APS
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MANUFACTURED GAS PLANT NEWSLETTER

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ENVIRONMENTAL ISSUES

When synthetic gas was manufactured in Prescott, the process used a variety of petroleum fuels and generated several by-products. These by-products included tars, lampblack, oils and purifier wastes. The tars are comprised primarily of polynuclear aromatic hydrocarbons (PAHs). Lampblack is primarily elemental carbon with trace levels of PAHs and metals such as lead. Purifier wastes can include tar and lampblack, as well as metals, sulfur and cyanide. The process also generated wastes such as residual crude oil.

Environmental studies on the Prescott MGP site started in 1993. Samples have been collected from 20 groundwater monitor wells, subsurface soils, creek sediments and surface water. The initial studies indicated there were surface and subsurface soil impacts as well as groundwater impacts, which were related to former MGP operations.

It was also determined that under certain conditions, the groundwater recharges to Miller Creek. Although none

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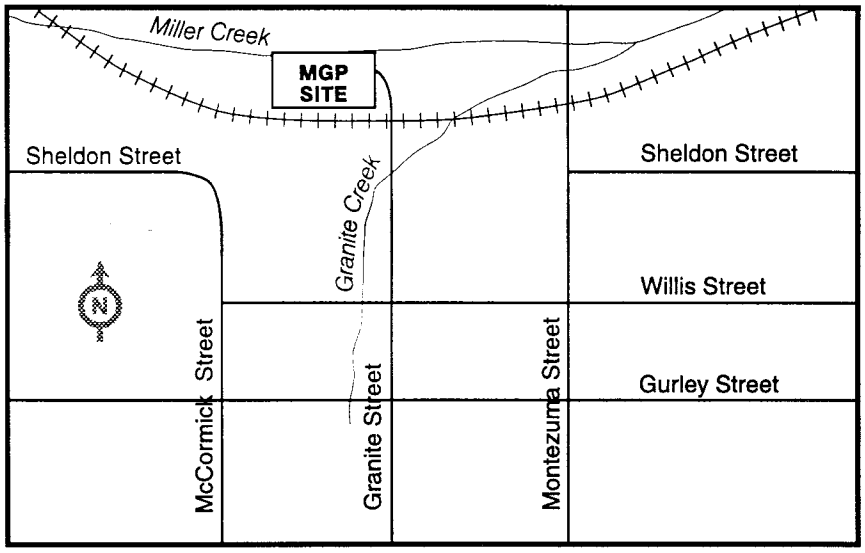

Prescott MGP Site Location

APS TO CLEAN UP CONTAMINATED PRESCOTT SITE

Arizona Public Service Company (APS) this Fall will begin cleaning up an area near North Granite Street in Prescott where the soil and groundwater have been contaminated by residue left behind by a gas manufacturing process that was discontinued approximately 50 years ago.

APS funded two health risk assessments which concluded that APS workers and nearby residents of all ages have no measurably greater risk of contracting cancer than people who do not work or live near the site.

APS, which plans to remove the contaminated soil, will conduct the project under the Arizona Department of Environmental Quality's (ADEQ) Voluntary Remediation Program. APS will work with the City of Prescott on the possible redevelopment of city property in the area for recreational use.

Over 1,500 manufactured gas plants (MGPs) operated throughout the United States from the

