

**FY2016**

**PICATINNY ARSENAL**

**Army Defense Environmental Restoration Program**

**Installation Action Plan**

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## Statement of Purpose

The purpose of the Installation Action Plan (IAP) is to outline the total multiyear cleanup program for an installation. The plan identifies environmental cleanup requirements at each site, group of sites or areas of concern (AOC), and proposes a comprehensive, installation-wide approach, along with the costs and schedules associated with conducting investigations and taking the remedial actions (RA).

In an effort to coordinate planning information between the restoration manager, the US Army Environmental Command (USAEC), Picatinny Arsenal (PTA), an IAP was completed. The IAP is used to track requirements, schedules, and tentative budgets for all major Army installation cleanup programs.

The Installation Restoration Program (IRP) and Military Munitions Response Program (MMRP) follow the policies and the appropriate directives from the regulatory agencies and the appropriate guidance from the other stakeholders such as the Restoration Advisory Board (RAB).

All site-specific funding and schedule information has been prepared according to projected overall Army funding levels and is, therefore, subject to change.

## Acronyms

AEDB-CC	Army Environmental Database - Compliance-related Cleanup
AEDB-R	Army Environmental Database - Restoration
ANL	Argonne National Laboratory
AOC	Area of Concern
ARAR	Applicable or Relevant and Appropriate Requirement
ARDEC	Armament Research, Development and Engineering Center
AST	Aboveground Storage Tank
BERA	Baseline Ecological Risk Assessment
Bldg	Building
BNA	Base Neutral Acid
BRAC	Base Realignment and Closure
BSB	Bear Swamp Brook
BTEX	Benzene, Toluene, Ethylbenzene, Xylene
CC	Compliance-related Cleanup
CDC	Childcare Development Center
CLIN	Contract Line Item Number
COC	Contaminant of Concern
COPEC	Contaminants of Potential Ecological Concern
CR	Compliance Restoration
CS	Confirmation Study
CSM	Conceptual Site Model
cy	cubic yards
DBA	Drum Burial Area
DD	Decision Document
DDT	Dichloro-diphenyl-trichloroethane
DERP	Defense Environmental Restoration Program
DNT	Dinitrotoluene
DoD	Department of Defense
DSERTS	Defense Site Environmental Restoration Tracking System
EC	Engineering Controls
EE/CA	Engineering Evaluation/Cost Analysis
EOD	Explosive Ordnance Disposal
ER,A	Environmental Restoration, Army
ERA	Ecological Risk Assessment
ERF	Electromagnetic Research Facility
FS	Feasibility Study
FY	Fiscal Year
GCL	Guncotton Line
GPB	Green Pond Brook
HA	Hazard Assessment
HE	High Explosives
HHRA	Human Health Risk Assessment
HI	Hazard Index
HQ	Hazard Quotient
HRC	Hydrogen Releasing Compound

## Acronyms

HRR	Historical Records Review
IAP	Installation Action Plan
ICM	Improved Conventional Munitions
IMCOM	Installation Management Command
IR	Installation Restoration
IRA	Interim Removal Action
IRAR	Interim Remedial Action Report
IRP	Installation Restoration Program
kg	kilogram
LF	Landfill
LOC	Level of Concern
LTM	Long-Term Management
LUC	Land Use Control
MATCON	Modified Asphalt Technology for Containment
MC	Munitions Constituents
MD	Munitions Debris
MEC	Munitions and Explosives of Concern
mg	milligram
mm	millimeter
MMRP	Military Munitions Response Program
MNA	Monitored Natural Attenuation
MR	Munitions Response
MRS	Munitions Response Site
MRSPP	Munitions Response Site Prioritization Protocol
MTBE	Methyl Tert butyl Ether
N/A	Not Applicable
NC	Nitrocellulose
NFA	No Further Action
NJDEP	New Jersey Department of Environmental Protection
NJNRDCSRS	New Jersey Direct Contact Soil Remediation Standard
NJPDES	New Jersey Pollutant Discharge Elimination System
NPL	National Priorities List
NTCRA	Non-Time Critical Removal Action
ODUSD(I&E)	Office of Deputy Under Secretary of Defense for Installation and Environment
ORAP	Operational Range Assessment Program
OU	Operable Unit
P&T	Pump-and-Treat
PA	Preliminary Assessment
PAH	Polycyclic Aromatic Hydrocarbon
PBA	Performance-Based Acquisition
PBC	Performance-Based Contract
PCB	Polychlorinated Biphenyl
PCE	Tetrachloroethylene
PEO	Program Executive Office
PHS&T	Packaging, Handling, Storage, and Transportation Center

## Acronyms

PICA	AEDB-R Abbreviation for Picatinny Arsenal Sites
POL	Petroleum, Oil and Lubricants
PP	Proposed Plan
ppb	parts per billion
ppm	parts per million
PTA	Picatinny Arsenal
R&D	Research and Development
RA	Remedial Action
RA(C)	Remedial Action (Construction)
RA(O)	Remedial Action (Operation)
RAB	Restoration Advisory Board
RAR	Remedial Action Report
RC	Response Complete
RCI	Residential Community Initiative
RCRA	Resource Conservation and Recovery Act
RD	Remedial Design
RDX	Cyclotrimethylenetrinitramine
RFA	RCRA Facility Assessment
RI	Remedial Investigation
RIP	Remedy-in-Place
RMD	Reaction Motors Division
ROD	Record of Decision
RRSE	Relative Risk Site Evaluation
RSA	Rodent Sperm Analysis
SDZ	Surface Danger Zone
SI	Site Inspection
SLERA	Screening Level Ecological Risk Assessment
SVE	Soil Vapor Extraction
SVOC	Semi-Volatile Organic Compound
TAPP	Technical Assistance for Public Participation
TBD	To Be Determined
TCE	Trichloroethylene
TCRA	Time-Critical Removal Action
TECUP	Toxic and Energetics Cleanup Program
Tetryl	2,4,6-Trinitrophenylmethylnitramine
TNT	Trinitrotoluene
TPH	Total Petroleum Hydrocarbons
TRC	Technical Review Committee
ug/L	micrograms per Liter
USACHPPM	US Army Center for Health Promotion and Preventive Medicine
USAEC	US Army Environmental Command
USAEHA	US Army Environmental Hygiene Agency
USATHAMA	US Army Toxic and Hazardous Materials Agency
USEPA	US Environmental Protection Agency
USGS	US Geological Survey



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## Acronyms

UST	Underground Storage Tank
UXO	Unexploded Ordnance
VOC	Volatile Organic Compound
WWI	World War I
WWII	World War II

## Installation Information

### Installation Locale

**Installation Size (Acreage):** 5880

**City:** Rockaway

**County:** Morris

**State:** New Jersey

### Other Locale Information

This installation lies just west of the greater New York/New Jersey Metropolitan Area, 32 miles northwest of Newark and 42 miles west of New York City.

Local boroughs in the immediate vicinity are Wharton (1 mile), Dover (3 miles), and Rockaway (5 miles). Interstates 80, 280, and 287 comprise the major travel thoroughfares in the area.

State Route 15 forms the southern boundary of the installation and provides access to the main gate. Areas around Picatinny are characterized by a mix of small towns, bedroom communities, and semi-rural lands. The installation is situated in the New Jersey Highlands portion of the New England physiographic province, a region of low mountain ridges and intervening valleys that trend southwest to northeast.

The New Jersey Highlands also provide the drinking water for much of the urbanized portions of the state. Upland areas in the vicinity of Picatinny are mostly forested with rocky outcrops as high as 1,000 feet above sea level occurring in places. Picatinny is laid out in a roughly southwest to northeast direction within a broad valley flanked by parallel ridge lines. Green Pond Mountain is the dominant topographic feature along the installation's northern boundary.

### Installation Mission

PTA is a joint service armament research and development center. It provides virtually all of the lethal mechanisms used in Army weapon systems and those of the other military services.

PTA is a Department of Defense (DoD) Joint Center of Excellence for Guns and Ammunition providing life cycle research, development, and acquisition support to each of our nation's military services. This includes production, field engineering support, and demilitarization of munitions, weapons, fire control and assigned items.

PTA is home to a number of tenant organizations including the Program Executive Office for Ammunition (PEO Ammo), US Army Armament Research, Development and Engineering Center, Joint Munitions and Lethality Life Cycle Management Command, IMCOM, and a number of smaller organizations most of which are involved in the materiel acquisition field. Currently, design, development and engineering support are the principal functions performed at Picatinny. Production is limited to fabricating and manufacturing small quantity prototypes for testing and procurement. As a part of the development and testing process, the installation stores various types of ammunition and explosives in specially designed bunkers. The storage of ammunition and explosives creates safety and security risks that limit access and restrict use of certain parts of the land base.

PTA executes four broad missions:

**Life Cycle Acquisition Management** - The Army is the DoD single manager for conventional ammunition acquisition. This includes small, medium and large-caliber ammunition for all US Forces. The Army maintains PEO Ammo at PTA as part of a larger effort to establish greater accountability and responsibility in the life cycle management of DoD's ammunition programs. PEO Ammo manages a portfolio of more than 400 different items.

**Armament and Munitions Research, Development and Engineering (ARDEC)** is the Army's principal researcher, developer, and sustainer of current and future armament and munitions systems. In this role, ARDEC is responsible for executing programs that are in one of the following phases of the acquisition process: basic research, applied research, concept demonstration, development, low rate initial production, and support of deployment.

## Installation Information

Base Operations and Community Support - The US Army Garrison, PTA (USAG) is part of the US Army Installation Management Command (IMCOM). USAG helps execute the missions of the installation's tenant organizations and personnel involved in implementing those missions by providing needed base operations services. These services are new construction and maintenance of facilities, roads and grounds, providing housing for Soldiers and their families and support activities for assigned civilian employees.

Additional tenants and organizations on PTA include the Company G, 2nd Battalion, 25th Marine Regiment; Defense Contract Management Agency-Springfield; Defense Contract Audit Agency; Naval Sea Systems Command and the New Jersey Army National Guard. Several Naval facilities, which provide significant operational benefit to the Naval Surface Warfare Center and the Naval Sea Systems Command, have begun to integrate themselves into the PTA landscape. These Navy facilities include a guns and weapons technical data facility, guns and weapons turret facility, and a packaging, handling, storage and transportation facility.

### Lead Organization

IMCOM

### Lead Executing Agencies for Installation

USAEC with two performance-based acquisition (PBA) contracts.

PTA with in-house contractor in regard to the non-time critical MMRP land use controls (LUC).

### Regulator Participation

<b>Federal</b>	US Environmental Protection Agency (USEPA) Region II, Federal Facilities Section US Fish and Wildlife Service for consultation aspects for endangered species
<b>State</b>	New Jersey Department of Environmental Protection (NJDEP)
<b>Local</b>	Rockaway Sewage Authority

### National Priorities List (NPL) Status

A score of 43.5 was recorded on 01-FEB-90.

**Date for RA(C) Completion:** 202010

**Date for NPL Deletion:** TBD

### Installation Restoration Advisory Board (RAB)/Technical Review Committee (TRC)/Technical Assistance for Public Participation (TAPP) Status

RAB established 199512

### Installation Program Summaries

#### IRP

**Primary Contaminants of Concern:** Explosives, Metals, Munitions and explosives of concern (MEC), Perchlorate, Pesticides, Petroleum, Oil and Lubricants (POL), Polychlorinated Biphenyls (PCB), Polycyclic Aromatic Hydrocarbons (PAH), Semi-volatiles (SVOC), Volatiles (VOC)

**Affected Media of Concern:** Groundwater, Sediment, Soil, Surface Water

#### MMRP

**Primary Contaminants of Concern:** Munitions and explosives of concern (MEC), Munitions constituents (MC)

**Affected Media of Concern:** Groundwater, Sediment, Soil, Surface Water

#### CR

**Primary Contaminants of Concern:** Metals, Polycyclic Aromatic Hydrocarbons (PAH)

**Affected Media of Concern:** Soil

## 5-Year / Periodic Review Summary

### 5-Year / Periodic Review Summary

Status	Start Date	End Date	End FY
Complete	201011	201109	2011
Complete	200602	200610	2007
Underway	201511	201609	2016

### Last Completed 5-Year / Periodic Review Details

Associated ROD/DD Name	Sites
Burning Ground Cap (Matcon)	PICA-002
EE/CA for removal action	PICA-011
LUC for Soils at Sites 19, 28, 44, etc	PICA-020, PICA-036, PICA-070, PICA-083, PICA-088, PICA-092, PICA-095, PICA-099, PICA-100, PICA-105, PICA-110, PICA-112, PICA-118
Post Farm Landfill	PICA-065
ROD for Green Pond/Bear Swamp Brooks	PICA-193
ROD for PICA 066- Site 20/24	PICA-066
ROD for PICA 076- Area D Groundwater	PICA-076
Removal Action D.D. of PCB impacted soil	PICA-011

**Results** EPA approved report as protective but provided additional comments.

**Actions** Army addressing EPA comments.

**Plans** Army will prepare & public notice the revised final document.

### Recommendations and Implementation Plans:

The 2011 five-year review was concurred on by the USEPA in August of 2012 and a public notice issued soon afterwards. The five-year review included evaluation of the following sites:

- Site 23 (PICA 065) Post Farm Landfill
- Site 20/24 (PICA 066) Pyrotechnic Testing Range/ Sanitary Landfill
- Site 25/26 (PICA 067) Sanitary Landfill/ Dredge Pile
- Area D (PICA 076) Groundwater
- Area E (PICA 077) Groundwater
- Site 180 (PICA 093) Waste Burial Area
- Green Pond Brook (GPB) and Bear Swamp Brook (PICA 193)
- Group of 13 Sites (PICA 020)
- Site 61/104 (PICA 102) Waste Dumps and Chemical Laboratories
- Area B (PICA 205) Groundwater
- Site 31/101 (PICA 072) Former DRMO Yard
- Area C (PICA 206) Groundwater
- Group 3 Sites (PICA 008) Groundwater
- Group 1 Sites (PICA 079)

The 2011 five-year review concluded that "All final site remedy decisions have not been made. Until final remedy decisions are completed, an opinion on site-wide protectiveness cannot be made. The selected remedial actions for those sites detailed herein are found to be functioning as intended and protective of human health and the environment. No deficiencies were noted that detract from the ability of the selected remedies to protect human health and the environment."

USEPA, in their concurrences, noted "However, several of USEPA's original comments (General Comments 1 and 2, Specific Comment 11) indicated that the five-year review should evaluate whether changes in methodology for

## 5-Year / Periodic Review Summary

**Recommendations and Implementation Plans:**

determining remediation standards have occurred, and if so, to what extent these changes may impact the protectiveness of the remedies. The responses to these comments are not adequate as little or no additional evaluation has been provided. Although USEPA will not require further revision of the fourth five-year review, it will expect a more detailed assessment of the protectiveness of the remedies to be made in future five-year reviews."

## Land Use Control (LUC) Summary

**LUC Title:** LUC at PICA-065

**Site(s):** PICA-065

**ROD/DD Title:** Post Farm Landfill

**Location of LUC**

Post Farm

**Land Use Restriction:** Landfill restriction - Prohibit activities that would impact the LF cap (or cover system) and drainage system, Landfill restriction - Prohibit excavation on LF cap or cover system, Landfill restriction - Restrict access to the site, Media specific restriction - Prohibit, or otherwise manage excavation below a specified depth, Media specific restriction - prohibit use of groundwater for consumption or domestic purposes, Media specific restriction - restrict drinking water well installation, Media specific restriction - restrict withdrawal or use of groundwater for agricultural/irrigation purposes, Media specific restriction - restrict withdrawal or use of groundwater w/out treatment, Restrict land use - No daycare/hospital/school use, Restrict land use - No residential use

**Types of Engineering Controls:** Fences, Signs

**Types of Institutional Controls:** Dig Permits, Education programs, Notations in Master Plan, Notices (in the grantor/grantee index, newspapers, etc.), Restrictions on land use

**Date in Place:** 200709

**Modification Date:** N/A

**Date Terminated:** N/A

**Inspecting Organization:** Installation

**Record of LUC:** Master Plan or Equivalent

**Documentation Date:** 200706

**LUC Enforcement:** Annual Inspections, 5 Year Reviews, Markers, Other

**Contaminants:** METALS, PAH, PCBs, VOC

**Additional Information**

This groundwater is part of the sitewide Classified Exemption Area per NJDEP Regulations

**LUC Title:** LUC at PICA-067

**Site(s):** PICA-067

**ROD/DD Title:** ROD for Sanitary Landfill & Dredge Pile

**Location of LUC**

Sanitary Landfill and Dredge Pile

**Land Use Restriction:** Media specific restriction - Prohibit, or otherwise manage excavation, Media specific restriction - Prohibit, or otherwise manage excavation below a specified depth, Restrict land use - No daycare/hospital/school use, Restrict land use - No residential use

**Types of Engineering Controls:** Signs

**Types of Institutional Controls:** Dig Permits, Education programs, Notations in Master Plan, Notices (in the grantor/grantee index, newspapers, etc.), Restrictions on land use

**Date in Place:** 200809

**Modification Date:** N/A

**Date Terminated:** N/A

**Inspecting Organization:** Installation

**Record of LUC:** Master Plan or Equivalent

**Documentation Date:** 200809

**LUC Enforcement:** Annual Inspections, 5 Year Reviews, Other

## Land Use Control (LUC) Summary

**Contaminants:** METALS, PAH, PCBs

**Additional Information**

N/A

**LUC Title:** LUC at PICA-077

**Site(s):** PICA-077

**ROD/DD Title:** ROD for Area E Groundwater

**Location of LUC**

Area E

**Land Use Restriction:** Media specific restriction - Prohibit groundwater extraction that interferes with Remedial Action system, Media specific restriction - prohibit use of groundwater for consumption or domestic purposes, Media specific restriction - restrict drinking water well installation, Media specific restriction - restrict withdrawal or use of groundwater for agricultural/irrigation purposes, Media specific restriction - restrict withdrawal or use of groundwater w/out treatment

**Types of Engineering Controls:** None

**Types of Institutional Controls:** Education programs, Notations in Master Plan, Notices (in the grantor/grantee index, newspapers, etc.), Restrictions on land use

**Date in Place:** 200709

**Modification Date:** N/A

**Date Terminated:** N/A

**Inspecting Organization:** Installation

**Record of LUC:** Master Plan or Equivalent

**Documentation Date:** 200709

**LUC Enforcement:** Annual Inspections, 5 Year Reviews, Other

**Contaminants:** VOC

**Additional Information**

This groundwater is part of the sitewide Classified Exemption Area per NJDEP Regulations

**LUC Title:** LUC at PICA-193

**Site(s):** PICA-193

**ROD/DD Title:** ROD for Green Pond/Bear Swamp Brooks

**Location of LUC**

Green Pond & Bear Swamp Brooks

**Land Use Restriction:** Media specific restriction - Prohibit fishing except for recreational purposes (catch and release), Restrict land use - No daycare/hospital/school use, Restrict land use - No residential use

**Types of Engineering Controls:** Signs

**Types of Institutional Controls:** Dig Permits, Education programs, Notations in Master Plan, Restrictions on land use

**Date in Place:** 200709

**Modification Date:** N/A

**Date Terminated:** N/A

**Inspecting Organization:** Installation

**Record of LUC:** Master Plan or Equivalent

**Documentation Date:** 200709



## Land Use Control (LUC) Summary

**LUC Enforcement:** Annual Inspections, 5 Year Reviews, Other

**Contaminants:** METALS, PAH, PCBs, PESTICIDES

**Additional Information**

N/A

**LUC Title:** LUC for Area B Groundwater

**Site(s):** PICA-205

**ROD/DD Title:** ROD for Area B Groundwater

**Location of LUC**

Southern Part of Picatinny at Site 20/24

**Land Use Restriction:** Landfill restriction - Prohibit activities that would impact the LF cap (or cover system) and drainage system, Landfill restriction - Prohibit excavation on LF cap or cover system, Media specific restriction - prohibit use of groundwater for consumption or domestic purposes, Media specific restriction - restrict drinking water well installation, Media specific restriction - restrict withdrawal or use of groundwater w/out treatment, Restrict land use - Mitigation area(s) protection, Restrict land use - No residential use

**Types of Engineering Controls:** Guards, Markers, Signs

**Types of Institutional Controls:** Construction Permit, Dig Permits, Notations in Master Plan, Restrictions on land use

**Date in Place:** 200905

**Modification Date:** N/A

**Date Terminated:** N/A

**Inspecting Organization:** EPA

**Record of LUC:** Master Plan or Equivalent

**Documentation Date:** N/A

**LUC Enforcement:** Annual Inspections, 5 Year Reviews, Markers

**Contaminants:** VOC

**Additional Information**

This groundwater is part of the sitewide Classified Exemption Area per NJDEP Regulations

**LUC Title:** LUC for PICA 079/Group 1

**Site(s):** PICA-079

**ROD/DD Title:** ROD for Group 1 Sites

**Location of LUC**

Near and around building in 800 including 809 and 810.

**Land Use Restriction:** Media specific restriction - Prohibit, or otherwise manage excavation, Media specific restriction - prohibit use of groundwater for consumption or domestic purposes, Restrict land use - No daycare/hospital/school use, Restrict land use - No residential use

**Types of Engineering Controls:** Markers, Signs

**Types of Institutional Controls:** Construction Permit, Dig Permits, Education programs, Notations in Master Plan, Restrictions on land use

**Date in Place:** 201009

**Modification Date:** N/A

**Date Terminated:** N/A

**Inspecting Organization:** Installation

**Record of LUC:** Master Plan or Equivalent

## Land Use Control (LUC) Summary

**Documentation Date:** 200709

**LUC Enforcement:** Annual Inspections, 5 Year Reviews, Markers

**Contaminants:** INORGANICS, NITROAROMATICS, PCBs

**Additional Information**

N/A

**LUC Title:** LUC for PICA 72/Site 31

**Site(s):** PICA-072

**ROD/DD Title:** ROD for Site 31/101 (PICA 072) Soil

**Location of LUC**

Area is defined in the remedial design and contains two sites (RI Site 31 and 101)

**Land Use Restriction:** Landfill restriction - Prohibit excavation on LF cap or cover system, Landfill restriction - Prohibit installation of utility system lines through the site, Media specific restriction - Prohibit, or otherwise manage excavation, Restrict land use - Mitigation area(s) protection, Restrict land use - No daycare/hospital/school use, Restrict land use - No residential use

**Types of Engineering Controls:** Fences, Markers, Signs

**Types of Institutional Controls:** Construction Permit, Dig Permits, Education programs, Notations in Master Plan, Restrictions on land use

**Date in Place:** 200906

**Modification Date:** N/A

**Date Terminated:** N/A

**Inspecting Organization:** EPA

**Record of LUC:** Master Plan or Equivalent

**Documentation Date:** N/A

**LUC Enforcement:** Annual Inspections, 5 Year Reviews, Markers

**Contaminants:** INORGANICS, PCBs, Unexploded Ordnance(UXO)

**Additional Information**

N/A

**LUC Title:** LUC for PICA-066, 20/24

**Site(s):** PICA-066

**ROD/DD Title:** ROD for PICA 066- Site 20/24

**Location of LUC**

Site 20/24, Area B

**Land Use Restriction:** Landfill restriction - Prohibit activities that would impact the LF cap (or cover system) and drainage system, Landfill restriction - Prohibit excavation on LF cap or cover system, Landfill restriction - Restrict access to the site, Media specific restriction - Prohibit, or otherwise manage excavation below a specified depth, Restrict land use - No daycare/hospital/school use, Restrict land use - No residential use

**Types of Engineering Controls:** Signs

**Types of Institutional Controls:** Dig Permits, Education programs, Notations in Master Plan, Notices (in the grantor/grantee index, newspapers, etc.), Restrictions on land use

**Date in Place:** 200309

**Modification Date:** N/A

## Land Use Control (LUC) Summary

**Date Terminated:** N/A

**Inspecting Organization:** Installation

**Record of LUC:** Master Plan or Equivalent

**Documentation Date:** 200309

**LUC Enforcement:** Annual Inspections, 5 Year Reviews

**Contaminants:** METALS, PCBs, PESTICIDES

**Additional Information**

N/A

**LUC Title:** LUC for PICA-076

**Site(s):** PICA-076

**ROD/DD Title:** ROD for PICA 076- Area D Groundwater

**Location of LUC**

Area D, Downtown Picatinny Groundwater

**Land Use Restriction:** Media specific restriction - prohibit use of groundwater for consumption or domestic purposes, Media specific restriction - restrict drinking water well installation, Media specific restriction - restrict withdrawal or use of groundwater for agricultural/irrigation purposes, Media specific restriction - restrict withdrawal or use of groundwater w/out treatment

**Types of Engineering Controls:** None

**Types of Institutional Controls:** Dig Permits, Notations in Master Plan, Restrictions on Groundwater Withdrawal, Restrictions on land use

**Date in Place:** 200708

**Modification Date:** N/A

**Date Terminated:** N/A

**Inspecting Organization:** Installation

**Record of LUC:** Master Plan or Equivalent

**Documentation Date:** 200708

**LUC Enforcement:** Annual Inspections, 5 Year Reviews

**Contaminants:** VOC

**Additional Information**

This groundwater is part of the sitewide Classified Exemption Area per NJDEP Regulations

**LUC Title:** LUC for PICA-093

**Site(s):** PICA-093

**ROD/DD Title:** ROD for Waste Burial Area, PICA-093

**Location of LUC**

Waste Burial Area

**Land Use Restriction:** Media specific restriction - Prohibit, or otherwise manage excavation, Media specific restriction - Prohibit, or otherwise manage excavation below a specified depth

**Types of Engineering Controls:** Signs

**Types of Institutional Controls:** Education programs, Notations in Master Plan, Notices (in the grantor/grantee index, newspapers, etc.), Restrictions on land use

**Date in Place:** 200709

## Land Use Control (LUC) Summary

**Modification Date:** N/A

**Date Terminated:** N/A

**Inspecting Organization:** Installation

**Record of LUC:** Master Plan or Equivalent

**Documentation Date:** 200709

**LUC Enforcement:** Annual Inspections, 5 Year Reviews

**Contaminants:** DIOXINS/DIBENZOFURANS, METALS, PCBs

**Additional Information**

N/A

**LUC Title:** LUCs for AREA C

**Site(s):** PICA-206

**ROD/DD Title:** Area C GW ROD

**Location of LUC**

Area C (Southern Picatinny)

**Land Use Restriction:** Media specific restriction - Prohibit groundwater extraction that interferes with Remedial Action system, Media specific restriction - prohibit use of groundwater for consumption or domestic purposes, Restrict land use - No residential use

**Types of Engineering Controls:** Signs

**Types of Institutional Controls:** Dig Permits, Education programs, Notations in Master Plan, Restrictions on Groundwater Withdrawal, Restrictions on land use

**Date in Place:** 200910

**Modification Date:** N/A

**Date Terminated:** N/A

**Inspecting Organization:** EPA

**Record of LUC:** Master Plan or Equivalent

**Documentation Date:** 200910

**LUC Enforcement:** Annual Inspections, 5 Year Reviews, Markers

**Contaminants:** INORGANICS, ORGANICS

**Additional Information**

N/A

**LUC Title:** LUCs related to Group 3

**Site(s):** PICA-008

**ROD/DD Title:** ROD for Group 3 or PICA 08

**Location of LUC**

Group 3 is located in the 3500 area and G-2 Pond area. Formerly Area J of RI Concept Plan

**Land Use Restriction:** Media specific restriction - Prohibit, or otherwise manage excavation, Media specific restriction - restrict drinking water well installation, Restrict land use - No daycare/hospital/school use, Restrict land use - No residential use

**Types of Engineering Controls:** Markers, Signs

**Types of Institutional Controls:** Dig Permits, Notations in Master Plan

**Date in Place:** 201010

## Land Use Control (LUC) Summary

**Modification Date:** N/A

**Date Terminated:** N/A

**Inspecting Organization:** Installation

**Record of LUC:** Master Plan or Equivalent

**Documentation Date:** 200709

**LUC Enforcement:** Annual Inspections, 5 Year Reviews, Markers

**Contaminants:** VOC

**Additional Information**

N/A

**LUC Title:** NTCRA LUCS for PICA MRS

**Site(s):** PICA-003-R-01, PICA-005-R-01, PICA-006-R-01, PICA-008-R-01, PICA-010-R-01, PICA-013-R-01

**ROD/DD Title:** Action Memorandum Land Use

**Location of LUC**

Six MRS on Picatinny

**Land Use Restriction:** Restrict land use - No daycare/hospital/school use

**Types of Engineering Controls:** Fences, Signs

**Types of Institutional Controls:** Construction Permit, Notations in Master Plan, Restrictions on land use

**Date in Place:** 201304

**Modification Date:** N/A

**Date Terminated:** N/A

**Inspecting Organization:** Installation

**Record of LUC:** Master Plan or Equivalent

**Documentation Date:** N/A

**LUC Enforcement:** Annual Inspections, 5 Year Reviews

**Contaminants:** Unexploded Ordnance(UXO)

**Additional Information**

N/A

# Cleanup Program Summary

## Installation Historic Activity

The PTA was established in 1880 by the US War Department as a storage and powder depot. Later it was expanded to assemble powder charges for cannons and to fill projectiles with maximite (a propellant). During World War I (WWI), PTA produced all sizes of projectiles. In the years following WWI, PTA began projectile melt-loading operations and began to manufacture pyrotechnic signals and flares on a production basis. During World War II (WWII), PTA produced artillery ammunition, bombs, high explosives (HE), pyrotechnics, and other ordnance. After WWII, PTA's primary role became the research and engineering of new ordnance; however, during the Korean and Vietnam conflicts, PTA resumed the production and development of explosives, ammunition, and mine systems.

In recent years, PTA's mission has shifted to conducting and managing research development, life cycle engineering, and support of other military weapons and weapon systems. The facility has responsibility for the research and development (R&D) of armament items.

## Installation Program Cleanup Progress

### IRP

**Prior Year Progress:** 2015 annual reports were approved by NJDEP and USEPA.

A draft five-year review will be concurred on by USEPA. Eastern Edge of Green Pond Brook, PICA-111, PICA-207 Sites and Lake Picatinny were sampled per approved work plans.

Initiated two performance-based acquisitions in FY16:

1. contract is to perform the RA(O)/LTM sites and 2. Contract is to obtain records of decision (ROD) and/or RIP for the remaining sites.

**Future Plan of Action:** Complete preliminary assessment (PA) and SIs for referred Operational Range Assessment Program (ORAP) sites, feasibility studies (FS), proposed plans (PP), RODs, RAs consistent with the schedule of the PBA.

Continue the LTM and RA(O) monitoring. Public notice for the 2016 five-year review.

### MMRP

**Prior Year Progress:** The PBA contract will develop a draft FS for all the MRS sites.

Continue MEC construction support for all eligible areas.

Perform clearance of American Water Plant construction project under an approved Explosive Safety Plan.

**Future Plan of Action:** Work on the FS, PP and ROD for all MRS sites as the program management plan of the contract allows.

Continue MEC construction support for all eligible areas.

### CR

**Prior Year Progress:** A contract was awarded in FY15 and work has begun on the FS, PP and ROD for CC-057 that is now included in PICA-006-R-02.

**Future Plan of Action:** Continue the FS, PP and ROD for CC-057/PICA-006-R-02.

Complete the SI for CC-211 and begin the RI, if needed. Complete the PA for CC-212 and begin the SI, if needed.

**PICATINNY ARSENAL**  
**Army Defense Environmental Restoration Program**  
**Installation Restoration Program**

# IRP Summary

**Installation Total Army Environmental Database-Restoration (AEDB-R) Sites/Closeout Sites Count:** 176/121

## Installation Site Types with Future and/or Underway Phases

1	Above Ground Storage Tank (PICA-022)
1	Building Demolition/Debris Removal (PICA-155)
1	Burn Area (PICA-002)
13	Contaminated Buildings (PICA-096, PICA-111, PICA-122, PICA-131, PICA-134, PICA-135, PICA-143, PICA-145, PICA-184, PICA-199, PICA-200, PICA-207, PICA-209)
1	Contaminated Fill (PICA-192)
8	Contaminated Ground Water (PICA-008, PICA-013, PICA-058, PICA-076, PICA-079, PICA-204, PICA-205, PICA-206)
3	Contaminated Sediments (PICA-015, PICA-057, PICA-193)
1	Disposal Pit/Dry Well (PICA-001)
2	Explosive Ordnance Disposal Area (PICA-162, PICA-164)
4	Landfill (PICA-065, PICA-066, PICA-067, PICA-093)
1	Oil Water Separator (PICA-097)
6	Spill Site Area (PICA-020, PICA-050, PICA-091, PICA-108, PICA-136, PICA-149)
8	Storage Area (PICA-011, PICA-071, PICA-072, PICA-075, PICA-085, PICA-171, PICA-175, PICA-195)
3	Surface Disposal Area (PICA-102, PICA-107, PICA-163)
1	Waste Lines (PICA-006)
1	Waste Treatment Plant (PICA-077)

## Most Widespread Contaminants of Concern

Explosives, Metals, Munitions and explosives of concern (MEC), Perchlorate, Pesticides, Petroleum, Oil and Lubricants (POL), Polychlorinated Biphenyls (PCB), Polycyclic Aromatic Hydrocarbons (PAH), Semi-volatiles (SVOC), Volatiles (VOC)

## Media of Concern

Groundwater, Sediment, Soil, Surface Water

## Completed Remedial Actions (Interim Remedial Actions/ Final Remedial Actions (IRA/FRA))

Site ID	Site Name	Action	Remedy	FY
PICA-089	PETROLEUM LEAK AREA(BLDG 305)SITE 52	IRA	WASTE REMOVAL - SOILS	1986
PICA-073	BLDG 553 STORAGE TANKS(SITE 32)	IRA	WASTE REMOVAL - DRUMS, TANKS, BULK CONTAINERS	1991
PICA-074	BLDG 527A STORAGE TANKS (SITE 33)	IRA	WASTE REMOVAL - DRUMS, TANKS, BULK CONTAINERS	1991
PICA-083	Golf Course Maintenance(BLDG 39)SITE 44	IRA	WASTE REMOVAL - SOILS	1991



## IRP Summary

### Completed Remedial Actions (Interim Remedial Actions/ Final Remedial Actions (IRA/FRA))

Site ID	Site Name	Action	Remedy	FY
PICA-123	FORMER HAZ WASTE STOR/FUSE ASS(BLDG 210)	IRA	WASTE REMOVAL - DRUMS, TANKS, BULK CONTAINERS	1991
PICA-136	HIGH PRESSUREBOILER frmr bldg. 3013	IRA	WASTE REMOVAL - SOILS	1992
PICA-065	POST FARM LANDFILL (SITE 23)	IRA	WASTE REMOVAL - DRUMS, TANKS, BULK CONTAINERS	1993
PICA-072	FORMER GAS STATION/ DRMO(SITE 31)	IRA	FENCE OR OTHER SITE ACCESS CONTROL MEASURES	1993
PICA-011	BLDG 60 SATELITE WSTE ACCOM AREA(SITE122	IRA	REMOVAL	2000
PICA-050	FORMER REACT MTRS/RCKT FUEL TST A 1500	IRA	WASTE REMOVAL - DRUMS, TANKS, BULK CONTAINERS	2002
PICA-066	SANITARY LANDFILL(NEAR SITE 20)SITE 24	FRA	CAPPING	2003
PICA-066	SANITARY LANDFILL(NEAR SITE 20)SITE 24	FRA	INSTITUTIONAL CONTROLS	2003
PICA-001	INACTIVE TETRYL WASTE PITS (SITES 17/18)	IRA	REMOVAL	2005
PICA-111	FORMER BLDG 435,PROPELLANT SOLV MIXING	IRA	WASTE REMOVAL - SOILS	2005
PICA-193	GREEN POND AND BEAR SWAMP BROOK SITE 190	IRA	WASTE REMOVAL - SOILS	2005
PICA-209	BUILDING 167, LOCOMOTIVE AREA, BLDG. 430	IRA	WASTE REMOVAL - SOILS	2005
PICA-076	FORM METL PLATG WSTWTR FAC/LAGOONS B- 24	FRA	INSTITUTIONAL CONTROLS	2006
PICA-076	FORM METL PLATG WSTWTR FAC/LAGOONS B- 24	IRA	GROUND WATER TREATMENT	2006
PICA-065	POST FARM LANDFILL (SITE 23)	FRA	INSTITUTIONAL CONTROLS	2007
PICA-067	SANITARY LANDFILL(NEAR SITE 26)SITE 25	FRA	CAPPING	2007
PICA-076	FORM METL PLATG WSTWTR FAC/LAGOONS B- 24	FRA	SLURRY WALLS/UNDERGROUND BARRIERS	2007
PICA-093	WASTE BURIAL AREA NEAR SITES 19&34(180)	FRA	FENCE OR OTHER SITE ACCESS CONTROL MEASURES	2007
PICA-193	GREEN POND AND BEAR SWAMP BROOK SITE 190	FRA	REMOVAL	2007
PICA-077	Area E Groundwater (Site 38)	FRA	NATURAL ATTENUATION	2008
PICA-102	FORMER WASTE DUMP/CHEMICAL LAB	FRA	REMOVAL	2008
PBC Picatinny	PBC	FRA	OTHER	2009
PICA-072	FORMER GAS STATION/ DRMO(SITE 31)	FRA	REMOVAL	2009
PICA-205	AREA B GROUNDWATER	FRA	BIOREMEDIATION - IN SITU GROUNDWATER	2009
PICA-205	AREA B GROUNDWATER	FRA	NATURAL ATTENUATION	2009
PICA-206	AREA C GROUNDWATER	FRA	INSTITUTIONAL CONTROLS	2009

## IRP Summary

### Completed Remedial Actions (Interim Remedial Actions/ Final Remedial Actions (IRA/FRA))

Site ID	Site Name	Action	Remedy	FY
PICA-072	FORMER GAS STATION/ DRMO(SITE 31)	FRA	CAPPING	2010
PICA-079	ORDNANCE/EXPLOSIVE BLDGS 800 AREA	FRA	NATURAL ATTENUATION	2010
PICA-079	ORDNANCE/EXPLOSIVE BLDGS 800 AREA	FRA	REMOVAL	2010
PICA-079	ORDNANCE/EXPLOSIVE BLDGS 800 AREA	FRA	INSTITUTIONAL CONTROLS	2010
PICA-008	INACT. ROCKET FUEL TEST Areas	FRA	INSTITUTIONAL CONTROLS	2011
PICA-008	INACT. ROCKET FUEL TEST Areas	FRA	CHEMICAL REDUCTION/OXIDATION	2011
PICA-013	Groundwater near building 91	FRA	INSTITUTIONAL CONTROLS	2011
PICA-013	Groundwater near building 91	FRA	NATURAL ATTENUATION	2011
PICA-204	MID-VALLEY GROUNDWATER	FRA	INSTITUTIONAL CONTROLS	2013
PICA-204	MID-VALLEY GROUNDWATER	FRA	NATURAL ATTENUATION	2013
PICA-204	MID-VALLEY GROUNDWATER	FRA	BIOREMEDIATION - IN SITU GROUNDWATER	2013
PICA-002	LOWER BURNING GROUND (SITE 34)	FRA	CAPPING	2015
PICA-002	LOWER BURNING GROUND (SITE 34)	FRA	INSTITUTIONAL CONTROLS	2015
PICA-002	LOWER BURNING GROUND (SITE 34)	FRA	OTHER	2015

### Duration of IRP

**Date of IRP Inception:** 197607

**Estimated Date for Remedy-In-Place (RIP)/Response Complete (RC):** 202005/205311

**Date of IRP completion including Long Term Management (LTM):** 205310

# IRP Contamination Assessment

## Contamination Assessment Overview

In July 1976, the USAEC, formerly the US Army Toxic and Hazardous Materials Agency (USATHAMA), Environmental Branch, conducted a record search of PTA. This report recommended that groundwater quality data should be collected by PTA at the locations where the groundwater leaves the arsenal.

In May 1979, the US Army Environmental Hygiene Agency (USAEHA) performed a geohydrologic study of PTA and found no gross contamination of existing drinking water wells. The study identified several AOCs and recommended that an additional 19 wells be installed to monitor sites of concern and the arsenal boundary.

In July 1980, New Jersey performed a New Jersey pollutant discharge elimination system (NJPDES) compliance inspection and found organic solvents being discharged from Buildings 24 and 95 (RI Concept No. 21/PICA-120, RI Concept No. 37/PICA-76, and RI Concept No. 22/PICA-10); Building 24 contained a metal plating operation and Building 95 contained a circuit board etching operation.

In October 1980, the USAEC performed a reassessment of PTA and found significant contamination associated with Resource Conservation and Recovery Act (RCRA) site Building 24 and RCRA site Building 95. The US Army recommended that a RCRA groundwater assessment be completed. During the period from January 1981 through August 1983, USAEHA conducted a detailed groundwater assessment. The investigation demonstrated that there were several monitoring wells in the vicinity of Buildings 24 and 95 that were highly contaminated with organic solvents, primarily trichloroethylene (TCE). The USAEHA prepared a groundwater quality assessment report documenting the investigation in February 1984. The PTA employed the US Geological Survey (USGS) to perform the additional groundwater investigation.

In February 1989, the NJDEP completed a RCRA facility assessment (RFA). A total of 55 solid waste management units were identified. Many of these sites were previously identified in other studies.

In 1986 and 1987, during a RCRA compliance evaluation inspection by USEPA, at least 30 additional sites were found where waste was handled and/or stored. Many of these sites were previously identified. In June 1988, PTA began fieldwork on a confirmation study (CS). This study included groundwater and/or soil sampling at 35 known or potentially contaminated areas. This study was completed and is considered to be an SI by the regulators.

In April 1988, Argonne National Laboratory (ANL) was tasked to prepare a comprehensive RI concept plan to identify, prioritize and develop a plan of action for each site for the accomplishment of an overall RI. The RI concept plan addressed over 157 sites. The final version of the RI concept plan was published in March 1991 and approved by the USEPA in October 1991.

In 1990, the investigative approach suggested by the RI concept plan, initiated by the Army, and approved by the regulatory agencies was to break the defined RI concept plan sites into areas (Areas A - P). These 16 RI concept-defined areas were prioritized and divided into three phases of investigation called Phase I, II, and III; however, the investigation of the Burning Ground (PICA 002/RI-Concept Site 34 or Area A) was initiated before the approval and normalization of this approach.

This original approach was modified by the implementation of the DoD relative risk funding policy. The goal of the relative risk policy was to attempt to address the worst sites first from a national or DoD perspective. According to the guidance, the investigations and RAs for sites with the highest relative risk would be funded first with few exceptions.

To determine the relative risk for each site, specific steps are required by the guidance. (Each step is applicable when data exists for each of the four different environmental media.) The media include groundwater, soil, sediment, and surface water. The process consists of the following steps:

1. Compare individual chemical results on a site basis to contaminant hazard factors which are supplied by the guidance;
2. Determine whether a migration pathway factor (significant, moderate or minimal) exists based on DoD guidance; and
3. Determine whether a migration pathway factor (evident, potential or confined) exists based on DoD guidance.

The resultant calculation is then designated high ("1"), medium ("2") or low ("3") relative risk. The site will take the highest relative risk score of any one medium. The relative risk score for each site also includes a factor as to whether a regulatory agreement with schedules or a regulatory agreement exists ("A" designation) or does not exist (a "B" designation). All sites at PTA are under such a regulatory agreement with schedules; thus all ratings are designated as "A." Relative risk is not an absolute expression of risk and is not a substitute for a baseline health risk assessment.

# IRP Contamination Assessment

## Contamination Assessment Overview

The Army Environmental Database - Restoration (AEDB-R), formerly the Defense Site Environmental Restoration Tracking System (DSERTS), presently includes 175 sites for PTA. The numbers are not consecutive and go from PICA-1 through PICA-210. These sites include the original sites listed in the RI concept plan, plus additional sites identified after the RI concept plan was approved.

The RI concept plan originally identified 154 sites. Another 21 sites were subsequently added. Those additional 21 sites were identified with AEDB-R numbers higher than PICA 187. The additional 21 sites include 14 sites relating to "other buildings" for RI Concept Areas B-P. These sites were identified because of the potential that the contractor, ANL, who developed the RI concept plan did not assess or review all the available information on all the buildings at the arsenal. However, after an evaluation, some of these "other buildings" sites were renamed as area-wide groundwater or specific sites. Additional new AEDB-R sites also included specific locations, such as Bear Swamp and Green Pond Brook (GPB), and the firehouse. Sites are regularly updated in AEDB-R.

At the August 2000, April 2001 and 2002 IAP meetings, it was agreed that sites be considered response complete (RC) based on the following:

- Active range, not Environmental Restoration, Army (ER,A) eligible previously identified in AEDB-R.
- Active range, not ER,A eligible, not previously identified in AEDB-R.
- Previously identified as RC based on no further action (NFA) assumption but now identified in institutional control PP.
- Combined with other sites such as PICA-120 now tied to PICA-076 and agreed to at meeting.
- PICA 78 will be considered RC and any action will be incorporated into the other two sites in the Building 31/Building 33 grouping. The RC is being done for administrative purposes.
- SI identified no AOCs as discussed in the 1998 IAP and beyond.
- PICA 63 (Site 20) was combined with PICA 66 (Site 24).

In 2003, as a consequence of the agreements made at a series of meetings that occurred, PTA RI concept sites were consolidated into PICA sites. The consolidation was agreed to by the regulators and USAEC AEDB-R program managers. The consolidation was based on geographic attributes, similar schedules, and similar remedies. A major portion of the sites are expected to have only institutional controls (IC) as a remedy.

At the May 2005 IAP meeting, an agreement was made to keep one site open - PICA 096 (Site 117) Building 22, Precision Machine Shop for all sites in the 25 sites IC FS, PP and later ROD. Certain sites have been already consolidated and one site [PICA 20 (Site 19)] was reopened to incorporate the costs associated with the 13 Site IC ROD.

The issue involving the enforceability of LUCs that was noted in the October 2002 IAP was resolved in 2003. The issue was between the USEPA and the DoD. PTA and the USEPA Region II agreed to follow the Navy approach to the LUC issue. Any ROD will only mention and not detail specific LUCs. The details will be specified in the RD phase document.

Although the enforceability of LUCs was resolved in 2003, as noted above, the USEPA and the Army still wrestled with the terminology and text regarding acceptable risk and existing LUCs. As of June 2006, the issue was resolved, but had delayed the planned ROD and PPs for a number of months.

In 2010, the USEPA was determining the status of the promulgated New Jersey soil cleanup standards as applicable or relevant and appropriate requirements (ARAR) for technical and legal reasons. The delay of this determination delayed FS work at sites with soil contamination issues.

Since 2010, the USEPA and the Army have agreed to specific text for legal documents in regard to groundwater cleanup, the role of ARARs, and similar subjects. This is generally known as the Mid-Valley Agreements.

The USEPA has determined in writing that the NJDEP soil cleanup criteria will be considered ARARs except for those which are based on inhalation. This determination was finalized in May 2010 but delayed a number of LUCs, FSs, and PPs; hence, soils were taken out of sites to move forward on the groundwater issues. This included PICA 13 and PICA 08.

In a letter dated Oct. 6, 2011, the USEPA later expressed that LUCs are not adequate to address ARAR exceedances of soils stating that "ICs alone are not sufficient to meet a numerical remediation standard. At a minimum, an appropriate engineering control (EC) is necessary, and would be in conjunction with an IC." The Army provided the table requested by the USEPA in a package dated Dec. 6, 2010 and further expressed the Army's uncompromised position in a letter dated March 10, 2010.

# IRP Contamination Assessment

## Contamination Assessment Overview

The March 10, 2010 letter stated the Army's position as follows:

"The baseline risk assessment provides the basis for taking RA at an NPL site and supports the development of RA objectives. Current land use is critical in determining whether there is a current risk associated with a Superfund site, and future land use is important in estimating potential future threats. The results of the risk assessment aid in determining the degree of remediation necessary to ensure long-term protection at NPL sites" (Office of Solid Waste and Emergency Response Directive No. 9355.7-04).

Under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), RAs address risks to the current and reasonably anticipated future use, not to unrealistic or hypothetical uses. Where the existing site conditions are protective of the current and reasonably anticipated future use, no RA or cleanup is required to alter site-specific conditions for the protection of human health and the environment; however, ICs would be implemented to prevent the hypothetical residential use of the site. When risks and hazards at sites are within the acceptable range for the current and reasonably anticipated future use, no ARAR analysis is triggered, and the promulgated New Jersey soil remediation standards, which would be potential chemical-specific ARARs in cases where the risk is unacceptable for the current and reasonable anticipated future use, would not be identified as ARARs. Since no soils are required to be actively remediated or cleaned up in order to be protective of industrial use, there are no chemical-specific standards to be identified as clean up criteria or ARARs.

The USEPA agreed with the Army position in a letter dated Nov. 28, 2012. In that letter USEPA said that "specifically, PTA, in conjunction with existing LUCs, will monitor land use at PICA-001 sites and report the monitoring results to USEPA. This represents NFA. Consequently, compliance with ARARs will not be necessary."

The Army and USEPA are aware of the position of NJDEP that was expressed in letters relating to the 26 Site PP for NFA, specifically a letter dated March 7, 2013 that was provided at the public meeting, as well as other correspondences during FY14.

PTA and USEPA signed the "25-Site No Further Action with Monitoring of Land Use ROD" in May 2014 after some adjusting and the negotiating of four risk assessments in which NJDEP pointed out inconsistencies during the public notice period of the PP. This format of the ROD will be used for the other NFA PPs and RODs. This includes the "26 Site NFA ROD" whose PP was an issued public notice in June 2014. There will follow two RODs for the 26 sites, the 18 sites in the non-lakes sites, and the five sites included in PICA-111.

## Cleanup Exit Strategy

Since agreements have been reached with USEPA regarding the applicability of ARARs and "NFA with Land Use Monitoring ROD" for the more than 80 sites deserving NFA, the speed of approval of these RODs should increase.

- Use the PBA to speed the process from draft to final documentation, and enhance the negotiating strength of the Army.
- Continue partnering to arrive at approved documentation for actions, mini work plans, use of emails rather than letters, and use of the worldwide web as a platform for review.
- Combine sites into documents to reduce the total time lag with the process.

