

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Region III

841 Chestnut Building

Philadelphia, Pennsylvania 19107

SUBJECT: RCRA Record of Decision
Uniform Tubes Inc.
Trappe, Pennsylvania

DATE: SEP 30 1991

FROM: Thomas C. Voltaggio, Director
Hazardous Waste Management Division (3HW00)

TO: Edwin B. Erickson, Regional Administrator
U.S. Environmental Protection Agency, Region III (3RA00)

Recommended Action:

I recommend that you sign the attached RCRA Record of Decision.

Purpose of this Record of Decision:

This Record of Decision presents EPA's selected corrective measures alternative for the Uniform Tubes Inc. (UTI) Facility, located in Trappe, Pennsylvania. The ROD consists of: 1. a Statement of Basis which summarizes the results of the Corrective Measures Study (CMS) prepared by UTI, discusses each corrective measure alternative presented in the CMS, and provides EPA's rationale for its selection; and 2. a Response to Comments which addresses comments and concerns expressed by the community and UTI.

Selected Remedy:

On June 30, 1988 EPA and UTI entered into an agreement to conduct RCRA Corrective Action. Public notice of EPA's tentative decision was issued on August 6, 1991 and a public meeting was held on September 5, 1991 at which the community expressed concerns about their water supply and their desire that treated water be reused.

The selected remedy consists of Alternatives 5 and 7 which are preferred because they represent the most expeditious alternatives for contaminant remediation. Alternatives 5 and 7 include the expanded recovery of contaminated groundwater from both shallow and deep wells located on-site. Treatment of the volatile organic compounds (TCE, TCA) contained in the recovered groundwater will be accomplished via air-stripping (with emission controls). Inorganic groundwater contamination (chromium) will be removed using ion-exchange. A source area in the vicinity of former solvent storage tanks will be further evaluated to determine the feasibility of in-situ vapor extraction and/or additional shallow groundwater recovery.

Future Actions:

EPA will begin negotiation of a RCRA § 3008(h) consent order requiring implementation of the final corrective measure alternative.

During the development of the Corrective Measures Implementation plan EPA will solicit comments on reuse of treated groundwater from interested parties.

An information request letter has been prepared which seeks information with which to evaluate potential risks associated with UTI's TRI emissions.

Significance of this Record of Decision:

This ROD sets out a comprehensive remedy for addressing contamination at this Facility which dates back prior to the passage of RCRA. This Facility has been targetted by EPA Headquarters for voluntary reductions in TRI emissions, has a long RCRA enforcement history, and is the subject of a General Accounting Office (GAO) study to evaluate the RCRA Corrective Action program.

The issue of establishing realistic groundwater remediation timeframes has been addressed and a mechanism to allow for long-term flexibility in evaluating clean-up success has been incorporated into this ROD. The approach incorporates existing Region III RCRA language regarding the achievement of steady state contaminant levels and language from the recent OSWER Directive 9283.1-03 entitled "Suggested ROD Language for Various Ground Water Remediation Options".

A law suit filed by the Boroughs of Trappe and Collegeville against UTI is currently pending in Montgomery County court. The Boroughs, which operate the local water authority, are seeking recovery of costs related to the treatment of contaminated water. UTI is located in a groundwater protection zone regulated by the Delaware River Basin Commission and the desire to ensure that treated groundwater will be reused has been strongly expressed by the community. EPA is actively working with the community to achieve a comprehensive and mutually agreeable solution to the situation in the context of RCRA Corrective Action authorities.

cc: B. Smith (3HW03)
R. Greaves (3HW60)
C. Pilla (3HW64)
J. Nevius (3HW64)
T. Malloy (3RC32)

FINAL DECISION AND RESPONSE TO COMMENTS
ON SELECTION OF CORRECTIVE MEASURES UNDER SECTION 3008(h) OF THE
RESOURCE CONSERVATION AND RECOVERY ACT

UNIFORM TUBES, INC.
TRAPPE, PENNSYLVANIA

INTRODUCTION

This Final Decision and Response to Comments is being presented by the U.S. Environmental Protection Agency (EPA). The purpose of the Final Decision and Response to Comments is to identify the selected remedy, present concerns and issues raised during the public comment period regarding the proposed remediation of contamination at the Uniform Tubes, Inc. Facility in Trappe, PA¹ (the Facility), including those that were raised at the September 5, 1991 public meeting, and to provide EPA's response to those concerns and issues. All of the comments received were carefully reviewed during the final selection of the Corrective Measures, and have been answered in this Response to Comments. No additional alternatives were raised that were not considered in the Corrective Measures Study (CMS) and the proposed Corrective Measure was not significantly altered as a result of public comments or the public meeting. Certain clarifications and modifications made as a result of public comments, particularly with respect to reuse of treated groundwater, are set forth in this Response to Comments.

On June 30, 1988 EPA and UTI Corporation (UTI) entered into a consent agreement pursuant to the Resource Conservation and Recovery Act (RCRA) which required UTI to conduct an investigation of contamination at its Facility located in Trappe, PA and propose Corrective Measures to address the contamination. The RCRA Facility Investigation (RFI or Remedial Investigation) and Corrective Measures Study (CMS) were generated by UTI and reviewed by EPA. Specific Corrective Measure Alternatives, including a preferred alternative, were identified and presented for public comment in the form of a Statement of Basis on August 6, 1991.

SELECTED REMEDY

The selected remedy to be implemented at the UTI Facility includes the recovery of contaminated groundwater from both shallow and deep wells located on-site as described in Alternative 5 of the Statement of Basis. The selected remedy in this respect represents a continuation and expansion of the ongoing groundwater pump and treat program. The recovery of groundwater on-site will result in the removal of contaminants from the aquifer and the containment of any future potential off-site migration of contaminants.

¹The Facility is physically located in the Borough of Trappe, however, Trappe does not have its own post office and UTI utilizes Colledgeville as its mailing address.

Recovered groundwater will be treated to remove the volatile organic compounds (VOCs) trichloroethylene (TCE) and 1,1,1 trichloroethane (TCA). Treatment will be accomplished via air-stripping (enhanced volatilization) with the "stripped" contaminants being contained via filtering/treatment, unless it is demonstrated that no unacceptable risk to human health or the environment will occur without such filtering/treatment. The inorganic groundwater contamination (chromium) will be removed using ion-exchange treatment, as necessary, as described in Alternative 5 of the Statement of Basis and modified by this document. A contaminant source area in the vicinity of former solvent storage tanks will be further addressed by implementing a pilot program to determine the feasibility of in-situ vapor extraction (venting) and/or additional shallow groundwater recovery as described in Alternative 7 of the Statement of Basis. Recovered treated groundwater will be reused in accordance with the requirements described below in response to comment number 1.

The selected remedy involves the pumping of the largest number of recovery wells exhibiting VOC and chromium contamination and provides the most comprehensive recovery of contaminants of any proposed alternative. The selected remedy incorporates additional ion-exchange treatment, as necessary, to accomplish chromium removal in conjunction with air-stripping. The selected remedy also focuses more directly than other alternatives described in the Statement of Basis on recovery of groundwater from wells (with projected yields greater than 1 gallon per minute) in close proximity to the sources of contamination. EPA believes the selected remedy provides the best balance among the alternatives with respect to the evaluation criteria described in the Statement of Basis.

CONCERNS RAISED DURING THE PUBLIC COMMENT PERIOD

A public comment period was set from August 6, 1991, through September 20, 1991. A display advertisement which constituted public notice was placed in the Independent & Montgomery Transcript newspaper on August 6, 1991. A public meeting was held on September 5, 1991, at 7 p.m. at the Perkiomen Valley/Graterford High School. The meeting was attended by approximately 40 people, including, but not limited to, representatives of EPA, UTI, the Boroughs of Collegeville and Trappe, Upper Providence Township, the Collegeville-Trappe Joint Water System and concerned citizens. A number of concerns were raised at the meeting and in written form subsequent to the meeting and they are presented below along with EPA's responses.

COMMUNITY CONCERNS

1. Concern: The withdrawal of 150 gallons per minute (gpm) from the aquifer beneath UTI and the subsequent discharge of treated water to Donny Brook is an unnecessary depletion of valuable groundwater resources as opposed to reuse of the water for public consumption.

