SITE REGISTRY REPORT

PROPOSED WATER QUALITY ASSURANCE REVOLVING FUND (WQARF) SITE
State Route 95 and Kiowa Boulevard
Lake Havasu City, Mohave County, Arizona
April 2016

Site Location

The proposed State Route 95 and Kiowa Boulevard Water Quality Revolving Fund (WQARF) Registry site (the Site) consists of a contaminated groundwater plume located in the vicinity of the intersection of State Route 95 and Kiowa Boulevard, Lake Havasu City, Arizona. The Site is generally bounded to the north by Kiowa Boulevard, to the south by Holly Avenue, to the east by San Juan Drive, and to the west by Cactus Wren Drive. The site consists of the former McCulloch facility, the former Kiowa Ponds area, and the area where groundwater impacts have occurred to the west and northwest of the former McCulloch facility. The site is in an urban setting that includes a mixture of commercial businesses, light industrial, warehouses, and residential neighborhoods.

Background

The site is located approximately 1.25 miles east of Lake Havasu and approximately one mile east of Lake Havasu City's north groundwater production well field, which contains eight production wells that are on standby and operated intermittently. Shallow groundwater occurs in coarse-grained alluvial and basin-fill deposits, composed of interbedded sand, gravel, cobbles, and silt, with minor clay. Groundwater flow direction at the Site is to the west, towards Lake Havasu, and the depth to groundwater is approximately 95 to 170 feet below ground surface. Kiowa Wash is located north of the Site and flows intermittently into Lake Havasu. The potential for the Site COCs to discharge to Lake Havasu exists, although no such discharge has been documented.

Releases of regulated chemical compounds to soil and groundwater have been documented at the former McCulloch facility. During historical characterization activities, soils with elevated concentrations of metals, including chromium, were discovered beneath sumps and buildings. Groundwater at the facility was found to contain volatile organic compounds (VOCs), compounds associated with petroleum hydrocarbons (benzene, toluene, ethylbenzene, and xylene [BTEX]), nitrate and chromium. At the time of the most recent 2014 groundwater sampling event, chemicals of concern (COCs) detected in groundwater samples include the VOCs tetrachloroethene (PCE), trichloroethene (TCE), 1,1-dichloroethene (1,1-DCE), and 1,2-dichloroethane (1,2-DCA), as well as nitrate and hexavalent chromium. As of 2014, concentrations of one or more of the COCs exceed regulatory limits at 18 of the 37 wells that were sampled.

Numerous soil and groundwater investigations have been conducted at the site since the early 1980's. Site investigations, in potential source areas, included soil gas surveys and soil sampling. In early 1990, approximately 20,000 pounds of soil contaminated with chromic acid was excavated from under the floor of the plating shop. During a 1992 investigation, chromium contaminated soil was identified to depths of 15 feet below ground surface (bgs) beneath the plating shop with total chromium concentrations in soil ranging from 43 milligrams per kilogram (mg/kg) to 40,700 mg/kg, exceeding the non-residential soil remediation level (NRSRL) of 65 mg/kg. In 1995, chromium was detected in soil samples to a vertical depth of 165 feet bgs, which was the approximate depth of the groundwater table at that time. A 1999 soil gas survey detected PCE as high as 480,000 micrograms per cubic meter ($\mu g/m^3$).

Dissolved chromium concentrations in Lake Havasu City (LHC) wells have increased between 2008 and 2014. In 2014, the concentration of dissolved chromium in one LHC drinking water production well was 0.12 mg/L.

TCE and PCE are present in the groundwater at levels that exceed the AWQS of 5 micrograms per liter (µg/L) which applies to both of these compounds. In 2014, maximum concentrations of PCE, TCE, 1,1-DCE, and 1,2-DCA were 60 µg/L, 31 µg/L, 9 µg/L, and 18 µg/L, respectively. Maximum concentrations for all of these VOCs exceeded their respective AWQSs.

In 2014, the maximum concentration of nitrate was 14 mg/L exceeding the AWQS regulatory limit of 10 mg/L.

The E&E score for the Site is 50 out of a possible 120. The Arizona Department of Environmental Quality (ADEQ) proposes that the Site be added to the WQARF Registry established pursuant to Arizona Revised Statutes (A.R.S.) § 49-287.01(D). This Draft Site Registry Report (SRR) was prepared to meet the requirements of A.R.S. § 49-287.01(B).

Rationale to list the Site on the WQARF Registry

- Dissolved chromium in one LHC drinking water production well was 0.12 mg/L, just above the AQWS of 0.1 mg/L.
- PCE, TCE, Nitrate, 1, 1-DCE, 1, 2-DCA are present in the groundwater at levels that exceed their respective AWQSs.
- Chromium was detected in soil samples to a vertical depth of 165 feet bgs, which historically was the approximate depth of the groundwater table, in recent years the groundwater table has been rising.
- Possible impacts to Lake Havasu and Kiowa Wash from the Kiowa Ponds and source area stormwater discharge pipes.
- Historic soil vapor concentrations near this release exceed soil vapor screening criteria and may be a threat to receptors in the area.