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FINAL FEDERAL FACILITIES AGREEMENT SITE MANAGEMENT PLAN FOR FISCAL YEAR
2010 NAS PENSACOLA FL
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TETRA TECH

Comprehensive Long-term Environmental Action Navy

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Federal Facilities Agreement Site Management Plan Fiscal Year 2010

Naval Air Station Pensacola
Pensacola, Florida

September 2009



NAS Jacksonville
Jacksonville, Florida 32212-0030

**FEDERAL FACILITIES AGREEMENT
SITE MANAGEMENT PLAN**

FISCAL YEAR 2010

**NAVAL AIR STATION PENSACOLA
PENSACOLA, FLORIDA**

Submitted to:

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ACRONYMS

ARAR	Applicable or Relevant and Appropriate Requirements
BRA	Baseline Risk Assessment
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CIP	Community Involvement Plan
COPC	Chemical of Potential Concern
CS	Confirmation Study
CSR	Confirmation Study Report
CTL	Cleanup Target Level
CVOC	Chlorinated Volatile Organic Compound
DDT	Dichlorodiphenyltrichloroethane
DoN	Department of the Navy
EP Toxic	Extraction Procedure Toxicity
ESI	Extended Site Inspection
FDER	Florida Department of Environmental Regulation
FDEP	Florida Department of Environmental Protection
FFA	Federal Facilities Agreement
FOTW	Federally Owned Treatment Works
FS	Feasibility Study
ft ³	Cubic Feet
FY	Fiscal Year
GCTL	Groundwater Cleanup Target Level
HSWA	Hazardous and Solid Waste Amendments
HW	Hazardous Waste
IAS	Initial Assessment Study
IRA	Interim Remedial Action
IRP	Installation Restoration Program
IWTP	Industrial Wastewater Treatment Plan
LUC	Land Use Control
LUCAP	Land Use Control Assurance Plan
MC	Munitions Constituents
MCL	Maximum Contaminant Level
MEC	Munitions and Explosives of Concern
µg/L	Micrograms per Liter
mg/kg	Milligrams per Kilogram

ACRONYMS (CONTINUED)

mR/hr	millirem per hour
MWR	Morale, Welfare, and Recreation
NACIP	Navy Assessment and Control of Installation Pollutants
NARF	Naval Air Rework Facility
NAS	Naval Air Station
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NEESA	Naval Energy and Environmental Support Activity
NEPA	National Environmental Policy Act
NFA	No Further Action
NFRAP	No Further Action Planned
OU	Operable Unit
PA	Preliminary Assessment
PAH	Polynuclear Aromatic Hydrocarbons
PCB	Polychlorinated Biphenyl
PCE	Tetrachloroethene
POL	Petroleum, Oil and Lubricant
ppb	Parts per Billion
ppm	Parts per Million
PSC	Potential Source of Contamination
PWC	Public Works Center
RAB	Restoration Advisory Board
RAO	Remedial Action Objective
RCRA	Resource Conservation and Recovery Act
RFA	RCRA Facility Assessment
RI	Remedial Investigation
ROD	Record of Decision
RPM	Remedial Project Manager (NAVFAC and regulatory)
SARA	Superfund Amendments and Reauthorization Act
SCR	Site Characterization Report
SCTL	Soil Cleanup Target Level
SI	Site Inspection
SMP	Site Management Plan
SVOC	Semivolatile Organic Compound
SWMU	Solid Waste Management Unit

ACRONYMS (CONTINUED)

TCE	Trichloroethene
TRPH	Total Recoverable Petroleum Hydrocarbon
TtNUS	Tetra Tech NUS, Inc.
USEPA	United States Environmental Protection Agency
UST	Underground Storage Tank
VOC	Volatile Organic Compound
VS	Verification Study
WWTP	Wastewater Treatment Plant

1.0 THE BASIS FOR A SITE MANAGEMENT PLAN

This Site Management Plan (SMP) provides a summary of response actions and associated documentation to be undertaken at the Naval Air Station (NAS) Pensacola according to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), as amended by the Superfund Amendments and Reauthorization Act (SARA) of 1986, as implemented by the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), and to the extent practicable the National Environmental Policy Act (NEPA) of 1969.

The requirement for this SMP is identified in the Federal Facilities Agreement (FFA) signed by the United States Environmental Protection Agency (USEPA), the state of Florida, Department of Environmental Regulation (FDER), now Florida Department of Environmental Protection (FDEP), and the Department of the Navy (DoN). The FFA was based on the requirement for an interagency agreement identified in the SARA, Section 120 (e)(2). The intent of the plan is to provide: (1) an action deemed necessary to mitigate any immediate threat to human health or the environment, (2) a list of Operable Units (OUs) subject to the terms of the FFA, (3) a prioritization and rationale for the OUs at NAS Pensacola, and (4) activities and schedules for work planned for the current year, including the submittal schedule for both primary and secondary documents. With the FFA being signed on 23 October 1990, and having a declared effective date of 01 November 1990, this is the 20th annual update of the SMP.

2.0 OVERALL MANAGEMENT APPROACH

Three major investigations have been conducted at NAS Pensacola. The DoN developed the Navy Assessment and Control of Installation Pollutants (NACIP) Program to identify and control environmental contamination from past use and disposal of hazardous substances at Navy and Marine Corps Installations. The NACIP Program is now part of the Navy's Installation Restoration Program (IRP), and is similar to the USEPA "Superfund" Program authorized by the CERCLA of 1980. The three major investigation activities performed at NAS Pensacola under the Navy's IRP or Superfund Programs are the following: (1) Initial Assessment Study (IAS) or Preliminary Assessment (PA), (2) Verification Study (VS) or Site Inspection (SI), (3) and the Confirmation Study (CS) or Extended Site Inspection (ESI). The IAS (1982-1983) was conducted by the Naval Energy and Environmental Support Activity (NEESA) and identified and assessed 29 Potential Sources of Contamination (PSCs) at NAS Pensacola, which could pose a potential threat to human health or the environment as a result of contamination from past naval operations. The VS (1984) and the CS (1985-1986) were conducted by Geraghty & Miller, Inc. to confirm or deny the presence of contamination at the PSCs identified in the IAS, as well as possibly locate additional PSCs. If contamination was detected, the magnitude and the extent of contamination would have been evaluated to allow for the recommendation of future remedial response action at these PSCs.

In addition to the Navy's IRP/CERCLA program, NAS Pensacola has other active regulatory programs. A Florida Resource Conservation and Recovery Act (RCRA) permit was issued to NAS Pensacola by the FDER. Concurrently, a RCRA Hazardous and Solid Waste Amendments (HSWA) permit was issued to the installation by USEPA in July 1988. A RCRA Facility Assessment (RFA) was included in the USEPA issued permit, and additional PSCs were located. Multiple tank sites are currently being investigated through the underground storage tank (US) program, as provided by the Florida Administrative Code, Chapter 62-770. These are examples of some, but not all the site-specific Applicable or Relevant and Appropriate Requirements (ARARs) that are in progress at NAS Pensacola.

A total of 46 PSCs have been identified at NAS Pensacola. Of the 46 PSCs, 25 PSCs have been classified as requiring Remedial Investigation and Feasibility Study (RI/FS) status and 21 PSCs have been classified as requiring screening status in accordance with the FFA (see Table 2-1). Six (6) of the 25 RI/FS PSCs require primary deliverables for the Fiscal Year (FY) 2010, including PSCs 38, 41, 43, 44, 45, and 46. Twenty-one (21) PSCs including PSCs 1, 2, 8, 9, 11, 12, 15, 17, 24, 25, 26, 27, 29, 30, 32, 33, 35, 38, 39, 40, and 42, have had Records of Decisions (RODs) submitted. Of the 21 screening PSCs, none require secondary deliverables for the FY 2010, 7 PSCs have been transferred to the UST program including PSCs 3, 19, 20, 21, 22, 23, and 37, and 12 PSCs have had Site Characterization Reports (SCR) submitted including PSCs 4, 5, 7, 10, 13, 14, 16, 18, 28, 34, 36, and 43. PSC 43 was

**TABLE 2-1
 IDENTIFICATION OF PSCs REQUIRING ACTION
 NAS PENSACOLA
 PENSACOLA, FLORIDA**

Category Number	OU Number	PSC	PSC Description	FFA Requires	FY 09 Status	Type of Contamination
1	-	13	Magazine Point Rubble Disposal	Screen	NFA (1996)	Rubble, Metal, Concrete
	10	32	IWTP Sludge Drying Beds	RI/FS	Transferred to RCRA 2003	F006 HW
	10	33	WWTP Ponds	RI/FS	Transferred to RCRA 2003	F006 HW wood, bricks
	10	35	Miscellaneous IWTP SWMUs	RI/FS	Transferred to RCRA 2003	Unknown
2	1	1	Sanitary Landfill	RI/FS	ROD / 5 yr Review FY 08	Solvents, PCB, Plating Solution, oil, paints, mercury, and asbestos
	3	2	Waterfront Sediments	RI/FS	ROD NFA (signed 2005)	Solvents, cyanide, metals
	11	38	Bldg. 71 Sewer Line TL 073/C southwest to the end	RI/FS	ROD / 5yr Review FY 08	Paint stripper, ketones, TCE, Industrial waste
	12	39	Oak Grove Campground Site	RI/FS	NFA ROD (signed 1998)	Debris, POL, broken clay, coal, cleaning solutions
3	2	11	N. Chevalier Disposal Field	RI/FS	ROD signed in FY 08	Industrial waste, oils, HW
	2	12	Scrap Bins	Screen	ROD signed in FY 08	Wet garbage material
	2	25	Radium Spill Site	Screen	ROD signed in FY 08	Radioactive waste
	2	26	Supply Department Outside Storage	RI/FS	ROD signed in FY 08	Industrial waste, oils
	2	27	Radium Dial Shop Sewer	RI/FS	ROD signed in FY 08	Radium, phosphorus
	2	30	Bldg. 649 & 755, Bldg. 648 (previously PSC 31) Sewer Line TL 045/A north to IWTP	RI/FS	ROD signed in FY 08	Metals, acids, caustic, degreasers, chromic solution, cyanide, paint, pesticides, paint thinner and sludge, industrial waste
4	15	40	Bayou Grande Area	*	NFA ROD (signed 2005)	Unknown
	16	41	NAS Pensacola Wetlands	*	RI/FS	Unknown
	17	42	Pensacola Bay	*	NA ROD (signed 1998)	Unknown

