

FIVE-YEAR REVIEW

**Jacksonville Municipal Landfill Superfund Site
EPA ID# ARD980809941
Lonoke County, Arkansas**

This memorandum documents EPA's approval of the Jacksonville Municipal Landfill Superfund Site Five-Year Review Report prepared by CH2MHill on behalf of EPA.

Summary of Five-Year Review Findings

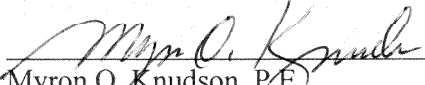
This is the first five-year review of the Jacksonville Municipal Landfill Site (the "Site") located near Jacksonville, in Lonoke County, Arkansas. The results of the five-year review indicate that the remedy is protective of human health and the environment. Based on this five-year review, Site documentation confirms the remedial action at the Site as originally set forth in the Record of Decision (ROD) has been implemented as planned and is protective of human health and the environment.

Actions Needed

Overall, the remedial actions performed appear to be functioning as designed, and the Site has been maintained appropriately. The city of Jacksonville is controlling access to the Site through fencing, and access to the ground water through restrictive covenants. No deficiencies were noted that impact the protectiveness of the remedy, and the remedy should remain protective if Site Operations and Maintenance and institutional controls continue. Because no contaminants of concern defined by the ROD were detected in four years of annual ground water sampling, and because ground water use is limited through restrictive covenants, EPA concurs with the Arkansas Department of Environmental Quality (ADEQ) recommendation to discontinue ground water monitoring. ADEQ has requested that the appropriate solid waste regulating authority be notified of the low concentration detections of non-Site-related metals in the monitoring wells that may be caused by leaching from the municipal landfill.

Determinations

I have determined that the remedy for the Jacksonville Municipal Landfill Superfund Site is protective of human health and the environment.



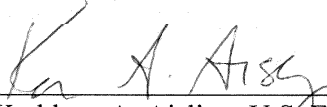
Myron O. Knudson, P.E.
Director, Superfund Division
U.S. Environmental Protection Agency
Region 6

9-27-00

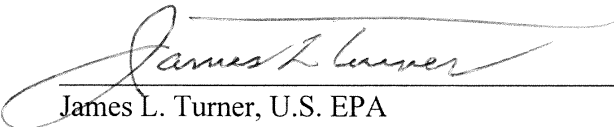
Date

CONCURRENCES


FIRST FIVE-YEAR REVIEW REPORT
for
Jacksonville Municipal Landfill Superfund Site
Lonoke County, Arkansas
EPA ID# ARD980809941


Kathleen A. Aisling, U.S. EPA
Remedial Project Manager, Technical Support Team

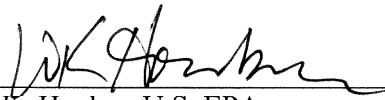
9/21/00
Date


James L. Turner, U.S. EPA
Senior Attorney, Superfund Branch

Sept. 22, 2000
Date


Gustavo T. Chavarria, U.S. EPA
Chief, AR/OK/TX Project Management Section

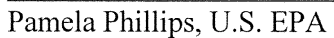
9/25/00
Date


William K. Honker, U.S. EPA
Chief, AR/OK/TX Branch


9/25/00
Date


Mark A. Peycke, U.S. EPA
Chief, Superfund Branch, Office of Regional Counsel

09/26/00
Date


Pamela Phillips, U.S. EPA
Deputy Director, Superfund Division

out [signature]
Date


June Buzzell, U.S. EPA
Writer Editor, Superfund Division

9/27/00
Date

Five-Year Review Report

First Five-Year Review Report for Jacksonville Municipal Landfill Lonoke County, Arkansas

September 27, 2000

PREPARED BY:

**CH2M HILL
Contract Number 68-W6-0036
Work Assignment Number 048-FRFE-06ZZ**

PREPARED FOR:

**Region 6
United States Environmental Protection Agency
Dallas, Texas**

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Executive Summary

The first five-year review of the Jacksonville Municipal Landfill site located near Jacksonville, in Lonoke County, Arkansas, was completed in September 2000. The results of the five-year review indicate that the remedy is protective of human health and the environment. Overall, the remedial actions performed appear to be functioning as designed, and the site has been maintained appropriately. No deficiencies were noted that impact the protectiveness of the remedy.

The remedy was chosen to remove the principal health threats that presented excess lifetime cancer risk, prevent further actual or threatened releases of hazardous substances from the site, and establish a method of long term monitoring to ensure protectiveness. Materials containing above 10 parts per billion (ppb) dioxin concentrations were removed and incinerated at the nearby Vertac Superfund Site, and the affected areas were backfilled and re-graded. Soil cover was placed on materials that were between 1 and 10 ppb dioxin level, and herbicide contamination associated with a hazard index above 0.3.

Operations and maintenance (O&M) at the site consists of site inspections to confirm fence integrity, and maintenance of the soil cover. Site inspections show that the fencing is effectively preventing access to the site and site groundwater. Annual groundwater monitoring was also performed. Because no contaminants of concern defined by the Record of Decision were detected in the four years of annual groundwater monitoring, the Arkansas Department of Environmental Quality has recommended discontinuing groundwater monitoring. The EPA concurs that this recommendation is appropriate because restrictive covenants are in place prohibiting groundwater use on the property, and the site is deleted from the National Priorities List (NPL). Some metals were detected in low concentrations in groundwater during monitoring, but they are not contaminants of concern associated with the hazardous materials disposed onsite. These metals may be associated with the solid waste portions of the landfill, and should be referred to the appropriate solid waste regulatory authority.

Based on this five-year review, site documentation confirms the remedial action at the site as originally set forth in the Record of Decision (ROD) has been implemented as planned and continues to be protective of human health and the environment.

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List of Acronyms

ADEQ	Arkansas Department of Environmental Quality
ADPC&E	Arkansas Department of Pollution Control and Ecology
ARARs	Applicable or Relevant and Appropriate Requirements
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CD	Consent Decree
CDC	Center for Disease Control
CFR	Code of Federal Regulations
COC	Contaminants of Concern
2,4-DCP	2,4-Dichlorophenol
E&E	Ecology and Environment
ERCS	Emergency Response Clean-up Service
EPA	United States Environmental Protection Agency
FR	Federal Register
HI	Hazard Index
LDR	Land Disposal Restrictions
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NPL	National Priorities List
MCLs	Maximum Contaminant Limits
O&M	Operation and Maintenance
OSWER	Office of Solid Waste and Emergency Response
OUs	Operable Units
ppb	part per billion
RCRA	Resource Conservation and Recovery Act
RI/FS	Remedial Investigation/Feasibility Study
ROD	Record of Decision
2,4,5-T	2,4,5-Trichlorophenoxy acetic acid
TAT	Technical Assistance Team
TBC	To Be Considered
TCDD	Tetrachlorodibenzo-p-dioxin
2,4,5-TP	2,4,5-Trichlorophenoxy propionic acid

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Five-Year Review Summary Form

SITE IDENTIFICATION

Site name (from WasteLAN): Jacksonville Municipal Landfill

EPA ID (from WasteLAN): ARD980809941

Region: EPA Region 6

State: AR

City/County: NA/Lonoke

SITE STATUS

NPL Status: Final Deleted Other (specify):

Remediation status (choose all that apply): Under Construction Operating Complete

Multiple OUs? Yes No

Construction completion date: September 1995

Has site been put into reuse? Yes No [Tree farming; municipal beautification]

REVIEW STATUS

Reviewing agency: EPA State Tribe Other Federal Agency:

Author: EPA Region 6, with support from RAC6 contractor CH2M HILL

Review period: August 1994 through September 2000

Date(s) of site inspection: June 27, 2000

Type of review: Statutory
 Policy
 Post-SARA Pre-SARA NPL-Removal only
 Non-NPL Remedial Action Site NPL State/Tribe-lead
 Regional Discretion

Review number: 1 (first) 2 (second) 3 (third) Other (specify):

Triggering action:
 Actual RA Onsite Construction Actual RA Start at OU# _____
 Construction Completion Recommendation of Previous Five-Year Review Report
 Other (specify):

Triggering action date (from WasteLAN): August 4, 1994

Due date (five years after triggering action date): August 4, 1999

Five-Year Review Summary Form

Deficiencies:

No deficiencies noted.

Recommendations and Follow-up Actions:

- Maintain records of annual O&M costs and site security logs; submittal of such records/logs is not required.
- After four annual groundwater monitoring events conducted from 1994 through 1997, no Contaminants of Concern as defined by the ROD were detected and the ADEQ recommended cessation of sampling. Based on a review of ADEQ data, EPA concurs with this recommendation. Requirements for groundwater monitoring under solid waste regulations for the municipal landfill portions of the site may still apply, and the current monitoring well network could potentially be used for that purpose, as well as the data collected by ADEQ from 1994 through 1997. As a result, the groundwater wells are not recommended for abandonment at this time. The appropriate agencies should be notified of the availability of the groundwater wells to be used for monitoring under that program, and of the detection of metals in groundwater samples that may be associated with the solid waste portion of Jacksonville Municipal Landfill and neighboring Rogers Road Municipal Landfill.

Protectiveness Statement(s):

The remedy completed for the Jacksonville Municipal Landfill site is protective of human health and the environment.

Other Comments:

None.

First Five-Year Review Report Jacksonville Municipal Landfill

The United States Environmental Protection Agency Region 6 has conducted a five-year review of the remedial actions implemented at the Jacksonville Municipal Landfill site located near Jacksonville, Lonoke County, Arkansas for the period August 1994 through September 2000. The purpose of a five-year review is to determine whether the remedy at a site is protective of human health and the environment. This report documents the results of the review for this site, conducted in accordance with EPA guidance on five-year reviews. EPA RAC6 contractor CH2M HILL provided support for preparation of this Five-Year Review Report.

Existing EPA guidance on five-year reviews includes the following:

- Office of Solid Waste and Emergency Response (OSWER) Directive 9355.7-02 (May 23, 1991), *Structure and Components of Five-Year Reviews* (introduced five-year review requirements).
- OSWER Directive 9355.7-02FS1 (August 1991), Fact Sheet: *Structure and Components of Five-Year Reviews*.
- OSWER Directive 9355.7-02A (July 26, 1994), *Supplemental Five-Year Review Guidance* (introduced level of review considerations for sites where response is ongoing).
- OSWER Directive 9355.7-03A (December 21, 1995), *Second Supplemental Five-Year Review Guidance* (identified three purposes of five-year review and emphasized that reviews must include a signed protectiveness determination, along with recommendations to correct deficiencies).

Guidance provided in these documents has been incorporated into the five-year review performed for this site, as have the concepts outlined in the *Draft Comprehensive Five-Year Review Guidance*, October 1999, OSWER Directive 9355.7-03B-P.

1.0 Introduction

The five-year review for the Jacksonville Municipal Landfill site is required by statute.

Statutory reviews are required for sites where, after remedial actions are complete, hazardous substances, pollutants, or contaminants will remain onsite at levels that will not allow for unrestricted use or unrestricted exposure. This requirement is set forth by the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). Statutory reviews are required only if the ROD was signed on or after the effective date of the Superfund Amendments and Reauthorization Act of 1986 (SARA). CERCLA §121(c), as amended by SARA, states:

If the President selects a remedial action that results in any hazardous substances, pollutants, or contaminants remaining at the site, the President shall review such remedial action no less often than each five years after the initiation of such remedial action to assure that human health and the environment are being protected by the remedial action being implemented.

The NCP §300.430(f)(4)(ii) of the Code of Federal Regulations (CFR) states:

If a remedial action is selected that results in hazardous substances, pollutants, or contaminants remaining at the site above levels that allow for unlimited use and unrestricted exposure, the lead agency shall review such action no less often than every five years after the initiation of the selected remedial action.

This is the first five-year review for the Jacksonville Municipal Landfill site. The triggering action for this statutory review is the date of initiation of the remedial action on August 4, 1994. This review is required because hazardous substances, pollutants, or contaminants were left onsite above levels that allow for unlimited use and unrestricted exposure, and the Record of Decision (ROD) called for institutional controls limiting groundwater use on and immediately downgradient of the site (EPA, 1990).

2.0 Site Chronology

A chronology of significant site events and dates are included in Table 1, provided at the end of the report text. Sources of this information are listed in Attachment 1, Documents Reviewed.

