EPA

TCEQ

City of Dallas

On this day, May 10, 2005,
the U.S. Environmental Protection Agency (U.S. EPA)
Determines that

OU 4 of the RSR Corporation Superfund Site is Ready for Industrial Reuse

Samuel Coleman, P.E.
Director, Superfund Division
U.S. EPA Region 6

City of Dallas

David Davis
Assistant Division Director
Texas Commission on
Environmental Quality

This Ready for Reuse Determination (RfR) is for OU4 of the RSR Corporation Superfund Site. This RfR Determination provides information that the U.S. EPA has made a technical determination that OU4, located in Dallas, Dallas County, Texas, is ready for industrial use and its remedy will remain protective of human health and the environment, subject to operation and maintenance of the remedy and the limitations as specified in the Record of Decision (ROD) and Remedial Action (RA) Report, which have been summarized in the attached report, RfR Determination, OU4 RSR Corporation Superfund Site, May 10, 2005. This RfR Determination remains valid only as long as the requirements and limitations specified in the ROD and RA Report are met.

This RfR Determination is a technical decision document and an environmental status report and does not have any legally binding effect, nor does it expressly or implicitly create, expand, or limit any legal rights, obligations, responsibilities, expectations, or benefits of any party. U.S. EPA assumes no responsibility for reuse activities or for any possible or potential harm that might result from reuse activities. U.S. EPA retains any and all rights and authorities it has, including but not limited to legal, equitable, or administrative rights. U.S. EPA specifically retains any and all rights and authorities it has to conduct, direct, oversee, and/or require environmental response actions in connection with OU4, including instances when new or additional information has been discovered regarding the contamination or conditions at OU4 that indicate that the remedy and/or the conditions at OU4 are no longer protective of human health or the environment for the uses identified in the RfR Determination.

The ROD and RA Report state that the remedy is protective for industrial use. No institutional controls are required by the ROD; however, future users of OU4 should comply with local land use regulations and the implemented remedy which includes maintaining the soil cover to prevent exposure to contaminants that remain onsite in order to ensure the continued protection of human health and the environment. The property owner is responsible for the continuing maintenance of the remedy at OU4. The types of uses identified in this RfR Determination remain subject to (i) applicable federal, state, and local regulation, including, but not limited to, zoning ordinances and building codes, and to (ii) title documents, including, but not limited to, easements, restrictions, and institutional controls.

RSR CORPORATION SUPERFUND SITE
OPERABLE UNIT 4
READY FOR REUSE DETERMINATION

TABLE OF CONTENTS

LIST OF EXHIBITS

I. Executive Summary

Property Description

This Ready for Reuse (RfR) Determination is for Operable Unit 4 (OU4) of the RSR Corporation Superfund Site located in west Dallas, Dallas County, Texas. The RSR Corporation Site encompasses an area of 13.6 square miles. OU4, the lead smelting facility, is approximately 6.5 acres in size, and is located at 2826 North Westmoreland Road in west Dallas. The property is currently owned by Murmur Corporation.

The RSR Corporation Site consists of five operable units, which are distinct geographical areas. OU1 consists of private residential areas potentially impacted by historical operations of the smelter. OU2 is a Dallas Housing Authority's public housing development located northeast of the smelter facility. OU3 consists of former landfills and slag piles located at three different sites within west Dallas. OU4 is the smelter facility. OU5 is the former battery wrecking facility and other industrial tracts of land associated with the smelter and located across the road from the smelter facility.

Purpose

The conditions summarized in this RfR Determination are based on limitations and requirements established in U.S. EPA decision documents for OU4 at the RSR Corporation Site, including the Record of Decision (ROD) and Remedial Action (RA) Report. U.S. EPA has made a technical determination that OU4 of the RSR Corporation Site, located in west Dallas, Dallas County, Texas is ready for industrial use and its remedy will remain protective of human health and the environment, subject to operation and maintenance of the remedy and the limitations specified in the ROD and RA Report.

The ROD and RA Report state that the remedy is protective for industrial use. No institutional controls are required by the ROD; however, future users of OU4 should comply with local land use regulations and the implemented remedy which includes maintaining the soil cover to prevent exposure to contaminants that remain onsite in order to ensure the continued protection of human health and the environment. The property owner is responsible for the continuing maintenance of the remedy at OU4.

The reasonably anticipated future land use of OU4 is industrial based on the past and current zoning map for this area. The RfR Determination for OU4 declares that OU4 is ready for industrial use.

Site Summary

Beginning in the early 1930s, a secondary lead smelting facility in west Dallas, Texas, processed used batteries and other lead-bearing materials into pure lead, lead alloys, and other lead products. The smelter property, which produced pure lead and specialty alloys, makes up OU4 of

the RSR Corporation Site. Other industrial property related to the smelter, such as the battery wrecking facility, make up OU5. In the refining process alloy elements, such as antimony, arsenic, and cadmium, were added as necessary to produce the desired product.

