

## Clearfield Contamination Background

In a number of communities surrounding Hill AFB, including Clearfield, chemicals historically disposed on base have contaminated areas of groundwater. This is not the drinking water.

**Groundwater:** Contamination in Clearfield consists of a shallow trichloroethene (TCE) plume discovered in the early 2000s, and a tetrachloroethene (PCE) and a deeper TCE plume discovered in the mid-2000s. Both of these chemicals, known as chlorinated solvents, were used at Hill AFB for vehicle and munitions maintenance from the end of World War II to the 1960s. The Air Force is currently studying the plumes to determine if the contamination is spreading. In most cases, there is no threat of exposure to the chemicals by coming into contact with the groundwater because of the depth to the contamination.

**Cleanup:** While the Air Force gathers more information about the plumes, treatability studies have been implemented to evaluate the effectiveness of various treatment options on a small scale.

In 2007, Hill conducted a study to evaluate if the groundwater could be treated beneath the surface by injecting both a chemical oxidant designed to destroy pollution in groundwater, and a carbon substrate, which promotes naturally occurring breakdown processes.

In 2009, Hill planted two sets of trees to evaluate a concept called phytoremediation, which uses root systems of plants to remove groundwater contaminants. The phytoremediation treatability study has been completed. Results show that phytoremediation shows potential as a remedy, but would be difficult to implement full-scale.

Another treatability study will be initiated on-base to evaluate the use of adding a carbon substrate to the subsurface to promote biodegradation of the groundwater contaminants.

# Hill Air Force Base Environmental Restoration Clearfield City Council Update

March 25, 2014

## Since Last Time (Dec. 13, 2011)

- Continued collecting groundwater samples
- Completed phytoremediation treatability study
- Continued collecting indoor air samples in residences

## Upcoming Activities

- Continue collecting groundwater samples
- Initiate a Treatability Study on-base to evaluate the use of adding a carbon substrate to the subsurface to promote biodegradation of the groundwater contaminants
- Update Feasibility Study to include new information and evaluate new treatment alternatives
- Develop the Proposed Plan for public comment, which identifies Hill AFB's preferred treatment alternatives for the plumes

## Clearfield City Timeline

Early 2000s	Shallow TCE plume discovered in Clearfield
Mid-2000s	PCE plume and deep TCE plume discovered in Clearfield
2007	Study to evaluate if groundwater can be treated beneath the surface by injecting chemical oxidant and carbon substrate
2009	Phytoremediation treatability study began
2013	Installed injection wells for upcoming treatability study
2014	Feasibility Study Supplement
2014	On-Base treatability study to begin
2014	Proposed Plan outlining chosen cleanup actions expected to be available for public comment
2014	Record of Decision documenting official cleanup agreement expected to be signed by Air Force, EPA, and UDEQ.



## Clearfield Air Sampling

Because chemicals can evaporate and move into homes from the groundwater below, the Air Force provides free air sampling, and if necessary, free vapor removal systems. To date, the few detections found in Clearfield have been attributed to indoor sources, not the groundwater.

The Air Force worked with the Utah Department of Environmental Quality (UDEQ) and the U.S. Environmental Protection Agency to set an action level, based on health risks, for each of the chemicals found in the groundwater. This action level is the lowest level at which the Air Force recommends taking action to prevent vapors from entering the home.

Homes in Affected Area: **273**  
 Homes Sampled Not in the Affected Area: **7**  
 Homes Sampled Since 2003: **188**  
 Agreed to 2014 Sampling: **41**

Historical Above Action Level Detections: **9**  
 Historical Below Action Level Detections: **16**

Sampled in 2014: **22**  
 2014 Above Action Level Detections: **1**  
 2014 Below Action Level Detections: **2**  
 2014 Non-Detects: **19**

