UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105

MEMORANDUM

DATE: APR 1 1 2006

SUBJECT: Request for a Time-Critical Removal Action at the Chaparral Gulch Residential Site, Dewey-Humboldt, Yavapai County, Arizona

FROM: Harry Allen, On-Scene Coordinator
Emergency Response Section (SFD-9-2)

THROUGH: Peter Guria, Chief
Emergency Response Section (SFD-9-2)

TO: Daniel Meer, Chief
Response, Planning & Assessment Branch (SFD-9)

I. PURPOSE

The purpose of this Action Memorandum is to obtain approval to spend up to $756,000 in direct costs to mitigate threats to human health and the environment posed by the presence of mine wastes at the Chaparral Gulch Residential Site ("Site"). The Site is located within the Town of Dewey-Humboldt, in Yavapai County, Arizona.

The Action Memorandum would serve as approval for the expenditure required for U.S. EPA, to take actions described herein to abate imminent and substantial endangerment to residents of properties contaminated by hazardous substances. The proposed removal of hazardous substances would be undertaken pursuant to Section 104(a)(1) of the Comprehensive Environmental Response, Compensation and Liability Act ("CERCLA"), 42 U.S.C. § 9604(a)(1), and Section 300.415 of the National Oil and Hazardous Substances Pollution Contingency Plan ("NCP"), 40 CFR § 300.415.

II. SITE CONDITIONS AND BACKGROUND

Site Status: Non-NPL
Category of Removal: Time-Critical
CERCLIS ID: N/A
SITE ID: 09NU

A. Site Description

1. Physical Location

The Site consists of 4 privately owned, residential parcels located along the stream corridor known as the Chaparral Gulch in Dewey-Humboldt, Yavapai County, AZ. The Site is divided by Highway 69, the Chaparral Gulch passes beneath the highway, and flows to the east southeast (see Figure 1 for a Site Location Map).

2. Site characteristics

The Site consists of four residential properties along the Chaparral Gulch situated northeast and east of the Iron King Mine. The properties are located on both sides of State Highway 69, in the town of Dewey-Humboldt, Arizona. The Iron King Mine occupies 153 acres approximately 1/4 mile west of the town of Dewey-Humboldt, Arizona (see Figure 2 for a Site Map).

The majority of the Iron King Mine is covered by tailings and waste rock piles. There are five retention ponds, at least five mine shafts, and a glory hole. The Iron King Mine consists of three properties - the mine property (a.k.a. Kuhles property), Ironite Products Company ("Ironite") property, and the former fertilizer plant (a.k.a. Nolan property). The Ironite property consists of 62 acres of tailings and 23 acres of fertilizer plant area. The Ironite plant currently produces Ironite fertilizer by mixing tailings with sulfuric acid, urea and water. The former fertilizer plant is located on a waste rock pile south of the mine property on the south side of Iron King Road.

A smelter is situated along the Chaparral Gulch as well. It occupies 182 acres and is situated along the eastern boundary of the investigation area. The Chaparral Gulch crosses the smelter property on the southeastern side of town. Large and small piles of yellow-orange tailings, slag, and grey smelter ash are present throughout the smelter property.

These four residential parcels are believed to be impacted by erosion, and tailings blow outs, from the nearby Iron King Mine during rain and flood events. Potential contamination may also be the result of air dispersion of waste sources from the mine and nearby Humboldt Smelter. Historical soil sampling results at the Site, generated by AZ Department of Environmental Quality (ADEQ), indicate that arsenic and lead levels prompted further investigation along the gulch.

During a 1995 National Pollutant Discharge Elimination System (NPDES) inspection, EPA inspectors noted runoffs and culverts from several areas on the Iron King Mine running into the Chaparral Gulch. In April 2002, sampling performed by the ADEQ during a Preliminary Assessment/Site Inspection (PA/SI) of the Iron King Mine revealed that sediment samples collected from the Chaparral Gulch in the vicinity of the residential areas had concentrations of arsenic and lead above EPA's Residential Preliminary Remediation Goals (PRGs) and ADEQ Soil Remediation Levels (SRLs). Elevated arsenic levels were also detected in background samples. A separate PA/SI