3.0 Background

The Jacksonville Municipal Landfill site encompasses less than five acres of the 40-acre landfill on the south end of an 80-acre tract of land in Lonoke County, outside the city limits of Jacksonville, Arkansas. The site is approximately 12 miles northeast of Little Rock, Arkansas. The northern end of the municipal landfill adjoins the south side of Graham Road; the Superfund site portion of the landfill is on the south end of the property. Less than one-half mile west of the Jacksonville site is the Rogers Road Municipal Landfill Superfund (see Figure 1). Because of the proximity of the sites and the similarities in their features and characteristics, the site characterization and remedial action activities for these sites were carried out concurrently.

The Jacksonville Municipal Landfill site is located within a residential and agricultural area. Morgan Road adjoins the property to the east. There is a fairly high population density within one-half mile radius of the site (approximately 51 single-family homes); areas further out are more sparsely populated. At the time of the ROD it was assumed that approximately 153 to 204 people lived within a one-half mile radius (EPA, 1990). The closest residential dwellings are located 30 yards away from the fence delineating the eastern boundary of the Jacksonville Landfill. An estimated 10,000 people live within three miles of the site and draw drinking water from public and private wells (EPA, 1996). A private water well is located 500 feet from the site; however, it is not currently used for drinking water.

The ROD also stated that the landfill was located in a predominantly agricultural area, the area did not lend itself to commercial types of development, that there were no businesses or commercial areas located within one and one-half miles of the site, and that the types of receptors

were not expected to change in the foreseeable future. Observations during the June 2000 site inspection (see Section 6) indicate this continues to be the case. Part of the area is located within a flood plain, making additional development unlikely.

A residential well inventory was conducted as part of the Remedial Investigation (RI) and information was collected from residences near the landfill. The City of Jacksonville installed a municipal water system which has served the residents in the area of the site since sometime prior to 1974 (EPA, 1990). Reportedly only one residence near the site ever used groundwater, and this household stopped using the well when municipal water was made available. The other residences were reported to have used only the City water system.

The City of Jacksonville operated the landfill, also known as the Graham Road Landfill, from the time it purchased the land in 1960 until 1973. The landfill was closed when the Arkansas Department of Pollution Control and Ecology (ADPC&E, now Arkansas Department of Environmental Quality [ADEQ]) refused to grant a landfill permit because of the high water table and poor drainage in the area.

Records indicate that open burning and trenching with bucket and dragline were the waste handling methods used, along with open dumping and landfilling. During the years that the facility was operated, the site was run as a typical sanitary landfill and not a permitted RCRA disposal facility. As a result, companies which hauled waste to the landfill were not required to provide the site operator with detailed information regarding generators, waste types, or quantities. No detailed records indicating specific waste types or quantities are known to have been kept by the site owner/operator, making identification of generators and operators difficult. It is known, however, that in addition to municipal waste, drums of industrial waste from a local herbicide manufacturer, now known as the Vertac Superfund Site (Vertac), were disposed of in the landfill. On-site soil and drums were found to be contaminated with dioxin (2,3,7,8-tetrachlorodibenzo-p-dioxin expressed as 2,3,7,8-TCDD equivalents) and the herbicides 2,4-

dichlorophenol (2,4-D), 2,4,5-trichlorophenoxy acetic acid (2,4,5-T), and 2,4,5-trichlorophenoxy propionic acid (2,4,5-TP). These drums were located in four isolated areas, mainly near the surface of the landfill.

The Jacksonville Municipal Landfill was identified to EPA on May 17, 1983, through a citizen's complaint. In July 1983, Ecology and Environment, Inc. (E&E) conducted a Preliminary Assessment/Site Investigation at the site. The Jacksonville Municipal Landfill was proposed for inclusion on the National Priorities List (NPL) of uncontrolled hazardous waste sites on January 22, 1987. The site was added to the NPL on July 22, 1987. In early 1986, the City of Jacksonville fenced the site to prevent public access. Although the City of Jacksonville maintains the fence around the perimeter, the site is still used recreationally for hunting by local residents.

A Remedial Investigation (RI) was conducted between November 1988 and March 1990, and a risk assessment was performed based on the analytical findings of the RI. The results of the RI and risk assessment and prior investigations are summarized in the RI Report (Peer and Resource Applications, Inc., 1990a). The Feasibility Study (FS) was also released at this time (Peer and Resource Applications, 1990b). Contaminants in onsite soil were found to include dioxin, and the herbicides 2,4,5-T, 2,4,5-TP, and 2,4-DCP.

The investigations undertaken at the Jacksonville Municipal Landfill Superfund Site revealed that contaminants in soil comprised the principal threat posed by the site. A remedy was chosen based on the following criteria:

- Remedy the contaminated soil using thermal treatment and soil cover to ensure it no longer presents a threat to human health or the environment.
- Eliminate the health risks due to ponded water onsite by filling in the existing site trenches with clean fill.

- Establish a method of long term monitoring to ensure that the soil cover is properly maintained and the groundwater quality is adequately monitored. (EPA, 1990)

The remedial actions undertaken to meet these criteria are described in the following paragraphs.

4.0 Remedial Actions

The remedial action completed at the Jacksonville Municipal Landfill Superfund Site included removal and incineration at the nearby Vertac Superfund Site of materials containing concentrations of dioxin above 10 ppb, and backfilling and regrading of the affected areas. The remedy also included placement of soil cover over materials demonstrating concentrations between 1 and 10 ppb dioxin, and herbicide contamination (2,4,5-T, 2,4,5-TP, and 2,4-DCP) associated with a hazard index (HI) above 0.3. A total of 498 cubic yards and 22 drums of material were removed, treated, and disposed at Vertac.

Included in the following subsections is a description of the remedy selection process employed at the Jacksonville Municipal Landfill Superfund Site, the implementation of the remedy, the Operations and Maintenance (O&M), and the progress made at the site since initiation of remedial action and construction completion.

4.1 Remedy Selection

The ROD for this site was signed on September 27, 1990. The selected remedy included:

- Excavation of contaminated soil and debris containing greater than 10 ppb dioxin and backfilling the excavated area.
- Transportation of the excavated material to the Vertac Superfund Site in Jacksonville, Arkansas.
- Incineration of the excavated contaminated material and disposal of residuals at Vertac.

- Steam-cleaning and disposal of large items of refuse removed from contaminated areas at the Jacksonville Site.
- Covering soil, debris and water meeting the criteria stated below with twelve inches of soil:
 - 2,3,7,8-TCDD (dioxin) concentrations >1.0 and ≤ 10 ppb, and/or
 - Cumulative HI $>.3$ for 2,4,5-T; 2,4,5 TP; and 2,4-DCP.
- Institutional controls such as fence maintenance and land-use restrictions limiting ground water use on and immediately downgradient of the site; and
- Ground water monitoring.

On June 20, 1994, a Consent Decree (CD) between EPA and the City of Jacksonville regarding the Site was entered in Federal District Court. This CD and the CD for the nearby Rogers Road Municipal Landfill Site were the first in the country between a municipality and EPA that utilized this type of mixed work settlement. Under the agreement, EPA performed the work that involved handling the hazardous substances, including excavation of the hot spots of contamination, transporting the material to Vertac, incineration, and decontamination. The city performed the non-hazardous work, including fencing, backfilling, grading, re-vegetating, inspection and maintenance, installation of additional groundwater wells, groundwater sampling and analysis, and implementation of land-use controls.

4.2 Remedy Implementation

On August 22, 1995, Ecology and Environment (E&E), the EPA Technical Assistance Team (TAT) and the Emergency Response Clean-up Service (ERCS) contractor, Riedel-Peterson, mobilized to begin remedial operations at the site. After preliminary road work was completed, excavation of contaminated soil was initiated. The excavation was conducted in three phases.

During Phase I (August 29-September 21, 1994), Riedel-Peterson re-containerized contaminated material that was in decaying drums and they excavated soil in the drum disposal area. This material was transported to the Vertac site for treatment at the incinerator. Confirmation soil

samples were collected after this initial excavation to verify the degree of contaminant removal and to determine the areas of moderate contamination (2,3,7,8-TCDD concentrations >1.0 and ≤ 10 ppb and herbicides $HI > 0.3$) which would later be covered with clean soil. Riedel-Peterson demobilized at the end of Phase I until sample results were received.

During Phase II (October 13-October 29, 1994), after the Phase I sample results were received and analyzed, Riedel-Petersen completed excavation and soil removal. During this phase, the City of Jacksonville began leveling and clearing non-contaminated areas onsite. The contaminated material was transported to Vertac and confirmation samples were collected. The contractors continued restoration efforts at the Rogers Road Landfill while waiting for sample results. Sample results confirmed that the removal of soil contaminated with >10 mg/kg dioxin was complete.

During Phase III (November 6-November 12, 1994), excavations were performed to ensure that all dioxin-contaminated drums had been discovered. One additional drum was discovered and excavated. The areas of moderate contamination were also covered with fill soil at this time.

A total of 498 cubic yards of contaminated soil and 22 drums of hazardous materials were transported to Vertac and incinerated. This is a higher volume than the 130 cubic yards estimated in the ROD. Despite this increase in volume, remedial activities went smoothly. Incineration at Vertac began on October 20, 1994, and ended on December 4, 1994. The January 20, 1995, Technical Assistance Report for the Jacksonville Municipal Landfill written by E&E (E&E, 1995), details the remedial action activities performed by EPA and its contractors.

The total cost for the action was \$140,715.00 for the excavation, preliminary sampling, and transportation of the waste and \$1.6 million for the confirmatory sampling and incineration at Vertac.

During the fall of 1994, the City of Jacksonville continued regrading activities and installed three additional groundwater monitoring wells between the Jacksonville Landfill and the Rogers Road Landfill as required by the ROD and CD. The city demobilized in late October when heavy rains in the area made passage through the site difficult. City activities recommenced in July 1995 when the site was sufficiently dry for vehicles to pass. The city regrading activities were completed in September 1995.

4.3 Operations and Maintenance

The City of Jacksonville, as agreed in the CD and accompanying Statement of Work and as detailed in the Remedial Action Work Plan (City of Jacksonville, 1994), has assumed all responsibility for O&M at the Jacksonville site. O&M activities include routine site inspections to ensure that positive drainage is occurring, and maintenance of perimeter fencing. These activities maintain the protectiveness of the remedy.

The ROD specified annual groundwater monitoring for up to thirty years to ensure that the remedy was effective and operating properly (with review every five years to determine continued necessity). ADEQ assumed responsibility for groundwater monitoring, and performed the monitoring for four annual events, from 1994 to 1997. Because no Contaminants of Concern (COCs) as defined by the ROD were detected during these four events, ADEQ recommended cessation of the groundwater monitoring after the 1997 event.

See Section 6.2 for a summary of projected versus actual annual O&M costs.

4.4 Progress Since Initiation of Remedial Action

All remedial action construction requirements have been completed. The site has been deleted from the NPL, with concurrence from ADEQ (ADEQ, 1999a). The site is fenced and the city of Jacksonville controls access to the site and site groundwater through the use of restrictive covenants. These restrictive covenants are the type of institutional controls contemplated in the

site Record of Decision (EPA, 1999a). The city of Jacksonville established these restrictive covenants prior to the deletion of the site from the NPL. The restrictive covenants cover the entire municipal landfill property, prohibiting the use of groundwater in existing groundwater wells for drinking or vegetable-watering, and prohibiting the drilling of additional groundwater wells (City of Jacksonville, 1999, 1999a, 1999b).

Control of groundwater use immediately downgradient of the site is not strictly enforceable, but residents are on municipal water supply. ADEQ has requested that the appropriate solid waste regulating authority be notified of the low detects of non-Site-related metals in the monitoring wells that may be caused by leaching from the municipal landfill. ADEQ recommends that the appropriate solid waste regulating authority be notified and that the 1994-1997 groundwater monitoring data be considered under such authority.

O&M procedures appear to be adequate although documentation of O&M frequency and annual costs have not always been consistently maintained in the period following construction completion (reporting to EPA is not required). As discussed previously, groundwater monitoring at the site was discontinued due to the lack of detection of COC's defined in the ROD.