**TABLE 2-1
 IDENTIFICATION OF PSCs REQUIRING ACTION
 NAS PENSACOLA
 PENSACOLA, FLORIDA**

Category Number	OU Number	PSC	PSC Description	FFA Requires	FY 09 Status	Type of Contamination
5	6	9	Navy Yard Disposal	RI/FS	NFA ROD (signed 1999)	Trash and refuse
	-	10	Commodores Pond	Screen	NFA (agreed on 2000)	Underwater storage of oak timbers
	-	14	Dredge Spoil Fill	Screen	NFA (agreed on 1997)	Dredge
	6	29	Soil South of Bldg. 3460	RI/FS	NFA ROD (signed 1999)	Slimy black substance (unknown)
	-	34	Solvent North of Bldg. 3557	Screen	NFA (agreed on 2000)	Solvent detergent
6	4	15	Pesticide Rinsate Disposal Area	RI/FS	ROD / 5yr Review FY 08	Organic pesticide
	14	17	Transformer Storage Yard	RI/FS	NFA ROD (signed 1998)	Dielectric oils, PCBs
	-	18	PCB Spill Area	Screen	NFA (agreed on 2000)	Transformer oil, PCBs
	-	28	Transformer Accident	Screen	NFA (agreed on 1997)	Transformer oil
7	-	4	Army Rubble Disposal	Screen	NFA (agreed on 1997)	Rubble, timber, pipes, other wastes
	-	5	Borrow Pit	Screen	NFA (agreed on 1995)	Unknown
	-	7	Firefighting School	Screen	NFA (agreed on 2000)	POLs
	13	8	Rifle Range Disposal	Screen		Solid waste, paper
	-	16	Brush Disposal Area	Screen	NFA (agreed on 1997)	Pruning and tree trimming refuse
	13	24	DDT Mixing Area	Screen	ROD / 5yr Review FY 08	DDT w/diesel fuel
8	-	36	IWTP Sewer Line	Screen	NFA (agreed on 1997)	Industrial waste
9	18	43	Demolition Debris Disposal Area 43	*	ROD	Metals
10	19	44	Former UST 3221SW	*	RI/FS	Solvents
11	20	45	Building 603 Lead Site	*	RI/FS	Lead
12	21	46	Former Building 72	*	RI/FS	Metals

**TABLE 2-1
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 PENSACOLA, FLORIDA**

Category Number	OU Number	PSC	PSC Description	FFA Requires	FY 09 Status	Type of Contamination
13	-	-	Chevalier Field Machine Gun Range	*	SI Screening	Munitions constituents
	-	-	Chevalier Field Pistol Range	*	SI Screening	Munitions constituents
	-	-	Fort Barrancas Rifle Range (tree Ranges)	*	SI Screening	Munitions constituents
	-	-	Fort Redoubt Skeet Range	*	SI Screening	Munitions constituents
	-	-	Magazine Point Bombing Target	*	SI Screening	Munitions and Explosives of Concern
	-	-	Magazine Point Rifle Range	*	SI Screening	Munitions constituents
	-	-	National Cemetery Gunnery Range Area North (four ranges)	*	SI Screening	Munitions constituents
	-	-	National Cemetery Gunnery Range Area South (two ranges)	*	SI Screening	Munitions constituents
	-	-	National Cemetery Skeet Range and Trap Range (two ranges)	*	SI Screening	Munitions constituents
	-	-	Sherman Field Rifle Range	*	SI Screening	Munitions constituents

Notes:

*Sites added after the FFA was signed in 1990.

RI/FS: Remedial Investigation/Feasibility Study

NFA: No Further Action

FFA: Federal Facility Agreement

IWTP: Industrial Water Treatment Plant

WWTP: Waste Water Treatment Plant

RCRA: Resource Conservation and Recovery Act

ROD: Record of Decision

POL: Petroleum, Oil and Lubricant

UST: Underground Storage Tank

DDT: Dichlorodiphenyltrichloroethane

PCB: Polychlorinated Biphenyl

HW: Hazardous Waste

SWMU: Solid Waste Management Unit

TCE: Trichloroethene

upgraded to RI/FS status and USEPA has issued it as OU 18 because elevated levels of chemicals of potential concern (COPCs) have been identified in the Confirmation Study Report (CSR). Screening PSC 6 was deleted during the screening process. These screening PSCs are tracked in the SMP with non-enforceable schedules for planning purposes only. The NAS Pensacola Tier I Partnering Team elevated PSC 44, 45, and 46 to RI/FS status because elevated levels of COPCs have been identified during the SCR investigation at the August 2006 meeting. USEPA has assigned OU numbers to these sites (OU 19, 20, and 21, respectively). Each OU narrative identifies and briefly describes all PSCs to which the accompanying OU

specific schedules apply. PSCs 2, 4, 5, 6, 7, 9, 10, 13, 14, 16, 17, 18, 28, 29, 32, 33, 34, 35, 36, 39, 40, and 42 have obtained No Further Action status under the IRP.

In FY 2009, the Navy included the additional areas of concern (PSCs) identified as part of the Military Munitions Response Program under the Defense Environmental Restoration Program to address munitions and explosives of concern at other than operational military ranges and other sites. A PA was completed by Malcolm Pirnie, Inc (November 2008) which identified and provided information on 10 areas of concern (PSCs). The 10 PSCs have been grouped together as Category 13. A further subset of the PSCs is the grouping of Munitions Constituent (MC) PSCs including: Chevalier Field Machine Gun Range, Chevalier Field Pistol Range, Fort Barrancas Rifle Ranges (three ranges), Fort Redoubt Skeet Range, Magazine Point Rifle Range, National Cemetery Gunnery Area North (four ranges), National Cemetery Gunnery Area South (two ranges), National Cemetery Skeet Range and Trap Range (2 ranges), and Sherman Field Rifle Range. These PSCs were reported to have munitions only, with no documented use of explosives. The remaining site, the Magazine Point Bombing Target, is classified as a Munitions and Explosives of Concern (MEC) PSC because of historic evidence of historic explosive use. Based on the Preliminary Assessment documentation all 10 sites have been carried forward to the Site Inspection stage.

Schedules are in place for each screening PSC in the IRP, and will be used to track the investigation progress providing updates to the Remedial Project Managers (RPMs). Each screening PSC will remain a screening PSC until such time as defensible and validated Level III or IV validated data becomes available. Once available, the Navy will utilize such data to either prepare individual PSC Site Characterization Reports to support a No Further Remedial Action Planned (NFRAP) determination with USEPA and FDEP concurrence, or immediately reclassify the PSC to RI/FS status. When any screening PSC is reclassified to RI/FS status, an enforceable schedule with due dates will be submitted at the next Tier I Partnering meeting. The parties will either reach agreement on a schedule at that meeting or will set a time frame for agreeing on that schedule. For PSCs currently listed as RI sites, if upon review of the RI report, the Parties agree that no remedial action is needed, then a draft Proposed Plan will be submitted in place of the FS. The Parties should make this decision as early in the process as possible and revise the appropriate enforceable schedules. During the investigation, if a removal action is deemed necessary or desirable, the DoN will provide a schedule indicating impacts to the current enforceable schedule for the consideration by the NAS Pensacola Tier I Partnering Team.

Specific changes have been made to facilitate the investigation at OUs 2 and 3. All Category 3 RI/FS PSCs (11, 26, 27, and 30) have been combined into OU 2 due to their geographic proximity and common potential remediation. (Note: PSC 27 was originally OU 7 and PSC 30 was originally OU 5.) All Category 3 Screening PSCs, including 12 and 25, are associated with OU 2. It should be noted that PSC 25 was originally associated with OU 7. The original OU 9 – PSC 31 (Soil North of Building 648) has been combined with

PSC 30 (Building 649 and 755) within Category 3, OU 2 due to the proximity and similar contaminants. PSC 27 (Radium Dial Shop Sewer) and Screening PSC 25 (Radium Spill Site) have been moved to Category 3 so they can be reported together with OU 2. This combination was necessary to allow study of contaminant migration across site boundaries. Although originally in Category 2, OU 7 [PSC 26 (Supply Department Outside Storage) and Screening PSC 12 (Scrap Bins)] have been moved to Category 3 due to their geographic proximity to Category 3 PSCs. Category 3, OU 3 - PSC 2 (Waterfront Sediments) and Category 3, OU 11 - PSC 38 (Building 71 Sewer Line TL 073/C Southwest to End) have been moved to Category 2 to expedite completion of the investigation. Additional changes were agreed upon at the 1996 August 22 NAS Pensacola Tier I Partnering Team meeting. Due to the proximity of PSCs 8, 22, and 24 and the detected levels of contamination at PSCs 8 and 24, these sites were grouped into OU 13. Therefore, Category 6, Screening PSC 24 (DDT Mixing Area) has been moved to Category 7, elevated to RI/FS status, and grouped into OU 13 based on geographic location. Category 7, Screening PSC 8 (Rifle Range Disposal) has been elevated to RI/FS status and grouped into OU 13 based on geographic location. Category 7, RI/FS PSC 22 has been transferred to the UST Program.

The seven remaining PSCs that will not proceed in the IRP are PSCs 3, 19, 20, 21, 22, 23, and 37. These PSCs were transferred to the UST Program and are not included or tracked in this SMP. The FDEP has a regulated process for the remediation of petroleum contaminated sites.

As agreed upon in the March 1999 NAS Pensacola Tier 1 Partnering Meeting in Tallahassee, Florida, the Navy, in a letter dated March 6, 2002, requested groundwater be handled under RCRA Authority at OU 10. The selected remedy for OU 10 was for soil excavation, with deferral of groundwater treatment to the RCRA program. Soil excavation has been completed in accordance with the ROD and is documented in the Remedial Action Completion Report.

OU 10 meets the criteria established in 62 FR 62523 to defer the site to the RCRA program. Performance standards for CERCLA were included in the RCRA Corrective Action Plan. The RCRA corrective action would, therefore, afford equivalent protection to a CERCLA action. The transfer to RCRA will eliminate the need for further cleanup under CERCLA. The transfer to RCRA, as concurred by FDEP and USEPA, will ensure that the remedy remains protective of human health and the environment, complies with federal and state requirements that were identified in the ROD as applicable or relevant and appropriate to this remedial action at the time the original ROD was signed, and is cost-effective.

The CERCLA RI/FS process is tailored to allow prioritization of PSCs according to potential threat to human health and the environment. The process initially focuses on source identification and delineation of soil, sediment, groundwater and surface water contamination. Data is continually assessed and PSCs evaluated to determine if contamination is present, to what extent, and what further action is needed. Should a threat to

human health and or the environment exist, the process is responsive to provide time critical removal of contaminants from a PSC. If an initial data evaluation indicates groundwater and/or surface water to be an immediate threat to human health or the environment, interim actions may be performed to mitigate further transport from the PSC. If groundwater or surface water contamination is not judged to be an immediate threat, delineation may be performed on a larger scale by viewing local aquifer and surface water systems as an individual OU(s), which may be impacted by several PSCs simultaneously.

