

MEETING MINUTES

11/29/02

Reference: Contract F41624-94-D-8136, Delivery Order 0023
Technical Interchange Meeting (TIM) Minutes (CDRL B002A)
Meeting: 7 October 1998
10:00 AM - Parsons ES Office - Austin, TX
2:00 PM - Texas Natural Resource Conservation Commission - Austin, TX
Subject: TIM 5 Meeting Minutes

The morning session of Technical Interchange Meeting (TIM) 5 was held at the Parsons ES office in Austin, Texas. The following were in attendance:

Name	Organization
Jo Jean Mullen	AFCEE/ERD
Greg Lyssy	USEPA
J.G. Hailer	WPI
Brian Murphy	CSSA
Drew Rak	AFCEE
Susan Roberts	Parsons ES
Julie Burdey	Parsons ES

The TIM 5 meeting addressed the possible strategy for investigating and characterizing groundwater contamination at Camp Stanley Storage Activity (CSSA).

DISCUSSION

Each of the items listed in the handout table "List of Potential Groundwater Strategy Actions" was discussed. Comments from the discussion are described below.

Where is the handout? Will it be attached?

Determine if Groundwater Contamination Poses a Threat

Add "perimeter" monitoring wells in areas of fault zones. A total of nine additional wells was proposed during the meeting. One well would be a monitoring well between B-3 and O-1, two wells would be background wells north of well 16, and six wells would be perimeter wells on the east, south, and west sides of the facility. It was noted that the wells currently identified as background may in fact turn out not to be background, based on contaminant levels. Drew Rak suggested that, although organic contaminants may be detected, inorganic concentrations, if they are not one of the suspected contaminants, could still be used for background calculations.

(Well acronyms) Bexar Met

In addition, three private offsite wells (Gompert, Hagendorf, Thompson) will be sampled under the new delivery order. Greg Lyssy suggested checking with the Leon Springs MUD to see if groundwater chemistry data could be obtained for their municipal well. CSSA also plans to try to obtain data on the Fair Oaks well. Brian Murphy indicated that Camp Bullis has a large TCE plume in groundwater approximately 1.5 mile from the CSSA boundary.

Evaluate Potential Mitigation of Further Spread of Contamination

Conduct IM and RFI actions in parallel, including O-1 and B-3 sites. Greg indicated that these are priority actions for EPA.

Conduct Risk Assessment

Items 4 through 7 (risk assessment CSM, appropriate screening data, exposure assumptions for risk, and screening criteria). Susan Roberts suggested that it is important to establish a team for the risk assessment. Drew Rak agreed and added that EPA and TNRCC have quite different requirements for how the risk assessment is conducted: EPA uses the site concentrations to determine the risk posed by those levels, and TNRCC requires that the risk concentration be calculated for a particular site. Greg Lyssy indicated that Maria Martinez will be the EPA risk assessor for this project. Greg agreed that risk assessors from EPA, TNRCC, AFCEE, and Parsons should have a joint site visit to agree on exposure pathways, receptors, and comparison criteria. Greg added that getting the risk assessment approach established is a priority for EPA.

Characterize Hydrogeologic System

Items 8 through 18 (conceptual CSM, fracture analysis, inclusion of all utility lines, surface water flow, water quality parameters, include nearby well data and pump tests as available, recovery test in CSSA water supply well(s), installation of additional wells, groundwater modeling). Greg agreed that all of the potential actions listed would provide useful information; however, his priorities are items 8 (prepare conceptual site model), 13 (research nearby water supply wells for water quality data), 17 (install additional wells), and 18 (groundwater modeling). Greg asked what type of model will be used. Jo Jean indicated that Visual MODFLOW and Visual Basic would be considered, particularly because good training is available for this software. However, Jo Jean added that these may not be the most appropriate software for the anisotropic system consisting of a faulted karst environment. Parsons will evaluate available groundwater modeling packages under the new delivery order, and the most appropriate will be selected. Susan added that, some mixture of software may be used so that the good visual aspects of some software may still be used.

Characterize Sources

Items 19 through 23 (cluster wells, additional coring and fracture analysis, installation of wells to varying depths, soil tests). To characterize additional sources, the options consist primarily of additional drilling in the vicinity of O-1 and B-3, and installation of cluster wells to characterize vertical extent of contamination, and possible sources. Cluster wells were discussed at some length. Greg felt that all wells may need to be cluster wells. The interval and number of clusters that EPA would like to see was not specifically identified; Greg indicated that CSSA should submit a plan.

