United States
Environmental Protection
Agency

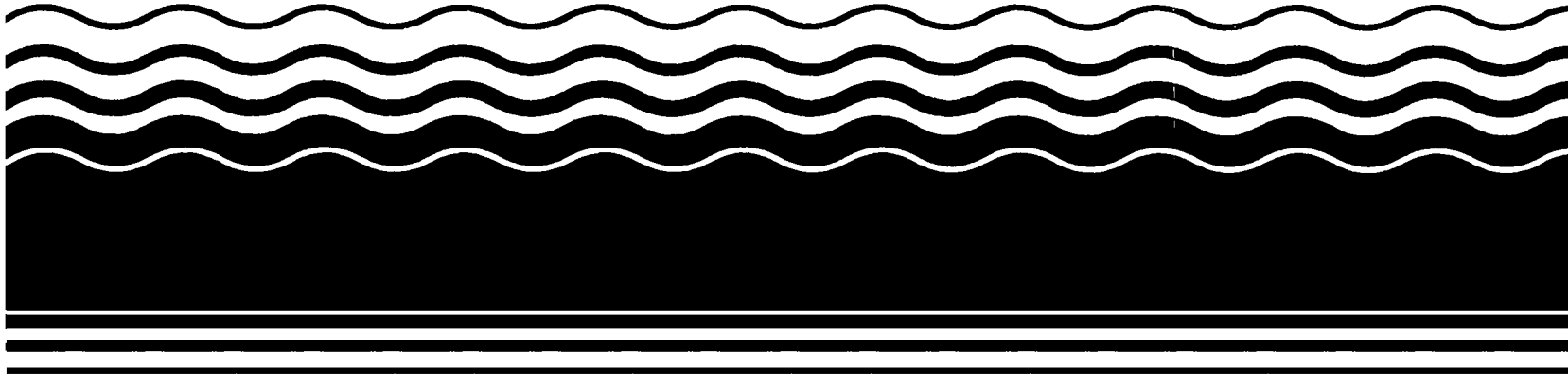
Office of
Emergency and
Remedial Response

EPA/ROD/R04-93/149
September 1993

EPA

Superfund Record of Decision:

Reeves Southeastern Galvanizing (Operable Unit 2), FL



50272-101

REPORT DOCUMENTATION PAGE	1. REPORT NO. EPA/ROD/R04-93/149	2.	3. Recipient's Accession No.

4. Title and Subtitle
SUPERFUND RECORD OF DECISION
Reeves Southeastern Galvanizing (Operable Unit 2), FL
Second Remedial Action - Final

5. Report Date 09/09/93

6.

7. Author(s)

8. Performing Organization Rept. No.

9. Performing Organization Name and Address

10 Project Task/Work Unit No.

11. Contract(C) or Grant(G) No.
(C)
(G)

12. Sponsoring Organization Name and Address
U.S. Environmental Protection Agency
401 M Street, S.W.
Washington, D.C. 20460

13. Type of Report & Period Covered
800/800

14.

15. Supplementary Notes
PB94-963029

16. Abstract (Limit: 200 words)

The 28.96-acre Reeves Southeastern Galvanizing (Operable Unit 2) site consists of the 17.36-acre Reeves Southeastern Galvanizing (SEG) facility and the 11.6-acre Reeves Southwestern Wire (SEW) facility, located in Hillsborough County, Florida. Land use in the area is predominantly industrial or undeveloped, with the nearest residence located 0.25 miles from the site. Two additional Superfund sites, the Peak Oil site and the Bay Drums site, are located in the adjacent area to the west. Small wetland areas are located to the south of the site, and there are also two surficial aquifers, the Northern Surficial Aquifer and the Floridian Aquifer, underlying the site. Buildings at the SEG facility include a commercial steel products building where materials are pre-treated and galvanized, a small office building, and a maintenance shed. Two inactive liquid waste percolation/evaporation ponds, a wastewater pretreatment facility, and a double-lined storage basin for settled solids are also located on the SEG portion of the site. Buildings at the SEW facility include the main building where steel wire is drawn, weaved into chain link fence, pre-treated, and galvanized, and an office building. There also are three former percolation/evaporation ponds located on the SEW property. The SEG facility began site operations in the mid-1960s and used a 300-gallon tank in the maintenance shed as a wastewater catch basin during

(See Attached Page)

17. Document Analysis a. Descriptors
Record of Decision - Reeves Southeastern Galvanizing (Operable Unit 2), FL
Second Remedial Action - Final
Contaminated Medium: gw
Key Contaminants: metals (arsenic, chromium, lead)

b. Identifiers/Open-Ended Terms

c. COSATI Field/Group

18. Availability Statement	19. Security Class (This Report) None	21. No. of Pages 58
	20. Security Class (This Page) None	22. Price

(See ANSI-Z39.18) *See Instructions on Reverse*

OPTIONAL FORM 272 (4-77)
(Formerly NTIS-35)
Department of Commerce

Abstract (Continued)

electroplating. The SEG facility also utilized two depressions as percolation/evaporation ponds for their wastewater until 1982, when the current wastewater pretreatment system was installed. Wastewater from the facility is currently discharged into the local POTW. The SEW facility began operations in 1955, at which time the first percolation/evaporation pond for disposal of the SEW's wastewater was used until it was backfilled in the late 1960s. A second pond was constructed prior to 1969 and used until 1980. The SEW began using its wastewater pretreatment program and discharging into the local POTW in 1980. In 1981, an EPA investigation identified elevated levels of heavy metals in the surface water and ground water at the SEG facility. Subsequent studies conducted by Reeves and the State indicated a possible ground water contamination problem in the surficial aquifer beneath both facilities, as a result of past disposal operations. Another FY93 ROD addressed contaminated soil and sediment at the SEG and SEW facilities, as OU1. This ROD addresses the contaminated ground water in the Northern Surficial Aquifer, as OU2. The primary contaminants of concern affecting the ground water are metals, including arsenic, chromium, and lead.

The selected remedial action for this site includes allowing for natural attenuation of the Northern Surficial Aquifer; installing additional ground water monitoring wells in the Northern Surficial Aquifer and the Upper Floridian Aquifer; preventing the discharge of ground water from the Northern Surficial Aquifer into the surface water of an unnamed creek; implementing a well survey; providing for a contingency remedy, including extraction and treatment of ground water using chemical precipitation to remove heavy metals, and discharging the treated water into the POTW, if satisfactory progress is not made by the natural attenuation process; monitoring the ground water to follow the progress of the natural attenuation; and implementing institutional controls, including ground water use restrictions. The estimated present worth cost for this remedial action is $136,000.

PERFORMANCE STANDARDS OR GOALS:

Chemical-specific ground water cleanup goals are based on SDWA MCLs and MCLGs, EPA action levels, and State levels, and include arsenic 50 ug/l; cadmium 5 ug/l; chromium 100 ug/l; lead 15 ug/l; nickel 100 ug/l; and zinc 10,000 ug/l.

RECORD OF DECISION
OPERABLE UNIT TWO
September 1993

Reeves Southeastern Superfund Site
Hillsborough County, Florida

REGION IV
Atlanta, Georgia

DECLARATION OF THE RECORD OF DECISION

SITE NAME AND LOCATION

Reeves Southeastern Corporation Site
Hillsborough County, Florida

STATEMENT OF BASIS AND PURPOSE

This decision document presents the selected remedial action for the Reeves Southeastern Corporation site in Hillsborough County, Florida, which was chosen in accordance with CERCLA, as amended by SARA, and the National Contingency Plan. This decision is based on the Administrative Record for this site.

The State of Florida, as represented by the Florida Department of Environmental Potection (FDEP) (formerly the Florida Department of Environmental Regulation), has been the support agency during the Remedial Investigation and Feasibility Study process for the Reeves Southeastern site. In accordance with 40 CFR 300.430, FDEP, as the support agency, has provided input during this process. Based upon comments received from FDEP, it is expected that concurrence will be forthcoming; however, a formal letter of concurrence has not yet been received.

ASSESSMENT OF THE SITE

Actual or threatened releases of hazardous substances from the site, if not addressed by implementing the response action selected in this ROD, may present an imminent and substantial endangerment to public health, welfare, or the environment.

DESCRIPTION OF THE REMEDY

This operable unit is the second of two operable units planned for the site. The first operable unit selected for this site involve the remediation of the soils/sediment on the site. The second operable unit, the subject of this ROD, addresses the contamination in the Northern Surficial Aquifer. Potential ingestion of water extracted from this aquifer poses the principal threat to human health because EPA's acceptable risk range is exceeded and concentrations are greater than MCLs.

The major components of the selected remedy include:

- Implementation of Operable Unit One as selected in the October 1992 Operable Unit One Record of Decision;
- Natural attenuation of the Northern Surficial Aquifer;
- Installation of additional monitor wells in the Northern Surfical Aquifer;

- o Prevention of discharge of groundwater from the Northern Surficial Aquifer into the surface water in the unnamed creek;

- o Installation of a monitor well in the Upper Floridan Aquifer in the general vicinity of the former production wells on the Reeves SEG facility;

- o Implementation of an intensive well survey within a one mile radius of the site;

- 0 Completion of the remedial design for the contingency remedy.

The cost of the selected remedy, not including the cost of Operable Unit One, is $136,000.

If satisfactory progress, as defined in the Decision Summary, is not made by the natural attenuation process, then the contingency remedy shall be implemented. The major componants of the contingency remedy include:

- o Extraction of contaminated groundwater from the Northern Surficial Aquifer;

- o Treatment of extracted groundwater by chemical precipitation to remove heavy metals;

- o Discharge of treated groundwater into local POTW.

The cost of the contingency remedy is $2,504,000.

STATUTORY DETERMINATIONS

Both the selected remedy and the contingency remedy are protective of human health and the environment, comply with Federal and state requirements that are legally applicable or relevant and appropriate to the remedial action, and are cost-effective. These remedies utilize permanent solutions and alternative treatment technologies to the maximum extent practicable and satisfy the statutory preference for remedies that employ treatment that reduces toxicity, mobility, or volume as a principal element. Because either of these remedies will result in hazardous substances remaining onsite above health-based levels for a time period exceeding five years, a review will be conducted within five years after commencement of the remedial action to ensure that the remedy continues to provide adequate protection of human health and the environment.

Patrick M. Tobin
Acting Regional Administrator

9-9-93
Date

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RECORD OF DECISION
OPERABLE UNIT TWO
REEVES SOUTHEASTERN SUPERFUND SITE
HILLSBOROUGH COUNTY, FLORIDA
DECISION SUMMARY

1.0 SITE NAME, LOCATION, AND DESCRIPTION

The Reeves Southeastern Corporation Site is located in central Hillsborough County, Florida. The site consists of two facilities located across the road from each other: the 17.36 acre Reeves Southeastern Galvanizing (SEG) facility on the north side of State Road (SR) 574 approximately 1200 feet west of Faulkenburg Road; and the 11.6 acre Reeves Southwestern Wire (SEW) facility located on the south side of SR 574 approximately 600 feet west of Faulkenburg Road. The SEG facility is on the NPL, the SEW facility is not. Both facilities are still in operation. Two additional Superfund sites are located in the area. These are the Peak Oil site, which is located immediately west of the SEW facility and the Bay Drums site, which is located immediately west of the Peak Oil site. Figure One, taken from the Reeves site source characterization Feasibility Study (FS), shows a map of all three sites.

