



DEPARTMENTS OF THE ARMY AND THE AIR FORCE

ARIZONA ARMY NATIONAL GUARD
CONSTRUCTION & FACILITIES MANAGEMENT OFFICE
5636 E. MCDOWELL RD., BLDG M5330
PHOENIX, ARIZONA 85008

November 2, 2016

Mr. Terry L. Baer
Hazardous Waste Unit Manager
Waste Programs Division
Arizona Department of Environmental Quality
1110 West Washington Street
Phoenix, Arizona 85007

Dear Mr. Baer:

With this letter, the Arizona Army National Guard (AZARNG) confirms the submission of all components of the final application for a Hazardous Waste Post-Closure Permit, Camp Navajo, Bellemont, Arizona (EPA ID No. AZ7 213 820 635; Place ID No. 3051; Licensing Time Frames No. 62926).

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision according to a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

If you have any questions, please contact Ms. Kim Birdsall of my staff at (602) 267-2498 or kim.birdsall@fmo.azdema.gov.

Sincerely,

A handwritten signature in black ink, appearing to read "M. Stubbs", is written over a horizontal line.

Matthew D. Stubbs
Colonel, Arizona Army National Guard
Construction and Facilities Management Officer

cc:

LTC Brian Saunders, ARNG-IED Cleanup Program Manager
CPT Steve Tuy, AZARNG Acting Environmental Program Manager
Randall Wilkinson, ARNG-IED/CEMML Cleanup Support Manager
David Annis, AZARNG Compliance Program Manager
Kim Birdsall, AZARNG Restoration Program Manager

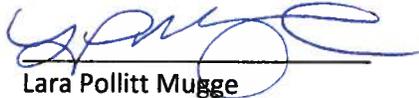
Diana Deming, ADEQ Permits and Plan Review Unit Project Manager
Michael Heitmann, CH2M Project Manager

Professional Engineer Certification

By means of this certification, I certify that the following document was prepared under my supervision:

- Revised Appendix I, *Post-closure Permit Area Groundwater Monitoring Plan* dated October 31, 2016.

Based on my inquiry of the person or persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete.



Lara Pollitt Mugge
Registered Professional Engineer
State of Arizona, No. 31708
Expiration: September 30, 2018



Permit Application

**Camp Navajo RCRA Post-closure
Permit Application
Open Burning/Open Detonation
Operations**

Prepared for
**Army National Guard Directorate
Environmental Programs Division
Camp Navajo
Bellemont, Arizona
AZ7213820635**

September 23, 2016

Prepared by
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Acronyms and Abbreviations

µg/L	microgram(s) per liter
A.A.C.	Arizona Administrative Code
AAR	After Action Report
amsl	above mean sea level
ADEQ	Arizona Department of Environmental Quality
ARNG	Army National Guard
AZ ARNG	Arizona Army National Guard
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	<i>Code of Federal Regulations</i>
CG	cyanogen chloride
CK	phosgene
DD	Decision Document
DDESB	Department of Defense Explosives Safety Board
EBASCO	EBASCO Environmental
EOD	explosive ordnance disposal
FEMA	Federal Emergency Management Agency
FIRM	Federal Insurance Rate Map
GIS	geographic information system
GWMP	Groundwater Monitoring Plan
HAZWOPER	Hazardous Waste Operations and Emergency Response
HE	high explosive
HMX	octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine
ICM	Improved Conventional Munitions
IS	Interim Status
lb	pound(s)
LTM	long-term monitoring
LUC	land use control
MEC	munitions and explosives of concern
mm	millimeter(s)
MRWA	Munitions Response Work Area
MPPEH	material potentially presenting an explosive hazard
NAAD	Navajo Army Depot
NEW	net explosive weight
OB	open burn
OD	open detonation
PCB	polychlorinated biphenyl
PCP	Post-closure Plan
RC	response complete
RCRA	Resource Conservation and Recovery Act
RDX	hexahydro-1,3,5-trinitro-1,3,5-triazine
RFA	RCRA Facility Assessment
RI	remedial investigation
SDZ	surface danger zone
SWMU	solid waste management unit
TNT	trinitrotoluene
TP	Technical Paper
URS	URS Corporation

USAEHA	U.S. Army Environmental Hygiene Agency
USATHAMA	U.S. Army Toxic and Hazardous Materials Agency
UXO	unexploded ordnance
VZMW	vadose zone monitoring well
WP	white phosphorus



ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY

AHWMA/RCRA POST-CLOSURE PERMIT APPLICATION COMPLETENESS/TECHNICAL EVALUATION CHECKLIST

DISCLAIMER: This checklist is not an official ADEQ policy document. This checklist is a tool used by ADEQ permit writers to evaluate hazardous waste permit applications. The checklist is periodically revised by ADEQ, following the adoption of new regulatory requirements.

Note: This checklist may be used for review of a permit application for a post-closure facility with no active hazardous waste management units. It provides a guideline to the basic requirements of a Part B post-closure permit application. Optional elements (contingency plan and personnel training) are indicated by italics. If a post-closure unit is present at a facility seeking a permit for active hazardous waste management units, the post-closure unit must be incorporated in the permit application like an operating unit in all appropriate sections.

CHECKLIST FOR REVIEW OF FEDERAL RCRA PERMIT APPLICATIONS POST-CLOSURE FACILITY REQUIREMENTS				
Section and Requirement	Federal Regulation	Review Consideration^a	Location in Application^b	See Attached Comment Number^c
PC-1 Description of Activities Conducted which Require Facility to Obtain a Permit under the Resource Conservation and Recovery Act (RCRA) and Brief Description of Nature of the Business	270.13(a),(m)		<i>RCRA Subtitle C Site Identification Form – Appendix A; Hazardous Waste Identification Form – Appendix A, and Section 2.1</i>	
PC-2 Name, Mailing Address, and Location of Facility for which the Application is Submitted, including a Topographic Map	270.13(b),(l)		<i>RCRA Subtitle C Site Identification Form – Appendix A, and Figure A-1</i>	
PC-3 Up to four Standard Industrial Classification Codes which Best Reflect the Products or Services Provided by the Facility	270.13(c)		<i>RCRA Subtitle C Site Identification Form – Appendix A (NAICS code provided)</i>	
PC-4 Operator/Owner's Name, Address, Telephone Number, and Ownership Status	270.13(d),(e)	Ownership status must include status as federal, state, private, public, or other entity.	<i>RCRA Subtitle C Site Identification Form – Appendix A and Hazardous Waste Identification Form – Appendix A</i>	
PC-5 Facility is New, Existing, or Located on Indian Lands	270.13(f),(g)	Description must include information on whether this is a first or revised application with date of last signed permit application.	<i>RCRA Subtitle C Site Identification Form – Appendix A</i>	

**CHECKLIST FOR REVIEW OF FEDERAL RCRA PERMIT APPLICATIONS
POST-CLOSURE FACILITY REQUIREMENTS**

Section and Requirement	Federal Regulation	Review Consideration ^a	Location in Application ^b	See Attached Comment Number ^c
PC-6 Description of Processes for Disposing of Hazardous Waste	270.13(i)	Description must include design capacity for these items.	Hazardous Waste Permit Information Form - Appendix A	
PC-7 Specification of the Hazardous Wastes Listed or Designated Under Title 40 of the Code of Federal Regulations Part 261	270.13(j)	Specifications must include estimate on quantity of waste to be disposed of.	Hazardous Waste Permit Information Form - Appendix A	
PC-8 Listing of all Permits or Construction Approvals Received or Applied for	270.13(k)	Permits include the following programs: Hazardous Waste Management under RCRA; Underground Injection Control under Solid Waste Disposal Act; Prevention of Significant Deterioration, Nonattainment Program, and National Emissions Standards for Hazardous Pollutants under the Clean Air Act; ocean dumping permits under the Marine Protection Research and Sanctuaries Act; dredge and fill permits under Section 404 of the Clean Water Act; or other relevant environmental permits including state permits.	Hazardous Waste Permit Information Form - Appendix A	
PC-9 Part B General Description	270.14(b)(1)		Section 2.1	
PC-10a Topographic Map	270.14(b)(19)	Show distance of 1,000 feet around unit at a scale of 1 inch to not more than 200 feet (multiple maps may be submitted at this scale), and should be similar to Part A	Figure B-2 and Section 2.2	
PC-10a(1) Scale and Date	270.14(b)(19)(i)	Other scales may be used if justified.	Figure B-2 and Section 2.2	
PC-10a(2) The 100-year Flood Plain Area	270.14(b)(19)(ii)		Figure B-4 and Section 2.3.2	
PC-10a(3) Surface Waters	270.14(b)(19)(iii)		Figure B-2 and Section 2.2	

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POST-CLOSURE FACILITY REQUIREMENTS**

Section and Requirement	Federal Regulation	Review Consideration^a	Location in Application^b	See Attached Comment Number^c
PC-10a(4) Surrounding Land Use	270.14(b)(19)(iv)		Figure B-2, Sections 2.1.3 and 2.2	
PC-10a(5) Wind Rose	270.14(b)(19)(v)		Figure B-2	
PC-10a(6) Map Orientation	270.14(b)(19)(vi)		Figure B-2	
PC-10a(7) Legal Boundaries	270.14(b)(19)(vii)		Figures A-1 (Facility) and B-2 and B-3 (Post-closure Area)	
PC-10a(8) Access Control	270.14(b)(19)(viii)		Figures B-5 and B-6	
PC-10a(9) Injection and Withdrawal Wells (onsite and offsite)	270.14(b)(19)(ix)		Figure A-1; Appendix D, Figures PCP-3 and PCP-4 (includes vadose zone wells)	
PC-10a(10) Buildings and Other Structures	270.14(b)(19)(x)		Figures A-1 (Facility) and B-2 (Post-closure Area)	
PC-10a(11) Drainage and Flood Control Barriers	270.14(b)(19)(xi)		Not Applicable – no control barriers	
PC-10a(12) Location of the Disposal Unit(s)	270.14(b)(19)(xii)		Figures A-2, B-2 and B-3	
PC-10a(13) Location of Solid Waste Management Units	270.14(d)(1)(i)		Figures B-3 and PCP-2 Section 5.0	
PC-10b Additional Information on the Topographic Map for Land Disposal Facilities	270.14(c)(3)			
PC-10b(1) Waste Management Areas	270.14(c)(3)		Figures B-2 and B-3	
PC-10b(2) Property Boundaries	270.14(c)(3)		Figures A-1 (Facility) and B-2 (Post-closure Area)	
PC-10b(3) Point-of-compliance Location	270.14(c)(3); 264.95	Point of compliance is defined in 264.95 (Also see guidance in the Federal Register, Vol. 1 No. 85, May 1, 1996, p 19432. Advanced Notice of Proposed Rulemaking)	Figure B-2 – Boundary of the Post-closure Area	
PC-10b(4) Location of Groundwater Monitoring Wells	270.14(c)(3); 264.97		Figures A-1 and B-2; Appendix D, Figures PCP-3 and PCP-4 (includes vadose zone wells)	

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Reviewer:

Checklist Revision Date (March 1998)

**CHECKLIST FOR REVIEW OF FEDERAL RCRA PERMIT APPLICATIONS
POST-CLOSURE FACILITY REQUIREMENTS**

Section and Requirement	Federal Regulation	Review Consideration ^a	Location in Application ^b	See Attached Comment Number ^c
PC-10c Uppermost Aquifer and Hydraulically Connected Aquifers Beneath Facility Property	270.14(c)(2)		Appendix D - Attachment B Section 2	
PC-10d Groundwater Flow Direction	270.14(c)(2), (3)	Should be included on the topographic map, if possible.	Figure B-2; Appendix D - Attachment B, Sections 2 and 3.4, Figure PCP-4	
PC-11a Seismic Requirements				
PC-11a(1) Political Jurisdiction in which Facility is Proposed to be Located	270.14(b)(11)(i)		Section 2.3.1	
PC-11a(2) Indication of Whether Facility is Listed in Appendix VI of 264 (New Facilities)	270.14(b)(11)(i)		Section 2.3.1	
PC-11a(3) New Facility must be Located at Least 200 feet from a Fault which has had Displacement in Holocene Time	270.14(b)(11)(ii); 264.18(a)	If facility location is listed in Appendix VI of 264, this information is required.	Not Applicable	
PC-11b Flood Plain Requirements	270.14(b)(11)(iii), (iv); 264.18(b)			
PC-11b(1) Copy of Federal Insurance Administration or other Flood Map	270.14(b)(11)(iii)	Reference source used to determine whether facility is located in 100-year flood plain.	Section 2.3.2; Figure B-4; Appendix H	
PC-11b(2) Engineering Analysis to Indicate the Various Hydrodynamic and Hydrostatic Forces Expected to Result from the 100-year Flood Plain	270.14(b)(11)(iv)(A); 264.18(b)	Flood plain requirements applicable if facility is located in 100-year flood plain.	Not Applicable	

**CHECKLIST FOR REVIEW OF FEDERAL RCRA PERMIT APPLICATIONS
POST-CLOSURE FACILITY REQUIREMENTS**

Section and Requirement	Federal Regulation	Review Consideration^a	Location in Application^b	See Attached Comment Number^c
PC-11b(3) <i>Structural or other Engineering Studies showing the Design of Operational Units and Flood Protection Devices and how these will Prevent Washout</i>	270.14(b)(11)(iv)(B); 264.18(b)	Flood plain requirements applicable if facility is located in 100-year flood plain.	Not Applicable	
PC-11b(4) <i>Plan and Schedule for Future Compliance</i>	270.14(b)(11)(v)	Flood plain requirements applicable if facility is located in 100-year flood plain and not in compliance with 264.18(b).	Not Applicable	
PC-11c <i>Interim Status Groundwater Monitoring Data</i>	270.14(c)(1)		Appendix D - Attachment B, Section 3	
PC-11c(1) <i>Description of Wells</i>	270.14(c)(1)	A copy of topographic map required by 270.14(b) on which location and identification of each interim status monitoring well is indicated. Details of design and construction of each interim status monitoring well.	Figure A-1; Appendix D - Figures PCP-3 and PCP-4; Attachment B, Section 3.2.1 and 3.3.1; Tables PCP-B1, B2, B3, and B4; Attachment B1	
PC-11c(2) <i>Description of Sampling and Analysis Procedures</i>	270.14(c)(1); 265.92	A copy of facility's groundwater sampling and analysis plan	Appendix D - Attachment B, Section 3 Referenced Work Plans are provided in App H.	
PC-11c(3) <i>Monitoring Data</i>	270.14(c)(1); 265.92	Provide all interim status monitoring results.	Appendix D - Attachment B, Sections 3.2.2 and 3.3.2; Tables PCP-B5 to PCP-B11	
PC-11c(4) <i>Statistical Procedures</i>	270.14(c)(1); 265.93	Provide information relating to statistical procedures.	Not Applicable – statistical analysis not performed during interim monitoring	
PC-11c(5) <i>Groundwater Assessment Plan</i>	270.14(c)(1); 265.93(d)(2)	If required, based on statistical comparison results, provide plan implemented for ground-water quality assessment program along with results obtained from implementation of plan.	Not Applicable – statistical analysis not performed during interim monitoring	
PC-12 <i>General Hydrogeologic Information</i>	270.14(c)(2)	Include description of the regional and site-specific geologic and hydrogeological setting.	Appendix D, Attachment B, Section 2	

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POST-CLOSURE FACILITY REQUIREMENTS**

Section and Requirement	Federal Regulation	Review Consideration ^a	Location in Application ^b	See Attached Comment Number ^c
PC-13 Contaminant Plume Description	270.14(c)(2), (4), (7); Part 261, Appendix VIII	In some cases, contaminant plumes may have been defined under groundwater quality assessment programs carried out during the interim status period which may not address the complete list of Appendix IX constituents as required under 270.14(c)(4). Additional monitoring may be required to identify the concentration of each Appendix VIII constituent in the plume.	Appendix D - Attachment B, Section 3.5	
PC-14 General Monitoring Program Requirements	270.14(c)(5); 264.90(b)(4); 264.97		Appendix D - Attachment B, Section 4	
PC-14a Description of Wells	270.14(c)(5); 264.97(a),(b),(c)		Appendix D - Attachment B, Sections 4.1.2 (vadose zone) and 4.2.2 (groundwater)	
PC-14b Description of Sampling and Analysis Procedures	270.14(c)(5); 264.97(d),(e),(f)		Appendix D- Attachment B, Sections 4.1.4 (vadose zone) and 4.2.4 (groundwater); Section B.6 of Attachment B2; Section B.6 of Attachment B3 Attachment B4 (work plan)	
PC-14c Procedures for Establishing Background Quality	270.14(c)(5); 264.97(a)(1),(g)		Appendix D, Attachment B, Section B.2 of Attachment B2 Section B.2 of Attachment B3	
PC-14d Statistical Procedures	264.97(h), (i)(1),(5),(6)		Appendix D, Attachment B, Sections 4.1.4.6 (vadose zone) and 4.2.4.6 (groundwater)	
PC-14d(1) Parametric Analysis of Variance (ANOVA)	270.14(c)(5); 264.97(h)(1), (i)(2)		Not Applicable	
PC-14(2) Nonparametric ANOVA	270.14(c)(5); 264.97(h)(2), (i)(2)		Not Applicable	
PC-14d(3) Tolerance or Prediction Interval Procedure	270.14(c)(5); 264.97(h)(3), (i)(4)		Not Applicable	

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POST-CLOSURE FACILITY REQUIREMENTS**

Section and Requirement	Federal Regulation	Review Consideration ^a	Location in Application ^b	See Attached Comment Number ^c
PC-14d(4) Control Chart Approach	270.14(c)(5); 264.97(h)(4), (i)(3)		Appendix D - Attachment B, Section 4.2.4.1; Section B.5 of Attachment B2;	
PC-14d(5) Alternative Approach	270.14(c)(5); 264.97(h)(5),(i)		Not Applicable	
PC-15 Detection Monitoring Program	270.14(c)(6); 264.91(a)(4); 264.98		Not Required No Detection Monitoring - Vadose zone information provided in Appendix D- Attachment B, Section 4.1 and Attachment B2	
PC-15a Indicator Parameters, Waste Constituents, Reaction Products to be Monitored	270.14(c)(6) (i); 264.98(a)		Not Required - Vadose zone provided in Appendix D - Attachment B, Section 4.1.1 and Section B.3 of Attachment B2	
PC-15b Groundwater Monitoring System	270.14(c)(6) (ii); 264.97(a) (2),(b),(c); 264.98(b)	Identify number, location, and depth of each and describe well construction materials.	Not Required - Vadose zone provided in Appendix D - Attachment B, Section 4.1.2 and Section B.4. of Attachment B2	
PC-15c Background Groundwater Concentration Values for Proposed Parameters	270.14(c)(6) (iii); 264.97 (g); 264.98(c), (d)		Not Required - Vadose zone provided in Appendix D - Attachment B, Section B.1 and B.2 of Attachment B2.	
PC-15d Proposed Sampling and Analysis Procedures	270.14(c)(6)(iv); 264.97(d),(e),(f); 264.98(d),(e),(f)		Appendix D- Attachment B, Sections 4.1.4; Section B.6 of Attachment B2; Attachment B4 (Work Plan)	
PC-15e Statistically Significant Increase in any Constituent or Parameter Identified at any Compliance Point Monitoring Well	270.14(c)(6); 264.98(g); Part 264 Appendix IX		Appendix D, Attachment B, Section 4.1.4.6; Section B.5 of Attachment B2	
PC-16 Compliance Monitoring Program	270.14(c)(7); 264.99		Appendix D - Attachment B, Section 4.2; Attachment B3	

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POST-CLOSURE FACILITY REQUIREMENTS**

Section and Requirement	Federal Regulation	Review Consideration ^a	Location in Application ^b	See Attached Comment Number ^c
PC-16a Waste Description	270.14(c)(7)(i)	Description must include historical records of volumes, types, and chemical composition of waste placed in units in waste management areas.	Section 2.1.4	
PC-16b Characterization of Contaminated Groundwater	270.14(c)(7)(ii)	For each well at point of compliance and for each background well, provide concentrations of each constituent in 261 Appendix VIII, major cations and anions, and constituents listed in Table 1 of 264.94, if not already mentioned above.	Appendix D- Attachment B, Section B.1 and B.2 of Attachment B3	
PC-16c Hazardous Constituents to be Monitored in Compliance Program	270.14(c)(7)(iii); 264.98(g)(3); 264.99(a)(1)		Appendix D- Attachment B, Section B.4 of Attachment B3	
PC-16d Concentration Limits	270.14(c)(7)(iv); 264.94, 264.97(g),(h); 264.99(a)(2)		Appendix D - Attachment B, Section 4.2.4.1 Attachment B4, Worksheet 15 (Work Plan)	
PC-16e Alternate Concentration Limits	270.14(c)(7)(iv); 264.94(b); 264.99(a)(2)	Provide justification for establishing alternate concentration limits. Justification must address following two factors.	Not Applicable	
PC-16e(1) Adverse Effects on Groundwater Quality	270.14(c)(7)(iv); 264.94(b)(1)		Not Applicable	
PC-16e(2) Potential Adverse Effects	270.14(c)(7)(iv); 264.94(b)(2)		Not Applicable	

CHECKLIST FOR REVIEW OF FEDERAL RCRA PERMIT APPLICATIONS POST-CLOSURE FACILITY REQUIREMENTS				
Section and Requirement	Federal Regulation	Review Consideration ^a	Location in Application ^b	See Attached Comment Number ^c
PC-16f Engineering Report Describing Groundwater Monitoring Systems	270.14(c)(7)(v); 264.95 264.97(a)(2), (b),(c); 264.99(b)	Provide details supporting representative nature of groundwater quality at background monitoring points and compliance monitoring point.	Appendix D - Attachment B, Attachment B4 (Work Plan)	
PC-16g Groundwater Monitoring Well Design	264.97(c)	Wells must be designed in accordance with American Society for Testing and Materials standards. Any well within loess must be designed to minimize turbidity.	Appendix D - Attachment B, Section 4.2.2; Attachment B1 (Well Construction)	
PC-16h Proposed Sampling and Statistical Analysis Procedures for Data	270.14(c)(7) (vi); 264.97 (d),(e),(f); 264.99(c) - (g)		Appendix D, Attachment B, Section 4.2.4; Section B.5 of Attachment B3	
PC-17 Groundwater Protection Standard Exceeded at Compliance Point Monitoring Well	270.14(c)(8); 264.99(h),(i)		Not Applicable	
PC-17a Corrective Action Program	270.14(c)(8); 264.99(j); 264.100	If hazardous constituents have been detected in groundwater, an owner or operator must submit sufficient information, supporting data, etc., to establish a corrective action program that meets requirements of 264.100.	Not Applicable	
PC-17b Characterization of Contaminated Groundwater	270.14(c)(8)(i)	For each well at point of compliance and for each background well, provide concentrations of each constituent in 261 Appendix VIII, major cations and anions, and constituents listed in Table 1 of 264.94, if not already determined by the above.	Not Applicable	

**CHECKLIST FOR REVIEW OF FEDERAL RCRA PERMIT APPLICATIONS
POST-CLOSURE FACILITY REQUIREMENTS**

Section and Requirement	Federal Regulation	Review Consideration^a	Location in Application^b	See Attached Comment Number^c
PC-17c Concentration Limits	270.14(c)(8)(ii); 264.94; 264.100(a)(2)	Specify the proposed concentration limits for hazardous constituent in groundwater.	Not Applicable	
PC-17d Alternate Concentration Limits	270.14(c)(8)(ii); 264.94(b); 264.100(a)(2)	Provide a justification for establishing alternate concentration limits. This justification must address each of the following two factors.	Not Applicable	
PC-17d(1) Adverse Effects on Groundwater Quality	270.14(c)(8); 264.94(b)(1)		Not Applicable	
PC-17d(2) Potential Adverse Effects	270.14(c)(8); 264.94(b)(2)		Not Applicable	
PC-17e Corrective Action Plan	270.14(c)(8)(iii); 264.100(b)	Provide detailed plans and engineering report on corrective actions proposed for facility, including maps of engineered structures, construction details, plans for removing waste, description of treatment technologies, effectiveness of correction program, description of reinjection system, additional hydrogeologic data, operation and maintenance plans, and closure and post-closure plans.	Not Applicable	
PC-17f Groundwater Monitoring Program	270.14(c)(8)(iv); 264.100(d)		Not Applicable	
PC-17f(1) Description of Monitoring System	270.14(c)(7)(v), (8)		Not Applicable	
PC-17f(2) Description of Sampling and Analysis Procedures	270.14(c)(7)(v), (8)		Not Applicable	
PC-17f(3) Monitoring Data and Statistical Analysis Procedures	270.14(c)(7)(v), (8)		Not Applicable	

**CHECKLIST FOR REVIEW OF FEDERAL RCRA PERMIT APPLICATIONS
POST-CLOSURE FACILITY REQUIREMENTS**

Section and Requirement	Federal Regulation	Review Consideration ^a	Location in Application ^b	See Attached Comment Number ^c
PC-17f(4) Reporting Requirements	270.14(c)(7); 264.100(g)		Not Applicable	
PC-18 Security	270.14(b)(4); 264.14	Demonstrate that ongoing post-closure use does allow disturbance of the integrity of the final liner(s), or any other components of the containment system, or the function of the monitoring system.	Sections 4.1.1 and 4.1.2 and Appendix D - Section 3.0	
PC-18a Security Procedures and Equipment	270.14(b)(4); 264.14	Unless waiver is granted, facility must have surveillance system or barrier or other means to control entry.	Appendix D - Section 3.1	
PC-18b Warning Signs	270.14(b)(4); 264.14(c)	Signs in English must be posted at each entrance, and be legible from 25 feet.	Appendix D - Section 3.1 and Attachment A	
PC-19 Inspection Schedule	270.14(b)(5); 264.15	Include where applicable, as part of the post-closure inspection schedule, specific for each type of disposal facility. These specific requirements and the schedule should be included as part of the post-closure plan.	Section 4.1.3 and Appendix D - Section 3.2; Table PCP-1	
PC-19a General Inspection Requirements	270.14(b)(5); 264.15(a), (b); 264.33	Describe the inspections to be conducted during post-closure care period, their frequency, the inspection procedure, and the logs to be kept. Inspection is required for monitoring equipment, safety emergency equipment, communication and alarm systems, decontamination equipment, security devices, and operating and structural equipment. Should be included as part of post-closure plan.	Section 4.1.3 and Appendix D - Section 3.2 and Table PCP-1	

**CHECKLIST FOR REVIEW OF FEDERAL RCRA PERMIT APPLICATIONS
POST-CLOSURE FACILITY REQUIREMENTS**

Section and Requirement	Federal Regulation	Review Consideration^a	Location in Application^b	See Attached Comment Number^c
PC-19b Types of Problems	270.14(b)(5); 264.15(b)(3)	Inspection checklist should be included as part of Part of post-closure plan and must identify types of problem	Appendix D - Section 4.1.3 and Table PCP-1	
PC-19c Frequency of Inspections	270.14(b)(5); 264.15(b)(4)	The rationale for determining the length of time between inspections should be provided as part the post-closure plan.	Appendix D - Section 4.1.3 and Table PCP-1	
PC-19d Schedule of Remedial Action	264.15(c)	Owner/operator must immediately remedy any deterioration or malfunction of equipment or structures to ensure problem does not lead to environmental or human health hazard.	Appendix D - Section 4.1.3 and Table PCP-2	
PC-19e Inspection Log	264.15(d)	Provide example log or summary. Should be included as part of the post-closure plan.	Appendix D - Table PCP-2	
PC-20 Waiver or Documentation of Preparedness and Prevention Requirements	270.14(b)(6) 264.32(a) - (d)	Facility must submit justification for any waiver requirements of this section.	Section 4.3 and Appendix D - Section 5.0	
PC-21 Emergency Equipment	270.14(a); 264.32(c)	Demonstrate that portable fire extinguishers, fire control equipment, spill control equipment, and decontamination equipment are available, if necessary.	Appendix D, Section 5.1	
PC-21a Water and Fire Control	270.14(a); 264.32(d)	Demonstrate facility has adequate fire control systems, water volume and pressure, foaming equipment, automatic sprinklers, etc., if necessary	Appendix D, Section 5.1	
PC-21b Testing and Maintenance of Equipment	270.14(a); 264.33	Demonstrate communication, alarm, fire control equipment, spill control equipment and decontamination equipment are tested and maintained, if applicable.	Appendix D, Section 5.2	

**CHECKLIST FOR REVIEW OF FEDERAL RCRA PERMIT APPLICATIONS
POST-CLOSURE FACILITY REQUIREMENTS**

Section and Requirement	Federal Regulation	Review Consideration ^a	Location in Application ^b	See Attached Comment Number ^c
PC-22 Documentation of Arrangements with Emergency Agencies	270.14(a); 264.37	Owner/operator must make arrangements, as appropriate, with type of waste and hazard potential, for the	Appendix D, Section 5.5 and Attachment C	
PC-22a Document Agreement Refusal	270.14(a); 264.37(b)	Document refusal to enter into a coordination agreement.	Not Applicable	
PC-22b Equipment and Power Failure	270.14(b)(8) (iv)	Describe procedure used to mitigate the effects of equipment failure and power outages, if	Not Applicable	
PC-23 Closure Plans	270.14(b)(13); 264.112(a)(1),(2)	Include an approved closure plan consistent with the requirements of 264.112. This plan is for post-closure facilities as a description of how the facility was closed.	Section 2.4.1 and Appendix H	
PC-23a Post-Closure Plan	270.14(b)(13)	Submit a copy of the approved plan	Appendix D	
PC-23b Post-closure Care Contact	270.14(b)(13); 264.118(b)(3)	Provide the name, address, and phone number of the person or office to contact about the waste disposal unit or facility during the post-closure care period.	Appendix D, Section 2.0	
PC-24 Notices Required for Disposal Facilities	270.14(b)(14)	Provide a certification of closure, a survey plat, and a post-closure certification. Also include a statement that the post-closure notices required by 270.149(b)(14) will be filed and submitted appropriately.	Section 2.4 and Appendix C	

CHECKLIST FOR REVIEW OF FEDERAL RCRA PERMIT APPLICATIONS

Section and Requirement	Federal Regulation	Review Consideration ^a	Location in Application ^b	See Attached Comment Number ^c
PC-25 Post-closure Cost Estimate	270.14(b)(16) 264.144	Provide a copy of the most recent post-closure cost estimate, calculated to cover the cost, in current dollars, of post-closure monitoring and maintenance of the facility in accordance with the applicable . Estimate must be based on the third party performing the post-closure activities. The cost estimate must be adjusted annually for inflation pursuant to 264.144(b).	Section 4.4, not required because this is a military installation	
PC-25a Financial Assurance Mechanism for Post-closure Care	270.14(b)(16); 264.145; 264.151	Provide a copy of the established financial assurance mechanism for post-closure care of the facility. The mechanism must be one of the following: trust fund surety bond letter of credit insurance financial test and corporate guarantee for post-closure care use of multiple financial mechanisms use of financial mechanism for multiple facilities.	Section 4.4, not required because this is a military installation	
PC-25b Use of State-Required Mechanisms	270.14(b)(18); 264.149	When state has regulations that provide equivalent or greater liability requirements for financial assurance for closure post-closure, submit copy of state-required financial mechanism.	Not Applicable	

CHECKLIST FOR REVIEW OF FEDERAL RCRA PERMIT APPLICATIONS

Section and Requirement	Federal Regulation	Review Consideration ^a	Location in Application ^b	See Attached Comment Number ^c
PC-25c State Assumption of Responsibility	270.14(b)(18); 264.150	If state assumes legal responsibility for compliance with closure, post-closure, or liability requirements there must be a letter submitted from the state specifying assumption of responsibilities and amounts of liability coverage assured by state.	Not Applicable	
PC-26 Solid Waste Management Units (SWMU)	270.14(d)(1); 264.101	Identify all SWMUs at the facility including hazardous and nonhazardous waste units, as well as active and inactive units, if known.	Section 5.0, Tables 5-1, 5-2, and 5-3	
PC-26a Characterize the SWMU	270.14(d)(1)	Submit SWMU information including: type of each unit; location on a topographic map; engineering drawings, if available, dimensions; dates of operation; description of wastes in each unit; and quantity or volume of waste, if known.	Figures B-2 and B-3, Section 5.0 and Tables 5-1, 5-2, and 5-3 and reference documents in Appendix H	
PC-26b No SWMUs		Describe methodology used to determine that no existing or former SWMUs exist at the facility.	Not Applicable	
PC-26c Releases	270.14(d)(2)		Section 5.0	
PC-26c(1) Characterize Releases	270.14(d)(3)	Provide following information concerning releases: date of release; type, quantity, and nature of release; groundwater monitoring and other analytical data; physical evidence of stressed vegetation; historical evidence of releases; any state, local, or federal enforcement action that may address releases; any public citizen complaints that indicate a release; and any other information showing the migration of the release.	Section 5.0 and Appendix D - Attachment B	
PC-26c(2) No Releases		Describe methodology used to determine that releases from SWMUs are not present.	Section 5.0	

CHECKLIST FOR REVIEW OF FEDERAL RCRA PERMIT APPLICATIONS

Section and Requirement	Federal Regulation	Review Consideration ^a	Location in Application ^b	See Attached Comment Number ^c
PC-27 Part B Certification Information on the Potential for the Public to be Exposed to Releases. At a Minimum, this must include: reasonably foreseeable potential releases potential pathways of human exposure potential magnitude and nature of exposure	270.11 270.10(j)	The federal requirement is for surface impoundments and land disposal units.	Section 7 Not Applicable per agreement with ADEQ	

This section of the checklist contains elements, currently required, that may become optional under the proposed regulation changes in 40 Code of Federal Regulations Part 270.

CHECKLIST FOR REVIEW OF FEDERAL RCRA PERMIT APPLICATIONS				
Section and Requirement	Federal Regulation	Review Consideration ^a	Location in Application ^b	See Attached Comment Number ^c
PC-30b <i>Emergency Coordinators</i>	270.14(b)(7); 264.52(d); 264.55	<i>There must at least be one primary emergency coordinator available at all times.</i>	Section 6.0 and Appendix G – Section 1.5	
PC-30c <i>Implementation</i>	270.14(b)(7); 264.52(a); 264.56(d)	<i>Emergency coordinator to determine that facility has had a release, fire, or explosion that could threaten human health or the environment outside facility.</i>	Section 6 and Appendix G – Section 1.1	
PC-30d <i>Emergency Actions</i>	270.14(b)(7); 264.56		Section 6.0 and Appendix G - Sections 2.2-2.4, 6.1	
PC-30d(1) <i>Notification</i>	270.14(b)(7); 264.56(a)	<i>Describe the method for immediate notification of facility personnel and necessary state and local agencies.</i>	Section 6.0 and Appendix G - Sections 1.6, 2.3, and 6.2	
PC-30d(2) <i>Identification of Hazardous Materials</i>	270.14(b)(7); 264.56(b)	<i>Observations, records, manifests, or chemical analysis may be used by emergency coordinator.</i>	Section 6.0 and Appendix G Sections 2.1, 6.3, 6.4	
PC-30d(3) <i>Assessment</i>	270.14(b)(7); 264.56(c),(d)	<i>Direct and indirect effects must be considered.</i>	Section 6.0 and Appendix G Sections 2.2, 6.3, 6.4	
PC-30d(4) <i>Control Procedures</i>	270.14(b)(7); 264.52(a)	<i>Contingency plan must describe actions facility personnel must take in response to fires, explosions, or any unplanned release of hazardous waste to air, soil, or surface water.</i>	Section 6.0 and Appendix G Sections 2.2-2.4, 6.3, 6.4	
PC-30d(5) <i>Post-Emergency Equipment Management</i>	270.14(b)(7); 264.56(h)(2)	<i>Decontamination is required for emergency equipment.</i>	Section 6.0 and Appendix G – Section 6.4	
PC-30e <i>Evacuation Plan for Facility Personnel</i>	270.14(b)(7); 264.52(f)	<i>Evacuation plans must include evacuation signals and primary and alternate evacuation routes.</i>	Section 6.0 and Appendix G – Section 6.5 and Attachment 7	

CHECKLIST FOR REVIEW OF FEDERAL RCRA PERMIT APPLICATIONS

Section and Requirement	Federal Regulation	Review Consideration ^a	Location in Application ^b	See Attached Comment Number ^c
PC-30f <i>Notification of Federal, State and Local Authorities before Resuming Post-closure Care</i>	270.14(b)(7); 264.56(i)	<i>Federal or state authorities must be notified within 15 days of occurrence.</i>	Section 6.0 and Appendix G – Section 2.4	
PC-30g <i>Notification Reports</i>	270.14(b)(7); 264.196(d)	<i>Demonstrate that any release to the environment will be reported to regional administrator within 24 hours of detection.</i>	Section 6.0 and Appendix G – Section 2.4	
PC-31 <i>Outline of Introductory and Continuing Training Programs</i>	270.14(b)(12); 264.16(a)(1)	<i>Facility personnel must successfully complete classroom or on-the-job training which will allow them to responsibly perform in their positions for post-closure care. The training program is limited to post-closure activities.</i>	Attachment D - Section 4.1	
PC-31a <i>Job Title/Job Description</i>	270.14(b)(12); 264.16(d)(1), (d)(2)	<i>Owner or operator must maintain records of job titles, names of employees, job descriptions, and types and amounts of training given to employees.</i>	Attachment D – Section 4.2	
PC-31b <i>Description of How Training will be Designed to Meet Actual Job Tasks</i>	270.14(b)(12); 264.16(c),(d) (3)	<i>Training must be conducted by a qualified person; there must also be an annual review of the training.</i>	Attachment D – Section 4.2	
PC-31c <i>Training Director</i>	270.14(b)(12); 264.16(a)(2)	<i>Program must be directed by person trained in hazardous waste procedures.</i>	Attachment D – Section 4.2	
PC-31d <i>Relevance of Training to Job Position</i>	270.14(b)(12); 264.16(a)(2)	<i>Training must include instruction on hazardous waste procedures relevant to each employee's position.</i>	Attachment D – Section 4.2	
PC-31e <i>Training for Emergency Response</i>	270.14(b)(12); 264.16(a)(3)	<i>Personnel must minimally be familiar with emergency procedures, emergency equipment, and emergency systems.</i>	Attachment D – Section 4.1 and 4.1.4	

CHECKLIST FOR REVIEW OF FEDERAL RCRA PERMIT APPLICATIONS

Section and Requirement	Federal Regulation	Review Consideration ^a	Location in Application ^b	See Attached Comment Number ^c
PC-31f Maintenance of Training Records/Copy of Personnel Training Documents	270.14(b)(12); 264.16(b),(d) (4),(e)	Training records on current personnel must be kept until the post-closure care period is completed. Training must be completed within 6 months after date of employment or assignment to the facility, whichever is later.	Attachment D – Section 4.3	
PC-32 Chemical and Physical Analyses	270.14(b)(2); 264.13(a)	Data generated by testing the waste, published data on the waste, or data gathered from similar processes may be used.	Not Applicable	
PC-33 Waste Analysis Plan	270.14(b)(3); 264.13(b),(c) 266.102(a)(2)(ii); 266.104(a); (2), 268.7	Address how for closed units/facilities, a waste analysis plan is not applicable. Discuss previous waste stream and/or current management of the waste, if applicable. Discuss whether or not leachate or runoff collection and analysis are necessary.	Not Applicable	

Notes:

^a Considerations in addition to the requirements presented in the regulations.

^b For each requirement, this column must indicate one of the following: NA for not applicable, IM for information missing, or the exact location of the information in the application.

^c If application is deficient in an area, prepare a comment describing the deficiency, attach it to the checklist, and reference the comment in this column.

Introduction

1.1 Purpose

The Army National Guard (ARNG) is submitting this post-closure permit application for a portion of the Former Open Burn/Open Detonation (OB/OD) Area at Camp Navajo in Bellemont, Arizona. The ARNG submitted a complete Resource Conservation and Recovery Act (RCRA) Part B Permit Application for multiple OB and OD units in 1988. A permit was never issued or denied, and operation of the OB/OD units under RCRA Interim Status (IS) continued until the mission ended in September 1994. The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) process was used to close the RCRA IS OB/OD units. A February 2007 meeting documented in a letter from ARNG to the Arizona Department of Environmental Quality (ADEQ) on March 26, 2007, further clarified that munitions and explosives of concern (MEC) characterization and closure documents completed under CERCLA fulfilled the requirements for documenting RCRA closure. The CERCLA closure documents that were prepared in lieu of a RCRA closure plan included work plans, reports, and Decision Documents (DDs). The *After Action Report, Munitions Response Work Area 02 and Navajo Army Depot (NAAD) 02, Camp Navajo, Arizona (AAR)* (CH2M HILL, 2016) is the final summary of the completion of the closure activities and will serve as final documentation for closure of the RCRA IS units. This post-closure permit application is being submitted for the portion of the Former OB/OD Area with remaining contamination, hereafter referred to as the Post-closure Permit Area.

1.2 Document Organization

Arizona has adopted the federal RCRA regulations, with limited changes, as discussed in Arizona Administrative Code (A.A.C.) R18-8 Article 2, and these include the RCRA permitting regulations. Title 40 *Code of Federal Regulations* (CFR) 270.13 and 270.14 specify the required contents of the RCRA Part A and Part B applications, respectively. Post-closure permit applications are only required to include selected information from 40 CFR 270.14, as specified in 40 CFR 270.28; however, the ADEQ may request additional information, as necessary, to process the permit application, as indicated in A.A.C. R-18-8-270(J). This permit application includes the required elements for a post-closure permit application and additional information that has been requested by ADEQ.

This post-closure permit application is organized according to the application requirements specified in the previous paragraph. Part A of the application consists of the *RCRA Subtitle C Site Identification Form* and the *Hazardous Waste Permit Information Form*. The information required for the Part A portion of the application, including figures and photographs, is presented in Appendix A. The text of this document, with supporting appendixes, tables, and figures, addresses the Part B application requirements, including a revised Post-closure Plan (PCP). The Arizona Hazardous Waste Management Act/RCRA Post-closure Permit Application Completeness/Technical Evaluation Checklist detailing the Part A and Part B application requirements and their corresponding locations in this document is presented at the front of this application.

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SECTION 2

Facility Description

This section presents the facility description information required by 40 CFR 270.14(b)(1), a description of the topographic map required by 40 CFR 270.14 (b)(19), and the facility location information (e.g., seismic and floodplain information) required by 40 CFR 270.14(b)(11). The facility description information is for the Post-closure Permit Area and adjacent land. Limited information for the entire Camp Navajo installation (the installation) is presented in this section as it applies to the Post-closure Permit Area. Part A of this application (see Appendix A) provides the required information for the entire installation.

2.1 General Description (40 CFR 270.14(b)(1))

This section provides a general description of the installation and the Post-closure Permit Area.

2.1.1 Camp Navajo General Description

Camp Navajo is situated on 28,347 acres of forest and prairie lands approximately 10 miles west of Flagstaff, Arizona, and south of Interstate 40 at Exit 185 in Bellemont, Coconino County, Arizona. A general location map is presented on Figure B-1 of Appendix B. Commercial, industrial, and private properties border the northern portions of the installation. The community of Bellemont, Arizona, is located on the northern boundary of the installation and has an estimated population of 600. The majority of land bordering the western, southern, and eastern portions of the installation is owned by the State of Arizona or the United States National Forest Service. A few private parcels are interspersed throughout the area. The surrounding land is characterized as undeveloped conifer forest interspersed with grassland meadows used for grazing. The closest residential dwelling is approximately 1 mile east of the Camp Navajo boundary.

Camp Navajo encompasses approximately 45 square miles and overlaps Townships 20, 21, and 22 North and Ranges 4, 5, and 6 East of the Gila and Salt River Baseline and Meridian. The average elevation of the site is approximately 7,100 feet above mean sea level (amsl) datum.

Camp Navajo is subdivided into multiple areas, with operations relating to storage, training, and administration:

- Administration Area
- Warehouse Area
- Limited Area
- Post-closure Permit Area and surrounding land
- Additional land used for training purposes

The Administration Area is located in the northern part of the installation and comprises the Garrison Command buildings, training facilities, and engineering and support facilities. The Warehouse Area is located in the northwest part of Camp Navajo and consists primarily of general storage warehouses and open storage areas. The Limited Area (also referred to as the Ammunition Storage Area) is a large, secured area of Camp Navajo specifically designated and set aside from other sectors of the installation for the primary purpose of processing, storing, and handling explosives and munitions.

The Post-closure Permit Area, shown on Figure B-2 of Appendix B, contains former OB/OD sites. This area requires post-closure care because of known or suspected presence of MEC and associated munitions constituents. Additionally, land surrounding the Post-closure Permit Area that may have received kick-outs has been identified as MRWA 02-02 and classified as a solid waste management unit (SWMU). Figure A-2 in Appendix A presents a facility drawing identifying the various areas of the entire installation.

2.1.2 Camp Navajo Operations

Camp Navajo was established in 1942 and placed under reserve status and re-designated as Navajo Depot Activity in 1971. In 1982, operational control of the mission was transferred from the Secretary of the Army to the Arizona Army National Guard (AZ ARNG). From its inception to 1993, the installation's mission was to operate as a reserve supply depot for the receipt, shipping, storage, surveillance, minor maintenance, and demilitarization of ammunition and assigned commodities. Beginning in 1982, the installation's mission was expanded to include training and support to tenant activities.

The OB/OD Area was used to demilitarize conventional munitions that had become obsolete or unserviceable. In accordance with the requirements of the RCRA regulations, in 1982, a RCRA Part A Permit Application was submitted for the OB and OD sites, and in 1988, a RCRA Part B Permit Application was prepared for the active treatment and disposal operations at the facility (Engineering, Design, and Geosciences Group, 1988). The facility operated under IS until treatment and disposal operations ceased in September 1994. A Draft RCRA Closure Plan was developed for the IS treatment and disposal sites in accordance with federal and state regulations (Engineering, Design, and Geosciences Group, 1988). Additional information regarding historical operations associated with munitions treatment and disposal, specifically in the Post-closure Permit Area and surrounding areas, is included in the *Management Action Plan* (Brown and Caldwell, 2005a) and the *Ordnance and Explosives/Chemical Warfare Materiel Operational History Report* (Brown and Caldwell, 2005b).

Materials may be encountered at the facility that are determined by an explosive or munitions emergency response specialist to present an immediate threat to human health, public safety, property, or the environment. If these materials are determined to be safe to move, they may be transported to the Post-closure Permit Area and detonated in a designated open detonation pit. As presented in 40 CFR 264.1(g)(8)(d), management of these wastes is not subject to the treatment, storage, and disposal requirements of 40 CFR 264, except for Subpart C, Preparedness and Prevention, and Subpart D, Contingency Plan and Emergency Procedures.

2.1.3 Munitions Response Work Area 02 General Description

The Post-closure Permit Area is located within a larger area that has been designated as MRWA 02 (see Figures B-2 and B-3 in Appendix B). The MRWA 02 designation was developed to represent an informal operational unit to address the explosive hazard associated with munitions disposed of at NAAD 02, a former RCRA IS OB/OD unit (Figure B-3 in Appendix B). Figure B-2 is an oversized figure that has also been provided in an 11 x 17 format as Figures B-2a and B-2b in Appendix B.

During remedial investigations (RIs) and other site characterization activities at the former OB/OD Area, MRWA 02 was identified as an area of approximately 2,042 acres. MRWA 02 is a circular parcel of land located in the south-central portion of Camp Navajo, west of the canyon of Volunteer Wash and the old Explosive Ordnance Disposal (EOD) Demolition Area (also identified as MRWA 01). The perimeter boundary of MRWA 02 coincides with the distance associated with the munition with the greatest fragmentation distance known to have been disposed of at NAAD 02, which was a 1,000-pound (lb) bomb (U.S. Army Toxic and Hazardous Materials Agency [USATHAMA], 1979). Density and distribution information from MEC characterization was used to divide MRWA 02 into three subareas: MRWA 02-01, MRWA 02-02, and MRWA 02-03 (CH2M HILL, 2009a). The Post-closure Permit Area comprises two of the subareas (MRWA 02-01 and MRWA 02-03).

A description of each subarea is presented below. Additionally, Table 2-1 in this document and Figure B-3 in Appendix B present MRWA 02-02 and the Post-closure Permit Area, as well as identify the former treatment and disposal areas within each subarea. Additional information on the history and waste managed in each of the former treatment and disposal areas in the Post-closure Permit Area is presented in the 1994 RCRA Facility Assessment (RFA) (Uribe & Associates, 1994).

Munitions Response Work Area 02-01

MRWA 02-01 coincides with the 694 acres that lie within the Improved Conventional Munitions (ICM) Waiver Area which was established to delineate the area in which submunition discoveries have occurred. Multiple former treatment and disposal units and SWMUs were either fully or partially located within this area, as identified in Table 2-1.

MRWA 02-01 is part of the area that has been designated for post-closure care. It is characterized as a wide, bowl-shaped, open prairie that contains the remains of more than 200 open pits and linear excavations in which OD of high explosive (HE) munitions occurred, including up to 8-inch projectiles and 500-lb aerial bombs, small arms ammunition, fuzes, primers, detonators, and other live munitions and components (USATHAMA, 1979). The area is traversed by a number of dirt and cinder-covered roads that provide access to the OD pits and to the adjacent operational and Buffer Area to the south and east. MEC is known to remain at the surface and in the subsurface at MRWA 02-01.

Munitions Response Work Area 02-02

MRWA 02-02 consists of 1,344 acres extending from the MRWA 02-01 boundary to the MRWA 02 perimeter boundary, not including land within MRWA 02-03. Land in MRWA 02-02 received kick-outs from OD activities in MRWA 02-01. MRWA 02-02 also includes former treatment and disposal units and SWMUs, as identified in Table 2-1. There is a potential for MEC to remain in the shallow subsurface at MRWA 02-02. MRWA 02-02 has been identified as a single SWMU for the purposes of this application as presented in Section 5.

Munitions Response Work Area 02-03

MRWA 02-03 consists of 2 acres of canyon floor within the Former White Phosphorus Detonation and Burn Area (NAAD 03), where subsurface munitions are suspected based on previous geophysical mapping. This northeast-trending drainage channel was used for demolition and burning of munitions containing white phosphorus (WP) and plasticized WP. MRWA 02-03 is suspected to contain MEC in the subsurface and is included in the Post-closure Permit Area.

TABLE 2-1

Summary of MRWA 02 Subarea Former Treatment and Disposal Units and SWMUs

Camp Navajo RCRA Post-closure Permit Application, Open Burning/Open Detonation Operations

MRWA Subarea	Former Operational Units	RCRA Status When Operating	NAAD Site Number (No.)
MRWA 02-01	Open Detonation Area	Interim Status	NAAD 02
	Former Cyanogen Chloride (CG)/Phosgene (CK) Demilitarization Area and Drum Burial Site	SWMU	NAAD 04
	Former Open Burn Area	Interim Status	NAAD 05
	OB/OD Waste Pile and Burn Area	Interim Status	NAAD 06
	Closed Trinitrotoluene (TNT) Retention Ponds	SWMU	NAAD 07
	Former Open Burn Area (Trenches)	Interim Status	NAAD 08B
	Closed Open Burn Area	Interim Status	NAAD 09B
MRWA 02-01 and MRWA 02-02	Closed Open Burn Area	Interim Status	NAAD 09C
	Potential Mustard Round Burial Site	SWMU	NAAD E76
MRWA 02-02	Former Open Burn Area (Ponds)	SWMU	NAAD 08A
	Closed Open Burn Area	SWMU	NAAD 09A

TABLE 2-1

Summary of MRWA 02 Subarea Former Treatment and Disposal Units and SWMUs*Camp Navajo RCRA Post-closure Permit Application, Open Burning/Open Detonation Operations*

	Current Open Burn Area Pad No. 3	Interim Status SWMU	NAAD 09D NAAD 10
MRWA 02-01, MRWA 02-02, and MRWA 02-03	Former WP Detonation and Burn Area	SWMU	NAAD 03

2.1.4 Former Operations within the Post-closure Permit Area

Because MEC is suspected to remain in the areas identified in Section 2.1.3 as MRWA 02-01 and MRWA 02-03, these areas will receive post-closure care as identified on Figures B-2 and B-3 in Appendix B.

A summary of the historical OB and OD activities that occurred within the Post-closure Permit Area is presented in this section.

NAAD 02—Open Detonation Area

NAAD 02 was an RCRA IS unit that originally consisted of approximately 200 acres within the central portion of the Post-closure Permit Area. NAAD 02 was used from the early 1940s through 1994. HE-filled munitions, fuzes, primers, detonators, and other material potentially presenting an explosive hazard (MPPEH) were detonated in pits dug with bulldozers or front-end loaders. General self-imposed limits per detonation in NAAD 02 were set at 5,000 lb at the surface and 10,000 lb underground. It was reported that approximately 10 to 14 pits were active at any time and the maximum quantity detonated on any given day was 1,120 lb net explosive weight (NEW). The largest munitions reportedly detonated were 1,000-lb bombs.

NAAD 03—Former White Phosphorus Detonation and Burn Area

NAAD 03 was not operated as a RCRA unit. It consisted of approximately 50 acres adjacent to NAAD 02, NAAD 06, and NAAD 09C in the east-central portion of MRWA 02 and along a gently sloping ravine or canyon area that trends from the southwest toward the northeast and is the primary surface water drainage for much of the original NAAD 02 operational footprint. NAAD 03 was used for the destruction of WP, plasticized WP, and conventional types of munitions during the period from 1945 through the mid-1970s. In the mid-1950s, two 250-lb bombs filled with blister agent (mustard) were suspected to be leaking and were brought directly to NAAD 03, placed on a large pile of wooden dunnage, drained, and burned (Brown and Caldwell, 2009a). A portion of NAAD 03 is located in the Post-closure Permit Area, as shown on Figure B-3 in Appendix B.

NAAD 04—Former Cyanogen Chloride/Phosgene Demolition Area and Drum Burial Site

NAAD 04 was not operated as a RCRA unit. It consisted of 4.1 acres south of NAAD 02 in the southeastern portion of the Post-closure Permit Area. In the 1950s, CG- and CK-filled chemical bombs were destroyed in NAAD 04 (Uribe & Associates, 1994). Waste drums were buried in the northeastern portion of NAAD 04. This area was initially designated as NAAD 44, but it was later incorporated into NAAD 04 (MKM Engineers, Inc., 2009).

NAAD 05—Former Open Burn Area

NAAD 05 operated under RCRA IS and consists of approximately 60 acres adjacent to NAAD 02, NAAD 06, NAAD 08B, and NAAD 09C. Open burning began in NAAD 05 in the 1940s and continued until approximately 1990. The area was used for the treatment of bulk propellant, bulk explosives, ballistite, propelling charges, igniters, napalm-filled fire bombs, possibly chromic and phosphoric acids, waste propellant generated as a result of the disassembly of munitions, and dunnage, shipping boxes, empty explosives containers and non-explosive items suspected of being contaminated by explosives or other hazardous materials. Prior to 1987, materials were burned directly on the ground throughout the area. Open burning of explosives and

explosives-contaminated materials was later conducted in four burn pans; each pan had a capacity of 1,000 lb per day (AMEC, 2009).

NAAD 06—Open Burn/Open Detonation Waste Pile and Burn Area

NAAD 06 operated under RCRA IS and consists of approximately 5 acres adjacent to NAAD 02, NAAD 03, and NAAD 05. Operations began in the area in the 1940s and burning operations ceased in 1990. Pallets, wire, wood, containers, and other explosive-contaminated materials were piled, burned, and landfilled in the area. Chromic and phosphoric acids may have also been transported to the burning grounds for destruction (AMEC, 2009).

NAAD 07—Closed Trinitrotoluene Retention Ponds

NAAD 07 was not operated under RCRA IS. It consisted of approximately 3.5 acres on the northern side of NAAD 02. The unit consisted of 12 lagoons, approximately 20 feet by 20 feet, arranged in three rows, with four lagoons in each row, located in the northwestern portion of the Post-closure Permit Area. TNT-contaminated water was transported from the TNT Washout Plant and allowed to evaporate, and the residuals were burned (MKM Engineers, Inc., 2009).

NAAD 08B—Former Open Burn Area (Trenches)

NAAD 08B operated under RCRA IS and consists of 6.6 acres adjacent to NAAD 02, NAAD 05, and NAAD E76. Two trenches were used from 1953 to 1972 for disposal of wastewater from the TNT Washout Plant. The wastewater was dumped into the trenches on piles of dunnage and allowed to dry, and then the residuals were burned. Other potential or known practices at the site included the burning of spotting charges, napalm bombs, and possibly chromic and phosphoric acids, demilitarization of 3.5-inch rockets, and disposal of debris (AMEC, 2009).

NAAD 09B—Closed Open Burn Area

NAAD 09B was not operated under RCRA IS. It consisted of approximately 9 acres within NAAD 02. The dates of operation are estimated to be from approximately 1959 to 1982, based on aerial photographs. Fiber tubes and ammunition boxes were burned in the area. Drums of paint residues containing lead and polychlorinated biphenyls (PCBs) thought to have been stripped from munitions during renovation and burned were buried at NAAD 09B. The site was incorporated into NAAD 02 (CH2M HILL, 2016).

NAAD 09C—Closed Open Burn Area

NAAD 09C operated under RCRA IS and consisted of approximately 2 acres adjacent to NAAD 02, NAAD 03, NAAD 05, and NAAD 06. The western one-half of NAAD 09C lies within the Post-closure Permit Area. Operations began at NAAD 09C in the 1940s and ceased in 1987. Explosives wastes and explosive-contaminated containers were burned and landfilled along the southern canyon wall of NAAD 03. Burn residues and metal remains were buried at the site (Brown and Caldwell, 2004b).

NAAD E76—Potential Mustard Round Burial Site

NAAD E76 was not operated under RCRA IS. It consists of 10.7 acres adjacent to NAAD 08B, and the approximate western half of NAAD E76 lies within the eastern portion of MRWA 02-01. The general area was identified by a retired Camp Navajo employee as possibly containing mustard munitions or possibly drums. No evidence of buried munitions or drums was found during investigations (MKM Engineers, Inc., 2009).

2.1.5 Physical Description of the Post-closure Permit Area

The Post-closure Permit Area and surrounding land consists of open, rolling grassland prairies interspersed with conifer forested areas. Elevations in the vicinity of the Post-closure Permit Area range from 7,044 feet amsl along a tributary to Volunteer Wash in the northeast corner of the site to up to 7,152 feet on the east-west trending ridge that traverses the southern boundary of the facility. The minimum elevation within the Post-closure Permit Area boundary is 7,060 feet amsl. The prevailing slope is generally toward the northeast, which is consistent with the regional dip of Colorado Plateau stratigraphy. The historical OD

activities created more than 200 identifiable pits, craters, and trenches. In addition, OD and site rework activities pulverized much of the surface material and underlying limestone bedrock, causing local topographic changes (Brown and Caldwell, 2007).

The Post-closure Permit Area is traversed by four ephemeral surface drainages that exit the site at the northeastern boundary. These drainages only flow intermittently following periods of snowmelt or heavy rainfall. From the northeastern boundary, surface water flows northeastward through the canyon floor before entering the canyon of Volunteer Wash. Two of the intermittent drainages cross the west-central portion of the Post-closure Permit Area, and a third intermittent drainage that trends northeast nearly bisects the area. The fourth intermittent drainage, which trends north-south, is located in the eastern part of the Post-closure Permit Area. Some of the natural drainage may have been disrupted by the historical OD activities. In the Post-closure Permit Area, surface water tends to accumulate temporarily in OD pits rather than readily flowing outward toward the drainages (Brown and Caldwell, 2007).

The steeply incised canyon of Volunteer Wash serves as the major surface water drainage for Camp Navajo and is located along the eastern and southern portion of MRWA 02. As with the drainages in the Post-closure Permit Area, flow in Volunteer Wash is considered ephemeral and only occurs following heavy rainfall and/or the spring snowmelt. Volunteer Wash exits at the southern boundary of Camp Navajo and eventually intersects Sycamore Canyon.

Numerous ravines and drainage channels are present throughout MRWA 02. Bedrock is exposed along the steeply incised canyons and drainage valleys, with only a thin veneer of sediment present along the floor of these drainage areas. The steep, rocky terraces of the canyon of Volunteer Wash are a good representation of erosion features in the area.

Cold winter temperatures typically result in ground freezing. A frost heave study was conducted in the area now referred to as the Post-closure Permit Area to assess the potential of frost heave on buried MEC for different soils and climate conditions (Young and Springer, 2005). The objective of the study was to collect site-specific frost depth and frequency data and to model the spatial variability using published soil characteristics. Field data were collected during the winter of 2004-2005 and included an assessment of impacts of depth-dependent, freeze-thaw frequency. During the study, the maximum predicted frost depth in the vicinity of the Post-closure Permit Area was about 2 feet, which is generally consistent with the maximum freeze depth measured at the test location. Because of the preliminary nature of the information from the model, frost penetration is conservatively estimated to extend to a maximum depth of about 2 feet throughout MRWA 02. It is inferred that MEC in the upper 2 feet of soil could be exposed to the effects of frost heave.

2.2 Topographic Map (40 CFR 270.14(b)(19))

Figure B-2 in Appendix B presents a topographic map of the Post-closure Permit Area with a scale of 1 inch = 200 feet. This map includes the following information:

- Map scale and date
- Surface waters, including intermittent streams
- Surrounding land use—the topographic map shows undeveloped land surrounding the Post-closure Permit Area
- Wind rose
- Orientation of the map (e.g., north arrow)
- Legal boundaries of the hazardous waste management facility—Figure B-3 in Appendix B shows additional detail on the boundaries of the Post-closure Permit Area and Figure A-2 in Appendix A shows the legal boundaries of the Camp Navajo installation and the boundaries of the Post-closure Permit Area

- Location of signage and road barriers around the boundaries of the Post-closure Permit Area— Figure B-5 in Appendix B shows additional detail on access control for the Post-closure Permit Area, and Figure B-6 in Appendix B presents additional detail on access control for the Camp Navajo installation
- Structures and internal roads in the Post-closure Permit Area

The following information was not included on the topographic map:

- 100-year floodplain area. The Post-closure Permit Area is not located in a 100-year floodplain area; however, Figure B-4 in Appendix B shows the 100-year floodplain map for the installation.
- Injection and withdrawal wells both onsite and offsite. There are no injection or withdrawal wells within or surrounding the Post-closure Permit Area. Figure GWMP-1, which is located in the Groundwater Monitoring Plan (GWMP) for the Post-closure Permit Area (see Appendix I), shows the vadose zone monitoring wells (VZMWs) and piezometer wells in the Post-closure Permit Area. Figure GWMP-2 shows the regional aquifer groundwater supply wells at Camp Navajo and in the surrounding area.
- Barriers for drainage or flood control. No barriers for drainage or flood control are located in the Post-closure Permit Area.
- Location of operational units. No active operational units are located in the Post-closure Permit Area or at Camp Navajo.

2.3 Location Information (40 CFR 270.14(b)(11))

2.3.1 Seismic Standard (40 CFR 270.14(b)(11)(i))

The installation, including the Post-closure Permit Area, is located in Coconino County in Arizona. Coconino County is not listed in Appendix VI of 40 CFR 264; therefore, no further information related to the seismic standard is required.

2.3.2 Floodplain Requirements (40 CFR 270.14(b)(11)(iii))

The Federal Emergency Management Agency (FEMA) establishes 100-year floodplain areas designated as Zone A on Federal Insurance Rate Maps (FIRMs). Floodplain maps from Coconino County were reviewed to determine the status of the Post-closure Permit Area. The west prairie to the north of the Post-closure Permit Area and Volunteer Wash to the west of the Post-closure Permit Area are included on floodplain maps for the area; however, based on calculations performed for the original Part B permit application, the 100-year flood elevation was estimated to be 7,054 feet amsl. The Post-closure Permit Area with its lowest elevation of 7,060 feet amsl would not be in the calculated 100-year floodplain. Therefore, the Post-closure Permit Area has not been identified as being located in a 100-year floodplain area as shown on Figure B-4 in Appendix B. FEMA maps are provided in Appendix H as both electronic and hard copies.

Since the Post-closure Permit Area has not been identified as being in a 100-year floodplain area, additional information regarding the potential impacts of a flood are not included in this application.

2.4 Closure and Post-closure Notices

The required closure and post-closure notices were filed in accordance with 40 CFR 270.14(b)(13) and (14) as described in this section.

2.4.1 Closure Plan and Certifications of Closure (40 CFR 270.14(b)(13))

The documents related to the completion of closure include the following:

- DDs
- AAR (CH2M HILL, 2016)

These documents provide detailed information relevant to the closure of the Post-closure Permit Area and the former RCRA IS units within or near the Post-closure Permit Area. References to work plans, remedial

investigation (RI) reports, other investigation-related documents, and correspondence indicating ADEQ concurrence with the findings are cited in the DDs and the AAR. The approved work plans for each area were used in lieu of an approved closure plan for the RCRA IS Units. Additionally, Table 2-2 presents a summary of the closure activities that occurred at each site, along with a cross-reference to the identification numbers used in former evaluations and assessments, including the RFA (Uribe & Associates, 1994).

TABLE 2-2

Summary of Former Treatment and Disposal Units and Site Closure Documentation for RCRA-regulated Units
Camp Navajo RCRA Post-closure Permit Application, Open Burning/Open Detonation Operations

Site Description	NAAD No.	NADA No.	AREE No.	Site Status	Closure Document Reference
Open Detonation Area (RCRA-regulated Unit)	NAAD 02	NADA-11	AREE-02	Located in MRWA 02-01. RI for chemical constituents completed in 2007 (Brown and Caldwell, 2007).	AAR for closure of chemical constituents and explosive hazards completed in 2016 (CH2M HILL, 2016).
Former Open Burn Area (RCRA-regulated Unit)	NAAD 05	NADA-12	AREE-05	Closed. Located in MRWA 02-01. NAAD 05 RI for chemical constituents completed in 2006 (AMEC, 2006a).	DD for closure for chemical constituents completed in 2009 (AMEC, 2009).
OB/OD Waste Pile and Burn Area (RCRA-regulated Unit)	NAAD 06	NADA-10	AREE-06	Closed. Located in MRWA 02-01. NAAD 06 RI for chemical constituents completed in 2006 (AMEC, 2006b).	DD for closure for chemical constituents completed in 2009 (AMEC, 2009).
Former Open Burn Area (Trenches) (RCRA-regulated Unit)	NAAD 08B	NADA-08	AREE-08	Closed. Located in MRWA 02-01. NAAD 08B RI for chemical constituents completed in 2005 (AMEC, 2005a).	DD for closure for chemical constituents completed in 2009 (AMEC, 2009).
Closed Open Burn Area (RCRA-Regulated Unit)	NAAD 09C	NADA-20	AREE-09	Closed. Majority of area located in MRWA 02-01 and a small portion in MRWA 02-02. Surface MEC clearance completed in entire area (CH2M HILL, 2011a).	DD for soil removal action completed in 2004 (Brown and Caldwell, 2004b). Explanation of Significant Differences completed in 2010 to describe changes to the removal action (Brown and Caldwell, 2009b).

Closure documents are provided in Appendix H. The AAR (CH2M HILL, 2016) was the final closure document for IS activities within the Post-Closure Permit Area. ARNG received concurrence from ADEQ on May 9, 2016. The Facility Closure Certification, signed by an independent, registered, professional engineer, was submitted to ADEQ via registered mail on May 17, 2016.

2.4.2 Post-closure Notices (40 CFR 270.14(b)(14) and 40 CFR 264.119)

The Post-closure Permit Area was closed under CERCLA through ADEQ. Copies of the post-closure notices and the final closure certification are provided in Appendix C. Appendix C includes the following:

- Certification of Closure of the RCRA-regulated units within the Post-closure Permit Area.
- A survey plat prepared by a registered land surveyor indicating the location and dimensions of the Post-closure Permit Area with respect to permanently surveyed benchmarks. Camp Navajo is federally owned and state-operated. No local zoning authority has jurisdiction over local land use; therefore, the location and dimensions of the Post-closure Permit Area are documented in the Camp Navajo Real Property

Development Plan. The submitted plat contains a note stating that the ARNG has the obligation to restrict disturbance of the hazardous waste disposal unit in accordance with the applicable Subpart G regulations.

- A copy of the notation added to the Real Property Development Plan, which meets the requirements of 40 CFR 264.119(a) and (b). This notation includes the following statements and information:
 - The land has been used to manage hazardous wastes.
 - The land's use is restricted under the facility's Hazardous Waste Management Act Permit, A.A.C., Title 18, Chapter 8 (40 CFR 260 through 273) and any applicable Arizona Revised Statutes.
 - The survey plat and a record of the type, location, and quantity of hazardous wastes disposed of in the Post-closure Permit Area have been filed with the Real Property Development Plan for the ARNG.
- A copy of the certification stating that the above notations have been made.

2.4.3 Pre-Application Meeting (40 CFR 270.28(b)(22))

On June 4, 2014, a pre-application meeting was held at the Ponderosa Fire Station in Bellemont, Arizona. Personnel from the ARNG, AZ ARNG, CH2M HILL (consultant), the federal Bureau of Land Management, and ADEQ attended the meeting, as well as members of the public. Meeting information including a summary of the meeting, the sign-in sheet, presentation materials, and the public notice are included in Appendix C.

2.5 Closure and Post-Closure Requirements for Landfills and Miscellaneous Unit (40 CFR 264.117, Subpart N, 601, and 603)

Table 2-3 presents the closure and post-closure requirements for hazardous waste facilities, landfills, and miscellaneous units. The applicability of each requirement, and, if applicable, the location of the information associated with the requirement, is presented in the table. Requirements for operating landfills contained in Subpart N and A.A.C. R18-8-264.P are not applicable to the Post-closure Permit Area and are not included in Table 2-3. Requirements for operating miscellaneous units are included as they apply to post-closure care, as specified in 40 CFR 264.603.

TABLE 2-3

Closure and Post-closure Regulatory Requirements

Camp Navajo RCRA Post-closure Permit Application, Open Burning/Open Detonation Operations

Regulatory Citation	Description of Requirement	Applicability	Location in Permit Application/Comment
A.A.C. R18-8-264.A	Arizona incorporates by reference the requirements of 40 CFR 264 into the Arizona Administrative Code.	Applicable	As discussed for each specific requirement in this table.
40 CFR 264.117	Specifies post-closure care and use of property requirements.	Applicable	As discussed below in this table.
264.117(a)	Post-closure care for each hazardous waste must begin after completion of closure of the unit and continue for 30 years after that date, including compliance with 40 CFR 264.117–120.	Applicable	Appendix D (Post-Closure Plan for Post-Closure Permit Area).
40 CFR 264.117(a)(1)	Monitoring, reporting, and maintenance in accordance applicable subparts (F, N, and X).	Applicable	Appendix D (Post-Closure Plan for Post-Closure Permit Area).
40 CFR 264.117(a)(2)	ADEQ may shorten or extend the post-closure period.	Applicable	No information required.
40 CFR 264.117(b)	ADEQ can require continuation of security requirements beyond post-closure period.	Applicable	No information required.
40 CFR 264.117(c)	Post-closure use of the site cannot disturb cover, liner(s), or any other components of the containment system, or the function of monitoring systems.	Applicable	Appendix D, Post-Closure Plan for Post-Closure Permit Area, Section 3.1 (Land Uses and Restrictions).
40 CFR 264.117(d)	Post-closure care activities must be in accordance with the post-closure plan.	Applicable	Appendix D (Post-Closure Plan for Post-closure Permit Area).
40 CFR 264.118	Requirements for post-closure plan.	Applicable	Appendix D (Post-Closure Plan for Post-closure Permit Area).
40 CFR 264.119	Post-closure notices.	Applicable	Section 2.4.2
40 CFR 264.120	Certification of completion of post-closure care.	Applicable	Not included in application since post-closure care is ongoing.
40 CFR 264.310	Closure and post-closure care requirements for landfills.	Applicable	Included in the permit application as discussed below.
40 CFR 264.310(a)	Landfill cover.	Not Applicable	Due to the nature of the contaminants and the size of the post-closure area, a cover is not required or feasible based on discussions with ADEQ.
40 CFR 264.310(b)	Compliance with post-closure requirements, including §§ 264.117 through 264.120.	Applicable	Information addressing 40 CFR 264.117 through 120 is referenced above in this table.
40 CFR 264.310(b)(1)	Maintain integrity of final cover.	Not Applicable	Cover is not feasible because of potential risks to cover installers due to the potential of unexploded munitions. Run-on/Run-off controls will be maintained as discussed below.

TABLE 2-3

Closure and Post-closure Regulatory Requirements*Camp Navajo RCRA Post-closure Permit Application, Open Burning/Open Detonation Operations*

Regulatory Citation	Description of Requirement	Applicability	Location in Permit Application/Comment
40 CFR 264.310(b)(2)	Operation of leachate system.	Not Applicable	Because this is not a designed land disposal unit, no leachate collection system is present.
40 CFR 264.310(b)(3)	Maintenance and monitoring of leak detection system.	Not Applicable	Because this is not a designed land disposal, no leak detection system was installed.
40 CFR 264.310(b)(4)	Maintain and monitor the groundwater monitoring system and comply with applicable requirements of Subpart F.	Applicable	Appendix D (Post-Closure Plan for Post-closure Permit Area). Appendix I (Groundwater Monitoring Plan). Appendix F (Corrective Action Procedures).
40 CFR 264.310(b)(5)	Prevent run-on and run-off from eroding or otherwise damaging the final cover.	Not Applicable	A cover will not be installed due to potential risk to cover installers. Appendix D, Post-Closure Plan for Post-closure Permit Area, Section 3.4 (Run-on/Run-off Controls).
40 CFR 264.310(b)(6)	Protect and maintain surveyed benchmarks.	Applicable	Appendix D, Post-Closure Plan for Post-closure Permit Area, Section 3.2 (Inspections).
40 CFR 264. 601	Waste unit must be located, designed, constructed, operated, maintained, and closed in a manner to ensure protection of human health and the environment.	Applicable	Appendix D (Post-Closure Plan for Post-closure Permit Area). Specific requirements are discussed below.
40 CFR 264.601(a)	Prevention of any releases that may have adverse effects on human health or the environment due to migration of waste constituents in the groundwater or subsurface environment.	Applicable	Appendix D (Post-Closure Plan for Post-closure Permit Area). Appendix I (Groundwater Monitoring Plan).
40 CFR 264.601(b)	Prevention of any releases that may have adverse effects on human health or the environment due to migration of waste constituents in surface water, wetlands, or on the soil surface.	Applicable	Appendix D, Post-Closure Plan for Post-closure Permit Area, Section 3.2 (Inspections) and Section 3.4 (Run-on/Run-off Controls). Appendix F (Corrective Action Procedures).
40 CFR 264.601(c)	Prevention of any release that may have adverse effects on human health or the environment due to migration of waste constituents in the air.	Applicable	Risk assessments have demonstrated negligible risk of contaminants being released to the air. Appendix D, Post-Closure Plan for Post-closure Permit Area, Section 3.3 (Prevention of Accidental Ignition or Reaction of Wastes).
40 CFR 264.603	Post-closure requirements for OB/OD unit including compliance with 40 CFR 264.601. Requires a post-closure plan.	Applicable	The location of information addressing 40 CFR 264.601 is discussed above in this table.

TABLE 2-3

Closure and Post-closure Regulatory Requirements*Camp Navajo RCRA Post-closure Permit Application, Open Burning/Open Detonation Operations*

Regulatory Citation	Description of Requirement	Applicability	Location in Permit Application/Comment
40 CFR 270.21	Specific Part B requirements for landfills.	Not Applicable	Requirements apply to operational landfills.
40 CFR 270.23	Specific Part B requirements for miscellaneous units.	Applicable	Applicable requirements of 40 CFR 270.23 are discussed below. 40 CFR 270.23 subsections that apply to operational units are not included.
40 CFR 270.23(a)(3)	Description of compliance with the post-closure requirements of § 264.603.	Applicable	Appendix D (Post-Closure Plan for Post-closure Permit Area) as discussed above in this table.
40 CFR 270.23(b)	Information to comply with performance standards of § 264.601.	Applicable	Appendix D, (Post-Closure Plan for Post-closure Permit Area) as discussed above in this table.
40 CFR 270.23(c)	Information on the potential pathways of exposure of humans or environmental receptors.	Applicable	Appendix D, Post-Closure Plan for Post-closure Permit Area, Section 3 (Prevention of Potential Hazards). Final Human and Ecological Risk Assessment NAAD 02 in Appendix H.

Note:

This table identifies closure and post-closure care requirements for specific types of hazardous waste units that could apply to the Post-closure Permit Area and is not intended to be inclusive of all requirements that may apply to the contents of the Post-closure Permit Application or operation of the Post-closure Permit Area.

SECTION 3

Groundwater Monitoring (40 CFR 270.14(c))

The proposed GWMP for the post-closure period is included in Appendix I. The GWMP includes the following:

- Summary of monitoring data for the vadose zone wells in the Post-closure Permit Area and surrounding groundwater wells collected during the IS period.
- Identification of the uppermost aquifer beneath the Post-closure Permit Area.
- Description of the proposed point-of-compliance.
- Figures showing the Post-closure Permit Area, the facility boundary, VZMWs in the Post-closure Permit Area, offsite groundwater monitoring wells, and the proposed point-of-compliance for monitoring activities.
- Discussion of any potential plume beneath the Post-closure Permit Area. A summary of the monitoring that has been performed at the facility related to the Post-closure Permit Area is presented in this section.
- Proposed vadose zone monitoring and groundwater monitoring programs for the post-closure period.
- Descriptions of site hydrogeology.
- Description of proposed monitoring activities and sampling and analysis activities for the vadose zone and the groundwater.

Because of the depth of the groundwater at the Post-closure Permit Area and the complexity of the hydrogeologic setting, the ARNG does not believe that direct monitoring for munitions constituents in groundwater beneath and/or immediately downgradient of the Post-closure Permit Area would effectively meet the intent of the requirements of 40 CFR 264.97 and 40 CFR 264.98 for post-closure monitoring. The fractured dual-porosity bedrock aquifer, coupled with the large distance between the source area and potential exposure points, make a traditional groundwater monitoring approach impractical and the resulting data unreliable. Technical support for requiring an alternative approach is provided in the GWMP in Appendix I. Supporting documentation is included in Appendix H.

As discussed in the GWMP presented in Appendix I, a combination of vadose zone monitoring (within the Post-closure Permit Area) and groundwater monitoring of offsite regional groundwater wells will be used for post-closure monitoring. The GWMP describes how a combination of vadose zone monitoring and groundwater monitoring will be used to identify new releases from the Post-closure Permit Area and potential impacts to the groundwater. The GWMP also summarizes the vadose zone and groundwater monitoring that was performed during IS.

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SECTION 4

Post-closure Plan (40 CFR 270.14(b)(13) and 264.118)

The PCP for the Post-closure Permit Area is presented in Appendix D. The PCP presents the post-closure contact information and describes the procedures to prevent hazards: the personnel training plan; preparedness and prevention procedures; and monitoring maintenance procedures that will be conducted during the post-closure period.

A current copy of the PCP will be kept at Camp Navajo in the Environmental Office during the post-closure period and will be available to ADEQ upon request¹. The Environmental Management Office will be responsible for maintaining and updating the PCP. The post-closure contact is provided in Section 2 of the PCP in Appendix D.

This section provides general information on the requirements for the procedures to prevent hazards, the personnel training plan, and the preparedness and prevention procedures that are provided in the PCP in Appendix D.

4.1 Procedures to Prevent Hazards

4.1.1 Security (40 CFR 270.14(b)(4) and 264.14)

The security procedures for the Post-closure Permit Area have been developed to prevent the unknowing entry and minimize the possibility for unauthorized entry of persons or livestock into the Post-closure Permit Area. Specific security procedures, including a description of warning signs that will be used during the post-closure period as required by 40 CFR 270.14(b)(4) and 264.14, are presented in Section 3.1 of the PCP. The security measures described in Section 3.1 of the PCP will prevent the unknowing entry and minimize the possibility for unauthorized entry into the Post-closure Permit Area. The installation fence and warning signs around the entire installation minimize unauthorized entry and prevent unknowing entry into Camp Navajo and the Buffer Area by the public. The Limited Area fence prevents personnel authorized to enter the Limited Area from entering the Buffer Area that surrounds the Post-closure Permit Area. Warning signs are posted around the Post-closure Permit Area boundary and at roadway entrances to prevent unknowing entry. However, because of concerns for native wildlife, a fence and gates around the Post-closure Permit Area are not proposed.

40 CFR 264.14(b)(2)(ii) requires “a means to control entry, at all times, through the gates or other entrances to the active portion of the facility.” Four roads enter the Post-closure Permit Area from the north, northwest, southwest, and south. At each intersection of the roads and the post-closure permit boundary, two concrete barriers have been installed that are staggered to allow authorized site personnel and emergency responders to pass through, as described in Section 3.1 of the PCP. The signs on the concrete barriers prevent unknowing entry. Additionally, entry points onto the installation and into the Buffer Area are controlled.

Gates between the Administration Area and Limited Area are manned by Security personnel. Gates between the Administration Area and Buffer Area and between the Limited Area and Buffer Area are locked and the keys or combinations are controlled by Security. The Security Office and Post 3 are manned 24 hours per day, 7 days per week.

¹ Additional Permit-required records may also be available from the Environmental Office and would be available for ADEQ review.

40 CFR 264.14(c) requires warning signs with appropriate language at each entrance to an active portion of a facility. Warning signs are located around the entire Post-closure Permit Area at a maximum of 100-foot intervals. The signs are visible and legible from a distance of at least 25 feet.

Additional security procedures to supplement those stated previously are described in Section 3.1 of the PCP and include the following:

- Security-specific training (MEC Awareness Training) will be administered for installation personnel, military training personnel, contractors, recreational users, and others who enter the Buffer Area unescorted, including consequences for trespassing into the Post-closure Permit Area.
- Periodic security patrols and fence and gate inspections.
- Instruction to report trespassers who are seen in or near the Post-closure Permit Area.
- Periodic inspections for evidence of trespassing into the Post-closure Permit Area.

If it is determined that unauthorized persons are entering the Post-closure Permit Area despite the signs, barriers, and MEC Awareness Training, additional measures may be implemented.

4.1.2 Waiver Request for Specific Security Procedures

As documented during a Stakeholder Advisory Group meeting on February 11, 2010, the United States Fish and Wildlife Service and the Arizona Game and Fish Department would prefer to limit the amount of fencing in this area because of the well-documented animal corridor track in the area and the potential risks to wildlife, specifically elk and antelope, in the area. Therefore, ARNG requests a waiver from selected security requirements at the Post-Closure Permit Area as follows:

40 CFR 264.14(b)(2)—40 CFR 264.14(b)(2)(i) requires “An artificial or natural barrier (e.g., a fence in good repair or a fence combined with a cliff), which completely surrounds the active portion of the facility.” 40 CFR 264.14(b) includes a comment that states “The requirements of paragraph (b) of this section are satisfied if the facility or plant within which the active portion is located itself has a surveillance system, or a barrier and a means to control entry, which complies with the requirements of paragraph (b) (1) or (2) of this section.” The security provisions described previously and in Section 3.1 of the PCP for the installation and the Buffer Area, which surrounds the Post-closure Permit Area, including fences, gates, and warning signs, and the warning signs surrounding the Post-closure Care Area are alternate means of security that meet this requirement.

4.1.3 Inspections (40 CFR 270.14(b)(5) and 264.15)

Inspections of the Post-closure Permit Area will focus on inspecting and maintaining security procedures and the equipment and procedures used to identify MEC releases. Section 3.2 of the PCP details the inspection procedures that will be used during the post-closure period. The PCP also includes a written schedule for inspections and an example inspection log. The timing and frequency for physical inspections of the Post-closure Permit Area boundary, areas prone to erosion or frost heave, groundwater monitoring wells, fences, signage, and barriers is based primarily on seasonal accessibility to areas in and around the Post-closure Permit Area. Past experience in and around the Post-closure Permit Area has identified certain times of the year (i.e., in the spring after the winter snows and snow melt have occurred) when ground surface features and security features are most likely to have changed and/or need repair. Annual inspections of facility records, including safety equipment maintenance records for, incident reports, training materials, and land use records will be conducted prior to submitting annual reports to ADEQ.

4.1.4 Prevention of Accidental Ignition or Reaction of Wastes (40 CFR 270.14(b)(9) and 40 CFR 264.17)

New wastes are not being handled or disposed of in the Post-closure Permit Area. Therefore, requirements associated with the interaction of wastes or the ignition of wastes during treatment, storage, or disposal activities are not applicable to the Post-closure Permit Area. Procedures that are in place to prevent

accidental ignition or reaction of the wastes remaining in the Post-closure Permit Area or during munitions emergency responses are provided in Section 3.3 of the PCP.

4.1.5 Run-on and Run-off Controls (40 CFR 270.14(b)(8)(ii))

There is no persistent surface water in the area of or surrounding the Post-closure Permit Area. Ephemeral surface water channels are scattered across the surrounding land and the permitted area. Section 3.4 of the PCP presents the potential run-on/run-off concerns in the Post-closure Permit Area and the procedures, primarily inspections, in place to address these concerns.

4.2 Personnel Training Plan

The training plan presented in Section 4 of the PCP addresses the training requirements for personnel assigned specific duties associated with post-closure care of the Post-closure Permit Area. Security-related training for installation personnel, military personnel, recreational users, contractors, or others who access the Buffer Area unescorted is described in Section 3.1 of the PCP.

The objective of this training plan is to prepare personnel to perform their post-closure care duties in a safe, environmentally sound, and technically competent manner. To achieve this objective, the program provides employees with introductory and continuing training relevant to their positions. Personnel will receive classroom and on-the-job training designed specifically to teach them how to perform their duties safely and in conformance with the post-closure permit. Personnel will complete the required training program within 6 months of assignment and will not be authorized to work unsupervised within the Post-closure Permit Area before completion of the training program. Section 4.1 of the PCP includes typical training content for each of the training programs. Examples of typical training materials for internal personnel are provided in Appendix E. This information is provided as an example of the types of information that will be included in the training sessions and safety briefings. However, the training materials may change during the course of the post-closure time period as a result of changes in activities at the facility, seasonal or ongoing changes in access restrictions, or other changes that are not associated with the Post-closure Permit Area. Therefore, ARNG requests that this information not be included in the final permit.

4.3 Preparedness and Prevention Requirements (40 CFR 270.14(b)(6) and 264 Subpart C)

ARNG is not requesting a waiver to the preparedness and prevention requirements specified in 40 CFR 264, Subpart C, given the nature of the waste (i.e., MEC) that may be remaining onsite. The equipment and procedures that will be used to meet the Preparedness and Prevention Requirements of Subpart C are presented in Section 5 of the PCP in Appendix D.

Since the Post-closure Permit Area is a non-operational facility (e.g., RCRA-regulated waste is not being handled), the primary risks at the site are the unintentional detonation of MEC located within the area by a person or a fire that originates within the Post-closure Permit Area or that may enter the Post-closure Permit Area, which threatens the surrounding Buffer Area, other parts of the installation, and U.S. Forest Service land. The security and access procedures described in Section 3.1 of the PCP will minimize the possibility of an unintentional detonation and explosion that could cause a fire or non-sudden release of hazardous waste (i.e., MEC) that could threaten human health or the environment. Unintentional detonations could occur during implementation of emergency munitions responses within the Post-closure Permit Area.

4.4 Post-closure Cost Estimate and Financial Assurance for Post-closure Care (40 CFR 270.14(b)(16))

The Post-closure Cost Estimate and Financial Assurance Demonstration is not required for the Post-closure Permit Area because the site is located on a federally owned and state-operated military installation.

According to 40 CFR 264.140(c), “States and the Federal government are exempt from the requirements of this subpart.”

SECTION 5

Solid Waste Management Units (40 CFR 270.14(d) and 264.101)

5.1 Description of Solid Waste Management Units (40 CFR 270.14(d)(1))

In 1987 and 1994, a base-wide groundwater contamination survey (U.S. Army Environmental Hygiene Agency [USAEHA], 1987) and an RFA (Uribe & Associates, 1994) were conducted at Camp Navajo. During these evaluations, SWMUs were identified and described. Some SWMUs, or portions of SWMUs, were located in the area now identified as MRWA 02-02, which is considered a single SWMU for the purposes of this permit application. Additional SWMUs were identified throughout the facility. The tables provided in this section list the SWMUs and the required information for each SWMU or the reference document in which that information can be found. The tables that are presented in this section include:

- Table 5-1—Former SWMUs Located within SWMU MRWA 02-02
- Table 5-2—Munitions-related SWMUs Located Outside MRWA 02-02
- Table 5-3—Non-Munitions-related SWMUs Located Outside MRWA 02-02

Several of the munitions-related SWMUs identified were located within the Post-closure Permit Area; therefore, they are not listed in this section. For additional information on these SWMUs, including closure documentation, refer to Section 2.1.4 and Table 2-1.

Section 5.2 provides the required permit application information for MRWA 02-02, which may require corrective action as a result of the potential for MEC to remain in the area. The required information for the individual SWMUs is presented in Tables 5-1, 5-2, and 5-3.

5.2 Munitions Response Work Area 02-02

5.2.1 Solid Waste Management Unit Locations (40 CFR 270.14(d)(1)(i))

SWMU MRWA 02-02 and the former individual SWMUs within MRWA 02-02 are described in this section and are shown on the topographic map presented on Figure B-3 in Appendix B.

5.2.2 Type of Unit (40 CFR 270.14(d)(1)(ii))

During the 1987 groundwater contamination survey (USAEHA, 1987) and the RFA (Uribe & Associates, 1994), multiple former operational areas located partially or fully within the current MRWA 02-02 boundaries were identified as SWMUs or RCRA-regulated units. These areas were combined to form SWMU MRWA 02-02. The former SWMUs and RCRA IS units within SWMU MRWA 02-02 are listed in Table 5-1 and described as follows:

- **Former Open Burn Area (Ponds) (NAAD 08A).** This former SWMU consisted of five 30-foot-by-30-foot lagoons and one 30-foot-by-75-foot lagoon positioned south of the other lagoons in the north-central portion of MRWA 02-02. Water containing explosive residuals from munitions decommissioning at Building 319 in the Ammunition Workshop Area (located in the Limited Area) was transported to this site and allowed to evaporate, and then the dried explosive residuals were burned. The periods of operation are not known; however, it is suspected that disposal of TNT-contaminated wastewater would have ceased by 1970, when the TNT Washout Plant was decommissioned.
- **Closed Open Burn Area (NAAD 09A).** This former SWMU consists of a 3.5-acre site in the north-central part of MRWA 02-02 that was used for the burning of ammunition boxes from the 1940s through 1987.

The site was characterized as a cinder-paved area with a small storage shed and a corrugated metal shed (Uribe & Associates, 1994).

- **Current Open Burn Area (NAAD 09D).** Also known as Pad No. 4, NAAD 09D was a RCRA IS unit that was located in the north-central part of MRWA 02-02 and was characterized as a 350-foot-by-250-foot site where burning of propellant was initially performed on open ground. In 1990 or 1991, four burn pans were moved from NAAD 05 to NAAD 09D. A fifth burn pan was added to the new location, and in 1992, the operation began using three additional new pans, for a total of eight pans. Each pan held approximately 1,000 lb of propellant; thus, the operation was burning up to a maximum of 8,000 lb of propellant per day. Burn residue was scraped and removed for disposal as solid waste. The final burn in this area was conducted in May 1993 (Uribe & Associates, 1994).
- **Pad No. 3 (NAAD 10).** Located in the northern part of MRWA 02-02, NAAD 10 was one of several staging pads that was formerly used for temporary storage of munitions scheduled for demolition. In 1969, five or six leaking drums of sodium arsenite were temporarily stored on the pad while leaks in the drums were repaired. The resulting spills on the soil were treated with lime (USATHAMA, 1979). Some burning activities were also reportedly conducted at this site (EBASCO Environmental [EBASCO], 1990), and propellants were suspected to be present as a result of material proof and surveillance testing (USATHAMA, 1979). Specific dates for activities at the site were not determined (Uribe & Associates, 1994).
- **Part of the Closed Open Burn Area (NAAD 09C).** Approximately 0.5-acre of the 2-acre NAAD 09C is located in the northeastern part of MRWA 02-02; the remaining acreage is located in MRWA 02-01 (the Post-closure Permit Area). NAAD 09C was used for open burning of explosives wastes and explosives-contaminated containers from the 1940s through 1987. Following burning, the residue and scrap metal were pushed over the south wall of the canyon, which is tributary to Volunteer Wash.
- **Part of the Former White Phosphorus Detonation and Burn Area (NAAD 03).** Approximately 4 acres of the canyon walls of NAAD 03 outside of the Post-closure Permit Area are located in the northeastern part of MRWA 02-02. The 2 acres of canyon floor are part of MRWA 02-03, which has been incorporated into the Post-closure Permit Area. Also referred to as Chemical Canyon, NAAD 03 was an OD area within a tributary to Volunteer Wash. Munitions and bombs were destroyed by detonation and burning from 1945 until the mid-1970s. NAAD 03 was also reportedly used for burning mercury-contaminated pallets; water containing 2,4,6-TNT; and sulfuric, hydrochloric, nitric, and chromic acids. Other historical operations at NAAD 03 include the burning of plasticized WP and red phosphorus munitions, and the demolition of napalm bombs (Brown and Caldwell, 2004a). The canyon walls received kick-outs from operations at NAAD 03 and NAAD 02.
- **Part of the Potential Mustard Round Burial Site (NAAD E76).** The approximate eastern half of NAAD E76 is located within the eastern part of MRWA 02-02. During the RFA, it was suggested that two possible locations might contain mustard munitions or possibly drums (Uribe & Associates, 1994).

5.2.3 General Dimensions and Structural Description (40 CFR 270.14(d)(1)(iii))

Specific information for each former SWMU in MRWA 02-02 is presented in Section 5.2.2. Additional details of the former SWMUs and RCRA IS units are presented in Section 5.2.2 and Table 5-1. This section provides information for the entire SWMU MRWA 02-02.

MRWA 02-02 comprises 1,339 acres that surround the Post-closure Permit Area. The MRWA 02-02 boundary coincides with the distance associated with the munition with greatest fragmentation distance known to have been detonated at the Post-closure Permit Area, which was a 1,000-lb bomb (USATHAMA, 1979), and that boundary was confirmed during MEC characterization activities (CH2M HILL, 2008a). Of the total acreage, 1,235 acres are located in the Buffer Area and 104 acres are located in the Limited Area, with 94 of the 104 acres in the western distal portion of MRWA 02-02 and 10 acres in the north-northeast distal

portion of MRWA 02-02 (Figures B-2 and B-3 in Appendix B). The Buffer Area is designated to provide a safe distance between the Limited Area munitions storage and handling areas and the surrounding public and private lands (Figure B-2 in Appendix B). A number of unimproved roads and firebreaks traverse the Buffer Area, which has only a few small, vacant buildings used during OB/OD operations scattered throughout the area.

All of MRWA 02-02 lies within the surface danger zone (SDZ) for a proposed small arms range. Also, a portion of MRWA 02-02 is located within the SDZ for the storage magazines in the Limited Area. Both of these features are shown on Figures B-2 and B-3 in Appendix B. An SDZ is the ground and airspace designated within the training complex (including associated safety areas) for vertical and lateral containment of projectiles, fragments, debris, and components resulting from the firing, launching, or detonation of weapon systems, including explosives and demolitions. The locations of the small arms range SDZ and the magazine SDZs place restrictions on the construction or location of inhabited buildings or structures. Storage magazines in the Limited Area of MRWA 02-02 are vacant because they are located within the proposed small arms range SDZ and will remain vacant for as long as the SDZ is in place. The portion of the SDZ located within the Post-closure Permit Area is off-limits to personnel.

The landscape of MRWA 02-02 is characterized as undulating hills and valleys of open grassland prairie with interspersed conifer forests and elevations ranging from 7,000 to 7,200 feet amsl. MRWA 02-02 includes a portion of the deeply incised canyon of Volunteer Wash near the eastern boundary. Volunteer Wash and all tributaries are considered intermittent, flowing only after a heavy rainstorm or a spring snowmelt.

Current and reasonably anticipated future land use for MRWA 02-02 includes operations for troop training, security and fire protection, wild-land fire prevention and protection, land, natural and cultural resource management, security patrols, and recreational activities. Military training units, recreationalists, and contractors are authorized to use the Buffer Area enter only through the East Gate and West Gate in the Administration Area (Figure B-2 in Appendix B). Permission to pass through the Limited Area to reach the Buffer Area is granted only on a case-by-case basis.

5.2.4 Dates of Operation (40 CFR 270.14(d)(1)(iv))

The operations that affected MRWA 02-02 and the operational sites described previously are considered to be generally concomitant with OB/OD operations at the facility, which occurred from the early-mid 1940s until 1994, when all operations ceased. Additional details for the dates of operation of each former SWMU or RCRA-regulated unit within MRWA 02-02 is presented in Table 5-1.

5.2.5 Specification of Wastes (40 CFR 270.14(d)(1)(v))

Land in MRWA 02-02 received MD and MEC kick-outs during OD activities within the Post-closure Permit Area. The MEC included HE-filled munitions, bombs, fuzes, primers, detonators, and other live-munitions components. In addition, WP and conventional types of munitions and bombs were detonated in the MRWA 02-03 portion of the Post-closure Permit Area (CH2M HILL, 2011a). In 2007, a surface MEC removal project was completed on 120 acres in the southern portion of MRWA 02-02 (CH2M HILL, 2008b). A total of 25 MEC were recovered and destroyed by OD, using existing OD pits in NAAD 02 (CH2M HILL, 2008c). In 2009, a surface MEC removal project was completed on 353 acres of MRWA 02-02 surrounding the Post-closure Permit Area (CH2M HILL, 2011b). A total of 621 MEC were recovered and destroyed by OD (CH2M HILL, 2010). If MD was found to retain its original shape or could be mistaken for MEC, it was consolidated at the southwestern corner of grid cells. Any MD that was set aside was consolidated and processed for further inspection and certification and/or verification prior to recycling as part of the MD management project (CH2M HILL, 2011c).

Combined with MEC recovered during MEC characterization (CH2M HILL, 2008a), 762 MEC have been removed from MRWA 02-02. Less than 100 MEC are estimated to remain in MRWA 02-02. This quantity is based on density modeling completed during MEC characterization (CH2M HILL, 2008a), less the quantity of MEC recovered during the surface MEC removal projects (CH2M HILL, 2008b; 2011b). The actual presence or

locations of these remaining MEC are not known, though they would likely be located in the shallow subsurface (0 to 6 inches below ground surface). MEC in the shallow subsurface could migrate to the surface via erosion or frost heave.

The surface clearance area excluded approximately 35 acres that were defined as exception areas. Exception areas were defined as land determined to be too steep and rocky to safely access for MEC clearance. These areas consisted primarily of the near-vertical canyon walls of Volunteer Wash, other steep terrain, large downed trees, and heavy brush. Exception areas were mapped and information regarding these areas will be retained in the Camp Navajo geographic information system (GIS) for future reference.

5.2.6 Solid Waste Management Unit Releases and Mitigation (40 CFR 270.14(d)(2))

This section provides detailed descriptions of the characterization of releases, the mitigation and remediation activities that were conducted in each of the former SWMUs identified in Table 5-1 and Section 5.2.2, and the overall remediation activities in MRWA 02-02.

- **Former Open Burn Area (Ponds) (NAAD 08A).** A soil removal action and bioremediation were completed in 2001 to mitigate the migration of explosive compounds to the subsurface (Tetra Tech, Inc., 2001). A follow-up chemical constituent characterization and risk-screening evaluation was completed in 2006 (MKM Engineers, Inc., 2006a). The DD for response complete (RC) for chemical constituents at NAAD 08A was finalized in 2009 (MKM Engineers, Inc., 2009).
- **Closed Open Burn Area (NAAD 09A).** The chemical constituent characterization and risk screening evaluation was completed in 2006 (MKM Engineers, Inc., 2006b). No releases were identified and no remediation was necessary. The DD for RC for chemical constituents at NAAD 09A was finalized in 2009 (MKM Engineers, Inc., 2009).
- **Current Open Burn Area (NAAD 09D).** The chemical constituent RI was completed in 2005 (AMEC, 2005b). No releases were identified and no remediation was necessary. The DD for RC for chemical constituents at NAAD 09D was finalized in 2009 (AMEC, 2009).
- **Pad No. 3 (NAAD 10).** An RI was completed in 1995 (Tetra Tech, Inc., 1999a). Follow-up site characterization activities were completed in 2006 (MKM Engineers, Inc., 2006c). No releases were identified and no remediation was necessary. The DD for RC for chemical constituents at NAAD 10 was finalized in 2009 (MKM Engineers, Inc., 2009).
- **Part of the Closed Open Burn Area (NAAD 09C).** The DD for a soil and debris removal action, which covered the area in both MRWA 02-01 and MRWA 02-02, was finalized in 2004 (Brown and Caldwell, 2004b). As a result of unexpected changes in the removal action, an Explanation of Significant Differences was finalized in 2009 (Brown and Caldwell, 2009b). Soil and MEC removal and management actions began in 2004 and were completed in 2010. A total of 6,061 MEC, MPPEH, and materials documented as an explosive hazard were recovered during the soil removal and management action. Also, a total of 36,030 lb of certified and verified material documented as safe generated from the removal action were shredded onsite and transported offsite for recycling. Approximately 500 cubic yards of soil with levels of chemical constituents exceeding Arizona Non-Residential Soil Remediation Levels were hauled offsite to the Waste Management Painted Desert Landfill in Joseph City, Arizona, for disposal as nonhazardous waste. The remaining excavated soil with constituent concentrations less than Arizona Non-Residential Soil Remediation Levels was used to backfill OD pits within NAAD 02 (CH2M HILL, 2011d).
- **Part of the Former White Phosphorus Detonation and Burn Area (NAAD 03).** The RI for chemical constituents at NAAD 03 was completed in 2006 (Brown and Caldwell, 2006). No releases were identified and no remediation was necessary. The DD for RC for chemical constituents at NAAD 03 was finalized in 2009 (Brown and Caldwell, 2009a).

- **Part of the Potential Mustard Round Burial Site (NAAD E76).** The results of a 1995 geophysical survey suggested that several subsurface anomalies were present that were consistent with concentrated ferrous metal debris (Tetra Tech, Inc., 1999b). A follow-up investigation was completed in 2006 to confirm the locations of the anomalies reported by Tetra Tech, Inc. (1999b) and the two anomalies were intrusively investigated. No MEC, drums, or bomb casings were found during the investigation (MKM Engineers, Inc., 2006d). The DD for RC for chemical constituents at NAAD E76 was finalized in 2009 (MKM Engineers, Inc., 2009).

Site characterization and interim removal actions for MEC and chemical constituents were completed within MRWA 02-02, as described previously, in accordance with the CERCLA process. Based on the results of the characterization and removal activities completed at MRWA 02-02, no additional remedial or corrective actions are planned. No other hazardous wastes were stored, treated, or disposed of at MRWA 02-02; however, MRWA 02-02 is considered a single munitions-related SWMU because MEC is suspected to remain in this area.

5.3 Former Solid Waste Management Units in the Post-closure Permit Area

In addition to MRWA 02-02, SWMUs were identified within the Post-closure Permit Area during the 1987 groundwater contamination survey (USAEHA, 1987) and the 1994 RFA (Uribe & Associates, 1994). Table 2-2 in Section 2 provides a summary of formerly identified SWMUs and RCRA-regulated units located within the Post-closure Permit Area.

Although some of the sites listed in Table 2-2 were identified at some point as SWMUs, with the exception of NAAD 02, these sites have been closed for chemical constituents for soil and surface water as shown in Table 2-2. They will not be managed as SMWUs under the RCRA post-closure permit since they are within the Post-closure Permit Area; therefore, RCRA post-closure permit requirements will apply to these areas. If MEC is identified in the Post-closure Permit Area, it will be left in place unless it presents an immediate danger to individuals entering the area. Groundwater or soil corrective action could occur for the Post-closure Area, depending on the findings of the GWMP (Appendix I).

5.4 Munitions Response Work Area 02-02 Solid Waste Management Unit Corrective Action Procedures

Based on the CERCLA DDs, which have been accepted by ADEQ in lieu of RCRA closure reports, all SWMUs located in MRWA 02-02 have been designated as RC and require no further site-specific CERCLA remedial action or RCRA Corrective Action; however, due to the suspected presence of MEC at MRWA 02-02, the potential exists for MEC not related to future military training activities to be encountered during normal operations and/or other activities within this SWMU. Therefore, corrective action procedures that will be implemented to address the discovery of MEC within MRWA 02-02 are presented in the SWMU Corrective Action Procedures in Appendix F.

TABLE 5-1

Former SWMUs Located within SWMU MRWA 02-02^a*Camp Navajo RCRA Post-closure Permit Application, Open Burning/Open Detonation Operations*

SWMU ID No.	Alternate ID No.^b	Name/Type of SWMU	Description/Types of Wastes	Dates of Operation^c	Status/Reference Document
NAAD 08A	NADA-06, AREE-8	Former Open Burn Area (Ponds)	See Section 5.2.2 for additional information	Unknown, suspected to have ceased operation by 1970 (Uribe & Associates, 1994)	RC for chemical constituents (MKM Engineers, Inc., 2009)
NAAD 09A	NADA-18, AREE-9	Closed Open Burn Area	See Section 5.2.2 for additional information	1940s through 1987 (Uribe & Associates, 1994)	RC for chemical constituents (MKM Engineers, 2009)
NAAD 09D	NADA-04, AREE-9	Former Propellant Burning Area RCRA IS Unit	See Section 5.2.2 for additional information	Unknown, final burn occurred in 1993 (Uribe & Associates, 1994)	RC for chemical constituents (AMEC, 2009)
NAAD 10	AREE-10	Pad No. 3	See Section 5.2.2 for additional information	Unknown	RC for chemical constituents (MKM Engineers, 2009)
NAAD 03 ^d	NADA-07, AREE-3	Former WP Detonation and Open Burn Area	See Section 5.2.2 for additional information	Unknown	RC for chemical constituents (Brown and Caldwell, 2009a)
NAAD 09C ^d	NADA-18, AREE-9	Closed Open Burn Area RCRA IS Unit	See Section 5.2.2 for additional information	1940s through 1987 (Uribe, 1994)	RC for chemical constituents (Brown and Caldwell, 2004b)
NAAD E76 ^d	AREE-76	Potential Mustard Round Burial Sites in Demolition Area	See Section 5.2.2 for additional information	Unknown	RC for chemical constituents (MKM Engineers, 2009)

Notes:

^a MRWA 02-02 has been identified as a single SWMU for this permit application. This table presents additional details for the former SWMUs and RCRA-regulated units located within the MRWA 02-02 area. Section 5.2 provides additional detail on the MRWA 02-02 SWMU as a single unit.

^b NADA IDs are based on the IDs assigned to the operational areas during the groundwater survey (USAEHA, 1987) and AREE IDs are based on the IDs assigned during the RFA (Uribe & Associates, 1994).

^c Dates of Operation, Types of Wastes, Releases and Mitigation for the entire MRWA 02-02 SWMU are presented in Section 5.2.

^d These operational areas are located partly in the MRWA 02-02 SWMU and partly in the Post-closure Permit Area.

TABLE 5-2

Munitions-related SWMUs Located Outside MRWA 02-02*Camp Navajo RCRA Post-closure Permit Application, Open Burning/Open Detonation Operations*

SWMU ID No.	Alternate ID No.^a	Name/Type of SWMU	Description/Types of Waste^b	Dates of Operation	Status/Reference Document
NAAD 01	NADA-05, AREE-1, MRWA 01	Old EOD Demolition Area See Figure 6.1 of the RFA for the location of the operational area (Uribe & Associates, 1994)	Former OD area located east of Volunteer Canyon in the south-central portion of Camp Navajo. HE-filled ammunition in shell sizes up to 155 millimeters (mm) were detonated in this area. WP-filled projectiles and small arms ammunition occasionally disposed of. Training-related firing of 50-caliber machine guns.	1942 to the mid-1970s (Uribe & Associates, 1994)	RC for chemical constituents (MKM Engineers, 2009), long-term monitoring (LTM) with land use controls (LUCs) for MEC (CH2M HILL, 2009b)
NAAD 11B	NADA-01, AREE-11, AREE-12	Building 318/319 TNT Washout Facility See Figure 6.2 of the RFA for the location of the operational area (Uribe & Associates, 1994)	Former TNT washout and recovery operations were housed in Buildings 318 and 319 in the Ammunition Workshop Area. Wash waters were initially discharged to the TNT wastewater lagoons, consisting of three unlined lagoons south of Building 319.	1940s to 1972 (Uribe & Associates, 1994)	RC for chemical constituents in soil and surface water, LTM with groundwater monitoring and LUCs (Brown and Caldwell, 2010)
NAAD 13	NADA-13, -14, -34, AREE-13, NAAD 14F	Building 334, Deactivation Furnace (RCRA-regulated unit); Building 325, Containerized Storage Facility; and Ash Disposal Pile See Figure 6.2 of the RFA for the location of the operational area (Uribe & Associates, 1994)	Demolished facility was located in the Ammunition Workshop Area. The Deactivation Furnace was used for demilitarization of ordnance. Ash wastes were initially dumped on the Ash Disposal Pile.	1961 to 1989 (Uribe & Associates, 1994)	RC for chemical constituents (Brown and Caldwell, 2009c)
NAAD 15B	AREE-15	Building 310 Ammunition Renovation See Figure 6.2 of the RFA for the location of the operational area (Uribe & Associates, 1994)	Building 310 was located in the Ammunition Workshop Area. It was used for removing pellets from rifle grenades, renovating shells, punching out primers, painting, burning out tracers, and demilitarizing WP rounds.	Unknown	RC for chemical constituents (URS, 2014a)
Not applicable	AREE-16	Igloo C-410	Former SWMU used for less-than-90-day storage of hazardous waste from ammunition workshop operations.	1943 to 1993 (Uribe & Associates, 1994)	Igloos are active; however, less-than-90-day storage of hazardous waste in C-410 ceased in May 1993 (Uribe & Associates, 1994)

TABLE 5-2

Munitions-related SWMUs Located Outside MRWA 02-02*Camp Navajo RCRA Post-closure Permit Application, Open Burning/Open Detonation Operations*

SWMU ID No.	Alternate ID No.^a	Name/Type of SWMU	Description/Types of Waste^b	Dates of Operation	Status/Reference Document
NAAD 19	NADA-02, AREE-19	Former Chemical Laboratory (sump and discharge area) See Figures 6.4 and 6.5 of the RFA for the location of the operational area (Uribe & Associates, 1994)	Located northwest of MRWA 02 in the Limited Area. The sump and drains associated with the former chemical laboratory at Building 460 were identified as a SWMU. Test residue was possibly discharged to the sump and drainage area during decontamination procedures. Testing included CG- and CK-filled bombs.	Late 1940s to 1970	RC for chemical constituents (URS, 2014a)
NAAD 20	AREE-20, MRWA 20	Former Pyrotechnic Range – Burn Pad	Located east of MRWA 02 in the Buffer Area. A burn pad located near the Pyrotechnic Range was identified as a possible SWMU.	Unknown	RC for chemical constituents (URS, 2014a), LTM with LUCs for MEC (CH2M HILL, 2009b)

Notes:

^a NADA IDs are based on the IDs assigned to the operational areas during the groundwater survey (USAEHA, 1987) and AREE IDs are based on the IDs assigned during the RFA (Uribe & Associates, 1994).

^b Additional information on unit dimensions and waste disposed of is provided in the RFA (Uribe & Associates, 1994) provided in Appendix H.

TABLE 5-3

Non-Munitions-related SWMUs Located Outside MRWA 02-02*Camp Navajo RCRA Post-closure Permit Application, Open Burning/Open Detonation Operations*

SWMU ID No.	Alternate ID No.^a	Name/Type of SWMU	Description/Types of Waste^b	Dates of Operation	Status/Reference Document
NAAD 14D	AREE-14	Building 322 Paint Operations	DD (Brown and Caldwell, 2010)	DD (Brown and Caldwell, 2010)	RC for chemical constituents (Brown and Caldwell, 2010)
NAAD 14G	AREE-14	Building 327 Rust Removal	DD (Brown and Caldwell, 2010)	DD (Brown and Caldwell, 2010)	RC for chemical constituents (Brown and Caldwell, 2010)
NAAD 16	NADA-01, AREE-16	Old Earth Reservoirs	Groundwater Assessment (USAEHA, 1987) RFA (Uribe & Associates, 1994)	Groundwater Assessment (USAEHA, 1987) RFA (Uribe & Associates, 1994)	RC for chemical constituents (URS, 2014a)
NAAD 24A, 24B	NADA-30; AREE-24, -70, -71	Vehicle and Locomotive Maintenance Shops, Building 55, Storm Sewer Outfalls	Groundwater Assessment (USAEHA, 1987) RFA (Uribe & Associates, 1994)	Groundwater Assessment (USAEHA, 1987) RFA (Uribe & Associates, 1994)	RC for chemical constituents (URS, 2014a)
NAAD 25	AREE-25	Paint Shop and Paint Storage Buildings	Groundwater Assessment (USAEHA, 1987) RFA (Uribe & Associates, 1994)	RFA (Uribe & Associates, 1994)	Actively used as paint shop and storage building (URS, 2014b)
NAAD 27	NADA-22, -23; AREE-27	Sewage Treatment Plant Sludge Drying Beds and Evaporation Lagoons	Groundwater Assessment (USAEHA, 1987) RFA (Uribe & Associates, 1994)	Groundwater Assessment (USAEHA, 1987) RFA (Uribe & Associates, 1994)	RC for chemical constituents (URS, 2014b)
NAAD 28	NADA-33, AREE-28	Former Sewage Lagoons for Indian Village	Groundwater Assessment (USAEHA, 1987) RFA (Uribe & Associates, 1994)	Groundwater Assessment (USAEHA, 1987) RFA (Uribe & Associates, 1994)	RC for chemical constituents (URS, 2014a)
NAAD 33	NADA-21, AREE-33	Pesticide Waste Storage (Igloo M-118)	Groundwater Assessment (USAEHA, 1987) RFA (Uribe & Associates, 1994)	Groundwater Assessment (USAEHA, 1987) RFA (Uribe & Associates, 1994)	RC for chemical constituents (URS, 2014b)
NAAD 40	NADA-17, AREE-40	Closed Sanitary Landfill	Groundwater Assessment (USAEHA, 1987) RFA (Uribe & Associates, 1994)	Groundwater Assessment (USAEHA, 1987) RFA (Uribe & Associates, 1994)	LTM with groundwater monitoring and LUCs (Brown and Caldwell, 2010) Clay cap installed in 2001 (IT Corporation, 2002)
NAAD 41	NADA-16, AREE-41	Cinder Pit Number 3 (and old firing range)	Groundwater Assessment (USAEHA, 1987) RFA (Uribe & Associates, 1994)	Groundwater Assessment (USAEHA, 1987) RFA (Uribe & Associates, 1994)	RC for chemical constituents (URS, 2014a)

TABLE 5-3

Non-Munitions-related SWMUs Located Outside MRWA 02-02*Camp Navajo RCRA Post-closure Permit Application, Open Burning/Open Detonation Operations*

SWMU ID No.	Alternate ID No.^a	Name/Type of SWMU	Description/Types of Waste^b	Dates of Operation	Status/Reference Document
NAAD 42	NADA-25, AREE-42	Construction Debris Landfill	Groundwater Assessment (USAEHA, 1987) RFA (Uribe & Associates, 1994)	Groundwater Assessment (USAEHA, 1987) RFA (Uribe & Associates, 1994)	RC for chemical constituents (URS, 2014a)
NAAD 43	NADA-27, AREE-43	Closed Construction Debris Landfills #1-5	Groundwater Assessment (USAEHA, 1987) RFA (Uribe & Associates, 1994)	Groundwater Assessment (USAEHA, 1987) RFA (Uribe & Associates, 1994)	RC for chemical constituents at Landfill Nos. 1-4, LTM with LUCs at Landfill No. 5 (Brown and Caldwell, 2010)
NAAD 45	NADA-15, AREE-45	Quarry Tank Area	Groundwater Assessment (USAEHA, 1987) RFA (Uribe & Associates, 1994)	Groundwater Assessment (USAEHA, 1987) RFA (Uribe & Associates, 1994)	RC for chemical constituents (URS, 2014a)
NAAD E46	NADA-24, AREE-46	Construction Debris Waste Pile	Groundwater Assessment (USAEHA, 1987) RFA (Uribe & Associates, 1994)	Groundwater Assessment (USAEHA, 1987) RFA (Uribe & Associates, 1994)	RC for chemical constituents (URS, 2014a)
NAAD 47	NADA-26, AREE-47	Warehouse Area Waste Pile	Groundwater Assessment (USAEHA, 1987) RFA (Uribe & Associates, 1994)	Groundwater Assessment (USAEHA, 1987) RFA (Uribe & Associates, 1994)	RC for chemical constituents (URS, 2014a)
NAAD 52B	NADA-31, AREE-52	PCB Storage Building S-18	Groundwater Assessment (USAEHA, 1987) RFA (Uribe & Associates, 1994)	Groundwater Assessment (USAEHA, 1987) RFA (Uribe & Associates, 1994)	RC for chemical constituents (URS, 2014a)
NAAD 38	AREE-38	Former Open Air Storage Area	Groundwater Assessment (USAEHA, 1987) RFA (Uribe & Associates, 1994)	Groundwater Assessment (USAEHA, 1987) RFA (Uribe & Associates, 1994)	RC for chemical constituents (URS, 2014a)
NAAD 39	NADA-28; AREE-39, -61, -62	Current Open Air Storage Area, Facility Engineer Storage Area	Groundwater Assessment (USAEHA, 1987) RFA (Uribe & Associates, 1994)	Groundwater Assessment (USAEHA, 1987) RFA (Uribe & Associates, 1994)	RC (URS, 2014b)
NAAD 48	AREE-48	Diesel and Gasoline-Contaminated Soil Piles	Groundwater Assessment (USAEHA, 1987) RFA (Uribe & Associates, 1994)	Groundwater Assessment (USAEHA, 1987) RFA (Uribe & Associates, 1994)	RC for chemical constituents (URS, 2014b)
NAAD 49	AREE-49	Igloo Area C Drum Site	Groundwater Assessment (USAEHA, 1987) RFA (Uribe & Associates, 1994)	Groundwater Assessment (USAEHA, 1987) RFA (Uribe & Associates, 1994)	RC for chemical constituents (URS, 2014a)

TABLE 5-3

Non-Munitions-related SWMUs Located Outside MRWA 02-02*Camp Navajo RCRA Post-closure Permit Application, Open Burning/Open Detonation Operations*

SWMU ID No.	Alternate ID No.^a	Name/Type of SWMU	Description/Types of Waste^b	Dates of Operation	Status/Reference Document
NAAD E50	AREE-50	Administration Area Incinerator	RFA (Uribe & Associates, 1994)	RFA (Uribe & Associates, 1994)	RC for chemical constituents (URS, 2014b)
NAAD 53	NADA-29; AREE-64, -71	Waste Oil Tank, Storm Sewer Outfalls	RFA (Uribe & Associates, 1994)	RFA (Uribe & Associates, 1994)	RC for chemical constituents (URS, 2014b)

Notes:

^a NADA IDs are based on the IDs assigned to the operational areas during the Groundwater Assessment (USAEHA, 1987) and AREE IDs are based on the IDs assigned during the RFA (Uribe & Associates, 1994).

^b Descriptions of the units or areas, dimensions, and wastes received are provided in the Groundwater Assessment (USAEHA, 1987) and RFA (Uribe & Associates, 1994), which are provided in Appendix H.

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SECTION 6

Contingency Plan (40 CFR 270.14(b)(7) and 264 Subpart D)

The Contingency Plan and Emergency Procedures (Contingency Plan) for the Post-closure Permit Area is presented in Appendix G. The plan includes the following elements:

- Description of the response actions that installation personnel will implement in the event of a fire, explosion, or other hazardous waste release to the environment in or near the Post-closure Permit Area (40 CFR 264.51(a) and (b)).
- Description of the arrangements with local police departments, fire departments, hospitals, contractors, and state and local emergency response teams to coordinate emergency services (40 CFR 264.51(d)).
- List of names, addresses, and phone numbers (office and home or cell) of persons trained and qualified to act as emergency coordinators for the Post-closure Permit Area.
- List and description of equipment associated with emergency responses within the Post-closure Permit Area.
- Evacuation plan for the site due to emergencies associated with the Post-closure Permit Area.

Appendix G also includes a table that presents the regulatory requirements for a contingency plan and the sections of the Contingency Plan that address each requirement.

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SECTION 7

Part B Certification (40 CFR 270.11)

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision according to a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

COL Matthew D. Stubbs

Name



Signature

September 28, 2016

Date

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SECTION 8

Recordkeeping and Reporting

A summary of the Recordkeeping and Reporting requirements associated with the Post-closure Permit Area is presented in Appendix J.

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SECTION 9

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Appendix A
Part A Permit Application Forms

<p>SEND COMPLETED FORM TO: The Appropriate State or Regional Office.</p>	<p>United States Environmental Protection Agency RCRA SUBTITLE C SITE IDENTIFICATION FORM</p>	
<p>1. Reason for Submittal</p> <p>MARK ALL BOX(ES) THAT APPLY</p>	<p>Reason for Submittal:</p> <p><input type="checkbox"/> To provide an Initial Notification (first time submitting site identification information / to obtain an EPA ID number for this location)</p> <p><input type="checkbox"/> To provide a Subsequent Notification (to update site identification information for this location)</p> <p><input type="checkbox"/> As a component of a First RCRA Hazardous Waste Part A Permit Application</p> <p><input type="checkbox"/> As a component of a Revised RCRA Hazardous Waste Part A Permit Application (Amendment # _____)</p> <p><input type="checkbox"/> As a component of the Hazardous Waste Report (If marked, see sub-bullet below)</p> <p style="margin-left: 20px;"><input type="checkbox"/> Site was a TSD facility and/or generator of >1,000 kg of hazardous waste, >1 kg of acute hazardous waste, or >100 kg of acute hazardous waste spill cleanup in one or more months of the report year (or State equivalent LQG regulations)</p>	
<p>2. Site EPA ID Number</p>	<p>EPA ID Number <input type="text"/> <input type="text"/></p>	
<p>3. Site Name</p>	<p>Name: <input style="width: 90%;" type="text"/></p>	
<p>4. Site Location Information</p>	<p>Street Address: <input style="width: 95%;" type="text"/></p>	
	<p>City, Town, or Village: <input style="width: 70%;" type="text"/></p>	<p>County: <input style="width: 20%;" type="text"/></p>
	<p>State: <input style="width: 15%;" type="text"/></p>	<p>Country: <input style="width: 55%;" type="text"/></p>
<p>5. Site Land Type</p>	<p><input type="checkbox"/> Private <input type="checkbox"/> County <input type="checkbox"/> District <input type="checkbox"/> Federal <input type="checkbox"/> Tribal <input type="checkbox"/> Municipal <input type="checkbox"/> State <input type="checkbox"/> Other</p>	
<p>6. NAICS Code(s) for the Site (at least 5-digit codes)</p>	<p>A. <input style="width: 15%;" type="text"/> <input style="width: 15%;" type="text"/> <input style="width: 15%;" type="text"/> <input style="width: 15%;" type="text"/> <input style="width: 15%;" type="text"/></p>	<p>C. <input style="width: 15%;" type="text"/> <input style="width: 15%;" type="text"/> <input style="width: 15%;" type="text"/> <input style="width: 15%;" type="text"/> <input style="width: 15%;" type="text"/></p>
	<p>B. <input style="width: 15%;" type="text"/> <input style="width: 15%;" type="text"/> <input style="width: 15%;" type="text"/> <input style="width: 15%;" type="text"/> <input style="width: 15%;" type="text"/></p>	<p>D. <input style="width: 15%;" type="text"/> <input style="width: 15%;" type="text"/> <input style="width: 15%;" type="text"/> <input style="width: 15%;" type="text"/> <input style="width: 15%;" type="text"/></p>
<p>7. Site Mailing Address</p>	<p>Street or P.O. Box: <input style="width: 95%;" type="text"/></p>	
	<p>City, Town, or Village: <input style="width: 95%;" type="text"/></p>	
	<p>State: <input style="width: 15%;" type="text"/></p>	<p>Country: <input style="width: 55%;" type="text"/></p>
<p>8. Site Contact Person</p>	<p>First Name: <input style="width: 30%;" type="text"/></p>	<p>MI: <input style="width: 10%;" type="text"/></p>
	<p>Last: <input style="width: 50%;" type="text"/></p>	
	<p>Title: <input style="width: 95%;" type="text"/></p>	
	<p>Street or P.O. Box: <input style="width: 95%;" type="text"/></p>	
	<p>City, Town or Village: <input style="width: 95%;" type="text"/></p>	
	<p>State: <input style="width: 15%;" type="text"/></p>	<p>Country: <input style="width: 55%;" type="text"/></p>
	<p>Zip Code: <input style="width: 20%;" type="text"/></p>	
<p>9. Legal Owner and Operator of the Site</p>	<p>A. Name of Site's Legal Owner: <input style="width: 80%;" type="text"/></p>	
	<p>Date Became Owner: <input style="width: 15%;" type="text"/></p>	
	<p>Owner Type: <input type="checkbox"/> Private <input type="checkbox"/> County <input type="checkbox"/> District <input type="checkbox"/> Federal <input type="checkbox"/> Tribal <input type="checkbox"/> Municipal <input type="checkbox"/> State <input type="checkbox"/> Other</p>	
	<p>Street or P.O. Box: <input style="width: 95%;" type="text"/></p>	
	<p>City, Town, or Village: <input style="width: 70%;" type="text"/></p>	
	<p>State: <input style="width: 15%;" type="text"/></p>	<p>Country: <input style="width: 55%;" type="text"/></p>
	<p>Phone: <input style="width: 20%;" type="text"/></p>	
<p>B. Name of Site's Operator: <input style="width: 80%;" type="text"/></p>		
<p>Date Became Operator: <input style="width: 15%;" type="text"/></p>		
<p>Operator Type: <input type="checkbox"/> Private <input type="checkbox"/> County <input type="checkbox"/> District <input type="checkbox"/> Federal <input type="checkbox"/> Tribal <input type="checkbox"/> Municipal <input type="checkbox"/> State <input type="checkbox"/> Other</p>		

10. Type of Regulated Waste Activity (at your site)
 Mark "Yes" or "No" for all current activities (as of the date submitting the form); complete any additional boxes as instructed.

A. Hazardous Waste Activities; Complete all parts 1-10.

- Y N **1. Generator of Hazardous Waste**
 If "Yes," mark only one of the following – a, b, or c.
- a. LQG: Generates, in any calendar month, 1,000 kg/mo (2,200 lbs/mo.) or more of hazardous waste; or Generates, in any calendar month, or accumulates at any time, more than 1 kg/mo (2.2 lbs/mo) of acute hazardous waste; or Generates, in any calendar month, or accumulates at any time, more than 100 kg/mo (220 lbs/mo) of acute hazardous spill cleanup material.
- b. SQG: 100 to 1,000 kg/mo (220 – 2,200 lbs/mo) of non-acute hazardous waste.
- c. CESQG: Less than 100 kg/mo (220 lbs/mo) of non-acute hazardous waste.
- If "Yes" above, indicate other generator activities in 2-10.

- Y N **2. Short-Term Generator** (generate from a short-term or one-time event and not from on-going processes). If "Yes," provide an explanation in the Comments section.
- Y N **3. United States Importer of Hazardous Waste**
- Y N **4. Mixed Waste (hazardous and radioactive) Generator**

- Y N **5. Transporter of Hazardous Waste**
 If "Yes," mark all that apply.
- a. Transporter
- b. Transfer Facility (at your site)

- Y N **6. Treater, Storer, or Disposer of Hazardous Waste** Note: A hazardous waste Part B permit is required for these activities.

- Y N **7. Recycler of Hazardous Waste**

- Y N **8. Exempt Boiler and/or Industrial Furnace**
 If "Yes," mark all that apply.
- a. Small Quantity On-site Burner Exemption
- b. Smelting, Melting, and Refining Furnace Exemption

- Y N **9. Underground Injection Control**

- Y N **10. Receives Hazardous Waste from Off-site**

B. Universal Waste Activities; Complete all parts 1-2.

- Y N **1. Large Quantity Handler of Universal Waste (you accumulate 5,000 kg or more) [refer to your State regulations to determine what is regulated]. Indicate types of universal waste managed at your site. If "Yes," mark all that apply.**
- a. Batteries
- b. Pesticides
- c. Mercury containing equipment
- d. Lamps
- e. Other (specify) _____
- f. Other (specify) _____
- g. Other (specify) _____

- Y N **2. Destination Facility for Universal Waste**
 Note: A hazardous waste permit may be required for this activity.

C. Used Oil Activities; Complete all parts 1-4.

- Y N **1. Used Oil Transporter**
 If "Yes," mark all that apply.
- a. Transporter
- b. Transfer Facility (at your site)

- Y N **2. Used Oil Processor and/or Re-refiner**
 If "Yes," mark all that apply.
- a. Processor
- b. Re-refiner

- Y N **3. Off-Specification Used Oil Burner**

- Y N **4. Used Oil Fuel Marketer**
 If "Yes," mark all that apply.
- a. Marketer Who Directs Shipment of Off-Specification Used Oil to Off-Specification Used Oil Burner
- b. Marketer Who First Claims the Used Oil Meets the Specifications

D. Eligible Academic Entities with Laboratories—Notification for opting into or withdrawing from managing laboratory hazardous wastes pursuant to 40 CFR Part 262 Subpart K

❖ You can ONLY Opt into Subpart K if:

- you are at least one of the following: a college or university; a teaching hospital that is owned by or has a formal affiliation agreement with a college or university; or a non-profit research institute that is owned by or has a formal affiliation agreement with a college or university; AND
- you have checked with your State to determine if 40 CFR Part 262 Subpart K is effective in your state

Y N 1. Opting into or currently operating under 40 CFR Part 262 Subpart K for the management of hazardous wastes in laboratories
See the item-by-item instructions for definitions of types of eligible academic entities. Mark all that apply:

- a. College or University
- b. Teaching Hospital that is owned by or has a formal written affiliation agreement with a college or university
- c. Non-profit Institute that is owned by or has a formal written affiliation agreement with a college or university

Y N 2. Withdrawing from 40 CFR Part 262 Subpart K for the management of hazardous wastes in laboratories

11. Description of Hazardous Waste

A. Waste Codes for Federally Regulated Hazardous Wastes. Please list the waste codes of the Federal hazardous wastes handled at your site. List them in the order they are presented in the regulations (e.g., D001, D003, F007, U112). Use an additional page if more spaces are needed.

B. Waste Codes for State-Regulated (i.e., non-Federal) Hazardous Wastes. Please list the waste codes of the State-Regulated hazardous wastes handled at your site. List them in the order they are presented in the regulations. Use an additional page if more spaces are needed.

12. Notification of Hazardous Secondary Material (HSM) Activity

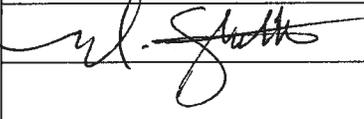
Y N Are you notifying under 40 CFR 260.42 that you will begin managing, are managing, or will stop managing hazardous secondary material under 40 CFR 261.2(a)(2)(ii), 40 CFR 261.4(a)(23), (24), or (25)?

If "Yes," you must fill out the Addendum to the Site Identification Form: Notification for Managing Hazardous Secondary Material.

13. Comments

Hazardous waste from historical open burning/open detonation (OB/OD) activities remains in place in the post-closure area.

14. Certification. I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations. For the RCRA Hazardous Waste Part A Permit Application, all owner(s) and operator(s) must sign (see 40 CFR 270.10(b) and 270.11).

Signature of legal owner, operator, or an authorized representative	Name and Official Title (type or print)	Date Signed (mm/dd/yyyy)
	Matthew D. Stubbs COL	28 September 2016

7. Process Codes and Design Capacities – Enter information in the Section on Form Page 3

- A. PROCESS CODE** – Enter the code from the list of process codes below that best describes each process to be used at the facility. If more lines are needed, attach a separate sheet of paper with the additional information. For “other” processes (i.e., D99, S99, T04 and X99), describe the process (including its design capacity) in the space provided in Item 8.
- B. PROCESS DESIGN CAPACITY** – For each code entered in Item 7.A; enter the capacity of the process.
1. **AMOUNT** – Enter the amount. In a case where design capacity is not applicable (such as in a closure/post-closure or enforcement action) enter the total amount of waste for that process.
 2. **UNIT OF MEASURE** – For each amount entered in Item 7.B(1), enter the code in Item 7.B(2) from the list of unit of measure codes below that describes the unit of measure used. Select only from the units of measure in this list.
- C. PROCESS TOTAL NUMBER OF UNITS** – Enter the total number of units for each corresponding process code.

Process Code	Process	Appropriate Unit of Measure for Process Design Capacity	Process Code	Process	Appropriate Unit of Measure for Process Design Capacity
Disposal			Treatment (Continued) (for T81 – T94)		
D79	Underground Injection Well Disposal	Gallons; Liters; Gallons Per Day; or Liters Per Day	T81	Cement Kiln	Gallons Per Day; Liters Per Day; Pounds Per Hour; Short Tons Per Hour; Kilograms Per Hour; Metric Tons Per Day; Metric Tons Per Hour; Short Tons Per Day; BTU Per Hour; Liters Per Hour; Kilograms Per Hour; or Million BTU Per Hour
D80	Landfill	Acre-feet; Hectares-meter; Acres; Cubic Meters; Hectares; Cubic Yards	T82	Lime Kiln	
D81	Land Treatment	Acres or Hectares	T83	Aggregate Kiln	
D82	Ocean Disposal	Gallons Per Day or Liters Per Day	T84	Phosphate Kiln	
D83	Surface Impoundment Disposal	Gallons; Liters; Cubic Meters; or Cubic Yards	T85	Coke Oven	
D99	Other Disposal	Any Unit of Measure Listed Below	T86	Blast Furnace	
Storage			T87	Smelting, Melting, or Refining Furnace	
S01	Container	Gallons; Liters; Cubic Meters; or Cubic Yards	T88	Titanium Dioxide Chloride Oxidation Reactor	
S02	Tank Storage	Gallons; Liters; Cubic Meters; or Cubic Yards	T89	Methane Reforming Furnace	
S03	Waste Pile	Cubic Yards or Cubic Meters	T90	Pulping Liquor Recovery Furnace	
S04	Surface Impoundment	Gallons; Liters; Cubic Meters; or Cubic Yards	T91	Combustion Device Used in the Recovery of Sulfur Values from Spent Sulfuric Acid	
S05	Drip Pad	Gallons; Liters; Cubic Meters; Hectares; or Cubic Yards	T92	Halogen Acid Furnaces	
S06	Containment Building Storage	Cubic Yards or Cubic Meters	T93	Other Industrial Furnaces Listed in 40 CFR 260.10	
S99	Other Storage	Any Unit of Measure Listed Below	T94	Containment Building Treatment	Cubic Yards; Cubic Meters; Short Tons Per Hour; Gallons Per Hour; Liters Per Hour; BTU Per Hour; Pounds Per Hour; Short Tons Per Day; Kilograms Per Hour; Metric Tons Per Day; Gallons Per Day; Liters Per Day; Metric Tons Per Hour; or Million BTU Per Hour
Treatment			Miscellaneous (Subpart X)		
T01	Tank Treatment	Gallons Per Day; Liters Per Day	X01	Open Burning/Open Detonation	Any Unit of Measure Listed Below
T02	Surface Impoundment	Gallons Per Day; Liters Per Day	X02	Mechanical Processing	Short Tons Per Hour; Metric Tons Per Hour; Short Tons Per Day; Metric Tons Per Day; Pounds Per Hour; Kilograms Per Hour; Gallons Per Hour; Liters Per Hour; or Gallons Per Day
T03	Incinerator	Short Tons Per Hour; Metric Tons Per Hour; Gallons Per Hour; Liters Per Hour; BTUs Per Hour; Pounds Per Hour; Short Tons Per Day; Kilograms Per Hour; Gallons Per Day; Metric Tons Per Hour; or Million BTU Per Hour	X03	Thermal Unit	Gallons Per Day; Liters Per Day; Pounds Per Hour; Short Tons Per Hour; Kilograms Per Hour; Metric Tons Per Day; Metric Tons Per Hour; Short Tons Per Day; BTU Per Hour; or Million BTU Per Hour
T04	Other Treatment	Gallons Per Day; Liters Per Day; Pounds Per Hour; Short Tons Per Hour; Kilograms Per Hour; Metric Tons Per Day; Short Tons Per Day; BTUs Per Hour; Gallons Per Day; Liters Per Hour; or Million BTU Per Hour	X04	Geologic Repository	Cubic Yards; Cubic Meters; Acre-feet; Hectare-meter; Gallons; or Liters
T80	Boiler	Gallons; Liters; Gallons Per Hour; Liters Per Hour; BTUs Per Hour; or Million BTU Per Hour	X99	Other Subpart X	Any Unit of Measure Listed Below

Unit of Measure	Unit of Measure Code	Unit of Measure	Unit of Measure Code
Gallons	G	Short Tons Per Hour	D
Gallons Per Hour.....	E	Short Tons Per Day	N
Gallons Per Day	U	Metric Tons Per Hour	W
Liters.....	L	Metric Tons Per Day	S
Liters Per Hour.....	H	Pounds Per Hour.....	J
Liters Per Day.....	V	Kilograms Per Hour.....	X
		Million BTU Per Hour.....	X
		Cubic Yards	Y
		Cubic Meters.....	C
		Acres.....	B
		Acre-feet	A
		Hectares.....	Q
		Hectare-meter	F
		BTU Per Hour.....	I

9. Description of Hazardous Wastes - Enter Information in the Sections on Form Page 5

- A. EPA HAZARDOUS WASTE NUMBER** – Enter the four-digit number from 40 CFR, Part 261 Subpart D of each listed hazardous waste you will handle. For hazardous wastes which are not listed in 40 CFR, Part 261 Subpart D, enter the four-digit number(s) from 40 CFR Part 261, Subpart C that describes the characteristics and/or the toxic contaminants of those hazardous wastes.
- B. ESTIMATED ANNUAL QUANTITY** – For each listed waste entered in Item 9.A, estimate the quantity of that waste that will be handled on an annual basis. For each characteristic or toxic contaminant entered in Item 9.A, estimate the total annual quantity of all the non-listed waste(s) that will be handled which possess that characteristic or contaminant.
- C. UNIT OF MEASURE** – For each quantity entered in Item 9.B, enter the unit of measure code. Units of measure which must be used and the appropriate codes are:

ENGLISH UNIT OF MEASURE	CODE	METRIC UNIT OF MEASURE	CODE
POUNDS	P	KILOGRAMS	K
TONS	T	METRIC TONS	M

If facility records use any other unit of measure for quantity, the units of measure must be converted into one of the required units of measure, taking into account the appropriate density or specific gravity of the waste.

