

**70% DESIGN
PLANS AND SPECIFICATIONS
REMEDIAL ACTION**

**Naval Ordnance Station
Site 5
Indian Head, Maryland**

Prepared For:

Environmental Engineering Branch
Chesapeake Division (Code 114)
Naval Facilities Engineering Command
Washington, D.C.

and

Air and Hazardous Waste Management Branch
Naval Ordnance Station
Indian Head, Maryland

Prepared By:

ABB ENVIRONMENTAL SERVICES, INC.
Washington, D.C.

Contract No. N62477-91D0043
Delivery Order No. 0001
Job No. 6942-00

February 4, 1992

ABB Environmental Services, Inc.

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ASEA BROWN BOVERI

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The views, opinions, and/or information contained in this document are those of the authors and should not be construed as an official Department of the Navy position, policy, or decision, unless so designated by other documentation.

**PLANS AND SPECIFICATIONS
REMEDIAL ACTION**

**Naval Ordnance Station
Site 5
Indian Head, Maryland**

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SECTION 01012

REMEDIAL ACTION SUMMARY OF WORK

PART 1 - GENERAL

1.1 DESCRIPTION

The remedial action site (Site 5) is comprised of two drainage ditches emanating from the west-facing corners of Building 731, Naval Ordnance Station, Indian Head, MD, which have been impacted by past photographic waste management practices originating within the building. These practices have resulted in elevated silver concentrations within ditch soils/sediments. Portions of the drainage ditch are within areas designated for a military construction project (MILCON P-059) and a segment of the ditch network lies in an area scheduled for expansion of an existing explosion berm. The Navy has elected to remediate the manmade segments of the drainage ditch network through excavation of soils/sediments exhibiting silver concentrations greater than 10 mg/kg, treatment of the excavate utilizing solidification/stabilization technology, followed by long-term onsite management through incorporation of the treated material within the onsite explosion berm expansion.

1.2 REMEDIAL ACTION

1.2.1 Scope of Work: The work items included in this project which the Contractor will be required to perform include the following:

1.2.1.1 Remediation Work Plan (SD-94): The contractor shall develop and submit to the Government Representative a remediation work plan which defines project tasks, the procedures to accomplish them, along with schedules; remediation-specific quality assurance/quality control systems and procedures; as well as health and safety, environmental protection, contingency, and security project components. The plan will serve as the defining document for all remediation activities associated with Site 5.

1.2.1.2 Permits and Approvals: The contractor shall obtain all federal, state, and local permits required to execute the remediation project and obtain approval of the Remediation Work Plan from the Government Representative and any other agency specified by the Government Representative prior to initiation of site work. Additionally, acceptance of the solidification/stabilization design mix shall be required from the Government Representative prior to initiation of any Site treatment.

1.2.1.3 Mobilization and Site Preparation:

Security: A fence shall be installed around the site as shown in the design sketches and as described in Section 02100 of the technical specifications. This barrier shall encompass the exclusion zone and access to the site shall be provided through two gates. The Contractor shall control access by requiring all personnel entering or leaving the site to sign in and out.

Access Roads/Routes: The primary site access roads are delineated within the design sketches. The Contractor will be required to construct access routes along the wooded segments of the manmade drainage ditches and other areas as necessary to facilitate excavation and hauling of soils/sediments and debris. These access routes will generally follow the course of the drainage ditches as shown in the design sketches. Construction of these access routes will require clearing and grubbing of vegetation and removal of debris from within and around the drainage ditches. Materials and design of access routes shall at a minimum, conform to the cross-sections shown in the design sketches.

Field Offices/Lab: The Contractor shall mobilize field offices and other appropriate structures in areas designated within the design sketches. These facilities include:

- o Contractor's office;
- o Personnel decontamination facility;
- o Field laboratory (if required);
- o Solid waste dumpster.

Decontamination Facility (Personnel): The Contractor shall provide a personnel decontamination facility for use by the Contractor's personnel and others visiting the site. The facility shall include a changing room, lockers, and showers. The specific requirements are outlined in Section 01510, Remedial Action Temporary Facilities.

Decontamination Facility (Equipment): A decontamination facility for vehicles and equipment leaving the exclusion zone shall be constructed by the Contractor. The minimum requirements for the facility are shown in the design sketches. The longitudinal dimension of the facility and the size of the holding/solids separation tank shall be determined by the Contractor based on the type and size of the vehicles and equipment proposed for use. The plans for the decontamination facility shall be approved by the Government Representative prior to construction. The specific requirements for the facility are outlined in Section 01510, Remedial Action Temporary Facilities.

Exclusion Zone: The Contractor shall establish an exclusion zone within the fenced area. This zone shall include the excavation area, any staging and stockpile areas, the treatment area, and the area designated for placement of treated material and expansion of the existing explosion berm. Entrance to the exclusion zone shall only be through the personnel and vehicle decontamination zones.

Excavate Stockpile Area: The Contractor shall design and construct a storage area for contaminated soils/sediments should the proposed treatment method require stockpiling or dewatering of excavate. Minimum requirements for the area are shown on the design sketches in Section 01510. The final design of the area shall be included in the Remedial Action Work Plan and be approved by the Government Representative prior to construction.

Treatability Testing: The Contractor shall implement the testing program delineated within the Remediation Work Plan using representative site soil/sediment samples to develop and optimize the solidification/stabilization design mix. This program shall include bench-scale testing to evaluate the physical, chemical, and geotechnical properties of the untreated and treated materials. Specific requirements for treatability testing are identified in Section 02240.

1.2.1.4 Waste Excavation and Handling: The Contractor shall excavate silver-contaminated soils/sediments from the zone defined within the design sketches. Confirmatory sampling will be conducted by the Government Representative to ensure attainment of target cleanup levels. As

necessary, the Government Representative may direct the Contractor to excavate additional soils/sediments to attain the target cleanup level. All excavated materials shall be handled in such fashion as to prevent the release of the excavate to the environment, and to minimize impacts to the adjacent forest, forest floor, or vegetation. Contaminated soils/sediments shall be loaded directly into leak-proof containers which shall be promptly removed to the Excavate Stockpile/Storage Area. Any subsequent handling of the soils/sediments, such as consolidation or dewatering, will occur at the staging area.

1.2.1.5 Solidification/Stabilization: The Contractor shall implement treatment of the excavated material using a self-contained, mobile treatment system. Treatment shall be initiated employing the accepted design mix which demonstrates the ability to meet explosion berm construction material/performance requirements including load-bearing and compactability characteristics as well as maintaining current TCLP leachability characteristics (non-detect for all elements/compounds). Treatment shall be conducted in a manner which minimizes the potential for release of contaminated material to the environment. Sampling shall be conducted by the Contractor and the Government Representative throughout the treatment process to ensure that the treated material meets specified requirements. Specific requirements pertinent to planning and execution of solidification/stabilization are delineated in Section 02240.

1.2.1.6 Placement/Compaction/Capping of Treated Material: Subsequent to treatment, the Contractor shall place and compact the solidified/stabilized material in the area designated within the design sketches and in a manner delineated in Section 02240, Remedial Action Solidification/Stabilization. Prior to placement, all site preparation activities associated with construction of the explosion berms (e.g., subgrade preparation) must be completed by the construction contractor. The Contractor shall place and compact the S/S material in 12 inch lifts on suitable subgrade. The final layer of solidified material shall be uniformly graded to provide an appropriate base for a 1 foot thick soil cap as shown in the design sketches. The Contractor will place, compact, and fine-grade the soil cap subsequent to S/S and placement/compaction of the excavate and remediation-contaminated material.

1.2.1.7 Sorting/Management of Debris: Debris generated through site preparation, excavation, or pretreatment processes and is not contaminated by presence on the site, shall be removed and transported to a disposal facility licensed to accept the debris. The need to test the debris for contamination, to decontaminate the debris, or to treat the debris as contaminated waste shall be determined by the Government Representative. The technical specification for debris sorting and disposal are located in Section 02205, Remedial Action Waste Excavation.

1.2.1.8 Ambient Air Monitoring: The Contractor shall conduct operations (excavation, treatment, etc.) such as to minimize the generation of dust and other airborne contaminants. In addition, personnel, onsite area, and perimeter real-time and full-shift monitoring shall be conducted. Provisions and procedures to accomplish this shall be delineated in the Remedial Action Work Plan.

1.2.1.9 Restoration/Demobilization:

Removal of Material Storage/Staging and Decontamination Areas: At the completion of the project, the Contractor shall remove all constructed support areas. All contaminated materials shall be disposed of in an appropriate manner and areas restored to the approximate contours and conditions prior to remediation of the site.

Restoration of the Drainage Ditch Network: The excavation area shall be backfilled and graded to the approximated contours existing prior to the remedial action, with the exception of the zone designated for expansion of the existing explosion berm. The drainage ditch network shall be rerouted along the perimeter of the expanded berm as shown in the Design Drawings. The soil backfill material shall be of a quality similar to that existing naturally at the site. The top six inches of soil backfill shall be of a quality suitable to support a grass cover crop and shall be relatively free of stones greater than 2 inches in diameter and deleterious matter. Jute matting or other appropriate technique shall be utilized to prevent erosion within the restored drainage ditches. The restoration shall be completed in accordance with specifications outlined in Section 02221, Remedial Action Drainage Ditch Restoration.

Revegetation: Areas disturbed by the remedial action shall be fertilized and seeded according to Section 02930, Turf at the completion of backfilling, compaction, and grading.

Removal of Equipment, Field Office/Laboratory, and Fencing: The Contractor shall remove from NOS all equipment, support facilities, and fencing installed to execute the remedial action.

Restoration of Access Road/Route Areas: Access roads/routes constructed during the remedial action will be restored to conditions prior to construction unless otherwise directed by the Government Representative. Restoration will involve removal of gravel subbase followed by backfilling, grading, and revegetation.

1.2.2 **Objectives:** The objectives of the remedial action at Site 5 include: the removal of soils/sediments contaminated with silver at concentrations greater than 10 mg/kg from the manmade sections of the drainage network; treatment of the excavate using solidification/stabilization technology to produce a material which meets the physical/chemical requirements of explosion berm construction material while maintaining the untreated material TCLP test characteristics; placement, compaction, and capping of the treated excavate within the zone designated for Site 5 explosion berm expansion as shown in the design sketches.

1.3 WORK SEQUENCE

The remediation of contaminated soils/sediments associated with the manmade drainage ditches emanating from Building 731 will be implemented during, and as part of, the construction of a Mix, Assemble and Cure Facility at Naval Ordnance Station, Indian Head, MD. Remediation work must be coordinated and properly sequenced with Facility construction tasks.

END OF SECTION

SECTION 01030

REMEDIAL ACTION SPECIAL PROJECT PROCEDURES

PART 1 - GENERAL

1.1 DESCRIPTION:

1.1.1 Special Project Procedures are required of the Contractor due to the conditions at the site. Special Project Procedures are required for the following:

- o Health and Safety
- o Spill Control
- o Dust Control
- o Runoff Control
- o Air Monitoring
- o Quality Control

1.1.2 These procedures shall meet the requirements of the National Oil and Hazardous Substances Contingency Plan (NCP).

1.1.3 Contractor is required to certify that the Contractor's employees are properly trained to perform the work required by this remedial action contract prior to commencement of any site work.

1.2 RELATED REQUIREMENTS

1.2.1 Related work which is specified in other sections of the Technical Specifications includes, but is not limited to, the following:

- o Environmental Protection: Section 01560
- o Remedial Action Project Record Documents: Section 01721

1.3 SUBMITTALS

1.3.1 Health and Safety, Spill Control, Dust Control, and Runoff Control Plans:

1.3.1.1 Submit plans for implementing these procedures for approval to the Government Representative and for review and comment to appropriate regulatory agencies. These plans will become a part of the Remediation Work Plan. No work onsite will be permitted until the comments received from the regulatory agencies is adequately addressed by the Contractor, and the plans are approved by the Contracting Officer. The Contractor will be given no extension in time for delays caused by the Contractor's failure to address all comments adequately in a second submittal.

1.3.1.2 The approved plans, complete with all comments addressed, shall be made a part of the Remedial Action Project Record Documents, Remediation Work Plan (see Section 01721). The Contractor shall implement and maintain these procedures at the appropriate time prior to a during performance of the remedial action work, Failure to adhere to these plans will give the Government Representative the right to issue a stop work order. The Contractor shall not be entitled to a time extension for such an action.

1.3.2 Air Monitoring Plan: The Contractor shall submit, to the Government Representative, a plan detailing the provisions and procedures for personnel, onsite area, and perimeter real-time and full-shift air monitoring during remedial activities. This plan will become a part of the Remediation Work Plan.

1.3.3 Contractor's Certification: Certify in writing to the Government Representative prior to beginning work that employees working pursuant to this Contract are properly trained for this type of work and that training, as a minimum, is in compliance with OSHA 1910.120.

1.3.4 A roster of trained personnel will be provided.

PART 2 - PRODUCTS

Not applicable.

PART 3 - EXECUTION

3.1 HEALTH AND SAFETY

3.1.1 The Health and Safety Plan shall conform to the requirements of 29 CFR 1910 which includes, but is not limited to, the following:

- o The name of a site health and safety officer and the names of key personnel and alternates responsible for site safety and health.
- o A health and safety risk analysis for existing site conditions, and for each site task and operation.
- o Employee training assignments.
- o A description of personal protective equipment to be used for each site task and operation.
- o Medical surveillance requirements.
- o A description of the frequency and types of air monitoring, personnel monitoring, and environmental sampling techniques and instrumentation to be used.
- o Site control measures.
- o Decontamination procedures.
- o Standard operating procedures for the site.
- o Buddy system.
- o Excavation Safety.
- o Heat and Cold Stress Prevention and Response.
- o A contingency plan that meets the requirements of 29 CFR 1910.120.
- o A roster of trained and certified personnel allowed onsite.

3.1.2 A continuous monitoring program shall be required to indicate conformance to the approved Health and Safety Plan.

3.1.3 References:

- o Occupational Safety and Health Administration (OSHA) Standards for General Industry, 29 CFR 1910, and Standards for the Construction Industry, 29 CFR 1926.
- o OSHA Standards for Hazardous Waste Operations and Emergency Response, 29 CFR 1910.120.
- o National Institute for Occupational Safety and Health (NIOSH), OSHA, the U.S. Environmental Protection Agency (EPA), and the U.S. Coast Guard, "Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities", October 1985.
- o Corps of Engineers (COE) Safety and Health Requirements Manual, EM 385-1-1 (April 1981, rev. October 1987).

3.2 SPILL CONTROL

3.2.1 A Spill Control and Contingency Plan shall include provisions for clean-up of any spills which may occur during excavation, treatment, and transportation (on and off base).

3.3 DUST CONTROL

3.3.1 Requirements: The Dust Control Plan, shall at a minimum:

- o Assign one individual, supervised by the Contractor Site Health and Safety Officer, whose responsibility is to prevent migration and blowing of dust (especially contaminated or potentially contaminated dust).
- o Require that any water be applied by methods approved by the Government Representative with equipment including a tank, pressure pump, and a nozzle equipped spray bar.
- o Require that any water will be applied in a manner which will not cause runoff, ponding, muddy conditions, or result in soil erosion.
- o Require all excavated and stockpiled soils be kept wet to avoid dust.
- o Require necessary actions to prevent dusting during and construction activities.

3.3.2 Implementation: The Contractor shall be responsible for dust control at the site. The Contractor assumes responsibility for any contract delays or work stoppages for use of inappropriate or ineffective dust control measures.

3.3.3 Materials required: Water shall not be salty or brackish and shall be free from oil, acid, and injurious alkali or vegetable matter.

3.4 RUNOFF CONTROL

3.4.1 Requirements: The Runoff Control Plan, shall at a minimum:

- o Prevent runoff from contaminating other soils and prevent off-site runoff from entering open excavations.
- o Assign one individual whose responsibility is to prevent runoff from decontamination pad during decontamination activities.

- o Obtain Government Representative Approval for implementing alternate runoff control measures.

3.4.2 Implementation: The Contractor shall:

- o Collect rainwater and decontamination washwater from the decontamination pad, perform required testing analyses, and discharge to an approved treatment facility (e.g., the station sanitary sewer system).
- o Maintain water level in collection area that will not result in water overflow from these collection facilities.

3.5 AIR QUALITY CONTROL

3.5.1 Implementation: The Contractor shall, at a minimum:

- o Perform personnel, onsite area, and perimeter real-time and full-shift monitoring.

3.6 QUALITY CONTROL

3.6.1 See Section 01400: Contractor Quality Control (CQC) System.

3.7 CONTRACTOR'S CERTIFICATION

3.7.1 Certify in writing that all employees working pursuant to this contract are properly trained for this type of work.

3.7.2 This certification shall state that:

- o All employees are current in their training for that level required by their job function and responsibility, as required by 29 CFR part 1910.
- o The individual who signs the certification of training on behalf of the Contractor had the Contractor's authority to certify that this training information is accurate and complete.
- o The Contractor agrees to abide by all applicable federal, state, and local laws and regulations regarding removal, storage, and treatment of contaminated soil done pursuant to or in conjunction with this contract.

END OF SECTION

SECTION 01060

REMEDIAL ACTION REGULATORY REQUIREMENTS

PART 1 - GENERAL

1.1 SUMMARY

1.1.1 This section addresses permitting and regulatory compliance as related to the planning and execution of the remediation of silver-contaminated soils and sediments within the manmade segments of drainage ditches emanating from Building 731, NOS, Indian Head, MD. The Contractor shall be responsible for obtaining all applicable permits and conforming to all applicable or relevant and appropriate requirements pertinent to aspects of the remedial action at Site 5. These include, but shall not be limited to federal, state, local, and facility regulations and requirements.

