Environmental Cleanup Program

Of

Naval Air Station, Whidbey Island

Oak Harbor, Washington

1995

RESTORING AND PRESERVING THE ENVIRONMENT ON MILITARY LANDS WHILE MAINTAINING OUR MISSION IS A NAVY PRIORITY. NAVAL AIR STATION, WHIDBEY ISLAND IS LEADING THE WAY.

1.0 Introduction

Naval Air Station (NAS), Whidbey Island, submits this award nomination with pride and enthusiasm. Long term protection of the environment is the only acceptable solution. Natural resources management and protection has been successfully integrated from investigation to remediation. The complexity and scope of the program was successfully managed due to the direct involvement and emphasis at all levels of the Station from the Commanding Officer to the individual employee. This spirit of cooperation extended to all regulatory levels as NAS Whidbey Island personnel incorporated the federal, state, and local environmental offices as partners to a common goal: Cleaning up the Station, continuing the mission, and protecting our environment for future generations.

1.1 The Mission

In 1940 the Navy began searching for a location to establish a rearming base for patrol planes operating in defense of the Puget Sound area. In 1941, Congress appropriated $3,000,000 for construction of a naval aviation installation on Whidbey Island. Naval Air Station, Whidbey Island was commissioned on September 21, 1942. NAS, Whidbey Island is the home of the Navy's EA-6B "Prowler" electronic warfare squadrons and the center for all "Intruder" attack bombers assigned to the West Coast. NAS Whidbey Island is also the West Coast home of the P-3 "Orion" patrol aircraft. The station also serves as support for the Navy and Marine Corps Air Reserve Units in the Pacific Northwest. The official mission statement of NAS Whidbey Island is:

"Our mission is to provide the highest quality facilities, services and products to the Naval community and all organizations utilizing Naval Air Station, Whidbey Island."

Tied to our mission statement is the "Visionary Statement" which includes the following goal of NAS Whidbey Island:

"To be a eader in Environmental stewardship"

and one of our "Guiding Princ ples" states that:

> "We will be good stewards of the resources entrusted to us; our people, the environment, and material assets. We will leave those who follow us a solid foundation for continued growth and improvement."

1.2 The Air Station

NAS Whidbey Island has two main land areas, Ault Field and the Seaplane Base. Both are located near the town of Oak Harbor, Washington, on Whidbey Island, about 80 miles northeast of Seattle, Washington. Ault Field is the primary operational component of the station and is comprised of two 8,000 foot long intersecting runways and the bulk of the operational, training, maintenance, and administrative facilities. The Seaplane Base, located about 3

miles southeast of Ault Field, acts as a commercial and residential support center for the station. NAS Whidbey Island also controls two other remote facilities on Whidbey Island. Outlying Field (OLF) Coupeville has a runway for field carrier landing practice and is located 20 miles south of Ault Field. Lake Hancock, an inactive and inert bombing range (used in the 1940's and 1950's), is located 10 miles south of OLF Coupeville. Of the nearly 10,200 employees connected with NAS Whidbey Island, approximately 8,100 are military personnel and about 2100 civilians. The following is an acreage breakdown for each of the facilities described above:

Ault Field	4,825	cres
Seaplane Base	3,225	
OLF Coupeville	666	
Lake Hancock	410	
Total:	9,126	

1.3 The Island

Whidbey Island is located in the Northwest Puget Sound area, approximately 26 miles North of Seattle. It is characterized by mild temperate climate, coniferous forests, and low commercial development. Most of the island is undeveloped and in a natural state. The main city of Oak Harbor (population 15,000) borders Ault Field, to the South, and the Seaplane Base to the West. Located 10 miles South of Oak Harbor lies Coupeville, population 8000. The economic level of the communities is about average for cities of these sizes, with a small town atmosphere. NAS Whidbey Island and the local communities share an excellent relationship.

2. Background

2.1 Changing Laws

The training, aviation, and aircraft maintenance operations at NAS Whidbey Island have generated a variety of wastes. Early disposal practices at the station, while acceptable by the standards of the time, have affected the environment at some locations at the station. Initial studies began in 1984 to determine the extent of contamination due to 42 years of operations. As a result of those findings, the U.S. Environmental Protection Agency (EPA) designated NAS Whidbey Island as two separate Superfund Sites Ault Field and Seaplane Base) on the National Priorities List (NPL) in February of 1990. In September 1990, the Navy, EPA, and Washington State Department of Ecology (WDOE) signed a Federal Facility Agreement that required the Navy to conduct a Remedial Investigation/Feasibility Study to determine the extent of contamination.

