

Hornecker, Lynn M (EFDSW)

From: Hornecker, Lynn M (EFDSW)
Sent: Friday, October 19, 2001 12:29 PM
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Cc: Potacka, Marianna K (EFDSW); 'bartonj@rb5s.swrcb.ca.gov'; 'fdonofri@dtsc.ca.gov'; 'solliges@mail.arc.nasa.gov'; 'ahanif@mail.arc.nasa.gov'; 'jantzr@mail.co.stanislaus.ca.us'; 'bhicks@envres.org'; 'boggsk@mail.co.stanislaus.ca.us'
Subject: Responses to NASA Comments on the Navy's Action Memorandum dated August 2001

Hello Don,

I have attached the Navy's responses to NASA comments on the Action Memorandum for the time-critical removal actions at NASA Crows Landing Flight Facility.

Please do not hesitate to call me if you have questions pertaining to the responses.

Thank you for providing comments.

V/R
Lynn Marie Hornecker
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19 October 2001



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RESPONSES TO COMMENTS FROM THE NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Subject: Action Memorandum, Time-Critical Removal Actions at the NASA Crows Landing Flight Facility, Administration Area Plume
1,2-Dichloroethane (1,2-DCA) and Carbon Tetrachloride Source Areas at Installation Restoration Program Site 17

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Comment	Response
<p>Comments prepared by Don Chuck, National Aeronautics and Space Administration and transmitted by e-mail message dated 9 October 2001</p> <p>Subject: Action Memorandum for Time-Critical Removal Actions at the NASA Crows Landing Flight Facility, Administrative Area Plume, Crows Landing, California</p> <p>Addressee: Marianna Potacka, Base Realignment and Closure (BRAC) Environmental Coordinator, Southwest Division, Naval Facilities Engineering Command</p>	

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<p>GENERAL COMMENTS</p> <p>Time-critical removal actions are a response to a release that poses a risk to the public health and the environment such that actions must be initiated within six months following the approval of the Action Memorandum (USACE, 1994, NAVFAC, 1997). This document has not demonstrated the need for a time-critical removal action (TCRA). The proposed actions in this TCRA are not supported by any data that show a significant reduction in mass or potential harm to public health or the environment. No rationale has been provided as to why groundwater extraction is limited to 120 days or 30,000 gallons. Considering the amount and extent of contamination present, a non-time-critical removal action is more appropriate for addressing the groundwater at Crows Landing.</p> <p>A conceptual model of the hydrogeology must be presented to support the actions proposed in this TCRA. At a minimum, the model should discuss in more detail the geological setting, the transport mechanism for spreading the contamination, and the rationale for the location of extraction wells and observation wells.</p> <p>Earlier data presented in previous investigations indicate that the soils at Crows Landing get finer as one goes from the Corcoran Clay to the surface. Soils at the Corcoran Clay have coarse sands and gravels. As a result, most of the agricultural and domestic wells are screened right at this level as well as below the clay. Pumping from the agricultural wells may have caused downward vertical gradients that have drawn contaminants down lower into the aquifer. A case could be made that the vertical gradients may be the major transport mechanisms. This is especially evidenced by the fact that the carbon tetrachloride is already being seen at Corcoran Clay and the petroleum contamination at Cluster 1 is as deep as it is. Once at that level, the contamination could then spread horizontally along the clay through more transmissive sands and gravels. The implication of this is that there is more of a risk of spreading of contamination downward and then horizontally along the Corcoran Clay than there is of horizontal spreading at the groundwater surface. This is evidenced by the fact that even after more than 60 years, contamination has not left the base. A removal action to address the vertical migration of the plume could be considered more urgent than what has been proposed in this action.</p>	<p>Responses to General Comments:</p> <p>The Navy appreciates the participation of NASA in the review of the Action Memorandum that was issued in August 2001.</p> <p>The Navy is conducting time-critical removal actions in accordance with the requirements of Title 40, Code of Federal Regulations (CFR), Section 300.415 to remove contaminants from source areas at the Administration Area Plume (the Plume) at NASA Crows Landing Flight Facility (the Facility). Groundwater beneath the Facility has been designated as a potential drinking water supply by the Regional Water Quality Control Board (RWQCB), Central Valley Region. The time-critical removal actions are not intended to provide hydraulic control of the Plume and the time-critical removal actions are not intended to replace the final remedy.</p> <p>The Navy will be submitting a work plan for the in-situ treatment activities, and the work plan will include details pertaining to the contaminant distribution within the Plume and the hydrogeology of the site.</p> <p>Routine groundwater sampling and continuous water level measurements have shown that groundwater is generally flowing northeast toward the San Joaquin River and toward the eastern Facility boundary. Contaminants in the groundwater appear to be migrating toward the Facility boundary based upon samples collected during June 2001.</p> <p>The Navy is implementing time-critical removal actions to remove contaminant mass from source areas. The Navy estimates that the fieldwork associated with the removal actions will be completed within 120 days. The Navy will conduct community relations activities, in accordance with the requirements of 40 CFR 300.415, if significant field activities extend beyond 120 days.</p> <p>Chlorinated solvents that are present in the Plume – including carbon tetrachloride (Specific Gravity: 1.59), 1,2-DCA (Specific Gravity: 1.24), and chloroform (Specific Gravity: 1.48) – are denser than water and the denser chemicals may migrate downward due to the density difference between the chemical and the groundwater. Carbon tetrachloride has migrated horizontally from the source area near well 17-MW-02 more than 600 feet north to well 17-MW-08. Carbon tetrachloride has also migrated</p>

