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DEPARTMENT OF THE NAVY
NAVAL WEAPONS SUPPORT CENTER
CRANE, INDIANA 47522-5000

IN REPLY REFER TO:
5090/H11.9
0924
06 AUG 1990

RCRA Activities
U.S. EPA, Region V
Post Office Box A-3587
Chicago, Illinois 60690-3587

Gentlemen:

Submitted for review is the RFI Phase II Surface Water Release Assessment Work Plan and the RFI Phase III Soils Release Assessment Work Plan for the Ammunition Burning Grounds (Site 3/10). Requirements for submittal of these reports were setforth in the Corrective actions portion of the Hazardous Waste Part B Permit issued to Naval Weapons Support Center Crane (NWSCC) in January 1990.

NWSCC point of contact is Mr. Jim Hunsicker, Code 0924, telephone 812-854-3233.

Sincerely,

CEC, USN
Public Works Officer
Director of the
Commanding Officer

Encl:
(1) RFI Phase II Surface Water Release Assessment Work Plan for the Ammunition Burning Grounds (Site 3/10)
(2) RFI Phase III Soils Release Assessment Work Plan for the Ammunition Burning Grounds (Site 3/10)
(3) Certification Statement

Copy to:
NORTHNAVFACENGCOM, Philadelphia (Code 14)
COMNAVSEASYSCOM (SEA-6541)
WES

Admin. Records
Code 095

Corrective Action Work Plan
RCRA Facility Investigation Phase III II
Release Assessment, Surface Water
Ammunition Burning Ground, Crane Naval Weapons Support Center

1. Task A: RFI Phase III Work Plan

a. RFI Phase III Work Plan

The U.S. Army Engineer Waterways Experiment Station (WES) will perform a RCRA Facility Investigation (RFI) Phase III Release Assessment (Surface Water) for the Crane Naval Weapons Support Center (NWSC), Crane, Indiana, at the Ammunition Burning Grounds (ABG). This site was previously designated as Correction Action Plan (CAP) site number 03/10. This document outlines the objectives of the RFI, discusses the technical approach, quality assurance/quality control measures, and personnel to be used in the RFI, and provides a schedule of work to be performed.

(1) Objective. The objective of the Phase III work is to determine the rate and extent of migration of hazardous waste or hazardous constituents in the surface water at the ABG. The surface water in the ABG is not a completely separate entity from the groundwater. Surface water flow is intermittent and during the drier parts of the year, the water table drops below the ground surface and exits as spring flow further down Little Sulfur Creek. Since the spring and groundwater have been sampled in the past, the surface water flow has been indirectly analyzed. The purpose of this Phase III Work Plan is to sample surface water entering the ABG upgradient and to get a few representative surface water samples to supplement the existing water quality data in the downstream portions of ABG.

(2) Technical Approach. The surface water will be sampled in the drainages west and northwest of the ABG for background contamination levels. The surface water components of flow in the ABG will be assessed in regard to the extent and magnitude of contamination. Based on the site specific conditions, it will be determined what techniques will be used to determine rate of contaminant migration. The assessment will have to take into account the interaction of surface and groundwater flow. Quantitative chemical analyses of surface water samples will be conducted for specific compounds which have been selected on the basis of previous groundwater sampling. The compounds are specific Appendix VIII compounds 1,1,1-Trichloroethane, trichloroethylene, D-N-Butyl Phthalate and bis (2-ethylhexyl) phthalate, Appendix III groundwater quality parameters (pH, specific conductance, iron, calcium, magnesium and potassium), metals (As, Ba, Cd, Cr, Pb, Hz, Se and Ag), and explosive compounds ROX, HMX and TNT. The surface water data will be incorporated with the groundwater data to provide a comprehensive model of contaminant movement in the ABG.

(3) Personnel. Phase III surface water work will be conducted by WES personnel, other CE personnel, or contractors approved by Crane working under WES supervision. All personnel working at the site will be trained in personal protection and safety and will have had a comprehensive physical examination within the 12 months preceding their involvement in the field work (see Health and Safety Plan, Part f.)

(4) Schedule. The Regional Administrator will approve, modify and approve, or disapprove and provide comments to the Permittee as to the corrections or modifications needed for the RFI Phase III Work Plan. Within 30 days after receiving comments from the Regional Office, the Permittee must modify or submit a new plan for approval. The Work Plan will be initiated within 45 days after it has been approved. The results of Phase III surface water work will determine whether Corrective Measures are necessary.

b. RFI Phase III Sampling and Analysis Plan.

