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NSB KINGS BAY
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LETTER REQUESTING EXTENSION TO ALLOW THE DISCHARGE OF TREATED GROUNDWATER TO THE SUBASE UPPER BASE WASTEWATER TREATMENT PLANT
NSB KINGS BAY GA
10/6/1994
NSB KINGS BAY

31547.000
09.01.00.0087

DEPARTMENT OF THE NAVY
NAVAL SUBMARINE BASE
KINGS BAY, GEORGIA 31547-5000

IN REPLY REFER TO:

October 6, 1994

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Georgia Department of Natural Resources
Attn: Mr. Larry Hedges
Industrial Wastewater Program Manager
205 Butler Street, SE, Suite 1070
Atlanta, GA 30354

Dear Mr. Hedges:

This letter is to formally request extension and modification to the authorization to allow discharge of treated groundwater to SUBASE Upper Base Wastewater Treatment Plant and Land Application System, LAS Permit No. GA 03-751. Current authorization is for the 10-month period from February 15, 1994, until December 15, 1994.

The modification includes:

- a 5-year extension,
- an updated monitoring plan, and
- future system modifications.

The 5-year extension is to allow continued operation of a groundwater treatment system as an interim measure until design and construction of a final remediation measure is implemented. The Phase I monitoring plan has been updated for the 5-year extension. Future system modifications may be associated with implementing a scaled-up interim measure needed to contain groundwater migration (Phase II).

Two documents are incorporated by reference: (1) the current Discharge Authorization dated February 4, 1994, from Georgia Department of Natural Resources (GA DNR) to Naval Submarine Base (NSB) Kings Bay, and (2) the initial *Request for Authorization for the Groundwater Discharge into the NSB Kings Bay Land Application System, Naval Installation Restoration Program, Naval Submarine Base, Kings Bay, Georgia, Contract No. N62467-89-D-0317* dated December 1993. The Request for Authorization is the document which was submitted for the initial 10-month pilot-scale study and Phase I continuance. Background information of the site, system, and operation and monitoring of the groundwater remediation is included.

The LAS facility has discharge requirements of 10 milligrams per liter (mg/ℓ) BOD_5 and 10 mg/ℓ TSS with a permitted capacity of 1.5 million gallons per day (gpd). The treated groundwater discharge to the LAS facility will not adversely affect the LAS operating and discharge parameters.

CURRENT SYSTEM OPERATIONS

Groundwater is extracted from the recovery wells installed near the Old County Landfill (Site 11) on SUBASE property. The water is then treated onsite to meet State and Federal drinking water standards and then discharged to a manhole for delivery to the LAS system. The design maximum treatment system discharge flow is 86,400 gpd.

Phase I has been effective in recovering and treating the contaminated groundwater. Current system operations meet all stipulations set forth in the discharge authorization. System discharge flows have been averaging between 50,000 and 55,000 gallons per day which is less than the authorized maximum of 86,400 gpd. Treated groundwater samples have met all State and Federal water standards as shown in Table 1. Table 1 provides influent and effluent concentrations and the discharge criteria for volatiles, semivolatiles, metals, and selected engineering treatability parameters (ETPs). The influent concentrations are the maximum values detected from influent samples collected from March 24, 1994 through August 23, 1994. The reported effluent concentration ranges are the minimum and maximum values to date which were detected from effluent samples collected from June 1994 through August 16, 1994. Discharge criteria are the maximum contaminant levels as established by the State of Georgia and USEPA.

SYSTEM MODIFICATION REQUEST

We request that the intended duration for discharge to the LAS be extended from 10 months (February 15, 1994, through December 15, 1994) to an additional 5 years (December 15, 1994, through December 15, 1999). This extended duration includes operating the treatment system as an interim measure until design and construction of a final remediation measure can be implemented.

