TCEQ

EPA

City of Dallas

On this day, May 10, 2005,

the U.S. Environmental Protection Agency (U.S. EPA)

Determines that

OU3 Site 1 of the RSR Corporation Site is Ready for Residential 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 Site 1 of OU3 of the RSR Corporation Superfund Site. This RfR Determination provides information that the U.S. EPA has made a technical determination that Site 1 of OU3, located in Dallas, Dallas County, Texas, is ready for residential 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 described in the Record of Decision (ROD), Remedial Action (RA) Report, and Operation and Maintenance (O&M) Plan, which have been summarized in the attached report, Ready for Reuse Determination, Site 1 of OU3 of the RSR Corporation Superfund Site, May 10, 2005. This RfR Determination remains valid only as long as the requirements and use limitations specified in the ROD and RA Report and the substantive requirements of the O&M Plan are met.

This Ready for Reuse 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 Site 1 of OU3, including instances when new or additional information has been discovered regarding the contamination or conditions at Site 1 of OU3 that indicate that the remedy and/or the conditions at Site 1 of OU3 are no longer protective of human health or the environment for the uses identified in the Ready for Reuse Determination.

The ROD and RA Report state that the remedy is protective for residential development. Remedial activities at Site 1 of OU3 included excavation of soil to a depth of up to two feet and, in some places, the placement of a two-foot soil cover on top of the excavated areas. Beneath the soil cover in these areas, there may be waste present on Site 1 of OU3. Future site users who do not disturb the soil cover will not encounter soils with potential contamination below. Under a consent decree agreement, Quemetco Metals (RSR Corporation) is responsible for the continuing operation and maintenance of the remedy at Site 1 of OU3. 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 3 SITE 1
READY FOR REUSE DETERMINATION

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Property Description

This Ready for Reuse (RfR) Determination is for Site 1 of Operable Unit 3 (OU3) of the RSR Corporation (RSR) Superfund Site located in west Dallas, Dallas County, Texas. The RSR Corporation Site encompasses an area of 13.6 square miles. OU3 Site 1 is located on the west side of the 1000 block of Westmoreland Road, just north of Fort Worth Avenue in the south-central portion of the RSR Corporation Site, and encompasses approximately 50 acres. The property is currently owned by multiple parties, as listed in Appendix A.

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 described in U.S. EPA documents for OU3 at the RSR Corporation Site, including the Record of Decision (ROD), Remedial Action (RA) Report, and Operation and Maintenance (O&M) Plan. U.S. EPA has made a technical determination that OU3 Site 1, located in west Dallas, Dallas County, Texas is ready for residential use and its remedy will remain protective of human health and the environment, subject to operation and maintenance of the remedy and the limitations identified below, as described in the O&M Plan.

- Annual inspection and maintenance of the soil cover placed on the slope.
- Annual short-term monitoring of two surface water locations.

In addition, the owner of the property, under the direction of U.S. EPA, is required to place a deed restriction on the property for maintenance of the soil cover.

The ROD and RA Report state that the site can be used for residential development. Remedial activities at the Site included excavation of soil to a depth of up to two feet and, in some places, the placement of a two-foot soil cover on top of the excavated areas. Beneath the soil cover in these areas, there may be waste present on the Site. Future site users who do not disturb the soil cover will not encounter soils with potential contamination below. Under a consent decree agreement, Quemetco Metals (RSR Corporation) is responsible for continuing operation and maintenance of the remedy at OU3 Site 1.

The future land use for OU3 Site 1 is residential based on current zoning, and/or reasonably

anticipated future zoning. At the time of the ROD, the southwestern portion of Site 1 was zoned for light industrial use, which includes wholesale distribution and storage. The rest of Site 1 was zoned for multi-family use. The RfR Determination for OU3 Site 1 determines that OU3 Site 1 is ready for residential use.

