Site: TOWER CHEM
Break: 8.6
Other: V.1

Five-Year Review Report

First Five-Year Review Report
for
Tower Chemical Company

Clermont
Lake County, Florida

January 2008

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For:
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Approved by:

Franklin E. Hill
Director
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Date:

3/11/08

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County Road 455
Clermont
Lake County, Florida

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List of Acronyms

AOC	Administrative Order on Consent
ARAR	Applicable or Relevant and Appropriate Requirement
ATSDR	Agency of Toxic Substances and Disease Registry
BFPP	Bona fide Prospective Purchaser
BHHRA	Baseline Human Health Risk Assessment
bls	below land surface
CD	Consent Decree
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
DCBP	4,4'-dichlorobenzophenone
EPA	United States Environmental Protection Agency
FDEP	Florida Department of Environmental Protection
FDER	Florida Department of Environmental Regulation
FYR	Five-Year Review
HI	Hazard Index
HQ	Hazard Quotient
ICs	Institutional Controls
IROD	Interim Action Record of Decision
MCL	Maximum Contaminant Level
NCP	National Contingency Plan
NPL	National Priorities List
O&M	Operation and Maintenance
PAHs	Polycyclic Aromatic Hydrocarbons
PPA	Prospective Purchaser Agreement
PRP	Potentially Responsible Party
RA	Remedial Action
RAOs	Remedial Action Objectives
RCRA	Resource Conservation and Recovery Act
RD	Remedial Design
RGs	Remedial Goals
RI/FS	Remedial Investigation/Feasibility Study
ROD	Record of Decision
RPM	Remedial Project Manager
SCTLs	Soil Cleanup Target Levels
SDWA	Safe Drinking Water Act
SJRWMD	St. John's River Water Management District
SRI	Supplementary Remedial Investigation
SVOCs	Semi-Volatile Organic Compounds
TBCs	To-be-considered goals/criteria
TCC	Tower Chemical Company
TIC	Tentatively Identified Compound
USACE	U.S. Army Corps of Engineers
VOCs	Volatile Organic Compounds

Executive Summary

Introduction

The Tower Chemical Company Superfund Site (TCC Site) includes a former pesticide manufacturing facility located along County Route 455 in Lake County, Florida. The Site includes three operable units (OUs). The primary components of a remedy selected in 1987 for OU 1 to address soil and ground water contamination were never implemented. An interim remedy, which covers OU 2 of the Site, included the installation of carbon filter systems on residential wells in the vicinity of the Site. This interim remedial action was taken to prevent human exposure to contaminants in the Site's ground water until selection of a final remedy. Institutional controls were not included in the interim remedy. The final remedy for the Site (OU 3), selected in 2006, is undergoing remedial design and will address remaining soil, sediment, and ground water contamination at the Site.

This Five-Year Review (FYR) evaluates only the 2000 interim remedy for the Site, because this is the only OU that has been implemented to date. This is the first FYR for the Site and was triggered by the on-site remedial action construction of OU 2 which started on January 28, 2003.

Remedial Action Objectives

The remedial action objective (RAO) for OU 2 is to minimize the risk posed by off-site migration of site-related ground water contaminants.

The toxicity assumptions used to determine that an unacceptable risk existed at the Site and that an interim action was necessary remain unchanged and are embodied in the final OU 3 remedy.

Technical Assessment

The interim remedy, selected in September 2000, recommended the implementation of wellhead protection at residences surrounding the Site. In January and February 2003, carbon absorption systems (carbon filters) were installed at six residences on County Route 455, Lake County, Florida, in the immediate vicinity of the TCC Site. Carbon filters have been replaced three times since their installation. Monitoring of the potable water treated by the carbon absorption units at two of the highest use residences was conducted in 2005 and revealed no site-related contaminants.

The Site's final remedy recommended the permanent replacement of the carbon absorption units with an alternate water supply. The final remedy specifies that the six residences with wellhead protection measures in place plus the additional residences being supplied by these wells will be connected to the City of Clermont's public water supply via a water main on the adjacent County Route 455. Funding has been secured for the implementation of these water connections and planning to implement the public water supply connections is on-going.

The Site inspection and interviews conducted for this FYR indicate that the interim remedy is functioning as intended by the 2000 Interim Record of Decision (IROD). One form of Institutional Control (IC) exists at the Site through the permitting process at the St. Johns River Water Management District that is in place to prevent the installation of new wells within the contaminated ground water plume (a delineated area of groundwater contamination) which

includes the Site and immediately adjacent areas. Until the implementation of the final remedy for the Site's ground water contamination is complete, ground water well monitoring should be continued to ensure that the existing plume does not migrate to the nearby residential wells. The exposure assumptions used to design the interim remedy remain valid. The IROD assumed that residences in the vicinity of the Site would remain occupied. The Site itself is currently in active commercial use for vehicle storage. The Baseline Human Health Risk Assessment (BHHRA) found on-site soil exposure for the future worker to be acceptable. The Site's reuse has enhanced the protectiveness of the remedy by discouraging trespassing on the Site. No new information identified through this FYR affects the protectiveness of the interim remedy.

Conclusion

The interim remedy at the Site has been and is expected to continue to be protective of human health and the environment. The immediate threat of exposure to contaminated ground water has been addressed through the installation and regular maintenance of carbon filter systems on potable water wells at nearby residences. Contaminated soil and ground water exceeding 2006 ROD cleanup goals are restricted to areas within the original Tower Chemical facility boundaries. The interim remedy is protective in the short term and is expected to be protective in the long term, dependent on implementation of the OU3 remedy and as long as regular maintenance of the carbon filters and potable water sampling is continued in the interim. Provisions in the 2006 ROD providing municipal water connection for nearby residences would replace the interim remedy.

Five-Year Review Summary Form

SITE IDENTIFICATION		
Site name *(from Wasteland)*: Tower Chemical Company Superfund Site		
EPA ID *(from WasteLAN)*: FLD004065546		
Region: 4	**State: FL**	**City/County: Lake County**
SITE STATUS		
NPL status: ☒ Final ☐ Deleted ☐ Other (specify)		
Remediation status (choose all that apply): ☒ Under Construction ☒ Operating ☐ Complete		
Multiple OUs?* ☒ YES ☐ NO	**Construction completion date:** mm/dd/yyyy	
Has Site been put into reuse? ☒ YES ☐ NO		
REVIEW STATUS		
Lead agency: ☒ EPA ☐ State ☐ Tribe ☐ Other Federal Agency		
Author name: Jan Rogers		
Author title: Remedial Project Manager	**Author affiliation: EPA Region 4**	
Review period:** 03/05/2007 to 01/28/2008		
Date(s) of Site inspection: 05/07/2007		
Type of review: ☒ Post-SARA ☐ Pre-SARA ☐ NPL-Removal only ☐ Non-NPL Remedial Action Site ☐ NPL State/Tribe-lead ☐ Regional Discretion		
Review number: ☒ 1 (first) ☐ 2 (second) ☐ 3 (third) ☐ Other (specify)		
Triggering action: ☒ Actual RA On-site Construction at OU# 2 ☐ Actual RA Start at OU# ☐ Construction Completion ☐ Previous Five-Year Review Report ☐ Other (specify)		
Triggering action date *(from WasteLAN)*: 01/28/2003		
Due date *(five years after triggering action date)*: 01/28/2008		

* ["OU" refers to operable unit.]
** [Review period should correspond to the actual start and end dates of the Five-Year Review in WasteLAN.]

Five-Year Review Summary Form continued

Issues:
1) Off-site potable well monitoring has not been completed in a consistent manner.

2) Interim institutional controls required in 2006 OU 3 ROD have not been implemented.

3) Current residents on carbon filters may prefer not to be connected to municipal water.

Issues 1 and 2 could potentially affect the protectiveness of the Site's interim remedy.

Recommendations and Follow-up Actions:
1) Verifying that 2007 ground water monitoring data confirm that carbon filters continue to maintain the protectiveness of the Site's interim ground water remedy.

2) Implementing and enforcing interim institutional controls required in the 2006 OU 3 ROD.

3) Clarifying for homeowners any O&M costs that they would be responsible for if they choose not to be connected to municipal water.

Protectiveness Statement(s):
OU1: The OU 1 remedy was never implemented and has been replaced by the site-wide OU 3 remedy.

OU 2: The interim remedy at the Site currently protects human health and the environment because the immediate threat of exposure to contaminated ground water has been addressed through the installation and regular maintenance of carbon filters on potable water wells at nearby residences. However, in order for the interim remedy to be protective in the long-term, the following actions need to be taken: regular maintenance of the carbon filters and potable water sampling is continued; and institutional controls are implemented and kept in place until the 2006 OU 3 ROD remediation goals are achieved and the Site is determined to be protective for any unrestricted use. Provisions in the 2006 ROD that include providing municipal water connection for nearby residences would replace the interim remedy.

OU3: The OU 3 remedy is currently protective of human health and the environment. While the OU 3 remedy is currently in the remedial design stage, the immediate threat of exposure to contaminated media at the Site's surface has been addressed through prior removal actions, and the site's interim remedy. The BHHRA found on-site soil exposure for the future worker to be acceptable. Soil and ground water exceeding 2006 ROD cleanup goals are limited to areas within the original facility boundaries. Contaminated ground water is not currently being used at the Site, and nearby residential potable water wells are protected with carbon filters. The SJRWMD has established a delineated area of ground water contamination, which includes the Tower Chemical Site area and therefore requires special considerations and restrictions on new groundwater use permits. Active commercial uses at the Site are consistent with the temporary residential use restriction required as part of the OU 3 remedy. However, in order for the remedy to remain protective, the following action needs to be taken: institutional controls required in the 2006 OU 3 ROD must be implemented and kept in place until remediation goals are achieved and the Site is determined to be protective for any unrestricted use.

Other Comments:
None

First Five-Year Review Report
for
Tower Chemical Company Superfund Site

1.0 Introduction

The purpose of a Five-Year Review is to evaluate the implementation and performance of a remedy in order to determine if the remedy will continue to be protective of human health and the environment. In addition, Five-Year Review reports identify issues found during the review, if any, and identify recommendations to address them.

The U.S. Environmental Protection Agency (EPA) prepares Five-Year Reviews pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Section 121(c) and the National Contingency Plan (NCP). CERCLA §121(c) states:

> "If the President selects a remedial action that results in any hazardous substances, pollutants, or contaminants remaining at the Site, the President shall review such remedial action no less often than each five years after the initiation of such remedial action to assure that human health and the environment are being protected by the remedial action being implemented. In addition, if upon such review it is the judgment of the President that action is appropriate at such Site in accordance with section [104] or [106], the President shall take or require such action. The President shall report to the Congress a list of facilities for which such review is required, the results of all such reviews, and any actions taken as a result of such reviews."

U.S. EPA interpreted this requirement further in the NCP; 40 Code of Federal Regulations (CFR) Section 300.430(f)(4)(ii), which states:

> "If a remedial action is selected that results is hazardous substances, pollutants, or contaminants remaining at the Site above levels that allow for unlimited use and unrestricted exposure, the lead agency shall review such actions no less often than every five years after the initiation of the selected remedial action."

The U.S. Environmental Protection Agency - Region 4, assisted by E^2 Inc., a U.S. EPA - Region 4 contractor, has conducted the Five-Year Review and prepared this report regarding the remedy implemented at the TCC Site in Clermont, Lake County, Florida. This review was conducted from May 2007 to January 2008. The Florida Department of Environmental Protection (FDEP) supported this Five-Year Review report.

The TCC Site has three operable units (OUs), which will be discussed in this report. OU 1 covers soil and surficial ground water and was never implemented, OU 2 covers an interim remedy for the Site's ground water contamination, and OU 3 is intended to be the final remedy for the Site's soil, ground water, and sediment contamination. OU 2 is addressed by the 2000 IROD, and is the focus of this FYR. The interim remedial action has been constructed at this Site with on-going maintenance of the carbon filters. The implementation of the Site's final remedy is currently in the remedial design phase.

This is the first FYR for the Site. The triggering action for this policy review is the beginning of the construction of the Site's interim remedial action on January 28, 2003. This policy FYR is being conducted because contaminated soils and ground water, which will be addressed in the Site's final remedial action, currently remain in place at the Site above levels that allow for unrestricted use and unlimited exposure. The 2006 ROD requires remediation of all media to levels at or below those that would allow for unrestricted use and unlimited exposure. However, the treatment will require more than five years to complete. If the soil and sediment remedy achieves residential standards after implementation, future reviews will only be required by policy, rather than statute, until ground water contaminants are reduced to below clean-up goals.

This review will be placed in the Site's file and the local repository for the TCC Site. The repository is located at the Cooper Memorial Library, 821 W. Minneola Ave., Clermont, Florida, 34711. The phone number for the library is 352-394-4265.

The next Five-Year Review will be required in January 2013.

2.0 Site Chronology

The following table lists the dates of important events for the Tower Chemical Company Superfund Site.

Table 1: Chronology of Site Events

Event	Date
Discovery	April 1, 1980
Preliminary Assessment	May 1, 1980
TCC Site proposed to NPL	December 30, 1982
Unilateral Administrative Order filed	June 8, 1983
Removal Action 1 started	June 27, 1983
Removal Action 1 completed	July 16, 1983
TCC Site finalized on NPL	September 8, 1983
Site Inspection	June 1, 1984
RI/FS completed for OU 1	July 9, 1987
ROD signed for OU 1	July 9, 1987
Consent Decree signed	October 26, 1987
Remedial Design started for OU 1	November 20, 1987
Removal Action 2 started	February 8, 1988
Removal Action 2 completed	July 13, 1990
Remedial Design for OU 1 completed	August 1990
Post-remedial design sampling	August 1991
Remedial Action started for OU 1 (Well abandonment, new potable well, primary remedy components not implemented)	September 29, 1989
Remedial Action completed for OU 1 (Well abandonment, new potable well, primary remedy components not implemented)	August 29, 1991
OU 1 Remedy deferred	August 1991
RI/FS started for OU 2	March 22, 1994
RI/FS completed for OU 2	June 22, 1999
Site Reassessment released	June 22, 1999
Interim Action ROD signed for OU 2	August 23, 2000
Final Supplemental Remedial Investigation Report released	August 23, 2001
Remedial Design started for OU 2	August 1, 2002
Remedial Design completed for OU 2	September 27, 2002
Remedial Action started for OU 2	September 27, 2002
Remedial Action on-site construction start OU 2	January 28, 2003
Remedial Action completed for OU 2	August 21, 2003
RI/FS completed for OU 3	September 14, 2006
ROD signed for OU 3	September 14, 2006
Remedial Design started for OU 3	September 27, 2006

3.0 Background

3.1 Physical Characteristics

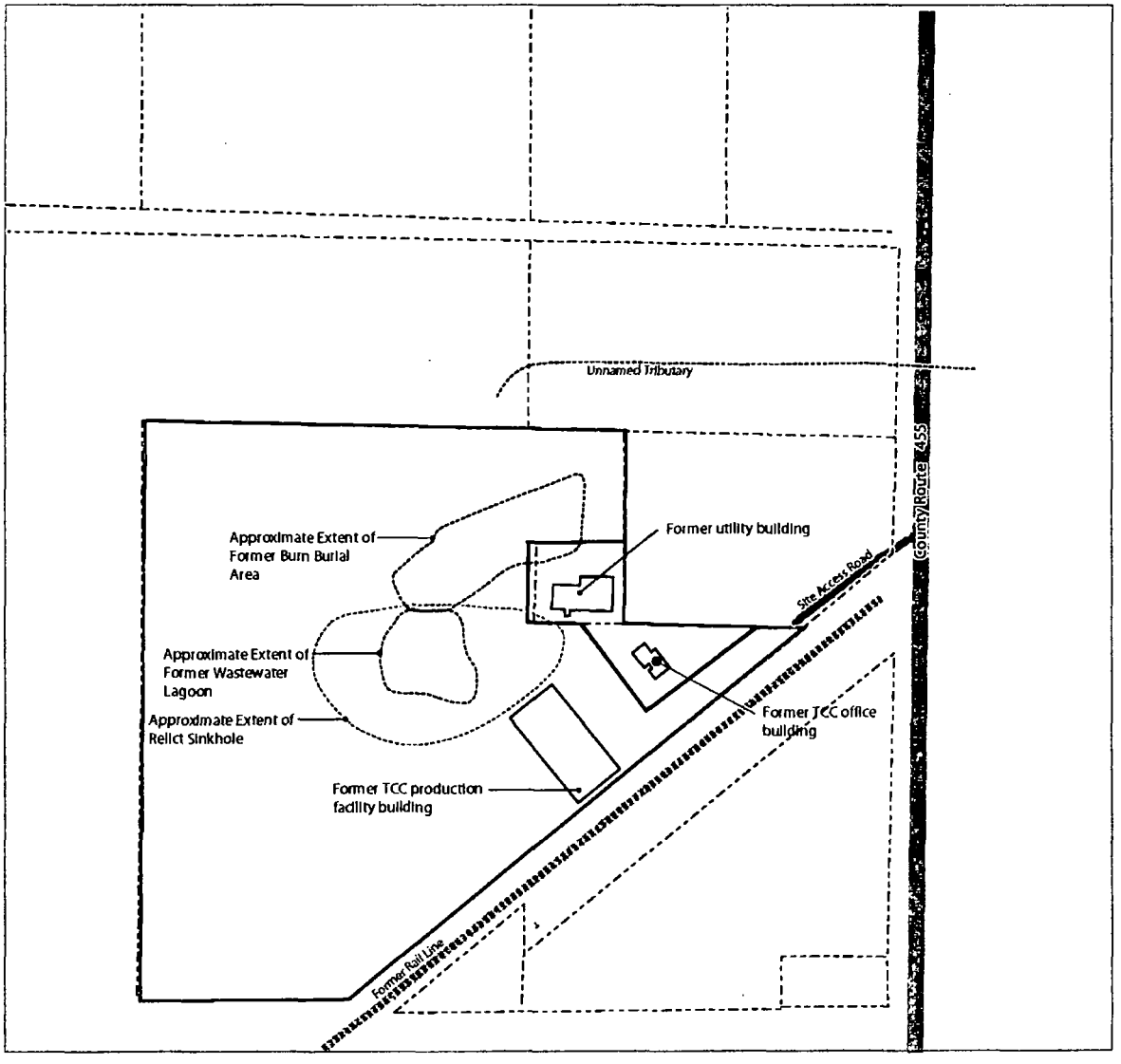
The Tower Chemical Co. Site (CERCLIS ID No. FLD004065546) is located on County Route 455 (CR 455) in Lake County, Florida.

Today, the TCC facility has been subdivided into four tax parcels (Figure 1). The main Site, including the original production facility, wastewater lagoon, and the burn/burial pit, is approximately 15 acres. This property is currently under the ownership of three individuals, who operate a vehicle storage facility for recreational vehicles, boats, and trucks. Three remaining parcels that were subdivided from the original TCC property in 1982 and 1983 comprise approximately one additional acre at the Site and include a former office building, former utility building, and a minor sliver of vacant land. These three parcels are currently owned by a commercial drinking water trucking operation that parks up to six tractor-trailers on a portion of these three parcels when the trucks are not in use.

The Site is relatively flat. Runoff from the Site drains into swampy areas and eventually into an unnamed tributary located west and north of the Site. The stream flows into the Gourd Neck area of Lake Apopka. The Site is bordered to the east by residences, on the south by a former railroad right-of-way and a residence, and on the west and northwest by a large wooded area. The distance to the nearest residence is 200 feet. The area immediately surrounding the Site is sparsely populated. 580 people live within one half-mile of the Site.

No federal endangered species are known to be located on the lands bordering the Site. Several federal and state listed species have been observed in the vicinity of Lake Apopka, including the wood stork, bald eagle, little heron, snowy egret, and peregrine falcon.

Figure 1: Location Map for Tower Chemical Company Superfund Site



Legend

Site Parcels

Parcel Boundaries (Approx.)

Structures

Site Features

NORTH

Scale: 0 130 260 ft.

Figure 1: Site Map

Tower Chemical Company Superfund Site, Lake County, Florida

3.2 Land and Resource Use

From 1957-1981, TCC operated a pesticide manufacturing facility at the Site. After closure of TCC, two new businesses were opened: Classic Manufacturing Company and Vita-Green Inc. From 1981 to 1986, Classic Manufacturing Company used a one-acre portion of the Site that included the utility building for the manufacture of plastic fishing worms. Vita-Green Inc., a company that blended and packaged potting soils for home garden use, moved onto the Site in 1981 and used an area adjacent to the TCC production facility. Vita-Green Inc. ceased operations at the Site in 1998.

