

Per the Federal Facility Agreement for Iowa Army Ammunition Plant, Article X.B.1, the attached document is the final version of the submitted document.

**ACTION MEMORANDUM
IOWA ARMY AMMUNITION PLANT
PERMANENT POTABLE WATER SUPPLY**

I. PURPOSE

The purpose of this Action Memorandum is to document approval of the proposed removal action described herein for the Iowa Army Ammunition Plant, Middletown, Iowa, to be executed by the U. S. Army.

II. SITE CONDITIONS AND BACKGROUND

A. Site Description

Iowa Army Ammunition Plant (IAAP), located approximately 10 miles west of the city of Burlington, Iowa was constructed in 1941 to produce supplies for World War II. Production activities began in September 1941 and ended in August 1945. Production was resumed in 1949 and has continued to the present. In the 1960s and 1970s, the IAAP produced supplies for the war in southeast Asia. During peacetime, activities at the plant continued, at a reduced level. Also, during a period from 1946 to 1950, nitrogen fertilizer was produced at IAAP. From 1947 through 1973, the former Atomic Energy Commission operated facilities on site, which then reverted back to the Department of Defense's control **in** 1973. The IAAP is currently operating to load, assemble and pack (LAP) ammunition items, including projectiles, mortar rounds, warheads, mines, and the components of these munitions.

In 1978, an Installation Assessment of the IAAP was conducted by the U.S. Army Toxic and Hazardous Materials Agency (USATHAMA) which involved personnel interviews and a review of the IAAP record. Based on findings of the report, it was concluded that off-site migration of contamination in the surface waters was not occurring, but three areas at the IAAP were identified as having known or possible contamination. Several environmental investigations followed this initial study, culminating with the award in December 1990 to conduct the Remedial Investigation / Feasibility (RI/FS) of the entire plant. Part of this study is the collection and evaluation of environmental samples to determine the impact of contamination to human health and the environment. This study has determined that explosives are migrating outside the IAAP boundaries in the surface waters. To determine the impact of this contamination to residents living near the IAAP, water samples were collected from residential wells located in the watersheds of these surface waters. Two of the initial six residences tested were found to have the explosive RDX above the Health Advisory.

The U.S. Army and the U.S. Environmental Protection Agency's Office of Drinking Water has published a health advisory which recommended the drinking water criteria for RDX for general population be established at 10 parts per billion (ppb) for investigation only and 2 ppb for multiple pathways. Based upon this recommendation, the U.S. Army agreed to sample additional wells implementing the 2 ppb health advisory as the decision point for alternative water. To date, a total of five residential wells have been found with RDX contamination above 2 ppb. These residents have been provided bottled water as an interim action.

B. Contamination Assessment

Evaluation of groundwater contaminants in off-post areas was initiated in 1985. A resident living adjacent to IAAP requested assistance from their Congressional Representative to determine if contaminants were leaving the IAAP and possibly entering into their drinking water causing the family's current health problems. The Army Environmental Hygiene Agency (AEHA) in coordination with the Iowa Department of Natural Resources (IDNR) sampled 31 off-post residential water supply wells and analyzed for volatile organics and explosive compounds. Results from this investigation showed that no detectable concentrations of contaminants were found at any of the sample locations.

As part of the current RI/FS study, surface waters leaving the IAAP were sampled and evaluated for possible contamination. The results showed the surface waters were found to contain explosives. To determine the impact of this contamination to residents living near the IAAP, a select number of residences were chosen and their drinking water analyzed. Two of the six wells tested were found to contain RDX above the Lifetime Health Advisory of 2 ppb.

To evaluate the possibility of additional residential off-post contamination, the U.S. Army Environmental Center, in coordination with the U.S. Army Corps of Engineers, conducted an extensive sampling and analysis program of residences located south of the IAAP. Of the 54 homes sampled, three additional wells were found to contain RDX above the Lifetime Health Advisory of 2 ppb. All affected homeowners have been offered bottled water until a permanent water supply is identified.

The following off-post groundwater sampling events have occurred at IAAP since 1985.

<u>DATE SAMPLED</u>	<u>WELLS SAMPLED</u>
March - May 1985	31 off-post residential wells 10 on-post monitor wells
November 1992	6 off-post residential wells
March 1993*	6 off-post residential wells
March - April 1993	54 off-post residential wells
May 1993*	3 off-post residential wells

*Note: The March 1993 and May 1993 sampling events were confirmation sampling events. These two events were performed to confirm the initial results from the first sampling events (November 1992 and March - April 1993).

The U.S. Army Environmental Center has just completed another residential well survey for the area south of IAAP to assure that all residential wells that may be exposed to contaminants are sampled. All residential wells in this area will be sampled to ensure the health and safety of the residents.

C. State and Local Authorities' Roles

The Region VII Environmental Protection Agency (EPA) is a party with the U.S. Army to the Federal Facility Agreement signed in September 1990. As a party to the agreement, the EPA has responsibility for regulatory oversight and guidance of the IAAP Installation Restoration, Program. In addition, the State of Iowa Department of Natural Resources is kept abreast of the environmental investigations at the IAAP and are provided copies of all documents for review, and were informed of the Army's findings of off-post contamination and subsequent offering of bottled water to affected residents.