During U.S. EPA's investigation of OU4 of the RSR Corporation Site, U.S. EPA performed an assessment of the human and environmental risks associated with using OU4 for industrial purposes. The risks that were identified for OU4 were human and environmental exposure to arsenic, cadmium, and lead associated with buildings, structures, equipment, and soils, through ingestion, inhalation, and direct contact. In its ROD for OU4, U.S. EPA selected response actions to manage these risks to human health and the environment. With the completion of removal and response actions at OU4 in September 2001, U.S. EPA has attained the CERCLA cleanup goals and remedial action objectives for the unacceptable levels of risk to current and future users of OU4. As a result, based on information available as of this date, U.S. EPA has determined that the unacceptable levels of risk to current and future users of OU4 have been abated and OU4 may be used for industrial purposes and will remain protective of human health and the environment, subject to operation and maintenance of the remedy and limitations as specified in the ROD and RA Report.

Relevant Documents

Documents pertaining to the RSR Corporation Site and the RfR Determination are part of the Administrative Record for OU4, which is available for review at the following address:

U.S. Environmental Protection Agency, Region 6
U.S. EPA Region 6
1445 Ross Avenue, Suite 1200
Dallas, TX 75202-2733

Additional information can be obtained from Carlos Sanchez, OU4's Remedial Project Manager (RPM), who can be reached at 214.665.8507 or sanchez.carlos@epa.gov.

Disclaimer

The attached RfR Determination is a technical document and an environmental status report that does not have any legally binding effect, nor does it expressly or implicitly create, expand, or limit any legal rights, obligations, responsibilities, expectations, or benefits of any party. U.S. EPA assumes no responsibility for reuse activities or for any possible or potential harm that might result from reuse activities. U.S. EPA retains any and all rights and authorities it has, including but not limited to legal, equitable, or administrative rights. U.S. EPA specifically retains any and all rights and authorities it has to conduct, direct, oversee, and/or require environmental response actions in connection with OU4, including instances when new or additional information has been discovered regarding the contamination or conditions at OU4 that indicate that the remedy and/or the conditions at OU4 are no longer protective of human health or the environment for the uses identified in the RfR Determination. This RfR

Determination remains valid only as long as the requirements and limitations specified in the RODs and RA Report are met.

Effective Date

As a result, based on information available as of this date, U.S. EPA has determined that the unacceptable levels of risk to current and future users of OU4 have been abated for industrial users. OU4 of the RSR Corporation Site is ready for industrial use and its remedy will remain protective of human health and the environment, subject to operation and maintenance of the remedy and limitations as specified in the RODs and RA Report.

U.S. EPA Region 6 issued this Ready for Reuse Determination, effective May 10, 2005.

By: _____

Samuel Coleman, P.E., Director
Superfund Division
United States Environmental Protection Agency
Region 6

II. Site Location

The RSR Corporation Site encompasses an area of approximately 13.6 square miles. An aerial photograph of the Site, shown in Exhibit 1, shows the approximate layout of the Site and its operable units. OU4 of the RSR Corporation Site, the lead smelting facility, is situated on approximately 6.5 acres of land located at 2826 North Westmoreland Road in west Dallas, Dallas County, Texas. Exhibit 2 is an aerial photograph of OU4. OU4 comprises tax parcel #00000700771000000 and contains several inactive structures, including the smelter facility, smelter stack, batch house, hog storage building and several other support buildings providing office space, showers, storage areas, laboratory needs, and vehicle support. The facility layout of OU4 is shown in an aerial photograph in Exhibit 3. The former smelter property is bound to the north by Singleton Boulevard, to the east by Texas Utilities property and Westerfield Road, to the south by the Union Pacific railroad, and to the west by Westmoreland Road.

Areas surrounding OU4 are a mixture of residential, commercial, and industrial facilities. The population in this area is approximately 17,000. Based on the 1994 City of Dallas zoning map, OU4 is currently zoned as Industrial Manufacturing (IM). IM zoning for the City of Dallas includes industrial, wholesale distribution and storage, and support office and retail uses. The surrounding land, OU1 of the RSR Corporation Site, is zoned primarily for single-family residential, multi-family residential, light and heavy industrial uses and, to a lesser extent, commercial and retail. The reasonably anticipated future land use of OU4 is industrial based on the past and current zoning map for this area.

III. Site Summary

Site and Contaminant History

For approximately 50 years, a secondary lead smelting facility, in west Dallas, Texas, processed used batteries and other lead-bearing materials into pure lead, lead alloys, and other lead products. The basic inputs into the smelting process were lead scrap and lead from used car batteries. In the first step of the smelting process the batteries were disassembled at a battery wrecking facility (OU5) using hammer-mills to break the batteries into small pieces (e.g. battery chips). The lead posts and grids were then sent across the street to the smelter facility (OU4) to produce soft pure lead or specialty alloys. In the refining process, alloy elements, such as antimony, arsenic, and cadmium, were added as necessary to produce the desired product. Slag was generated as part of the smelting process and is made up of oxidized impurities and molten lead. Slag and battery chips that were not reprocessed were considered waste material and required disposal.

Activities at the Site led to arsenic, cadmium, and lead contamination of dust and residual materials present on and within the buildings, structures, equipment, and soils. A large part of this contamination was a result of fallout of emissions from the smelter stack. Throughout the many years that the smelter operated, the practice of disposing slag and battery chips on the smelter facility property also contributed to the contamination.