Innovative ways are continually sought to reduce lengthy interim report development and review process. Methods such as offering data presentations and “on-board” document reviews to regulatory agencies allowing continual data assessment and rapid decision-making are good examples. These data presentations are in response to a need to eliminate the requirement for formal interim data reports and thereby reduce the time required to reach critical decision points for each PSC. Specifically, the data gaps and the information needed to fill those gaps shall be identified by evaluating the data itself rather than by evaluating a formal data report. These data presentations to concerned agencies offer effective communication and a reduced schedule to reach a ROD. A formal report shall be prepared once the nature and extent of contamination has been adequately delineated for the purposes of performing a Baseline Risk Assessment (BRA) and selecting a Remedial Action. Decisions concerning data assessment and actions to be taken can be made during NAS Pensacola Tier I Partnering meetings. These meetings will provide a forum for discussion of investigative results and proposed actions. The verbal decisions may be final with no reporting and review time required.

This approach synthesizes prioritization of PSCs with a realistic view of dynamic environmental systems. Areas more easily defined can be identified and treated, thereby removing PSCs in a timely manner. Flowing groundwater and surface water systems are naturally continuous without regard for PSC boundaries, and may be investigated and treated as a single system.

As agreed upon in the FFA, the DoN shall update the SMP yearly. This SMP provides event management planning. Included in this SMP is a description of NAS Pensacola's PSC program arrangement into remedial activity categories and OUs. Updates will reflect changes in project priorities, changes in scheduling, and the addition or deletion of PSCs due to the site condition or program accomplishments with the continued regulatory agency and the Restoration Advisory Board (RAB) involvement.

Additionally, during FY 09, the Community Involvement Plan (CIP) was updated. This was the third update to the CIP originally issued on 1990.

3.0 RATIONALE FOR OPERABLE UNIT GROUPINGS

To facilitate implementation of the NAS Pensacola RI/FS program, the 22 PSCs requiring RI/FS have been clustered into 21 OUs. The scheduled work at these OUs is being prioritized based on relative potential threat, schedule optimization, and task management. The category priorities were originally formulated in the SMP, at the June 1992 RPM meeting for Category 1-4 and in August 1992 for Category 5-7 for the yearly SMP submittal. As a result of the 1993 Base Realignment and Closure process, category priorities were modified and are reflected in the following operable unit narratives. The criterion used to generate the RI/FS OUs was as follows.

- Geographic proximity of PSCs
- Similar contamination types
- Similar aquifer contamination zones
- Similar potential investigation methods
- Potential scope and complexity of the investigation
- Mission impact of remedial activities
- Regulatory concerns
- Similarity of potential remedial actions
- Potential for human exposure/contact
- Suspected mobility of potential contaminants
- Potential for off-site migration and exposure
- Relative threat to groundwater (e.g., suspected date, and volume of release)

These OUs may be re-defined as more data is collected and evaluated. Ultimately, an OU will consist of PSCs with common matrices which require similar remedial efforts, or similar potential for human exposure/contact, or the potential for earlier remediation.

Due to the large number of PSCs on NAS Pensacola, the number of PSCs in each OU, and the aggregate complexity of the contamination problem at each OU, the commencement of work at all OUs concurrently is not feasible. The schedule has been staggered to relieve these and other problems such as regulatory staffing, monetary resources, and contractor resources.

4.0 EXCLUSIONS

The PSCs undergoing screening activities are included and otherwise addressed hereafter in this SMP; some have been grouped with OUs for investigative and reporting purposes. After screening the PSCs, the RPMs will determine future response activities. If RI/FS activities are recommended, the DoN shall incorporate these PSCs into existing OUs prior to the submittal of the RI report, or designate them as new OUs following the criteria listed in Section 3.0. When all the parties have concurred, the future additional OUs shall become part of the SMP, and a revision to the SMP shall be made in accordance with Section 2.0.

5.0 OPERABLE UNIT SCHEDULING

OU schedules are based on the issuance of draft primary and secondary submittals. The schedule is in accordance with the FFA and reflects USEPA and FDEP input allowing for review periods based on their resources. The SMP assumes no dispute resolutions or delays due to holidays, vacations, or weekends. The schedule calendar is a Julian calendar without weekends, holidays, or other non-work days. The final comment responses to be submitted with each draft final primary document shall be the product of consensus of all Parties to the maximum extent practicable. In order to achieve this goal, the Navy shall notify the Parties in writing of any difficulties which it foresees in adequately addressing any agency's comments as soon as possible, and no later than 60 days from receipt of all regulatory comments.

6.0 OPERABLE UNIT NARRATIVES

The following narratives describe the contents of each OU. A brief description of each OU and what is known about its contamination is included. Deliverables for the upcoming year are listed with due dates.

6.1 RI/FS CATEGORY 1: OU 10

- PSC 32: Industrial Wastewater Treatment Plant (IWTP) Sludge Drying Beds,
- PSC 33: Wastewater Treatment Plan (WWTP) Ponds,
- PSC 35: Miscellaneous IWTP Solid Waste Management Units (SWMUs),
- PSC 13: Magazine Point Rubble Disposal (Screening PSC)

PSC 32, IWTP Sludge Drying Beds - These contiguous units operated with the IWTP from 1971 to 1984. These units received listed hazardous waste sludge (F006) from the RCRA surface impoundment (IWTP Surge Pond), and, as a result, underwent RCRA closure in 1989. Contents of the drying beds (remaining sludge and leachate drainage system) and an underlying layer of sand were removed to about 6 feet below ground surface. Material removed was disposed of as a hazardous waste. The PSC was then backfilled with clean sand and capped with high density asphalt. The site's groundwater is monitored by three monitoring wells and the surrounding HSWA permit groundwater monitoring system. The PSC will continue to be monitored under the HSWA permit as a part of the IRP.

PSC 33, WWTP Ponds - These surface impoundments consist of the domestic polishing pond, phenol/stabilization pond, and industrial surge pond. In 1987, the USEPA RCRA Compliance Branch determined the polishing and stabilization ponds received listed F006 hazardous waste from the surge pond. The ponds were taken out-of-service. In 1988 to 1989, the ponds underwent RCRA permitted "clean closures". The sediment in the ponds was removed and disposed of as a hazardous waste. No further formal monitoring of these surface impoundments is required, but they are in range of the HSWA permit monitoring system. The industrial surge pond was taken out-of-service and underwent closure in 1989. The industrial surge pond is suspected of being the prime contributor to the IWTP groundwater contamination. The surge pond was removed to the groundwater table. The groundwater table is approximately 6 feet below ground surface. Removed material was disposed of as a hazardous waste. The surge pond PSC will continue to be monitored under the HSWA permit as part of the IRP.

PSC 35, Miscellaneous IWTP SWMUs - In addition to PSC 32 and 33 units, other units in the IWTP may receive hazardous waste or constituents. These will be investigated for possible releases. Most of these units are above ground tanks. These tanks require only visual inspection for leaks, cracks, or other evidence

of release. Also included are underground oil/sludge storage tanks and underground piping which are appurtenances to SWMUs. The following units are included as miscellaneous IWTP area SWMUs:

- Industrial Grit Chamber
- Primary Clarifier
- Oil/Water Separator
- Oil Storage Tanks
- Sludge Thickener
- Belt Filter Presses
- Parallel Flocculators
- Aeration (activated sludge) Tank
- Parallel Final Clarifiers
- Aerobic Sludge Digester
- Contact Chlorinator
- Ancillary Piping, Pumps, Junction Boxes, etc.

PSC 13, Magazine Point Rubble Disposal (Screening PSC) - PSC 13 was investigated and reported on concurrently with OU 10. This PSC is within the same area as PSC 32 and 33, and was found after the construction in 1971 and upgrading of the existing WWTP to provide tertiary treatment of industrial wastes and secondary treatment of the domestic wastes by NAS Pensacola.

The PSCs in OU 10 were grouped together due to the following: (1) geographic proximity of PSCs, (2) similar contamination types, and (3) similar groundwater flow. Prioritization of these PSCs was due to the suspected magnitude and toxicity of contamination, the potential for off-site migration of contaminants via several pathways, and the potential for human exposure.

2010 Primary Deliverables	Due Date
None: ROD Completed. OU Transferred to RCRA	
2010 Secondary Deliverables	
None	

6.2 R/FS CATEGORY 2: OU 1

PSC 1, Sanitary Landfill - OU 1, also referred to as PSC 1 or Site 1, is an inactive sanitary landfill encompassing approximately 85 acres. The landfill surface varies from 8 to 20 feet above mean sea level and is densely vegetated with 15- to 40-foot tall planted pines and natural scrub vegetation. During the

early 1950s and until the official closing October 1, 1976, a variety of domestic and industrial wastes generated from NAS Pensacola and other outlying Navy facilities were disposed at the PSC 1. A partial list of wastes and quantities disposed at the site included:

- Ketone-soaked rags
- PCB- and transformer-oil-soaked rags [6,500 cubic feet (ft³)]
- Paint chips
- Paint sludge from water wall paint booth (170,000 pounds)
- Paint sludge (5,200 gallons)
- Dry air-filter pads from paint booths
- Compressed air cylinders (200)
- Asbestos from building demolition
- Wood soaked with plating solutions
- Pesticide rinsate
- Garbage (64,800 tons)
- Containers of paints, pesticides, oils, strippers, plating chemicals, solvents, thinners, etc.

Based on the data collected during the Site 1 RI, the *Final ROD*, issued by Ensafe on August 19, 1998, outlined three Remedial Action Objectives (RAOs) for the Site 1:

1. Protection of groundwater from leachable compounds
2. Restoration of groundwater and prevention of further contamination of shallow/intermediate groundwater
3. Prevention of further contamination of surface water in Wetland 3

The remedial actions selected for the site included:

- Institutional controls to restrict groundwater use and intrusive activities
- Implementation of a groundwater monitoring program to ensure that natural processes are effectively reducing the concentrations of organic compounds to attain performance standards
- A groundwater interceptor system to treat the iron-contaminated groundwater that is migrating from the landfill and discharging to Wetland 3

The long-term monitoring plan was implemented by Tetra Tech NUS, Inc. (TtNUS). Groundwater was monitored for the following constituents: nickel, benzene, chlorobenzene, vinyl chloride,

1,1,2,2-tetrachlorethane, xylenes, aluminum, cadmium, chromium, iron, and manganese. A System Optimization Study was completed in 2007.

