CLEAN

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NAVAL WEAPONS STATION CONCORD
CONCORD, CALIFORNIA

DRAFT FINAL
INVESTIGATION-DERIVED WASTE MANAGEMENT PLAN

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ABBREVIATIONS AND ACRONYMS

AOC	Area of Contamination
ARAR	Applicable or Relevant and Appropriate Requirement
ASA	Accumulation Storage Area
AWQC	Ambient Water Quality Criteria
Cal/EPA	California Environmental Protection Agency
CAMU	Corrective Action Management Unit
CCR	California Code of Regulations
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act of 1980
CFR	Code of Federal Regulations
CLEAN	Comprehensive Long-Term Environmental Action Navy
CLP	Contract Laboratory Program
cm	Centimeter
cm^2	Square Centimeter
COLIWASA	Composite Liquid Waste Sampler
ft^3	Cubic Feet
yd^3	Cubic Yards
CWA	Clean Water Act
DA	Decontamination Area
DDSD	Delta Diablo Sanitary District
DE	Disposable Equipment
DERP	Defense Environmental Restoration Program
DOT	U.S. Department of Transportation
DTSC	California Department of Toxic Substances
EFA WEST	Engineering Field Activity West, Naval Facilities Engineering Command
EPA	U.S. Environmental Protection Agency
FFSRA	Federal Facilities Site Remediation Agreement
FS	Feasibility Study
FSAP	Field Sampling and Analysis Plan
FSP	Field Sampling Plan
HSP	Health and Safety Plan
HSWA	Hazardous and Solid Waste Amendments of 1984
i.d.	Inside Diameter
IDW	Investigation-Derived Waste
IR	Installation Restoration
LDR	Land Disposal Restrictions
MCL	Maximum Contaminant Levels
MCLG	Maximum Contaminant Level Goals
mg/kg	Milligrams per Kilogram
mg/L	Milligrams per Liter
mL	Milliliter
mm	Millimeter
MTR	Minimum Technology Requirements
NCP	National Contingency Plan

ABBREVIATIONS AND ACRONYMS (Continued)

o.d.	Outside Diameter
PCB	Polychlorinated Biphenyl
PPE	Personal Protective Equipment
ppm	Parts per Million
POTW	Publicly Owned Treatment Works
PRC	PRC Environmental Management, Inc.
QA/QC	Quality Assurance/Quality Control
RCRA	Resource Conservation and Recovery Act
RI	Remedial Investigation
ROD	Record of Decision
RT	Regulatory Threshold
RWQCB	Regional Water Quality Control Board
SARA	Superfund Amendments and Reauthorization Act
SDWA	Safe Drinking Water Act
SI	Site Inspection
STLC	Soluble Threshold Limit Concentrations
SWMU	Solid Waste Management Unit
SWRCB	State Water Resources Control Board
TBC	To-Be-Considered
TCLP	Toxicity Characteristic Leaching Procedure
TDU	Treatment Disposal Unit
TSCA	Toxic Substances Control Act
TSDF	Treatment, Storage, or Disposal Facility
TTLC	Total Threshold Limit Concentrations
TU	Temporary Unit
USC	United States Code
UST	Underground Storage Tank
WET	Waste Extraction Test
WMP	Waste Management Plan
WP	Work Plan
WPNSTA	Naval Weapons Station

1.0 INTRODUCTION

Engineering Field Activity West (EFA WEST), Naval Facilities Engineering Command, is conducting various investigations at Naval Weapons Station (WPNSTA) Concord, California. These activities include underground storage tank (UST) investigations, site investigations at 24 solid waste management units (SWMU), remedial investigation/feasibility studies (RI/FS) at 9 Installation Restoration (IR) sites, and ecological risk assessments. The investigations are conducted under the Comprehensive Long-Term Environmental Action Navy (CLEAN) Contract No. N62474-99-D-5086: Contract Task Order (CTO) numbers 0009, 0232, 0240, 0270, 0281, 0283, 0295, and 0303.

EFA WEST authorized PRC Environmental Management, Inc. (PRC) to develop a plan under CTOs 0126, 0250, and 0283, to manage investigation-derived waste (IDW) associated with the investigation activities at WPNSTA Concord. This document establishes procedures for the PRC field investigation team and provides guidance on the proper handling, storing, sampling, characterizing, and disposing of IDW. This plan reflects the temporary unit provisions promulgated under the Resource Conservation and Recovery Act (RCRA) Corrective Action rule, codified in Title 40 of the Code of Federal Regulations (CFR) Section 264.553 (40 CFR §264.553) and Title 22 of the California Code of Regulations (CCR) Section 66264.553 (22 CCR §66264.553).

The Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) and the Superfund Amendments and Reauthorization Act of 1986 (SARA) established a series of programs for the cleanup of hazardous waste disposal sites and release sites nationwide. One of the programs, the Defense Environmental Restoration Program (DERP), is codified in SARA Section 211 (10 United States Code [USC] 2701). The Navy Installation Restoration Program (IRP) is a component of DERP, and is designed to identify contamination at past potential hazardous waste disposal sites and release sites that resulted from Navy and Marine Corps activities. In furtherance of the Navy's IRP at WPNSTA Concord, PRC was contracted to conduct environmental site investigations.

Environmental site investigations generate liquid and solid waste, including soil cuttings, purge water, decontamination fluids, used personal protective equipment (PPE), and disposable sampling equipment. The National Contingency Plan (NCP), (codified in 40 CFR Part 300), requires that

CERCLA response actions, including IDW management, at the facility meet all applicable or relevant and appropriate requirements (ARAR), to the extent practicable considering the urgency of the situation.

Before this plan was developed, IDW generated at WPNSTA Concord during site investigation activities was stored, using generator accumulation areas, for up to 90 days, and then properly disposed of as specified by federal and state regulations. Table 1 summarizes the storage and disposal options for each type of waste.

TABLE 1

SUMMARY OF STORAGE AND DISPOSAL OPTIONS

Waste Type	Activity	Storage Option	Management Option
Soil	test pit and monitoring well excavations, surface and subsurface sampling from soil borings	drums or roll-off bins	approved off-site disposal facility
Sediment	surface and subsurface soil sampling	drums or roll-off bins	approved off-site disposal facility
Sludge	sampling from septic tanks	drums or roll-off bins	approved off-site disposal facility
Aqueous liquids	purge groundwater, well development, grab water sampling, decontamination fluids	drums or tanks	approved off-site disposal or disposal to local publicly owned treatment works (POTW)
Solid nonhazardous wastes	use of disposable PPE and sampling equipment, general refuse from field activities (for example, plastic packaging materials)	double-bagged in drums	on-site industrial dumpster

1.1 PLAN ORGANIZATION

The organization of this IDW plan parallels the decision-making process used to determine the proper handling and disposition of IDW. Section 1 has two additional subsections, providing project background and a site description. Section 2 describes the types of waste that may be generated during investigation activities. Section 3 presents the process of characterizing IDW in accordance with applicable federal and state requirements. Section 4 describes the on-site storage facilities at WPNSTA Concord. Section 5 contains the procedures for transferring IDW to a subcontractor for off-site management. Section 6 discusses requirements for managing IDW on site.

Six appendixes (A through F) support this plan. Appendix A identifies potential ARARs for managing the IDW generated at WPNSTA Concord. Appendix B provides procedures for IDW sampling. Appendix C contains the waste profile form and instructions for completing it. Appendix D presents the training requirements for waste management personnel. Appendix E outlines a contingency plan for temporary storage areas. Appendix F presents the storage inspection form.

1.2 PROJECT BACKGROUND

WPNSTA Concord is approximately 30 miles northwest of San Francisco, California, in the north-central portion of Contra Costa County. The facility, which encompasses approximately 13,000 acres, is a principal naval munitions transhipment port on the West Coast. WPNSTA Concord is bounded on the north by Suisun Bay and by the city of Concord, population 100,000, to the south and west. Refer to Figure 1.

Currently, the facility contains three main separate land holdings reflecting regulatory program status: the Tidal Area, the Inland Area, and a "Litigation Area." The "Litigation Area" designation is due to the extensive litigation conducted by the Navy to recover cleanup costs from former and adjacent operators for a portion of land purchased in the Tidal Area.

In 1983, an initial assessment study (IAS) was conducted to identify sites presenting a potential threat to human health or the environment; 26 sites were identified. Thirteen of these 26 sites were later identified as sites of potential contamination and were recommended for further investigation.

Subsequent investigations were conducted in a 1984 confirmation study, and in a 1991 site characterization study. The 13 IAS sites recommended for further investigation were divided into three groups: the Tidal Area, the Inland Area, and the Litigation Area.

A site characterization was completed in 1991 for the Tidal Area sites. This characterization has led to the scheduling of the Tidal Area sites for further sampling and analysis, beginning in the Spring of 1995 under a remedial investigation/feasibility study (RI/FS). The Inland Area sites were evaluated in a site investigation (SI) that was completed in 1993. During the SI, additional sites were identified for inclusion in the Inland Area group and were also investigated. Some of the Inland Area sites investigated during this period were recommended for further action, and the RI/FS field work for the Inland Area sites will commence in Spring 1995. From 1984 through 1988, the Litigation Area sites were studied in a RI/FS. The Litigation Area sites were subsequently assembled into remedial action subsites (RASS) 1, 2, 3, and 4. In 1989, a Record of Decision (ROD) regarding the RASSs was signed and remedial action field work on some of the RASSs was completed in 1994. The remaining RASS remedial action field work will be completed in the Spring of 1995. Refer to Figure 2.

Additional Inland Area field investigation studies were performed under the Pollution Abatement Program (PAP). In 1994, three underground storage tanks (UST) were removed from the Inland Area. Following the removal of the USTs, groundwater monitoring investigations were recommended for the areas in and around the former UST locations. Currently, two former UST locations are scheduled for investigation in the Spring of 1995.

In September 1992, a Federal Facility Site Remediation Agreement (FFSRA) between the California Department of Toxic Substances (DTSC) and the Regional Water Quality Control Board (RWQCB) was signed for the Tidal Area and Inland Area sites. The FFSRA establishes the schedule for Installation Restoration (IR) activities for the Tidal and Inland Area sites. The schedules presented in the FFSRA were amended in May 1994 to include site investigation field work for 24 SWMUs. Figures 3 and 4 show the Tidal Area and Inland Area SWMUs. The FFSRA will again undergo revision in the Spring of 1995 to reflect any changes to the IR schedule. In December 1994, WPNSTA Concord was declared a Superfund site and was placed on the National Priorities List (NPL), which will also require negotiation of an Federal Facilities Agreement (FFA).

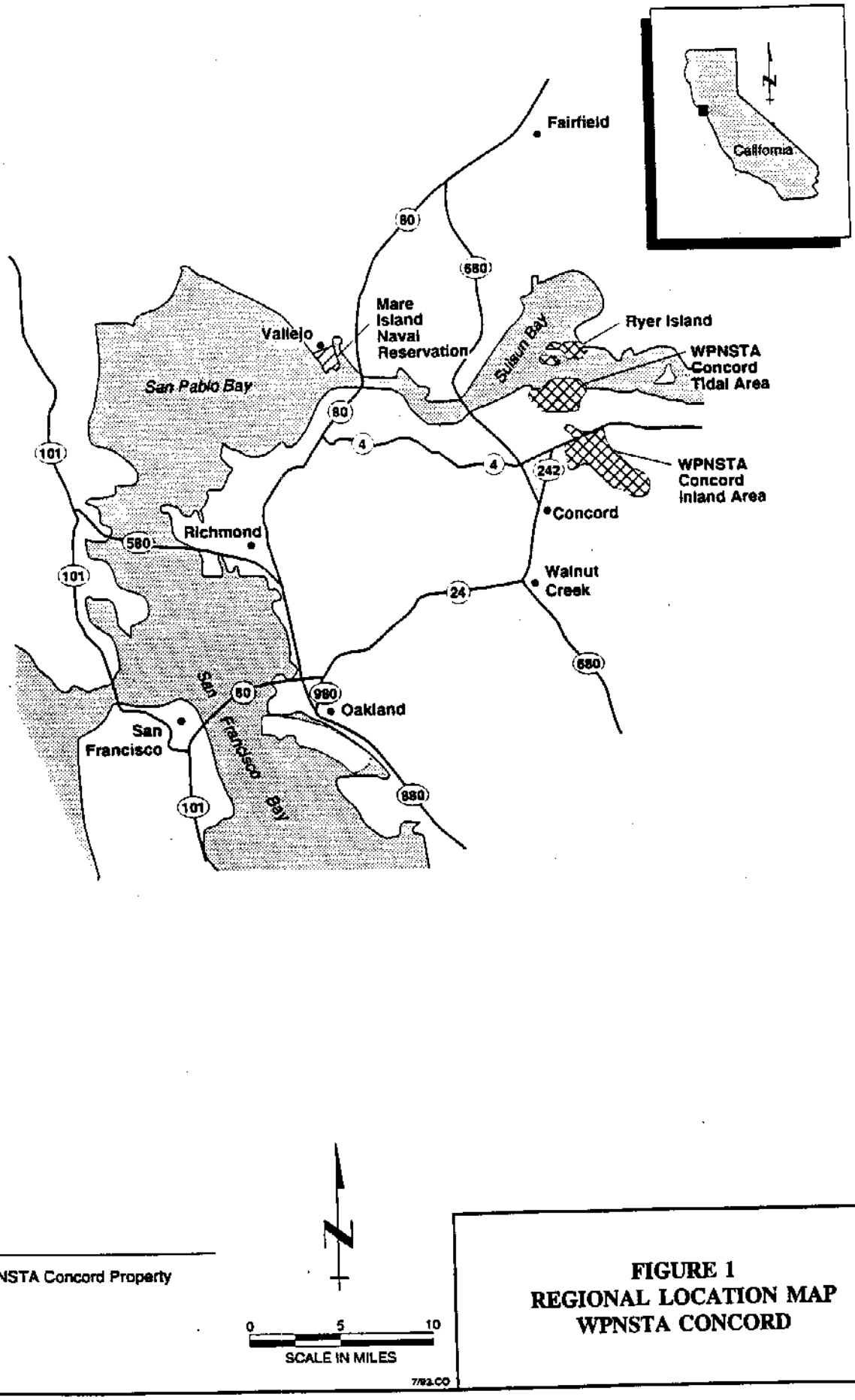

FIGURE 1
REGIONAL LOCATION MAP
WPNSTA CONCORD

Figures 2-4

These detailed station maps have been deleted from the Internet-accessible version of this document as per Department of the Navy Internet security regulations.

1.3 SITE DESCRIPTION

The Los Medanos Hills separate the Inland and Tidal Areas. WPNSTA Concord property north of Los Medanos Hills has been designated as the Tidal Area. The Tidal Area includes 6,077 acres of mainland and six islands in Suisun Bay that total 1,571 acres. Two county-owned public roads, Waterfront Road and Port Chicago Highway, traverse the Tidal Area in the vicinity of the former town of Port Chicago. The area is crossed by three railroads and the Contra Costa Canal. Refer to Figure 5.

The Inland Area encompasses approximately 5,100 acres between the Los Medanos Hills and the city of Concord. Three public roads cross the Inland Area: State Route 4, Willow Pass Road, and Bailey Road. The northwest section of the base is also crossed by the Contra Costa Canal. Refer to Figure 6.

The majority of WPNSTA Concord operations take place in the Inland Area. Ammunition storage, which constitutes the largest single land use at WPNSTA Concord, is maintained in five magazine groups and two groups of barricaded railroad sidings. Various production facilities for the inspection and maintenance of ordnance are located throughout the Inland Area. Most of the facilities in the greater Tidal Area are dedicated to ordnance operations and are located on the original Port Chicago property of the Naval Magazine, which was acquired by the Navy in 1942. Within the 17,000 linear feet of waterfront are three explosives-handling piers, a barge pier, lighter moorings, and a tug basin. Barricaded rail car sidings, rail car classification yards, and a large unbarricaded holding lot for trucks are inland from the waterfront area and approximately 1,000 feet east of the Tidal Area Landfill site. There are several open inert storage and parking aprons associated with the piers and support activities.

Land use in the vicinity of WPNSTA Concord is diverse, characterized by a mixture of agricultural, open space, residential, and industrial zones. Steep slopes and access problems have prevented extensive development in the hills northeast of WPNSTA Concord. These areas are currently zoned for agricultural and open space use. Residential sections of the city of Concord border the facility on the south, and several public schools and parks parallel the Navy property. The Concord Pavilion, a public entertainment facility, is constructed near the facility's border.