1.2 ON-SITE WORK

1.2.1 Regulations applicable to on-site waste handling activities will include but not necessarily be limited to the following regulations promulgated under the Resource Conservation and Recovery Act (RCRA), Clean Air Act (CAA), the Occupational Safety and Health Act (OSHA), regulations promulgated by the State of Maryland under the Code of Maryland (COMAR), and Naval Ordnance Station regulations:

- o National Contingency Plan (40 CFR 300)
- o RCRA Storage Requirements (40CFR 261.10, 40 CFR 264)
- o RCRA Land Disposal Restrictions (40 CFR 268.10)
- o OSHA Occupational Health and Safety Standards (29 CFR Part 1910)
- o OSHA - Recordkeeping and Reporting (29 CFR 1904)
- o OSHA - General Industry Standards (29 CFR 1926)
- o CAA - National Ambient Air Quality Standards (NAAQS)
- o CAA - Subchapter C - Air Programs, National Emission Standards for Hazardous Air Pollutants (40 CFR 61.240 - 61.247)
- o Code of Maryland Regulations (COMAR)

1.3 TRANSPORTATION

1.3.1 Waste/Material transportation regulations will include, but not necessarily be limited to the following:

- o Department of Transportation (D.O.T.), Rules for the Transportation of Hazardous Materials (49 CFR Section 171)

1.4 OFF-SITE TREATMENT/DISPOSAL

1.4.1 Regulations applicable to off-site treatment and disposal of hazardous wastes, if required, will include but not necessarily be limited to the following:

- o RCRA - Hazardous Waste Management (40 CFR, Part 264).
- o RCRA - Land Disposal Restrictions (40 CFR Part 268).

END OF SECTION

SECTION 01510

REMEDIAL ACTION TEMPORARY FACILITIES

PART 1 - GENERAL

1.1 DESCRIPTION:

1.1.1 Work Included: The Contractor shall provide such temporary facilities as the work may warrant. Facilities include, but are not limited to:

- o Contractor's Office
- o Sanitary Facilities
- o Soil/Sediment Storage and Staging Area
- o Equipment Decontamination Facility
- o Personnel Decontamination Facility
- o Access Roads/Routes
- o Trash Dumpster/Containers
- o Fencing
- o Scales
- o Safety Equipment

1.1.2 Upon completion of the work, completely remove all Contractor installed temporary facilities at each site of excavation. Repair all damage caused by the installation or remediation.

1.2 RELATED REQUIREMENTS

1.2.1 Related work which is specified in other sections of the Technical Specifications includes, but is not limited to, the following:

- o Remedial Action Special Project Procedures: Section 01125
- o Remedial Action Site Maintenance: Section 01710
- o Remedial Action Demobilization: Section 01712
- o Earthwork for Structures and Pavements: Section 02221
- o Cast-In-Place Concrete: Section 03300

1.3 SUBMITTALS

1.3.1 Decontamination Facilities: Submit final details for decontamination facility for vehicles/equipment and personnel, along with procedures for management of wastes generated at the facilities for approval from the Government Representative prior to beginning work as a component of the Remediation Work Plan.

1.3.2 Soils/Sediments Storage and Staging Area: Submit final details necessary for the construction of the staging area, along with procedures for the management of wastes generated at the facility for

approval from the Government Representative prior to beginning work as a component of the Remediation Work Plan.

PART 2 - PRODUCTS

2.1 MATERIALS

2.1.1 Personnel safety equipment shall be furnished in compliance with State and Federal requirements, including OSHA and in accordance with the Remediation Work Plan.

2.1.2 The equipment decontamination facility shall be located such that any equipment leaving the exclusion zone shall be decontaminated prior to leaving the site. The facility shall consist of a reinforced concrete pad and a collection drain for proper management of wash water as detailed in the design sketches. The facility shall be equipped with the following equipment:

- o High pressure steam generating unit with a self-contained water storage tank and pressurizing system.
- o Suitably sized to provide a minimum of 500 psi with a 0.5 to 5 GPM flow range and a nominal temperature of 200 deg. F.
- o Storage Tank: Minimum size of 200 gallons.
- o Wash Equipment Hose: Minimum of 50 ft. in length.

2.1.3 The personnel decontamination facility shall include at a minimum 2 showers, and adequate locker and change room facilities for all on-site personnel.

2.1.4 The soils/sediments staging and storage area shall consist of a lined containment area as shown in the design sketches. The liner membrane shall be 30-mils thick and meet specifications described in Section 02721, Geomembrane Liner.

2.1.5 A temporary certified scale for weighing activities associated with remedial activities shall be installed onsite by the Contractor.

2.1.6 Dumpsters for general site trash collection with minimum weekly disposal shall be provided for by the Contractor. The size of the dumpster shall be at least 6 cubic yards. Dumpsters shall not be used for disposal of hazardous or special waste materials. The Contractor shall provide appropriate separate containers approved by the Government Representative (e.g., drums) for storage and disposal of hazardous trash such as contaminated personal protective equipment, rope, or wire. Clearly label containers as hazardous waste.

2.1.7 All necessary equipment for the protection of the traveling public shall be furnished and maintained as specified in the Manual on Uniform Traffic Control Devices (Part VI).

PART 3 - EXECUTION

3.1 PERFORMANCE:

3.1.1 Field Offices and Storage Trailers: Site in approved locations and properly set up for all anticipated weather conditions. Sanitary conveniences shall be provided for all onsite personnel.

3.1.2 Wash water shall be collected and to the removed from the decontamination pad, tested, and discharged into the base sanitary sewer system.

3.1.3 Runoff collected from the soils/sediments storage and staging area shall, to the maximum extent practicable, be utilized as feed water in the solidification/stabilization process. If this is not practicable, the collected water shall be tested and managed appropriately.

3.1.3 All structures installed under this Section shall be provided with non-toxic, dry chemical, fire extinguishers meeting Underwriters Laboratories, Inc. approval for Class A, Class B, and Class C fires with a minimum rating of 2A, 10B, 10C. Locate and distribute fire extinguishers in accordance with NFPA 10, Portable Fire Extinguishers.

3.2 REMOVAL OF FACILITIES

3.2.1 Removal all temporary facilities installed upon project completion.

3.2.2 Dispose of concrete, soil, membranes, pipe, and holding tanks associated with the soils/sediment storage and staging area and equipment/vehicle decontamination facility. Contaminated materials shall be disposed of at a RCRA Subtitle C facility, non-contaminated materials shall be disposed of at a solid waste disposal facility.

3.2.3 The areas used for the staging/storage and decontamination facilities shall be restored to the approximate contours and conditions existing prior to remediation of the site.

END OF SECTION

SECTION 01710

REMEDIAL ACTION SITE MAINTENANCE

PART 1 - GENERAL

1.1 DESCRIPTION

1.1.1 The Contractor shall maintain the remediation site free from accumulations of waste, debris, and rubbish, caused by operations.

1.1.2 At completion of work, remove waste materials, rubbish, tools, equipment, machinery, and surplus materials, and clean all sight-exposed surfaces.

1.1.3 At completion of work, remove Contractor equipment and materials from the site.

1.1.4 Remove temporary facilities specified in Sections 01510 and 01712.

1.2 RELATED REQUIREMENTS

1.2.1 Related work which is specified in other sections of the Technical Specifications includes, but is not limited to, the following:

- o Remedial Action Summary of Work: Section 01010
- o Remedial Action Special Project Procedures: Section 01030
- o Remedial Action Temporary Facilities: Section 01510
- o Remedial Action Demobilization: Section 01721

1.3 SAFETY REQUIREMENTS

1.3.1 Standards: Maintain project in accordance with following safety and insurance standards:

- o Manual of Accident Prevention in Construction - AGC.
- o Hazards Control: Prevent accumulation of wastes which create hazardous conditions. Provide adequate ventilation during use of volatile or noxious substances.
- o Conduct cleaning and disposal operations to comply with local ordinances and anti-pollution laws. Do not burn rubbish and waste materials on NOS property. Non-hazardous materials will be disposed in an approved off-base landfill. Do not dispose of volatile wastes such as mineral spirits, oil, or paint thinner in storm or sanitary drains. Do not dispose of wastes into streams or waterways.
- o Cleaning activities shall be conducted in accordance with the approved Remediation Work Plan.
- o Post Material Safety Data Sheets in appropriate locations and make available for employees.

PART 2 - PRODUCTS

2.1 MATERIALS

2.1.1 Use only cleaning materials recommended by manufacturer of surface to be cleaned. Use cleaning materials only on surfaces recommended by cleaning material manufacturer. Furnish with a portable wash unit see Equipment Decontamination as specified in Temporary Facilities - Section 01510.

PART 3 - EXECUTION

3.1 DURING CONSTRUCTION

3.1.1 Execute cleaning to ensure that the site is maintained free from accumulations of waste materials and rubbish. At reasonable intervals during progress of work, clean site, and dispose of waste materials, debris, and rubbish. The Government Representative may require additional cleaning if in his/her opinion it is needed.

3.1.2 Provide on-site containers for collection of waste materials, debris, and rubbish. Remove waste materials, debris and rubbish from site and legally dispose of at public or private facilities off Station property.

3.1.3 Handle materials in a controlled manner with as few handlings as possible; do not drop or throw materials from heights.

3.2 FINAL CLEANING

3.2.1 In preparation for substantial completion, conduct final inspection of site. Maintain cleaning until project is substantially complete. The Government Representative will make final determination of site cleanliness and the Contractor will continue to clean site to satisfaction of Government Representative. All project facilities shall be decontaminated and removed as outline in Section 01712 - Demobilization.

END OF SECTION

SECTION 01712

REMEDIAL ACTION MOBILIZATION/DEMobilIZATION

PART 1 - GENERAL

1.1 DESCRIPTION

1.1.1 This section covers the requirements for proper site mobilization prior to the start of remedial activities and demobilization at the completion of all work required to execute the remedial action at Site 5.

1.1.2 The work shall consist of the mobilization and demobilization of the Contractor's personnel, equipment, and materials necessary for the performance of the remedial action. It shall include the transportation of personnel, equipment and operating supplies to the site; establishment of offices, all necessary utilities, and other preparatory work at the site, along with proper removal of such.

1.1.3 Demobilization work activities will include the following:

- o Decontamination of all Contractor equipment and materials, and removal from site of same.
- o Collection and disposal of all Contractor generated contaminated materials and equipment for which decontamination is inappropriate, including materials used to construct the decontamination pads at excavation sites.
- o Decontamination of site dedicated equipment and facilities operated by the Contractor and removal from site, including excavation, treatment, and support equipment.
- o Disconnect and remove treatment facility equipment and portions of utilities as specified in this Section.
- o Remove and dispose or return temporary facilities specified in Section 01510.

1.2 RELATED REQUIREMENTS

1.2.1 Related work which is specified in other sections of the Technical Specifications includes, but is not limited to, the following:

- o Remedial Action Summary of Work: Section 01012
- o Remedial Action Temporary Facilities: Section 01510
- o Remedial Action Off-site Transportation: Section 02081
- o Remedial Action Off-site Disposal: Section 02082

PART 2 - PRODUCTS

Not applicable.

PART 3 - EXECUTION

3.1 DECONTAMINATION

3.1.1 Decontaminate all facilities, equipment, and materials prior to final removal except where inappropriate.

3.2 STORAGE ON SITE:

3.2.1 On-site storage of contaminated materials shall be in drums, plastic bags, or otherwise contained and covered to prevent contaminating environmental media and Station facilities.

3.3 FINAL APPROVAL

3.3.1 Prior to removal from site, all decontaminated equipment and materials shall be inspected and approved by the Government Representative.

3.4 OPERATION AREAS

3.4.1 Prior to removal of temporary and treatment facilities and equipment, thoroughly wash down and decontaminate all equipment and facilities prior to site close out. Remove sediments and liquid from catch basins and sumps. Sediments shall be treated with the remainder of contaminated soil.

3.4.2 Remove the fence installed at the site following completion of backfill operation and removal of decontaminating equipment.

3.4.3 The Contractor shall repair any erosion or runoff related damage to the site and reseed as specified in Section 02930.

3.5 DECONTAMINATION AND STAGING AREA

The Contractor shall dismantle and properly dispose of and/or remove from the site all temporary and supporting facilities no longer required for construction including but not limited to the decontamination and soils/sediments storage and staging areas.

3.5.1 Upon completion of equipment decontamination, thoroughly wash down the equipment decontamination pad. Remove sediments from the collection trough and sump and treat as described in paragraph 3.4.1. Remove decontamination pad and dispose of at off-base sanitary landfill.

3.5.2 Upon completion of staging and storage of contaminated soils/sediments, thoroughly wash down the equipment decontamination pad. Remove sediments from the collection sump and treat as described in paragraph 3.4.1. Test materials which contacted contaminated materials and if these materials exhibit silver concentrations greater than 10 mg/kg, treat these materials through solidification/stabilization and incorporate into the berm expansion. Remove uncontaminated components of the unit and dispose of at off-base sanitary landfill.

END OF SECTION

SECTION 02081

REMEDIAL ACTION OFF-SITE TRANSPORTATION

PART 1 - GENERAL

1.1 DESCRIPTION

During the execution of the remedial action debris will be generated through site preparation, excavation, or pretreatment processes, and demobilization. This waste will not be amenable to onsite treatment and will require offsite transport and disposal at a facility licensed to accept the debris. This section specifies requirements for the transport of remedial action-generated wastes not amenable to onsite treatment and management.

1.1.1 The Contractor shall provide equipment, personnel and facilities necessary to handle/load and transport the waste materials.

1.1.2 The Contractor shall comply with all applicable regulatory requirements listed as well as other applicable Federal, State or local laws, codes and ordinances which govern or regulate solid and hazardous wastes. Verify that all vehicles entering and leaving the site comply with all safety requirements.

1.1.3 The Contractor shall inspect vehicles before leaving the site.

1.1.4 Transport materials from the site to an off-base disposal facility approved by the Governments Representative that is licensed to accept waste generated as part of the remedial action.

1.2 RELATED REQUIREMENTS

1.2.1 Related work which is specified in other sections of the Technical Specifications includes, but is not limited to, the following:

- o Remedial Action Special Project Procedures: Section 01030
- o Remedial Action Regulatory Requirements: Section 01060
- o Remedial Action Off-site Disposal: Section 02082
- o Remedial Action Waste Excavation: Section 02205

1.3 SITE ENTRY

1.3.1 All transporters must follow the appropriate Health and Safety protocols established for the site within the Remediation Work Plan. Normal operating procedure will involve site entry at the exclusion

zone entrance with sign in, entry to the site with the appropriate level of protection, followed by proceeding to area as designated by the Contractor.

1.4 VEHICLE REQUIREMENTS

1.4.1 Bulk Waste Transportation:

1.4.1.1 Use vehicles licensed under the State of Maryland and other states as appropriate. All vehicles will have identification numbers displayed as per USDOT regulation defined within 49 CFR 172.336 a,b. Transporter will provide placards or identification number as required. All trucks shall be washed and clean prior to arriving at the site.

1.4.1.2 Transporters of hazardous wastes offsite shall be in full conformance with state laws as well as any other applicable Federal laws, including DOT requirements.

1.5 SPILL CONTROL

The Contractor is responsible for any and all actions necessary to remedy situations involving waste spilled in loading or transit. See Spill Control as specified in Remedial Action Special Projects Procedures - Section 01030.

1.6 SUBMITTAL

1.6.1 The Contractor shall incorporate a transportation plan for offsite transportation and disposal of remedial action wastes not amenable to onsite treatment and management. The Contractor will detail the procedures for loading and transporting materials offsite, including vehicle type, container type, name and address of transporter, and routing.

PART 2 - PRODUCTS

Not applicable

PART 3 - EXECUTION

3.1 GENERAL

3.1.1 Manifests: The Contractor shall organize and maintain the material shipment records/manifests required by RCRA, along with any documentation requirements stipulated under the State of Maryland Code of Regulations.

3.1.2 The Contractor shall coordinate the schedule for truck arrival and material deliveries at the disposal site to meet the approved project schedule. The schedule shall be compatible with the availability of equipment and personnel for material handling operations.

3.1.3 The Contractor shall obtain letters of commitment from waste haulers and disposal facilities indicating agreement to handle and accept the expected quantities of material to be generated through the remedial action.

3.2 LOADING

3.2.1 The Contractor shall provide equipment, personnel, and facilities necessary to handle/load materials for transport.

3.2.2 The following solid and hazardous waste categories will require loading and handling: bulk solids, construction and site preparation debris, and hazardous wastes not amenable to onsite treatment.

3.2.3. The loading equipment driver and other personnel shall comply with requirements of the Remediation Work Plan and must have protective equipment required by the Health and Safety Plan for on-site work.

3.2.4 Vehicle Decontamination: All vehicles leaving the site shall pass through the decontamination facility and be inspected by the Contractor to ensure that no soil adheres to its wheels or undercarriage. At a minimum, the vehicles wheels and undercarriage shall be washed using high pressure water and/or steam. If necessary, the vehicle shall be scrubbed down in order to remove all soil adhering to the vehicle.

3.3 MEASUREMENT

3.3.1 Measure the weight and volume of waste material in the transporting vehicle prior to leaving the site using a method approved by the Government Representative.

3.4 HAULING

3.4.1 Implement a hauling or transport schedule that allows for removal of the waste from the site at a rate commensurate with the waste handling schedule.

3.4.2 Identify the route of travel for all vehicles going to or from the site to the final disposal area identified. This route shall not be changed without approval by the Government Representative.

3.4.3. Normal Operating Procedure:

- o Coordinate with the Governments Representative for vehicle inspection and recording of quantities and types of wastes leaving the site.
- o Transporter shall receive completed manifest as necessary for removal of hazardous wastes.
- o Transporter must sign-out at office prior to leaving site.

END OF SECTION

SECTION 02082

REMEDIAL ACTION OFF-SITE DISPOSAL

PART 1 - GENERAL

1.1 DESCRIPTION

The work specified hereunder in this section shall involve the offsite disposal of any materials that are not amenable to onsite solidification/stabilization treatment.

1.1.1 The Contractor shall provide for off-site disposal of site preparation and demolition debris (i.e., tree trunks, concrete pad, fence, solid and hazardous wastes), and trees, used personnel protective equipment, and residuals from the treatment unit.

1.1.2 The Contractor shall be responsible for acceptance of the specific material at an approved disposal facility, for ensuring that the facility is properly permitted to accept the waste, and that the facility provides the stated treatment and/or disposal services.

1.1.3 The Contractor shall record weights, volumes, and character of materials disposed. Ensure that weighing devices used are certified by the appropriate state inspection agency.

