Summer 2001

RPM News

Remedial Project Manager News

"Communicating Navy Installation Restoration Program News and Information Among All Participants"

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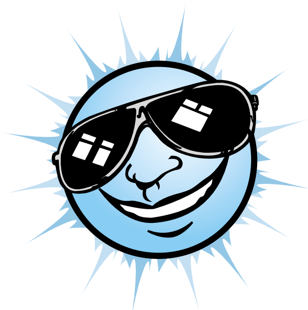

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Southern Division's Executive Environmental Restoration Briefing

Looking to the Future

Southern Division's Commander, Captain Cellon, and Vice, Captain Bersson joining special guest Rear Admiral Baucom and Southern Division's Environmental Business Line Manager, Mr. Sid Allison.

Where do we go from here? Due to past successes, cleanup is winding down in the next ten years. What will be the other environmental opportunities within the Navy? Reviewing past successes and identifying future opportunities was the focus of the Executive Environmental Briefing hosted by Southern Division (SOUTHDIV), Naval Facilities Engineering Command (NAVFAC) on January 10, 2001 in Charleston, South Carolina.

Rear Admiral Baucom (OPNAV N45), Captain Richard E. Cellon (Commander, Southern Division, NAVFAC), Captain Thomas F. Bersson (Vice Commander, Southern Division), Dr. James Wright (Director, Environmental Division, COMNAVFACENGCOM), Southern Division Managers, and Southern Division's Comprehensive Long Term Environmental Action, Navy (CLEAN) II, CLEAN III and Remedial Action Contractors (RAC) were invited to participate in this one day briefing.

Sid Allison (Southern Division's Environmental Business Line Manager), set the stage for the briefing by stating the objectives: (1) look at our past successes and (2) look at the future. Mr. Allison noted that environmental cleanup work at known sites should be finishing in the next 10-12 years and at a lower level of spending than in the past. Given this, there are other environmental opportunities within the Navy to be addressed. Southern Division's goal is to identify these opportunities and plan for the future.

continued on page 2

RPM NEWS

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NFESC

Using Appropriated Funds

Commanding Officer:

Captain Richard O. Gamble, II

Environmental Department Head:

Stephen E. Eikenberry

Information Management Branch:

Mr. Doug Zillmer

Environmental Engineering Consultant:

805-982-4858

Editors:

805-982-5462

Graphic Design:

805-982-3843

Southern Division's Sid Allison, Joe McCauley, and Rick Davis discussing the meeting.

"Looking To The Future"
continued from page 1

Each of Southern Division's Contractors (Tetra Tech NUS, Inc., EnSafe and CH2M Hill) gave a presentation on the following:

Program Metrics

- funding vs. expenditures,
- use of small businesses,
- project close-outs,
- and health and safety performance

Program Initiatives

- narrowing the gap between funding and expenditures,
- minimizing program management costs,
- using web-based technology,
- and continued use of partnering

Project Highlights

- use of partnering,
- early transfer of property,
- data quality objectives,
- use of web-based technology and innovative technologies

The Future

- CH2M Hill also gave a presentation on Southern Division's Fixed Price Insured Environmental Contract at the Charleston Naval Complex.

Rear Admiral Baucom gave a lunchtime presentation centered around existing legislation affecting Department of Defense ability to conduct exercises in support of military readiness. His central theme was ensuring that the Navy maintains the ability to be combat ready through training. The Navy needs to be proactive in order to complete its mission within the framework of environmental legislation.

Rick Davis (SOUTHDIV Manager) then led a roundtable discussion on what the future holds for environmental work within the Navy. Future opportunities identified included: Environmental Management Systems, compliance, range readiness, unexploded ordnance, and environmental justice. It was noted that the use of Geographic Information Systems (GIS) has become the industry norm and is expected to grow as new applications (e.g., tracking Land Use Controls) are identified.

For more information please contact:

Southern Division
Phone: (843)820-5944

Can A Freshwater/Saltwater Interface Be A Contaminant Migration Barrier?

During site remediation activities at Underground Storage Tank (UST) Site 653 on Naval Air Station (NAS) North Island, California, Southwest Division's (SWDIV) Tim Latas and Information Technology (IT) Corporation's Brian White and Richard Wong have identified the presence of an invisible barrier that is affecting the migration of groundwater contaminants. The understanding of this invisible barrier is important to accelerating site cleanup and closure.

Background

Both fresh and saline groundwater are present in coastal areas. When they coexist, they tend to remain separate based on density differences and lack of mixing forces. This boundary is referred to as the freshwater/saltwater interface (FWSWI). Because freshwater is less dense, it is usually found sitting atop (island condition) or pushing against the adjacent saltwater (coastal conditions). Without physical mixing, the chemicals in these two different liquids reach equilibrium at their interface through diffusion.

An environment that has freshwater atop saltwater complicates the process of assessing the distribution and concentrations of volatile organic compounds (VOCs) that are denser than water, such as cis-1,2-dichloroethene and vinyl chloride. An example of this situation was identified at UST Site 653 located on NAS North Island. VOCs were identified as migrating downward to about 30 feet below ground surface (bgs), but were not detected in the deeper wells at the site (46 feet bgs). The geology at the site consists predominantly of sand without discernable lithologic barriers that could restrict the downward migration of VOCs. Because groundwater salinity contrasts were the only difference identified between the upper and lower wells at the site, IT Corporation suggested that the FWSWI could be preventing the downward migration of contaminants at the site.

