

St. Juliens Creek Annex Partnering Team Meeting Minutes: July 25 - 26, 2007

Attendees: Tim Reisch/NAVFAC MID LANT
Josh Barber/EPA (Region III)
Karen Doran/VDEQ
Kim Henderson/CH2M HILL
Janna Staszak/CH2M HILL

Tier II Link: Tim Reisch/NAVFAC MID LANT

Guests: John Lowe/CH2M HILL
Pat McMurray/VDEQ

From: Janna Staszak/CH2M HILL

Date: August 13, 2007

Location: VDEQ, Richmond, Virginia

Wednesday, July 25, 2007

1200 Welcome/Check In

Roles and Responsibilities for this meeting:

Meeting Manager: Karen Doran
Timekeeper/Gatekeeper: Josh Barber
Host: Karen Doran
Goalkeeper: Tim Reisch
Facilitator: Kim Henderson
Recorder: Janna Staszak

Ground Rules

I. Review Agenda, Meeting Minutes, Action Items, and Parking Lot from the Previous Meeting

Review Agenda: No changes were made to the agenda. Topics will be adjusted throughout the meeting as necessary.

Review Meeting Minutes: Not applicable (no outstanding minutes).

Review Parking Lot: Parking Lot items were reviewed.

- Environmental Indicators: Josh will look into how Environmental Indicators under control can be achieved in FY08.
- Site 4 Groundwater Monitoring at 5-Year Review: Remains in Parking Lot.

Review Action Items: The action items were reviewed. The following action item was added:

Action Tim – Check with Pete Clifford on arranging for a flyover of SJCA with the team.

II. Site 21 RI/FS and Vapor Intrusion Evaluation

Objective: Discuss the RI/FS content. Discuss the vapor intrusion evaluation process and determine a path forward for Site 21 buildings. Discuss the FS alternatives.

Overview of Discussion: Copies of the presentation and a table of FS screened alternatives were distributed. John Lowe/CH2M HILL and Pat McMurray/VDEQ joined for this discussion. Janna briefly reviewed the history, current status of the site, and the RI activities recently conducted. The key findings of the investigation activities include a shallow groundwater CVOC plume. The human health risk assessment for exposure to shallow groundwater identified potential risks to a future resident from CVOCs (TCE, cis-1,2-DCE, VC), benzene, and arsenic. No risks were identified to current site users (i.e., industrial worker or construction worker).

John discussed the indoor air vapor intrusion evaluation. He explained that the draft Navy policy is under development and is anticipated within the next 3 to 4 months and will be followed by guidance. The policy includes modeling as a tool for evaluation of vapor intrusion pathways. The evaluation approach for Site 21 will include the Johnson & Ettinger (J&E) Model and will align with the draft Navy policy and EPA guidance. The Building 1556 pathway was evaluated as part of the Draft SSI report, but the later delineation activities have revealed a greater plume extent that encompasses additional building footprints. John reviewed the characteristics of Building 1556 based on the as-built drawings and the model inputs. The highest concentrations detected were used in the existing model for conservativeness. The estimated indoor air concentrations were below the lowest published exposure limits (OSHA PEL or TLV). The cancer risk calculated was within EPA's acceptable risk range based on the using the Cal-EPA's slope factor. Pat indicated that the state is using the higher NCEA TCE slope factor (approximately 2 orders of magnitude higher), which is more conservative but is awaiting EPA's final value (currently unpublished). Pat indicated that if this value was used, there would be unacceptable risk identified. John indicated that the Navy is encouraging the use of evaluation using the Cal-EPA's slope factor. Pat stated that it is likely not a near term concern because active remediation is planned. John indicated that there is no imminent hazard and no need for immediate action.

John reviewed the additional buildings' characteristics and current use. Most are used for storage or maintenance shops and are only occasionally accessed. Building 54 is the only building with regular occupants, and has two workers who spend 8-hr work shifts in the building five days per week. The same approach will be used to evaluate all of the additional buildings as for Building 1556, but more conservative air exchange rates will be used as the buildings are not equipped with central HVAC systems/ventilation. Existing shallow groundwater data will be used. The screened interval in the monitoring well is below the top of water table and extends about 10 feet. Typically groundwater data from the very top of the water table provides the best indication of soil gas concentrations potentially migrating to the building. This will be identified as an uncertainty in the assessment.