1.2 RELATED REQUIREMENTS

1.2.1 Related work which is specified in other sections of the Technical Specifications includes, but is not limited to, the following:

- o Regulatory Requirements: Section 01060
- o Remedial Action Special Project Procedures: Section 01030
- o Remedial Action Off-Site Transportation: Section 02081
- o Remedial Action Waste Excavation: Section 02205

1.3 SUBMITTALS

1.3.1 As part of the Remediation Work Plan, the Contractor shall develop an Off-Site Disposal Plan which shall include at a minimum:

- o Proposed disposal facility for waste, including ownership, location, disposal, and if applicable, State identification code.
- o Materials to be disposed at proposed facility.

PART 2 - PRODUCTS

Not applicable.

PART 3 - EXECUTION

3.1 COORDINATION

3.1.1 Prior to the commencement of work, verify the acceptability of the proposed off-site disposal facility with the Contracting Officer and appropriate regulatory agencies.

3.1.2 Disposal Facility: The Contractor shall be responsible for ensuring the acceptance of the specified waste at an approved disposal facility, that the facility is properly permitted to accept the stated waste, that the facility provides the stated disposal services, and that the disposal facility is in compliance with its permit(s) at the time of waste disposal.

3.2 RECORDKEEPING

3.2.1 The Contractor shall obtain manifest forms, obtain material code numbers, and complete the shipment manifest records as required by the appropriate regulatory agencies for verifying the material type (Code Type) and quantity of each load in unit volume and weight. Copies of the manifests shall be submitted to the Government Representative within two business days following shipment, and within two business days after notification of receipt at the disposal facility. Any manifest discrepancies shall be reported immediately to the Government representative and be resolved by the Contractor.

3.2.2 The Contractor shall provide a final report to the Contracting Officer with written documentation and records verifying receipt and the quantity received of each load at the disposal facility and verification of proper disposal. Copies of the actual disposal receipt shall be provided to the Contracting Officer.

3.2.3 All manifests shall be signed by the Government Representative after review and prior to offsite transport and disposal.

END OF SECTION

SECTION 02100

REMEDIAL ACTION SITE PREPARATION

PART 1 - GENERAL

1.1 SUMMARY

1.1.1 This section addresses requirements for preparation of Site 5 for all activities associated with the remedial action. The Contractor shall be responsible for clearing, grubbing, stripping, and grading site areas required to support remediation including, but not limited to, access routes, excavation, decontamination, storage, treatment, and placement areas.

1.1.2 The Contractor shall be responsible for the preservation of all facilities, property, fences, existing trees, plants, and other vegetation that to remain at, or adjacent to the project site. The Contractor shall use precautions to prevent damage or injury from all remediation actions. The Contractor shall repair or replace any material damage incurred by remediation-related work to a condition that is acceptable to the Government Representative.

1.2 RELATED REQUIREMENTS

- o Remedial Action Summary of Work: Section 01012
- o Remedial Action Temporary Facilities: Section 01510
- o Remedial Action Offsite Transportation: Section 02081
- o Remedial Action Offsite Disposal: Section 02082

1.3 REGULATORY REQUIREMENTS

1.3.1 Burning shall not be allowed on Site.

1.3.2 Offsite transportation and disposal of debris shall be performed in accordance with the specification and Sections 02081 and 02082, along with all applicable laws and regulations.

2.1 EQUIPMENT

2.1.1 The Contractor shall provide all equipment, labor, and materials required to perform work as specified in this section.

PART 3 - EXECUTION

3.1 CLEARING AND GRUBBING

3.1.1 The surface of the ground, within areas to be excavated or graded as required to execute the remediation project shall be completely cleared of all timber, brush, stumps, roots, grass, weeds, rubbish,

construction or other debris, and other obstructions resting on or protruding through the surface of the ground. Clearing operations shall be conducted in a manner that prevents damage to existing structures, utilities, and installations and those under construction.

3.1.2 Grubbing shall consist of the complete removal of all stumps, roots larger than 1.5 inches in diameter, matted roots, brush, timber, logs, and any other organic or debris resting on, under or protruding through the surface of the ground, to a depth of 18 inches and within the areas to be excavated as defined in the design sketches.

3.1.3 All material and debris, cleared, grubbed and removed from uncontaminated areas by the clearing and grubbing operations shall be segregated from all materials which are removed from contaminated areas. Soils and sediments adhering to material removed from contaminated material shall be removed by mechanical means and the material stockpiled within the contaminated soils and sediments storage area for later treatment. No clearing and grubbing material or debris shall be disposed of in backfill areas.

3.2 GRADING

3.2.1 Grading in preparation for excavation, access route installation, storage/staging, decontamination, treatment, and placement areas shall be performed in all zones to be employed throughout the remedial action to the necessary lines, grades, and elevations. All material encountered, of whatever nature, within the remedial action site limits, shall be removed and disposed of as directed by the Government Representative. During the grading process, the subgrade shall be maintained in such condition that it will be well drained at all times. When necessary or directed by the Government Representative, temporary drains and drainage shall be installed to intercept or divert surface water runoff. Grading also includes cutting drainage ditches and shaping access and access route subgrades. Final grading and dressing of the site shall be performed by the Contractor to the extent required to assure proper and adequate drainage.

3.2.2 As necessary, the Contractor shall provide erosion control measures and maintain site areas in a neat manner. Where necessary, the Contractor shall reseed areas damaged by construction activities.

END OF SECTION

SECTION 02205

REMEDIAL ACTION WASTE EXCAVATION

PART 1 - GENERAL

1.1 SUMMARY

1.1.1 This section addresses activities necessary to remove contaminated soils/sediments from the manmade segments of drainage ditches emanating from Building 731, Naval Ordnance Station, Indian Head, MD. Work included in this activity involves excavation, loading, and onsite hauling of contaminated soils/sediments. The excavation will be maintained free from surface water utilizing appropriate engineering controls including dewatering equipment throughout the contaminated material removal process and until ditch remediation is complete.

1.2 LIMITS OF EXCAVATION

1.2.1 The Contractor shall remove the volume of sediments and soil six feet to each side laterally from center stream (total of twelve (12) feet wide) and to a depth of two (2) feet vertically below ground surface as shown in the design sketches within a tolerance of plus or minus 0.1 feet. The linear extent or length of excavation within the ditches is approximately 1170 feet as delineated within Figure 1. The volume associated with this excavation is 1150 cubic yards. Once the Contractor has excavated the specified cross-section and at incremental distances defined in the Remediation Work Plan, confirmatory sampling will be completed by the Government Representative. Once the Government has reviewed the results of the soils/sediments analyses, the Government Representative may require the Contractor to excavate an additional volume of soil/sediment specified by the Government Representative to attain target cleanup level concentrations of 10 mg/kg of silver. Subsequent sampling and analysis shall follow each excavation sequence. The Contractor and the Government Representative shall work together closely to coordinate excavation, sampling, and analysis to minimize downtime. The Contractor shall schedule work to facilitate sampling and analysis by the Government Representative.

1.2.2 Unauthorized Excavations: Removal of materials beyond the specified width, depth, and length dimensions specified herein or within the design sketches without specific direction from the Government Representative.

1.3 SEQUENCE OF EXCAVATION

Excavation of Site 5 drainage ditches shall be initiated at the most upstream positions (adjacent to Building 731) and progressively move downstream within each drainage ditch. The drainage ditch impacted by the explosion berm expansion shall be excavated first, with the remaining ditch excavated upon completion of excavation activities in the first ditch.

1.4 JOB CONDITIONS

1.4.1 Existing Utilities: Locate all utilities in the areas of work. If utilities are to remain in place, provide adequate means of protection during remedial activities. Should uncharted or incorrectly charted piping or other utilities be encountered during work, consult the Government Representative immediately for directions as to procedure.

1.4.2 Protection of Persons and Property: Employ the exclusion zone approach throughout all excavation activities. Protect the public, structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout and other hazards created through excavation operations.

PART 2 - PRODUCTS

Not Used

PART 3 - EXECUTION

3.1 PERFORMANCE

3.1.1 Preparation: Prior to any excavation, contact all appropriate personnel and/or agencies and obtain all required permits. Examine the areas and conditions under which excavating, filling, and grading are to be performed and notify the Government Representative in writing of conditions detrimental to the proper and timely completion of the work. Prior to breaking ground notify the Government Representative as to when excavation is to begin. Remove and dispose of obstructions visible on the ground surface. Complete all necessary clearing including the removal of vegetation, debris, and obstructions as necessary.

3.1.2 Classification: The zone of excavation identified within this clause is unclassified. All excavation shall be completed regardless of the type, nature, or condition of the materials encountered.

3.1.3 Surface Water Control: The Contractor shall keep excavations dry throughout the contaminated material removal process and until backfilling is complete. Surface water control shall be performed when necessary at no additional cost to the Government. Dispose of water pumped or drained from the construction site in a suitable manner to avoid public nuisance, injury to public health, damage to public and private property, and damage to the environment and the work completed or in progress. Provide suitable temporary channels for water that may flow along or across the construction site. Do not allow ground or surface water to enter excavations.

3.1.4 Stability of Excavations: Slope sides of excavations for existing soil conditions to comply with OSHA, and local codes and ordinances having jurisdiction. Sheet, shore, and brace where sloping is not possible either because of space restrictions or stability of material excavated. Maintain sides and slopes of excavations in a safe condition until completion of backfilling.

3.1.5 Soil Excavation and Handling: The Contractor shall provide all the necessary labor, equipment, and materials to efficiently remove and handle contaminated soils and sediments from the drainage ditch network. The contractor shall perform the necessary excavation to attain target cleanup levels for silver in soils and sediments (10 mg/kg). Excavated materials shall be handled in such a fashion as to prevent

the release of excavated materials to the environment. Contaminated soils/sediments will be loaded directly into leak-proof containers which will be removed promptly to the soils/sediment storage/staging area. Any subsequent handling of the material, such as consolidation or dewatering, will occur at the staging area. Contaminated soils/sediments will be transported on the site in containers or vehicles designed to transport such materials without spillage. Care shall be taken during loading, handling, and transporting to minimize the potential for spillage, tracking, or other means of deposition of contaminated materials. Contaminated materials which are release shall be cleaned up immediately to the satisfaction of the Government Representative.

3.1.6 Material Storage: Stockpile contaminated excavated materials within the soils/sediments storage and staging facility detailed in Section 01510, Temporary Facilities. Place, grade, and shape stockpiles for proper drainage. Provide covering on stockpiles to prevent wind dispersion.

3.1.7 Sorting of Debris: Debris encountered during excavation shall be removed and transported to a disposal facility licensed to accept the debris. The need to test the debris for contamination, to decontaminate the debris, or to treat the debris as contaminated waste shall be determined by the Government Representative.

3.1.7 Backfilling: Backfilling of the excavated areas may begin only when sampling results indicate acceptable contaminant concentration levels have been attained. The Contractor will not begin placing earthfill in excavated areas without the approval of the Government Representative.

END OF SECTION

SECTION 02221

REMEDIAL ACTION DRAINAGE DITCH RESTORATION

PART 1 - GENERAL

1.1 DESCRIPTION

1.1.1 This section addresses activities involved in the restoration of the manmade drainage ditches subsequent to excavation. Work required under this section includes restoration of all areas subject to excavation, clearing, and any other usage associated with the remedial action.

1.1.2 The Contractor shall restor the drainage ditches, ditch banks, and disturbed areas within the construction zone to preconstruction conditions. Restoration shall mean that topography, soil, and ditch location and gradient shall be as similar to pre-remediation conditions as practicable. Erosion controls (jute thatching) within the ditches and along the stream bank shall be used to support restoration. Restoration shall also mean that the restored stream will be functionally similar, as practicable, in terms of surface water runoff and retention, and flood and erosion prevention to that which was there prior to excavation.

1.1.3 At the Government Representatives request, the Contractor shall reroute the segment of the stream located within areas planned for the explosion berm expansion as shown in the design drawings. In this case, excavated areas within the berm area shall be backfilled and compacted to grade.

1.2 RELATED REQUIREMENTS

1.2.1 Related work which is specified in other sections of the Technical Specifications includes, but is not limited to, the following:

- o Contractor Quality Control System: Section 01400
- o Earthwork for Structures and Pavements: Section 02221

1.3 QUALITY ASSURANCE

1.3.1 Testing and Inspection Service: The Contractor shall conduct testing and inspection services in accordance with the Contractor Quality Control System for backfill and compaction as specified in Section 02221 and 01400.

PART 2 - PRODUCTS

2.1 MATERIALS

2.1.1 Backfill materials shall be consistent with those specified within Section 02221.

PART 3 - EXECUTION

3.1 PREPARATION

3.1.1 The Contractor shall examine the areas and conditions under which backfilling, compaction, and grading are to be performed and notify the Government Representative in writing of conditions detrimental to the proper and timely completion of the work.

3.2 BACKFILL AND FILL

3.2.1 General: Place soil material in layers to required subgrade elevations.

3.2.2 Backfill excavations as promptly as work permits, but not until completion of the following:

- o Approval given by the Government Representative
- o Removal of any sheeting, shoring and bracing, and backfilling of voids, as necessary
- o Removal of trash and debris

3.2.3 Placement: Place backfill and fill materials in layers of not more than 12 inches in loose depth. Do not place backfill or fill material on surfaces that are muddy, frozen, or contain frost or ice. Before compaction, moisten or aerate each layer as necessary to provide the optimum moisture content.

3.3 COMPACTION

3.3.1 Compaction shall not be less than 90 percent of maximum as determined by Modified Proctor (ASTM D1557).

3.4 GRADING

3.4.1 General: Uniformly grade areas within limits of grading under this section, including adjacent transition areas. Smooth finish surface to preconstruction elevations, compact with uniform levels or slopes and existing grades. Grade areas to drain away from structures and to prevent ponding. Finish grassed areas to receive topsoil to within not more than 0.1 foot of the required subgrade elevation.

3.5 EROSION CONTROL

3.5.1 Re-establish turf in all appropriate areas impacted by construction. Install geotextile fabric within drainage ditches to prevent erosion as shown in the design sketches.

END OF SECTION

SECTION 02230

REMEDIAL ACTION BASE COURSE MATERIALS FOR ROADWAYS

PART 1 - GENERAL

1.1 DESCRIPTION

1.1.1 Furnish and place gravel on the existing access road, and any additional new roadways that may need to be established during the course of the work, to allow equipment access.

PART 2 - PRODUCTS

2.1 MATERIALS

2.1.1 Road gravels shall be of hard durable particles free from vegetative matter, lumps, or balls of clay and other deleterious substances.

PART 3 - EXECUTION

3.1 PLACING AND COMPACTING

3.1.1 Placing and compacting shall be in accordance with [Maryland DOT specs?]

3.1.2 The roadway shall be constructed to the cross-section shown in Figure 5.

3.2 SHAPING, COMPACTING, AND STABILIZING

3.2.1 Compaction of each layer shall continue until a density of not less than 95 percent of the maximum density has been achieved for the full width and depth of the layer. The maximum density shall be determined in accordance with ASTM D1557. If required, additional water and fine material shall be applied to prevent checking, raveling, or rutting.

3.2.2 If the top of the layer becomes contaminated by degradation of the gravel or addition of foreign material, the contaminated material shall be removed and replaced with the specified material.

3.2.3 All layers of gravel shall be compacted to the required density immediately after placing.

3.2.4 The Contractor shall bear full responsibility for, and make all necessary repairs to the gravel and the subgrade until the pavement is in place.

3.2.5 The top of any gravel layer shall be scarified and loosened for a minimum depth of 1 inch immediately prior to the placing of the next layer of gravel.

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3.2.6 The surface of each layer shall be maintained during compaction operations in such a manner that a uniform texture is produced and the gravel firmly keyed. The moisture content of the material shall be maintained at the proper percent to attain the required compaction and stability.

3.2.7 If voids remain on the surface after the gravel has been constructed to grade, compacted, checked, and approved, sand leveling material shall be dumped and spread as directed. The quantity of sand leveling material shall be limited to the amount necessary to fill the voids and the minor low areas on the gravel. After the sand leveling material has been spread, it shall be completely rolled by a rubber tired roller with water applied, if necessary.

END OF SECTION

SECTION 02240

REMEDIAL ACTION SOLIDIFICATION/STABILIZATION

PART 1 - GENERAL

1.1 DESCRIPTION

This specification establishes the requirements for the treatment and incorporation of silver-contaminated soils and sediments excavated from manmade drainage ditches emanating from Building 731. Tasks involved in the treatment and placement of excavated materials includes completion of a treatability study to develop a solidification/stabilization (S/S) design mix, treatment of the excavated materials, followed by placement, compaction, and capping of the treated material within the designated zone of the explosion berm shown in the design sketches.

1.2 RELATED REQUIREMENTS

1.2.1 Related work which is specified in other sections of the Technical Specifications includes, but is not limited to, the following:

- o Earthwork for Structures and Pavements: Section 02221

1.3 SUBMITTALS

1.3.1 Remediation Work Plan: The Contractor shall include a Solidification/Stabilization Plan addressing all solidification/stabilization tasks associated with the remediation project. The Solidification/Stabilization Plan shall contain a detailed description of how the work will be accomplished and shall contain at a minimum:

- o A treatability study plan designed to develop a design mix which demonstrates the ability to meet requirements of paragraph 3.2.1.3. Upon completion of the treatability study, the results and recommendations shall be submitted to the Government Representative for approval.
- o The methodologies, procedures, and construction sequence to accomplish solidification/stabilization of excavated soils/sediments including processing rates, equipment, stockpiling locations, and movement of material during solidification/stabilization work activities.
- o A construction schedule identifying the critical path for all solidification/stabilization activities.
- o Personnel requirements including names of supervisory personnel assigned to the project and the project organization.
- o Equipment requirements.

- o Construction quality control procedures to be implemented during remedial construction.
- o Health and Safety procedures including material safety data sheets for prospective solidification/stabilization reagents.

1.4 QUALITY ASSURANCE

1.4.1 Codes and Standards: All solidification/stabilization work shall be completed in compliance with applicable requirements and regulations of governing authorities having jurisdiction.

1.4.2 Solidification/Stabilization Testing:

1.4.2.1 The Contractor shall provide quality control testing during solidification/stabilization operations for the characteristics specified in paragraph 3.2.1.3 of this specification.

1.4.2.2 The Contractor must demonstrate to the satisfaction of the Government Representative its ability to produce acceptable and consistent results. This shall be judged by the analysis of split samples of solidified/stabilized product for the characteristics specified in paragraph 3.2.1.3 of this specification. The split samples shall be prepared by the Contractor under the direction of the Government Representative, and submitted to the Government Representative for analysis. The results of the analysis will be compared to the Contractor's testing results.