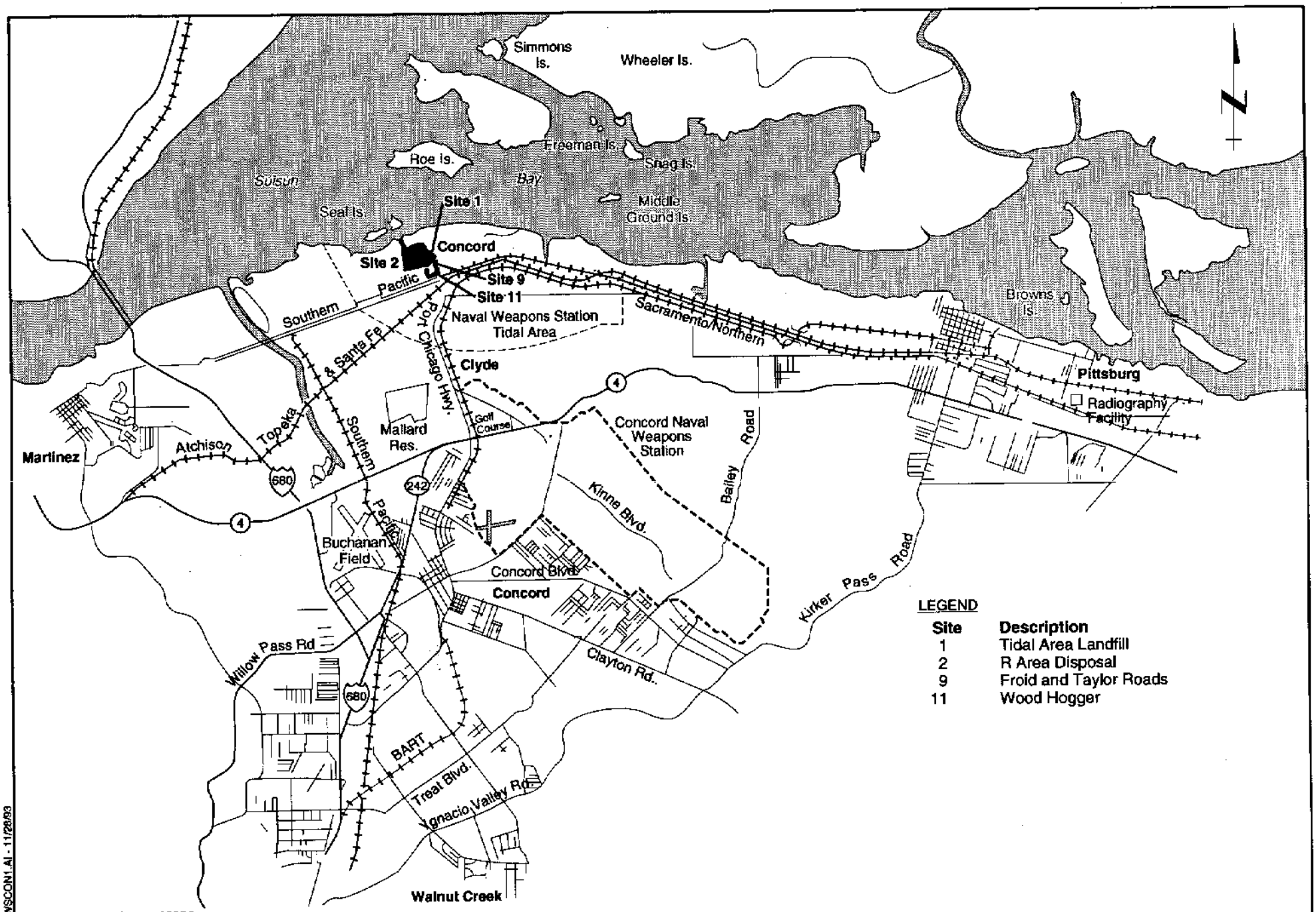

FIGURE 5
TIDAL AREA IR SITES
WPNSTA CONCORD

SOURCE : IT CORP., JUNE 1989

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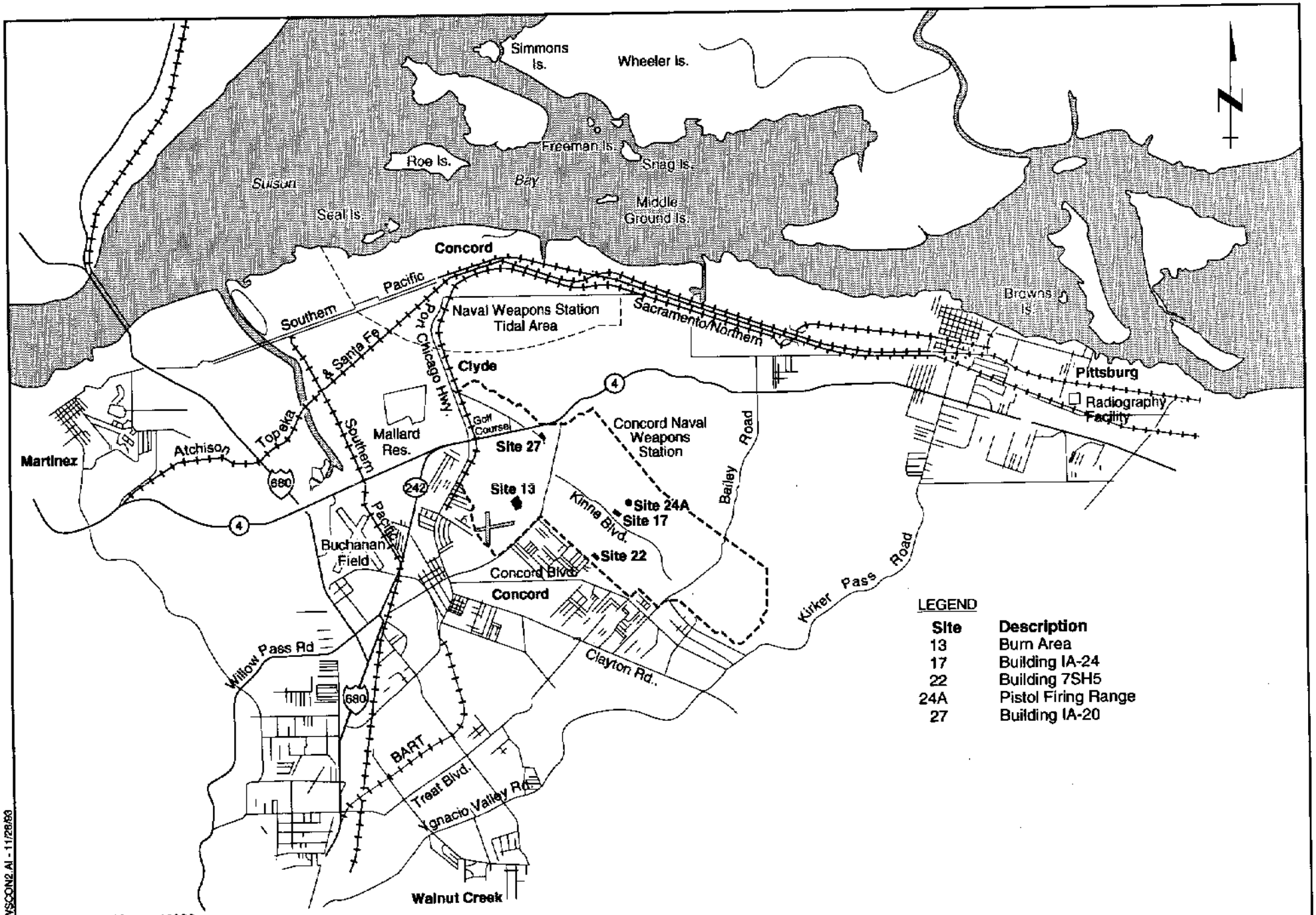

FIGURE 6
INLAND AREA IR SITES
WPNSTA CONCORD

SOURCE : IT CORP., JUNE 1989

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2.0 GENERATION OF IDW AT WPNSTA CONCORD

Field investigation activities at WPNSTA Concord will generate IDW that could potentially pose a risk to human health and the environment. The process of planning for IDW generation, typical sources, and means to estimate the quantities associated with particular investigation activities at WPNSTA Concord are discussed in the sections that follow.

2.1 PRELIMINARY IDW PLANNING

Planning is the first step in a comprehensive IDW management program. In developing work plans for field tasks, investigation methods that minimize waste generation should be preferentially selected. As the field sampling and analysis plans (FSAP) for WPNSTA Concord indicate, Geoprobe borings are being widely used when sampling from shallow subsurface depths. The Geoprobe system is being used to collect samples primarily because its use keeps costs low and the amount of waste associated with each boring is much less than traditional drilling methods.

IDW storage and management options should be considered before field work begins. In particular, identification of the ARARs that may be applicable once the waste has been generated will facilitate selection of the most appropriate waste management strategy. For a particular site, if a remedial alternative is identified and in place, the IDW will be disposed of in a manner consistent with the site remedy.

2.2 SOURCES OF IDW

Currently, IDW is being generated as a by-product of the field investigation activities being performed at WPNSTA Concord. Field investigation activities at WPNSTA Concord include surface and subsurface soil sampling from soil borings, trenching and test pit excavations, well installation and groundwater monitoring, and sludge sampling from septic tanks. The IDW includes soil cuttings, purged groundwater, decontamination fluids, used personal protective equipment (PPE), and disposable sampling equipment (DE). Soil cuttings are generated through Geoprobe borings, installation of monitoring wells, and hollow-stem augered and hand-augered soil borings. Groundwater is purged from monitoring wells in the course of well development and prior to

sampling. Virtually all field investigation activities require equipment decontamination, which yields wastewater. Used PPE is also a waste product resulting from field work. Disposable sampling equipment typically includes single-use samplers such as disposable bailers.

General refuse from field activities, such as packaging materials or broken or cut-off PVC well casing, is managed as nonhazardous material and disposed of accordingly. In general, IDW soil generated at a particular field site is handled in the following manner: all waste is placed in Department of Transportation (DOT) approved 55-gallon drums and labeled immediately following waste generation. Containers are transferred using an appropriate vehicle to a central storage area on a daily basis, and in no case more than 3 days after waste is generated. Liquids generated at field sites are contained in DOT approved 55-gallon drums, transported to the central storage area, and pumped to large-capacity storage tanks before final disposal.

2.3 IDW VOLUME ESTIMATES

The volumes of IDW typically associated with particular field activities are estimated as follows:

- **Geoprobe Borings**. The Geoprobe uses a hydraulically operated probe and specialized sampling tools to obtain soil gas, groundwater and soil samples. If the hydraulic hammer is used to drive a 2-inch-diameter sampler 20 feet, the volume of soil removed would be approximately 0.4 cubic feet (ft^3). Assuming the soil volume expands approximately 30 percent upon removal from the hole, the effective volume of IDW from the boring would be about 0.6 ft^3, or 4 gallons. The number and depth of Geoprobe borings placed at each investigation site to define the extent of contamination will depend on actual site conditions encountered.

- **Drilling**. The volume of soil generated through monitoring well installation and soil boring at WPNSTA Concord will vary depending on variables such as the outside diameter (O.D.) of the boring, soil conditions, etc. If a monitoring well requires a 10-inch O.D. soil boring, this boring will generate about 0.7 ft^3 or 5.3 gallons of soil cuttings per linear foot of borehole. A 10-foot soil boring of this type would generate approximately 7.0 ft^3, or 53 gallons of soil cuttings (approximately one 55-gallon drum). Soil cuttings generated during drilling will typically be placed into 55-gallon containers.

- **Well Development and Groundwater Sampling**. The volume of groundwater evacuated from monitoring wells during development and groundwater sampling is dependent on a number of variables,

including the groundwater elevation in the well, turbidity of the groundwater, well diameter, length of screened interval, and porosity of the material used as filter packing. Purging of the monitoring well development and before groundwater sampling requires the removal of at least three times the volume of standing water in the well. The volume of standing water includes the amount of groundwater contained both within the well screen and the saturated borehole radius, and assumes a 30 percent porosity within the filter pack. For example, a 4-inch well with a 10-inch borehole would contain approximately 1.2 gallons of fluid per foot of saturated zone. If three volumes of water were purged from a well with 15 feet of water, 54 gallons of fluid would be collected. Well development may require purging more than three borehole volumes if physical parameters have not stabilized.

- **Trenching and Subsurface Exploration**. For trenching or other large-volume excavations, it may be necessary to store the wastes in covered roll-off bins or inside a temporary structure with an appropriate bottom liner. If an area has been defined as a corrective action management unit (CAMU), soil that has been removed from trenching excavations may be used to backfill the trenches with the excavated material when sampling is complete.

- **PPE, Disposable Sampling Equipment, and Decontamination Fluid**. The volume of IDW generated as PPE, disposable equipment, and decontamination wastewater during field activities will vary by task and in response to site conditions. In particular, the EPA health and safety work level (Level D, Level C or Level B) will affect IDW volumes. For a crew of four, waste PPE volume has been estimated at one-half of a 55-gallon container per day. The volume of wastewater from decontamination will vary from a few gallons per day for decontamination of monitoring instruments to several hundred gallons per day for large equipment such as drilling rigs.

3.0 CHARACTERIZING IDW

The project manager, with support from IDW coordinators and project chemists, is responsible for ensuring that the IDW has been properly characterized for disposal to an appropriate facility. The process of identifying and characterizing IDW should be started during the planning stages of field activities. Characterizing IDW is a multi-step process that involves determining the origin of the waste and then considering the chemical contaminants and their concentrations in the waste. Typically, the history of the investigation site and the analytical data obtained from the soil and groundwater investigations are used to determine whether the waste of that matrix is hazardous or

Waste and Unit Classifications Used in California

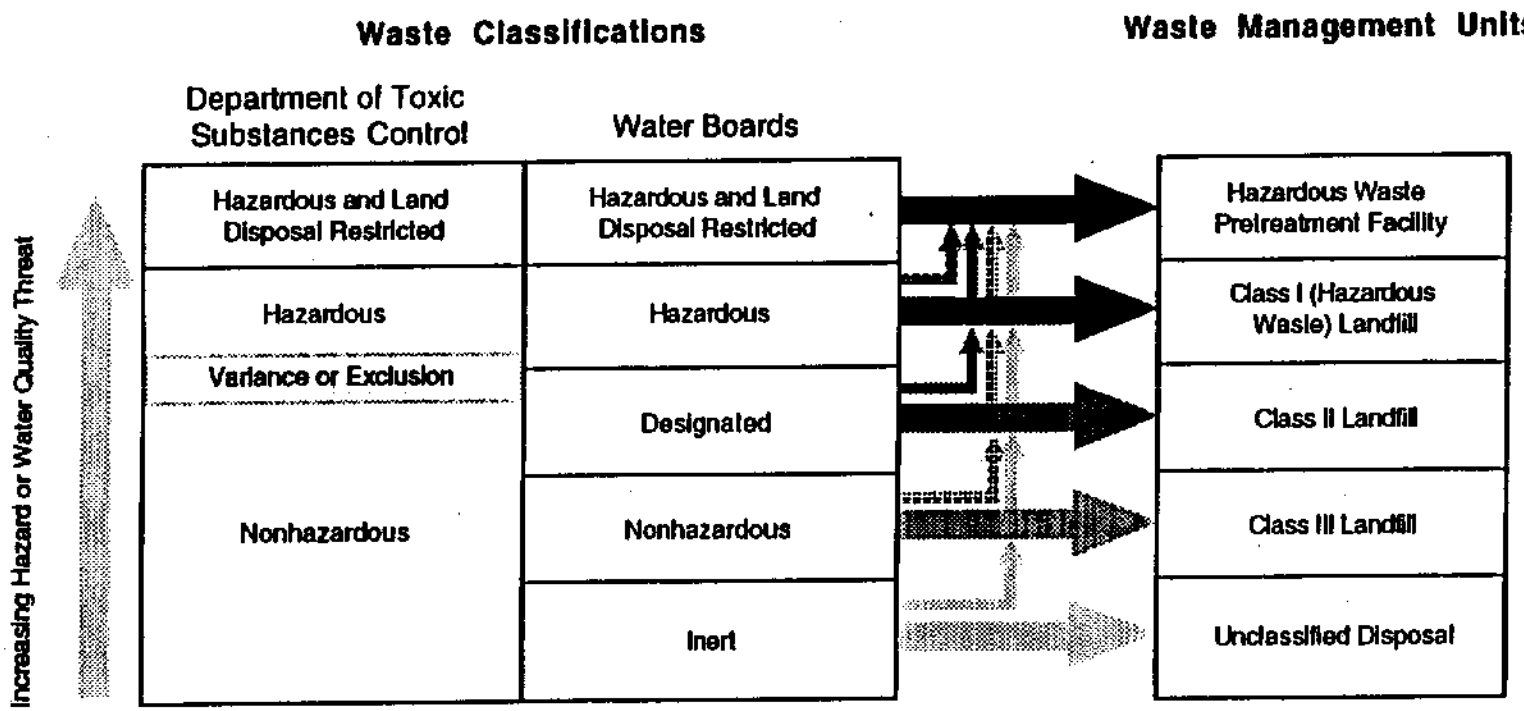


FIGURE 7

WASTE AND UNIT CLASSIFICATIONS USED IN CALIFORNIA

nonhazardous. If necessary, sampling and analysis of the IDW will be conducted to provide additional information and determine specific hazardous waste characteristics. All samples collected for waste analysis should be representative of the waste being sampled. Guidelines for collecting representative samples are contained in Chapter 9 of "Test Methods for Evaluating Solid Waste" (EPA 1986). Appendix B provides a detailed discussion of IDW sampling methods.