2.2 Challenges

The initial challenge to overcome in the cleanup program was the organization of two National Priority Listed sites with 40 individual areas to be investigated. Working closely with the EPA

and the WDOE it was agreed to group the areas of investigation into operable units. Areas were grouped based on anticipated similar contaminants, potential groundwater recharge areas, and within the same watershed. This allowed the cleanup team to perform a single Remedial Investigation/Feasibility Study (RI/FS) and Record of Decision on each operable unit rather than producing these documents for each individual area. Ault Field was divided into four operable units; OU1, OU2, OU3, and OU5. The Seaplane Base has a single operable unit, OU4.

The concentration levels of contaminants t many of the investigated areas were above cleanup cr eria set by WDOE, but below EPA cleanup criteria. This ambigu y created a potential fo high cost remediation technologies.

With the numerous areas to be investigated, it became apparent that the program could realize high costs in investigations/cleanup and a prolonged overall program timeframe.

Whidbey Island has a very complex geology with numerous aquifers at various depths. Fortunately, only one investigated site had contaminants migrate through the soils and into the shallow aquifer. Not only is the remediation a complex program, but this situation to remediate the groundwater has resulted in the closing of 22 adjacent drinking water wells on adjacent private property. Even though the private wells are free of contaminants, they have been closed to prevent the possibility of these wells affecting the remediation of the groundwater on Navy property. Closing of the wells and connecting the residents to a public or Navy water supply also served as a Navy "good faith" effort to ensure that our neighbors will always have a constant source of drinking water.

2.3 Environmental Cleanup Organization

The Environmental Cleanup Program is managed through the Environmental Affairs Department at NAS Whidbey Island. This department serves under the Commanding Officer, NAS Whidbey Island. NAS Whidbey Island has developed a team approach in managing the cleanup program including individuals from various departments from around the station. These individuals include the following: Commanding Officer, NAS Whidbey Island, Captain John F. Schork; Environmental Affairs Director, Ms. Kathryn Souders; Station Cleanup Program Manager, Mr. Andrew Spendlove, Assistant Program Manager, Mr. Michael Canup; Natural Resource Biologist, Mr. Matthew Klope; and Public Affairs Officer, Mr. Howard Thomas. Regional Navy support includes Project Managers, Mr. Bryan Haelsig and Mr. Dan Hayes; Contracting Officer's Tech Representative, Ms. Hope Lewis; and Navy Technical Representative, Mr. Ron Martin.

2.4 Management

The management approach used throughout the cleanup program is the same philosophy used throughout the station, "Team Whidbey."

This approach has proven successful, time and time again, in various programs around the station. It involves the dedication of individuals to participate as players in every aspect of the program. Here at NAS Whidbey Island, we are also dedicated to this same philosophy in working with the regulatory agencies and regional Navy offices involved with the cleanup program. Has this philosophy benefitted the station? You bet, it has! Through the Team Whidbey process many potential conflicts have been resolved at the program manager level and agreements to streamline many complex processes have been accomplished.

2.5 Community Involvement

NAS Whidbey Island established a Technical Review Committee (TRC) when the cleanup program began in 1987. This committee met every 3 months and consisted primarily of Navy personnel, state and federal regulators. Only one community member was required under Navy guidance at that time.

In November 1993, NAS Whidbey Island was chosen by the Chief of Naval Operations to be a pilot installation to implement draft Navy guidance in creating a Restoration Advisory Board (RAB) to replace the outdated TRC. The goal of the RAB guidance was to involve more of the local community in an advisory capacity. Local environmental groups, city and county agencies were invited to participate. The first RAB meeting was held in January 1994 with subsequent meetings held every month. These RAB meetings have proven valuable in informing members of the local community and as an avenue to process information through the RAB member back to the organizations or groups they represent. A local RAB initiative, to provide summaries of Proposed Plans, RODS, and other official documentation was started at NAS Whidbey Island and is now the standard for the RABs throughout the Northwest. New members are constantly being sought to ensure that the broadest representation of the community is represented.