Pat inquired about Navy policy, and whether it will recommend sub-slab soil gas sampling. John indicated that the Navy policy will include a tiered approach, consistent with EPA's policy and that it will be possible to rule out the vapor intrusion pathway using groundwater data and a weight of evidence approach. Josh indicated that in discussion with Kathy Davies she raised the point that the moisture content/humidity is an important variable that could affect the outcome of the model. John explained that he is using standard soil values provided within the model. He reviews the soil boring logs for the site and matches the soil type as closely as possible with the site and uses the model assumptions.

Janna went over the results of the ecological risk assessment that will be presented in the RI. The ecological risk screening performed as part of the SI indicated there is no habitat at the site and potential transport pathway is to Site 2.

Josh asked about deep groundwater, and the team discussed the potential risks from arsenic and vanadium previously identified and risk managed in the draft SSI document. Rationale for risk management will be presented in the RI report. The team also discussed the previous soil data collected in the site vicinity and how it will be presented in the RI report. The previous reports discussing soil data and risk screenings will be discussed and referred to.

The remedial action objectives (RAOs) for Site 21 were presented:

- Reduce COC concentrations in shallow groundwater to the maximum extent practicable.
- Prevent onsite exposure to groundwater with COC concentrations above acceptable risk levels.

Josh wondered if more specific RAOs would be better for different areas (i.e., source area vs. diffused plume area). The team discussed and agreed that preventing migration should be incorporated into the RAOs.

Action Kim - Send team Navy Remedial Action Optimization guidance.

Janna reviewed the FS alternatives: no action, ISCO, ISCR, ERD, and MNA. Tim asked if soil mixing with ZVI was considered for the hot spots. Potential utility concerns were discussed.

Action Tim - Provide team with soil mixing with ZVI information.

Action Kim - Send Tim the Camp Lejeune EE/CA for soil mixing.

Janna discussed potential concerns with ISCR/ERD and ISCO regarding temporary mobilization of elevated metals (e.g., arsenic and chromium, respectively) and metals loading (ISCO concern only). ISCO will not likely be the recommended alternative due to the size and concentrations of the plume, likelihood of required reinjection, and incompatibility with reducing treatments. The potential ISCO metals loading can be evaluated through calculations during the evaluation of alternatives. ISCR appears to be a more suitable option for the site based on the preliminary evaluation. Therefore, to address the potential arsenic concern, Janna presented options for evaluation in support of the ISCR/ERD remedy evaluation, including reviewing existing data, collecting additional

groundwater data, conducting bench scale testing, or conducting pilot (push-pull) testing. Because any increase in arsenic concentrations would likely be temporary and decline after the oxidizing conditions of the site returned, the team discussed that they may not be a concern. LUCs will be implemented to prevent exposure, and monitoring will be conducted at the site to confirm they return to acceptable levels. The team was not aware of other sites with similar conditions, and how arsenic concerns had been addressed at those sites.

Action Team - Research examples of ISCR/ERD (reducing conditions) increasing arsenic in groundwater and time frame.

Action Janna - Send team draft Site 21 MCL/RAO language.

Path Forward: Research soil mixing with ZVI and examples of ISCR/ERD (reducing conditions) increasing arsenic. Proceed with RI report and delay FS until more information is compiled and a determination is made as to whether additional testing is needed.

Action Tim - Find out the impact of the UFP QAPP for Site 21 bench scale testing work plan.

III. Roundtable

GIS: The newest GIS information provided by NAVFAC to CH2M HILL is in UTM. It is unclear if NAVFAC would like GIS be converted from state plane to UTM. Tim believes NAVFAC is staying in state plane, but will look into it in association with NIRIS conversion. CH2M HILL will leave GIS in state plane system unless otherwise directed.