D. PROCESSES

1. PROCESS CODES:

For listed hazardous waste: For each listed hazardous waste entered in Item 9.A, select the code(s) from the list of process codes contained in Items 7.A and 8.A on page 3 to indicate all the processes that will be used to store, treat, and/or dispose of all listed hazardous wastes.

For non-listed waste: For each characteristic or toxic contaminant entered in Item 9.A, select the code(s) from the list of process codes contained in Items 7.A and 8.A on page 3 to indicate all the processes that will be used to store, treat, and/or dispose of all the non-listed hazardous wastes that possess that characteristic or toxic contaminant.

NOTE: THREE SPACES ARE PROVIDED FOR ENTERING PROCESS CODES. IF MORE ARE NEEDED:

1. Enter the first two as described above.
2. Enter "000" in the extreme right box of Item 9.D(1).
3. Use additional sheet, enter line number from previous sheet, and enter additional code(s) in Item 9.E.

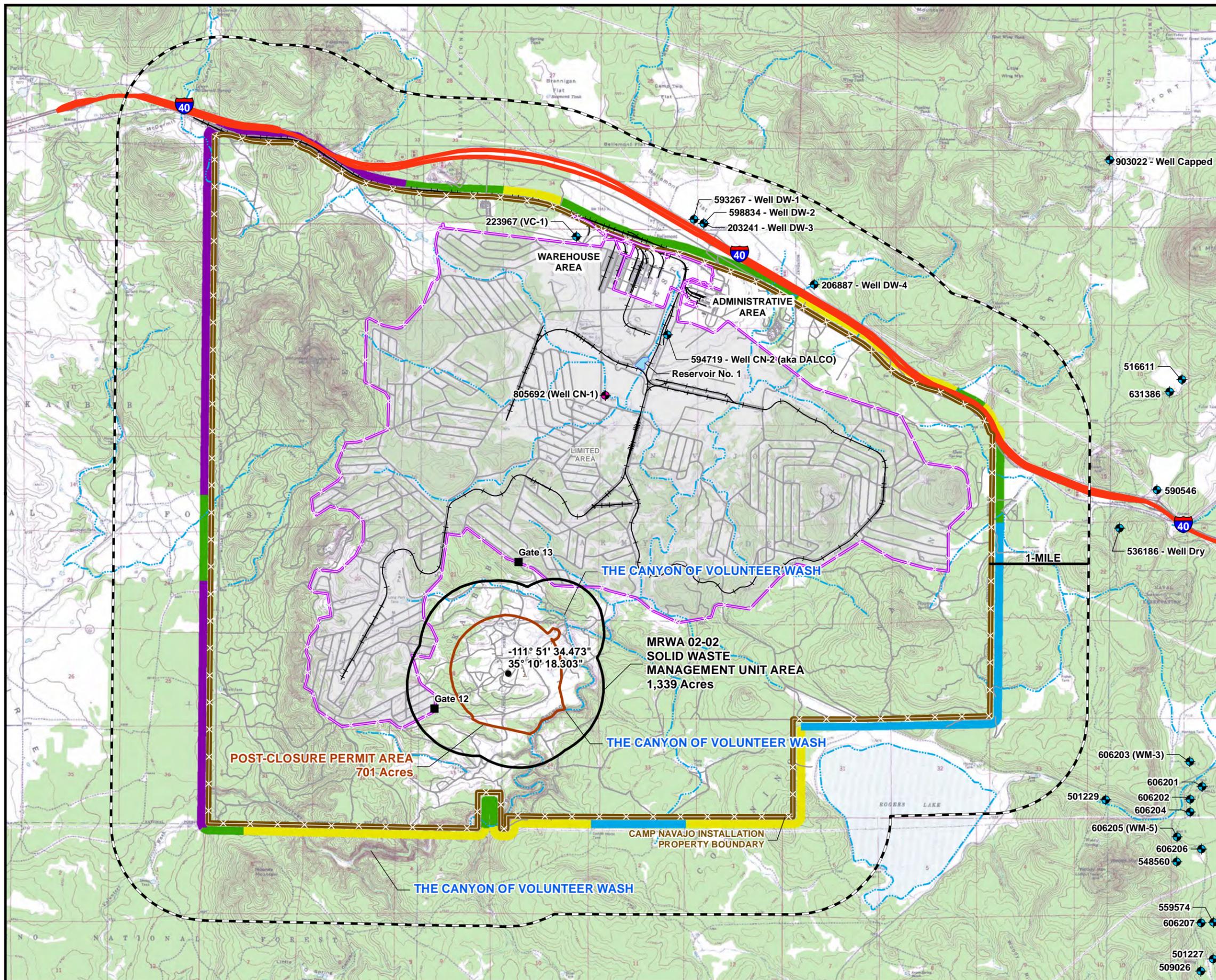
2. PROCESS DESCRIPTION: If code is not listed for a process that will be used, describe the process in Item 9.D(2) or in Item 9.E(2).

NOTE: HAZARDOUS WASTES DESCRIBED BY MORE THAN ONE EPA HAZARDOUS WASTE NUMBER – Hazardous wastes that can be described by more than one EPA Hazardous Waste Number shall be described on the form as follows:

1. Select one of the EPA Hazardous Waste Numbers and enter it in Item 9.A. On the same line complete Items 9.B, 9.C, and 9.D by estimating the total annual quantity of the waste and describing all the processes to be used to store, treat, and/or dispose of the waste.
2. In Item 9.A of the next line enter the other EPA Hazardous Waste Number that can be used to describe the waste. In Item 9.D.2 on that line enter "included with above" and make no other entries on that line.
3. Repeat step 2 for each EPA Hazardous Waste Number that can be used to describe the hazardous waste.

EXAMPLE FOR COMPLETING Item 9 (shown in line numbers X-1, X-2, X-3, and X-4 below) – A facility will treat and dispose of an estimated 900 pounds per year of chrome shavings from leather tanning and finishing operations. In addition, the facility will treat and dispose of three non-listed wastes. Two wastes are corrosive only and there will be an estimated 200 pounds per year of each waste. The other waste is corrosive and ignitable and there will be an estimated 100 pounds per year of that waste. Treatment will be in an incinerator and disposal will be in a landfill.

Line Number	A. EPA Hazardous Waste No. (Enter code)					B. Estimated Annual Qty of Waste	C. Unit of Measure (Enter code)	D. PROCESSES															
	(1) PROCESS CODES (Enter Code)										(2) PROCESS DESCRIPTION (If code is not entered in 9.D(1))												
X	1	K	0	5	4	900	P	T	0	3	D	8	0										
X	2	D	0	0	2	400	P	T	0	3	D	8	0										
X	3	D	0	0	1	100	P	T	0	3	D	8	0										
X	4	D	0	0	2																		Included With Above



LEGEND

BOUNDARY SYMBOLOGY

- MRWA 02-02 SOLID WASTE MANAGEMENT UNIT AREA
- POST-CLOSURE PERMIT AREA
- LIMITED AREA
- CAMP NAVAJO INSTALLATION 1-MILE BUFFER
- CAMP NAVAJO FACILITY BOUNDARY AND FENCE
- LIMITED AREA PERIMETER FENCE

OTHER SYMBOLOGY

- GATE
- INTERMITTENT DRAINAGE
- INTERSTATE
- ROAD
- RAILROAD
- DRINKING WATER WELL
- REGIONAL GROUNDWATER MONITORING WELL (SENTRY WELL)
- RESERVOIR

ADJACENT LAND OWNERSHIP

- PRIVATE/RESIDENTIAL
- KAIBAB NATIONAL FOREST/RECREATIONAL
- COCONINO NATIONAL FOREST/RECREATIONAL
- STATE LAND/RECREATIONAL

NOTES:

1. LATITUDE AND LONGITUDE PROVIDED FOR THE CENTER OF THE POST-CLOSURE CARE AREA.
2. ALL HAZARDOUS WASTE MANAGEMENT AREAS HAVE BEEN CLOSED, THUS ONLY THE OLD OB/OD AREA (POST-CLOSURE CARE AREA) AND THE SURROUNDING SWMU (MRWA 02-02) ARE SHOWN.
3. CAMP NAVAJO AWI WELLS SHOWN ON FIGURE B-2.
4. GARLAND PRAIRIE WELL WP-1 (908359) IS MORE THAN FIVE MILES WEST OF CAMP NAVAJO AND NOT SHOWN ON THIS VIEW.

IMAGERY SOURCE:

- GARLAND PRAIRIE QUADRANGLE, 1963
- BELLEMONT QUADRANGLE, 1963
- FLAGSTAFF WEST QUADRANGLE, 1963
- HUMPHREYS PEAK QUADRANGLE, 1983
- WING MOUNTAIN QUADRANGLE, 1983
- PARKS QUADRANGLE, 1991

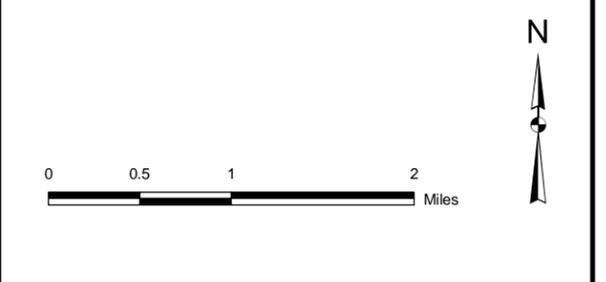
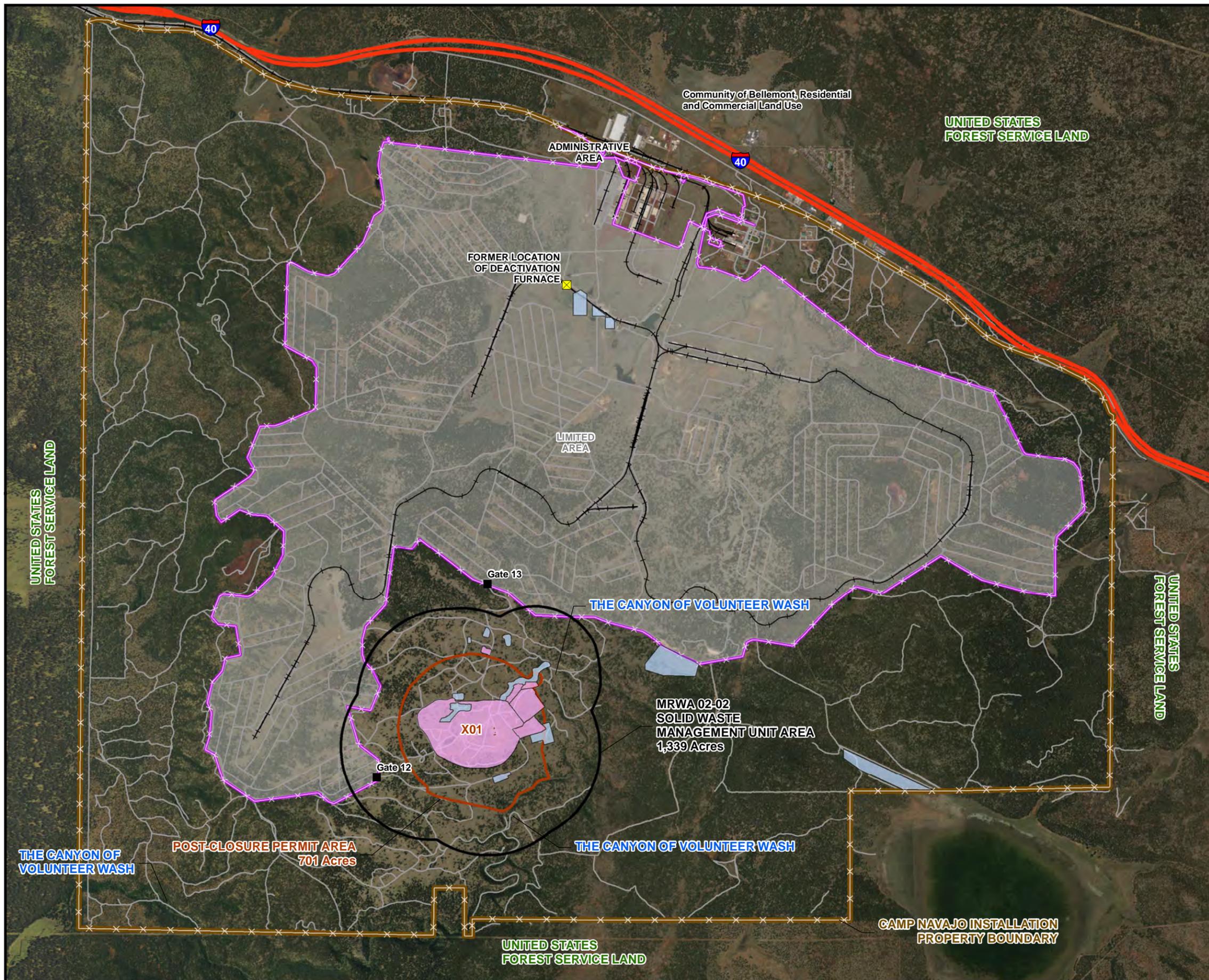


FIGURE A-1
PART A TOPOGRAPHIC MAP
 RCRA POST-CLOSURE PERMIT APPLICATION
 CAMP NAVAJO, BELLEMONT, ARIZONA



- LEGEND**
- BOUNDARY SYMBOLOGY**
- MRWA 02-02 SOLID WASTE MANAGEMENT UNIT AREA
 - POST-CLOSURE PERMIT AREA
 - LIMITED AREA
 - FORMER RCRA INTERIM STATUS PERMIT SITES
 - FORMER SOLID WASTE MANAGEMENT UNITS IDENTIFIED DURING THE RCRA FACILITY ASSESSMENT (URIBE, 1994)
 - CAMP NAVAJO FACILITY BOUNDARY AND FENCE
 - LIMITED AREA PERIMETER FENCE
- OTHER SYMBOLOGY**
- GATE
 - FORMER LOCATION OF DEACTIVATION FURNACE
 - INTERSTATE
 - ROAD
 - RAILROAD

NOTE:

1. IDENTIFICATION OF PAST TREATMENT, STORAGE, AND DISPOSAL OPERATIONS ASSOCIATED WITH MUNITIONS ARE PRESENTED IN FIGURE B-3 OF THE PART B APPLICATION.



FIGURE A-2
PART A FACILITY DRAWING
 RCRA POST-CLOSURE PERMIT APPLICATION
 CAMP NAVAJO, BELLEFONT, ARIZONA



Photo 1: Post-closure Permit Area and surrounding Solid Waste Management Unit (SWMU) Munitions Response Work Area (MRWA) 02-02. Photo taken November 2009.



Photo 2: Post-closure Permit Area view to the southwest. Photo taken November 2009.



Photo 3: Post-closure Permit Area view to the north (ponding caused by recent rain or snow events). Photo taken May 2010.



Photo 4: Post-closure Permit Area boundary signs. Photo taken November 2012.



Photo 5: Post-closure Permit Area former open detonation pit view to the northeast (ponding caused by recent rain or snow events). Photo taken May 2010.



Photo 6: Post-closure Permit Area view to the northeast. Photo taken November 2009.



Photo 7. Former Open Detonation Pit in Post-Closure Permit Area. Photo taken October 2009.



Photo 8. Former Open Detonation Pit in Post-closure Permit Area. Photo taken October 2009.



Photo 9. ODP-109 to be used for emergency open detonations in Post-closure permit area. Photo taken November 2009.

Appendix B Figures

FACILITY DESCRIPTION

General Facility Description

Camp Navajo is situated on 28,347 acres of forest and prairie lands approximately 10 miles west of Flagstaff, Arizona, and south of Interstate 40 at Exit 185 in Bellemont, Coconino County, Arizona. The community of Bellemont, Arizona, is located on the northern boundary of the installation. The majority of land bordering the western, southern, and eastern portions of the installation is owned by the State of Arizona or the National Forest Service. The Navajo Army Depot was established by the Department of the Army in 1942 to operate as a supply depot for the receipt, shipping, storage, surveillance, minor maintenance, and demilitarization of ammunition and assigned commodities. It was placed under reserve status and re-designated as Navajo Depot Activity in 1971. In 1982, operational control of the mission was transferred under an Inter-Service Support Agreement to the Arizona Army National Guard (AZARNG). In 1993, the Army mission ended, the installation was transferred under an indefinite-period license to AZARNG, and the installation name was changed to Camp Navajo. Currently, Camp Navajo is owned by the Department of the Army and operated by AZARNG.

Between the early 1940s and 1994, the Former Open Burn/Open Detonation (OB/OD) Area was used to demilitarize conventional and chemical munitions that had become obsolete or unserviceable. Demilitarization primarily consisted of burning or detonating munitions. The portion of the Former OB/OD Area subject to Post-closure care requirements is the Post-closure Permit Area.

Post-closure Permit Area Description

The Post-closure Permit Area consists of 701 acres located within a larger area that has been designated as Munitions Response Work Area (MRWA) 02. The MRWA 02 designation was developed to represent an informal operational unit to address the explosive hazard associated with munitions demilitarized at the Navajo Army Depot (NAAD) 02 OD Area, a former RCRA OB/OD unit. MRWA 02 is divided into MRWA 02-01, MRWA 02-02, and MRWA 02-03. The Post-closure Permit Area encompasses the portion of the Former OB/OD Area with remaining munitions and explosives of concern (MEC) contamination, and is comprised of MRWA 02-01 and MRWA 02-03. MRWA 02-02 is designated as a solid waste management unit (SWMU) and surrounds the Post-closure Permit Area.

Former OB/OD Operations

The former OB/OD treatment units are described in Table 1.

Table 1

Former Waste Treatment Areas

Camp Navajo Post-closure Permit Area

Treatment Area	Years Operated	Approximate Size	Wastes Managed	How Wastes Were Managed
NAAD 02	1940s - 1994	200 acres	High explosive (HE)-filled munitions, fuzes, primers, detonators, and other material potentially presenting an explosive hazard	Open detonation
NAAD 03	1945 - 1970s	50 acres	White phosphorus (WP) and conventional munitions	Open detonation and burning
NAAD 04	1950s	4.1 acres	Cyanogen chloride (CG)- and phosgene (CK)-filled chemical bombs	Venting
NAAD 05	1940s - 1990	60 acres	Bulk propellant and explosives, ballistite, propelling charges, igniters, napalm-filled	Open burning

			fire bombs, and other items potentially contaminated by explosives	
NAAD 06	1940s - 1990	5 acres	Pallets, wire, wood, containers, and other materials	Open burning
NAAD 07	1953-1972	3.5 acres	TNT-contaminated wastewater	Evaporation and settling in lagoons, sediments periodically burned off
NAAD 08B	1953 - 1972	6.6 acres	TNT-contaminated wastewater, spotting charges, napalm-filled fire bombs, and 3.5-inch rockets	Open burning
NAAD 09B	1959 - 1982	9 acres	Fiber tubes, ammunition boxes, drums of paint residues	Open burning
NAAD 09C	1940s - 1987	2 acres	Explosives wastes and explosives-contaminated containers	Open burning
NAAD E76	1950s	10.7 acres	Potential mustard munitions or drums	Potential burial area (no evidence found), portion of NAAD within permit area

Closure Activities

The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) process was used to investigate, remediate, and close all treatment units. Detailed historical operations and final closure activities were summarized in Decision Documents and an After Action Report, which were approved by ADEQ.

Closure activities included soil, surface water, and groundwater sampling; geophysical, vegetation, wildlife, and cultural resource surveys; risk assessments; partial MEC removal; and soil removal, treatment, and disposal. Based on information collected during closure activities, the Post-closure Permit Area is estimated to contain between 1,000 and 3,000 remaining MEC. SWMU MRWA 02-02 was cleared of munitions and was closed under CERCLA. However, the potential exists for munitions that were not identified during closure activities to remain.

The constituents of concern (COCs) and constituents of potential concern (COPCs) that may remain in the area include:

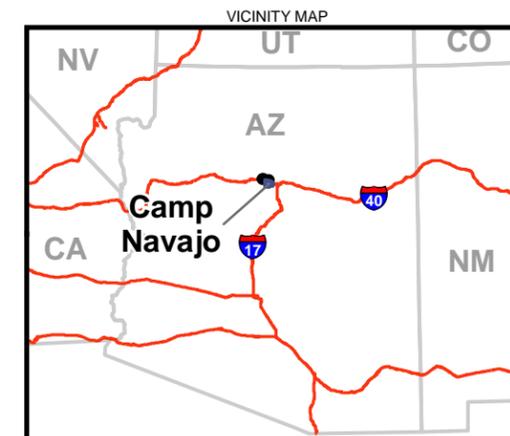
- Perchlorate
- Explosives, including hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)
- Nitrate
- Selected semi-volatile organics
- Selected metals

Site Conditions and Operations

Current and reasonably anticipated future land uses at the Post-closure Permit Area include:

- Post-closure care activities
- Military procedures-required surface danger zones for munitions storage magazines and a proposed small arms range
- Mission support and maintenance
- Security and fire-protection inspections (no security patrols or firefighting will occur inside the Post-closure Permit Area)
- Occasional intentional detonations of acceptable-to-move MEC recovered during MEC inspections
- Natural and cultural resources management

Post-closure care includes implementation of the activities described in the Post-Closure Plan, including security procedures, inspections, and post-closure monitoring. Post-closure monitoring includes the sampling of vadose zone monitoring wells located within and near the Post-closure Permit Area. The wells are constructed to screen the soil/bedrock interface and fractures within the bedrock. Groundwater monitoring is conducted at regional groundwater wells located outside the Post-closure Permit Area boundary. The depth to groundwater below the Post-closure Permit Area is estimated to be 1,600 feet bgs.



- LEGEND**
- MILITARY RESERVATION BOUNDARY
 - COUNTY BOUNDARY
 - STATE PARKS
 - INTERSTATE
 - STATE HIGHWAY
 - ROAD

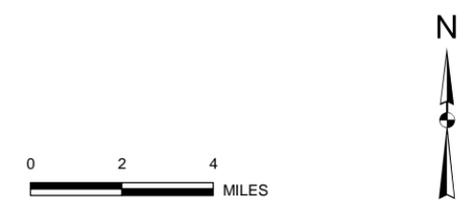
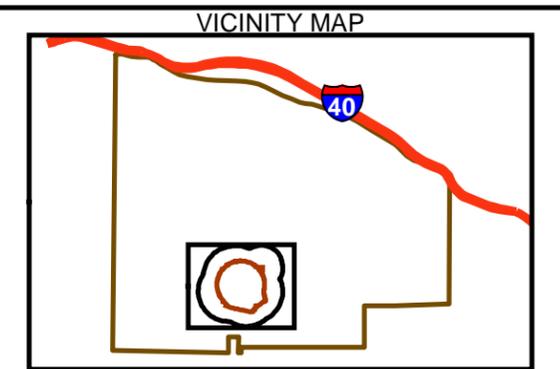
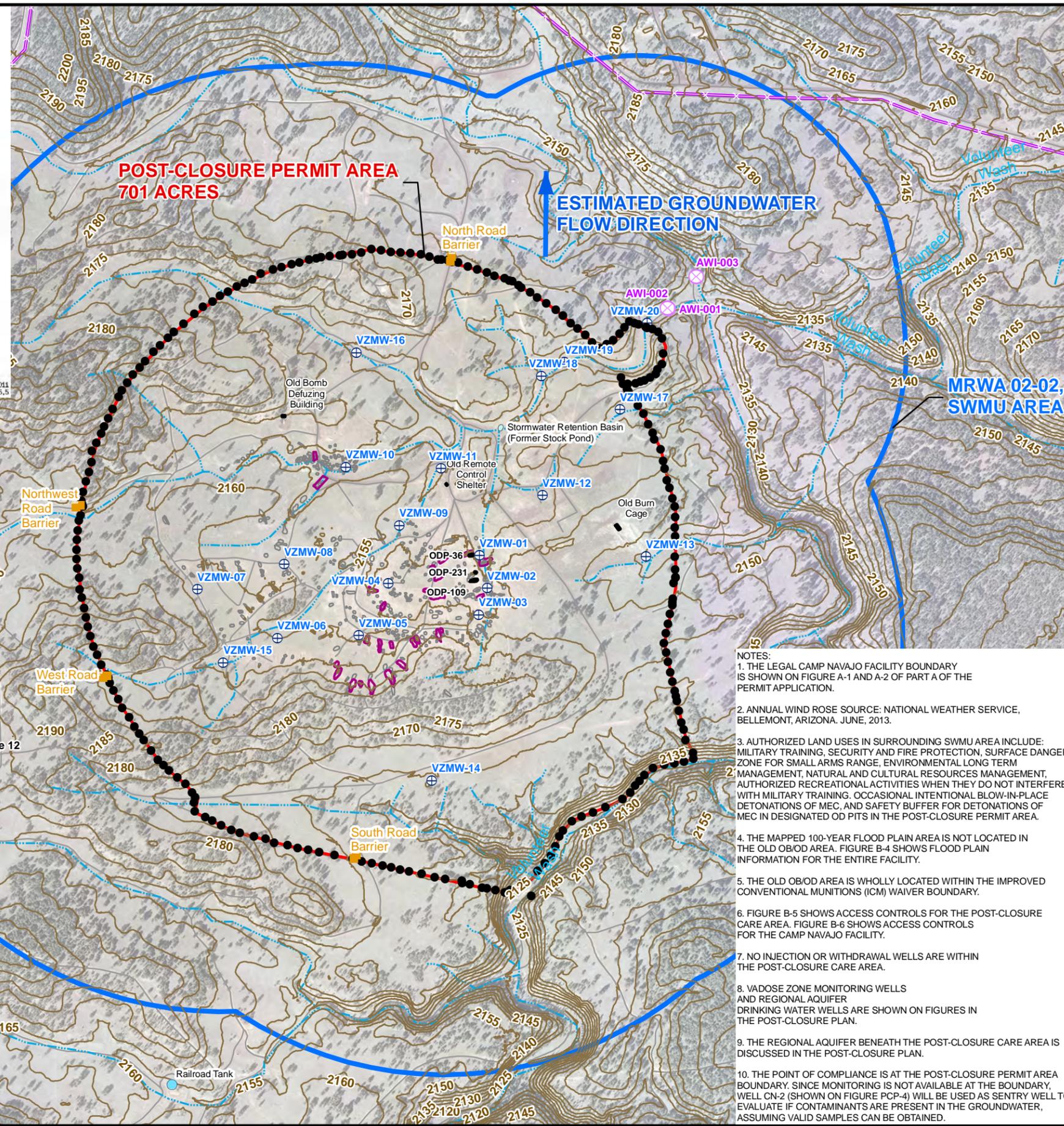
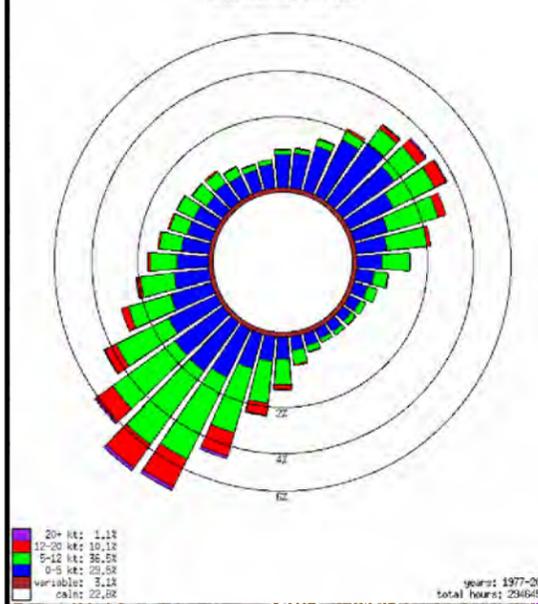


FIGURE B-1
SITE LOCATION MAP
 RCRA POST-CLOSURE PERMIT APPLICATION
 CAMP NAVAJO, BELLEMONT, ARIZONA

ANNUAL WIND ROSE FOR BELLEMONT, ARIZONA
RPLGJ Jan-Dec 00Z-23Z



- LEGEND**
- BOUNDARY SYMBOLOGY**
- ▭ MRWA 02-02, SOLID WASTE MANAGEMENT UNIT AREA
 - ▭ POST-CLOSURE PERMIT AREA
 - ▭ SURFACE WATER CATCHMENT AREA
 - ✕ LIMITED AREA PERIMETER FENCE
 - ▭ BACKFILLED OD PIT
 - NOT FILLED OD PIT
 - OPEN DETONATION PITS TO BE USED FOR EMERGENCY OPEN DETONATIONS
- OTHER SYMBOLOGY**
- LIMITED AREA PERIMETER GATE
 - ⊕ VADOSE ZONE MONITORING WELL
 - ⊗ MONITORING WELL
 - DANGER SIGNS SURROUNDING POST CLOSURE AREA
 - ROAD BARRIER
 - ▭ OLD STRUCTURES INSIDE POST CLOSURE AREA
 - 5 FT CONTOUR ELEVATION LINE
 - INTERMITTENT DRAINAGE
 - ROAD

NOTE:
 ROADS SHOWN WITHOUT BARRIERS ARE NOT VIABLE VEHICLE ENTRANCES AND ARE NOT MAINTAINED.

- NOTES:**
1. THE LEGAL CAMP NAVAJO FACILITY BOUNDARY IS SHOWN ON FIGURE A-1 AND A-2 OF PART A OF THE PERMIT APPLICATION.
 2. ANNUAL WIND ROSE SOURCE: NATIONAL WEATHER SERVICE, BELLEMONT, ARIZONA, JUNE, 2013.
 3. AUTHORIZED LAND USES IN SURROUNDING SWMU AREA INCLUDE: MILITARY TRAINING, SECURITY AND FIRE PROTECTION, SURFACE DANGER ZONE FOR SMALL ARMS RANGE, ENVIRONMENTAL LONG TERM MANAGEMENT, NATURAL AND CULTURAL RESOURCES MANAGEMENT, AUTHORIZED RECREATIONAL ACTIVITIES WHEN THEY DO NOT INTERFERE WITH MILITARY TRAINING, OCCASIONAL INTENTIONAL BLOW-IN-PLACE DETONATIONS OF MEC, AND SAFETY BUFFER FOR DETONATIONS OF MEC IN DESIGNATED OD PITS IN THE POST-CLOSURE PERMIT AREA.
 4. THE MAPPED 100-YEAR FLOOD PLAIN AREA IS NOT LOCATED IN THE OLD OB/OD AREA. FIGURE B-4 SHOWS FLOOD PLAIN INFORMATION FOR THE ENTIRE FACILITY.
 5. THE OLD OB/OD AREA IS WHOLLY LOCATED WITHIN THE IMPROVED CONVENTIONAL MUNITIONS (ICM) WAIVER BOUNDARY.
 6. FIGURE B-5 SHOWS ACCESS CONTROLS FOR THE POST-CLOSURE CARE AREA. FIGURE B-6 SHOWS ACCESS CONTROLS FOR THE CAMP NAVAJO FACILITY.
 7. NO INJECTION OR WITHDRAWAL WELLS ARE WITHIN THE POST-CLOSURE CARE AREA.
 8. VADOSE ZONE MONITORING WELLS AND REGIONAL AQUIFER DRINKING WATER WELLS ARE SHOWN ON FIGURES IN THE POST-CLOSURE PLAN.
 9. THE REGIONAL AQUIFER BENEATH THE POST-CLOSURE CARE AREA IS DISCUSSED IN THE POST-CLOSURE PLAN.
 10. THE POINT OF COMPLIANCE IS AT THE POST-CLOSURE PERMIT AREA BOUNDARY. SINCE MONITORING IS NOT AVAILABLE AT THE BOUNDARY, WELL CN-2 (SHOWN ON FIGURE PCP-4) WILL BE USED AS SENTRY WELL TO EVALUATE IF CONTAMINANTS ARE PRESENT IN THE GROUNDWATER, ASSUMING VALID SAMPLES CAN BE OBTAINED.

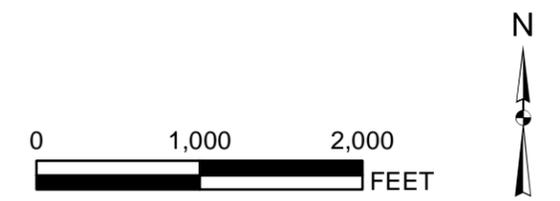
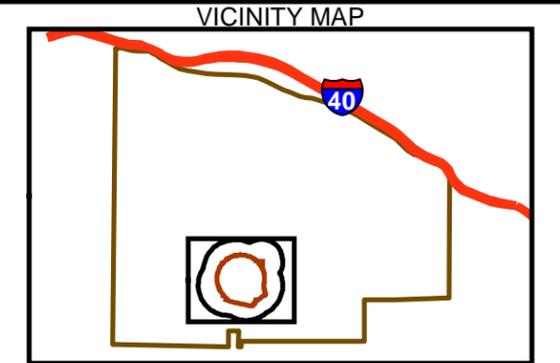
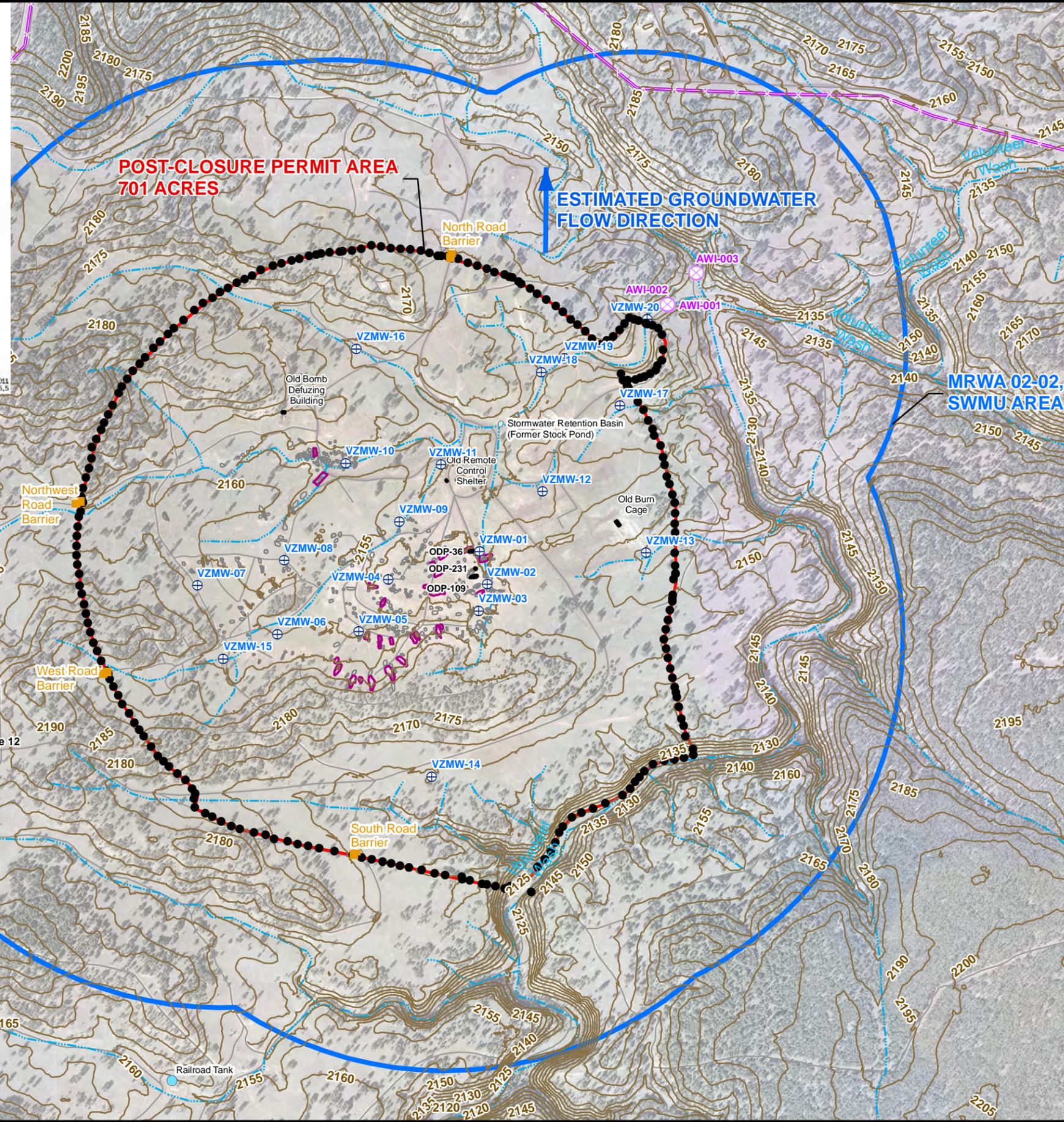
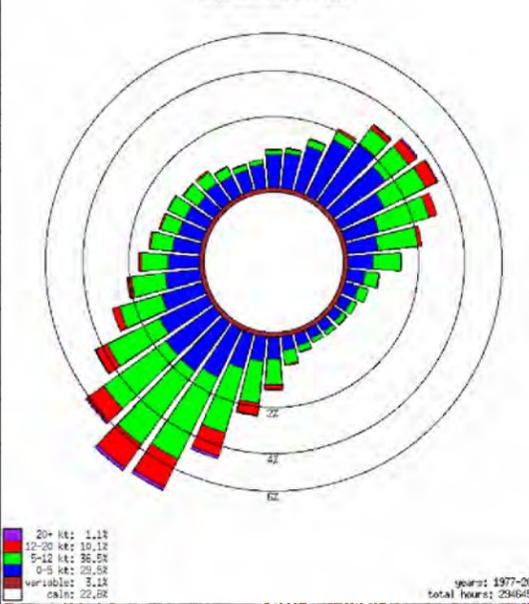


FIGURE B-2a
POST-CLOSURE PERMIT AREA
 RCRA POST-CLOSURE PERMIT APPLICATION
 CAMP NAVAJO, BELLEMONT, ARIZONA

ANNUAL WIND ROSE FOR BELLEMONT, ARIZONA
RPLGJ Jan-Dec 00Z-23Z

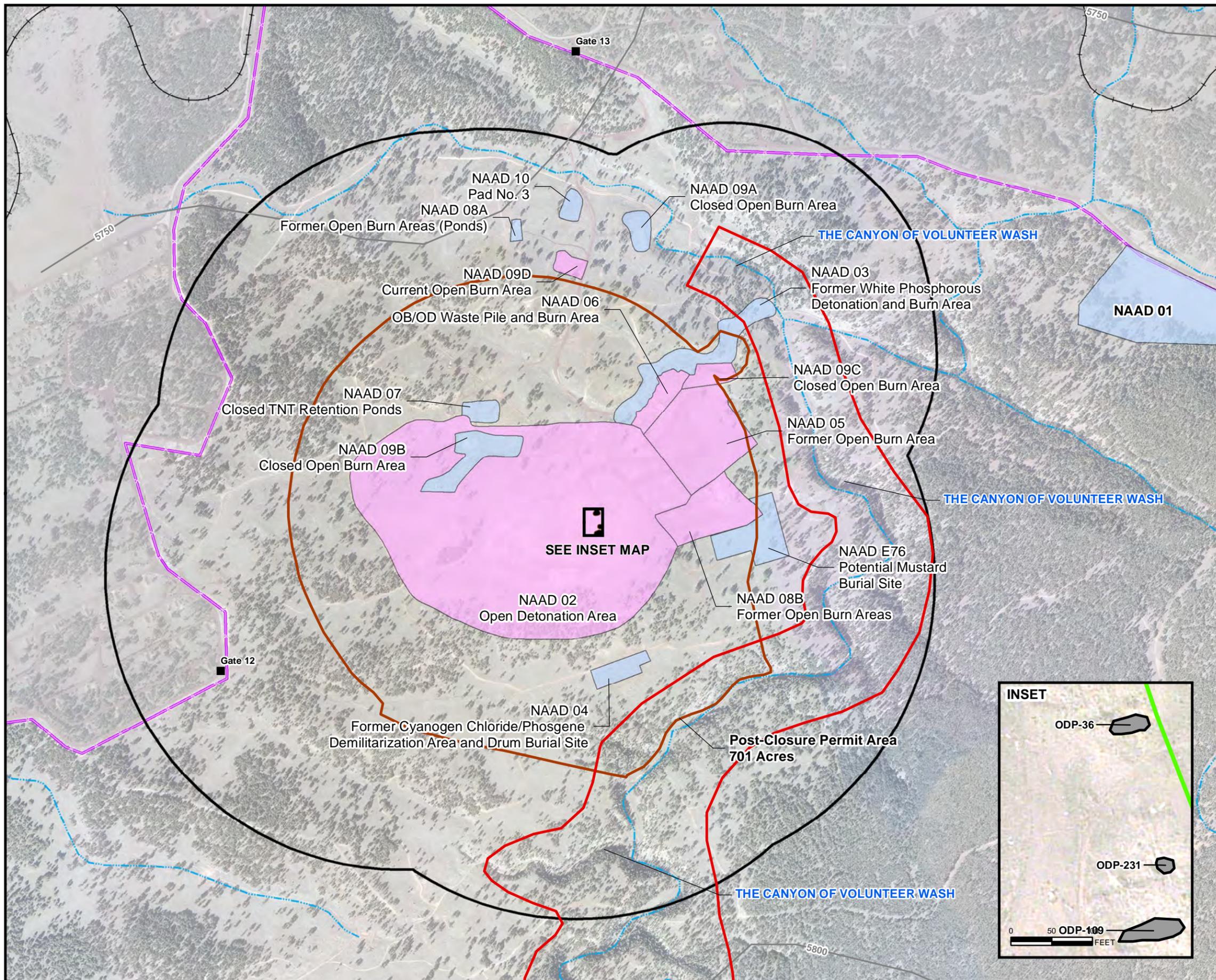


- LEGEND**
- BOUNDARY SYMBOLOGY**
- ▭ MRWA 02-02, SOLID WASTE MANAGEMENT UNIT AREA
 - ▭ POST-CLOSURE PERMIT AREA
 - ▭ SURFACE WATER CATCHMENT AREA
 - ✕ LIMITED AREA PERIMETER FENCE
 - BACKFILLED OD PIT
 - NOT FILLED OD PIT
 - OPEN DETONATION PITS TO BE USED FOR EMERGENCY OPEN DETONATIONS
- OTHER SYMBOLOGY**
- LIMITED AREA PERIMETER GATE
 - ⊕ VADOSE ZONE MONITORING WELL
 - ⊗ MONITORING WELL
 - DANGER SIGNS SURROUNDING POST CLOSURE AREA
 - ROAD BARRIER
 - OLD STRUCTURES INSIDE POST CLOSURE AREA
 - 5 FT CONTOUR ELEVATION LINE
 - INTERMITTENT DRAINAGE
 - ROAD

NOTE:
 ROADS SHOWN WITHOUT BARRIERS ARE NOT VIABLE VEHICLE ENTRANCES AND ARE NOT MAINTAINED.



FIGURE B-2b
POST-CLOSURE PERMIT AREA
 RCRA POST-CLOSURE PERMIT APPLICATION
 CAMP NAVAJO, BELLEMONT, ARIZONA



LEGEND

BOUNDARY SYMBOLOGY

- MRWA 02-02 SOLID WASTE MANAGEMENT UNIT AREA
- POST-CLOSURE PERMIT AREA
- LIMITED AREA
- RCRA INTERIM STATUS PERMIT SITES
- SOLID WASTE MANAGEMENT UNITS IDENTIFIED DURING THE RCRA FACILITY ASSESSMENT (URIBE, 1994)
- EMERGENCY OPEN DETONATION PIT SITES
- OPEN DETONATION PITS TO BE USED FOR EMERGENCY OPEN DETONATIONS
- LIMITED AREA PERIMETER FENCE

OTHER SYMBOLOGY

- GATE
- STEADY STATE REGIONAL AQUIFER WATER LEVEL ELEVATIONS (SOURCE: USGS, 2007 AND BROWN AND CALDWELL, 2008)
- INTERMITTENT DRAINAGE
- BOUNDARY DELINEATING STEEP CANYON WALLS OF VOLUNTEER WASH
- ROAD
- RAILROAD

NOTE:
 VADOSE ZONE MONITORING WELL AND REGIONAL AQUIFER WELL LOCATIONS SHOWN ON FIGURE GWMP-1 AND FIGURE GWMP-2 OF THE GROUNDWATER MONITORING PLAN

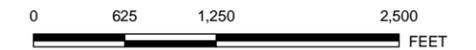
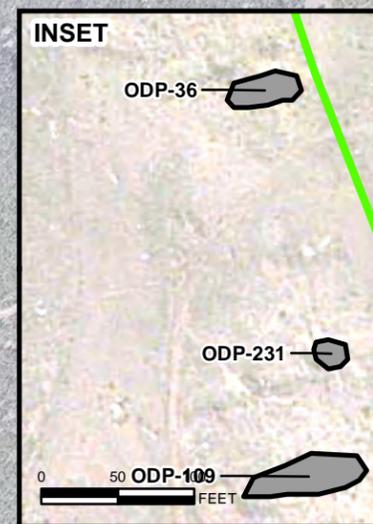
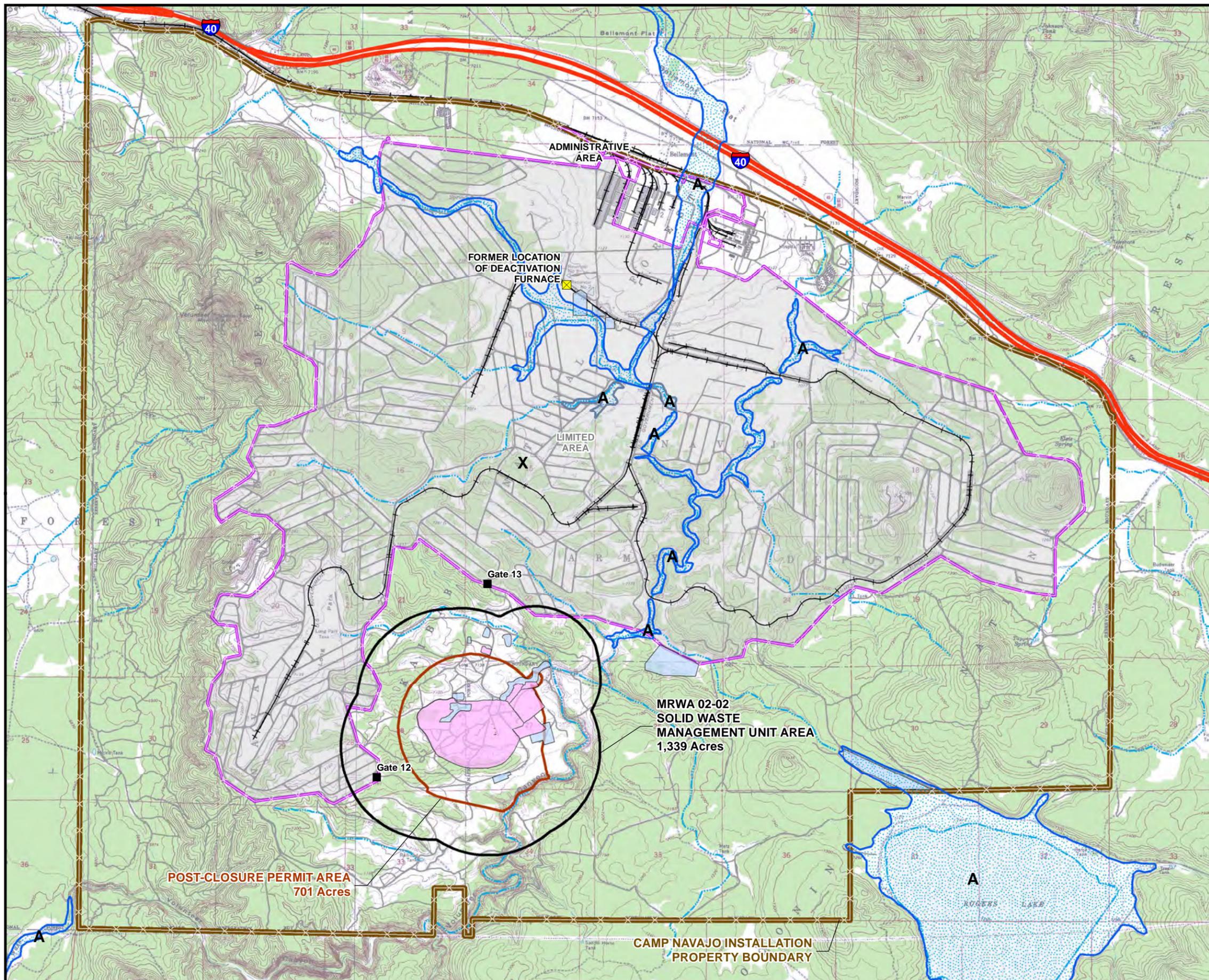


FIGURE B-3
MUNITIONS RESPONSE
WORK AREA 02 FORMER
TREATMENT STORAGE AND
DISPOSAL AREAS
 RCRA POST-CLOSURE PERMIT APPLICATION
 CAMP NAVAJO, BELLEMONT, ARIZONA



- LEGEND**
- BOUNDARY SYMBOLOGY**
- MRWA 02-02 SOLID WASTE MANAGEMENT UNIT AREA
 - POST-CLOSURE PERMIT AREA
 - LIMITED AREA
 - RCRA INTERIM STATUS PERMIT SITES
 - SOLID WASTE MANAGEMENT UNITS IDENTIFIED DURING THE RCRA FACILITY ASSESSMENT (URIBE, 1994)
 - CAMP NAVAJO INSTALLATION PROPERTY BOUNDARY
 - LIMITED AREA PERIMETER FENCE
- OTHER SYMBOLOGY**
- GATE
 - FORMER LOCATION OF DEACTIVATION FURNACE
 - INTERMITTENT DRAINAGE
 - INTERSTATE
 - ROAD
 - RAILROAD
- FLOOD ZONE**
- A AREAS SUBJECT TO INUNDATION BY THE 1-PERCENT-ANNUAL-CHANCE FLOOD EVENT. BECAUSE DETAILED HYDRAULIC ANALYSES HAVE NOT BEEN PERFORMED, NO BASE FLOOD ELEVATIONS (BFES) OR FLOOD DEPTHS ARE SHOWN.
 - X MINIMAL RISK AREAS OUTSIDE THE 1-PERCENT AND .2-PERCENT-ANNUAL-CHANCE FLOODPLAINS. NO BFES OR BASE FLOOD DEPTHS ARE SHOWN WITHIN THESE ZONES.

SOURCE: FEMA, 2010.

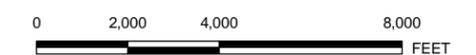
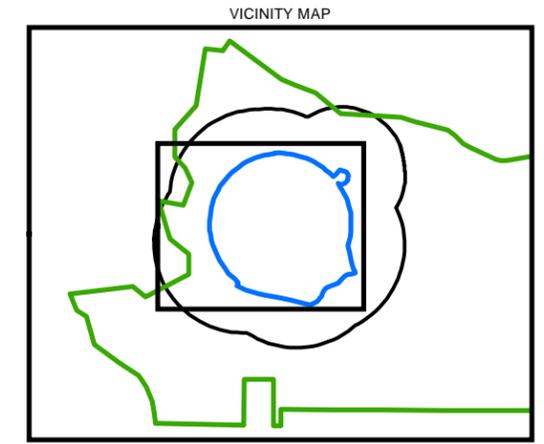
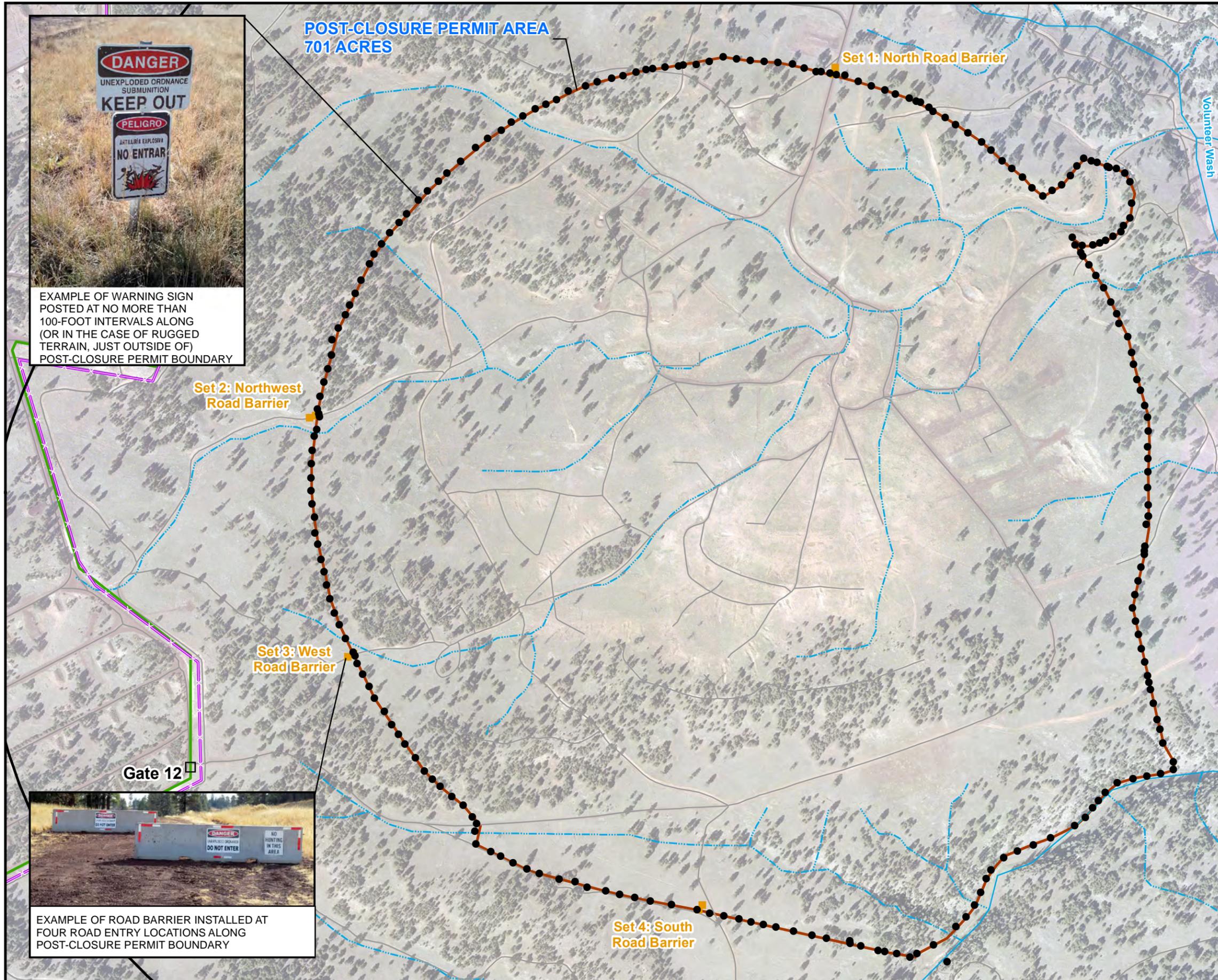
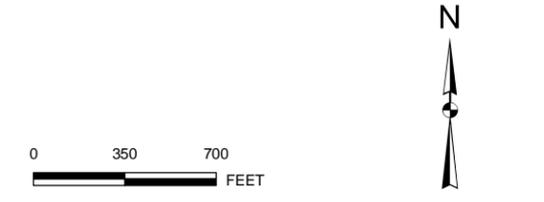


FIGURE B-4
CAMP NAVAJO
100-YEAR FLOODPLAIN
 RCRA POST-CLOSURE PERMIT APPLICATION
 CAMP NAVAJO, BELLEFONT, ARIZONA

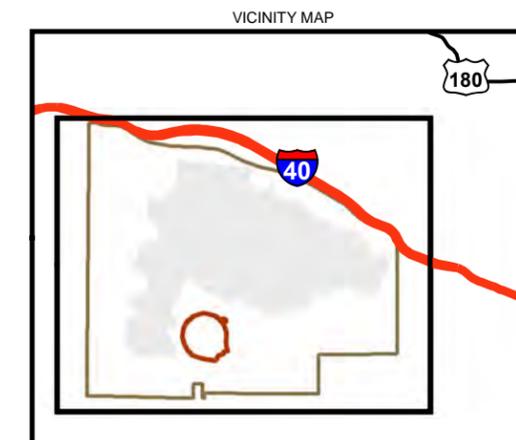
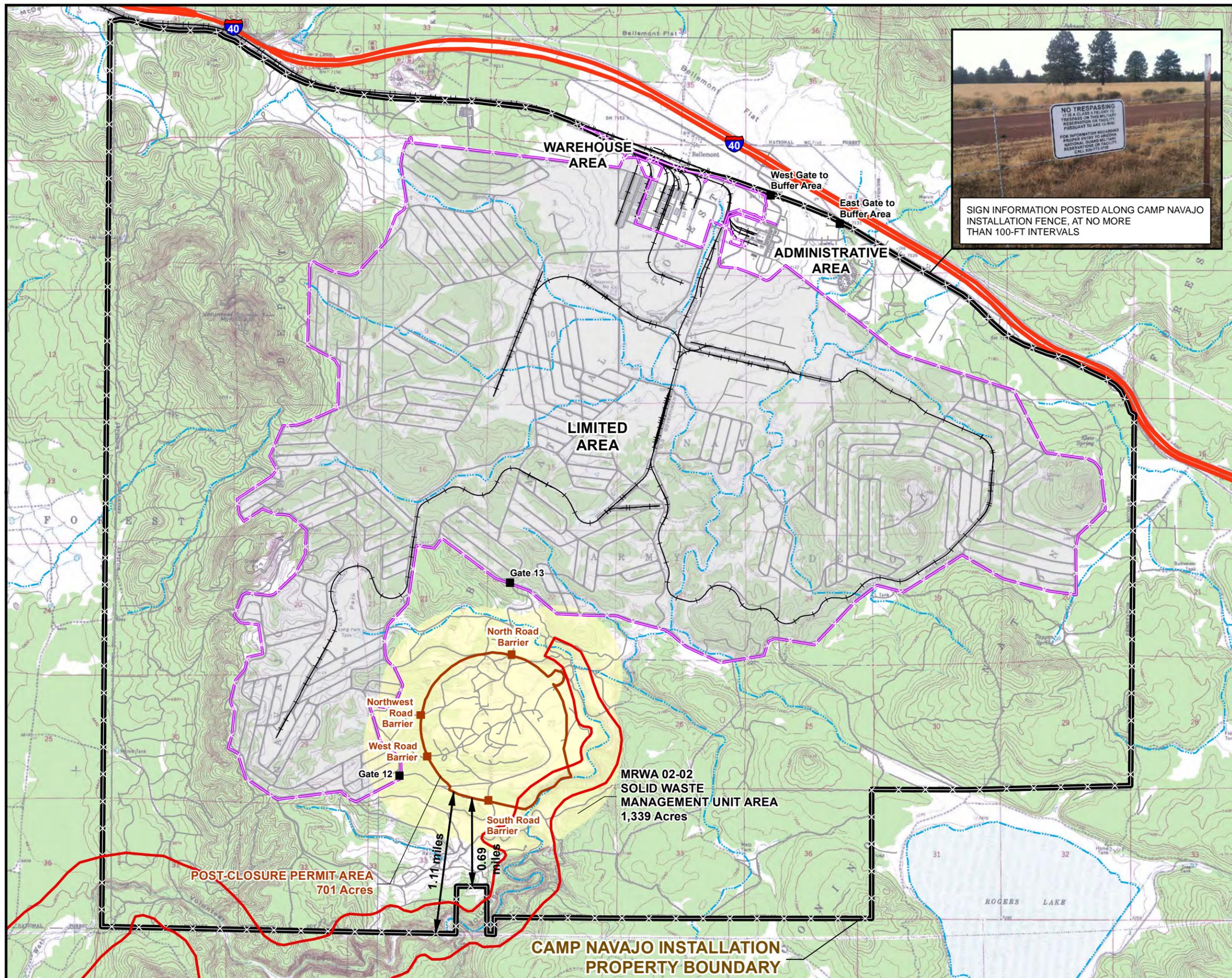


- LEGEND**
- DANGER SIGNS
 - ROAD BARRIER
- BOUNDARY SYMBOLOGY**
- MRWA BOUNDARY
 - ▭ FORMER OB/OD AREA BOUNDARY
 - ▭ POST-CLOSURE PERMIT AREA
 - ✂ LIMITED AREA PERIMETER FENCE
- OTHER SYMBOLOGY**
- DRAINAGE
 - - - INTERMITTENT DRAINAGE
 - ROAD
 - RAILROAD

NOTE:
ROADS SHOWN WITHOUT BARRIERS ARE NOT VIABLE VEHICLE ENTRANCES AND ARE NOT MAINTAINED.



**FIGURE B-5
ACCESS CONTROLS –
POST-CLOSURE PERMIT AREA**
RCRA POST-CLOSURE PERMIT APPLICATION
CAMP NAVAJO, BELLEMONT, ARIZONA



- LEGEND**
- BOUNDARY SYMBOLOGY**
- POST-CLOSURE PERMIT AREA
 - LIMITED AREA
 - MRWA 02-02 SOLID WASTE MANAGEMENT UNIT AREA
 - CAMP NAVAJO INSTALLATION BOUNDARY AND FENCE
 - LIMITED AREA PERIMETER FENCE
 - STEEP CANYON WALLS OF VOLUNTEER WASH
- OTHER SYMBOLOGY**
- GATE
 - ROAD BARRIER
 - INTERMITTENT DRAINAGE
 - INTERSTATE
 - ROAD
 - RAILROAD

NOTE:
 INSTALLATION BOUNDARY FENCE CONSTRUCTED OF 3-STRAND BARBED-WIRE MOUNTED ON T-POSTS WITH OCCASIONAL LOW-PROFILE SMOOTH-WIRE SEPARATIONS TO ALLOW FOR WILDLIFE PASSAGE.

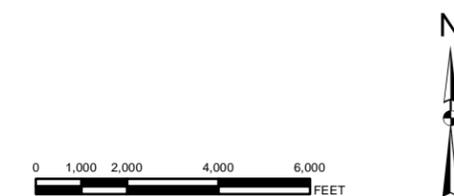


FIGURE B-6
ACCESS CONTROLS -
CAMP NAVAJO INSTALLATION
 RCRA POST-CLOSURE PERMIT APPLICATION
 CAMP NAVAJO, BELLEMONT, ARIZONA

Appendix C
Copies of Post-closure Notices and
Pre-Application Meeting Information

Closure Certification Forms

DEPARTMENTS OF THE ARMY AND THE AIR FORCE

Joint Force Headquarters - Arizona
5636 East McDowell Road
Phoenix, Arizona 85008-3495

May 17, 2016

Mr. Anthony Leverock
Permits and Plan Review Unit Supervisor
Waste Programs Division
Arizona Department of Environmental Quality
1110 West Washington Street
Phoenix, Arizona 85007

Dear Mr. Leverock:

The Arizona Army National Guard (AZARNG) is pleased to submit the amended survey plat for the hazardous waste post-closure permit application for Camp Navajo, Bellemont, Arizona.

In accordance with Arizona Administrative Code R18-8-264.A (40 CFR 264.115, 264.116 and 264.119) and as required by your department (letter dated 1 February 2016), the amended survey plat is certified by a Professional Land Surveyor and will be provided to the AZARNG's Planning and Programming Office for inclusion in the installation's master plan.

The updated Operator and Professional Engineer closure certification forms are enclosed with the amended survey. On 9 May 2016, the Arizona Department of Environmental Quality (ADEQ) Federal Projects Unit provided concurrence with the *Final After Action Report, Munitions Response Work Area 02 and Navajo Army Depot (NAAD) 02, Camp Navajo, Bellemont, Arizona* dated March 2016. This was the final closure document for the former interim status units at the facility.

If you have any questions, please contact Ms. Kim Birdsall of my staff at (602) 267-2498 or kim.birdsall@fmo.azdema.gov.

Sincerely,

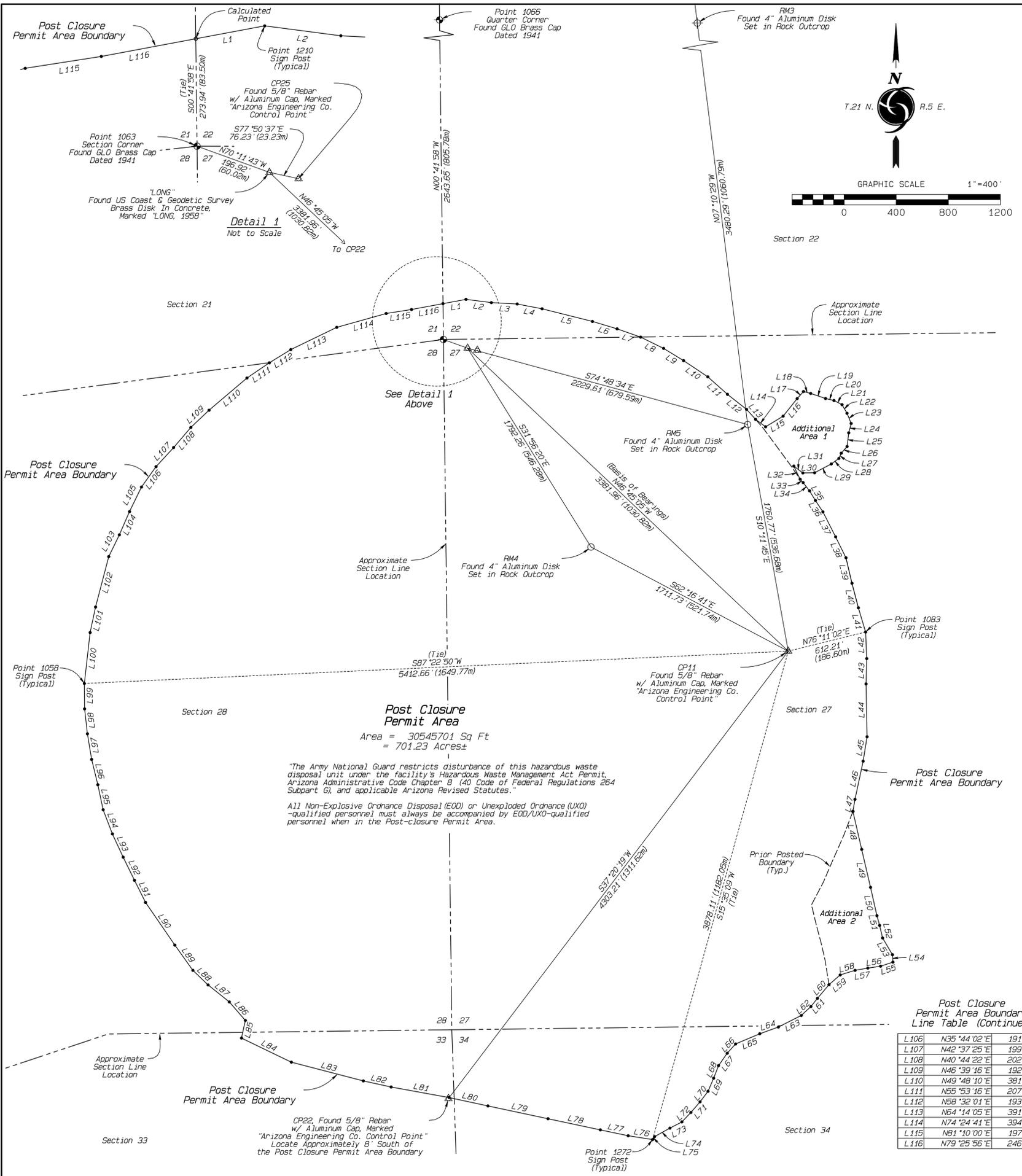


Matthew D. Stubbs
Colonel, Arizona Army National Guard
Construction and Facilities Management Officer

Enclosures

cc:

LTC Brian Saunders, ARNG-IED Cleanup Program Manager
LTC John Ladd, AZARNG Environmental Program Manager
Patrick Shaw, ARNG-IED Cleanup and Restoration Branch Chief
Randall Wilkinson, ARNG-IED/CEMML Cleanup Support Manager
David Annis, AZARNG Compliance Program Manager
Kim Birdsall, AZARNG Restoration Program Manager
Karin Harker, ADEQ Federal Projects Unit Project Manager
Diana Deming, ADEQ Permits and Plan Review Unit Project Manager
Michael Heitmann, CH2M Project Manager



Post Closure Permit Area Boundary Line Table

LINE	BEARING	DISTANCE
L1	N79°28'37"E	179.62'
L2	S82°37'29"E	196.52'
L3	S87°01'34"E	198.51'
L4	S79°05'50"E	194.84'
L5	S75°56'48"E	398.76'
L6	S73°22'19"E	197.89'
L7	S70°45'58"E	191.27'
L8	S64°01'20"E	195.99'
L9	S58°34'38"E	179.77'
L10	S56°24'10"E	224.50'
L11	S48°22'44"E	201.19'
L12	S51°49'43"E	186.68'
L13	S42°21'40"E	103.25'
L14	S53°20'07"E	95.52'
L15	N58°48'56"E	157.55'
L16	N38°48'07"E	172.60'
L17	N41°59'16"E	72.33'
L18	S75°17'10"E	57.04'
L19	S71°12'45"E	120.61'
L20	S76°40'18"E	66.47'
L21	S62°58'11"E	69.71'
L22	S29°58'13"E	75.86'
L23	S22°18'23"E	84.60'
L24	S14°37'44"W	74.02'
L25	S06°58'34"W	105.49'
L26	S41°13'14"W	67.69'
L27	S24°35'04"W	44.00'
L28	S53°56'00"W	72.19'
L29	S62°15'51"W	144.58'
L30	S89°03'37"W	89.97'
L31	N63°13'01"W	87.37'
L32	S25°57'09"E	111.76'
L33	S41°41'34"E	34.14'
L34	S38°09'13"E	79.80'
L35	S31°33'01"E	86.85'
L36	S33°24'03"E	104.65'
L37	S27°03'49"E	214.41'
L38	S26°22'13"E	178.51'
L39	S13°19'55"E	200.05'
L40	S14°41'02"E	194.14'
L41	S16°40'33"E	193.50'
L42	S02°28'53"E	203.15'
L43	S01°35'51"W	193.94'
L44	S01°05'24"E	404.64'
L45	S09°10'21"W	189.12'
L46	S12°10'04"W	298.46'
L47	S09°39'37"W	93.39'
L48	S13°05'44"E	298.29'
L49	S13°11'59"E	298.08'
L50	S12°41'41"E	222.28'
L51	S15°36'51"E	77.24'
L52	S13°21'45"E	98.83'
L53	S30°38'34"E	148.34'
L54	S04°06'53"E	57.12'
L55	S71°58'24"W	100.14'
L56	S81°34'38"W	99.38'
L57	S79°57'51"W	98.89'
L58	S72°53'46"W	119.93'
L59	S49°09'00"W	113.47'
L60	S40°19'08"W	137.45'
L61	S38°36'10"W	80.10'
L62	S47°22'31"W	100.75'
L63	S63°11'33"W	197.04'
L64	S70°26'36"W	151.80'
L65	S67°04'35"W	201.44'
L66	S42°15'00"W	95.39'
L67	S35°17'35"W	116.28'
L68	S21°15'02"W	102.76'
L69	S23°22'54"W	109.39'
L70	S37°09'36"W	101.20'
L71	S40°56'24"W	107.69'
L72	S43°40'42"W	100.39'
L73	S62°39'40"W	103.34'
L74	S61°11'10"W	134.27'
L75	S34°18'19"W	27.29'
L76	N81°07'13"W	189.82'
L77	N78°09'25"W	218.22'
L78	N78°03'42"W	410.92'
L79	N77°59'35"W	472.11'
L80	N77°51'50"W	305.64'
L81	N79°45'56"W	452.09'
L82	N77°42'52"W	218.27'
L83	N75°27'44"W	571.44'
L84	N64°16'40"W	424.88'
L85	N12°19'34"E	138.19'
L86	N41°01'26"W	187.48'
L87	N51°25'43"W	208.95'
L88	N46°20'07"W	161.81'
L89	N35°38'15"W	237.04'
L90	N34°37'45"W	396.67'
L91	N26°36'20"W	189.14'
L92	S26°09'50"E	197.26'
L93	N24°56'09"W	195.89'
L94	N21°05'21"W	198.59'
L95	N11°59'40"W	195.10'
L96	N13°49'36"W	199.51'
L97	N09°23'27"W	198.49'
L98	N06°31'27"W	191.96'
L99	N00°27'19"W	194.28'
L100	N06°27'49"E	391.99'
L101	N12°07'13"E	199.72'
L102	N14°40'49"E	398.56'
L103	N26°08'12"E	185.26'
L104	N23°43'33"E	194.15'
L105	N26°03'46"E	209.35'
L106	N35°44'02"E	191.78'
L107	N42°37'25"E	199.29'
L108	N40°44'22"E	202.39'
L109	N46°39'16"E	192.04'
L110	N49°48'10"E	381.58'
L111	N55°53'16"E	207.29'
L112	N58°32'01"E	193.78'
L113	N64°14'05"E	391.82'
L114	N74°24'41"E	394.05'
L115	N81°10'00"E	197.21'
L116	N79°25'56"E	246.03'

Post Closure Permit Area Boundary Line Table (Continued)

L106	N35°44'02"E	191.78'
L107	N42°37'25"E	199.29'
L108	N40°44'22"E	202.39'
L109	N46°39'16"E	192.04'
L110	N49°48'10"E	381.58'
L111	N55°53'16"E	207.29'
L112	N58°32'01"E	193.78'
L113	N64°14'05"E	391.82'
L114	N74°24'41"E	394.05'
L115	N81°10'00"E	197.21'
L116	N79°25'56"E	246.03'

Survey Notes:

Basis of Bearing and Coordinates:
 All dimensions shown on this plat are measured and based on the following projection information.
 Linear Unit: International Foot
 Geodetic Datum: North American Datum of 1983 (NAD83)
 System: Arizona State Plane Coordinates (Modified)
 Zone = Arizona Central 0202
 Projection: Transverse Mercator
 Latitude of Grid Origin: 31°00'00.0000"N
 Longitude of Grid Origin: 110°10'00.0000"W
 Northing at Grid Origin: 0.000
 Easting at Grid Origin: 700000.00

Project Projected to Ground About Point CP1
 Point CP1 Latitude = N35°10'23.11431"
 Point CP1 Longitude = W111°51'06.95864"
 Combined Scale Factor = 1.0004348018
 Vertical Datum: NAVD 88
 Geoid Model = GEOID12a

The basis of bearings is true geodetic north. Grid bearings shown hereon do not equal geodetic bearings due to meridian convergence. All bearings shown are grid bearings.

This survey was conducted using GPS referenced to the National Spatial Reference System. Coordinates for GPS control points were derived using the National Geodetic Survey's, Online Positioning User Service (OPUS), REF FRAME: NAD_83(2011)(EPOCH+2010.0000).

Existing survey reference monuments found during the course of this survey were left undisturbed.

Note: This plat was prepared using the above stated projection information in order to show actual ground distances between reference monuments and the Post Closure Permit boundary, and to show an accurate area in acres for the boundary at ground. Distances shown on this plat are in international feet. The distances shown in meters in parenthesis are direct conversions from International feet at ground.

The table below shows latitude and longitude, UTM Zone 12 North coordinate values at grid in meters and state plane coordinate values at grid in international feet for reference monuments and tie points to the Post Closure Permit Area boundary.

Prior survey work done in conjunction with remediation activities that took place in 2007 and 2008, which established the Post Closure Permit Area boundary, was performed using UTM Zone 12 North coordinates at grid, in meters.

The sign posts locations which define the Post Closure Permit Area boundary shown hereon were located in conjunction with the remediation activities that took place in 2007 and 2008. Those remediation activities ended at the posted boundary, except for Additional Areas 1 & 2 shown hereon. Additional sign posts have been added to the boundary since the 2007 and 2008 remediation activities.

The Post Closure Permit Area boundary is marked by sign posts only. The sign posts consist of an aluminum post and warning sign. No permanent monumentation was established for the boundary.

Point Coordinate Table:

Point	Latitude (NAD83)	Longitude (NAD83)	Height (M)
CP25	N35°10'45.88005"	W111°51'35.70732"	2152.947
LONG	N35°10'46.03950"	W111°51'36.60523"	2153.567
RM4	N35°10'30.99638"	W111°51'25.19856"	2125.006
RM5	N35°10'40.25034"	W111°51'10.69830"	2120.793
1063	N35°10'46.69991"	W111°51'38.83603"	2150.966
1066	N35°11'12.83655"	W111°51'39.20666"	2145.039
RM3	N35°11'14.39353"	W111°51'15.90668"	2147.970
CP22	N35°09'49.30283"	W111°51'38.40971"	2136.130
CP11	N35°10'23.11431"	W111°51'06.95864"	2140.246

(Tie Points to the Post Closure Permit boundary)

1012	N35°10'49.73190"	W111°51'36.74733"	2048.830
1058	N35°10'20.69841"	W111°52'12.06759"	2048.791
1083	N35°10'24.55590"	W111°50'59.79892"	2048.834
1272	N35°09'46.18744"	W111°51'19.53308"	2048.799

UTM Zone 12 North Coordinates, at Grid Point

Point	Northing (Meter)	Easting (Meter)	Elevation (Meter)
CP25	3893277.906	421701.659	2176.119
LONG	3893283.015	421678.990	2176.740
RM4	3892817.096	421963.507	2148.182
RM5	3893099.026	422332.729	2143.955
1063	3893303.848	421622.742	2174.139
1066	3894109.110	421620.339	2168.197
RM3	3894151.992	422210.028	2171.115
CP22	3891535.548	421618.224	2159.340
CP11	3892570.313	422422.796	2163.417

(Tie Points to the Post Closure Permit boundary)

1012	3893396.796	421676.380	2072.000
1058	3892510.145	420775.204	2072.000
1083	3892613.174	422604.282	2072.000
1272	3891435.455	422094.941	2072.000

Arizona State Plane Coordinates, Central Zone at Grid Point

Point	Northing (1ft)	Easting (1ft)	Elevation (1ft)
CP25	1520597.01	716957.25	7139.50
LONG	1520613.09	716882.71	7141.53
RM4	1519092.81	717830.43	7047.84
RM5	1520029.12	719033.48	7033.97
1063	1520679.75	716697.50	7133.00
1066	1523322.10	716665.26	7113.51
RM3	1523480.65	718598.99	7123.08
CP22	1514877.05	716736.16	7084.45
CP11	1518296.90	719345.02	7097.82

(Tie Points to the Post Closure Permit boundary)

1012	1520986.38	716870.70	6797.90
1058	1518049.63	713940.37	6797.90
1083	1518443.03	719939.26	6797.90
1272	1514563.01	718303.50	6797.90

Camp Navajo Post Closure Permit Area Boundary
 Located in Sections 21, 22, 28, 27, 33 & 34, Township 21 North, Range 5 East, Gila & Salt River Baseline & Meridian, Coconino County, Arizona

Owner:
 Arizona Army National Guard

ARIZONA SURVEYING
 Arizona Surveying, Inc
 1843 N. Heavenly Ct
 Flagstaff, AZ 86001
 John Luckow, RLS
 Tel: (928) 601-1042

JOB NO: _____
 DRAWN BY: JLS
 DATE: 4-28-16
 SCALE: 1" = 400'
 REVISIONS:
 SHEET 1 OF 1

**FACILITY CLOSURE
OWNER OR OPERATOR CERTIFICATION**

(The owner or operator must certify that the activities performed in closing the facility are in accordance with the specifications of the closure plan approved by the Arizona Department of Environmental Quality, Waste Programs Division. Accordingly, the certification will be straightforward, no matter how complex closure itself has been.[40 CFR 264.115 as adopted by A.A.C. R18-8-264.A or 40 CFR 265.115 as adopted by A.A.C. R18-8-265])

I, COL Matthew D. Stubbs, CFMO, of
Owner or Operator

Camp Navajo, Bellemont, Arizona

Name and address of hazardous waste facility

hereby state and certify that, to the best of my knowledge and belief, the above-named hazardous waste facility has been closed in accordance with specifications of the approved closure plan, and that the closure was completed on the 18th day of November, 2015.


Signature

17 May 24 16
Date

Professional Engineer Certification

An independent registered professional engineer(s) must certify that the facility has been closed in accordance with the approved closure plan. The engineer is not certifying the adequacy of the activities or the plan; he is certifying only that, in his judgment, the activities performed were in accordance with the specifications in the approved plan. At final closure the professional engineer who certifies that closure has been completed may rely in part on earlier certifications of any partial closures and in part on his inspections of the facility as a whole to ensure that those partially closed areas have been maintained [40 CFR 264.115 as adopted by A.A.C. R18-8-264.A or 40 CFR 265.115 as adopted by A.A.C. R18-8-265]).

Certification of Closure for the following interim status (IS) units NAAD 05, NAAD 06, NAAD 08B, NAAD 09C, and NAAD 09D is based on information provided in the reports and ADEQ approvals/concurrences presented in Exhibit 1.

Closure activities for IS unit NAAD 02, which contains IS unit NAAD 09B, have been conducted in accordance with the ADEQ-approved documents presented in Exhibit 2, in lieu of an approved Closure Plan.

Certification of closure of these units also certifies closure of the interim status hazardous waste-related activities at the facility.

I, Lara Pollitt Mugge a registered professional engineer, hereby certify that closure activities at NAADs 05, 06, 08B, 09C, and 09D were completed based on the information provided in the documents presented in Exhibit 1 and ADEQ approvals of the work performed for all prior closure activities. I also certify that closure activities for NAAD 02, including NAAD 09B, have been completed in accordance with the work plans, documents, and ADEQ approvals presented in Exhibit 2, in lieu of an approved ADEQ Closure Plan for the facility:

Camp Navajo, Bellemont, Arizona

(Name and address of hazardous waste facility)

I have made visual inspection(s) of NAAD 02 at the aforementioned facility. Closure of the aforementioned facility has been performed in accordance with the plans, reports, and ADEQ approvals presented in Exhibit 1 and Exhibit 2.


Signature

5-17-16

Date

*Professional Seal (Pursuant to A.R.S. §32-125)
Issued by the Arizona State Board of Technical Registration*



Exp. 9-30-18

Exhibit 1

RCRA Part B Permit Closure Documentation and Correspondence for NAADs 05, 06, 08B, 09C, and 09D
Camp Navajo, Bellemont, Arizona

Interim Status Hazardous Waste Management Units	Closure Documents	Date of Closure Documents
NAAD 05	Final NAAD 05 Remedial Investigation Report and Risk Screening Evaluation, Camp Navajo, Bellemont, Arizona, prepared by AMEC	May 31, 2006
	ADEQ Concurrence on Remedial Investigation Report and Risk Screening Evaluation for NAAD 05	June 29, 2006
	Final NAAD 05 Interim Removal Action Report, Camp Navajo, Bellemont, Arizona, prepared by AMEC	September 29, 2006
	ADEQ Concurrence on Interim NAAD 05 Removal Action Report	November 24, 2006
	Final NAAD 05 Human and Ecological Risk Assessment (HERA), Camp Navajo, Bellemont, Arizona, prepared by AMEC	June 21, 2007
	ADEQ Approval of NAAD 05 HERA	July 16, 2007
	<i>Final Decision Document for Site-Related Chemical Constituents at Four RCRA Open Burn Sites (NAADs 05, 06, 08B and 09D), Camp Navajo, Coconino County, Bellemont, Arizona, prepared by AMEC</i>	December 11, 2009 (signed by ADEQ on January 7, 2010)
NAAD 06	Final NAAD 06 Remedial Investigation Report and Risk Screening Evaluation, Camp Navajo, Bellemont, Arizona, prepared by AMEC	May 31, 2006
	ADEQ Concurrence on NAAD 06 Remedial Investigation Report and Risk Screening Evaluation	June 29, 2006
	Final NAAD 06 Human and Ecological Risk Assessment (HERA), Camp Navajo, Bellemont, Arizona, prepared by AMEC	May 21, 2008
	ADEQ Approval of NAAD 06 HERA	April 22, 2008
	<i>Final Decision Document for Site-Related Chemical Constituents at Four RCRA Open Burn Sites (NAADs 05, 06, 08B and 09D), Camp Navajo, Coconino County, Bellemont, Arizona, prepared by AMEC</i>	December 11, 2009 (signed by ADEQ on January 7, 2010)
NAAD 08B	Final NAAD 08B Remedial Investigation Report and Risk Screening Evaluation, Camp Navajo, Bellemont, Arizona, prepared by AMEC	October 12, 2005
	ADEQ Concurrence on NAAD 08B Remedial Investigation Report and Risk Screening Evaluation	December 13, 2005
	Final NAAD 08B Human and Ecological Risk Assessment (HERA), Camp Navajo, Bellemont, Arizona, prepared by AMEC	April 10, 2006
	ADEQ Concurrence on NAAD 08B HERA	May 3, 2006
	<i>Final Decision Document for Site-Related Chemical Constituents at Four RCRA Open Burn Sites (NAADs 05, 06, 08B and 09D), Camp Navajo, Coconino County, Bellemont, Arizona, prepared by AMEC</i>	December 11, 2009 (signed by ADEQ on January 7, 2010)

Exhibit 1

**RCRA Part B Permit Closure Documentation and Correspondence for NAADs 05, 06, 08B, 09C, and 09D
Camp Navajo, Bellemont, Arizona**

Interim Status Hazardous Waste Management Units	Closure Documents	Date of Closure Documents
NAAD 09C	<i>Final Decision Document for Removal Action NAAD 09C Closed Open Burn Area, Camp Navajo, Bellemont, Arizona prepared by Brown and Caldwell</i>	October 7, 2004 (signed by ADEQ on November 24, 2004)
	Final Removal Action Completion Report, NAAD 09C Closed Open Burn Area, Camp Navajo, Bellemont, Arizona	August 1, 2008
	ADEQ Concurrence on NAAD 09C Final Removal Action Completion Report	July 31, 2008
	Explanation of Significant Differences, Final Decision Document, Removal Action NAAD 09C Closed Open Burn Area, Camp Navajo, Bellemont, Arizona, prepared by Brown and Caldwell	September 21, 2009 (signed by ADEQ on October 27, 2009)
	Soil Stockpile Field Management Technical Memorandum, NAAD 02 and NAAD 09C, OB/OD Area Closure Program, Camp Navajo, Arizona, prepared by CH2M HILL	February 2, 2011
	ADEQ Concurrence on Soil Stockpile Field Management Technical Memorandum for NAAD 02 and NAAD 09C	March 1, 2011
NAAD 09D	Final NAAD 09D Remedial Investigation and Risk Screening Evaluation prepared by AMEC	October 7, 2005
	ADEQ Concurrence on NAAD 09D Remedial Investigation and Risk Screening Investigation	November 5, 2005
	Final NAAD 09D Ecological Risk Assessment, prepared by AMEC	October 7, 2005
	ADEQ Concurrence on NAAD 09D Ecological Risk Assessment	January 6, 2006
	<i>Final Decision Document for Site-Related Chemical Constituents at Four RCRA Open Burn Sites (NAADs 05, 06, 08B and 09D), Camp Navajo, Coconino County, Bellemont, Arizona, prepared by AMEC</i>	December 11, 2009 (signed by ADEQ on January 7, 2010)

Notes:

ADEQ = Arizona Department of Environmental Quality

HERA = human and ecological risk assessment

NAAD = Navajo Army Depot

OB/OD = open burn/open detonation

RCRA = Resource Conservation and Recovery Act

Exhibit 2**RCRA Part B Permit Closure Documentation and Correspondence for NAAD 02***Camp Navajo, Bellemont, Arizona*

Interim Status Hazardous Waste Management Units	Closure Documents	Date of Closure Documents
NAAD 02 (including NAAD 09B)	Summary Letter Report of the Open Detonation Pit Sampling Event at Camp Navajo, Bellemont, Arizona, prepared by Brown and Caldwell	July 20, 2003
	ADEQ Concurrence on Summary Letter Report for NAAD 02	October 30, 2003
	Work Plan for NAAD 02, Site-Specific Soil Remedial Investigation/Feasibility Study, OB/OD Area Closure Project, Camp Navajo, Bellemont, Arizona, prepared by Brown and Caldwell	February 11, 2005
	Site-Specific Work Plan, Supplemental Characterization of MEC, NAAD 01, NAAD 02/03, and NAAD 20, Camp Navajo OB/OD Area, Bellemont, prepared by CH2M HILL	June 2006
	Site-Specific Soil Remedial Investigation Report for NAAD 02, OB/OD Area Closure Project, Bellemont, Arizona, prepared by Brown and Caldwell	April 30, 2007
	ADEQ Approval of NAAD 02 Site-Specific Soil Remedial Investigation Report	April 13, 2007
	NAAD 02/03 MEC Characterization Report, OB/OD Area Closure Project, Camp Navajo, prepared by CH2M HILL	May 2008
	ADEQ Concurrence on NAAD 02/03 MEC Characterization Report	May 5, 2008
	Soil Stockpile Field Management Technical Memorandum, NAAD 02 and NAAD 09C, OB/OD Area Closure Program, Camp Navajo, Arizona, prepared by CH2M HILL	February 2, 2011
	ADEQ Concurrence on Soil Stockpile Field Management Technical Memorandum for NAAD 02 and NAAD 09C	March 1, 2011
	Final Human and Ecological Risk Assessment (HERA), NAAD 02 OB/OD Area Closure Project, dated August 2014, revised December 2015, prepared by AMEC	August 2014
	ADEQ Concurrence on Revised Final HERA for NAAD 02	January 11, 2016
	After Action Report Munitions Response Work Area 02 and Navajo Army Depot (NAAD) 02, prepared by CH2M HILL	March 2016
	ADEQ Concurrence on After Action Report Munitions Response Work Area 02 and NAAD 02	May 9, 2016

Notes:

ADEQ = Arizona Department of Environmental Quality

HERA = human and ecological risk assessment

MEC = munitions and explosives of concern

MRA = munitions response area

MRS = munitions response site

MRWA = munitions response work area

NAAD = Navajo Army Depot

OB/OD = open burn/open detonation

RCRA = Resource Conservation and Recovery Act

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DEPARTMENT OF
EMERGENCY & MILITARY AFFAIRS
DIVISION OF MILITARY AFFAIRS
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PHOENIX, ARIZONA 85008
NGAZ-FMO-EM (Stubbs)

Waste Programs Division
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Post-Closure Certifications

DEPARTMENTS OF THE ARMY AND THE AIR FORCE

Joint Force Headquarters - Arizona
5636 East McDowell Road
Phoenix, Arizona 85008-3495

June 13, 2016

Construction and Facilities Management Office – Environmental Section

Mr. Anthony Leverock
Permits and Plan Review Unit Supervisor
Waste Programs Division
Arizona Department of Environmental Quality
1110 West Washington Street
Phoenix, Arizona 85007

Dear Mr. Leverock:

Enclosed please find a copy of the Certification of Post-Closure Notice for the Notation to the Real Property Development Plan (Notation) for the Post-Closure Permit Area at Camp Navajo in Bellemont, Arizona.

The Notation has been submitted via memorandum (attached) to the Arizona Department of Emergency and Military Affairs Office of Planning and Programming which maintains jurisdiction over Camp Navajo's land use and is responsible for the development and management of Real Property Development Plans. The Notation has been amended to the Camp Navajo Real Property Development Plan.

The Notation is being provided in lieu of a notation to the deed to the facility property since Camp Navajo is a federal facility. This is consistent with the information provided in the Camp Navajo RCRA Post-closure Permit Application for the Open Burning/Open Detonation Operations and with discussions held with ADEQ representatives.

The Notation to the Real Property Development Plan includes the following required information:

- a. Site description;
- b. Land use restrictions;
- c. Statement that the land was used to manage hazardous waste;
- d. Information regarding the type, location, and quantity of hazardous waste treated; and
- e. Survey plat indicating the location of the Post-Closure Permit Area.

If you have any questions, please contact Kim Birdsall of my staff at (602) 267-2498 or kim.birdsall@fmo.azdema.gov.

Sincerely,



Matthew D. Stubbs
Colonel, Arizona Army National Guard
Construction and Facilities Management Officer

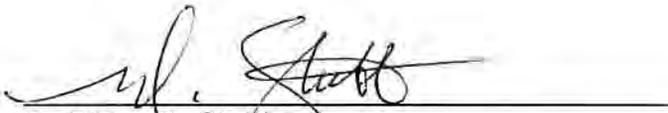
Enclosure

cc:

LTC Brian Saunders, ARNG-IED Cleanup Program Manager
LTC John Ladd, AZARNG Environmental Program Manager
Patrick Shaw, ARNG-IED Cleanup and Restoration Branch Chief
Randall Wilkinson, ARNG-IED/CEMML Cleanup Support Manager
David Annis, AZARNG Compliance Program Manager
Kim Birdsall, AZARNG Restoration Program Manager
Karin Harker, ADEQ Federal Projects Unit Project Manager
Diana Deming, ADEQ Permits and Plan Review Unit Project Manager
Michael Heitmann, CH2M Project Manager

**CERTIFICATION OF POST-CLOSURE NOTICE
NOTATION TO REAL PROPERTY DEVELOPMENT PLAN
POST-CLOSURE PERMIT AREA
CAMP NAVAJO, BELLEMONT, ARIZONA**

I hereby certify, based on knowledge and belief, that the Camp Navajo facility in Bellemont, Arizona has included the Notation to the Real Property Development Plan for the Post-Closure Permit Area, a copy of which is attached hereto, in the Camp Navajo Real Property Development Plan, as required for post-closure notice under 40 CFR 264.119(b).



Matthew D. Stubbs
Colonel, Arizona Army National Guard
Construction and Facilities Management Officer

20 June 2016
Date

Enclosure

DEPARTMENTS OF THE ARMY AND THE AIR FORCE

Joint Force Headquarters - Arizona
5636 East McDowell Road
Phoenix, Arizona 85008-3495

NGAZ-FMO-EM

13 June 2016

MEMORANDUM FOR LTC John S. Ladd, Acting Director of Planning and Programming, Arizona Army National Guard Construction and Facilities Management Office

SUBJECT: Notation to the Real Property Development Plan and Revised Survey Plat for Munitions Response Work Area (MRWA) 02/Navajo Army Depot (NAAD) 02, Camp Navajo

1. References:

- a. Memorandum, LTC John Ladd, LTC Matt Stubbs and Ms. Sandy Mallach, 19 November 2015, subject: Land Use Controls in Real Property Development Plans.
 - b. Memorandum, LTC John Ladd, Ms. Sandra Mallach, 17 December 2015, subject: Post-Closure Notice: Survey Plat for Munitions Response Work Area (MRWA) 02/Navajo Army Depot (NAAD) 02, Camp Navajo.
2. IAW 40 CFR §264.119, the attached notation and revised survey plat are being transmitted to your office for inclusion in the Camp Navajo Real Property Development Plan.
 3. The revised plat replaces the one previously transmitted to your office (Reference b).
 4. Please refer questions regarding this issue to myself at (602) 267-2498 or kim.birdsall@fmo.azdema.gov.

Encl



Kim T. Birdsall
Restoration Program Manager
Environmental Office

NOTATION TO THE REAL PROPERTY DEVELOPMENT PLAN CAMP NAVAJO, BELLEMONT, ARIZONA POST-CLOSURE PERMIT AREA

This document and the accompanying survey plat for the Post-Closure Permit Area at Camp Navajo in Bellemont, Arizona, are attached to the Camp Navajo Real Property Development Plan (RPDP) in accordance with the requirements of 40 Code of Federal Regulations (CFR) 264.119 and National Guard Pamphlet 210-20.

The Post-Closure Permit Area encompasses a 701-acre portion of the Former Open Burn/Open Detonation (OB/OD) Area at Camp Navajo. The Former OB/OD Area was used to demilitarize conventional munitions that had become obsolete or unserviceable. Munitions and explosives of concern (MEC) and associated munitions constituents (MC) are known or suspected to remain in the Post-Closure Permit Area.

Notification and Restrictions

- The Post-Closure Permit Area identified on the accompanying Survey Plat was used to manage hazardous wastes, including MEC and MC.
- Due to MEC and MC remaining within the Post-Closure Permit Area, use of the land is restricted under the following authorities:
 - Hazardous Waste Management Act Permit (*Post-Closure Permit*), Arizona Administrative Code, Title 18, Chapter 8 (40 CFR Parts 260 through 273) and applicable Arizona Revised Statutes (Arizona Department of Environmental Quality, in preparation).
 - *Concurrence with the Final After Action Report, Munitions and Explosives of Concern Response Actions, MRWA 01, MRWA 02 and MRWA 20, Camp Navajo, Arizona* (Department of Defense Explosive Safety Board, 2015).
 - *Approval of Request for ICM Waiver for the Open Burn/Open Detonation Area (OB/OD), Camp Navajo, Bellemont, Arizona* (Department of the Army Safety Office, 2003).
 - *Camp Navajo Request for Improved Conventional Munitions (ICM) Waiver Amendment 1* (Department of the Army Safety Office, 2008).
 - *Certificate of Risk Acceptance (CORA) for the ICM Waiver Area* (Arizona Department of Emergency and Military Affairs, 2011).
- For further information, contact the Arizona Department of Emergency and Military Affairs Environmental Program Manager at (602) 267-2742.

Type, Location, and Quantity of Hazardous Waste Treated in the Post-Closure Permit Area

OB/OD operations at Camp Navajo took place from the early 1940s through September 1994. Approximately 10 to 14 OD pits were generally active at any one time within the Post-Closure Permit Area during OB/OD operations. The maximum daily quantity of munitions detonated was estimated to be 1,120 pounds net explosive weight. Millions of munitions were reportedly destroyed at the Former OB/OD Area during historic operations. The total net explosive weight of munitions detonated is unknown. Munitions types and associated MC that may have been demilitarized in the Post-Closure Permit Area include:

Fuzes	Rockets	Pyrotechnics
Primers	Projectiles	Incendiaries
Detonators	Flares	Tracers
Igniters	Illuminators	Smokes
Actuators	Spotting charges	Chemical agents
Initiators	Improved Conventional Munitions	Dissolved MC residues in wastewater
Bombs	Small arms	Solid MC residues on soil after wastewater evaporation
Mortars	Propellants	
Mines	Explosives	MC-contaminated material
Grenades		

Pre-Application Meeting Documents

NOTICE OF PUBLIC MEETING

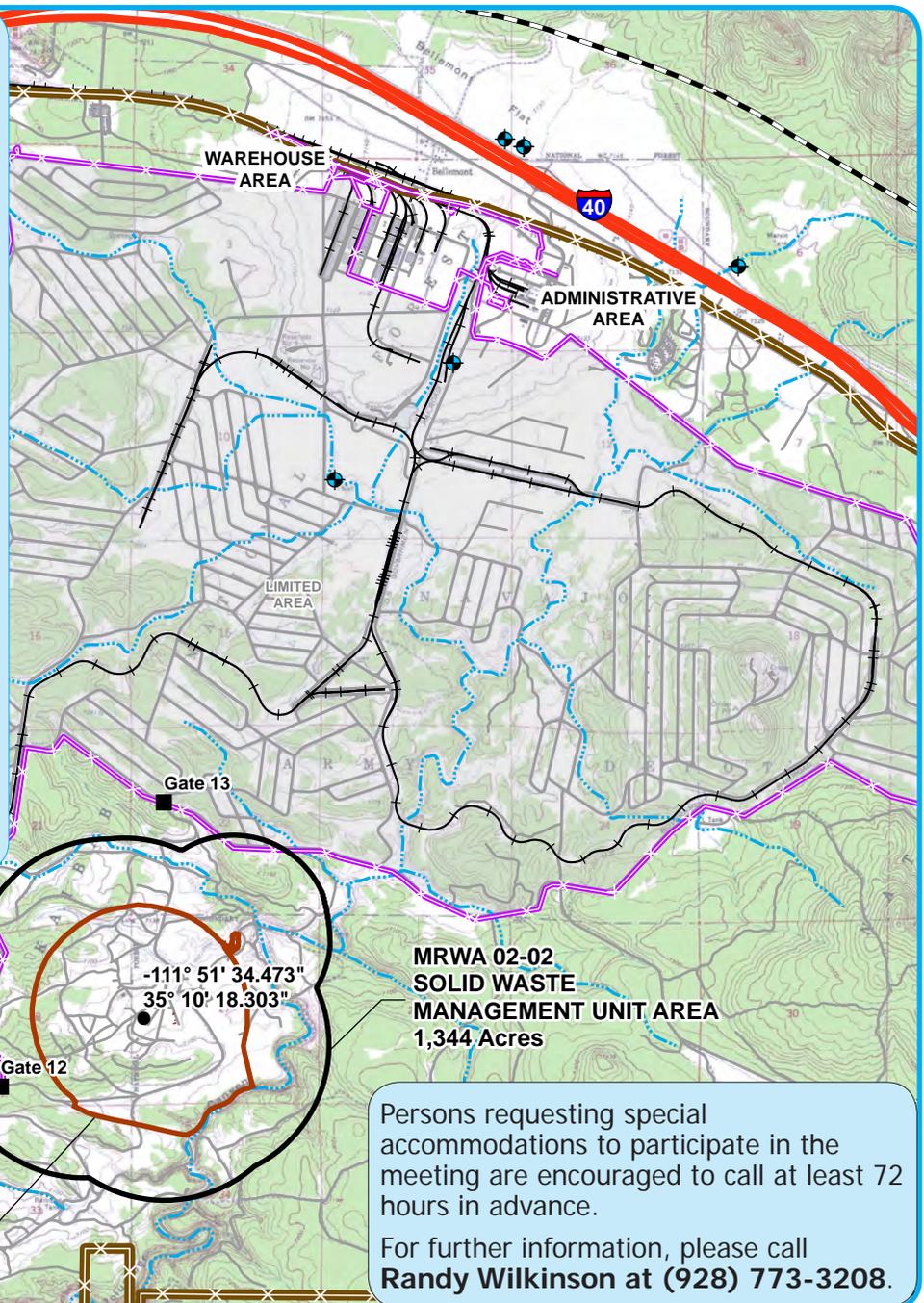
PRE-APPLICATION POST-CLOSURE PERMIT MEETING CAMP NAVAJO OLD OPEN BURN/OPEN DETONATION AREA

June 4, 7:00 PM; Doors open at 6:45 PM

Ponderosa Fire District Station
11951 Shadow Mountain Drive
Bellemont, Arizona

The Arizona Army National Guard will hold a meeting open to the public to inform and solicit questions from the community regarding the proposed hazardous waste management activities for the Old Open Burn/Open Detonation Area, located at Camp Navajo in Bellemont, Arizona. The Old Open Burn/Open Detonation Area is an approximate 696-acre area that was used for the disposal of munitions from the early 1940s until 1994. The Arizona Army National Guard is closing the Resource Conservation and Recovery Act (RCRA) Interim Status Permit and intends to conduct long-term management activities under a RCRA Post-Closure Permit.

The meeting will start at 7:00 PM on June 4, 2014 at the Ponderosa Fire District Station in Bellemont, located east of the Pilot Truck Stop at Interstate 40 Exit 185.



Persons requesting special accommodations to participate in the meeting are encouraged to call at least 72 hours in advance.

For further information, please call **Randy Wilkinson** at (928) 773-3208.

NOTICE OF PUBLIC MEETING

**PRE-APPLICATION
POST-CLOSURE PERMIT MEETING**

**CAMP NAVAJO
OLD OPEN BURN/OPEN DETONATION AREA**

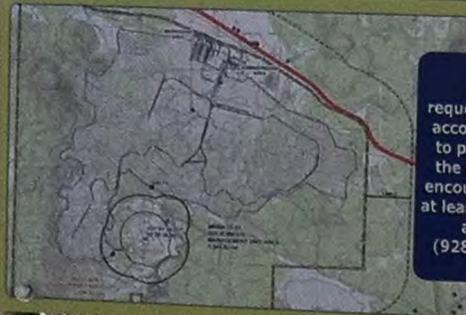
June 4, 7:00 PM

Doors open at 6:45 PM

Ponderosa Fire Station

11951 Shadow Mountain Drive
Bellemont, Arizona

Meeting Open to Public to Inform and Solicit Questions
for the Proposed Long Term Post-Closure Care of the
Old Open Burn/Open Detonation Area.



Persons
requesting special
accommodations
to participate in
the meeting are
encouraged to call
at least 72 hours in
advance.
(928) 773-3208





LEGAL NO. 17815

NOTICE OF PUBLIC MEETING

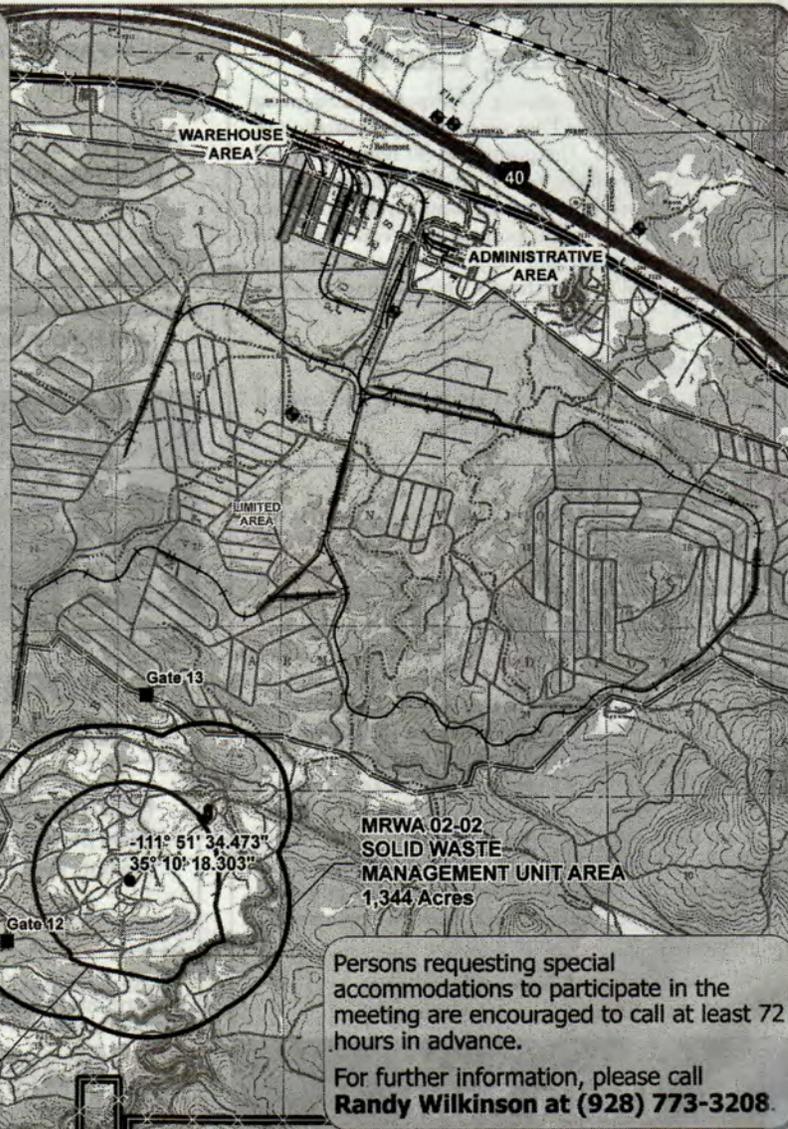
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For further information, please call **Randy Wilkinson at (928) 773-3208.**

Daily Sun

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May 4 2014

AFFIDAVIT/PROOF OF PUBLICATION

STATE OF ARIZONA

} ss.

County of Coconino

Bobbie Crosby being duly sworn deposes and says:

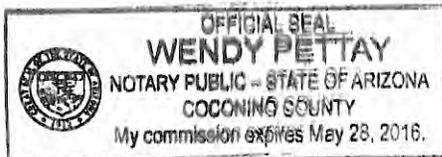
That she is the legal clerk of the Arizona Daily Sun
a newspaper published at Flagstaff, Coconino County, Arizona; that the
Legal 17815
_____ a copy of which is
hereunto attached, was first published in said newspaper in its issue dated
the 4 day of May, 2014, and was
published in each one issue of said newspaper for one
consecutive day the last publication being in the issue dated the
4 day of May, 2014.

Subscribed and sworn to before me this

5 day of May, 2014

Wendy Pettay

Notary Public



My Commission expires

05/28/2016

LEGAL NO. 17815

NOTICE OF PUBLIC MEETING

PRE-APPLICATION POST-CLOSURE PERMIT MEETING CAMP NAVAJO OLD OPEN BURN/OPEN DETONATION AREA

June 4, 7:00 PM; Doors open at 6:45 PM

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The meeting will start at 7:00 PM on June 4, 2014 at the Ponderosa Fire District Station in Bellemont, located east of the Pilot Truck Stop at Interstate 40 Exit 195.



Persons requesting special accommodations to participate in the meeting are encouraged to call at least 72 hours in advance.

For further information, please call Randy Wilkinson at (928) 773-3208.

From: Dana.Downs-Heimes@CH2M.com
Sent: Monday, May 05, 2014 10:10 AM
To: Wilkinson, Randall W CTR NG NGB ARNG (US)
Cc: Mike.Heitmann@CH2M.com; Lara.Pollitt@CH2M.com
Subject: FW: Public Service Announcement

Randy,

Below is documentation of Public Service Announcement for the RCRA pre-application public meeting via radio station KAFF.

Dana

From: Peter Bruce [peter.bruce@kaff.com]
Sent: Monday, May 05, 2014 9:54 AM
To: Downs-Heimes, Dana/PHX
Subject: Re: Public Service Announcement

Dana,

Here are the times the announcement was made on Thursday, May 1st: KAFF-AM, 7:07 am and 8:42 am. KAFF-FM, 8:01 am, KMGN-FM, 8:45 am, KFSZ-FM, 7:55 am. I'll use the news release again the day of the event, June 4th.

Thanks,

Peter

On Fri, May 2, 2014 at 11:16 AM, <Dana.Downs-Heimes@ch2m.com> wrote:

Hello Peter,

Per our conversation, thank you so much for broadcasting the Arizona Army National Guard news release regarding the June 4, 2014 public meeting.

As you have time, can you please respond with information as to when the announcement was broadcast (e.g., date, time)? You can continue to broadcast as needed, up until the week prior to the June 4th meeting, but we just need documentation to show that the announcement was broadcast on or before May

4th, 2014.

Thank you again!

Dana

Dana Downs-Heimes
Project Consultant
Environmental Services
CH2M HILL
Post Office Box 16096
Bellemont, Arizona 86015
928/699-1948 <tel:928%2F699-1948>



**For Release No Later
Than May 4, 2014**

Contact: Randy Wilkinson
928-773-3208

News Release

Pre-Application Post-Closure Permit Meeting Camp Navajo Old Open Burn/Open Detonation Area June 4, 2014

CAMP NAVAJO, ARIZ...The Arizona Army National Guard will hold a meeting open to the public to inform and solicit questions and comments from the community regarding the proposed hazardous waste management activities for the Old Open Burn/Open Detonation area, located at Camp Navajo, Bellemont, Arizona.

The Old Open Burn/Open Detonation Area is an approximate 696-acre area that was used for the disposal of munitions from the early 1940s until 1994. The Arizona Army National Guard is closing the Resource Conservation and Recovery Act (RCRA) Interim Status Permit and intends to conduct long term management activities under a Post-Closure Permit.

The meeting will start at 7:00 PM on June 4, 2014 at the Ponderosa Fire Station, 11951 Shadow Mountain Drive, in Bellemont, east of the Pilot Truck Stop, at Interstate 40, Exit 185. Doors will be open at 6:45 PM.

Persons requesting special accommodations to participate in the meeting are encouraged to call at least 72 hours in advance.

For further information, please call **Randy Wilkinson** at **(928) 773-3208**.

###

Mailing List
RCRA Permit Pre-Application Meeting
June 4, 2014

Sent?	PNAME	TITLE	ORG	ADDRESS	CITY	ST	ZIP
Y	SYBIL SMITH	ADEQ NORTHWEST COMMUNITY LIAISON	ADEQ	2625 N KING ST - 2ND FLOOR	FLAGSTAFF	AZ	86004
Y	LAURA MALONE	DIVISION DIRECTOR	ADEQ - WASTE PROGRAMS DIVISION	1110 W. WASHINGTON ST, 4TH FLOOR	PHOENIX	AZ	85007
#	LARRY D. VOYLES	DIRECTOR	ARIZONA GAME & FISH DEPT.	5000 W. CAREFREE HIGHWAY	PHOENIX	AZ	85086-5000
Y	KEN JACKSON	INFORMATION & EDUCATION DIV.	ARIZONA GAME & FISH DEPT.	5000 W. CAREFREE HIGHWAY	PHOENIX	AZ	85086-5000
Y	BRIAN GORETZKI	PROG MGR, RADIOACTIVE MATERIALS	AZ RADIATION REGULATORY AGENCY	4814 S. 40TH STREET	PHOENIX	AZ	85040
Y	ANN HOWARD	DEPUTY SHPO/ARCHAEOLOGIST	SHPO, ARIZONA STATE PARKS	1300 W. WASHINGTON	PHOENIX	AZ	85007
N	HON. CHESTER CRANDELL	STATE SENATOR - DIST. 06	ARIZONA STATE SENATE	1700 W. WASHINGTON, SENATE WING	PHOENIX	AZ	85007
Y	MICHAEL J LACEY	DIRECTOR	AZ DEPT. OF WATER RESOURCES	3550 N. CENTRAL AVE	PHOENIX	AZ	85012
N	HON. BRENDA BARTON	STATE REPRESENTATIVE/DIST. 06	AZ HOUSE OF REPRESENTATIVES	1700 W. WASHINGTON, HOUSE WING	PHOENIX	AZ	85007
N	HON. ROBERT THORPE	STATE REPRESENTATIVE/DIST. 06	AZ HOUSE OF REPRESENTATIVES	1700 W. WASHINGTON, HOUSE WING	PHOENIX	AZ	85007
Y	TAMARA HUDDLESTON	ENVR. ENFORCEMENT SECTION CHIEF	AZ OFFICE OF ATTORNEY GENERAL	1275 W. WASHINGTON ST.	PHOENIX	AZ	85007-2926
Y	AUBREY GODWIN	AGENCY DIRECTOR	AZ RADIATION & REGULATORY AGENCY	4814 S. 40th STREET	PHOENIX	AZ	85040
Y	STEPHEN WILLIAMS	DIRECTOR, NATURAL RESOURCES	AZ STATE LAND DEPARTMENT	1616 WEST ADAMS STREET	PHOENIX	AZ	85007
Y	VANESSA P HICKMAN	STATE LAND COMMISSIONER	AZ STATE LAND DEPARTMENT	1616 WEST ADAMS STREET	PHOENIX	AZ	85007
Y	RAYMOND SUAZO	STATE DIRECTOR	BUREAU OF LAND MANAGEMENT	1 N. CENTRAL AVE, STE #800	PHOENIX	AZ	85004-4427
Y	JOSH COPLEY	DEPUTY CITY MGR UTIL SRVC & SAFETY	CITY OF FLAGSTAFF	211 W ASPEN AVE	FLAGSTAFF	AZ	86001
Y	MARK GAILLARD	FIRE CHIEF	CITY OF FLAGSTAFF	211 W ASPEN AVE	FLAGSTAFF	AZ	86001
Y	HON. JERRY NABOURS	MAYOR	CITY OF FLAGSTAFF	211 W ASPEN AVE	FLAGSTAFF	AZ	86001
Y	ERIK SOLBERG	PUBLIC WORKS DIRECTOR	CITY OF FLAGSTAFF	211 W ASPEN AVE	FLAGSTAFF	AZ	86001
Y	DEAN COUGHENOUR	RISK MANAGER	CITY OF FLAGSTAFF	101 W CHERRY AVE	FLAGSTAFF	AZ	86001
Y	REBECCA SAYERS	SUSTAINABILITY & ENVR SERVICES	CITY OF FLAGSTAFF	211 W ASPEN AVE	FLAGSTAFF	AZ	86001
Y	JEFF DENT	FIRE CHIEF	CITY OF WILLIAMS	113 S FIRST ST	WILLIAMS	AZ	86046
Y	BILL PRUETT	INTERIM WATER SUPERINTENDENT	CITY OF WILLIAMS	113 S FIRST ST	WILLIAMS	AZ	86046
Y	HON. JOHN MOORE	MAYOR	CITY OF WILLIAMS	113 S FIRST ST	WILLIAMS	AZ	86046
Y	JOHN ABER	ASST DIRECTOR, PLANNING AND ZONING	COCONINO COUNTY	2500 N FORT VALLEY RD, BLDG 1	FLAGSTAFF	AZ	86001
Y	DOUG STAWARSKI	CHIEF BLDG OFFICIAL, ENVR. QUALITY	COCONINO COUNTY	2500 N FORT VALLEY RD, BLDG 1	FLAGSTAFF	AZ	86001
Y	CYNTHIA SEELHAMMER	COUNTY MANAGER	COCONINO COUNTY	219 E CHERRY AVE	FLAGSTAFF	AZ	86001
Y	ANDY BERTELSEN	DIRECTOR, PUBLIC WORKS	COCONINO COUNTY	5600 E COMMERCE AVE	FLAGSTAFF	AZ	86004
Y	ROBERT ROWLEY	EMERGENCY MANAGER	COCONINO COUNTY	2500 N FORT VALLEY RD, BLDG 1	FLAGSTAFF	AZ	86001
Y	J.M. RUMANN, P.E., CFM	ENGINEERING SUPERVISOR	COCONINO COUNTY	2500 N FORT VALLEY RD, BLDG 1	FLAGSTAFF	AZ	86001
Y	ART BABBOTT	SUPERVISOR/DIST. 1	COCONINO COUNTY	219 E CHERRY AVE	FLAGSTAFF	AZ	86001
Y	LIZ ARCHULETA	SUPERVISOR/DIST. 2	COCONINO COUNTY	219 E CHERRY AVE	FLAGSTAFF	AZ	86001
Y	MATT RYAN	CHAIRMAN OF THE BOARD/SUPERVISOR/DIST. 3	COCONINO COUNTY	219 E CHERRY AVE	FLAGSTAFF	AZ	86001
Y	MANDY METZGER	SUPERVISOR/DIST. 4	COCONINO COUNTY	219 E CHERRY AVE	FLAGSTAFF	AZ	86001
Y	LENA FOWLER	SUPERVISOR/DIST. 5	COCONINO COUNTY	219 E CHERRY AVE	FLAGSTAFF	AZ	86001
Y	DAVID W ROZEMA	COUNTY ATTORNEY	COCONINO COUNTY ATTORNEY'S OFFICE	110 E CHERRY AVE	FLAGSTAFF	AZ	86001
Y	CHRIS FETZER	EXECUTIVE DIRECTOR	NORTHERN AZ COUNCIL OF GOVERNMENTS	119 E ASPEN AVE	FLAGSTAFF	AZ	86001
Y	MARK SACHARA	FIRE CHIEF	PONDEROSA FIRE DISTRICT-STATION 82	PO BOX 16359	BELLEMONT	AZ	86015
Y	ROBERT BARGER	STATE FIRE MARSHALL	STATE OF ARIZONA	1110 W. WASHINGTON ST, STE #100	PHOENIX	AZ	85007
Y	BARBARA GROSS	PERMIT MANAGER, HAZARDOUS WASTE	U.S. EPA, REGION IX	75 HAWTHORNE ST	FRANISCO	CA	94105
Y	CARRIE MARR	AZ ECOLOGICAL SVCS STATE OFFICE	U.S. FISH & WILDLIFE SERVICE	2321 W. ROYAL PALM RD, STE #103	PHOENIX	AZ	85021
Y	JAMES LEENHOUTS	DIRECTOR, WATER SCIENCE CENTER	U.S. GEOLOGICAL SURVEY	520 N. PARK AVE., STE #221	TUCSON	AZ	85719
Y	BOB HART	ASST DIRECTOR, WATER SCIENCE CENTER	U.S. GEOLOGICAL SURVEY	2255 N GEMINI DR	FLAGSTAFF	AZ	86001
N	THE HONORABLE ANN KIRKPATRICK	CONGRESSWOMAN - DIST. 1	U.S. HOUSE OF REPRESENTATIVES	211 NORTH FLORENCE STREET, STE 1	CASA GRANDE	AZ	85122
N	THE HONORABLE JEFF FLAKE	SENATOR	UNITED STATES SENATE	2200 E. CAMELBACK RD, STE 120	PHOENIX	AZ	85016-3455
N	THE HONORABLE JOHN McCAIN	SENATOR	UNITED STATES SENATE	2201 E. CAMELBACK RD, STE 115	PHOENIX	AZ	85016
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Y	EARL STEWART	FOREST SUPERVISOR	COCONINO NATIONAL FOREST	1824 SOUTH THOMPSON STREET	FLAGSTAFF	AZ	86001
Y	SIR OR MADAM	FOREST SUPERVISOR	KAIBAB NATIONAL FOREST	800 SOUTH SIXTH STREET	WILLIAMS	AZ	86046
Y	BRIDGET BERO	CHAIR, CIVIL & ENVIRONMENTAL ENGINEERING	NORTHERN ARIZONA UNIVERSITY	PO BOX 15600	FLAGSTAFF	AZ	86011
Y	CHRISTIAN B. LUGINBUHL		U.S.NAVAL OBSERVATORY - FLAGSTAFF	10391 WEST NAVAL OBSERVATORY RD	FLAGSTAFF	AZ	86001-8521
Y	DENNIS JONES		BELLEMONT HOA	PO BOX 16218	BELLEMONT	AZ	86015
Y	KRIS KRINGLE		FLAGSAFF MEADOWS TOWNHOUSES	PO BOX 30520	FLAGSTAFF	AZ	86003
Y	RACHEL EDELSTEIN	DIRECTOR OF DEVELOPMENT	ARBORETUM OF FLAGSTAFF	4001 SOUTH WOODY MOUNTAIN ROAD	FLAGSTAFF	AZ	86001
?	DUANE MILLER		MILLER BROTHERS	15 CULTURAL PARK PLACE	SEDONA	AZ	86336
Y	BILL HEDDEN	EXECUTIVE DIRECTOR	GRAND CANYON TRUST	2601 NORTH FORT VALLEY ROAD	FLAGSTAFF	AZ	86001
Y	ANDY BESSLER		SIERRA CLUB	PO BOX 38	FLAGSTAFF	AZ	80662-0038

LTC Gage corresponded directly



DEPARTMENT OF THE ARMY
ARIZONA ARMY NATIONAL GUARD
HEADQUARTERS, ARIZONA TRAINING CENTERS
1 HUGHES BOULEVARD
BELLEMONT, ARIZONA 86015-5902

REPLY TO
ATTENTION OF

NGAZ-MTC-CDR

15 MAY 2014

CARRIE MARR
AZ ECOLOGICAL SVCS STATE OFFICE
U.S. FISH & WILDLIFE SERVICE
2321 W. ROYAL PALM RD, STE #103
PHOENIX, AZ 85021

SUBJECT: Camp Navajo RCRA Post-Closure Permit Pre-Application Meeting

DEAR CARRIE MARR:

It is my pleasure to invite you or a designated representative to a public meeting to inform and solicit questions and comments from the community regarding the proposed hazardous waste permit application for the Old Open Burn/Open Detonation Area, located at Camp Navajo, Bellemont, Arizona.

Camp Navajo is a former Army ammunition depot that was transferred to the Arizona Army National Guard and is now used as a major training center. The Old Open Burn/Open Detonation Area is an approximate 696-acre area that was used for the disposal of munitions from the early 1940s until 1994. The Arizona Army National Guard is closing the Resource Conservation and Recovery Act (RCRA) Interim Status Permit and intends to conduct long term management activities under a RCRA Post-Closure Permit.

The meeting will start at 7:00 PM on June 4, 2014 at the Ponderosa Fire Station, 11951 Shadow Mountain Drive, in Bellemont, east of the Pilot Travel Center, at Interstate 40, Exit 185. Doors will be open at 6:45 PM. I have enclosed a flyer that may be posted or shared within your organization as you see fit.

For further information, please call Mr. Randy Wilkinson at 928-773-3208. Persons requesting special accommodations to participate in the meeting are encouraged to call at least 72 hours in advance.

A handwritten signature in black ink, appearing to read "Kim L. Gage".

KIM L. GAGE
LTC, EN
Commanding

NOTICE OF PUBLIC MEETING

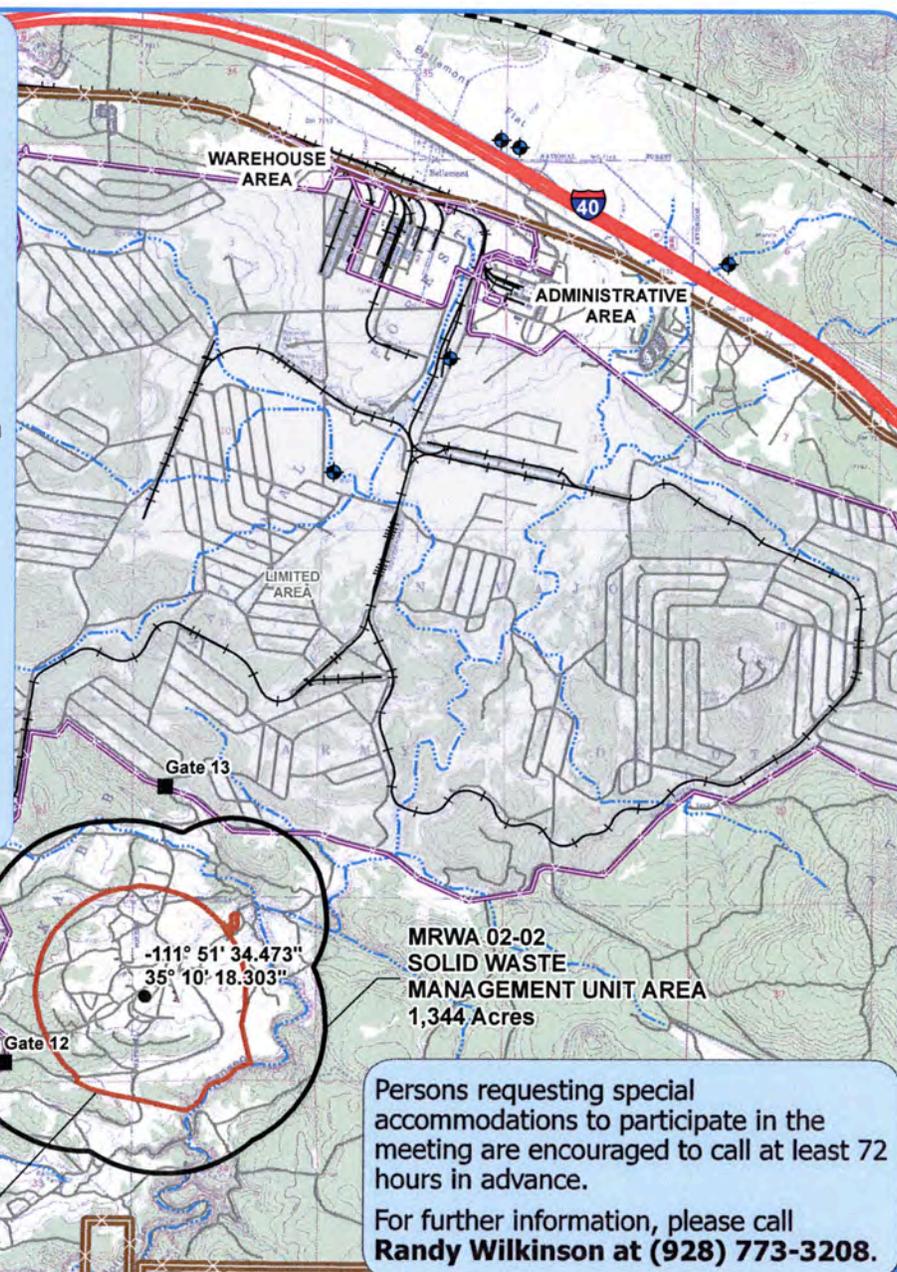
PRE-APPLICATION POST-CLOSURE PERMIT MEETING CAMP NAVAJO OLD OPEN BURN/OPEN DETONATION AREA

June 4, 7:00 PM; Doors open at 6:45 PM

Ponderosa Fire District Station
11951 Shadow Mountain Drive
Bellemont, Arizona

The Arizona Army National Guard will hold a meeting open to the public to inform and solicit questions from the community regarding the proposed hazardous waste management activities for the Old Open Burn/Open Detonation Area, located at Camp Navajo in Bellemont, Arizona. The Old Open Burn/Open Detonation Area is an approximate 696-acre area that was used for the disposal of munitions from the early 1940s until 1994. The Arizona Army National Guard is closing the Resource Conservation and Recovery Act (RCRA) Interim Status Permit and intends to conduct long-term management activities under a RCRA Post-Closure Permit.

The meeting will start at 7:00 PM on June 4, 2014 at the Ponderosa Fire District Station in Bellemont, located east of the Pilot Truck Stop at Interstate 40 Exit 185.



Persons requesting special accommodations to participate in the meeting are encouraged to call at least 72 hours in advance.
For further information, please call **Randy Wilkinson at (928) 773-3208.**

Camp Navajo
Environmental Dept.
P.O. Box 16123
Bellemont, AZ 86015

PHOENIX
AZ 852
16 MAY '14
PN 91



CARRIE MARR
AZ ECOLOGICAL SVCS STATE OFFICE
U.S. FISH & WILDLIFE SERVICE
2321 W. ROYAL PALM RD, STE #103
PHOENIX, AZ 85021

65021497428

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Meeting Sign-In Form
Camp Navajo Post-Closure Permit Pre-Application Meeting
June 4, 2014
Ponderosa Fire Station
Bellemont, Arizona



Name		If you would like to be contacted to learn more, please provide one of the following below:		
First	Last	Phone Number	Email Address	Mailing Address
Anthony	Leucrook	602 771-4160	acl@azdeg.gov	1110 W. Washington, Phx
Diana	Demich	602-771-4160	dd3@azdeg.gov	1110 W Washington Phoenix, AZ 85007
Colleen	Murray	602 771 4203	CM15@azdeg.gov	" "
Steve	Willis	480 316 3373	steve.oxo@pro-com	5705 S. 16th Dr. Phoenix AZ 85041
Wayne	Miller - ADEQ	602.771.4121	Miller.Wayne@azdeg.gov	1110 W. Washington Phoenix, AZ 85007
PATRICK CONLEY		pconley78@gmail.com		
DAVE DIENER		928 221-9680	DD5185@NSW.COM	P.O. Box 16235 Bellemont AZ 84015
JOHN O'BRIEN		928-527-3578	jobrien@fs.fed.us	
Rem Hawes		623-580 5530	rhawes@blm.gov	BLM Hassayampa Field Offc. 21605 N 7th Ave Phoenix, AZ 85027
Harry Handler ADEQ				

Camp Navajo
Camp Navajo Post-Closure Permit Pre-Application Meeting
Wednesday June 4, 2014 7:00 PM
Ponderosa Fire Department, Bellemont Arizona

Attendance: ADEQ, CH2M HILL, Army National Guard, Kaibab National Forest Engineer, 2-3 members of the public. People in attendance listed on sign-in sheet provided to Randy Wilkinson.

Meeting Summary:

The public meeting began with an introduction by Lt. Colonel Kim Gage of the Army National Guard. He explained the environmental culture of the guard and the missions for Camp Navajo.

Lt. Col John Ladd then provided a brief explanation of the Guard structure and programs.

Mike Heitmann of CHM2 HILL then presented the following information on the post-closure permit and the activities that have been performed at the site leading to the post-closure permit via a series of slides and photographs. Additionally, maps of Camp Navajo were posted during the meeting showing the post-closure area and the former waste management areas (OB and OD areas). Topics that were covered included:

- RCRA Post-Closure Permit Introduction
- Installation Description and History
- Previous Investigations and Site Status
- Resource Conservation and Recovery Act (RCRA) Post-Closure Permit Application Requirements
- Path Forward to close site and submit application

1st Question from Public – Resident wells are located north of the base, which they believe was downgradient. What is the history of contaminants in the wells around the base? Guard answered that nothing has been found in the wells north of the base as of now.

2nd Question from Public – What would happen if something was found in the wells? - Colonel Ladd and Mike Heitmann responded that the result would first be verified through a second round of sampling. Then the results would be submitted to ADEQ along with proposed actions to respond to the detections.

Colonel Ladd also stated that while the groundwater flow direction on the base is north, it actually turns at the freeway and heads back to the south. Therefore, the resident's wells north of I40 would likely not be downgradient of the OB/OD area.

Mike Heitmann stated that during the monitoring period, as many wells as possible would be identified for sampling. Access would have to be granted since most of the wells are private wells.

3rd Question from Public - What are the contaminants of concern? Mike Heitmann and Colonel ladd answered RDX, TNT, and perchlorate.

Meeting ended around 8:15 PM.

Pre-Application Post-Closure Permit Meeting



Former Open Burn/Open Detonation Area

Camp Navajo

June 4, 2014

Ponderosa Fire Station
Bellemont, Arizona

Welcome



Arizona National Guard

LTC Kim Gage – Camp Navajo Garrison Commander

**LTC John Ladd – Arizona Army National Guard
Environmental Program Manager**

**Mike Heitmann – Camp Navajo RCRA Project;
Project Manager (CH2M HILL)**



Introduction

Mike Heitmann – CH2M HILL Project Manager

Agenda

- RCRA Post-Closure Permit Introduction – Why is this needed?
- Installation Description and History
- Previous Investigations and Site Status
- Future Land Use
- Resource Conservation and Recovery Act (RCRA) Post-Closure Permit Application
- Path Forward



Post-Closure Permit

- Camp Navajo is applying for a Resource Conservation and Recovery Act (RCRA) Post-Closure Permit for a portion of the former Open Burn/Open Detonation (OB/OD) Area, called the “Post-Closure Area”.
- The Post-Closure Permit is required because munitions are suspected to remain in the area, which are defined as hazardous waste.
- The Post-Closure Permit will specify procedures for post-closure care of the area including, but not limited to, inspections, security, and monitoring.



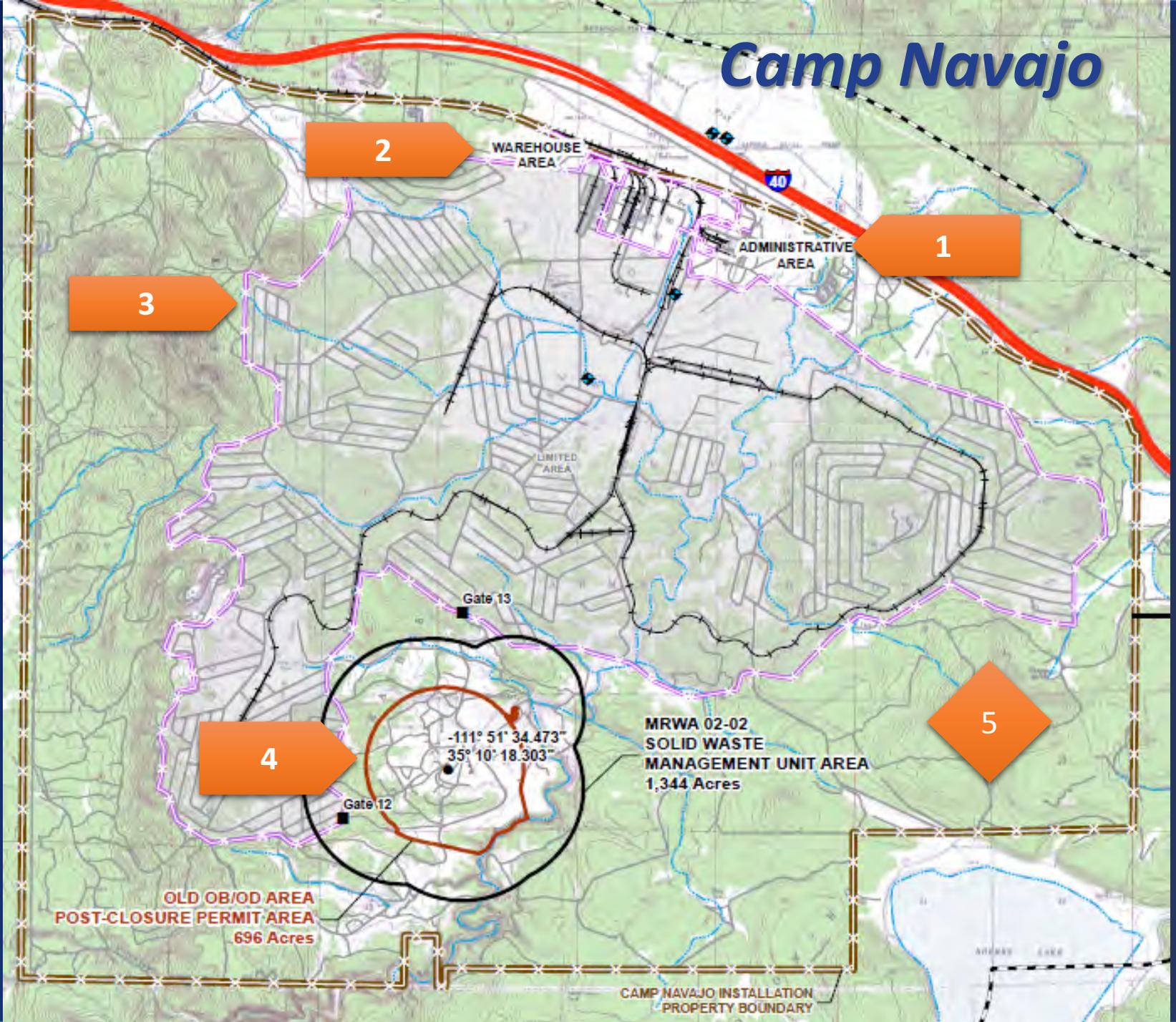
Installation Description

Camp Navajo

- 28,347 acres
- Five operational areas
 1. Administrative Area
 2. Warehouse Area
 3. Limited Area
 4. Former OB/OD Area and surrounding land (MRWA 02)
 5. Additional land used for training purposes



Camp Navajo



3

2

1

4

5

OLD OB/OD AREA
POST-CLOSURE PERMIT AREA
696 Acres

MRWA 02-02
SOLID WASTE
MANAGEMENT UNIT AREA
1,344 Acres

CAMP NAVAJO INSTALLATION
PROPERTY BOUNDARY

Installation History

- Established 1942 for the U.S. Army to operate as a reserve supply depot for the receipt, shipping, storage, surveillance, minor maintenance, and demilitarization of ammunition and assigned commodities.



