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ALAMEDA POINT
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30 MAR 1992

BY FACSIMILE TRANSMISSION
Ms. Virginia Lasky
Department of Toxic Substances Control
700 Heinz Ave., Suite 200
Berkeley, CA 94710

Subj: TIDAL INFLUENCE STUDY, NAS ALAMEDA

Dear: Ms. Lasky:

Enclosure (1) provides the details for the Tidal Influence Study to be conducted at the Naval Air Station (NAS), Alameda. The work plan is based on the Sampling Plan, Solid Waste Assessment Test (SWAT) Proposal Addendum, Volume 1A previously approved by the Department of Toxic Substances Control (DTSC).

The results of the Tidal Influence Study will be incorporated into the final SWAT report for Phases 5 and 6 of the Remedial Investigation/ Feasibility Study. In order to meet the current schedule for the SWAT, field work for the Tidal Inflence Study must be completed by the end of April 1992. The Navy intends to mobilize and proceed with the field work during the week of April 12, 1992. It is requested that the DTSC notify this office of any changes by no later than April 6, 1992 so that the changes may be incorporated.

If you have any further questions regarding this matter, please contact Wing Wong, Code 1811WW, (415) 244-2537.

Sincerely,

W. Wong for

LOUISE T. LEW
Head, Installation Restoration Section

Encl:
(1) Work Plans for Tidal Influence Study, NAS Alameda

Copy to:
California Regional Water Quality Control Board (Attn: Janette Baxter)
NAS Alameda (Attn: Randy Cate)
Planning Research Corporation (Attn: Duane Balch)
James M. Montgomery Consulting Engineers (Attn: Steve Newton)

Blind copy to:
1811, 1811WW, Admin Record (3 copies)

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WORK PLANS FOR TIDAL INFLUENCE STUDY
NAS ALAMEDA

Background

The work plan for the NAS Alameda Remedial Investigation/Feasibility Study (RI/FS) prepared by Canonie Environmental (Canonie) included a brief description (Attachment A) of a minimal tidal influence study. Our general experience in conducting tidal influence studies and our specific experience with the Phases 2B and 3 sites indicates that a larger number of wells will require monitoring to ascertain overall groundwater gradients and to evaluate potential connections between the underlying aquifers. A description of the recommended tidal influence study is presented in the remainder of this document.

Objectives

The objectives of this study are to determine the magnitude and extent of tidal influences on groundwater levels in the shallow water bearing zone (fill material), the Merritt sand, and Bay Mud sands around the Disposal Area, West Beach Landfill, and runway areas. A time weighted average head will be calculated for each tidally influenced well to help determine the average direction of groundwater flow.

The expanded scope is necessary for definition of groundwater flow patterns, potentiometric head distribution, and hydraulic gradients. Development of a detailed understanding of these flow components is fundamental to assess the potential for contaminant transport at the subject landfills. Groundwater contour maps will be prepared for several different tidal levels to assess groundwater flow directions around the landfills at various times within a tidal cycle.

Wells designated "a" and "e" are completed in the fill material above the Bay Muds, the wells designated "b" and "c" are completed in the Merritt Sand or the Bay Mud sands. These wells were selected to provide an even coverage of the site in the fill material (a and e wells) and the Merritt sand or Bay Mud sands (b and c wells).

Two marine tidal stations were installed to establish a baseline for the tidal influence study conducted at the Phases 2B and 3 sites, one at Pier 4 in the Oakland Harbor and one in the dock area of Building 15 at the Sea Plane Lagoon. The water levels in the bay will be monitored from these two stations during the CTO No. 0107 tidal influence study.

Field Methods

The tidal influence study will include collection of groundwater elevation data using pressure transducers and data loggers at a frequency of not less than 4 readings per hour, for a continuous period of 72 hours. All wells at each of the indicated well clusters and at the marine tidal stations will be monitored.

The following assumptions are associated with the tidal influence study.

- Portions of roads, driveways, and other areas can be barricaded as necessary for the 72-hour duration of the study to protect monitoring equipment.
- Access to NAS Alameda during night hours and weekends will be available for the duration of the study.
- Pressure transducer and continuous data logger measurements are deemed preferable to manual water level measurements due to the number of wells and large areal extent of the water level survey site.

Proposed Equipment for Field Activities

7	-	Hermit 2000 8-channel data loggers
19	-	Hermit 1000C 2-channel data loggers
53	-	10 psi pressure transducers with 400 foot cables, and 15 foot jumper cables
153	-	barricades

ENCLOSURE (1)

Proposed Interpretation and Reporting

Data from the tidal influence study will be plotted, evaluated, and included in the draft version of the CTO No. 0107 Phase 5 SWAT report. Data evaluation will include the generation of plots of water level versus time in each well and in the Oakland Harbor and Sea Plane Lagoon. Curves generated for each well will be compared to curves generated for the lagoon and harbor to determine whether influence exists, and to the extent possible, the lag time between tides in the bay and influences in the well. In addition, an average head will be calculated for each tidally influenced well using the methods of Serfes ("Determining the Mean Hydraulic Gradient of Ground Water Affected by Tidal Fluctuations", Ground Water Vol. 29, No. 4, July-August 1991). This information will be used to prepare groundwater contour maps that reflect the net groundwater flow direction around the landfills.