The Site's largest parcel was purchased in 2005 from the Lake County Properties Available listing for past taxes and is currently in commercial use as a storage facility for recreational vehicles, boats, trailers, and other vehicles. Before purchasing the Site, the new owners were advised of the 2002 CERCLA Amendments, which provide for the establishment of a Bona Fide Prospective Purchaser (BFPP) defense under CERCLA. In April 2007, EPA and the owners negotiated a Windfall Lien settlement. The new owners have cleared the collapsed portion of the main production building and are converting the remaining building and slab as well as the adjacent uncontaminated land into a storage facility. The owners have also cleared heavy vegetation from the remainder of the 15-acre parcel in preparation of future expansion, which has simplified access to existing monitoring wells. The property now has a secure gate and new fencing is being installed around a major portion of the property. The new owners have been advised not to construct permanent features on areas targeted for soil remediation or where confirmatory soil sampling must be performed.

In 2006, a commercial drinking water trucking operation purchased the remaining three parcels at the Site. The company maintains the property as an unpaved parking area for tractor-trailer trucks used to haul drinking water. Both property owners at the Site plan to continue using the property for commercial purposes.

Currently, all 16 acres of the original Tower Chemical facility meet the cross program revitalization measure designation "Protective for People Under Current Conditions." Initial response actions have removed the immediate threat of exposure and there are no complete exposure pathways. The BHHRA found on-site soil exposure for the future worker to be acceptable.

Commercial and residential growth is occurring within one-half mile of the Site. Residential subdivisions have been built north of the Site in the past five years. Commercial developments south and east of the Site are planned for the near future. The new commercial and residential properties in the area have connected to the City of Clermont's expanding network of public water supply lines in the area, as required by local ordinance.

Although commercial uses are currently located at the Site, the 2006 ROD identified the potential for residential land uses at the Site. When the final remedy for the Site has been implemented, the Site will support residential uses. Until the implementation of the final

remedy, the 2006 OU 3 ROD remediation goals are achieved, and the Site is determined to be protective for any unrestricted use, residential uses will need to be prohibited at the Site through the implementation of temporary institutional controls.

Ground water is no longer used at the Site, but it is an important resource for drinking water in the surrounding area. Currently, the operators of a commercial storage facility at the Site are installing a connection to the municipal water line on County Route 455. The other current site use, which includes a parking area for water tanker trucks, does not require water use. The hydrogeology underlying the Site and its surrounding areas includes two separate ground water zones separated by a confining layer of clay. Ground water in a surficial aquifer is found one to four feet below the surface (bls). A layer of clay known as the Hawthorn Clay Confining Unit is located at approximately 35-40 feet bls. Deep ground water is found in the Ocala Limestone, which is the uppermost unit of the Floridan aquifer system. A sand-filled sinkhole within the Hawthorn Clay Confining Unit located directly beneath the Site allows ground water to flow between the Floridan and surficial aquifers. Ground water typically moves from the Floridan up into the surficial aquifer. Nearby residences receive their drinking water from the Floridan aquifer. Farther from the Site, new development has resulted in at least two additional drinking water supply wells being installed into the Floridan aquifer. The City of Clermont currently draws its drinking water from the Floridan aquifer as well.

The surficial aquifer tends to flow to the northeast. The Floridan aquifer tends to flow to the north. Residential drinking water wells adjacent to the Site which received carbon filtration systems are located from 400 feet to 1,150 feet to the north, north-northeast, northeast, east, and southeast of the on-site former wastewater pond area. A public drinking water supply well is located 0.8 mile to the west of the TCC site.

3.3 History of Contamination

The TCC Site in Lake County, Florida, is an approximately 16-acre former pesticide manufacturing facility. From 1957 to 1981, TCC manufactured, produced, and stored various pesticides. The two main products produced by TCC were chlorobenzilate (a miticide) and a copper-based agricultural fungicide with the trade name "Cop-o-cide." In order to produce chlorobenzilate it was necessary to either buy or manufacture the compound dichlorobenzil. During periods in which dichlorobenzil was difficult to obtain, TCC manufactured it in-house from dichloro-diphenyl-trichloroethane (DDT). This in-house process was used during the last few months of the company's operation, resulting in the production of both dicofol and 4,4'-dichlorobenzophenone (DCBP) at the Site, as byproducts in the production of chlorobenzilate.

TCC discharged chlorobenzilate production waste water into a 0.5-acre, unlined percolation/evaporation pond, which was located over a relict sinkhole. This subsurface feature created a conduit from surface water on the Site to the surficial and Floridan ground water aquifers. TCC also used a 1.5-acre burn/burial area as a burning ground for disposal of the company's solid chemical wastes and for burial of solid wastes. TCC also disposed of acidic waste water on a spray irrigation field off-site, southwest of the waste water pond. In May 1980, the waste water pond overflowed into an adjacent swamp and

entered the unnamed stream west of the site. Florida Department of Environmental Regulation (FDER), predecessor agency to FDEP, discovered that acidic waste water had reached the Gourd Neck area of Lake Apopka, where aquatic vegetation was affected. At the same time, FDER reported that TCC discharges had caused defoliation across the spray irrigation field area. These incidents led FDER to discover the Site's contamination.

3.4 Initial Response

As a result of damages caused by an overflow of the waste water lagoon in 1980, FDER ordered TCC to cease all discharges from the Site. In July 1980, the State Circuit Court ruled that TCC could continue to operate only if the company met FDER requirements. TCC and FDER entered into negotiations to define the clean-up process for the Site while FDER pursued legal action against TCC. In December 1980, all production operations were stopped at TCC and the facility was decommissioned in 1981.

In August 1980, EPA conducted a preliminary hazardous waste site investigation. The Site was proposed for inclusion on the National Priorities List of Hazardous Waste Sites (NPL) in December 1982 and finalized on the NPL in September 1983. On June 15, 1982, FDER, TCC, and Mr. Ralph Roane, TCC President, agreed to a Consent Final Judgment, in which TCC was to pay compensatory damages in the amount of $10,000,000, and Mr. Roane was to pay $40,000. To date, FDER, now FDEP, has not received any compensation. In 1983, FDER requested that EPA take over the management role of the remedial planning process for the Site. Also in 1983, the EPA Region 4 Emergency Response Branch and the FDER performed an emergency removal action to mitigate the immediate threat to human health and the environment. Approximately one million gallons of contaminated water were recovered from the waste water pond and treated with activated carbon prior to discharge to a nearby stream.

In addition, in 1983 the EPA Region 4 Emergency Response Branch and FDER excavated and shipped approximately 130 cubic yards of pond sediments, 2,370 cubic yards of contaminated soils from the burn/burial area, and 150 empty drums to Emelle, Alabama, for disposal. The excavated pond area was backfilled with clean fill and capped with an 8 to 12 inch thick protective clay layer to retard future downward migration of residual contaminants into the ground water. The burn/burial area was also backfilled and clay-capped. The two areas were contoured to control surface water runoff and enclosed within a chain-link fence to prevent public access.

In 1988, a second removal action addressed contaminated storage tanks, concrete pads, and underlying contaminated soils. These excavated materials were contained on-site and will be addressed through the Site's final remedy.

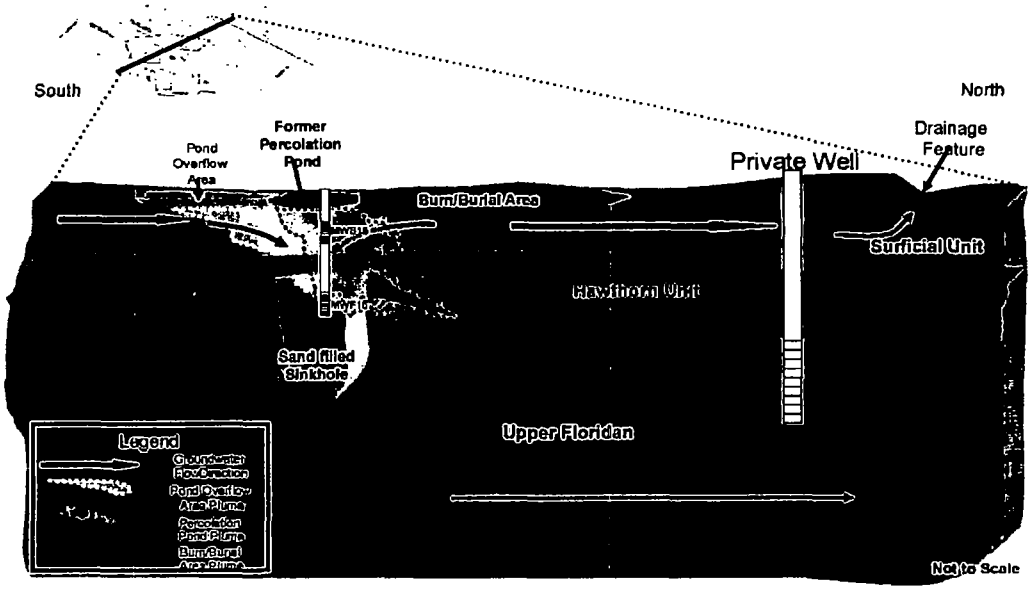
3.5 Basis for Taking Action

The 1983 removal action addressed the most highly contaminated portions of the Site. The Remedial Investigation report released in 1987, as part of the remedy at OU 1, included the initial baseline human health risk assessment (BHHRA) for the Site. This

assessment highlighted a primary exposure pathway through soil and ground water beneath the Site (See Figure 2).

The BHHRA for the Site states that contamination occurred as a result of deposition of contaminants in the sediments and soils of the former waste water/percolation pond and the burn/burial area. From these source areas, contaminants leached from the soil into the shallow ground water (surficial aquifer). Due to a breach of the dense, clay-confining unit (Hawthorn Clay) and the presence of some downward vertical hydraulic gradients, some contamination has migrated downward to the deeper aquifer (Floridan aquifer). The contamination can be transported via the natural horizontal hydraulic gradient as well as through gradients induced by pumping of residential wells. Residential wells represent exposure points at this Site. In addition, ground water flow in the shallow aquifer discharges to a surface drainage pathway.

Figure 2: Site Conceptual Model



Adapted from Jackson (EPA), Comments on Draft Supplemental RI, January 2001

Figure 2: Site Conceptual Model

3.5.1 Site Contaminants and Media Affected

EPA's 1987 ROD (OU 1) selected, as a remedy, on-site incineration of an estimated 4,000 cubic yards of contaminated soil and treatment of the surficial ground water. Treatment of ground water was to be limited to the surficial aquifer because, at the time, it was believed that the water quality of the Floridan aquifer had not been impacted by the activities of the Tower Chemical Company. In August 1991, as a result of post-remedial design sampling of the Site's soil for better definition of the volume of soil destined for incineration, analytical results showed considerably lower concentrations of dicofol, the most toxic soil contaminant targeted for remediation. The degradation product 4,4'-dichlorobenzophenone (DCBP) was found to have replaced dicofol as the most highly concentrated soil contaminant. In 1991, EPA halted all plans to remediate the Site pending further evaluation of the data.

Between 1991 and 2000, on-site soil and ground water were sampled by EPA and summarized in a 1999 EPA Site Reassessment and a 2001 Supplemental Remedial Investigation (SRI) report. Summaries of these findings are presented below.

3.5.1.1 Soils

Soil investigations undertaken in 1998, 2000, and 2004 identified the presence of metals, SVOCs, DCBP, and other pesticides in the Site's surface and subsurface soils.

In the 1998 investigation of surface soil samples collected from the Site, the pesticides DDE, DDT, and DDD were detected at concentrations up to 19,000 µg/kg in the burn/burial area and an area encompassing the northern end of the large steel building on-site. Subsurface soil investigations indicated significant concentrations of DCBP and other pesticides at depths ranging from 10 to 30 feet bls. DCBP concentrations were found at over 110 to 27,000 µg/kg.

In 2000, surface soil samples indicated that arsenic, SVOCs, and pesticides were located in a heavily vegetated area just east of the Site. These results have led to further efforts to delineate soil contamination in this area during the OU 3 remedial design phase.

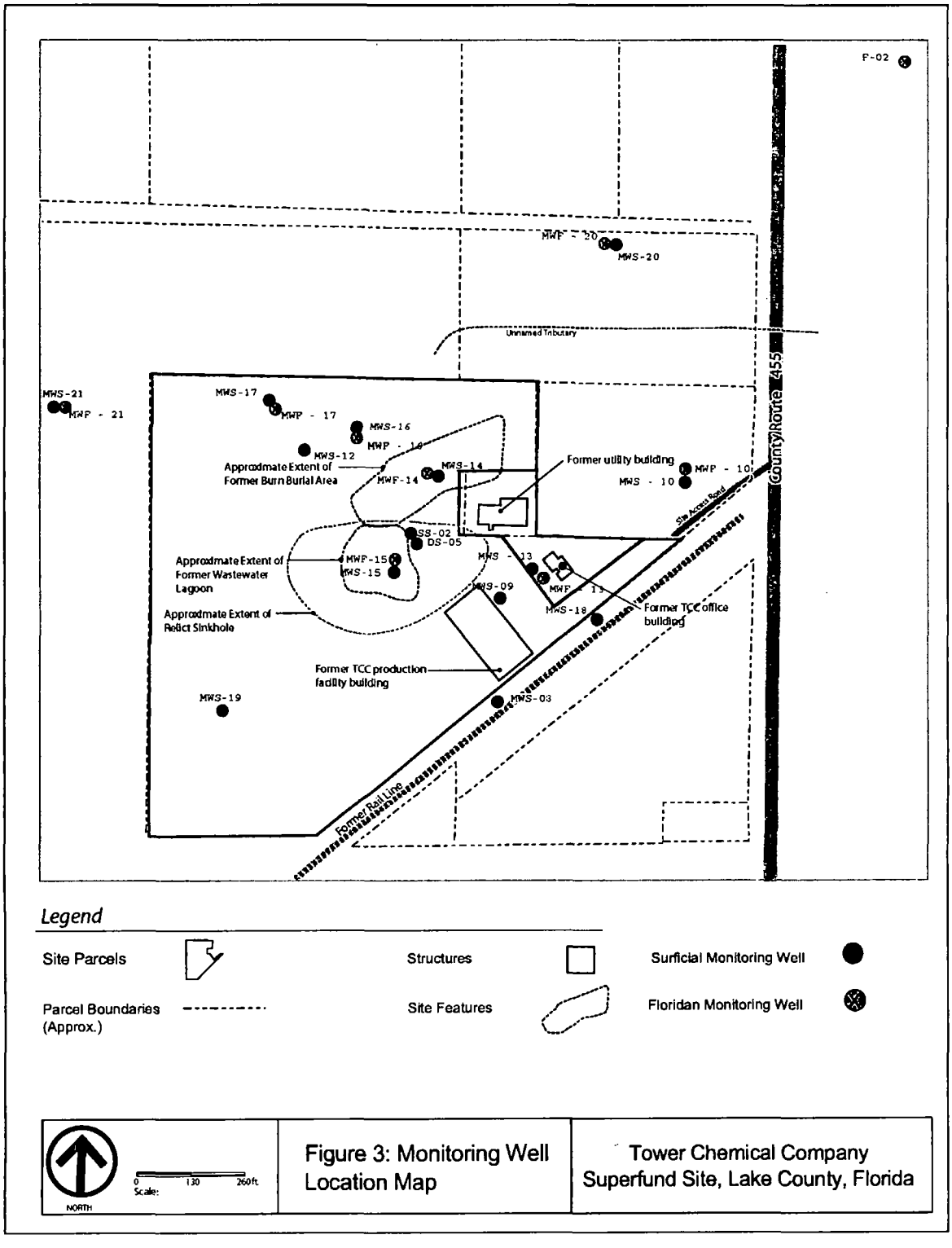
In 2004, soil sampling was conducted to confirm previous conclusions about the extent of DCBP contamination. The 2004 samples confirmed that DCBP soil contamination is primarily limited to the Site's source areas, which include the former wastewater lagoon and burn pit areas. Lower concentrations of DCBP were also found in surface soil samples in perimeter areas surrounding the source areas.

3.5.1.2 Ground Water

The 1999 Site Reassessment presented the results of the 1998 ground water data, which confirmed the presence of DCBP rather than dicofol as the primary COC in the Site's ground water. The ground water data included in the 1999 Site Reassessment were combined with 2000 ground water monitoring data and included in the 2001 SRI that established a revised risk assessment for the Site. The SRI showed that DCBP, in addition to other VOCs and SVOCs, was present in surficial ground water monitoring wells located at the Site as well as in one off-site residential well. Figure 3 shows the

location of most of the ground water monitoring wells for the TCC Site. Details of the ground water investigation from the 2001 SRI are highlighted below.

Figure 3: Monitoring Well Location Map



On-site Ground Water Quality

During the 1998 ground water sampling, VOCs were detected almost exclusively in the surficial aquifer monitoring wells. The principal VOC detected was xylene. The highest concentrations of VOCs were found in monitoring wells located in the vicinity of the former waste water pond.

Only one of the 15 Floridan aquifer ground water monitoring wells sampled contained detectable concentrations of VOCs. This well is located near the northwest part of the former waste water pond. Xylene comprised approximately 26% of the total target VOC load in this well.

Modest concentrations of target SVOCs were detected in both the surficial and Floridan aquifer monitoring wells. Three of the five target semivolatile compounds were phenolic compounds. Miscellaneous non-target SVOCs were present at higher concentrations. The majority of these contaminants were detected in surficial aquifer monitoring wells. The highest concentrations of these non-target SVOCs were found in surficial aquifer monitoring wells in the vicinity of the former waste water lagoon.

DCBP was detected in all of the surficial aquifer monitoring wells sampled. DCBP concentrations were similar across the Site, ranging from 230 to 240 parts per billion (ppb). In the Floridan aquifer, DCBP was found at low concentrations or below detection limits in all except two of the on-site monitoring wells, which contained 560 ppb of DCBP. These wells are located in the vicinity of the former waste water lagoon. Metals concentrations in ground water were not found to be of a significant enough concern to warrant a pro-active remedy at this time.

Ground water sampling results from the 2000 SRI demonstrate that the highest concentrations of total VOCs, SVOCs, and DCBP were detected in surficial wells located within, and to the west and north of, the wastewater pond and burn/burial areas (MWS-14, MWS-15, and MWS-16). A comparison of 2000 ground water data to 1995 ground water data indicates that total VOC and SVOC concentrations in the well located within the former wastewater lagoon area (MWS-15) decreased substantially. Floridan ground water monitoring well sampling results indicated that no significant concentrations of organic compounds were present in the Floridan aquifer. MWF-15 data appear to contradict this statement but this well is considered a deeper representation of the surficial aquifer in that location due to its location in the former wastewater lagoon, its depth, and the lack of a clay confining layer because of the relic sink hole.

In 2006, ten on-site ground water monitoring wells were sampled and analyzed specifically for the compounds DCBP, chlorobenzilate, and dicofol, as well as VOC, SVOC, pesticide, and heavy metals scans. No detectible concentrations of chlorobenzilate or dicofol were found in any of the wells that were sampled. However, DCBP was detected in nine surficial aquifer monitoring wells at concentrations ranging from 110 to 2,200 ppb. The highest concentrations of DCBP were detected immediately to the north, east, and northwest of the former wastewater pond, in wells DS-5, MWS-9, and MWS- 12.

Off-site Ground Water Quality

On eight occasions between 1993 and 2006, EPA sampled potable and ground water monitoring wells surrounding the Site. The following discussion focuses on the organic contaminants detected in the off-site monitoring wells, which include both surficial and Floridan aquifer wells, as well as the off-site potable water wells.

In October 1993, 16 off-site wells were sampled and analyzed. Of these, nine were monitoring wells and seven were potable water wells. Xylene and chlorobenzene levels were below the State of Florida MCLs, which are 10,000 and 100 ppb, respectively. In addition, monitoring wells MWS-10 and MWS-11 contained detectable concentrations of tentatively identified extractable compounds. Generally, MCLs do not exist for these tentatively identified compounds. One off-site potable water well contained concentrations of 1,1-dichloroethane and 1,1-dichloroethene at levels below the State of Florida MCLs for these compounds, which are 70 and 7 ppb, respectively.

In October 1994, seven off-site monitoring wells were sampled and analyzed. Four were surficial aquifer monitoring wells and three were Floridan aquifer monitoring wells. Samples from surficial aquifer monitoring well MWS-11 contained four tentatively identified compounds. Dicofol was reported in two monitoring wells, which included one deep surficial aquifer well and one Floridan aquifer monitoring well. The current State of Florida ground water criterion for dicofol is 0.4 ppb.

In March 1995, four off-site surficial aquifer monitoring wells, three off-site Floridan aquifer monitoring wells, and one potable water well were sampled. Xylene was detected at low concentrations in three of the surficial aquifer wells and one of the three Floridan aquifer wells. Tentatively identified compounds were detected in two surficial aquifer monitoring wells, one Floridan aquifer well, and the potable water well. One of the surficial aquifer monitoring wells was reported to contain dicofol.

In March 1997, the only wells sampled were potable water wells. These samples were analyzed for purgeable and extractable organic compounds, as well as pesticides and DCBP. No contaminants were detected in any of the four wells sampled.