The monitoring plan for Phase I is updated for the additional 5-year period. The sampling program outlined in the initial request includes sampling volatiles every week and metals and selected ETPs every other week. In addition to this, semivolatiles have been sampled every other week. A revision to this monitoring plan, extended over the 5-year period, is presented in Table 2. Volatiles, semivolatiles, metals, and ETPs continue to be collected and analyzed; however, the sampling frequency decreases over time as system operations mature and stabilize and as discharge criteria continue to be met.

As ABB Environmental Services is the operator of the treatment system, we request that you provide a copy of your authorization to them at:

ABB Environmental Services, Inc.
Attn: Mr. Ted Taylor
1400 Centerpoint Boulevard, Suite 158
Knoxville, TN 37932-1968

We thank you for your consideration of this request and the continuing assistance you are providing to the project. If you have questions regarding this request or the enclosed documents, please contact Mr. Mike Anderson at (912) 673-4620. Please address all correspondence to "Commanding Officer, Naval Submarine Base, 1063 USS Tennessee Avenue, Kings Bay, Georgia 31547-2606."

Sincerely,

pc: GA DNR (EPD), Bruce Khaleghi
ABB-ES, Ted Taylor
Anthony Robinson, SOUTHNAVFACENGCOM

Table 1
Phase I Treatment System
Summary of Constituents Detected in Influent and Effluent Dissolved Aeration Tank (DAT) Samples Collected for Offsite Analysis

Constituents of Concern	Influent Concentration[1]	Effluent Concentration Range[2]	Discharge Criteria[3]
Volatile Organic Compounds[4] (µg/ℓ)			
Chloromethane	2	<2[5]	NONE
Vinyl Chloride	24	<2[5]	2
Acetone	140[6]	23 to 58[7]	NONE
1,1-Dichloroethene	1	<2[5]	7
1,1-Dichloroethane	17	<2[5]	NONE
cis-1,2-Dichloroethene	330	<2 to 8	70
trans-1,2-Dichloroethene	4	<2[5]	100
2-Butanone	92	33 to 96	NONE
Trichlorethene	78	<2[5]	5
Benzene	2	<2[5]	5
4-Methyl-2-pentanone	430	36 to 82	NONE
2-Hexanone	6	<17[5] to <23[5]	NONE
Tetrachloroethene	19	<2[5]	5
Toluene	77	<2[5]	1,000
Chlorobenzene	2	<2[5]	100
Ethylbenzene	24	<2[5]	700
Xylene (total)	27	<2[5]	10,000
1,2-Dichloroethane	13.47	<2[5]	5
Methylene Chloride	23.41	<2[5] to <3[5]	5
1,4-Dichlorobenzene	2	<2[5]	75
Semivolatile Organic Compounds[4] (µg/ℓ)			
Phenol	31	14 to 17	NONE
2-Methylphenol	5	2 to 4	NONE
4-Methylphenol	250	68 to 150	NONE
2,4-Dimethylphenol	5	<10[5]	NONE
Naphthalene	8	1 to 3	NONE
Diethylphthalate	10	7 to 8	NONE
Di-n-butylphthalate	<10	1	NONE
bis(2-Ethylhexyl)phthalate	<10	0.7 to 2	6

See notes at end of table.

Table 1 (continued)
Phase I Treatment System
Summary of Constituents Detected in Influent and Effluent
Dissolved Aeration Tank (DAT) Samples Collected for Offsite Analysis

Constituents of Concern	Influent Concentration[1]	Effluent Concentration Range[2]	Discharge Criteria[3]
Metals[8] (mg/ℓ)			
Cadmium	<0.005[5]	<0.010[5]	0.005
Chromium	<0.010[5]	<0.010[5]	0.1
Iron	3.27	1.0 to 2.3	NONE
Manganese	0.0907	0.015 to 0.18	NONE
Lead	<0.003[5]	<0.003[5]	0.05
Engineering and Treatability Parameters (ETPs)[9] (mg/ℓ)			
Biochemical Oxygen Demand	32	18 to 24	NONE
Carbon, Total Organic	33.7	<17[5] to 22	NONE
Chloride	57.9	42 to 59	NONE
Hardness	140	30 to 68	NONE
Total Dissolved Solids	280	160 to 220	NONE
Total Suspended Solids	25	<10[5] to 11	NONE