Susan indicated that Parsons would recommend that a pilot hole be drilled prior to installing the wells to look for dense fractures, highly vuggy areas, etc. She also asked Greg if he had any objection to using mud rotary for drilling, since that produces the best core samples. Greg said he had no specific objections, but that we would need to discuss what type of mud would be used.

Drew indicated that cluster wells are not necessary for the risk assessment. Joe Hailer and Julie Burdey added that cluster wells may not be necessary in all of the wells. Joe described a depth-specific diffusion sampler that AFCEE is currently testing. The sampler does not collect a water sample but it can provide information on TCE concentrations at specific depths, making cluster wells unnecessary. Also, due to the

highly vuggy and fractured bedrock, it may not be possible to sample discrete intervals; water may be highly intermixed. What may appear to be separate zones (based on the pilot hole), may actually be interconnected only a short distance from the well.

Julie added that the purpose of the perimeter wells is to determine if groundwater contamination poses a risk to possible downgradient receptors. Those receptors have deep single-cased or uncased wells, so single-cased wells near the perimeter would be a more accurate representation of water that receptors may be using. Purpose of cluster wells is to provide information for remediation, not risk assessment. Presumably remediation does not need to be evaluated on the perimeter of the facility, but only in the source area.

Greg said that he would discuss cluster wells with hydrogeologists at EPA to get their opinion. Greg identified items 19 (cluster wells north and south of well 16), 20 (coring and fracture analysis), and 22 (cluster well(s) between O-1 and B-3).

Determine Metals Background

Items 24 through 27 (background wells and monitoring, statistical evaluation of data, baseline of groundwater based on historic data). Determining metals background includes installing background wells, monitoring metals levels, establishing statistical approach to be used, and updating metals in soils and rock with new data. Drew suggested that a conference call be held to agree on the statistical approach, and that geologists should be included in the decision. Greg identified item 24 (install background wells) as a priority for EPA.

Determine Nature of Contamination

Items 28 through 39 (baseline of groundwater based on historical data, installation of well near O-1 and B-3, monitoring strategies, additional transducers, surface recharge/discharge locations, passive soil gas, vertical analysis of plume, new wells). A number of potential actions were discussed. Some of the items had been discussed previously, such as installing additional wells. EPA priorities included items 29 (installing a monitoring well in the vicinity of B-3 and O-1), 30 (sampling wells within 24 hours after several rainfall events to determine if concentrations increase or decrease), 36 (vertical analysis of plume concentrations), and 39 (installing new wells).

Define Extent of Contamination

Items 40 through 48 (perimeter wells, evaluate cluster vs. single depth wells, install wells north of well CS-16, background, upgradient and downgradient wells). Potential actions listed under defining the extent of contamination had been discussed previously. EPA priorities include 40 (install perimeter wells), 41 (evaluate cluster vs. single depth approach), 42 (install background wells), and 45 through 48 (all installing wells which were previously discussed).

ed

SUMMARY

Greg identified the following action items as priorities for EPA:

- Install six perimeter wells.
- Install two background wells
- Install one well between B-3 and O-1.
- Evaluate cluster vs. single depth approach for new wells.
- Develop a risk assessment conceptual site model, including site visit by EPA, TNRCC, AFCEE, and Parsons risk assessors.
- Prepare hydrogeologic conceptual site model.
- Research nearby water supply wells for water quality data, other characteristics.
- Initiate groundwater modeling.
- Additional drilling at O-1, coring and fracture analysis.
- Sample wells within 24 hours after rain to determine effects of precipitation.
- Vertical analysis of groundwater plume.

