



Colorado Department
of Public Health
and Environment

Fact Sheet

Former Hamilton Sundstrand Denver Facility Proposed Remedy

April 6, 2008

Notice of Public Comment Period Proposed Final Corrective Action for Former Hamilton Sundstrand Denver Facility

Facility: Former Hamilton Sundstrand Facility
2480 West 70th Ave
Denver, CO 80221

EPA ID Number: COD007057995

The Colorado Department of Public Health and Environment, Hazardous Materials and Waste Management Division is evaluating the final remedies for soil and groundwater contamination proposed in the Draft Corrective Measures Work Plan for the Former Hamilton Sundstrand Denver Facility. We will consider all written comments received during the public comment period prior to making a final decision.

There will be an Open House:

**Thursday, April 24, 2008
6:00pm to 8:00pm
FM Day School Gymnasium
1740 Jordan Drive, Denver**

The Public Comment Period will be held April 6, 2008 to May 21, 2008

Comments or questions should be directed to:

David Walker
Colorado Department of Public Health and Environment
Hazardous Materials and Waste Management
Mail Code HMWMD-HWC-B2
4300 Cherry Creek Drive South
Denver, CO 80246-1530 Email: david.walker@state.co.us
(303) 692-3354, or Toll Free 1-888-569-1831, ext. 3354

Facility Description

The Former Hamilton Sundstrand Denver Facility was constructed in 1955, and was used until 2004 to manufacture and test aerospace industry components. The former facility is located on approximately 44 acres on the southwest edge of unincorporated Adams county. The Perl Mack neighborhood is located directly east of the site. Manufacturing operations included shaping, milling, grinding, welding and polishing steel components that were then electroplated or painted. Manufacturing processes used oils to cool and lubricate machines and parts, and cleaning solvents to prepare components for plating or painting. Historical storage of fresh and spent cooling oils and solvents in above- and below-ground tanks and containers led to releases of these materials into the soil and shallow groundwater beneath the Facility.

Cooling oils released to the soil migrated down to shallow groundwater and formed a light non-aqueous phase liquid (LNAPL) layer that typically floats on the water table. Solvents released to soil and shallow ground water are called chlorinated volatile organic compounds (VOCs). These compounds were released in mixtures with the cooling oils. VOCs tend to dissolve into groundwater and move in the direction of groundwater flow.

Groundwater flows from west to east. Contaminants released at the site have only impacted the shallow alluvial groundwater, which is approximately 30 to 40 feet below the ground surface, not the deeper groundwater in the bedrock.

Discussion and evaluation of corrective measures for the Former Hamilton Sundstrand Site has been divided into three parcels:

- 43-acre Facility Parcel, where all manufacturing operations occurred,
- The Perl Mack Neighborhood, located east of the Facility Parcel, and
- The 138-acre Vacant Parcel open area to the east of the Facility Parcel.

All contaminant releases to soil and groundwater occurred on the Facility Parcel. The groundwater contaminant plume originates from the Facility Parcel and migrates beneath the Perl Mack Neighborhood and Vacant Parcel.

A Seepage Water Remediation System was installed in 1995 to collect and treat impacted groundwater flowing east before it seeped to the surface near Clear Creek and the Lower Clear Creek Canal. The seep water is treated using an air stripper to remove VOCs before discharge at Kalcevic Gulch. The Remediation System will continue to operate as part of the final corrective measure for the Former Hamilton Sundstrand Denver Facility until contaminant concentrations in the groundwater plume beneath the Vacant Parcel achieve Colorado groundwater and surface water standards.

Proposed Cleanup Objectives

The overall objective of the site corrective measures is to protect human health and the environment. Specific cleanup objectives vary between the separate parcels.

In the Perl Mack Neighborhood and Vacant Parcel, the only environmental media impacted by releases from the Former Hamilton Sundstrand Facility is the shallow alluvial groundwater. The cleanup proposal for these two parcels is to have the quality of shallow groundwater meet state standards within a short period of time. The proposed cleanup includes active remedies to reduce the concentrations of contaminants in the shallow groundwater and prevent further contamination due to on-site sources.