In accordance with RCRA, all wastes are classified as either hazardous or nonhazardous. Solid wastes are defined to be hazardous either by being a listed waste (determined by the origin of the waste) or a characteristic waste (determined by physical properties or contaminant concentrations in the waste). A hazardous waste may be characterized as both a listed and a characteristic waste. In California, where land disposal of hazardous waste is regulated by both the Cal/EPA, DTSC and the RWQCB, the definition of hazardous waste also includes a class of non-RCRA-characteristic hazardous wastes. In addition, the State Water Resources Control Board (SWRCB) has established a classification between hazardous and nonhazardous waste called "designated waste." A waste is a designated waste if it "consists of or contains pollutants which, under ambient environmental conditions at the waste management unit, could be released at concentrations in excess of applicable water quality objectives, or which could cause degradation of waters of the state" (23 CCR §2522[a]). Hazardous waste granted a variance pursuant to 22 CCR §66260 may still be classified as a designated waste. Designated wastes may be discharged only at Class I or Class II waste management units (23 CCR §2522[b]).

Therefore, for the purpose of this IDW management plan, nonhazardous wastes are wastes with contaminant concentrations below federal RCRA standards and California criteria for non-RCRA and designated wastes. Figure 7 shows the relationship between classifications for hazardous, nonhazardous, and designated wastes as established by the DTSC and the water boards (RWQCB and SWRCB). The waste characterization process is described in the sections that follow.

3.1 IDENTIFYING LISTED HAZARDOUS WASTE

The project manager is responsible for identifying any potential listed hazardous wastes that may be present at the site by establishing the previous history and use of the site where the materials were generated. There are two major considerations in identifying listed hazardous waste:

- Date of disposal or release. Wastes disposed of prior to November 8, 1980, are not subject to RCRA regulations regarding listed hazardous waste.

- The specific activity that resulted in generation of the waste. Examples of activities that may generate listed wastes include rinsing and management of pesticide containers, electroplating, dry cleaning, and wood treatment.

EPA provides guidance on the level of effort required to establish whether listed waste activities were conducted at investigation sites:

> At many CERCLA sites no information exists on the source of the wastes nor are references available citing the date of disposal. The lead agency should use available site information, manifests, storage records, and vouchers in an effort to ascertain the source of these contaminants. When this documentation is not available, the lead agency may assume that the wastes are not listed RCRA hazardous wastes, unless further analysis or information becomes available which allows the lead agency to determine that the wastes are listed RCRA hazardous wastes (EPA 1988c).

Once it has been established that a listed waste is present at a field activity site, the analytical data from environmental investigations at that site should be reviewed to determine if the IDW actually contains hazardous constituents found in the RCRA listed waste. EPA's "contained-in" policy states that media such as soil and groundwater that contain a listed hazardous waste must be managed as a listed hazardous waste until the media no longer contains appreciable concentrations of that waste. However, no policy exists on how to determine at what concentration the media is no longer considered a listed hazardous waste. This determination is generally made on a case-by-case basis.

When site investigation data are used, a conservative waste characterization is made based on maximum total concentrations of contaminants measured in the environmental samples. This information, including any duplicate sample results, will be correlated to the drums containing IDW from that location. Samples collected directly from IDW storage containers are composited according to generation site. Analytical results are then applied to all containers from that generation site.

Additional considerations for effectively managing listed IDW are whether the waste may also be hazardous for characteristics (as described in Section 3.2) and whether the cost of additional analytical work for evaluating characteristics will offset the cost of managing the waste as a listed hazardous waste.

3.2 IDENTIFYING CHARACTERISTIC HAZARDOUS WASTE

Characteristic hazardous wastes are identified based on general physical and chemical properties. For a waste to be considered a characteristic hazardous waste under federal and state law, it must exhibit one or more of the following properties, as defined in 40 CFR §261.21 through §261.24 and 22 CCR §66261.21 through §66261.24:

- Ignitability
- Corrosivity
- Reactivity
- Toxicity

California has additional characteristic criteria that are given in 22 CCR §66261.22 and §66261.24. Waste that exhibits a characteristic only for California criteria is known as a non-RCRA hazardous waste. IDW generated by the field investigation activities at WPNSTA Concord typically consists of soil and water with low concentrations of contaminants that are insufficient to cause the media to exhibit the ignitability, corrosivity, or reactivity characteristics.

The characteristic for toxicity in a soil or sludge is determined through evaluation of the leaching potential of specific heavy metal, volatile organic, semivolatile, and pesticide and herbicide constituents in the material. The toxicity characteristic leaching procedure (TCLP) is a laboratory procedure used to simulate the way hazardous constituents could leach from a waste by subjecting that waste to an acidic buffer. TCLP results are compared with regulatory limits set by EPA to protect human health and the environment. If total constituent concentration analyses were performed on a soil sample but TCLP analyses were not, the EPA rule of thumb is to multiply the federal regulatory limit by 20 for comparison with the total values. The factor of 20 is a conservative estimate of the maximum potential leaching that could occur. For liquid wastes, TCLP is not necessary; soluble constituent concentrations can be compared directly with the regulatory limits.

EPA regulations provide that if a total analysis demonstrates individual constituents are not present in the waste, or that they are present at such low concentrations that the appropriate regulatory levels

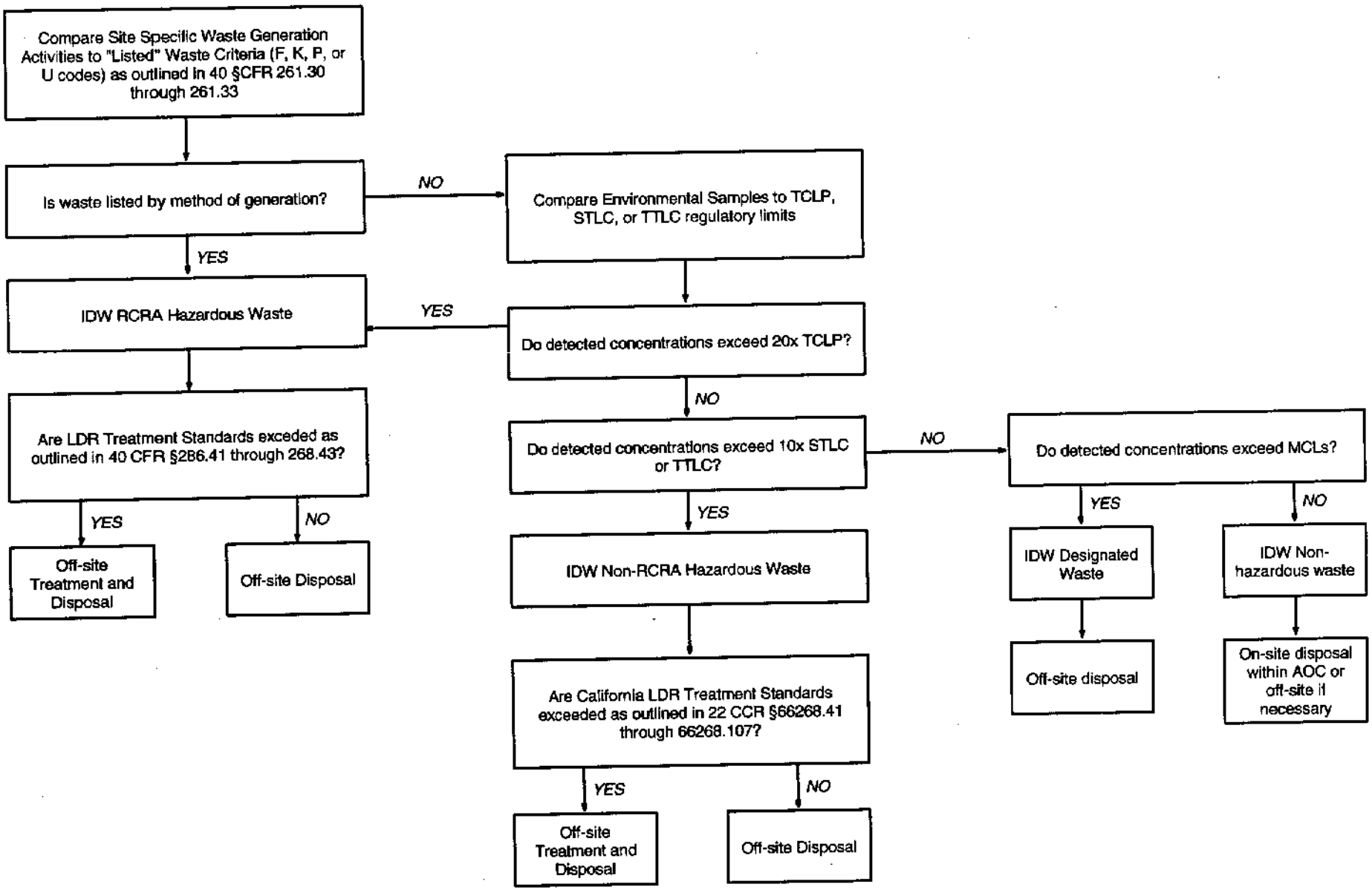
could not possibly be exceeded, the TCLP need not be run. Refer to EPA Method 1311 documentation (EPA 1986). If TCLP analyses are performed and constituent concentrations are above federal regulatory limits, further testing for comparison with state criteria is not required.

California's toxicity characteristic standards for hazardous waste are defined for both total constituent concentrations in the waste and potential leachate concentrations, as simulated by the Wet Extraction Test (WET). The WET is similar to TCLP, except that a stronger buffer is employed and the sample is not as dilute during analysis. The state toxicity standards are known as soluble threshold limit concentrations (STLC) and total threshold limit concentrations (TTLC). If results of the WET and/or total concentration waste analyses exceed STLCs or TTLCs, respectively, the waste is non-RCRA hazardous. For comparison with analyses of environmental samples, 10 times the STLC value is used instead of 20 (the dilution ratio for an STLC analysis is less than for a TCLP). California regulations provide that if total concentrations in the waste are below STLC values, the WET need not be run (22 CCR Chapter 11, Appendix II).

To determine whether a waste is a designated waste under California law, the "Designated Level Methodology" should be employed (Marshack 1989). Using this approach, the waste discharge will be evaluated for potential to degrade waters of the state at a particular disposal site.

The process of evaluating IDW generated at WPNSTA Concord for the toxicity criteria will vary on a case-by-case basis, depending on the availability of analytical data from environmental investigations. Figure 8 shows the IDW soil characterization process. Initial screening of the waste using existing analytical data may eliminate the need for some or all of the toxicity characteristic analyses. As a conservative starting point, most IDW will be assumed to be non-RCRA hazardous. If there is a significant possibility that the waste is nonhazardous, all required testing, including the WET, will be conducted to demonstrate the absence of hazardous characteristics. However, since PRC will be managing off-site IDW primarily through a waste subcontractor using only hazardous waste facilities, the cost and benefit of complete waste characterization must be weighed against the cost and benefit of immediate disposal as hazardous waste without further analysis or delay. For each discrete IDW wastestream, the IDW coordinator will evaluate all existing information and develop an appropriate testing strategy.

FIGURE 8
IDW SOIL CHARACTERIZATION PROCESS



3.3 COMPLETING A WASTE PROFILE

IDW is characterized through knowledge of the waste, review of environmental data that correlate with the waste, and/or sampling and analysis of the waste itself. This characterization is used to prepare a waste profile that summarizes all the information available on the IDW. A waste profile must be completed for all hazardous IDW shipped to off-site facilities. Appendix C contains the waste profile form and completion instructions.

Completion of the profile ensures that PRC has all necessary information to properly manage the waste. Each blank on the profile form should be filled in, even if the appropriate response is "not applicable" or a zero value. The profile sections cover these subjects:

- Generator Identification
- Waste Description
- Transportation Information
- Physical Properties
- Toxicity Characteristics
- Total Metals
- Chemical Composition
- Additional Information and Comments
- Generator Certification

In most cases, analytical data obtained from the site investigation will be used to characterize the IDW from the same investigation task. This process allows the IDW to be characterized more quickly and minimizes the number of IDW analyses by allowing preliminary identification of potential hazardous waste categories that may apply.

Once the waste profile has been completed and reviewed by a qualified technical manager, it should be signed by the Navy installation representative. The waste profile will then be used by the waste

management subcontractor to determine the appropriate treatment and disposal actions.

If a waste stream of consistent character is generated continuously over time, a single profile may be used to describe multiple shipments of that waste. For example, if soil cuttings are being generated during investigation of a particular site, one waste profile may be completed, approved by the waste management facility, and used repeatedly to describe soil cuttings shipped from that site at different times during the investigation.

3.4 MANAGEMENT OF DISPOSABLE PPE AND SAMPLING EQUIPMENT

Used PPE and disposable sampling equipment should be managed according to the type of activity performed and level of contamination encountered. In general, most PPE and disposable equipment should be managed as nonhazardous solid waste, because little contact with the environmental media occurs and low concentrations of contaminants are involved. The IDW should be placed in plastic bags and transferred to an on-site industrial dumpster, where it will be picked up by a garbage company and taken off site for disposal in a municipal landfill.

PPE and disposable equipment that is grossly contaminated (for example, coated with oil) should be placed in 55-gallon drums, accurately labeled as discussed in Section 4.3, and stored in an IDW accumulation area. This PPE and sampling equipment should be managed as hazardous waste unless results of site investigation analyses show the contaminant is not present at hazardous concentrations or was incorrectly identified as hazardous initially.

3.5 MANAGEMENT OF EMPTY DRUMS

Empty used drums may be temporarily stored on site if, for example, IDW is consolidated on site to minimize the number of containers shipped off site. Containers left empty after IDW is removed for treatment or disposal at on-site locations is another example. Containers that have held previously hazardous waste may be exempt from federal and state hazardous materials management regulations (40 CFR 261.7 and 22 CCR 66261.7) if they are emptied to the maximum extent practicable prior to further management. For containers of 110-gallon capacities or less, federal regulations define empty to mean that no more than 2.5 centimeters of residue remain on the bottom of the container, and the

residue constitutes less than 3 percent by weight of the total container capacity. California regulations do not provide quantitative criteria for empty drums, but state that no hazardous material can be poured or drained or feasibly removed by physical methods from an empty container. If the container was used for an acutely hazardous waste, both federal and state regulations specify that it must be decontaminated via triple-rinsing with an appropriate solvent prior to further management.

California law also stipulates how the empty containers must be managed for the exemption from hazardous materials regulations to apply. Empty containers must be managed in one of the following ways:

- Disposed of at an approved solid waste management facility, if 5-gallon capacity or less.
- Reclaimed for scrap value on site or shipped to a reclaimer for scrap.
- Reconditioned or remanufactured on site for subsequent reuse, or shipped to a reconditioner or remanufacturer.
- Shipped to a supplier or another intermediate collection location for accumulation prior to managing by one of the above three methods.

Off-site disposal of empty drums in some instances will be accomplished through the waste management subcontract, as explained in Section 5.2.