IT Corporation and SWDIV developed and employed methods to locate the FWSWI and to assess whether it was effecting the downward migration of VOCs. The invisible FWSWI was detected by measuring the electrical conductivity of groundwater in wells screened above and below the FWSWI and in wells screened across the interface. In the areas of high contaminant concentrations atop the interface, the concentrations decreased by 80% merely 4 feet below the interface. Samples taken 10 feet below the FWSWI did not have detectable VOCs. Based on the conductivity and chemical results, the FWSWI appears to be an effective barrier to VOC migration. Figure 1 displays the relationship between the FWSWI and the distribution of vinyl chloride in groundwater at UST Site 653. SWDIV will take this important site feature into account in the development of the final remedial options for this site.

Conclusion

Since most Naval and Marine Corps bases are situated in coastal areas, it is important to ascertain whether both fresh and saline groundwater exist below VOC impacted sites that are located on these installations. If the FWSWI is present, it will inhibit VOC migration, depending on the density/concentration of site contaminants, physical mixing forces, and density differences.

POC:

Organization: NAVFAC SWDIV
Telephone: (619)556-8940

Author:

Organization: IT Corporation
Telephone: (619)437-6326 ext. 314

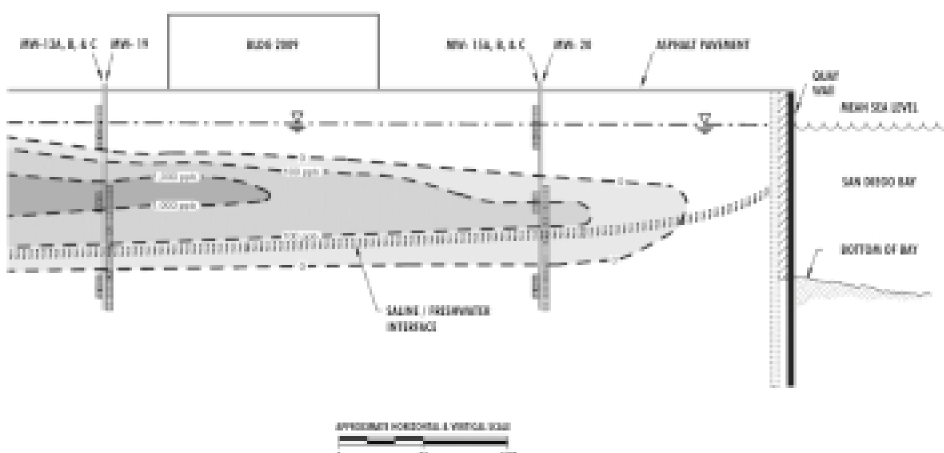

Figure 1. – Schematic of vinyl chloride impacted groundwater and FWSWI.

Naval Surface Warfare Center, Dahlgren, VA

Site 17 – 1400 Area Landfill, Soil Cap with Phytoremediation

Executive Summary

A phytoremediation solution in the form of a vegetative cap was implemented at the Site 17—1400 Area Landfill. This cap will minimize migration of contaminated groundwater, limit rainwater from reaching the water table, and stabilize the soil cover. The process entailed the following:

- clearing of the site,
- removal and off-site disposal of mercury contaminated sediments from an adjacent marsh,
- excavation and consolidation of waste material to reduce the areal extent of the landfill and establishment of a perimeter buffer zone,
- grading,
- soil cover placement,
- installation of water control structures, and
- planting hybrid poplars, along with a variety of other plant and tree species.

Additional mitigation wetlands adjacent to the landfill were created during construction of the cap. Beaver damage to newly planted trees and unexpected dry weather after planting contributed to the lessons learned during this project. The overall success of the project can be credited to keeping all key players well-informed at every stage and seeking their input.

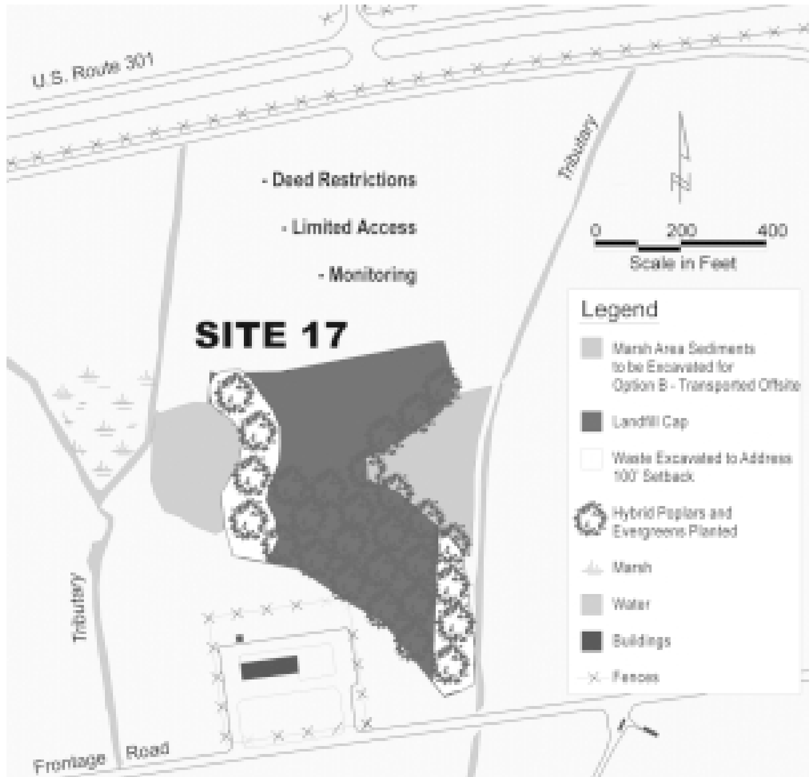

Figure 1. Site 17 layout.