MEETING MINUTES

Reference: Contract F41624-94-D-8136, Delivery Order 0023
 Technical Interchange Meeting (TIM) Minutes (CDRL B002A)

Meeting: 7 October 1998
 10:00 AM - Parsons ES Office - Austin, TX
 2:00 PM - Texas Natural Resource Conservation Commission - Austin, TX

Subject: TIM 5 Meeting Minutes

The morning session of Technical Interchange Meeting (TIM) 5 was held at the Parsons ES office in Austin, Texas. The following were in attendance:

Name	Organization
Jo Jean Mullen	AFCEE/ERD
Greg Lyssy	USEPA
J.G. Hailer	WPI
Brian Murphy	CSSA
Drew Rak	AFCEE
Susan Roberts	Parsons ES
Julie Burdey	Parsons ES

The TIM 5 meeting addressed the possible strategy for investigating and characterizing groundwater contamination at Camp Stanley Storage Activity (CSSA).

DISCUSSION

Each of the items listed in the handout table "List of Potential Groundwater Strategy Actions" was discussed. Comments from the discussion are described below.

Determine if Groundwater Contamination Poses a Threat

Add "perimeter" monitoring wells in areas of fault zones. A total of nine additional wells was proposed during the meeting. One well would be a monitoring well between B-3 and O-1, two wells would be background wells north of well 16, and six wells would be perimeter wells on the east, south, and west sides of the facility. It was noted that the wells currently identified as background may in fact turn out not to be background, based on contaminant levels. Drew Rak suggested that, although organic contaminants may be detected, inorganic concentrations, if they are not one of the suspected contaminants, could still be used for background calculations.

In addition, three private offsite wells (Gompert, Hagendorf, Thompson) will be sampled under the new delivery order. Greg Lyssy suggested checking with the Leon Springs MUD to see if groundwater chemistry data could be obtained for their municipal well. CSSA also plans to try to obtain data on the Fair Oaks well. Brian Murphy indicated that Camp Bullis has a large TCE plume in groundwater approximately 1.5 mile from the CSSA boundary.

Evaluate Potential Mitigation of Further Spread of Contamination

Conduct IM and RFI actions in parallel, including O-1 and B-3 sites. Greg indicated that these are priority actions for EPA.

Conduct Risk Assessment

Items 4 through 7 (risk assessment CSM, appropriate screening data, exposure assumptions for risk, and screening criteria). Susan Roberts suggested that it is important to establish a team for the risk assessment. Drew Rak agreed and added that EPA and TNRCC have quite different requirements for how the risk assessment is conducted: EPA uses the site concentrations to determine the risk posed by those levels, and TNRCC requires that the risk concentration be calculated for a particular site. Greg Lyssy indicated that Maria Martinez will be the EPA risk assessor for this project. Greg agreed that risk assessors from EPA, TNRCC, AFCEE, and Parsons should have a joint site visit to agree on exposure pathways, receptors, and comparison criteria. Greg added that getting the risk assessment approach established is a priority for EPA.

Characterize Hydrogeologic System

Items 8 through 18 (conceptual CSM, fracture analysis, inclusion of all utility lines, surface water flow, water quality parameters, include nearby well data and pump tests as available, recovery test in CSSA water supply well(s), installation of additional wells, groundwater modeling). Greg agreed that all of the potential actions listed would provide useful information; however, his priorities are items 8 (prepare conceptual site model), 13 (research nearby water supply wells for water quality data), 17 (install additional wells), and 18 (groundwater modeling). Greg asked what type of model will be used. Jo Jean indicated that Visual MODFLOW and Visual Basic would be considered, particularly because good training is available for this software. However, Jo Jean added that these may not be the most appropriate software for the anisotropic system consisting of a faulted karst environment. Parsons will evaluate available groundwater modeling packages under the new delivery order, and the most appropriate will be selected. Susan added that, some mixture of software may be used so that the good visual aspects of some software may still be used.

Characterize Sources

Items 19 through 23 (cluster wells, additional coring and fracture analysis, installation of wells to varying depths, soil tests). To characterize additional sources, the options consist primarily of additional drilling in the vicinity of O-1 and B-3, and installation of cluster wells to characterize vertical extent of contamination, and possible sources. Cluster wells were discussed at some length. Greg felt that all wells may need to be cluster wells. The interval and number of clusters that EPA would like to see was not specifically identified; Greg indicated that CSSA should submit a plan.

Susan indicated that Parsons would recommend that a pilot hole be drilled prior to installing the wells to look for dense fractures, highly vuggy areas, etc. She also asked Greg if he had any objection to using mud rotary for drilling, since that produces the best core samples. Greg said he had no specific objections, but that we would need to discuss what type of mud would be used.