From approximately 1934 until 1971, the lead smelting facility and associated battery wrecking operations were operated by Murph Metals, Inc. or its predecessors. In 1971, RSR Corporation acquired the lead smelting operation and operated under the name Murph Metals. RSR Corporation continued to operate the smelter and associated battery wrecking operations until the acquisition of the facility by Murmur Corporation (Murmur) in May 1984. In 1984, the City of Dallas declined to renew the smelter's operating permit. This decision was based on the smelter's historic operational practices and changes in the City's zoning ordinance restrictions. As a result, the smelter closed in 1984 and has not been operated since that time.

Exhibit 1. RSR Corporation Superfund Site Operable Units 1–5 and Vicinity

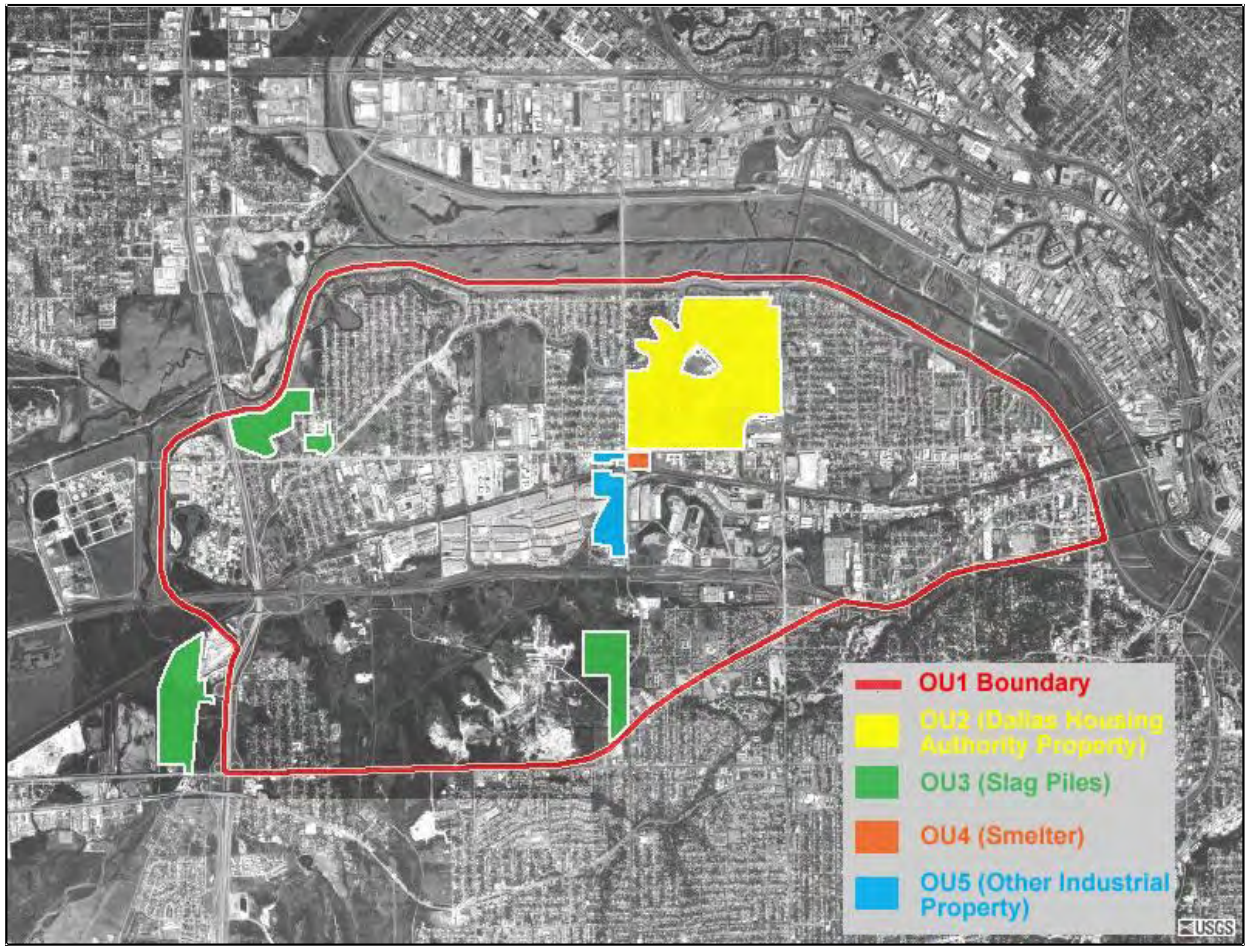


Exhibit 2. Aerial Photograph of OU4 of the RSR Corporation Site

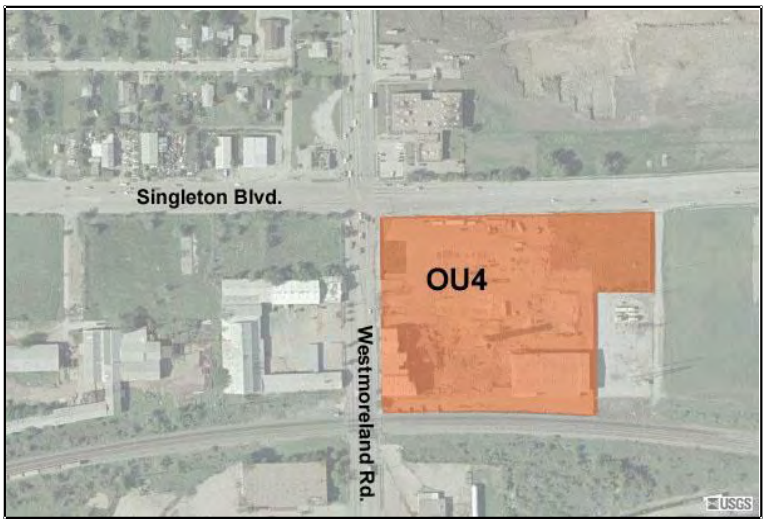
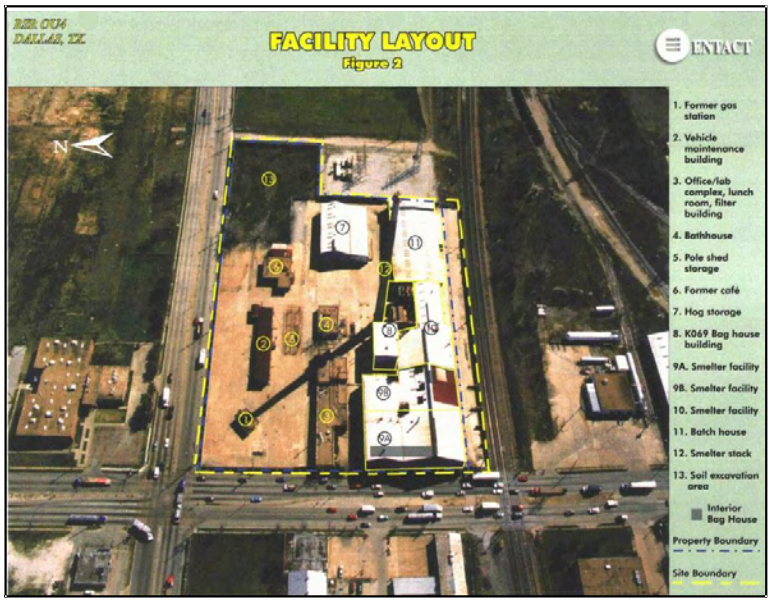


Exhibit 3. Aerial Photograph of the Facility Layout of OU4 of the RSR Corporation Site



Description of Risks

Risk assessments developed in accordance with OU4 assumed a remedial action goal of future industrial use, based on the City of Dallas current zoning map. The principal threats at OU4 of the RSR Corporation Site were the arsenic-, cadmium-, and lead-contaminated dust and residual materials present on and within the buildings, structures, and equipment, including the smelter stack. These areas presented the most significant risk at OU4, due to the potential for exposure through direct contact, inhalation and incidental ingestion of arsenic-, cadmium-, antimony-, and lead-contaminated materials. There was also a potential for increased risk due to the migration of these contaminants, as evidenced by the elevated concentrations of arsenic, cadmium and lead in the sediment and stormwater.