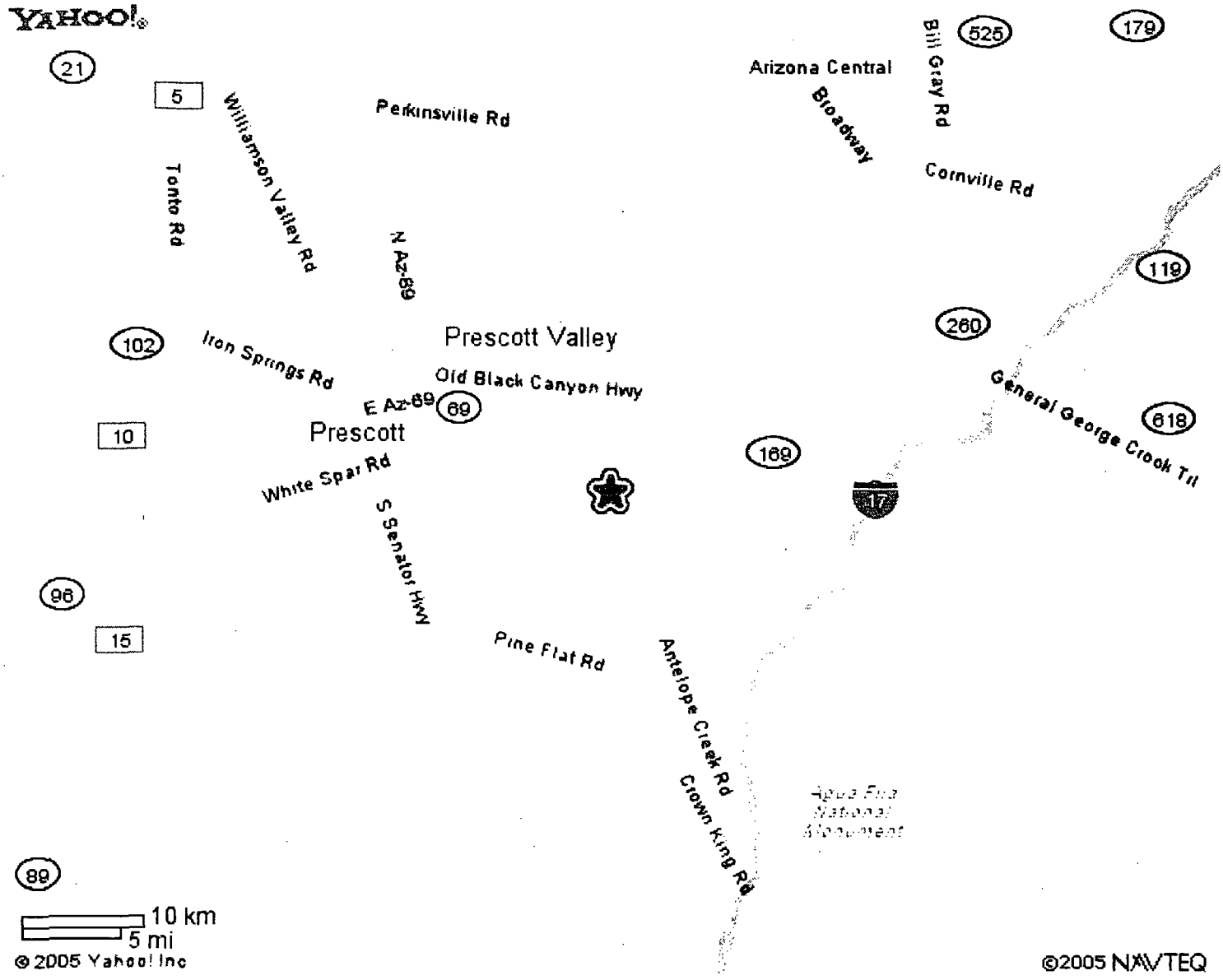

Figure 1: Site Location Map
Chaparral Gulch Residential Site
Humboldt, Yavapai, Arizona

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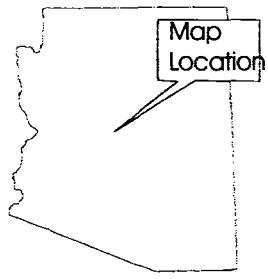
Site Location