As stated in the *Final ROD* (Ensafe, 1998a), the interceptor trench was installed to prevent iron-contaminated groundwater from discharging to Wetland 3. At that time, FDEP considered the point where groundwater discharged to surface water at Wetland 3 to be the point of compliance. The interceptor trench was installed by Bechtel and has operated since 1999. Intercepted groundwater has been discharged to the Federally Owned Treatment Works (FOTW) for treatment. Despite the operation of that system, iron concentrations in Wetland 3 remain above reference concentrations. As stated in the Optimization Study by TtNUS and agreed by the NAS Pensacola Tier I Partnering Team, use of the interceptor trench was discontinued in 2009 because historic data had indicated that the system was not effective in reducing iron concentrations in the wetland.

In addition, a Technical Memorandum for Reconnaissance Phase Flow Control Pilot Study was submitted in February 2009 (TtNUS, 2009). The memorandum was completed to address the possibility of blocking the culvert between Wetland 3 and Wetland 4 to isolate Wetland 3 and thereby protect Wetland 4 by creating an infiltration area within Wetland 3 for the treatment of iron. The Memorandum also addressed the establishment of a revised Point of Compliance sampling location for the wetlands. The Pilot Study memorandum documented that the culvert could not be blocked because of the persistent upward groundwater flow which would not allow infiltration within the wetland. The Pilot Study also recommended that the Point of Compliance sampling location should be moved to Wetland 4 prior to the discharge location to Bayou Grande (TtNUS, 2009). The regulatory agencies concurred with the recommendation to move the compliance location.

2010 Primary Deliverables	Due Date
None: ROD Completed and Five Year Review Done 09/2008	
2010 Secondary Deliverables	
None	

6.3 R/FS CATEGORY 2: OU 3

PSC 2: Waterfront Sediment Area - PSC 2 is on the southeastern shoreline of NAS Pensacola, along Pensacola Bay. The site consists of near-shore sediments along the waterfront. From 1939 to 1973, untreated industrial wastes from Naval Aviation Depot and Naval Air Rework Facilities operations were routinely discharged into Pensacola Bay, near PSC 2. Over 34 years, an estimated 83 million gallons of the following materials were disposed of in the bay: waste-containing paint, paint solvents, thinners, ketones, trichloroethylene, alodine, mercury, and concentrated plating wastes (primarily chromium,

cadmium, lead, nickel, and cyanide). Other potential impacts may have occurred from vessel operations at the pier and docks in the immediate area. Additionally, off-site sources (other non-Navy vessels or operations) may have impacted the site due to the fluctuating nature of bay waters and sediment.

Based on the data collected during the Site 2 investigations, the *Draft ROD* issued by Ensafe on August 9, 2005, outlined the RAO for the OU 3 site:

- Protection of ecological environment

The remedial actions selected for the site included:

- Natural processes (i.e., biological, physical, and/or chemical, and/or burial) are expected to reduce toxicity and volume (via dispersion) over time.
- Homeland Department security restrictions prevent human exposure to contaminated sediments at Site 2. Unauthorized boat traffic is not allowed within 500 feet of the NAS Pensacola shoreline. Site 2 is within the restricted area.

The RI and risk assessment have addressed all media at the site; therefore, no other actions will be considered for Site 2 unless Homeland Department security restrictions are substantially changed.

2010 Primary Deliverables	Due Date
None: ROD Completed (NA)	
2010 Secondary Deliverables	
None	

6.4 RIFS CATEGORY 2: OU 11

PSC 38: Building 71 and Industrial Waste Sewer Line (TL 073/C southwest to the end) - OU 11, Site 38 consists of the contaminated soil and groundwater identified at Buildings 71 and 604 and associated IWTP sewer line area of NAS Pensacola.

Building 71, was used from 1935 to the late 1970s for aircraft paint stripping and painting operations, and consisted of a steel-framed structure with metal siding on a 10- to 14-inch-thick concrete slab. The building was approximately 100 feet wide by 160 feet long and approximately 35 feet high.

Waste stored during this period reportedly consisted of solvents, acids, caustics, oxidizers, and liquid and non-liquid toxic materials (E&E, 1992). The building structure has subsequently been demolished and the area is used by Morale, Welfare, and Recreation (MWR) for parking large trucks.

Building 604, was an irregularly shaped, brick/masonry structure built in 1937. Naval Aviation Depot metal plating operations were located in Building 604 until it was closed in May 1996 (EnSafe, 2005a). Initial plating operations were conducted in the western portion of Building 604 from approximately 1960 until the shop was demolished around 1970 (NEESA, 1983).

Wastes from various operations at Site 38 (including paint stripping) were discharged to Pensacola Bay until the IWTP was built in 1973. Wastes previously entered the IWTP sewer line by gravity feed and force main without any pretreatment or segregation. The interconnected gravity lines, which previously served operations at Building 604 and Building 71, flow to the lift station at Building 3435. The force main extends northeast from the lift station where it eventually discharged to the IWTP (EnSafe, 2005a).

Contaminants identified in the Building 71 study area included heavy metals, chlorinated solvents, and petroleum solvents potentially related to past paint stripping and metal refinishing activities. Specifically, inorganics, semivolatile organic compounds (SVOCs), pesticides, and PCBs exceeded applicable criteria for the Building 71 study area. SVOC contaminant exceedances were primarily associated with the IWTP line, except for one location beneath the southern part of Building 604. Parts cleaning took place in the general vicinity of this sample. Pesticides and PCBs exceeded their criteria in samples from grassy areas on site, likely as the result of residuals remaining from routine spraying.

Contaminants identified in the Building 604 study area included inorganics, SVOCs, pesticides, and volatile organic compounds (VOCs). Heavy metals, including chromium and cadmium, were also detected above reference concentrations and applicable criteria near the former plating facility.

Based on the data collected during the Site 38 RI, the *Final ROD* issued by TtNUS on August 26, 2006, outlined two RAOs for the OU 11 site:

- Monitor groundwater to insure COPCs are not migrating off-site and institutional controls
- Eliminate human health risk above Hazard Index (HI) = 1.

The remedial actions selected for the site included:

- Except for the areas identified for removal, detected concentrations remaining in soil do not present an unacceptable threat to human health or the environment assuming that only industrial and/or commercial uses are permitted at Site 38 and the existing caps are maintained.

- Although contamination is present in groundwater at concentrations greater than FDEP cleanup target levels (CTLs), detected concentrations are relatively low and do not present an unacceptable threat to human health or the environment under the groundwater use restrictions implemented as part of the selected remedy.
- Implementing institutional controls through the Land Use Control Assurance Plan (LUCAP) to restrict use of groundwater from the surficial zone of the sand and gravel aquifer within 300 feet of the site.

Because of Hurricane Ivan damage (2004), the Navy elected to remove the buildings and associated parking lots. Surface soil areas identified as exceeding FDEP Soil Cleanup Target Levels (SCTLs) were to be removed and replaced with clean fill to prevent unacceptable exposure.

Source removal activities were reportedly conducted at Site 38 in conjunction with cleanup of hurricane related debris, and clean fill was placed in the excavated areas to limit direct exposure to impacted soil. However, no report documenting associated activities was available for review. Monitoring of natural attenuation of groundwater quality has not been initiated because documentation of the source removal activity has to be documented prior to initiation.

Confirmatory sampling was completed in 2009 to determine if the removal was done according to the remedy as needed to prevent unacceptable risk exposure. Additional soil data evaluation and groundwater monitoring will be completed in FY 2010.

2010 Primary Deliverables	Due Date
Draft Remedial Design	10 April 2010
2010 Secondary Deliverables	
Draft UFP SAP – Groundwater monitoring	20 December 2010

6.5 R/FS CATEGORY 2: OU 12

PSC 39: Oak Grove Campground Area - Oak Grove is a campground area located immediately south of Sherman Field on the south side of Radford Boulevard. An area of stressed vegetation and stained soil approximately 150 feet in diameter was found near the Pensacola Bay. A small amount of construction debris consisting of old brick, broken clay pipe, and coal is scattered across the site. Records indicate that a saw mill was once located near this site.

The selected remedy for Site 39 was for No Further Action with a review of the site within five years. The significant difference to the July 1995 ROD involves deleting the five-year review, which was included

because the risk assessment indicated the detected arsenic and aluminum in groundwater contributed to a potential for excess risk. Arsenic occurs naturally and the detected levels in groundwater [5 parts per billion (ppb)] are less than the Federal Maximum Contaminant Level (MCL) and Florida Primary Drinking Water Standard (50 ppb). This change provided cost savings while protecting human health and the environment. Aluminum occurs naturally and exceeded its Federal Secondary MCLs and Florida Secondary Drinking Water Standards. The exceedances are limited to the upper portion of the shallow aquifer, which is not used for potable water in this area because of saltwater intrusion from Pensacola Bay.

2010 Primary Deliverables	Due Date
None: ROD Completed (NFA)	
2010 Secondary Deliverables	
None	

6.6 R/FS CATEGORY 3: OU 2

- PSC 11: North Chevalier Disposal Area
- PSC 26: Supply Department Outside Storage Area
- PSC 12: Scrap Bins (Screening PSC)
- PSC 27: Radium Dial Shop Sewer
- PSC 25: Radium Spill Area (Screening PSC)
- PSC 30: Buildings 648, 649, and 755 and Sewer Line (TL 145/A North to IWTP)

PSC 11, North Chevalier Disposal Area - This PSC received industrial waste and oils, including hazardous waste. Groundwater analytical data from the on-site monitoring wells indicate both shallow and deep groundwater contamination with heavy metals and VOCs. Groundwater flow in the shallow system is eastward toward the creek leading into Bayou Grande. Sediment samples taken during the NACIP Study showed high concentrations of heavy metals. Borings to define the lateral and vertical extent of the landfill indicate construction debris east of the creek. The total lateral extent of the site is unknown. Old topographic surveys indicate the fill encompasses several hundred thousand square feet of the original tidal creek area. Prioritization of this PSC was due to the suspected magnitude and toxicity of contamination, pathways, and the potential for human exposure.

PSC 26, Supply Department Outside Storage Area - PSC 26 is a 90 square foot outside area, south of Building 684, used to store containers of industrial materials. Containers were stored on steel mats. Leakage is reported to have occurred from these containers. Since PSC 11 is down gradient from this area, investigations will be conducted.

