N00296_004150
MOFFETT FIELD
SSIC NO. 5090.3.A

**Tetra Tech EM Inc.**

1099 18th Street, Suite 1960 ◆ Denver, CO 80202 ◆ (303) 295-1101 ◆ FAX (303) 295-2818

August 28, 1998

Mr. Stephen Chao
Department of the Navy
Engineering Field Activity West
Naval Facilities Engineering Command
900 Commodore Drive, Building 210
San Bruno, California 94066-5006

CLEAN Contract Number N62474-94-D-7609
Contract Task Order 153

**Subject:** **In Situ Abiotic Redox Manipulation (ISRM) Phase I Test Status**

Dear Mr. Chao:

Enclosed are plots of data obtained during additional soil reduction batch testing conducted on A2-aquifer channel zone sediments collected in the proposed ISRM test area. As indicated in my letter of July 1, 1998, early column tests were hindered by the high clay content of soils recovered during initial field activities. Samples of the more permeable channel-zone sediments were therefore collected during subsequent field work to facilitate column testing. Additional batch tests were conducted on these sediments to obtain data that would more accurately represent the available iron content of the A2-aquifer channels. As you can see from the enclosed plots, data from tests on the channel sediments closely resemble the earlier data. Based on simple graphical analysis of these plots, the available iron content of tested soils is approximately 0.65 weight percent. As expected, this estimated available iron content is lower than for the more clayey soils tested previously (which ranged from 0.8 to 1.1 percent). It is, however, still indicative of sufficient reductive capacity for treatment of trichloroethylene (TCE)-contaminated groundwater, and is well above the criterion established by Pacific Northwest National Laboratory (PNNL) for implementation of the ISRM technology (0.05 weight percent). Although these results are extremely promising, the graphical method used to analyze the data is considered only a rough estimating tool. Based on comparison of earlier graphical results to modeled results for the same data obtained by PNNL, it is likely that the actual available iron content is somewhat lower than estimated (still, however, above the 0.05 weight percent criterion). Additional assistance in analyzing the data will be sought from PNNL to generate more accurate estimates of available iron content.

At present, preliminary volatile organic compound (VOC) degradation batch tests are underway. Early results indicate that reduced soils are capable of effectively reducing TCE in Moffett Federal Airfield (MFA) groundwater. Actual batch tests are anticipated to begin the week of August 31, and continue through mid-September. Sampling frequencies outlined in the final ISRM Phase I work plan will be modified for these batch tests to accommodate the limited amount of channel sediments collected. However, based on data obtained to date

contains recycled fiber and is recyclable

through preliminary tests, the anticipated frequency will be adequate to fully characterize VOC decay rates.

PNNL is currently conducting limited testing of the channel deposit sediments. As we discussed previously, efforts are currently under way to modify the subcontract to enable completion of the column tests. After the column test data are complete, Tetra Tech EM Inc. and PNNL will jointly prepare a bench-scale test report. Included with this letter is a preliminary schedule for ISRM activities through Phase II (field) testing. The schedule assumes that column test activities will be completed and summarized by mid-October. Based on the activities and submittal dates outlined in the schedule, Phase II testing (if implemented) will be completed by the end of August 1999.