Former Open Burn/Open Detonation Area

Operational History

- Operated primarily from 1945 through mid-1970s. Activities ceased in 1994 when the missions ended.
- Consisted of multiple operational units for burning and detonation of munitions.
- Munitions that were managed included high-explosive-filled munitions, fuzes, primers, detonators, white phosphorous munitions, and conventional types of munitions and bombs.
- Operations also included burning of plasticized white phosphorous and red phosphorus munitions, venting and burning of blister agent (mustard) bombs, and demolition of napalm bombs.
- Additional related activities to open burning and temporary munitions storage.



Former Open Burn/Open Detonation Area *Regulatory History*

- A RCRA permit application was submitted in 1988 for the active OB/OD operations at Camp Navajo.
- Camp Navajo operated under RCRA Interim Status until OB/OD operations ceased in September 1994.
- Closure of the OB/OD operational units and the surrounding areas was conducted in accordance with CERCLA under the direction of the ADEQ Federal Projects Unit (FPU).
- Closure activities included soil investigations for munitions constituents and surface and subsurface clearance of munitions and explosives of concern (MEC) in selected areas.
- Former operational areas were identified as NAADs.

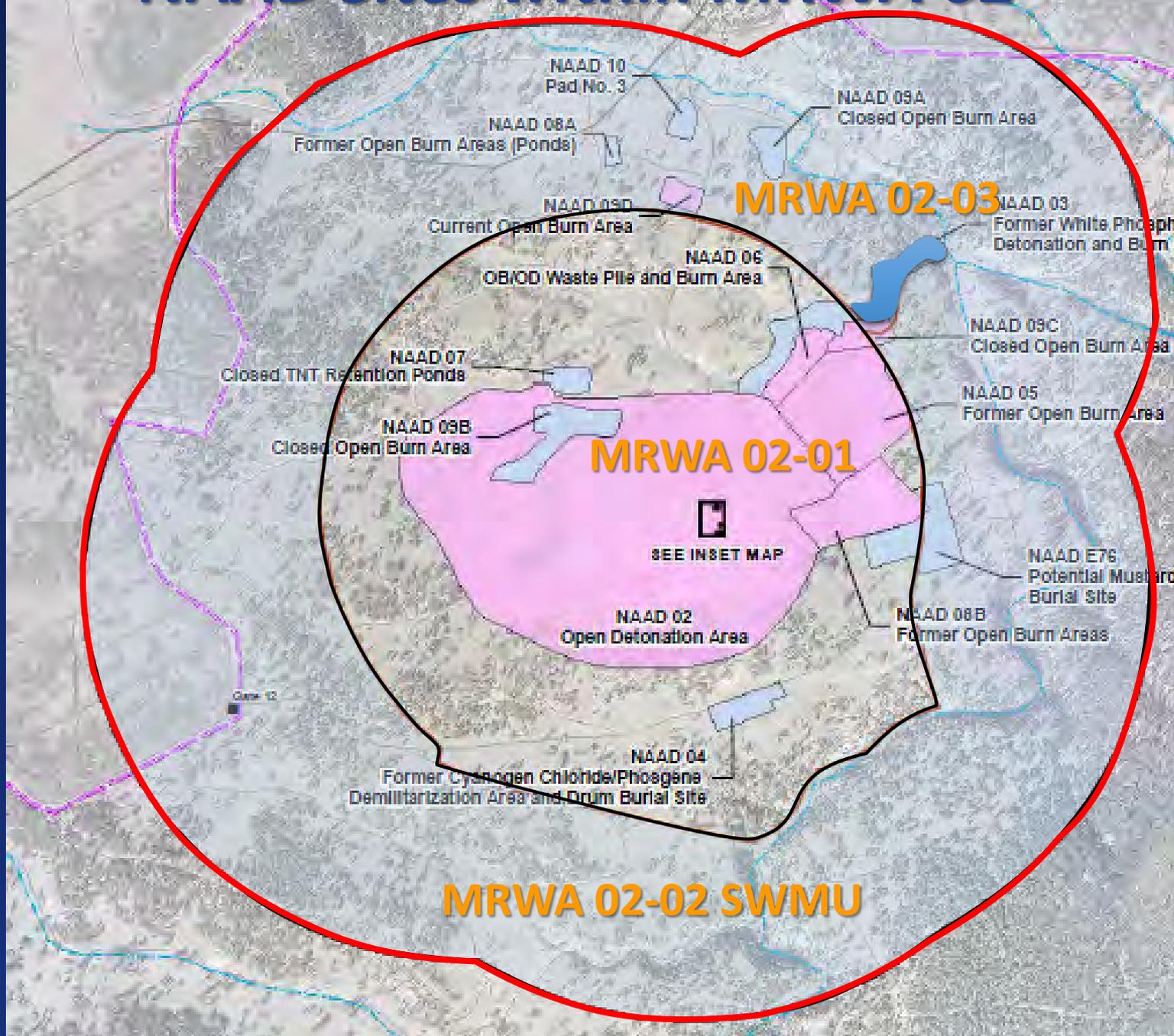


Former Open Burn/Open Detonation Area *Munitions Response Work Area 02 (MRWA 02)*

- The area encompassing the former OB/OD operational areas was designated as MRWA 02.
- MRWA 02 includes:
 - Post Closure Permit Area (696 acres):
 - ✓ MRWA 02 -01 – Open Detonation Area and surrounding land with munitions remaining, including submunitions
 - ✓ MRWA 02 -03 – White Phosphorous Detonation and Open Burn Area
 - MRWA 02 -02 SWMU (1,344 acres)
 - ✓ Kick-out Area surrounding MRWA 02-01 where MEC and munitions debris were ejected during open detonations.



NAAD Sites within MRWA 02



MRWA 02-01 and Southern Portion of MRWA 02-02



Previous Investigations

Former Open Burn/Open Detonation Area

- Investigations were separated into:
 - Munitions Constituents (MC)
 - Munitions and Explosives of Concern (MEC)



Previous Investigations

MC Investigations

- Navajo Army Depot (NAAD Sites)
 - Soil
 - Surface Water
 - Groundwater

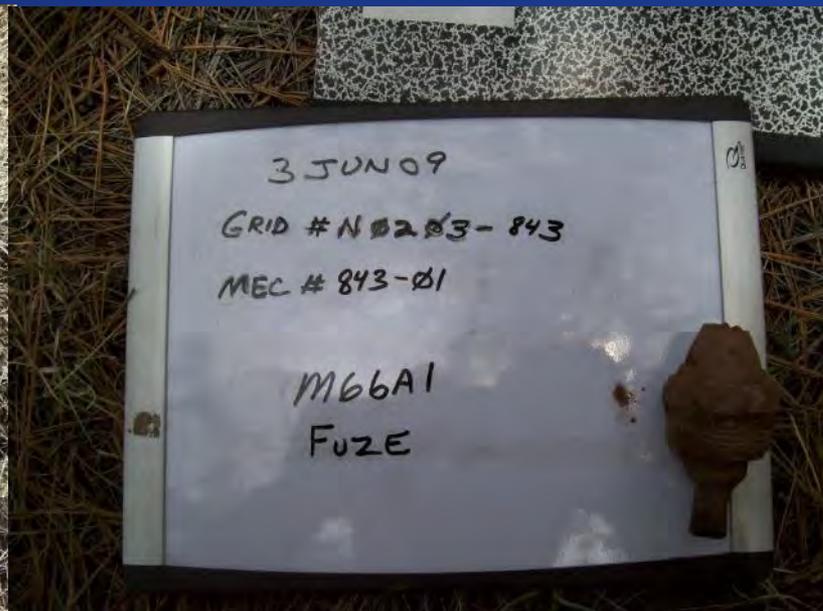


Previous Investigations

MEC Investigations



Previous Investigations *MEC Recovered*



Previous Investigations *MD Recovered*



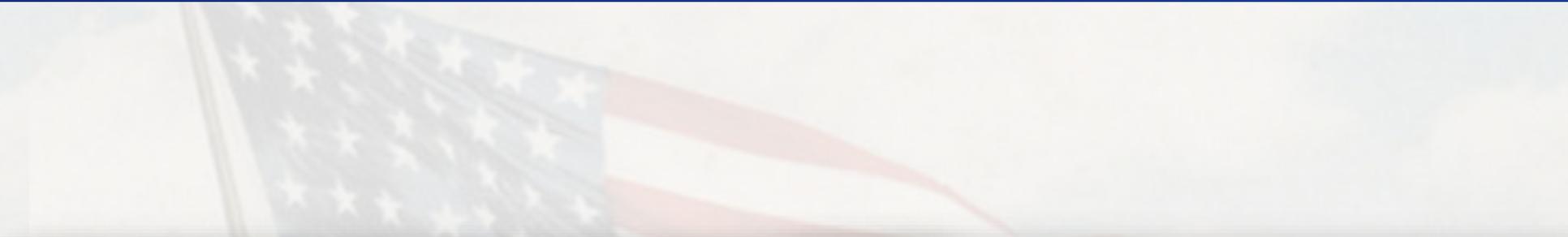
Previous Investigations

MC and MEC Clean Up Activities



Previous Investigations

Site Restoration



Previous Investigations

Summary of MC and MEC Clean Up

- 11,718 MEC and munitions documented with an explosive hazard were recovered and destroyed.
- 384,640 pounds of material documented as safe were recycled.
- 731,030 pounds of range-related debris (not munitions-related) were recycled.
- More than 18,000 cubic yards of soil and debris were excavated and processed.
- 28 OD pits were backfilled using approximately 12,161 yd³ of processed soil batch materials.



Previous Investigations

MEC Estimated to Remain

- Post-Closure Area – Estimated to be about 3,000 MEC in the surface and subsurface
- SWMU MRWA 02-02 – Potential MEC in the shallow subsurface

The type and locations of these MEC are not known. The quantity is based on statistical analyses of MEC previously recovered.



Final Site Conditions

Post-Closure Area (MRWA 02-01/03)

- MEC remain at the surface and subsurface.
- Post-Closure Permit Area coincides with the ICM Waiver Area, an area with suspected submuntions.
- Surface and subsurface MEC response actions were evaluated, but not implemented for MRWA 02-01 due to excessive worker exposure risks and costs.
- Access is limited to EOD and UXO-qualified personnel or others under EOD or UXO-qualified personnel escort.



Proposed Future Land Use

Post Closure Area

- RCRA post-closure care activities – Inspections, monitoring, and maintenance.
- Safety buffer zone for the storage magazines and small arms range .
- Occasional intentional detonations of acceptable-to-move MEC recovered during MEC inspections that pose an immediate threat to human health, public safety, property, or the environment.
- Natural and cultural resources management.
- Actions authorized under the ICM Waiver documents



Proposed Future Land Use

SWMU MRWA 02-02

- Troop Training; land navigation, maneuver areas, bivouac sites
- Security and fire protection
- Wild-land fire prevention and protection
- Natural and cultural resource management
- Authorized recreational activities



Post-Closure Permit Application

- In accordance with 40 CFR 270.1(c), owners or operators must obtain a permit for the post-closure period to ensure that appropriate monitoring and maintenance activities will be conducted.
- Applies to facilities where waste remains in place after the completion of closure activities.
- Monitoring and maintenance activities are required to prevent or control releases of contaminants to the environment.
- Post-Closure care time period is typically a 30-year period after closure that can be extended, if necessary.



Post-Closure Permit Application

Permit Application Contents

- RCRA Part A Application– Facility Information
- Facility/Unit Description
- Closure and Post-Closure Notices
- Personnel Training Plan for Post-Closure Area
- Contingency Plan
- Description of SWMUs
- Part B Certification
- Post-Closure Plan – Inspections, Security, Preparedness and Prevention, and Monitoring



Post Closure Permit Application

Facility/Unit Description

- General Facility Description (40 CFR 270.14(b)(1))
- Floodplain and Seismic information (40 CFR 270.14(b)(11))
- Topographic map showing a distance of 1,000 feet around the Post-Closure Permit Area which includes the information listed in 40 CFR 270.14(b)(19), such as:
 - Surface waters
 - Boundaries of the Post-Closure Area
 - Surrounding land uses
 - Structures in and surrounding the Post-Closure Permit Area



Post Closure Permit Application

Closure and Post-Closure Documentation and Notices

- Required by 40 CFR 270.14(b)(13) and (b)(14) and must include the following:
 - Documents related to the preparation, implementation, and completion of closure
 - Certifications of Closure
 - Survey Plat identifying Post-Closure Area
 - Estimate of the type, location, and quantity of waste (i.e., munitions) that have been disposed in the Post-Closure Area
 - Notation on property deed or installation documentation stating that that the area was used to manage munitions and is restricted



Post Closure Permit Application *Training Requirements*

- Required by 40 CFR 270.14(b)(12)
- An outline of both the introductory and continuing training programs by owners or operators to prepare personnel to maintain the Post-Closure Permit Area.
- Must include the information required by 40 CFR 264.16, which includes:
 - Outline of training program
 - Relevance of training to job duties
 - Training records



Post Closure Permit Application *Contingency Plan*

- Must be prepared for the Post-Closure Area in accordance with 40 CFR 270.14(b)(7))
- Contingency Plan must include the information in 40 CFR 264 Subpart D, which includes:
 - Response actions for facility personnel in the event of a fire, explosion or other hazardous waste release to the environment.
 - Arrangements with local police departments, fire departments, hospitals, contractors, and State and local emergency response teams to coordinate emergency services.
 - List of names, addresses, and phone numbers of all persons trained and qualified to act as emergency coordinator.
 - A list and description of emergency equipment at the facility.
 - An evacuation plan for installation personnel .



Post Closure Permit Application

Description of SWMUs

- A SWMU is any unit at Camp Navajo at which solid wastes have been placed at any time, irrespective of whether the unit was intended for the management of solid or hazardous waste.
- Must include the information listed in 40 CFR 270.14(d) for each SWMU including:
 - SWMU Location
 - Type of Unit
 - General Dimensions and Structural Description
 - Dates of Operation
 - Types of Wastes
 - Releases and mitigation
- MRWA 02-02 has been designated as a single SWMU due to detonation kick-outs throughout the area.



Post Closure Permit Application

Description of SWMUs (cont.)

- MRWA 02 -02 will be inspected as part of CERCLA Long Term Management 5-Year Reviews.
- Corrective Action Procedures for MEC encountered in the MRWA 02-02 SWMU include the three “Rs” of MEC safety awareness :
 - **RECOGNIZE** - Identify the object as a potential munition
 - **RETREAT** - Go back the way you came
 - **REPORT** – Notify Security at 928.773.3297 or Range Control at 928.773.3155



Post Closure Permit Application

Part B Certification

- Statement and signature required by 40 CFR 270.11:

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision according to a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.



Permit Application

Post-Closure Plan

- Required by *40 CFR* 270.14(b)(13) and 40 CFR 264.118
- The post-closure plan must identify the activities that will be carried on after closure and the frequency of these activities
- The Post-Closure Plan is specific to the Post-Closure Area.
- Establishes land use controls for both general public and Camp Navajo/military personnel.
- A post-closure plan has been previously submitted to ADEQ, and a revised plan will be submitted with application.



Permit Application

Post-Closure Plan Contents

- Description of planned monitoring –Vadose zone and groundwater monitoring for Post-Closure Permit Area
- Description of planned maintenance activities and frequencies, including:
 - Security procedures
 - Inspection Schedule
 - Land use controls
- Post-Closure plan may also include preparedness and prevention requirements
- Post-Closure Contact personnel



Post-Closure Plan *Security Requirements*

- Required by 40 CFR 270.14(b)(4)
- As specified in 40 CFR 264.14, *“The owner or operator must prevent the unknowing entry, and minimize the possibility for the unauthorized entry, of persons or livestock onto the active portion of the facility.”*
- Post-Closure plan presents the methods that will be used to meet the requirements.



Post-Closure Plan

Inspection Requirements

- Required by 40 CFR 270.14(b)(5)
- As specified in 40 CFR 264.15, inspection plan for the Post-Closure Area must include:
 - Inspection of the area for situations which may be causing—or may lead to—(1) release of hazardous waste constituents to the environment or (2) a threat to human health.
 - A written schedule for inspecting monitoring equipment, safety and emergency equipment, security devices, and operating and structural equipment that are important to preventing, detecting, or responding to hazards
- Any malfunctions or deterioration must be remedied.
- Inspections must be recorded and maintained for at least 3 years.



Post-Closure Plan

Preparedness and Prevention Requirements

- Required by 40 CFR 270.14
- Preparedness and prevention plan/procedures must meet the requirements of 40 CFR 264 Subpart C, which include:
 - List of required equipment
 - Procedures for testing and maintenance of equipment
 - Access to communication or alarm systems
 - Arrangements with local authorities



Future Land Use Controls for the Post-Closure Area

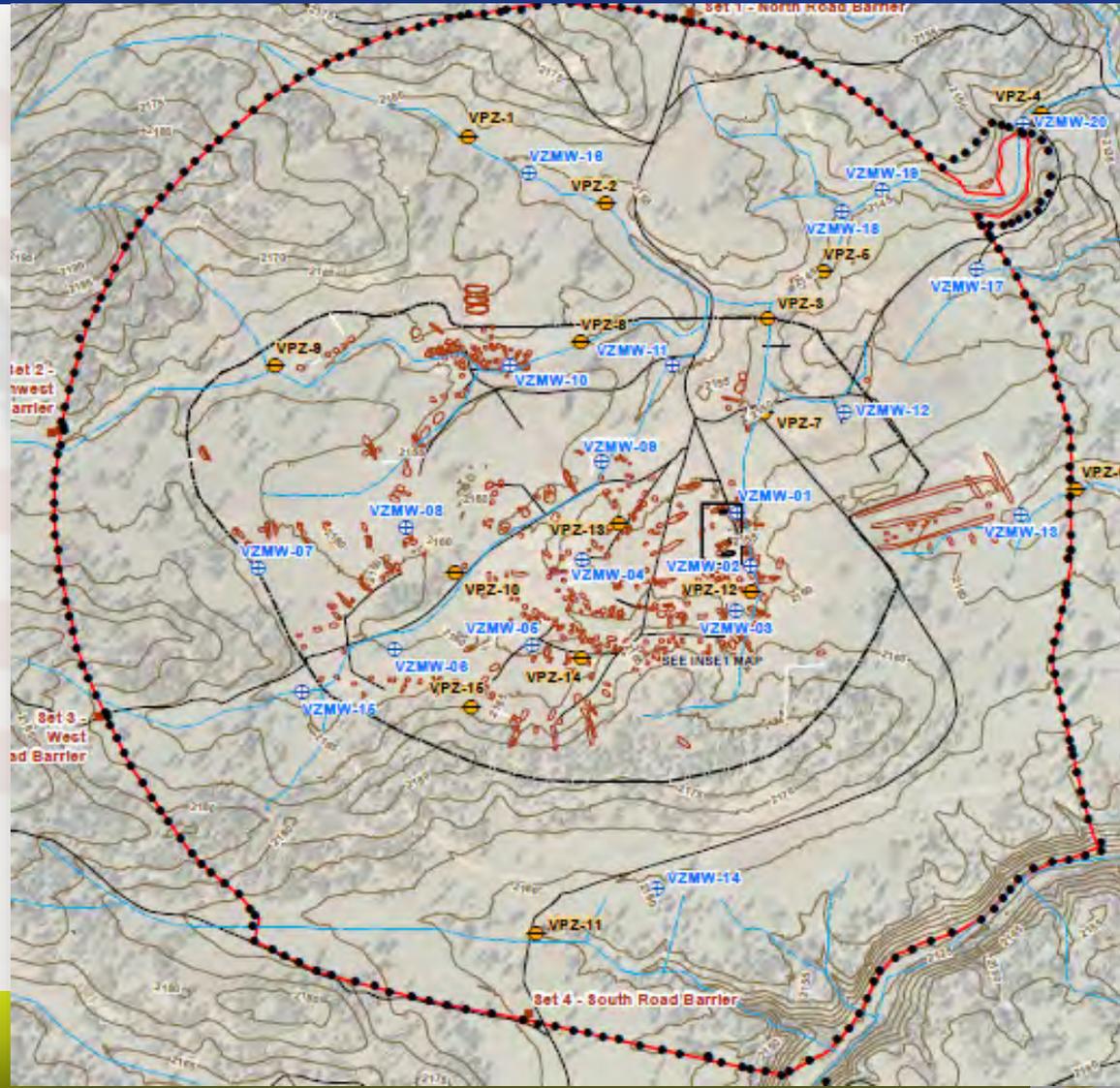
- Land use is and will continue to be for military use/military training.
- The U.S. Department of Defense Explosives Safety Board must review all plans for leasing, transferring, disposing, or remediating MEC-contaminated real property.
- Army Regulation 210-20, Real Property Master Planning for Army Installations places restrictions on future land use including the prohibition of inhabited buildings or structures, parks or playgrounds.
- Land uses in the post-closure permit area are further restricted in accordance with RCRA Post-Closure Permit requirements.



Post-Closure Plan

Groundwater Monitoring Plan – Vadose Zone Monitoring

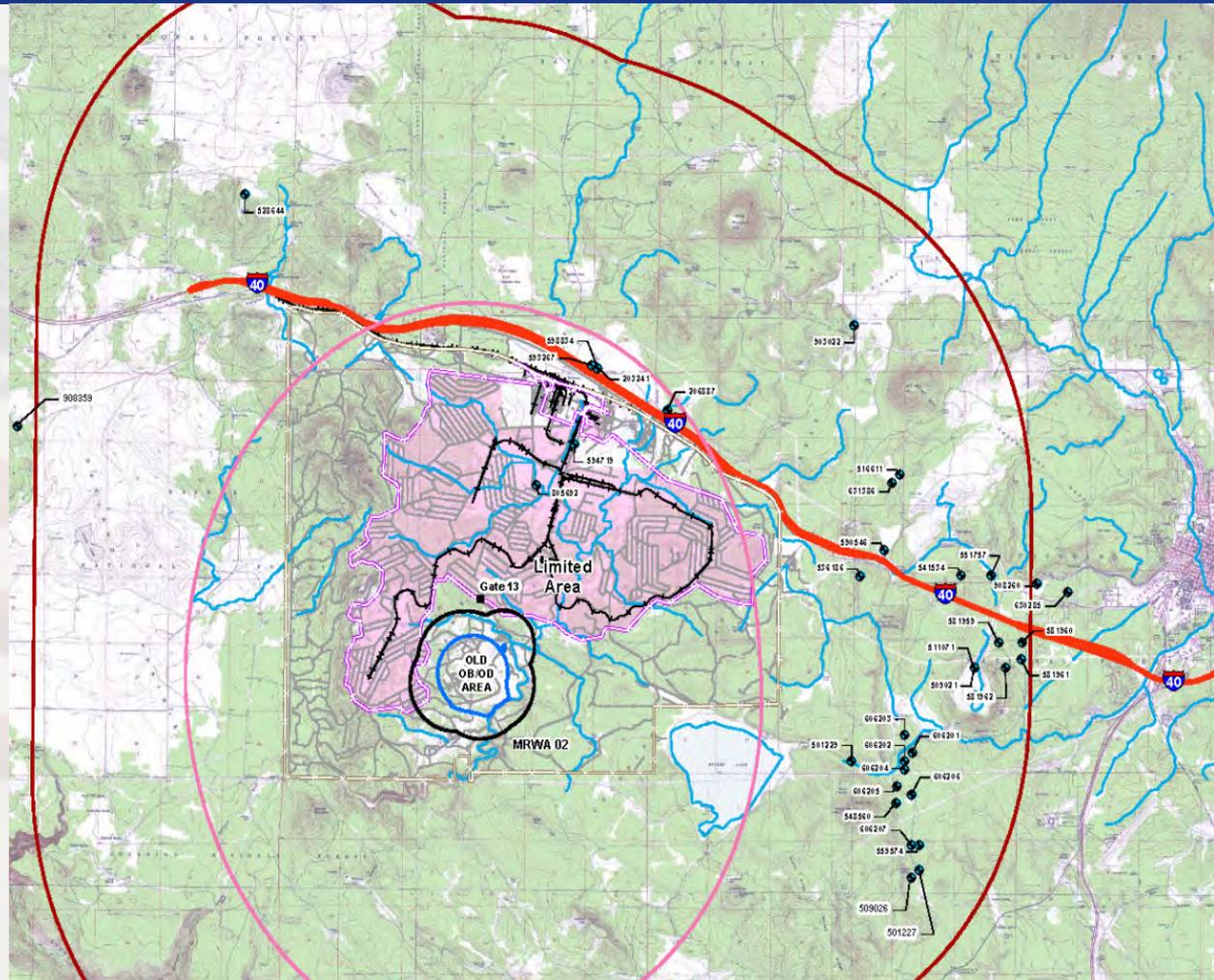
- Vadose zone wells are located in the Post-Closure Area
- Monitored for munitions-related constituents.
- Results are used to evaluate potential releases from the Post-Closure Area.



Post-Closure Plan

Groundwater Monitoring Plan – Groundwater Monitoring

- Groundwater wells within Camp Navajo and the surrounding area.
- Selected wells will be monitored for detections of munitions-related constituents.
- Groundwater flow direction estimated to be to the north.



Post-Closure Plan

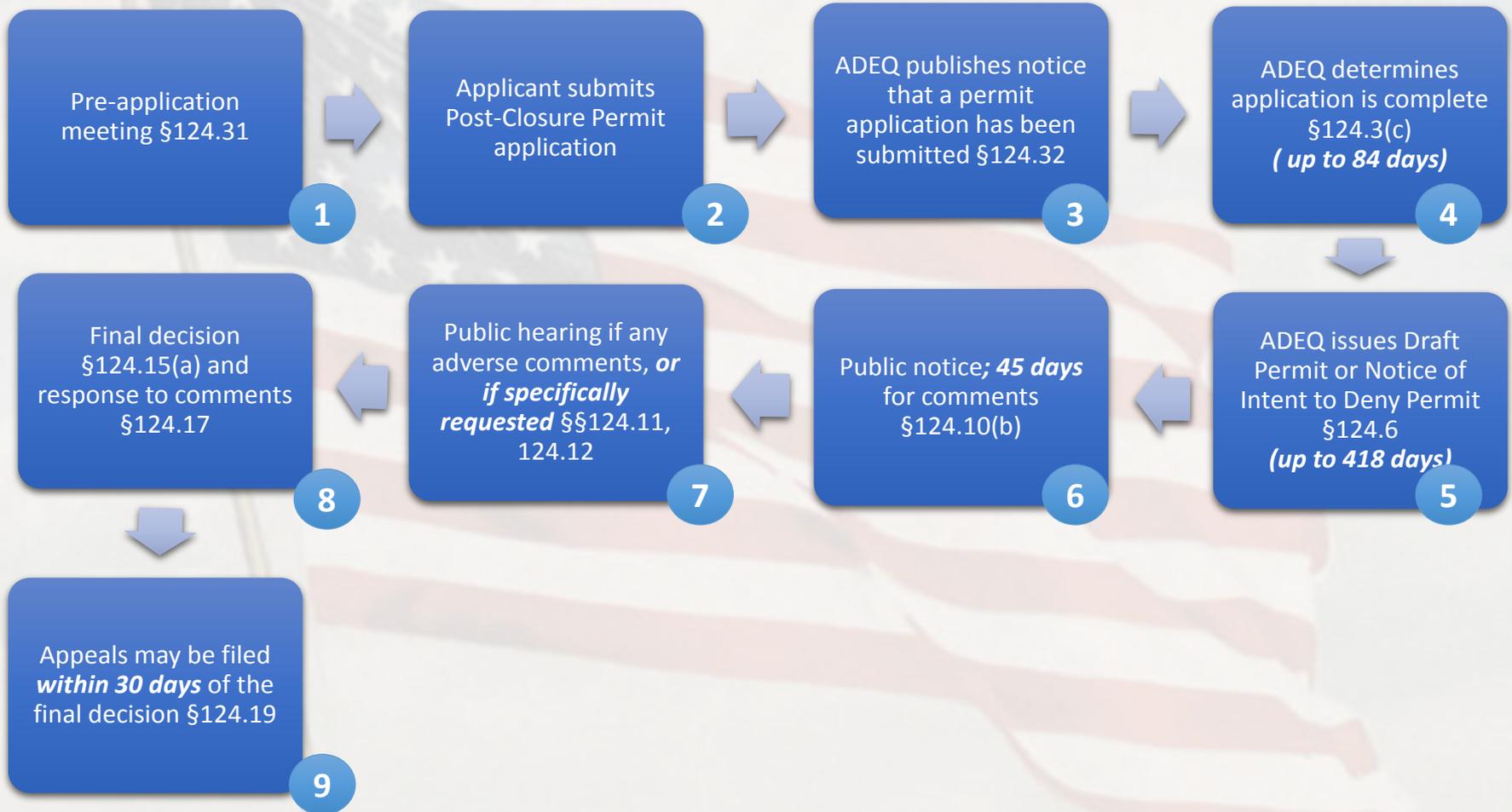
Groundwater Monitoring Plan Requirements

- Groundwater Monitoring Plan required by 40 CFR 270.14(c) and must include the information listed in 40 CFR 264.97 to 264.99 including:
 - Summary of groundwater monitoring data, including vadose zone data.
 - Identification of uppermost aquifer and aquifers hydraulically interconnected to include groundwater flow directions.
 - Detailed plans describing the proposed groundwater monitoring program.
 - Sufficient information to implement a detection, compliance, or corrective action monitoring program, whichever is applicable.



Path Forward – RCRA Permitting Process

Major Steps in the Post-Closure Permitting Process



Questions?

- Point of Contact information

Randy Wilkinson

Camp Navajo

P.O. Box 16123

Bellemont, AZ 86015



Appendix D
Post-closure Plan for the Post-closure Permit
Area

Post-closure Plan for Post-closure Permit Area Open Burning/Open Detonation Operations, Camp Navajo

Prepared for
Army National Guard Directorate
Environmental Programs Division
Camp Navajo
Bellemont, Arizona
AZ7213820635

October 31, 2016

Prepared by
CH2MHILL®
1501 W. Fountainhead Parkway
Suite 401
Tempe, Arizona 85282

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Attachments

- A Photographs of Security Equipment
- B Documentation of Agreements with Emergency Agencies

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- PCP-1 Schedule and Description of Inspection Activities
- PCP-2a Example Inspection Log
- PCP-2b Example Maintenance and Repair Log
- PCP-3 Content of Training Programs
- PCP-4 Post-closure Permit Area Job Descriptions

Figures

- PCP-1 Site Location Map
- PCP-2 Post-closure Permit Area and MRWA 02-02
- PCP-3 Security Measures at the Post-closure Permit Area

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Acronyms and Abbreviations

AAR	After Action Report
ADEQ	Arizona Department of Environmental Quality
Army	Department of the Army
AZ ARNG	Arizona Army National Guard
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	<i>Code of Federal Regulations</i>
CG	cyanogen chloride
CK	phosgene
DD	Decision Document
DDESB	Department of Defense Explosives Safety Board
EOD	explosive ordnance disposal
ESS	Explosive Safety Submission
HE	high explosive
lb	pound(s)
ICM	improved conventional munitions
IS	Interim Status
LUC	land use control
MC	munitions constituent
MEC	munitions and explosives of concern
MRWA	Munitions Response Work Area
NAAD	Navajo Army Depot
NEW	net explosive weight
OB	open burn
OD	open detonation
PCP	Post-closure Plan
QASAS	Quality Assurance Specialist, Ammunition Surveillance
RCRA	Resource Conservation and Recovery Act
SOG	standard operating guideline
SOP	standard operating procedure
TNT	trinitrotoluene
TP	Technical Paper
UXO	unexploded ordnance
WP	white phosphorus

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SECTION 1

Introduction (40 CFR 264.118(a))

The owner or operator of a hazardous waste disposal unit must have a written Post-closure Plan (PCP) if waste is to remain in place. Additionally, in accordance with the post-closure permit application submittal requirement specified in Title 40 *Code of Federal Regulations* (CFR) Part 270.14(b)(13), the permit application must include a PCP. This PCP has been prepared for post-closure care of the Post-closure Permit Area, a part of Camp Navajo with waste remaining after Resource Conservation and Recovery Act (RCRA) closure of the Interim Status (IS) sites located within the area.

1.1 General Facility Description

Camp Navajo is situated on 28,347 acres of forest and prairie lands approximately 10 miles west of Flagstaff, Arizona, and south of Interstate 40 at Exit 185 in Bellemont, Coconino County, Arizona. A general location map is presented on Figure PCP-1. Commercial, industrial, and private properties border the northern portions of the installation. The community of Bellemont, Arizona, is located on the northern boundary of the installation and has an estimated population of 600. The majority of land bordering the western, southern, and eastern portions of the installation is owned by the State of Arizona or the National Forest Service. A few private parcels are interspersed throughout the area. The surrounding land is characterized as undeveloped conifer forest interspersed with grassland meadows used for grazing. The closest residential dwelling is approximately 1 mile east of the Camp Navajo boundary.

Camp Navajo was established in 1942 and placed under reserve status and re-designated as Navajo Depot Activity in 1971. In 1982, operational control of the mission was transferred from the Secretary of the Army to the Arizona Army National Guard (AZ ARNG). From its inception to 1982, the installation's mission was to operate as a reserve supply depot for the receipt, shipping, storage, surveillance, minor maintenance, and demilitarization of ammunition and assigned commodities. The Former Open Burn/Open Detonation (OB/OD) Area was used to demilitarize conventional and chemical munitions that had become obsolete or unserviceable.

1.2 Post-closure Permit Area

The Post-closure Permit Area comprises two subareas, Munitions Response Work Area (MRWA) 02-01 and MRWA 02-03, which were identified during previous investigative activities at the facility. MRWA 02-1 and MRWA 02-03 are both located within a larger area that has been designated as MRWA 02 (Figure PCP-2). The MRWA 02 designation was developed to represent an informal operational unit that addressed the explosive safety hazard associated with munitions destroyed at Navajo Army Depot (NAAD) 02, a former RCRA IS OB/OD unit. Since munitions and explosives of concern (MEC) are known or suspected to remain in the areas identified as MRWA 02-01 and MRWA 02-03, these areas make up the Post-closure Permit Area identified on Figure PCP-2.

A summary of the OB and OD activities that occurred within the Post-closure Permit Area is presented in this section. The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) process was used to investigate, remediate, and close all units. This PCP has been prepared for activities conducted in the part of the Former OB/OD Area with remaining contamination, primarily MEC (Post-closure Permit Area).

The historical operations and restoration activities are summarized in Decision Documents (DDs) for the NAAD sites within the Former OB/OD Area except NAAD 02. The CERCLA DDs for the RCRA IS units served as RCRA closure documentation. However, since NAAD 02 would be subject to a Post-closure Permit, an After Action Report (AAR) (CH2M HILL, 2016) was prepared in lieu of a DD.

1.2.1 NAAD 02—Open Detonation Area

NAAD 02 was a RCRA IS unit that originally consisted of approximately 200 acres within the central portion of the Post-closure Permit Area. NAAD 02 was used from the early 1940s through 1994. High explosive (HE)-filled munitions, fuzes, primers, detonators, and other material potentially presenting an explosive hazard were detonated in pits dug with bulldozers or front-end loaders. General self-imposed limits per detonation in NAAD 02 were set at 5,000 pounds (lb) at the surface and 10,000 lb underground. It was reported that approximately 10 to 14 pits were active at any time and the maximum quantity detonated on any given day was 1,120 lb net explosive weight (NEW). The largest munitions reportedly detonated were 1,000-lb bombs.

1.2.2 NAAD 03—Former White Phosphorus Detonation and Burn Area

NAAD 03 was not operated as a RCRA unit. It consists of approximately 50 acres located adjacent to NAAD 02, NAAD 06, and NAAD 09C in the east-central portion of MRWA 02, along a gently sloping ravine or canyon area that trends from the southwest toward the northeast, and is the primary surface water drainage for much of the original NAAD 02 operational footprint. A portion of NAAD 03 is located in the Post-closure Permit Area, shown on Figure PCP-2. NAAD 03 was used for the destruction of white phosphorus (WP), plasticized WP, and conventional types of munitions during the period from 1945 through the mid-1970s. In the mid-1950s, two 250-lb bombs filled with blister agent (mustard) were suspected to be leaking and were brought directly to NAAD 03, placed on a large pile of wooden dunnage, detonated, and burned. Surveillance Branch personnel ran H-detection tests in the area and no evidence of contamination was reported. This was a singular emergency response, not a planned disposal operation. Afterwards, carcasses were removed and the Army collected soil samples, which were non-detect for mustard agent (Brown and Caldwell, 2009).

1.2.3 NAAD 04—Former Cyanogen Chloride/Phosgene Demolition Area and Drum Burial Site

NAAD 04 was not operated as a RCRA unit. It consists of 4.1 acres located south of NAAD 02 in the southeastern portion of the Post-closure Permit Area. In the 1950s, cyanogen chloride (CG)- and phosgene (CK)-filled chemical bombs were vented in NAAD 04. The bombs were opened by setting off an explosive charge on the valve, and the carcasses were shipped off-site for recycling. The CG and CK gases vented to the atmosphere. Cyanide was the only potential residual, but was not detected in soil samples. Waste drums were buried in the northeastern portion of NAAD 04. This area was initially designated as NAAD 44 but was later incorporated into NAAD 04 (MKM Engineers, Inc., 2009).

1.2.4 NAAD 05—Former Open Burn Area

NAAD 05 was operated under RCRA IS and consists of approximately 60 acres located adjacent to NAAD 02, NAAD 06, NAAD 08B, and NAAD 09C. Open burning began in NAAD 05 in the 1940s and continued until approximately 1990. The area was used for the treatment of bulk propellant, bulk explosives, ballistite, propelling charges, igniters, napalm-filled fire bombs, possibly chromic and phosphoric acids, waste propellant generated as a result of the disassembly of munitions, and dunnage, shipping boxes, empty explosives containers, and non-explosive items suspected of being contaminated by explosives or other hazardous materials. Prior to 1987, materials were burned directly on the ground throughout the area. Open burning of explosives and explosive-contaminated materials was later conducted in four burn pans; each pan had a capacity of 1,000 lb per day (AMEC, 2009).

1.2.5 NAAD 06—Open Burn/Open Detonation Waste Pile and Burn Area

NAAD 06 was operated under RCRA IS and consists of approximately 5 acres located adjacent to NAAD 02, NAAD 03, and NAAD 05. Operations began in the area in the 1940s and burning operations ceased in 1990. Pallets, wire, wood, containers, and other explosive-contaminated materials were piled, burned, and landfilled in the area. Chromic and phosphoric acids may have also been transported to the burning grounds for destruction (AMEC, 2009).

1.2.6 NAAD 07—Closed Trinitrotoluene Retention Ponds

NAAD 07 was not operated under RCRA IS. The 3.5-acre unit is located on the north side of NAAD 02 in the northwest portion of the Post-closure Permit Area. It consisted of 12 lagoons, approximately 20 feet by 20 feet, arranged in three rows, with four lagoons in each row. Trinitrotoluene (TNT)-contaminated water was transported from the TNT Washout Plant into the lagoons and allowed to evaporate, and the residuals were burned (MKM Engineers, Inc., 2009).

1.2.7 NAAD 08B—Former Open Burn Area (Trenches)

NAAD 08B was operated under RCRA IS and consists of 6.6 acres located adjacent to NAAD 02, NAAD 05, and NAAD E76. Two trenches were used from 1953 to 1972 for the disposal of wastewater from the TNT Washout Plant. The wastewater was dumped into the trenches on piles of dunnage and allowed to dry, and then the residuals were burned. Other potential or known practices at the site included burning spotting charges, napalm bombs, and possibly chromic and phosphoric acids; demilitarizing 3.5-inch rockets; and disposing of debris (AMEC, 2009).

1.2.8 NAAD 09B—Closed Open Burn Area

NAAD 09B was not operated under RCRA IS. It consisted of approximately 9 acres located within NAAD 02. The dates of operation are estimated to be from approximately 1959 to 1982 based on aerial photographs. Fiber tubes and ammunition boxes were burned in the area. Drums of paint residues containing lead and polychlorinated biphenyls thought to have been stripped from munitions during renovation and burned were buried at NAAD 09B. The site was incorporated into NAAD 02 (CH2M HILL, 2015).

1.2.9 NAAD 09C—Closed Open Burn Area

NAAD 09C operated under RCRA IS and consisted of approximately 2 acres located adjacent to NAAD 02, NAAD 03, NAAD 05, and NAAD 06. The western half of NAAD 09C lies within the Post-closure Permit Area. Operations began at NAAD 09C in the 1940s and ceased in 1987. Explosives wastes and explosive-contaminated containers were burned and landfilled along the southern canyon wall of NAAD 03. Burn residues and metal remains were buried at the site (Brown and Caldwell, 2004).

1.2.10 NAAD E76—Potential Mustard Round Burial Site

NAAD E76 was not operated under RCRA IS. It consists of 10.7 acres located adjacent to NAAD 08B, and the approximate western half of NAAD E76 lies within the eastern portion of MRWA 02-01. The general area was identified by a retired Camp Navajo employee as possibly containing mustard munitions or drums. No evidence of buried munitions or drums was found during investigations (MKM Engineers, Inc., 2009).

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SECTION 2

Post-closure Contact (40 CFR 264.118(b)(3))

During the post-closure time period, the AZ ARNG is the operator of the facility. The post-closure contact is:

Captain Steven Tuy
Arizona Department of Emergency and Military Affairs
5636 E. McDowell Road
Phoenix, AZ 85008-2643
Phone: 602-629-4220

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Procedures to Prevent Hazards

3.1 Security (40 CFR 270.14(b)(4) and 264.14)

The security procedures included in this section apply only to the Post-closure Permit Area; however, some security measures that are used to prevent entry into the Post-closure Permit Area also serve to reduce entry into other areas of the installation. Figure PCP-3 depicts the security measures presented below.

The following security measures are used to secure the Post-closure Permit Area:

- **Warning Signs** – Danger signs in English and Spanish are placed at a maximum of 100-foot intervals along the boundary of the Post-closure Permit Area. The English signs state “DANGER, UNEXPLODED ORDNANCE, SUBMUNITION, KEEP OUT.” The Spanish signs state “PELIGRO, ARTILLERIA EXPLOSIVA, NO ENTRAR” and contain a graphic. The signs are made of aluminum; the English signs are 12 inches tall by 18 inches wide, and the Spanish signs are 18 inches tall by 10 inches wide. Photographs of the signs are provided in Attachment A. The Arizona Department of Environmental Quality (ADEQ) approved the language for the English and Spanish wording of the signs in email communications during February and March 2002. The warning signs are located around the entire Post-closure Permit Area at a maximum of 100-foot intervals and are visible and legible from 25 feet to individuals approaching the Post-closure Permit Area from any direction to prevent unknowing entry.

Any new signs developed for the Post-closure Permit Area boundary will be in accordance with the Department of the Army Pamphlet 385-63, “Range Safety” (Department of the Army [Army], 2014). As required by 40 CFR 264.14(c), the signs will specify that only authorized personnel are allowed to enter the Post-closure Permit Area and that entry into the area can be dangerous.

- **Barriers to Control Entry** – Vehicular access to Solid Waste Management Unit MRWA 02-02, surrounding the Post-closure Permit Area, is through Security Post 3, the West Gate, or the East Gate. These access points are controlled by security and/or require a key to enter. All personnel accessing this area must be authorized and must check in at Security Post 3 prior to entry to minimize the potential for unauthorized entry into the Post-closure Permit Area.

Concrete road barriers with danger signs are installed at four locations where roads intersect the Post-closure Permit Area from MRWA 02-02 to prevent unknowing entry by vehicles into the Post-closure Permit Area. Roads enter the Post-closure Permit Area from the north, northwest, southwest, and south. Each access location consists of two concrete barriers, staggered to allow authorized traffic to pass through. They are placed approximately 45 feet apart to accommodate Camp Navajo Fire Department vehicle entry. The first (exterior) barrier is approximately 45 feet outside of the boundary. The second (interior) barrier is aligned with the boundary. A total of eight danger signs are affixed to the eight barriers. The danger signs state “DANGER, UNEXPLODED ORDNANCE, DO NOT ENTER.” The signs are made of aluminum, with a reflective coating, and are 22 inches tall by 29.5 inches wide. ADEQ approved the language for the wording of the barrier signs in accordance with the specified Pamphlet 385-63 in an email dated October 16, 2012. A no hunting sign is also affixed to each of the four exterior barriers that state “NO HUNTING IN THIS AREA.” The signs are made of aluminum and are 24 inches tall by 18 inches wide. Photographs of the road barriers and associated signage are provided in Attachment A.

No primary roads enter the Post-closure Permit Area from the east where the steep cliffs of Volunteer Canyon form a natural barrier to vehicular traffic. No military training occurs in Volunteer Wash, the southern portion of which is a Protected Activity Center and critical habitat for the endangered Mexican spotted owl. Individuals authorized to be in the Buffer Area will have received MEC Awareness Training

along with maps showing the Post-closure Permit Area. Consequences are in place for those authorized to be in the Buffer Area, but who may enter the Post-closure Permit Area without authorization. The specific consequences are identified in the MEC Awareness Training. In addition, the Post-closure Permit Area boundary is marked with danger signs posted every 100 feet that are legible from a distance of at least 25 feet.

The Camp Navajo boundary fence, which surrounds the installation and delineates Camp Navajo property, is a security measure for the Post-closure Permit Area. The boundary fence consists of a 4-foot barbed wire fence that is approximately 25 miles long with 30 elk jumps. This fence prevents unknowing entry into the installation. This fence includes posted signs to warn potential trespassers. The signs state: "NO TRESPASSING. IT IS A CLASS 6 FELONY TO TRESPASS ON THIS MILITARY RESERVATION OR FACILITY PURSUANT TO ARS 13-5002. FOR INFORMATION REGARDING PROPER ENTRY TO ARIZONA NATIONAL GUARD MILITARY RESERVATIONS OR FACILITIES CALL 928-773-3297." The language of these signs provides legal notice of the gravity and consequences of trespassing and is used at other ARNG installations. The fence and signage serve as the primary installation marker. Photographs of the installation fence and associated signage are provided in Attachment A.

- **Land Uses and Restrictions** – In conformance with the Installation's Explosive Safety Submission (ESS) approval stipulations (Department of Defense Explosives Safety Board [DDESB], 2007):

"Land use is and will continue to be for military use/military training. If changes occur that could increase explosive hazards to site workers or the public due to the presence of military munitions at the site, an amendment to the ESS must be submitted to DDESB for review and approval. DDESB must review plans for leasing, transferring, disposing, or remediating MEC-contaminated real property".

Current and reasonably anticipated future land uses at the Post-closure Permit Area are limited to those prescribed in the Memorandum "Approval of Request for ICM Waiver for the Open Burn/Open Detonation Area (OB/OD), Camp Navajo, Bellemont, Arizona" (Army, 2003), the Memorandum "2008 Camp Navajo Request for Improved Conventional Munitions (ICM) Waiver Amendment 1" (Army, 2008), and the Certificate of Risk Acceptance for the ICM Waiver Area (CH2M HILL, 2011).

The uses specified in these documents are as follows:

- Surface danger zones for current storage magazines and a proposed small arms range. The firing points and target areas of the currently proposed range and any future small arms ranges will be located outside the Post-closure Permit Area. Because the area will function only as a surface danger zone, range clearance activities will not be performed.
- Mission support and maintenance.
- Security and fire-protection inspections (no security patrols or firefighting will occur inside the Post-closure Permit Area).
- RCRA post-closure care.
- Occasional intentional detonations of acceptable-to-move MEC recovered during MEC inspections.
- Natural and cultural resources management.

Additional land uses that may occur in the Post-closure Permit Area are dependent on installation activities and the ongoing mission of the installation and are subject to ADEQ review of a permit modification request requiring Director approval. The livestock grazing program was cancelled in the late 1990s. Future leases are not planned, but would be subject to ADEQ review of a permit modification request.

A Land Use Control Implementation Plan will be developed separately, incorporating details of this PCP and the Post-closure Area Permit regarding land use restrictions, land use controls (LUCs), and methods

for ensuring effective controls and restrictions. The Land Use Control Implementation Plan will be made available for review by ADEQ upon request.

- **Monitoring Well Security** – All wells installed in or near the Post-closure Permit Area for the purposes of water monitoring are equipped with caps and locks.

3.1.1 Security Training Requirements

Installation personnel, military training personnel, contractors, recreational users, and others who may enter the Buffer Area will receive MEC Awareness Training that provides the security procedures associated with the Post-closure Permit Area. The training materials are provided by the Camp Navajo Environmental Office to installation departments for inclusion in job- and activity-specific training programs, including training for recreational users. Additionally, recreational users who access the Buffer Area comply with daily security check-In requirements presented in Section 3.1.2.

Maps are available at Security Post 3 during check-in that identify “Go” and “No Go” areas for the Buffer Area. Prior to gaining entry, recreational users must present documentation to Security demonstrating they have received appropriate training to enter the Buffer Area.

MEC Awareness Training

Installation personnel, military training personnel, contractors, recreational users, and others who access the Buffer Area will receive MEC Awareness Training as part of their initial job- or activity-specific training. Refresher training will be provided to installation personnel, no less than annually. Contractors and military training personnel receive MEC Awareness Training prior to the commencement of each period of work or recreational activity inside the Buffer Area, no less than annually. The training will be provided as a handout and/or slides to accompany other training programs. The contents of this training program include:

- Map delineating the Post-closure Permit Area, Buffer Area, and Limited Area that shows “No Entry” areas
- Photos of signage and concrete off-set barriers delineating the Post-closure Permit Area
- Access restrictions to the Post-closure Permit Area (e.g., no entry without Quality Assurance Specialist, Ammunition Surveillance [QASAS] or Garrison Commander authorization and explosive ordnance disposal [EOD]- or unexploded ordnance [UXO]-qualified escort personnel)
- Prohibited articles in the Buffer Area (e.g., ammunition, explosives, fireworks, and similar type items)
- Activity restrictions in the Buffer Area (e.g., no digging or camp fires without permit)
- No smoking is allowed in the Post-closure Permit Area. No smoking is allowed in the Buffer Area without prior authorization on a case-by-case basis and only in designated areas. No flame sources are allowed in the Post-closure Permit Area without a permit from the QASAS and Fire Department
- Emergency response procedures
- Emergency response personnel contact information
- Instructions to report trespassers in the Post-closure Permit Area or Buffer Area
- Consequences for recreational users (i.e., removal from the installation, confiscation of permits, game animals, and/or firewood, loss of future recreational privileges and/or other consequences)
- Consequences for installation personnel, military training personnel, contractors, and others (i.e., removal from the area, reporting to supervisor, unit commander, and/or Garrison Commander, and/or other consequences determined on a case-by-case basis)

- Consequences for public not authorized to be on the installation (i.e., removal from the area, reporting to Sheriff's Office and Garrison Commander, and/or consequences determined on a case-by-case basis, including felony charges if warranted)
- 3Rs training – Recognize, Retreat, and Report munitions discoveries

MEC Awareness Training will be documented and maintained by the department conducting the training, including, but not limited to, who conducts the training and who attends the training. A log will be maintained documenting that each department has received updated MEC Training materials. This log will include the following information:

- Department name
- Name and signature of individual receiving training materials
- Date training materials were provided
- Name and Signature of environmental personnel providing training materials.

Daily Security Check-In

Recreational users must check into Security each day prior to entry. Recreational users who remain in the Buffer Area overnight must call into Security each morning prior to leaving their campsite, and each evening when they have returned to their campsite. Recreational users receive daily updates on access restrictions for the Buffer Area.

3.2 Inspections (40 CFR 270.14(b)(5) and 264.15)

In accordance with 40 CFR 264.15(b) and (c) and installation security requirements, annual inspections are conducted at the Post-closure Permit Area, once per calendar year, not less than 9 months apart. To the extent practicable, the annual inspections will coincide with the spring vadose zone monitoring event, and the semiannual inspections will coincide with the spring and fall vadose zone monitoring events. The inspections will include the following:

- Inspect the Post-closure Permit Area boundary
- Inspect areas prone to erosion or frost heave
- Inspect groundwater monitoring wells
- Inspect and maintain fences, signage, and road barriers
- Review inspection and maintenance records for safety equipment; applicable facility-wide inspections, testing and maintenance procedures for safety equipment are addressed in Section 5.2
- Review the Camp Navajo Real Property Master Plan
- Review trespassing and other incident reports
- Review MEC Awareness Training records and materials
- Review Personnel Training records and materials
- Review land use records
- Review documents that are included in the permit by reference
- Review munitions response After Action Reports for MEC identified in MRWA 02-02 and the Post-closure Permit Area and any additional documents related to substantial MEC found or managed

Results of the inspections and reviews will be recorded on inspection logs and maintained in the Camp Navajo Environmental Office in accordance with 40 CFR 264.15(b), (c) and (d). Deficiencies observed during the inspection period that require maintenance or repair will be photographed and recorded on a

maintenance and repair log, including the date the maintenance or repair occurred. Deficiencies will be corrected as soon as possible. If they cannot be corrected immediately, the log will include recommendations to correct the deficiency or enhance safety and a schedule for when the recommendations should be completed. If any indications of migration (e.g., sediment accumulation, munitions, or munitions debris) are observed outside of the Post-Closure Permit Area during inspections, then sediment sampling will be conducted. If evidence of springs or seeps is observed along the Post-closure Permit Area boundary in Volunteer Canyon, water sampling will be conducted. Table PCP-1 presents the inspection schedule and descriptions. Table PCP-2a is an example of an inspection log that may be used to document the information in Table PCP-1, and Table PCP-2b is an example of a maintenance and repair log that may be used.

An annual report (Annual Post-Closure Care and Groundwater Monitoring Report) will be prepared, provided to ADEQ, and placed in the Camp Navajo Administrative Record for public viewing. The semiannual and annual inspection activities will be summarized, and the locations of erosion, frost heave, incidents, repairs, and deficiencies will be shown on maps. Appendices will include the inspection and maintenance logs. The findings will be assessed to identify changes to the assumptions used in the MEC Hazard Assessment. The report will determine if the LUCs are operating as intended and if they remain protective of human health and safety and the environment. It will outline actions that should be taken if LUCs are shown to be ineffective.

TABLE PCP-1

Schedule and Description of Inspection Activities*Post-closure Plan for Post-closure Permit Area, Open Burning/Open Detonation Operations, Camp Navajo*

Inspection Activity	Frequency	Items to be Inspected
Inspect the Post-closure Permit Area boundary (inspect areas within 5 feet of boundary)	Annual	<ul style="list-style-type: none"> - Inspect for evidence of erosion, run-on, run-off, and MEC exposure or migration out of the Post-closure Permit Area. - Inspect for evidence of trespassing into the Post-closure Permit Area, including items such as personal trash, shell casings, bent or removed signs, or tire tracks. - Inspect land survey benchmarks.
Inspect areas outside the Post-closure Permit Area	Annual	<ul style="list-style-type: none"> - Inspect areas outside the Post-closure Permit Area boundary, focusing on steep hillsides, exception areas, and surface water drainages. - Inspect for signs of erosion or frost heave. - Inspect for signs of springs or seeps in Volunteer Canyon. - Inspect for evidence of MEC exposure or migration out of the Post-closure Permit Area.
Inspect areas inside the Post-closure Permit Area	Semiannual	<ul style="list-style-type: none"> - Inspect areas of the Post-closure Permit Area that can be observed from the perimeter boundary and during inspection of wells. - Identify areas of standing water, including former detonation pits. - Inspect for evidence of erosion, run-on, and run-off. - Inspect road barriers and associated signage for deterioration, damage, and visibility. Identify intentional removal or damage. If some roads are not accessible due to weather conditions, document on the inspection form.
Inspect vadose zone and shallow groundwater monitoring wells	Semiannual	<ul style="list-style-type: none"> - Inspect the structural integrity of the wellheads, caps, and locks, noting broken locks, cracked piping, missing caps, etc. - Inspect for rodent burrows next to the wells.
Review records for annual inspection of installation and Limited Area fences, signs, and gates and inspect Post-closure Permit Area signs	Annual	<ul style="list-style-type: none"> - Review Facilities Maintenance Office, Facilities Engineering, Security, and Range Control inspection and maintenance records for the installation boundary fence, gates and signs and the Limited Area boundary fence, gates, and locks. - Inspect the Post-closure Permit Area boundary signs to confirm their legibility and structural integrity.

TABLE PCP-1

Schedule and Description of Inspection Activities

Post-closure Plan for Post-closure Permit Area, Open Burning/Open Detonation Operations, Camp Navajo

Inspection Activity	Frequency	Items to be Inspected
Review inspection and maintenance records for safety equipment	Annual	Review Security, Facilities Engineering, and Fire Department records to confirm that radios, fire extinguishers, and first aid kits have been inspected and maintained in accordance with manufacturer recommendations.
Review trespassing and other incident reports	Semiannual	Review Security records for trespassing and other incident reports associated with the Post-closure Permit Area.
Review MEC Awareness Training records and materials (Section 3.1 of the PCP)	Annual	<ul style="list-style-type: none"> - Review Safety, Security, Facilities Maintenance Office, Facilities Engineering, QASAS, and Range Control training records and materials to confirm departments are providing and documenting MEC Awareness Training. - Review training materials to confirm they contain the information listed in Section 3.1 of the PCP.
Review Personnel Training records and materials (Section 4 of the PCP)	Annual	<ul style="list-style-type: none"> - Review records to confirm that Post-closure Permit Area facility and emergency response personnel are receiving the training. - Review training materials to confirm they contain the information listed in Section 4 of the PCP.
Review land use records	Annual	Review Range Control and other department records for types and duration of military training and recreational activities near the Post-closure Permit Area to determine if nearby land uses have changed.
Review documents that are included in the permit by reference	Annual	Review standard operating procedures, standard operating guidelines, etc. referenced in the permit to identify changes that may be inconsistent with permit requirements.
Review the Camp Navajo Real Property Master Plan	Annual	Review Real Property Master Plan to confirm that the Post-closure Permit Area has been properly notated.
Review munitions response AARs	Annual	<ul style="list-style-type: none"> - Review munitions response after action reports for MEC discoveries in MRWA 02-02. - Confirm that the SWMU Corrective Action Procedures were implemented for MEC discoveries in MRWA 02-02. - Review munitions response after action reports for MEC associated with the Post-closure Permit Area.

TABLE PCP-2a

Example Inspection Log

Post-closure Plan for Post-closure Permit Area, Open Burning/Open Detonation Operations, Camp Navajo

Name of Inspector:	Date/Time of Inspection:				
<i>See Table PCP-1 for items to be reviewed during inspections.</i>					
Post-closure Permit Area Boundary (annual)	Yes	No	N/A	Response Required?	See Note No.
Has the boundary been inspected?				Yes No	
Has evidence of erosion or run-off been observed?				Yes No	
Are survey benchmarks in good condition?				Yes No	
Have MEC been observed within 5 feet of the boundary?				Yes No	
Has evidence of trespassing been observed?				Yes No	
<i>Note: Document locations of erosion, MEC or evidence of trespassing on a map. Implement the SWMU Corrective Action Procedures if MEC is discovered outside the Post-closure Permit Area boundary.</i>					
Areas Inside the Post-closure Permit Area (semiannual)	Yes	No	N/A	Response Required?	See Note No.
Have areas of standing water been observed?				Yes No	
Has evidence of erosion, run-on, or run-off been observed?				Yes No	
Is water present in the stock tank?				Yes No	
Were road barriers and associated signage inspected?				Yes No	
Were repairs or replacements necessary, and if so, have they been completed?				Yes No	

TABLE PCP-2a

Example Inspection Log

Post-closure Plan for Post-closure Permit Area, Open Burning/Open Detonation Operations, Camp Navajo

<i>If signs or barriers required repair, check one of the following: ___ Signs are faded/unreadable ___ Signs were removed ___ Signs/barriers appeared to be intentionally damaged ___ Other (explain)</i>					
<i>Note: Document locations of erosion, run-on, or run-off and areas of standing water on a map. Document locations of fence, sign, or barrier damage and repairs on a map. Attach photographs documenting items requiring repair.</i>					
Areas Outside the Post-closure Permit Area (annual)	Yes	No	N/A	Response Required?	See Note No.
Have areas prone to erosion, frost heave, or seepage been inspected?				Yes No	
Has erosion, frost heave, or seepage been observed?				Yes No	
If erosion, frost heave, or seepage has been observed, is it in a drainage?				Yes No	
Was MEC observed within areas of erosion or drainage?				Yes No	
<i>Note: Document locations of erosion, frost heave or MEC on a map. Implement the SWMU Corrective Action Procedures if MEC is discovered outside the Post-closure Permit Area boundary.</i>					
Vadose Zone and Shallow Groundwater Monitoring Wells (semiannual)	Yes	No	N/A	Response Required?	See Note No.
Have the wellheads, caps and locks been inspected?				Yes No	
Were repairs necessary, and if so, have they been completed?				Yes No	
Were the inspection and maintenance documented?				Yes No	
<i>Note: Document locations of well head, cap or lock damage and repairs on a map.</i>					
Fences, Signs, and Gates (annual)	Yes	No	N/A	Response Required?	See Note No.
Were installation and Limited Area fences, gates, locks, and signs inspected?				Yes No	
Were repairs or replacements necessary, and if so, were they completed?				Yes No	
Have the Post-closure Permit Area boundary signs been inspected?				Yes No	
Were repairs necessary, and if so, have they been completed?				Yes No	
Were the fence and sign inspections and repairs documented?				Yes No	
<i>If fences or signs required repair, check one of the following: ___ Signs are faded/unreadable ___ Signs were removed ___ Fences/Signs appeared to be intentionally damaged ___ Other (explain)</i>					
<i>Note: Document locations of fence and sign damage and repairs on a map. Attach photographs documenting items requiring repair.</i>					
Safety Equipment (annual)	Yes	No	N/A	Response Required?	See Note No.
Were maintenance and repair records available for review?				Yes No	
Has fire and emergency response equipment been inspected?				Yes No	
Have the base radios been inspected and repaired if necessary?				Yes No	
Have the fire extinguishers been inspected and replaced if necessary?				Yes No	
Have the first aid kits been inspected and restocked if necessary?				Yes No	
Trespassing and Other Incidents (semiannual)	Yes	No	N/A	Response Required?	See Note No.
Were records of trespassing available for review from Security?				Yes No	
Has trespassing onto the installation occurred?				Yes No	
Has trespassing into the Post-closure Permit Area occurred?				Yes No	
Have MEC been discovered in or near the Post-closure Permit Area?				Yes No	
Have fire or medical incidents occurred in or near the Post-closure Permit Area?				Yes No	
Has emergency demolition occurred in or near the Post-closure Permit Area?				Yes No	
Were the incidents properly documented?				Yes No	
<i>Note: Document locations of trespassing, MEC discovery, fire or medical incidents on a map.</i>					
MEC Awareness Training (annual)	Yes	No	N/A	Response Required?	See Note No.
Have installation personnel received annual training?				Yes No	
Have military training personnel received training?				Yes No	

TABLE PCP-2a

Example Inspection Log

Post-closure Plan for Post-closure Permit Area, Open Burning/Open Detonation Operations, Camp Navajo

Have contractors received training?				Yes	No	
Have hunters, wood cutters, campers, and other visitors received training?				Yes	No	
Have tenants received annual notification?				Yes	No	
Do training materials include required information (see PCP Section 3.1.1)?				Yes	No	
<i>Note: Revise training materials if site conditions, land uses, or LUCs have changed or information is missing</i>						
Personnel Training Plan (annual)	Yes	No	N/A	Response Required?		See Note No.
Have site workers and emergency responders received required training?				Yes	No	
Do training materials include required information?				Yes	No	
<i>Note: Revise training materials if site conditions have changed or information is missing.</i>						
Land Use (annual)	Yes	No	N/A	Response Required?		See Note No.
Have military training records been reviewed?				Yes	No	
Have the types or durations of military training changed?				Yes	No	
Has the range surface danger zone or restricted airspace overlying the Post-closure Permit Area been activated?				Yes	No	
Have recreational permits been reviewed?				Yes	No	
Have the types or durations of recreational activities changed?				Yes	No	
Has land use in the Buffer Area changed?				Yes	No	
Has land use adjacent to the installation changed?				Yes	No	
<i>Note: Review the MEC Hazard Assessment assumptions if the types or durations of land use have changed.</i>						
Permit Reference documents (annual)	Yes	No	N/A	Response Required?		See Note No.
Have documents referenced in the permit been reviewed?				Yes	No	
Have the reference documents been revised?				Yes	No	
Do the revisions remain consistent with permit requirements?				Yes	No	
Real Property Development (annual)	Yes	No	N/A	Response Required?		See Note No.
Has the Real Property Development Plan been reviewed?				Yes	No	
Have the Post-closure Permit Area LUCs been notated and shown on a map?				Yes	No	
Do the Post-closure Permit Area LUCs support current and planned future land uses near the Post-closure Permit Area?				Yes	No	
<i>Note: Revise the notations if the land uses or LUCs have changed.</i>						
Munitions Responses (annual)	Yes	No	N/A	Response Required?		See Note No.
Have munitions responses occurred in MRWA 02-02?				Yes	No	
Have the associated munitions response after action reports been reviewed?				Yes	No	
Were the SWMU Corrective Action Procedures followed?				Yes	No	
Were munitions responses implemented in the Post-closure Permit Area?				Yes	No	
Maintenance and Repairs (annual)	Yes	No	N/A	Response Required?		See Note No.
Have maintenance or repairs been conducted since the previous inspection?				Yes	No	
Were maintenance or repairs conducted during this inspection?				Yes	No	
Have maintenance or repairs been scheduled for future completion?				Yes	No	
Notes:						
<i>Any deterioration or malfunction of equipment or structures which the inspection reveals will be remedied on a schedule that verifies that the problem does not lead to an environmental or human health hazard. Where a hazard is imminent or has already occurred, remedial action must be taken immediately. Document maintenance activities, including proposed and actual schedules on the Maintenance and Repair Log. Attach photographs of any items requiring maintenance or repair.</i>						

- No flame sources or other sources of ignition will be brought into the Post-closure Permit Area without a permit that has been reviewed and approved by the QASAS and the Camp Navajo Fire Department. This is documented in the MEC Awareness Training Material.
- No smoking is allowed in the Post-closure Permit Area. No smoking is allowed in the Buffer Area without prior authorization on a case-by-case basis and only in designated areas. This is documented in the MEC Awareness Training Material.

3.4 Run-on and Run-off Controls (40 CFR 270.14(b)(8)(ii))

There are currently no constructed run-on or run-off controls associated with the Post-closure Permit Area. There is no persistent surface water in or near the Post-closure Permit Area. Ephemeral surface water channels are scattered across the surrounding land and the permitted area. Based on former surface water evaluations, the watershed upgradient of the Post-closure Permit Area is small and the ephemeral water channels do not yield significant run-on to the Post-closure Permit Area during typical snowmelt or precipitation events. In areas of former OD activities in the Post-closure Permit Area, surface water tends to accumulate temporarily in former OD pits following periods of heavy rain and snowmelt rather than readily flowing outwards, minimizing the potential for run-off from the Post-closure Permit Area.

Much of the area of former OD pits within the Post-closure Permit Area drains to a former stock pond. During annual inspections, observations of standing water in the stock pond and other areas within the Post-closure Permit Area will be documented. Inspections of the Post-closure Permit Area boundary as described in Table PCP-1 will also identify areas of erosion or other evidence of run-on or run-off in the Post-closure Permit area.

A surface water run-on/run-off evaluation (i.e., Surface Water Survey) will be performed using topographic mapping of the Post-closure Permit Area and the surrounding land. If it is determined that storm water controls must be implemented to prevent run-on or run-off from the Post-closure Permit Area, they will be included in the inspection and maintenance schedule and added to the Inspection Log Sheet.

SECTION 4

Personnel Training Plan (40 CFR 270.14(b)(12) and 264.16)

This training plan addresses the training requirements for facility personnel assigned specific duties associated with post-closure care of the Post-closure Permit Area. Security-related training for installation personnel, military personnel, contractors, recreational users, and others who access the Buffer Area, but will not be performing work associated with the Post-closure Permit Area, is described in Section 3.1.

The objective of this training plan is to prepare facility personnel to perform their post-closure care duties in a safe, environmentally sound, and technically competent manner. To achieve this objective, the program provides employees with introductory and continuing training relevant to their positions. Facility personnel will receive classroom and on-the-job training designed specifically to teach them how to perform their duties safely and in conformance with the post-closure permit. Facility personnel will complete the required training program within 6 months of assignment and will not be authorized to work unsupervised within the Post-closure Permit Area before completion of the appropriate training program. The following sections describe the training requirements for Camp Navajo environmental staff, emergency responders, and EOD- and UXO-qualified personnel.

4.1 Outline of Introductory and Continuing Personnel Training Program

All facility personnel who are involved in post-closure care activities receive the following types of training:

- Occupational Safety and Health Administration Health and Safety Training in accordance with 29 CFR 1910.120 (Hazardous Waste Operations and Emergency Response [HAZWOPER])
- RCRA Hazardous Waste Awareness and Materials Training
- Post-closure Care Training

Other personnel who may enter the Post-closure Permit Area include EOD- and UXO-qualified personnel and Camp Navajo emergency response personnel who will receive the following additional training, as applicable:

- EOD- and UXO-qualified Personnel Training
- Emergency Response Personnel Training

A description of each training program and the associated training content for each program is provided in this section. Additionally, non-EOD-qualified and non-UXO-qualified personnel must always be accompanied by EOD/UXO-qualified personnel when in the Post-closure Permit Area. The content of each training and the required frequency is presented in Table PCP-3. Table PCP-4 identifies the specific training facility personnel and contractors will receive.

4.1.1 Occupational Safety and Health Administration Hazardous Waste Operations and Emergency Response (HAZWOPER) Training

Facility personnel involved in post-closure care activities, including the Post-closure Site Manager and his/her designees, the RCRA Emergency Coordinator, and workers, including contractors, who have the potential to perform or directly supervise intrusive activities within the Post-closure Permit Area, will be trained in accordance with 29 CFR 1910.120. HAZWOPER training will consist of a minimum of 24 or 40 hours of initial offsite instruction, depending on the risk of exposure during job duties, and an annual 8-hour

refresher training. The contents of these training classes are presented in Table PCP-3. Table PCP-4 identifies the level of HAZWOPER training for facility personnel and contractors.

4.1.2 RCRA Hazardous Waste Awareness and Materials Training

Facility personnel involved in post-closure care activities, including the Post-closure Site Manager and his/her designees, the RCRA Emergency Coordinator, and emergency response personnel receive RCRA Hazardous Waste Awareness and Materials Training. This training is conducted initially and annually to promote knowledge, understanding, and awareness of hazardous waste so that work associated with the Post-closure Permit Area meets relevant hazardous waste regulations. The content of this training is presented in Table PCP-3.

4.1.3 Post-Closure Care Training

Post-closure Care Training will be implemented to provide appropriate training to personnel who may enter the Post-closure Permit Area, including workers or contractors performing post-closure care monitoring or inspections and other authorized individuals who may be required to enter the Post-closure Permit Area for non-intrusive types of activities. The Post-closure Care Training will incorporate basic emergency response procedures to MEC, known as the "3Rs": recognize, retreat, and report, and will include MEC Awareness Training as described in Section 3.1. The content of this training is presented in Table PCP-3.

4.1.4 Explosive Ordnance Disposal/ Unexploded Ordnance Personnel Training

Only fully qualified EOD/UXO-qualified personnel will be authorized to respond to MEC-related emergencies within the Post-closure Permit Area. All EOD personnel receive MEC training by attending and graduating from a military EOD school of the United States, Canada, Great Britain, Germany, or Australia. Training requirements for UXO-qualified personnel are described in the DDESB's *Minimum Qualifications for Personnel Conducting Munitions and Explosives of Concern-Related Activities; Technical Paper (TP) No. 18* (most current version at the publication of this document). An outline of this training is not provided in the permit application but will incorporate, by reference, the aforementioned document. The training identified in TP-18 incorporates MEC-related munitions response procedures.

4.1.5 Emergency Response Personnel Training

Emergency response personnel training is provided to Camp Navajo Fire Department personnel who are responsible for immediate response to medical emergencies within the Post-closure Permit Area and fires and/or explosions or detonations within the area that threaten personnel or property outside of the Post-closure Permit Area. The Fire Department consists of highly trained emergency response specialists. Their professional training with respect to fighting wild-land fires and fires in explosive environments, spill response, and emergency medical treatment is broad and outside the scope of this training plan. Fire Department personnel receive extensive training equivalent to National Fire Protection Association and 29 CFR 1910.120(q) emergency responder requirements and continuing training on a periodic basis. The typical course content for emergency response personnel training is provided in Table PCP-3.

TABLE PCP-3

Content of Training Programs*Camp Navajo RCRA Post-closure Permit Application, Open Burning/Open Detonation Operations*

Type of Training	Frequency	Minimum Content
HAZWOPER (Occupational Safety and Health Administration) – 24-hour (initial) and 40-hour (initial)	Initial	<ul style="list-style-type: none"> • Overview of federal regulations related to hazardous materials, hazardous waste management, and Hazard Communications (20 CFR 1910.1200) • Overview of hazardous materials (i.e., properties, compatibility, toxicology), including potential risks during an incident and how to ask for help • Respiratory Protection – Selection, Use, and Maintenance • Personal Protective Equipment – Use and Limitations • Site Control • Medical Surveillance • Site-specific Health and Safety Plans – Developments and Uses • Air Monitoring Equipment – Uses and Limitations • Emergency Plans and Procedures • Decontamination Procedures • Container Handling
HAZWOPER (Occupational Safety and Health Administration) – 8-hour Refresher	Annual	<ul style="list-style-type: none"> • Topics covered in initial training relevant to work being performed
Post-Closure Care Training	Initial and Annual	<ul style="list-style-type: none"> • Map showing roads, features, and evacuation routes • Photos showing what MEC looks like • Access restrictions to the Post-closure Permit Area • Prohibited articles in the Post-closure Permit Area • Activity restrictions in the Post-closure Permit Area • Emergency response procedures • Emergency response personnel contact information • Instructions to report trespassers in the Post-closure Permit Area • Smoking restrictions (no smoking) in the Post-closure Permit Area • MEC avoidance procedures • MEC Awareness Training (Security-related)
RCRA Hazardous Waste Awareness and Materials Training – Internal	Initial and Annual	<ul style="list-style-type: none"> • RCRA overview/history • HW Management <ul style="list-style-type: none"> - Identification and waste determinations - Generator status - Accumulation and weekly inspections - Disposal and recycling - Documentation - Education and training • Emergency response procedure • Emergency systems, including communications or alarm systems • Responses to fires and explosions, including MEC found in the Post-closure Permit Area • Response to groundwater contamination emanating from the Post-closure Permit Area • OSHA Hazard Communication Standard • Post-closure Permit Area Contingency Plan and how to implement it

TABLE PCP-3

Content of Training Programs

Camp Navajo RCRA Post-closure Permit Application, Open Burning/Open Detonation Operations

Type of Training	Frequency	Minimum Content
		<ul style="list-style-type: none"> Housekeeping and audits
EOD/UXO Training	Initial training and documented experience as required by TP-18	<ul style="list-style-type: none"> In conformance with Minimum Qualifications for UXO Technicians and Personnel (DDESB TP-18 is most current)
Emergency Response Personnel Training	Initial and Annual	<ul style="list-style-type: none"> Camp Navajo emergency procedures Post-closure Permit Contingency Plan Training for duties specific to Camp Navajo Fire Department personnel

4.2 Relevance of Training to Job Duties

This training program will provide employees with training that is relevant to their positions and necessary for them to perform their job tasks safely.

Table PCP-4 presents a job title/description and associated training for each activity that may require entry to the Post-closure Permit Area by facility personnel.

TABLE PCP-4

Post-closure Permit Area Job Descriptions

Camp Navajo RCRA Post-closure Permit Application, Open Burning/Open Detonation Operations

Job Title/Description	Job Responsibilities	Type of Training and Frequency
Post-closure Site Manager and Designee	Provides ongoing oversight, supervision, and coordination at the Post-closure Permit Area during the post-closure care period for access control, monitoring, inspection, and maintenance in compliance with the permit. The Post-closure Site Manager or his designee, trained in hazardous waste procedures, also serves as the Training Director. Responsible for providing internal MEC Awareness Training materials.	<ul style="list-style-type: none"> 24-hour HAZWOPER initial (29 CFR 1910.120(e) and (p)) 8-hour HAZWOPER refresher annual (29 CFR 1910.120(e)(8) and (p)(7)) MEC Awareness Training (initial and annual) Hazardous Waste Awareness and Materials Training (Internal) Initial and Annual
RCRA Emergency Coordinator	Oversees implementation of the Post-closure Permit Area Contingency Plan. Provides internal Hazardous Waste Awareness and Materials Training.	<ul style="list-style-type: none"> 40-hour HAZWOPER initial (29 CFR 1910.120(e) and (p)) 8-hour HAZWOPER refresher (29 CFR 1910.120(e)(8) and (p)(7)) MEC Awareness Training (initial and annual) Hazardous Waste Awareness and Materials Training (External) Initial and Annual
RCRA Alternate Emergency Coordinator (Camp Navajo Fire Department Chief)	Oversees implementation of Camp Navajo emergency response procedures.	<ul style="list-style-type: none"> 40-hour HAZWOPER initial (29 CFR 1910.120(e) and (p)) 8-hour HAZWOPER refresher (29 CFR 1910.120(e)(8) and (p)(7))

TABLE PCP-4

Post-closure Permit Area Job Descriptions*Camp Navajo RCRA Post-closure Permit Application, Open Burning/Open Detonation Operations*

Job Title/Description	Job Responsibilities	Type of Training and Frequency
		<ul style="list-style-type: none"> • MEC Awareness Training (initial and annual) • Hazardous Waste Awareness and Materials Training (Internal) Initial and Annual
Site investigation Personnel	Performs post-closure intrusive sampling activities, as needed.	<ul style="list-style-type: none"> • 40-Hour HAZWOPER initial (29 CFR 1910.120(e) and (p)) • 8-hour HAZWOPER refresher annual (29 CFR 1910.120(e)(8) and (p)(7)) • MEC Awareness Training (initial and annual)
Emergency Response Personnel (Camp Navajo Fire Department)	Provides immediate response to medical emergencies within the Post-closure Permit Area and fires and/or explosions or detonations within the area that threaten personnel or property outside of the Post-closure Permit Area.	<ul style="list-style-type: none"> • Emergency Response Personnel Training (29 CFR 1910.120(q)) initial and annual • MEC Awareness Training (initial and annual) • Hazardous Waste Awareness and Materials Training (Internal) initial and annual
EOD and UXO-qualified Personnel	Provides UXO escort, avoidance support, and construction support in the Post-closure Permit Area.	<ul style="list-style-type: none"> • Military EOD training, experience and/or per DDESB TP-18. See DDESB TP-18 for training frequency

4.3 Training Records

Training records for Camp Navajo personnel, except for Fire Department personnel, for initial and continuing training will be maintained onsite at the Camp Navajo Environmental Management Office. MEC Awareness Training records for all personnel accessing the Post-closure Permit Area will also be retained at the Camp Navajo Environmental Management Office. Emergency response personnel retain their own training records at the Camp Navajo Fire Department. Military EOD and UXO-qualified personnel retain their own training records with their respective unit commands. Contractors are required to retain their own training records. Proof of proper training of contractor staff will be verified by the Post-closure Site Manager (or designee) by reviewing proof of training documentation prior to authorizing individuals to access the Post-closure Permit Area. The Camp Navajo Environmental Management Office will support the various training activities, provide supplemental site-specific training materials and updates, and annually inspect existing training programs to evaluate whether they continue to accurately reflect the activities at the site and training procedures.

The following records will be maintained at the Camp Navajo Environmental Office in accordance with 40 CFR 264.16(d):

- Job title for each position that may need access to the Post-closure Permit Area related to hazardous waste management, and the name of the employee filling each job.
- Written job description for each position listed in Table PCP-4. This description will include the requisite skill, education, or other qualifications, and duties of employees assigned to each position.
- Written description of the type and amount of both introductory and continuing training that will be given to each person filling a position presented in Table PCP-4.

- Records that the required training listed in this section has been given to, and completed by, facility personnel.

Training records on current personnel must be kept until closure of the facility; training records on former employees must be kept for at least 3 years from the date the employee last worked at the facility. Personnel training records may accompany personnel if they are transferred to other military facilities.

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SECTION 5

Preparedness and Prevention Requirements (40 CFR 270.14(b)(6) and 264 Subpart C)

The Post-closure Permit Area is a non-operational facility (e.g., RCRA-regulated waste is not being handled). The primary hazards are explosions, which include the unintentional detonation of a munition located within the Post-closure Permit Area, and fire, which can originate in the Post-closure Permit Area or enter the Post-closure Permit Area and threaten the surrounding area, other parts of the installation, or U.S. Forest Service land. The security and access procedures described in Section 3 of this PCP will minimize the possibility of an unintentional human-caused detonation, which could also cause a fire or non-sudden release of hazardous waste (munitions constituent [MC]) that could threaten human health or the environment. The potential for non-sudden releases of MC to soil or groundwater are addressed through the groundwater monitoring program.

5.1 Required Equipment (40 CFR 264.32)

The potential emergencies within the permitted area primarily include accidental detonation and wild-land fire. Any accidental detonations or fires within the Post-closure Permit Area would not require response unless they threaten areas outside the permitted area. Required equipment includes the following:

- Onsite fire and emergency response equipment. This equipment will include, at a minimum, the appropriate equipment to contain and fight wildfire that occurs in the Buffer Area to keep fire from entering the Post-closure Permit Area. No firefighting equipment or personnel will be deployed within the Post-closure Permit Area. Camp Navajo firefighting personnel maintain firefighting equipment readiness, including water at adequate volume and pressure to supply water hose streams, to fight forest fires in the area. This same equipment will be used to respond to fire that threatens the Post-closure Permit Area.
- Two-way radio or cell phone communication and notification systems. These systems will be used for emergency notifications and to provide instructions to personnel.
- Two-way radios or cell phones will be required for all military training units, installation personnel, contractors, recreational users, and others who access the Buffer Area. All two-way radios and cell phones taken into the Limited Area and the Post-closure Permit Area will be tested and authorized for use at Camp Navajo by the Facilities Engineering Office. Two-way radios and cell phones will be capable of contacting Camp Navajo security, fire, and emergency response personnel.
- Portable fire extinguishers and first aid kits. All vehicles carrying personnel into the Post-closure Permit Area will be equipped with minimum rating 10:BC portable fire extinguishers and first aid kits.

5.2 Testing and Maintenance of Equipment (40 CFR 264.33)

The Camp Navajo Fire Department is a 24-hour, 7-day per week, fully-equipped support operation located in the Administrative Area. Camp Navajo Fire Department equipment is maintained and tested in accordance with manufacturer specifications, which may include periodic inspections and maintenance following incident responses, to assure proper operation in the time of an emergency. Camp Navajo firefighting personnel maintain firefighting equipment readiness, including water at adequate volume and pressure to supply water hose streams, to fight forest fires in the area. This same equipment will be used to respond to fire that threatens the Post-closure Permit Area.

Camp Navajo two-way radio communication is used on a regular basis by Security, the Fire Department, and other Camp Navajo departments. Full-time Camp Navajo employees maintain the two-way radio system to ensure the system remains functional.

Fire extinguishers and first aid kits that are taken into the Post-closure Permit Area will be inspected annually to verify that they have not expired and that they contain the appropriate supplies as documented on the annual inspection log. Base radios will be tested and fire extinguishers and first aid kits will be inspected prior to entry into the Post-closure Permit Area.

All equipment will be tested and maintained in accordance with manufacturer's specifications. Documentation of testing and maintenance activities will be maintained in the appropriate department (e.g., Security, Fire Department) and will be available for review.

5.3 Access to Communications or Alarm System (40 CFR 264.34)

Handheld radios or cell phones will be required for all military training units, installation, and contractor personnel when performing operations at or near the Post-closure Permit Area. All two-way radios and cell phones taken into the Limited Area and the proposed Post-closure Permit Area will be tested and authorized for use at Camp Navajo by the Facilities Engineering Office. The handheld radios and/or cell phones will be capable of contacting Camp Navajo security, fire, and emergency response personnel. No individual is allowed to enter the Post-closure Permit Area alone.

5.4 Required Aisle Space (40 CFR 264.35)

This requirement does not apply to the Post-closure Permit Area.

5.5 Arrangements with Local Authorities (40 CFR 264.37)

The Camp Navajo Fire Department is a party to the *Cooperative Greater Flagstaff Area Fire Agencies All Risk Emergency Intergovernmental Agreement*, dated April 15, 2014, which includes the following local organizations for response to incidents that require additional support:

- Flagstaff Fire Department, Flagstaff, Arizona
- Ponderosa Fire Department, Bellemont, Arizona
- Pinewood Fire District, Munds Park, Arizona
- Sedona Fire District, Sedona, Arizona
- Highlands Fire District, Kachina Village, Arizona
- Mormon Lake Fire District, Mormon Lake, Arizona
- Summit Fire District, Doney Park, Arizona

The Arizona Department of Emergency Services, including the Camp Navajo Fire District, is party to the *Arizona Fire Service Mutual Aid Plan*, dated July 2011, which includes all firefighter organizations throughout the state. Documentation of these agreements is presented in Attachment B.

The Camp Navajo Fire Department is the medical response lead agency. If outside support is necessary, they will transport injured personnel to the Flagstaff Medical Center or North Country Healthcare in Williams. Both facilities are provided with a copy of the current contingency plan. A copy of the notification letters is presented in Attachment B.

The local agencies/authorities list will be updated, as necessary, throughout the post-closure period, which will require a permit modification, and an updated list of Cooperative Agreements will be maintained at the Camp Navajo Fire Department. The Camp Navajo QASAS maintains communication and arrangements with the military EOD units at Papago Park Military Reservation and Luke Air Force Base.

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SECTION 6

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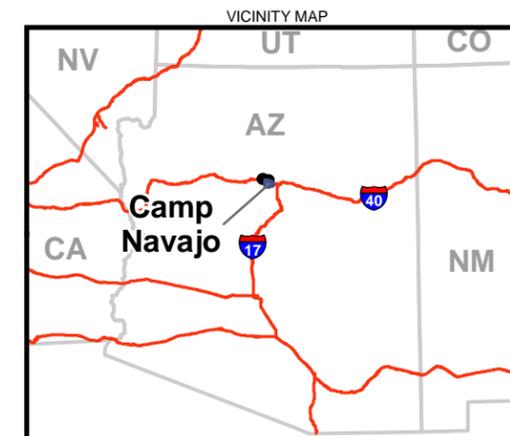
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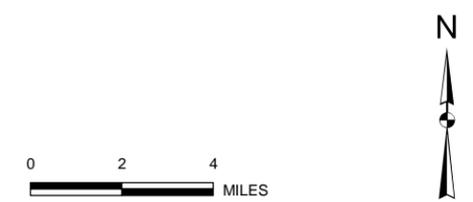
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Figures

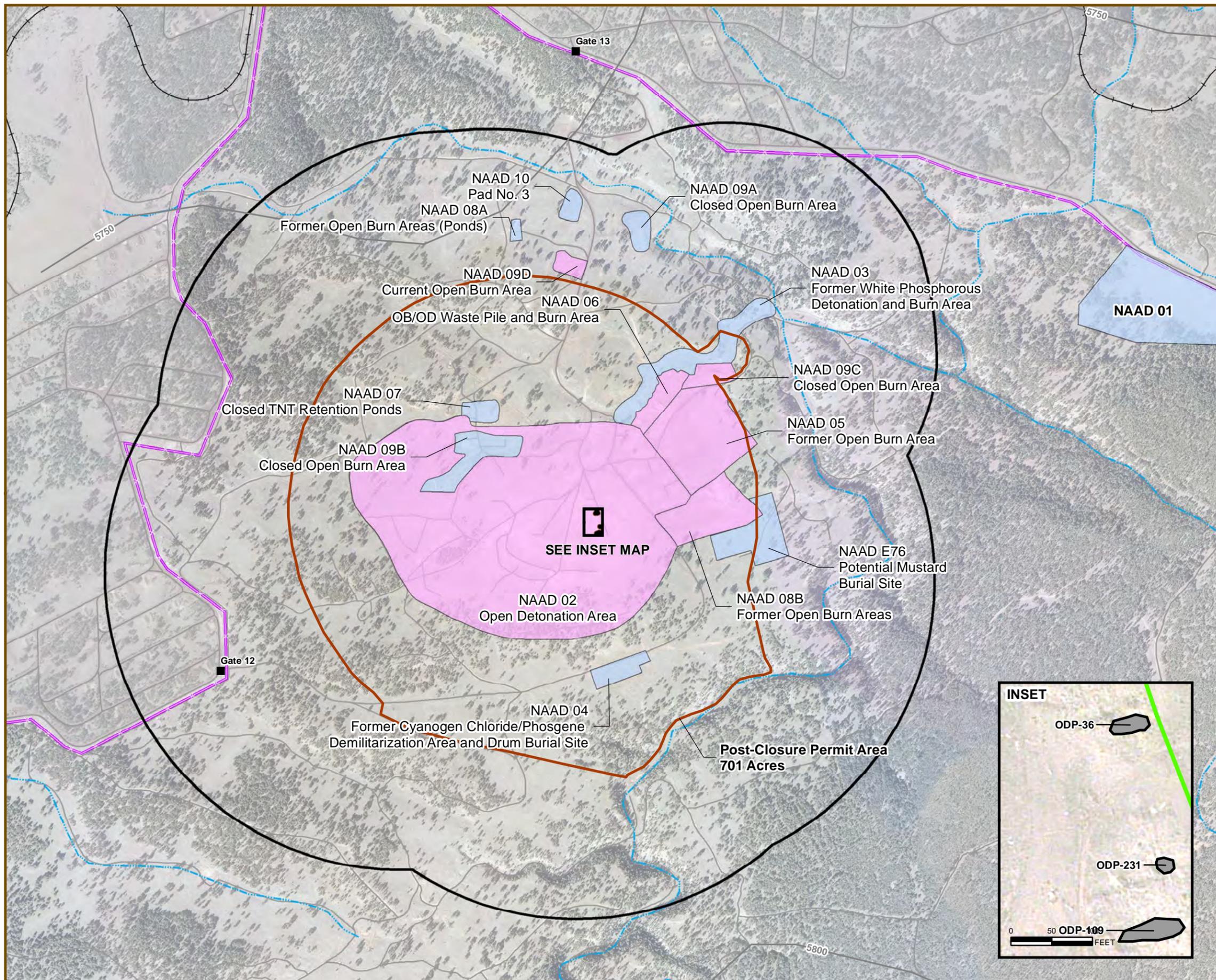
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- LEGEND**
- MILITARY RESERVATION BOUNDARY
 - COUNTY BOUNDARY
 - STATE PARKS
 - INTERSTATE
 - STATE HIGHWAY
 - ROAD

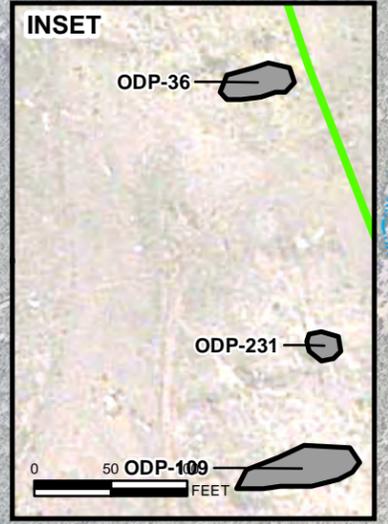
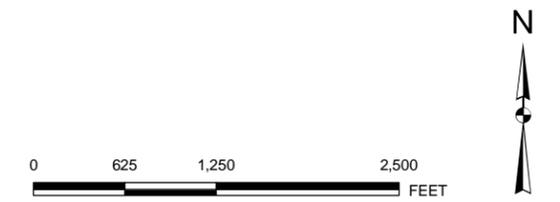


**FIGURE PCP-1
SITE LOCATION MAP**
RCRA POST-CLOSURE PERMIT APPLICATION
CAMP NAVAJO, BELLEMONT, ARIZONA

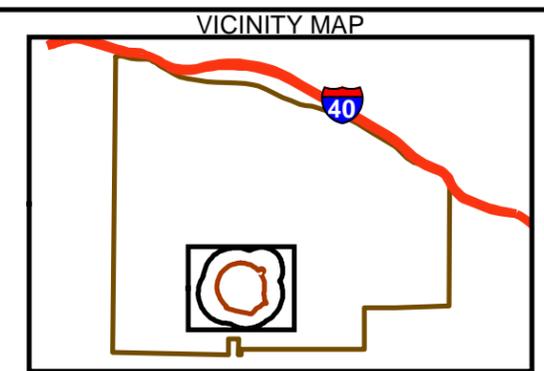
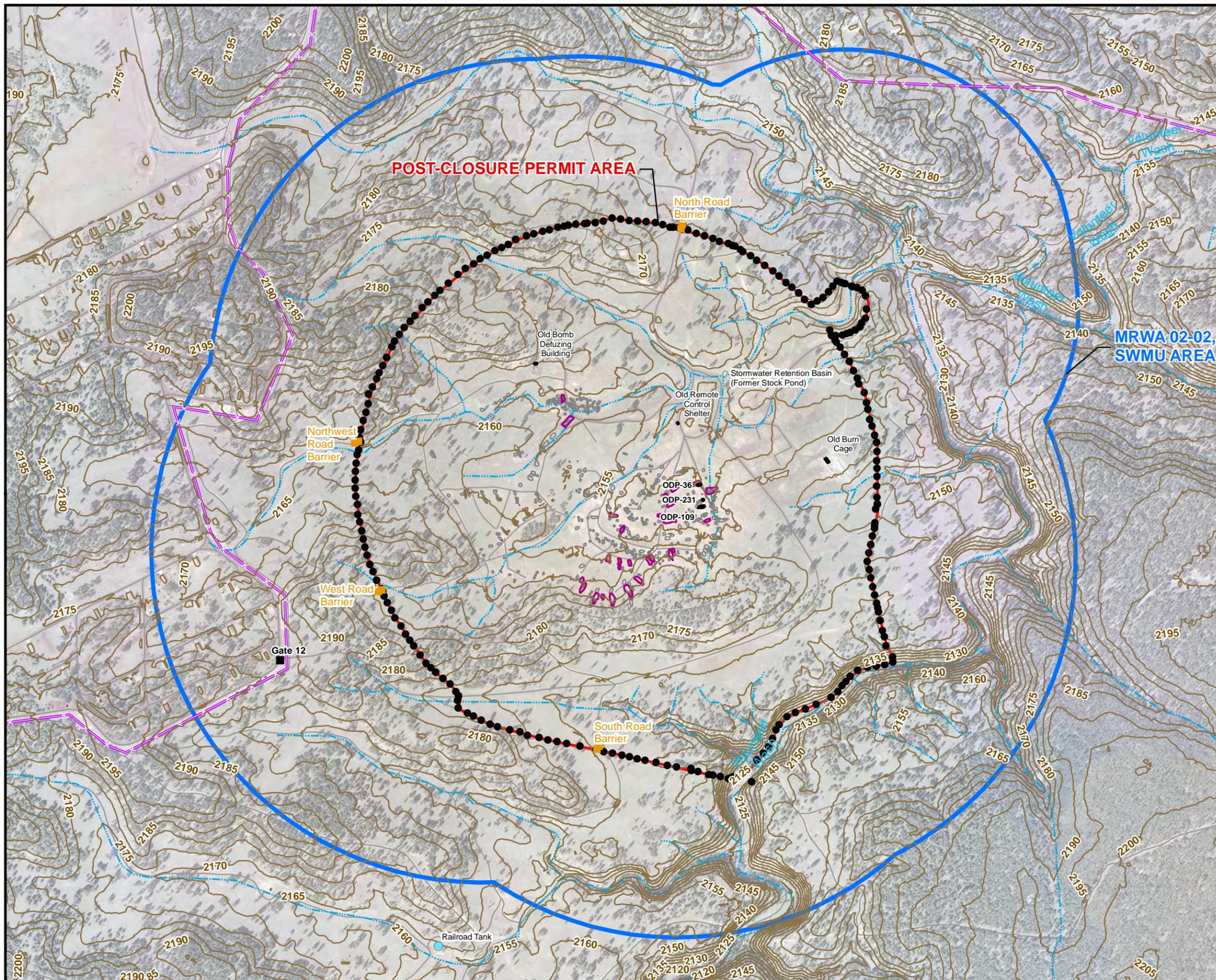


- LEGEND**
- BOUNDARY SYMBOLOGY**
- MRWA 02-02 SOLID WASTE MANAGEMENT UNIT AREA
 - POST-CLOSURE PERMIT AREA
 - LIMITED AREA
 - RCRA INTERIM STATUS PERMIT SITES
 - SOLID WASTE MANAGEMENT UNITS IDENTIFIED DURING THE RCRA FACILITY ASSESSMENT (URIBE, 1994)
 - EMERGENCY OPEN DETONATION PIT SITES
 - OPEN DETONATION PITS TO BE USED FOR EMERGENCY OPEN DETONATIONS
 - LIMITED AREA PERIMETER FENCE
- OTHER SYMBOLOGY**
- GATE
 - STEADY STATE REGIONAL AQUIFER WATER LEVEL ELEVATIONS (SOURCE: USGS, 2007 AND BROWN AND CALDWELL, 2008)
 - INTERMITTENT DRAINAGE
 - ROAD
 - RAILROAD

NOTE:
 VADOSE ZONE MONITORING WELL AND REGIONAL AQUIFER WELL LOCATIONS SHOWN ON FIGURE GWMP-1 AND FIGURE GWMP-2 OF THE GROUNDWATER MONITORING PLAN



**FIGURE PCP-2
 POST-CLOSURE PERMIT AREA
 AND MRWA 02-02**
 RCRA POST-CLOSURE PERMIT APPLICATION
 CAMP NAVAJO, BELLEMONT, ARIZONA



- LEGEND**
- BOUNDARY SYMBOLOGY**
- █ MRWA 02-02, SOLID WASTE MANAGEMENT UNIT AREA
 - █ POST-CLOSURE PERMIT AREA
 - █ SURFACE WATER CATCHMENT AREA
 - █ LIMITED AREA PERIMETER FENCE
 - █ BACKFILLED OD PIT
 - █ NOT FILLED OD PIT
 - █ OPEN DETONATION PITS TO BE USED FOR EMERGENCY OPEN DETONATIONS
- OTHER SYMBOLOGY**
- LIMITED AREA PERIMETER GATE
 - ⊕ VADOSE ZONE MONITORING WELL
 - ⊗ MONITORING WELL
 - DANGER SIGNS SURROUNDING POST CLOSURE AREA
 - ROAD BARRIER
 - █ OLD STRUCTURES INSIDE POST CLOSURE AREA
 - 5 FT CONTOUR ELEVATION LINE
 - - - INTERMITTENT DRAINAGE
 - ROAD

NOTE:
ROADS SHOWN WITHOUT BARRIERS ARE NOT VIABLE VEHICLE ENTRANCES AND ARE NOT MAINTAINED.

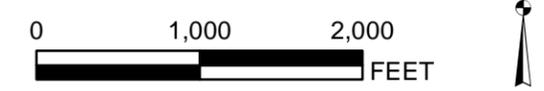


FIGURE PCP-3
SECURITY MEASURES AT THE
POST-CLOSURE PERMIT AREA
RCRA POST-CLOSURE PERMIT APPLICATION
CAMP NAVAJO, BELLEMONT, ARIZONA

Attachment A
Photographs of Security Equipment

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Photo 1: Off-set road barriers entering Post-closure Permit Area



Photo 3: Signs surrounding Post-closure Permit Area



Photo 2: No hunting signs on road barriers



Photo 4: Locked gates in Limited Area fence



Photo 5: Installation boundary fence and signs

Attachment B
Documentation of Agreements with
Emergency Agencies

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**State of Arizona
Arizona Fire Chiefs Association
Fire Service Mutual Aid Plan**

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State of Arizona Arizona Fire Chiefs Association Fire Service Mutual Aid Plan

**Jan Brewer
Governor**

**Revised
July 2011**

ARIZONA FIRE SERVICE MUTUAL AID PLAN

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Fire Service Mutual Aid Committee

Randy Karrer Golder Ranch Fire District Chairman	Dave Bunce Salt River Fire Department Vice Chairman
Jay Strebeck Phoenix Fire Department Maricopa County Representative	Mike Casson Cottonwood Fire Department Yavapai/Coconino County Representative
Louise Smith Prescott Regional Communications Director	Chuck Osterman Kingman Fire Department Mohave County Representative
Bob Barger Arizona State Fire Marshal	Matt Parks Arizona Division of Emergency Management
Dugger Hughes Northwest Fire District Pima County Representative	Dennis Light Yuma Fire Department Yuma/La Paz County Representative
Les Caid Rio Rico Fire Department Santa Cruz County Representative	David Geyer Arizona State Forestry Division
Dori Beck Phoenix Fire Communications Supervisor	Barry Scott Arizona Division of Emergency Management
Mike Todd Public Safety Interoperable Communications Office, GITA	Pat Hancock Snowflake Fire Department Navajo & Apache County Representative

Preamble

In the absence of or in support of a declaration of emergency, this Arizona Fire Service Mutual Aid Plan provides for the systematic mobilization, organization and operation of necessary fire and rescue resources within the State and its political sub-divisions in responding to and recovering from the effects of disasters.

Executive Order

EXECUTIVE ORDER 2003-21 Arizona Fire Service Mutual Aid Plan

WHEREAS, an effective emergency response system is dependent upon the efficient sharing of resources; and

WHEREAS, fire service agencies play a vital role in emergency and disaster preparedness, response, recovery and mitigation activities; and

WHEREAS, no single community has sufficient resources to respond to all emergencies and mutual aid agreements are an essential component of preparedness planning; and

WHEREAS, the Arizona Fire Chiefs Association (AFCA), Arizona State Land Department, Arizona Division of Emergency Management, and county emergency management agencies have developed the Arizona Fire Service Mutual Aid Plan to facilitate the sharing of statewide fire service resources; and

WHEREAS, the Arizona Fire Service Mutual Aid Plan provides for the systematic mobilization and operation of fire service agencies in mitigating the effects of civil, natural or technological disasters.

NOW, THEREFORE, I, Janet Napolitano, Governor of the State of Arizona, by virtue of the power vested in me by the Arizona Constitution and the laws of the State, do hereby order as follows:

1. All state agencies are directed to comply with and contribute to the implementation and continued development of the Fire Service Mutual Aid Plan.
2. Fire departments across Arizona are encouraged to adopt and participate in the Arizona Fire Service Mutual Aid Plan.
3. Arizona fire departments are also encouraged to use the Arizona Fire Service Mutual Aid Plan as a framework for developing detailed operational plans.

IN WITNESS WHEREOF, I have hereunto set my hand and caused to be affixed the Great Seal of the State of Arizona.


GOVERNOR

DONE at Lakeside, Arizona this 21st day of June in the Year Two Thousand and Three and of the Independence of the United States of America the Two Hundred and Twenty-Seventh.

ATTEST:


SECRETARY OF STATE



ARIZONA FIRE SERVICE MUTUAL AID PLAN

I. INTRODUCTION

The Arizona Fire Chiefs Association (AFCA), through cooperation with the Arizona Department of Fire, Building and Life Safety (ADFBL), Arizona Division of Emergency Management (ADEM), Arizona State Forestry Division (ASFD), the Arizona Fire District Association (AFDA), and the Professional Fire Fighters of Arizona (PFFA), developed the Fire Service Mutual Aid Plan to provide immediate response resources for all-hazard emergencies.

The Fire Service Mutual Aid Plan is the initial activation and mobilization plan prior to a declaration of emergency. This plan is also intended to complement the State of Arizona Emergency Response and Recovery Plan (SERRP). The SERRP is published in four (4) parts as follows:

- Basic Emergency Plan
- Emergency Support Functions (ESF)
- Incident Annexes
- Support Annexes

The above provides the planning basis and concepts for the development of the Fire Service Mutual Aid Plan. This Plan supports the concepts of the National Incident Management System (NIMS) and multi-hazard response planning. Arizona's fire service conducts emergency operations planning at four (4) levels: Local, Tribal, County and State.

Phoenix Fire Department Regional Dispatch Center (PFDRDC) will act as the conduit for resource requests and deployment documentation until the Incident City and/or County's EOC is brought up and operational. At that time all requests for resources will be funneled through the applicable EOC.

This plan is an 'OPT OUT' plan. Fire jurisdictions that do not wish to participate must send formal written notification to the Arizona Fire Chiefs Association Board of Directors.

A. Purpose of the Plan:

1. To provide statewide fire service resources to an incident once available automatic and mutual aid has been exhausted by the local authority.

2. To provide for the systematic mobilization, deployment and operation of necessary fire service resources within the State and its political subdivisions in responding to and recovering from, the effects of disasters and emergencies.
3. To provide comprehensive and compatible plans for the expedient mobilization and deployment of the closest, most appropriate, available fire service resources.
4. To provide a fire service inventory of all apparatus, equipment and specialty teams in Arizona. This inventory will be maintained by the State Fire Resource Coordinator (SFRC) and completed no later than 31 March annually.
5. To provide annual training and/or exercises between Plan participants.
6. To prepare for and respond to events of national significance when requested.

B. Planning Basis:

1. Local Resources:
No community has resources sufficient to cope with all potential emergencies. Local needs not met should be resolved through development of local area reciprocal aid agreements or compacts.
2. Pre-planning:
Fire service officials must pre-plan emergency operations to ensure efficient utilization of the closest, most appropriate, available resources.
3. Wildfire Response:
This Plan is intended to cover *all hazard* incidents throughout the State of Arizona however, it also recognizes the authority and responsibility of Local, State, Federal and Tribal agencies in suppression of wildfires occurring both within and outside of local fire protection boundaries. It further recognizes the authority and responsibility of federal fire agencies to manage wildfires on federally owned lands, and the need for a **coordinated** response to reduce the possibility of "double ordering".
4. Use of Local Mutual Aid and/or Automatic Aid:
Fire service officials must pre-plan emergency operations to ensure efficient utilization of available resources. Local mutual and automatic aid agreements should be utilized prior to activating the Fire Service Mutual Aid Plan.

5. The Arizona Mutual Aid Compact (AZMAC) among the Local, County, Tribal and State agencies signatory thereto:
 - a. Creates a formal structure for the provision of Mutual Aid.
 - b. Provides that no party shall be required to unreasonably deplete its own resources in furnishing mutual aid.
 - c. Provides that local jurisdiction shall maintain authority based on NIMS compliance.
 - d. Provides that reimbursement for services extended under the AZMAC shall be pursuant to the State law and policies.
6. The AFCA shall appoint one (1) Fire Resource Coordinator (CFRC) in each County to work in conjunction with the City and/or County Emergency Manager and SFRC to identify available resources for mobilization and deployment when activated by the Fire Service Mutual Aid Plan.
7. Emergency operations plans must be reviewed, tested and updated on a regular basis. Revised plans should reflect experiences gained through training and disaster operations, as well as, changes in resource availability and national standards.
8. Supporting documentation referenced in any part of this Plan may be revised and become effective upon acceptance by the AFCA Fire Mutual Aid Committee. Changes shall be distributed via the Arizona Fire Chiefs Association.
9. Nothing in this Plan shall be deemed to obligate any party to expend any monies that have not been appropriated or allocated for the purposes of the Plan, nor to expend monies in any fashion contrary to law.
10. Nothing in this Plan shall be deemed to require any party to take action in excess of authority conferred by statute, rule, charter, or ordinance, nor to do anything in violation of law.

II. REFERENCES

A. State Emergency Response and Recovery Plan (SERRP)

1. Arizona Revised Statutes Title 26, Chapter 2.
2. Arizona Revised Statutes Title 35, Chapter 1.

3. Arizona Revised Statutes Title 36-2208 through 36-2210.

4. Arizona Administrative Code Title 8, Chapter 2, Article 3.

B. Arizona Mutual Aid Compact (AZMAC).

C. Arizona Emergency Management Master Mutual Aid Agreement (April 1993).

D. Memorandum of Understanding (MOU) between ADEM and AFCA (March 2000).

III. DEFINITIONS AND GUIDING POLICIES

A. Mobilization and Deployment:

Facilitate the rendering of aid to persons or property in areas within the State stricken by an emergency. During an emergency, if the need arises for additional aid, such aid may be rendered in accordance with approved emergency plans.

B. Voluntary Deployment:

Deployment is voluntary. Jurisdictional procedures may quantify the number of resources a department may commit.

C. Arizona Mutual Aid Compact (AZMAC):

An agreement made and entered into by the State, Tribal, Counties and Local jurisdictions of Arizona. This agreement will facilitate implementation of the Fire Service Mutual Aid Plan.

D. Joint Powers (Wildfire) Agreement:

An agreement made and entered into by and between the State of Arizona, ASFD, acting as the agent of all cooperating agencies and the following Federal agencies: USDA Forest Service, USDI National Park Service, Bureau of Indian Affairs, Bureau of Land Management, and US Fish and Wildlife Service, for the purpose of coordinating the use of State and Federal fire service resources used at incidents.

E. Authority Having Jurisdiction:

Local fire service organizations, including municipal fire departments, tribal fire departments, fire districts, fire associations and/or private fire protection organizations providing fire services to the State or any political subdivision of the State to include County and Federal agencies.

F. Fire Service

Services provided by a Fire Department that are related to all hazard events include fire protection, pre-hospital EMS, mass casualty, Technical Rescue and Hazardous Materials. Arizona's fire service resources shall include, but not be limited to, personnel, apparatus, equipment, and/or facilities under the direct control of Local, County, Tribal, State, Federal, or private fire, rescue, or other agency or organization willing to provide those resources under the provisions of the Arizona Fire Service Mutual Aid Plan.

IV. Plan Maintenance:

The Arizona Fire Service Mutual Aid Plan will be reviewed and revised every two (2) years by the AFCA Fire Service Mutual Aid Committee.

Arizona Fire Chiefs Association Fire Service Mutual Aid Committee is responsible for the coordination of the Arizona Fire Service Mutual Aid Plan, including the development, revisions, distribution, training and exercising is the responsibility of the AFCA. The AFCA Fire Service Mutual Aid Committee will oversee this process. The Committee may be comprised of the following:

- Arizona Fire Chiefs Association Fire Service Mutual Aid Plan Coordinator (Chairperson)
- Arizona Fire Chiefs Association Assistant Fire Service Mutual Aid Plan Coordinator (Vice-Chairperson)
- Arizona Department of Fire, Building and Life Safety (two [2] representatives)
- Arizona Division of Emergency Management (one [1] representative)
- Arizona Division of the Forester (one [1] representative)
- Phoenix Fire Department Regional Dispatch Center (two [2] representatives)
- Fire Resource Coordinators (one [1] representative from each County)
- Arizona City and/or County Emergency Managers (one [1] representative from each County)
- Arizona Fire Chiefs Association
- Professional Fire Fighters of Arizona
- Volunteer Fire Fighters of Arizona
- Fire Districts
- Metro Department
- Rural Fire Departments
- Tribal Fire Department
- Communications Representatives

The Fire Service Mutual Aid Plan Coordinator may recommend to the AFCA President that Committee membership be altered for the continued success of the Plan. The AFCA President will approve or deny all recommendations.

Organizational Structure and Responsibilities:

Within each County a CFRC will be appointed by the AFCA Board as a vital logistical link from the area to form a management team consisting of at least the City and/or County Emergency Manager and the CFRC. Each team is responsible for tracking all fire service resources within the respective County and reporting those findings to the SFRC. Alternates for each position should be appointed in the event that the primary CFRC is unavailable.

V. POLICIES

The following policies form the basis of the Fire Service Mutual Aid Plan:

- A.** The basic tenets of emergency planning are self-help, automatic aid and/or mutual aid and specialty response systems.
- B.** The AFCA recognizes the SERRP and the AZMAC to be guiding policies for response to incidents that have exceeded automatic and mutual aid agreements.
- C.** The initial operational period is defined as the first 12 hours. Each agency shall determine its available resources and if any resources can be committed for an extended period of time if requested.
- D.** Contributing agencies should anticipate that their resources will be committed for a minimum of the first operational period.
- E.** Reimbursement will be in accordance with AZMAC. For Wildfire operational and reimbursement guidelines refer to ASFD agreements. Units must be ordered through Arizona State Forrester.

VI. ORGANIZATION

The fire service includes all public and private entities furnishing fire protection and related services within the State.

A. County Fire Resource Coordinator:

The CFRC(s) are identified by the AFCA from local fire service entities within the County. The appointee will serve on the Fire Service Mutual Aid Committee.

The CFRC is responsible for tracking fire service resources within the County and coordinating with the City and/or County Emergency Manager(s) and the SFRC on current incident status and escalation potential.

B. Local and/or County Emergency Manager:

Responsible for pre-incident emergency preparedness, multi-discipline response and recovery coordination and making recommendations for a Local or County Declaration of Emergency by the Local Council or County Board of Supervisors (or governing body).

C. State Fire Resource Coordinator:

The SFRC is appointed by the Arizona Fire Chiefs Association and is responsible for tracking and maintaining a database of fire service resources within the State. The SFRC coordinates with ADEM and the CFRC(s) on current incident status and escalation potential.

D. Fire Service Mutual Aid Plan Coordinator:

The Fire Service Mutual Aid Plan Coordinator is appointed by the AFCA to chair the Committee and facilitate the Arizona Fire Service Mutual Aid Plan.

E. Contributing State Agencies:

Department of Fire, Building and Life Safety
Arizona State Forestry Division
Arizona Division of Emergency Management
Other State agencies as defined by the SERRP

VII. RESPONSIBILITIES

A. Local Agency (Authority Having Jurisdiction):

1. Directs all actions toward mitigating and stabilizing emergencies to include: fire suppression, life safety, conservation of property and the environment as well as assisting other emergency services and in recovery.
2. Develops an effective all hazards emergency plan for use of fire resources under its control and ensures that said plan is integrated into the emergency plan of the appropriate County(s).
3. Makes maximum use of existing resources, facilities and services within the local community prior to requesting assistance from neighboring jurisdictions.

4. Conducts mutual aid and/or automatic aid training in accordance with established operational procedures on a regular basis.
5. During emergency operations, keeps the CFRC and City and/or County Emergency Manager informed on all matters.
6. During emergency operations, the agency receiving Fire Service Mutual Aid is responsible for the logistic support of all personnel and equipment received.
7. Prepares personnel and equipment inventories and forwards copies to the CRFC annually.
8. Maintains an up-to-date list for alerting fire service personnel in emergencies and a checklist of timely actions to be taken to put emergency operations plans into effect.
9. Establishes emergency communications capabilities with the CFRC.
10. Anticipates emergency needs for such items as emergency fire equipment, commonly used spare parts, expendable supplies and accessories, and ensures functional availability of these in locations convenient for ready use.
11. Maintains appropriate records, data, and other pertinent information of Fire Service Mutual Aid resources committed.

B. County Fire Resource Coordinator:

1. Acts as a liaison between requesting agency and local fire agencies within the County to fill resource requests until EOC is operational.
2. Resource requests beyond the means of the County Fire Resource Coordinator will be forwarded to PFDRDC for Fire Service Mutual Aid activation.
3. Establish and maintain working partnerships with respective City and/or County Emergency Manager and SFRC.
4. Maintains an active inventory and roster by agency within the respective County in an effort to rapidly identify resources for deployment. Reports fire service resources to the SFRC annually.
5. Ensure communications among the appropriate agencies during an incident.

6. Has no operational authority over either the incident or responding resources.
7. Maintains 24/7/365 CFRC coverage. Ensures sufficient CFRC trained alternate coverage (recommend at least two [2] alternates).

C. State Fire Resource Coordinator:

1. Acts as a liaison between the State of Arizona, CFRC of the incident, PFDRDC, and those Counties and/or jurisdictions from which resources may be needed.
2. Maintains a current fire service resource database in an effort to rapidly identify resources within the State.
3. Operates in a support capacity with no operational authority over either the incident or committed resources.
4. Maintains 24/7/365 SFRC coverage. Ensures sufficient SFRC trained alternate coverage (recommend at least two [2] alternates).

D. Arizona Fire Chiefs Association:

The President of the AFCA will establish and maintain a Fire Service Mutual Aid Committee to serve in an oversight and advisory capacity on all matters relating to the Arizona Fire Service Mutual Aid Plan:

1. Coordinates Fire Service Mutual Aid Plan updates with the AFDA, PFFA, VFFA, State Fire Marshal, and local Fire Chiefs.
2. At the request of the Director of ADEM, the President of the AFCA will appoint a Fire Service Representative to the State Emergency Operations Center.
3. Develops and provides training programs and materials for effective application and utilization of the Arizona Fire Service Mutual Aid Plan.

E. Arizona State Fire Marshal:

Responsible to ensure the Governor's Office is notified of conditions in each geographic and organizational area of the State and the occurrence or imminent threat of disaster.

F. Phoenix Fire Department Regional Dispatch Center:

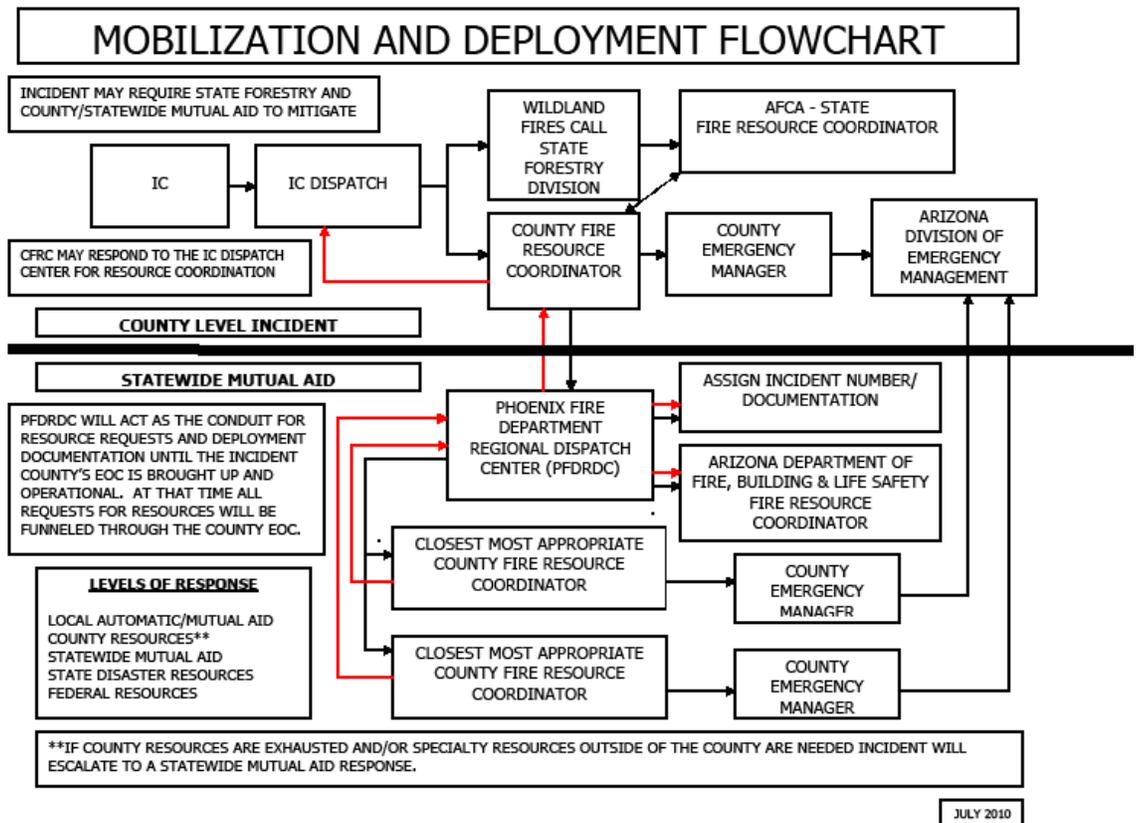
PFDRDC will become the one-point of contact to initiate the Arizona Fire Service Mutual Aid Plan as it relates to All Hazard incidents except Wildfires. Wildfire calls will go directly to the ASFD. In the event PFDRDC receives a Wildfire call, the calling jurisdiction/party will be transferred to the ASFD.

PFDRDC will be responsible to:

- Assign an incident number and append applicable documentation into the incident history
- Courtesy notification to the SFRC
- Contact the closest most appropriate CFRC(s) as necessary to obtain requested resources
- Communicate with the affected CFRC to advise of responding resource status

PFDRDC will act as the conduit for resource requests and deployment documentation until the Incident City and/or County's EOC is brought up and operational. At that time all requests for resources will be funneled through the applicable EOC.

VIII. MOBILIZATION AND DEPLOYMENT FLOWCHART



IX. PROCEDURES – MOBILIZATION AND DEPLOYMENT

Incident Command will notify their dispatch center when they are working an All Hazard incident requiring additional resources or a Wildfire.

If the incident is a Wildfire, the dispatch center will contact the ASFD as well as their CFRC. On working Wildfires the ASFD has the option to notify the SFRC. The CFRC will notify their City and/or County Emergency Manager for notification purposes and will, in most cases, be in contact with the SFRC.

If the incident is an All Hazard incident the dispatch center will contact their CFRC who will be responsible for coordinating resource requests within the County to affectively mitigate the incident, as well as, notification to their City and/or County Emergency Manager and the SFRC. If the incident is larger than available resources within the County or specialty resources are needed, activation of the Arizona Fire Service Mutual Aid Plan is required. Activation of the Arizona Fire Service Mutual Aid Plan is made by the CFRC to PFDRDC.

PFDRDC will assign an incident number and append applicable documentation into the incident history for tracking purposes. PFDRDC will contact the closest most appropriate CFRC(s) as necessary to obtain the requested resources. PFDRDC will make a courtesy notification to the SFRC and will communicate with the affected CFRC to advise of responding resource status.

PFDRDC will act as the conduit for resource requests and deployment documentation until the Incident City and/or County's EOC is brought up and operational. At that time all requests for resources will be funneled through the applicable EOC.

A. Training:

- 1.** The training of regular emergency personnel in specialized skills and techniques is essential to successfully deploy assigned emergency responsibilities to handle All Hazard emergencies. Fire service officials should identify key personnel with emergency assignments and ensure the adequacy of their training.
- 2.** The State of Arizona Fire Service has adopted the National Incident Management System (NIMS). All fire service agencies shall maintain operational familiarity with this system.
- 3.** CFRC's in coordination with their City and/or County Emergency Managers should develop and implement training for a County deployment of the Arizona Fire Service Mutual Aid system annually.

B. Planning:

A well-developed, decision-making process can compliment all phases of mutual aid utilization. Failure to plan assures failure. Effective emergency action is dependent upon comprehensive planning. All mutual aid planning must consider the logistical and financial obligations incurred in either providing or receiving mutual aid assistance (eg: fuel, feeding and overtime for assigned personnel). Emergency situations evolve through a series of stages: Preparedness, Response and Recovery. The SERRP will serve as the Plans guiding document.

1. Preparedness:

When possible, jurisdictions will put pre-emergency plans into operation. Such plans include alerting key personnel, ensuring readiness of essential resources, and preparing to move resources to the threatened area when required. If a request for mutual aid resources is anticipated, the next higher level of jurisdiction must be advised, including all available information relative to the expected threat, its location, imminence, potential severity, and other associated problems.

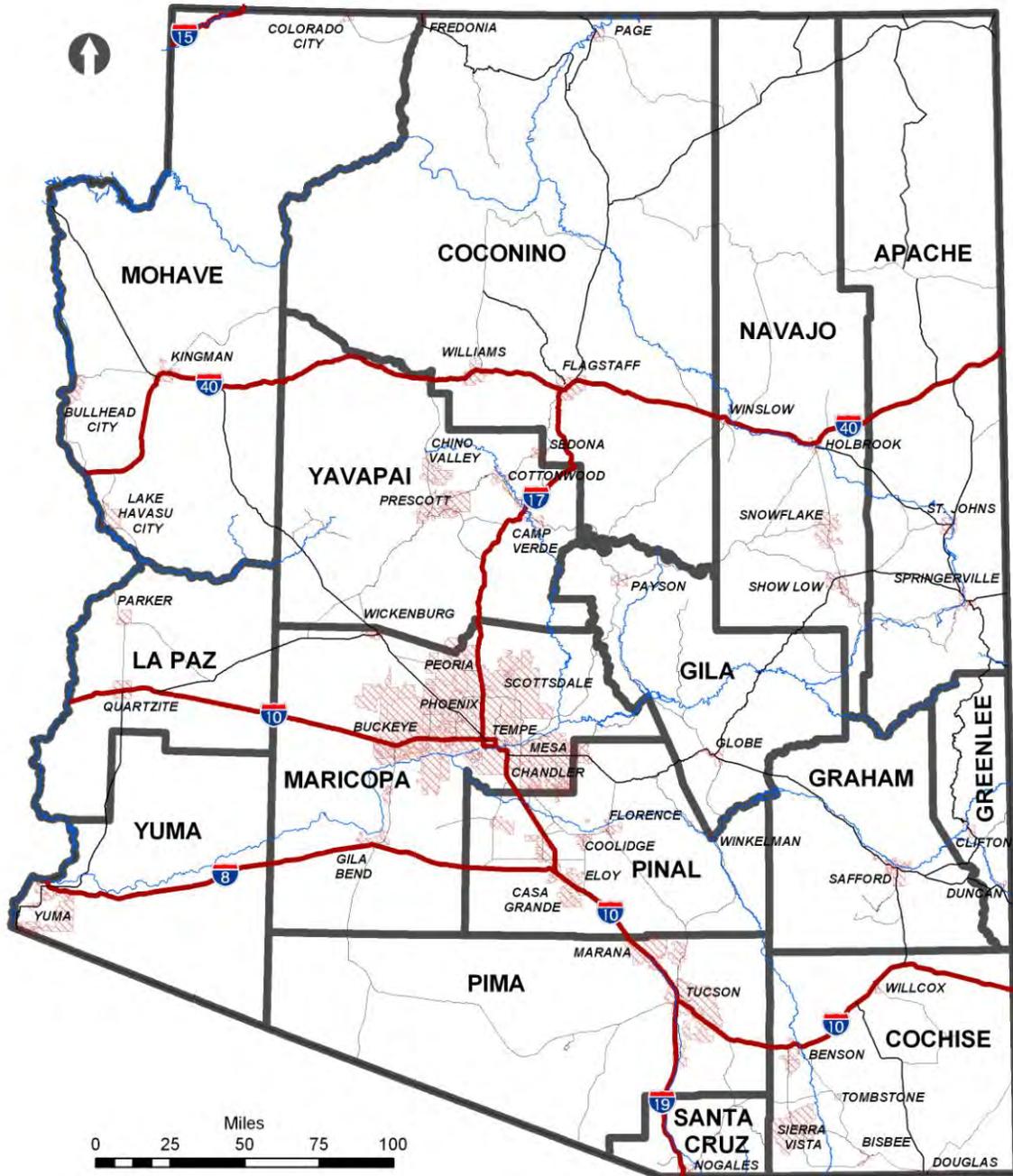
2. Response:

The nature of emergency operations is dependent upon the characteristics and requirements of the situation. This phase may require the use of Local, Operational Area, Regional, and State resources. The magnitude and severity of fire service emergencies may develop rapidly and without warning. Equally rapid pre-planned response on the part of the fire service is required.

3. Recovery:

Planning for this phase should include re-establishment of essential services, safety inspections and restoration of infrastructure.

X. STATE MAP:



XI. SUPPORTING DOCUMENTS:

Field Operations Guide (FOG) – in pocket size format

National Response Framework

Homeland Security Presidential Directive #5 and #8

Emergency Management Assistance Compact (EMAC)

Intrastate Mutual Aid System (IMAS)

County Fire Resource Coordinator List

County/City Emergency Manger List

Documents to be added

**Cooperative Greater Flagstaff Area Fire Agencies All Risk Emergency
Intergovernmental Agreement**

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**Cooperative Greater Flagstaff Area
Fire Agencies All Risk Emergency
Intergovernmental Agreement**

This Intergovernmental Agreement (“Agreement”) is entered into by and among governmental fire rescue and emergency medical service agencies, districts and municipalities (the “Party” or Parties”) that have adopted and executed this Agreement.

RECITALS

- A. The Parties shall consist of members of various fire rescue and emergency medical service departments which together, form a cooperative of information, training, fire prevention, procurement, administration, fire suppression response, medical services and any cooperative effort which is deemed mutually beneficial to the Parties. Nothing herein shall be construed to suggest that the Parties are forming a joint venture or partnership, or that the Parties shall be liable for the conduct of the other except as otherwise specifically provided in this Agreement.
- B. The Parties concur that working collaboratively yields the highest levels of services in conjunction with the most effective use of local fire, rescue, and emergency medical department resources.
- C. The Parties seek to provide the most efficient, safe, and effective fire-rescue-emergency medical services to their communities.
- D. It is the desire of the Parties to continue and improve the nature and coordination of emergency assistance to incidents that threaten loss of life or property within the geographic boundaries of their respective jurisdictions to include regional operations, procedures, and practices governing command and control and hazard zone operations.
- E. The Parties recognize the vulnerability of the people and the communities located within the greater Flagstaff area, the Sedona area, and communities located in the joint service areas of the Parties to damage, injury, and loss of life and property resulting from fire and all other natural and man-made emergencies and disasters (“Incidents”). It is also recognized that fires, natural and man-made emergencies, and disasters may present equipment and staffing requirements beyond the capacity of each individual Party.
- F. The Parties who have executed this Agreement are fire districts and municipalities of the State of Arizona and are authorized pursuant to A.R.S. § 11-951 *et seq* to enter into intergovernmental agreements for the joint exercise of powers to carry out their mutual responsibilities.

1. Purpose

The purpose of this IGA is to establish the lawful cooperation of governmental fire and medical rescue departments in the mutual attainment of their life safety mission.

2. Scope

The scope of this agreement shall include the following:

2.1 To provide cooperative procedures and practices including but not limited to emergency response, emergency standby coverage, joint purchasing, communications infrastructure and protocols, training, health and safety, fire prevention, public education, fire investigations, wildland fuels mitigation and suppression programs and other activities that will enhance the ability of the Parties to fulfill their missions, and;

2.2 To provide procedures to notify Parties of the need for assistance in the event of an Incident.

3. Request for Assistance

Any Party who is a signatory to this Agreement may request assistance for fire, medical and hazmat services ("Emergency Services") if the requesting Party determines that additional resources are needed or that an incident is potentially beyond the capacity of the requesting Party to control or mitigate; or the requesting Party is occupied with another Incident.

3.1 Authorized Designee. Upon contacting its dispatch center to request mutual assistance, each Party shall identify an authorized designee to provide contact information, including 24-hour access, and shall maintain current resource information for purposes of mutual assistance response.

4. Response to Request

A Party which receives a request for assistance shall, in the exercise of its discretion, determine whether it has the resources to respond, taking into consideration the safety of its citizens and property within its own jurisdiction. The Fire Chief or the authorized designee of each Party which receives a request for assistance shall be the sole judge as to the amount of assistance, if any, which that Party can provide. No Party shall be liable to any other Party for failing to respond to a request for assistance, for the amount of assistance provided, or if assistance is withdrawn.

5. Incident Command

A Party that responds to a request for assistance shall work under the direction of the Incident Commander ("IC") as designated by the Incident Command System ("ICS"). If the assisting Party needs to return to its jurisdiction during this time period, the Party shall coordinate a release time with the Incident Commander. The IC will make all attempts to

release Mutual Aid units back to their jurisdiction as soon as it is safe and appropriate to do so.

6. Responsibility for Equipment and Personnel

In rendering initial attack mutual assistance, each requesting and assisting Party shall be responsible for the provision and maintenance of the respective Party's own equipment and personnel.

7. Costs

Except as specifically agreed to by the Parties for a particular incident, neither Party shall be reimbursed by the other party for any costs incurred pursuant to this Agreement.

8. Reciprocity

The Parties agree that the mutual aid provided pursuant to this Agreement is reciprocal. The Parties acknowledge that mutual aid does not ensure that a Party will receive the exact same amount of assistance that it gives. It is intended that the level of service delivered under this agreement will be comparable.

9. Operational Procedures

From time to time, the Fire Chiefs or authorized designees of each Party may promulgate mutually agreeable written operational procedures for the cooperative implementation of this Agreement. In addition, field exercises as well as command, control, and communication exercises may be implemented to examine, evaluate and improve the collective performance of all participants.

10. Incident Reports

All Parties shall make available to other Parties all incident reports that involve mutual assistance.

11. Participating Parties

A District or Municipality not a Party to this Agreement may enter into this Agreement without amendment of this Agreement by the governing bodies of the existing members, provided that it is approved as a Party by a voice vote of a simple majority of the authorized designees of the Parties to the Agreement, and its governing body approves the terms of this Agreement and authorizes execution of the Agreement.

12. Indemnification

Each Party to this Agreement shall indemnify, defend and hold harmless the other Party, their members, directors, officers, employees, agents, attorneys and assigns from and against any and all claims, losses, liability, costs or expenses resulting from the negligence or willful misconduct of the indemnifying Party or Parties, provided however, nothing herein shall be

construed to expand the liability of any Party or its employees beyond the gross negligence/intentional misconduct standard applicable to emergency medical technicians or paramedics providing emergency medical aid as provided for in A.R.S. §48-818. This indemnification shall survive termination of this Agreement or the termination of the participation of any of its Parties.

13. Worker's Compensation Claims

Each Party herein shall comply with the provisions of A.R.S. §23-1022 (E) by posting the public notice required. As provided for in A.R.S. §23-1022(D), an employee of a public agency who works under the jurisdiction or control of or within the jurisdictional boundaries of another public agency pursuant to a specific intergovernmental agreement or contract entered into between the public agencies is deemed to be an employee of both public agencies. However, the primary employer is solely liable for the payment of Workers' Compensation benefits. As such, each Party shall maintain Workers' Compensation insurance coverage on all of its own employees providing services pursuant to this Agreement.

14. Insurance

Each Party shall bear the risk of its own actions, as it does with all its operations, and shall determine for itself an appropriate level of insurance coverage and maintain such coverage. Nothing in this Agreement shall be construed as a waiver of any limitation on liability that may apply to a Party.

15. Effective Date; Term

15.1 Effective Date. This Agreement will become effective for each Party after approval by its governing body (the "Effective Date").

15.2 Term. Except as otherwise provided in this Agreement, this Agreement will terminate on June 30, 2018, unless extended or terminated by action of the Parties.

15.3 Any Party may terminate its participation in this Agreement by providing each of the other Parties thirty (30) days written notice.

16. Cancellation for Conflict of Interest

This Agreement is subject to cancellation for conflict of interest pursuant to A.R.S. § 38-511.

17. Existing Mutual Aid Agreements

The existing Cooperative Greater Flagstaff Area Fire Agencies All Risk Emergency Mutual Aid Intergovernmental Agreement entered by the parties in 2008 is hereby terminated and replaced in its entirety by this Agreement. The Parties recognize that this Agreement is not intended to terminate, modify, amend, or otherwise alter any Cooperative Agreements entered into by and between the Arizona State Land Department / State Forester and its

cooperators.

18. Right to Enter into Additional Agreements

The Parties to this Agreement are not precluded from participating in additional or supplemental IGA's or contracts as deemed appropriate by the Parties. Nothing in this Agreement shall limit the ability of a Party to provide emergency assistance to another jurisdiction which is not a participant in this Agreement.

19. Compliance with All Laws.

Each Party shall comply with all federal, state and local laws, rules and regulations.

20. Execution Procedure

This Agreement will be executed in counterparts by the governing body of each Party.

21. Non-Discrimination.

Each Party warrants that it complies with any state and federal laws, rules and regulations which mandate that all persons, regardless of race, color, creed, religion, sex, genetic information, age, national origin, disability, familial status or political affiliation, shall have equal access to employment opportunities, including but not limited to the Americans with Disabilities Act. Each Party shall take affirmative action to ensure that it will not participate either directly or indirectly in the discrimination prohibited by or pursuant to Title VI of the Civil Rights Act of 1964, Section 504 of the Rehabilitation Act of 1973, Section 109 of the Housing and Community Development Act of 1974, the Age Discrimination Act of 1975, Genetic Information Nondiscrimination Act of 2008.

22. Legal Arizona Workers Act Compliance.

Parties are required to comply with A.R.S. §41-4401, and hereby warrants that it will, at all times during the term of this Agreement, comply with all federal immigration laws applicable to the employment of their respective employees, the requirements of A.R.S. §41-4401, and with the e-verification requirements of A.R.S. §23-214(A) (together the "state and federal immigration laws"). Parties further agree to ensure that each subcontractor that performs any work under this Agreement likewise complies with the state and federal immigration laws.

A breach of a warranty regarding compliance with the state and federal immigration laws shall be deemed a material breach of the Agreement and the Party who breaches may be subject to penalties up to and including termination of the Agreement.

Each Party retains the legal right to inspect the papers of any contractor or subcontract employee working under the terms of the Agreement to ensure that the other Party is complying with the warranties regarding compliance with the state and federal immigration laws.

23. Non-appropriation.

This Agreement shall be subject to available funding for each Party, and nothing in this Agreement shall bind any Party to expenditures in excess of funds appropriated and allotted for the purposes outlined in this Agreement.

24. No Third Party Beneficiaries

Nothing in the provisions of this Agreement is intended to create duties or obligations to or rights in third parties not parties to this Agreement or to affect the legal liability of any Party to the Agreement by imposing any standard of care different from the standard of care imposed by law.

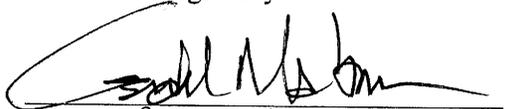
**Cooperative Greater Flagstaff Area
Fire Agencies All Risk Emergency
Intergovernmental Agreement**

Signature Page

IN WITNESS WHEREOF, the Parties each sign this Intergovernmental Agreement on a separate signature page. The signatories warrant that they have been duly authorized to bind the jurisdiction to the terms and conditions in this Agreement by formal approval of the jurisdiction's governing body.