PSC 12, Scrap Bins (Screening PSC) - Screening PSC 12 is being investigated and reported on concurrently with this OU. It is located approximately 800 feet northwest of Chevalier Field and 600 feet west of PSC 11. Most of the site area is enclosed by a fence and covered with a large concrete pad where heavy equipment is currently kept. From the early 1930s to mid 1940s, garbage from NAS Pensacola was placed in scrap bins and stored in this area (industrial waste was sent to the North Chevalier Disposal Area). Approximately 16 cubic yards (2 truck loads) per day of wet garbage was stored before being hauled off and used as livestock feed. There is no evidence of hazardous material disposal at this PSC.

PSC 27, Radium Dial Shop Sewer - From 1940s to 1976, Building 709 was used to rework instrument dials painted with radium containing paint. Spent cleaning solutions and luminous paint were routinely poured into the sanitary sewer system. In 1976, the building was dismantled and the drain pipe found to have a reading of 1.2 millirem per hour (mR/hr). The drain pipe was removed to a depth of 18 inches. The remaining lateral underground portion of the pipe was capped and covered with concrete. At PSC 27, radium removal operations at NAS Pensacola involved stripping radium-containing paint from instrument dials prior to repainting. From 1965 to 1975, these operations were conducted in Building 709. In 1975, all activities related to radium painted instruments, including stripping and re-painting, were permanently moved to Building 780. At the present, aircraft instruments containing radium are disassembled in Building 780. Instrument dials were stripped using paint thinner, then soaked in a lye and nitric acid solution. Contaminated instrument cases were processed by soaking in a "turco" acid solution. Components were cleaned with a wire brush to remove all residues.

Screening PSC 25 has been grouped with PSC 27 to investigate the extent of contamination. Analyses of shallow groundwater samples indicate gross Alpha concentrations below the primary drinking water standard. Chlorinated hydrocarbons were detected in shallow groundwater samples. Chlorinated hydrocarbons were not detected in samples from the deeper wells. The groundwater flow direction is, reportedly, south-southeast and toward PSC 30. Several analyses for chlorinated VOCs from the installed monitoring wells indicated traces of solvents are present in the groundwater.

PSC 25, Radium Spill Site (Screening PSC) - PSC 25 is being investigated and reported on concurrently with this OU and is located on the eastern portion of NAS Pensacola just east of Murray Road and north of Farrar Road on the east side of Building 780. NEESA (1983) reported a small spill of low-level radioactive waste containing radium at this site in 1978. The spill occurred on pavement and was properly cleaned up according to NEESA. The spill occurred because drums of waste were being stored outside and allowed to corrode and leak. Building 780 was the location of radium removal operations for radium dials and other equipment. The equipment was decontaminated here before being repainted in the radium dial shop (former Building 708). Contamination resulting from the spill or waste handling is the focus of the investigation. On 14 October 1992, the UST program transferred 709D-N, which is at PSC 27, to the IRP.

PSC 30, Buildings 648, 649 and 755 and Industrial Sewer Line - Over a 15 year period north of Building 648, waste paint, thinner, and paint sludge were poured onto the ground. The only monitoring well near the site indicated low concentrations of chlorinated hydrocarbons. A second round of samples from this monitoring well detected no chlorinated volatiles. The exact location of the disposal site in relation to the monitoring well is not reported. On October, 14 1992, the UST Program transferred 647N and 648N, which are at previous PSC 31, to the IRP.

Building 649 housed a tin/cadmium plating shop with 15 tanks located inside this building, ranging in capacity from 200 to 500 gallons. These tanks, along with a 250 gallon tank of trichloroethylene, were emptied routinely into a ditch leading to a creek discharging into Bayou Grande. Acids, caustics, degreasers, and chromatic solutions were also drained into this ditch. After 20 years, this operation was replaced with a magnesium treatment line. The magnesium treatment line operated for 10 years.

Building 755 operated 50 tanks located inside this building over a 10 year period as a plating facility for nickel, lead, tin, chromium and miscellaneous metals. These tanks, ranging in capacity from 50 to 200 gallons, were drained periodically into the ditch described above. Sediment samples from four separate locations in the ditch were analyzed for metals and cyanide. Low levels of metal [below Extraction Procedure Toxicity (EP Toxic)] were found. On 14 October 1992, the UST Program transferred 647E, 647N, 649N, and 649W, which are at PSC 30, to the IRP.

Waste from various types of operations enters the Industrial Waste Sewer Line (TL 045/A north to the IWTP) without any pretreatment or segregation. Consequently, the waste stream may consist of everything generated or used in the facility, including paint strippers, heavy metals, pesticides, radioactive wastes, fuels, cyanide wastes (prior to 1962), solvents, and waste oils. In 1979, a pump failure at the final industrial waste lift station, located approximately 2,000 feet southwest of the IWTP, caused a spill of industrial waste into a nearby unnamed creek, which leads into the south arm of Bayou Grande. The spill was investigated by the FDER, and a Notice of Violation was issued to NAS Pensacola. The spill caused a minor fish kill in the creek.

These PSCs were grouped together mainly due to the following: geographic proximity of PSCs, the potential for off-site migration, and its impact on the other PSC. Prioritization of these PSCs was due to the suspected magnitude and toxicity of contamination, the potential for off-site migration of contaminants via several pathways, and the potential for human exposure.

Prioritization of this PSC was due to the suspected magnitude and toxicity of contamination, the potential for off-site migration of contaminants via several pathways, and the potential for human exposure.

Based on the data collected during the OU 2 RI, the *Final ROD* issued by TtNUS in 2008, outlined the following RAOs for OU 2:

- Protect human health by eliminating or preventing exposure to contamination in surface soil by COPCs that exceed Florida residential and commercial/industrial SCTLs.
- Eliminate a continuing contamination source to groundwater by eliminating COPCs in subsurface soil at concentrations that exceed Florida SCTLs for leachability.
- Reduce human health risk from exposure to groundwater by reducing groundwater contamination at OU 2 to meet Florida Groundwater Cleanup Target Levels (GCTLs).

The remedial actions selected for the site includes four major components: (1) natural attenuation of contaminated groundwater, (2) removal of selected soil areas, (3) land use controls (LUCs), and (4) groundwater monitoring.

The expected outcome of the selected remedy may be summarized as follows:

- Upon confirmation of the soil removal, OU 2 will be environmentally safe for its intended industrial use as long as the soil and groundwater LUCs are in place and observed.
- Groundwater cleanup goals will be attained in more than 30 years, and the surficial aquifer will become available for unrestricted use, although the surficial aquifer is not likely to be used because water is already provided to the area from an off-site source.

2010 Primary Deliverables	Due Date
None: ROD Completed	
2010 Secondary Deliverables	
UFP SAP for Groundwater to Surface Water Interface Investigation	08 December 2010

6.7 R/FS CATEGORY 4: OU 16

PSC 41: NAS Pensacola Wetlands - Site 41 encompasses all of the wetlands potentially impacted by site activities, both tidal and non-tidal, within the NAS Pensacola boundary. A USEPA inventory of wetlands identified and enumerated 79 wetland complexes on NAS Pensacola. Two other wetlands were identified during habitat/biota surveys. For the purpose of these studies, freshwater and brackish water ponds, and drainage ditches are included as wetlands. The majority and largest of the wetlands on NAS Pensacola are located in the western portion of the installation, primarily south and west of Sherman Field. About a third of the 81 wetlands are located east of Sherman Field, where most of the IRP sites are located. These small

and remnant wetlands are the only potential receptors on base. Contamination was detected in all eight wetlands that have been sampled during contamination assessments. Nineteen (19) PSCs (1, 3, 4, 5, 6, 9, 10, 11, 13, 14, 16, 29, 30, 32, 33, 34, 35, 36, and 39) on NAS Pensacola are suspected sources of contamination to these wetlands.

Decision making TRIAD analyses were used to round-out the ecological assessment of each wetland, to determine if the ecological impacts to sediment and surface water were acceptable or not. At wetlands determined to have COPCs, a human health risk evaluation was conducted. The following wetlands are recommended for an FS:

- Wetland 3
- Wetland 5A
- Wetland 15
- Wetland 16
- Wetland 18 (A&B)
- Wetland 64
- Wetland 10
- Wetland 48

The following wetlands are being assessed under the FDEP petroleum program; therefore, CERCLA has no authority to proceed:

- Wetland 12 (Bilge Water Spill)
- Wetland W1 (UST 18)

All other wetlands are recommended for NFA based on the weight of evidence from the various techniques used to analyze the data and that Navy policy prohibits investigation of wetlands not directly linked to Navy CERCLA/RCRA sites.

2010 Primary Deliverables	Due Date
Draft Proposed Plan	16 April 2010
2010 Secondary Deliverables	
None	

6.8 R/FS CATEGORY 4: OU 15

PSC 40: Bayou Grande - OU 15, including only Bayou Grande (Site 40), is an estuarine water body adjacent to the northern border of NAS Pensacola.

Bayou Grande, an estuarine water body connected to Pensacola Bay, lies adjacent to the northern boundary of NAS Pensacola. During contamination assessment investigations, total recoverable petroleum hydrocarbons (TRPHs), metals, polynuclear aromatic hydrocarbons (PAHs), and phenols were detected in near shore Bayou Grande sediment samples, and metals were detected in near shore Bayou Grande surface water samples. Sixteen (16) PSCs (1, 3, 9, 10, 11, 12, 15, 16, 23, 29, 30, 32, 33, 34, 35, and 36) are believed to potentially contribute to the concentrations found in Bayou Grande.

Bayou Grande has a total surface area of approximately 1.5 square miles and approximately 20 miles of total coastline. Approximately 8.5 miles of Bayou Grande coastline border NAS Pensacola property. Bayou Grande, with a mean depth of approximately 6 feet, is part of a larger surface water system known as the Pensacola Bay System. Site 40 (OU 15), Bayou Grande, was included as a separate site for an RI based on the possible receipt of hazardous substances and that media within Site 40 may individually provide exposure pathways impacting human health and the environment. The RI and the human health and ecological risk assessment conducted for OU 15 support a no-action remedial action.

2010 Primary Deliverables	Due Date
None: ROD Completed (NFA)	
2010 Secondary Deliverables	
None	

6.9 R/FS CATEGORY 4: OU 17

PSC 42: Pensacola Bay Area - NAS Pensacola is bordered on the south by Big Lagoon and Pensacola Bay, on the east by Pensacola Bay, and on the north by Bayou Grande. Only a very small portion of the western end of NAS Pensacola is farther than a mile from one of these bodies of water. Swampy areas exist on or near the western portion of NAS Pensacola. Man-made drainage ways and storm drains feed into the short intermittent streams emptying into Pensacola Bay and Bayou Grande. No perennial streams enter or exit NAS Pensacola, but the marshy areas (wetlands) and their small lakes retain water throughout the year. During contamination assessment investigations, metals, TRPH, PAHs, and VOCs were detected in sediment samples collected along the southeastern waterfront of Pensacola Bay. Fourteen (14) PSCs (2, 3, 4, 13, 14,

17, 18, 28, 32, 33, 35, 36, 28, and 39) on NAS Pensacola are suspected sources of contaminants to Pensacola Bay.