Site Summary

Beginning in the early 1930s, a lead smelting facility in west Dallas, Texas, processed used batteries and other lead-bearing materials into pure lead, lead alloys, and other lead products. In the refining process alloy elements, such as antimony, arsenic, and cadmium, were added as necessary to produce the desired product. OU3 Site 1 of the RSR Corporation Site was used for surface dumping of slag, battery chips, and other household and municipal debris.

The risks that were identified for OU3 Site 1 of the RSR Corporation Site were exposure to lead, arsenic, and antimony present in the slag piles and landfills by direct contact, inhalation, and ingestion. In its Record of Decision (ROD) for OU3, U.S. EPA selected response actions to manage these risks to human health and the environment. With the completion of remedial activities at OU3 in September 2004, U.S. EPA has attained the CERCLA cleanup goals and remedial action objectives for the unacceptable levels of risk to current and future residents, trespassers, and workers at OU3 Site 1. 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 OU3 Site 1 have been abated and the site may be used for residential purposes and will remain protective of human health and the environment, subject to operation and maintenance of the remedy and limitations as described in the ROD, RA Report, and O&M Plan.

Relevant Documents

Documents pertaining to the RSR Corporation Site and the RfR Determination are part of the Administrative Record for OU3 Site 1, 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, OU3 Site 1'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 OU3 Site 1, including instances when new or additional information has been discovered regarding the contamination or conditions at OU3 Site 1 that indicate that the remedy and/or the conditions at OU3 Site 1 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 ROD and RA Report are met. This RfR Determination remains valid only as long as the substantive requirements of the O&M Plan are met.

Effective Date

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 OU3 Site 1 have been abated for residential users. OU3 Site 1 at the RSR Corporation Site is ready for residential use and the its remedy will remain protective of human health and the environment, subject to operation and maintenance of the remedy and limitations as described in the ROD, RA Report, and O&M Plan.

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 in west Dallas, Dallas County, Texas. Exhibit 1 is a vicinity map of the RSR Corporation Site, showing the approximate layout of the Site and its five operable units (OUs). OU3 of the RSR Corporation Site consists of three separate properties (Sites 1, 3, and 4) which include two former municipal landfills (Sites 3 and 4), and one disposal area (Site 1) where slag and battery chips generated from the smelting and battery breaking process were disposed. Exhibit 2 is an area map of OU3, showing Sites 1, 3, and 4.

OU3 Site 1 is situated on approximately 50 acres of land located on the west side of the 1000 block of Westmoreland Road, just north of Forth Worth Avenue in the south-central portion of the RSR Corporation Site. Site 1 was used for surface dumping of slag, battery chips, and other household and municipal debris. Exhibit 3 shows an aerial photograph of OU3 Site 1. Appendix A includes a table of the tax parcel numbers, addresses, and ownership of the parcels in Site 1.

The RSR Corporation Site is diverse and includes large single and multi-family residential neighborhoods, multi-family public housing areas and some industrial, commercial, and retail establishments. In 1997, the population in this area was approximately 17,000.