Response: The proposed remedy as set forth in the Statement of Basis included reuse of the groundwater as part of the remedy. The discharge of the treated groundwater to Donny Brook via the UTI spray field and retention basin was also included in the proposed remedy as an option in light of the conclusion in the CMS that the Collegeville-Trappe Joint Water System (CTJWS) was not interested in accepting the treated groundwater for reuse. At the public meeting, a representative of the CTJWS stated that CTJWS has never rejected or even received a formal proposal to reuse treated water.

EPA agrees that the treated water should be reused, if such reuse is practical. As part of the implementation of the remedy, options for reuse shall be evaluated, including reuse on-site for production and other purposes and reuse by CTJWS or other appropriate water authorities. As part of the evaluation process, EPA intends to solicit input from the CTJWS, the local governments, and concerned citizens. EPA's preference is for total reuse of the treated groundwater. In the event that reuse is impractical, the treated groundwater will be discharged to Donny Brook in accordance with applicable federal and state regulations (including an assessment of the impact of the discharge on the Brook). Such discharge would occur only if no appropriate reuse option can be developed and implemented in accordance with applicable regulatory requirements.

2. Concern: The proposed remediation would result in an unacceptable depletion of the groundwater available to meet the Boroughs' current and future needs.

Response: There are three points EPA would like to make in response to this concern.

(a) The selected remedy will ultimately result in the pumping of a considerable amount of water (150 gallons/minute or 216,000 gallons/day) from beneath the Facility. However, all of this water is currently contaminated² and if allowed to spread unchecked (as was the case prior to 1980), would result in a greater amount of regional contamination and larger treatment costs for the affected

²The average concentration of VOCs in groundwater to be withdrawn under the selected remedy is 3,144 ppb, as presented in Table 5-19 on page 5-56 of the CMS.

Boroughs/Townships. By withdrawing and treating the groundwater and, if practical, providing it for reuse, the selected remedy can actually increase the beneficial use of this groundwater.

(b) The 150 gpm groundwater withdrawal rate is a maximum withdrawal rate and implementation will proceed in phases. Aquifer response will be monitored closely as specific wells are incorporated into the recovery well network. The proposed pumping rates are not expected to adversely affect recovery in the nearby public well CT-8, based on data presented in the RFI and CMS (see Section 4.3.2 of the CMS). As discussed in the Statement of Basis, in implementing the remedy EPA will retain the authority to require the adjustment of groundwater recovery rates as warranted by recovery system performance data collected during regular monitoring. Thus, if the pumping at the Facility affects the ability of CTJWS to obtain groundwater from CT-8 (for example, during a period of drought), pumping rates can be adjusted. In addition, any proposed withdrawal from the aquifer is subject to permitting requirements and associated groundwater-supply impact determinations within the authority of the Delaware River Basin Commission (DRBC).

(c) Groundwater is a renewable resource. As described in the RFI, groundwater levels are recharged by precipitation moving down through the shallow soil overburden. The renewable nature of this resource, when considered in conjunction with the issues discussed in (a) and (b), above, demonstrates that the selected remedy should not adversely affect water use in the area. Quite the contrary, it is expected that implementation of the remedy will enhance the quality of groundwater in the regional aquifer.

3. Concern: Can reinjection be used to replace contaminated groundwater removed from the aquifer with treated groundwater?

Response: Reinjection was evaluated in the CMS and rejected as an option due, in part, to the difficulty of implementation. Reinjection would have a substantial effect on the dynamics of groundwater flow and could result in dilution, making recovery of contamination and hydraulic control much less effective. There are substantial technical and regulatory hurdles as well, including but not limited to: the identification and location of fractures in the fractured bedrock with sufficient hydraulic capacity to handle the volumes of water to be reinjected; fouling of injection pathways as a result of clogging, sedimentation and entrainment of air; potential mineralization as a result of mixing of groundwater with different natural mineral chemistries and temperatures, and the need for Federal and state permits. The water proposed for reinjection will also have to meet or exceed applicable drinking water standards. Reinjection is not advisable or practical at this Facility, particularly when reuse is appropriate.

4. Concern: A number of concerns were identified regarding the adequacy of the public participation procedures followed by EPA in this case. These concerns included: (a) the shortness of the public comment period; (b) the placement of the Administrative Record file in the Perkiomen Valley Public Library rather than Ursinus College; (c) the failure to provide individual copies of the Statement of Basis and Administrative Record to the local Boroughs, the CTJWS, and their legal counsel; (d) the selection of the Perkiomen Valley High School as the location for the public meeting; and (e) the inadequacy of the public notice appearing in the Independent and Montgomery Transcript.

Response: (a) EPA encourages public participation in the remedy selection process, and has established administrative procedures to ensure that meaningful public participation takes place throughout the process. Those procedures, which are set forth in "Guidance on RCRA Corrective Action Documents", OSWER Directive 9902.6 (February 1991), were followed in this matter. EPA believes that adequate public participation procedures were followed, and declined to extend the formal period for public comment beyond the forty-five (45) day period initially established.

(b) EPA understands the desire of those who commented to have the Administrative Record file placed at the Ursinus College Library, which is located closer to the Facility than the Perkiomen Valley Public Library. However, EPA's practice is to place Administrative Record files in public libraries in order to ensure that all members of the public will have open access to the records. The public library in this case is located approximately five and one-half miles from the Facility, is open every day except Sunday and has evening hours on three of those days. EPA believes that this location provides an appropriate balance between proximity to the Facility and the affected residents, the hours of operation, and open access to the public. At the request of several of those who commented, EPA has placed another copy of the Administrative Record file at the Myrin Library of Ursinus College.

(c) The placement of a copy of the Administrative Record file near the affected community provides an adequate opportunity for the public, as well as the local governments and their counsel, to review that file. Representatives of the local governments and CTJWS objected to the fact that individual copies of the Statement of Basis and documents supporting it were not provided to them. While such distribution is not required to satisfy the public participation requirements, EPA has decided that these individuals shall, in the future, receive copies of significant documents. EPA has placed those persons on the mailing list for this Facility.

(d) Several of those who commented suggested that the location of the public meeting, Perkiomen Valley High School, was too distant from the Facility and the affected communities to allow adequate attendance. EPA attempts to hold public meetings at

locations convenient to the public, and in fact changed the location of this meeting once before to accomodate greater expected attendance. Undoubtedly, other locations could have been selected. Nonetheless, EPA believes that the Perkiomen Valley High School, which is less than six miles from the Facility, was an appropriate place for the public meeting.

(e) A number of those who commented noted that the public notice placed in the Independant and Montgomery Transcript stated that the public comment period ran from July 30, 1991 through September 13, 1991 when in fact the period ran from August 6, 1991 through September 20, 1991³. EPA regrets the error in the notice, but does not believe that it impacted on the ability of the public to comment on the proposed remedy. EPA received several comments after September 13, and at the public meeting it was made clear that the period ran until September 20.

5. Concern: What are the so-called "Drinking Water Standards" that the proposed treatment system and any treated water must meet?

Response: The standards referred to as "Maximum Contaminant Levels" or MCLs represent federally enforceable limits for contaminants in drinking water provided by public water systems. The MCL for TCA is 200 parts per billion (ppb), the MCL for TCE is 5 ppb, and the MCL for chromium (total) was 50 ppb and has recently been revised to 100 ppb. The MCLs are derived, in part, by assuming a lifetime (70 years) of exposure for a 70 kilogram (154 pound) adult who consumes two liters of contaminated water per day.

6. Concern: Why has soil removal not been selected as part of the proposed remedy?

Response: Soil removal was evaluated in the CMS and rejected. Based on the findings of the RFI and as stated in the Statement of Basis, EPA has determined that residual levels of contaminants in soils at the Facility do not represent a threat to human health in that they occur at depths which preclude human exposure via inhalation or ingestion. Except as described below, the possibility that residual contaminants in the soil may leach into the groundwater also does not create a risk as the concentrations which occur in the soil would not cause the concentrations in groundwater to exceed the relevant MCLs. In any event, the proposed pump and treat remediation will result in the recovery and containment of any contaminants which leach to groundwater. The potential enhanced exposure to contamination as a result of removal of the soil and the logistics and scope of removal and disposal were also

³It should be noted that the notice, published on August 6, announced the start of a forty-five (45) day comment period. Forty-five days from August 6 is September 20.

evaluated in making the decision not to conduct soil removal.