In March 1998, five off-site monitoring wells were sampled. Three of these wells were Floridan aquifer monitoring wells. In addition, five potable water wells were sampled. All the ground water wells were analyzed for purgeable and extractable organic compounds, pesticides, as well as dicofol and DCBP. Two potable water wells were found to contain bis(2-ethylhexyl)phthalate. Historically, other site contaminants have not been detected in the two wells where the contaminant was found (14003 and 14331 County Road 455). This extractable compound is a common field contaminant introduced into a sample through the use of latex gloves while sampling. As such, it is not believed to be a ground water contaminant present in these wells. The only other organic contaminant found during the March 1998 sampling was DCBP, which was detected at concentrations of less than one ppb in four out of the five monitoring wells and one of the five potable water wells sampled. Currently, a drinking water standard does not exist for DCBP, but a provisional reference dose has been developed.

In July 1999, six potable water wells were sampled. All ground water samples were analyzed for purgeable and extractable organic compounds, as well as pesticides, dicofol, DCBP and chlorobenzilate. Only one well had a detectable concentration (0.01 ppb) of the pesticide lindane. The State of Florida MCL for lindane is 0.2 ppb.

In 2000, twelve off-site monitoring wells, and four residential wells were sampled and analyzed for total VOCs, SVOCs, and DCBP. The 2000 ground water data show consistently lower off-site concentrations of VOCs, SVOCs, and DCBP when compared to those for on-site wells. Higher concentrations were generally detected in surficial monitoring wells in comparison to the Floridan wells.

VOCs were detected in nine monitoring wells at concentrations of 36 ppb and lower. The highest VOC concentrations were detected in MWS-8, which is located along the former railroad spur, and in F-2, which is located east of CR 455.

SVOCs were detected in five monitoring wells at concentrations below 55 ppb. The highest SVOC concentrations were found in MWF-22, located in the far western portion of the Site, and in F-2, which is located east of CR 455.

DCBP was detected in nine monitoring wells at concentrations less than 0.24 ppb. The highest DCBP concentrations were found in MWS-8, located in the former railroad spur area. DCBP was also detected in one residential well at a concentration of 0.02 ppb, which is below the remediation goal of 21 ppb that was set in the 2006 ROD.

In 2006, five off-site monitoring wells were sampled and analyzed for DCBP, chlorobenzilate, and dicofol. None of the off-site wells sampled contained detectable concentrations of DCBP, chlorobenzilate, or dicofol.

Summary

It is currently believed that changes in analytical techniques between the mid-to-late 1990s and/or increased sensitivity to the possibility that DCBP had previously been misidentified as dicofol, has resulted in the recent identification of DCBP, tentatively identified compounds, and unidentified compounds as the predominant ground water contaminants at the Site. The identification of these compounds and the uncertainties associated with the limited knowledge of their toxicological properties prompted EPA to take the precautionary measure of protecting nearby residents from potential exposure to site-related ground water contaminants by recommending the implementation of well head protection through installation and maintenance of carbon filter systems for nearby private residential wells.

4.0 Remedial Actions

In accordance with CERCLA and the NCP, the overriding goals for any remedial action are protection of human health and the environment and compliance with applicable or relevant and appropriate requirements (ARARs).

4.1 Remedy Selection

Based on consideration of the requirements of CERCLA and the NCP, an analysis of alternatives, and public and state comments, EPA has selected three remedies to address the soil and ground water contamination at the Site. The Site's 1987 OU 1 ROD selected a remedy for soil and surficial ground water. In 1991, the remedial activities in the OU 1 ROD were deferred until final remedy selection. A 2000 IROD selected an interim remedy for ground water. Construction of the IROD's components was completed in 2003. The 2006 OU 3 ROD is the final remedy for the Site. OU 3 addresses remaining on-site and off-site soil and ground water contamination. Implementation of OU 3 is currently underway.

4.1.1 1987 ROD (OU 1)

In 1987, EPA selected a remedy for the Site's OU 1 (signed July 9, 1987). The remedial action objectives for OU 1 were to prevent human exposure to site-related contaminants through:

- ingestion of contaminated on-site soils and surface water;
- physical contact with soils and surface water at the Site;
- inhalation of airborne particulates; and
- potential ingestion of contaminated ground water through contaminant migration to drinking water supply in the Floridan aquifer.

An additional remedial action objective was established to limit natural resource damages through the discharge of contaminated surficial ground water to the unnamed tributary at the Site.

The major components of this remedy included thermal treatment of contaminated soils and surficial ground water recovery and treatment.

4.1.2 2000 IROD (OU 2)

In 2000, EPA selected an interim remedy for the TCC Site (signed August 23, 2000). The remedial action objective established in the 2000 IROD was to:

> "Minimize the risk posed by off-site migration of site-related groundwater contaminants through either the extension of a water line from an alternate supply or by implementing well-head treatment of the potable water wells, located in the immediate vicinity of the Site and drawing water from the Floridan aquifer."

On and off-site ground water sampling indicated that site-related contaminants including DCBP had migrated into the Floridan aquifer, which serves as the local water supply, and had been detected in site investigations conducted between 1993 and 1999 in off-site potable and monitoring wells. Uncertainty regarding the toxicity of DCBP influenced the selection of the interim remedy in the 2000 IROD, and the 2006 OU 3 ROD addressed

these underlying uncertainties by establishing site specific cleanup goals for DCBP. The 2006 ROD final remedy established cleanup targets for the Site's ground water contamination, with a cleanup goal of 21 ppb for DCBP.

The 2000 IROD evaluated two remedial alternatives, and selected "Alternative 2: Ground Water Monitoring and Wellhead Protection" to remove the threat of human exposure to contaminated ground water at the Site. The selected alternative required the following activities:

- Survey:
  All the potable well owners in the immediate vicinity of the Site would be canvassed in an effort to determine whether they would like their wells to be outfitted with carbon absorption units. This would be done because, prior to the May 2000 Proposed Plan public meeting, some of the residents indicated that they did not want to have the carbon units installed, believing that their wells are sufficiently deep to be at a minimal risk of becoming contaminated.

- Installation of Carbon Units:
  Carbon filters were provided for six potable water wells servicing seven residences located in the immediate vicinity of the Site. Those well owners that consented to have carbon filters installed received them. Since concentrations of contaminants are relatively low, the carbon filters will be installed on the waterline entering the homes to treat only that water, since a substantial amount of well water is also used to irrigate vegetable gardens.

- Ground Water Monitoring:
  Periodic monitoring will be performed to ensure that the carbon units are effectively removing organic compounds to below State of Florida Drinking Water Standards or risk-based standards where the former do not exist, and to confirm that the Floridan aquifer ground water plume has not migrated beyond its current boundaries. This monitoring will involve the sampling of a select number of monitoring wells. In addition, a maximum of seven water wells outfitted with carbon units will be sampled and analyzed for VOCs and SVOCs, as well as chlorobenzilate, dicofol, and DCBP. Samples will not be analyzed for metals and the target pesticides, since metals are not a concern at the Site and, with one exception over the past seven years, pesticides have not been detected in any of the on-site or off-site ground water monitoring or potable water wells. The frequency of monitoring will begin as once per year. Depending on the results of the first two years of monitoring, the frequency may be revised to every other year.

4.1.3 2006 ROD

Actions selected in the 2006 ROD for OU 3 will address the final site-wide remedy for soil, tributary sediments, and ground water contamination. Therefore, this ROD will replace components of the 1987 ROD that were not implemented, which will complete and close out the 1987 Record of Decision (OU 1). In addition, this ROD will implement a permanent solution (connection to public drinking water supply) to follow up on the

temporary solution of carbon filter systems that was implemented through the 2000 IROD for OU 2.

This ROD addresses soil, sediment and ground water contamination at the Site and calls for the implementation of response measures which will protect human health and the environment. A ROD was issued for the Site in 1987, but EPA canceled implementation of that selected remedy because confirmatory sampling indicated that pesticide contaminants had degraded or changed to less harmful compounds that did not require on-site thermal treatment. Subsequent investigations have identified significant concentrations of partial breakdown products of the original pesticide contaminants, as well as elevated levels of other site contaminants. These contaminants continue to pose an unacceptable threat to public health and the environment. The final remedy replaces components of the 1987 ROD that were not implemented by addressing the contaminated soil, as well as ground water contamination resulting from past facility operations.

The remedial action objectives established in the 2006 final remedy for the Site address all remaining soil, ground water, and sediment contamination at the Site and include:

- Soil
  - Prevent ingestion, inhalation, or direct contact with surface soil that contains contaminant concentrations in excess of the remediation goals;
  - Control migration and leaching of contaminants in surface and subsurface soil to ground water that could result in ground water contamination in excess of MCLs or remediation goals;
  - Prevent ingestion or inhalation of soil particulates in air that contain contaminant concentrations in soil in excess of the remediation goals;
  - Permanently and/or significantly reduce the Mobility/Toxicity/Volume (M/T/V) of characteristic hazardous waste with treatment; and
  - Control future releases of contaminants to ensure protection of human health and the environment.

- Ground Water
  - Prevent ingestion of ground water that contains contaminant concentrations in excess of remediation goals;
  - Restore the ground water aquifer system to the remediation goals by cleanup, and prevent the migration of the pollutants beyond the existing limits of the known contaminant plume or established point of compliance;
  - Prevent discharge of ground water contaminants to surface water bodies that would exceed surface water quality standards;
  - Control future releases of contaminants of concern in ground water to ensure protection of human health and the environment;
  - Permanently or significantly reduce the mobility, toxicity, and volume of characteristic principal-threat hazardous waste with treatment; and
  - Protect sediment biota and wetland environment adjacent to the TCC Site based on State of Florida Sediment Quality Guidelines.

In the 2006 ROD, a total of eight soil alternatives and five ground water alternatives were evaluated. The selected remedy combined soil remediation alternatives S8 (Excavation and Off-Site Disposal) & S7 (In-situ Treatment with Biodegradation/Bioventing) with a combination of ground water remediation alternatives G4 (In-situ Treatment with Bioaugmentation) and G2 (Monitored Natural Attenuation).

The major components of the selected remedy included:

- Excavation of contaminated surface soils (anticipated to be 0' to 2-4' bls) and selected subsurface soils in the saturated zone to 12' bls that exceed soil remediation goals, with subsequent consolidation and off-site disposal of soils;
- Wetland delineation and delineation of contaminated sediments in the off-site wetland and surface water discharge areas west of County Route 455 that contain concentrations exceeding the State of Florida Sediment Quality Guidelines (SQGs) based on threshold effect concentrations (TECs) for site-related contaminants, including copper;
- Excavation of contaminated sediments exceeding the State of Florida SQGs based on threshold effect concentrations;
- Treatment of remaining contaminated subsurface soils via an in-situ biodegradation and bioventing treatment with possible physical/chemical treatment enhancements;
- Treatment of Site ground water that exceeds ground water remediation goals via in-situ bioaugmentation;
- Replacement of temporary carbon filter systems on nearby residential drinking water wells with permanent connection to public water supply;
- Implementation of monitored natural attenuation (MNA) to reach inorganic ground water remediation goals and remaining organic ground water remediation goals that are not attained once the maximum effect of bioaugmentation on the organic contaminants is realized;
- Installation of additional downgradient monitoring wells to further delineate the extent of contamination that exceeds remediation goals in the surficial and Floridan aquifers and provide confirmation monitoring that the remedy is effectively mitigating the potential for plume migration;
- Installation of point of compliance monitoring well(s) in the surficial aquifer immediately upgradient of the unnamed creek to confirm that the remedy is effective in preventing any discharge to surface water that exceeds surface water quality standards, including toxicity criteria;
- Implementation of temporary institutional controls (ICs), under the State of Florida (FDEP) restrictive covenants process, to restrict on-site land and ground water use until remediation goals are met and the Site is determined to be protective for unrestricted use; and
- Re-evaluation of available toxicological data pertaining to Tentatively Identified Compounds (TICs) as well as the continued protectiveness of the remedy during policy CERCLA FYRs.

Principal threat wastes at this Site include the elevated organic contaminated soils in the saturated and unsaturated zones under the former waste water pond and burn/burial area, which continue to serve as source material and cause adverse ground water impacts.

Inorganic contaminants detected above remediation goals appear limited in distribution but have resulted in isolated occurrences of inorganic ground water contamination. Principal threat waste that exceeds remediation goals from land surface to the top of ground water (approximately 4-5 feet bls) and hot spots up to 12 feet bls will be excavated and disposed off-site. Excavated waste will be tested to determine its categorization under the Resource Conservation and Recovery Act (RCRA) for disposal purposes. Any soils categorized as RCRA hazardous waste will be treated and disposed of at a permitted disposal facility pursuant to RCRA requirements (40 CFR Part 268). The remaining principal threat waste below excavation limits will be treated in-situ using the optimum combination of physical/chemical/biological processes identified in a remedial design treatability study.

Early in the remedial design, a treatability study will be used to evaluate the best mix of biodegradation, bioventing, and bioaugmentation tools, and assess whether in-situ physical/chemical treatment processes can enhance the effectiveness of the remedy. The treatability study will also evaluate whether organic and inorganic contaminants will be mobilized during the in-situ treatment process and, if so, what methods will be utilized to prevent migration during implementation of the remedy. Dewatering operations will require water treatment on-site to remove suspended solids and contaminants before returning water to the Site via infiltration trenches or injection wells. Due to the uncertainties associated with the tentatively identified and unidentified contaminants at the Site, it is not anticipated that approval for surface water discharge or discharge to a Publicly Owned Treatment Works (POTW) will be pursued.

Monitored Natural Attenuation (MNA) will be utilized for existing inorganic ground water contamination that occurs sporadically across the Site. It will also be used to address organic or inorganic ground water contamination that remains at or below the levels established in the State of Florida Chapter 62-777, Florida Administrative Code (F.A.C.), Natural Attenuation Default Criteria, but exceeds remediation goals, after the maximum effect of the active remedy has been achieved.

The selected remedy for OU 3 will provide protection of human health and the environment by eliminating, reducing, or controlling risk at the Site through removal, treatment, engineering controls, and/or temporary institutional controls (ICs) such as land and/or ground water use restrictions on the Site until remediation goals specified in the 2006 ROD are met and the Site is determined to be protective for any unrestricted use. During implementation of the remedy and until all remediation goals specified in the 2006 ROD are met and the Site is determined to be protective for any unrestricted use, ICs and FYRs will be used to ensure that the Site remains protective. When fully implemented, this remedy will not leave hazardous substances on the Site above unrestricted use levels. As a result, long-term ICs and additional Site FYRs will not be required after remediation goals have been achieved.

4.2 Remedy Implementation

4.2.1 OU 1 1987 ROD

One component of the OU 1 remedy has been completed. A single residential well was abandoned and replaced as part of the remedial activities conducted under OU 1. At the completion of Remedial Design in 1991, the remedy selected under OU 1 was cancelled due to significantly lower concentrations of soil contaminants found during pre-excavation confirmation sampling. Site investigations and annual off-site ground water monitoring were undertaken between 1991 and 1998 that led to the 1999 Site Reassessment, the 2000 IROD, 2001 SRI, and 2006 ROD.

4.2.2 OU 2 2000 IROD

The implementation of the 2000 IROD has included two components: carbon filter installation with continued maintenance and ground water monitoring. Carbon filters have been installed and maintained utilizing an Interagency Agreement between EPA and the U.S. Army Corps of Engineers (USACE). The USACE contracted with a commercial vendor to install and maintain the filters. Drinking water sampled in 2005 revealed no site-related contaminants.

Carbon Filter Installation

In January 2003, inline carbon filtration systems were installed on potable wells at the following Lake County, Florida residences in the immediate vicinity of the TCC Site (See also Figure 4: Carbon Filter Location Map):

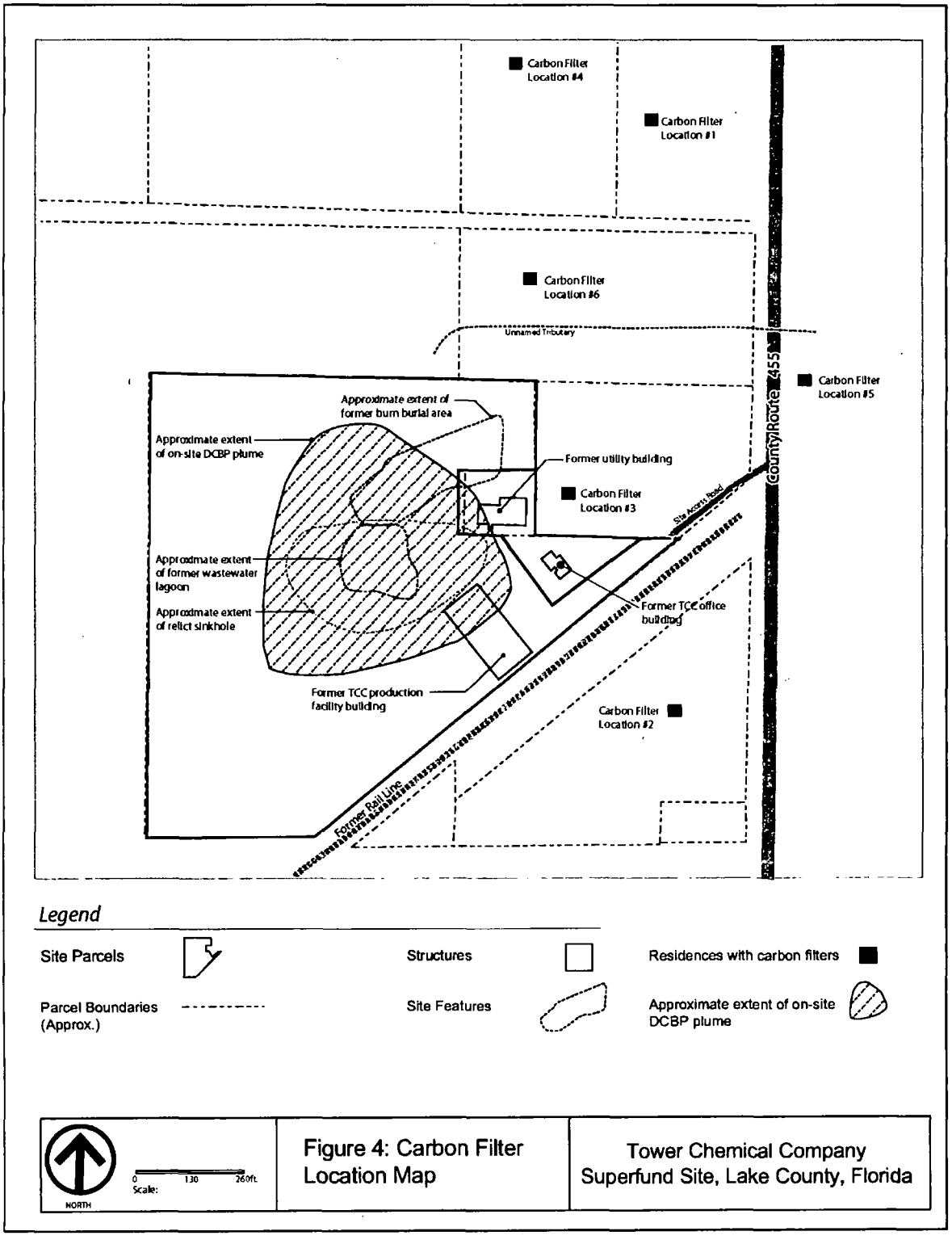
Carbon Filter Location #1
Carbon Filter Location #2 (two filters installed at this address)
Carbon Filter Location #3 (two filters installed at this address)
Carbon Filter Location #4
Carbon Filter Location #5
Carbon Filter Location #6

The carbon filtration systems that were installed on the potable water wells listed above included the following components and specifications:

Filtracarb BKK2000 8x30 USS carbon;
Model 2510 Water Conditioning Control Valve;
12x52 inch fiberglass tank;
In-flow and out-flow particle filters (5 micron); and
110-volt AC exterior electrical outlet, where required.

All components of the filtration systems were installed in January and February 2003. As part of a quality assurance plan for the interim remedial action, the carbon was changed in August 2003, June 2005, and April 2007.

Figure 4: Carbon Filter Location Map



Monitoring

In June 2005, ground water samples were taken from the potable water wells with carbon filters. Additional ground water monitoring occurred in October 2007 as part of the OU 3 RD (results are pending).

4.2.3 OU3 2006 ROD

The 2006 ROD is currently being implemented. Remedial design is underway with construction anticipated to begin in mid- to late-2008. The final remedy includes plans to replace the carbon filter wellhead treatment systems with municipal water supplied by the City of Clermont water main now present along County Route 455. In May 2007, $200,000 in funding was allocated for the connection of municipal water lines to the residences that receive water from the carbon filter systems. EPA site staff are working with the USACE and local officials to ensure that municipal water connections can take place in the short-term.

4.3 Operation and Maintenance (O&M)

Formal O&M activities for the Site will begin after the implementation of the site-wide OU 3 ROD. However, several maintenance activities are required as part of the 2000 IROD, including periodic change-out of the granulated activated carbon, carbon system performance monitoring, as well as homeowner maintenance of the pre- and post-filter particulate cartridges. The construction and maintenance costs for these activities are summarized below.