2010 Primary Deliverables	<u>Due Date</u>
None: ROD Completed (NFA)	
2010 Secondary Deliverables	
None	

6.10 R/FS CATEGORY 5: OU 6

- PSC 9: Navy Yard Disposal Area
- PSC 29: Soil South of Building 3460
- PSC 34: Solvent North of Building 3557 (Screening PSC)

PSC 9, Navy Yard Disposal Area - This area was used for the disposal of trash and refuse during the period between 1917 and the early 1930s. It is reported that the PSC is shown on several old maps as the Navy Yard Dump or the Warrington Village Dump (NEESA, 1983). In the late 1960s, while trenching for the IWTP system, part of PSC 9 was excavated. Glass, scrap metal, and debris were unearthed. No unusual odor was reported associated with the PSC. The IAS report concluded no further study was necessary and the PSC did not constitute a threat to human health or the environment. During the VS of this PSC, monitoring wells were installed at the southwest corner of Chevalier Field to determine shallow groundwater flow and groundwater samples taken to further delineate the contamination problem in the general area of Screening PSC 34 and PSC 29. Groundwater samples were analyzed for VOCs; however, no VOCs were detected in any samples obtained.

PSC 29, Soil South of Building 3460 - In 1981, workers excavating soil beneath the concrete apron south of Building 3460 received skin burns from a "black slimy liquid" in the soil. Types of chemicals involved and extent of contamination are unknown. A leak in the nearby industrial sewer line from the Naval Aviation Depot facility is the expected source. This site is part of the group including PSC 9 and Screening PSC 34 studied together.

PSC 34, Solvent North of Building 3557 (Screening PSC) - During May 1984, a leak occurred in a pipeline at the north end of Building 3557. The leak reportedly resulted in the loss of solvent detergent used for cleaning aircraft. The solution contained 1.7 percent chlorinated aromatic hydrocarbons solvent. Contamination of site soils and groundwater may have occurred as the result of the solvent detergent release. Contamination may have penetrated beneath the apron via the expansion joints which separated individual concrete tiles and via runoff of escaped solvent to the unpaved storage tank area. The unpaved drainage

ditch in the tank area is suspected to have carried contamination off-site and is presumed to be connected to the paved drainage ditch located west Chevalier Field.

These PSCs were grouped together mainly due to the following: geographic proximity of PSCs, the potential for off-site migration, and its impact on the other PSCs. Prioritization of these PSCs was due to the suspected magnitude and toxicity of contamination, the potential for off-site migration of contaminants via several pathways, and the potential for human exposure.

2010 Primary Deliverables	Due Date
None: ROD Completed (NFA)	
2010 Secondary Deliverables	
None	

6.11 R/IFS CATEGORY 5: PSC 10

PSC 10: Commodore's Pond (Screening PSC) - During the mid-nineteenth century, screening PSC 10 was the location of a small surface water body used for the underwater storage of shaped oak timbers. This underwater storage method preserved the wood prior to its use for shipbuilding. The original pond's, no longer in existence, exact dimensions are unknown. PSC debris was unearthed in the late 1960s during trenching operations for installations of the IWTP system. Abandoned oak timbers were exhumed and reburied on Magazine Point. It is reported no hazardous materials were encountered during this effort.

2010 Primary Deliverables	Due Date
None	
2010 Secondary Deliverables	
None: SCR Completed (NFA)	

6.12 R/IFS CATEGORY 5: PSC 14

PSC 14: Dredge Spoil Disposal Area (Screening PSC) - PSC 14 has been used for placement of dredge materials removed from Pensacola Bay. These materials represent the sand, mud, and debris found at various depths within the Pensacola Bay dredged channels and basins.

2010 Primary Deliverables	Due Date
None	
2010 Secondary Deliverables	
None: SCR Completed (NFA)	

6.13 RI/FS CATEGORY 6: OU 4

PSC 15: Pesticide Rinsate Disposal Area – OU 4, Site 15, is located in the northern portion of NAS Pensacola, and includes portions of the golf course, the golf course maintenance facilities, three concrete wash-down pads, two asphalt wash-down pads, a former pesticide/drum storage building, a removed UST, equipment storage buildings, and several in-use buildings.

From 1963 to the present, fertilizer, pesticide, and herbicide materials for application at the golf course have been stored and mixed at the golf course maintenance facility. Application equipment such as tractors, sprayer tanks, and spreaders are also rinsed at the facility’s wash-down pads, which are located northeast of Building 2692 and northwest of Building 3447. Prior to the construction of the wash racks, cleaning the equipment at the asphalt wash-down pad released dilute rinsate solutions directly onto the surrounding ground surface, where the materials infiltrated the soil [Geraghty and Miller (G&M), 1984].

In the past, a sink located outside of Building 3586 and a floor drain in a concrete pad north of the building collected pesticide and herbicide residue waste and discharged them into a UST. The contents were periodically pumped out by a contracted agent before its removal in 1993. Reportedly, the UST was removed in 1993 and the contents of the tank were spread across the ground surface, approximately 200 feet north-northwest of Building 3447 (EnSafe, 1999).

Contaminant types identified in soil samples collected at Site 15 consisted of metals (particularly arsenic), TRPH, VOCs, PAHs, and pesticides. Groundwater samples detected low concentrations of metals (particularly arsenic) and dieldrin/4,4-DDE (EnSafe, 1999).

Based on the data collected during the Site 15 RI, the Final ROD issued by EnSafe (1999) outlined two RAOs for the OU 4 site:

- Eliminate human health risk above Hazard Index of 1.
- Monitor groundwater to insure COPCs are not migrating off-site, and institutional controls.

The remedial actions selected for the site included:

- Removing excess risk from the dermal and ingestion pathways for contaminated soil by removing contaminated soil above industrial goals through a removal action.
- Performing groundwater monitoring to ensure the COPCs are not moving off-site. Monitoring slated to cease after two consecutive sampling events, demonstrate attainment of remedial goals, and concurrence with USEPA and FDEP is received.
- Implementing institutional controls through the LUCAP to restrict use of groundwater from the surficial zone of the sand and gravel aquifer within 300 feet of the site, as well as restricting the use of the site as industrial.

The results presented in the Interim Remedial Action Report indicate that all arsenic impacted soil at concentrations above the remedial goal were removed and replaced with clean backfill. Additionally, a Groundwater Monitoring Plan was prepared by CH2MHill in June 2003 and nine semi-annual monitoring events have been completed through November 2008. Semi-annual and annual reports summarizing the analytical results of monitored natural attenuation of groundwater indicated that groundwater concentrations have continued to decrease. The most recent sampling event reviewed (November 2008) indicated that groundwater arsenic concentrations had decreased below the remedial goal of 50 micrograms per liter (µg/L) in all but one monitoring well.

2010 Primary Deliverables	<u>Due Date</u>
None: ROD Completed and Five Year Review Completed FY 08	
2010 Secondary Deliverables	
None	

6.14 R/FS CATEGORY 6: OU 14

PSC 17: Transformer Storage Yard -Transformers containing PCBs as well as PCB-free transformers were stored on this paved area. A black oily residue on the pavement was found to contain high levels of PCBs as well as other chlorinated hydrocarbons. Three soil borings drilled through the pavement found significant concentrations of PCBs near the catch basin; leakage through joints in the pavement is the suspected cause. PCB concentrations were below the EP Toxic standard.

No sampling of soil outside of the paved area has been done. In addition, no samples were taken from sediments or soils within or under joints, cracks in the catch basin, or the storm sewer. Further study will be conducted on this PSC.

2010 Primary Deliverables	Due Date
None: ROD Completed (NFA)	
2010 Secondary Deliverables	
None	

6.15 R/FS CATEGORY 6: PSC 18

PSC 18: PCB Spill (Screening PSC) - In 1966, a transformer at Substation A reportedly failed, spilling approximately 50 gallons of transformer oil containing an unknown concentration of PCBs on the small gravel-covered area along the northeast side of substation A. It is assumed no clean-up effort was conducted. During IAS field investigations, analysis of a field sample indicated Aroclor 1260 was present at a concentration of 4 parts per million (ppm), which was less than that considered hazardous under the Toxic Substance Control Act.

2010 Primary Deliverables	Due Date
None	
2010 Secondary Deliverables	
None: SCR Completed (NFA)	

6.16 R/FS CATEGORY 6: PSC 28

PSC 28: Transformer Accident Area (Screening PSC) - In 1969, a transformer fell from a truck traveling on Radford Boulevard, just north of Building 632. The transformer broke open and spilled approximately 50 gallons of transformer oil onto the pavement. It is not known whether the oil contained PCBs. The oil was reportedly washed into a nearby storm sewer drain.

2010 Primary Deliverables	Due Date
None	
2010 Secondary Deliverables	
None: SCR Completed (NFA)	

6.17 R/FS CATEGORY 7: OU 13

- PSC 8: Rifle Range Disposal
- PSC 24: DDT Mixing Area

OU 13 is comprised of adjacent PSC 8 (Site 8) - Rifle Range Disposal Area and PSC 24 (Site 24) - DDT Mixing Area, which border the eastern side of John H. Tower Road and are southeast of the intersection of John H. Tower and Taylor Roads.

PSC 8: Rifle Range Disposal - The rifle range disposal area is located in the area now occupied by Building 3561, which houses the NAS Pensacola Public Works Center (PWC) Maintenance/Material Department. This building covers an area approximately 550 feet by 163 feet. Surrounding the building is an asphalt parking lot on the eastern, western, and northern sides of the building. Along the southern side of the building lies a small grassy area. This area was reportedly used for the disposal of solid waste (primarily paper) from NAS Pensacola between 1951 and 1955, and disposal was accomplished by burning and burial. Site 8 is surrounded by chain-link fencing.