5.0 Five-Year Review Process

This five-year review has been conducted using the concepts found in EPA's Draft *Comprehensive Five-Year Review Guidance*, dated October 1999 (EPA, 1999), and in accordance with the guidance contained in the existing final five-year review guidance documents that are listed on page 1 of this report. The EPA made information available to the public regarding its intent to perform the five-year review through the Jacksonville site status summary on EPA's Region 6 website, at http://www.epa.gov/earth1r6/6sf/pdf/jvllc_1f.pdf. It is EPA's intention to advertise the availability of the five-year review report in a newspaper local to the site and on the site status summary website referenced above, and to provide a copy of the

report in the information repository. The five-year review consisted of interviews with relevant parties, a site inspection conducted at the site, and a review of applicable data and documentation covering the period of the review. The findings of the review are described in the following section.

6.0 Five-Year Review Findings

The information collected during the interviews, the site inspection, the standards review, and the data review are described in the following subsections.

6.1 Interviews

Interviews were conducted with representatives from the City of Jacksonville, and with representatives of state and federal regulatory agencies at the City of Jacksonville offices and at the Jacksonville and Rogers Road Municipal Landfill sites on June 27, 2000. Interview Record Forms which document the issues discussed during these interviews are provided in Attachment 2.

Interviews were conducted with Murice Green of the City of Jacksonville, Brian Wakelyn of the ADEQ, and Kathleen Aisling and Kenneth Clark of the EPA. The overall impression from all respondents was that the remedy implementation at both sites went smoothly and had a positive effect on the surrounding community. The health risks were removed, the grading done at the sites as part of the remedy resulted in drainage improvements, and the sites are now maintained. At the Jacksonville site, part of the landfill that was not included in the Superfund remediation is now utilized as a tree farm by the city, whereas prior to completion of the remedial action, the entire 40-acre landfill was overgrown and in disuse. The trees are being grown for eventual transplant to surrounding communities.

The only community concern regarding the site since prior to the initiation of the remedial action in 1994 was one complaint by a nearby resident that water was draining from the site to his property. This was not a result of the actions taken at the site; however, the City of Jacksonville responded to the complaint by dredging the drainage ditch. There is a gas pipeline owned by Teppco that runs diagonally across the site (Figure 1) that is maintained by the gas company.

O&M costs associated with the site have not been individually tracked; submission of documentation was not specified in the O&M plans. Based on the interviews, however, the City indicated no significant changes had occurred in the ongoing O&M activities, and therefore the costs have most likely remained consistent since the completion of the remedy (see Section 6.2).

6.2 Site Inspection

A site inspection was conducted at the site on June 27, 2000. The completed site inspection checklist is provided in Attachment 3. Photographs taken during the site inspection are provided in Attachment 4.

The area around the site is densely wooded (Photos 1, 13 and 14, Attachment 4). The fencing around the site appeared intact and secure, although no signs were posted on the fence or the gate (Photo 1, Attachment 4). No vandalism was evident, and the roads were adequate (Photos 10 and 11, Attachment 4). The soil cover appeared to be in good condition; no settlement, cracks, or erosion was evident (Photos 10 and 11, Attachment 4). The presence of poison oak, poison ivy, and numerous ticks were observed.

The site was dry on the day of the site inspection and appeared well-graded. However, the site is situated in a natural low area, and standing water in the area surrounding Jacksonville Landfill has been noted by the City of Jacksonville staff following rain events. The area where the Teppco pipeline runs diagonally across the site appeared well maintained (Photo 15, Attachment 4).

Monitor wells MWJ-07, MWJ-08, MWJ-10, MWJ-11, MWJ-13 and an unused residential well were located during the site inspection and photographed (Photos 6, 7, 10, 16, 17, 18, and 19; see also Figure1). Surface completions appeared to be in good condition with the exception of MWJ-10, where a cracked pad was noted (Photo 17, Attachment 4). Not all wells were located during the site inspection due to the presence of dense vegetation, including poison oak and ivy, and the abundance of ticks observed in the area. The wells are visited by city personnel during the periodic inspections several times per year.

As part of the review, actual O&M costs are compared to the projected costs to determine if there have been any unanticipated or unusually high O&M costs during the review period. The ROD estimated an annual O&M cost of \$4,500 for fence maintenance and site inspection, and \$20,570 for groundwater monitoring, with an additional \$5,000 for supplemental monitoring to occur every five years (EPA, 1990). The O&M costs presented in the ROD as well as the FS Table referenced in the ROD estimate are provided in Attachment 3. Although detailed O&M cost documentation has not been maintained, a current annual O&M estimate was provided by the City of Jacksonville and ADEQ (also provided in Attachment 3). Table 2 provides a summary of these costs for Jacksonville. The annual total for site inspection and cover maintenance for both the Rogers Road and Jacksonville sites was \$13,440, the annual groundwater monitoring cost for both sites was estimated at \$7,000 for a total of \$20,440. It was assumed for the purposes of this review that half of the amount, or \$10,220, is the approximate annual cost of O&M for Jacksonville. Although the site inspection and maintenance costs are slightly more than what was projected in the ROD, the groundwater monitoring costs are significantly lower. Therefore the O&M costs are not an issue of concern for this site.

6.3 Standards Review

Applicable or Relevant and Appropriate Requirements (ARARs) for this site were identified in the ROD dated September 27, 1990. This Five-Year Review included identification of and

evaluation of changes in these ARARs to determine whether such changes may affect the protectiveness of the selected remedy.

The ROD identified the following ARARs as having an impact on the proposed remedy:

1. RCRA Land Disposal Restrictions (LDRs), as regulated under 40 CFR Part 268.
2. Transportation of hazardous wastes, as regulated under 40 CFR Part 263 and 49 CFR Parts 107 and 171-177.
3. The operational standards and monitoring requirements for hazardous waste incinerators, as regulated under 40 CFR Part 264 Subpart O.
4. Guidance for the closure of open dumps as regulated under 40 CFR 256.23.
5. The post-closure care and monitoring requirements for hazardous waste disposal facilities as regulated under 40 CFR 264.117(a)(1).
6. Requirements to evaluate the potential impacts to floodplains as regulated under the Executive Order on Floodplain Management, Executive Order No. 11988.

The Jacksonville Landfill ROD identified the following criteria as to be considered (TBCs) for the remedial action:

1. The Center For Disease Control's (CDC's) 2,3,7,8-TCDD concentration recommendations for residential settings of 1.0 ppb in surface soil and 10.0 ppb when covered by at least 12 inches of clean fill.

2. CERCLA section 104(d)(4), which allows EPA to treat noncontiguous facilities as one where those facilities are reasonably related on the basis of geography or threat.
3. 40 CFR Part 258 (Proposed), which contains the operating, design, closure, and post-closure criteria for municipal solid waste landfills.
4. 40 CFR Parts 260, 261, 264, and 270, which contain proposed standards for owners and operators of hazardous waste incinerators.

No state ARARs were identified in the ROD.

Hazardous waste incineration is no longer occurring as part of the site remedy, and the 40 CFR Part 264 Subpart O regulations no longer apply to the site. This also would apply to the regulations relating to hazardous waste incineration under 40 CFR Parts 260, 261, 264, and 270. In addition, since hazardous waste is no longer being transported at the site, the regulations at 40 CFR Part 263 and 49 CFR Parts 107 and 171-177 are no longer applicable.

Since the ROD was signed, there have been no changes to the regulations under 40 CFR 256.23 (guidance for closure of open dumps), and there have been no changes to Executive Order No. 11988 (floodplains). In addition, there have been no changes to CERCLA section 104(d)(4) (noncontiguous facilities) since the ROD was signed. No promulgated changes could be found in the CDC's concentration recommendations for 2,3,7,8-TCDD.

In addition, there have been no changes to the regulatory requirements described under 40 CFR 264.117(a)(1). This regulation requires 30 years of post-closure care and monitoring or for another period determined by the Regional Administrator. The EPA has determined, based on groundwater sampling results, that the groundwater is not impacted by the COCs and that continued monitoring is not necessary. The proposed regulations under 40 CFR Part 258 were

promulgated on October 9, 1991 (56 FR 51016). However, the Jacksonville Landfill met the requirements for closure as a hazardous waste landfill under 40 CFR 264.117(a)(1), and the regulations of 40 CFR 258 would not apply.

The EPA has promulgated changes in the LDRs with regards to the classification of contaminated soil (40 CFR 268.49, 63 FR 28602-28622). The remedy satisfies these ARAR requirements.

In summary, it appears that no new laws or regulations have been promulgated or enacted that would call into question the effectiveness of the remedy at Jacksonville to protect human health and the environment. Institutional controls have been implemented through the restrictive covenants applied to the property (City of Jacksonville, 1999, 1999a, 1999b), and these appear to be effective in controlling access to site groundwater.

6.4 Data Review

During the remedial action, the confirmatory sampling involved a 14 x 14 grid around all the areas that were visibly contaminated or shown to be contaminated during the Remedial Investigation. Sample locations that did not meet remedial action goals and all the adjacent grid locations were then re-excavated, and the entire re-excavated area was re-sampled. This process was continued until all grid locations met remedial action goals.

As per the ROD and the CD, areas where 2,3,7,8-TCDD equivalent concentrations were greater than or equal to 10 ppb were excavated and the material was transported to Vertac for incineration. In several areas, this involved excavation deeper than the one foot projected from previous investigations. A total of 498 cubic yards of waste material was removed. Final confirmatory sampling showed that removal of this quantity of material was sufficient to meet remedial action goals. The complete results of the confirmatory sampling are given in the

Technical Assistance Report for the Jacksonville Municipal Landfill (E&E, 1995). The data contained in this report demonstrate that cleanup levels specified in the ROD were achieved.

Groundwater monitoring at the site was conducted concurrently with the groundwater monitoring of the Rogers Road Municipal Landfill Superfund Site between 1994 and 1997. Seven wells were sampled annually (MWJ-01, MWR-06, MWJ-06, MWJ-10, the Wise residence well, RW-01, and RW-02) and 3 wells were to be sampled initially and then every five years (MWJ-02, MWR-07, and MWJ-07). Locations of these wells are shown on Figure 1. Samples were submitted for analysis for dioxins, metals, volatiles, semivolatiles, and pesticides. None of the COCs listed in the ROD (Equivalents of 2,3,7,8-TCDD, chlorophenols, herbicides, and pesticides) were observed during the four sampling events (ADEQ, 1999).

During the last sampling event, aluminum and iron were detected at concentrations above secondary drinking water standards (established for taste and aesthetics) at wells MWR-08, MWR-09, and MWR-10. Many wells exhibited metals concentrations above background well concentrations in this and previous events (ADEQ, 1999). These metals are not contaminants of concern associated with the Superfund portion of the site, and are possibly associated with the municipal waste portions of the landfill.

7.0 Assessment

Based on the site interviews, the site inspection, and the data review, it appears the remedy is functioning as intended by the ROD. The assumptions used at the time of the remedy selection are still valid, and no additional information has been identified that would call into question the protectiveness of the remedy. No erosion or standing water is evident at the site, onsite groundwater use onsite is prohibited through the establishment of restrictive covenants on the property, and no COCs have been detected in groundwater to-date.

8.0 Deficiencies

No deficiencies were noted.

9.0 Recommendations and Follow-up Actions

It is suggested that individual O&M cost records for this site be maintained by the City, to facilitate review of the appropriateness of O&M costs in future 5-year reviews. Although groundwater appears to be free of COC contamination, some metals were detected that may be associated with the solid waste portion of the landfill, and the appropriate solid waste regulatory authority should be notified.

10.0 Protectiveness Statement

This site meets all the site completion requirements as specified in OSWER Directive 9320.2-3C, Procedures for Completion and Deletion of National Priorities List Sites and Update. Specifically, confirmatory sampling verified that the site has achieved the ROD cleanup standards: all contaminated soil and debris containing greater than 10 ppb equivalent 2,3,7,8-TCDD were excavated and all soil and debris with 2,3,7,8-TCDD concentrations >1.0 and ≤ 10 ppb, or with a Cumulative HI $>.3$ for 2,4,5-T; 2,4,5 TP, and 2,4-DCP were either excavated or covered with one foot of clean soil. Ground water monitoring conducted after the remedial action was completed provides further assurance that implementation of the remedy eliminated the source of contamination at the site. The soil cover has been maintained since completion of the remedial action, and restrictive covenants have been put in place to limit the use of the ground water onsite. Accordingly, this site was deleted from the National Priorities list effective March 14, 2000. 65 Fed. Reg. 13697, March 14, 2000.