The contaminant source in the vicinity of the former solvent storage tanks located beneath UTI's Plant 1, however, is expected to remain a significant source of VOCs. Due to the location of the tanks, it is difficult to determine the precise levels of soil contamination, or to remove contaminated soils. The in-situ vapor extraction pilot program in the vicinity of the former solvent storage tanks is designed to address residual soil contamination in that area without requiring the destruction of parts of the building.

7. Concern: What will be done about off-site contamination?

Response: Based on the findings of the RFI and CMS, it appears that the effect of pumping at CT-8 may continue to draw contamination from the UTI site. The groundwater extraction portion of the selected remedy is designed, in part, to intercept on-site contamination prior to off-site migration, and is expected to partially recover contamination which may have already migrated past the Facility boundary.

UTI has been sampling off-site private wells since contamination was discovered and has taken steps to provide municipal water or bottled water to residents whose wells are contaminated. This quarterly monitoring program was expanded, in cooperation with EPA, during the RFI to ensure that any impacted wells had been identified. Off-site public water supply wells that may have been affected by contaminant migration from the UTI Facility are sampled regularly and have had air-strippers installed by the local water authority to treat any volatile organic contamination and ensure that drinking water standards are met or exceeded. Private wells located beyond the Facility boundary will continue to be sampled regularly to evaluate the quality of groundwater and the effectiveness of the selected remedy in terms of the continued reduction of contaminant levels in the subset of monitored wells which currently exhibit contamination (see also response to comment number 15).

8. Concern: How long will this remediation take and at what rate(s) will groundwater be removed from the aquifer over that period?

Response: Although it is difficult to predict precisely the time necessary to complete a remedial clean-up of this nature, the recovery of contaminants at the UTI Facility will probably take several decades. Mixing and dilution in the aquifer over time make recovery of contaminants difficult, particularly at low concentrations (hundreds of parts per billion). EPA will monitor the progress of the remedial program and will retain the authority to require changes in recovery rates and well locations. As contamination levels decrease, withdrawal rates will be reduced and

recovery wells can be converted for use as monitoring wells, as necessary, to ensure that clean groundwater resources are managed as efficiently as possible. Thus, it is expected that as clean-up goals are reached, the amount of water withdrawn will decrease.

9. Concern: The proposed pumping at the UTI Facility will draw contaminants toward UTI and potentially draw contaminants from other sources into the area.

Response: In part, the pumping at the UTI Facility is designed to draw contaminants in close proximity to the Facility to the recovery wells. This will partially remediate the historical off-site migration of contaminants from UTI. Based on information presented in the CMS, however, it is expected that the proposed withdrawal rate of groundwater at the UTI Facility will not cause the migration of contaminants to the UTI Facility from other known off-site contaminant sources. Based on the findings in the RFI and CMS, it is unlikely that the withdrawal rate will effect water levels in CT-8, the local CTJWS supply well located 700 feet southeast of the Facility, let alone draw contaminants from as far away as that well. (The previous statement is merely illustrative of the limited reach of the pumping influence and is not meant to suggest that the CT-8 well is a "source" of regional contamination.) The projected radius of influence (or area within which water levels will be affected) as a result of proposed groundwater withdrawal at UTI extends approximately 500-1000 feet beyond the Facility boundary (see Figure 4-7 on page 4-25 in the CMS). The actual radius of influence will be determined as the Corrective Measures are implemented in a phased manner and recovery wells are progressively brought on-line. As stated above, EPA has the authority to require modifications to pumping rates and well locations.

10. Concern: UTI is currently, and under the selected remedy will be, required to meet drinking water standards with regard to all water withdrawn as part of the remediation. These standards are referred to as Maximum Contaminant Levels (MCLs). Even though MCLs will be achieved for each individual contaminant, what is the cumulative and/or synergistic toxicological effect of achieving MCLs when several contaminants are present, particularly TCE and TCA which are chemically similar?

Response: The EPA Office of Drinking Water provides health advisories as technical guidance for the protection of human health. Health Advisories are concentrations of a substance in drinking water which are estimated to have negligible effects in humans, when ingested for a specified period of time. The health advisory for 1,1,1-trichloroethane (TCA) is 200 ppb, the MCL for the contaminant. Based on scientific studies, TCA is not

considered a human carcinogen by EPA⁴.

The MCL for trichloroethylene (TCE) is 5 ppb. The MCL for TCE is below TCE's Health Advisory of 100 ppb because it is based on the possible carcinogenic effects of TCE. TCE has been linked to cancer in laboratory animals, however, data on human exposure is inconclusive. Therefore, EPA has classified TCE as a probable human carcinogen. The MCL of 5 ppb considers the possible health effects as well as the technical aspects of contaminant removal, such as feasibility of treatment, and relative ease of implementation.

Because the MCLs are equivalent to (in the case of TCA) or below (in the case of TCE) the Health Advisories, no cumulative, adverse effect would be expected from drinking water which is required to be treated to MCLs or below. Current EPA toxicological databases do not contain documentation regarding synergistic effects of multiple contaminants. However, for the reasons stated above, EPA believes that achievement of MCLs is protective of human health and the environment.

11. Concern: An EPA TOXNET databank release dated October 22, 1990, shows TCA as having "no adequate data" available for carcinogenic effect on humans. Is this still the case? If not, what does the current data reveal? If it is, then what is being done to obtain accurate data?

Response: TOXNET is a computer system composed of about 15 different databases. There is no single database called TOXNET, nor is it run or financed by EPA. The Integrated Risk Information System (IRIS) is an EPA database containing up-to-date health risk and EPA regulatory information for numerous chemicals. The information contained in this database states that TCA is not considered a human carcinogen, based on laboratory and human health data⁵.

12. Concern: The EPA TOXNET further states that TCA "degradation is reported to be greatly increased by exposure to ozone and chlorine but no actual data was found regarding its reactivity to ozone." Is the air-stripping disposal method causing any of the following:

1. Depletion of the ozone layer?
2. "Smog" in the immediate area around UTI?

⁴Integrated Risk Information System, 1991

⁵IRIS, September, 1991

3. Evidence of TCA in blood or urine samples taken from anyone living close to the contaminated area?

Response: As stated above, TOXNET is not an EPA database. Under the selected remedy UTI will be required to treat emissions from the air-stripper to address/absorb emissions of volatile organic compounds in the air leaving the stripper (using Best Available Demonstrated Treatment technology), unless UTI demonstrates that emission levels of those compounds do not exceed the regulatory requirements described in the Statement of Basis and that no unacceptable risk to human health and the environment will occur. The standards set forth in the Statement of Basis with respect to air emissions and the requirement to treat such emissions are intended to minimize impacts on human health and the environment. In the event that UTI seeks to demonstrate that treatment is unnecessary, environmental and human health assessments shall be performed to ensure that no significant adverse impacts will occur. Operation of the air-stripper with emission controls would not be expected to result in significant depletion of the ozone layer or result in "smog" in the vicinity of UTI, or to adversely affect the body chemistry of any of the local residents.

13. Concern: Why does EPA's Toxic Release Inventory (TRI), obtained February 28, 1991 show data obtained as the most current available? What about 1989 and 1990?

Response: As required by law, TRI data must be reported by July 1 in the year following the reporting period. EPA receives a tremendous amount of data which must be processed and entered into a computer to make it available to the public. There is a lag time between the receipt of the data and when it is available. The 1989 data are currently available to EPA and the public. The public contact for UTI regarding TRI data is listed as Gordon B. Hattersley, President of UTI.

14. Concern: Why does the EPA TRI data indicate non-point air release in 1988 of TCA at 652,323 total pounds? How much of this is the result of air-stripping? Why did an EPA administrator, when he heard the figure above advise me to "move away from the area?"

