

**PROPOSED REMEDIAL OBJECTIVES REPORT  
CENTRAL AND CAMELBACK  
WATER QUALITY ASSURANCE REVOLVING FUND  
REGISTRY SITE  
PHOENIX, ARIZONA**



October 16, 2014

Arizona Department of Environmental Quality  
Remedial Projects Unit  
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## LIST OF ABBREVIATIONS & ACRONYMS

A.A.C.	Arizona Administrative Code
ADEQ	Arizona Department of Environmental Quality
ADWR	Arizona Department of Water Resources
AMA	Active Management Area
A.R.S.	Arizona Revised Statutes
AWQS	Aquifer Water Quality Standard
C&C	Central and Camelback
COC	Chemicals of Concern
1,1-DCE	1,1-dichloroethene
ERA	Early Response Action
FS	Feasibility Study
HGC	Hydro Geo Chem, Inc.
PCE	Tetrachloroethene
RO	Remedial Objective
RI	Remedial Investigation
SCSA	Southwest Corner Source Area
SRL	Soil Remediation Level
SRP	Salt River Project
SVE	Soil Vapor Extraction
TCE	Trichloroethene
µg/L	Micrograms per liter
VOC	Volatile Organic Compound
WQARF	Water Quality Assurance Revolving Fund

## 1.0 INTRODUCTION

The Arizona Department of Environmental Quality (ADEQ) has prepared this Proposed Remedial Objectives (ROs) Report for the Central and Camelback (C&C) Water Quality Assurance Revolving Fund (WQARF) Registry Site (the Site) to meet requirements established under Arizona Administrative Code (A.A.C.) R18-16-406. This Proposed RO Report relies upon the Land and Water Use Study (LWUS) Report dated April 2014. The Land and Water Use Report (Use Report) is contained in Appendix K of the C&C Remedial Investigation (RI) Report prepared by Hydro Geo Chem, Inc. (HGC) for ADEQ.

ROs are established for the current and reasonably foreseeable uses of land and waters of the state that have been or are threatened to be affected by a release of a hazardous substance. Pursuant to A.A.C. R18-16-406(D), it is specified that reasonably foreseeable uses of land are those likely to occur at the site and the reasonably foreseeable uses of water are those likely to occur within one hundred years unless site-specific information suggests a longer time period is more appropriate.

Reasonably foreseeable uses are those likely to occur, based on information provided by water providers, well owners, land owners, government agencies, and others. Not every use identified in the LWUS Report will have a corresponding RO. Uses identified in the LWUS Report may or may not be addressed based on information gathered during the public involvement process, limitations of WQARF, and whether the use is reasonably foreseeable.

The ROs must be stated in the following terms: (1) protecting against the loss or impairment of each use; (2) restoring, replacing, or otherwise providing for each use; (3) when action is needed to protect or provide for the use; and (4) how long action is needed to protect or provide for the use.

The ROs chosen for the site will be evaluated in the feasibility study (FS) phase of the WQARF process. The FS will evaluate specific remedial measures and strategies required to meet ROs. A remedial strategy is one or a combination of six general strategies identified in Paragraph B.4 of Arizona Revised Statutes (A.R.S.) 49-282-06 (plume remediation, physical containment, controlled migration, source control, monitoring, and no action.) A remedial measure is a specific action taken in conjunction with remedial strategies to achieve one or more ROs (for example, well replacement, well modification, water treatment, water supply replacement, and engineering controls.)

The FS will propose at least three remedies, a reference remedy and generally two alternative remedies, capable of meeting ROs. A reference remedy is a combination of remedial strategies and measures capable of achieving ROs, and is compared with alternative remedies for purposes of selecting a proposed remedy. An alternative remedy is a combination of remedial strategies and measures different from the reference remedy; alternative remedies are compared with the reference remedy for purposes of selecting a proposed remedy. Proposed remedies will also be generally compatible with future land and water use specified by land owners and water providers.