Introduction

Site 17, the now-closed 1400 Area Landfill, is located north of Frontage Road and south of U.S. Route 301, between two streams (tributaries) that delineate the eastern and western boundaries of the site. A site map is shown in Figure 1. The tributaries drain southward to Hideaway Pond (immediately south and down gradient of the landfill). A small pond has formed as the result of beaver activity west of the landfill, and a marsh is adjacent to to the east of the landfill. Building 1400 lies between the landfill and Frontage Road.

Background

The Site of the closed landfill was operated as a gravel pit between 1953 and 1969. From 1970 through 1978, the depression created by the graveling operation was used as a landfill for municipal waste. Besides municipal waste, construction debris, aircraft parts, and ordnance casings were disposed of in the landfill. By 1981, the area between the tributaries had been filled and covered with soil, and vegetation overgrew the site and surrounding areas.

In 1981 an Initial Assessment Study (IAS) was completed and documented that the site was used as a sanitary landfill. No evidence of hazardous waste disposal could be found. Mercury contamination of Hideaway Pond and the two tributaries was investigated during a Confirmation Study (CS) carried out during 1983-1984. A Remedial Investigation (RI) performed between 1993 and 1997 more clearly defined the boundaries of the landfill. Additional groundwater, surface water, and sediment samples were collected during the RI to further characterize contaminant levels and distributions. Human and ecological risks were calculated from data collected during the RI and information generated by United States Geological Survey (USGS) and ecological studies (performed between 1995 and 1997).

Risk Evaluation

No human health risks were found, but potential ecological risks were identified in surface soils, groundwater, and surface water/sediment. Contaminants identified from the landfill were:

- Soil: PAHs, metals (chromium, thallium, mercury)
- Groundwater: mercury
- Surface water/sediment: mercury

Cleanup Alternatives

Four cleanup alternatives were evaluated based on site conditions, risks, and legal requirements.

Alternative 1 – No action was used as a baseline against which the effectiveness of the other three alternatives were compared.

Alternative 2 – Sanitary landfill cap proposed placing dried waste/fill under a cap, placing dried marsh sediments either under the cap or disposing them off-site, and groundwater monitoring.

Alternative 3 – Impermeable landfill cap proposed placing dried marsh sediments either under a cap or disposing them off-site, and installation of a slurry wall.

Alternative 4 – Soil cap with phytoremediation proposed placing dried waste/fill under a cap, disposing dried marsh sediments off-site, and monitoring. Alternatives 2 through 4 all included deed and access restrictions.

Soil Cap with Phytoremediation

Alternative 4 – Soil cap with phytoremediation was selected as the remedial method for this site. This alternative included a cap comprised of a 2-foot layer of clean fill planted with specially selected trees. The trees included species such as hybrid poplars, which are often used in phytoremediation projects because they grow quickly, are relatively disease- and pest-free, and transpire relatively large amounts of water. The trees are also phreatophytic – meaning that their roots will seek out groundwater as a water source, drawing from the capillary fringe of the water table. These trees, in effect, function as groundwater pumps, moving water through their roots and out through their leaves as vapor, a process know known as transpiration.

Groves of phreatophytic trees are known to transpire groundwater at rates sufficient to cause localized depressions of the water table.

Given appropriate conditions, groves of phreatophytic trees such as poplars, willows, and sycamores can be used to prevent the off-site migration of contaminated groundwater. Plantings used in this way are one type of phytoremediation known as "hydraulic control." In addition, the tree roots remove soil moisture (from rainfall) from the upper soil, thereby limiting water from leaching potential contaminants and reaching the water table—further enhancing hydraulic control. Plant roots also anchor the soil cover, preventing erosion and possible future failure of the cap.

The selected alternative also included removal of landfilled waste within 100 feet of the beaver dam pond and streams to establish a buffer zone between the waste material and surface waters. This material was removed, dried, and placed under the soil cover.

Alternative 4 addresses long term goals for Site 17 by mitigating mercury risks through hydraulic control and preventing mercury-impacted media from possible eco-receptors (plants and animals). This alternative also complies with relevant and appropriate Federal and Commonwealth of Virginia regulatory requirements.

Another benefit of phytoremediation is that plants, and the microbial population supported by plants around their roots, cause the degradation of organic contaminants. This benefit was not addressed during the Remedial Investigation/Feasibility Study (RI/FS) process, since the organic contaminants were not risk drivers. Verifying biological degradation of contaminants can be costly. However, the benefit of enhanced biodegradation brought about by the plants and their associated microbiota will nonetheless be realized.

After the Record of Decision (ROD) for Site 17 was signed in September 1998, design, cleanup, and closure activities began.

Pre-planting Preparations

To ensure safe working conditions, ordnance clearance of the site was first performed, though no ordnance was found. Subsequently, existing vegetation was cleared, and the site was graded for positive adequate runoff.