Because the remedial actions at the Jacksonville Municipal Landfill site are protective, the remedy for the site is protective of human health and the environment.

11.0 Next Review

Since the first five year review was due on or before August 4, 1999, the next five year review should be completed during or before August 2004. The subsequent review should include a site inspection and review of O&M procedures, costs, and surrounding groundwater use.

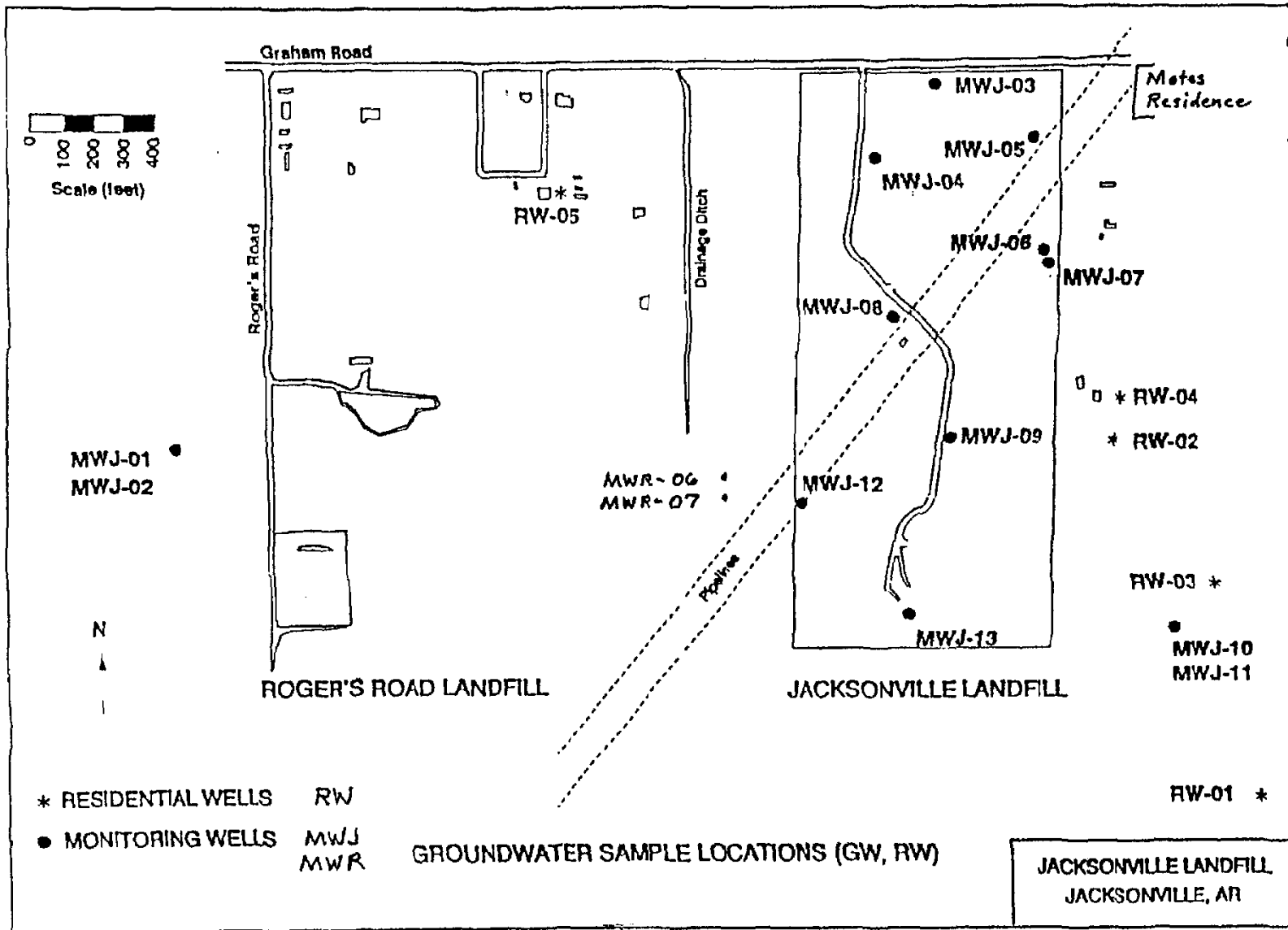


Figure 1: Site Map and Monitoring Well Network
 Rogers Road and Jacksonville Municipal Landfills

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Table 1 Chronology of Site Events	
Date	Event
May 17, 1983	Site was identified to EPA by citizen complaint
July 22, 1987	Site added to the NPL list with a score of 29.64
November 1988- March 1990	Remedial Investigation and Risk Assessment conducted
June 30, 1990	Remedial Investigation/Feasibility Study report completed
September 27, 1990	Record of Decision signed
August 1994 - September 1995	Remedial Action activities conducted, start of review period
November 1994	First annual groundwater monitoring event conducted.
November 1995	Second annual groundwater monitoring event conducted.
November 1996	Third annual groundwater monitoring event conducted.
November 1997	Fourth annual groundwater monitoring event conducted; cessation of groundwater monitoring recommended due to lack of detections of site-related constituents.
November 1999	Site proposed for deletion from the NPL.
March 2000	Site deleted from the NPL.
September 2000	First Five Year Review Report Completed.

Table 2 Annual O&M Estimated Costs			
Item	Estimated cost	Frequency	Cost
Site clearing equipment rental	\$1080	6/year	\$6,480
Site Inspector monthly cost	\$20	1/month	\$240
Groundwater Monitoring annual cost	\$3,500	1/year	\$3,500
TOTAL:			\$10,220

Table 3 Recommendations and Follow-up Actions				
Recommendations/ Follow-up Actions	Party Responsible	Oversight Agency	Milestone Date	Follow-up Actions: Affects Protectiveness (Y/N)
Maintain annual O&M cost records and site access logs to facilitate future 5-year reviews	City of Jacksonville	EPA	ongoing	N
Refer site to appropriate solid waste regulatory authority, and refer monitor well network details and monitoring results for consideration as needed/appropriate.	EPA	NA	2001	N

Attachment 1
Documents Reviewed

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Attachment 1 Documents Reviewed

- Arkansas Department of Environmental Quality (ADEQ), 1999. Letter Report from Mr. Mike Bates/ADEQ to Mr. Bill Honker/U.S. EPA Region 6 regarding *Jacksonville Landfill and Rogers Road Landfill Superfund Sites, Jacksonville, Arkansas*. Summary of 4th annual groundwater sampling event, November 17-19, 1997, and statistical evaluation of Events 1 through 4. April 12, 1999.
- Arkansas Department of Environmental Quality (ADEQ), 1999a. Letter from Randall Mathis, Director, to Myron Knudson, Director Superfund Division, EPA, regarding “Jacksonville and Rogers Road Landfills”. Provides ADEQ concurrence of deletion of the referenced sites from the NPL. June 21, 1999.
- Arkansas Department of Pollution Control and Ecology (ADPC&E), 1995. Letter Report from Mr. Devon Hobby/ADPC&E to Ms. Kathleen Aisling/U.S. EPA Region 6 regarding *Jacksonville Landfill and Rogers Road Landfill Superfund Sites, Jacksonville, Arkansas*. Summary of first annual groundwater sampling event, November-December 1994. March 28, 1995.
- City of Jacksonville, 1994. *Remedial Action Work Plan for the Jacksonville Municipal Landfill Superfund Site*. September 1994.
- City of Jacksonville, 1994. *Groundwater Work Plan for the Jacksonville Municipal Landfill Superfund Site*. November 1994.
- City of Jacksonville, 1999. Letter from Robert Bamberg, City Attorney, to James L. Turner, Assistant Regional Counsel, EPA regarding “Jacksonville Municipal Landfill and Rogers Road Landfill Superfund Sites. Provides copies of restrictive covenants in place for Jacksonville landfill to restrict groundwater use. September 8, 1999.
- City of Jacksonville, 1999a. Restrictive Covenants for Real Property Located in Lonoke County, Arkansas, for 0.97 acre part of the west half of the northwest quarter of Section 27, T-3-N, R-10-W, Lonoke County, Arkansas. Signed August 27, 1999.
- City of Jacksonville, 1999b. Restrictive Covenants for Real Property Located in Lonoke County, Arkansas, for 39 acre part of the west half of the northwest quarter of Section 27, T-3-N, R-10-W, Lonoke County, Arkansas. Signed August 31, 1999.

- Ecology and Environment (E&E), 1995. *Technical Assistance Report* (includes Remedial Action Sampling and Analysis Plan, Quality Assurance Project Plan, Health and Safety Plan, and Remedial Action Closeout Report). January 1995.
- U. S. Environmental Protection Agency (EPA), 1990. Record of Decision: Jacksonville Municipal Landfill, AR. ROD/R06-90/055. Final, September 1990.
- U.S. Environmental Protection Agency (EPA), 1991. *Structure and Components of Five-Year Reviews*. Office of Solid Waste and Emergency Response (OSWER) Directive 9355.7-02. May 23, 1991.
- U.S. Environmental Protection Agency (EPA), 1991. Factsheet: *Structure and Components of Five-Year Reviews*. OSWER Directive 9355.7-02FS1. August 1991.
- U.S. Environmental Protection Agency (EPA), 1994. *Supplemental Five-Year Review Guidance*. OSWER Directive 9355.7-02A. July 26, 1994.
- U.S. Environmental Protection Agency (EPA), 1995. *Second Supplemental Five-Year Review Guidance*. OSWER Directive 9355.7-03A. December 21, 1995.
- U.S. Environmental Protection Agency (EPA), 1996. *Jacksonville Municipal Landfill Superfund Site Closeout Report*. April 30, 1996.
- U. S. Environmental Protection Agency (EPA), 1999. Comprehensive Five-Year Review Guidance. EPA540R-98-050. OSWER Directive 9355.7-03B-P. Draft, October 1999.
- U. S. Environmental Protection Agency (EPA), 1999a. Letter from James L. Turner, Assistant Regional Counsel, EPA, to Robert Bamberg, City of Jacksonville Attorney, regarding "Jacksonville Municipal Landfill and Rogers Road Landfill Superfund Sites". Requests the City of Jacksonville establish deed restrictions as a component of the sites' deletion from the NPL. August 18, 1999.
- Peer Consultants, P. C., and Resource Applications, Inc., 1990a. Remedial Investigation Report for Jacksonville Landfill Site, Jacksonville, Arkansas. June 1990.
- Peer Consultants, P. C., and Resource Applications, Inc., 1990b. Feasibility Study Report for Jacksonville Landfill Site, Jacksonville, Arkansas. June 1990.

Attachment 2
Interview Record Forms

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Five-Year Review Interview Record Rogers Road/Jacksonville Pulaski/Lonoke Counties, Arkansas	Interviewee: Brian Wakelyn Arkansas Department of Environmental Quality Phone: (501) 682-0845
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Site Name		EPA ID No.		Date of Interview	Interview Method
Rogers Road Municipal Landfill		EPA ID# ARD981055809		June 27, 2000	In person
Jacksonville Municipal Landfill		EPA ID# ARD980809941		June 27, 2000	In person
Interview Conducted by	Organization	Phone	Email	Address	
Margaret O'Hare	CH2M HILL, as rep of EPA	972-980-2170	mohare@ch2m.com	5339 Alpha Road Suite 300 Dallas, Texas 75240	
Katie Swanson	CH2M HILL, as rep of EPA	972-980-2170	kswanso2@ch2m.com	5339 Alpha Road Suite 300 Dallas, Texas 75240	

Interview Questions and Responses	
1. What is your overall impression of the work conducted at each site? (general sentiment)	Response: No additional response (beyond that provided by other interviewees).
2. From your perspective, what effect have remedial operations at the site had on the surrounding community?	Response: No additional response.
3. Are you aware of any ongoing community concerns regarding the site or its operation and administration? Please provide details.	Response: No additional response.
4. Are you aware of any events, incidents, or activities that have occurred at either site, such as dumping, vandalism, trespassing, or emergency response from local authorities, since the startup of remedial action? If so, please give details.	Response: In the mid-90's, raw sewage was being discharged to the Jacksonville site near MWJ-07 by a neighboring resident; the discharge was halted when it was identified.