Installed Vapor Removal Systems: **1**  
 Pending Vapor Removal Systems: **0**

Operable Unit 10 Shannon Smith: 801-775-6913	
<b>Location</b>	<p><u>TCE</u>: Approximately from Hill AFB Boundary to 650 West and from 500 North to 750 North. Another plume section is located from approximately 800 North to 870 North and from 100 West to main Street.</p> <p><u>PCE</u>: Approximately from 800 North in a southwest direction to 200 West (about half a block wide)</p> <p><i>Depth to groundwater: 3-185 feet</i></p>
<b>Chemicals</b>	<p>Trichloroethene (TCE)*            Tetrachloroethene (PCE)*            *Degreasers historically used at Hill AFB</p>
<b>Extent</b>	<p>142 acres affected in Clearfield            Approximately 300-350 homes in the area  <i>Plumes predicted to be stable.</i>  <i>Studying site conditions to confirm.</i></p>
<b>Source</b>	<p>An oil/water separator and spills containing degreasers used for vehicle and munitions maintenance near west area of Hill AFB.</p>
<b>Remedies</b>	<p>While the Air Force gathers more information about the plumes, treatability studies have been implemented to evaluate the effectiveness of various treatment options on a small scale.</p> <p>A new treatability study will be initiated to evaluate the use of adding a carbon substrate to the subsurface to promote biodegradation.</p>



*Above: Trees planted above contamination as part of the phytoremediation treatability study. The trees were removed after the completion of the study.*

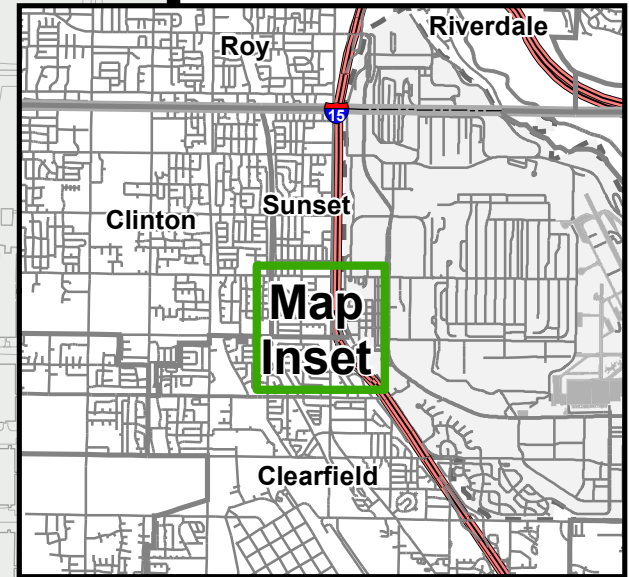
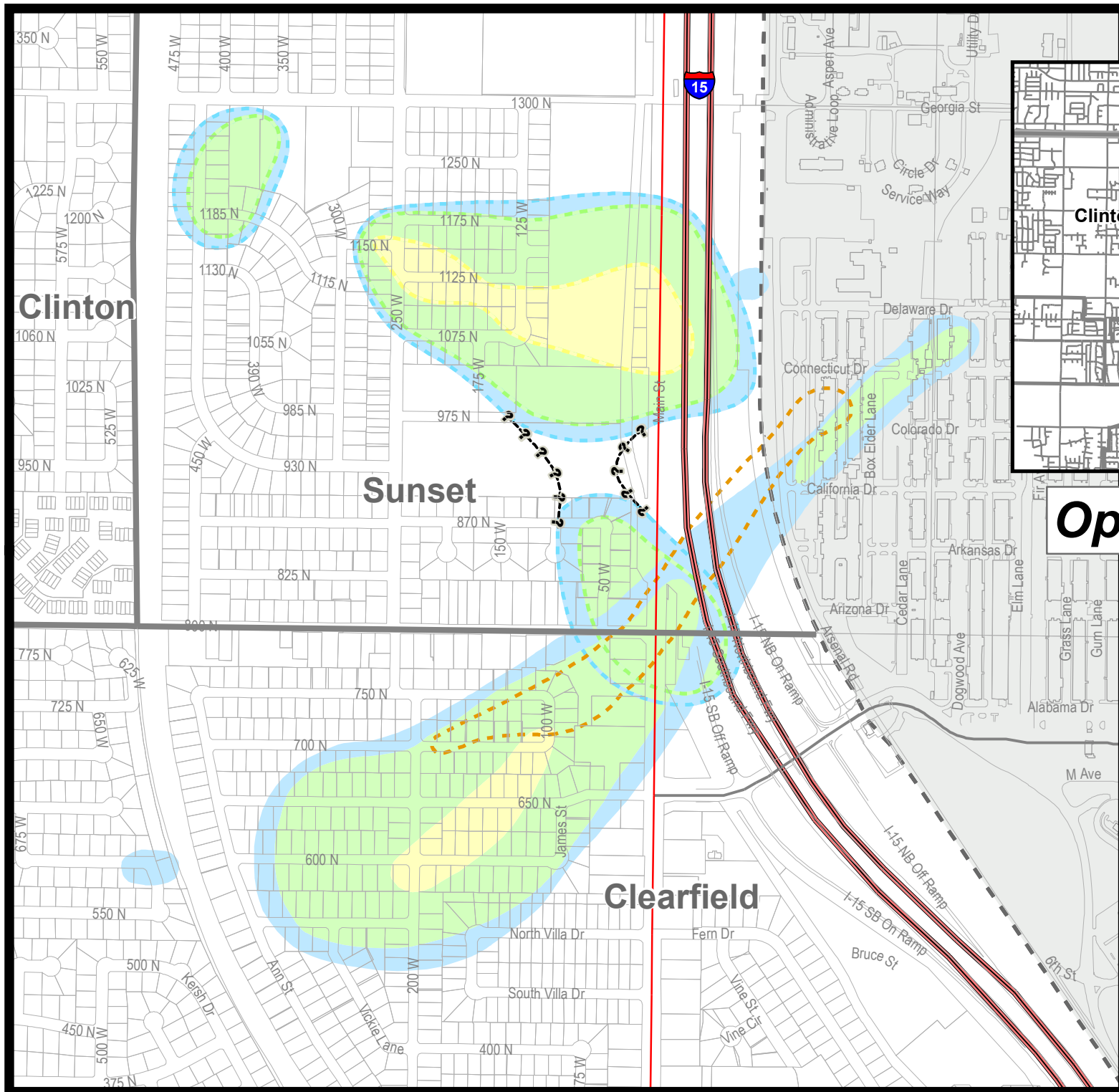
*Left: A technician checks household cleaners for possible indoor sources of vapor intrusion.*