## IRP Previous Studies

Year	Title	Author	Date
1976	The History of Picatinny Arsenal 1880 - 1931, Vol. 1 War Plans Division, Plant Engineering Department, PTA March 31, 1931, Reissued	War Plans Division, Plant Engineering Department, PTA	DEC-1976
1979	Geohydrologic Consultation No. 31-24-0191-79	US Army Environmental Hygiene Agency	JUN-1979
1981	Phase 1, Groundwater Quality Assessment No. 38- 260153-82, Picatinny Arsenal, Dover NJ	US Army Environmental Hygiene Agency	JUL-1981
1982	Darcon Historic Building Inventory HABS/HABER Report (condensed version), Technical Background and Terminology, HAER No. NJ- 36	Picatinny Arsenal	AUG-1982
	Picatinny Arsenal Preliminary Field Investigation Findings/Recommendations Area H	Picatinny Arsenal	SEP-1982
	HABRS/HAER Inventory Report (full report) DARCOM - Historic Building Inventory HABS/HAER Report	Picatinny Arsenal	SEP-1982
1983	Reassessment of Picatinny Arsenal	Chemical Systems Laboratory	MAY-1983
1984	Final Report, Groundwater Quality Assessment No. 38- 26-0153-84, ARRACDEN Picatinny Arsenal Support Activity, Dover, NJ	US Army Environmental Agency	JAN-1984
1985	Historic Properties Report, Picatinny Arsenal, Dover, New Jersey	Picatinny Arsenal	MAR-1985
1986	Groundwater Quality Data for Picatinny Arsenal, NJ, 1958-85	US Geological Survey	JAN-1986
	Determination of Geohydrologic Framework and Extent of Groundwater Contamination Using Surface Geophysical Techniques at Picatinny Arsenal, NJ; Water Resources Investigation Report 86-4051	US Geological Survey	APR-1986
	Description and Results of Test Drilling Program at Picatinny Arsenal	US Geological Survey	APR-1986
1988	Resource Conservation and Recovery Act (RCRA) Buildings to be Exempted and Closed, Part I, II and III, plus Appendices	Picatinny Arsenal	AUG-1988
1989	Installation Assessment Picatinny Arsenal, Morris County, NJ Volume 1 text, Volume 2 maps	USEPA	MAR-1989
	Cost Estimate Report for Interim Groundwater Remediation at Picatinny Arsenal, Building 24 Study Area, Dover, New Jersey	ERC Environmental and Energy Services, Co., Inc.	MAR-1989
	Develop Documentation/Prepare Remedial Action Concept Plan for Building 24, Contamination Plume at Picatinny Arsenal	Engineering Technologies Associates, Inc.	APR-1989
	Engineering Feasibility Study for Interim Groundwater Remediation at Picatinny Arsenal Building 24 Study	ERC Environmental and Energy Services, Co., Inc.	APR-1989

## IRP Previous Studies

1989	Title	Author	Date
	Area Dover, New Jersey		
	Record of Decision for Interim Groundwater Remediation Plan, Picatinny Arsenal, New Jersey	ERC Environmental and Energy Services, Co., Inc.	MAY-1989
	Record of Decision and Environmental Assessment Report for Interim Groundwater Remediation at Picatinny Arsenal, Building 24 Study Area Dover, NJ	ERC, Environmental and Energy Services Co., Inc.	MAY-1989
	Record of Decision and Environmental Assessment Report for Interim Groundwater Remediation at Picatinny Arsenal, Building 24 Study Area Dover, NJ	ERC, Environmental and Energy Services Co., Inc.	MAY-1989
	Site Investigation of Picatinny Arsenal, Volumes 1 and 2	Dames & Moore	JUL-1989
	Final Report, Well Drilling/Installation and Sampling Analysis, Southwest Boundary Well Clusters, Picatinny Arsenal, NJ	Dames and Moore	JUL-1989
	USATHAMA Public Involvement and Response Plan for Picatinny Arsenal,	Environmental Science and Engineering	SEP-1989
	Data Review, Post Farm landfill, Site 23, Picatinny Arsenal, New Jersey	US Army Toxic and Hazardous Materials Agency (USATHAMA)	SEP-1989
1990	Contamination of Shallow Groundwater in the Area of Building 95, Picatinny Arsenal, NJ, 1985-90, Water Resources Investigation Report No.: 92-4122 U.S. Geological Survey data for study was completed i	US Geological Survey	JAN-1990
	Assessment of Contamination of Groundwater and Surface Water in the Area of Building 24, Picatinny Arsenal, NJ 1986-87, Water-Resources Investigations Report 90-4057	US Geological Survey	JAN-1990
	Final, Verification of Design Parameters, Picatinny Arsenal, Interim Groundwater Treatment System	Metcalf & Eddy, Inc.	JAN-1990
	Final, Waste Management Plan for Interim Remedial Design, Picatinny Arsenal, New Jersey	Metcalf & Eddy, Inc.	JAN-1990
	Site Specific Quality Management Plan, Interim Groundwater Remediation Plan, Picatinny Arsenal, NJ	Metcalf & Eddy, Inc.	JAN-1990
	Geophysical Surveys to Locate Buried Drums at Post Farm Site, Picatinny Arsenal	US Geological Survey, Pierre J. Lacombe	JUL-1990
	Environmental Remedial Actions at Picatinny Arsenal	Weston	DEC-1990
	Streamed-Material Characterizations and Surface Water Quality, Green Pond Brook and Tributaries, Picatinny Arsenal, NJ 1983-90, U.S. Geological Survey, Water Resources Investigation Report 95-4246	US Geological Survey	DEC-1990
1991	Air Permit Log No. 01-90-2140 (Permit to Construct, Install or Alter Control Apparatus or Equipment), New Jersey (Revised)	Department of Environmental Protection	JAN-1991
	Remedial Investigation Concept Plan for Picatinny Arsenal Volumes 1 and 2	Argonne National Laboratories	MAR-1991
	Health Risk Assessment Study No. 39-26-L172-91, ARDEC, Picatinny Arsenal, NJ	AEHA	APR-1991
	Picatinny Arsenal Open Burn Area, Air Toxic Monitoring, 14-15 November 1990	Foster-Wheeler Enviroresponse Inc.	MAY-1991
	Health Risk Assessment Study No. 39-26-L172-91, ARDEC, Picatinny Arsenal, NJ	AEHA	JUL-1991

## IRP Previous Studies

1991	Title	Author	Date
	Federal Facility Agreement, Administrative Docket Number: II-CERCLA-FFA-001-04	USEPA and US Army Armament Research Development and Engineering Center	AUG-1991
	Environmental Remedial Actions at Picatinny Arsenal Volumes I, II and III	Weston Services, Inc.	OCT-1991
	Removal Site Investigation of Post Farm Landfill, Drum Burial Area at Picatinny Arsenal, Volume 1	Roy F. Weston, Inc.	OCT-1991
1992			
	Health Risk Assessment Study No. 39-26-L172-92, ARDEC, Picatinny Arsenal, NJ	AEHA	APR-1992
	Decision Document, Picatinny Arsenal Off-Post Alternate Water Supply	Picatinny	SEP-1992
	Removal Site Investigation of Post Farm Landfill, Drum Burial Area at Picatinny Arsenal, Phase II and Phase III Technical Report	Roy F. Weston, Inc.	SEP-1992
	Appendix B: U.S.G.S. Well Logs and Downhole Geophysical Logs	Dames and Moore	OCT-1992
	Removal Engineering Evaluation/Cost Analysis (EE/CA) - Final Post Farm Landfill - Site 23 (Drum Burial Area Only) Picatinny Arsenal	Roy F. Weston, Inc.	OCT-1992
	Remedial Investigation/ Feasibility Study (RI/FS) of the Burning Ground at Picatinny Arsenal	Dames and Moore	NOV-1992
	Part B, Field Sampling Plan (FSP)	Dames and Moore	NOV-1992
	Part C, Quality Assurance Project Plan	Dames and Moore	NOV-1992
	Environmental Baseline Study for Picatinny Arsenal, Volume II	US Army Armament Munitions & Chemical Command Armament RDE Center	DEC-1992
	Part D, Health and Safety Plan	Dames and Moore	DEC-1992
	Part A, RI/FS Work Plan	Dames and Moore	DEC-1992
1993			
	Validated Sampling Data	Veritech Environmental	JUN-1993
	Removal Action Report, Post Farm Landfill -Drum Burial Area, Picatinny Arsenal, Rockaway Township, New Jersey	Roy F. Weston, Inc.	JUN-1993
	Part B, Field Sampling Plan	Dames and Moore	JUL-1993
	Part A, Work Plan	Dames and Moore	JUL-1993
	Phase I Remedial Investigation/Feasibility Study (RI/FS) Picatinny Arsenal, New Jersey	Dames and Moore	AUG-1993
	Part A, Work Plan	Dames and Moore	AUG-1993
	Part C, Quality Assurance Project Plan	Dames and Moore	AUG-1993
	Part D, Health and Safety Plan	Dames and Moore	AUG-1993
	Phase I Remedial Investigation/Feasibility Study (RI/FS) Picatinny Arsenal, New Jersey	Dames and Moore	AUG-1993
	Part B, Field Sampling Plan	Dames and Moore	AUG-1993



## IRP Previous Studies

1993	Title	Author	Date
	Part C, Quality Assurance Project Plan	Dames and Moore	AUG-1993
	Part D, Health and Safety Plan	Dames and Moore	AUG-1993
	Environmental Remedial Actions, Building 519, at Picatinny Arsenal, Final Closure Plan	Roy F. Weston	SEP-1993
	Environmental Remedial Actions Post Farm Landfill, Borrow Area at Picatinny Arsenal, Final Work Plan	Roy F. Weston	OCT-1993
	Non-Time Critical Removal Action Preliminary Assessment for Unexploded Ordnance Area of the DRMO Yard (Site 31),	Roy F. Weston	NOV-1993
1994			
	Hydrology of and Water Quality In The Open Burning Area and Vicinity, Picatinny Arsenal, NJ, 1989-90, Water Resources Investigation Report 92-4134	US Geological Survey	JAN-1994
	RCRA Groundwater Monitoring Plan Building 95 Surface Impoundments	Carpenter Environmental Associates Inc.	JAN-1994
	Water Allocation Permit Equivalency No. 2450E (formerly 2403P), New Jersey	Department of Environmental Protection	FEB-1994
	Environmental Remedial Actions Post Farm Landfill, Borrow Area at Picatinny Arsenal, Preliminary Subsurface Investigation	Roy F. Weston, Inc.	FEB-1994
	Non-Time Critical Removal Action Site Investigation Report of the DRMO (RI-Concept Site No. 31)	Roy F. Weston	JUL-1994
	NJ Pollutant Discharge Elimination System/Discharge to Groundwater (NJPDES/DGW) Permit Equivalency (PEQ) for Surfactant Injection Study	Jersey Department of Environmental Protection	OCT-1994
	Burning Ground Remedial Investigation Report (RI Concept Plan Site No.34 and Area A), Volumes I and II)	Dames and Moore	DEC-1994
	Picatinny Arsenal, Phase II Remedial Investigation/ Feasibility Study Work Plan, Final Report	USAEC	DEC-1994
	Picatinny Arsenal, Phase II Sampling and Analysis Plan and Quality Assurance Project Plan, Volume 1 and Volume II, Final Report	USAEC	DEC-1994
	Picatinny Arsenal, Phase II RI/FS, Final Health and Safety Plan	USAEC	DEC-1994
	Evaluation of the Effect of Extraction Well Withdrawals on a Trichloroethylene Plume in Groundwater Near Building 24, Picatinny Arsenal	US Geological Survey	DEC-1994
1995			
	Particle-Tracking Analyses to Determine Locations for a New Extraction Well in the Trichloroethylene Plume in Groundwater Near Building 24, Picatinny Arsenal, NJ	US Geological Survey	JAN-1995
	Final Report and Appendices CERCLA Site Clearances, Pistol Range	Carpenter Environmental Assoc.	FEB-1995
	RCRA Building 95 Impoundments Groundwater Monitoring Results Sampling of June 25, 1993	Northeastern Analytical Corporation	APR-1995
	Evaluation of the Effect of Extraction Well Withdrawals on a Trichloroethylene Plume in Groundwater Near Building 24, Picatinny Arsenal	U.S. Geological Survey	APR-1995
	Picatinny Arsenal, Appendix A, Volume II, CERCLA Site Clearances for Building 537	Carpenter Environmental Associates, Inc.	JUN-1995
	Non-Time Critical Removal Action Site Investigation Report and Engineering Evaluation/Cost Analysis at Building 1363A and 1373, RI Concept Area L, Picatinny	Carpenter Environmental Associates, Inc.	JUN-1995

## IRP Previous Studies

1995	Title	Author	Date
	Arsenal, New Jersey		
	Appendix D, Volume II and EE/CA at Buildings 1363A and 1373	Carpenter Environmental Associates, Inc	JUN-1995
	Engineering Evaluation/Cost Analysis for a Non-Time Critical Removal Action for Radium, Strontium and Depleted Uranium Contaminated Soils at Picatinny Arsenal Health Physics Office and the Installation	Army Materiel Command, Rock Island, IL with Allied Technology Group	JUN-1995
	Final Report and CERCLA Site Clearances for Building 537	Carpenter Environmental Associates, Inc.	JUN-1995
	Final Engineering Evaluation/Cost Analysis Report for Buildings 1363A and 1373	Carpenter Environmental Associates, Inc.	JUN-1995
	Final Report and Appendices for CERCLA Site Clearances for Building 537	Carpenter Environmental Associates, Inc.	JUN-1995
	Appendix B and C, Volume I, SI Report and EE/CA at Buildings 1363A and 1373,	Carpenter Environmental Associates, Inc.	JUN-1995
	Appendix A, Volume II, SI (Site Investigation) Report and EE/CA (Engineering Evaluation/Cost Analysis) at Buildings 1363A and 1373	Carpenter Environmental Associates, Inc.	JUN-1995
	Final Report and Appendix A, Volume I, CERCLA Site Clearances for Building 537	Carpenter Environmental Associates, Inc.	JUN-1995
	Appendix C, Volume II and EE/CA at Buildings 1363A and 1373	Carpenter Environmental Associates, Inc.	JUN-1995
	Final Summary Removal Report for Non-Time Critical Removal Actions at Buildings 1363A and 1373, RI Concept Area L, Picatinny Arsenal, NJ	Carpenter Environmental Associates, Inc.	SEP-1995
	Quality Assurance Project Plan, Interim Groundwater Treatment System	Dow Environmental Inc.	NOV-1995
1996			
	Hydrogeology of and Simulation of Groundwater Flow at Picatinny Arsenal Water Resources Investigation, 96-4061	U.S. Geological Survey	JAN-1996
	Picatinny Arsenal Restoration Advisory Board Charter	Picatinny Arsenal Restoration Advisory Board	AUG-1996
	Evaluation of Structures Built Prior to 1946 at Picatinny Arsenal	WCH Industries	OCT-1996
1997			
	Analysis of Groundwater Flowpaths Near Water Supply Wells, Picatinny Arsenal, NJ	US Geological Survey Water-Resources Investigations Report 96-4228	JAN-1997
	Picatinny Arsenal Area D Groundwater Feasibility Study Data Gap Work Plan, Delivery Order 007, Volume 1B Data gap Work Plan Sections 4, 5, 6 and 7	ICF Kaiser Engineers	OCT-1997
	Picatinny Arsenal Area D Groundwater Feasibility Study, Volume 1A - Data Gap Work, Volume 1B Data Gap Work Plan	ICF Kaiser Engineers	OCT-1997
	Picatinny Arsenal Area D Groundwater Feasibility Study, Volume 1A Data Gap Work, Volume 1B Data Gap Work Plan	ICF Kaiser Engineers	OCT-1997
	Phase 1 Remedial Investigation Report Volume 6A, Section 15, Conclusions and Recommendations	Dames and Moore	NOV-1997
	Site 23 - Post Farm Landfill Additional Investigation Data Report -Volume 1- DATA and Volume II Appendices	ICF Kaiser Engineers	NOV-1997

## IRP Previous Studies

1997	Title	Author	Date
	Ecological Field Sampling Work Plan Phase II Remedial Investigation/Feasibility Study, Picatinny Arsenal, New Jersey	ICF Kaiser Engineers	DEC-1997
	Relative Risk Site Evaluation No. 38-EH-5690-97, Picatinny Arsenal, NJ	USACHPPM	DEC-1997
1998			
	Preliminary Assessment/Site Inspection Report for Non-Evaluated Phase III RI Concept Plan Sites and Additional Sites within RI concept Plan Area L, Volume I, Sites with Recommendations For No Further	ICF Kaiser Engineers	JAN-1998
	Work Plan for Additional RI Investigation at Phase II, Group 1, Sites 40, 93, 156 & 157	ICF Kaiser Engineers	FEB-1998
	Work Plan for Additional RI Investigation at Phase II, Group 3, Sites 1, 2, 4D & 4E	ICF Kaiser Engineers	FEB-1998
	Picatinny Arsenal Facility-Wide Health and Safety Plan, Volumes I and II	ICF Kaiser Engineers	FEB-1998
	Phase 1, Site 20/24 Data Report and Additional Investigation Work Plan - Picatinny Arsenal, Phase I	ICF Kaiser Engineers	MAR-1998
	Community Involvement Response Plan Picatinny Arsenal	Picatinny	APR-1998
	Field Inspection of 53 Areas Sensitive for Cultural Resources and Phase IB Archaeological Surveys of Eight Sensitive Areas at Picatinny Arsenal, Morris County, NJ	Panamerican Consultants, Inc.	APR-1998
	Response to NJ Historic Preservation Office Review of Architectural Assessment of Historic Structures at Picatinny Arsenal, Morris County, NJ and Definition of Historic Districts for Picatinny Arsenal	Panamerican Consultants, Inc.	AUG-1998
	Site 23 -Post Farm Landfill Fracture Trace Analysis Report	ICF Kaiser Engineers	AUG-1998
	Picatinny Arsenal Facility-Wide Field Sampling Plan	ICF Kaiser Engineers	SEP-1998
	Work Plan Summary Investigation Tables for Phase III 1A Study Sites, Delivery Order 0017	ICF Kaiser Engineers	SEP-1998
	Trenching and Sampling Work Plan Site 180 -Waste Burial Area, Task Order 19	ICF Kaiser Engineers	SEP-1998
	Work plan for Areas F and G Groundwater Remedial Investigation, Task Order 0017	ICF Kaiser Engineers	DEC-1998
1999			
	Final Remedial Investigation Work Plan Buildings 31 and 33 Picatinny Arsenal, New Jersey Contract Number DAAE30-96-D-1026, Delivery Order Three	Environmental Compliance, Inc.	FEB-1999
	Phase II Remedial Investigation Report, Round 1, Volume 1	ICF Kaiser Engineers	MAR-1999
	Phase 1 Remedial Investigation Report, Volume 1, Introduction and Area B	Dames and Moore	APR-1999
	Area B Data Report, Groundwater Feasibility Study Data Gap Investigation, Volume 2, Appendices A-R	ICF Kaiser Engineers	APR-1999
	Phase II Remedial Investigation Report, Round 1, Volume 2, Area H Sites	ICF Kaiser Engineers	APR-1999
	Phase II Remedial Investigation Report, Round 1, Volume 3, Area I, No Further Action Sites	ICF Kaiser Engineers	APR-1999
	Phase II Remedial Investigation Report, Round 1, Volume 3 Area I IA Sites Recommended for Additional Investigation	ICF Kaiser Engineers	APR-1999

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1999

Title	Author	Date
Phase II Remedial Investigation Report, Round 1, Volume 3, Area I 2A/3A Sites Recommended for Additional Investigation	ICF Kaiser Engineers	APR-1999
Phase II Remedial Investigation Report, Round 1, Volume 4, Area J Sites	ICF Kaiser Engineers	APR-1999
Public Health Assessment for Picatinny Arsenal (US Army) Dover, Morris County, NJ, CERCLIS NO NJ3210020704	ATSDR	APR-1999
Health Consultation, Review of Picatinny Arsenal PCB Health Risk Assessment Assumptions, Picatinny Arsenal, Dover, Morris County, NJ CERCLIS NO NJ3210020704	ATSDR	APR-1999
Proposed Plan No Response Action with Existing Institutional Controls and Land Use Control Assurance Plan for Sites 19, 22, 28, 44, 49, 86, 1043, 106, 124, 135, 141, 143, 145 163, 182 and 183	ICF Kaiser Engineers	APR-1999
Phase I Remedial Investigation Report, Volume 7, Ecological Assessment	Dames and Moore	APR-1999
Phase I, Remedial Investigation Report, Volume 14, Appendix D Data Validation Appendix E Physical Properties of Contaminants of Concern	Dames and Moore	APR-1999
Appendix E Physical Properties of Contaminants of Concern	Dames and Moore	APR-1999
Phase I Remedial Investigation Report, Volume 1, Introduction and Area B	Dames and Moore	APR-1999
Phase I Remedial Investigation Report, Volume 8, Human Health Assessment	Dames and Moore	APR-1999
Phase I Remedial Investigation Report, Volume 2, Study Area C	ICF Kaiser Engineers	APR-1999
Phase I Remedial Investigation Report Volume 3, Study Area D and E	Dames and Moore	APR-1999
Phase I RI Report, Volume 5, Section 10 Study Area G	Dames and Moore	APR-1999
Phase I RI Report, Volume 6, Sections 11 & 12, Study Area G Green Pond Brook and Fate and Transport	Dames and Moore	APR-1999
Compilation of Background Information and Existing Institutional Controls for Reference During Regulatory Review Proposed Plan - No Response Action with Existing Institutional Controls and LUCAP for S	ICF Kaiser Engineers	MAY-1999
Picatinny Arsenal Facility-Wide Quality Assurance Project Plan	IT Group	MAY-1999
Picatinny Arsenal Task Order 17, Phase I 2A/3A Sites Additional Investigation Work Plan	IT Group	JUL-1999
Area E Groundwater Feasibility Study Data Gap Investigation Work Plan	ICF Kaiser Engineers	JUL-1999
Area E Groundwater Feasibility Study Data Gap Investigation Work Plan	ICF Kaiser Engineers	JUL-1999
Phase I Additional RI Sites 22, 44, 61, 104, 122, 135, 141 and 145, Volumes 1 & 2	IT Corporation	SEP-1999
Picatinny Arsenal Task Order 19, Engineering Evaluation/Cost Analysis (EE/CA) Site 122, PCB Soils at Building 60/60A Area	IT Corporation	SEP-1999
Area B Data Report/Groundwater Feasibility Study Data Gap Investigation, Volumes 1, Data Report Workplan	IT Group	OCT-1999
Picatinny Arsenal Facility-Wide Background	IT Corporation	OCT-1999

## IRP Previous Studies

Year	Title	Author	Date	
1999	Investigation Work Plan			
	Picatinny Arsenal Additional Site Investigations Sites 3, 31, 192, and 199 (Workplan	IT Corporation	NOV-1999	
2000	Picatinny Arsenal Task Order 19 Site 122 PCB Soil and Sediment Removal Action Work Plan	IT Corporation	JAN-2000	
	Picatinny Arsenal Task Order 17, Site 34, Proposed Plan	IT Corporation	MAR-2000	
	Feasibility Study for Site 20/24 Picatinny Arsenal, NJ	IT Corporation	MAR-2000	
	Picatinny Arsenal Task Order 19, Site 16 Guncotton Line Investigation Work Plan	IT Corporation	MAR-2000	
	Phase I & II Remedial Investigation Report, Buildings 31 and 33, Picatinny Arsenal, NJ Contract No. DAAE30-96-D-1026, D.O. 3	Environmental Compliance, Inc.	APR-2000	
	Picatinny Arsenal Task Order 17 Phase III 2A/3A Sites Additional Investigation Workplan	IT Corporation	JUN-2000	
	Screening-Level Ecological Risk Assessment Site 54 - Lake Denmark Remedial Investigation/Feasibility Study, Picatinny Arsenal, NJ	IT Corporation	JUL-2000	
	Area E Groundwater Feasibility Study	IT Corporation	JUL-2000	
	Risk Management Plan for 9 Sites in the Phase I Area, Picatinny Arsenal, NJ	IT Corporation	AUG-2000	
	Picatinny Arsenal, Task Order 19, Site 180, Exploratory Trench Investigation Data Report	IT Corporation	OCT-2000	
	Picatinny Arsenal Task Order 19, Site 122 (DSERTS #PICA011) PCB Soil & Sediment Removal Action Report	IT Corporation	OCT-2000	
	2001	Picatinny Arsenal RCRA Subpart X Permit Monitoring Summary of Groundwater Sampling Results from February 1999 to October 2000, Task Order 0027	IT Group	JAN-2001
		Mid-Valley Groundwater Investigation Work Plan Picatinny Arsenal, NJ	IT Corporation	JAN-2001
		Iron Powder Demonstration Study: REO: Interim Status Report PTA Landfill Morris County, NJ	ARS Technologies Inc.	JAN-2001
		Picatinny Arsenal Task Order 19, Engineering Evaluation/Cost Analysis - Remedial Action to Treat Tetryl in Soil from the Northern Tetryl Pits at Site 17	IT Corporation	FEB-2001
Picatinny Arsenal Phase III-1A Human Health Risk Assessment Approach		IT Corporation	MAR-2001	
Picatinny Arsenal Green Pond Brook & Bear Swamp Brook Focused Feasibility Study, Task Order 17		IT Corporation	APR-2001	
Indiana Bat Prey Tissue Sampling Work Plan, Picatinny Arsenal New Jersey, Task Order 5		IT Corporation	APR-2001	
Picatinny Arsenal Task Order 17, Fish Collection and Human Health Risk Assessment Work Plan		IT Corporation	APR-2001	
Institutional Control Proposed Plan For Soils at Sites: 19, 28, 44, 49, 86, 106, 124, 135, 141, 143, 163, 182 and 183 at Picatinny Arsenal		IT Group, Inc.	JUN-2001	
Proposed Plan for Site 20/24 Picatinny Arsenal, New Jersey		IT Group Inc.	JUN-2001	
Feasibility Study for Site 23, Picatinny Arsenal, NJ		IT Corporation	JUN-2001	

## IRP Previous Studies

**2001**

Title	Author	Date
Picatinny Arsenal Task Order 17, Area C Groundwater Data Report	IT Corporation	JUN-2001
Area D Groundwater Feasibility Study, Report of Model Re-Calibration and Cost Analysis	IT Corporation	JUN-2001
Picatinny Arsenal Task Order 17, Fish Collection and Human Health Risk Assessment Workplan; also listed under Risk Assessment Reports	IT Corporation	JUL-2001
Picatinny Arsenal Task Order 19, Site 16, Guncotton Line Investigation and Removal Action Report	IT Corporation	JUL-2001
Picatinny Arsenal Task Order 17, Area C Groundwater Data Report	IT Corporation	JUL-2001
Institutional Control Record of Decision for Soils at Sites 19, 28, 44, 49, 86, 106, 124, 135, 141, 143, 163, 182 and 183	IT Corporation	JUL-2001
Picatinny Arsenal Task Order 17, Site 34, Feasibility Study Report	IT Corporation	AUG-2001
Picatinny Arsenal Task Order 19, Site 17, (DSERTS #PICA 001) Northern Tetryl Pits, Explosive Soil Removal and Treatment Action Work Plan	IT Corporation	SEP-2001
Proposed Plan for Site 23, Post Farm Landfill, Picatinny Arsenal, NJ Task Order 17, prepared by IT Corporation, Draft Final	IT Corporation	OCT-2001
Picatinny Arsenal, Delivery Order No.17, Phase II Group 3 Sites Remedial Investigation Report Sites 1, 2 & 4, Volumes 1 - 6	IT Corporation	OCT-2001
Picatinny Arsenal Phase II Sites Surface Water & Sediment Supplemental Human Health Risk Assessment	IT Corporation	NOV-2001
Picatinny Arsenal Phase II Sites Surface Water & Sediment Supplemental Human Health Risk Assessment	IT Corporation	NOV-2001
Picatinny Arsenal Phase II Sites Surface Water & Sediment Supplemental Human Health Risk Assessment (see also in GW documents),	IT Corporation	NOV-2001
Proposed Plan for Green Pond and Bear Swamp Brooks, Picatinny Arsenal, NJ	IT Corporation	DEC-2001

**2002**

Picatinny Arsenal Task Order 19 Remedial Action Work Plan for the Construction of a Soil Cap at Site 20/24 Pyrotechnic Testing Range	IT Group	FEB-2002
Draft Technical Report, Bench Scale Study for Innovative Technology Demonstration, Picatinny Arsenal/Range Safe	BEM Systems, Inc.	MAR-2002
Picatinny Arsenal Task Order 17 Phase III 1A Sites, Remedial Investigation Report, Area N Site 10 Volume 3, Binder 4	Shaw Environmental, Inc.	APR-2002
Picatinny Arsenal Task Order 17 Phase III - 1A Sites Remedial Investigation Report Area O - Site 54 Volume 4, Binder 5	Shaw Environmental, Inc.	APR-2002
Area B Groundwater Feasibility Study, Volume 1 Report, Volume 2 Appendices	IT Corporation	APR-2002
Picatinny Arsenal Task Order 17, Phase III 1A Sites, Remedial Investigation Report, Area P, Volume 5, Binder 6		APR-2002

## IRP Previous Studies

2002

Title	Author	Date
Proposed Plan for Area B Groundwater Picatinny Arsenal NJ	Shaw Environmental & Infrastructure, Inc.	APR-2002
Picatinny Arsenal Task Order 17 Phase III - 1A Sites Remedial Investigation Report General Sections Volume 1, Binder 1		APR-2002
Picatinny Arsenal Facility-Wide Background Investigation	IT Corporation	MAY-2002
Environmental & Infrastructure, Inc. (formerly IT Corporation), May-02.	IT Corporation	MAY-2002
Picatinny Arsenal Task Order 19 Work Plan for the Investigation of Sumps and Dry Wells with Previously Identified COCs at Various Sites	IT Corporation	MAY-2002
Picatinny Arsenal Task Order 17, Fish Consumption Human Health Risk Assessment Report	IT Corporation	MAY-2002
Engineering Evaluation/Cost Analysis (EE/CA) for the Removal and Disposal of the Sediment from the Retention Basins of Bear Swamp Brook, Picatinny Arsenal, NJ	Picatinny Installation Restoration Office	JUN-2002
Picatinny Arsenal Task Order 5, Phase II Group 1 Sites, Remedial Investigation Report Sites 40, 93, 156 & 157 Volumes 1 through 7	IT Corporation	JUN-2002
Trichloroethylene Treatability Study Work Plan	Environmental Restoration	JUL-2002
Additional Site Investigations (Orchard) Sites 3, 31, 192 & 199 Remedial Investigation Report Volume 3, Human Health Risk Assessment Appendix M	IT Corporation	JUL-2002
Proposed Plan for Area D Groundwater Picatinny Arsenal, New Jersey	Shaw Environmental & Infrastructure Inc.	AUG-2002
Revised Work Plan for Lead Isotope Analysis For Area C Groundwater, Picatinny Arsenal, NJ	Shaw Environmental & Infrastructure, Inc.	AUG-2002
Sampling Work Plan Site 193 Bear Swamp Brook Sediment Retention Ponds Task Order 17	Shaw Environmental & Infrastructure Inc.	AUG-2002
Revised Work Plan for Lead Isotope Analysis For Area C Groundwater, Picatinny Arsenal, NJ	Shaw Environmental & Infrastructure, Inc.	AUG-2002
Picatinny Arsenal Task Order 17 Phase III -1A Sites, Remedial Investigation Report, Area L, Volume 2, Binder 3 (Sites 43, 91, 103, 161, 168 Groundwater Assessment)	Shaw Environmental, Inc.	OCT-2002
Submittal of Response to EPA's Evaluations of Picatinny's Responses to USEPA Comments on the Phase III-1A RI Report, Picatinny Arsenal, Oct-02.	Shaw Environmental & Infrastructure Inc.	OCT-2002
Sampling Work Plan Site 193 -Bear Swamp Brook Sediment Retention Ponds Task Order 17p	IT Corporation	OCT-2002
Picatinny Arsenal Task Order 17, Additional Site Investigations Remedial Investigation Report, Sites 3, 31, 192, and 199 Volume I	IT Corporation	NOV-2002
Draft Classification Exception Area (CEA), New Jersey	Department of Environmental Protection	NOV-2002
Picatinny Arsenal Task Order 17 Phase III -1A Remedial Investigation Report, Area L, Volume 2, Binder 2 (Sites 5, 6, 18, 35, 167), Oct-02.	IT Corporation	NOV-2002

2003

Application for a Stream Encroachment Permit (equivalent) & Statewide General Permit (equivalent) No. 4 for Sediment Removal from Bear Swamp Brook	New Jersey Department of Environmental Protection	JAN-2003
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## IRP Previous Studies

2003

Title	Author	Date
Sedimentation Ponds		
Remedial Investigation Work Plan for LNAPL Area at Well 31-6, Building 31, Picatinny Arsenal, NJ Contract No. DAAE30-01-D-1004, D.O.5	Environmental Compliance, Inc.	JAN-2003
Transcript of Proceedings, Public Meeting, Hilton Garden Inn, Rockaway, NJ 07885	A.R.T. Agency, Inc.	JAN-2003
Task Order 17 Southern Boundary Fall 2002 Quarterly Groundwater Monitoring Report	IT Corporation	JAN-2003
Picatinny Arsenal Task Order 19, Site 16, Guncotton Line Investigation and Removal Action Report	Shaw Environmental, Inc.	FEB-2003
Correspondence and Comments to NJ Department of Environmental Protection: Modification to DEP of Environmental Protection Land Use Regulation Element Permit-Equivalent No. 4 (Hazardous Site Investigation)	Picatinny Arsenal	MAR-2003
Correspondence and Comments to USEPA Response to Comments on Site 34 Proposed Plan	Picatinny Arsenal	MAR-2003
Correspondence and Comments to EPA: Minutes from Final March 4th and 5th Partnering Meeting	Picatinny Arsenal	MAR-2003
Phase II Group 1 and Group 3 Sites, Groundwater Summaries, Picatinny Arsenal, NJ, Task Order 17	Shaw Environmental, Inc.	MAR-2003
Picatinny Arsenal Task Order 17, Phase I 2A/3A Remedial Investigation Report, Volume 6 - Human Health Risk Assessment (Site 60, 142, 185, 187, 209, and 210) Appendix Q	Shaw Environmental, Inc.	MAR-2003
Picatinny Arsenal Task Order 17, Phase I 2A/3A Remedial Investigation, Volume 7 - Human Health Risk Assessment (Site 101, 118, 126, 136, 139, 146) Appendix R	Shaw Environmental, Inc.	MAR-2003
Correspondence and Comments to NJ Department of Environmental Protection: Submittal of the Discharge Monitoring Report (DMR),	Picatinny Arsenal	MAR-2003
Correspondence and Comments from EPA: Additional Sites Remedial Investigation Report, Sites 3, 31, 192 and 199	US Environmental Protection Agency	MAR-2003
Feasibility Study for Site 25/26, Delivery Order 0017	US Army Corps of Engineers Baltimore District	MAR-2003
Correspondence and Comments from USEPA: File Correspondence Phase III 1A Sites Remedial Investigation Report,	US Environmental Protection Agency	MAR-2003
Phase I 2A/3A Sites Remedial Investigation Report Volume 2, Area D Sites	Shaw Environmental, Inc.	MAR-2003
Phase I 2A/3A Sites Remedial Investigation Report, Volume 3, Area F Sites	Shaw Environmental, Inc.	MAR-2003
Phase I 2A/3A Sites Remedial Investigation Report, Volume 3, Area F Sites	Shaw Environmental, Inc.	MAR-2003
Phase I 2A/3A Sites Remedial Investigation Report Volume 1	Shaw Environmental, Inc.	MAR-2003
1. Site 16, Report, July 2002: No formal approval letter except IAG schedule - ongoing work in Phase II Additional Investigations. 2) Site 122 Removal Action Request	Picatinny Arsenal	APR-2003
Submittal of Data from Green Pond Brook in front of Site 78,	Picatinny Arsenal	APR-2003
Correspondence and Comments from NJ Department of	New Jersey Department of	APR-2003



## IRP Previous Studies

2003

Title	Author	Date
Environmental Protection: Area D and Area C Reporting Change Request	Environmental Protection	
U.S. Environmental Protection Agency	Shaw Environmental, Inc.	APR-2003
Site 193, Bear Swamp Brook, Sediment Removal Action, Delivery Order 17,	Shaw Environmental, Inc.	APR-2003
Proposed Plan for Site 23, Post Farm Landfill, Picatinny Arsenal	Shaw Environmental, Inc.	MAY-2003
Submittal of the Final Area D Groundwater Feasibility Study, Delivery Order 17,	Shaw Environmental, Inc.	MAY-2003
Proposed Plan for Green Pond and Bear Swamp Brooks, Picatinny Arsenal, NJ,	Shaw Environmental, Inc.	MAY-2003
Response to Comments Final Fish Consumption Human Health Risk Assessment Report Base on June 7th Meeting	Consumption Human Health Risk Assessment Report base on June 7th Meeting, Picatinny	JUN-2003
Picatinny Arsenal Task Order 19 Addendum to the Remedial Action Work Plan for the Construction of a Soil Cap at Site 20/24 Pyrotechnic Testing Range	Shaw Environmental, Inc.	JUN-2003
Picatinny Arsenal Task Order 19, Site 122 (DSERTS #PICA011) PCB Soil & Sediment Removal Action Report, Shaw Environmental, Inc., Jun-03.	Shaw Environmental, Inc.	JUN-2003
Lead Engineering Evaluation/Cost Analysis (EE/CA) for Soil Removal at Sites 139, 142, 209 (Building 430), 209 (Former Building 303), 161, and 171 at Picatinny Arsenal	USEPA	JUN-2003
NJ Pollutant Discharge Elimination System/Discharge to Groundwater (NJPDES/DGW) Permit Equivalency (PEQ),	New Jersey Department of Environmental Protection	AUG-2003
Submittal of Response to EPA Comments on the Phase I 2A/3A Remedial Investigation Report (RI Report),	Picatinny Arsenal	SEP-2003
Final Site 34 Proposed Plan	Shaw Environmental, Inc	SEP-2003
Mid-Valley Groundwater Investigation Data Gap Work Plan Picatinny Arsenal, NJ,	Shaw Environmental, Inc	SEP-2003
Picatinny Arsenal Task Order 19 Work Plan for the Investigation of Sumps and Dry Wells with Previously Identified COCs at Various Sites	Shaw Environmental, Inc	SEP-2003
Picatinny Arsenal Task Order 17 Phase III - 2A/3A Sites, Remedial Investigation Report, Volume 2 - Area L Sites	Shaw Environmental, Inc.	SEP-2003
Picatinny Arsenal Task Order 17 Phase III 2A/3A Sites Remedial Investigation Report, Volume 5 - Appendices A-K (Binder 1), Appendix L, Human Health Risk Assessment (Binder 2), Appendices M-O (Binder 3)	Shaw Environmental, Inc.	SEP-2003
Picatinny Arsenal Task Order 17 Phase III 2A/3A Sites Remedial Investigation Report, Volume 1, Volume 2 - Area L Sites, Volume 3 - Area M Sites,, Volume 4 - Area P Site	Shaw Environmental, Inc.	SEP-2003
Proposed Plan for Area E Groundwater, Picatinny Arsenal, NJ	Shaw Environmental, Inc.,	OCT-2003

2004

Proposed Plan for Site 34	Shaw Environmental, Inc	JAN-2004
Task Order 17 Southern Boundary Fall 2002 Quarterly Groundwater Monitoring Report	IT Corporation	JAN-2004

## IRP Previous Studies

2004

Title	Author	Date
Site 22 Feasibility Study, Picatinny Arsenal, New Jersey, Delivery Order 0017	Shaw Environmental, Inc.	FEB-2004
Picatinny Arsenal Task Order 19, Lead Site Removal Action Work Plan	Shaw Environmental, Inc.	FEB-2004
Phase II Group 1 and Group 3 Sites, Groundwater Summaries, Picatinny Arsenal, NJ, Task Order 17	Shaw Environmental, Inc.	MAR-2004
Picatinny Arsenal Task Order 17, 600 Area Groundwater Remedial Investigation Workplan.	Shaw Environmental, Inc.	APR-2004
Picatinny Arsenal Area D Groundwater Record of Decision	Shaw Environmental, Inc.	APR-2004
600 Area Groundwater Remedial Investigation, Picatinny, Dover, NJ. (results of Downhole Geophysical Logging Surveys).	Mid-Atlantic Geosciences, LLC	MAY-2004
Long Term Monitoring Plan and Land Use Control Remedial Design for the Post Farm Landfill, Picatinny Arsenal, NJ	Shaw Environmental, Inc.	JUN-2004
Group 1 Sites Feasibility Study, Picatinny Arsenal, New Jersey	Shaw Environmental, Inc	JUN-2004
Record of Decision Site 23 -The Post Farm Landfill, Picatinny Arsenal, NJ	Shaw Environmental, Inc	JUN-2004
Proposed Plan for Area E Groundwater, Picatinny Arsenal, NJ	Shaw Environmental Inc	JUL-2004
Proposed Plan for Site 22, Picatinny New Jersey.	Shaw Environmental, Inc	AUG-2004
Record of Decision Site 23 - The Post Farm Landfill, Picatinny Arsenal, NJ	Shaw Environmental, Inc	AUG-2004
Picatinny Arsenal Task Order 17 Phase III & Phase I 2A/3A Sites Ecological Risk Assessment Work Plan.	Shaw Environmental, Inc.	OCT-2004
Proposed Plan for Site 25/26 Soil, Picatinny New Jersey.	Shaw Environmental Inc.	NOV-2004
Proposed Plan for Site 22, Picatinny New Jersey.	Shaw Environmental, Inc.	NOV-2004
Proposed Plan for Area E Groundwater, Picatinny New Jersey.	Shaw Environmental Inc	NOV-2004
Quarterly Checklist to Ensure Integrity of Vegetative Cap, Section 2.2 of the Land Use Control Plan for Site 20/24, Quarterly Inspection #5	Shaw Environmental, Inc.	DEC-2004
Land Use Control Record of Decision for Soils at Sites: 19,28,44,49,86,106,124,135,141,143,163,182 and 183.	Shaw Environmental, Inc.	DEC-2004
Record of Decision Green Pond	Shaw Environmental, Inc.	DEC-2004
Site 20/24 Wetland Mitigation Report.	Shaw Environmental, Inc.	DEC-2004

2005

Record of Decision Site 34 The Burning Grounds	Shaw Environmental, Inc.	JAN-2005
Picatinny Arsenal Task Order 19, Site 20/24 Pyrotechnic Testing Range Annual Landuse Certification	Shaw Environmental, Inc.	JAN-2005
Picatinny Arsenal Task Order 17 Phase III 2A/3A Sites Remedial Investigation Report, Volume 6 Appendix L, Human Health Risk Assessment.		JAN-2005
Phase 1 2A/3A Sites Remedial Investigation Report Volume 1, Volume 2 - Area D Sites, Volume 3 - Area F Sites, Volume 4 - Area G sites and References, Volume 5 - Appendices, Volume 6 - Human Health	Shaw Environmental, Inc.	JAN-2005
Picatinny Arsenal Task Order 17 Phase III 2A/3A Sites	Shaw Environmental, Inc.	FEB-2005

## IRP Previous Studies

2005

Title	Author	Date
Remedial Investigation Report, Volume 1, Volume 2 - Area L sites, Volume 3 - Area M Sites, Volume 4 - Area P Sites.		
Site 193, Bear Swamp Brook, Sediment Removal Action As-Built reports	Shaw Environmental, Inc.	MAR-2005
Picatinny Arsenal Task Order 17 Phase III & Phase I 2A/3A Sites Screening Level Ecological Risk Assessment		MAR-2005
Picatinny Task Order 17 Site 78, Remedial Investigation Report and Groundwater Pilot Study Work Plan	Shaw Environmental, Inc	MAR-2005
Phase III -1A Sites Remedial Investigation Report General Sections Volume 1, Binder 1, Area L; Volume 2, Binder 2 (Sites 5,6,18,35,167) Area N - Site 10; Volume 3, Binder 4 Area O - Site 54; Volume	Shaw Environmental, Inc.	APR-2005
Record of Decision Area E Groundwater and Site 22	Shaw Environmental, Inc.	APR-2005
Proposed Plan for Area B Groundwater Picatinny Arsenal New Jersey	Shaw Environmental & Infrastructure, Inc	APR-2005
Revised Phase I & II Remedial Investigation Report, Buildings 31 and 33 Remedial Investigation Concept Sites 29 & 85/PICA 71, Picatinny Arsenal, New Jersey	Environmental Compliance, Inc	APR-2005
Picatinny Arsenal Task Order 17, Supplemental Investigation of the Apple Trees Recreational Area, Site 192	Shaw Environmental, Inc	APR-2005
Area C Groundwater Feasibility Study, Picatinny, NJ	IT Corporation	MAY-2005
Final Feasibility Study for Site 61 and 104, Picatinny, NJ	Shaw Environmental Inc.	JUN-2005
Record of Decision Site 25/26 Soil Draft	Shaw Environmental, Inc	JUN-2005
Feasibility Study for Site(s) 61 and 104, Picatinny Arsenal	Shaw Environmental, Inc.	JUN-2005
Picatinny Arsenal Task Order 19, Report on the Investigation of Sumps and Dry Wells with previously identified COCs at various Sites Volume 1 Section 1 through 7, Figures and appendices A & B, Volume	Shaw Environmental, Inc	JUN-2005
Picatinny Arsenal Task Order 17 Phase III & Phase I 2A/3A Sites Screening Level Ecological Risk Assessment	Shaw Environmental, Inc.	JUN-2005
Correspondence and Comments from New Jersey Department of Environmental Protection: NJDEP Approval of the Record of Decision (ROD) for Site 34-Burning Grounds, Picatinny NJ	New Jersey Department of Environmental Protection	JUL-2005
Site 79 Sodium Lactate Groundwater Pilot Study Report, Picatinny, NJ	Shaw Environmental, Inc.	JUL-2005
Area B (Site 20/24) HRC and ORC Groundwater Pilot Study; Picatinny Arsenal New Jersey	Shaw Environmental & Infrastructure, Inc.	JUL-2005
Army Submission of Revised Pages Regarding the Phase II RI Report, Rounds 1 and 2, Volume 1; Phase II RI Report Rounds 1 and 2, Volume 2 Area H; Phase II RI Report, Rounds 1 and 2 Volume 4 Area J,	Picatinny Arsenal	AUG-2005
Final 25 Site Feasibility Study	Shaw Environmental, Inc.	AUG-2005
Response to Comments regarding Area E Groundwater and Site 22 ROD	USEPA	AUG-2005
Submission of Revised Pages for Phase I & II Remedial Investigation Report, Buildings 31 and 33 Remedial	Environmental Compliance, Inc.	AUG-2005

## IRP Previous Studies

2005

Title	Author	Date
Investigation Concept Sites 29 & 85/PICA 71, Picatinny Arsenal, New Jersey		
Site 2 (Phase II/Group 3) Nanoscale ZVI Pilot Groundwater Study Work Plan (Dated July 2004) Picatinny Arsenal, NJ	Shaw Environmental, Inc.	AUG-2005
Draft Site 2 (Phase II/Group 3) Nanoscale ZVI Pilot Study Report (Dated August 2005) Picatinny Arsenal, NJ	Shaw Environmental, Inc.	AUG-2005
Army response to the Letter request to complete investigation related to Area C Groundwater on behalf of Pondview Estates	Picatinny Arsenal	AUG-2005
Comments from US Environmental Protection Agency: Approval of Revisions to Group 3 Feasibility Study (Dated August 2005).	USEPA	AUG-2005
Comments from US Environmental Protection Agency: Area E Groundwater and Site 22 (PICA 077) ROD (Dated April 2005)	USEPA	AUG-2005
Comments from US Environmental Protection Agency: Comments regarding Record of Decision (ROD) for Site 25/26 Soil (Dated June,	USEPA	AUG-2005
Comments from US Environmental Protection Agency: Approval of changes to Phase III 1A RI Report (Dated April, 2005	USEPA	AUG-2005
Comments from US Environmental Protection Agency: Response to comments for Phase II RI Report, Volume 3-Area I Sites (Dated March 25, 2005).	USEPA	AUG-2005
Draft Final Lead Removal Action Data Report	Shaw Environmental Inc.	SEP-2005
Approval of Group 1 Sites FS (Phase II Sites 40, 93, 156 and 157)	USEPA	SEP-2005
Letter request from Scarinci & Hollenbeck, LLC to review documents in the Picatinny Administrative Record on behalf of Pondview Estates	Scarinci & Hollenbeck, LLC	SEP-2005
Army response to letter request from Scarinci & Hollenbeck, LLC to review documents in the Picatinny Administrative Record on behalf of Pondview Estates	Scarinci & Hollenbeck, LLC	SEP-2005
Approval of Buildings 31/33 RI Report	USEPA	SEP-2005
Approval of Decision (ROD) for the Burning Grounds (Comments from USEPA)	USEPA	SEP-2005
Army Submission of Page Drops for the Final Area C Groundwater Feasibility Study	Picatinny Arsenal	OCT-2005
Army Electronic Submission of Proposed Supplemental Groundwater Investigation of 600 Area	Picatinny Arsenal	OCT-2005
Approval of Site 78 Remedial Investigation Report (Comments from EPA)	USEPA	OCT-2005
Approval of Sites 3, 31, 192 and 199 Remedial Investigation Report (Comments from USEPA)	USEPA	OCT-2005
Approval of FS for Sites 31 and 101 (Comments from USEPA)	USEPA	NOV-2005
Army Submission of IAG Meeting Minutes for November 1, 2005	Picatinny Arsenal	NOV-2005
Mid-Valley Groundwater Feasibility Study Picatinny Arsenal, New Jersey	Shaw Environmental, Inc.	NOV-2005
Feasibility Study for Sites 31 and 101	Shaw Environmental, Inc.	NOV-2005

## IRP Previous Studies

2005	Title	Author	Date
	Mid-Valley Groundwater Feasibility Study	Shaw Environmental, Inc.	NOV-2005
	Submittal of Comments regarding Proposed Plan for Remediation of Area B Groundwater	Subsurface Solutions, LLC	NOV-2005
	Approval of Site Closure Report for Site 20/24 (Comments from USEPA)	USEPA	NOV-2005
2006	Correspondence and Comments from New Jersey Department of Environmental Protection: Complete Profile Sampling Results From Bureau of Safe Drinking Water, Picatinny NJ	New Jersey Department of Environmental Protection	JAN-2006
	Comments Regarding Phase III & Phase I 2A/3A Sites Baseline Ecological Risk Assessment	USEPA	JAN-2006
	Response to Comments Regarding Mid-Valley Groundwater Feasibility Study	USEPA	JAN-2006
	Request for Meeting to Resolve Language in Picatinny's Decision Document	Picatinny Arsenal	JAN-2006
	Submission of Final ESTCP Technology Demonstration Plan	Picatinny Arsenal	JAN-2006
	Comments from USEPA: USEPA's Comments EBS and Finding of Suitability to Lease Report for Buildings 350, 352, 353, 354	USEPA	MAR-2006
	Comments from USEPA: USEPA approval to Army's Response to Comments Regarding Mid-Valley Groundwater FS	USEPA	MAR-2006
	Picatinny Task Order 17: Phase III and Phase I 2A/3A Sites Baseline Ecological Risk Assessment	Shaw Environmental, Inc.	MAR-2006
	216468- Morris County Municipal Utilities Authority Rockaway Basin Well Drilling and Testing-Contract No. 32B	Hatch Mott MacDonald	MAR-2006
	Focused Feasibility Study for Buildings 31 and 33 Remedial Investigation Concept Sites 29 & 85/PICA 71	Environmental Compliance, Inc.	MAR-2006
	Remedial Design for Record of Decision for Green Pond Brook/Bear Swamp Brook (PICA-192)	Shaw Environmental, Inc.	APR-2006
	Bear Swamp Brook Oil/Water Separator and Tributary Stream Sediment Removal Action Work Plan	Shaw Environmental, Inc.	APR-2006
	Phase II Remedial Investigation Report, Rounds 1, and 2, Area I Volume 3 500 Sites; 900 and 3000 Area Sites; Area I Remaining Sites; and Area I Specific Appendices	Shaw Environmental, Inc.	MAY-2006
	Record of Decision for Soil at Site 25, Sanitary Landfill, and Site 26, Dredge Disposal Pile	Shaw Environmental, Inc.	JUL-2006
	Proposed Plan for Site 180	Shaw Environmental Inc.	JUL-2006
	Characterization Survey and Additional Sampling Plan for the Former Dog Pound Site	Shaw Environmental, Inc.	AUG-2006
	Action Memorandum, Munitions and Explosives of Concern Time Critical Removal Action for Tilcon Quarry, Picatinny, New Jersey	Picatinny Environmental Affairs Office	SEP-2006
	Performance Based Contract Facility-Wide Field Sampling Plan	ARCADIS, Inc.	SEP-2006
	Historical Records Review, Picatinny Arsenal, New Jersey: Stakeholder Draft	Malcolm Pirnie, Inc.	SEP-2006
	Third Five-Year Review Report	Shaw Environmental, Inc.	OCT-2006
	Performance Based Contract Quality Assurance Project Plan	ARCADIS, Inc.	OCT-2006

## IRP Previous Studies

2006	Title	Author	Date
	Groundwater Sampling and Temporary Well Installation, Picatinny Arsenal, Area D Golf Course	CPT Testing	NOV-2006
	Draft Remedial Action Workplan, PICA 067 (Sites 25 and 26)	ARCADIS, Inc.	DEC-2006
2007	Record of Decision For Site 25/26 Soil	Picatinny Arsenal	JAN-2007
	Draft Final Record of Decision, PICA 205, Area B Groundwater	ARCADIS, Inc.	JAN-2007
	Final Proposed Plan for Site 180 (PICA 093), Waste Burial Area	ARCADIS, Inc.	FEB-2007
	Final Time Critical Removal Action Work plan, Mount Hope Quarry, Morris County, New Jersey	Malcolm Pirnie, Inc.	FEB-2007
	Site Inspection Work plan, Picatinny Arsenal, New Jersey	Malcolm Pirnie, Inc.	FEB-2007
	Draft Final Remedial Action Work plan, Sites 25/26 (PICA 067), Sanitary Landfill and Dredge Pile	ARCADIS, Inc.	FEB-2007
	Draft Remedial Design, PICA 205, Area B Groundwater	ARCADIS, Inc.	MAR-2007
	Final Remedial Design, Area D	ARCADIS, Inc.	MAR-2007
	Task Order 17- Bear Swamp Brook Oil/Water Separator and Tributary Stream Sediment Removal Action Work plan	Shaw Environmental, Inc.	MAR-2007
	February 2007 Area E Groundwater Monitoring Data	ARCADIS, Inc.	JUN-2007
	2nd Half 2006 and 1st Half 2007 Semiannual Groundwater / Surface Water Monitoring, Area D/Building 24 RCRA Units	ARCADIS, Inc.	JUN-2007
	Draft Final Remedial Action Work plan, Site 180 (PICA 093) Waste Burial Area	ARCADIS, Inc.	JUN-2007
	Record of Decision For PICA 020 Group of Sites	ARCADIS, Inc.	JUL-2007
	Final Remedial Action Work plan, Site 25/26 (PICA 067), Sanitary Landfill and Dredge Pile	ARCADIS, Inc.	JUL-2007
	Draft Final Land Use Control Plan, Remedial Design Addendum 01, Area D (PICA-76)	ARCADIS, Inc.	AUG-2007
	Draft Remedial Design Area E (PICA-77) & Site 22 (PICA-010)	ARCADIS, Inc.	AUG-2007
	1st and 2nd Quarter 2007 Groundwater Monitoring One-time Surface Soil Sampling Report	ARCADIS, Inc.	AUG-2007
	Final Quality Assurance Project Plan	ARCADIS, Inc.	AUG-2007
	Vapor Intrusion Investigation Report for the Child Development Center	ARCADIS, Inc.	AUG-2007
	Draft Final Remedial Action Work plan, PICA 020 Group of Sites	ARCADIS, Inc.	AUG-2007
	Record of Decision for Area E Groundwater and Site 22 (Building 95 Impoundment Area)	ARCADIS, Inc.	SEP-2007
	Record of Decision, Site 180 (PICA 093) Waste Burial Area	ARCADIS, Inc.	SEP-2007
	Proposed Plan for Area C Groundwater	Shaw Environmental, Inc.	SEP-2007
	Remedial Action Report, Site 23 (PICA 065) The Post Farm Landfill	ARCADIS, Inc.	SEP-2007
	Final Proposed Plan, Sites 31 and 101 (PICA 072), Former DRMO Yard and Former Gas Station	ARCADIS, Inc.	SEP-2007

## IRP Previous Studies

**2007**

Title	Author	Date
Draft Final Time Critical Removal Action Report, Mount Hope Quarry, Morris County, New Jersey	Malcolm Pirnie, Inc.	SEP-2007
Remedial Action Report, Site 180 (PICA 093) Waste Burial Area	ARCADIS, Inc.	OCT-2007
Picatinny Arsenal Army Defense Environmental Restoration Program Installation Action Plan FY 2007	Picatinny Arsenal	OCT-2007
Picatinny Arsenal Compliance-Related Cleanup Installation Action Plan FY 2007	Picatinny Arsenal	OCT-2007
Final Feasibility Study, Mid-Valley Groundwater	ARCADIS, Inc.	NOV-2007
Stakeholder Draft, Site Inspection Report, Picatinny Arsenal, New Jersey	Malcolm Pirnie, Inc.	NOV-2007
Site Inspection Report Picatinny Arsenal Relating to the MMRP	Malcolm Pirnie, Inc.	NOV-2007
Feasibility Study for Sites 109, 125, 142, 144, 146 & PICA-203	Shaw Environmental Inc.	DEC-2007
Engineering Evaluation / Cost Analysis Investigative Work Plan Residential Community Initiative Military Housing Project Area (Part of PICA-003-R-01)	PIKA- MP JV, LLC	DEC-2007
Draft Final Time Critical Removal Action Report, Mount Hope Quarry, Morris County, New Jersey	Malcolm Pirnie, Inc.	DEC-2007

**2008**

Picatinny Arsenal Sampling Summary Report Former Dog Pound Site	Shaw Environmental, Inc.	JAN-2008
Picatinny Arsenal Classification Exception Area Biennial Certification	Shaw Environmental, Inc.	JAN-2008
Draft Final Interim Remedial Action Report, Area E Groundwater	ARCADIS, Inc.	FEB-2008
Draft Final Feasibility Study, Area P Site 78 (PICA 013)	ARCADIS, Inc.	FEB-2008
Child Development Indoor Air Sampling Report	ARCADIS	MAR-2008
Remedial Action Report, Site 25/26 (PICA 067), Sanitary Landfill and Dredge Pile	ARCADIS, Inc.	MAR-2008
Draft Final Proposed Plan, Sites 61 and 104 (PICA 102)	ARCADIS, Inc.	MAR-2008
Record of Decision For Site 31/101 (PICA 72) Soil	ARCADIS, Inc.	MAR-2008
2007 Annual Land Use Certification	ARCADIS, Inc.	MAR-2008
RDX Report for 600 Hill	Shaw	APR-2008
Remedial design for Area B Groundwater	ARCADIS	NOV-2008

**2009**

Draft Technical Memorandum for Group 3 Sites	ARCADIS	MAR-2009
Draft Technical Memorandum for Group 1 Sites	ARCADIS	APR-2009
. "Final' Midvalley Groundwater Feasibility Study	ARCADIS	MAY-2009
Feasibility Study for Site 78 (PICA 13)	ARCADIS	MAY-2009
Remedial Design for LTM for Area C	Shaw Environmental	MAY-2009
Site 25/26 Remedial Action Report	ARCADIS	JUN-2009
Site 180 Remedial Action Report	ARCADIS	JUN-2009

## IRP Previous Studies

**2009**

Title	Author	Date
PICA 20 (2007 LUC Group) Remedial Action Report	ARCADIS	JUN-2009
Site 61 and 104 (PICA 102) Remedial Action Report	ARCADIS	JUN-2009
Feasibility Study for PICA 1 LUC Group (PICA 1, 6, 22, 85, 143, 145, 163, 171, 192, and 199) (Arcadis 25 Site FS)	ARCADIS	SEP-2009
The 5 Site FS) (PICA 11, 85, 91, 97, and 108)	ARCADIS	SEP-2009
Wetland Mitigation Plan for PICA 072	ARCADIS	SEP-2009
Proposed Plan for PICA 13 (Site 78)	ARCADIS	OCT-2009
Skeet Range Workplan	Shaw Environmental	DEC-2009
45 Site FS; PICA 11, 50, 75, 91, 97, 108, 122, 134, 135, 136, 162, 175, 200, 209	ARCADIS	DEC-2009
Lake FS (PICA 15, 57, 195)	ARCADIS	DEC-2009
Non Lakes Feasibility Study (which includes TECUP Buildings))	ARCADIS	DEC-2009