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	<p>vertically from the source near 17-MW-02 approximately 200 feet to well 17-MW-15.</p> <p>Six deep monitoring wells (screened below a depth of 230 feet below ground surface) are located within or near the Plume. Volatile organic compounds (VOCs) were detected in samples collected from three of the six wells during 1998 to 1999 (Predesign Investigation Summary Report (Tetra Tech 1999)); VOCs were detected above laboratory reporting limits in samples from 17-MW-15, 17-MW-21, and 117-MW-12. VOCs were not detected at or above laboratory reporting limits in the samples from the other wells that are located near the edges of the shallow plume. Well 17-MW-15 is located within the carbon tetrachloride source area; well 17-MW-21 is located within the Plume downgradient from UST Cluster 1; and well 117-MW-12 is located near UST Site 117. Based upon the analysis of samples from the six deep wells and from other wells within and near the Plume, the horizontal extent of the plume appears to be greater in the shallow and mid-shallow zones than in the deeper zone. Consequently, the risk for plume migration appears to be greater in the shallow and mid-shallow zones. The Navy is addressing the shallow and mid-shallow zones in the time-critical removal actions.</p> <p>The following information is provided for clarification: The Navy obtained California Department of Water Resources (DWR) records for water supply wells that are located on the Facility. DWR logs identify the screened or perforated intervals for most of the wells. Some wells have perforations for several hundred feet, and perforated intervals do not appear to coincide with the estimated location of the Corcoran Clay. Previous Navy reports have identified an estimated depth of 230 to 270 feet below ground surface for the top of the Corcoran Clay and an estimated thickness of approximately 65 feet for the Corcoran Clay at the Facility (Final Irrigation Practices Technical Memorandum (PRC 1993)). Five water supply wells located at the Facility have perforated zones between the following approximate depths: 144 to 600 feet; 200 to 590 feet; 122 to 250 feet; 188 to 620 feet; 170 to 270 feet.</p>

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<p>COMMENT 1 Sect. I, 1st Par., Last Sent., Pg. 1 The groundwater gradient direction is described as northeast. In past groundwater reports the groundwater exhibited a divide in the area of the administration plume with some flow directed toward the southeast. The position of the divide and the flow directions varied with time. The flow maps that have been presented in the last three quarterly reports were based on data using fewer of the wells than previous reports. Using only partial data may give a false impression of the gradient slope and direction. Failure to use all data in determining gradient and flow direction could miss areas that may not be flowing to the northeast. Having a clear picture of the flow conditions at the Crows Landing Flight Facility (CLFF) is important if any injections are to be done.</p>	<p>Response to Comment 1. Previously published Navy reports identified a groundwater divide at the Facility. The current Navy team has not been able to verify the existence of such a feature at the Facility. The Navy has collected continuous groundwater elevation data at several locations since late calendar year 2000 and this water level data has been presented in the quarterly groundwater monitoring reports. This data is being evaluated in order to evaluate potential seasonal influences on the water levels and potential influences caused by pumping of irrigation water supply wells.</p> <p>The Navy has included water table elevation maps in the routine monitoring reports that were issued in March 2001, May 2001, and August 2001, and the gradient has been approximately northeast. The maps are based upon water level measurements at wells that are screened across or very near the water table, and the measurements used to prepare the maps were collected within a 24-hour period.</p>
<p>COMMENT 2 Sect. I, Par. 5, Pg. 2 While it is correct that the Navy is the lead federal agency, 42 U.S.C. Section 9620(a)(4) [CERCLA 120 (a)(4)] states:</p> <p>(4) State laws State laws concerning removal and remedial action, including State laws regarding enforcement, shall apply to removal and remedial action at facilities owned or operated by a department, agency, or instrumentality of the United States or facilities that are the subject of a deferral under subsection (h)(3)(C) of this section when such facilities are not included on the National Priorities List. The preceding sentence shall not apply to the extent a State law would apply any standard or requirement to such facilities which is more stringent than the standards and requirements applicable to facilities which are not owned or operated by any such department, agency, or instrumentality</p> <p>Also, from 10 U.S.C. Section 2705(b) (b) Comment by EPA and State and Local Authorities. -</p> <p>(1) Release notices. - The Secretary shall ensure that the Administrator of the</p>	<p>Response to Comment 2. The Navy is conducting the time-critical removal actions in accordance with the requirements of the 40 CFR 300.415. The Navy identified Applicable or Relevant and Appropriate Requirements (ARARs) in the Action Memorandum, and the Navy will comply with substantive requirements of Federal, State, and local regulations.</p> <p>Also, please see the Response to Comment 14.</p>