Currently, the area north of the SEG facility is Sabal Industrial Park, a development containing various light industrial and office buildings. The area south of the Reeves site is generally undeveloped, but does encompass about 400 acres owned by Hillsborough County that contains a wastewater treatment plant, a solid waste resource recovery facility and an area designated as the potential location of a new jail. There is no residential development in the immediate vicinity; the nearest being .25 miles east of the SEW facility. According to the Official Zoning Atlas for Hillsborough County (1985), the Reeves, Peak Oil and Bay Drums properties are all currently zoned for light manufacturing. All of this information would indicate that it is unlikely that the future use of the property would include residential development.

The largest building on the SEG facility is where commercial steel products are pre-treated and galvanized. There is also a small office building and maintenance shed. A 300 gallon tank situated in a small rectangular area in the northwest corner of the maintenance shed was used in the 1960s as a wastewater catch basin during electroplating. Two inactive liquid waste percolation/evaporation ponds are located in the north-central part of the property area. A waste-water pretreatment facility and a double-lined storage basin for settled solids are located on the northeast portion of the SEG.

The largest building on the SEW facility is where steel wire is drawn, weaved into chain link fence, pre-treated and galvanized.

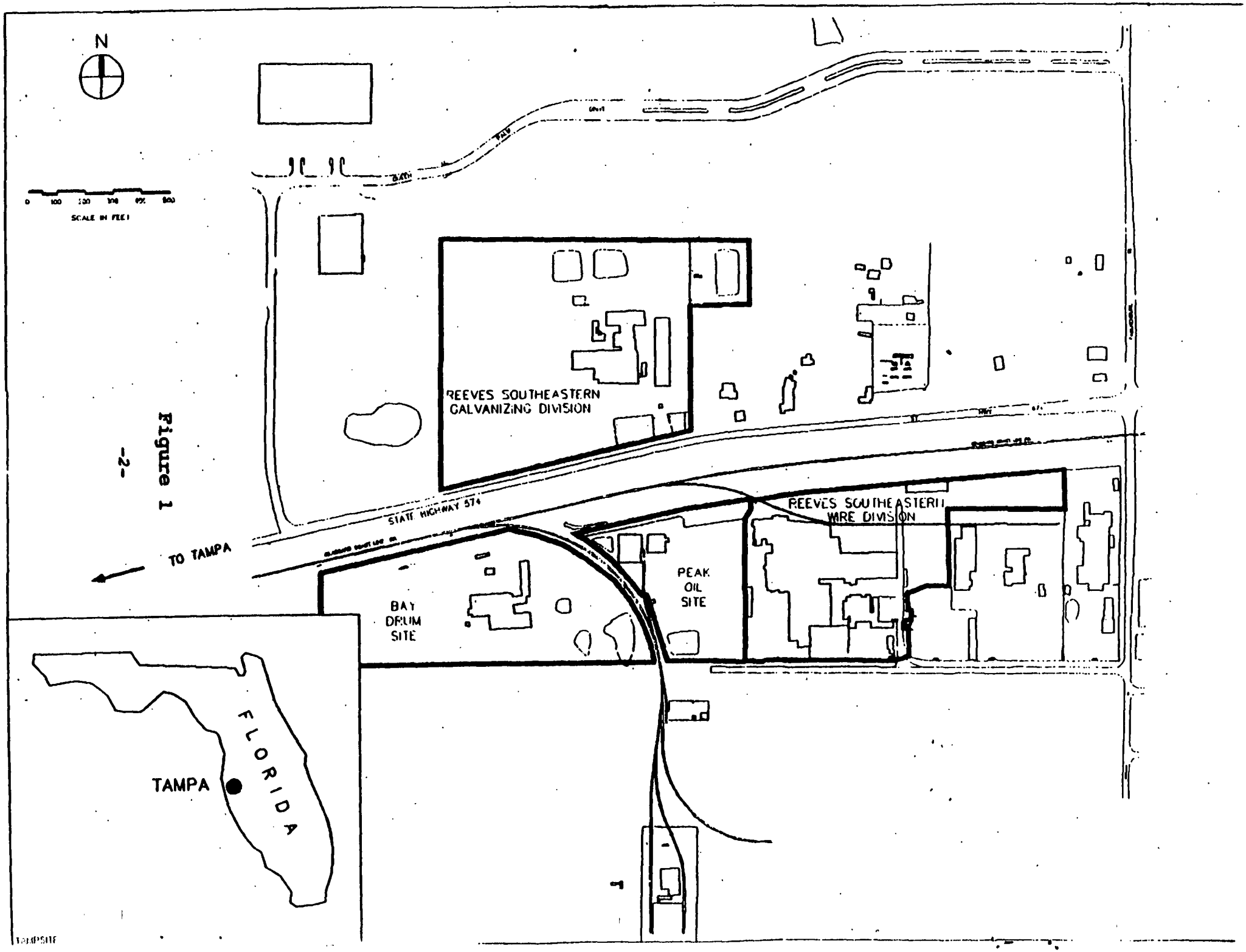

N
SCALE IN FEET
REEVES SOUTHEASTERN
GALVANIZING DIVISION
REEVES SOUTHEASTERN
WIRE DIVISION
STATE HIGHWAY 574
TO TAMPA
BAY
DRUM
SITE
PEAK
OIL
SITE
FLORIDA
TAMPA

Figure 1

The smaller building on the facility is an office building. There are three former percolation/evaporation ponds: one on the central western edge of the property (now backfilled); and two on the southwestern corner of the property. There are several offsite wetlands near the three sites.

2.0 SITE HISTORY AND ENFORCEMENT ACTIVITIES

The SEG facility was originally built and operated as Acme Plating and Galvanizing Company in the mid-1960s. In 1970, the facility was acquired by Metal Coatings, Inc, which merged into the Southeastern Galvanizing Corporation in 1971. Through internal reorganizations, Southeastern Galvanizing Corporation became the Southeastern Division of Reeves Southeastern Corporation. The SEG facility utilized two depressions as percolation/evaporation ponds for their wastewater. The ponds were later enlarged to their present size of 100' by 100' each, with 5' berms surrounding them and a below grade depth of about 10'. The ponds were used for disposing of process wastewater until 1982, when the current wastewater pretreatment system was installed. Wastewater from the facility is now discharged into the local publicly owned treatment works (POTW).

The SEW facility was originally built in 1955 and operated by Florida Wholesale Fence, Inc., a subsidiary of Reeves Fences, Inc. Through two mergers, Florida Wholesale Fence became the Southeastern Wire Division of Reeves Southeastern Corporation. The first percolation/evaporation pond for disposal of SEW's wastewater was built in 1955 and was used until it was backfilled in the late 1960s. Its dimensions were approximately 75' long and 25' wide and was located along the central western border of SEW. A second pond was constructed prior to 1969; it was subdivided in 1975 to form the two current ponds in the southwest corner of the facility. Both ponds are approximately 35' by 35', and are surrounded by a 3' berm. The ponds were excavated to a depth of 3'. Discharge into these ponds ceased in 1980 when SEW began using its wastewater pretreatment program. Discharge from this facility also goes into the local POTW.

The U.S. EPA conducted a site investigation in 1981 that indicated elevated metal levels in surface water and groundwater at the SEG facility. Subsequently, the Florida Department of Environmental Protection (FDEP) (formerly the Florida Department of Environmental Regulation) conducted a survey of the types and magnitude of chemical contamination at SEG; this survey resulted in the 1982 placement of SEG on EPA's National Priorities List (NPL). Reeves contracted in 1985 with CH2MHill for a terrain conductivity survey utilizing electromagnetic induction technology to be performed at both SEW and SEG. The results indicated a possible groundwater contamination problem in the surficial aquifer underneath both facilities.

In 1988, the Reeves Southeastern Corporation and a group of potentially responsible parties (PRPs) for the adjacent Peak Oil site signed individual Administrative Orders of Consent (AOCs) to perform source characterization Remedial Investigations and Feasibility Studies (RI/FSs) at their respective sites. Under the AOCs, the Peak Oil PRPs agreed to perform a source characterization RI/FS at the Peak Oil site and the Reeves Southeastern Corporation would perform a source characterization RI/FS at its SEG and SEW facilities. EPA decided to perform a source characterization RI/FS at the Bay Drums site. The results of the source characterization RI/FS and the resulting remedy decision is documented in the Operable Unit One - Record of Decision, October 1992. That remedy decision consists of the following: excavation of contaminated soils and sediments on the SEG and SEW facilities; backfilling of excavated areas with clean fill; solidification/stabilization of the contaminated soils and sediments; disposal of the solidified material above the water table on the SEG facility; and capping of the solidified material with a low permeability cap.

In addition to the source control RI/FSs being conducted by Reeves, the Peak Oil PRPs and EPA, the Peak Oil and Bay Drums PRPs and the Reeves Southeastern Corporation agreed in a separate AOC to perform an area-wide groundwater RI/FS. The results of the groundwater RI/FS are detailed in the Area-Wide Hydrologic Remedial Investigation and Risk Assessment, Canonie Environmental, Inc., April 1992 and the Area-Wide Hydrologic Feasibility Study, Canonie Environmental, Inc., October 1992. There is also a wetlands impact study being performed by EPA on wetlands which are located to the north and south of the three sites; the results of this study will also be addressed in a separate ROD.

3.0 HIGHLIGHTS OF COMMUNITY PARTICIPATION

Community relations for the Reeves Site has, for the most part, been handled in conjunction with the Peak Oil and Bay Drums sites. Interest in the Reeves site itself has been minimal. What community interest that has been noted was focused on EPA activities at the other two Superfund sites. This is probably due to the removal at Peak Oil, where contaminated sludge from a lagoon was incinerated, and the removal at Bay Drums, where a large pile of roofing shingles had to be removed from the site in order to conduct the RI/FS. The 1989 Community Relations Plan, prepared by Beverly Mosely, EPA, states the following:

> "Community involvement at the Bay/Peak/Reeves sites has been minor to date, judging from responses during interviews of local environmental agency staffs. Agency personnel from the Hillsborough County Environmental Protection Commission (HCEPC), Southwest Florida Water Management District (SWFWMD), Tampa Bay Regional Planning Council (TBRPC), and

Florida Department of Environmental Regulation, Southwest District (FDEP-SWD) were contacted to ascertain the nature of comments or complaints received at those agencies. No formal complaints or inquiries were on record, however there have been concerns over the disposition of the roofing debris on the Bay Drum site.

Elected officials or their representatives displayed general knowledge of the sites, but overt concern within the community was not known to them. General concerns associated with groundwater contamination and hazardous materials were referenced frequently by officials, but nothing specific to the Bay/Peak/Reeves sites was presented.

Many national and regional environmental organizations, such as National Audubon Society, Sierra Club, and National Wildlife Federation, have local groups in the Tampa-St. Petersburg area. Local environmental organizations, such as Brooker Creek Preservation Society, Manasota-88, and Izaak Walton League, also have interest in situation similar to the Bay/Peak/Reeves sites. Specific interest in the Bay/Peak/Reeves sites by any of the national or local organizations has not been identified at this time. Contact with the organizations usually has resulted in a request to be notified of public meetings or issuance of public documents.

Contact with the Brandon area Chamber of Commerce did not reveal specific concerns. The Brandon Chamber does have a committee that follows local activities associated with water, wastewater, and hazardous waste activities."

In the time period between the preparation of the 1989 CRP and the public comment period for the Reeves RI/FS, no significant community interest in the Reeves site was noted.

The source control RI/FS was completed and presented to the public in August 1992. A public meeting was held at the Brandon Community College on August 18, 1992, at which the Agency's preferred alternative for the Reeves source control cleanup plan was presented. The preferred alternatives for the sources at the Peak Oil and Bay Drums sites were also presented at this meeting. The preferred alternative was, in fact, the cleanup plan that was selected in the October 1992 ROD.