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

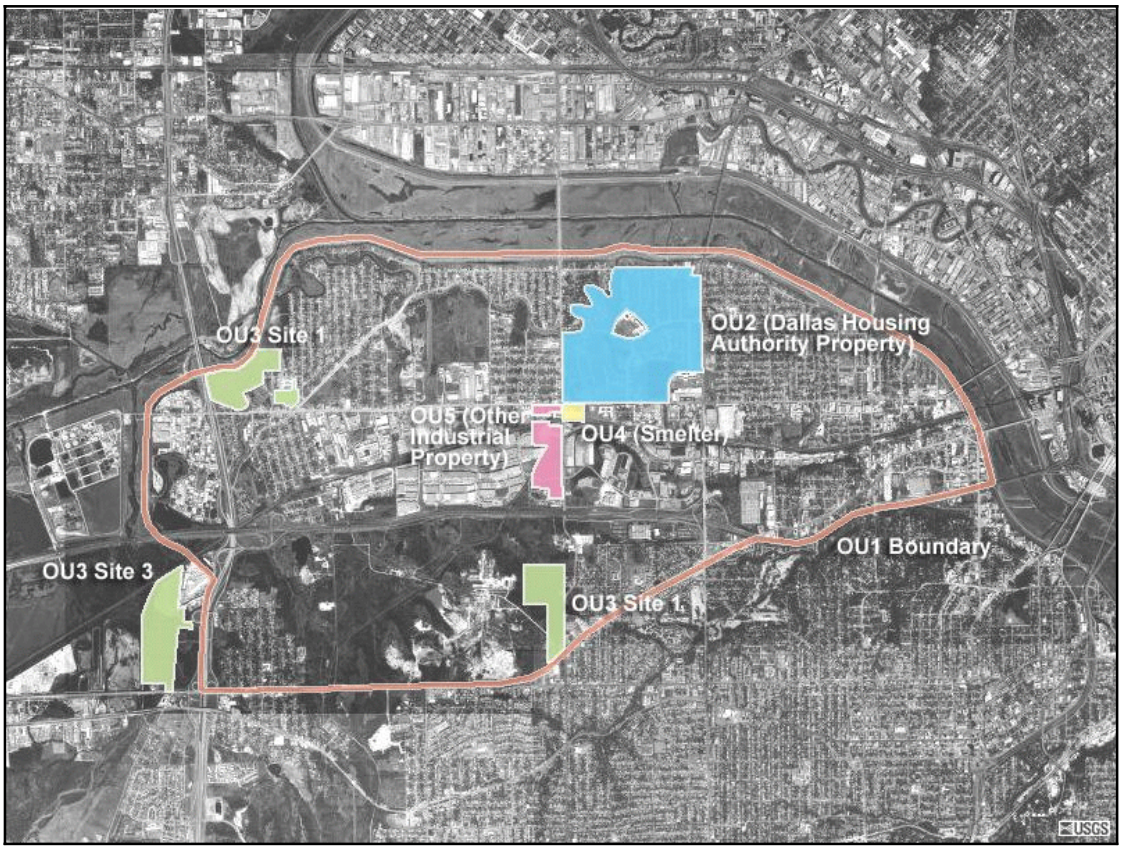

Exhibit 2. Area Map of OU3, Showing Sites 1, 3, and 4

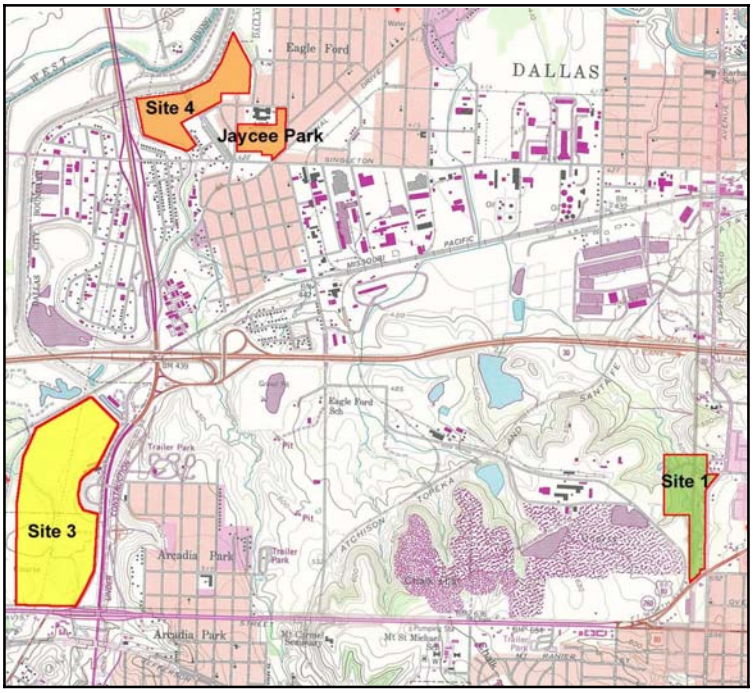

Exhibit 3. Aerial Photograph of OU3 Site 1

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.

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.