**2010**

Proposed Plan for the PICA 1 LUC Group (Arcadis 25 Site FS)	ARCADIS	JAN-2010
Draft Group 1 Record of Decision	ARCADIS	JAN-2010
Draft Proposed Plan for 600 Area	Shaw Environmental	FEB-2010
Area E Annual Report 2009	ARCADIS	FEB-2010
Area B Annual Report	ARCADIS	FEB-2010
Remedial Design for PICA 008 (Group 3)	ARCADIS	APR-2010
Decommissioning Work plan for Pump and Treat Facility for Area D	ARCADIS	APR-2010
GPB/BSB (PICA 193) 2009 Annual Report	ARCADIS	JUN-2010
Revised CEA Biannual Report	ARCADIS	JUN-2010
Proposed Plan for PICA-111	Shaw Environmental	JUN-2010
Area C Semiannual Groundwater Data Report, winter 2010.	Shaw	JUN-2010
Signed Group 3 Record of Decision	Army with ARCADIS	JUL-2010
ROD for PICA 13 or Site 78	ARCADIS	JUL-2010
Annual LUC Certification Report	ARCADIS	JUL-2010
Site 31/101 (PICA 72) Remedial Action Report	ARCADIS	AUG-2010
. Area C Groundwater Interim Remedial Action Report	Shaw	AUG-2010
600 Area MTBE Groundwater Investigation Data Report	Shaw	AUG-2010
Final Feasibility study for 25 Sites (Shaw developed)	Shaw	SEP-2010
Skeet Range SI Data Report	Shaw	SEP-2010
Building 91, Site 78 Vapor Intrusion Evaluation, 2010, Picatinny Arsenal, NJ	ARCADIS	OCT-2010



## IRP Previous Studies

2010

Title	Author	Date
Site 34 Burning Grounds Sampling Results	ARCAIDS	OCT-2010
Final Remedial Design for Groundwater and Surface Water Group 3 Site 1, 2, and 4 (PICA 008)	ARCADIS	DEC-2010
2009 Annual Monitoring Report Area D	ARCADIS	DEC-2010
600 Area Source and Vapor Intrusion Work plan	Shaw	DEC-2010

2011

Area B GW Annual Report 2010	ARCADIS	FEB-2011
Group 3 (PICA 008) Interim Remedial Action Report	ARCADIS	FEB-2011
Revised CEA Biannual Report	ARCADIS	FEB-2011
Hydrasleeve SOP	ARCADIS	FEB-2011
ROD for PICA 13 or Site 78 signed by Army	Army	MAR-2011
Final ICM Removal Action Report	ARCADIS	MAR-2011
Group 1 (PICA 79) Interim Remedial Action Report	ARCADIS	MAR-2011
Area E Annual Report 2009	ARCADIS	MAR-2011
Former Skeet Range Remedial Investigation Work plan	Shaw	MAR-2011
Group 1 (PICA 79) Interim Remedial Action Report	ARCADSI	APR-2011
Annual LUC Certification Report for 2010	ARCADIS	APR-2011
Area C Statistical Report	WESTON	APR-2011
GPB/BSB (PICA 193 Annual Report) Annual Report 2010	ARCADIS	APR-2011
Group 3 (PICA 008) Groundwater Annual Report 2010	ARCADIS	APR-2011
PICA-111 Sites (Site 109, 125, 142, 144, 146 & PICA-203) Proposed Plan, May 2010	Shaw	MAY-2011
Remedial Investigation Workplan for the MMRP for Picatinny	WESTON	JUL-2011
Building 660 Vapor Intrusion Investigation Report PICA 58 600 Hill Groundwater Plume	Shaw Inc.	SEP-2011
Picatinny Lake Sampling Work Plan	ARCADIS	OCT-2011
Mid Valley (PICA 204) FS Addendum	ARCADIS	NOV-2011
PICA 204 Mid-Valley ¿ Sub-slab Soil Gas Sampling Work Plan	ARCADIS	DEC-2011
Q2 2011 Groundwater Monitoring Data Report, Group 3 (PICA 08)	ARCADIS	DEC-2011
Q2 2011 Groundwater Monitoring Data Report, Site 78 (PICA 13)	ARCADIS	DEC-2011
40. Q2 2011 Groundwater Monitoring Data Report, Group 3 (PICA 08)	ARCADIS	DEC-2011
2011 Semi-Annual MNA and Remedial Action Operation Data Report Area D (PICA 076) Groundwater Summary Table and Associated Figures 25 Site Group, PICA 001	ARCADIS	DEC-2011

2012

## IRP Previous Studies

2012

Title	Author	Date
Mid Valley (PICA 204) Proposed Plan	ARCADIS	JAN-2012
Addendum of the Remedial Investigation Workplan for the MMRP for Picatinny	WESTON	JAN-2012
Final Mid Valley (PICA 204) Proposed Plan	ARCADIS	JAN-2012
Site 78 (PICA 13) Annual Report 2012	ARCADSI	JAN-2012
Community Involvement Plan	WESON	FEB-2012
Q3 2011 Groundwater Monitoring Data Report, Site 78 (PICA 13)	ARCADIS	FEB-2012
Q3 2011 Groundwater Monitoring Data Report, Group 3 (PICA 08)	ARCADSU	FEB-2012
Hydrasleeve SOP	ARCADIS	FEB-2012
Action Memorandum Land Use Controls	URS	MAR-2012
Tilcon 3 Removal Action Report	PIKA Inc	MAR-2012
Area C Groundwater Monitoring Report Round d	WESTON	MAR-2012
Group 1 (PICA 079) Annual Report 2011	ARCADIS	MAR-2012
PICA 204 Mid-Valley ¿ Sub-slab Soil Gas Sampling Report	ARCADSI	MAY-2012
Draft Proposed Plan for the PICA 1 LUC Group (¿ARCADIS¿ 25 Site FS)	ARCADIS	MAY-2012
Group 3 (PICA 008)Groundwater Annual Report 2011	ARCADIS	JUN-2012
Area C Groundwater Monitoring Report Round d	WESTON	JUN-2012
Area B Annual Report 2011	ARCADIS	JUL-2012
Area E Annual Report 2011	ARCADIS	JUL-2012
Area B Annual Report 2011	ARCADIS	JUL-2012
Area E Annual Report 2011	ARCADIS	JUL-2012
Draft Mid Valley (PICA 204) ROD	ARCADIS	AUG-2012
Area D Annual Report for 2011	ARCADIS	AUG-2012
Post Farm (PICA 65) Annual Report 2011	ARCADIS	AUG-2012
Q1 2012 Groundwater Monitoring Data Report, Group 3 (PICA 08)	ARCADIS	AUG-2012
Q1 2012 Groundwater Monitoring Data Report, Group 1 (PICA 79)	ARCADIS	AUG-2012
Q1 2012 Groundwater Monitoring Data Report, Site 78 (PICA 13)	ARCADIS	AUG-2012
Public Notice of Five-Year Review for 2011	ARCADUS	SEP-2012
2012 Semi-Annual MNA and Remedial Action Operation Data Report Area D (PICA 076)	ARCADIS	OCT-2012
2012 Semi-Annual Monitoring Report (First and Second Quarter) Area B (PICA 205) Groundwater	ARCADIS	OCT-2012
2012 Semi-Annual Monitoring Report Area E (PICA 077) Groundwater	ARCADIS	OCT-2012
Biennial Certification Monitoring Report for a Ground	ARCADIS	NOV-2012

## IRP Previous Studies

2012	Title	Author	Date
	Water Classification Exemption Area (CEA)		
	PICA 204 Mid-Valley & Sub-slab Soil Gas Sampling Work Plan	ARCADSI	DEC-2012
	Remedial Design Vegetation and UXO Clearance at PICA 02	ARCADIS	DEC-2012
	2011 Semi-Annual Monitoring Report (First and Second Quarter) Area B (PICA 205) Groundwater	ARCADIS	DEC-2012
2013			
	Area C Groundwater Monitoring Report Round E	ARCADIS	JAN-2013
	600 Hill Report	Shaw	FEB-2013
	Proposed Plan for NFA the PICA 1 (& ARCADIS & 25 Site FS)	ARCADIS	FEB-2013
	Annual LUC Certification Report	ARCADIS	FEB-2013
	2012 Annual Groundwater Monitoring Data Report, Site 78 (PICA 13)	ARCADIS	MAR-2013
	Mid Valley (PICA 204) Remedial Design	ARCADIS	APR-2013
	2012 Annual Groundwater Monitoring Data Report, Group 1 (PICA 79)	ARCADIS	APR-2013
	600 Hill investigative FS Addendum	SHAW	MAY-2013
	Well Analysis, Repair, and Abandonment Work Plan, Addendum 03) Group 3 Sites (PICA 008), Site 78 (PICA 013), Group 1 Sites (PICA 079)	ARCADIS	MAY-2013
	2012 Annual Monitoring Report (First and Second Quarter) Area B (PICA 205) Groundw	ARCADIS	MAY-2013
	2012 Annual Monitoring Report Area E (PICA 077) Groundwater	ARCADIS	MAY-2013
	2012 Annual MNA and Remedial Action Operation Data Report Area D (PICA 076) Groundwater	ARCADOS	MAY-2013
	2012 Annual Groundwater Monitoring Data Report, Group 3 (PICA 08)	ARCADIS	MAY-2013
	Proposed Plan for PICA-111	Shaw	JUN-2013
	GPB/BSB (PICA 193 Annual Report) Annual Report 2012	ARCADIS	JUL-2013
	GPB/BSB (PICA 193 Annual Report) Annual Report 2012	ARCADSI	JUL-2013
	Area C Groundwater Monitoring Report Round F	WESTON	AUG-2013
	MidValley Groundwater IRAR for Groundwater	ARCADIS	SEP-2013
	2013 Semi-Annual Groundwater Data Report, Site 78 (PICA 013)	ARCADIS	NOV-2013
	2013 Semi Annual Groundwater Data Report, Group 1 (PICA 079)	ARCADIS	NOV-2013
2014			
	Area C Groundwater Monitoring Report Round G	WESTON	MAR-2014
	2013 Annual Groundwater Monitoring Data Report, Site 78 (PICA 13)	ARCADIS	MAR-2014
	PICA 204 2014 Annual Monitoring Report (vo;lume 1 and 2)	ARCADIS	APR-2014

## IRP Previous Studies

2014

Title	Author	Date
1. 2014 Area C Groundwater Semiannual Report without data reduced size	WESTON	MAY-2014
1. 25 Site Record of Decision signed by EPA in May 2014	ARMY and EPA signed	MAY-2014
Final 26 Site No Action Proposed Plan	Army	MAY-2014
NFA PP for ¿Shaw 26¿ Site Group	ARCADIS	MAY-2014
ROD for 25 Site Group (PICA 001)	ARCADIS	MAY-2014
Explanation of Significant Differences for PICA 02 ROD	ARCADIS	MAY-2014
Area C Groundwater Monitoring Report Round H	WESTON	MAY-2014
2013 Annual Groundwater Monitoring Data Report, Group 3 (PICA 08)	ARCADIS	MAY-2014
2014 Semi-annual Groundwater Monitoring Data Report, Group 1 (PICA 79)	ARCADIS	MAY-2014
Feasibility Studies (now called the 3 Site FS) (PICA 11, 85, 91, 97, and 108)	ARCADIS	JUN-2014
Feasibility Study for PICA 11 LUC Group of Sites¿Now called the 48Site FS¿) (PICA 11, 50, 75, 91, 97, 108, 122, 134, 135, 136, 162, 175, 200, 209) ¿	ARCADUS	JUN-2014
Lakes FS (PICA 15, 57, 195)	ARCADIS	JUN-2014
Remedial Design Vegetation and UXO Clearance at PICA 02	ARCADIS	JUN-2014
2014 Annual LUC Certification Report	ARCADIS	JUN-2014
Site 34 (PICA-002) First and Second Quarter 2014 Monitoring Report	ARCADIS	JUN-2014
Letter Report 300 Marsh Area	WESTON	JUL-2014
2014 Semi-annual Groundwater Monitoring Data Report, group 3 (PICA 08)	ARCADIS	JUL-2014
2014 Semi-annual Groundwater Monitoring Data Report, Group 1 (PICA 79)	ARCADIS	JUL-2014
2014 Semi-annual groundwater Monitoring Data Report, Site 78 (PICA 13)	ARCADIS	JUL-2014
GPB/BSB (PICA 193 Annual Report) Annual Report 2013	ARCADIS	JUL-2014
Non-Lakes Feasibility Study (which includes TECUP Buildings)	ARCADIS	AUG-2014
2014 First Quarter Monitoring Report, PICA 204 (Midvalley)	ARCADIS	AUG-2014
Remedial Action Report Addendum SW System Modification Site 34	ARCADIS	SEP-2014
PICA 013 2014_annual. to regulators	ARCADIS	OCT-2014
2014 Area C Groundwater SemiAnnual Report	WESTON	OCT-2014
Biennial Certification Monitoring Report	ARCADIS	OCT-2014
2014 PICA 205 Annual Report 2014	ARCADIS	OCT-2014
2014 Draft Annual Report - Area E (PICA-077)	ARCADIS	OCT-2014
2014 Annual Monitoring Report - Site 23 PICA 065,	ARCADIS	OCT-2014

## IRP Previous Studies

2014	Title	Author	Date
	2014 Annual Monitoring Report PICA-008 dated October 2014	ARCADIS	OCT-2014
	PICA 008 2014 Semi-Annual Report to regulators, 2014 10 20	ARCADIS	OCT-2014
	PICA 079 2014 Annual Report 2014 11 03	ARCADIS	NOV-2014
	PICA 204 2014 Annual Monitoring Report	ARCADIS	NOV-2014
	PICA 002 Mitigation Report	ARCADIS	NOV-2014
	PICA 002 Remedial Action Report	ARCADIS	NOV-2014
	2014 Annual Monitoring Report - Site 23 PICA 065,	ARCADIS	NOV-2014
	2014 11 12 PICA 002 Annual 2014 Report	ARCADIS	NOV-2014
	2014 Area D (PICA 076) Annual Report	ARCADIS	NOV-2014
	Final 2014 Annual LUC Report	ARCADIS	DEC-2014
2015	21 Site ROD - No Further Action with Monitoring of Land Use Record of Decision for PICA-096	EPA and Army signed	MAR-2015
	3- Site Group Site WP	ECC	DEC-2015
2016	RAO/LTM UFP-QAPP	EA	JAN-2016
	Workplan for Eastern Side of Green Pond Brook	ECC	FEB-2016
	Picatinny Lake Sediment Sampling Work Plan	ECC	FEB-2016
	2015 RI Concept Plan 78 Annual Report	EA	FEB-2016
	Cleanup Contract UFP-QAPP	ECC	FEB-2016
	2015 Group 3 Annual Report	EA	MAR-2016
	2015 RI Concept Plan 78 Annual Report	EA	MAR-2016
	2015 Area E Annual Report	EA	MAR-2016
	2015 Area B Annual Report	EA	MAR-2016
	2015 Wetland Mitigation Report	EA	MAR-2016
	2015 Annual LUC and NFA Site Monitoring Report	EA	MAR-2016
	2015 Group 1 Annual Report	EA	MAR-2016
	2015 Lower Burning Ground Annual Report	EA	MAR-2016
	2015 Area C Annual Report	EA	MAR-2016
	2015 Area D Annual Report	EA	MAR-2016
	Phase V Well Abandonment Report	EA	MAR-2016
	Workplan for PICA 207 sites	ECC	APR-2016
	Workplan for PICA-111 Sites	ECC	APR-2016

**PICATINNY ARSENAL**  
**Installation Restoration Program**  
**Site Descriptions**

Site Name: INACTIVE TETRYL WASTE PITS (SITES 17/18)

STATUS

Regulatory Driver: CERCLA

RRSE: HIGH

Contaminants of Concern: Explosives, Metals, Polycyclic Aromatic Hydrocarbons (PAH), Volatiles (VOC)

Media of Concern: Soil

Phases	Start	End
PA.....	197607.....	198105
SI.....	198707.....	198906
RI/FS.....	199606.....	201405
IRA.....	200010.....	200503
LTM.....	201406.....	204609

RIP Date: N/A

RC Date: 201405

SITE DESCRIPTION

The costs for PICA-001 is covered under PICA-206. The site has a ROD that is for "No Further Action with Monitoring of Land Use. Formerly PICA-001 carries the LTM costs for annual inspections, certification reports for all the sites that were contained in the signed "No Further Action with Monitoring of Land Use Record of Decision for Sites with PICA-001, 006, 022, 085, 143, 163, 171, 192 and 199 and No Further Action for PICA 146" (25 Site Group).

The original AEDB-R site called the Northern 2,4,6-Trinitrophenylmethyl nitramine (Tetryl) Pits (PICA-017) had consisted of four unlined, bermed pits, located at the intersection of 18th Avenue and 13th Street. The Southern Tetryl Pit (PICA-018) received waste from Building 1052 and may have operated from 1938 to 1945. The northern and southern tetryl pits are currently inactive. Materials that may have been in the tetryl pits included: tetryl, nitric acid, and water. Lead was not a constituent of the final product.

Surface soil samples were collected as part of a PA/SI conducted in 1996, and soil, sediment, and groundwater samples were collected during RI activities conducted from 1998 to 2000. An engineering evaluation/cost analysis (EE/CA) for the removal of soil co-contaminated with explosives and lead was completed in 2001. Soil contaminated with explosives [about 300 cubic yards (cy)] was treated in a bioreactor to address explosives. A rotted catch basin and 25 cy of soil were removed at the southern tetryl pits as part of a facility-wide sump and catch basin investigation in 2004.

An RI submitted in 2003 included the results of the tetryl removal action. Human health risk assessment (HHRA) results indicate the non-cancer hazard index (HI) is less than one for target populations and estimated total cancer risks are 1E-4 for industrial research workers and within target risk range for the on-site youth visitor scenario. A baseline ecological risk assessment was conducted in 2005. It determined that although the food web models indicated that adverse effects on reproduction in small mammals or birds could occur given sufficient exposure to site contaminants of potential ecological concern (COPEC), the field investigations and rodent sperm analysis (RSA) results indicated that effects, if any, were not impacting the populations of small mammals or birds.

An FS with PICA-001 for LUCs only was approved by the USEPA in August 2009. The original PP was submitted in January 2010. The USEPA provided comments during the review process in FY10 and FY11 that indicated that they would not be satisfied with only ICs and would require ECs. The USEPA requested and Army submitted the "25 Site Table" that provided summaries of the sites so the USEPA and the NJDEP could determine if the LUCs proposed for the sites comply with the USEPA policy.

Groundwater contamination is being addressed on an area-wide basis as part of the Mid-Valley groundwater investigation currently in the RI/FS stage. Details of this investigation are supported in PICA-204 and funding is supported under the PBA.

In a letter dated Nov. 27, 2012, the USEPA had technically approved the NFA with monitoring of land use PP for the 25 PTA sites within PICA-001, 006, 022, 085, 143, 163, 171, 192, and 199. In this letter the USEPA agrees with the Army position that sites with acceptable risk should be considered as an NFA as existing LUCs prevent a different land use. The Army agreed to notification and annual certification of maintaining the current land use.

**Site ID: PICA-001**

**Site Name: INACTIVE TETRYL WASTE PITS (SITES 17/18)**

This PP was a public notice issued in March 2013 and the ROD was signed by the Army and USEPA by May 2014. It is recognized that the NJDEP did not concur on the action since the ROD did not recognize the NJDEP cleanup numbers as ARARs or as cleanup goals.

A certification of land use for the site with an inspection report was submitted in December 2014 and March 2015 to the regulators and approved.

### **CLEANUP/EXIT STRATEGY**

The Army will continue the required annual inspection and develop the certification report as required by the "No Further Action with Monitoring of Land Use Record of Decision." The site will also be evaluated in five-year reviews.



Site Name: LOWER BURNING GROUND (SITE 34)

STATUS

Regulatory Driver: CERCLA

RRSE: HIGH

Contaminants of Concern: Dioxins/Dibenzofurans, Metals, Pesticides, Polychlorinated Biphenyls (PCB), Semi-volatiles (SVOC)

Media of Concern: Groundwater, Sediment, Soil, Surface Water

Phases	Start	End
PA.....	197607.....	198105
SI.....	198707.....	198906
RI/FS.....	199011.....	200508
RD.....	200604.....	201404
RA(C).....	200604.....	201412
LTM.....	201412.....	204609

RIP Date: N/A

RC Date: 201412

SITE DESCRIPTION

The future LTM costs for this site are incorporated by the cost in PICA-206. The site is now considered RIP. The Lower Burning Ground encompasses an area of 7 acres. The site for the RI was broken into four areas: the landfill area, the waste pile area, the open burning area, and the burn pan area. The landfill area sustained landfill operations from 1960 to 1980 to fill in low-lying ground. Direct burning of explosives-contaminated wastes on the ground surface was conducted in the open burning area until 1985. From 1985 to 2011 explosives-contaminated wastes had been burned in nine burning pans.

In the 1980s, a geophysical survey was conducted and groundwater wells were installed. An SI was completed in 1989, metals and polycyclic aromatic hydrocarbons (PAH) were detected above levels of concern (LOC) in soil and sediment. In 1990, USAEHA soil sampling found dioxins. In a 1990 groundwater assessment, wells were sampled for VOCs, base neutral acids (BNA), pesticides dioxins/furans, and PCBs. VOCs and metals were detected above LOCs and the HHRA found the risk was above 5 by 10(-4).

The 1993 RI included sampling soil, surface water, sediment, and groundwater for VOCs, metals, BNAs, dioxins/furans, PCBs, and pesticides. In the soil there were exceedances of BNAs, metals, PCBs, and detections of explosives and dioxins/furans. There were exceedances of metals and VOCs in surface water and metals, pesticides, and cyanide in sediment. Metals were detected above LOC in groundwater. The 1993 HHRA indicated that risk was above 1 by 10(-4) from metals, PAHs, PCBs, and dioxins.

The FS was approved by the regulatory agencies in the fall of 2001. Surface soil sampling was done in August 2002. These results were used to finalize the design of the cap. A public meeting for the site was completed on Feb. 19, 2004. The ROD was signed by the PTA Garrison Commander and the USEPA.

The ROD included provisions that allowed the delay of the implementation of the cleanup (closure) until the incinerator was operational that would replace the burning. The incinerator was proven out and functional in May 2011. The burning pans and other equipment at the burning ground at PICA-002 were moved to the "new burning grounds." Both tree-clearing and surface-UXO clearance was completed in the spring of 2012.

A change to the design of the cover required by the ROD was agreed to by Army and regulators. The change was from a modified asphalt technology for containment (MATCON) cover to a hybrid cover. A contract modification was required in FY13 to include implementation of ARARs promulgated since the ROD was signed. An explanation of significant differences was a public notice issued in FY13.

The full remedial design (RD) which was submitted in October was approved by the regulators in the spring of 2014. The RD also included wetland mitigation of two areas outside the remediation area as the cover was placed over existing wetlands. A groundwater monitoring program was also implemented. The work was completed by September 2013 including the replacement of certain wells and abandonment of others. A remedial action report (RAR) was submitted to the regulators by October 2014 and approved by regulators December 2014 on which the RIP date is based. The sampling of the wells was completed by August and an annual sampling report was submitted November 2014 and LUC certification was included in the LUC report in December

**Site ID: PICA-002**

**Site Name: LOWER BURNING GROUND (SITE 34)**

2014.

Requirements of the RD continue including groundwater monitoring, land use certifications, wetland mitigation reporting and required maintenance of the cover.

The 2014 Annual LTM Report, Remedial Action Report, and Wetland Mitigation Report were submitted in calendar year 2014 and all approved by the regulator. The 2015 Annual LTM was submitted in early 2016 and approved by the regulators.

On the former burning grounds cover is the Picatinny solar project with 1782 panels producing 588 kilowatts of direct current.

### **CLEANUP/EXIT STRATEGY**

LTM will continue for the next 30 years as is required. Long-term groundwater and surface water monitoring is required with statistical testing after the 8th round of sampling. Wetland monitoring for the wetland enhancement project will continue with corrective measures done as necessary.

**Site ID: PICA-006**  
**Site Name: GUNCOTTON LINE (SITE 16)**

**STATUS**

**Regulatory Driver:** CERCLA  
**RRSE:** HIGH  
Contaminants of Concern: Explosives, Metals  
Media of Concern: Sediment, Soil

<b>Phases</b>	<b>Start</b>	<b>End</b>
PA.....	197607.....	198105
SI.....	198707.....	198906
RI/FS.....	199604.....	201405
LTM.....	201406.....	204609

**RIP Date:** N/A  
**RC Date:** 201405

**SITE DESCRIPTION**

The future LTM costs for this site are incorporated by the costs in PICA-206.

PICA-006's LTM costs are required by the "No Further Action with Monitoring of Land Use Record of Decision for Sites with PICA-001, 006, 022, 085, 143, 163, 171, 192 and 199 and No Further Action for PICA 146" are carried by LTM costs included with PICA-001. The group name is 25 Sites.

The original AEDB-R site called the Guncotton Line (GCL) is located near the southern end of Picatinny Lake that inadvertently received nitrocellulose (NC), referred to as guncotton. The pipeline was formerly used to discharge liquid waste from a trinitrotoluene (TNT) facility, in Building 520, into Picatinny Lake. The line included a portion of open trench and a buried pipeline. The pipeline ran from an underground catch basin near Building 554, past Building 506, under the location of a former coal pile, and ended in the vicinity of Building 424-E.

During the Phase II RI, a geophysical survey was conducted to identify the underground portion of the line. Soil samples were collected from the open trench portion of the line. Bioassays conducted on soil from the open trench did detect explosives, pesticides, and metals in the test organisms but the levels of these chemicals did not result in increased toxicity to the earthworms. The undefined portion of the line, under the former coal pile, near Building 506, was identified in spring 2000 through the use of video cameras, smoke testing and test pitting. Approximately 270 linear ft of a 12-inch pipeline, and 200 linear ft of an 8-inch pipeline, were excavated and removed with NC-contaminated soil, in order that a sanitary sewer line could safely be installed.

Additional sampling in 2001 delineated the horizontal and vertical extent of contamination in the open trench. The risk from sediment and subsurface soil exposures are within the USEPA target risk range. The non-cancer hazard from exposure to subsurface soil is below target threshold of one, while the hazard from sediment exposure exceeds one. For the on-site youth visitors, this exposure pathway is not reasonably anticipated as the majority of the GCL is within an enclosure.

The lead concentrations identified in the sediment are not considered a health concern. Metals and explosives contamination is present along the entire length of the open trench and drainage ditch (2,200 feet). Additional ecological investigations of the open trench planned for spring 2005 found the trench to be completely dry. Alterations to its origin due to remediation and/or construction have rendered the trench unsuitable as a significant aquatic habitat or significant transport pathway.

An FS was approved by the USEPA for the site in August 2009. The original PP was submitted in January 2010.

The packaging, handling, storage, and transportation (PHS&T) facility was built directly on a segment of the open part of the GCL. The Army proposed and NJDEP and USEPA agreed that the soils from underneath the footprint would be placed under an asphalt cover.

In a letter dated Nov. 27, 2012, USEPA had technically approved the NFA with monitoring of land use PP for the 25 PTA sites within PICA-001, 006, 022, 085, 143, 146, 163, 171, 192, and 199. In this letter the USEPA agrees with the Army position that sites with acceptable risk should be considered as NFA as existing LUCs prevent a different land use. The Army agreed to

**Site ID: PICA-006**  
**Site Name: GUNCOTTON LINE (SITE 16)**

notification and certification.

This PP was a public notice issued in March 2013 and the ROD was signed by the Army and USEPA by May 2014. It is recognized that the NJDEP did not concur on the action since the ROD did not recognize the NJDEP cleanup numbers as ARARs or as cleanup goals.

A certification of land use for the site with an inspection report was submitted in December 2014 and in early 2015 to the regulators and approved.

### **CLEANUP/EXIT STRATEGY**

The Army will continue the required annual inspection and develop the certification report as required by the "No Further Action with Monitoring of Land Use Record of Decision." The site will also be evaluated in the five-year reviews.

Site Name: INACT. ROCKET FUEL TEST Areas

STATUS

Regulatory Driver: CERCLA

RRSE: MEDIUM

Contaminants of Concern: Metals, Semi-volatiles (SVOC), Volatiles (VOC)

Media of Concern: Groundwater, Sediment, Soil, Surface Water

Phases	Start	End
PA.....	197607.....	198105
SI.....	198707.....	198906
RI/FS.....	199502.....	201008
RD.....	201008.....	201012
RA(C).....	201012.....	201106
RA(O).....	201107.....	204009

RIP Date: 201107

RC Date: 204009

SITE DESCRIPTION

PICA-007 (RI Site 1) and PICA-157 (RI Site 4) have consolidated into PICA-008 (RI Site 2). These sites are now known as Group 3. PICA-008 now represents funding associated with former PICA-007 and PICA-157 sites (RI Concept Sites 1, 2 and 4.)

This 31-acre site includes Rocket Test Areas A, B, and C, that were leased to the Naval Air Rockets Test Station division of the Navy. The Navy entered into a sublease agreement with the Reaction Motors Division (RMD) of Thiokol Chemical Co. in 1947. Activities at this site discontinued in 1962. The sublease with RMD expired in 1968. RMD tested and evaluated rocket engines and their related components at the site. Other operations known to have occurred in these test areas include new and alternative rocket fuel development and engine redesign. The majority of the buildings have been decontaminated and demolished, and Test Areas B and C remain inactive and unimproved.

As part of the Phase II RI conducted in 1996, the following activities were performed: a geophysical survey, a soil-gas survey, installation of monitoring wells, excavation and sampling of test pits, and collection of soil, groundwater, surface water, and sediment samples. VOC groundwater contamination has been identified in the two aquifers beneath the site. The extent of the groundwater contamination in the shallow aquifer was defined during the Group 3 RI completed in 1998. The HHRA indicates that the risk and hazard to impacted site media are below the target risk level of 1 by 10(-4), but above the target hazard level of one. The primary pathway contributing to risk and hazard was dermal contact with groundwater. The primary chemical driving the cancer risk and non-cancer hazard was carbon tetrachloride. The shallow groundwater discharges to several ecologically sensitive ponds, brooks, and associated wetlands at the site. Surface water and sediment results have indicated levels of VOCs, ammonia, and metals above LOCs in these surface water bodies. Additional groundwater investigation and monitored natural attenuation (MNA) evaluation was completed in 2002, to fill specific data gaps to effectively evaluate remedial alternatives for the surface and groundwater contamination.

The FS addressed all media at RI sites 1, 2, and 4. At RI Site 2, carbon tetrachloride, tetrachloroethylene (PCE), and corresponding breakdown products were contaminants of concern (COCs) in the groundwater. In surface water ammonia and metals were identified as COCs. In sediment several metals were identified as COCs. In surface soil AOCs were developed for lead [4,410 milligrams per kilogram (mg/kg)] and zinc (1,550 mg/kg). Additional surface soil sampling was completed for the former location of Buildings 3513 and 3517 to investigate polychlorinated biphenyls (PCB)-contaminated surface soil. After compliance averaging, it was determined that no RA was needed for the PCBs in this area. A pilot study, to test zero-valence iron, was completed in FY05 and a report was submitted to the regulators.

In 2003, PICA-007 and -157 were listed as RC in AEDB-R and will be addressed as part of PICA-008. Site 2 is being used as a homeland defense training center.

The PP was publicly advertised in October 2009. The ROD was signed by both the USEPA and the Army and concurred on by the NJDEP. The soils were not addressed by this ROD which was a decision made by the IRP team. Soils are captured in the separate FS and PP that proposes an NFA with monitoring of land use. The enhance bioremediation of the groundwater will continue under RA(O).

**Site ID: PICA-008**

**Site Name: INACT. ROCKET FUEL TEST Areas**

Groundwater monitoring and enhanced bioremediation will continue. The 2014 annual report was submitted in the fall of 2014 and approved by the NJDEP. The 2015 annual report was submitted in March 2016. The results from this report show favorable results.

## **CLEANUP/EXIT STRATEGY**

The Army will continue to conduct RA(O) as required by the remedial design (RD). The site will also be evaluated in the five-year reviews. The RD includes both injection of emulsified vegetable oil and MNA. Annual reports will also be completed.

Site Name: BLDG 60 SATELITE WSTE ACCOM AREA(SITE122)

STATUS

Regulatory Driver: CERCLA

RRSE: MEDIUM

Contaminants of Concern: Metals, Pesticides, Polychlorinated Biphenyls (PCB), Semi-volatiles (SVOC)

Media of Concern: Groundwater, Sediment, Soil

Phases	Start	End
PA.....	198707.....	198906
SI.....	198910.....	199103
RI/FS.....	199309.....	201906
IRA.....	199906.....	200008

RIP Date: N/A

RC Date: 201906

SITE DESCRIPTION

This site is in the 46 Site Group B. In 1942, Building 60 was constructed adjacent to Bear Swamp Brook (BSB) as an environmental testing laboratory. Various types of testing conducted in the building include: ballistic air gun launch testing, drop testing, solar radiation testing, mechanical stress, shock, vibration, jolt testing, and static load testing. The various testing equipment and machines at Building 60 use lubricating, hydraulic, and heating oils. Heating oils were formerly stored in Building 60-A which was located on the west side of Building 60. The recirculation water/steam was discharged into BSB via various pipes projecting out of the eastern wall of the building. These discharges were permitted through a NJPDES permit.

An RI was performed in 1994 that included a radiological survey, surface soil, subsurface soil, surface water, and sediment sampling as well as HHRA and ecological risk assessments (ERA). The radiological survey did not identify any AOCs. The HHRA determined that carcinogenic risk was between or above 1 by 10(-4) to 1 by 10(-6). The ERA determined that contaminants were detected but the communities were not affected and the habitat was highly altered by human activity. The RI recommended that additional sampling be completed to delineate areas of metals, PCB, and semi-volatile organic compounds (SVOC) contamination above LOCs. Based on these recommendations and regulatory comment, a follow-on investigation was completed in 1997. This RI identified soil contaminated with SVOCs, PCBs, and metals and sediments contaminated with PCBs. In 1999, an EE/CA was written and in 2000 an IRA was performed for PCBs. A total of 387 cy of soil and sediment was removed from the site. Other areas of the site still contained soils contaminated with SVOCs and metals at low levels. Groundwater at the site is addressed in the Area D area- wide groundwater. The site was addressed by the ARCADIS PBA.

An FS that included a small excavation submitted in September 2009 was modified based on the resolution of the formal dispute between the Army and USEPA. The site was then included in the "NFA 48-Site Feasibility Study" that was approved by the USEPA in July 2014.

The NJDEP did not concur.

A draft "No Further Action with Monitoring of Land Use Proposed Plan for Areas D, H, J, K, M, and P Sites, including PICAs 008, 011, -013, 050, 071, 091, and 175" was submitted in September 2014.

Group name is 45 Site Group B.

CLEANUP/EXIT STRATEGY

The Army will finalize and public notice the PP, and the "No Further Action with Monitoring of Land Use Record of Decision" will be signed.

After the ROD is completed, the Army will conduct the required annual inspection and develop the certification report required by the "No Further Action with Monitoring of Land Use Record of Decision." The site will also be evaluated in the five-year reviews.

**STATUS**

Regulatory Driver: CERCLA

RRSE: HIGH

Contaminants of Concern: Metals, Polycyclic Aromatic Hydrocarbons (PAH), Volatiles (VOC)

Media of Concern: Groundwater, Soil

Phases	Start	End
PA.....	197607.....	198105
SI.....	198707.....	198906
RI/FS.....	199606.....	201103
RD.....	201103.....	201104
RA(C).....	201105.....	201105
RA(O).....	201106.....	202405
<b>RIP Date:</b>	201106	
<b>RC Date:</b>	202405	

**SITE DESCRIPTION**

Site 78 or PICA-013 is located near Building 9 at the intersection of Fourth Avenue and South Sixth Street. The building was built in 1942 as a storehouse and supply building. An optics laboratory was constructed in the north end including a glass machine shop. Currently, the central portion of Building 91 is used as office space. The southern end is used for receiving and storage of many materials received at the arsenal.

Soil samples were taken in 1996. Based upon the results, RI activities were initiated in 1998 for VOCs, SVOCs, and metals in soil, surface water, and sediment. Three groundwater monitoring wells were installed as part of a tank closure in 1999 on the eastern side of the building. Soil analysis indicates the presence of PAHs in exceedance of the LOCs. Surface water metals concentrations are in excess of the LOCs and sediment contains metals and PAHs at concentrations greater than LOC. Groundwater contamination includes VOC concentrations (two plumes) in excess of LOCs. The RI was submitted in 2003. The HHRA results worker scenario is 1 by 10(-4) and within the 1 by 10(-4) to 1 by 10(-6) range for an on-site youth visitor scenario.

A pilot study (sodium lactate injection) was funded in FY03 to address VOCs in groundwater. The pilot study was completed in 2005. A screening level ERA (SLERA) conducted in 2004 determined that due to the limited habitat and the relatively low hazard quotients (HQs) (i.e., HQs less than 10), further ecological investigation was not required.

The principal causes for concern at this site were: (1) the discharge of VOCs from groundwater to GPB and levels in the groundwater above the established standards in groundwater and (2) low level contamination in soils.

The FS was approved by the USEPA and the NJDEP. The groundwater PP was publicly advertised in April 2010. The soils at the site will be addressed in a separate PP and ROD due to the New Jersey standards/ARAR issue. The soils portion of this site will be addressed in the 45 Site FS.

The draft groundwater ROD was submitted in July 2010. Based on comments from the USEPA and the NJDEP a vapor intrusion evaluation was conducted at Building 91 in October 2010 and findings submitted in December 2010. In January 2011 both the USEPA and the NJDEP approved NFA with respect to vapor intrusion for this site. The final groundwater ROD was signed by the Army in March 2011 and includes MNA and LTM. The RD was approved in 2011 technically before ROD signature.

Monitoring has continued from 2011 through 2016. The 2015 annual report was submitted in the winter of 2016 and approved by the NJDEP and USEPA. The 2015 annual report indicated that "Evaluation of concentrations trends within wells located in or near the plume center of mass indicates that the degradation half-lives are consistent with those predicted within the RD."

**CLEANUP/EXIT STRATEGY**

Annual monitoring for MNA for groundwater will continue and annual reports will be submitted as required by the RD. The exit



**Site ID: PICA-013**  
**Site Name: Groundwater near building 91**

strategy remains consistent with the RD and ROD.

**Site ID: PICA-015**  
**Site Name: LAKE DENMARK (SITE 54)**

**STATUS**

**Regulatory Driver:** CERCLA  
**RRSE:** MEDIUM  
Contaminants of Concern: Metals  
Media of Concern: Sediment, Surface Water

<b>Phases</b>	<b>Start</b>	<b>End</b>
PA.....	197607.....	198105
SI.....	198707.....	198906
RI/FS.....	199606.....	201906
<b>RIP Date:</b>	N/A	
<b>RC Date:</b>	201906	

**SITE DESCRIPTION**

Future LTM costs for PICA-15 are covered under PICA-091.

Lake Denmark, an artificial lake located in the northeastern portion of PTA, has a surface area of approximately 174 acres and an average depth of 6 to 7 feet. Storage magazines, in the 1200 Area, are the only development around Lake Denmark. Lake Denmark has a long history as a repository of munitions and their associated wastes. After the 1926 Lake Denmark explosion, munitions were reportedly dumped into the lake. Also discussed was the possibility of Radiation Technology Inc. dumping waste into Lake Denmark. Lake Denmark has been used as an impact area for experimental mortar rounds and other explosive or pyrotechnic munitions. This site is currently inactive.

Explosives, VOCs, SVOCs, pesticides/PCBs, anions, and metals analysis were conducted as part of the 1996 PA/SI.

RI activities were conducted from 1998 to 1999 including VOCs, SVOCs, explosives, and metals analysis of surface water and sediment; targeted metals analysis of soils; and geophysical surveys.

Surface water and sediment analysis indicated the presence of metals in exceedance of LOCs. A geophysical survey conducted as part of RI activities indicated three areas may contain metal deposits. HHRA results indicated risks and hazards were within the target levels. Based upon results of the RI, a SLERA was conducted in 2000. Results of the SLERA indicate the level of ecological risk present at Lake Denmark did not warrant a full ERA.

An original FS with this site, Lake Picatinny and explosive ordnance disposal (EOD) Pond was submitted in October 2009. An "NFA FS" version of the FS had been approved by the regulators in 2012; the approval was later rescinded because of the issues with the Lake Picatinny portion of the FS.

A revised FS was submitted in spring of 2014 to the regulators. The alternatives involving PICA 057 were unchanged from the 2012 version. USEPA and NJDEP did not provide any comments on that portion of the FS in their comment letters sent.

USEPA and NJDEP agreed in October 2015 that the 2012 FS related to this site is approvable. With this approval, the ROD will be for NFA with monitoring of land use or LUCs only.

**CLEANUP/EXIT STRATEGY**

The Army will finalize the FS, the PP, and ROD for this site.

The expected remedy for this site is LUCs and LTM, as negotiated with the regulators.

**Site ID: PICA-020**

**Site Name: PYROTECHNIC DEMO AREA (SITE 19)**

**STATUS**

**Regulatory Driver:** CERCLA

**RRSE:** HIGH

Contaminants of Concern: Metals, Pesticides, Polychlorinated Biphenyls (PCB)

Media of Concern: Soil

Phases	Start	End
PA.....	197607.....	198105
SI.....	198707.....	198906
RI/FS.....	199309.....	200810
RD.....	200604.....	200811
RA(C).....	200604.....	200811
LTM.....	200812.....	204609

**RIP Date:** N/A

**RC Date:** 200811

**SITE DESCRIPTION**

PICA- 20 contains AEDB-R sites PICA-036, 070, 092, 095, 099, 100, 105, 110, 112, and 118; cost for these sites are associated with LUCs. Group name is Group of 13. Two of the RI Concept Plan sites, 44 and 49 (closed PICA-083 and PICA-088), in the ROD were assessed as NFA.

The PP had originally been a public notice issued in 2001, but the LUC issue held up the ROD until September 2008 when the ROD was signed.

The RD work plan regarding the LUCs was submitted to and approved by the USEPA in November 2008. LUCs were implemented in 2008 and currently remain in place.

The RAR was approved by the USEPA in June 2009.

Certification reports have been submitted in 2009 through 2016 and approved by the NJDEP and USEPA. The 2014 annual certification report was submitted in December of 2014 and approved by both the NJDEP and USEPA in January 2015. The 2016 annual certification report was submitted in April 2016 and approved by the regulators.

All future costs are carried on PICA-206.

**CLEANUP/EXIT STRATEGY**

The LUCs will continue in FY16 and beyond in accordance with the approved RD plan and Army guidance.

The Army will conduct the required inspection and develop the certification report for the signature of the Picatinny Environmental Project Manager. The site will also be evaluated in the five-year reviews.

Site Name: POWER PLNT/HAZ WST TNKS/PROPELL PRD

STATUS

Regulatory Driver: CERCLA
RRSE: MEDIUM
Contaminants of Concern: Metals, Volatiles (VOC)
Media of Concern: Groundwater, Sediment

Table with 3 columns: Phases, Start, End. Rows include PA, SI, RI/FS, LTM, RIP Date, and RC Date.

SITE DESCRIPTION

The future LTM costs for this site are incorporated by the cost in PICA-206.

The PICA-022 LTM costs are required by the "No Further Action with Monitoring of Land Use Record of Decision for Sites with PICA-001, 006, 022, 085, 143, 163, 171, 192 and 199 and No Further Action for PICA 146" ROD.

PICA-047 and 145 (Sites 63/65) had previously been consolidated into PICA-022.

The original AEDB-R site included Former Building 519, a former still house for storage of ether and alcohol, and Building 519-A, which formerly housed an inactive 3,800-gallon aboveground storage tank (AST) that was used to store spent alcohol.

Analytical results of soil samples collected during the RCRA closure of Building 519-A detected levels of lead above its comparison criterion. Phase II RI activities were conducted at this site in 1996. Analytical results from the RI identified explosives and metals in the soil at concentrations above LOCs.

An FS with PICA-001 was approved by the USEPA in August 2009. The original PP was submitted in January 2010. The USEPA provided comments during the review process in FY10 and FY11 that indicated that they would not be satisfied with only ICs and would require ECs.

In a letter dated Nov. 27, 2012, the USEPA had technically approved the NFA with monitoring of land use PP for the 25 PTA sites within PICA-001, 006, 022, 085, 143, 146, 163, 171, 192, and 199. In this letter the USEPA agreed with the Army position that sites with acceptable risk should be considered as NFA as existing LUCs prevent a different land use.

A certification of land use for the site with an inspection report was submitted in December 2014 and early calendar year 2016 to the regulators and approved.

**Site ID: PICA-022**

**Site Name: POWER PLNT/HAZ WST TNKS/PROPELL PRD**

## **CLEANUP/EXIT STRATEGY**

The Army will conduct the required annual inspection and develop the certification report as required by the "No Further Action with Monitoring of Land Use Record of Decision." The site will also be evaluated in the five-year reviews.

Site Name: FORMER REACT MTRS/RCKT FUEL TST A 1500

STATUS

Regulatory Driver: CERCLA

RRSE: MEDIUM

Contaminants of Concern: Explosives, Metals, Semi-volatiles (SVOC)

Media of Concern: Groundwater, Sediment, Soil, Surface Water

Phases	Start	End
PA.....	197607.....	198105
SI.....	198707.....	198906
RI/FS.....	199502.....	201906
IRA.....	200102.....	200203

RIP Date: N/A

RC Date: 201906

SITE DESCRIPTION

The future LTM costs for the site are covered under PICA-091.

This 20-acre site consists of the 1500 series buildings and is divided into the western explosives area and the eastern pyrotechnics area. From the early-1950s up until 1958, liquid fuel missiles were tested in the eastern pyrotechnics area. After 1958 additional buildings were constructed for mixing, pressing, and filling of various pyrotechnic compounds into flares, fuses, and primers. The western explosives area was constructed in the late-1940s and was used for the large-scale storage, production, conditioning, loading, and testing of pyrotechnics, explosives, and solid rocket propellants from 1947 through the early-1960s. The eastern and western explosives areas are currently used for storage, assembly, research, development, and testing of HE, propellants, and projectiles.

The 1996 Phase II RI included a radiological survey, installation of monitoring wells, and collection of soil, groundwater, surface water, and sediment samples at the site. The RI identified explosives in groundwater downgradient of the Building 1505 test range; including cyclotrimethylenetrinitramine (RDX) in excess of its LOC. Lead was detected above its LOC in a sediment sample associated with a dry well. SVOCs and metals have been detected at elevated levels in surface water and sediment samples collected from the swamp behind Building 1515 resulting in ecological concerns for the area. Additional RI activities performed in 2000 included the installation of an additional well and collection of additional soil, groundwater, and sediment samples. Results of this investigation successfully delineated the extent of RDX in the groundwater and characterized the lead contamination. An underground storage tank (UST) was removed in FY01. Estimated cancer risks are below or within the USEPA's target range of 1 by 10(-4) to 1 by 10(-6) for all exposures scenarios. The estimated non-cancer hazards are all below the USEPA's target threshold of 1. A suspected dry well and associated lead-contaminated soil were removed in 2003. An additional 2 cy of lead contaminated soil were removed in 2004 as part of a facility-wide lead removal action.

The site was first included in FS submitted in October 2009, for PICA 11 LUC group of sites, 45 Site FS, (PICA-11, 50, 75, 91, 97, 108, 122, 134, 135, 136, 162, 175, 200, 209). The approval of the FS was held up until the ARAR issue with USEPA on ARARs was resolved.

In a letter dated Nov. 27, 2012, the USEPA had technically approved the NFA with monitoring of land use PP for the 25 Sites within PICA-001, 006, 022, 085, 143, 146, 163, 171, 192, and 199. In this letter the USEPA agreed with the Army position that sites with acceptable risk should be considered as NFA as existing LUCs prevent a different land use. The Army agreed to notification and certification. Based on this position as well as earlier comments from USEPA and NJDEP. The FS was approved by USEPA in July 2014 although NJDEP did not concur.

Based on this agreement a revised FS called "Final 48 Site Feasibility Study PICA-008, 011, 013, 050, 071, 075, 091, 107, 108, 122, 134, 135, 136, 162, 175, 200, and 209" was submitted in June and was approved USEPA and NJDEP did not concur.

A draft "No Further Action with Monitoring of Land Use Proposed Plan for Areas D, H, J, K, M, and P Sites, including PICAs 008, 011, 013, 050, 071, 091, and 175" was submitted in September of 2014.

The Army received comments from the NJDEP on the draft PPs in FY15. A new contract was awarded in FY15 to 'achieve' a

**Site ID: PICA-050**

**Site Name: FORMER REACT MTRS/RCKT FUEL TST A 1500**

ROD. The contractor and Army met in FY16 with NJDEP and EPA to resolve the issues and developed sampling plans as necessary.

The Group is 45 Site Group B.

## **CLEANUP/EXIT STRATEGY**

The Army will finalize and public notice the PP, and an NFA with monitoring of land use ROD is expected to be signed by FY19.

After the ROD is completed, the Army will conduct the required annual inspections and develop the certification report for the signature of the Picatinny Environmental Project Manager as required by the "No Further Action with Monitoring of Land Use Record of Decision." The site will also be evaluated in the five-year reviews. The duration for the monitoring of land use is assumed to be 30 years based on guidance in the Defense Environmental Restoration Program (DERP) Manual dated March 9, 2012.

**Site ID: PICA-057**

**Site Name: PICATINNY LAKE (SITE 53)**

## STATUS

Regulatory Driver: CERCLA

RRSE: MEDIUM

Contaminants of Concern: Metals

Media of Concern: Sediment, Soil, Surface Water

Phases	Start	End
PA.....	197607.....	198105
SI.....	198707.....	198906
RI/FS.....	199502.....	201709
RD.....	201710.....	201804
RA(C).....	201805.....	201912

RIP Date: N/A

RC Date: 202005

## SITE DESCRIPTION

Picatinny Lake, located at the geographic center of PTA, was formed in the 1880s by damming GPB. PTA Lake is approximately 118 acres and approximately 5,200 feet long by 1,000 feet wide. The lake has a maximum depth of 20 feet and contains approximately 165 million gallons of water. Picatinny Lake is a source of non-potable water used for production-related purposes and firefighting.

From 1985 until 1988, PTA discharged treated process wastewater and cooling water to Picatinny Lake under a NJPDES permit. Since 1989, only non-contact cooling water has been discharged to the lake. Many active, inactive, and demolished buildings surround the lake. Surrounding land use includes propellant and munitions R&D, production, and storage; steam and electric power generation; chemical laboratories, and a betatron and x-ray laboratory. Previous land use includes smokeless powder production and testing.

Numerous potential sources of contamination have been documented around the lake, including its use as an impact area for experimental mortar rounds; storage of smokeless powder and explosives underwater; discharge or disposal of explosives and debris into the lake; pyrotechnic testing on Flare Island; explosive-related accidents at the surrounding buildings; oil spills, wastewater discharges or sewage overflows.

Phase II RI and ERA activities included the performance of geophysical surveys, the collection of 23 surface water and sediment samples, the performance of surface water and sediment bioassays, the completion of benthic macroinvertebrate and fish surveys, and the chemical analysis of fish tissue samples. Surface water and sediment contamination was identified throughout the lake. The HHRA conducted with the RI evaluated an industrial research worker's exposure to surface water. The estimated chemical and radiological risks are below the USEPA's target cancer risk range, and the hazards are below the target threshold of one. The available ecological evidence suggests that surface water does not pose a risk to ecological receptors; however, the sediment data indicated that there is potential for ecological contaminants of potential concern to adversely affect benthic receptors.

Results from a fish consumption HHRA for the PTA fishable water bodies indicated hazards above the USEPA's target threshold of one for Picatinny Lake. PTA instituted fish consumption advisories, as recommended by the NJDEP, for anglers using Picatinny Lake and other bodies of water at PTA, similar as many other water bodies in New Jersey.

The initial FS was submitted in October 2009 and eventually approved by the USEPA in April of 2012. However, both the USEPA and the NJDEP requested additional ecological sampling based on the uncertainty. The requested sampling took place in early FY12 and another round in October 2013. A revised final FS was submitted in June 2014 that included the results of the additional sampling in Lake Picatinny and included an alternative for a "dig and haul" of contaminated sediments despite that there is no confirmed unacceptable human health risk or ecological risk. The group name is Lakes.

The MEC at this site will be addressed by the MMRP program.



**Site ID: PICA-057**  
**Site Name: PICATINNY LAKE (SITE 53)**

**CLEANUP/EXIT STRATEGY**

The ROD is expected to be signed in 2018 and the remediation funded in FY 2018 before the ROD is finalized.

The RD and RA would be completed by the end of FY 2019. The most conservative expected remediation is a dig and haul of contaminated sediments in five hot spots. Once the remediation is completed, no further costs [LTM or RA(O)] are assumed for PICA-057, as it will be true NFA. However, there is no confirmed unacceptable risk to human health or ecological receptors.

# Site Name: 600 HILL GROUNDWATER PLUME

## STATUS

Regulatory Driver: CERCLA

RRSE: HIGH

Contaminants of Concern: Explosives, Metals, Munitions and explosives of concern (MEC), Volatiles (VOC)

Media of Concern: Groundwater, Soil

Phases	Start	End
PA.....	197607.....	198105
SI.....	198707.....	198906
RI/FS.....	199606.....	201709

RIP Date: N/A

RC Date: 201710

## SITE DESCRIPTION

This site is now defined as the contaminated groundwater beneath PICA-058 and adjacent sites. As of FY14, PICA 058 costs are now addressed by PICA-013-R-01.

The Munitions Waste Pit, Site 12, is located in the northwestern portion of PTA, near former Building 656. The site was operated for evaluating munitions from approximately 1955 until the mid-1980s. Historical practices consisted of testing munitions. Many ammunition fragments were projected out from the site and were never recovered. According to PTA personnel, from 1965 to the present, no munitions were disposed of at the site.

In the late-1990s, a large amount of rock and fill dirt was placed from a nearby construction site.

This site is now defined as the contaminated groundwater beneath PICA-058 and adjacent sites. In the early-1990s, a production well was installed to serve the advanced warhead development facility, Building 660. Analysis of groundwater from this well indicated contamination with TCE and low levels of methyl tert butyl ether (MTBE), freon, and toluene. Surface water and groundwater sampling of monitoring wells in the 600 Area identified levels of RDX. An additional investigation was performed to determine the source of the RDX contamination in the surface water and groundwater in the Building 650 area. The investigation delineated the contamination and the regulators concurred that no further investigation or action was needed for RDX.

A groundwater RI was initiated for this site in 2004. This investigation revealed higher concentrations of TCE (170 parts per billion (ppb)) beneath PICA-058. Additional investigations have identified RDX contamination in surface water and have delineated the extent of the TCE contamination in the groundwater. A risk assessment for groundwater exposure at the site has been completed.