5. Have there been routine communications or activities (site visits, inspections, reporting activities, etc.) conducted by your office regarding either site since the startup of remedial action other than the annual site inspection? If so, please describe purpose and results.

Response: Groundwater monitoring was conducted annually by the state through 1997; during those visits it has been observed that the area around the Rogers Road landfill is underwater for extended periods due to poor drainage unrelated to the remedial activities. Portions of the Jacksonville landfill are also very wet. Because no detections of site-related contaminants were reported in the monitoring wells during any annual sampling event, annual groundwater monitoring has not been conducted since 1997.

6. Have there been any complaints, violations, or other incidents related to the site that required a response by your office? If so, please give summarize the events and results of the responses.

Response: No.

7. Were any problems or difficulties encountered after the initiation of remedial action which impacted construction progress and implementability?

Response: No additional response.

8. Were or have any problems been encountered at either site which required or will require changes in the Record of Decision or remedial action performed?

Response: No additional response.

9. Have there been any significant changes in the site status or maintenance requirements since completion of remedial action? If so, do they affect the protectiveness or effectiveness of the remedy? Please describe changes and impacts.

Response: Annual groundwater monitoring conducted by ADEQ was discontinued after the 1997 monitoring event, because no site-related constituents had been detected in any groundwater samples during 4 annual monitoring events. A recommendation to permanently discontinue groundwater monitoring has been sent to EPA.

10. Have there been unexpected O&M difficulties or costs at either site since the start of O&M? If so, please give details

Response: No.

11. What are the approximate annual O&M costs for each site?

Response: Groundwater monitoring was generally \$6,000 - \$7,000 per event.

12. Is groundwater use restricted beyond the perimeter fenced area of either site? Is the groundwater use restriction by institutional control verified as part of each site's annual inspection?

Response: The only restrictions are within the perimeter fence. Although nearby residential wells are not used for drinking water, ADEQ recommends that letters be sent to residents communicating the results of groundwater samples and that institutional controls be established to prevent future use.

13. Have there been opportunities to optimize the operation, maintenance, or sampling efforts at the site since the start of the remedial action? Please describe changes and the resultant or desired cost savings or improved efficiency.

Response: As indicated in the response to Question 9, groundwater monitoring was discontinued after the 1997 event, pending EPA concurrence. During the years the groundwater monitoring was being done, the government contracting process meant the low bidder had to be selected, which resulted in 3 different contractors being used for the 4 events. The process would have been easier, more consistent, if the same contractor could have been used for all events.

14. Do you have any comments, suggestions, or recommendations regarding either site?

Response: Impose institutional controls for groundwater use from neighboring properties, permanently discontinue groundwater monitoring related to the Superfund site portion of the landfills, and notify solid waste regulating authority of the potential need to monitor groundwater for constituents related to the municipal landfill portion of the sites.

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Five-Year Review Interview Record Rogers Road/Jacksonville Pulaski/Lonoke Counties, Arkansas		Interviewee: Murice Green City of Jacksonville Phone: 501-982-6071		
Site Name		EPA ID No.		Date of Interview
Rogers Road Municipal Landfill		EPA ID# ARD981055809		June 27, 2000
Jacksonville Municipal Landfill		EPA ID# ARD980809941		June 27, 2000
Interview Conducted by	Organization	Phone	Email	Address
Margaret O'Hare	CH2M HILL, as rep of EPA	972-980-2170	mohare@ch2m.com	5339 Alpha Road Suite 300 Dallas, Texas 75240
Katie Swanson	CH2M HILL, as rep of EPA	972-980-2170	kswanso2@ch2m.com	5339 Alpha Road Suite 300 Dallas, Texas 75240
Interview Questions and Responses				
1. What is your overall impression of the work conducted at each site? (general sentiment)				
Response: The work done at the sites [Rogers Road Landfill and neighboring Jacksonville Landfill] took care of the problem, in fact, the regrading necessary as part of the remedy took care of a lot of the drainage problems at the sites. Both sites are now in a condition that they could be applied to recreational use; there is good ground cover, trees, and grass.				
2. From your perspective, what effect have remedial operations at the site had on the surrounding community?				
Response: The remediation had a positive effect on the surrounding area, both sites are now more attractive than some of the surrounding areas. At Jacksonville Landfill, mulch from the city mulching operation was used to dress up the site. About 3 to 4 years ago the National Tree Foundation sent the city some saplings and a tree farm was started onsite (although a drought recently killed many of the trees). The trees are used for city beautification projects. The ditches at the site are maintained by the county. At Rogers Road, there were drainage improvements due to the remedy, although no mulch was applied to this site. There is a low area at the back of the site where drainage is not as good.				

3. Are you aware of any ongoing community concerns regarding the site or its operation and administration? Please provide details.

Response: A homeowner that lives near the Southeast corner of the Jacksonville site complained about water draining from the site onto his property. This was not a result of the remedial action, however, the City responded to his complaint by dredging out the drainage ditch in the area; there have been no further complaints.

4. Are you aware of any events, incidents, or activities that have occurred at either site, such as dumping, vandalism, trespassing, or emergency response from local authorities, since the startup of remedial action? If so, please give details.

Response: There haven't been any problems since the completion of the remedial action (during the remedial activities there was a problem with theft of the barb wire fencing and gates). There is a gas line that runs down the middle of the Jacksonville site that requires periodic access by the operators of the gas line, but there have been no signs of tampering.

5. Have there been routine communications or activities (site visits, inspections, reporting activities, etc.) conducted by your office regarding either site since the startup of remedial action other than the annual site inspection? If so, please describe purpose and results.

Response: The city does not keep a log or submit O&M reports, but the sites are inspected on a monthly basis (or as needed) to check the area, ensure the fence and gates are intact, check the condition of the wells, and check the need for mowing/bush-hogging/regrading. The city plans to keep a log of these activities in the future.

6. Have there been any complaints, violations, or other incidents related to the site that required a response by your office? If so, please give summarize the events and results of the responses.

Response: Not since completion of the remedial action (see response to questions 3 and 4).

7. Were any problems or difficulties encountered after the initiation of remedial action which impacted construction progress and implementability?

Response: Nothing out of the ordinary. The remedial action was delayed for approximately a month or so due to wet weather, there is standing water in the area of the landfills since it is a natural low area. Roads had to be built to facilitate access.

8. Were or have any problems been encountered at either site which required or will require changes in the Record of Decision or remedial action performed?

Response: No.

9. Have there been any significant changes in the site status or maintenance requirements since completion of remedial action? If so, do they affect the protectiveness or effectiveness of the remedy? Please describe changes and impacts.

Response: Not in terms of activities managed by the City.

10. Have there been unexpected O&M difficulties or costs at either site since the start of O&M? If so, please give details

Response: Costs for O&M activities conducted by the city have not been historically tracked by the city (not part of the O&M responsibilities as understood by the city). There have been no significant changes in the activities involved, however, and therefore the costs have most likely remained consistent since the completion of the remedy.

11. What are the approximate annual O&M costs for each site?

Response: See response to Question 10; the city can provide an estimated annual cost upon request.

12. Is groundwater use restricted beyond the perimeter fenced area of either site? Is the groundwater use restriction by institutional control verified as part of each site's annual inspection?

Response: The restrictions only apply within the fenced area of each site. Although the existing residential wells have been sampled, these wells are not known to be used (the area is on city water).

13. Have there been opportunities to optimize the operation, maintenance, or sampling efforts at the site since the start of the remedial action? Please describe changes and the resultant or desired cost savings or improved efficiency.

Response: As indicated in the response to Question 10, there have been no significant changes in the O&M activities under the city's responsibility since the completion of remedial action.

14. Do you have any comments, suggestions, or recommendations regarding either site?

Response: No.

Five-Year Review Interview Record Rogers Road/Jacksonville Pulaski/Lonoke Counties, Arkansas		Interviewee: Kathleen Aisling EPA Region 6, RPM Phone: (214) 665-8509			
Site Name		EPA ID No.		Date of Interview	Interview Method
Rogers Road Municipal Landfill		EPA ID# ARD981055809		June 27, 2000	In person
Jacksonville Municipal Landfill		EPA ID# ARD980809941		June 27, 2000	In person
Interview Conducted by	Organization	Phone	Email	Address	
Margaret O'Hare	CH2M HILL, as rep of EPA	972-980-2170	mohare@ch2m.com	5339 Alpha Road Suite 300 Dallas, Texas 75240	
Katie Swanson	CH2M HILL, as rep of EPA	972-980-2170	kswanso2@ch2m.com	5339 Alpha Road Suite 300 Dallas, Texas 75240	
Interview Questions and Responses					
1. What is your overall impression of the work conducted at each site? (general sentiment)					
Response: The construction at both sites went very well, it was a very thorough job.					
2. From your perspective, what effect have remedial operations at the site had on the surrounding community?					
Response: The action took away some of the stigma attached to the sites as Superfund sites and landfills, had a positive effect on the community, and returned the land to some amount of reuse. The sites were very overgrown prior to the action, now they both have access roads and are routinely mowed. Also, odors noticeable prior to the action are gone.					
3. Are you aware of any ongoing community concerns regarding the site or its operation and administration? Please provide details.					
Response: No ongoing community concerns.					

4. Are you aware of any events, incidents, or activities that have occurred at either site, such as dumping, vandalism, trespassing, or emergency response from local authorities, since the startup of remedial action? If so, please give details.

Response: At the beginning of the remedial action, there were two incidents of note, one involving the theft of some fencing from the sites, and the other involving the discharge onsite of raw sewage from a neighboring property onto the Jacksonville landfill property. No incidents since 1995.

5. Have there been routine communications or activities (site visits, inspections, reporting activities, etc.) conducted by your office regarding either site since the startup of remedial action other than the annual site inspection? If so, please describe purpose and results.

Response: Since the completion of remedial action, EPA representatives were present at the first two annual groundwater monitoring events, and have performed two additional site visits (generally at least one visit per year).

6. Have there been any complaints, violations, or other incidents related to the site that required a response by your office? If so, please give summarize the events and results of the responses.

Response: No.

7. Were any problems or difficulties encountered after the initiation of remedial action which impacted construction progress and implementability?

Response: No.

8. Were or have any problems been encountered at either site which required or will require changes in the Record of Decision or remedial action performed?

Response: No.

9. Have there been any significant changes in the site status or maintenance requirements since completion of remedial action? If so, do they affect the protectiveness or effectiveness of the remedy? Please describe changes and impacts.

Response: None, except for the discontinuation of groundwater monitoring by ADEQ. EPA concurs with ADEQ that it is appropriate to discontinue groundwater monitoring.

10. Have there been unexpected O&M difficulties or costs at either site since the start of O&M? If so, please give details

Response: No.

11. What are the approximate annual O&M costs for each site?

Response: The city and ADEQ are responsible for O&M costs; the ROD provides projected O&M costs.

12. Is groundwater use restricted beyond the perimeter fenced area of either site? Is the groundwater use restriction by institutional control verified as part of each site's annual inspection?

Response: Groundwater use is restricted for the entire landfill even though the area where contamination was left in place and capped makes up only a portion of the property, less than an acre. No institutional controls are in place for neighboring properties.

13. Have there been opportunities to optimize the operation, maintenance, or sampling efforts at the site since the start of the remedial action? Please describe changes and the resultant or desired cost savings or improved efficiency.

Response: Yes, with the discontinuation of groundwater monitoring. EPA concurs with the appropriateness of this action.

14. Do you have any comments, suggestions, or recommendations regarding either site?

Response: Officially discontinue annual groundwater as part of the annual O&M for these sites. Pass the sites and control of the groundwater monitoring wells over to the appropriate regulatory authority for use in solid waste post-closure monitoring as appropriate.