City of Flagstaff

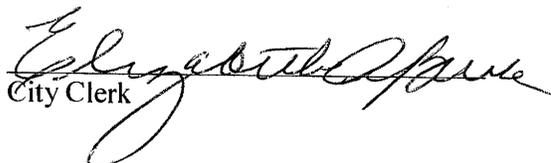
Authorized signatory:



Name: Gerald Nabours

Title: Mayor

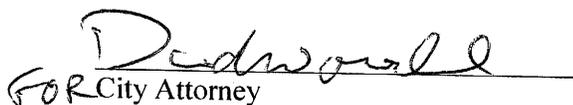
Attest:


City Clerk

Date of formal approval by governing body:

5/6/14

Approved as to Form:


FOR City Attorney

**Cooperative Greater Flagstaff Area
Fire Agencies All Risk Emergency
Intergovernmental Agreement**

Signature Page

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Party:

Arizona Department of Emergency &
Military Affairs

Authorized signatory:

Name:

Title:

Jeri Johnson
Procurement Manager

**Cooperative Greater Flagstaff Area
Fire Agencies All Risk Emergency
Intergovernmental Agreement**

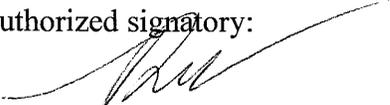
Signature Page

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Party:

PINEWOOD FIRE DISTRICT

Authorized signatory:


Name: Richard Drinen
Title: Chairman, Board of Directors

Attest:


Name: E.L. FRIEDLUND
Title: ~~SECRETARY~~ CLERK
BOARD OF DIRECTORS

Date of formal approval by governing body:

July 15, 2014

Attorney's Approval:

Name: _____
Title: _____

Cooperative Greater Flagstaff Area
Fire Agencies All Risk Emergency
Intergovernmental Agreement

Signature Page

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Party:

Ponderosa Fire District

Authorized signatory:


Name: John Philpot
Title: Chairman of Board

Attest:


Name: Anthony Matthews
Title: Vice Chair

Date of formal approval by governing body:

7/17/14

Attorney's Approval:

Name: _____
Title: _____

**Cooperative Greater Flagstaff Area
Fire Agencies All Risk Emergency
Intergovernmental Agreement**

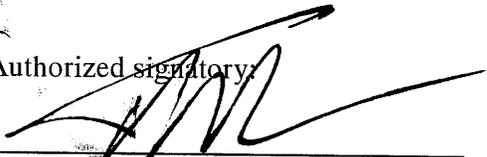
Signature Page

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Party:

SEDONA FIRE DISTRICT

Authorized signatory:


Name: TY MONTGOMERY
Title: FIRE BOARD CHAIRMAN

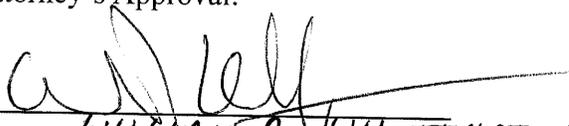
Attest:


Name: CORRIE COOPERMAN
Title: FIRE BOARD CLERK

Date of formal approval by governing body:

MAY 28, 2014

Attorney's Approval:


Name: WILLIAM R. WHITTINGTON
Title: ATTORNEY

**Cooperative Greater Flagstaff Area
Fire Agencies All Risk Emergency
Intergovernmental Agreement**

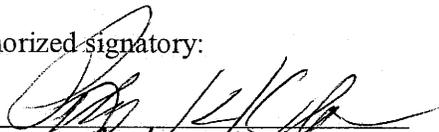
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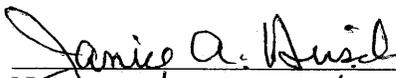
Party:

Highlands Fire District

Authorized signatory:


Name: Peter Kloeber
Title: Chairperson, Board of Directors
Highlands Fire District

Attest:


Name: Janice Hirsch
Title: Clerk

Date of formal approval by governing body:

May 20, 2014

Attorney's Approval:

Name: _____
Title: _____

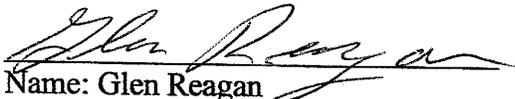
**Cooperative Greater Flagstaff Area
Fire Agencies All Risk Emergency
Intergovernmental Agreement**

Signature Page

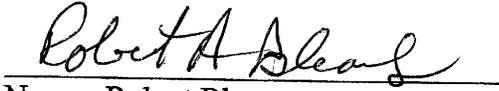
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Party: Mormon Lake Fire District

Authorized signatory:


Name: Glen Reagan
Title: Fire Chief

Attest:


Name: Robert Blean
Title: Fire Board President

Date of formal approval by governing body:

6/14/14

Attorney's Approval:

Name: _____
Title: _____

Cooperative Greater Flagstaff Area
Fire Agencies All Risk Emergency
Intergovernmental Agreement

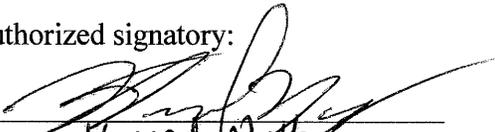
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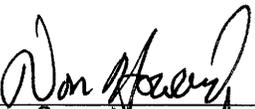
Party:

Summit Fire District

Authorized signatory:


Name: Howard Watt
Title: Board Chairperson

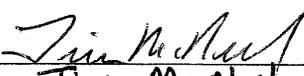
Attest:


Name: Don Howard
Title: Fire Chief

Date of formal approval by governing body:

April 15th, 2014

Attorney's Approval:


Name: Tim McNeel
Title: Deputy County Attorney



DEPARTMENTS OF THE ARMY AND THE AIR FORCE
JOINT FORCE HEADQUARTERS - ARIZONA
5636 EAST MCDOWELL ROAD
PHOENIX, ARIZONA 85008-3495

March 21, 2016

Bob Tullis
ATTN: Security
Flagstaff Medical Center
1200 N. Beaver Street
Flagstaff, AZ 86001

Dear Mr. Tullis,

As required by 40 CFR §§264 and 265, the Arizona Army National Guard maintains a Resource Conservation and Recovery Act (RCRA) Contingency Plan for its Camp Navajo (CN) facility. The plan addresses containment buildings that accumulate hazardous wastes and munitions-impacted areas. The purpose of this contingency plan is to minimize hazards to human health or the environment from fires, explosions, or any unplanned sudden or non-sudden releases of hazardous waste or hazardous waste constituents to air, soil or surface water.

Per 40 CFR §§264.53 and 265.53, we are providing you with an updated copy of the Arizona Army National Guard, Camp Navajo RCRA Contingency Plan and Emergency Procedures as your agency may be called upon to provide emergency services. The enclosed copy supersedes the previous Camp Navajo RCRA Contingency Plan dated August 2015. Please shred/destroy the August 2015 plan as it contains personnel contact information, maps and procedures specific to Camp Navajo. Your cooperation is appreciated.

Please familiarize yourself and staff with this plan. Should updates be made to the plan, they will be provided in a timely manner. Please contact Lauren Hertz at (w) (928) 773-3210, (c) (602) 571-1253 or by email at lauren.hertz@fmo.azdema.gov, if you have any questions or concerns.

Sincerely,

A handwritten signature in black ink, appearing to read "John Ladd", is written over a printed name and title.

John Ladd
Lieutenant Colonel, AZ Army National Guard
Environmental Program Manager

Enclosure



DEPARTMENTS OF THE ARMY AND THE AIR FORCE
JOINT FORCE HEADQUARTERS - ARIZONA
5636 EAST MCDOWELL ROAD
PHOENIX, ARIZONA 85008-3495

March 21, 2016

Mary Case, Clinical Supervisor
Williams North Country Healthcare
301 South 7th Street
Williams, AZ 86046

Dear Ms. Case,

As required by 40 CFR §§264 and 265, the Arizona Army National Guard maintains a Resource Conservation and Recovery Act (RCRA) Contingency Plan for its Camp Navajo (CN) facility. The plan addresses containment buildings that accumulate hazardous wastes and munitions-impacted areas. The purpose of this contingency plan is to minimize hazards to human health or the environment from fires, explosions, or any unplanned sudden or non-sudden releases of hazardous waste or hazardous waste constituents to air, soil or surface water.

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Sincerely,

A handwritten signature in black ink, appearing to read "John Ladd".

John Ladd
Lieutenant Colonel, AZ Army National Guard
Environmental Program Manager

Enclosure

Appendix E
Examples of Training Materials

Appendix E - Examples of Training Materials

Examples of training materials were previously provided to ADEQ. Training materials will include the content specified in Section 3 for MEC Awareness Training and in Section 4 for Personnel Training and will be provided to ADEQ upon request.

Camp Navajo 2015 Hunter
Safety and Certification Course

Agenda

- Welcome
- Authorized Participants Validation
- Break
- Hunting Areas/Restricted Areas/Off Limits Areas/Limited Area Access/Emergency Numbers
- Break
- Munitions & Explosives/Un-Exploded Ordnance
- Lunch
- ATV/Camping Billeting/Hunter Helpers/ Wounded Game/Security Check-in/Scouting
- CN hunting fees and paper work authorization

Authorized Participants Validation

- Military: Hunters must be current & or Retired military service members. Must have valid identification card (ID), CAC/retired military ID card or retirement letter from your state personnel office with a proper state ID.
- DAV: Hunters must provide letter of 50% or greater from Veterans Administration (VA) showing a service connected disability, or proof of Purple Heart.
- Wounded Warriors: (WW) must meet the Chief Administration Office Of the House definition; Any disabled veteran who has served on active duty since September 11, 2001, has fewer than 20 years of military service, and has received either a memorandum rating of 30 percent or greater from their service physical evaluation board or a VA service-connected disability rating of 30 percent or greater is eligible to hunt under WW hunt. WW will need to provide proof of WW program.

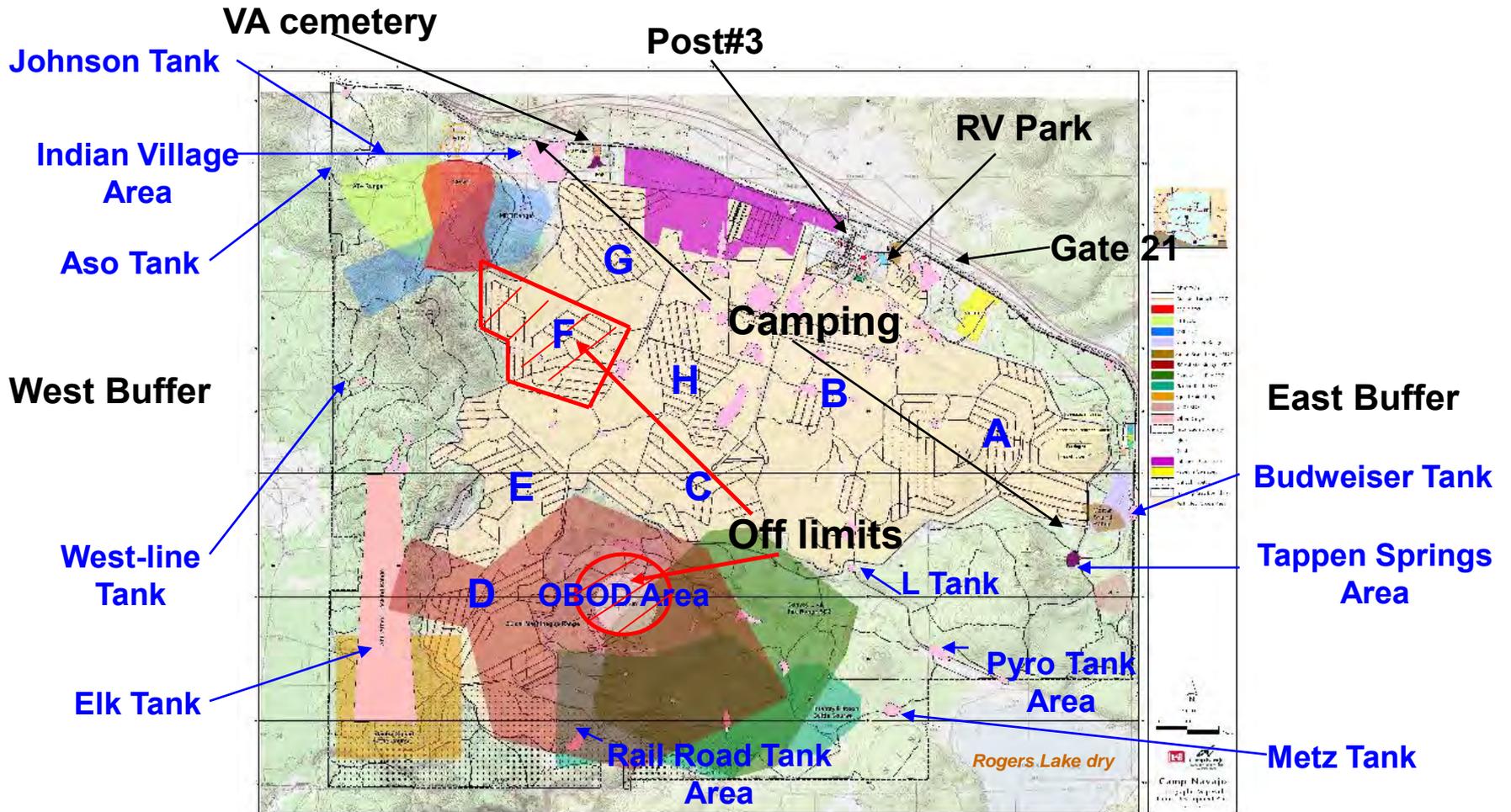
Authorized Participants Validation

- Other hunters: Hunters will include civilian hunters, State of Arizona employees and all category of hunters.
- Required Paperwork and Fees for Hunting on Camp Navajo. You will need to provide proof of the following:
 - AZGFD Hunting License
 - AZGFD Hunting Permit (TAG)
 - Hunter Safety Course Certification Card. NRA, or an equivalent state hunter safety education course is acceptable.
 - Completion of the Camp Navajo safety course.
- Will need to fill out and sign the following documents.
 - Waiver of Liability.
 - Hunter Identification.
 - Camp Navajo Safety and Certification Course.

Authorized Participants Validation Fees

- Fees apply to all hunters. If you have had a check that has been canceled or returned, hunters must first pay overdue fees by casher check before hunting privileges are restored. Check with hunting coordinator.
- Fee to hunt on Camp Navajo; two separate checks or money orders, **NO CASH** will be taken.
- Elk & Antelope, \$55 to the State of Arizona, \$5 to Dept. of Treasury.
- Turkey & Archery Deer \$25 to the State of Arizona, \$5 to Dept. of Treasury.

Hunting Areas/Restricted Areas/Off Limits Areas/Limited Area Closures



Areas in the Limited Area can be closed down daily
 A, B, C, D, E, G, H, "red indicate most often closed"

Hunting areas/Restricted Areas/Off Limits Areas/Limited Area Access/Emergency Numbers

- Administrative Area (AA) main post:
 - Hunting is prohibited.
 - All weapons must have a cable and or trigger lock when in the AA
 - No harvested animals will be field dressed and/or skinned in the AA and or RV park.
- Limited Area (LA):
 - LA is designated a restricted area and by regulation is strictly controlled as to who may enter. Only approved military, or retired military with proper clearance or personnel with security clearance will enter.
 - Personnel qualified to hunt in the LA will use only archery equipment.
 - **LA sections will close frequently due to mission requirements, security will post daily closures and brief hunters at post#3 LA entrance.**
 - Hunter are responsible for any damages to the LA. Hunter will remove vehicle at own expense.

Hunting areas/Restricted Areas/Off Limits Areas/Limited Area Access/Emergency Numbers

- Give all traffic the right away when in the LA.
- No cell phones, cameras unless cleared and approved by the installation Commander. Large Rocket Motors **are sensitive to any electronic impulses**. GPS will be allowed.
- No hunter helper in the LA while hunting. If an Elk is harvested the hunter may take two unarmed hunter helpers to the downed games location for recovery only.
- LA will open for hunting at 0500 and will close at dusk, unless recovering a harvested Elk.
- POVs will be allowed in the LA but must be inspected and searched by the Hunting Coordinator or Security Officers. Have available for inspection your proof of insurance, registration, and must have a 1A10BC FIRE extinguisher in your vehicle at all times.
- No smoking, lighters or alcoholic beverages in the LA.
- POV policy may change at any time by order of the Commander.
- F area is off limits to all hunting activities. A, B, C, D, E, G, H areas may close on any given work day due to mission. Security will brief daily closures.

Hunting areas/Restricted Areas/Off Limits Areas/Limited Area Access/Emergency Numbers

- Personnel qualified to hunt in the LA must not enter any area where depot personnel are working. Stay 500 yards away from any depot operation. **Do not** observe any depot operations. “Your are most likely in a closed area”.
- All personnel qualified to hunt in the limited area will submit Form 19B, as well as other required documentation.
- Military Hunters qualified to hunt the limited area must provide a letter from your security manager to Camp Navajo Security Manager of your security clearance status and must have your SSN on the letter.
- Other military and retirees must contact ACCUSEARCH @ (800) 462-7019 Ext. 202. Request a nationwide criminal search. This may cost the hunter \$45.00+, subject to change. Ensure ACCUSEARCH sends results directly to Camp Navajo Security Manager. The Camp Navajo Security Manager may be contacted at wally.handley@campnavajo.com or 929-773-3270.
- Personnel that qualify to enter the LA will be placed on the LA roster for your hunt dates only. No more than 12 hunters in the LA at one time. Archery Permits have first priority over downgrading hunters from rifle to archery, first come first serve. LA hunts may be eliminated or changed to LA only hunts in the future.

Hunting areas/Restricted Areas/Off Limits Areas/Limited Area Access/Emergency Numbers

- Buffer area (BA):
 - The BA is located outside of the LA and is designated as either the east or west buffer area. BA is approximately 17,000 acres.
 - Off road vehicles are recommended. Hunter are responsible for any damages to the BA. Camp Navajo will not respond to hunters disabled vehicles. Hunter will remove vehicle at own cost.
 - The BA is subject to closure due to training. East and or west buffer can close without notice due to training requirements.
 - All hunters must report to the main security guard post before entering the buffer for your daily hunt. If eligible to camp on Camp Navajo, hunter must call security @ 928-773-3259 prior to your hunting activity each day and upon closure of hunting each day.
 - No alcoholic beverages or drugs during hunting activities, alcohol may be consumed at camp sites.

Hunting areas/Restricted Areas/Off Limits Areas/Limited Area Access/Emergency Numbers

- Open Burn Open Detonation Area OBOD:
 - This area is off limits to all hunters. Dangers signs are posted. Violators will be prosecuted as per ADEQ (Trespassing).
- Emergency Numbers for Camp Navajo:
 - Security 928-773-3297.
 - Fire Department 928-773-3290/3211.

Munitions & Explosives/Un-Exploded Ordnance

- Methods of Generation of UXO.
 - Combat.
 - Discarded Military Munitions (DMM).
 - Live Fire Ranges.

Methods of Generation of UXO

Combat

- Fired ammo fails to function.
- Dispersed world-wide.
- From various conflicts.
- War “souvenirs”.



Methods of Generation of UXO

Discarded Military Munitions (DMM)

- Unfired ammunition.
- Buried, abandoned, or other improper disposal.
- Technically not UXO, but presents similar hazards.



Methods of Generation of UXO

Live Fire Ranges

- Fired ammo fails to function.
- Should be limited to range boundaries (in theory).



ATV off Road/Camping Billeting/Hunter Helpers/ Wounded Game/Security Check-in-out/Scouting

- ATV/UTV: Any vehicle with two-four wheels will be allowed for hunting purpose only. All vehicles used for hunting must have registration, insurance and be street Legal. All ATV/UTV/OTV will be in compliance with Arizona State law and will display an OHV decal. AZGFD will enforce off road requirements and laws.
- All vehicles will stay on established roads or trail systems. The only exception is to recover harvested game.
- Camping and Billeting: Any Active/Reserve DOD personnel that are in possession of a valid military identification card is authorized.
- Camping is available at Tappen Springs (TS), Indian Village (IV), and the Pine View RV Park. There is no water or electricity at Tappen Springs and Indian Village however, portable toilets are provided. The RV Park offers water, bathroom/showers, electric hook-ups, and tent camping. There is no cleaning of any game in or around the Administrative Area.

ATV off Road/Camping Billeting/Hunter Helpers/ Wounded Game/Security Check-in-out/Scouting

- Billeting is available for DOD personnel at the CN Training Site for a nominal fee. The use of masking scents inside billeting is prohibited. For additional information or reservations call (928) 773-3152. Military units training at CN have precedence over hunters. Billeting/campgrounds may not be available when military units are occupying these facilities.
- All RV Park and Campers must check in with Camp Host first. RV Park and Camping is on a first come first served basis
- No dumping of black water on Camp Navajo. Dump station is available at RV Park (see camp host for fees).
- RV camping (see camp host for fees). RV Park will close 1 Oct.
- RV park bathroom facility and laundry facility are only for RV park residents.

ATV off Road/Camping Billeting/Hunter Helpers/ Wounded Game/Security Check-in-out/Scouting

- Wounded Game: While hunting in the BA, if a wounded animal crosses into the LA, the hunter will physically report to Post 3. If Security is available, the hunter may be escorted to the area where the animal crossed the fence. If authorized, the hunter will sign in at Security and pursue animal where it entered the LA. If the animal is not located immediately all personnel will return to Post 3. Personal rifles and pistols are not authorized in the LA. Arrangements must be made prior to entering. If a wounded animal crosses into the OBOD area the hunter will not be allowed to pursue the animal. Hunters are prohibited from pursuing animals inside the OBOD and "F" Areas.
- Hunter Helper: All hunter helper are required to follow all rules, policies and regulations. No hunter helper in the LA. A hunter that harvests game in the LA may take two helpers in to recover game only. A hunter helper must be listed on hunter identification form.

ATV off Road/Camping Billeting/Hunter Helpers/ Wounded Game/Security Check-in-out/Scouting

- Security check in-out: All hunter must check in at the start of their hunt with post #3 main guard station to receive Camp Navajo hunting permit. Hunters entering the LA must check in and out each time they enter the LA for hunting. In accordance with AZGFD regulation, all game must be properly tagged immediately upon locating it. All game must be checked out through security (including the head, hide and legs). Check-out is extremely important in that the AZGFD and CN derive much of their statistical data for game management from the animals taken. Whether successful or not, at the completion of hunting and departure from CN, hunters must return the CN Hunt Permit to security at Post 3.
- Hunters that are camping at TS and or IV must call in at the start and end of each hunting day (928-773-3297).

ATV off Road/Camping Billeting/Hunter Helpers/ Wounded Game/Security Check-in-out/Scouting

- Scouting: Scouting will be allowed two weeks prior to the hunt and is limited to BA only. No LA scouting.
- Camp Fires: Fires are authorized at Tappen Springs, Indian Village, and the RV Park in designated fire pits or grills. Fire pans may be used but are not provided. Fire permits must be obtained from the Installation Fire Department prior to starting fires. If any fire restrictions are in effect permits will not be issued.

Closing/Questions

- All fees and paperwork must be turned in before granted a Camp Navajo hunt permit. (**Red** Permit) indicates buffer only. (**Green** Permit) limited area access approved.
- This course is good until mission change or new course is required. Don't loss your course card.
- Please review Camp Navajo hunting requirements prior to next year's Elk submission for any change to the program. New safety course may be required due to missions.
- Camp Navajo follows all AZGFD regulations. AZGFD will be on Camp Navajo enforcing hunting regulation/laws and they will issue citations.
- Happy Hunting

Storage Area must be equipped with a fire extinguisher (10BC rating or greater).

While driving in the Ammunition Storage Area all vehicles must safely stop on the roadway shoulder and remain stationary when an escorted transport vehicle passes.

Each Contractor-provided vehicle and towed trailer shall show the Contractor's name so that it is clearly visible on both front doors of the vehicle and both sides of a towed trailer or the Contractor may furnish a clearly legible identification sign mounted on the dashboard of the vehicle.

Do not approach workers in magazine / storage areas! These areas are marked with portable signs, road closed signs or vehicular blockage. **Stay Away!**

REQUIRED PERMITS AND ACTIVITIES

Heat/Flame-Producing Permit: Obtain permit from Camp Navajo Fire Department prior to using any heat/flame-producing tools or equipment. After the permit is issued by the Fire Department, it will be approved or disapproved by the Camp Navajo Safety Officer and Quality Assurance Officer.

Excavation Permit: Obtain permit from the Project Manager prior to commencing any excavation work to include, shovel work, pounding stakes or posts, or any ground disturbance above and beyond normal walking or driving activities. Coordinate this activity through Camp Navajo Facilities Engineering at least 72 hours prior to any required excavation. Facilities Engineering will locate utility lines prior to any excavation work. All excavations falling under OSHA standards shall be braced and shored in accordance with the standard.

Confined Space Work Permit: Contractor employees are not authorized to enter any confined spaces or any Camp Navajo jobsites unless specifically required by the service or construction contract. See your Point of Contact for permitting directions and requirements.

Work at Elevated Locations: Any work performed in unguarded areas over 4 feet shall require fall arrest equipment. This can be accomplished by a number of devices. Contact your Point of Contact for selecting the right system for your application.

Personal Protective Equipment: Depending on the task and job location Eye Protection, Hard Hat, Safety Shoes, Hearing Protection and Proper Clothing may be required. See your CN Point of Contact for additional information.

Vehicles and motorized equipment within the Ammunition Protection, and Proper Clothing may be required. See your Camp Navajo Point of Contact for additional information.

Electrical: Only authorized and qualified persons are permitted to work on the installation, wiring, troubleshooting, or repair of electrical equipment.

Asbestos: There is encapsulated asbestos known to be on the property. Before conducting any building, electrical, or plumbing maintenance contact your Point of Contact for permission to proceed.

ENVIRONMENTAL COMPLIANCE

General Protection of Land and Cultural Resources: The Contractor shall confine his construction activities to areas defined on the drawings unless prior written approval is granted by CN DE. The land and cultural resources outside the limits of work performed under this contract shall be preserved in their present condition. Contact your Point of Contact regarding issues of Record Of Environmental Check

Spill Prevention and Response: To prevent and reduce the impact of fuel, lubricant, and other regulated material releases to the environment, the Contractor shall comply with the requirements outlined in the Camp Navajo Spill Prevention, Control and Countermeasures Plan (SPCCP).

Chemical Use: No chemicals may be brought onto CN Property without prior approval. All excess chemical must be removed after the project unless prior arrangements are made.

Encountering Wildlife: There are many poisonous insects and animals on the CN property. There are also many protected animals on CN property. Do not touch, harm or disturb any animals on CN property.

REPORTING ACCIDENTS

All accidents, including first aid and near miss events must be **immediately** reported to the Point of Contact. Depending on the severity involved parties may be required to participate in an investigation of the incident.

**CAMP NAVAJO POINTS OF CONTACT
(NON-EMERGENCY)**

SAFETY OFFICE
928-773-3366
QUALITY ASSURANCE OFFICE
928-773-3206
SECURITY
928-773-3297
FIRE DEPARTMENT
928-773-3290
FMO (North)
928-773-3248 / 3265
FACILITIES ENGINEERING
928-773-3247
TRAINING SITE - OPERATIONS
928-773-3272
TRAINING SITE - MANAGER
928-773-3295
TRAINING SITE - BILLETING
928-773-3152

TRAINING SITE - RANGE CONTROL
928-773-3155 / 3161

AZGTC - READINESS
928-773-3153

AZGTC - PERSONNEL
928-773-3167

UNIT / DEPARTMENT POC

WRITE IN YOUR POC NUMBERS ABOVE



**INSTALLATION SAFETY
INFORMATION
FOR
CONTRACTORS
AND
VISITORS**

ARIZONA TRAINING CENTERS
AND
CAMP NAVAJO INDUSTRIAL OPERATIONS

By order of the
Commander

This pamphlet contains information regarding installation and explosive safety for personnel while at Camp Navajo. Relevant telephone numbers are listed on the back of this pamphlet.

Understanding and complying with the information contained in this pamphlet, the referenced documents, and other contractual requirements should minimize the potential risks. Therefore, adherence to the contents of this pamphlet will support Camp Navajo mission accomplishments, provide a safe workplace for all personnel, and enhance cooperation and assistance from Camp Navajo personnel.

INTRODUCTION

Numerous Federal, State, and DOD regulations apply to the operations at Camp Navajo. The following is a partial listing of the references that apply:

29 CFR 1910 - OSHA General Industry Standards.

29 CFR 1926 - OSHA Construction Standards.

40 CFR - Protection of the Environment.

DA Pam 385-64 - Army Explosive Safety.

NGR Pam 385-64 - National Guard Explosive Safety.

NAVSEA OP5 - Ammunition and Explosives Safety Ashore.

AFMAN 91-201 - Air Force Explosive Safety.

In addition to the references cited above; Camp Navajo Industrial Operations (CNIO), Facilities Management Operations (FMO), Arizona National Guard (AZNG), Contractor and Sub-Contractor employees, are also subject to; special requirements, specifications, or standards, stipulated in their employment contract(s). Violation of these standards could result in work stoppage until corrective action is taken by the department/contractor safety representative, or Officer in Charge (OIC). Note: CNIO, FMO, AZNG, Contractor and Sub-Contractor employees are subject to unannounced inspections by Federal or State Compliance Officers.

The minimal space in this pamphlet does not allow for all of the standards to be addressed; therefore, some obvious or elementary requirements are provided here as a reminder.

CONTRACTOR ACCESS AND USE OF PREMISES

Contractor shall ensure that personnel employed on Camp Navajo become familiar with this document and obey Camp Navajo regulations. Keep within the limits of the work and avenues of ingress and egress as directed. Do not enter restricted areas unless required to do so and until cleared for such entry. Government issued identification badges must be worn at all times.

Unexploded Ordnance AND Materials of Explosive Concern

The potential for personnel encountering Unexploded Ordnance or Material of Explosive Concern is possible.

Recognize, Retreat, and Report
928-773-3206 or 928-773-3297



A Explosives Safety Policy states that the minimum number of people should be exposed for the minimum amount of time to the minimum amount of ammunition and explosives possible. Therefore, only installation personnel or approved guests are authorized access to the ammunition storage area.

CONTACT YOUR POINT OF CONTACT FOR SPECIFIC AMMUNITION STORAGE AREA GUIDANCE / ACCESS.

FIRE

To report a Fire Emergency call: **928-773-3211**

To contact the Fire Department: 928-773-3290

Smoking is prohibited within the Ammunition Storage Area. Matches, lighters, flame producing devices are prohibited in explosive operating buildings / areas or magazine storage areas.

A permit issued by the fire department is required to perform hot work; burning, grinding, or welding.

Burning of trash or other materials is prohibited.

Flammable liquids such as gasoline will be stored in and dispensed from approved NFPA containers.

Accumulation of combustible materials will be kept to a minimum. Work areas shall be cleaned up daily. Worksites are subject to unannounced fire / safety inspections.

PROHIBITED ARTICLES

Firearms (firearms will not be stored by Camp Navajo security personnel) – all of Camp Navajo

Alcoholic beverages of any type – all of Camp Navajo

Cigarette lighters or flame-producing devices – Limited area only

Drugs other than a prescription-type (prescription drugs shall be in original containers) shall not be brought onto Camp Navajo.

Ammunition, explosives, explosive devices, fireworks and similar type items are prohibited on Camp Navajo unless specifically authorized in writing by Camp Navajo and necessary and essential for accomplishment of the work to be performed.

CAMERA PERMITS

Cameras are not authorized within the Ammunition Storage Area without prior command approval. Do not take pictures of Ammunition Storage Area commodities with locations referenced. Do not take pictures that may reveal classified information! If you're not sure.....**Don't take the picture!**

CELL PHONES

Mobile Phones are not authorized for use while driving, or within Ordnance Areas (*permit required for use within the Ammunition Storage Area*)

Cell Phone Permit: Obtain permit from Camp Navajo Facilities Engineering prior to taking mobile device(s) into the ASA. Coordinate permits through CNIO Communications Section at least 72 hours prior to Ammunition Storage Area activities.

VEHICLE REQUIREMENTS

All vehicles entering or leaving Camp Navajo Industrial Storage Facilities are subject to search.

Vehicles must be in good mechanical condition, properly registered and insured.

Drivers must possess a valid state driver's license and proof of insurance (or valid OF 348 or operators permit).

Pay strict attention to posted caution and warning signs on buildings or along the roadways. Drive with caution near pedestrians / soldiers in training. Speed limit passing marching/PT soldiers is 10 MPH. Drivers must obey posted speed limits.

Arizona State traffic laws are enforced on Camp Navajo. Motor cyclists shall wear approved safety helmets. All vehicle occupants shall wear installed seat belts.

For incident / accident evacuation purposes, Back in / Head out Parking transportation vehicles while in the Ammunition Storage Area. While in the Ammunition Storage Area, keys remain in ignition and all doors unlocked.

When encountering escorted transport vehicles all traffic must pull to the roadway shoulder and remain stationary until the transport vehicle has passed.

MEC Safety



Arizona Army National Guard, Camp Navajo, Arizona




MEC Safety

References

- DoD Manual 6055.09-M - Ammunition and Explosives Safety Standards
- AR 385-63 - Range Safety
- AR 385-64 - Explosives Safety Program
- DoD Manual 4715.20 – Defense Environmental Restoration Program Management
- ADEQ RCRA Post-Closure Permit



MEC Safety

What are MEC?

- Include but not limited to:
 - Ammunition
 - Bombs
 - Cartridges
 - Rockets
 - Grenades
 - Missiles
 - Mines
 - Fuzes
 - Bulk TNT, C4



MEC Safety

Definitions

- **MEC: Munitions and Explosives of Concern**
 - UXO: Unexploded Ordnance
 - DMM: Discarded Military Munitions
 - MC: Munitions Constituents
- **MPPEH: Material Potentially Presenting an Explosive Hazard**
 - MDAS: Material Documented as Safe
 - MDEH: Material Documented as an Explosive Hazard

MEC Safety




MEC Safety



MEC Safety

MEC Safety

Definitions

- MC: Munitions Constituents
 - Explosives
 - Perchlorate
 - White Phosphorus
 - Hexachloroethane smoke
 - Chemical warfare materiel
 - Metals

MEC Safety

Definitions

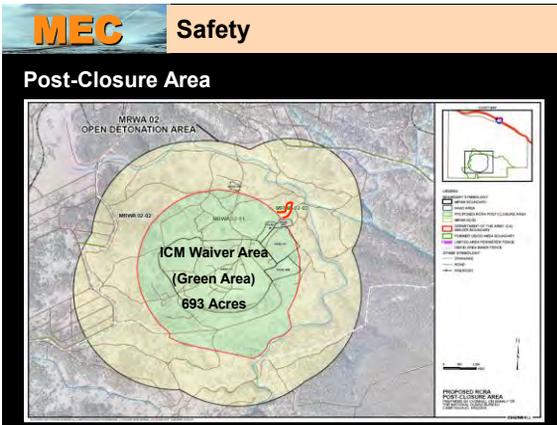
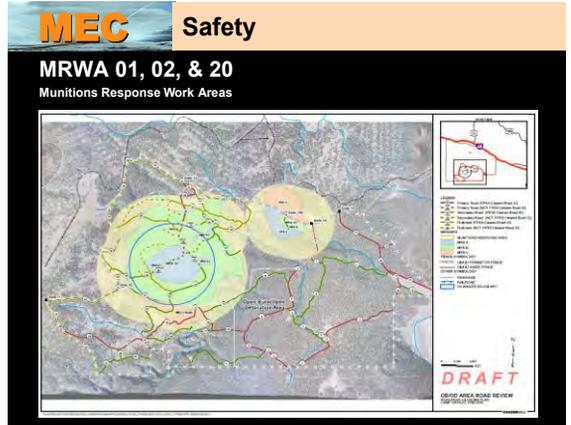
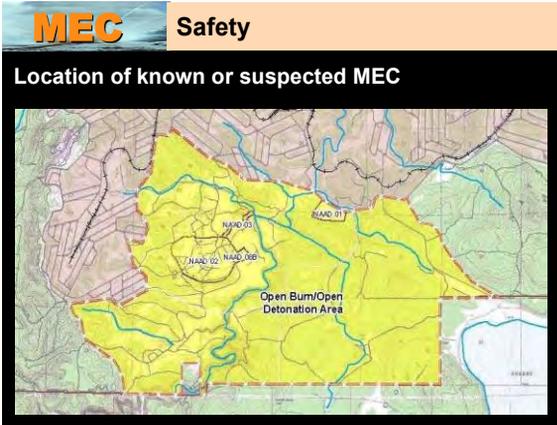
- MD: Munitions Debris
 - Shrapnel, frag
- RRD: Range-Related Debris
 - Strapping, hinges, boxes

MEC Safety

MEC Safety

MEC Safety

Location of Old OB/OD and EOD Areas



- MEC Safety**
- Things to consider...**
- How clean is clean?
 - MEC was not removed everywhere
 - Steep slopes, downed trees, heavy brush
 - MD was not removed everywhere
 - MD indicates that MEC may be present
 - Are the roads and firebreaks safe?
 - Erosion and frost heave can bring items to surface
 - Wildfire in the OB/OD or EOD Areas?
 - All personnel retreat at least 2000 feet

Things to consider...

- Do you see MPPEH on the ground?
 - Army 3Rs official explosives safety message:
 - Recognize, Retreat, Report
 - If it looks like MD, is in an area expected to contain MD, and can be safely avoided, may not need to report
- UXO-qualified personnel
 - EOD
 - QASAS
 - UXO Technicians



Things to Consider...

- Planning an excavation?
 - Areas of known or suspected MEC contamination
- Need UXO Construction Support?
 - On-call support
 - On-site UXO avoidance
 - On-site UXO clearance
- Planning off-site disposal or recycling?
 - No MD that looks like a munition
 - No soil containing MD that looks like a munition

Remember the 3 Rs

1. **RECOGNIZE**
2. **RETREAT**
3. **REPORT**



Army Safe is Army Strong



RCRA:

Resource Conservation & Recovery Act

Hazardous Waste Awareness and Materials Management Training



Why are you here?

- Because somebody made me
- Because my job requires me to be
- Because 40 CFR 262 and 265 says I need to be
- Because you will, or you already manage hazardous waste and you must successfully complete this classroom instruction



What is the goal of this training?

To teach you initially and annually how to perform your duties in a way that increases your knowledge, understanding and hazardous waste awareness to ensure that your work environment/facility is compliant with relevant hazardous waste regulations. ©



Training Objectives:

1. RCRA overview/history
2. HW Management
 - a) Identification and waste determinations
 - b) Generator status
 - c) Accumulation and weekly inspections
 - d) Disposal and recycling
 - e) Documentation
 - f) Education and training
3. Emergency response procedures
4. OSHA Hazard Communication Standard
5. Housekeeping and Audits
6. Test
7. Survey

Hazardous Waste Awareness and Materials Management Training



RCRA History:

What we commonly refer to as RCRA, or the Act is a combination of the first federal statutes and all subsequent amendments

- 1965 Congress enacted Solid Waste Disposal Act
- 1976 Resource Conservation and Recovery Act
- 1984 Hazardous and Solid Waste Amendments
- 1992 Federal Facilities Compliance Act
- 1996 Land Disposal Program Flexibility Act



RCRA - What is it & Goals:

Three elements comprise the RCRA program:

1. Law (or Act)
2. Regulations, 40 CFR 239-282
 - 40 CFR 260-273 regulates hazardous waste
3. Guidance and policy directives



Goals set by RCRA:

- To protect human health & the environment from potential hazards of waste disposal
- To conserve energy and natural resources
- To reduce the amount of waste generated
- To ensure that wastes are managed in an environmentally sound manner
 - CRADLE-to-GRABE



RCRA Abbreviated:



Presently, the Act consists of 10 subtitles...Subtitle D-for state solid waste plans and Subtitle C-the hazardous waste management program set to manage hazardous waste from cradle-to-grave.



RCRA Regulation:

Who regulates RCRA in Arizona?

1. Environmental Protection Agency (Region 9)
2. Arizona Department of Environmental Quality (ADEQ)

What HW regulations and code apply in Arizona?

1. 40 CFR 260-273 regulates hazardous waste
2. State of Arizona, Arizona Administrative Code Title 18, Chapter 8
3. AZARNQ, Army Regulation 200-1



Why do we care and manage waste?

1. We are committed to environmental compliance
2. Laws required us manage waste properly
3. Improper waste management affects public health/environment and causes penalties

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Who Manages Hazardous Waste (HW)?

EVERYONE who handles or works with HW!

What does HW Management Include?

Identification / Waste Determination
 Generator Status
 Containment & Labeling
 Accumulation / Inspection
 Disposal / Recycling
 Documentation
 Education / Training

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AZARNQ

Generated Solid Wastes (SW)

A solid waste is any material that is discarded by being abandoned/simply thrown away, disposed of, burned or incinerated, treated (but not recycled), inherently waste-like (always considered a solid waste), a discarded military munition* or recycled in certain ways.



- Hazardous waste (HW)
- Medical waste
- Military munitions
- Petroleum, Oil and Lubricant (POL) waste
- Recyclable waste
- Universal waste
- Trash/Refuse



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Military Munitions:

1. Munitions are not Solid Waste:

- Training
- Research
- Test/evaluation
- Range clearance
- Resource recovery/collection

2. Unused Munitions become Solid Waste:

- Abandoned (disposed of, burned or treated prior to disposal)
- Removed from storage for disposal
- Damaged, leaking or deteriorated & cannot be recycled
- Declared waste by authorized military official

3. Used Munitions become Solid Waste:

- Transported off-range
- Buried or landfilled on or off-range
- Fired munitions land off-range



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HW Determination:

- Waste determination is a complex task
- Generator is responsible for waste determination
- And determining any applicable exclusions



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Hazardous Waste (HW)-What is it?



Recall That: HW must be determined to be a solid waste first

Simply Put: A hazardous waste is a waste with properties that make it dangerous or capable of having a harmful effect on human health or the environment.

Can Be: Liquid, solid, gas or sludge...

And that hazardous wastes can be one of three types:

- Is it **Listed** (F, K, P and U)?
- Is it **Characteristic** (TRIC)?
- Is it a mixture? /Is it derived from?

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Listed Waste: 40 CFR 261.31-33



- **F-Lists** are Non-Specific Source Waste (Common manufacturing and industrial processes)
- **K-Lists** are Specific Source Wastes (Specific sectors or industries)
- **P (acute and fatal) and U (non-acute/toxic+) Lists**
 - Pure and commercial grade unused chemicals
 - Off-spec, spilled, residues, soils/debris P/U contaminated
 - 2.2 lbs. monthly of P-listed waste = Large Quantity Generator



Characteristic Waste 40 CFR 261.21-24, D-Listed

1. **Toxicity** (D004-D043) – produces leachate above regulatory levels as determined by the Toxicity Characteristic Leaching Procedure (TCLP)
2. **Reactivity** (D003) – readily explodes or undergoes violent reactions when exposed to water, caustics or under normal handling conditions
3. **Ignitability** (D001) – can readily catch fire and sustain combustion
4. **Corrosivity** (D002) – pH ≤ 2 or pH ≥ 12.5 or corrodes steel at a rate > 6.35mm/yr



Examples

1. **Toxicity** (D004-D043) – heavy metals such as lead and cadmium, MEK on [] benzene
2. **Reactivity** (D003) – sodium azide, potassium permanganate & cyanide bearing waste
3. **Ignitability** (D001) – acetone, methanol, isopropanol and used solvents
4. **Corrosivity** (D002) – battery acid and rust removers



Universal Waste (UW), 40 CFR 273

Subject to special management provisions intended to ease the management burden and facilitate the recycling or proper treatment and disposal of such materials

UW Classifications – Generators of UW are referred to as “Handlers”

1. Small Quantity Handler – accumulates no more than 5,000 kg / ~11,000 lbs.
2. Large Quantity Handler – accumulates more than 5,000 kg

- Batteries
- Pesticides
- Mercury-containing equipment
- Lamps



Universal Waste Batteries

- Defined** 1 or more electrochemical cells designed to receive, store and deliver electric energy
- Container** Must be contained in a closed, structurally sound and compatible container lacking evidence of leakage, spillage or damage
- Labeling**
 - Universal Waste-Battery (ies)
 - Waste Battery (ies)
 - Used Battery (ies)
 - Dated the date it was discarded. Cannot exceed 1 year post accumulation date.



Universal Waste Used Battery



Universal Waste Pesticides

- Defined** Any substance or mixture of substances intended for preventing, destroying, repelling or mitigating any pest, or intended for use as a plant regulator, defoliant, or desiccant
- Container** Must be contained in a closed, structurally sound and compatible container lacking evidence of leakage, spillage or damage
- Labeling**
 - Universal Waste-Pesticides
 - Waste Pesticides
 - Dated the date it was discarded. Cannot exceed 1 year post accumulation date.



Universal Waste Waste Pesticides



Universal Mercury-Containing Equipment

- Examples**
 - Older blood pressure devices
 - Thermometers
 - Thermostats with Hg ampules
- Equipment**
 - Universal Waste-Mercury Containing Equipment
 - Waste Mercury Containing Equipment
 - Used Mercury Containing Equipment
- Thermostats**
 - Universal Waste-Mercury Thermostats
 - Waste Mercury Thermostats
 - Used Mercury Thermostats
 - Dated the date it was discarded. Cannot exceed 1 year post accumulation date.



Universal Waste Used Mercury Thermostat



Universal Lamps

Definition

Container

Labeling

- A bulb or tube portion of an electric lighting device, designed to produce radiant energy
 - Thermometers
 - Thermostats with Hg ampules
- Lamps must be placed in a closed container that is compatible, structurally sound and adequate to prevent breakage
- Universal Waste-Lamp(s)
 - Waste Lamp (s)
 - Used Lamp (s)
 - Dated the date it was discarded. Cannot exceed 1 year post accumulation date.



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Non-RCRA Regulated Waste Petroleum, Oils & Lubricants (POLs)



POL ≠ Pour on land
POLs are not hazardous waste unless you make it so

Subject to special management provisions intended to ease the management burden and facilitate the recycling or proper treatment and disposal of such materials

- Used oil must be stored in tanks or containers which are structurally sound and clearly labeled "Used Oil". Labeling is applicable to drip containers.
- Never mix chemicals or degreasers with used oil which can make it hazardous waste subject to HW regulations rather than a recyclable waste.
- Keep containers closed when not in use. A funnel in the drum, not in use is an open container violation.

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What do you think?



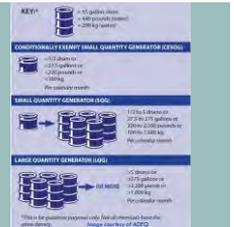
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Generator Status

Waste determination facilitates determining generator status.

A generator is defined as any person or site whose processes and actions create hazardous waste.



- Conditionally Exempt Small Quantity Generator (CESQG)
- Small Quantity Generator (SQG)
- Large Quantity Generator (LQG)
- (Episodic)

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Generator Status Counting waste

- Again, recall that you must first determine if you have a HW. The next step is determining how much you have, which then determines your generator status.
- All AZARNG HW generators (CESQGs, SQGs and LQGs) managing a central accumulation area (CAA) must track their monthly HW generation and report these forms to the AZARNG ENV. Office – South/North (as designated).
- Who is reporting for your generation site?

Click on the image to take you to the document

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Generator Status Comparison

	EPA ID #	Monthly Accumulation and On-site Limit	Storage Time Limit	Manifest	Personnel Training	Contingency Plan and Preparedness & Prevention
CESQG	40 CFR 261.12	Not required ≤ 220 lbs. or < 2.2 lbs. acute ≤ 2,200 lbs. of all lines	None	Not required	Not required	Not required
SQG	40 CFR 261.24(a) & (d)	Required ≥ 220 lbs. & ≤ 2,200 lbs. ≤ 12,228 lbs. of all lines	≤ 180 days / ≤ 270 days (with-)	Required	Basic training	Basic info at phone required
LQG	40 CFR 261.24(a), (d) & (f)	Required > 2,220 lbs. or > 2.2 lbs. acute No maximum limit	≤ 90 days	Required	Full training	Full plan required Required

Generator status determines which regulatory requirements you/your facility must comply with.

The more waste you generate, the stricter the regulatory requirements!

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Pollution Prevention

AZARNG Recycling & Waste Reduction



- Aluminum cans
- Brass
- Cardboard
- Glycol
- Lead-Acid Batteries
- Pallets
- Paper (white)
- Plastic bottles
- Rechargeable Batteries
- Scrap metals
- Toner cartridges
- Used Oil & filters

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Containerization



- Any portable device used to store, transport, treat or handle HW.
 - Examples include: 5-gal can/pail, 55-gal drum, fiber drums or a tank car
- Must be compatible with waste, secured and labeled
- Must be 50 feet from property line if reactive or ignitable
- Must be DOT certified to transport on highway
- Kept containers closed except for adding or removing waste
- Handle to not damage container & use 2" containment when storing containers of liquid HW
- Inspected on a weekly basis using revised checklist



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Labeling



- Use indelible point pen, paint or permanent marker
- Label all HW containers "Hazardous Waste"
- Label all HW containers with waste stream name
 - Examples include: paint waste, waste paint, solvent waste...
- Always label in the upper 1/3 of the drum-never on top
- Additional DOT labels maybe utilized to indicate transportation hazards
- When container is placed in Central Accumulation Area, it will be re-dated
- Inspect all container labels weekly using revised checklist



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What do you think?



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Accumulation

Satellite Accumulation Point (SAP)

- Provides a place to accumulate small amounts of a HW stream in a single container until full, prior to moving to the CAA
- Beneficial if c containers are saved, reduces disposal costs and supports operational & process flow



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Accumulation

Central Accumulation Area (CAA)

- Designated secure location on-site for accumulating HW
- Must have fire suppression and have proper signage
- Must not exceed accumulation time limits:
 - LQG = 90 days / SQG = 180 days
- Must have compatible, dated and labeled containers
- Must keep aisles open, free of obstructions and utilize 2" containment
- Must never transport HW from one facility to another
- Must alert Environmental Office if you are close to exceeding monthly HW limit
- Must report monthly accumulation to ENV, office
- Must be inspected weekly
- Must post emergency response information & procedure sheet next to phone



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SAP Requirements

- Must be located at/near point of generation and be under operator control
- Must only be 1 container per HW stream, up to 55 gallons maximum
- Must have proper labeling on container (HW and waste stream)
- Must be have proper signage designating generation process
- Must date container when it becomes full and move to CAA within 3 days
- Must never move waste from one SAP to another SAP
- Must be inspected weekly
- Must post emergency response information & procedure sheet next to phone

Weekly Inspection

- ❑ Inspection forms must be retained for 3 years from date of inspection
- ❑ Must be signed and dated
- ❑ Ensures accumulated waste is positioned correctly, has appropriate labeling and containers are structurally sound*
- ❑ Ensures adequate aisle space and necessary PPE & spill response are available if needed
- ❑ Ensures accumulation limits have not and will not be exceeded**...

Weekly Inspection Checklist

Generator Information

Transporter Information

TSD Information

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HW Facilities & Cradle-to-Grave

Generators

- Cause hazardous waste to exist
- Ultimately are responsible for their HW
- Cause hazardous waste to be regulated by RCRA, 40 CFR 261 and 262

Transporters

- Move hazardous waste off-site
- Regulated by RCRA, 40 CFR 263 and DOT, 49 CFR 171-179

TSDs

- Treatment, storage and disposal facility
- Treat, store and dispose of hazardous waste
- Can be either Permitted TSDF or Interim Status TSDF
- 40 CFR 264 and 265



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HW Manifests & Documentation

Facility Mailing Address

Facility Site Address (if different)

Waste DOT Shipping Name

No. containers, type, weight & waste codes

Generator's Signature and Date

Transporter's Signature and Date

TSD's Signature and Date

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BREAK TIME!

When we come back, we are going to switch gears a bit and discuss:

1. Emergency Response
2. OSHA Hazard Communication Standard
3. Housekeeping/Audits
4. Test
5. Survey

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Accident Prevention & Emergency Response

- Are you able to respond effectively to emergencies?
- Are you familiar with emergency procedures?
- Are you familiar with emergency equipment?
- Are you familiar with emergency systems?

- *How to use, inspect, repair &/or replace facility emergency & monitoring equip.;
- *Key parameters for automatic waste feed cut-off systems;
- *Communications or alarm systems;
- *Response to fires or explosions;
- *Response to ground-water contamination incidents; and
- *Shutdown of operations



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Accident Prevention

Minimizing potential risks

	Contingency Plan and Preparedness & Prevention
CESQG (40 CFR 261.23)	Not required
SGQ (40 CFR 260.24 (f) & (g))	Basic info at phone
LQG (40 CFR 260.24(f), (g), & (h))	Full plan required Required

Equipment required at SGQs and LQGs for immediate access

Internal communications/alarm system (voice or signal) to provide emergency instruction	✓
Telephone or hand-held, two-way radio to summon emergency assistance	✓
Portable fire extinguishers, spill control and decontamination supplies	✓
*Water at adequate volume and pressure for suppression	✓
Other requirements for SGQs and LQGs	
Test and maintain equipment	✓
Maintain sufficient aisle space-no obstructions	✓
*Secure arrangements with local emergency response agencies	✓

SGQs and LQGs are required to keep employee's familiar with basic safety guidelines and response procedures in the event of an accident or emergency. Therefore SGQs and LQGs must ensure the following:

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OSHA Labeling and Globally Harmonized System (GHS)



In 2012, OSHA adopted new hazardous chemical labeling requirements revising the HCS, aligning globally a system of classification and labeling for chemicals.

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OSHA Labeling and Globally Harmonized System (GHS)



6 Label Requirements

1. Manufacturer name, address, phone #
2. Product identifier
3. Signal Word (Warning or Danger)
4. Hazard stmts.
5. Precautionary stmts.
6. Pictograms

Additionally in 2012, OSHA adopted a new format for communicating information on Safety Data Sheets (SDS).

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OSHA Safety Data Sheets (SDS)



1. Identification
2. Hazard Identification
3. Composition
4. First-Aid Measures
5. Fire-Fighting Measures
6. Accidental Release Measures
7. Handling and Storage
8. Exposure Controls/PPE
9. Physical and Chemical Properties
10. Stability and Reactivity
11. Toxicological Information
12. Ecological Information
13. Disposal Considerations
14. Transport Information
15. Regulatory Information
16. Other

SDSs formally called Material Safety Data Sheets (MSDS). SDSs communicate hazards for each hazardous chemical in the workplace. SDSs are required to be presented in a consistent user-friendly 16-section format.

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OSHA GHS Video



Hazardous Waste Awareness and Management Training Program

Annual Training for the Arizona Army National Guard

Good Housekeeping BMPs



Best Management Practice

- Always know what you're working with, understand the hazards & how to protect yourself
- Always ensure chemical and HW containers are labeled and stored appropriately
- Always keep HW containers closed except when adding or removing waste
- Always keep incompatibles separate
- Never throw HW in the trash, pour it down the drain/on ground or mix waste
- Always complete weekly (SAP and CAA) inspections
- Report deficiencies and concerns immediately
- Know who to contact for assistance
- Know how to respond in an emergency
- Repeat your training annually

Annual Training for the Arizona Army National Guard

Inspections/Audits

What do we look for and where do we look?



- Can be internal by the AZARNG Env. Office staff or by Environmental Performance Assessment System (EPAS)
- Can be external by the Arizona Department of Environmental Quality (ADEQ)
- We look at everything and we look everywhere!
- We are here to help you get in, or remain in compliance

Annual Training for the Arizona Army National Guard

Training Completed: You are now able to...

1. Understand why you are here (#C2x-overview/history)
2. Manage HW
 - a) Identify and determine waste
 - b) Determine your generator status
 - c) Accumulate, inspect and report HW
 - d) Define where your HW goes to
 - e) Comprehend manifest usage
 - f) Education and training
3. Respond to spills/releases, fire or explosions
4. Identify chemical hazards and protect yourself from them
5. Identify BMPs and compliance violations

... perform your duties in a way that increases your knowledge, understanding and hazardous waste awareness to ensure that your work environment/facility is compliant with relevant hazardous waste regulations. ☺



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Thank you for your participation!

This training program was presented to you by the DEMA, AZARNG Environmental Office. Our offices are here to provide you with training, guidance and support of safe and proper HW Management. Should you have any questions, comments or concerns, please contact:

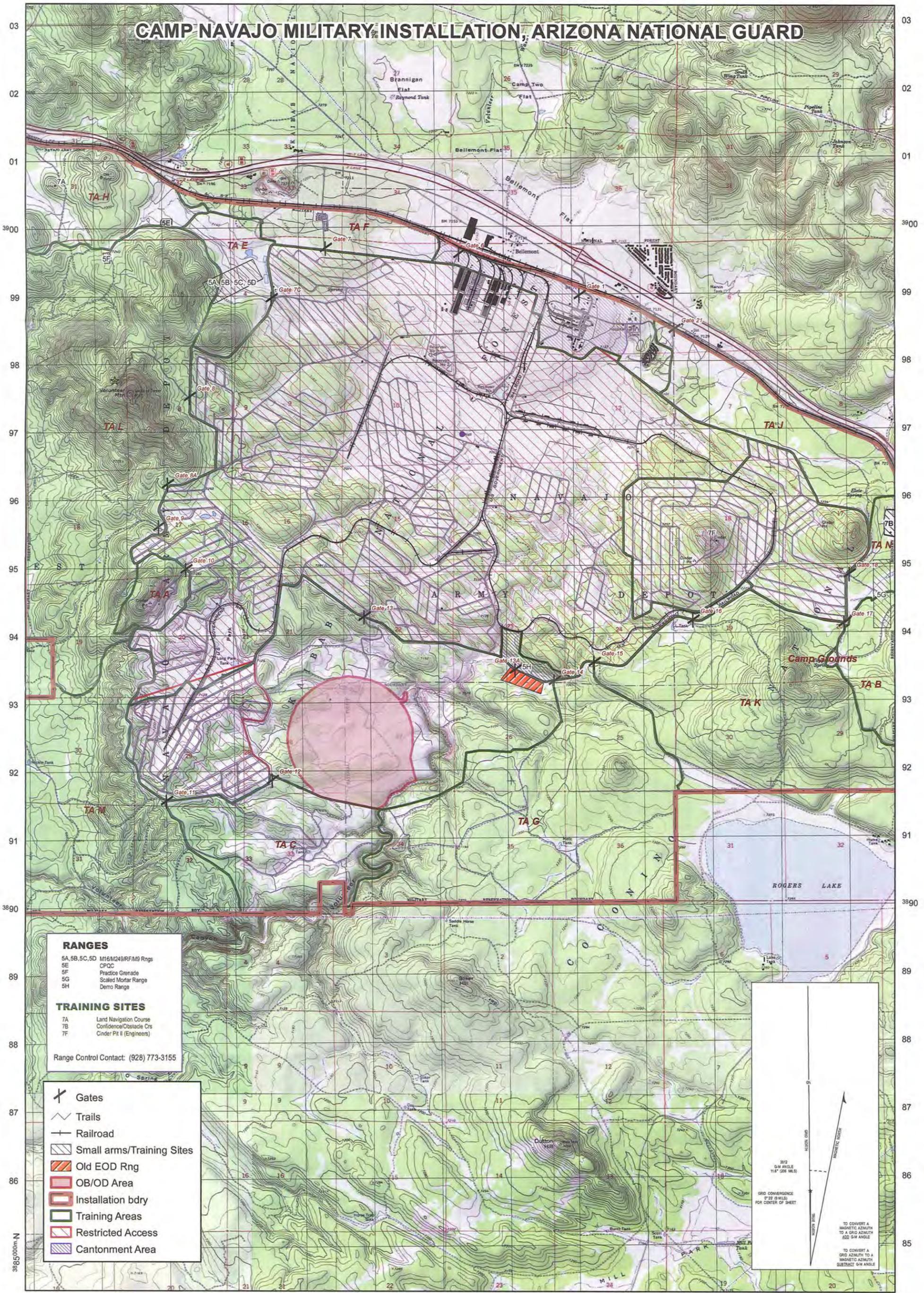
- Environmental Office – Southern AZ.....office (602) 629-4770 / cell (602) 319-0417
- Environmental Office – Northern AZ.....office (928) 773-3210 / cell (602) 571-1253

Questions?

Hazardous Waste Awareness and Materials Management Training

Annual Training for the Arizona
Army National Guard

CAMP NAVAJO MILITARY INSTALLATION, ARIZONA NATIONAL GUARD



RANGES

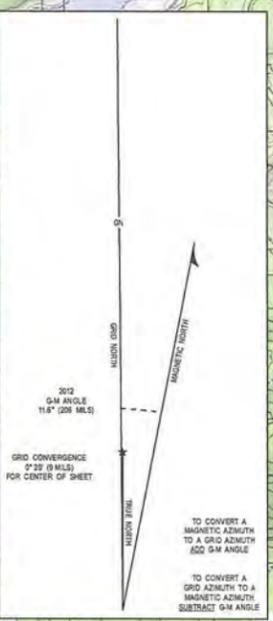
- 5A, 5B, 5C, 5D M16/M249/RF/M9 Rngs
- 5E CPCC
- 5F Practice Grenade
- 5G Scaled Mortar Range
- 5H Demo Range

TRAINING SITES

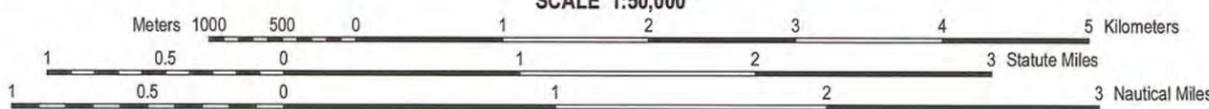
- 7A Land Navigation Course
- 7B Confidence/Obstacle Crs
- 7F Cinder Pit II (Engineers)

Range Control Contact: (928) 773-3155

- Gates
- Trails
- Railroad
- Small arms/Training Sites
- Old EOD Rng
- OB/OD Area
- Installation bdry
- Training Areas
- Restricted Access
- Cantonment Area



SCALE 1:50,000



Appendix F
Solid Waste Management Unit Corrective Action
Procedures

Solid Waste Management Unit Corrective Action Procedures

If munitions and explosives of concern (MEC) are encountered in a munitions-related solid waste management unit (SWMU) Munitions Response Work Area (MRWA) 02-02 during normal training and installation activities, the corrective action procedures discussed below will be followed.

F.1 Regulatory Applicability

The treatment, storage, and disposal requirements of Title 40 *Code of Federal Regulations* (CFR) 264, except for Subparts C and D for the Camp Navajo installation, do not apply to “the management of wastes that represent an immediate threat to human health, public safety, property, or the environment, from the known or suspected presence of military munitions, other explosive material, or an explosive device, as determined by an explosive or munitions emergency response specialist” (40 CFR 264.1(g)(8)(D)). Explosive ordnance disposal (EOD) or unexploded ordnance (UXO)-qualified personnel meet the definition of a munitions emergency response specialist as presented in 40 CFR 260.10 and will make determinations for management of MEC or suspected MEC observed in MRWA 02-02. The Camp Navajo Quality Assurance Specialist, Ammunition Surveillance (QASAS) is UXO-qualified.

Detonation of MEC is considered an “Explosives or Munitions Emergency” as defined in 40 CFR 260.10 because it includes “the suspected or detected presence of UXO, damaged or deteriorated explosives...that creates an actual or potential imminent threat to human health, as determined by an explosives or munitions emergency response specialist.” To minimize the potential for impacts on individuals who may enter MRWA 02-02, “immediate” responses to MEC identified in MRWA 02-02 will be required. Only EOD- or UXO-qualified personnel will determine whether an immediate response involving detonation of the MEC is required.

A description of preparedness and prevention procedures required by 40 CFR 264, Subpart C, are presented in Section F.5 and the Contingency Plan required by 40 CFR 264, Subpart D, is in Appendix G of this Permit Application. Once the immediate response is completed, any additional hazardous waste treatment or containment activities will be subject to the applicable requirements of 40 CFR 264.

F.2 Initial Response to MEC in MRWA 02-02

In the event suspected MEC is encountered at MRWA 02-02, the 3Rs of MEC safety awareness will be followed:

RECOGNIZE—Identify the object as a potential munition.

RETREAT—Go back the way you came.

REPORT—Notify Security at (928) 773-3297 or Range Control at (928) 773-3155.

If suspected MEC is recognized, personnel in the area will stop and immediately retreat to a safe area using the same route of entry. MEC should never be touched, moved, or disturbed. The use of cell phones, radios, or walkie-talkies near MEC should be avoided. MEC can become unstable over time and react to motion or electromagnetic discharge.

The suspected MEC will be reported to Security or Range Control as soon as possible. The MEC location and landmarks or other features that would aid in locating the MEC will be reported. Sticks, rocks, or flags may be used to mark the path to the MEC location.

F.3 Management of MEC in MRWA 02-02

Security or Range Control personnel will secure the suspected MEC until the QASAS, EOD, or other UXO-qualified personnel arrive to inspect it. If the item is determined to be MEC, the immediate area will be marked, and an exclusion zone will be established. Only EOD- or UXO-qualified personnel will determine whether the item represents an immediate threat to human health, public safety, property, or the environment. If the item represents an immediate threat, EOD- or UXO-qualified personnel will determine whether the item is safe or unsafe to move.

Safe-to-move items may be transported to authorized open detonation (OD) pits within the Post-closure Permit Area and destroyed using OD procedures based on the determination of EOD- or UXO-qualified personnel. Unsafe-to-move items will be blown in place. If nearby assets must be protected, engineering controls will be employed in accordance with Army and industry standard guidance and requirements. Demolition procedures will be conducted only upon authorization from the Garrison Commander and under suitable site conditions. Explosive operations will follow appropriate military guidance and requirements, and will be conducted only by EOD- or UXO-qualified personnel.

The Land Use Control Implementation Plan (LUCIP) will contain information on the OD pit locations in the Post-closure Permit Area, surface danger zones, and notification procedures associated with MEC management in MRWA 02-02. Following a MEC discovery in MRWA 02-02 and demolition event within MRWA 02-02 or the Post-closure Permit Area, an after action report documenting the discovery, management, transfer, and destruction of MEC will be prepared and included in the Annual Post-closure Care and Groundwater Monitoring Report.

Waste management activities will not be conducted for MEC that is managed in the OD pits in the Post-closure Permit Area.

F.4 Waste Management for Blow-in-Place Management

The location of MEC in MRWA 02-02 requiring blow-in-place management will be marked on a map. After the blow-in-place operation and explosives and munitions emergency response is complete, the surrounding area will be policed for munitions debris (MD). MD will be inspected, certified, and verified to be material documented as safe (MDAS) (i.e., no longer containing an explosive hazard) and disposed of offsite at an approved disposal/recycling facility.

One composite or incremental soil sample will be collected at each OD location. Properly-trained environmental personnel will collect post-detonation samples from the surface (0 to 0.5 foot below ground surface). Composite or incremental soil samples will be analyzed for the following constituents:

- Explosives (U.S. Environmental Protection Agency [EPA] Method 8330B)
- Metals (EPA Methods 6020A and 7471A)

Soil sampling results will be compared to Arizona non-Residential Soil Remediation Levels (NR-SRLs) and/or background levels for metals. If any constituents are above NR-SRLs, Arizona Department of Environmental Quality (ADEQ) will be notified, and a determination will be made regarding the necessity for a removal action.

The waste management activities will be described in the After Action Report, which will be included in the Annual Post-closure Care and Groundwater Monitoring Report.

F.5 Preparedness and Prevention Requirements (40 CFR 264, Subpart C)

The primary hazards associated with explosives and munitions emergency responses are accidental detonations, explosions, and fire. Explosives and munitions emergency responses will comply with the requirements of 40 CFR 264, Subpart C, as specified in this section.

F.5.1 Design and Operation of Facility (40 CFR 264.31)

Management of MEC will be conducted in a manner to minimize the possibility of a fire, explosion, or unplanned sudden or non-sudden release of hazardous waste or hazardous waste constituents to air, soil, or surface water that could threaten human health or the environment. The LUCIP provides details related to the Post-Closure Permit Area property and controls. EOD- or UXO-qualified personnel shall make all determinations with regard to the treatment, storage, transport, and classification of MEC discovered in MRWA 02-02.

F.5.2 Required Equipment (40 CFR 264.32)

Onsite fire and emergency response equipment will include, at a minimum, the appropriate equipment to contain and fight a fire in MRWA 02-02 during explosives and munitions emergency responses. No firefighting equipment or personnel will be deployed within the Post-closure Permit Area. Camp Navajo firefighting personnel maintain firefighting equipment readiness, including water at adequate volume and pressure to supply water hose streams to fight forest fires in the area. This same equipment will be used to respond to a fire in MRWA 02-02.

Two-way radio and cell phone communication and notification systems will be used for emergency notifications and to provide instructions to installation personnel. These items will be required for personnel performing emergency response operations associated with MRWA 02-02. Two-way radios and cell phones will be capable of contacting Camp Navajo security, fire, and emergency response personnel.

Vehicles carrying personnel into MRWA 02-02 or the Post-closure Permit Area during an explosives and munitions emergency response will be equipped with portable fire extinguishers and first aid kits.

F.5.3 Testing and Maintenance of Equipment (40 CFR 264.33)

The Camp Navajo Fire Department is a 24-hour, 7-day per week, fully-equipped support operation located in the Administrative Area. Camp Navajo Fire Department equipment is maintained and tested in accordance with manufacturer's specifications, including periodic inspections and maintenance following incident responses, to assure proper operation in the time of an emergency. Camp Navajo firefighting personnel maintain firefighting equipment readiness, including water at adequate volume and pressure to supply water hose streams to fight forest fires in the area.

Camp Navajo two-way radio communication is used on a regular basis by Security, the Fire Department, and other Camp Navajo departments. Full-time Camp Navajo employees maintain the two-way radio system to ensure the system remains functional.

Fire extinguishers and first aid kits that are taken into MRWA 02-02 or the Post-closure Permit Area during explosives and munitions emergency responses will be inspected annually to verify that they have not expired and that they contain the appropriate supplies.

F.5.4 Access to Communications or Alarm System (40 CFR 264.34)

Access to two-way radios or cell phones will be required for personnel performing explosives and munitions emergency response operations associated with MRWA 02-02. All two-way radios and cell phones used during these operations will be tested and authorized for use at Camp Navajo by the Facilities Engineering Office. The two-way radios and cell phones will be capable of contacting Camp Navajo security, fire, and emergency response personnel. No individual is allowed to enter the Post-closure Permit Area alone.

F.5.5 Arrangements with Local Authorities (40 CFR 264.37)

The Camp Navajo Fire Department is a party to the *Cooperative Greater Flagstaff Area Fire Agencies All Risk Emergency Intergovernmental Agreement*, dated April 15, 2014, which includes the following local organizations for response to incidents that require additional support:

- Flagstaff Fire Department, Flagstaff, Arizona
- Ponderosa Fire Department, Bellemont, Arizona
- Pinewood Fire District, Munds Park, Arizona
- Sedona Fire District, Sedona, Arizona
- Highlands Fire District, Kachina Village, Arizona
- Mormon Lake Fire District, Mormon Lake, Arizona
- Summit Fire District, Doney Park, Arizona

The Arizona Department of Emergency Services, including the Camp Navajo Fire District, is party to the *Arizona Fire Service Mutual Aid Plan*, dated July 2011, which includes all firefighter organizations throughout the State. Documentation of these agreements is presented in Attachment B of the Post-closure Plan (Appendix D).

The Camp Navajo Fire Department is the medical response lead agency. If outside support is necessary, they will transport injured personnel to the Flagstaff Medical Center or North Country Healthcare in Williams. Both facilities will be provided with a copy of the current Contingency Plan. A copy of Contingency Plan transmittal letters is presented in Attachment B of the Post-closure Plan (Appendix D).

The Camp Navajo QASAS maintains communication and arrangements with the military EOD units at Papago Park Military Reservation and Luke Air Force Base.

F.6 Contingency Planning (40 CFR 264, Subpart D)

During explosives and munitions emergency responses, procedures in the Post-closure Permit Area Contingency Plan presented in Appendix G of the Post-closure Permit Application will apply. Additionally, the waste management procedures contained in this document will be followed in MRWA 02-02 when the explosives and munitions emergency response is complete to meet the requirements of 40 CFR 264.56(g).

Appendix G
Resource Conservation and Recovery Act
Contingency Plan

Appendix G – Contingency Plan

A contingency plan specific to activities associated with the Post-closure Permit Area is being developed and will be submitted to ADEQ for inclusion in the Post-Closure Permit Application.



Arizona Army National Guard, Camp Navajo RCRA Contingency Plan and Emergency Procedures



Arizona Army National Guard, Camp Navajo RCRA Contingency Plan and Emergency Procedures

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Arizona Army National Guard, Camp Navajo RCRA Contingency Plan and Emergency Procedures

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Attachment #7 Post-Closure Permit Area Evacuation Map	7-1
Attachment #8 Cooperative Greater Flagstaff Area Fire Agencies All Risk Emergency Intergovernmental Agreement	
Attachment #9 State of Arizona, Fire Chiefs Association Fire Service Mutual Aid Plan	
Attachment #10 Transmittal Letters to Area Agencies – Not attached – Copies kept on file with original Arizona Army National Guard, Camp Navajo RCRA Contingency Plan and Emergency Procedures located at the CN Environmental Office	
Camp Navajo SPCCP – Not attached – Review full program separately located at the CN Environmental Office	



Arizona Army National Guard, Camp Navajo RCRA Contingency Plan and Emergency Procedures

1.0 Introduction.

The Arizona Army National Guard (AZARNG) maintains a Resource Conservation and Recovery Act (RCRA) Contingency Plan for its Camp Navajo (CN) facility, as required by 40 CFR 264, Subpart D for Owners and Operators of Treatment, Storage and Disposal Facilities (TSDFs). Until a Post-Closure Permit is issued for the Open Burn/Open Detonation (OB/OD) Area, this Contingency Plan also meets the requirements of 40 CFR 265, Subpart D for Interim Status Owners and Operators of TSDFs.

This CN RCRA Contingency Plan and Emergency Procedures plan addresses the containment buildings that accumulate hazardous wastes and are subject to the 90-day generator accumulation area provision. This area is also known as the Central Accumulation Area (CAA). This plan also addresses munitions-impacted areas within the former OB/OD Area. Attachment 6 has been included to meet RCRA Post-Closure Permit requirements for the area within the former OB/OD Area known as the Post-Closure Permit Area. This Contingency Plan is applicable through the post-closure care period and will remain in effect even if CN is no longer a large quantity generator (LQG).

1.1 Purpose and implementation of contingency plan.

- (a) The purpose of this contingency plan is to minimize hazards to human health or the environment from fires, explosions, or any unplanned sudden or non-sudden release of hazardous waste or hazardous waste constituents to air, soil, or surface water.
 - (b) The contingency plan will be immediately implemented whenever:
 - a. There is a fire, explosion, or release of hazardous waste or hazardous waste constituents which **could** threaten human health or the environment (40 CFR §§264/5.51 (b)).
 - b. There is an imminent or actual emergency situation (40 CFR §§264/5.56(a)).
-

1.2 Contents of the contingency plan incorporate hazardous waste management provisions and include:

- (a) the actions facility personnel must take to comply with §§264/5.51 and §§264/5.56 in response to fires, explosions, or any unplanned sudden or non-sudden release of hazardous waste or hazardous waste constituents to air, soil, or surface water at the facility.
See Diagram #1
 - (b) the arrangements agreed to by local police departments, fire departments, hospitals, contractors, and State and local emergency response teams to coordinate emergency services, pursuant to §§264/5.37.
See Attachment #8 and #9
 - (c) a list of the names, addresses, and phone numbers (office and home) of all persons qualified to act as emergency coordinator (see §§264/5.55) in the order in which they will assume responsibility as alternates.
See Attachment #1
 - (d) a list of all emergency equipment at the facility, where this equipment is required, the location and a physical description of each item on the list, and a brief outline of its capabilities.
See Attachment #2
 - (e) an evacuation plan for facility personnel where there is a possibility that evacuation could be necessary, signal(s) to be used to begin evacuation, evacuation routes, and alternate evacuation routes.
See Attachment #3 (specific to the Central Accumulation Area) and Attachment #4
-



Arizona Army National Guard, Camp Navajo RCRA Contingency Plan and Emergency Procedures

1.3 Copies of the contingency plan

A copy of the contingency plan and all revisions to the plan must be:

- (a) Maintained at the facility; and
 - (b) Submitted to all local police departments, fire departments, hospitals, and State and local emergency response teams that may be called upon to provide emergency services.
-

1.4 Amendment of contingency plan.

The contingency plan must be reviewed, and amended, if necessary, whenever:

- (a) Applicable regulations are revised;
 - (b) The plan fails in an emergency;
 - (c) The facility/installation changes—in its design, construction, operation, maintenance, or other circumstances—in a way that materially increases the potential for fires, explosions, or releases of hazardous waste or hazardous waste constituents, or changes the response necessary in an emergency;
 - (d) The list of emergency coordinators changes; or
 - (e) The list of emergency equipment changes.
-

1.5 Emergency coordinator.

At all times, there must be at least one employee either on the facility premises or on call (i.e., available to respond to an emergency by reaching the facility within a short period of time) with the responsibility for coordinating all emergency response measures. This emergency coordinator must be thoroughly familiar with all aspects of the facility's contingency plan, all operations and activities at the facility, the location and characteristics of waste handled, the location of all records within the facility, and the facility layout. In addition, this person must have the authority to commit the resources needed to carry out the contingency plan.

Note: See [Attachment #1](#) for the Emergency Coordinator and qualified personnel contact information

[Comment: The emergency coordinator's responsibilities are detailed in §265.56. Applicable responsibilities for the emergency coordinator vary, depending on factors such as type and variety of waste(s) handled by the facility, and type and complexity of the facility.]

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Arizona Army National Guard, Camp Navajo RCRA Contingency Plan and Emergency Procedures

1.6 Coordination of Emergencies/Additional Arrangements.

1. CN Security

CN Security will activate an internal facility alarm, initiate a Code-Red notification to inform facility personnel in the event of a hazardous release, fire and/or explosion or required evacuation and notify the CN Fire Department, the Garrison Commander and the RCRA Emergency Coordinator. CN Security will assist with securing compromised and/or affected areas in which an unplanned spill, release, fire or explosion involving HW that threatens human life and/or the environment. Furthermore, CN Security will follow Incident Command System (ICS) protocols if implemented and assist the On-Scene Commander (OSC) with emergency evacuation and isolation.

2. CN Fire Department

CN has its own fire department (FD) and participates in the regional Local Emergency Planning Committee (LEPC). CNFD provides 24/7 services for structural fire response, wildland fire response, emergency medical response (Basic Life Support), coordinating emergency medical response (Advanced Life Support) and hazardous materials response.

The CNFD has entered into an intergovernmental agreement known as the Cooperative Greater Flagstaff Area Fire Agencies All Risk Emergency Intergovernmental Agreement (IGA) ([Attachment #8](#)). All entered parties are fire districts and municipalities of the State of Arizona and are authorized pursuant to A.R.S. § 11-951 *et seq* to enter into intergovernmental agreements for the joint exercise of powers to carry out their mutual responsibilities of fire, rescue, emergency medical and hazmat services. Furthermore, the CNFD participates in the state Executive Order 2003-21, the [Arizona Fire Service Mutual Aid Plan](http://c.ymcdn.com/sites/www.azfirechiefs.org/resource/resmgr/docs/az_fog_oct2010.pdf) (http://c.ymcdn.com/sites/www.azfirechiefs.org/resource/resmgr/docs/az_fog_oct2010.pdf) which provides immediate response resources for all-hazard emergencies, when so requested. A condensed version of this plan is kept on-site with the CNFD and the CN Environmental Office ([Attachment #9](#)).

3. Outside Agencies

Outside agencies can provide assistance if called upon and may include, but are not limited to Flagstaff Medical Center, Coconino County Sheriff's Office, AZ Emergency Planning Commission, LEPC and/or local emergency response teams. Copies of this Contingency Plan will be submitted to local police departments, fire departments, hospitals, and State and local emergency response teams that may be called upon to provide emergency services. Copies of the transmittal letters will be kept on file with this contingency plan.

Providing the contingency plan to outside agencies will familiarize them with the layout of the facility, properties of the hazardous waste handled at CN and associated hazards, the types of injuries or illnesses which could result from fires, explosions or releases at the facility, places where facility personnel would normally be working with hazardous waste, facility entrances and evacuation routes.

When more than one police and fire department respond to an emergency, CNFD and CN Security will be the primary emergency authorities. Assisting agencies will support the primary emergency authority and follow ICS if implemented.

4. Contractors

Arizona Department of Emergency & Military Affairs (AZDEMA) has a state contracted vendor to provide emergency and routine services (such as identification, characterization, removal and disposal of hazardous substances and/or pollutants). Should emergency services be required of the contracted vendor, the Emergency Coordinator will contact the Environmental Restoration Manager who shall initiate contracted emergency services.

Additionally, AZDEMA-Arizona Army National Guard (AZARNG) at CN has a vendor contracted for routine hazardous waste pick-ups. Pick-ups are scheduled to remove accumulated hazardous waste stored in the 90-day CAA.



Arizona Army National Guard, Camp Navajo RCRA Contingency Plan and Emergency Procedures

2.0 Camp Navajo Hazardous Wastes.

The typical hazardous wastes generated at Camp Navajo include:

- (a) Waste flammable liquids (labpacks)
 - (b) Waste flammable aerosols
 - (c) Waste mercury/phosphor powder and broken glass from broken fluorescent lamps
 - (d) An infrequent labpack of a toxic, reactive, ignitable or corrosive material
 - (e) Very infrequent military munitions/ordnance clean-out operations
-

2.1 Hazardous Waste (HW) Spill/Release.

A spill or release is an unintended, accidental, or uncontrolled discharge of a material, such as hazardous waste or petroleum, oil and lubricants (POL), from a primary container (such as a drum, tank or pipe) in a quantity and location that requires immediate and/or extraordinary action to prevent:

- (a) A hazard to the health and safety of personnel or the public
- (b) Contamination or direct release to the environment

NOTE: For POL releases, further guidance can be obtained from the CN Spill Prevention Control and Countermeasure Plan (SPCCP).

¹Incidental Release is defined as a release of a hazardous substance which does not pose a significant safety or health hazard to employees in the immediate vicinity or to the employee cleaning it up, nor does it have the potential to become an emergency within a short time frame. Incidental releases are limited in quantity, exposure potential, or toxicity and present minor safety or health hazards to employees in the immediate work area or those assigned to clean them up (OSHA Directive CPL 02-02-073, App. A and defined under the definition of emergency response in 29 CFR 1910.120(a)(3).

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Arizona Army National Guard, Camp Navajo RCRA Contingency Plan and Emergency Procedures

2.2 Initial HW Spill/Release, Fire or Explosion Response Procedures (*Diagram #1*).

When a hazardous waste spill/release, fire or explosion occurs or is discovered, regardless of location, CN trained staff shall implement the following actions immediately upon accessing the situation/hazards to human health/environment and determine applicability:

- A. Non-emergency (controllable) situations that staff have been trained to deal with
 - i. Small spill
 - ii. Incidental release¹
 - iii. Incipient stage fire
 1. Account for personnel and determine if there are injuries. Attend to injured personnel if capable and safe to do so²
 2. Immediately contact the CNFD for fires or the RCRA Emergency Coordinator (EC) for spills/release
 - i. Who will determine the appropriate level of emergency response and course of action
 3. Secure the site by warning nearby personnel and evacuate upwind if necessary
 4. Observe and identify spill/release severity and countermeasures to be taken if safe to do so²
 5. Activate countermeasures if safe to do so²
 6. Follow up with all required activities, see section 2.3

- B. Emergency (uncontrollable)/Immediate Danger to Life and/or Health (IDLH) or significant threat to the environment
 - i. Personnel/the public are injured or missing
 - ii. Public health and safety is/can be compromised
 - iii. Fire, explosion or release is outside the facility
 - iv. Spill/release equal to or exceeding the reportable quantities (RQs) under "CERCLA Superfund" guidelines (40 CFR 302.4) and EPCRA Extremely Hazardous Substances (40 CFR Part 355, Appendix A) released in any 24-hour period
 - v. Outside assistance is necessary
 - vi. Personal Protective Equipment (PPE) on hand is not sufficient
 - vii. Spill/release is gas, fumes, chemicals staff have not been trained to manage
 - viii. Spill/release is unknown
 - ix. Other hazards are present such as electrical shock, heat or flames
 1. Account for personnel and determine if there are injuries. Attend to injured personnel if capable and if safe to do so².
 2. Immediately contact CN Security who will activate internal facility alarm to notify facility personnel in addition to notifying CNFD, CN Garrison Commander and CN RCRA Emergency Coordinator
 3. Secure the site by warning nearby personnel and evacuate upwind if necessary
 4. Observe and identify spill/release severity and countermeasures to be taken if safe to do so²
 5. Report to and assist OSC/ISOC
 6. Follow up with all required activities, see section 2.4

¹Incidental Release is defined as a release of a hazardous substance which does not pose a significant safety or health hazard to employees in the immediate vicinity or to the employee cleaning it up, nor does it have the potential to become an emergency within a short time frame. Incidental releases are limited in quantity, exposure potential, or toxicity and present minor safety or health hazards to employees in the immediate work area or those assigned to clean them up (OSHA Directive CPL 02-02-073, App. A and defined under the definition of emergency response in 29 CFR 1910.120(a)(3).

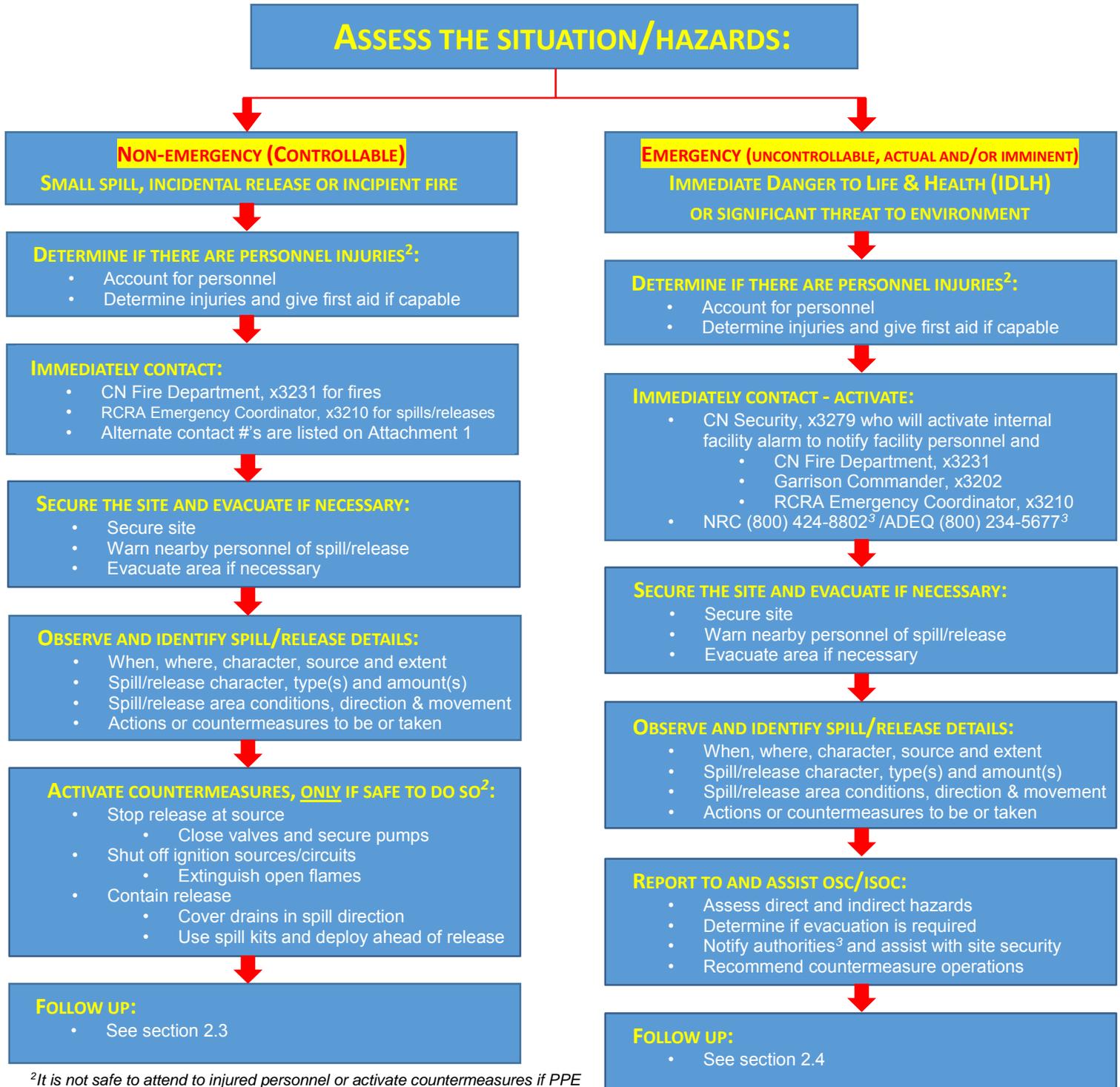
²It is not safe to attend to injured personnel or activate countermeasures (stop a release, fire/explosion, shut off ignition sources or contain a spill) if:

- i. PPE on hand is not sufficient
- ii. Spill/release is gas, fumes, chemicals that staff have not been trained to manage
- iii. Spill/release is unknown
- iv. Other hazards are present such as electrical shock, heat or flames



Arizona Army National Guard, Camp Navajo RCRA Contingency Plan and Emergency Procedures

2.2.1 Diagram #1, Initial Response Procedures FOR HW SPILLS/RELEASES, FIRES OR EXPLOSIONS



²It is not safe to attend to injured personnel or activate countermeasures if PPE on hand is not sufficient, spill/release is gas, fumes, chemicals that staff have not been trained to manage, spill/release is unknown, or other hazards are present such as electrical shock, heat or flames.

³Only the AZ ARNG SSC Alternate/Environmental Program Manager (EPM) or designee shall make notifications to the NRC and/or ADEQ.



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2.3 Follow Up/After Actions for Non-Emergency Incidental Release:

After following initial HW spill/release response procedures, the CN RCRA Emergency Coordinator shall:

- 1) Determine which available spill response kit materials to utilize for clean-up
- 2) Ensures the release has been cleaned up, evaluated, treated, containerized and stored for proper disposal
- 3) Notifies the appropriate authorities^{3,4,5}
- 4) Completes the Specific Incident Reporting Record (**Attachment #5**) form, and maintains the file copy

2.4 Follow Up/After Actions for Emergency Release:

After following initial HW spill/release response procedures, the CN RCRA Emergency Coordinator shall:

- 1) Take all measures to ensure that fires, explosions and releases do not occur, recur or spread to other HW at the facility
- 2) Collect and contain the spill/release waste
- 3) Remove/isolate incompatible waste containers
- 4) Ensure clean-up procedures are completed
- 5) Treat, store and/or dispose of recovered waste
- 6) Ensure emergency equipment is fit for reuse
- 7) Monitor for leaks/ruptures, pressure changes or gas generation in valves, pipes or equipment
- 8) Within 15 days, report the plan implementation to the Regional Administrator of ADEQ

¹*Incidental Release is defined as a release of a hazardous substance which does not pose a significant safety or health hazard to employees in the immediate vicinity or to the employee cleaning it up, nor does it have the potential to become an emergency within a short time frame. Incidental releases are limited in quantity, exposure potential, or toxicity and present minor safety or health hazards to employees in the immediate work area or those assigned to clean them up (OSHA Directive CPL 02-02-073, App. A).*

²*Note: It is not safe to stop a release, shut off ignition sources or contain a release if:*

- i. PPE on hand is not sufficient
- ii. Release is gas, fumes or chemicals staff have not been trained to manage
- iii. Release is unknown
- iv. Other hazards are present such as electrical shock, heat or flames

³*Note: Authorities to be notified⁴:*

- a. For RCRA Hazardous Waste(s) released outside the facility:
 1. Local Fire Department
 2. NRC
 3. ADEQ
- b. For CERCLA Hazardous Substances, (40 CFR 302.4) and EPCRA Extremely Hazardous Substances (40 CFR Part 355, Appendix A) released in any 24-hour period equal to or exceeding a Reportable Quantity (RQ):
 1. Local Fire Department
 2. NRC
 3. ADEQ
 4. LEPC (if release is off-site)
- c. Soil Remediation
 1. ADEQ

⁴*Only the AZ ARNG SSC Alternate/Environmental Program Manager (EPM) or designee shall make notifications to the NRC and/or ADEQ.*

⁵*NOTE: For releases of oil, a significant spill is determined in accordance with 40 CFR 110.3 and is a discharge event in which a sheen on water occurs, which would trigger reporting by the EPM/designee to both ADEQ and NRC. For any POL release, further guidance can be obtained from the CN SPCCP.*



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2.5 Emergency Response Roles and Responsibilities:

When any HW spill/release is imminent or an actual emergency situation such as an IDLH, a significant threat to the environment exists or available remediation and response measures are inadequate to control the situation or prevent further release, the CN RCRA Emergency Coordinator shall turn over control to the CN Garrison Commander, who assumes the role of the On-Scene Commander (OSC) and RCRA Emergency Commander.

The OSC determines the need for further response actions such as:

- Directing and conducting the emergency response
- Requests additional resources if needed, beyond those available at CN

Concurrently, the CN Fire Department (FD) Chief/On-site supervisor assumes the role of the Installation On-Scene Coordinator (IOSC) and assists with response actions as determined by the OSC. The RCRA Emergency Coordinator assists the OSC and the IOSC. **The Emergency Response responsibilities and procedures are designated below:**

1) **RCRA Emergency Commander (OSC) or designee shall:**

- a. Activate internal facility alarms/communication (via phone/radio) to notify facility personnel
- b. Notify State or local agencies with designated response roles if their help is needed.
- c. Determine if the emergency could threaten human health, or the environment outside the facility and if so he/she must report as follows:
 1. If evacuation of local areas may be advisable and immediately notify appropriate local authorities and be available to help appropriate officials decide whether local areas should be evacuated; and
 2. Immediately notify either the government official designated as the on-scene coordinator for that geographical area, or the NRC 24/7 at (800) 424-8802¹ and ADEQ at (800) 234-5677¹.
Include:
 - i) Name and telephone number of reporter;
 - ii) Name and address of facility;
 - iii) Time and type of incident (e.g., spill/release, fire or explosion);
 - iv) Name/type and quantity of material(s) involved, to the extent known;
 - v) Extent of injuries, if any; and
 - vi) Possible hazards to human health and/or the environment outside the facility.
- d. Take all reasonable measures necessary to ensure that spills/releases, fires or explosions do not occur, recur, or spread to other HW including where applicable, stopping processes and operations, collecting and containing released waste, and removing or isolating containers.
- e. Ensure there is monitoring for leaks, pressure buildup, gas generation, or ruptures in valves, pipes, or other equipment, wherever this is appropriate if operations stop due to the emergency release, fire or explosion.
- f. Complete ***Attachment #5***, Specific Incident Reporting Record and report the contingency plan implementation within 15 days to the ADEQ Regional Administrator and include:
 1. Name, address, and telephone number of the owner or operator;
 2. Name, address, and telephone number of the facility;
 3. Date, time, and type of incident (e.g., fire, explosion);
 4. Name/type and quantity of material(s) involved;
 5. Extent of injuries, if any;
 6. An assessment of actual/potential hazards to human health and/or environment, and
 7. Estimated quantity and disposition of recovered material that resulted from the incident
- g. Convene no later than 30-days post contingency plan implementation with the IOSC and RCRA Emergency Coordinator to review the effectiveness and adequacy of the contingency plan.

¹Note: Only the AZ ARNG SSC Alternate/Environmental Program Manager (EPM) or designee shall make notifications to the NRC and/or ADEQ.



Arizona Army National Guard, Camp Navajo RCRA Contingency Plan and Emergency Procedures

2.5 Emergency Response Roles and Responsibilities Continued:

- 2) **IOSC shall:**
 - a. Take all reasonable measures necessary to ensure that spills/releases, fires or explosions do not occur, recur, or spread to other HW including where applicable, stopping processes and operations, collecting and containing released waste, and removing or isolating containers.
 - b. Ensure that, in the affected area(s) of the facility:
 1. All emergency equipment listed is fit for its intended use before operations are resumed.
 - c. Convene no later than 30-days post contingency plan implementation with the OSC and RCRA Emergency Coordinator to review the effectiveness and adequacy of the contingency plan.

- 3) **RCRA Emergency Coordinator shall:**
 - a. Identify the character, exact source, amount, and extent of any released material(s) by observation, review of facility records/manifests and if necessary by chemical analysis.
 - b. Assess possible hazards to human health or the environment that may result from the spill/release, fire, or explosion and consider both the direct and indirect effects (e.g., the effects of any toxic, irritating, or asphyxiating gases that are generated, or the effects of any hazardous surface water run-offs from water or chemical agents used to control fire and heat-induced explosions).
 - Report assessment to OSC and ISOC immediately.
 - c. Take all reasonable measures necessary to ensure that spills/releases, fires or explosions do not occur, recur, or spread to other HW including where applicable, stopping processes and operations, collecting and containing released waste, and removing or isolating containers.
 - d. Ensure that, in the affected area(s) of the facility:
 1. No waste that may be incompatible with the released material is treated, stored, or disposed of until cleanup procedures are completed; and
 2. Emergency equipment listed is fit for its intended use before operations are resumed.
 - e. Provide for treating, storing, or disposing of recovered waste, contaminated soil or surface water, or any other material that results from a spill/release, fire, or explosion at the facility.
 - f. Convene no later than 30-days post contingency plan implementation with the OSC and IOSC to review the effectiveness and adequacy of the contingency plan.
 - g. Complete revisions as needed to amend the contingency plan to ensure competence and compliance. Notify and provide all potential/responding parties of the revised/amended contingency plan and ensure that transmittals of correspondence are kept on file with the contingency plan.

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Arizona Army National Guard, Camp Navajo RCRA Contingency Plan and Emergency Procedures

3.0 Evacuation Plan

In the event that a safety or life threatening hazard exists, the involved facility will be immediately evacuated. The signal for commencement of evacuation is a steady continuous alarm with an air horn, siren or vehicle horn. These signals will allow for the safe egress of employees from the workplace, the immediate work area or both. In situations involving hazardous materials or possible contamination, evacuees may be decontaminated prior to being transported out of a contaminated area.

Listed below are:

- 1) Locations where there is a possibility that evacuation could be necessary
- 2) Primary and alternate egress, and evacuation routes
- 3) Designated and alternate rally points

Due to unforeseen circumstances such as the type and quantity of release, weather conditions and blocked escape routes may alter the primary egress or evacuation route. Therefore alternate egress and evacuation routes may be utilized. After the signal for commencement has been initiated, all employees shall proceed to their designated or alternate rally point. After an evacuation all employees must check in with their supervisor, designated building manager and Security for accountability.

TABLE #1		
LOCATION	EVACUATION ROUTE	RALLY POINT FOR PERSONNEL ACCOUNTABILITY
Building 15-A, Central Accumulation Area (CAA), storage and warehouse	<p>Personnel shall evacuate the <u>CAA</u> location through the entry door (or gate if open) and proceed upwind and away from the building.</p> <p>Personnel shall evacuate the <u>warehouse</u> through the north entry door as the primary means of egress. Alternate egress include the west, north and south roll-up doors.</p>	<p>1° - Building 8, Security (<i>See Attachment #3</i>)</p> <p>2° - Building 58, FMO (<i>See Attachment #4</i>)</p>
Building 23, Satellite Accumulation Point (SAP)	<p>Personnel shall evacuate the SAP location in building 23 through the west personnel entry door and proceed upwind and away from the building. The alternate evacuation egress is the east personnel entry door.</p>	<p>1° - Building 8, Security 2° - Building 58, FMO (<i>See Attachment #4</i>)</p>
Building 35A, Satellite Accumulation Point (SAP)	<p>Personnel shall evacuate the SAP location from building 35A through the north personnel entry door and proceed upwind and away from the building.</p>	<p>1° - Building 8, Security 2° - Building 58, FMO (<i>See Attachment #4</i>)</p>
Other Cantonment and Limited Area Buildings	<p>Personnel shall evacuate through the nearest personnel egress door, proceed upwind and away from the building.</p>	<p>Unless otherwise designated by the building manager,</p> <p>1° - Building 8, Security 2° - Building 58, FMO (<i>See Attachment #4</i>)</p>



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4.0 Reference Material

1. AZARNG, CN Contingency Plan, July 2013
2. AZARNG, CN Spill Prevention, Control and Countermeasures Plan (SPCCP), 2013
3. AR 385-10
4. AR 385-63
5. PAM 200-1
6. PAM 385-64
7. 40 CFR 265
8. 40 CFR 264
9. Arizona Fire Mutual Aid Plan
10. Fire Agencies Intergovernmental Agreement

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Arizona Army National Guard, Camp Navajo RCRA Contingency Plan and Emergency Procedures

ATTACHMENT #1.1, EMERGENCY COORDINATORS IN DESCENDING ORDER OF RESPONSIBILITY

TITLE	NAME & ADDRESS	CN LANDLINE	ALTERNATE CONTACT #
RCRA Emergency Coordinator	Lauren J. Hertz 2506 E. Heidi Loop Flagstaff, AZ 86004	(928) 773-3210	(602) 571-1253
Installation On-Scene Commander (OSC)	Anita Vinson, Garrison Commander 1 Hughes Avenue Bellemont, AZ 86015	(928) 773-3202	(602) 361-1253
Installation On-Scene Coordinator (IOSC)	Lee Antonides, Fire Chief 3957 S. Box Canyon Trail Flagstaff, AZ 86005	(928) 773-3231	(520) 271-8443
IOSC Alternate - 1	Anthony Brutto, Deputy Chief 2420 E. Goldenrod Street Phoenix, AZ 85048	(928) 773-3215	(602) 561-7184
IOSC Alternate - 2	Thomas Mitchell, A-Shift Captain 11065 E. Seabring Avenue Mesa, AZ 85212	(928) 773-3290	(480) 227-3620
IOSC Alternate - 3	Christian Davis, B-Shift Captain 1904 N. West Street Flagstaff, AZ 86004	(928) 773-3290	(928) 606-6136
IOSC Alternate - 4	Erik Hall, C-Shift Captain 48214 N. 35 th Avenue New River, AZ 85087	(928) 773-3290	(602) 329-0859

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Arizona Army National Guard, Camp Navajo RCRA Contingency Plan and Emergency Procedures

ATTACHMENT #1.2, EMERGENCY AGENCY CONTACTS

AGENCY NAME	POC NAME AND TITLE	CONTACT #
AZ National Guard at Papago Park, 24/7	Joint Operations Center	(602) 264-2583
AZ ARNG State Spill Coordinator (SSC)	LTC Matthew Stubbs, State Spill Coordinator-CFMO	(602) 267-2771
AZ ARNG SSC Alternate	LTC John Ladd, Environmental Program Manager-CFMO	(602) 267-2742 / (602) 725-3576
AZ Department of Public Safety, Flagstaff	MJR Philpot, District Commander	(928) 773-3601, Admin (928) 773-3700, Dispatch
AZ State Forestry Division, Flagstaff	Aaron Green, District Forester	(928) 774-1425
Burlington Northern/Santa Fe Railroad	Greg Hughes, AZ Division Superintendent	(928) 226-3888 / (928) 707-1818 (800) 832-5452 Emergency
Camp Navajo Quality Assurance Specialist Ammunition Surveillance (QASAS)	Larry Chastain, QASAS	(928) 773-3206 / (928) 255-8777
Camp Navajo Security - Tower	Kelli Martinez, Chief of Security	(928) 773-3297 / (928) 853-2632
City of Flagstaff, Fire Department	Mark Gaillard, Fire Chief	(928) 213-2500, Admin (928) 774-1414, Dispatch
City of Flagstaff, Police Department	Kevin Treadway, Police Chief	(928) 779-3646, Admin (928) 774-1414, Dispatch
City of Williams, Fire Department	Chase Pearson, Fire Chief	(928) 635-4421
City of Williams, Police Department	Herman Nixon, Police Chief	(928) 635-4461
Coconino County Emergency Mgmt.	Robert Rowley, Emergency Mgr.	(928) 679-8310
Coconino County Sheriff's Department	Bill Pribil, Sheriff	(928) 774-4523
Coconino National Forest-HQ	Laura Jo West, Forest Supervisor	(928) 527-3505
Environmental Restoration Manager	Kim Birdsall	(602) 267-2663 / (602) 376-3793
Explosive Ordnance Disposal (EOD) Personnel	CPT Rori A. Comiskey	(602) 267-2770 / (480) 652-9183
Flagstaff Medical Center (FMC)	Switchboard	(928) 779-3366
Highlands Fire District	Dirch Foreman, Fire Chief	(928) 525-1717
Kaibab National Forest	Brian Westbrook, Forest Supervisor	(928) 635-8301
Mormon Lake Fire District	Cliff Terrell, Fire Chief	(928) 354-2231
Pinewood Fire District	John Welsch, Fire Chief	(928) 286-9885
Ponderosa Fire District	Mark Sachara, Fire Chief	(928) 773-8933
Sedona Fire District	Kris Kazian, Fire Chief	(928) 282-6800
Summit Fire District	Don Howard, Fire Chief	(928) 526-9537
Transwestern Pipeline Company/Houston Gas Control	Tracy Kuehl, Team Leader	(866) 999-8975, 24/7 (928) 774-1547/ (928) 699-7671
Williams Clinic, North Country Healthcare	Switchboard	(928) 635-4441



Arizona Army National Guard, Camp Navajo RCRA Contingency Plan and Emergency Procedures

ATTACHMENT #1.3, RELEASE REPORTING

AUTHORITIES TO NOTIFY	CONTACT #
ADEQ – Arizona Dept. of Env. Quality 24/7 Emergency Hotline	(800) 234-5677 / (602) 771-2330
AZ SERC – State Emergency Response Commission, under ADEQ	(602) 771-4106 / (602) 771-2306
EPA Region 9	(800) 300-2193 / (415) 947-4400
LEPC – Local Emergency Planning Committee	(602) 464-6346 / (928) 679-8310
NRC – National Response Center	(800) 424-8802

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Arizona Army National Guard, Camp Navajo RCRA Contingency Plan and Emergency Procedures

ATTACHMENT #2, EMERGENCY EQUIPMENT, SUPPLIES AND PPE

Emergency control equipment available on site but not limited to includes: absorbent pads and socks, granular absorbent in adequate supply, absorbent pillows, empty drums, salvage drums, non-sparking equipment, brooms, and shovels. Emergency control equipment listed is for the Central Accumulation Area (CAA) buildings and for the CN Fire Department (CNFD) only. Should an uncontrolled spill occur, CN will initiate a spill response per 3.11.2 of the CN Spill Prevention, Control and Countermeasures Plan (SPCCP). CN is committed to the deployment of manpower and equipment. Per 40 CFR 265.33, all equipment shall be tested and maintained as necessary to assure its proper operation in the event of an emergency. PPE is inspected prior to each use and at quarterly minimum, PPE quantities, containerization/supplies and absorbents/neutralizers shall be checked visually for sufficient supply determination. Emergency equipment utilized under contingency plan implementation shall be inspected to determine fitness/integrity by the CNFD, the RCRA Emergency Coordinator or its respectful owner prior to use and if used, before any further operations are resumed.

Bldg. 15, CAA Equipment		
Quantity	Item	Purpose/Capability
3	55 gallon drum dollies	Moving containerized waste
1	55 gallon drum grappler	Moving containerized waste
2	Brass drum locks	Locking drums
1	Drum socket tool	Ring closure on drums
1	50 lb. ABC Fire Suppression System for inside hazardous waste storage locker unit and alarm	Fire suppression
5	Metal shovels	Clean-up of non-flammable/non-explosive material
1	Water sampler, extended	Take water samples
1	Wooden push broom	Clean-up of non-flammable/non-explosive material
Bldg. 15, CAA Supplies		
Quantity	Item	Purpose/Capability
10	5 gallon poly, open-head drum, screw top	Overpacking or contain contaminants
2	5 gallon metal, close-head drums	Contain contaminants/pour liquids
2	5 gallon metal, open-head drums	Overpacking or contain contaminants
1	14 gallon poly, open-head drum	Overpacking or contain contaminants
3	20 gallon poly, open-head drums	Overpacking or contain contaminants
6	30 gallon poly open-head drums, blue	Overpacking or contain contaminants
1	30 gallon poly closed-head drum	Contain liquids
1	30 gallon metal open-head drum	Overpacking or contain contaminants
3	30 gallon metal closed-head drums	Contain liquids
3	55 gallon metal, open-head drum	Overpacking or contain contaminants
1	55 gallon poly Salvage drum, yellow	Overpacking or contain contaminants
10	85 gallon drum liners, 6 mil poly	Contain contaminants
4	95 gallon poly drum <u>overpacks</u> , 650 lb. capacity, yellow	Overpacking or contain contaminants



Arizona Army National Guard, Camp Navajo RCRA Contingency Plan and Emergency Procedures

ATTACHMENT #2, EMERGENCY EQUIPMENT, SUPPLIES AND PPE

Bldg. 15, CAA Supplies (Continued)		
Quantity	Item	Purpose/Capability
6	CYGB w/liners	Contain waste
1 box	Drum bungs	Extra bungs for drum closure
1 box	Drum tubing	Replacement tubing for drum sealing
1 box	Instant Lead-check	Lead determination
1	Metal drop can	Oily-rag containment
1	Poly ramp for drums	Moving containerized waste
2 rolls	Poly bag liners for Asbestos, clear	Asbestos containment
1 roll	Poly bag liners for Asbestos, yellow	Asbestos containment
4 rolls	Sheeting, Weather-All	Containment for soil stockpiles
1	Small poly drip pan	Drip containment
7	Unique poly-gloved vacuum bags for asbestos	Asbestos containment
TBD	Various sized amber bottles	Sampling
Bldg. 15, CAA Absorbent and Neutralizer Supplies		
Quantity	Item	Purpose/Capability
~50	30" X 30" haz-mat absorbent mats	Spill recovery
~6	3" X 4' haz-mat absorbent socks	Spill recovery
1	5 gallon poly full of PIG Hazmat socks	Spill recovery
.5 c. f. bag	Activated sphagnum peat, P.O.L. Sorb	POL absorbent
50 lbs.	Citric Acid, Cargill Foods	Base neutralizer
~40 lbs.	Coarse Vermiculite, Strong-Lite	Absorbent for POL and paint
11	PIG absorbent pans	Spill recovery and drip containment
150 lbs.	Sodium Sesquicarbonate, Sesqui	Acid neutralizer
75 lbs.	Sponge Dry #2013, cellulose granular	Absorbent
Bldg. 15, CAA PPE		
Quantity	Item	Purpose/Capability
TBD	Gloves, nitrile and leather, various sizes	PPE. Chemical resistance and contamination protection.
1	Individual Face Shield/Visor	PPE. Eye and face splash protection
TBD	One-piece Tyvek suits, white, sizes XL +	PPE. Chemical resistance and contamination protection
100	Tyvek booties, white one-size	PPE. Chemical resistance/foot wear protection



Arizona Army National Guard, Camp Navajo RCRA Contingency Plan and Emergency Procedures

ATTACHMENT #2, EMERGENCY EQUIPMENT, SUPPLIES AND PPE

Bldg. 15, Inside Equipment		
Quantity	Item	Purpose/Capability
2	ABC Portable Fire Extinguishers	Fire Suppression
4	Hand-held two-way radios	Communication to CN Security to initiate Code-Red and summon emergency assistance
4 each	Landlines and cell phones	Communication to CN Security to initiate Code-Red and summon emergency assistance
Bldg. 15, Inside PPE and First Aid		
Quantity	Item	Purpose/Capability
~100 pairs	Gloves, nitrile extended cuff, size SM	PPE. Chemical resistance and contamination protection.
1	Individual Face Shield/Visor	PPE. Eye and face splash protection
1	Full Face Respirator, North 7600-8AS	PPE. Respiratory protection
1	1/2 Mask Respirator, North 7700-30S	PPE. Respiratory protection
1	Hard-hat, North A29	PPE. Head protection
1	Adventure Medical Kit/First Aid	First Aid



Arizona Army National Guard, Camp Navajo RCRA Contingency Plan and Emergency Procedures

ATTACHMENT #2, EMERGENCY EQUIPMENT, SUPPLIES AND PPE

Bldg. 15, Conex #1/Red Storage Locker Equipment		
Quantity	Item	Purpose/Capability
10	5 gallon poly, open-head drums	Overpacking or contain contaminants
1	15 gallon poly, closed-head drum, handles	Contain liquids
1	15 gallon metal, closed-head drum	Contain flammable liquids
1	15 gallon metal, open-head drum, black	Overpacking or contain contaminants
1	20 gallon poly, closed-head drum, with handles, blue	Contain liquids
1	30 gallon poly closed-head drum, black	Contain liquids
10	30 gallon metal closed-head drum, black	Contain flammable liquids
3	20 gallon capacity poly <u>overpack</u> salvage drums	Overpacking or contain contaminants
1	30 gallon capacity poly <u>overpack</u> salvage drum, yellow	Overpacking or contain contaminants
10	55 gallon capacity poly <u>overpack</u> salvage drums	Overpacking or contain contaminants
5	95 gallon poly <u>overpack</u> salvage drums, 650 lb. capacity, yellow	Overpacking or contain contaminants
3	Polyethylene sheeting rolls	Containment for soil stockpiles
TBD	Various sized amber bottles	Sampling
Bldg. 15, Conex #1 (Red Storage Locker) Absorbent Supplies		
Quantity	Item	Purpose/Capability
10 bags	Oil Dri, 40 lb. bags	POL absorbent
40	PIG pillows, 10"x10"x2"	Spill recovery and drip containment



Arizona Army National Guard, Camp Navajo RCRA Contingency Plan and Emergency Procedures

ATTACHMENT #2, EMERGENCY EQUIPMENT, SUPPLIES AND PPE

Bldg. 17, Equipment		
Quantity	Item	Purpose/Capability
1	PIT	moving containerized/palletized waste
1	55 gallon metal, open-head drum	Overpacking or contain contaminants
1	55 gallon metal, closed-head drum	Contain liquids
30	55 gallon metal, open-head drums, previously used for non-contaminated dirt	Overpacking or contain contaminants
10	85 gallon metal, open-head overpack drums	Overpacking or contain contaminants
3	Spill pallets	Contain liquids
Bldg. 17, Absorbent Supplies		
Quantity	Item	Purpose/Capability
10 bags	Coarse Vermiculite, Strong-Lite 18 lbs.	Absorbent for POL and paint



Arizona Army National Guard, Camp Navajo RCRA Contingency Plan and Emergency Procedures

ATTACHMENT #2, EMERGENCY EQUIPMENT, SUPPLIES AND PPE

CNFD E-911, Equipment		
Quantity	Item	Purpose/Capability
4	60-minute Self-Contained breathing Apparatus (SCBA) <i>Tested Annually</i>	When contamination exceeds NIOSH IDLH levels
7	Spare 60-minute SCBA bottles <i>Tested Annually</i>	Back-up air supply
1	Blue haz-mat bag containing 3" X 4' hazmat absorbent socks	Contain absorbent socks
1	Blue haz-mat bag containing hazmat PPE	Contain PPE
1	Bucket containing haz-mat absorbent	Contain absorbent
1	Plastic non-sparking square nose shovel	Clean up of flammable/explosive material
1	Gas monitor	For confined space entry and imminent danger
CNFD E-911, Absorbent Supplies		
Quantity	Item	Purpose/Capability
5	3" X 4' haz-mat absorbent socks	Spill recovery
1	Bucket of haz-mat absorbent	Spill recovery
CNFD E-911, PPE		
Quantity	Item	Purpose/Capability
6	One-piece Tyvek suits, white, 2XL	PPE. Chemical resistance and contamination protection
4	Rubber haz-mat gloves, L	PPE. Hand protection for spill recovery
4	Tyvek haz-mat boot covers, XL	PPE. Chemical resistance/foot wear protection



Arizona Army National Guard, Camp Navajo RCRA Contingency Plan and Emergency Procedures

ATTACHMENT #2, EMERGENCY EQUIPMENT, SUPPLIES AND PPE

CNFD E-913, Equipment		
Quantity	Item	Purpose/Capability
4	60-minute Self-Contained breathing Apparatus (SCBA)	When contamination exceeds NIOSH IDLH levels
3	Spare 60-minute SCBA bottles	Back-up air supply
1	Blue haz-mat bag containing 3" X 4' hazmat absorbent socks	Contain absorbent socks
1	Blue haz-mat bag containing hazmat absorbent	Contain absorbent
1	Plastic non-sparking square nose shovel	Clean up of flammable/explosive material
CNFD E-913, Absorbent Supplies		
Quantity	Item	Purpose/Capability
5	3" X 4' haz-mat absorbent socks	Spill recovery
1	Bucket of haz-mat absorbent	Spill recovery
CNFD E-913, PPE		
Quantity	Item	Purpose/Capability
6	One-piece Tyvek suits, white, 2XL	PPE. Chemical resistance and contamination protection



Arizona Army National Guard, Camp Navajo RCRA Contingency Plan and Emergency Procedures

ATTACHMENT #2, EMERGENCY EQUIPMENT, SUPPLIES AND PPE

CNFD C-91, Equipment		
Quantity	Item	Purpose/Capability
1	Blue haz-mat bag containing 3" X 4' hazmat absorbent socks and 15" X 18" haz-mat absorbent sheets	Contain absorbent socks
1	Bucket containing haz-mat absorbent	Contain absorbent
1	Plastic non-sparking square nose shovel	Clean up of flammable/explosive material
CNFD C-91, Absorbent Supplies		
Quantity	Item	Purpose/Capability
6	3" X 4' haz-mat absorbent socks	Spill recovery
1	Bucket of haz-mat absorbent	Spill recovery
6	15" X 18" haz-mat absorbent sheets	Spill recovery



Arizona Army National Guard, Camp Navajo RCRA Contingency Plan and Emergency Procedures

ATTACHMENT #2, EMERGENCY EQUIPMENT, SUPPLIES AND PPE

CNFD R-92, Equipment		
Quantity	Item	Purpose/Capability
3	Blue haz-mat bag containing 3" X 4' hazmat absorbent socks	Contain absorbent socks
1	Blue haz-mat bag containing bag of haz-mat absorbent	Contain bag of absorbent
1	Blue haz-mat bag containing 15: X 18" haz-mat absorbent roll	Contain absorbent roll
2	Blue haz-mat bag containing hazmat PPE	Contain PPE
2	Haz-mat decontamination showers	FD spill response/Decontamination
2	Haz-mat decontamination hoops	FD spill response/Decontamination
5	Haz-mat decontamination pools	Decontamination efforts
1	Poly 7-gallon drums with lids	Over-packing/containing contaminated material
1	Uni-hoist with tripod	Winching personnel and equipment out of hazardous areas
1	Gasoline powered ventilation system with ducting <i>Tested ~Quarterly</i>	Improve IDLH ventilation levels
1	Leak plugging kit with rubber and wooden plugs of various sizes	Plugging leaks
1	Set of non-sparking tools	Plugging leaks
2	SKED sleds	Personnel recovery
CNFD R-92, Absorbent Supplies		
Quantity	Item	Purpose/Capability
38	3" X 4' haz-mat absorbent socks	Spill recovery
1	Bag of haz-mat absorbent	Spill recovery
1	Haz-mat absorbent pan	Spill recovery
1	30" X 30" haz-mat absorbent roll	Spill recovery
1	15" X 18" haz-mat absorbent roll	Spill recovery
40	15" X 18" haz-mat absorbent sheets	Spill recovery
CNFD R-92, PPE		
Quantity	Item	Purpose/Capability
6 each, 18 total	One-piece Tyvek suits, white, L-2XL	PPE. Chemical resistance and contamination protection
4	Tyvek haz-mat boot covers, L-XL	PPE. Chemical resistance/foot wear protection
1	Latex gloves, L	PPE. Hand protection. Not chemical resistant



Arizona Army National Guard, Camp Navajo RCRA Contingency Plan and Emergency Procedures

ATTACHMENT #2, EMERGENCY EQUIPMENT, SUPPLIES AND PPE

CNFD Fire Station Supply Room Equipment		
Quantity	Item	Purpose/Capability
1	Square nose metal shovel	Clean-up of non-flammable/non-explosive material
2	Squeegees	Clean-up and material recovery
CNFD Fire Station Supply Room Absorbent Supplies		
Quantity	Item	Purpose/Capability
1	30" X 30" haz-mat absorbent roll	Spill recovery
1	15" X 18" haz-mat absorbent roll	Spill recovery
1	Roll of plastic fillable diking material	Encircle spill and prevent migration
CNFD Fire Station Supply Room PPE		
Quantity	Item	Purpose/Capability
12	One-piece Tyvek suits, white, M	PPE. Chemical resistance and contamination protection
6	One-piece Tyvek suits, white, L	PPE. Chemical resistance and contamination protection
18	One-piece Tyvek suits, white, 2XL	PPE. Chemical resistance and contamination protection
6	Tyvek haz-mat boot covers, 3XL	PPE. Chemical resistance and contamination protection



Arizona Army National Guard, Camp Navajo RCRA Contingency Plan and Emergency Procedures

ATTACHMENT #2, EMERGENCY EQUIPMENT, SUPPLIES AND PPE

CNFD Fire Station Supply Igloo Equipment (H-127)		
Quantity	Item	Purpose/Capability
TBD	Square nose metal shovel	Clean-up of non-flammable/non-explosive material
1	Chlorine leak confinement kit <i>No testing Required</i>	Confine chlorine leaks
1	7 gallon metal, open-head drum	Overpacking or contain contaminants
3	20 gallon metal, open-head drum	Overpacking or contain contaminants
4	55 gallon, metal, open-head drum	Overpacking or contain contaminants
CNFD Fire Station Supply Igloo Absorbent Supplies		
Quantity	Item	Purpose/Capability
3	30" X 30" haz-mat absorbent roll	Spill recovery
210	3" X 4' haz-mat absorbent socks	Spill recovery
CNFD Fire Station Supply Igloo PPE		
Quantity	Item	Purpose/Capability
18	One-piece Tyvek suits, white, M	PPE. Chemical resistance and contamination protection
12	One-piece Tyvek suits, white, L	PPE. Chemical resistance and contamination protection
6	One-piece Tyvek suits, white, XL	PPE. Chemical resistance and contamination protection
12	One-piece Tyvek suits, white, 2XL	PPE. Chemical resistance and contamination protection
12	One-piece Tyvek suits, white, 3XL	PPE. Chemical resistance and contamination protection
TBD	One-piece Tyvek suit, yellow, size TBD	PPE. Chemical resistance and contamination protection
TBD	One-piece Tyvek suit, green, size TBD	PPE. Chemical resistance and contamination protection

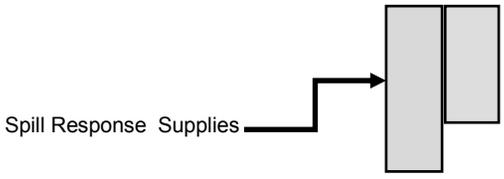
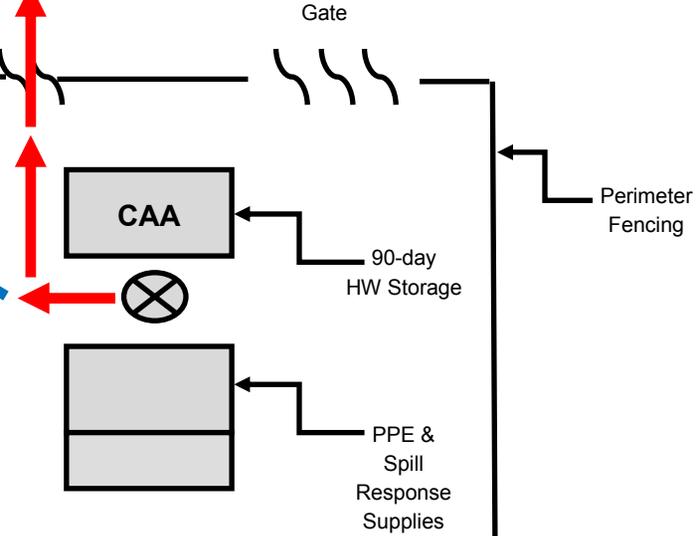
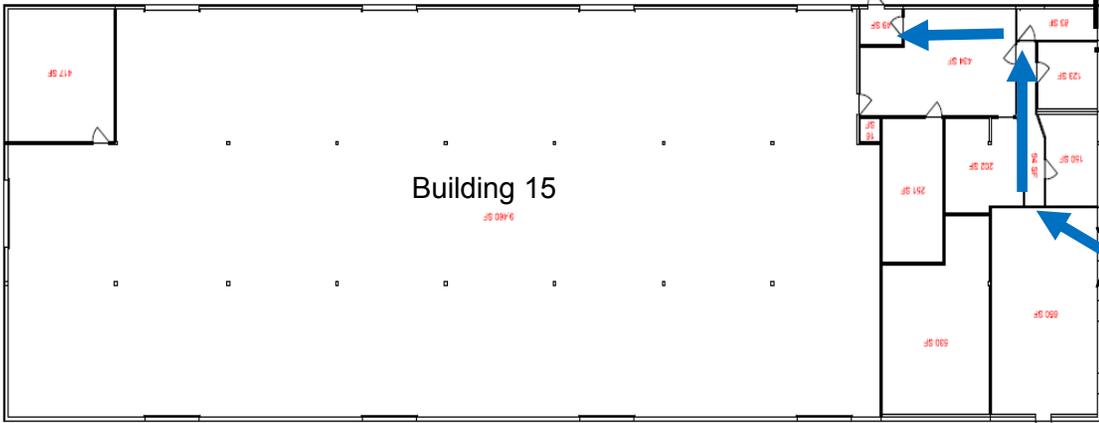
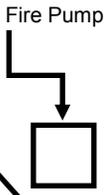


Attachment #3

CAA/90-day Storage Area

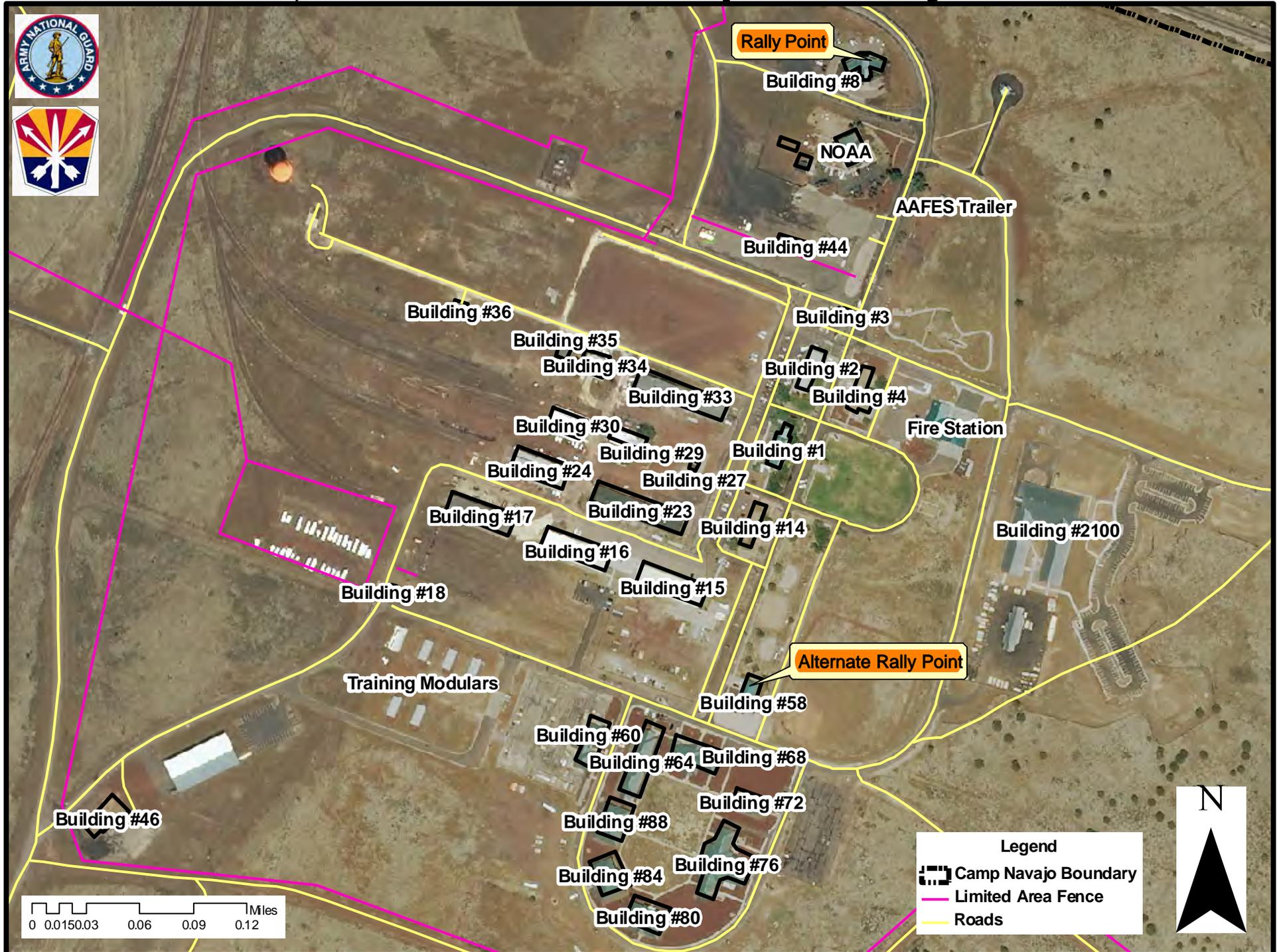
Evacuation Map Routes

Primary Rally Point, Bldg. 8



Alternate Rally Point, Bldg. 58

Attachment #4, Cantonment Area Map with Rally Points





Arizona Army National Guard, Camp Navajo RCRA Contingency Plan and Emergency Procedures

ATTACHMENT #5, SPECIFIC INCIDENT REPORTING RECORD CAMP NAVAJO EMERGENCY HW SPILL/RELEASE & SPECIFIC INCIDENT REPORTING FORM

Name of Operator/Owner: Arizona Army National Guard
Owner/Operator Address: 5636 E. McDowell Road, Phoenix, AZ 85008
Owner/Operator Contact #: (602) 267-2742

Facility Name: Camp Navajo
Facility Address: 1 Hughes Avenue, Belmont AZ 86015
Facility Contact #: (928) 773-3210, Environmental Office

Emergency Coordinator/OSC: _____ Contact #: _____

Date of Incident: _____ Time of Incident: _____

Location of Incident: _____

Type of Incident: _____
(i.e., fire, explosion, spill)

Material(s) Involved: Name(s) if Known _____

Estimated Quantity _____

Hazards Present _____
(Toxic, Reactive, Ignitable, Corrosive, Inhalation...)

Additional Description: Incident Source _____

Affected Media _____
(Soil, Air, Ground/Surface Water...)

Response Measures Taken _____

Injuries Sustained: (yes/no and extent) _____

Describe actual/potential hazards to human health/the environment where applicable (in/outside the facility):

Material Recovered: Estimated Quantity _____

Disposition _____



**Arizona Army National Guard,
Camp Navajo
RCRA Contingency Plan and Emergency
Procedures**

ATTACHMENT #5, SPECIFIC INCIDENT REPORTING RECORD
CAMP NAVAJO EMERGENCY HW SPILL/RELEASE & SPECIFIC INCIDENT REPORTING (CONTINUED)

Preventable Conclusions: _____

Printed Name: _____
 (Person Completing Report)

Contact #: _____

Signature: _____
 (Person Completing Report)

Date: _____

**Submit ORIGINAL to the CN Environmental Office, Bldg. 15.
 After received, reviewed and signed by authorized Environmental staff,
 a copy of this form will be produced for your records.**

Environmental staff Printed Name: _____

Contact #: _____

Environmental staff Signature: _____

Date: _____

ADDITIONAL INFORMATION AND/OR DIAGRAMS:



Arizona Army National Guard, Camp Navajo RCRA Contingency Plan and Emergency Procedures

Attachment #6, Post-Closure Permit Area

POST-CLOSURE CARE SPECIFIC CONTINGENCY PROCEDURES

6.1 Emergency Response to Hazardous Waste Releases:

Hazards to human health and the environment associated with post-closure care in the Post-Closure Permit Area include the following:

- Wildland fires and unintentional open detonations/explosions inside the Post-Closure Permit Area
- Discovery of munitions or explosives of concern (MEC) that have migrated outside the Post-Closure Permit Area

Advanced planning is essential for firefighting operations involving areas that are known or suspected to contain MEC. Coordination of such plans between firefighters and explosive safety personnel including Quality Assurance Specialist Ammunition Surveillance (QASAS) or Explosive Ordnance Disposal (EOD) personnel is essential.

As defined by Army Regulation 200-1, MEC is a term which distinguishes specific categories of military munitions that may pose unique explosives safety risks. The categories are such:

- 1) Unexploded ordnance (UXO), as defined in 10 USC 101(e)(5)(A);
- 2) Discarded military munitions (DMM), as defined in 10 USC 2710(e)(2) or
- 3) Munitions constituents (MC) (e.g., trinitrotoluene (TNT), cyclotrimethylenetrinitramine (RDX)), as defined in 10 USC 2710(e)(3), present in high enough concentrations to pose an explosive hazard.

6.2 Security Notification and Emergency Equipment:

Prior to departing for the Post-Closure Permit Area, staff will communicate with Security/radio station #1 destination intent. All staff and visitors shall produce positive ID to Security post 3 and remain with Security until released.

Vehicles carrying personnel into the proposed Post-Closure Permit Area at a minimum will be equipped with:

- 1) Fire extinguisher (10 B:C rating or greater)
- 2) First-aid kit
- 3) Communication system via a permitted cell phone or radio

Note: Cell phones are not permitted into the Limited Area unless they have been cleared by Security. All cell phones must be declared and cleared prior to leaving Security post 3.

Prior to entering the Post-Closure Permit Area, staff will inspect and test the emergency equipment as follows:

- 1) Inspect fire extinguisher to ensure it is properly charged and the unit integrity has not been compromised
- 2) Inspect first-aid to ensure supplies are adequate
- 3) Test the communication radio with station #1 to ensure radio is operable

After an emergency situation in which a fire extinguisher has been used from a vehicle, the fire extinguisher will be replaced with a new or recharged extinguisher by the vehicle or department owner. When supplies from a first aid kit from a vehicle have been used, the first aid kit will be inspected and supplies replaced by the vehicle or department owner prior to using the first aid kit in the Post-Closure Permit Area again.

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Arizona Army National Guard, Camp Navajo RCRA Contingency Plan and Emergency Procedures

Attachment #6, Post-Closure Permit Area

6.3 MEC discovered outside the Post-Closure Permit Area:

This section applies to MEC discovered outside the Post-Closure Permit Area that are suspected to have originated from within the Post-Closure Permit Area boundary. In the event MEC is discovered, the following procedures will be taken:

- **Recognize** — Recognizing MEC is key to reducing the risk of injury or death. If an object is encountered that is suspected to be MEC, consider it extremely dangerous.
- **Retreat** — Do not touch, move or disturb it, but immediately and carefully - do not run - leave the area following the same path on which the area was entered. If possible, mark the general area, not the munition, in some manner (e.g., with a hat, piece of cloth, or tying a piece of plastic to a tree branch).
- **Report** — If suspected MEC is encountered, immediately contact Camp Navajo Security at (928) 773-3297. Report:
 - 1) The suspect MEC location
 - 2) Direction to the item
 - 3) Any landmarks or other feature (such as sticks, rocks, flags, clothing) that would aid in locating the suspect MEC

CN Security will notify QASAS or EOD or other UXO-qualified personnel to inspect and determine the safety status of the MEC. EOD and/or UXO-qualified personnel are trained in accordance with the Department of Defense (DoD) Explosives Safety Board (DDESB), *Minimum Qualifications for Personnel Conducting Munitions and Explosives of Concern-Related Activities; Technical Paper No. 18* (DDESB, 2015).

- If the item is determined to be unsafe to move, the item will be destroyed using blow-in-place procedures following all required notifications. The Specific Incident Reporting Record shall be completed documenting the finding and disposition of the item(s) ([Attachment #5](#)) and the original record shall be submitted to the CN Environmental Office.
- If the suspect item is determined to be MEC and determined to be safe to move, and within the net explosive weight (NEW) and minimum separation distance (MSD) limits for MRWA 02, the item may be relocated to one of three authorized open detonation pits located within the Post-Closure Permit Area. Following required notifications, the item will be destroyed via open detonation.

Remainder of this page intentionally left blank



Arizona Army National Guard, Camp Navajo RCRA Contingency Plan and Emergency Procedures

Attachment #6, Post-Closure Permit Area

6.4 Waste in Place inside the Post-Closure Permit Area:

Emergency situations inside the Post-Closure Permit Area include wildland fire and unintentional open detonations. MEC discovered inside the Post-Closure Permit Area is not considered a release. In the event a fire or explosion occurs inside the Post-Closure Permit Area, the following procedures will be taken by the individual discovering the release:

- 1) Account for personnel and attend to injured personnel first, only if it is safe to do so¹.
- 2) Immediately contact CN Security who will activate the internal facility alarm to notify facility personnel in addition to notifying CNFD, CN Garrison Commander, QASAS and/or EOD and the RCRA Emergency Coordinator (EC).
 - a. OSC (On-Scene Commander) / IOSC (Installation On-Scene Coordinator) shall determine further hazards, if additional evacuation is required and secure the site.
 - b. QASAS and/or EOD personnel will determine whether the area is safe for entry in conjunction with a careful assessment by senior firefighting personnel. If QASAS and/or EOD personnel are not available to make an entry determination, the installation OSC can make the determination to enter for rescue and/or recovery operations.
 - c. The RCRA EC shall report to and assist OSC/IOSC and make proper notification to the AZARNG SSC Alternate/Environmental Program Manager (EPM) who shall notify reporting authorities ([Attachment #1](#)).
- 3) Leave the Post-Closure Permit Area and notify other individuals in the Post-Closure Permit Area via cell phone or two-way radio to immediately leave the area. All personnel must retreat a distance of at least 2,000 feet from the Post-Closure Permit Area boundary ([Attachment #7](#)), communicate location and identify release details to responders.
- 4) The Camp Navajo Fire Department (CNFD) will not enter the Post-Closure Permit Area to suppress a fire within the Post-Closure Permit Area.
 - a. Per PAM 385-64, firefighting forces will be well acquainted with the risks involved in each fire hazard group and the best methods of fighting fires of all kinds of materials under their protection. They should also know how to use personnel protective devices required for the various types of fires. All operating personnel and firefighting forces involved with explosives must be trained in the precautions to be taken and how to fight fires. This training will include the application and meaning of each type fire hazard symbol, reporting fires, sounding alarms, area evacuations and type and use of appropriate firefighting equipment.
- 5) The installation OSC/IOSC and EC shall :
 - a. Take all measures to ensure that fires, explosions and releases do not occur, recur or spread to other hazardous waste at the facility.
 - b. Remain out of the affected Post-Closure Permit Area until cooled for at least 24 hours per DA PAM 385-64. Re-entry into the Post-Closure Permit Area will not be permitted until after EOD or UXO-qualified personnel have conducted a follow-up inspection to determine whether access roads are safe for use and there is no longer a threat of fire/detonation of MEC.
 - c. Ensure all follow-up activities are completed including clean-up, ensuring all emergency equipment is fit for reuse, monitoring and proper reporting. The OSC/IOSC shall complete the Specific Incident Reporting Form ([Attachment #5](#)). A thorough review of the incident activities will be reviewed in addition to any pre-fire plans covering all explosive areas and possible exposures of explosives to fire in accordance with AR 420-1 to ensure plan adequacy.