4.0 STORAGE OF IDW

Specific storage requirements for IDW depend on a number of factors, including the location of storage areas, the length of time the waste will be stored, the type of storage unit, the type of waste, and the regulatory status of the storage unit. Federal and state regulations allow storage of hazardous waste in three types of management unit:

- A temporary unit (TU)
- A unit allowing accumulation for up to 90 days from the date of generation
- A unit that meets full permitted facility standards

The location of these storage units may be within the area of contamination (AOC), within a designated CAMU, or at another location within the installation. More than one type of storage unit may be used, as necessary. A CAMU is a land-based disposal unit that requires extensive siting and operation requirements. At WPNSTA Concord, a CAMU was considered inappropriate for management of the relatively small volumes of IDW generated because of extensive siting and operational requirements.

TUs as defined under RCRA, are often used at many sites to provide flexibility and longer storage times and will be used under certain circumstances, such as for containerizing nonhazardous IDW groundwater.

Typically, IDW is stored in a manner that meets the requirements for hazardous waste storage until analytical data from environmental investigations or other information show that the waste is not hazardous. Storage of nonhazardous waste and designated waste in drums and tanks is not regulated by EPA or DTSC, so there are no time limits for storage or storage area specifications for these materials. Solid IDW is segregated by site according to major contaminants and compatibility. Liquid IDW is generally contained in drums at the site, transported to the central storage area, and consolidated into a large storage tank, which is tested prior to discharge. Some heavily contaminated liquid IDW may be segregated by site into drums for management at an approved off-site facility. This approach does not impact the data requirements for waste characterization as discussed in Section 3.2. Centralized storage areas that meet the more stringent requirements for hazardous waste will typically be provided for storage of both hazardous and nonhazardous IDW at WPNSTA Concord, as described below.

4.1 WPNSTA CONCORD STORAGE AREA DESCRIPTION

Storage of IDW generated during field investigation activities will be determined by Navy installation requirements; type, concentration, and volume of contaminants; risk to human health and the environment; site conditions; degree of public access; and remediation plans. IDW will be stored at central waste storage areas designated for Inland Area or Tidal Area sites, or it will be stored at the area of contamination (AOC). The EPA has defined an AOC as an area "delineated by the areal extent or boundary of contiguous contamination. Such contamination must be continuous, but may

contain varying types and concentrations of hazardous substances."

The central waste storage area at WPNSTA Concord for the Inland Area field investigation sites will be located along Kinne Boulevard in a paved parking lot, east of Building IA-27 (SWMU 14). The central storage area for the Inland sites is approximately 30 by 40 feet and is surrounded by a secured fence. The area is bordered on the east by Kinne Boulevard, west by an earthen berm, an open field on the north, and a 25-foot-wide paved access entrance to the south. In addition, a decontamination pad containing two 2,560-gallon, double-walled polyethylene tanks will be located within the fenced area. See Figure 9 for a map of the IDW waste storage area.

The central storage area at WPNSTA Concord for the Tidal Area field investigation sites will be in the Tidal Area Landfill. The storage area is approximately 20 by 20 feet. and will be underlain by a polyethylene liner that is bermed on the sides. The entrance into the Tidal Landfill area will be fenced.

PRC will operate the storage areas using standard practices for storage of hazardous waste, as codified in 22 CCR Chapter 15 and 40 CFR Part 265. General operating requirements for the storage area include personnel training and emergency preparedness. Personnel managing containers and tanks will receive initial and annual training related to operation and maintenance of the central waste storage unit. Appendix D is a summary of the training program. A contingency plan will be developed and emergency equipment provided for each storage area. An outline of information covered in the contingency plan is included in Appendix E. Appendix F is the storage area inspection form.

The central waste storage areas were selected in consideration of factors specified in 40 CFR Section 264.553 and 22 CCR Section 66254.553:

- **Length of time the unit will be in operation.** Investigations at WPNSTA Concord are expected to be ongoing for several years, and the storage areas will be maintained to function on a long-term basis. Nonhazardous waste generated during field activities will be stored for a maximum of 1 year from the generation date before final management. Typically, hazardous waste will be removed from the site within 90 days of generation.

- **Volumes of wastes to be managed.** The volume of IDW generated during field

activities will vary depending on the environmental conditions encountered. The selected storage areas have sufficient capacity for the continuing investigation, based on current IDW generation rates.

- **Waste characteristics**. The physical and chemical characteristics of the wastes to be managed in the unit are compatible with the unit design.

- **Potential for releases from the unit**. Containment features of the unit will minimize the potential for contaminant migration from the unit in the event of a release.

- **Site conditions**. Hydrogeologic conditions and other environmental characteristics (such as the location of the 100-year floodplain) have been evaluated and are not expected to exacerbate migration of a potential release from the facility.

- **Risk assessment**. The potential for exposure of humans and environmental receptors if releases were to occur from the units is considered relatively low, due to the remote location of the site.

4.1.1 Container Storage Area Specifications

All container storage activities at WPNSTA Concord will comply with the following regulatory requirements and installation policies:

- Containers will be in good condition and compatible with the waste placed inside them.
- Containers will be kept closed, except when waste is being added or removed from them, and the containers will be managed in such a way as to prevent rupture or leakage.
- Containers of hazardous waste will be marked as hazardous waste and with the accumulation start date, composition and physical state of the waste, hazardous properties of the waste, and the name and address of the generator.
- Inspections of the container storage unit will be conducted and recorded at least weekly.
- The container storage unit will have an impermeable base.
- All drums will be stored on pallets.

Figure 9

This detailed station map has been deleted from the Internet-accessible version of this document as per Department of the Navy Internet security regulations.

- Liquids from runon, precipitation, or spills that accrue in the container storage area will be collected promptly and managed appropriately.

4.1.2 Tank Specifications

Tanks will be used primarily to store groundwater from well purging and rinse water from equipment decontamination. All tanks used for wastewater storage will comply with requirements for temporary storage units to provide maximum protectiveness.

Bulk or portable tanks used for storage of IDW will meet the following requirements:

- Each tank will be marked with the accumulation start date, composition date, and physical state of the waste, any hazardous properties of the waste, and the name and address of the generator.
- The foundation, structural support, seams, and connections will be adequately designed to provide sufficient structural strength and compatibility with the waste to be stored.
- Each tank will provide sufficient corrosion protection to prevent any impact to the structural integrity of the tank from wastewater stored within the tank and external factors.
- In accordance with federal and state requirements, any tank storing hazardous waste, as a precautionary and conservative approach, will meet the requirements of a secondary containment system, and will be set on a level, impermeable surface.
- Each individual tank will be double-wall constructed and coated with an impermeable polyethylene lining. This lining will be compatible with nonhazardous purged groundwater and/or decontamination fluid. Each tank will be equipped with a device designed to prevent the infiltration of precipitation.
- Each tank will be placed on a level, concrete surface to prevent any possible migration of wastes or accumulated liquid out of the tank to the soil, groundwater, or surface water at any time during the use of the tank.
- Inspection of each tank will be conducted on a weekly basis when the tank is in use. Inspections will include examination of the spill-control equipment, tank structural components, construction materials and secondary containment

units, and tank liquid level as described in Section 4.2.

- If any IDW other than groundwater or decontamination water will be stored in any tank, a compatibility assessment will be performed to ensure that the waste is compatible with water previously stored in the tank and that adverse reactions will not occur.

4.2 INSPECTIONS AND STORAGE INVENTORY LOG

The storage area will be inspected weekly to confirm adequate tank operations and to evaluate container storage and safety equipment condition. A standard inspection form which shows the items to be inspected and allows notation of any problem areas will be used at WPNSTA Concord. Appendix F is a copy of the inspection form. Container storage inspections will cover the following areas:

- Condition of containers
- Adequacy and completeness of labels
- Evidence of leaks and spills
- Adequacy of aisle space
- Condition of emergency equipment
- Condition of operating equipment

Tank inspections will cover the following areas:

- Overfill and spill control, to confirm water levels
- Tank shell, to detect corrosion or releases of waste
- Secondary containment structures and surrounding areas, to detect erosion or releases of waste
- Piping and ancillary equipment, to detect erosion or releases of waste

In addition to maintaining records of regular inspections, an inventory of IDW in storage will be maintained to track the following:

- Number of containers/tanks currently in storage

- The container/tank identification number(s)
- Current storage and holding capacity of each tank
- Date(s) the IDW in each container/tank was generated
- Date of IDW analysis and resultant characterization
- Date any containers were consolidated, repackaged, or overpacked
- Dates, manifest numbers, and destination facilities for IDW that is shipped to off-site management facilities
- Dates and disposition information for IDW that is disposed of on site

Inventory information will be updated at least weekly on a database, and a physical check of the inventory against the actual containers in storage will be conducted during storage area inspections.

4.3 CONTAINER LABELING

Waste labeling and recordkeeping requirements include initial labeling of containers with, "ANALYTICAL RESULTS ARE PENDING ON THE CONTENTS IN THIS CONTAINER." The completed label should include the following information: waste generation date, IDW type, source site number, and boring or monitoring well number, if applicable. A sample drum label used for identifying containerized IDW pending characterization is shown on Figure 10.

All drum labeling information should be entered into the field logbook. After the contents of the drums are characterized, as described in Section 3.0, the labels should be replaced to reflect the appropriate classification of wastes within the drums and the logbook should be updated. Drums containing hazardous IDW should be labeled HAZARDOUS WASTE (Figure 11), and drums containing nonhazardous IDW should be labeled "NONHAZARDOUS WASTE" (Figure 12). Both labels should include the waste generation date, IDW type, source site number, and boring or monitoring well number, if applicable.

Drum labels should be placed on the side of the drum, not on the lid, to reduce breakdown of the label by environmental conditions and to prevent the possibility of interchanging labels if lids are

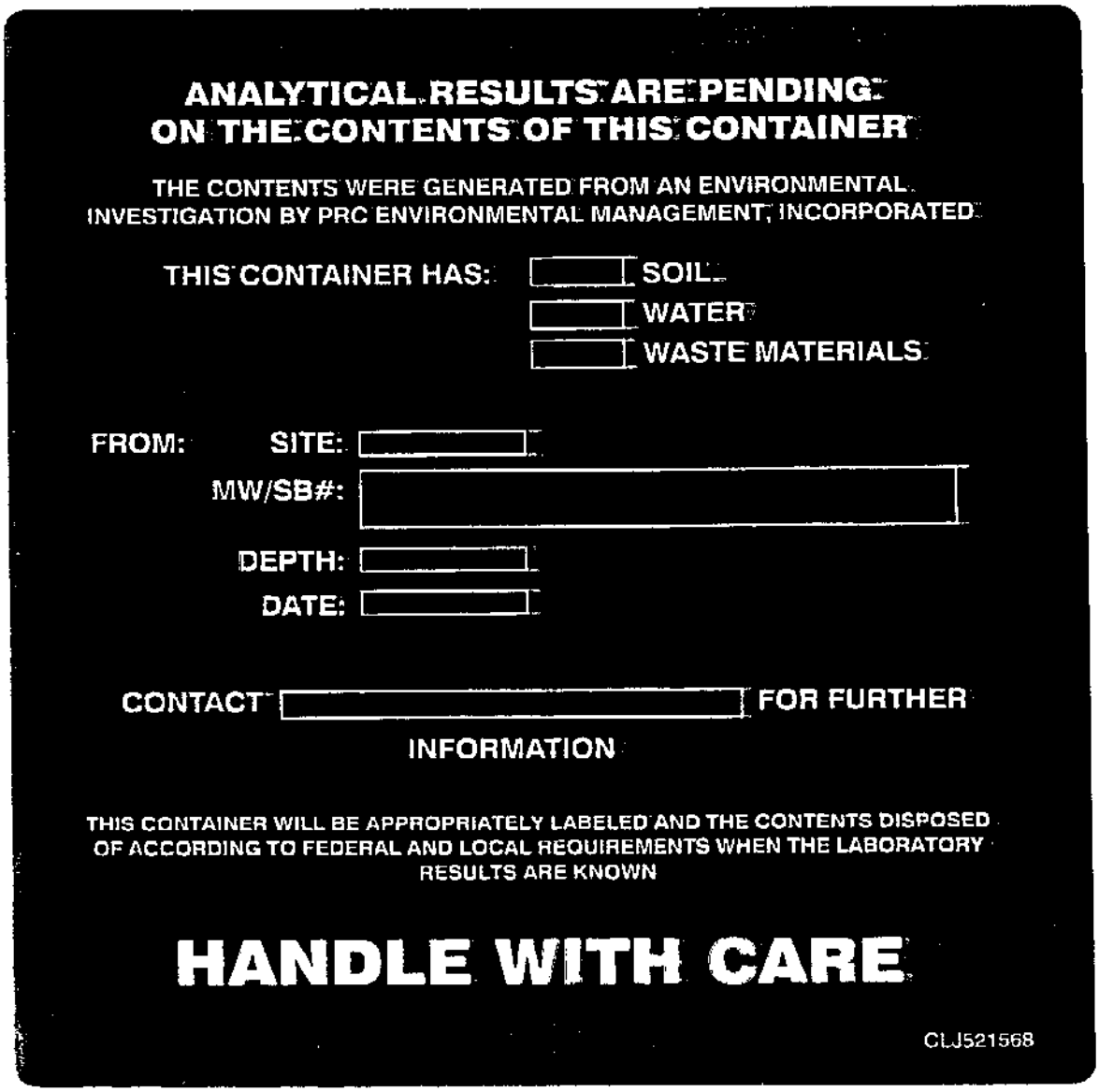


Figure 10 ANALYTICAL RESULTS PENDING LABEL

HAZARDOUS WASTE

STATE AND FEDERAL LAWS PROHIBIT IMPROPER DISPOSAL

IF FOUND, CONTACT THE NEAREST POLICE OR PUBLIC SAFETY AUTHORITY,
THE U.S. ENVIRONMENTAL PROTECTION AGENCY OR THE
CALIFRNIA DEPARTMENT OF HEALTH SERVICES

GENERATOR INFORMATION

NAME _____

ADDRESS _____ **PHONE** _____

CITY, STATE, ZIP _____

EPA ID NO. _____ **CA WASTE NO.** _____ **ACCMULATION START DATE** _____

CONTENTS, COMPOSITION _____

PHYSICAL STATE: ☐ SOLID ☐ LIQUID

HAZARDOUS PROPERTIES: ☐ FLAMMABLE ☐ TOXIC ☐ CORROSIVE ☐ REACTIVE ☐ OTHER

[_____]

D.O.T. PROPER SHIPPING NAME AND UN OR NA NO. WITH PREFIX

HANDLE WITH CARE

FIGURE 11
NAVAL WEAPONS STATION CONCORD
HAZARDOUS WASTE CONTAINER LABEL

IMU (SF)004-01291 DRUMLBL1.DRW - 11/26/93

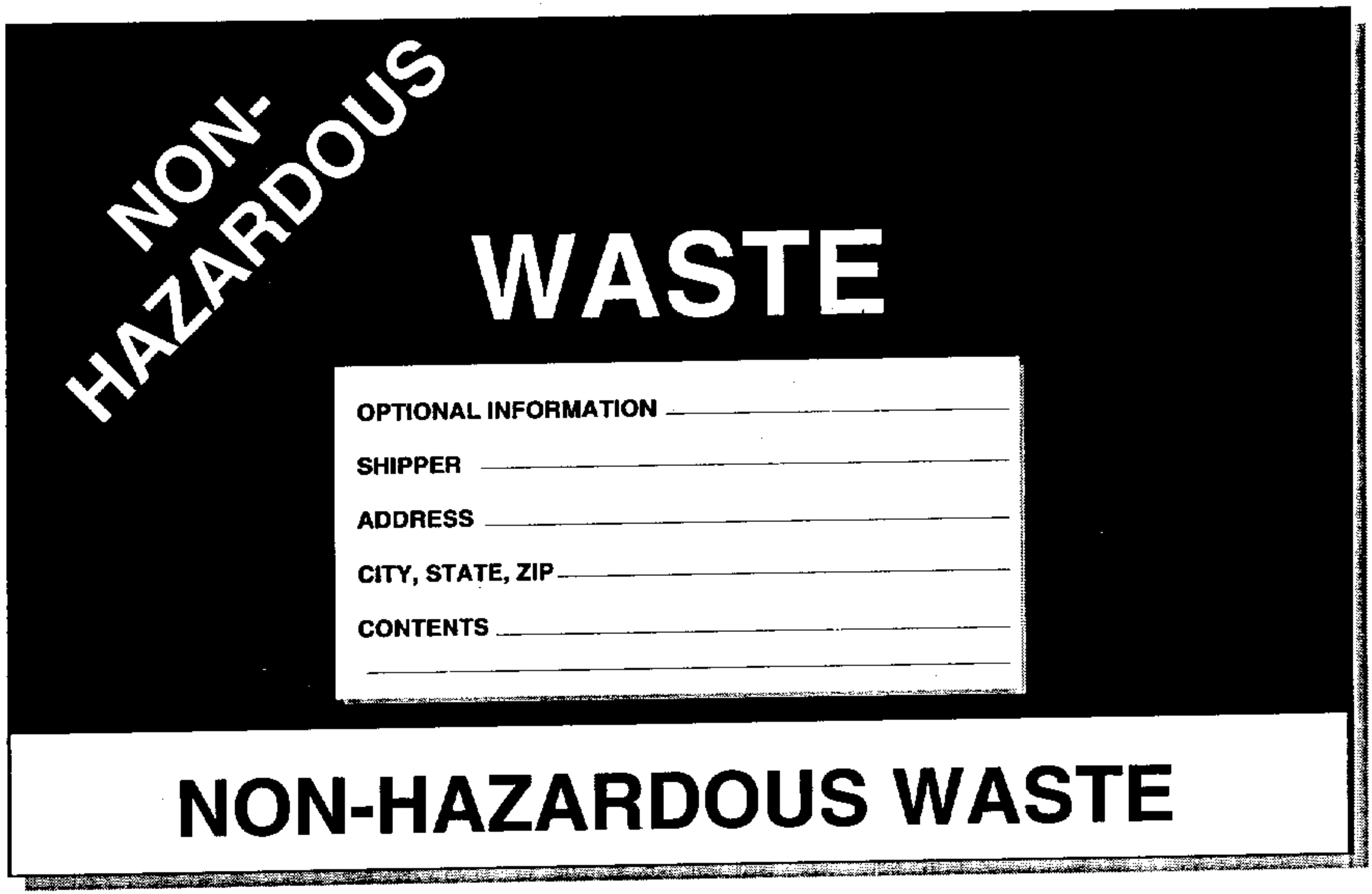


FIGURE 12
NAVAL WEAPONS STATION CONCORD

NONHAZARDOUS WASTE CONTAINER LABEL

reused. In addition to labels, the drums should be marked with a unique identifier in case the label is lost or removed. The identifier should include the site number and a unique identification number and should be entered into the storage inventory log.