Schedule

The results of the tidal influence study will be incorporated into the final SWAT report for Phases 5 and 6 for CTO No. 0107. In order to meet this schedule the field work must be completed by the end of April 1992. Currently, field work is planned for the week of April 12. April 6 is the last day that we can postpone the delivery of equipment rented for the tidal influence study.

Wells to be used in the Tidal Influence Study

Disposal Area (DA) at wells:

		Fill Material Wells		Merritt and Bay Mud sand Wells	
Well Cluster	Data Logger*	a	e	c	b
M-001	8-1**	a	e		b
M-003	2-1**	a			
M-004	2-1**	a			
M-005	2-2	a			
M-006	2-3	a			
M-007	2-4	a		c	
M-009	2-5	a			
M-025	8-2	a	e	c	
M-027	8-3	a	e	c	b
M-028	2-6	a	e		
M-029	8-1**	a	e		
		11	5	3	2

West Beach Landfill (WBL) at wells:

Well Cluster		a	e	c	b
M-010	8-4**	a			b
M-012	8-4**	a			b
M-013	2-7	a		c	
M-014	2-8	a			b
M-015	2-9	a			
M-016	2-10	a			
M-018	2-11	a	e		
M-020	8-5	a	e		b
M-021	8-6	a	e	c	
M-023	8-7	a	e		b
		10	4	2	5

Background (BG) at well clusters:

Well Cluster		a	e	c	b
M-101	2-12	a			
M-102	2-13	a			
M-103	2-14	a			b
M-104	2-15	a		c	
M-105	2-16	a			b
M-109	2-17	a			
		6	0	1	2

Marine Tidal Stations:

Location		No. tranducers
Oakland Channel (Pier 4)	2-18	1
Sea Plane Lagoon (Bldg. 15)	2-19	1
		2

* - type of data logger (2 or 8 channel) and identification number of data logger at each well cluster
** - data logger (2 or 8 channel) will be collecting data from more than one well cluster

OAKLAND INNER HARBOR

SAN FRANCISCO BAY

NAS ALAMEDA

PIER NO. 4

TAXIWAY NO. 1

TAXIWAY NO. 2

TAXIWAY NO. 3

TAXIWAY NO. 4

TAXIWAY NO. 5

E/W TAXIWAY

E/W TAXIWAY

AVENUE C

AVENUE

FIRST ST.

SECOND ST.

M-001-E, M-001-B, M-001-A, M-002-A, M-002-E, M-003-A, M-004-A, M-005-A, M-006-A, M-007-A, M-007-C, M-008-A, M-009-A, M-010-A, M-010-B, M-011-A, M-012-A, M-012-B, M-013-A, M-013-C, M-014-A, M-014-B, M-015-A, M-016-A, M-017-A, M-018-A, M-018-E, M-019-A, M-019-E, M-020-A, M-020-B, M-020-E, M-021-A, M-021-C, M-021-E, M-022-A, M-022-E, M-023-A, M-023-B, M-023-E, M-024-A, M-024-E, M-025-C, M-025-E, M-026-A, M-026-E, M-027-A, M-027-B, M-027-C, M-027-E, M-028-A, M-028-E, M-029-A, M-029-E, M-101-A, M-102-A, M-103-A, M-103-B, M-104-A, M-104-C, M-105-A, M-105-B, M-106-A, M-107-A, M-108-A, M-108-B, M-109-A, M-110-A, M-111-A

25-A

0 350 700
FEET

E 1480000
N 476000

N 472000
E 1471000

20 3 134 23 5 400

NOTES:

Monitoring Well

NOTES:

1. Well locations shown on this drawing are provided by John E. Koch Land Surveyor ca. State Lic, No. LS4811, 5427 Telegraph Ave., . Suite A Oakland, ca 94609.
2. Coordinates shown are based upon California Coordinate System, Zone 3, NAD 27.

REV. 09/17/91 PLOT 1=700

NAVAL AIR STATION ALAMEDA
ALAMEDA, CALIFORNIA
WELL LOCATIONS
SEPTEMBER, 1991

hydrogeologic characteristics revealed by the soil sample borings at each location. (See Section 3.2.2.2.)

The rationale for monitoring well locations and depths is presented in Section 3.5.

3.2.4 Ground Water Sampling

Ground water samples will be collected from each of the wells installed at the locations shown on Figure 3-3. Samples from the wells around the 1943-1956 Disposal Area will be analyzed for the parameters listed in Table 3-1 according to the methods listed in Table 3-3. The analytical results of these samples will be evaluated to determine whether any contamination is present in the ground water in that area.

will be collected from monitoring wells after the well
eveloped, and allowed a sufficient recovery time.
nts will be taken and recorded at each well prior to
A sufficient number of water samples will be
r the analysis of the ground water parameters listed
to the QAPP for information regarding well purging and
:edures. The types of samples to be collected and the
)r these samples are also listed in the QAPP.

\T Guidance document, ground water samples will be
l on a quarterly basis for four consecutive quarters.

A series of pressure transducers placed in certain monitoring wells will be employed to measure the tidal influences in the landfill. These transducers will be connected to a data logger to record systematic water level measurements. Measurements will be recorded for two 48-hour periods, once during a period of the monthly high tides and a second time during a period of the monthly low tides.