NAS Whidbey Island's community involvement program also incorporates a community outreach program. This program is coordinated through the station's Public Affairs Office and includes the development of informational brochures, speaking engagements, and demonstrations regarding the cleanup program throughout the local community. Examples of this program include many speaking engagements to civic groups including Lions International, Rotary, Environmental Groups, and schools. Demonstrations have included exhibits coordinated with the EPA at the station's annual air show and at the Island County's Annual Water Festival.

Each time a Proposed Plan for each operable unit has been presented to the RAB and the local community, the station has conducted a public meeting to present the information contained in the document and to solicit comments. Open house information sessions,

immediately before the public meeting, were held to familiarize the public with the document and answer questions prior to the meeting.

2.6 Restoration Agreements

The first and most important agreement to be developed and signed on 17 September 1990 was the Federal Facilities Agreement (FFA) for the two NPL sites at NAS Whidbey Island (Ault Field and the Seaplane Base). This document was a milestone in setting up the operable unit organization and schedules for each operable unit cleanup. This agreement has been modified only through the schedules for each operable unit. As with most environmental programs and dealing with unknowns, reasonable extensions in any schedule is expected. Of the five current operable units, Operable Units 1,2, and 4 have had schedule extensions extended approximately 3 months each. These extensions were agreed to by the cleanup team project managers and did not affect the performance of the program.

2.7 Environmental Planning

To date, one Interim Action Record of Decision and four Record of Decisions have been signed with a fifth draft Record of Decision having been prepared. The final Record of Decision is expected to be signed in mid-February of 1996. They are as follows:

Operable Unit One,	Interim Action Record of Decision	17 May 1992
Operable Unit One,	Record of Decision	22 Dec 1993
Operable Unit Four,	Record of Decision	20 Dec 1993
Operable Unit Two,	Record of Decision	02 Jun 1994
Operable Unit Three,	Record of Decision	29 Mar 1995
Operable Unit Five,	Draft Record of Decision	18 Oct 1995
Operable Unit Five,	Record of Decision (expected)	16 Feb 1996

2.8 Initiatives

There are five significant initiatives that have been undertaken as part of the cleanup program at NAS Whidbey Island.

2.8.1 Optimum Organization of Cleanup Sites

The first initiative was the organization of the areas of concern into manageable operable units. This action alone prevented the preparation of forty separate RI/FS documents at a great cost and time savings. By organizing areas based on similar attributes i.e., potentially similar contaminants, similar geographical areas, and anticipated similar hydrogeological characteristics, it became easier to design remedial investigations. These base units were not chiseled in stone, as areas could be moved from one Operable Unit to another to better facilitate cleanup as new data was gained.

2.8.2 Using Economies of Scale to Reduce Costs

The second initiative involved the screening of 26 areas, which the cleanup team felt may not have levels of contaminants

that would trigger a full RI/FS investigation. In an effort to streamline the RI/FS process and conserve valuable cleanup dollars, the cleanup team decided to conduct a streamlined investigation on these areas called the Hazardous Waste Evaluation Study. This investigation would evaluate the areas and provide information to either continue with additional investigations if contaminants were found or to recommend that further investigations not be conducted. This single initiative removed 17 areas from further investigation at a significant cost savings to the program. In addition to this streamlining, seven remaining areas are being remediated through a removal action program which did not require full RI/FS documentation. Only two of the 26 areas investigated required additional investigation and were placed into a new fifth operable unit.

2.8.3 New RI/FS Technologies

The third initiative was to investigate new and innovative technologies within the RI/FS evaluations. At one of the landfills, it was determined that levels of certain contaminants were very low and obtaining an accurate analysis was proving to be almost impossible. An experimental low-flow sampling technology was incorporated to obtain groundwater samples without the turbidity of the sample skewing the analysis. This technology proved highly successful and test results proved that the landfill did not require remediation.

2.8.4 Restoration and Creation of Natural Habitats

The fourth initiative has proven to be highly successful and is being incorporated throughout the Department of Defense. Here at NAS Whidbey Island the protection and enhancement of natural resources is a top priority. During the RI/FS portion of the program extra procedures were taken to protect the natural resources at each of the investigation areas. Wetlands were completely avoided, trees were left in place if at all possible, erosion control practices were incorporated, and restoration of the investigation areas was accomplished. Major initiatives were and are being performed during the restoration phases of the program. Active participation in the remediation phase of the program has resulted in tremendous benefits to the local environment and natural resources. Wetlands have been created from excavation sites and a prairie habitat is being added to the landfill cap project. Details on these projects may be found in section 4.1.2.