Response: The figure regarding total pounds of TCA emitted at the Facility represents an estimate by UTI of the amount of TCA emitted as fugitive emissions (that is, emissions which can not be traced to a specific source such as a stack or vent) resulting from industrial activity at its Facility in 1988. Approximately 1% of the total emissions of TCA at UTI are a result of current air-stripping activity. EPA is not aware of the circumstances under which the statement to which you refer was made or who made it.

15. Concern: An owner of property in the vicinity of the UTI Facility on which a domestic water supply well is located asked the following questions: (a) could water historically discharged

to the stream have impacted their well; (b) will 226,000 gallons/day of future proposed discharge flow past their property; and (c) would EPA consider monitoring their well? Other persons expressed concern about the effects of erosion on the banks of the Brook and on adjacent properties as a result of potential discharges.

Response: (a) There is no evidence that historic discharges of surface water from the UTI Facility have impacted groundwater quality in areas located downstream. Water discharged to Donny Brook after 1980 was treated using air-stripping to remove VOCs and monitored regularly to ensure that MCLs were met or exceeded as a result of treatment.

(b) Please see response to comment number 1.

(c) Since the discovery of contamination, UTI has sampled wells in the vicinity of the Facility and provided bottled or municipal water to residents whose wells were affected. During the RFI, UTI, in cooperation with EPA, expanded the residential well sampling program to include all domestic wells located within a quarter mile radius of the Facility to ensure that the rate and extent of potential off-site migration was appropriately evaluated. Many of these wells exhibited no evidence of TCE or TCA contamination.

As part of the selected remedy, UTI will continue to monitor selected off-site wells on a semiannual basis (see Section 5.4 starting on page 5-6 of the CMS regarding institutional controls) and more frequently during the early phases of implementation. The presence of TCE or TCA was not detected in two wells located on Clayhor Avenue in the general vicinity of the specific well under discussion during the most recent sampling on June 20, 1991. There are currently no plans to expand the list of off-site domestic wells to be sampled by UTI, however, EPA will periodically reevaluate the adequacy of off-site sampling based on potential changes in contaminant distribution patterns.

With respect to the potential effects of erosion, any discharge will have to comply with applicable federal and state law regarding discharges to streams. EPA was not aware of significant erosion of properties located adjacent to the Brook prior to receiving these comments, and will require that prior to any discharge under the selected remedy, an assessment of the potential effects of erosion on the banks of the Brook and on adjacent properties be conducted.

16. Concern: Why were no studies or investigations conducted with respect to the proposed remediation as required by the National Environmental Policy Act (NEPA)?

Response: NEPA, 42 U.S.C. Sections 4321, et. seq., and the regulations implemented pursuant to its authority require that federal agencies include appropriate and careful consideration of the environmental effects of their proposed actions in their decision-making process. In complying with NEPA, agencies implementing major actions are generally required to prepare an Environmental Impact Statement (EIS). Courts have held, however, that no EIS is required for issuance of certain permits under RCRA for performance of corrective actions. This is because the remedy selection process for corrective action under RCRA by its very nature generally involves the same type of review and investigation as would be required in the preparation of an EIS. Likewise, for the same reason, EPA believes that no EIS requirement is applicable to corrective action decisions made under Section 3008(h) of RCRA.

COMPANY COMMENTS

In submitting comments regarding the Statement of Basis, UTI identified a series of specific statements in that document and provided a separate comment with respect to each statement. In responding to UTI's comments, EPA will identify the statement from the Statement of Basis, set forth UTI's comment (or a summary of the comment) and provide EPA's response.

17. Page 2, Fourth Paragraph:

Statement: "The plant property was purchased by UTI in 1964."

Comment: The plant property was purchased by UTI in 1959.

Response: EPA has no basis on which to agree or disagree with the comment. EPA's Statement of Basis should have read that Plant 1 was constructed by UTI in 1964.

18. Page 8, Third Paragraph:

Statement: "TCE is a volatile organic compound that is known to cause cancer in laboratory animals. It has been determined that TCA may cause cancer in laboratory animals. Both TCE and TCA are, therefore, suspected human carcinogens."

Comment: According to the August 1, 1991 update of the EPA database IRIS, 1,1,1-trichloroethane (TCA) is not a suspected carcinogen in humans or animals. Therefore, TCA cannot be classified as a known or suspected human carcinogen. For TCE, the only laboratory animals determined to develop cancer from TCE are mice. Tests on other animals species to date have shown either inconclusive results or negative results.

Response: See comment number 11 and associated response.

19. Page 9, Fourth Paragraph:

Statement: "The MCLs for TCE, TCA, and total chromium are 5, 200, and 50 micrograms/liter, respectively."

Comment: The MCL for chromium was changed since the completion of the CMS. The latest established chromium MCL is 100 ug/l for total chromium, (56 Federal Register 3526, January 30, 1991). EPA acknowledged this factor at the September 5, 1991 public meeting.

Response: The clean-up goals are modified to reflect the recent change regarding the MCL for total chromium.

20. Page 16, Fourth Paragraph:

Statement: "Chromium contamination is typically associated with VOC contamination and groundwater recovery from wells located closest to contaminant sources is precluded unless chromium treatment is accomplished because chromium levels in recovered groundwater would exceed the relevant MCL."

Comment: Chromium concentrations projected for extracted groundwater were below the new MCL for all Alternatives described in the CMS involving groundwater extraction. Chromium treatment is included under Alternative 5 because for that alternative only the projected chromium concentration in the extracted groundwater is above the surface water discharge criteria. Groundwater recovery from wells located closest to contaminant sources will occur under Alternative 4, as well as under Alternative 5. The wells that are located closest to the contaminant sources are the shallow RCRA wells and the Plant 1 Sump. The pumping rates for these wells are the same for Alternatives 4 and 5. (Refer to tables 5-13 and 5-18 in the CMS for a listing of extraction wells for each alternative). Therefore, Alternative 4 also aggressively addresses shallow groundwater in the source area.

Response: UTI's comment appears to address two different issues which are not necessarily related. The comment focuses first on the reason chromium treatment is required under the selected remedy (*i.e.*, to ensure that the treated groundwater meets applicable standards), but goes on to suggest that Alternative 4 in the CMS aggressively addresses shallow groundwater contamination in the source area.

While Alternative 4 does address contamination in the swale source area, as noted in the CMS, the additional recovery wells which are part of the selected remedy provide a higher rate of contaminant recovery from the swale source area. The RCRA wells and the Plant 1 sump are currently of limited value as recovery wells because of their projected yield of less than 1 gallon per minute (the sump, in fact, is not considered a "well"). The additional wells proposed in Alternative 5 over Alternative 4

(i.e., wells UTM-3, UTM-11, and UTM-15, hence forth "Alternative 5 Wells") are located closer to the source of contamination in the swale than any of the other monitoring wells on-site other than the RCRA wells.

All of the Alternative 5 Wells exhibit the presence of chromium and average concentrations (as presented in the CMS) of both TCE and TCA over 500 ppb. The combined average TCE and TCA influent concentration for Alternative 4 is projected in the CMS as 2,559 ppb and for Alternative 5 as 3,144 ppb. The projected extraction rates for the two Alternatives are roughly equivalent (refer to Tables 5-14 and 5-19 in the CMS). Based on this information and assuming the average concentrations of VOCs immediately drop by half and then remain constant in the first year, Alternative 5 would result in the recovery of at least 225 pounds more VOCs in the first year than Alternative 4. In addition, given the yields of the Alternative 5 wells and their close proximity to the source of contaminants at the swale, not only contaminant recovery but also source area hydraulic control are accomplished to a greater extent in Alternative 5 than Alternative 4 while potential contaminant migration is minimized (see additional discussion in response to comment 21).

21. Page 17, Item 1:

Statement: "Alternative 5 (in conjunction with Alternative 7) provides the best overall remediation and protection because it addresses both deep and shallow groundwater contamination, as well as providing for focused remediation of the source area."