The risk assessment indicated that most of the total cancer risks exceeded U.S. EPA's acceptable risk range of or one in ten thousand to one in one million ($1 \times l0^{-4}$ to 1×10^{-6}) for cancer-causing contaminants. Most of the non-cancer risks also exceeded acceptable limits. Arsenic contributed most significantly to the cancer risk at OU4 and cadmium and antimony contributed greatly to the non-cancer risk. The results of the risk assessment indicated that existing conditions at OU4 posed an excess lifetime cancer risk of one in a hundred (1×10^{-2}) from ingestion of contaminated residual materials and soil. This risk related primarily to arsenic, cadmium, and antimony on site. Lead on site was also determined to be present at unacceptable levels. A model used to predict adult blood levels estimated blood-lead levels for a future worker on site in excess of those limits established by Occupational Safety and Health Administration (OSHA).

The shallow ground water in the vicinity of OU4 and OU5 was not considered a potential water supply, nor is it expected to be used as a water supply. The drinking water supply for the west Dallas community is provided by the City of Dallas water system which draws from surface water reservoirs located many miles from the RSR Corporation Site. The Texas Department of Health and the Dallas City Code requirements limit the installation of private wells in the RSR Corporation Site area (general vicinity of Westmoreland Road and Singleton Boulevard) in any ground water aquifer. Due to these factors, ingestion of ground water was not considered a complete pathway for purposes of the risk assessment, and further evaluation of ground water in the risk evaluation was not conducted.

Appendix A provides additional information on the risk assessment for OU4.

Summary of Cleanup Activities

Exhibit 4 shows a time line of U.S. EPA activities performed to date at OU4 of the RSR Corporation Superfund Site.

