

**FEASIBILITY STUDY WORK PLAN  
40<sup>th</sup> STREET AND OSBORN ROAD  
WQARF REGISTRY SITE  
PHOENIX, ARIZONA**



July 13, 2020

Arizona Department of Environmental Quality  
Remedial Projects Unit  
1110 West Washington  
Phoenix, Arizona 85007

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## FIGURES

Figure 1. 40<sup>th</sup> Street and Osborn Road WQARF Site Plan – Phoenix, Arizona

## **LIST OF ABBREVIATIONS & ACRONYMS**

|        |   |
|--------|---|
| A.A.C. | Arizona Administrative Code                 |
| ADEQ   | Arizona Department of Environmental Quality |
| A.R.S. | Arizona Revised Statutes                    |
| AWQS   | Aquifer Water Quality Standard              |
| COC    | Contaminants of Concern                     |
| FS     | Feasibility Study                           |
| GPL    | Groundwater Protection Level                |
| PCE    | Tetrachloroethene                           |
| RO     | Remedial Objectives                         |
| RI     | Remedial Investigation                      |
| rSRL   | Residential Soil Remediation Level          |
| SRP    | Salt River Project                          |
| SRL    | Soil Remediation Level                      |
| VOC    | Volatile Organic Compound                   |
| WP     | Work Plan                                   |
| WQARF  | Water Quality Assurance Revolving Fund      |

# 1.0 INTRODUCTION

## 1.1 Purpose

This Work Plan (WP) presents the methodology that will be followed for completion of the Feasibility Study (FS) for the 40th Street and Osborn Road Water Quality Assurance Revolving Fund (WQARF) Site (the Site) in Phoenix, Arizona. This work plan is required as part of the FS process, pursuant to Arizona Administrative Code (A.A.C.) R18-16-407(B).

The purpose of the FS is to develop and evaluate a reference remedy and alternative remedies that are capable of achieving the Site's Remedial Objectives (ROs). A FS Report will be developed that relies on data and information from the Remedial Investigation (RI), and further work that may be conducted during the FS, and will evaluate the reference remedy and at least two alternative remedies, to ensure that each remedy meets the following in accordance with A.A.C. R18-16-407(H):

- achieves the ROs;
- is consistent with water management plans and general land use plans; and
- is evaluated with comparison criteria including practicability, risk, cost, and benefit.

One of the alternative remedies will be less aggressive than the reference remedy and one will be more aggressive as required by A.A.C. R18-16-407(E).

In accordance with A.A.C. R18-16-407(I), based on the evaluation of the reference remedy and the alternative remedies, the proposed remedy will be developed and described in the FS Report. The FS Report shall describe the reasons for selecting the remedy including all of the following:

- how the proposed remedy will achieve the ROs;
- how the comparison criteria were considered; and
- how the proposed remedy meets the requirements of Arizona Revised Statutes (A.R.S.)§49-282.06.

## 1.2 Site Description

The Site is bound to the north by East Fairmont Avenue, to the east by 42nd Street, to the south by East Hubbell Street, and to the west by 25th Street (Figure 1).

The purpose of the RI was to determine the nature and extent of contamination at the Site. The RI also identified present and foreseeable land and water use at the Site that have been or could become impacted by the contamination associated with the Site. A summary of the RI and ongoing monitoring program findings and conclusions is presented below:

- The COC at the Site is dissolved PCE in the groundwater. The source of the PCE is currently unknown.
- Based on the May 2020 groundwater sampling event, the maximum concentration of PCE at the Site is 120 µg/L.
- The vertical extent of groundwater impact has been characterized to impermeable bedrock.
- Though PCE concentrations are slightly above the AWQS of 5.0 µg/L in groundwater samples collected from the furthest downgradient monitoring well BMW-16D, it has been determined that the downgradient extent of the PCE is adequately defined to complete the RI.
- The boundary of the Site plume is adequately defined for the purposes of the RI. The need for additional monitoring wells to define the contaminant plume in the southwestern area of the Site will be further evaluated during the Feasibility Study.
- Land use at the Site consists of mixed residential and commercial uses. This is not expected to change over the next 100 years.
- Groundwater is currently used intermittently for irrigation in the vicinity of the Site by the Salt River Project (SRP). Over the next 100 years, SRP anticipates these wells will transition from irrigation to municipal service (potable supply). The City of Phoenix may also need to supplement their potable supply should water demand or available supplies change over the next 100 years.
- Additional details of land and water use within the Site are provided in the Final Remedial Investigation Report.