TDD: 09-06-02-0006
Project: 0621.01RS



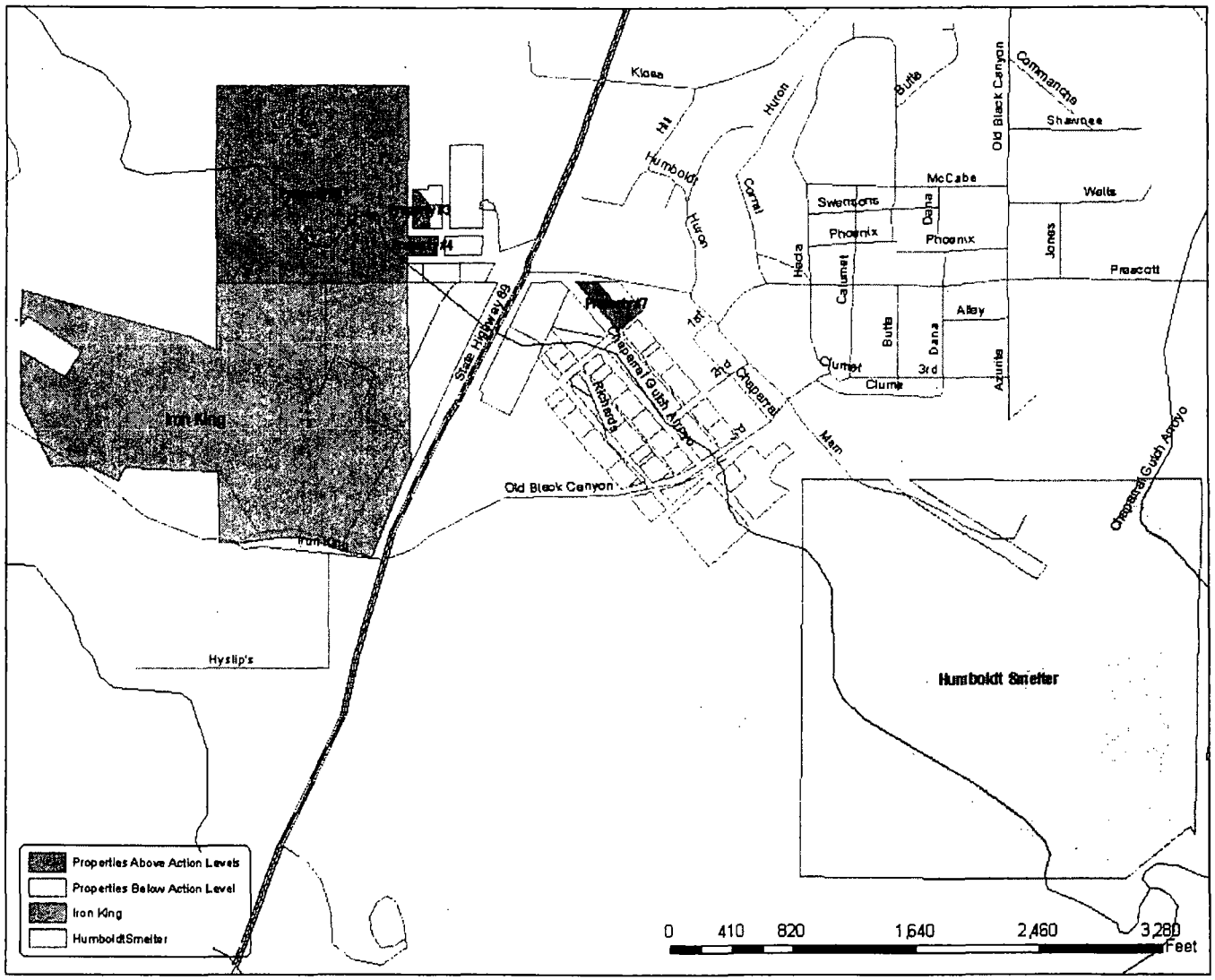


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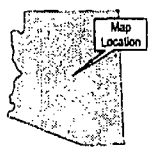
Figure 2: Chaparral Gulch Residential Site
Humboldt, Yavapai, Arizona



was prepared for the Humboldt Smelter Site.

3. Removal site evaluation

In 2005, USEPA completed a removal assessment at the Chaparral Gulch Residential Site that included soil sampling and analyses at 17 privately owned, residential parcels located along the Chaparral Gulch stream corridor. Field sampling activities occurred between August 15 and 17, 2005 and were conducted by the Superfund Technical Assessment and Response Team (START) in accordance with the approved Sampling and Analysis Plan (SAP).

Residential property sample locations were set using a random start point and the grid spacing for each property as described in the SAP and determined by the Visual Sampling Plan (VSP) software. Nine surface samples and one subsurface sample were collected from each property. Surface samples were collected at 0-6 inches below ground surface and subsurface samples were collected at approximately 1.5 feet bgs. All of the soil samples were analyzed for lead and arsenic.

USEPA calculated the 95% upper confidence limit (UCL) on the mean concentration of each contaminant in all surface samples at each parcel using ProUCL software. The software package generates normal and multiple transformed statistics and recommends the appropriate UCL for the data distribution being evaluated. The subsurface results were collected for review purposes only. The subsurface sample results were not evaluated quantitatively.