(1) Sampling Objectives. The sampling of the surface water will be designed to determine the presence or absence of specific compounds in the ABG. Only a limited number of samples are needed because of the extensive groundwater sampling which has been conducted in the area and the interconnecting of the ground and surface water in the ABG.

(2) Sampling Equipment and Containers. Sampling equipment and containers are discussed in Part I of the accompanying QA/QC document for sampling and analyses of surface water at Crane NWSC, Crane, Indiana.

(3) Analytical Parameters and Test Methods. Analytical methods in general are described in the QA/QC section in preparation. Data validation and reporting will conform to Naval Energy and Environmental Support Activity (NEESA) standards (reference NEESA 20.2-047B).

(4) Sample Types. Surface water sampling at the ABG will be biased because of the previous work at the site. The samples will be collected from Little Sulfur Creek and its tributaries and sealed in glass containers.

(5) Sample Locations, Depths and Frequency. The proposed sampling locations are shown in Figure 1. Samples taken in the drainages west and northwest of the ABG valley will serve as upgradient surface water data points. Water quality samples will be collected in one round and compared to existing groundwater sampling results.

(6) Sampling Schedule. The surface water sampling schedule will depend on the date of implementation of the Phase III Work Plan.

(7) Sampling Procedures. Surface water sampling procedures are described in detail in the QA/QC document.

(8) Rationale for Sampling Location and Choice of Analytes. The sampling locations were chosen as shown in Figure 1 to determine upgradient surface water quality and to supplement groundwater/surface water data already collected.

(9) Environmental Conditions at the Time of Sampling. Environmental conditions at the ABG are affected at times by the burning of munitions. The presence of volatile organic compounds in the air will be continuously monitored using a photoionization organic vapor detector and a combustible gas detector.

(10) Chain-of-Custody Forms and Procedures. Chain-of-custody is described in the accompanying QA/QC document, Part I.

(10) Chain-of-Custody Forms and Procedures. Chain-of-custody is described in the accompanying QA/QC document, Part I.

(11) Decontamination Procedures. Decontamination procedures for water sampling are described in detail in the accompanying QA/QC document (in preparation).

(12) Documentation. All sampling activities, methods, and analytical results will be presented in written reports at the end of the RFI for the ABG.

(13) Calibration of Field Devices. Calibration of the air-monitoring devices is described in the Health and Safety Plan.

(14) Sample Preservation. Water sample preservation methods are described in the QA/QC document.

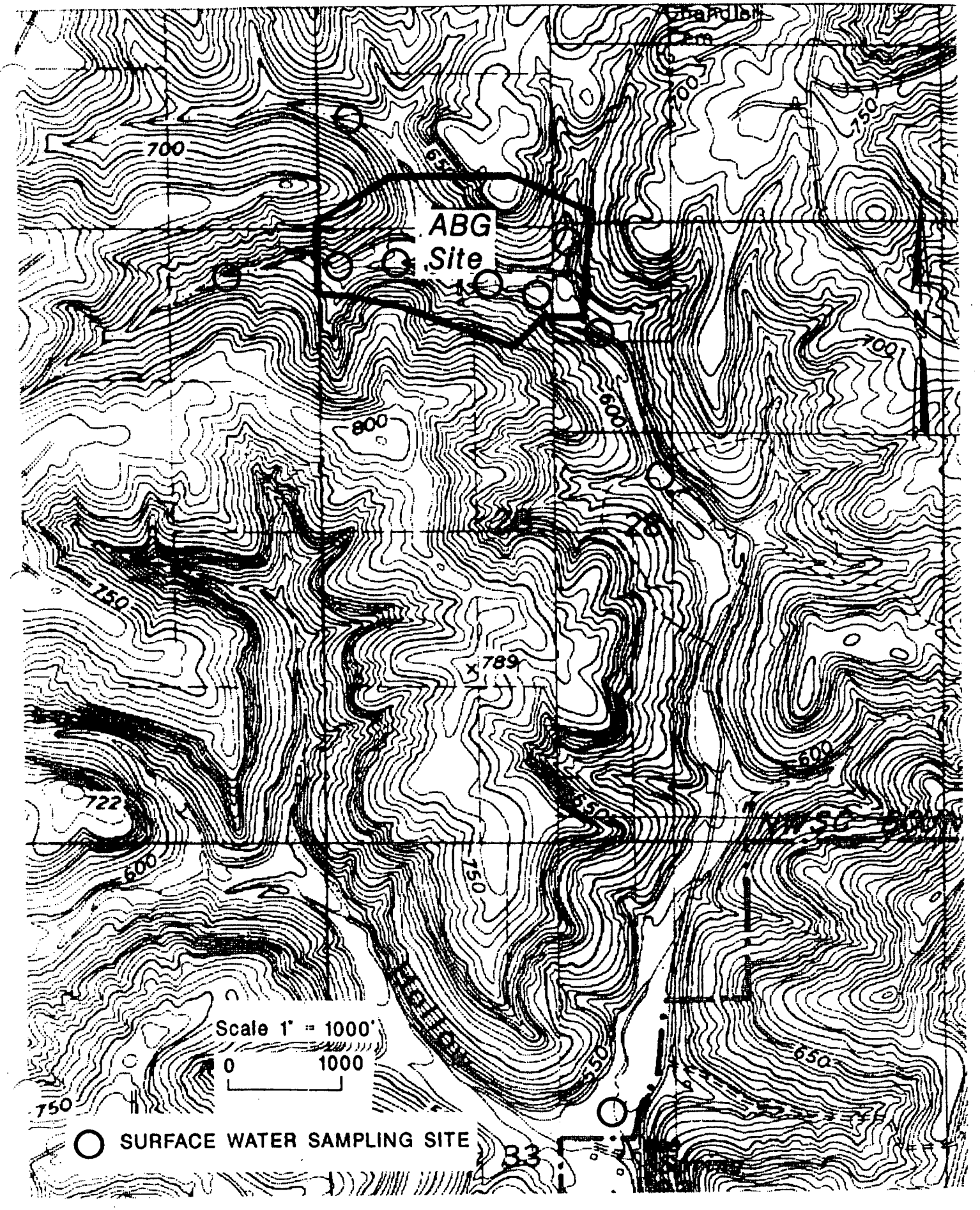
(15) Survey Data. All sample sites will be surveyed by certified professional surveyors to determine their elevation (NGUD) and east-west coordinates using the Indiana State Plane Coordinate System. The surveyors will supply WES with all survey data and a table of all sample elevations and locations.