2.8.5 Combining Projects for Synergistic Cost Savings

The fifth initiative involved the consolidation of excavated soils from remediated areas from around the station. Having the Area 6 Landfill site remediation technology include an impervious cap, this allowed the cleanup team to place soils excavated from other cleanup areas on station and place these soils under the cap at the Area 6 Landfill. Soils excavated from other areas, if determined to be contaminated, but not dangerous or hazardous, are being

placed at Area 6 to eventually be placed under the constructed receive landfill cap. This will allow protection of the environment and will result in a tremendous cost avoidance to the program.

3.0 Program Summary

3.1 Objectives

The objectives of the cleanup program at NAS Whidbey Island fall into two broad categories: (1) conduct investigations and remediate the areas in a timely and cost efficient manner (2) inform and involve the local public in the entire cleanup program

Over the past 3 years, the cleanup program has signed into place one Interim Action Record of Decision, four Record of Decisions, and the fifth and final Record of Decision is expected to be signed in mid-February 1995. The timely remediation of the Seaplane Base NPL site has resulted in its delisting on 21 September, 1995.

NAS Whidbey Island was selected as a pilot installation to establish a Restoration Advisory Board (RAB) to replace the existing Technical Advisory Committee. This new board has been meeting for one year and has increased public participation with new members. By establishing the RAB, the Station has increased the awareness of the program within the local community and provided a direct avenue for public comment and participation.

3.2 Goals

Seven years ago, we initiated the station's remedial investigation portion of the Installation Restoration Program (IRP). Since that time we have exceeded our goals by:

* Successfully initiating two Federal Facilities Agreements for the two National Priority Listed (NPL) sites on NAS Whidbey Island.

* Organizing the 40 areas of investigation into manageable Operable Units and successfully completing remedial investigation and feasibility studies for all areas.

* Initiating a streamlined Hazardous Waste Evaluation Study of 26 areas of potential contamination and determining that 17 of the areas studied could be removed from the program without additional studies.

Signing four of five Record of Decisions (ROD) and having prepared he final ROD for signature pending the final revue.

Delis ing e first Navy NPL site, Seaplane Base.

* Establishing one of the Navy's first Restoration Advisory Boards from a former Technical Review Committee. This pilot project became the standard for the Navy in the Northwest.

4.0 Accomplishments:

4.1 **Fast Track Cleanup**

Fast tracking saves time and resources, a concept that "Team Whidbey" not only understands but has incorporated as a way to do business. Several of NAS Whidbey Island fast track initiatives have been "firsts", resulted in significant cost savings and in the acceleration of the program.

4.1.1 **De-listing Seaplane Base**

The Seaplane Base of NAS Whidbey Island is the first installation in the Department of the Navy to be removed from the EPA's National Priorities List (NPL). This was accomplished through an aggressive proactive approach, innovative technologies, and close cooperation between all involved agencies. Delisting from the NPL occurred on September 21, 1995. The Seaplane Base is located on the northern part of Whidbey Island and originally provided seaplane patrol operations, rocket firing training, torpedo overhaul, and military personnel training. The Seaplane Base cleanup included five areas; an auto repair/paint shop, a seaplane maintenance shop, a salvage yard, a former landfill, and a pesticide/paint storage area. The contaminants included heavy metals, PCBs, hydrocarbons (both aromatic and aliphatic), and pesticides. The cleanup team's concentrated efforts to fast track the cleanup process at the station's NPL site located on the Seaplane base has resulted in the remediation of the five contaminated areas. Cleanup was accomplished by the removal of contaminated soil from various locations. The Seaplane Base is currently used for base support, fuel transfer and storage, and family housing.

2 Cleanup Actions

* **Landfill closure**

A 45 acre landfill cap has been designed and is currently being constructed on the Station's closed landfill. In working with design engineers, the surface of the cap has been designed to create a prairie habitat, a habitat type rare to Whidbey Island. This habitat will also be designed to promote upland game i.e. valley quail and associated habitat for songbirds as a part of the Navy's participation in the Partner's In Flight program.

