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**INTERIM REMEDIAL ACTION PROPOSED PLAN FOR
SITE 15, SUBSTATION NO. 2, BUILDING 90
NAVAL STATION ROOSEVELT ROADS
PUERTO RICO**

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**U.S. NAVAL STATION
ROOSEVELT ROADS, PUERTO RICO
INSTALLATION RESTORATION PROGRAM**

**INTERIM REMEDIAL ACTION
PROPOSED PLAN**

JANUARY 1993

**U.S. Naval Station, Roosevelt Roads, Proposed Cleanup for Soils at Site 15,
Substation No. 2, Building No. 90.**

The U.S. Naval Station, Roosevelt Roads is proposing a cleanup plan to remediate PCB contaminated soils/sediment at Site 15, Substation No. 2, Building No. 90, located on Naval Station, Roosevelt Roads, Puerto Rico. In accordance with Section 117(a) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), Naval Station Roosevelt Roads is issuing this Proposed Plan to provide opportunity for public review and comment on the cleanup alternatives, under consideration for this site. Naval Station Roosevelt Roads will consider public comments as part of the final decision-making process for selecting the cleanup remedy for the site.

The preferred alternative is excavation of the PCB contaminated soils, shipment and disposal at an off-site landfill in the United States. A description of the alternatives considered is described on page 9 of this document.

This proposed plan:

1. explains the opportunities for the public to comment on the remedial alternatives;
2. includes a brief history of the site and the principal findings of site investigations;
3. provides a brief description of the alternatives evaluated in the Feasibility Study (FS);
4. outlines the criteria used by Naval Station, Roosevelt Roads to propose an alternative for use at the site; and
5. presents Naval Station, Roosevelt Roads rationale for its preliminary selection of the preferred alternative.

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To help the public participate in reviewing the cleanup options for the site, this document also includes information about where interested citizens can find more detailed descriptions of the remedy process and the alternatives under consideration for Site 15, Substation No. 2, Building No. 90.

THE PUBLIC'S ROLE IN EVALUATING REMEDIAL ALTERNATIVES

Public Comment Period

U.S. Naval Station, Roosevelt Roads is conducting a 30-day public comment period, from February 15 to March 16, 1993 to provide an opportunity for public involvement in the cleanup decision. During the comment period, the public is invited to review the Proposed Plan and the Remedial Investigation (RI) and the Feasibility Study (FS) reports and offer comments to Naval Station.

Written Comments

If, after reviewing the information on the site, you would like to comment in writing on the preferred alternatives, any of the other cleanup alternatives under consideration, or other issues relevant to the site cleanup, please mail your comments to Naval Station, Roosevelt Roads (postmarked no later than March 16, 1993 to:

Public Affairs Officer
U.S. Naval Station Roosevelt Roads
P.O. Box 3001
Ceiba, Puerto Rico 00735-3001
(809) 865-4018

Naval Station's Review of Public Comment

U.S. Naval Station, Roosevelt Roads will review comments received from the public as part of the process of reaching a final decision on the most appropriate remedial alternative for cleanup on Site 15, Substation No. 2 Building No. 90. Naval Station's final choice of a remedy will be issued in a Decision Document (DD) for the site. A document, called a Responsiveness Summary, that summarizes Naval Station's responses to comments received during the public comment period will be issued with the DD. Once the DD is signed by the Commanding Officer of Naval Station, Roosevelt Roads, it will become part of the Administrative Record, containing the documents used by Naval Station to choose a remedy for the sites.

Additional Public Information

Because the Proposed Plan provides only a summary description of the investigation of Site 15, Substation No. 2, Building No. 90 and the cleanup alternatives considered, the public is encouraged to consult the Administrative Record, which contains the Remedial Investigation/Feasibility Study for the soils, and other site documents, for a more detailed explanation of the site and all of the remedial alternatives under consideration.

