

**EXPLANATION OF SIGNIFICANT DIFFERENCE #4**  
**19<sup>th</sup> Avenue Landfill**  
**Phoenix, Arizona**

**June 2015**

**I. INTRODUCTION**

This Explanation of Significant Difference (“ESD”) #4 updates the U.S. Environmental Protection Agency’s (“EPA”) signed Record of Decision (“ROD”) for the final remedy at the 19<sup>th</sup> Avenue Landfill Superfund Site (“Site”) in Phoenix, Arizona. Specifically, this ESD #4 modifies the remedy as follows:

- It modifies the remedy by allowing the current flare treatment system for Cell A-1 at the Site to be replaced with an improved treatment system, Carbon Adsorption System (“CAS”).
- It documents that a Declaration of Environmental Use Restriction (“DEUR”) was placed in the chain of title for the Site in 2006, and that an Amendment was made in 2012 to the DEUR allowing the cap to be penetrated for emergency repairs.

On September 21, 1989, the State of Arizona’s Department of Environmental Quality (“ADEQ”) signed a Letter of Determination (“LOD”). EPA concurred with the remedy selected in the 1989 LOD through the issuance of a ROD on September 29, 1989. The selected remedy required “the containment of the landfill wastes on-site with the collection and flaring of landfill generated gases. Landfill gases that are generated shall be managed by separate gas collection and flare systems which will operate independently in each cell of the landfill.”

This ESD #4 is provided in accordance with Section 117(c) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (“CERCLA”), as amended by the Superfund Amendment and Reauthorization Act of 1986 (“SARA”), 42 U.S.C. Section 9617(c), and Section 300.435(c)(2)(i) (55 Fed. Reg. 8666, 8852 (March 8, 1990)) of the National Oil and Hazardous Substances Pollution Contingency Plan (“NCP”).

The two remedy changes are summarized below.

- Allows for replacement of the current landfill gas flaring system with a CAS to contain and remove landfill gas contaminants, including volatile organic compounds (“VOCs”) from the Site. The extracted landfill gas vapors will be treated in granulated activated carbon (GAC) vessels to remove any VOCs prior to discharge to the atmosphere. The GAC will be periodically removed and replaced, in accordance with the Maricopa County Air Quality Department permit.
- Documents and incorporates the 2012 DEUR Amendment that allows intentional breaches of the engineered protective cap, if necessary, to perform emergency repairs or maintenance activities on the landfill gas extraction system in accordance with a *Landfill Maintenance Contingency Plan*, which was incorporated as a component of the

Engineering Control Plan. The original 2006 DEUR did not allow the City, the property owner to conduct any excavation or construction activities on the site, nor create or permit any other soil disturbance or other activity that may impair the integrity of any engineering control such as the cap.

A copy of the 2006 DEUR and the 2012 DEUR Amendment are included as attachments to this ESD #4.

Consistent with Section 117(c) of CERCLA, 42 U.S.C. Section 9617(c), and Section 300.435(c)(2) of the NCP, any change or modification to the Site's remedy or implementation of the remedial action, including the engineering controls and/or institutional controls, must be approved by EPA.

This ESD #4 becomes part of the Administrative Record for the Site. The complete Administrative Record for the Site is available at the following locations:

Arizona Department of Environmental Quality  
Phoenix Main Office  
1110 W. Washington Street  
Phoenix, Arizona 85007

U.S. EPA Records Center  
75 Hawthorne Street, Suite 4035  
San Francisco, California 94105

EPA provided ADEQ a fifteen (15) working-day comment period. Comments, including ADEQ's concurrence on this ESD, are summarized in Section IV of this document and included in the Site Administrative Record file. Pursuant to 40 C.F.R. Section 300.435(c)(2)(i), a formal public comment period is not required for this ESD #4, though the ESD will be available to the public in the Site Administrative Record and information repository, and a notice and brief summary of the ESD will published in a major local newspaper of general circulation.

## **II. BACKGROUND**

The following provides background information on the Site, and a summary of the original 1989 ADEQ LOD and EPA's subsequent 1989 ROD. Additional background information can be found in these decision documents and the Site's Administrative Record.

### **A. Site Location**

The Site is a 213-acre parcel (used historically as a landfill) located in an industrial area within the municipal boundaries of Phoenix, in Maricopa County, Arizona. The landfill was separated into two cells, Cell A and Cell A-1. The major part of the landfill includes 200 acres, referred to as Cell A, which is located on the north side of the Salt River channel. Cell A is bounded on the north by Lower Buckeye Road, on the east by the 15<sup>th</sup> Avenue storm drain outfall, on the west by 19<sup>th</sup> Avenue, and on the south by the Salt River channel. The remaining 13 acres of the landfill, Cell A-1, is bounded on the north by the Salt River channel, on the east by an active sand and gravel pit, on the south by industrial property, and on the west by an active sand and gravel pit.

## **B. Summary of Site History, Contamination Problems and Selected Remedy**

The Site is located on alluvial fill and lies within the Basin and Range physiographic province. Groundwater flow direction is generally to the northwest. The Salt River bed adjacent to the landfill is normally dry.