1.4.2.3 Results of all quality assurance and quality control tests performed during construction to be used for determining compliance with these specifications shall be submitted to the Government Representative.

1.4.2.4 The Government Representative may request quality control and quality assurance samples to be collect at any time during solidification/stabilization activities. Additional quality assurance and quality control samples may be conducted by the Maryland Department of the Environment (MDE).

1.4.2.5 The Contractor's testing reports shall provide the basis for determination of compliance except as noted herein. A conflict shall occur if the quality assurance data do not agree with the Contractor's testing data with respect to the accept/reject criteria for characteristics specified in paragraph 3.2.1.3 of this specification. If, based on the quality assurance testing data, the Government Representative determines there is a conflict with the acceptance of the Contractor's data, the following activities shall occur:

- o The Government Representative shall request an audit for all participating laboratories on all appropriate testing data for the treated material in question. The audit shall examine all calculations, transcriptions, and procedures performed for errors. Results of the audit shall be submitted to the Government Representative no later than 24 hours after notification.
- o If the audit does not produce a resolution of the conflicting data, then split samples or field retesting shall be taken at a location selected by the Government Representative which has previously been tested and complies with the acceptance criteria. Split sample testing shall be performed by the participating laboratories for the criterion in question and the results of the analyses shall be submitted to the Government Representative within 48 hours of sampling. Field retesting results shall be submitted

within one hour of testing. The test results will be used by the Government Representative to determine the validity of the test data in question.

- o If there is agreement between participating laboratories on the split sample or field retesting results, the data for samples from the treated material in question are considered valid. The Government Representative shall consider two concurring results to be valid and the nonconcurring results to be invalid.
- o Should the analytical results of the split samples or field retesting indicate that the participating laboratories are not producing consistent data, a detailed laboratory or field testing equipment audit shall be performed at each laboratory or for each piece of field testing equipment. Corrective measures, based on the audit, shall be undertaken to the satisfaction of the Government Representative. No data for the questionable parameter shall be considered valid in the subject evaluation area (for placed, treated material), areas submitted concurrently, or in subsequent areas pending acceptance of the detailed audit and corrective measures undertaken.

1.4.3 Job Conditions:

1.4.3.1 Existing Utilities: Locate all utilities in the areas of work. If utilities are to remain in place, provide adequate means of protection during remedial activities. Should uncharted or incorrectly charted piping or other utilities be encountered during work, consult the Government Representative immediately for directions as to procedure.

1.4.3.2 Protection of Persons and Property: Employ the exclusion zone concept during all treatment and placement activities. Protect the public, structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout and other hazards created by solidification/stabilization operations.

PART 2 - PRODUCTS

2.1 SOLIDIFICATION/STABILIZATION MATERIALS AND EQUIPMENT

2.1.1 The Contractor shall demonstrate the solidification/stabilization reagents and mix design performance requirements of paragraph 3.2.1.3 by providing treatability test results for solidification/stabilization of the site silver-contaminated soils and sediments.

2.1.2 The Contractor shall secure sufficient quantities of solidification/stabilization reagent to insure construction activities progress without delay for purchase or delivery of the reagent to the job site.

2.1.3 The Contractor shall not use hazardous waste materials for solidification/stabilization reagents nor shall any hazardous waste materials be brought to the site.

2.1.4 The method of operations and specific equipment to be used shall be selected by the Contractor and described in the Remediation Work Plan. The solidification/stabilization equipment shall be a self-contained, mobile unit which precludes contact of in-process material with environmental media. It shall be the Contractor's responsibility to utilize an efficient solidification/stabilization system.

2.1.5 After solidification/stabilization activities are completed, the Contractor shall completely remove all unused reagents from the site, and shall not dispose of any reagents onsite.

PART 3 - EXECUTION

3.1 PREPARATION

3.1.1 Examine the areas and conditions under which solidification/stabilization is to be performed and notify the Government Representative in writing of conditions detrimental to the proper and timely completion of the work.

3.1.2 Prior to beginning of solidification/stabilization in any area, ensure that or perform all necessary clearing and subgrade preparation in that area.

3.2 SOLIDIFICATION/STABILIZATION

3.2.1 Preparation:

3.2.1.1 Utilize the mix design and methodologies delineated within the Remediation Work Plan and Treatability Study Report as authorized by the Government Representative to meet the performance requirements for the solidified/stabilized product.

3.2.1.2 Modify the mix design as necessary during solidification/stabilization activities to achieve performance specifications. The Contractor shall inform the Government Representative prior to implementing changes to the mix design.

3.2.1.3 The solidified/stabilized material must exhibit the following properties:

- o Penetration resistance of greater than or equal to 3 tons per square foot measured by pocket penetrometer within two days of solidification/stabilization.
- o Toxicity Characteristic Leaching Procedure (TCLP) test results for all analytes at concentrations below test criteria limits.
- o Permeability of 1×10^5 cm/sec or less as determined by the US Army Corps of Engineers Method EM-1110-2-1906 within 14 days or less of solidification/stabilization.

3.2.1.4 Unauthorized Solidification/Stabilization: Solidification/stabilization of materials beyond indicated in the design sketches and any additional material excavated to attain target cleanup levels without specific direction of the Government Representative.

3.2.1.5 Material Storage: The Contractor shall stockpile solidification/stabilization reagents where directed. Reagents shall be placed, graded, shaped, or stored to minimize reagent loss, maintain reagent consistency for desired solidification/stabilization performance, and comply with applicable requirements of governing bodies having jurisdiction.

3.2.1.6 Dust Control: The Contractor shall take measures to minimize fugitive dust emissions generated by solidification/stabilization activities and contain/manage reagent to minimize blowing, spilling, and migration outside of storage areas via runoff, percolation, wind, or transfer between storage and transport equipment.

3.2.1.7 Cold Weather Conditions: The Contractor shall suspend solidification/stabilization activities when ambient air temperatures fall below 40°F.

3.3 PLACEMENT, COMPACTION, AND CAPPING OF SOLIDIFIED/STABILIZED MATERIAL

3.3.1 Placement and Compaction: The Contractor shall place and compact the solidified/stabilized material within the zone designated for the expansion of the explosion berm as shown in the design sketches. Construction of the treated material bank shall consist of placing treated material in 12 inch loose lifts and compacting to at least 95% of the maximum obtained in the ASTM D1557 (Method C) Modified Proctor Test. Moisture content should be from zero to two percentage points above the optimal value. The placed and compacted material shall not have side slopes steeper than 3.0 horizontal to 1.0 vertical. The native soil under the material shall be disced or scarified so as to loosen the entire surface to a depth of four inches prior to placement of the first lift. Water shall be added, when necessary, at the time of scarifying to bring the material to within plus or minus two percent of optimum water content by ASTM D1557 test. Excess water shall be allowed to evaporate and rescarified prior to placement of the first lift. Immediately after scarifying, a layer of treated material shall be placed over the base and compacted as specified. Any material which fails to meet the specified minimum density shall be recompacted. Uniformly grade final layer of the solidified/stabilized material to provide an appropriate base for the bedding layer and soil cap.

3.3.2 Bedding Layer and Soil Cap: Upon placement and compaction of the final lift, a bedding layer (if needed) and a one foot thick soil cover (after compaction) shall be installed by the Contractor. Material employed in the construction shall be consistent with requirements specified for backfill materials in Section 02221. Final grading and dressing of the installed cap shall be performed by the Contractor to the extent required to provide an appropriate base for construction of the berm expansion. Subsequent to final grading, the bank shall be protected from erosion utilizing an appropriate method, such as placement of matting.

3.4 FIELD QUALITY CONTROL

3.4.1 The Contractor shall collect and test solidified/stabilized product samples for approval by the Government Representative. Determination of compliance with the penetration resistance, TCLP testing, and permeability requirements of paragraph 3.2.1.3 of this specification shall be made by the Government Representative based on reports provided by the Contractor, except as noted in paragraph 1.4.2.5 of this specification.

3.4.2 The Contractor shall perform the following:

- o Maintain daily logs of volumes of material solidified/stabilized, reagent deliveries, reagent quantities used, and other observations. Conduct visual observations of all incoming reagents throughout the project.
- o Collect a minimum of one sample for penetration resistance testing per 100 cubic yards of solidified/stabilized material. The Contractor shall test each sample.
- o Collect a minimum of one sample for TCLP testing per 100 cubic yards of solidified/stabilized material. The Government Representative will randomly select ten percent of these samples for testing by the Contractor.
- o Collect a minimum of one sample for permeability testing per 100 cubic yards of solidified/stabilized material. The Government Representative will randomly select ten percent of these samples for testing by the Contractor.
- o Submit to the Government Representative the results of the penetration resistance, TCLP, and permeability testing on representative samples of the treated material.

- o If, as determined by the Government Representative's review of the test results, the solidified/stabilized material as placed within explosion berm as shown in the design sketches, is below specified requirements, the Contractor shall undertake necessary corrective actions and testing at no additional expense to the Government. The Contractor may retest a rejected area once prior to undertaking additional corrective actions.
- o The area which will be considered rejected due to the failure of a sample to meet the performance criteria will be defined as the area encompassing the entire distance to surrounding sampling points which meet the performance criteria, and to a depth of the top surface of the next underlying complying lift.

3.5 CORRECTIVE ACTION

3.5.1 If the Contractor chooses to rework an area of treated and placed material which has been rejected for nonconformance with any of the performance criteria and it subsequently fails, the Contractor shall excavate the rejected area and re-solidify/re-stabilize it with additional material. The Contractor may rework a solidified/stabilized area rejected for nonconformance with the required specified performance criteria until it meets the specifications, provided that such work does not cause the area to deviate from the other requirements of conformance.

3.5.2 The expense for all corrective action shall be borne by the Contractor.

3.5.3 Prior to initiating solidification/stabilization activities, the Contractor must notify the Government Representative if the physical nature of the solidified/stabilized product will prevent implementation of the corrective actions for areas failing performance specification within the designated testing periods. In this case, the Contractor must notify the Government Representative in writing of corrective actions to be taken if areas fail to achieve performance specifications.

3.6 MAINTENANCE

3.6.1 Protection of Solidified/Stabilized Areas: Protect newly solidified/stabilized areas from erosion, and keep free of trash and debris. Repair and re-establish solidified/stabilized material in settled, eroded, and rutted areas to specified tolerances prior to cap placement.

3.6.2 Reconditioning Solidified/Stabilized Areas: Where completed solidification/stabilized areas are disturbed by subsequent construction operations or adverse weather, reshape and compact to required density and permeability prior to further construction.

END OF SECTION

SECTION 02721

REMEDIAL ACTION GEOMEMBRANE LINER
(POLYVINYL CHLORIDE (PVC) MEMBRANE)

PART 1 - GENERAL

1.1 DESCRIPTION OF WORK

1.1.1 Work specified in this Section shall consist of furnishing all labor, materials, and equipment to install a PVC membrane in the contaminated materials/soils/sediments storage/staging area in conformity with the Contract Drawings and as specified herein.

1.2 SUBMITTALS

1.2.1 Manufacturer's Experience: The manufacturer supplying the membrane shall satisfactorily demonstrate previous experience by letter of certification. Certification shall indicate that the manufacturer has produced, and has in service in similar applications for a period of not less than one (1) year, at least ten (10) million sq. ft. of PVC material. The fabricator's field representative will be present during installation.

1.2.2 Certification test results shall be submitted showing that the PVC sheeting meets the material requirements of these specifications.

1.2.3 Manufacturer's Guarantee: The manufacturer of the membrane liner shall guarantee the membrane as follows:

- o The manufacturer warrants the PVC cover which is manufactured, sold as first quality, and installed with technical assistance and/or by an approved installation contractor to be: (1) furnished free of manufacturing defects in workmanship or material for a period of one year from the time of delivery with the basis for judgment of defects being the applicable product specifications in effect at the time the order was placed unless modified by mutual written agreement and (2) shall not develop cracks/holes which penetrate the membrane due to the effects of normal service through the duration of this project.

1.3 QUALITY ASSURANCE

1.3.1 Manufacturer's Technical Service: The Contractor shall, at his/her expense, provide a technical representative of the membrane fabricator at the jobsite to insure compliance with the manufacturer's installation directions. The technical representative shall be present when the membrane installation is started, at substantial completion of the installation, and at such times, upon written notification from the Contractor, that the installation is not in conformance with the manufacturer's recommended procedures. He shall observe the work, reporting in writing unsatisfactory conditions or recommendations for

improvement in procedures to the Contractor with a copy to Government Representative. The technical representative shall not be directly responsible for the quality of the work involved; such responsibility shall be solely that of the Contractor.

1.3.2 Certification of Membrane: The manufacturer shall certify in writing that the membrane delivered to the job site meets the chemical and physical requirements specified herein.

1.3.3 Certification of Solvents and Seaming Adhesives: The Contractor shall certify in writing that solvents and seaming adhesives are the types recommended by the manufacturer of the membrane for the intended use.

PART 2 - PRODUCTS

2.1 POLYVINYL CHLORIDE (PVC) MEMBRANE

2.1.1 General: The materials supplied under these Specifications shall be first quality products designed and manufactured specifically for the purposes of this work, and which have been satisfactorily demonstrated by prior use to be suitable and durable for such purposes.

2.1.2 Description of PVC Materials: PVC (polyvinyl chloride) plastic membrane shall consist of calendared polyvinyl chloride sheeting fabricated into large sections by means of special factory-bonded seams into a single panel, or into the minimum number of large panels required to fit the jobsite.

- o Physical Characteristics: The PVC materials shall have the following physical characteristics:

<u>Properties</u>	<u>Value</u>	<u>Test Method</u>
Color	Black	-----
Thickness, mils, \pm 10%	30	ASTM D1593
Tensile strength, min., lbs./in. width	69	ASTM D882
Modulus @ 100% elongation min. lbs./in. width	27	ASTM D882
Ultimate elongation, % min.	300	ASTM D882
Tear resistance:	8	ASTM D1004
(a) Graves tear, lbs. min.		
Low temperature impact, pass, °F	-20	ASTM D1790
Volatility, % loss, max.	0.7	ASTM D1203
Water extraction @ 104° F, 24 hrs) % loss, max.	0.35	ASTM D1239
Specific gravity, min.	1.2	ASTM D792
Dimensional stability (@ 212° F, 15 min.) % max. change	5.0	ASTM D1204
Resistance to soil burial:	5.0	ASTM D3083
Tensile strength loss, % max.		
Elongation loss, % max.	20.0	

- o PVC materials shall be manufactured from domestic virgin polyvinyl chloride resin and specifically compounded for the use in hydraulic facilities. Reprocessed material shall not be used.

2.1.3 Factory Bonded Seam: The rolls shall be fabricated into the designed blanket sizes using one of the following seaming techniques: adhesive, heat seaming, or dielectric seaming.

The overlap shall provide the minimum required seam width (as indicated below). The seam shall extend to the edge of the sheet, so that no loose flap is present on the top side of the blanket. A loose flap is permissible on the bottom side of the fabricated blanket.

The rolls shall be laid out without tension and seamed without wrinkles or fishmouths. If wrinkles occur within the sheet due to the seaming process, the wrinkle shall not extend into the seamed width. Wrinkles which extend into the seamed width shall be treated as specified.

The overlap area to be seamed shall be free from moisture, dust, dirt, debris of any kind, and foreign material. The fabrication area shall be in a clean, enclosed, temperature controlled facility.

The dielectric and heat seaming devices shall be accurately monitored and controlled at all times to effect a consistently acceptable seamed width. Dielectric bars or wheels with ribs shall effect the full specified seam width. Space between the bar ribs shall not be counted in the seam width.

The PVC adhesive used for seaming the rolls together shall be as recommended by the PVC manufacturer and shall not be deleterious to the PVC material in any way after seaming. The adhesive product shall be applied as specified by the PVC manufacturer with special attention to the ambient temperature and rolling pressure. The adhesive shall have been tested for longevity in contact with the PVC material and its application shall result in no appreciable stiffening of the membrane. Prepared adhesive tapes shall not be used.

The minimum seam widths shall be:

	<u>Unreinforced</u>
PVC adhesive seaming	25 mm (1 in.)
Heat seaming	25 mm (1 in.)
Dielectric seaming	20 mm (3/4 in.)

Factory seams shall have a strength of 80 percent of the specified tensile sheet strength.

All fabricated seams shall pass a 100 percent air lance inspection.

2.1.4 Other Materials:

- o Cleaning Solvent: Solvent for cleaning contact surfaces of field joints and for other required uses shall be as recommended by the manufacturer or approved fabricator of the PVC material.

- o Adhesives: All seaming, scaling and high-solids adhesives shall be of a type or types recommended by the manufacturer or approved fabricator of the PVC material and shall be delivered in original sealed containers each with an indelible label bearing the brand name and complete directions as to proper storage, use and application of the adhesive.
- o Pipe Boots, Vents, Patches, and Membrane Reinforcement: All such devices shall be of the same material as the membrane or a compatible approved equal.
- o Mechanical Fastenings: Mechanical fastenings shall be of the material, size, and type as detailed on the plans or approved shop drawings.

PART 3 - EXECUTION

3.1 GENERAL: Prior to ordering PVC material, the Contractor shall submit, for Government approval, shop drawings showing panel layout with proposed size, number, position, and sequence of placing of all factory-fabricated sheets and indicating the location of all field joints and the direction of shop joints on each sheet. Shop drawings shall also show recommended details and/or methods for anchoring at top of slope, field joints, seals at structures, and penetrations.

3.2 SHIPPING AND HANDLING: Each factory-fabricated sheet shall be given prominent, unique indelible identifying markings indicating the sheet number, date of fabrication, and proper direction of unrolling and/or unfolding to facilitate layout and positioning in the field. Each factory-fabricated sheet shall be individually packaged in heavy cardboard or wooden crate fully enclosed and protected to prevent damage to it during shipment, prominently identified in the same fashion as the sheet within and showing the date of shipment. Until installed, factory-fabricated sheets shall be stored indoors in their original unopened crates; or outside stored on pallets protected from the direct rays of the sun under a light-colored heat-reflective opaque cover in a manner that provides a free-flowing air space between the crate and cover.