PSC 24: DDT Mixing Area - Site 24 is immediately north of Building 3561 and Site 8. The northern portion is encompassed by the northwest corner of the Barrancas National Cemetery and contains many grave sites. The northern and central portions are primarily unpaved and sparsely covered with native grasses and trees. The southern portion contains a fenced storage area with a gravel and crushed shell surface. An unimproved dirt road runs east to west across the southern portion of the site. Site 24 was once used as a pesticide mixing and handling area. From the early 1950s until the early 1960s, Site 24 was used to mix DDT with diesel fuel for mosquito control. DDT reportedly spilled in the mixing area while being transferred from drums to spray tanks, and may have contaminated local soil and groundwater. DDT was aerially applied for at least 10 years to control mosquito outbreaks. In later years, DDT was applied by a fogger machine. On the average, two or three mosquito outbreaks occurred each year during the spring and summer. Following each outbreak, DDT was generally applied during a one-week period. For each aerial application, 500 gallons of a 20 percent DDT solution was mixed with 500 gallons of diesel oil. The fogger machine used 300 gallons of a 20 percent DDT solution mixed with 300 gallons of diesel fuel. It is estimated that up to 20 gallons of the 20 percent solution may have been spilled during the approximately 10 years of mixing at the site. The site is currently used as a buffer zone between John H. Towers Road and the Barrancas National Cemetery and for cemetery burials.

Based on the data collected during the Site 8 and 24 RI, and the Final ROD issued by TtNUS on August 10, 2006, the major components of the remedy are:

- LUCs to restrict groundwater use of the surficial zone of the sand-and-gravel aquifer until cleanup levels are met.
- Groundwater monitoring in accordance with a Monitoring Plan to monitor expected reductions in contaminant concentrations and assess whether any contaminants are migrating off-site.

The OU 13 ROD specified removal of isolated hot spot areas of impacted soil to reduce the direct exposure potential at the site. Approximately 634 cubic yards of dieldrin-impacted soil were removed from the eastern side of Building 3561 and approximately 429 cubic yards of cadmium-impacted soil were also removed from the western side of Building 3561. All dieldrin and cadmium impacted soil with contaminant concentrations exceeding the remedial goal of 0.004 milligrams per kilogram (mg/kg), and 0.005 µg/L, respectively were removed. The Groundwater Monitoring Plan has been approved and monitoring of natural attenuation has been initiated.

2010 Primary Deliverables	<u>Due Date</u>
None: ROD Completed and Five Year Review Done FY 08	
2010 Secondary Deliverables	
None	

6.18 RI/FS CATEGORY 7: PSC 4

PSC 4: Army Rubble Disposal Area (Screening PSC) - Site 4 is an area of about 150 feet by 800 feet southeast of Forrest Sherman Field, just north of Building 3260. In the early 1950s, rubble from tearing down the old U.S. Army barracks at Fort Barrancas was disposed of at Site 4. The rubble included timber, pipes, mattresses, and other waste.

2010 Primary Deliverables	Due Date
None	
2010 Secondary Deliverables	
None: SCR Completed (NFA)	

6.19 R/FS CATEGORY 7: PSC 5

PSC 5: Borrow Pit (Screening PSC) - Site 5, a long, shallow pit about 1 foot deep, is southeast of Forrest Sherman Field and east of Building 3221. Soil was removed (“borrowed”) from the site in 1976 for use elsewhere on the facility. The area is still mainly bare.

2010 Primary Deliverables	Due Date
None	
2010 Secondary Deliverables	
None: SCR Completed (NFA)	

6.20 R/FS CATEGORY 7: PSC 7

PSC 7: Firefighting School (Screening PSC) - The firefighting training school in Building 1713 has been in operation since 1940. Training that involved gasoline fires (and perhaps other flammable liquids) in open tanks of water reportedly occurred west of Building 1713. The presence of a clearing and firefighting tower east to southeast of Building 1713 suggests there was training conducted in those areas as well. There is no evidence of hazardous waste disposal or threat to human health or the environment.

2010 Primary Deliverables	Due Date
None	
2010 Secondary Deliverables	
None: SCR Completed (NFA)	

6.21 R/FS CATEGORY 7: PSC 16

PSC 16: Brush Disposal Area (Screening PSC) - Site 16 is northeast of the east end of Forrest Sherman Field. From the late 1960s to 1973 the site was used for the disposal of brush pruned and trimmed at NAS Pensacola. The Army may have used part of the site to burn garbage and dispose of ash.

2010 Primary Deliverables	Due Date
None	
2010 Secondary Deliverables	
None: SCR Completed (NFA)	

6.22 R/FS CATEGORY 8: PSC 36

PSC 36: IWTP Sewer Line (Screening PSC) - The industrial waste sewer line is about 23,000 feet long and is located in an area approximately 1 mile wide by 1.5 miles long in the southeastern portion of NAS Pensacola. Flow within the sewer line is toward the IWTP, which is located at the northeast end of the base.

2010 Primary Deliverables	Due Date
None	
2010 Secondary Deliverables	
None: SCR Completed (NFA)	

6.23 R/FS CATEGORY 9: OU 18

PSC 43: Demolition Debris Disposal Area 43 - Site 43 is located at the southwestern corner of Murray and Taylor Roads and north of Road Q, which provides access to the NAS Pensacola Officer's Quarters. Site 43 is located adjacent to several housing areas; therefore, recreational users as well as site and maintenance workers are expected to use the site. The site lies on the eastern slope of a low area between Murray and Taylor Roads and across the street from the entrance to the Officer's Quarters. The area covers approximately 40,000 square feet and the site elevation is approximately 20 feet above mean sea level. There is approximately 10 feet of vertical relief across the site. Previously the site contained a tennis court and a building foundation/basketball court; however, in 2003, the tennis and basketball courts were removed by the facility.

Site 43 is located in a developed area of the base. A paved parking lot covers approximately 31,000 square feet of the site area. The history begins in 1992 with the discovery of a partially buried drum. Subsequent investigations for magnetic anomalies determined the existence of several areas where buried objects were suspected to be present. During a site characterization field event, test pitting revealed the presence of several drums, which were removed. An interim remedial action (IRA) followed, and debris and contaminated soil to a depth of 2 feet from the surface were removed. An RI in 2005 and 2006 provided data indicating the presence of residual surface soil and shallow subsurface soil contamination to a depth not exceeding 4 feet below land surface and the presence of lead in groundwater at one location exceeding the regulatory standards (TtNUS, 2007c). In July 2008, the final FS for Site 43 was submitted and the draft ROD was submitted to the regulatory agencies on September 1, 2009.

2010 Primary Deliverables	Due Date
Draft Remedial Design	03 April 2010
2010 Secondary Deliverables	
None	

6.24 R/FS CATEGORY 10: OU 19

PSC 44: Former UST 3221 SW - Site 44 is located at the southwest end of Building 3221, a large hangar currently used to refurbish aircraft used for museum display. Building 3221 is adjacent to Forrest Sherman Field. The hangar and adjacent paved areas were part of the Naval Air Rework Facility (NARF), and were probably used for aircraft maintenance before the current National Museum of Naval Aviation location opened in 1975.

The paved area adjacent to the southwest corner of Building 3221 is currently used as a wash rack for cleaning aircraft and aircraft parts. Surface drainage in this area flows to a small concrete-lined ditch located on the southeast edge of the pavement. When aircraft parts washing activities are being conducted, a diverter system is used to direct the run off to the sanitary sewer system for treatment at the NAS Pensacola IWTP.

Site 44 was first investigated as UST Site 3221 SW in 1992, following the removal of a 1,000-gallon UST located at the southwest corner of Building 3221. Tetrachloroethene (PCE) was detected at concentrations exceeding the state guidance concentrations in four wells downgradient of the UST. Because of the low concentrations of PCE, the site investigation was allowed to continue in accordance with the petroleum program. The source of chlorinated solvents in groundwater was not determined during the UST investigation. Because of the detection of chlorinated solvents in groundwater, the Navy transferred this site to the IRP for further assessment (TtNUS, 2007b).

The release of contaminants at Site 44 appears to have resulted from routine aircraft maintenance operations. However, the time of disposal or accidental releases are unknown.

Arsenic and chlorinated PAHs were detected in surface soil and subsurface soil samples at concentrations exceeding risk-based screening criteria. TCE in groundwater samples exceeded risk-based screening criteria.

2010 Primary Deliverables	Due Date
Draft Proposed Plan	22 January 2010
Draft ROD	01 April 2010
2010 Secondary Deliverables	
None	

6.25 R/FS CATEGORY 11: OU 20

PSC 45: Building 603 Lead Site - During an investigation to characterize Site 18 (PCB spill at Substation A), lead concentrations in soil were found to exceed screening levels in an area west of Site 18. This area was designated as PSC 45 (Site 45) - Building 603 Lead Site and its initial boundaries were presumed based on the Site 18 investigation. Site 45 lies near the intersection of Mustin Street and Center Avenue at NAS Pensacola. No known source of contamination has been identified for Site 45. From the Site 18 investigation, four surface soil samples and one shallow groundwater sample exceeded screening criteria to define what is now the historical boundary of Site 45.

Although unpaved at the time of the PCB spill at Site 18, the surface of Site 45 now consists primarily of asphalt parking lots north and south of Mustin Street. Nearby areas are industrialized – containing warehouses, office spaces, and the old NAS power generating plant. No surface water bodies exist on site.

The area to the west of Building 1 is the location where lead and PAHs were detected in surface soil and subsurface soil samples at concentrations exceeding risk-based screening criteria, including PAH and lead concentrations greater the Florida industrial SCTL. The elevated human health risk will require active remediation to prevent further exposure to site soil and impact to site groundwater. An interim removal action should be considered to expedite site cleanup in this area. Additionally, metals and VOCs in groundwater at Site 45 exceeded risk-based screening criteria.

2010 Primary Deliverables	Due Date
Draft Proposed Plan	19 March 2010
Draft ROD	01 June 2010
2010 Secondary Deliverables	
None	

6.26 R/FS CATEGORY 12: OU 21

PSC 46: Former Building 72 - This PSC was discovered during the investigation of Site 38 – OU 11 (Building 71 Sewer Line). While investigating Site 38 (OU 11), lead concentrations detected appeared to be increasing further from the suspected source for Site 38.

Buildings 71 and 72 were used from 1935 up to the late 1970's for aircraft paint stripping and painting. Before 1973, wastes from paint stripping and painting operations were discharged directly to Pensacola Bay.

The release of contaminants at Site 46 probably resulted from routine aircraft maintenance activities and storage of materials used in these activities. The detections of chlorinated VOCs (CVOCs) and metals at Site 46 supports paint stripping activities as a probable source of contamination.

The area at the northeast corner of Building 72 where TCE and other CVOCs were detected in surface soil and subsurface soil samples will require active remediation to prevent further impact to site groundwater.

Metals and CVOCs in groundwater at Site 46 exceeded risk-based screening criteria. The proposed plan for remediation at Site 38 has established that natural attenuation of metals and CVOCs is sufficiently protective of human health and the environment.