¹It is not safe to attend to injured personnel or activate countermeasures if PPE on hand is not sufficient, spill/release is gas, fumes, chemicals that staff have not been trained to manage, spill/release is unknown, Other hazards are present such as electrical shock, heat or flames.



Arizona Army National Guard, Camp Navajo RCRA Contingency Plan and Emergency Procedures

Evacuation Plan

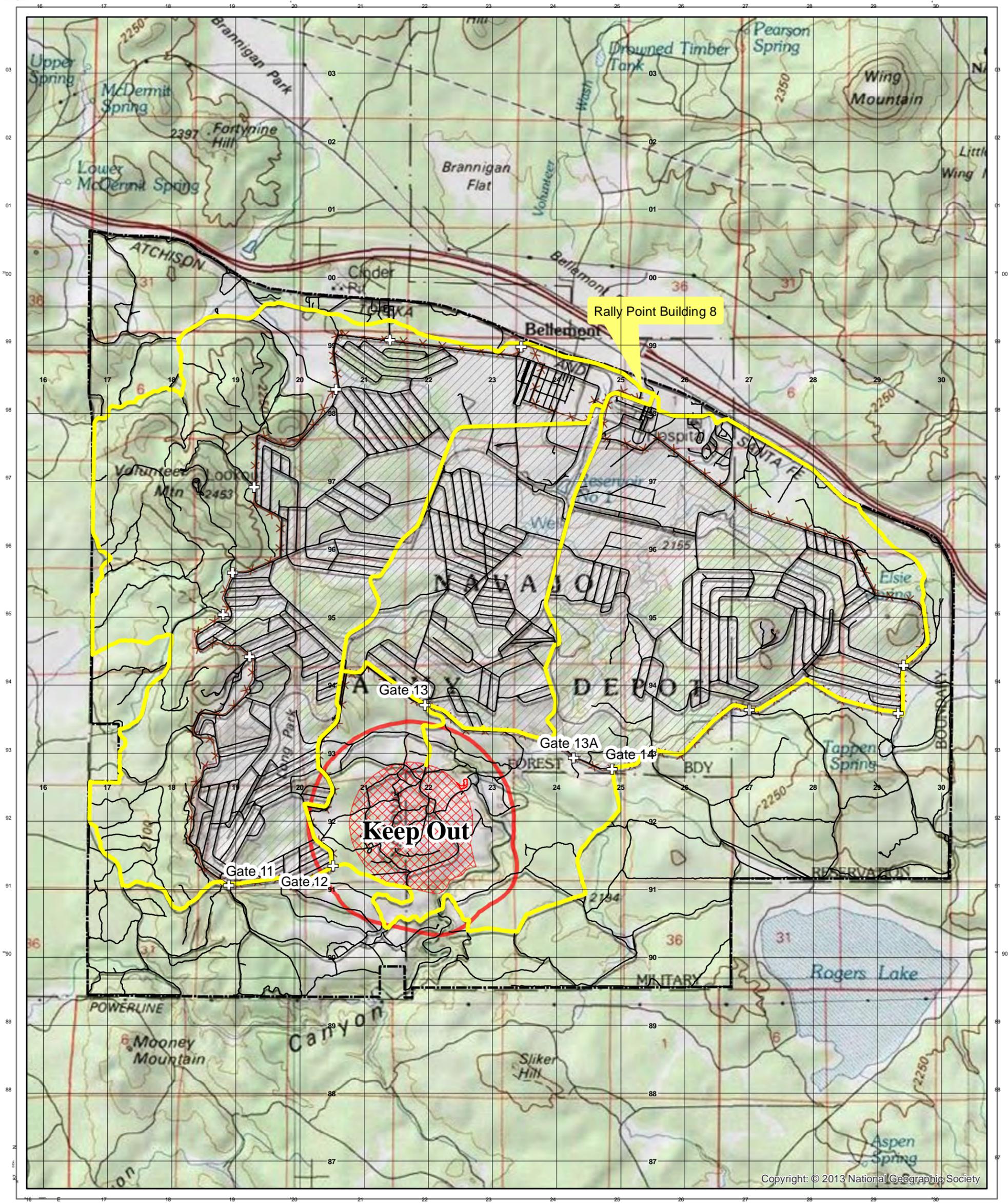
6.5 POST-CLOSURE PERMIT AREA (OB/OD AREA):

Post-Closure Permit Area	<p>Personnel must immediately retreat a distance of at least 2,000 feet from the Post-Closure Permit Area boundary (See Attachment #7). If assistance is needed to evacuate the Post-Closure Permit Area, the CN Fire Department shall assist and first contact QASAS and/or EOD to determine if entry is safe.</p> <p>The Fire Department would then perform a risk assessment to determine evacuation feasibility. The primary rally point for personnel accountability as designated by the CN Fire Department is building 8-Security.</p> <p>However, unforeseen circumstances such as the type and quantity of release, weather conditions and blocked escape routes may alter the primary evacuation route. Therefore alternate routes may be utilized. After an evacuation all employees must check in with their supervisor and designated building manager.</p>
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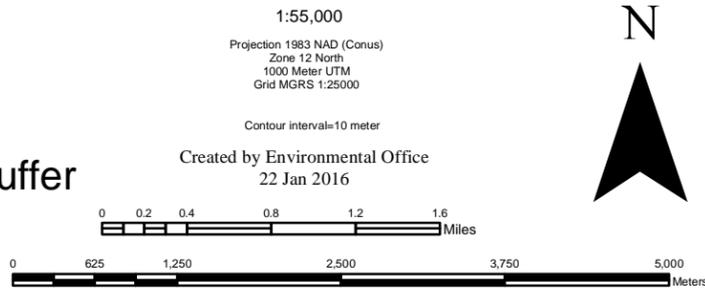
Attachment #7, Post-Closure Permit Area Evacuation Map



Copyright: © 2013 National Geographic Society

Legend

- ⊕ Perimeter Gates
- Evacuation Route
- Roads
- Post closure permit area 2000 ft buffer
- ▨ Post closure permit area
- ⊗ Limited_Area_Boundary



CN Contingency Plan, Attachment #8

Cooperative Greater Flagstaff Area Fire Agencies All Risk Emergency Intergovernmental Agreement

This Intergovernmental Agreement (“Agreement”) is entered into by and among governmental fire rescue and emergency medical service agencies, districts and municipalities (the “Party” or Parties”) that have adopted and executed this Agreement.

RECITALS

- A. The Parties shall consist of members of various fire rescue and emergency medical service departments which together, form a cooperative of information, training, fire prevention, procurement, administration, fire suppression response, medical services and any cooperative effort which is deemed mutually beneficial to the Parties. Nothing herein shall be construed to suggest that the Parties are forming a joint venture or partnership, or that the Parties shall be liable for the conduct of the other except as otherwise specifically provided in this Agreement.
- B. The Parties concur that working collaboratively yields the highest levels of services in conjunction with the most effective use of local fire, rescue, and emergency medical department resources.
- C. The Parties seek to provide the most efficient, safe, and effective fire-rescue-emergency medical services to their communities.
- D. It is the desire of the Parties to continue and improve the nature and coordination of emergency assistance to incidents that threaten loss of life or property within the geographic boundaries of their respective jurisdictions to include regional operations, procedures, and practices governing command and control and hazard zone operations.
- E. The Parties recognize the vulnerability of the people and the communities located within the greater Flagstaff area, the Sedona area, and communities located in the joint service areas of the Parties to damage, injury, and loss of life and property resulting from fire and all other natural and man-made emergencies and disasters (“Incidents”). It is also recognized that fires, natural and man-made emergencies, and disasters may present equipment and staffing requirements beyond the capacity of each individual Party.
- F. The Parties who have executed this Agreement are fire districts and municipalities of the State of Arizona and are authorized pursuant to A.R.S. § 11-951 *et seq* to enter into intergovernmental agreements for the joint exercise of powers to carry out their mutual responsibilities.

1. Purpose

The purpose of this IGA is to establish the lawful cooperation of governmental fire and medical rescue departments in the mutual attainment of their life safety mission.

2. Scope

The scope of this agreement shall include the following:

2.1 To provide cooperative procedures and practices including but not limited to emergency response, emergency standby coverage, joint purchasing, communications infrastructure and protocols, training, health and safety, fire prevention, public education, fire investigations, wildland fuels mitigation and suppression programs and other activities that will enhance the ability of the Parties to fulfill their missions, and;

2.2 To provide procedures to notify Parties of the need for assistance in the event of an Incident.

3. Request for Assistance

Any Party who is a signatory to this Agreement may request assistance for fire, medical and hazmat services ("Emergency Services") if the requesting Party determines that additional resources are needed or that an incident is potentially beyond the capacity of the requesting Party to control or mitigate; or the requesting Party is occupied with another Incident.

3.1 Authorized Designee. Upon contacting its dispatch center to request mutual assistance, each Party shall identify an authorized designee to provide contact information, including 24-hour access, and shall maintain current resource information for purposes of mutual assistance response.

4. Response to Request

A Party which receives a request for assistance shall, in the exercise of its discretion, determine whether it has the resources to respond, taking into consideration the safety of its citizens and property within its own jurisdiction. The Fire Chief or the authorized designee of each Party which receives a request for assistance shall be the sole judge as to the amount of assistance, if any, which that Party can provide. No Party shall be liable to any other Party for failing to respond to a request for assistance, for the amount of assistance provided, or if assistance is withdrawn.

5. Incident Command

A Party that responds to a request for assistance shall work under the direction of the Incident Commander ("IC") as designated by the Incident Command System ("ICS"). If the assisting Party needs to return to its jurisdiction during this time period, the Party shall coordinate a release time with the Incident Commander. The IC will make all attempts to

release Mutual Aid units back to their jurisdiction as soon as it is safe and appropriate to do so.

6. Responsibility for Equipment and Personnel

In rendering initial attack mutual assistance, each requesting and assisting Party shall be responsible for the provision and maintenance of the respective Party's own equipment and personnel.

7. Costs

Except as specifically agreed to by the Parties for a particular incident, neither Party shall be reimbursed by the other party for any costs incurred pursuant to this Agreement.

8. Reciprocity

The Parties agree that the mutual aid provided pursuant to this Agreement is reciprocal. The Parties acknowledge that mutual aid does not ensure that a Party will receive the exact same amount of assistance that it gives. It is intended that the level of service delivered under this agreement will be comparable.

9. Operational Procedures

From time to time, the Fire Chiefs or authorized designees of each Party may promulgate mutually agreeable written operational procedures for the cooperative implementation of this Agreement. In addition, field exercises as well as command, control, and communication exercises may be implemented to examine, evaluate and improve the collective performance of all participants.

10. Incident Reports

All Parties shall make available to other Parties all incident reports that involve mutual assistance.

11. Participating Parties

A District or Municipality not a Party to this Agreement may enter into this Agreement without amendment of this Agreement by the governing bodies of the existing members, provided that it is approved as a Party by a voice vote of a simple majority of the authorized designees of the Parties to the Agreement, and its governing body approves the terms of this Agreement and authorizes execution of the Agreement.

12. Indemnification

Each Party to this Agreement shall indemnify, defend and hold harmless the other Party, their members, directors, officers, employees, agents, attorneys and assigns from and against any and all claims, losses, liability, costs or expenses resulting from the negligence or willful misconduct of the indemnifying Party or Parties, provided however, nothing herein shall be

construed to expand the liability of any Party or its employees beyond the gross negligence/intentional misconduct standard applicable to emergency medical technicians or paramedics providing emergency medical aid as provided for in A.R.S. §48-818. This indemnification shall survive termination of this Agreement or the termination of the participation of any of its Parties.

13. Worker's Compensation Claims

Each Party herein shall comply with the provisions of A.R.S. §23-1022 (E) by posting the public notice required. As provided for in A.R.S. §23-1022(D), an employee of a public agency who works under the jurisdiction or control of or within the jurisdictional boundaries of another public agency pursuant to a specific intergovernmental agreement or contract entered into between the public agencies is deemed to be an employee of both public agencies. However, the primary employer is solely liable for the payment of Workers' Compensation benefits. As such, each Party shall maintain Workers' Compensation insurance coverage on all of its own employees providing services pursuant to this Agreement.

14. Insurance

Each Party shall bear the risk of its own actions, as it does with all its operations, and shall determine for itself an appropriate level of insurance coverage and maintain such coverage. Nothing in this Agreement shall be construed as a waiver of any limitation on liability that may apply to a Party.

15. Effective Date; Term

15.1 Effective Date. This Agreement will become effective for each Party after approval by its governing body (the "Effective Date").

15.2 Term. Except as otherwise provided in this Agreement, this Agreement will terminate on June 30, 2018, unless extended or terminated by action of the Parties.

15.3 Any Party may terminate its participation in this Agreement by providing each of the other Parties thirty (30) days written notice.

16. Cancellation for Conflict of Interest

This Agreement is subject to cancellation for conflict of interest pursuant to A.R.S. § 38-511.

17. Existing Mutual Aid Agreements

The existing Cooperative Greater Flagstaff Area Fire Agencies All Risk Emergency Mutual Aid Intergovernmental Agreement entered by the parties in 2008 is hereby terminated and replaced in its entirety by this Agreement. The Parties recognize that this Agreement is not intended to terminate, modify, amend, or otherwise alter any Cooperative Agreements entered into by and between the Arizona State Land Department / State Forester and its

cooperators.

18. Right to Enter into Additional Agreements

The Parties to this Agreement are not precluded from participating in additional or supplemental IGA's or contracts as deemed appropriate by the Parties. Nothing in this Agreement shall limit the ability of a Party to provide emergency assistance to another jurisdiction which is not a participant in this Agreement.

19. Compliance with All Laws.

Each Party shall comply with all federal, state and local laws, rules and regulations.

20. Execution Procedure

This Agreement will be executed in counterparts by the governing body of each Party.

21. Non-Discrimination.

Each Party warrants that it complies with any state and federal laws, rules and regulations which mandate that all persons, regardless of race, color, creed, religion, sex, genetic information, age, national origin, disability, familial status or political affiliation, shall have equal access to employment opportunities, including but not limited to the Americans with Disabilities Act. Each Party shall take affirmative action to ensure that it will not participate either directly or indirectly in the discrimination prohibited by or pursuant to Title VI of the Civil Rights Act of 1964, Section 504 of the Rehabilitation Act of 1973, Section 109 of the Housing and Community Development Act of 1974, the Age Discrimination Act of 1975, Genetic Information Nondiscrimination Act of 2008.

22. Legal Arizona Workers Act Compliance.

Parties are required to comply with A.R.S. §41-4401, and hereby warrants that it will, at all times during the term of this Agreement, comply with all federal immigration laws applicable to the employment of their respective employees, the requirements of A.R.S. §41-4401, and with the e-verification requirements of A.R.S. §23-214(A) (together the "state and federal immigration laws"). Parties further agree to ensure that each subcontractor that performs any work under this Agreement likewise complies with the state and federal immigration laws.

A breach of a warranty regarding compliance with the state and federal immigration laws shall be deemed a material breach of the Agreement and the Party who breaches may be subject to penalties up to and including termination of the Agreement.

Each Party retains the legal right to inspect the papers of any contractor or subcontract employee working under the terms of the Agreement to ensure that the other Party is complying with the warranties regarding compliance with the state and federal immigration laws.

23. Non-appropriation.

This Agreement shall be subject to available funding for each Party, and nothing in this Agreement shall bind any Party to expenditures in excess of funds appropriated and allotted for the purposes outlined in this Agreement.

24. No Third Party Beneficiaries

Nothing in the provisions of this Agreement is intended to create duties or obligations to or rights in third parties not parties to this Agreement or to affect the legal liability of any Party to the Agreement by imposing any standard of care different from the standard of care imposed by law.

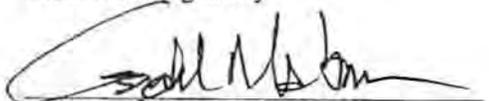
**Cooperative Greater Flagstaff Area
Fire Agencies All Risk Emergency
Intergovernmental Agreement**

Signature Page

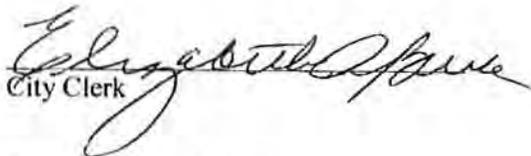
IN WITNESS WHEREOF, the Parties each sign this Intergovernmental Agreement on a separate signature page. The signatories warrant that they have been duly authorized to bind the jurisdiction to the terms and conditions in this Agreement by formal approval of the jurisdiction's governing body.

City of Flagstaff

Authorized signatory:


Name: Gerald Nabours
Title: Mayor

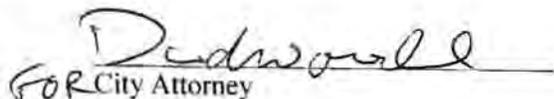
Attest:


City Clerk

Date of formal approval by governing body:

5/6/14

Approved as to Form:


FOR City Attorney

**Cooperative Greater Flagstaff Area
Fire Agencies All Risk Emergency
Intergovernmental Agreement**

Signature Page

IN WITNESS WHEREOF, the Parties each sign this Intergovernmental Agreement on a separate signature page. The signatories warrant that they have been duly authorized to bind the jurisdiction to the terms and conditions in this Agreement by formal approval of the jurisdiction's governing body.

Party:

*Arizona Department of Emergency
Military Affairs*

Authorized signatory:

Name:

Title:

[Signature]
Tippi Jacobsen
Procurement Manager

**Cooperative Greater Flagstaff Area
Fire Agencies All Risk Emergency
Intergovernmental Agreement**

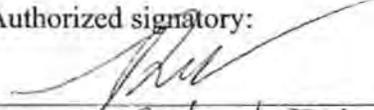
Signature Page

IN WITNESS WHEREOF, the Parties each sign this Intergovernmental Agreement on a separate signature page. The signatories warrant that they have been duly authorized to bind the jurisdiction to the terms and conditions in this Agreement by formal approval of the jurisdiction's governing body.

Party:

PINEWOOD FIRE DISTRICT

Authorized signatory:



Name: Richard Drinen
Title: Chairman, Board of Directors

Attest:


Name: E.L. FRIEDLUND
Title: ~~SENIOR~~ CLERK
BOARD OF DIRECTORS

Date of formal approval by governing body:

July 15, 2014

Attorney's Approval:

Name: _____
Title: _____

Cooperative Greater Flagstaff Area
Fire Agencies All Risk Emergency
Intergovernmental Agreement

Signature Page

IN WITNESS WHEREOF, the Parties each sign this Intergovernmental Agreement on a separate signature page. The signatories warrant that they have been duly authorized to bind the jurisdiction to the terms and conditions in this Agreement by formal approval of the jurisdiction's governing body.

Party:

Ponderosa Fire District

Authorized signatory:


Name: John Philpot
Title: Chairman of Board

Attest:


Name: Anthony Matthews
Title: Vice Chair

Date of formal approval by governing body:

7/17/14

Attorney's Approval:

Name: _____
Title: _____

**Cooperative Greater Flagstaff Area
Fire Agencies All Risk Emergency
Intergovernmental Agreement**

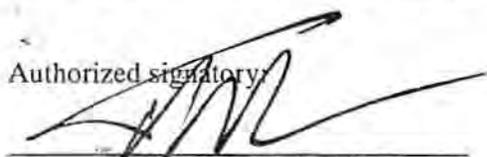
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Party:

SEDONA FIRE DISTRICT

Authorized signatory:



Name: TY MONTGOMERY
Title: FIRE BOARD CHAIRMAN

Attest:

Corrie Cooperman
Name: CORRIE COOPERMAN
Title: FIRE BOARD CLERK

Date of formal approval by governing body:

MAY 28, 2014

Attorney's Approval:

William R. Whittington
Name: WILLIAM R. WHITTINGTON
Title: ATTORNEY

**Cooperative Greater Flagstaff Area
Fire Agencies All Risk Emergency
Intergovernmental Agreement**

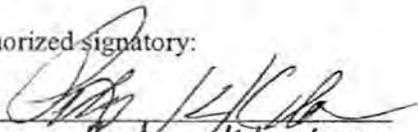
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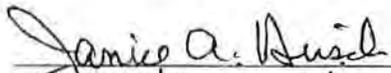
Party:

Highlands Fire District

Authorized signatory:


Name: Peter Kloeber
Title: Chairperson, Board of Directors
Highlands Fire District

Attest:


Name: Janice Hirsch
Title: CLERK

Date of formal approval by governing body:

May 20, 2014

Attorney's Approval:

Name: _____
Title: _____

**Cooperative Greater Flagstaff Area
Fire Agencies All Risk Emergency
Intergovernmental Agreement**

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Party: Mormon Lake Fire District

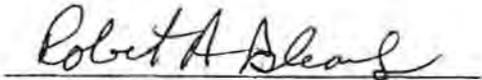
Authorized signatory:



Name: Glen Reagan

Title: Fire Chief

Attest:



Name: Robert Blean

Title: Fire Board President

Date of formal approval by governing body:

6/14/14

Attorney's Approval:

Name:

Title:

Cooperative Greater Flagstaff Area
Fire Agencies All Risk Emergency
Intergovernmental Agreement

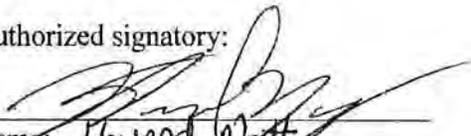
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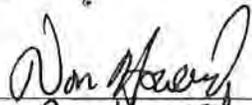
Party:

Summit Fire District

Authorized signatory:


Name: Howard Watt
Title: Board Chairperson

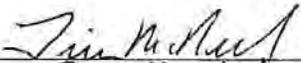
Attest:


Name: Don Howard
Title: Fire Chief

Date of formal approval by governing body:

April 15th, 2014

Attorney's Approval:


Name: Tim McNeel
Title: Deputy County Attorney

CN Contingency Plan, Attachment #9



State of Arizona Arizona Fire Chiefs Association Fire Service Mutual Aid Plan

**Jan Brewer
Governor**

**Revised
July 2011**

ARIZONA FIRE SERVICE MUTUAL AID PLAN

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Fire Service Mutual Aid Committee

Randy Karrer Golder Ranch Fire District Chairman	Dave Bunce Salt River Fire Department Vice Chairman
Jay Strebeck Phoenix Fire Department Maricopa County Representative	Mike Casson Cottonwood Fire Department Yavapai/Coconino County Representative
Louise Smith Prescott Regional Communications Director	Chuck Osterman Kingman Fire Department Mohave County Representative
Bob Barger Arizona State Fire Marshal	Matt Parks Arizona Division of Emergency Management
Dugger Hughes Northwest Fire District Pima County Representative	Dennis Light Yuma Fire Department Yuma/La Paz County Representative
Les Caid Rio Rico Fire Department Santa Cruz County Representative	David Geyer Arizona State Forestry Division
Dori Beck Phoenix Fire Communications Supervisor	Barry Scott Arizona Division of Emergency Management
Mike Todd Public Safety Interoperable Communications Office, GITA	Pat Hancock Snowflake Fire Department Navajo & Apache County Representative

Preamble

In the absence of or in support of a declaration of emergency, this Arizona Fire Service Mutual Aid Plan provides for the systematic mobilization, organization and operation of necessary fire and rescue resources within the State and its political sub-divisions in responding to and recovering from the effects of disasters.

Executive Order

EXECUTIVE ORDER 2003-21 Arizona Fire Service Mutual Aid Plan

WHEREAS, an effective emergency response system is dependent upon the efficient sharing of resources; and

WHEREAS, fire service agencies play a vital role in emergency and disaster preparedness, response, recovery and mitigation activities; and

WHEREAS, no single community has sufficient resources to respond to all emergencies and mutual aid agreements are an essential component of preparedness planning; and

WHEREAS, the Arizona Fire Chiefs Association (AFCA), Arizona State Land Department, Arizona Division of Emergency Management, and county emergency management agencies have developed the Arizona Fire Service Mutual Aid Plan to facilitate the sharing of statewide fire service resources; and

WHEREAS, the Arizona Fire Service Mutual Aid Plan provides for the systematic mobilization and operation of fire service agencies in mitigating the effects of civil, natural or technological disasters.

NOW, THEREFORE, I, Janet Napolitano, Governor of the State of Arizona, by virtue of the power vested in me by the Arizona Constitution and the laws of the State, do hereby order as follows:

1. All state agencies are directed to comply with and contribute to the implementation and continued development of the Fire Service Mutual Aid Plan.
2. Fire departments across Arizona are encouraged to adopt and participate in the Arizona Fire Service Mutual Aid Plan.
3. Arizona fire departments are also encouraged to use the Arizona Fire Service Mutual Aid Plan as a framework for developing detailed operational plans.

IN WITNESS WHEREOF, I have hereunto set my hand and caused to be affixed the Great Seal of the State of Arizona.


GOVERNOR

DONE at Lakeside, Arizona this 21st day of June in the Year Two Thousand and Three and of the Independence of the United States of America the Two Hundred and Twenty-Seventh.

ATTEST:


SECRETARY OF STATE



ARIZONA FIRE SERVICE MUTUAL AID PLAN

I. INTRODUCTION

The Arizona Fire Chiefs Association (AFCA), through cooperation with the Arizona Department of Fire, Building and Life Safety (ADFBL), Arizona Division of Emergency Management (ADEM), Arizona State Forestry Division (ASFD), the Arizona Fire District Association (AFDA), and the Professional Fire Fighters of Arizona (PFFA), developed the Fire Service Mutual Aid Plan to provide immediate response resources for all-hazard emergencies.

The Fire Service Mutual Aid Plan is the initial activation and mobilization plan prior to a declaration of emergency. This plan is also intended to complement the State of Arizona Emergency Response and Recovery Plan (SERRP). The SERRP is published in four (4) parts as follows:

- Basic Emergency Plan
- Emergency Support Functions (ESF)
- Incident Annexes
- Support Annexes

The above provides the planning basis and concepts for the development of the Fire Service Mutual Aid Plan. This Plan supports the concepts of the National Incident Management System (NIMS) and multi-hazard response planning. Arizona's fire service conducts emergency operations planning at four (4) levels: Local, Tribal, County and State.

Phoenix Fire Department Regional Dispatch Center (PFDRDC) will act as the conduit for resource requests and deployment documentation until the Incident City and/or County's EOC is brought up and operational. At that time all requests for resources will be funneled through the applicable EOC.

This plan is an 'OPT OUT' plan. Fire jurisdictions that do not wish to participate must send formal written notification to the Arizona Fire Chiefs Association Board of Directors.

A. Purpose of the Plan:

1. To provide statewide fire service resources to an incident once available automatic and mutual aid has been exhausted by the local authority.

2. To provide for the systematic mobilization, deployment and operation of necessary fire service resources within the State and its political subdivisions in responding to and recovering from, the effects of disasters and emergencies.
3. To provide comprehensive and compatible plans for the expedient mobilization and deployment of the closest, most appropriate, available fire service resources.
4. To provide a fire service inventory of all apparatus, equipment and specialty teams in Arizona. This inventory will be maintained by the State Fire Resource Coordinator (SFRC) and completed no later than 31 March annually.
5. To provide annual training and/or exercises between Plan participants.
6. To prepare for and respond to events of national significance when requested.

B. Planning Basis:

1. Local Resources:
No community has resources sufficient to cope with all potential emergencies. Local needs not met should be resolved through development of local area reciprocal aid agreements or compacts.
2. Pre-planning:
Fire service officials must pre-plan emergency operations to ensure efficient utilization of the closest, most appropriate, available resources.
3. Wildfire Response:
This Plan is intended to cover *all hazard* incidents throughout the State of Arizona however, it also recognizes the authority and responsibility of Local, State, Federal and Tribal agencies in suppression of wildfires occurring both within and outside of local fire protection boundaries. It further recognizes the authority and responsibility of federal fire agencies to manage wildfires on federally owned lands, and the need for a **coordinated** response to reduce the possibility of "double ordering".
4. Use of Local Mutual Aid and/or Automatic Aid:
Fire service officials must pre-plan emergency operations to ensure efficient utilization of available resources. Local mutual and automatic aid agreements should be utilized prior to activating the Fire Service Mutual Aid Plan.

5. The Arizona Mutual Aid Compact (AZMAC) among the Local, County, Tribal and State agencies signatory thereto:
 - a. Creates a formal structure for the provision of Mutual Aid.
 - b. Provides that no party shall be required to unreasonably deplete its own resources in furnishing mutual aid.
 - c. Provides that local jurisdiction shall maintain authority based on NIMS compliance.
 - d. Provides that reimbursement for services extended under the AZMAC shall be pursuant to the State law and policies.
6. The AFCA shall appoint one (1) Fire Resource Coordinator (CFRC) in each County to work in conjunction with the City and/or County Emergency Manager and SFRC to identify available resources for mobilization and deployment when activated by the Fire Service Mutual Aid Plan.
7. Emergency operations plans must be reviewed, tested and updated on a regular basis. Revised plans should reflect experiences gained through training and disaster operations, as well as, changes in resource availability and national standards.
8. Supporting documentation referenced in any part of this Plan may be revised and become effective upon acceptance by the AFCA Fire Mutual Aid Committee. Changes shall be distributed via the Arizona Fire Chiefs Association.
9. Nothing in this Plan shall be deemed to obligate any party to expend any monies that have not been appropriated or allocated for the purposes of the Plan, nor to expend monies in any fashion contrary to law.
10. Nothing in this Plan shall be deemed to require any party to take action in excess of authority conferred by statute, rule, charter, or ordinance, nor to do anything in violation of law.

II. REFERENCES

A. State Emergency Response and Recovery Plan (SERRP)

1. Arizona Revised Statutes Title 26, Chapter 2.
2. Arizona Revised Statutes Title 35, Chapter 1.

3. Arizona Revised Statutes Title 36-2208 through 36-2210.

4. Arizona Administrative Code Title 8, Chapter 2, Article 3.

B. Arizona Mutual Aid Compact (AZMAC).

C. Arizona Emergency Management Master Mutual Aid Agreement (April 1993).

D. Memorandum of Understanding (MOU) between ADEM and AFCA (March 2000).

III. DEFINITIONS AND GUIDING POLICIES

A. Mobilization and Deployment:

Facilitate the rendering of aid to persons or property in areas within the State stricken by an emergency. During an emergency, if the need arises for additional aid, such aid may be rendered in accordance with approved emergency plans.

B. Voluntary Deployment:

Deployment is voluntary. Jurisdictional procedures may quantify the number of resources a department may commit.

C. Arizona Mutual Aid Compact (AZMAC):

An agreement made and entered into by the State, Tribal, Counties and Local jurisdictions of Arizona. This agreement will facilitate implementation of the Fire Service Mutual Aid Plan.

D. Joint Powers (Wildfire) Agreement:

An agreement made and entered into by and between the State of Arizona, ASFD, acting as the agent of all cooperating agencies and the following Federal agencies: USDA Forest Service, USDI National Park Service, Bureau of Indian Affairs, Bureau of Land Management, and US Fish and Wildlife Service, for the purpose of coordinating the use of State and Federal fire service resources used at incidents.

E. Authority Having Jurisdiction:

Local fire service organizations, including municipal fire departments, tribal fire departments, fire districts, fire associations and/or private fire protection organizations providing fire services to the State or any political subdivision of the State to include County and Federal agencies.

F. Fire Service

Services provided by a Fire Department that are related to all hazard events include fire protection, pre-hospital EMS, mass casualty, Technical Rescue and Hazardous Materials. Arizona's fire service resources shall include, but not be limited to, personnel, apparatus, equipment, and/or facilities under the direct control of Local, County, Tribal, State, Federal, or private fire, rescue, or other agency or organization willing to provide those resources under the provisions of the Arizona Fire Service Mutual Aid Plan.

IV. Plan Maintenance:

The Arizona Fire Service Mutual Aid Plan will be reviewed and revised every two (2) years by the AFCA Fire Service Mutual Aid Committee.

Arizona Fire Chiefs Association Fire Service Mutual Aid Committee is responsible for the coordination of the Arizona Fire Service Mutual Aid Plan, including the development, revisions, distribution, training and exercising is the responsibility of the AFCA. The AFCA Fire Service Mutual Aid Committee will oversee this process. The Committee may be comprised of the following:

- Arizona Fire Chiefs Association Fire Service Mutual Aid Plan Coordinator (Chairperson)
- Arizona Fire Chiefs Association Assistant Fire Service Mutual Aid Plan Coordinator (Vice-Chairperson)
- Arizona Department of Fire, Building and Life Safety (two [2] representatives)
- Arizona Division of Emergency Management (one [1] representative)
- Arizona Division of the Forester (one [1] representative)
- Phoenix Fire Department Regional Dispatch Center (two [2] representatives)
- Fire Resource Coordinators (one [1] representative from each County)
- Arizona City and/or County Emergency Managers (one [1] representative from each County)
- Arizona Fire Chiefs Association
- Professional Fire Fighters of Arizona
- Volunteer Fire Fighters of Arizona
- Fire Districts
- Metro Department
- Rural Fire Departments
- Tribal Fire Department
- Communications Representatives

The Fire Service Mutual Aid Plan Coordinator may recommend to the AFCA President that Committee membership be altered for the continued success of the Plan. The AFCA President will approve or deny all recommendations.

Organizational Structure and Responsibilities:

Within each County a CFRC will be appointed by the AFCA Board as a vital logistical link from the area to form a management team consisting of at least the City and/or County Emergency Manager and the CFRC. Each team is responsible for tracking all fire service resources within the respective County and reporting those findings to the SFRC. Alternates for each position should be appointed in the event that the primary CFRC is unavailable.

V. POLICIES

The following policies form the basis of the Fire Service Mutual Aid Plan:

- A.** The basic tenets of emergency planning are self-help, automatic aid and/or mutual aid and specialty response systems.
- B.** The AFCA recognizes the SERRP and the AZMAC to be guiding policies for response to incidents that have exceeded automatic and mutual aid agreements.
- C.** The initial operational period is defined as the first 12 hours. Each agency shall determine its available resources and if any resources can be committed for an extended period of time if requested.
- D.** Contributing agencies should anticipate that their resources will be committed for a minimum of the first operational period.
- E.** Reimbursement will be in accordance with AZMAC. For Wildfire operational and reimbursement guidelines refer to ASFD agreements. Units must be ordered through Arizona State Forrester.

VI. ORGANIZATION

The fire service includes all public and private entities furnishing fire protection and related services within the State.

A. County Fire Resource Coordinator:

The CFRC(s) are identified by the AFCA from local fire service entities within the County. The appointee will serve on the Fire Service Mutual Aid Committee.

The CFRC is responsible for tracking fire service resources within the County and coordinating with the City and/or County Emergency Manager(s) and the SFRC on current incident status and escalation potential.

B. Local and/or County Emergency Manager:

Responsible for pre-incident emergency preparedness, multi-discipline response and recovery coordination and making recommendations for a Local or County Declaration of Emergency by the Local Council or County Board of Supervisors (or governing body).

C. State Fire Resource Coordinator:

The SFRC is appointed by the Arizona Fire Chiefs Association and is responsible for tracking and maintaining a database of fire service resources within the State. The SFRC coordinates with ADEM and the CFRC(s) on current incident status and escalation potential.

D. Fire Service Mutual Aid Plan Coordinator:

The Fire Service Mutual Aid Plan Coordinator is appointed by the AFCA to chair the Committee and facilitate the Arizona Fire Service Mutual Aid Plan.

E. Contributing State Agencies:

Department of Fire, Building and Life Safety
Arizona State Forestry Division
Arizona Division of Emergency Management
Other State agencies as defined by the SERRP

VII. RESPONSIBILITIES

A. Local Agency (Authority Having Jurisdiction):

1. Directs all actions toward mitigating and stabilizing emergencies to include: fire suppression, life safety, conservation of property and the environment as well as assisting other emergency services and in recovery.
2. Develops an effective all hazards emergency plan for use of fire resources under its control and ensures that said plan is integrated into the emergency plan of the appropriate County(s).
3. Makes maximum use of existing resources, facilities and services within the local community prior to requesting assistance from neighboring jurisdictions.

4. Conducts mutual aid and/or automatic aid training in accordance with established operational procedures on a regular basis.
5. During emergency operations, keeps the CFRC and City and/or County Emergency Manager informed on all matters.
6. During emergency operations, the agency receiving Fire Service Mutual Aid is responsible for the logistic support of all personnel and equipment received.
7. Prepares personnel and equipment inventories and forwards copies to the CRFC annually.
8. Maintains an up-to-date list for alerting fire service personnel in emergencies and a checklist of timely actions to be taken to put emergency operations plans into effect.
9. Establishes emergency communications capabilities with the CFRC.
10. Anticipates emergency needs for such items as emergency fire equipment, commonly used spare parts, expendable supplies and accessories, and ensures functional availability of these in locations convenient for ready use.
11. Maintains appropriate records, data, and other pertinent information of Fire Service Mutual Aid resources committed.

B. County Fire Resource Coordinator:

1. Acts as a liaison between requesting agency and local fire agencies within the County to fill resource requests until EOC is operational.
2. Resource requests beyond the means of the County Fire Resource Coordinator will be forwarded to PFDRDC for Fire Service Mutual Aid activation.
3. Establish and maintain working partnerships with respective City and/or County Emergency Manager and SFRC.
4. Maintains an active inventory and roster by agency within the respective County in an effort to rapidly identify resources for deployment. Reports fire service resources to the SFRC annually.
5. Ensure communications among the appropriate agencies during an incident.

6. Has no operational authority over either the incident or responding resources.
7. Maintains 24/7/365 CFRC coverage. Ensures sufficient CFRC trained alternate coverage (recommend at least two [2] alternates).

C. State Fire Resource Coordinator:

1. Acts as a liaison between the State of Arizona, CFRC of the incident, PFDRDC, and those Counties and/or jurisdictions from which resources may be needed.
2. Maintains a current fire service resource database in an effort to rapidly identify resources within the State.
3. Operates in a support capacity with no operational authority over either the incident or committed resources.
4. Maintains 24/7/365 SFRC coverage. Ensures sufficient SFRC trained alternate coverage (recommend at least two [2] alternates).

D. Arizona Fire Chiefs Association:

The President of the AFCA will establish and maintain a Fire Service Mutual Aid Committee to serve in an oversight and advisory capacity on all matters relating to the Arizona Fire Service Mutual Aid Plan:

1. Coordinates Fire Service Mutual Aid Plan updates with the AFDA, PFFA, VFFA, State Fire Marshal, and local Fire Chiefs.
2. At the request of the Director of ADEM, the President of the AFCA will appoint a Fire Service Representative to the State Emergency Operations Center.
3. Develops and provides training programs and materials for effective application and utilization of the Arizona Fire Service Mutual Aid Plan.

E. Arizona State Fire Marshal:

Responsible to ensure the Governor's Office is notified of conditions in each geographic and organizational area of the State and the occurrence or imminent threat of disaster.

F. Phoenix Fire Department Regional Dispatch Center:

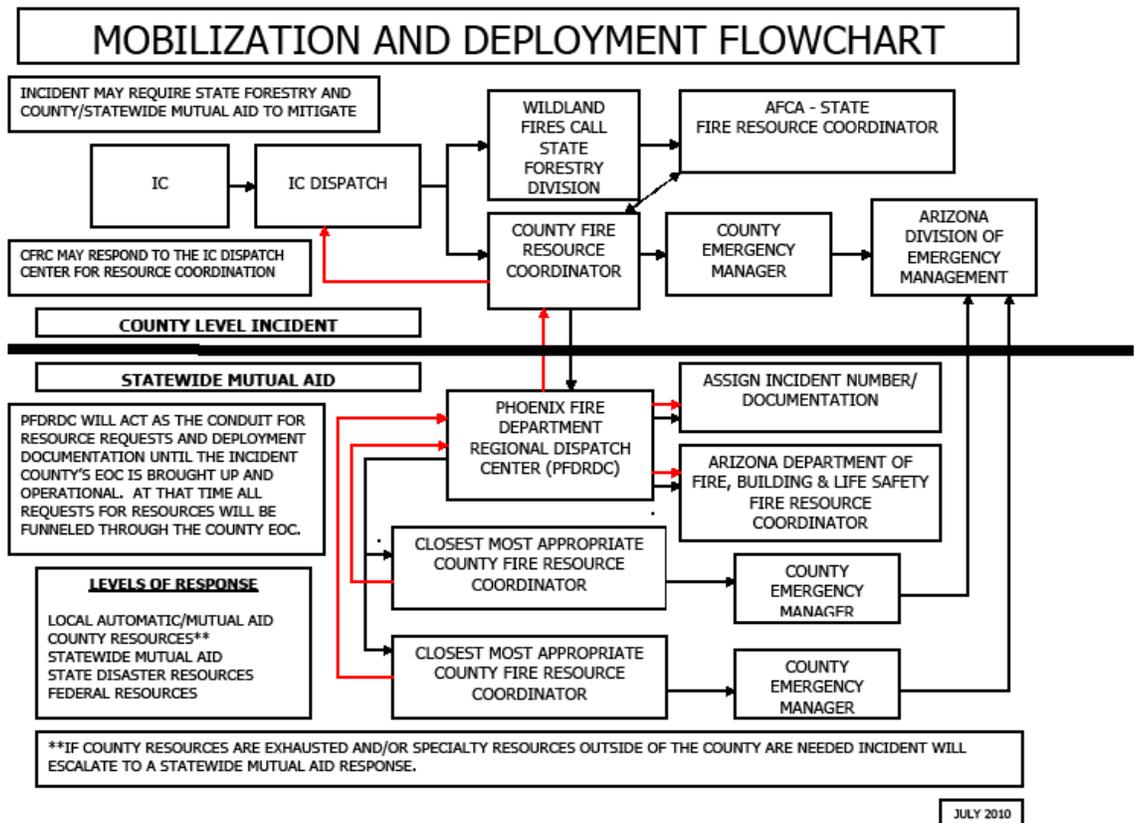
PFDRDC will become the one-point of contact to initiate the Arizona Fire Service Mutual Aid Plan as it relates to All Hazard incidents except Wildfires. Wildfire calls will go directly to the ASFD. In the event PFDRDC receives a Wildfire call, the calling jurisdiction/party will be transferred to the ASFD.

PFDRDC will be responsible to:

- Assign an incident number and append applicable documentation into the incident history
- Courtesy notification to the SFRC
- Contact the closest most appropriate CFRC(s) as necessary to obtain requested resources
- Communicate with the affected CFRC to advise of responding resource status

PFDRDC will act as the conduit for resource requests and deployment documentation until the Incident City and/or County's EOC is brought up and operational. At that time all requests for resources will be funneled through the applicable EOC.

VIII. MOBILIZATION AND DEPLOYMENT FLOWCHART



IX. PROCEDURES – MOBILIZATION AND DEPLOYMENT

Incident Command will notify their dispatch center when they are working an All Hazard incident requiring additional resources or a Wildfire.

If the incident is a Wildfire, the dispatch center will contact the ASFD as well as their CFRC. On working Wildfires the ASFD has the option to notify the SFRC. The CFRC will notify their City and/or County Emergency Manager for notification purposes and will, in most cases, be in contact with the SFRC.

If the incident is an All Hazard incident the dispatch center will contact their CFRC who will be responsible for coordinating resource requests within the County to affectively mitigate the incident, as well as, notification to their City and/or County Emergency Manager and the SFRC. If the incident is larger than available resources within the County or specialty resources are needed, activation of the Arizona Fire Service Mutual Aid Plan is required. Activation of the Arizona Fire Service Mutual Aid Plan is made by the CFRC to PFDRDC.

PFDRDC will assign an incident number and append applicable documentation into the incident history for tracking purposes. PFDRDC will contact the closest most appropriate CFRC(s) as necessary to obtain the requested resources. PFDRDC will make a courtesy notification to the SFRC and will communicate with the affected CFRC to advise of responding resource status.

PFDRDC will act as the conduit for resource requests and deployment documentation until the Incident City and/or County's EOC is brought up and operational. At that time all requests for resources will be funneled through the applicable EOC.

A. Training:

- 1.** The training of regular emergency personnel in specialized skills and techniques is essential to successfully deploy assigned emergency responsibilities to handle All Hazard emergencies. Fire service officials should identify key personnel with emergency assignments and ensure the adequacy of their training.
- 2.** The State of Arizona Fire Service has adopted the National Incident Management System (NIMS). All fire service agencies shall maintain operational familiarity with this system.
- 3.** CFRC's in coordination with their City and/or County Emergency Managers should develop and implement training for a County deployment of the Arizona Fire Service Mutual Aid system annually.

B. Planning:

A well-developed, decision-making process can compliment all phases of mutual aid utilization. Failure to plan assures failure. Effective emergency action is dependent upon comprehensive planning. All mutual aid planning must consider the logistical and financial obligations incurred in either providing or receiving mutual aid assistance (eg: fuel, feeding and overtime for assigned personnel). Emergency situations evolve through a series of stages: Preparedness, Response and Recovery. The SERRP will serve as the Plans guiding document.

1. Preparedness:

When possible, jurisdictions will put pre-emergency plans into operation. Such plans include alerting key personnel, ensuring readiness of essential resources, and preparing to move resources to the threatened area when required. If a request for mutual aid resources is anticipated, the next higher level of jurisdiction must be advised, including all available information relative to the expected threat, its location, imminence, potential severity, and other associated problems.

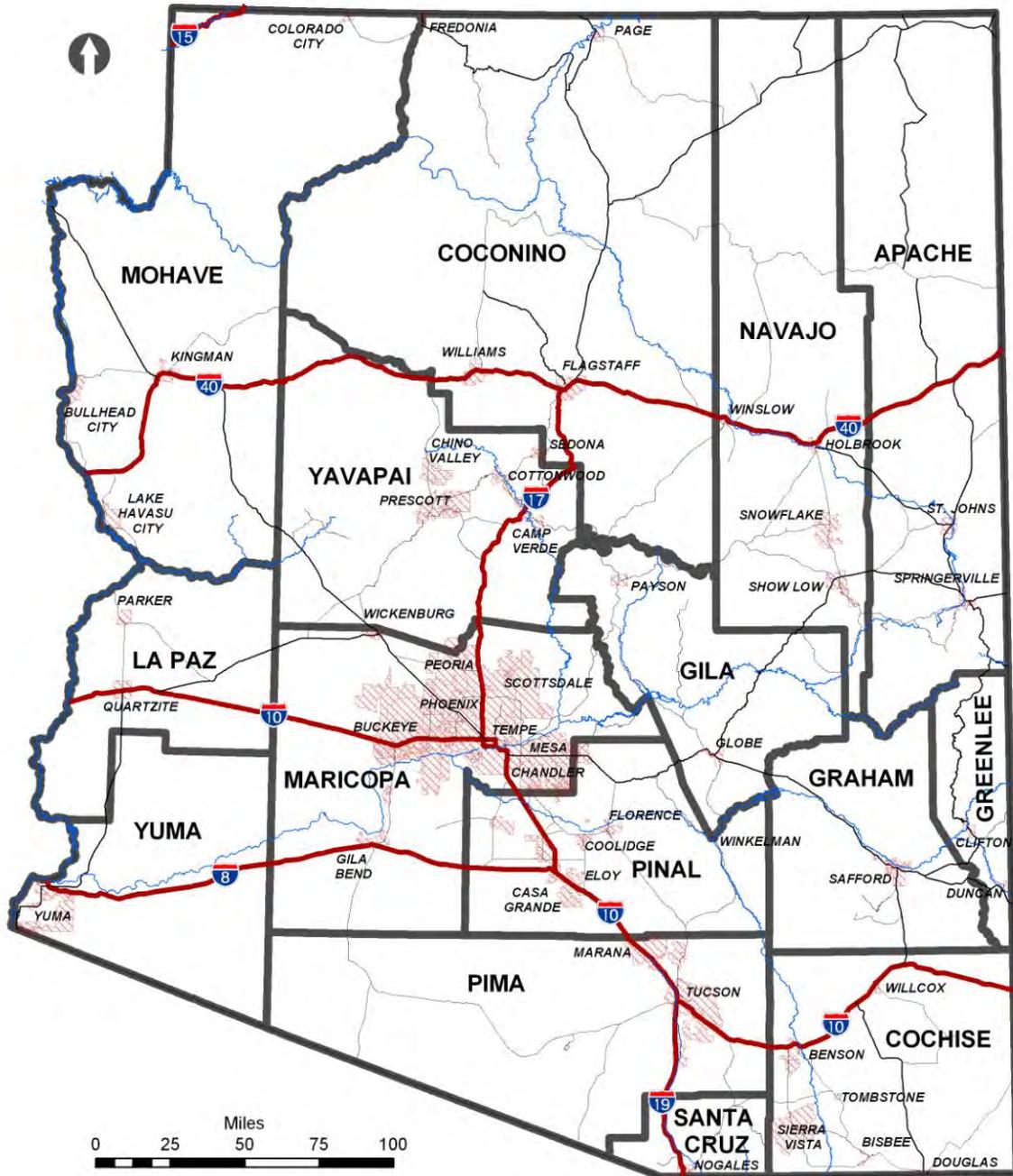
2. Response:

The nature of emergency operations is dependent upon the characteristics and requirements of the situation. This phase may require the use of Local, Operational Area, Regional, and State resources. The magnitude and severity of fire service emergencies may develop rapidly and without warning. Equally rapid pre-planned response on the part of the fire service is required.

3. Recovery:

Planning for this phase should include re-establishment of essential services, safety inspections and restoration of infrastructure.

X. STATE MAP:



XI. SUPPORTING DOCUMENTS:

Field Operations Guide (FOG) – in pocket size format

National Response Framework

Homeland Security Presidential Directive #5 and #8

Emergency Management Assistance Compact (EMAC)

Intrastate Mutual Aid System (IMAS)

County Fire Resource Coordinator List

County/City Emergency Manger List

Documents to be added

Appendix H
Reference Documents

Appendix H – Reference Documents

Reference documents were provided on CDs. Please request them from ADEQ in electronic form or the documents can be found in the complete administrative record at the NAU Cline Library, Special Collections and Archives, or at the ADEQ Records Management Center under the Waste programs Division Federal Projects Unit or Hazardous Waste Management Unit.

Appendix I
Groundwater Monitoring Plan

Post-closure Permit Area Groundwater Monitoring Plan

Prepared for
Army National Guard Directorate
Environmental Programs Division
Camp Navajo
Bellemont, Arizona
AZ7213820635

October 31, 2016

Prepared by
CH2MHILL®
1501 West Fountainhead Parkway
Suite 401
Tempe, AZ 85282

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- I.6 Completed Work Plans and Reports

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Acronyms and Abbreviations

µg/L	microgram(s) per liter
ADWR	Arizona Department of Water Resources
ADVS	Arizona Department of Veterans Services
ARNG	Army National Guard Directorate
AWQS	Aquifer Water Quality Standards
AZ ARNG	Arizona Army National Guard
bgs	below ground surface
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	<i>Code of Federal Regulations</i>
CO ₃	carbonate
COC	contaminant of concern
COPC	contaminant of potential concern
DNT	dinitrotoluene
HCO ₃	bicarbonate
HMX	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine
ICM	Improved Conventional Munitions
LTM	long-term management
MC	munitions constituent
MEC	munitions and explosives of concern
mg/L	milligram(s) per liter
MRWA	Munitions Response Work Area
NAAD	Navajo Army Depot
OB	open burn
OC	organochlorine
OD	open detonation
PAH	polynuclear aromatic hydrocarbon
PCB	polychlorinated biphenyl
PCDD	polychlorinated dibenzodioxins
PCDF	polychlorinated dibenzofurans
PCP	Post-closure Plan
pg/L	picogram(s) per liter
PVC	polyvinyl chloride

RCRA	Resource Conservation and Recovery Act
RDX	hexahydro-1,3,5-trinitro-1,3,5-triazine
SVOC	semivolatile organic compound
TAL	Target Analyte List
TEF	toxicity equivalent factor
TEQ	toxicity equivalent
TNT	2,4,6-trinitrotoluene
USEPA	U.S. Environmental Protection Agency
USGS	U.S. Geological Survey
VOC	volatile organic compound
VPZ	vadose zone piezometer
VZMW	vadose zone monitoring well

Introduction

This Groundwater Monitoring Plan (GWMP) summarizes the procedures for selecting and monitoring vadose zone and regional aquifer groundwater wells to be included in Resource Conservation and Recovery Act (RCRA) post-closure care groundwater monitoring for the Post-closure Permit Area at Camp Navajo in Belmont, Arizona. It is anticipated that RCRA post-closure care groundwater monitoring in general, as well as monitoring at select wells, will satisfy Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Long-term Management (LTM) objectives. The CERCLA process was used to close open burn/open detonation (OB/OD) units that operated under RCRA interim status in the Former OB/OD Area at Camp Navajo until 1994. Contamination remains in a portion of the Former OB/OD Area, which is referred to as the Post-closure Permit Area.

The Post-closure Permit Area is located within a larger area that has been designated as Munitions Response Work Area (MRWA) 02. The MRWA 02 designation was developed to represent an informal operational unit to address the explosive hazard associated with munitions disposed of at the Navajo Army Depot (NAAD) 02 Open Detonation Area, a former RCRA OB/OD unit. MRWA 02 is divided into MRWA 02-01, MRWA 02-02, and MRWA 02-03.

The Post-closure Permit Area consists of land in the 694-acre Improved Conventional Munitions (ICM) Waiver Area (MRWA 02-01) and in a 2-acre portion of the Former White Phosphorus Detonation and Burn Area (MRWA 02-03). The former operational footprint of NAAD 02 contains the remains of more than 200 open pits and linear excavations that were used for the destruction of military munitions. Munitions and explosives of concern (MEC) and munitions constituents (MC) were removed in portions of MRWA 02-01 during surface and subsurface characterization, but no site-wide removal action was performed, and MEC is known or suspected to remain in place. A surface MEC removal action was completed at MRWA 02-03, but MEC is known or suspected to remain in the subsurface.

1.1 Document Organization

This GWMP has been developed in accordance with Arizona Administrative Code R-18-8 264.A and 40 CFR 264 Subpart F. Alternative approaches to selected requirements specified in Title 40 *Code of Federal Regulations* (CFR) Part 264, Subpart F are included in this Plan as described in Section 1.2. This document includes the following sections:

- Section 1, Introduction – Includes a brief facility description and alternative approach to groundwater monitoring
- Section 2, Hydrogeologic Conditions – Describes hydrogeologic conditions in and surrounding the Post-closure Permit Area
- Section 3, Interim Status Period Groundwater Monitoring Data – Summarizes vadose zone and groundwater data collected during CERCLA closure activities during the interim status period
- Section 4, Post-closure Care Monitoring – Describes the approach for post-closure monitoring
- Section 5, Waste Management
- Section 6, References – Includes the references cited in this document

The report also contains the following attachments:

- Attachment I.1, Well Construction Information
- Attachment I.2, Vadose Zone Monitoring Plan

- Attachment I.3, Regional Aquifer Monitoring Plan
- Attachment I.4, Field Sampling Plan
- Attachment I.5, Statistical Analysis Procedures
- Attachment I.6, Completed Work Plans and Reports

1.2 Alternative Approach to Groundwater Monitoring

The proposed approach for groundwater monitoring presented in this plan includes alternative methods to meet the requirements of Arizona Administrative Code R-18-8 264.A (40 CFR 270.14(c) and 40 CFR 264.97 and 99). Because of the depth of groundwater at the Post-closure Permit Area (estimated approximately 1,600 feet below ground surface [bgs]) and the complexity of the hydrogeologic setting, direct monitoring for MC in groundwater beneath and/or immediately downgradient of the Post-closure Permit Area would not effectively meet the intent of the requirements of 40 CFR 264.97 for post-closure monitoring. The fractured dual-porosity bedrock and the depth of the aquifer, combined with the large distance between the source area and potential exposure points, make a traditional groundwater monitoring approach impractical and the resulting data potentially unreliable. As a result, the ARNG is proposing alternate means of compliance rather than a strict interpretation of groundwater monitoring requirements in 40 CFR Subpart F. The following approach has been developed to comply with the requirements outlined in correspondence from former ADEQ Waste Programs Division Director Amanda Stone (ADEQ, 2008) in response to a proposal with cases provided in the May 30, 2008 letter from Ms. Kimberly Harriz (ARNG, 2008) to support Camp Navajo's request for an alternate groundwater monitoring program. Alternative monitoring methods include:

- Using hydrogeologic and sampling data from previous sampling events along with infiltration modeling to identify the need for compliance monitoring instead of using actual detections in the groundwater at the point of compliance.
- Using vadose zone wells to detect releases of contaminants of concern (COCs) and contaminants of potential concern (COPCs) from the Post-closure Permit Area. Vadose zone wells are shown on Figure GWMP-1.
- Using the closest existing regional aquifer well near the Post-closure Permit Area as a “sentry” well to evaluate whether COCs and/or COPCs are present in the groundwater.
- Conducting compliance monitoring at selected regional aquifer wells within and in the vicinity of Camp Navajo (Figure GWMP-2). Such monitoring will evaluate the concentrations of COCs and COPCs originating from the Post-Closure Permit Area.
- Conducting groundwater monitoring at AWI-series shallow groundwater wells, as shown on Figure GWMP-1.

The GWMP includes monitoring for new releases from the Post-closure Permit Area (vadose zone monitoring) and monitoring local drinking water wells (regional aquifer monitoring). This plan includes corrective action procedures to be taken if vadose zone monitoring indicates a statistically significant new release. It also includes corrective action procedures to be taken if regional aquifer monitoring indicates a detection of explosives or perchlorate, an exceedance of a regulatory or health-based standard, or a statistically significant change in COC or COPC concentrations.

Additionally, the uppermost aquifer is located approximately 1,600 feet below the Post-closure Permit Area, reducing the potential for releases from the Post-closure Permit Area to impact the groundwater. Also, because of the hydrogeologic conditions, as presented in Sections 2.1 and 2.2, regional aquifer wells installed at a point of compliance located at the Post-closure Permit Area boundary may not provide accurate indications of releases from the Post-closure Permit Area. Human health and the environment will

be protected using the alternative approach in lieu of installing groundwater monitoring wells upgradient and downgradient of the Post-closure Permit Area. Therefore, an alternative means of compliance rather than a strict interpretation of 40 CFR Subpart F is being proposed.

Results of previous sampling of vadose zone water has shown that intermittent transport of several MC compounds occurs during infiltration of precipitation or snow melt. This occurs when enough precipitation or snow melt enters the vadose zone to induce vertical (assumed) transport. The manner and path of the transport, as well as the estimated duration of the vadose water transport to reach the uppermost part of the aquifer is not known. Site operations took place from early 1940s through 1994 and peak site operations are believed to have occurred 30 to 50 years ago. Therefore, the use of available groundwater wells at Camp Navajo and groundwater wells surrounding Camp Navajo, both of which are in an estimated downgradient direction, provide a more reliable source of monitoring data and better areal coverage to monitor potential releases from the Post-closure Permit Area. Camp Navajo Well CN-1, which was not sampled as part of site closure activities will be rehabilitated and used as the “sentry well”. This well is screened at the top of the regional aquifer. Based on the current groundwater flow in the regional aquifer, Well CN-1 would be the first location to encounter impacted groundwater from the Post-closure Permit Area.

Evidence of a statistically significant new release of COCs or COPCs in vadose zone wells or AWI-Series wells, or identification of COCs or COPCs associated with the permitted area in regional aquifer wells, will result in the re-evaluation of the groundwater monitoring network and may result in increased sampling of existing wells, installation of groundwater wells to determine the impacts from the permitted area and/or other corrective action activities.

Hydrogeologic Conditions

2.1 Regional Hydrogeologic Conditions

Camp Navajo is located along the southern edge of the Colorado Plateau and within the southwest corner of the central San Francisco volcanic field. The geology consists of a thin veneer of Tertiary and Quaternary volcanic vent and flow deposits overlying a thick sequence of sub-horizontal Paleozoic sedimentary rock units. The sedimentary sequence present in this region is similar to that of the Grand Canyon with several units being thinner or absent. Sandstone is the dominant rock type, with abundant limestone and dolomite present as well, with smaller amounts of siltstone and mudstone (Thorstenson and Beard, 1998). Altitudes of the region range from 12,633 feet at the top of San Francisco Mountain to about 5,450 feet in Oak Creek Canyon. The average altitude of the region is about 7,200 feet.

Two large, regional groundwater flow systems occur in the southern portion of the Colorado Plateau and adjacent areas: the Coconino aquifer (C-aquifer) and the Redwall-Muav aquifer (R-aquifer). The C-aquifer is a water-table aquifer for most of its occurrence with depths to water that range from a few hundred feet to more than 1,500 feet. In the western part of the Coconino Plateau study area, the C-aquifer is dry except for small localized perched water-bearing zones decoupled from the C-aquifer to the east. The R-aquifer underlies the C-aquifer and ranges from at least 3,000 feet bgs in the western part of the Colorado Plateau to more than 3,200 feet bgs in the eastern part of the study area. The R-aquifer is a confined aquifer for most of its occurrence with hydraulic heads of several hundred to more than 500 feet above the top of the aquifer in the western part of the study area and more than 2,000 feet above the top of the aquifer in the eastern part of the study area near Flagstaff. In the eastern and northeast parts of the area, the C-aquifer and the R-aquifer are in partial hydraulic connection through faults and other fractures (Bills et al., 2005).

Recharge to the C-aquifer occurs from direct infiltration of precipitation and infiltration of runoff mainly at higher altitudes along the Mogollon Rim and in the San Francisco Mountain area where the Kaibab Formation is exposed at land surface. A significant part of the recharge process is the interception of runoff by open fractures and solution channels developed on the Kaibab Formation surface (Bills, et al., 2007; Wilkinson, 2000). The aquifer also is recharged by downward leakage of groundwater from overlying perched zones and through the volcanic rocks of the San Francisco Volcanic Field (Bills, et al., 2007).

Most of the groundwater discharge from the C-aquifer occurs to the north, as spring flow in the Grand Canyon, downward leakage to the R-aquifer, discharge from wells, and evapotranspiration where the water table is at or near land surface. The aquifer also discharges to springs along the Colorado and Little Colorado Rivers and along the Mogollon Rim in Sycamore Creek, Oak Creek, Wet Beaver Creek, and West Clear Creek (south of Wet Beaver Creek outside the study area), as well as directly to the Verde River north of Clarkdale. A review of the Museum of Northern Arizona's Spring Stewardship Institute online inventory indicates that no C-aquifer springs are present on Camp Navajo or in Sycamore Canyon. The perennial springs in Sycamore Canyon discharge from the R-aquifer.

The regional aquifer characteristics are considered heterogeneous, anisotropic, and unconfined (Bills, et al., 2005). Movement of water in the Kaibab is thought to be a complex combination of vertical and lateral flow heavily influenced by structural voids rather than direct percolation through the interstitial pores of the rock. The primary component of water flow in the Kaibab Formation is inferred to be vertical as infiltration in unsaturated conditions. Lateral flow of water in saturated conditions in the Kaibab Formation is interpreted to be restricted to distances of no more than several hundred feet near faulted strata. The high potential of water for concentration and flow in conjunction with faults demonstrated in both shallow and regional aquifers for the Flagstaff area (Bills, et al., 2000) is comparable to conditions previously observed at the AWI-series wells that intersect faults northeast of the Post-closure Permit Area (Figure GWMP-3).

Only very limited aquifer data were available for the western portion of the regional aquifer until deep wells were drilled in the Camp Navajo, Bellemont, Garland Prairie, and Williams areas within the past 10 years. Recent studies by the U.S. Geological Survey (USGS) using the Williams and Garland Prairie data suggest that the C-aquifer dries out between Camp Navajo and Garland Prairie and the R-aquifer becomes unconfined between Garland Prairie and Williams (Bills, et al., 2005). The R-aquifer is not used as a source of groundwater in the Camp Navajo and Bellemont area.

2.2 Local Hydrogeologic Conditions

MRWA 02 consists of open, rolling, grassy prairies with several small forested areas and highlands. Elevations range from about 7,044 feet along a tributary to Volunteer Wash in the northeast corner of the site; up to 7,152 feet on the ridge that traverses the southern boundary of the site. The prevailing slope is towards the northeast, which is consistent with the regional dip of the Colorado Plateau stratigraphy. The historical OD activities have created more than 200 identifiable pits, craters, and trenches. In addition, the detonations likely pulverized much of the surface material and underlying limestone bedrock, causing local topographic changes (Brown and Caldwell, 2007).

There is no persistent surface water at the Post-closure Permit Area. Ephemeral surface water channels are scattered across the area, and surface water drains to Volunteer Wash (Figure GWMP-3). The two largest channels are located within the canyon of MRWA 02-03 and the deeply incised canyon of Volunteer Wash. MRWA 02-01, including all of NAAD 02, is traversed by four drainages that coalesce at a former stock tank near the northeast boundary. When the stock tank is full, water overflows the dam and flows northeastward through the canyon of MRWA 02-03 before entering Volunteer Wash. Two of the drainages cross the west-central portion of MRWA 02-01, and a third drainage that trends northeast nearly bisects MRWA 02-01. The fourth drainage, which trends north-south, is located in the eastern part of MRWA 02-01.

Some of the natural drainage has been disrupted by the historical OD activities. In these areas, surface water tends to accumulate in OD pits following periods of heavy rain and snowmelt rather than flowing toward the drainages (Figure PCP-3 in the Post-Closure Plan) and contribute significantly to infiltration. With the exception of the Stock Tank, which is at the downgradient edge of NAAD 02 in a major drainage area and upgradient of NAAD 03, no other catchments, such as Railroad Tank (located outside of the southwest boundary of the Post-closure Permit Area), are located within the watershed of NAAD 02 (Brown and Caldwell, 2007).

Volunteer Wash is the surface water drainage for a large watershed extending to Humphrey's Peak at an elevation of 12,600 feet and includes the majority of Camp Navajo. It nearly bisects Camp Navajo north to south and forms a portion of the eastern boundary of the Post-closure Permit Area. Volunteer Wash exits at the southern boundary of Camp Navajo and eventually intersects Sycamore Canyon.

The Post-closure Permit Area is underlain by the Kaibab Formation, except for small areas of Tertiary and Quaternary volcanic rocks exposed in the northwestern corner and east of Volunteer Wash (Thorstenson and Beard, 1998). The Permian Kaibab Formation consists of the upper Harrisburg Member and the lower Fossil Mountain Member. The Harrisburg Member is an incompetent, gypsiferous, silty limestone that forms low hills and swales in the Post-closure Permit Area. The Harrisburg Member extends west to the Grand Canyon but is not present east of Camp Navajo. The Fossil Mountain Member is a competent sandy limestone that is exposed along Volunteer Wash and the canyon of MRWA 02-03. The Fossil Mountain Member is a resistant unit displaying joints, dissolution features, and irregular bedding planes in the canyon walls, but these features are not evident in the Harrisburg Member. The Kaibab Formation is underlain by an estimated 3,000 feet of sedimentary rocks consisting of, in descending order, the Permian Toroweap Formation, Coconino Sandstone, and Schnebly Hill Formation, the Pennsylvanian-Permian Supai Group, the Mississippian Redwall Limestone, the Devonian Martin Formation, and the Cambrian Tapeats Sandstone, underlain by Precambrian granite and quartzite.

The water table of the regional aquifer (C-aquifer) at Camp Navajo and Bellemont is located at a depth of approximately 1,600 feet bgs in the Schnebly Hill Formation and the upper portions of the Supai Group (Bills, et al., 2000, 2005). The Coconino Sandstone and Schnebly Hill Formation generally have a higher sandstone content and porosity than the underlying units of the Supai Group and are the major producing formations in the region. However, the Coconino Sandstone is above the water table in the Camp Navajo vicinity, and portions of the Schnebly Hill Formation contain mudstone and limestone at discrete stratigraphic intervals. The Supai Group consists of fine-grained sandstone, siltstone, mudstone, dolomite, and limestone. The units of the Supai Group can be distinguished in many exposures throughout the region, but their distinction is problematic in boring logs because of their similar lithologies.

At Camp Navajo, the C-aquifer is differentiated from the R-aquifer by strata in the Supai Group that significantly retard water infiltration and constitute a confining layer over the R-aquifer (Bills, et al., 2000).

Perched water-bearing zones have been encountered in the northern Camp Navajo and Bellemont areas in fractured volcanic rocks. Production from springs and wells associated with the volcanic rocks is generally small and highly variable, indicating a limited extent and a dependence on seasonal precipitation. Northeast of Camp Navajo, production from one residential well screened across voids in the Kaibab Formation is limited to a few gallons per day. Boring logs for the regional aquifer wells in the northern Camp Navajo and Bellemont areas indicate that the perched water-bearing zones are more than 1,000 feet above the C-aquifer.

No springs or laterally extensive perched water-bearing zones have been identified in the Post-closure Permit Area. Multiple borings were drilled in the Post-closure Permit Area during previous investigations, including numerous soil borings to depths of up to 44 feet. Bedrock borings were advanced to 50 feet (94-10, 94-11), 150 feet (94-06, 94-07, 94-08), and 311 feet (ND11 A2CH-1). In 2006 two exploration borings (EXB-1 and EXB-2) were drilled in the area between well AWI-001 and the NAAD 02 OD pits to nominal depths of 500 feet to determine if the water-bearing intervals in the Kaibab Formation recorded in well AWI-001 (350-foot-deep well) represented a laterally continuous shallow water-bearing interval. All borings were dry, leading to the conclusion that the C-aquifer is the uppermost aquifer in the Post-closure Permit Area (Brown and Caldwell, 2008).

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SECTION 3

Interim Status Period Groundwater Monitoring Data (40 CFR 270.14.14(c)(1), 265.90)

Because the former treatment area (Post-closure Permit Area) was not a surface impoundment, landfill or land treatment facility, the requirement for interim status groundwater monitoring, including the requirements of 40 CFR 265.92 through 265.94, is not applicable as indicated in 40 CFR 265.90(a). However, as part of closure activities for the former treatment areas, vadose zone and groundwater monitoring was performed during the interim status period. Therefore, available vadose zone and groundwater monitoring information collected during the interim status period is being included in this application.

3.1 Topographic Map (40 CFR 270.14(b))

Topographic maps showing the locations of vadose zone wells and groundwater wells monitored during the interim status period are shown on Figures GWMP-1 and GWMP-02.

3.2 Vadose Zone Monitoring

Vadose zone monitoring was conducted during CERCLA closure activities for the area that now consists of the Post-closure Permit Area. Because of the depth of groundwater in the area and the complexity of the hydrogeologic setting, vadose zone monitoring was identified as the optimum method to evaluate potential releases to the subsurface from the waste left in place. This section summarizes the vadose zone monitoring that was performed during the interim status period.

3.2.1 Design and Construction of Interim Status Vadose Zone Monitoring Wells

Vadose Zone Monitoring Wells. Twenty vadose zone monitoring wells (VZMWs) were installed throughout MRWA 02-01 (19 wells) and MRWA 02-03 (1 well) in November 2008. The VZMWs were installed at locations corresponding with areas of greatest estimated MEC density and topographic low areas to target early detection monitoring of potential MC releases within the shallow alluvium of the vadose zone (Figure GWMP-1). Data loggers were installed in each well to monitor vadose zone infiltration events. A vadose zone monitoring program was conducted from 2009 to 2010 to correspond with periods of precipitation and snowmelt. Sampling was conducted again in the spring of 2014, and spring and late summer (August) of 2015.

The 20 VZMWs range in depth from 10 to 26 feet bgs and are constructed to screen the interface between weathered and competent bedrock. Well location and construction details for the VZMWs are summarized in Table GWMP-1. The locations of the VZMWs are shown on Figure GWMP-1. All VZMWs are constructed of 4-inch-diameter polyvinyl chloride (PVC) casing with either 2-foot or 2.5-foot-long screen, plus a 2 to 2.5-foot blank PVC sump. Because the VZMWs capture intermittent water percolating through the vadose zone, the wells were interpreted to be geotechnical borings and provided one Arizona Department of Water Resources (ADWR) identification number (55-909981). VZMW construction diagrams are provided in Attachment I.1.

Vadose Zone Piezometers. In November 2013, 15 temporary vadose zone piezometers (VPZs) were installed at MRWA 02-01 and MRWA 02-03 to address the possibility of lateral flow, better assess the volume of water traveling through the vadose zone, and support future vadose zone monitoring (Figure GWMP-1). The temporary piezometers range in depth from 7 to 40 feet bgs and are constructed to screen the interface between weathered and competent bedrock. Well location and construction details for the VPZs are summarized in Table GWMP-2. The locations of the VPZs are shown on Figure GWMP-1. The VPZs are constructed of 2-inch-diameter PVC casing with 5-foot or 10-foot-long screens (piezometer VPZ-10 has a

screen length of 15 feet), with no PVC sumps. Because the piezometers are considered temporary features that do not intersect groundwater, no ADWR identification number was assigned.

Shallow Monitoring Wells. Monitoring wells 1901, 1902, and 1903 were installed in 1980 into surficial material to a maximum depth of approximately 30 feet, and were typically dry during follow-on monitoring events. Monitoring wells AWI-001, AWI-002, and AWI-003 were installed in 1997 into bedrock in proximity to known faults at depths ranging from 162 to 353 feet bgs. Well construction and water level information for the shallow groundwater wells is summarized in Table GWMP-3. All wells were constructed of PVC and ranged in depth from 29.48 to 353.5 feet bgs, as summarized in Table GWMP-3. Well construction diagrams for the AWI-series wells are provided in Attachment I.1.

Between August 2004 and July 2006, a shallow well monitoring program was implemented at shallow-depth monitoring wells (AWI-001, AWI-002, and AWI-003, 1901, 1902, and 1903 shown on Figure GWMP-1), located within and near the Post-closure Permit Area, and at select regional aquifer drinking water wells.

The 1900-series wells were initially dry in the 1980s. Water was detected in well 1901 in 1994, 1997, 2004, and 2005, when water was also noted in Volunteer Wash next to the well. Water was detected in wells AWI-001, AWI-002, and AWI-003 in 1997 and 2004 through 2006, but was only detected consistently in well AWI-001. The water detected in all of these wells was attributed to infiltration through the vadose zone and was not considered to be representative of an aquifer. Wells 1901, 1902, and 1903 were abandoned in May 2006. Wells AWI-001, AWI-002, and AWI-003 are located outside the Post-closure Permit Area.

3.2.2 Summary of Vadose Zone Monitoring Data Obtained During Interim Status Period

This section summarizes the vadose zone and groundwater monitoring conducted during the interim status period. Vadose zone monitoring from 2009 to 2010 and from 2014 to 2015 was conducted in accordance with the following work plan and addenda:

- *Vadose Zone Monitoring Work Plan, Open Burn/Open Detonation Area, Camp Navajo, Coconino County, Bellemont, Arizona* (AMEC, 2009).
- *Replacement for Final Vadose Zone Monitoring Work Plan Appendix C, Vadose Zone Well Sampling Specifications. Camp Navajo, Bellemont, Arizona.* Technical Memorandum: Addendum 1 (CH2M HILL, 2010).
- *Supplement to the "Replacement for Final Vadose Zone Monitoring Work Plan Appendix C—Vadose Zone Well Sampling Specifications." Camp Navajo, Bellemont, Arizona.* Technical Memorandum: Addendum 2 (CH2M HILL, 2013).
- *Supplement to the "Replacement for Final Vadose Zone Monitoring Work Plan Appendix C—Vadose Zone Well Sampling Specifications." Camp Navajo, Bellemont, Arizona.* Technical Memorandum: Addendum 3 (CH2M HILL, 2015b).

From the winter of 2009 through the summer of 2015, water levels in the VZMWs were continuously monitored to identify the presence of infiltration water in the wells during precipitation and snow melt events. To ensure that a representative number of VZMWs would have sufficient water to collect samples, the semiannual sampling events occurred in the winter-spring and summer-fall periods to coincide with the first significant snowmelt and monsoon events. Water samples were collected in March, April, and July of 2009; in May, June, July, and August of 2010; in March of 2014; and April and August of 2015.

The results of the 2009–2010 and 2014–2015 vadose zone sampling events will be considered baseline data for the Post-closure Permit vadose zone monitoring program. These baseline results will be used to document existing contaminant concentrations in the vadose zone in the Post-closure Permit Area and to compare concentrations observed during the post-closure care period to identify potential releases from the

Post-closure Permit Area. Continued monitoring will be conducted to monitor changes in the quality of vadose zone water over time.

3.2.2.1 Sampling Methodology

The volume of water contained within the VZMW sump/well screen was measured during each sampling event using a calibrated water-level meter to determine if a sufficient volume of water was present to allow for the collection of the primary COCs and COPCs. If there was sufficient water in the VZMW to allow for collection of samples for the primary COCs and COPCs, any remaining volume was used to collect samples for the secondary COPCs. If samples for any secondary COPCs could not be collected during the first period sampling of primary COCs and COPCs because of an insufficient volume of water, an attempt was made to collect the remaining parameters from a given location during the second period sampling of primary COCs and COPCs.

In many cases, a sufficient volume of water was not present for all COCs and COPCs to be sampled. Eleven VZMWs in 2009, 17 VZMWs in 2010, and 8 VZMWs and 1 VPZ in 2014 contained sufficient water for the collection of samples, although not all contained sufficient water for the full analytical suite. During the spring 2015 sampling event, 11 VZMWs and 2 VPZs contained sufficient water for sampling for all primary COCs/COPCs. Also, 4 VZMWs and 1 VPZ had had enough water to sample for the secondary COPC dissolved explosives, and 5 VZMW and 1 VPZ had enough water to sample for dissolved metals. During the summer 2015 event, 8 VZMWs and 1 VPZ contained enough water to sample for all primary COCs/COPCs. VPZ-6 had sufficient water to sample for all primary and secondary COPCs (not including dioxins and furans and white phosphorus). Also, three VZMWs had enough water to sample for the secondary COPCs dissolved explosives and dissolved metals.

2009 to 2010 Sampling Events

From 2009 to 2010, each VZMW was sampled one time during each period for the following primary COCs and COPCs, when adequate water was available for all analyses:

- Perchlorate (United States Environmental Protection Agency [USEPA] Methods E314 and E332)
- Explosives (USEPA Methods 8330 and 8330B)

Additionally, each VZMW was sampled one time during the monitoring year for the following secondary COPCs, when adequate water was available for the analyses:

- Nitrate plus nitrite as nitrogen (USEPA Method 353.2/300)
- Semi-volatile organic compounds (SVOCs) (USEPA method 625/8270 and 8270C SIM)
- Dissolved target analyte list (TAL) metals (USEPA Method 200.7/200.8)

In 2010, the following additional special circumstance COPCs were included:

- Dioxins/furans (USEPA Method 8290) were to be collected once from three selected VZMWs with a priority to follow the secondary COPCs. Locations were determined based on the availability of sample volume and proximity to disposal areas with waste types conducive to dioxin formation.
- White phosphorus (USEPA Method 7580) was to be collected once from VZMW-18, -19, and -20, within the Former White Phosphorus Detonation and Burn Area, with a priority to follow the primary COCs and COPCs.
- Total TAL metals (USEPA Method 200.7/200.8) were to be collected at a maximum of six locations where dissolved TAL metals were sampled, with a priority to follow all other analytes.

2014 and 2015 Sampling Events

In 2014 and 2015, each VZMW was sampled for the following constituents when adequate infiltration water was present:

- Perchlorate (USEPA Method 6850)

- Explosives (USEPA Method 8330B)
- White phosphorus (USEPA Method 7580), which was to be collected from VZMW-18, -19, and -20 only, with a priority to follow perchlorate and explosives, if sufficient water was available

In 2015, each VZMW was scheduled to be sampled one time during each period for the following:

- Explosives (Full List) (USEPA 8330)
- Perchlorate (USEPA 6850)
- Nitrate (USEPA 353.2)

Additionally, the following samples were to be collected if sufficient water was available:

- Explosives (filtered) (USEPA 8330) (up to five samples)
- Metals (dissolved) (USEPA 200.7/200.8/245) (up to 10 samples)
- Dioxins/furans (USEPA 8290) (up to two samples in proximity to disposal areas with waste types conducive to dioxin formation)
- White phosphorus (USEPA 7580) (up to two samples from VZMW-18, -19, -20 and VPZ-04 only)

3.2.2.2 Vadose Zone Sampling Results

2009 Results

During the 2009 winter-spring sampling event, primary COCs/COPCs were analyzed from samples collected at the 11 VZMWs with sufficient water (VZMW-01, VZMW-02, VZMW-04, VZMW-05, VZMW-06, VZMW-07, VZMW-08, VZMW-09, VZMW-11, VZMW-16, and VZMW-17). Primary COCs and COPCs were also analyzed in samples collected from the three wells with sufficient water during the 2009 summer-fall sampling event (VZMW-04, VZMW-05, and VZMW-17).

Perchlorate was detected in 8 of 11 wells. The highest concentration (204 micrograms per liter [$\mu\text{g/L}$]) was detected in well VZMW-08.

Explosives were detected in all 11 wells. The detected explosives included the following:

- Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)
- Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)
- Nitrobenzene
- 4-Amino-2,6-Dinitrotoluene (DNT)
- 1,3-Dinitrobenzene
- 2,4,6-Trinitrotoluene (TNT)
- 2-Amino-4,6-DNT
- 2,4-DNT
- 1,3,5-Trinitrobenzene
- 2-Nitrotoluene

The concentrations of explosives varied between the wells; however, RDX was detected with the highest concentration in wells VZMW-01 and VZMW-05. RDX was also the most commonly detected explosive, with detections in 9 of the 11 wells. RDX was not detected in wells VZMW-08 and VZMW-11.

Sufficient water volume for analysis of all or some secondary COPCs was available in 9 of the 11 VZMWs that contained water. Nine wells were sampled for nitrate plus nitrite, and eight wells were sampled for SVOCs and dissolved TAL metals. Wells VZMW-07 and VZMW-11 did not contain enough water at any time to collect samples for analysis of secondary COPCs. Nitrate plus nitrite was detected in seven wells with the highest concentration (1.40 milligrams per liter [mg/L]) detected in well VZMW-02.

SVOCs which were detected in seven of the wells. The detected SVOCs included the following:

- Bis(2-ethylhexyl)phthalate
- Dimethyl Phthalate
- Di-N-Butyl Phthalate
- Chrysene
- Fluorene
- Naphthalene

Bis(2-ethylhexyl)phthalate was the most commonly detected SVOC, being detected in seven of eight samples. The highest concentration (53 µg/L) was detected in well VZMW-16.

Dissolved metals were detected in eight wells. The samples were filtered in the field. The detected metals included the following:

Aluminum	Antimony	Arsenic	Barium
Beryllium	Cadmium	Chromium	Cobalt
Iron	Lead	Magnesium	Manganese
Molybdenum	Nickel	Potassium	Selenium
Silver	Sodium	Vanadium	Zinc

The highest number of detections occurred in well VZMW-02, where all of the previously listed metals except for silver were detected.

The results of the 2009 vadose zone sampling are summarized in Table GWMP-5.

2010 Sampling Results

During the first 2010 sampling event (May–June 2010), 17 VZMWs contained enough water for sampling (VZMW-01, VZMW-02, VZMW-04, VZMW-05, VZMW-06, VZMW-07, VZMW-08, VZMW-09, VZMW-10, VZMW-11, VZMW-12, VZMW-13, VZMW-15, VZMW-16, VZMW-17, VZMW-19, and VZMW-20). Three VZMWs did not contain sufficient water volume for sampling (VZMW-03, VZMW-14, and VZMW-18). During the second 2010 sampling event (August 2010), four VZMWs had enough water for sampling (VZMW-01, VZMW-02, VZMW-04, and VZMW-05), while the rest were dry or had insufficient water volume to collect a sample.

Perchlorate was detected in 15 of the 17 wells (VZMW-01, VZMW-02, VZMW-04, VZMW-05, VZMW-06, VZMW-07, VZMW-08, VZMW-09, VZMW-10, VZMW-12, VZMW-13, VZMW-15, VZMW-16, VZMW-17, and VZMW-19). The highest concentration (150 µg/L) was detected in well VZMW-08.

Explosives were detected in 8 of the 17 wells (VZMW-01, VZMW-02, VZMW-04, VZMW-05, VZMW-06, VZMW-08, VZMW-17, and VZMW-19) and included the following:

- RDX
- HMX
- 2,4,6-TNT
- 2-Amino-4,6-DNT

RDX was also the most commonly detected explosive, with the highest concentration (47 µg/L) detected in well VZMW-05.

Sufficient water volume for analysis of all or some secondary COPCs was available in all but one VZMW that contained water. Sixteen wells were sampled for nitrate plus nitrite, 15 wells were sampled for SVOCs, and 14 wells were sampled for dissolved metals. Well VZMW-20 did not contain enough water at any time to collect samples for analysis of any secondary COPCs.

Nitrate plus nitrite was detected in all 16 wells. The highest concentration of nitrate plus nitrite (77 mg/L) was detected in VZMW-10.

SVOCs were detected in 6 of 15 wells (VZMW-01, VZMW-04, VZMW-10, VZMW-13, VZMW-15, and VZMW-19). The detected SVOCs included the following:

- Bis(2-ethylhexyl)phthalate
- Dimethyl Phthalate
- Di-N-Butyl Phthalate

Bis(2-ethylhexyl)phthalate was the most commonly detected SVOC (detected in 3 of 15 samples). The highest concentration (16 µg/L) was detected in well VZMW-15.

Metals were detected in all 14 wells (both dissolved and total metals). The detected dissolved metals included the following:

Aluminum	Antimony	Arsenic	Barium
Beryllium	Cadmium	Chromium	Cobalt
Copper	Iron	Lead	Magnesium
Manganese	Molybdenum	Nickel	Potassium
Selenium	Silver	Sodium	Vanadium
Zinc			

Two wells (VZMW-12 and VZMW-17) were sampled for dioxins and furans. Dioxin congeners were detected in well VZMW-17 and included the following:

- 1,2,3,4,6,7,8,9-OCDD (7.96 picograms per liter [pg/L])
- 1,2,3,4,6,7,8-HPCDD (1.94 pg/L)
- Heptachlorordibenzo-p-dioxins, Total (3.6 pg/L)

One well (VZMW-19) was sampled for white phosphorus. No white phosphorus was detected.

The results of the 2010 vadose zone sampling are summarized in Table GWMP-6.

2014 Vadose Zone Sampling Results

In March 2014, samples were collected from eight VZMWs (VZMW-01, VZMW-04, VZMW-05, VZMW-07, VZMW-09, VZMW-12, VZMW-16, and VZMW-17) and one VPZ (VPZ-06).

Analytical results included the following:

- Perchlorate was detected in all sampled VZMWs except VZMW-04. The highest concentration (6.3 µg/L) was detected at VZMW-05. Perchlorate was also detected at VPZ-06 at a concentration of 0.095 µg/L.
- RDX was detected in all sampled VZMWs except VZMW-16. The highest concentrations were detected at VZMW-01 (32 µg/L) and its quality control duplicate VZMW-21 (33 µg/L). RDX was also detected at VPZ-06 at a concentration of 0.42 µg/L.
- HMX was detected in all sampled VZMWs except VZMW-07 and VZMW-16. The highest concentration (14 µg/L) was detected at VZMW-01 and its quality control duplicate VZMW-21. HMX was not detected at VPZ-06.
- 2-amino-4,6-DNT was detected in all sampled VZMWs except VZMW-07, VZMW-09, and VZMW-16. The highest concentration (0.29 µg/L) was detected at VZMW-01. 2-amino-4,6-DNT was not detected at VPZ-06.
- 4-amino-2,6-DNT was detected in all wells except VZMW-07, VZMW-09, VZMW-12, and VZMW-16. The highest concentration (0.72 µg/L) was detected in a duplicate sample from VZMW-01. 4-amino-2,6-DNT was not detected at VPZ-06.

The results of the 2014 vadose zone sampling are summarized in Table GWMP-7.

2015 Vadose Zone Sampling Results

Two sampling events were completed during 2015. The first period was conducted in April and the second in August to capture infiltration from monsoon precipitation. The results are summarized below.

Spring 2015 Vadose Zone Sampling Results

In April 2015, VZMW-01, VZMW-02, VZMW-04, VZMW-05, VZMW-06, VZMW-07, VZMW-09, VZMW-11, VZMW-12, VZMW-16, VZMW-17, VPZ-06 and VPZ-09 were found to contain sufficient water for sampling for perchlorate, explosives, and nitrate. Also, there was sufficient water to sample for dissolved metals at VZMW-04 and VZMW-07 and for dissolved explosives at VZMW-06. No water was measured in VZMW-18, VZMW-19, VZMW-20, or VPZ-04, all of which are located in the tributary drainage to Volunteer Canyon, so no samples were collected from these wells.

The analytical results included the following:

- Perchlorate was detected in VPZ-06 (0.097 µg/L J), and its QC duplicate VPZ-25 (0.13 µg/L J), and at VPZ-09 (0.37 µg/L J). Perchlorate was also detected at all sampled VZMWs at concentrations ranging from 0.27 µg/L J at VZMW-04 to 44 µg/L J at VZMW-02.
- Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX) was detected at VPZ-06 (0.31 µg/L J) and its QC duplicate VPZ-25 A (0.38 µg/L J) but not at VPZ-09. RDX was also detected at all sampled VZMWs, except VZMW-11 and VZMW-16. Concentrations ranged from 0.17 to 26 µg/L. The highest concentration (26 µg/L J) was detected in the filtered sample at VZMW-05.
- Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX) was detected at VPZ-06 (0.56 µg/L J) but not in its QC duplicate VPZ-25 (0.62 µg/L U) or at VPZ-09. HMX was also detected at VZMW-01, VZMW-02, VZMW-04, VZMW-05, VZMW-06, VZMW-12, and VZMW-17. Concentrations ranged from 0.37 J to 12 µg/L. The highest concentration was detected at VZMW-01 (12 µg/L).
- 2-amino-4,6-dinitrotoluene (DNT) was detected at VZMW-01, VZMW-02, VZMW-04, and VZMW-05. Concentrations ranged from 0.023 J to 0.41 µg/L, with the highest concentration detected at VZMW-04 (0.41 µg/L). This compound was not detected at the sampled VPZs.
- 4-amino-2,6-DNT was detected at VZMW-01, VZMW-02, VZMW-04, and VZMW-05 at concentrations ranging from 0.059 J to 0.82 µg/L, with the highest concentration detected at VZMW-04 (0.82 µg/L). This compound was not detected at the sampled VPZs.

The dissolved (filtered) explosive results for samples collected at VZMW-01, VZMW-02, VZMW-05, VZMW-06 and VPZ-06 were reported at equal or lower concentrations than for the total (unfiltered) explosive results, with the following exceptions: concentrations of 4-amino-2,6-DNT in VZMW-01, RDX in VZMW-05, and HMX in VZMW-06 were higher in the filtered samples than in the unfiltered samples. This could indicate a possible problem with field and/or laboratory contamination for the specified explosive.

The results of the spring 2015 vadose zone sampling are summarized in Table GWMP-8.

Summer (August) 2015 Vadose Zone Sampling Results

In August 2015, VZMW-01, VZMW-02, VZMW-05, VZMW-09, VZMW-11, VZMW-12, VZMW-16, VZMW-17, VPZ-06 and VPZ-09 were found to contain sufficient water for sampling for perchlorate, explosives, and nitrate. Also, three VZMWs (VZMW-02, VZMW-16, and VZMW-17) had enough water to sample for the secondary COPCs dissolved explosives and dissolved metals. VPZ-6 had sufficient water to sample for all primary and secondary COPCs (not including dioxins and furans, and white phosphorous). No water was measured in VZMW-18, VZMW-19, VZMW-20, VPZ-04, or VPZ-05, all of which are located in the tributary drainage to Volunteer Canyon, so no samples were collected from these wells.

The analytical results included the following:

- Perchlorate was detected in VPZ-09 (0.347 µg/L J), VZMW-01 (3.9 µg/L), VZMW-02 (48 µg/L), VZMW-05 (1.1 µg/L) VZMW-09 (0.64 µg/L) and its QC duplicate VZMW-25 (0.61 µg/L), VZMW-11 (0.17 µg/L J), VZMW-12 (0.51 µg/L), VZMW-16 (0.36 µg/L J), and VZMW-17 (0.33 µg/L J).
- RDX was detected at VPZ-06 (0.18 µg/L J and dissolved fraction "A" 0.38 µg/L J), VZMW-01 (25 µg/L), VZMW-02 (22 µg/L J and dissolved fraction "A" 23 µg/L J), VZMW-05 (31 µg/L), VZMW-09 (0.25 µg/L), and its QC duplicate VZMW-25 (0.28 µg/L), VZMW-12 (4.2 µg/L), and VZMW-17 (4.8 µg/L and dissolved fraction "A" 4.5 µg/L).
- HMX was detected at VZMW-01 (13 µg/L), VZMW-02 (1.8 µg/L and dissolved fraction "A" 1.7 µg/L), VZMW-05 (7.4 µg/L), VZMW-12 (0.83 µg/L), and VZMW-17 (2.7 µg/L and dissolved concentrations "A" 2.3 µg/L). This compound was not detected at VPZ-06, the only VPZ with sufficient water to sample for explosives.
- DNT was detected at VZMW-01 (0.23 µg/L), VZMW-02 (0.076 µg/L and no dissolved concentrations were detected), and VZMW-05 (0.26 µg/L). This compound was not detected at VPZ-06, the only VPZ with sufficient water to sample for explosives.
- 4-amino-2,6-DNT was detected at VZMW-01 (0.58 µg/L), VZMW-02 (0.12 µg/L and no dissolved concentrations were detected), VZMW-05 (0.64 µg/L), and VZMW-17 (0.043 µg/L J and no dissolved concentrations were detected). This compound was not detected at VPZ-06, the only VPZ with sufficient water to sample for explosives.
- Nitrate was detected in VPZ-09 (0.347 mg/L), VZMW-01 (0.032 mg/L J), VZMW-02 (0.246 mg/L), VZMW-05 (0.093 mg/L), VZMW-09 (3.66 mg/L), and its QC duplicate VZMW-25 (3.64 mg/L), VZMW-11 (1.18 mg/L), VZMW-12 (7.35 mg/L), VZMW-16 (0.304 mg/L), and VZMW-17 (0.486 mg/L).

The RDX and HMX results for samples collected at VZMW-17 were reported at lower concentrations for the dissolved (filtered) samples than for the total (unfiltered) samples. Also, the 2-amino-4,6-DNT and 4-amino-2,6-DNT results for samples collected at VZMW-02 and VZMW-17 were reported as not detected for the dissolved samples and detected in the total samples. However, the RDX results for samples collected at VPZ-06 and VZMW-02 were reported at higher concentrations for the dissolved samples than for the total samples. Similar to the spring 2015 sample results, this could indicate a possible problem with field and/or laboratory contamination for the specified explosive.

The results of the August 2015 vadose zone sampling are summarized in Table GWMP-9.

3.2.3 Summary of Shallow Monitoring Well Data

3.2.3.1 Shallow Wells Analytical Methods

The COCs and COPCs and analytical methods for the shallow groundwater monitoring wells included the following:

- Dissolved primary pollutant metals (USEPA Method 6010B/7000 Series) including antimony, arsenic, barium, beryllium, cadmium, chromium, copper, iron, lead, mercury, nickel, selenium, silver, thallium, and zinc
- Explosives (USEPA Method 8330)
- SVOCs (USEPA Method 8270)
- Picric acid (USEPA Method 8151)
- Perchlorate (USEPA Method 314.0/Confirmation analyses using SW8321A)
- Volatile organic compounds (VOCs) (USEPA Method 8021B or 8260B)
- Nitrate/nitrite as nitrogen (USEPA Methods 300/354.1)

- Polychlorinated biphenyls (PCBs) (USEPA Method 8082)
- Polynuclear aromatic hydrocarbons (PAHs) (USEPA Method 8310)
- Hexavalent chromium (USEPA Method 7196A/SM 3510C)
- White phosphorus (USEPA Method 7580)
- Organochlorine (OC) pesticides (USEPA Method 8081A)
- Polychlorinated dibenzodioxins (PCDD) and polychlorinated dibenzofurans (PCDF) (USEPA Test Method 8290)

3.2.3.2 Shallow Wells Analytical Results

The only reported organic constituents in shallow wells AWI-001, AWI-002, and AWI-003 were dioxin/furan compounds reported as a total toxicity equivalent (TEQ), and a single detection of RDX reported in well AWI-001 in October 1997 (Harding Lawson Associates, 1998). The TEQ values are not specific compounds but were obtained by summing the products of the calculated raw analytical result and assigning a toxicity equivalent factor (TEF) for each dioxin/furan congener. These 2005 results were subsequently considered non-representative because a TEQ could be calculated even if no individual congener was reported as detected.

None of the detected inorganic constituents in shallow wells for which there are established regulatory levels exceeded their respective Aquifer Water Quality Standards (AWQS). Dissolved barium was present in the majority of samples and concentrations were typically lower than those detected in the regional aquifer wells. Dissolved iron was detected in a single sample from AWI-002. The remaining detected metals (mercury and zinc) were not consistently present between sampling events or between sampled wells. Nitrate was detected in the AWI-001 and AWI-002 samples (Brown and Caldwell, 2008).

Detected concentrations of dissolved calcium and magnesium and alkalinity were generally consistent between sampling events and between individual wells. Potassium, sodium, sulfate, and chloride were detected in wells AWI-002 and AWI-003 but not in well AWI-001. Higher concentrations of cations/anions and alkalinity in the AWI-series wells compared to well 1901 were inferred to be the result of longer infiltration times and travel through the Kaibab Formation (Brown and Caldwell, 2008).

Detected concentrations of dissolved calcium and magnesium and alkalinity were typically twice as high in the shallow wells as in the regional aquifer wells. In contrast, sodium was detected in all of the regional aquifer wells, but only rarely in the shallow wells. Sulfate and chloride were detected in wells AWI-002 and AWI-003 at concentrations similar to those in wells DW-1 and DW-2 for the February 2005 sampling event. Sulfate and chloride were not detected in any shallow wells at any other time. It appears that all geochemical differences between the 1900-series wells, the AWI-series wells, and the regional wells can be ascribed to differences in travel time and lithology (Brown and Caldwell, 2008).

No results from sampling of the 1900-series and AWI-series wells will be used as baseline data for the Post-closure Permit groundwater monitoring program because they are not representative of the uppermost aquifer. However, it may be useful for interpreting similarities and differences between future vadose zone and regional aquifer sampling results.

3.3 Groundwater Monitoring

The regional aquifer wells included one well at Camp Navajo (Well CN-2, previously referred to as the “DALCO” well); four wells in the community of Bellemont that serve residential and commercial customers (DW-1, DW-2, DW-3, and DW-4); and two wells at the City of Flagstaff Woody Mountain well field (WM-3 and WM-5) (Figure GWMP-2). The cumulative data is summarized in the *OB/OD Area Surface and Groundwater Monitoring Report—2006 Annual Report* (Brown and Caldwell, 2008).

3.3.1 Design and Construction of Interim Status Groundwater Monitoring Wells

The regional aquifer groundwater production wells that were sampled during the interim status period included Camp Navajo well CN-2; the community of Bellemont drinking water wells DW-1, DW-2, DW-3, and DW-4; and the City of Flagstaff Woody Mountain well field wells WM-3 and WM-5. Well construction and water level information for the regional aquifer wells is summarized in Table GWMP-4 and available well construction diagrams are provided in Attachment I.1. The wells range in depth from 2,084 to 2,908 feet bgs and are constructed of steel with screens (perforated casing) that range from depth intervals of 1,530 to 1,947 feet bgs to 2,080 to 2,150 feet bgs.

3.3.2 Summary of Groundwater Monitoring Data Obtained During Interim Status Period (40 CFR 270.14(c)(1))

Groundwater monitoring from 2004 to 2006 was conducted in accordance with the following work plan and amendments:

- *OB/OD Area Surface and Groundwater Sampling Work Plan, Arizona Army National Guard, Camp Navajo, Bellemont, Arizona* (Brown and Caldwell, 2004).
- *Amendment 1, Revised OB/OD Area Surface and Groundwater Monitoring Work Plan. Arizona Army National Guard, Camp Navajo, Bellemont, Arizona* (Brown and Caldwell, 2005a).
- *Amendment 2, Revised OB/OD Area Surface and Groundwater Monitoring Work Plan. Arizona Army National Guard, Camp Navajo, Bellemont, Arizona* (Brown and Caldwell, 2005b).

3.3.2.1 Regional Aquifer Analytical Methods

The COCs and COPCs and analytical methods for the Camp Navajo and Bellemont regional aquifer wells included the following:

- Dissolved primary pollutant metals (USEPA Method 6010B/7000 Series) including antimony, arsenic, barium, beryllium, cadmium, chromium, copper, iron, lead, mercury, nickel, selenium, silver, thallium, and zinc
- Explosives (USEPA Method 8330)
- SVOCs (USEPA Method 8270)
- Picric acid (USEPA Method 8151)
- Perchlorate (USEPA Method 314.0/Confirmation analyses using SW8321A)
- Volatile organic compounds (VOCs) (USEPA Method 8021B or 8260B)
- Nitrate/nitrite as nitrogen (USEPA Methods 300/354.1)
- Polychlorinated biphenyls (PCBs) (USEPA Method 8082)
- Polynuclear aromatic hydrocarbons (PAHs) (USEPA Method 8310)
- Hexavalent chromium (USEPA Method 7196A/SM 3510C)
- White phosphorus (USEPA Method 7580)

The samples collected from the Camp Navajo and Bellemont wells were also analyzed for additional constituents and isotopes to determine the source and age of the water. The analytes were chosen for comparison to similar data collected by the USGS at the City of Flagstaff Woody Mountain well field wells and springs and wells throughout the Flagstaff area. They included the following:

- Metal ion geochemistry including calcium, magnesium, potassium, sodium (USEPA Method 6010/7000 Series), alkalinity including carbonate (CO₃) and bicarbonate (HCO₃) (USEPA Method 310.1), and sulfate and chloride (USEPA Method 300.0)
- Silica (USEPA Method 200.7/6010 Series)
- Isotopes—Oxygen 16/18, Hydrogen 1 /2, Deuterium 16/18, Tritium, Carbon 12/13, Carbon 14, and Strontium 86/87
- Total organic carbon (Method SM 5310C)
- Phosphate (USEPA Method 365.2)
- Sulfide (Method SM 4500-S)

The COCs and COPCs and analytical methods for the City of Flagstaff Woody Mountain well field wells WM-3 and WM-5 included the following:

- Explosives (USEPA Method 8330)
- SVOCs, including propellants (USEPA Method 8270C)
- Perchlorate (USEPA Method 314.0/Confirmation analyses using SW8321A)
- Picric acid (USEPA Method 8151)
- White phosphorous (USEPA Method 7580)

Samples from the Woody Mountain wells were not analyzed for primary pollutant metals, VOCs, nitrate/nitrite, hexavalent chromium, PAHs, PCBs, ion geochemistry, silica, alkalinity, sulfate, or chloride.

3.3.2.2 Regional Aquifer Analytical Results

A cumulative summary of detected constituents and comparison to current regulatory screening levels and standards, including results for the 1997 shallow groundwater sampling data, is presented in Table GWMP-10. Detected organic constituents are summarized in Table GWMP-11, detected inorganic constituents are summarized in Table GWMP-12, and detected metals are summarized in Table GWMP-13.

The analytical results from groundwater samples collected from regional aquifer wells were consistent between sampling events and generally comparable between wells.

The only detected organic constituents were a single detection of acetone in well DW-3 and chloroform in a regular sample and duplicate from well CN-2. Both constituents are common laboratory contaminants and were not present in any other water samples. Therefore, they were not considered representative of groundwater quality (Brown and Caldwell, 2008).

No detected inorganic constituent having an established regulatory level exceeded its respective AWQS.

Barium was detected in the majority of samples, but the remaining metals were only rarely and inconsistently detected. The concentrations of barium were consistent between sampling events and were generally higher by an order of magnitude compared with those in the shallow wells. The higher concentrations of barium in the regional aquifer wells may be indicative of recharge water from volcanic sources compared with recharge water from limestone in the AWI-series wells. The concentrations of barium are consistent with those detected in other regional aquifer wells in the Flagstaff area (Bills et al., 2000). The concentrations of zinc were also higher compared with the samples from the shallow wells. The detections of copper and lead were singular events and were not detected in the shallow wells. Nitrate was not detected in the regional aquifer wells (Brown and Caldwell, 2008).

The detected concentrations of calcium, magnesium, and alkalinity were generally consistent between sampling events and between individual wells. Sulfate and chloride were detected in separate samples from Bellemont wells DW-1 and DW-2, while sodium was detected in multiple samples from each of the Bellemont wells and the Camp Navajo well CN-2 (Brown and Caldwell, 2008).

The results of the 2004–2006 regional aquifer groundwater monitoring program will be considered baseline data for the regional aquifer portion of the Post-closure Permit groundwater monitoring program. Similar to vadose zone monitoring, these baseline results will be used to document existing water quality conditions in the regional aquifer downgradient of the Post-closure Permit Area. Continued monitoring will be conducted to monitor changes in the quality of groundwater over time.

3.4 Surface Water Monitoring

Surface water sampling was previously performed as a part of the surface and groundwater monitoring program (Brown and Caldwell, 2008). Samples were collected in several OD pits and the former stock tank (ND3) located downstream from NAAD 02 at the head of the MRWA 02-03 canyon. A single dioxin congener was detected in surface water from the former stock tank at sample location ND3 in a 1997 sample (Harding Lawson Associates, 1998), but not in 2004-2005 samples (Brown and Caldwell, 2007). The dissolved-phase copper concentration and the cadmium and lead reporting limits exceeded Surface Water Quality Standards (SWQSS) at sample location ND3 in August 2004, but were lower than the SWQSS in the January 2005 sample.

The NAAD 02 Remedial Investigation (RI) report concluded that COPCs were not migrating offsite, and the offsite surface water exposure pathway was considered incomplete. Vegetative cover tends to limit mobilization of sediments along this transport pathway in parts of NAAD 02. In addition, where the natural surface drainage pattern has been disrupted by historic open detonation activities, surface water accumulates temporarily in OD pits rather than flowing off site along the established natural drainages. As a result, this interruption of offsite flow by surface water accumulation in OD pits results in an incomplete transport pathway for surface water and mobilized sediments. The RI report conclusions suggested that most of the accumulated water dissipated through evaporation. However, vadose zone monitoring results show a significant volume of infiltration, and run-off from significant storm events must be considered.

3.5 Quality of Groundwater Passing Point of Compliance (40 CFR 264.97(a)(2))

Data collected from the VZMWs discussed in Section 3.2 are representative of water from precipitation that has infiltrated through the vadose zone and could potentially reach the regional aquifer water table. The water quality data in the VZMWs, along with estimates of infiltration water volume, were used to simulate the impact at the downgradient boundary of the Post-closure Permit Area. The results are contained in the *Vadose Zone Infiltration Model Technical Evaluation* that is appended to the *After Action Report Munitions Response Work Area 02 and Navajo Army Depot (NAAD) 02, Camp Navajo, Arizona* (CH2M HILL, 2016) and indicate the likelihood that MC has migrated beyond the alluvial cover in the vadose zone and could potentially reach the regional aquifer. Therefore, compliance monitoring will be conducted for the regional aquifer using existing water supply wells. The point-of-compliance is the Post-closure Permit Area boundary. However, monitoring is not available at the boundary; therefore, well CN-1 will be used to evaluate whether contaminants are present in the groundwater, assuming valid samples can be obtained. Information from water level monitoring completed from 2004 to 2006 at the regional aquifer wells (Brown and Caldwell, 2008) indicates the groundwater flow direction from the Post-closure Permit Area is generally to the north toward well CN-1. Well CN-1 is located approximately 3 miles north of the Post-closure Permit Area's northern boundary, and the Bellemont water supply wells are located another 2 miles north of well CN-1. It is expected that any contaminants migrating northward from the Post-closure Permit Area be detected in well CN-1 before reaching the Bellemont supply wells. Hence, well CN-1 is positioned to serve as a downgradient sentry well that will be incorporated into the groundwater monitoring program. Additionally, vadose zone monitoring will be conducted simultaneously with the groundwater monitoring program. Vadose zone monitoring will be used to identify increases in concentrations above baseline concentrations. The goal is to identify new releases in the Post-closure Permit Area before they impact the uppermost

aquifer at the facility. The regional aquifer sampling data will be evaluated for compliance with established standards for the constituents described in Section 4.2.1.

3.6 Groundwater Plume Description (40 CFR 270.14(c)(4))

Insufficient data exists to determine with certainty the presence or absence of a groundwater contaminant plume. However MC have been detected during vadose zone monitoring, and perchlorate was detected during the March 2016 regional groundwater sampling and subsequent confirmation sampling. Additionally, results of previous vadose zone modeling conducted during closure activities suggests the potential for contaminants to have reached groundwater.

3.7 Results of Evaluation of Groundwater Surface Elevations

The presence of water measured in the 1900-series and AWI-series wells was interpreted to be infiltration that temporarily saturates the shallow subsurface material. Thus, use of the water level data from these wells was not used for flow or gradient estimates (Brown and Caldwell, 2008). The 1900-series wells were abandoned after July 2005, in accordance with the revisions presented in Amendment 1 to the Surface and Groundwater Monitoring Work Plan (Brown and Caldwell, 2005a). The depth to water in the AWI-series wells suggested that it might be perched on the stratigraphic contact between the Kaibab and Toroweap Formations. This was evaluated by drilling two additional borings between the AWI-series wells and the NAAD 02 OD pits to nominal depths of 500 feet, below the stratigraphic contact and below the elevation of the water level in AWI-001. The borings were dry, and it was determined that no laterally extensive water-bearing interval was present in this area. The water encountered in AWI-001, AWI-002, and AWI-003 was considered to be vertical infiltration along faults, and not lateral flow from the NAAD sites.

During historical groundwater monitoring events, not all of the regional aquifer wells were equipped or accessible to physically allow for the measurement of water levels. Bellemont wells DW-1 and DW-2 were not equipped with sounding tubes or ports that permit deployment of a probe to measure water levels. During the final 2006 sampling event, permanent pumping or monitoring equipment had not yet been installed in Bellemont well DW-4. The water elevation in well DW-4 was measured in the previous quarter by using a temporary transducer deployed by the well construction subcontractor. Also, while not physically accessible for the measurement of water levels using a probe, the City of Flagstaff deployed transducers in Woody Mountain wells WM-3 and WM-5 to measure water depths and elevations. Water level measurements in the Woody Mountain wells were obtained either by direct observation of transducer readings at the well or by contacting the City of Flagstaff by telephone and requesting the readings verbally from City personnel (Brown and Caldwell, 2008).

The water levels measured in the Camp Navajo CN-2 and Bellemont DW-3 wells were recorded from September 2004 through 2006. During the monitoring period, water elevations remained within a relatively stable range. A slight decrease in elevations between October 2004 and November 2004 was followed by a 21 to 23-foot rise in the water elevations between the November 2004 and April 2005 monitoring events. The increase in groundwater elevations was coincident with a prolonged period of high precipitation and runoff (Brown and Caldwell, 2008).

The relatively stable elevations of water reported in the Camp Navajo CN-2 and Bellemont DW-3 wells were thought to reflect static water level conditions in the aquifer resulting from limited pumping during most of 2004 and 2005. Static water levels in Camp Navajo well CN-2 were consistently between 50 and 60 feet higher than those recorded in Bellemont well DW-3. This difference in water elevations was attributed to displacement on the Bellemont fault (Figure GWMP-4), but subsequent data from Bellemont well DW-4 suggested that the elevation differences may reflect the regional gradient (Brown and Caldwell, 2008).

Based upon the available monitoring and published data, regional aquifer groundwater flow is anticipated to follow a complex path with a hydraulic gradient that is spatially variable due to multiple fault systems and

their orientations, topographic divides, and lithologic differences. The evaluation of recharge and movement of water in the regional aquifer discussed in Bills and others (2000, 2005) indicated that a groundwater divide was located approximately 3 miles south of Camp Navajo (Figure GWMP-4). Overall, regional groundwater flows in a northerly direction until eventually discharging at springs along the Colorado River. The flow direction north of the groundwater divide depicted in Plate 2 of Bills and others (2000) was toward the north-northwest in the vicinity of Camp Navajo and Bellemont (Brown and Caldwell, 2008). After the installation of five new wells at Camp Navajo and Bellemont and 2 years of monitoring (Brown and Caldwell, 2008), the local direction of groundwater flow was confirmed to be to the north (Figure GWMP-2).

Post-closure Care Monitoring

Post-closure care groundwater monitoring will be conducted using a combination of vadose zone monitoring at the VZMWs, VPZs, and AWI-series shallow wells in and near the Post-closure Permit Area, and groundwater monitoring at regional aquifer water supply wells. Vadose zone monitoring at the Post-closure Permit Area will be conducted to detect and characterize new releases of COCs and/or COPCs to the vadose zone. Compliance monitoring will be conducted at select regional aquifer water supply wells to ascertain whether COCs and/or COPCs from the Post-closure Permit Area have been released to the regional aquifer and are present at concentrations that would have the potential to threaten human health and the environment.

The wells included in this sampling and analysis program are located on Camp Navajo property and at locations outside the installation boundary. Activities related to the sampling of wells not owned or operated by Army National Guard Directorate (ARNG) must be approved by the Camp Navajo Garrison Commander, by the ARNG Directorate, and by the well owner or owner's representative.

4.1 Vadose Zone Monitoring Program (40 CFR 270.14(c)(6)(ii), 264.97)

Vadose zone monitoring will be conducted at the Post-closure Permit Area to detect and characterize releases of COCs and COPCs from the Post-closure Permit Area to the vadose zone that could migrate into the regional aquifer. This monitoring will include the 20 VZMWs summarized in Table GWMP-1, and the 15 piezometers summarized in Table GWMP-2 for as long as they remain at the Post-closure Permit Area. In addition, the shallow AWI-series wells will be included in the vadose zone monitoring program. The vadose zone being monitored is not considered an aquifer. Per 40 CFR 260.10, an *aquifer* is defined as a geologic formation, group of formations, or part of a formation capable of yielding a significant amount of groundwater to wells or springs.

The monitoring plan for the vadose zone is presented in Attachment I.2. This section contains general information regarding the vadose zone monitoring program. For specific details, refer to Attachment I.2.

4.1.1 Constituents to be Monitored (40 CFR 264.97(c)(6)(i))

MC contained in the remaining MEC consist primarily of explosives and metals. The most common filler material is high explosives. The high explosives typically consist of TNT or Composition B, which is a 60/40 mixture of TNT and RDX. Some explosive compounds readily degrade upon exposure to the environment; therefore, degradation products are also of concern. Less frequently encountered filler materials include propellants such as perchlorate and pyrotechnics such as white phosphorus. Other materials, for instance obscurants such as hexachloroethane smoke, were known to be destroyed but the associated MEC such as smoke grenades are not known to remain. A complete list of COPCs for each NAAD site was compiled in the *Ordnance and Explosives/Chemical Warfare Materiel Operational History Report* (Brown and Caldwell, 2005a).

The complete list of parameters for sampling VZMWs, VPZs, and AWI-Series wells are presented in Table GWMP-16.

4.1.2 Description of Wells (40 CFR 264.97(a) and (c))

The 20 VZMWs installed in the Post-closure Permit Area, described in Section 2, will be used to detect potential releases of COCs and/or COPCs from remaining MEC to the vadose zone and evaluate the potential for those releases to migrate into the regional aquifer. The locations of these wells are shown on Figure GWMP-1. Well construction details are summarized in Table GWMP-1 and well construction diagrams are included in Attachment I.1. In addition, the 15 VPZs will be included as part of release evaluation monitoring

for as long as they remain operational at the Post-closure Permit Area. VPZs found not to contain water over repeated sampling periods will require a permit modification request with ADEQ's concurrence prior to abandonment. Pending ADEQ's concurrence, VPZs with measurable water levels may be converted to VZMWs or abandoned and a VZMW installed adjacent to it. VPZ construction details are summarized in Table GWMP-2.

In addition to the VZMWs and VPZs, wells AWI-001, AWI-002, and AWI-003 will be used to provide an additional source of information regarding infiltration rates and the potential movement of contaminants through the subsurface. The wells were installed in 1997 into bedrock in proximity to known faults at depths ranging from 162 to 353 feet bgs. Well construction and water level information for the shallow wells is summarized in Table GWMP-3. The AWI-series wells were constructed of PVC and ranged in depth from 162 to 353.5 feet bgs, as summarized in Table GWMP-3. Well construction diagrams for these wells are provided in Attachment I.1. If one or more of the AWI-series wells are found not to contain water over repeated sampling periods, a permit modification request to abandon the wells may be granted with ADEQ's concurrence.

4.1.3 Representative Samples (40 CFR 264.97(a)(1) and (2))

The majority of VZMWs were installed in areas of greatest estimated MEC density and in areas of low topography to provide early detection of MC releases from MEC within the vadose zone. Vadose zone water samples are representative of water infiltrating through the MEC source areas, are useful for the early evaluation of releases of MC from remaining MEC, and can be used to evaluate potential impacts to the regional aquifer below the Post-closure Permit Area.

4.1.4 Sampling, Analysis and Statistical Procedures (40 CFR 270.14(c)(6)(iv), 264.97(d),(e) and (h))

A general summary of sampling and analysis procedures are provided in Attachment I.2, Vadose Zone Monitoring Program. Detailed procedures for sampling and analysis procedures are provided in the Field Sampling Plan of Attachment I.4.

4.1.4.1 Statistical Procedures (40 CFR 264.97(h))

A statistical determination using a control chart approach will be made after each sampling event to assess whether a new release has occurred. The determination will be made within 60 days of receiving the validated laboratory data from the initial sampling event.

Baseline concentrations will be established for each COC and COPC in each well once it has been analyzed in that well four times. Trends, seasonality, and adherence to a normal distribution will also be assessed prior to developing the control charts.

A combined Shewhart-CUSUM control chart will be prepared for each COC and COPC detected in each well. The procedure for generating these control charts is in Chapter 20 of the *Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities Unified Guidance* (USEPA, 2009), provided as Attachment I.5. The control limit will be set equal to the mean plus 4.5 times the standard deviation. If a measured concentration in the Shewhart chart or cumulative sum in the CUSUM chart exceeds the respective control limit as described in Attachment I.5, the actions provided in Section 4.1.4.2 will be implemented.

4.1.4.2 Response Actions to Statistically Significant Increases

Based on the statistical analysis discussed in Section 4.1.4.1 and presented in Attachment I.4, if a statistically significant increase in vadose zone concentrations of COCs and/or COPCs is observed, the following actions will be taken:

- ADEQ will be notified within 7 days.
- Within 30 days of completing the statistical analysis, ARNG will determine whether an affected well has retained a sufficient amount of water for re-sampling. This determination may be made by reviewing

transducer data, conducting manual water level measurements, reviewing recent precipitation data, or other means.

- If ARNG determines that sufficient water remains, the well will be re-sampled within 14 days of the determination. If the re-sampling confirms the exceedance of one or more control limits, and it cannot be attributed to seasonality or other effects, this will be considered statistically significant evidence of a new release.
- If the affected well does not have sufficient water by the next scheduled sampling event, then the initial sample concentration will be considered evidence of a new release by itself, without collecting a confirmation sample.
- Complete an evaluation of potential impacts to the regional aquifer using the Vadose Zone Infiltration Model. The model was created to forecast how observed contaminant concentrations in water in the vadose zone could potentially impact groundwater quality in the regional aquifer. Using available site and monitoring data, the simplified quantitative model was developed to calculate how COC and/or COPC mass loading in the vadose zone translates to COC and/or COPC concentrations that might be measured in a regional groundwater well at the hypothetical point of compliance..
- Review the monitoring data and, if applicable, modeling results, to determine if a potential source area for the COC and/or COPC concentration increase can be identified. In accordance with 264.98(g)(6), evaluate whether the cause of the increase is unrelated to the Post-closure Permit Area.
- If a source area can be identified, conduct a MEC survey and surface and subsurface soil sampling to confirm the source area.
- Submit to the ADEQ-designated Regional Administrator within 180 days all data necessary to justify a modification to the monitoring program to better define the possible impacts of the release. This submission may include additions to the monitoring network, such as the installation of additional wells to delineate the source of the release, or increased monitoring during an infiltration event to determine if concentrations vary during the event.
- If a release in the Post-closure Permit Area is confirmed, an alternate concentration limit or an engineering feasibility plan for a corrective action program will be submitted, unless the conditions of 264.98(g)(5)(ii)(A) and (B) are met. Corrective actions that may be considered include the following:
 - Complete a surface/subsurface MEC removal action as either time-critical or corrective action, inspection of recovered MEC for evidence of a release (such as corrosion that has penetrated explosive materials), and confirmation sampling beneath MEC items, and
 - Conduct a soil removal action or implement engineering controls at areas determined to be the source of increased MC loading.

4.2 Groundwater Monitoring Program (40 CFR 270.14(c)(7), 264.99)

Groundwater monitoring will be conducted at select regional aquifer water supply wells to ascertain whether COCs and COPCs from the Post-closure Permit Area are present in the regional aquifer groundwater and are present at concentrations that could potentially threaten human health and the environment. Vadose zone results in the Post-closure Permit Area and associated modeling have indicated the potential for COPCs to be present in groundwater. Groundwater wells available for monitoring are not located within or adjacent to the Post-closure Permit Area. Since wells that will be monitored are located a distance from the Post-closure treatment area, regional aquifer monitoring will be conducted in accordance with compliance monitoring requirements to identify and respond to potential releases.

4.2.1 Constituents to be Monitored (40 CFR 264.97(c)(6)(i), 264.99(a))

The historical groundwater sampling events were intended to provide baseline data for post-closure care. Because of the extended period of time since that study, as well as the variable number of samples collected from the wells, additional baseline sampling is warranted and was conducted in March 2016 of selected wells.

The parameters for groundwater sampling are included in Table GWMP-16 and are discussed further in Section I.4.5.2 of Attachment I.4. Analytical results will be compared to reference limits summarized in the Quality Assurance Project Plan (QAPP).

4.2.2 Description of Wells (40 CFR 264.97(a) and (c))

4.2.2.1 Determination of Wells

A query of the ADWR online database was conducted to identify water wells greater than 1,000 feet deep and within a 5-mile radius of the Camp Navajo installation boundary that could potentially be used in the compliance monitoring program. The depth to the regional aquifer in the vicinity is estimated to be no less than 1,200 to 1,300 feet bgs. The results of the query identified 33 groundwater wells within the approximate 5-mile radius of the installation boundary (see Table GWMP-14 of this plan and Figure GWMP-2):

- Twelve wells constituting the Woody Mountain well field are located southeast of the installation boundary, are owned and operated by the City of Flagstaff municipal water department, and serve the City of Flagstaff.
- Six wells are located east of the installation boundary, are owned and operated by Flagstaff Ranch Water Company, and serve the Flagstaff Ranch residential development.
- One well is located east of the installation boundary, is owned and operated by A-1 Ranch Homeowners Association, and serves the A-1 Ranch residential development.
- Four wells are located north of the installation boundary and north of Highway 40 in the Bellemont community, is owned and operated by Utility Source LLC, and serve the Flagstaff Meadows residential development and local commercial customers.
- Two wells, only one of which is operational, are located in the north-central part of Camp Navajo, are owned and operated by AZ ARNG, and serve Camp Navajo and its tenants.
- One well is located in the north-central part of Camp Navajo, is owned and operated by the Arizona Department of Veterans Services (ADVS), and serves a Veterans Cemetery for irrigation and commercial use. Well construction was completed in December 2014. The well location is shown on Figure GWMP-2.
- Eight remaining wells are located to the north, east, and west, are privately owned and operated, and serve individual residences.

Three wells are located slightly more than 5 miles from the installation boundary (Table GWMP-14 in this plan and Figure GWMP-2). Two of these wells are to the northeast and are owned and operated by the City of Flagstaff and Hidden Hollow Mobile Home Park. The third well, located to the west, is privately owned and operated, serving an individual residence.

The results of the query indicated that seven of the groundwater wells located within a 5-mile radius of the installation boundary are also located within a 5-mile radius of the Post-closure Permit Area (highlighted on Table GWMP-14.) These include the two Camp Navajo wells (CN-1 and CN-2), the four Bellemont wells (DW-1, DW-2, DW-3 and DW-4), and the ADVS well (VC-1). The remaining 26 wells were outside the 5-mile radius of the Post-closure Permit Area boundary.

Other than the Bellemont area, there are few parcels of land within a 5-mile radius of the installation that are upgradient or downgradient from the Post-closure Permit Area and have a potential for significant future development. The majority of the area consists of national forest and state lands with isolated private parcels.

The results of the query are summarized on Table GWMP-14.

4.2.2.2 Wells Outside of the Post-closure Permit Area Five-Mile Radius

The Woody Mountain well field is located 6 miles east of the Post-closure Permit Area, along the east (down-thrown) side of the Oak Creek fault. Two of the 13 City of Flagstaff wells (WM-3 and WM-5) were monitored during the surface and groundwater study conducted from 2004 through 2006 (Brown and Caldwell, 2008). Well WM-5 is located at the junction of the Oak Creek fault with the Dunham fault zone, which is a northwest-trending zone of parallel faults that pass through the northern edge of the OB/OD Area (Figures GWMP-3 and GWMP-4). The potential for groundwater flow along the Dunham fault zone was previously identified as a concern during development of previous USGS contour maps, which were based on limited water elevation data. With the regional aquifer groundwater elevations and other hydrogeologic data collected during the 2004-2006 groundwater study, the groundwater elevation map was refined and it was confirmed that water levels at the Woody Mountain well field were 200 to 500 feet higher than at Camp Navajo and that the Dunham fault zone is an unlikely southeastern flow path (Figure GWMP-4). Therefore, these wells will not be included in the monitoring program.

The six Flagstaff Ranch wells are located approximately 2 miles east of the Oak Creek fault (Figure GWMP-4). Water levels in these wells are also higher than in the Camp Navajo and Bellemont wells (Brown and Caldwell, 2008; Bills, et al., 2005).

The majority of the wells serve individual residences, although some wells serve two residences. The A-1 Ranch well serves several residences. Many of these wells serve vacation or second homes that are used only occasionally. The production from these wells is expected to be intermittent and of small volume. The Robert Fried well was reported as dry. The Rose West LLC well was reported to be capped and the Kralovetz well was reported to be abandoned. The Garland Prairie well (WP-1) is slightly more than 5 miles from the western installation boundary and 8 miles from the Post-closure Permit Area.

4.2.2.3 Wells to be Included in Groundwater Monitoring

The regional aquifer wells to be included in the post-closure care groundwater monitoring program include those that lie within a fan that radiates northward in a downgradient direction from the Post-closure Permit Area. The wells to be included in the groundwater monitoring network currently include the following:

- Two Camp Navajo wells (CN-1 and CN-2),
- Four Bellemont wells (DW-1, DW-2, DW-3 and DW-4),
- One Veterans Cemetery well (VC-1), and
- One Garland Prairie Well (WP-1) (pending right of entry approval)

Details regarding the selection of these wells for the groundwater monitoring program are provided in Attachment I.3. The summary of wells to be included in the groundwater monitoring program is provided as Table GWMP-15. Available well construction diagrams are provided in Attachment I.1.

4.2.3 Representative Samples (40 CFR 264.97(a)(1) and (2) and 264.99(a)(3))

ARNG and ADEQ determined that, as a result of complex hydrogeologic conditions, regional aquifer monitoring wells in the Post-closure Permit Area could not be used to determine the absence of a groundwater contaminant plume with any certainty. The Vadose Zone Infiltration Model used a virtual point of compliance in the regional aquifer at the downgradient (north) boundary of the Post-closure Permit Area, but for groundwater sampling purposes, the downgradient regional aquifer water supply wells will be monitored.

The regional aquifer wells to be sampled from an arc to the north and northeast and downgradient of the Post-closure Permit Area. The Garland Prairie well (WP-1) to the west is not likely to be hydraulically connected to the Post-closure Permit Area, but it will be investigated to confirm or refute that assertion. The down-gradient wells are also located on the northeast-trending Bellemont fault and on both sides of the fault, which starts just north of the Post-closure Permit Area and bisects the Bellemont area. Thus, these wells are well-positioned to intercept a groundwater contaminant plume.

More importantly, the wells are the source of drinking water for Camp Navajo and the Bellemont community, and the groundwater samples are representative of the water the population ingests and uses to bathe. Given the complex hydrogeologic conditions, a combination of monitoring using the vadose zone wells and the drinking water wells provides the most reliable assurance that groundwater quality is and will be protective of human health.

4.2.4 Sampling, Analysis and Statistical Procedures (40 CFR 270.14(c)(6)(iv), 264.97(d), (e) and (h), 264.99(c) and (d))

A general description of sampling and analysis is provided as Attachment I3, Regional Aquifer Monitoring Plan. Detailed procedures for sampling, analysis, and quality control and other procedures are provided in Attachment I.4.

4.2.4.1 Statistical Procedures (40 CFR 264.97(h), 264.99(d))

Statistical procedures will vary based on location and parameter. For all groundwater wells, a confirmed detection of explosives or perchlorate will result in a corrective action, which may include increasing the frequency of monitoring and the size of the sampling network, and/or other actions. Health-based standards will be applied to these locations to determine when corrective actions are required. Reference limits are summarized in Worksheet 15 (Reference Limits and Evaluation) of the QAPP.

Constituents other than explosives or perchlorate that are monitored and have an established health-based standard for groundwater or drinking water will also be compared to that standard to evaluate additional potential corrective action activities. The Mann-Kendall trend test shall be applied to historical data for all constituents detected in any groundwater well. In addition, when a minimum of 4 seasonal sampling events have been completed for a given well (e.g., 4 spring events, 4 summer events), the seasonal Mann-Kendall trend test will be applied to that well. Details regarding the use of the Mann-Kendall trend test are summarized in Section 17.3.2 of the *Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities Unified Guidance* (USEPA, 2009), provided in Attachment I.5.

4.2.4.2 Response Actions to Statistically Significant Increases

Corrective action will be indicated by, but not limited to, one or more of the following monitoring results:

- A detection of explosives or perchlorate.
- A statistically significant increase in concentrations of explosives or perchlorate or other constituents of concern.
- Trend activity indicator showing that the activity is of concern for explosives, perchlorate or other constituents of concern or monitored parameters.
- Exceedance of a regulatory standard, or an aquifer quality level or limit established in the permit.

If corrective action is indicated, the following actions will be taken:

- Notify ADEQ in writing within 7 days.
- Compare concentrations to health-based criteria in Worksheet 15 of the QAPP and notify the well owner if they exceed criteria within 14 days of receiving the initial laboratory analytical reports.
- Pending provisions of the existing access agreement with the well owner, perform confirmation sampling within 30 days of completing data validation on the initial samples to confirm the detections and/or concentrations.

- Notify a well owner in writing within 30 days of receipt of confirmation sampling results from the laboratory if a detection of explosives or perchlorate is confirmed, a statistically significant increase in COCs or COPCs is determined, health-based levels are exceeded, or trend activity indicators are at a level of concern.
- Conduct additional investigation to determine whether the constituent(s) in question are originating from the permitted area. Additional investigation may include the following:
 - Within 30 days of data validation, complete a review of the ADWR well registry for additional nearby wells that can provide additional data, and begin attempts to gain access to the well. Well sampling will be conducted as soon as possible based upon owner availability.
 - Review site histories and historical data to determine if the Post-closure Permit Area and/or other NAAD sites may be likely sources.
- Submit to the ADEQ-designated Regional Administrator within 180 days all data necessary to justify a modification to the monitoring program to better characterize the potential release. This submission may include additions to the monitoring network, such as the installation of wells, if the concentrations exceed health-based criteria and the release is likely to be coming from the Post-closure Permit Area. It may include a modification to the conceptual site model as previously presented in the NAAD-02 Remedial Investigation Report (Brown and Caldwell, 2007) and the OB/OD Area Surface and Groundwater Monitoring Report (Brown and Caldwell, 2008). This submittal will be a permit modification request requiring ADEQ approval.
- If a release from the Post-closure Permit Area is confirmed, an alternate concentration limit or an engineering feasibility plan for a corrective action program will be submitted as a permit modification request requiring ADEQ approval, unless the conditions of 264.98(g)(5)(ii)(A) and (B) are met. Corrective actions that may be considered include the following:
 - Monitoring program changes,
 - Well replacement,
 - Installation of additional monitoring wells,
 - Aquifer remediation,
 - Well head treatment, and
 - If it is determined that the Post-closure Permit Area is a continuing source, source control and/or remediation.

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SECTION 5

Waste Management

Waste management procedures are presented in Attachment I.4.

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Tables

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TABLE GWMP-1

Vadose Zone Monitoring Well Installation Information

RCRA Post-Closure Permit Area Groundwater Monitoring Plan

Camp Navajo, Bellemont, Arizona

VZMW ID	UTM Location Easting (m)	UTM Location Northing (m)	Elevation of Concrete Pad on North Side of Casing, in m and (feet)	Screened Interval (ft)	Total Depth Well (ft)	Depth to Weathered Bedrock (ft)	Depth to Competent Bedrock (ft)	3/18/2014 Measured Water Column Thickness (ft)
VZMW-1	422005.797	3892463.795	2153.924 (7064.871)	6.5-11.5	14	6	9.5	4.2
VZMW-2	422029.321	3892364.704	2156.201 (7072.339)	17.6-22.6	24.6	19.5	21.5	0.5
VZMW-3	422002.979	3892282.969	2159.731 (7083.918)	10-15	17	12	14.	0
VZMW-4	421726.528	3892378.847	2155.564 (7070.25)	10-15.3	19.8	6	14.	1.4
VZMW-5	421636.148	3892220.575	2159.118 (7081.907)	9.5-14.5	17.	6	13.5	3.5
VZMW-6	421387.656	3892212.516	2159.721 (7083.885)	5-7.5	10	4.5	6	0.3
VZMW-7	421142.683	3892361.311	2163.297 (7095.614)	5.5-8.0	10	3.0	7	0.7
VZMW-8	421408.849	3892437.147	2158.130 (7078.666)	8.5-13.5	15.5	6.0	12.5	0
VZMW-9	421760.367	3892556.047	2151.684 (7057.524)	16.5-21.5	24	16.5	20	2.8
VZMW-10	421596.293	3892734.314	2151.769 (7057.802)	11-16	18.5	13.5	15	0.2
VZMW-11	421888.098	3892730.296	2148.480 (7047.014)	5-10	15.8	5.5	9.5	0.55

TABLE GWMP-1

Vadose Zone Monitoring Well Installation Information

RCRA Post-Closure Permit Area Groundwater Monitoring Plan

Camp Navajo, Bellemont, Arizona

VZMW ID	UTM Location Easting (m)	UTM Location Northing (m)	Elevation of Concrete Pad on North Side of Casing, in m and (feet)	Screened Interval (ft)	Total Depth Well (ft)	Depth to Weathered Bedrock (ft)	Depth to Competent Bedrock (ft)	3/18/2014 Measured Water Column Thickness (ft)
VZMW-12	422197.674	3892648.314	2152.665 (7060.741)	5.5-10.5	13	7.5	9	2.6
VZMW-13	422515.225	3892460.328	2154.204 (7065.789)	17.5-22.5	25	7.0	21.5	0
VZMW-14	421859.065	3891778.393	2159.173 (7082.087)	5.5-10.5	13	4.0	8.5	0
VZMW-15	421222.142	3892137.125	2163.044 (7094.784)	19.5-23.5	26.3	20	22.5	0
VZMW-16	421629.775	3893082.714	2154.037 (7065.241)	12.5-17.5	19.8	5.5	16.5	3.35
VZMW-17	422435.000	3892909.141	2148.087 (7045.725)	7.5-12.5	15	8.0	11.5	2.9
VZMW-18	422194.234	3893011.735	2143.003 (7029.05)	5-11	13	8.5	10.5	0
VZMW-19	422265.110	3893053.294	2141.412 (7023.831)	12.5-17.5	20	14.5	16	0.7
VZMW-20	422518.297	3893172.010	2135.145 (7003.276)	11.5-16.5	19	13.5	15	0

TABLE GWMP-2

Piezometer Installation Information

RCRA Post-Closure Permit Area Groundwater Monitoring Plan

Camp Navajo, Bellemont, Arizona

VPZ ID	UTM Location Easting (m)	UTM Location Northing (m)	Elevation Estimated ¹ at Ground Surface, in m and (feet)	Screened Interval (ft)	Total Depth Piezometer (ft)	Depth to Weathered Bedrock (ft)	Depth to Competent Bedrock (ft)	3/18/2014 Measured Water Column Thickness (ft)
VPZ-1	0421521	3893149	2156.73 (7074.07)	11.5-21.5	21.5	8	21.5	
VPZ-2	0421768	3893028	2151.69 (7057.53)	6-11	11	6.5	11	
VPZ-3	0422060	3892818	2146.79 (7041.46)	8-13	13	11	13	
VPZ-4	0422552	3893191	2133.67 (6998.44)	14-24	24	11	24	
VPZ-5	0422160	3892902	2144.54 (7034.1)	13-23	23	7	22	
VPZ-6	0422614	3892505	2150.84 (7054.77)	12-22	22	6.5	22	15.9
VPZ-7	0422053	3892647	2149.66 (7050.89)	2-7	7	4	7	
VPZ-8	0421723	3892773	2149.85 (7051.51)	16-26	26	11	26	
VPZ-9	0421174	3892730	2156.35 (7072.84)	12.5-22.5	22.5	7	22	0.4
VPZ-10	0421497	3892352	2157.21 (7075.63)	25-40	40	11	39.5	
VPZ-11	0421642	3891693	2154.86 (7067.96)	4.5-9.5	9.5	3	9.5	

TABLE GWMP-2

Piezometer Installation Information

RCRA Post-Closure Permit Area Groundwater Monitoring Plan

Camp Navajo, Bellemont, Arizona

VPZ ID	UTM Location Easting (m)	UTM Location Northing (m)	Elevation Estimated ¹ at Ground Surface, in m and (feet)	Screened Interval (ft)	Total Depth Piezometer (ft)	Depth to Weathered Bedrock (ft)	Depth to Competent Bedrock (ft)	3/18/2014 Measured Water Column Thickness (ft)
VPZ-12	0422029	3892317	2158.59 (7080.18)	7-17	17	7	10	
VPZ-13	0421792	3892442	2155.19 (7069.021)	2-7	7	2	5	
VPZ-14	0421724	3892199	2163.36 (7095.83)	15-25	25	13	25	
VPZ-15	0421525	3892109	2168.33 (7112.13)	2.5-7.5	7.5	4.5	5.5	

Notes:

¹ VPZ surface elevations were determined digitally using Arcview GIS 3d Analyst®

TABLE GWMP-3

NAAD-02 Groundwater Monitoring Wells

RCRA Post-Closure Permit Area Groundwater Monitoring Plan

Camp Navajo, Bellemont, Arizona

Well ID	Owner ID	ADWR ID 55 -	Cadastral Location	Elevation of Ground Surface (ft)	Well Depth (ft bgs)	Casing Material	Screen Interval (ft bgs)	Depth to Water (ft bmp)
1901	Arizona Army National Guard	808692	Abandoned	6986.73	29.48	PVC	9-29	NA
1902	Arizona Army National Guard	808693	Abandoned	7002.95	30.03	PVC	9.75-29.75	NA
1903	Arizona Army National Guard	808694	Abandoned	7044.41	30.52	PVC	9.85-30.52	NA
AWI-001	Arizona Army National Guard	560288	A21005027ABB	6,998.16	353.5	PVC	302.27-352.27	334
AWI-002	Arizona Army National Guard	560289	A21005027ABB	6,997.92	162	PVC	108.5-158.5	159
AWI-003	Arizona Army National Guard	560519	A21005027ABA	6,994.02	213.4	PVC	102.75-212.75	195

Notes:

bgs = below ground surface

bmp = below measuring point

ft = foot (feet)

NA= Not available

TABLE GWMP-4

Regional Aquifer Well Installation Information

RCRA Post-Closure Permit Area Groundwater Monitoring Plan

Camp Navajo, Bellemont, Arizona

Well ID	Owner ID	ADWR ID 55 -	Cadastral Location	Elevation of Ground Surface (ft)	Well Depth (ft bgs)	Casing Material	Screen Interval (ft bgs)	Depth to Water (ft bmp)
CN-1 Camp Navajo	Arizona Army National Guard	805692 ³	A21005011CBC	7,043	1,647	Steel	1,150–1,500 ¹	1,408
CN-2 Camp Navajo	Arizona Army National Guard	594719	A21005011ABA	7,140	2,084	Steel	1,646–2,046	1,583
DW-1 Bellemont	Lonnie McCleve	593267	A22005036BDC	7,152	2,440	Steel	1,530–1,947	1,550
DW-2 Bellemont	Fuelco	598834	A22005036CCC	7,133	2,100	Steel	1,540–2,100	1,542
DW-3 Bellemont	Greenland Field Development	203241	A22005036CCC	7,125	2,825	Steel	2,275–2,801	1,606
DW-4 Bellemont	Utility Source LLC	206887	A21006006CBA	7,160	2,908	Steel	2,080–2,150	1,675
WP-1 Garland Prairie	Development Services of America	908359 ³	A21004005DCB	6,817	3,580	Steel	2,580–3,580	1,863
VC-1 Veterans Cemetery	Arizona Department of Veterans Services	223967 ³	A21005003ABA	7,170	2,203	Steel	1,887-2203	2,080
WM-3 Woody Mountain	City of Flagstaff	606203 ⁴	A21006035BCC	7,129 ²	1,600	Steel	1,300–1,600	1,340
WM-5 Woody Mountain	City of Flagstaff	606205 ⁴	A20006002BBC	7,186 ²	1,600	Steel	1,050–1,600	1,294

Notes:

¹ Casing was perforated between 1,150 and 1,500 feet below ground surface (ft bgs). Casing may have dropped approximately 20 feet during later construction of the vault.