Construction and Maintenance Costs:

The 2000 IROD projected the remedy's construction costs at $40,369 and anticipated O&M costs over ten years at $178,750. The present net worth of the selected remedy, calculated at a 7% discount rate over ten years, was estimated at $168,919 (Table 2).

The costs for implementation and operation and maintenance of the TCC Site's 2000 interim remedy are provided below. The total costs incurred at the TCC Site from January 2003 through April 2007 were $102,000 (Table 3).

Table 2: 2000 IROD Anticipated Construction and O&M Costs

Cost Estimates	Construction Activities
Anticipated construction costs -$40,369	Installation of carbon filters
Anticipated O&M costs - $178,750	Carbon change-outs, monitoring, particle filter replacement, USACE overhead
Estimated present net worth in 2000 (7% discount rate over ten years) – $168,919	

Table 3: Actual Construction and O&M Costs 2003-2007

Remedy construction and O&M costs from January 2003-April 2007	Filter Installation and Maintenance Activities Performed
$102,000	• Installation of Carbon Filter System (January – February 2003) • Carbon Change-out (August 2003) • Carbon Change-out & Sampling (June 2005) • Additional Particle Filter Procurement (July 2006) • Carbon Change-out (April 2007)

Carbon Filter Change-out

The granulated activated carbon (GAC) change-out ensures that the carbon filters maintain their treatment capacity. The change-out requires the removal and replacement of two cubic feet of GAC, as well as the replacement of the pre- and post-filter cartridges.

Periodic Monitoring

From 2001-2003, potable water wells were sampled annually, prior to installation of the carbon filters. Post-carbon filter effluent (drinking water) from two residential drinking water wells was sampled in 2005. An additional round of potable well water sampling was performed, as part of the remedial design field work which started in October 2007, to determine if any significant concentrations of site contaminants have migrated to the residential wells.

Pre/Post Filter Cartridge Maintenance

Pre-filter cartridges are designed to prevent particulate matter from clogging the carbon in the carbon treatment system, and post-filter cartridges are meant to prevent any granulated carbon from migrating into the household drinking water. Homeowners and tenants of affected residences are supplied with clear instructions and a supply of replaceable particulate filters. Typically, the pre-and-post filter cartridges are designed to be replaced every three to four months.

5.0 Progress Since the Last Five-Year Review

This is the first FYR for the Tower Chemical Company Site.

6.0 Five-Year Review Process

6.1 Administrative Components

EPA Region 4 initiated the Five-Year Review in March 2007. The EPA TCC FYR team was led by Jan Rogers of EPA, Remedial Project Manager (RPM) for the Site, and included Elisa Roberts, EPA site attorney, Judie Kean and Jennifer Farrell of the FDEP, and contractor support provided to EPA by E^2 Inc. The activities selected by Mr. Rogers for this FYR included:

- Community notification;
- Document review;
- Data collection and review;
- Site inspection;
- Local interviews; and
- Five-Year Review Report development and review.

6.2 Community Involvement

On April 21, 2007, a public notice was published in the *Orlando Sentinel* and *Daily Commercial* newspapers announcing the commencement of the FYR process for the TCC Site, providing Jan Rogers' contact information and inviting community participation. A copy of this public notice is provided in Appendix B of this report.

The Five-Year Review report will be made available to the public once it has been finalized. Copies of this document will be placed in the designated public repository: Cooper Memorial Public Library, 821 W. Minneola Ave., Clermont, Florida, 34711. On May 7, 2007, as part of the site inspection, EPA staff visited the Cooper Memorial Public Library and confirmed that TCC site documents were readily available to the public in the library's reference room. Upon completion of the FYR, a public notice will be placed in the *Orlando Sentinel* and *Daily Commercial* newspapers to announce the availability of the FYR report in the site document repository. No citizen comments or concerns regarding cleanup activities at the Site have been received from the public to date.

6.3 Document Review

This FYR included a review of relevant, site-related documents including the Record of Decision, remedial action reports, and recent monitoring data. A complete list of the documents reviewed can be found in Appendix A.

ARARs Review

Section 121 (d) (2) (A) of CERCLA specifies that Superfund remedial actions must meet any federal standards, requirements, criteria, or limitations that are determined to be legally applicable or relevant and appropriate requirements (ARARs). Applicable or relevant and appropriate means those standards, criteria or limitations promulgated under federal or state law that specifically address a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstance at a CERCLA site. To-Be-Considered criteria (TBCs) are non-promulgated advisories and guidance that are not legally binding, but should be considered in determining the necessary level of cleanup for protection of human health or the environment. While TBCs do not have the status of ARARs, EPA's approach to determining if a remedial action is protective of human health and the environment involves consideration of TBCs along with ARARs.

The goal of the 2000 IROD was to address the off-site ground water contamination. The remedial action objective was to minimize the risk posed by off-site migration of site-related ground water contaminants.[1] The identification of tentatively identified and unidentified compounds in the Site's ground water, combined with the lack of toxicological data on these compounds, prompted EPA and FDEP's implementation of the 2000 IROD that included the installation of carbon filters on nearby residential wells. Since many of the Site's tentatively identified and unidentified compounds do not have established ARARs, a summary of the ARAR review for DCBP, one of the Site's primary ground water contaminants, is provided below.

The ARAR for DCBP is 210 µg/l based on State of Florida promulgated regulatory levels for this COC in ground water; 21 µg/l is EPA's cleanup goal, which is based on EPA's application of an uncertainty factor to the 210 µg/l ARAR.

Research on DCBP during the final RI/FS indicated that a provisional reference dose would result in a remediation goal of 1,100 µg/l if the compound was determined not to be a carcinogen and 0.25 µg/l if DCBP was a carcinogen.[2] In the 2006 ROD for OU 3, EPA selected a conservative cleanup goal of 21 µg/l for DCBP. This cleanup goal was established based on Florida's "Ground Water and Surface Water Cleanup Target Levels (GCTL)," which establish a DCBP cleanup GCTL of 210 µg/l.[3] Considering the uncertainty of the carcinogenic properties of DCBP, EPA selected a more protective cleanup by reducing the Florida GCTL cleanup target level by a factor of ten from 210 µg/l to the current cleanup goal provided in the 2006 ROD of 21 µg/l.

During the 2001 SRI, DCBP was detected in 11 of the 14 surficial wells that were sampled, with the highest concentrations detected in MWF-15 (560 µg/l and 2,000 µg/l in

[1] 2000 IROD, pp 18 and 25

[2] EPA. 2003. Memorandum between William N. O'Steen, Environmental Scientist, EPA Region 4, Technical Services Section and Galo V. Jackson/Jamey Watt, Remedial Project Managers, EPA Region 4, Superfund Remedial and Technical Services Branch, re:
4,4'-dichlorobenzophenone (DCBP) Soil Remedial Goals (RG) for Ground Water Protection at the Tower Chemical NPL Site. November 13.

[3] Chapter 62-777 F.A.C.

a duplicate sample). Other notable concentrations were found in MWS-15 (380 µg/l), MWS-12 (140 µg/l), MWS-19 (82 µg/l), and MWS-16 (5.2 µg/l). In the remaining surficial wells where it was detected, DCBP concentrations ranged from 0.068 µg/l to 0.98 µg/l, below the 2006 ROD's cleanup goal for DCBP (21 µg/l). DCBP was also detected in 9 of the 10 Floridan wells sampled and in one of the four residential wells sampled at concentrations ranging from 0.014 µg/l to 0.34 µg/l, below the 2006 ROD's cleanup goal for DCBP (21 µg/l). This suggests that a substantial migration of site contaminants to residential wells has not occurred.

6.4 Data Review

Data reviewed for this FYR include off-site potable well monitoring results collected between 2001 and 2005.

6.4.1 Potable Well Monitoring 2001-2003

In 2001 and 2002, samples were collected from off-site potable water wells. Addresses are not included with these results. In August 2003, six months after the installation of the carbon filters, water samples were collected from all wells where carbon filters were installed, and the samples were collected from carbon filter-treated ground water. In 2005, carbon filter treated water was collected from the two highest-use potable water wells.

In 2002, DCBP was detected at 0.5 µg/l in one of the off-site potable water wells, which is below the 21 µg/l cleanup goal established in the 2006 ROD. No exceedances of the 21 µg/l cleanup goal for DCBP have been detected in the potable water wells near the Site. It should be noted that data for DCBP and dicofol in 2003 were qualified because the samples "Exceeded Recommended Holding Time."

In 2003, seven samples were collected from private residential wells. Sample #1 was collected from Carbon Filter Location #3, #2 from Carbon Filter Location #3, #3 from Carbon Filter Location #1, #4 from Carbon Filter Location #5, #5 from Carbon Filter Location #6, #6 from Carbon Filter Location #4, and #7 from Carbon Filter Location #2 (only one sample was taken from this address, even though two filters are installed). Methylene chloride (a common lab contaminant) was detected in samples #4, #5, and the trip blank, which suggests that it was introduced from external sources. All methylene chloride concentrations were below the drinking water standard of 5 µg/l and the concentrations in the well samples were less than 1 µg/l. The compound bis(2-ethylhexyl)phthalate was also detected at concentrations of 7.0 and 7.2 µg/l in two separate potable water wells. These levels exceed the risk-based drinking water standard of 6 µg/l.[4] Bis(2-ethylhexyl)phthalate (BEHP) is a compound associated with plasticizers and is commonly found in areas where trash has been buried or burned. BEHP is also a common laboratory contaminant that can be introduced into samples from contact with latex gloves.

[4] State of Florida Drinking Water Standards, Monitoring and Reporting (Chapter 62-550), last updated on 01/07/2005. Standards for Synthetic Organic Contaminants (http://www.dep.state.fl.us/Water/drinkingwater/st_syn.htm).

6.4.2 Potable Water Well Sampling 2005

In June 2005, potable well sampling was conducted in conjunction with the carbon change-out. The USACE and EPA selected two residences for sampling of the effluent from the carbon units prior to the change-out. The sampling was conducted to determine if contaminants were breaking through the carbon filters and reaching the residents' drinking water. Sampling was conducted at Carbon Filter Location #3 and Carbon Filter Location #1. These residences were selected because of their proximity to the Site and, in the case of Carbon Filter Location #1, for the large quantities of water used.

A USACE summary of the sampling results reported that:

> "Except for acetone, which is a common laboratory contaminant and which was also detected in the associated method blank, there were no target compounds detected for any of the samples. There were not tentatively identified compounds (TICs) detected in the samples as well. Based on the analytical results, either there are no Site specific contaminants of concern (COCs) in the residences drinking water, or the carbon contact units are successfully removing existing COCs."[5]

The compound DCBP, which was identified in the 2000 IROD as the predominant ground water contaminant, was not specifically included in the sampling data presented in the 2005 Carbon Replacement and Residential Well Sampling report. Sampling data were available for the compounds 1,2-dichlorobenzene, 1,3-dichlorobenzene, and 1,4-dichlorobenzene, and concentrations of these compounds were below the reporting limit of 12 µ/L. Sampling and analysis procedures included scans of SVOCs that would have detected the presence of significant concentrations of DCBP, if they were present. Future sampling of residential potable water wells is needed to confirm that DCBP is not present in the drinking water treated with carbon filtration.

6.4.3 Summary

2005 potable water data confirm that the sampled site-related contaminants were not breaking through carbon filters in concentrations above reporting limits. However, DCBP was not included in the results of the 2005 report. EPA anticipates sampling ground water at on-site and off-site monitoring wells in 2007. The data were not available at the time of this review. Future sampling should include raw and/or treated water samples for all potable water wells with carbon filters, and samples should be analyzed for the compound DCBP. The results of the 2007 sampling data should be reviewed as part of the next Five-Year Review for the TCC Site.

[5] U.S. Army Corps of Engineers. 2005. Carbon Replacement & Residential Well Sampling Tower Chemical Superfund Site FLD004065546, Clermont, Florida. (p. 2)

6.5 Site Inspection

The Site inspection for this FYR was conducted on May 7, 2007, by the RPM, site attorney, FDEP representatives, and contractor staff. The purpose of the inspection was to take photographs, assess the condition of wells, document land use changes at the Site, and to conduct interviews with residents with wellhead treatment systems installed on their wells. Additional meetings with representatives from the Clermont Utilities Department, St. John's River Water Management District, and the FDEP Central Florida District were also held in order to obtain information relevant to the extension of municipal water service lines, as well as the implementation of temporary ICs required as part of the Site's final remedy.

During the site inspection, the following observations were made. Both parcels were in active use. Portions of the larger parcel (15 acres) have been fenced off and covered with gravel or pea stone for the storage of vehicles. Several vehicles were parked in the gravel covered area, and a dump truck was parked outside of the fenced area. Four tractor-trailer trucks were parked on one of the Site's smaller parcels adjacent to the utility building. Site fencing was visible in sections but was not complete.

Several abandoned pump test wells were identified on the Site. Since the site inspection, the remaining pump test wells were cut below ground surface grade and covered by EPA and the new owner on June 26, 2007. Visual inspection revealed that one monitoring well was not properly locked. This well should be properly secured in order to maintain the protectiveness of the Site's remedy. Not all monitoring wells were located and inspected.

Visual inspections of four carbon filters installed on private wells were combined with interviews with well users, local and state regulatory agencies, and the site owner. Interviews, visual inspections, and review of monitoring data indicated that the interim remedy is functioning as designed.

Discussions held during the site inspection identified that interim institutional controls required as part of the 2006 ROD have not yet been implemented.

The complete site inspection checklist is included in Appendix D.

6.6 Interviews

During the Five-Year Review process, interviews were conducted with parties impacted by the Site, including the current landowner, surrounding business owners, and regulatory agencies involved in or aware of the Site (Table 4). The purpose of the interviews was to document the perceived status of the Site and any perceived problems or successes with those phases of the remedy that have been implemented to date. All the interviews were conducted during the site visit on May 7 and May 8, 2007. None of the interviewees were aware of any emergency responses or problems with the remedy at the Site. Interviews are summarized below and complete interview forms are included in Appendix C.

Table 4: Interviewees Participating in FYR Process

Name	Position	Affiliation
Site Owner	Business Owner	Site Owner
Property Owner	Business Owner	Adjacent Property Owner
Tamara Richardson	Director of Engineering and Utilities	City of Clermont, Florida
Jim Frazee	Hydrologist	St. John's River Water Management District
Brett LeRoux	Project Manager	FDEP Central Florida District
Resident at Carbon Filter Location #1	Property Owner	Residential property owner with private well
Resident at Carbon Filter Location #2	Property Owner	Residential property owner with private well
Resident at Carbon Filter Location #3	Property Owner	Residential property owner with private well
Resident at Carbon Filter Location #4	Property Owner	Residential property owner with private well
Resident at Carbon Filter Location #6	Property Renter	Residential property renter with private well

Site Owner: The Site's three owners operate a recreational vehicle and boat storage facility on a portion of the Site. The Site owner that was interviewed is aware of EPA's remedial activities at the Site and has been in regular contact with the Site's RPM, Jan Rogers, as well as the Site's former RPM, Galo Jackson. The Site owner was not aware that ground water use restrictions would need to be put in place at the Site as part of a temporary IC component of the Site's 2006 ROD. He indicated he would be willing to cooperate to help implement restrictions as necessary. He also indicated that he and his partners were in the process of installing water lines to connect to public water supply for fire protection and eventually for potable water use at the Site. The Site owner indicated that he intends to maintain the Site as a commercial storage business. He discussed his preference to have abandoned monitoring wells at the Site removed to prevent them from being damaged in the process of moving vehicles around the property.

Adjacent Business Owner: The owner of a commercial water trucking business currently parks up to six trucks as well as private vehicles on a 1-acre portion of the Site that includes the former Tower Chemical office building, a metal shed building formerly used for the manufacturing of synthetic fishing lures, and a small sliver of vacant land. He plans to continue using the property for vehicle storage and indicated that he does not conduct vehicle maintenance at the Site.

The adjacent business owner purchased the property in 2006 from Southeast Agriculture and was not aware that the parcels were part of the Tower Chemical Co. Superfund Site, although he was familiar with the Tower Chemical Co. and knew that property adjacent to his was contaminated and being cleaned up. He indicated that he had not conducted a title search prior to purchasing his property and was not aware of the EPA's plans to conduct remedial activities and to implement temporary ICs restricting ground water use at the Site. The adjacent business owner would like to receive additional information

about the Site and Superfund liability provisions that may affect him. He also indicated that he would like to receive regular site updates.

Ms. Tamara Richardson: Ms. Richardson is Director of Engineering and Utilities at the City of Clermont, Florida. EPA staff, including Mr. Rogers, have been in contact with her regarding the proposed extension of municipal water lines to residences affected by ground water contamination at the Site. The City of Clermont maintains a municipal water line that runs along County Route 455 adjacent to the Site. All new homes and businesses along this corridor are required to hook into the municipal water line, but existing structures that are on private wells are grandfathered and are not required to hook into the water line. The City of Clermont does not oversee any permitting for new wells in this area. Ms. Richardson indicated that since the property is technically located in Lake County, the County's Department of Public Health would be responsible for any well permitting.

When asked what steps would need to be taken in order to ensure that existing residences could be hooked up to the municipal water supply line on County Route 455, Ms. Richardson outlined the following process:

- EPA would be responsible for identifying the residences that need to be connected.
- EPA would be responsible for installing a pipe to connect the municipal line to the houses (City of Clermont's specifications for waterline hookups are available online at http://clermont.govoffice.com).
- EPA would need to pay a meter setting fee for each residence.
- The City of Clermont would set the meters for all occupied residences.

Ms. Richardson indicated that if any private residential wells will remain in use for irrigation purposes, then the supply line for municipal water would need to be segregated from these wells in order to prevent cross-contamination of the municipal water supply. She asked that EPA continue to maintain contact with her about a timeframe for tying the existing homes into the municipal water line.

Mr. Jim Frazee: Mr. Frazee is a hydrologist with the St. John's River Water Management District, the permitting authority for ground water withdrawal in Clermont and Lake County. The SJRWMD oversees permitting for deep wells and any wells that are located in ground water delineated areas. In Florida, ground water delineated areas are defined as areas within 1,000 feet of a well known to be contaminated.[6] The Tower Chemical Co. Site is located in a delineated area. SJRWMD maintains a GIS database that is linked to ground water delineated areas and is used to track permits and land use trends and changes.

Mr. Frazee is aware of the Tower Chemical Co. Site and has stayed up to date on EPA's cleanup plans. He indicated that he would like to establish a positive working relationship with site managers at the Tower Chemical Co. Site and that he would be

[6] Chapter 62-524 Florida Administrative Code

willing to work with EPA to implement temporary ICs to restrict ground water use at the Site.

Mr. Brett LeRoux: Mr. LeRoux works with the Florida Department of Environmental Protection's Central Florida District Office. His office has not been involved with the site investigation or cleanup activities at the TCC Site, because Superfund sites are generally handled by FDEP's headquarters office in Tallahassee. Mr. LeRoux was aware of the Tower Chemical Co. Site's contamination through coverage in the local media. He indicated that he would like to receive regular site updates and be included on notices about future public meetings.

Residential Property Owners: Six nearby residents were interviewed on May 7, 2007. The purpose of the interviews was to ensure that residents with wellhead treatment systems installed on their wells were aware of the interim remedy that required the carbon filters. Additionally, the interviews were conducted to help inform residents that a 2006 ROD for the Tower Chemical Co. Site included a provision for wellhead treatment systems to be replaced by municipal water supplied by the City of Clermont.

Most of the residents were aware of the Tower Chemical Co. Site and its contamination. However, few of the residents were aware that EPA had selected a final remedy for the Site in 2006. All of the residents interviewed were aware that carbon filters were installed on their wells and regular changes of the particulate filters are necessary. Residents indicated that they changed the particulate filters anywhere from once every other month to once every four months. Most residents indicated that they would like to be connected to the municipal water supply. However, one resident expressed a preference not to be connected to the municipal water supply.

7.0 Technical Assessment

7.1 Question A: Is the remedy functioning as intended by the decision documents?

The review of documents, ARARs, risk assumptions, and the site inspection indicate that interim remedial components currently in place for OU 2 are functioning as intended by the IROD. The interim remedy evaluated in this FYR includes the implementation of wellhead protection through the installation of carbon filtration systems on residential wells, and ground water monitoring. These interim actions were designed to eliminate exposure by preventing contact and ingestion of contaminated ground water.

The carbon filtration systems were installed in January and February 2003, and the carbon was replaced six months after installation in August 2003, as well as in June 2005 and April 2007. In addition to the replacement of the carbon, residents interviewed during the FYR indicated that the particle filters were changed regularly to maintain the effectiveness of the treatment system. The data reports from the 2003 sampling of wells with carbon filters do not clarify whether samples were taken from raw ground water or treated water. 2005 drinking water monitoring data do not include the results of DCBP samples that are a critical indicator of the remedy's protectiveness. Post-carbon filter sampling data were only available for two of the residential wells. Four additional wells have filters. Drinking water monitoring planned for 2007 as part of the OU 3 remedial design sampling needs to include all of the six wells with carbon filters.

