

**Enclosure 4**  
**Perchlorate Sampling Conducted Since 2001**

Facility Name	Component	City	State	Test Site/Source	Sampled	Detected	Comments	Known Human Exposure?
Arnold AFB	Air Force	Tullahoma	TN		yes	Sediment - Awaiting Results		
Beale AFB	Air Force	Marysville	CA		yes	Groundwater		No exposure pathway. Groundwater not used for drinking water
Buckley AFB	Air Force	Aurora	CO		no		State has inquired.	
Cannon AFB	Air Force	Clovis	NM		yes	Soil, Drinking water, Surface water 25 ug/L // 6.1 ug/L	NMED State requirement; March 1999 detect, April 1999 non-detect	No exposure pathway.
Cape Cod AFS	Air Force	Sandwich	MA		yes	Not detected		
Davis Monthan AFB	Air Force	Tucson	AZ		yes	Soil (unconfirmed)	Source - Explosives, Propellant Disposal; state provisional soil cleanup levels	
Duluth, Reserve Center	Air Force	Duluth	MN		yes	Not detected		
Edwards AFB	Air Force	Edwards	CA	Jet Propulsion Lab, North Base	yes	Groundwater, soil	Source - Rocket Research (36,000 ug/L maximum level detected in Groundwater plume from Jet Propulsion Lab. An innovative ion exchange perchlorate treatment technology is currently being demonstrated at Edwards AFB.	No exposure pathway. Groundwater not used as drinking water.
Ellsworth AFB	Air Force	Rapid City	SD		yes	Not detected	Groundwater sampled	
FE Warren AFB	Air Force	Cheyenne	WY		no			
Hill AFB	Air Force	Ogden	UT		yes	Soil, Groundwater, Drinking water 70 ug/L maximum level detected in Groundwater	Tested Soil, Groundwater, Drinking water - Groundwater found in installation monitoring well	No exposure pathway. Groundwater not used as drinking water.
Holloman AFB	Air Force	Gallup	NM		yes	Not detected	Source - Rocket Testing; Groundwater, Surface water, soil/sediment	
Kirtland AFB	Air Force	Albuquerque	NM		yes	Not detected		
Lackland AFB	Air Force	San Antonio	TX		yes	Awaiting Results		
Langley AFB	Air Force	Hampton	VA		yes	Awaiting Results		
Mather AFB	Air Force	Sacramento	CA				Closed	
McClellan AFB	Air Force	Sacramento	CA				Closed	
McConnell AFB	Air Force	Wichita	KS		yes	Not detected	Titan Sites - Groundwater, soil sampled	
Melrose Air Force Range	Air Force	Melrose	NM		yes	Awaiting Results	Source - Explosives; soil, Drinking water, Surface water	
Moody AFB	Air Force	Valdosta	GA		no			
Mountain Home AFB	Air Force		ID		no			
New Boston AFS	Air Force	Manchester, NH	MA		yes	Not detected		
Offutt AFB	Air Force		NE		no			
Onizuka AFS	Air Force	Sunnyvale	CA		yes	Not detected		
Patrick AFB	Air Force	Cocoa Beach	FL		yes	Not detected		
Plant 4	Air Force	Forth Worth	TX		yes	Not detected		
Plant 42	Air Force	Palmdale	CA		yes	Not detected		
Plant 44	Air Force	Tucson	AZ		yes	Not detected		
Plant PJKS	Air Force	Waterton	CO		yes	Not detected		
Poinsett Range	Air Force	Shaw AFB	SC		yes	Groundwater - 8.4 ug/L maximum level detected		No exposure pathway. Groundwater not used as drinking water.
Randolph AFB	Air Force	San Antonio	TX		no			
Sheppard AFB	Air Force	Wichita Falls	TX		yes	Awaiting Results		