Written comments on this Proposed RO Report will be accepted for a period of 30 days following the release. If significant public interest exists or if significant issues or information is brought to the attention of ADEQ, the comment period may be extended. The final report will include a responsiveness summary to written comments received from the public during the comment period. The Final RO Report will be an appendix to the Final RI Report.

## 2.0 REMEDIAL OBJECTIVES FOR LAND USE

The Site is located in the City of Phoenix and is bounded approximately by Missouri Avenue to the north, Second Street to the east, Pierson Street to the south and Third Avenue to the west. Contaminants of concern (COCs) for the Site are tetrachloroethene (PCE), trichloroethene (TCE), and 1,1-dichloroethene (1,1-DCE). PCE was determined to be the primary contaminant, with TCE and 1,1-DCE believed to be present as breakdown byproducts of PCE. After several years of investigations, the source area of the COCs was determined to be at the former drycleaner facility at the southwest corner source area (SCSA).

Early Response Actions (ERAs) performed at the SCSA include groundwater pump and treat and soil vapor extraction (SVE). These ERAs reduced the COCs detected in the groundwater and vadose zone soil at the Site. The groundwater pump and treat system is still in operation and has removed approximately 330 pounds of volatile organic compounds (VOCs). The SVE system is also still in operation and has removed approximately 6,120 pounds of VOCs from the vadose zone soils.

Typically, ROs for land use are established for those properties known to be contaminated with hazardous substances above a Soil Remediation Level (SRL) or a risk-based level. At the SCSA, the vadose zone is currently contaminated above regulatory standards with PCE. The groundwater is currently contaminated with PCE and TCE.

### 2.1 Summary of Current and Reasonably Foreseeable Land Use

Generally, the Site is located in a mixed urban, commercial and residential area. Based on the current zoning maps provided by the City of Phoenix, the Site is zoned as residential (single and multiple family) and commercial (restricted, retail, intermediate, and high density). Based on future land use plans provided by the City of Phoenix, there are no immediate plans to change the land use or zoning for the areas of the City of Phoenix within and adjacent to the Site.

### 2.2 Soil Remedial Objective

Although the former drycleaner property is currently zoned for commercial use, reasonably foreseeable use may be residential as has been indicated by the current property owner. Therefore, residential SRLs apply and the ROs for land use at the former drycleaner property are:

**To restore soil conditions to the remediation standards for residential use specified in A.A.C. R18-7-203 (specifically background remediation standards prescribed in R18-7-204, predetermined remediation standards prescribed in R18-7-205, or site specific remediation standards prescribed in R18-7-206) that are applicable to the hazardous substances identified (PCE) and to prevent exposure to contaminants either by direct exposure resulting from construction or industrial activities and from vapor intrusion into occupied structures which would create a health risk. This action is needed for the present time and for as long as the level of contamination in the soil threatens its use as a residential property.**

### **3.0 REMEDIAL OBJECTIVES FOR GROUNDWATER USE**

The groundwater use portion of the Use Report is an inclusive summary of information gathered from the Arizona Department of Water Resources (ADWR), water providers, municipalities, and land owners. The water providers within the Site are the City of Phoenix and the Salt River Project (SRP).

#### **3.1 Summary of Current and Reasonably Foreseeable Groundwater Use**

The Site lies within the Phoenix Active Management Area (AMA). The Phoenix AMA was created by the Arizona Groundwater Management Code passed in 1980 and covers approximately 5,646 square miles in central Arizona. All groundwater withdrawn from any AMA must occur under a groundwater right or permit, unless groundwater is being withdrawn from an exempt well.

According to ADWR records, there are 11 non-exempt withdrawal wells in the Site; one irrigation well and ten dewatering wells. ADWR records indicate that there are no exempt withdrawal wells in the Site and there are no grandfathered rights in the Site. The City of Phoenix and SRP have service area rights in the Site, however, of the two, only SRP is currently pumping groundwater in the Site.