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<p>Environmental Protection Agency and appropriate State and local officials have an adequate opportunity to comment on notices under paragraphs (1) and (2) of subsection (a).</p> <p>(2) Proposals for response actions. - The Secretary shall require that an adequate opportunity for timely review and comment be afforded to the Administrator and to appropriate State and local officials after making a proposal referred to in subsection (a)(3) and before undertaking an activity or action referred to in subsection (a)(4). The preceding sentence does not apply if the action is an emergency removal taken because of imminent and substantial endangerment to human health or the environment and consultation would be impractical.</p>	
<p>COMMENT 3 Sect. I, Par. 8, Pg. 2 This paragraph includes aquifer testing as part of this TCRA. A work plan should be provided along with a figure describing the wells to be used (both pumping and observation) and the procedures to be followed for the test. The purpose and the objectives for the test must be provided. It is also necessary to provide the conceptual model of the hydrogeology that is being used to determine locations of aquifer tests and extraction wells.</p>	<p>Response to Comment 3. The Navy conducted aquifer tests at existing wells in the vicinity of the highest 1,2-DCA concentrations in order to collect data for the refinement of the hydrogeological model of the Plume and to identify the optimum location(s) for contaminant removal through groundwater extraction. The wells were located near the former UST Site 117. Procedures for aquifer tests were provided in the work plan issued in October 2000.</p>

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<p>COMMENT 4 Sect. I, Par. 9, Pg. 2 The first sentence states that TCRA will "... will reduce the potential exposure to nearby human populations and animals from hazardous substances, and will reduce the potential for migration of the plume to the adjacent properties." It is unclear from this memorandum how the proposed TCRA will accomplish these goals. The extraction of the contaminated water and storage on site will increase potential exposure to the environment. As long as the contaminated water is on site in a tank, it could be released to the environment through a leak or spillage during pumping to and from the storage tank. Additional potential exposure is involved with the transport of the waste to the disposal/treatment facility.</p> <p>It is unclear how the TCRA will reduce migration from the site since the pumping rates are low and depths are shallow.</p> <p>Finally, the memorandum should explain how the TCRA will provide information on aquifer characteristics. In order to obtain robust data on the aquifer for remedial selection and design, the aquifer will need to be stressed more and monitored in several wells. Additional information needs to be provided to show how this will be done.</p>	<p>Response to Comment 4. The Navy implemented time-critical removal actions in order to remove contaminants from a potential drinking water supply. The Navy intends to remove contaminant mass from source areas during the implementation of the removal actions. The removal actions are not intended to provide hydraulic control of the Plume.</p> <p>The RWQCB Central Valley Region Basin Plan identifies municipal and domestic water supply as existing or potential beneficial uses of the groundwater beneath the Facility. The California Department of Health Services (DHS), Division of Drinking Water inspected the domestic water system at the Facility in 1993, and the DHS documentation of 1993 indicates that nitrate concentrations in the groundwater exceed drinking water standards.</p> <p>The general procedures for extraction, storage, and transportation of groundwater to a treatment/disposal facility are identified in Attachment 3 of the work plan issued in October 2000.</p> <p>Worker protection is addressed in the health and safety documentation, and field personnel are trained in spill containment and response activities and the use of appropriate personal protective equipment.</p>
<p>COMMENT 5 Sect. II. A. 1., 4th Par., 2nd Sent., Pg. 5 Please define what is meant by "optimization activities."</p>	<p>Response to Comment 5. Optimization activities at UST Cluster 1 include individual testing of vapor extraction wells and extraction from groups of wells using portable soil vapor extraction (SVE) treatment units. Optimization activities are being conducted in order to identify the most efficient and cost-effective configuration for mass removal from the vadose zone. The requirements of the California Code of Regulations (CCR), Title 23, Division 3, Section 16, Article 11, 2725 indicate that the most cost-effective corrective action should be implemented.</p>

