DEPARTMENT OF THE NAVY
MARE ISLAND NAVAL SHIPYARD
VALLEJO, CALIFORNIA 94592

IN REPLY REFER TO:
5090
Ser 460/50

OCT 11 1985

United States Environmental Protection Agency
Attn: Mr. Mark Kamiya
Region IX
Toxic and Waste Management Division, Code M-5
215 Fremont Street
San Francisco, CA 94105

Dear Mr. Kamiya:

Enclosures (1), (2), and (3) are provided as you requested in our meeting of 1 October 1985 with the California Department of Health Services. The field work prescribed in enclosures (1) and (2) was initiated on 3 October 1985.

If additional information is desired, please contact Shipyard Code 461, Mr. Ralph M. Lee, telephone (707) 646-2421 or 2432.

H. R. Frauenfelder

H. R. FRAUENFELDER
CAPT,CEC,USN
Public Works Officer
By direction of the Shipyard Commander

Enclosure:
(1) Mare Island Naval Shipyard Scope of Work of 26 September 1985, A & E Service for Groundwater Monitoring Evaluation, Contract No. N62474-85-C-0221
(2) Aqua Terra Technologies proposed Scope of Work of 4 September 1985, Contract No. N62474-85-C-0221
(3) Mare Island Naval Shipyard Hazardous Waste Operations Plan of 10 May 1985

Copy to(with enclosures (1) and (2)):
California Department of Health Services
Toxic Substances Control Division
714 "P" Street
Sacramento, CA 95814
Attn: Mr. John Masterman (5 copies)

California Department of Health Services
Toxic Substances Control Division
5850 Shellmound Road, Room 317
Emeryville, CA 94608
Attn: Mr. Andrew Hicks

OCT 1985

California Regional Water Quality Control Board
San Francisco Bay Region
1111 Jackson Street
Oakland, CA 94607 Attn: Ms. Lila Tang

Naval Energy and Environmental Support Activity (NEESA)
Code 112N
Port Hueneme, CA 93043
Attn: Mr. Richard Seraydarian

Western Division, Naval Facilities Engineering Command (Code 1142)
P.O. Box 727
San Bruno, CA 94066

Date: 26 Sep 85

Contract # N62474-85-C-0221

OCT 1 1 1985

MARE ISLAND
VALLEJO, CALIFORNIA
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A & E SERVICES FOR
GROUNDWATER MONITORING EVALUATION

The scope of work originally designated under Contract N62474-85-C-0221 is hereby revised for the accomplishment of the following modifications as directed by the Officer in Charge (OIC):

A. SERVICES:

The scope of this work includes evaluation of existing conditions and preparation of specifications to correct deficiencies in the groundwater monitoring program for the Mare Island Sanitary Landfill and Industrial Wastewater Treatment Plant. The intent of the work is to fulfill the requirements of enclosure (1), a Cleanup and Abatement Order issued by the California Regional Water Quality Control Board, Tasks a and c-g inclusive. The scope is divided into the nine significant tasks described below:

(1) Task 1 - Field Planning

This task involves basic project planning and coordination based upon existing well information and monitoring requirements. An outline summarizing the final project approach will be prepared for approval by the California Regional Water Quality Control Board.

(2) Task 2 - Preliminary Well Assessment

The details of previous groundwater monitoring systems will be obtained. Geotechnical engineers will review boring logs and evaluate well construction and installation details. Subsequently, the subsurface conditions and hydrogeologic setting will be evaluated.

The inside of all existing wells will be cleaned by swabbing. A dual hose airlift pump will be used to develop each well. Anticipate removing at least five to 10 well casing volumes of water during development. Water generated during well development will be discharged on the ground-surface, at least 100 feet away from any well. The amount of water removed during development will be recorded for each well. Groundwater levels prior to and immediately following pumping will also be recorded.