Questionnaires were mailed to the City of Phoenix, SRP, and land owners to obtain information regarding current and future uses of groundwater within the Site. The following paragraphs identify current and foreseeable groundwater uses within the Site and proposed ROs.

The Site is in the City of Phoenix and the Phoenix AMA, an area where groundwater use is controlled and regulated. The City of Phoenix does not have groundwater wells within the Site but has indicated that it may install wells here in the future. Currently a portion of the groundwater within the Site is contaminated with COCs that would restrict use of the groundwater by the City of Phoenix if the city wanted to use the groundwater for municipal purposes.

SRP currently owns one well (13.5E-9.4N) within the Site boundaries. PCE was consistently detected above the Arizona Water Quality Standard (AWQS) of 5.0 micrograms per liter ( $\mu\text{g/L}$ ) in the well. Currently the well provides water for irrigation, however, SRP anticipates that the well will transition to drinking water supply in the reasonably foreseeable future, either by directly connecting the well to municipal water distribution systems or piping to municipal water treatment plants located on the SRP canal system. Currently, the SRP well is not pumped on a regular basis and according to SRP; there are no anticipated changes in the pumping schedule.

One Camelback Inc., property owner of the southeast corner of Central Avenue and Camelback Road current has ten dewatering wells surrounding their building at the property. The dewatering wells are used to pump groundwater from the aquifer to lower the depth of groundwater to prevent groundwater from entering the building's underground garage. The pumped groundwater is treated because of the presence of petroleum hydrocarbons from an underground storage tank (UST) release in this area. The treated groundwater is released to the City of Phoenix storm water system.

### 3.2 Groundwater Remedial Objective

There is no current groundwater use in the Site, however, the regional aquifer is considered to be a future drinking water source for the City of Phoenix and SRP. Therefore, the future use of the regional aquifer must be protected.

**The remedial objective for regional groundwater at the site is to protect for the use as a groundwater supply by the City of Phoenix, and SRP. This action will be needed if/when groundwater use changes to municipal/drinking water. This action will be needed for as long as the level of contamination in the groundwater threatens the use of the regional groundwater for municipal/drinking water uses.**

#### **4.0 REMEDIAL OBJECTIVES FOR SURFACE WATER USE**

The surface water use portion of the Use Report indicates that surface water usage within the Site is for residential irrigation. The surface water source comes from groundwater wells outside the Site.

##### **4.1 Summary of Current and Reasonably Foreseeable Surface Water Use**

Surface water for use in the Site is provided/distributed by the Medlock Homeowners Association canal system. Water from the Medlock Homeowners Association is used for residential irrigation. This water is supplied by the SRP from sources outside the Site.

##### **4.2 Surface Water Remedial Objective**

| Current surface water use in the Site is for irrigation and comes from groundwater sources outside the site; therefore no RO is necessary at this time.

## **APPENDIX A**



## **A ORAL SOLICITATIONS FOR PROPOSED REMEDIAL OBJECTIVES**

As per Arizona Administrative Code (A.A.C.) R18-16-406(I), a community advisory board (CAB) meeting was held at A.L. Moore-Grimshaw Mortuaries Bethany Chapel on July 23, 2014 during the 45-day to 90-day public solicitation period for the Remedial Objectives (ROs). The purpose of the meeting was to solicit and consider proposed ROs for the Central and Camelback (C&C) Water Quality Assurance Revolving Fund (WQARF) Site. The meeting gave a public forum for oral and written ROs to be submitted. Arizona Department of Environmental Quality (ADEQ) received oral proposed ROs from each of the CAB members in attendance during the meeting and none following the meeting. Oral ROs received are as follows:

### **Mr. Lynn Morrow, Ms. Pam Perry, Mr. Stan Watts, Mr. Paul Barquinero, and Mr. Chad Johnson**

- 1) Wanted to use the example of a groundwater RO that was presented in the Arizona Department of Environmental Quality (ADEQ) presentation, which stated: The remedial objective for regional groundwater at the site is to protect for the use of the groundwater supply by the City of Phoenix, and SRP. This action is currently needed and will be needed if/when groundwater use changes to municipal/drinking water uses. This action will be needed for as long as the level of contamination in the groundwater threatens the use of the regional groundwater for municipal/drinking water uses.