The area-wide groundwater RI/FS Report and Proposed Plan for the Reeves Southeastern Site were released to the public on February 20, 1993. These documents were released in conjunction with the Peak Oil and Bay Drums RI/FSs and Proposed Plans and were made available to the public in both the Administrative Record and the information repository maintained at the EPA Docket Room in Region IV and at the Brandon Public Library. The notice of

availability of these documents and announcement of the pending public meeting was published in the Tampa Tribune on both February 18 and February 22, 1993. A public comment period was held from February 20 to March 22, 1993. The public meeting was held on February 24, 1993. At the meeting, representatives from EPA presented the three Proposed Plans and answered questions regarding the problems at the three sites, the groundwater remedial alternatives under consideration for the Reeves, Peak Oil and Bay Drums sites and the ash pile remedial alternative being considered for the Peak Oil site. A response to the comments received for the Reeves site during the public comment period is included in the Responsiveness Summary, which is Appendix A of this ROD. This decision document presents the selected groundwater remedial action for the northern surficial aquifer at the Reeves Southeastern Site, in Hillsborough County, Florida, chosen in accordance with CERCLA, as amended by SARA, and, to the extent practicable the National Contingency Plan. The decision for this site is based on the Administrative Record.

4.0 SCOPE AND ROLE OF OPERABLE UNIT

As with many Superfund sites, the problems at the Reeves Southeastern site are complex. As a result, EPA divided the work into two operable units (OUs). These are:

- o OU One: Contamination in the soils and sediments.
- o OU Two: Contamination in the groundwater.

OU One has been addressed in the Reeves OU One - ROD, October 1992. The Reeves OU Two will address the northern surficial aquifer. The Peak Oil and Bay Drums OU Twos will address the southern surficial and Upper Floridan aquifers. The Peak Oil and Bay Drums OU Two will be selected in separate ROD. Originally, it had been planned that the wetlands issues would also be addressed in the OU Two RODs. However, no FS has been prepared for the wetlands issues as of the time of this ROD, therefore these issues will have to be addressed in a later, separate action.

5.0 SUMMARY OF SITE CHARACTERISTICS

5.1 Scope

This section will discuss general site characteristics and outline the results of the groundwater RI. The issue of source contamination is addressed in the Operable Unit One - Record of Decision, October 1992 and will not be discussed further in this ROD.

5.2 General Site Characteristics

Climate in the Tampa area is characterized by mild winters and relatively long, humid, warm summers. Spring and fall tend to be dry, with the majority of the rainfall in the summer. The general topography is flat. The land use in the area is either industrial or undeveloped, with the nearest single family residential area being 0.25 miles east of the SEW facility. Topographically, surface elevations on the SEG facility range from 36 feet above mean sea level (MSL) at the southern boundary to 26 feet above MSL on the northern boundary. The southern portion of the SEW facility slopes gradually toward the south and southwest toward small wetland areas. The area around the two facilities is relatively flat.

The groundwater system beneath the area consists of two major water bearing units: a surficial aquifer and the Floridan aquifer system. The surficial aquifer, which is defined as a Class IIB aquifer, is from 8.5 feet to 37 feet thick with a saturated thickness of about 5 to 25 feet. It is separated from the Floridan aquifer by the Hawthorne formation, a clayey low-permeability layer from 16 to 40 feet thick. The surficial aquifer is hydraulically connected to the wetlands near the site and the flow direction varies seasonally. Water levels also fluctuate seasonally and change rapidly in response to rainfall and other natural influences. Although regionally the Floridan aquifer flows to the west-southwest, in the vicinity of the site the flow direction shifts to the northwest. This is thought to be due to the proximity of the site to the Tampa Bypass Canal, which reportedly cuts into the low-permeability layer and reaches the upper Floridan aquifer in several places. The Floridan aquifer is the primary source of drinking water and water for industrial use in Hillsborough County, however, there are no permitted wells which are used for drinking water in the general vicinity of the site. To EPA's knowledge, the surficial aquifer is not currently used for any purpose. It meets the criteria for classification as a Class IIB aquifer under EPA's groundwater protection strategy. A Class IIB aquifer is considered a potential drinking water source.

5.3 Results of Area-Wide Groundwater Remedial Investigation

The area-wide groundwater RI was done in conjunction with the Peak Oil and Bay Drums sites. The area-wide RI for the three sites was divided into two phases of field work. Field work for the first phase was conducted from October 1989 through January 1990; field work for the second phase was conducted from July 1991 through September 1991.

The analytical sampling in the surficial aquifer showed 25 volatile organic compounds (VOCs), 29 semivolatile organic compounds (SVOCs), 6 pesticides and 23 inorganic compounds. Most

of the VOCs were found in the area of the Peak Oil and Bay Drums sites. The compounds found under the SEG facility were, for the large part, inorganic. These findings are consistent with the findings in the Site Source Characterization RIs that were done for the three sites.

The analytical results from the upper Floridan aquifer detected impacts primarily in two of the ten wells sampled, Well F2 (the Peak Oil Site production well) and Well F3 (the Bay Drums production well). Wells F2 and F3 contained 13 and 15 VOCs, respectively. These contaminants are not thought to be related to the Reeves Southeastern Corporations's activities. There were levels of trichloroethylene (TCE) found in the two former production wells on the SEG facility. However, it is thought that this result was a function of contamination that drained down the inside of the casings and contaminated the water in the wells themselves, not a result of a plume of contamination in the upper Floridan aquifer. Ranges of the contaminants of concern for the northern surficial aquifer can be seen in Table One.

In summary, the RI identified three areas of concern: the northern surficial aquifer, which is primarily impacted by metals; the southern surficial aquifer, which is impacted by VOCs, SVOCs, and metals; and the upper Floridan aquifer, which contains levels of VOCs. Figures Two and Three show the direction of groundwater flow in the surficial aquifer at different points of the year. Closer inspection of the results indicated, however, that only the contaminants found in the northern surficial aquifer could be substantially tied into the operations at the Reeves facilities. Although there were some levels of heavy metals in the southern surficial and Upper Floridan, the vast majority of contaminants in these aquifers are the result of source contamination at the Peak Oil and Bay Drum sites. For this reason, this ROD will focus on the northern surficial aquifer and the Peak Oil and Bay Drums OU Two RODs, to be issued separately, will address the southern surficial and Upper Floridan aquifers.

Sampling of the surface waters and sediments in the several nearby wetlands was performed as a part of this RI. However, this Proposed Plan only address the proposed groundwater remedy. Therefore, those results will not be discuss as a part of this Proposed Plan, but will be addressed in a later, separate proposed plan and ROD.