Drew indicated that cluster wells are not necessary for the risk assessment. Joe Hailer and Julie Burdey added that cluster wells may not be necessary in all of the wells. Joe described a depth-specific diffusion sampler that AFCEE is currently testing. The sampler does not collect a water sample but it can provide information on TCE concentrations at specific depths, making cluster wells unnecessary. Also, due to the

highly vuggy and fractured bedrock, it may not be possible to sample discrete intervals; water may be highly intermixed. What may appear to be separate zones (based on the pilot hole), may actually be interconnected only a short distance from the well.

Julie added that the purpose of the perimeter wells is to determine if groundwater contamination poses a risk to possible downgradient receptors. Those receptors have deep single-cased or uncased wells, so single-cased wells near the perimeter would be a more accurate representation of water that receptors may be using. Purpose of cluster wells is to provide information for remediation, not risk assessment. Presumably remediation does not need to be evaluated on the perimeter of the facility, but only in the source area.

Greg said that he would discuss cluster wells with hydrogeologists at EPA to get their opinion. Greg identified items 19 (cluster wells north and south of well 16), 20 (coring and fracture analysis), and 22 (cluster well(s) between O-1 and B-3).

Determine Metals Background

Items 24 through 27 (background wells and monitoring, statistical evaluation of data, baseline of groundwater based on historic data). Determining metals background includes installing background wells, monitoring metals levels, establishing statistical approach to be used, and updating metals in soils and rock with new data. Drew suggested that a conference call be held to agree on the statistical approach, and that geologists should be included in the decision. Greg identified item 24 (install background wells) as a priority for EPA.

Determine Nature of Contamination

Items 28 through 39 (baseline of groundwater based on historical data, installation of well near O-1 and B-3, monitoring strategies, additional transducers, surface recharge/discharge locations, passive soil gas, vertical analysis of plume, new wells). A number of potential actions were discussed. Some of the items had been discussed previously, such as installing additional wells. EPA priorities included items 29 (installing a monitoring well in the vicinity of B-3 and O-1), 30 (sampling wells within 24 hours after several rainfall events to determine if concentrations increase or decrease), 36 (vertical analysis of plume concentrations), and 39 (installing new wells).

Define Extent of Contamination

Items 40 through 48 (perimeter wells, evaluate cluster vs. single depth wells, install wells north of well CS-16, background, upgradient and downgradient wells). Potential actions listed under defining the extent of contamination had been discussed previously. EPA priorities include 40 (install perimeter wells), 41 (evaluate cluster vs. single depth approach), 42 (install background wells), and 45 through 48 (all installing wells which were previously discussed).

SUMMARY

Greg identified the following action items as priorities for EPA:

- Install six perimeter wells.
- Install two background wells
- Install one well between B-3 and O-1.
- Evaluate cluster vs. single depth approach for new wells.
- Develop a risk assessment conceptual site model, including site visit by EPA, TNRCC, AFCEE, and Parsons risk assessors.
- Prepare hydrogeologic conceptual site model.
- Research nearby water supply wells for water quality data, other characteristics.
- Initiate groundwater modeling.
- Additional drilling at O-1, coring and fracture analysis.
- Sample wells within 24 hours after rain to determine effects of precipitation.
- Vertical analysis of groundwater plume.

PARSONS

8000 Centre Park Dr., Suite 200
Austin, Texas 78754
(512) 719-6000
(512) 719-6099 FAX

Done
Fax

QUEST

To: BRIAN MURPHY
Fax: (303) 235-4552
Phone: (303) 231-9939
Cc: *8*

From: KARUNA MIRCHANDANI
Pages: 7
Date: 7/30/02
Job number: 738290.10

- Urgent For Review Please Comment Please Reply Please Recycle

Brian-

Attached are 2 sets of meeting minutes.
These are the LAST deliverables for
Do.23. Please call me w/ comments
and/or approval, so I can get
Teri to approve as well.

Hope you had a good trip.

Thanks.
Karuna.