Approximately 3,000 tons of mercury-contaminated sediment from the nearby marsh was disposed of off-site. Waste and soil within 100 feet of the nearby tributaries and beaver dam pond (See Figure 2) were also removed, creating a setback between the water and waste. The 100-foot setback was pre-final graded, creating a new wetland that was could be used to mitigate other wetland losses on the base.

Figure 2. 100-foot setback between the marsh and the landfill.

The waste and soil removed from the setback area were combined with waste and contaminated soil removed from the southern tip of the landfill, and placed in the central area of the landfill.

A soil cover cap was constructed by placing 2 feet of clean fill over the centralized wastes and soils, as well as the remaining portions of the landfill. The cap was designed to separate the waste from people, plants, and animals. Following the soil cap, monitoring wells, piezometers, erosion control matting, and sediment logs (to prevent erosion) were installed.

The site was prepared for planting.

Planting Requirements

In 2000, over 900 hybrid poplar trees and 800 trees of other species were planted on the soil cap to provide hydraulic control and phytostablization of the site. The mix of planted tree species is shown below. The plants used in the mitigation wetland are also shown below.

Tree Mix	
937 Hybrid Poplar	(54%)
226 Sycamore	(13%)
210 Red Mulberry	(12%)
180 Tulip Poplar	(10%)
180 Loblolly Pine	(10%)
1733 Total Trees	

Wetland Plant Mix	
12,238 Soft-Stem Bulrush	(herb)
12,238 Common-Three Square	(herb)
173 Black Gum	(tree)
173 Black Willow	(tree)
144 Common Elderberry	(shrub)
144 Sweet Pepperbush	(shrub)

Hybrid poplars were delivered as 6-foot tall bare roots (without leaves). The earth was augured on 8.5-foot centers in areas with waste and 17-foot centers in areas without waste to create planting holes.

Post-Planting Activities

Beavers entered into the newly planted site and destroyed some of the plants. However, plants located further upland were ignored by the beavers. To prevent the beavers from damming the area, a water control structure was installed enabling better hydraulic control of the western wetland area.

Heavy rains during Summer 2000 gave way to unanticipated drought conditions in the fall and winter. This drought resulted in a 66% loss of loblolly pine trees, though all other plants survived. The loblolly pines were replaced in April 2001, and an irrigation system was installed soon thereafter (see Figure 3) to prevent possible future losses from drought. Because of the fall and winter drought following planting of the tender young trees, vegetation establishment slowed, but has since recovered.

The Site 17 Landfill originally covered about 6.0 acres. As a result of the Remedial Action (RA), the landfill now covers 3.5 acres and is properly controlled. The cost of the project was $1,800,000.

Lessons Learned

1. Research nurseries and required fertilizers up front. Coordinate tree quantity and delivery well before you need them. This will reduce delays in receiving trees.
2. Install an irrigation system to ensure adequate moisture control on the cap.
3. Topsoil for a vegetative cap should have more organic contents (at least 5% organic matter) and less clay. A loamy soil helps establish plantings. Coordinate soil sources up-front. Fill and topsoil from different areas may need to be blended.
4. Allow for unexpected environmental conditions—both weather and wildlife—that may affect the growth of plants and trees.
5. Regular meetings keep all key players well-informed, allowing them to "buy in" to the process. For example:

- Comprehensive Long-Term Environmental Action Navy (CLEAN)/Remedial Action Contractor (RAC)/Navy/Regulator Meetings
- Quality Assurance/Quality Control (QA/QC) on-site meetings every 2 weeks with Base Environmental & Natural Resources, RAC Superintendent, Design Field Rep, Resident Officer In Charge of Construction (ROICC), Navy Remedial Project Manager (RPM), Navy Engineer In Charge (EIC), and USGS.
- Partnering updates every 5 weeks were provided to the Navy RPM, the Base ROICC, Base Environmental, CLEAN and RAC contractors, Environmental Protection Agency (EPA) and the State.

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Proposed Remedial Action Plan Summary, Site 17. NSWC. August 1998.

Environmental Restoration Fact Sheet for Site 17. NAVSEA. April 2001.

Points of Contact:
Remedial Project Manager
EFA Chesapeake, Code CH21
Phone: (202)685-3282

Environmental Engineer
NFESC, Code 413
Phone: (805)982-4798

Environmental Engineer
NFESC, Code 414
Phone: (805)982-4993

Anteon
Phone: (805)982-1615

Figure 3. Irrigation system installed May 2001.

Multiphase Extraction of Subsurface Petroleum:

Aggressive Solution to a Complex Site

The Navy is constructing a multiphase extraction (MPE) system to remove a large plume of JP-5 jet fuel from the subsurface at Naval Air Station (NAS) Lemoore in California. The plume originated from a leak in a pressurized subsurface pipeline. MPE uses high vacuum to remove product in the vapor, free, and dissolved phases. In addition to providing rapid removal of the plume, MPE will also facilitate implementation of monitored natural attenuation (MNA) as the final remedy at the site.

MPE is suitable for petroleum sites where complex conditions present serious obstacles for less aggressive technologies (EPA 1997). The following conditions complicate free product removal at NAS Lemoore's Site 17:

- The plume has existed for at least one complete drought cycle, smearing the product as the water table fell and rose again. As a result, a significant amount of residual product is trapped within the soil in interstitial pore spaces and disconnected lenses and stringers below the water table.
- The site hydrogeology, channel sands encased in clay layers and lenses, provides conditions that may lead to preferential removal from sandy deposits only.