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Five-Year Review Interview Record Rogers Road/Jacksonville Pulaski/Lonoke Counties, Arkansas		Interviewee: Ken Clark EPA Region 6, OSC Phone:	
Site Name	EPA ID No.	Date of Interview	Interview Method
Rogers Road Municipal Landfill	EPA ID# ARD981055809	June 27, 2000	In person
Jacksonville Municipal Landfill	EPA ID# ARD980809941	June 27, 2000	In person
Interview Conducted by	Organization	Phone	Email
Margaret O'Hare	CH2M HILL, as rep of EPA	972-980-2170	mohare@ch2m.com
Katie Swanson	CH2M HILL, as rep of EPA	972-980-2170	kswanso2@ch2m.com
Address			
5339 Alpha Road Suite 300 Dallas, Texas 75240			
Interview Questions and Responses			
1. What is your overall impression of the work conducted at each site? (general sentiment)			
Response: Concur with the city's assessment of the work (The work done at the sites [Rogers Road Landfill and neighboring Jacksonville Landfill] took care of the problem, in fact, the regrading necessary as part of the remedy took care of a lot of the drainage problems at the sites. Both sites are now in a condition that they could be applied to recreational use; there is good ground cover, trees, and grass.)			
2. From your perspective, what effect have remedial operations at the site had on the surrounding community?			
Response: Positive impact, noting in particular the tree farms, which involve the National Tree Foundation and local scouts.			
3. Are you aware of any ongoing community concerns regarding the site or its operation and administration? Please provide details.			
Response: No additional response provided (beyond that provided by other respondents).			
4. Are you aware of any events, incidents, or activities that have occurred at either site, such as dumping, vandalism, trespassing, or emergency response from local authorities, since the startup of remedial action? If so, please give details.			
Response: No additional response provided.			

5. Have there been routine communications or activities (site visits, inspections, reporting activities, etc.) conducted by your office regarding either site since the startup of remedial action other than the annual site inspection? If so, please describe purpose and results.

Response: No additional response provided.

6. Have there been any complaints, violations, or other incidents related to the site that required a response by your office? If so, please give summarize the events and results of the responses.

Response: No.

7. Were any problems or difficulties encountered after the initiation of remedial action which impacted construction progress and implementability?

Response: No.

8. Were or have any problems been encountered at either site which required or will require changes in the Record of Decision or remedial action performed?

Response: No.

9. Have there been any significant changes in the site status or maintenance requirements since completion of remedial action? If so, do they affect the protectiveness or effectiveness of the remedy? Please describe changes and impacts.

Response: No additional response provided.

10. Have there been unexpected O&M difficulties or costs at either site since the start of O&M? If so, please give details

Response: No additional response provided.

11. What are the approximate annual O&M costs for each site?

Response: No additional response provided.

12. Is groundwater use restricted beyond the perimeter fenced area of either site? Is the groundwater use restriction by institutional control verified as part of each site's annual inspection?

Response: No additional response provided.

13. Have there been opportunities to optimize the operation, maintenance, or sampling efforts at the site since the start of the remedial action? Please describe changes and the resultant or desired cost savings or improved efficiency.

Response: No additional response provided.

14. Do you have any comments, suggestions, or recommendations regarding either site?

Response: No additional response provided.

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Attachment 3
Site Inspection Checklist

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Jacksonville Municipal Landfill Five-Year Review Site Inspection Checklist

Please note that "O&M" is referred to throughout this checklist. At sites where Long-Term Response Actions are in progress, O&M activities may be referred to as "system operations" since these sites are not considered to be in the O&M phase while being remediated under the Superfund program. N/A means "not applicable."

I. SITE INFORMATION	
Site Name: Jacksonville Municipal Landfill	EPA ID: ARD980809941
City/State: Lonoke County, Arkansas	Date of Inspection: June 27, 2000
Agency Completing 5 Year Review: US EPA	Weather/temperature: 80 F, overcast, calm
Remedy Includes: (Check all that apply) <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Landfill cover/containment <input checked="" type="checkbox"/> Access controls <input checked="" type="checkbox"/> Institutional controls <input type="checkbox"/> Groundwater pump and treatment <input type="checkbox"/> Surface water collection and treatment <input type="checkbox"/> Other: 	
Attachments: <input checked="" type="checkbox"/> Inspection team roster attached <input type="checkbox"/> Site map attached	
II. INTERVIEWS (Check all that apply)	
1. O&M site manager: Name: Murice Green Title: Chief of Public Works, City of Jacksonville Date: June 27, 2000 Interviewed: <input checked="" type="checkbox"/> at site <input checked="" type="checkbox"/> at office <input type="checkbox"/> by phone Phone Number: (501)982-6071 <u>Problems, suggestions:</u> <input type="checkbox"/> Additional report attached (if additional space required).	
2. O&M staff: Name: James Whisker Title: City Engineer Date: June 27, 2000 Interviewed: <input checked="" type="checkbox"/> at site <input checked="" type="checkbox"/> at office <input type="checkbox"/> by phone Phone Number: (501)982-6071 <u>Problems, suggestions:</u> <input type="checkbox"/> Additional report attached (if additional space required).	

3. **Local regulatory authorities and response agencies** (i.e., State and Tribal offices, emergency response office, police department, office of public health or environmental health, zoning office, recorder of deeds, or other city and county offices, etc.) Fill in all that apply.

Agency: Arkansas Department of Environmental Quality

Contact: Brian Wakelyn

Name:

Title: Project Manager

Date: June 27, 2000

Phone Number: (501) 682-0845

Problems, suggestions: Additional report attached (if additional space required).

Agency: U.S. Environmental Protection Agency

Contact: Ken Clark

Name:

Title: OSC

Date: June 27, 2000

Phone Number: (214)665-6774

Problems, suggestions: Additional report attached (if additional space required).

Agency:

Contact:

Name:

Title:

Date:

Phone Number:

Problems, suggestions: Additional report attached (if additional space required).

Agency:

Contact:

Name:

Title:

Date:

Phone Number:

Problems, suggestions: Additional report attached (if additional space required).

4. **Other interviews** (optional) N/A Additional report attached (if additional space required).

Kathleen Aisling/EPA Remedial Project Manager

III. ONSITE DOCUMENTS & RECORDS VERIFIED (Check all that apply)			
1. O&M Documents <input type="checkbox"/> O&M Manual <input checked="" type="checkbox"/> As-Built Drawings <input type="checkbox"/> Maintenance Logs <u>Remarks:</u>	<input type="checkbox"/> Readily available <input checked="" type="checkbox"/> Readily available <input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date <input checked="" type="checkbox"/> Up to date <input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A <input type="checkbox"/> N/A <input checked="" type="checkbox"/> N/A
2. Health and Safety Plan Documents <input type="checkbox"/> Site-Specific Health and Safety Plan <input type="checkbox"/> Contingency plan/emergency response plan <u>Remarks:</u> There are no site conditions that would restrict normal emergency response	<input type="checkbox"/> Readily available <input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date <input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A <input checked="" type="checkbox"/> N/A
3. O&M and OSHA Training Records <u>Remarks:</u>	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A
4. Permits and Service Agreements <input type="checkbox"/> Air discharge permit <input type="checkbox"/> Effluent discharge <input type="checkbox"/> Waste disposal, POTW <input type="checkbox"/> Other permits <u>Remarks:</u>	<input type="checkbox"/> Readily available <input type="checkbox"/> Readily available <input type="checkbox"/> Readily available <input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date <input type="checkbox"/> Up to date <input type="checkbox"/> Up to date <input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A <input checked="" type="checkbox"/> N/A <input checked="" type="checkbox"/> N/A <input checked="" type="checkbox"/> N/A
5. Gas Generation Records <u>Remarks:</u>	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A
6. Settlement Monument Records <u>Remarks:</u>	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A
7. Groundwater Monitoring Records <u>Remarks:</u>	<input checked="" type="checkbox"/> Readily available	<input checked="" type="checkbox"/> Up to date	<input type="checkbox"/> N/A
8. Leachate Extraction Records <u>Remarks:</u>	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A
9. Discharge Compliance Records <u>Remarks:</u>	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A
10. Daily Access/Security Logs <u>Remarks:</u>	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A

IV. O&M Costs				<input checked="" type="checkbox"/> Applicable	<input type="checkbox"/> N/A
1. O&M Organization					
<input type="checkbox"/> State in-house	<input type="checkbox"/> Contractor for State				
<input checked="" type="checkbox"/> PRP in-house	<input type="checkbox"/> Contractor for PRP				
<input type="checkbox"/> Other:					
2. O&M Cost Records					
<input checked="" type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input type="checkbox"/> Funding mechanism/agreement in place			
Original O&M cost estimate: \$4,500 for site inspection and cover maintenance <input checked="" type="checkbox"/> Breakdown attached					
\$20,570 for groundwater monitoring (see attached ROD and FS cost information)					
Total annual cost by year for review period if available - not available, estimated annual cost for site inspection and cover maintenance provided by City of Jacksonville (see attached estimate) is \$6,720/year. Estimated groundwater cost is \$3,000 - \$3,500/year.					
From (Date):	To (Date):	Total cost:	<input type="checkbox"/> Breakdown attached		
From (Date):	To (Date):	Total cost:	<input type="checkbox"/> Breakdown attached		
From (Date):	To (Date):	Total cost:	<input type="checkbox"/> Breakdown attached		
From (Date):	To (Date):	Total cost:	<input type="checkbox"/> Breakdown attached		
From (Date):	To (Date):	Total cost:	<input type="checkbox"/> Breakdown attached		
3. Unanticipated or Unusually High O&M Costs During Review Period <input checked="" type="checkbox"/> N/A					
<u>Describe costs and reasons:</u>					
V. ACCESS AND INSTITUTIONAL CONTROLS				<input checked="" type="checkbox"/> Applicable	<input type="checkbox"/> N/A
A. Fencing					
1. Fencing damaged <input type="checkbox"/> Location shown on site map <input checked="" type="checkbox"/> Gates secured <input type="checkbox"/> N/A					
Remarks: No damage evident, the City of Jacksonville reported that the former city engineer had done thorough inspection of fence perimeter					
B. Other Access Restrictions					
1. Signs and other security measures <input type="checkbox"/> Location shown on site map <input type="checkbox"/> N/A					
Remarks: No signs posted on gate or fencing					

C. Institutional Controls		
1. Implementation and enforcement		
Site conditions imply ICs not properly implemented:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> N/A
Site conditions imply ICs not being fully enforced:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> N/A
Type of monitoring (e.g, self-reporting, drive by): Site inspections of fencing used to restrict access		
Frequency: monthly		
Responsible party/agency: City of Jacksonville		
Contact: Murice Green		
Name:		
Title: Chief of Public Works		
Date: June 27, 2000		
Phone Number: (501)982-6071		
Reporting is up-to-date:	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input checked="" type="checkbox"/> N/A
Reports are verified by the lead agency:	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input checked="" type="checkbox"/> N/A
Specific requirements in deed or decision documents have been met:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> N/A
Violations have been reported:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> N/A
Other problems or suggestions:	<input type="checkbox"/> Additional report attached (if additional space required).	
2. Adequacy <input checked="" type="checkbox"/> ICs are adequate <input type="checkbox"/> ICs are inadequate <input type="checkbox"/> N/A		
<u>Remarks:</u> ICs are adequate at restricting access to the site and site groundwater. Although groundwater immediately downgradient is not under control of City, residents are on municipal supply and groundwater use is not expected.		
D. General		
1. Vandalism/trespassing <input type="checkbox"/> Location shown on site map <input checked="" type="checkbox"/> No vandalism evident		
<u>Remarks:</u>		
2. Land use changes onsite <input checked="" type="checkbox"/> N/A		
<u>Remarks:</u>		
3. Land use changes offsite <input checked="" type="checkbox"/> N/A		
<u>Remarks:</u>		
VI. GENERAL SITE CONDITIONS		
A. Roads <input checked="" type="checkbox"/> Applicable <input type="checkbox"/> N/A		
1. Roads damaged <input type="checkbox"/> Location shown on site map <input checked="" type="checkbox"/> Roads adequate <input type="checkbox"/> N/A		
<u>Remarks:</u>		

B. Other Site Conditions		
Remarks: Empty drums left onsite from previous investigation activities, drums are not in good condition.		
VII. LANDFILL COVERS <input checked="" type="checkbox"/> Applicable <input type="checkbox"/> N/A		
A. Landfill Surface		
1. Settlement (Low spots) Areal extent: Depth: Remarks:	<input type="checkbox"/> Location shown on site map Depth:	<input checked="" type="checkbox"/> Settlement not evident
2. Cracks Lengths: Widths: Depths: Remarks:	<input type="checkbox"/> Location shown on site map Widths: Depths:	<input checked="" type="checkbox"/> Cracking not evident
3. Erosion Areal extent: Depth: Remarks:	<input type="checkbox"/> Location shown on site map Depth:	<input checked="" type="checkbox"/> Erosion not evident
4. Holes Areal extent: Depth: Remarks:	<input type="checkbox"/> Location shown on site map Depth:	<input checked="" type="checkbox"/> Holes not evident
5. Vegetative Cover <input checked="" type="checkbox"/> Cover properly established <input checked="" type="checkbox"/> No signs of stress <input checked="" type="checkbox"/> Grass <input checked="" type="checkbox"/> Trees/Shrubs Remarks:		
6. Alternative Cover (armored rock, concrete, etc.) Remarks:		<input checked="" type="checkbox"/> N/A
7. Bulges Areal extent: Height: Remarks:	<input type="checkbox"/> Location shown on site map Height:	<input checked="" type="checkbox"/> Bulges not evident