The Administrative Record will be available for review at the following locations:

Building 31, Public Works Department
U.S. Naval Station Roosevelt Roads
Ceiba, Puerto Rico 00735
(809) 865-4429
Hours: Monday-Friday: 7:00 a.m. to 3:30 p.m.

Information Repository
Office of Public Relations
Mayoress of Ceiba
P.O. Box 224
Ceiba, Puerto Rico 00735
(809) 885-2180 or 885-3654
Hours: Monday-Friday: 8:00 a.m. to 12:00 p.m.
1:00 p.m. to 4:30 p.m.

SITE HISTORY

The Remedial Investigation/Feasibility Study (RI/FS) at Site 15, Substation No. 2, Building 90, Naval Station (NAVSTA) Roosevelt Roads, consisted of: (1) completing the RI/FS for the soil/surficial sediment operable unit, (2) determining the horizontal extent of PCB contamination at the site, (3) performing a risk assessment based on all available data, and (4) evaluating potential remedial actions and target cleanup levels. Technically feasible control measures, including the no further action alternative, were evaluated in a two-step screening process to select a plan for mitigating potential threats to human health and the environment from the site. Alternative control measures are evaluated on the basis of the current understanding of site conditions as documented in the following report:

Remedial Investigation/Feasibility Study for Substation No. 2, (Site 15), Building 90, Naval Station Roosevelt Roads, Puerto Rico (Versar, May 15, 1992).

NAVSTA Roosevelt Roads is located on the east coast of Puerto Rico in the municipality of Ceiba, approximately 33 miles southeast of the capital city of San Juan (Figure 1). It is bordered on all sides but the west by the Caribbean Sea. Agricultural land is located to the southwest, and Bosque Estatal de Ceiba, a mangrove forest, is located near the station's western border. Immediately adjacent to the base's western border is the town of Ceiba. The nearest major town is Fajardo located 10 miles north of the station.

From 1964 to the present, transformers have been maintained and repaired at Site 15, (Figure 2). As part of maintenance of the transformers, the transformer oil was drained to facilitate repair to the inner core and coils. During 1964 to 1979, it was a routine practice to drain or pour the transformer oil onto the ground at the work location. It is estimated that a maximum of 3,000 gallons of polychlorinated biphenyl (PCB)-contaminated transformer oil was disposed of on the ground at the site during that period of time.

RESULTS OF INVESTIGATION

As part of an early investigation performed in 1985 and 1986 by ESE, Inc., 36 soil samples were collected from 33 hand augered soil borings at Site 15. Soil and surficial sediment samples were collected from the surface to a depth of 1 foot below land surface (BLS) in all but two of the borings which were extended deeper. The soil and sediment samples were analyzed for PCBs. Concentrations of PCBs ranged from not detected (ND) to 1,186 parts per million (ppm). PCB levels above 50 ppm were found at four sampling locations. The highest concentrations were found around Building 90 and in the drainage ditch along Valley Forge Road. Two samples from the fenced-in storage yard were <1 ppm.

During 1991, a total of 36 additional soil and surficial sediment samples were collected, by Versar, to confirm previous analyses for PCB contamination and to further delineate the contaminated area. These samples were largely collected from shallow (0 to 3 inches BLS) soil. Deeper (8 to 12 inches BLS) soil samples were also collected, where possible. Coral outcrops are visible at the site and the soil and sediment is less than a foot thick throughout most of the site. Twelve sediment samples were collected from seven locations in the two ditches running along the margins of Substation 2. Deeper soil (8 to 12 inches) was also collected from below the seven drainage ditch sediment sample locations, where possible. The two concrete chip samples and three wipe samples were collected from the concrete pad at the entrance to Site 15 to confirm suspected PCB contamination. Wipe and chip samples were used to characterize the stained concrete surfaces to determine potential needs for remediation of these structures.