Exhibit 4. Timeline of Activities Performed at OU4 of the RSR Corporation Site

Date	Activity
1930s	Lead smelter begins operating
1984	Lead smelter stops operating after their permit is not renewed
1984-1985	Texas Natural Resource Conservation Commission (TNRCC) inspects the smelter and battery wrecking facilities and finds several hazardous waste violations
June 1991	Site is submitted to the Superfund program after the owner was unable to obtain final closure from TNRCC for portions of the battery wrecking facility due to a dispute with its contractor
1991	U.S. EPA begins to collect soil samples in west Dallas to determine the presence of lead after residents complained that slag and battery chips were used as fill material in their yards
1993	U.S. EPA begins remedial investigations of the smelter and related properties
May 1993	U.S. EPA proposes that the RSR Corporation Site be added to the NPL
June 1994	Due to lead contamination in residential soils near the smelter, an emergency removal action to remove them is completed
July 1995	A non-time-critical removal action of waste drums, uncontained residual waste/debris piles, and laboratory containers is completed
September 1995	RSR Corporation Superfund Site listed on the NPL
February 1996	ROD for OU4 smelter facility property, including buildings, structures, equipment, and contaminated soils signed
April 1997	ROD for OU5 and groundwater portion of OU4 signed
October 2000	Cleanup activities at OU4 begin
September 2001	Cleanup activities at OU4 are completed, including stabilizing and off-site disposal of contaminated buildings, structures, and soil

Removal Actions

After failed attempts to develop a plan to remediate the property, the Texas Natural Resource Conservation Commission (TNRCC) referred the Site to the Superfund program for assessment. Almost immediately, TNRCC began receiving complaints from residents alleging that slag and battery chips had been disposed of on their properties. In 1991, U.S. EPA began soil sampling in west Dallas to determine the presence of soil lead contamination. The results indicated that contamination existed in some residential areas (OU1) near the smelter where fallout of contamination from the smelter stack had occurred and where battery chips or slag had been used as fill in residential yards and driveways. Consequently, U.S. EPA initiated an emergency removal action in the residential areas consisting of removal and off-site disposal of

contaminated soil and debris in excess of removal action cleanup levels. This removal action in the residential area (OU1) was completed in June 1994.

In 1993, U.S. EPA initiated remedial investigations of the smelter and related properties (OU4 and OU5) and alleged smelter waste disposal areas (OU3). In addition, a removal action at OU2, the public housing residential area, was initiated by the Dallas Housing Authority under U.S. EPA oversight. On May 10, 1993, U.S. EPA proposed the RSR Corporation Site to the National Priorities List (NPL) of Superfund sites.

A field investigation was conducted in the Spring of 1994 on OU4 and 5. During this investigation, three areas of immediate concern were identified. More than 500 waste drums, 73 uncontained residual waste/debris piles, and approximately 50 laboratory containers were found. To abate the immediate threat to human health and environment posed by the presence of these materials, U.S. EPA completed a removal action in July 1995. Waste materials present at 90 residual/debris piles and drum locations were remediated during the removal.

Remedial Actions

On September 29, 1995, the RSR Corporation Site was finalized on the NPL. U.S. EPA signed two Records of Decision (RODs) addressing contamination at OU4 of the RSR Corporation Site. The ROD specifically addressing the OU4 smelter facility property, including buildings, structures, equipment, and contaminated soils was signed on February 28, 1996. The ground water portion of OU4 is addressed in the ROD for OU5 of the RSR Corporation Site, signed on April 3, 1997. Because the shallow ground water is not considered to be a potential drinking water supply, no action was recommended for the shallow ground water in OU4. The remedial action objectives for OU4 of the RSR Corporation Site were to minimize exposure to the arsenic, cadmium and lead present in the buildings, structures, smelter stack, equipment, and soils by direct contact, inhalation and ingestion, and to reduce the potential for migration of these contaminants. The selected remedy for OU4 included: removal, treatment and disposal of residual material; demolition and decontamination of approximately 190,000 square feet of buildings/structures and equipment; disposal of all building debris off site; demolition of the smelter stack and disposal off site; excavation of 13,500 cubic yards of contaminated soil and/or battery chips and lead slag and disposal off site; and capping and/or backfilling the areal extent of OU4 with two feet of clean soil.

Remediation activities for OU4 began in October 2000 and were completed in September 2001. The cleanup actions completed at OU4 included:

- Stabilizing and off-site disposal of buildings, structures, and soil (0-2 feet in depth).
- All material that was excavated was characterized and hauled off site to appropriate disposal/recycling facilities. A total of 8,540 cubic yards of concrete and approximately 1,088 tons of steel were recycled. In addition, 2,137 cubic yards of construction debris was removed and disposed of.

- Soils contaminated with arsenic or lead, and/or visible battery chips or slag were removed from OU4 to a depth no greater than one foot in the paved areas and to a depth no greater than two feet in the northeast unpaved area of OU4. A total of 10,995 cubic yards of treated soil was excavated and disposed.
- Upon completion of the excavation, the areas were surveyed to verify the depth of excavation, and sampled to establish remaining concentration levels.
- OU4 was backfilled with imported clay fill material and topsoil to a maximum depth of two feet.

Remediation activities for OU4 were completed in September 2001.

Redevelopment/Reuse History

OU4 of the RSR Corporation Site is currently vacant. The current owner of OU4 is Murmur Corporation. Based on the 1994 City of Dallas zoning map, OU4 is currently zoned as Industrial Manufacturing (IM). IM zoning for the City of Dallas includes industrial, wholesale distribution and storage, and support office and retail uses. The surrounding land, which comprises OU1 of the RSR Corporation Site, is zoned primarily for single-family residential, multi-family residential, light and heavy industrial uses and, to a lesser extent, commercial and retail. The reasonably anticipated future land use of OU4 is industrial based on the past and current zoning map for this area.