² Elevation measured from top of casing (Brown and Caldwell, 2008).

³ Post-closure groundwater monitoring well.

⁴ Interim Status groundwater monitoring well.

ft bmp = foot (feet) below measuring point

TABLE GWMP-5

2009 Vadose Zone Monitor Well Sampling Results

RCRA Post-Closure Permit Area Groundwater Monitoring Plan

Camp Navajo, Bellemont, Arizona

Location ID:			VZMW-01	VZMW-01	VZMW-02	VZMW-04	VZMW-04	VZMW-04	VZMW-04	VZMW-04	VZMW-05	VZMW-05	VZMW-05	VZMW-05
Sample ID:			N0203-VZMW1-01	VZMW-01-001	VZMW-02-001	N0203-VZMW4-01	N0203-VZMW40-01	VZMW-04-001	VZMW-40-001	VZMW-04-002	ND0203-VZMW5-01	VZMW-05-001	VZMW-05-002	VZMW-21-002
Sample Date:			3/2/2009	3/25/2009	3/26/2009	3/2/2009	3/2/2009	3/25/2009	3/25/2009	7/29/2009	3/2/2009	3/25/2009	7/29/2009	7/29/2009
Sample Purpose:			N	N	N	N	FD	N	FD	N	N	N	FD	
Analytical Method	Analyte	Units												
E200.7	ALUMINUM	µg/L	173	--	16.3	162	<50	--	--	--	<50	--	--	--
E200.7	BARIUM	µg/L	--	--	45.2	--	--	--	--	--	--	--	--	--
E200.7	CHROMIUM	µg/L	--	--	1.1	--	--	--	--	--	--	--	--	--
E200.7	COBALT	µg/L	<10	--	0.5	<10	<10	--	--	--	<10	--	--	--
E200.7	COPPER	µg/L	<10	--	<10* ^{1,A}	<10	<10	--	--	--	<10	--	--	--
E200.7	IRON	µg/L	<20* ^{1,A}	--	13.7	<20* ^{1,A}	<20* ^{1,A}	--	--	--	<20* ^{1,A}	--	--	--
E200.7	MAGNESIUM	µg/L	34500 J ^{2,F}	--	38300	135000	135000	--	--	--	43100	--	--	--
E200.7	MANGANESE	µg/L	3.7	--	5.5	<5	<5	--	--	--	<5	--	--	--
E200.7	MOLYBDENUM	µg/L	4.4	--	0.6	5	3.2	--	--	--	<10	--	--	--
E200.7	NICKEL	µg/L	<10	--	--	<10	<10	--	--	--	<10	--	--	--
E200.7	POTASSIUM	µg/L	1150	--	834	3690	3680	--	--	--	906	--	--	--
E200.7	SODIUM	µg/L	5010	--	26100	50400	51000	--	--	--	2190	--	--	--
E200.7	VANADIUM	µg/L	<10	--	3.8	7.7	9.5	--	--	--	<10	--	--	--
E200.7	ZINC	µg/L	2.2	--	5.8	2.8	<10	--	--	--	<10	--	--	--
E200.8	ANTIMONY	µg/L	0.236	--	0.164	0.376	0.368	--	--	--	0.208	--	--	--
E200.8	ARSENIC	µg/L	1.5	--	2.8	2.5	2.6	--	--	--	0.83	--	--	--
E200.8	BARIUM	µg/L	42.8	--	--	425	427	--	--	--	52.3	--	--	--
E200.8	BERYLLIUM	µg/L	<0.02	--	0.025	<0.02* ^{1,A}	<0.02	--	--	--	<0.02	--	--	--
E200.8	CADMIUM	µg/L	<0.02 ^{1,A}	--	0.267	<0.02* ^{1,A}	<0.02* ^{1,A}	--	--	--	<0.02* ^{1,A}	--	--	--
E200.8	CHROMIUM	µg/L	1.62	--	--	<0.2 ^{1,A}	<0.2* ^{1,A}	--	--	--	1.03	--	--	--
E200.8	LEAD	µg/L	<0.02 ^{1,A}	--	0.332	0.25 J ^{2,D}	<0.02 ^{2,D}	--	--	--	<0.02 ^{1,A}	--	--	--
E200.8	NICKEL	µg/L	--	--	1.29	--	--	--	--	--	--	--	--	--
E200.8	SELENIUM	µg/L	1.3	--	2.8	1.5	1.5	--	--	--	0.8	--	--	--
E200.8	SILVER	µg/L	<0.02 ^{1,A}	--	<0.02* ^{1,A}	0.05 J ^{2,D}	<0.02* ^{3,A,D}	--	--	--	<0.02	--	--	--
E200.8	THALLIUM	µg/L	<0.02* ^{1,A}	--	<0.02* ^{1,A}	0.523	0.527	--	--	--	<0.02* ^{1,A}	--	--	--
E245.1	MERCURY	µg/L	<0.2	--	<0.2	<0.2	<0.2	--	--	--	<0.2	--	--	--
E314.0	PERCHLORATE	µg/L	3	--	37	<1	<1	--	--	--	6	--	--	--
E332.0	Perchlorate	µg/L	--	--	--	--	--	--	--	0.15	--	--	1.9 J ^{2,E}	1.9 J ^{2,E}
E353.2	NITRATE + NITRITE-N	mg/L	0.29	--	1.40	0.89	0.88	--	--	--	<0.05 ^{1,A}	--	--	--
SW8270C	1,2,4-TRICHLOROBENZENE	µg/L	--	<9.8	<11	--	--	<11	<11	--	--	<11	--	--
SW8270C	1,2-DICHLOROBENZENE	µg/L	--	<9.8	<11	--	--	<11	<11	--	--	<11	--	--
SW8270C	1,2-DIPHENYLHYDRAZINE	µg/L	--	<9.8	<11	--	--	<11	<11	--	--	<11	--	--
SW8270C	1,3-DICHLOROBENZENE	µg/L	--	<9.8	<11	--	--	<11	<11	--	--	<11	--	--
SW8270C	1,4-DICHLOROBENZENE	µg/L	--	<9.8	<11	--	--	<11	<11	--	--	<11	--	--
SW8270C	2,4,5-TRICHLOROPHENOL	µg/L	--	<9.8	<11	--	--	<11	<11	--	--	<11	--	--
SW8270C	2,4,6-TRICHLOROPHENOL	µg/L	--	<9.8	<11	--	--	<11	<11	--	--	<11	--	--
SW8270C	2,4-DICHLOROPHENOL	µg/L	--	<9.8	<11	--	--	<11	<11	--	--	<11	--	--
SW8270C	2,4-DIMETHYLPHENOL	µg/L	--	<9.8	<11	--	--	<11	<11	--	--	<11	--	--

TABLE GWMP-5

2009 Vadose Zone Monitor Well Sampling Results

RCRA Post-Closure Permit Area Groundwater Monitoring Plan

Camp Navajo, Bellemont, Arizona

	Location ID:		VZMW-01	VZMW-01	VZMW-02	VZMW-04	VZMW-04	VZMW-04	VZMW-04	VZMW-04	VZMW-05	VZMW-05	VZMW-05	VZMW-05
	Sample ID:		N0203-VZMW1-01	VZMW-01-001	VZMW-02-001	N0203-VZMW4-01	N0203-VZMW40-01	VZMW-04-001	VZMW-40-001	VZMW-04-002	ND0203-VZMW5-01	VZMW-05-001	VZMW-05-002	VZMW-21-002
	Sample Date:		3/2/2009	3/25/2009	3/26/2009	3/2/2009	3/2/2009	3/25/2009	3/25/2009	7/29/2009	3/2/2009	3/25/2009	7/29/2009	7/29/2009
	Sample Purpose:		N	N	N	N	FD	N	FD	N	N	N	N	FD
Analytical Method	Analyte	Units												
SW8270C	2,4-DINITROPHENOL	µg/L	--	<20	<22	--	--	<22	<22	--	--	<21	--	--
SW8270C	2,4-DINITROTOLUENE	µg/L	--	<9.8	<11	--	--	<11	<11	--	--	<11	--	--
SW8270C	2,6-DINITROTOLUENE	µg/L	--	<9.8	<11	--	--	<11	<11	--	--	<11	--	--
SW8270C	2-CHLORONAPHTHALENE	µg/L	--	<9.8	<11	--	--	<11	<11	--	--	<11	--	--
SW8270C	2-CHLOROPHENOL	µg/L	--	<9.8	<11	--	--	<11	<11	--	--	<11	--	--
SW8270C	2-METHYLNAPHTHALENE	µg/L	--	<9.8	<11	--	--	<11	<11	--	--	<11	--	--
SW8270C	2-METHYLPHENOL	µg/L	--	<9.8	<11	--	--	<11	<11	--	--	<11	--	--
SW8270C	2-NITROANILINE	µg/L	--	<20	<22	--	--	<22	<22	--	--	<21	--	--
SW8270C	2-NITROPHENOL	µg/L	--	<9.8	<11	--	--	<11	<11	--	--	<11	--	--
SW8270C	3,3'-DICHLOROBENZIDINE	µg/L	--	<9.8	<11	--	--	<11	<11	--	--	<11	--	--
SW8270C	3-NITROANILINE	µg/L	--	<20	<22	--	--	<22	<22	--	--	<21	--	--
SW8270C	4,6-DINITRO-2-METHYLPHENOL	µg/L	--	<9.8	<11	--	--	<11	<11	--	--	<11	--	--
SW8270C	4-BROMOPHENYL PHENYL ETHER	µg/L	--	<9.8	<11	--	--	<11	<11	--	--	<11	--	--
SW8270C	4-CHLORO-3-METHYLPHENOL	µg/L	--	<9.8	<11	--	--	<11	<11	--	--	<11	--	--
SW8270C	4-CHLOROANILINE	µg/L	--	<9.8	<11	--	--	<11	<11	--	--	<11	--	--
SW8270C	4-CHLOROPHENYL PHENYL ETHER	µg/L	--	<9.8	<11	--	--	<11	<11	--	--	<11	--	--
SW8270C	4-METHYLPHENOL	µg/L	--	<9.8	<11	--	--	<11	<11	--	--	<11	--	--
SW8270C	4-NITROANILINE	µg/L	--	<20	<22	--	--	<22	<22	--	--	<21	--	--
SW8270C	4-NITROPHENOL	µg/L	--	<9.8	<11	--	--	<11	<11	--	--	<11	--	--
SW8270C	ACENAPHTHENE	µg/L	--	<9.8	<11	--	--	<11	<11	--	--	<11	--	--
SW8270C	ACENAPHTHYLENE	µg/L	--	<9.8	<11	--	--	<11	<11	--	--	<11	--	--
SW8270C	ANILINE	µg/L	--	<9.8	<11	--	--	<11	<11	--	--	<11	--	--
SW8270C	ANTHRACENE	µg/L	--	<9.8	<11	--	--	<11	<11	--	--	<11	--	--
SW8270C	BENZO (A) ANTHRACENE	µg/L	--	<9.8	<11	--	--	<11	<11	--	--	<11	--	--
SW8270C	BENZO (A) PYRENE	µg/L	--	<9.8	<11	--	--	<11	<11	--	--	<11	--	--
SW8270C	BENZO (B) FLUORANTHENE	µg/L	--	<9.8	<11	--	--	<11	<11	--	--	<11	--	--
SW8270C	BENZO (G,H,I) PERYLENE	µg/L	--	<9.8	<11	--	--	<11	<11	--	--	<11	--	--
SW8270C	BENZO(K)FLUORANTHENE	µg/L	--	<9.8	<11	--	--	<11	<11	--	--	<11	--	--
SW8270C	BENZOIC ACID	µg/L	--	<25	<27	--	--	<27	<27	--	--	<26	--	--
SW8270C	BENZYL ALCOHOL	µg/L	--	<9.8	<11	--	--	<11	<11	--	--	<11	--	--
SW8270C	BIS (2-CHLOROETHOXY) METHANE	µg/L	--	<9.8	<11	--	--	<11	<11	--	--	<11	--	--
SW8270C	BIS (2-CHLOROETHYL) ETHER	µg/L	--	<9.8	<11	--	--	<11	<11	--	--	<11	--	--
SW8270C	BIS (2-ETHYLHEXYL) PHTHALATE	µg/L	--	38	4.9 J	--	--	29	30	--	--	28	--	--
SW8270C	Bis(2-chloroisopropyl) Ether	µg/L	--	<9.8	<11	--	--	<11	<11	--	--	<11	--	--
SW8270C	BUTYL BENZYLPHTHALATE	µg/L	--	<9.8	<11	--	--	<11	<11	--	--	<11	--	--
SW8270C	CHRYSENE	µg/L	--	<9.8	<11	--	--	<11	<11	--	--	<11	--	--
SW8270C	DIBENZO (A,H) ANTHRACENE	µg/L	--	<9.8	<11	--	--	<11	<11	--	--	<11	--	--
SW8270C	DIBENZOFURAN	µg/L	--	<9.8	<11	--	--	<11	<11	--	--	<11	--	--

TABLE GWMP-5

2009 Vadose Zone Monitor Well Sampling Results

RCRA Post-Closure Permit Area Groundwater Monitoring Plan

Camp Navajo, Bellemont, Arizona

Location ID:			VZMW-01	VZMW-01	VZMW-02	VZMW-04	VZMW-04	VZMW-04	VZMW-04	VZMW-04	VZMW-05	VZMW-05	VZMW-05	VZMW-05
Sample ID:			N0203-VZMW1-01	VZMW-01-001	VZMW-02-001	N0203-VZMW4-01	N0203-VZMW40-01	VZMW-04-001	VZMW-40-001	VZMW-04-002	ND0203-VZMW5-01	VZMW-05-001	VZMW-05-002	VZMW-21-002
Sample Date:			3/2/2009	3/25/2009	3/26/2009	3/2/2009	3/2/2009	3/25/2009	3/25/2009	7/29/2009	3/2/2009	3/25/2009	7/29/2009	7/29/2009
Sample Purpose:			N	N	N	N	FD	N	FD	N	N	N	N	FD
Analytical Method	Analyte	Units												
SW8270C	DIETHYL PHTHALATE	µg/L	--	<9.8	<11	--	--	<11	<11	--	--	<11	--	--
SW8270C	DIMETHYL PHTHALATE	µg/L	--	<9.8	0.36 J	--	--	<11	<11	--	--	<11	--	--
SW8270C	DI-N-BUTYLPHthalate	µg/L	--	<9.8	0.41 J	--	--	<11	<11	--	--	<11	--	--
SW8270C	DI-N-OCTYLPHthalate	µg/L	--	<9.8	<11	--	--	<11	<11	--	--	<11	--	--
SW8270C	FLUORANTHENE	µg/L	--	<9.8* 1,A	<11* 1,A	--	--	<11* 1,A	<11* 1,A	--	--	<11* 1,A	--	--
SW8270C	FLUORENE	µg/L	--	<9.8	<11	--	--	<11	<11	--	--	<11	--	--
SW8270C	HEXACHLOROBENZENE	µg/L	--	<9.8	<11	--	--	<11	<11	--	--	<11	--	--
SW8270C	HEXACHLOROBUTADIENE	µg/L	--	<9.8	<11	--	--	<11	<11	--	--	<11	--	--
SW8270C	µg/L	µg/L	--	<9.8	<11	--	--	<11	<11	--	--	<11	--	--
SW8270C	µg/L	µg/L	--	<9.8	<11	--	--	<11	<11	--	--	<11	--	--
SW8270C	INDENO (1,2,3-C,D) PYRENE	µg/L	--	<9.8	<11	--	--	<11	<11	--	--	<11	--	--
SW8270C	ISOPHORONE	µg/L	--	<9.8	<11	--	--	<11	<11	--	--	<11	--	--
SW8270C	NAPHTHALENE	µg/L	--	<9.8	<11	--	--	<11	<11	--	--	<11	--	--
SW8270C	NITROBENZENE	µg/L	--	<9.8	<11	--	--	<11	<11	--	--	<11	--	--
SW8270C	N-NITROSODIMETHYLAMINE	µg/L	--	<9.8	<11	--	--	<11	<11	--	--	<11	--	--
SW8270C	N-NITROSODI-N-PROPYLAMINE	µg/L	--	<9.8	<11	--	--	<11	<11	--	--	<11	--	--
SW8270C	N-NITROSODIPHENYLAMINE	µg/L	--	<9.8	<11	--	--	<11	<11	--	--	<11	--	--
SW8270C	PENTACHLOROPHENOL	µg/L	--	<9.8	<11	--	--	<11	<11	--	--	<11	--	--
SW8270C	PHENANTHRENE	µg/L	--	<9.8	<11	--	--	<11	<11	--	--	<11	--	--
SW8270C	PHENOL	µg/L	--	<9.8	<11	--	--	<11	<11	--	--	<11	--	--
SW8270C	PYRENE	µg/L	--	<9.8	<11	--	--	<11	<11	--	--	<11	--	--
SW8270C SIM	2-METHYLNAPHTHALENE	µg/L	<4.0 1,A	--	--	<3.6* 1,A	<3.6* 1,A	--	--	--	<3.8* 1,A	--	--	--
SW8270C SIM	ACENAPHTHENE	ng/L	<4.0 3,B	--	--	<3.6 3,B	<3.6 3,B	--	--	--	<3.8 3,B	--	--	--
SW8270C SIM	ACENAPHTHYLENE	ng/L	<4.0 3,B	--	--	<3.6 3,B	<3.6 3,B	--	--	--	<3.8 3,B	--	--	--
SW8270C SIM	ANTHRACENE	ng/L	<4.0	--	--	<3.6	<3.6	--	--	--	<3.8	--	--	--
SW8270C SIM	BENZO (A) ANTHRACENE	ng/L	<4.0	--	--	<3.6	<3.6	--	--	--	<3.8	--	--	--
SW8270C SIM	BENZO (A) PYRENE	ng/L	<4.0	--	--	<3.6	<3.6	--	--	--	<3.8	--	--	--
SW8270C SIM	BENZO (B) FLUORANTHENE	ng/L	<4.0	--	--	<3.6	<3.6	--	--	--	<3.8	--	--	--
SW8270C SIM	BENZO (G,H,I) PERYLENE	ng/L	<4.0	--	--	<3.6	<3.6	--	--	--	<3.8	--	--	--
SW8270C SIM	BENZO(K)FLUORANTHENE	ng/L	<4.0	--	--	<3.6	<3.6	--	--	--	<3.8	--	--	--
SW8270C SIM	CHRYSENE	ng/L	<4.0 3,B	--	--	<3.6 3,B	<3.6 3,B	--	--	--	<3.8 3,B	--	--	--
SW8270C SIM	DIBENZO (A,H) ANTHRACENE	ng/L	<4.0* 1,A	--	--	<3.6	<3.6	--	--	--	<3.8	--	--	--
SW8270C SIM	DIBENZOFURAN	ng/L	<4.0 3,B	--	--	<3.6 3,B	<3.6 3,B	--	--	--	<3.8 3,B	--	--	--
SW8270C SIM	FLUORANTHENE	ng/L	<4.0* 3,A,B	--	--	<3.6 3,B	<3.6 3,B	--	--	--	<3.8* 3,A,B	--	--	--
SW8270C SIM	FLUORENE	ng/L	<4.0 3,B	--	--	<3.6 3,B	<3.6 3,B	--	--	--	0.68 J 2,B	--	--	--
SW8270C SIM	INDENO (1,2,3-C,D) PYRENE	ng/L	<4.0	--	--	<3.6	<3.6	--	--	--	<3.8	--	--	--
SW8270C SIM	NAPHTHALENE	ng/L	<4.0 3,A,B	--	--	<3.6* 3,A,B	<3.6* 3,A,B	--	--	--	<3.8 3,A,B	--	--	--
SW8270C SIM	PHENANTHRENE	ng/L	<4.0	--	--	<3.6	<3.6* 1,A	--	--	--	<3.8	--	--	--

See last page for notes.

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TABLE GWMP-5

2009 Vadose Zone Monitor Well Sampling Results

RCRA Post-Closure Permit Area Groundwater Monitoring Plan

Camp Navajo, Bellemont, Arizona

Location ID:		VZMW-01	VZMW-01	VZMW-02	VZMW-04	VZMW-04	VZMW-04	VZMW-04	VZMW-04	VZMW-05	VZMW-05	VZMW-05	VZMW-05
Sample ID:		N0203-VZMW1-01	VZMW-01-001	VZMW-02-001	N0203-VZMW4-01	N0203-VZMW40-01	VZMW-04-001	VZMW-40-001	VZMW-04-002	ND0203-VZMW5-01	VZMW-05-001	VZMW-05-002	VZMW-21-002
Sample Date:		3/2/2009	3/25/2009	3/26/2009	3/2/2009	3/2/2009	3/25/2009	3/25/2009	7/29/2009	3/2/2009	3/25/2009	7/29/2009	7/29/2009
Sample Purpose:		N	N	N	N	FD	N	FD	N	N	N	N	FD
Analytical Method	Analyte	Units											
SW8270C SIM	PYRENE	ng/L	<4.0* ^{1,A}	--	--	<3.6	<3.6	--	--	--	<3.8* ^{1,A}	--	--
SW8330	1,3,5-TRINITROBENZENE	µg/L	0.20 J	--	<2.2	<2.3	<2.2	--	--	<2.3	<2.1	--	<2.0
SW8330	1,3-DINITROBENZENE	µg/L	<2.3* ^{1,A}	--	<2.2* ^{1,A}	<2.3* ^{1,A}	<2.2* ^{1,A}	--	--	<2.3	<2.1* ^{1,A}	--	<2.0* ^{1,A}
SW8330	2,4,6-TRINITROTOLUENE	µg/L	<2.3	--	<2.2	<2.3	<2.2	--	--	<2.3	<2.1	--	0.20 J
SW8330	2,4-DINITROTOLUENE	µg/L	<2.3	--	<2.2	0.27 J	0.26 J	--	--	<2.3	<2.1	--	<2.0
SW8330	2,6-DINITROTOLUENE	µg/L	<2.3	--	<2.2	<2.3	<2.2	--	--	<2.3	<2.1	--	<2.0
SW8330	2-AMINO-4,6-DINITROTOLUENE	µg/L	<2.3	--	<2.2	<2.3	<2.2	--	--	<2.3	<2.1	--	0.33 J
SW8330	2-NITROTOLUENE	µg/L	<2.3	--	<2.2	<2.3	<2.2	--	--	<2.3	<2.1	--	<2.0
SW8330	3-NITROTOLUENE	µg/L	<2.3	--	<2.2	<2.3	<2.2	--	--	<2.3	<2.1	--	<2.0
SW8330	4-AMINO-2,6-DINITROTOLUENE	µg/L	0.58 J	--	0.31 J	0.70 J	0.73 J	--	--	0.58 J^{2,B}	0.31 J	--	0.83 J^{2,B}
SW8330	4-NITROTOLUENE	µg/L	<2.3	--	<2.2	<2.3	<2.2	--	--	<2.3	<2.1	--	<2.0
SW8330	HMX	µg/L	11 J^{2,C}	--	0.67 J	<2.3	<2.2	--	--	<2.3	6.3 J^{2,C}	--	5.6
SW8330	NITROBENZENE	µg/L	<2.3	--	<2.2	<2.3	<2.2	--	--	<2.3	<2.1	--	<2.0
SW8330	RDX	µg/L	38 J^{2,C}	--	8.3 J^{2,C}	0.76 J	0.75 J	--	--	1.3 J	33 J^{2,C}	--	38
SW8330	TETRYL	µg/L	<2.3	--	<2.2	<2.3	<2.2	--	--	<2.3	<2.1	--	<2.0

TABLE GWMP-5

2009 Vadose Zone Monitor Well Sampling Results

RCRA Post-Closure Permit Area Groundwater Monitoring Plan

Camp Navajo, Bellemont, Arizona

Location ID:			VZMW-06	VZMW-06	VZMW-07	VZMW-07	VZMW-08	VZMW-08	VZMW-09	VZMW-09	VZMW-11	VZMW-16	VZMW-16	VZMW-17	VZMW-17
Sample ID:			N0203-VZMW6-01	VZMW-06-001	VZMW-07-001	VZMW-07-001B	VZMW-08-001	VZMW-08-001B	ND0203-VZMW9-01	VZMW-09-001	VZMW-11-001	ND0203-VZMW16-01	VZMW-16-001	VZMW-17-001	VZMW-17-002
Sample Date:			3/2/2009	3/25/2009	3/25/2009	4/1/2009	3/25/2009	4/1/2009	3/2/2009	3/25/2009	3/26/2009	3/2/2009	3/25/2009	3/26/2009	7/29/2009
Sample Purpose:			N	N	N	N	N	N	N	N	N	N	N	N	N
Analytical Method	Analyte	Units													
E200.7	ALUMINUM	µg/L	34	--	--	--	--	--	<50	--	--	<50	--	<50	--
E200.7	BARIUM	µg/L	--	--	--	--	--	--	--	--	--	--	--	46	--
E200.7	CHROMIUM	µg/L	--	--	--	--	--	--	--	--	--	--	--	1.1	--
E200.7	COBALT	µg/L	<10	--	--	--	--	--	<10	--	--	<10	--	<10	--
E200.7	COPPER	µg/L	<10	--	--	--	--	--	<10	--	--	<10	--	<10* 1,A	--
E200.7	IRON	µg/L	<20* 1,A	--	--	--	--	--	<20* 1,A	--	--	<20* 1,A	--	4.6	--
E200.7	MAGNESIUM	µg/L	19000	--	--	--	--	--	17600	--	--	15800	--	16100	--
E200.7	MANGANESE	µg/L	26	--	--	--	--	--	1.5	--	--	6.4	--	0.5	--
E200.7	MOLYBDENUM	µg/L	<10	--	--	--	--	--	<10	--	--	4.5	--	11	--
E200.7	NICKEL	µg/L	<10	--	--	--	--	--	<10	--	--	<10	--	--	--
E200.7	POTASSIUM	µg/L	1110	--	--	--	--	--	506	--	--	808	--	2670	--
E200.7	SODIUM	µg/L	11200	--	--	--	--	--	1280	--	--	16300	--	27200	--
E200.7	VANADIUM	µg/L	<10	--	--	--	--	--	<10	--	--	<10	--	1.4	--
E200.7	ZINC	µg/L	2.4	--	--	--	--	--	<10	--	--	<10	--	<10* 1,A	--
E200.8	ANTIMONY	µg/L	0.088	--	--	--	--	--	0.031	--	--	0.064	--	0.231	--
E200.8	ARSENIC	µg/L	0.77	--	--	--	--	--	1.7	--	--	2.1	--	1.2	--
E200.8	BARIUM	µg/L	61.3	--	--	--	--	--	20.1	--	--	25.3	--	--	--
E200.8	BERYLLIUM	µg/L	<0.02	--	--	--	--	--	<0.02	--	--	<0.02	--	<0.02	--
E200.8	CADMIUM	µg/L	0.028	--	--	--	--	--	<0.02* 1,A	--	--	<0.02* 1,A	--	0.043	--
E200.8	CHROMIUM	µg/L	6.83	--	--	--	--	--	1.86	--	--	2.36	--	--	--
E200.8	LEAD	µg/L	0.17	--	--	--	--	--	<0.02* 1,A	--	--	<0.02* 1,A	--	0.024	--
E200.8	NICKEL	µg/L	--	--	--	--	--	--	--	--	--	--	--	0.69	--
E200.8	SELENIUM	µg/L	1.7	--	--	--	--	--	<2	--	--	1.5	--	1.3	--
E200.8	SILVER	µg/L	<0.02* 1,A	--	--	--	--	--	<0.02	--	--	<0.02 1,A	--	<0.02* 1,A	--
E200.8	THALLIUM	µg/L	<0.02	--	--	--	--	--	<0.02	--	--	<0.02* 1,A	--	<0.02* 1,A	--
E245.1	MERCURY	µg/L	<0.2	--	--	--	--	--	<0.2	--	--	<0.2	--	<0.2	--
E314.0	PERCHLORATE	µg/L	10	--	<1	--	204	--	0.9 J	--	<1	<1	--	<1	--
E332.0	Perchlorate	µg/L	--	--	--	--	--	--	--	--	--	--	--	--	0.42 J 2,E
E353.2	NITRATE + NITRITE-N	mg/L	0.28	--	--	--	--	--	1.28	<0.05* 1,A	--	0.43	--	0.62	--
SW8270C	1,2,4-TRICHLOROBENZENE	µg/L	--	<10	--	--	--	--	--	<10	--	--	<11	<11	--
SW8270C	1,2-DICHLOROBENZENE	µg/L	--	<10	--	--	--	--	--	<10	--	--	<11	<11	--
SW8270C	1,2-DIPHENYLHYDRAZINE	µg/L	--	<10	--	--	--	--	--	<10	--	--	<11	<11	--
SW8270C	1,3-DICHLOROBENZENE	µg/L	--	<10	--	--	--	--	--	<10	--	--	<11	<11	--
SW8270C	1,4-DICHLOROBENZENE	µg/L	--	<10	--	--	--	--	--	<10	--	--	<11	<11	--
SW8270C	2,4,5-TRICHLOROPHENOL	µg/L	--	<10	--	--	--	--	--	<10	--	--	<11	<11	--
SW8270C	2,4,6-TRICHLOROPHENOL	µg/L	--	<10	--	--	--	--	--	<10	--	--	<11	<11	--
SW8270C	2,4-DICHLOROPHENOL	µg/L	--	<10	--	--	--	--	--	<10	--	--	<11	<11	--
SW8270C	2,4-DIMETHYLPHENOL	µg/L	--	<10	--	--	--	--	--	<10	--	--	<11	<11	--

TABLE GWMP-5

2009 Vadose Zone Monitor Well Sampling Results

RCRA Post-Closure Permit Area Groundwater Monitoring Plan

Camp Navajo, Bellemont, Arizona

	Location ID:		VZMW-06	VZMW-06	VZMW-07	VZMW-07	VZMW-08	VZMW-08	VZMW-09	VZMW-09	VZMW-11	VZMW-16	VZMW-16	VZMW-17	VZMW-17
	Sample ID:		N0203-VZMW6-01	VZMW-06-001	VZMW-07-001	VZMW-07-001B	VZMW-08-001	VZMW-08-001B	ND0203-VZMW9-01	VZMW-09-001	VZMW-11-001	ND0203-VZMW16-01	VZMW-16-001	VZMW-17-001	VZMW-17-002
	Sample Date:		3/2/2009	3/25/2009	3/25/2009	4/1/2009	3/25/2009	4/1/2009	3/2/2009	3/25/2009	3/26/2009	3/2/2009	3/25/2009	3/26/2009	7/29/2009
	Sample Purpose:		N	N	N	N	N	N	N	N	N	N	N	N	N
Analytical Method	Analyte	Units													
SW8270C	2,4-DINITROPHENOL	µg/L	--	<20	--	--	--	--	--	<20	--	--	<22	<22	--
SW8270C	2,4-DINITROTOLUENE	µg/L	--	<10	--	--	--	--	--	<10	--	--	<11	<11	--
SW8270C	2,6-DINITROTOLUENE	µg/L	--	<10	--	--	--	--	--	<10	--	--	<11	<11	--
SW8270C	2-CHLORONAPHTHALENE	µg/L	--	<10	--	--	--	--	--	<10	--	--	<11	<11	--
SW8270C	2-CHLOROPHENOL	µg/L	--	<10	--	--	--	--	--	<10	--	--	<11	<11	--
SW8270C	2-METHYLNAPHTHALENE	µg/L	--	<10	--	--	--	--	--	<10	--	--	<11	<11	--
SW8270C	2-METHYLPHENOL	µg/L	--	<10	--	--	--	--	--	<10	--	--	<11	<11	--
SW8270C	2-NITROANILINE	µg/L	--	<20	--	--	--	--	--	<20	--	--	<22	<22	--
SW8270C	2-NITROPHENOL	µg/L	--	<10	--	--	--	--	--	<10	--	--	<11	<11	--
SW8270C	3,3'-DICHLOROBENZIDINE	µg/L	--	<10	--	--	--	--	--	<10	--	--	<11	<11	--
SW8270C	3-NITROANILINE	µg/L	--	<20	--	--	--	--	--	<20	--	--	<22	<22	--
SW8270C	4,6-DINITRO-2-METHYLPHENOL	µg/L	--	<10	--	--	--	--	--	<10	--	--	<11	<11	--
SW8270C	4-BROMOPHENYL PHENYL ETHER	µg/L	--	<10	--	--	--	--	--	<10	--	--	<11	<11	--
SW8270C	4-CHLORO-3-METHYLPHENOL	µg/L	--	<10	--	--	--	--	--	<10	--	--	<11	<11	--
SW8270C	4-CHLOROANILINE	µg/L	--	<10	--	--	--	--	--	<10	--	--	<11	<11	--
SW8270C	4-CHLOROPHENYL PHENYL ETHER	µg/L	--	<10	--	--	--	--	--	<10	--	--	<11	<11	--
SW8270C	4-METHYLPHENOL	µg/L	--	<10	--	--	--	--	--	<10	--	--	<11	<11	--
SW8270C	4-NITROANILINE	µg/L	--	<20	--	--	--	--	--	<20	--	--	<22	<22	--
SW8270C	4-NITROPHENOL	µg/L	--	<10	--	--	--	--	--	<10	--	--	<11	<11	--
SW8270C	ACENAPHTHENE	µg/L	--	<10	--	--	--	--	--	<10	--	--	<11	<11	--
SW8270C	ACENAPHTHYLENE	µg/L	--	<10	--	--	--	--	--	<10	--	--	<11	<11	--
SW8270C	ANILINE	µg/L	--	<10	--	--	--	--	--	<10	--	--	<11	<11	--
SW8270C	ANTHRACENE	µg/L	--	<10	--	--	--	--	--	<10	--	--	<11	<11	--
SW8270C	BENZO (A) ANTHRACENE	µg/L	--	<10	--	--	--	--	--	<10	--	--	<11	<11	--
SW8270C	BENZO (A) PYRENE	µg/L	--	<10	--	--	--	--	--	<10	--	--	<11	<11	--
SW8270C	BENZO (B) FLUORANTHENE	µg/L	--	<10	--	--	--	--	--	<10	--	--	<11	<11	--
SW8270C	BENZO (G,H,I) PERYLENE	µg/L	--	<10	--	--	--	--	--	<10	--	--	<11	<11	--
SW8270C	BENZO(K)FLUORANTHENE	µg/L	--	<10	--	--	--	--	--	<10	--	--	<11	<11	--
SW8270C	BENZOIC ACID	µg/L	--	<25	--	--	--	--	--	<25	--	--	<27	<27	--
SW8270C	BENZYL ALCOHOL	µg/L	--	<10	--	--	--	--	--	<10	--	--	<11	<11	--
SW8270C	BIS (2-CHLOROETHOXY) METHANE	µg/L	--	<10	--	--	--	--	--	<10	--	--	<11	<11	--
SW8270C	BIS (2-CHLOROETHYL) ETHER	µg/L	--	<10	--	--	--	--	--	<10	--	--	<11	<11	--
SW8270C	BIS (2-ETHYLHEXYL) PHTHALATE	µg/L	--	2.3 J	--	--	--	--	--	28	--	--	53	<11	--
SW8270C	Bis(2-chloroisopropyl) Ether	µg/L	--	<10	--	--	--	--	--	<10	--	--	<11	<11	--
SW8270C	BUTYL BENZYLPHTHALATE	µg/L	--	<10	--	--	--	--	--	<10	--	--	<11	<11	--
SW8270C	CHRYSENE	µg/L	--	<10	--	--	--	--	--	<10	--	--	<11	<11	--
SW8270C	DIBENZO (A,H) ANTHRACENE	µg/L	--	<10	--	--	--	--	--	<10	--	--	<11	<11	--
SW8270C	DIBENZOFURAN	µg/L	--	<10	--	--	--	--	--	<10	--	--	<11	<11	--

TABLE GWMP-5

2009 Vadose Zone Monitor Well Sampling Results

RCRA Post-Closure Permit Area Groundwater Monitoring Plan

Camp Navajo, Bellemont, Arizona

Location ID:			VZMW-06	VZMW-06	VZMW-07	VZMW-07	VZMW-08	VZMW-08	VZMW-09	VZMW-09	VZMW-11	VZMW-16	VZMW-16	VZMW-17	VZMW-17
Sample ID:			N0203-VZMW6-01	VZMW-06-001	VZMW-07-001	VZMW-07-001B	VZMW-08-001	VZMW-08-001B	ND0203-VZMW9-01	VZMW-09-001	VZMW-11-001	ND0203-VZMW16-01	VZMW-16-001	VZMW-17-001	VZMW-17-002
Sample Date:			3/2/2009	3/25/2009	3/25/2009	4/1/2009	3/25/2009	4/1/2009	3/2/2009	3/25/2009	3/26/2009	3/2/2009	3/25/2009	3/26/2009	7/29/2009
Sample Purpose:			N	N	N	N	N	N	N	N	N	N	N	N	N
Analytical Method	Analyte	Units													
SW8270C	DIETHYL PHTHALATE	µg/L	--	<10	--	--	--	--	--	<10	--	--	<11	<11	--
SW8270C	DIMETHYL PHTHALATE	µg/L	--	<10	--	--	--	--	--	<10	--	--	<11	<11	--
SW8270C	DI-N-BUTYLPHthalate	µg/L	--	0.39 J	--	--	--	--	--	<10	--	--	<11	<11	--
SW8270C	DI-N-OCTYLPHthalate	µg/L	--	<10	--	--	--	--	--	<10	--	--	<11	<11	--
SW8270C	FLUORANTHENE	µg/L	--	<10* ^{1,A}	--	--	--	--	--	<10* ^{1,A}	--	--	<11* ^{1,A}	<11* ^{1,A}	--
SW8270C	FLUORENE	µg/L	--	<10	--	--	--	--	--	<10	--	--	<11	<11	--
SW8270C	HEXACHLOROBENZENE	µg/L	--	<10	--	--	--	--	--	<10	--	--	<11	<11	--
SW8270C	HEXACHLOROBUTADIENE	µg/L	--	<10	--	--	--	--	--	<10	--	--	<11	<11	--
SW8270C	µg/L	µg/L	--	<10	--	--	--	--	--	<10	--	--	<11	<11	--
SW8270C	µg/L	µg/L	--	<10	--	--	--	--	--	<10	--	--	<11	<11	--
SW8270C	INDENO (1,2,3-C,D) PYRENE	µg/L	--	<10	--	--	--	--	--	<10	--	--	<11	<11	--
SW8270C	ISOPHORONE	µg/L	--	<10	--	--	--	--	--	<10	--	--	<11	<11	--
SW8270C	NAPHTHALENE	µg/L	--	<10	--	--	--	--	--	<10	--	--	<11	<11	--
SW8270C	NITROBENZENE	µg/L	--	<10	--	--	--	--	--	<10	--	--	<11	<11	--
SW8270C	N-NITROSODIMETHYLAMINE	µg/L	--	<10	--	--	--	--	--	<10	--	--	<11	<11	--
SW8270C	N-NITROSODI-N-PROPYLAMINE	µg/L	--	<10	--	--	--	--	--	<10	--	--	<11	<11	--
SW8270C	N-NITROSODIPHENYLAMINE	µg/L	--	<10	--	--	--	--	--	<10	--	--	<11	<11	--
SW8270C	PENTACHLOROPHENOL	µg/L	--	<10	--	--	--	--	--	<10	--	--	<11	<11	--
SW8270C	PHENANTHRENE	µg/L	--	<10	--	--	--	--	--	<10	--	--	<11	<11	--
SW8270C	PHENOL	µg/L	--	<10	--	--	--	--	--	<10	--	--	<11	<11	--
SW8270C	PYRENE	µg/L	--	<10	--	--	--	--	--	<10	--	--	<11	<11	--
SW8270C SIM	2-METHYLNAPHTHALENE	µg/L	<3.8* ^{1,A}	--	--	--	--	--	<3.7* ^{1,A}	--	--	<3.6 ^{1,A}	--	--	--
SW8270C SIM	ACENAPHTHENE	ng/L	<3.8 ^{3,B}	--	--	--	--	--	<3.7 ^{3,B}	--	--	<3.6 ^{3,B}	--	--	--
SW8270C SIM	ACENAPHTHYLENE	ng/L	<3.8 ^{3,B}	--	--	--	--	--	<3.7 ^{3,B}	--	--	<3.6 ^{3,B}	--	--	--
SW8270C SIM	ANTHRACENE	ng/L	<3.8	--	--	--	--	--	<3.7	--	--	<3.6	--	--	--
SW8270C SIM	BENZO (A) ANTHRACENE	ng/L	<3.8	--	--	--	--	--	<3.7	--	--	<3.6	--	--	--
SW8270C SIM	BENZO (A) PYRENE	ng/L	<3.8	--	--	--	--	--	<3.7	--	--	<3.6	--	--	--
SW8270C SIM	BENZO (B) FLUORANTHENE	ng/L	<3.8	--	--	--	--	--	<3.7	--	--	<3.6	--	--	--
SW8270C SIM	BENZO (G,H,I) PERYLENE	ng/L	<3.8	--	--	--	--	--	<3.7	--	--	<3.6	--	--	--
SW8270C SIM	BENZO(K)FLUORANTHENE	ng/L	<3.8	--	--	--	--	--	<3.7	--	--	<3.6	--	--	--
SW8270C SIM	CHRYSENE	ng/L	1.5 J ^{2,B}	--	--	--	--	--	<3.7 ^{3,B}	--	--	<3.6 ^{3,B}	--	--	--
SW8270C SIM	DIBENZO (A,H) ANTHRACENE	ng/L	<3.8	--	--	--	--	--	<3.7	--	--	<3.6	--	--	--
SW8270C SIM	DIBENZOFURAN	ng/L	<3.8 ^{3,B}	--	--	--	--	--	<3.7 ^{3,B}	--	--	1.4 J ^{2,B}	--	--	--
SW8270C SIM	FLUORANTHENE	ng/L	<3.8* ^{3,A,B}	--	--	--	--	--	<3.7* ^{3,A,B}	--	--	<3.6* ^{3,A,B}	--	--	--
SW8270C SIM	FLUORENE	ng/L	2.8 J ^{2,B}	--	--	--	--	--	<3.7 ^{3,B}	--	--	<3.6 ^{3,B}	--	--	--
SW8270C SIM	INDENO (1,2,3-C,D) PYRENE	ng/L	<3.8	--	--	--	--	--	<3.7	--	--	<3.6	--	--	--
SW8270C SIM	NAPHTHALENE	ng/L	52 J ^{2,B}	--	--	--	--	--	<3.7 ^{3,A,B}	--	--	<3.6 ^{3,A,B}	--	--	--
SW8270C SIM	PHENANTHRENE	ng/L	<3.8 ^{1,A}	--	----	--	--	--	<3.7 ^{1,A}	--	--	<3.6 ^{1,A}	--	--	--

See last page for notes.

TABLE GWMP-5

2009 Vadose Zone Monitor Well Sampling Results

RCRA Post-Closure Permit Area Groundwater Monitoring Plan

Camp Navajo, Bellemont, Arizona

	Location ID:		VZMW-06	VZMW-06	VZMW-07	VZMW-07	VZMW-08	VZMW-08	VZMW-09	VZMW-09	VZMW-11	VZMW-16	VZMW-16	VZMW-17	VZMW-17
	Sample ID:		N0203-VZMW6-01	VZMW-06-001	VZMW-07-001	VZMW-07-001B	VZMW-08-001	VZMW-08-001B	ND0203-VZMW9-01	VZMW-09-001	VZMW-11-001	ND0203-VZMW16-01	VZMW-16-001	VZMW-17-001	VZMW-17-002
	Sample Date:		3/2/2009	3/25/2009	3/25/2009	4/1/2009	3/25/2009	4/1/2009	3/2/2009	3/25/2009	3/26/2009	3/2/2009	3/25/2009	3/26/2009	7/29/2009
	Sample Purpose:		N	N	N	N	N	N	N	N	N	N	N	N	N
Analytical Method	Analyte	Units													
SW8270C SIM	PYRENE	ng/L	<3.8* ^{1,A}	--	--	--	--	--	<3.7* ^{1,A}	--	--	<3.6* ^{1,A}	--	--	--
SW8330	1,3,5-TRINITROBENZENE	µg/L	<2.3	--	--	<2.4	--	<2.4 ^{3,G}	<2.1	--	<2.3	<2.1	--	<2.2	<2.0
SW8330	1,3-DINITROBENZENE	µg/L	<2.3* ^{1,A}	--	--	<2.4* ^{1,A}	--	<2.4* ^{3,A,G}	<2.1* ^{1,A}	--	<2.3* ^{1,A}	<2.1* ^{1,A}	--	<2.2* ^{1,A}	<2.0* ^{1,A}
SW8330	2,4,6-TRINITROTOLUENE	µg/L	<2.3	--	--	<2.4	--	<2.4 ^{3,G}	<2.1	--	<2.3	<2.1	--	<2.2	<2.0
SW8330	2,4-DINITROTOLUENE	µg/L	<2.3	--	--	<2.4	--	<2.4 ^{3,G}	<2.1	--	<2.3	<2.1	--	<2.2	<2.0
SW8330	2,6-DINITROTOLUENE	µg/L	<2.3	--	--	<2.4	--	<2.4 ^{3,G}	<2.1	--	<2.3	<2.1	--	<2.2	<2.0
SW8330	2-AMINO-4,6-DINITROTOLUENE	µg/L	<2.3	--	--	<2.4	--	<2.4 ^{3,G}	<2.1	--	<2.3	<2.1	--	<2.2	<2.0
SW8330	2-NITROTOLUENE	µg/L	<2.3	--	--	<2.4	--	<2.4 ^{3,G}	<2.1	--	<2.3	<2.1	--	0.53 J	<2.0
SW8330	3-NITROTOLUENE	µg/L	<2.3	--	--	<2.4	--	<2.4 ^{3,G}	<2.1	--	<2.3	<2.1	--	<2.2	<2.0
SW8330	4-AMINO-2,6-DINITROTOLUENE	µg/L	<2.3	--	--	<2.4	--	<2.4 ^{3,G}	<2.1	--	<2.3	<2.1	--	<2.2	0.20 J^{2,B}
SW8330	4-NITROTOLUENE	µg/L	<2.3	--	--	<2.4	--	<2.4 ^{3,G}	<2.1	--	<2.3	<2.1	--	<2.2	<2.0
SW8330	HMX	µg/L	4.8 J^{2,C}	--	--	<2.4	--	<2.4 ^{3,G}	<2.1	--	<2.3	<2.1	--	2.7 J^{2,C}	5.7
SW8330	NITROBENZENE	µg/L	0.27 J	--	--	<2.4	--	<2.4 ^{3,G}	<2.1	--	0.31 J	<2.1	--	<2.2	<2.0
SW8330	RDX	µg/L	32 J^{2,C}	--	--	1.2 J	--	<2.4 ^{3,G}	1.0 J	--	<2.3	1.3 J	--	6.5 J^{2,C}	11
SW8330	TETRYL	µg/L	<2.3	--	--	<2.4	--	<2.4 ^{3,G}	<2.1	--	<2.3	<2.1	--	<2.2	<2.0

Notes:**Bold font indicates analyte was detected at or above detection limit**

Non-detections are shown as less than the reporting limit.

-- = not analyzed

FD = field duplicate

N = normal sample

ng/L = nanograms per Liter

mg/L = milligrams per Liter

µg/L = micrograms per Liter

* Value adjusted, for more details refer to Data Validation Report.

1 - The analyte was not detected at or above the detection limit objective.

2 - The analyte is present but the reported value may not be accurate or precise (estimated).

3 - The analyte was not detected at or above the detection limit objective. However, the reported detection limit is approximate, and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.

A - Blank contamination in the method blank or calibration blank(s)

B - Blank spike/LCS - low recovery

C - Confirmation analysis result not meeting criteria

D - Field duplicate precision not meeting criteria

E - Internal standard - high recovery

F - Serial dilution reproducibility not meeting criteria

G - Spiked surrogate - low recovery

TABLE GWMP-6

2010 Vadose Zone Monitor Well Sampling Results

RCRA Post-Closure Permit Area Groundwater Monitoring Plan

Camp Navajo, Bellemont, Arizona

		Location ID: Sample ID: Sample Date: Sample Purpose:	EQUIPBLANK EB- 051810 5/18/2010 EB	EQUIPBLANK EB- 081210 8/12/2010 EB	VZMW-01 VZMW-01- 003 5/12/2010 N	VZMW-01 VZMW-40- 003 5/12/2010 FD	VZMW-01 VZMW-01- 004 8/12/2010 N	VZMW-01 VZMW-40- 004 8/12/2010 FD	VZMW-02 VZMW-02- 003 5/12/2010 N	VZMW-02 VZMW-02- 004 8/12/2010 N
Analytical Method	Parameter	Units								
E200.7	Aluminum	µg/L	--	--	2250 J	4260 J	--	--	867 J	--
E200.7	Barium	µg/L	--	--	60.2 J	85.4 J	--	--	68.3	--
E200.7	Chromium	µg/L	--	--	9.7	14.5	--	--	3.5	--
E200.7	Cobalt	µg/L	--	--	3.7	4.4	--	--	<10	--
E200.7	Copper	µg/L	--	--	15.9 J	30.6 J	--	--	<10.0	--
E200.7	Iron	µg/L	--	--	5120 J	9410 J	--	--	987 J	--
E200.7	Magnesium	µg/L	--	--	109000 J	173000 J	--	--	45400 J	--
E200.7	Manganese	µg/L	--	--	293 J	482 J	--	--	39.2	--
E200.7	Molybdenum	µg/L	--	--	<10	<10	--	--	<10	--
E200.7	Nickel	µg/L	--	--	7.6	14.7	--	--	<20.0	--
E200.7	Potassium	µg/L	--	--	1580 J	2350 J	--	--	854	--
E200.7	Sodium	µg/L	--	--	1860	2020	--	--	7190 J	--
E200.7	Vanadium	µg/L	--	--	21.5	28.3	--	--	6.1	--
E200.7	Zinc	µg/L	--	--	68.4 J	118 J	--	--	7.6	--
E200.7 (Dissolved)	Aluminum	µg/L	<50.0	<50	<50	<50	--	--	60	--
E200.7 (Dissolved)	Barium	µg/L	<5.0	0.7	21.1	21.4	--	--	52.9	--
E200.7 (Dissolved)	Chromium	µg/L	<5.0	<5.0	<5.0	2.8	--	--	<5.0	--
E200.7 (Dissolved)	Cobalt	µg/L	<10.0	<10	<10	<10	--	--	<10	--
E200.7 (Dissolved)	Copper	µg/L	<10.0	<10.0	<10.0	<10.0	--	--	<10.0	--
E200.7 (Dissolved)	Iron	µg/L	<20.0	<20.0	5.8	2.5	--	--	70.3	--
E200.7 (Dissolved)	Magnesium	µg/L	6.4	47.5	24500	24600	--	--	41800	--
E200.7 (Dissolved)	Manganese	µg/L	<5.0	<5.0	<5.0	<5.0	--	--	2.5	--
E200.7 (Dissolved)	Molybdenum	µg/L	<10.0	3.2	<10	<10	--	--	<10	--
E200.7 (Dissolved)	Nickel	µg/L	<20.0	<20.0	<20.0	<20.0	--	--	<20.0	--
E200.7 (Dissolved)	Potassium	µg/L	<400	<400	665	713	--	--	592	--
E200.7 (Dissolved)	Sodium	µg/L	34	113	1660	1750	--	--	7030	--
E200.7 (Dissolved)	Vanadium	µg/L	<10.0	5.9	5.8	6.8	--	--	6.1	--
E200.7 (Dissolved)	Zinc	µg/L	<10.0	2.5	<10.0	1.6	--	--	2.1	--
E200.8	Antimony	µg/L	--	--	0.36	0.36	--	--	0.16	--
E200.8	Arsenic	µg/L	--	--	4.04 J	5.67 J	--	--	1.75	--
E200.8	Beryllium	µg/L	--	--	0.285 J	0.422 J	--	--	0.086	--
E200.8	Cadmium	µg/L	--	--	1.360 J	1.930 J	--	--	0.128	--
E200.8	Lead	µg/L	--	--	6.010 J	8.100 J	--	--	1.180	--
E200.8	Selenium	µg/L	--	--	<2.0	<2.0	--	--	<2.0	--
E200.8	Silver	µg/L	--	--	0.183	0.218	--	--	0.048	--
E200.8	Thallium	µg/L	--	--	0.284 J	0.408 J	--	--	0.089	--
E200.8 (Dissolved)	Antimony	µg/L	<0.05	<0.05	0.31	0.32	--	--	0.14	--
E200.8 (Dissolved)	Arsenic	µg/L	<0.50	<0.50	1.76	1.84	--	--	1.43	--
E200.8 (Dissolved)	Barium	µg/L	--	--	--	--	--	--	--	--
E200.8 (Dissolved)	Beryllium	µg/L	<0.020	<0.020	<0.020	<0.020	--	--	0.006	--
E200.8 (Dissolved)	Cadmium	µg/L	<0.020	<0.020	0.047	0.056	--	--	0.074	--
E200.8 (Dissolved)	Chromium	µg/L	--	--	--	--	--	--	--	--
E200.8 (Dissolved)	Lead	µg/L	0.017	<0.020	0.092	0.106	--	--	0.156	--
E200.8 (Dissolved)	Nickel	µg/L	--	--	--	--	--	--	--	--
E200.8 (Dissolved)	Selenium	µg/L	<1.0	<1.0	<2.0	<2.0	--	--	<2.0	--

TABLE GWMP-6

2010 Vadose Zone Monitor Well Sampling Results

RCRA Post-Closure Permit Area Groundwater Monitoring Plan

Camp Navajo, Bellemont, Arizona

		Location ID: Sample ID: Sample Date: Sample Purpose:	EQUIPBLANK EB- 051810 5/18/2010 EB	EQUIPBLANK EB- 081210 8/12/2010 EB	VZMW-01 VZMW-01- 003 5/12/2010 N	VZMW-01 VZMW-40- 003 5/12/2010 FD	VZMW-01 VZMW-01- 004 8/12/2010 N	VZMW-01 VZMW-40- 004 8/12/2010 FD	VZMW-02 VZMW-02- 003 5/12/2010 N	VZMW-02 VZMW-02- 004 8/12/2010 N
Analytical Method	Parameter	Units								
E200.8 (Dissolved)	Silver	µg/L	<0.020	<0.020	0.012	0.012	--	--	0.010	--
E200.8 (Dissolved)	Thallium	µg/L	<0.020	<0.020	0.061	0.060	--	--	0.057	--
E245.1	Mercury	µg/L	--	--	<0.20	0.05	--	--	<0.20	--
E245.1 (Dissolved)	Mercury	µg/L	<0.20	<0.20	<0.20	<0.20	--	--	<0.20	--
E314.0	Perchlorate	µg/L	--	--	--	--	--	--	48.8	--
E332.0	Perchlorate	µg/L	--	--	2.7	2.9	3.7 J	3.4 J	43	41
E353.2	Nitrate + Nitrite-N	mg/L	--	--	0.770	0.773	--	--	1.86	--
SW7580	White phosphorus	µg/L	--	--	--	--	--	--	--	--
SW8270C	1,2,4-Trichlorobenzene	µg/L	--	--	<9.6	<11	--	--	<10	--
SW8270C	1,2-Dichlorobenzene	µg/L	--	--	<9.6	<11	--	--	<10	--
SW8270C	1,2-Diphenylhydrazine	µg/L	--	--	--	--	--	--	--	--
SW8270C	1,3-Dichlorobenzene	µg/L	--	--	<9.6	<11	--	--	<10	--
SW8270C	1,4-Dichlorobenzene	µg/L	--	--	<9.6	<11	--	--	<10	--
SW8270C	2,4,5-Trichlorophenol	µg/L	--	--	<9.6	<11	--	--	<10	--
SW8270C	2,4,6-Trichlorophenol	µg/L	--	--	<9.6	<11	--	--	<10	--
SW8270C	2,4-Dichlorophenol	µg/L	--	--	<9.6	<11	--	--	<10	--
SW8270C	2,4-Dimethylphenol	µg/L	--	--	<9.6	<11	--	--	<10	--
SW8270C	2,4-Dinitrophenol	µg/L	--	--	<24	<27	--	--	<25	--
SW8270C	2,4-Dinitrotoluene	µg/L	--	--	<9.6	<11	--	--	<10	--
SW8270C	2,6-Dinitrotoluene	µg/L	--	--	<9.6	<11	--	--	<10	--
SW8270C	2-Chloronaphthalene	µg/L	--	--	<9.6	<11	--	--	<10	--
SW8270C	2-Chlorophenol	µg/L	--	--	<9.6	<11	--	--	<10	--
SW8270C	2-Methylnaphthalene	µg/L	--	--	<9.6	<11	--	--	<10	--
SW8270C	2-Methylphenol	µg/L	--	--	<9.6	<11	--	--	<10	--
SW8270C	2-Nitroaniline	µg/L	--	--	<24	<27	--	--	<25	--
SW8270C	2-Nitrophenol	µg/L	--	--	<9.6	<11	--	--	<10	--
SW8270C	3,3'-Dichlorobenzidine	µg/L	--	--	<24	<27	--	--	<25	--
SW8270C	3-Nitroaniline	µg/L	--	--	<24	<27	--	--	<25	--
SW8270C	4,6-Dinitro-2-methylphenol	µg/L	--	--	<24	<27	--	--	<25	--
SW8270C	4-Bromophenyl phenyl ether	µg/L	--	--	<9.6	<11	--	--	<10	--
SW8270C	4-Chloro-3-methylphenol	µg/L	--	--	<9.6	<11	--	--	<10	--
SW8270C	4-Chloroaniline	µg/L	--	--	<9.6	<11	--	--	<10	--
SW8270C	4-Chlorophenyl phenyl ether	µg/L	--	--	<9.6	<11	--	--	<10	--
SW8270C	4-Methylphenol	µg/L	--	--	<9.6	<11	--	--	<10	--
SW8270C	4-Nitroaniline	µg/L	--	--	<24	<27	--	--	<25	--
SW8270C	4-Nitrophenol	µg/L	--	--	<24	<27	--	--	<25	--
SW8270C	Acenaphthene	µg/L	--	--	<9.6	<11	--	--	<10	--
SW8270C	Acenaphthylene	µg/L	--	--	<9.6	<11	--	--	<10	--
SW8270C	Aniline	µg/L	--	--	<24	<27	--	--	<25	--
SW8270C	Anthracene	µg/L	--	--	<9.6	<11	--	--	<10	--
SW8270C	Benzo (a) anthracene	µg/L	--	--	<9.6	<11	--	--	<10	--
SW8270C	Benzo (a) pyrene	µg/L	--	--	<9.6	<11	--	--	<10	--
SW8270C	Benzo (b) fluoranthene	µg/L	--	--	<9.6	<11	--	--	<10	--
SW8270C	Benzo (g,h,i) perylene	µg/L	--	--	<9.6	<11	--	--	<10	--
SW8270C	Benzo(k)fluoranthene	µg/L	--	--	<9.6	<11	--	--	<10	--

TABLE GWMP-6

2010 Vadose Zone Monitor Well Sampling Results

RCRA Post-Closure Permit Area Groundwater Monitoring Plan

Camp Navajo, Bellemont, Arizona

		Location ID: Sample ID: Sample Date: Sample Purpose:	EQUIPBLANK EB- 051810 5/18/2010 EB	EQUIPBLANK EB- 081210 8/12/2010 EB	VZMW-01 VZMW-01- 003 5/12/2010 N	VZMW-01 VZMW-40- 003 5/12/2010 FD	VZMW-01 VZMW-01- 004 8/12/2010 N	VZMW-01 VZMW-40- 004 8/12/2010 FD	VZMW-02 VZMW-02- 003 5/12/2010 N	VZMW-02 VZMW-02- 004 8/12/2010 N
Analytical Method	Parameter	Units								
SW8270C	Benzoic acid	µg/L	--	--	<24	<27	--	--	<25	--
SW8270C	Benzyl alcohol	µg/L	--	--	<9.6	<11	--	--	<10	--
SW8270C	Bis (2-chloroethoxy) methane	µg/L	--	--	<9.6	<11	--	--	<10	--
SW8270C	Bis (2-chloroethyl) ether	µg/L	--	--	<9.6	<11	--	--	<10	--
SW8270C	Bis (2-ethylhexyl) phthalate	µg/L	--	--	<9.6	2.9 J	--	--	<10	--
SW8270C	Bis(2-chloroisopropyl) ether	µg/L	--	--	<9.6	<11	--	--	<10	--
SW8270C	Butyl benzylphthalate	µg/L	--	--	<9.6	<11	--	--	<10	--
SW8270C	Chrysene	µg/L	--	--	<9.6	<11	--	--	<10	--
SW8270C	Dibenzo (a,h) anthracene	µg/L	--	--	<9.6	<11	--	--	<10	--
SW8270C	Dibenzofuran	µg/L	--	--	<9.6	<11	--	--	<10	--
SW8270C	Diethyl phthalate	µg/L	--	--	<9.6	<11	--	--	<10	--
SW8270C	Dimethyl phthalate	µg/L	--	--	<9.6	<11	--	--	<10	--
SW8270C	Di-n-butylphthalate	µg/L	--	--	<9.6	<11	--	--	<10	--
SW8270C	Di-n-octylphthalate	µg/L	--	--	<9.6	<11	--	--	<10	--
SW8270C	Fluoranthene	µg/L	--	--	<9.6	<11	--	--	<10	--
SW8270C	Fluorene	µg/L	--	--	<9.6	<11	--	--	<10	--
SW8270C	Hexachlorobenzene	µg/L	--	--	<9.6	<11	--	--	<10	--
SW8270C	Hexachlorobutadiene	µg/L	--	--	<9.6	<11	--	--	<10	--
SW8270C	Hexachlorocyclopentadiene	µg/L	--	--	<9.6	<11	--	--	<10	--
SW8270C	Hexachloroethane	µg/L	--	--	<9.6	<11	--	--	<10	--
SW8270C	Indeno (1,2,3-c,d) pyrene	µg/L	--	--	<9.6	<11	--	--	<10	--
SW8270C	Isophorone	µg/L	--	--	<9.6	<11	--	--	<10	--
SW8270C	naphthalene	µg/L	--	--	<9.6	<11	--	--	<10	--
SW8270C	Nitrobenzene	µg/L	--	--	<9.6	<11	--	--	<10	--
SW8270C	n-Nitrosodimethylamine	µg/L	--	--	<24	<27	--	--	<25	--
SW8270C	n-Nitrosodi-n-propylamine	µg/L	--	--	<9.6	<11	--	--	<10	--
SW8270C	n-Nitrosodiphenylamine	µg/L	--	--	<9.6	<11	--	--	<10	--
SW8270C	Pentachlorophenol	µg/L	--	--	<24	<27	--	--	<25	--
SW8270C	Phenanthrene	µg/L	--	--	<9.6	<11	--	--	<10	--
SW8270C	Phenol	µg/L	--	--	<9.6	<11	--	--	<10	--
SW8270C	Pyrene	µg/L	--	--	<9.6	<11	--	--	<10	--
SW8270C SIM	2-Methylnaphthalene	ng/L	--	--	--	--	--	--	--	--
SW8270C SIM	Acenaphthene	ng/L	--	--	--	--	--	--	--	--
SW8270C SIM	Acenaphthylene	ng/L	--	--	--	--	--	--	--	--
SW8270C SIM	Anthracene	ng/L	--	--	--	--	--	--	--	--
SW8270C SIM	Benzo (a) anthracene	ng/L	--	--	--	--	--	--	--	--
SW8270C SIM	Benzo (a) pyrene	ng/L	--	--	--	--	--	--	--	--
SW8270C SIM	Benzo (b) fluoranthene	ng/L	--	--	--	--	--	--	--	--
SW8270C SIM	Benzo (g,h,i) perylene	ng/L	--	--	--	--	--	--	--	--
SW8270C SIM	Benzo(k)fluoranthene	ng/L	--	--	--	--	--	--	--	--
SW8270C SIM	Chrysene	ng/L	--	--	--	--	--	--	--	--
SW8270C SIM	Dibenzo (a,h) anthracene	ng/L	--	--	--	--	--	--	--	--
SW8270C SIM	Dibenzofuran	ng/L	--	--	--	--	--	--	--	--
SW8270C SIM	Fluoranthene	ng/L	--	--	--	--	--	--	--	--
SW8270C SIM	Fluorene	ng/L	--	--	--	--	--	--	--	--

TABLE GWMP-6

2010 Vadose Zone Monitor Well Sampling Results

RCRA Post-Closure Permit Area Groundwater Monitoring Plan

Camp Navajo, Bellemont, Arizona

		Location ID: Sample ID: Sample Date: Sample Purpose:	EQUIPBLANK EB- 051810 5/18/2010 EB	EQUIPBLANK EB- 081210 8/12/2010 EB	VZMW-01 VZMW-01- 003 5/12/2010 N	VZMW-01 VZMW-40- 003 5/12/2010 FD	VZMW-01 VZMW-01- 004 8/12/2010 N	VZMW-01 VZMW-40- 004 8/12/2010 FD	VZMW-02 VZMW-02- 003 5/12/2010 N	VZMW-02 VZMW-02- 004 8/12/2010 N
Analytical Method	Parameter	Units								
SW8270C SIM	Indeno (1,2,3-c,d) pyrene	ng/L	--	--	--	--	--	--	--	--
SW8270C SIM	naphthalene	ng/L	--	--	--	--	--	--	--	--
SW8270C SIM	Phenanthrene	ng/L	--	--	--	--	--	--	--	--
SW8270C SIM	Pyrene	ng/L	--	--	--	--	--	--	--	--
SW8290	1,2,3,4,6,7,8,9-OCDD	pg/L	--	--	--	--	--	--	--	--
SW8290	1,2,3,4,6,7,8-HPCDD	pg/L	--	--	--	--	--	--	--	--
SW8290	1,2,3,4,6,7,8-HPCDF	pg/L	--	--	--	--	--	--	--	--
SW8290	1,2,3,4,7,8,9-HPCDF	pg/L	--	--	--	--	--	--	--	--
SW8290	1,2,3,4,7,8-HXCDD	pg/L	--	--	--	--	--	--	--	--
SW8290	1,2,3,4,7,8-HXCDF	pg/L	--	--	--	--	--	--	--	--
SW8290	1,2,3,6,7,8-HXCDD	pg/L	--	--	--	--	--	--	--	--
SW8290	1,2,3,6,7,8-HXCDF	pg/L	--	--	--	--	--	--	--	--
SW8290	1,2,3,7,8,9-HXCDD	pg/L	--	--	--	--	--	--	--	--
SW8290	1,2,3,7,8,9-HXCDF	pg/L	--	--	--	--	--	--	--	--
SW8290	1,2,3,7,8-PECDD	pg/L	--	--	--	--	--	--	--	--
SW8290	1,2,3,7,8-PECDF	pg/L	--	--	--	--	--	--	--	--
SW8290	2,3,4,6,7,8-HXCDF	pg/L	--	--	--	--	--	--	--	--
SW8290	2,3,4,7,8-PECDF	pg/L	--	--	--	--	--	--	--	--
SW8290	2,3,7,8-TCDD	pg/L	--	--	--	--	--	--	--	--
SW8290	2,3,7,8-TCDF	pg/L	--	--	--	--	--	--	--	--
SW8290	Heptachlorodibenzofurans, Total	pg/L	--	--	--	--	--	--	--	--
SW8290	Heptachlorodibenzo-p-dioxins, Total	pg/L	--	--	--	--	--	--	--	--
SW8290	Hexachlorodibenzofurans, Total	pg/L	--	--	--	--	--	--	--	--
SW8290	Hexachlorodibenzo-p-dioxins, Total	pg/L	--	--	--	--	--	--	--	--
SW8290	OCDF	pg/L	--	--	--	--	--	--	--	--
SW8290	Pentachlorodibenzofurans, Total	pg/L	--	--	--	--	--	--	--	--
SW8290	Pentachlorodibenzo-p-dioxin, Total	pg/L	--	--	--	--	--	--	--	--
SW8290	Tetrachlorodibenzofurans, Total	pg/L	--	--	--	--	--	--	--	--
SW8290	Tetrachlorodibenzo-p-dioxins, Total	pg/L	--	--	--	--	--	--	--	--
SW8330	1,3,5-Trinitrobenzene	µg/L	--	--	--	--	<2.0	<2.0	--	<2.0
SW8330	1,3-Dinitrobenzene	µg/L	--	--	--	--	<2.0	<2.0	--	<2.0
SW8330	2,4,6-Trinitrotoluene	µg/L	--	--	--	--	<2.0	<2.0	--	<2.0
SW8330	2,4-Dinitrotoluene	µg/L	--	--	--	--	<2.0	<2.0	--	<2.0
SW8330	2,6-Dinitrotoluene	µg/L	--	--	--	--	<2.0	<2.0	--	<2.0
SW8330	2-Amino-4,6-dinitrotoluene	µg/L	--	--	--	--	0.36 J	0.32 J	--	<2.0
SW8330	2-Nitrotoluene	µg/L	--	--	--	--	<2.0	<2.0	--	<2.0
SW8330	3-Nitrotoluene	µg/L	--	--	--	--	<2.0	<2.0	--	<2.0
SW8330	4-Amino-2,6-dinitrotoluene	µg/L	--	--	--	--	0.88 J	--	--	<2.0
SW8330	4-Nitrotoluene	µg/L	--	--	--	--	<2.0	--	--	<2.0
SW8330	HMX	µg/L	--	--	--	--	12	--	--	1.0 J
SW8330	Nitrobenzene	µg/L	--	--	--	--	<2.0	--	--	<2.0
SW8330	RDX	µg/L	--	--	--	--	30 J	--	--	10
SW8330	Tetryl	µg/L	--	--	--	--	<2.0	--	--	<2.0
SW8330B	1,3,5-Trinitrobenzene	µg/L	--	--	0.20 J	0.20 J	--	--	<2.0	--
SW8330B	1,3-Dinitrobenzene	µg/L	--	--	<2.0	<2.0	--	--	<2.0	--

TABLE GWMP-6

2010 Vadose Zone Monitor Well Sampling Results

RCRA Post-Closure Permit Area Groundwater Monitoring Plan

Camp Navajo, Bellemont, Arizona

		Location ID: Sample ID: Sample Date: Sample Purpose:	EQUIPBLANK EB- 051810 5/18/2010 EB	EQUIPBLANK EB- 081210 8/12/2010 EB	VZMW-01 VZMW-01- 003 5/12/2010 N	VZMW-01 VZMW-40- 003 5/12/2010 FD	VZMW-01 VZMW-01- 004 8/12/2010 N	VZMW-01 VZMW-40- 004 8/12/2010 FD	VZMW-02 VZMW-02- 003 5/12/2010 N	VZMW-02 VZMW-02- 004 8/12/2010 N
Analytical Method	Parameter	Units								
SW8330B	2,4,6-Trinitrotoluene	µg/L	--	--	<2.0	<2.0	--	--	<2.0	--
SW8330B	2,4-Dinitrotoluene	µg/L	--	--	<2.0	<2.0	--	--	<2.0	--
SW8330B	2,6-Dinitrotoluene	µg/L	--	--	<2.0	<2.0	--	--	<2.0	--
SW8330B	2-Amino-4,6-dinitrotoluene	µg/L	--	--	<2.0	<2.0	--	--	<2.0	--
SW8330B	2-Nitrotoluene	µg/L	--	--	<2.0	<2.0	--	--	<2.0	--
SW8330B	3-Nitrotoluene	µg/L	--	--	<2.0	<2.0	--	--	<2.0	--
SW8330B	4-Amino-2,6-dinitrotoluene	µg/L	--	--	0.45 J	0.44 J	--	--	<2.0	--
SW8330B	4-Nitrotoluene	µg/L	--	--	<2.0	<2.0	--	--	<2.0	--
SW8330B	HMX	µg/L	--	--	9.7	9.3	--	--	1.1 J	--
SW8330B	Nitrobenzene	µg/L	--	--	<2.0	<2.0	--	--	<2.0	--
SW8330B	RDX	µg/L	--	--	30	31	--	--	15	--
SW8330B	Tetryl	µg/L	--	--	<2.0	<2.0	--	--	<2.0	--

TABLE GWMP-6

2010 Vadose Zone Monitor Well Sampling Results

RCRA Post-Closure Permit Area Groundwater Monitoring Plan

Camp Navajo, Bellemont, Arizona

		Location ID: Sample ID: Sample Date: Sample Purpose:	VZMW-04 N0203- Y2MW-4-050610 5/6/2010 N	VZMW-04 N0203- VZMW04-03 5/17/2010 N	VZMW-04 VZMW-04- 004 8/12/2010 N	VZMW-05 VZMW-05- 003 5/13/2010 N	VZMW-05 NO203- VZMW05-03A 5/27/2010 N	VZMW-05 VZMW-05- 004 8/12/2010 N	VZMW-06 VZMW-06- 003 5/13/2010 N	VZMW-07 VZMW-07- 003 5/18/2010 N
Analytical Method	Parameter	Units								
E200.7	Aluminum	µg/L	--	--	--	1250	--	--	1640	--
E200.7	Barium	µg/L	--	--	--	67.1	--	--	285	--
E200.7	Chromium	µg/L	--	--	--	3.5	--	--	7.5	--
E200.7	Cobalt	µg/L	--	--	--	<10	--	--	<10	--
E200.7	Copper	µg/L	--	--	--	<10.0	--	--	4.4	--
E200.7	Iron	µg/L	--	--	--	1800	--	--	1590	--
E200.7	Magnesium	µg/L	--	--	--	98900	--	--	35500	--
E200.7	Manganese	µg/L	--	--	--	214	--	--	99.9	--
E200.7	Molybdenum	µg/L	--	--	--	<10	--	--	<10	--
E200.7	Nickel	µg/L	--	--	--	2.1	--	--	2.4	--
E200.7	Potassium	µg/L	--	--	--	1100	--	--	1940	--
E200.7	Sodium	µg/L	--	--	--	2290	--	--	8060	--
E200.7	Vanadium	µg/L	--	--	--	15.5	--	--	8.6	--
E200.7	Zinc	µg/L	--	--	--	29.5	--	--	35.4	--
E200.7 (Dissolved)	Aluminum	µg/L	--	--	<50	<50	--	--	<50	3.9
E200.7 (Dissolved)	Barium	µg/L	--	--	439	40.8	--	--	43.9	49.7
E200.7 (Dissolved)	Chromium	µg/L	--	--	<5.0	<5.0	--	--	4.9	0.9
E200.7 (Dissolved)	Cobalt	µg/L	--	--	<10	<10	--	--	<10	<10.0
E200.7 (Dissolved)	Copper	µg/L	--	--	<10.0	<10.0	--	--	<10.0	<10.0
E200.7 (Dissolved)	Iron	µg/L	--	--	18.6	36.5	--	--	1.3	<20.0
E200.7 (Dissolved)	Magnesium	µg/L	--	--	131000	42800	--	--	20100	20600
E200.7 (Dissolved)	Manganese	µg/L	--	--	31.2 J	3.2	--	--	<5.0	0.5
E200.7 (Dissolved)	Molybdenum	µg/L	--	--	<10	<10	--	--	<10	4.9
E200.7 (Dissolved)	Nickel	µg/L	--	--	<20.0	<20.0	--	--	<20.0	<20.0
E200.7 (Dissolved)	Potassium	µg/L	--	--	4490	819	--	--	822	807
E200.7 (Dissolved)	Sodium	µg/L	--	--	43200	2340	--	--	8000	30700
E200.7 (Dissolved)	Vanadium	µg/L	--	--	<10.0	8.6	--	--	7.4	2.0
E200.7 (Dissolved)	Zinc	µg/L	--	--	<10.0	<10.0	--	--	<10.0	2.5
E200.8	Antimony	µg/L	--	--	--	0.25	--	--	0.28	--
E200.8	Arsenic	µg/L	--	--	--	1.69	--	--	1.45	--
E200.8	Beryllium	µg/L	--	--	--	0.115	--	--	0.458	--
E200.8	Cadmium	µg/L	--	--	--	0.420	--	--	0.403	--
E200.8	Lead	µg/L	--	--	--	1.370	--	--	9.730	--
E200.8	Selenium	µg/L	--	--	--	<2.0	--	--	<2.0	--
E200.8	Silver	µg/L	--	--	--	0.123	--	--	0.112	--
E200.8	Thallium	µg/L	--	--	--	0.072	--	--	0.106	--
E200.8 (Dissolved)	Antimony	µg/L	--	--	0.73	0.21	--	--	0.17	0.16
E200.8 (Dissolved)	Arsenic	µg/L	--	--	2.36	1.10	--	--	0.67	0.93
E200.8 (Dissolved)	Barium	µg/L	--	--	--	--	--	--	--	--
E200.8 (Dissolved)	Beryllium	µg/L	--	--	<0.020	<0.020	--	--	<0.020	<0.020
E200.8 (Dissolved)	Cadmium	µg/L	--	--	<0.020	0.055	--	--	<0.020	0.107
E200.8 (Dissolved)	Chromium	µg/L	--	--	--	--	--	--	--	--
E200.8 (Dissolved)	Lead	µg/L	--	--	0.200	0.092	--	--	0.137	<0.020
E200.8 (Dissolved)	Nickel	µg/L	--	--	--	--	--	--	--	--
E200.8 (Dissolved)	Selenium	µg/L	--	--	0.3	0.8	--	--	0.8	3.3

TABLE GWMP-6

2010 Vadose Zone Monitor Well Sampling Results

RCRA Post-Closure Permit Area Groundwater Monitoring Plan

Camp Navajo, Bellemont, Arizona

		Location ID: Sample ID: Sample Date: Sample Purpose:	VZMW-04 N0203- Y2MW-4-050610 5/6/2010 N	VZMW-04 N0203- VZMW04-03 5/17/2010 N	VZMW-04 VZMW-04- 004 8/12/2010 N	VZMW-05 VZMW-05- 003 5/13/2010 N	VZMW-05 NO203- VZMW05-03A 5/27/2010 N	VZMW-05 VZMW-05- 004 8/12/2010 N	VZMW-06 VZMW-06- 003 5/13/2010 N	VZMW-07 VZMW-07- 003 5/18/2010 N
Analytical Method	Parameter	Units								
E200.8 (Dissolved)	Silver	µg/L	--	--	<0.020	<0.020	--	--	<0.020	<0.020
E200.8 (Dissolved)	Thallium	µg/L	--	--	0.463	0.054	--	--	0.056	<0.020
E245.1	Mercury	µg/L	--	--	--	<0.20	--	--	<0.20	--
E245.1 (Dissolved)	Mercury	µg/L	--	--	<0.20	<0.20	--	--	<0.20	<0.20
E314.0	Perchlorate	µg/L	--	--	--	--	9.3	--	--	--
E332.0	Perchlorate	µg/L	<0.1	--	0.33	11	9.5	2.8	9.8	0.63
E353.2	Nitrate + Nitrite-N	mg/L	--	0.957	--	0.143	--	--	1.26	0.390
SW7580	White phosphorus	µg/L	--	--	--	--	--	--	--	--
SW8270C	1,2,4-Trichlorobenzene	µg/L	<9.6	--	--	<9.6	--	--	<9.6	<9.9
SW8270C	1,2-Dichlorobenzene	µg/L	<9.6	--	--	<9.6	--	--	<9.6	<9.9
SW8270C	1,2-Diphenylhydrazine	µg/L	--	--	--	--	--	--	--	--
SW8270C	1,3-Dichlorobenzene	µg/L	<9.6	--	--	<9.6	--	--	<9.6	<9.9
SW8270C	1,4-Dichlorobenzene	µg/L	<9.6	--	--	<9.6	--	--	<9.6	<9.9
SW8270C	2,4,5-Trichlorophenol	µg/L	<9.6	--	--	<9.6	--	--	<9.6	<9.9
SW8270C	2,4,6-Trichlorophenol	µg/L	<9.6	--	--	<9.6	--	--	<9.6	<9.9
SW8270C	2,4-Dichlorophenol	µg/L	<9.6	--	--	<9.6	--	--	<9.6	<9.9
SW8270C	2,4-Dimethylphenol	µg/L	<9.6	--	--	<9.6	--	--	<9.6	<9.9
SW8270C	2,4-Dinitrophenol	µg/L	<24	--	--	<24	--	--	<24	<25
SW8270C	2,4-Dinitrotoluene	µg/L	0.29 J	--	--	<9.6	--	--	<9.6	<9.9
SW8270C	2,6-Dinitrotoluene	µg/L	<9.6	--	--	<9.6	--	--	<9.6	<9.9
SW8270C	2-Chloronaphthalene	µg/L	<9.6	--	--	<9.6	--	--	<9.6	<9.9
SW8270C	2-Chlorophenol	µg/L	<9.6	--	--	<9.6	--	--	<9.6	<9.9
SW8270C	2-Methylnaphthalene	µg/L	<9.6	--	--	<9.6	--	--	<9.6	<9.9
SW8270C	2-Methylphenol	µg/L	<9.6	--	--	<9.6	--	--	<9.6	<9.9
SW8270C	2-Nitroaniline	µg/L	<24	--	--	<24	--	--	<24	<25
SW8270C	2-Nitrophenol	µg/L	<9.6	--	--	<9.6	--	--	<9.6	<9.9
SW8270C	3,3'-Dichlorobenzidine	µg/L	<24	--	--	<24	--	--	<24	<25
SW8270C	3-Nitroaniline	µg/L	<24	--	--	<24	--	--	<24	<25
SW8270C	4,6-Dinitro-2-methylphenol	µg/L	<24	--	--	<24	--	--	<24	<25
SW8270C	4-Bromophenyl phenyl ether	µg/L	<9.6	--	--	<9.6	--	--	<9.6	<9.9
SW8270C	4-Chloro-3-methylphenol	µg/L	<9.6	--	--	<9.6	--	--	<9.6	<9.9
SW8270C	4-Chloroaniline	µg/L	<9.6	--	--	<9.6	--	--	<9.6	<9.9
SW8270C	4-Chlorophenyl phenyl ether	µg/L	<9.6	--	--	<9.6	--	--	<9.6	<9.9
SW8270C	4-Methylphenol	µg/L	<9.6	--	--	<9.6	--	--	<9.6	<9.9
SW8270C	4-Nitroaniline	µg/L	<24	--	--	<24	--	--	<24	<25
SW8270C	4-Nitrophenol	µg/L	<24	--	--	<24	--	--	<24	<25
SW8270C	Acenaphthene	µg/L	<9.6	--	--	<9.6	--	--	<9.6	<9.9
SW8270C	Acenaphthylene	µg/L	<9.6	--	--	<9.6	--	--	<9.6	<9.9
SW8270C	Aniline	µg/L	<24	--	--	<24	--	--	<24	<25
SW8270C	Anthracene	µg/L	<9.6	--	--	<9.6	--	--	<9.6	<9.9
SW8270C	Benzo (a) anthracene	µg/L	<9.6	--	--	<9.6	--	--	<9.6	<9.9
SW8270C	Benzo (a) pyrene	µg/L	<9.6	--	--	<9.6	--	--	<9.6	<9.9
SW8270C	Benzo (b) fluoranthene	µg/L	<9.6	--	--	<9.6	--	--	<9.6	<9.9
SW8270C	Benzo (g,h,i) perylene	µg/L	<9.6	--	--	<9.6	--	--	<9.6	<9.9
SW8270C	Benzo(k)fluoranthene	µg/L	<9.6	--	--	<9.6	--	--	<9.6	<9.9

TABLE GWMP-6

2010 Vadose Zone Monitor Well Sampling Results

RCRA Post-Closure Permit Area Groundwater Monitoring Plan

Camp Navajo, Bellemont, Arizona

		Location ID: Sample ID: Sample Date: Sample Purpose:	VZMW-04 N0203- Y2MW-4-050610 5/6/2010 N	VZMW-04 N0203- VZMW04-03 5/17/2010 N	VZMW-04 VZMW-04- 004 8/12/2010 N	VZMW-05 VZMW-05- 003 5/13/2010 N	VZMW-05 NO203- VZMW05-03A 5/27/2010 N	VZMW-05 VZMW-05- 004 8/12/2010 N	VZMW-06 VZMW-06- 003 5/13/2010 N	VZMW-07 VZMW-07- 003 5/18/2010 N
Analytical Method	Parameter	Units								
SW8270C	Benzoic acid	µg/L	<24	--	--	<24	--	--	<24	<25
SW8270C	Benzyl alcohol	µg/L	<9.6	--	--	<9.6	--	--	<9.6	<9.9
SW8270C	Bis (2-chloroethoxy) methane	µg/L	<9.6	--	--	<9.6	--	--	<9.6	<9.9
SW8270C	Bis (2-chloroethyl) ether	µg/L	<9.6	--	--	<9.6	--	--	<9.6	<9.9
SW8270C	Bis (2-ethylhexyl) phthalate	µg/L	<9.6	--	--	<9.6	--	--	<9.6	<9.9
SW8270C	Bis(2-chloroisopropyl) ether	µg/L	<9.6	--	--	<9.6	--	--	<9.6	<9.9
SW8270C	Butyl benzylphthalate	µg/L	<9.6	--	--	<9.6	--	--	<9.6	<9.9
SW8270C	Chrysene	µg/L	<9.6	--	--	<9.6	--	--	<9.6	<9.9
SW8270C	Dibenzo (a,h) anthracene	µg/L	<9.6	--	--	<9.6	--	--	<9.6	<9.9
SW8270C	Dibenzofuran	µg/L	<9.6	--	--	<9.6	--	--	<9.6	<9.9
SW8270C	Diethyl phthalate	µg/L	<9.6	--	--	<9.6	--	--	<9.6	<9.9
SW8270C	Dimethyl phthalate	µg/L	<9.6	--	--	<9.6	--	--	<9.6	<9.9
SW8270C	Di-n-butylphthalate	µg/L	<9.6	--	--	<9.6	--	--	<9.6	<9.9
SW8270C	Di-n-octylphthalate	µg/L	<9.6	--	--	<9.6	--	--	<9.6	<9.9
SW8270C	Fluoranthene	µg/L	<9.6	--	--	<9.6	--	--	<9.6	<9.9
SW8270C	Fluorene	µg/L	<9.6	--	--	<9.6	--	--	<9.6	<9.9
SW8270C	Hexachlorobenzene	µg/L	<9.6	--	--	<9.6	--	--	<9.6	<9.9
SW8270C	Hexachlorobutadiene	µg/L	<9.6	--	--	<9.6	--	--	<9.6	<9.9
SW8270C	Hexachlorocyclopentadiene	µg/L	<9.6	--	--	<9.6	--	--	<9.6	<9.9
SW8270C	Hexachloroethane	µg/L	<9.6	--	--	<9.6	--	--	<9.6	<9.9
SW8270C	Indeno (1,2,3-c,d) pyrene	µg/L	<9.6	--	--	<9.6	--	--	<9.6	<9.9
SW8270C	Isophorone	µg/L	<9.6	--	--	<9.6	--	--	<9.6	<9.9
SW8270C	naphthalene	µg/L	<9.6	--	--	<9.6	--	--	<9.6	<9.9
SW8270C	Nitrobenzene	µg/L	<9.6	--	--	<9.6	--	--	<9.6	<9.9
SW8270C	n-Nitrosodimethylamine	µg/L	<24	--	--	<24	--	--	<24	<25
SW8270C	n-Nitrosodi-n-propylamine	µg/L	<9.6	--	--	<9.6	--	--	<9.6	<9.9
SW8270C	n-Nitrosodiphenylamine	µg/L	<9.6	--	--	<9.6	--	--	<9.6	<9.9
SW8270C	Pentachlorophenol	µg/L	<24	--	--	<24	--	--	<24	<25
SW8270C	Phenanthrene	µg/L	<9.6	--	--	<9.6	--	--	<9.6	<9.9
SW8270C	Phenol	µg/L	<9.6	--	--	<9.6	--	--	<9.6	<9.9
SW8270C	Pyrene	µg/L	<9.6	--	--	<9.6	--	--	<9.6	<9.9
SW8270C SIM	2-Methylnaphthalene	ng/L	--	--	--	--	--	--	--	--
SW8270C SIM	Acenaphthene	ng/L	--	--	--	--	--	--	--	--
SW8270C SIM	Acenaphthylene	ng/L	--	--	--	--	--	--	--	--
SW8270C SIM	Anthracene	ng/L	--	--	--	--	--	--	--	--
SW8270C SIM	Benzo (a) anthracene	ng/L	--	--	--	--	--	--	--	--
SW8270C SIM	Benzo (a) pyrene	ng/L	--	--	--	--	--	--	--	--
SW8270C SIM	Benzo (b) fluoranthene	ng/L	--	--	--	--	--	--	--	--
SW8270C SIM	Benzo (g,h,i) perylene	ng/L	--	--	--	--	--	--	--	--
SW8270C SIM	Benzo(k)fluoranthene	ng/L	--	--	--	--	--	--	--	--
SW8270C SIM	Chrysene	ng/L	--	--	--	--	--	--	--	--
SW8270C SIM	Dibenzo (a,h) anthracene	ng/L	--	--	--	--	--	--	--	--
SW8270C SIM	Dibenzofuran	ng/L	--	--	--	--	--	--	--	--
SW8270C SIM	Fluoranthene	ng/L	--	--	--	--	--	--	--	--
SW8270C SIM	Fluorene	ng/L	--	--	--	--	--	--	--	--

TABLE GWMP-6

2010 Vadose Zone Monitor Well Sampling Results

RCRA Post-Closure Permit Area Groundwater Monitoring Plan

Camp Navajo, Bellemont, Arizona

		Location ID: Sample ID: Sample Date: Sample Purpose:	VZMW-04 N0203- Y2MW-4-050610 5/6/2010 N	VZMW-04 N0203- VZMW04-03 5/17/2010 N	VZMW-04 VZMW-04- 004 8/12/2010 N	VZMW-05 VZMW-05- 003 5/13/2010 N	VZMW-05 NO203- VZMW05-03A 5/27/2010 N	VZMW-05 VZMW-05- 004 8/12/2010 N	VZMW-06 VZMW-06- 003 5/13/2010 N	VZMW-07 VZMW-07- 003 5/18/2010 N
Analytical Method	Parameter	Units								
SW8270C SIM	Indeno (1,2,3-c,d) pyrene	ng/L	--	--	--	--	--	--	--	--
SW8270C SIM	naphthalene	ng/L	--	--	--	--	--	--	--	--
SW8270C SIM	Phenanthrene	ng/L	--	--	--	--	--	--	--	--
SW8270C SIM	Pyrene	ng/L	--	--	--	--	--	--	--	--
SW8290	1,2,3,4,6,7,8,9-OCDD	pg/L	--	--	--	--	--	--	--	--
SW8290	1,2,3,4,6,7,8-HPCDD	pg/L	--	--	--	--	--	--	--	--
SW8290	1,2,3,4,6,7,8-HPCDF	pg/L	--	--	--	--	--	--	--	--
SW8290	1,2,3,4,7,8,9-HPCDF	pg/L	--	--	--	--	--	--	--	--
SW8290	1,2,3,4,7,8-HXCDD	pg/L	--	--	--	--	--	--	--	--
SW8290	1,2,3,4,7,8-HXCDF	pg/L	--	--	--	--	--	--	--	--
SW8290	1,2,3,6,7,8-HXCDD	pg/L	--	--	--	--	--	--	--	--
SW8290	1,2,3,6,7,8-HXCDF	pg/L	--	--	--	--	--	--	--	--
SW8290	1,2,3,7,8,9-HXCDD	pg/L	--	--	--	--	--	--	--	--
SW8290	1,2,3,7,8,9-HXCDF	pg/L	--	--	--	--	--	--	--	--
SW8290	1,2,3,7,8-PECDD	pg/L	--	--	--	--	--	--	--	--
SW8290	1,2,3,7,8-PECDF	pg/L	--	--	--	--	--	--	--	--
SW8290	2,3,4,6,7,8-HXCDF	pg/L	--	--	--	--	--	--	--	--
SW8290	2,3,4,7,8-PECDF	pg/L	--	--	--	--	--	--	--	--
SW8290	2,3,7,8-TCDD	pg/L	--	--	--	--	--	--	--	--
SW8290	2,3,7,8-TCDF	pg/L	--	--	--	--	--	--	--	--
SW8290	Heptachlorodibenzofurans, Total	pg/L	--	--	--	--	--	--	--	--
SW8290	Heptachlorodibenzo-p-dioxins, Total	pg/L	--	--	--	--	--	--	--	--
SW8290	Hexachlorodibenzofurans, Total	pg/L	--	--	--	--	--	--	--	--
SW8290	Hexachlorodibenzo-p-dioxins, Total	pg/L	--	--	--	--	--	--	--	--
SW8290	OCDF	pg/L	--	--	--	--	--	--	--	--
SW8290	Pentachlorodibenzofurans, Total	pg/L	--	--	--	--	--	--	--	--
SW8290	Pentachlorodibenzo-p-dioxin, Total	pg/L	--	--	--	--	--	--	--	--
SW8290	Tetrachlorodibenzofurans, Total	pg/L	--	--	--	--	--	--	--	--
SW8290	Tetrachlorodibenzo-p-dioxins, Total	pg/L	--	--	--	--	--	--	--	--
SW8330	1,3,5-Trinitrobenzene	µg/L	<2.2	--	<2.0	--	--	<2.0	--	<2.0
SW8330	1,3-Dinitrobenzene	µg/L	<2.2	--	<2.0	--	--	<2.0	--	<2.0
SW8330	2,4,6-Trinitrotoluene	µg/L	0.37 J	--	0.71 J	--	--	0.48 J	--	<2.0
SW8330	2,4-Dinitrotoluene	µg/L	0.30 J	--	0.64 J	--	--	<2.0	--	<2.0
SW8330	2,6-Dinitrotoluene	µg/L	<2.2	--	<2.0	--	--	<2.0	--	<2.0
SW8330	2-Amino-4,6-dinitrotoluene	µg/L	0.38 J	--	0.67 J	--	--	0.40 J	--	<2.0
SW8330	2-Nitrotoluene	µg/L	<2.2	--	<2.0	--	--	<2.0	--	<2.0
SW8330	3-Nitrotoluene	µg/L	<2.2	--	<2.0	--	--	<2.0	--	<2.0
SW8330	4-Amino-2,6-dinitrotoluene	µg/L	0.80 J	--	1.5 J	--	--	0.94 J	--	<2.0
SW8330	4-Nitrotoluene	µg/L	<2.2	--	<2.0	--	--	<2.0	--	<2.0
SW8330	HMX	µg/L	0.97 J	--	0.33 J	--	--	8.3	--	<2.0
SW8330	Nitrobenzene	µg/L	<2.2	--	<2.0	--	--	<2.0	--	<2.0
SW8330	RDX	µg/L	2.2	--	3.0	--	--	47	--	<0.48
SW8330	Tetryl	µg/L	<2.2	--	<2.0	--	--	<2.0	--	<2.0
SW8330B	1,3,5-Trinitrobenzene	µg/L	--	--	--	<2.0	--	--	<2.0	--
SW8330B	1,3-Dinitrobenzene	µg/L	--	--	--	<2.0	--	--	<2.0	--

TABLE GWMP-6

2010 Vadose Zone Monitor Well Sampling Results

RCRA Post-Closure Permit Area Groundwater Monitoring Plan

Camp Navajo, Bellemont, Arizona

		Location ID: Sample ID: Sample Date: Sample Purpose:	VZMW-04 N0203- Y2MW-4-050610 5/6/2010 N	VZMW-04 N0203- VZMW04-03 5/17/2010 N	VZMW-04 VZMW-04- 004 8/12/2010 N	VZMW-05 VZMW-05- 003 5/13/2010 N	VZMW-05 NO203- VZMW05-03A 5/27/2010 N	VZMW-05 VZMW-05- 004 8/12/2010 N	VZMW-06 VZMW-06- 003 5/13/2010 N	VZMW-07 VZMW-07- 003 5/18/2010 N
Analytical Method	Parameter	Units								
SW8330B	2,4,6-Trinitrotoluene	µg/L	--	--	--	<2.0	--	--	<2.0	--
SW8330B	2,4-Dinitrotoluene	µg/L	--	--	--	<2.0	--	--	<2.0	--
SW8330B	2,6-Dinitrotoluene	µg/L	--	--	--	<2.0	--	--	<2.0	--
SW8330B	2-Amino-4,6-dinitrotoluene	µg/L	--	--	--	<2.0	--	--	<2.0	--
SW8330B	2-Nitrotoluene	µg/L	--	--	--	<2.0	--	--	<2.0	--
SW8330B	3-Nitrotoluene	µg/L	--	--	--	<2.0	--	--	<2.0	--
SW8330B	4-Amino-2,6-dinitrotoluene	µg/L	--	--	--	<2.0	--	--	<2.0	--
SW8330B	4-Nitrotoluene	µg/L	--	--	--	<2.0	--	--	<2.0	--
SW8330B	HMX	µg/L	--	--	--	6.3	--	--	6.6	--
SW8330B	Nitrobenzene	µg/L	--	--	--	<2.0	--	--	<2.0	--
SW8330B	RDX	µg/L	--	--	--	37	--	--	25	--
SW8330B	Tetryl	µg/L	--	--	--	<2.0	--	--	<2.0	--

TABLE GWMP-6

2010 Vadose Zone Monitor Well Sampling Results

RCRA Post-Closure Permit Area Groundwater Monitoring Plan

Camp Navajo, Bellemont, Arizona

		Location ID: Sample ID: Sample Date: Sample Purpose:	VZMW-08 VZMW-08- 003 5/13/2010 N	VZMW-09 VZMW-09- 003 5/18/2010 N	VZMW-10 VZMW-10- 003 5/18/2010 N	VZMW-11 N0203- VZMW11-03 5/17/2010 N	VZMW-12 VZMW-12- 003 5/18/2010 N	VZMW-13 VZMW-13- 003 5/18/2010 N	VZMW-15 VZMW-15- 003 5/13/2010 N	VZMW-16 N0203- VZMW16-03 5/17/2010 N
Analytical Method	Parameter	Units								
E200.7	Aluminum	µg/L	3180	1750	--	--	--	--	7420	--
E200.7	Barium	µg/L	198	45.1	--	--	--	--	200	--
E200.7	Chromium	µg/L	11.5	9.6	--	--	--	--	37.0	--
E200.7	Cobalt	µg/L	2.6	0.8	--	--	--	--	5.5	--
E200.7	Copper	µg/L	11.8	2.7	--	--	--	--	15.0	--
E200.7	Iron	µg/L	3580	1690	--	--	--	--	9310	--
E200.7	Magnesium	µg/L	117000	49400	--	--	--	--	226000	--
E200.7	Manganese	µg/L	940	75.6	--	--	--	--	551	--
E200.7	Molybdenum	µg/L	<10	0.8	--	--	--	--	11	--
E200.7	Nickel	µg/L	9.5	3.0	--	--	--	--	12.6	--
E200.7	Potassium	µg/L	1230	1110	--	--	--	--	4440	--
E200.7	Sodium	µg/L	4520	10200	--	--	--	--	17500	--
E200.7	Vanadium	µg/L	24.0	10.7	--	--	--	--	32.1	--
E200.7	Zinc	µg/L	117	17.8	--	--	--	--	92.4	--
E200.7 (Dissolved)	Aluminum	µg/L	<50	2.5	542	--	104	242	<50	--
E200.7 (Dissolved)	Barium	µg/L	37.4	27.2	92.7	--	47.6	35.8	48.4	--
E200.7 (Dissolved)	Chromium	µg/L	2.4	1.4	12.0	--	2.9	0.6	2.3	--
E200.7 (Dissolved)	Cobalt	µg/L	<10	<10.0	<10.0	--	<10.0	<10.0	<10	--
E200.7 (Dissolved)	Copper	µg/L	<10.0	1.3	0.8	--	1.7	1.3	<10.0	--
E200.7 (Dissolved)	Iron	µg/L	3.3	<20.0	489	--	77.4	150	4.0	--
E200.7 (Dissolved)	Magnesium	µg/L	30600	19000	60800	--	26300	21100	61000	--
E200.7 (Dissolved)	Manganese	µg/L	<5.0	0.6	38.8	--	7.8	5.0	<5.0	--
E200.7 (Dissolved)	Molybdenum	µg/L	<10	<10.0	1.2	--	1.3	7.3	9.0	--
E200.7 (Dissolved)	Nickel	µg/L	<20.0	<20.0	1.8	--	0.7	1.0	<20.0	--
E200.7 (Dissolved)	Potassium	µg/L	604	517	2150	--	961	1580	2680	--
E200.7 (Dissolved)	Sodium	µg/L	4340	10900	10600	--	19900	57300	18100	--
E200.7 (Dissolved)	Vanadium	µg/L	<10.0	3.0	4.6	--	4.3	2.0	<10.0	--
E200.7 (Dissolved)	Zinc	µg/L	<10.0	0.9	7.4	--	5.9	2.1	<10.0	--
E200.8	Antimony	µg/L	0.24	0.08	--	--	--	--	0.44	--
E200.8	Arsenic	µg/L	3.62	3.04	--	--	--	--	5.04	--
E200.8	Beryllium	µg/L	0.509	0.115	--	--	--	--	0.975	--
E200.8	Cadmium	µg/L	3.080	0.151	--	--	--	--	2.670	--
E200.8	Lead	µg/L	3.760	1.380	--	--	--	--	14.8	--
E200.8	Selenium	µg/L	<2.0	1.2	--	--	--	--	<2.0	--
E200.8	Silver	µg/L	<0.020	<0.020	--	--	--	--	78.5	--
E200.8	Thallium	µg/L	0.106	<0.020	--	--	--	--	0.399	--
E200.8 (Dissolved)	Antimony	µg/L	0.11	0.04	0.22	--	0.17	0.49	0.33	--
E200.8 (Dissolved)	Arsenic	µg/L	0.83	1.62	1.54	--	2.67	1.78	1.60	--
E200.8 (Dissolved)	Barium	µg/L	--	--	--	--	--	--	--	--
E200.8 (Dissolved)	Beryllium	µg/L	<0.020	<0.020	0.038	--	<0.020	<0.020	<0.020	--
E200.8 (Dissolved)	Cadmium	µg/L	<0.020	0.030	0.241	--	0.212	0.053	0.072	--
E200.8 (Dissolved)	Chromium	µg/L	--	--	--	--	--	--	--	--
E200.8 (Dissolved)	Lead	µg/L	0.050	<0.020	0.474	--	0.514	0.314	0.131	--
E200.8 (Dissolved)	Nickel	µg/L	--	--	--	--	--	--	--	--
E200.8 (Dissolved)	Selenium	µg/L	0.8	1.2	1.1	--	2.1	1.3	<2.0	--

TABLE GWMP-6

2010 Vadose Zone Monitor Well Sampling Results

RCRA Post-Closure Permit Area Groundwater Monitoring Plan

Camp Navajo, Bellemont, Arizona

		Location ID: Sample ID: Sample Date: Sample Purpose:	VZMW-08 VZMW-08- 003 5/13/2010 N	VZMW-09 VZMW-09- 003 5/18/2010 N	VZMW-10 VZMW-10- 003 5/18/2010 N	VZMW-11 N0203- VZMW11-03 5/17/2010 N	VZMW-12 VZMW-12- 003 5/18/2010 N	VZMW-13 VZMW-13- 003 5/18/2010 N	VZMW-15 VZMW-15- 003 5/13/2010 N	VZMW-16 N0203- VZMW16-03 5/17/2010 N
Analytical Method	Parameter	Units								
E200.8 (Dissolved)	Silver	µg/L	<0.020	<0.020	<0.020	--	<0.020	<0.020	<0.020	--
E200.8 (Dissolved)	Thallium	µg/L	0.060	<0.020	<0.020	--	<0.020	<0.020	0.060	--
E245.1	Mercury	µg/L	0.16	<0.20	--	--	--	--	0.05	--
E245.1 (Dissolved)	Mercury	µg/L	<0.20	<0.20	<0.20	--	<0.20	<0.20	<0.20	--
E314.0	Perchlorate	µg/L	--	--	--	--	--	--	--	--
E332.0	Perchlorate	µg/L	150	1.3	1.9	<1	0.14	3.4	1.6	0.42
E353.2	Nitrate + Nitrite-N	mg/L	0.447	0.472	77.8	2.38	5.44	2.11	0.504	0.330
SW7580	White phosphorus	µg/L	--	--	--	--	--	--	--	--
SW8270C	1,2,4-Trichlorobenzene	µg/L	<9.8	<9.6	<9.6	--	<9.6	<9.6	<9.7	<12
SW8270C	1,2-Dichlorobenzene	µg/L	<9.8	<9.6	<9.6	--	<9.6	<9.6	<9.7	<12
SW8270C	1,2-Diphenylhydrazine	µg/L	--	--	--	--	--	--	--	--
SW8270C	1,3-Dichlorobenzene	µg/L	<9.8	<9.6	<9.6	--	<9.6	<9.6	<9.7	<12
SW8270C	1,4-Dichlorobenzene	µg/L	<9.8	<9.6	<9.6	--	<9.6	<9.6	<9.7	<12
SW8270C	2,4,5-Trichlorophenol	µg/L	<9.8	<9.6	<9.6	--	<9.6	<9.6	<9.7	<12
SW8270C	2,4,6-Trichlorophenol	µg/L	<9.8	<9.6	<9.6	--	<9.6	<9.6	<9.7	<12
SW8270C	2,4-Dichlorophenol	µg/L	<9.8	<9.6	<9.6	--	<9.6	<9.6	<9.7	<12
SW8270C	2,4-Dimethylphenol	µg/L	<9.8	<9.6	<9.6	--	<9.6	<9.6	<9.7	<12
SW8270C	2,4-Dinitrophenol	µg/L	<25	<24	<24	--	<24	<24	<25	<29
SW8270C	2,4-Dinitrotoluene	µg/L	<9.8	<9.6	<9.6	--	<9.6	<9.6	<9.7	<12
SW8270C	2,6-Dinitrotoluene	µg/L	<9.8	<9.6	<9.6	--	<9.6	<9.6	<9.7	<12
SW8270C	2-Chloronaphthalene	µg/L	<9.8	<9.6	<9.6	--	<9.6	<9.6	<9.7	<12
SW8270C	2-Chlorophenol	µg/L	<9.8	<9.6	<9.6	--	<9.6	<9.6	<9.7	<12
SW8270C	2-Methylnaphthalene	µg/L	<9.8	<9.6	<9.6	--	<9.6	<9.6	<9.7	<12
SW8270C	2-Methylphenol	µg/L	<9.8	<9.6	<9.6	--	<9.6	<9.6	<9.7	<12
SW8270C	2-Nitroaniline	µg/L	<25	<24	<24	--	<24	<24	<25	<29
SW8270C	2-Nitrophenol	µg/L	<9.8	<9.6	<9.6	--	<9.6	<9.6	<9.7	<12
SW8270C	3,3'-Dichlorobenzidine	µg/L	<25	<24	<24	--	<24	<24	<25	<29
SW8270C	3-Nitroaniline	µg/L	<25	<24	<24	--	<24	<24	<25	<29
SW8270C	4,6-Dinitro-2-methylphenol	µg/L	<25	<24	<24	--	<24	<24	<25	<29
SW8270C	4-Bromophenyl phenyl ether	µg/L	<9.8	<9.6	<9.6	--	<9.6	<9.6	<9.7	<12
SW8270C	4-Chloro-3-methylphenol	µg/L	<9.8	<9.6	<9.6	--	<9.6	<9.6	<9.7	<12
SW8270C	4-Chloroaniline	µg/L	<9.8	<9.6	<9.6	--	<9.6	<9.6	<9.7	<12
SW8270C	4-Chlorophenyl phenyl ether	µg/L	<9.8	<9.6	<9.6	--	<9.6	<9.6	<9.7	<12
SW8270C	4-Methylphenol	µg/L	<9.8	<9.6	<9.6	--	<9.6	<9.6	<9.7	<12
SW8270C	4-Nitroaniline	µg/L	<25	<24	<24	--	<24	<24	<25	<29
SW8270C	4-Nitrophenol	µg/L	<25	<24	<24	--	<24	<24	<25	<29
SW8270C	Acenaphthene	µg/L	<9.8	<9.6	<9.6	--	<9.6	<9.6	<9.7	<12
SW8270C	Acenaphthylene	µg/L	<9.8	<9.6	<9.6	--	<9.6	<9.6	<9.7	<12
SW8270C	Aniline	µg/L	<25	<24	<24	--	<24	<24	<25	<29
SW8270C	Anthracene	µg/L	<9.8	<9.6	<9.6	--	<9.6	<9.6	<9.7	<12
SW8270C	Benzo (a) anthracene	µg/L	<9.8	<9.6	<9.6	--	<9.6	<9.6	<9.7	<12
SW8270C	Benzo (a) pyrene	µg/L	<9.8	<9.6	<9.6	--	<9.6	<9.6	<9.7	<12
SW8270C	Benzo (b) fluoranthene	µg/L	<9.8	<9.6	<9.6	--	<9.6	<9.6	<9.7	<12
SW8270C	Benzo (g,h,i) perylene	µg/L	<9.8	<9.6	<9.6	--	<9.6	<9.6	<9.7	<12
SW8270C	Benzo(k)fluoranthene	µg/L	<9.8	<9.6	<9.6	--	<9.6	<9.6	<9.7	<12

TABLE GWMP-6

2010 Vadose Zone Monitor Well Sampling Results

RCRA Post-Closure Permit Area Groundwater Monitoring Plan

Camp Navajo, Bellemont, Arizona

		Location ID: Sample ID: Sample Date: Sample Purpose:	VZMW-08 VZMW-08- 003 5/13/2010 N	VZMW-09 VZMW-09- 003 5/18/2010 N	VZMW-10 VZMW-10- 003 5/18/2010 N	VZMW-11 N0203- VZMW11-03 5/17/2010 N	VZMW-12 VZMW-12- 003 5/18/2010 N	VZMW-13 VZMW-13- 003 5/18/2010 N	VZMW-15 VZMW-15- 003 5/13/2010 N	VZMW-16 N0203- VZMW16-03 5/17/2010 N
Analytical Method	Parameter	Units								
SW8270C	Benzoic acid	µg/L	<25	<24	<24	--	<24	<24	<25	<29
SW8270C	Benzyl alcohol	µg/L	<9.8	<9.6	<9.6	--	<9.6	<9.6	<9.7	<12
SW8270C	Bis (2-chloroethoxy) methane	µg/L	<9.8	<9.6	<9.6	--	<9.6	<9.6	<9.7	<12
SW8270C	Bis (2-chloroethyl) ether	µg/L	<9.8	<9.6	<9.6	--	<9.6	<9.6	<9.7	<12
SW8270C	Bis (2-ethylhexyl) phthalate	µg/L	<9.8	<9.6	3.6 J	--	<9.6	2.6 J	16	<12
SW8270C	Bis(2-chloroisopropyl) ether	µg/L	<9.8	<9.6	<9.6	--	<9.6	<9.6	<9.7	<12
SW8270C	Butyl benzylphthalate	µg/L	<9.8	<9.6	<9.6	--	<9.6	<9.6	<9.7	<12
SW8270C	Chrysene	µg/L	<9.8	<9.6	<9.6	--	<9.6	<9.6	<9.7	<12
SW8270C	Dibenzo (a,h) anthracene	µg/L	<9.8	<9.6	<9.6	--	<9.6	<9.6	<9.7	<12
SW8270C	Dibenzofuran	µg/L	<9.8	<9.6	<9.6	--	<9.6	<9.6	<9.7	<12
SW8270C	Diethyl phthalate	µg/L	<9.8	<9.6	<9.6	--	<9.6	<9.6	<9.7	<12
SW8270C	Dimethyl phthalate	µg/L	<9.8	<9.6	0.72 J	--	<9.6	<9.6	<9.7	<12
SW8270C	Di-n-butylphthalate	µg/L	<9.8	<9.6	<9.6	--	<9.6	<9.6	0.38 J	<12
SW8270C	Di-n-octylphthalate	µg/L	<9.8	<9.6	<9.6	--	<9.6	<9.6	<9.7	<12
SW8270C	Fluoranthene	µg/L	<9.8	<9.6	<9.6	--	<9.6	<9.6	<9.7	<12
SW8270C	Fluorene	µg/L	<9.8	<9.6	<9.6	--	<9.6	<9.6	<9.7	<12
SW8270C	Hexachlorobenzene	µg/L	<9.8	<9.6	<9.6	--	<9.6	<9.6	<9.7	<12
SW8270C	Hexachlorobutadiene	µg/L	<9.8	<9.6	<9.6	--	<9.6	<9.6	<9.7	<12
SW8270C	Hexachlorocyclopentadiene	µg/L	<9.8	<9.6	<9.6	--	<9.6	<9.6	<9.7	<12
SW8270C	Hexachloroethane	µg/L	<9.8	<9.6	<9.6	--	<9.6	<9.6	<9.7	<12
SW8270C	Indeno (1,2,3-c,d) pyrene	µg/L	<9.8	<9.6	<9.6	--	<9.6	<9.6	<9.7	<12
SW8270C	Isophorone	µg/L	<9.8	<9.6	<9.6	--	<9.6	<9.6	<9.7	<12
SW8270C	naphthalene	µg/L	<9.8	<9.6	<9.6	--	<9.6	<9.6	<9.7	<12
SW8270C	Nitrobenzene	µg/L	<9.8	<9.6	<9.6	--	<9.6	<9.6	<9.7	<12
SW8270C	n-Nitrosodimethylamine	µg/L	<25	<24	<24	--	<24	<24	<25	<29
SW8270C	n-Nitrosodi-n-propylamine	µg/L	<9.8	<9.6	<9.6	--	<9.6	<9.6	<9.7	<12
SW8270C	n-Nitrosodiphenylamine	µg/L	<9.8	<9.6	<9.6	--	<9.6	<9.6	<9.7	<12
SW8270C	Pentachlorophenol	µg/L	<25	<24	<24	--	<24	<24	<25	<29
SW8270C	Phenanthrene	µg/L	<9.8	<9.6	<9.6	--	<9.6	<9.6	<9.7	<12
SW8270C	Phenol	µg/L	<9.8	<9.6	<9.6	--	<9.6	<9.6	<9.7	<12
SW8270C	Pyrene	µg/L	<9.8	<9.6	<9.6	--	<9.6	<9.6	<9.7	<12
SW8270C SIM	2-Methylnaphthalene	ng/L	--	--	--	--	--	--	--	--
SW8270C SIM	Acenaphthene	ng/L	--	--	--	--	--	--	--	--
SW8270C SIM	Acenaphthylene	ng/L	--	--	--	--	--	--	--	--
SW8270C SIM	Anthracene	ng/L	--	--	--	--	--	--	--	--
SW8270C SIM	Benzo (a) anthracene	ng/L	--	--	--	--	--	--	--	--
SW8270C SIM	Benzo (a) pyrene	ng/L	--	--	--	--	--	--	--	--
SW8270C SIM	Benzo (b) fluoranthene	ng/L	--	--	--	--	--	--	--	--
SW8270C SIM	Benzo (g,h,i) perylene	ng/L	--	--	--	--	--	--	--	--
SW8270C SIM	Benzo(k)fluoranthene	ng/L	--	--	--	--	--	--	--	--
SW8270C SIM	Chrysene	ng/L	--	--	--	--	--	--	--	--
SW8270C SIM	Dibenzo (a,h) anthracene	ng/L	--	--	--	--	--	--	--	--
SW8270C SIM	Dibenzofuran	ng/L	--	--	--	--	--	--	--	--
SW8270C SIM	Fluoranthene	ng/L	--	--	--	--	--	--	--	--
SW8270C SIM	Fluorene	ng/L	--	--	--	--	--	--	--	--

TABLE GWMP-6

2010 Vadose Zone Monitor Well Sampling Results

RCRA Post-Closure Permit Area Groundwater Monitoring Plan

Camp Navajo, Bellemont, Arizona

		Location ID: Sample ID: Sample Date: Sample Purpose:	VZMW-08 VZMW-08- 003 5/13/2010 N	VZMW-09 VZMW-09- 003 5/18/2010 N	VZMW-10 VZMW-10- 003 5/18/2010 N	VZMW-11 N0203- VZMW11-03 5/17/2010 N	VZMW-12 VZMW-12- 003 5/18/2010 N	VZMW-13 VZMW-13- 003 5/18/2010 N	VZMW-15 VZMW-15- 003 5/13/2010 N	VZMW-16 N0203- VZMW16-03 5/17/2010 N
Analytical Method	Parameter	Units								
SW8270C SIM	Indeno (1,2,3-c,d) pyrene	ng/L	--	--	--	--	--	--	--	--
SW8270C SIM	naphthalene	ng/L	--	--	--	--	--	--	--	--
SW8270C SIM	Phenanthrene	ng/L	--	--	--	--	--	--	--	--
SW8270C SIM	Pyrene	ng/L	--	--	--	--	--	--	--	--
SW8290	1,2,3,4,6,7,8,9-OCDD	pg/L	--	--	--	--	<45.5	--	--	--
SW8290	1,2,3,4,6,7,8-HPCDD	pg/L	--	--	--	--	<22.7	--	--	--
SW8290	1,2,3,4,6,7,8-HPCDF	pg/L	--	--	--	--	<22.7	--	--	--
SW8290	1,2,3,4,7,8,9-HPCDF	pg/L	--	--	--	--	<22.7	--	--	--
SW8290	1,2,3,4,7,8-HXCDD	pg/L	--	--	--	--	<22.7	--	--	--
SW8290	1,2,3,4,7,8-HXCDF	pg/L	--	--	--	--	<22.7	--	--	--
SW8290	1,2,3,6,7,8-HXCDD	pg/L	--	--	--	--	<22.7	--	--	--
SW8290	1,2,3,6,7,8-HXCDF	pg/L	--	--	--	--	<22.7	--	--	--
SW8290	1,2,3,7,8,9-HXCDD	pg/L	--	--	--	--	<22.7	--	--	--
SW8290	1,2,3,7,8,9-HXCDF	pg/L	--	--	--	--	<22.7	--	--	--
SW8290	1,2,3,7,8-PECDD	pg/L	--	--	--	--	<22.7	--	--	--
SW8290	1,2,3,7,8-PECDF	pg/L	--	--	--	--	<22.7	--	--	--
SW8290	2,3,4,6,7,8-HXCDF	pg/L	--	--	--	--	<22.7	--	--	--
SW8290	2,3,4,7,8-PECDF	pg/L	--	--	--	--	<22.7	--	--	--
SW8290	2,3,7,8-TCDD	pg/L	--	--	--	--	<9.09	--	--	--
SW8290	2,3,7,8-TCDF	pg/L	--	--	--	--	<9.09	--	--	--
SW8290	Heptachlorodibenzofurans, Total	pg/L	--	--	--	--	<22.7	--	--	--
SW8290	Heptachlorodibenzo-p-dioxins, Total	pg/L	--	--	--	--	<22.7	--	--	--
SW8290	Hexachlorodibenzofurans, Total	pg/L	--	--	--	--	<22.7	--	--	--
SW8290	Hexachlorodibenzo-p-dioxins, Total	pg/L	--	--	--	--	<22.7	--	--	--
SW8290	OCDF	pg/L	--	--	--	--	<45.5	--	--	--
SW8290	Pentachlorodibenzofurans, Total	pg/L	--	--	--	--	<22.7	--	--	--
SW8290	Pentachlorodibenzo-p-dioxin, Total	pg/L	--	--	--	--	<22.7	--	--	--
SW8290	Tetrachlorodibenzofurans, Total	pg/L	--	--	--	--	<9.09	--	--	--
SW8290	Tetrachlorodibenzo-p-dioxins, Total	pg/L	--	--	--	--	<9.09	--	--	--
SW8330	1,3,5-Trinitrobenzene	µg/L	--	<2.0	<2.0	R	<2.0	<2.0	--	<2.0
SW8330	1,3-Dinitrobenzene	µg/L	--	<2.0	<2.0	R	<2.0	<2.0	--	<2.0
SW8330	2,4,6-Trinitrotoluene	µg/L	--	<2.0	<2.0	R	<2.0	<2.0	--	<2.0
SW8330	2,4-Dinitrotoluene	µg/L	--	<2.0	<2.0	R	<2.0	<2.0	--	<2.0
SW8330	2,6-Dinitrotoluene	µg/L	--	<2.0	<2.0	R	<2.0	<2.0	--	<2.0
SW8330	2-Amino-4,6-dinitrotoluene	µg/L	--	<2.0	<2.0	R	<2.0	<2.0	--	<2.0
SW8330	2-Nitrotoluene	µg/L	--	<2.0	<2.0	R	<2.0	<2.0	--	<2.0
SW8330	3-Nitrotoluene	µg/L	--	<2.0	<2.0	R	<2.0	<2.0	--	<2.0
SW8330	4-Amino-2,6-dinitrotoluene	µg/L	--	<2.0	<2.0	R	<2.0	<2.0	--	<2.0
SW8330	4-Nitrotoluene	µg/L	--	<2.0	<2.0	R	<2.0	<2.0	--	<2.0
SW8330	HMX	µg/L	--	<2.0	<2.0	R	<2.0	0.29 J	--	<2.0
SW8330	Nitrobenzene	µg/L	--	<2.0	<2.0	R	<2.0	<2.0	--	<2.0
SW8330	RDX	µg/L	--	0.90 J	<0.48	R	2.1 J	2.4 J	--	<0.50
SW8330	Tetryl	µg/L	--	<2.0	<2.0	R	<2.0	<2.0	--	<2.0
SW8330B	1,3,5-Trinitrobenzene	µg/L	<2.0	--	--	--	--	--	<2.0	--
SW8330B	1,3-Dinitrobenzene	µg/L	<2.0	--	--	--	--	--	<2.0	--

TABLE GWMP-6

2010 Vadose Zone Monitor Well Sampling Results

RCRA Post-Closure Permit Area Groundwater Monitoring Plan

Camp Navajo, Bellemont, Arizona

		Location ID: Sample ID: Sample Date: Sample Purpose:	VZMW-08 VZMW-08- 003 5/13/2010 N	VZMW-09 VZMW-09- 003 5/18/2010 N	VZMW-10 VZMW-10- 003 5/18/2010 N	VZMW-11 N0203- VZMW11-03 5/17/2010 N	VZMW-12 VZMW-12- 003 5/18/2010 N	VZMW-13 VZMW-13- 003 5/18/2010 N	VZMW-15 VZMW-15- 003 5/13/2010 N	VZMW-16 N0203- VZMW16-03 5/17/2010 N
Analytical Method	Parameter	Units								
SW8330B	2,4,6-Trinitrotoluene	µg/L	<2.0	--	--	--	--	--	<2.0	--
SW8330B	2,4-Dinitrotoluene	µg/L	<2.0	--	--	--	--	--	<2.0	--
SW8330B	2,6-Dinitrotoluene	µg/L	<2.0	--	--	--	--	--	<2.0	--
SW8330B	2-Amino-4,6-dinitrotoluene	µg/L	<2.0	--	--	--	--	--	<2.0	--
SW8330B	2-Nitrotoluene	µg/L	<2.0	--	--	--	--	--	<2.0	--
SW8330B	3-Nitrotoluene	µg/L	<2.0	--	--	--	--	--	<2.0	--
SW8330B	4-Amino-2,6-dinitrotoluene	µg/L	<2.0	--	--	--	--	--	<2.0	--
SW8330B	4-Nitrotoluene	µg/L	<2.0	--	--	--	--	--	<2.0	--
SW8330B	HMX	µg/L	<2.0	--	--	--	--	--	<2.0	--
SW8330B	Nitrobenzene	µg/L	<2.0	--	--	--	--	--	<2.0	--
SW8330B	RDX	µg/L	0.24 J	--	--	--	--	--	<0.48	--
SW8330B	Tetryl	µg/L	<2.0	--	--	--	--	--	<2.0	--

TABLE GWMP-6

2010 Vadose Zone Monitor Well Sampling Results

RCRA Post-Closure Permit Area Groundwater Monitoring Plan

Camp Navajo, Bellemont, Arizona

		Location ID: Sample ID: Sample Date: Sample Purpose:	VZMW-16 N0203- VZMW16-3B 2/6/2010 N	VZMW-17 VZMW-17- 003 5/13/2010 N	VZMW-19 VZMW-19- 003 5/13/2010 N
Analytical Method	Parameter	Units			
E200.7	Aluminum	µg/L	--	9270 J	--
E200.7	Barium	µg/L	--	304 J	--
E200.7	Chromium	µg/L	--	20.1	--
E200.7	Cobalt	µg/L	--	6.8	--
E200.7	Copper	µg/L	--	<10.0	--
E200.7	Iron	µg/L	--	10000 J	--
E200.7	Magnesium	µg/L	--	162000 J	--
E200.7	Manganese	µg/L	--	1150 J	--
E200.7	Molybdenum	µg/L	--	8.5	--
E200.7	Nickel	µg/L	--	17.1	--
E200.7	Potassium	µg/L	--	4010 J	--
E200.7	Sodium	µg/L	--	20500	--
E200.7	Vanadium	µg/L	--	37.1	--
E200.7	Zinc	µg/L	--	94.4 J	--
E200.7 (Dissolved)	Aluminum	µg/L	--	<50	460
E200.7 (Dissolved)	Barium	µg/L	--	36.4	71.1
E200.7 (Dissolved)	Chromium	µg/L	--	<5.0	28.8
E200.7 (Dissolved)	Cobalt	µg/L	--	<10	<10
E200.7 (Dissolved)	Copper	µg/L	--	2.2	5.5
E200.7 (Dissolved)	Iron	µg/L	--	<20.0	598
E200.7 (Dissolved)	Magnesium	µg/L	--	10600	58200
E200.7 (Dissolved)	Manganese	µg/L	--	<5.0	50.9
E200.7 (Dissolved)	Molybdenum	µg/L	--	<10	<10
E200.7 (Dissolved)	Nickel	µg/L	--	<20.0	<20.0
E200.7 (Dissolved)	Potassium	µg/L	--	1980	3100
E200.7 (Dissolved)	Sodium	µg/L	--	20500	38500
E200.7 (Dissolved)	Vanadium	µg/L	--	6.3	9.1
E200.7 (Dissolved)	Zinc	µg/L	--	<10.0	11.6
E200.8	Antimony	µg/L	--	0.46	--
E200.8	Arsenic	µg/L	--	7.11	--
E200.8	Beryllium	µg/L	--	1.090	--
E200.8	Cadmium	µg/L	--	3.140	--
E200.8	Lead	µg/L	--	13.3	--
E200.8	Selenium	µg/L	--	<2.0	--
E200.8	Silver	µg/L	--	0.144	--
E200.8	Thallium	µg/L	--	0.309	--
E200.8 (Dissolved)	Antimony	µg/L	--	0.52	0.27
E200.8 (Dissolved)	Arsenic	µg/L	--	3.26	5.23
E200.8 (Dissolved)	Barium	µg/L	--	--	--
E200.8 (Dissolved)	Beryllium	µg/L	--	<0.020	0.056
E200.8 (Dissolved)	Cadmium	µg/L	--	0.040	0.179
E200.8 (Dissolved)	Chromium	µg/L	--	--	--
E200.8 (Dissolved)	Lead	µg/L	--	0.057	5.020
E200.8 (Dissolved)	Nickel	µg/L	--	--	--
E200.8 (Dissolved)	Selenium	µg/L	--	0.9	13.8

TABLE GWMP-6

2010 Vadose Zone Monitor Well Sampling Results

RCRA Post-Closure Permit Area Groundwater Monitoring Plan

Camp Navajo, Bellemont, Arizona

		Location ID: Sample ID: Sample Date: Sample Purpose:	VZMW-16 N0203- VZMW16-3B 2/6/2010 N	VZMW-17 VZMW-17- 003 5/13/2010 N	VZMW-19 VZMW-19- 003 5/13/2010 N
Analytical Method	Parameter	Units			
E200.8 (Dissolved)	Silver	µg/L	--	<0.020	<0.020
E200.8 (Dissolved)	Thallium	µg/L	--	0.065	0.086
E245.1	Mercury	µg/L	--	0.08	--
E245.1 (Dissolved)	Mercury	µg/L	--	<0.20	<0.20
E314.0	Perchlorate	µg/L	--	--	--
E332.0	Perchlorate	µg/L	--	0.83	0.85
E353.2	Nitrate + Nitrite-N	mg/L	--	0.835	2.31
SW7580	White phosphorus	µg/L	--	--	<0.05
SW8270C	1,2,4-Trichlorobenzene	µg/L	--	<10	<9.8
SW8270C	1,2-Dichlorobenzene	µg/L	--	<10	<9.8
SW8270C	1,2-Diphenylhydrazine	µg/L	--	--	--
SW8270C	1,3-Dichlorobenzene	µg/L	--	<10	<9.8
SW8270C	1,4-Dichlorobenzene	µg/L	--	<10	<9.8
SW8270C	2,4,5-Trichlorophenol	µg/L	--	<10	<9.8
SW8270C	2,4,6-Trichlorophenol	µg/L	--	<10	<9.8
SW8270C	2,4-Dichlorophenol	µg/L	--	<10	<9.8
SW8270C	2,4-Dimethylphenol	µg/L	--	<10	<9.8
SW8270C	2,4-Dinitrophenol	µg/L	--	<25	<25
SW8270C	2,4-Dinitrotoluene	µg/L	--	<10	<9.8
SW8270C	2,6-Dinitrotoluene	µg/L	--	<10	<9.8
SW8270C	2-Chloronaphthalene	µg/L	--	<10	<9.8
SW8270C	2-Chlorophenol	µg/L	--	<10	<9.8
SW8270C	2-Methylnaphthalene	µg/L	--	<10	<9.8
SW8270C	2-Methylphenol	µg/L	--	<10	<9.8
SW8270C	2-Nitroaniline	µg/L	--	<25	<25
SW8270C	2-Nitrophenol	µg/L	--	<10	<9.8
SW8270C	3,3'-Dichlorobenzidine	µg/L	--	<25	<25
SW8270C	3-Nitroaniline	µg/L	--	<25	<25
SW8270C	4,6-Dinitro-2-methylphenol	µg/L	--	<25	<25
SW8270C	4-Bromophenyl phenyl ether	µg/L	--	<10	<9.8
SW8270C	4-Chloro-3-methylphenol	µg/L	--	<10	<9.8
SW8270C	4-Chloroaniline	µg/L	--	<10	<9.8
SW8270C	4-Chlorophenyl phenyl ether	µg/L	--	<10	<9.8
SW8270C	4-Methylphenol	µg/L	--	<10	<9.8
SW8270C	4-Nitroaniline	µg/L	--	<25	<25
SW8270C	4-Nitrophenol	µg/L	--	<25	<25
SW8270C	Acenaphthene	µg/L	--	<10	<9.8
SW8270C	Acenaphthylene	µg/L	--	<10	<9.8
SW8270C	Aniline	µg/L	--	<25	<25
SW8270C	Anthracene	µg/L	--	<10	<9.8
SW8270C	Benzo (a) anthracene	µg/L	--	<10	<9.8
SW8270C	Benzo (a) pyrene	µg/L	--	<10	<9.8
SW8270C	Benzo (b) fluoranthene	µg/L	--	<10	<9.8
SW8270C	Benzo (g,h,i) perylene	µg/L	--	<10	<9.8
SW8270C	Benzo(k)fluoranthene	µg/L	--	<10	<9.8

TABLE GWMP-6

2010 Vadose Zone Monitor Well Sampling Results

RCRA Post-Closure Permit Area Groundwater Monitoring Plan

Camp Navajo, Bellemont, Arizona

		Location ID: Sample ID: Sample Date: Sample Purpose:	VZMW-16 N0203- VZMW16-3B 2/6/2010 N	VZMW-17 VZMW-17- 003 5/13/2010 N	VZMW-19 VZMW-19- 003 5/13/2010 N
Analytical Method	Parameter	Units			
SW8270C	Benzoic acid	µg/L	--	<25	<25
SW8270C	Benzyl alcohol	µg/L	--	<10	<9.8
SW8270C	Bis (2-chloroethoxy) methane	µg/L	--	<10	<9.8
SW8270C	Bis (2-chloroethyl) ether	µg/L	--	<10	<9.8
SW8270C	Bis (2-ethylhexyl) phthalate	µg/L	--	<10	2.5 J
SW8270C	Bis(2-chloroisopropyl) ether	µg/L	--	<10	<9.8
SW8270C	Butyl benzylphthalate	µg/L	--	<10	<9.8
SW8270C	Chrysene	µg/L	--	<10	<9.8
SW8270C	Dibenzo (a,h) anthracene	µg/L	--	<10	<9.8
SW8270C	Dibenzofuran	µg/L	--	<10	<9.8
SW8270C	Diethyl phthalate	µg/L	--	<10	<9.8
SW8270C	Dimethyl phthalate	µg/L	--	<10	<9.8
SW8270C	Di-n-butylphthalate	µg/L	--	<10	<9.8
SW8270C	Di-n-octylphthalate	µg/L	--	<10	<9.8
SW8270C	Fluoranthene	µg/L	--	<10	<9.8
SW8270C	Fluorene	µg/L	--	<10	<9.8
SW8270C	Hexachlorobenzene	µg/L	--	<10	<9.8
SW8270C	Hexachlorobutadiene	µg/L	--	<10	<9.8
SW8270C	Hexachlorocyclopentadiene	µg/L	--	<10	<9.8
SW8270C	Hexachloroethane	µg/L	--	<10	<9.8
SW8270C	Indeno (1,2,3-c,d) pyrene	µg/L	--	<10	<9.8
SW8270C	Isophorone	µg/L	--	<10	<9.8
SW8270C	naphthalene	µg/L	--	<10	<9.8
SW8270C	Nitrobenzene	µg/L	--	<10	<9.8
SW8270C	n-Nitrosodimethylamine	µg/L	--	<25	<25
SW8270C	n-Nitrosodi-n-propylamine	µg/L	--	<10	<9.8
SW8270C	n-Nitrosodiphenylamine	µg/L	--	<10	<9.8
SW8270C	Pentachlorophenol	µg/L	--	<25	<25
SW8270C	Phenanthrene	µg/L	--	<10	<9.8
SW8270C	Phenol	µg/L	--	<10	<9.8
SW8270C	Pyrene	µg/L	--	<10	<9.8
SW8270C SIM	2-Methylnaphthalene	ng/L	--	--	--
SW8270C SIM	Acenaphthene	ng/L	--	--	--
SW8270C SIM	Acenaphthylene	ng/L	--	--	--
SW8270C SIM	Anthracene	ng/L	--	--	--
SW8270C SIM	Benzo (a) anthracene	ng/L	--	--	--
SW8270C SIM	Benzo (a) pyrene	ng/L	--	--	--
SW8270C SIM	Benzo (b) fluoranthene	ng/L	--	--	--
SW8270C SIM	Benzo (g,h,i) perylene	ng/L	--	--	--
SW8270C SIM	Benzo(k)fluoranthene	ng/L	--	--	--
SW8270C SIM	Chrysene	ng/L	--	--	--
SW8270C SIM	Dibenzo (a,h) anthracene	ng/L	--	--	--
SW8270C SIM	Dibenzofuran	ng/L	--	--	--
SW8270C SIM	Fluoranthene	ng/L	--	--	--
SW8270C SIM	Fluorene	ng/L	--	--	--

TABLE GWMP-6

2010 Vadose Zone Monitor Well Sampling Results

RCRA Post-Closure Permit Area Groundwater Monitoring Plan

Camp Navajo, Bellemont, Arizona

		Location ID: Sample ID: Sample Date: Sample Purpose:	VZMW-16 N0203- VZMW16-3B 2/6/2010 N	VZMW-17 VZMW-17- 003 5/13/2010 N	VZMW-19 VZMW-19- 003 5/13/2010 N
Analytical Method	Parameter	Units			
SW8270C SIM	Indeno (1,2,3-c,d) pyrene	ng/L	--	--	--
SW8270C SIM	naphthalene	ng/L	--	--	--
SW8270C SIM	Phenanthrene	ng/L	--	--	--
SW8270C SIM	Pyrene	ng/L	--	--	--
SW8290	1,2,3,4,6,7,8,9-OCDD	pg/L	--	7.96 J	--
SW8290	1,2,3,4,6,7,8-HPCDD	pg/L	--	1.94 J	--
SW8290	1,2,3,4,6,7,8-HPCDF	pg/L	--	<24.0	--
SW8290	1,2,3,4,7,8,9-HPCDF	pg/L	--	<24.0	--
SW8290	1,2,3,4,7,8-HXCDD	pg/L	--	<24.0	--
SW8290	1,2,3,4,7,8-HXCDF	pg/L	--	<24.0	--
SW8290	1,2,3,6,7,8-HXCDD	pg/L	--	<24.0	--
SW8290	1,2,3,6,7,8-HXCDF	pg/L	--	<24.0	--
SW8290	1,2,3,7,8,9-HXCDD	pg/L	--	<24.0	--
SW8290	1,2,3,7,8,9-HXCDF	pg/L	--	<24.0	--
SW8290	1,2,3,7,8-PECDD	pg/L	--	<24.0	--
SW8290	1,2,3,7,8-PECDF	pg/L	--	<24.0	--
SW8290	2,3,4,6,7,8-HXCDF	pg/L	--	<24.0	--
SW8290	2,3,4,7,8-PECDF	pg/L	--	<24.0	--
SW8290	2,3,7,8-TCDD	pg/L	--	<9.62	--
SW8290	2,3,7,8-TCDF	pg/L	--	<9.62	--
SW8290	Heptachlorodibenzofurans, Total	pg/L	--	<24.0	--
SW8290	Heptachlorodibenzo-p-dioxins, Total	pg/L	--	3.6 J	--
SW8290	Hexachlorodibenzofurans, Total	pg/L	--	<24.0	--
SW8290	Hexachlorodibenzo-p-dioxins, Total	pg/L	--	<24.0	--
SW8290	OCDF	pg/L	--	<48.1	--
SW8290	Pentachlorodibenzofurans, Total	pg/L	--	<24.0	--
SW8290	Pentachlorodibenzo-p-dioxin, Total	pg/L	--	<24.0	--
SW8290	Tetrachlorodibenzofurans, Total	pg/L	--	<9.62	--
SW8290	Tetrachlorodibenzo-p-dioxins, Total	pg/L	--	<9.62	--
SW8330	1,3,5-Trinitrobenzene	µg/L	<2.0	--	--
SW8330	1,3-Dinitrobenzene	µg/L	<2.0	--	--
SW8330	2,4,6-Trinitrotoluene	µg/L	<2.0	--	--
SW8330	2,4-Dinitrotoluene	µg/L	<2.0	--	--
SW8330	2,6-Dinitrotoluene	µg/L	<2.0	--	--
SW8330	2-Amino-4,6-dinitrotoluene	µg/L	<2.0	--	--
SW8330	2-Nitrotoluene	µg/L	<2.0	--	--
SW8330	3-Nitrotoluene	µg/L	<2.0	--	--
SW8330	4-Amino-2,6-dinitrotoluene	µg/L	<2.0	--	--
SW8330	4-Nitrotoluene	µg/L	<2.0	--	--
SW8330	HMX	µg/L	<2.0	--	--
SW8330	Nitrobenzene	µg/L	<2.0	--	--
SW8330	RDX	µg/L	<0.48	--	--
SW8330	Tetryl	µg/L	<2.0	--	--
SW8330B	1,3,5-Trinitrobenzene	µg/L	--	R	<2.0
SW8330B	1,3-Dinitrobenzene	µg/L	--	R	<2.0

TABLE GWMP-6

2010 Vadose Zone Monitor Well Sampling Results

RCRA Post-Closure Permit Area Groundwater Monitoring Plan

Camp Navajo, Bellemont, Arizona

		Location ID: Sample ID: Sample Date: Sample Purpose:	VZMW-16 N0203- VZMW16-3B 2/6/2010 N	VZMW-17 VZMW-17- 003 5/13/2010 N	VZMW-19 VZMW-19- 003 5/13/2010 N
Analytical Method	Parameter	Units			
SW8330B	2,4,6-Trinitrotoluene	µg/L	--	R	<2.0
SW8330B	2,4-Dinitrotoluene	µg/L	--	R	<2.0
SW8330B	2,6-Dinitrotoluene	µg/L	--	R	<2.0
SW8330B	2-Amino-4,6-dinitrotoluene	µg/L	--	R	<2.0
SW8330B	2-Nitrotoluene	µg/L	--	R	<2.0
SW8330B	3-Nitrotoluene	µg/L	--	R	<2.0
SW8330B	4-Amino-2,6-dinitrotoluene	µg/L	--	R	<2.0
SW8330B	4-Nitrotoluene	µg/L	--	R	<2.0
SW8330B	HMX	µg/L	--	R	0.37 J
SW8330B	Nitrobenzene	µg/L	--	R	<2.0
SW8330B	RDX	µg/L	--	0.25 J	<0.49
SW8330B	Tetryl	µg/L	--	R	<2.0

Notes:

Non-detections are shown as less than the reporting limit or method detection limit.