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<p>COMMENT 6 Sect. II. A. 1., 5th Par., 3rd Sent., Pg. 6 The sentence states that the TCRA at the dry well was completed in late June 2001. Did the TCRA achieve its goals as stated in the action memorandum? Did the TCRA make any significant reduction in contaminant mass? Data on the amount of original mass present and mass removed by that TCRA should be provided in this memorandum. Such information will help in the evaluation of the proposed actions in this TCRA and their ability to reduce mass.</p>	<p>Response to Comment 6. The Navy was successful in removing contaminants from the source area near the former dry well at the Administration Area Plume as described in the Action Memorandum dated November 2000. The Navy is in the process of preparing the summary document for the time-critical removal actions that were conducted near the former dry well, and the summary document will identify the amount of mass removed.</p>
<p>COMMENT 7 Sect. II. A. 1., 8th Par., Pg. 7 In the 6th sentence, it is stated that the TCRA will provide verification testing of residual vapor concentrations at 117-EX-01 and 117-EX-02. The proposed actions for this TCRA are groundwater extraction and <i>in situ</i> treatment (Sect. V). Please explain how these actions will verify the presence of any vapors in the vadose zone. A TCRA should not be required to test these wells for vapors.</p>	<p>Response to Comment 7. The removal actions are intended to address contaminant removal at source areas, and the vadose zone at UST Site 117 could represent a source of future groundwater contamination. The Navy may test the vadose zone wells during the removal actions in order to identify residual vapor concentrations and to determine whether or not a significant source of 1,2-DCA remains in the vadose zone. The Navy conducted SVE pilot test activities at UST Site 117 during 1997 and 1998, and soil, soil gas, and groundwater samples were analyzed. The previously published accounts of the SVE pilot test summarize information pertaining to petroleum hydrocarbon and BTEX concentrations in the soil. Previously published accounts of the SVE pilot test did not discuss the presence or absence of 1,2-DCA in the vadose zone. Previously published data summaries pertaining to the SVE pilot test do not state whether or not soil or soil gas samples were analyzed for 1,2-DCA, 1,2-DCP, or other volatile organic compounds.</p>
<p>COMMENT 8 Sect. II. A. 1., Par. 8, 2nd Sent., Pg. 7 Selected data is provided in Table 1. What was the basis for the selection of the data?</p>	<p>Response to Comment 8. The data presented in Table 1 was intended to describe maximum concentrations of selected contaminants in groundwater in the vicinity of UST Site 117.</p>