IV. U.S. EPA's Basis for the Ready for Reuse (RfR) Determination

The reasonably anticipated future land use for OU4 is industrial based on the past and current zoning map for the area. The RfR Determination for OU4 declares that OU4 is ready for industrial use.

The RfR Determination for OU4 is based upon the Record of Decision and RA Report. Prior to remediation, it was determined that potential ingestion, dermal contact and inhalation of materials present on OU4 contaminated with lead, arsenic, cadmium and antimony in excess of remedial goals posed unacceptable risks to human health and the environment. The OU4 RODs state that the selected remedy is protective of human health and the environment, and complies with federal and state requirements that are legally applicable or relevant and appropriate to the remedial action. The Final Close-Out Report documents the completion of remedy construction activities at OU4: "The final inspection was completed on November 6, 2001. All punch-list tasks had been completed." The Final Close-Out Report provides evidence that OU4 is ready for industrial use and that its remedy will remain protective of human health and the environment, subject to operation and maintenance of the remedy and the limitations specified in the ROD and RA Report.

V. Ongoing Limitations and Responsibilities Previously Established by U.S. EPA

Institutional and Engineering Controls

No engineering or institutional controls are required by the ROD; however, future users of OU4 should comply with local land use regulations and the implemented remedy, which includes maintaining the soil cover to prevent exposure to contaminants that remain onsite in order to ensure the continued protection of human health and the environment.

Operations & Maintenance Requirements

Future users of OU4 should ensure the protectiveness of the remedy by maintaining the soil cover to prevent exposure to contaminants that remain onsite. The short-term tasks of the Operation and Maintenance Plan were implemented after completion of remedial action by establishing a vegetative cover over OU4. The property owner is responsible for continuing maintenance of the remedy at OU4.

VI. Provisos

This RfR Determination is a technical decision document and an environmental status report and does not have any legally binding effect and does not expressly or implicitly create, expand, or limit any legal rights, obligations, responsibilities, expectations, or benefits of any party. U.S. EPA assumes no responsibility for reuse activities and/or for any potential harm that might result from reuse activities. U.S. EPA retains any and all rights and authorities it has, including, but not limited to legal, equitable, or administrative rights. U.S. EPA specifically retains any and all rights and authorities it has to conduct, direct, oversee, and/or require environmental response actions in connection with OU4, including but not limited to instances when new or additional information has been discovered regarding the contamination or conditions at OU4 that indicate that the response and/or the conditions at OU4 are no longer protective of human health or the environment for the types of uses identified in the Ready for Reuse Determination.

The types of uses identified as protective in this RfR Determination remain subject to (i) applicable federal, state, and local regulation and to (ii) title documents, including, but not limited to, easements, restrictions, and institutional controls.

This RfR Determination remains valid only as long as the requirements specified in the RODs and RA Report, other response decision documents, and the land title documents are met.

APPENDIX A

RISK ASSESSMENT SUMMARY

A risk assessment is defined by U.S. EPA as a qualitative and quantitative evaluation of the risk posed to human health and/or the environment by the actual or potential presence and/or use of specific pollutants. A risk assessment characterizes the current or potential threat to public health and the environment that may be posed by chemicals originating at or migrating from a contaminated site. Information used in the risk assessment is taken from the remedial investigation, the stage of the U.S. EPA pipeline of activities that characterizes site conditions and determines the levels of contamination at a site.

The risk assessment for OU4 of the RSR Corporation Site evaluated potential risks to human health and the environment using two measures: Excess Lifetime Cancer Risks (ELCRs) and Hazard Indices (HIs). ELCRs describe whether exposure to cancer-causing contaminants at a site poses an unacceptable health risk to humans. A carcinogenic risk of 1×10^{-6} means that one out of 1,000,000 people exposed over a 70-year lifetime could potentially develop cancer as a result of the exposure. The carcinogenic risk range established under CERCLA designates risks less than $l0^{-4}$ to 10^{-6} as acceptable and protective of human health. Risks greater than this range indicate that the risks pose an unacceptable cancer risk to human health.

The hazard index (HI) describes whether exposure to non-cancer-causing contaminants at a site poses an unacceptable health risk to humans. An HI greater than one indicates that under U.S. EPA's Hazard Indices guidelines, the contaminants pose an unacceptable risk to human health, and an HI less than one indicates that the contaminants pose an acceptable risk.

The reasonable maximum exposure (RME) is the highest exposure that is reasonably expected to occur at a site. RME values used in the risk assessment for OU4 included: a soil ingestion rate of 100 mg/day for current and future on-site trespassers, and 50 mg/day for future workers; an inhalation rate of 20 m^3/day for all populations evaluated; an exposure frequency of 52 days/year for current and future on-site trespassers, and 250 days/year for future workers; and an exposure duration of 10 years for on-site trespassers, and 25 years for future workers.