-- = not analyzed

EB = equipment blank FD = field duplicate

N = normal sample

pg/L = picograms per Liter mg/L = milligrams per Liter ng/L = nanograms per Liter

µg/L = micrograms per Liter

TABLE GWMP-7

2014 Vadose Zone Monitor Well Sampling Results

RCRA Post-Closure Permit Area Groundwater Monitoring Plan

Camp Navajo, Bellemont, Arizona

Location	VPZ06	VZMW01		VZMW04	VZMW07	VZMW09		VZMW12	VZMW16
Sample ID	ND0203-VPZ06-032614	ND0203-VZMW01-032714	ND0203-VZMW01-032714-FILTERED	ND0203-VZMW04-032714	ND0203-VZMW07-032714	ND0203-VZMW09-032714	ND0203-VZMW09-032714-FILTERED	ND0203-VZMW12-032614	ND0203-VZMW16-032714
Sample Depth (ft)	0 - 0	0 - 0	0 - 0	0 - 0	0 - 0	0 - 0	0 - 0	0 - 0	0 - 0
Sample Date	3/26/2014	3/27/2014	3/27/2014	3/27/2014	3/27/2014	3/27/2014	3/27/2014	3/26/2014	3/27/2014
Analyte									
SW6850 (µg/L)									
Perchlorate	0.095 J	5 J	NA	0.25 UJ	0.34 J	0.74 J	NA	0.66 J	0.36 J
SW8330B (µg/L)									
1,3,5-TRINITROBENZENE	0.2 U	0.2 U	0.2 U	0.2 U	0.21 U	0.2 U	0.34 U	0.2 U	0.2 U
1,3-DINITROBENZENE	0.02 U	0.02 U	0.02 U	0.02 U	0.021 U	0.02 U	0.034 U	0.02 U	0.02 U
2,4,6-TRINITROTOLUENE	0.04 U	0.04 U	0.04 U	0.04 U	0.041 U	0.04 U	0.067 U	0.04 U	0.04 U
2,4-DINITROTOLUENE	0.02 U	0.02 U	0.02 U	0.02 U	0.021 U	0.02 U	0.034 U	0.02 U	0.02 U
2,6-DINITROTOLUENE	0.1 U	0.1 U	0.1 U	0.1 U	0.11 U	0.1 U	0.17 U	0.1 U	0.1 U
2-AMINO-4,6-DINITROTOLUENE	0.02 U	0.25 J	0.28 J	0.12 J	0.021 U	0.02 U	0.034 U	0.019 J	0.02 U
2-NITROTOLUENE	0.1 U	0.1 U	0.1 U	0.1 U	0.11 U	0.1 U	0.17 U	0.1 U	0.1 U
3-NITROTOLUENE	0.02 U	0.02 U	0.02 U	0.02 U	0.021 U	0.02 U	0.034 U	0.02 U	0.02 U
4-AMINO-2,6-DINITROTOLUENE	0.04 U	0.61 J	0.69 J	0.41	0.041 U	0.04 U	0.067 U	0.04 U	0.04 U
4-NITROTOLUENE	0.04 U	0.04 U	0.04 U	0.04 U	0.041 U	0.04 U	0.067 U	0.04 U	0.04 U
HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	0.42 J	28 J	32 J	2.1	0.54	0.35 J	0.37 J	6.6	0.04 U
NITROBENZENE	0.04 U	0.04 U	0.04 U	0.04 U	0.041 U	0.04 U	0.067 U	0.04 U	0.04 U
OCTAHYDRO-1,3,5,7-TETRAZOCINE	0.04 U	12 J	14 J	0.69	0.041 U	0.037 J	0.057 J	1.3	0.04 U
TETRYL	0.1 U	0.1 U	0.1 U	0.1 U	0.11 U	0.1 U	0.17 U	0.1 U	0.1 U

TABLE GWMP-7

2014 Vadose Zone Monitor Well Sampling Results

RCRA Post-Closure Permit Area Groundwater Monitoring Plan

Camp Navajo, Bellemont, Arizona

Location	VZMW17	VZMW21 (QC Duplicate for VZMW01)		VZMW5	
Sample ID	ND0203-VZMW17-032614	ND0203-VZMW21-032714	ND0203-VZMW21-032714-FILTERED	ND0203-VZMW5-032614	ND0203-VZMW5-032614-FILTERED
Sample Depth (ft)	0 - 0	0 - 0	0 - 0	0 - 0	0 - 0
Sample Date	3/26/2014	3/27/2014	3/27/2014	3/26/2014	3/26/2014
Analyte					
SW6850 (µg/L)					
Perchlorate	0.32 J	5.1 J	NA	6.3 J	NA
SW8330B (µg/L)					
1,3,5-TRINITROBENZENE	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,3-DINITROBENZENE	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
2,4,6-TRINITROTOLUENE	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U
2,4-DINITROTOLUENE	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
2,6-DINITROTOLUENE	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
2-AMINO-4,6-DINITROTOLUENE	0.012 J	0.29	0.29	0.11	0.08 J
2-NITROTOLUENE	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
3-NITROTOLUENE	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
4-AMINO-2,6-DINITROTOLUENE	0.022 J	0.72	0.72	0.27 J	0.19
4-NITROTOLUENE	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U
HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	5.6	33	33	28	24
NITROBENZENE	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U
OCTAHYDRO-1,3,5,7-TETRANITRO-1,3,5,7-TETRAZOCINE	3.3	14	14	6.8	5.7
TETRYL	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U

Notes:

NA Not analyzed

J-- The analyte was positively identified: the associated numerical value is the approximate concentration of the analyte in the sample.

U-- The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

UJ-- The analyte was below the reported sample quantitation limit. However, the reported value is approximate.

µg/L-- microgram(s) per liter

Bold indicates the analyte was detected

TABLE GWMP-8

Spring 2015 Vadose Zone Monitor Well Sample Results

RCRA Post-Closure Permit Area Groundwater Monitoring Plan

Camp Navajo, Bellemont, Arizona

Location		VPZ06		VPZ09	VPZ25		VZMW01	
Sample ID		ND0203-VPZ06-042315	ND0203-VPZ06-042315-A	ND0203-VPZ09-042315	ND0203-VPZ25-042315	ND0203-VPZ25-042315-A	ND0203-VZMW01-042215	ND0203-VZMW01-042215-A
Sample Depth (ft)		0 - 0	0 - 0	0 - 0	0 - 0	0 - 0	0 - 0	0 - 0
Sample Date		4/23/2015	4/23/2015	4/23/2015	4/23/2015	4/23/2015	4/22/2015	4/22/2015
Analyte	Units							
E353.2 (µg/L)								
NITROGEN, NITRATE-NITRITE	µg/L	20 U	NA	304	174	NA	24 J	NA
SW6010C (µg/L)								
ALUMINUM, DISSOLVED	µg/L	92.9	NA	NA	593	NA	10 U	NA
ANTIMONY, DISSOLVED	µg/L	21.7 U	NA	NA	20 U	NA	22.8 U	NA
ARSENIC, DISSOLVED	µg/L	5.7 J	NA	NA	8.6 J	NA	10 U	NA
BARIUM, DISSOLVED	µg/L	136	NA	NA	114	NA	34.7	NA
BERYLLIUM, DISSOLVED	µg/L	1 U	NA	NA	1 U	NA	1 U	NA
CADMIUM, DISSOLVED	µg/L	1 U	NA	NA	1 U	NA	1 U	NA
CHROMIUM, DISSOLVED	µg/L	2 U	NA	NA	1 J	NA	1.7 J	NA
COBALT, DISSOLVED	µg/L	0.7 J	NA	NA	2.2 J	NA	2 U	NA
COPPER, DISSOLVED	µg/L	4 U	NA	NA	4 U	NA	1.3 J	NA
IRON, DISSOLVED	µg/L	1930	NA	NA	2390	NA	10 U	NA
LEAD, DISSOLVED	µg/L	10 U	NA	NA	10 U	NA	10 U	NA
MAGNESIUM, DISSOLVED	µg/L	31000	NA	NA	37000	NA	36600	NA
MANGANESE, DISSOLVED	µg/L	194	NA	NA	305	NA	1 U	NA
MOLYBDENUM, DISSOLVED	µg/L	12.3	NA	NA	2 U	NA	12.8	NA
NICKEL, DISSOLVED	µg/L	2 U	NA	NA	3.5 J	NA	2 U	NA
POTASSIUM, DISSOLVED	µg/L	517	NA	NA	758	NA	651	NA
SELENIUM, DISSOLVED	µg/L	20 U	NA	NA	20 U	NA	20 U	NA
SILVER, DISSOLVED	µg/L	4 U	NA	NA	4 U	NA	4 U	NA
SODIUM, DISSOLVED	µg/L	5090	NA	NA	5170	NA	6450	NA
THALLIUM, DISSOLVED	µg/L	10 U	NA	NA	10 U	NA	10 U	NA
VANADIUM, DISSOLVED	µg/L	1 J	NA	NA	3.5 J	NA	4.9	NA
ZINC, DISSOLVED	µg/L	32.1	NA	NA	155	NA	2 J	NA
SW6850 (µg/L)								
Perchlorate	µg/L	0.097 J	NA	0.37 J	0.13 J	NA	6	NA
SW7470A (µg/L)								
MERCURY, DISSOLVED	µg/L	0.05 U	NA	NA	0.05 U	NA	0.05 U	NA
SW8330B (µg/L)								
1,3,5-TRINITROBENZENE	µg/L	0.2 U	0.2 U	0.21 U	0.2 U	0.2 U	0.21 U	0.21 U
1,3-DINITROBENZENE	µg/L	0.02 U	0.02 U	0.021 U	0.02 U	0.02 U	0.021 U	0.021 U
2,4,6-TRINITROTOLUENE	µg/L	0.04 U	0.04 U	0.042 U	0.04 U	0.04 U	0.042 U	0.041 U
2,4-DINITROTOLUENE	µg/L	0.02 U	0.02 U	0.021 U	0.02 U	0.02 U	0.021 U	0.021 U
2,6-DINITROTOLUENE	µg/L	0.1 U	0.1 U	0.11 U	0.1 U	0.1 U	0.11 U	0.11 U
2-AMINO-4,6-DINITROTOLUENE (2-AMINO-4,6 -DNT)	µg/L	0.02 U	0.02 U	0.021 U	0.02 U	0.02 U	0.17 J	0.17 J
2-NITROTOLUENE	µg/L	0.1 U	0.1 U	0.11 U	0.1 U	0.1 U	0.11 U	0.11 U
3-NITROTOLUENE	µg/L	0.1 U	0.1 U	0.11 U	0.1 U	0.1 U	0.11 U	0.11 U
4-AMINO-2,6-DINITROTOLUENE (4-AMINO-2,6-DNT)	µg/L	0.04 U	0.04 U	0.042 U	0.04 U	0.04 U	0.44 J	0.45 J
4-NITROTOLUENE	µg/L	0.04 U	0.04 U	0.042 U	0.04 U	0.04 U	0.042 U	0.041 U
HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE (RDX)	µg/L	0.31 J	0.25 J	0.042 U	0.28 J	0.38 J	25	25
NITROBENZENE	µg/L	0.04 U	0.04 U	0.042 U	0.04 U	0.04 U	0.042 U	0.041 U
OCTAHYDRO-1,3,5,7-TETRANITRO-1,3,5,7-TETRAZOCINE (HMX)	µg/L	0.56 J	0.79 U	0.84 U	0.62 U	0.55 U	12	12
2,4,6-TRINITROPHENYLMETHYLNITRAMINE (TETRYL)	µg/L	0.1 U	0.1 U	0.11 U	0.1 U	0.1 U	0.11 U	0.11 U

TABLE GWMP-8

Spring 2015 Vadose Zone Monitor Well Sample Results

RCRA Post-Closure Permit Area Groundwater Monitoring Plan

Camp Navajo, Bellemont, Arizona

Location		VZMW02		VZMW04	VZMW05		VZMW06	
Sample ID		ND0203-VZMW02-042215	ND0203-VZMW02-042215-A	ND0203-VZMW04-042215	ND0203-VZMW05-042215	ND0203-VZMW05-042215-A	ND0203-VZMW06-042315	ND0203-VZMW06-042315-A
Sample Depth (ft)		0 - 0	0 - 0	0 - 0	0 - 0	0 - 0	0 - 0	0 - 0
Sample Date		4/22/2015	4/22/2015	4/22/2015	4/22/2015	4/22/2015	4/23/2015	4/23/2015
Analyte	Units							
E353.2 (µg/L)								
NITROGEN, NITRATE-NITRITE	µg/L	253	NA	510	20 U	NA	3760	NA
SW6010C (µg/L)								
ALUMINUM, DISSOLVED	µg/L	1540	NA	66800	10 U	NA	NA	NA
ANTIMONY, DISSOLVED	µg/L	20 U	NA	40 U	20 U	NA	NA	NA
ARSENIC, DISSOLVED	µg/L	10 U	NA	34.8	10 U	NA	NA	NA
BARIUM, DISSOLVED	µg/L	89.8	NA	1000	70.6	NA	NA	NA
BERYLLIUM, DISSOLVED	µg/L	0.28 J	NA	17.2	1 U	NA	NA	NA
CADMIUM, DISSOLVED	µg/L	1 U	NA	2 U	1 U	NA	NA	NA
CHROMIUM, DISSOLVED	µg/L	3.9 J	NA	14	0.9 J	NA	NA	NA
COBALT, DISSOLVED	µg/L	1.4 J	NA	11.2	2 U	NA	NA	NA
COPPER, DISSOLVED	µg/L	4.3	NA	49.8	4 U	NA	NA	NA
IRON, DISSOLVED	µg/L	2190	NA	22000	10 U	NA	NA	NA
LEAD, DISSOLVED	µg/L	5.5 J	NA	120	10 U	NA	NA	NA
MAGNESIUM, DISSOLVED	µg/L	60900	NA	106000	52000	NA	NA	NA
MANGANESE, DISSOLVED	µg/L	127	NA	967	1 U	NA	NA	NA
MOLYBDENUM, DISSOLVED	µg/L	2 U	NA	10.4 U	2 U	NA	NA	NA
NICKEL, DISSOLVED	µg/L	4.2	NA	13.2	2 U	NA	NA	NA
POTASSIUM, DISSOLVED	µg/L	1040	NA	11900	1100	NA	NA	NA
SELENIUM, DISSOLVED	µg/L	20 U	NA	40 U	20 U	NA	NA	NA
SILVER, DISSOLVED	µg/L	4 U	NA	8 U	4 U	NA	NA	NA
SODIUM, DISSOLVED	µg/L	47000	NA	232000	3010	NA	NA	NA
THALLIUM, DISSOLVED	µg/L	10 U	NA	10 U	20 U	NA	NA	NA
VANADIUM, DISSOLVED	µg/L	7.7	NA	65.6	5.6	NA	NA	NA
ZINC, DISSOLVED	µg/L	17.9	NA	106	0.8 J	NA	NA	NA
SW6850 (µg/L)								
Perchlorate	µg/L	44 J	NA	0.27 J	5.6	NA	4.6	NA
SW7470A (µg/L)								
MERCURY, DISSOLVED	µg/L	0.05 U	NA	0.1 J	0.05 U	NA	NA	NA
SW8330B (µg/L)								
1,3,5-TRINITROBENZENE	µg/L	0.23 UJ	0.2 UJ	0.24 U	0.2 U	0.2 U	0.21 U	0.21 U
1,3-DINITROBENZENE	µg/L	0.023 U	0.02 U	0.024 U	0.02 U	0.02 U	0.021 U	0.021 U
2,4,6-TRINITROTOLUENE	µg/L	0.045 U	0.04 U	0.31	0.04 U	0.04 U	0.042 U	0.042 U
2,4-DINITROTOLUENE	µg/L	0.023 U	0.02 U	0.11 J	0.02 U	0.02 U	0.021 U	0.021 U
2,6-DINITROTOLUENE	µg/L	0.12 U	0.1 U	0.12 U	0.1 U	0.1 U	0.11 U	0.11 U
2-AMINO-4,6-DINITROTOLUENE (2-AMINO-4,6-DNT)	µg/L	0.12	0.02 U	0.41	0.077 J	0.023 J	0.021 U	0.021 U
2-NITROTOLUENE	µg/L	0.12 U	0.1 U	0.12 U	0.1 U	0.1 U	0.11 U	0.11 U
3-NITROTOLUENE	µg/L	0.12 U	0.1 U	0.12 U	0.1 U	0.1 U	0.11 U	0.11 U
4-AMINO-2,6-DINITROTOLUENE (4-AMINO-2,6-DNT)	µg/L	0.15	0.04 U	0.82	0.16	0.059 J	0.042 U	0.042 U
4-NITROTOLUENE	µg/L	0.045 U	0.04 U	0.045 U	0.04 U	0.04 U	0.042 U	0.042 U
HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE (RDX)	µg/L	25	23	3.7	25 J	26 J	18	17
NITROBENZENE	µg/L	0.045 U	0.04 U	0.048 U	0.04 U	0.04 U	0.042 U	0.042 U
OCTAHYDRO-1,3,5,7-TETRANITRO-1,3,5,7-TETRAZOCINE (HMX)	µg/L	3.6	1.4 J	0.37 J	6.9	6.9	8.5 J	8.7 J
2,4,6-TRINITROPHENYLMETHYLNITRAMINE (TETRYL)	µg/L	0.12 U	0.1 U	0.12 U	0.1 U	0.1 U	0.11 U	0.11 U

TABLE GWMP-8

Spring 2015 Vadose Zone Monitor Well Sample Results

RCRA Post-Closure Permit Area Groundwater Monitoring Plan

Camp Navajo, Bellemont, Arizona

Location		VZMW07	VZMW09	VZMW11	VZMW12	VZMW16	VZMW17	VZMW25
Sample ID		ND0203-VZMW07-042315	ND0203-VZMW09-042315	ND0203-VZMW11-042315	ND0203-VZMW12-042315	ND0203-VZMW16-042215	ND0203-VZMW17-042215	ND0203-VZMW25-042315
Sample Depth (ft)		0 - 0	0 - 0	0 - 0	0 - 0	0 - 0	0 - 0	0 - 0
Sample Date		4/23/2015	4/23/2015	4/23/2015	4/23/2015	4/22/2015	4/22/2015	4/23/2015
Analyte	Units							
E353.2 (µg/L)								
NITROGEN, NITRATE-NITRITE	µg/L	226	2580	3620	11300	334	499	2620
SW6010C (µg/L)								
ALUMINUM, DISSOLVED	µg/L	10 U	NA	NA	NA	NA	NA	NA
ANTIMONY, DISSOLVED	µg/L	20 U	NA	NA	NA	NA	NA	NA
ARSENIC, DISSOLVED	µg/L	10 U	NA	NA	NA	NA	NA	NA
BARIUM, DISSOLVED	µg/L	49.6	NA	NA	NA	NA	NA	NA
BERYLLIUM, DISSOLVED	µg/L	1 U	NA	NA	NA	NA	NA	NA
CADMIUM, DISSOLVED	µg/L	1 U	NA	NA	NA	NA	NA	NA
CHROMIUM, DISSOLVED	µg/L	1 J	NA	NA	NA	NA	NA	NA
COBALT, DISSOLVED	µg/L	2 U	NA	NA	NA	NA	NA	NA
COPPER, DISSOLVED	µg/L	4 U	NA	NA	NA	NA	NA	NA
IRON, DISSOLVED	µg/L	10 U	NA	NA	NA	NA	NA	NA
LEAD, DISSOLVED	µg/L	10 U	NA	NA	NA	NA	NA	NA
MAGNESIUM, DISSOLVED	µg/L	27200	NA	NA	NA	NA	NA	NA
MANGANESE, DISSOLVED	µg/L	1 U	NA	NA	NA	NA	NA	NA
MOLYBDENUM, DISSOLVED	µg/L	4.2 U	NA	NA	NA	NA	NA	NA
NICKEL, DISSOLVED	µg/L	2 U	NA	NA	NA	NA	NA	NA
POTASSIUM, DISSOLVED	µg/L	578	NA	NA	NA	NA	NA	NA
SELENIUM, DISSOLVED	µg/L	20 U	NA	NA	NA	NA	NA	NA
SILVER, DISSOLVED	µg/L	4 U	NA	NA	NA	NA	NA	NA
SODIUM, DISSOLVED	µg/L	23500	NA	NA	NA	NA	NA	NA
THALLIUM, DISSOLVED	µg/L	10 U	NA	NA	NA	NA	NA	NA
VANADIUM, DISSOLVED	µg/L	2.1 J	NA	NA	NA	NA	NA	NA
ZINC, DISSOLVED	µg/L	4 U	NA	NA	NA	NA	NA	NA
SW6850 (µg/L)								
Perchlorate	µg/L	0.28 J	0.68	0.42 J	0.64	0.4 J	0.34 J	0.67
SW7470A (µg/L)								
MERCURY, DISSOLVED	µg/L	0.05 U	NA	NA	NA	NA	NA	NA
SW8330B (µg/L)								
1,3,5-TRINITROBENZENE	µg/L	0.22 U	0.2 U	0.21 U	0.22 U	0.2 U	0.21 U	0.21 U
1,3-DINITROBENZENE	µg/L	0.022 U	0.02 U	0.021 U	0.022 U	0.02 U	0.021 U	0.021 U
2,4,6-TRINITROTOLUENE	µg/L	0.044 U	0.04 U	0.042 U	0.044 U	0.04 U	0.041 U	0.041 U
2,4-DINITROTOLUENE	µg/L	0.022 U	0.02 U	0.021 U	0.022 U	0.02 U	0.021 U	0.021 U
2,6-DINITROTOLUENE	µg/L	0.11 U	0.1 U	0.11 U	0.11 U	0.1 U	0.11 U	0.11 U
2-AMINO-4,6-DINITROTOLUENE (2-AMINO-4,6-DNT)	µg/L	0.022 U	0.02 U	0.021 U	0.022 U	0.02 U	0.021 U	0.021 U
2-NITROTOLUENE	µg/L	0.11 U	0.1 U	0.11 U	0.11 U	0.1 U	0.11 U	0.11 U
3-NITROTOLUENE	µg/L	0.11 U	0.1 U	0.11 U	0.11 U	0.1 U	0.11 U	0.11 U
4-AMINO-2,6-DINITROTOLUENE (4-AMINO-2,6-DNT)	µg/L	0.044 U	0.04 U	0.042 U	0.044 U	0.04 U	0.041 U	0.041 U
4-NITROTOLUENE	µg/L	0.044 U	0.04 U	0.042 U	0.044 U	0.04 U	0.041 U	0.041 U
HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE (RDX)	µg/L	0.17	0.5	0.042 U	6.3	0.04 U	4	0.57
NITROBENZENE	µg/L	0.044 U	0.04 U	0.042 U	0.044 U	0.04 U	0.041 U	0.041 U
OCTAHYDRO-1,3,5,7-TETRANITRO-1,3,5,7-TETRAZOCINE (HMX)	µg/L	0.044 U	0.04 U	0.042 U	1.6	0.04 U	2.7	0.81 U
2,4,6-TRINITROPHENYLMETHYLNITRAMINE (TETRYL)	µg/L	0.11 U	0.1 U	0.11 U	0.11 U	0.1 U	0.11 U	0.11 U

Notes:

NA Not analyzed

J The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

U The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

UJ The analyte was below the reported sample quantitation limit. However, the reported value is approximate.

µg/L Micrograms per Liter

Suffix "A" - indicates that the sample is a filtered explosive sample.

Bold -- indicates the analyte was detected above the laboratory method detection limit.

Table GWMP-9
Summer (August) 2015 Vadose Zone Monitor Well Sampling Results
 RCRA Post-Closure Permit Area Groundwater Monitoring Plan
 Camp Navajo, Belmont, Arizona

Location		VPZ06		VPZ09	VZMW01	VZMW02		VZMW05	VZMW09
Sample ID		ND0203-VPZ06-081915	ND0203-VPZ06-081915-A	ND0203-VPZ09-082015	ND0203-VZMW01-081815	ND0203-VZMW02-081815	ND0203-VZMW02-081815-A	ND0203-VZMW05-081815	ND0203-VZMW09-081815
Sample Depth (ft)		0 - 0	0 - 0	0 - 0	0 - 0	0 - 0	0 - 0	0 - 0	0 - 0
Sample Date		8/19/2015	8/19/2015	8/20/2015	8/18/2015	8/18/2015	8/18/2015	8/18/2015	8/18/2015
Analyte	Units								
E353.2 (mg/L)									
NITROGEN, NITRATE-NITRITE	mg/L	0.02 U	NA	0.347	0.032 J	0.246	NA	0.093	3.66
SW6010C (µg/L)									
ALUMINUM, DISSOLVED	µg/L	1690 J	NA	NA	40.9 J	6010 J	NA	5.9 J	NA
ANTIMONY, DISSOLVED	µg/L	21.3 UJ	NA	NA	14 J	6.6 J	NA	21.3 UJ	NA
ARSENIC, DISSOLVED	µg/L	14.9	NA	NA	6.2 J	5.5 J	NA	10.6 U	NA
BARIUM, DISSOLVED	µg/L	121	NA	NA	49.8	197	NA	121	NA
BERYLLIUM, DISSOLVED	µg/L	0.61 J	NA	NA	1.09 U	1.11	NA	1.06 U	NA
CADMIUM, DISSOLVED	µg/L	0.53 U	NA	NA	0.33 J	0.96 J	NA	0.21 J	NA
CHROMIUM, DISSOLVED	µg/L	5.9	NA	NA	1.3 J	10.4	NA	2.1 U	NA
COBALT, DISSOLVED	µg/L	4.2 J	NA	NA	1.1 U	5.5	NA	0.6 J	NA
COPPER, DISSOLVED	µg/L	6.8	NA	NA	4.4 U	16.5	NA	2.3 J	NA
IRON, DISSOLVED	µg/L	5320	NA	NA	66.6	6840	NA	21.3 U	NA
LEAD, DISSOLVED	µg/L	8.3 J	NA	NA	5.4 U	14.7	NA	5.3 U	NA
MAGNESIUM, DISSOLVED	µg/L	72800	NA	NA	40500	101000	NA	67100	NA
MANGANESE, DISSOLVED	µg/L	458	NA	NA	10.5	667	NA	1.8	NA
MOLYBDENUM, DISSOLVED	µg/L	2.1 U	NA	NA	6.9 U	2.1 U	NA	2.1 U	NA
NICKEL, DISSOLVED	µg/L	8.7	NA	NA	2.2 U	15.6	NA	2.1 U	NA
POTASSIUM, DISSOLVED	µg/L	1150	NA	NA	937	1860	NA	2420	NA
SELENIUM, DISSOLVED	µg/L	21.3 U	NA	NA	17.7 J	21.3 U	NA	21.3 U	NA
SILVER, DISSOLVED	µg/L	4.3 U	NA	NA	4.4 U	4.3 U	NA	4.3 U	NA
SODIUM, DISSOLVED	µg/L	5690	NA	NA	16300	25900	NA	2910	NA
THALLIUM, DISSOLVED	µg/L	10.6 U	NA	NA	10.9 U	10.6 U	NA	10.6 U	NA
VANADIUM, DISSOLVED	µg/L	9.8	NA	NA	7.3	20.5	NA	5.5	NA
ZINC, DISSOLVED	µg/L	383	NA	NA	3.7 J	68	NA	2 J	NA
SW6850 (µg/L)									
PERCHLORATE	µg/L	0.25 U	NA	0.34 J	3.9	48	NA	1.1	0.64
SW7470A (UG/L)									
MERCURY, DISSOLVED	µg/L	0.05 U	NA	NA	0.05 U	0.06 J	NA	0.05 U	NA
SW8330B (µg/L)									
1,3,5-TRINITROBENZENE	µg/L	0.23 U	0.21 U	NA	0.23 U	0.2 U	0.23 U	0.22 U	0.23 U
1,3-DINITROBENZENE	µg/L	0.12 U	0.11 U	NA	0.12 U	0.1 U	0.12 U	0.11 U	0.12 U
2,4,6-TRINITROTOLUENE (2,4,6-TNT)	µg/L	0.23 U	0.21 U	NA	0.23 U	0.2 U	0.23 U	0.22 U	0.23 U
2,4-DINITROTOLUENE (2,4-DNT)	µg/L	0.23 U	0.21 U	NA	0.23 U	0.2 U	0.23 U	0.22 U	0.23 U
2,6-DINITROTOLUENE (2,6-DNT)	µg/L	0.23 U	0.21 U	NA	0.23 U	0.2 U	0.23 U	0.22 U	0.23 U
2-AMINO-4,6-DINITROTOLUENE (2-AMINO-4,6-DNT)	µg/L	0.12 U	0.11 U	NA	0.23	0.076 J	0.12 U	0.26	0.12 U
2-NITROTOLUENE	µg/L	0.12 U	0.11 U	NA	0.12 U	0.1 U	0.12 U	0.11 U	0.12 U
3-NITROTOLUENE	µg/L	0.12 U	0.11 U	NA	0.12 U	0.1 U	0.12 U	0.11 U	0.12 U
4-AMINO-2,6-DINITROTOLUENE (4-AMINO-2,6-DNT)	µg/L	0.12 U	0.11 U	NA	0.58	0.12	0.12 U	0.64	0.12 U
4-NITROTOLUENE	µg/L	0.12 U	0.11 U	NA	0.12 U	0.1 U	0.12 U	0.11 U	0.12 U
HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE (RDX)	µg/L	0.18 J	0.38 J	NA	25	22 J	23 J	31	0.25
NITROBENZENE	µg/L	0.12 U	0.11 U	NA	0.12 U	0.1 U	0.12 U	0.11 U	0.12 U
OCTAHYDRO-1,3,5,7-TETRANITRO-1,3,5,7-TETRAZOCINE (HMX)	µg/L	0.12 U	0.99 U	NA	13	1.8	1.7	7.4	0.12 U
2,4,6-TRINITROPHENYLMETHYLNITRAMINE (TETRYL)	µg/L	0.23 U	0.21 U	NA	0.23 U	0.2 U	0.23 U	0.22 U	0.23 U

Table GWMP-9
Summer (August) 2015 Vadose Zone Monitor Well Sampling Results
 RCRA Post-Closure Permit Area Groundwater Monitoring Plan
 Camp Navajo, Belmont, Arizona

Location		VZMW11	VZMW12	VZMW16		VZMW17		VZMW25
Sample ID		ND0203-VZMW11-082015	ND0203-VZMW12-082015	ND0203-VZMW16-082015	ND0203-VZMW16-082015-A	ND0203-VZMW17-081915	ND0203-VZMW17-081915-A	ND0203-VZMW25-081815
Sample Depth (ft)		0 - 0	0 - 0	0 - 0	0 - 0	0 - 0	0 - 0	0 - 0
Sample Date		8/20/2015	8/20/2015	8/20/2015	8/20/2015	8/19/2015	8/19/2015	8/18/2015
Analyte	Units							
E353.2 (mg/L)								
NITROGEN, NITRATE-NITRITE	mg/L	1.18	7.35	0.304	NA	0.486	NA	3.64
SW6010C (µg/L)								
ALUMINUM, DISSOLVED	µg/L	NA	NA	NA	NA	3220 J	NA	NA
ANTIMONY, DISSOLVED	µg/L	NA	NA	NA	NA	21.3 UJ	NA	NA
ARSENIC, DISSOLVED	µg/L	NA	NA	NA	NA	7.7 J	NA	NA
BARIUM, DISSOLVED	µg/L	NA	NA	NA	NA	111	NA	NA
BERYLLIUM, DISSOLVED	µg/L	NA	NA	NA	NA	1.06 U	NA	NA
CADMIUM, DISSOLVED	µg/L	NA	NA	NA	NA	0.85 J	NA	NA
CHROMIUM, DISSOLVED	µg/L	NA	NA	NA	NA	10.2	NA	NA
COBALT, DISSOLVED	µg/L	NA	NA	NA	NA	4 J	NA	NA
COPPER, DISSOLVED	µg/L	NA	NA	NA	NA	7.9	NA	NA
IRON, DISSOLVED	µg/L	NA	NA	NA	NA	4370	NA	NA
LEAD, DISSOLVED	µg/L	NA	NA	NA	NA	6.5 J	NA	NA
MAGNESIUM, DISSOLVED	µg/L	NA	NA	NA	NA	67900	NA	NA
MANGANESE, DISSOLVED	µg/L	NA	NA	NA	NA	504	NA	NA
MOLYBDENUM, DISSOLVED	µg/L	NA	NA	NA	NA	2.1 U	NA	NA
NICKEL, DISSOLVED	µg/L	NA	NA	NA	NA	7.8	NA	NA
POTASSIUM, DISSOLVED	µg/L	NA	NA	NA	NA	2510	NA	NA
SELENIUM, DISSOLVED	µg/L	NA	NA	NA	NA	21.3 U	NA	NA
SILVER, DISSOLVED	µg/L	NA	NA	NA	NA	4.3 U	NA	NA
SODIUM, DISSOLVED	µg/L	NA	NA	NA	NA	58900	NA	NA
THALLIUM, DISSOLVED	µg/L	NA	NA	NA	NA	10.6 U	NA	NA
VANADIUM, DISSOLVED	µg/L	NA	NA	NA	NA	16.8	NA	NA
ZINC, DISSOLVED	µg/L	NA	NA	NA	NA	35.2	NA	NA
SW6850 (µg/L)								
PERCHLORATE	µg/L	0.17 J	0.51	0.36 J	NA	0.33 J	NA	0.61
SW7470A (UG/L)								
MERCURY, DISSOLVED	µg/L	NA	NA	NA	NA	0.05 U	NA	NA
SW8330B (µg/L)								
1,3,5-TRINITROBENZENE	µg/L	NA	0.23 U	0.21 U	0.21 U	0.23 U	0.2 U	0.23 U
1,3-DINITROBENZENE	µg/L	NA	0.12 U	0.11 U	0.11 U	0.12 U	0.1 U	0.12 U
2,4,6-TRINITROTOLUENE (2,4,6-TNT)	µg/L	NA	0.23 U	0.21 U	0.21 U	0.23 U	0.2 U	0.23 U
2,4-DINITROTOLUENE (2,4-DNT)	µg/L	NA	0.23 U	0.21 U	0.21 U	0.23 U	0.2 U	0.23 U
2,6-DINITROTOLUENE (2,6-DNT)	µg/L	NA	0.23 U	0.21 U	0.21 U	0.23 U	0.2 U	0.23 U
2-AMINO-4,6-DINITROTOLUENE (2-AMINO-4,6-DNT)	µg/L	NA	0.12 U	0.11 U	0.11 U	0.12 U	0.1 U	0.12 U
2-NITROTOLUENE	µg/L	NA	0.12 U	0.11 U	0.11 U	0.12 U	0.1 U	0.12 U
3-NITROTOLUENE	µg/L	NA	0.12 U	0.11 U	0.11 U	0.12 U	0.1 U	0.12 U
4-AMINO-2,6-DINITROTOLUENE (4-AMINO-2,6-DNT)	µg/L	NA	0.12 U	0.11 U	0.11 U	0.043 J	0.1 U	0.12 U
4-NITROTOLUENE	µg/L	NA	0.12 U	0.11 U	0.11 U	0.12 U	0.1 U	0.12 U
HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE (RDX)	µg/L	NA	4.2	0.21 U	0.21 U	4.8	4.5	0.28
NITROBENZENE	µg/L	NA	0.12 U	0.11 U	0.11 U	0.12 U	0.1 U	0.12 U
OCTAHYDRO-1,3,5,7-TETRANITRO-1,3,5,7-TETRAZOCINE (HMX)	µg/L	NA	0.83	0.11 U	0.11 U	2.7	2.3	0.12 U
2,4,6-TRINITROPHENYLMETHYLNITRAMINE (TETRYL)	µg/L	NA	0.23 U	0.21 U	0.21 U	0.23 U	0.2 U	0.23 U

Notes:

- NA-- Not analyzed
- J-- The analyte was positively identified: the associated numerical value is the approximate concentration of the analyte in the sample.
- U-- The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
- UJ-- The analyte was below the reported sample quantitation limit. However, the reported value is approximate.
- mg/L-- Milligrams per Liter
- µg/L-- Micrograms per Liter
- Bold indicates the analyte was detected**
- Samples with "-A" suffix are for the dissolved explosives fraction

TABLE GWMP-10

Cumulative Summary of Detected Constituents in Groundwater Wells (1997, 2004-2006)

RCRA Post-Closure Permit Area Groundwater Monitoring Plan

Camp Navajo, Bellemont, Arizona

StationID	Field Sample ID	Sample Date	Sample Type	Analyte Name	USEPA RSL (2015)	MCL	Arizona AWQS	Result	Units	Detection Flag	Filtered	PQL	Lab QC Flag	Validation QC Flag
1901	1901	6/18/1997	R	Aluminum				1.19	mg/L	Yes	Yes			
1901	1901	6/18/1997	R	Calcium				46.8	mg/L	Yes	Yes			
1901	1901	6/18/1997	R	Iron	14	mg/L	14	1.24	mg/L	Yes	Yes			
1901	1901	6/18/1997	R	Lead	0.015	mg/L	0.015	0.0111	mg/L	Yes	Yes			
1901	1901	6/18/1997	R	Magnesium				23.2	mg/L	Yes	Yes			
1901	1901	6/18/1997	R	Manganese	0.43	mg/L	0.98	0.0924	mg/L	Yes	Yes			
1901	1901	6/18/1997	R	Mercury	0.00063	mg/L	0.002	0.000231	mg/L	Yes	Yes			
1901	1901	6/18/1997	R	Nitrate/Nitrite as N				0.83	mg/L	Yes	No			
1901	1901	6/18/1997	R	Zinc	6	mg/L		0.0248	mg/L	Yes	Yes			
1901	1901-WTR1	8/19/2004	R	Barium	3.8	mg/L	2	0.024	mg/L	Yes	Yes	0.010		
1901	1901-WTR1	8/19/2004	R	Bicarbonate Alk (as CaCO3)				150	mg/L	Yes	No	20		
1901	1901-WTR1	8/19/2004	R	Calcium				34	mg/L	Yes	Yes	1.0		
1901	1901-WTR1	8/19/2004	R	Magnesium				16	mg/L	Yes	Yes	1.0		
1901	1901-WTR1	8/19/2004	R	Nitrate/Nitrite as N			10	1.2	mg/L	Yes	No	0.50		
1901	1901-WTR1	8/19/2004	R	Nitrate-N			10	1.2	mg/L	Yes	No	0.50		
1901	1901-WTR1	8/19/2004	R	Total Alkalinity (as CaCO3)				150	mg/L	Yes	No	20		
1901	1901 WTR1	11/17/2004	R	Barium	3.8	mg/L	2	0.018	mg/L	Yes	Yes	0.010		
1901	1901 WTR1	11/17/2004	R	Calcium				28	mg/L	Yes	Yes	1.0		
1901	1901 WTR1	11/17/2004	R	Magnesium				14	mg/L	Yes	Yes	1.0		
1901	1901 WTR1	11/17/2004	R	Nitrate-N			10	0.76	mg/L	Yes	No	0.50		
1901	1901 WTR1	11/17/2004	R	Sodium				2.6	mg/L	Yes	Yes	2.0		
1901	1901-WTR1	5/11/2005	R	Barium	3.8	mg/L	2	0.015	mg/L	Yes	Yes	0.010		
1901	1901-WTR1	5/11/2005	R	Calcium				27	mg/L	Yes	Yes	1.0		
1901	1901-WTR1	5/11/2005	R	Magnesium				13	mg/L	Yes	Yes	1.0		
1901	1901-WTR1	5/11/2005	R	Sodium				2.4	mg/L	Yes	Yes	2.0		
1901	1901-WTR1	5/11/2005	R	Total TCDD	0.00012	pg/L	0.00003	41.6	pg/L	Yes	No	10.0		
1901	1901-WTR1	5/11/2005	R	Total TCDF				25.9	pg/L	Yes	No	10.0		
AWI001	AWI001	7/16/1997	R	Aluminum				0.648	mg/L	Yes	No		J	
AWI001	AWI001	7/16/1997	R	Bis(2-ethylhexyl)phthalate				0.016	mg/L	Yes	No			
AWI001	AWI001	7/16/1997	R	Calcium				43.1	mg/L	Yes	Yes			
AWI001	AWI001	7/16/1997	R	Calcium				45.1	mg/L	Yes	No			
AWI001	AWI001	7/16/1997	R	Iron	14	mg/L		1.34	mg/L	Yes	No		J	
AWI001	AWI001	7/16/1997	R	Magnesium				20.9	mg/L	Yes	Yes			
AWI001	AWI001	7/16/1997	R	Magnesium				21.3	mg/L	Yes	No			
AWI001	AWI001	7/16/1997	R	Manganese	0.43	mg/L	0.98	0.0333	mg/L	Yes	Yes			
AWI001	AWI001	7/16/1997	R	Manganese	0.43	mg/L	0.98	0.0952	mg/L	Yes	No			
AWI001	AWI001	7/16/1997	R	Mercury	0.00063	mg/L	0.002	0.00023	mg/L	Yes	No			
AWI001	AWI001	7/16/1997	R	Mercury	0.00063	mg/L	0.002	0.00056	mg/L	Yes	Yes		J	
AWI001	AWI001	7/16/1997	R	Sodium				6120	mg/L	Yes	No			
AWI001	AWI001	7/16/1997	R	Total Dissolved Solids				185	mg/L	Yes	No			
AWI001	AWI001	7/16/1997	R	Total Suspended Solids				47	mg/L	Yes	No			
AWI001	AWI001	10/22/1997	R	RDX	0.0007	mg/L		0.0005	mg/L	Yes	No			
AWI001	AWI001 WTR1	11/16/2005	R	Barium	3.8	mg/L	2	0.032	mg/L	Yes	Yes	0.010		
AWI001	AWI001 WTR1	11/16/2005	R	Calcium				44	mg/L	Yes	Yes	1.0		
AWI001	AWI001 WTR1	11/16/2005	R	Magnesium				22	mg/L	Yes	Yes	1.0		
AWI001	AWI001 WTR1	11/16/2005	R	Nitrate/Nitrite as N			10	0.62	mg/L	Yes	No	0.50		
AWI001	AWI001 WTR1	11/16/2005	R	Nitrate-N			10	0.62	mg/L	Yes	No	0.50		
AWI001	AWI001-WTR1	8/19/2004	R	Barium	3.8	mg/L	2	0.033	mg/L	Yes	Yes	0.010		
AWI001	AWI001-WTR1	8/19/2004	R	Bicarbonate Alk (as CaCO3)				200	mg/L	Yes	No	20		
AWI001	AWI001-WTR1	8/19/2004	R	Calcium				45	mg/L	Yes	Yes	1.0		
AWI001	AWI001-WTR1	8/19/2004	R	Magnesium				23	mg/L	Yes	Yes	1.0		
AWI001	AWI001-WTR1	8/19/2004	R	Total Alkalinity (as CaCO3)				200	mg/L	Yes	No	20		
AWI001	AWI001-WTR1	11/17/2004	R	Barium	3.8	mg/L	2	0.034	mg/L	Yes	Yes	0.010		
AWI001	AWI001-WTR1	11/17/2004	R	Calcium				45	mg/L	Yes	Yes	1.0		

TABLE GWMP-10

Cumulative Summary of Detected Constituents in Groundwater Wells (1997, 2004-2006)

RCRA Post-Closure Permit Area Groundwater Monitoring Plan

Camp Navajo, Bellemont, Arizona

StationID	Field Sample ID	Sample Date	Sample Type	Analyte Name	USEPA RSL (2015)		MCL		Arizona AWQS		Result	Units	Detection Flag	Filtered	PQL	Lab QC Flag	Validation QC Flag
AWI001	AWI001-WTR1	11/17/2004	R	Magnesium							23	mg/L	Yes	Yes	1.0		
AWI001	AWI001-WTR1	11/17/2004	R	Zinc	6	mg/L					0.079	mg/L	Yes	Yes	0.050		
AWI001	AWI001-WTR1	2/24/2005	R	Barium	3.8	mg/L	2	mg/L	2	mg/L	0.031	mg/L	Yes	Yes	0.010		
AWI001	AWI001-WTR1	2/24/2005	R	Bicarbonate Alk (as CaCO3)							200	mg/L	Yes	No	20		
AWI001	AWI001-WTR1	2/24/2005	R	Calcium							45	mg/L	Yes	Yes	1.0		
AWI001	AWI001-WTR1	2/24/2005	R	Magnesium							23	mg/L	Yes	Yes	1.0		
AWI001	AWI001-WTR1	2/24/2005	R	Total Alkalinity (as CaCO3)							200	mg/L	Yes	No	20		
AWI001	AWI001-WTR1	2/24/2005	R	Total TEQ							6	pg/L	Yes	No			
AWI001	AWI001-WTR1	5/11/2005	R	Barium	3.8	mg/L	2	mg/L	2	mg/L	0.032	mg/L	Yes	Yes	0.010		
AWI001	AWI001-WTR1	5/11/2005	R	Calcium							46	mg/L	Yes	Yes	1.0		
AWI001	AWI001-WTR1	5/11/2005	R	Magnesium							23	mg/L	Yes	Yes	1.0		
AWI001	AWI001-WTR1	5/11/2005	R	Nitrate/Nitrite as N			10	mg/L	10	mg/L	0.54	mg/L	Yes	No	0.50		
AWI001	AWI001-WTR1	5/11/2005	R	Nitrate-N			10	mg/L	10	mg/L	0.54	mg/L	Yes	No	0.50		
AWI001	AWI001-WTR1	8/30/2005	R	Barium	3.8	mg/L	2	mg/L	2	mg/L	0.034	mg/L	Yes	Yes	0.010		
AWI001	AWI001-WTR1	8/30/2005	R	Nitrate/Nitrite as N			10	mg/L	10	mg/L	0.56	mg/L	Yes	No	0.50		
AWI001	AWI001-WTR1	8/30/2005	R	Nitrate-N			10	mg/L	10	mg/L	0.56	mg/L	Yes	No	0.50		
AWI001	AWI001-WTR1	4/11/2006	R	Barium	3.8	mg/L	2	mg/L	2	mg/L	0.031	mg/L	Yes	Yes	0.010		
AWI001	AWI001-WTR1	4/11/2006	R	Calcium							44	mg/L	Yes	Yes	1.0		
AWI001	AWI001-WTR1	4/11/2006	R	Magnesium							22	mg/L	Yes	Yes	1.0		
AWI001	AWI001-WTR1	4/11/2006	R	Nitrate/Nitrite as N			10	mg/L	10	mg/L	0.79	mg/L	Yes	No	0.50		
AWI001	AWI001-WTR1	4/11/2006	R	Nitrate-N			10	mg/L	10	mg/L	0.79	mg/L	Yes	No	0.50		
AWI001	AWI001-WTR1	6/13/2006	R	Barium	3.8	mg/L	2	mg/L	2	mg/L	0.033	mg/L	Yes	Yes	0.010		
AWI001	AWI001-WTR1	6/13/2006	R	Nitrate/Nitrite as N			10	mg/L	10	mg/L	0.69	mg/L	Yes	No	0.50		
AWI001	AWI001-WTR1	6/13/2006	R	Nitrate-N			10	mg/L	10	mg/L	0.69	mg/L	Yes	No	0.50		
AWI001	AWI001-WTR2	8/19/2004	D	Barium	3.8	mg/L	2	mg/L	2	mg/L	0.033	mg/L	Yes	Yes	0.010		
AWI001	AWI001-WTR2	8/19/2004	D	Bicarbonate Alk (as CaCO3)							200	mg/L	Yes	No	20		
AWI001	AWI001-WTR2	8/19/2004	D	Calcium							46	mg/L	Yes	Yes	1.0		
AWI001	AWI001-WTR2	8/19/2004	D	Magnesium							23	mg/L	Yes	Yes	1.0		
AWI001	AWI001-WTR2	8/19/2004	D	Total Alkalinity (as CaCO3)							200	mg/L	Yes	No	20		
AWI001	AWI001-WTR2	11/17/2004	D	Barium	3.8	mg/L	2	mg/L	2	mg/L	0.032	mg/L	Yes	Yes	0.010		
AWI001	AWI001-WTR2	11/17/2004	D	Calcium							44	mg/L	Yes	Yes	1.0		
AWI001	AWI001-WTR2	11/17/2004	D	Magnesium							23	mg/L	Yes	Yes	1.0		
AWI001	AWI001-WTR2	2/24/2005	D	Barium	3.8	mg/L	2	mg/L	2	mg/L	0.035	mg/L	Yes	Yes	0.010		
AWI001	AWI001-WTR2	2/24/2005	D	Bicarbonate Alk (as CaCO3)							200	mg/L	Yes	No	20		
AWI001	AWI001-WTR2	2/24/2005	D	Calcium							48	mg/L	Yes	Yes	1.0		
AWI001	AWI001-WTR2	2/24/2005	D	Hardness							220	mg/L	Yes	Yes	10		
AWI001	AWI001-WTR2	2/24/2005	D	Magnesium							24	mg/L	Yes	Yes	1.0		
AWI001	AWI001-WTR2	2/24/2005	D	Mercury	0.00063	mg/L	0.002	mg/L	0.002	mg/L	0.0003	mg/L	Yes	Yes	0.0002		
AWI001	AWI001-WTR2	2/24/2005	D	Total Alkalinity (as CaCO3)							200	mg/L	Yes	No	20		
AWI001	AWI001-WTR2	2/24/2005	D	Total TEQ							3.6	pg/L	Yes	No			
AWI001	AWI001-WTR2	8/30/2005	D	Barium	3.8	mg/L	2	mg/L	2	mg/L	0.033	mg/L	Yes	Yes	0.010		
AWI001	AWI001-WTR2	8/30/2005	D	Nitrate/Nitrite as N			10	mg/L	10	mg/L	0.5	mg/L	Yes	No	0.50		
AWI001	AWI001-WTR2	8/30/2005	D	Nitrate-N			10	mg/L	10	mg/L	0.5	mg/L	Yes	No	0.50		
AWI001	AWI001 WTR2	11/16/2005	D	Barium	3.8	mg/L	2	mg/L	2	mg/L	0.03	mg/L	Yes	Yes	0.010		
AWI001	AWI001 WTR2	11/16/2005	D	Calcium							42	mg/L	Yes	Yes	1.0		
AWI001	AWI001 WTR2	11/16/2005	D	Magnesium							21	mg/L	Yes	Yes	1.0		
AWI001	AWI001 WTR2	11/16/2005	D	Nitrate/Nitrite as N			10	mg/L	10	mg/L	0.61	mg/L	Yes	No	0.50		
AWI001	AWI001 WTR2	11/16/2005	D	Nitrate-N			10	mg/L	10	mg/L	0.61	mg/L	Yes	No	0.50		
AWI001	AWI001-WTR2	4/11/2006	D	Barium	3.8	mg/L	2	mg/L	2	mg/L	0.031	mg/L	Yes	Yes	0.010		
AWI001	AWI001-WTR2	4/11/2006	D	Calcium							45	mg/L	Yes	Yes	1.0		
AWI001	AWI001-WTR2	4/11/2006	D	Magnesium							23	mg/L	Yes	Yes	1.0		
AWI001	AWI001-WTR2	4/11/2006	D	Nitrate/Nitrite as N			10	mg/L	10	mg/L	0.73	mg/L	Yes	No	0.50		
AWI001	AWI001-WTR2	4/11/2006	D	Nitrate-N			10	mg/L	10	mg/L	0.73	mg/L	Yes	No	0.50		
AWI001	AWI001-WTR2	6/13/2006	D	Barium	3.8	mg/L	2	mg/L	2	mg/L	0.032	mg/L	Yes	Yes	0.010		

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RCRA Post-Closure Permit Area Groundwater Monitoring Plan

Camp Navajo, Bellemont, Arizona

StationID	Field Sample ID	Sample Date	Sample Type	Analyte Name	USEPA RSL (2015)		MCL		Arizona AWQS		Result	Units	Detection Flag	Filtered	PQL	Lab QC Flag	Validation QC Flag
AWI001	AWI001-WTR2	6/13/2006	D	Nitrate/Nitrite as N			10	mg/L	10	mg/L	0.77	mg/L	Yes	No	0.50		
AWI001	AWI001-WTR2	6/13/2006	D	Nitrate-N			10	mg/L	10	mg/L	0.77	mg/L	Yes	No	0.50		
AWI002	AWI002	7/2/1997	R	Acetone	14	mg/L					0.16	mg/L	Yes	No			
AWI002	AWI002	7/15/1997	R	Aluminum							0.675	mg/L	Yes	No			
AWI002	AWI002	7/15/1997	R	Calcium							52.7	mg/L	Yes	Yes			
AWI002	AWI002	7/15/1997	R	Calcium							108	mg/L	Yes	No			
AWI002	AWI002	7/15/1997	R	Iron	14	mg/L					0.395	mg/L	Yes	No		J	
AWI002	AWI002	7/15/1997	R	Lead	0.015	mg/L	0.015	mg/L	0.05	mg/L	0.0041	mg/L	Yes	Yes			
AWI002	AWI002	7/15/1997	R	Magnesium							53.7	mg/L	Yes	No			
AWI002	AWI002	7/15/1997	R	Magnesium							27.3	mg/L	Yes	Yes			
AWI002	AWI002	7/15/1997	R	Manganese							0.135	mg/L	Yes	Yes			
AWI002	AWI002	7/15/1997	R	Manganese							0.263	mg/L	Yes	No			
AWI002	AWI002	7/15/1997	R	Mercury	0.00063	mg/L	0.002	mg/L	0.002	mg/L	0.00028	mg/L	Yes	Yes			
AWI002	AWI002	7/15/1997	R	Nitrate/Nitrite as N			10	mg/L	10	mg/L	0.68	mg/L	Yes	No			
AWI002	AWI002	7/15/1997	R	Total Dissolved Solids							195	mg/L	Yes	No			
AWI002	AWI002	7/15/1997	R	Total Suspended Solids							170	mg/L	Yes	No			
AWI002	AWI002	7/15/1997	R	Zinc	6	mg/L			2.1	mg/L	0.0326	mg/L	Yes	Yes			
AWI002	AWI002-WTR1	2/24/2005	R	Barium	3.8	mg/L	2	mg/L	2	mg/L	0.06	mg/L	Yes	Yes	0.010		
AWI002	AWI002-WTR1	2/24/2005	R	Bicarbonate Alk (as CaCO3)							210	mg/L	Yes	No	20		
AWI002	AWI002-WTR1	2/24/2005	R	Calcium							47	mg/L	Yes	Yes	1.0		
AWI002	AWI002-WTR1	2/24/2005	R	Chloride							3.1	mg/L	Yes	No	2.5		
AWI002	AWI002-WTR1	2/24/2005	R	Magnesium							24	mg/L	Yes	Yes	1.0		
AWI002	AWI002-WTR1	2/24/2005	R	Nitrate/Nitrite as N			10	mg/L	10	mg/L	0.75	mg/L	Yes	No	0.50		
AWI002	AWI002-WTR1	2/24/2005	R	Nitrate-N			10	mg/L	10	mg/L	0.75	mg/L	Yes	No	0.50		
AWI002	AWI002-WTR1	2/24/2005	R	Potassium							5.6	mg/L	Yes	Yes	2.0		
AWI002	AWI002-WTR1	2/24/2005	R	Sodium							6.1	mg/L	Yes	Yes	2.0		
AWI002	AWI002-WTR1	2/24/2005	R	Sulfate							7	mg/L	Yes	No	3.0		
AWI002	AWI002-WTR1	2/24/2005	R	Total Alkalinity (as CaCO3)							210	mg/L	Yes	No	20		
AWI002	AWI002-WTR1	2/24/2005	R	Total TEQ							4.5	pg/L	Yes	No			
AWI002	AWI002-WTR1	5/11/2005	R	Barium	3.8	mg/L	2	mg/L	2	mg/L	0.047	mg/L	Yes	Yes	0.010		
AWI002	AWI002-WTR1	5/11/2005	R	Calcium							49	mg/L	Yes	Yes	1.0		
AWI002	AWI002-WTR1	5/11/2005	R	Magnesium							24	mg/L	Yes	Yes	1.0		
AWI002	AWI002-WTR1	5/11/2005	R	Nitrate/Nitrite as N			10	mg/L	10	mg/L	0.97	mg/L	Yes	No	0.50		
AWI002	AWI002-WTR1	5/11/2005	R	Nitrate-N			10	mg/L	10	mg/L	0.97	mg/L	Yes	No	0.50		
AWI002	AWI002-WTR1	8/30/2005	R	Barium	3.8	mg/L	2	mg/L	2	mg/L	0.041	mg/L	Yes	Yes	0.010		
AWI002	AWI002-WTR1	8/30/2005	R	Nitrate/Nitrite as N			10	mg/L	10	mg/L	0.68	mg/L	Yes	No	0.50		
AWI002	AWI002-WTR1	8/30/2005	R	Nitrate-N			10	mg/L	10	mg/L	0.68	mg/L	Yes	No	0.50		
AWI002	AWI002 WTR1	11/16/2005	R	Barium	3.8	mg/L	2	mg/L	2	mg/L	0.032	mg/L	Yes	Yes	0.010		
AWI002	AWI002 WTR1	11/16/2005	R	Calcium							48	mg/L	Yes	Yes	1.0		
AWI002	AWI002 WTR1	11/16/2005	R	Magnesium							24	mg/L	Yes	Yes	1.0		
AWI002	AWI002 WTR1	11/16/2005	R	Nitrate/Nitrite as N			10	mg/L	10	mg/L	1.1	mg/L	Yes	No	0.50		
AWI002	AWI002 WTR1	11/16/2005	R	Nitrate-N			10	mg/L	10	mg/L	1.1	mg/L	Yes	No	0.50		
AWI002	AWI002-WTR1	4/11/2006	R	Barium	3.8	mg/L	2	mg/L	2	mg/L	0.036	mg/L	Yes	Yes	0.010		
AWI002	AWI002-WTR1	4/11/2006	R	Calcium							50	mg/L	Yes	Yes	1.0		
AWI002	AWI002-WTR1	4/11/2006	R	Iron	14	mg/L					0.89	mg/L	Yes	Yes	0.10		
AWI002	AWI002-WTR1	4/11/2006	R	Magnesium							25	mg/L	Yes	Yes	1.0		
AWI002	AWI002-WTR1	4/11/2006	R	Nitrate/Nitrite as N			10	mg/L	10	mg/L	0.96	mg/L	Yes	No	0.50		
AWI002	AWI002-WTR1	4/11/2006	R	Nitrate-N			10	mg/L	10	mg/L	0.96	mg/L	Yes	No	0.50		
AWI003	AWI003	7/15/1997	R	Acetone	14	mg/L					0.75	mg/L	Yes	No		J	
AWI003	AWI003	7/15/1997	R	Aluminum							1.17	mg/L	Yes	Yes			
AWI003	AWI003	7/15/1997	R	Calcium							58.9	mg/L	Yes	Yes			
AWI003	AWI003	7/15/1997	R	Magnesium							28.1	mg/L	Yes	Yes			
AWI003	AWI003	7/15/1997	R	Manganese							0.0183	mg/L	Yes	Yes			
AWI003	AWI003	7/15/1997	R	Mercury	0.00063	mg/L	0.002	mg/L	0.002	mg/L	0.000427	mg/L	Yes	Yes			

TABLE GWMP-10

Cumulative Summary of Detected Constituents in Groundwater Wells (1997, 2004-2006)

RCRA Post-Closure Permit Area Groundwater Monitoring Plan

Camp Navajo, Bellemont, Arizona

StationID	Field Sample ID	Sample Date	Sample Type	Analyte Name	USEPA RSL (2015)		MCL		Arizona AWQS		Result	Units	Detection Flag	Filtered	PQL	Lab QC Flag	Validation QC Flag
AWI003	AWI003	7/15/1997	R	Total Dissolved Solids							230	mg/L	Yes	No			
AWI003	AWI003	7/15/1997	R	Total Suspended Solids							448	mg/L	Yes	No			
AWI003	AWI003	7/15/1997	R	Zinc	6	mg/L					0.0623	mg/L	Yes	Yes			
AWI003	AWI003-WTR1	2/24/2005	R	Barium	3.8	mg/L	2	mg/L	2	mg/L	0.087	mg/L	Yes	Yes	0.010		
AWI003	AWI003-WTR1	2/24/2005	R	Bicarbonate Alk (as CaCO3)							240	mg/L	Yes	No	20		
AWI003	AWI003-WTR1	2/24/2005	R	Calcium							52	mg/L	Yes	Yes	1.0		
AWI003	AWI003-WTR1	2/24/2005	R	Magnesium							24	mg/L	Yes	Yes	1.0		
AWI003	AWI003-WTR1	2/24/2005	R	Potassium							16	mg/L	Yes	Yes	2.0		
AWI003	AWI003-WTR1	2/24/2005	R	Sodium							13	mg/L	Yes	Yes	2.0		
AWI003	AWI003-WTR1	2/24/2005	R	Sulfate							4.5	mg/L	Yes	No	3.0		
AWI003	AWI003-WTR1	2/24/2005	R	Total Alkalinity (as CaCO3)							240	mg/L	Yes	No	20		
AWI003	AWI003-WTR1	2/24/2005	R	Total TEQ							3.6	pg/L	Yes	No			
AWI003	AWI003-WTR1	5/11/2005	R	Barium	3.8	mg/L	2	mg/L	2	mg/L	0.15	mg/L	Yes	Yes	0.010		J
AWI003	AWI003-WTR1	5/11/2005	R	Calcium							40	mg/L	Yes	Yes	1.0		
AWI003	AWI003-WTR1	5/11/2005	R	Magnesium							15	mg/L	Yes	Yes	1.0		
AWI003	AWI003-WTR1	5/11/2005	R	Potassium							7.8	mg/L	Yes	Yes	2.0		J
AWI003	AWI003-WTR1	5/11/2005	R	Sodium							8.1	mg/L	Yes	Yes	2.0		
AWI003	AWI003-WTR1	8/30/2005	R	Barium	3.8	mg/L	2	mg/L	2	mg/L	0.11	mg/L	Yes	Yes	0.010		
AWI003	AWI003 WTR1	11/16/2005	R	Barium	3.8	mg/L	2	mg/L	2	mg/L	0.04	mg/L	Yes	Yes	0.010		
AWI003	AWI003 WTR1	11/16/2005	R	Calcium							53	mg/L	Yes	Yes	1.0		
AWI003	AWI003 WTR1	11/16/2005	R	Magnesium							25	mg/L	Yes	Yes	1.0		
AWI003	AWI003-WTR1	4/11/2006	R	Barium							0.038	mg/L	Yes	Yes	0.010		
AWI003	AWI003-WTR1	4/11/2006	R	Calcium							53	mg/L	Yes	Yes	1.0		
AWI003	AWI003-WTR1	4/11/2006	R	Magnesium							25	mg/L	Yes	Yes	1.0		
AWI003	AWI003-WTR1	6/13/2006	R	Barium	3.8	mg/L	2	mg/L	2	mg/L	0.043	mg/L	Yes	Yes	0.010		
AWI003	AWI003-WTR2	5/11/2005	D	Barium	3.8	mg/L	2	mg/L	2	mg/L	0.12	mg/L	Yes	Yes	0.010		J
AWI003	AWI003-WTR2	5/11/2005	D	Calcium							44	mg/L	Yes	Yes	1.0		
AWI003	AWI003-WTR2	5/11/2005	D	Magnesium							18	mg/L	Yes	Yes	1.0		
AWI003	AWI003-WTR2	5/11/2005	D	Potassium							5.4	mg/L	Yes	Yes	2.0		J
AWI003	AWI003-WTR2	5/11/2005	D	Sodium							6.1	mg/L	Yes	Yes	2.0		
DALCO	DALCO WTR 1	8/10/2004	R	Barium	3.8	mg/L	2	mg/L	2	mg/L	0.13	mg/L	Yes	Yes	0.010		
DALCO	DALCO WTR 1	8/10/2004	R	Bicarbonate Alk (as CaCO3)							120	mg/L	Yes	No	20		
DALCO	DALCO WTR 1	8/10/2004	R	Calcium							22	mg/L	Yes	Yes	1.0		
DALCO	DALCO WTR 1	8/10/2004	R	Magnesium							12	mg/L	Yes	Yes	1.0		
DALCO	DALCO WTR 1	8/10/2004	R	Mercury	0.00063	mg/L	0.002	mg/L	0.002	mg/L	0.0004	mg/L	Yes	Yes	0.0002		
DALCO	DALCO WTR 1	8/10/2004	R	Silica							12	mg/L	Yes	Yes	0.43		
DALCO	DALCO WTR 1	8/10/2004	R	Sodium							2.7	mg/L	Yes	Yes	2.0		
DALCO	DALCO WTR 1	8/10/2004	R	Total Alkalinity (as CaCO3)							120	mg/L	Yes	No	20		
DALCO	DALCO WTR 1	8/10/2004	R	Total Dissolved Solids							110	mg/L	Yes	Yes	10		
DALCO	DALCO WTR1	11/18/2004	R	Barium	3.8	mg/L	2	mg/L	2	mg/L	0.13	mg/L	Yes	Yes	0.010		
DALCO	DALCO WTR1	11/18/2004	R	Calcium							22	mg/L	Yes	Yes	1.0		
DALCO	DALCO WTR1	11/18/2004	R	Magnesium							12	mg/L	Yes	Yes	1.0		
DALCO	DALCO WTR1	11/18/2004	R	Sodium							2.7	mg/L	Yes	Yes	2.0		
DALCO	DALCO WTR1	2/17/2005	R	Barium							0.11	mg/L	Yes	Yes	0.010		
DALCO	DALCO WTR1	2/17/2005	R	Bicarbonate Alk (as CaCO3)							110	mg/L	Yes	No	20		
DALCO	DALCO WTR1	2/17/2005	R	Calcium							21	mg/L	Yes	Yes	1.0		
DALCO	DALCO WTR1	2/17/2005	R	Magnesium							12	mg/L	Yes	Yes	1.0		
DALCO	DALCO WTR1	2/17/2005	R	Sodium							3.2	mg/L	Yes	Yes	2.0		
DALCO	DALCO WTR1	2/17/2005	R	Total Alkalinity (as CaCO3)							110	mg/L	Yes	No	20		
DALCO	DALCO WTR1	11/15/2005	R	Barium	3.8	mg/L	2	mg/L	2	mg/L	0.11	mg/L	Yes	Yes	0.010		
DALCO	DALCO WTR1	11/15/2005	R	Calcium							22	mg/L	Yes	Yes	1.0		
DALCO	DALCO WTR1	11/15/2005	R	Magnesium							12	mg/L	Yes	Yes	1.0		
DALCO	DALCO WTR1	11/15/2005	R	Sodium							2.2	mg/L	Yes	Yes	2.0		
DALCO	DALCO-WTR1	5/12/2005	R	Barium	3.8	mg/L	2	mg/L	2	mg/L	0.12	mg/L	Yes	Yes	0.010		

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RCRA Post-Closure Permit Area Groundwater Monitoring Plan

Camp Navajo, Bellemont, Arizona

StationID	Field Sample ID	Sample Date	Sample Type	Analyte Name	USEPA RSL (2015)	MCL	Arizona AWQS	Result	Units	Detection Flag	Filtered	PQL	Lab QC Flag	Validation QC Flag	
DALCO	DALCO-WTR1	5/12/2005	R	Calcium				23	mg/L	Yes	Yes	1.0			
DALCO	DALCO-WTR1	5/12/2005	R	Magnesium				12	mg/L	Yes	Yes	1.0			
DALCO	DALCO-WTR1	5/12/2005	R	Sodium				2.9	mg/L	Yes	Yes	2.0			
DALCO	DALCO-WTR1	8/25/2005	R	Barium	3.8	mg/L	2	mg/L	2	mg/L	0.11	mg/L	Yes	Yes	0.010
DALCO	DALCO-WTR1	3/22/2006	R	Barium	3.8	mg/L	2	mg/L	2	mg/L	0.11	mg/L	Yes	Yes	0.010
DALCO	DALCO-WTR1	3/22/2006	R	Calcium				23	mg/L	Yes	Yes	1.0			
DALCO	DALCO-WTR1	3/22/2006	R	Magnesium				13	mg/L	Yes	Yes	1.0			
DALCO	DALCO-WTR1	3/22/2006	R	Sodium				3	mg/L	Yes	Yes	2.0			
DALCO	DALCO WTR1	6/15/2006	R	Barium				0.13	mg/L	Yes	Yes	0.010			
DALCO	DALCO WTR1	6/15/2006	R	Chloroform				1.2	µg/L	Yes	No	0.50			
DALCO	DALCO WTR2	11/15/2005	D	Barium	3.8	mg/L	2	mg/L	2	mg/L	0.12	mg/L	Yes	Yes	0.010
DALCO	DALCO WTR2	11/15/2005	D	Calcium				22	mg/L	Yes	Yes	1.0			
DALCO	DALCO WTR2	11/15/2005	D	Magnesium				12	mg/L	Yes	Yes	1.0			
DALCO	DALCO WTR2	11/15/2005	D	Sodium				2.4	mg/L	Yes	Yes	2.0			
DALCO	DALCO-WTR2	3/22/2006	D	Barium	3.8	mg/L	2	mg/L	2	mg/L	0.11	mg/L	Yes	Yes	0.010
DALCO	DALCO-WTR2	3/22/2006	D	Calcium				23	mg/L	Yes	Yes	1.0			
DALCO	DALCO-WTR2	3/22/2006	D	Magnesium				13	mg/L	Yes	Yes	1.0			
DALCO	DALCO-WTR2	3/22/2006	D	Sodium				3	mg/L	Yes	Yes	2.0			
DALCO	DALCO WTR2	6/15/2006	D	Barium				0.12	mg/L	Yes	Yes	0.010			
DALCO	DALCO WTR2	6/15/2006	D	Chloroform				1.3	µg/L	Yes	No	0.50			
DW-1	DMW1-WTR1	9/21/2004	R	Barium	3.8	mg/L	2	mg/L	2	mg/L	0.58	mg/L	Yes	No	0.010
DW-1	DMW1-WTR1	9/21/2004	R	Bicarbonate Alk (as CaCO3)				92	mg/L	Yes	No	20			
DW-1	DMW1-WTR1	9/21/2004	R	Calcium				16	mg/L	Yes	No	1.0			
DW-1	DMW1-WTR1	9/21/2004	R	Magnesium				9.5	mg/L	Yes	No	1.0			
DW-1	DMW1-WTR1	9/21/2004	R	Silica				11	mg/L	Yes	No	0.43			
DW-1	DMW1-WTR1	9/21/2004	R	Sodium				5.1	mg/L	Yes	No	2.0			
DW-1	DMW1-WTR1	9/21/2004	R	Total Alkalinity (as CaCO3)				92	mg/L	Yes	No	20			
DW-1	DMW1-WTR1	9/21/2004	R	Total Dissolved Solids				110	mg/L	Yes	No	10			
DW-1	DMW1-WTR1	9/21/2004	R	Zinc	6	mg/L		0.062	mg/L	Yes	No	0.050			
DW-1	DW-1 WTR 1	11/15/2004	R	Barium	3.8	mg/L	2	mg/L	2	mg/L	0.61	mg/L	Yes	Yes	0.010
DW-1	DW-1 WTR 1	11/15/2004	R	Calcium				16	mg/L	Yes	Yes	1.0			
DW-1	DW-1 WTR 1	11/15/2004	R	Magnesium				9.7	mg/L	Yes	Yes	1.0			
DW-1	DW-1 WTR 1	11/15/2004	R	Sodium				5.8	mg/L	Yes	Yes	2.0			
DW-1	DMW-1 WTR1	2/17/2005	R	Barium	3.8	mg/L	2	mg/L	2	mg/L	0.61	mg/L	Yes	Yes	0.010
DW-1	DMW-1 WTR1	2/17/2005	R	Bicarbonate Alk (as CaCO3)				94	mg/L	Yes	No	20			
DW-1	DMW-1 WTR1	2/17/2005	R	Calcium				18	mg/L	Yes	Yes	1.0			
DW-1	DMW-1 WTR1	2/17/2005	R	Chloride				3.4	mg/L	Yes	No	2.5			
DW-1	DMW-1 WTR1	2/17/2005	R	Magnesium				10	mg/L	Yes	Yes	1.0			
DW-1	DMW-1 WTR1	2/17/2005	R	Sodium				6.8	mg/L	Yes	Yes	2.0			
DW-1	DMW-1 WTR1	2/17/2005	R	Total Alkalinity (as CaCO3)				94	mg/L	Yes	No	20			
DW-1	DMW-1 WTR1	2/17/2005	R	Zinc	6	mg/L		1	mg/L	Yes	Yes	0.050			
DW-1	DMW-1 WTR1	5/12/2005	R	Barium				0.61	mg/L	Yes	Yes	0.010			
DW-1	DMW-1 WTR1	5/12/2005	R	Calcium				17	mg/L	Yes	Yes	1.0			
DW-1	DMW-1 WTR1	5/12/2005	R	Iron	14	mg/L		0.65	mg/L	Yes	Yes	0.10			
DW-1	DMW-1 WTR1	5/12/2005	R	Magnesium				9.8	mg/L	Yes	Yes	1.0			
DW-1	DMW-1 WTR1	5/12/2005	R	Sodium				9.7	mg/L	Yes	Yes	2.0			
DW-1	DMW-1 WTR1	5/12/2005	R	Zinc	6	mg/L		0.84	mg/L	Yes	Yes	0.050			
DW-1	DMW-1 WTR1	8/24/2005	R	Barium	3.8	mg/L	2	mg/L	2	mg/L	0.67	mg/L	Yes	Yes	0.010
DW-1	DMW1 WTR1	11/15/2005	R	Barium	3.8	mg/L	2	mg/L	2	mg/L	0.61	mg/L	Yes	Yes	0.010
DW-1	DMW1 WTR1	11/15/2005	R	Calcium				16	mg/L	Yes	Yes	1.0			
DW-1	DMW1 WTR1	11/15/2005	R	Iron	14	mg/L		0.4	mg/L	Yes	Yes	0.10			
DW-1	DMW1 WTR1	11/15/2005	R	Magnesium				9.3	mg/L	Yes	Yes	1.0			
DW-1	DMW1 WTR1	11/15/2005	R	Sodium				6.8	mg/L	Yes	Yes	2.0			
DW-1	DMW-1 WTR1	3/22/2006	R	Barium	3.8	mg/L	2	mg/L	2	mg/L	0.65	mg/L	Yes	Yes	0.010

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Camp Navajo, Bellemont, Arizona

StationID	Field Sample ID	Sample Date	Sample Type	Analyte Name	USEPA RSL (2015)		MCL		Arizona AWQS		Result	Units	Detection Flag	Filtered	PQL	Lab QC Flag	Validation QC Flag
DW-1	DMW-1 WTR1	3/22/2006	R	Calcium							18	mg/L	Yes	Yes	1.0		
DW-1	DMW-1 WTR1	3/22/2006	R	Iron	14	mg/L					0.23	mg/L	Yes	Yes	0.10		
DW-1	DMW-1 WTR1	3/22/2006	R	Magnesium							10	mg/L	Yes	Yes	1.0		
DW-1	DMW-1 WTR1	3/22/2006	R	Sodium							6.9	mg/L	Yes	Yes	2.0		
DW-1	DMW1-WTR1	6/15/2006	R	Barium	3.8	mg/L	2	mg/L	2	mg/L	0.64	mg/L	Yes	Yes	0.010		
DW-2	DMW2-WTR1	9/21/2004	R	Barium	3.8	mg/L	2	mg/L	2	mg/L	0.57	mg/L	Yes	No	0.010		
DW-2	DMW2-WTR1	9/21/2004	R	Bicarbonate Alk (as CaCO3)							87	mg/L	Yes	No	20		
DW-2	DMW2-WTR1	9/21/2004	R	Calcium							16	mg/L	Yes	No	1.0		
DW-2	DMW2-WTR1	9/21/2004	R	Copper	0.8	mg/L	1.3	mg/L			0.015	mg/L	Yes	No	0.010		
DW-2	DMW2-WTR1	9/21/2004	R	Iron	14	mg/L					0.29	mg/L	Yes	No	0.10		
DW-2	DMW2-WTR1	9/21/2004	R	Lead	0.015	mg/L	0.015	mg/L	0.05	mg/L	0.015	mg/L	Yes	No	0.010		
DW-2	DMW2-WTR1	9/21/2004	R	Magnesium							11	mg/L	Yes	No	1.0		
DW-2	DMW2-WTR1	9/21/2004	R	Silica							9.3	mg/L	Yes	No	0.43		
DW-2	DMW2-WTR1	9/21/2004	R	Sodium							4.1	mg/L	Yes	No	2.0		
DW-2	DMW2-WTR1	9/21/2004	R	Sulfate							5.4	mg/L	Yes	No	3.0		
DW-2	DMW2-WTR1	9/21/2004	R	Total Alkalinity (as CaCO3)							87	mg/L	Yes	No	20		
DW-2	DMW2-WTR1	9/21/2004	R	Total Dissolved Solids							99	mg/L	Yes	No	10		
DW-2	DW-2 WTR 1	11/15/2004	R	Barium	3.8	mg/L	2	mg/L	2	mg/L	0.57	mg/L	Yes	Yes	0.010		
DW-2	DW-2 WTR 1	11/15/2004	R	Calcium							14	mg/L	Yes	Yes	1.0		
DW-2	DW-2 WTR 1	11/15/2004	R	Magnesium							8.9	mg/L	Yes	Yes	1.0		
DW-2	DW-2 WTR 1	11/15/2004	R	Sodium							4.8	mg/L	Yes	Yes	2.0		
DW-2	DMW-2 WTR1	2/17/2005	R	Barium	3.8	mg/L	2	mg/L	2	mg/L	0.52	mg/L	Yes	Yes	0.010		
DW-2	DMW-2 WTR1	2/17/2005	R	Bicarbonate Alk (as CaCO3)							92	mg/L	Yes	No	20		
DW-2	DMW-2 WTR1	2/17/2005	R	Calcium							16	mg/L	Yes	Yes	1.0		
DW-2	DMW-2 WTR1	2/17/2005	R	Magnesium							12	mg/L	Yes	Yes	1.0		
DW-2	DMW-2 WTR1	2/17/2005	R	Sodium							4.5	mg/L	Yes	Yes	2.0		
DW-2	DMW-2 WTR1	2/17/2005	R	Sulfate							7.9	mg/L	Yes	No	3.0		
DW-2	DMW-2 WTR1	2/17/2005	R	Total Alkalinity (as CaCO3)							92	mg/L	Yes	No	20		
DW-2	DMW-2 WTR1	5/12/2005	R	Barium	3.8	mg/L	2	mg/L	2	mg/L	0.53	mg/L	Yes	Yes	0.010		
DW-2	DMW-2 WTR1	5/12/2005	R	Calcium							16	mg/L	Yes	Yes	1.0		
DW-2	DMW-2 WTR1	5/12/2005	R	Magnesium							11	mg/L	Yes	Yes	1.0		
DW-2	DMW-2 WTR1	5/12/2005	R	Sodium							4.3	mg/L	Yes	Yes	2.0		
DW-2	DMW-2 WTR1	8/24/2005	R	Barium	3.8	mg/L	2	mg/L	2	mg/L	0.53	mg/L	Yes	Yes	0.010		
DW-2	DMW2 WTR1	11/15/2005	R	Barium	3.8	mg/L	2	mg/L	2	mg/L	0.5	mg/L	Yes	Yes	0.010		
DW-2	DMW2 WTR1	11/15/2005	R	Calcium							15	mg/L	Yes	Yes	1.0		
DW-2	DMW2 WTR1	11/15/2005	R	Magnesium							11	mg/L	Yes	Yes	1.0		
DW-2	DMW2 WTR1	11/15/2005	R	Sodium							3.7	mg/L	Yes	Yes	2.0		
DW-2	DMW-2 WTR1	3/22/2006	R	Barium	3.8	mg/L	2	mg/L	2	mg/L	0.52	mg/L	Yes	Yes	0.010		
DW-2	DMW-2 WTR1	3/22/2006	R	Calcium							16	mg/L	Yes	Yes	1.0		
DW-2	DMW-2 WTR1	3/22/2006	R	Magnesium							12	mg/L	Yes	Yes	1.0		
DW-2	DMW-2 WTR1	3/22/2006	R	Sodium							4.4	mg/L	Yes	Yes	2.0		
DW-2	DMW2-WTR1	6/15/2006	R	Barium	3.8	mg/L	2	mg/L	2	mg/L	0.52	mg/L	Yes	Yes	0.010		
DW-3	DW-3 WTR 1	11/15/2004	R	Barium	3.8	mg/L	2	mg/L	2	mg/L	0.51	mg/L	Yes	Yes	0.010		
DW-3	DW-3 WTR 1	11/15/2004	R	Calcium							20	mg/L	Yes	Yes	1.0		
DW-3	DW-3 WTR 1	11/15/2004	R	Magnesium							12	mg/L	Yes	Yes	1.0		
DW-3	DW-3 WTR 1	11/15/2004	R	Silica							11	mg/L	Yes	Yes	0.43		
DW-3	DW-3 WTR 1	11/15/2004	R	Sodium							4.3	mg/L	Yes	Yes	2.0		
DW-3	DMW-3 WTR1	2/17/2005	R	Barium	3.8	mg/L	2	mg/L	2	mg/L	0.49	mg/L	Yes	Yes	0.010		
DW-3	DMW-3 WTR1	2/17/2005	R	Bicarbonate Alk (as CaCO3)							110	mg/L	Yes	No	20		
DW-3	DMW-3 WTR1	2/17/2005	R	Calcium							21	mg/L	Yes	Yes	1.0		
DW-3	DMW-3 WTR1	2/17/2005	R	Iron	14	mg/L					0.12	mg/L	Yes	Yes	0.10		
DW-3	DMW-3 WTR1	2/17/2005	R	Magnesium							13	mg/L	Yes	Yes	1.0		
DW-3	DMW-3 WTR1	2/17/2005	R	Sodium							4.2	mg/L	Yes	Yes	2.0		
DW-3	DMW-3 WTR1	2/17/2005	R	Total Alkalinity (as CaCO3)							110	mg/L	Yes	No	20		

TABLE GWMP-10

Cumulative Summary of Detected Constituents in Groundwater Wells (1997, 2004-2006)

RCRA Post-Closure Permit Area Groundwater Monitoring Plan

Camp Navajo, Bellemont, Arizona

StationID	Field Sample ID	Sample Date	Sample Type	Analyte Name	USEPA RSL (2015)		MCL		Arizona AWQS		Result	Units	Detection Flag	Filtered	PQL	Lab QC Flag	Validation QC Flag
DW-3	DW3-WTR1	6/14/2005	R	Barium	3.8	mg/L	2	mg/L	2	mg/L	0.46	mg/L	Yes	Yes	0.010		
DW-3	DW3-WTR1	6/14/2005	R	Calcium							20	mg/L	Yes	Yes	1.0		
DW-3	DW3-WTR1	6/14/2005	R	Magnesium							12	mg/L	Yes	Yes	1.0		
DW-3	DW3-WTR1	6/14/2005	R	Sodium							4.4	mg/L	Yes	Yes	2.0		
DW-3	DW3-WTR1	8/26/2005	R	Barium	3.8	mg/L	2	mg/L	2	mg/L	0.56	mg/L	Yes	Yes	0.010		
DW-3	DMW3 WTR1	11/15/2005	R	Barium	3.8	mg/L	2	mg/L	2	mg/L	0.51	mg/L	Yes	Yes	0.010		
DW-3	DMW3 WTR1	11/15/2005	R	Calcium							21	mg/L	Yes	Yes	1.0		
DW-3	DMW3 WTR1	11/15/2005	R	Magnesium							12	mg/L	Yes	Yes	1.0		
DW-3	DMW3 WTR1	11/15/2005	R	Sodium							4.1	mg/L	Yes	Yes	2.0		
DW-3	DMW-3 WTR1	4/20/2006	R	Acetone	14	mg/L					48	µg/L	Yes	No	20		
DW-3	DMW-3 WTR1	4/20/2006	R	Barium	3.8	mg/L	2	mg/L	2	mg/L	0.51	mg/L	Yes	Yes	0.010		
DW-3	DMW3-WTR1	6/15/2006	R	Barium	3.8	mg/L	2	mg/L	2	mg/L	0.5	mg/L	Yes	Yes	0.010		
DW-3	DW3-WTR2	8/26/2005	D	Barium	3.8	mg/L	2	mg/L	2	mg/L	0.54	mg/L	Yes	Yes	0.010		
DW-4	DMW4-WTR1	11/7/2005	R	Barium	3.8	mg/L	2	mg/L	2	mg/L	0.17	mg/L	Yes	Yes	0.010		
DW-4	DMW4-WTR1	11/7/2005	R	Bicarbonate Alk (as CaCO3)							94	mg/L	Yes	No	20		
DW-4	DMW4-WTR1	11/7/2005	R	Calcium							19	mg/L	Yes	Yes	1.0		
DW-4	DMW4-WTR1	11/7/2005	R	Chloride							2.8	mg/L	Yes	No	2.5		
DW-4	DMW4-WTR1	11/7/2005	R	Magnesium							9.5	mg/L	Yes	Yes	1.0		
DW-4	DMW4-WTR1	11/7/2005	R	Phosphorus (as P)							0.066	mg/L	Yes	No	0.050		
DW-4	DMW4-WTR1	11/7/2005	R	Silica							13	mg/L	Yes	Yes	0.43		
DW-4	DMW4-WTR1	11/7/2005	R	Sodium							4.5	mg/L	Yes	Yes	2.0		
DW-4	DMW4-WTR1	11/7/2005	R	Total Alkalinity (as CaCO3)							94	mg/L	Yes	No	20		
DW-4	DMW4-WTR1	11/7/2005	R	Total Dissolved Solids							120	mg/L	Yes	Yes	10		

Notes:

mg/L-- milligrams per liter

pg/L-- picogram per liter

D--

R--

TABLE GWMP-11

2004-2006 Summary of Detected Organic Constituents in Groundwater Wells

RCRA Post-Closure Permit Area Groundwater Monitoring Plan

Camp Navajo, Bellemont, Arizona

WELL ID	SAMPLE ID	SAMPLE DATE	Acetone (ug/L)	Chloroform (µg/L)	Total TEQ (pg/L)
DW-3	DMW-3 WTR1	4/20/2006	48		
DALCO	DALCO-WTR1	6/15/2006		1.2	
DALCO	DALCO-WTR2	6/15/2006		1.3	
AWI001	AWI001-WTR1	2/24/2005			6
AWI001	AWI001-WTR2*	2/24/2005			3.6
AWI002	AWI002-WTR1	2/24/2005			4.5
AWI003	AWI003-WTR1	2/24/2005			3.6
Regulatory Limit - Arizona Aquifer Water Quality Standard			NNS	100**	30

Shaded cell indicates constituent was not detected above the laboratory detection limits.

pg/L = picograms per liter

µg/L = micrograms per liter

NNS = No numeric standard

* Duplicate sample

** Standard is for total trihalomethanes. Total trihalomethanes is the sum of chloroform, bromodichloromethane, dibromochloromethane, and bromoform.

TABLE GWMP-12

2004-2006 Summary of Detected Inorganic Constituents in Groundwater Wells

RCRA Post-Closure Permit Area Groundwater Monitoring Plan

Camp Navajo, Bellemont, Arizona

WELL ID	SAMPLE ID	SAMPLE DATE	Alkalinity	Calcium Dissolved	Chloride	Magnesium Dissolved	Nitrate-N	Potassium Dissolved	Sodium	Sulfate	Silica Dissolved	Total Dissolved Solids
DALCO	DALCO WTR1	8/10/2004	120	22		12			2.7		12	110
DALCO	DALCO WTR1	11/18/2004		22		12			2.7			
DALCO	DALCO WTR1	2/17/2005	110	21		12			3.2			
DALCO	DALCO WTR1	5/12/2005		23		12			2.9			
DALCO	DALCO WTR1	11/15/2005		22		12			2.2			
DALCO	DALCO WTR2*	11/15/2005		22		12			2.4			
DALCO	DALCO WTR1	3/22/2006		23		13			3			
DALCO	DALCO-WTR2*	3/22/2006		23		13			3			
1901	1901-WTR1	8/19/2004	150	34		16	1.2					
1901	1901-WTR1	11/17/2004		28		14	0.76		2.6			
1901	1901-WTR1	5/11/2005		27		13			2.4			
DW-1	DMW-1 WTR1	9/21/2004	92	16		9.5			5.1			110
DW-1	DMW-1 WTR1	11/15/2004		16		9.7			5.8			
DW-1	DMW-1 WTR1	2/17/2005	94	18	3.4	10			6.8			
DW-1	DMW-1 WTR1	5/12/2005		17		9.8			9.7			
DW-1	DMW-1 WTR1	11/15/2005		16		9.3			6.8			
DW-1	DMW-1 WTR1	3/2/2006		18		10			6.9			
DW-2	DMW-2 WTR1	9/21/2004	87	16		11			4.1	5.4		99
DW-2	DMW-2 WTR1	11/15/2004		14		8.9			4.8			
DW-2	DMW-2 WTR1	2/17/2005	92	16		12			4.5	7.9		
DW-2	DMW-2 WTR1	5/12/2005		16		11			4.3			
DW-2	DMW-2 WTR1	11/15/2005		15		11			3.7			
DW-2	DMW-2 WTR1	3/22/06		16		12			4.4			
DW-3	DWM-3 WTR1	11/15/2004		20		12			4.3		11	
DW-3	DMW-3 WTR1	2/17/2005	110	21		13			4.2			
DW-3	DMW-3 WTR1	6/14/2005		20		12			4.4			
DW-3	DMW-3 WTR1	11/15/2005		21		12			4.1			
DW-4	DMW4-WTR1	11/7/2005	94	19	2.8	9.5			4.5		13	120
AWI001	AWI001-WTR1	8/19/2004	200	45		23						
AWI001	AWI001-WTR2*	8/19/2004	200	46		23						
AWI001	AWI001-WTR1	11/17/2004		45		23						
AWI001	AWI001-WTR2*	11/17/2004		44		23						
AWI001	AWI001-WTR1	2/24/2005	200	45		23						
AWI001	AWI001-WTR2*	2/24/2005	200	48		24						
AWI001	AWI001-WTR1	5/11/2005		46		23	0.54					
AWI001	AWI001-WTR1	8/30/2005					0.56					
AWI001	AWI001-WTR2*	8/30/2005					0.5					
AWI001	AWI001-WTR1	11/16/2005		44		22	0.62					
AWI001	AWI001-WTR2*	11/16/2005		42		21	0.61					
AWI001	AWI001-WTR1	4/11/2006		44		22	0.79					
AWI001	AWI001-WTR2*	4/11/2006		45		23	0.73					
AWI001	AWI001-WTR1	6/13/2006					0.69					
AWI001	AWI001-WTR2*	6/13/2006					0.77					
AWI002	AWI002-WTR1	2/24/2005	210	47	3.1	24	0.75	5.6	6.1	7		
AWI002	AWI002-WTR1	5/11/2005		49		24	0.97					
AWI002	AWI002-WTR1	8/30/2005					0.68					

TABLE GWMP-12

2004-2006 Summary of Detected Inorganic Constituents in Groundwater Wells

RCRA Post-Closure Permit Area Groundwater Monitoring Plan

Camp Navajo, Bellemont, Arizona

WELL ID	SAMPLE ID	SAMPLE DATE	Alkalinity	Calcium Dissolved	Chloride	Magnesium Dissolved	Nitrate-N	Potassium Dissolved	Sodium	Sulfate	Silica Dissolved	Total Dissolved Solids
AWI002	AWI002-WTR1	11/16/2005		48		24	1.1					
AWI002	AWI002-WTR1	4/11/2006		50		25	0.96					
AWI003	AWI003-WTR1	2/24/2005	240	52		24		16	13	4.5		
AWI003	AWI003-WTR1	5/11/2005		40		15		7.8	8.1			
AWI003	AWI003-WTR2*	5/11/2005		44		18		5.4	6.1			
AWI003	AWI003-WTR1	11/16/2005		53		25						
AWI003	AWI003-WTR1	4/11/2006		53		25						
Regulatory Limit - Arizona Aquifer Water Quality Standard			NNS	NNS	NNS	NNS	10	NNS	NNS	NNS	NNS	NNS

Shaded cell indicates either constituent was not sampled or constituent was not detected above the laboratory detection limits.

Concentrations in mg/L = milligrams per liter

NNS = No numeric standard

* Duplicate sample

TABLE GWMP-13

2004-2006 Summary of Detected Metals in Groundwater Samples

RCRA Post-Closure Permit Area Groundwater Monitoring Plan

Camp Navajo, Bellemont, Arizona

WELL ID	SAMPLE ID	SAMPLE DATE	Barium Dissolved	Copper Dissolved	Iron Dissolved	Lead Dissolved	Mercury Dissolved	Zinc Dissolved
AWI001	AWI001-WTR1	11/17/2004	0.034					0.079
AWI001	AWI001-WTR2*	11/17/2004	0.032					
AWI001	AWI001-WTR1	2/24/2005	0.031					
AWI001	AWI001-WTR2*	2/24/2005	0.035				0.0003	
AWI001	AWI001-WTR1	5/11/2005	0.032					
AWI001	AWI001-WTR1	8/30/2005	0.034					
AWI001	AWI001-WTR2*	8/30/2005	0.033					
AWI001	AWI001-WTR1	11/16/2005	0.032					
AWI001	AWI001-WTR2*	11/16/2005	0.03					
AWI001	AWI001-WTR1	4/11/2006	0.031					
AWI001	AWI001-WTR2*	4/11/2006	0.031					
AWI001	AWI001-WTR1	6/13/2006	0.033					
AWI001	AWI001-WTR2*	6/13/2006	0.032					
AWI002	AWI002-WTR1	2/24/2005	0.06					
AWI002	AWI002-WTR1	5/11/2005	0.047					
AWI002	AWI002-WTR1	8/30/2005	0.041					
AWI002	AWI002-WTR1	11/16/2005	0.032					
AWI002	AWI002-WTR1	4/11/2006	0.036		0.89			
AWI003	AWI003-WTR1	2/24/2005	0.087					
AWI003	AWI003-WTR1	5/11/2005	0.15					
AWI003	AWI003-WTR2*	5/11/2005	0.12					
AWI003	AWI003-WTR1	8/30/2005	0.11					
AWI003	AWI003-WTR1	11/16/2005	0.04					
AWI003	AWI003-WTR1	4/11/2006	0.038					
AWI003	AWI003-WTR1	6/13/2006	0.043					
Regulatory Limit - Arizona Aquifer Water Quality Standard			2**	NNS	NNS	0.05**	0.002**	NNS

Shaded cell indicates constituent was not detected above the laboratory detection limits reported in Appendix G.

Concentrations in mg/L = milligrams per liter

NNS = No numeric standard

* Duplicate sample

** Standard for total metal. No Aquifer Water Quality Standard for dissolved metal.

TABLE GWMP-14

Regional Aquifer Wells Located in the Camp Navajo Vicinity
 RCRA Post-Closure Permit Area Groundwater Monitoring Plan
 Camp Navajo, Bellemont, Arizona

REGISTRY_ID	GWSI_SITE_ID	CADASTRAL	OWNER_NAME	WELL_TYPE_GROUP	WELL_DEPTH	CASING_DEPTH	UTM_X_METERS	UTM_Y_METERS
203241		A22005036CCC	GREENFIELD LAND DEVELOPMENT	NON-EXEMPT	2801.00	2801.00	424955.90	3899850.00
206887		A21006006CBA	UTILITY SOURCE LLC	NON-EXEMPT	2908.00	NA	426781.30	3898834.00
501227	350747111435301	A20006011BDD	FLAGSTAFF, CITY OF	NON-EXEMPT	1910.00	1300.00	433367.10	3887729.00
501229		A21006034CCA	FLAGSTAFF, CITY OF	NON-EXEMPT	1008.00	0.00	431595.00	3890352.00
509021		A21006025BCD	FLAGSTAFF RANCH WTR	NON-EXEMPT	1810.00	0.00	434806.30	3892599.00
509026	350745111435601	A20006011CAB	FLAGSTAFF, CITY OF	NON-EXEMPT	1840.00	1840.00	433162.90	3887527.00
511071		A21006025BCD	FLAGSTAFF RANCH ASSO	NON-EXEMPT	1800.00	1800.00	434806.30	3892599.00
516611		A21006010DAA	BURNS, ROBERT	NON-EXEMPT	1700.00	1630.00	432855.00	3897275.00
528644		A22004024BBD	KRALOVETZ, RICHARD	EXEMPT	1010.00	20.00	415743.10	3904046.00
536186		A21006022BAB	FRIED, ROBERT	EXEMPT	1140.00	1140.00	431826.00	3894829.00
541534	351136111430901	A21006023AAA	WEST PARK DEV PRTSP	EXEMPT	1600.00	1600.00	434461.40	3894848.00
548560	350843111441701	A20006002BCC	FLAGSTAFF, CITY OF	NON-EXEMPT	2110.00	1782.00	432768.60	3889330.00
551757		A21006024BAA	SASKAN RANCH HOA	EXEMPT	1640.00	1610.00	435257.40	3894847.00
559574	350805111435001	A20006011BAA	FLAGSTAFF, CITY OF	NON-EXEMPT	1956.00	1950.00	433373.30	3888325.00
581959		A21006025ABB	FLAGSTAFF RANCH GOLF CLUB	NON-EXEMPT	2040.00	2040.00	435437.30	3893207.00
581960		A21006025AAA	FLAGSTAFF RANCH WATER COMPANY	NON-EXEMPT	1920.00	1760.00	436055.10	3893212.00
581961		A21006025ADA	FLAGSTAFF RANCH GOLF CLUB	NON-EXEMPT	2035.00	2040.00	436039.70	3892802.00
581962		A21006025ACD	FLAGSTAFF RANCH GOLF CLUB	NON-EXEMPT	1780.00	1135.00	435622.80	3892598.00
590546		A21006015DBD	A-1 RANCH HOMEOWNERS ASSOC	NON-EXEMPT	2100.00	2100.00	432442.10	3895455.00
593267		A22005036BDC	LONNIE MCCLEVE	NON-EXEMPT	2400.00	1947.00	425405.10	3900687.00
594719		A21005011ABA	ARIZONA ARMY NATIONAL GUARD	NON-EXEMPT	2084.00	2084.00	424357.90	3898010.00
598834		A22005036CCC	FUELCO	NON-EXEMPT	2100.00	2100.00	424955.90	3899850.00
606201	350924111440101	A21006035CBD	FLAGSTAFF, CITY OF	NON-EXEMPT	1600.00	1588.00	433186.70	3890562.00
606202	350916111440801	A21006035CCB	FLAGSTAFF, CITY OF	NON-EXEMPT	1746.00	1600.00	432985.10	3890353.00
606203	350933111440801	A21006035BCC	FLAGSTAFF, CITY OF	NON-EXEMPT	1900.00	1900.00	432983.10	3890976.00
606204	350905111440801	A21006035CCC	FLAGSTAFF, CITY OF	NON-EXEMPT	2030.00	2030.00	432985.70	3890145.00
606205	350856111441601	A20006002BBC	FLAGSTAFF, CITY OF	NON-EXEMPT	1600.00	1600.00	432770.70	3889737.00
606206	350847111440401	A20006002BDB	FLAGSTAFF, CITY OF	NON-EXEMPT	1700.00	1700.00	433174.90	3889539.00
606207	350808111440101	A20006011BAB	FLAGSTAFF, CITY OF,	NON-EXEMPT	1816.00	1782.00	433169.70	3888321.00
630285	351130111411601	A21007019ACA	HIDDEN HOLLOW M P	EXEMPT	1551.00	1551.00	437257.30	3894435.00
631386		A21006010DAC	DOWNS/BEST/COUPLAND/HONNE	EXEMPT	1800.00	0.00	432651.60	3897073.00
805692	351245111502801	A21005011CBC	ARIZONA ARMY NATIONAL GUARD	NON-EXEMPT	1647.00	1500.00	423350.20	3897013.00
903022		A22006034BCA	ROSE WEST LLC	EXEMPT	2610.00	2610.00	431664.80	3900889.00
908260		A21007019BBD	CITY OF FLAGSTAFF	NON-EXEMPT	2486.00	2480.00	436452.70	3894641.00
908359		A21004005DCB	DEVELOPMENT SERVICES OF AMERICA	NON-EXEMPT	3580.00	2580.00	409774.80	3898431.00
223967		A21005003ABA	ARIZONA DEPT OF VETERANS SERVICES	NON-EXEMPT	2200.00	2200.00	422745.00	3899662.00

Wells within a 5 mile radius of NAAD-02

TABLE GWMP-15
Summary of Wells to be Included in Groundwater Monitoring Program
RCRA Post-closure Permit Area Groundwater Monitoring Plan
Camp Navajo, Bellemont, Arizona

Well Name/ID	ADWR Registration No.	Depth to Water (feet bgs)	Total Well Depth (feet bgs)
Camp Navajo Well (CN-1)	55-805692	1,320 ^c	1,647
Camp Navajo Well (CN-2)	55-594719	1,583 ^a	2,084
Bellemont Well (DW-1)	55-593267	1,550 ^a	2,440
Bellemont Well (DW-2)	55-598834	1,542 ^a	2,100
Bellemont Well (DW-3)	55-203241	1,606 ^a	2,825
Bellemont Well (DW-4)	55-206887	1,675 ^a	2,908
Veterans Cemetery Well (VC-1)	55-223967	2,080	2,203
Garland Prairie Well (WP-1)	55-908359	1,863 ^b	3,580

Notes:

^aBased on water level measurements collected in 2006

^bBased on 2009 ADWR well construction report

^cBased on the average of water levels measured in 1996–1997

TABLE GWMP-16
Summary of Constituents to be Monitored
 RCRA Post-closure Permit Area Groundwater Monitoring Plan
 Camp Navajo, Bellemont, Arizona

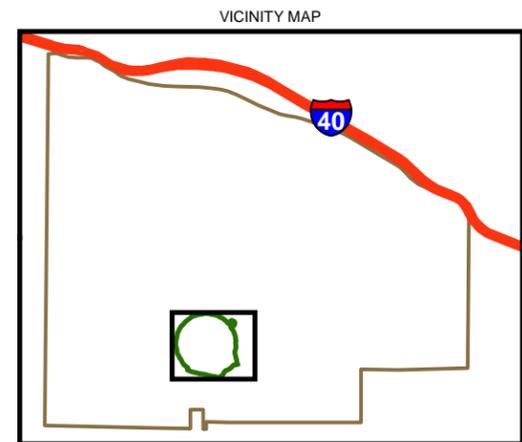
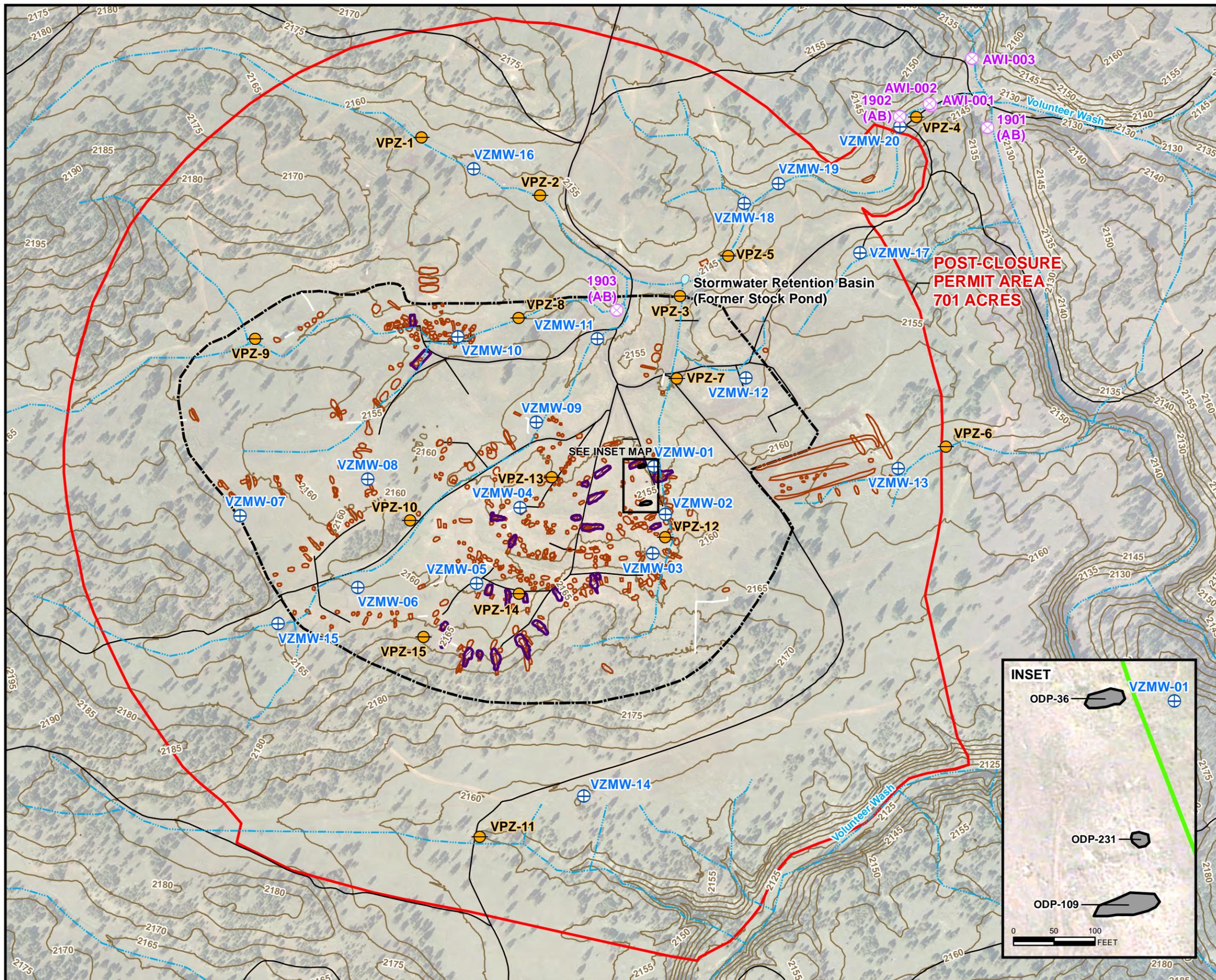
Well/ Location	Frequency	Analytes												
		Explosives	Perchlorate	Nitrate/ Nitrite	TAL Metals	WP	SVOCs	Dioxins/ Furans	VOCs	OCPs	PCBs	Herbicides	Cyanide	Sulfide
		EPA Method 8330B	EPA Method 6850	EPA Method 353.2	EPA Method 6010C/6020A/7470A	EPA Method 7580	EPA Method 8270D	EPA Method 8290A	EPA Method 8260C	EPA Method 8151A	EPA Method 8082A	EPA Method 8081B	EPA Method 9012B	EPA Method 9034
VZMWs (20 total)	Semiannual (Spring/Fall)	X	X	X	X(2)	X(2,3)	X(2)	X(2,3)						
VPZs (15 total)		X	X	X	X(2)	X(2,3)	X(2)	X(2,3)						
AWIs (3 total)		X	X	X	X(2)	X(2,3)	X(2)	X(2,3)						
Former Stock Tank		X	X	X	X(2)	X(2,3)	X(2)	X(2,3)						
CN-1	Quarterly	X	X	X	X	X	X(1)	X(1)						
CN-2		X	X	X	X	X	X(1)	X(1)						
DW-1		X	X	X	X	X								
DW-2		X	X	X	X	X								
DW-3		X	X	X	X	X	X(1)	X(1)						
DW-4		X	X	X	X	X	X(1)	X(1)						
VC-1		X	X	X	X	X	X(1)	X(1)						
WP-1		X	X	X	X	X								

AWIs = Area-Wide Investigation (AWI)-series wells
 EPA = U.S. Environmental Protection Agency
 OCPs = Organochlorine Pesticides
 PCBs = Polychlorinated Biphenyls
 SVOCs = Semi-Volatile Organic Compounds
 TAL = Target Analyte List
 VOCs = Volatile Organic Compounds
 VPZs = Vadose Zone Piezometers
 VZMW = Vadose Zone Monitoring Wells
 WP = White Phosphorous

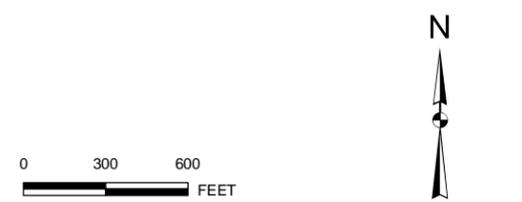
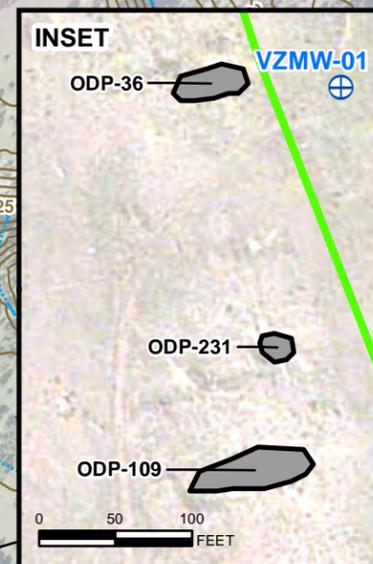
(1) = Sample annually during 2nd quarterly event in conjunction with Spring semiannual event
 (2) = Sample for secondary COPCs if sufficient water is present after primary COPC samples are collected
 (3) = Sample for WP and Dioxins/Furans in selected wells (VMW-18, VMW-19, VMW-20, VPZ-4, VPZ-5, and AWI-series wells) and Former Stock Tank

Figures

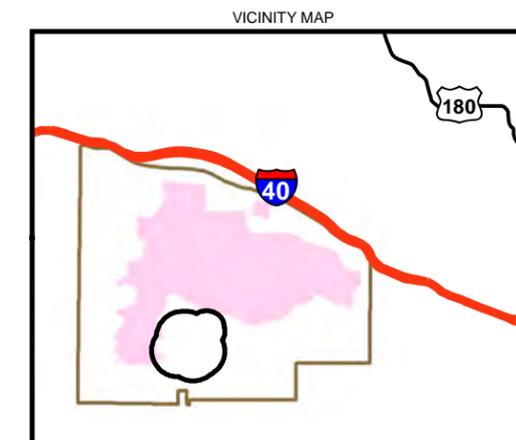
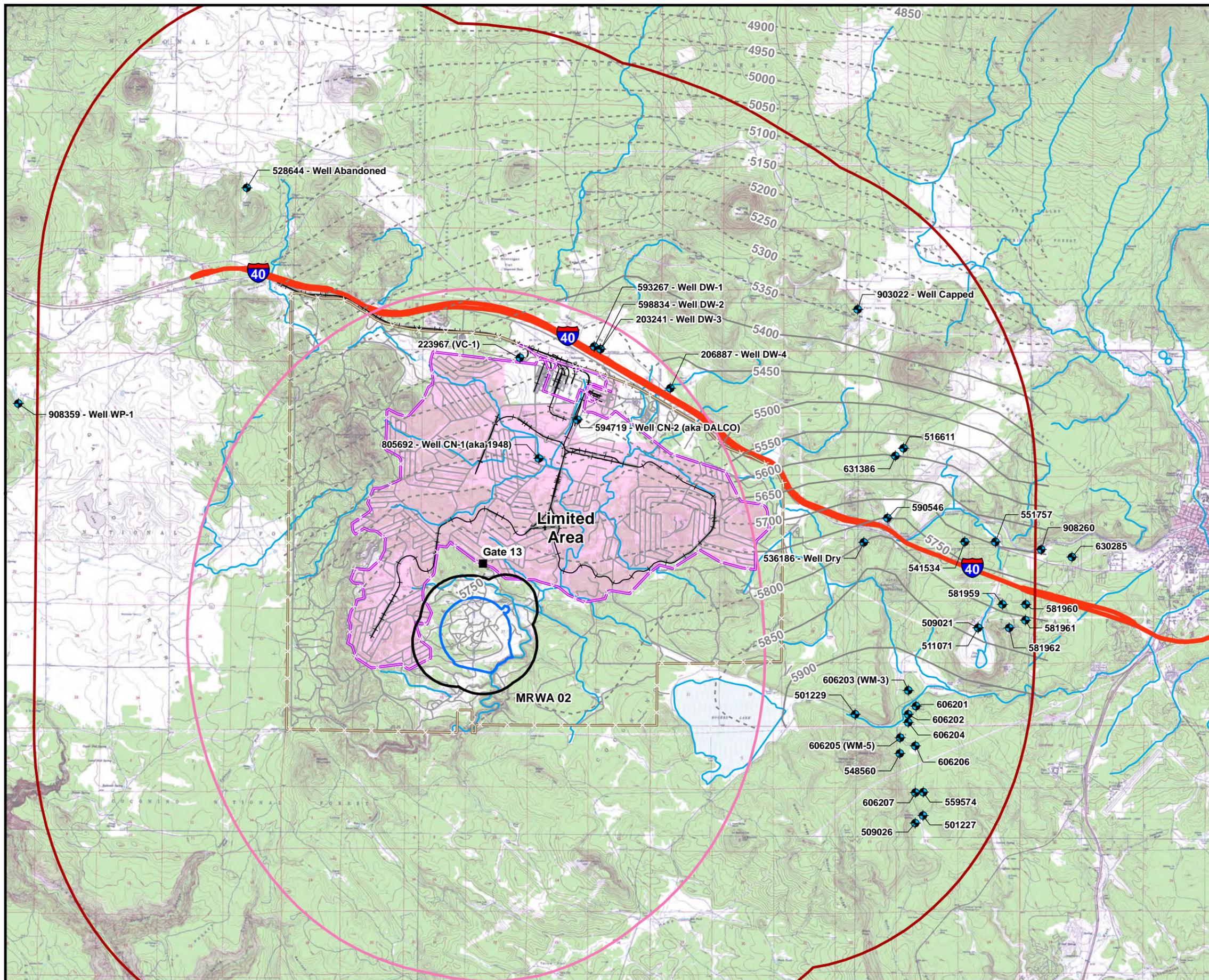
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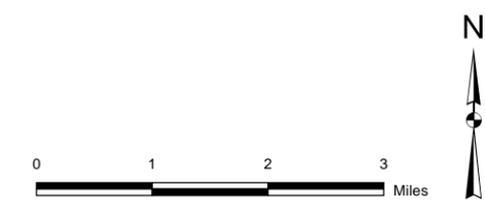
- LEGEND**
- PIEZOMETER INSTALLATION LOCATION
 - VADOSE ZONE MONITORING WELL
 - SHALLOW GROUNDWATER WELLS IN THE POST-CLOSURE PERMIT AREA
- BOUNDARY SYMBOLOGY**
- POST-CLOSURE PERMIT AREA
 - NAAD 02 AREA
 - FORMER OD PIT
 - OPEN DETONATION PITS TO BE USED FOR EMERGENCY OPEN DETONATIONS
 - BACKFILLED OD PIT AND TWO MISC. SITES
- OTHER SYMBOLOGY**
- INTERMITTENT DRAINAGE
 - 5 M CONTOUR
 - SURFACE WATER CATCHMENT AREA
- AB = WELL ABANDONED



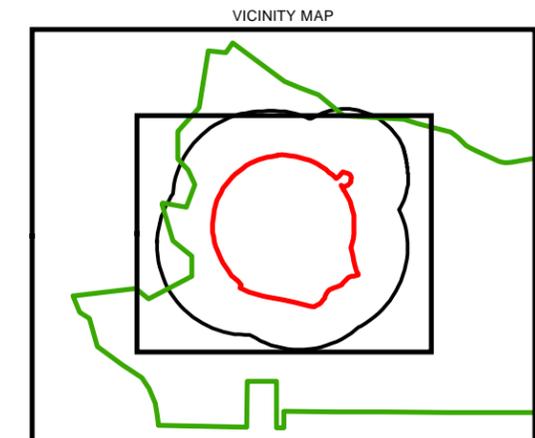
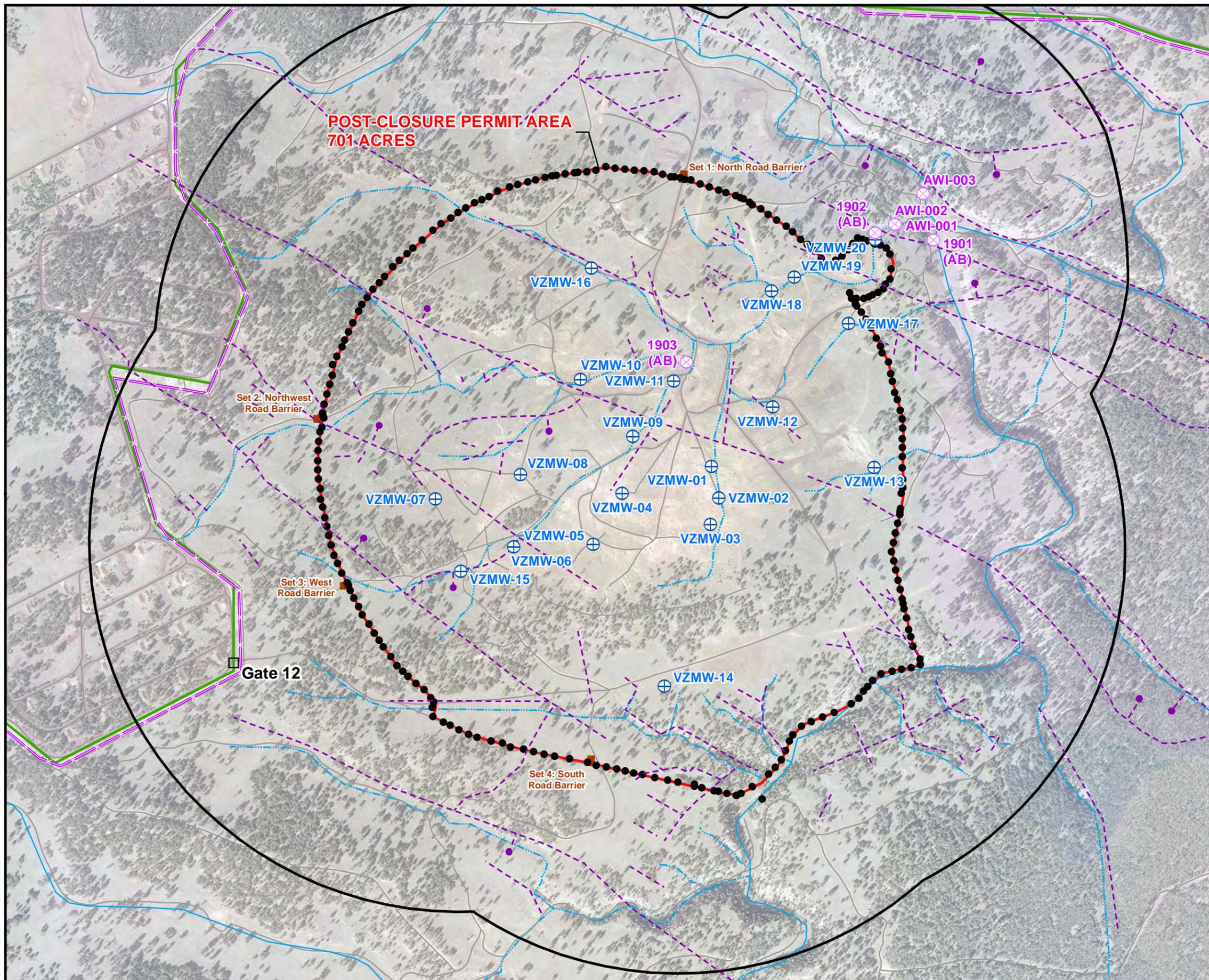
**FIGURE GWMP-1
VADOSE ZONE MONITOR WELL
AND PIEZOMETER LOCATIONS**
RCRA POST-CLOSURE PERMIT APPLICATION
GROUNDWATER MONITORING PLAN
CAMP NAVAJO, BELLEMONT, ARIZONA



- LEGEND**
- BOUNDARY SYMBOLOGY**
- MRWA BOUNDARY
 - LIMITED AREA
 - INSTALLATION BOUNDARY 5 MILE BUFFER
 - 5-MILE RADIUS FROM THE POST-CLOSURE PERMIT AREA BOUNDARY
 - POST-CLOSURE PERMIT AREA
 - INSTALLATION BOUNDARY FENCE
 - LIMITED AREA PERIMETER FENCE
- OTHER SYMBOLOGY**
- GATE
 - DRAINAGE
 - INTERSTATE
 - ROAD
 - RAILROAD
 - GROUNDWATER WELL
 - STEADY STATE REGIONAL AQUIFER WATER LEVEL ELEVATIONS (DASHED WHERE INFERRED)
- (SOURCE: USGS, 2007 AND BROWN AND CALDWELL, 2008)



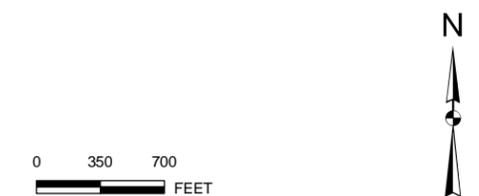
**FIGURE GWMP-2
REGIONAL AQUIFER WELLS
IN VICINITY**
RCRA POST-CLOSURE PERMIT APPLICATION
GROUNDWATER MONITORING PLAN
CAMP NAVAJO, BELLEFONT, ARIZONA



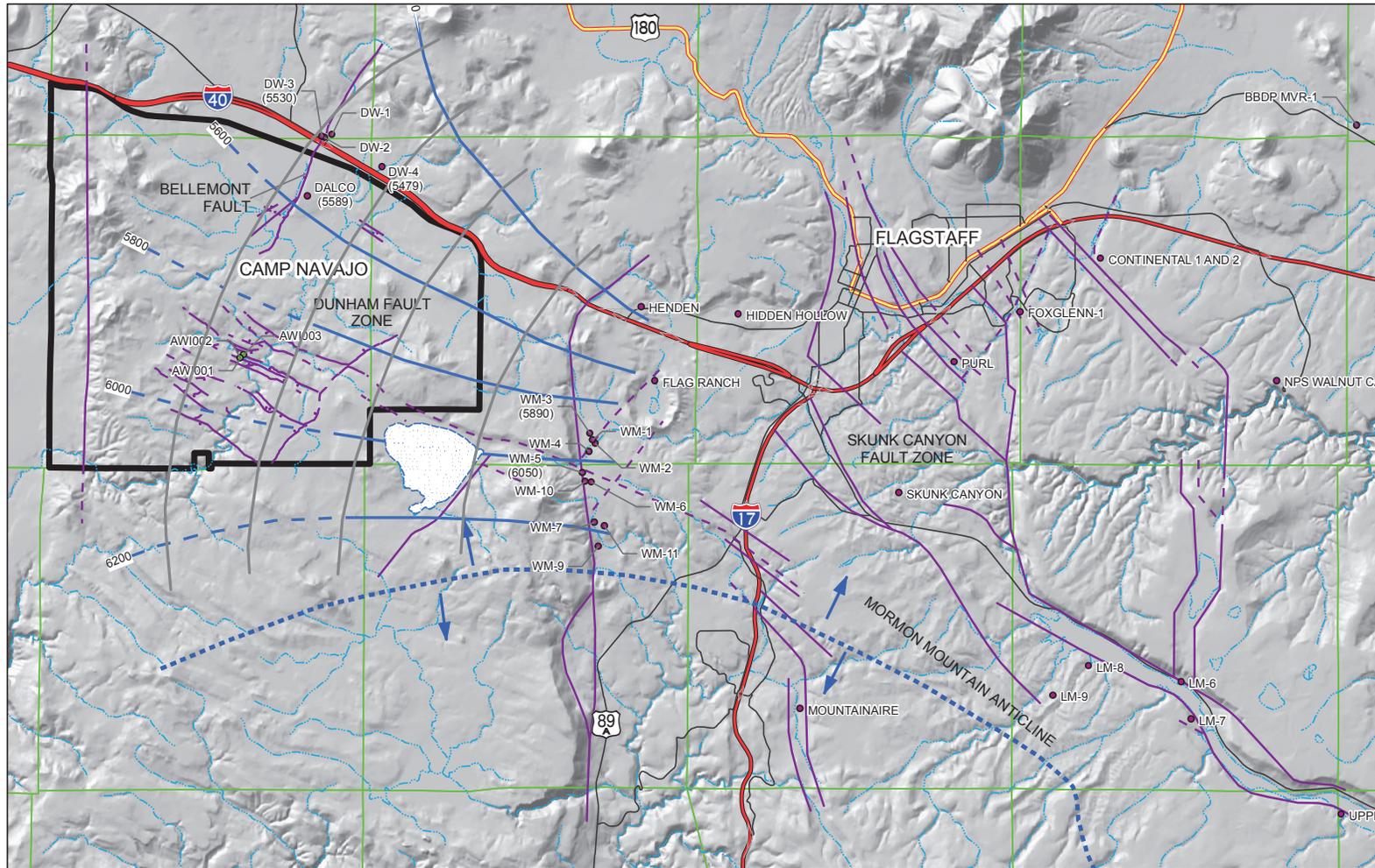
LEGEND

- DANGER SIGNS
- ROAD BARRIER
- BOUNDARY SYMBOLOGY**
- ▭ MRWA BOUNDARY
- ▭ FORMER OB/OD AREA BOUNDARY
- ▭ POST-CLOSURE PERMIT AREA
- ▭ LIMITED AREA PERIMETER FENCE
- OTHER SYMBOLOGY**
- DRAINAGE
- - - - - INTERMITTENT DRAINAGE
- ⊗ MONITORING WELL
- ⊕ VADOSE ZONE MONITORING WELL
- ROAD
- RAILROAD
- - - - - INFERRED GEOLOGIC FAULT, BALL ON DOWNTHROWN SIDE

NOTE:
ROADS SHOWN WITHOUT BARRIERS ARE NOT VIABLE VEHICLE ENTRANCES AND ARE NOT MAINTAINED.