Contamination of OU3 Site 1 resulted from uncontrolled surface dumping of municipal type debris, along with slag and battery chips that were generated from the smelting and battery breaking process. As a result of these activities, soils, sediments, and surface water were contaminated with lead, arsenic, and antimony.

Description of Risks

The risk assessment assumed that the reasonably anticipated future land use of OU3 Site 1 would be residential, based on current zoning at the time and/or reasonably anticipated future zoning. The risks that were identified for OU3 Site 1 were exposure to lead, arsenic, and antimony present in the slag piles and landfills by direct contact, inhalation, and ingestion. The risk assessment considered all contaminated media (surface and subsurface soils, surface water, and sediments), and considered exposure scenarios to be current and future residents, trespassers, and workers.

The risk assessment for OU3 Site 1 indicated that many of the total cancer risks exceeded U.S. EPA's acceptable risk range of one in ten thousand to one in one million ($1 \times l0^{-4}$ to 1×10^{-6}) for cancer-causing contaminants. The greatest cancer risk at OU3 Site 1 was nine in one thousand (9×10^{-3}) from incidental ingestion and dermal contact with soil by the current resident child. Non-cancer risks for current and future child and adult residents, child and adult trespassers, and workers all exceeded acceptable limits. Arsenic in soil contributed most to both the cancer and

non-cancer risks at OU3 Site 1. Lead concentrations were also determined to present above acceptable levels.

The shallow groundwater in the vicinity of OU3 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 groundwater aquifer. Due to these factors, ingestion of groundwater was not considered a complete pathway for purposes of the risk assessment, and further evaluation of groundwater in the risk evaluation was not conducted.

Appendix B provides additional information on the risk assessment for OU3 Site 1.

Summary of Cleanup Activities

Exhibit 4 shows a timeline of U.S. EPA activities performed to date at OU3 Site 1 of the RSR Corporation Superfund Site.

Exhibit 4. Timeline of Activities Performed at OU3 Site 1 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	An emergency removal action is completed to remove residential soils contaminated with lead near the smelter
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

Date	Activity
September 1997	ROD for OU3 signed
April 2004	Cleanup activities at OU3 Site 1 begin
September 2004	Cleanup activities at OU3 Site 1 are completed

Removal Actions

After failed attempts to develop a plan to remediate the property, the Texas Natural Resource Conservation Commission (TNRCC), now the Texas Commission on Environmental Quality, (TCEQ), 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, an investigation of and 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.

Remedial Actions

On September 29, 1995, the RSR Corporation Site was finalized on the NPL. U.S. EPA issued a ROD for OU3 on September 30, 1997. The selected remedy for OU3 Site 1 included: excavation and removal of slag, battery chips and metals-contaminated soils exceeding cleanup goals to a depth of two feet; excavation and removal of sediments in the intermittent creek exceeding cleanup goals; backfilling and regrading of excavated areas using clean soil; off-site disposal of the excavated material (i.e. slag, battery chips, soil, and sediments) in an appropriate landfill; and monitoring of surface water. Because the shallow groundwater is not considered to be a potential drinking water supply, no action was recommended for the shallow groundwater beneath OU3.

Remediation activities for OU3 Site 1 began in April 2004. The cleanup actions completed at OU3 Site 1 included:

- Excavation of impacted soils with lead and/or arsenic concentrations which exceeded acceptable limits and excavation of visible accumulations of slag and battery chips to a maximum depth of 2 feet below the ground surface from the flat

and sloped surfaces of Site 1 adjacent to Westmoreland Road.

- If at a depth of 2 feet below the ground surface, impacted soils, slag, or battery chips were present, a 2-foot soil cover was placed on the excavated surface. The soil cover consisted of 20 inches of clay and 4 inches of topsoil.
- Excavation and restoration of impacted soil locations in the northern remote portions of Site 1.
- Stabilization of impacted materials as Texas Class 2 industrial non-hazardous waste and off-site disposal.

Remediation activities for OU3 Site 1 were completed in September 2004 and achieved residential cleanup goals.