The risk assessment indicated that most of the total cancer risks exceeded U.S. EPA's acceptable risk range of $1 \times l0^{-4}$ or 1×10^{-6} for cancer-causing contaminants, and a hazard index greater than one for non-cancer-causing contaminants. The results of the risk assessment indicated that existing conditions at OU4 posed an excess lifetime cancer risk of 1×10^{-2} (one in a hundred) from ingestion of contaminated residual materials and soil. This risk related primarily to arsenic, cadmium, and antimony on site. Lead on site was also determined to be present at unacceptable levels. A model used to predict adult blood levels estimated blood-lead levels for a future worker on site in excess of those limits established by Occupational Safety and Health Administration (OSHA).

Exhibit 5 shows the cumulative potential cancer (ELCRs) and non-cancer risks (HI) for current and future populations at OU4 of the RSR Corporation Site.

Exhibit 5. Cumulative Potential Risks for Current and Future Exposed Populations

Populations	Cumulative Potential Risks for Exposed Populations			
	Adult (RME)		Child (RME)	
	ELCRs	Hazard Index	ELCRs	Hazard Index
Current and Future On-site Trespasser	6×10^{-3} (soil, dust, air, building materials)	130	1×10^{-2} (soil, dust, air, building materials)	210
Future Commercial/Industrial Worker (Process)	4×10^{-2} (soil, dust, air, building materials)	340	NA	NA
Future Commercial/Industrial Worker (Non-Process)	3×10^{-4} (soil, dust, air, building materials)	3.4	NA	NA

NA = Not applicable for this scenario.
Process = Associated with process-related buildings, e.g. smelter facility, batch house, hog storage building.
Non-Process = Associated with all other buildings.

APPENDIX B

ABBREVIATIONS AND ACRONYMS

AR- Administrative Record
CC - Construction Completion
CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (Superfund)
CERCLIS - Comprehensive Environmental Response, Compensation, and Liability Information System
COC - Contaminant of Concern
ELCR - Excess Lifetime Cancer Risks
ESI - Expanded Site Inspection
FCOR - Final Close Out Report
GIS - Geographic Information System
HI - Hazard Index
HRS - Hazard Ranking System
IM - Industrial Manufacturing
NOID - Notice of Intent to Delete
NOD - Notice of Deletion
NPL - (N)ational (P)riorities (L)ist of Superfund Hazardous Waste Sites
O&M - Operations and Maintenance
OSHA - Occupational Safety and Health Administration
OSRTI - Office of Superfund Remediation and Technological Innovation
OU - Operable Unit
OSWER - Office of Solid Waste and Emergency Response
PA - Preliminary Assessment
PCOR - Preliminary Close Out Report
PHA - Public Health Assessment
PRP - Potentially Responsible Party
RA - Remedial Action
RD - Remedial Design
RfR - Ready for Reuse determination
RI/FS - Remedial Investigation/Feasibility Study
RME - Reasonable Maximum Exposure
ROD - Record of Decision
RPM - Remedial Project Manager
SARA - Superfund Amendments and Reauthorization Act of 1986
SI - Site Inspection
SRI - Superfund Redevelopment Initiative
TCEQ - Texas Commission on Environmental Quality
TNRCC - Texas Natural Resources Conservation Commission
TSDF - Treatment, Storage, and Disposal Facility
U.S. EPA - United States Environmental Protection Agency

APPENDIX C

GLOSSARY

Baseline Risk Assessment (BLRA): A qualitative and quantitative evaluation of the risk posed to human health and/or the environment by the actual or potential presence and/or use of specific pollutants. A risk assessment characterizes the current or potential threat to public health and the environment that may be posed by chemicals originating at or migrating from a contaminated site.

Carcinogenic: A carcinogenic chemical is one which is believed to be capable of causing cancer.

Closeout report: A report submitted by the Remedial Program Manager (RPM) verifying that the conditions of the site comply with the Record of Decision (ROD) findings and design specifications and that activities performed at the site are sufficient to achieve protection of public health and the environment. This is a Remedial Action (RA) or ROD sub-event.

Construction Completion (CC): The Construction Completion List is a compilation of sites presently or formerly on the NPL. Sites qualify for the Construction Completion List when: any necessary physical construction is complete; U.S. EPA has determined that the response action should be limited to measures that do not involve construction; or the site qualifies for deletion from the NPL.

Deed restrictions: Restrictions placed within a deed that control the use of the property. Restrictions travel with the deed, and cannot generally be removed by new owners.

Dermal absorption: Absorption through the skin.

Discovery: The process by which a potential hazardous waste site is brought to the attention of the U.S. EPA. The process can occur through the use of several mechanisms such as a phone call or referral by another government agency.

Ecological risk assessment: Assessment of the risks posed by the site to ecological receptors.

Engineering controls: Engineering controls eliminate or reduce exposure to a chemical or physical hazard through the use or substitution of engineered machinery or equipment. An example of an engineering control is a protective cover over waste left on site.

Expanded Site Inspection (ESI): Functions performed to collect additional data, beyond that required for Hazard Ranking System scoring, in order to expedite the Remedial Investigation/Feasibility Study (RI/FS) project planning phase for National Priorities List (NPL) sites. The site inspection focus on pathways and receptors has been expanded to include site and source characterization. The information facilitates the development of RI/FS workplan and sampling and analysis plan.