## **2.0 FEASIBILITY STUDY TASKS**

This section discusses the tasks associated with the development of the FS Report. The FS tasks will be performed in order to meet the requirements of A.A.C. R18-16-407. The FS process considers the data gathered during the RI and further work that may be conducted during the FS and;

- considers the ROs;
- includes the identification of potential treatment and containment technologies that satisfy the ROs;
- includes remedial technology screening;
- includes the development and analysis of remediation alternatives and technologies; and
- includes a comparison of the remedies and proposes a remedy.

### **2.1 Remedial Objectives**

The ROs developed as part of the RI process, pursuant to A.A.C. R18-16-406 (I), were based on field investigation results, the land and water use surveys, the screening level risk evaluation, ADEQ input, RO solicitation from the public, and input from the community during the draft RO Report public comment period. ROs are used during remedial alternatives development to identify appropriate remedial technologies. The ROs for the Site are available in the Final RO Report, Appendix M in the Final RI Report.

### **2.2 Development and Screening of Remedial Measures**

Remedial measures are remediation technologies or methodologies, and are screened based on anticipated removal or reduction of contaminants at a site and the ability to achieve the ROs. The FS evaluation will look at future risk under reasonably foreseeable uses of the source area. Typically, appropriate remediation alternatives and technologies are screened using the following criteria:

- compatibility with current and reasonably foreseeable land use,
- COC treatment effectiveness,
- regulatory requirements,
- constructability,
- operation and maintenance requirements,

- health and safety considerations,
- generation and management of waste products,
- flexibility/expandability, and
- cost.

Selected remedial measures will then be assembled with selected strategies to develop the reference remedy and alternative remedies. The remedial strategies to be developed, consistent with A.A.C. R18-16-407 (F), are listed below. Source control shall be considered as an element of the reference remedy and all alternative remedies, if applicable, except for the monitoring and no action strategies. A strategy may incorporate more than one remedial measure.

- plume remediation;
- physical containment;
- controlled migration;
- source control;
- monitoring; and,
- no action alternative.

### **2.3 Development of Reference Remedy and Alternative Remedies**

Based upon the retained remedial measures and strategies, a reference remedy and two alternative remedies will be developed as described in A.A.C. R18-16-407(E). The combination of the remedial strategy and the remedial measures for each alternative remedy shall achieve the ROs. The reference remedy and any alternative remedy also may include contingent remedial strategies or remedial measures to address reasonable uncertainties regarding the achievement of ROs or uncertain time-frames in which ROs will be achieved. The reference remedy and alternative remedies will be described in the FS Report in sufficient detail to allow evaluation using the comparison criteria, but plans at construction level details are not required at this time. Standard measurements for comparison of alternative remedies are included in appendix A of A.A.C. R18-16-407 and may be used, as applicable, for comparison of the relevant factors. Where appropriate, the reference remedy and an alternative remedies may incorporate different strategies for different aquifers, or portions of aquifers.

The reference remedy shall be developed based upon best engineering, geological, or hydrogeological judgment following engineering, geological, or hydrogeological standards of practice, considering the following:

- the information in the RI;
- the best available scientific information concerning available remedial technologies;

- preliminary analysis of the comparison criteria and the ability of the reference remedy to comply with A.R.S. §49-282.06.

At a minimum, at least two alternative remedies shall be developed for comparison with the reference remedy. At least one of the alternative remedies must employ a remedial strategy or combination of strategies that is more aggressive than the reference remedy, and at least one of the alternative remedies must employ a remedial strategy or combination of strategies that is less aggressive than the reference remedy. A more aggressive strategy is a strategy that requires fewer remedial measures to achieve the ROs; a strategy that achieves the ROs in a shorter period of time; or a strategy that is more certain in the long term and requires fewer contingencies.