8. Wet Areas/Water Damage		<input checked="" type="checkbox"/> Wet areas/water damage not evident
<input type="checkbox"/> Wet areas	<input type="checkbox"/> Location shown on site map	Areal extent:
<input type="checkbox"/> Ponding	<input type="checkbox"/> Location shown on site map	Areal extent:
<input type="checkbox"/> Seeps	<input type="checkbox"/> Location shown on site map	Areal extent:
<input type="checkbox"/> Soft subgrade	<input type="checkbox"/> Location shown on site map	Areal extent:
<u>Remarks:</u> There is poor drainage in the surrounding areas, site has been graded to prevent the occurrence of standing water.		
9. Slope Instability		<input checked="" type="checkbox"/> No evidence of slope instability
<input type="checkbox"/> Slides	<input type="checkbox"/> Location shown on site map	Areal extent:
<u>Remarks:</u>		
B. Benches		<input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A
(Horizontally constructed mounds of earth placed across a steep landfill side slope to interrupt the slope in order to slow down the velocity of surface runoff and intercept and convey the runoff to a lined channel.)		
1. Flows Bypass Bench		<input type="checkbox"/> N/A or okay
<u>Remarks:</u>		
2. Bench Breached		<input type="checkbox"/> N/A or okay
<u>Remarks:</u>		
3. Bench Overtopped		<input type="checkbox"/> N/A or okay
<u>Remarks:</u>		
C. Letdown Channels		<input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A
(Channel lined with erosion control mats, riprap, grout bags, or gabions that descend down the steep side slope of the cover and will allow the runoff water collected by the benches to move off of the landfill cover without creating erosion gullies.)		
1. Settlement		<input type="checkbox"/> No evidence of settlement
<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> Location shown on site map	Areal extent:
Depth:	Depth:	Remarks:
<u>Remarks:</u>		
2. Material Degradation		<input type="checkbox"/> No evidence of degradation
<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> Location shown on site map	Material type:
Areal extent:	Areal extent:	Remarks:
<u>Remarks:</u>		
3. Erosion		<input type="checkbox"/> No evidence of erosion
<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> Location shown on site map	Areal extent:
Depth:	Depth:	Remarks:
<u>Remarks:</u>		

<p>4. Undercutting Areal extent: Depth: Remarks:</p>	<p><input type="checkbox"/> Location shown on site map <input type="checkbox"/> No evidence of undercutting</p>
<p>5. Obstructions Type: Areal extent: Height: Remarks:</p>	<p><input type="checkbox"/> Location shown on site map <input type="checkbox"/> N/A</p>
<p>6. Excessive Vegetative Growth <input type="checkbox"/> Evidence of excessive growth <input type="checkbox"/> Location shown on site map Remarks:</p>	<p><input type="checkbox"/> No evidence of excessive growth <input type="checkbox"/> Vegetation in channels but does not obstruct flow Areal extent:</p>
<p>D. Cover Penetrations <input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A</p>	
<p>1. Gas Vents <input type="checkbox"/> Active <input type="checkbox"/> Passive <input type="checkbox"/> Properly secured/locked <input type="checkbox"/> Evidence of leakage at penetration Remarks:</p>	<p><input type="checkbox"/> Routinely sampled <input type="checkbox"/> Functioning <input type="checkbox"/> Needs O&M <input type="checkbox"/> Good condition <input type="checkbox"/> N/A</p>
<p>2. Gas Monitoring Probes <input type="checkbox"/> Routinely sampled <input type="checkbox"/> Properly secured/locked <input type="checkbox"/> Evidence of leakage at penetration Remarks:</p>	<p><input type="checkbox"/> Functioning <input type="checkbox"/> Needs O&M <input type="checkbox"/> Good condition <input type="checkbox"/> N/A</p>
<p>3. Monitoring Wells (within surface area of landfill) <input type="checkbox"/> Routinely sampled <input type="checkbox"/> Properly secured/locked <input type="checkbox"/> Evidence of leakage at penetration Remarks:</p>	<p><input type="checkbox"/> Functioning <input type="checkbox"/> Needs O&M <input type="checkbox"/> Good condition <input type="checkbox"/> N/A</p>
<p>4. Leachate Extraction Wells <input type="checkbox"/> Routinely sampled <input type="checkbox"/> Properly secured/locked <input type="checkbox"/> Evidence of leakage at penetration Remarks:</p>	<p><input type="checkbox"/> Functioning <input type="checkbox"/> Needs O&M <input type="checkbox"/> Good condition <input type="checkbox"/> N/A</p>
<p>5. Settlement Monuments Remarks:</p>	<p><input type="checkbox"/> Located <input type="checkbox"/> Routinely surveyed <input type="checkbox"/> N/A</p>

E. Gas Collection and Treatment		<input type="checkbox"/> Applicable	<input checked="" type="checkbox"/> N/A
1. Gas Treatment Facilities <input type="checkbox"/> Flaring <input type="checkbox"/> Thermal destruction <input type="checkbox"/> Collection for reuse <input type="checkbox"/> Good condition <input type="checkbox"/> Needs O& M <u>Remarks:</u>		<input type="checkbox"/> N/A	
2. Gas Collection Wells, Manifolds and Piping <input type="checkbox"/> Good condition <input type="checkbox"/> Needs O& M <u>Remarks:</u>		<input type="checkbox"/> N/A	
3. Gas Monitoring Facilities (e.g., gas monitoring of adjacent homes or buildings) <input type="checkbox"/> Good condition <input type="checkbox"/> Needs O& M <u>Remarks:</u>		<input type="checkbox"/> N/A	
F. Cover Drainage Layer		<input type="checkbox"/> Applicable	<input checked="" type="checkbox"/> N/A
1. Outlet Pipes Inspected <input type="checkbox"/> Functioning <u>Remarks:</u>		<input type="checkbox"/> N/A	
2. Outlet Rock Inspected <input type="checkbox"/> Functioning <u>Remarks:</u>		<input type="checkbox"/> N/A	
G. Detention/Sedimentation Ponds		<input type="checkbox"/> Applicable	<input checked="" type="checkbox"/> N/A
1. Siltation <input type="checkbox"/> Siltation evident Areal extent: Depth: <u>Remarks:</u>		<input type="checkbox"/> N/A	
2. Erosion <input type="checkbox"/> Erosion evident Areal extent: Depth: <u>Remarks:</u>		<input type="checkbox"/> N/A	
3. Outlet Works <input type="checkbox"/> Functioning <u>Remarks:</u>		<input type="checkbox"/> N/A	
4. Dam <input type="checkbox"/> Functioning <u>Remarks:</u>		<input type="checkbox"/> N/A	

H. Retaining Walls		<input type="checkbox"/> Applicable	<input checked="" type="checkbox"/> N/A
1. Deformations	<input type="checkbox"/> Location shown on site map Horizontal displacement: Vertical displacement: <u>Remarks:</u>	<input type="checkbox"/> Deformation not evident Rotational displacement:	
2. Degradation	<input type="checkbox"/> Location shown on site map <u>Remarks:</u>	<input type="checkbox"/> Degradation not evident	
I. Perimeter Ditches/Off-site discharge		<input checked="" type="checkbox"/> Applicable	<input type="checkbox"/> N/A
1. Siltation	<input type="checkbox"/> Location shown on site map Areal extent: Depth: <u>Remarks:</u>	<input checked="" type="checkbox"/> Siltation not evident	
2. Vegetative Growth	<input type="checkbox"/> Location shown on site map Areal extent: Type: <u>Remarks:</u>	<input checked="" type="checkbox"/> Vegetation does not impede flow	
3. Erosion	<input type="checkbox"/> Location shown on site map Areal extent: Depth: <u>Remarks:</u>	<input checked="" type="checkbox"/> Erosion not evident	
4. Discharge Structure	<input type="checkbox"/> Location shown on site map <input type="checkbox"/> Functioning <input type="checkbox"/> Good Condition <u>Remarks:</u> No discharge structure, drainage managed by site grading.	<input checked="" type="checkbox"/> N/A	
VIII. VERTICAL BARRIER WALLS		<input type="checkbox"/> Applicable	<input checked="" type="checkbox"/> N/A
1. Settlement	<input type="checkbox"/> Location shown on site map Areal extent: Depth: <u>Remarks:</u>	<input type="checkbox"/> Settlement not evident	
2. Performance Monitoring	<input type="checkbox"/> Performance not monitored <input type="checkbox"/> Performance monitored Frequency: <input type="checkbox"/> Evidence of breaching Head differential: <u>Remarks:</u>	<input type="checkbox"/> N/A	

IX. GROUNDWATER/SURFACE WATER REMEDIES		<input checked="" type="checkbox"/> Applicable	<input type="checkbox"/> N/A
A. Groundwater Extraction Wells, Pumps, and Pipelines		<input type="checkbox"/> Applicable	<input checked="" type="checkbox"/> N/A
1. Pumps, Wellhead Plumbing, and Electrical	<input type="checkbox"/> All required wells located <input type="checkbox"/> Good condition <input type="checkbox"/> Needs O& M Remarks:		<input type="checkbox"/> N/A
2. Extraction System Pipelines, Valves, Valve Boxes, and Other Appurtenances	<input type="checkbox"/> System located <input type="checkbox"/> Good condition <input type="checkbox"/> Needs O& M Remarks:		<input type="checkbox"/> N/A
3. Spare Parts and Equipment	<input type="checkbox"/> Readily available <input type="checkbox"/> Good condition <input type="checkbox"/> Requires Upgrade <input type="checkbox"/> Needs to be provided Remarks:		<input type="checkbox"/> N/A
B. Surface Water Collection Structures, Pumps, and Pipelines		<input type="checkbox"/> Applicable	<input checked="" type="checkbox"/> N/A
1. Collection Structures, Pumps, and Electrical	<input type="checkbox"/> Good condition <input type="checkbox"/> Needs O& M Remarks:		<input type="checkbox"/> N/A
2. Surface Water Collection System Pipelines, Valves, Valve Boxes, and Other Appurtenances	<input type="checkbox"/> Good condition <input type="checkbox"/> Needs O& M Remarks:		<input type="checkbox"/> N/A
3. Spare Parts and Equipment	<input type="checkbox"/> Readily available <input type="checkbox"/> Good condition <input type="checkbox"/> Requires Upgrade <input type="checkbox"/> Needs to be provided Remarks:		<input type="checkbox"/> N/A
C. Treatment System		<input type="checkbox"/> Applicable	<input checked="" type="checkbox"/> N/A
1. Treatment Train (Check components that apply)	<input type="checkbox"/> Metals removal <input type="checkbox"/> Oil/water separation <input type="checkbox"/> Bioremediation <input type="checkbox"/> Air stripping <input type="checkbox"/> Carbon adsorbers <input type="checkbox"/> Filters (list type): <input type="checkbox"/> Additive (list type, e.g., chelation agent, flocculent) <input type="checkbox"/> Others (list): <input type="checkbox"/> Good condition <input type="checkbox"/> Needs O&M <input type="checkbox"/> Sampling ports properly marked and functional <input type="checkbox"/> Sampling/maintenance log displayed and up to date <input type="checkbox"/> Equipment properly identified <input type="checkbox"/> Quantity of groundwater treated annually (list volume): <input type="checkbox"/> Quantity of surface water treated annually (list volume):		

2.	Electrical Enclosures and Panels (properly rated and functional) <input type="checkbox"/> Good condition <input type="checkbox"/> Needs O & M <u>Remarks:</u>	<input type="checkbox"/> N/A
3.	Tanks, Vaults, Storage Vessels <input type="checkbox"/> Good condition <input type="checkbox"/> Proper secondary containment <input type="checkbox"/> Needs O&M <u>Remarks:</u>	<input type="checkbox"/> N/A
4.	Discharge Structure and Appurtenances <input type="checkbox"/> Good condition <input type="checkbox"/> Needs O & M <u>Remarks:</u>	<input type="checkbox"/> N/A
5.	Treatment Building(s) <input type="checkbox"/> Good condition (esp. roof and doorways) <input type="checkbox"/> Needs Repair <input type="checkbox"/> Chemicals and equipment properly stored <u>Remarks:</u>	<input type="checkbox"/> N/A
6.	Monitoring Wells (pump and treatment remedy) <input type="checkbox"/> All required wells located <input type="checkbox"/> Properly secured/locked <input type="checkbox"/> Functioning <input type="checkbox"/> Routinely sampled <input type="checkbox"/> Good condition <input type="checkbox"/> Needs O&M <u>Remarks:</u>	<input type="checkbox"/> N/A
D.	Monitored Natural Attenuation	<input checked="" type="checkbox"/> Applicable <input type="checkbox"/> N/A
1.	Monitoring Wells (natural attenuation remedy) <input type="checkbox"/> All required wells located <input checked="" type="checkbox"/> Properly secured/locked <input checked="" type="checkbox"/> Functioning <input type="checkbox"/> Routinely sampled <input type="checkbox"/> Good condition <input type="checkbox"/> Needs O&M <u>Remarks:</u> All wells were not located during the site visit due to dense vegetation including poison oak/ivy and ticks. The background wells are difficult to access due to land owner and animals present in the area. These wells are inspected routinely during the periodic inspections by the city. The pad at well MWJ-10 is cracked.	<input type="checkbox"/> N/A
X. OTHER REMEDIES		<input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A
If there are remedies applied at the site which are not covered above, attach an inspection sheet describing the physical nature and condition of any facility associated with the remedy. An example would be soil vapor extraction.		