Surface sampling design allowed USEPA to develop representative exposure concentration for each residential property. The measure of exposure for assessment of risk is the average concentration of a contaminant throughout a property. The premise is based on the assumption that over a long enough period of time, a resident would contact all parts of the property. A resident would not be exposed to only the maximum or any other particular detected concentrations of a chemical. A conservative estimate of the average concentration of a chemical across a property is the 95 percent upper-confidence limit (95% UCL) on the mean. The use of an upper confidence limit of the mean (95 % UCL) provides reasonable confidence that the true site average will not be underestimated.

4. Release or threatened release into the environment of a hazardous substance, or pollutant or contaminant

The sample UCL for each property was compared to various background concentrations and the Region 9 Preliminary Remediation Goal (PRG). Based on a visual comparison, all 17 of the properties in the investigation exceeded the PRG for arsenic. The UCL results for 4 parcels (i.e., parcels 2, 3, 4, 7) were greater than 100 ppm arsenic and each exceeded the Site-specific background UCL concentration by at least 3 times. The statistical analysis sheets for each of the selected parcels are

attached (see ProUCL Reports attached).

Similarly, the START Final Report determined that these properties were significantly different than the background concentration, based on the Mann-Whitney (non-parametric) test. For these reasons, EPA believes that four parcels significantly exceed 100 ppm arsenic and the background UCL. The START Final Report is included in the Administrative Record.

Table 4.1 - Past Analytical Results

Property Identifier	Mean Arsenic Concentration (ppm)	Arsenic Upper Confidence Level (95% UCL) Concentration (ppm)	Site-Specific Background 95% UCL	EPA PRG/ ADEQ SRL
2	**108**	**145**	32	22 (EPA PRG) 10 (AZ SRL)
3	**83**	**111**		
4	**124**	**145**		
7	**99**	**356**		

Source: ecology&environment, Inc, (START) sampling result, October 2005.
Statistical data generated using ProUCL.
Notes: Bolded results indicate that measured concentrations exceed applicable health-based benchmarks and background UCL. Underlined results indicate properties exceeding the Removal Action Trigger level. mg/kg (milligram/kilogram) or parts per million (ppm). UCL - Upper Confidence Limit; PRG - EPA R9's Preliminary Remediation Goal, SRL - ADEQ's Soil Remediation Level

The Site-specific mean background arsenic concentration was 23 parts per million (ppm). The sample population included results from eight background sampling locations. Since the site-specific arsenic background concentration was greater than both the Residential PRG for arsenic (22 ppm) and the ADEQ SRL for arsenic (10 ppm), the background arsenic UCL concentration of 32 ppm, was used as a screening level. The mean and UCL concentrations including the outlier are 31 ppm and 47 ppm respectively (see ProUCL reports attached).

5. NPL status

The Chaparral Gulch Residential Site is not on the National Priorities List (NPL). In 2002, ADEQ conducted a PA/SI at the Iron King Mine Site (CERCLIS ID No. AZ0000309013). In 2004, ADEQ conducted a PA/SI at the Humboldt Smelter Site (CERCLIS ID NO. AZN000906020). The Hazard Ranking System was utilized to evaluate each site. The two site reports are included in the Administrative Record.

The PA/SI reports identified observed contamination and observed releases of hazardous substances at both the Iron King Mine Site and at the Humboldt Smelter Site. These sites may be combined under the name Iron King Mine-Humboldt Smelter Site for future investigative purposes and future actions.

Current conditions at the Chaparral Gulch Residential Site pose imminent and substantial endangerment (see Sections III and IV) at four residential properties exclusively. The proposed Removal Action will complete all work at the Chaparral Gulch Residential Site but will not complete work at the Iron.King Mine-Humboldt Smelter Site.

B. Other Actions to Date

No other response actions have occurred at the Site to date.

C. State and Local Authorities' Roles

1. State and local actions to date

The ADEQ Remedial Projects Section, PA/SI Section and Voluntary Cleanup Program have participated during the course of Site assessment and Removal Action planning activities. EPA and ADEQ have reached consensus that EPA will take the lead on enforcement and removal activities pertaining to this Site.

EPA has received a Request for Federal Action from ADEQ. In their letter dated April 3, 2006, ADEQ also provided comments on EPA's proposed residential excavation approach for this Removal Action.