The 2000 IROD specified that the interim remedy would remain in place until a final remedy for the site's contaminated soil and ground water has been successfully implemented. Based on the results of the Supplemental Remedial Investigation and Feasibility Study for the Site's final remedy, as documented in the 2006 ROD, it was determined that the residential wells currently protected with carbon filters should be replaced by public water supply. These residential wells are scheduled to be replaced with public water supply, and funding has been secured to complete the municipal water hook up at all residences serviced by the carbon filter systems.

The 2000 IROD estimated that the present net worth cost for the interim remedy would be $169,919 which included 10 years of operation and maintenance. The actual costs of remedy implementation and maintenance to date total $102,000 for the installation of carbon filtration systems, three rounds of carbon change-outs, the procurement of particle filters, and all USACE procurement, management, and overhead costs. Therefore, the costs incurred to date are below the anticipated costs for the implementation of the Site's remedy.

Currently, public automobile access to the Site is restricted via a locked gate at the access road. Removal actions were completed to address immediate threats in the burn/burial and waste water settling pond areas of the Site.

Temporary ICs required under the 2006 ROD for OU 3 have not been implemented as of this review. The temporary ICs required in the 2006 ROD include restricting future land use to commercial/industrial uses and preventing on-site ground water use in the interim

period between the signature of the ROD and construction of the ROD's selected remedy. These temporary ICs will be implemented through the FDEP restrictive covenants process and will be enforced until all remediation goals are achieved and the Site is determined to be protective for unrestricted use.

7.2 Question B: Are the exposure assumptions, Toxicity Data, Cleanup Levels, and Remedial Action Objectives (RAOs) Used at the Time of Remedy Selection Still Valid?

The review of documents, ARARs, risk assumptions, and the Site inspection indicate that exposure assumptions and Toxicity Data used in the selection of the IROD have changed slightly. A cleanup goal for DCBP of 21µg/l was established in the 2006 ROD, while at the time of the IROD's signing, uncertainties led the designation of a range of potential standard values with a minimum of 0.25µg/l. The 2006 ROD noted that available toxicological data pertaining to TICs including DCBP would be reevaluated during Five-Year Reviews to determine if the cleanup goals for these TICs remain protective. Additional toxicological data regarding DCBP is not available beyond that which was available at the time of the 2006 ROD, and thus the cleanup goal of 21µg/l for DCBP remains protective. Site specific clean up goals were not established in the 2000 IROD because it was an interim action that focused on wellhead protection as a means of preventing exposure. The toxicity assumptions used to determine that an unacceptable risk existed at the Site are still valid. The 2006 ROD for the Site establishes RAOs and site-specific cleanup goals for the Site's COCs. The cleanup levels established in the 2006 ROD are based on a residential future land use assumption, and have not changed between their use in the design of the 2006 ROD and the date of this FYR. The unacceptable soil and ground water concentrations were limited to on-site areas of the original Tower facility. Residential uses are prohibited on-site until cleanup goals specified in the 2006 ROD are met and the Site is determined to be protective for unrestricted use. The BHHRA evaluation predicted that on-site soil exposure for future workers would equate to a cancer risk of $4x10^{-6}$ and a non-cancer risk of 0.02 (within the acceptable risk range). Unacceptable risk occurred when the future resident exposure to on-site soil and ground water was evaluated. The property owners at the Site envision commercial uses only and are not planning to use on-site ground water. The Site's planned use restrictions and the land use assumptions used to design the final remedy would support commercial reuse. The data and objectives used to inform the Site's remedies are still valid.

7.3 Question C: Has Any Other Information Come to Light That Could Call Into Question the Protectiveness of the Remedy?

The review of documents did not reveal any new information that would call into question the protectiveness of the remedy. There is no other information such as land use changes or ecological risks that calls into question the protectiveness of the remedies. It is believed that the appropriate reuse of the former TCC Site has enhanced the protectiveness of the remedy by discouraging trespassing and the use of the Site for inappropriate purposes.

7.4 Technical Assessment Summary

According to the data reviewed, the site inspection, and the interviews, remedial components currently in place are protective for human health and the environment and are functioning as intended by the IROD. There have been no changes in the physical conditions of the Site that would affect the protectiveness of the remedy. There have been no changes to standardized risk assessment methodology that could affect the protectiveness of the remedy. There is no other information that calls into question the protectiveness of the remedy.

8.0 Issues

Table 5: Current Issues for the Tower Chemical Site

Issue	Affects Current Protectiveness	Affects Future Protectiveness
Off site ground water and drinking water monitoring has not been completed in a consistent manner.	No	Yes
Interim ICs required in 2006 OU 3 ROD have not been implemented.	No	Yes
Current residents on carbon filters may choose not to be connected to municipal water.	No	Yes

Annual monitoring of potable wells was conducted between the signing of the IROD in 2000 and the construction of the interim remedy in 2003 to assure protectiveness in the interim period before installation of the filter systems. The IROD specified that the frequency of monitoring could be reduced to every two years. However, 2005 sampling was performed post-filter on only the two highest use potable wells on carbon filters. Monitoring conducted in October 2007 included sampling of pre-filter potable water at each of the potable wells with carbon filters to ensure that the remedy continues to minimize the risk posed by off site migration of site-related ground water contaminants. Pre-filter data will identify the presence of any site contaminants at the well. If detections are above acceptable drinking water standards, post-filter data would be needed to ensure the filters are removing the contaminant. Post-filter data would demonstrate the effectiveness of the carbon filter system but would not give an indication of contaminant loading to enable an accurate estimation of the life-cycle of a carbon change-out. A combination of pre- and post-filter samples over time is more cost effective and should provide sufficient evidence that the potable wells continue to be safe for use. Off-site monitoring wells are another indicator of site contaminant migration into the adjacent residential areas but may not, in all cases, be an early warning indicator of potential impact to potable wells.

The 2006 ROD for the Site required the implementation of interim ICs restricting ground water use and preventing residential land uses at the Site until cleanup goals specified in the 2006 ROD are met and the Site is determined to be protective for unrestricted use. One level of IC protection currently exists through the SJRWMD permitting process for new ground water use. The Tower Chemical Site falls within a contaminated ground water delineation area and therefore receives special considerations and requirements for new ground water use permits that would prevent use of the contaminated ground water within the on-site ground water plume. EPA Region 4 staff are working with FDEP to establish Florida's uniform environmental covenant on the properties at the Site. Ongoing coordination to establish ICs as soon as possible is recommended. In the interim, before ICs are recorded, notification of restrictions on land and ground water use on-site should be conveyed to the current owners via letter notification.

Interviews conducted during the FYR identified one resident who did not wish to be connected to municipal water. This resident feels that the water is of high quality and

that the residence is up-gradient from the site and, therefore, not exposed to a significant threat. This resident indicated that the resident's heirs may ultimately agree to be connected to the municipal water when the resident is no longer living. If EPA is unable to obtain permission to connect a residence to the available public water supply, EPA will request permission to install all necessary materials up to the house and pay the connection fee without connecting into the residence. EPA would like to continue using all of the residential wells on carbon filters as additional ground water monitoring points. If contamination conditions change, the residence can easily be connected to the public water system.

Since EPA Region 4 plans to fund the connection to municipal water for residences currently on carbon filters, the Agency would not be able to justify continued payment for the maintenance of the carbon filters once the connections are in place. If homeowners who choose not to be connected to municipal water are required to pay for the operation and maintenance of their carbon filter, these costs should be explained to the homeowners through an estimate of annual O&M costs. In addition to an explanation of costs, EPA would need to ensure that property owners understand that the remedy may not remain protective if O&M activities are not paid for and carried out in a timely manner.

9.0 Recommendations and Follow-up Actions

Table 6: Recommendations to Address Current Issues at the TCC Site

Issue	Recommendations/ Follow-Up Actions	Party Responsible	Oversight Agency	Milestone Date	Affects Current Protectiveness ?	Affects Future Protectiveness ?
Off site ground water and drinking water monitoring has not been completed in a consistent manner.	Ensuring 2007 ground water data from potable wells on carbon filter systems confirms that residents' drinking water is protected from site contaminants (DCBP, VOCs, SVOCs, and metals)	EPA	EPA	March 31, 2008	No	Yes
Lack of interim ICs as required in 2006 OU 3 ROD.	Implementing and enforcing ground water use restrictions and residential land use restrictions at the Site until the 2006 OU 3 ROD remediation goals are achieved and the Site is determined to be protective for any unrestricted use.	EPA/FDEP/ Site Owners	EPA	December 30, 2008	No	Yes
Current residents on carbon filters may choose not to be connected to municipal water.	Clarifying for homeowners any O&M costs that they would be responsible for if they choose not to be connected to municipal water.	EPA / City of Clermont / Property Owners	EPA	September 30, 2008	No	Yes

10.0 Protectiveness Statements

OU 1: The OU 1 remedy was never implemented and has been replaced by the site-wide OU 3 remedy.

OU 2: the interim remedy at the Site currently protects human health and the environment because the immediate threat of exposure to contaminated ground water has been addressed through the installation and regular maintenance of carbon filters on potable water wells at nearby residences. However, in order for the interim remedy to remain protective in the long-term, the following actions need to be taken: regular maintenance of the carbon filters and potable water sampling is continued; and institutional controls are implemented and kept in place until the 2006 OU 3 ROD remediation goals are achieved and the Site is determined to be protective for any unrestricted use. Provisions in the 2006 ROD that include providing municipal water connections for nearby residences would replace the interim remedy.

OU3: The OU 3 remedy is currently protective of human health and the environment. While the OU 3 remedy is currently in the remedial design stage, the immediate threat of exposure to contaminated media at the Site's surface has been addressed through prior removal actions, and the site's interim remedy. The BHHRA found on-site soil exposure for the future worker to be acceptable. Soil and ground water exceeding 2006 ROD cleanup goals are restricted to areas within the original facility boundaries. Contaminated ground water is not currently being used at the Site, and nearby residential potable water wells are protected with carbon filters. The SJRWMD has established a delineated area of ground water contamination which includes the Tower Chemical Site area and therefore requires special considerations and restrictions on new groundwater use permits. Active commercial uses at the Site are consistent with the temporary residential use restriction required as part of the OU 3 remedy. However, in order for the remedy to remain protective, the following action needs to be taken: institutional controls required in the 2006 OU 3 ROD must be implemented and kept in place until remediation goals are achieved and the Site is determined to be protective for any unrestricted use.

11.0 Next Review

At present, this is a policy review Site that requires ongoing Five-Year Reviews as long as waste is left on-site that does not allow for unrestricted use and unlimited exposure. The next Five-Year Review for the TCC Site, which will be due in January 2013, should confirm whether interim ICs required as part of the 2006 ROD have been implemented, and whether residences with carbon filters have been connected to municipal water. Until the OU 3 site-wide final remedy is implemented, residential cleanup goals are attained for soil, sediment, and ground water, and the Site is determined to be protective for any unrestricted use, future reviews for this site will be required as a matter of policy.

Appendix A: List of Documents Reviewed

ATSDR. Di(2-ethylhexl) phthalate (DEHP) ToxFAQ Fact Sheet. http://www.atsdr.cdc.gov/tfacts9.pdf. September 2002.

Ebasco. Preliminary Design Report. Tower Chemical Site, Clermont, Florida. 1989.

EPA Record of Decision: TOWER CHEMICAL CO. (OU 2). EPA/ROD/R04-00/158. August 23, 2000.

EPA Record of Decision: TOWER CHEMICAL CO. (OU 3). EPA/ROD/R2006040001021. September 14, 2006.

EPA Reassessment of the TOWER CHEMICAL CO. National Priorities List Site Clermont, Lake County, Florida. 54/001/36891. 1999.

CDM. Final Supplemental Remedial Investigation Report for the Tower Chemical Site Clermont, Florida. Work Assignment NO. 054-RICO-0419. Document Control No. 3280-054-RI-REVU-12001. August 23, 2001.

EPA. Interim Remedial Action Report: Tower Chemical Site. Installation of Carbon Absorption Units. August 21, 2003.

EPA. Memorandum between William N. O'Steen, Environmental Scientist, EPA Region 4, Technical Services Section and Galo V. Jackson/Jamey Watt, Remedial Project Managers, EPA Region 4, Superfund Remedial and Technical Services Branch, re: 4,4'-dichlorobenzophenone (DCBP) Soil Remedial Goals (RG) for Ground-Water Protection at the Tower Chemical NPL Site. November 13, 2003.

State of Florida. State of Florida Drinking Water Standards, Monitoring and Reporting (Chapter 62-550). January 7, 2005.

State of Florida. Groundwater and Surface Water Cleanup Target Levels Comparison (Chapter 62-777). April17, 2005.

US Army Corps of Engineers. Carbon Replacement and Residential Well Sampling: Tower Chemical Superfund Site. September 2005.

Appendix B: Press Notice

U. S. Environmental Protection Agency, Region 4
Announces A Five Year Review
for the
Tower Chemical Co. Superfund Site,
Town of Clermont, Lake County, Florida

Section 121 of CERCLA, as amended by SARA, requires that remedial actions of hazardous substances be subject to a Five-Year Review to ensure that the selected remedy continues to protect human health and the environment.

Site Background: The Tower Chemical Co. Site (the Site) is in the Town of Clermont, Lake County, Florida. The Site, which covers approximately fifteen acres, lies in an area of mixed agricultural, residential, and industrial use about 15 miles west of Orlando on County Road 455. Between 1957 and 1981, the Tower Chemical Company manufactured, produced, and stored various pesticides. Soil, surface water, and ground water resources at and near the Site became contaminated with acidic wastewater, DDT, and other organic contaminants.

Cleanup Action: In 1983, the Site was added to the National Priorities List of contaminated sites requiring cleanup. In 1987 the first ROD was signed for the Site, which selected excavation and off site disposal of contaminated soil, sediment, and drums as well as treatment and on-site discharge of wastewater, and construction of a surface water diversion system. EPA canceled implementation of this remedy due to confirmatory sampling that indicated that pesticide contaminants had degraded and no longer required on-site thermal treatment. Subsequent investigations, however, identified significant concentrations of pesticide breakdown products and elevated levels of other contaminants. In 2000, an interim remedy was selected and in 2003 carbon adsorption filters were installed on nearby residents' wells to treat ground water used for drinking. In 2006, a final remedy was selected for the entire Site to provide a permanent solution to the contamination. The final remedy will include: connecting affected residences to the public water supply, excavation and off-site disposal of contaminated soils, excavation of contaminated sediments from nearby wetlands, treatment of soils in the saturated zone and ground water table with in-situ bioremediation, treatment of ground water with in-situ bioremediation, monitoring and natural attenuation of ground water, and temporary restrictive covenants to prevent inappropriate use of land and ground water until remedial goals are met.

Five-Year Review Schedule: EPA plans to complete the Five-Year Review process in October 2007. Comments are welcome during this time. As part of the Five-Year Review process, EPA will be available to answer any questions about the Site. Community members who have questions about the Site, the Five-Year Review process, or who would like to participate in a community interview, are asked to contact the Project Manager, Jan Rogers.

Contact Information: If you would like more information or have any questions, comments and/or concerns about the Five-Year Review, you may contact the following:

Jan Rogers, Project Manager
561-616-8868 / 1-800- 435-9234 (Toll Free)
U.S. EPA, Region 4 – South Florida Office
400 N. Congress Ave., Suite 120
West Palm Beach, FL 33401-2933
Rogers.jan@epa.gov

L'Tonya Spencer, Community Involvement Coordinator
404-562-8463 / 1-800-564-7577 **(Toll Free)**
U.S. EPA, Region 4 – Superfund Division
61 Forsyth Street
Atlanta, GA 30303
Spencer.latonya@epa.gov

Site Repository Information is as follows:

U.S. EPA Region 4 Mailing Address
Waste Division (Mailcode: 4WD-SRTSB)
61 Forsyth Street
Atlanta, Georgia 30303

Local Document Repository
Cooper Memorial Library
620 W. Montrose St.
Clermont, FL 34711

Or view online at: http://cfpub.epa.gov/supercpad/cursites/csitinfo.cfm?id=0400521

Before the undersigned authority personally appeared Beverly C. Simmons

who on oath says that he/she is the Legal Advertising Representative of Orlando Sentinel, a daily newspaper published at Orlando in Orange County, Florida; that the attached copy of advertisement, being a U. S. ENVIRONMENTA in the matter of ********TOWER CHEMICAL

in the ORANGE Court, was published in said newspaper in the issue; of 04/29/07

Affiant further says that the said Orlando Sentinel is a newspaper published at ORLANDO, in said ORANGE County, Florida, and that the said newspaper has heretofore been continuously published in said ORANGE County, Florida, each Week Day and has been entered as second-class mail matter at the post office in ORLANDO in said ORANGE County, Florida, for a period of one year next preceding the first publication of the attached copy of advertisement; and affiant further says that he/she has neither paid nor promised any person, firm or corporation any discount, rebate, commission or refund for the purpose of securing this advertisement for publication in the said newspaper.

Beverly C. Simmons

The foregoing instrument was acknowledged before me this 2nd day of MAY, 20 07, by BEVERLY C.SIMMONS, who is personally known to me and who did take an oath.

(SEAL)

Year Review process in October 2007. Comments are welcome during this time. As part of the Five-Year Review process, EPA will be available to answer any questions about the Site. Community members who have questions about the Site, the Five-Year Review process, or who would like to participate in a community interview are asked to contact the Project Manager, Jan Rogers.

Contact Information: If you would like more information or have any questions, comments and/or concerns about the Five-Year Review, you may contact the following:

Jan Rogers, Project Manager
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Site Repository Information is as follows:

U.S. EPA Region 4 Mailing Address
Waste Division (Mail code: 4WD-SRTSB)
61 Forsyth Street
Atlanta, Georgia 30303

Local Document Repository
Cooper Memorial Library
625 W. Montrose St.
Clermont, Fl 34711

Or view online at: http://cfpub.epa.gov/supercpad/cursites/csitinfo.cfm?id=0402571

CORTV4-APR 29

Chemical Co. Site (the Site) is in the Town of Clermont, Lake County, Florida. The Site, which covers approximately fifteen acres, lies in an area of mixed agricultural, residential, and industrial use about 15 miles west of Orlando on County Road 455. Between 1957 and 1981, the Tower Chemical Company manufactured, produced, and stored various pesticides. Soil, surface water, and ground water resources at and near the Site became contaminated with acidic wastewater, DDT, and other organic contaminants.

Cleanup Action: In 1983, the Site was added to the National Priorities List of contaminated sites requiring cleanup. In 1987, the first ROD was signed for the Site, which selected excavation and off site disposal of contaminated soil, sediment, and drums as well as treatment and on-site discharge of wastewater, and construction of a surface water diversion system. EPA canceled implementation of this remedy due to confirmatory sampling that indicated that pesticide contaminants had degraded and no longer required action. A thermal treatment Subsequent investigations, however, identified significant concentrations of pesticide breakdown products and elevated levels of other contaminants. In 2000, an interim remedy was selected and in 2002 carbon adsorption filters were installed near residents' wells to treat ground water used for drinking. In 2006, a final remedy was selected for the entire Site to provide a permanent solution to the contamination. The final remedy will include: connecting affected residences to the public water supply; excavation and offsite disposal of contaminated soils; excavation of contaminated sediments from nearby wetlands, treatment of soils in the saturated zone and ground water to be with in-situ bioremediation; treatment of ground water with in-situ bioremediation, monitoring and natural attenuation of ground water, and temporary re-

Appendix C: Interview Forms

Interview Form for Tower Chemical's Five-Year Review

Site Name: Tower Chemical **EPA ID No.: FLD004065546**
Interviewer Name: Jan Rogers **Affiliation: U.S. EPA**
Affiliation: Site Owner
Time: 9:00 AM Date: 5/9/07
Type of Interview (Circle one): In Person Phone Mail Other_____
Location of Interview: Tower Chemical Site, County Route 455, Clermont, Florida

Site Owner
Mr. Rogers provided an overview of the Site's remedy, describing that this Site inspection is part of a Five-Year Review that is triggered by the need to evaluate the Site's interim ground water remedy. He explained that the interim remedy, implemented in 2002-2003, included the installation of carbon filters on private drinking water wells at nearby residences. He also explained the components of the remedy that was selected for the Site in 2006.

1. What is your overall impression of the project?

   Overall, the Site owner has been very satisfied.

2. What effect has this Site had on the surrounding community, if any?

   According to the Site owner, people around here know the name Tower Chemical. Mostly the older folks who have been around for a while can remember when the plant operated, but the younger people don't know much about it all. The Site has not really affected surrounding property values either way.

3. Are you aware that EPA has selected remedies to address soil, sediment, and ground water contamination at the Site?

   Yes. The Site owner is aware of EPA's remedial plans.

4. Are you aware of any complaints or inquiries regarding environmental issues or the remedial action from residents since implementation of the interim action?