Risk assessment results indicate acceptable levels of cancer risk within the target risk range. The HHRA evaluated the following hypothetical risk scenarios to include industrial research workers and construction excavation workers. These hypothetical scenarios evaluated groundwater, surface water, and indoor air. Maximum potential risk from all pathways was 0.0051.1 by 10(-5) in the industrial research worker scenario. Maximum hazard from all pathways was 0.0057 in the industrial worker scenario.

This site was not covered under the PBA.

An FS was approved by the USEPA in March 2010 and the PP was submitted in spring 2010.

Upon review of the PP, USEPA requested an investigation to determine if a burial area represents a continuing source of groundwater contamination, a vapor intrusion investigation for Building 660, and additional sampling to support an MNA alternative.

The results of the trenching did reveal a burial area. The burial area contained not only MEC and MEC-related items but drums labeled TCE. Soils 25 feet from the surface were contaminated with parts per million (ppm) levels of TCE. This was determined to be the source area for the TCE plume.

A revised FS, with the results of the vapor intrusion study, the trenching investigation and additional groundwater monitoring

**Site ID: PICA-058**

**Site Name: 600 HILL GROUNDWATER PLUME**

results, was submitted to the regulators in spring of 2013 and approved by the regulators in 2013. The FS included two additional alternatives to address the source of the TCE in the landfill.

MRS PICA-013-R-01 is now combined with PICA-058 since the sites are congruent and the dig and haul alternative in the 2013 FS will address MEC. The group name is 600 Hill Waste Pit.

### **CLEANUP/EXIT STRATEGY**

The Army will include PICA-058 with PICA-013-R-01 in an FS, PP and ROD. The remediation will be discussed in PICA-013-R-01 cleanup/exit strategy.

The proposed action will be most likely a dig and haul to remove the source of the TCE as well as MEC, MNA for the volatile organic plume, and LUCs for the MEC for both sites.

MNA after the landfill remediation is completed will continue an additional 10 years.

Site Name: POST FARM LANDFILL (SITE 23)

STATUS

Regulatory Driver: CERCLA

RRSE: MEDIUM

Contaminants of Concern: Metals, Radionuclides, Semi-volatiles (SVOC), Volatiles (VOC)

Media of Concern: Groundwater, Soil

Phases	Start	End
PA.....	197607.....	198105
SI.....	198707.....	198906
RI/FS.....	199105.....	200505
RD.....	200506.....	200610
IRA.....	199112.....	199301
RA(C).....	200604.....	200708
LTM.....	200710.....	204609

RIP Date: N/A

RC Date: 200709

SITE DESCRIPTION

Future LTM costs are addressed by PICA-206.

The Post Farm Landfill consists of 10.3 acres located along the top of the unnamed hill that forms the southeastern boundary of PTA. It contains a borrow pit near the central portion of the site, and two landfilled areas where drums and other materials were buried. During the 1950s, the site was used mostly as a source of borrow materials. In the 1960s, landfilling activities began in the southern and northern area of the site. These areas are referred to as the northern Drum Burial Area (DBA) and southern DBA. The DBAs reportedly received fly ash from coal burning operations, paint stripping wastes, phenols, and spent explosive-laden hydraulic oils in containers or as free liquid.

In 1992, a non-time critical removal action (NTCRA) was performed to remove buried containers at the site. During the removal action, small containers, garbage cans, batteries, and drums were removed and disposed of off-site. Post excavation sampling and exploratory trench sampling were also completed as part of the action. The trench investigation determined that all buried containers had likely been removed from the site. The last phase of the action included placing at least 6 to 18 inches of native soil over the former burial areas.

An RI was completed in 1994 with additional sampling in 1996-1997. The 1994 HHRA indicated that carcinogenic risk was in the range of 1 by 10(-4) to 1 by 10(-6) from PAHs, PCBs, and dioxins/furans. This HHRA was based on a limited number of samples. The 1996/1997 RI included completing soil borings, installing monitoring wells, collecting surface soil, sediment, surface water, and groundwater samples, and completing a fracture trace analysis. Results indicate moderate criteria exceedances in surface soil for metals and SVOCs, in subsurface soil and sediment for metals, and in groundwater for VOCs, dioxins/furans, metals, and radionuclides. The detections of dioxins/furans were not reproduced in the later 1997 sampling event.

In 2000, an FS was completed which evaluated excavation and disposal, on-site fixation, capping, and ICs. The FS recommendation was for ICs and long-term groundwater monitoring. The USEPA and the NJDEP approved the FS. A PP was finalized and a public meeting was held in December 2003. A ROD was signed by the PTA Garrison Commander in September 2004 and by the USEPA in December 2004. The USEPA and the NJDEP approved the RD in December 2006.

Surface soil sampling conducted in May 2007 confirmed that previously detected concentrations of metals and SVOCs in soil were isolated in nature and the existing vegetative cover is sufficient. Quarterly groundwater monitoring for target analyte list metals, VOCs, and radiological parameters was performed as part of the long-term monitoring program in 2007.

In 2008, groundwater monitoring was reduced to annual sampling per the approved exit strategy in the RD. Annual reports and certification continue based on sampling results. Exit strategy continued with only one well being required to be sampled.

Groundwater annual reports and LUCs certification are submitted annually. The 2014 annual report was submitted on Oct. 31, 2014 and approved by the NJDEP. The 2015 annual report was submitted in January 2016 and approved by USEPA and NJDEP

**Site ID: PICA-065**  
**Site Name: POST FARM LANDFILL (SITE 23)**

by March 2016.

The group name is Post Farm Landfill.

## **CLEANUP/EXIT STRATEGY**

The LUCs and groundwater monitoring will continue in FY16 in accordance with the approved RD plan. Five-year reviews will continue as well. The exit strategy remains consistent with the RD and ROD. Currently, only one well is being sampled.

Site Name: SANITARY LANDFILL(NEAR SITE 20)SITE 24

STATUS

Regulatory Driver: CERCLA

RRSE: HIGH

Contaminants of Concern: Metals, Pesticides, Polychlorinated Biphenyls (PCB)

Media of Concern: Soil

Phases	Start	End
PA.....	197607.....	198105
SI.....	198707.....	198906
RI/FS.....	199309.....	200206
RD.....	200307.....	200308
RA(C).....	200308.....	200309
LTM.....	200309.....	204609

RIP Date: N/A

RC Date: 200309

SITE DESCRIPTION

Future LTM costs for this site are addressed under PICA-206

PICA-066 contains AEDB-R site PICA-063 (RI Sites 20 and 24) and is in the group named Post Farm Landfill. Site 24 occupies approximately 28 acres adjacent to the southern boundary in the southwestern corner of the arsenal. Records indicate that sanitary waste, fly ash, ordnance, industrial wastes and wastewater treatment plant sludge were dumped on a portion of the site. PICA-066 covers all environmental media at this site with the exception of groundwater. Site groundwater is being addressed in PICA-205.

A 1994 RI included geophysical, radiological, and soil gas surveys in addition to surface soil, subsurface soil, surface water/sediment, and groundwater samples analyzed for VOCs, BNAs, metals, cyanide, explosives, pesticides, PCBs, dioxins/furans, and radiologicals. Metals, PCBs, and pesticides were detected above surface soil LOCs. VOCs and metals were detected above surface water LOCs. Metals, cyanide, and pesticides were detected above sediment LOCs. The HHRA determined that the carcinogenic risk fell between or exceeded the 1 by 10(-4) to 1 by 10(-6) risk range from arsenic, beryllium, PCBs, and dioxins/furans. The HI did not exceed one. Additional RI activity was completed in 1997 including soil gas survey, geoprobe groundwater sampling, surface soil sampling, subsurface soil sampling, and surface water sediment sampling. Samples were analyzed for VOCs, SVOCs, pesticides, PCBs, and metals. Surface soil LOCs were exceeded for pesticides, PCBs, and metals. This sampling event included a large sampling grid to completely delineate PCB contamination of surface soil.

In 2000, an FS was conducted that included a baseline ERA (BERA) that determined that exposure to lead and dichloro-diphenyl-trichloroethane (DDT) in soil could lead to elevated hazards for avian species. The FS also selected PCBs as a COC based on risk to human health. Site-specific remediation goals were developed for these compounds. The FS examined a vegetative soil cover, an asphalt cover, and excavation and disposal of soils contaminated with PCBs above NJDEP criteria and lead and DDT above a site-specific ecological action level. A PP was completed for this site and public notice was completed in July 2001. A ROD was prepared in summer 2001 and signed in spring 2002. In order to complete the design of the soil cover, additional delineation sampling was completed in summer 2001. Some of these samples contained PCBs at much greater concentrations (3,500 mg/kg) than were seen in the 1997 soil grid sampling (297 mg/kg). Soils containing PCBs at concentrations over 297 mg/kg were excavated and disposed of off-site. The vegetated soil cover was completed in 2003. The wetlands that were destroyed by the capping were replaced with an enhanced wetland pursuant to the wetland permit-equivalent for the action.

LUC certification reports have been submitted annually. The site is in the LTM phase.

CLEANUP/EXIT STRATEGY

The Army will continue LTM including cap maintenance; LUCS will be maintained in accordance with the RD. Five-year reviews will continue.

Site Name: SANITARY LANDFILL(NEAR SITE 26)SITE 25

STATUS

Regulatory Driver: CERCLA

RRSE: HIGH

Contaminants of Concern: Metals, Polycyclic Aromatic Hydrocarbons (PAH)

Media of Concern: Soil

Phases	Start	End
PA.....	197607.....	198105
SI.....	198707.....	198906
RI/FS.....	199309.....	200708
RD.....	200604.....	200708
RA(C).....	200604.....	200709
LTM.....	200709.....	204609

RIP Date: N/A

RC Date: 200709

SITE DESCRIPTION

Future LTM costs are included in the costs for PICA-206-R-01.

PICA-067 or Sanitary Landfill contains AEDB-R sites PICA-63, the dredge pile or referred RI Concept Plan Sites 25 and 26. The group name is Landfill and Dredge Pile.

PICA-067 consists of approximately 8 acres and is located within the central valley of PTA. The area has been divided into four sections: the southern borrow area, the landfill area, the Dredge Pile (Site 26, PICA-068) and the northeast area. PICA-068, the Dredge Pile, has been combined with this site (PICA-067). All issues associated with the Dredge Pile will be addressed under this site. Therefore, PICA-068 is considered RC. The southern borrow area consists of a 2-acre grass-covered clearing formerly used for landfilling. The Dredge Pile encompasses about 2,000 square ft, near the center of the site and is about 15 to 20 ft high. A variety of wastes were disposed of at Site 25 from the 1940s through the 1970s. These wastes included rubbish, industrial wastes, shells, and sewage treatment plant sludge. The landfill was closed and covered in 1972. The site is currently inactive.

An RI was completed for the site in 1994. The field portion of this RI consisted of a geophysical survey, radiological survey, soil gas survey, soil sampling, test pitting, monitor well installation, and groundwater sampling. An HHRA and ERA were also conducted as part of the RI. The HHRA determined that the cancer risk was between 1 by 10(-4) and 1 by 10(-6) mainly associated with PAHs. The RI report concluded that the site should proceed to FS to address human health risk associated with SVOCs, dioxins/furans, metals, and PCBs.

In order to facilitate the performance of the FS, additional delineation of PAH contaminated soil was performed in 1997 to delineate PAH contamination in the northeast corner of the site. To determine the best course of action in light of all data and the level of risk associated with the site, a risk management plan was drafted in 2000. The risk management plan determined that human health risk resulted from PAH-contaminated soils.

The FS, which was finalized in 2003, recommended extending a parking lot to cover the PAH-contaminated soil. The PP and public meeting for the site were completed in December 2004. The ROD for the site was submitted to the regulators in June 2005 and resubmitted after comments from the USEPA; the preferred remedy in the revised ROD was revised to a vegetative soil cover in lieu of an asphalt cover. The revised ROD was approved by the USEPA and was signed in July 2007. In September 2007 a soil cover was constructed at the site. The RAR report is complete and the certification reports have been provided annually.

The site is in the LTM phase.

CLEANUP/EXIT STRATEGY

The LUC monitoring will continue in accordance with the approved RD plan. Five-year reviews will continue.

**Site ID: PICA-071**

**Site Name: DRUM STRG AREA(B31 YARD) SITE 29**

## STATUS

**Regulatory Driver:** CERCLA

**RRSE:** MEDIUM

Contaminants of Concern: Metals, Petroleum, Oil and Lubricants (POL), Polychlorinated Biphenyls (PCB)

Media of Concern: Groundwater, Soil

Phases	Start	End
PA.....	197607.....	198105
SI.....	198707.....	198906
RI/FS.....	199309.....	201906

**RIP Date:** N/A

**RC Date:** 201906

## SITE DESCRIPTION

Future LTM costs are covered under PICA-091.

PICA-071 is in the 45 Site Group B.

In 2003, PICA-084 was listed as RC in the AEDB-R and will be addressed under PICA-071.

PICA-071 or Site 29 is a former drum storage area located in an outside courtyard between wings 1 and 2 near the northwest corner of Building 31. Building 31 has two stories, a concrete foundation, and consists of five wings with three courtyards. Building 31 was a metal workshop containing various types of equipment including lathes, milling machines, and drill presses. Operation of these machines generated cutting oils and machine oils, which were collected in 55-gallon drums that were stored outside the building.

In 1989, an SI was conducted. State criteria were exceeded for metals, VOCs, BNAs, and total petroleum hydrocarbons (TPH). An RI was conducted in 1994. No petroleum related contaminants were detected in the RI sampling. Under the RCRA program, a tank was removed and confirmatory sampling conducted. The confirmatory sampling consisted of sampling in the tank excavation and advancing soil borings in the area of contamination identified in the 1989 site investigation. In the late-1990s, follow-up investigation took place to further address issues discovered in the 1989 site investigation. All tanks associated with this site have been removed. All of the courtyards at Building 31 are contaminated with PCBs, petroleum, and SVOCs. Some wells at the site are also contaminated with petroleum.

Building 31 has been transformed into an armament software center. Regulators have been notified of the situation; ICs and ECs will be integrated with the new facility.

Approximately 500 tons of petroleum contaminated soil (6 to 10 ft below ground surface) located off the northwest corner of Building 31 was removed in early FY04. Soil in the courtyards has been covered over with concrete, asphalt, or coarse gravel.

The RI was completed in 2005 and approved by the regulators. The FS was submitted to the regulators in spring 2006. The USEPA and the NJDEP have provided comments; however, the continuation of the FS was integrated into the "45 Site FS" performed by ARCADIS.

An FS that included this site was submitted to the regulators in October 2009 called the 45 Site FS and resubmitted as an NFA FS with land monitoring in 2013.

In a letter dated Nov. 27, 2012, the USEPA had technically approved the NFA with monitoring of land use PP for the 25 PTA sites within PICA-001, 006, 022, 085, 143, 163, 171, 192, and 199. In this letter the USEPA agreed with the Army position that sites with acceptable risk should be considered as NFA as existing LUCs prevent a different land use. The Army agreed to notification and certification requirements.

Based on this agreement a revised FS called "Final 48 Site Feasibility Study PICA-008, 011, 013, 050, 071, 075, 091, 107, 108, 122, 134, 135, 136, 162, 175, 200, and 209" was submitted in June and was approved by USEPA while NJDEP did not concur.



**Site ID: PICA-071**

**Site Name: DRUM STRG AREA(B31 YARD) SITE 29**

A draft "No Further Action with Monitoring of Land Use Proposed Plan for Areas D, H, J, K, M, and P Sites, including PICAs 008, 011, 013, 050, 071, 091, and 175" was submitted in September 2014.

The Army received comments from the NJDEP on the draft PPs in FY15. A new contract was awarded in FY15 to achieve a ROD. The contractor and Army met in FY16 with NJDEP and USEPA to resolve the issues and developed sampling plans as necessary. The site is still considered NFA with monitoring of land use.

### **CLEANUP/EXIT STRATEGY**

The Army will finalize and public notice the PP, and an NFA with monitoring of land use ROD is expected to be signed by 2020.

After the ROD, the Army will conduct the required annual inspections and develop the certification report for the signature of the Picatinny Environmental Project Manager as required by the "No Further Action with Monitoring of Land Use Record of Decision." The site will also be evaluated in the five-year reviews.

Site Name: FORMER GAS STATION/ DRMO(SITE 31)

STATUS

Regulatory Driver: CERCLA

RRSE: HIGH

Contaminants of Concern: Metals, Polychlorinated Biphenyls (PCB), Polycyclic Aromatic Hydrocarbons (PAH), Semi-volatiles (SVOC), Volatiles (VOC)

Media of Concern: Groundwater, Sediment, Soil, Surface Water

Phases	Start	End
PA.....	197607.....	198105
SI.....	198707.....	198906
RI/FS.....	199309.....	200907
RD.....	200907.....	200909
IRA.....	199304.....	199305
RA(C).....	200909.....	200910
LTM.....	200911.....	204609
RIP Date:	N/A	
RC Date:	200910	

SITE DESCRIPTION

The future LTM costs for this site are incorporated by the costs in PICA-206.

PICA-72 contains AEDB-R site PICA-116 (RI Sites 31 and 101). This group name is Defense Reutilization and Marketing Office (DRMO).

This site includes five buildings located on 6 acres of land. The site had been used as a storage yard for disposal, salvage, and sale of excess materials. A variety of items including materials used in the manufacturing and testing of explosives, pyrotechnics, and munitions, potential PCB-containing transformers, scrap metal, used batteries, and motor vehicles were stored in the area. PICA-072 includes all environmental media at RI sites 31 and 101 (formerly PICA-116) except groundwater which is addressed by the Mid-Valley Groundwater site (PICA-204.)

A 1989 SI indicated that surface soils were contaminated with oil, grease, PCBs, metals, and BNAs above LOC. Sediments were contaminated with oil, grease, BNAs, and metals.

In 1991, a RCRA closure investigation was performed on an asphalt area adjacent to Building 314 formerly used to store batteries. Closure verification samples (surface soil samples and chip samples) were collected and analyzed for VOCs and PP metals. Analytical results indicted the storage of batteries may have been a source of metals contamination in surface soil. In 1991, a RCRA closure investigation was conducted on a room inside the building formerly used to store photographic film. Also in 1991, a RCRA closure verification sampling event was conducted at Building 314-E to evaluate an area used for storage of discarded lead batteries and equipment. Two of the three areas were pressure washed and rinsed, and chip samples were collected. The RCRA closure report for all three investigated areas was approved by the NJDEP.

In 1993, an investigation was conducted to evaluate the potential for contamination of soil and groundwater from metals, TPH, benzene, toluene, ethylbenzene, xylene (BTEX), and PCBs. PAHs, metals, and PCBs were detected above the LOCs in soil, and metals were detected above LOC in groundwater.

A follow-up investigation was conducted in 2000. Surface soil grid samples were collected for VOCs, SVOCs, metals, PCBs, dioxins, and explosives. Six AOCs were found based on exceedance levels of metals, PCBs, and PAHs. Soil contamination at this site contained "hot-spots" of metals and PCBs. Maximum levels of contamination in surface soil include Aroclor 1260 5,100 mg/kg, copper 68,500 mg/kg, lead 35,900 mg/kg, and zinc at 53,800 mg/kg. Maximum levels of metals in site sediment include copper at 6,580 mg/kg and lead at 3,330 mg/kg. Additional sampling was conducted in 2001 to delineate PCB contamination adjacent to Building 314-D. The estimated risk and hazards for the industrial research worker exceed the target levels. The primary risk and hazard drivers are PCBs. In addition, lead is deemed a concern at the site.

In 2003, PICA-116 was listed as RC in AEDB-R and would be addressed under PICA-072.

**Site ID: PICA-072**

**Site Name: FORMER GAS STATION/ DRMO(SITE 31)**

Public notice of the PP was in October 2007. The ROD was signed in June 2009 and the RD work plan at the same time period.

Completed in 2009, the selected action included excavation and off-site disposal of lead and PCB contaminated soil, on-site consolidation of PAH, arsenic, PCB, and metal contaminated soil (RCRA nonhazardous), installation of an asphalt cap, soil cover, and implementation of LUCs.

Simultaneously, a time critical removal action (TCRA) of improved conventional munitions was completed on a portion of this site under the associated MMRP site.

Certification reports are submitted annually and the site is in the LTM phase.

At PICA-072 and PICA-116, the remedy includes continued maintenance of the asphalt cap, soil cover and LUCs.

To address surface water and sediment contamination, long-term chemical and biological monitoring has been implemented as part of PICA 193, and groundwater monitoring will be incorporated into the Mid-Valley Groundwater Site (PICA-204).

## **CLEANUP/EXIT STRATEGY**

The Army will continue LTM including cap maintenance and ICs in accordance with the RD. Five-year reviews are also applicable to this site.

Site Name: EQPMT & WASTE STORAGE IN 3000-AREA

STATUS

Regulatory Driver: CERCLA

RRSE: MEDIUM

Contaminants of Concern: Metals, Semi-volatiles (SVOC), Volatiles (VOC)

Media of Concern: Groundwater, Soil

Phases	Start	End
PA.....	197607.....	198105
SI.....	198707.....	198906
RI/FS.....	199606.....	201906

RIP Date: N/A

RC Date: 201906

SITE DESCRIPTION

LTM costs for the consolidated site PICA-075 are covered by PICA-091. This group name is 45 Site Group A. In 2003, PICA-086, 141, and 191 were listed in AEDB-R as RC and are addressed under PICA-075.

The original site Building 3100 was constructed as a storage facility in 1942. From 1942 until the early-1950s Building 3100 was used for explosives storage, and was serviced by a rail line on the west side of the building. From the early-1950s until 1975, the building was utilized as an environmental test building. Materials tested in the environmental lab included: fully loaded rocket components and ordnance items, such as solid propellant boosters and sustainers, prepackaged liquid rocket engines, and gas generators; however, no exposed explosives were tested.

Use of the building, as a waste storage facility, began in 1981 under interim status until March 1991, when PTA was granted a hazardous waste facility permit. Building 3100 is currently the only RCRA-permitted hazardous waste storage facility at PTA.

In 1996, a PA/SI was conducted. Soil samples were analyzed for explosives, VOCs, SVOCs, pesticides/PCBs, anions, and metals. One soil sample contained beryllium at a concentration equal to the LOCs. RI activities were initiated in 2000 for the analysis of VOCs, SVOCs, TAL metals, cyanide, anions, explosives, and ethylene glycol. Metals were detected at concentrations marginally above LOC in soil. In 2001, additional subsurface soil samples were collected around Building 3100 as part of the Mid-Valley Groundwater site. The samples, which were analyzed for VOCs, did not contain any LOC exceedances. The field investigations and RSA results from the BERA indicated that effects from exposure, if any, were not impacting the local populations of small mammals or birds.

The site is included in an original FS submitted in October 2009, for PICA 11 LUC group of sites, 45 Site FS, (PICA-11, 50, 75, 91, 97, 108, 122, 134, 135, 136, 162, 175, 200, 209). The approval of the FS was held up until the issue with USEPA on ARARs was resolved. In a letter dated Nov. 27, 2012, the USEPA had technically approved the NFA with monitoring of land use PP for the 25 Site FS within PICA-001, 006, 022, 085, 143, 146, 163, 171, 192, and 199. In this letter the USEPA agreed with the Army position that sites with acceptable risk should be considered as NFA as existing LUCs prevent a different land use. The Army agreed to notification and certification; and an RD is not required.

Based on this agreement with USEPA, the Army submitted the "Final 48 Site FS" in June of 2014. The FS was approved by USEPA in July 2014 although NJDEP did not concur.

The draft "No Further Action with Monitoring of Land Use Proposed Plan for Areas F, G, I, and L Sites, including PICAs 075, 108, 122, 134, 135, 136, 147, 200, and 209" was submitted in September 2014. The Army received comments from the NJDEP on the draft PPs in FY15. A new contract was awarded in FY15 to 'achieve' a ROD. The contractor and Army met in FY16 with NJDEP and USEPA to resolve the issues and developed sampling plans as necessary.

This group name is 45 Site Group A.

**Site ID: PICA-075**

**Site Name: EQPMT & WASTE STORAGE IN 3000-AREA**

## **CLEANUP/EXIT STRATEGY**

The Army will finalize and public notice the PP, and an NFA with monitoring of land use ROD is expected to be signed by 2020.

After the ROD, the Army will conduct the required annual inspections and develop the certification report for the signature of the Picatinny Environmental Project Manager as required by the "No Further Action with Monitoring of Land Use Record of Decision." The site will also be evaluated in the five-year reviews.

Site Name: FORM METL PLATG WSTWTR FAC/LAGOONS B-24

STATUS

Regulatory Driver: CERCLA
RRSE: MEDIUM
Contaminants of Concern: Volatiles (VOC)
Media of Concern: Groundwater, Surface Water

Table with 3 columns: Phases, Start, End. Rows include PA, SI, RI/FS, RD, IRA, RA(C), RA(O), RIP Date, and RC Date.

SITE DESCRIPTION

PICA-76 contains AEDB-R site PICA-120 (Site 21). The group name is Area D.

Site 37 consists of the contaminated groundwater from a former wastewater treatment facility and lagoons associated with the metal plating activities formerly housed in Building 24. The lagoons were suspected to have leaked, and were closed under interim status in 1981.

There have been numerous investigations of the TCE plume at this site. Two wells were sampled for metals and anions from 1958 to 1985. From 1981 to 1985, 21 wells were installed and sampled. VOCs were also determined to be discharging to GPB.

In 1994 an RI was completed. The 1994 HHRA found cancer risk between or above the 1 by 10(-4) to 1 by 10(-6) range (assumes direct groundwater use). Pilot scale remedial technology studies were carried out by the USGS including air sparging, methane sparging, and surfactant treatment.

In 1997, an FS examined P&T, six phase heating with soil vapor extraction (SVE), accelerated bioremediation, MNA, and reactive barrier wall. The FS determined that MNA would take an extended period (more than 100 years). The preferred alternative was the reactive barrier.

A permeable reactive wall was installed in spring 2007. The interim action P&T system was shut down in 2007 and dismantled in 2010.

MNA sampling is a component of this remedy to address groundwater and surface water. Compliance monitoring of GPB was implemented in September 2007. Indoor air sampling was also completed in accordance with the ROD.

The Final Remedial Design Area D Groundwater on page 50 states that "The duration for MNA to reach chemical-specific groundwater standards is anticipated to be greater than 30 years." The final Area D Groundwater ROD states on Page 1-4: "Because this remedy will result in hazardous substances, pollutants or contaminants remaining on site above levels that allow for unrestricted exposure for a period of time, statutory reviews will be conducted every five years after initiation of remedial action to ensure that the remedy is, or will be, protective of human health and the environment until such time as it may be determined that

**Site ID: PICA-076**

**Site Name: FORM METL PLATG WSTWTR FAC/LAGOONS B-24**

the site qualifies for unrestricted use." Since the date at which achievement of the contaminant levels specified in the ROD and RD cannot be predicted, an RA(O) duration of 30 years is assumed, based on guidance in the July 2014 memorandum from the Acting Deputy Under Secretary of Defense, Cost-to-Complete Update Procedure, Update to the Department of Defense Manual 4715.20, DERP Management, March 9 2012. A finite number of years was not established in the ROD.

RA(O) are ongoing and annual reports are submitted each year. The 2014 annual report was submitted in December 2014 and approved by the NJDEP. The FY15 was submitted in the spring of 2016 and is expected to be approved.

## **CLEANUP/EXIT STRATEGY**

The LUCs, the RA(O) of MNA and the permeable reactive barrier maintenance, and the required monitoring will continue in accordance with the approved RD plan; the site will be evaluated in five-year reviews.

**Site ID: PICA-077**

**Site Name: Area E Groundwater (Site 38)**

## STATUS

Regulatory Driver: CERCLA

RRSE: HIGH

Contaminants of Concern: Volatiles (VOC)

Media of Concern: Groundwater

Phases	Start	End
PA.....	197607.....	198105
SI.....	198504.....	199005
RI/FS.....	199105.....	200709
RD.....	200604.....	200709
RA(C).....	200604.....	200809
RA(O).....	200810.....	205310

RIP Date: 200810

RC Date: 205311

## SITE DESCRIPTION

PICA-077 contains AEDB-R site PICA-010 and includes both RI Concept Sites 38 and 22. In 2003, PICA-010 was listed as RC in AEDB-R and will be addressed under PICA-077. The site group is Area E.

Site 38 consists of contaminated groundwater from the former underground treatment tanks within Building 95 and Area E groundwater. PICA-077 covers all environmental media at these sites. Building 95 served as a circuit board etching operation from 1961 to 1988. Manufacturing at Building 95 consisted of electroplating operations. The wastewater was discharged into the treatment system where it was stored and treated in nine USTs. Integrity testing of the seven tanks was conducted in 1988. All tanks failed and were removed from service. As a result, the nine USTs were filled with concrete as part of RCRA closure activities in 1991. The NJDEP approved these activities.

There have been numerous studies conducted at Site 38 as well as on Area E groundwater. Only the significant investigations are summarized here. Site 38 sampling included confirmatory samples collected during the RCRA closure of the tanks and subsurface soil samples collected as part of tank removal. Area-wide studies included surface water and sediment samples collected for metals, VOCs, and water quality parameters. Piezometers were sampled for VOCs. In the Phase I RI, sediment samples were collected for VOCs, BNAs, metals, and pesticide/PCBs. Groundwater investigations included installation and sampling of 45 wells before 1989, 32 additional wells in 1989, and three rounds from 26 existing wells in 1994. The results of this sampling indicated that metals and VOCs were above LOCs. The HHRA found the carcinogenic risk between or above the 1 by 10<sup>(-4)</sup> to 1 by 10<sup>(-6)</sup> (based on on-site consumption) range based on VOCs, metals, and PCBs. Quarterly sampling was conducted on seven wells from 1990 until 2001. In 1999, an FS data gap investigation sampled 36 wells, surface water, and mini-piezometers for VOCs. A smaller number of wells were sampled for metals and redox parameters.

The levels of chlorinated solvents exceed maximum contaminant levels (MCLs) and New Jersey groundwater standards. GPB is acting as a barrier to contaminant transport; however, levels detected in the brook are below surface water criteria. The FS evaluated MNA, P&T, chemical oxidation, and air sparging with SVE. A bench scale evaluation of chemical oxidation was completed in 2002.

The final FS incorporated this new data and proposed MNA as the final remedy. A PP was finalized and a public meeting held in November 2004. The ROD was signed by the Army and the USEPA in July 2007 and September 2007, respectively. MNA sampling will continue, LUCs are also part of the remedy. The RD work plan was approved. The Final Remedial Design Area E Groundwater & Site 22 states on page 24: "The duration for MNA to reach chemical-specific groundwater standards at Area E is anticipated to be approximately 45 years." The RD was completed in 2008 leaving 37 years more of remediation or up until FY54.

The subsequent annual reports providing the results of the MNA sampling have been submitted and approved. The 2014 Area E Groundwater Annual Report was submitted to the regulators in October 2014 and approved by the NJDEP. The 2015 annual report was submitted in March 2016 and approval by the regulators is expected.



**Site ID: PICA-077**  
**Site Name: Area E Groundwater (Site 38)**

## **CLEANUP/EXIT STRATEGY**

The LUCs and RA(O) (MNA) will continue in FY16 and beyond in accordance with the approved RD plan. The site will also be evaluated in the five-year reviews.

**Site Name: ORDNANCE/EXPLOSIVE BLDGS 800 AREA**

**STATUS**

**Regulatory Driver:** CERCLA

**RRSE:** LOW

Contaminants of Concern: Explosives, Metals, Polychlorinated Biphenyls (PCB), Semi-volatiles (SVOC)

Media of Concern: Groundwater, Sediment, Soil, Surface Water

Phases	Start	End
PA.....	197607.....	198105
SI.....	198707.....	198906
RI/FS.....	199502.....	201009
RD.....	200604.....	201009
RA(C).....	201006.....	201009
RA(O).....	201010.....	202409

**RIP Date:** 201010

**RC Date:** 202409

**SITE DESCRIPTION**

PICA 079 contains AEDB-R sites PICA-079, 139, 151 and 152 (Sites 40, 93, 156 and 157). In 2003, PICA-139, 151, and 152 were listed as RC in the AEDB-R and will be addressed under PICA-079. The group name is Group 1.

This site consists of the areas around Building 809, a wastewater treatment plant, and Building 810, a melt-pour facility for large projectiles. Building 809 was constructed in 1944 for use as a large caliber projectile washout facility. Washout operations included the steam cleaning of off-specification projectiles. Explosives-contaminated wastewater from shell washout operations was discharged to a nearby leaching pool, which eventually discharged to Picatinny Lake. Building 809 was later converted to its current use, a wastewater treatment plant for treating explosives-contaminated wastewater.

Building 810 was constructed in 1930 for use as an operating facility. The building was renovated in 1940 for its current use as a melt-pour facility. Operations at Building 810 involve melting explosives in kettles and pouring the explosives into projectiles, and transporting the projectiles by conveyor to a cooling bay.

Phase II RI activities included the installation of five monitoring wells and the collection of soil, groundwater, surface water, and sediment samples. Explosives and metals were reported at concentrations exceeding LOCs in groundwater and soil, over an extensive area, to the east of Buildings 809 and 810. Elevated levels of explosives and metals were also detected in the surface water and sediment samples collected adjacent to the site, probably due to overland runoff and erosion of contaminated soil discharging to PTA Lake. Soil and sediment bioassays, conducted as part of the Phase II ERA, found 100 percent mortality in the test organisms. In addition, large portions of the site are devoid of vegetation, suggesting that the soil contamination is also toxic to vegetation. The installation of two bedrock monitoring wells, and the collection of additional groundwater samples, during the Group 1 RI helped define the extent of the groundwater contamination. Results of the HHRA indicated that the risk and hazard from exposure to impacted site media are above the target levels of 1 by 10(-4) and 1, respectively. The risk and/or hazard drivers are RDX and 2,4,6-TNT in soil and 2,4,6-TNT in groundwater. Fieldwork to address data gaps was conducted in summer 2002 and the Group 1 FS was completed in late 2004. The Group 1 FS addresses all media at PICA-079, -139, -151, and -152.

In situ enhanced bioremediation was originally selected as the preferred alternative to address groundwater; however, subsequent sampling has demonstrated significant attenuation and migration of contaminants. Therefore, MNA was being recommended as the preferred remedy for groundwater. A demonstration project to evaluate the use of recirculating wells for substrate was implemented in 2008. Explosives-contaminated soil would be excavated for on-site treatment through disposal at an approved off-site facility. All other AOCs were addressed through ICs. The sediment near the site will be addressed per the Lake Picatinny AOC.

The PP was publicly advertised in October 2009 and the ROD was signed and the RD was approved in 2010. The selected remedy which consisted of the excavation and off-site disposal of explosive-contaminated soil, LTM of groundwater, and LUCs was implemented in September 2010.

An RAR was submitted in spring 2011 documenting the implementation of the remedy. RA(O) (MNA) of the groundwater and

**Site ID: PICA-079**

**Site Name: ORDNANCE/EXPLOSIVE BLDGS 800 AREA**

LUCs are ongoing. The annual reports with the results of the monitoring required by the RD continue to be submitted and approved.

The 2014 annual report was submitted October 2014 which was subsequently approved by the NJDEP. The 2015 annual report was submitted in March 2016. The results from this report show favorable results.

### **CLEANUP/EXIT STRATEGY**

The LUCs and RA(O) (MNA) will continue in FY15 and beyond in accordance with the approved RD plan. The site will be evaluated in the five-year reviews.

**Site ID: PICA-085**  
**Site Name: BLDS IN 500-AREA**

**STATUS**

**Regulatory Driver:** CERCLA

**RRSE:** MEDIUM

Contaminants of Concern: Explosives, Metals, Semi-volatiles (SVOC)

Media of Concern: Sediment, Soil, Surface Water

Phases	Start	End
PA.....	197607.....	198105
SI.....	198707.....	198906
RI/FS.....	199502.....	201405
LTM.....	201406.....	204609

**RIP Date:** N/A

**RC Date:** 201405

**SITE DESCRIPTION**

The LTM costs for PICA-085 are covered by the LTM costs for PICA-206.

PICA-085 is itself a consolidated site that captures Site 46, as well as administratively closed sites PICA-064 (Site 147), PICA-073 (Site 32), PICA-074 (Site 33), PICA-140 (Site 97), PICA-142 (Site 105), PICA-148 (Site 148), PICA-150 (Site 150) and PICA-156 (Site 184). This site group had been called the 25 Sites Group.

LTM costs until FY16 had been carried under PICA-001.

PICA-085 consisted of Building 507 which was constructed in 1929 for use as a train engine maintenance facility. From 1987 to the present, Building 507 has been used as a garage facility for utility line maintenance vehicles. Waste materials, such as waste oil and spent cleaning solvents, were reportedly stored in 55-gallon drums in a shed adjacent to the eastern side of the building.

In 1991, a RCRA closure was performed for the shed. Elevated levels of SVOCs and metals were reported in the soil samples around the shed. The Phase II RI, conducted in 1996, included the performance of a geophysical survey, the performance of a soil-gas survey, the installation of one monitoring well, and the collection of soil and groundwater samples. Results of the geophysical survey did not identify any USTs at the site. No soil-gas analytes were detected above the reporting limits. The RI also identified SVOC and arsenic contamination in the soil around Building 507. Additional samples, collected in 2001, could not delineate the extent of the arsenic contamination; additional sampling is not possible due to the presence of underground utilities and overhead power lines. The results of the HHRA indicated that the estimated cancer risk and HI from exposure to surface soil by the site industrial research worker exceed the target levels. The estimated risk from subsurface soil exposure are within the USEPA's target risk range of 1 by 10<sup>(-4)</sup> to 1 by 10<sup>(-06)</sup> and the hazard for this exposure is below the target threshold level of one.

An FS was approved by the USEPA in August 2009. This PP was a public notice issued in March of 2013 and the ROD was signed by the Army and USEPA by May 2014. It is recognized that the NJDEP did not concur on the action since the ROD did not recognize the NJDEP cleanup numbers as ARARs or as cleanup goals since there were no unacceptable risks to the current and reasonably anticipated future land uses.

The monitoring of land use certification for 2015 was submitted in March 2016. The certification was approved by both the USEPA and NJDEP.

**CLEANUP/EXIT STRATEGY**

The Army will conduct the required annual inspection and develop the certification report required by the "No Further Action with Monitoring of Land Use Record of Decision." The site will also be evaluated in the five-year reviews.

**Site ID: PICA-091**  
**Site Name: BLDGS IN 200-AREA**

**STATUS**

**Regulatory Driver:** CERCLA

**RRSE:** MEDIUM

Contaminants of Concern: Explosives, Metals, Polychlorinated Biphenyls (PCB)

Media of Concern: Groundwater, Soil

Phases	Start	End
PA.....	197607.....	198105
SI.....	198707.....	198906
RI/FS.....	199502.....	201906
LTM.....	201910.....	205006

**RIP Date:** N/A

**RC Date:** 201906

**SITE DESCRIPTION**

PICA-091 carries the future LTM costs for following consolidated PICA AEDB-R sites:

- a. The 45 RI Concept Plan sites referred to as the 45 Sites Group represented by these 14 sites: PICA-011, -050, -071, -075, -091, -107, -108, -122, -134, -135, -136, -175, -200 and -209.
- b. The 6 RI Concept Plan sites referred to as the PICA-111 Sites are combined under AEDB-R site PICA-111.
- c. The 12 RI Concept Plan sites referred to as the Non-Lakes Sites are consolidated under the following 4 AEDB-R sites: PICA-145, -155, -184 and -195.
- d. The 4 RI Concept Plan sites referred to as the PICA-207 Sites are combined under AEDB-R site PICA-207.
- e. The two sites from the Lake Groups called PICA-15 (Lake Denmark) and PICA-164 (EOD) Pond.

Thus, the costs carried on AEDB-R site PICA-091 represents 22 AEDB-R sites and 67 individual RI Concept Plan sites.

This original site consisted of the area around Building 221, an explosives inspection and machining facility; Building 223, a former explosives inspection and machining facility, and Building 225, an explosives machining and light assembly facility. Activities conducted include explosive unit testing, inspection, and storage. Materials used at Building 221 were limited to explosives, radioactive materials, and small amounts of solvents and propellants.

In 1991 a RCRA closure was performed on a 4,000-gallon AST located in a concrete vault in the basement of Building 225. Sludge and explosives-contaminated wastewater were removed from the tank and disposed of off-site. The concrete vault, tank, and basement area were subsequently decontaminated. Soil samples collected, downgradient of the tank, contained VOCs and metals above LOCs. The NJDEP required that the subject area requires further action.

The RI performed in 1996 involved the performance of a radiological survey, installation of monitoring wells, and collection of soil and groundwater samples. No soil samples collected during the radiological survey contained levels of radionuclides in excess of LOCs. Explosives were detected in the groundwater, downgradient of the buildings, at concentrations exceeding LOCs. SVOCs, PCBs, and arsenic concentrations were identified above LOCs in the soil samples.

Additional RI sampling completed in 2000 helped to delineate the extent of the PCBs in soil and RDX in the groundwater.

The site is included in an FS submitted in October 2009, for PICA 11 LUC group of sites, 45 Site FS, (PICA-11, 50, 75, 91, 97, 108, 122, 134, 135, 136, 162, 175, 200, 209). The approval of the FS was held up until the issue with USEPA on ARARs was resolved.

In a letter dated Nov. 27, 2012, the USEPA had technically approved the NFA with monitoring of land use PP for the 25 "Site FS within PICA-001, 006, 022, 085, 143, 146, 163, 171, 192, and 199." In this letter the USEPA agreed with the Army position that

**Site ID: PICA-091**  
**Site Name: BLDGS IN 200-AREA**

sites with acceptable risk should be considered as NFA as existing LUCs prevent a different land use. The Army has agreed to notification and certification.

As a result of this agreement, the Army submitted a 48 Site FS in the summer of 2014. The FS was approved by USEPA in July 2014 although NJDEP did not concur.

A draft "No Further Action with Monitoring of Land Use Proposed Plan for Areas D, H, J, K, M, and P Sites, including PICAs 008, 011, 013, 050, 071, 091, and 175" was submitted in September 2014. The Army received comments from the NJDEP on the draft PPs in FY15. A new contract was awarded in FY15 to achieve a ROD. The contractor and Army met in FY16 with NJDEP and USEPA to resolve the issues and developed sampling plans as necessary. The site is still considered NFA with monitoring of land use.

Group name is 45 Site Group B.

## **CLEANUP/EXIT STRATEGY**

The Army will finalize and public notice the PP, and an NFA with monitoring of land use is expected to be signed by 2017.

After the ROD is completed, the Army will conduct the required annual inspections and develop the certification report as required by the "No Further Action with Monitoring of Land Use Record of Decision." The site will also be evaluated in the five-year reviews.

The certification and reporting requirements are considered LUC costs in the database despite the site being an NFA site. The LTM cost for PICA-091 includes all the similar costs for the sites in the above-mentioned ROD (PICA-008, 011, 013, 050, 071, 091, and 175).

**Site Name: WASTE BURIAL AREA NEAR SITES 19&34(180)**

**STATUS**

**Regulatory Driver:** CERCLA

**RRSE:** HIGH

Contaminants of Concern: Dioxins/Dibenzofurans, Metals, Munitions and explosives of concern (MEC), Other (Base Neutral Acid), Polychlorinated Biphenyls (PCB), Semi-volatiles (SVOC), Volatiles (VOC)

Media of Concern: Sediment, Soil, Surface Water

Phases	Start	End
PA.....	197607.....	198105
SI.....	198707.....	198906
RI/FS.....	199309.....	200708
RD.....	200604.....	200709
RA(C).....	200604.....	200709
LTM.....	200710.....	204609

**RIP Date:** N/A

**RC Date:** 200709

**SITE DESCRIPTION**

Future LTM costs are covered by PICA-206.

The waste burial area is situated in a low marshy area formerly containing several debris piles of drums, concrete rubble, scrap, metal, lumber, railroad ties, and trees. A drainage ditch discharges to the southeast corner of the site, causing localized ponding and marshy conditions. Extensive landfilling operations have taken place in this portion of Area C over the years. Materials were disposed of in large burial pits and in surface piles. The proximity of Site 180 to the burning ground made it a convenient location to dispose of and store items that could not be burned or did not require burning. Since this was an unregulated disposal site, the years of operation are unknown. Most disposal activities are believed to have taken place in the 1960s and 1970s.

The site was the subject of an RI in 1994. As part of the RI, a geophysical survey was conducted, and surface, subsurface soil, surface water, sediment, and groundwater samples were collected. All samples were analyzed for VOCs, SVOCs, metals, explosives, PCBs, dioxins/furans, and gross alpha, gross beta, and gamma radiation. The geophysical survey did not identify any burial areas. Other results indicated that LOCs were exceeded for BNAs in soil and sediment, metals in surface water and sediment and metals and dioxin in groundwater.

The HHRA determined that cancer risk was in the range of 1 by 10(-4) to 1 by 10(-6). As part of an extensive trenching investigation in 1998, additional soil, sediment, and surface water samples were collected and analyzed for VOCs, SVOCs, metals, pesticides, explosives, dioxins/furans, and PCBs. During this investigation, SVOCs, metals, and PCBs were occasionally detected in surface soil above the LOC and carbon tetrachloride was detected above the LOC in one subsurface soil sample. The trenching investigation also removed some debris piles and asbestos found at the site and restored native vegetation to the area. During trenching investigation, live 90 millimeter (mm) grenades were discovered buried at the site. The site was also the subject of a risk management evaluation that recommended an FS for mitigation of human health risk and no action for ecological concerns. HHRA found risk within the 1 by 10(-4) to 1 by 10(-6) risk range and non-cancer HI below 1. Impacts to groundwater will be covered under an area-wide action addressed in PICA-206.

On Dec. 17, 2006 a PP that includes ICs and ECs was approved by the USEPA and the NJDEP. A ROD was signed by the Army and the USEPA by September 2007. An RD was approved by the USEPA in October 2007.

LUCs have been implemented. Certifications have been submitted annually. The certification for 2014 was submitted in December 2014 and approved by both USEPA and NJDEP. The certification for LUCs was submitted in spring of 2016 and was approved by the regulators.

This group name is Waste Burial Area.

**Site ID: PICA-093**

**Site Name: WASTE BURIAL AREA NEAR SITES 19&34(180)**

## **CLEANUP/EXIT STRATEGY**

The Army will continue the LUCs in accordance with the RD work plan. The site will also be included in five-year reviews.



Site Name: BLDG 22,PRECISION MACHINE SHOP(SITE 117)

STATUS

Regulatory Driver: CERCLA

RRSE: MEDIUM

Contaminants of Concern: Metals, Pesticides, Polychlorinated Biphenyls (PCB), Volatiles (VOC)

Media of Concern: Sediment, Soil

Phases	Start	End
PA.....	197607.....	198105
SI.....	198707.....	198906
RI/FS.....	199309.....	201504
LTM.....	201504.....	204609

RIP Date: N/A

RC Date: 201504

SITE DESCRIPTION

PICA-096 LTM costs are in PICA-206 LTM costs.

PICA 096 is a consolidated site that includes all the AEDB-R sites PICA-069, 094, 098, 101, 114, 77, 119, 158, 159, 161, 176, 177, 183, 190, and 208. It is considered the 21 Site Group. It includes the RI Concept Plan Sites RI Sites 10, 27, 69, 117, 119, 120, 121, 123, 134, 136, 145, 164, 172, 174, 175, 176, 177, 185, 186, and PICA Site 208 as Site 60 as NFA.

This group name is 21 Site Group.

The original PICA 096 site was Building 22 which was constructed in 1918 as a precision machine shop. Over the years, various activities conducted at Building 22 included machining of depleted uranium and machining of other metals (e.g., aluminum and copper) to manufacture appurtenances for anti-tank weapons, rocket launchers, and explosive anti-tank shells. Precision machining activities were conducted at Building 22 until 1988. Since 1988, Building 22 has not housed any manufacturing operation or been used for any other purpose.

The site underwent an RI in 1994 that included a radiological survey and the collection of surface soil samples for VOCs, SVOCs, metals/cyanide, explosives, pesticide/PCBs, uranium and gross alpha, beta and gamma radiation. The only LOC exceedances were for beryllium in surface soil. The radiological survey did not identify any AOCs. In 2000, a risk management plan was written to evaluate human health and ecological risk and determine the best path forward. The HHRA determined that risks for three modeled receptor populations were between 1 by 10(-4) and 1 by 10(-6). Hazard indices were below one for two populations and exactly one for the third population. ERA work included terrestrial receptor modeling, earthworm studies, plant studies, mammal trapping, mammal community assessments, and tissue analyses. The conclusion was that although the site currently has low habitat value, the site could pose risks that are sufficiently elevated to warrant risk management attention, if impacted portions are allowed to return to more attractive habitat. The risk management evaluation determined that it was not in the best interest of the site to actively remediate the site for ecological concerns; however, the site should proceed to FS for human health concerns.

In 2005, PICA-029, 053, 069, 094, 098, 101, 114, 158, 161, 176, 177, 183, 190, and 207 were listed as RC in AEDB-R and will be addressed under PICA-096. The draft FS for PICA-029, 053, 069, 161, and 096 was tentatively approved by the regulators; however, the resubmittal of the document was delayed until the submittal and approval by the regulators of the additional characterization study of PICA-208 (the dog pound area).

Potential groundwater contamination associated with the site is being addressed under PICA-076. The FS was resubmitted to the regulators in spring 2009 and is considered approved by the regulators.

In a letter dated Nov. 27, 2012, the USEPA had technically approved the NFA with monitoring of land use PP for the 25 PTA sites associated with PICA 01. In this letter the USEPA agreed with the Army position that sites with acceptable risk should be considered NFA as existing LUCs prevent a different land use. The Army agreed to notification and certification; however, because it is NFA, an RD or the implementation of LUCs. The PP and ROD related to all the sites having acceptable risk would follow this format such as the 25 Sites associated with PICA 096.

**Site ID: PICA-096**

**Site Name: BLDG 22,PRECISION MACHINE SHOP(SITE 117)**

The PP was public noticed in June 2014 and the ROD was signed by the Army and by USEPA by spring of 2015.

The monitoring of land use certification was submitted in December 2014. The certification was approved by both the USEPA and NJDEP.

The monitoring of land use certification for 2015 was submitted in March 2016. The certification is expected to be approved by both the USEPA and NJDEP.

### **CLEANUP/EXIT STRATEGY**

The ROD called "No Further Action with Monitoring of Land Use Record of Decision for PICA 096 (Sites 7,10, 27, 52/95/96, 117, 119, 120, 121, 123, 134, 136, 145, 172, 173, 177, 185, 186, 207, and 208) and No Further Action for PICA-096 (Site 60, 69, 164, 176 and 187)" is planned.

The Army will conduct the required annual inspections and develop the certification report as required by the "No Further Action with Monitoring of Land Use Record of Decision." The site will also be evaluated in the future five-year reviews.

Site Name: BLD 41, PESTICIDE STR & FORM OIL/W SEP

STATUS

Regulatory Driver: CERCLA

RRSE: MEDIUM

Contaminants of Concern: Metals, Pesticides

Media of Concern: Sediment, Soil

Phases	Start	End
PA.....	197607.....	198105
SI.....	198707.....	198906
RI/FS.....	199309.....	201810

RIP Date: N/A

RC Date: 201810

SITE DESCRIPTION

PICA-097 costs are now in the PICA-149. This site is part of the 3 Site Group.

Building 41 is located in the middle of the golf course. Prior to 1964 it was used for storage. In 1964, this building was reassigned for storage of fertilizer, lime and miscellaneous inert materials. Since then, the building has been predominantly used for storage of pesticides and herbicides that are applied on the golf course and lawn surrounding the site. Until 1988, it was a common occurrence for open bags of pesticides and herbicides, stored at Building 41, to leak onto the wooden floor due to a leaky roof.

Groundwater samples collected from site monitoring wells have consistently contained elevated levels of TCE and PCE. Groundwater at this site is covered under the Area D groundwater operable unit (OU). During the Phase I RI, metals were detected at concentrations in excess of their respective LOCs in surface soil samples. Sediment samples from the oil/water separator pond contained elevated levels of metals, cyanide, DDT, and PCBs. Sediment within the oil water separator pond was covered under the GPB/ROD. The Phase I ERA concluded that this site poses virtually no risk because the contaminant levels are too low, and the area is spatially insignificant; however, earthworm toxicity testing indicated total mortality in one sample, probably due to pesticides. Human health risk falls within or below the target range 1 by 10(-4) to 1 by 10(-6). The HI exceeds the target level of one, primarily due to manganese and thallium. Additional RI sampling conducted in 2000 delineated the extent of most metals in the soil, but the delineation for arsenic, which is believed to be related to pesticide use on the golf course, is not ER,A fundable.

In 2009, the site was included in the "Five Site FS."

The approval of the document was delayed until USEPA and NJDEP went through dispute resolution under the InterAgency Agreement which was resolved in December 2013. In the interest of progressing quickly to an acceptable remedy decision at sites where an unacceptable soil risk has been identified, the Army agreed to address exposure to all contaminants that are above the New Jersey Direct Contract Soil Remediation Standard (NJRDCSRS) regardless of whether the contaminant has been designated as a risk driver or not.

The site was then included in the 3 Site FS and PP both of which were submitted in spring of 2014. The PP was a public notice issued in September 2014. The preferred alternative in the PP and ROD is for a "dig and haul" with LTM.

In FY15, a contract was awarded and a CLIN was funded to take the 3 Site Group to ROD which is expected to be signed in FY19. The PBC includes cost for all remedial aspects required by a signed ROD for all three sites from RD and RA phases to response complete for PICA-149, PICA-131 and PICA-097. This group name is 3 Site Group.

In FY15, an investigative work plan was approved and implemented. The purpose of the work plan was to determine a better estimate for the quantity of excavated soils for the ROD.

CLEANUP/EXIT STRATEGY

**Site ID: PICA-097**

**Site Name: BLD 41, PESTICIDE STR & FORM OIL/W SEP**

The Army will develop a ROD for signature.

After the ROD, the Army will develop a RD to conduct the action, a dig and haul remedy and LUCs. The site will also be addressed by the five-year review process.

**Site ID: PICA-102**

**Site Name: FORMER WASTE DUMP/CHEMICAL LAB**

**STATUS**

**Regulatory Driver:** CERCLA

**RRSE:** HIGH

Contaminants of Concern: Metals

Media of Concern: Sediment, Soil

Phases	Start	End
PA.....	197607.....	198105
SI.....	198707.....	198906
RI/FS.....	199309.....	200809
RD.....	200604.....	200809
RA(C).....	200604.....	200809
LTM.....	200810.....	204609

**RIP Date:** N/A

**RC Date:** 200809

**SITE DESCRIPTION**

Future LTM costs for PICA-102 are covered by PICA-206.

PICA-206 or Site 61 encompasses approximately 3 acres and consists of Buildings 171 and 176. Trash, including cars and unknown materials, were reportedly used to fill in the swamp area west of Buildings 171 and 176 sometime prior to 1960. Building 171 was constructed in 1948 on what was originally the site of high explosives magazine No. 2. Since its construction, Building 171 has been used as an administrative building containing a graphics department, which included photo processing units. A RCRA closure plan was prepared for the photographic processing. The facility was to have been closed; however, the closure plan was never implemented because the building was renovated. Building 176 was constructed in 1944 for storage of laboratory equipment and sampling of ammunition. In 1959, Building 176 was converted to a plastics information center and later converted to an administrative building.