6.0 SUMMARY OF SITE RISKS

6.1 Human Health Risks

6.1.1 Scope

A baseline risk assessment (BRA) was conducted as part of the RI

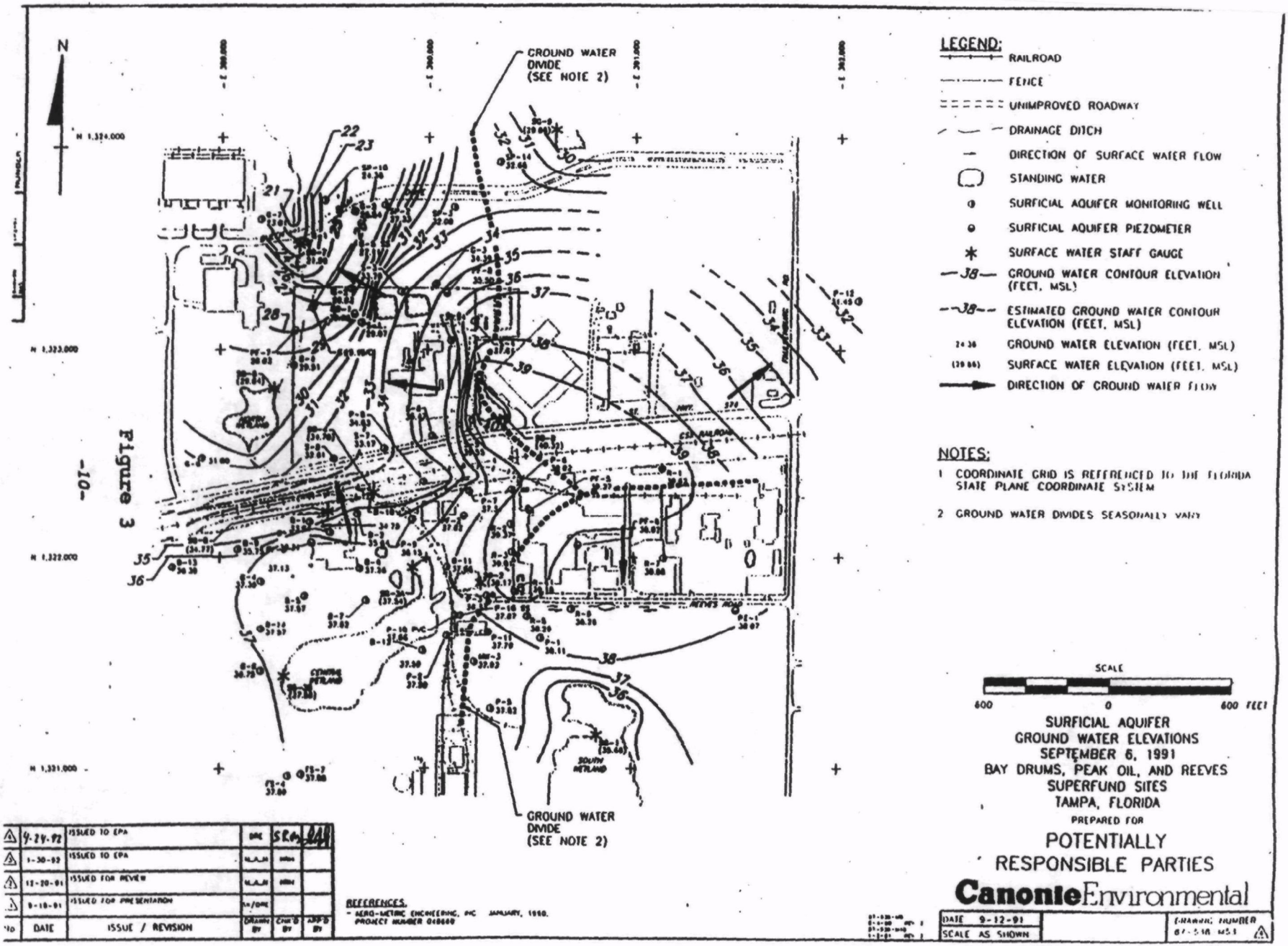


Figure 3

-10-

POOR QUALITY
ORIGINAL

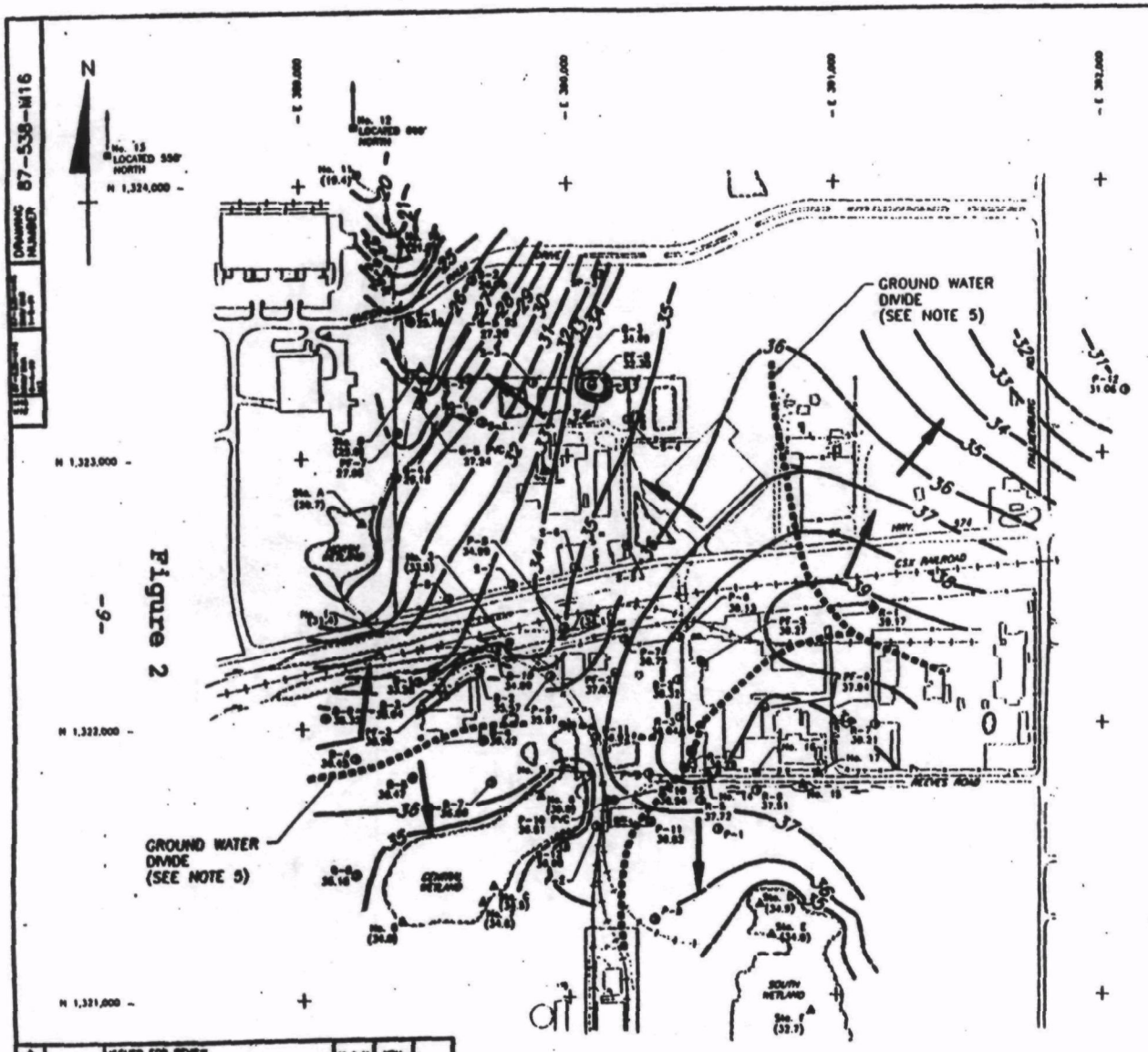


Figure 2

-9-

LEGEND:

- RAILROAD
- FENCE
- UNIMPROVED ROADWAY
- DRAINAGE DITCH
- DIRECTION OF SURFACE WATER FLOW
- STANDING WATER
- SURFICIAL AQUIFER MONITORING WELL
- SURFICIAL AQUIFER PIEZOMETER
- SURFACE WATER/SEDIMENT SAMPLE
- SURFACE WATER/SEDIMENT AND WETLAND IMPACT STUDY SAMPLE
- —26— GROUND WATER CONTOUR ELEVATION (FEET, MSL)
- --26-- ESTIMATED GROUND WATER CONTOUR ELEVATION (FEET, MSL)
- 28.00 GROUND WATER ELEVATION (FEET, MSL)
- (34.8) SURFACE WATER ELEVATION (FEET, MSL)
- DIRECTION OF GROUND WATER FLOW

NOTES:

1. COORDINATE GRID IS REFERENCED TO THE FLORIDA STATE PLANE COORDINATE SYSTEM
2. MONITORING WELL P-2 IS FIELD LABELLED MW-2
3. WELL AND SAMPLING LOCATIONS SURVEYED BY TALLAMY, VAN KUREN, GERTIS & ASSOCIATES, MARCH 1990.
4. SURFACE WATER ELEVATIONS SURVEYED BY TALLAMY, VAN KUREN, GERTIS & ASSOCIATES, MARCH 1990
5. GROUND WATER DIVIDES SEASONALLY VARY

SCALE

600 0 600 FEET

SURFICIAL AQUIFER
GROUND WATER ELEVATIONS
JANUARY 12, 1990
BAY DRUMS, PEAK OIL, AND REEVES
SUPERFUND SITES
TAMPA, FLORIDA

PREPARED FOR

POTENTIALLY
RESPONSIBLE PARTIES

Canonie Environmental

No.	DATE	ISSUE / REVISION	DRAWN BY	CHK'D BY	APP'D BY
5	12-20-91	ISSUED FOR REVIEW	M.A.H	MRH	
4	9-1-91	ISSUED TO AGENCY	BKE	BMA	GAB
3	3-5-91	WORKING DRAFT TO EPA	BKE	BMA	
2	4-21-92	ISSUED TO EPA	BKE	BMA	
1	1-30-92	ISSUED TO EPA	M.A.H	MRH	

REFERENCES:
- AERO-METRIC ENGINEERING, INC. JANUARY, 1990; PROJECT NUMBER 048660

DATE: 9-13-90
SCALE: AS SHOWN

DRAWING NUMBER 87-538-M16

87-538-M16 DRAWING NUMBER

POOR QUALITY ORIGINAL

to estimate the health or environmental problems that could result if the Reeves site was not remediated. A BRA represents an evaluation of the "No Action" alternative, in that itidentifies the risk present if no remedial action is taken. Theassessment considers environmental media and exposure pathways that could result in unacceptable levels of exposure now or in the foreseeable future. Data collected and analyzed during the RI provided the basis for the risk evaluation. The BRA process can be divided into four components: contaminant identification; exposure assessment; toxicity assessment; and risk characterization.

Two separate BRAs have been developed for this site: the first developed for the site-specific source control RI/FS; the second developed as part of the area-wide groundwater RI/FS. The source control BRA is discussed in detail in the Operable Unit One ROD (October 1992); the area-wide groundwater BRA is discussed in the remainder of Section 6 of this ROD.

6.1.2 Contaminant Identification

Based on the study area data, the BRA selected contaminants of concern (COCs) to focus on those likely to pose the greatest threat to human health. The COCs were based on those found in the entire surficial aquifer, not divided up into the results of the northern and southern surficial aquifers. As explained in more detail in Section 7.2 of this ROD, the COCs for the northern surficial aquifer were narrowed down to contaminants in the groundwater that resulted from sources identified on the site and were above any MCLs and/or exceeded a risk level of 1E-6 or a hazard quotient of 0.1.

Appropriate exposure point concentrations (EPC) were then calculated for each COC. Because the BRA did not separate the COCs in the northern surficial aquifer from those in the southern surficial aquifer, the exposure point concentrations calculated in the BRA and identified in this ROD were calculated from the data from the entire surficial aquifer. The COCs, the highest concentrations detected and the EPCs are found in Table One.

For arsenic, chromium, lead and nickel, there were wells on all three sites containing concentrations above acceptable levels of these four contaminants. Therefore, the EPCs reported in Table One are most likely reflective of the EPCs that would be calculated for the northern surficial aquifer alone. For zinc and cadmium, the majority of the zinc and cadmium concentrations were found in the northern surficial aquifer. By factoring in the large number of non-detects or detects at low levels from the southern surficial aquifer, the EPC for the entire surficial aquifer is lowered from the EPC that would be calculated from the data from the northern surficial aquifer alone.

TABLE ONE
Summary of Chemical Concentrations of the Chemicals of Concern in the Surficial Aquifer

Chemical	Concentration (ug/l)	
	Highest Concentration Detected[1]	Exposure Point Concentration[1]
Arsenic	95	12[3]
Cadmium	20	5[3]
Chromium	780	67.6[3]
Zinc	337,000	33,800[3]
Nickel	330	46.3[3]
Lead[2]	180	13.4 ug/l (water)[4] 187,000 (soil)[4]

[1] The concentrations reported in this table are for the entire surficial aquifer. Concentrations calculated for just the northern surficial aquifer would be slightly different. See Section 6.1.2 of this ROD for a more detailed explanation of this point.

[2] The risk calculation for lead was done using the UBK model, rather than the standard risk and/or hazard quotient calculation. See Section 6.1.4 of this ROD for a more detailed explanation of this point.

[3] Upper 95% confidence limit on arithmetic mean confidence.

[4] Arithmetic average for Reeves site.

6.1.3 Exposure Assessment Information

Generally, there are two scenarios developed for the BRA: a current use scenario; and a potential future use scenario. Under the current use scenario, there is no exposure to groundwater, therefore the current use scenario will not be discussed further in this ROD. The future use scenario assumes that industrial manufacturing operations take place at the three sites with no cleanup of current levels of contaminants. A future use residential scenario was also developed because it is the goal of EPA's Superfund program to return Class I and Class II aquifers to their beneficial uses which include human consumption. The exposure pathways developed for the future use scenario are found in Table Three. The exposure assumptions used in this BRA are in Table Four.

6.1.4 Toxicity Assessment Information

Slope factors (SFs) have been developed by EPA's Carcinogenic Assessment Group for estimating excess lifetime cancer risks associated with exposure to the potentially carcinogenic contaminant(s) of concern. SFs, which are expressed in units of $(mg/kg\text{-}day)^{-1}$, are multiplied by the estimated intake of a potential carcinogen, in mg/kg-day, to provide an upper-bound estimate of the excess lifetime cancer risk associated with exposure at that intake level. The term "upper bound" reflects the conservative estimate of the risks calculated from the SF. Use of this approach makes underestimation of the actual cancer risk highly unlikely. Slope factors are derived from the results of human epidemiological studies or chronic animal bioassays to which animal-to-human extrapolation and uncertainty factors have been applied (e.g., to account for the use of animal data to predict effects on humans).

Reference doses (RfDs) have been developed by EPA for indicating the potential for adverse health effects from exposure to contaminant(s) of concern exhibiting noncarcinogenic effects. RfDs, expressed in units of mg/kg-day, are estimates of lifetime daily exposure levels for humans, including sensitive individuals. Estimated intakes of contaminant(s) of concern ingested from contaminated drinking water can be compared to the RfD. RfDs are derived from human epidemiological studies or animal studies to which uncertainty factors have been applied (e.g., to account for the use of animal data to predict effects on humans). The Chronic Daily Intake (CDI) factors and the applicable route-specific Slope Factors for the chemicals of concern can be found in Table Five.