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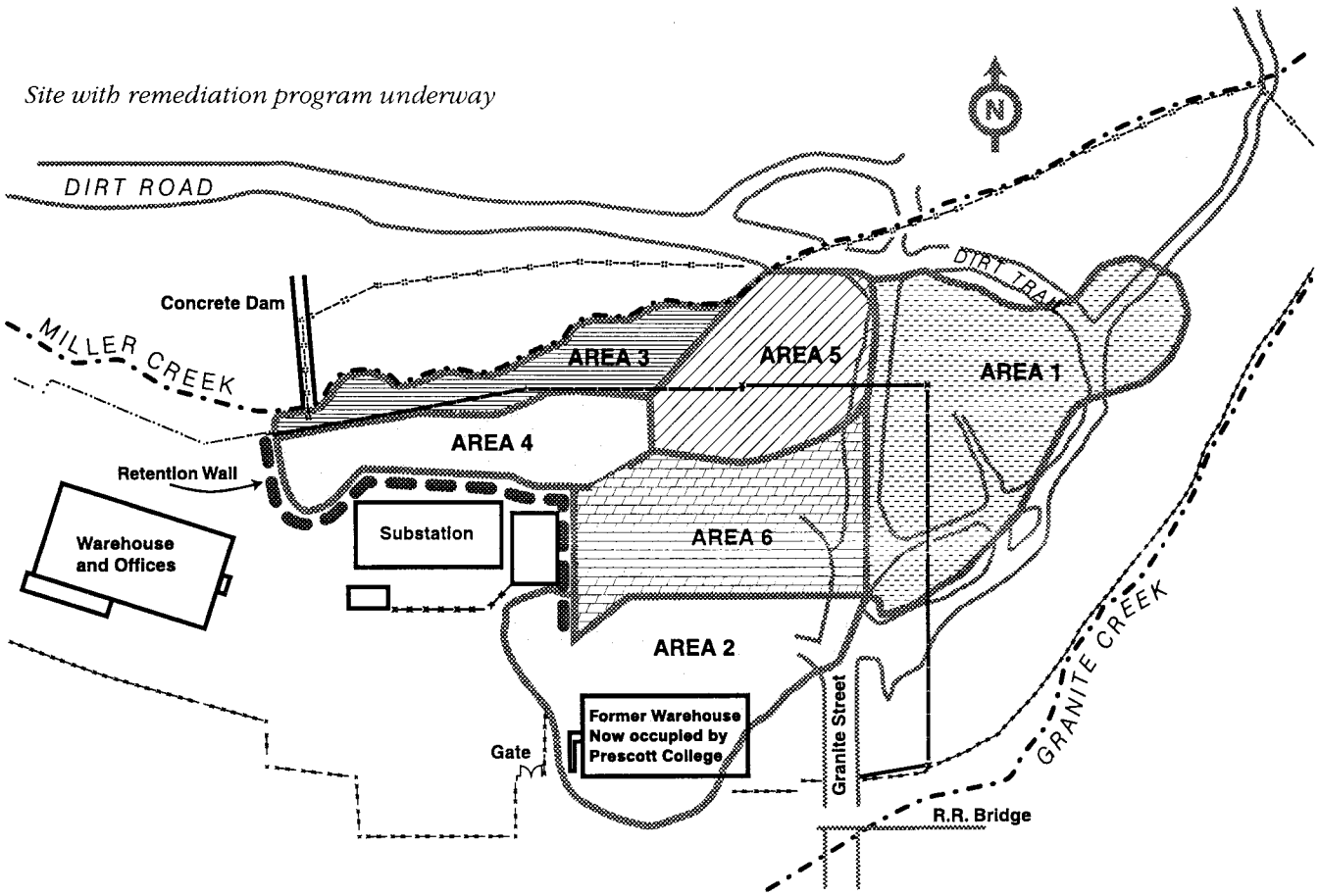
Site with remediation program underway



DETERMINING THE BEST CLEANUP STRATEGY

After the environmental studies were conducted to thoroughly characterize the impacts of the operation of the former MGP, a number of alternatives to cleaning up the site were analyzed. A variety of alternatives were reviewed using two primary approaches:

1. Treating contaminated soil and groundwater in place (called "in-situ treatment"), using techniques such as biological treatments, soil containment, hydraulic control of groundwater or groundwater treatment; and

2. Treating contaminated soil after removing it from the ground. This will result in the removal of the source of groundwater and surface water impacts. (known as "ex-situ treatment").

Each alternative was evaluated based on the following criteria:

- Overall protection of human health and the environment.
- Short- and long-term effectiveness.
- Compliance with ADEQ standards.
- Reduction in toxicity and volume.
- Implementability.
- Cost.
- Public acceptance.

The MGP by-products have remained very stable in the soil, and have not moved or degraded appreciably in the 50 years since operations ceased at the Prescott site. After carefully analyzing the material and looking at various options to address the problem, the cleanup strategy which best met the overall goals was soil excavation and off-site soil treatment. APS has prepared a Remedial Action Plan for ADEQ that provides for the excavation of the impacted soil.

The excavation will be deep enough to remove the impacts to groundwater and surface water in the area. It will be conducted in stages (shown as Areas 1-6 in the diagram) to minimize overall disruptions.

THE CLEANUP EFFORT

The excavation work will involve the eastern half of the APS construction yard, as well as part of the City of Prescott land just east of the site and the nearby Prescott College facility. The APS Customer Service Office at 120 N. Marina Street will not be affected.

Starting in the Fall of 1999, APS will initiate pre-excavation activities, which will include:

- Identifying and potentially re-locating utility and sewer lines.
- Clearing the area of surface material such as asphalt, non-indigenous trees and undergrowth, and removing the shotcrete along Miller Creek.
- Building retention walls to reinforce the substation and APS warehouse.
- Fencing around the perimeter of the site for safety purposes.

Once the area is prepared, APS will dig test trenches at several locations around the site to better estimate the extent of impacted soil and finalize the full excavation plan. The excavation work will be divided into six different areas, and will be conducted in stages throughout a four to six-month period. Work will occur Monday thru Saturday. Some areas will be excavated to depths of 20-26 feet, although the average excavation depth will be closer to 16 feet.