**Hill AFB Representatives**  
**Shannon Smith, OU-10 Project Manager:** 801-775-6913  
**Barbara Fisher, Public Affairs:** 801-775-3652

**Hill AFB Restoration Advisory Board  
 Clearfield Representatives**  
**Buck Ekstrom, City Representative:** b.ekstrom@hillrab.org  
**Vern Phipps, Community:** v.phipps@hillrab.org

**Regulatory Agency Representatives**  
**Sandra Bourgeois, U.S. Environmental Protection Agency:** 303-312-6666  
**Mo Slam, Utah Department of Environmental Quality:** 803-536-4178  
**Dave Allison, Utah Department of Environmental Quality:** 801-536-4479

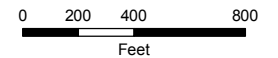
**For more information, please visit:**  
**[www.hillrab.org](http://www.hillrab.org)**



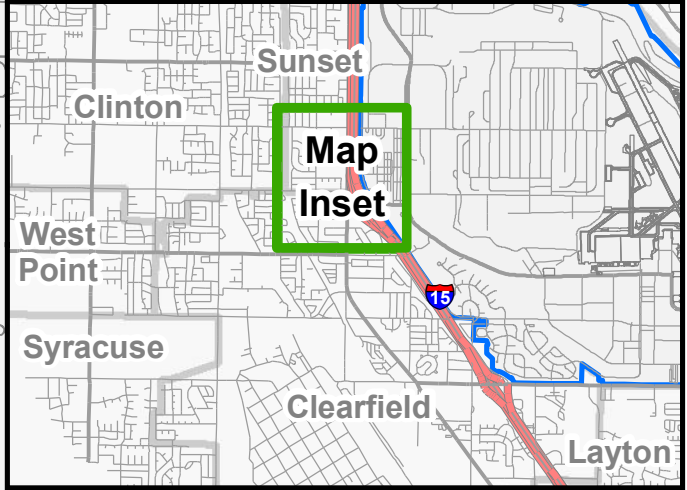
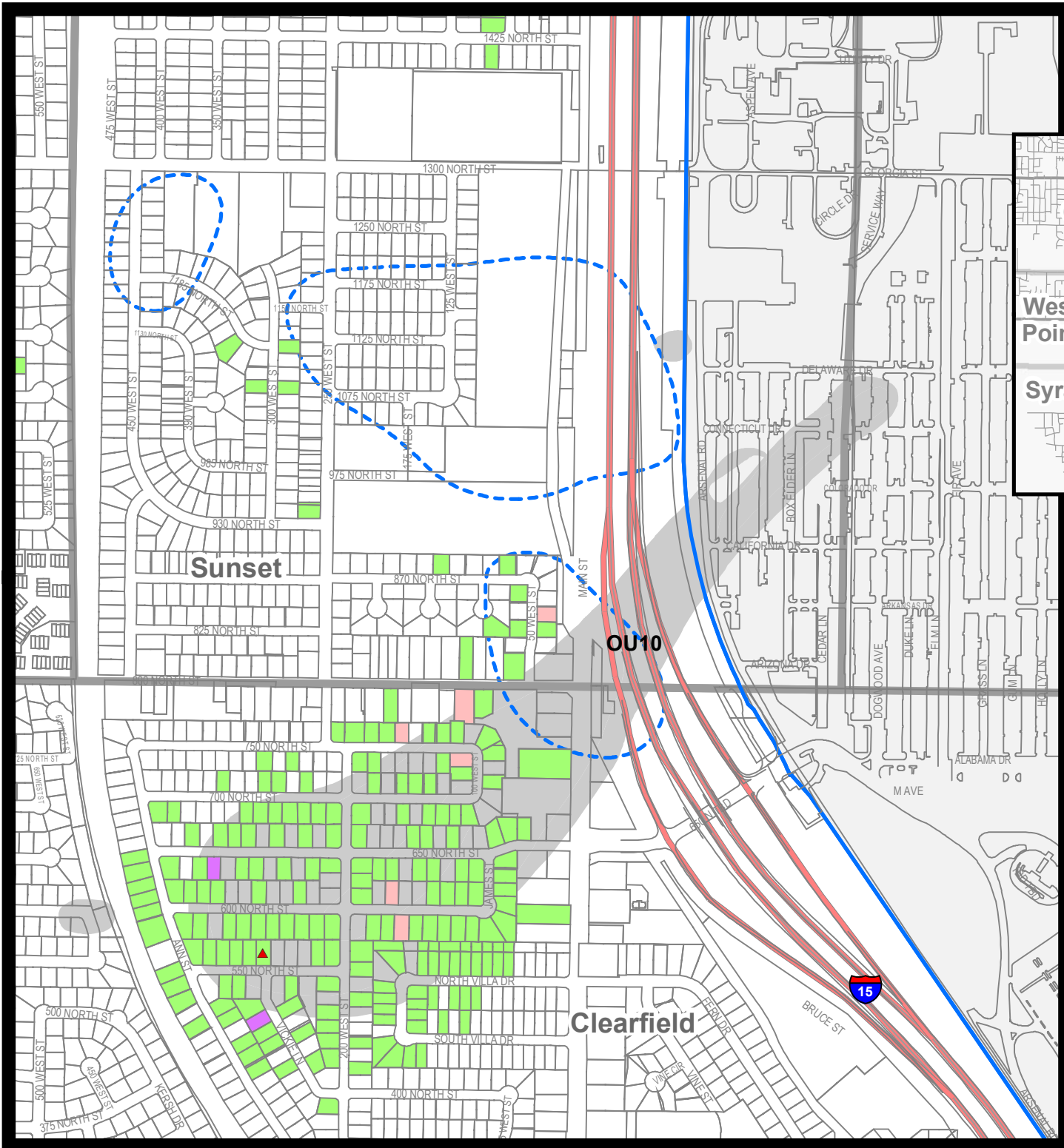
# Operable Unit 10

February 2014

- ?-?- Area of Uncertainty
- PCE Contamination
- Deep TCE Plume**
- 5 - 10 µg/L
- 10 - 100 µg/L
- > 100 µg/L
- Shallow TCE Plume**
- 5 - 10 µg/L
- 10 - 100 µg/L
- > 100 µg/L









Plumes developed using spring 2011 data



**Most Recent  
Air Sampling Results  
2003-2014**

**Clearfield and Sunset**

-  Vapor Mitigation System Installed
-  Non-Detection
-  Below Mitigation Action Level
-  Above Mitigation Action Level
-  Deep Plume Location
-  Areas of Groundwater Contamination