In contrast, both the soil and groundwater at the Facility Parcel have been contaminated by past operations at the site. The owners of the Facility Parcel property placed an enforceable Environmental Covenant on the property limiting future use of the site to recreational purposes only. As a result, there is no need to clean the Facility Parcel to residential or unrestricted use levels.

The property owner and Arcadis U.S., Inc. have developed site-specific Health-Based Remedial Goals for constituents detected in groundwater and soil at the Facility Parcel. While not as conservative as would be necessary for a residential property, the Health-Based Remedial Goals for both soil and groundwater will ensure that migration of contaminant vapors coming up from the groundwater to outdoor air are protective of landscape maintenance workers, and children and adults who will use the recreational area planned for the Facility Parcel. The proposed remedy for the Facility Parcel LNAPL and contaminated groundwater will reduce contaminated concentrations causing downgradient groundwater quality to meet state groundwater quality standards.

Existing Cleanup Activities

Currently, there are three mitigation systems operating at the site in addition to the Seepage Water Remediation System. They are:

- Groundwater Barrier System,
- Residential Sub-Slab Depressurization Systems,
- Perimeter Soil Vapor Barrier System.

The Groundwater Barrier System consists of 15 groundwater extraction wells located along the eastern boundary of the Facility Parcel. The system is designed to capture and extract floating LNAPL and VOC contaminated alluvial groundwater before it leaves the Facility Parcel. The system began operation in 1992 and has been upgraded several times since. Extracted groundwater is filtered, and then treated with an air stripper to remove VOCs. The treated groundwater discharges via a permitted outfall located on Little Dry Creek. As of March 2008, the Groundwater Barrier System has removed approximately 11,000 pounds of chlorinated VOCs from the groundwater. The system will continue to operate as part of final corrective actions for the Former Hamilton Sundstrand Denver Facility.

Hamilton Sundstrand initiated an extensive indoor air testing program in October 2000 in Perl Mack Neighborhood residences. The concern was for VOC vapors potentially migrating upward from the contaminated groundwater plumes into air inside the homes. Indoor air sampling results and Hamilton Sundstrand's proactive approach to facility cleanup led to the voluntary installation of 70 individual home sub-slab depressurization (ventilation) systems. The ventilation systems will be maintained and operated as part of the final corrective measure for the Former Hamilton Sundstrand Denver Facility.

The perimeter Vapor Barrier System interim measure was constructed to prevent potential migration of contaminated soil vapor across the Facility Parcel eastern boundary, toward the Perl Mack Neighborhood and Vacant Parcel. The Vapor Barrier System consists of at least four soil vapor extraction wells. The wells are screened in the dry soil above the groundwater table, and a strong vacuum is applied in the well to collect the contaminated vapor from the pores of the dry soil above the groundwater table. The perimeter Vapor Barrier System will continue to operate as part of the final corrective measure for the Former Hamilton Sundstrand Denver Facility.

Proposed Final Corrective Measures/ Cleanup Activities

The Colorado Department of Public Health and Environment is currently evaluating Arcadis' proposal for final corrective measures addressing soil and groundwater contamination created by operations at the Former Hamilton Sundstrand Denver Facility. In order to accomplish the objectives described above, Arcadis intends to continue operating the existing mitigation systems until cleanup objectives for those systems have been met.

In addition, Arcadis intends to design, construct and operate the following new remediation systems to address the contamination created by releases at the facility.