When the excavation work moves near Miller Creek, the creek will be temporarily diverted. Permits will be obtained from the U.S. Army Corps of Engineers.

As each area is excavated, the soil will temporarily be stockpiled onto plastic-lined pads or placed into large metal storage bins. A number of soil samples will be taken to determine the specific concentrations of MGP by-products and define how the soil should be treated. A mobile lab will be located on-site to provide a quick turn-around on soil analysis.

The soil will be removed from the site in large commercial trucks. At full operation, there may be as many as two trucks an hour entering and leaving the site. APS will coordinate with the City to minimize local traffic impacts.

All contaminated soil will be transported off-site for treatment. Most of the contaminated soil will be treated as a "special waste" and transported to a permitted soil treatment facility. At this facility, the material is heated to extremely high temperatures in a special kiln which destroys the MGP by-products and produces sterile, clean soil. After being treated, this soil will be used as fill material.

It is anticipated that a small amount of the soil will have higher levels of contamination. This soil will be handled as a hazardous waste and will be transported to a permitted out-of-state hazardous waste facility for disposal.

Throughout the excavation process, APS will take special precautions to prevent dust. On-site air monitoring will occur at least once an hour at different locations around the property to ensure there are no effects beyond the excavation site. The air monitoring instruments provide instantaneous readings and detect excess dust or other contaminants in the air which might occur when the MGP material is exposed. Some of the material may smell like mothballs, so an odor-suppressing spray foam and other measures will be used to control dust and odors if necessary. Air samples will also be collected and sent to a laboratory for analysis. The instantaneous and laboratory sample results will be compared to verify that the air quality is not being impacted during the cleanup process.

As different excavation areas are completed, they will be filled with clean, treated soil or new fill soil. APS will work with community leaders and neighbors to develop compatible landscaping and revegetation plans.

Once the excavation is complete, groundwater and surface water samples will continue to be collected to ensure the effectiveness of the cleanup efforts.

PRESCOTT SITE

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early 1800s to about 1950. They made synthetic gas for domestic heating and lighting. By 1908, there were 13 manufactured gas plants operating in Arizona, including the one in Prescott, which was operated by a corporate predecessor of APS.

The former Prescott plant site, located at 300 N. Granite St., covers about one-half of the six-acre parcel currently owned by APS.

The Company now operates a service center consisting of a shop, a warehouse, a substation, a materials storage area, and a vehicle refueling center. The Site is adjacent to Miller Creek on the north, and vacant land owned by the City of Prescott to the east. Lincoln Avenue is the western boundary of the APS property, and the former right-of-way for the Atchison, Topeka and the Santa Fe Railroad is located to the south. The area surrounding the site is residential to the north and a mix of retail, commercial and light industrial to the south and west. Prescott College operates a building just south of the property, which houses faculty offices and classroom space.

The plant operated in Prescott from 1909 until 1949. By 1957, it appears that the property had been converted to the current shop and warehouse facility by APS.

ENVIRONMENTAL

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of the groundwater or surface water in the area is used for any drinking water purposes, and Prescott residents receive groundwater from wells in Chino Valley, APS still felt an interim cleanup strategy was needed.

In 1996, APS installed a 150-foot air sparging trench near the Miller Creek bed. The trench, which is about 15 feet deep, reaches bedrock. It treats the water through a combination of air stripping and enhanced bioremediation. This system was installed to reduce the cyanide and PAH levels in groundwater.

Impacted soil was also identified near Miller Creek. Efforts were taken to clean up the area and stabilize the bank with shotcrete (also referred to as gunite). To accomplish this, APS obtained approval from the Army Corps of Engineers, the City of Prescott and Arizona Department of Environmental Quality (ADEQ). The shotcrete was designed to blend in with the creek area and much of the space has been covered with gravel.

In August 1997, additional environmental studies were conducted to further characterize the impacted soil, surface water and groundwater on the eastern end of the site. In 1998, several debris piles were removed from the City of Prescott property to the east of the substation.

Two health risk assessments have also been conducted to determine if there is a potential health risk for workers or nearby residents if they came in contact with the MGP-related materials. One study was conducted in 1992 and a follow-up assessment was prepared in March 1999. Using EPA-approved risk methodologies, the analyses factored in exposures to both children and adults. The results of both risk assessments showed that APS workers and nearby residents of all ages have no measurable increased risk of contracting cancer when compared to people who do not live or work near the site.

NEED MORE INFORMATION?

If you have questions or comments about the APS project, please call the 24-hour project information line at (520) 776-3619. Project updates will be available.