c. RFI Phase III Health and Safety Plan (Surface Water Sampling).

Background. An initial assessment study of the NWSC conducted in 1981 to identify potential contamination sources determined that past activities at the NWSC have resulted in possible contamination of soil, groundwater, and surface water by potentially hazardous chemicals in several areas of the facility. The chemicals, by their presence in the soil and water, present a potential hazard to personnel conducting RFIs. RFI activities at ABG will require surface water sampling. The health and safety plan is intended to (a) describe field activities to identify potential hazards associated with each activity, (b) insure safety consciousness by each individual involved with the field activities, (c) control exposure to potentially hazardous chemical compounds by specifying protective gear and monitoring procedures commensurate with the anticipated risk, and (d) provide emergency procedures in the event of unanticipated high contaminant concentrations, incident response, control and disposal of generated waste materials.

(1) Surface Water Sampling. Additional flow measurement may be required whereby surface waters in streams and water issuing from springs are sampled and the rate of flow determined. Concentrations of contaminants in surface waters will be decreased by dilution. Some dilution and aeration will also occur in spring fed waters. Field personnel should nonetheless be alert for any signs of contamination such as discoloring of the water or the presence of odors or vapors.

A particular hazard to personnel exists at the ABG as a result of burning activities there. Explosive destruction of ordnance at the ABG produces blast waves and flying debris. All personnel are required to leave the vicinity of the ABG during burning activities. Control of personnel evacuation is the responsibility of the range safety officer at the ABG area.


ABG
Site
700
750
800
600
789
722
650
Scale 1" = 1000'
0
1000
SURFACE WATER SAMPLING SITE

Previous laboratory analysis of surface water samples at the ABC area has indicated the presence of minor amounts of contaminants in the surface water. Unexpected releases to the air near the streams will be monitored by air monitoring devices as described below. Sampling locations are shown in Figure 1.

(2) General Personnel Safety. The monitoring and precautionary measures specified in the following paragraphs are considered reasonable and prudent for general field investigations planned for the RFI. Each employee will have a comprehensive physical examination within the 12 months preceding his/her field involvement to provide background information. Upon completion of the project, or annually, whichever occurs first, each employee will have a routine physical examination. Physical examinations will consist of the following:

(a) Comprehensive Physical Examination. Basic health history, basic physical examination, routine EKG, chest x-ray, pulmonary function, audio testing, eye evaluation, hemoccult, Chem-screen 26, CBC with differential, acetylcholinesterase activity, heavy metals in blood to include lead, cadmium, mercury, arsenic, chromium, and strontium; urinalysis.

(b) Routine Physical Examination. Basic physical examination, resting EKG, chest x-ray, pulmonary function, SMA-26, urinalysis, audiometric.