Redevelopment/Reuse History

OU3 Site 1 of the RSR Corporation Site is currently vacant. At the time of the ROD, the southwestern portion of Site 1 was zoned for light industrial use, which includes wholesale distribution and storage. The rest of OU3 Site 1 was zoned for multi-family use.

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

The reasonably anticipated future land use for OU3 Site 1 is residential based on current zoning and/or reasonably anticipated future zoning. The RfR Determination for OU3 Site 1 determines that Site 1 is ready for residential use.

The RfR Determination for OU3 Site 1 is based upon the Record of Decision (ROD), Remedial Action (RA) Report, and Operation and Maintenance (O&M) Plan. Prior to remediation, OU3 Site 1 posed unacceptable risks to human health and the environment for residential use. The OU3 ROD states 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 Remedial Action Report documents the completion of the remedial activities at OU3 Site 1, "Remedial activities associated with Sites 1, 3 and 4 of OU3 accomplished the ROD remedy by containment or excavation/removal of slag, battery chips and/or metals-impacted soils and sediments." The Remedial Action Report provides evidence that OU3 Site 1 is ready for residential use and that its remedy will remain protective of human health and the environment, subject to inspection of the remedy and continued use of the operations and maintenance controls as described in the Operation and Maintenance Plan.

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

The ROD and RA Report state that the site can be used for residential development. This RfR Determination remains valid only so long as the substantive requirements of the O&M Plan are met.

The substantive requirements in the O&M Plan, are as follows:

- Approximately annual inspections of Site 1 will involve the evaluation of the integrity of the soil cover. The soil cover will be inspected for signs of erosion, subsidence, loss of vegetation on areas of topsoil placement, including bare spots, animal burrows or other natural conditions that may compromise the integrity of the soil cover. The condition of the vegetative cover will be evaluated and corrective actions implemented where necessary based on evidence of significant erosion.
- Maintenance of the vegetative cover will include mowing, watering and re-seeding on an as needed basis for the sole and only purpose of maintaining the integrity of the placed soil cover where the risk of integrity failure is due to natural causes.
- Corrective action will be implemented when any of the above conditions are noted during an inspection. Corrective action will be taken within 30 days of discovery.
- Annual short-term monitoring of two surface water locations.
- Operation and maintenance activities for the remote areas of Site 1 are not required.

The O&M Plan also requires that the owner of the property, under the direction of U.S. EPA, place a deed restriction on the property for maintenance of the soil cover at OU3 Site 1. The location of the soil cover on the slope will be recorded on the deed notice. A restriction will be placed on the deed which notes that the soil cover must be maintained during all future uses of the property. The restriction will also state that future development plans for Site 1 should be reviewed and concurred by U.S. EPA to ensure that the remedy continues to be protective of human health and the environment.

Under a consent decree agreement, Quemetco Metals (RSR Corporation) is responsible for continuing operation and maintenance of the remedy at OU3 Site 1. U.S. EPA will perform reviews at OU3 Site 1 of the RSR Corporation Site every five years to ensure that the remedy continues to provide adequate protection of human health and the environment.

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 OU3 Site 1, including but not limited to instances when new or additional information has been discovered regarding the contamination or conditions at OU3 Site 1 that indicate that the response and/or the conditions at OU3 Site 1 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 described in the ROD, RA Report, other response decision documents, O&M Plan, and the land title documents are met.