Comment: CMS Alternatives 3, 4, and 5 are all equally protective of human health and the environment because protection is provided by plume containment in the deep zone and institutional controls which will minimize the possibility of exposure. In combination with Alternative 7, Alternative 4 and Alternative 5 address both shallow and deep groundwater contamination through groundwater extraction, as well as providing for focused remediation of the source area. Therefore, Alternative 4 provides protection of human health and the environment and is at least as protective as Alternative 5.

Response: CMS Alternative 4 is not at least as protective of human health and the environment as the selected remedy. The selected remedy provides greater initial VOC recovery rates and focuses more directly on the swale source area. Alternative 4 differs from the selected remedy in that Alternative 4 proposes to pump UTM-18, the downgradient hydraulic control well, at a higher rate (100 gpm versus 75 gpm) than the selected remedy. The lower pumping rate for UTM-18 in the selected remedy would be offset by pumping wells UTM-3, UTM-11, and UTM-15 at a combined flow rate of 31 gpm (see Table 5-19 in the CMS). The average concentration of VOCs in the 31 gpm of groundwater recovered from the Alternative 5 Wells is

projected at 4,141 ppb. The average concentration of VOCs in the additional 25 gpm from UTM-18 in Alternative 4 is projected at 1,110 ppb. The additional VOC recovery is more protective of human health and the environment.

Moreover, increased pumping of UTM-18 as proposed in Alternative 4 could actually result in reduced potential contaminant recovery. This is because UTM-18 has the potential to draw contaminants which primarily occur at "shallow" depths vertically to the deeper water supply portion of the aquifer and over greater horizontal distances than if wells located closer to the "shallow" source (UTM-3, UTM-11, and UTM-15) were used to recover contaminated groundwater⁶. Increasing the length of potential horizontal and vertical contaminant migration pathways would result in an increase of the potential for mixing, dilution and adsorption of contaminants and reduce the effectiveness of the proposed remedy by reducing potential contaminant recovery.

22. Page 17, Item 1:

Statement: "Human health is protected by removing VOC and chromium from the recovered groundwater."

Comment: Human health is protected primarily by preventing exposure to contaminated groundwater not necessarily by groundwater treatment. Alternative 4 will reduce off-site migration of TCE and chromium to the same or a greater extent than Alternative 5 by providing more aggressive hydrologic control of groundwater migration downgradient of the site. This is accomplished by pumping well UTM-18, the downgradient hydrologic control well, at a higher rate under Alternative 4 (100 gpm) than under Alternative 5 (75 gpm).

Response: As described above, the reduced projected recovery of groundwater from UTM-18 in the selected remedy compared to Alternative 4 would be more than off-set by the enhanced hydraulic control and contaminant recovery in the more direct vicinity of the swale source, accomplished in Alternative 5 by virtue of pumping wells UTM-3, UTM-11, and UTM-15.

23. Page 19, Second Paragraph:

Statement: "Current projections of the off-gas VOC concentrations

⁶Wells UTM-3, UTM-11, and UTM-15 are all between 100 and 150 feet in depth and are all located less than 200 feet from the swale source and approximately 680 feet (along the strike of the bedrock) from the underground storage tanks, another contaminant source area. UTM-18 is 453 feet deep and is located approximately 400 feet from the swale source and approximately 1000 feet from the underground tanks.

... vary considerably but suggest that, under some circumstances, control technology would be required to meet standards set forth above [40 CFR Part 265, Subpart AA, 25 PA Code Section 127.12(a)(5), Section 3008(h) Corrective Action Authority]."

Comment: All the standards cited by EPA will be met by implementing Alternatives 3, 4, or 5 under any foreseeable circumstance without the use of air control technology. We believe that EPA may have misinterpreted the data presented in the CMS by using the projected worst case maximum (which assumed that each well is at its highest concentration recorded) as a long-term average for comparison against historical averages. Average projected groundwater concentrations, not maximums, accurately reflect the expected rate of annual emissions. If the "circumstances" EPA is referring to is that the highest concentrations recorded at each well will persist continuously, this is not technically credible.

The purpose of defining the worst case maximum values was to conservatively ensure that the air stripper could effectively handle this hypothetical simultaneous maximum and meet discharge criteria for any grab sample of the effluent. In reality, this overall worst case maximum VOC concentration would never be observed, even in a grab sample, because it requires that all wells be at their maximum concentrations at the same time. This has never occurred over the last 14 years of groundwater monitoring.

Since risk exposure and the critical regulatory criteria for air emissions are based on annual emission rates (which by definition are represented by average groundwater concentrations), we anticipate no circumstances in which the reference standards will not be met without emission control.

Response: EPA agrees that worst case maximum values are appropriate for determining whether the air-stripper can effectively treat groundwater to meet applicable discharge criteria. Such maximum levels are likewise appropriate in projecting whether the air-stripper emissions may exceed appropriate levels. Moreover, the use of the maximum levels presented may not even represent a conservative evaluation for the following reasons:

- (a) The initiation of pumping may draw additional contaminants to the wells, particularly UTM-18 which accounts for approximately half of the projected groundwater recovery in the selected remedy and which currently exhibits relatively low contaminant concentrations (590 ppb TCE and 420 ppb TCA which represent both the average and maximum value listed for each VOC in the CMS).
- (b) The selected remedy calls for redevelopment of the most contaminated wells (primarily the "RCRA" wells) to

enhance recovery which would result in increased contaminant loading.

- (c) The selected remedy calls for the potential implementation of additional shallow groundwater recovery in the vicinity of a source area and/or changes to the well recovery network pending review and evaluation of implementation and overall groundwater recovery performance data.
- (d) Surges in contaminant levels may accompany precipitation and enhanced source area flushing as called for in the selected remedy or result from incomplete air-stripper-influent mixing.

EPA considers treatment of emissions from the air-stripper to be an essential component of the selected remedy. Such treatment is necessary to avoid simply transferring contaminants from one media (groundwater) to another (air). Minor changes in contaminant concentrations and yields from recovery wells and the sump would result in significant changes in UTI's projected air-stripper emission concentrations. Until UTI is able to demonstrate that the actual emissions meet the standards with respect to health and environmental impacts, emission controls will be required.

24. Page 9, First Paragraph:

Statement: "The maximum on-site concentration of TCA in groundwater was 1,800,000 ppb in samples obtained in October 1986 from the Plant 1 Sump (UTI has stated that this concentration may be related to process operations and may not be fully representative of environmental contamination)."

Comment: This maximum concentration for the Plant 1 Sump is not representative of groundwater conditions and did not occur as a result of normal process operations. As explained on page 1-13 of the CMS, this maximum concentration was caused by a leak in a pipejoint supplying solvent to the Plant 1 degreaser. The pipe, which was located over the sump, was repaired and relocated. The leak was repaired in 1986 and measures were taken to isolate the sump from the process equipment containment area. Typical concentrations in the sump which reflect actual groundwater concentrations are orders of magnitude lower than this maximum value cited. For example, the average TCA concentration in the sump for 1988-90 was 38,000 ppb.

Throughout the SOB [Statement of Basis], EPA has seriously misrepresented site characteristics by only citing maximum concentrations for TCE, TCA, and chromium. Representative values should have been cited.

Response: Spillage of TCA as a result of leaky pipes is a serious matter, particularly if the leaks were "contained" by the sump. EPA presented the information in a fair manner by pointing out the circumstances under which this particular analytical result was obtained.

In presenting concentration data, values were qualified as maximum. Other data is available and can be found in the Administrative Record file. EPA disagrees with the statement that it seriously misrepresented site characteristics.

25. Page 9, Second Paragraph:

Statement: "All off-site wells have chromium concentrations below the MCLs"

Comment: Three off-site wells were found to contain chromium in the remedial investigation sampling. The highest concentration found was less than 25% of the MCL for chromium.

Response: This statement cannot be found on Page 9 of the Statement of Basis issued for public comment or at any other location in the Statement of Basis. The statement is technically correct but could be misinterpreted. EPA would modify the sentence to read: "Three off-site wells were found to contain chromium in the remedial investigation sampling. The total concentrations of chromium detected in off-site wells were not above the MCL for total chromium of 100 ppb."

26. Page 14, First Paragraph:

Statement: "The goal of the remedial action is to restore the groundwater to its beneficial use, which is, at this site, a drinking water aquifer."