In addition, the site is located between the runways and taxiways of an active air station, precluding excavation and removal as a practical alternative. This location requires a product removal technique that has minimal impact on flight operations.

Site History

Previous attempts to remove product at NAS Lemoore Site 17 were successful at removing localized product within portions of the site. Two areas were excavated shortly after the leak was discovered in 1987. A combined 122,000 gallons of product were pumped out of the open excavations using vacuum trucks (PRC 1997). A steam injection/vacuum extraction (SIVE) demonstration system was installed on the northern half of the plume in 1994. The SIVE system removed approximately 80,000 gallons of product through 4 months of operation (Udell and Itamura 1995).

Free product was not detected in the SIVE extraction wells after the system was turned off. However, product was again measured in many extraction wells at thicknesses of more than 2 feet in 1998. SIVE was not re-implemented at the site because of cost considerations and concerns related to smearing of product upward. Passive skimming pumps installed in wells in the southern part of the plume in 1997 were ineffective.

MPE Technology

MPE is an aggressive technology that relies on the synergy between concurrent extraction of vapor and liquids from a common borehole (Figure 1). It is commonly implemented by applying a vacuum through a small-diameter drop tube inserted into the extraction well, at or below the water table (EPA 1999). Airflow induced by the vacuum entrains product and water into and up the drop tube. The vacuum conveys vapor, product, and water from the well to a separation and treatment system. The vacuum and groundwater drawdown generated in the subsurface by MPE accelerate movement of contaminated vapors and free-phase product into the extraction well.

For Site 17 and similar sites, MPE provides a "jump start" toward establishing monitored natural attenuation (MNA) processes while the source is being removed. Regulatory approval of MNA as part of a final remedy generally requires a demonstration that Natural Attenuation (NA) processes are active and that the contaminant plume is stable or shrinking. In addition to removing product in both the vapor and liquid phases, MPE accelerates in situ aerobic bioremediation by increasing the oxygen content of contaminated soils and groundwater (EPA 1997). The oxygen content is increased by (1) inducing air flow to soils in the unsaturated zone, (2) dewatering soils in the capillary fringe and inducing air flow to soils that formerly were partially saturated, and (3) promoting movement of oxygenated groundwater from outside the contaminant plume into contaminated areas. MPE can expedite product removal and biodegradation of residual product at locations, such as Site

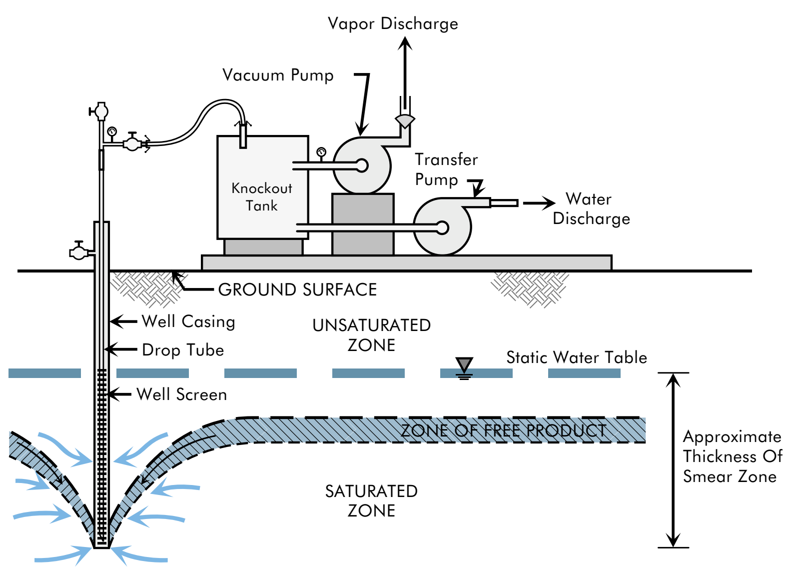

Figure 1. Multiphase extraction schematic.

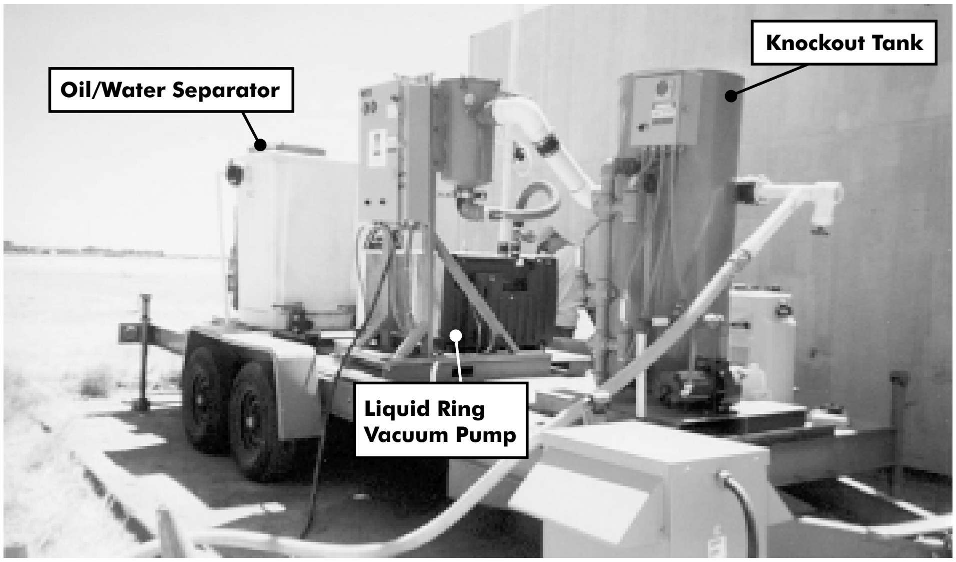

Figure 2. MPE pilot test skid.