III. THREATS TO PUBLIC HEALTH OR WELFARE OR THE ENVIRONMENT, AND STATUTORY AND REGULATORY AUTHORITIES

Current Site conditions pose the threat of potential future releases of a hazardous substance, namely arsenic. The likelihood of direct human exposure, via ingestion and/or inhalation of hazardous substances, and the threat of potential future releases and migration of those substances, pose an imminent and substantial endangerment to public health, and/or welfare, or the environment based on the factors set forth in the NCP, 40 CFR § 300.415(b)(2). These factors include:

1. Actual or potential exposure to hazardous substances or pollutants or contaminants by nearby populations or the food chain

As described in Section II.A.4, high concentrations of arsenic have been detected in samples of residential soils at the Site. Much of the contaminated material is very fine-grained and therefore likely to result in human exposure via inhalation or ingestion. Arsenic may be entrained in naturally and mechanically generated dust and/or transported on shoes and clothing of residents passing over contaminated areas. Gardening and other yard work also may result in exposure to contamination.

Analytical results indicate that concentrations of heavy metals identified in these media exceed background and EPA's PRGs. Acute inhalation exposure to high levels

of arsenic can cause throat and lung irritation and may exacerbate asthma. Chronic long-term exposure to arsenic via ingestion may result in nausea, vomiting, circulatory disorders, peripheral neuropathy, and skin disorders including hyperpigmentation and cancers.

Contamination is readily accessible to on-site full-time residents and potentially nearby part-time and/or full-time. Persons living on these contaminated properties, or engaging in recreational activities on or in close proximity to the properties are likely to come into contact with uncontrolled hazardous substances present within the mine wastes. Recreational activities in the vicinity of the Site include horse-riding and use of all-terrain vehicles (ATVs) and dirt-bikes. Children have been observed riding ATVs within residential area under investigation.

2. Weather conditions that may cause hazardous substances or pollutants or contaminants to migrate or be released

Heavy rains and winds may transport contaminated soils from the Site causing contaminant dispersal and increasing the likelihood of exposure.

3. Availability of other appropriate Federal or State response mechanisms to respond to the release

The Site is located on private land and is therefore not under the jurisdiction of any other Federal agency. State authorities have provided a Request for Federal Action letter. This letter is included in the Administrative Record for the Site.

IV. ENDANGERMENT DETERMINATION

Actual and threatened releases of hazardous substances from this site, if not addressed by implementing a Time-Critical Removal Action may continue to present an imminent and substantial endangerment to public health, or welfare, or the environment.

V. PROPOSED ACTIONS AND ESTIMATED COSTS

A. Proposed Actions

1. Proposed action description

USEPA proposes to mitigate imminent and substantial threats to human health, welfare, or the environment by taking steps to prevent the release of arsenic. The removal action will include the following objectives to prevent direct human contact with environmental arsenic in residential soils on at four properties:

- Remove surficial contamination by excavating soil within the existing sampling grids to achieve a concentration of 23 ppm arsenic or less at the excavation surface.
- Conduct confirmation sampling and analysis using X-Ray Fluorescence (XRF) and laboratory analyses.
- Transport and dispose excavated material at an off-site facility.
- Replace excavated material with clean fill, restore property to pre-removal conditions replacing patios, fences, trees and shrubs if necessary.

Under circumstances where special considerations are appropriate for the scope of the residential excavation, such as risk to property or significant duress for the resident, an alternative approach to the excavation extent may be deemed appropriate.

2. Contribution to remedial performance

This removal action would complete all clean-up activities at the Chaparral Gulch Residential Site.

The long-term cleanup plan for the site:

It is expected that this removal action will eliminate any threat of direct or indirect contact with or inhalation of hazardous substances at these residential properties. There is no known groundwater contamination at the Site.

Threats that will require attention prior to the start of a long-term cleanup:

USEPA has identified imminent threats posed by arsenic contamination at Chaparral Gulch Residential Site. The mitigation actions described above will constitute a permanent remedy for the Site.

Sources of the contamination may require long-term cleanup. In future actions, these sources comprise the Iron King Mine-Humboldt Smelter Site. USEPA will coordinate with ADEQ to evaluate the risk of human health effects based on other mine wastes exposure pathways that may be present at the Iron King Mine-Humboldt Smelter Site.

The extent to which the removal will ensure that threats are adequately abated:

The removal of surficial hazardous substances contamination by excavation and disposal will abate the threats described in Section III.

Consistency with the long-term remedy:

USEPA asserts that the Time-Critical Removal proposed for the Site is consistent with addressing the larger issue of potential exposures posed by the Iron

King Mine-Humboldt Smelter Site.

3. Applicable or relevant and appropriate requirements (ARARs)

Section 300.415(j) of the NCP provides that removal actions must attain ARARs to the extent practicable, considering the exigencies of the situation.