[1] Influent data was collected during Phase I Activities (March 24, 1994 through August 23, 1994).
[2] Effluent data was collected during Phase I Continuance Activities (June 1994 through August 16, 1994).
[3] Discharge criteria are the maximum contaminant levels as established by the State of Georgia and U.S. Environmental Protection Agency (USEPA). Where "NONE" is indicated, these limits are not established.
[4] Effluent samples were analyzed for volatiles and semivolatiles by the USEPA Contract Laboratory Program 1990 and 1992 Statement of Work for Organic Analysis for all Target Compound List (TCL) volatile organic compounds and semivolatile organic compounds. Constituents in the TCL not shown above were non-detect.
[5] A "less-than" symbol (<) indicates that the constituent was not detected at the reported quantitation limit.
[6] The value shown is the highest concentration of acetone detected in an influent sample; however, all positive results for acetone in influent samples were qualified as undetected due to laboratory method blank contamination. The value shown is not representative of the actual influent concentration of acetone.
[7] Values may be biased high because acetone was detected in associated trip blanks at concentrations ranging from 6 to 16 micrograms per liter.
[8] Effluent samples were analyzed for metals by USEPA Methods 6010 and 7421.
[9] Effluent samples were analyzed for ETPs by USEPA Methods 325.2, 415.1, 160.2, 160.1, 130.2, and 405.1.

Notes: µg/ℓ = micrograms per liter.
mg/ℓ = milligrams per liter.
ETP = engineering and treatability parameter.

Table 2
Phase I Continuance Monitoring Plan
Dissolved Aeration Tank Sampling Frequency

Time Period	Frequency	Analysis	Analytical Method
Year 1	1 per month	Volatiles	CLP-TCL
	1 per quarter	Semivolatiles	CLP-TCL
		Metals	Methods 6010, 7421[1]
		ETPs	Parameter dependent[2]
Year 2	1 per quarter	Volatiles	CLP-TCL
	1 per 6 months	Semivolatiles	CLP-TCL
		Metals	Method 6010, 7421[1]
		ETPs	Parameter dependent[2]
Years 3 to 5	1 per 6 months	Volatiles	CLP-TCL
	1 per 6 months	Semivolatiles	CLP-TCL
		Metals	Method 6010, 7421[1]
		ETPs	Parameter dependent[2]

[1] Effluent samples for metals.

[2] Effluent samples will be collected for the following engineering and treatability parameters (ETPs) and will be analyzed by their respective analytical methods: chloride (U.S. Environmental Protection Agency [USEPA] Method 325.2), total organic carbon (USEPA Method 415.1), total suspended solids (USEPA Method 160.2), total dissolved solids (USEPA Method 160.1), hardness (USEPA Method 130.2), and biological oxygen demand (5-day) (USEPA Method 405.1).

Notes: CLP-TCL = Contract Laboratory Program - target compound list.
ETP = engineering treatability parameters.

ADDENDUM I

SAMPLING AND ANALYSIS PLAN
SUPPLEMENTAL RESOURCE CONSERVATION AND
RECOVERY ACT FACILITY INVESTIGATION FOR SITE 11

This section is to replace Section 2.2.2 in
the original Sampling and Analysis Plan

2.2.2 Air Sampling The air quality evaluation for the RFI includes characterization of baseline air quality at the site and characterization of air quality during excavation of test trenches at the landfill. The air quality sampling program to be conducted during excavation of test trenches includes monitoring at the site perimeter and in nearby residential areas.