4.4 REPACKAGING AND OVERPACKING CONTAINERS

Repackaging or overpacking of containers may become necessary if a container becomes damaged or weathered and is no longer suitable for use. Repackaging involves transferring the waste from the damaged drum into a new container, whereas overpacking involves placing the damaged drum into a larger container. When repackaging or overpacking is performed, the new container must be labeled in an identical manner, and a note should be made in the storage inventory log of the change in packaging or drum size.

5.0 MANAGING IDW AT OFF-SITE FACILITIES

Once the waste characterization process has been completed, treatment and disposal options may be considered that provide for appropriate management of the waste. The off-site waste management options addressed in this section include management of aqueous liquids at the wastewater treatment plant and waste management at off-site facilities, as facilitated by the Navy's contractor and waste management subcontract.

5.1 MANAGEMENT OF LIQUID IDW AT DELTA DIABLO SANITATION DISTRICT

IDW liquids such as groundwater, surface water, and decontamination fluids are often suitable for discharge to the Delta Diablo Sanitation District (DDSD) publicly owned treatment works (POTW). Based on the completed waste profile, an evaluation may be made as to whether the IDW meets the acceptance criteria for the DDSD POTW, as specified in the POTW's discharge permit. The acceptance criteria determines whether wastewater can be accepted by the POTW, or whether the wastewater must be transported to an alternate disposal facility. Table 2 identifies the DDSD Wastewater Discharge Limits. Wastewater is sampled and the results submitted to DDSD for approval to discharge. Approval for discharge of the IDW to the wastewater treatment plant will be obtained from the designated installation representative and plant personnel. A certificate of disposal

or other acknowledgment of receipt should be obtained from the POTW after the IDW has been accepted, and this document should be filed along with the waste profile and a copy of the Land Disposal Restriction (LDR) notification.

If the wastewater is not suitable for discharge to the POTW, it will be managed as hazardous waste and disposed of off site by the Navy waste management subcontractor. The Navy waste management subcontractor will transport the unacceptable wastewater using a tanker truck to an approved off-site facility.

5.2 OFF-SITE MANAGEMENT OF HAZARDOUS AND NONHAZARDOUS IDW SOIL

If the IDW soil is nonhazardous, it will be disposed of at an approved off-site disposal facility and characterized according to the criteria of the receiving facility. PRC has established a subcontract with a waste management firm to provide waste management services for IDW generated at all Navy installations under investigation through the CLEAN program. The contract will facilitate pickup, transport, treatment, storage, and disposal of waste on a continuing basis. With the subcontract, IDW characterization and management practices will be more consistent, and response time will improve because individual contracts will not be negotiated for each action. PRC may also exercise greater control over the off-site management conditions through this agreement. The subcontract is supported by a subcontracts manager and a technical manager, who will provide centralized administrative and technical expertise on waste management issues for all Navy CLEAN installations.

5.2.1 Requesting IDW Management Services

The installation IDW coordinator or project manager will decide when sufficient quantities of IDW have accumulated to warrant shipment off site, while ensuring applicable storage capacity and time limits are not exceeded. A detailed delivery order will be completed by the project manager or IDW coordinator, and a copy will be forwarded to the Navy installation point of contact. After review by the technical manager, the subcontracts manager will issue the delivery order to the waste management subcontractor.

TABLE 2

DELTA DIABLO SANITARY DISTRICT

WASTEWATER DISCHARGE LIMITS

Toxicants	Maximum Concentration Allowable (mg/L)
Antimony	1.0
Arsenic	0.53
Barium	0.5
Beryllium	0.25
Cadmium	0.59
Chlorinated Hydrocarbons *	1.67
Chromium, total	1.60
Cobalt	0.50
Copper	0.50
Cresols	1.0
Cyanides	0.17
Iron	0.15
Lead	0.32
Mercury	0.0003
Nickel	0.50
Phenols	5.5
Selenium	2.0
Silver	0.15
Zinc	1.6

TABLE 2

DELTA DIABLO SANITARY DISTRICT

WASTEWATER DISCHARGE LIMITS (Continued)

Toxicants	Maximum Concentration Allowable (mg/L)
Ammonium as N	200
Total Phosphorous as P	100
Sodium	900
Calcium	600
Magnesium	230
Potassium	100
Chloride	2,000
Sulfate	1,000

Notes:

mg/L = Milligrams per Liter

* = Includes, but not limited to pesticides, herbicides, and algaecides.

5.2.2 Shipment of IDW to Off-Site Facilities

When the waste management subcontractor receives a delivery order, the subcontractor will be responsible for scheduling the shipment with the project manager or installation IDW coordinator. The subcontractor will ensure that waste profiles are approved by receiving facilities, all shipment documents are prepared, the shipment is transported to the receiving facility, and proper treatment and disposal have been accomplished. The shipping documents that must be prepared by the subcontractor, depending on the nature of the shipment, are described below:

- **Uniform Hazardous Waste Manifest**. This document is used for cradle-to-grave tracking of waste regulated as RCRA hazardous under the federal regulations or non-RCRA hazardous under California regulations. It must be signed by the generator (the Navy installation point of contact) and the initial transporter before the shipment leaves the installation. The generator's copy of the manifest is retained by the Navy.

- **Nonhazardous Waste Manifest**. This document is used to track all shipments of nonhazardous IDW, including designated waste. The nonhazardous waste manifest may also be used for nonhazardous waste shipped to facilities outside California. The nonhazardous waste manifest is signed by the generator and the initial transporter before the shipment leaves the installation, and the generator retains a copy.

- **Land Disposal Restriction (LDR) Notification**. A notification form must be prepared for all RCRA hazardous waste that is restricted from land disposal under 40 CFR Part 268 and for RCRA hazardous and non-RCRA hazardous waste that is restricted from land disposal 22 CCR Chapter 18. This notification is signed by the generator of the waste, and it tells the receiving facility what standards must be met for the waste before it can be placed in a hazardous waste landfill. A copy of the LDR notification is kept by the generator, and the original is attached to the manifest. A shipment of waste may have more than one LDR notification that contains standards for several different waste streams.

- **Land Disposal Restriction Certification**. If a restricted waste is shipped directly to a hazardous waste landfill without pretreatment because it already meets the applicable treatment standards, a LDR certification is required. The generator must certify that all the applicable standards have been met, and waste analysis to support that certification must be attached. A copy of the LDR certification is kept by the generator, and the original is attached to the manifest.

6.0 MANAGING IDW ON SITE

If applicable state and federal regulations are met, IDW may be managed on site. In California, on-site waste management is regulated under Titles 22 and 23 CCR. This section outlines two options for on-site management of IDW in California:

- Disposal of nonhazardous waste solids through the designated level methodology.
- Management of hazardous and nonhazardous waste through use as test material for treatability studies.

6.1 DESIGNATED LEVEL METHODOLOGY

California's designated level methodology contains procedures for land disposal of nonhazardous waste outside of Class II and Class III landfills. The regulations are applicable on a site-specific basis, in consideration of site conditions as well as contaminant concentrations.

The first step in applying the designated level methodology is determining whether the IDW meets the criteria for a designated waste. First, the total contaminant concentrations in the waste should be compared to maximum contaminant levels (MCL) and Water Quality Objectives in California. If the contaminant concentrations are below MCLs, the IDW is not considered designated waste. Second, the geology and hydrogeology of the site must be evaluated to determine whether the site is underlain by any potential sources of drinking water. If there are no potential drinking water sources, the IDW may be excluded from the designated waste definition.

Therefore, IDW will be considered a designated waste when contaminant levels exceed MCLs and Water Quality Objectives and the proposed disposal site is in communication with potential drinking water sources. If the IDW does not meet the designated waste criteria, it is nonhazardous and should be managed accordingly. If the IDW meets the designated waste criteria, the Designated Level Methodology is used to calculate an environmental attenuation factor based on the actual contaminant levels and site-specific conditions, including the geology of the proposed disposal site.

To find the environmental attentuation factor, a model is developed which, given geological variables such as distance to groundwater or surface water and soil permeability, allows prediction of the amount of contaminant attenuation that would occur as the waste migrates toward a potential drinking water source. If the environmental attenuation factor derived from Marshack's Designated Waste Methodology shows that the contaminant concentrations in the IDW soil pose no threat to Water Quality Objectives based on a comparison to below MCLs or Water Quality Objectives, then disposal of the IDW at the site may be approved. The environmental attenuation factor may be affected by engineering controls placed at the disposal site, such as concrete pads or synthetic liners, and these engineering controls may be factored into the designated methodology model.

If on-site disposal using the designated-level methodology is considered at WPNSTA Concord, PRC and EFA WEST will work closely with regulatory agencies to develop a satisfactory model and obtain approval for the disposal, if it is found to be appropriate. Other ARARs that should be considered with respect to this action will also be identified.

6.2 USE OF IDW IN PILOT-SCALE TREATABILITY STUDIES

If IDW is used beneficially on site for pilot-scale treatability studies, it will be exempt from federal hazardous waste regulations, as long as notification is given to EPA and certain recordkeeping and management standards are met (40 CFR 261.4[e] and [f]). However, California does not provide an exemption for these samples, and treatability studies conducted in California must meet all requirements for management of hazardous waste.

Prior to conducting a treatability study, any IDW intended for use in the study should be stored in accordance with applicable regulations, in properly labeled and marked containers. In planning for treatability studies, the Navy will work closely with regulatory agencies. Treatability study design will also include ARAR research and identification.

REFERENCES

Marshack, J. 1989. "The Designated Level Methodology for Waste Classification and Cleanup Level Determination." Revised. Published by the California Regional Water Quality Control Board, Central Valley Region. June.

U.S. Environmental Protection Agency (EPA). 1986. "Test Methods for Evaluating Solid Waste." Third Edition SW-846. Prepared by the Office of Solid Waste and Emergency Response.

EPA. 1988a. "Guidance for Conducting Remedial Investigations and Feasibility Studies under CERCLA, Interim Final." Prepared by the Office of Emergency and Remedial Response. October.

EPA. 1988b. "CERCLA Compliance with Other Laws Manual, Draft Guidance." Prepared by the Office of Emergency and Remedial Response. August.

EPA. 1988c. "National Oil and Hazardous Substances Pollution Contingency Plan: Proposed Rule." 53 CFR 51444. Prepared by the Office of Emergency and Remedial Response. December 21.

EPA. 1991. "Management of Investigation-Derived Wastes During Site Inspections." Prepared by the Office of Emergency and Remedial Response, Publication 9345.3-02FS. May.

APPENDIX A

DEFINITION AND IDENTIFICATION OF ARARs

APPENDIX A
DEFINITION AND IDENTIFICATION OF ARAR'S

1.0 ARARs DEFINED

The National Contingency Plan (NCP) requires that handling of IDW at National Priorities List (NPL) sites, including federal facilities, be conducted in accordance with applicable or relevant and appropriate requirements (ARAR) to the extent practicable considering the urgency of the situation. The NCP is codified at 40 Code of Federal Regulations (CFR) Part 300. Likewise, the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Section 120(a)(4) requires that investigation and remediation activities at non-NPL federal facilities meet the substantive requirements of applicable state laws.

Potential ARARs are regulations that either meet applicability criteria or relevance and appropriateness criteria. Applicable requirements are standards or criteria promulgated under federal or state law that specifically address a hazardous substance, pollutant contaminant, remedial action, location, or other circumstance at a project site (EPA 1988a). Applicability implies that the remedial action or the circumstances at the site satisfy all of the jurisdictional prerequisites of a requirement. For example, when a waste is generated at a CERCLA site that meets the definition of a hazardous waste, RCRA requirements are applicable.

If a requirement is not applicable, one must still consider whether it is relevant and appropriate. Relevant and appropriate requirements are standards or criteria promulgated under federal or state laws that are suited to a particular site because the physical conditions at the site are sufficiently similar to those for which the regulations were developed.

If a given requirement is relevant, but not appropriate, for the project site, it would not be considered an ARAR for that site. When a requirement is deemed both relevant and appropriate, this requirement must be complied with to the same degree as if it were applicable. For example, the use of maximum contaminant levels (MCL) as cleanup standards for water at WPNSTA Concord would not be an applicable ARAR because the contaminated water is not used as a drinking water source; however, MCLs are relevant and appropriate for the site if the water is being treated for potential use as drinking water at some time in the future. In some cases, only a portion of a requirement will be

considered both relevant and appropriate for the project site.

There are several types of ARARs: chemical-specific, action-specific, and location-specific. Chemical-specific ARARs are usually health- or risk-based numerical values that are applicable under certain site conditions. These values establish an acceptable residual concentration of a chemical substance or an amount that may be safely discharged to the ambient environment. MCLs are examples of chemical-specific ARARs. Action-specific ARARs are technology- or activity-based requirements or limitations on actions that may introduce hazardous substances into the environment. An example of an action-specific ARAR is an emission limit on a chemical constituent released during incineration of contaminated soil. Location-specific ARARs are restrictions placed on the residual concentrations of hazardous substances or the conduct of hazardous substance-releasing activities solely because they occur in special locations. For example, when a new waste management unit is created to treat or dispose of waste at a CERCLA site, RCRA siting requirements pertaining to seismicity and flooding would constitute location-specific ARARs. Note that the administrative requirements of ARARs (a RCRA storage permit, for example) need not be met under CERCLA, as long as substantive issues are addressed (EPA 1988a).

To-be-considered (TBC) criteria are guidance or nonpromulgated advisories issued by federal or state government that are not legally binding and do not have the status of potential ARARs. In many circumstances, TBC criteria should be reviewed along with ARARs in determining IDW management practices that are sufficiently protective of human health and the environment.

2.0 ARAR IDENTIFICATION

Federal environmental laws and regulations that are potential ARARs for IDW management at CERCLA sites include the Land Disposal Restrictions (LDR) and Corrective Action Program of RCRA; the Toxic Substances Control Act (TSCA); the Clean Water Act (CWA); and the Safe Drinking Water Act (SDWA). In California, regulations have been promulgated that are more stringent than the federal requirements in many areas, including solid and hazardous waste management. The potential ARARs for IDW management at WPNSTA Concord are detailed below. Note that these ARARs only apply to off-site waste disposal; if on-site disposal is elected, EFA WEST will work with regulatory agencies to identify additional ARARs, as appropriate.