3.3 SURFACE PREPARATION: Surfaces to be covered shall be smooth and free of all sharp rocks or other sharp objects, vegetation and stubble. A suitable soil sterilant should be applied when indicated. An authorized representative of the installation Contractor shall certify in writing that the surface on which the cover is to be placed is acceptable. No installation of the membrane shall commence until this certification is furnished to Government Representative. It shall be the responsibility of the Contractor installing the membrane to keep the receiving surface in the accepted condition until complete installation of the liner is accomplished.

3.4 FIELD SEAMS:

3.4.1 Field Joints: Lap joints will be used to seal factory fabricated panels of PVC together in the field. Lap joints shall be formed by lapping the edges of panels a minimum of 4 in. (100 mm) for adhesive seaming and 1 in. (25 mm) for heating seaming. The contact surfaces of the panels shall be wiped clean to remove all dirt, dust or other foreign materials. Sufficient cold-applied vinyl to vinyl bonding adhesive shall be applied to the contact surfaces in the joint area, and the two surfaces pressed together immediately. Any wrinkles shall be smoothed out. Wrinkles which extend into the seamed width shall be treated as specified. Field seams shall have a strength of 80 percent of the specified tensile sheet strength.

3.4.2 Joints to Structures: All curing compounds and coatings shall be completely removed from the joint area. Joining of PVC to concrete shall be made with vinyl to concrete adhesive and mechanically fastened. Unless otherwise shown on the Drawings, the minimum width of concrete to PVC joint shall be 8 in. (20 cm).

3.4.3 Repairs to PVC: Any necessary repairs to the PVC shall be patched with the lining material itself and cold applied vinyl to vinyl splicing adhesive. The splicing adhesive shall be applied to the contact surfaces of both the patch and lining to be repaired, and the two surfaces pressed together immediately. Any wrinkles shall be smoothed out.

3.4.4 Seaming Wrinkles: Fishmouths or wrinkles at the seam overlaps shall be cut along the ridge of the wrinkle back into the panel so as to effect a flat overlap. The cut fishmouths or wrinkles shall be seamed as well as possible, and shall then be patched with an oval or round patch of the same PVC material extending a minimum of 6 in. (150 mm) beyond the cut in all directions.

3.4.5 Quality of Workmanship: All joints, on completion of the work, shall be tightly bonded. Any lining surface showing injury due to scuffing, penetration by foreign objects or distress from rough subgrade shall, as directed by Government Representative, be replaced or covered and sealed with an additional layer of PVC of the proper size.

3.5 PIPE BOOTS, VENTS, AND PATCHES:

3.5.1 All such devices shall be constructed in accordance with the Drawings or as recommended by the manufacturer.

3.5.2 Sealing materials and adhesives for attachment to the membrane shall be of the type recommended by the manufacturer and be compatible with the PVC membrane and the chemical environment of the installation.

3.5.3 All devices shall be installed to provide an effective, watertight seal.

3.6 MECHANICAL FASTENINGS:

3.6.1 Mechanical fastenings and sealing details shall be constructed in accordance with the Drawings, or as recommended by the manufacturer.

3.6.2 Sealing materials and contact adhesives shall be of the type recommended by the manufacturer and be compatible with PVC membrane and the chemical environment of the installation.

3.6.3 All devices shall be installed to provide an effective watertight seal.

3.7 FIELD TESTING AND REPAIR:

3.7.1 The Contractor shall test the entire length of all field seams with an air lance or vacuum test unit where possible under site conditions. This testing shall be part of the overall services provided under the Contract and shall be performed in the presence of the manufacturer's service representative and the Government Representative. All structural faults in the weld joints shall be repaired and retested.

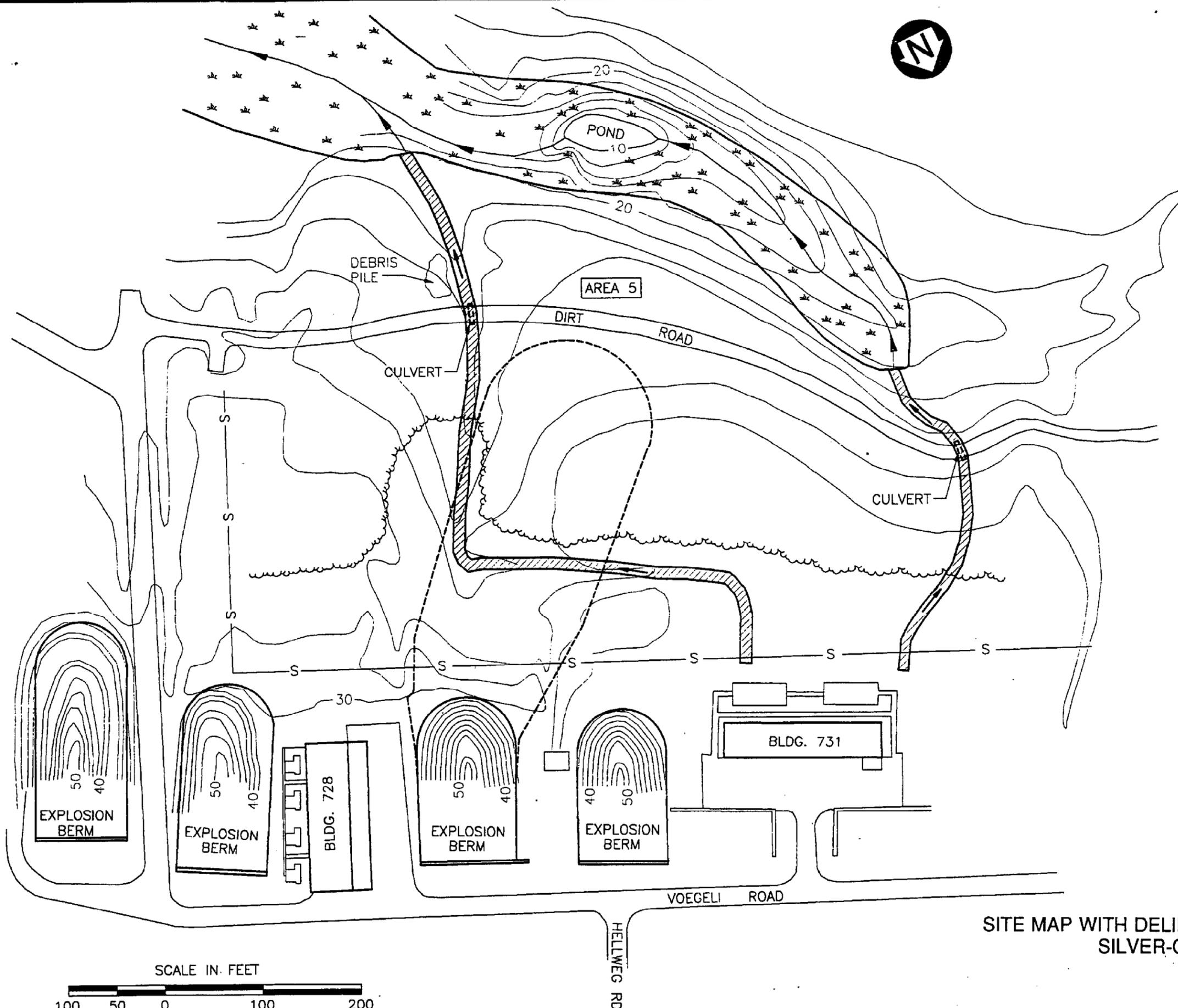
Revision A
February 3, 1992

3.7.2 Test seams shall be performed to verify that seaming conditions are adequate. Test seams shall be conducted at Government Representative's discretion and at least once each day, at the beginning of the morning, for each seaming equipment or adhesive product used that day. Test seaming shall be performed under the same conditions as production seaming. The test seam shall be 3 ft. long.

3.8 CLEANUP:

3.8.1 On completion of installation, the Contractor shall dispose of all trash and waste and remove all excess material and equipment used in connection with the work. The Contractor shall leave the premises in a neat and acceptable condition.

END OF SECTION



- LEGEND**
- *** INDICATE WETLANDS
 -  APPROXIMATE AREA OF SEDIMENT EXCAVATION
 - S — STEAM LINE
 -  TREE LINE
 - - - - - PROPOSED EXPLOSION BERM EXPANSION

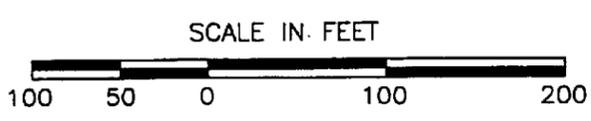


FIGURE 1
SITE MAP WITH DELINEATION OF EXCAVATION ZONES
SILVER-CONTAMINATED DRAINAGE DITCH
NOS INDIAN HEAD
INDIAN HEAD, MARYLAND

COMPACTED FILL SEEDED FOR EROSION CONTROL (SEE SPECIFICATIONS)

ELEVATION 67.0'

3'
1 1/2:1 MIN.: 2:1 MAX. (TYP.)

EL. 70

EL. 60

DRAINAGE SWALE

TOE OF SLOPE EL. 31' ±

EXISTING GRADE

EL. 30

FLOW LINE

EL. 20

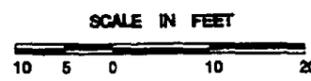
OUTLINE OF PROPOSED EXPLOSION BERM



OUTLINE OF PROPOSED PLACEMENT OF TREATED MATERIALS

OVERHEAD PLAN VIEW (NOT TO SCALE)

DRAINAGE



COMPACTED FILL SEEDED FOR EROSION CONTROL (SEE SPECIFICATIONS)

ELEVATION 65.5'

3'
1 1/2:1 MIN.: 2:1 MAX. (TYP.)

EL. 70

EL. 60

VARIABLES

EL. 50

EL. 40

EL. 30

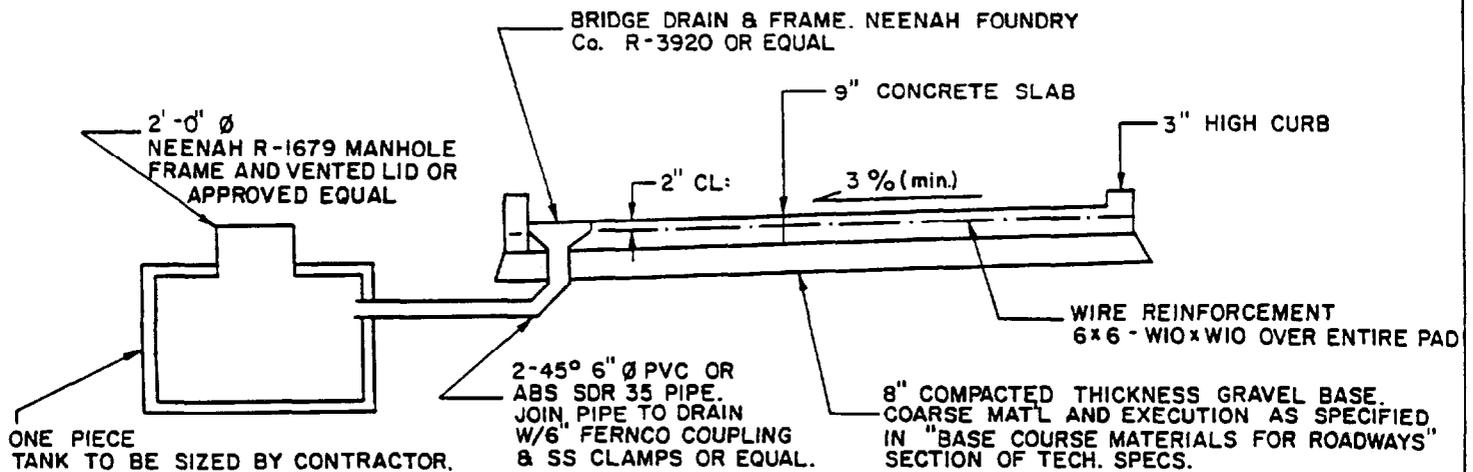
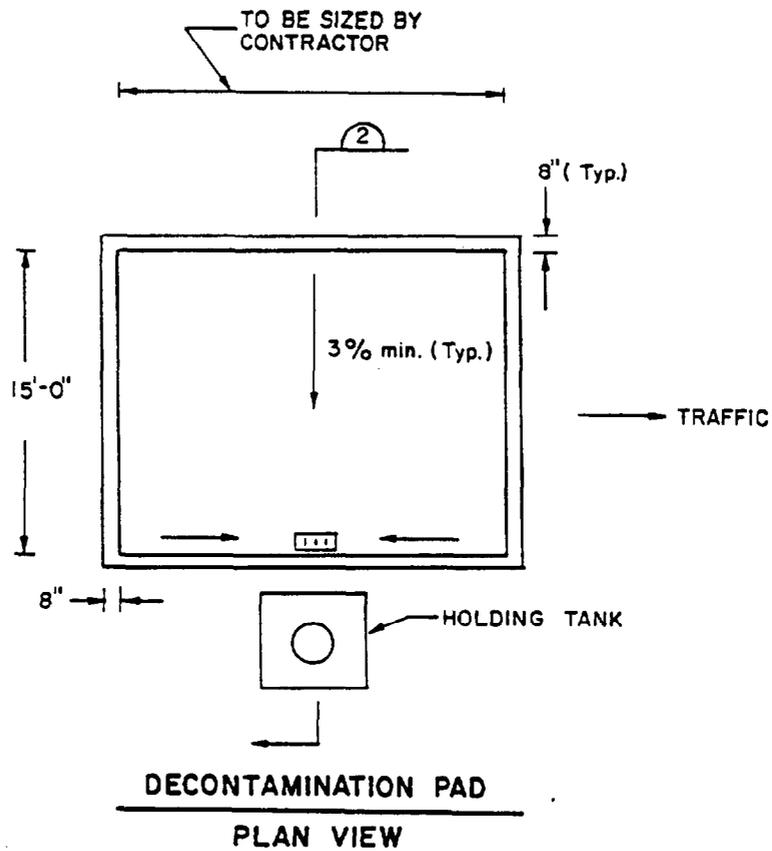
EL. 20

EXISTING BARRICADE

RETAINING WALL TOW FL. 40.0' (TYP)

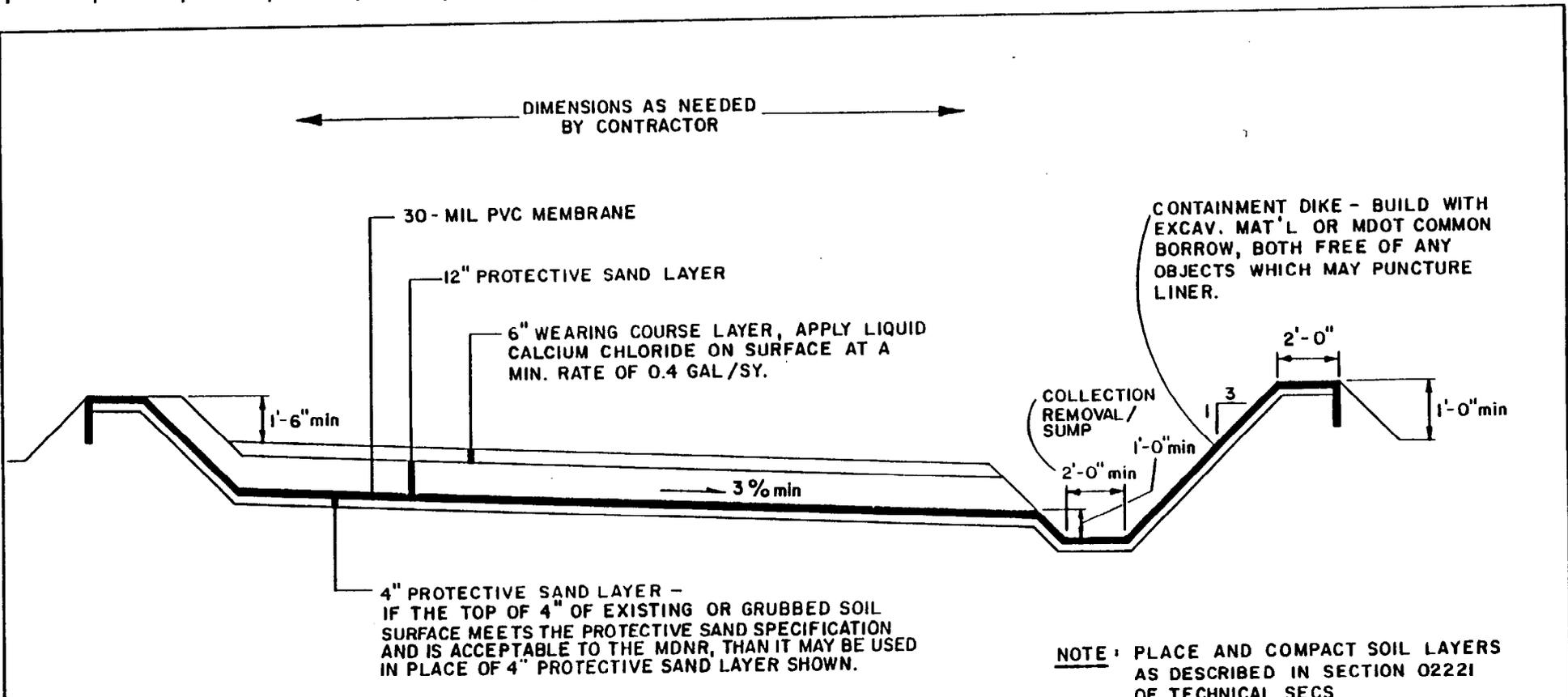
EXISTING GRADE

FIGURE 2
CROSS-SECTIONAL VIEWS
OF EXPLOSION BERM EXTENSION
AND PLACEMENT OF TREATED MATERIALS
NOS INDIAN HEAD
INDIAN HEAD, MARYLAND



