Redfield Site

Questions & Answers Groundwater Cleanup Remedy

February 2011

Background

Since the mid-1990s, Brown Retail has been working to address compounds, primarily cleaning solvents, which entered groundwater from the former Redfield manufacturing facility located at 5800 E. Jewell Ave and surrounding facilities. This work has included:

- Preventing the flow of affected groundwater into the adjacent neighborhood;
- Cleaning up the groundwater;
- Testing area houses and buildings for the presence of indoor air vapors from compounds in the groundwater that migrated through building foundations; and
- When necessary, installing indoor air mitigation systems to prevent vapors from entering a house or building.

These efforts have successfully prevented exposure to these compounds (for additional background information on the site, visit www.RedfieldSite.org).

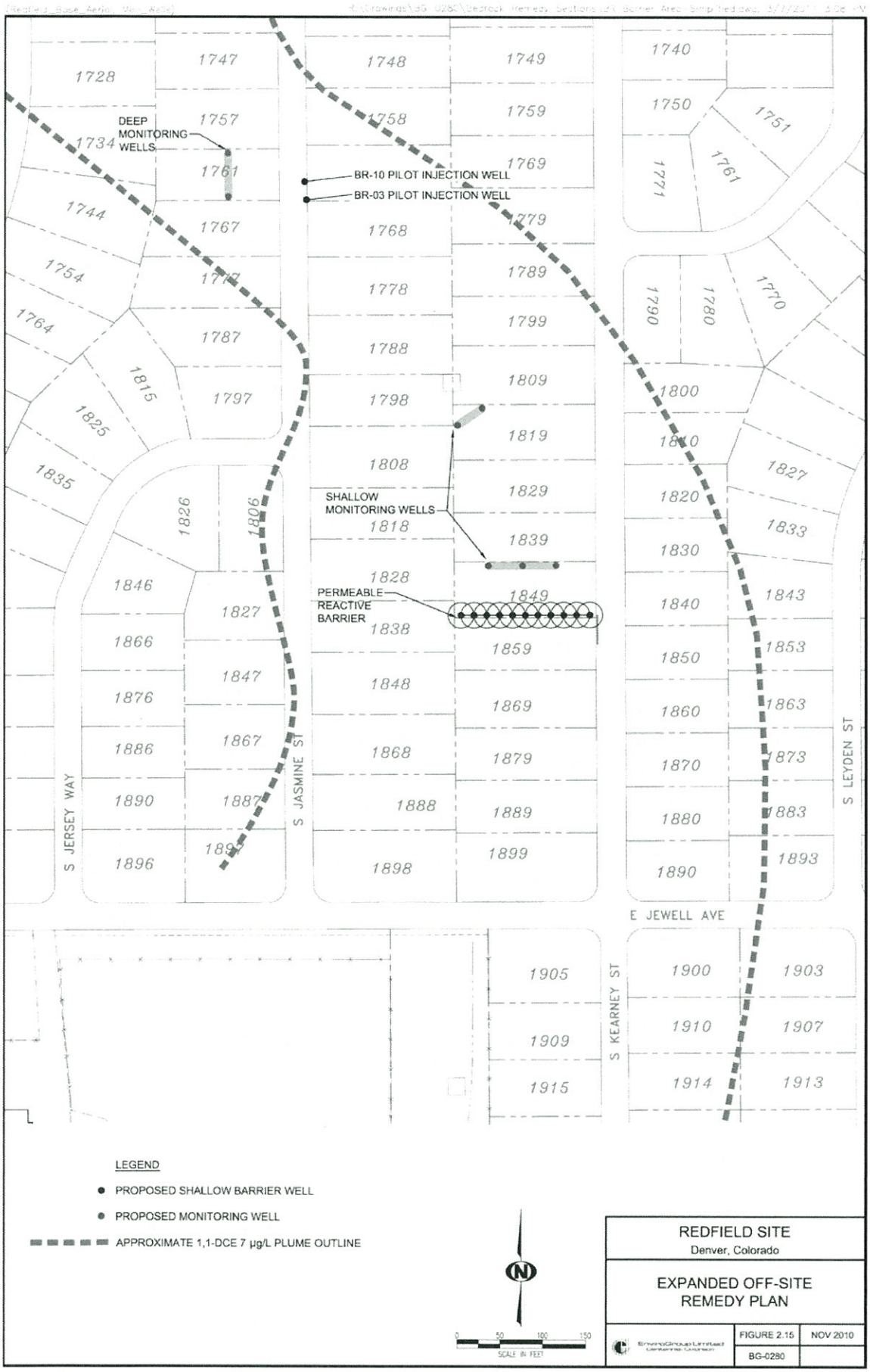
An onsite groundwater treatment system installed in 2000 has effectively treated more than 58.7 million gallons of affected groundwater under and near the Redfield site, preventing contaminated groundwater from flowing from the Redfield property. While these efforts have been highly effective, groundwater monitoring in the neighborhood indicates that contaminated groundwater still remains around a bedrock ridge located approximately 13 to 55 feet below the ground between East Jewell Avenue and South Jasmine Street, and East Jewell Avenue and South Kearney Street.

This area is located beyond the former Redfield site boundary and therefore is not directly treated by the onsite groundwater water treatment system. Drinking water in the area is supplied by Denver Water and therefore is not impacted.