   The Site owner is not aware of any complaints related to environmental issues at the Site. So far the only complaints have been from customers who are anxious to store their boats and RVs in the facility that the Site owner and his business partners are working to open; these customers would like the business to open soon.

5. Are you aware that temporary institutional controls required as part of the Site's remedy will limit residential use and the installation of wells at the Site during the implementation of the remedy?

   The Site owner was not aware of the institutional controls required at the Site.

   Mr. Rogers described that he would be working with the State of Florida to ensure that restrictive covenants could be put in place to prevent residential use and well installation at the Site until the final remedy has been implemented.

   Mr. Rogers asked if the Site owner was aware of any restrictions in the deed for the property?

   The Site owner indicated that he did not know if there were. He offered to share the results of a title search that was completed for the property as part of the Phase I Environmental Site Assessment that he had conducted before purchasing the property. He also indicated that he would be happy to cooperate in order to establish institutional controls.

6. What effect has the reuse of the Site had on the community? Are you aware of any changes in projected land use?

   In general the effect of reuse has been positive. There has been a lot of positive interest in the service that they will be offering on the Site. Nearby residential development has created a lot of demand for boat storage. The Site owner explained that they had hired a demolition contractor to haul away metal structures from the concrete pad of the original plant building at the Site. After the demolition, he and his partners also refurbished the steel frame and roof that covers the concrete pad. The Site owner pointed toward the metal open frame building, explaining that they had cleaned, repainted, and replaced some metal roofing on the building.

   Mr. Rogers explained that metal debris had collected on the concrete pad inside the open frame building and had represented an attractive nuisance.

   The Site owner said he thought the restoration of a shell structure has improved the aesthetics of the Site.

   Mr. Rogers talked about the Site owner's business offering and mentioned that vehicle storage seemed to be a good fit for the Site.

   The Site owner explained that the need for the vehicle and recreation equipment storage business arose when many of the nearby residential neighborhoods began implementing restrictive covenants and zoning ordinances that prevent homeowners from parking boats, recreational vehicles, or other large objects in their driveways.

Mr. Rogers then explained that the 2006 Record of Decision (ROD) that had recently been completed anticipates a residential cleanup standard.

The Site owner said he intends to continue using the property he owns for commercial purposes and that he might like to see the whole Site paved at some point in the future.

Mr. Rogers explained that paving the Site could potentially generate a large amount of stormwater runoff that would need to be collected and controlled.

The Site owner said he believes that new commercial uses are planned for areas to the west and south. Areas to the north of the Site are likely to remain residential. He explained that traffic is heavy on County Route 455.

Mr. Rogers indicated that plans might be in place to widen County Route 455.

The Site owner said that this had been discussed, but that the road is a scenic byway and has to remain a two-lane road.

The Site owner and his partners are planning to install a water line for fire protection in their vehicle storage area. A permit has been filed with the Clermont Water Utility to connect to the municipal line. The proposed fire line would likely be installed along the south side of the Site access road adjacent to the former rail bed. The Site owner said that they would replace the fence that is down on that side of the property after the fire line was installed.

Mr. Rogers asked if there would be a drinking water line installed at the Site.

The Site owner said that they would like to have one but would need to install a second line.

Mr. Rogers indicated that he could understand that drinking water cannot come from a fire line, because the infrequent use of this water would result in stagnant conditions.

The Site owner explained that the office building located at the southern edge of the Site's parking area was owned by another business that parks its trucks on the small property that it owns.

Mr. Rogers asked if the Site owner knew when the adjacent business owner had acquired the property.

He purchased three parcels from Southeast Agriculture in January 2006.

Mr. Rogers then asked: Who owned the parcels that you purchased?

We purchased the Babel parcels.

7. Have you, anyone associated with your business, or any of the other tenants at the Site conducted site-related activities or communicated with EPA in the last five years? If so, please give purpose and results of these activities.

   The Site owner indicated that he had worked closely with RPM Galo Jackson and that he saw and communicated with Mr. Rogers frequently.

   The Site owner indicated that he wanted to see abandoned wells removed from the Site. He asked Mr. Rogers when it would be possible for EPA to come remove the other abandoned wells.

   Mr. Rogers explained that abandoned monitoring wells were removed from areas of the Site that do not have contaminated soils, and that the Site owner had helped remove these wells.

   The Site owner discussed the need to remove other abandoned monitoring wells from the Site to prevent them from being damaged.

8. Do you feel well informed about the Site's activities and progress?

   Yes. The Site owner has been in regular contact with EPA remedial project managers and regional counsel. He indicated that he was trying to stay informed so that he can stay out of trouble.

9. Do you have any comments, suggestions, or recommendations regarding the Site's management or operation?

   The Site owner indicated that he would like to see the abandoned monitoring wells removed as soon as possible. He is concerned that someone at the Site will drive into one of the wells and cause liability issues for him. He asked when EPA could come out to remove the rest of them.

   Mr. Rogers indicated that it would be within three months.

   The Site owner indicated that they would like to see the wells removed as soon as possible, hopefully sooner than three months, and they are willing to help.

The Site owner also asked if it would be possible to remove a pile of debris from the western edge of the burn/burial area at the Site. He mentioned that these piles are not in the way right now, but they will be. In addition, he sees them as an eyesore and potential perception issue when they open for business.

Mr. Rogers indicated that further discussions with the Florida Department of Environmental Protection are needed to determine the appropriate procedures of removal and disposal of the debris pile, which may contain contaminated soils. There is some concern that the soil, concrete, and debris in this pile may be contaminated, as the materials were left on site following previous removal actions. The soils have been tested previously and were not highly contaminated, but they would need to be retested prior to removal.

Interview Form for Tower Chemical's Five-Year Review

Site Name: Tower Chemical **EPA ID No.: FLD004065546**
Interviewer Name: Jan Rogers **Affiliation: EPA Region 4**
Subject's Name: Tamara Richardson **Affiliation: City of Clermont Water Utility**
Subject's Contact Information: T: 352-241-7335 / Email: trichardson@clermontfl.org
Time: 11:00 AM **Date: 5/9/07**
Type of Interview (Circle one): In Person **Phone** **Mail** **Other_____**
Location of Interview: Clermont City Hall, 685 Montrose St., Clermont, FL

Clermont Water Utility: Tamara Richardson, Director of Engineering and Utilities

Mr. Rogers provided an overview of the Site's remedy, describing that this interview is part of a Five-Year Review that is triggered by the need to evaluate the Site's interim ground water remedy. He explained that the interim remedy, implemented in 2002-2003, included the installation of carbon filters on private drinking water wells at nearby residences. He also explained the components of the remedy that was selected for the Site in 2006.

1. Are you aware of the environmental issues at the Tower Chemical Superfund Site?

   Yes. Ms. Richardson has followed the Tower Chemical Site closely in the media. She also attended at public workshop for the Site five or six years ago.

2. What permitting or other regulatory requirements does the Clermont Water Utility currently have in place that govern well installation, decommissioning, or ground water usage?

   The Tower Chemical Site is in Lake County. Currently the City would not have permitting authority or the responsibility to oversee well installation in the Tower Chemical Site area. Lake County would issue a building permit when applications are filed for an electrical hookup to power a new well. At the municipal level, this would be the only permitting process related to new well installation. St. John's River Water Management District may have other permitting authority or processes.

3. Do any of these regulations apply to the Tower Chemical Site or the nearby residents?

   Building permits are required for new well installation in both Lake County and Clermont, and permits are required to connect to any municipal water line.

   The City of Clermont does maintain a municipal water line that runs along County Route 455. All new homes and businesses along this corridor are required to hook into the municipal water line, however existing structures that are on private wells are grandfathered and are not required to hook into the water line.

The Site owners filed for a permit to tap into the water line on County Route 455. Ms. Richardson indicated that the Site owners intend to install a 10" fire line.

Mr. Rogers said that he had spoken with the current owner about the fire line and that he may also want to install a drinking water line.

Ms. Richardson indicated that if the Site owners want to provide potable water at the Site, they would need to install an additional water supply line, because the water in a fire line is typically stagnant the majority of the time and not suitable for consumption.

Mr. Rogers indicated that he had talked with the current owner about that.

4. Does the Clermont Water Utility have any maps or other tools that indicate the extent of the contaminated ground water plume associated with this Site?

   No. The City is not generally concerned with tapping into ground water plumes. Municipal wells draw from the Floridan aquifer at depths that have not been affected by contamination at the Tower Chemical Site. Ms. Richardson is aware of an EDB plume and high nitrate concentrations in surficial aquifers in the area. The city does not maintain ground water plume mapping tools.

5. How does the Clermont Water Utility identify/track areas of contaminated ground water and what is the process for obtaining a withdrawal permit in such an area?

   For instance, would you incorporate an EPA delineation of ground water contamination into your reference maps? Would having this type of information preclude issuance of a ground water withdrawal permit? If such a permit request were submitted, would EPA be contacted for comment?

   The City does not maintain ground water plume mapping tools. It would be necessary to coordinate with Lake County to identify which department handles building permits. The County's Health Department would most likely handle the permitting for well installation.

6. Are you aware of or expecting any changes to regional or state laws that might affect how ground water use is managed?

   Currently, the City of Clermont's municipal wells draw water from the Floridan aquifer at depths of 800-900 feet. There is some concern that the water supply system will change, and Clermont may be required to stop withdrawal from the Floridan. Under this scenario, a water supply pipeline would connect Clermont's future water lines to surface water resources in Ocala, located east of Clermont.

7. Would the Clermont Water Utility be willing to consider the possibility of an agreement with EPA concerning the regulation of well installation and ground water use at and around this Site until ground water cleanup goals have been met?

   Lake County would need to be involved in any agreement related to well installation or permitting at the Tower Chemical Site, because the City of Clermont Water Utility does not have jurisdiction over the Site and surrounding areas. Lake County and Clermont can coordinate in the future to ensure that municipal water hook ups and subsequent well decommissioning processes are integrated. If it could help, the City of Clermont Water Utility would be willing to do so.

8. Is there anything in terms of data or information that EPA or FDEP could provide that would improve the Clermont Water Utility's ability to oversee the area affected by this Site?

   Ms. Richardson requested that EPA provide her with adequate notice before requesting water hookups, so that she can bring the City Council up to speed.

   Clermont has established firm regulations on the use of municipal water for irrigation purposes. Ms. Richardson would need to know if EPA and the Florida Department of Environmental Protection will require residences around the Tower Chemical Site to abandon their irrigation wells. These residences might then need to use municipal water for irrigation, which can be approved under certain circumstances.

   Mr. Rogers indicated that discussions between EPA and FDEP were ongoing regarding the use of existing private wells for irrigation purposes.

9. Has the Clermont Water Utility worked with EPA or FDEP before to implement, monitor, or enforce ground water use restrictions related to a Superfund Site?

   No.

   Mr. Rogers explained that the final remedy selected for the Tower Chemical Site would require temporary institutional controls to prevent ground water use during the Site's remediation.

10. Is the Clermont Water Utility aware of EPA's remedial plans to shift water supply from several residential wells threatened by ground water contamination at the Site to municipal water?

Yes. Ms. Richardson has been in contact with Mr. Rogers regarding EPA's remedial plans to shift water supply from private residential wells to municipal water.

Mr. Rogers explained that EPA is in the process of identifying a timeframe and funding source for the conversion of the homes to municipal water.

Ms. Richardson asked that whenever the timeframe is established that she would like to know as soon as possible so that she can brief the Clermont City Council.

11. Is there a mandate for residences on private wells to be connected to the municipal water line that runs along County Route 455?

There is no mandate for residents on private wells to have their homes connected to the municipal supply line. These residences would be grandfathered and the residents could continue using their private wells. Any new structures or land uses requiring water use would need to receive water via the municipal line on County Route 455.

What procedures would need to be followed to ensure that residences could be tied into the municipal water system in a timely manner?

Ms. Richardson indicated that the following steps would need to happen:

- *EPA would be responsible for identifying the residences that need to be connected.*
- *EPA would be responsible for installing a pipe to connect the municipal line to the houses (City of Clermont's specifications for waterline hookups are available online at http://clermont.govoffice.com).*
- *EPA would need to pay the impact and meter setting fees for each residence.*
- *The City of Clermont would set the meters for all occupied residences.*

Mr. Rogers asked if the new municipal water supply connection to the house would need to be separate from the existing well connection.

Ms. Richardson responded that if the private residential wells will continue to be used for drinking water irrigation purposes, then the supply line for municipal water would need to be segregated from these wells to prevent cross-contamination of the municipal water supply.

Interview Form for Tower Chemical's Five-Year Review

Site Name: Tower Chemical **EPA ID No.: FLD004065546**
Interviewer Name: Jan Rogers **Affiliation: EPA Region 4**
Subject's Name: Brett LeRoux **Affiliation: FDEP Central District**
Subject's Contact Information: 3319 Maguire Blvd., Orlando, FL / T: 407-893-3330
Time: 9:00 AM Date: 5/10/07
Type of Interview (Circle one): In Person Phone Mail Other_____
Location of Interview: 3319 Maguire Blvd., Orlando, FL

State of Florida DEP: Brett LeRoux

Mr. Rogers provided an overview of the Site's remedy, describing that this interview is part of a Five-Year Review that is triggered by the need to evaluate the Site's interim ground water remedy. He explained that the interim remedy, implemented in 2002-2003, included the installation of carbon filters on private drinking water wells at nearby residences. He also explained the components of the remedy that was selected for the Site in 2006.

1. What is your overall impression of the project?

   Mr. LeRoux was not familiar with the project beyond what frequently appears in the media. At the Florida Department of Environmental Protection (FDEP), whenever a project is handled through the Tallahassee state office, as the Tower Chemical Site is, the district offices are rarely involved.

2. How well do you believe the remedy currently in place (this includes carbon filters only) is performing?

   Mr. LeRoux was not aware of the remedy components at the Site.

3. Are you aware of any complaints or inquiries regarding environmental issues or the remedial action from residents since implementation of the interim action?

   Mr. LeRoux has not had or heard complaints about the Tower Chemical Site for a long time. He felt that any efforts that can be taken to publicize what the Agency is doing to remediate the Site would go a long ways. He indicated that he was not aware that the Site is being put back into reuse.

4. Has your office conducted any site-related activities or communications in the last five years? If so, please give purpose and results of these activities.

   The FDEP Central Office has never been involved at the Site.

5. Do you feel well informed about the Site's activities and progress?

   Mr. LeRoux indicated that he knew very little about the Site's progress. He asked where the Site repository was located.

   Mr. Rogers indicated that the Clermont Public Library serves as the Site document repository. He asked if Mr. LeRoux would like to receive fact sheets.

   Mr. LeRoux indicated that he would like to receive updates in the mail and would like to be notified of any future public meetings.

6. Do you have any comments, suggestions, or recommendations regarding the Site's management or operation?

   Mr. LeRoux did not have any suggestions about the Site. He indicated that he did not have extensive experience with pesticides.

   Mr. Rogers explained EPA's approach to identifying in-situ treatment options for the Site's soil contamination through chemical-oxidation.

   Mr. LeRoux indicated that he thought chemical-oxidation would likely be an effective approach for the Site.

Interview Form for Tower Chemical's Five-Year Review

Site Name: Tower Chemical **EPA ID No.: FLD004065546**
Interviewer Name: Jan Rogers **Affiliation: EPA Region 4**
Subject's Name: Jim Frazee **Affiliation: St. John's River Water Management District**
Subject's Contact Information: Tel: 407-893-3330
Time: 11:30 AM **Date: 5/10/07**
Type of Interview (Circle one): In Person **Phone** **Mail** **Other_____**
Location of Interview: International Plaza Hotel, 10100 International Drive, Orlando, FL

St. John's River Water Management District: Jim Frazee, Hydrologist, Water Use Regulation Division

Mr. Rogers provided an overview of the Site's remedy, describing that this interview is part of a Five-Year Review that is triggered by the need to evaluate the Site's interim ground water remedy. He explained that the interim remedy, implemented in 2002-2003, included the installation of carbon filters on private drinking water wells at nearby residences. He also explained the components of the remedy that was selected for the Site in 2006.

1. Are you aware of the environmental issues at the Tower Chemical Superfund Site?

   Mr. Frazee was aware that Site sampling had discovered breakdown components of compounds produced at the Tower Chemical Site. He has been in contact with previous Remedial Project Managers at the Site.

2. What permitting or other regulatory requirements does the St. John's River Water Management District (SJRWMD) currently have in regulations that govern well installation, decommissioning, or ground water usage?

   Mr. Frazee indicated that all wells in the Site area are either permitted by the Lake County Health Department or by SJRWMD according to delineated areas. To help keep up with demand, the SJRWMD has delegated permitting of wells less than 6 inches to the Lake County Health Department, which allows the SJRWMD to focus on wells permitted in special areas such as the delineated areas. The Lake County Health Department and SJRWMD's permit regulations are interconnected to allow this cooperative arrangement. The delineated areas were developed in 1995 and have not been modified since that time. Each year approximately 800 wells in and out of these delineated areas are sampled in Lake County, and they have been identifying areas beyond the 1995 delineated areas that may necessitate a future reconfiguration of these areas. Mr. Frazee indicated that very specialized permitting is occurring in the area around the Tower Chemical Site.

3. Do any of these regulations apply to the Tower Chemical Site or the nearby residents?

   Yes. See answer to question to #2, above.

4. Does the SJRWMD have any maps or other tools that indicate the extent of the contaminated ground water plume associated with this Site?

   SJRWMD uses the delineated area ground water contaminant maps developed in 1995. These maps have been integrated into a Geographic Information System (GIS), which is constantly updated with additional information to help improve wellhead protection processes.

5. How does the SJRWMD identify/track areas of contaminated ground water and what is the process for obtaining a withdrawal permit in such an area?

   SJRWMD works with existing delineated area maps. Mr. Frazee explained that delineated area maps, developed in 1995, are available for the area around the Tower Chemical Site (he provided hard copies of these maps – see attached). SJRWMD's policy is for all new development within delineated areas to be connected to municipal supply. All properties within 500' of a public water supply line are required to be connected to that source. Private wells will only be permitted if municipal connection is not possible.

   If a well must be installed within a delineated area, a separate permitting process requires installation of a deeper well (800-900 feet). Permitting for wells in Lake County would be handled by both the SJRWMD and the Lake County Health Department (LCHD). LCHD handles the permitting for all wells with lower withdrawal capacity – any well less than 6" in diameter. The larger capacity wells that draw water from greater depths are handled by SJRWMD. SJRWMD also handles all wells in delineated areas.

6. For instance, would you incorporate an EPA delineation of ground water contamination into your reference maps? Would having this type of information preclude issuance of a ground water withdrawal permit? If such a permit request were submitted, would EPA be contacted for comment?

   SJRWMD already works with existing delineated area maps, but would be interested in receiving any new data layers that EPA could provide. Mr. Frazee explained that delineated area maps developed in 1995 are available for the area around the Tower Chemical Site (he provided hard copies of these maps – see attached).

   If a permit request was filed within a delineated area, SJRWMD would likely still issue a permit, but the SJRWMD would ensure that the well was engineered to prevent exposure to contamination. The district would only permit a "Zone A" well that taps deep into the Floridan aquifer. Wells in delineated areas are also fitted with specialized sampling caps that have identification tags, and sampling hook ups. The wells are sampled regularly to ensure that drinking water standards are met.

   The SJRWMD is very sensitive to and aware of the ground water issues around the Tower Chemical Site; they would like to have as much information as possible, so that

they can make the best possible decisions regarding wells in the area. As part of the permitting process, it would be possible for SJRWMD to notify EPA Region 4 whenever a permit request is filed within the delineated area around the Tower Chemical Site.

7. Are you aware of or expecting any changes to regional or state laws that might affect how ground water use is managed?

   A new regional water management district initiative is underway to develop a policy on water use allocation. Over the next six years, changes may have implications for consumptive use in the Clermont area.

8. Would the SJRWMD be willing to consider the possibility of an agreement with EPA concerning the regulation of well installation and ground water use at and around this Site until ground water cleanup goals have been met?

   SJRWMD would like to coordinate with EPA as closely as possible and would be willing to consider a cooperative agreement. Permitting processes are already in place to ensure that special permits are issued within delineated areas. Mr. Frazee indicated that he would need to be notified if there are particular issues beyond what is understood today.

   He believes that close coordination will be key. At other sites where EPA has been involved, Mr. Frazee has not had good experiences. He feels that it is essential to work together

9. Is there anything in terms of data or information that EPA or FDEP could provide to make the SJRWMD's job of overseeing the area affected by this Site easier?

   Mr. Frazee would like to be notified if relevant information comes up. He indicated that he could share data and water quality reports with EPA if that would be helpful.

   SJRWMD faces a number of challenges working with old or abandoned irrigation wells. These wells represent a public health hazard for the water management districts. If excavation, farming, or property maintenance activities caused an abandoned well to be broken, debris or contaminants could potentially be released into the ground water. There is a need to identify all irrigation wells and to track their use. If wells are no longer in use, then SJRWMD should be notified so that the wells can be properly abandoned, grouted, and removed.