(3) Task 3- Existing Wells Repair, Upgrade and Survey

Existing wells which do not comply with facility specifications will be upgraded. The open well hole on the property will be sealed with a cement bentonite grout. Damaged well surface seals will be repaired. The upper portions of the seal will be removed using a jack hammer. A new concrete seal will be placed around the well top. A level survey will be conducted to determine the relative elevations of the well tops. Surveying equipment with a high level of accuracy shall be used. The well top elevations will be referenced to benchmarks with known elevations and/or landmarks assigned an assumed elevation. The location of the wells will be determined by taping distances from known landmarks.

A detailed proposal for fulfillment of enclosure (1), Task c, shall be prepared; completion of the report requires approval by the California Regional Water Quality Control Board.

(4) Task 4 - Hydrogeologic Investigation

A 24-hour pump test will be performed to evaluate aquifer characteristics and the degree of continuity between wells. The pumped well and two nearby wells will be monitored during the test. An electrical pressure transducer system will be used to monitor drawdown in all three wells. Field permeabilities and the hydraulic interconnection between the wells will be evaluated using the pump test date.

Groundwater gradients will also be determined as part of this task. Groundwater levels will be measured. Seasonal and tidal effects on the gradient will be evaluated by correlating tidal and rainfall data with recorded groundwater elevations. Records of the activities within the dredge spoil pond will be obtained for the 30 day period preceding investigation. This information, coupled with data gathered during the investigation, will be reviewed to evaluate the effects of the pond on groundwater gradients.

(5) Task 5 - Determine Existing Well Location Adequacy

Based upon the field data generated by a study, the adequacy of the existing well network will be evaluated. Emphasis will be placed on checking that the landfill is adequately monitored, given the on-site soil and hydrogeologic conditions.

Recommendations regarding new well locatoins, screened intervals, and other well details, will be developed as necessary. It is anticipated that no new wells will be required.

(6) Task 6 - Evaluate Potential Contaminant Migration Rate and Extent

Gradient data and aquifer characteristics generated by the investigation will be used to determine the probable rate, direction and extent of contaminant migration.

(7) Task 7 - Prepare Project Report

The results of the investigation will be summarized in a written report, complete with gradient maps, survey data, pump test results, and conclusions/recommendations. The report will include a detailed description of field procedures and engineering analyses.

(8) and (9) Task 8/9 - Meeting with OICC Staff and Regulatory Agency

During and upon completion of Tasks 1 through 7, the project staff will attend meetings with the OICC staff and the regulatory agencies, as necessary, to present and discuss the results of the investigation.

B. COST LIMITATION. The estimated construction cost is: N/A (study).

C. SCHEDULE OF SUBMITTALS: With reference to the additional service, the following schedule applies:

(1) Reports will be provided to meet the State deadline of October 28, 1985 for enclosure (1), Tasks a and c.

(2) Status reports on the hydrogeologic investigation will be submitted monthly commencing 44 days after State approval of the investigation procedure.

(3) Hydrogeologic final report shall be date established by State approval of Task c.

(4) A proposal for additional wells shall be submitted 10 days after the State determines that additional wells are necessary.

(5) All required reports will be submitted with the original and six copies.

All basic contract requirements, other than those specifically modified by this change order, remain in full effect; and performance under this change order will be in accordance therewith.

OCT 1 1 1985

September 4, 1985

Department of the Navy
Officer in Charge of Construction
Building 513, Room 202
Mare Island Naval Shipyard
Vallejo, CA 94592

TERRA Technologies

Subject: Contract N62474-85-C-0221
Various Environmental Projects

In accordance with the subject contract, Aqua Terra Technologies has prepared a proposed scope of work and corresponding fee estimate for Architectural-Engineering services as requested by Mare Island Naval Shipyard. The scope of work and fee proposal are for responding to deficiencies in Shipyard hazardous waste facilities as listed in the June 26, 1985 letter from the San Francisco Regional Water Quality Control Board (RWQCB) to the Shipyard.

The scope of work is divided into the nine major tasks described below. These tasks correlate with the requirements of the RWQCB as outlined in their June 26, 1985 letter. The fees associated with each task have been summarized on the attachment.