Environmental Indicators: The guidelines for determining the classification can be interpreted differently. Tim indicated that Tier II would like more consistency between applications of Environmental Indicators at the facilities, and would like to meet with the teams to discuss their sites. Tim and Josh will plan a meeting in Philadelphia in August to discuss and plan for incorporation into FY08 goals. They will update the team at the September meeting. Josh indicated that SJCA currently has human exposure environmental indicator classified as under control. Groundwater migration under control is currently classified as "insufficient data" based on Site 2.

Action Josh - Schedule August meeting regarding Environmental Indicators.

Ready for Reuse: EPA is restructuring their tracking system for site identifiers such as "ready for reuse", "ready for anticipated use", etc. Josh is going to get further clarification, and it will be discussed during the next meeting.

Triad Investigations Conference: A Triad Investigations conference is going to be held at University of Massachusetts Amherst in June of 2008. CH2M HILL is preparing an abstract for submission. The team can be co-authors if desired, and will consider attending the conference as a team activity.

Site 4: Latest round of groundwater results were distributed (May 2007). The data is consistent with previous rounds.

Navy Reorganization: Navy has merged regional Environmental staff into NAVFAC MIDLANT (officially happens October 1, but functionally complete now). IR program will be the least impacted because of little involvement from other environmental staff.

IV. Site 5 ERI Addendum and Removal Action

Objective: Discuss the ERI addendum and upcoming removal action. Review the project schedule.

Overview of Discussion: Copies of the presentation were distributed. Kim briefly reviewed the history and current status of the site. An addendum to the ERI is being prepared to present a revised HHRA, based on the collection of two additional rounds of shallow groundwater data collected in 2006. The HHRA has been performed and did not identify any new risk drivers or higher risk values. Kim reviewed the RME and CT risks, and MCL exceedances. She reviewed the risk management approach for each constituent and the team consensus statement from the May 2007 partnering meeting.

Kim reviewed the upcoming removal action and its phases. The project for the first phase, the waste/burnt soil area, has been awarded to the Agviq-CH2M HILL Joint Venture. The work plan is being prepared, but the work schedule is dependent on the approval of the explosives safety submission (ESS) by NOSSA. The next phase of the removal action will address the impacted surface soil and sediment areas. A modification to an existing contract is underway to use existing funding to address a portion of those areas. Additionally, Tim indicated that because the path forward for the closeout of the site is known, the Navy will likely focus swing funds for the removal of the remaining areas. This aligns with the Navy's attempt to accelerate site/base closure (see Tier II update). Tim suggested that the team consider accelerating the schedule in an attempt to have the NFA ROD complete in FY 2008. The PP should be prepared and submitted for team review immediately after construction completion, and can proceed (draft) without the construction completion report.

Kim reviewed the results of the hot spot delineation activities conducted in June. The SS66 hot spot has been delineated as a 10-ft radius. The SS19 samples were analyzed south and east to a 50-ft radius, but did not achieve an average below 400 ppm for lead. The team discussed the path forward. The lead concentrations in all of the new samples (range of 26.5 to 2,240 ppm) were lower than the initial SS19 sample's concentration (4,740 ppm) and did not exhibit a spatial trend. If the results of the initial sample are replaced by the average of the new samples, the site-wide average for lead is below 400 ppm and the team discussed whether a removal was necessary. Karen indicated that the widespread lead detections appear to indicate a lead problem in the area, and she would like it to be further delineated. The team agreed to collect 5 additional samples south to delineate the area. Kim presented the results of SS35. A GPS error in the field during the sampling activity resulted in the samples all being shifted north approximately 20 feet. Therefore, although the results met the criteria in the work plan, the samples appear to have missed the previously detected hot spot. Therefore, the team agreed to collect samples east, south, and west in the initially planned locations.

Action Josh/Karen - Discuss Site 5 SS19 hot spot information with risk assessors.

Path Forward: Complete the ERI Addendum for August submission. Collect additional samples for the delineation of the SS19 and SS35 hot spots, and report the results in a technical memorandum in September.