In 1955, the 19<sup>th</sup> Avenue Landfill Site was relatively undisturbed except for a shallow 20-acre excavation in the northwestern portion of Cell A. In 1957, the City extended an existing lease with the landowner to operate a municipal landfill. Sand and gravel pits were excavated to a depth of approximately 30 to 50 feet, and backfilled predominately with municipal refuse from the Phoenix area, and some solid and liquid industrial wastes.

In the 1970s, liquid industrial wastes were poured into unlined pits that were dug into areas of Cell A, previously filled with refuse in the 1960s. In addition to the municipal and industrial wastes, some medical wastes and materials containing low levels of radioactivity were deposited. It has been estimated that the Cell A landfill contained approximately nine million cubic yards of refuse. Cell A-1 was mined for sand and gravel prior to 1971, and completely filled with refuse by late 1972. Cell A-1 contained the same type of municipal refuse as Cell A; however, no evidence of liquid, solid or special hazardous types of materials were found in Cell A-1. Cell A-1 landfill contains an estimated one-half million cubic yards of refuse.

Parts of the landfill were covered with water by at least one flood event during 1965 and intermittently during the 1970's. Surface water runoff events in May 1978 washed refuse from the southwest part of Cell A and the northern third of Cell A-1. The cells were refilled: Cell A with refuse during the summer of 1978; and Cell A-1 with construction debris in 1979. In 1979, river flows in the winter and spring again washed out refuse in the southwestern part of Cell A. Following the river flows, the area was covered with rubble, asphalt and dirt to prevent additional erosion during the next few years.

In 1979, the landfill was closed under a cease and desist order issued by the Arizona Department of Health Services ("ADHS"). The same year, the City and ADHS entered into a consent agreement in June, followed by an amended Consent Order in December. To comply with the first amended Consent Order, the City covered the site with fill material, stockpiled soil for final capping, installed groundwater monitor wells, built berms around the boundary of the landfill, installed a methane gas collection system and provided a 24-hour security guard until 1996. The guard was no longer required once the site was secured by a permanent fence with secured access points.

In 1983, the landfill was placed on EPA's National Priorities List ("NPL"). A Remedial Investigation/Feasibility Study ("RI/FS") was voluntarily conducted by the City. The RI/FS Report was prepared according to the requirements of CERCLA. In 1988, the City submitted the RI/FS Report to ADEQ. The Report was reviewed by ADEQ, EPA and the Arizona Department of Water Resources ("ADWR"). Comments by these agencies were incorporated into the subsequent Remedial Action Plan ("RAP").

In 1988, EPA assigned the lead oversight responsibility for the site to ADEQ. ADEQ s required the City to prepare a RAP under the state Water Quality Assurance Revolving Fund (“WQARF”) rules. The RAP included options, ranging from excavation of the entire landfill to a no action option. These options were categorized into the four objectives for the 19th Avenue Landfill; *Refuse-Washout*, *Surface-Water Quality*, *Ground-Water Quality*, and *Landfill-Gas Accumulation*.

In 1989, ADEQ approved the final RAP and the RI/FS for the Site. The LOD recorded approval of the preferred alternative A, with inclusion of a groundwater contingency plan (Appendix B of the RAP). EPA’s 1989 ROD documented EPA’s concurrence of the remedy selected by ADEQ for the Site.

In 1992, a Consent Decree between the State of Arizona and the City of Phoenix was signed by the United States District Court. The Consent Decree specified the capping of the landfill cells, removal and treatment of methane gas, monitoring of groundwater, flood control improvements and bank stabilization, and a contingency plan to treat groundwater if standards are exceeded.

In 1995, EPA and ADEQ signed ESD #1 modifying the remedy to allow use of a flexible lining system, Armorflex, instead of a gunite surface, because it provided flexibility during subgrade landfill settlement, could withstand vehicle loading and provided excellent erosion protection. In 1996, remedy construction was completed and the City, EPA and ADEQ conducted a final inspection in 1997. ADEQ prepared the Preliminary Close-out Report (“PCOR”) in 1998.

In 2000, the first Five Year Review (“FYR”) was completed for the Site. In 2001, ADEQ approved a final engineering design for the landfill gas collection system, and construction was completed in 2002. Maricopa County gave the City an Air Quality permit to operate the system during the fall 2002.

In 2003, ADEQ and EPA signed ESD #2 for the Site. This ESD modified the 1989 remedy by updating the maximum contaminant levels (MCLs) for specific constituents in groundwater, and adding the Arizona Ambient Air Quality Guidelines for volatile organic compounds (“VOCs”) as performance standards for ambient air quality monitoring at the site, should ambient air quality monitoring be necessary in the future.

In 2006, ESD # 3 was signed by ADEQ and EPA for the Site. This ESD modified the remedy by requiring institutional controls (“ICs”) be added to the required remedy, which shall include a DEUR attached to the property deed and filed with the Maricopa County Records Office. Later in 2006, the City executed and recorded the DEUR for the Site.