* **Removed and disposed of stock piled hazardous and problem waste**

Contaminated soils were stockpiled and tested to determine the extent of contamination. In agreement with the EPA the soils are being relocated to the on-site landfill and will be covered with the cap upon final closure. This resulted in a large savings to the Navy.

* **Turned two contaminated areas into wetlands**

Contaminated soil was removed from one area on Ault Field and backfill material was obtained from one area on Seaplane Base resulting in depressions. NAS Whidbey Island decided to create wetlands rather than pay to fill these depressions with backfill soil. The abandoned fireschool on Ault field was excavated to clean subsoils. The project engineers were convinced to slope the sides and grade the surrounding project area to concentrate water into a pond. This has created a two acre freshwater wetland. On the Seaplane Base, backfill soil was obtained on-station to fill in the operable unit 4 remediated areas. This backfill area was designed to become a second wetland pond approximately one acre in size. NAS Whidbey Island now has two new wetland ecosystems instead of two contaminated areas.

* **Cleaning up the runway drainage ditches**

The ditches adjacent to the runway on Ault Field were tested for contamination and found to require cleanup actions. Water from the ditches flows through Ault Field and off-station to a large bay. Past practices and a lack of effective spill containment allowed contaminants from spills on and around the runway to run into the runway ditch areas. About six years ago management practices changed and spill response measures were enacted. The past contamination still requiring cleanup included; heavy metals, primarily lead and arsenic, and some organic compounds. Cleanup of this area was completed in December 1996. The contaminated ditch dredgings have been removed and placed in the on-station landfill that is in the process of being capped. Use of the on-site landfill for contaminated soil storage has saved both time and money.

* **Installed Air Stripper in the Landfill of Area 6**

Area 6 is the former Station Landfill and included a hazardous waste disposal area. Waste was disposed of in accordance with the regulations of that time. A comprehensive study determined that organic chemicals were the primary concern in the soils and shallow aquifer below the former disposal area. These chemicals were found in the groundwater and have the potential to migrate off station property and contaminate surrounding lands. An air stripper was constructed on-site to draw water from recovery wells located along the border for the landfill to intercept any contaminants that may be migrating off station. The recovered water is vented to the atmosphere to remove volatile organics, and then injected back into the aquifer up-gradient of the landfill to create a flushing process. The system is operated in strict accordance with all

local, state, and federal laws

* **Jet Test Cell**

Two underground fuel storage tanks with associated piping were installed when this jet engine test facility was originally constructed. Recent studies showed petroleum products floating on the groundwater below the facility. Skimming the surface of the groundwater to collect and recycle the floating product will be performed. Earlier attempts to remove the product by active pumping proved unsuccessful. This is an example of the commitment to succeed and use new and different technologies when old ones don't work.

* **Disposed of appr. 3000 drums of tailings from monitoring wells and site investigations**

These drums of wastes were generated during the installation of monitoring wells during the investigations of the suspect contaminated areas. Since these drums contained problem wastes and not hazardous wastes, a majority of the drums contents were placed in the landfill which would receive the cap. Drums containing hazardous wasted were to a permitted disposal site, for hazardous waste. Close cooperation with federal and state regulators allowed NAS Whidbey Island to dispose of most wastes in the on-site landfill resulting in large cost savings to the program.

* **Cleanup of Valve Leak in Fuel Farm Two (FF2)**

A discovery of leaking fuel in a valve box in FF2 led to quick response. The valve pit was removed and the low level contaminated soil was removed to the landfill. The higher contaminated soil was sent to a permitted disposal site. The fast response limited the spread of contaminants. A new sealed valve pit was installed.

4.1.3 Accelerating Investigation Timeframes

The first major accomplishment of the cleanup team centered around its ability to come to a consensus and organize the 40 areas of investigation into operable units and into the streamlined Hazardous Waste Evaluation Study. All areas with the greatest likelihood of contamination were grouped into operable units to reduce the number of RI/FS's to be conducted. The team reduced the number of RI/FS's to be conducted from 14 to four by grouping these highest potentially contaminated areas into operable units. The remaining 26 areas, determined to be least likely of being contaminated, were investigated under a streamlined remedial investigation which was termed the Hazardous Waste Evaluation Study. This study determined if these areas would have to undergo a full RI/FS or be eligible for removal from the program without further investigation. Under this effort, 17 of the 26 areas required no further, seven areas were placed into a streamlined Removal Action Program, and two were combined into the station's fifth operable unit to undergo a streamlined RI/FS investigation. This study allowed for limited sampling of each area and resulted

in a tremendous time and cost savings to the progr m

By initiating fast track RI/FS portions of the program, the cleanup team at NAS Whidbey Island has been able to move the cleanup program into the remediation phase in many areas. Listed below is a summary of the program's results at the time this package was prepared.