Environmental contamination with lead presents a problem in the development of the BRA. This is because the "normal" background exposures to lead from sources such as food, water and air together contribute a substantial fraction of what EPA considers

TABLE TWO SUMMARY OF EXPOSURE PATHWAYS FOR THE GROUNDWATER
Future Use Condition/Onsite Worker
o Ingestion of groundwater from the surficial aquifer
Future Use Conditions/Onsite Resident
o Ingestion of groundwater from the surficial aquifer
o Dermal contact with surficial aquifer water while showering
o Inhalation of surficial aquifer contaminants while showering

TABLE THREE Assumptions Used to Estimate Exposure via Ingestion of Groundwater		
Parameter	Future Use Worker	Future Use Resident
Chemical Concentrations in Water	see EPCs in Table One	
Ingestion Rate (L/day)	1	2
Exposure Frequency (days/year)	250	365
Exposure Duration (years)	30	30
Body Weight (kg)	70	70
Average Time (days) Noncarcinogens Carcinogens	 10,950 25,550	 10,950 25,550

TABLE FOUR Summary of Chronic Rfds and Slope Factors			
Chemical	Oral Toxicity		
	RfD (mg/kg/day)	SF 1/(mg/kg/day)	Reference
Arsenic	3.00E-4	1.75	IRIS
Cadmium	5.00E-4	NA	IRIS
Chromium	5.00E-3	NA	IRIS
Nickel	2.00E-2	NA	IRIS
Zinc	3.00E-1	NA	IRIS

the "acceptable" level of exposure and because the normally accepted measure of maximum allowable exposure is expressed not as a daily intake as is for most chemicals, but as aconcentration in the blood. EPA has examined several procedures for assessing lead and currently recommends the Uptake/Biokinetic (UBK) model be used to predict blood lead concentrations resulting from environmental concentrations of lead. For this BRA, version 0.4 of the UBK model was used. Blood levels for children from 0 - 6 years of age were modeled. Based on a directive from EPA Region IV, acceptable exposures were defined as those that result in predicted blood levels of less than 10 ug/dl in at least 95% of the exposed children.

6.1.5 Risk Characterization Information

For carcinogens, risks are estimated as the incremental probability of an individual developing cancer over a life-time as a result of exposure to the carcinogen. Excess life-time cancer risk is calculated from the following equation:

Risk = CDI x SF

where:

risk = a unit less probability (e.g., 2E-6) of an individual developing cancer;

CDI = chronic daily intake averaged over 70 years (mg/kg-day);SF = slope-factor, expressed as $(mg/kg\text{-}day)^{-1}$

These risks are probabilities that are generally expressed in scientific notation (e.g., 1E-6). An excess lifetime cancer risk of 1E-6 indicates that, as a reasonable maximum estimate, an individual has a 1 in 1,000,000 additional chance of developing cancer as a result of site-related exposure to a carcinogen over a 70-year lifetime under the specific exposure conditions at a site. The National Contingency Plan (NCP) states that sites should be remediated to chemical concentrations that correspond to an upper-bound cancer risk to an individual not exceeding 1E-6 to 1E-4 excess lifetime risk.

The potential for noncarcinogenic effects is evaluated by comparing an exposure level over a specified time period (e.g., life-time) with a reference dose derived for a similar exposure period. The ratio of exposure to toxicity is called a hazard quotient (HQ). By adding the HQs for all contaminant(s) of concern that affects the same target organ (e.g., liver) within a medium or across all media to which a given population may reasonably be exposed, the Hazard Index (HI) can be generated.

The HQ is calculated as follows:

Non-cancer HQ = CDI/RfD

where:

CDI = Chronic Daily Intake

RfD = reference dose; and

CDI and RfD are expressed in the same units and represent the same exposure period (i.e., chronic, subchronic, or short-term).

Using these procedures, the lifetime cancer rates estimated to be caused by the surficial aquifer at these sites can be found in Table Six.

The hazard index due to ingestion of surficial aquifer water for both future use scenarios are greater than 1.0. The results can be seen in Table Seven.

The UBK model predicts as its output a probability curve around the geometric mean of the blood lead concentrations, from which the 95th percentile of the children's blood level concentration can be determined. The model calculated that the percent of exposed children predicted to have blood levels below 10 ug/dl is 99.70%.

All of the COCs have been found in the northern surficial aquifer at levels higher than either maximum contaminant levels (arsenic, chromium, cadmium, lead, nickel) or acceptable health based numbers (zinc). The northern surficial has been classified by EPA as a Class IIB aquifer. The goal of EPA's Superfund approach is to return usable and potentially usable groundwaters to their beneficial uses within a reasonable timeframe. For Class I and II aquifers, MCLs are generally considered the appropriate preliminary cleanup goals; in their absence, health based numbers are most often used. Any exceedences of these preliminary cleanup goals is considered an appropriate justification to take an action to return the groundwater to its beneficial use.

6.1.6 Uncertainties and Limitations in the BRA Process

Risk assessment provides a systematic means for organizing, analyzing, and presenting information on the nature and magnitude of risks posed by chemical exposures. Nevertheless, uncertainties and limitations are present in all BRAs because of the quality of available data and the need to make assumptions and develop inferences based on incomplete information about existing conditions and future circumstances. These uncertainties and limitations should be recognized and considered when discussing quantitative risk estimates. In general, the uncertainties and limitations in the BRA can be classified in the

TABLE FIVE CANCER RISK BY INDIVIDUAL PATHWAY*		
SCENARIO/EXPOSED POPULATION	RISK	CHEMICAL
FUTURE USE - ONSITE WORKERS		
Ingestion, surficial aquifer	8.81E-5	Arsenic
FUTURE USE - ONSITE RESIDENT		
Ingestion, surficial aquifer	2.57E-4	Arsenic
Inhalation while showering, surficial aquifer	5.83E-7	Arsenic
Dermal absorption while showering, surficial aquifer	none	

* The data used to calculate the risks was from the entire surficial aquifer. However, only the results for the COCs are reported here.

TABLE SIX HAZARD INDEX BY INDIVIDUAL PATHWAY*		
SCENARIO/EXPOSED POPULATION	RISK	CHEMICAL*
FUTURE USE - ONSITE WORKERS		
Ingestion, surficial aquifer	3.91E-1 1.32E-1 2.27E-2 1.10	Arsenic Chromium Nickel Zinc
Total	1.65	
FUTURE USE - ONSITE RESIDENT		
Ingestion, surficial aquifer	1.14 3.86E-1 6.61E-2 3.22	Arsenic Chromium Nickel Zinc
Total	4.81	
Inhalation while showering, surficial aquifer	none	
Dermal absorption while showering, surficial aquifer	2.59E-3 1.04E-2 2.94E-2 2.40E-3 1.17E-2	Arsenic Cadmium Chromium Nickel Zinc
Total	.056	

* The data used to calculate the hazard quotients was from the entire surficial aquifer. However, only the results for the COCs are reported here.

following categories:

- o environmental sampling and laboratory measurement;
- o mathematical fate and transport modeling;
- o receptor exposure assessment; and
- o toxilogical assessment.

The BRA is based on groundwater data specific to the sites gathered for the Area-Wide RI. The quality of data depends on the adequacy of the set of rules or procedures that specify how a sample is selected and handled. The quality assurance and quality control procedures used to minimize uncertainties were based on Region IV procedures and were reviewed and approved in advance by EPA. They are described in detail in the RI Report.

The use of mathematical models to predict the fate and transport of chemicals is accepted by EPA, however, EPA does not specify which models are would be the most appropriate to use in any given situation. Because few models have been authoritatively verified by field observations, there is some uncertainty associated with their use. Tradeoffs in the various models between simplicity, generality and accuracy are made on a site specific basis and are based in part of the professional judgement of the technical staff involved in that particular site.

In the BRA, a large number of assumptions are made to assess potential human exposure. In the absence of site specific data, many of this BRA's assumptions were assumptions made by EPA. As can be expected any time an assumption is made, there is some dispute as to the appropriate level of conservatism should be factored into that assumption.

Available scientific information is currently insufficient to provide a thorough understanding of all the toxic properties of chemicals to which humans are potentially exposed. This makes it necessary in some cases to infer these properties by extrapolating them from data obtained under other conditions of exposure, generally in experimental laboratory animals. This may introduce uncertainties of two types into the BRA: those related to extrapolating from one species to another and those related to extrapolating from the high exposure doses usually used in experimental animal studies to the lower doses usually estimated for human exposure situations.

6.2 Environmental Risks

The environmental risks at this site were addressed in a separate study (Area-Wide Wetlands Impact Study). This study evaluates

the ecological status of the wetlands associated with the Bay Drums, Peak Oil and Reeves Southeastern Sites. The results of this study are contained in the Area-Wide Wetlands Impact Study Report. The wetlands associated with these three sites will be addressed in a separate operable unit.

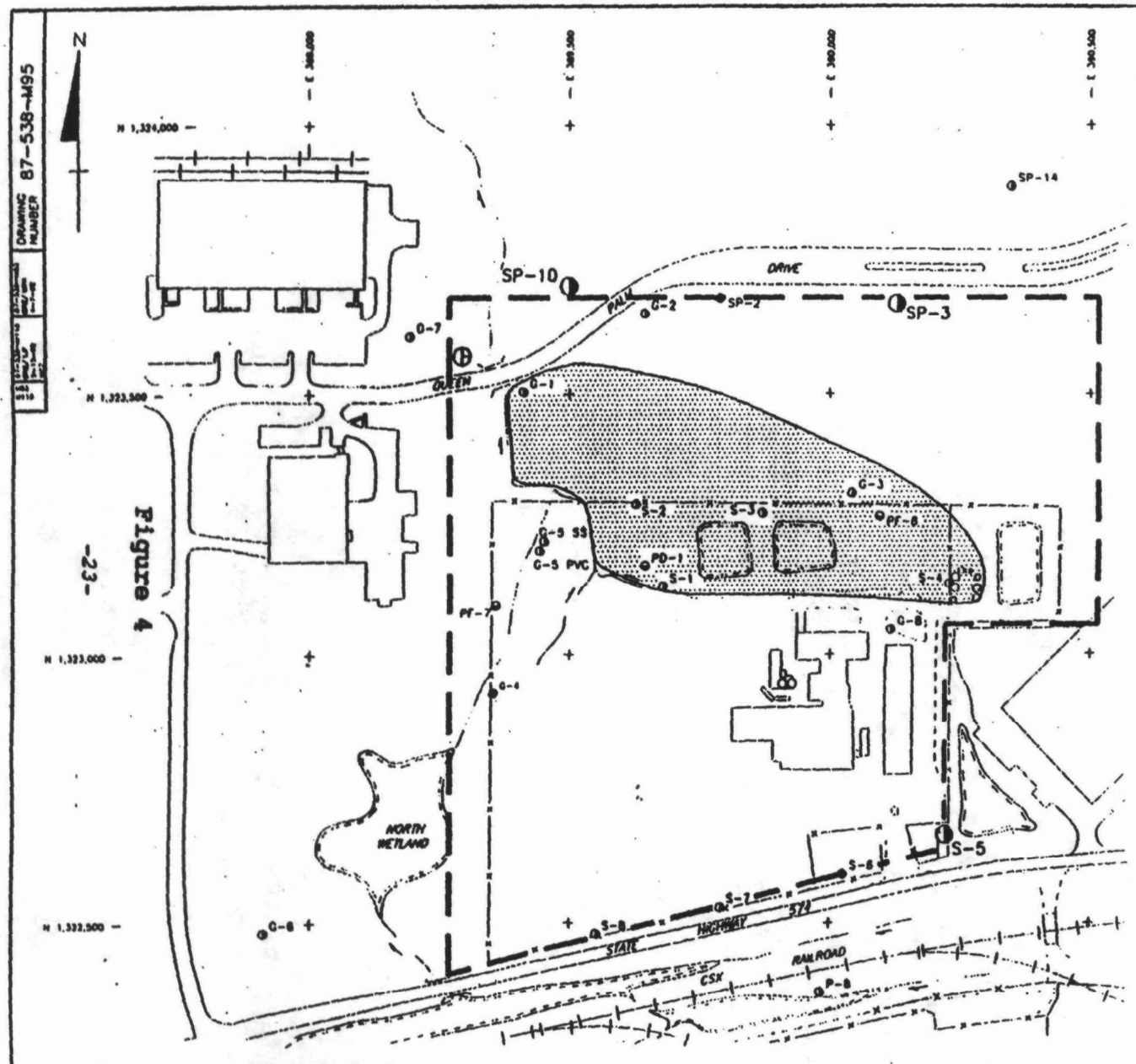
7.0 DESCRIPTION OF ALTERNATIVES

7.1 Remedial Action Objectives

This OU2 ROD addresses only cleanup of the groundwater in the northern surficial aquifer. The cleanup of the southern surficial aquifer and the upper Floridan aquifer will be addressed in separate OUR RODs issued for the groundwater at the Peak Oil and Bay Drums sites. This conclusion is reached based on the aquifer flow directions, the confining layer between the surficial and the Upper Floridan aquifers, and because the contaminants found in the southern surficial and the upper Floridan aquifers are considered to be a result of operations at the Peak Oil and Bay Drums sites. The selection of chemicals attributed to operations at the Reeves site is discussed in moredetail later in this section. The area to be addressed in the Northern surficial aquifer can be seen in Figure Four.