2.2.2.1 Baseline Site Air Quality Characterization Prior to conducting intrusive activities at the site (soil borings, test trenches, and surface soil sampling), an air monitoring program will be conducted to evaluate the baseline air quality. A portable meteorological station capable of monitoring wind speed, wind direction, and temperature will be set up at the site. The meteorological station will be used to assist in the selection of upwind and downwind site perimeter monitoring stations. One upwind station and two downwind stations will be established. Sample stations will be located on platforms at approximate breathing height level (4 to 6 feet above ground). To accommodate shifts in wind direction, the sampling locations will be selected on the morning of each day of testing. During the testing, if a sustained (greater than 1 to 2 hours) wind shift is noted, sampling will be temporarily suspended, and the sampling station locations will be moved to maintain the upwind/downwind monitoring network design.

Baseline air monitoring will be conducted during favorable meteorological conditions (i.e., no precipitation, low winds, and ambient temperature greater than 45 degrees Fahrenheit).

A total of three 1-day sampling events will be conducted. Samples will be collected over an 8- to 9-hour period. Each sampling event will consist of the collection of one sample at each of the sampling locations. Additionally, one of the downwind stations will have a co-located sample for quality control. Therefore, four samples will be collected for each of three sampling events, yielding a total of 12 samples. One field-biased blank will be collected during the sampling events. Total laboratory analyses, therefore, will consist of 12 samples plus 1 blank. Sampling and analysis will be conducted in accordance with USEPA Method TO-14. Parameters for analyses include TCL VOCs. Sampling and analytical methodology are described in the QAPP, Subsection 3.5.7.

2.2.2.2 Air Monitoring During Excavation Air monitoring during excavation of test trenches includes real-time measurements and collection of laboratory samples at the site perimeter. Additionally, air samples will be collected in nearby residential areas to evaluate the potential for exposure of offsite receptors to VOCs in air.

Perimeter Monitoring and Real-time Measurements. During excavation, air monitoring will be conducted at the site perimeter to evaluate concentrations of vinyl chloride which may result from disturbance of the site soils. To protect the health of onsite personnel and nearby, offsite receptors, an action limit of one half of the Occupational Safety and Health Administration permissible exposure limit is proposed, equivalent to 0.5 parts per million (ppm) or 1.28 milligrams per cubic meter (mg/m^3).

The nearest receptor, a residential home, is located approximately 200 to 300 feet from the site. It is assumed that with dilution due to air dispersion, a concentration of 1.28 mg/m^3 or less at the site fence line will result in receptor exposures less than the negligible risk level of 0.027 micrograms per cubic meter ($\mu g/m^3$). As described below, the validity of this assumption and the adequacy of the proposed perimeter action limit will be evaluated via residential exposure monitoring during site excavation.

Perimeter monitoring during site excavation will be conducted using stain detector tubes. This methodology has been selected as it will provide inexpensive, real-time data specific to vinyl chloride and at sufficiently low detection limits equivalent to the 0.5 ppm action limit. Stain detector tubes that will detect vinyl chloride at levels below 0.5 ppm are available from several manufacturers. Action limit monitoring will be conducted at one upwind and two downwind locations at a frequency of three times per day during excavation. If vinyl chloride is detected at a level lower than the action limit, monitoring will be increased to a rate of once per hour, until non-detectable levels are reached. In the event that action limits are detected, the FOL will be immediately notified, and the excavation in progress will be backfilled in an attempt to eliminate the emission.

Perimeter Monitoring and Collection of Laboratory Samples. As a supplement to the action limit monitoring for vinyl chloride, additional VOC sampling and analysis will be conducted at the site perimeter. The objective of this air monitoring will be to validate the vinyl chloride measurements obtained via the stain detector tubes and to evaluate the impact of site excavation on the site air quality, relative to the baseline levels.

Three perimeter monitoring events are proposed during site excavation activities. The perimeter monitoring events will be scheduled to occur during periods of "worst case" excavation for the evaluation of the maximum air quality impact of site activities.

Perimeter monitoring for VOCs will be conducted using the identical procedures identified above for the baseline air monitoring, including the daily designation of one upwind and two downwind sampling locations. One of the downwind stations will be sampled in duplicate for quality control. Sampling and analysis will be conducted in accordance with Method TO-14, the evaluation of TCL VOCs (including vinyl chloride) (USEPA, 1988c). As with the baseline event, four samples will be collected for each of three sampling events, yielding a total of 12 samples. One field-biased blank will be collected during the sampling event. Total laboratory analyses will consist of 12 samples plus 1 blank.