Comment: All groundwater under the site is not part of a "drinking water aquifer." Due to low yields in the shallow zone, it is impractical to utilize this zone for water supply and it is not being used for that purpose. It is anticipated that the remedial objectives will be achieved in the drinking water aquifer while the shallow groundwater may remain above MCLs. Therefore, it is not necessary to restore the shallow groundwater zone to drinking water standards to achieve the remedial objectives of restoring the drinking water aquifer.

Response: EPA believes that any portion of the aquifer beneath the Facility is an actual and/or potential source of drinking water. Based on the findings of the RFI, the shallow zone and the deeper "drinking water aquifer" are hydraulically connected and groundwater occurring in the shallow zone is likely to eventually recharge the deeper zone under the force of gravity. Therefore in order to restore the groundwater occurring in the aquifer to its

beneficial use as drinking water and to prevent additional contamination from affecting groundwater quality to the maximum extent possible, it is necessary to fully remediate both the shallow and deep water bearing zones of the aquifer.

27. Time requirements to Achieve Cleanup Objectives and Cost Effectiveness

UTI submitted a number of related comments regarding this topic, which are presented below. The series of comments are addressed by a single response set forth below after the comments.

Page 16, Third Paragraph:

Statement: "EPA prefers Alternative 5 in conjunction with Alternative 7 because if incorporates proven technologies, is protective of human health and the environment, and is cost effective."

Comment: Cost effectiveness is a measure of cost against benefit, in this case protection of human health and the environment. The selection of Alternatives 5 and 7 is not cost effective when compared to Alternatives 3 and 7 or Alternatives 4 and 7. In the CMS, Alternatives, 3, 4, and 5 were all found to be equally protective of human health and the environment. The difference between these alternatives is only the potential time requirements for cleanup, a factor which cannot be accurately evaluated in this instance. According to the proposed RCRA corrective action regulations, cost is a key consideration when selecting among alternatives that are equally protective of human health and the environment. Costs for capital and operation and maintenance for each alternative were presented in tabular form in the CMS in Section 5. Alternative 4 is more cost effective than Alternative 5, and is similarly proven and protective of human health and the environment.

Page 16, Fourth Paragraph:

Statement: "Alternative 5 will allow the cleanup goals to be attained more quickly and effectively relative to Alternative 3 or Alternative 4,"

Comment: No estimates of time have been made to project when the cleanup standards will be attained under any alternative. Such an effort could not be accomplished because of the low transmissivity and heterogeneity of the upper groundwater zone. Remediation will be long-term in duration regardless of which alternative is ultimately implemented. As stated in Section 6.2 of the CMS, the reduction in duration of remediation achieved by the Alternative 5 groundwater extraction scheme cannot be calculated and may not be significant. Therefore, the advantage of Alternative 5 in reduced time to complete the remediation consists only of an

indeterminate and likely small reduction in a lengthy corrective action program. This constitutes a rather small benefit (if a benefit at all) at a significantly higher cost.

Page 20, First Paragraph:

Statement: "The focus on remediating higher concentration groundwater source areas is expected to reduce the duration of the corrective measure program. However, the effect cannot be calculated due to the complexity of contaminant distribution and recovery, and groundwater flow."

Comment: By EPA's own admission the effect of Alternative 5 on reducing the duration of remediation cannot be calculated. In fact, the effect may be quite small as discussed in the CMS.

Page 21, Fourth Paragraph:

Comment: EPA neglected to indicate that Alternative 5 will have slightly less short-term effectiveness than Alternatives 3 and 4 because the lower pumping rate for UTM-18 will create a less extensive hydrologic barrier which will reach out quite as far off-site, as discussed in Section 5.7.2 of the CMS.

Page 21, Item 8:

Comment: EPA did not indicate that design, permitting (PADER WQM Part 2 and Air Emission Control Permit) for its Alternative selection (i.e., Alternative 5 with emissions control) will result in a delay in implementation relative to Alternative 4. The additional permits required under Alternative 5 can typically result in additional implementation delays of one year or more relative to Alternative 4.

Response to the issue of the time requirements and cost effectiveness:

EPA does not consider Alternatives 3, 4, and the selected remedy equally protective of human health and the environment. For the reasons presented in response to comments numbers 20 and 21, Alternative 4 is not as effective as the selected remedy in recovering contaminants, in providing hydraulic controls as closely as possible to the source of contamination associated with the swale, and in preventing the horizontal migration of contaminants on-site and the vertical migration of contaminants both on and off-site. The factors listed above and discussed by EPA in previous responses are expected to result in a reduction in the time necessary to achieve the remedial goals, but that is a reflection of the effectiveness of the selected remedy and not the criteria for its selection.

The projected reduction in pumping rates for UTM-18 in the selected remedy (75 gpm) and Alternative 4 (100 gpm) and the potentially less effective off-site contaminant recovery as a result is off-set by the enhanced initial recovery and reduced potential migration of contaminants in the more direct vicinity of the swale source area. Some off-site contamination has migrated beyond the potential hydraulic control of UTM-18 at either recovery rate, particularly given the pumping of CTJWS Well CT-8.

The concept of hydraulic control involves the recovery of groundwater, thereby creating a cone of depression or drawdown of the water table in the vicinity of a particular well. The cone of depression is associated with a radius of influence within which contaminants are drawn to the well and are prevented from migrating past it. In Alternative 4 and the selected remedy, the deep Well UTM-18 would be pumped at rates which create a radius of influence that will "capture" contaminants which emanate from sources on UTI property. This "capture" is designed to prevent contaminants which occur on-site from migrating off-site in the direction of CTJWS well CT-8. By focusing more on a containment strategy (Alternative 4, UTM-18 pumped at 100 gpm for "sitewide hydraulic control", see page 4-20 of the CMS) as opposed to a contaminant recovery strategy (Alternative 5, UTM-18 pumped at 75 gpm for "sitewide hydraulic control" with the difference to be made up by pumping wells for "source area hydraulic control", "VOC and Chromium recovery" and "VOC recovery"), UTI would be utilizing large volumes of additional valuable groundwater (25 gpm) with relatively low contaminant levels to prevent migration as opposed to recovering contaminants. This is at odds with the need to preserve groundwater resources in the vicinity of UTI and with concerns as expressed by the community during the public comment period.

There are a number of permits which will be required prior to implementing the selected remedy at UTI. The permits can all be applied for at one time and need not be obtained consecutively as is implied by the comment regarding potential delays stemming from air-emission control modifications. As is stated in the CMS, the air-stripper may require modifications which result in the need for a construction permit simply to handle the volumes of water proposed and to ensure adequate treatment. EPA is committed to working with UTI and its consultants to facilitate the acquisition of permits to the extent possible. In any event, even if additional time were needed for implementation of emission controls, the need for protectiveness outweighs the marginal increase in implementation time.

28. Need for Chromium Treatment

UTI submitted a number of related comments regarding this topic, which are presented below. The series of comments are addressed by a single response set forth below after the comments.

Page 17, Third Paragraph:

Statement: "The additional treatment for chromium in Alternative 5 consisting of ion-exchange will ensure that treated water which is released to a surface stream and/or spray field consistently achieves relevant requirements"

Comment: The treated water discharge will consistently achieve relevant requirements under Alternatives 3 and 4 as well as 5, stated in the detailed description of these Alternatives in Section 5 of the CMS.

Page 17, Third Paragraph:

Statement: "Chromium treatment will also address potential fluctuations in concentrations of chromium in recovered groundwater resulting from natural variability and/or induced infiltration."