Section 300.5 of the NCP defines applicable requirements as cleanup standards, standards of control, and other substantive environmental protection requirements, criteria or limitations promulgated under Federal environmental or State environmental or facility siting laws that specifically address a hazardous substance, pollutant, contaminant, remedial action, location or other circumstances at a CERCLA site.

Section 300.5 of the NCP defines relevant and appropriate requirements as cleanup standards, standards of control and other substantive requirements, criteria, or limitations promulgated under Federal environmental or State environmental or facility siting laws that, while not "applicable" to a hazardous substance, pollutant, or contaminant, remedial action, location, or other circumstances at a CERCLA site, address problems or situations sufficiently similar to those encountered at the CERCLA site and are well-suited to the particular site.

Because CERCLA on-site response actions do not require permitting, only substantive requirements are considered as possible ARARs. Administrative requirements such as approval of, or consultation with administrative bodies, issuance of permits, documentation, reporting, record keeping, and enforcement are not ARARs for the CERCLA actions confined to the site.

The following ARARs have been identified for the proposed response action. All can be attained.

Federal ARARs: The CERCLA Off-Site Disposal Rule OSWER Directive 9347.3-8FS; and the U.S. Department of Transportation of Hazardous Materials Regulations 49 CFR Part 171, 172 and 173.

State ARARs: USEPA has considered the SRLs in the selection of a cleanup level as stated above.

4. Project schedule

It is estimated that removal activities will take approximately 25 working days to complete.

B. Estimated Costs

Regional Removal Allowance Costs

Cleanup Contractor	$ 550,000
Extramural Costs Not Funded from the Regional Allowance	
START Contractor	80,000
Extramural Subtotal	$ 630,000
Extramural Contingency (20%)	$ 126,000
TOTAL, Removal Action Project Ceiling	$ 756,000

VI. EXPECTED CHANGE IN THE SITUATION SHOULD ACTION BE DELAYED OR NOT TAKEN

Given the site conditions, the nature of the hazardous substances documented on site, and the potential exposure pathways to nearby populations described in Sections III and IV above, actual or threatened releases of hazardous substances from the Site, if not addressed by implementing the response actions selected in this Action Memorandum, may present an imminent and substantial endangerment to public health, or welfare, or the environment.

VII. OUTSTANDING POLICY ISSUES

There are no outstanding policy issues with the Site identified at this time.

VIII. ENFORCEMENT

Please see the attached Confidential Enforcement Addendum for a discussion regarding potentially responsible parties. In addition to the extramural costs estimated for the proposed action, a cost recovery enforcement action also may recover the following intramural costs:

Intramural Costs[1]	
U.S. EPA Direct Costs	$ 75,000

1. Direct costs include direct extramural costs and direct intramural costs. Indirect costs are calculated based on an estimated indirect cost rate expressed as a percentage of site-specific direct costs, consistent with the full cost accounting methodology effective October 2, 2000. These estimates do not include pre-judgement interest, do not take into account other enforcement costs, including Department of Justice costs, and may be adjusted during the course of a removal action. The estimates are for illustrative purposes only and their use is not intended to create any rights for responsible parties. Neither the lack of a total cost estimate nor deviation of actual costs from this estimate will affect the United States' right to cost recovery.

U.S. EPA Indirect Costs (35.28%) $ 293,177

TOTAL Intramural Costs $ 368,177

The total USEPA extramural and intramural costs for this removal action, based on full-cost accounting practices, that will be eligible for cost recovery are estimated to be $1,124,177.

IX. U.S. EPA RECOMMENDATION

This decision document represents the selected removal action for the Chaparral Gulch Residential Siite, Dewey-Humboldt, Yavapai County, Arizona developed in accordance with CERCLA as amended, and not inconsistent with the NCP. This decision is based on the Administrative Record for the Site.

Because conditions at the site meet the NCP criteria for a Time-Critical Removal Action, USEPA enforcement staff recommend the approval of the removal action proposed in this Action Memorandum. The total project ceiling if approved will be $1,124,177, of which an estimated $756,000 comes from the Regional Removal Allowance. Approval may be indicated by signing below.