### **Ms. Pam Perry**

- 2) Soil be handled properly per future development.

### **Mr. Stan Watts, Mr. Lynn Morrow, and Mr. Chad Johnson**

- 3) Requested that Mr. Watts' draft RI comment with respect to soil be incorporated into the objectives for soil, which was: Concerned that the RI does not address the soil exposure pathway for potential future workman onsite or potentially residential; it seems to discount the fact that there is a pathway but in my mind I see that there might be one and I guess I would be concerned that saying there's no pathway is too strong.

### **Mr. Peter Zorba**

- 4) Cleanup be conducted to a standard that allows for any and all possible future uses and result in water that is safe for people to drink.

## **APPENDIX B**



## **B WRITTEN SOLICITATIONS FOR PROPOSED REMEDIAL OBJECTIVES**

As mentioned in Appendix A, per Arizona Administrative Code (A.A.C.) R18-16-406(I), a community advisory board meeting was held at A.L. Moore-Grimshaw Mortuaries Bethany Chapel on July 23, 2014 during the 45-day to 90-day public solicitation period for the Remedial Objectives (ROs). The purpose of the meeting was to solicit and consider proposed ROs for the Central and Camelback (C&C) Water Quality Assurance Revolving Fund (WQARF) Site. The meeting gave a public forum for written ROs to be submitted. Arizona Department of Environmental Quality (ADEQ) did not receive any written proposed remedial objectives during the meeting but received one letter from the City of Phoenix with proposed ROs following the meeting.

The written ROs are attached.



## City of Phoenix

OFFICE OF ENVIRONMENTAL PROGRAMS

July 24, 2014

Mr. Kevin Snyder  
ADEQ Project Manager  
1110 West Washington Street  
Phoenix, Arizona 85007

Re: Suggested Remedial Objectives for the Central and Camelback WQARF Site

Dear Mr. Snyder:

This letter is in response to ADEQ's solicitation of proposed remedial objectives for the Central and Camelback WQARF site. As you know, the city of Phoenix Water Services Department supplies potable water to approximately 1.4 million people. The sources for this water are surface water from the Salt, Verde, and Colorado rivers and groundwater from wells. Groundwater, as in the past, will continue to be a vital source to meet our future water demands. Groundwater is used to provide water on a continuous basis to isolated areas within our water service area, and for backup water supplies in the event of surface water supply cutbacks due to drought, water main breaks, or water treatment plant outages. Over the next 20 to 50 years, as service area demands increase with growing population, groundwater will be relied upon more heavily on a continuous basis to provide water supplies in our service area.

One remedial objective should be for the future long-term groundwater use. The city of Phoenix requests that the aquifer be available for drinking water use, and not cause damage or harm to our future wells, and associated recharge projects. Where groundwater treatment is necessary to protect future long-term groundwater use, the remedy should include measures to provide for the long-term operation and maintenance of reliable and cost-effective water treatment technologies.

As the entity that regulates land use for the area encompassed by this site, Phoenix requests that ADEQ select remedial objectives that are supportive of unrestricted use of the land. The Central and Camelback WQARF site includes residential, and commercial land uses. A remedial objective for the site should be to remediate soils that would allow continuation of the current land uses.

For the volatile contaminants of concern, the remediation of groundwater and soil contamination should be to levels adequate to avoid a health risk caused by soil vapor intrusion into occupied structures. The potential for vapor intrusion should be predicted through application of peer-reviewed models and validated with field data.

Thank you for consideration of these suggestions and we look forward to future discussions.

Sincerely,

Philip McNeely, Manager  
Office of Environmental Programs