THIS MESSAGE AND ALL DOCUMENTS TRANSMITTED HERewith ARE STRICTLY CONFIDENTIAL AND ARE INTENDED ONLY FOR THE USE OF THE SPECIFIC INDIVIDUAL OR ENTITY LISTED BELOW. THEY MAY CONTAIN INFORMATION THAT IS ATTORNEY-WORK PRODUCT, THAT IS SUBJECT TO THE ATTORNEY-CLIENT PRIVILEGE, OR THAT CONSTITUTES TRADE SECRETS OR IS OTHERWISE PROPRIETARY. Dissemination, distribution, or copying of this communication to anyone other than the specific individual or entity listed below (or the person responsible for delivering this communication to the specific individual or entity listed below) is STRICTLY PROHIBITED. If you receive this communication in error, please notify the sender immediately by telephone (collect), and return the original communication to us at the above address via the U.S. Postal Service. Thank you.

MEETING MINUTES

Reference: Contract F41624-94-D-8136, Delivery Order 0023
 Technical Interchange Meeting (TIM) Minutes (CDRL B002A)

Meeting: 7 October 1998 2:00 PM
 Texas Natural Resources Conservation Commission (TNRCC)
 Remediation Division

Subject: TIM 5 Meeting Minutes

The afternoon session of Technical Interchange Meeting (TIM) 5 was held at the TNRCC Building D, Room No. 200-33 in Austin, Texas. The following were in attendance:

Name	Organization
Jo Jean Mullen	AFCEE/ERD
Greg Lyssy	USEPA
J.G. Hailer	WPI
Brian Murphy	CSSA
Drew Rak	AFCEE
Susan Roberts	Parsons ES
Julie Burdey	Parsons ES
Clint Simmons	TNRCC
Kirk Coulter	TNRCC
Malcolm A. Ferris	TNRCC - San Antonio
Steve Rembish	Parsons ES
Karuna Mirchandani	Parsons ES

DISCUSSION

Brian Murphy presented an overview of the teaming meeting, including a brief history, current environmental projects and their status, and anticipated actions under the upcoming EPA 3008(h) Consent Order. The latter includes IM, RFI, CMS and CMI actions. ITS data issues were also reviewed.

Greg's update on the EPA 3008(h) Order - close to being signed. Small SWMUs - TNRCC will be lead, while EPA will continue active oversight of the program and problem sites. Greg also discussed the investigation needs of the planned order.

All deliverables will be sent to EPA and TNRCC. Funding continues to be a major issue on order. CSSA will be spending \$3-4 million per year.

TRNCC brought up the item of work plans vs. closure reports. Clint Simmons stated that TNRCC does not have time to review planning documents. In discussion of the teaming arrangements, it was agreed that Kirk Coulter will continue to review investigation reports for the SWMU closures.

Closure plan action items:

- TNRCC just wants to see final closure reports.
- Changes in TNRCC RRRs will not require order changes, just changes in deliverables.

The meeting concluded with this discussion.

PARSONS

8000 Centre Park Dr., Suite 200
Austin, Texas 78754
(512) 719-6000
(512) 719-6099 FAX

Done
Fax

QUEST

To: BRIAN MURPHY
Fax: (303) 235-4552
Phone: (303) 231-9939
Cc: *8*

From: KARUNA MIRCHANDANI
Pages: 7
Date: 7/30/02
Job number: 738290.10

Urgent For Review Please Comment Please Reply Please Recycle

Brian-

Attached are 2 sets of meeting minutes.
These are the LAST deliverables for
Do.23. Please call me w/ comments
and/or approval, so I can get
Teri to approve as well.

Hope you had a good trip.

Thanks
Karuna.

THIS MESSAGE AND ALL DOCUMENTS TRANSMITTED HERewith ARE STRICTLY CONFIDENTIAL AND ARE INTENDED ONLY FOR THE USE OF THE SPECIFIC INDIVIDUAL OR ENTITY LISTED BELOW. THEY MAY CONTAIN INFORMATION THAT IS ATTORNEY-WORK PRODUCT, THAT IS SUBJECT TO THE ATTORNEY-CLIENT PRIVILEGE, OR THAT CONSTITUTES TRADE SECRETS OR IS OTHERWISE PROPRIETARY. Dissemination, distribution, or copying of this communication to anyone other than the specific individual or entity listed below (or the person responsible for delivering this communication to the specific individual or entity listed below) is STRICTLY PROHIBITED. If you receive this communication in error, please notify the sender immediately by telephone (collect), and return the original communication to us at the above address via the U.S. Postal Service. Thank you.