**Enclosure 4  
Perchlorate Sampling Conducted Since 2001**

Facility Name	Component	City	State	Test Site/Source	Sampled	Detected	Comments	Known Human Exposure?
Tinker AFB	Air Force	Oklahoma City	OK		no			
Travis AFB	Air Force	Fairfield	CA		yes	Groundwater, Site 12	Dept. of Health Services sampled	No exposure pathway. Groundwater not used as a drinking water source.
Vandenberg AFB	Air Force	Lompoc	CA		yes	Soil. In Groundwater, maximum detected was 517 ug/L	Tested Soil, Groundwater, Drinking water - found in Groundwater site 8 SLC4 in Trichloroethylene plume.	No exposure pathway.
Westover AFB	Air Force	Chicopee	MA		no		Restoration Advisory Board, via state, is requesting sampling.	
Wright-Patterson AFB	Air Force	Dayton	OH		yes	Not detected		
Aberdeen Proving Ground	Army	Aberdeen	MD	Drinking water	yes	Drinking water	State has issued health advisory for the City of Aberdeen of 1 ppb perchlorate in drinking water. State has issued a Draft Administrative Order to the Aberdeen Proving Groundwater to monitor, evaluate, and clean up perchlorate contamination. Aberdeen Proving Ground has ceased training with munitions containing perchlorate in the affected area. EPA Region III was involved in the sampling.	Exposure Pathway. Army is monitoring and assisting City of Aberdeen to ensure finished drinking water remains below 1ppb. Perchlorate has been found in drinking supply wells (Not detected- 5ppb) for the City of Aberdeen. Perchlorate has been detected in the aquifer that supplies water to the City of Aberdeen.
Aberdeen Proving Ground	Army	Aberdeen	MD	COA well field	yes	Groundwater	See above.	See above.
Aberdeen Proving Ground	Army	Aberdeen	MD	COA wells	yes	Groundwater	See above.	See above.
Aberdeen Proving Ground	Army	Aberdeen	MD	Harford drinking water	yes	Drinking water	See above.	See above.
Aberdeen Proving Ground	Army	Aberdeen	MD	Harford well field	no		See above.	See above.
Aberdeen Proving Ground	Army	Aberdeen	MD	Harford wells	yes	Groundwater	See above.	See above.
ARDEC (Picatinny Arsenal)	Army	Raritan	NJ	Open Burning/Open Detonation	yes	Groundwater		No exposure pathway.
Badger Army Ammunition Plant	Army	Baraboo	WI		yes	Not detected	State requested sampling	
Camp Bonneville	Army	Vancouver	WA		yes	Soil, Groundwater	Camp Bonneville is listed by EPA as a potential source for perchlorate releases. Source - Explosives, Propellant Disposal, missile disposa	No exposure pathway.
Camp Bullis	Army	San Antonio	TX	Open Burning/Open Detonation area	yes	Groundwater	Sampled in 2001 & 2002 due to request from state regulators.	No exposure pathway.
Camp Navajo	Army	Bellemont	AZ	Detonation Pits	yes	Groundwater		No exposure pathway.
Dugway Proving Ground	Army	Dugway	UT		no		Dugway is preparing a proposal for perchlorate assessment.	
Fort Meade	Army	Odenton	MD	Open Burning/Open Detonation areas	yes	Groundwater		No exposure pathway.
Fort Wingate	Army	Gallup	NM	Open burning/open detonation areas	yes	Groundwater	BRAC site currently under State Cleanup authority. Source - Explosives Disposal.	Investigation underway to determine whether there is a pathway for exposure.
Jefferson Proving Ground	Army	Madison	IN	Range boundaries	yes		Sample results pending Quality Assurance/Quality Control.	
Lake City Army Ammunition Plant	Army	Independence	MO		yes	Groundwater		No exposure pathway. 2 of 30 wells sampled with results of 23 and 79 ppb. No drinking water sources are threatened.
Lone Star Army Ammunition Plant	Army	Texarkana	TX	Burning Ground	yes	Groundwater		No exposure pathway. Low levels of perchlorate in soil and groundwater, but no indication that there is a completed pathway of exposure. 8 ppb found in Groundwater burning grounds and 9 ppb found next to production building. Monitoring of surface water continues on a quarterly basis per an agreement with regulatory agencies.
Lone Star Army Ammunition Plant	Army	Texarkana	TX	Production Bldg	yes	Soil		See above.