Thursday, July 26, 2007

0800 Welcome/Check In

Reviewed Roles and Responsibilities

Reviewed Ground Rules

Reviewed current agenda: The agenda was reviewed; no changes were made.

V. Site 2 Triad Investigation Results and Path Forward

Objectives: Review the Triad Investigation results, develop a path forward, and review the schedule.

Overview of Discussion: Copies of the presentation were distributed. Pat McMurray/VDEQ joined the team for this discussion. Kim briefly reviewed the site background and investigation history then discussed the Triad Investigation, for which the objective was to address remaining data gaps. Each of the data gaps and associated activities and results were discussed:

Source Delineation: MIP borings and DPT groundwater and soil sampling were conducted to further refine the source area. The source has been delineated, and two potential release points were identified based on more shallow contamination identified at MIP 216 and MIPs 202/235.

Contaminant Mass and Distribution: MIP borings, DPT groundwater and soil sampling, and lithology observations were conducted to further define the source area and identify lithology where contamination mass is present. The contaminants appear to have vertically migrated downward and spread horizontally at the confining unit, which slopes toward the inlet. The confining unit is considered to be an effective barrier based on its thickness. The top of the confining unit is a series of interbedded clay, silt, and sand layers over a thicker competent clay layers and lateral migration appears to have occurred in the upper interbedded sand layers.

Pat inquired about subsurface soil data collection, and indicated that their default risk assessment approach is to look to a depth of 15 feet below ground surface because material to that depth can be brought to the ground surface during construction. Kim indicated that the soil data collected during this investigation was not validated and is not planned for use in a risk assessment. It was decided at a previous meeting that subsurface risk would be assumed.

High concentrations of TCE were detected in soil (up to 14,000,000 ppb). The highest concentration was in silty fine to medium sand, but typically, silty clays and clayey silts had the highest CVOC concentrations. The heterogeneous concentrations across the site make contaminant mass calculation unreliable. The SourceDK model was used to estimate 6,000 pounds of TCE in the aquifer. The mass will not be used in a remedial design due to uncertainty; however, it may be necessary to use the mass estimate to evaluate MNA.

Groundwater CVOC Delineation: MIP, DPT groundwater sampling, and monitoring well installation and sampling were conducted to further delineate the horizontal and vertical presence of CVOCs. Vertically, TCE and its daughter products were delineated and extend

vertically to the confining unit. Horizontally, the plume has not migrated east of the inlet and the centerline appears to follow the western edge of the tidal inlet. The southern extent of the plume appears to extend further than anticipated.

The team discussed the southern portion of the plume. MW02S was installed in 1997 and screened at 3 to 13 ft bgs south of St. Juliens Drive as a downgradient well. Based on the results of the Triad Investigation, it appeared that the confining unit was actually deeper, and because the contaminants were concentrated at the confining unit, MW16S was installed east of MW02S in the anticipated centerline of the CVOC plume. MW16S was screened at 14 to 24 ft bgs, just above the confining unit. MW16S was sampled after installation, and TCE was detected at 62 µg/L, cis-1,2-DCE at 9J µg/L, and VC at 0.7 µg/L. Because high concentrations were detected by the lab in the sample analyzed immediately before the MW16S sample, a second sample was collected and analyzed to confirm the detections weren't a result of laboratory contamination. TCE was detected at 12 µg/L, cis-1,2-DCE at 6.2J µg/L, and VC at 0.35J µg/L, confirming that the plume extends further south than anticipated.

The team reviewed the samples collected from St. Juliens Creek surface water or sediment during previous investigation activities. TCE (0.3J and 0.8J µg/L) and cis-1,2-DCE (ND and 0.3J µg/L) were detected only in the surface water samples collected at the outfall to St. Juliens Creek during the RI. No human health or ecological risks in surface water were identified in the RI, and no results exceeded the Virginia Water Quality Standard. One sediment sample was collected at the outfall and TCE was detected (10J µg/L), but no risk to human health or ecological receptors from sediment were identified in the RI. Four additional sediment samples were collected from St. Juliens Creek during the background investigation, but no CVOCs were identified.