2.1 RESOURCE CONSERVATION AND RECOVERY ACT

RCRA was passed by Congress in 1976 to meet three goals: (1) protection of human health and the environment, (2) reduction of waste and conservation of energy and natural resources, and (3) reduction or elimination of the generation of hazardous waste as expeditiously as possible. The Hazardous and Solid Waste Amendments (HSWA) of 1984 significantly expanded the scope of RCRA by adding new corrective action requirements, LDRs, and minimum technical requirements (MTR).

RCRA is the most important federal ARAR for management of IDW, because it contains regulations that pertain to disposal of solid waste and all aspects of transportation, treatment, storage, and disposal of hazardous wastes. RCRA comprises 10 subtitles that address specific waste management activities. Two of these subtitles and their implementing regulations may be ARARs for IDW handling: Subtitle C (Hazardous Waste Management) and Subtitle D (Solid Waste Management). The regulations are codified in 40 CFR Parts 260 through 272.

Under RCRA Subtitle C, wastes are defined as hazardous on the basis of their source or method of generation ("listed" wastes) or their chemical constituents or characteristics ("characteristic" wastes). The hazardous waste identification rules are codified in 40 CFR Part 261. An example of a listed waste would be 1,1,1-trichloroethane when it is a spent solvent. Soil, groundwater, and other IDW containing this or any other listed waste would also be considered hazardous based on the "contained-in" interpretation (EPA 1986). Characteristic hazardous wastes include those wastes with one or more characteristics of ignitability, corrosivity, reactivity, and toxicity.

The determination of whether a waste is or is not hazardous may be made on the basis of specific knowledge that the contaminant is or is not likely to be found in the waste, rather than by direct testing (EPA 1991). The generator of the IDW may choose to characterize the waste as hazardous or nonhazardous, based on the history of operations at the site and analytical data from environmental samples collected in the surrounding area, without actually collecting a sample of the waste and testing it for hazardous waste parameters.

RCRA was developed first and foremost as a pollution prevention-oriented program; the primary objective of the act was to prevent new releases that would result in contaminated sites. To achieve this objective, a stringent set of standards was developed to address ongoing waste management

activities. The Subtitle C regulations are specified as uniform, national standards that apply to all RCRA-regulated facilities. The standards are intended to prevent or minimize environmental releases of a wide range of hazardous waste types, under varied environmental conditions, in the event of operational contingencies, and under other circumstances. The HSWA amendments to RCRA strengthened the RCRA prevention program by adding the LDRs and MTRs, which have become central features of the RCRA prevention program. These provide incentives to generators to minimize the amounts of waste being generated. This is accomplished by requiring treatment of hazardous waste prior to disposal, through use of special liners and leak detection designs for land-based disposal units. The applicability of LDRs and MTRs is described in greater detail in the subsections that follow.

2.1.1 Land Disposal Restrictions

With respect to the management of IDW, the LDR program is one of the most significant provisions of RCRA. The LDR program, defined in RCRA Section 3004 and codified in 40 CFR Part 268, requires pretreatment for hazardous waste prior to placement in a land disposal unit, such as a landfill, surface impoundment, waste pile, or other land-based unit. Waste subject to LDRs must be treated to meet designated standards that are based on the best demonstrated available technology that has been identified for each waste type.

Generators of hazardous waste must prepare a notification form to accompany hazardous waste to disposal facilities if that waste is restricted from land disposal. If the waste meets LDR standards as-generated (without treatment), the generator will also prepare a certification to that effect. When the waste must be treated, certification is prepared by the treatment facility after LDRs have been met.

For the purposes of managing IDW under LDRs, the area of contamination (AOC) is a significant concept. EPA has not yet issued a regulatory definition of the term "AOC," but it is contained within the definition of "on-site" in 40 CFR §300.5, which states that "on-site means the areal extent of contamination and all suitable areas in very close proximity to the contamination necessary for implementation of the response action." The preamble to the NCP (55 FR 8760) states that "EPA generally equates the CERCLA area of contamination with a single RCRA land-based unit, usually a landfill." It is further noted that "under RCRA the term 'landfill' could include a non-discrete land area on or in which there is generally dispersed contamination." With respect to the AOC, the

following activities would constitute land disposal actions that trigger LDRs:

- Consolidating and disposing of wastes from different AOCs in a single AOC.
- Moving wastes outside an AOC for storage or treatment and returning the wastes to the same AOC or a different AOC.
- Excavating wastes from an AOC for removal to a separate unit such as a tank, surface impoundment, or incinerator that is within the AOC, and then redepositing the wastes in the AOC (EPA 1991).

Within an AOC, disposal of contaminated soil or sediments may be exempt from LDRs under certain conditions if it can be demonstrated that the LDRs are not ARARs for the disposal. Specifically, LDRs are not considered ARARs when uncontained hazardous IDW (soil or sediments) is handled as follows:

- Capped in place
- Treated *in situ*
- Processed within the AOC to improve structural stability
- Left in place, moved, or stored within a single AOC

There are no LDR exemptions that apply to disposal of PPE, disposable sampling equipment, extracted groundwater, or decontamination fluid within an AOC.

In addition to establishing concentration limits for waste disposal, LDRs prohibit the storage of restricted hazardous waste for more than 1 year, unless the purpose of storage is to accumulate sufficient quantities of waste to facilitate proper disposal, treatment, or recovery (40 CFR 268.50[a][1]). Accordingly, IDW may be stored until a final disposal option is identified through a record of decision (ROD). The conditions under which such storage occurs should comply with substantive regulations pertaining to storage of hazardous waste in containers (such as the provisions governing secondary containment for drums containing liquid hazardous wastes).

All LDRs must be met to the extent practicable if hazardous IDW cannot be held within the delineated AOC. For example, if leaving hazardous IDW within the AOC would significantly

increase risks to human health and the environment through the potential for fire, explosion, toxicity, or other hazard, then the IDW should be managed at an off-site RCRA Subtitle C hazardous waste treatment, storage, or disposal (TSDF) facility.

For the SWMUs at WPNSTA Concord, the PRC team along with the Navy will determine if the anticipated IDW can be left within the AOC or if constraints exist that require immediate removal due to health and safety or environmental concerns. In instances when the IDW must be moved outside of the AOC, the LDRs may be ARARs as described above.

Hazardous decontamination fluids, PPE, and DE should be containerized and ultimately disposed of off site. Once hazardous wastes are taken off site, such wastes are subject to both the substantive and administrative requirements of RCRA.

Nonhazardous PPE or DE should be disposed of in facilities such as municipal solid waste landfills. Nonhazardous IDW, such as soil cuttings or sediment, may be disposed of within the AOC if all other ARARs are met.

2.1.2 Corrective Action Program

In addition to the prevention-oriented provisions of RCRA, the HSWA corrective action program created a very different, new mandate for the RCRA program: cleaning up releases from solid waste management units at over 4,000 RCRA TSD facilities. While implementing HSWA requirements and the Superfund program, EPA found that Subtitle C requirements, when applied to remediation wastes, could act as a disincentive to more protective remedies and provided very limited flexibility in choosing the most practicable remedy at a specific site. In response to these findings, EPA developed two new types of waste management units, the Corrective Action Management Unit (CAMU) and the Temporary Unit (TU). These units are intended to allow greater regulatory flexibility at remediation sites, while maintaining a standard of environmental protection.

CAMUs are land-based units that can be used to treat or store wastes during a site remediation, while providing an exemption from two significant regulatory provisions:

- Placement of remediation wastes into or within a CAMU does not constitute land disposal of hazardous wastes, so that LDR standards are not triggered.

- Consolidation or placement of remediation wastes into or within a CAMU does not constitute creation of a unit subject to MTRs.

TUs are for short-term operation of tanks and container storage units used for the treatment or storage of remediation wastes. These units may only be used for remediation wastes, and they must be located at the facility where the remediation is taking place. TUs do not include incinerator, non-tank thermal treatment devices, or units regulated under 40 CFR Part 264 Subpart X (miscellaneous units). The corrective action regulations for temporary units provide that an alternative design, operating, or closure standard may be applied rather than the standards that normally apply to permitted facilities. Wastes can be stored in a TU for up to 1 year, with extensions available on a case-by-case basis.

2.2 TOXIC SUBSTANCES CONTROL ACT

Congress passed the Toxic Substances Control Act (TSCA) in 1976 to establish new requirements and authorities for identifying and controlling toxic chemical hazards to human health and the environment. While the majority of regulations promulgated under TSCA address chemical manufacturing, the law also covers the management and disposal of wastes containing polychlorinated biphenyls (PCB) (40 CFR Part 761) and asbestos (40 CFR Part 763). Regulations pertaining to management of IDW containing PCBs are summarized below:

- IDW that is nonhazardous under RCRA but contains PCBs at concentrations greater than 50 ppm must be managed at facilities permitted under TSCA (incineration is the most common option for disposal of these wastes).

- Nonhazardous IDW with PCB concentrations less than 50 ppm is generally not regulated under TSCA; however, California regulates any waste with PCB concentrations greater than 5 ppm as hazardous.

2.3 CLEAN WATER ACT

The Clean Water Act (CWA), developed in 1977, provides site-specific pollutant discharge limitations and performance standards for specific industries to protect surface water quality. During the field investigation activities at WPNSTA Concord, the most likely situation where the CWA will be

applicable involves the indirect discharge of IDW water to a publicly owned treatment works (POTW) or a wastewater treatment plant (EPA 1991). A less likely situation may involve direct discharge, either on-site or off-site, to surface water. The CWA also provides criteria for selecting POTWs and sets ambient water quality criteria (AWQC) for the protection of human health and aquatic life. Regulations under the CWA are codified in 40 CFR Parts 121 through 136.

2.4 SAFE DRINKING WATER ACT

The Safe Drinking Water Act (SDWA), which was initially enacted in 1974 and most recently amended in 1986, mandates that EPA establish regulations to protect human health from contaminants in drinking water. These regulations, codified in 40 CFR Parts 141 through 149, establish national drinking water standards and a joint federal-state system for ensuring compliance with those standards.

EPA has developed two sets of drinking water standards, referred to as primary and secondary standards, to protect human health and to ensure the aesthetic quality of drinking water, respectively (EPA 1988b). Primary standards consist of contaminant-specific standards, known as maximum contaminant levels (MCL). MCLs are set as close as feasible to maximum contaminant level goals (MCLG), which are health-based goals. Secondary drinking water standards are recommended limits to protect the aesthetic quality of water supplies, such as clarity and odor, and are not enforceable at the federal level. At a minimum, states must enforce the federal MCLs; California uses secondary drinking water standards that are equal to or more stringent than federal MCLs.

2.5 CALIFORNIA HAZARDOUS AND DESIGNATED WASTE REQUIREMENTS

California hazardous waste regulations, Title 22, Division 4.5 of the California Code of Regulations (CCR) and regulations for designated wastes in Title 23 of the CCR, contain ARARs for IDW management. Title 22 Division 4.5 regulations establish additional criteria for the definition of hazardous waste, including total threshold limit concentrations (TTLC) and soluble threshold limit concentrations (STLC) for constituents of concern. Wastes that meet the STLC/TTLC criteria, but do not meet federal hazardous waste criteria, are called non-RCRA hazardous wastes. The non-RCRA hazardous wastes must be managed in the same manner as RCRA hazardous wastes.

The State of California Water Resources Control Board (SWRCB) regulates and promulgates applicable water quality objectives that are potential ARARs for IDW soil and water handling. California has also established drinking water standards for selected compounds under CCR Title 22, Division 2. These standards may also be ARARs if they are more stringent that then corresponding federal MCLs.

ARAR waivers may be available for state requirements that are inconsistently applied in similar circumstances at other remedial action sites within California, in accordance with CERCLA Section 121(d)(4)(E) and 40 CFR §300.430(f)(1)(ii)(C)(5).

APPENDIX B
IDW SAMPLING PROCEDURES

APPENDIX B

IDW SAMPLING PROCEDURES

1.0 INTRODUCTION

This appendix describes the equipment and methods that will be used for sampling investigation-derived waste (IDW) generated at WPNSTA Concord. Note that in many circumstances, knowledge of the site and results of sampling and analysis work performed for the site investigation will be sufficient to classify the IDW, and no additional testing will be necessary; however, if waste sampling and analysis are required for characterization, it is essential to obtain representative samples of the media. The sampling procedures for IDW generated at WPNSTA Concord during site investigation activities will conform to the requirements of the following guidance: EPA Test Methods for Evaluating Solid Waste, Volume 1A; Laboratory Manual of Physical/Chemical Methods, OSWER document November 1986, SW-846, Third Edition, Revision 1, November 1990. The strategy that will be used to obtain representative samples, as well as specific sampling methods for soil or sludge and liquid IDW, are detailed below. In addition, an approach to characterizing used personal protective equipment (PPE) and disposal equipment (DE) in drums is provided, and health and safety considerations for IDW sampling and equipment decontamination procedures are described.

2.0 SAMPLING STRATEGY

Greatest sampling accuracy is usually achieved by using a random sampling technique, while sampling precision is achieved by collecting the appropriate number of samples and by maximizing the physical size of the samples. A simple random sampling strategy will be employed for most solid IDW characterization. In simple random sampling, all locations within a container of IDW have an equal chance of being sampled. The appropriate number of samples to be collected in simple random sampling is estimated by finding the regulatory threshold (RT) for the contaminants of concern, and computing the sample mean ($\bar{x}$) and variance (s^2). Since there is typically little or no information about the distribution of the chemical contaminants within a container of waste, random sampling is appropriate.

Simple random sampling may also be used for liquid IDW that is thought to be homogeneous. For liquid IDW sampling where the contaminants of concern are thought to stratify due to their relative

densities, stratified random sampling may be used. Stratified random sampling is different from simple random sampling in that the x and s^2 are calculated for each stratum in the population, and then integrated into the overall estimates of those statistics. If there are recognized trends or cycles associated with the contaminants in the IDW, such as in a drum with floating or sinking products, systematic random sampling may be used.

If the waste is to be disposed of at a treatment, storage, or disposal facility (TSDF), the TSDF's operators may elect to perform their own waste characterization or verification. Therefore, it is important to contact the potential TSDF prior to performing sampling and laboratory analysis of the IDW to avoid duplication of effort and costs. It is also necessary to determine transportation requirements and costs prior to shipping the IDW.

As a general procedure, when sampling a previously sealed IDW vessel, the presence of a bottom sludge should be checked. This is easily accomplished by measuring the depth to apparent bottom and then comparing it to the known interior depth.

2.1 SOIL AND SLUDGE SAMPLING

Sampling devices suitable for soil and sludge (or sediment) sampling include scoops, thin-walled tube samplers, hand augers, core samplers, and sampling triers. The use of a scoop or a sampling trier is generally recommended for sampling containerized soil and sludge; however, site-specific conditions may be more conducive to other sampling methods, so all of the identified equipment is described below. In particular, the presence of rocks or debris may complicate sampling and preclude the use of, or require modification to, some of these sampling devices. All sampling equipment, excluding single-use disposable items, will be thoroughly decontaminated before and after every use, as described in Section 6.0 below.

2.1.1 Shovel, Spade, and Scoop

Collection of soil and sludge samples can be accomplished with tools such as shovels, spades, and scoops. The recommended and most direct method of collecting surface samples for analysis is with a spade and scoop. This method is limited somewhat to sampling at the near surface; collection of samples from depths greater than 50 centimeters (cm) may become very labor-intensive. Use of

disposable scoops is recommended to minimize potential sampling error. Samples collected for volatile organic compound (VOC) analysis will be placed directly into precleaned jars supplied by the laboratory. Samples collected for other analyses may be composited in a stainless steel or disposable bowl and then placed in jars.

2.1.2 Thin-Walled Tube Sampler and Hand Corer

The thin-walled tube sampler is a metal tube, generally 2.5 to 7.5 cm in diameter and 30 to 60 cm long. The tube is forced into the soil or sludge and then extracted. Friction will usually hold the sample material in the tube during extraction. A variety of interchangeable cutting tips facilitates penetration with reduced sample disturbance. Thin-walled tube samplers are available in various styles and materials, as suitable for moist, dry, sandy, or heavy-duty applications.

Sampling soil or sludge can also be accomplished with a hand corer. This device is similar to a thin-walled tube sampler, but has a handle to facilitate driving the corer and a check valve on top to prevent washout during sample retrieval through an overlying water layer. Sampling at depth with a hand corer may be limited by the presence of rocks or a collapsing auger hole.