The site underwent an RI in 1994 consisting of a geophysical survey, test pits, radiological survey, surface soil, surface water, sediment sampling for VOCs, BNAs, metals, cyanide, explosives, and pesticide/PCBs. BNAs and metals were detected above LOC in surface soil and sediment. The Phase I RI recommended that this site proceed to FS; however, additional RI work was completed in 1997 based upon regulatory comment. This RI consisted of test pits, the collection of subsurface soil, surface soil, surface water and sediment for VOCs, SVOCs, pesticide/PCBs, and metals. The risk management plan in 2000 determined that human health risk was within the 1 by 10<sup>(-4)</sup> to 1 by 10<sup>(-6)</sup> range for all three receptor populations. Two of three hazard indices were greater than one. Elevated hazard indices were largely caused by inhalation of manganese. An ERA was performed, including terrestrial receptor modeling, earthworm bioassays, plan/mammal community assessments, and tissue sample analyses. The risk management decision was that the overall weight of evidence indicated that current conditions potentially posed ecological risk. The recommendation was for risk management attention or monitoring to be decided in an FS. The FS was submitted to regulators in August 2004. The FS evaluated ICs, removal, and capping as remedial alternatives.

The FS for the site was completed in 2004. Metals contaminated soil was found between PICA-102 (Site 61) and PICA-103 (Site 104). The FS included all media at these sites with the exception of groundwater. Groundwater is being addressed under PICA-204.

In 2003, PICA-103 was listed as RC in AEDB-R and will be addressed under PICA-102. PICA-102 now represents funding associated with former PICA-103.

The ROD, RD, and implementation were all completed in FY08. The implemented remedy included excavation and off-site disposal of metals-contaminated soils as well as LUCs. LTM is ongoing. A certification report is submitted annually. The group name is Waste Dumps and Labs.

A LUC report was submitted to the regulators in March 2016 and was approved by both the USEPA and NJDEP.

**Site ID: PICA-102**

**Site Name: FORMER WASTE DUMP/CHEMICAL LAB**

## **CLEANUP/EXIT STRATEGY**

The LUCs will continue in FY16 and beyond in accordance with the approved RD plan. The site will also be evaluated in the five-year reviews.

Site Name: BLDGS 404,407,&408,CHMCL LAB&PROP PLANTS

STATUS

Regulatory Driver: CERCLA

RRSE: HIGH

Contaminants of Concern: Metals, Polycyclic Aromatic Hydrocarbons (PAH)

Media of Concern: Sediment, Soil

Phases	Start	End
PA.....	197607.....	198105
SI.....	198707.....	198906
RI/FS.....	199309.....	201906

RIP Date: N/A

RC Date: 201906

SITE DESCRIPTION

LTM costs for site PICA-075 are covered by PICA-091.

The group name is 45 Site Group A.

This site has an area of approximately 7 acres and includes Buildings 404, 407 and 408. Building 404 was originally constructed as a storehouse for sodium nitrate. The building was modified in the 1950s for use as a scientific lab. The lab was used for conducting physical research, including bomb testing and pyrometry. A physical-chemical laboratory was located in Building 404 from 1958 to 1975. Building 407 was originally used as an experimental chemistry lab, and was subsequently used as an energetics lab for propellant manufacturing. Building 408 was originally used for the experimental loading and nitrating of cottons, linens, and wood pulp for the production of NC. Building 408 was modified for use as a chemical research facility in the experimental pressing of explosives. In 1974, the building was used as a lead azide production facility. The building was demolished in 2013.

Environmental samples collected during the Phase I RI indicated surface soil exceedances for PAHs, metals, and pesticide, dieldrin. Surface water exceedances detected in samples from the drainage ditches include several metals. Associated sediment samples contained exceedances for PAHs, metals, and cyanide. Groundwater exceedances in the overburden aquifers include TCE and metals. Human health risk falls within the target range 1 by 10(-4) to 1 by 10(-6). The hazard index exceeds the target level of 1. Manganese was identified as the primary hazard driver in soil. The adult lead model results indicate lead is not a health concern. The Phase I ERA concluded that this site poses a high risk to certain organisms such as birds and terrestrial invertebrates. Based on the results of the Phase I ERA, an additional ecological investigation was conducted in 2005. Although the food web exposure models indicated that adverse effects to terrestrial receptors could occur given sufficient exposure to site COPECs, the field investigations and RSA results indicated that effects, if any, were not impacting the local populations of small mammals or birds. For aquatic receptors, the results of the lines of investigation (i.e., vegetation and benthic surveys) provided sufficient weight-of-evidence to suggest that the aquatic ecosystems at the site are not adversely affected due to the presence of site-related COPECs in the sediment or surface water. In order to delineate the extent of soil and sediment contamination, additional samples were collected in 2000 and 2001.

An FS that included an excavation was submitted in September 2009 was modified based on the resolution of the formal resolution between the Army and USEPA. The site was considered a candidate for "NFA with Monitoring of Land Use".

The site was then included in the "NFA 48-Site Feasibility Study" that was approved by the USEPA in July 2014. The NJDEP did not concur.

A draft "No Further Action with Monitoring of Land Use Proposed Plan for Areas F, G, I, and L Sites, including PICAs 075, 108, 122, 134, 135, 136, 108, 200, and 209" was submitted in September 2014.

The group name is 45 Site Group A. LTM costs for the consolidated site PICA-075 are covered by PICA-091.

The Army received comments from the NJDEP on the draft proposed plans in FY15. A new contract was awarded in FY15 to achieve a ROD. The contractor and Army met in FY16 with NJDEP and USEPA to resolve the issues and developed sampling

**Site ID: PICA-107**

**Site Name: BLDGS 404,407,&408,CHMCL LAB&PROP PLANTS**

plans as necessary. The sites are still considered a no further action with monitoring of land use.

## **CLEANUP/EXIT STRATEGY**

The Army will finalize and public notice the PP, and an NFA with monitoring of land use ROD will be signed.



## Site ID: PICA-108

### Site Name: BLDGS in 400/300 AREA, Site 139

#### STATUS

Regulatory Driver: CERCLA

RRSE: MEDIUM

Contaminants of Concern: Metals, Polychlorinated Biphenyls (PCB), Polycyclic Aromatic Hydrocarbons (PAH), Volatiles (VOC)

Media of Concern: Groundwater, Sediment, Soil, Surface Water

Phases	Start	End
PA.....	197607.....	198105
SI.....	198707.....	198906
RI/FS.....	199309.....	201906

RIP Date: N/A

RC Date: 201906

#### SITE DESCRIPTION

LTM costs for PICA-108 are covered by PICA-091.

The group name is 45 Site Group A.

PICA-108 carried cost for the following closed PICA sites: PICA-109 (Site 140), PICA-138 (Site 90), PICA-147 (Site 137) and PICA-210.

The original Site 139 consists of Building 424 and the surrounding area. Building 424 was an HEs plant. As a HEs plant, after production of explosives ceased, all production equipment was removed, except for the neutralization and acid tanks.

A sump was located inside Building 424 and was used for the collection of overflow production water. The sump discharged to the marsh area southwest of the building via an open trough and a small outfall ditch. Based on the results of the Phase I ERA, an additional ecological investigation was conducted at the site in spring and summer 2005.

Field investigations and RSA results indicated that effects were not impacting the local populations of small mammals or birds. For aquatic receptors, the results of the lines of investigation provided sufficient weight-of-evidence to suggest that the aquatic ecosystems at the site are not adversely affected.

During the Phase II RI, sediment samples from the drainage ditch contained elevated levels of several explosive compounds and metals. In order to delineate the existing contamination, and investigate other potential sources at the site, additional samples were collected in 2000 and 2001.

Between June and September 2004 the neutralization tank and approximately 94 cy of soil were removed from the southern corner of Building 424. Additionally, approximately 1,759 gallons of water within the neutralization tank were drained, sampled, and disposed of off-site as nonhazardous waste. Post-excavation samples indicated lead and SVOC concentrations were below LOCs.

The FS with this site was submitted in December 2009. The approval of the FS was held up until the issue with USEPA on ARARs was resolved.

In a letter dated Nov. 27, 2012, the USEPA had technically approved the NFA with monitoring of land use PP for the "25 Site FS within PICA-001, 006, 022, 085, 143, 146, 163, 171, 192, and 199." In this letter the USEPA agreed with the Army position that sites with acceptable risk should be considered as NFA as existing LUCs prevent a different land use. The Army has agreed to notification and certification. The site is included in an original FS submitted in October 2009, for PICA 11 LUC group of sites, 45 Site FS, (PICA-11, 50, 75, 91, 97, 108, 122, 134, 135, 136, 162, 175, 200, 209). The approval of the FS was held up until the issue with USEPA on ARARs was resolved. The Army agreed to notification and certification and an RD is not required.

Based on this agreement with USEPA, the Army submitted the Final 48 Site FS in June of 2014.

**Site ID: PICA-108**

**Site Name: BLDGS in 400/300 AREA, Site 139**

The FS was approved by USEPA in July 2014 although NJDEP did not concur.

The draft "No Further Action with Monitoring of Land Use Proposed Plan for Areas F, G, I, and L Sites, including PICAs 075, 108, 122, 134, 135, 136, 147, 200, and 209 " was submitted in September of 2014.

The Army received comments from the NJDEP on the draft proposed plans in FY15. A new contract was awarded in FY15 to achieve a ROD. The contractor and Army met in FY16 with NJDEP and USEPA to resolve the issues and developed sampling plans as necessary. The site is still considered a NFA with monitoring of land use.

### **CLEANUP/EXIT STRATEGY**

The Army will finalize and public notice the PP, and an NFA with monitoring of land use ROD is expected to be signed by 2020.

After the ROD is completed, the Army will conduct the required annual inspections and develop the certification report by the ROD. The site will also be evaluated in the five-year reviews.

Site Name: FORMER BLDG 435, PROPELLANT SOLV MIXING

STATUS

Regulatory Driver: CERCLA
RRSE: MEDIUM
Contaminants of Concern: Metals, Perchlorate
Media of Concern: Groundwater, Soil

Table with 3 columns: Phases, Start, End. Rows include PA, SI, RI/FS, IRA with corresponding dates. RIP Date: N/A, RC Date: 201906

SITE DESCRIPTION

Future LTM Costs for PICA-111 are addressed by PICA-091.

In 2003, PICA-106, 113, 115, 144, and 203 were administratively listed as RC in the AEDB-R. All future activities will be addressed under PICA-111. The group name is PICA-111.

PICA-111 consists of former Building 435 and the surrounding area. In the early-1950s, the building was used for pulverizing operations of experimental propellants. The building was then used to mix solvents for propellant production. The 1991 Argonne National Laboratory (ANL) RI concept plan indicated that ethyl acetate and acetone were potentially used in Building 435. Building 435 was demolished under the Toxic and Energetics Cleanup Program (TECUP) in September 2000.

A RCRA closure was performed at Building 435 in 1991. The analytical results indicated that copper was the only compound detected above its LOC. In a December 1992 correspondence to PTA, the NJDEP stated that the closure was incomplete and would require further investigation under CERCLA. In order to delineate the extent of soil contamination at this site, four soil samples were collected in 2000. No LOC exceedances were identified in the soil samples. A very high lead concentration was detected in the sediment sample collected from the seep vat. Metals and perchlorate were detected at concentrations exceeding LOCs in the groundwater sample. Lead and perchlorate (600 ppb) contamination was delineated in 2001. Estimated cancer risks are below or within the USEPA's target range of 1 by 10(-4) to 1 by 10(-6) for all exposure scenarios. The estimated non-cancer hazards are all below the USEPA's target threshold of one; however, results of the site-specific lead exposure assessment indicated lead poses a health risk.

Based on comments from the USEPA, an additional risk assessment was performed in FY08 regarding military residents only. A SLERA was conducted for this site in the spring and summer 2005. With the removal of the lead contamination (as noted below), the only apparent contamination at the site is perchlorate in groundwater. However, samples collected in August 2006 showed the levels of perchlorate at non-detectable levels from the three monitoring wells located at the site. Samples collected in November 2008 showed levels of perchlorate [7.1 micrograms per liter (ug/L)] above the LOC of 5 ug/L.

Sampling in July 2009 showed no exceedances of perchlorate. Coupled with decreasing results in the past, these results indicate that perchlorate is naturally attenuating. Samples from GPB, the potential discharge point for groundwater have not contained detectable levels of perchlorate in the surface water. Thus, there is no complete exposure pathway for ecological receptors from groundwater or GPB, and further ecological investigation is not warranted.

An interim remedial action (IRA) for lead was conducted between May and June 2004 as part of the facility-wide lead removal investigation. Approximately 15 cy of soil were removed from the site of the former wooden seep vat and trough. Post-excavation results did not identify any lead concentrations above the LOC.

In April 2010 the FS was finalized. A draft PP was submitted to the regulators in June 2013. NJDEP provided comments in April 2014 and USEPA provided comments in November 2014.

A sampling workplan will be implemented in FY16. Negotiations between the Army, USEPA and NJDEP continue.

**Site ID: PICA-111**

**Site Name: FORMER BLDG 435, PROPELLANT SOLV MIXING**

## **CLEANUP/EXIT STRATEGY**

The Army will finalize and public notice the PPd and an NFA with monitoring of land use ROD will be signed.

After the ROD is completed, the Army will conduct the required annual inspections and develop the certification report as required by the "No Further Action with Monitoring of Land Use Record of Decision." The site will also be evaluated in the five-year reviews. These are considered LTM costs.

**Site ID: PICA-122**

**Site Name: PROPELLANT TESTING (BLDG 197) SITE 126**

**STATUS**

**Regulatory Driver:** CERCLA

**RRSE:** MEDIUM

**Contaminants of Concern:** Metals

**Media of Concern:** Soil

<b>Phases</b>	<b>Start</b>	<b>End</b>
PA.....	197607.....	198105
SI.....	198910.....	199103
RI/FS.....	199309.....	201906

**RIP Date:** N/A

**RC Date:** 201906

**SITE DESCRIPTION**

Future LTM costs for PICA-122 are captured by PICA-091

The original site Building 197 is in an area of PTA used for chemistry and other testing laboratories. The building was constructed in 1942 for surveillance testing. The building is now demolished.

The Phase I RI conducted in 1994 included the collection of surface soil samples for analysis of VOCs, BNAs, metals, cyanide, explosives, and pesticide/PCBs. Metals were detected in exceedance of LOC. In 2000 and 2001, additional investigation was performed for the Phase I 2A-3A sites RI. This investigation consisted of the collection of surface and subsurface soil for arsenic, copper, and cadmium in soil. The Phase I ERA concluded that neither the small mammal studies, nor the earthworm toxicity studies found any significant impacts in this area.

Estimated risks for the realistic exposure scenarios are within or below the USEPA's target range of 1 by 10<sup>(-4)</sup> to 1 by 10<sup>(-6)</sup>. The site was included in an FS submitted in October 2009, for PICA 11 LUC group of sites, 45 Site FS, (PICA-11, 50, 75, 91, 97, 108, 122, 134, 135, 136, 162, 175, 200, 209). The approval of the FS was held up until the issue with USEPA on ARARs was resolved. In a letter dated Nov. 27, 2012, the USEPA had technically approved the NFA with monitoring of land use PP for the "25 Site FS within PICA-001, 006, 022, 085, 143, 146, 163, 171, 192, and 199." In this letter the USEPA agreed with the Army position that sites with acceptable risk should be considered as an NFA as existing LUCs prevent a different land use. The Army agreed to notification and certification reporting, although an RD is not required.

Based on this agreement with USEPA, the Army submitted the Final 48 Site FS in June 2014. The FS was approved by USEPA in July 2014 although NJDEP did not concur.

The draft "No Further Action with Monitoring of Land Use Proposed Plan for Areas F, G, I, and L Sites, including PICAs 075, 108, 122, 134, 135, 136, 147, 200, and 209" was submitted in September 2014.

The Army received comments from the NJDEP on the draft proposed plans in FY15. A new contract was awarded in FY15 to achieve a ROD. The contractor and Army met in FY16 with NJDEP and USEPA to resolve the issues and developed sampling plans as necessary. The site is still considered a NFA with monitoring of land use.

**CLEANUP/EXIT STRATEGY**

The Army will finalize and public notice the PP, and an NFA with monitoring of land use ROD is expected to be signed by 2020.

After the ROD is completed, the Army will conduct the required annual inspections and develop the certification report as required by the ROD. The site will also be evaluated in the five-year reviews.

Site Name: FORMER ORDNANACE MANUFAC. (BLDG 266)

STATUS

Regulatory Driver: CERCLA

RRSE: MEDIUM

Contaminants of Concern: Metals, Semi-volatiles (SVOC)

Media of Concern: Soil

Phases	Start	End
PA.....	197607.....	198105
SI.....	198910.....	199103
RI/FS.....	199502.....	201810
RIP Date:	N/A	
RC Date:	201810	

SITE DESCRIPTION

PICA-131 future costs for RD and RA(C) are in the costs for PICA-149.

Site is part of the 3 Site Group.

Building 266 served as an explosives production facility from the time of its construction in 1903 until the early-1950s. Explosives production ceased here sometime before 1953, when the building was converted to its current use as a wind tunnel research facility. The wind tunnel research facility has been used to simulate and study the flight characteristics of small projectiles. At one time, operations of the wind tunnel resulted in the generation and dispersion of mercury condensate in and around the wind tunnel exhaust area.

An internal investigation conducted in 1991 included the collection of 23 soil samples around Building 266. In general, the results showed elevated levels of PAHs and metals. In response to an accidental mercury release in February 1992, two soil samples were collected from areas that had been excavated following the release. Results of the post-excavation samples did not detect mercury concentrations above the LOC. The 1996 Phase II RI activities included the installation of three monitoring wells and the collection of soil and groundwater samples. Analytical results from the RI identified VOCs in groundwater, and SVOCs and arsenic in the soil at concentrations above LOCs.

Additional RI activities performed in 2000 included the collection of soil and groundwater samples at the site. Additional LOC exceedances were reported for TCE in groundwater and arsenic in the soil. Results of the HHRA indicate the risk and hazard from exposure to surface soil are above the target risk level of 1E-4 and the target hazard level of 1. Modeled risk and results of a soil bioassay indicate minimal ecological risk to terrestrial species.

In 2009, the site was included in the Five Site FS. The approval of the document was delayed until USEPA and NJDEP went through a dispute resolution under the InterAgency Agreement which was resolved in December of 2013.

In the interest of progressing quickly to an acceptable remedy decision at sites where an unacceptable soil risk has been identified the Army agreed to address exposure to all contaminates that are above the New Jersey Direct Contract Soil Remediation Standard (NJRDCSRS) regardless of whether the contaminant has been designated as a risk driver or not.

The site was then included in a Three Site FS and PP both of which were submitted in spring of 2014. The PP was a public notice issued in September of 2014. The preferred alternative in the PP and ROD is for a "dig and haul" with LTM. This group name is Three Site Group.

The PBC includes cost for all remedial aspects required by a signed ROD for all three sites RD and RA phases to response complete for PICA-149, PICA-131 and PICA-097.

In FY15, an investigative work plan was approved and implemented. The purpose of the work plan was to determine a better estimate for the quantity of excavated soils for the ROD.

**Site ID: PICA-131**

**Site Name: FORMER ORDNANACE MANUFAC. (BLDG 266)**

## **CLEANUP/EXIT STRATEGY**

The Army will develop a ROD for signature. After the ROD is completed, the Army will conduct the action, which is a dig and haul remedy. No LUCs are expected after the remedy. The site will be evaluated in the five-year reviews.

Site Name: R&D LAB/Chem Storage 3000-Area,

STATUS

Regulatory Driver: CERCLA

RRSE: LOW

Contaminants of Concern: Metals, Polycyclic Aromatic Hydrocarbons (PAH)

Media of Concern: Soil

Phases	Start	End
PA.....	197607.....	198105
SI.....	198910.....	199103
RI/FS.....	199502.....	201906

RIP Date: N/A

RC Date: 201906

SITE DESCRIPTION

LTM costs for PICA-134 are covered by PICA-091. This group name is 45 Site Group A. Site 70 consists of Building 3028, a research and development (R&D) laboratory, and Building 3029, a general purpose warehouse. Building 3028 operated as a supply-storehouse until 1980. Between 1980 and 1982, the building was renovated to be used as laboratories and offices. Use of the R&D laboratories began in 1982. Building 3028 is currently used as an explosive chemistry laboratory. The transformer, located on the western side of Building 3028, had an Aroclor-1260 concentration of 194 ppm. The transformer was removed.

Mercury vapor was discovered in one of the laboratories during air sampling in 1990. The mercury was suspected to have come from damaged test equipment. The mercury contamination was remediated. Small amounts of mercury may have also gone down sink and floor drains, as a result of periodic mercury spills that occurred during routine laboratory activities. Radioactive material and equipment with radioactive sources were periodically used in the building. All radioactive materials had reportedly been removed from the building. In 1991, a RCRA closure was performed for specific laboratory areas inside Building 3028. As part of the closure, the designated areas were cleaned. In 1992, the NJDEP approved the closure. Building 3029 is connected to the north end of Building 3028. The currently vacant building once operated as an unofficial warehouse for storage of chemicals and equipment used in Building 3028. In 1991, a RCRA closure was performed to remove chemicals and equipment from the building. The building was demolished and a surveillance facility was constructed in its place. A clean closure was approved by the NJDEP in 1992.

Phase II RI activities were conducted in 1996. The radiological survey detected two samples with radiological concentrations above LOCs. During the RI, beryllium and PAHs were detected above LOCs in soil. Results of an HHRA indicated that the risks and hazard indices associated with exposure to soil at the site do not exceed the target levels. In response to regulatory comments on the RI report, one soil sample was collected for PAHs during additional RI activities in 2001. No exceedances of PAH LOCs were reported in the sample.

In 2003 PICA-012 and PICA-018 were listed as RC in AEDB-R and will be addressed under PICA-134. PICA-134 represented the funding associated with former sites PICA-012 and PICA-018.

The site was included in an FS submitted in October 2009, for PICA 11 LUC group of sites, 45 Site FS, (PICA-11, 50, 75, 91, 97, 108, 122, 134, 135, 136, 162, 175, 200, 209).

The approval of the FS was held up until the issue with USEPA on ARARs was resolved. In a letter dated Nov. 27, 2012, the USEPA had technically approved the NFA with monitoring of land use PP for the 25 Site FS within PICA-001, 006, 022, 085, 143, 146, 163, 171, 192, and 199. In this letter the USEPA agreed with the Army position that sites with acceptable risk should be considered as an NFA as existing LUCs prevent a different land use. The Army agreed to notification and certification reporting although an RD is not required.

The FS was based on this agreement with USEPA, the Army submitted the Final 48 Site FS in June 2014. The FS was approved by USEPA in July 2014 although NJDEP did not concur.

The draft "No Further Action with Monitoring of Land Use Proposed Plan for Areas F, G, I, and L Sites, including PICAs 075, 108, 122, 134, 135, 136, 147, 200, and 209 " was submitted in September 2014.



**Site ID: PICA-134**

**Site Name: R&D LAB/Chem Storage 3000-Area,**

The Army received comments from the NJDEP on the draft proposed plans in FY15. A new contract was awarded in FY15 to achieve a ROD. The contractor and Army met in FY16 with NJDEP and USEPA to resolve the issues and developed sampling plans as necessary. The site is still considered an NFA with monitoring of land use.

## **CLEANUP/EXIT STRATEGY**

The Army will finalize and public notice the PP, and an NFA with monitoring of land use ROD is expected to be signed by 2020.

After the ROD is completed, the Army will conduct the required annual inspections and develop the certification report as required by the ROD. The site will also be evaluated in the five-year reviews.

**Site ID: PICA-135**

**Site Name: BLDGS IN THE 900-AREA**

**STATUS**

**Regulatory Driver:** CERCLA

**RRSE:** LOW

Contaminants of Concern: Metals, Polycyclic Aromatic Hydrocarbons (PAH)

Media of Concern: Soil

Phases	Start	End
PA.....	197607.....	198105
SI.....	198910.....	199103
RI/FS.....	199502.....	201906

**RIP Date:** N/A

**RC Date:** 201906

**SITE DESCRIPTION**

LTM costs for PICA-075 are covered by PICA-091. This group name is 45 Site Group A.

In 2003 PICA-137, 153, and 154 were listed as RC in AEDB-R and will be addressed under PICA-135.

The original PICA-135 site is considered the area around Building 910 which was constructed in 1950 for use as a storage magazine. The building is located on the northwestern shore of Picatinny Lake, and was utilized until the 1970s for the environmental testing of munitions to determine the effect of temperature and humidity on propellants and explosives.

In 1991, RCRA closure activities were performed at Building 910 by washing down the walls and walk-in areas, and removing any remaining debris. The subject area received a clean closure from the NJDEP in 1992. The RI conducted at the site in 1996 included the collection of soil, groundwater, and sediment samples. Analytical results identified PAHs and metals in the surface soil, as well as metals in the sediment at concentrations in excess of their respective LOCs.

In response to regulatory comments on the RI report, additional soil samples were collected in 2001 to delineate the extent of soil contamination. Based on these results, the PAH contamination has been delineated. One additional sample, collected in 2002, completed the arsenic delineation. Results of an HHRA for soil, sediment and surface water exposures at the site indicated that the risks and hazard indices are below the target levels of 1 by 10(-4) and 1, respectively.

The site was included in an FS submitted in October 2009. The approval of the FS was held up until the issue with USEPA on ARARs was resolved.

In a letter dated Nov. 27, 2012, the USEPA had technically approved the NFA with monitoring of land use PP for the 25 Site FS within PICA-001, 006, 022, 085, 143, 146, 163, 171, 192, and 199. In this letter the USEPA agreed with the Army position that sites with acceptable risk should be considered as an NFA as existing LUCs prevent a different land use. The Army agreed to notification and certification requirements.

Based on this agreement with USEPA, the Army submitted the Final 48 Site FS in June 2014. The FS was approved by USEPA in July 2014 although NJDEP did not concur.

The draft "No Further Action with Monitoring of Land Use Proposed Plan for Areas F, G, I, and L Sites, including PICAs 075, 108, 122, 134, 135, 136, 147, 200, and 209 " was submitted in September 2014.

The Army received comments from the NJDEP on the draft PPs in FY15. A new contract was awarded in FY15 to achieve a ROD. The contractor and Army met in FY16 with NJDEP and USEPA to resolve the issues and developed sampling plans as necessary. The site is still considered an NFA with monitoring of land use.

This group name is 45 Site Group A. LTM costs for the consolidated site PICA-075 are covered by PICA-091.

**Site ID: PICA-135**  
**Site Name: BLDGS IN THE 900-AREA**

## **CLEANUP/EXIT STRATEGY**

The Army will finalize and public notice the PP, and an NFA with monitoring of land use ROD is expected to be signed by 2020.

After the ROD is completed, the Army will conduct the required annual inspections and develop the certification report for the signature of the Picatinny Environmental Project Manager as required by the "No Further Action with Monitoring of Land Use Record of Decision." The site will also be evaluated in the five-year reviews.

Site Name: HIGH PRESSUREBOILER frmr bldg. 3013

STATUS

Regulatory Driver: CERCLA

RRSE: MEDIUM

Contaminants of Concern: Metals, Petroleum, Oil and Lubricants (POL), Polycyclic Aromatic Hydrocarbons (PAH), Semi-volatiles (SVOC), Volatiles (VOC)

Media of Concern: Groundwater, Soil

Phases	Start	End
PA.....	197607.....	198105
SI.....	198910.....	199103
RI/FS.....	199502.....	201906
IRA.....	199001.....	199208

RIP Date: N/A

RC Date: 201906

SITE DESCRIPTION

Built in 1901, Building 3013 was originally used as a main boiler house, but is currently used as an auxiliary boiler house. The building was also used to produce explosives during WWI and WWII, and was expanded in the 1940s to include a water treatment system. In 1967, two 20,000-gallon USTs were installed for storage of fuel oil for the boiler. These USTs were in service until their removal in 1990. Discolored soil was noted after the tanks were removed. Building 3013 is currently inactive.

In 1991 a RCRA closure was performed that included removing waste material from the building, and decontaminating the waste storage area, in the westernmost corner of the building. In 1992, the NJDEP approved the closure area. As a result of the identification of discolored soil during the removal of the two USTs, about 1,500 tons of contaminated soil was removed from a 15-foot deep excavation. Elevated levels of TPH were detected in the soil samples; VOCs and SVOCs were detected in the groundwater. In response to recommendations from the previously mentioned investigation, additional soil and groundwater samples were collected in 1994 to better define the contamination near the former USTs. No contaminant concentrations were reported above LOCs.

Phase II RI activities were conducted at the site in 1996. During the RI, TPHs were detected at high levels in three wells. Lead was reported at concentrations above LOCs in groundwater and soil. SVOCs and arsenic were also detected at concentrations in excess of LOCs in the soil. Additional investigations performed in 2000 delineated the extent of the arsenic and lead contamination in soil; however, additional samples were collected in 2001 to complete the PAH delineation in soil. The results of the HHRA indicated that the estimated cancer risk from exposure to surface soil is above the target risk level of 1 by 10(-4). The estimated hazard from exposure to surface soil is below the target threshold level of 1. The estimated risk from exposure to subsurface soil is within the target risk range of 1 by 10(-4) to 1 by 10(-6). The hazard from subsurface soil exposure is below the target level. The adult lead model results indicate lead concentrations in surface soil are not a concern as the average lead concentration (312 mg/kg) does not exceed the lead model-derived preliminary remediation goals. In 2004, additional groundwater samples did not have contamination above LOCs. The original building has been demolished as of 2013.

The site was included in an FS submitted in October 2009. The approval of the FS was held up until the issue with USEPA on ARARs was resolved.

In a letter dated Nov. 27, 2012, the USEPA had technically approved the NFA with monitoring of land use PP for the 25 Site FS within PICA-001, 006, 022, 085, 143, 146, 163, 171, 192, and 199. In this letter the USEPA agreed with the Army position that sites with acceptable risk should be considered as an NFA as existing LUCs prevent a different land use. The Army agreed to notification and certification reporting requirements. Based on this agreement with USEPA, the Army submitted the Final 48 Site FS in June 2014. The FS was approved by USEPA in July 2014 although NJDEP did not concur.

The draft "No Further Action with Monitoring of Land Use Proposed Plan for Areas F, G, I, and L Sites, including PICAs 075, 108, 122, 134, 135, 136, 147, 200, and 209" was submitted in September 2014.

The group name is 45 Site Group A.

LTM costs for the consolidated site PICA-136 are covered by PICA-091.

**Site ID: PICA-136**

**Site Name: HIGH PRESSUREBOILER frmr bldg. 3013**

## **CLEANUP/EXIT STRATEGY**

The Army will finalize and public notice the PP, and an NFA with monitoring of land use ROD is expected to be signed by 2020.

After the ROD is completed, the Army will conduct the required annual inspections and develop the certification report for the signature of the Picatinny Environmental Project Manager as required by the "No Further Action with Monitoring of Land Use Record of Decision." The site will also be evaluated in the five-year reviews.

Site Name: ORDNANCE FAC (BLDGS 717,722,732)SITE 108

STATUS

Regulatory Driver: CERCLA

RRSE: HIGH

Contaminants of Concern: Metals, Polychlorinated Biphenyls (PCB), Semi-volatiles (SVOC)

Media of Concern: Sediment, Soil

Phases	Start	End
PA.....	197607.....	198105
SI.....	198910.....	199103
RI/FS.....	199502.....	201405
LTM.....	201406.....	204609

RIP Date: N/A

RC Date: 201405

SITE DESCRIPTION

The LTM costs for PICA-143 are covered under the LTM costs for PICA-206.

PICA-143's LTM costs required by the "No Further Action with Monitoring of Land Use Record of Decision for Sites with PICA - 001, 006, 022, 085, 143, 163, 171, 192 and 199 and No Further Action for PICA 146" are carried by LTM costs included with PICA-001. The group name is 25 Site Group.

The original AEDB-R site consists of Building 717, an ordnance facility, former Building 722, a physics and flare-testing laboratory, and former Building 732, a physics laboratory and ordnance facility. Building 722 was originally used as an office and testing laboratory, but was later converted to a flare testing facility. Building 732 was used as a pyrotechnic facility. Wastewater from Building 732 was reportedly discharged to GPB. Building 732 was demolished under TECUP in 2004.

Phase II RI activities included performance of a soil-gas survey, performance of a radiological survey, installation of three monitoring wells, and the collection of soil, groundwater, surface water, sediment and sump samples. RI results identified AOCs at the site, including metals contamination at Flare Island, metals and mirex contamination in the catch basins and sumps of Building 732, soil contamination on the south side of Building 722, and PCB contamination near a transformer pad.

Additional sampling was performed in 2001 to delineate the extent of contamination at the various AOCs. The sumps at Building 732 were removed in 2003. Post-excavation sample results indicate additional soil will have to be removed adjacent to the former sumps. As part of the Building 722 demolition, the flare tunnel clean-out sump was also removed. Approximately 2.5 cy of the soil contamination on the south side of the building were removed in 2004 prior to its demolition.

The risks and hazards from exposure to Picatinny Lake surface water and sediment adjacent to the site are below the target levels of 1 by 10(-6) and 1, respectively. Based on a 2007 re-evaluation of risks using updated dermal exposure assumptions, the risks of surface soil exposure are below the target level of 1 by 10(-4) and the hazard from surface soil exposure was below 1.

The site was addressed by the ARCADIS PBA until December 2014. An FS with PICA-001 for LUCs only was approved by the USEPA in August 2009. The original PP was submitted in January 2010. The USEPA provided comments during the review process in FY10 and FY11 that indicated that they would not be satisfied with only ICs and would require ECs.

In a letter dated Nov. 27, 2012, the USEPA had technically approved the NFA with monitoring of land use PP for the 25 PTA sites within PICA-001, 006, 022, 085, 143, 163, 171, 192, and 199. In this letter the USEPA agreed with the Army position that sites with acceptable risk should be considered as an NFA as existing LUCs prevent a different land use. The Army agreed to notification and certification requirements.

This PP was a public notice issued in March 2013 and the ROD was signed by the Army and USEPA by May 2014. It is recognized that the NJDEP did not concur with the action since the ROD did not recognize the NJDEP cleanup numbers as ARARs or as cleanup goals since there were no unacceptable risks for the current and reasonably anticipated land use.

A certification of land use for the site with an inspection report was submitted in December 2014 to the regulators and approved.

**Site ID: PICA-143**

**Site Name: ORDNANCE FAC (BLDGS 717,722,732)SITE 108**

The monitoring of land use certification for 2015 was submitted in March 2016. The certification was approved by both the USEPA and NJDEP.

## **CLEANUP/EXIT STRATEGY**

The Army will conduct the required annual inspections and develop the certification report as required by the "No Further Action with Monitoring of Land Use Record of Decision." The site will also be evaluated in the five-year reviews.

**Site ID: PICA-145**

**Site Name: 500 AREA BUILDINGS SITE 110**

**STATUS**

**Regulatory Driver:** CERCLA

**RRSE:** MEDIUM

**Contaminants of Concern:** Semi-volatiles (SVOC)

**Media of Concern:** Soil

<b>Phases</b>	<b>Start</b>	<b>End</b>
PA.....	197607.....	198105
SI.....	198910.....	199103
RI/FS.....	199502.....	201906

**RIP Date:** N/A

**RC Date:** 201906

**SITE DESCRIPTION**

Future LTM costs are captured under PICA-091.

PICA-145 is part of a group of sites that are commonly referred to as the Non-Lakes Sites and will now incorporate the costs for sites PICA-155, PICA-184 and PICA-195. There are actually 12 RI Concept Plan Sites since PICA-195 has nine RI Concept Plan Sites associated with it.

The PICA-145 consists of the 500 Area buildings located southeast of Picatinny Lake. The 500 Area Buildings were characterized individually as part of the Phase II RI (Shaw, 2005a) and predominantly used for the production of propellants. Many of the buildings in the 500 Area were characterized individually as part of the Phase II RI and feasibility studies conducted at other sites. A total of 18 of the 500 Area buildings are addressed through other PICAs. Additionally, 23 of the 500 Area Buildings were decontaminated and/or demolished under the TECUP effort. Previous investigations have not been conducted at PICA-45/Site 110, per se. As mentioned above, buildings within the 500 Area have been evaluated in association with individual sites, and some have been evaluated in association with the PICA-155/Site 178 TECUP Buildings, but PICA-145/Site 110 has not been evaluated apart from these other sites until recently. ARCADIS collected surface soil samples (0-1 ft below ground surface) in 2008 from 25 percent of the 500 Area Buildings that had not previously been investigated through other sites.

Based on the risk assessments performed for this site, for current and reasonably anticipated future use (military/industrial), the carcinogenic risk is within the generally accepted risk range of 1E-06 to 1E-04; the noncarcinogenic hazard is at or less than 1; lead is not a concern; and ecological risks are expected to be minimal based on the small size and disturbed nature of the areas around the buildings.

PICA-145 is included in the Non-Lakes FS which includes PICA-145, 155, 184 and 195 which was approved by the USEPA in May 2014 after the USEPA agreed with the Army position that sites with acceptable risk should be considered as an NFA as existing LUCs prevent a different land use. USEPA approved the FS in July 2014.

Negotiations with the NJDEP continued in FY15 and FY16.

**CLEANUP/EXIT STRATEGY**

The Army will develop and public notice a PP and ROD. The most likely action is NFA with monitoring of land use.

After the ROD is completed, the Army will conduct the required annual inspections and develop the certification report as required by a "No Further Action with Monitoring of Land Use Record of Decision." The site will also be evaluated in the five-year reviews.



**Site ID: PICA-149**

**Site Name: PROPELLANT PLANT (BLDG541) SITE 149**

**STATUS**

**Regulatory Driver:** CERCLA

**RRSE:** MEDIUM

**Contaminants of Concern:** Explosives, Semi-volatiles (SVOC)

**Media of Concern:** Soil

<b>Phases</b>	<b>Start</b>	<b>End</b>
PA.....	197607.....	198105
SI.....	198910.....	199103
RI/FS.....	199502.....	201810
RD.....	201810.....	201901
RA(C).....	201812.....	201910

**RIP Date:** N/A

**RC Date:** 201910

**SITE DESCRIPTION**

PICA-149 contains all costs for PICA-97 and PICA-137. PICA-149 is part of the 3 Site Group.

Building 541 was constructed in 1943 to perform the water drying process to harden explosive powder grains. Operations ceased in the mid-1950s, and the building was used to house two Plymouth gas locomotives during the 1960s. Building 541 was demolished under TECUP in 1983.

During its use as a water drying process facility, Building 541 received shipments of explosive powder, transported by railroad from Building 533. PTA personnel reported that a vat in Building 541 ruptured, causing liquid containing propellant to leak onto the building floor and to the outside area. The solution was reported to be single-base propellant grains dissolved in solvents. The energetic compounds were nitrocellulose (NC) and/or nitroglycerine. The solvents were ether, alcohol, and/or acetone.

Phase II RI activities conducted at this site in 1996 included the installation of two monitoring wells, and the collection of soil and groundwater samples. SVOCs and 2,4-dinitrotoluene (DNT) were detected in the soil at concentrations greater than LOCs during the Phase II RI. Additional RI sampling was conducted in 2001 to complete the delineation of the soil contamination. Results of a HHRA found that the risk from exposure to surface soil at the site exceeds the target level of 1 by 10(-4). The hazard from surface soil exposure is equal to the target threshold level of 1. Risks and hazards from subsurface soil exposure are below the target levels.

In 2009, the site was included in the Five Site FS. The approval of the document was delayed until USEPA and NJDEP went through dispute resolution under the InterAgency Agreement which was resolved in December 2013. In the interest of progressing quickly to an acceptable remedy decision at sites where an unacceptable soil risk has been identified the Army agreed to address exposure to all contaminants that are above the NJNRDCSRS regardless of whether the contaminant has been designated as a risk driver or not.

The site was then included in a Three Site FS and PP both of which were submitted in spring of 2014. The PP was a public notice issued in September 2014. The preferred alternative in the PP and ROD is for a "dig and haul" with LTM. This group name is Three Site Group.

In FY15, a contract was awarded and a CLIN was funded to take the 3 Site Group to ROD which is expected to be signed in FY19. The PBA includes cost for all remedial aspects required by a signed ROD for all three sites from RD and RA phases to response complete for PICA-149, PICA-131 and PICA-097.

In FY15, an investigative work plan was approved and implemented. In FY15, an investigative work plan was approved and implemented. The purpose of the work plan was to determine a better estimate for the quantity of excavated soils for the ROD.

**Site ID: PICA-149**

**Site Name: PROPELLANT PLANT (BLDG541) SITE 149**

## **CLEANUP/EXIT STRATEGY**

The Army will develop the ROD and RD for the 3 Site Group.

The RD will be implemented, and the contaminated soils will be removed so that a true NFA will be applicable for this site.

**Site ID: PICA-155**  
**Site Name: TECUP BUILDINGS SITE 178**

**STATUS**

**Regulatory Driver:** CERCLA

**RRSE:** LOW

Contaminants of Concern: Dioxins/Dibenzofurans, Metals, Semi-volatiles (SVOC)

Media of Concern: Soil

<b>Phases</b>	<b>Start</b>	<b>End</b>
PA.....	197607.....	198105
SI.....	198910.....	199103
RI/FS.....	199502.....	201906

**RIP Date:** N/A

**RC Date:** 201906

**SITE DESCRIPTION**

Future LTM costs are covered under PICA-091 The group name is Non-Lakes.

PICA-155 consists of buildings that have been demolished under TECUP which was instituted in the 1980s to safely demolish potentially contaminated buildings. The buildings were used for a variety of purposes ranging from munitions production to inert storage. The majority of the TECUP operations were performed in the 1980s. Prior to 1981, formal records of building demolition operations were not maintained. Between 1981 and 1989, approximately 145 buildings at PTA were demolished under TECUP, after being decontaminated by fire or washing. After the decontamination process, the buildings are demolished and the area graded. In the past, buildings were sometimes demolished and buried-in-place without any preparatory decontamination measures.

During the Phase II RI, three former building areas were investigated. Soil samples were collected at Building 269, a former primer loading facility; Building 557, a former propellant plant; and Building 565, a former propellant plant. SVOCs, dioxins and lead were detected above LOCs in the soil at these former buildings. The SVOC and dioxin concentrations may be related to the use of diesel fuel and/or treated wood to burn the buildings. Additional samples were collected at all three former building areas in 2001 to delineate the existing soil contamination. HHRAs were completed for each former building. Results of the HHRAs for each former building indicate risk and hazard levels below the target levels of 1 by 10<sup>(-4)</sup> and 1, respectively. Lead was not identified as a health concern in surface or subsurface soil at any of the former buildings with the exception of subsurface soil at former Building 565. Results of the ERA suggest that there is little potential risk to terrestrial species from soil exposure at the site.

Additional soil sampling was conducted in 2008 to investigate 31 additional buildings affected by TECUP as requested by the NJDEP. Risk and hazard were calculated as acceptable per this sampling. This information was incorporated into the FS (the Non-Lakes FS) that was submitted in September 2009.

In 2012, the USEPA agreed with the Army position that sites with acceptable risk should be considered as an NFA as existing LUCs prevent a different land use. The Army agreed to notification and certification; however, because it is an NFA, no action is required to perform an RD or the implementation of LUCs.

The Non-Lakes FS which includes PICA-145, 155, 184 and 195 was submitted and approved by the USEPA in July 2014.

Negotiations with NJDEP continued in FY15 and FY16. The group name is Non-Lakes.

**CLEANUP/EXIT STRATEGY**

The Army will develop and public notice a PP and ROD. The most likely action is NFA with monitoring of land use.

After the ROD is completed, the Army will conduct the required annual inspections and develop the certification report as required by a "No Further Action with Monitoring of Land Use Record of Decision." The site will also be evaluated in the five-year reviews. The costs for those efforts are considered LTM.

**Site ID: PICA-162**

**Site Name: SHELL BURIAL AREAS NEAR SITE 5**

**STATUS**

**Regulatory Driver:** CERCLA

**RRSE:** MEDIUM

Contaminants of Concern: Metals, Semi-volatiles (SVOC), Volatiles (VOC)

Media of Concern: Groundwater, Soil

Phases	Start	End
PA.....	197607.....	198105
SI.....	198910.....	199103
RI/FS.....	199603.....	201805

**RIP Date:** N/A

**RC Date:** 201809

**SITE DESCRIPTION**

In 2003 PICA-052 was listed as RC in the AEDB-R and will be addressed under PICA-162.

The Site 5 Shell Burial Area is located northwest of Building 3150, at the intersection of Schrader Road and Gately Road. The area is in the vicinity of a crater caused by the 1926 Lake Denmark explosion. Exploded and UXO, as well as building debris from the explosion, was deposited in the crater. The 1.5-acre area, under the control of the US Naval Ammunition Depot, continued to be used as an ordnance dumping area until 1945. The area was then covered with about 20 ft of fill material, fenced, and marked with warning signs. Approximately 25 tons of debris and ordnance were deposited in both this shell burial area and the shell burial area located near Building 3100. Ordnance in the shell burial areas included: mines, depth charges, fuses, projectiles, explosives, ammunition, propellants, and possibly rocket fuels. A 1981 installation assessment addendum stated that the shell burial areas also contained acids, pickling liquors, cyanide, phenol, and metals.

Dames and Moore performed an SI in 1989 to investigate groundwater VOC contamination which was detected in one well installed and sampled in 1981 at Site 5A; an analysis of the groundwater for VOCs, explosives, metals, and components of solid propellants was included as part of the SI. Compounds were not detected at levels greater than LOCs during the 1989 SI. RI activities were conducted from 1998 to 2001, including the installation and sampling of groundwater monitoring wells. Groundwater, surface soil, and subsurface soil samples were analyzed for VOCs, SVOCs, explosives, metals, cyanide, and anions. Three rounds of groundwater sampling have been conducted to date at Site 5, as part of the Phase III-1A RI. Cyanide and VOCs were detected at concentrations exceeding the LOC in groundwater, during the first round of sampling. One VOC was present in excess of LOCs during the two subsequent rounds of groundwater sampling. Results of the HHRA indicated the risk and hazards from exposure, at the site, are below the target levels of 1 by 10<sup>(-4)</sup> and 1, respectively. A BERA was performed for this site in spring and summer 2005. Although the food web models indicated that adverse effects on reproduction in small mammals or birds could occur given sufficient exposure to site COPECs in northeastern Area L, the field investigations and RSA results indicated that effects, if any, were not impacting the local populations of small mammals or birds.

Groundwater contamination is currently being monitored under the Mid-Valley (PICA-204) ROD.

The site was included in FS submitted in October 2009, for PICA 11 LUC group of sites, 45 Site FS, (PICA-11, 50, 75, 91, 97, 108, 122, 134, 135, 136, 162, 175, 200, 209). The approval of the FS was held up until the issue with USEPA on ARARs was resolved. In a letter dated Nov. 27, 2012, the USEPA had technically approved the NFA with monitoring of land use PP for the 25 Site FS within PICA-001, 006, 022, 085, 143, 146, 163, 171, 192, and 199. In this letter the USEPA agreed with the Army position that sites with acceptable risk should be considered as an NFA as existing LUCs prevent a different land use. The Army agreed to notification and certification reporting requirements.

As a result of the agreement, the 48 Site FS which included PICA-162 submitted by the Army was approved by USEPA in July 2014 although NJDEP did not concur.

The Army with regulator concurrence decided in 2014 that the two IRP shell burial areas PICA-162 and PICA-052 will be addressed with the MMRP site PICA-010-R-01 (Shell Burial Grounds) since they are the exact same geographic site. Hence, PICA-162's phase schedule will replicate that of PICA-010-R-01 and funding for the PICA-162 will be under PICA-010-R- 01.

**Site ID: PICA-162**  
**Site Name: SHELL BURIAL AREAS NEAR SITE 5**

## **CLEANUP/EXIT STRATEGY**

The Army will include PICA-162 with PICA-010-R-01 in an FS. The Army will develop and public notice a PP and develop a ROD for signature.

**Site ID: PICA-163**

**Site Name: Propellant/Rocket Prod 1300/1400 Area**

## STATUS

**Regulatory Driver:** CERCLA

**RRSE:** HIGH

Contaminants of Concern: Metals, Polychlorinated Biphenyls (PCB), Polycyclic Aromatic Hydrocarbons (PAH)

Media of Concern: Groundwater, Soil

Phases	Start	End
PA.....	197607.....	198105
SI.....	198910.....	199103
RI/FS.....	199606.....	201405
LTM.....	201406.....	204609

**RIP Date:** N/A

**RC Date:** 201405

## SITE DESCRIPTION

The LTM costs for PICA-163 are covered under the LTM costs for PICA-206.

PICA-163's LTM costs are required by the NFA with monitoring of land use ROD. The group name is 25 Site Group.

In 2003, PICA-021, PICA-168, PICA-169, PICA-172, and PICA-174 were listed as RC in the AEDB-R and will be addressed under PICA-163.

The original site which consisted of Building 1301, constructed in 1945 and demolished in 2005, consisted of eight separate RI activities which were conducted from 1998 to 2000. Included as parts of the RI were a soil gas survey and VOC, PAH, PCB, explosives, and metals analyses of surface soil, subsurface soil, surface water, sediment, and groundwater. Lead was detected at concentrations in excess of LOC in paint chip samples and numerous soil samples collected in the vicinity of the catch basin discharges, in the woods west of Building 1301. Results of the HHRA indicated the risks and hazards at the site are below the target risks. A BERA was conducted in spring and summer 2005. Although the food web models indicated that adverse effects on reproduction in small mammals or birds could occur given sufficient exposure to site contaminants of potential ecological concern (COPEC) in southern Area L, the field investigations and rodent sperm analysis (RSA) results indicated that effects, if any, were not impacting the local populations of small mammals or birds. All lead-lined troughs and catch basins were removed in 2002 and lead-contaminated soil (62 cy) directly adjacent to Building 1301 was removed as part of the facility-wide sump and dry well investigation. Metals-contaminated soil remains in the vicinity of the catch basin discharges in the woods west of Building 1301.

The site is addressed by the ARCADIS PBA. An FS including this site was approved in September 2009. A PP was submitted in January 2010.

An FS was approved by the USEPA in August 2009. The original PP was submitted in January 2010. The USEPA provided comments during the review process in FY10 and FY11 that indicated that they would not be satisfied with only ICs and would require ECs.

The USEPA requested and Army submitted the "25 Site Table" that provided summaries of the sites so the USEPA and the NJDEP could determine if the LUCs proposed for the sites comply with the USEPA policy.

In a letter dated Nov. 27, 2012, the USEPA had technically approved the NFA with monitoring of land use PP for the 25 PTA sites within PICA-001, 006, 022, 085, 143, 146, 163, 171, 192, and 199. In this letter the USEPA agrees with the Army position that sites with acceptable risk should be considered as an NFA as existing LUCs prevent a different land use. The Army agreed to notification and certification requirements.

## CLEANUP/EXIT STRATEGY

The Army will conduct the required annual inspection and develop the certification report as required by the "No Further Action

**Site ID: PICA-163**  
**Site Name: Propellant/Rocket Prod 1300/1400 Area**

with Monitoring of Land Use Record of Decision." The site will also be evaluated in the five-year reviews.

Site Name: RESERVOIR NEAR BLDG 3159 SITE 103

STATUS

Regulatory Driver: CERCLA
RRSE: MEDIUM
Contaminants of Concern: Metals, Volatiles (VOC)
Media of Concern: Sediment, Soil

Table with 3 columns: Phases, Start, End. Rows include PA, SI, RI/FS, RIP Date, and RC Date.

SITE DESCRIPTION

Future LTM costs are covered under PICA-091.

The 16,000,000-gallon reservoir (EOD) pond, located near Building 3159, was constructed sometime between 1951 and 1953. Prior to its construction, the reservoir was an undeveloped marsh area.

Buildings 3137, 3155, 3157, and 3159, along with several foundations remaining from the 1926 Lake Denmark explosion, surround the reservoir. No spills have been documented from the four surrounding buildings into the reservoir.

A USAEHA investigation was conducted at the reservoir in 1984, and at nearby Building 3157 in 1988. Elevated levels of chromium and copper were detected in sediment from the reservoir, and mirex was detected in one surface soil sample collected near Building 3157.

An original FS with this site and Lake Picatinny and Lake Denmark was submitted in October 2009. An "NFA FS" version of the FS had been approved by the regulators in 2012; the approval was later rejected because of the issues with the Lake Picatinny portion of the FS.

USEPA and NJDEP agreed in October 2015 that the 2012 FS related to this site is approvable. With this approval the ROD will be for NFA with monitoring of land use.

CLEANUP/EXIT STRATEGY

The Army will finalize the FS, develop then public notice the PP, and finalize a ROD for this site. The expected remedy for this site is NFA with monitoring of land use. The site will be evaluated in the five-year reviews.



**Site ID: PICA-171**

**Site Name: ORDNANCE BLDG/EXPLOSIVES PROD.**

## STATUS

**Regulatory Driver:** CERCLA

**RRSE:** HIGH

Contaminants of Concern: Metals, Polychlorinated Biphenyls (PCB), Polycyclic Aromatic Hydrocarbons (PAH)

Media of Concern: Soil

Phases	Start	End
PA.....	197607.....	198105
SI.....	198910.....	199103
RI/FS.....	199606.....	201405
LTM.....	201406.....	204609

**RIP Date:** N/A

**RC Date:** 201405

## SITE DESCRIPTION

The LTM costs for PICA-171 are covered under the LTM costs for PICA-206.

This site is being addressed in the 25 Site NFA with monitoring of land use ROD.

In 2003, PICA-173 was listed as RC in the AEDB-R and was addressed under PICA-171.

Site 171 consists of Buildings 3106, 3109 and 3111. All three buildings were used as magazines while under naval ownership. Currently, the buildings are used for physical and environmental testing of ordnance items.

Building 3106 was used to store magnesium powder, oxidizers, explosives, and rocket fuels. In 1964 and 1965, Building 3106 was modified for use as an environmental test facility and is still used to evaluate packaging materials etc. Three dry wells are located on the north side of Building 3106. A drop tower (Building 3145) is located northeast of the building. Two dry wells were associated with Building 3109, which only received steam condensate. The Navy constructed Building 3111 in 1943 for use as a smokeless powder storage building. In the 1960s, the building was converted as an air gun facility.

A TPH-contaminated soil removal was conducted in the early-1990s, in an area of an old oil vapor containment drum, at Building 3111.

A PA/SI was conducted in 1996. Metals and PAHs were detected in soil at concentrations exceeding the LOC. Based upon results of the PA/SI, PICA-171 was included as part of the Phase III 2A/3A RI. RI activities included the analysis of surface soil, subsurface soil, and groundwater for VOCs, SVOCs, explosives, PCBs, metals, and perchlorate. Metals, PCBs and PAHs were detected at concentrations greater than LOC in surface soil. Results of an HHRA indicate the risks and hazards from soil exposure are below the target levels of 1 by 10(-4) and 1, respectively; however, lead in the soil is a potential concern. The BERA performed in 2005 concluded that although the food web models indicated that adverse effects on reproduction in small mammals or birds could occur given sufficient exposures to site COPECs in northeastern Area L, the field investigations and RSA results indicated that effects, if any, were not impacting the local populations of small mammals or birds.

Groundwater contamination is being addressed on an area-wide basis as part of the Mid-Valley ROD.

Approximately 180 cy of metals-contaminated soil were removed in 2004. Post-excavation data indicate that elevated lead levels were eliminated.

In 2003, PICA-173 was listed as RC in the AEDB-R and will be addressed under PICA-171.