As stated before, the Risk Assessment that was done for the groundwater RI/FS did not differentiate between that contaminants that were found in the northern and southern surficial aquifers. Instead the BRA separate the exposure scenarios based on surficial and Upper Floridan aquifers. This ROD separates the chemicals of concern found in the northern surficial aquifer resulting from the Reeves site from the chemicals of concern found in the southern surficial and Upper Floridan aquifers resulting from the Peak Oil and Bay Drums sites. The methodology used by EPA was to compare the list of indicator chemicals that were determined to be important in the Reeves Source Characterization risk assessment to the list of indicator chemicals in the Area-Wide Groundwater risk assessment. The indicator chemicals list from the Reeves source characterization was as follows:

- arsenic
- cadmium
- chromium
- gold
- lead
- mercury
- nickel
- polychlorinated biphenyls (PCBs)
- polynuclear aromatic hydrocarbons (PAHs)
- 1,2,4-trichlorobenzene
- zinc.



LEGEND:

- RAILROAD
- FENCE
- UNIMPROVED ROADWAY
- DRAINAGE DITCH
- DIRECTION OF SURFACE WATER FLOW
- STANDING WATER
- SURFICIAL AQUIFER MONITORING WELL
- SURFICIAL AQUIFER PIEZOMETER
- EXISTING SURFICIAL AQUIFER MONITORING WELL FOR MONITORING PROGRAM
- PROPOSED SURFICIAL AQUIFER MONITORING WELL FOR MONITORING PROGRAM
- AREA OF IMPACTED GROUND WATER (SEE NOTE 2)
- COMPLIANCE BOUNDARY

NOTES:

1. COORDINATE GRID IS REFERENCED TO THE FLORIDA STATE PLANE COORDINATE SYSTEM
2. IMPACTED GROUND WATER IS AT CONCENTRATIONS ABOVE CLEANUP LEVELS

SCALE

300 0 30

COMPLIANCE BOUNDARY AND
AREA OF IMPACTED GROUND WATER
NORTHERN SURFICIAL AQUIFER
BAY DRUMS, PEAK OIL, AND REEVES
SUPERFUND SITES
TAMPA, FLORIDA

PREPARED FOR

POTENTIALLY
RESPONSIBLE PARTIES

Canonie Environmental

DRAWING NUMBER	87-538-M95

3	10-2-92	ISSUED TO EPA	KLM	RF	DMA
2	6-4-92	ISSUED FOR AGENCY REVIEW	BRE	SRM	
1	5-13-92	ISSUED FOR REVIEW	BRE	TJF	
		ISSUE / REVISION	DRAWN BY	CHK'D BY	APP'D BY

REFERENCES:

- AERO-METRIC ENGINEERING, INC. JANUARY, 1990; PROJECT NUMBER 048660

DATE: 5-7-92	DRAWING NU
SCALE: AS SHOWN	87-538-M9

Of these indicator chemicals, gold, PCBs and 1,2,4-trichlorobenzene were not determined to be present in the groundwater in levels significant enough to be included in the groundwater risk assessment. Some PAHs were found on both lists, however no PAHs have ever been associated with the Reeves operation. The PAHs were included in the Reeves sourcecharacterization risk assessment because of their presence in the soils on the western border of the SEW facility and have been attributed to operations at the Peak Oil site. Mercury was not found in the groundwater in levels above the federally established MCL of 2 ug/l. This methodology leaves the following list of contaminants found in the groundwater that can be attributed to the Reeves site:

- arsenic
- cadmium
- chromium
- lead
- nickel
- zinc.

After reviewing the above list, the State of Florida had one addition, aluminum. This addition is based on the elevated levels of aluminum in the groundwater and in State regulations mandating that secondary drinking water standards be enforced as cleanup goals in Class GI and GII aquifers. These regulations were amended in January 1993 to include aluminum. The original risk assessment list was developed prior to the 1993 amendments; therefore aluminum was not included in that list.

Cleanup levels for those contaminants were selected to protect human health, welfare and the environment and to be in compliance with applicable or relevant and appropriate requirements (ARARs). The cleanup levels selected for the contaminants of concern in the groundwater are as follows:

Contaminant of Concern	Cleanup Level (UG/L)	Source of Cleanup Level
Arsenic	50	Federal MCL
Cadmium	5	Federal MCL; value from 56CFR 3528, 1/30/91; effective date 7/30/92
Chromium	100	Federal MCL; value from 56CFR 3528, 1/30/91; effective date 7/30/92
Lead	15	Current Action Level, EPA OSWER Directive #9355.4-02

Nickel	100	Federal MCL, proposed value 55CFR 30370-448, 7/25/90
Zinc	10,000	Noncarcinogenic risk-based concentration for future onsite resident

7.2 ARARs

Section 121 (d)(2)(A) of CERCLA specifies that Superfund Remedial Actions must meet any Federal standard, requirement, criteria or limitation that is determined to be an applicable or relevant and appropriate requirement (ARAR). ARARs fall into three categories: contaminant-specific; location-specific; and action-specific. Potential ARARs can be found in Table Seven.

7.3 Development and Screening of Alternatives

7.3.1 Process

As a part of the process, the FS preliminarily evaluates a number of different technologies. The technologies are generally evaluated on the basis of their effectiveness, implementability and cost in relation to the remedial action goals for the site. After the screening, EPA considered four active remediation alternatives in the groundwater FS. Those four alternatives are listed in the FS as Alternatives 1, 2A, 2B and 2C. The National Contingency Plan (NCP) also requires the development of a no action alternative as a basis for comparing other alternatives. However, the groundwater FS was developed in conjunction with the source characterization RI/FS and assumes that some type of source control remedial action will be implemented along with the selected groundwater remedial action. The true no action alternative that is presented here was developed as a part of the source characterization RI/FS.

For ease of cross reference with the FS, this ROD has maintained the numbering system used in the FS. The retained alternatives are as follows:

No Action Alternative

Alternative 1 - Source Control/Monitoring

Alternative 2A - Active Restoration

Alternative 2B - Active Restoration

Alternative 2C - Active Restoration

TABLE SEVEN

Applicable and Relevant and Appropriate Requirements				
	Chemical-Specific ARARs			
Authority/ Requirement	Description	Status	Consideration in the FS	Alternatives it applies to
Safe Drinking Water Act (SWA), 40 CFR 141.11-141.16, 141.50-141.51	Primary Drinking Water Standards (MCLs and MCLGs)	Relevant and Appropriate	Considered in the development of cleanup goals	1, 2A,B, C
Clean Water Act (CWA) Section 304(a)(1) Ambient Water Quality Criteria (AWQC)	AWQC are surface water quality criteria developed to protect both aquatic and human health	Relevant and Appropriate	Considered in development of soil cleanup levels	2A
Florida Surface Water Quality Standards, FAC 17-302	Establishes minimum surface water quality criteria for designated classes	Relevant and Appropriate	Considered in the development od remedial alternatives	1, 2A,B, C
Florida Underground Injection Control Regulations, FAC 17-28.700	Authorizes zones of discharge for facilities discharging to groundwater as of 7/1/82	Applicable	Considered in the development of groundwater alternatives.	1, 2A,B, C

Florida Groundwater Classes, Standards and Exemptions, FAC 17-520	Classification of aquifers and sets cleanup standards for different classes	Applicable	Considered in development of groundwater cleanup levels	1, 2A,B, C

	Location Specific			
Endangered Species Act (50 CFR Part 402)	Requires action to conserve endangered or threatened species for activities in critical habitats.	Applicable	Considered if site is located in critical habitat area for endangered or threatened species	1, 2A,B, C
Executive Order on Protection of Wetlands, 40 CFR Part 6, Appendix A	Requires federal agencies to avoid, to the extent possible, the destruction of wetlands	Relevant and Appropriate	Considered in the development of remedial alternatives	1, 2A,B, C
CWA Dredge and Fill Provisions, 40 CFR Part 230	Restricts discharge of dredge or fill material that will have an adverse impact on wetlands	Relevant and Appropriate	Considered in the development of alternatives	2A
Potable Water Well Permitting in Delineated Areas, FAC 17-524 and Florida Statute 373.309	Regulatory clearance to use potable water wells in areas of known contamination. Local Ordinance 90-35 makes it mandatory for developers to connect residences and businesses to public water supplies where available	Applicable	Considered in the development of remedial alternatives	1, 2A,B, C

FAC 17-555.312	Wellhead protection requirements. Location of public drinking water wells. Specifies buffer zone of no less than 500 feet between future potable well and existing land applications of reclaimed water areas	Relevant and Appropriate	Considered in the development of remedial alternatives	2B
Florida Rules on Hazardous Waste Warning Signs, FAC 17-736	Requires the use of appropriate warning signs to inform public of potentially harmful at site	Applicable	May be required at perimeter and entrance of site	1, 2A,B, C

	Action-Specific			
Clean Water Act (33 USCA 1251-1376), National Pollutant Discharge Elimination System, 40 CFR 122-125	Discharges to surface water must meet NPDES requirements, including discharge limitations, monitoring requirements, and best management practices	Applicable to offsite discharges, Relevant and Appropriate to onsite discharges	Development of alternatives	2A
Clean Water Act, Section 304(a)(1), Water Quality Criteria (WQC)	WQC are health based criteria developed to protect aquatic life and human health from harmful effects caused by chemical constituents in surface water	Relevant and Appropriate	Considered for discharge to unnamed creek	2A

CWA Water Quality Standards [CWA 402 (a)(1)]	Effluent limitations	Applicable	Development of alternatives	2A,B, C
CWA Discharge to Publicly Owned Treatment Works (POTW), CWA 307, 40 CFR 403	Pretreatment regulations for discharge into POTWs	Applicable	Development of alternatives	2C
Florida Drinking Water Standards, FAC 17-550	Drinking water standards for class G-II and G-I aquifers, surficial and Floridan Aquifer	Relevant and Appropriate	Considered in development of groundwater cleanup levels	1, 2A,B, C
Florida Surface Water Standards, FAC 17-302	Surface water standards for Class III waters and site-specific alternative criteria	Relevant and Appropriate	Considered for discharge to the unnamed creek	1, 2A,B, C

7.3.2 No Action Alternative

Major Components of the Remedial Alternative. The National Contingency Plan (NCP) requires the development of a no action alternative as a basis for comparison with the other alternatives. Under this alternative, no action will be taken to reduce the risk posed by the soil/sediment contamination at the site. Only continued groundwater monitoring is included in this alternative.