To assess the potential impacts of the CVOC groundwater plume on St. Juliens Creek, the results of MW16S sample analysis were screened against the Tap Water RBC x 10 to determine if they were indicative of risk in surface water of St. Juliens Creek. The concentrations of TCE and vinyl chloride exceeded this value, but there is uncertainty in the validity of this comparison because TCE volatilizes quickly in surface water. The groundwater concentrations were also compared to ecological screening values, and did not exceed. Pat indicated that if the area is used for recreational use and there are no restrictions, there is probably intermittent exposure and the potential for unacceptable risk.

Action Janna - Update Site 2 boundary in GIS.

Groundwater to Surface Water/Sediment Interactions in Inlet: Sediment diffusion samplers were installed and analyzed within the transition zone of groundwater to surface water in the inlet to determine the magnitude of CVOC concentrations in sediment pore water, and groundwater and surface water elevations were analyzed at piezometers to confirm that groundwater is discharging to surface water. CVOCs were detected in pore water samples, most at concentrations below 10J µg/L. The sample from PW04 had the highest CVOC concentrations. At that location, TCE concentrations were higher in groundwater, and cis-1,2-DCE and VC concentrations were higher in sediment, indicating that reductive dechlorination is likely occurring in the sediments. During high tide, the vertical gradient indicated that surface water was recharging groundwater. During low tide, the gradient could not be measured because there was no surface water present. However, the

potentiometric water levels indicate the groundwater flow direction in the inlet is influenced by the tide, and groundwater most likely recharges surface water during low tide.

Groundwater Flow Direction: Groundwater levels were measured in shallow and deep groundwater monitoring wells and in the piezometers to refine the groundwater flow model. Shallow groundwater flows toward the inlet, with a horizontal gradient of approximately 0.01 ft/ft. The vertical gradient was upward at all shallow/deep well pairs, ranging from 0.002 to 0.047 ft/ft.

Geotechnical and Geochemical Properties: DPT soil sampling for TOC analysis was conducted based on observed organics and/or high CVOC concentrations and for geotechnical analysis over variable depths to support remedial technology evaluation. Organics were detected adjacent to the inlet. Of the samples analyzed for TOC, those with higher CVOC concentrations also had higher TOC concentrations. The high TOC suggests that chemical oxidation might not be a favorable remedy because the reagent will react with the natural organics, requiring more reagent. The site soil consists mostly of silty sand, with silt and clay lenses present. The groundwater contaminants migrate preferentially through the sandier layers. The fine-grained sands, clay, and waste present may limit the effective radius of influence for certain technologies.

Natural Attenuation Indicators: Water quality parameters were collected from the shallow and deep wells to evaluate natural attenuation processes. Within the CVOC plume the DO and ORP indicated reducing conditions, which are favorable for reductive dechlorination. Upgradient, the DO and ORP indicate oxidizing conditions, which indicate the biological processes are working within the plume. The deep groundwater is under naturally reduced conditions.

Ecological Risk: Pore water samples were collected and analyzed for comparison to ecological screening values developed for the protection of aquatic life from CVOCs in surface water. Results of one pore water sample (from PW04) exceed the ecological screening values. This was expected because it is located adjacent to highest concentration of the plume. No toxicity testing will be conducted because it is assumed that potential risks are present.

Wetland Debris Delineation: A visual survey was conducted to determine the extent of surface debris in the wetland. Concrete was identified near the culvert to St. Juliens Creek. Karen indicated that she had thought more debris was present. Kim indicated that additional debris is present within the site, but the delineation was only conducted within the inlet.

Action Janna/Kim - Check on waste in inlet delineation (concrete) to confirm the extent is not greater.

Remedial Alternative Effectiveness: Kim reviewed the remedial alternatives that were included within the work plan. The evaluation of the alternatives will be performed in the Feasibility Study. The alternatives for evaluation will be further refined at the next partnering meeting.

Path Forward: Continue evaluation of data as it is received, and prepare the ERI Report (mid October Navy submission and mid November team submission). Refine the remedial action objectives and remedial alternatives for evaluation in a separate Feasibility Study.