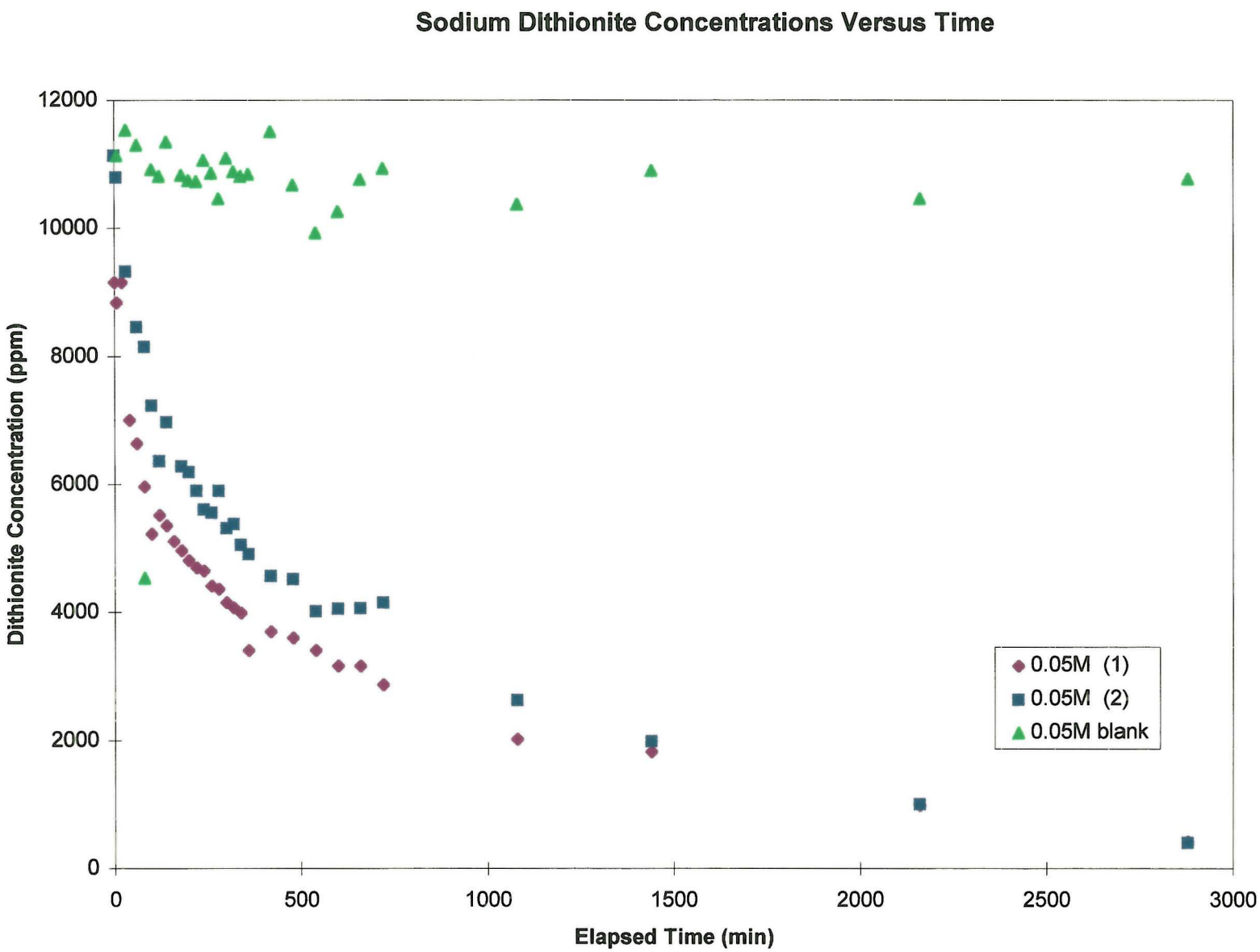
Please call me at (303) 312-8845 with any questions.