17, where product has been smeared by the falling and rising water table.

Pilot Test

The Navy conducted a pilot test of the MPE technology at Site 17 in August 1999. The skid-mounted MPE system (Figure 2) used a high-vacuum liquid ring pump to extract liquid and vapor from existing wells. The extracted liquid was separated from vapor in a knockout tank and the product was separated from water using an oil/water separator. The product flowed by gravity into 55-gallon drums (Figure 3) and the water was pumped to a collection tank.

MPE was tested at four wells in geologic environments that ranged from thick sandy channel deposits to thinly bedded silt and silty sand. Product removal rates at the test wells ranged from 2 to 8 gallons per hour, with an average radius of influence (ROI) of 20 feet.

Full-Scale Concept

The full-scale MPE system at Site 17 includes 35 extraction wells that will be screened across the zone of contamination and placed to provide full pneumatic and hydraulic influence of the product plume. The groundwater table is about 10-12 feet below ground surface (bgs) and extraction wells will be drilled to approximately 25 feet. Flexibility is an important characteristic of the design of the MPE system for Site 17. The hydraulic and pneumatic conductivities of the soil vary dramatically across the site, as does the nature and distribution of product. If all 35 extraction wells were connected to a single vacuum source, almost all of the vapor and groundwater flow would be drawn from a few wells located in the permeable sand channel material in the center of the plume because it constitutes the path of least resistance. To overcome this geological challenge, the design of the MPE system for Site 17 includes four separate systems to extract from geologically distinct parts of the site (Figure 4). Careful geologic logging of the extraction wells will allow the wells to be grouped by the geologic materials they are screened across. Grouping wells in this manner will enable easier balancing of flows from individual wells, allowing all portions of the plume to be remediated.

The MPE design takes advantage of changing conditions as the water table is drawn down and the cone of depression increases in size. Initially, the adjustable drop tubes will be inserted with the open end just below the product layer, so that the bulk of the floating free product can be extracted without smearing the product downward. After removing the most accessible product, the drop tubes will be incrementally lowered to expose residual product to vacuum throughout the smear zone. Dewatering will release trapped pockets of free product below the water table, allowing them to be captured by the system.

Full-Scale Design

The four identical, skid-mounted extraction units are each designed to accommodate vapor flows of up to 900 acfm (approximately 80 scfm) and liquid flows of up to 50 gpm. Vapor and entrained liquid from the extraction wells will pass through a knockout tank at each extraction unit to separate the liquid and vapor phases. Vapor from the separators will be transferred by a vacuum blower to a pipe manifold and subsequently treated in a catalytic oxidizer to control vapor-phase hydrocarbon emissions. Liquid will be transferred from the separator by a low-shear transfer pump to the water treatment system via a separate pipe manifold.

The water treatment system was designed to maximize product removal and to minimize mechanical equipment components and associated maintenance requirements. Following bulk product removal in a sedimentation tank and a coalescing oil/water separator, extracted water is pumped through bag filters and granular activated carbon to remove dissolved petroleum hydrocarbons. The long-term flow rate for the treatment system is expected to be about 100 gpm based upon calculated groundwater recharge rates; the maximum flow of the system is designed for 150 gpm.

A key consideration in assessing the feasibility of the MPE system was treatment and discharge capacity. The poor quality (high salinity) of the shallow groundwater at the site prevented discharge of treated groundwater to surface water. The relatively high flow rate projected for full-scale operation prevented discharge to the base industrial wastewater treatment plant. To avoid the high cost of desalination that would be necessary for surface water discharge, the Navy proposed discharging treated groundwater back into the same aquifer using an infiltration gallery constructed in an open field near the MPE system. Because this is considered a beneficial reuse of water, the regulatory agencies preferred this alternative to surface water discharge and are issuing discharge permits. The infiltration gallery is sized to discharge a maximum flow of 150 gpm and is located a sufficient distance from the MPE system to have negligible effect on extraction.

Figure 3. Product discharge during Pilot Test.

System Operation

The system is expected to achieve free product site remediation goals within 30 months. Individual extraction units will be turned off when no more than 0.01 foot of product can be detected for all piezometers within its subarea. When all subareas are clear of product (within all piezometers and extraction wells) for 1 year, the system will be decommissioned and MNA will commence, subject to regulatory and Navy approval.

Construction of the MPE System began in May 2001. Full-scale operation of the system is expected to begin in January 2002.

Summary

The MPE system at Site 17 is designed to rapidly remove product in three phases (vapor phase, free phase, and dissolved phase) from interfingered geologic units that have a wide range of hydraulic conductivity. Concurrently, the MPE system will stimulate aerobic biodegradation of any residual product in saturated and unsaturated soils by drawing oxygen into soil vapor and by drawing clean groundwater from the periphery of the plume toward the center. By conducting aggressive product removal while establishing conditions suitable for MNA of residual petroleum contamination, the Navy will shorten the time required to close the site by years, minimizing both the cost of cleanup and the disturbance to base operations.