Total Areas Investigated	40
Areas with continued investigations	
Areas removed from the program (no contaminati	
Areas remediated	
Areas currently under remediation	

All areas that have been remediated and those remaining to be remediated fall within the boundaries of the station. Many of these areas are adjacent to or a part of an existing facility. For these reasons, all remediated areas will remain part of the Station.

4.1.4 Accelerating Cleanup Timeframes

Alternatives to accelerate the remediation of areas within the cleanup program is a primary goal of the cleanup team. The first example is the signing of an Interim Action Record of Decision for the landfill portion of the Area 6 Landfill. Early in the program, the Area 6 Landfill area was investigated and it was discovered that this landfill included an abandoned hazardous waste disposal area. During the remedial investigation, it was discovered that the shallow aquifer was contaminated from the abandoned hazardous waste disposal area. Also discovered under the landfill portion, were contaminants in the subsoils which had leached out of the landfill trenches into the shallow aquifer. Upon completion of the remedial investigation, it was determined that this area now included two isolated cleanup situations. The ground-water contamination resulting from the hazardous waste disposal area would require additional investigations. Confronted with this situation, the cleanup team decided to enter into an Interim Action Record of Decision for the landfill portion of the area. This would allow an extension of the schedule for the hazardous waste disposal area investigation and would maintain the original schedule for the landfill portion. This interim action allowed for the continuation of the schedule for the landfill portion of the Area 6 Landfill, while the investigations for the discovered abandoned hazardous waste disposal area continued.

A second example of the cleanup team's efforts to fast track the program is apparent in Operable Unit Three. This operable unit had consisted of two cleanup areas, the Runway Drainage Ditch Complex (Area 16) and the Abandoned Runway Fire School (Area 31). A

streamlined remedial investigation was performed in order to fast track this operable unit. During the investigation, Area 31 was found to have contaminated a perched aquifer and would require additional investigations. The cleanup team analyzed the situation and the decision was made to remove Area 31 from operable unit in order that Area 16 would remain on track and not require the extension of the remediation schedule. This decision also involved the decision to place Area 31 into Operable Unit Five which would allow an additional 12 months of investigation, without delay to the rest of Operable Unit three.

4.1.6 Re-Use Plans

The initiatives of the station's re-use plan are two-fold: (1) Remediate all areas to allow for future development. (2) Create habitat through the remediation of contaminated areas. One example is the creation of a small wetland pond resulting from the remediation of Area 29 (Clover Valley Fire School).

4.2 Innovative Technologies Implemented/Developed

4.2.1 Low Flow Sampling

Low-flow groundwater sampling strategies were implemented at the abandoned landfill (Area 2). This technology was used to obtain quantitative sampling results from the groundwater wells located around the landfill. Previous water samples taken had resulted in high turbidity thus skewing the analysis of the sample. By using the low-flow sampling technique, water samples were taken slowly over an extended period of time. Accurate results from this technology provided an avenue to remove this landfill area from further investigation. This area has been declared clean and many months and countless dollars were saved.

4.2.2 Wildlife Habitat Investigations

The second innovative technology was performed by The Institute of Wildlife and Environmental Toxicology (TIWET), Clemson University, South Carolina. TIWET performed a toxicological demonstration project on the Runway Drainage Ditch Complex (Area 16) to study the possible effects of contaminants present on the wildlife inhabiting the area. This study investigated the possible effects of contaminants on the survivability and reproductive success of the Northern harrier and great blue heron. This study also investigated the possible effects on the Townsend's vole, the primary prey species of both the harrier and heron. This two year study determined that the uptake of trace contaminants through the food chain within the runway drainage ditch complex did not have any adverse effects on the vole or the avian species studied. This research proved invaluable in assisting the remedial investigation performed on Area 16. As a result of the research, in combination with the findings of the remedial investigation, the grassland areas of Area 16 were not considered for remediation.