DECONTAMINATION PAD SECTION 2

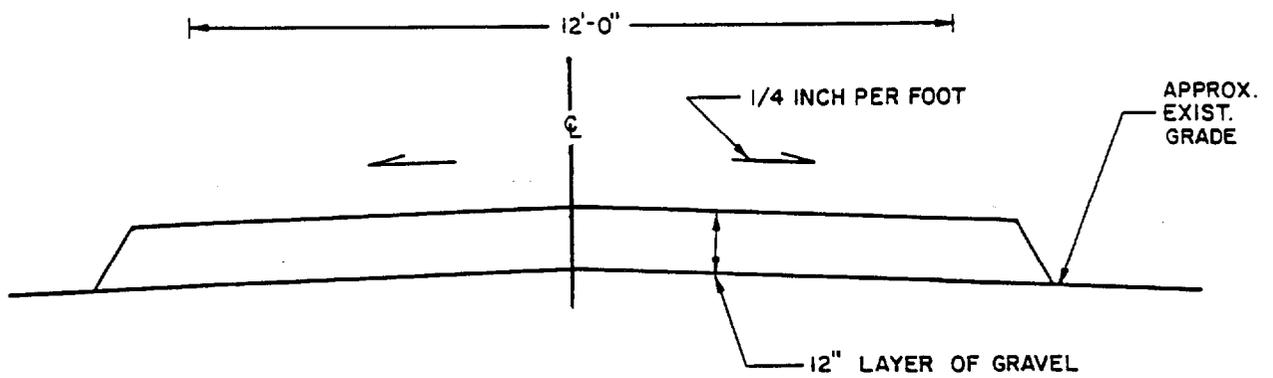
**FIGURE 3
DECONTAMINATION AREAS
NOS INDIAN HEAD
INDIAN HEAD, MARYLAND**



SOIL SPECIFICATIONS

TYPE PROTECTIVE SAND	SCREEN SIZE	PERCENT PASSING BY WEIGHT
PROTECTIVE SAND	NO. 8	100
	10	95-100
	20	75-95
	40	40-80
	60	15-60
	100	0-40
WEARING COURSE	200	0-20
	1"	100
	3/4"	85-100
	5/8"	65-100
	NO. 4	55-85
	10	40-70
	40	25-45
	200	10-20

FIGURE 4
CONTAMINATED MATERIALS/EQUIPMENT
STORAGE AREAS
NOS INDIAN HEAD
INDIAN HEAD, MARYLAND



TYPICAL ROAD CROSS SECTION

FIGURE 5
TYPICAL ACCESS ROAD
CROSS SECTION
NOS INDIAN HEAD
INDIAN HEAD, MARYLAND

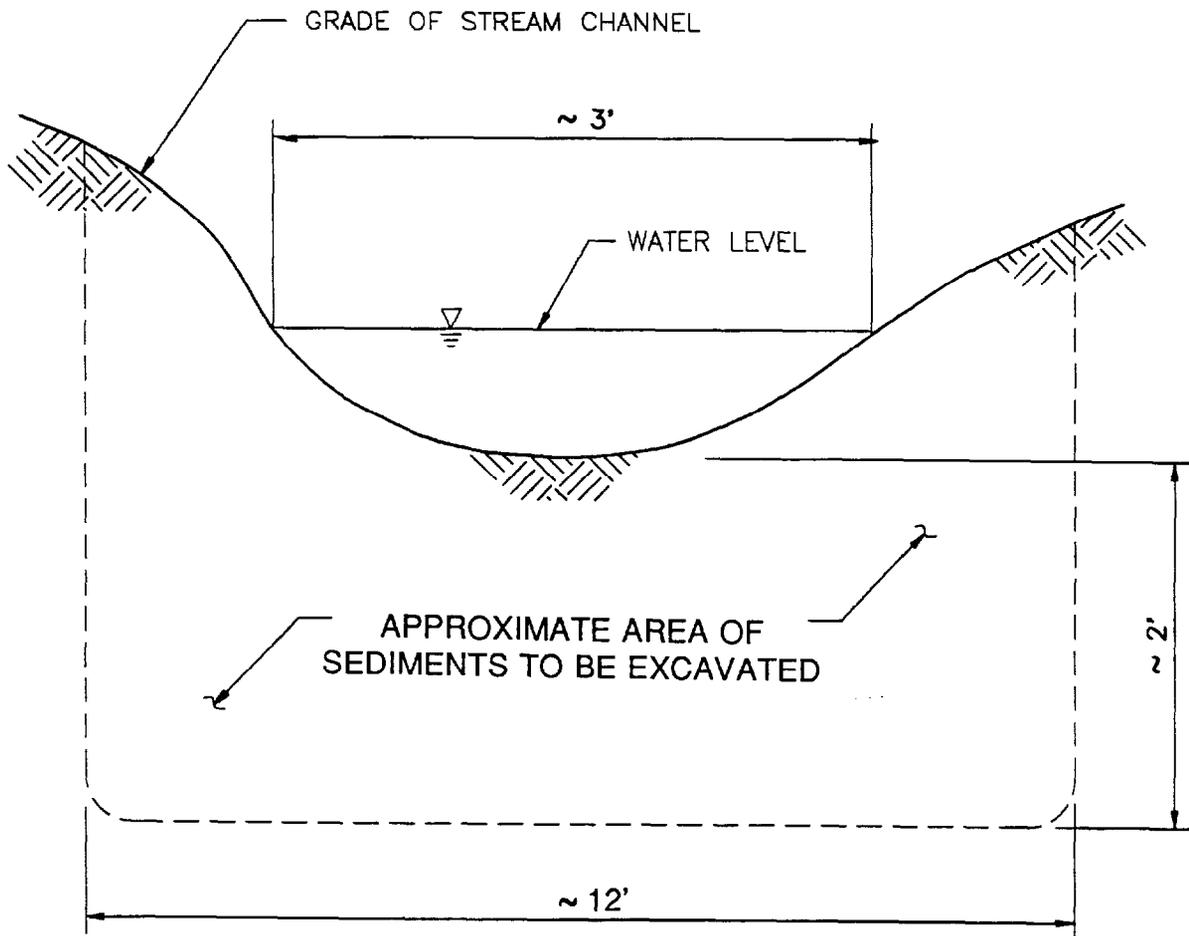


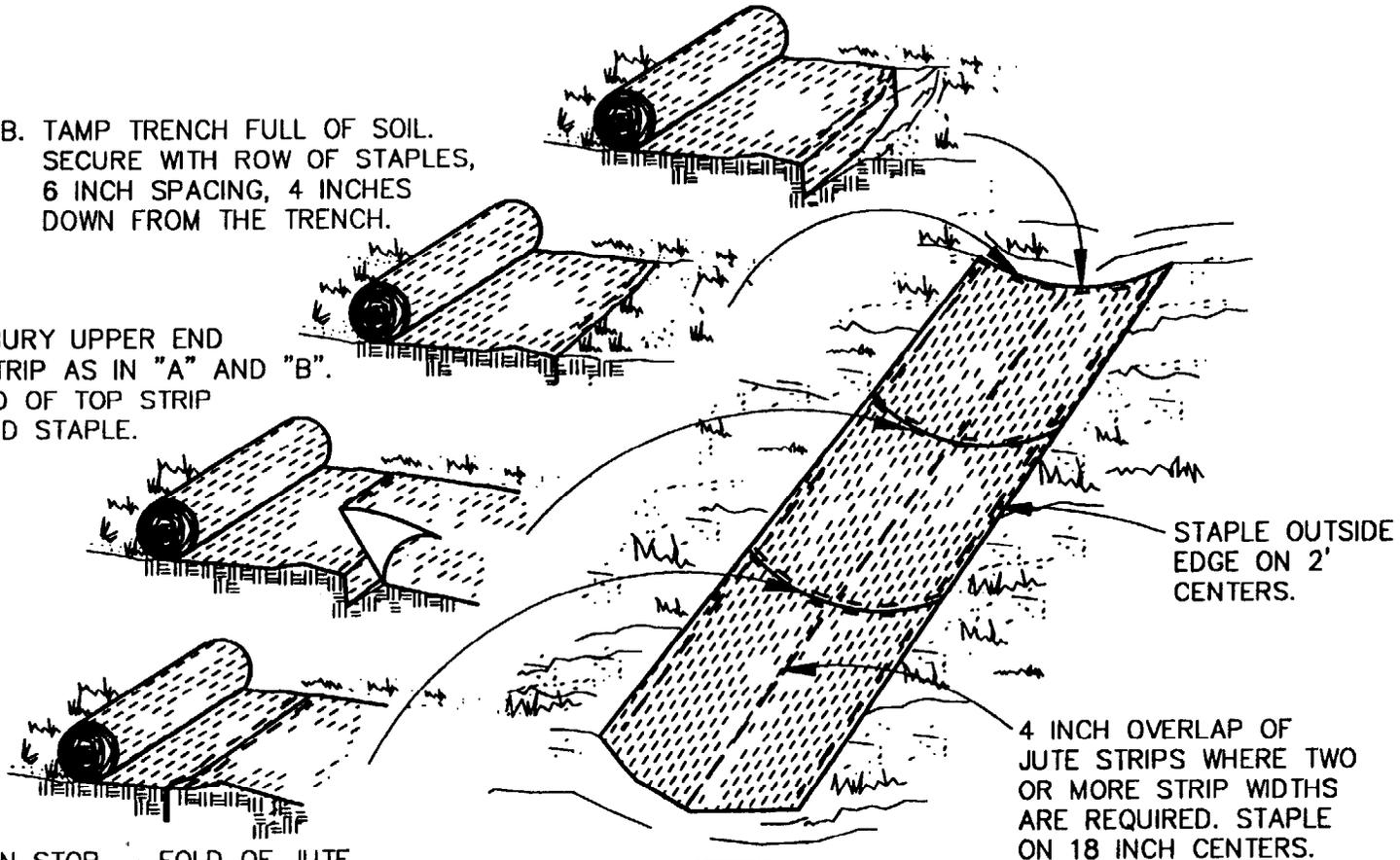
FIGURE 6
 CROSS-SECTIONAL VIEW OF
 STREAMBED EXCAVATION DIMENSIONS
 (NOT TO SCALE)
 NOS INDIAN HEAD
 INDIAN HEAD, MARYLAND

A. BURY THE TOP END OF THE JUTE STRIPS
IN A TRENCH 6 INCHES OR MORE IN DEPTH

B. TAMP TRENCH FULL OF SOIL.
SECURE WITH ROW OF STAPLES,
6 INCH SPACING, 4 INCHES
DOWN FROM THE TRENCH.

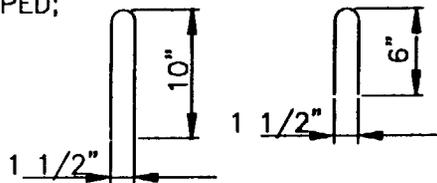
C. OVERLAP--BURY UPPER END
OF LOWER STRIP AS IN "A" AND "B".
OVERLAP END OF TOP STRIP
4 INCHES AND STAPLE.

D. EROSION STOP-- FOLD OF JUTE
BURIED IN SLIT TRENCH AND TAMPED;
DOUBLE ROW OF STAPLES.



STAPLE OUTSIDE
EDGE ON 2'
CENTERS.

4 INCH OVERLAP OF
JUTE STRIPS WHERE TWO
OR MORE STRIP WIDTHS
ARE REQUIRED. STAPLE
ON 18 INCH CENTERS.



TYPICAL STAPLES
NO. 11 GAUGE WIRE

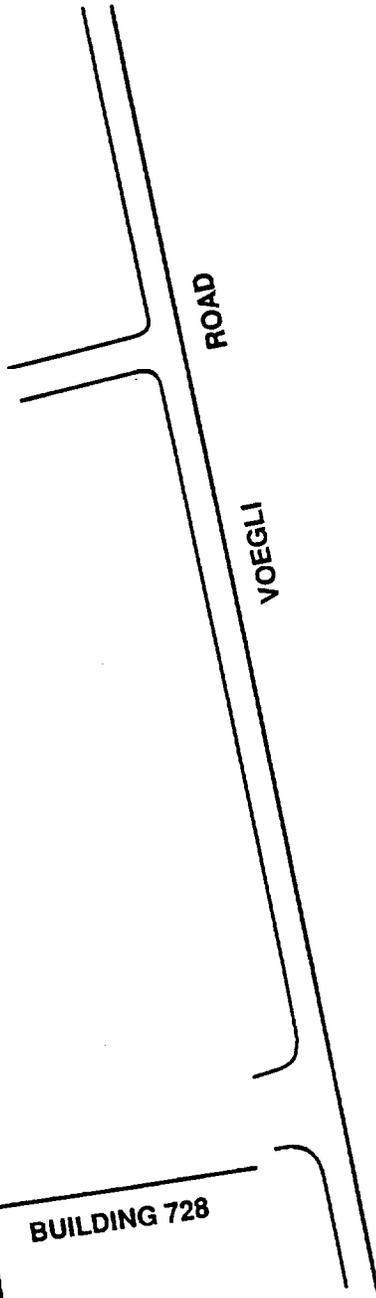
FIGURE 7
TYPICAL JUTE THATCHING INSTALLATION
NOS INDIAN HEAD
INDIAN HEAD, MARYLAND



+
BACKGROUND
SAMPLE

DRAINAGE FROM
BUILDING 731

BUILDING 731



0 + 60
SP 8

4 + 00
SP 7

0 + 40
SP 6

3 + 00
SP 5

OUTLINE OF
PROPOSED BERM
STRUCTURE

2 + 00
SP 4

1 + 20
SP 3

0 + 00
SP 1

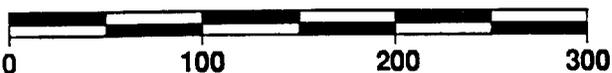
1 + 00
SP 2

BUILDING 728

LEGEND



SCALE IN FEET



**SAMPLING TRANSECT
LOCATIONS; SITE 5
NOS INDIAN HEAD**

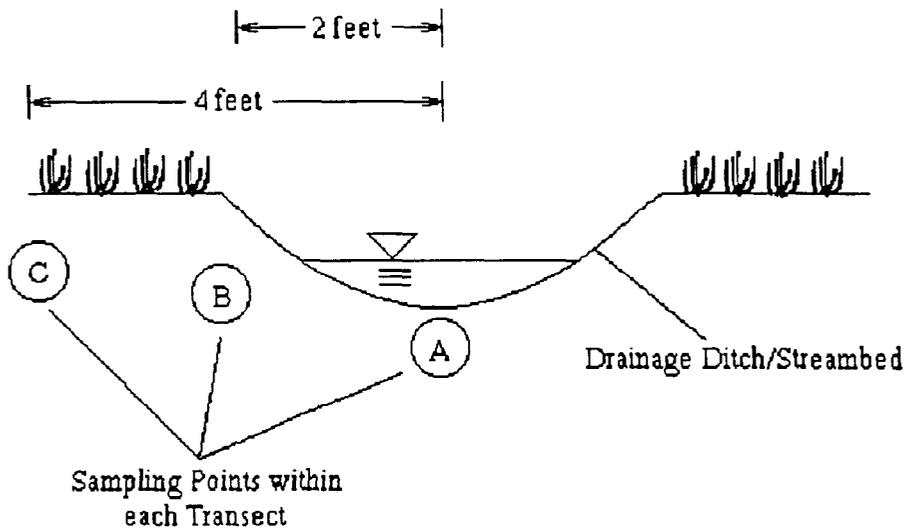
ABB Environmental Services, Inc.

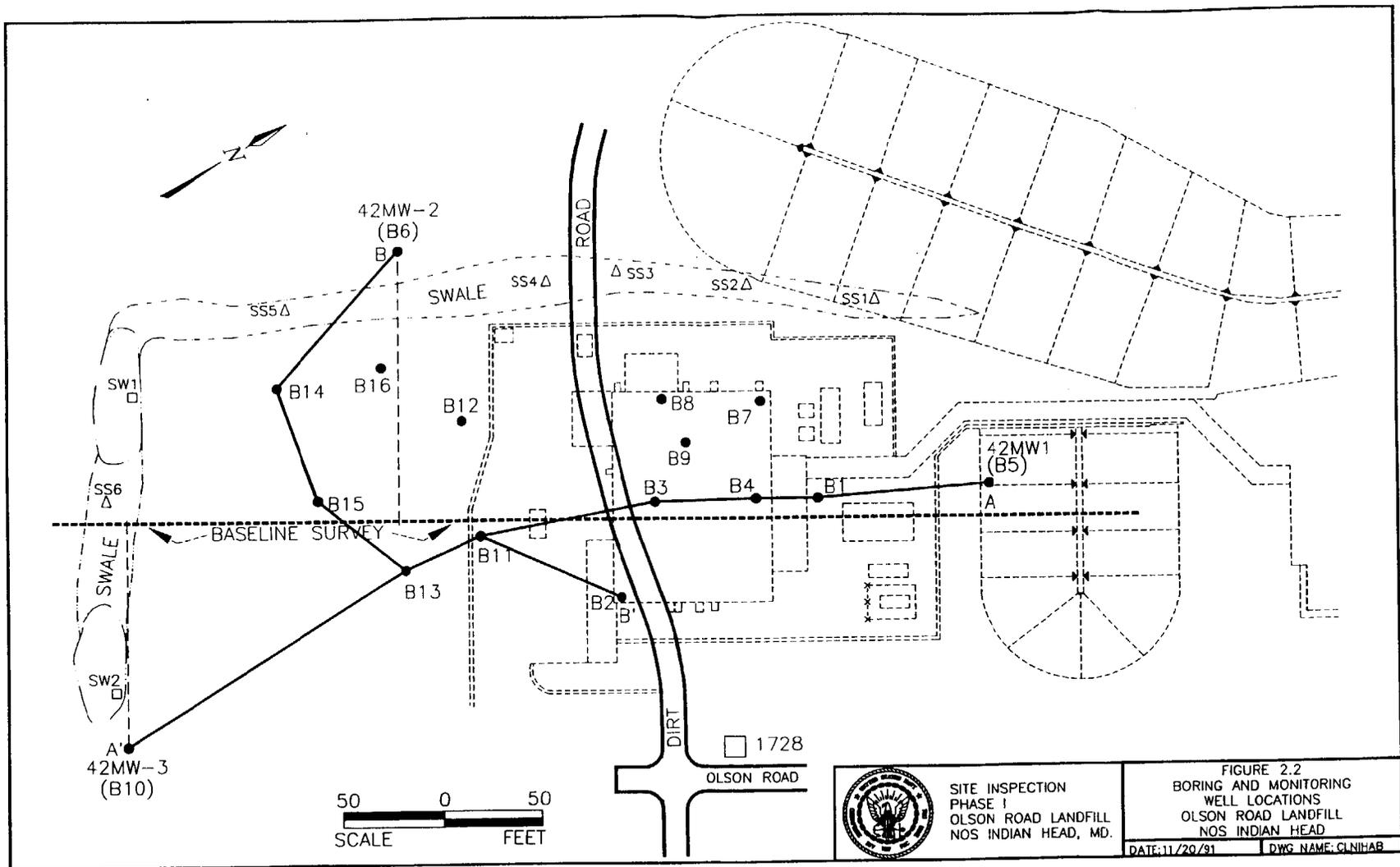
Silver Concentrations in Soil/Sediment Samples

	Depth	Silver Concentration (mg/kg)								BACK-GROUND
		SP 1	SP 2*	SP 3*	SP 4*	SP 5	SP 6	SP 7	SP 8	
Sampling Point A	0"	104	13	43	84	67	571	7.3	337	Below Detection Limits at Both Surface level and 18" Depth.
	18"	--	4.6	--	5.2	15	16	--	11	
Sampling Point B	0"	67	60	--	16	26	22	13	39	
	18"	--	3.1	7.7	2.9	6.8	3.1	--	13	
Sampling Point C	0"	12	37	--	11	11	32	7.7	144	
	18"	--	--	--	--	--	23	--	--	

*These locations are within the outline of the proposed explosion berm.
 -- = Below detection limit.