An FS with this site was originally submitted in September 2009 but its approval was delayed until the ARAR issue was resolved with the USEPA.

The USEPA requested and Army submitted the "25 Site Table" that provided summaries of the sites so the USEPA and the

**Site ID: PICA-171**

**Site Name: ORDNANCE BLDG/EXPLOSIVES PROD.**

NJDEP could determine if the LUCs proposed for the sites comply with the USEPA policy.

The USEPA had technically approved the NFA with monitoring of land use PP for 25 PTA sites within PICA-001, 006, 022, 085, 143, 146, 163, 171, 192, and 199 in a letter dated Nov. 27, 2012. In this letter USEPA agrees with the Army position that sites with acceptable risk should be considered as NFA as existing LUCs prevent a different land use. The Army has agreed to notification and certification requirements.

This PP was publicly advertised in March of 2013 and the ROD signed by USEPA and Army in June. It is recognized that the NJDEP did not concur with the action since it does not recognize the NJDEP cleanup numbers as ARARs.

The group name is 25 Site Group.

A certification of land use for the site with an inspection report was submitted in December 2014 to the regulators and approved.

A certification of land use was submitted in 2016.

## **CLEANUP/EXIT STRATEGY**

The Army will conduct the required annual inspection and develop the certification report as required by the "No Further Action with Monitoring of Land Use Record of Decision." The site will also be evaluated in the five-year reviews.

**Site ID: PICA-175**

**Site Name: ORDNANCE BLDGS in 600-AREA**

**STATUS**

**Regulatory Driver:** CERCLA

**RRSE:** MEDIUM

Contaminants of Concern: Explosives, Metals

Media of Concern: Soil

<b>Phases</b>	<b>Start</b>	<b>End</b>
PA.....	197607.....	198105
SI.....	198910.....	199103
RI/FS.....	199606.....	201906

**RIP Date:** N/A

**RC Date:** 201906

**SITE DESCRIPTION**

Future LTM costs for PICA-175 are captured under PICA-091.

PICA-175 also represents all actions and costs for PICA-133, 178, 179 and 180, Sites 115, 151, 152, 153 and 154. The LTM costs for PICA-175 are further consolidated into PICA-091.

Building 611, constructed in 1965, has been used for the testing of small munitions since its construction. Analytical results indicate the groundwater has not been impacted by the former testing operations at the site. Results of an HHRA indicate the risks and hazards from soil exposure at the site are below the target levels of 1 by 10<sup>(-4)</sup>. Although several contaminants had been identified that could pose a risk to wildlife at the site if there was significant opportunity for exposure, the size of the affected area, the poor habitat and its location suggest that any further ecological investigations beyond the SLERA were not warranted.

The site was included in an FS submitted in October 2009, for PICA 11 LUC group of sites, 45 Site FS, (PICA-11, 50, 75, 91, 97, 108, 122, 134, 135, 136, 162, 175, 200, 209). The approval of the FS was held up until the issue with USEPA on ARARs was resolved.

In a letter dated Nov. 27, 2012, the USEPA had technically approved the NFA with monitoring of land use PP for the 25 Site FS within PICA-001, 006, 022, 085, 143, 146, 163, 171, 192, and 199. In this letter the USEPA agreed with the Army position that sites with acceptable risk should be considered as an NFA as existing LUCs prevent a different land use. The Army agreed to notification and certification requirements. Based on this agreement with USEPA, the Army submitted the Final 48 Site FS in June 2014. The FS was approved by USEPA in July 2014 although NJDEP did not concur.

A draft "No Further Action with Monitoring of Land Use Proposed Plan for Areas D, H, J, K, M, and P Sites, including PICAs 008, 011, 013, 050, 071, 091, and 175" was submitted in September 2014.

The Army received comments from the NJDEP on the draft proposed plans in FY15. A new contract was awarded in FY15 to achieve a ROD. The contractor and Army met in FY16 with NJDEP and USEPA to resolve the issues and developed sampling plans as necessary. the site is still considered an NFA with monitoring of land use.

The group name is 45 Site Group B.

**CLEANUP/EXIT STRATEGY**

The Army will finalize and public notice the PP, and an NFA with monitoring of land use ROD is expected to be signed by FY19.

After the ROD is completed, the Army will conduct the required annual inspections and develop the certification report as required by the "No Further Action with Monitoring of Land Use Record of Decision." The site will also be evaluated in the five-year reviews.

**Site ID: PICA-184**

**Site Name: BUILDINGS(1600,1601,1609,1610) SITE 94**

## STATUS

**Regulatory Driver:** CERCLA

**RRSE:** MEDIUM

**Contaminants of Concern:** Metals

**Media of Concern:** Soil

Phases	Start	End
PA.....	197607.....	198105
SI.....	198910.....	199103
RI/FS.....	199606.....	201906

**RIP Date:** N/A

**RC Date:** 201906

## SITE DESCRIPTION

PICA-184 future LTM costs are addressed by PICA-091

PICA-184 or Site 94 consists of Buildings 1609 North, 1909 South, 1610 and former Buildings 1600, 1601, and 1604. Buildings 1601 and 1604 were demolished in 2001. Building 1600 was used for explosives testing since its construction in 1949 as a test chamber until it was demolished in 2005. Until 2001, it was being used for physical testing of high explosives. Building 1601 was once used for explosives testing, but since the 1970s it was used as a photographic laboratory. There was a small pit/sump that was about 2 by 2 by 2 ft at the northeast corner of the building.

Building 1604 was built in 1942 as a flare and pyrotechnics assembly plant and was listed as an ordnance facility in 1977; however, an extension to the north in 1949 added a plating facility. The building was inactive except for several rooms that in recent years have been used for storage. Building 1609 South was constructed in 1942 as a machine shop, while Building 1609 North was constructed in 1951 as a physics laboratory. From 1962 until the present, Building 1609 has been used as a powder metallurgy laboratory. The installation personnel also indicated that from approximately 1970 to the mid-1980s, Building 1609 made tungsten cubes for use in the warhead of the Patriot missile. Building 1610 was constructed in 1942 as a change house and office building for workers in the 1600 Area. Change house operations were discontinued at the building around 1973. The entire building has been used as an office building for various government and private agencies.

A PA/SI was conducted in 1996. Metals were detected in soil at concentrations greater than the LOC. A soil gas survey, as well as surface soil, subsurface soil, surface water, sediment, and groundwater sampling for VOCs, explosives, and metals was conducted from 1998 to 1999. Metals were detected in soil at concentrations greater than LOC. About 25 cy of metals-contaminated soil were removed from the area of the former sand basin on the south side of Building 1601. HHRA results indicate risks and hazard are within the target levels. A SLERA was conducted in 2004 and a determination was made that no further ERA is warranted due to the small size of the affected area, its location far from other contaminated sites, and the removal of metals-contaminated soil in select areas.

PICA 184 was included with the Non-Lakes FS which includes PICA-145, 155, 184 and 195 and was approved by the USEPA in July 2014 after the USEPA agreed with the Army position that sites with acceptable risk should be considered NFA as existing LUCs prevent a different land use. The Army agreed to notification and certification requirements.

Negotiations with NJDEP continued in FY15 and FY16.

The group name is Non-Lakes.

## CLEANUP/EXIT STRATEGY

The Army will develop and public notice a PP and ROD. The most likely action is NFA with monitoring of land use.

After the ROD, the Army will conduct the required annual inspection and develop the certification report as required by a "No

**Site ID: PICA-184**  
**Site Name: BUILDINGS(1600,1601,1609,1610) SITE 94**

Further Action with Monitoring of Land Use Record of Decision." The site will also be evaluated in the five-year reviews.

Site Name: APPLE TREES RECREATIONAL AREA

STATUS

Regulatory Driver: CERCLA
RRSE: HIGH
Contaminants of Concern: Metals, Pesticides
Media of Concern: Soil

Table with 3 columns: Phases, Start, End. Rows include PA, SI, RI/FS, LTM with corresponding dates. Includes RIP Date: N/A and RC Date: 201405.

SITE DESCRIPTION

The LTM costs for PICA-192 are covered under the LTM costs for PICA-206.

This site is included in the 25-Site NFA with monitoring of land use ROD.

This site is an apple orchard and recreational area. In 1992, the USAEHA performed a health risk assessment study at the site. As part of the study, surface soil samples were collected from the orchard and analyzed for VOCs, SVOCs, and metals. Arsenic was the only compound that exceeded its LOC. The source of the arsenic is believed to be the application of arsenic-based pesticides to control insect predation on the apples. The USAEHA concluded that arsenic concentrations in surface soil, at the apple orchard, posed a human health risk.

In 2000, an extensive soil sampling program was conducted to determine the extent of arsenic contamination at the orchard. The sampling determined that the arsenic contamination was widespread throughout the orchard; however, the contamination appeared to be limited to the top 1 to 2 ft of soil because subsurface soils did not contain elevated levels of arsenic.

In spring 2004, this site was reclassified by the Army from an apple orchard to a recreational area. In response to regulatory comments on the RI report and the reclassification of the site, additional sampling was conducted in the summer of 2004. Six surface soil samples were collected and analyzed for pesticides and lead. Organochlorine pesticides were detected in all six samples, but only the samples collected adjacent to the apple trees had LOC exceedances.

Based on the current use of the site as a recreational area, an HHRA was conducted for worker and residential recreational exposures. Results from the recreational HHRA indicate risks and hazards are below the target levels.

In a letter dated Nov. 27, 2012, the USEPA had technically approved the NFA with monitoring of land use PP for the 25 PTA sites within PICA-001, 006, 022, 085, 143, 146, 163, 171, 192, and 199. In this letter the USEPA agrees with the Army position that sites with acceptable risk should be considered NFA as existing LUCs prevent a different land use. The Army agreed to notification and certification.

This PP was a public notice issued in March 2013 and the ROD was signed by the Army and USEPA by May of 2014. It is recognized that the NJDEP did not concur on the action since the ROD did not recognize the NJDEP cleanup numbers as ARARs or as cleanup goals.

A certification of land use for the site with an inspection report was submitted in December 2014 to the regulators and approved.

The PP recommended NFA with monitoring of land use. The PP was publicly advertised in March 2013 and the ROD signed by USEPA and Army in May 2014. It is recognized that the NJDEP does not concur on the action since it does not recognize the NJDEP cleanup numbers as ARARs because there is no unacceptable risk under the current and reasonably anticipated future land use. The group name is 25 Site Group.

An FS was approved by the USEPA in August 2009. This PP was a public notice issued in March 2013 and the ROD was signed

**Site ID: PICA-192**

**Site Name: APPLE TREES RECREATIONAL AREA**

by the Army and USEPA by May 2014. It is recognized that the NJDEP did not concur on the action since the ROD did not recognize the NJDEP cleanup numbers as ARARs or as cleanup goals since there were no unacceptable risks to the current and reasonably anticipated future land uses.

The monitoring of land use certification was submitted in December 2014. The certification was approved by both the USEPA and NJDEP.

The monitoring of land use certification for 2015 was submitted in March 2016. The certification is expected to be approved by both the USEPA and NJDEP.

**CLEANUP/EXIT STRATEGY**

The Army will conduct the required annual inspection and develop the certification report as required by the "No Further Action with Monitoring of Land Use Record of Decision." The site will also be evaluated in the five-year reviews.

Site Name: GREEN POND AND BEAR SWAMP BROOK SITE 190

STATUS

Regulatory Driver: CERCLA

RRSE: HIGH

Contaminants of Concern: Metals, Pesticides, Polychlorinated Biphenyls (PCB), Polycyclic Aromatic Hydrocarbons (PAH), Semi-volatiles (SVOC)

Media of Concern: Sediment, Surface Water

Phases	Start	End
PA.....	197607.....	198105
SI.....	198910.....	199103
RI/FS.....	199309.....	200507
RD.....	200108.....	200702
IRA.....	200308.....	200410
RA(C).....	200604.....	200709
LTM.....	200710.....	204609

RIP Date: N/A

RC Date: 200709

SITE DESCRIPTION

The GPB Study area begins at the outfall of Picatinny Lake and extends to the southern installation boundary. The BSB area begins on Green Pond Mountain and extends until BSB's confluence with GPB. These two brooks are the main drainages for the watershed on the southern portion of Picatinny. These two brooks flow past several industrial areas that previously had waste discharges to surface water.

There have been numerous investigations of GPB/BSB since 1983. Investigations were carried out by the USGS (1988, 1990, and 1991), Metcalf and Eddy (1991), the USAEHA (1991), and Dames and Moore (1989). These investigations cumulatively collected over 100 surface water and sediment samples. The site underwent an RI in 1994 and 34 additional surface water/sediment samples were collected and analyzed for VOCs, BNAs, metals, cyanide, explosives, pesticides, PCBs, and TPH. A subset of these samples was analyzed for dioxins and radionuclides. The HHRA calculated a risk of 8 by 10(-6) for trespasser swimmers (PCBs and dioxins/furans), 2 by 10(-4) for fish consumers (arsenic and PCBs). The ERA determined that there did not appear to be any grossly evident contaminant related impacts, but the contaminant food chain model suggested a potential for impacts.

In 1999, an FS data gap investigation took place and an additional 13 surface water/sediment samples and 42 sediment samples were collected and analyzed for VOCs, SVOCs, pesticides, PCBs, explosives, metals, anions, and radiologicals with a smaller number of samples analyzed for dioxins. There were exceedances of VOCs, SVOCs, pesticides, PCBs, explosives, anions, and metals criteria in surface water, and VOCs, SVOCs, pesticides, PCBs, and metals criteria in sediment. Potential effect levels were calculated and based upon the number and severity of the effect level exceedances AOCs were identified and an FS was performed. The AOCs in three regions are: Region 2 - Site 52, 95, and 96 impacted with SVOCs, PCBs, and pesticides; Site 101 with copper; Region 3 - Area H containing mercury and pesticides and Area D basins containing metals, SVOCs, pesticides and PCBs; Region 4 - containing copper. The FS recommended chemical and biological monitoring for Regions 2 and 4, and excavation and off-site disposal for Region 3. The FS is final. A PP public meeting occurred in December 2003. The ROD was signed in July 2005. An RD was submitted to the regulators in April 2006 and approved in March 2007. In September 2007, 900 tons of imported sediment was removed from an oil/water separator and 13 tons of impacted sediments were excavated near RI site 34 in Region 3. The chemical and biological monitoring required by the ROD was implemented in 2007 and is ongoing. Data reports and LUC certifications have been submitted annually since 2007. The site is in the LTM phase.

PICA-194 was administratively closed and all actions are now captured under PICA-193. Costs are captured under PICA-206.

The group name is Green Pond and BSB.

The annual report for GPB and BSB was submitted in November 2014 and approved by the NJDEP.



**Site ID: PICA-193**

**Site Name: GREEN POND AND BEAR SWAMP BROOK SITE 190**

## **CLEANUP/EXIT STRATEGY**

The LUCs and surface water and sediment monitoring will continue in accordance with the approved RD plan and Army guidance. The site will be evaluated in the five-year reviews.

## Site ID: PICA-195

### Site Name: BLDGS IN 1400/1300/3100/1000 AREAS

#### STATUS

Regulatory Driver: CERCLA

RRSE: LOW

Contaminants of Concern: Volatiles (VOC)

Media of Concern: Groundwater, Soil

Phases	Start	End
PA.....	197607.....	198105
SI.....	198910.....	199103
RI/FS.....	199606.....	201906

RIP Date: N/A

RC Date: 201906

#### SITE DESCRIPTION

Future LTM costs for PICA-195 are covered by PICA-091.

In 2003 the following eight AEDB-R sites (PICA-037, 080, 081, 082, 164, 166, -167, and 170) were administratively closed (listed as RC in AEDB-R). All actions and costs at these sites have been addressed under PICA-195 and now PICA-145. All sites are part of the group called Non-Lakes.

The original PICA-195 or Site 77 consisted of Building 3150, which was constructed in 1942 as a storage building. Currently it houses a precision machine shop (85,592 square ft) and a gymnasium (8,285 square ft).

A document review was completed for this site to investigate the potential for impact to groundwater and it indicated the following materials were handled in the building: lubricating oils, metal cuttings and degreasers. This site is adjacent to Site 5 (Shell Burial Area).

In 2003 the following eight AEDB-R sites (PICA-037, 080, 081, 082, 164, 166, 167, and 170) were administratively closed (listed as RC in AEDB-R). All actions and costs at these sites will be addressed under PICA-195.

The nine PICA-195 sites are included in the Non-Lakes FS which includes PICA-145, 155, 184 and 195 and was approved by the USEPA in July 2014 after USEPA agreed with the Army position that sites with acceptable risk should be considered NFA as existing LUCs prevent a different land use. The Army agreed to notification and certification requirements. NJDEP did not concur since it does not recognize the NJDEP cleanup numbers as ARARs (there are no unacceptable risks under the current and reasonably anticipated land use).

Negotiations with NJDEP continued in FY15 and FY16.

Group name is Non-Lakes.

#### CLEANUP/EXIT STRATEGY

The Army will develop and public notice a PP and ROD. The most likely action is NFA with monitoring of land use.

After the ROD, the Army will conduct the required annual inspection and develop the certification report as required by a "No Further Action with Monitoring of Land Use Record of Decision." The site will also be evaluated in the five-year reviews.

Site Name: FORMER PISTOL RANGE DUMP&NAVY MANURE PIT

STATUS

Regulatory Driver: CERCLA

RRSE: HIGH

Contaminants of Concern: Metals, Pesticides, Polycyclic Aromatic Hydrocarbons (PAH)

Media of Concern: Soil

Phases	Start	End
PA.....	199312.....	199404
SI.....	199408.....	199509
RI/FS.....	199703.....	201405
LTM.....	201406.....	204609

RIP Date: N/A

RC Date: 201405

SITE DESCRIPTION

All future LTM costs are addressed under PICA-206.

PICA-199 (Site 199) is included in the 25-Site NFA with monitoring of land use ROD.

Site 199 consists of an abandoned pistol range and a former dumping area. The pistol range was active from approximately 1936 to 1980. This range was approved for pistol, shot gun, and tear gas rounds. The former range is presently in poor condition.

The area to the north of the pistol range was used as a dumping area. The former dumping area is about one acre and contains construction and demolition debris and domestic trash (i.e., crushed metal drums, car parts, glass, ceramics, terra cotta pipe, shingles, coal, construction buckets, soda cans, and solidified paint wastes). No information is available regarding the dates in which wastes were placed at the former dumping area; however, the type of trash present at the former dumping area suggests that the site was active from the 1920s to the mid-1930s, with sporadic activity as late as 1970. A 1940 naval ammunition depot map indicated that a manure pit occupied the southeastern half of Site 199.

As part of the US Army Center for Health Promotion and Preventive Medicine (USACHPPM) relative risk site evaluation (RRSE), antimony and lead were detected at concentrations greater than their respective LOCs. In order to further characterize the site, soil and groundwater samples were collected at the site in 2000. Elevated lead levels were reported in soil samples collected from the pistol range portion of the site. Elevated levels of arsenic, zinc, and PAHs were detected in the soil samples collected from the former dumping area in association with buried debris. The HHRA indicates that the risk from exposure to impacted site media is above the target risk levels, but below the target hazard level. Lead was also determined to be a health concern at the site. A reevaluation performed in 2007 found the risk to be within the USEPA target of 1 by 10(-4) to 1 by 10(-6) and non-carcinogenic hazards below 1 for the current and reasonably anticipated future use. The adult lead blood model was also updated to reflect current guidance and determined that lead is not a health concern at this site.

The FS was approved in August 2009 by the USEPA. This PP recommended NFA with monitoring of land use. It was an issued public notice in March 2013 and the ROD was signed by the Army and USEPA in May 2014. It is recognized that the NJDEP did not concur with the action since the ROD did not recognize the NJDEP cleanup numbers as ARARs or as cleanup goals because there were no unacceptable risks at the site under the current or reasonably anticipated land use. The site is in the LTM phase.

A certification of land use for the site with an inspection report was submitted in December 2014 to the regulators and approved.

The monitoring of land use certification was submitted in December 2014. The certification was approved by both the USEPA and NJDEP.

The monitoring of land use certification for 2015 was submitted in March 2016. The certification is expected to be approved by both the USEPA and NJDEP.

**Site ID: PICA-199**

**Site Name: FORMER PISTOL RANGE DUMP&NAVY MANURE PIT**

## **CLEANUP/EXIT STRATEGY**

The Army will conduct the required annual inspection and develop the certification report as required by the "No Further Action with Monitoring of Land Use Record of Decision." The site will also be evaluated in the five-year reviews.

**Site ID: PICA-200**  
**Site Name: AREA (L) OTHER BUILDINGS**

**STATUS**

**Regulatory Driver:** CERCLA

**RRSE:** MEDIUM

Contaminants of Concern: Explosives, Metals, Polycyclic Aromatic Hydrocarbons (PAH), Volatiles (VOC)

Media of Concern: Groundwater, Sediment, Soil, Surface Water

Phases	Start	End
PA.....	199312.....	199404
SI.....	199408.....	199504
RI/FS.....	199512.....	201906

**RIP Date:** N/A

**RC Date:** 201906

**SITE DESCRIPTION**

LTM costs for PICA-200 are covered by PICA-091.

The PICA 200 site representing 13 buildings in Area L are included in PICA-200. The 7,500-gallon UST, formerly located at Building 1037, was sampled in 1988 and removed in 1990. Post-excavation soils analysis for TPH indicated all concentrations were below LOC. An internal tank investigation was performed in 1993 at Buildings 1030 and 1038. Building 1038 tanks were sampled and analyzed for toluene and toxicity characteristics leaching procedure metals. Detections were not above LOC. The tanks at Building 1030 were empty so samples were not collected.

The PICA-200 buildings were included as part of the 1996 PA/SI for VOCs, SVOCs, pesticides/PCBs, explosives, metals, and anions analysis in soil. Metals were detected above LOC at Buildings 1030, 1414, 1415, and 1437. PAHs were detected at concentrations greater than LOC at Building 1414-A. Based upon results of the PA/SI, Buildings 1030, 1037, 1038, 1090, 1414, 1414-A, 1415, and 1437 were included as part of the Phase III 2A/3A RI. Field activities performed in 2000 and 2001 identified metals exceedances in soil at Building 1030 and elevated levels of NC in the soil at Building 1415. The extent of this contamination had been delineated.

In 2004, the stainless steel catch tank at Building 1437 was removed from the building and disposed of off-site as scrap metal. Groundwater at this site is addressed under the Mid-Valley ROD. HHRAs were completed for the individual buildings and risk and hazards were below the target levels at all buildings. A SLERA concluded that no further ecological investigation is warranted for this site. A BERA was performed for former Building 1030 in 2005 and it included a benthic macroinvertebrate survey of Robinson Run. The results suggested that the benthic community of Robinson Run was not at significant risk from the potential presence of contaminants from Area L sites.

The site was included in an FS submitted in October 2009; the approval of the FS was held up until the issue with USEPA on ARARs was resolved. The FS was finally approved by USEPA in July 2014, although NJDEP did not concur. A draft "No Further Action with Monitoring of Land Use Proposed Plan for Areas F, G, I, and L Sites, including PICAs 075, 108, 122, 134, 135, 136, 147, 200, and 209" was submitted in September 2014.

The Army received comments from the NJDEP on the draft PPs in FY15. A new contract was awarded in FY15 to achieve a ROD. The contractor and Army met in FY16 with NJDEP and USEPA to resolve the issues and developed sampling plans as necessary. The site is still considered an NFA with monitoring of land use.

The group name for this site is 45 Site Group A.

**CLEANUP/EXIT STRATEGY**

The Army will finalize and public notice the PP, and an NFA with monitoring of land use ROD is expected to be signed by FY19.

**Site ID: PICA-200**  
**Site Name: AREA (L) OTHER BUILDINGS**

After the ROD, the Army will conduct the required annual inspection and develop the certification report as required by the "No Further Action with Monitoring of Land Use Record of Decision." The site will also be evaluated in the five-year reviews.

Site Name: MID-VALLEY GROUNDWATER

STATUS

Regulatory Driver: CERCLA

RRSE: HIGH

Contaminants of Concern: Explosives, Metals, Volatiles (VOC)

Media of Concern: Groundwater

Phases	Start	End
PA.....	199309.....	199604
SI.....	199608.....	199806
RI/FS.....	199809.....	201209
RD.....	201210.....	201212
RA(C).....	201212.....	201302
RA(O).....	201303.....	204802

RIP Date: 201303

RC Date: 204802

SITE DESCRIPTION

The Mid-Valley region at PTA consists of study Areas F, G, H, and the northwestern part of Area L. A Phase I RI was completed in 1998 for Areas F and G at PTA. During that investigation, several COCs were identified in the groundwater at sites within the F and G study areas. These COCs included TCE, PCE, RDX, and metals. Calculations for the hypothetical future use of groundwater by future residents and workers exceeded the carcinogenic risk criteria of 1 by 10(-06), and the non-carcinogenic hazard criteria of one. The Phase I RI concluded that these COCs might have upgradient sources in Areas H (to the west) and L (to the east), which are impacting the groundwater in Areas F and G. Subsequent investigations have focused on the Area H and L study sites (Phase II and Phase III RIs, respectively); and on further characterizing the extent of contamination at the Area F and G study sites (Phase I Additional RI and Areas F and G groundwater investigation). During the Phase II and Phase III RIs, TCE, PCE, RDX, and metals were detected at concentrations greater than LOC in groundwater in Areas H and L.

A groundwater RI was started in late 2001 to delineate the plumes. A data gap investigation was started in 2003 and completed in 2004. The TCE plume is long and narrow and has moderate TCE exceedance conditions [TCE about 100 ug/L]. The TCE plume is over 5,000 ft long. The RDX plume covers a smaller area and has concentrations of about 80 ug/L.

Although an FS was approved in 2009; additional investigation revealed higher levels of TCE contamination near Building 3109. Over 10 additional wells were installed in the vicinity of Building 3109.

The PP was an issued public notice and the ROD signed in FY13. The action is for enhanced bioremediation for the TCE plume and MNA for the polishing of the TCE plume and MNA for the RDX plume. There is also a small soils removal to ensure the RDX-contaminated soils do not add to the RDX plume.

The RD was approved in FY13 and the system is enhanced bioremediation and is expected to be operational in FY13.

The groundwater monitoring system also includes the monitoring of the two shell burial sites (PICA-052 and -162) and the groundwater beneath the former DRMO (PICA-072) which are all located in the Mid-Valley Area.

The FS addendum was submitted and approved by the regulators in calendar year 2012.

The PP was an issued public notice and the signing of the ROD occurred in September 2012. The RD was approved in January 2013.

The ROD includes enhanced bioremediation, MNA and LUC. The RD was approved and implemented. Annual reports are submitted and approved since the interim remedial action report (IRAR) was approved.

The 2014 annual report was submitted in November 2014 and submitted to the regulators and has been approved by the NJDEP. The 2015 annual report was submitted in April 2016. Annual monitoring continues.

**Site ID: PICA-204**

**Site Name: MID-VALLEY GROUNDWATER**

## **CLEANUP/EXIT STRATEGY**

The LUCs and RA(O) (MNA and enhanced remediation) and the required monitoring of the Shell Burial Areas, the DRMO Yard, and Drinking Water Well will continue in FY17 and beyond in accordance with the approved RD plan and approved guidance. The site will also be evaluated in the five-year reviews.

Another round of injection of emulsified oil as enhanced bioremediation is expected .



**STATUS**

Regulatory Driver: CERCLA

RRSE: HIGH

Contaminants of Concern: Metals, Volatiles (VOC)

Media of Concern: Groundwater

Phases	Start	End
PA.....	199309.....	199604
RI/FS.....	199608.....	200904
RD.....	200604.....	200904
RA(C).....	200604.....	200904
RA(O).....	200604.....	202109

RIP Date: 200904

RC Date: 202109

**SITE DESCRIPTION**

The groundwater in this area is being addressed independently of the other media. All other environmental media at this site are being addressed under PICA-066. There are two sites within Area B, Site 20 (a pyrotechnic range) and Site 24 (a sanitary landfill). Site 20 is located entirely within Site 24. Site 24 consists of cleared, reclaimed/filled wetlands containing several small mobile buildings/sheds, ponds, and man-made drainage ditches. The most prominent feature of Site 24 is the landfill pond that occupies an area of approximately 1 acre. Documentation indicates that fly ash, ordnance, industrial waste, and sludge from the water treatment plant were reportedly disposed of at Site 24 until 1972.

Groundwater investigation began from 1981 to 1984 when two wells were installed and sampled for VOCs and metals. A geophysical survey was performed in 1986. Three additional wells were installed and sampled for VOCs, SVOCs, metals, anions, and phenols in 1989. VOCs, metals, and anions were detected above LOCs. In 1994, the RI included geophysical, radiological, and soil gas surveys, and installation of more wells where VOCs and metals were detected above LOC. The HHRA was calculated to be above 1 by 10(-4) (assuming on-site consumption of groundwater). A follow-up geoprobe investigation in 1996 and additional well installations in 1998 and 1999 were all carried out to close data gaps associated with plume delineation or potential remedial alternatives. The most recent investigation included a redox-zonation to assess the potential for MNA. All of these investigations found elevated levels of VOCs in the two uppermost aquifers.

In April 2002, an FS was submitted which examined MNA, chemical oxidation, iron slurry injection, hydrogen releasing compound (HRC), oxygen releasing compound, and P&T. The final FS recommends expedited treatment of groundwater using HRC. Prior to this FS recommendation, the Army performed a pilot scale injection of iron slurry for chemical reduction of chlorinated organics. This work was completed in February 2002 but this process was not found to be effective at this site. An HRC pilot study was completed in fall 2004.

The PP was finalized and the public notice completed in 2005. The ROD was submitted to the regulators in June 2008. A pilot injection test was completed in January 2007. The first quarterly amendment injection and monitoring was completed in September 2008. Amendment injections and monitoring have been ongoing since 2008.

VOC concentrations have been decreasing across the site through 2015. The ROD specifies that the concentrations of COCs within groundwater must reach the soil cleanup levels (SCL) within seven years (September 2015). As of June 2014, the SCLs were attained for all COCs at six of the seven monitoring wells within the plume. One location (20/24-MW-08) had a low level exceedance of the SCL (SCL of 1.0 ug/L) with a reported concentration of 1.03 ug/L during the June 2014 sampling event. Conditions remain favorable to sustaining complete reductive dechlorination of residual VC at this location, as indicated by TOC, pH, and methane data, as well as the detection of biodegradation products ethane and ethene. Furthermore, residual VC can be degraded under both anaerobic and aerobic aquifer conditions. Therefore, degradation of residual VC is expected to continue as TOC within groundwater is depleted and the groundwater conditions transition from an anaerobic/reducing to aerobic environment.

Annual reports continue to be submitted with the results and analysis of the sampling required by the approved RD of groundwater and surface water.

**Site ID: PICA-205**  
**Site Name: AREA B GROUNDWATER**

## **CLEANUP/EXIT STRATEGY**

The LUCs and RA(O) of enhanced bioremediation will continue in accordance with the approved RD plan . The site will also be evaluated in the five-year reviews.

It is expected that the levels in the volatile organics in groundwater will all be below remedial action goals by 2021. Another round of molasses injection is not expected.

**Site ID: PICA-206**  
**Site Name: AREA C GROUNDWATER**

**STATUS**

**Regulatory Driver:** CERCLA

**RRSE:** MEDIUM

Contaminants of Concern: Dioxins/Dibenzofurans, Metals, Volatiles (VOC)

Media of Concern: Groundwater

Phases	Start	End
PA.....	199309.....	199604
RI/FS.....	199608.....	200908
RD.....	200908.....	200909
RA(C).....	200909.....	200909
LTM.....	200911.....	204609

**RIP Date:** N/A

**RC Date:** 200909

**SITE DESCRIPTION**

Future Costs for the following sites are covered in PICA-206:

- PICA-001, 25 Site Group
- PICA-002, Lower Burning Ground
- PICA-006 25 Site Group
- PICA-020, Group of 13
- PICA-022 25 Site Group
- PICA-065, Post Farm Landfill
- PICA-066, Pyro Range and Landfill
- PICA- 067, Landfill and Dredge Pile
- PICA-072, DRMO
- PICA-085, 25 Site Group
- PICA-093, Waste Burial Area
- PICA-096, 21 Site Group
- PICA-102, Waste Dumps and Lab
- PICA-143, 25 Site Group
- PICA-163, 25 Site Group
- PICA-171 25 Site Group
- PICA-192, 25 Site Group
- PICA-193 GP and BS Brooks
- PICA-199 25 Site Group
- PICA-206 Area C

This site addresses approximately 126 acres in the southwestern portion of PTA, near the southern boundary of the arsenal. The site addresses the groundwater at the following six sites: Site 19 - Pyrotechnic Demonstration Area (PICA-020), Site 23 - Post Farm Landfill (PICA-065), Site 25 - Sanitary Landfill (PICA-067), Site 26 - Dredge Piles from GPB (PICA-068), Site 163 - Baseball Fields (PICA-092), and Site 180 - Waste Burial Area (PICA-093).

PICA-206 covers all groundwater in Area C with the exception of the Site 23 groundwater. Due to the geographic and elevation differences between Site 23 and all of the remaining sites in Area C, Site 23 groundwater is being addressed along with the remaining media at Site 23 (PICA-065).

An area-wide groundwater assessment was performed as part of the 1994 RI. In the RI, groundwater exceedances were found for VOCs, one SVOC, and metals. The HHRA indicated that carcinogenic risk fell between or exceeded the 10(-6) to 10(-4) range. Carcinogenic risk is primarily from carbon tetrachloride, chloroform, TCE, arsenic, beryllium, heptachlor epoxide, and dioxins/furans. In 2001, additional rounds of groundwater samples were collected for VOCs, metals, explosives, perchlorate, and dioxins. Groundwater analyses were targeted to include only previous detections. Results indicated exceedances of VOCs and

**Site ID: PICA-206**  
**Site Name: AREA C GROUNDWATER**

metals. Additional delineation of these samples was conducted in 2002, one year of quarterly sampling was conducted for the 16 southern boundary wells between fall 2002 and summer 2003, semiannual monitoring was conducted through 2004 and semiannual monitoring has been conducted since fall 2005. An FS was completed in 2005 in which continued implementation of ICs with LTM was recommended. The FS was approved and the PP was a public notice issued in October 2007. A ROD was signed by the USEPA in September 2009.

The RD for LTM and ICs was finalized in November 2009. The initial semiannual groundwater sampling event for the LTM was completed in February 2010. The initial statistical test required by the sampling plan was performed in 2012. The test results allowed the NJDEP and USEPA to agree with a reduction in the frequency, parameters, and number of wells in the monitoring program.

The LTM phase began in 2009 and includes monitoring, LUCs, well repair and abandonment.

The two semi-annual reports for Area C were submitted in October 2014 and approved by the NJDEP. The annual report for 2015 was submitted in March 2016 to the regulators.

## **CLEANUP/EXIT STRATEGY**

The LUCs/LTM will continue in accordance with the approved RD plan. The site will continue to be evaluated in the five-year reviews. The Army will continue the sampling of the southern boundary wells for explosives, metal and volatile organics.

**Site ID: PICA-207**  
**Site Name: STORAGE BUILDING 63**

**STATUS**

Regulatory Driver: CERCLA

RRSE: LOW

Contaminants of Concern: Metals

Media of Concern: Soil

Phases	Start	End
PA.....	199309.....	199604
RI/FS.....	199608.....	201906

RIP Date: N/A

RC Date: 201906

**SITE DESCRIPTION**

Future LTM costs for PICA-207 are covered by PICA-91.

PICA-207 is re-opened in 2015 to represent four PICA sites or six RI Concept Sites that had been consolidated into PICA-096. According to the NJDEP and agreed to by USEPA, these sites require additional sampling to determine the extent of contamination.

The additional sampling requirements were the result of the NJDEP review of the September 2014 26-Site NFA with monitoring of land use ROD.

The sites consolidated into PICA-207 now include 1) the group of PICA sites PICA-089, PICA-121, PICA-029 (Sites 52, 95, and 96); 2) PICA-160 (RI Concept Site 173); 3) PICA-190 (RI Concept Site 187) and PICA-207.

The NJDEP has required additional sampling at all the consolidated sites. The results of this sampling will be reviewed and it is expected that the nature of the contamination at these sites will not change and the Army will continue to propose NFA with monitoring of land use.

The original PICA site is Building 63 which is a large, open shed, with no walls throughout most of its length, and a large second floor with a ramp at the northeast end leading to the second floor. The building was constructed in 1942 as a lumber and box storage area, and has always been used for storage. Currently, the building is being used for lumber and pipe storage, miscellaneous storage and storage of several military vehicles. BSB is adjacent to the site about 40 feet away. Floor plans for the building indicate that storage of transformers and "toxic lumber" have taken place at the site.

In 1997, USACHPPM conducted an RRSE at the site. During this evaluation no evidence of spills or releases from the site were found. Six composite surface soil samples were collected from the two AOCs (i.e., the former transformer storage area and the former toxic lumber storage area). Arsenic was the only compound detected above LOC. USACHPPM determined that the relative risk associated with the site was low.

A work plan for additional sampling will be implemented in FY16. Negotiations with the NJDEP continue regarding the site.

**CLEANUP/EXIT STRATEGY**

The Army will develop and public notice the PP, and an NFA with monitoring of land use ROD will be signed for these consolidated sites.

After the ROD, the Army will conduct the required annual inspection and develop the certification report as required by the "No Further Action with Monitoring of Land Use Record of Decision." The site will also be evaluated in the five-year reviews.

Site Name: BUILDING 167, LOCOMOTIVE AREA, BLDG. 430

STATUS

Regulatory Driver: CERCLA

RRSE: MEDIUM

Contaminants of Concern: Metals, Petroleum, Oil and Lubricants (POL), Polycyclic Aromatic Hydrocarbons (PAH), Volatiles (VOC)

Media of Concern: Groundwater, Sediment, Soil

Phases	Start	End
PA.....	199309.....	199604
SI.....	199608.....	199806
RI/FS.....	199809.....	201906
IRA.....	200308.....	200410

RIP Date: N/A

RC Date: 201906

SITE DESCRIPTION

Future LTM costs are now covered under PICA-091.

PICA-209 consists of five separate buildings or former buildings (Buildings 167, 303, 426, 426A, and 430) in Area F, grouped together by USACHPPM for an RRSE.

In 1998, the USACHPPM performed an RRSE for the five buildings and storage areas associated with this site. Samples were collected at each building except former Building 426. Metals, explosives, and PAHs above LOC were detected in the soil. VOCs, explosives, and metals above LOC were identified in the groundwater. In 2000 and 2001, surface and subsurface soil were sampled for arsenic, lead, and explosives.

The analytical results have successfully delineated the extent of contamination at each building, and no further sampling is proposed. Individual HHRA's were performed for the five buildings. Risks were above 1 x 10(-4) at Buildings 167 and 430. Hazards were above the target levels of 1 at Building 430 and former Building 303. Lead was also a health concern at these two buildings. A SLERA was conducted for the five PICA-209 buildings in spring 2005. A reconnaissance visit prior to the BERA field investigations determined that construction or remediation activities north of Area F, as well as the cessation of discharges from Area F buildings to this ditch had altered the expected flow patterns and the ditch was completely dry. The ditch no longer represents a potential aquatic habitat. Previous sediment analytical data was regarded as surface soil data for evaluation in the Area F BERA through wildlife exposure modeling. Although the food web exposure models indicated that adverse effects on reproduction in small mammals or birds could occur given sufficient exposure to site COPECs in Area F, the field investigations and RSA results indicated that effects, if any, were not impacting the local populations of small mammals or birds.

A final release survey, including remediation and removal of contaminated radiological items in 2002, was performed at Building 167 by the US Army Joint Munitions Command (non-ER,A funds).

Approximately 13.5 cubic ft of soil were excavated and disposed of off-site. Based on the post-excavation results, no further remediation of the radiological contamination is required. One sump, two lead catch tanks, and about 145 cy of contaminated soil (PAHs from Building 167, lead/explosives from Building 430, and lead from Buildings 303 and 430) were removed from four of the five PICA-209 buildings between December 2003 and September 2004. Additionally, three sumps at Buildings 430 and 462A were further investigated.

Groundwater contamination is addressed as part of the Mid-Valley groundwater ROD.

The approval of the FS was held up until the issue with USEPA on ARARs was resolved (the USEPA agreed with the Army position that sites with acceptable risk should be considered as an NFA as existing LUCs prevent a different land use). The Army agreed to notification and certification reporting. The FS was approved by USEPA in July 2014 although NJDEP did not concur. A draft "No Further Action with Monitoring of Land Use Proposed Plan for Areas F, G, I, and L Sites, including PICAs 075, 108, 122, 134, 135, 136, 147, 200, and 209" was submitted in September 2014. This group name is 45 Site Group A.

The Army received comments from the NJDEP on the draft proposed plans in FY15. A new contract was awarded in FY15 to

**Site ID: PICA-209**

**Site Name: BUILDING 167, LOCOMOTIVE AREA, BLDG. 430**

achieve a ROD. The contractor and Army met in FY16 with NJDEP and USEPA to resolve the issues and developed sampling plans as necessary. The site is still considered an NFA with monitoring of land use.

## **CLEANUP/EXIT STRATEGY**

The Army will finalize and public notice the PP, and an NFA with monitoring of land use ROD is expected to be signed by 2020.

After the ROD, the Army will conduct the required annual inspection as required by the "No Further Action with Monitoring of Land Use Record of Decision." The site will also be evaluated in the five-year reviews.

## Site Closeout (No Further Action) Summary

Site ID	Site Name	NFA Date	Documentation
PBC Picatinny	PBC	201403	
PICA-007	INACT.ROCKET FUEL TEST G-2 AREA (SITE 1)	200306	PICA-007 was listed as RC in AEDB-R and will be addressed as part of PICA-008.
PICA-010	BUILDING 95 FORMER WASTE IMPOUNDMENTS	200306	In 2003, PICA-010 was listed as RC in AEDB-R and will be addressed under PICA-077.
PICA-012	BLDG 3022 PHYS ANAL LAB/ENERG(SITE 83)	200306	In 2003, PICA-012 was listed as RC in AEDB-R and will be addressed under PICA-134.
PICA-018	FLUOROCHEMICAL STRG(3045)(SITE 30)	200306	In 2003, PICA-018 was listed as RC in AEDB-R and will be addressed under PICA-134.
PICA-021	FORMER NG PROC AREA (1361A-1364) ST 35	200306	In 2003, PICA-021 was listed as RC in AEDB-R and will be addressed under PICA-163.
PICA-029	BUILDINGS IN 300 AREA	200506	In 2005, PICA-029 was listed as RC in AEDB-R and will be addressed under PICA-096.
PICA-036	FORMER PROPELLANT PLANT(1010)(SITE 106)	199702	The costs for ICs for this site, although closed (RC) for years, has been integrated into the PICA- 020. It is part of the Institutional Control Record of Decision for 13 Sites.
PICA-037	FORMER HAZ WST TANK STOR(1380)(SITE 51)	200306	In 2003, PICA-037 was listed as RC in AEDB-R and will be addressed under PICA-195.
PICA-047	STEAM POWER PLANT BLDG 506(SITE 63/65)	200306	In 2003, PICA-047 was listed as RC in AEDB-R and will be addressed under PICA-022.
PICA-052	SHELL BURIAL AREA(NEAR B-3100)(SITE 6)	200306	In 2003, PICA-052 was listed as RC in AEDB-R and will be addressed under PICA-162.
PICA-053	MUNITS&PROPLTS TST AREA/CHEM BURIAL	200505	In 2005, PICA-053 was listed as RC in AEDB-R and will be addressed under PICA-096.
PICA-054	MUNITS&PROPLT TST AREA(B-1222)(SITE 8)	199702	Site is ER,A ineligible and will be covered under the CC program as CC-054.
PICA-055	MUNITS&PROPLT TEST AREA(B670,B673,B674)	200107	Active range - not eligible
PICA-056	FORMER CHEMICAL BURIAL AREA (SITE 10)	200306	In 2003, PICA-056 was listed as RC in AEDB-R and will be addressed under PICA-053.
PICA-059	MUNITS/PYROTEC TEST AREA(B-640)(SITE 13)	199702	Active range - not eligible
PICA-060	MUNITIONS TEST AREA (B-636) SITE 14	200106	Active Site - Not ER,A eligible
PICA-061	MUNITIONS TEST AREA(B616,B654)(SITE 15)	200106	Active range - not eligible
PICA-063	PYROTECHNIC TESTING RANGE (SITE 20)	200205	PICA-063 has been combined with PICA-066, Sanitary Landfill (Site 24), and both are being addressed concurrently under PICA-066.
PICA-064	POACH HOUSE (520) (SITE 147)	200306	In 2003, PICA-064 was listed as RC in AEDB-R and will be addressed under PICA-085.



## Site Closeout (No Further Action) Summary

Site ID	Site Name	NFA Date	Documentation
PICA-068	DREDGE PILE (SITE 26)	199702	PICA-068 has been combined with PICA-067, Sanitary Landfill (Site 25), and both are being addressed concurrently under PICA-067.
PICA-069	PROPELLANT/CHEM/MATERIAL STORAGE	200506	In 2005, PICA-069 was listed as RC in AEDB-R and will be addressed under PICA-096.
PICA-070	SEWAGE TRMT PLANT SLUDGE BEDS(B80)SITE28	199702	This cost for ICs for this site, although closed (RC) for years, has been integrated into the PICA- 020. It is part of the Institutional Control Record of Decision for 13 Sites.
PICA-073	BLDG 553 STORAGE TANKS(SITE 32)	200306	In 2003, PICA-073 was listed as RC in AEDB-R and will be addressed under PICA-085.
PICA-074	BLDG 527A STORAGE TANKS (SITE 33)	200306	In 2003, PICA-074 was listed as RC in AEDB-R and will be addressed under PICA-085.
PICA-078	VEHCL MAINT FORMER-WW PRETRTMT FAC(B-31)	200103	The site will be addressed under site PICA-084.
PICA-080	FORMER LAB PACK FAC (B-1094) SITE 41	200306	In 2003, PICA-080 was listed as RC in AEDB-R and will be addressed under PICA-195.
PICA-081	FORMER PCB STORAGE AREA (B-3114) SITE 42	200306	In 2003, PICA-081 was listed as RC in AEDB-R and will be addressed under PICA-195.
PICA-082	PESTICIDE STORAGE AREA (B-3157) SITE 43	200306	In 2003, PICA-082 was listed as RC in AEDB-R and will be addressed under PICA-195.
PICA-083	Golf Course Maintenance(BLDG 39)SITE 44	200008	The cost for ICs for this site, although closed (RC) for years, have been integrated into PICA- 020. It is part of the Institutional Control Record of Decision for 13 Sites.
PICA-084	VEHICLE MAINTENCE (BLDG 33)SITE 45	200407	In 2003, PICA-084 was listed as RC in AEDB-R and will be addressed under PICA-071.
PICA-086	HEAVY EQUIP. MAINTENANCE(BLDG 3005&3006)	200306	In 2003, PICA-086 was listed as RC in AEDB-R and will be addressed under PICA-075.
PICA-087	Auto Hobby Shop (BLDG 3315)- Site 48	200106	The site will be addressed under PICA-084.
PICA-088	Soldering Storage Area (BLDG 19&19A)	199706	The costs for ICs for this site, although closed (RC) for years, have been integrated into PICA- 020. It is part of the Institutional Control Record of Decision for 13 Sites.
PICA-089	PETROLEUM LEAK AREA(BLDG 305)SITE 52	200306	In 2003, PICA-089 was listed as RC in AEDB-R and will be addressed under PICA-029.
PICA-092	BASEBALL FIELDS (SITE 163)	199702	The costs for ICs for this site, although closed (RC) for years, have been integrated into PICA-020. It is part of the Institutional Control Record of Decision for 13 Sites.

## Site Closeout (No Further Action) Summary

Site ID	Site Name	NFA Date	Documentation
PICA-094	SURVEILLANCE LABORATORY(BLDG 92)-SITE 69	200406	In 2005, PICA-094 was listed as RC in AEDB-R and will be addressed under PICA-096.
PICA-095	BLDG 12, PHOTO PROCESSING FAC (SITE 86)	199702	The site will be addressed under PICA-020.
PICA-098	METAL PLATING SHOP, BLDG 64 (SITE 123)	200506	In 2005, PICA-098 was listed as RC in AEDB-R and will be addressed under PICA-096.
PICA-099	BLDG 5, ARSENAL REPRTION & TRNG OFF(182)	199702	The costs for ICs for this site, although closed (RC) for years, have been integrated into PICA- 020. It is part of the Institutional Control Record of Decision for 13 Sites.
PICA-100	GRAPHIC REPRODUCTION & TRNG BLDG 58 (183)	199702	Costs for ICs for this site, although closed (RC) for years, has been integrated into the PICA- 020. It is part of the Institutional Control Record of Decision for 13 Sites.
PICA-101	BLDG 163, PHOTOGRAPHY LAB (SITE 60)	200406	In 2005, PICA-101 was listed as RC in AEDB-R and will be addressed under PICA-096.
PICA-103	BLDGS 161&162,CHEMICAL LAB(SITE 104)	200306	In 2003, PICA-103 was listed as RC in AEDB-R and will be addressed under PICA-102.
PICA-104	BLDGS 454&455,PROPELLANT BAG FLG AREA	200306	In 2003, PICA-104 was listed as RC in AEDB-R and will be addressed under PICA-108.
PICA-105	BLDG 166,PROPELLANT TEST (SITE 124)	199702	This site will be addressed under PICA-020.
PICA-106	BLDGS 172&183 & BLDGS IN 400 AREA	200306	In 2003, PICA-106 was listed as RC in AEDB-R and will be addressed under PICA-111.
PICA-109	BLDGS 427&427B,PROPELLANT PRO(SITE 140)	200606	In 2006, PICA-109 was listed as RC in AEDB-R and will be addressed under PICA-108
PICA-110	BLDG 429,PROPELLANT CRUSHING(SITE 141)	200008	The costs for ICs for this site, although closed (RC) for years, have been integrated into PICA- 020. It is part of the Institutional Control Record of Decision for 13 Sites.
PICA-112	BLDG 436,PROPELLANT PROCESSING(SITE 143)	199702	The costs for ICs for this site, although closed (RC) for years, have been integrated into PICA- 020. It is part of the Institutional Control Record of Decision for 13 Sites.
PICA-113	BLDG 462,PROPELLANT FINISHING (SITE 144)	200306	In 2003, PICA-113 was listed as RC in AEDB-R and will be addressed under PICA-111.
PICA-114	BLDG 477,EXPLOSIVE&PROPELLANT MIX AREA	200506	In 2005, PICA-114 was listed as RC in AEDB-R and will be addressed under PICA-096.
PICA-115	BLDG 497,POWDER PRESSING (SITE 146)	200306	In 2003, PICA-115 was listed as RC in AEDB-R and will be addressed under PICA-111.
PICA-116	BLDGS 311&319, FORMER GAS STATION &	200306	In 2003, PICA-116 was listed as RC in AEDB-R and will be addressed under

## Site Closeout (No Further Action) Summary

Site ID	Site Name	NFA Date	Documentation
			PICA-072.
PICA-117	BLDG 302,SERVICE SHOPS (SITE 134)	200306	In 2003, PICA-117 was listed as RC in AEDB-R and will be addressed under PICA-029.
PICA-118	METALLURGY LAB, BLDG 315 (SITE 135)	200108	The costs for ICs for this site, although closed (RC) for years, have been integrated into PICA- 020. It is part of the Institutional Control Record of Decision for 13 Sites.
PICA-119	BLDG 355,METALLURGY LAB (SITE 136)	200306	In 2003, PICA-119 was listed as RC in AEDB-R and will be addressed under PICA-029.
PICA-120	FORMER BLDG 24 PLATING FACIL (SITE 21)	200008	The contaminated groundwater from the old Building 24 is currently being addressed as part of PICA-076; thus PICA-120 is considered RC.
PICA-121	BUILDING 336 - EXPLOSIVE LAUNDRY	200609	In 2006, PICA-121 was listed as RC in AEDB-R and will be addressed under PICA-29
PICA-123	FORMER HAZ WASTE STOR/FUSE ASS(BLDG 210)	200306	In 2003, PICA-123 was listed as RC in AEDB-R and will be addressed under PICA-091.
PICA-124	LOADING/DISASSEMBLY PLT (BLDG241)SITE 64	200306	In 2003, PICA-124 was listed as RC in AEDB-R and will be addressed under PICA-091.
PICA-125	MINE ASSEMBLY FACILITY(BLDG 268) SITE 98	200306	In 2003, PICA-125 was listed as RC in AEDB-R and will be addressed under PICA-091.
PICA-126	EXP LOADING FACILITY (BLDG 276) SITE 100	200306	In 2003, PICA-126 was listed as RC in AEDB-R and will be addressed under PICA-091.
PICA-127	MELT CASTING OPERATION (BLDG 230)SITE127	200306	In 2003, PICA-127 was listed as RC in AEDB-R and will be addressed under PICA-091.
PICA-128	EXP PRESSING PLT (BLDGS235/236) SITE 128	200306	In 2003, PICA-128 was listed as RC in AEDB-R and will be addressed under PICA-091.
PICA-129	CHANGE HOUSE (BLDG 240) SITE 129	200306	In 2003, PICA-129 was listed as RC in AEDB-R and will be addressed under PICA-091.
PICA-130	POWDER PRESS/PELLETING(BLDG 252)SITE 130	200306	In 2003, PICA-130 was listed as RC in AEDB-R and will be addressed under PICA-091.
PICA-132	FORMER LOAD FACILITY (BDLGS271/271I-N)	200306	In 2003, PICA-132 was listed as RC in AEDB-R and will be addressed under PICA-091.
PICA-133	CHANGE HOUSE (BUILDING 600) SITE 151	200306	In 2003, PICA-133 was listed as RC in AEDB-R and will be addressed under PICA-175.
PICA-137	XRAY PHOTOPROCESSING LAB(BLDG 908)SITE82	200306	In 2003, PICA-137 was listed as RC in AEDB-R and will be addressed under PICA-135.
PICA-138	ELECTROMAG. GUN TEST SHED(BLDG329)SITE90	200306	In 2003, PICA-138 was listed as RC in AEDB-R and will be addressed under PICA-108.