(3) Air Monitoring. The most common halogenated organic compounds in industrial use and OSHA allowable inhalation limits are listed in Table 1 (OSHA Safety and Health Standards 29CFR 1910).

Table 1

Limits of Exposure and Detection for Common Organic Solvents

Solvent	Maximum Allowable* Exposure, 8 hrs.	Sensitivity** Photoionization	Detection*** Limit
Benzene	10 ppm	High	5 ppm
1,1 Dichloroethane	100 ppm	High	-
1,2 Dichloroethane	200 ppm	High	-
Methylene Chloride	500 ppm	High	100 ppm
Trichloroethylene	100 ppm	High	2 ppm

* OSHA Safety and Health Standards (29 CFR 1910) OSHA 2206
** HNu Model PI-101 with 11.7 ev lamp, HNu Systems, Newton, Mass.
*** Draeger Detector Tubes, National Draeger Inc., Pittsburg, PA

Air monitoring efforts will concentrate on monitoring for organic solvents and combustible gas. The presence of dust will be determined visually.

The presence of volatile organic compounds in the air will be continuously monitored using a photoionization organic vapor detector (HNu Systems Model 101, Hazardous Waste Detector) and a combustible gas detector (Neotronics Meter, EXOTOX Model 40-OFH).

The photoionization unit is a non-specific detector that can semiquantitatively determine the concentration of a broad range of potentially hazardous organic compounds in the air. The unit will be calibrated relative to benzene concentration or to standards traceable to benzene. The unit will be set to provide an audible alarm at 75 percent of the threshold limit value (TLV) for manufacturer's recommendation and checked periodically for proper operation.

The combustible gas/respirable air unit is a catalytic and thermal conductivity unit that measures the concentration of flammable gas, hydrogen sulfide and oxygen levels in the air. The combustible gas sensor is calibrated on methane and will provide an alarm at 25 percent of the lower explosive limit (LEL) of methane in air. The combustible gas/respirable air unit will be calibrated before field work is started and semiannually throughout the period of use as recommended by the manufacturer.

(a) Specific Monitoring. The concentration of three common solvents (benzene, methylene chloride, and trichloroethylene) in the air will be determined at the sampling site using colorimetric monitoring devices (detector tubes). The limits of detection of the colorimetric tubes are at or below 50 percent of the TLV in all cases. Records of readings will be maintained and correlated with readings from continuous monitoring devices.

(b) Control of Particulates. Dust generated from off-site locations could move over the sampling locations and other field activity areas intermittently. Monitoring for intermittently occurring particulates is of limited value. Efforts to avoid ingestion of significant amounts of dust will include:

(1) Physically avoiding the main stream concentration of dust.

(2) Discontinuing work when dust cannot be adequately controlled.

(c) Action Levels. In the event air monitoring indicates levels of combustible gas or organic vapors that exceed the action levels (Table 1), work will be suspended and the work site evacuated. A Crane NWSC industrial hygiene specialist will be brought onsite to define the specific hazard and specify necessary protective measures which will be implemented before work is resumed.

Table 2
Action Levels for Air Monitoring Instruments

Instrument	Level	Rationale
Photoionization	40 ppm benzene equivalent	80 percent of OSHA threshold level for benzene, 8-hr exposure
Combustible gas	1.25 percent methane, equiv. methane	Lower Explosive Limit

site, respirators with particulate filters and organic vapor cartridges will be issued and fitted by NWSC to each worker. Each respirator will be individually fitted to the crew member to whom it is issued. Respirators will be checked for serviceability, readiness and accessibility. Respirators will be kept in sealed plastic (Ziplock) bags.

(1) Limiting Skin Contact. All persons involved in handling samples will wear rubber gloves, safety-toe rubber boots, disposable coveralls, hard hats and safety glasses or face shields. Higher levels of protective clothing, such as Levels A, B, or C, will be issued and worn if or when working conditions require them. Protective equipment will be inspected daily. Worn or damaged equipment will be cleaned and discarded or disposed of as contaminated waste.

(2) Decontamination. All tools and equipment contaminated by material from sampling locations will be cleaned with high-pressure hot water or steam and/or commercial washing compounds and water when removed from that location. The intention is to limit the spread of contamination and prevent cross-contamination from one site to another. Wash water and waste from contaminated sites will be retained for disposal. Wash water and wastes will be tested for contaminants and disposed of in compliance with local requirements. Sampling apparatus will be thoroughly cleaned using high pressure hot water or steam before they are placed in a stream.

NOTE:

DOCUMENT CURRENTLY UNAVAILABLE.