XI. OVERALL OBSERVATIONS

A. Implementation of the Remedy

Describe issues and observations relating to whether the remedy is effective and functioning as designed. Begin with a brief statement of what the remedy is to accomplish (i.e., to contain contaminant plume, minimize infiltration and gas emission, etc.)

The remedy is effective and functioning as designed. The remedy was chosen to remove the principal health threats that presented excess lifetime cancer risk, and prevent further actual or threatened releases of hazardous substances from the site. Materials containing above 10 ppb dioxin concentrations were removed and treated, and the affected areas were backfilled and re-graded. Soil cover was placed on materials that were between 1 and 10 ppb dioxin level, and herbicide contamination associated with a hazard index above 0.7. Institutional controls include site inspections to confirm fence integrity and land use restrictions. Site inspections show that the fencing is effectively preventing access to the site. Annual groundwater monitoring was also conducted, but was halted in 1997 since no contaminants of concern were detected.

B. Adequacy of O&M

Describe issues and observations related to the implementation and scope of O&M procedures. In particular, discuss their relationship to the current and long-term protectiveness of the remedy.

O&M procedures appear to be adequate. Written records of O&M frequency and annual costs have not been individually maintained, and the City indicated an effort will be made to keep these records up-to-date and readily accessible in the future. Groundwater monitoring at the site was discontinued due to lack of detected site-related contaminants. The existing monitoring well network could potentially be used for monitoring under the appropriate solid waste regulatory authority, so abandonment is not recommended at this time.

C. Early Indicators of Potential Remedy Failure

Describe issues and observations such as unexpected changes in the cost or scope of O&M or a high frequency of unscheduled repairs, that suggest that the protectiveness of the remedy may be compromised in the future.

None observed.

D. Opportunities for Optimization

Describe possible opportunities for optimization in monitoring tasks or the operation of the remedy.

Groundwater monitoring was determined to no longer be necessary. However, solid waste regulations may still apply. The current monitoring well network could possibly be used for solid waste monitoring purposes, and groundwater data and information about the wells should be conveyed to the appropriate solid waste regulatory authority.

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Inspection Team Roster
Jacksonville Municipal Landfill Site, 5 Year Review
June 27, 2000

Name	Agency	Phone Number
Margaret O'Hare	CH2M HILL	(972) 980-2170
Katie Swanson	CH2M HILL	(972) 980-2170
Kin Siew	ADEQ	(501) 682-0855
Brian Wakelyn	ADEQ	(501) 682-0845
Jay Whisker	City of Jacksonville	(501) 982-6071
Murice Green	City of Jacksonville	(501) 982-3146
Kathleen Aisling	USEPA	(214) 665-8509
Kenneth Clark	USEPA/ERCS	(214) 665-6774

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TABLE 8 (Cont'd)

COST ESTIMATE
ALTERNATIVE 5

Jacksonville Landfill Site
Jacksonville, Arkansas

Activity	Estimated Quantity	Unit Price	Cost(\$) (1990)
II. O & M Cost			
• Annual Data Review	8 Hrs	\$60/Hr	480
• Maintenance of Existing Fence	L.S.		2,000
• Annual Inspection and Maintenance of Soil Cover	L.S.		2,500
A. Periodic Inspection of Containers Stored Onsite for One Year	L.S.		3,000
B. Present Worth of Long-Term Groundwater Monitoring (Annual and 5-Year) (See Jacksonville FS Report, Table 6-1 for Details).			360,170
C. Present Worth of Annual Data Review (\$480 X 15.3725)			7,380
D. Present Worth of Existing Fence Maintenance Based on 5% Discount Rate for 30 Years (\$2,000 X 15.3725)			30,750
E. Present Worth of Inspection and Maintenance of Soil Cover Based on 5% Discount Rate for 30 Years (\$2,500 X 15.3725)			38,430
F. Land Use Control Contingencies for 30 Years			<u>74,000</u>
		TOTAL O & M COST (NET PRESENT WORTH):	513,730

TABLE 8 (Cont'd)

COST ESTIMATE
ALTERNATIVE 5

Jacksonville Landfill Site
Jacksonville, Arkansas

Activity	Estimated Quantity	Unit Price	Cost(\$) (1990)
----------	-----------------------	---------------	--------------------

III. TOTAL COST OF ALTERNATIVE 5
(CAPITAL + O & M)
(NET PRESENT WORTH):

=====
\$ 1,949,940
=====

TABLE 6-1

**COST ESTIMATE
ALTERNATIVE 1: NO ACTION
Jacksonville Landfill Site
Jacksonville, Arkansas**

Activity	Estimated Quantity	Unit Price	Cost (\$) (1990)	References/ Remarks
I. <u>Capital Cost</u>			- 0 -	
II. <u>O & M Cost</u>				
A. Monitoring				
(1) <u>Annual Monitoring:</u>				
• Groundwater Sampling	40 Hrs	\$30/Hr	1,200	
• Groundwater Lab Analysis				
Seven Well Samples, One Field Blank, One Spike Sample and One QC Sample	10 Samples	\$1,500/Sample	15,000	Reference 30
Contingency Analysis	10 Samples	\$250/Sample	2,500	
		SUBTOTAL:	<u>18,700</u>	

6-11

TABLE 6-1

COST ESTIMATE
ALTERNATIVE 1: NO ACTION
 Jacksonville Landfill Site
 Jacksonville, Arkansas

Activity	Estimated Quantity	Unit Price	Cost (\$) (1990)	References/Remarks
• Maintenance Contingency @10%			<u>1,870</u>	
	TOTAL ANNUAL MONITORING COST:		20,570	
(2) <u>5 - Year Monitoring:</u>				
• Groundwater Lab Analysis	3 Samples	\$1,500/Sample	4,500	Reference 30
		SUBTOTAL:	<u>4,500</u>	
• Contingency @10%			<u>500</u>	
	TOTAL 5-YEAR MONITORING COST:		5,000	
B. <u>Report Preparation:</u>				
5-year Review Report	180 Hrs	\$60/Hr	<u>10,800</u>	

6-12

TABLE 6-1 (continued)

COST ESTIMATE
 ALTERNATIVE 1: NO ACTION
 Jacksonville Landfill Site
 Jacksonville, Arkansas

Activity	Estimated Quantity	Unit Price	Cost (\$) (1990)	References/Remarks
C. Present Worth of Annual Monitoring & Maintenance Cost Based on 5% Discount for 30 years - (\$20,570 X 15.3725)			316,210	
D. Present Worth of 5-year Monitoring & Maintenance Based on 5% Discount - (\$5,000 X 2.7820)			13,910	
E. Present Worth of 5-year Review Reports (\$10,800 X 2.782)			<u>30,050</u>	
			TOTAL PRESENT WORTH OF O & M COST:	
			360,170	
III. TOTAL COST (NET PRESENT WORTH) OF ALTERNATIVE 1			<u>360,000</u>	

6-13

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**CITY OF JACKSONVILLE
ENGINEERING DEPARTMENT**

FACSIMILE TRANSMITTAL SHEET

TO:	Margaret P. O'Harc	FROM:	James S. Whisker
COMPANY:	CH2MHILL	DATE:	July 7, 2000
FAX NUMBER:	(972)385-0846	TOTAL NO. OF PAGES INCLUDING COVER:	2
PHONE NUMBER:		CC:	

RE: Superfund Sites

NOTES/COMMENTS:

DCN 00-1974 page 1 of 2

Attachment 4
Site Inspection Photographs

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Photograph 1.



Facing south.

Main access gate for Jacksonville
Municipal Landfill property; gate located at
north end of property along Graham Road.

Photograph 2.



Facing north toward one of the tree farms maintained by the City of Jacksonville on the landfill property. Graham Road is visible at mid-center of photograph beyond tree farm.

Photograph 3.



Facing north; closer view of tree farm seen in Photograph 3.

Graham Road visible in background.

Photograph 4.



Facing northeast along Teppco pipeline right-of-way. To left of view is the tree farm visible in Photographs 2 and 3.

MWJ-05 is visible just left of center (see arrow).

Photograph 5.



Facing south along perimeter fence on east side of Jacksonville Municipal Landfill property, near wells MWJ-08 and 09.

Adjacent residences visible to left.



Photograph 6.

Facing southeast toward perimeter fence, monitor well MWJ-07 visible in foreground.

Residence visible in background beyond perimeter fence (same residence visible in Photograph 5).



Photograph 7.

Facing east-southeast toward perimeter fence, monitor well MWJ-08 visible in foreground. MWJ-07 (Photograph 6) is located to left of view.

Residence visible in background beyond perimeter fence.

Photograph 8.



Facing west; overview of the second tree farm maintained by the City of Jacksonville on the municipal landfill property. Tree farm is located west of monitor well MWJ-09 (the well is not visible in the photograph).

Photograph 9.



Facing north, different view of tree farm
seen in Photograph 8.

Photograph 10.



Facing north; overview of main remediated area of Jacksonville Municipal Landfill.

Monitor well MWJ-13 is visible in right foreground. Blacktop is a vehicle turn-around constructed by the City of Jacksonville over the remediated area cover.

Photograph 11.



Facing north-northeast; overview of main remediated area of Jacksonville Municipal Landfill.

Monitor well MWJ-13 is visible at center left (see arrow). Blacktop is a vehicle turn-around constructed by the City of Jacksonville over the remediated area cover.

Photograph 12.



Facing southwest; closeup of monitor well MWJ-13 (also visible in Photographs 10 and 11).

Photograph 13.



Facing west along perimeter fence south of remediated area. Area along fence is kept clear by the City of Jacksonville.

Photograph 14.



Facing east along perimeter fence south of remediated area. Area along fence is kept clear by the City of Jacksonville.

Note deer stand in tree, left of center.

Photograph 15.



Facing southwest along Teppco pipeline right of way.

Perimeter fence is visible at center of photo, trending left to right; structure in center of right-of-way is associated with the pipeline. Monitor MWJ-12 located left of center along perimeter fence (see arrow).

Photograph 16.



Facing west, toward two monitor wells (MWJ-10 and MWJ-11) located along Morgan Road (residential street which parallels eastern border of Jacksonville Municipal Landfill).



Photograph 17.

Closeup of Monitor well MWJ-10. Note concrete pad is cracked (see arrow).

Photograph 18.



Closeup view of monitor well MWJ-11.

Photograph 19.



Facing north along Morgan Road
(residential street which parallels eastern
border of Jacksonville Municipal Landfill).

Private residence fence visible at left.

Unused residential well RW-01 is located
in shed at left center of photograph on far
side of fence.