APPENDIX A

PARCEL OWNERSHIP INFORMATION

Property Address	Owner Name / Business Name	Type	Parcel Number
Operable Unit 3 Site 1			
1157 N WESTMORELAND RD	ENCLAVE PARTNERSHIP THE	COMMERCIAL	00000306961000000
1151 N WESTMORELAND RD	ENCLAVE PARTNERSHIP THE	COMMERCIAL	00000306982000000
1161 N WESTMORELAND RD	ENCLAVE PARTNERSHIP THE	COMMERCIAL	00000306973000000
1149 N WESTMORELAND RD	ENCLAVE PARTNERSHIP THE	COMMERCIAL	00000306970000000
1135 N WESTMORELAND RD	WESTMORELAND REALTY LLC	COMMERCIAL	00000306976000000
1045 N WESTMORELAND RD	TEXAS UTILITIES ELEC CO	COMMERCIAL	004152000B0010000
3319 FORT WORTH AVE	JANUS ASSOC LTD ET AL	RESIDENTIAL	00000306964000000
3321 FORT WORTH AVE	NAGLE CONNIE M	COMMERCIAL	00000306964000200
3325 FORT WORTH AVE	NAGLE FRED JR TRUST	COMMERCIAL	00000306988000000

APPENDIX B

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 prepared for 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. ELCRs are expressed numerically, e.g, 1 x $l0^{-4}$ or 1 x 10^{-6} (or one in ten thousand to one in one million). A carcinogenic risk of 1 x 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 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 OU3 included: a soil/sediment ingestion rate of 200 mg/day for child residents, 100 mg/day for adult residents and child and adult trespassers, and 50 mg/day for current and future workers; an inhalation rate of 5 m^3/day for child residents, 20 m^3/day for adult residents, 1 m^3/hour for child trespassers, 0.6 m^3/hour for adult trespassers, and 2.5 m^3/hour for current and future workers; an exposure frequency of 350 days/year for child and adult residents, 52 days/year for child and adult trespassers and current workers, and 250 days/year for future workers; and an exposure duration of 6 years for child residents, 30 years for adult residents, 10 years for child and adult trespassers, and 25 years for current and future workers.

The risks that were identified for OU3 Site 1 were exposure to lead, arsenic, and antimony present in the slag piles and landfills by direct contact, inhalation, and ingestion. The risk assessment for OU3 Site 1 indicated that many of the total cancer risks exceeded U.S. EPA's acceptable risk range of one in ten thousand to one in one million (1 x $l0^{-4}$ to 1 x 10^{-6}) for cancer-causing contaminants. The greatest cancer risk at OU3 Site 1 was nine in one thousand (9 x 10^{-3}) from incidental ingestion and dermal contact with soil by the current resident child. Non-cancer risks

for current and future child and adult residents, child and adult trespassers, and workers all exceeded acceptable limits. Arsenic in soil contributed most to both the cancer and non-cancer risks at OU3 Site 1. Lead concentrations were also determined to present above acceptable levels.

Exhibit 5 shows the cumulative potential cancer and non-cancer risks for current and future populations.

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

Populations	**Cumulative Potential Risks for Exposed Populations**					
	Soil (RME)		Sediment (RME)		Surface Water (RME)	
	ELCRs	HI	ELCRs	HI	ELCRs	HI
Current Resident - Child	$9x10^{-3}$	390				
Current Resident - Adult	$5x10^{-3}$	43				
Future Resident - Child	$4x10^{-3}$	280				
Future Resident - Adult	$2x10^{-3}$	31				
Current Trespasser - Child	$4x10^{-4}$	10	$4x10^{-5}$	0.1	$5x10^{-6}$	0.03
Current Trespasser - Adult	$2x10^{-4}$	6.2	$2x10^{-5}$	0.1	$3x10^{-6}$	0.02
Future Trespasser - Child	$2x10^{-4}$	7.2	$4x10^{-5}$	0.1	$5x10^{-6}$	0.03
Future Trespasser - Adult	$1x10^{-4}$	4.4	$2x10^{-5}$	0.1	$3x10^{-6}$	0.02
Current Commercial/ Industrial Worker	$3x10^{-4}$	3.2				
Future Commercial/ Industrial Worker	$8x10^{-4}$	11				

RME = based on reasonable maximum exposure (RME)
ELCRs = excess lifetime cancer risks
HI = hazard index

APPENDIX C

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 D

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.

Excess Lifetime Cancer Risk (ELCR): The additional or extra risk of developing cancer due to exposure to a toxic substance incurred over the lifetime of an individual.

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.