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For further information, you may contact:

Engineering Field Activity West,
Naval Facilities Engineering Command
Code 052, Commercial (650)244-2656,
DSN 494-2656,

Environmental Protection Specialist,
Naval Air Station Lemoore
Code N451L, Commercial (559)998-3850,
DSN 949-3850

Project Manager, Tetra Tech EM Inc.
(303)382-8791

Project Engineer, Tetra Tech EM Inc.
(303)382-8786

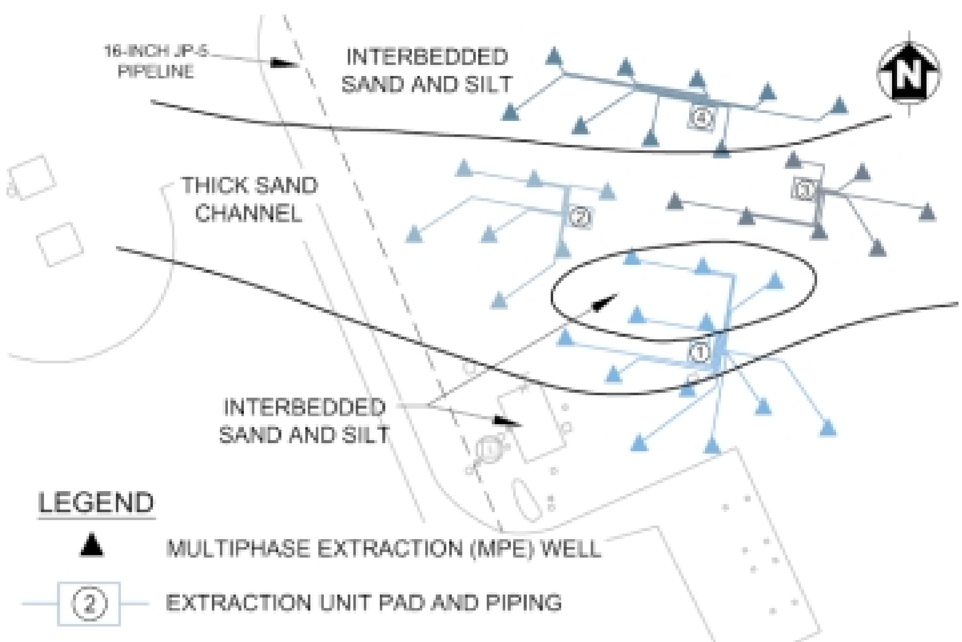
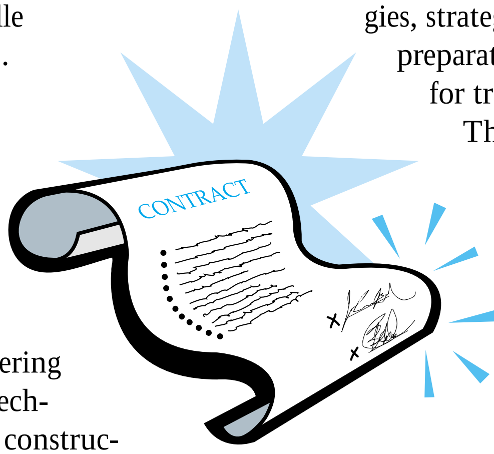


Figure 4. Extraction system layout and generalized geology.

ETIC is Awarded

NAVFAC awarded the **Environmental Technology Implementation Contract** (ETIC) (Contract No. N47408-01-D-8207) to Battelle Memorial Institute on 7 May 2001. This ID/IQ contract is Cost-Plus-Award-Fee with a timeline of one year plus 4-one year options (5 years total) and maximum contract value of $75,000,000.



The objective of this procurement is to 1) obtain various engineering services for promoting innovative technologies and 2) perform incidental construction tasks related to innovative technologies applied at contaminated sites. Work will proceed predominately at Navy and Marine Corps installations and occasionally at other U.S. Government agencies worldwide. The effort may include construction, installation, testing, operation, evaluation, and implementation of a variety of proven innovative remedial action technologies, strategies and systems and may also include preparation of technical documents and training for transfer of innovative technology efforts. The sites will consist of those ranked on the Superfund National Priority List (NPL), as well as, non-NPL sites regulated under Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), Resource Conservation and Recovery Act (RCRA) sites, underground storage tank (UST) sites and other sites which may require remedial action.

To obtain services through this contract or for more information please contact (805) 982-1556

New Web Site for "Navy Guidance for Conducting Human Health Risk Assessments"

There is a new web site available to Remedial Project Managers (RPMs) and their Team that provides information and guidance for implementing the Chief of Naval Operations (CNO) human health risk assessments (HHRAs) policy. The HHRA web site provides detailed information on how to conduct a HHRA as well as how to evaluate the effectiveness and potential implementation impacts of remedial alternatives. Topics covered on this web site include 1) regulatory basis for HHRAs, 2) the HHRA process, 3) issue papers on HHRA- related topics, and 4) HHRA specific tools/analytical methods. There is also a case studies section, which presents examples of Navy HHRAs. Navy and other agency web sites identifying assessment and cleanup technologies can be found on a Technology Connection section. This web site has been developed and prepared by the Naval Facilities Engineering Command (NAVFAC). This site can also be accessed through the NFESC Environmental web page at *http://erb.nfesc.navy.mil* under Regulations and Policies at Navy Related Sites or under Navy Support at Work Groups, Risk Assessment, Related Sites. The HHRA web site complements the ecological risk assessment web site made available earlier this year, which is also accessible through the above links.