The RI determined that sediment and soil surrounding the immediate area of Site 15 and the transformer pads is contaminated with PCBs at concentrations exceeding applicable or relevant and appropriate requirements (ARARs). The depth of contamination is at least 1 foot; however, the presence of coral at a depth of 1 foot prevents deeper sampling at this time. This RI/FS focused on the soil/sediment operable unit. Any potential contamination of coral, ground-water or surface water pathways are to be evaluated during the initial soil removal action proposed herein. An estimated 235 cubic yards of soil/sediment require remediation.

The building interiors, ground water, and surface water operable units were specifically not addressed by this RI/FS. Because the substation is currently in use, the building interiors are an occupational exposure (if contaminants are present) and the building is secure from the general public at all times. Therefore, investigation of the interior surfaces may be conducted at another time without affecting the selection of remedy for soil/sediment, or exterior surfaces.

Surface water and ground-water investigations have also been excluded from discussion at the present. The potential for contamination of either of these media can be more reliably assessed following scraping of the site and initial soil removal actions. Soil removal activities will expose the white coral located immediately below the thin soils, making the areas where contaminants could percolate to the water table more apparent. The Initial Assessment Study (IAS) indicates that the ground water at NAVSTA Roosevelt Roads is saline. Therefore, the ground water at the site would be classified as a Class III aquifer (unusable) under EPA's (1986) ground-water classification guidance. Surface water is not normally present on site except for brief periods immediately after heavy rains. Neither the ground water or surface water operable units are a direct source of human exposure. Selection of remedy for the soil/sediment operable unit does not interfere with any future remedial actions for the ground-

water/surface water operable unit, and will facilitate the assessment nature and extent of contamination of the aqueous media (if any).

SUMMARY OF SITE RISKS

Data from the site characterization and evaluation of potential exposure pathways are used to evaluate site risks for current and potential future exposure scenarios. The FS screens potentially applicable remedial process options to arrive at assembled remedial alternatives to eliminate site risks. The scope of the selection of remedy for the FS is limited to the soil/sediment and building exterior operable unit only. The remedial alternatives are intended to define the first phase of remediation and to select the most cost-effective remedy to best protect human health and the environment. Confirmatory sampling, and additional characterization requirements/removal are acknowledged as an integral part of the site remedy and are to be included in the Remedial Design Report to be prepared for this site at a later date.

The risk assessment for Site 15 focused on known site contaminants identified through the field activities conducted as part of the RI and previous investigations. The principal contaminants of concern identified during these investigations were PCBs. Arachlor 1260 was found in all samples where PCBs were detected; Arachlor 1254 was found in only one soil sample.

To evaluate the risks to site workers or trespassing children were evaluated for dermal contact/absorption and incidental ingestion were calculated for the site. Unacceptable hazard indices and carcinogenic risk were found to result from the soil contamination, and therefore, remedial actions are required.

There are a number of uncertainties associated with risk estimates. These uncertainties are introduced because of (1) the need to extrapolate below the dose range of experimental tests using animals, (2) the variability of the receptor population, (3) assumed equivalency of dose-response relationships between animals and humans, (4) differences in experimental exposure routes versus exposure routes expected on site and, (5) sampling error in the environmental sampling data used to make the calculations. In addition to chemical concentration, route and duration of exposure, there are many other factors which may influence the likelihood of developing adverse health effects. These include differences between individual nutritional health and status, age, sex, inherited characteristics, and recreational habits (e.g., smoking vs. non-smoking) that may affect susceptibility.