## Site Closeout (No Further Action) Summary

Site ID	Site Name	NFA Date	Documentation
PICA-139	AMMUN DEMO 1 ORD FAC(BLDGS800/807)SITE93	200306	In 2003, PICA-139 was listed as RC in AEDB-R and will be addressed under PICA-079.
PICA-140	POST ENG MAINT SHOP (BLDG 501) SITE 97	200306	In 2003, PICA-140 was listed as RC in AEDB-R and will be addressed under PICA-085.
PICA-141	FORMER ENLISTED MENS BARRACKS(BLDG 3050	200306	In 2003, PICA-141 was listed as RC in AEDB-R and will be addressed under PICA-075.
PICA-142	PROPELLANT PLANT (BLDG 511) SITE 105	200306	In 2003, PICA-142 was listed as RC in AEDB-R and will be addressed under PICA-085.
PICA-144	PYROTECHNIC PLANT (BLDG 445) SITE 109	200306	In 2003, PICA-144 was listed as RC in AEDB-R and will be addressed under PICA-111.
PICA-146	PROPELLANT PLANT (BLDG 561) SITE 113	201405	
PICA-147	ADMINISTRATION BLDG (BLDG 382) SITE 137	200306	In 2003, PICA-147 was listed as RC in AEDB-R and will be addressed under PICA-108.
PICA-148	CHANGE HOUSE (BLDG 527) SITE 148	200306	In 2003, PICA-148 was listed as RC in AEDB-R and will be addressed under PICA-085.
PICA-150	PROPELLANT PLANT (BLDG 555) SITE 150	200306	In 2003, PICA-150 was listed as RC in AEDB-R and will be addressed under PICA-085.
PICA-151	Ordnance Bldgs 813, 816/816B	200306	In 2003, PICA-151 was listed as RC in AEDB-R and will be addressed under PICA-079.
PICA-152	ORDNANCE FAC (BLDGS 820,823) SITE 157	200306	In 2003, PICA-152 was listed as RC in AEDB-R and will be addressed under PICA-079.
PICA-153	HIGH-EXP MAGAZINE (BLDG 926) SITE 158	200306	In 2003, PICA-153 was listed as RC in AEDB-R and will be addressed under PICA-135.
PICA-154	SUPPLIES & SER. BLDG (BLDG 975) SITE 159	200306	In 2003, PICA-154 was listed as RC in AEDB-R and will be addressed under PICA-135.
PICA-156	REFRIG. & INERT GAS PLT(BLDG 523)SITE184	200306	In 2003, PICA-156 was listed as RC in AEDB-R and will be addressed under PICA-085.
PICA-157	FORMER MOTORS/ROC FUEL TST AREA(3600)	200306	In 2003, PICA-157 was listed as RC in AEDB-R and will be addressed as part of PICA-008.
PICA-158	HELICOPTER MAINTENANCE(BLDG 3801)SITE175	200506	In 2005, PICA-158 was listed as RC in AEDB-R and will be addressed under PICA-096.
PICA-159	PARKING AREA ACROSS FROM BLDG 3328	200306	In 2003, PICA-159 was listed as RC in AEDB-R and will be addressed under PICA-161.
PICA-160	CHEM LAB & ADMIN BLDG (BLDG 3404)SITE173	200306	In 2003, PICA-160 was listed as RC in AEDB-R and will be addressed under PICA-161.
PICA-161	SEWAGE TRMT/CHEM LAB/FIREHOUSE/PRKG	200506	In 2005, PICA-161 was listed as RC in AEDB-R and will be addressed under PICA-096.

## Site Closeout (No Further Action) Summary

Site ID	Site Name	NFA Date	Documentation
PICA-165	FORMER EXPLOSIVES LOADING (BLDG 1033)	200306	In 2003, PICA-165 was listed as RC in AEDB-R and will be addressed under PICA-195.
PICA-166	FORMER ORDNANCE FACILITY (BLDG 1029)	200306	In 2003, PICA-166 was listed as RC in AEDB-R and will be addressed under PICA-195.
PICA-167	FORMER PROP PLT/ORD FAC(BLDGS1373,1374)	200306	In 2003, PICA-167 was listed as RC in AEDB-R and will be addressed under PICA-195.
PICA-168	PROPEL PLTS/PRESS HOUSE 1400,1402-1403	200306	In 2003, PICA-168 was listed as RC in AEDB-R and will be addressed under PICA-163.
PICA-169	PROP PLTS (BLDGS1408,1408A-C,1409,1411)	200306	In 2003, PICA-169 was listed as RC in AEDB-R and will be addressed under PICA-163.
PICA-170	PROP MELT PLTS (BLDGS1462-1464) SITE 170	200306	In 2003, PICA-170 was listed as RC in AEDB-R and will be addressed under PICA-195.
PICA-172	FORMER NITRATION BLDG (BLDG 1031)	200306	In 2003, PICA-172 was listed as RC in AEDB-R and will be addressed under PICA-163.
PICA-173	FORMER EX MAN/STOR(BLDGS1070,1071,1071C)	200306	In 2003, PICA-173 was listed as RC in AEDB-R and will be addressed under PICA-171.
PICA-174	FORMER PROP PLTS(BLDGS1354,1357,1359)	200306	In 2003, PICA-174 was listed as RC in AEDB-R and will be addressed under PICA-163.
PICA-176	LITTLE LEAGUE BASEBALL FIELD SITE 176	200406	In 2005, PICA-176 was listed as RC in AEDB-R and will be addressed under PICA-096.
PICA-177	SAN SEWER SYSTEM BREAKS/LEAKS SITE 177	200406	In 2005, PICA-177 was listed as RC in AEDB-R and will be addressed under PICA-096.
PICA-178	ORDNANCE FAC (BLDGS 604,604C) SITE 152	200306	In 2003, PICA-178 was listed as RC in AEDB-R and will be addressed under PICA-175.
PICA-179	ORDINANCE FACILITY (BLDG 606) SITE 153	200306	In 2003, PICA-179 was listed as RC in AEDB-R and will be addressed under PICA-175.
PICA-180	FIELD OFF,DISASS(BLDGS 617,617G) SITE154	200306	In 2003, PICA-180 was listed as RC in AEDB-R and will be addressed under PICA-175.
PICA-181	ORDINANCE FAC (BLDGS 620,620B) SITE 155	199710	Site is an active operation and therefore, not ER,A eligible.
PICA-182	MUN TEST RANGES (BLDGS647,649,650)SITE11	199702	Site is not ER,A eligible
PICA-183	GEN PURPOSE MAGAZINE (BLDG1217) SITE 164	200406	In 2005, PICA-183 was listed as RC in AEDB-R and will be addressed under PICA-096.
PICA-185	PROP STORAGE (BLDGS46,47,48) SITE 119	200306	In 2003, PICA-185 was listed as RC in AEDB-R and will be addressed under PICA-069.
PICA-186	PROPELLANT STORAGE (BLDG 50) SITE 120	200306	In 2003, PICA-186 was listed as RC in AEDB-R and will be addressed under PICA-069.

## Site Closeout (No Further Action) Summary

Site ID	Site Name	NFA Date	Documentation
PICA-187	CHEMICAL STORAGE (BLDG 57) SITE 121	200306	In 2003, PICA-187 was listed as RC in AEDB-R and will be addressed under PICA-069.
PICA-188	FORMER LABORATORY IN BLDG 350 SITE 185	200306	In 2003, PICA-188 was listed as RC in AEDB-R and will be addressed under PICA-029.
PICA-189	FIREHOUSE (BUILDING 3316) SITE 186	200306	In 2003, PICA-189 was listed as RC in AEDB-R and will be addressed under PICA-161.
PICA-190	OIL & ACID STORAGE (BLDG 67) SITE 187	200506	In 2005, PICA-190 was listed as RC in AEDB-R and will be addressed under PICA-096.
PICA-191	FORMER COAL STORAGE AREA (BLDG 3173)	200306	In 2003, PICA-191 was listed as RC in AEDB-R and will be addressed under PICA-075.
PICA-194	BEAR SWAMP BROOK	200008	This site is listed as RC in AEDB-R and will be addressed under PICA-193.
PICA-197	AREA "O" OTHER BUILDINGS	199710	Site was determined RC by USACHPPM in 1997 during their RRSE study.
PICA-198	AREA "N" OTHER BUILDINGS	199710	Site was determined RC by USACHPPM in 1997 during their RRSE study.
PICA-201	Other Bldgs in Area P	199710	Site was determined RC by USACHPPM in 1997 during their RRSE study.
PICA-202	Other Bldgs in Area J	199710	Site was determined RC by USACHPPM in 1997 during their RRSE study.
PICA-203	FORMER POISON GAS LAB	200306	In 2003, PICA-203 was listed as RC in AEDB-R and will be addressed under PICA-111.
PICA-208	D.U. SCRAP STORAGE AREA	200306	In 2003, PICA-208 was listed as RC in AEDB-R and will be addressed under PICA-069.
PICA-210	BUILDING 321	200306	In 2003, PICA-210 was listed as RC in AEDB-R and will be addressed under PICA-108.

Date of IRP Inception: 197607

## Past Phase Completion Milestones

1981

PA (PICA-001 - INACTIVE TETRYL WASTE PITS (SITES 17/18), PICA-002 - LOWER BURNING GROUND (SITE 34), PICA-006 - GUNCOTTON LINE (SITE 16), PICA-007 - INACT.ROCKET FUEL TEST G-2 AREA (SITE 1), PICA-008 - INACT. ROCKET FUEL TEST Areas, PICA-010 - BUILDING 95 FORMER WASTE IMPOUNDMENTS, PICA-012 - BLDG 3022 PHYS ANAL LAB/ENERG(SITE 83), PICA-013 - Groundwater near building 91 , PICA-015 - LAKE DENMARK (SITE 54), PICA-018 - FLUORO-CHEMICAL STRG(3045)(SITE 30), PICA-020 - PYROTECHNIC DEMO AREA (SITE 19), PICA-021 - FORMER NG PROC AREA (1361A-1364) ST 35, PICA-022 - POWER PLNT/HAZ WST TNKS/PROPELL PRD, PICA-029 - BUILDINGS IN 300 AREA, PICA-037 - FORMER HAZ WST TANK STOR(1380)(SITE 51), PICA-047 - STEAM POWER PLANT BLDG 506(SITE 63/65), PICA-050 - FORMER REACT MTRS/RCKT FUEL TST A 1500, PICA-052 - SHELL BURIAL AREA(NEAR B-3100)(SITE 6), PICA-053 - MUNITS&PROPLTS TST AREA/CHEM BURIAL, PICA-054 - MUNITS&PROPLT TST AREA(B-1222)(SITE 8), PICA-055 - MUNITS&PROPLT TEST AREA(B670,B673,B674), PICA-056 - FORMER CHEMICAL BURIAL AREA (SITE 10), PICA-057 - PICATINNY LAKE (SITE 53), PICA-058 - 600 HILL GROUNDWATER PLUME, PICA-059 - MUNITS/PYROTEC TEST AREA(B-640)(SITE 13), PICA-060 - MUNITIONS TEST AREA (B-636) SITE 14, PICA-061 - MUNITIONS TEST AREA(B616,B654)(SITE 15), PICA-063 - PYROTECHNIC TESTING RANGE (SITE 20), PICA-064 - POACH HOUSE (520) (SITE 147), PICA-065 - POST FARM LANDFILL (SITE 23), PICA-066 - SANITARY LANDFILL(NEAR SITE 20)SITE 24, PICA-067 - SANITARY LANDFILL(NEAR SITE 26)SITE 25, PICA-068 - DREDGE PILE (SITE 26), PICA-069 - PROPELLANT/CHEM/MATERIAL STORAGE, PICA-070 - SEWAGE TRMT PLANT SLUDGE BEDS(B80)SITE28, PICA-071 - DRUM STRG AREA(B31 YARD) SITE 29, PICA-072 - FORMER GAS STATION/ DRMO(SITE 31), PICA-073 - BLDG 553 STORAGE TANKS(SITE 32), PICA-074 - BLDG 527A STORAGE TANKS (SITE 33), PICA-075 - EQPMT & WASTE STORAGE IN 3000-AREA, PICA-076 - FORM METL PLATG WSTWTR FAC/LAGOONS B-24 , PICA-077 - Area E Groundwater (Site 38), PICA-078 - VEHCL MAINT FORMER-WW PRETRTMT FAC(B-31), PICA-079 - ORDNANCE/EXPLOSIVE BLDGS 800 AREA, PICA-080 - FORMER LAB PACK FAC (B-1094) SITE 41, PICA-081 - FORMER PCB STORAGE AREA (B-3114) SITE 42, PICA-082 - PESTICIDE STORAGE AREA (B-3157) SITE 43, PICA-083 - Golf Course Maintenance(BLDG 39)SITE 44, PICA-085 - BLDS IN 500-AREA, PICA-086 - HEAVY EQUIP. MAINTENANCE(BLDG 3005&3006), PICA-087 - Auto Hobby Shop (BLDG 3315)- Site 48, PICA-091 - BLDGS IN 200-AREA, PICA-092 - BASEBALL FIELDS (SITE 163), PICA-093 - WASTE BURIAL AREA NEAR SITES 19&34(180), PICA-094 - SURVEILLANCE LABORATORY(BLDG 92)-SITE 69, PICA-095 - BLDG 12, PHOTO PROCESSING FAC (SITE 86), PICA-096 - BLDG 22,PRECISION MACHINE SHOP(SITE 117), PICA-097 - BLD 41,PESTICIDE STR & FORM OIL/W SEP, PICA-098 - METAL PLATING SHOP, BLDG 64 (SITE 123), PICA-099 - BLDG 5,ARSENAL REPRITION & TRNG OFF(182), PICA-100 - GRAPHIC REPRODUCTION &TRNG BLDG 58 (183), PICA-101 - BLDG 163, PHOTOGRAPHY LAB (SITE 60), PICA-102 - FORMER WASTE DUMP/CHEMICAL LAB, PICA-103 - BLDGS 161&162,CHEMICAL LAB(SITE 104), PICA-104 - BLDGS 454&455,PROPELLANT BAG FLG AREA, PICA-105 - BLDG 166,PROPELLANT TEST (SITE 124), PICA-106 - BLDGS 172&183 & BLDGS IN 400 AREA, PICA-107 - BLDGS 404,407,&408,CHMCL LAB&PROP PLANTS, PICA-108 - BLDGS in 400/300 AREA, Site 139, PICA-109 - BLDGS 427&427B,PROPELLANT PRO(SITE 140), PICA-110 - BLDG 429,PROPELLANT CRUSHING(SITE 141), PICA-111 - FORMER BLDG 435,PROPELLANT SOLV MIXING , PICA-112 - BLDG 436,PROPELLANT PROCESSING(SITE 143), PICA-113 - BLDG 462,PROPELLANT FINISHING (SITE 144), PICA-114 - BLDG 477,EXPLOSIVE&PROPELLANT MIX AREA, PICA-115 - BLDG 497,POWDER PRESSING (SITE 146), PICA-116 - BLDGS 311&319, FORMER GAS STATION & , PICA-117 - BLDG 302,SERVICE SHOPS (SITE 134), PICA-118 - METALLURGY LAB, BLDG 315 (SITE 135), PICA-119 - BLDG 355,METALLURGY LAB (SITE 136), PICA-120 - FORMER BLDG 24 PLATING FACIL (SITE 21), PICA-121 - BUILDING 336 - EXPLOSIVE LAUNDRY, PICA-122 - PROPELLANT TESTING (BLDG 197) SITE 126, PICA-123 - FORMER HAZ WASTE STOR/FUSE ASS(BLDG 210), PICA-124 - LOADING/DISASSEMBLY PLT (BLDG241)SITE 64, PICA-125 - MINE ASSEMBLY FACILITY(BLDG 268) SITE 98, PICA-126 - EXP LOADING FACILITY (BLDG 276) SITE 100, PICA-127 - MELT CASTING OPERATION (BLDG 230)SITE127, PICA-128 - EXP PRESSING PLT (BLDGS235/236) SITE 128, PICA-129 - CHANGE HOUSE (BLDG 240) SITE 129, PICA-130 - POWDER PRESS/PELLETING(BLDG 252)SITE 130, PICA-131 - FORMER ORDNANACE MANUFAC. (BLDG 266) , PICA-132 - FORMER LOAD FACILITY (BDLGS271/271I-N) , PICA-133 - CHANGE HOUSE (BUILDING 600) SITE 151, PICA-134 - R&D LAB/Chem Storage 3000-Area, , PICA-135 - BLDGS IN THE 900-AREA, PICA-136 - HIGH PRESSUREBOILER frmr bldg. 3013, PICA-137 - XRAY PHOTOPROCESSING LAB(BLDG 908)SITE82, PICA-138 - ELECTROMAG.

GUN TEST SHED(BLDG329)SITE90, PICA-139 - AMMUN DEMO 1 ORD FAC(BLDGS800/807)SITE93, PICA-140 - POST ENG MAINT SHOP (BLDG 501) SITE 97, PICA-141 - FORMER ENLISTED MENS BARRACKS(BLDG 3050, PICA-142 - PROPELLANT PLANT (BLDG 511) SITE 105, PICA-143 - ORDNANCE FAC (BLDGS 717,722,732)SITE 108, PICA-144 - PYROTECHNIC PLANT (BLDG 445) SITE 109, PICA-145 - 500 AREA BUILDINGS SITE 110, PICA-146 - PROPELLANT PLANT (BLDG 561) SITE 113, PICA-147 - ADMINISTRATION BLDG (BLDG 382) SITE 137, PICA-148 - CHANGE HOUSE (BLDG 527) SITE 148, PICA-149 - PROPELLANT PLANT (BLDG541) SITE 149, PICA-150 - PROPELLANT PLANT (BLDG 555) SITE 150, PICA-151 - Ordnance Bldgs 813, 816/816B, PICA-152 - ORDNANCE FAC (BLDGS 820,823) SITE 157, PICA-153 - HIGH-EXP MAGAZINE (BLDG 926) SITE 158, PICA-154 - SUPPLIES & SER. BLDG (BLDG 975) SITE 159, PICA-155 - TECUP BUILDINGS SITE 178, PICA-156 - REFRIG. & INERT GAS PLT(BLDG 523)SITE184, PICA-157 - FORMER MOTORS/ROC FUEL TST AREA(3600) , PICA-158 - HELICOPTER MAINTENANCE(BLDG 3801)SITE175, PICA-159 - PARKING AREA ACROSS FROM BLDG 3328, PICA-160 - CHEM LAB & ADMIN BLDG (BLDG 3404)SITE173, PICA-161 - SEWAGE TRMT/CHEM LAB/FIREHOUSE/PRKG, PICA-162 - SHELL BURIAL AREAS NEAR SITE 5, PICA-163 - Propellnt/Rcket Prod 1300/1400 Area, PICA-164 - RESERVOIR NEAR BLDG 3159 SITE 103, PICA-165 - FORMER EXPLOSIVES LOADING (BLDG 1033) , PICA-166 - FORMER ORDNANCE FACILITY (BLDG 1029) , PICA-167 - FORMER PROP PLT/ORD FAC(BLDGS1373,1374) , PICA-168 - PROPEL PLTS/PRESS HOUSE 1400,1402-1403, PICA-169 - PROP PLTS (BLDGS1408,1408A-C,1409,1411), PICA-170 - PROP MELT PLTS (BLDGS1462-1464) SITE 170, PICA-171 - ORDNANCE BLDG/EXPLOSIVES PROD., PICA-172 - FORMER NITRATION BLDG (BLDG 1031) , PICA-173 - FORMER EX MAN/STOR(BLDGS1070,1071,1071C), PICA-174 - FORMER PROP PLTS(BLDGS1354,1357,1359) , PICA-175 - ORDNANCE BLDGS in 600-AREA, PICA-176 - LITTLE LEAGUE BASEBALL FIELD SITE 176, PICA-177 - SAN SEWER SYSTEM BREAKS/LEAKS SITE 177, PICA-178 - ORDNANCE FAC (BLDGS 604,604C) SITE 152, PICA-179 - ORDINANCE FACILITY (BLDG 606) SITE 153, PICA-180 - FIELD OFF,DISASS(BLDGS 617,617G) SITE154, PICA-181 - ORDINANCE FAC (BLDGS 620,620B) SITE 155, PICA-182 - MUN TEST RANGES (BLDGS647,649,650)SITE11, PICA-183 - GEN PURPOSE MAGAZINE (BLDG1217) SITE 164, PICA-184 - BUILDINGS(1600,1601,1609,1610) SITE 94, PICA-185 - PROP STORAGE (BLDGS46,47,48) SITE 119, PICA-186 - PROPELLANT STORAGE (BLDG 50) SITE 120, PICA-187 - CHEMICAL STORAGE (BLDG 57) SITE 121, PICA-188 - FORMER LABORATORY IN BLDG 350 SITE 185, PICA-189 - FIREHOUSE (BUILDING 3316) SITE 186, PICA-190 - OIL & ACID STORAGE (BLDG 67) SITE 187, PICA-191 - FORMER COAL STORAGE AREA (BLDG 3173) , PICA-192 - APPLE TREES RECREATIONAL AREA , PICA-193 - GREEN POND AND BEAR SWAMP BROOK SITE 190, PICA-194 - BEAR SWAMP BROOK, PICA-195 - BLDGS IN 1400/1300/3100/1000 AREAS)

**1985**

PA (PICA-089 - PETROLEUM LEAK AREA(BLDG 305)SITE 52)

**1986**

IRA (PICA-089 - PETROLEUM LEAK AREA(BLDG 305)SITE 52)

**1989**

SI

(PICA-001 - INACTIVE TETRYL WASTE PITS (SITES 17/18), PICA-002 - LOWER BURNING GROUND (SITE 34), PICA-006 - GUNCOTTON LINE (SITE 16), PICA-007 - INACT.ROCKET FUEL TEST G-2 AREA (SITE 1), PICA-008 - INACT. ROCKET FUEL TEST Areas, PICA-010 - BUILDING 95 FORMER WASTE IMPOUNDMENTS, PICA-012 - BLDG 3022 PHYS ANAL LAB/ENERG(SITE 83), PICA-013 - Groundwater near building 91 , PICA-015 - LAKE DENMARK (SITE 54), PICA-018 - FLUOROCEMICAL STRG(3045)(SITE 30), PICA-020 - PYROTECHNIC DEMO AREA (SITE 19), PICA-021 - FORMER NG PROC AREA (1361A-1364) ST 35, PICA-022 - POWER PLNT/HAZ WST TNKS/PROPELL PRD, PICA-029 - BUILDINGS IN 300 AREA, PICA-037 - FORMER HAZ WST TANK STOR(1380)(SITE 51), PICA-047 - STEAM POWER PLANT BLDG 506(SITE 63/65), PICA-050 - FORMER REACT MTRS/RCKT FUEL TST A 1500, PICA-052 - SHELL BURIAL AREA(NEAR B-3100)(SITE 6), PICA-053 - MUNITS&PROPLTS TST AREA/CHEM BURIAL, PICA-054 - MUNITS&PROPLT TST AREA(B-1222)(SITE 8), PICA-055 - MUNITS&PROPLT TEST AREA(B670,B673,B674), PICA-056 - FORMER CHEMICAL BURIAL AREA (SITE 10), PICA-057 - PICATINNY LAKE (SITE 53), PICA-058 - 600 HILL GROUNDWATER PLUME, PICA-059 - MUNITS/PYROTEC TEST AREA(B-640)(SITE 13), PICA-060 - MUNITIONS TEST AREA (B-636) SITE 14, PICA-061 - MUNITIONS TEST AREA(B616,B654)(SITE 15), PICA-063 - PYROTECHNIC TESTING RANGE (SITE 20), PICA-064 -



POACH HOUSE (520) (SITE 147), PICA-065 - POST FARM LANDFILL (SITE 23), PICA-066 - SANITARY LANDFILL(NEAR SITE 20)SITE 24, PICA-067 - SANITARY LANDFILL(NEAR SITE 26)SITE 25, PICA-068 - DREDGE PILE (SITE 26), PICA-069 - PROPELLANT/CHEM/MATERIAL STORAGE, PICA-070 - SEWAGE TRMT PLANT SLUDGE BEDS(B80)SITE28, PICA-071 - DRUM STRG AREA(B31 YARD) SITE 29, PICA-072 - FORMER GAS STATION/ DRMO(SITE 31), PICA-073 - BLDG 553 STORAGE TANKS(SITE 32), PICA-074 - BLDG 527A STORAGE TANKS (SITE 33), PICA-075 - EQPMT & WASTE STORAGE IN 3000-AREA, PICA-078 - VEHCL MAINT FORMER-WW PRETRTMT FAC(B-31), PICA-079 - ORDNANCE/EXPLOSIVE BLDGS 800 AREA, PICA-080 - FORMER LAB PACK FAC (B-1094) SITE 41, PICA-081 - FORMER PCB STORAGE AREA (B-3114) SITE 42, PICA-082 - PESTICIDE STORAGE AREA (B-3157) SITE 43, PICA-083 - Golf Course Maintenance(BLDG 39)SITE 44, PICA-085 - BLDS IN 500-AREA, PICA-086 - HEAVY EQUIP. MAINTENANCE(BLDG 3005&3006), PICA-091 - BLDGS IN 200-AREA, PICA-092 - BASEBALL FIELDS (SITE 163), PICA-093 - WASTE BURIAL AREA NEAR SITES 19&34(180), PICA-095 - BLDG 12, PHOTO PROCESSING FAC (SITE 86), PICA-096 - BLDG 22,PRECISION MACHINE SHOP(SITE 117), PICA-097 - BLD 41,PESTICIDE STR & FORM OIL/W SEP, PICA-098 - METAL PLATING SHOP, BLDG 64 (SITE 123), PICA-099 - BLDG 5,ARSENAL REPRTION & TRNG OFF(182), PICA-100 - GRAPHIC REPRODUCTION &TRNG BLDG 58 (183), PICA-101 - BLDG 163, PHOTOGRAPHY LAB (SITE 60), PICA-102 - FORMER WASTE DUMP/CHEMICAL LAB, PICA-103 - BLDGS 161&162,CHEMICAL LAB(SITE 104), PICA-104 - BLDGS 454&455,PROPELLANT BAG FLG AREA, PICA-105 - BLDG 166,PROPELLANT TEST (SITE 124), PICA-106 - BLDGS 172&183 & BLDGS IN 400 AREA, PICA-107 - BLDGS 404,407,&408,CHMCL LAB&PROP PLANTS, PICA-108 - BLDGS in 400/300 AREA, Site 139, PICA-109 - BLDGS 427&427B,PROPELLANT PRO(SITE 140), PICA-110 - BLDG 429,PROPELLANT CRUSHING(SITE 141), PICA-111 - FORMER BLDG 435,PROPELLANT SOLV MIXING , PICA-112 - BLDG 436,PROPELLANT PROCESSING(SITE 143), PICA-113 - BLDG 462,PROPELLANT FINISHING (SITE 144), PICA-114 - BLDG 477,EXPLOSIVE&PROPELLANT MIX AREA, PICA-115 - BLDG 497,POWDER PRESSING (SITE 146), PICA-116 - BLDGS 311&319, FORMER GAS STATION & , PICA-117 - BLDG 302,SERVICE SHOPS (SITE 134), PICA-118 - METALLURGY LAB, BLDG 315 (SITE 135), PICA-119 - BLDG 355,METALLURGY LAB (SITE 136), PICA-120 - FORMER BLDG 24 PLATING FACIL (SITE 21), PICA-121 - BUILDING 336 - EXPLOSIVE LAUNDRY) (PICA-011 - BLDG 60 SATELITE WSTE ACCOM AREA(SITE122)

PA  
**1990**  
 SI (PICA-076 - FORM METL PLATG WSTWTR FAC/LAGOONS B-24 , PICA-077 - Area E Groundwater (Site 38))

**1991**  
 IRA (PICA-073 - BLDG 553 STORAGE TANKS(SITE 32), PICA-074 - BLDG 527A STORAGE TANKS (SITE 33), PICA-083 - Golf Course Maintenance(BLDG 39)SITE 44, PICA-123 - FORMER HAZ WASTE STOR/FUSE ASS(BLDG 210))

PA (PICA-036 - FORMER PROPELLANT PLANT(1010)(SITE 106), PICA-084 - VEHICLE MAINTENCE (BLDG 33)SITE 45, PICA-088 - Soldering Storage Area (BLDG 19&19A))

SI (PICA-011 - BLDG 60 SATELITE WSTE ACCOM AREA(SITE122, PICA-036 - FORMER PROPELLANT PLANT(1010)(SITE 106), PICA-084 - VEHICLE MAINTENCE (BLDG 33)SITE 45, PICA-088 - Soldering Storage Area (BLDG 19&19A), PICA-089 - PETROLEUM LEAK AREA(BLDG 305)SITE 52, PICA-122 - PROPELLANT TESTING (BLDG 197) SITE 126, PICA-123 - FORMER HAZ WASTE STOR/FUSE ASS(BLDG 210), PICA-124 - LOADING/DISASSEMBLY PLT (BLDG241)SITE 64, PICA-125 - MINE ASSEMBLY FACILITY(BLDG 268) SITE 98, PICA-126 - EXP LOADING FACILITY (BLDG 276) SITE 100, PICA-127 - MELT CASTING OPERATION (BLDG 230)SITE127, PICA-128 - EXP PRESSING PLT (BLDGS235/236) SITE 128, PICA-129 - CHANGE HOUSE (BLDG 240) SITE 129, PICA-130 - POWDER PRESS/PELLETING(BLDG 252)SITE 130, PICA-131 - FORMER ORDNANACE MANUFAC. (BLDG 266) , PICA-132 - FORMER LOAD FACILITY (BDLGS271/271I-N) , PICA-133 - CHANGE HOUSE (BUILDING 600) SITE 151, PICA-134 - R&D LAB/Chem Storage 3000-Area, , PICA-135 - BLDGS IN THE 900-AREA, PICA-136 - HIGH PRESSUREBOILER frmr bldg. 3013, PICA-137 - XRAY PHOTOPROCESSING LAB(BLDG 908)SITE82, PICA-138 - ELECTROMAG. GUN TEST SHED(BLDG329)SITE90, PICA-139 - AMMUN DEMO 1 ORD FAC(BLDGS800/807)SITE93, PICA-140 - POST ENG MAINT SHOP (BLDG 501) SITE 97, PICA-141 - FORMER ENLISTED MENS BARRACKS(BLDG 3050, PICA-142 - PROPELLANT PLANT (BLDG 511) SITE

105, PICA-143 - ORDNANCE FAC (BLDGS 717,722,732)SITE 108, PICA-144 - PYROTECHNIC PLANT (BLDG 445) SITE 109, PICA-145 - 500 AREA BUILDINGS SITE 110, PICA-146 - PROPELLANT PLANT (BLDG 561) SITE 113, PICA-147 - ADMINISTRATION BLDG (BLDG 382) SITE 137, PICA-148 - CHANGE HOUSE (BLDG 527) SITE 148, PICA-149 - PROPELLANT PLANT (BLDG541) SITE 149, PICA-150 - PROPELLANT PLANT (BLDG 555) SITE 150, PICA-151 - Ordnance Bldgs 813, 816/816B, PICA-152 - ORDNANCE FAC (BLDGS 820,823) SITE 157, PICA-153 - HIGH-EXP MAGAZINE (BLDG 926) SITE 158, PICA-154 - SUPPLIES & SER. BLDG (BLDG 975) SITE 159, PICA-155 - TECUP BUILDINGS SITE 178, PICA-156 - REFRIG. & INERT GAS PLT(BLDG 523)SITE184, PICA-157 - FORMER MOTORS/ROC FUEL TST AREA(3600) , PICA-158 - HELICOPTER MAINTENANCE(BLDG 3801)SITE175, PICA-159 - PARKING AREA ACROSS FROM BLDG 3328, PICA-160 - CHEM LAB & ADMIN BLDG (BLDG 3404)SITE173, PICA-161 - SEWAGE TRMT/CHEM LAB/FIREHOUSE/PRKG, PICA-162 - SHELL BURIAL AREAS NEAR SITE 5, PICA-163 - Propellnt/Rcket Prod 1300/1400 Area, PICA-164 - RESERVOIR NEAR BLDG 3159 SITE 103, PICA-165 - FORMER EXPLOSIVES LOADING (BLDG 1033) , PICA-166 - FORMER ORDNANCE FACILITY (BLDG 1029) , PICA-167 - FORMER PROP PLT/ORD FAC(BLDGS1373,1374) , PICA-168 - PROPEL PLTS/PRESS HOUSE 1400,1402-1403, PICA-169 - PROP PLTS (BLDGS1408,1408A-C,1409,1411), PICA-170 - PROP MELT PLTS (BLDGS1462-1464) SITE 170, PICA-171 - ORDNANCE BLDG/EXPLOSIVES PROD., PICA-172 - FORMER NITRATION BLDG (BLDG 1031) , PICA-173 - FORMER EX MAN/STOR(BLDGS1070,1071,1071C), PICA-174 - FORMER PROP PLTS(BLDGS1354,1357,1359) , PICA-175 - ORDNANCE BLDGS in 600-AREA, PICA-176 - LITTLE LEAGUE BASEBALL FIELD SITE 176, PICA-178 - ORDNANCE FAC (BLDGS 604,604C) SITE 152, PICA-179 - ORDINANCE FACILITY (BLDG 606) SITE 153, PICA-180 - FIELD OFF,DISASS(BLDGS 617,617G) SITE154, PICA-182 - MUN TEST RANGES (BLDGS647,649,650)SITE11, PICA-183 - GEN PURPOSE MAGAZINE (BLDG1217) SITE 164, PICA-184 - BUILDINGS(1600,1601,1609,1610) SITE 94, PICA-185 - PROP STORAGE (BLDGS46,47,48) SITE 119, PICA-186 - PROPELLANT STORAGE (BLDG 50) SITE 120, PICA-187 - CHEMICAL STORAGE (BLDG 57) SITE 121, PICA-191 - FORMER COAL STORAGE AREA (BLDG 3173) , PICA-193 - GREEN POND AND BEAR SWAMP BROOK SITE 190, PICA-194 - BEAR SWAMP BROOK, PICA-195 - BLDGS IN 1400/1300/3100/1000 AREAS)

**1992**

SI (PICA-177 - SAN SEWER SYSTEM BREAKS/LEAKS SITE 177, PICA-192 - APPLE TREES RECREATIONAL AREA )

IRA (PICA-136 - HIGH PRESSUREBOILER frmr bldg. 3013)

**1993**

IRA (PICA-065 - POST FARM LANDFILL (SITE 23), PICA-072 - FORMER GAS STATION/ DRMO(SITE 31))

**1994**

PA (PICA-199 - FORMER PISTOL RANGE DUMP&NAVY MANURE PIT, PICA-200 - AREA (L) OTHER BUILDINGS)

**1995**

SI (PICA-199 - FORMER PISTOL RANGE DUMP&NAVY MANURE PIT, PICA-200 - AREA (L) OTHER BUILDINGS)

**1996**

PA (PICA-197 - AREA "O" OTHER BUILDINGS, PICA-198 - AREA "N"OTHER BUILDINGS, PICA-201 - Other Bldgs in Area P, PICA-202 - Other Bldgs in Area J, PICA-203 - FORMER POISON GAS LAB, PICA-204 - MID-VALLEY GROUNDWATER, PICA-205 - AREA B GROUNDWATER , PICA-206 - AREA C GROUNDWATER, PICA-207 - STORAGE BUILDING 63, PICA-208 - D.U. SCRAP STORAGE AREA, PICA-209 - BUILDING 167, LOCOMOTIVE AREA, BLDG. 430, PICA-210 - BUILDING 321)

**1997**

RI/FS (PICA-036 - FORMER PROPELLANT PLANT(1010)(SITE 106), PICA-054 - MUNITS&PROPLT TST AREA(B-1222)(SITE 8), PICA-059 - MUNITS/PYROTEC TEST AREA(B-640)(SITE 13), PICA-068 - DREDGE PILE (SITE 26), PICA-070 - SEWAGE TRMT PLANT SLUDGE BEDS(B80)SITE28, PICA-088 - Soldering Storage Area (BLDG 19&19A), PICA-092 - BASEBALL FIELDS (SITE 163), PICA-095 - BLDG 12, PHOTO PROCESSING FAC (SITE 86), PICA-099 - BLDG 5, ARSENAL REPRTION & TRNG OFF(182), PICA-100 - GRAPHIC REPRODUCTION & TRNG BLDG 58 (183), PICA-105 - BLDG 166, PROPELLANT TEST (SITE 124),

## IRP Schedule

SI	PICA-112 - BLDG 436,PROPELLANT PROCESSING(SITE 143), PICA-182 - MUN TEST RANGES (BLDGS647,649,650)SITE11) (PICA-181 - ORDINANCE FAC (BLDGS 620,620B) SITE 155, PICA-197 - AREA "O" OTHER BUILDINGS, PICA-198 - AREA "N"OTHER BUILDINGS, PICA-201 - Other Bldgs in Area P, PICA-202 - Other Bldgs in Area J)
<b>1998</b>	
SI	(PICA-087 - Auto Hobby Shop (BLDG 3315)- Site 48, PICA-094 - SURVEILLANCE LABORATORY(BLDG 92)-SITE 69, PICA-188 - FORMER LABORATORY IN BLDG 350 SITE 185, PICA-189 - FIREHOUSE (BUILDING 3316) SITE 186, PICA-190 - OIL & ACID STORAGE (BLDG 67) SITE 187, PICA-203 - FORMER POISON GAS LAB, PICA-204 - MID-VALLEY GROUNDWATER, PICA-209 - BUILDING 167, LOCOMOTIVE AREA, BLDG. 430, PICA-210 - BUILDING 321)
<b>2000</b>	
IRA RI/FS	(PICA-011 - BLDG 60 SATELITE WSTE ACCOM AREA(SITE122) (PICA-055 - MUNITS&PROPLT TEST AREA(B670,B673,B674), PICA-060 - MUNITIONS TEST AREA (B-636) SITE 14, PICA-061 - MUNITIONS TEST AREA(B616,B654)(SITE 15), PICA-083 - Golf Course Maintenance(BLDG 39)SITE 44, PICA-110 - BLDG 429,PROPELLANT CRUSHING(SITE 141), PICA-120 - FORMER BLDG 24 PLATING FACIL (SITE 21), PICA-194 - BEAR SWAMP BROOK)
<b>2001</b>	
RI/FS PA	(PICA-078 - VEHCL MAINT FORMER-WW PRETRTMT FAC(B-31), PICA-087 - Auto Hobby Shop (BLDG 3315)- Site 48, PICA-118 - METALLURGY LAB, BLDG 315 (SITE 135)) (PBC Picatinny - PBC)
<b>2002</b>	
IRA RI/FS	(PICA-050 - FORMER REACT MTRS/RCKT FUEL TST A 1500) (PICA-063 - PYROTECHNIC TESTING RANGE (SITE 20), PICA-066 - SANITARY LANDFILL(NEAR SITE 20)SITE 24)
<b>2003</b>	
RA(C) RI/FS	(PICA-066 - SANITARY LANDFILL(NEAR SITE 20)SITE 24) (PICA-007 - INACT.ROCKET FUEL TEST G-2 AREA (SITE 1), PICA-010 - BUILDING 95 FORMER WASTE IMPOUNDMENTS, PICA-012 - BLDG 3022 PHYS ANAL LAB/ENERG(SITE 83), PICA-018 - FLUOROCHEMICAL STRG(3045)(SITE 30), PICA-021 - FORMER NG PROC AREA (1361A-1364) ST 35, PICA-037 - FORMER HAZ WST TANK STOR(1380)(SITE 51), PICA-047 - STEAM POWER PLANT BLDG 506(SITE 63/65), PICA-052 - SHELL BURIAL AREA(NEAR B-3100)(SITE 6), PICA-056 - FORMER CHEMICAL BURIAL AREA (SITE 10), PICA-064 - POACH HOUSE (520) (SITE 147), PICA-073 - BLDG 553 STORAGE TANKS(SITE 32), PICA-074 - BLDG 527A STORAGE TANKS (SITE 33), PICA-080 - FORMER LAB PACK FAC (B-1094) SITE 41, PICA-081 - FORMER PCB STORAGE AREA (B-3114) SITE 42, PICA-082 - PESTICIDE STORAGE AREA (B-3157) SITE 43, PICA-086 - HEAVY EQUIP. MAINTENANCE(BLDG 3005&3006), PICA-089 - PETROLEUM LEAK AREA(BLDG 305)SITE 52, PICA-103 - BLDGS 161&162,CHEMICAL LAB(SITE 104), PICA-104 - BLDGS 454&455,PROPELLANT BAG FLG AREA, PICA-106 - BLDGS 172&183 & BLDGS IN 400 AREA, PICA-113 - BLDG 462,PROPELLANT FINISHING (SITE 144), PICA-115 - BLDG 497,POWDER PRESSING (SITE 146), PICA-116 - BLDGS 311&319, FORMER GAS STATION & , PICA-117 - BLDG 302,SERVICE SHOPS (SITE 134), PICA-119 - BLDG 355,METALLURGY LAB (SITE 136), PICA-123 - FORMER HAZ WASTE STOR/FUSE ASS(BLDG 210), PICA-124 - LOADING/DISASSEMBLY PLT (BLDG241)SITE 64, PICA-125 - MINE ASSEMBLY FACILITY(BLDG 268) SITE 98, PICA-126 - EXP LOADING FACILITY (BLDG 276) SITE 100, PICA-127 - MELT CASTING OPERATION (BLDG 230)SITE127, PICA-128 - EXP PRESSING PLT (BLDGS235/236) SITE 128, PICA-129 - CHANGE HOUSE (BLDG 240) SITE 129, PICA-130 - POWDER PRESS/PELLETING(BLDG 252)SITE 130, PICA-132 - FORMER LOAD FACILITY (BDLGS271/271-N) , PICA-133 - CHANGE HOUSE (BUILDING 600) SITE 151, PICA-137 - XRAY PHOTOPROCESSING LAB(BLDG 908)SITE82, PICA-138 - ELECTROMAG. GUN TEST SHED(BLDG329)SITE90, PICA-139 - AMMUN DEMO 1 ORD FAC(BLDGS800/807)SITE93, PICA-140 - POST ENG MAINT SHOP (BLDG 501) SITE 97, PICA-141 - FORMER ENLISTED MENS BARRACKS(BLDG 3050, PICA-142 - PROPELLANT PLANT (BLDG 511) SITE 105, PICA-144 - PYROTECHNIC PLANT (BLDG 445)

## IRP Schedule

	<p>SITE 109, PICA-147 - ADMINISTRATION BLDG (BLDG 382) SITE 137, PICA-148 - CHANGE HOUSE (BLDG 527) SITE 148, PICA-150 - PROPELLANT PLANT (BLDG 555) SITE 150, PICA-151 - Ordnance Bldgs 813, 816/816B, PICA-152 - ORDNANCE FAC (BLDGS 820,823) SITE 157, PICA-153 - HIGH-EXP MAGAZINE (BLDG 926) SITE 158, PICA-154 - SUPPLIES &amp; SER. BLDG (BLDG 975) SITE 159, PICA-156 - REFRIG. &amp; INERT GAS PLT(BLDG 523)SITE184, PICA-157 - FORMER MOTORS/ROC FUEL TST AREA(3600) , PICA-159 - PARKING AREA ACROSS FROM BLDG 3328, PICA-160 - CHEM LAB &amp; ADMIN BLDG (BLDG 3404)SITE173, PICA-165 - FORMER EXPLOSIVES LOADING (BLDG 1033) , PICA-166 - FORMER ORDNANCE FACILITY (BLDG 1029) , PICA-167 - FORMER PROP PLT/ORD FAC(BLDGS1373,1374) , PICA-168 - PROPEL PLTS/PRESS HOUSE 1400,1402-1403, PICA-169 - PROP PLTS (BLDGS1408,1408A-C,1409,1411), PICA-170 - PROP MELT PLTS (BLDGS1462-1464) SITE 170, PICA-172 - FORMER NITRATION BLDG (BLDG 1031) , PICA-173 - FORMER EX MAN/STOR(BLDGS1070,1071,1071C), PICA-174 - FORMER PROP PLTS(BLDGS1354,1357,1359) , PICA-178 - ORDNANCE FAC (BLDGS 604,604C) SITE 152, PICA-179 - ORDINANCE FACILITY (BLDG 606) SITE 153, PICA-180 - FIELD OFF,DISASS(BLDGS 617,617G) SITE154, PICA-185 - PROP STORAGE (BLDGS46,47,48) SITE 119, PICA-186 - PROPELLANT STORAGE (BLDG 50) SITE 120, PICA-187 - CHEMICAL STORAGE (BLDG 57) SITE 121, PICA-188 - FORMER LABORATORY IN BLDG 350 SITE 185, PICA-189 - FIREHOUSE (BUILDING 3316) SITE 186, PICA-191 - FORMER COAL STORAGE AREA (BLDG 3173) , PICA-203 - FORMER POISON GAS LAB, PICA-208 - D.U. SCRAP STORAGE AREA, PICA-210 - BUILDING 321)</p>
RD	
<b>2004</b>	
RI/FS	(PICA-076 - FORM METL PLATG WSTWTR FAC/LAGOONS B-24 , PICA-084 - VEHICLE MAINTENCE (BLDG 33)SITE 45, PICA-094 - SURVEILLANCE LABORATORY(BLDG 92)-SITE 69, PICA-101 - BLDG 163, PHOTOGRAPHY LAB (SITE 60), PICA-176 - LITTLE LEAGUE BASEBALL FIELD SITE 176, PICA-177 - SAN SEWER SYSTEM BREAKS/LEAKS SITE 177, PICA-183 - GEN PURPOSE MAGAZINE (BLDG1217) SITE 164)
<b>2005</b>	
RI/FS	(PICA-002 - LOWER BURNING GROUND (SITE 34), PICA-029 - BUILDINGS IN 300 AREA, PICA-053 - MUNITS&PROPLTS TST AREA/CHEM BURIAL, PICA-065 - POST FARM LANDFILL (SITE 23), PICA-069 - PROPELLANT/CHEM/MATERIAL STORAGE, PICA-098 - METAL PLATING SHOP, BLDG 64 (SITE 123), PICA-114 - BLDG 477,EXPLOSIVE&PROPELLANT MIX AREA, PICA-158 - HELICOPTER MAINTENANCE(BLDG 3801)SITE175, PICA-161 - SEWAGE TRMT/CHEM LAB/FIREHOUSE/PRKG, PICA-190 - OIL & ACID STORAGE (BLDG 67) SITE 187, PICA-193 - GREEN POND AND BEAR SWAMP BROOK SITE 190)
IRA	(PICA-001 - INACTIVE TETRYL WASTE PITS (SITES 17/18), PICA-111 - FORMER BLDG 435,PROPELLANT SOLV MIXING , PICA-193 - GREEN POND AND BEAR SWAMP BROOK SITE 190, PICA-209 - BUILDING 167, LOCOMOTIVE AREA, BLDG. 430)
<b>2006</b>	
RI/FS	(PICA-109 - BLDGS 427&427B,PROPELLANT PRO(SITE 140), PICA-121 - BUILDING 336 - EXPLOSIVE LAUNDRY)
IRA	(PICA-076 - FORM METL PLATG WSTWTR FAC/LAGOONS B-24 )
<b>2007</b>	
RI/FS	(PICA-067 - SANITIARY LANDFILL(NEAR SITE 26)SITE 25, PICA-077 - Area E Groundwater (Site 38), PICA-093 - WASTE BURIAL AREA NEAR SITES 19&34(180))
RA(C)	(PICA-065 - POST FARM LANDFILL (SITE 23), PICA-067 - SANITIARY LANDFILL(NEAR SITE 26)SITE 25, PICA-076 - FORM METL PLATG WSTWTR FAC/LAGOONS B-24 , PICA-093 - WASTE BURIAL AREA NEAR SITES 19&34(180), PICA-193 - GREEN POND AND BEAR SWAMP BROOK SITE 190)
RD	(PICA-065 - POST FARM LANDFILL (SITE 23), PICA-067 - SANITIARY LANDFILL(NEAR SITE 26)SITE 25, PICA-076 - FORM METL PLATG WSTWTR FAC/LAGOONS B-24 , PICA-077 - Area E Groundwater (Site 38), PICA-093 - WASTE BURIAL AREA NEAR SITES 19&34(180), PICA-193 - GREEN POND AND BEAR SWAMP BROOK SITE 190)
<b>2008</b>	
RA(C)	(PICA-077 - Area E Groundwater (Site 38), PICA-102 - FORMER WASTE DUMP/CHEMICAL LAB)

# IRP Schedule

RD	(PICA-102 - FORMER WASTE DUMP/CHEMICAL LAB)
RI/FS	(PICA-102 - FORMER WASTE DUMP/CHEMICAL LAB)
<b>2009</b>	
RA(C)	(PBC Picatinny - PBC, PICA-020 - PYROTECHNIC DEMO AREA (SITE 19), PICA-205 - AREA B GROUNDWATER , PICA-206 - AREA C GROUNDWATER)
RD	(PICA-020 - PYROTECHNIC DEMO AREA (SITE 19), PICA-072 - FORMER GAS STATION/ DRMO(SITE 31), PICA-205 - AREA B GROUNDWATER , PICA-206 - AREA C GROUNDWATER)
RI/FS	(PICA-020 - PYROTECHNIC DEMO AREA (SITE 19), PICA-072 - FORMER GAS STATION/ DRMO(SITE 31), PICA-205 - AREA B GROUNDWATER , PICA-206 - AREA C GROUNDWATER)
<b>2010</b>	
RI/FS	(PICA-008 - INACT. ROCKET FUEL TEST Areas, PICA-079 - ORDNANCE/EXPLOSIVE BLDGS 800 AREA)
RD	(PICA-079 - ORDNANCE/EXPLOSIVE BLDGS 800 AREA)
RA(C)	(PICA-072 - FORMER GAS STATION/ DRMO(SITE 31), PICA-079 - ORDNANCE/EXPLOSIVE BLDGS 800 AREA)
<b>2011</b>	
RI/FS	(PICA-013 - Groundwater near building 91 )
RA(C)	(PICA-008 - INACT. ROCKET FUEL TEST Areas, PICA-013 - Groundwater near building 91 )
RD	(PICA-008 - INACT. ROCKET FUEL TEST Areas, PICA-013 - Groundwater near building 91 )
<b>2012</b>	
RI/FS	(PICA-204 - MID-VALLEY GROUNDWATER)
<b>2013</b>	
RA(C)	(PICA-204 - MID-VALLEY GROUNDWATER)
RD	(PICA-204 - MID-VALLEY GROUNDWATER)
<b>2014</b>	
RI/FS	(PICA-001 - INACTIVE TETRYL WASTE PITS (SITES 17/18), PICA-006 - GUNCOTTON LINE (SITE 16), PICA-022 - POWER PLNT/HAZ WST TNKS/PROPELL PRD, PICA-085 - BLDS IN 500-AREA, PICA-143 - ORDNANCE FAC (BLDGS 717,722,732)SITE 108, PICA-146 - PROPELLANT PLANT (BLDG 561) SITE 113, PICA-163 - Propellnt/Rcket Prod 1300/1400 Area, PICA-171 - ORDNANCE BLDG/EXPLOSIVES PROD., PICA-192 - APPLE TREES RECREATIONAL AREA , PICA-199 - FORMER PISTOL RANGE DUMP&NAVY MANURE PIT)
RD	(PICA-002 - LOWER BURNING GROUND (SITE 34))
RA(O)	(PBC Picatinny - PBC)
<b>2015</b>	
RI/FS	(PICA-096 - BLDG 22,PRECISION MACHINE SHOP(SITE 117))
RA(C)	(PICA-002 - LOWER BURNING GROUND (SITE 34))

## Projected Phase Completion Milestones

See attached schedule

## Projected Record of Decision (ROD)/Decision Document (DD) Approval Dates

Site ID	Site Name	ROD/DD Title	ROD/DD Date
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## IRP Schedule

**Final RA(C) Completion Date:** 201912

**Schedule for Next Five-Year Review:** 2016

**Estimated Completion Date of IRP at Installation (including LTM phase):** 205310

## PICATINNY ARSENAL IRP Schedule

= phase underway

SITE ID	SITE NAME	PHASE	FY17	FY18	FY19	FY20	FY21	FY22+
PICA-001	INACTIVE TETRYL WASTE PITS (SITES 17/18)	LTM						
PICA-002	LOWER BURNING GROUND (SITE 34)	LTM						
PICA-006	GUNCOTTON LINE (SITE 16)	LTM						
PICA-008	INACT. ROCKET FUEL TEST Areas	RA(O)						
PICA-011	BLDG 60 SATELITE WSTE ACCOM AREA(SITE122)	RI/FS						
PICA-013	Groundwater near building 91	RA(O)						
PICA-015	LAKE DENMARK (SITE 54)	RI/FS						
PICA-020	PYROTECHNIC DEMO AREA (SITE 19)	LTM						
PICA-022	POWER PLNT/HAZ WST TNKS/PROPELL PRD	LTM						
PICA-050	FORMER REACT MTRS/RCKT FUEL TST A 1500	RI/FS						
PICA-057	PICATINNY LAKE (SITE 53)	RI/FS						
		RD						
		RA(C)						
PICA-058	600 HILL GROUNDWATER PLUME	RI/FS						
PICA-065	POST FARM LANDFILL (SITE 23)	LTM						
PICA-066	SANITARY LANDFILL(NEAR SITE 20)SITE 24	LTM						
PICA-067	SANITARY LANDFILL(NEAR SITE 26)SITE 25	LTM						
PICA-071	DRUM STRG AREA(B31 YARD) SITE 29	RI/FS						
PICA-072	FORMER GAS STATION/ DRMO(SITE 31)	LTM						
PICA-075	EQPMT & WASTE STORAGE IN 3000-AREA	RI/FS						
PICA-076	FORM METL PLATG WSTWTR FAC/LAGOONS B-24	RA(O)						

## PICATINNY ARSENAL IRP Schedule

SITE ID	SITE NAME	PHASE	FY17	FY18	FY19	FY20	FY21	FY22+
PICA-077	Area E Groundwater (Site 38)	RA(O)						
SITE ID	SITE NAME	PHASE	FY17	FY18	FY19	FY20	FY21	FY22+
PICA-079	ORDNANCE/EXPLOSIVE BLDGS 800 AREA	RA(O)						
SITE ID	SITE NAME	PHASE	FY17	FY18	FY19	FY20	FY21	FY22+
PICA-085	BLDS IN 500-AREA	LTM						
SITE ID	SITE NAME	PHASE	FY17	FY18	FY19	FY20	FY21	FY22+
PICA-091	BLDGS IN 200-AREA	RI/FS						
		LTM						
SITE ID	SITE NAME	PHASE	FY17	FY18	FY19	FY20	FY21	FY22+
PICA-093	WASTE BURIAL AREA NEAR SITES 19&34(180)	LTM						
SITE ID	SITE NAME	PHASE	FY17	FY18	FY19	FY20	FY21	FY22+
PICA-096	BLDG 22,PRECISION MACHINE SHOP(SITE 117)	LTM						
SITE ID	SITE NAME	PHASE	FY17	FY18	FY19	FY20	FY21	FY22+
PICA-097	BLD 41,PESTICIDE STR & FORM OIL/W SEP	RI/FS						
SITE ID	SITE NAME	PHASE	FY17	FY18	FY19	FY20	FY21	FY22+
PICA-102	FORMER WASTE DUMP/CHEMICAL LAB	LTM						
SITE ID	SITE NAME	PHASE	FY17	FY18	FY19	FY20	FY21	FY22+
PICA-107	BLDGS 404,407,&408,CHMCL LAB&PROP PLANTS	RI/FS						
SITE ID	SITE NAME	PHASE	FY17	FY18	FY19	FY20	FY21	FY22+
PICA-108	BLDGS in 400/300 AREA, Site 139	RI/FS						
SITE ID	SITE NAME	PHASE	FY17	FY18	FY19	FY20	FY21	FY22+
PICA-111	FORMER BLDG 435,PROPELLANT SOLV MIXING	RI/FS						
SITE ID	SITE NAME	PHASE	FY17	FY18	FY19	FY20	FY21	FY22+
PICA-122	PROPELLANT TESTING (BLDG 197) SITE 126	RI/FS						
SITE ID	SITE NAME	PHASE	FY17	FY18	FY19	FY20	FY21	FY22+
PICA-131	FORMER ORDNANCE MANUFAC. (BLDG 266)	RI/FS						
SITE ID	SITE NAME	PHASE	FY17	FY18	FY19	FY20	FY21	FY22+
PICA-134	R&D LAB/Chem Storage 3000-Area,	RI/FS						
SITE ID	SITE NAME	PHASE	FY17	FY18	FY19	FY20	FY21	FY22+
PICA-135	BLDGS IN THE 900-AREA	RI/FS						
SITE ID	SITE NAME	PHASE	FY17	FY18	FY19	FY20	FY21	FY22+
PICA-136	HIGH PRESSUREBOILER frmr bldg. 3013	RI/FS						
SITE ID	SITE NAME	PHASE	FY17	FY18	FY19	FY20	FY21	FY22+
PICA-143	ORDNANCE FAC (BLDGS 717,722,732)SITE 108	LTM						
SITE ID	SITE NAME	PHASE	FY17	FY18	FY19	FY20	FY21	FY22+
PICA-145	500 AREA BUILDINGS SITE 110	RI/FS						
SITE ID	SITE NAME	PHASE	FY17	FY18	FY19	FY20	FY21	FY22+
PICA-149	PROPELLANT PLANT (BLDG541) SITE 149	RI/FS						
		RD						
		RA(C)						



## PICATINNY ARSENAL IRP Schedule

SITE ID	SITE NAME	PHASE	FY17	FY18	FY19	FY20	FY21	FY22+
PICA-155	TECUP BUILDINGS SITE 178	RI/FS						
SITE ID	SITE NAME	PHASE	FY17	FY18	FY19	FY20	FY21	FY22+
PICA-162	SHELL BURIAL AREAS NEAR SITE 5	RI/FS						
SITE ID	SITE NAME	PHASE	FY17	FY18	FY19	FY20	FY21	FY22+
PICA-163	Propellnt/Rcket Prod 1300/1400 Area	LTM						
SITE ID	SITE NAME	PHASE	FY17	FY18	FY19	FY20	FY21	FY22+
PICA-164	RESERVOIR NEAR BLDG 3159 SITE 103	RI/FS						
SITE ID	SITE NAME	PHASE	FY17	FY18	FY19	FY20	FY21	FY22+
PICA-171	ORDNANCE BLDG/EXPLOSIVES PROD.	LTM						
SITE ID	SITE NAME	PHASE	FY17	FY18	FY19	FY20	FY21	FY22+
PICA-175	ORDNANCE BLDGS in 600-AREA	RI/FS						
SITE ID	SITE NAME	PHASE	FY17	FY18	FY19	FY20	FY21	FY22+
PICA-184	BUILDINGS(1600,1601,1609,1610) SITE 94	RI/FS						
SITE ID	SITE NAME	PHASE	FY17	FY18	FY19	FY20	FY21	FY22+
PICA-192	APPLE TREES RECREATIONAL AREA	LTM						
SITE ID	SITE NAME	PHASE	FY17	FY18	FY19	FY20	FY21	FY22+
PICA-193	GREEN POND AND BEAR SWAMP BROOK SITE 190	LTM						
SITE ID	SITE NAME	PHASE	FY17	FY18	FY19	FY20	FY21	FY22+
PICA-195	BLDGS IN 1400/1300/3100/1000 AREAS	RI/FS						
SITE ID	SITE NAME	PHASE	FY17	FY18	FY19	FY20	FY21	FY22+
PICA-199	FORMER PISTOL RANGE DUMP&NAVY MANURE PIT	LTM						
SITE ID	SITE NAME	PHASE	FY17	FY18	FY19	FY20	FY21	FY22+
PICA-200	AREA (L) OTHER BUILDINGS	RI/FS						
SITE ID	SITE NAME	PHASE	FY17	FY18	FY19	FY20	FY21	FY22+
PICA-204	MID-VALLEY GROUNDWATER	RA(O)						
SITE ID	SITE NAME	PHASE	FY17	FY18	FY19	FY20	FY21	FY22+
PICA-205	AREA B GROUNDWATER	RA(O)						
SITE ID	SITE NAME	PHASE	FY17	FY18	FY19	FY20	FY21	FY22+
PICA-206	AREA C GROUNDWATER	LTM						
SITE ID	SITE NAME	PHASE	FY17	FY18	FY19	FY20	FY21	FY22+
PICA-207	STORAGE BUILDING 63	RI/FS						
SITE ID	SITE NAME	PHASE	FY17	FY18	FY19	FY20	FY21	FY22+
PICA-209	BUILDING 167, LOCOMOTIVE AREA, BLDG. 430	RI/FS						

**PICATINNY ARSENAL**  
**Army Defense Environmental Restoration Program**  
**Military Munitions Response Program**

# MMRP Summary

**Installation Total Army Environmental Database-Restoration (AEDB-R) Sites/Closeout Sites Count:** 17/7

## Installation Site Types with Future and/or Underway Phases

- 1 Firing Range  
(PICA-006-R-02)
- 9 Unexploded Munitions/Ordnance  
(PICA-003-R-01, PICA-003-R-02, PICA-004-R-01, PICA-006-R-01, PICA-008-R-01, PICA-010-R-01, PICA-012-R-01, PICA-013-R-01, PICA-014-R-01)

## Most Widespread Contaminants of Concern

Munitions and explosives of concern (MEC), Munitions constituents (MC)

## Media of Concern

Groundwater, Sediment, Soil, Surface Water

## Completed Remedial Actions (Interim Remedial Actions/ Final Remedial Actions (IRA/FRA))

Site ID	Site Name	Action	Remedy	FY
PICA-004-R-01	1926 EXPLOSION SITE-TD	IRA	WASTE REMOVAL - SOILS	2009
PICA-007-R-01	Former DRMO YARD	IRA	REMOVAL	2009
PICA-004-R-01	1926 EXPLOSION SITE-TD	IRA	UXO CLEARANCE	2011
PICA-005-R-01	Green Pond Brook MRS	IRA	INSTITUTIONAL CONTROLS	2014

## Duration of MMRP

**Date of MMRP Inception** 200212

**Estimated Date for Remedy-In-Place (RIP)/Response Complete (RC):** 202010/203001

**Date of MMRP completion including Long Term Management (LTM):** 204809

# MMRP Contamination Assessment

## **Contamination Assessment Overview**

An SI was initiated for all 11 sites in February 2006 and was completed in FY08. MEC in the soil is a major concern.