Task 1 - Field Planning

This task will involve basic project planning and coordination. An outline summarizing the final project approach will be prepared.

Task 2 - Preliminary Well Assessment

The details of previous groundwater monitoring systems will be obtained by Aqua Terra. Our geotechnical engineers will review boring logs and evaluate well construction and installation details. This will allow us to evaluate subsurface conditions and the hydrogeologic setting.

The inside of all existing wells will be cleaned by swabbing. A dual hose airlift pump will be used to develop each well. We anticipate removing at least five to 10 well casing volumes of water during development. Water generated during well development will be discharged on the groundsurface, at least 100 feet away from any well. The amount of water removed during development will be recorded for each well. Groundwater levels prior to and immediately following pumping will also be recorded.

Task 3 - Existing Wells Repair, Upgrade & Survey

Existing wells which do not comply with facility specifications will be upgraded. Steel well covers with locking caps will be installed on all wells that currently do not have covers. The open well hole on the property will be sealed with a cement bentonite grout. Damaged well surface seals will be repaired. The upper portions of the seal will be removed using a jack hammer. A new concrete seal will be placed around the well top.

A level survey will be conducted to determine the relative elevations of the well tops. It will be necessary to use surveying equipment with a high level of accuracy due to the large distances between monitoring wells. The well top elevations will be referenced to benchmarks with known elevations and/or landmarks assigned an assumed elevation. The location of the wells will be determined by taping distances from known landmarks.

Task 4 - Hydrogeologic Investigation

For estimating purposes, we have assumed that a 24-hour pump test will be performed to evaluate aquifer characteristics and the degree of continuity between wells. The pumped well and two nearby wells will be monitored during the test. An electrical pressure transducer system will be used to monitor drawdown in all three wells. Field permeabilities and the hydraulic interconnection between the wells will be evaluated using the pump test date.

Groundwater gradients will also be determined as part of this task. Groundwater levels will be measured by Aqua Terra Technologies. Seasonal and tidal effects on the gradient will be evaluated by correlating tidal and rainfall data with recorded groundwater elevations. Records of the activities within the dredge spoil pond will be obtained for the 30 day period preceding our investigation. This information, coupled with data gathered during our investigation, will be reviewed to evaluate the effects of the pond on groundwater gradients.

Task 5 - Determine Existing Well Location Adequacy

Based upon the field data generated by a study, the adequacy of the existing well network will be evaluated. Emphasis will be placed on checking that the landfill is adequately monitored, given the on-site soil and hydrogeologic conditions.

Recommendations regarding new well locations, screened intervals and other well details will be developed, as necessary.

Task 6 - Evaluate Potential Contaminant Migration Rate and Extent

Gradient data and aquifer characteristics generated by the investigation will be used to determine the probable rate, direction and extent of contaminant migration.

Task 7 - Prepare Project Report

The results of the investigation will be summarized in a written report, complete with gradient maps, survey data, pump test results, and our conclusions/recommendations. The report will include a detailed description of field procedures and engineering analyses.

Task 8/9 - Meetings with OICC Staff and Regulatory Agency

During and upon completion of Task 1 through 7, our project staff will attend meetings with the OICC staff and the regulatory agencies, as necessary, to present and discuss the results of the investigation.

Sincerely,

Aqua Terra Technologies

R. Wane Schneiter, Ph.D., P.E.
Vice President

RWS:lg(518.4-11-01)

ENCLOSURE 3

MARE ISLAND NAVAL SHIPYARD
HAZARDOUS WASTE OPERATIONS PLAN

DATED 10 MAY 1985

THIS ENCLOSURE WAS NOT RECEIVED IN THE
RESTORATION RECORD FILE.

FOR ADDITIONAL INFORMATION, CONTACT:

DIANE C. SILVA, COMMAND RECORDS MANAGER, CODE EV33
NAVAL FACILITIES ENGINEERING COMMAND, SOUTHWEST
1220 PACIFIC HIGHWAY (NBSD BLDG. 3519)
SAN DIEGO, CA 92132

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