**FIGURE GWMP-3
GEOLOGIC FAULTS AT
POST-CLOSURE PERMIT AREA**
RCRA POST-CLOSURE PERMIT APPLICATION
CAMP NAVAJO, BELLEMONT, ARIZONA



SOURCE: FLAGSTAFF, AZ 1:100,000 USGS TOPOGRAPHIC MAP

EXPLANATION

- REGIONAL AQUIFER WELL; (5589) ELEVATION OF WATER IN MARCH 2006 (BROWN AND CALDWELL)
- KAIBAB FORMATION WELL
- FAULT, DASHED WHERE INFERRED (SENSE OF MOTION NOT SHOWN)
- INFERRED GROUNDWATER DIVIDE FROM BILLS AND OTHERS (2000)
- POTENTIOMETRIC CONTOUR, BROWN AND CALDWELL DATA 2005-2006 (FT AMSL)
DASHED WHERE INFERRED, QUERIED WHERE UNCERTAIN
- SCHEMATIC LINES OF FLOW IN REGIONAL AQUIFER

Brown and Caldwell, 2008

**FIGURE GWMP-4
2006 WATER ELEVATION MAP
NEAR THE POST-CLOSURE
PERMIT AREA**

GROUNDWATER MONITORING PLAN
CAMP NAVAJO, BELLEMONT, ARIZONA

Attachment I.1
Well Construction Information

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CH2MHILL Well Number: VZMW-01

Date: 14 Nov 08, 11:10

Client: National Guard Bureau
Project: Camp Navajo VZMW
Project Number: 381581.01.02
Logged by: Downs-Heimes, Dana

Driller: Enviro-Drill, INC
Drilling Method: HSA/Air Rotary
Northing: 3892463.795
Easting: 422005.797

Elev of Top of PVC well casing: 7069.28
Elev of Top of metal casing: 7069.80
Elev of N side of concrete pad: 7066.68

Depth (ft)	Bedrock	Soil Description	Well Info			Packing Description	Well Construction Notes
			Lithology	Well Drawing	Well Packing		
							— Top of Metal Casing — Top of PVC Casing — Top of Concrete Pad
	Ground Surface	0' - 3.5' Reddish-brown sandy silt (SM) with organic matter				Concrete	0-6.5' 4" PVC Casing
		3.5' - 6' Reddish brown clayey sand (SC) with gravel size pieces of light gray and yellowish orange limestone				1' - 5' Hydrated Bentonite Chips	
	6' Weathered Bedrock	6' - 9.5' Pale yellowish orange weathered limestone with angular gravel size fragments of light gray limestone and reddish brown clayey sand				5' - 5.5' Fine Sand	6.5'-11.5' 4" PVC Slotted Screen
	9.5' Competent Bedrock	9.5' - 14' Light gray micritic limestone				5.5' - 12' Sand Filter Pack	
						12' - 14' Hydrated Bentonite Chips	11.5'-14.0' 4" PVC Sump



CH2MHILL Well Number: VZMW-02

Date: 14 Nov 08, 14:30

Client: National Guard Bureau
Project: Camp Navajo VZMW
Project Number: 381581.01.02
Logged by: Downs-Heimes, Dana

Driller: Enviro-Drill, INC
Drilling Method: HSA/Air Rotary
Northing: 3892364.704
Easting: 422029.321

Elev of Top of PVC well casing: 7076.77
Elev of Top of metal casing: 7077.16
Elev of N side of concrete pad: 7074.15

Depth (ft)	Bedrock	Soil Description	Well Info			Packing Description	Well Construction Notes
			Lithology	Well Drawing	Well Packing		
							— Top of Metal Casing — Top of PVC Casing — Top of Concrete Pad
	Ground Surface	0' - 2.5' Medium brown sandy silt (SM) with organic matter				Concrete	
		2.5' - 4' Reddish brown clayey sand (SC) with gravel size fragments of light gray and yellowish orange limestone					
		4' - 8' Dark brown clayey sand (SC) with angular gravel size fragments of light gray and pale brown limestone				1' - 15.5' Hydrated Bentonite Chips	0-17.6' 4" PVC Casing
		8' - 19.5' Reddish brown clay (CL) with gravel size fragments of light gray and pale brown limestone				15.5' - 16' Fine Sand	
	19.5' Weathered Bedrock	19.5' - 21.5' Pale brown weathered limestone with reddish brown clay				16' - 23' Sand Filter Pack	17.6'-22.6' 4" PVC Slotted Screen
	21.5' Competent Bedrock	21.5' - 24.6' Grayish white micritic limestone				23' - 24.6' Hydrated Bentonite Chips	22.6'-24.6' 4" PVC Sump



CH2MHILL Well Number: VZMW-03

Date: 14 Nov 08, 12:40

Client: National Guard Bureau
Project: Camp Navajo VZMW
Project Number: 381581.01.02
Logged by: Downs-Heimes, Dana

Driller: Enviro-Drill, INC
Drilling Method: HSA/Air Rotary
Northing: 3892282.969
Easting: 422002.979

Elev of Top of PVC well casing: 7087.90
Elev of Top of metal casing: 7088.45
Elev of N side of concrete pad: 7085.73

Depth (ft)	Bedrock	Soil Description	Well Info			Packing Description	Well Construction Notes
			Lithology	Well Drawing	Well Packing		
	Ground Surface						— Top of Metal Casing — Top of PVC Casing — Top of Concrete Pad
0' - 3'		Medium brown sandy silt (SM) with organic matter				Concrete	
3' - 7'		Reddish brown clayey silt (ML)				1' - 8' Hydrated Bentonite Chips	0'-10' 4" PVC Casing
7' - 12'		Dark brown clayey sand (SC) with angular gravel size fragments of pale brown limestone and reddish brown silty clay (SC)				8' - 9' Fine Sand	
12' Weathered Bedrock						9' - 15.5' Sand Filter Pack	10'-15' 4" PVC Slotted Screen
14' Competent Bedrock		Pale brown weathered limestone with reddish brown clay				15.5' - 17' Hydrated Bentonite Chips	15'-17' 4" PVC Sump
		Pale brown and grayish white micritic limestone					



CH2MHILL Well Number: VZMW-04

Date: 19 Nov 08, 15:00

Client: National Guard Bureau
Project: Camp Navajo VZMW
Project Number: 381581.01.02
Logged by: Downs-Heimes, Dana

Driller: Enviro-Drill, INC
Drilling Method: HSA/Air Rotary
Northing: 3892378.847
Easting: 421726.528

Elev of Top of PVC well casing: 7074.96
Elev of Top of metal casing: 7075.36
Elev of N side of concrete pad: 7072.06

Depth (ft)	Bedrock	Soil Description	Well Info			Packing Description	Well Construction Notes
			Lithology	Well Drawing	Well Packing		
	Ground Surface						— Top of Metal Casing — Top of PVC Casing — Top of Concrete Pad
		0' - 4' Medium brown sandy silt (SM) with organic matter				Concrete	0'-10' 4" PVC Casing
	6' Weathered Bedrock	4' - 6' Reddish brown clayey sand (SC) with gravel size limestone fragments				1' - 8.5' Hydrated Bentonite Chips	
		6' - 14' Pale brown and yellowish brown weathered limestone with reddish brown clayey sand (SC)				8.5' - 9' Fine Sand	10'-15.3' 4" PVC Slotted Screen
	14' Competent Bedrock	14' - 19.8' Pale brown and grayish white micritic limestone				9' - 15.5' Sand Filter Pack	
		14' - 19.8' Pale brown and grayish white micritic limestone				15.5' - 19.8' Hydrated Bentonite Chips	15.3'-17.5' 4" PVC Sump
		Total Depth of Borehole					



CH2MHILL Well Number: VZMW-05

Date: 20 Nov 08, 10:00

Client: National Guard Bureau
Project: Camp Navajo VZMW
Project Number: 381581.01.02
Logged by: Downs-Heimes, Dana

Driller: Enviro-Drill, INC
Drilling Method: HSA/Air Rotary
Northing: 3892220.575
Easting: 421636.148

Elev of Top of PVC well casing: 7086.31
Elev of Top of metal casing: 7086.70
Elev of N side of concrete pad: 7083.72

Depth (ft)	Bedrock	Soil Description	Well Info			Packing Description	Well Construction Notes
			Lithology	Well Drawing	Well Packing		
	Ground Surface						— Top of Metal Casing — Top of PVC Casing — Top of Concrete Pad
	6.0' Weathered Bedrock	0' - 6' Reddish brown clayey sand (SC) with gravel-size pale brown limestone fragments				Concrete	0'-9.5' 4" PVC casing
	13.5' Competent Bedrock	6' - 13.5' Pale brown and yellowish brown weathered limestone with brown clayey sand (SC) and reddish brown clay (CL)				8' - 8.5' Fine Sand 8.5' - 15' Sand Filter Pack	9.5'-14.5' 4" PVC Slotted Screen
		13.5' - 17' Pinkish brown and grayish white micritic limestone				15' - 17' Hydrated Bentonite Chips	14.5'-17' 4" PVC Sump



CH2MHILL Well Number: VZMW-06

Date: 13 Nov 08, 14:50

Client: National Guard Bureau
Project: Camp Navajo VZMW
Project Number: 381581.01.02
Logged by: Downs-Heimes, Dana

Driller: Enviro-Drill, INC
Drilling Method: HSA/Air Rotary
Northing: 3892212.516
Easting: 421387.656

Elev of Top of PVC well casing: 7088.30
Elev of Top of metal casing: 7088.74
Elev of N side of concrete pad: 7085.70

Depth (ft)	Bedrock	Soil Description	Well Info			Packing Description	Well Construction Notes
			Lithology	Well Drawing	Well Packing		
	Ground Surface						— Top of Metal Casing — Top of PVC Casing — Top of Concrete Pad
		0' - 2' Medium brown sandy silt (SM) with organic matter				Concrete	
		2' - 4.5' Reddish brown clayey sand (SC) with gravel-size pale brown limestone fragments				0' - 3.5' Hydrated Bentonite Chips	0'-5' 4" PVC Casing
4.5'	Weathered Bedrock					3.5' - 4' Fine Sand	
6'	Competent Bedrock					4' - 8' Sand Filter Pack	5'-7.5' 4" PVC Slotted Screen
		4.5' - 6' Light tan to yellowish brown weathered limestone				8' - 10' Hydrated Bentonite Chips	7.5'-10' 4" PVC Sump
		6' - 10' Grayish white micritic limestone					



CH2MHILL Well Number: VZMW-07

Date: 13 Nov 08, 13:45

Client: National Guard Bureau
Project: Camp Navajo VZMW
Project Number: 381581.01.02
Logged by: Downs-Heimes, Dana

Driller: Enviro-Drill, INC
Drilling Method: HSA/Air Rotary
Northing: 3892361.311
Easting: 421142.683

Elev of Top of PVC well casing: 7100.05
Elev of Top of metal casing: 7100.53
Elev of N side of concrete pad: 7097.43

Depth (ft)	Bedrock	Soil Description	Well Info			Packing Description	Well Construction Notes
			Lithology	Well Drawing	Well Packing		
							— Top of Metal Casing — Top of PVC Casing — Top of Concrete Pad
Ground Surface		0' - 2' Medium brown sandy silt (SM) with organic matter				Concrete	
3' Weathered Bedrock		2' - 3' Reddish brown clayey sand (SC) with gravel-size pale brown limestone fragments				0' - 4.5' Hydrated Bentonite Chips	0'-5.5' 4" PVC Casing
		3' - 7' Light tan to yellowish brown weathered limestone				4.5' - 5' Fine Sand	5.5'-8.0' 4" PVC Slotted Screen
7' Competent Bedrock		7' - 10' Grayish micritic limestone				5' - 8.5' Sand Filter Pack	
						8.5' - 10' Hydrated Bentonite Chips	8.0'-10' 4" PVC Sump



CH2MHILL Well Number: VZMW-08

Date: 19 Nov 08, 16:35

Client: National Guard Bureau
Project: Camp Navajo VZMW
Project Number: 381581.01.02
Logged by: Downs-Heimes, Dana

Driller: Enviro-Drill, INC
Drilling Method: HSA/Air Rotary
Northing: 3892437.147
Easting: 421408.849

Elev of Top of PVC well casing: 7083.57
Elev of Top of metal casing: 7083.99
Elev of N side of concrete pad: 7080.48

Depth (ft)	Bedrock	Soil Description	Well Info			Packing Description	Well Construction Notes
			Lithology	Well Drawing	Well Packing		
	Ground Surface						— Top of Metal Casing — Top of PVC Casing — Top of Concrete Pad
		0' - 4.5' Medium brown sandy silt (SM) with organic matter				Concrete	0'-8.5' 4" PVC Casing
		4.5' - 6' Reddish brown clayey sand (SC)				1' - 7' Hydrated Bentonite Chips	
	6.0' Weathered Bedrock					7' - 7.5' Fine Sand	8.5'-13.5' 4" PVC Slotted Screen
		6' - 12.5' Light tan to yellowish brown weathered limestone				7.5' - 14' Sand Filter Pack	
	12.5' Competent Bedrock					14' - 15.5' Hydrated Bentonite Chips	13.5'-15.5' 4" PVC Sump
		12.5' - 15.5' Grayish white micritic limestone					



CH2MHILL Well Number: VZMW-09

Date: 14 Nov 08, 9:35

Client: National Guard Bureau
Project: Camp Navajo VZMW
Project Number: 381581.01.02
Logged by: Downs-Heimes, Dana

Driller: Enviro-Drill, INC
Drilling Method: HSA/Air Rotary
Northing: 3892556.047
Easting: 421760.367

Elev of Top of PVC well casing: 7062.06
Elev of Top of metal casing: 7062.44
Elev of N side of concrete pad: 7059.33

Depth (ft)	Bedrock	Soil Description	Well Info			Packing Description	Well Construction Notes
			Lithology	Well Drawing	Well Packing		
	Ground Surface	<p>0' - 2' Medium brown sandy silt (SM) with organic matter</p> <p>2' - 4' Reddish brown clayey sand (SC)</p>				Concrete	<p>Top of Metal Casing</p> <p>Top of PVC Casing</p> <p>Top of Concrete Pad</p>
	16.5' Weathered Bedrock	<p>4' - 16.5' Reddish brown silty clay (ML) with gravel size fragments of pale brown and yellowish brown weathered limestone</p>				<p>1' - 15' Hydrated Bentonite Chips</p>	<p>0'-16.5' 4" PVC Casing</p>
	20.0' Competent Bedrock	<p>16.5' - 20' Pale brown and yellowish brown weathered limestone with reddish-brown clayey sand (SC) and reddish brown clay (CL)</p> <p>20' - 24' Pale brown micritic limestone</p>				<p>15' - 15.5' Fine Sand</p> <p>15.5' - 22' Sand Filter Pack</p> <p>22' - 24' Hydrated Bentonite Chips</p>	<p>16.5'-21.5' PVC Slotted Screen</p> <p>21.5'-24.0' 4" PVC Sump</p>



CH2MHILL Well Number: VZMW-10

Date: 19 Nov 08, 10:45

Client: National Guard Bureau
Project: Camp Navajo VZMW
Project Number: 381581.01.02
Logged by: Downs-Heimes, Dana

Driller: Enviro-Drill, INC
Drilling Method: HSA/Air Rotary
Northing: 3892734.314
Easting: 421596.293

Elev of Top of PVC well casing: 7059.61
Elev of Top of metal casing: 7062.94
Elev of N side of concrete pad: 7062.56

Depth (ft)	Bedrock	Soil Description	Well Info			Packing Description	Well Construction Notes
			Lithology	Well Drawing	Well Packing		
							— Top of Metal Casing — Top of PVC Casing — Top of Concrete Pad
	Ground Surface					Concrete	Top of Concrete Pad
		0' - 7.5' Medium brown sandy silt (SM) with organic matter				1' - 9.5' Hydrated Bentonite Chips	0'-11' 4" PVC Casing
		7.5' - 10' Reddish brown silty clay (ML) with gravel size fragments of pale brown and yellowish brown weathered limestone				9.5' - 10' Fine Sand	
	13.5' Weathered Bedrock 15.0' Competent Bedrock	10' - 13.5' Reddish-brown clay (CL) with gravel size fragments of pale brown and yellowish brown weathered limestone				10' - 16.5' Sand Filter Pack	11'-16' 4" PVC Slotted Screen
		13.5' - 15' Pale brown and yellowish brown weathered limestone with reddish-brown clayey sand (SC) and reddish brown clay (CL)				16.5' - 18.5' Hydrated Bentonite Chips	16'-18.5' 4" PVC Sump
		15' - 18.5' Grayish white micritic limestone					



CH2MHILL Well Number: VZMW-11

Date: 19 Nov 08, 12:45

Client: National Guard Bureau
Project: Camp Navajo VZMW
Project Number: 381581.01.02
Logged by: Downs-Heimes, Dana

Driller: Enviro-Drill, INC
Drilling Method: HSA/Air Rotary
Northing: 3892730.296
Easting: 421888.098

Elev of Top of PVC well casing: 7051.35
Elev of Top of metal casing: 7051.75
Elev of N side of concrete pad: 7048.82

Depth (ft)	Bedrock	Soil Description	Well Info			Packing Description	Well Construction Notes
			Lithology	Well Drawing	Well Packing		
							— Top of Metal Casing — Top of PVC Casing — Top of Concrete Pad
	Ground Surface	0' - 3' Medium brown sandy silt (SM) with organic matter				Concrete	0'-5.0' 4" PVC Casing
		3' - 5.5' Reddish brown clayey sand (SC) with gravel size fragments of pale brown and yellowish brown weathered limestone				0.5' - 3.5' Hydrated Bentonite Chips 3.5' - 4' Fine Sand	
	5.5' Weathered Bedrock	5.5' - 9.5' Pale brown and yellowish brown weathered limestone with reddish-brown clayey sand (SC)				4' - 10.5' Sand Filter Pack	5.0'-10.0' 4" PVC Slotted Screen
	9.5' Competent Bedrock	9.5' - 15.8' Yellowish brown micritic limestone				10.5' - 15.8' Hydrate Bentonite Chips	10.0'-12.0' 4" PVC Sump
		Total Depth of Borehole					



CH2MHILL Well Number: VZMW-12

Date: 18 Nov 08, 15:40

Client: National Guard Bureau
Project: Camp Navajo VZMW
Project Number: 381581.01.02
Logged by: Downs-Heimes, Dana

Driller: Enviro-Drill, INC
Drilling Method: HSA/Air Rotary
Northing: 3892648.314
Easting: 422197.674

Elev of Top of PVC well casing: 7065.33
Elev of Top of metal casing: 7065.79
Elev of N side of concrete pad: 7062.55

Depth (ft)	Bedrock	Soil Description	Well Info			Packing Description	Well Construction Notes
			Lithology	Well Drawing	Well Packing		
							— Top of Metal Casing — Top of PVC Casing — Top of Concrete Pad
	Ground Surface					Concrete	Top of Concrete Pad
		0' - 7.5' Medium brown sandy silt (SM) with organic matter				1' - 4' Hydrated Bentonite Chips	0'-5.5' 4" PVC Casing
						4' - 4.5' Fine Sand	
	7.5' Weathered Bedrock	7.5' - 9' Pale brown weathered limestone				4.5' - 11' Sand Filter Pack	5.5'-10.5' 4" PVC Screen
	9.0' Competent Bedrock	9' - 13' Grayish white micritic limestone				11' - 13' Hydrated Bentonite Chips	10.5'-13.0' 4" PVC Sump



CH2MHILL Well Number: VZMW-13

Date: 21 Nov 08, 9:25

Client: National Guard Bureau
Project: Camp Navajo VZMW
Project Number: 381581.01.02
Logged by: Downs-Heimes, Dana

Driller: Enviro-Drill, INC
Drilling Method: HSA/Air Rotary
Northing: 3892460.328
Easting: 422515.225

Elev of Top of PVC well casing: 7070.47
Elev of Top of metal casing: 7070.85
Elev of N side of concrete pad: 7067.60

Depth (ft)	Bedrock	Soil Description	Well Info			Packing Description	Well Construction Notes
			Lithology	Well Drawing	Well Packing		
	Ground Surface						— Top of Metal Casing — Top of PVC Casing — Top of Concrete Pad
		0' - 4' Medium brown sandy silt (SM) with organic matter				Concrete	
	7.0' Weathered Bedrock	4' - 7' Reddish brown silty clay (ML) with gravel size fragments of pale brown and yellowish brown weathered limestone				0' - 16' Hydrated Bentonite Chips	0'-17.5' 4" PVC Casing
		7' - 21.5' Pale brown and yellowish brown weathered limestone with reddish-brown clayey sand (SC) and reddish brown clay (CL)				16' - 16.5' Fine Sand	
	21.5' Competent Bedrock	21.5' - 25' Yellowish white micritic limestone				16.5' - 23' Sand Filter Pack	17.5'-22.5' 4" PVC Slotted Screen
						23' - 25' Hydrated Bentonite Chips	22.5'-25.0' 4" PVC Sump



CH2MHILL Well Number: VZMW-14

Date: 21 Nov 08, 12:15

Client: National Guard Bureau
Project: Camp Navajo VZMW
Project Number: 381581.01.02
Logged by: Downs-Heimes, Dana

Driller: Enviro-Drill, INC
Drilling Method: HSA/Air Rotary
Northing: 3891778.393
Easting: 421859.065

Elev of Top of PVC well casing: 7086.75
Elev of Top of metal casing: 7087.31
Elev of N side of concrete pad: 7083.90

Depth (ft)	Bedrock	Soil Description	Well Info			Packing Description	Well Construction Notes
			Lithology	Well Drawing	Well Packing		
0' - 4.0'	Ground Surface	0' - 4' Medium brown sandy silt (SM) with organic matter and gravel size fragments of yellowish white weathered limestone				Concrete	Top of Metal Casing Top of PVC Casing Top of Concrete Pad
4.0' - 8.5'	4.0' Weathered Bedrock	4' - 8.5' Pinkish white weathered limestone				0' - 4' Hydrated Bentonite Chips 4' - 4.5' Fine Sand	0'-5.5' 4" PVC Casing
8.5' - 10.5'	8.5' Competent Bedrock	8.5' - 13' Grayish white micritic limestone				4.5' - 11' Sand Filter Pack	5.5'-10.5' 4" PVC Slotted Screen
10.5' - 13.0'						11' - 13' Hydrated Bentonite Chips	10.5'-13.0' 4" PVC Sump



CH2MHILL Well Number: VZMW-15

Date: 13 Nov 08, 11:55

Client: National Guard Bureau
Project: Camp Navajo VZMW
Project Number: 381581.01.02
Logged by: Downs-Heimes, Dana

Driller: Enviro-Drill, INC
Drilling Method: HSA/Air Rotary
Northing: 3892137.125
Easting: 421222.142

Elev of Top of PVC well casing: 7099.31
Elev of Top of metal casing: 7099.56
Elev of N side of concrete pad: 7096.60

Depth (ft)	Bedrock	Soil Description	Well Info			Packing Description	Well Construction Notes
			Lithology	Well Drawing	Well Packing		
	Ground Surface					Concrete	Top of Metal Casing Top of PVC Casing Top of Concrete Pad
		0' - 4' Medium brown sandy silt (SM) with organic matter and gravel size fragments of yellowish-brown limestone				0' - 2' Sand	
		4' - 5' Reddish brown silty clay (ML) with gravel size fragments of pale brown and yellowish brown weathered limestone				2' - 17.5' Hydrated Bentonite Chips	0'-19.5' 4" PVC Casing
		5' - 20' Reddish-brown clay (CL) with gravel size fragments of pale brown and yellowish brown weathered limestone					
	20.0' Weathered Bedrock	20' - 22.5' Pale brown and yellowish brown weathered limestone with reddish-brown clayey sand (SC) and reddish brown clay (CL)				17.5' - 18' Fine Sand	
	22.5' Competent Bedrock	22.5' - 26.3' Pale brown micritic limestone				18' - 24' Sand Filter Pack	19.5'-23.5' 4" PVC Slotted Screen
		Total Depth of Borehole				24' - 26.3' Hydrated Bentonite Chips	23.5'-26.0' 4" PVC Sump



CH2MHILL Well Number: VZMW-16

Date: 20 Nov 08, 10:40

Client: National Guard Bureau
Project: Camp Navajo VZMW
Project Number: 381581.01.02
Logged by: Downs-Heimes, Dana

Driller: Enviro-Drill, INC
Drilling Method: HSA/Air Rotary
Northing: 3893082.714
Easting: 421629.775

Elev of Top of PVC well casing: 7069.92
Elev of Top of metal casing: 7070.32
Elev of N side of concrete pad: 7067.05

Depth (ft)	Bedrock	Soil Description	Well Info			Packing Description	Well Construction Notes
			Lithology	Well Drawing	Well Packing		
							— Top of Metal Casing — Top of PVC Casing — Top of Concrete Pad
	Ground Surface	0' - 2' Medium brown sandy silt (SM) with organic matter				Concrete	
	5.5' Weathered Bedrock	2' - 5.5' Medium brown clayey sand (SC) with gravel-size pale brown limestone fragments				1' - 11' Hydrated Bentonite Chips	0'-12.5' 4" PVC Casing
	16.5' Competent Bedrock	5.5' - 16.5' Pale brown to yellowish brown weathered limestone with pieces of competent grayish white micritic limestone				11' - 11.5' Fine Sand	
		16.5' - 19.8' Grayish white micritic limestone				11.5' - 18' Sand Filter Pack	12.5'-17.5' 4" PVC Slotted Screen
						18' - 19.8' Hydrated Bentonite Chips	17.5'-19.8' 4" PVC Sump



CH2MHILL Well Number: VZMW-17

Date: 18 Nov 08, 14:15

Client: National Guard Bureau
Project: Camp Navajo VZMW
Project Number: 381581.01.02
Logged by: Downs-Heimes, Dana

Driller: Enviro-Drill, INC
Drilling Method: HSA/Air Rotary
Northing: 3892909.141
Easting: 422435

Elev of Top of PVC well casing: 7050.30
Elev of Top of metal casing: 7050.63
Elev of N side of concrete pad: 7047.53

Depth (ft)	Bedrock	Soil Description	Well Info			Packing Description	Well Construction Notes
			Lithology	Well Drawing	Well Packing		
	Ground Surface					Concrete	— Top of Metal Casing — Top of PVC Casing — Top of Concrete Pad
		0' - 4.5' Medium brown sandy silt (SM) with organic matter				0' - 6' Hydrated Bentonite Chips	0'-7.5' 4" PVC Casing
	8' Weathered Bedrock	4.5' - 6.5' Reddish brown silty clay (ML) with gravel size fragments of pale brown and yellowish brown weathered limestone				6' - 6.5' Fine Sand	
	11.5' Competent Bedrock	6.5' - 8' Reddish-brown clay (CL) with gravel size fragments of pale brown and yellowish brown weathered limestone				6.5' - 13' Sand Filter Pack	7.5'-12.5' 4" PVC Slotted Screen
		8' - 11.5' Pale brown and yellowish brown weathered limestone with reddish-brown clayey sand (SC) and reddish brown clay (CL)				13' - 15' Hydrated Bentonite Chips	12.5'-15.0' 4" PVC Sump
		11.5' - 15' Grayish brown micritic limestone					



CH2MHILL Well Number: VZMW-18

Date: 17 Nov 08, 12:45

Client: National Guard Bureau
Project: Camp Navajo VZMW
Project Number: 381581.01.02
Logged by: Downs-Heimes, Dana

Driller: Enviro-Drill, INC
Drilling Method: HSA/Air Rotary
Northing: 3893011.735
Easting: 422194.234

Elev of Top of PVC well casing: 7033.29
Elev of Top of metal casing: 7033.70
Elev of N side of concrete pad: 7030.85

Depth (ft)	Bedrock	Soil Description	Well Info			Packing Description	Well Construction Notes
			Lithology	Well Drawing	Well Packing		
							— Top of Metal Casing — Top of PVC Casing — Top of Concrete Pad
	Ground Surface	0' - 6' Medium brown sandy silt (SM) with organic matter and gravel-size fragments of pale brown and yellowish brown weathered limestone				Concrete	0'-6.0' 4" PVC Casing
		6' - 8.5' Dark brown silty clay (ML) with gravel size fragments of pale brown and yellowish brown weathered limestone				1' - 4.5' Hydrated Bentonite Chips 4.5' - 5' Fine Sand	
	8.5' Weathered Bedrock	8.5' - 10.5' Pale brown and yellowish brown weathered limestone with reddish-brown clayey sand (SC) and reddish brown clay (CL)				5' - 11.5' Sand Filter Pack	6.0'-11.0' 4" PVC Slotted Screen
	10.5' Competent Bedrock	10.5' - 13' Yellowish gray micritic limestone				11.5' - 13' Hydrated Bentonite Chips	11.0'-13.0' 4" PVC Sump



CH2MHILL Well Number: VZMW-19

Date: 17 Nov 08, 16:20

Client: National Guard Bureau
Project: Camp Navajo VZMW
Project Number: 381581.01.02
Logged by: Downs-Heimes, Dana

Driller: Enviro-Drill, INC
Drilling Method: HSA/Air Rotary
Northing: 3893053.294
Easting: 422265.11

Elev of Top of PVC well casing: 7028.82
Elev of Top of metal casing: 7029.32
Elev of N side of concrete pad: 7025.63

Depth (ft)	Bedrock	Soil Description	Well Info			Packing Description	Well Construction Notes
			Lithology	Well Drawing	Well Packing		
	Ground Surface					Concrete	— Top of Metal Casing — Top of PVC Casing — Top of Concrete Pad
0' - 3'		Medium brown sandy silt (SM) with organic matter and gravel-size fragments of pale brown and yellowish brown weathered limestone					0'-12.5' 4" PVC Casing
3' - 11'		Dark brown silty clay (ML) with gravel size fragments of pale brown and yellowish brown weathered limestone				0' - 11' Hydrated Bentonite Chips	
11' - 14.5'	14.5' Weathered Bedrock	Medium-brown clay (CL) with gravel size fragments of yellowish brown weathered limestone				11' - 11.5' Fine Sand	12.5'-17.5' 4" PVC Slotted Screen
14.5' - 16'	16.0' Competent Bedrock	Pale brown and medium brown weathered limestone with medium brown clayey sand (SC)				11.5' - 18' Sand Filter Pack	
16' - 20'		Yellowish-gray micritic limestone				18' - 20' Hydrated Bentonite Chips	17.5'-20.0' 4" PVC Sump



CH2MHILL Well Number: VZMW-20

Date: 18 Nov 08, 11:35

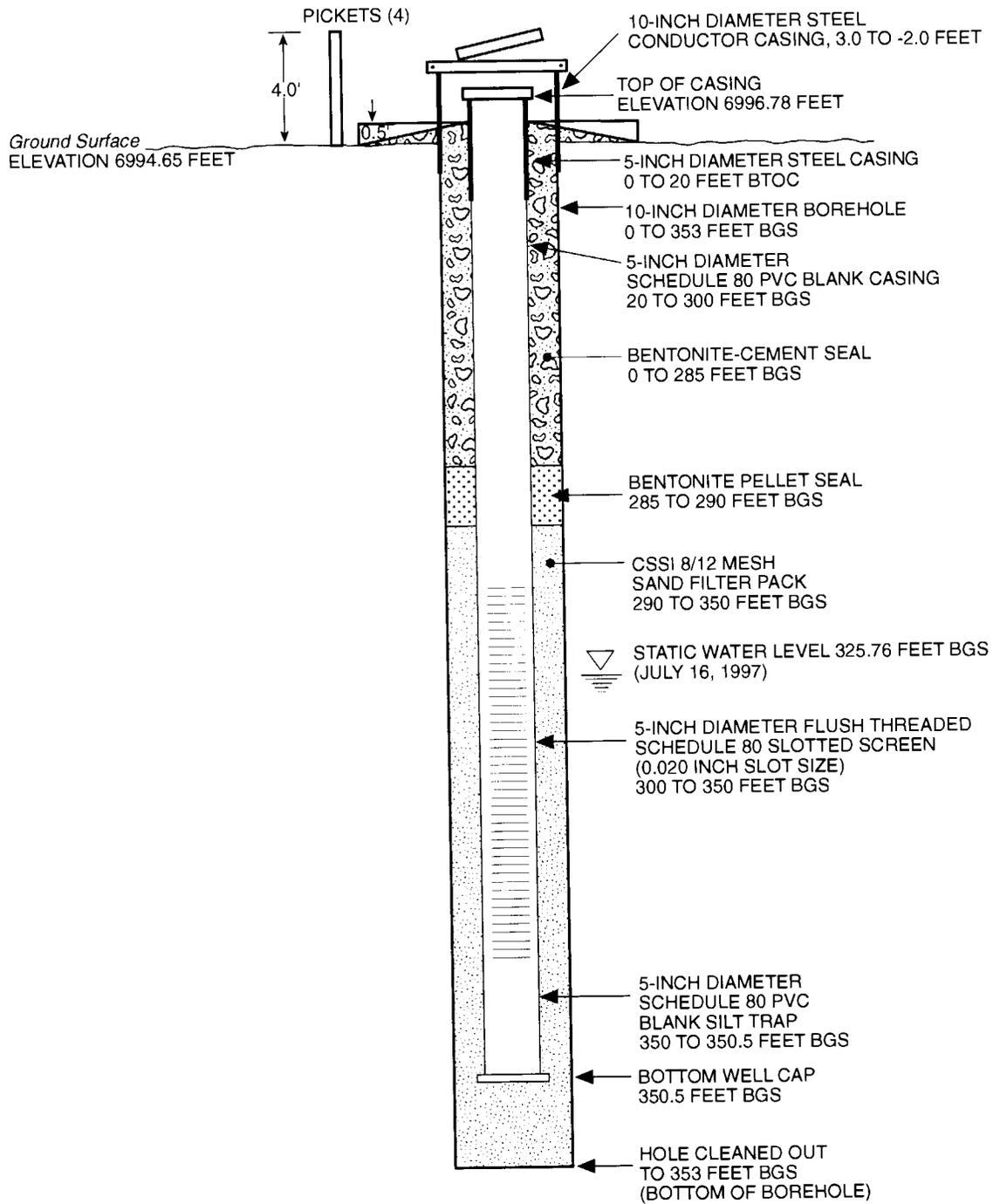
Client: National Guard Bureau
Project: Camp Navajo VZMW
Project Number: 381581.01.02
Logged by: Downs-Heimes, Dana

Driller: Enviro-Drill, INC
Drilling Method: HSA/Air Rotary
Northing: 3893172.01
Easting: 422518.297

Elev of Top of PVC well casing: 7007.78
Elev of Top of metal casing: 7008.12
Elev of N side of concrete pad: 7005.07

Depth (ft)	Bedrock	Soil Description	Well Info			Packing Description	Well Construction Notes
			Lithology	Well Drawing	Well Packing		
							— Top of Metal Casing — Top of PVC Casing — Top of Concrete Pad
	Ground Surface	0' - 8' Medium brown sandy silt (SM) with organic matter and gravel-size fragments of pale brown and yellowish brown weathered limestone				Concrete	0'-11.5' 4" PVC Casing
		8' - 13.5' Dark brown silty clay (ML) with gravel size fragments of pale brown and yellowish brown weathered limestone				10' - 10.5' Sand Filter Pack	
	13.5' Weathered Bedrock	13.5' - 15' Pale brown and medium brown weathered limestone with medium brown clayey sand (SC)				10.5' - 17' Sand Filter Pack	11.5'-16.5' 4" PVC Slotted Screen
	15.0' Competent Bedrock	15' - 19' Yellowish-gray micritic limestone				17' - 19' Hydrated Bentonite Chips	16.5'-19.0' 4" PVC Sump

COMPLETION DATE: JUNE 11, 1997



NOT TO SCALE

BGS = BELOW GROUND SURFACE
BTOC = BELOW TOP OF CASING



Harding Lawson Associates
Engineering and
Environmental Services

**Well Completion Diagram for
Well AWIMW001
Camp Navajo
Bellemont, Arizona**

FIGURE

J43

DRAWN
GEA

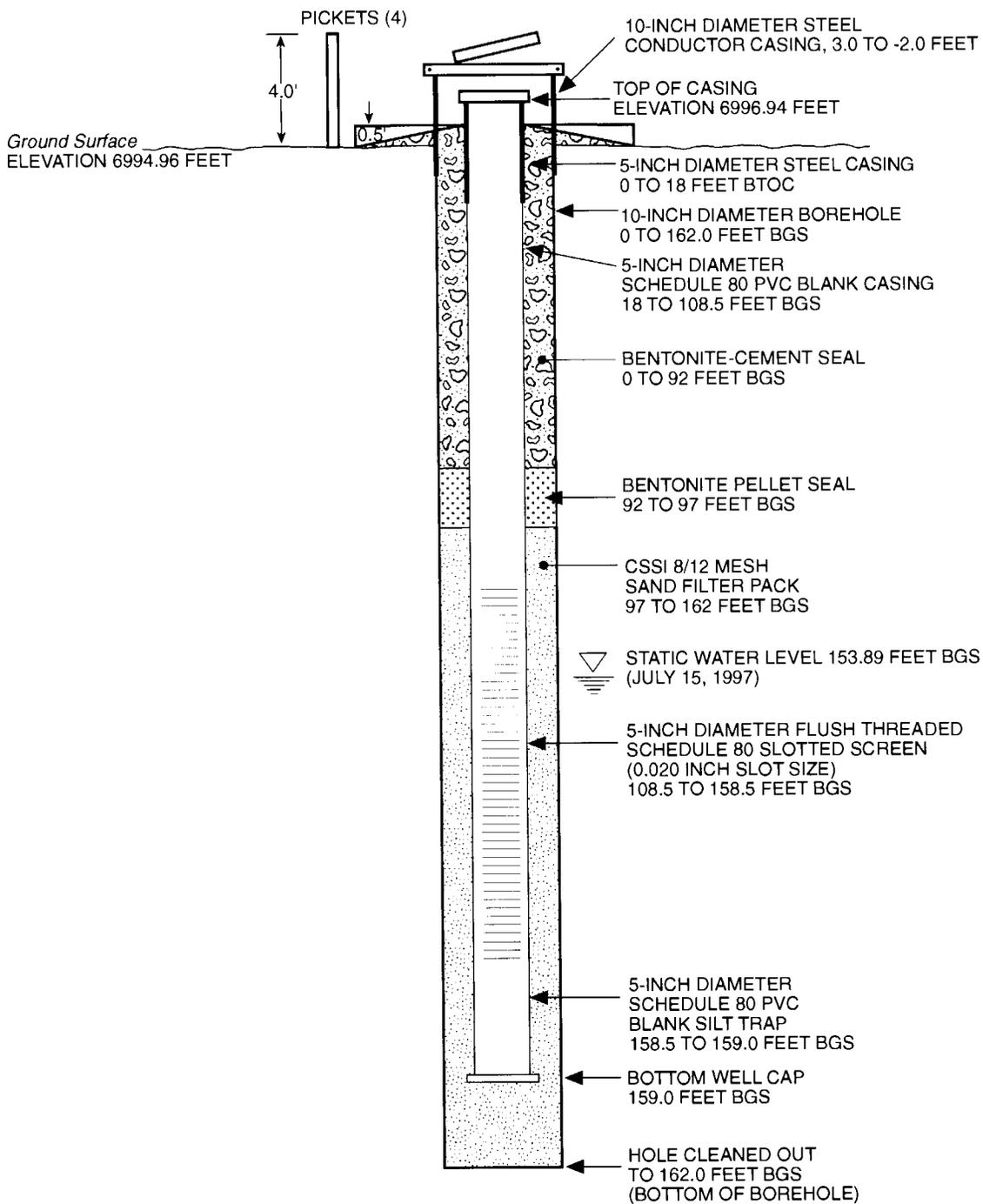
JOB NUMBER
32045,06.02.00

APPROVED

DATE
11/97

REVISED DATE

COMPLETION DATE: JUNE 18, 1997



NOT TO SCALE

BGS = BELOW GROUND SURFACE
BTOC = BELOW TOP OF CASING



Harding Lawson Associates
Engineering and
Environmental Services

**Well Completion Diagram for
Well AWIMW002
Camp Navajo
Belmont, Arizona**

FIGURE

J44

DRAWN
GEA

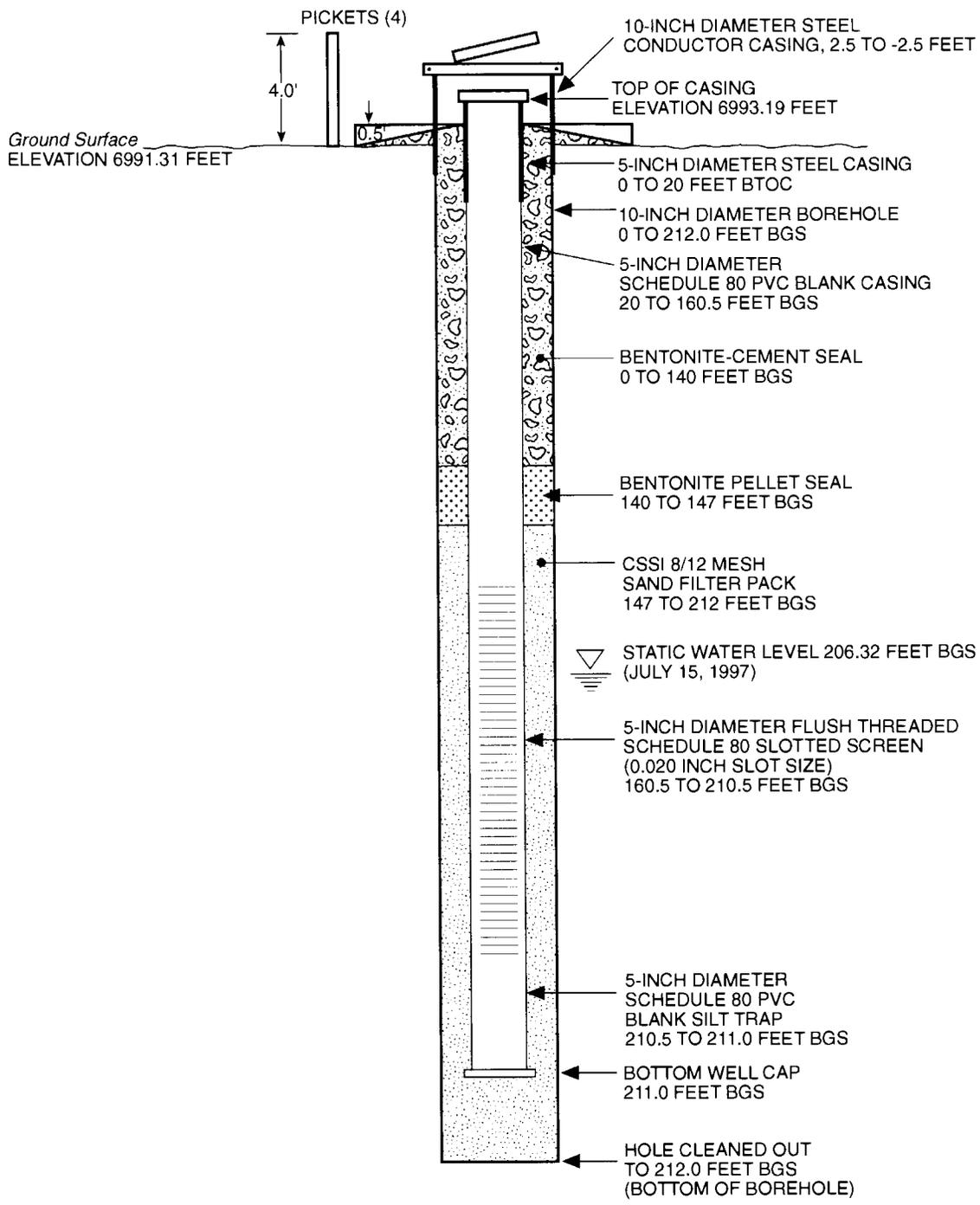
JOB NUMBER
32045,06.02.00

APPROVED

DATE
11/97

REVISED DATE

COMPLETION DATE: JUNE 20, 1997



NOT TO SCALE

BGS = BELOW GROUND SURFACE
BTOC = BELOW TOP OF CASING



Harding Lawson Associates
Engineering and
Environmental Services

**Well Completion Diagram for
Well AWIMW003**
Camp Navajo
Bellemont, Arizona

FIGURE
J45

DRAWN GEA	JOB NUMBER 32045,06.02.00	APPROVED	DATE 11/97	REVISED DATE
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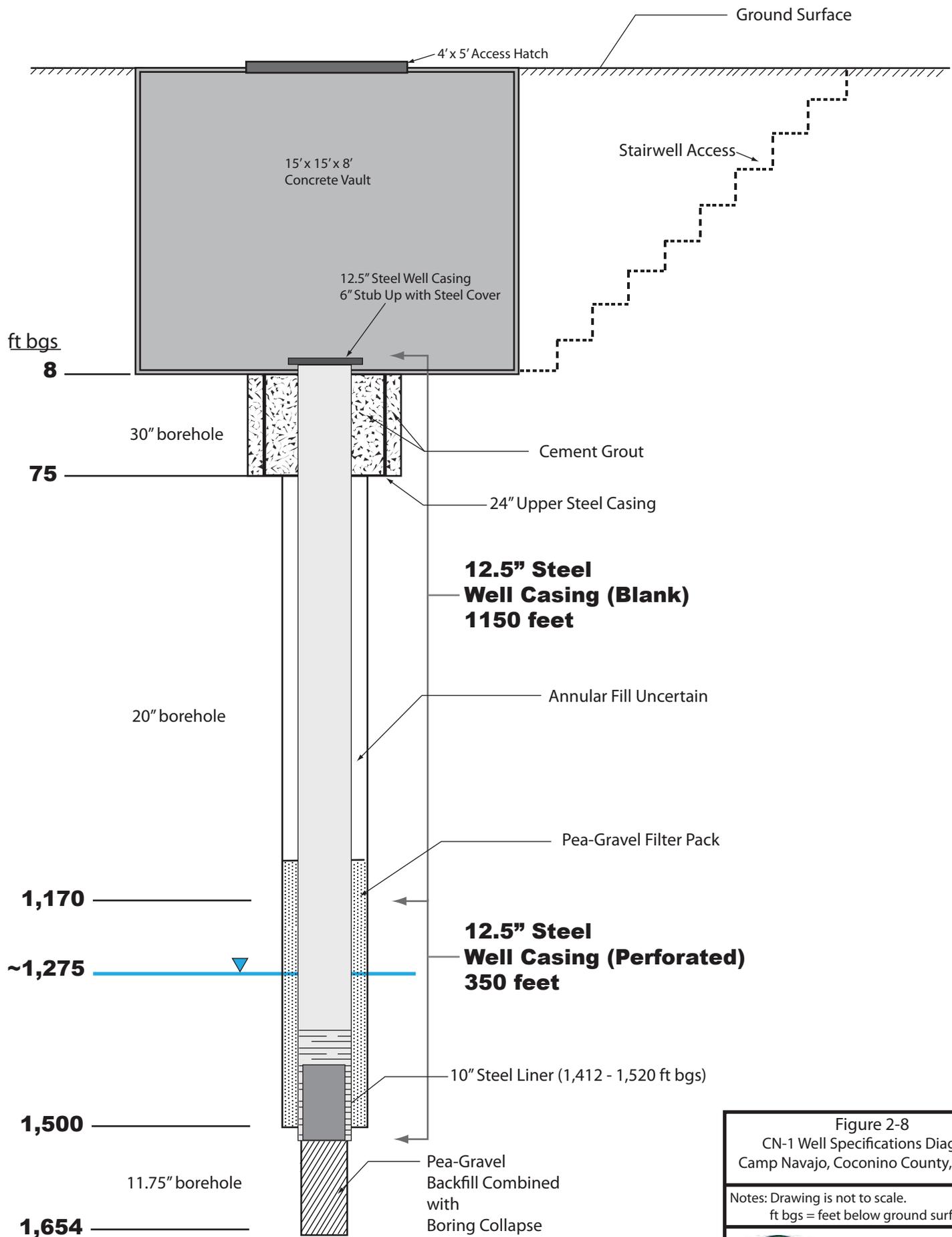


Figure 2-8
 CN-1 Well Specifications Diagram
 Camp Navajo, Coconino County, Arizona

Notes: Drawing is not to scale.
 ft bgs = feet below ground surface



Well Driller Report and Well Log

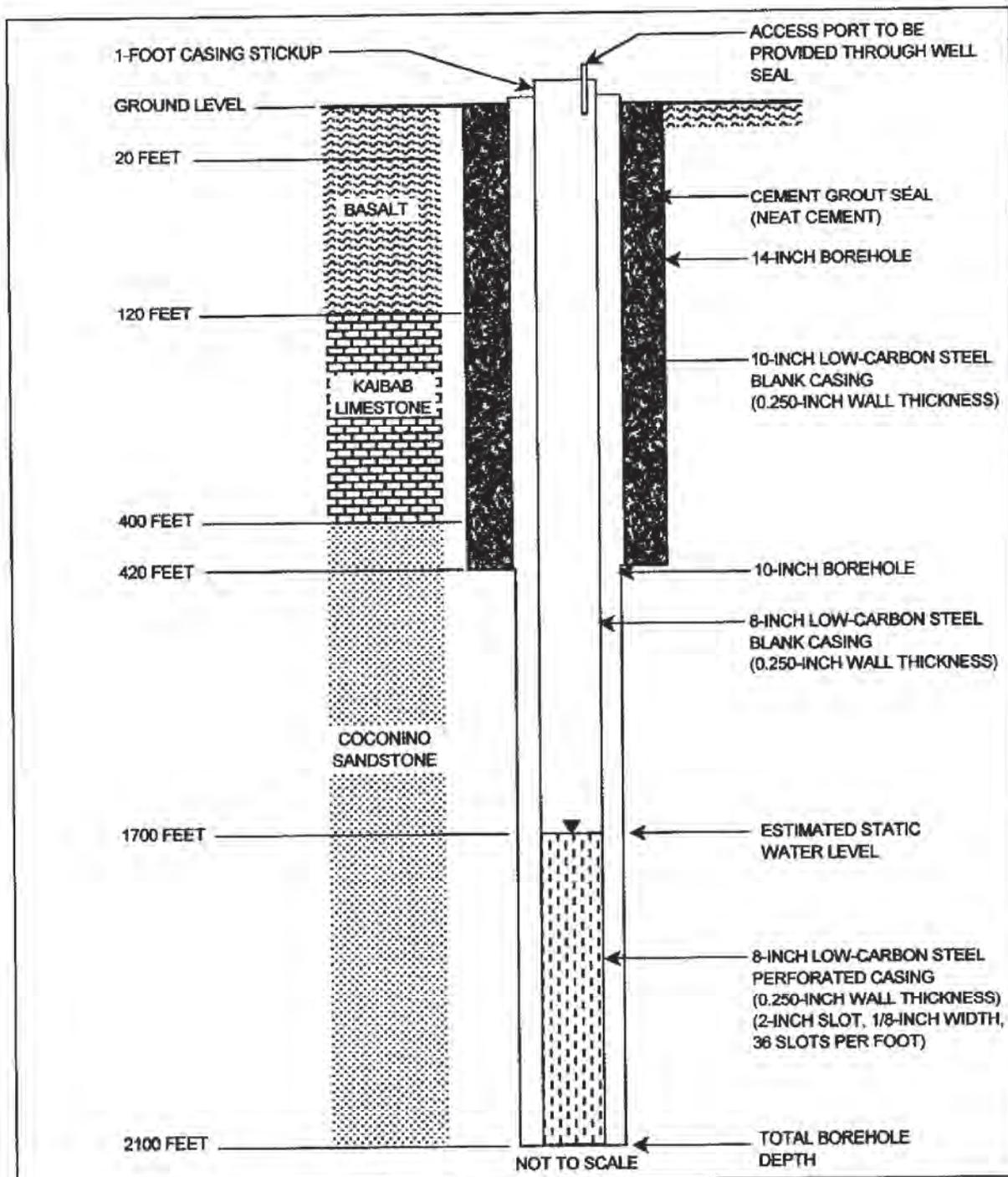
WELL REGISTRATION NUMBER
55-594719

SECTION 4. WELL CONSTRUCTION DESIGN (AS BUILT) (attach additional page if needed)

Borehole			Installed Casing													
DEPTH FROM SURFACE		BOREHOLE DIAMETER (inches)	DEPTH FROM SURFACE		OUTER DIAMETER (inches)	MATERIAL TYPE (X)				PERFORATION TYPE (X)					SLOT SIZE IF ANY (inches)	
FROM (feet)	TO (feet)		FROM (feet)	TO (feet)		STEEL	PVC	ABS	IF OTHER TYPE, DESCRIBE	BLANK OR NONE	WIRE WRAP	SHUTTER SCREEN	MILLS KNIFE	SLOTTED		IF OTHER TYPE, DESCRIBE
0	120	22"	0	120	20"	X			Surface Casing							.375 wall
0	1648	15"	0	1646	12"	X			Grade B	X						.375 wall
1648	2085	14 1/2"	1563	1646	10"	X			HSLA Grd	X						5/16 wall
			1646	2046	10"	X						X				Roscoe Mass. Old slot
			2046	2084	10"	X				X						

Installed Annular Material												
DEPTH FROM SURFACE		ANNULAR MATERIAL TYPE (X)							FILTER PACK			
FROM (feet)	TO (feet)	NONE	CONCRETE	NEAT CEMENT OR CEMENT GROUT	CEMENT-BENTONITE GROUT	BENTONITE			IF OTHER TYPE OF ANNULAR MATERIAL, DESCRIBE	SAND	GRAVEL	SIZE
						GROUT	CHIPS	PELLETS				
0	1640			X								
1565	2084								Colorado Silica		X	8x12

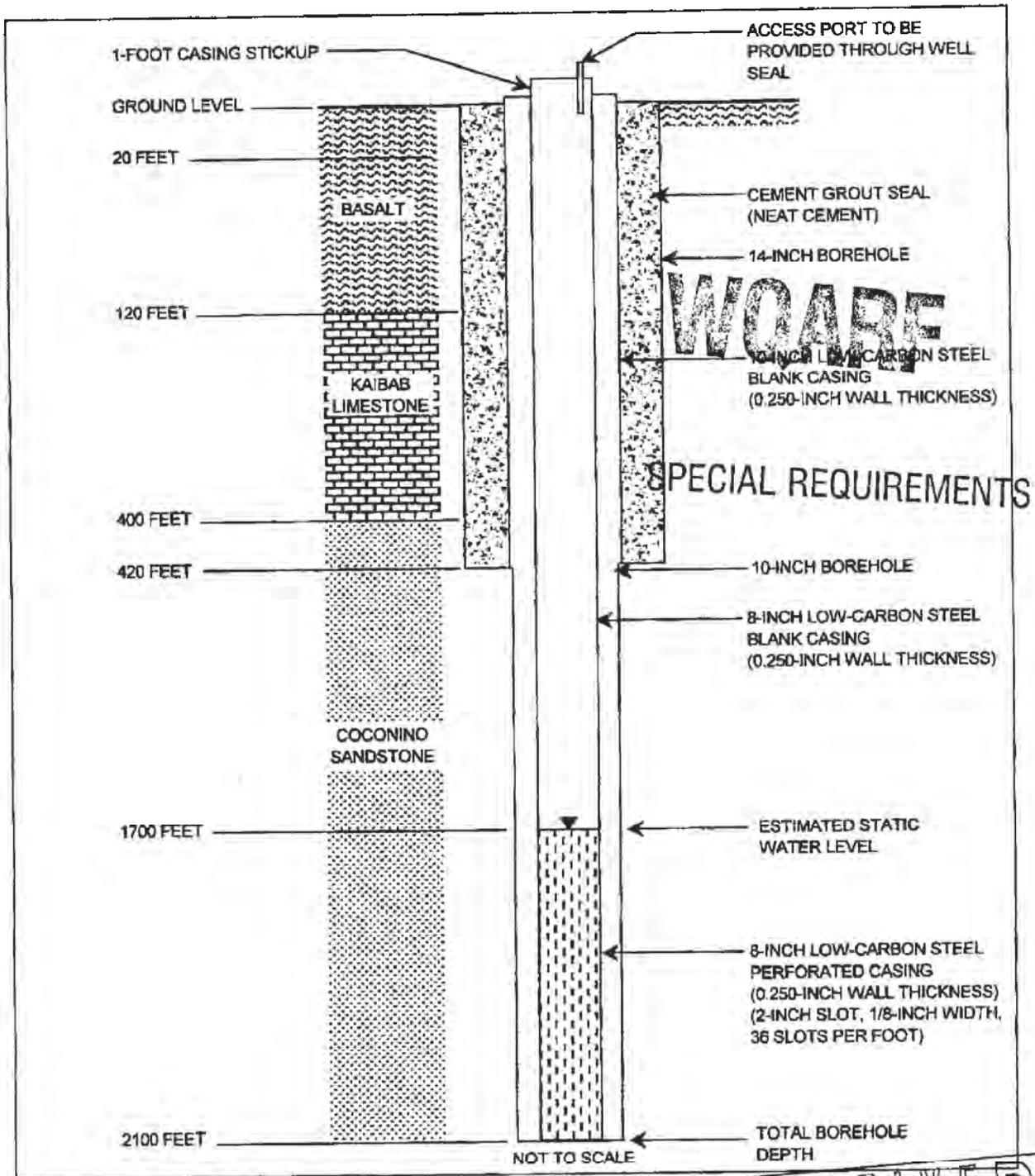
DEPTH OF BORING	DEPTH OF COMPLETED WELL
Feet Below Land Surface	Feet Below Land Surface



PROPOSED WELL CONSTRUCTION
 DIAGRAM FOR McCLEVE WELL
 WELL REGISTRY #55-593267
 T22N, R5E, SECTION 36 BDC

BELLEMONT DRINKING WATER SUPPLY WELL DW-1

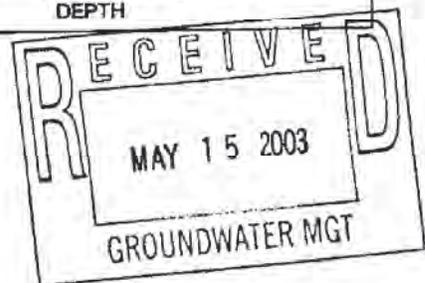
PREPARED BY: FLAGSTAFF WELL & SUPPLY CO., INC.

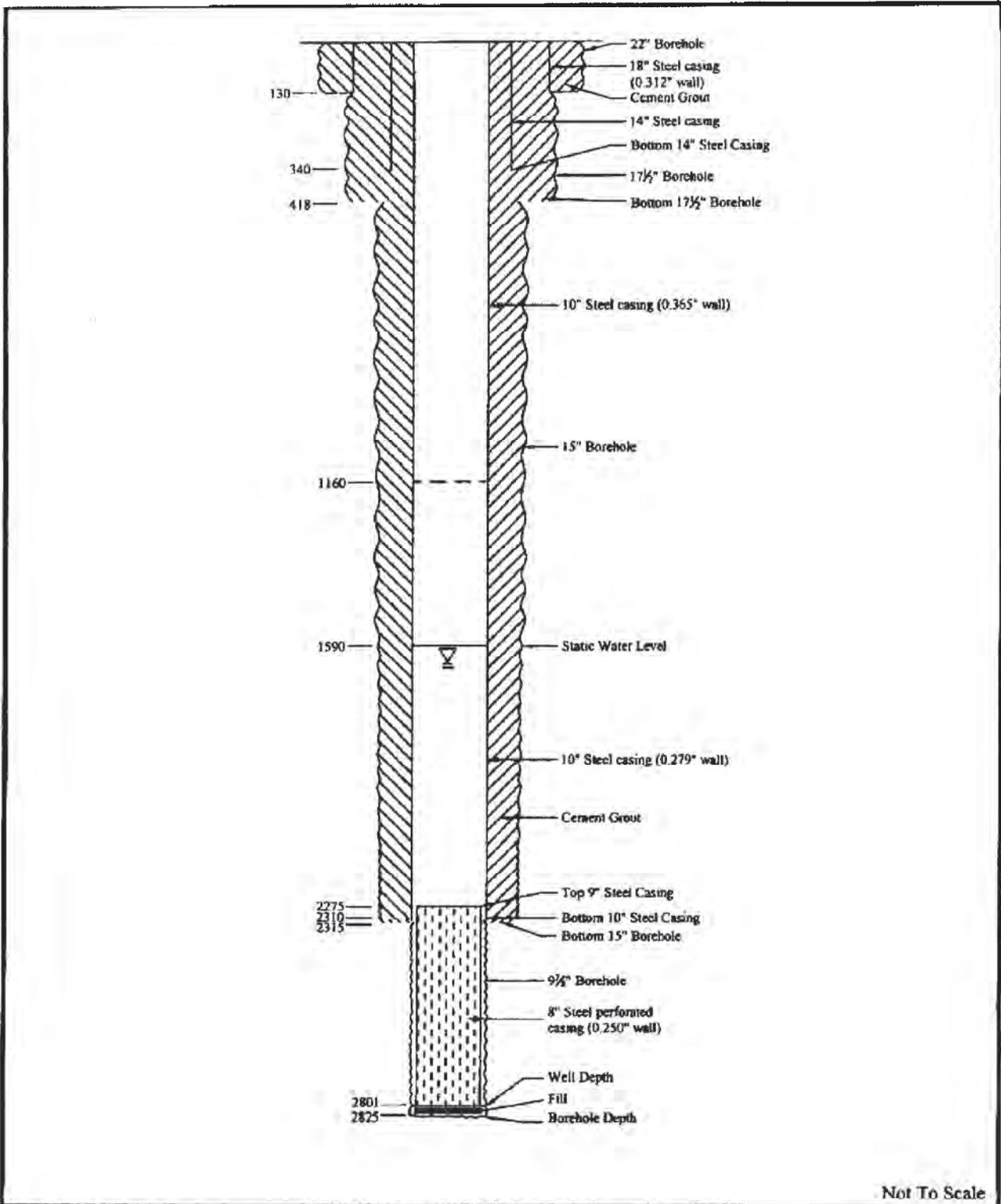


PROPOSED WELL CONSTRUCTION
DIAGRAM FOR McCLEVE WELL

BELLEMONT DRINKING WATER SUPPLY WELL DW-2

PREPARED BY: FLAGSTAFF WELL & SUPPLY CO., INC.



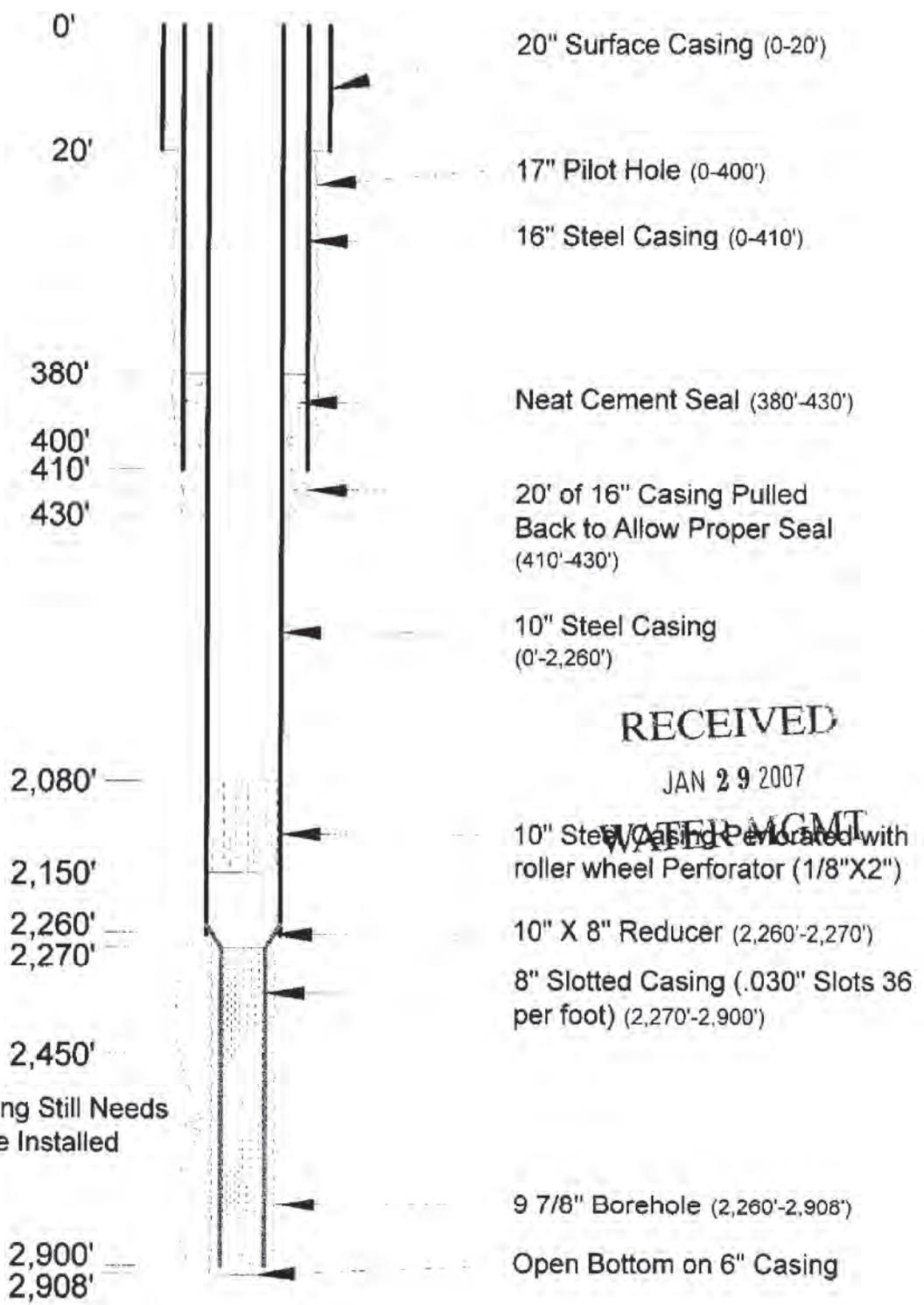


Not To Scale

	<p>As Built for Deep Well Bell-3</p>	<p>Figure</p>
--	--	---------------

File Path: s:\04-369\Figures\Well design well 3.dwg

206887



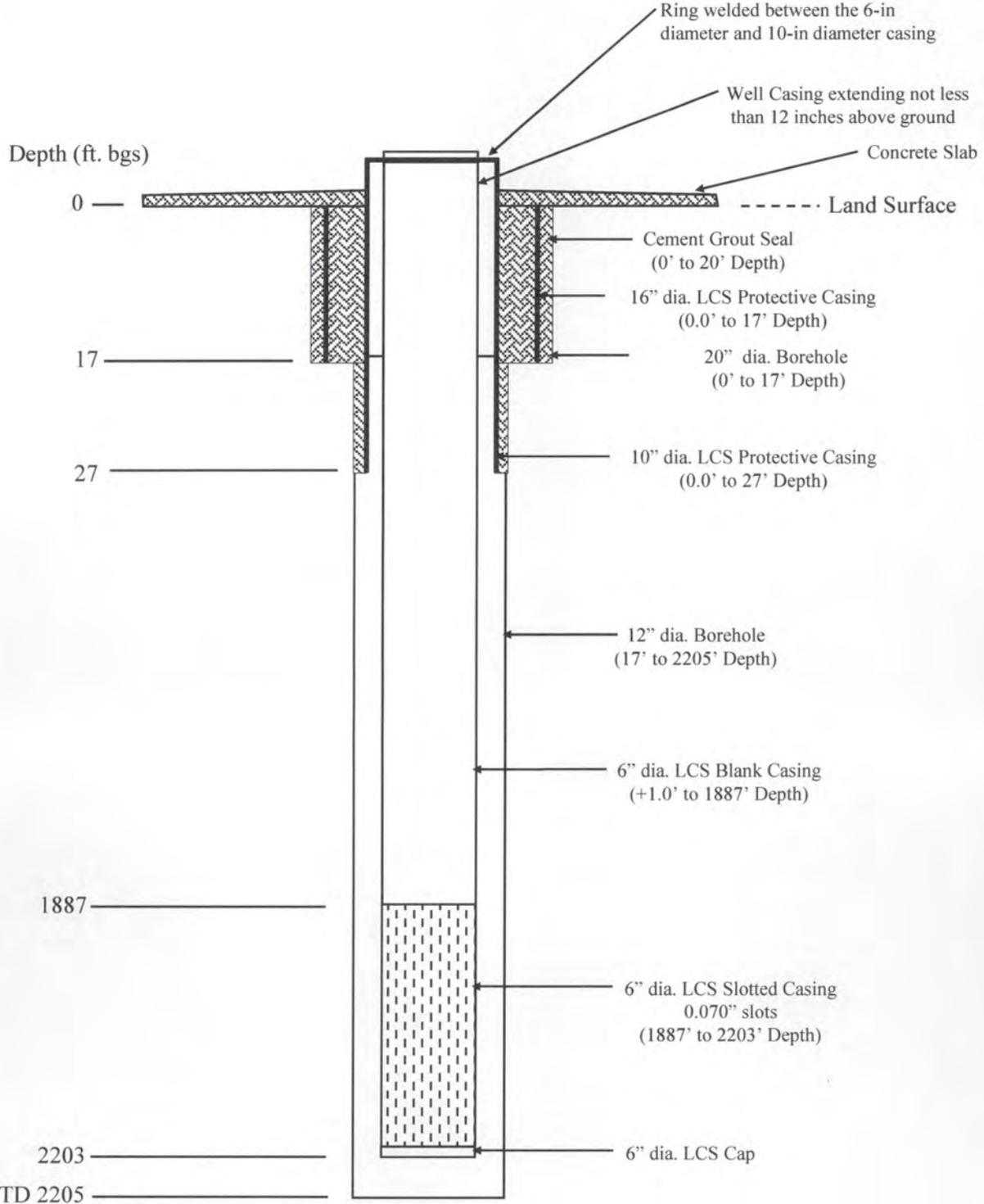
NOT TO SCALE

55-206887
Dual Rotary Completion

HSI HydroSystems Inc.
 GARY C. SMALL M.S., P.G., C.E.I.
 1220 S. PARK LANE SUITE 8 TEMPE, AZ. 85281
 TELEPHONE: 480-817-8050 FAX: 480-817-8048

Bellmont Deep Well 4
Conceptual Design

Figure 1



-NOT TO SCALE

<p>Southwest Ground-water Consultants, Inc.</p>  <p>October 27, 2015 Project B.2086</p>	<p>WELL AS-BUILT ADWR WELL 55-223967</p> <p>Arizona Department of Veterans' Services, Bellemont, AZ</p>	<p>Figure 2</p>
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VETERANS CEMETERY IRRIGATION AND DRINKING WATER WELL VC-1

Attachment I.2
Vadose Zone Monitoring Plan

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Camp Navajo RCRA Post-closure Permit Application Vadose Zone Monitoring Plan

Subsurface investigations have indicated that there is no laterally extensive, shallow water-bearing interval present beneath the Post-closure Permit Area (Brown and Caldwell, 2007). Instead, the subsurface in the Post-closure Permit Area is typically unsaturated, except during temporary infiltration events. Therefore, a release evaluation monitoring program has been designed to use vadose zone monitoring wells located in the Post-closure Permit Area. The wells typically contain water only during peak runoff events, such as the spring snowmelt and the summer monsoon.

I.2.1 Quality of Baseline Vadose Zone Data

Data collected during vadose zone monitoring events from 2009 to 2015 will be used to establish baseline data for the Post-closure Permit Area vadose zone. Vadose zone water samples were collected in March, April and July of 2009, in May, June, July, and August of 2010, in March of 2014, and in April and August 2015. Data summary tables for these sampling events are provided in Tables GWMP-5, GWMP-6, GWMP-7, GWMP-8, and GWMP-9. Analytical results from the VZMWs included the following:

- Perchlorate has been detected at wells VZMW-01, VZMW-02, VZMW-04, VZMW-05, VZMW-07, VZMW-08, VZMW-09, VZMW-11, VZMW-12, VZMW-16 and VZMW-17 and piezometers VPZ-06 and VPZ-09. Concentrations have ranged from 0.14 to 204 µg/L.
- Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX) has been detected in 13 VZMWs and VPZ-06. Concentrations ranged from 0.24 to 47 µg/L. The highest concentrations occurred in 2009 and 2010 samples from VZMW-01 and VZMW-05.
- Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX) has been detected in 14 VZMWs and VPZ-06. Concentrations ranged from 0.29 to 12 µg/L. The highest concentrations occurred in 2009 and 2010 samples from VZMW-01 and VZMW-05.
- 2-amino-4,6-dinitrotoluene (DNT) was detected at VZMW-01, VZMW-02, VZMW-04, and VZMW-05. Concentrations ranged from 0.023 µg/L to 0.41 µg/L, with the highest concentration detected at VZMW-04 (0.41 µg/L). This compound was not detected at the sampled VPZs.
- Nitrate/nitrite has been detected in 17 wells and VPZ-09. Concentrations ranged from 43 to 77,800 µg/L. Highest detections occurred in May 2010 samples from VZMW-10.

I.2.2 Procedures for Establishing Baseline Concentrations in the Vadose Zone

Data from samples of water in the VZMWs collected from 2009 through 2015 will be used to establish baseline concentrations for the COCs and COPCs. Results from samples collected during post-closure care will be compared with baseline concentrations to assess whether a new release has occurred. Because water flow within the vadose zone is generally vertical rather than horizontal, there are no upgradient wells to use as background monitoring points. Instead, baseline concentrations will be established using analytical results from the VZMWs.

In some cases, the baseline concentrations may indicate that contamination already exists at one or more of the VZMWs. Although the *Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities Unified Guidance* (USEPA, 2009) recommends that only data showing a well is uncontaminated be used to establish a baseline, it also states that monitoring for release evaluation is appropriate if the unit being monitored is

in a contaminated area but is not affected by current RCRA waste management practices. The purpose of the vadose zone monitoring program in the Post-closure Permit Area is to determine whether a new release has occurred. Therefore, it is appropriate to use data indicating that a well may already exhibit contaminant concentrations. That is, even though the well may already contain COCs or COPCs, previous data can still be used as a baseline for future comparisons to determine whether the concentrations are increasing, which may be indicative of a new release.

Baseline concentrations will be determined using a statistical evaluation in accordance with the procedures described in Section 4.1.4.1 of this Groundwater Monitoring Plan.

1.2.3 Constituents to be Monitored

MC contained in the MEC remaining in the Post-closure Permit Area consist primarily of explosives and metals. The most common filler material is high explosives. The high explosives typically consist of TNT or Composition B, which is a 60/40 mixture of TNT and RDX. Some explosive compounds readily degrade upon exposure to the environment; therefore, degradation products are also of concern. Less frequently encountered filler materials include propellants such as perchlorate, and pyrotechnics such as white phosphorus. A complete list of COPCs for each NAAD was compiled in the *Ordnance and Explosives/Chemical Warfare Materiel Operational History Report* (Brown and Caldwell, 2005).

ARNG and ADEQ identified the COCs and COPCs to be sampled during baseline vadose zone monitoring, which included explosives, perchlorate, nitrate, white phosphorus, metals, SVOCs, and dioxins/furans. Because of the intermittent nature of water in the VZMWs, the existing analytical data set is still insufficient for a robust statistical evaluation. Therefore, 2 additional years of baseline sampling will be conducted. The primary objective is to increase the number of samples of indicator COCs and COPCs at each well so that statistical evaluations will be representative. The indicator COCs and COPCs include explosives, perchlorate, and nitrate. The secondary objective is to further evaluate the presence and concentrations of residual white phosphorus and metals.

SVOCs and dioxins/furans are secondary contaminants that will only be sampled if sufficient water is available after collecting samples for other contaminants. SVOCs, which include hexachloroethane and dioxins/furans were primarily associated with OB operations. The analytical results from remedial investigations at the OB sites, and the vadose zone sampling results to date for hexachloroethane, SVOCs, and dioxins/furans do not indicate a residual source and intentional OB and OD activities have been discontinued. Therefore, SVOCs and dioxin/furans may be considered for deletion or reduced frequency after the two additional years of sampling upon ADEQ's concurrence of a permit modification request.

VZMWs and VPZs will be sampled and analyzed for the parameters identified in Table GWMP-16.

1.2.4 Description of Vadose Zone Wells

1.2.4.1 Vadose Zone Monitoring Wells and Piezometers

The 20 VZMWs installed in the Post-closure Permit Area, described in Section 3.2.1 of the GWMP, will be used to detect and measure COC and COPC concentrations and evaluate the potential for new releases to the vadose zone that could migrate into the regional aquifer. The locations of these wells are shown on Figure GWMP-1. Well construction details are summarized in Table GWMP-1 and well construction figures are shown in Attachment I.1 of this GWMP. In addition, the 15 VPZs will be included as part of release evaluation monitoring for as long as they remain operational. VPZs found not to contain water over repeated sampling periods will be abandoned. VPZs with measurable water levels will be converted to VZMWs or abandoned and a VZMW installed adjacent to it. Abandonment of VPZs, conversion of VPZs to VZMWs or removal of VZMWs, regardless of whether they are operational or not, will require ADEQ's approval of a permit modification request. Well construction information for the VPZs is provided in Table GWMP-1.

I.2.4.2 AWI-Series Shallow Wells

Monitoring wells AWI-001, AWI-002, and AWI-003 were installed in 1997 into bedrock in proximity to known faults. Well construction and water level information for the shallow wells is summarized in Table GWMP-3. All wells were constructed of PVC and ranged in depth from 29.48 to 353.5 feet bgs, as summarized in Table GWMP-3. Well construction diagrams are provided in Attachment I.1. Data from these wells will be used to provide an additional source of information regarding infiltration rates and the potential movement of contaminants through the subsurface.

I.2.5 Statistical Procedures and Data Evaluation

A statistical analysis using a control chart approach will be made after each sampling event to assess whether a new release has occurred. The determination will be made within 60 days of receiving the validated laboratory data. The procedures for completing statistical analyses are provided in Section 4.1.4.1 of this GWMP.

I.2.6 Sampling and Analysis Procedures

Details regarding purging events and vadose zone sampling and analysis are described in Sections I.4.4 and I.4.5, respectively, of Attachment I.4. The VZMWs, VPZs, and AWI-series wells will be sampled for the parameters identified in Table GWMP-16.

Additionally, the former stock tank at the head of the canyon of MRWA 02-03 will be evaluated to determine if sufficient surface water is present to collect representative grab samples. Surface water sampling will be conducted in conformance with Section I.4.5.3 of Attachment I.4.

I.2.6.1 Sample Collection Procedures (40 CFR 264.97(d)(1))

Sample collection procedures will conform the procedures specified in Section I.4.5.1 and I.4.7 of Attachment I.4:

I.2.6.2 Sample Preservation and Shipment (40 CFR 264.97(d)(2))

Procedures for sample preservation are presented in the QAPP for each analytical method. Shipment procedures are described in Section I.4.8 of Attachment I.4.

I.2.6.3 Analytical Procedures (40 CFR 264.97(d)(3))

The analytical laboratory will be accredited for each analytical method through the National Environmental Laboratory Accreditation Program, the Department of Defense Environmental Laboratory Accreditation Program, and the Arizona Department of Health Services. Analytical methods along with frequency of QC sampling, target quantitation limits, limits for analytical accuracy and precision, and data validation procedures are provided in the QAPP.

I.2.6.4 Chain of Custody Procedures (40 CFR 264.97(d)(4))

All samples will be documented in dedicated field logbooks issued and controlled by the field supervisor. The logbooks will be serialized and checked out to the sampling team leader at the onset of field sampling activities. All personnel involved with sample collection and handling will understand the chain-of-custody procedures described in Section I.4.7.3 of Attachment I.4.

I.2.6.5 Sampling Intervals (40 CFR 264.97(g), 264.98(d))

Vadose zone water samples will be collected from the VZMWs, VPZs, and AWI-series wells twice per year during post-closure care. The objective is to collect samples during one winter-spring snowmelt event and one summer-fall rainfall event. Historically, these seasonal climatic conditions provide the greatest chances of collecting the greatest number of samples from the greatest number of wells.

Professional judgment will be used to choose the particular dates of the event. Although the VZMWs only contain water during or shortly after a snowmelt or rainfall event, a review of previous sampling dates and hydrographs indicate that the sampling events can be timed based on local observations of snowpack thickness and snowmelt rate, and monsoon rainfall quantity and frequency.

The former stock tank will be evaluated for the presence of water during each vadose zone monitoring event. If it is determined that there is sufficient water to sample, then samples will be collected following the procedures outlined in the FSP. The necessity of additional surface water sampling from accessible OD pits will be determined based on a review of vadose zone monitoring results and consultation with ADEQ. Surface water samples will be analyzed for the same constituents listed in Section 2.3. Surface water sampling may be considered for deletion or reduced frequency after two years of sampling upon ADEQ's concurrence of a permit modification request.

I.2.6.6 Reporting

Results of vadose zone monitoring activities will be submitted in the form of a Technical Memorandum (TM) following each monitoring event. The TM will summarize the results of transducer data and manual water level measurements, discuss the sampling rationale, and provide a summary and analysis of vadose zone sample analytical results. The TM will be submitted in draft format for ADEQ review within 90 days of completing the associated sampling event.

I.2.7 Outline of Corrective Action Plan for Vadose Zone Monitoring

If a statistically significant increase of monitored parameters is detected, the sequence of corrective actions will follow the procedures described in Section 4.1.4.2 of the GWMP.

I.2.8 References

Brown and Caldwell. 2007. *Site-Specific Soil Remedial Investigation Report for NAAD 02, OB/OD Area Closure Project, Camp Navajo, Bellemont, Arizona*. Final. April 30.

United States Environmental Protection Agency (USEPA). 2009. *The Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities Unified Guidance*. March.

Attachment I.3
Regional Aquifer Monitoring Plan

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Camp Navajo RCRA Post-closure Permit Application Regional Aquifer Monitoring Plan

Previous investigations have identified the C-aquifer as the uppermost aquifer in the Post-closure Permit Area. Due to the extreme depth to groundwater and the complex hydrogeologic conditions, and the consequent uncertainty associated with a traditional groundwater monitoring approach, existing and new water supply wells downgradient of the Post-closure Permit Area would be monitored to ensure protection of human health and the environment.

I.3.1 Quality of Baseline Regional Aquifer Data

Groundwater sampling events were conducted between August 2004 and July 2006 to evaluate on-site and offsite groundwater conditions and the potential for contaminant of concern (COC) and contaminant of potential concern (COPC) migration offsite. Groundwater samples were collected quarterly from five wells (1901, 1903, AWI-001, AWI-002, and AWI-003) between 2004 and 2006 within the Open Burn (OB)/Open Detonation (OD) Area. The monitoring of wells 1901, 1902, and 1903 was discontinued after July 2005 (Brown and Caldwell, 2006a), and the wells were abandoned in May 2006 in accordance with Arizona Department of Water Resources (ADWR) rules (Brown and Caldwell, 2008). Samples were also collected from the Camp Navajo drinking water supply well (CN-2), two drinking water supply wells in the City of Flagstaff's Woody Mountain well field (WM-3 and WM-5), and four drinking water supply wells in Bellemont (DW-1, DW-2, DW-3 and DW-4). Well construction information for these wells is summarized in Table GWMP-4 and available well construction diagrams are provided in Attachment I.1 of this GWMP. The groundwater analyses included the following COCs and COPCs:

- Organic Compounds
 - Explosives
 - Volatile organic compounds (VOCs)
 - Semivolatile organic compounds (SVOCs)
 - Organochlorine Pesticides (OCPs)
 - Polynuclear aromatic hydrocarbons
 - Polychlorinated biphenyls (PCBs)
 - Dioxins/Furans
- Inorganic Compounds
 - Primary Pollutant Metals (dissolved)
 - Nitrate/Nitrite
 - Hexavalent Chromium (dissolved)
 - White Phosphorous
 - Perchlorate

During the 2004-2006 groundwater sampling events, there were no detections of organic constituents, and detected inorganic concentrations did not exceed established regulatory levels. Nitrate and metals concentrations in the wells were similar to regional background levels (Brown and Caldwell, 2008). Perchlorate was detected during the March 2016 sampling event and subsequent confirmation sampling.

I.3.2 Procedures for Establishing Baseline Concentrations in the Regional Aquifer

Baseline concentrations will be established for each COC and COPC in each well once it has been analyzed in each groundwater well four times. Historical analytical data is available for several of the regional aquifer wells to be monitored under the permit. Additional monitoring is required to establish baseline concentrations for those wells that were not previously sampled during the 2004 through 2006 sampling events. The sampling frequency for all regional wells will be quarterly for a minimum of two years, after which ARNG may request a reduced sampling frequency, which will require Arizona Department of Environmental Quality (ADEQ) approval of a permit modification request. Trends, seasonality, and adherence to a normal distribution will also be assessed prior to conducting statistical analysis using control charts, as described in the *Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities Unified Guidance* (USEPA, 2009).

I.3.3 Constituents to be Monitored

The constituents to be monitored at the regional aquifer wells will be consistent with those identified in Attachment I.2, Vadose Zone Monitoring Plan, of this GWMP, and are described in Section I.4.5.2 of Attachment I.4 and in Table GWMP-16. Detailed analytical information is also provided in the Quality Assurance Project Plan (QAPP).

For the regional aquifer monitoring, all samples (unfiltered unless required by the analytical method) will be analyzed quarterly for explosives, perchlorate, nitrate, metals, and white phosphorus for a minimum of two years. Wells CN-1, CN-2, DW-3, DW-4, and VC-1 will be analyzed for Part 264 Appendix IX constituents (e.g. VOCs, SVOCs, OCPs, PCBs, cyanide, sulfide, herbicides, and dioxins/furans) annually. Sampling frequency may be reduced and compounds may be removed from the list of analytes after two years with ADEQ approval of a permit modification request. Appendix IX constituents and/or classes of constituents are presented in Section I.4.5.2 of Attachment I.4 and in Table GWMP-16. Detailed analytical information is also provided in the Quality Assurance Project Plan (QAPP).

I.3.4 Description of Regional Aquifer Wells

A query of the ADWR online database was conducted to identify water wells greater than 1,000 feet deep and within a 5-mile radius of the Camp Navajo installation boundary that could potentially be used in the groundwater monitoring program. The depth to the regional aquifer in the vicinity is estimated to be no less than 1,200 to 1,300 feet below ground surface.

The results of the query indicated that seven groundwater wells located within a 5-mile radius of the installation boundary are also located within a 5-mile radius of the Post-closure Permit Area (highlighted on Table GWMP-14.) These include two Camp Navajo wells (CN-1 and CN-2), four Bellemont wells (DW-1, DW-2, DW-3 and DW-4), and the Veteran's Cemetery well (VC-1). The remaining 26 wells were outside the 5-mile radius of the Post-closure Permit Area boundary.

The wells to be included in the groundwater monitoring network include the following wells, which are shown on Figure GWMP-2:

- Two Camp Navajo wells (CN-1 and CN-2),
- Four Bellemont wells (DW-1, DW-2, DW-3 and DW-4),
- One Veterans Cemetery well (VC-1), and
- One Garland Prairie well (WP-1) (pending right of entry approval).

The interpretation of groundwater conditions west of Camp Navajo are based on limited data from available well drillers reports. This data gap warrants the collection of additional data from the Garland Prairie well

(WP-1) if right of entry is granted. The well is on the west (down-thrown) side of the Volunteer fault, more than 5 miles from the installation boundary. Water levels are up to 500 feet lower than wells closer to the installation, and the water comes from the R-Aquifer, suggesting poor or no hydraulic connection with the C-Aquifer in the Post-closure Permit Area. However, pending access authorization, this information will be confirmed by the collection of 2 years of monitoring data, including physical, water quality, and geochemical parameters, and comparison to similar Camp Navajo and Bellemont local data previously collected in 2004–2006. The results will be retained as baseline data for possible future use if a release occurs and further monitoring is required.

Camp Navajo obtains the majority of its water from several springs that issue from a shallow perched aquifer (Wild Bill Hill aquifer). However, to compensate for the highly variable yield, the first Camp Navajo regional-aquifer well (CN-1; also referred to as well 1948) was drilled in 1952. It was poorly constructed, resulting in a low pumping capacity, was never used for water supply, and is no longer operational. A well construction diagram is included in Attachment I.1. Well CN-2 is the sole operational well at Camp Navajo, is located north of the Post-closure Permit Area, and was installed for water supply in 2003. At that time, a 60-unit housing development was present on the installation. After the housing unit was demolished in 2004, water needs at the installation decreased significantly. Well CN-2 (also referred to as the DALCO well) is now used only to supplement the springs during times of low flow. The spring flow is highly variable, but being gravity-fed, it does not entail expensive pumping costs and is the preferred source. Well CN-2 is occasionally run for short periods of time for maintenance and upkeep. Well construction diagrams for wells CN-1 and CN-2 are provided in Attachment I.1.

Utility Source LLC provides water to the Flagstaff Meadows residential development, a truck stop, a motel, a fire station, and a bulk water station, all in the community of Bellemont and on the north side of Highway 40. The Army National Guard Directorate (ARNG) has obtained written permission to monitor these wells during post-closure care (Lonnie McCleve, Utility Source LLC.). Well construction diagrams for wells DW-1, DW-2, DW-3, and DW-4 are provided in Attachment I.1.

The Veteran's Cemetery well (VC-1) was installed in 2014 to provide water for potable uses and irrigation for approximately 80 acres of land within the Camp Navajo boundary (Southwest Ground-water Consultants, 2015). The well is 2,205 feet deep and the water level was measured at approximately 1,882 feet below ground surface. The well VC-1 construction diagram is provided in Attachment I.1. Pump capacity is reported at approximately 60 gallons per minute (gpm). The ARNG has obtained verbal permission to monitor the well (Victor Daniels, ADVS, pers. comm.). Table GWMP-15 presents a summary of regional aquifer wells to be included in the post-closure care groundwater monitoring program.

With the exception of well CN-1, samples will be collected from wells with operational dedicated pumping equipment, and water levels will be collected from wells with operational dedicated sounders or sounder tubes. The wells must be able to pump into the water system or to waste for a sufficient period of time to purge the well. The water samples will be collected from the wellhead or as close to the wellhead as possible, from a hose bib or some other valve if present. Groundwater samples will be collected and analyzed prior to discharge to any treatment system. At well CN-1, which has no pump installed, water levels will be measured by lowering a non-dedicated sounder inside the casing. Pending results of the well rehabilitation and discussions with ADEQ, depth-specific samples may be collected from well CN-1 during the baseline sampling period. Otherwise, groundwater samples will be collected using a non-dedicated pump or bailer. Physical accessibility will depend on safe weather and ground conditions.

I.3.5 Statistical Procedures and Data Evaluation

The statistical procedures that will be used to evaluate groundwater analytical data are discussed in Section 4.2.4.1 of this GWMP.

I.3.6 Sampling and Analysis Procedures

The sampling and analysis procedures that will be followed during groundwater sampling activities are summarized in the following sections.

I.3.6.1 Sample Collection Procedures (40 CFR 264.97(d)(1))

The sample collection procedures are specified in Section I.4.5.2 and I.4.7 of Attachment I.4:

I.3.6.2 Sample Preservation and Shipment (40 CFR 264.97(d)(2))

Procedures for sample preservation are presented in the QAPP for each analytical method. Shipment procedures are described Section I.4.8 of Attachment I.4.

I.3.6.3 Analytical Procedures (40 CFR 264.97(d)(3))

The analytical laboratory will be accredited for each analytical method through the National Environmental Laboratory Accreditation Program, the Department of Defense Environmental Laboratory Accreditation Program, and the Arizona Department of Health Services. Analytical methods along with frequency of QC sampling, target quantitation limits, limits for analytical accuracy and precision, and data validation procedures are provided in the QAPP.

I.3.6.4 Chain of Custody Procedures (40 CFR 264.97(d)(4))

All samples will be documented in dedicated field logbooks issued and controlled by the field supervisor. The logbooks will be serialized and checked out to the sampling team leader at the onset of field sampling activities. All personnel involved with sample collection and handling will understand the chain-of-custody procedures described in Section I.4.7.3 of Attachment I.4).

I.3.6.5 Sampling Intervals (40 CFR 264.97(g))

The monitoring frequency will be maintained at quarterly for a minimum of two years. Wells CN-1, CN-2, DW-3, DW-4, and VC-1 will be sampled for 40 CFR 264 Appendix IX constituents annually. Any reduction in monitoring frequency thereafter will require ADEQ's approval of a permit modification request. The objective during the first 2 years is to collect samples during both wet and dry seasons (high and low water levels). It is possible that water levels increase at some wells as a result of vertical infiltration, in which case the water sampling results could reflect to some degree the new infiltration water rather than upgradient water. The dates of the regional aquifer sampling events may be scheduled to coincide with the vadose zone sampling and purging events, but in any case, the events will not occur less than 60 days apart.

I.3.6.6 Groundwater Flow Determination (40 CFR 264.99(e))

Regional groundwater flow direction will be determined quarterly. ADEQ approval of a permit modification request to reduce the proposed monitoring frequency will be required. Water levels may fluctuate in response to seasonal infiltration events, and as the populations of Camp Navajo and the Bellemont community grow, increased pumping from the drinking water wells may impact groundwater flow direction. Therefore, water level maps will be prepared and evaluated for these natural and anthropogenic influences.

I.3.6.7 Reporting

Results of quarterly groundwater monitoring activities will be submitted in the form of a brief Technical Memorandum (TM) following each monitoring event. The TM will summarize the results and present maps of the water level measurements, and provide a summary and analysis of groundwater sample analytical results. The TM will be submitted in draft format for ADEQ review within 90 days of completing the associated sampling event.

An Annual Groundwater Monitoring Report will be submitted in draft format for ADEQ review within 120 days of completing the final monitoring event of the calendar year. The report will include a detailed

description and analysis of all monitoring activities (i.e., regional wells, vadose zone wells and AWI wells) including the following items:

- Groundwater Elevation Monitoring
- Groundwater Sample Collection Procedures
- Groundwater Sample Analyses
- Data Summary and Analysis
- Data Comparison to Health-Based Levels and Regulatory Standards
- Statistical Analysis (Mann-Kendall Trend Analysis and Seasonal Mann-Kendall Trend Analysis)
- Data Quality Evaluation
- Summary and Recommendations
- Field forms
- Laboratory Analytical Reports and Sample Documentation

I.3.7 Outline of Corrective Action Plan for Regional Aquifer Monitoring

The sequence of corrective actions for the Regional Monitoring Wells will proceed according to the procedures described in Section 4.2.4.2 of this GWMP.

I.3.8 References

Brown and Caldwell. 2008. *OB/OD Area Surface and Groundwater Monitoring Report, 2006 Annual Report Including May–July 2006, Arizona Army National Guard, Camp Navajo, Bellemont, Arizona*. Final. April 15.

Southwest Ground-water Consultants, Inc. 2015. Well Installation Report, Arizona Department of Veterans Services Cemetery Well, Bellemont, Arizona. October 27, 2015.

United States Environmental Protection Agency (USEPA). 2009. *The Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities Unified Guidance*. March.

Attachment I.4
Field Sampling Plan

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Camp Navajo Post-closure Monitoring Field Sampling Plan

This Field Sampling Plan (FSP) has been prepared as a guide for data collection to support vadose zone and regional aquifer monitoring described in Attachment I.2 and I.3 of the Groundwater Monitoring Plan (GWMP).

I.4.1 Site Preparation and Access

The sampling field team leader (FTL) is responsible for ensuring that all sampling equipment is available and all sampling personnel are trained and qualified to conduct the work. Training documentation must be submitted to Arizona Army National Guard (AZARNG) prior to the sampling event, including copies of HAZWOPER and Explosive Ordnance Disposal (EOD) training certificates. In addition, site-specific MEC Awareness Training will be given to all personnel by Camp Navajo.

Before field activities start, the sampling team will conduct a health and safety meeting to review the scope of work, identify site-specific hazards, discuss mitigation measures to address hazards, review the site safety and health plan and this FSP, and sign a personnel sign-off sheet. Additional health and safety briefings will be conducted at the beginning of each workday and on an as-needed basis and documented on the Safety Meeting Log presented in Annex A.

I.4.1.1 Access Arrangements

Camp Navajo security clearance is required to gain access to the Post-closure Permit Area through the Limited Area. The use and transport of cellular telephones and cameras within the Limited Area is prohibited without a permit for each unit. Permits are specific to an individual, and cannot be transferred from one individual to another.

I.4.1.2 Post-Closure Permit Area

Access to the Post-closure Permit Area is limited to EOD and Unexploded Ordnance (UXO)-qualified personnel or others under EOD or UXO-qualified personnel escort. All personnel must stay within sight of the EOD or UXO-qualified personnel at all times. Personnel are required to stay within the limits of the work area and avenues of ingress and egress as directed.

Sampling work in the Post-closure Permit Area will be conducted using munitions and explosives of concern (MEC) avoidance procedures. The Post-closure Permit Area is traversed by a number of dirt and cinder-covered roads that provide access to the vadose zone monitoring wells (VZMWs), vadose zone piezometers (VPZs), and Area-Wide Investigation (AWI) monitoring wells and the Former Stock Tank. Although previous surface clearances have been conducted along access roads and in the vicinity of VZMWs, VPZs, AWI wells and the Former Stock Tank, erosion and frost heave can result in MEC, material potentially presenting an explosive hazard (MPPEH) and munitions debris (MD) being brought to the surface. The UXO-qualified escort will locate an access route to each sampling location that is free of anomalies, using an appropriate geophysical detection instrument. If anomalies or surface MEC are encountered, they will be marked with flagging, and the access route shall be relocated to avoid contact. The UXO escort may move large MD items that could result in vehicle tire punctures.

The AWI wells are located a short distance outside of the Post-closure Permit Area, and EOD escort is not strictly required during sampling at these wells. However, it is expected that the same sampling team will sample all of the wells in succession, and the most efficient access route may be through the Post-closure Permit Area.

I.4.1.3 Camp Navajo Limited Area Regional Aquifer Wells

Sampling personnel vehicles traveling through the Limited Area to access wells CN-1 and CN-2 will give right-of-way to large cargo trucks on Limited Area access roads. Also, regional aquifer well CN-1 is located inside of the Inhabited Building Distance (IBD) for the Rocket Motor Transport Facility. Personnel cannot enter the IBD when operations are occurring at the facility. Access to well CN-1 will be coordinated with the Ordnance Operations Department and Camp Navajo Security.

I.4.1.4 Privately-owned Regional Aquifer Wells

Inclusion of regional aquifer wells in the groundwater monitoring program is dependent upon obtaining right of entry and permission to sample from the landowner. Access to regional aquifer wells proposed for monitoring will be confirmed with AZARNG personnel prior to water sampling events. Physical accessibility will be dependent on safe weather and ground conditions.

In addition, dates for sampling regional aquifer wells will be communicated to the individual well owners by AZARNG to request that the pumping equipment is off for approximately 24 hours prior to measuring water elevations.

I.4.2. Wells and Surface Water Locations Included in the Post-closure Monitoring Program

The following wells are included in the monitoring program:

- 20 VZMWs (VZMW-1 through VZMW-20) installed in the Post-closure Permit Area, to detect and measure contaminant of concern (COC) and contaminant of potential concern (COPC) concentrations and evaluate the potential for new releases to the vadose zone that could migrate into the regional aquifer. Well construction information for VZMWs is summarized in Table GWMP-1 and locations are shown on Figure GWMP-1.
- 15 VPZs (VPZ-1 through VPZ-15) will be included as part of release evaluation monitoring. Construction information for the VPZs is summarized in Table GWMP-2 and locations are shown on Figure GWMP-1.
- Three AWI wells (AWI-001, AWI-002, and AWI-003) will be sampled to provide an additional source of information regarding infiltration rates and the potential movement of contaminants through the subsurface. Well construction information for the AWI monitoring wells is summarized in Table GWMP-3 and locations are shown on Figure GWMP-1.
- Eight regional aquifer wells:
 - Two wells located in the Camp Navajo Limited Area (CN-1 and CN-2),
 - One Veterans Cemetery well (VC-1) located in the northwestern part of Camp Navajo
 - Four Bellemont production wells (DW-1, DW-2, DW-3 and DW-4), in the community of Bellemont, north of Camp Navajo
 - One Garland Prairie well (WP-1) (pending right of entry approval), located approximately 5 miles west of Camp Navajo.

Well construction information for the regional aquifer wells is summarized in Table GWMP-4 and locations are shown on Figure GWMP-2.

One surface water monitoring location is included in this monitoring program. This is the Former Stock Tank, located in the northeastern part of the Post-closure Permit Area, shown on Figure GWMP-1.

I.4.3. Water Elevation Monitoring

This section provides procedures for water elevation monitoring at VZMWs, VPZs, AWI wells and regional aquifer wells.

I.4.3.1 VZMW Water Level Monitoring Using Dedicated Transducers

Vadose zone water level elevations will be measured from the VZMW wells shown on Figure GWMP-1. To retrieve data from each VZMW pressure transducer, a Leveloader must be used to retrieve data from the transducers. The well caps of the monitoring wells are equipped with a direct read device which will allow for data retrieval without opening the well.

1. Connect the direct read cable from the Leveloader to the proper connector in the well head.
2. Turn on Leveloader by pressing the ON button for approximately 5 seconds.
3. On the Leveloader screen select “Connect to Logger” option and press the OK button.
4. On the next screen Scroll Down and select “Data from Levelogger” option and press the OK button.
5. A list of the current readings will appear on screen. Press “Save Log” to save data to Leveloader.
6. Once saved, the Leveloader will show the previous screen. Press Return.
7. Disconnect the Levelogger and connect next Levelogger or turn off the Leveloader by pressing the ON button for a few seconds.
8. To assure that continuous logging of the water level data will take place and that logger memory will not be filled, the Levelogger must be restarted.
9. To restart logger, connect Leveloader to proper connector in well head. Turn on the Leveloader.
10. On the Leveloader screen select “Connect to Logger” option and press the OK button.
11. Scroll down and select “Restart Levelogger,” and follow the instructions on screen to stop Levelogger.
12. Select “Future Start Logging.” On the following screen, select proper date and time for Levelogger to start (recommended for simultaneous recording on all the wells) and select submit to start Levelogger. The data collected on the Leveloader can then be transferred to a PC for analysis.

The data collected on the Leveloader will be transferred to a PC for storage and analysis.

A water level sounder will also be used at each VZMW to conduct water level monitoring, and verify the VZMW transducer data, as described in Section I.4.3.3. The static water level will be measured each time a well is sampled or purged before any water is withdrawn and before purging or sampling equipment enters a well. The measurement results will be recorded in the field log book and data forms presented in Annex A.

I.4.3.2 VPZ Water Level Monitoring Using Dedicated Devices

Vadose zone water level elevations will be observed and recorded from each temporary VPZ. Because the VPZs installed at the Post-closure Permit Area are considered temporary monitoring points, pressure transducers are not installed in the VPZs. Instead, devices designed to capture up to three relative water level depths have been installed in each VPZ. Each device consists of three sections of 0.5-inch polyvinyl chloride (PVC) pipe cut at different lengths (0.5-foot, 1 foot, and 2 feet), capped at the bottom ends, and bound together using plastic zip ties. The devices are intended to collect general information regarding the fluctuation of vadose zone water levels. The devices are positioned at the bottom of each piezometer and secured with a dedicated polypropylene rope. Monitoring of the VPZs will be performed by removing the dedicated devices and observing the presence/absence of water in each PVC pipe, and recording the information in the field log book and data forms presented in Annex A.

A water level sounder will also be used at each VPZ to measure the current depth and thickness of the saturated interval to the base of the VPZ casing, as described in Section I.4.3.3. This process will provide data to determine whether sufficient water is present in VPZs for sample collection. The measurement results will be recorded in the field log book and data forms presented in Annex A.

I.4.3.3 Water Level and Well Depth Measurements Using Electronic Sounder

An electronic water level indicator with audible alarm that employs a battery-powered probe assembly attached to a cable marked in 0.01-foot increments will be used to supplement water level monitoring information collected from the VZMW and VPZs, as well as to collect water level information from the AWI wells. The static water level will be measured each time a well is to be sampled or purged. This must be done before any water is withdrawn and before purging or sampling equipment enters a well.

When the probe makes contact with the water surface, an electrical impulse is transmitted in the cable to activate an audible alarm. The water level indicator is equipped with a sensitivity adjustment switch that enables the operator to distinguish between actual and false readings caused by the presence of conductive, immiscible components on top of the groundwater. The manufacturer's operating manual should be consulted for instructions on use of the sensitivity adjustment.

All equipment shall be decontaminated before and after introduction of the equipment to the well following standard decontamination procedures. The indicator probe and 5 feet beyond the portion of the measuring tape will be decontaminated by washing with a solution of laboratory grade detergent and potable water. The probe and cable will then be rinsed with a final deionized (DI) water rinse. The entire probe reel will be rinsed with DI water in addition to the decontamination of the probe tip described previously.

The measurements of static water level and total depth will be taken at an established reference point, generally at the top of the casing at the surveyor's mark. The mark should be permanent, e.g., a notch or mark on the top of the casing. If the surveyor's point is not marked at the time of the water level reading, the north side of the casing should be marked and used.

If the well is sealed with an airtight cap, a minimum of 15 minutes time will be allowed for equilibration of pressures after the cap is removed before collecting a water level measurement. This process may be accomplished by first removing the caps on all/some of the wells in the well field, then returning to initiate water monitoring. To verify equilibration in wells where a noticeable vacuum is observed, multiple water level readings may be taken to determine if water level is static. The water level is considered static if three consecutive readings are within 0.01 foot.

To measure water levels, the sounder is switched on and slowly lowered until the probe tip contacts the water surface as indicated by audible alarm. Raise the probe out of the water until the alarm turns off. Repeat raising and lowering the probe until the precise level is determined. Record the reading on the cable at the established reference point to the nearest 0.01 foot.

To measure the total depth of the well, slowly lower the water level sounder (with plumb attached if necessary) until the cable goes slack. Raise and lower the probe until the precise location of the bottom is determined. Record the reading on the cable at the established reference point to the nearest 0.01 foot. The measurement must be adjusted based on the actual location of the zero depth on the probe if a correction exists. If it is not possible to measure the total depth of a well in which pumping equipment is installed, the as-built construction plans will be used as a reference.

The following minimum information shall be recorded in the field record log:

- Date and time of measurements;
- Equipment used and any malfunctions, if applicable;
- Measured water levels;
- Measured total depth of well;

- Reference point for measurements if other than the established reference point; and,
- Physical condition of well.

I.4.3.4 Water Level Measurements at Regional Aquifer Wells

Groundwater elevations will be measured from accessible regional aquifer wells on a quarterly basis. AZARNG will make a request to the owner that well pumping operations be suspended for 24 hours prior to sampling. This will allow the aquifer to rebound and provide a relatively static water elevation measurement unaffected by pumping conditions. If the pumping equipment cannot be turned off prior to measuring water elevations, then the operating pump conditions will be recorded and measurements collected.

Measurement of groundwater elevation will be performed utilizing a dedicated sounder or a non-dedicated sounder. The elevation of groundwater will be measured during each quarterly monitoring event before purging/sample collection is initiated. Wells DW-1, DW-3, DW-4, and VC-1 are equipped with dedicated transducers and the elevation of groundwater can be obtained by reading the operating panel inside the pump house at each well. Measurement of regional groundwater elevation in Belmont well DW-2 is not possible because it is not equipped with either sounding tube or transducer.

Water elevations in regional aquifer wells CN-1 and CN-2 will be measured using a non-dedicated sounder capable of measuring depths up to 2,000 feet. The sounder may be equipped with an electric motor and if so, must be anchored to a support stand or other stationary structure when in operation. Any mechanical difficulties encountered during operation of the sounder will be recorded and reported to the AZARNG PM, with recommendations for service or repair if necessary.

The depth to water in each well will be measured to the nearest 0.01 foot, referenced to the surveyed datum point on the sounding port at each well, or to the surveyed mark on the well casings that do not contain dedicated sampling equipment. Water elevation data will be recorded on data collection forms (Annex A).

The water-level meter will be decontaminated before use in each regional aquifer well in accordance with Section I.4.10. Decontamination fluids will be contained at the sites and transferred to a 55-gallon drum used for IDW storage at a location designated by Camp Navajo and managed as described in Section I.4.11.

I.4.3.5 Former Stock Tank

The Stock Tank will be inspected during each semi-annual monitoring event. The presence or absence of water in the Stock Tank will be recorded in the field logbook, with the approximate maximum depth and extent (diameter in feet) of the surface water. Photographs with a measuring rod for scale will be taken from at least two locations on the perimeter of the tank to document the conditions.

I.4.4 Well Purging Procedures

The goal of purging is removal of stagnant water in the well casings in order to obtain representative samples of the water in the vadose zone or in the aquifer. Purging requirements for the VZMWs and VPZs differ from those for the AWI and regional aquifer wells.

I.4.4.1 Vadose Zone Wells

The VZMWs and VPZs will not be purged immediately before sampling, because of the possibility they will not recharge. Instead, they will be purged after sampling to remove excess water from the sump, so that they are ready to capture water from the next season's infiltration event. However, if additional infiltration events occur during the current season, the wells may require purging between seasons. Water levels will be recorded prior to purging, but no water quality parameters will be collected. Water purged from VZMWs, VPZs and AWI monitor wells will be discharged to the ground surface in close proximity to the wells.

Typical purging procedures will be followed at the AWI and regional aquifer wells. If pre-existing or current data indicates a low recharge for an AWI well, or limited recharge is suspected, then the purging of a well prior to sample collection may be inadvisable and sampling may be conducted directly without purging. The following procedures will be performed at each well to determine purge volumes and monitor water quality parameters to determine purging completeness:

Calculate the volume of water in the well casing in gallons based on feet of water and casing diameter. Calculate the casing unit volume using the following equation:

$$\text{Casing Unit Volume} = \{\pi r^2 h + [(\pi r R^2 h - \pi r^2 h)0.3]\} \times 7.48 \text{ gallons/ft}^3$$

Where:

R = borehole radius in inches

r = well radius in inches

h = well depth in feet

Water parameters will be measured during purging, or from excess sample water during direct sampling using bailers. The parameters will be measured with instrumentation capable of determining the following parameters:

- pH
- Temperature
- Electrical conductivity
- Oxidation/Reduction Potential (ORP)
- Turbidity

Field measurements shall be made in accordance with the manufacturer's instructions, with calibration prior to use each day, if turned off for extended periods (i.e. >4 hours), or if anomalous measurements persist for a single or multiple parameters. Calibration of all instruments will be recorded in the log book.

I.4.4.2 AWI Wells

A variety of sampling devices may be used for purging and sampling the AWI wells, including bailers, bladder pumps, electrical submersible pumps, and gas-driven pumps. Use of any pumping equipment to purge wells will generate a stream of purge water that can be monitored for water parameters to determine when stabilization occurs.

The following procedure will be used for determining stabilization when wells are purged using pumping equipment:

- Initiate parameter measurements after 1 minute of purging;
- A minimum of 3 measurements should be recorded for all parameters prior to sampling;
- Monitor the purge rate, time, and possible drawdown of water levels during purging;
- The following values between 3 consecutive readings indicate adequate stability of the water chemistry for sampling;
 - pH within ± 0.1 pH unit
 - Temperature within $\pm 10\%$
 - Conductivity within $\pm 10\%$
 - ORP within ± 10 mv
 - Turbidity below 10 NTUs
- If the water parameters are not stable, then a minimum volume of three well volumes may be used to determine purge completeness.

A single set of water parameters should be collected from excess sample water for wells that are sampled without purging. If a well is purged using a bailer, then the parameters may be measured from each bailer of water removed. If the well goes dry during purging, then samples can be collected as soon as 80% recharge has occurred. Samples for chemical analysis will be collected within 24 hours after purging is complete.

I.4.4.3 Regional Aquifer Wells

Most of the regional-aquifer wells contain semi-permanently mounted pumps that limit the options available for purging and groundwater sampling. With the exception of well CN-1, each regional aquifer well will undergo a purging process to remove a minimum volume of water in the well casing prior to sample collection. Because there is no pump in well CN-1, this well will not be purged.

If the well pump has been operating prior to sample collection, then a minimum purge time or volume is not required. The approximate volume of water in the well will be calculated for purging using well specifications and pumping flow rates. The pump at a given well will be operated for a duration that removes a minimum of 1 casing volume prior to sampling. A minimum of 1 set of water quality parameters will be monitored from the sample stream at each well prior to sample collection. Water used for measurement of parameters and for analytical samples will be collected directly from the discharge port or bypass spigot on each production well.

A minimum volume of one well casing of water will be purged from the production wells if they are turned off upon arrival. The volume of purge water will be determined from water levels (probe or transducer) and well construction information. The total volume of water purged, flow rate, water quality parameters, and time will be recorded.

Water purged from the regional aquifer wells will be discharged to the water system if available, or ground surface near the wellhead.

I.4.5 Water Sample Collection and Analysis

The following sections provide procedures for the collection of water samples. Samples will be collected at the frequencies presented in Attachment I.2 (VZMW, VPZ, and AWI wells) and Attachment I.3 (regional aquifer wells).

I.4.5.1 VZMW, VPZ and AWI Monitoring Well Sampling

Sampling Procedures

Low volumes of water and minimal recharge has been documented during historical sampling events in the Post-closure Permit Area. A determination of whether sampling may be conducted will depend upon the volume of water determined during water level monitoring. If water volume is sufficient, each VZMW, VPZ and AWI monitoring well will be sampled one time during the designated sampling period for the primary COPCs.

Disposable bailers may be used to collect samples from the VZMWs, VPZs and AWI wells using the following procedures:

Using new or string/nylon line attached to the bailer for each well;

- Lower the bailer slowly and gently into contact with the water in the well;
- Lower the bailer to the same depth in the well each time, within the screened interval; and
- Retrieve the bailer smoothly, and slowly drain the water into the sample containers through the bailer's bottom discharge control device.
- The bailer may be deployed at increasing depths during the process if the well begins to dry out.

A peristaltic pump may be used to sample the VZMWs and VPZs and a bladder pump may be used to sample the AWI wells, depending on well depth, in lieu of a bailer. Upon collection of samples, the remaining water in each well will be bailed and discharged to the ground surface in close proximity to the well.

Analytes

The Post-closure Permit Area wells will be analyzed for primary and secondary COPCs as described in this section and presented in Table GWMP-16. Analytical methods for each compound or class of compounds are presented in the Quality Assurance Project Plan (QAPP).

The primary COPCs to be analyzed are:

- Perchlorate
- Explosives
- Nitrate

Samples will be analyzed for additional special circumstance COPCs with secondary priority, assuming a sufficient volume of water is present, as follows:

- VPZ-04, VPZ-05, VZMW-18, VZMW-19, VZMW-20 require specific analytes that are not applicable to the remaining wells in the Post-closure Permit Area and include:
 - White Phosphorous
 - Dioxins and Furans
- Dissolved target analyte list (TAL) metals collected from the first 5 wells that contain sufficient water to collect metals samples following the primary COPCs.

Water samples collected for analysis of perchlorate and dissolved metals must be filtered in the field prior to submitting to the laboratory, in conformance with procedures described in the QAPP.

Quality assurance/quality control (QA/QC) samples will be collected if sufficient volume is available, as described in Section I.4.6 and in the QAPP.

I.4.5.2 Regional Aquifer Well Sampling

Most of the regional aquifer wells contain semi-permanently mounted pumps that limit the options available for groundwater sampling. These wells will be sampled from the nearest outlet port or spigot to the wellhead manifold, prior to treatment.

Well CN-1 will be sampled without purging using a non-dedicated bailer deployed from a reel at the surface to recover water for sample analysis. A well pump rig operated by a contractor will be used for deploying a non-dedicated bailer into the well to recover water for samples. Water parameters consistent with those listed above will be measured from excess sample water.

Analytes

Regional groundwater monitoring wells will be analyzed for COCs, COPCs and 40 CFR 264 Appendix IX compounds, as described in this section and presented in Table GWMP-16. Analytical methods for each compound or class of compounds are presented in the QAPP.

The constituents to be sampled at the regional aquifer wells include:

- Perchlorate
- Explosives
- Nitrate

- Metals
- White Phosphorous
- Dioxins and Furans
- Wells CN-1, CN-2, DW-3, DW-4, and VC-1 will be sampled for 40 CFR Part 264 Appendix IX constituents (one sampling event per year in the spring), including VOCs, SVOCs, OCPs, PCBs, cyanide, sulfide, herbicides, and dioxins/furans.

Upon completion of sample collection, the sample team will replace any well appurtenances, secure the pump, and close/secure any structures housing the wellhead equipment. All non-dedicated equipment used for sampling activities will be decontaminated prior to and following use according to the procedure described in Section I.4.10. Decontamination fluids, if generated, will be contained at the wells and transferred to a 55-gallon drum specifically designated for IDW and at a location determined by Camp Navajo as described in Section I.4.11.

I.4.5.3 Stock Tank Surface Water Sampling

Surface water at the Stock Tank will be sampled if sufficient water has accumulated to permit sampling without excessive sediment or disturbance of the substrate during the sampling procedure. Samples will be collected using a telescoping pole with a catcher and/or clamp at the end to a disposable 500 mL plastic beaker and submitted for analyses in accordance with GWMP-16 and the QAPP.

The procedures for surface water sampling may be applicable to other locations if necessary, dependent upon the physical conditions, as determined by a visual inspection.

The following general procedures will be adhered to during surface water sampling:

- Grab samples will be taken from parts of the surface water body that can be safely accessed and adequately represent the condition or quality of the water being sampled;
- Whenever possible, samples will be obtained directly into laboratory- provided containers (Teflon, glass, or stainless steel);
- After the bottles are sealed, the outsides of the bottles will be rinsed with deionized water and dried;
- Water samples will be described in detail, including color and texture of suspended sediment;
- Samples will be labeled in accordance with Section I.4.7;
- Whenever possible, field observations (pH, temperature, conductivity, ORP, turbidity) will be made from the sample source (e.g. pond) rather than from containers.

All non-dedicated equipment used for sampling activities will be decontaminated prior to and following use according to the procedure described in Section I.4.10. Decontamination fluids will be contained at the wells and transferred to a 55-gallon drum specifically designated for IDW and at a location determined by Camp Navajo as described in Section I.4.11.

I.4.6 Quality Assurance/Quality Control Sampling

The following sections describe field sampling procedures for QA/QC.

I.4.6.1 Field Duplicate Samples

For each sampling round for VZMW, VPZ and AWI wells, one duplicate sample will be collected for every 10 primary samples. For the regional aquifer sampling, one duplicate sample will also be collected for every ten primary samples collected (i.e. one duplicate sample per event). These duplicate samples are taken immediately following the collection of the samples, and are intended to duplicate the primary sample.

Notations will be made in the appropriate field logbook indicating that a duplicate sample was collected, and describing how it was collected. Duplicates will be handled in the same manner as all other samples.

I.4.6.2 Field Blanks and Equipment Blanks

Field blanks will be obtained by filling a sample bottle in a contaminant-free area with deionized water. A field blank is collected from each batch of deionized water that is used for field procedures.

To minimize potential bias by the receiving laboratory, blank samples are submitted blind.

Equipment blank samples will be collected daily and analyzed to determine the effectiveness of decontamination practices for non-dedicated equipment/material that contacts wells, appurtenances, or media to be sampled. Equipment blanks (also called rinse or rinsate blanks) are collected at a frequency of 5 to 10% of samples. If fewer than 20 samples are collected in a day, 1 equipment blank sample will be collected. Equipment blank samples are collected as follows:

- Sample bottles for equipment blanks are of the same type as routine sample bottles and will be prepared prior to sampling.
- Pour ASTM Type II reagent-grade water over and/or into the decontaminated sampling equipment. Then pour the water from the sampling equipment into the equipment blank sample jars.
- Collect rinsate sample for the same parameters that are being analyzed in the primary samples.
- After all bottles are filled, label the sampling equipment with the associated routine sample ID number and use that sampling equipment to collect the environmental sample at that particular sampling location.
- Note in the field logbook that an equipment blank was collected for that particular sampling location.
- Once collected, equipment blank samples will be preserved and managed in the same manner as primary samples.

I.4.6.3 Trip Blanks

The purpose of a trip blank sample is to determine whether factors during transport may have affected the sample quality of volatile organic compounds (VOCs). A trip blank prepared in the laboratory or field consists of two VOC sample bottles filled with ASTM Type II reagent-grade water. Trip blanks will be obtained the morning prior to sampling and will accompany the associated routine sample bottles in the same cooler. When the day of sampling is completed, the trip blanks will be handled in the same manner as routine samples and returned to the laboratory. Trip blanks will be collected at a frequency of 1 per day of VOC sample shipment. A note should be made in the field logbook that a trip blank accompanied the particular samples.

I.4.6.4 Matrix Spike/Matrix Spike Duplicate Samples

Matrix spike/matrix spike duplicate (MS/MSD) samples are collected for the laboratory to perform internal QC checks. MS/MSD sampling involves collection of triple the volume of a routine VZ or groundwater sample. MS/MSD samples are collected at a rate of 1 for every 20 samples. They are collected as separate samples immediately after the collection of the routine samples for the same parameter. The sample collection procedure is as follows:

- Additional bottles will be prepared the first day so the sampling teams will be ready to sample. For example, a routine sample for polychlorinated biphenyls (PCBs) requires two 1-liter amber glass bottles. An MS/MSD sample for PCBs requires six 1-liter amber glass bottles.
- Note in the field logbook that an MS/MSD sample was collected at that particular location. Once collected, handle samples in the same manner as routine samples.

The MS/MSD samples will be identified using the nomenclature outlined in Section I.4.7, with the designation of MS/MSD on the chain-of-custody form and on the sample containers. Chain-of-custody procedures are also presented in Section I.4.7.

I.4.7 Sample Containers, Labels and Chain of Custody

I.4.7.1 Sample Containers and Preparation

The types of sampling containers and preservation requirements for the analyses are described in the QAPP. Sample containers, types of preservative, and number of containers will be inspected by field sampling personnel prior to mobilization for sampling activities. In addition, a review of the sample containers will be performed before daily field work begins to ensure the number, type, and preservation methods for the provided containers are sufficient for the planned sampling activities that day. Sample designations will be in accordance with the rationale and nomenclature described below.

Sample containers will be placed in a zip-lock type bag and sealed, squeezing as much air as possible from the bag before closing. Place the sample container bag into another zip-lock type bag to ensure the samples and sample labels remain dry during shipment. Glass jars or bottles should be wrapped in bubble wrap before placing them into zip-lock type bags, or placed into the zip-lock type bags and placed in the cooler with sufficient packing material to ensure safe transport of the jars. The general preservation method employed during delivery consists of sufficient wet ice to maintain samples in a cool environment (4°C + 2°C). Wet ice will be placed in sealed plastic bags separate from the sample containers to protect the samples from the water and possible leakage into the sample containers. The samples and wet ice used for preservation will be placed inside of a separate sealed plastic bag that serves as the liner for the shipping cooler. The plastic liner will be taped shut inside the cooler prior to sealing for shipment.

I.4.7.2 Sample Labels

Sample labels are required for each container used to submit media for laboratory analyses. The sample labels will be affixed to the proper sample container at the time of collection by the sample collector or assisting field personnel. Alternately, labels may be affixed by the laboratory and portions of sample labels will be completed by the laboratory before sampling activities begin. Labels will be made of a waterproof material backed with a water-resistant adhesive. Information recorded on labels by sampling personnel will be completed using waterproof ink.

Unique sample identification will be applied for each sample. The following information is expected for a complete sample label, with the anticipated party responsible for completion in parenthesis:

- Project name and number (laboratory)
- Unique sample ID number (sample personnel)
- Date and time of sample collection (sample personnel)
- Preservative used, if applicable (laboratory)
- Sample filtering, if applicable (sample personnel)
- Analysis to be conducted (laboratory)
- Initials of the sampler (sample personnel)

All information completed by the laboratory on sample labels will be reviewed for accuracy *prior to* mobilization to sites for sampling. Any inaccuracies will be verified and corrected, if necessary, and the laboratory notified to eliminate potential confusion when the samples are logged at the laboratory.

The sample ID will be comprised of three components:

XXX-YYYY-QQQQ

Where:

XXX - Defines the site location using a number, where:
NAAD02 = Site NAAD-02 (for all VZMW, VZP and AWI wells)
RAW = Regional Aquifer Wells
WD =Waste Disposal Sample

YYYY – Is the individual sample type and location identifier where:
= monitoring well specific ID as listed in Table GWMP-1, GWMP-2, GWMP-3 and GWMP-4
AQD# = Aqueous waste disposal number (#)

QQQQ – Defines QA sample type:

00 = Environmental sample
01 = Duplicate sample
02 = Equipment blank (rinsate)
03 = Trip blank
04 = Matrix spike
05 = Matrix spike duplicate

Although most sample labels are made with water-resistant paper and are filled out using waterproof ink, inclement weather and general field conditions can affect the legibility of sample labels. It is recommended that, after sample labels are filled out and affixed to the sample container, the container be placed in a plastic resealable bag. This will preserve the label, keep it from becoming illegible, and if the label falls off, the identification of the sample will still be known. In addition to label protection, COC and analysis request forms should also be protected when samples are shipped in iced coolers. Typically, these forms should be placed inside a plastic resealable bag or similar waterproof protection and taped to the inside lid of the secured shipping container with the samples.

1.4.7.3 Chain of Custody Records

The use of COC records is a step in the QA/QC process and used to provide the laboratory with a record of samples submitted compared with those planned for a sampling event. Preprinted COC records will be supplied by the analytical laboratory to record sample information. A COC record is required for each group or shipment of samples in order to maintain a record of sample collection and custody between personnel, during shipment, and receipt by the laboratory. An example COC is provided in Annex A.

All personnel involved with sample collection and handling will understand and comply with the sample COC procedures:

1. The COC records should be initiated prior to the beginning of each sampling event by the Field Team Leader or field personnel who will be sample collectors.
2. The sample collector will verify that the COC record is complete, accurate in all aspects, and consistent with all other sample documentation (i.e., number of samples, sample labels, field logs). The verification process will include a physical inspection of the sample containers and comparison of the label to the COC and appropriate SOPs for identification information.
3. Following sample collection, the sample collector will sign the “Relinquished By” box on the COC, marking the date and time custody is transferred to another authorized person or for shipment to the laboratory.
4. Authorized personnel will sign the “Received By” box, marking the date and time of receipt of the samples from the sample collector if a transfer occurs prior to shipment. Every transfer of physical custody will be documented on the COC. The Field Team Leader will be notified if transfers are necessary during the sampling events.

5. The sample collector or other authorized person will sign the “Relinquished By” box and enter the shipper's name and shipping number in the “Shipping Number” box immediately prior to sealing a sample shipping container for courier pickup after ensuring that samples and COCs match (i.e., only samples identified on the enclosed COCs are in the container and all samples enclosed are listed on the COCs enclosed). If the COCs are sealed inside the sample shipping container, commercial carriers are not required to sign the COC.
6. The “Received By” box will be signed by the laboratory sample receipt staff.
7. Distribution of the COC copies are as follows:
 - White and yellow copies: Sealed in plastic bag with a custody seal (initialed and dated) and taped inside the top of the shipping container
 - Goldenrod copy: Filed in appropriate home or field office project file
 - Pink copy: Submitted to data management staff in home office
8. Changes made to a COC will be accomplished by the following procedures:
 - Striking the incorrect information with a single line, and initialing and dating the strike
 - Enter the correct information, and pertinent information as to why the change was made.
 - Changes made to a COC following original distribution will be accomplished by the procedures noted above with photocopies of the corrected COC distributed to the field office project file, project chemist, and the home office.
9. Record the above activities in the sample control logbook.
10. All COCs will be accounted for in the sample control logbook by recording the following information:
 - List of all samples included on the COC with sample and ship date, shipper, and invoice number
 - Sample container manufacturer lot number
 - Comments (as applicable)

If an error is made, a single line should be drawn through the entry, and the entry initialed and dated. The erroneous information should not be obliterated. Any errors found in documentation should be corrected by the person who made the entry.

When previously collected samples are split with a facility, state regulatory agency, or other government agency, the agency representative must sign the COC record, if present. All samples should be accompanied by a COC record. The original of the COC record will be placed in a plastic bag taped to the inside lid of the secured shipping container and transmitted to the laboratory along with the samples. One copy of the record will be retained by the field investigator or project leader. This copy will become a part of the project file. If sent by mail, the package should be registered with return receipt requested. If sent by common carrier, an air bill should be used. Receipts from post offices and air bills should be retained. The air bill number or registered mail serial number should be recorded in the remarks section of the COC record.

I.4.7.4 Chain of Custody Seals

The COC seal is an adhesive seal placed in areas such that if a sealed container is opened, the seal would be broken. The COC seal ensures that no sample tampering occurred between the field and the laboratory analysis.

These signed and dated seals will be placed at the junction between the lid and the jar and on the cooler by the person responsible for packaging. If the coolers or jars are opened before receipt at the laboratory, the

seals will not be intact. If the COC seals are not intact, the Laboratory Project Manager will notify the Sample Manager/Project Chemist within 24 hours of receipt of the container. The sampling team manager will then follow the corrective action procedures.

I.4.8 Sample Transportation

Water samples will be delivered to the laboratory by sampling personnel, a courier service, or a commercial shipping service, such as UPS or Federal Express. Samples that are delivered to the laboratory by sampling personnel will not require custody seals on the containers. Possession of the samples during transport must be documented by each individual on the COC records. The completed COC records will be placed inside a plastic bag that is sealed and taped to the inside of the cooler lid. If the samples are delivered by a courier service, then the appropriate information relinquishing control of the samples will be recorded on the COC record before placement inside the cooler. Two or more signed custody seals, consisting of tape imprinted with the date and initials from the sampler(s) will be placed on the cooler, so that the cooler cannot be opened without one or more of the seals being broken. Wide, clear tape will be placed over the seals to help ensure against accidental breakage or tearing. The cooler will be closed and taped shut with strapping tape (filament-type) around both ends and around the lid to form a seal with the cooler body.

The air bill used for commercial shipment (if applicable) will be filled out before the samples are handed over for shipping. Samples will be submitted for delivery allowing for sufficient time to perform extractions or analyses by the laboratory. Sampling for analytes with extremely short holding times will not be scheduled on a Friday or weekend. Samples that are shipped will conform to all Department of Transportation (DOT) regulations for packaging and shipment. For purposes of this SAP, it is assumed that concentrations of constituents potentially present in water samples will not exist at levels requiring field screening to determine if shipping is acceptable. This is based upon the analytes and concentrations detected during previous investigations. The proposed well locations are also not anticipated to yield water samples that contain analytes that differ significantly from those in previous investigations.

I.4.9 Field Documentation

When samples are collected for chemical or physical characteristics analysis, field documentation will be completed. All data collection will be documented in either a bound field logbook or on appropriate field forms.

I.4.9.1 Field Logbooks

Field logbooks will be assigned to individual field personnel for daily entries. Notes in the bound field logbooks will be made legibly, written in black or blue ink, and be as detailed and descriptive as possible so that a particular situation may be recalled without reliance on the collector's memory. No blank pages or sections of pages will be allowed. If a page is not completely filled in, a line will be drawn through the blank portion and initialed by the person keeping the log. There should be no erasure or deletions from the field notes. At the end of each day, the logbook will be signed and dated.

The field logbook is the primary means of documenting field activities. It must be completed concurrent with field activities and present a thorough but concise summary of the activities conducted. The field logbook should enable the field activities to be reconstructed without relying on the field member's memory.

General provisions for field logbooks include:

- Project name/location and sequential logbook number should appear on the cover.
- Contact information should be recorded inside the front cover in case the logbook is misplaced.
- Write legibly and use a black or blue ink pen for all logbook entries.

- Corrections should be made by crossing out the data with a single strike mark, which will be initialed and dated by the person making the correction. Ensure that the original entry being struck out is still readable.
- Each page of the logbook should be sequentially numbered, dated, and signed by the field team member.
- Time should be recorded in military time (24-hour clock).
- For field sampling or data collection events documented in the logbook, entries should include but not be limited to:
 - Name of author, date, and time of entry.
 - Name, company/agency affiliation, and responsibility of field team members.
 - Names, titles, and arrival/departure times of any site visitors.
 - Weather (e.g., temperature, cloud cover, humidity, wind).
 - Health and safety briefings, personal protection equipment (PPE) level, or changes or issues encountered.
 - Calibration of field equipment.
 - Description of task.
 - Sample or data collection method.
 - Brand, type, and size of filter used for field filtering of perchlorate and/or dissolved metals samples.
 - Number and volume of sample(s) taken.
 - Date and time of collection.
 - Sample identification number(s).
 - Information concerning sampling changes, scheduling modifications, and change orders.
 - Details of sampling locations and visual observations of matrix sampled (e.g., soil description, odors, discolorations).
 - Site sketch of sample locations.
 - Sample preservation.
 - Sample matrix.
 - Sample analysis to be performed.
 - Field observations.
 - Any field measurements made.
 - Decontamination procedures.
 - Documentation for investigation derived wastes (IDW) (e.g., contents and approximate volume of waste, disposal method).
 - Documentation of any scope of work changes required by field conditions.
 - Description of photographs taken.

I.4.9.2 Field Forms

Various field data collection forms will be used to streamline the documentation of field data (Annex A). Field forms may also be customized for large data collection efforts. If field data are recorded on a field form, this data entry should be documented in the daily field logbook entry. Field form data entry should be executed with the same quality standards as field logbook data entry. Entries should be neatly written in black or blue ink and corrections made with single line strike-out and initials. Original field forms should be submitted daily to the Project Manager and be incorporated into the project file.

I.4.9.3 Photographs

Photographs will be taken at sampling locations to document changes in site conditions, distressed vegetation, and access road conditions. Collection of photographs will require a Camp Navajo permit for use of a camera in the Limited Area. All photographs will serve to verify information entered in the field logbook and will illustrate key work tasks such as purging the wells, filtration, and sample collection. When a photograph is taken, the following information will be recorded in a photographic log (Annex A):

- Time, date, location, and weather conditions
- Description of the subject photographed and direction of orientation
- Name of person taking the photograph

Select photographs from the field effort will be included in a photographic log in the Semiannual PCC Reports. All photographs taken during the field activities will also be included in a separate file in JPEG (.jpg) format on a CD-ROM for each respective report.

I.4.9.4 Sample Documentation

Documentation during sampling is essential to ensure proper sample identification and consistent data review between sampling events. The cumulative number of samples, identification, and dates of shipment will be recorded for each event using a sample log (Annex A). The log will be used for comparison to sample labels and the COC as part of the QA verification process.

I.4.10 Decontamination Procedures

Non-dedicated equipment used during sampling will be either decontaminated at a centralized decontamination area or, in the case where sampling locations are widely dispersed, decontaminated at the individual sampling locations. All non-dedicated sampling equipment will be decontaminated after use to prevent cross-contamination between sampling points. Dedicated (disposable) sampling equipment will be contained and managed as IDW.

The following describes the procedure for decontaminating non-dedicated sampling equipment:

- Initial wash in a container (e.g. tub or 5-gallon bucket) of distilled water and Alconox/Liquinox, or equivalent type of non-phosphate cleanser. Brush the objects to remove contaminants and any residual material if the equipment has contacted soil or sediment.
- Place the equipment into a second container that contains distilled water to rinse the non-phosphate detergent from the equipment.
- If metals analyses are requested from the sample location, then the equipment will also be rinsed with a 0.10N (laboratory supplied) solution.
- Rinse equipment in a third container that contains laboratory-grade deionized water.
- After final rinsing, place equipment on disposable plastic sheeting or paper towels to air dry. Equipment that contacts fluids other than the final rinsate will be subject to reapplication of the full decontamination process to ensure no residual contaminants of concern remain.

Decontaminated equipment will be stored in uncontaminated buckets or plastic bags located away from sampling preparation areas. Materials to be stored more than a few hours will also be covered or placed inside vehicles if possible. Dispose of all wash water, rinse water, rinsates, and other sampling wastes (e.g., tubing, plastic sheeting) in properly marked, sealable containers, or as directed.

I.4.11 Investigation Derived Waste Management

The requirements for investigation derived waste management are applicable to wastes generated as a result of field sampling activities and not yet characterized by laboratory analysis as hazardous or non-hazardous wastes. The goal of IDW management is to minimize the amount of waste generated while following applicable regulations.

Prior to beginning sampling activities, field personnel will review and understand all applicable federal, state, and local regulations regarding management and disposal of IDW. Also, the sampling Field Team Leader will determine an area for IDW storage in consultation with the AZARNG RPM.

Any container used for IDW will be U.S. Department of Transportation (DOT) approved. Drums will not be stacked on top of each other and will be stored in rows not larger than two drums wide, with labels facing outward for identification. Decontamination fluids and other low-volume fluids may be temporarily stored and transported in 5-gallon buckets with lids. Field screening will be used to drum materials with similar levels of contamination together, if possible.

I.4.11.1 Liquid Investigation Derived Waste

Residual liquid such as water from well purging and sampling will not require containerization and will be discharged to the ground surface in close proximity to the wells. However, decontamination fluids used during sampling activities at the Post-closure Permit Area or regional-aquifer wells will be contained and transferred to a 55-gallon storage drum. No other types of liquid waste are anticipated for generation during sampling activities. Decontamination water will be placed in DOT-approved drums or 5-gallon buckets with lids, as appropriate. Drums or 5-gallon buckets will be sealed and labeled. Liquids drums will contain removable bungs. Funnels will be used to prevent spillage when adding liquids to the drums. As necessary, IDW-filled drums will be transported to the secure staging area at Camp Navajo in accordance with applicable DOT and U.S. Environmental Protection Agency (EPA) regulations.

The IDW-filled drums must be sampled to determine whether they contain materials classified as Resource Conservation and Recovery Act (RCRA) hazardous wastes. IDW-filled drums containing RCRA hazardous wastes must be shipped off-site within 90 days. The *EPA Guide to Management of Investigation-Derived Wastes* (January 1992) will be used to assist in management of IDW where necessary.

I.4.11.2 Other Investigation Derived Waste

Other IDW anticipated to be generated during sampling activities will consist primarily of sampling waste consisting of inert materials such as non-dedicated disposable sampling equipment, plastic or paper bags, used personal protective equipment (gloves, disposable coveralls), and cardboard or plastic containers. Disposable sampling equipment will be rinsed with decontamination solution prior to disposal. This material will be bagged or otherwise contained and disposed of in the Field Office dumpster or other appropriate and approved location directed by AZARNG.

I.4.11.3 Characterization and Classification of Investigation Derived Waste for Disposal

Collection of liquid IDW samples for characterization will be performed by using a disposable sampler, such as a bailer, to transfer the liquid into appropriate containers. Sampling and analyses of liquid IDW will be performed following the completion of all field activities for an event that the IDW is generated. Existing

information regarding detected constituents and waste characterization/profiling will be used to compile the analyses for liquid IDW characterization, which may include the following:

- VOCs
- SVOCs
- Metals
- Corrosivity (pH)
- Flashpoint

Analysis of IDW is not proposed for perchlorate; however, if perchlorate is detected from either the groundwater or surface water sample sets, then the IDW may be analyzed for perchlorate to evaluate proper characterization and disposal.

Laboratory analytical data will be used to prepare the necessary waste profile information and submit to the AZARNG for approval and signature prior to transport and disposal as non-hazardous waste is based upon historical data. Documentation of all phases of IDW management, from generation to disposal, will be provided to the ARNG/AZARNG and reproduced in subsequent reporting documents as applicable.

Other IDW (packaging, used personal protective equipment, etc.) from sampling activities will not require characterization sampling and analyses for disposal.

I.4.12 Quality Assurance Project Plan

A QAPP has been developed for post-closure monitoring to serve as a guide to AZARNG, its consultants, and analytical laboratory personnel for sample analysis and laboratory performance evaluations for post-closure monitoring sampling and analysis activities. This initial QAPP will be submitted to ADEQ for review and approval. ADEQ will be notified, in writing, of any updates or modifications to the QAPP. The QAPP and revisions to it are subject to ADEQ review upon request.

The QAPP for the Post-closure Monitoring Program will include the information presented below (where applicable):

- Title and Approval Sheet
- Table of Contents
- Distribution List
- Project Organization
- Post-closure Permit Area Background
- Project Description
- Special Training/Certification
- Quality Objectives and Criteria for Measurement Data
- Sampling Process Design (i.e., sampling locations, frequency, etc.)
- Sampling Method Requirements
- Sampling Handling and Custody Requirements
- Analytical Method Requirements
- Quality Control Requirements
- Instrument/Equipment Testing, Inspection, & Maintenance Requirements
- Instrument Calibration and Frequency
- Inspection/Acceptance Requirements for Supplies and Consumables
- Data Acquisition Requirements for Non-Direct Measurement (if applicable)
- Data Management
- Assessments and Response Actions
- Reports to Management

- Data Review, Validation, and Verification
- Validation and Verification Methods
- Reconciliation with User Requirements

Attachment I.5
Statistical Analysis Procedures

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Attachment I-5

The Statistical Analysis Procedures will be completed under schedule compliance

Attachment I.6
Completed Work Plans and Reports

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Appendix J
Recordkeeping and Reporting

Recordkeeping and Reporting

This appendix presents information on recordkeeping and reporting as discussed in Arizona Administrative Code (A.A.C.) R18-8 264.A (Title 40 *Code of Federal Regulations* [CFR] 264.73) and R18-8-264.I for recordkeeping and reporting associated with the Camp Navajo Post-closure Permit Area.

J.1 Recordkeeping

The Permittee shall keep a Post-closure Permit Area Operating Record until Post-Closure Care of the Facility has been approved as complete by the Arizona Department of Environmental Quality (ADEQ). The Operating Record shall include items identified in 40 CFR 264.73 and other records specified in the Post-Closure Plan (Appendix D). A copy of the records presented in Table J-1 will be maintained in the Camp Navajo Environmental Office.

J.2 Reporting

J.2.1 Annual Post-Closure Care and Groundwater Monitoring Report

An annual report will be prepared, provided to ADEQ, and placed in the Camp Navajo Administrative Record for public viewing by March 1 of each calendar year. This report will include the following:

- Facility identification
- Results of the semiannual and annual inspection and review activities
- Assessment of finding to evaluate the assumptions used in the Munitions and Explosives of Concern (MEC) Hazard Assessment.
- Evaluation of the effectiveness of security procedures
- Review of land use controls to evaluate if they are operating as intended and remain protective of human health and safety and the environment
- Summary of vadose zone and groundwater monitoring, data evaluation, and other activities conducted in accordance with the Groundwater Monitoring Plan
- Review of MEC After Action Reports for the previous year
- Certification of report

J.2.2 Technical Memoranda

Results of vadose zone monitoring activities will be submitted in the form of a Technical Memorandum (TM) following each monitoring event. The TM will summarize the results of transducer data and manual water level measurements, discuss the sampling rationale, and provide a summary and analysis of vadose zone sample analytical results. Groundwater flow direction will also be determined and presented quarterly. The TM will be submitted in draft format for ADEQ review within 90 days of completing the associated sampling event.

Results of quarterly groundwater monitoring activities will be submitted in the form of a brief Technical Memorandum (TM) following each monitoring event. The TM will summarize the results of water level measurements, and provide a summary and analysis of groundwater sample analytical results. It will also include the laboratory analytical reports. The TM will be submitted in draft format for ADEQ review within 90 days of completing the associated sampling event.

J.2.3 Additional Reports

Additional reports will be submitted as required for incidences of releases, fires, or explosions requiring implementation of the Contingency Plan and documentation of facility closure.

TABLE J-1

Recordkeeping Requirements*Camp Navajo Post-closure Permit Area*

Record	Minimum Retention Period	Regulatory Citation (if applicable) or Requirement
Operating Record		
Summary reports and details of all incidents that require implementing the Post-closure Permit Area Contingency Plan	3 years	40 CFR 264.56(i) and 40 CFR 264.73(6)
Inspection schedule, records, and results, including maintenance, repair, or replacement activities	3 years	40 CFR 264.15(d) and 40 CFR 264.73(6) (Section 4.1.3 of the Post-closure Plan)
Monitoring, testing or analytical data, and corrective action information associated with the Groundwater Monitoring Plan	Until the completion of post-closure care (historical data may be kept in a remote file storage location, but will be readily available with adequate notice)	40 CFR 264, Subpart F, and 40 CFR 264.73(6)
Other Records		
Documentation of MEC Awareness Training for individuals who access the Buffer Area	3 years	Post-closure Plan Section 3.1
Documentation of personnel training for facility personnel who may need access to the Post-closure Permit Area related to hazardous waste management: <ul style="list-style-type: none"> • Job title for each position that may need access to the Post-closure Permit Area related to hazardous waste management, and the name of the employee filling each job • Written job description for each position • Written description of the type and amount of both introductory and continuing training that will be given to each person • Records documenting that the required training listed in this section has been given to, and completed by, facility personnel; include copies of training materials 	Until the completion of post-closure care for current employees; 3 years from the date the employee last worked at the installation for former employees.	40 CFR 264.14 Post-closure Plan Section 4.1 and Tables PCP-3 and PCP-4
Copies of Annual and Quarterly reports and memorandums submitted to ADEQ	3 years	NA
Munitions Response After Action Reports for MRWA 02-02 and the Post-closure Permit Area	6 years so that they are available for 5-year reviews.	Not Applicable