Plants, birds, insects, and fishes are all potential ecological receptors on the station; however, the pathways necessary to significantly impact the flora and fauna are not always complete, and exposure is not likely to occur. Although exposure is not likely to occur, remedial actions at the site will be directed towards minimizing adverse impacts to the flora and fauna encountered at the site. Site 15 makes up less than 1 percent of the total station area. Most vegetation was cleared from the site area when first constructed, and there has only been sparse revegetation by grasses, with some shrubs at the perimeter of the site. Most of the biota on the station would be found in the lush areas of the station, especially in the mangrove forests, rather than on Site 15. Other than a few lizards and skinks, no animal populations were observed on Site 15 during the RI. It is felt that the reptile population would quickly reestablish itself following remediation. There are no surface water bodies present on the site. The drainage ditches on Site 15 only contain water immediately after a rainstorm, and consequently, do not support multicellular aquatic life. Surficial sediment data indicate that it is unlikely that contamination of marine ecosystems above ARARs has occurred from discharge of the drainage swales to storm sewers.

The extent of contamination at Site 15 measures approximately 700 square yards (yd²); the volume of contamination is estimated to be approximately 235 cubic yards (yd³) and is estimated to be 350 tons. This includes debris from cleaning of approximately 5,000 square feet of concrete surfaces at the site.

SUMMARY OF ALTERNATIVES

The four interim remedial actions alternatives evaluated in the FS for the remediation of soil/surficial sediment and building exteriors at Site 15 are:

- No Action Alternative - Site remains as is
- Alternative A - Excavation, Off-site Incineration
- Alternative B - Excavation, Off-site Landfill
- Alternative C - Excavation, On-site Incineration

All remedial alternatives include provisions for power washing or grit blasting of contaminated concrete surfaces following soil/surficial sediment remediation.

No Action Alternative

This alternative is required to be evaluated under the National Contingency Plan. Under this alternative, no remedial actions would be performed. Costs associated with this option are negligible.

Alternative A - Excavation, Transportation, and Incineration

The excavation and transportation to incineration facility remedial alternative involves the removal of the contaminated soil/surficial sediment using conventional construction techniques (e.g., backhoe or truck-mounted excavator). All soil/sediment measuring above 10 ppm PCBs is excavated and replaced with clean backfill. After the contaminated soil is excavated, the material is loaded into internodal containers and placed on barges for transportation to the United States mainland. There, the manifested wastes are then transported via rail and trucks for transportation to the incineration facility. There are currently no incineration facilities in Puerto Rico that are properly licensed to receive PCB-bearing waste. Off-site incineration in accordance with 40 CFR 761 as it pertains to incineration of PCB solids is effected by subjecting the wastes to very high temperatures at which the contaminants are oxidized to carbon dioxide, water, and chlorine gas, which is recovered. Any noncombustibles in the contaminated soil will appear as ash residue in the incineration process, and will require disposal by landfilling.

Alternative B - Excavation, Shipment, and Landfill Disposal

The excavation and transportation to landfill facility remedial alternative involves the removal of the contaminated soil using conventional construction techniques (e.g., backhoe or truck-mounted excavator). All soil or coral measuring above 10 ppm PCBs is excavated and replaced with clean backfill. After the contaminated soil is excavated, the material is loaded into internodal containers and placed on barges for transportation to the United States mainland. There, the manifested wastes are then transported via rail and trucks for transportation to the landfill facility. There are no landfills in Puerto Rico that are licensed to receive PCB-bearing wastes. The contaminated wastes are to be properly landfilled at the facility.

Alternative C - Soil Excavation and On-site Incineration

The excavation and on-site incineration remedial alternative involves the excavation of the contaminated soil using conventional construction techniques (e.g., backhoe or truck-mounted excavator). All materials measuring above 10 ppm PCBs is excavated and replaced with clean backfill. After the contaminated soil is excavated, the material is loaded into a mobile incineration trailer for thermal destruction. The process and regulatory requirements are essentially the same as off-site incineration.

NAVY'S PREFERRED ALTERNATIVE

Based on the feasibility study, Alternative B - Excavation, Shipment, and Landfill Disposal is the remedial technology recommended for Site 15. This control measure was selected based on probable achievement of the nine Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLA) criteria for selecting remedial alternatives: overall protection of human health and the environment; compliance with ARARs; long-term effectiveness and permanence; short-term effectiveness; reduction of mobility, toxicity, and volume; implementability; cost; local government acceptance; and community acceptance.