Most of the groundwater in the Redfield area flows through sand and silt deposits found in valleys of the bedrock. However, residual contaminants in the bedrock ridge inhibits natural flushing and cleanup of the off-site groundwater plume. Brown Retail, under the direction of the Colorado Department of Public Health and the Environment (CDPHE) plans to conduct additional work in 2011 that specifically targets contaminated groundwater located offsite by installing groundwater injection wells directly above the impacted bedrock ridge. The wells will be used to inject materials that will treat contaminated groundwater seeping from the bedrock ridge, with the goal of enhancing and speeding up the cleanup of the off-site groundwater plume.

Following are highlights of work planned for 2011. Plans have been reviewed and approved by CDPHE.

Where will the wells be installed?



With homeowners' permission, injection wells will be installed on at least one residential property between South Jasmine and South Kearney Streets, between East Jewell and East Mexico Avenues as shown in Figure 1.2. Ideally, a line of injection wells spaced approximately 15 feet apart will be installed across the bedrock channel to achieve maximum benefit. It is necessary to install the wells directly above the affected bedrock area to achieve the best results, which in this case is on a residential property, not the street or other public right-of-way.

Additionally, monitoring wells used to collect groundwater samples to measure reductions in compound concentrates will be installed on a few additional properties with homeowners' permission. The locations for these wells also were selected based on data that delineated the affected bedrock ridge.

At this time, there are plans to install 11 injection and eight monitoring wells. The need for additional wells on other properties may be necessary depending on the results of monitoring over the next two years.

When will installation begin?

Brown Retail is working to obtain homeowner permission to install the wells and provide access for monitoring. The goal is to begin installing injection and monitoring wells in April 2011 and begin injection to groundwater through these wells in September 2011.

What does this work entail?

Installation of the wells will begin with a site visit to meet with the property owners and listen to any special needs or concerns they have that can be addressed. Brown Retail's consultant, EnviroGroup, would then conduct a utility location assessment and document pre-construction site features and conditions such as fences, pavement, sprinkler systems, and landscaping by means of sketches, photos, and videos. Next, based on the site information obtained, individual site plans will be prepared including fences to be temporarily removed during well installation, sprinkler irrigation system components to be removed and replaced, if any, landscape features to be removed if any, and the locations of the proposed wells.

After individual site plans are presented and discussed with the property owners, well installations would be scheduled. On average each well is expected to take approximately 2 days to complete. Work would be conducted between 8:00 a.m. and 4:00 p.m. During well installation "core samples" will be removed from the bore hole and placed on a stand for logging. Core samples are samples of earthen materials collected from the well bore during well installation. After logging, the core sample material will be placed in a drum and removed from the property. Well installation includes logging of the borehole materials, installing the well screen, riser pipe and well pack material, grouting the well in place, and installing the well vault.

During well installation, a truck to haul the drilling equipment, a support truck, and several contractor vehicles will be parked in the street. During well development and sampling, there will be no more than two vehicles parked in the street.

During injection, a truck or trailer with injection materials will be parked on the street together with no more than two support vehicles. Water to dilute the injection material will be obtained from a city fire hydrant by means of a hydrant meter and hose.

Properties adjacent to properties having monitor or injection wells may experience temporary impacts including having fences removed and replaced or minor damage to landscape features along the property line. If this becomes necessary, EnviroGroup will coordinate with the owners of the adjacent properties.

At the end of the process, all impacted properties will be restored to pre-installation conditions.

How long will the installations take and how will it impact homeowners' yards?

Each well is expected to take, on average, approximately two working days to install. All landscaping affected by well installation will be restored by Brown Retail to pre-installation conditions.

Monitoring wells are 2 inches in diameter, and can be covered with a small access box similar to a sprinkler system vault to protect them and keep them from being seen. After the wells have been injected, some of the injection well heads may be covered with landscaping materials, if approved by CDPHE, between injection or monitoring activities.

How will this help clean up the groundwater?

Naturally occurring microorganisms live in the groundwater. By injecting "food" (a soybean oil) for these microorganisms, it encourage them to consume the oil and degrade the unwanted compounds in the groundwater as well. This cleanup process is commonly used at sites across the country and is proven to be effective in cleaning contaminated groundwater. The soybean oil is a natural material that poses no harm to health or the environment. The microorganisms are also harmless.

How will you know these efforts are effective?

The monitoring wells being installed will be used to collect groundwater samples to monitor the effectiveness of the injection process. Testing will be done quarterly during the first year, and will likely decrease to semi-annual or annual sampling in subsequent years.

How long will the wells remain on these properties?

It may take several years and perhaps longer for concentrations of solvents in the groundwater to decrease to levels that meet CDPHE's regulatory standards. After CDPHE standards have been met, additional treatment injections may be required, perhaps every 3 to 5 years, until the residual source of contaminants in the weathered bedrock has been effectively reduced or eliminated.

Are the properties in this area more at risk from the contamination?

No. All impacted properties already have been tested and indoor air ventilation systems have been installed, thus preventing vapors from entering houses. At some homes, CDPHE determined it is no longer necessary to operate the indoor air mitigation systems due to changes it has made in its regulatory action (cleanup) levels. The work being proposed in 2011 is to expedite clean up of groundwater contaminants.

For More Information

For more information on the Redfield site environmental activities, contact:

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