Comment: As discussed in the CMS in Subsection 5.7.2.1, variability in chromium concentration will not be a problem based upon the proposed phased implementation of recovery wells and contingency chromium treatment. As EPA indicated in its comments on 5 August 1991 to the draft CMS, water levels may drop in shallow wells as a result of the pumping of deep wells and yields may be lower than projected. Phased implementation will be necessary to first gauge the capture zone and hydrologic effects of the deep wells on the shallow wells and then to gauge the effects of pumping the shallow wells. As discussed in the CMS in Section 5.7.2.1, chromium concentrations are expected to drop under the initial phase pumping conditions to below the projections which were made based on static conditions. This is because the wells containing the highest chromium concentrations are located in a stagnant zone created by current groundwater extraction at UTM-1. The initial phases of pumping under Alternatives 4 or 5 include wells which are lower in chromium concentrations. This results in a wide safety margin between projected initial chromium concentrations and the discharge criteria. Under these circumstances it is most logical to monitor chromium concentrations during the initial phases of corrective action pumping to confirm or adjust the projections while there is a wide safety margin between chromium concentrations and the discharge criteria. This monitoring in the initial phases will determine if chromium treatment is necessary prior to implementing the final phases. Because of the likely decline in chromium concentrations, chromium treatment should be installed (for any alternative) only if chromium concentrations in the initial phases of corrective action indicated that ultimate concentrations will remain at levels that require treatment to meet surface water discharge standards.

Page 17, Fifth Paragraph:

Statement: "Only Alternative 5 provides for recovery in wells located in the immediate vicinity of the swale/impoundment source area by incorporating the necessary chromium treatment."

Comment: As discussed earlier, Alternative 4 also provides extraction from groundwater wells in the swale/impoundment area. Chromium treatment is not necessary based solely on location of wells in the swale/impoundment area. The need for chromium treatment should be based on projected and measured chromium concentrations and applicable discharge criteria. A comparison of Subsections 5.6 and 5.7 in the CMS provides the detailed discussion of the scope of Alternatives 4 and 5, the groundwater extraction wells included in each alternative, and the necessity of chromium treatment. As stated in the CMS, chromium treatment is contemplated as part of Alternative 4, if warranted by initial monitoring and unanticipated groundwater concentrations. However, the decision to install chromium treatment should be based on the results of initial phases of corrective action for any alternative and not be predetermined by EPA.

Summary [by UTI of the above comments]

Based upon a balanced evaluation, the selection of Alternative 5, as opposed to Alternative 4, is not justified or warranted. EPA's own rationale as stated in the SOB does not justify the selection of Alternative 5. Alternatives 3, 4, and 5 each meet all relevant protection criteria for human health and the environment. They each equally prevent human exposure as well as provide removal and treatment of VOCs. Contrary to EPA's assertion, Alternative 5 is not the only alternative that addresses shallow and deep groundwater contamination; Alternative 4 also addresses both. The difference between Alternatives 4 and 5 is the initial rate of VOCs and chromium extracted from groundwater. Alternative 5 extracts these constituents at a higher initial rate than Alternative 4. However, as stated in the CMS and by EPA's own admission in the SOB, the effect Alternative 5 will have on actually reducing the duration of remediation cannot be determined. In fact, the effect may be insignificant since the overall duration of remediation is expected to be lengthy due to the natural characteristics of the site. Based on these factors and the significantly higher cost, Alternative 5 is not cost effective when compared to Alternative 4.

Apparently, the primary reason EPA selected Alternative 5 is that this is the only alternative that incorporates treatment of chromium. The need for chromium treatment was projected for this alternative only to meet the surface water discharge criteria. If the water was to be reused or discharged in any fashion other than surface water discharge, chromium treatment would not be required

as part of Alternative 5 to meet applicable quality standards (including drinking water standards).

EPA erroneously stated in the SOB that chromium treatment would be necessary to ensure that discharged water met appropriate standards. Under Alternatives 3 and 4, chromium treatment is not required because the amount of chromium expected to be extracted would not exceed surface water discharge standards. The chromium extracted if Alternative 5 were implemented would require treatment only if those concentrations remained as high as the levels projected in the CMS. However, the site conditions suggest that the chromium concentrations would drop substantially in the deep wells under pumping conditions and the yields of the shallow wells with higher chromium concentrations would drop below the CMS projections such that chromium treatment would no longer be necessary. Therefore, as part of the implementation of any corrective action alternative, WESTON recommended that the necessity of chromium treatment be determined in the initial phases of corrective action prior to the construction of such a treatment system.

As explained in Section 6.3.1 in the CMS, the implementation of Alternative 4 calls for first pumping wells UTM-1, UTM-14, and UTM-18. After six months of monitoring, the drawdown in the remaining deep and shallow wells will be assessed as well as any changes in VOC and chromium concentrations. If sufficient water levels remain in the RCRA wells, wells RCRA-2 and RCRA-3 will then be pumped for six months while monitoring the other RCRA wells to gauge the extent of their hydrologic influence as well as to determine their actual yield (which may be significantly below the estimate of 1 gpm made without the benefit of pump testing).

During the two initial phases of corrective action, the flow and concentration projections can be adjusted based upon actual yields and actual concentrations under pumping conditions. This will provide a more reliable indication of whether chromium treatment is needed to meet the surface water quality criteria. If, as expected, the applicable criteria are still projected to be met without chromium treatment, the remaining wells (RCRA-1 and RCRA 4) will be placed into operation. This phased implementation approach is necessary, whether Alternative 4 or 5 is implemented, because of the heterogeneous hydrogeologic conditions on-site.

Response to the issue of the need for chromium treatment:

Although UTI described these comments as relating to the need for chromium treatment, much of the comments was directed to the effectiveness of Alternative 4 and the selected remedy to remediate contamination occurring in both shallow and deeper zones of the aquifer. Contrary to UTI's statement, the Statement of Basis acknowledges that Alternative 4 addresses the "shallow" contamination. EPA instead noted that Alternative 4 is not as

effective as the selected remedy in remediating the source area. See responses to comments numbers 20 and 21.

The need for chromium treatment is, in large part, controlled by the ultimate use of the treated groundwater. If the groundwater is reused by a public water authority, it must meet, at a minimum, the MCL for total chromium. If instead the water is discharged to Donny Brook because reuse is not practical, the water must meet appropriate National Pollutant Discharge Elimination System permit discharge standards, which may be more stringent than the MCL. EPA is willing to evaluate the need for chromium treatment on the basis of monitoring of the treated groundwater during implementation and will not require chromium treatment if monitoring demonstrates that the groundwater meets the relevant standards. EPA accordingly modifies the selected remedy in this respect.

29. Air Emission Control

UTI submitted a number of related comments regarding this topic, which are presented below. The series of comments are addressed by a single response set forth below after the comments.

Page 18, Item 4:

Statement: "UTI may petition EPA to discontinue use of control technology if can be demonstrated to EPA's satisfaction that the concentrations of contaminants which are to be emitted from the proposed remedial system are below applicable regulatory and statutory threshold criteria."

Comment: UTI has already provided sufficient information and analysis in the CMS (Subsection 4.8) to clearly demonstrate that the projected emissions from the air stripper (as described in CMS Subsection 4.8) are below applicable regulatory and statutory threshold criteria and do not require emission control. All regulations and policies cited in this SOB item [40 CFR Part 265, Subpart AA, 25 PA Code Section 127.12(a)(5), Section 3008(h) Corrective Action Authority] will be met under Alternative 3,4, or 5 without air emission control on the stripper. Therefore, air emission controls are not necessary or required.

Page 19, Third Paragraph:

Statement: "An environmental assessment must be conducted in order to demonstrate that the effect of the untreated air stripper emissions and/or chromium concentrations in the air stripper effluent are acceptable."

Comment: An environmental assessment for air stripper emissions was already completed in Subsection 4.8 of the CMS. It demonstrated that the emissions from the stripper will meet all applicable health and environmental criteria.

Page 22, Fourth Paragraph:

EPA excluded the cost of stripper air emission controls in its description of selected remedy.

In the SOB, EPA maintains that air emission controls are required for the UTI air stripper. The SOB states that "EPA cannot sanction a remedy that allows for cross-media transfer of contaminants without treatment in violation of existing requirements." UTI has already provided sufficient information and analysis in the CMS (Subsection 4.8) to clearly demonstrate that the projected emissions from the air stripper as described in the CMS are below the applicable regulatory and statutory threshold criteria and, therefore, do not require emission control. The stripper without air controls does not violate any requirement. Alternatives 3, 4, or 5 meet all air regulations and policies cited by EPA in the SOB without emission control on the stripper. EPA needs only to review the air quality assessment in the CMS to reach this conclusion. Nowhere has EPA challenged or even questioned the technical analysis of this issue. In addition, by failing to calculate the costs of stripper air emission controls in its cost-effectiveness analysis, EPA skewed that analysis.