There are no incineration or landfill facilities licensed to accept PCB wastes located in Puerto Rico. The U.S. Ecology-Beatty, Nevada facility is the nearest approved facility for disposal of PCB-bearing materials generated by remedial action at Site 15. The long-term potential liabilities associated with landfill disposal are higher than incineration, but are offset greatly by the low cost of landfill disposal. This process option was selected based on probable achievement of the nine CERCLA criteria for selecting remedial alternatives. The cost for this alternative at this site estimated to be \$426,621.

OTHER ALTERNATIVES EVALUATED IN THE FS

Alternative A also met the nine criteria mentioned above and promised to be equally effective for remediation of the site. Alternative A has a decreased liability in the long run, due to the elimination of contaminated soil, rather than the landfilling of it. However, the cost for Alternative A is prohibitively expensive compared to Alternative B, \$1,490,688 compared to \$426,621. The reduced cost for Alternative B is more than compensatory for the increased potential liability.

Alternative C is equally effective as Alternative B. The cost for on-site incineration was quoted between \$600 to \$2,000 per ton. If a contract could be secured at the lower figure, on-site incineration would be almost the same cost as Alternative B, but would be more desirable due to its previously noted inherent advantages or eliminating all potential liability for the contaminated material. Unfortunately, no vendor was willing to quote on jobs of less than 5,000 tons. This option will be reviewed at the time of remediation, because the field of remediation is growing at a rapid pace and a contractor may be found who is willing to undertake remediation of the site in the future.

The No Action Alternative is not protective of human health and so is excluded from further discussion. A profile of the performance of the other alternatives with respect to the nine CERCLA criteria follows.

ANALYSIS OF ALTERNATIVES

CERCLA uses nine criteria to evaluate each remedial alternative retained for detailed analysis in the FS. The nine criteria are used to select a remedy that meets the CERCLA program goals of protecting human health and the environment, maintaining protection over time and minimizing untreated waste. Definitions of the nine criteria and a summary of the Navy's evaluation of the alternatives using the nine criteria are provided below.

1. **Overall Protection of Human Health and the Environment** addresses how an alternative as a whole will protect human health and the environment. This includes an assessment of how public health and environmental risks are properly eliminated, reduced or controlled through treatment, engineering controls or institutional controls. The remedial alternatives will adequately protect human health and the environment from PCBs associated with contaminated soil. Soils or coral contaminated above 10 ppm, the established clean-up standard for soil at the site, will be excavated, thereby removing the contaminant source.

2. **Compliance with Applicable or Relevant and Appropriate Requirements (ARARs)** addresses whether or not a remedy complies with all state and federal environmental and public health laws and requirements that apply or are relevant and appropriate to the condition and cleanup options at a specific site. If an ARAR cannot be met, the analysis of the alternative must provide grounds for invoking a statutory waiver. Compliance with ARARs will be attained because (1) all materials contaminated with PCBs at concentrations above 10 ppm will be removed from the site for treatment or landfilling, and (2) the removed soils will be treated and landfilled according to requirements of the facility's TSCA or RCRA permit for PCB treatment and disposal.

3. **Long-Term Effectiveness and Permanence** refers to the ability of an alternative to maintain reliable protection of human health and the environment over time once the cleanup goals have been met. After the removal of PCB-contaminated soil, no residual contamination levels above 10 ppm will be present at the site. Consequently, no future controls will be required to monitor and maintain the long-term effectiveness of this remedial alternative.

4. **Reduction of Toxicity, Mobility, or Volume** through treatment are three principal measures of the overall performance of an alternative. The 1986 amendments to CERCLA emphasize that, whenever possible, the remedy should be selected that uses a treatment

process to permanently reduce the level of toxicity of contaminants at the site, the spread of contaminants away from the source of contamination and the volume of amount of contamination at the site. The alternatives will significantly reduce the remaining contaminant volume by removing all soil contaminated above 10 ppm total PCB concentration. However, regardless of the pretreatment method employed, the waste toxicity may or may not be reduced prior to landfilling. Therefore, potential future liabilities associated with the disposal of the pretreatment waste material in a landfill may exist.