**Enclosure 4  
Perchlorate Sampling Conducted Since 2001**

Facility Name	Component	City	State	Test Site/Source	Sampled	Detected	Comments	Known Human Exposure?
Longhorn Army Ammunition Plant	Army	Karnack	TX		yes	Soil, Groundwater, Surface water	Longhorn is being used to test and study different innovative perchlorate cleanup technologies as well as being used to study ecological effects of perchlorate. Source - Propellant Handling	No exposure pathway. Perchlorate is not approaching drinking water sources. Installation has defined nature and extent of perchlorate contamination at various locations on Longhorn property. Nature and extent of perchlorate contamination in soil and groundwater has been identified. Monitoring of surface water continues on a quarterly basis per an agreement with regulatory agencies.
Massachusetts Military Reservation	Army	Falmouth	MA	MMR Open burning/open detonation areas	yes	Groundwater	EPA Region 1 has directed a screening level of 1.5 ppb and a cleanup level of 4 ppb. Massachusetts Department of Environmental Protection (MDEP) has issued a health advisory of 1 ppb in drinking water for the Towne of Bourne. Corps of Engineers has built a pipeline connecting Bourne with a regional water supply. Investigations into the feasibility of using an innovative perchlorate treatment technology are being conducted.	Exposure Pathway. Alternative drinking water source provided to other towns also provided to the town of Bourne. Perchlorate has been detected in wells that supply the town of Bourne (< 1 ppb) and in a private residence Bourne well (1.75 ppb). Perchlorate has been found in a sole source aquifer located under MMR (upto 300 ppb).
Massachusetts Military Reservation	Army	Falmouth	MA	Bourne water supply wells	yes	Drinking water	See above.	See above.
Massachusetts Military Reservation	Army	Falmouth	MA	Gallow Skating Rink	yes	Groundwater	See above.	See above.
Massachusetts Military Reservation	Army	Falmouth	MA	MMR Impact areas	yes	Groundwater	See above.	See above.
Massachusetts Military Reservation	Army	Falmouth	MA	MMR Testing ranges	yes	Groundwater	See above.	See above.
Massachusetts Military Reservation	Army	Falmouth	MA	MMR Training ranges	yes	Groundwater	See above.	See above.
Massachusetts Military Reservation	Army	Falmouth	MA		yes	Groundwater	Source - Open burning/open detonation. See above.	See above.
McAlester Army Ammunition Plant	Army	McAlester	OK	Brown Lake	yes	Surface water	State and EPA Region 6 directed sampling of adjacent lakes using RCRA 3004 authority. No sampling yet conducted at the Open burning/open detonation pending agreement between state and EPA Region 6	No exposure pathway. Concentrations detected below reporting limit.
McAlester Army Ammunition Plant	Army	McAlester	OK	Open burning/open detonation areas	no		See above.	See above.
McAlester Army Ammunition Plant	Army	McAlester	OK	Rocket Lake	yes	Surface water	See above.	See above.
Red River Army Depot	Army	Texarkana	TX	Open burning/open detonation areas	yes	Surface water	State requires quarterly sampling of Open burning/open detonation sites and there is a sampling plan. State has added perchlorate to Red River's TPDES permit. State has asked the facility to develop a Pollution Prevention Control Plan to address perchlorate.	No exposure pathway. Sewage outfall discharged to surface water that eventually feeds into lake used for drinking water. State sampling of surface water used for drinking water were non-detect.
Red River Army Depot	Army	Texarkana	TX	Sanitary Sewage Plant	yes	Soil, Groundwater	See above.	(see above)
Red River Army Depot	Army	Texarkana	TX		yes	Groundwater	Source - Propellant Handling. See above.	(see above)