Response to the issue of the need for air-stripper emission controls:

As explained in response to comment number 23, EPA believes that the decision to allow uncontrolled air emissions must be based on actual performance of the air-stripper to ensure that those emissions meet the applicable standards. EPA cannot allow cross-media contamination and considers emission controls to be part of the air-stripper treatment train. The "assessment" submitted by UTI consists of an assessment of risk to off-site human receptors resulting solely from projected air-stripper emissions. A health assessment based on actual emissions addressing on-site and off-site receptors and a broader-based assessment of all environmental impacts (including detailed analysis of the impacts to the ozone layer) would be required by EPA in the event that UTI chooses to petition EPA not to implement or to discontinue implementation of air-stripper emission controls. EPA would be pleased to meet with representatives of UTI to discuss this matter further.

The emissions controls would be necessary to meet mandatory regulatory standards. It would be inappropriate to select a remedy without such controls on the basis of cost alone. Moreover, it is assumed that the initial capital cost of the control technology would be the same regardless of whether it was implemented as part of Alternative 3, 4 or 5. Because the initial capital cost of implementing emission controls is equal for each groundwater remediation alternative, it would not alter the decision to select one alternative over another, and thus would not have skewed the

cost benefit analysis⁷.

30. Points of Compliance

UTI submitted a number of related comments regarding this topic, which are presented below. The series of comments are addressed by a single response set forth below after the comments.

Page 13, Second Paragraph:

Statement: "The on-site Points of Compliance will be the wells designated UTM-1, UTM-14, UTM-18, RCRA-2, and the Plant 1 Sump."

Comment: RCRA-2 and the Plant 1 Sump were not identified as appropriate points of compliance in the CMS. The MCLs should be applied at the deep wells which are reflective of the drinking water aquifer and not at RCRA-2 and the Plant 1 Sump which are reflective of the upper groundwater zone. The upper groundwater zone does not yield sufficient groundwater to be used for water supply. The rationale for the selected point of compliance is given in Subsection 4.6 of the CMS.

Page 13, Third Paragraph:

Statement: "RCRA-2 and the Plant 1 Sump represent the most highly contaminated monitoring points respectively in the vicinity of the two source areas and have, therefore, been selected as Points of Compliance to evaluate the effectiveness of remediation."

Comment: It is not necessary to identify a well as a point of compliance just to monitor the progress of corrective action. The progress of the remediation will be monitored using all on-site monitor wells and the Plant 1 Sump.

The purpose of establishing points of compliance is to assure that the corrective action objectives are being met. As stated in the SOB and EPA's proposed corrective action regulations, corrective action measures are intended to result in remediation that is protective of human health and the environment. There is a distinction between a location selected for monitoring the effectiveness of the remedy, and an location selected for demonstrating compliance with the remedial objectives. Internal monitoring points may be appropriate for evaluating the effectiveness of the remedy. However, the determination of when the cleanup objectives are met - the points of compliance - should be made only at suitable points of exposure, not at arbitrary locations that are totally unrelated to any points of exposure.

⁷Facility-specific information regarding cost of the control technology, although requested by EPA, was not provided by UTI in preparation of the CMS.

Given the site hydrologic conditions detailed in the CMS, it is expected that successful remediation of the drinking water aquifer will eventually be achieved while residual concentrations in the shallow, low yielding groundwater zone still remain above MCLs on-site. Since RCRA-2 and the Plant 1 Sump are in this shallow, low yielding groundwater zone, they are not appropriate compliance points for tracking the achievement of drinking water quality standards. It is inappropriate to designate RCRA-2 and the Plant 1 Sump as compliance points for purposes of UTI's corrective action measures.

EPA has stated that it may be technically impossible to achieve MCLs at all the points of compliance. Pump and treat technologies for groundwater remediation can be effective in hydrologic control of the contamination plume but it may not be possible with this technology to restore the aquifer to MCLs. Thus, EPA has allowed UTI to petition EPA to modify the cleanup goals. EPA's description of the petitioning process is vague and EPA needs to better explain the process. In addition, EPA would allow UTI to discontinue chromium treatment or air emission control via a similar petition. UTI would have to submit an environmental assessment which concludes that the effects of untreated air emissions or chromium were acceptable. This was already done for air emissions within the CMS (Subsection 4.8) and for chromium discharge. EPA needs to clarify their requirements for the "assessment."

Response to the issue of Points of Compliance:

As explained in response to comment number 26, the "upper groundwater zone" referred to by UTI must be remediated as well as the so-called "drinking water aquifer". They are, in fact, hydraulically connected.

Points of Compliance have been selected in order to assure that the selected remedy, when complete, meets the clean-up goals throughout the area of contaminated groundwater. As described above, EPA considers the upper portion of the aquifer to be part of the area of concern; therefore the establishment of Points of Compliance in the upper portion of the aquifer is appropriate.

The precise nature of the petition for the establishment of modified clean-up levels is more appropriately dealt with during implementation of the selected remedy. The technical and administrative requirements of the petition process will be developed either in negotiations with UTI or, if such negotiations are unsuccessful, as part of a unilateral administrative order or judicial action. Likewise, the form and contents of the air emissions petition and assessment will be developed as part of the implementation process.

In the Statement of Basis, EPA stated that the petition, if granted, would result in a revision of the clean-up goals. As a clarification to this point, EPA notes that the clean-up goals described in the Statement of Basis would not be revised under this process; instead alternative performance standards would be established. These alternative performance standards establish the levels to be met in implementing this selected remedy. The clean-up goals would remain in effect, and EPA would retain its authority to require implementation of additional corrective measures in the event that achievement of the clean-up goals becomes no longer technically impracticable. See 55 Fed. Reg. 30830 (July 27, 1991).

31. UTI Comment on Public Comments

Comment: A public meeting hosted by EPA was held on September 5, 1991. The dominant public comments during the meeting were the rejection of the proposed surface water discharge of the treated groundwater and the request that the treated groundwater be reused.

The CMS analysis indicated that the groundwater extraction at UTI would not have significant effects on extraction at well CT-8. However, UTI is evaluating various alternatives that will meet the corrective action objectives and be responsive to the public concerns. Approaches are being explored that would result in the treated groundwater being made available to the Collegeville-Trappe Joint Water Authority ("CTJWA"). Such an approach could require UTI to revise the components of its recommended corrective measure, and either modify the CMS or negotiate a revised remedy with EPA. While UTI is willing to pursue a remedy that is responsive to the public comments, adopting such a plan will require both EPA's cooperation and operate within a context to resolve the litigation currently pending between the CTJWA and UTI.

Response:

As described in response to comment number 1, the selected remedy will include reuse of treated groundwater, unless such use is not practical. No modifications to the CMS are necessary because this Response to Comments and the Statement of Basis establish the remedy to be implemented at the Facility. EPA intends to cooperate fully with the affected governments, the CTJWS and UTI in implementing this remedy. It should be noted, however, that any litigation pending between UTI and the CTJWS is the concern of those parties and does not provide a basis for altering or interfering with implementation of the selected remedy.

RESPONSE TO PUBLIC CONCERN

EPA believes that the concerns raised by the public and UTI have been adequately addressed in this Response to Comments. Following issuance of the selected remedy, EPA will provide UTI with the opportunity to negotiate an administrative consent order implementing the corrective measures forming the selected remedy. If no agreement is reached, EPA is authorized to issue a unilateral order or seek a court order for implementation. To determine whether specific community concerns arise during the implementation process, information will be provided to the public through press releases, periodic meetings and discussions with CTJWS and other interested parties or other appropriate means, such as additional public meetings.

DECLARATIONS

Based on the Administrative Record compiled for this Corrective Action, I have determined that the selected remedy as set forth in the Statement of Basis and modified or clarified by the Response to Comments is appropriate and will be protective of human health and the environment.



Edwin B. Erickson, Regional Administrator
for U.S. Environmental Protection Agency,
Region III

9-30-91

Date