Perl Mack Neighborhood

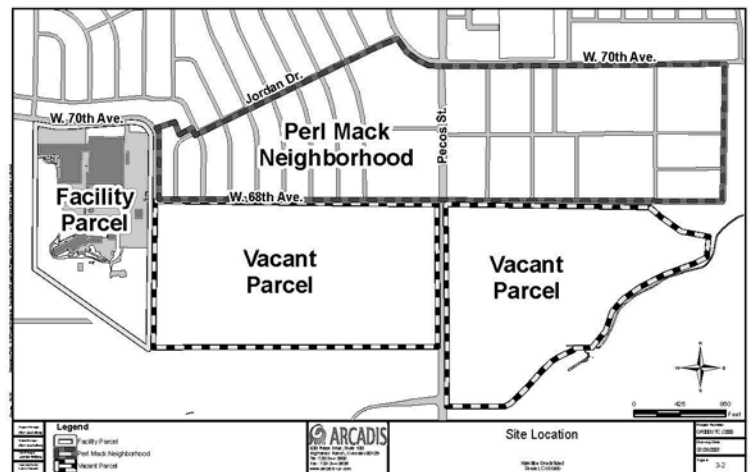
Operation of the Groundwater and Vapor Barrier Systems at the Facility Parcel boundary has resulted in significant reductions in the concentration of groundwater contaminants beneath the Perl Mack Neighborhood. Arcadis has proposed to expand vapor barriers to the east so that active soil-vapor extraction will occur beneath both Zuni Street and Jordan Street. Arcadis will also upgrade the groundwater barrier system to ensure that no contaminated groundwater migrates from the Facility Parcel to the Perl Mack Neighborhood. Additional active corrective measures may be designed and operated to achieve groundwater cleanup goals.

Vacant Parcels

The proposed final corrective measure for treating the contaminated groundwater beneath the Vacant Parcel is called In-Situ [In-Ground] Enhanced Reductive Dechlorination: molasses injected into the ground

provides a food source for naturally occurring bacteria. The bacteria then can break solvents down in the ground water.

Initial tests of this system have shown a significant decrease in the concentration of chlorinated VOCs in groundwater beneath the Vacant Parcel. It is anticipated the combination of the Enhanced Reductive Dechlorination (ERD) system and the groundwater barrier system will rapidly achieve groundwater standards. Additional treatment methods will be evaluated if the Vacant Parcel ERD treatment does not appear to work as designed.



Facility Parcel

The proposed final corrective measure for the Facility Parcel will address shallow soil contamination through excavation and off-site disposal to protect the future users of the recreational area. The corrective measures also address the contaminated shallow alluvial groundwater, as well as other sources of groundwater contamination. These include deep contaminated soil and the LNAPL layer.

Impacted soils will be excavated using standard earth-moving equipment and properly disposed off-site. Confirmation soil samples will be collected to ensure that contaminant removal is complete.

The proposed final corrective measure to address deep contaminated soil, the LNAPL layer and affected groundwater is soil-vapor extraction, either alone or in combination with air sparging. Air sparging "pushes" VOCs into zones where they can be physically removed using soil-vapor extraction.

Pilot tests of air sparging and soil-vapor extraction at the Facility Parcel have shown the techniques to be

very successful at removing contaminants from the soil and shallow groundwater.

A long-term groundwater monitoring program will be conducted to verify that the various corrective

measures achieve their goals. The monitoring results will be regularly evaluated, with modifications made to the constructed mitigation measures if necessary.

For more information, please visit one of the Information Repositories:

Perl Mack Library
7611 Hilltop Circle
Denver, CO

Colorado Department of Public Health and Environment
Hazardous Materials and Waste Management Division
Records Center – Building B, West Wing
4300 Cherry Creek Drive South
Denver, CO 80246
Toll Free: 1-888-569-1831, Extension 3331
Hours of Operation: Monday – Friday 8:00am – 5:00pm

If you would like to speak to someone about your questions, please contact:

David Walker, Project Manager
Colorado Department of Public Health and Environment
Hazardous Materials and Waste Management Division
Toll Free: 1-888-569-1831, Extension 3354

Allan Steckelberg
Project Director
Arcadis U.S., Inc.
720- 344-3500

Danny Lutz, Public Information Officer
Colorado Department of Public Health and Environment
Hazardous Materials and Waste Management Division
Toll Free: 1-888-569-1831, Extension 3310