III. THREAT OF PUBLIC HEALTH OR WELFARE OR THE ENVIRONMENT, AND STATUTORY AND REGULATORY AUTHORITIES

A. Threats to Public Health or Welfare

During recent sampling events residential wells were sampled and found to contain RDX at levels above 2 ppb. Five wells were found with levels above or at the RDX action level of 2 ppb and have been provided bottled water as an interim action.

B. Threats to the Environment

The proposed removal action applies to the contamination of the drinking water aquifer. Presently, there are no environmental risks associated with the groundwater contamination.

IV. ENDANGERMENT DETERMINATION

Actual releases of contaminants from this site, if not addressed by implementing the response action selected in this Action Memorandum, may present an imminent and substantial threat to public health, or welfare, or the environment.

V. PROPOSED ACTIONS AND ESTIMATED COSTS

A. Proposed Action

1. The proposed removal action involves providing public water hookups to all residents south of the IAAP, east of the unnamed tributary of the Line 3A sewage treatment plant, and west of Spring Creek to the Skunk River. A private water company, Rathburn Water Company, Inc., has recently awarded a contract to provide public water to this area and will begin construction on July 5, 1993. At an initial offering price of \$350.00, Rathburn Water Co., will provide labor and materials to run an extension from the water main to the homeowner's property. At the end of extension, called the meter pit, will be the water meter and the connection from the meter pit to the house. If residents have not yet signed an agreement with Rathburn, but decide after construction begins to hookup to the water, and the construction has already passed the area near their homes, the hookup fee will be raised to \$500.00, to cover the costs to bring the construction equipment back to an area where they have already completed the work. If residents decide to hookup to the water after construction activities are complete, charges will be based on linear footage to run the line from the water main to the home, plus labor and materials. Current estimates for this scenario run from \$1,200.00 and higher. If residents decide not to hookup to the public water, they will be asked to sign a waiver, refusing the hookup. Well abandonment will not be required as part of this effort. The current contract with Rathburn Water Co. Inc., does not require the residents to cap their wells, but they must ensure that the well water and public water cannot enter the same drinking water lines.

This scenario provides a unique opportunity to the Army in that no design or construction costs will be incurred by the Army to complete this remedial action. This action requires the Army to pay for public water hookups to approximately 150 residences

at a current cost of \$350.00 each to Rathburn Water Co., Inc, and then reimburse the homeowners for the expenses incurred to connect their house to the water meter pit. The cost to complete the connection between the house and the meter pit is dependent upon the distance between the meter pit and the house. Average costs for this effort are estimated to be between \$500.00 and \$650.00 each, bringing the total cost per complete hookup per household to between \$800.00 and \$1,000.00.

2. Contribution to Remedial Performance

Implementation of this removal action will contribute to the efficient performance of the long-term groundwater remedial action by providing the component of the final action which is "protective of human health".

B. Estimated Cost

The cost of providing public water to residents in this area is estimated to be \$150,000. Table 1 provides a detailed breakout of costs.

VI. EXPECTED CHANGE IN THE SITUATION SHOULD ACTION BE DELAYED OR NOT TAKEN

Delayed action will increase public health risks to the residents through prolonged exposure to groundwater contamination. Substantial additional monitoring costs and bottled water costs will continue to accrue until the implementation of the public water hookup. There is, also, the possibility of increased hookup costs for late agreements with the Rathburn Water Co., Inc., ranging from between \$500.00 to \$1,200.00 per household.

VII. OUTSTANDING POLICY ISSUES - None.

VIII. RECOMMENDATION

This decision document represents the selected removal action for the Iowa Army Ammunition Plant in Middletown, Iowa, developed in accordance with the Comprehensive Environmental Response, Compensation and Liability Act as amended, and not inconsistent with the NCP. This decision is based on the Administrative Record for the site. The total project costs are estimated at \$150,000 and is funded under the fiscal year 1993 Defense Environmental Restoration Account work plan.

TABLE 1
 PERMANENT POTABLE WATER SUPPLY COST
 IOWA ARMY AMMUNITION PLANT

HOOKUP RO WATER LINE WHILE CONSTRUCTION IS ONGOING:

NUMBER OF RESIDENCES	HOOKUP FEE	TOTAL COST
150	\$350.00	\$52,500.00

HOOKUP TO WATER LINE AFTER CONSTRUCTION IS COMPLETE,
 BUT THE CONSTRUCTION EQUIPMENT IS STILL ON-SITE:

NUMBER OF RESIDENCES	HOOKUP FEE	TOTAL COST
150	\$500.00	\$75,000.00

HOOKUP TO WATER LINE AFTER CONSTRUCTION IS COMPLETE,
 BUT THE EQUIPMENT HAS LEFT THE SITE:

NUMBER OF RESIDENCES	HOOKUP FEE	TOTAL COST
150	\$1,200.00	\$180,000.00

THE COST TO COMPLETE THE CONNECTION BETWEEN THE METER PIT
 AND THE HOUSE:

NUMBER OF RESIDENCES	ESTIMATED COST*	TOTAL COST
150	\$650.00	\$97,500.00

*NOTE: THE ESTIMATED COST INCLUDES THE COST TO DIG THE TRENCH
 FROM THE METER PIT TO THE HOUSE, THE MATERIALS TO COMPLETE THE
 CONNECTION, AND LABOR COSTS.