5. **Short-Term Effectiveness** refers to the likelihood of adverse impacts on human health of the environment that may be posed during the construction and implementation of an alternative until cleanup goals are achieved. All of remedial alternatives involve excavation and treatment and have excellent short-term effectiveness.

6. **Implementability** refers to the technical and administrative feasibility of an alternative, including the availability of materials and services needed to implement the alternative. Provided that workers performing soil excavation at the property are properly equipped with personal protective equipment and are fully certified for hazardous waste work (according to Occupational Safety and Health Administration [OSHA] regulations in 40 CFR 1910), implementation of these alternative should not pose a risk to human health or the environment. As a precautionary measure, the soils should be kept saturated at all time during excavation work, thereby minimizing release of potentially-contaminated dust particles.

These remedial alternatives are moderately easy to implement. Equipment and labor required for the excavation work are available in Puerto Rico or are easily transported to the site. OSHA-certified workers are required for the work, but they are also available in Puerto Rico or the United States. Clean backfill is available on the island of Puerto Rico and is relatively inexpensive.

7. **Cost** includes the capital (up-front) cost of implementing an alternative as well as the cost of operating and maintaining the alternative over the long-term and net present worth of both capital and operation and maintenance costs. All of these alternatives are capital intensive and have ostensibly no operation and maintenance costs. Costs for Alternative A is \$1,490,688; for Alternative B is \$426,621; and for Alternative C is \$1,189,871.

8. **State/Territorial Acceptance** addresses whether, based on its review of the RI/FS and Proposed Cleanup Plan, the Sate/Territory concurs with, opposes, or has no comment on the alternative the Navy is proposing as the remedy for the site. The Puerto Rico Environmental Quality Board has reviewed the RI/FS Reports and concurs with these plans.

9. **Community Acceptance** addresses whether the public concurs with the Navy's Proposed Plan. Community acceptance of this Proposed Plan will be evaluated based on comments received during the public comment period. This alternative is thought to be acceptable to the local community. The contaminated soil will be permanently removed from the site, thereby eliminating any significant risk to human health and the environment associated with exposure to PCB-contaminated soil. The material will be properly managed and ultimately disposed according to applicable regulations. Also, the remedial action could be implemented within a relatively short time period, thereby not restricting future development and use of the site.

NAVY'S RATIONALE FOR PROPOSING THE PREFERRED ALTERNATIVE

Based on current information and analysis of the RI and FS reports, the navy believes that the preferred alternative for the Interim Remedial Action at Site 15, Substation No. 2, Building No. 90 is consistent with the requirements of the Superfund law and its amendments, specifically Section 121 of CERCLA and to the extent practicable, the National Contingency Plan. Except for the No-Action alternative, all of the alternatives presented in this Proposed Plan would provide overall protection of human health and the environment. In the Navy's analysis; however, the preferred alternative identified in this Plan is more readily implementable and cost-effective than the other alternatives evaluated. In addition, in the Navy's estimation, the preferred alternative would achieve the best balance among the criteria used by the Navy to evaluate the alternatives. The preferred alternative should provide short and long-term protectiveness of human health and the environment, will attain all federal and state applicable and appropriate public health and environmental requirements (ARARs), and will reduce mobility and volume of the contaminated soils.

MAILING LIST

If you are not on the mailing list and would like to receive future publications pertaining to Site 15, Substation No. 2, Building 90, NAVSTA Roosevelt Roads, please fill out, detach, and mail this form to:

Public Affairs Officer
U.S. Naval Station Roosevelt Roads
P.O. Box 3001
Ceiba, Puerto Rico 00735-3001
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