General Components. The groundwater would be monitored on an annual basis from the existing monitor well network. The estimated present worth cost of this alternative is $29,000.

7.3.3 Alternative 1 - Source Control/Monitoring

Major Components of the Remedial Alternative. For this alternative, institutional actions such as regulatory restrictions on groundwater use, groundwater monitoring and implementation of surface and source control remediation would be implemented. The purpose of the groundwater monitoring would be, in part, to monitor the progress of the natural attenuation that a groundwater model done for the FS anticipates would occur.

General Component. The source control remedy selected in the Record of Decision - Operable Unit One, October 1992 would be fully implemented. One new monitor well and three additional monitor wells will be sampled twice a year for the first three years and once a year thereafter for the remainder of the monitoring period. It is anticipated that the groundwater would attenuate to acceptable levels within 7.6 years of the completion of the source control remedy. The monitoring period would last for ten years. The location of the monitor wells would be within or along the compliance boundary shown in Figure Four. Not including the cost of the source control alternative, which is stated in the Operable Unit One ROD (October 1992), the present worth cost of this alternative is $136,000.

This alternative will meet all Federal and State ARARs.

7.3.4 Alternative 2A - Active Restoration

Major Components of the Remedial Alternative. This alternative includes the installation and implementation of a groundwater extraction system. Groundwater would be extracted from the ground, treated for heavy metals by chemical precipitation and ion exchange, and discharged to the unnamed creek. According to the model done for the FS, this alternative would reach acceptable levels in the groundwater in 3.5 years of the completion of the source control remedy.

General Component. Approximately five extraction wells would be

installed to recover groundwater at a steady-state extraction rate of 25 gallon/minute (GPM). Each well would remove approximately 5 gpm. A piping system would convey the extracted groundwater to a central collection area for treatment. Figure Five shows the proposed locations of the wells and treatment system. Treatability studies will be needed in the design phase to determine optimum treatment parameters at which most heavy metals can be removed. The treated groundwater would be required to meet applicable surface water standards before being discharged into the unnamed creek. The present worth cost of this alternative is $2,752,000.

This alternative will meet all Federal and State ARARs.

7.3.5 Alternative 2B - Active Restoration

Major Components of the Remedial Action. This alternative includes the installation and implementation of a groundwater extraction system. Groundwater would be extracted from the ground, treated for heavy metals by chemical precipitation and discharged by spray irrigation on property owned by Reeves in or near the study area. According to the model done for the FS, this alternative would reach acceptable levels in the groundwater in 3.5 years of the completion of the source control remedy.

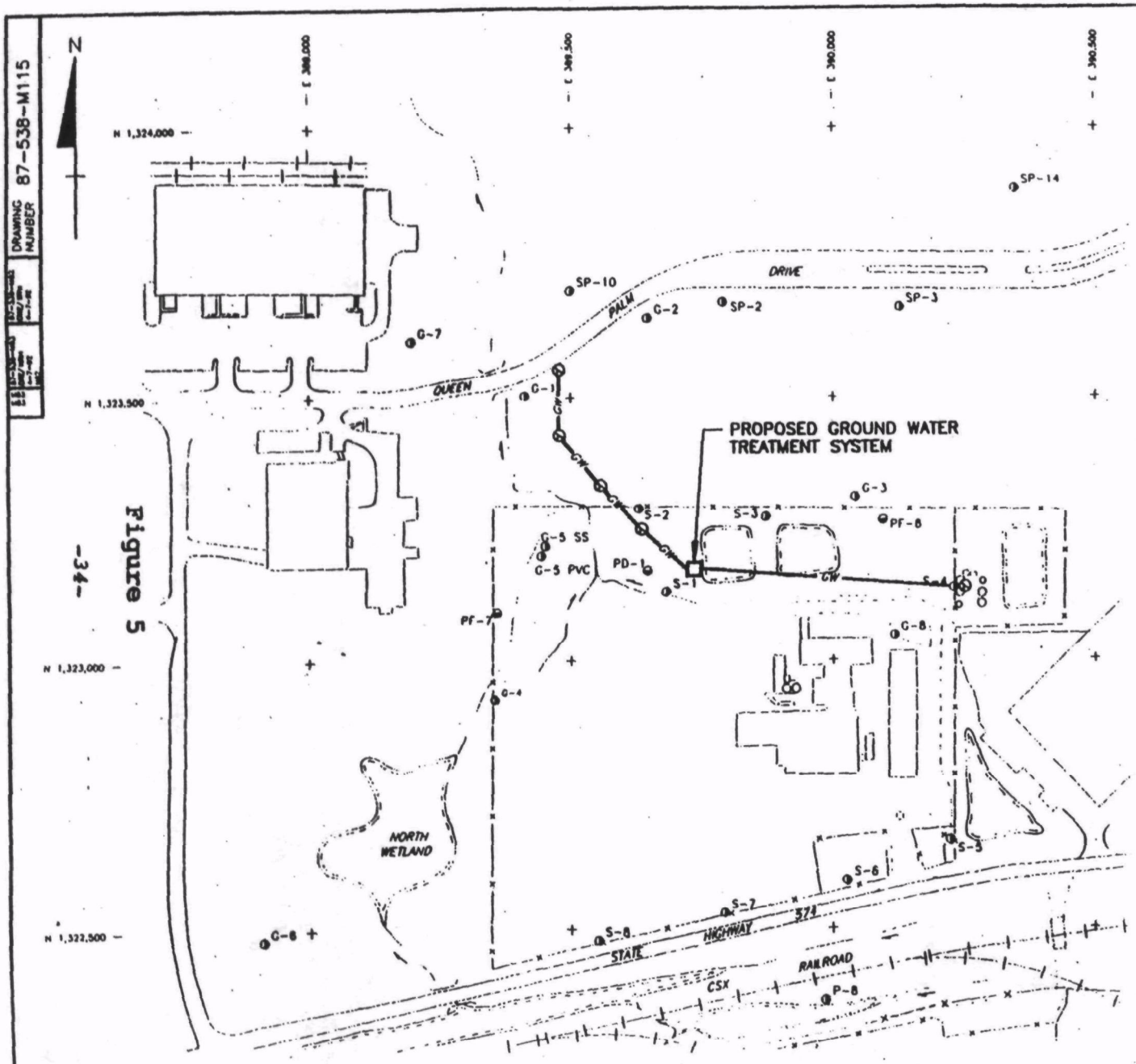
General Component. The location of the extraction wells and the treatment are identical to those described in Alternative 2A. In addition, the spray irrigation system and the discharge piping will consist of approximately 2,200 linear feet of piping. Water entering the spray irrigation system would meat applicable groundwater standards. Treatability studies will be needed in the design phase to determine optimum treatment parameters at which most heavy metals can be removed. The present worth costof this alternative is $2,207,000.

This alternative will meet all Federal and State ARARs.

7.3.6 Alternative 2C - Active Restoration

Major Components of the Remedial Action. This alternative includes the installation and implementation of a groundwater extraction system. Groundwater would be extracted from the ground, treated for heavy metals by chemical precipitation and discharged into the local publicly owned treatment works (POTW). According to the model done for the FS, this alternative would reach acceptable levels in the groundwater in 3.5 years of the completion of the source control remedy.

General Component. The location of the extraction wells and the treatment are identical to those described in Alternative 2A. Groundwater would be treated to meet pollutant limits set by the POTW prior to discharge. The treated groundwater would be



LEGEND:

- RAILROAD
- FENCE
- UNIMPROVED ROADWAY
- DRAINAGE DITCH
- DIRECTION OF SURFACE WATER FLOW
- STANDING WATER
- SURFICIAL AQUIFER MONITORING WELL
- SURFICIAL AQUIFER PIEZOMETER
- PROPOSED GROUND WATER EXTRACTION WELL
- CW — PROPOSED GROUND WATER COLLECTION PIPING

NOTES:

1. COORDINATE GRID IS REFERENCED TO THE FLORIDA STATE PLANE COORDINATE SYSTEM.

SCALE

300 0 300

PROPOSED GROUND WATER
EXTRACTION SYSTEM
NORTHERN SURFICIAL AQUIFER
BAY DRUMS, PEAK OIL, AND REEVES
SUPERFUND SITES
TAMPA, FLORIDA

PREPARED FOR:

POTENTIALLY
RESPONSIBLE PARTIES

Canonie Environmenta

3	10-2-92	ISSUED TO EPA	M.A.M	T-JF	DMA
2	6-4-92	ISSUED FOR AGENCY REVIEW	DRE	SRH	
1	5-13-92	ISSUED FOR REVIEW	DRE	KRH	

DRAWING NUMBER 87-538-M115

Figure 5

-34-

REFERENCES:

- AERO-METRIC ENGINEERING, INC JANUARY, 1990.

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conveyed via 100 linear feet of piping to an onsite sewer line for ultimate discharge into the POTW. A permit from the POTW would have to be obtained in order to discharge the treated groundwater into its system. The present worth cost of this alternative is $2,504,000. This alternative will meet all Federal and State ARARs.

8.0 SUMMARY OF THE COMPARATIVE ANALYSIS OF ALTERNATIVES

8.1 Criteria for Evaluating Remedial Alternatives

In selecting its preferred cleanup alternative, EPA uses nine criteria to evaluate each of the detailed alternatives developed in the FS. Those nine criteria are developed in more detail in Figure Six the next page. The comparison of the five alternatives using those criteria can be found in the remainder of Section 8 of this ROD.

8.2 Threshold Criteria

8.2.1 Overall Protection of Human Health and the Environment

At the point of completion of the remedy, alternatives 1, 2A, 2B and 2C are all equally effective at providing overall protection of human health and the environment. Alternative 1 will take a significantly longer period of time to be completed than Alternatives 2A, 2B, and 2C. The no action alternative is not protective of human health and the environment.

8.2.2 Compliance with ARARs

Alternatives 1, 2A, 2B and 2C comply with relevant Federal and State ARARs and with Superfund's preference for treatment. Because the no action alternative does not comply with the firsttwo criteria, it will not be considered further in this analysis of alternatives.

8.3 Primary Balancing Criteria

8.3.1 Long-Term Effectiveness

Alternatives 2A, 2B and 2C are all equally effective at providing overall protection of human health and the environment. Alternative 1 will provide slightly lesser long term effectiveness, primarily because of the length of time to reach the cleanup goals.

8.3.2 Reduction of Toxicity, Mobility or Volume

All four of the alternatives will provide for a permanent reduction of toxicity, mobility, and volume of chemicals by treatment.

CRITERIA FOR EVALUATING REMEDIAL ALTERNATIVES

In selecting its preferred cleanup alternative, EPA uses the following criteria to evaluate each of the alternatives developed in the Feasibility Study (FS). The first two criteria are the essential Threshold Criteria and must be met before an alternative can be considered further. The next five are the Primary Balancing Criteria used to further evaluate the alternatives once the Threshold Criteria have been met. The last two Modifying Criteria are used to further evaluate EPA's preferred alternative and Proposed Plan after public comment period has ended and comments from the State have been received. All nine criteria are explained in more detail here.