10. Has the SJRWMD worked with EPA or FDEP before to implement, monitor, or enforce ground water use restrictions related to a Superfund Site?

    SJRWMD has worked with EPA at other Sites. The experience of interfacing with EPA has been mixed. Lack of willingness to cooperate on EPA's part at other sites prevented effective permitting.

SJRWMD would be able to help with the enforcement ground water use restrictions in the future. While existing residences in delineated areas are allowed to remain on private wells, a property transfer would automatically trigger a connection to the public water supply.

Mr. Frazee felt like it would make sense to assemble a group of key regulatory departments and agencies to plan for future ground water use restrictions at the Site.

11. Is the SJRWMD aware of EPA's remedial plans to shift water supply from several residential wells threatened by ground water contamination at the Site to municipal water?

Yes. Mr. Frazee is aware of these plans. He indicated that the shift to municipal water supply would be consistent with the SJRWMD's policy regarding private wells within delineated areas.

Interview Form for Tower Chemical's Five-Year Review

Site Name: Tower Chemical **EPA ID No.: FLD004065546**
Interviewer Name: Jan Rogers **Affiliation: EPA Region 4**
Affiliation: Adjacent Business Owner
Time: 1:45 PM **Date: 5/10/07**
Type of Interview (Circle one): In Person **Phone** **Mail** **Other_____**
Location of Interview: Tower Chemical Company Superfund Site, County Route 455, Clermont, FL

Business Owner
Mr. Rogers provided an overview of the Site's remedy, describing that this interview is part of a Five-Year Review that is triggered by the need to evaluate the Site's interim ground water remedy. He explained that the interim remedy, implemented in 2002-2003, included the installation of carbon filters on private drinking water wells at nearby residences. He also explained the components of the remedy that was selected for the Site in 2006.

1. What is your overall impression of the project?

   The interviewee owns three parcels at the Site, totaling approximately one acre. These parcels include a former office building as well as a metal shed building on the southern side of the property. The interviewee knows that the Site has been affected by contamination from the Tower Chemical plant, but he has not been heavily updated and just has general knowledge of the Site from what he has heard and read. He was not aware of the remedy that had been selected for the Site.

   The interviewee asked what the depth of contamination was, and Mr. Rogers responded that it varies but that most is deeper than 12 feet.

2. What effect has this Site had on the surrounding community, if any?

   The interviewee is aware that neighborhoods in Monteverde had EDB well issues in the 1980s, but he wasn't sure whether that was related to the Tower Chemical Site. Most folks today don't know very much about the Site.

3. Are you aware that EPA has selected remedies to address soil, sediment, and ground water contamination at the Site?

   No. The interviewee was aware the testing was underway at the Site. Through conversations he has had with former employees at the Site, he has some awareness of the waste disposal practices. He is aware that a sinkhole exists beneath the evaporation pond and that contaminants were dumped into that pond.

4. Are you aware of any complaints or inquiries regarding environmental issues or the remedial action from residents since implementation of the interim action?

No. *The interviewee was not aware of the carbon filters that had been installed on residences surrounding the Site. He was not aware of the potential ground water contamination at the Site.*

5. Are you aware that temporary institutional controls required as part of the Site's remedy will limit residential use and the installation of wells at the Site during the implementation of the remedy?

   He was not aware that any use restrictions would be required at the Site, but he indicated that he would not have a problem with the restrictions. He currently uses the property he owns to park tanker trucks that he uses to haul potable water. He does not conduct maintenance activities at the Site.

6. What effect has the reuse of the Site had on the community? Are you aware of any changes in projected land use?

   The interviewee feels that the vehicle storage facility has improved the Site. He feels like parking tanker trucks on his portion of the Site is a good reuse for the property. He indicated that he had no plans to reuse the property for anything other than parking trucks. Although, he indicated that he would sell for the right price. There are two buildings located on the property that the interviewee owns. He suggested that he may clear some old scrap metal out of one of the buildings.

7. Have you, anyone associated with your business, or any of the other tenants at the Site conducted site-related activities or communicated with EPA in the last five years? If so, please give purpose and results of these activities.

   No. The interviewee has not conducted any site-related activities. In 2006, he purchased the property from Southeast Agriculture. He did not communicate with EPA prior to purchasing the Site.

   Mr. Rogers asked the interviewee if he knew whether he had a Phase I environmental Site assessment performed before he purchased the property.

   The interviewee indicated that did not conduct a Phase I environmental Site assessment, but he did not know if one might have been conducted.

   Mr. Rogers indicated that he would like to share some information with the interviewee about the Superfund program and some of the liability implications of owning property at or near a Superfund Site.

   The interviewee was not aware that he could be held liable for contamination at the Site under CERCLA.

8. Do you feel well informed about the Site's activities and progress?

   No.

   Mr. Rogers asked if the interviewee would like to receive fact sheets that provide Site updates.

   The interviewee would appreciate receiving updates in the form of fact sheets or communications from EPA.

9. Do you have any comments, suggestions, or recommendations regarding the Site's management or operation?

   The interviewee asked that EPA not include the property that he owns as part of the Tower Chemical Superfund Site. He indicated that he has done nothing to cause contamination at the Site. He also asked if EPA site activities would cost him anything.

   Mr. Rogers offered that it would be hard to say and that he would provide the interviewee with information on EPA's bona fide prospective purchaser requirements.

Interview Form for Tower Chemical's Five-Year Review

Site Name: Tower Chemical **EPA ID No.: FLD004065546**
Interviewer Name: Jan Rogers **Affiliation: EPA Region 4**
Name: Resident at Carbon Filter Location #3 **Affiliation: Affected Residents**
Time: 2:00 PM **Date: 5/9/07**
Type of Interview (Circle one): In Person **Phone** **Mail** **Other_____**
Location of Interview: Private Residence, Clermont, FL

Affected Residents
Mr. Rogers provided an overview of the Site's remedy, describing that this interview is part of a Five-Year Review that is triggered by the need to evaluate the Site's interim ground water remedy. He explained that the interim remedy, implemented in 2002-2003, included the installation of carbon filters on private drinking water wells at nearby residences. He also explained the components of the remedy that was selected for the Site in 2006.

1. Are you aware of the environmental issues at the Tower Chemical Superfund Site and what cleanup activities have occurred?

   Yes. The residents have been well informed about the Site. The residence abuts the Tower Chemical property, and one of the residents used to work at the Tower Chemical Site. The resident remembers the Tower Chemical Company operators putting truckloads of lime into the evaporation pond to try to neutralize the acidity of the pond. He said that it didn't seem to work because strips for measuring pH would turn color if you just got close to the drainage ditch. At one time, the residents watered their garden and the plants were all dead the next day. The resident also saw a cow drink water from the drainage ditch at one point, and immediately after, the cow was slinging its head around. He checked the pH and it was low.

2. What are your views about current Site conditions, problems, or related concerns?

   The residents expressed concern about wind-blown dust and dirt carrying contaminants into their yard and home. The residents suggested that paving the Site would prevent wind-blown dirt from migrating off-site.

3. What has been your experience with the carbon filters installed in your home in 2003?

   The residents have not had any problems with the filters. The particle filters are almost never clogged.

4. How frequently have you changed the particle filters?

   The residents change the particle filters once every three months.

5. Was a laminated sheet of instructions left with you during the recent carbon filter change-out?

Yes, the residents received a laminated sheet of instructions.

6. What effect has this Site had on the surrounding community, if any?

   The residents do not feel like the Site has had much impact on the surrounding community. The residents indicated that property values are continuing to increase.

7. Should EPA do more to keep involved parties and surrounding neighbors informed of activities at the Site? What methods would you recommend?

   The residents indicated that they felt well informed about the Site and ongoing activities.

8. Do you have any comments, suggestions, or recommendations regarding the Site's management or operations?

   Except for the dust that blows around at the Site, the residents feel that EPA has handled the project well.

9. Future cleanup plans at the Site include connecting your home into Clermont's municipal water supply. Do you have any comments or concerns about the potential change in your water supply?

   Two carbon filters were installed on the residents' well. These filters serve three residences including their own home, a rental trailer on their property, and an adjacent residence. The residents indicated that they would like all residences on their well to be hooked up to the municipal water supply. The residents expressed an interest in being able to continue using their well for irrigation after they are hooked up to the municipal water supply. Mr. Rogers said that he thought this would be possible, but that he would have to look into this further.

Interview Form for Tower Chemical's Five-Year Review

Site Name: Tower Chemical **EPA ID No.: FLD004065546**
Interviewer Name: Jan Rogers **Affiliation: EPA Region 4**
Name: Resident at Carbon Filter Location #4 **Affiliation: Affected Resident**
Time: 3:00 PM **Date: 5/9/07**
Type of Interview (Circle one): In Person **Phone** **Mail** **Other_____**
Location of Interview: Private Residence, Clermont, FL

Affected Residents
Mr. Rogers provided an overview of the Site's remedy, describing that this interview is part of a Five-Year Review that is triggered by the need to evaluate the Site's interim ground water remedy. He explained that the interim remedy, implemented in 2002-2003, included the installation of carbon filters on private drinking water wells at nearby residences. He also explained the components of the remedy that was selected for the Site in 2006.

1. Are you aware of the environmental issues at the Tower Chemical Superfund Site and what cleanup activities have occurred?

   Yes, he is aware of what has been done so far, but was not as aware of what is planned. The resident attended a meeting several years ago. The resident mentioned that from 1946 until the 1990s, the grandparents of the current residents at Carbon Filter Location #3 lived in the house that he now lives in and didn't have any health problems during the period that Tower Chemical was operating.

2. What are your views about current Site conditions, problems, or related concerns?

   The resident doesn't have any current concerns about the Site. He is assured by the fact that the Site is in reuse. He said that he sees this as an indication that it must be safe.

3. What has been your experience with the carbon filters installed in your home in 2003?

   The resident hasn't found the filters to be a nuisance or anything. He said he liked knowing that the water is more purified. He said that he could taste and see a difference in his water when the filters were installed. He doesn't get much particulate matter on his filters; sometimes there is black stuff that looks like carbon.

4. How frequently have you changed the particle filters?

   Whenever the pressure begins to drop, the resident tends to change the particle filters. He estimates that he does this every two-to-four months.

5. Was a laminated sheet of instructions left with you during the recent carbon filter change-out?

No. The resident did not receive a laminated sheet of instructions.

6. What effect has this Site had on the surrounding community, if any?

   Residents up the road at the newer developments tend to make a big deal about the Site. Many of these folks are new to the area and tend to ask a lot of questions whenever the Site comes up in the paper.

   In general, the Site hasn't had too much impact on the community. The area around the Site is changing though. The resident explained that he and one or two of his neighbors had discussed the idea of combining their land prior to selling it off for commercial uses. He felt like the commercial growth along Route 50 would likely extend north along County Route 455.

7. Should EPA do more to keep involved parties and surrounding neighbors informed of activities at the Site? What methods would you recommend?

   The resident indicated that it would be nice to get updates on the activities at the Site.

8. Do you have any comments, suggestions, or recommendations regarding the Site's management or operations?

   No.

9. Future cleanup plans at the Site include connecting your home into Clermont's municipal water supply. Do you have any comments or concerns about the potential change in your water supply?

   The resident does not have a preference about the drinking water supply. He did indicate that he would prefer to maintain his private well for irrigation purposes – primarily garden irrigation.

   Mr. Rogers said that this is something that they will have to look into because the local water officials are concerned that the well water may get used for things other than irrigation, which could pose a health risk.

   The resident wondered whether EPA would continue to monitor the water quality once he is hooked up to the municipal water supply.

Interview Form for Tower Chemical's Five-Year Review

Site Name: Tower Chemical **EPA ID No.: FLD004065546**
Interviewer Name: Jan Rogers **Affiliation: EPA Region 4**
Name: Resident at Carbon Filter Location #1 **Affiliation: Affected Resident**
Time: 4:00 PM **Date: 5/9/07**
Type of Interview (Circle one): In Person **Phone** **Mail** **Other_____**
Location of Interview: Private Residence, Clermont, FL

Affected Residents
Mr. Rogers provided an overview of the Site's remedy, describing that this interview is part of a Five-Year Review that is triggered by the need to evaluate the Site's interim ground water remedy. He explained that the interim remedy, implemented in 2002-2003, included the installation of carbon filters on private drinking water wells at nearby residences. He also explained the components of the remedy that was selected for the Site in 2006.

1. Are you aware of the environmental issues at the Tower Chemical Superfund Site and what cleanup activities have occurred?

   Yes. The resident is aware of the issues at the Site. He has not seen the cleanup plans but knows about the Site. He knows the Site owners.

2. What are your views about current Site conditions, problems, or related concerns?

   He sees no problems with the Site currently.

3. What has been your experience with the carbon filters installed in your home in 2003?

   The filters have worked well for the resident. He indicated that he uses a lot of water for washing trucks and vehicles on his property.

4. How frequently have you changed the particle filters?

   The resident has changed the particle filters on the property's carbon filter approximately once per month. With each change the filters are clogged with brown stuff.

   Mr. Rogers asked if he would need additional filters.

   The resident indicated that he would like to have additional filters in stock.

5. Was a laminated sheet of instructions left with you during the recent carbon filter change-out?

   He was not sure but indicated that perhaps one was left with his wife.

Mr. Rogers asked if perhaps two sheets were left, because another affected resident did not receive one, and it seemed feasible that extras may have been left with you.

The resident indicated that he was not sure.

6. What effect has this Site had on the surrounding community, if any?

   He does not feel that the Site has had an impact on the surrounding community. From his perspective there have been no problems.

7. Should EPA do more to keep involved parties and surrounding neighbors informed of activities at the Site? What methods would you recommend?

   Forms and newsletters in the mail would be fine.

8. Do you have any comments, suggestions, or recommendations regarding the Site's management or operations?

   The resident asked how frequently the ground water was tested. Mr. Rogers indicated that the drinking water was sampled for residential wells in 2005. The resident felt that EPA was at the Site frequently and seemed to be doing a good job.

9. Future cleanup plans at the Site include connecting your home into Clermont's municipal water supply. Do you have any comments or concerns about the potential change in your water supply?

   The resident would like to be connected to the municipal water supply but would like to maintain his private well for washing trucks and vehicles.

Interview Form for Tower Chemical's Five-Year Review

Site Name: Tower Chemical **EPA ID No.: FLD004065546**
Interviewer Name: Jan Rogers **Affiliation: EPA Region 4**
Name: Resident at Carbon Filter Location #6 **Affiliation: Affected Resident (renter)**
Time: 6:00 PM **Date: 5/9/07**
Type of Interview (Circle one): In Person **Phone** **Mail** **Other_____**
Location of Interview: Private Residence, Clermont, FL

Affected Residents
Mr. Rogers provided an overview of the Site's remedy, describing that this interview is part of a Five-Year Review that is triggered by the need to evaluate the Site's interim ground water remedy. He explained that the interim remedy, implemented in 2002-2003, included the installation of carbon filters on private drinking water wells at nearby residences. He also explained the components of the remedy that was selected for the Site in 2006.

1. Are you aware of the environmental issues at the Tower Chemical Superfund Site and what cleanup activities have occurred?

   The resident has been renting the property for two months. He indicated that he was aware of trucks going in and out of the Site, but he did not know about the property's status as a Superfund Site.

   Mr. Rogers asked if he had contact information for the owner of the rental property.

   The resident showed a copy of his lease, which indicated his landlord's current address.

2. What are your views about current Site conditions, problems, or related concerns?

   Until this interview, the resident did not have any opinions about the Site. If he had known about the history of contamination at the Site, he indicated that he probably wouldn't have rented the property.

3. What has been your experience with the carbon filters installed in your home in 2003?

   At the end of the first month that the resident and his girlfriend lived at the property, the water was poor tasting and the water pressure dropped significantly. He found it hard to drink the water. His girlfriend stopped drinking the water and drank only bottled water.

   Mr. Rogers indicated that the carbon filters would have been changed around April 14th.

   The resident said after the contractors had been at the house replacing the filters, the water began to taste much better and the water pressure improved. The resident has not experienced bad tasting water or water pressure problems since then.

4. How frequently have you changed the particle filters?

The resident has not changed the particle filters yet.

Mr. Rogers indicated that he would recommend changing the particle filters every three months.

The resident indicated that he would plan to change them every three months and he would hope that keeps the water tasting better. He said his girlfriend still won't drink the water.

5. Was a laminated sheet of instructions left with you during the recent carbon filter change-out?

   Yes.

6. What effect has this Site had on the surrounding community, if any?

   The resident did not share any thoughts about the impact of the Site on the community.

7. Should EPA do more to keep involved parties and surrounding neighbors informed of activities at the Site? What methods would you recommend?

   He indicated that he appreciated being informed about the Site, and indicated that we would like to receive additional information in the form of fact sheets or newsletters in the mail.

   Mr. Rogers explained that fact sheets generally provide a flexible way to provide updates that don't require or necessitate a public meeting.

   The resident indicated that he did not generally like to share his thoughts in meetings or public forums.

8. Do you have any comments, suggestions, or recommendations regarding the Site's management or operations?

   No. The resident is glad that the carbon filters were changed when they were. He indicated that he was now a little scared to learn about the Site's contamination.

9. Future cleanup plans at the Site include connecting your home into Clermont's municipal water supply. Do you have any comments or concerns about the potential change in your water supply?

   The resident does not have concerns about being switched over to public water supply. He indicated that his girlfriend wouldn't drink city water or well water, only bottled water.

Interview Form for Tower Chemical's Five-Year Review

Site Name: Tower Chemical **EPA ID No.: FLD004065546**
Interviewer Name: Jan Rogers **Affiliation: EPA Region 4**
Name: Resident at Carbon Filter Location #2 **Affiliation: Affected Resident**
Time: 7:00 PM **Date: 5/9/07**
Type of Interview (Circle one): In Person **Phone** **Mail** **Other_____**
Location of Interview: Private Residence, Clermont, FL

Affected Residents
Mr. Rogers provided an overview of the Site's remedy, describing that this interview is part of a Five-Year Review that is triggered by the need to evaluate the Site's interim ground water remedy. He explained that the interim remedy, implemented in 2002-2003, included the installation of carbon filters on private drinking water wells at nearby residences. He also explained the components of the remedy that was selected for the Site in 2006.

1. Are you aware of the environmental issues at the Tower Chemical Superfund Site and what cleanup activities have occurred?

   The resident is aware of the environmental issues at the Tower Chemical Site. She was curious to know what EPA was planning to do about it.

2. What are your views about current Site conditions, problems, or related concerns?

   The resident indicated that the Site's contamination killed large trees nearby, as well as her family's dog and several cows and pigs across the road. She also remembers experiencing heavy mists when the plant was in operation, and explained that one time her husband couldn't work outside due to the odor. She said he couldn't breathe.

   The resident used to work for the worm company at the Site. She indicated that she did not think they had caused contamination at the Site.

3. What has been your experience with the carbon filters installed in your home in 2003?

   The resident said she didn't have any questions. She said the water tastes good.

4. How frequently have you changed the particle filters?

   She indicated that her son changes the filters. She did not know how often he tended to change them.

   Mr. Rogers suggested that every three months is a good schedule for changing the particle filters.

5. Was a laminated sheet of instructions left with you during the recent carbon filter change-out?

   She was not sure if a laminated sheet had been left at the house. She thinks she had one, but isn't sure where it is now.

6. What effect has this Site had on the surrounding community, if any?

   She indicated that she felt the plant owners put the community through hard times. Today she feels like conditions are much better.

7. Should EPA do more to keep involved parties and surrounding neighbors informed of activities at the Site? What methods would you recommend?

   She indicated that she'd like to know how soon EPA would make her hook up to the city water. She also indicated she did not want public water due to its chlorine taste. She was located up-gradient from the Site, and her well seemed fine. She felt that after she was gone her heirs would want it. The resident said she appreciates being visited in person.

8. Do you have any comments, suggestions, or recommendations regarding the Site's management or operations?

   As long as no additional contaminants are dumped at the Site, the resident does not have any suggestions. She feels like the Site has been a problem for so long that she'd like to see something done about it. She then asked what EPA is doing to address the contamination.

   Mr. Rogers explained the components of the remedy that was selected for the Site in 2006, including its soil and ground water remedy components.

9. Future cleanup plans at the Site include connecting your home into Clermont's municipal water supply. Do you have any comments or concerns about the potential change in your water supply?

   Initially, the resident indicated that she did not want city water. She said she'd prefer to have her well and that she wouldn't use city water. Eventually, she said if she had to have city water, she would make do, but she would prefer to keep her well water.