2.1.3 Gravity Corer and Grab Sampler

A small gravity corer, used in limnological studies, is useful to sample the sludge under a deep liquid column in a 55-gallon drum. If the sludge layer is less than 30 cm in thickness, a grab sampler may be more effective because penetration of the corer may damage the container liner or bottom. Gravity corers are easier to preclean and decontaminate than grab samplers. The presence of rocks or debris may complicate sampling and preclude the use of, or require modification to, these devices.

2.1.4 Sampling Trier

Bulk soils can be sampled with a sampling trier. In particular, this method is effective for collecting composite samples of containerized soil. A typical sampling trier is a long tube with a slot that extends almost its entire length. The tip and edges of the slot are sharpened so that the trier cuts a core of the material when rotated. Sampling triers are usually made of stainless steel and have wooden handles. They range from about 60 to 100 cm in length and 1.27 to 2.54 cm in diameter.

Samples collected with a trier for VOC analysis will be placed directly into precleaned jars. Soils for other analyses may be composited in a stainless steel or disposable bowl prior to placement in jars and shipment to the laboratory.

3.0 LIQUID SAMPLING

Beakers, glass tubes, bailers, and extended bottle samplers and composite liquid waste samplers (COLIWASA) are devices that may be used to sample containerized liquid media, as described below. All liquid sampling equipment, except single-use disposable items, will be thoroughly decontaminated before and after use, as described in Section 6.0.

3.1 DIRECT SAMPLE BOTTLE SUBMERGENCE AND BEAKERS

Samples from drums with homogeneous contents can be readily collected by directly submerging a sample bottle. This method is recommended for collecting samples for VOC analysis because sample aeration is minimized; however, PPE must be selected very carefully to guard against the potential splash hazard. The exterior of submerged bottles must be decontaminated prior to shipment. A beaker, constructed of glass, Teflon, or stainless steel, may also be used to obtain samples of containerized liquids. Beakers typically have a capacity of at least 500 milliliters (mL) to provide an adequate sample volume for analysis and to minimize disturbance of the liquid, thus reducing agitation of any sediment layer. If a large sample volume is required, a stainless steel beaker with pour spout and handle works well. It is easily cleaned and considerably less expensive than Teflon.

3.2 GLASS TUBES AND BAILERS

Liquid samples from containers such as 55-gallon drums will typically be collected using lengths of glass tubing or bailers. The glass tubes are normally 122 cm in length, with an inside diameter (i.d.) of 6 to 16 millimeters (mm). Larger diameter tubes may be used for more viscous fluids. Note that use of glass tubes may pose a splash hazard during use, and there is a potential for sample loss when collecting low viscosity fluids.

Bailers are useful for collecting samples from large containers such as tanks. A bailer is a cylindrical container with a check valve at one end that is typically made of Teflon, polyvinyl chloride (PVC), or

stainless steel. Similar to glass tubes, bailers may also pose a splash hazard during use. Disposable bailers are recommended for IDW to minimize potential sampling error.

3.3 EXTENDED BOTTLE SAMPLER

The extended bottle sampler is a grab sampler designed to facilitate collection of subsurface liquid samples to a maximum depth of 1.5 meters (m) (5 feet). The sampler consists of a 1.8-m (6-foot) aluminum tube with a stainless steel clamp attached to the end that holds a sample bottle of the desired size. Because the exterior of the sample bottle is exposed to the liquid, it must be decontaminated prior to shipment.

3.4 COMPOSITE LIQUID WASTE SAMPLER

The COLIWASA is designed to permit representative sampling of the complete water column in drums or other containers of liquid media. The sampler is useful when contaminants of different densities, such as oil and water, are present in the same container. It consists of a 152-cm long by 4-cm i.d. section of tubing with a neoprene stopper at one end. A rod running the length of the tube is attached to the stopper, and moving the rod allows the sampler to be opened and closed. Since the COLIWASA is difficult to decontaminate and more expensive to purchase than other sampling devices, it is recommended for use only when multiphase wastes are suspected.

3.5 WIPE SAMPLING

Wipe samples are used to assess surface contamination and may be applicable for the analysis of drum surfaces. The terms "wipe sample," "swipe sample," and "smear sample" are used synonymously. For purposes of this section, the method will be termed "wipe sample."

Wipe sampling consists of rubbing a moistened filter paper over a measured area of 100 square centimenters (cm^2). The paper is then sent to the laboratory for analysis, and the results are related to the known sample area. Equipment required for collecting wipe samples includes Whatman 541 filter paper or equivalent, solvent to wet filter paper, and disposable chemical-resistant gloves. The type of solvent required is dependent on the analysis performed. The laboratory conducting the analysis will specify the type of solvent required. The steps involved in obtaining a wipe sample are as follows:

- Using a clean and impervious disposable glove, remove a filter paper and moisten with a collection medium selected to dissolve the contaminants of concern as specified for the source area. Organic-free water or the laboratory analysis solvent should be used to moisten the filter paper. The filter should be wet but not dripping. A new glove should be used for each sample to avoid cross-contamination of samples.

- Thoroughly wipe approximately 100 cm^2 of the area with the moistened filter. Using a template will help in judging the size of the wipe area. If a different size area is wiped, the change should be recorded in the field logbook and on the chain-of-custody form. If the surface is not flat, any crevices or depressions must be wiped and the physical shape of the area should be recorded.

- Without allowing the filter to contact any other surface, fold the filter with the exposed side in, and then fold it over to form a 90-degree angle in the center of the filter. Place the filter, angle first, into the appropriate sampling jar for the analyses to be conducted and send the sample to the appropriate laboratory.

- To prepare blank samples, moisten a filter with the collection medium. Place the blank in a separate sample bottle and submit it with the other samples. Document the sample collection in the field logbook and on appropriate forms, and ship samples per procedures specified by the receiving laboratory.

4.0 USED PPE AND DISPOSABLE EQUIPMENT

To characterize used drums of used PPE and disposable sampling equipment prior to disposal, wipe samples may be used to assess the surface contamination of the drum interior. Wipe samples, as discussed in Section 3.5, are collected by rubbing a moistened filter paper over a defined area, typically 100 cm^2. The paper is then placed in a sample container and sent to a laboratory for analysis. Equipment used to collect wipe samples includes Whatman 541 filter paper or equivalent, solvent to wet filter paper, and a disposable template to define the sample area. The type of solvent required is dependent on the type of analysis performed, and will be specified by the laboratory conducting the analysis.

5.0 HEALTH AND SAFETY CONSIDERATIONS

Protocols for health and safety applicable during IDW sampling will be in accordance with the health and safety plan for the WPNSTA SI. In particular, personal protection during IDW sampling must

include new gloves made of chemical-resistant materials that are compatible with the waste constituents (if known), protective coveralls of a chemical-resistant material, rubber boots, and safety glasses. IDW sampling will typically be conducted by two employees working as a team for greater safety.

6.0 EQUIPMENT DECONTAMINATION

Whenever field conditions permit, disposable sampling equipment will be used to minimize potential sampling error. If disposable equipment is not appropriate for a particular application, the sampling equipment used will be thoroughly decontaminated before and after contact with waste materials. The general procedure for decontaminating equipment will be as follows:

- Scrub the sampling equipment with a stiff brush in a bucket of Alconox and water solution.
- Triple-rinse the sampling equipment with potable water.
- Final-rinse the sampling equipment with deionized (DI) water and allow to air dry in a clean place.
- Reassemble the equipment in a clean place, on plastic sheeting .

If the sampling equipment has been in contact with oily materials or sludges, the procedure will be as follows:

- Steam clean the equipment.
- Rinse the equipment with hexane or methanol.
- Scrub with Alconox, triple-rinse, and dry as indicated above.

APPENDIX C

WASTE PROFILE FORM AND COMPLETION INSTRUCTIONS

Revision 0:01/18/95

PROFILE NUMBER _____

Completed by _____

Date _____

Reviewed by _____

U.S. NAVY, ENGINEERING FIELD ACTIVITY WEST

INVESTIGATION-DERIVED WASTE PROFILE

Complete one form for each waste stream generated at each site. See instructions for detailed information about this form.

1.0 GENERATOR INFORMATION

Facility Name _____
Site Name _____
Address _____
_____
City _____ State _____ Zip _____

USEPA ID Number _____
Technical Contact _____
Phone _____
Fax _____
CTO Number _____

2.0 WASTE DESCRIPTION

Waste Description _____
Is this waste regulated by USEPA or Cal/EPA? _____ Waste codes _____ CLIN _____
LDR Subcategory _____
Wastewater or Nonwastewater? (see instructions) _____
Concentration Standard per §268.41? _____ _____ _____ _____
Concentration Standard per §268.43? _____ _____ _____ _____
Technology-Based Standard §268.42? _____ _____ _____ _____
Special Handling Instructions _____

3.0 TRANSPORTATION INFORMATION

DOT Proper Shipping Name _____
_____
DOT Hazard Class _____ UN/NA Number _____ RQ _____
Packaging Description _____

4.0 PHYSICAL PROPERTIES

Color _____
Odor _____

	Avg.	Min.	Max.
pH			
Specific Gravity			
Flash point			
(Method):			
BTU/lb			

Liquid Layering _____
Physical State _____
Viscosity _____
Yard-Pound Factor _____ x YD = LB
% Halogens _____
% Liquids _____
% Sludge _____
% Solids _____
% Water _____

4.0 PHYSICAL PROPERTIES (Continued)

Acid Reactive	Y	N	Biological	Y	N	Corrosive	Y	N
Dioxin	Y	N	Explosive	Y	N	Flammable	Y	N
Oxidizer	Y	N	Pesticide	Y	N	Herbicide	Y	N
Poison	Y	N	Pumpable	Y	N	Pyrophoric	Y	N
Radioactive	Y	N	RCRA Reactive	Y	N	Shock Sensitive	Y	N
Wastewater	Y	N	Water Reactive	Y	N	Other _____		

5.0 TOXICITY CHARACTERISTICS

U.S EPA Waste Code	Contaminant	Level (mg/L)	Federal Regulated Level	California STLC	California TTLC
	Aldrin	_____		0.14	1.4
	Antimony	_____		15	500
D004	Arsenic	_____	5.0	5.0	500
	Asbestos	_____			1.0%
D005	Barium	_____	100.0	100.0	10,000
D018	Benzene	_____	0.5		
	Beryllium	_____		0.75	75
D006	Cadmium	_____	1.0	1.0	100
D019	Carbon Tetrachloride	_____	0.5		
D020	Chlordane	_____	0.03	0.25	2.5
D021	Chlorobenzene	_____	100.0		
D022	Chloroform	_____	6.0		
D007	Chromium (Total)	_____	5.0	5	2,500
	Chromium (Trivalent)	_____		5	2,500
	Chromium (Hexavalent)	_____		5	500
	Cobalt	_____		80	8,000
	Copper	_____		25	2,500
D023	o-Cresol	_____	200.0		
D024	m-Cresol	_____	200.0		
D025	p-Cresol	_____	200.0		
D016	2,4-D	_____	10.0	10.0	100
	DDT, DDE, DDD	_____		0.1	1.0
D027	1,4-Dichlorobenzene	_____	7.5		
D028	1,2-Dichloroethane	_____	0.5		
D029	1,1-Dichloroethylene	_____	0.7		
	Dieldrin	_____		0.8	8.0
D030	2,4-Dinitrotoluene	_____	0.13		
	Dioxin (2,3,7,8, - TCDD)	_____		0.001	0.01
D012	Endrin	_____	0.02	0.02	0.2
	Fluoride salts	_____		180	18,000
D031	Heptachlor (& its epoxide)	_____	0.008	0.47	4.7
D032	Hexachlorobenzene	_____	0.13		
D033	Hexachlorobutadiene	_____	0.5		
D034	Hexachloroethane	_____	3.0		
	Kepone	_____		2.1	21
D008	Lead	_____	5.0	5.0	1,000
	Lead components, organic	_____			13
D013	Lindane	_____	0.4	0.4	4.0
D009	Mercury	_____	0.2	0.2	20
D014	Methoxychlor	_____	10.0	10	100
D035	Methyl ethyl ketone	_____	200.0		
	Mirex	_____		2.1	21
	Molybdenum	_____		350	3,500

	Nickel			20	2,000
D036	Nitrobenzene		2.0		

Waste Profile No. _____

5.0 TOXICITY CHARACTERISTICS (Continued)

U.S EPA Waste Code	Contaminant	Level (mg/L)	Federal Regulated Level	California STLC	California TTLC
D037	Pentachlorophenol		100.0	1.7	17
D038	Pyridine		5.0		
D010	Selenium		1.0	1.0	100
D011	Silver		5.0	5	100
D039	Tetrachloroethylene		0.7		
	Thallium			7.0	700
D015	Toxaphene		0.5	0.5	5
D017	2,4,5-TP (Silvex)		1.0	1.0	10
D040	Trichloroethylene		0.5	204	2,040
D041	2,4,5-Trichlorophenol		400.0		
D042	2,4,6-Trichlorophenol		2.0		
	Vanadium			24	2400
D043	Vinyl chloride		0.2		
	Zinc			250	5,000
	PCB			5.0	50

6.0 TOTAL METALS

Metals (ppm)	Avg.	Min.	Max.	Metals (ppm)	Avg.	Min.	Max.
Aluminum				Iron			
Antimony				Lead			
Arsenic				Mercury			
Barium				Molybdenum			
Beryllium				Nickel			
Cadmium				Selenium			
Chromium VI				Silver			
Chromium III				Thallium			
Cobalt				Vanadium			
Fluoride				Zinc			

7.0 CHEMICAL COMPOSITION

Chemical Name	Avg.	Min.	Max	Circle one:
				% PPM PPB
				% PPM PPB
				% PPM PPB
				% PPM PPB
				% PPM PPB
				% PPM PPB
				% PPM PPB
Water				% PPM PPB

8.0 ADDITIONAL INFORMATION AND COMMENTS

Attached documentation: _____

9.0 GENERATOR CERTIFICATION

I hereby certify, as an authorized representative of the generator named on Page 1 of this Waste Profile, that the information provided in this and all attached documents is true and correct; reveals any and all known or suspected hazards involving the handling, transportation, treatment, storage, and disposal of this waste; and no willful misrepresentations or omissions have been made. I further certify and warrant that this identification is the result either of an analysis of a representative sample obtained and analyzed in accordance with the sampling and testing procedures specified by the U.S. Environmental Protection Agency or by applying knowledge of the process generating the specific waste being offered.

Generator's Signature _____ Title _____ Date _____

Instructions for Completing the Investigation-Derived Waste Profile

1.0 ***Generator Information.*** The mailing address of the generator and the site where the waste will be picked up should be indicated. The EPA Identification Number for the site must be provided, unless the generator is a conditionally exempt small quantity generator. Be sure to include the CTO number associated with the IDW being profiled.

2.0 ***Waste Description.*** This section provides a general description of the waste and how it was generated. It also requests regulatory information about the waste that will assist in determining what kind of treatment or disposal is required.

2.1 EPA hazardous waste codes are also included in this section. Waste codes are chosen according to whether the waste contains any listed hazardous waste or whether the waste exhibits a hazardous waste characteristic. There is a hierarchy for assigning waste codes which can be reviewed in detail in 40 CFR Part 261 of the federal hazardous waste regulations and 22 CCR Chapter 11 of the California Regulations. Here's a simple explanation:

a. If the remediation site is associated with a specific industrial process, first look under the K-code listing in 40 CFR §261.32 or 22 CCR §66261.32 to determine whether any of the generating processes exactly match the activities previously conducted at the site. If so, the waste gets the K-code associated with that industrial process. Then go on to step "d" to assign characteristic codes. If the process is not described in the K-code list, go to step "b." There are very few specific industrial processes from the K list that would result in such IDW at Navy facilities.

b. If the former activities at the remediation site do not match any of the industrial processes in the K list, look under the more general F-code listings in 40 CFR §261.31 or 22 CCR §66261.31 to determine if any of the generating processes match the activity and contaminants at the site. If so, the waste gets the appropriate F-code. Then continue to step "d" to assign characteristic codes. If the waste does not meet an F-code listing description, also go to step "d." Some common F-code activities include use of solvents, wood treatment activities, and electroplating operations.

c. If the remediation site is associated with the release of an unused commercial product, an out-of-date product, or an off-specification product from a manufacturing process, look under the P-code and U-code listings in 40 CFR §261.33 or 22 CCR §66261.33 for a match to the contaminants found at the site. P-code wastes are acutely toxic, and U-code wastes are listed for chronic toxicity, reactivity, or ignitability. A common activity which results in this type of waste is a pesticide storage area where containers were rinsed or where releases occurred. Don't forget to check the lists for common synonyms of the chemical. The CAS number may also be used to review the list of waste codes. If the waste does not match any of the chemicals in this list, go to step "d."

d. This step is for assigning additional codes and for assigning codes to wastes that didn't fall into any of the categories described in steps a, b, or c. This step covers physical properties of the waste rather than the process that generated the waste. These waste characteristics are

described in 40 CFR Part 261, Subpart C and 22 CCR 66261, Article 3. There are four categories of characteristics, known as D-code wastes: ignitable, corrosive, reactive and toxic. A waste may exhibit one or more of these characteristics. The only way to determine whether a waste is regulated as a characteristic waste is to take a sample and analyze it for the characteristic, or to use other analytical data to determine if it exhibits one or more characteristics. Toxicity characteristics are discussed in more detail in Section 5 below. If the waste does not fall into any of the categories listed in steps "a" through "c" and does not exhibit a hazardous characteristic, it is not regulated as hazardous waste, although it may be regulated as designated waste.