Explanation of Significant Differences (ESD): A significant change to a Record of Decision (ROD) that does not fundamentally alter the remedy. An ESD may be initiated by U.S. EPA.

Exposure pathways: Exposure pathways are means by which contaminants can reach populations of people, plants, or animals. Exposure pathways include groundwater, surface water, soil, and air.

Feasibility Study (FS): A study of a hazardous waste site intended to (1) evaluate alternative remedial actions from technical, environmental, and cost-effectiveness perspectives; (2) recommend the cost-effective remedial action; and (3) prepare a conceptual design, a cost estimate for budgetary purposes, and a preliminary construction schedule.

Fugitive landfill gas: Gas formed in landfills that could reasonably pass through a stack, chimney, vent or other functionally equivalent opening.

Hazard Index (HI): The sum of hazard quotients for substances that affect the same target organ or organ system. Because different pollutants may cause similar adverse health effects, it is often appropriate to combine hazard quotients associated with different substances. As with the hazard quotient, aggregate exposures below a HI of 1.0 will likely not result in adverse non-cancer health effects over a lifetime of exposure.

Hazard Ranking System (HRS) Scoring: The HRS is a screening mechanism used to place sites on the NPL. In order for a site to be listed, it must have: 1) contaminants listed on U.S. EPA's Target Compound List of sufficient concentration to warrant concern; 2) a sensitive receptor population that would be negatively affected by the contaminants; and 3) pathways of exposure that would introduce the contaminant into the sensitive receptor population. Theoretically, a site meeting these conditions would score 28.5 or higher on the HRS, the threshold for placement on the NPL. The report detailing the findings of the scoring is referred to as the *HRS Scoring Package*.

Institutional controls: Institutional controls (ICs) are non-engineered instruments, such as administrative and/or legal controls, that help minimize the potential for human exposure to contamination and/or protect the integrity of a remedy by limiting land or resource use.

National Priorities List (NPL): Sites are listed on the National Priorities List (NPL) upon completion of Hazard Ranking System (HRS) screening, public solicitation of comments about the proposed site, and consideration of all comments. The NPL primarily serves as an information and management tool. The identification of a site for the NPL is intended primarily to guide U.S. EPA in: determining which sites warrant further investigation to assess the nature and extent of the human health and environmental risks associated with a site; identifying what CERCLA-financed remedial actions may be appropriate; notifying the public of sites U.S. EPA believes warrant further investigation; and serving notice to potentially responsible parties that U.S. EPA may initiate CERCLA-financed remedial action.

Notice of Deletion (NOD): Notification of a site's deletion from the NPL, published in the *Federal Register.*

Notice of Intent to Delete (NOID): Notification of U.S. EPA's intention to delete a site from the NPL, published in both the *Federal Register* and a newspaper of record.

NPL site deletions: With state concurrence, the U.S. EPA determines when no further response is required at a site to protect human health or the environment. U.S. EPA approves a close out report verifying that response actions have been taken or that no action is required. U.S. EPA then publishes a deletion notice in the *Federal Register*.

NPL site listing process: The NPL is a list of the most serious sites identified for possible long-term remediation. A proposed NPL site is listed when U.S. EPA issues a final rule in the *Federal Register,* which enables U.S. EPA to use federal monies to pay for long-term remedial actions. U.S. EPA issues a proposed rule in the *Federal Register* to solicit comments on proposed NPL sites. U.S. EPA responds to comments and adds sites to the NPL that continue to meet requirements for listing.

Operation and Maintenance (O&M): O&M activities are conducted after remedial actions are complete in order to ensure that remedies are operational and effective.

Potentially Responsible Parties (PRPs): The Superfund law (CERCLA) allows U.S. EPA to respond to releases or threatened releases of hazardous substances into the environment. Under CERCLA, potentially responsible parties (PRPs) are expected to conduct or pay for the cleanup. The Superfund enforcement program identifies the PRPs at the site; negotiates with PRPs to do the cleanup; and recovers from PRPs the costs spent by U.S. EPA at Superfund cleanups.

Preliminary Assessment (PA): Preliminary assessments are investigations of site conditions to ascertain the source, nature, extent, and magnitude of the contamination.

Preliminary Close Out Report (PCOR): A precursor to the close out report, it is a report submitted by the Remedial Program Manager (RPM) verifying that the conditions of the site comply with the Record of Decision (ROD) findings and design specifications and that activities performed at the site are sufficient to achieve protection of public health and the environment.

Remedial Action (RA): The implementation of a permanent resolution to address a release or potential release of a hazardous substance from a site.

Remedial Design (RD): The process of fully detailing and specifying the selected remedy identified in the Record of Decision.

Remedial Investigation (RI): An investigation intended to gather the data necessary to: (1) determine the nature and extent of problems at the site; (2) establish cleanup criteria for the site; (3) identify preliminary alternative remedial actions; and (4) support the technical and cost analyses of the alternatives.

Record of Decision (ROD): The ROD documents the cleanup alternatives that will be used at NPL sites, and the supporting analyses.

Restrictive covenants: Restrictive covenants are deed restrictions that apply to a specific real estate parcel.

Site Inspection (SI): The process of collecting site data and samples to characterize the severity of the hazard for the hazard ranking score and/or enforcement support.