For further information please contact:

Naval Facilities Engineering Service Center (NFESC)
Phone: (805)982-4798

Remediation Innovative Technology Seminar (RITS)

The Remediation Innovative Technology Seminar (RITS) provides training on new and innovative technologies, methodologies, and guidance under the Navy's Environmental Restoration Program. RITS is sponsored by the Naval Facilities Engineering Command (NAVFAC) in coordination with its geographical Engineering Field Divisions (EFDs) and Activities (EFAs), and its Naval Facilities Engineering Service Center (NFESC). The RITS training serves as one of many ways the Navy promotes innovative technologies to enable site restorations to take place faster, consume less energy, and provide better results at lower cost.

While the RITS is developed primarily for the Navy's Environmental Restoration and Base Realignment and Closure (BRAC) environmental professionals, it is also available to other DoD personnel, the Navy's environmental cleanup contractors, and environmental regulators.

Topics for the October 2001 offering are:

Five-Year Reviews - This session presents five-year review requirements, recently developed Navy policy, and will analyze actual five-year review reports. Five-year reviews are required at Navy and Marine Corps environmental restoration sites where remaining hazardous substances, pollutants or contaminants prevent unlimited land use and unrestricted exposure. Five-year reviews ensure remedies remain protective of human health and the environment. They can also be useful to evaluate remedial performance, identify remedy deficiencies, and recommend corrective actions.

Management of Secondary Treatment Trains - This session presents innovative and cost effective methods for managing the secondary waste streams resulting from remediation systems. The topic covers construction, operation and maintenance, disposal costs, and overall costs of secondary treatment systems such as air stripping, granular activated carbon adsorption, UV oxidation, bioreactors, and others. The most effective treatment train for each system will be identified.

Perchlorate - This session presents the historical uses of perchlorate, discusses why it's of concern today, introduces information about toxicology, and reviews regulatory considerations. In addition, information on the analysis and treatment of perchlorate will be provided. The session will conclude with a discussion about the roles of the Interagency Perchlorate Steering Committee, and the DoD perchlorate workgroup.

Knowledge Exchange - Source Removal Technologies - This session presents case studies of source removal technologies such as: in situ oxidation, permeable reactive walls, groundwater circulation wells, and in situ bioremediation. These case studies provide examples of technologies applied incorrectly and discuss criteria for properly implementing source removal technologies. The audience will leave this session understanding the value of a well-documented project, regardless of its outcome.

Agenda

0800 - 0830	Welcome and Introductions
0830 - 1000	Five-Year Reviews
1000 - 1130	Management of Secondary Treatment Trains
1130 - 1230	Lunch
1230 - 1415	Perchlorate
1415 - 1600	Knowledge Exchange – Source Removal Technologies

Schedule

EFD/A	2001 Date	Location
Atlantic Division	2 October Tuesday	Hilton Norfolk Airport VA
Southern Division	4 October Thursday	Embassy Suites Charleston Convention Center SC
EFA Northeast	16 October Tuesday	Renaissance Hotel Philadelphia Airport PA
EFA Chesapeake	18 October Thursday	Marriott Key Bridge Arlington VA
Southwest Division	23 October Tuesday	Sheraton San Diego Hotel & Marina CA
EFA Northwest	25 October Thursday	Howard Johnson Plaza Bremerton WA
Pacific Division	30 October Tuesday	Makalapa BOQ, Pearl Harbor HI

Registration

Register on the web at *http://erb.nfesc.navy.mil/support/rits/main.htm* no later than one week prior to the date of the seminar you plan to attend.

Or, register by fax, E-mail, or phone. Provide the following information no later than one week prior to the date of the seminar you plan to attend:

- Seminar Date & Location
- Name
- Organization/Activity/Company
- Telephone (Navy and Marine Corps, include DSN prefix)
- Fax
- E-mail

Due to space limitations, registration for contractors is limited to those currently working under the Navy's environmental restoration program. If you are a contractor, please provide us with your Contract Number and Primary Navy Technical Point of Contact.

Fax, E-mail or phone registration to
Fax: (805)982-3694
E-mail: rits@nfesc.navy.mil
Voice (805)982-5575, DSN 551-5575

- *Please note that you must make your own lodging arrangements.*
- *There is no cost to attend the seminar.*
- *No form DD1556 is required.*

Calendar Of Events

DATE	COURSE NAME	LOCATION	PHONE	EMAIL
Oct 23-24	Accelerated Bioremediation of Chlorinated Solvents Training Course	New Orleans, LA	(770) 242-7712	nelson@sseb.org
Dec 4-5	Accelerated Bioremediation of Chlorinated Solvents Training Course	Tampa, FL	(770) 242-7712	nelson@sseb.org
Dec 11-13	2001 Navy/Marine Corps Water Program Managers Conference	San Diego, CA	(619) 524-0496	gkiehl@dandp.com

Reminder

Get a head start on your next article for the ***Fall 2001 Issue*** of ***RPM News***.

Please provide text, original photos, and/or drawings, no later than 10 August.

Thanks,
RPM News Editor

DEPARTMENT OF THE NAVY

Commanding Officer
NFESC Code 413/Ortiz
1100 23rd Avenue
Port Hueneme, CA 93043-4370

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