VI. Draft SMP Schedule and Comment Resolution

Objective: Resolve SMP comments and review the schedule for the IR program.

Overview of Discussion: Copies of the presentation and schedule were distributed. Janna reviewed the comments received from EPA and VDEQ and how they would be resolved. Tim reviewed the SMP and provided the following comments:

- Exclude draft/final from the SMP schedule because it cannot officially be considered final until the ER,N funding is distributed. A sentence that was crafted for the NNSY SMP and should be added to the SJCA SMP for explanation.
- Clarify in the response complete sentence that all of the sites previously closed are included in the tables.

Janna reviewed the site schedules, and made revisions based on the paths forward for the sites determined during this meeting.

Path Forward: The revisions resulting from comment resolution and the revised schedule will be incorporated, and an updated SMP will be distributed by August 15.

VII. Tier II Update

Goals: Update goals and post them on web sites.

Training: Identify training needs and submit to Tier II (e.g., ESS)

Base/Site Closure Acceleration: VDEQ and EPA have asked to identify bases for which closure can be expedited. Navy has developed a schedule and cost to complete estimate for closure of each site, and is using it to balance their spending plans.

VIII. Schedule and FY 2007 Team Goals Update

Schedule: The Schedule was updated and is included as a separate file.

FY 2007 Team Goals: The FY 2007 Goals were updated, included as an attachment, and will be posted on the Virginia/Maryland Joint IR Teams web site.

VIII. Agenda Building – September Meeting Agenda

<u>Topic</u>	<u>Goal</u>	<u>Lead</u>	<u>Time</u>
Site 21 Path Forward (TBD based on August call; potential WP for TS/BS) (Consider technical guest, TBD)	TBD	TBD	1.5 hr
Site 20 Path Forward	Provide information on input from NOSSA and Atlantic	Tim	1 hr
Environmental Indicators	Update team on August EI meeting.	Tim/Josh	0.5 hr
EPA CPRM	Informational	Josh/Bruce	1 hr

Site 5 NTCRA Work Plan & Delineation Results	Resolve comments on draft work plan and present results of delineation; resolve comments on ERI Addendum Report	Janna	1.5 hr
Site 2 RAOs	Review RAOs	Kim	0.5 hr
FY 2008 Goals	Develop goals for FY2008	Team	0.5 hr
RAB Agenda Building	Identify RAB topics and presenters.	Team	0.5 hr
Success Story	Review Site 2 Success Story	Karen	0.5 hr
Roundtable	Introduce new topics	Team	0.5 hr

Next meeting: September 18 - 19, 2007

Location: CH2M HILL, Philadelphia, Pennsylvania

Lodging: TBD

Start time: 12:00 PM

Finish time: 5:00 PM

Chair: Kim Henderson

Host: Josh Barber

Timekeeper: Karen Doran

Goal Keeper: Tim Reisch

Recorder: Janna Staszak

Facilitator: Tim Reisch

Tier II: Tim Reisch

Guests: Site 21 Tech person; Bruce Beach

Pre-Meeting Agenda Conference Call: 10:00 AM on September 6, 2007

Action Janna - Schedule a conference room at Philadelphia office.

IX. Future Meetings Schedule

August 8, 2007 @ 10:30	Conference call on Site 21 soil mixing & path forward
August	Navy/EPA meeting on Environmental Indicators/GPRA Goals
September 18 - 19, 2007	Philadelphia, Pennsylvania
October 10, 2007 @ 9:00	Site 4 Annual Inspection
November 13 - 14, 2007	Tidewater, Virginia (with RAB)
January 23 - 24, 2008	Richmond, Alexandria, or Williamsburg, VA

X. Meeting Evaluation

Kim provided facilitator feedback. During the Partnering Session, the Team filled in "+" and "Δ" to list the positives and negatives of the meeting.

XI. Parking Lot

- Incorporate Environmental Indicators into FY2008 Goals
- Site 4 groundwater monitoring during the 5-year review
- Phone numbers on IR site signs.