**Enclosure 4  
Perchlorate Sampling Conducted Since 2001**

Facility Name	Component	City	State	Test Site/Source	Sampled	Detected	Comments	Known Human Exposure?
Redstone Arsenal	Army	Huntsville	AL		yes	Groundwater	There are two known plumes of perchlorate with elevated levels of perchlorate. Currently no drinking water sources are threatened.	Possible exposure pathway. The installation is monitoring to ensure that drinking water remains unaffected. Drinking water sources, however, have not been impacted. Elevated levels of perchlorate have been detected in springs that empty into a creek that, in turn, empties into the river. This site is located one mile upstream of the arsenal's drinking water intake. Sampling results from the drinking water intake are non-detect.
Seneca Army Depot	Army	Romulus	NY		no		Seneca Army Depot has been directed by regulators to assess for perchlorate. Seneca is evaluating the request, but there is no action yet. Regulators are targeting the Open burning/open detonation grounds.	
White Sands Missile Range	Army	Las Cruces	NM		yes	Soil	Source - Rocket Testing	No exposure pathway. Currently investigating perchlorate contamination in a drinking water aquifer. Have identified plume and are placing additional ground water monitoring wells to identify extent of contamination preliminary to developing a mapping and transport model.
Kerr-McGee Perchlorate Plant	FUDS	Henderson	NV		yes (not sampled by DoD)	Groundwater, Surface water, Drinking water	Source - Chemical Manufacturing	Exposure pathway suspected. DoD confirmation is pending.
Nike 14 Launcher Area	FUDS		CA		yes (not sampled by DoD)	Groundwater	Records search will address potential FUDS eligibility for emergent chemicals identified in letter rec'd from reg agency.	Exposure pathway suspected. DoD confirmation is pending.
Pyrite Canyon	FUDS	Glen Avon	CA		no		Need to establish FUDS eligibility. Records search will also include checking if any perchlorate containing items were stored/assembled, etc on site or if site usage during FUDS time era could have contributed to conditions.	
Rialto (formerly Rialto Ammunition Supply Point)	FUDS	Rialto	CA	Drinking water supply wells	yes (not sampled by DoD)	Drinking water	Source - Fireworks Facility, BF Goodrich, Rocket Research and Manufacturing	Exposure pathway suspected. DoD confirmation is pending.
Shumaker NAD	FUDS	Camden	AR	Surficial Aquifer	yes (not sampled by DoD)	Groundwater	The Corps of Engineers has conducted. Potentially responsible party investigations that have determined the Navy did not use perchlorate at the site. Post-Navy tenants at the site have used perchlorate.	Exposure pathway suspected. DoD confirmation is pending.
Brunswick NAS	Navy	Brunswick	ME	Explosive Ordnance Disposal Range	yes	Awaiting Results		
China Lake	Navy	China Lake	CA	Test and Training Range	yes	yes		No exposure pathway.
Concord	Navy	Concord	CA	Not applicable	no	Not applicable		
Corona	Navy	Corona	CA		yes	Awaiting Results		
Crane	Navy	Crane	IN		yes	Awaiting Results		
Dahlgren	Navy	Dahlgren	VA	Not applicable	no	Not applicable		
El Toro	Navy	Irvine	CA	Explosive Ordnance Disposal Range	yes	Groundwater	BRAC	No exposure pathway. Groundwater not used as a drinking water source.

**Enclosure 4**  
**Perchlorate Sampling Conducted Since 2001**

Facility Name	Component	City	State	Test Site/Source	Sampled	Detected	Comments	Known Human Exposure?
Indian Head	Navy	Indian Head	MD	propellant handling	yes	Groundwater, Surface water	Groundwater concentrations near the hogout facility average approximately 170 ppb. The effectiveness of an innovative in situ perchlorate treatment technology is being demonstrated at NSWC Indian Head.	No exposure pathway. Groundwater is not used for drinking water.
Little Creek NAB	Navy	Norfolk	VA	Pyrotechnics, cartridges, grenades, rocket motors, missiles, propellant, flares	No	Not Applicable		
Lualualei, Rocket Test Facility	Navy	Lualualei	HI		yes	no		
McGregor Naval Weapons Plant	Navy	McGregor	TX	propellant handling	yes	Soil, Groundwater, Surface water	Closed. Innovative perchlorate treatment technologies are being demonstrated at NWIRP McGregor.	No exposure pathway. Groundwater is not used for drinking water.
Normans Island	Navy		MA	bombing range	yes	Awaiting Results	Transferred	
Norfolk Naval Station	Navy	Norfolk	VA	Pyrotechnics, cartridges, grenades, rocket motors, missiles, propellants, mines, torpedoes	No	Not applicable	Storage only.	
St. Julien's Creek Annex	Navy	Norfolk	VA	Pyrotechnics, cartridges, grenades, rocket motors, missiles, propellants, mines, torpedoes, fuzes, flares, ejection seats	No	Not Applicable		
San Nicholas Island	Navy	Ventura County	CA	Explosive Ordnance Disposal Range	yes	Groundwater		No exposure pathway. Impacted wells taken out of service. RO provides all drinking water.
Seal Beach	Navy	Seal Beach	CA		yes	Awaiting Results		
South Weymouth EX-NAS	Navy	Weymouth	MA	Explosive Ordnance Disposal Range	yes	Awaiting Results	BRAC	
White Oak Fed. Research Center (Naval Surface Warfare Center)	Navy	Silver Spring	MD	propellant handling	yes	Groundwater	BRAC	No exposure pathway. Groundwater is not used for drinking water.
Yorktown NWS	Navy		VA	Pyrotechnics, cartridges, grenades, rocket motors, missiles, propellants, mines, torpedoes, fuzes, flares, ejection seats	No	Not Applicable		
Yorktown NWS Cheatham Annex	Navy		VA	Not Applicable	No	Not Applicable		