Schematic of Sampling Point Locations





Phase I Site Inspection, NOS Indian Head, MD Sediment Samples

CAS. NO.	CL COMPOUND	SITE	INDIAN HEAD		INDIAN HEAD		INDIAN HEAD		INDIAN HEAD	
		SAMPLE	42SS-1	42SS-2	42SS-3	42SS-4	42SS-5	42SS-6	42SS-7	
CCN: INORGANICS		MATRIX	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
7429-90-5	M Aluminum		3570	8060	13600	5130	8630			
7440-36-0	M Antimony		BDL	6	BDL	12	BDL	6	BDL	12
7440-38-2	M Arsenic		BDL	10	BDL	10	BDL	10	BDL	10
7440-39-3	M Barium		BDL	20	62	96	47		55	
7440-41-7	M Beryllium		BDL	0.5	BDL	0.5	BDL	0.5	BDL	0.5
7440-43-9	M Cadmium		BDL	0.5	1	BDL	1	BDL	0.5	BDL
7440-70-2	M Calcium		BDL	500	1470	2220	1750		2880	
7440-47-3	M Chromium		8	7	10	7		16		
7440-48-4	M Cobalt		BDL	5	7	21	BDL	5	BDL	1
7440-50-8	M Copper		70	41	44	23		13		
7439-89-6	M Iron		6060	14100	23700	10400		10900		
7439-92-1	M Lead		8	19	23	17		59		
7439-95-4	M Magnesium		BDL	500	751	BDL	1000	769	BDL	1000
7439-96-5	M Manganese		68	396	592	243		270		
7439-97-6	M Mercury		BDL	0.1	BDL	0.1	BDL	0.1	BDL	0.1
7440-02-0	M Nickel		BDL	4	9	13	11		10	
7440-09-7	M Potassium		BDL	500	BDL	500	BDL	500	BDL	1000
7782-49-2	M Selenium		BDL	5	BDL	5	BDL	5	BDL	5
7440-22-4	M Silver		202	151	177	27		10		
7440-23-5	M Sodium		BDL	500	BDL	500	BDL	500	BDL	1000
7440-28-0	M Thallium		BDL	1	BDL	1	BDL	1	BDL	1
7440-62-2	M Vanadium		8	18	24	15		23		
7440-66-6	M Zinc		78	144	207	107		104		
	M Cyanide		BDL	0.5	BDL	0.5	BDL	0.5	BDL	0.5

Phase I Site Inspection, NOS Indian Head, MD Sediment Samples

		SITE SAMPLE CCN: INORGANICS MATRIX	INDIAN HEAD 42SS-6	
CAS. NO.	CL COMPOUND		SOIL mg/kg	
7429-90-5	M Aluminum		7240	
7440-38-0	M Antimony		BDL	6
7440-38-2	M Arsenic		BDL	10
7440-39-3	M Barium		90	
7440-41-7	M Beryllium		BDL	0.5
7440-43-8	M Cadmium		4	
7440-70-2	M Calcium		2120	
7440-47-3	M Chromium		9	
7440-48-4	M Cobalt		BDL	5
7440-50-8	M Copper		28	
7439-89-8	M Iron		2120	
7439-92-1	M Lead		17	
7439-85-4	M Magnesium		918	
7439-96-5	M Manganese		166	
7439-97-6	M Mercury		BDL	0.1
7440-02-0	M Nickel		18	
7440-09-7	M Potassium		901	
7782-49-2	M Selenium		BDL	5
7440-22-4	M Silver		99	
7440-23-5	M Sodium		BDL	500
7440-28-0	M Thallium		BDL	1
7440-62-2	M Vanadium		21	
7440-66-6	M Zinc		171	
	M Cyanide		BDL	0.5

Phase I Site Inspection, NOS Indian Head, MD Sediment Samples

SITE SAMPLE		INDIAN HEAD 42SS-1		INDIAN HEAD 42SS-2		INDIAN HEAD 42SS-3		INDIAN HEAD 42SS-4		INDIAN HEAD 42SS-5	
CCN: ORGANICS MATRIX		SOIL ug/kg		SOIL ug/kg		SOIL ug/kg		SOIL ug/kg		SOIL ug/kg	
CAS. NO.	CL COMPOUND										
74-87-3	V Chloromethane	BDL	10								
74-83-9	V Bromomethane	BDL	10								
75-01-4	V Vinyl Chloride	BDL	10								
75-00-3	V Chloroethane	BDL	10								
75-09-2	V Methylene Chloride	BDL	10	9		22		8		BDL	10
87-84-1	V Acetone	BDL	10	BDL	10	148		BDL	10	BDL	10
75-15-0	V Carbon Disulfide	BDL	10								
75-35-4	V 1,1-Dichloroethene	BDL	10								
75-34-3	V 1,1-Dichloroethane	BDL	10								
540-59-0	V 1,2-Dichloroethene(total)	BDL	10								
67-66-3	V Chloroform	BDL	10								
107-06-2	V 1,2-Dichloroethane	BDL	10								
78-93-3	V 2-Butanone	BDL	10								
71-55-6	V 1,1,1-Trichloroethane	BDL	10								
56-23-5	V Carbon Tetrachloride	BDL	10								
75-27-4	V Bromodichloromethane	BDL	10								
78-87-5	V 1,2-Dichloropropane	BDL	10								
10061-01-5	V cis-1,3-Dichloropropene	BDL	10								
79-01-6	V Trichloroethene	BDL	10								
124-48-1	V Dibromochloromethane	BDL	10								
79-00-5	V 1,1,2-Trichloroethane	BDL	10								
71-43-2	V Benzene	BDL	10								
10061-02-6	V Trans-1,3-Dichloropropene	BDL	10								
75-25-2	V Bromoform	BDL	10								
108-10-1	V 4-Methyl-2-Pentanone	BDL	10								
591-78-6	V 2-Hexanone	BDL	10								
127-18-4	V Tetrachloroethene	BDL	10								
79-34-5	V 1,1,2,2-Tetrachloroethane	BDL	10								
108-88-3	V Toluene	81		BDL	10	BDL	10	BDL	10	BDL	10
108-90-7	V Chlorobenzene	BDL	10								
100-41-4	V Ethylbenzene	12		BDL	10	BDL	10	BDL	10	BDL	10
100-42-5	V Styrene	BDL	10								
1330-20-7	V Xylenes (Total)	BDL	10								
108-95-2	A Phenol	BDL	330								
111-44-4	A Bis(2-Chloroethyl)ether	BDL	330								
95-57-8	A 2-Chlorophenol	BDL	330								
541-73-1	A 1,3-Dichlorobenzene	BDL	330								
106-46-7	A 1,4-Dichlorobenzene	BDL	330								
95-50-1	A 1,2-Dichlorobenzene	BDL	330								
95-48-7	A 2-Methylphenol	BDL	330								
108-60-1	A 2,2'-oxybis(1-Chloropropane)	BDL	330								
106-44-5	A 4-Methylphenol	BDL	330								
621-64-7	A N-Nitroso-di-n-propylamine	BDL	330								
67-72-1	A Hexachloroethane	BDL	330								
98-95-3	A Nitrobenzene	BDL	330								
78-59-1	A Isophorone	BDL	330								
88-75-5	A 2-Nitrophenol	BDL	330								
105-67-9	A 2,4-Dimethylphenol	BDL	330								
111-91-1	A Bis(2-Chloroethoxy)methane	BDL	330								
120-83-2	A 2,4-Dichlorophenol	BDL	330								
120-82-1	A 1,2,4-Trichlorobenzene	BDL	330								
91-20-3	A Naphthalene	BDL	330								
106-47-8	A 4-Chloroaniline	BDL	330								
87-68-3	A Hexachlorobutadiene	BDL	330								
59-50-7	A 4-Chloro-3-methylphenol	BDL	330								
91-57-6	A 2-Methylnaphthalene	BDL	330								
77-47-4	A Hexachlorocyclopentadiene	BDL	330								
88-06-2	A 2,4,6-Trichlorophenol	BDL	330								
95-95-4	A 2,4,5-Trichlorophenol	BDL	1600								
91-58-7	A 2-Chloronaphthalene	BDL	330								
88-74-4	A 2-Nitroaniline	BDL	1600								
131-11-3	A Dimethylphthalate	BDL	330								
208-96-8	A Acenaphthylene	BDL	330								

Phase I Site Inspection, NOS Indian Head, MD Sediment Samples

GAS. NO.	CL COMPOUND	SITE SAMPLE CCN: ORGANICS MATRIX	INDIAN HEAD 42SS-1		INDIAN HEAD 42SS-2		INDIAN HEAD 42SS-3		INDIAN HEAD 42SS-4		INDIAN HEAD 42SS-5	
			SOIL ug/kg		SOIL ug/kg		SOIL ug/kg		SOIL ug/kg		SOIL ug/kg	
606-20-2	A 2,6-Dinitrotoluene		BDL	330								
99-09-2	A 3-Nitroaniline		BDL	1600								
83-32-9	A Acenaphthene		BDL	330								
51-28-5	B 2,4-Dinitrophenol		BDL	1600								
100-02-7	B 4-Nitrophenol		BDL	1600								
132-64-9	B Dibenzofuran		BDL	330								
121-14-2	B 2,4-Dinitrotoluene		BDL	330								
84-66-2	B Diethylphthalate		BDL	330								
7005-72-3	B 4-Chlorophenyl-phenylether		BDL	330								
86-73-7	B Fluorene		BDL	330								
100-01-6	B 4-Nitroaniline		BDL	1600								
534-62-1	B 4,6-Dinitro-2-methylphenol		BDL	1600								
86-30-6	B N-Nitrosodiphenylamine(1)		BDL	330								
101-65-3	B 4-Bromophenyl-phenylether		BDL	330								
118-74-1	B Hexachlorobenzene		BDL	330								
87-86-5	B Pentachlorophenol		BDL	1600								
85-01-8	B Phenanthrene		BDL	330								
120-12-7	B Anthracene		BDL	330								
86-74-8	B Carbazole		BDL	330								
84-74-2	B Di-n-butylphthalate	606			572				243		250	
206-44-0	B Fluoranthene		BDL	330								
129-00-0	B Pyrene		BDL	330								
85-68-7	B Butylbenzylphthalate		BDL	330								
81-84-1	B 3,3'-Dichlorobenzidine		BDL	660								
56-65-3	B Benzo(a)anthracene		BDL	330								
218-01-9	B Chrysene		BDL	330								
117-81-7	B bis(2-Ethylhexyl)phthalate		BDL	330								
117-84-0	B Di-n-octylphthalate		BDL	330								
205-99-2	B Benzo(b)fluoranthene		BDL	330								
207-08-9	B Benzo(k)fluoranthene		BDL	330								
50-32-8	B Benzo(a)pyrene		BDL	330								
183-39-6	B Indeno(1,2,3-cd)pyrene		BDL	330								
53-70-3	B Dibenz(a,h)anthracene		BDL	330								
191-24-2	B Benzo(g,h,i)perylene		BDL	330								
319-84-8	P Alpha-BHC		BDL	1.7								
319-85-7	P Beta-BHC	3			BDL	1.7	BDL	1.7	BDL	1.7	BDL	1.7
319-86-8	P Delta-BHC		BDL	1.7								
58-89-9	P Gamma-BHC (Lindane)		BDL	1.7								
76-44-8	P Heptachlor		BDL	1.7								
309-00-2	P Aldrin		BDL	1.7								
1024-57-3	P Heptachlor epoxide		BDL	1.7	BDL	1.7	BDL	1.7	4		BDL	1.7
959-08-8	P Endosulfan I		BDL	1.7								
60-57-1	P Dieldrin		BDL	3.3								
72-55-9	P 4,4'-DDE		BDL	3.3								
72-20-8	P Endrin	6			BDL	3.3	BDL	3.3	BDL	3.3	BDL	3.3
33213-65-9	P Endosulfan II		BDL	3.3								
72-54-8	P 4,4'-DDD		BDL	3.3								
1031-07-8	P Endosulfan sulfate	42			BDL	3.3	18		40		BDL	3.3
50-29-3	P 4,4'-DDT	40			BDL	3.3	BDL	3.3	24		BDL	3.3
72-43-5	P Methoxychlor		BDL	17								
53494-70-5	P Endrin ketone		BDL	3.3								
7421-36-3	P Endrin aldehyde		BDL	3.3								
5103-71-9	P Alpha-Chlordane		BDL	1.7								
5103-74-2	P Gamma-Chlordane		BDL	1.7								
8001-35-2	P Toxaphene		BDL	170								
12674-11-2	P Aroclor-1018		BDL	33								
11104-28-2	P Aroclor-1221		BDL	67								
11141-16-5	P Aroclor-1232		BDL	33								
53489-21-8	P Aroclor-1242		BDL	33								
12672-29-6	P Aroclor-1248		BDL	33								
11097-69-1	P Aroclor-1254		BDL	33								
11096-82-5	P Aroclor-1260		BDL	33								

CAS. NO.	CL COMPOUND	SITE	INDIAN HEAD
		SAMPLE CCN: ORGANICS MATRIX	42SS-6
		SOIL	
		ug/kg	
74-87-3	V Chloromethane		BDL 10
74-83-9	V Bromomethane		BDL 10
75-01-4	V Vinyl Chloride		BDL 10
75-00-3	V Chloroethane		BDL 10
75-09-2	V Methylene Chloride		BDL 10
67-64-1	V Acetone	194	
75-15-0	V Carbon Disulfide	BDL	10
75-35-4	V 1,1-Dichloroethene	BDL	10
75-34-3	V 1,1-Dichloroethane	BDL	10
540-58-0	V 1,2-Dichloroethene(total)	BDL	10
67-66-3	V Chloroform	BDL	10
107-06-2	V 1,2-Dichloroethane	BDL	10
78-93-3	V 2-Butanone	BDL	10
71-55-6	V 1,1,1-Trichloroethane	BDL	10
56-23-5	V Carbon Tetrachloride	BDL	10
75-27-4	V Bromodichloromethane	BDL	10
78-87-5	V 1,2-Dichloropropane	BDL	10
10061-01-5	V cis-1,3-Dichloropropene	BDL	10
79-01-6	V Trichloroethene	BDL	10
124-48-1	V Dibromochloromethane	BDL	10
79-00-5	V 1,1,2-Trichloroethane	BDL	10
71-43-2	V Benzene	BDL	10
10061-02-6	V Trans-1,3-Dichloropropene	BDL	10
75-25-2	V Bromoform	BDL	10
108-10-1	V 4-Methyl-2-Pentanone	BDL	10
591-78-6	V 2-Hexanone	BDL	10
127-18-4	V Tetrachloroethene	BDL	10
79-34-5	V 1,1,2,2-Tetrachloroethane	BDL	10
108-88-3	V Toluene	BDL	10
108-90-7	V Chlorobenzene	BDL	10
100-41-4	V Ethylbenzene	BDL	10
100-42-5	V Styrene	BDL	10
1330-20-7	V Xylenes (Total)	BDL	10
108-95-2	A Phenol	BDL	330
111-44-4	A Bis(2-Chloroethyl)ether	BDL	330
95-57-8	A 2-Chlorophenol	BDL	330
541-73-1	A 1,3-Dichlorobenzene	BDL	330
106-46-7	A 1,4-Dichlorobenzene	BDL	330
95-50-1	A 1,2-Dichlorobenzene	BDL	330
95-48-7	A 2-Methylphenol	BDL	330
108-60-1	A 2,2'-oxybis(1-Chloropropane)	BDL	330
106-44-5	A 4-Methylphenol	BDL	330
621-64-7	A N-Nitroso-d-n-propylamine	BDL	330
67-72-1	A Hexachloroethane	BDL	330
98-95-3	A Nitrobenzene	BDL	330
78-59-1	A Isophorone	BDL	330
88-75-5	A 2-Nitrophenol	BDL	330
105-67-9	A 2,4-Dimethylphenol	BDL	330
111-91-1	A Bis(2-Chloroethoxy)methane	BDL	330
120-83-2	A 2,4-Dichlorophenol	BDL	330
120-82-1	A 1,2,4-Trichlorobenzene	BDL	330
91-20-3	A Naphthalene	BDL	330
106-47-8	A 4-Chloroaniline	BDL	330
87-68-3	A Hexachlorobutadiene	BDL	330
59-50-7	A 4-Chloro-3-methylphenol	BDL	330
91-57-6	A 2-Methylnaphthalene	BDL	330
77-47-4	A Hexachlorocyclopentadiene	BDL	330
88-06-2	A 2,4,6-Trichlorophenol	BDL	330
95-95-4	A 2,4,5-Trichlorophenol	BDL	1600
91-58-7	A 2-Chloronaphthalene	BDL	330
88-74-4	A 2-Nitroaniline	BDL	1600
131-11-3	A Dimethylphthalate	BDL	330
208-96-8	A Acenaphthylene	BDL	330

Duplicate
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Phase I Site Inspection, NOS Indian Head, MD Sediment Samples