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<p>COMMENT 9 Sect. II. A. 1., Par. 14, Last Sent., Pg.8 This sentence, as written, is incomplete.</p>	<p>Response to Comment 9. Comment acknowledged.</p>
<p>COMMENT 10 Sect. II. A. 1., "Evaluation of the Release..." 3rd Sent., Pg.10 The sentence notes potential impacts to plume migration caused by pumping of nearby agricultural wells. Please explain how the TCRA will address these potential impacts, especially since the TCRA extraction is operating at 0.5 gpm or less. Additionally, during the BCT conference call held on 9/26/2001, the Navy reported that only one of eight wells tracked by data loggers showed any influence by agricultural wells. This well was not in the 117 area. The draft feasibility study for the administration area plume had also noted at one point that pumping from agricultural wells flattened the gradient. If pumping did indeed flatten the gradient, then the potential for plume migration appears moot.</p>	<p>Response to Comment 10. The time-critical removal actions are intended to remove contaminant mass from the groundwater. The removal of contaminant mass at source areas could reduce potential spreading of the Plume and potential costs of remediation activities.</p> <p>Pumping from irrigation water supply wells in the vicinity of the Plume does not appear to significantly influence contaminant migration based upon the information from the automated water level recorders at the Facility. However, pumping from existing wells or new wells on adjacent properties located east of the Plume (on privately-owned properties) could potentially influence Plume migration. Removal of contaminant mass from the source areas reduces the amount of contamination that could potentially spread.</p>
<p>COMMENT 11 Sect. III. A., Par. 2, Pg. 16-17 The paragraph states that the proposed TCRA will reduce the spreading of the plume. To prevent further migration or spreading, pumping at higher rates than 0.5 gpm will be needed to provide any hydraulic control on movement. It is also questionable that mass removal at low rates (the previous Cluster 1 TCRA removed only 3 lbs/week) will be effective at reducing the risks of plume spreading (by diffusion and/or advection).</p> <p>Further clarification will be needed to show how in situ treatment will "abate" potential plume spreading. Does the substrate require advection or diffusion to work, or a combination of both? How will the substrate and daughter products be controlled or constrained from migrating themselves?</p> <p>Finally, the memorandum should clarify as to how the TCRA will reduce exposure. There are no present known complete exposure pathways at Crows Landing. The extraction, storage, and transportation does provide possible complete pathways for exposure.</p>	<p>Response to Comment 11. The time-critical removal actions are intended to remove contaminant mass from the groundwater at source areas. The time-critical removal actions are not intended to provide hydraulic control of the Plume.</p> <p>The removal of contaminant mass at source areas could result in reduced spreading of the Plume and reduced costs of remediation activities. By reducing the potential spreading of the Plume, the potential exposure of human populations and animals to the hazardous substances that are present in the groundwater is reduced.</p> <p>The Navy plans to issue plans to describe the in-situ treatment process in detail.</p>
<p>COMMENT 12 Sect. IV, Pg. 17 This document needs to show more directly how there is an imminent and substantial</p>	<p>Response to Comment 12. The Navy is implementing time-critical removal actions to address contamination of a potential drinking water supply. The implementation of removal actions now will</p>

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<p>endangerment to public health, welfare, or the environment if this TCRA is not implemented. As noted in previous comments, it is questionable that the proposed extraction will be able to control plume migration or make any real reduction in mass at the low flow rates presently being used. The in situ portion of this TCRA also needs to be better described as to how the process works, how it will be controlled, and how it will provide protection to receptors.</p>	<p>enable the Navy to remove contaminant mass from source areas while the feasibility study, proposed plan, and Record of Decision documents are developed. Removal of contaminant mass now could reduce potential spreading of the contaminant plume and could reduce the cost of remediation.</p> <p>The Navy plans to issue plans to describe the in-situ treatment process in detail.</p>
<p>COMMENT 13 Sect. V.A.1, "Groundwater Extraction" Pg. 18 This section states that the groundwater extraction will continue 30,000 gal are extracted or for 120 days. How much mass will be removed with the extraction of 30,000 gal? What was the basis for choosing this quantity or the 120 day duration? The extraction of 30,000 gal in 120 days is approximately 0.2 gpm. How will such a small flow rate have any effect on reducing plume migration?</p>	<p>Response to Comment 13. The removal of approximately 30,000 gallons from the source area(s) will result in the removal of contaminant mass from the groundwater. Contaminant concentrations also may be reduced. The removal actions are not intended to provide hydraulic control of the plume.</p> <p>The Navy will present the actual mass removal information and contaminant concentrations in a summary report following the completion of the time-critical removal actions.</p>
<p>COMMENT 14 Sect. V.A.5, Par. 5, Pg. 20 This paragraph states that only state standards that are identified in a timely manner may be ARARs. Since this document went out as a final and not a draft, how was the state or any other party able to identify ARARs in a timely manner?</p>	<p>Response to Comment 14. The Navy identified ARARs in the Action Memorandum dated August 2001, and the Navy considered potential ARARs provided by the RWQCB (State Water Board requirements for cleanups) in January 2001 during the implementation of the removal actions near the former dry well. The Navy responded to RWQCB comments on the Action Memorandum dated August 2001 on 3 October 2001.</p>
<p>Reference:</p> <p>NAVFAC, 1997. <u>Navy/Marine Corps Installation Restoration Manual</u>, Sect. 3.2.2, Naval Facilities Engineering Command, February, 1997.</p> <p>USACE, 1994. <u>Technical Guidelines for Hazardous and Toxic Waste Treatment and Cleanup Activities</u>, EM 1110-1-502, Sect. 2-31, US Army Corps of Engineers, 30 April 1994.</p>	

TRANSMITTAL

Date: 19 Oct 2001

From: Lynn Marie Hornecker
CROWS LANDING

To: Diane Silva
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