This research has proven so successful, that CNN News has requested that they be allowed to film a scientific documentary covering the project in the spring of 1996.

4.2.3 Creation of Wetlands

In working with design engineers, it was possible to provide them with areas on the station in which to obtain soils to backfill contaminated areas which have been excavated. The benefits of this action are two-fold. First, is the cost savings to the government by not having to go off-station to purchase and haul backfill material. Second, is the opportunity to designate the locations of soil borrow areas to create wetlands when the project is completed. A 1/4 acre pond has been created by obtaining backfill material for the remediation of Operable Unit Four. A second wetland creation project has been constructed as part of the remediation of the abandoned Clover Valley Fire School (Area 29) of Operable Unit Two. This project contradicts the engineering philosophy of "Dig Hole, Fill Hole." A pond approximately 1/2 acre in size has been constructed through the excavation of this abandoned fire school. Since this area is flooded with shallow water most of the winter and spring months, it became the perfect opportunity to create wetlands through the cleanup process.

4.2.4 Creation of Prairie Habitats

During the Feasibility Study for the Area 6 landfill, it became apparent that the abandoned 40-acre landfill area would require a landfill cap as part of the remediation process. In preparing the design package, the idea of performing some habitat enhancement was investigated. Since the cap cannot have any deep penetration vegetative root systems and only grass species could be planted, this became the perfect site to create a grassland/prairie type habitat, a habitat native to Whidbey Island which is declining rapidly due to development. Again working with the biologists of the design firms, the cleanup team was able to design a quality grassland habitat to benefit songbirds and upland gamebird species. Another outcome of this interaction with the design firm was the identification of a potential problem with the retention ponds designed to hold the water as it flows off the cap. These ponds could only be located on the Area 6 Landfill project site which is directly under the approach of one of the station's runways. In order to minimize the potential for birds to utilize the ponds and create a Bird Aircraft Strike Hazard, the two retention ponds have been redesigned to drain at the fastest rate possible.

4.2.5 Installation of Air blower in former Runway Fire School

Final studies of the Runway Fire School showed elevated levels on hydrocarbons, primarily diesel. Innovative technology will be used to clean the confined contamination area. It was determined increasing airflow into the ground would allow natural bacteria to mitigate the excess petroleum trapped in the soils. A skimmer will extract petroleum directly from the ground water surface and an air

blower will provide the sub-surface air.

4.2.6 Low Cost Soil Disposal

Close cooperation with Environmental Regulators allowed NAS Whidbey Island to dispose of most wastes in the on-site landfill procuring large cost savings to the government.

4.3 Developing Partnerships

NAS Whidbey Island was chosen by the Chief of Naval Operations to serve as a pilot installation to develop a Restoration Advisory Board (RAB) to replace the existing Technical Review Committee. This RAB created a growing partnership between the Station and the local community. This partnership has resulted in a degree of trust that allows a free exchange of ideas and information. The RAB and members of the Navy have met for several all day partnering session to facilitate understanding and review critical background issues.

Probably the single most important partnership which has developed through the cleanup program is the partnership between the Navy and the regulators. Over the past several years, the cleanup team has developed a working relationship which has allowed the team the make decisions at the lowest regulatory level. This relationship has also allowed the team to agree on streamlining the investigations. One aspect of this streamlining includes agreeing to eliminate draft documents and cut Navy and agency review times in order to meet schedules and avoid extensions. To enhance this relationship, the cleanup team has participated in several partnering sessions. This partnering, through the cleanup team, has also enhanced the working relationships of other Navy programs dealing with these agencies.

The Navy has worked closely with the City of Oak Harbor and the Island County officials during the hook-up of privately owned houses to city water and the subsequent closing of the on-site wells.

4.4 Restoration Advisory Boards

NAS Whidbey Island was chosen as a pilot installation by the Chief of Naval Operations in October 1993, to establish a Restoration Advisory Board (RAB) to replace the Technical Review Committee. The RAB, consisting of local community members and regulatory personnel, reviews all proposed Superfund cleanup actions and makes suggestions for improvements and cost savings. A significant accomplishment has been the publishing of information about the RAB and obtaining additional members from diverse interests throughout the community. By adding members to the RAB, the board has greatly broadened avenues to disseminate cleanup program information and has increased public awareness.