In 2012, the City recorded an amendment to the 2006 DEUR, incorporating a *Landfill Maintenance Contingency Plan*, as a component of the Engineering Control Plan, to allow an intentional breach into the engineered protective cap if needed to perform emergency repair or maintenance activities of the landfill gas extraction system.

In 2005, a second FYR was completed for the Site, and a third FYR in 2010. The fourth FYR is scheduled to be completed by September 2015.

### **III. DESCRIPTION OF SIGNIFICANT DIFFERENCE**

After reviewing the protectiveness of the current Site remedy, EPA, in coordination with ADEQ, has decided that the two remedy modifications described in this ESD are necessary to protect human health and the environment. EPA has presented these changes to the remedy in the form of an ESD because the changes are significant but not fundamental in nature.

EPA decided in 2015 that the current landfill gas treatment technology (flaring) for Cell A-1 at the landfill needs to be replaced with a CAS because flaring is no longer protective of human health and the environment. The aging landfill is no longer producing sufficient methane for the flares to burn adequately to combust VOCs and other contaminants present in the landfill gas. Therefore, a treatment system using GAC is needed to remove those contaminants. The purpose of replacing the current flare system with a CAS system at Cell A-1 is to maintain the integrity of the landfill remedy by controlling potential exposure to contaminants, including VOCs, which currently could be released to the atmosphere from landfill gas generated by decomposing waste materials. With decreasing amounts of methane being produced at Cell A-1, a typical characteristic of older landfills, the current flare system does not burn effectively to adequately remove these contaminants. The new CAS will extract the landfill gas from the subsurface by use of a blower and then treat the landfill gas with carbon contained in three GAC vessels and capture the contaminants so that they cannot be released to the atmosphere.

EPA decided in 2006, as documented in ESD #3, that enforceable ICs needed to be placed on the Site to ensure that the existing remedy would be protective of human health and the environment in the long-term. The purpose of implementing ICs on the Site was to maintain the integrity of the landfill remedy components (landfill cap) and to protect human health and the environment by controlling potential exposure to the buried wastes and landfill gas. However, the original IC in the form of a DEUR did not allow the protective engineered cap to be penetrated. Therefore, the City of Phoenix, as agreed to by ADEQ, recorded an amendment to the DEUR in 2012 allowing for such penetration when emergency repairs or maintenance is needed of the landfill gas extraction system buried beneath the cap. EPA concurs that an exception to this restriction needs to be made when emergency repairs or maintenance must be conducted. This extraction system is an integral component of the remedy that prevents contaminants in the landfill gas from being released to the atmosphere and posing a risk to human health or the environment. This 2012 DEUR amendment does not impact any Applicable or Relevant and Appropriate Requirements (ARARs) identified in the ADEQ Remedial Action Plan (RAP) attached to the 1989 EPA Record of Decision (ROD) or the updated ARARs, including updated ground water quality standards and ambient air standards, identified in the 2003 ESD #2. By allowing repairs or maintenance to be made to the landfill gas extraction system without delay as soon as problems are identified, the City can ensure that the integrity and effectiveness of the remedy is well managed to protect any surface water, ground water, air or soils that could be impacted by the migration or release of uncontrolled landfill gas.

**IV. SUPPORT AGENCY COMMENTS**

ADEQ concurred with this proposed ESD #4 in a letter dated June 17, 2015, and provides approval of the final ESD via signature below.

**V. AFFIRMATION OF STATUTORY DETERMINATIONS**

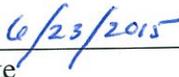
This ESD #4 modifies the selected remedy by replacing the current flare system with a CAS. ESD #4 also requires an IC, in this case an amendment to the DEUR that allows the landfill cap to be penetrated in order to conduct emergency repairs and maintenance. This ESD also documents that this latter requirement has already been implemented. EPA believes that by these changes, the selected remedy for the 19<sup>th</sup> Avenue Landfill Site will remain protective of human health and the environment, will continue to comply with the applicable or relevant and appropriate federal and state requirements for this remedial action, and will continue to be cost-effective. The modified remedy satisfies CERCLA Sections 117(c) and 121, and 40 C.F.R. Section 300.435(c)(2)(i).

**VI. PUBLIC PARTICIPATION COMPLIANCE**

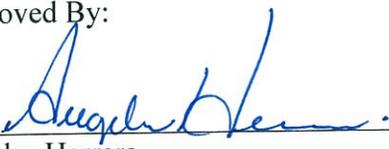
No public comment period is required for this ESD #4 because the changes are not fundamentally altering the selected remedy. EPA has provided ADEQ with a fifteen (15) working-day comment period on this ESD. In accordance with 40 C.F.R. Sections 300.435(c)(2)(i) and 300.825(a)(2), this final ESD and all documents will be contained in the Administrative Record for the 19<sup>th</sup> Avenue Landfill Site.

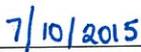
Approved By:

  
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Tina LePage  
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Date

Approved By:

  
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Date