Residential Area Air Monitoring. In addition to the site perimeter air monitoring, air quality in the nearby residential areas will also be evaluated to ensure that site excavation activities do not result in adverse exposures to offsite receptors.

Air monitoring will evaluate vinyl chloride concentrations near three residences which are located downwind of the site during a period of "worst case" excavation activity. As with the other air monitoring tasks, the sample locations will be located on the day of testing, with the assistance of the onsite meteorological station.

The residential air monitoring will be conducted at the same time as the perimeter monitoring; therefore, the upwind "background" air samples collected for the perimeter monitoring will also serve as background samples for the residential air monitoring. Efforts will be made to locate this sampling station in an area that will not be impacted by the site or other localized potential sources of vinyl chloride or other VOCs. Obtaining a credible background measurement concentration is essential to the success of the air monitoring program; the risk-based vinyl chloride concentration target is extremely low and it is important to evaluate background levels of this air contaminant as well as levels that may be attributed to site activities.

Three sampling events in the residential area are planned, using the same methodology as described in the baseline program. Three residences will be monitored for 3-day-long sampling events, yielding a total of nine samples for the residential air monitoring program. One field-biased blank will be collected during the sampling event. Total laboratory analyses, therefore, will consist of nine samples plus one blank.

Results of the residential air monitoring program will be used to confirm that offsite receptors have not been exposed to excessive concentrations (greater than the negligible risk concentration of 0.027 $\mu g/m^3$) of vinyl chloride or other VOCs as a result of site activities. The perimeter action limit will be re-evaluated after receiving the results of the residential air monitoring, and adjusted, if necessary.

ADDENDUM 1

QUALITY ASSURANCE PROGRAM PLAN
SUPPLEMENTAL RESOURCE CONSERVATION
AND RECOVERY ACT FACILITY INVESTIGATION FOR SITE 11

This is an addition to Section 3.5.7,
Air Quality Monitoring (page 3-30)

Air Sampling and Analytical Methodology. Air quality samples for the evaluation of VOCs will be collected in accordance with USEPA Method TO-14 "Determination of VOCs in Ambient Air Using SUMMA Passivated Canister Sampling and Gas Chromatographic Analysis," as found in the *Compendium of Methods for the Determination of Toxic Organic Compounds in Ambient Air*. This method involves the collection of a whole-air sample in a polished stainless-steel SUMMA canister. Recent advances in gas chromatography and mass spectrometry (GC/MS) and air sample preconcentrator technology have resulted in the ability to detect VOCs at levels as low as 0.05 ppb on a routine basis, and further fine-tuning may be applied to achieve levels as low as 0.01 ppb for vinyl chloride.

One SUMMA canister sample will be collected at each sampling station location. Using a vacuum gauge and calibrated flowmeter, integrated samples will be collected over the 8-hour sample collection period.

A field log book will be maintained that will note sample times, locations, and general ambient conditions during each event.

After the completion of samples, the canisters will be shipped under chain of custody documentation to the laboratory for analysis. Samples will be concentrated and analyzed via GC/MS for USEPA TCL VOCs (including vinyl chloride). Laboratory analytical procedures, including QA/AC, are attached.

Quality Control Procedures. One of the downwind sampling locations will be sampled in duplicate during each sampling event for quality control precision analysis.

Laboratory quality control procedures will be conducted in accordance with the method, including cleaning and conditioning the SUMMA canisters to ensure that they are not contaminated, method detection limit studies, instrument tune and calibration, analysis of field and method blanks, and the determination of internal standard/surrogate recoveries.

Data Reduction and Reporting. Analytical results will be reported in units of parts per billion for each detected VOC compound.

A description of the sampling and analytical procedures and a summary of the field conditions will be included with the reported data.