Sincerely,

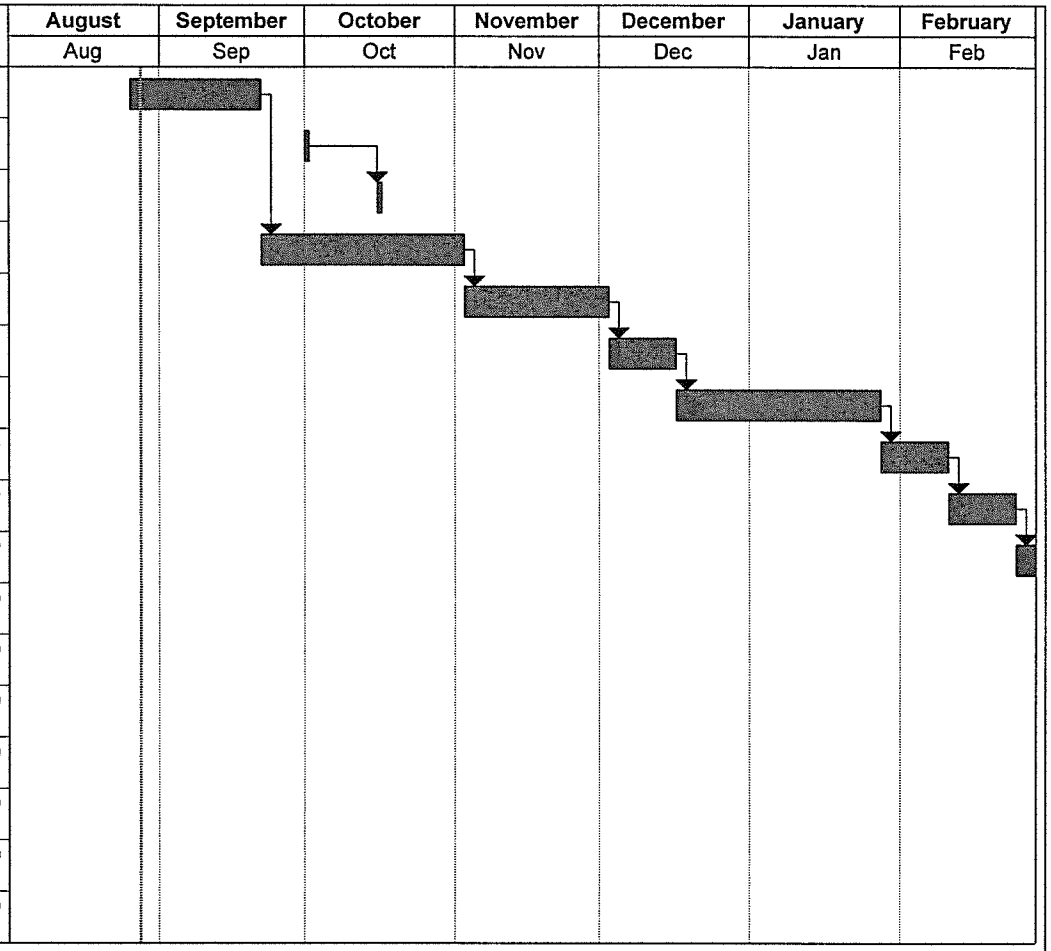
Ronna T. Ungs

Ronna T. Ungs, P.E.
Project Engineer

cc: Mr. Donald Chuck (EFA West)
Mr. Jonathon Fruchter (PNNL)


Sodium DIthionite Concentrations Versus Time
Dithionite Concentration (ppm)
12000
10000
8000
6000
4000
2000
0
0
500
1000
1500
2000
2500
3000
Elapsed Time (min)
0.05M (1)
0.05M (2)
0.05M blank

| ID | Task Name | Duration | Start | Finish |
|---|---|---|---|---|
| 1 | Complete batch testing | 19d | Wed 8/26/98 | Mon 9/21/98 |
| 2 | Complete column testing | 1d | Thu 10/1/98 | Thu 10/1/98 |
| 3 | Receive PNNL results | 1d | Fri 10/16/98 | Fri 10/16/98 |
| 4 | Prepare draft bench-scale report | 30d | Tue 9/22/98 | Mon 11/2/98 |
| 5 | Receive Navy/regulator com's on draft | 30ed | Tue 11/3/98 | Thu 12/3/98 |
| 6 | Prepare final bench-scale report | 10d | Thu 12/3/98 | Wed 12/16/98 |
| 7 | Prepare internal draft Phase II WP | 30d | Thu 12/17/98 | Wed 1/27/99 |
| 8 | Receive Navy com's on internal draft | 14ed | Thu 1/28/99 | Thu 2/11/99 |
| 9 | Prepare draft Phase II WP | 10d | Thu 2/11/99 | Wed 2/24/99 |
| 10 | Receive regulator comments on draft | 32ed | Thu 2/25/99 | Mon 3/29/99 |
| 11 | Prepare draft-final Phase II WP | 15d | Mon 3/29/99 | Fri 4/16/99 |
| 12 | Receive Navy/regulator com's on final | 30ed | Mon 4/19/99 | Wed 5/19/99 |
| 13 | Prepare final Phase II WP | 10d | Wed 5/19/99 | Tue 6/1/99 |
| 14 | Conduct tracer test | 10d | Wed 6/2/99 | Tue 6/15/99 |
| 15 | Prepare tracer test report | 20d | Wed 6/16/99 | Tue 7/13/99 |
| 16 | Conduct field test | 10d | Wed 7/14/99 | Tue 7/27/99 |
| 17 | Prepare field test report | 25d | Wed 7/28/99 | Tue 8/31/99 |