CAS. NO.	CL COMPOUND	SITE	INDIAN HEAD
		SAMPLE CCN: ORGANICS MATRIX	42SS-6 SOIL ug/kg
606-20-2	A 2,6-Dinitrotoluene		BDL 330
99-09-2	A 3-Nitroaniline		BDL 1600
83-32-9	A Acenaphthene		BDL 330
51-28-5	B 2,4-Dinitrophenol		BDL 1600
100-02-7	B 4-Nitrophenol		BDL 1600
132-64-9	B Dibenzofuran		BDL 330
121-14-2	B 2,4-Dinitrotoluene		BDL 330
84-66-2	B Diethylphthalate		BDL 330
7005-72-3	B 4-Chlorophenyl-phenylether		BDL 330
86-73-7	B Fluorene		BDL 330
100-01-6	B 4-Nitroaniline		BDL 1600
534-52-1	B 4,6-Dinitro-2-methylphenol		BDL 1600
86-30-6	B N-Nitrosodiphenylamine(1)		BDL 330
101-55-3	B 4-Bromophenyl-phenylether		BDL 330
118-74-1	B Hexachlorobenzene		BDL 330
87-88-5	B Pentachlorophenol		BDL 1600
85-01-8	B Phenanthrene		BDL 330
120-12-7	B Anthracene		BDL 330
86-74-8	B Carbazole		BDL 330
84-74-2	B Di-n-butylphthalate		BDL 330
206-44-0	B Fluoranthene		BDL 330
129-00-0	B Pyrene		BDL 330
85-68-7	B Butylbenzylphthalate		BDL 330
91-94-1	B 3,3'-Dichlorobenzidine		BDL 660
56-55-3	B Benzo(a)anthracene		BDL 330
218-01-9	B Chrysene		BDL 330
117-81-7	B bis(2-Ethylhexyl)phthalate		BDL 330
117-84-0	B Di-n-octylphthalate		BDL 330
205-99-2	B Benzo(b)fluoranthene		BDL 330
207-08-9	B Benzo(k)fluoranthene		BDL 330
50-32-8	B Benzo(a)pyrene		BDL 330
193-39-5	B Indeno(1,2,3-cd)pyrene		BDL 330
53-70-3	B Dibenz(a,h)anthracene		BDL 330
191-24-2	B Benzo(g,h,i)perylene		BDL 330
319-84-6	P Alpha-BHC		BDL 1.7
319-85-7	P Beta-BHC		BDL 1.7
319-86-8	P Delta-BHC		BDL 1.7
58-89-9	P Gamma-BHC (Lindane)		BDL 1.7
76-44-8	P Heptachlor		BDL 1.7
309-00-2	P Aldrin		BDL 1.7
1024-57-3	P Heptachlor epoxide		BDL 1.7
959-98-8	P Endosulfan I	5	
60-57-1	P Dieldrin		BDL 3.3
72-55-9	P 4,4'-DDE		BDL 3.3
72-20-8	P Endrin		BDL 3.3
33213-65-9	P Endosulfan II		BDL 3.3
72-54-8	P 4,4'-DDD		BDL 3.3
1031-07-8	P Endosulfan sulfate		BDL 3.3
50-29-3	P 4,4'-DDT		BDL 3.3
72-43-5	P Methoxychlor		BDL 17
53494-70-5	P Endrin ketone		BDL 3.3
7421-38-3	P Endrin aldehyde		BDL 3.3
5103-71-9	P Alpha-Chlordane		BDL 1.7
5103-74-2	P Gamma-Chlordane		BDL 1.7
8001-35-2	P Toxaphene		BDL 170
12674-11-2	P Aroclor-1018		BDL 33
11104-28-2	P Aroclor-1221		BDL 67
11141-16-5	P Aroclor-1232		BDL 33
53489-21-9	P Aroclor-1242		BDL 33
12672-29-8	P Aroclor-1248		BDL 33
11097-69-1	P Aroclor-1254		BDL 33
11096-82-5	P Aroclor-1260		BDL 33

Phase I Site Inspection, NOS Indian Head, MD Groundwater Sample

CAS. NO.	CL COMPOUND	SITE	INDIAN HEAD		INDIAN HEAD		INDIAN HEAD	
		SAMPLE	42MW-3		42SW-1		42SW-2	
		DATE	WATER		WATER		WATER	
		DEPTH	ug/l		ug/l		ug/l	
		MATRIX	ug/l		ug/l		ug/l	
7429-90-5	M Aluminum		340		BDL	200	3940	
7440-36-0	M Antimony		BDL	60	BDL	60	BDL	60
7440-38-2	M Arsenic		BDL	10	BDL	10	24	
7440-39-3	M Barium		230		BDL	200	1100	
7440-41-7	M Beryllium		BDL	5	BDL	5	BDL	5
7440-43-8	M Cadmium		BDL	5	BDL	5	28	
7440-70-2	M Calcium		15000		18000		56000	
7440-47-3	M Chromium		BDL	10	BDL	10	BDL	10
7440-48-4	M Cobalt		BDL	50	BDL	50	62	
7440-50-8	M Copper		BDL	25	BDL	25	51	
7439-89-6	M Iron		18000		20000		30000	
7439-92-1	M Lead		4		3.8		280	
7439-95-4	M Magnesium		5620		BDL	5000	10000	
7439-96-5	M Manganese		6120		840		8400	
7439-97-8	M Mercury		BDL	0.2	BDL	0.2	0.7	
7440-02-0	M Nickel		BDL	40	BDL	40	59	
7440-09-7	M Potassium		BDL	5000	BDL	5800	6200	
7782-49-2	M Selenium		BDL	5	BDL	5	BDL	5
7440-22-4	M Silver		BDL	10	BDL	10	BDL	10
7440-23-5	M Sodium		13000		26000		37000	
7440-28-0	M Thallium		bdl	0	BDL	5	BDL	5
7440-62-2	M Vanadium		BDL	50	BDL	50	BDL	50
7440-66-6	M Zinc		BDL	20	BDL	52	1300	
	M Cyanide		BDL	0.005	BDL	0.005	BDL	0.005

Phase I Site Inspection, NOS Indian Head, MD Groundwater Sample

CAS. NO.	CL COMPOUND	SITE SAMPLE		INDIAN HEAD		INDIAN HEAD		
		CCN: INORGANICS/ORGANICS	DATE	42MW-3	42SW-1	42SW-2		
		DEPTH						
		MATRIX	WATER	WATER	WATER			
			ug/l	ug/l	ug/l			
74-87-3	V Chloromethane		BDL	10	BDL	10	BDL	10
74-83-9	V Bromomethane		BDL	10	BDL	10	BDL	10
75-01-4	V Vinyl Chloride		BDL	10	BDL	10	BDL	10
75-00-3	V Chloroethane		BDL	10	BDL	10	BDL	10
75-09-2	V Methylene Chloride		BDL	10	BDL	10	BDL	10
67-64-1	V Acetone		BDL	10	BDL	10	BDL	10
75-15-0	V Carbon Disulfide		BDL	10	BDL	10	BDL	10
75-35-4	V 1,1-Dichloroethene		BDL	10	BDL	10	BDL	10
75-34-3	V 1,1-Dichloroethane		BDL	10	BDL	10	BDL	10
540-59-0	V 1,2-Dichloroethene(total)		BDL	10	BDL	10	BDL	10
67-66-3	V Chloroform		BDL	10	BDL	10	BDL	10
107-06-2	V 1,2-Dichloroethane		BDL	10	BDL	10	BDL	10
78-83-3	V 2-Butanone		BDL	10	BDL	10	BDL	10
71-55-6	V 1,1,1-Trichloroethane		BDL	10	BDL	10	BDL	10
58-23-5	V Carbon Tetrachloride		BDL	10	BDL	10	BDL	10
75-27-4	V Bromodichloromethane		BDL	10	BDL	10	BDL	10
78-87-5	V 1,2-Dichloropropane		BDL	10	BDL	10	BDL	10
10061-01-5	V cis-1,3-Dichloropropene		BDL	10	BDL	10	BDL	10
79-01-6	V Trichloroethene		BDL	10	BDL	10	BDL	10
124-48-1	V Dibromochloromethane		BDL	10	BDL	10	BDL	10
79-00-5	V 1,1,2-Trichloroethane		BDL	10	BDL	10	BDL	10
71-43-2	V Benzene		BDL	10	BDL	10	BDL	10
10061-02-8	V Trans-1,3-Dichloropropene		BDL	10	BDL	10	BDL	10
75-25-2	V Bromoform		BDL	10	BDL	10	BDL	10
108-10-1	V 4-Methyl-2-Pentanone		BDL	10	BDL	10	BDL	10
591-78-8	V 2-Hexanone		BDL	10	BDL	10	BDL	10
127-18-4	V Tetrachloroethene		BDL	10	BDL	10	BDL	10
79-34-5	V 1,1,2,2-Tetrachloroethane		BDL	10	BDL	10	BDL	10
108-88-3	V Toluene		BDL	10	BDL	10	BDL	10
108-90-7	V Chlorobenzene		BDL	10	BDL	10	BDL	10
100-41-4	V Ethylbenzene		BDL	10	BDL	10	BDL	10
100-42-5	V Styrene		BDL	10	BDL	10	BDL	10
1330-20-7	V Xylenes (Total)		BDL	10	BDL	10	BDL	10
108-95-2	A Phenol		BDL	10	BDL	10	BDL	10
111-44-4	A Bis(2-Chloroethyl)ether		BDL	10	BDL	10	BDL	10
95-57-8	A 2-Chlorophenol		BDL	10	BDL	10	BDL	10
541-73-1	A 1,3-Dichlorobenzene		BDL	10	BDL	10	BDL	10
106-46-7	A 1,4-Dichlorobenzene		BDL	10	BDL	10	BDL	10
95-50-1	A 1,2-Dichlorobenzene		BDL	10	BDL	10	BDL	10
95-48-7	A 2-Methylphenol		BDL	10	BDL	10	BDL	10
108-60-1	A 2,2'-oxybis(1-Chloropropane)		BDL	10	BDL	10	BDL	10
106-44-5	A 4-Methylphenol		BDL	10	BDL	10	BDL	10
621-64-7	A N-Nitroso-di-n-propylamine		BDL	10	BDL	10	BDL	10
67-72-1	A Hexachloroethane		BDL	10	BDL	10	BDL	10
98-05-3	A Nitrobenzene		BDL	10	BDL	10	BDL	10
78-59-1	A Isophorone		BDL	10	BDL	10	BDL	10
88-75-5	A 2-Nitrophenol		BDL	10	BDL	10	BDL	10
105-87-0	A 2,4-Dimethylphenol		BDL	10	BDL	10	BDL	10
111-91-1	A Bis(2-Chloroethoxy)methane		BDL	10	BDL	10	BDL	10
120-83-2	A 2,4-Dichlorophenol		BDL	10	BDL	10	BDL	10
120-82-1	A 1,2,4-Trichlorobenzene		BDL	10	BDL	10	BDL	10
91-20-3	A Naphthalene		BDL	10	BDL	10	BDL	10
106-47-8	A 4-Chloroaniline		BDL	10	BDL	10	BDL	10
87-68-9	A Hexachlorobutadiene		BDL	10	BDL	10	BDL	10
59-50-7	A 4-Chloro-3-methylphenol		BDL	10	BDL	10	BDL	10
91-57-8	A 2-Methylnaphthalene		BDL	10	BDL	10	BDL	10
77-47-4	A Hexachlorocyclopentadiene		BDL	10	BDL	10	BDL	10
88-06-2	A 2,4,6-Trichlorophenol		BDL	10	BDL	10	BDL	10
95-85-4	A 2,4,5-Trichlorophenol		BDL	50	BDL	50	BDL	50
91-58-7	A 2-Chloronaphthalene		BDL	10	BDL	10	BDL	10
88-74-4	A 2-Nitroaniline		BDL	50	BDL	50	BDL	50

Phase I Site Inspection, NOS Indian Head, MD Groundwater Sample

CAS. NO.	CL COMPOUND	SITE SAMPLE CCN: INORGANICS/ORGANICS DATE DEPTH MATRIX	INDIAN HEAD		INDIAN HEAD		INDIAN HEAD		
			42MW-3		42SW-1		42SW-2		
			WATER ug/l		WATER ug/l		WATER ug/l		
131-11-3	A Dimethylphthalate		BDL	10	BDL	10	BDL	10	
208-96-8	A Acenaphthylene		BDL	10	BDL	10	BDL	10	
606-20-2	A 2,6-Dinitrotoluene		BDL	10	BDL	10	BDL	10	
99-09-2	A 3-Nitroaniline		BDL	50	BDL	50	BDL	50	
83-32-9	A Acenaphthene		BDL	10	BDL	10	BDL	10	
51-28-5	B 2,4-Dinitrophenol		BDL	50	BDL	50	BDL	50	
100-02-7	B 4-Nitrophenol		BDL	50	BDL	50	BDL	50	
132-84-9	B Dibenzofuran		BDL	10	BDL	10	BDL	10	
121-14-2	B 2,4-Dinitrotoluene		BDL	10	BDL	10	BDL	10	
84-66-2	B Diethylphthalate		BDL	10	BDL	10	BDL	10	
7005-72-3	B 4-Chlorophenyl-phenylether		BDL	10	BDL	10	BDL	10	
86-73-7	B Fluorene		BDL	10	BDL	10	BDL	10	
100-01-6	B 4-Nitroaniline		BDL	50	BDL	50	BDL	50	
534-52-1	B 4,6-Dinitro-2-methylphenol		BDL	50	BDL	50	BDL	50	
86-30-6	B N-Nitrosodiphenylamine(1)		BDL	10	BDL	10	BDL	10	
101-55-3	B 4-Bromophenyl-phenylether		BDL	10	BDL	10	BDL	10	
118-74-1	B Hexachlorobenzene		BDL	10	BDL	10	BDL	10	
87-86-5	B Pentachlorophenol		BDL	50	BDL	50	BDL	50	
85-01-8	B Phenanthrene		BDL	10	BDL	10	BDL	10	
120-12-7	B Anthracene		BDL	10	BDL	10	BDL	10	
86-74-8	B Carbazole		BDL	10	BDL	10	BDL	10	
84-74-2	B Di-n-butylphthalate			9		25		19	
208-44-0	B Fluoranthene		BDL	10	BDL	10	BDL	10	
129-00-0	B Pyrene		BDL	10	BDL	10	BDL	10	
85-68-7	B Butylbenzylphthalate		BDL	10	BDL	10	BDL	10	
91-84-1	B 3,3'-Dichlorobenzidine		BDL	20	BDL	20	BDL	20	
56-55-3	B Benzo(a)anthracene		BDL	10	BDL	10	BDL	10	
218-01-9	B Chrysene		BDL	10	BDL	10	BDL	10	
117-81-7	B bis(2-Ethylhexyl)phthalate		BDL	10	BDL	10	BDL	10	
117-84-0	B Di-n-octylphthalate		BDL	10	BDL	10	BDL	10	
205-99-2	B Benzo(b)fluoranthene		BDL	10	BDL	10	BDL	10	
207-08-9	B Benzo(k)fluoranthene		BDL	10	BDL	10	BDL	10	
50-32-8	B Benzo(a)pyrene		BDL	10	BDL	10	BDL	10	
193-39-5	B Indeno(1,2,3-cd)pyrene		BDL	10	BDL	10	BDL	10	
53-70-3	B Dibenz(a,h)anthracene		BDL	10	BDL	10	BDL	10	
191-24-2	B Benzo(g,h,i)perylene		BDL	10	BDL	10	BDL	10	
319-84-6	P Alpha-BHC		BDL	0.05	BDL	0.05	BDL	0.05	
319-85-7	P Beta-BHC			0.13		BDL	0.05	BDL	0.05
319-86-8	P Delta-BHC		BDL	0.05	BDL	0.05	BDL	0.05	
58-89-9	P Gamma-BHC (Lindane)		BDL	0.05	BDL	0.05	BDL	0.05	
78-44-8	P Heptachlor		BDL	0.05	BDL	0.05	BDL	0.05	
309-00-2	P Aldrin		BDL	0.05	BDL	0.05	BDL	0.05	
1024-57-3	P Heptachlor epoxide		BDL	0.05	BDL	0.05	BDL	0.05	
959-98-8	P Endosulfan I		BDL	0.05	BDL	0.05	BDL	0.05	
60-57-1	P Dieldrin		BDL	0.1	BDL	0.1	BDL	0.1	
72-55-9	P 4,4'-DDE		BDL	0.1	BDL	0.1	BDL	0.1	
72-20-8	P Endrin		BDL	0.1	BDL	0.1	BDL	0.1	
33213-85-9	P Endosulfan II		BDL	0.1	BDL	0.1	BDL	0.1	
72-54-8	P 4,4'-DDD		BDL	0.1	BDL	0.1	BDL	0.1	
1031-07-8	P Endosulfan sulfate		BDL	0.1	BDL	0.1	BDL	0.1	
50-29-3	P 4,4'-DDT		BDL	0.1	BDL	0.1	BDL	0.1	
72-43-5	P Methoxychlor		BDL	0.5	BDL	0.5	BDL	0.5	
53494-70-5	P Endrin ketone		BDL	0.1	BDL	0.1	BDL	0.1	
7421-36-3	P Endrin aldehyde		BDL	0.1	BDL	0.1	BDL	0.1	
5103-71-9	P Alpha-Chlordane		BDL	0.05	BDL	0.05	BDL	0.05	
5103-74-2	P Gamma-Chlordane		BDL	0.05	BDL	0.05	BDL	0.05	
8001-35-2	P Toxaphene		BDL	5	BDL	5	BDL	5	
12674-11-2	P Aroclor-1016		BDL	1	BDL	1	BDL	1	
11104-28-2	P Aroclor-1221		BDL	2	BDL	2	BDL	2	
11141-16-5	P Aroclor-1232		BDL	1	BDL	1	BDL	1	
53460-21-9	P Aroclor-1242		BDL	1	BDL	1	BDL	1	

Phase I Site Inspection, NOS Indian Head, MD Groundwater Sample

CAS. NO.	CL COMPOUND	SITE	INDIAN HEAD	INDIAN HEAD	INDIAN HEAD
		SAMPLE	42MW-3	42SW-1	42SW-2
CCN: INORGANICS/ORGANICS		DATE			
		DEPTH			
		MATRIX	WATER	WATER	WATER
			ug/l	ug/l	ug/l
12672-29-6 P	Aroclor-1248		BDL 1	BDL 1	BDL 1
11097-69-1 P	Aroclor-1254		BDL 1	BDL 1	BDL 1
11098-82-5 P	Aroclor-1260		BDL 1	BDL 1	BDL 1