In accordance A.A.C. R18-16-407(G), in identifying remedial measures, the needs of the well owners and the water providers and their customers will be considered, including quantity and quality of water, water rights, and other legal constraints on water supplies, reliability of water suppliers and any operational implications. Such remedial measures may include, but will not be limited to, well replacement, well modification, water treatment, provision of replacement water supplies and engineering controls. Where remedial measures are relied upon to achieve ROs, such remedial measures will remain in effect as long as required to ensure the continued achievement of those objectives.

A comparative evaluation of the reference remedy and the alternative remedies developed will be conducted. In accordance with A.A.C.18-16-407(H), each remedy will be evaluated using the following:

- A demonstration that the remedial alternative will achieve the ROs.
- An evaluation of consistency with the water management plans of the affected water providers and the general land use plans of the local governments with land use jurisdiction.
- An evaluation of the comparison criteria, including:
  - a. practicability of the alternative;
  - b. an evaluation of risk, including the overall protectiveness of public health and aquatic and terrestrial biota;
  - c. cost of the alternative;
  - d. benefit or value the alternative; and
  - e. a discussion of the comparison criteria as evaluated in relation to each other.



Based upon the evaluation and comparison of the reference remedy and the other alternative remedies developed, a proposed remedy will be developed and described in the FS in accordance with A.A.C. R18-16-407(I). The FS Report shall describe the reasons for selection of the proposed remedy including the following:

- how the proposed remedy will achieve the ROs;
- how the comparison criteria were considered; and
- how the proposed remedy meets the requirements of Arizona Revised Statutes (A.R.S.) §49-282.06.

### **3.0 COMMUNITY INVOLVEMENT**

ADEQ will issue a Notice to the Public announcing availability of the WP to implement the Feasibility Study on ADEQ's website at [www.azdeq.gov](http://www.azdeq.gov). The notice will be mailed and emailed to the Public Mailing List for the Site; water providers, the Community Advisory Board, and any other interested parties.

## 4.0 FEASIBILITY STUDY REPORT FORMAT

An FS Report will be prepared documenting the FS process. The FS Report will be organized into the following sections:

- **Section 1.0 Introduction**  
This section will summarize the purpose of the FS Report.
- **Section 2.0 Site Background**  
This section will present a summary of the Site description, physiographic setting, nature and extent of contamination and a risk evaluation.
- **Section 3.0 Feasibility Study Scoping**  
This section I present the regulatory requirements presented in statute and rule, delineate the remediation areas and present the ROs identified in the RI.
- **Section 4.0 Identification and Screening of Remedial Measures and Remedial Strategies**  
This section will present the evaluation and screening of various remedial measures and strategies related to contamination in soil and groundwater and lists the technologies that have been retained for evaluation as part of the reference and alternative remedies pursuant to A.A.C. R18-16-407 (E) and (F).
- **Section 5.0 Development of Reference Remedy and Alternative Remedies**  
This section will present the selected reference remedy, and at a minimum, a more aggressive remedy and a less aggressive remedy. Each remedy will include a discussion of the associated remedial measures and remedial strategies pursuant to A.A.C. R18-16-407(E).
- **Section 6.0 Detailed Comparison of the Reference Remedy and the Alternative Remedies**  
The remedies will be compared to each other based on the comparison criteria of practicability, cost, risk and benefit. Uncertainties, if identified, associated with each remedy or comparison criteria will be discussed pursuant to A.A.C. R18-16-407(H).
- **Section 7.0 Proposed Remedy**  
This section will present the proposed remedy as required in A.A.C. R18-16-407(I), and discusses how it will achieve the ROs, how the comparison criteria were considered, and how the proposed remedy will meet the requirements of A.R.S. §49-282.06.
- **Section 8.0 Community Involvement**  
This section will document the community involvement activities conducted in association with the FS.

## **FIGURES**

# Figure 1