Project: project schedule
Date: Fri 8/28/98

Task
Progress
Milestone
Summary
Rolled Up Task
Rolled Up Milestone
Rolled Up Progress

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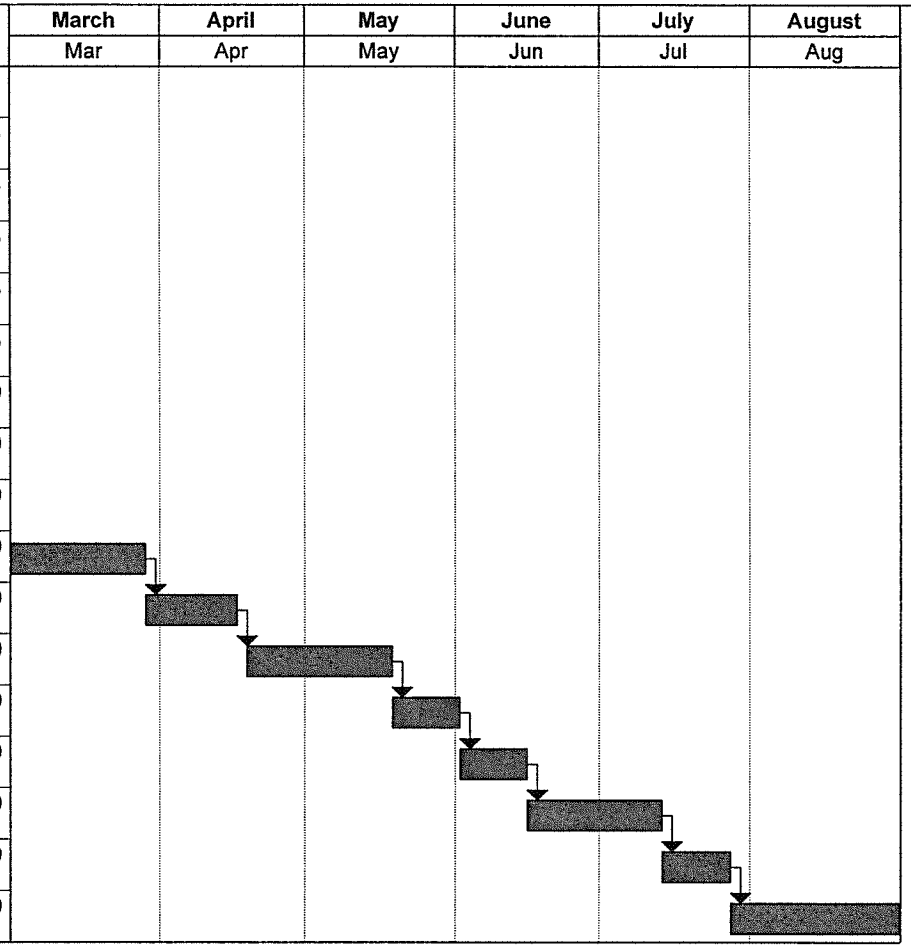


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