<u>2010 Primary Deliverables</u>	<u>Due Date</u>
Draft Proposed Plan	21 May 2010
Draft ROD	01 August 2010
<u>2010 Secondary Deliverables</u>	
None	

6.27 R/FS CATEGORY 13: MRP SITES

- Chevalier Field Machine Gun Range
- Chevalier Field Pistol Range
- Fort Barrancas Rifle Ranges (three ranges)
- Fort Redoubt Skeet Range
- Magazine Point Bombing Target
- Magazine Point Rifle Range
- National Cemetery Gunnery Area North (four ranges)
- National Cemetery Gunnery Area South (two ranges)

-
- National Cemetery Skeet Range and Trap Range (2 ranges)
 - Sherman Field Rifle Range

Chevalier Field Machine Gun Range - The Chevalier Field Machine Gun Range is located along the northern boundary of Chevalier Field, within the boundaries of NAS Pensacola. The Chevalier Field Machine Gun Range is denoted on historical maps dated 1939 through 1943. Direction of fire was assumed to be from the east to the west based upon the orientation of the backstop berm on the 1943 map and the depiction of surrounding roads. The probable location of the firing line would have been approximately 50 feet east of the east side of the machine gun berm and just west of the adjacent road. The Chevalier Field Machine Gun Range is now located beneath Building 3644 between Pat Bellinger Road and Magazine Point Road and adjacent to Millington Road. One piece of munitions debris was located in the area west of Building 3644; however, the range-association of the debris could not be determined. Munitions use was probably limited to small arms ammunition, typically .30- and .50-caliber rounds.

Chevalier Field Pistol Range - The Chevalier Field Pistol Range is located northwest of Chevalier Field, within the boundaries of NAS Pensacola. The Chevalier Field Pistol Range is denoted on historical maps dated 1940 through 1942. Direction of fire is assumed to be from the southwest to the northeast, based upon the range orientation and the surrounding development, as depicted on historical maps. Approximately half of the Chevalier Field Pistol Range is currently located beneath Building 781, which is west of Warehouse Road and north of Page Road. The remaining half of the range is located beneath parking areas just east of Building 781 and an adjacent fenced parking area. Munitions use was probably limited to small arms ammunition, typically .38- and .45-caliber rounds.

Fort Barrancas Rifle Ranges - The Fort Barrancas Rifle Ranges is a complex of three historical ranges: Fort Barrancas Rifle Range 1, Fort Barrancas Rifle Range 2a, and Fort Barrancas Rifle Range 2b. The site is located in a partially developed portion of NAS Pensacola. Radford Boulevard, a jogging trail, landscaped areas, recreational fields, a U.S. Coast Guard facility, Pensacola Bay, and Big Lagoon currently overlap the site. The range and associated butt and firing lines for Fort Barrancas Rifle Range 1 are denoted on a 1910 map that shows the range's orientation with a general direction of fire from northeast to southwest. Based on the map's depiction of the berm located closer to the firing position than the targets, munitions would have been fired over the berm and would have landed in Pensacola Bay and Big Lagoon. Fort Barrancas Rifle Ranges 2a and 2b were identified on an 1893 map that shows a range butt located near the front of Fort San Carlos at sea-level. Three firing points that fired towards a target in front of Fort San Carlos are denoted on the historical map, with the general direction of fire being from east to west or southeast to northwest, depending on the location of the firing point. Two of the firing points are denoted in the PA as Fort Barrancas Rifle Range 2a and Rifle Range 2b. The third firing point was marked as 'proposed', indicating that it may not

have been in use. Consequently, it was not analyzed for the PA (Malcolm Pirnie, 2008). Munitions use at the Fort Barrancas Rifle Ranges was probably limited to small arms ammunition, typically .30-caliber rounds.

Fort Redoubt Skeet Range - The Fort Redoubt Skeet Range, also denoted as Gunnery Range and Army Range on historical maps, is located approximately 300 feet to the southwest of the walls of Fort Redoubt. The range is denoted on maps dated 1930 through 1954. Based upon information obtained from the 1950 map, the Fort Redoubt Skeet Range appears to have been a single-field range. One structure (Building 1712) is denoted on maps dated 1949 through 1954. Two features that appear to be a berm and a ditch appear on maps dated 1930 through 1954; however, no document was identified that explained the use or affiliation of these features. The Fort Redoubt Skeet Range lies partly within a thickly vegetated and wooded area as well as beneath a concrete and demolition waste disposal area. No MEC, munitions debris, or bullets/bullet fragments were observed in the accessible portions of the range. No berm, ditch, or structures exist at the site or in the immediate vicinity. Approximately 30 percent of the area comprising the surface danger zone for the Skeet Range falls on land that was transferred to the Department of the Interior in 1947. Munitions use was probably limited to small arms ammunition, typically 12-gauge, 16-gauge, 20-gauge, and .410-caliber shotgun rounds.

Magazine Point Bombing Target - The Magazine Point Bombing Target is located approximately 800 feet north of Millington Avenue, which is the northern boundary of Chevalier Field, within the boundaries of NAS Pensacola. The Magazine Point Bombing Target was identified on a historical map dated 1933; however, on a 1939 historical map, a 'Radio Compass House' was located in the vicinity of where the Magazine Point Bombing Target had been located on the 1933 map. The Magazine Point Bombing Target site includes the NAS Pensacola WWTP as well as a portion of Pensacola Bay. Undeveloped areas near the shoreline are covered with heavy vegetation, storm debris, concrete, and asphalt debris. Due to the proximity of Chevalier Field, munitions use was probably limited to practice bombs, possibly containing spotting charges.

Magazine Point Rifle Range - The Magazine Point Rifle Range was used for small arms target practice during the early 1900s. The range is positioned along the shoreline of Pensacola Bay about 0.3 miles north of Chevalier Field. According to historical maps, the Magazine Point Rifle Range was constructed directly to the north of Woolsey and the former U.S. Navy Yard and Station. The Magazine Point Rifle Range was partially destroyed during a hurricane in 1906 (Malcolm Pirnie, 2008). The historical archives search produced correspondence from 1910 that discussed proposed repairs and modifications to the Rifle Range after its partial destruction from a hurricane. In addition, a map dated 1910 shows the proposed repairs and modifications to the range, as mentioned in the 1910 correspondence; however, no other archives were identified that denoted the range or its modification after 1910. Currently, the northern and central portions of the former range are undeveloped and unmaintained areas, except for structures associated with the NAS Pensacola WWTP. The southern portion of the range currently contains an aviation maintenance and repair

facility, with a recreational park in the southernmost portion of the range. No structures exist at the site or in the immediate vicinity. Munitions use was probably limited to small arms ammunition, typically .30-caliber rounds.

National Cemetery Gunnery Area North - The National Cemetery Gunnery Area North is a complex of four historical ranges: Gunnery Area North Machine Gun Range, Gunnery Area North Pistol Range, Gunnery Area North Rifle Range, and Gunnery Area North Firing Stand. The National Cemetery Gunnery Area North site is located on a portion of Barrancas National Cemetery at NAS Pensacola. The Machine Gun Range was originally a pistol range, as identified on historical maps dated 1940 and 1941. The pistol range was extended and converted to the Machine Gun Range and is identified on maps dated between 1943 and 1954. The Gunnery Area North Pistol Range was later constructed east of the Machine Gun Range and is identified on maps dated between 1947 and 1954. The Firing Stand is shown on maps dated between 1944 and 1947. Maps dated various years between 1933 and 1940 illustrate the Rifle Range. Currently the National Cemetery Gunnery Area North is completely developed. Structures at the site include Building 3857 (Storage), Building 462 (Armory), Building 702 (Maintenance Shop), the western wall of Barrancas National Cemetery, and asphalt parking areas. Munitions use was likely limited to .22-caliber, .30-caliber, .45-caliber, .50-caliber, and 20-millimeter small arms ammunition.

National Cemetery Gunnery Area South - The National Cemetery Gunnery Area South is a complex containing the Gunnery Area South Pistol Range and Machine Gun Range. The National Cemetery Gunnery Area South is located north of Hovey Road. The Machine Gun Range is identified on historical maps dated 1933 and 1939 through 1943. The Pistol Range is located just west of the Machine Gun Range, illustrated on maps dated 1940 through 1943. Currently the National Cemetery Gunnery Area South is completely developed. Structures include Building 488, Building 461, and the associated asphalt parking lots. Munitions use was likely limited to .22-caliber, .45-caliber, .50-caliber, and 20-millimeter small arms ammunition.

National Cemetery Skeet and Trap Ranges - The National Cemetery Skeet and Trap Ranges site includes the National Cemetery Skeet Range and the National Cemetery Trap Range. The National Cemetery Skeet and Trap Ranges site is adjacent to the Barrancas National Cemetery. The Skeet Range is identified on one 1940 map, and the Trap Range is identified on maps dated 1941 and 1942. Currently the National Cemetery Skeet and Trap Ranges site is completely developed. Structures at the site include Building 3561, Building 488 (NOMI Headquarters), and the associated asphalt parking areas. Munitions use was likely limited to 12-gauge, 16-gauge, 20-gauge, and .410-caliber shotgun ammunition.

Sherman Field Rifle Range - The Sherman Field Rifle Range is located southwest of Sherman Field, within the boundaries of NAS Pensacola, and includes the area west of the former and present fuel farms. The Sherman Field Rifle Range was denoted on one historical map dated 1951 and titled "Jet Training Field Land Use Map." Direction of fire is assumed to have been from the north-northeast to the south-southwest, based

upon the range orientation and the surrounding development, as depicted on historical maps. Firing lines would have been located on the northern end of the Sherman Field Rifle Range, near the Sherman airfield, and there were probably multiple firing points throughout the length of the range. The location of a berm for the Sherman Field Rifle Range could not be identified and was not denoted on the map. The land cover at the former range is variable, with areas of heavy vegetation and relatively clear areas. Munitions use was probably limited to small arms ammunition, typically .30-caliber rounds.

These PSCs were grouped together mainly due to the following: similar contaminate types, similar investigation methodology, and its impact on the other PSC. Based on the data collected during the Preliminary Assessment completed by Malcolm Pirnie, Inc., all 10 sites have been carried forward to the Site Investigation stage.

2010 Primary Deliverables	Due Date
Draft MC Site Inspection Report	01 July 2010
Draft MEC Site Inspection Report	01 June 2010
2010 Secondary Deliverables	
Draft UFP SAP MC Sites	15 November 2009
Draft UFP SAP MEC Sites	15 November 2009

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