Approve: _____ 11 April 2006
Daniel Meer, Chief Date
Response, Planning and Assessment Branch

Disapprove: _____ _____
Daniel Meer, Chief Date
Response, Planning and Assessment Branch

Enforcement Addendum

Attachments:

1. Index to the Administrative Record
2. Photograph Log

cc: Sherry Fielding, USEPA, OEM, HQ
Pat Port, U.S. Department of Interior
Samantha Roberts, Arizona Department of Environmental Quality

bcc: H. Allen, SFD-9-2
M. Benson, ORC-3
C. Reiner, SFD-9-2
C. Temple, SFD-9-2
Site File

ATTACHMENT I
INDEX TO THE ADMINISTRATIVE RECORD

1. Final Preliminary Assessment/Site Inspection Report, Iron King Mine Site. Prepared for ADEQ. October 2002.

2. Final Preliminary Assessment/Site Inspection Report, Humboldt Smelter Site. Prepared for ADEQ. April 2004.

3. Final Report. Iron King Mine Site, Humboldt, Arizona. Prepared by Ecology & Environment, Inc. October 2005.

4. Letter from: Amanda Stone, Director, Waste Programs Division, ADEQ to: Keith Takata, Director, Superfund Division, U.S. EPA Region 9. March 2006.

ATTACHMENT II
PHOTOGRAPH LOG

ATTACHMENT II
PHOTOGRAPH LOG

CHAPARRAL GULCH RESIDENTIAL SITE
ATTACHMENT II
PHOTOGRAPH LOG

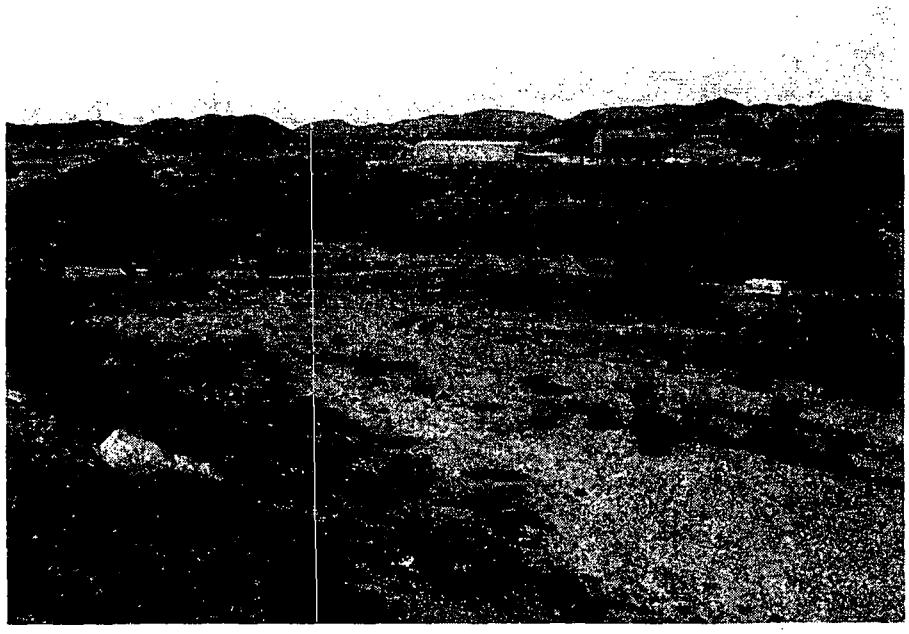


Photo 1. Overview of Chaparral Gulch residences 2, 3 and 4. Iron King Mine and Highway 69 in background.

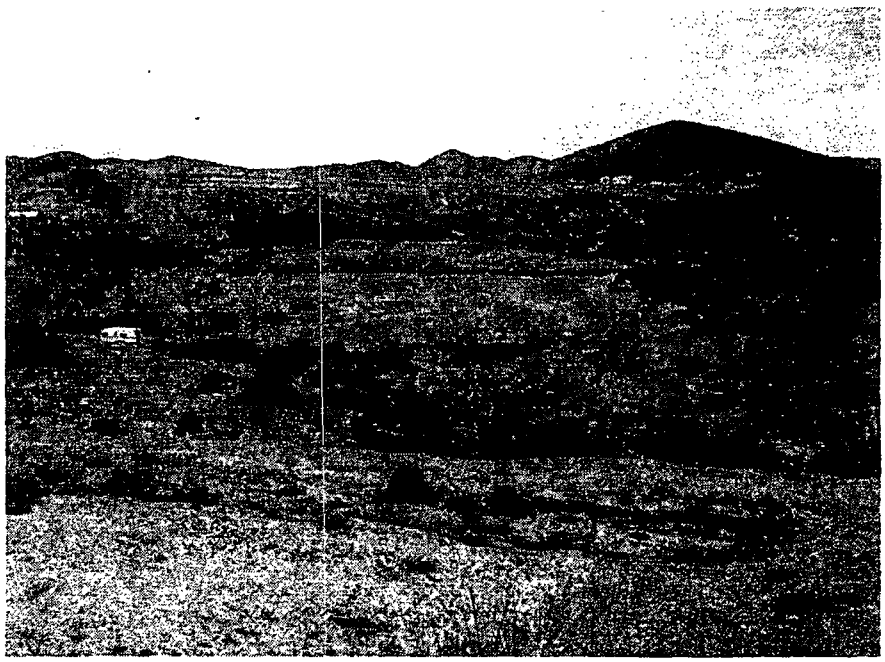


Photo 2. Overview of property 2, Chaparral Gulch and Iron King Mine in background.