Appendix D: Site Inspection Checklist

FIVE-YEAR REVIEW SITE INSPECTION CHECKLIST

I. SITE INFORMATION

Site name: Tower Chemical Company Site	**Date of inspection: 05/07/2007**
Location and Region: Clermont, FL / Region 4	**EPA ID: FLD004065546**
Agency, office, or company leading the five-year review: EPA Region 4	**Weather/temperature: Sunny and breezy, 75 degrees**

Remedy Includes: (Check all that apply)

- ☐ Landfill cover/containment
- ☐ Access controls
- ☐ Institutional controls
- ☐ Groundwater pump and treatment
- ☐ Surface water collection and treatment
- ☐ Monitored natural attenuation
- ☐ Groundwater containment
- ☐ Vertical barrier walls
- x Other Ground water: Carbon filtration devices installed on private wells

Attachments: x Inspection team roster attached x Site map attached

II. INTERVIEWS (Check all that apply)

1. **O&M Site manager** N/A (Name) _____ (Title) mm/dd/yyyy (Date)
   Interviewed ☐ at Site ☐ at office ☐ by phone Phone no. _____
   Problems, suggestions; ☐ Report attached _____

2. **O&M staff** N/A (Name) _____ (Title) mm/dd/yyyy (Date)
   Interviewed ☐ at Site ☐ at office ☐ by phone Phone no. _____
   Problems, suggestions; ☐ Report attached _____

3. **Local regulatory authorities and response agencies** (i.e., State and Tribal offices, emergency response office, police department, office of public health or environmental health, zoning office, recorder of deeds, or other city and county offices, etc.)

   Agency City of Clermont Water Utility

Contact	Name	Title	Date	Phone No.
	Tamara Richardson	Director of Engineering & Utilities	05/09/2007	352-241-7335

   Problems; suggestions; x Report attached

   Agency Florida Department of Environmental Protection – Central District Office

Contact	Name	Title	Date	Phone No.
	Brett LeRoux	Manager, Storage Tanks & Waste Cleanup	05/10/2007	407-893-3330

   Problems; suggestions; x Report attached

   Agency St. John's River Water Management District

Contact	Name	Title	Date	Phone No.
	Jim Frazee	Hydrologist,	05/10/2007	407-893-3330

Name	Water Use Regulation Division Title	Date	Phone No.
Problems; suggestions; x Report attached			
4. **Other interviews** (optional) x Report attached			
Resident at Carbon Filter Location #1			
Resident at Carbon Filter Location #2			
Residents at Carbon Filter Location #3			
Resident at Carbon Filter Location #4			
Resident at Carbon Filter Location #6			
Site Owner			
Adjacent Business Owner			

III. ON-SITE DOCUMENTS & RECORDS VERIFIED (Check all that apply)

1.	**O&M Documents**			
	☐ O&M manual	☐ Readily available	☐ Up to date	x N/A
	☐ As-built drawings	☐ Readily available	☐ Up to date	x N/A
	☐ Maintenance logs	☐ Readily available	☐ Up to date	x N/A
	Remarks: _____			
2.	**Site-Specific Health and Safety Plan**	☐ Readily available	☐ Up to date	x N/A
	☐ Contingency plan/emergency response plan	☐ Readily available	☐ Up to date	x N/A
	Remarks: _____			
3.	**O&M and OSHA Training Records**	☐ Readily available	☐ Up to date	xN/A
	Remarks: _____			
4.	**Permits and Service Agreements**			
	☐ Air discharge permit	☐ Readily available	☐ Up to date	x N/A
	☐ Effluent discharge	☐ Readily available	☐ Up to date	x N/A
	☐ Waste disposal, POTW	☐ Readily available	☐ Up to date	x N/A
	☐ Other permits _____	☐ Readily available	☐ Up to date	x N/A
	Remarks: _____			
5.	**Gas Generation Records**	☐ Readily available	☐ Up to date	x N/A
	Remarks: _____			
6.	**Settlement Monument Records**	☐ Readily available	☐ Up to date	x N/A
	Remarks: _____			

7. **Groundwater Monitoring Records** ☐ Readily available ☐ Up to date x N/A

Remarks: _____

8. **Leachate Extraction Records** ☐ Readily available ☐ Up to date x N/A

Remarks: _____

9. **Discharge Compliance Records**

☐ Air ☐ Readily available ☐ Up to date x N/A

☐ Water (effluent) ☐ Readily available ☐ Up to date x N/A

Remarks: _____

10. **Daily Access/Security Logs** ☐ Readily available ☐ Up to date x N/A

Remarks: _____

IV. O&M COSTS

1. **O&M Organization**

x State in-house ☐ Contractor for State

☐ PRP in-house ☐ Contractor for PRP

☐ Federal Facility in-house ☐ Contractor for Federal Facility

x Other: U.S. Army Corps of Engineers with EPA oversight

2. **O&M Cost Records**

☐ Readily available ☐ Up to date

x Funding mechanism/agreement in place (USACE) ☐ Unavailable

Original O&M cost estimate _____ ☐ Breakdown attached

Total annual cost by year for review period if available

From mm/dd/yyyy	To mm/dd/yyyy	_____	☐ Breakdown attached
Date	Date	Total cost	
From mm/dd/yyyy	To mm/dd/yyyy	_____	☐ Breakdown attached
Date	Date	Total cost	
From mm/dd/yyyy	To mm/dd/yyyy	_____	☐ Breakdown attached
Date	Date	Total cost	
From mm/dd/yyyy	To mm/dd/yyyy	_____	☐ Breakdown attached
Date	Date	Total cost	
From mm/dd/yyyy	To mm/dd/yyyy	_____	☐ Breakdown attached
Date	Date	Total cost	

3. **Unanticipated or Unusually High O&M Costs During Review Period**

Describe costs and reasons: _____

V. ACCESS AND INSTITUTIONAL CONTROLS ☐ Applicable x N/A

A. Fencing

1. **Fencing damaged** ☐ Location shown on Site map ☐ Gates secured ☒ N/A

Remarks: _____

B. Other Access Restrictions

1. **Signs and other security measures** ☐ Location shown on Site map ☒ N/A

Remarks: _____

C. Institutional Controls (ICs)

1. **Implementation and enforcement**

Site conditions imply ICs not properly implemented ☐ Yes ☐ No ☒ N/A

Site conditions imply ICs not being fully enforced ☐ Yes ☐ No ☒ N/A

Type of monitoring (e.g., self-reporting, drive by) _____

Frequency _____

Responsible party/agency _____

Contact	_____	_____	mm/dd/yyyy	_____
	Name	Title	Date	Phone no.

Reporting is up-to-date	☐ Yes	☐ No	☐ N/A
Reports are verified by the lead agency	☐ Yes	☐ No	☐ N/A
Specific requirements in deed or decision documents have been met	☐ Yes	☐ No	☐ N/A
Violations have been reported	☐ Yes	☐ No	☐ N/A

Other problems or suggestions: ☐ Report attached

_____

2. **Adequacy** ☐ ICs are adequate ☐ ICs are inadequate ☒ N/A

Remarks: _____

D. General

1. **Vandalism/trespassing** ☐ Location shown on Site map ☒ No vandalism evident

Remarks: _____

2. **Land use changes on Site** ☐ N/A

Remarks: A portion of Site is in reuse as a commercial and recreational vehicle storage facility. Storage areas are limited to a covered concrete pad and a gravel parking area.

3. **Land use changes off Site** ☐ N/A

Remarks: A recreational trail created as part of a rails-to-trails conversion is located adjacent to the Site. A large regional mall is planned within one mile of the Tower Chemical Site. New residential development is occurring in the area north of the Site.

VI. GENERAL SITE CONDITIONS

A. Roads x Applicable ☐ N/A

1.	Roads damaged	Location shown on Site map	x Roads adequate ☐ N/A
	Remarks:		
B. Other Site Conditions			
	Remarks: _____		
	VII. LANDFILL COVERS	☐ Applicable	x N/A
A. Landfill Surface			
1.	**Settlement** (Low spots)	☐ Location shown on Site map	☐ Settlement not evident
	Arial extent _____		Depth _____
	Remarks: _____		
2.	**Cracks**	☐ Location shown on Site map	☐ Cracking not evident
	Lengths _____	Widths _____	Depths _____
	Remarks: _____		
3.	**Erosion**	☐ Location shown on Site map	☐ Erosion not evident
	Arial extent _____		Depth _____
	Remarks: _____		
4.	**Holes**	☐ Location shown on Site map	☐ Holes not evident
	Arial extent _____		Depth _____
	Remarks: _____		
5.	**Vegetative Cover**	☐ Grass	☐ Cover properly established
	☐ No signs of stress	☐ Trees/Shrubs (indicate size and locations on a diagram)	
	Remarks: _____		
6.	**Alternative Cover** (armored rock, concrete, etc.)		☐ N/A
	Remarks: _____		
7.	**Bulges**	☐ Location shown on Site map	☐ Bulges not evident
	Arial extent _____		Height _____
	Remarks: _____		
8.	**Wet Areas/Water Damage**	☐ Wet areas/water damage not evident	
	☐ Wet areas	☐ Location shown on Site map	Arial extent _____
	☐ Ponding	☐ Location shown on Site map	Arial extent _____
	☐ Seeps	☐ Location shown on Site map	Arial extent _____
	☐ Soft subgrade	☐ Location shown on Site map	Arial extent _____
	Remarks: _____		
9.	**Slope Instability**	☐ Slides	☐ Location shown on Site map
	☐ No evidence of slope instability		

Arial extent _____

Remarks: _____

B. Benches ☐ Applicable ☐ N/A

(Horizontally constructed mounds of earth placed across a steep landfill side slope to interrupt the slope in order to slow down the velocity of surface runoff and intercept and convey the runoff to a lined channel.)

1. **Flows Bypass Bench** ☐ Location shown on Site map ☐ N/A or okay

   Remarks: _____

2. **Bench Breached** ☐ Location shown on Site map ☐ N/A or okay

   Remarks: _____

3. **Bench Overtopped** ☐ Location shown on Site map ☐ N/A or okay

   Remarks: _____

C. Letdown Channels ☐ Applicable ☐ N/A

(Channel lined with erosion control mats, riprap, grout bags, or gabions that descend down the steep side slope of the cover and will allow the runoff water collected by the benches to move off of the landfill cover without creating erosion gullies.)

1. **Settlement** (Low spots) ☐ Location shown on Site map ☐ No evidence of settlement

   Arial extent _____ Depth _____

   Remarks: _____

2. **Material Degradation** ☐ Location shown on Site map ☐ No evidence of degradation

   Material type_____ Arial extent _____

   Remarks: _____

3. **Erosion** ☐ Location shown on Site map ☐ No evidence of erosion

   Arial extent _____ Depth _____

   Remarks: _____

4. **Undercutting** ☐ Location shown on Site map ☐ No evidence of undercutting

   Arial extent _____ Depth _____

   Remarks: _____

5. **Obstructions** Type _____ ☐ No obstructions

   ☐ Location shown on Site map Arial extent _____

   Size _____

   Remarks: _____

6. **Excessive Vegetative Growth** Type _____

   ☐ No evidence of excessive growth

   ☐ Vegetation in channels does not obstruct flow

   ☐ Location shown on Site map Arial extent _____

   Remarks: _____

D. Cover Penetrations ☐ Applicable ☐ N/A

1. **Gas Vents** ☐ Active ☐ Passive
   ☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition
   ☐ Evidence of leakage at penetration ☐ Needs Maintenance ☐ N/A
   Remarks: _____

2. **Gas Monitoring Probes**
   ☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition
   ☐ Evidence of leakage at penetration ☐ Needs Maintenance ☐ N/A
   Remarks: _____

3. **Monitoring Wells** (within surface area of landfill)
   ☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition
   ☐ Evidence of leakage at penetration ☐ Needs Maintenance ☐ N/A
   Remarks: _____

4. **Extraction Wells Leachate**
   ☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition
   ☐ Evidence of leakage at penetration ☐ Needs Maintenance ☐ N/A
   Remarks: _____

5. **Settlement Monuments** ☐ Located ☐ Routinely surveyed ☐ N/A
   Remarks: _____

E. Gas Collection and Treatment ☐ Applicable ☐ N/A

1. **Gas Treatment Facilities**
   ☐ Flaring ☐ Thermal destruction ☐ Collection for reuse
   ☐ Good condition ☐ Needs Maintenance
   Remarks: _____

2. **Gas Collection Wells, Manifolds and Piping**
   ☐ Good condition ☐ Needs Maintenance
   Remarks: _____

3. **Gas Monitoring Facilities** (e.g., gas monitoring of adjacent homes or buildings)
   ☐ Good condition ☐ Needs Maintenance ☐ N/A
   Remarks: _____

F. Cover Drainage Layer ☐ Applicable ☐ N/A

1. **Outlet Pipes Inspected** ☐ Functioning ☐ N/A
   Remarks: _____

2. **Outlet Rock Inspected** ☐ Functioning ☐ N/A
   Remarks: _____

G. Detention/Sedimentation Ponds ☐ Applicable ☐ N/A

1. **Siltation** Area extent _____ Depth _____ ☐ N/A
   ☐ Siltation not evident
   Remarks: _____

2. **Erosion** Area extent _____ Depth _____
   ☐ Erosion not evident
   Remarks: _____

3. **Outlet Works** ☐ Functioning ☐ N/A
   Remarks: _____

4. **Dam** ☐ Functioning ☐ N/A
   Remarks: _____

H. Retaining Walls ☐ Applicable ☐ N/A

1. **Deformations** ☐ Location shown on Site map ☐ Deformation not evident
   Horizontal displacement _____ Vertical displacement _____
   Rotational displacement _____
   Remarks: _____

2. **Degradation** ☐ Location shown on Site map ☐ Degradation not evident
   Remarks: _____

I. Perimeter Ditches/Off-Site Discharge ☐ Applicable ☐ N/A

1. **Siltation** ☐ Location shown on Site map ☐ Siltation not evident
   Area extent _____ Depth _____
   Remarks: _____

2. **Vegetative Growth** ☐ Location shown on Site map ☐ N/A
   ☐ Vegetation does not impede flow
   Area extent _____ Type _____
   Remarks: _____

3. **Erosion** ☐ Location shown on Site map ☐ Erosion not evident
   Area extent _____ Depth _____
   Remarks: _____

4. **Discharge Structure** ☐ Functioning ☐ N/A
   Remarks: _____

VIII. VERTICAL BARRIER WALLS ☐ Applicable x N/A

1. **Settlement** ☐ Location shown on Site map ☐ Settlement not evident
   Area extent _____ Depth _____

Remarks: _____

2. **Performance Monitoring** Type of monitoring _____

☐ Performance not monitored

Frequency _____ ☐ Evidence of breaching

Head differential _____

Remarks: _____

IX. GROUNDWATER/SURFACE WATER REMEDIES x Applicable ☐ N/A

A. Groundwater Extraction Wells, Pumps, and Pipelines ☐ Applicable x N/A

1. **Pumps, Wellhead Plumbing, and Electrical**

☐ Good condition ☐ All required wells properly operating ☐ Needs Maintenance ☐ N/A

Remarks: _____

2. **Extraction System Pipelines, Valves, Valve Boxes, and Other Appurtenances**

☐ Good condition ☐ Needs Maintenance

Remarks: N/A

3. **Spare Parts and Equipment**

☐ Readily available ☐ Good condition ☐ Requires upgrade ☐ Needs to be provided

Remarks: N/A

B. Surface Water Collection Structures, Pumps, and Pipelines ☐ Applicable ☒ N/A

1. **Collection Structures, Pumps, and Electrical**

☐ Good condition ☐ Needs Maintenance

Remarks: _____

2. **Surface Water Collection System Pipelines, Valves, Valve Boxes, and Other Appurtenances**

☐ Good condition ☐ Needs Maintenance

Remarks: _____

3. **Spare Parts and Equipment**

☐ Readily available ☐ Good condition ☐ Requires upgrade ☐ Needs to be provided

Remarks: _____

C. Treatment System x Applicable ☐ N/A

1. **Treatment Train** (Check components that apply)

☐ Metals removal ☐ Oil/water separation ☐ Bioremediation

☐ Air stripping x Carbon adsorbers

x Filters _____

☐ Additive (e.g., chelation agent, flocculent) _____

☐ Others _____

☐ Good condition ☐ Needs Maintenance

☐ Sampling ports properly marked and functional

☐ Sampling/maintenance log displayed and up to date

☐ Equipment properly identified

☐ Quantity of groundwater treated annually _____

☐ Quantity of surface water treated annually _____

Remarks: Carbon filtration devices installed on private wells were located and visually inspected at four of the six affected properties.

2. **Electrical Enclosures and Panels** (properly rated and functional)

x N/A ☐ Good condition ☐ Needs Maintenance

Remarks: _____

3. **Tanks, Vaults, Storage Vessels**

x N/A ☐ Good condition ☐ Proper secondary containment ☐ Needs Maintenance

Remarks: _____

4. **Discharge Structure and Appurtenances**

x N/A ☐ Good condition ☐ Needs Maintenance

Remarks: _____

5. **Treatment Building(s)**

x N/A ☐ Good condition (esp. roof and doorways) ☐ Needs repair

☐ Chemicals and equipment properly stored

Remarks: _____

6. **Monitoring Wells** (pump and treatment remedy)

☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition

☐ All required wells located ☐ Needs Maintenance x N/A

Remarks: _____

D. Monitoring Data

1. **Monitoring Data**

☐ Is routinely submitted on time ☒ Is of acceptable quality

2. **Monitoring data suggests:**

X Groundwater plume is effectively contained ☐ Contaminant concentrations are declining

E. Monitored Natural Attenuation

1. **Monitoring Wells** (natural attenuation remedy)

☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition

☐ All required wells located ☐ Needs Maintenance ☐ N/A

Remarks: Several abandoned pump test wells were identified on the Site. The remaining pump test wells were cut below the surface and covered by EPA and the new owner on June 26, 2007. Visual inspection revealed that one monitoring well (MWS-13) was not properly locked. This well should be properly secured in order to maintain the protectiveness of the Site's remedy. This well cluster has subsequently been flush mounted and secured during remedial design. Not all monitoring wells were located and

inspected.

X. OTHER REMEDIES

If there are remedies applied at the Site and not covered above, attach an inspection sheet describing the physical nature and condition of any facility associated with the remedy. An example would be soil vapor extraction.

XI. OVERALL OBSERVATIONS

A. Implementation of the Remedy

Describe issues and observations relating to whether the remedy is effective and functioning as designed. Begin with a brief statement of what the remedy is to accomplish (i.e., to contain contaminant plume, minimize infiltration and gas emission, etc.).

In August 2000, EPA selected an interim remedy for the Tower Chemical Site that consisted of installing carbon absorption units on six private residential wells, combined with sampling and analyses of the off-site potable and monitoring wells located in the immediate vicinity around the Site. Uncertainty surrounding the toxicity of 4,4'-dichlorobenzophenone (DCBP) detected in one potable water well surrounding the Site prompted EPA and FDEP to select the interim remedy to treat potable water in the vicinity of the Site.

Visual inspection of four carbon filters installed on private wells were combined with interviews with well users, local and state regulatory agencies, and the Site owner. Sampling of the water treated by the carbon absorption units was conducted in 2005. A new round of well sampling is scheduled for early in the Remedial Design for the final remedy. Interviews, visual inspections, and review of monitoring data indicated that the remedy is functioning as designed.

B. Adequacy of O&M

Describe issues and observations related to the implementation and scope of O&M procedures. In particular, discuss their relationship to the current and long-term protectiveness of the remedy.

The carbon filtration devices installed on six private drinking water wells have been subject to routine maintenance. Since the installation of the carbon filters in 2003, carbon was changed six months after installation, in 2005, and in April 2007. Private well users are responsible for routine maintenance of particle filters fitted on the carbon filter devices. Additional particle filters were supplied to all homes with filter units on September 6, 2006. Interviews with well users indicate that the particle filters have all been changed regularly, approximately once every three to four months. Visual observations and anecdotal evidence gained through interviews suggest that the interim remedy is functioning as intended and remains protective of human health and the environment.

C. Early Indicators of Potential Remedy Problems

Describe issues and observations such as unexpected changes in the cost or scope of O&M or a high frequency of unscheduled repairs that suggest that the protectiveness of the remedy may be compromised in the future.

Interviews with private well users, local and state regulatory authorities, and the Site owner did not reveal any issues indicating that the protectiveness of the remedy may be compromised.

D. Opportunities for Optimization

Describe possible opportunities for optimization in monitoring tasks or the operation of the remedy.

EPA Region 4 is working to connect affected residents to the City of Clermont's public water supply. This would allow the carbon filtration devices to be removed from private wells, reducing long-term operation and maintenance activities and costs. Funding for the connection of homes on filter systems to the public water supply has been obtained by Region 4. The State Superfund Contract has been amended to cover scope and dollars. The inter-agency agreement with USACE has also being amended to cover this new task.

Appendix E: Photographs from Site Inspection Visit

Former production building at the TCC Site being prepared for reuse as a commercial storage facility.

Monitoring well MWS-19 located southwest of the waste water lagoon at the TCC Site.

Carbon filter installed on drinking water well at Carbon Filter Location #1.

Truck parking area and utility building.

Former TCC office building. MWS-13 & MWF-13 on left.

Monitoring wells MWS-14 & MWF-14 located in former burn/burial area at the TCC Site.