4.4.1 Community Involvement

The formation of the RAB has assisted in the building of positive relations between the "Government" and the local community. The addition of more community members and the efforts of the RAB to inform the community on all aspects of the program through various forms of media has increased public acceptance of the Navy's efforts. The local chapter of the National Audubon Society has actively participated in the Station's Restoration Advisory Board and stated at the November meeting that "his chapter is satisfied with the Navy's progress and has full confidence in what the Navy does and if the Navy says they will do something then it will get done". This sentiment was echoed by the local environmental group associated with Western Washington State University Beach Watcher's group representative. Several cleanup actions have been closely coordinated and environmental monitoring conducted with local Audubon representatives. The local community has participated in reviews to ensure the best alternatives are used. The communities expresses confidence in the Navy's ability to responsibly administer the program.

4.4.1 Cost Savings Through RAB Review

A less costly alternative for one of the cleanup projects was considered and implemented due to RAB involvement. The RAB questioned the stringency of the "residential" cleanup standard required in cleaning Area 31. This is a restricted area and not subject to human risk. The Navy, with the support of the RAB, was successful in gaining permission from the regulatory agency to use the less restrictive criteria of ecological risk. The selected method of cleanup includes skimming and bio-venting rather than full removal and disposal. The contamination is primarily petrochemicals and should naturally degrade in twenty to thirty years after the completion of the skimming. The area is at a runway and will not be used for any kind of development in that time.

4.4.2 The RABs Self Monitoring

* The RAB has been meeting monthly since the first meeting in January, 1994 until recently. The RAB decided to meet every other month beginning November, 1995, due to the lessening of review documents and the high degree of trust and credibility the Station has earned. This initiative saves the cost of holding and preparing for 6 meetings per year, freeing government employees time.

* The RAB requested that summary reviews were prepared to shorten the time required to review documents. This initiative started with the Whidbey Island RAB is now the standard for all RABs in the Northwest.

* Open houses have been added directly before the public meetings to have both on a single night, saving time and effort

This has the added side benefit of educating the gen ral public prior to the meeting, thus expediting the meeting by limiting the amount of explaining required.

4.5 Providing Opportunities for Small Businesses

The remediation phase of the cleanup program is under the Comprehensive, Long-term, Environmental, Action, Navy (CLEAN) contract. This contract has set prime contracting protocols, but does allow for local small contracts. These local business are contacted by the prime contractor through local advertisements. Through this cleanup effort, seven local contractors have been used involving 40 personnel.

4.6 Reducing Risk to Human Health and the Environment

4.6.1 Private Well Closures and Piped in Water Hook-ups

The cleanup team initiated an interim action for the Area 6 Landfill to provide an avenue to continue the design phase of the landfill cap, while the groundwater investigations at the same area continued. Associated with the Area 6 Landfill and the groundwater issues, the adjacent private off-station drinking water wells have being closed and the citizens connected to city or Navy potable water supplies. This effort, even though the wells have been tested clean, eliminates any future risk to citizens and will assist in the cleanup process. This project was completed in December 1995.

4.6.2 Actions to Prevent Future Contamination

Current operational areas and processes which could resulted in areas being placed in the cleanup program have been either eliminated or altered to prevent similar contamination from recurring. These programs include the management of hazardous materials, spill prevention control and countermeasures, product substitution, recycling, establishment of a hazardous material reutilization store, and pollution prevention. Through the efforts of the hazardous waste minimization team, the station has achieved a 40% reduction in hazardous waste generation over the last five years. Oil and hazardous substances spill prevention efforts have been successful in that over the past four years, only one reportable quantity of oil has been released into the environment.

4.6.3 Property Restrictions

All areas that may pose a threat to human health are documented and will have deed restrictions added to limit future risks. At NAS Whidbey Island there are many areas that are cleaned up to acceptable levels for their current use, the former landfills, fire training schools, pesticide areas, and maintenance shops to name a few. If these areas were to be released in the future we will restrict that use to like activities thereby

ensuring that accidental exposure will not occur. This shall happen by filing with the County land offices and applicable agencies. Files will be kept by the Station Master Planning Office.

4.6.4 Private Property

There is an indication of slight contamination to a privately owned property at the Station border near Area 31. We are investigating as to the extent of contamination and the Navy's responsibility. We shall take the appropriate cleanup action for a residential area if results indicate the contamination is due to Navy actions.