In addition to the waste codes assigned under the federal regulations, the State of California uses its own set of waste codes that describe the physical nature of the waste. These waste codes should be identified for each hazardous waste according to the list of California waste codes.

2.2 This section of the profile also requests information about the land disposal restrictions (LDR) that are applicable to the waste. LDR subcategories exist for some waste codes and should be indicated if applicable. If the waste meets the definition of a wastewater described in 40 CFR 268.2(f), please indicate that in this section. Wastewater is defined as wastes that contain less than 1 percent by weight total organic carbon (TOC) *and* less than 1 percent by weight total suspended solids (TSS), with exceptions for some wastes. In addition, 40 CFR Part 268 details the LDR treatment standards that apply to each hazardous waste code. These regulations should be used to identify specific LDR treatment standards for the waste described on the profile.

3.0 ***Transportation Information.*** This section is for completing the proper U.S. Department of Transportation (DOT) shipping name, hazard class, and UN/NA number. In addition, the reportable quantity (RQ) for the waste is shown here. DOT information is available in 49 CFR Part 172, and RQ information is available in 40 CFR Part 302.

4.0 ***Physical Properties.*** Important physical characteristics are described in this section of the profile, including many of the characteristics that will be used for verifying the waste identification when the waste is picked up by PRC's waste management subcontractor.

5.0 ***Toxicity Characteristics.*** This section of the profile deals with the toxicity category of the four characteristic waste categories. It contains a comprehensive listing of chemical constituents that are regulated by EPA and California. Their corresponding D-codes are shown in the list, as is the regulated level for each chemical. This section of the form should be completed even if the waste is listed as a K-code, F-code, P-code, or U-code so that LDR requirements are addressed. It is usually based on an analytical report for the waste. If a sample will be collected for toxicity characteristic analysis, the constituents chosen for analysis should be based on a review of available corresponding environmental data, known activities at the site, and possible management methods for the waste.

6.0 ***Total Metals.*** Information on total metals is usually required for waste streams requiring certain types of treatment. For example, an inorganic sludge that exhibits a toxicity characteristic for cadmium and lead (D006 and D008) may be chemically stabilized to meet LDR treatment standards before it is landfilled. Usually this type of treatment consists of "fixing" the waste in

a concrete-like material. In order to ensure that the required EPA treatment standards will be met, the treatment company needs information on the total quantity of cadmium and lead in the waste so that it can develop the proper "recipe" for the waste and stabilizer.

7.0 ***Chemical Composition.*** All the components of the waste are listed, along with a range of their concentration. It is important that the average concentrations add up to 100 percent, so that all the components are represented. The composition of a typical solvent/waste water stream is shown here.

Chemical Name	Avg.	Min.	Max.	Conc.
Xylol (Dimethylbenzene)	3	2	4	%
Ethyl Acetate	5	4	6	%
Methanol	1	1	2	%
Ethanol	1	1	2	%
Hexone (Methyl isobutyl ketone)	1	1	2	%
Aliphatic Naphtha (carrier)	69	50	70	%
Water	20	10	55	%
Total Composition	100	N/A	N/A	%

8.0 ***Additional Information and Comments.*** This section explains any special conditions or handling required for the waste. In addition, this section should list the supporting documentation attached to the profile to support the waste characterization.

9.0 ***Generator Certification.*** The generator certification should be signed by a Navy representative from the installation where the waste is generated.

APPENDIX D

TRAINING REQUIREMENTS FOR WASTE MANAGEMENT PERSONNEL

APPENDIX D

TRAINING REQUIREMENTS FOR WASTE MANAGEMENT PERSONNEL

PRC Environmental Management, Inc. (PRC), its employees and subcontractors who perform IDW management activities related to storage and packaging of waste, should be trained to perform those duties in a safe manner that is protective of the environment. The training should meet the substantive requirements of 40 CFR §265.16 and 22 CCR §66265.16, although training received to meet other hazardous waste operations requirements may be used in whole or in part to meet these requirements.

The U.S. Environmental Protection Agency (EPA) requires that personnel at hazardous waste facilities successfully complete a program of classroom or on-the-job training that teaches them to perform their duties in a way that ensures the facility's compliance with hazardous waste management requirements. The program should be directed by a person trained in hazardous waste management procedures, and it should include a discussion on hazardous waste management procedures for facility personnel. Project managers or installation coordinators should ensure that facility storage area personnel are able to respond effectively to emergencies by incorporating the following elements into training sessions:

- Procedures for using, inspecting, repairing, and replacing facility emergency and monitoring equipment
- Communication and alarm systems
- Response to fire or explosions
- Response to groundwater contamination incidents
- Shutdown of operations

Initial training must be conducted within 6 months of an employee's hire or assignment to storage area duties. During the 6-month period, the employee cannot work unsupervised until the training is received. Each employee must participate in refresher training at least annually.

Training records should be kept for each installation and each employee with storage area duties. The

installation training records should consist of the following:

- A written job description for each position and the name of each employee filling the position.
- A written description of the type and amount of both introductory and annual training that is given to each person for each position described above.
- Records that document that the training or job experience required has been given to each storage area employee.

Each employee's training files should contain a record of the introductory and annual training given and the date of completion.

Training records should be maintained at the installation until the storage area is closed. Training records for individual employees should be maintained for 3 years after the employee has left employment with PRC or is transferred to other duties.

The following sample training plan outline may be used to develop a site-specific training program.

1 Training Plan Objectives

1.1 Allow for safe operation of the accumulation storage area (ASA)
1.2 Instruct employees in methods to keep the ASA in compliance with applicable regulations at all times

2 Training Management

2.1 PRC EMI Health and Safety Program

2.1.1 Training required by the Occupational Safety and Health Administration (OSHA)
2.1.2 First aid and CPR training

2.2 Navy CLEAN Facility Managers

3 Training Plan Design

3.1 Initial Training

3.1.1 Introductory on-the-job training

3.1.2 Procedures for using, inspecting, repairing, and replacing ASA equipment and emergency equipment

3.1.3 Familiarize employees with the contingency plan, emergency procedures, and communication equipment

3.1.4 Learn appropriate responses to fires, releases, injuries, and natural disasters as they relate to the ASA and post-emergency procedures

3.1.5 Hazardous Waste Operations and Emergency Response (HAZWOPER) Training

3.1.6 First aid and CPR training

3.2 Continuing Training

3.2.1 Annual HAZWOPER Refresher
3.2.2 First aid and CPR training

3.3 Recordkeeping

3.3.1 Training records
3.3.2 Job descriptions

APPENDIX E

CONTINGENCY PLAN OUTLINE FOR TEMPORARY STORAGE UNITS

APPENDIX E

CONTINGENCY PLAN OUTLINE FOR TEMPORARY STORAGE UNITS

I. Temporary Storage Area Description
   - A. Location of temporary storage area
     1. Vicinity location map
     2. Neighboring areas
     3. Proximity to investigation
   - B. Rationale for location choice
   - C. Description of temporary storage area
     1. Temporary storage area layout map
     2. Storage capacities
     3. Types of waste being accumulated
     4. Required packaging of waste
     5. Evacuation Plan

II. Operations at temporary storage area
   - A. Placement of waste for storage
   - B. Preparation of waste for transport
   - C. Removal of waste from site
   - D. Inspections

III. Emergency Coordinator
   - A. Designation of coordinator
     1. Coordinator rotation schedule
     2. Method of contact
        - a. Phone list
        - b. Pager
        - c. Cellular

B. Emergency Coordinator Responsibilities

1. Contact facility personnel
   a. Navy environmental personnel to be contacted
   b. Other responsible personnel to be contacted
2. Determination of extent of emergency
   a. Determine problem
   b. Determine appropriate response. Take into account training of personnel, threat to human health, threat to environment, ambient conditions.
3. Implement response action
4. Oversee response action
5. Evaluate response action
6. Review response action records
7. Amend contingency plan as required based on evaluation of response

IV. Coordination Agreements. Results of attempts to arrange emergency response actions with facility emergency response personnel.

V. Emergency Equipment

A. Types of hazards anticipated

B. Emergency response equipment at the temporary storage area

1. Placement of equipment on temporary storage area site map
2. Limitations of emergency equipment
3. Emergency equipment available from Navy

VI. Implementation of Contingency Plan

A. Fire or explosion

B. Release

C. Geologic or meteorological events

D. Medical emergency

VII. Emergency Response Procedures

A. Injured personnel

B. Fire

C. Release

D. Approaching storms

VIII. Procedures when requesting Navy or other outside emergency services

IX. Post emergency procedures

A. Storage and treatment of released material

B. Emergency equipment maintenance

X. Notification and reporting

A. Navy contacts

B. Local contacts

1. LEPC
2. RWQCB
3. Regional DTSC

C. State contacts: California State Office of Emergency Services

XI. Amendments to Contingency Plan

APPENDIX F

STORAGE AREA INSPECTION FORM

APPENDIX F

STORAGE AREA INSPECTION FORM

TANK INSPECTION - WEEKLY

INSPECTED BY: _____ _____ __/__/__ _____
Inspector's name (print) Signature Date Time

REVIEWED BY: _____ _____ __/__/__ _____
Manager's name (print) Signature Date Time

EQUIPMENT/AREA	SAT	UNSAT	COMMENTS
HAZARDOUS WASTE TANK SYSTEM			
Materials of Construction			
Tank supports, anchors, walls, bottoms, seams, and joints (No damage, corrosion, buckles, bulges, and evidence of leakage)	☐	☐	
Ancillary Equipment			
Condition of piping, valves, flanges, and fixtures (No damage, corrosion, buckles, bulges, or evidence of leakage)	☐	☐	
Operation	☐	☐	
Overfill/Spill Prevention Control			
Liquid level indicator (No obstruction of movement)	☐	☐	
Verify tanks filled to no more than 95% capacity	☐	☐	
Verify high level alarms and shutoffs	☐	☐	
Secondary Containment (Tanks, Ancillary Equipment)			
No evidence of leakage, spills or accumulated liquid	☐	☐	
No cracks, corrosion or obstructions	☐	☐	
No evidence of infiltration of rainwater	☐	☐	
Surrounding Area			
No intrusion of debris, erosion, or evidence of a release (e.g., wet spots, discoloration, dead or dying vegetation)	☐	☐	

STORAGE AREA INSPECTION FORM

GENERAL INSPECTION - WEEKLY

INSPECTED BY: _____ _____ __/__/__ _____
Inspector's name (print) Signature Date Time

REVIEWED BY: _____ _____ __/__/__ _____
Manager's name (print) Signature Date Time

EQUIPMENT/AREA	SAT	UNSAT	COMMENTS
FACILITY PROPER			
Evacuation Routes			
Access (Unobstructed)	☐	☐	
Emergency exits unlocked at start of day	☐	☐	
Pavement/curbing			
No evidence of leakage, spillage, or accumulated liquid	☐	☐	
Access Road			
Access (Unobstructed)	☐	☐	
Condition (No holes, depressions, or debris)	☐	☐	
SECURITY DEVICES			
Fences			
Condition (No damage or corrosion)	☐	☐	
Gates			
Condition (No damage or corrosion)	☐	☐	
Operation (Swing or slide freely)	☐	☐	
Access (Unobstructed)	☐	☐	
Padlocks			
Present at each gate	☐	☐	
Operation	☐	☐	
Warning Signs			
Presence (Maximum 75 feet apart)	☐	☐	
Legibility (From a minimum 25 feet away)	☐	☐	
SAFETY AND EMERGENCY EQUIPMENT			
Emergency Shower/Eye Wash Stations			
Adequate supply of eyewash solution	☐	☐	
Handle operation	☐	☐	
Water Pressure, volume, and flow	☐	☐	
Identification signs (Present, legible, and in satisfactory condition)	☐	☐	
Access (Unobstructed)	☐	☐	

EQUIPMENT/AREA	SAT	UNSAT	COMMENTS
SAFETY AND EMERGENCY EQUIPMENT (continued)			
Portable Fire Extinguishers			
Each type present at designated locations	☐	☐	
Charge (Adequate pressure)	☐	☐	
Access (Unobstructed)	☐	☐	
Service tags (attached to each and up to date)	☐	☐	
Spill Kits			
SEE INSPECTION LAYOUT			
Present at designated locations	☐	☐	
Identification markings (legible)	☐	☐	
Access (Unobstructed)	☐	☐	
Communication System - *Telephones:*			
Present at designated locations	☐	☐	
Operation (Capable of obtaining an outside line)	☐	☐	
First Aid Kits			
Present at designated locations	☐	☐	
Access (Unobstructed)	☐	☐	
OPERATING EQUIPMENT			
Handtruck			
Condition (No damage or corrosion)	☐	☐	
Containers			
Condition (No leaks, buckles, bulges, or corrosion)	☐	☐	
Verify containers are sitting securely on pallets, are adequately supported and not tilted	☐	☐	
Labels/Markings			
Present on each container (Hazardous Waste affixed, not deteriorated)	☐	☐	
Completeness of information	☐	☐	
Accumulation Start Date (less than 90-days)	☐	☐	
Visibility	☐	☐	
Legibility	☐	☐	
Pallets			
Condition (No evidence of leakage or broken planks)	☐	☐	
Storage Pad			
No evidence of leakage, spillage, or accumulated liquid in the vicinity of storage pad	☐	☐	
Container placement (All containers are stored on pad)	☐	☐	
Access to air horns, fire extinguishers, spill kits, entrances/exits (Unobstructed)	☐	☐	
Proper segregation of incompatible wastes	☐	☐	
All containers of ignitable, oxidizer, or reactive waste stored at least 50 ft. from property line	☐	☐	

EQUIPMENT/AREA	SAT	UNSAT	COMMENTS
OPERATING EQUIPMENT (continued)			
Secondary Containment			
No evidence of leakage, spills or accumulated liquid	☐	☐	
No cracks, corrosion or oustructions	☐	☐	
No evidence of infiltration of rainwater	☐	☐	
Integrity of coating	☐	☐	
Surrounding Area			
No intrusion of debris, erosion, or evidence of a release (e.g., wet spots, discoloration, dead or dying vegetation)	☐	☐	
TANK STORAGE AREAS			
Materials of Construction			
Tank supports, anchors, walls, bottoms, seams, and joints (No damage, corrosion, buckles, bulges, and evidence of leakage)	☐	☐	
Ancillary Equipment			
Condition of piping, valves, flanges, and fixtures (No damage, corrosion, buckles, bulges, or evidence of leakage)	☐	☐	
Operation	☐	☐	
Overfill/Spill Prevention Control			
Liquid level indicator (No obstruction of movement)	☐	☐	
Record quantity of liquid in each tank	☐	☐	
Compare liquid level indicators to actual levels	☐	☐	
Record quantity of liquid in each tank, verify no more than 95% full	☐	☐	
Verify high level alarms and shutoffs	☐	☐	
Labels/Markings			
Present on each tank (content identification)	☐	☐	
Completeness of information	☐	☐	
Visibility	☐	☐	
Legibility	☐	☐	
Secondary Containment (Tanks, Ancillary Equipment)			
No evidence of leakage, spills or accumulated liquid	☐	☐	
No cracks, corrosion or obstructions	☐	☐	
No evidence of infiltration of rainwater	☐	☐	
Surrounding Area			
No intrusion of debris, erosion, or evidence of a release (e.g., wet spots, discoloration, dead or dying vegetation)	☐	☐	