CHAPARRAL GULCH RESIDENTIAL SITE
ATTACHMENT II
PHOTOGRAPH LOG

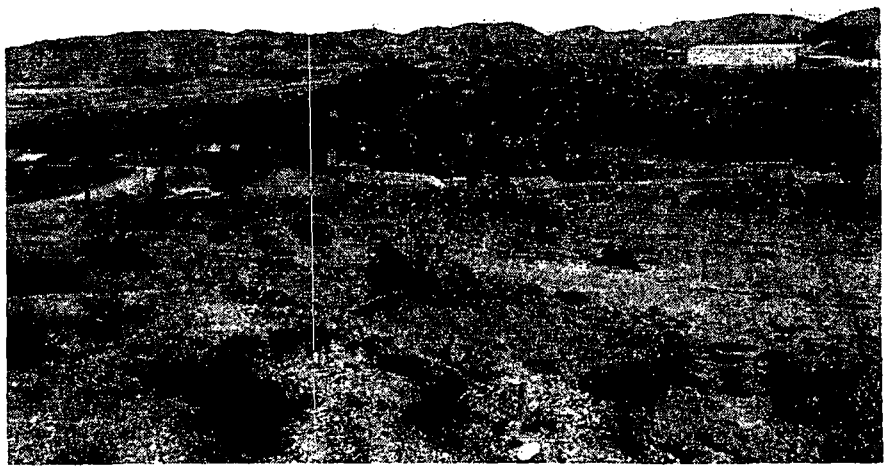


Photo 3. Overview of properties 3 and 4 situated between the Iron King Mine and Highway 69.

Photo 4. Residential soil sample collection in August 2005.

CHAPARRAL GULCH RESIDENTIAL SITE
ATTACHMENT II
PHOTOGRAPH LOG

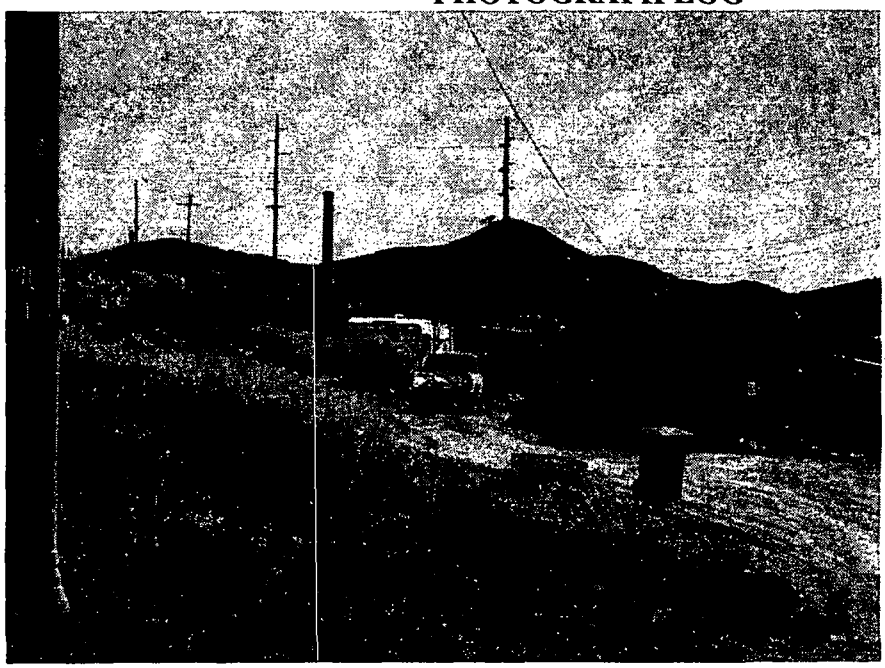


Photo 5. View of Chaparral Gulch residences adjacent to Humboldt Smelter property, smelter stack in background.

JOB STATUS REPORT

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PLEASE DELIVER TO:

NAME David Wallis
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PHONE # 602-530-8136
OFFICE Gallagher and Kennedy

NAME
FAX #
PHONE #
OFFICE

NAME
FAX #
PHONE #
OFFICE

FROM:

NAME Michele Benson
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DATE 5/02/06

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ADDITIONAL MESSAGE: _____