## **Cleanup Exit Strategy**

The SI and subsequent investigations will determine the cleanup strategy for each site. More than likely, all the sites will require an RI/FS, an RD, and a remedial action (construction) [RA(C)] for removal of soils and any explosives that are found. See the individual cleanup strategies for more detailed information.

## MMRP Previous Studies

Year	Title	Author	Date
2003	Final US Army Closed, Transferring and Transferred Range/Site Inventory for Picatinny Arsenal, New Jersey	Malcolm Pirnie, Inc.	DEC-2003
2006	Final Historical Records Review, Picatinny Arsenal, New Jersey	Malcolm Pirnie, Inc.	DEC-2006
2007	Final Work Plan, Picatinny Arsenal, New Jersey	Malcolm Pirnie, Inc.	JUL-2007
	EE/CA Workplan	PIKA/MPI	DEC-2007
2008	Final Site Inspection, Picatinny Arsenal, New Jersey	Malcolm Pirnie, Inc.	MAY-2008
	Mount Hope Time Critical Removal Action Addendum	PIKA/MPI	JUN-2008
2009	Mount Hope Time Critical Removal Action Addendum	MPI	JAN-2009
2010	Engineering Evaluation/Cost Analysis Report	PIKA/MPI	JUN-2010
2011	Final TCRA Report for ICM removal	ARCADIS	MAR-2011
	Tilcon 3 Removal Action Report	PIKA	APR-2011
	Remedial Investigation Workplan for the MMRP for Picatinny	WESTON	JUL-2011
2012	Addendum Remedial Investigation Workplan for the MMRP for Picatinny	WESTON	JAN-2012
	Interim Land Use Control Plan for MMRP Sites	URS	SEP-2012
	Pathway Analysis Report	WESTON	OCT-2012
2013	Lake Denmark Off-Post Munitions Response Site Technical Assessment of Existing Data and Coverage Military Munitions Response Program	WESTON	MAR-2013
	Remedial Investigation Report for the MMRP for Picatinny Site	WESTON	MAR-2013
2014	Light Detection and Ranging Data Assessment Remedial Investigation Military Munitions Response Program	WESTON	MAY-2014

**PICATINNY ARSENAL**  
**Military Munitions Response Program**  
**Site Descriptions**

# Site ID: PICA-003-R-01

## Site Name: 1926 Explosion Radius

### STATUS

**Regulatory Driver:** CERCLA

**MRSPP Score:** 03

Contaminants of Concern: Munitions and explosives of concern (MEC), Munitions constituents (MC)

Media of Concern: Groundwater, Soil

Phases	Start	End
PA.....	200212.....	200312
SI.....	200602.....	200805
RI/FS.....	200910.....	201805
IRA.....	201002.....	201809
LTM.....	201810.....	204809

**RIP Date:** N/A

**RC Date:** 201809

### SITE DESCRIPTION

PICA-003-R-01 includes the future cost for the following Munitions Response Sites (MRSs: PICA-003-R-01, PICA-003-R-02, PICA-004-R-01, PICA-006-R-01 PICA-008-R-01, PICA-010-R-01 with PICA-162, PICA-012-R-01 and PICA-014-R-01.

The original munitions response site (MRS) includes the on-post area affected by the explosion of the Lake Denmark Naval Ammunition Depot in 1926. The 1926 explosion radius MRS consists of the explosion center and the area within a one-mile radius, minus off-post property, areas that fall on operational ranges, areas that fall on surface danger zones (SDZs) for operational ranges where there is the potential for an ongoing release of MEC due to the use of the range, and areas identified as separate MRS. Thus, the 1926 explosion radius MRS consists of 1,562 acres.

According to an historical report, an estimated 2.5 million pounds of explosives detonated in the explosion, including: TNT, 25-pound Navy Mark I bombs, Mark II bombs, Mark III, Mark IV aircraft bombs, Mark V bombs, bomb accessories (e.g., fins, tails), aerial bombs, 14-inch class B, 14-in armor piercing (AP) rounds, and 5-inch and 8-inch shells.

Based on the final SI dated April 2008, the following historical records review (HRR) MRS were consolidated into this MRS: 1926 Explosion Radius (PICA-003-R-01), Former DRMO Yard, and Former Burning Ground (PICA-007-R-01), and Former Projectile Range (site ID: N/A).

In 2008, an EE/CA was conducted at six locations within the 1926 Explosion Site Radius MRS. The investigated areas included the residential community initiative (RCI) military housing project (Navy Hill Housing, Fisher's Pond, and Farley Avenue), childcare development center (CDC), electromagnetic research facility (ERF), and PHS&T. A total of 45 MEC items and 6,380 pounds of munitions debris (MD) items were found throughout the six investigated areas.

An IRA was conducted at PICA-007-R-01 that is called the improved conventional munitions (ICM) removal action in the Former DRMO Yard. Because PICA-007-R-01 was combined with PICA-003-R-01 in the SI, all future requirements associated with PICA-007-R-01 are tracked under PICA-003-R-01.

The SI was completed in FY08. The EE/CA for the RCI (Navy Hill Housing, Fisher's Pond, and Farley Avenue), CDC, ERF, and PHS&T was approved. The RI contract was funded in FY10 and the full work plan approved in the spring of 2012. The RI fieldwork was completed in FY12 for the site.

The RI contract was funded in FY10 and tracked under PBA@MR PICA. The RI work plan was approved in summer 2011 and the fieldwork was implemented starting in FY12. The final RI report was approved by October 2014. The 3-acre fuze area PICA-003-R-01 was assessed as a separate conceptual site model (CSM) in that approved report.

A LUC NTCRA DD was signed in the spring of 2012. The LUC work plan was approved by Army and the regulators in the fall of 2012 and is currently implemented through the final ROD action which is expected in FY18.

**Site ID: PICA-003-R-01**  
**Site Name: 1926 Explosion Radius**

A new contract was awarded in FY15 with the task of developing an FS for all MMRP sites. The FS is expected to be submitted to the regulators in FY16.

**CLEANUP/EXIT STRATEGY**

The Army will develop an FS and will fund, develop and public notice a PP and a ROD for signature.

The LUCs related to the NTCRA DD will continue until the ROD is signed.

Action for this large site is expected to be a removal action of 1,560 acres at 1-foot depth. This is an estimate only. This will be followed by LUCs similar to the NTCRA DD and will be evaluated in the five-year reviews.



**Site ID: PICA-003-R-02**  
**Site Name: Fuze Area**

**STATUS**

**Regulatory Driver:** CERCLA

**MRSPP Score:** 04

Contaminants of Concern: Munitions and explosives of concern (MEC), Munitions constituents (MC)

Media of Concern: Groundwater, Soil

Phases	Start	End
PA.....	200212.....	200312
SI.....	200602.....	200805
RI/FS.....	200910.....	201805
IRA.....	200702.....	201809

**RIP Date:** N/A

**RC Date:** 201809

**SITE DESCRIPTION**

Future costs of PICA-003-R-02 are included in the cost for PICA-003-R-01.

The Fuze Area MRS is 1.63 acres in size and was originally part of the 1926 Explosion Radius MRS (PICA-003-R-01). The MRS is characterized by a high concentration of MK2 base detonating and MK2 point detonating fuzes predominately found on the ground surface. The release mechanism for these fuzes is unknown; however, a building foundation is directly adjacent to where the fuzes were found. It is possible that the fuzes were stored in the former building and the building was damaged during the 1926 Lake Denmark explosion. If so, the building may have been razed and the fuzes dispersed in this area.

Statistical calculations conducted during the MMRP RI suggest a MEC density of 173 items per acre. MEC exposure pathways for receptors with access to the MRS are complete. The Fuze Area MRS has a MEC hazard assessment (HA) Hazard Level Category of 2, which indicates the MRS has a moderately high hazard potential. Munitions constituents (MC) sampling was not warranted as part of the RI based on the characterization work performed at the MRS.

The RI report was submitted in December 2013 and approval expected in October 2014 as comments were provided by February 2014 and issues were resolved by September 2014. The final RI report will be approved by October of 2014.

The 3-acre fuze area PICA-003-R-01 was assessed as a separate CSM. The FS, PP and ROD was to be awarded in FY15.

A LUC NTCRA DD was signed in the spring of 2012. The LUC work plan was approved by Army and the regulators in the fall of 2012 and is currently implemented through the final ROD action which is expected in FY17 or later.

As part of an Interim NTCRA, warning signs have been installed at 50-ft increments around the Fuze Area MRS.

A new contract was awarded in FY15 with the task of developing an FS for all MMRP sites. The FS is expected to be submitted to the regulators in FY16.

**CLEANUP/EXIT STRATEGY**

The Army will develop an FS and will fund, develop and public notice a PP and a ROD for signature. The LUCs related to the NTCRA DD will continue until the ROD is signed.

Action for this small site is expected to be a removal action of 2 acres at 2-foot depth. This will be followed by LUCs similar to the NTCRA DD and will be evaluated in the five-year reviews.

**Site ID: PICA-004-R-01**  
**Site Name: 1926 EXPLOSION SITE-TD**

**STATUS**

**Regulatory Driver:** CERCLA

**MRSPP Score:** 03

Contaminants of Concern: Munitions and explosives of concern (MEC), Munitions constituents (MC)

Media of Concern: Groundwater, Soil

<b>Phases</b>	<b>Start</b>	<b>End</b>
PA.....	200212.....	200312
SI.....	200602.....	200805
RI/FS.....	200910.....	201805
IRA.....	200711.....	201108

**RIP Date:** N/A

**RC Date:** 201809

**SITE DESCRIPTION**

Future costs of PICA-004-R-01 are included in the cost for PICA-003-R-01.

This MRS consists of all off-post properties that fall within a one-mile (1,609 meters) radius of the center of the 1926 Lake Denmark explosion (PICA-003-R-01). The 1926 Explosion Site off-post consists of vacant land and commercial property, including the Mt. Hope Quarry, which covers the largest area of this MRS. The quarry is located adjacent to PTA on the eastern side of the fence line that marks the installation boundary. This MRS consists of 833 acres.

Review of recent aerial photographs shows the active quarry face to currently be approximately 700 ft (213 meters) from the fence line and approximately 1,100 ft (325 meters) from the closest shell burial area, which represents the closest former crater from the 1926 explosion. Over the past four years, which is how long EOD records are kept, several MEC finds were made at the quarry; all of the items found were manufactured prior to 1926. After the HRR began, the frequency of the MEC finds at the quarry increased; this is assumed to be related to the quarry's active face moving toward PTA. As a result, from December 2006 to March 2007, a TCRA was performed for 22.6 acres of the quarry, which was the area identified by the quarry manager as planned rock blast and processing areas. The purpose of the TCRA was to significantly reduce the imminent safety hazard presented to the Mt. Hope Quarry employees.

In spring 2008, TCRA activities were conducted on an additional 22 acres at Tilcon Quarry as the operational area at the quarry expanded. During the second phase of the TCRA, 130 MD items were uncovered and removed from the site. Two other removal actions were implemented over the next three years at the site for a total of three.

The SI was completed in FY08. The third TCRA was implemented in 2010 and completed in March 2011 because of a delay regarding safety concerns during implementation.

The RI contract was funded in FY10 and tracked under PBA@MR PICA. The RI work plan was approved in summer 2011 and the fieldwork was implemented starting in FY12. The final RI report was approved by October 2014.

A LUC NTCRA DD was signed in the spring of 2012. The LUC work plan was approved by Army and the regulators in the fall of 2012 and is currently implemented through the final ROD action which is expected in FY18.

**CLEANUP/EXIT STRATEGY**

The Army will develop an FS and will fund, develop and public notice a PP and a ROD for signature.

Action for this large off-post site is expected to be an LUC including ICs similar in nature to that of the NTCRA DD although done by other owners.

**Site ID: PICA-004-R-01**  
**Site Name: 1926 EXPLOSION SITE-TD**

The site will be evaluated in five-year reviews.

# Site ID: PICA-006-R-01

## Site Name: Former Operational Areas

### STATUS

Regulatory Driver: CERCLA

MRSP Score: 03

Contaminants of Concern: Munitions and explosives of concern (MEC), Munitions constituents (MC)

Media of Concern: Groundwater, Soil

Phases	Start	End
PA.....	200212.....	200312
SI.....	200602.....	200805
RI/FS.....	200910.....	201805
IRA.....	201203.....	201809

RIP Date: N/A

RC Date: 201810

### SITE DESCRIPTION

Future costs of PICA-006-R-01 are included in the cost for PICA-003-R-01.

This MRS covers approximately 1,977 acres and consists of all areas of the installation south of Shinkle Road that are other than operational ranges, do not fall within an SDZ for operational ranges with the potential for ongoing releases of MEC. Throughout the years there have been numerous UXO items found this MRS. According to an installation survey report, in 1973 PTA used 2,036 acres for R&D and testing.

A dredge pile and a former sanitary landfill, which cover approximately 13 acres, are located on the southern portion of this MRS. The dredge pile lies entirely within the limits of the landfill and both the dredge pile and landfill are reported MEC disposal areas. According to several reports, shells were disposed of in the sanitary landfill. In addition, dredge spoils from GPB were reportedly placed at this location and GPB was dredged due to the presence of shells. In interviews with PTA personnel and contractors, it was noted that MEC were identified during utility trenching operations in the landfill. An explosive, NC, has been found in numerous soil and groundwater samples collected from both areas.

A waste burial was used as an unregulated disposal area and consists of undeveloped land in a low-lying wetland. The exact years of operation are unknown; however, extensive landfilling activities are believed to have occurred in the 1960s and 1970s. During a site walk in January 1998, MD, identified as large projectiles, were observed in this area; no base plates or fuses/nose plugs appeared to be installed on these projectiles. In addition, 40mm grenades were found in trenches installed under the IRP.

The site is associated with two AEDB-R sites, PICA-068 and PICA-067. PICA-068 was closed and any issues arising from the site addressed under PICA-067. The cost-to-complete does not cover all ordnance and explosives for all the phases. Previous investigations have determined that the COCs are metals, SVOCs, pesticides and PAHs. Contaminated soil will be removed from the site and potential groundwater concerns addressed under PICA-206. Whether the metals are linked to MC or not is unknown.

Based on the final SI dated April 2008, the following HRR MRS were consolidated into this MRS:

- Dredge Pile and Former Sanitary Landfill (PICA-006-R-01),
- Former Operation Area South (site ID: N/A), and
- Waste Burial Area near Sites 19 and 34 (site ID: N/A).

The SI was completed in FY08. The RI contract was funded in FY10.

An additional 370 acres in FY11 were considered ER-A eligible based on the redefining of PTA operational ranges and buffers. As a result of the RI findings a 190.5-acre area that was found to contain concentrated munitions as a former mortar range was traversed, detected and delineated during the MMRP RI fieldwork in 2013. The concentrated munitions were originally part of the Former Operational Areas MRS (PICA-006-R-01).

A LUC NTCRA DD was signed in the spring of 2012. The LUC work plan was approved by Army and the regulators and is currently implemented.

**Site ID: PICA-006-R-01**  
**Site Name: Former Operational Areas**

The RI contract was funded in FY10 and tracked under PBA@MR PICA. The RI work plan was approved in summer 2011 and the fieldwork was implemented in FY12. The final RI report was approved by October 2014.

A new contract was awarded in FY15 with the task of developing an FS for all MMRP sites. The FS is expected to be submitted to the regulators in FY16.

This group name is MR Sites.

### **CLEANUP/EXIT STRATEGY**

The Army will develop an FS and will fund, develop and public notice a PP and a ROD for signature.

The LUCs per the NTCRA will continue until the ROD is signed.

The final RA for this large site is expected to be an LUC similar in nature to that of the NTCRA DD. The site will be evaluated in five-year reviews.

## Site ID: PICA-006-R-02

### Site Name: Former Operational Areas Mortar Ran

#### STATUS

Regulatory Driver: CERCLA

MRSPP Score: 03

Contaminants of Concern: Munitions and explosives of concern (MEC), Munitions constituents (MC)

Media of Concern: Groundwater, Soil

Phases	Start	End
PA.....	200212.....	200312
SI.....	200602.....	200805
RI/FS.....	200910.....	201807
RD.....	201807.....	201909
IRA.....	201203.....	201809
RA(C).....	201809.....	202010

RIP Date: N/A

RC Date: 202010

#### SITE DESCRIPTION

Future cost for CC-057 (Former Skeet Range) are incorporated into PICA-006-R-02.

A 190.5-acre area that was found to contain concentrated munitions as a former mortar range was traversed, detected and delineated during the MMRP RI fieldwork in 2013. The concentrated munitions were originally part of the Former Operational Areas MRS (PICA-006-R-01). Sixty-two MEC items including 60mm and 81mm mortars were recovered in addition to 27 MD items. The calculated MEC density is approximately two items per acre. An interview conducted after the RI fieldwork corroborates the MEC findings. The interviewee also mentioned the use of 120mm mortars; however, no 120mm mortars were identified within the MRS.

MEC exposure pathways for receptors with access to the MRS are complete. The Former Operational Areas Mortar Range MRS has a MEC HA Hazard Level Category of 1, which indicates the MRS has the highest hazard potential. MC are covered under the IRP and media sampling was not performed during the MMRP RI.

The RI contract was funded in FY10 and tracked under PBA@MR PICA. The RI work plan was approved in summer 2011 and the fieldwork was implemented in FY12. The final RI report was approved by October 2014.

A LUC NTCRA DD was signed in the spring of 2012. The LUC work plan was approved by Army and the regulators in the fall of 2012 and is currently implemented through the final ROD action which is expected in FY18.

A LUC NTCRA DD was signed in the spring of 2012. The LUC work plan was approved by Army and the regulators in the fall of 2012 and is currently implemented through the final ROD action which is expected in FY18.

A new contract was awarded in FY15 with the task of developing an FS for all MMRP sites. The FS for PICA-006-R-02 with the Former Skeet Range (CC-057) is expected to be submitted to the regulators in FY16.

This group name is Mortar and Skeet.

#### CLEANUP/EXIT STRATEGY

The Army will develop an FS, fund, develop and public notice a PP and a ROD for signature.

The LUCs per the NTCRA will continue until the ROD is signed.

The final RA for this site is expected to be an LUC similar in nature to that of the NTCRA DD. There is a chance that the Former

**Site ID: PICA-006-R-02**  
**Site Name: Former Operational Areas Mortar Ran**

Skeet Range action will require a dig and haul cleanup.

The site will be evaluated in five-year reviews.

**Site ID: PICA-008-R-01**  
**Site Name: Lakes**

**STATUS**

**Regulatory Driver:** CERCLA  
**MRSPP Score:** 03  
Contaminants of Concern: Munitions and explosives of concern (MEC), Munitions constituents (MC)  
Media of Concern: Sediment, Surface Water

<b>Phases</b>	<b>Start</b>	<b>End</b>
PA.....	200212.....	200312
SI.....	200602.....	200805
RI/FS.....	200910.....	201805
IRA.....	201203.....	201809
<b>RIP Date:</b>	N/A	
<b>RC Date:</b>	201809	

**SITE DESCRIPTION**

Future costs of PICA-008-R-02 are included in the cost for PICA-003-R-01.

There are two large lakes on PTA that were historically used as ranges: Lake Denmark and Picatinny Lake. Although they are not adjacent to each other, these two lakes were consolidated into one MRS since the CSMs for both lakes are very similar. This MRS covers 758 acres and includes the lakes as well as the on-post land portions covered by the SDZs associated with the ranges.

Previously, the lakes were used as a mortar impact area and an experimental munitions testing range. Three ranges, 60mm, 81mm, and 4.2-inch inert projectile ranges, were identified. These ranges shared a single firing point on the southern end of the lake, but had several lines of fire. Several impact areas were located on the northern end of the lake. A 20mm cannon range that fired across Lake Denmark toward an impact area near Building 1221 was also identified.

Picatinny Lake covers approximately 125 acres and is located in the central portion of the installation. Picatinny Lake is used for recreational boating and fishing; however, swimming is banned and fish consumption advisories are in effect. Picatinny Lake is also used as a source of non-potable water for production purposes and firefighting. There are two islands within Picatinny Lake, Flare Island, which is an artificial peninsula constructed of coal slag, and Picnic Island, located in the southern portion of the lake. There is no historical evidence of former munitions testing conducted on Picnic Island. Picatinny Lake has had several uses, including a range and a testing and storage area. A three-inch Barbette gun firing range was previously located on the southeast shore of the lake; the impact area was located across the lake near Buildings 810 and 824. Flare Island, an artificial island, was formerly used to test flares and pyrotechnics. The lake was also used for the underwater storage of smokeless powder and explosives.

The site is associated with AEDB-R site PICA-015. The AEDB-R description sheet indicated that ICs would be recommended for this site.

Based on the final SI in April 2008, the HRR MRS for Lake Denmark (PICA-008-R-01, which is the on-post portion) and Picatinny Lake Site (PICA-009-R-01) were consolidated into this MRS. Additionally, in order to describe actual site operations at both areas since their CSMs are very similar, the site name for this MRS changed to Lakes MRS. MC is not estimated because it is being addressed under the IRP.

The SI was completed in FY08. The RI contract was funded in FY10 and a work plan approved in early 2011.

A LUC NTCRA DD was signed in the spring of 2012. The LUC work plan was approved by Army and the regulators and is currently implemented. The Group name is Lakes. The LUCs are ongoing and will last until the ROD is signed which is expected in FY18.

The RI contract was funded in FY10 and tracked under PBA@MR PICA. The RI work plan was approved in summer 2011 and the fieldwork was implemented in FY12. The final RI report was approved by October 2014.

A new contract was awarded in FY15 with the task of developing an FS for all MMRP sites. The FS is expected to be submitted to



**Site ID: PICA-008-R-01**  
**Site Name: Lakes**

the regulators in FY16.

## **CLEANUP/EXIT STRATEGY**

The Army will develop an FS then fund, develop and public notice a PP and a ROD for signature. The LUCs per the NTCRA will continue until the ROD is signed.

The final RA for this large site is expected to be a LUC similar in nature to that of the NTCRA DD. The site will be evaluated in five-year reviews.

# Site ID: PICA-010-R-01

## Site Name: Shell Burial Grounds

### STATUS

Regulatory Driver: CERCLA

MRSP Score: 05

Contaminants of Concern: Munitions and explosives of concern (MEC), Munitions constituents (MC)

Media of Concern: Groundwater, Soil

Phases	Start	End
PA.....	200212.....	200312
SI.....	200602.....	200805
RI/FS.....	200910.....	201805
IRA.....	201203.....	201809

RIP Date: N/A

RC Date: 201809

### SITE DESCRIPTION

Future costs of PICA-010-R-01 are included in the cost for PICA-003-R-01.

During the Lake Denmark explosion in 1926, three craters were formed; two are adjacent to one another. These three craters formed two burial grounds (one on the southeastern portion of the installation near Building 3150 and another on the southern portion of the installation near Building 3100) that were used for the disposal of approximately 25 tons of explosives from the explosion. Although the two burial grounds are not adjacent to each other, they were consolidated into one MRS since their CSMs are the same.

The burial ground near Building 3150 covers approximately 1.5 acres and is located near the southeastern installation boundary while the other burial ground near Building 3100 covers approximately 4 acres and is located in the southern half of the installation. Materials that were disposed of at these burial grounds include projectiles, mines, depth charges, fuses, explosives, small arms ammunition, propellants, and, possibly, rocket fuels. It was also reported that the site potentially contains acids, pickling liquors, cyanide, and phenol. The Navy continued to use these areas for explosives disposal until 1945; no records of the types of material or amounts disposed of were kept. After the Navy discontinued its use of these areas, they were covered with 20 ft of fill. Currently, ICs exist for both burial grounds as they are fenced in and posted with warning signs.

The site is associated with AEDB-R site PICA-162. Previous investigations conducted from 1998 to 2000 indicated that cyanide and VOCs were detected in the groundwater at concentrations exceeding LOCs. Whether the metals are linked to MEC or not is unknown.

Based on the final SI dated April 2008, the following HRR MR sites were consolidated into this MRS: Shell Burial Ground No. 1 (PICA-010-R-01; this is near Building 3150) and Shell Burial Ground No. 2 (PICA-011-R-01, near Building 3100). Additionally, the site name for this MRS changed to Shell Burial Grounds in order to describe actual site operations at both areas since their CSMs are the same.

The RI contract was funded in FY10 and tracked under PBA@MR PICA. The RI work plan was approved in summer 2011 and the fieldwork was implemented starting in FY12. The final RI report was approved by October 2014.

The Army has decided that the two IRP sites associated with the Shell Burial Areas (PICA 162 or Sites 5 and 6) will be addressed in the FS with PICA-010-R-01.

A LUC NTCRA DD was signed in the spring of 2012. The LUC work plan was approved by Army and the regulators is currently implemented.

The contract to develop an FS was awarded in FY15.

The group Name is Shell Burial Grounds.

**Site ID: PICA-010-R-01**  
**Site Name: Shell Burial Grounds**

**CLEANUP/EXIT STRATEGY**

The Army will develop an FS then fund, develop and public notice a PP and a ROD for signature.

The LUCs per the NTCRA will continue until the ROD is signed.

The final RA is expected to be the replacement of 2,675 feet of fence and an LUC similar in nature to that of the NTCRA DD. The site will be evaluated in five-year reviews.

# Site ID: PICA-012-R-01

## Site Name: Lake Denmark - Off-Post

### STATUS

Regulatory Driver: CERCLA

MRSPP Score: 05

Contaminants of Concern: Munitions and explosives of concern (MEC), Munitions constituents (MC)

Media of Concern: Groundwater, Soil

Phases	Start	End
PA.....	200212.....	200312
SI.....	200602.....	200805
RI/FS.....	200910.....	201805
IRA.....	201002.....	201809

RIP Date: N/A

RC Date: 201810

### SITE DESCRIPTION

Future costs of PICA-012-R-01 are included in the cost for PICA-003-R-01.

This MRS covers approximately 96 acres and consists of all off-post property that falls within the safety fan of the Lake Denmark ranges. This site contains commercial/light industrial properties and vacant land; the largest property associated with the Lake Denmark Off-Post MRS is Radiation Technologies, Inc., a superfund site.

According to the USEPA's website, the Radiation Technologies, Inc. superfund site occupies 263 acres immediately adjacent to PTA's boundary near Lake Denmark. Past activities at Radiation Technologies, Inc. included testing and development of rocket engines and propellants. One of the COCs associated with the Radiation Technologies, Inc. site is perchlorate, which has been found in groundwater. Investigation and cleanup activities at this site are ongoing. Currently, the former Radiation Technologies, Inc. facility is leased by Sterigenics, a global company that provides sterilization and ionization services for the healthcare, food safety, and advanced applications industries. According to the Sterigenics website, the Sterigenics operation in Rockaway Township is a gamma facility.

The SI was completed in FY08. The USEPA used UXO-construction support during the superfund investigation at the site in 2010.

The RI contract was funded in FY10 and the full work plan approved in the spring of 2012. The RI fieldwork was completed in FY12 for the site; the results are summarized in the executive summary report. The work plan was approved in spring of 2012 by the regulators. The RI report was submitted in December 2013 and the final RI report was approved in October of 2014.

A new contract was awarded in FY15 with the task of developing an FS for all MMRP sites. The FS is expected to be submitted to the regulators in FY16.

This group name is MR Sites.

### CLEANUP/EXIT STRATEGY

The Army will develop an FS then fund, develop and public notice a PP and a ROD for signature.

Action for this off-post site is expected to be an LUC including ICs for this off-post site similar in nature to that of the NTCRA DD although done by other owners.

The site will be evaluated in five-year reviews.

# Site ID: PICA-013-R-01

## Site Name: Inactive Munitions Waste Pit

### STATUS

**Regulatory Driver:** CERCLA

**MRSPP Score:** 04

Contaminants of Concern: Metals, Munitions and explosives of concern (MEC)

Media of Concern: Sediment, Soil

Phases	Start	End
PA.....	200212.....	200312
SI.....	200602.....	201101
RI/FS.....	201104.....	201710
RD.....	201710.....	201806
IRA.....	201203.....	201710
RA(C).....	201806.....	201901
RA(O).....	201910.....	203001
<b>RIP Date:</b>	201910	
<b>RC Date:</b>	203001	

### SITE DESCRIPTION

The site now includes the costs for PICA-058 or the 600 Hill TCE Plume.

The site is located northwest of the northernmost end of Picatinny Lake, near the installation boundary. This site contains a range and the associated SDZ. A portion of the SDZ falls off-post and is tracked separately in AEDB-R Site (PICA-014-R-01). This site was reportedly used from 1955 to the mid-1980s for the testing and storage of munitions and explosives. The site appears to have consisted of an open field with a burn cage, a gun turret, and a building (Building 656). Whether or not all of these structures were present throughout the site's operation is unknown. Site features and other evidence have been identified indicating that burial of munitions took place. In the 1980s, the site was covered with topsoil and sand, and in the late-1990s, the majority of the site was covered with fill and rock, up to 12 ft thick. The rock was removed in 2013.

The SI was completed in FY08. The RI contract was funded in FY10 and a work plan approved in early 2011. The RI report was submitted in December 2013 and approval in October 2014 as comments were provided by February 2014 and issues were resolved by September 2014. This site will be grouped with PICA-058 for the FS through ROD and remedy.

A LUC NTCRA DD was signed in the spring of 2012. The LUC work plan was approved by Army and the regulators in the fall of 2012 and is currently implemented through the final ROD action.

The RI contract was funded in FY10 and tracked under site PBA@MR PICA. The RI work plan was approved in summer 2011 and the fieldwork was implemented starting in FY12. The RI investigation of the area was completed by FY12. The RI report was submitted in December 2013 and approval expected in October 2014 as comments were provided by February 2014 and issues were resolved by September 2014. The final RI report was approved in October of 2014.

An FS was funded in FY15 under performance-based acquisition. The FS includes that of PICA-058, the 600 Hill groundwater plume FS. The PP and ROD will be funded in FY17.

The group name is 600 Hill Waste Pit.

### CLEANUP/EXIT STRATEGY

The Army will develop an FS, develop and public notice a PP, and develop a ROD for signature. The LUCs related to the NTCRA DD will continue.

Once an alternative is proposed, the cleanup strategy will include the description of the proposal, and a cost estimate will also be developed and used for the AEDB-R process. The most likely proposed action will be a combination of removal and LUCs. The

**Site ID: PICA-013-R-01**  
**Site Name: Inactive Munitions Waste Pit**

site portion dealing with PICA-058 groundwater is most likely MNA.

**Site ID: PICA-014-R-01**  
**Site Name: Inactive Munitions Waste Pit - TD**

**STATUS**

**Regulatory Driver:** CERCLA

**MRSPP Score:** 04

Contaminants of Concern: Munitions and explosives of concern (MEC), Munitions constituents (MC)

Media of Concern: Groundwater, Soil

<b>Phases</b>	<b>Start</b>	<b>End</b>
PA.....	200212.....	200312
SI.....	200602.....	200805
RI/FS.....	200910.....	201805

**RIP Date:** N/A

**RC Date:** 201809

**SITE DESCRIPTION**

Future costs of PICA-012-R-01 are included in the cost for PICA-003-R-01.

This MRS covers 7.5 acres and consists of all off-post property that falls within the SDZ of the Inactive Munitions Waste Pit MRS (i.e., within a 1,250-ft radius from the center of the inactive munitions waste pit MRS).

The RI contract was funded in FY10 and tracked under PBA@MR PICA. The RI work plan was approved in summer 2011 and the fieldwork was implemented in FY12. The RI of the area was completed by FY12. The RI report was submitted in December 2013 was approved in October 2014.

A new contract was awarded in FY15 with the task of developing an FS for all MMRP sites. The FS is expected to be submitted to the regulators in FY16.

The group name is MR Sites.

**CLEANUP/EXIT STRATEGY**

The Army will develop an FS then fund, develop and public notice a PP and a ROD for signature.

Action for this off-post site is expected to be an LUC including ICs similar in nature to that of the NTCRA DD although done by other owners.

The site will be evaluated in five-year reviews.

## Site Closeout (No Further Action) Summary

Site ID	Site Name	NFA Date	Documentation
PBA@MR PICA	PBA for MR sites at Picatinny	201403	All CLINS were awarded.
PICA-001-R-01	FormerMunitions&PropellantTest Area	201203	Operational Range not eligible.
PICA-002-R-01	1000-METER RANGE	200803	Based on the Final HRR dated November 2006, this MRS has been consolidated with site PICA-001-R-01. As such, this MRS is RC.
PICA-005-R-01	Green Pond Brook MRS	201312	Site combined with PICA-005-R-01
PICA-007-R-01	Former DRMO YARD	200909	Site combined with PICA-003-R-01. Only opened temporarily to fund the ICM cleanup within the site.
PICA-009-R-01	PICATINNY LAKE SITE	200803	Based on the Stakeholder Draft SI dated November 2007, this MRS has been consolidated with site PICA-008-R-01. As such, this MRS is RC.
PICA-011-R-01	SHELL BURIAL GROUND #2	200803	Based on the Stakeholder Draft SI dated November 2007, this MRS has been consolidated with site PICA-010-R-01. As such, this MRS is RC.



# MMRP Schedule

**Date of MMRP Inception** 200212

## Past Phase Completion Milestones

### 2004

PA (PICA-001-R-01 - FormerMunitions&PropellantTest Area, PICA-002-R-01 - 1000-METER RANGE, PICA-003-R-01 - 1926 Explosion Radius, PICA-003-R-02 - Fuze Area, PICA-004-R-01 - 1926 EXPLOSION SITE-TD, PICA-005-R-01 - Green Pond Brook MRS, PICA-006-R-01 - Former Operational Areas, PICA-006-R-02 - Former Operational Areas Mortar Ran, PICA-007-R-01 - Former DRMO YARD, PICA-008-R-01 - Lakes, PICA-009-R-01 - PICATINNY LAKE SITE, PICA-010-R-01 - Shell Burial Grounds, PICA-011-R-01 - SHELL BURIAL GROUND #2, PICA-012-R-01 - Lake Denmark - Off-Post, PICA-013-R-01 - Inactive Munitions Waste Pit, PICA-014-R-01 - Inactive Munitions Waste Pit - TD)

### 2007

PA (PBA@MR PICA - PBA for MR sites at Picatinny)

### 2008

SI (PICA-001-R-01 - FormerMunitions&PropellantTest Area, PICA-003-R-01 - 1926 Explosion Radius, PICA-003-R-02 - Fuze Area, PICA-004-R-01 - 1926 EXPLOSION SITE-TD, PICA-005-R-01 - Green Pond Brook MRS, PICA-006-R-01 - Former Operational Areas, PICA-006-R-02 - Former Operational Areas Mortar Ran, PICA-007-R-01 - Former DRMO YARD, PICA-008-R-01 - Lakes, PICA-010-R-01 - Shell Burial Grounds, PICA-012-R-01 - Lake Denmark - Off-Post, PICA-014-R-01 - Inactive Munitions Waste Pit - TD)

### 2009

SI (PBA@MR PICA - PBA for MR sites at Picatinny)

IRA (PICA-007-R-01 - Former DRMO YARD)

### 2011

SI (PICA-013-R-01 - Inactive Munitions Waste Pit)

IRA (PICA-004-R-01 - 1926 EXPLOSION SITE-TD)

### 2012

RI/FS (PICA-001-R-01 - FormerMunitions&PropellantTest Area)

### 2014

IRA (PICA-005-R-01 - Green Pond Brook MRS)

RI/FS (PBA@MR PICA - PBA for MR sites at Picatinny, PICA-005-R-01 - Green Pond Brook MRS)

## Additional Past Phase Completion Milestones

EE/CA Report for RCI, CDC, and various BRAC footprints

## Projected Phase Completion Milestones

See attached schedule

## Projected Record of Decision (ROD)/Decision Document (DD) Approval Dates

Site ID	Site Name	ROD/DD Title	ROD/DD Date
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**Final RA(C) Completion Date:** 202010

**Schedule for Next Five-Year Review:** 2016

**Estimated Completion Date of MMRP at Installation (including LTM phase):** 204809

## PICATINNY ARSENAL MMRP Schedule

= phase underway

SITE ID	SITE NAME	PHASE	FY17	FY18	FY19	FY20	FY21	FY22+
PICA-003-R-01	1926 Explosion Radius	RI/FS						
		IRA						
		LTM						
SITE ID	SITE NAME	PHASE	FY17	FY18	FY19	FY20	FY21	FY22+
PICA-003-R-02	Fuze Area	RI/FS						
		IRA						
SITE ID	SITE NAME	PHASE	FY17	FY18	FY19	FY20	FY21	FY22+
PICA-004-R-01	1926 EXPLOSION SITE-TD	RI/FS						
SITE ID	SITE NAME	PHASE	FY17	FY18	FY19	FY20	FY21	FY22+
PICA-006-R-01	Former Operational Areas	RI/FS						
		IRA						
SITE ID	SITE NAME	PHASE	FY17	FY18	FY19	FY20	FY21	FY22+
PICA-006-R-02	Former Operational Areas Mortar Ran	RI/FS						
		RD						
		IRA						
		RA(C)						
SITE ID	SITE NAME	PHASE	FY17	FY18	FY19	FY20	FY21	FY22+
PICA-008-R-01	Lakes	RI/FS						
		IRA						
SITE ID	SITE NAME	PHASE	FY17	FY18	FY19	FY20	FY21	FY22+
PICA-010-R-01	Shell Burial Grounds	RI/FS						
		IRA						
SITE ID	SITE NAME	PHASE	FY17	FY18	FY19	FY20	FY21	FY22+
PICA-012-R-01	Lake Denmark - Off-Post	RI/FS						
		IRA						
SITE ID	SITE NAME	PHASE	FY17	FY18	FY19	FY20	FY21	FY22+
PICA-013-R-01	Inactive Munitions Waste Pit	RI/FS						
		RD						
		IRA						
		RA(C)						
		RA(O)						
SITE ID	SITE NAME	PHASE	FY17	FY18	FY19	FY20	FY21	FY22+
PICA-014-R-01	Inactive Munitions Waste Pit - TD	RI/FS						

**PICATINNY ARSENAL**  
**Army Defense Environmental Restoration Program**  
**Compliance Restoration**

## CR Summary

**Installation Total Army Environmental Database-Restoration (AEDB-R) Sites/Closeout Sites Count:** 4/1

### Installation Site Types with Future and/or Underway Phases

- 1 Contaminated Fill  
(CC-211)
- 1 Small Arms Range  
(CC-057)
- 1 Spill Site Area  
(CC-212)

### Most Widespread Contaminants of Concern

Metals, Polycyclic Aromatic Hydrocarbons (PAH)

### Media of Concern

Soil

### Completed Remedial Actions (Interim Remedial Actions/ Final Remedial Actions (IRA/FRA))

Site ID	Site Name	Action	Remedy	FY
N/A				

### Duration of CR

**Date of CR Inception:** 200201

**Estimated Date for Remedy-In-Place (RIP)/Response Complete (RC):** 201807/201807

**Date of CR completion including Long Term Management (LTM):** 201807

## CR Contamination Assessment

### Contamination Assessment Overview

Environmental restoration activities include the IRP and MMRP. On Dec. 29, 2008, the Office of the Deputy Under Secretary of Defense for Installations and Environment issued an interim policy for Defense Environmental Restoration Program (DERP) eligibility that rescinded the 1986 eligibility date for the IRP and the 2002 eligibility date for the MMRP. This made many sites previously addressed in the Army's Compliance-related Cleanup (CC) program eligible for the DERP. Sites that are now eligible for the Munitions Response (MR) program have been migrated from Army Environmental Database Compliance-related Cleanup (AEDB-CC) and given the naming convention of other MR sites. The newly eligible non-MR type sites are considered to be Installation Restoration (IR) sites; however, the newly eligible sites are being coded as Compliance Restoration (CR) in AEDB-R to distinguish them from the original IR sites and IR metrics. The RI report was approved by the regulators in early FY12. The site is being combined with PICA-006-R-02 (Former Operational Areas Mortar Range) for the FS.

### Cleanup Exit Strategy

Although the RI report was approved by the regulators in early FY12, the expected contracting for the next phase was delayed until the results from the MMRP of the same area were understood and then integrated into the contracting effort.

The site FS will be mixed with the PICA-006-R-02.

## CR Previous Studies

2012

**Title**

**Author**

**Date**

RI Report for Skeet Range	Shaw	MAR-2012
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**PICATINNY ARSENAL**  
**Compliance Restoration**  
**Site Descriptions**

**Site ID: CC-057**

**Site Name: Former Skeet Range**

## STATUS

**Regulatory Driver:** OTHER

Contaminants of Concern: Metals, Polycyclic Aromatic Hydrocarbons (PAH)

Media of Concern: Soil

Phases	Start	End
PA.....	200811.....	200901
SI.....	200901.....	201006
RI/FS.....	201003.....	201807

**RIP Date:** N/A

**RC Date:** 201807

## SITE DESCRIPTION

CC-057 costs for future RD, RA(C) and LTM phases are captured under PICA-006-R-02 since they are co-located and being addressed together.

The site was used as a skeet range and archery range, but aerial photos indicate there were extensive historical fill operations in this area. The area is open to hunters and MMRP issues are also present within this site.

A high level of lead in the soil was first encountered in 2006 but further investigation was required to determine if the site was ER, A eligible due to historic landfilling activities (as an extension of site 180/PICA-093). An investigation in 2008 further defined the problem and determined the lead was from activities related to the recently closed Skeet Range.

The area of the currently-known soil contamination is approximately 2 acres; however, the known contaminated area, which is located within the shot fall zone of the Former Skeet Range, is situated within a floodplain and partially within a wetland.

Lead contamination in the soils ranges up to 209,000 mg/kg. Lead contamination in sediment ranges up to 21,500 mg/kg and the surface water levels were as high as 354 ug/L. These levels are orders of magnitude above the state regulatory limit and mostly exceed the lead model risk.

The 2008, Site 180 and Former Skeet Range Lead Investigation Data Report were provided to the USEPA and the NJDEP in December 2008. The USEPA responded with a letter requesting that the Army make every effort to facilitate timely follow-up sampling.

An abbreviated work plan to characterize lead and PAH concentrations, which are common constituents in shotgun ammunition and clay targets, respectively, was approved by the regulators. Fieldwork for this SI was conducted in spring 2010 and a contract was awarded in FY10 for an RI. The RI work plan was submitted to the USEPA and the NJDEP in October 2010 and comments were received in December 2010. The RI work plan was finalized in January 2011. The RI report was submitted in December of 2011 was approved by the regulators in May 2012.

A contract for the FS through RIP was awarded in FY15: the cost for the action are now combined with MRS PICA-006-R-02 since they are generally co-located.

A new contract was awarded in FY15 with the task of developing an FS for all MMRP sites.

The FS for PICA-006-R-02 with the Former Skeet Range (CC-057) is to be submitted to the regulators in FY16 or early FY 17.

This group name is Mortar and Skeet.

## CLEANUP/EXIT STRATEGY



**Site ID: CC-057**  
**Site Name: Former Skeet Range**

An FS, PP and ROD are expected; however, there is not enough information to characterize or conduct a certifiable cost estimate for an RA at this time.

Site ID: CC-211

## Site Name: Eastern Edge of Green Pond Brook

### STATUS

Regulatory Driver: CERCLA  
Contaminants of Concern: Metals  
Media of Concern: Soil

Phases	Start	End
PA.....	201202.....	201406
SI.....	201408.....	201703

RIP Date: N/A

RC Date: 201706

### SITE DESCRIPTION

The Site "Eastern Edge of GPB" is a small area (500 ft by 10 ft) along the eastern bank of the brook across from the former DRMO Yard that was apparently used as a fill area in the past. Sampling conducted in May and June 2012 and October 2013 found levels of metals above screening levels. In January 2014, NJDEP requested additional investigation be conducted.

The site has been subject to sampling in the past. In 1993, an NTCRA at the Former DRMO Yard was conducted. Two test pits were dug in the area of this site and metals were detected above LOCs. During the 2013 MMRP RI, two soil samples were collected in the area of this site where munitions debris was located. Numerous metals including antimony, arsenic, copper, lead and zinc, were found at concentrations above their respective LOCs. Although the MMRP RI investigation did not indicate the presence of large burial areas in the eastern bank, the extent of soil containing metals at concentrations above their respective LOCs is unknown.

### CLEANUP/EXIT STRATEGY

Until it is determined that the site will go past the SI and further in the CERCLA process, will there be a need to do anything more.

Site ID: CC-212

## Site Name: Abandoned Railroad Tracks

### STATUS

Regulatory Driver: CERCLA

Contaminants of Concern: Metals, Polycyclic Aromatic Hydrocarbons (PAH)

Media of Concern: Soil

Phases	Start	End
PA.....	201409.....	201409
SI.....	201409.....	201805

RIP Date: N/A

RC Date: 201806

### SITE DESCRIPTION

There are approximately 49 miles of abandoned railroad tracks on PTA. Investigations of DERP other sites have occasionally included samples at abandoned railroad tracks that yielded results with exceedances of screening levels for contaminants, particularly of arsenic and PAHs. USEPA Region 2 and NJDEP have requested an investigation of these abandoned tracks to determine if there has been a release.

Contract was awarded in FY15 to implement the PA. The SI is expected to be complete in FY17.

### CLEANUP/EXIT STRATEGY

Until it is determined that the site will go past the SI and further in the CERCLA process, will there be a need to do anything more.

## Site Closeout (No Further Action) Summary

Site ID	Site Name	NFA Date	Documentation
CC-055	MTBE Contaminated GW in 600 Area	201105	NJDEP did approve an NFA and any additional sampling will be required under the groundwater program of PIC 058.

## CR Schedule

**Date of CR Inception:** 200201

### **Past Phase Completion Milestones**

#### **2004**

PA (CC-055 - MTBE Contaminated GW in 600 Area)

#### **2005**

SI (CC-055 - MTBE Contaminated GW in 600 Area)

#### **2009**

PA (CC-057 - Former Skeet Range)

#### **2010**

SI (CC-057 - Former Skeet Range)

#### **2011**

RI/FS (CC-055 - MTBE Contaminated GW in 600 Area)

#### **2014**

PA (CC-211 - Eastern Edge of Green Pond Brook, CC-212 - Abandoned Railroad Tracks)

### **Projected Phase Completion Milestones**

**See attached schedule**

### **Projected Record of Decision (ROD)/Decision Document (DD) Approval Dates**

To Be Determined

### **Final RA(C) Completion Date:**

**Schedule for Next Five-Year Review:** 2016

**Estimated Completion Date of CR at Installation (including LTM phase):** 201807

## PICATINNY ARSENAL CR Schedule

= phase underway

SITE ID	SITE NAME	PHASE	FY17	FY18	FY19	FY20	FY21	FY22+
CC-057	Former Skeet Range	RI/FS						
SITE ID	SITE NAME	PHASE	FY17	FY18	FY19	FY20	FY21	FY22+
CC-211	Eastern Edge of Green Pond Brook	SI						
SITE ID	SITE NAME	PHASE	FY17	FY18	FY19	FY20	FY21	FY22+
CC-212	Abandoned Railroad Tracks	SI						

## Community Involvement

**Technical Review Committee (TRC):** 199106

**Community Involvement Plan (Date Published):** 201302

**Restoration Advisory Board (RAB):** RAB established 199512

**RAB Adjournment Date:** N/A

**RAB Adjournment Reason:** None

### Additional Community Involvement Information

The surrounding community for PTA includes the towns of Dover, Jefferson, Rockaway, Denville, and the Borough of Wharton. In 1989, a TRC was formed to address citizen concerns over environmental issues at the arsenal. In December 1995, the TRC evolved into the RAB. This board includes representatives of the Army, the USEPA Region 2, the NJDEP, and of the surrounding towns from Dover, Jefferson, Rockaway, and Denville, the Borough of Wharton, the Rockaway Township Environmental Commission, a union representative from PTA, the New Jersey Institute of Technology, and citizens from the surrounding communities.

The PTA follows Army and USEPA guidance relating to public notices and public meetings for PPs and signed RODs. The Army has revised the community relations plan to include both the MMRP and the IRP and provided that to the regulators, RAB, and Technical Assistance for Public Participation (TAPP) contractors in a PDF format or hard copy if required.

The RAB expressed an interest in the TAPP program, and PTA was one of the first installations to hire a TAPP contractor. The final purchase order for the current TAPP extension was purchased in summer 2009. A second waiver request by the RAB was approved by the Army and was provided for 2011. The contractor is provided all technical documents and a copy of all correspondence to and from the regulators. The TAPP, as well as three members of the RAB, attended the November 2010 and June 2011 technical project planning meetings for the kickoff for the MMRP RI. FY14 was the last year of the current waiver. Hence going into FY15, there was no TAPP consultant. The RAB was told of this issue but has decided not to request.

The TAPP contractor also provides frequent updates of the technical issues to the RAB and resolutions from the regulatory meeting and comments to PPs as requested by the RAB. The RAB decides which document to review by vote during a RAB meeting or by email via Doodle which is a website for voting.

During the latest period, two of the more noteworthy events included the election of the new civilian co-chair in October 2013 and additional member being added. A tour for the RAB members took place in October 2014.

### Administrative Record is located at

Environmental Affairs Division  
US Army Installation Management Agency  
Building 319, Picatinny Arsenal 07806:  
Call for appointment at 973-724-6748 or email at ted.b.gabel.civ@mail.mil

### Information Repository is located at

Rockaway Library  
61 Mount Hope Road  
Rockaway, NJ 07866  
973.627.2344  
and  
Morris County Library  
30 East Hanover Road  
Whippany, NJ 07981  
973.285.6930

**Current Technical Assistance for Public Participation (TAPP):**200008

**TAPP Title:** TAPP Contract

**Potential TAPP:** The purchase and waiver extension for the TAPP ended in early November 2015.