***Overall Protection of Human Health and the Environment** - Assesses degree to which alternative eliminates, reduces, or controls health and environmental threats through treatment, engineering methods, or institutional controls.*

***Compliance with Applicable or Relevant and Appropriate Requirements** - Assesses compliance with Federal/State requirements.*

***Cost** - Weighing the benefits of a remedy against the cost of implementation.*

***Implementability** - Refers to the technical feasibility and administrative ease of a remedy.*

***Short-Term Effectiveness** - Length of time for remedy to achieve protection and potential impact of construction and implementation of a remedy.*

***Long-Term Effectiveness** - Degree to which a remedy can maintain protection of health and environment once cleanup goals have been met.*

***Reduction of Toxicity, Mobility, or Volume Through Treatment** - Refers to expected performance of the treatment technologies to lessen harmful nature, movement or amount of contaminants.*

***State Acceptance** - Consideration of State's opinion of the preferred alternative.*

***Community Acceptance** - Consideration of public comments on the preferred alternative.*

Figure 6

8.3.3 Short-Term Effectiveness

All alternatives may pose a minimal hazard to workers either installing or operating the groundwater treatment system due to dermal contact or accidental ingestion of contaminated groundwater. There is also a minimal hazard to workers associated with treatment system operations. Alternative 1 will provide slightly more short-term effectiveness because there will be no hazard to workers from the installation and operation of a treatment system.

8.3.4 Implementability

No technical restraints are anticipated. However, both 2A and 2C will require discharge permits that may result in administrative difficulties in implementing these remedies. Of these two, it is anticipated that the discharge permit for the POTW may be easier to obtain than the permit for discharging into surface water. All three may require access agreements which may also result in administrative delays.

8.3.5 Cost

The comparative present worth costs of the four remaining alternatives are as follows:

Alternative 1	$136,000
Alternative 2A	$2,752,000
Alternative 2B	$2,207,000
Alternative 2C	$2,504,000

The substantially lower cost for Alternative 1 reflects the fact that this is primarily a monitoring/institutional control alternative; the cost of the source control remedy is not included in this cost estimate. The differences in costs between the three active restoration remedies mostly reflect the differences in costs between the three discharge options; in addition, Alternative 2A has a two step treatment train (chemical precipitation/ion exchange), Alternatives 2B and 2C have only one (chemical precipitation).

8.4 Modifying Criteria

8.4.1 State Acceptance

The State of Florida, as represented by the Florida Department of Environmental Regulation (FDEP), has been the support agency during the Remedial Investigation and Feasibility Study process for the Reeves Southeastern site. In accordance with the 40 CFR 300.430, FDEP, as the support agency, has provided input during this process. Based upon comments received from FDEP, it is expected that concurrence will be forthcoming; however, a formal

letter of concurrence has not yet been received.

8.4.2 Community Acceptance

The general public in the community expressed no major concerns about the selected remedy during the public comment period. The Reeves corporation, however, submitted lengthy comments objecting to the preferred alternative and suggesting that EPA select Alternative 1 instead. The comments from both the community and the Reeves Corporation are discussed in detail in the Responsiveness Summary, which is Appendix A of this ROD.

9.0 SELECTION OF REMEDY

9.1 Selected Remedy

9.1.1 Description of Remedy

Based upon consideration of the requirements of CERCLA, the NCP, the detailed analyses of alternatives and public and state comments, EPA has selected Alternative 1, with modifications, as the groundwater management of migration remedy for the Northern Surficial Aquifer at this site. The modifications consist of the following:

MODIFICATION ONE — The northern surficial aquifer shall be sampled as a task in the OU2 RD. The purpose of this sampling shall be to establish "time-zero" levels of the COCs. If the levels of COCs have not been reduced to either below the selected performance standards or by at least 50% from the "time-zero" levels within 2.6 years of the completion of the OU1 RA, the presumption shall be that the selected remedy is not working and that the contingency remedy shall be implemented. The OU1 remedy shall be considered complete upon submittal of the final Final Inspection Report.

MODIFICATION TWO — The RD for the contingency remedy (described in detail in Section 9.2) shall be completed prior to the completion of Modification One.

MODIFICATION THREE — Groundwater from the northern surficial aquifer shall be prevented from further discharging into the unnamed creek. The OU2 RD will contain an engineering proposal that will, when built, prevent further discharge. Upon EPA's approval of the engineering proposal, the barrier will be constructed.

At the completion of this remedy, the potential future risks associated with the groundwater at this site will be within EPA's acceptable risk range of $1x10^{-6}$ to $1x10^{-4}$. EPA has determined that this risk range is protective of human health and the environment. Because this remedy will result in hazardous substances remaining onsite above health-based levels for a time period exceeding five years, a review will be conducted within five years after commencement of the remedial action to ensure that the remedy continues to provide adequate protection of human health and the environment.

Major Components of the Remedial Alternative. For this alternative, institutional actions such as regulatory restrictions on groundwater use, groundwater monitoring and implementation of surface and source control remediation would be implemented. The purpose of the groundwater monitoring would be, in part, to monitor the progress of the natural attenuation that a groundwater model done for the FS anticipates would occur.

General Component. The source control remedy selected in the Record of Decision - Operable Unit One, October 1992 would be fully implemented. One new monitor well and three additional monitor wells will be sampled twice a year for the first three years and once a year thereafter for the remainder of the monitoring period. The model in the FS predicted that the groundwater will attenuate to acceptable levels within 7.6 years of the completion of the source control remedy. The monitoring period will last for ten years. The location of the monitor wells will be within or along the compliance boundary shown in Figure Four. Not including the cost of the source control alternative, which is stated in the Operable Unit One ROD (October 1992), or the costs associated with the three modifications, the present worth cost of this alternative is $136,000.

9.1.2 Performance Standards

The Performance Standards selected for the chemicals of concern are as follows:

Contaminant of Concern	Cleanup Level (UG/L)	Source of Cleanup Level
Arsenic	50	Federal MCL
Cadmium	5	Federal MCL; value from 56 CFR 3528, 1/30/91; effective date 7/30/92
Chromium	100	Federal MCL; value from 56 CFR 3528, 1/30/91; effective date 7/30/92

Lead	15	Current Action Level, EPA OSWER Directive #9355.4-02
Nickel	100	Federal MCL, proposed value 55 CFR 30370-448, 7/25/90
Zinc	10,000	Noncarcinogenic risk-based concentration for future onsite resident

These Performance Standards were selected based on the following conditions being met:

CONDITION ONE A thorough door-to-door private well survey shall be performed as a task in the OU2 Remedial Design. The information to be gathered in the well survey is as follows: (1) size of private well; and (2) depth of private well. The in-depth well survey shall cover the same territory that was covered for the preliminary well survey done for the Area-Wide Groundwater RI/FS. Private wells that are in use and are discovered in this well survey shall be sampled for the COCs. If the levels in the private well water sample are above the selected Performance Standards and it is determined that the private well contamination is related to the Reeves Southeastern site, then the users of that well should be offered the opportunity to be hooked up to the public water at no charge.

CONDITION TWO As a task in the OU2 RD, a Floridan monitor well shall be constructed in the general vicinity of the former production wells on the SEG facility. This well shall be monitored for violations of Florida's secondary drinking water standards as designated in F.A.C. 17-550.

If during the RD/RA phase, these conditions are not met or a showing is made that the northern surficial aquifer is a likely potable drinking water source, then the Performance Standards will revert to the following:

Contaminant of Concern	Cleanup Level (UG/L)	Source of Cleanup Level
Arsenic	50	Federal MCL
Cadmium	5	Federal MCL; value from 56CFR 3528, 1/30/91; effective date 7/30/92

Chromium	100	Federal MCL; value from 56CFR 3528, 1/30/91; effective date 7/30/92
Lead	15	Current Action Level, EPA OSWER Directive #9355.4-02
Nickel	100	Federal MCL, proposed value 55CFR 30370-448, 7/25/90
Zinc	5,000	F.A.C. Chapter 17-550, January 1993
Aluminum	200	F.A.C. Chapter 17-550, January 1993

Because certain performance standards may not be determined until the Remedial Design phase, it shall be understood that the list of performance standards in this section is not exclusive and may be subject to addition and/or modification by the Agency in the RD/RA phase.

ARARs Component. The major federal ARARs and TBCs for this alternative are as follows:

- Safe Drinking Water Act (SWA), 40 CFR 141.11-141.16, 141.50-141.51
- Clean Water Act (CWA) Section 304(a)(1), Ambient Water Quality Criteria (AWQC)
- Endangered Species Act, (50 CFR Part 402)
- Executive Order on Protection of Wetlands, 40 CFR Part 6, Appendix A
- CWA Water Quality Standards [CWA 402 (a)(1)]

The major State ARARs and TBCs are as follows:

- Florida Surface Water Quality Standards, FAC 17-302
- Florida Drinking Water Standards, FAC 17-550
- Florida Groundwater Classes, Standards and Exemptions, FAC 17-520
- Florida Underground Injection Control Regulations, FAC 17-28.700
- Potable Water Well Permitting in Delineated Areas, FAC 17-524 and Florida Statute 373.309

- o FAC 17-555.312
- o FAC 17-555.312
- o Florida Rules on Hazardous Waste Warning Signs, FAC 17-736

This alternative shall meet all Federal and State ARARs.

9.2 Contingency Remedy

9.2.1 Description of Remedy

If the conditions in Modification One of the selected remedy are not met, then the contingency remedy for the site shall be implemented. Based upon consideration of the requirements of CERCLA, the NCP, the detailed analyses of alternatives and public and state comments, EPA has selected Alternative 2C as the contingency groundwater management of migration remedy for the Northern Surficial Aquifer at this site. The engineering proposal described in Modificiation Three of the original remedy shall be constructed. At the completion of this remedy, the risk potential future risks associated with the groundwater at this site will be within EPA's acceptable risk range of $1x10^{-6}$ to $1x10^{-4}$. EPA has determined that this risk range is protective of human health and the environment. Because this remedy will result in hazardous substances remaining onsite above health-based levels for a time period exceeding five years, a review will be conducted within five years after commencement of the remedial action to ensure that the remedy continues to provide adequate protection of human health and the environment. The total present worth cost of the contingency remedy is estimated at $2,504,000.

Major Components of the Remedial Action. This alternative includes the installation and implementation of a groundwater extraction system. Groundwater would be extracted from the ground, treated for heavy metals by chemical precipitation and discharged into the local publicly owned treatment works (POTW).

General Component. The location of the extraction wells and the treatment unit are located on the northern part of the Reeves facility. Groundwater would be treated to meet pollutant limits set by the POTW prior to discharge. The treated groundwater would be conveyed via 100 linear feet of piping to an onsite sewer line for ultimate discharge into the POTW. A permit from the POTW would have to be obtained in order to discharge the treated groundwater into its system. The extracted groundwater will be treated to levels set by the POTW prior to discharge.

9.2.2 Performance Standards

The Performance Standards selected for the chemicals of concern are as follows:

Contaminant of Concern	Cleanup Level (UG/L)	Source of Cleanup Level
Arsenic	50	Federal MCL
Cadmium	5	Federal MCL; value from 56CFR 3528, 1/30/91; effective date 7/30/92
Chromium	100	Federal MCL; value from 56CFR 3528, 1/30/91; effective date 7/30/92
Lead	15	Current Action Level, EPA OSWER Directive #9355.4-02
Nickel	100	Federal MCL, proposed value 55CFR 30370-448, 7/25/90
Zinc	10,000	Noncarcinogenic risk-based concentration for future onsite resident

These Performance Standards were selected based on the following conditions being met:

CONDITION ONE A thorough door-to-door private well survey shall be performed as a task in the OU2 Remedial Design. The information to be gathered in the well survey is as follows: (1) size of private well; and (2) depth of private well. The in-depth well survey shall cover the same territory that was covered for the preliminary well survey done for the Area-Wide Groundwater RI/FS. Private wells that are in use and are discovered in this well survey shall be sampled for the COCs. If the levels in the private well water sample are above the selected Performance Standards and it is determined that the private well contamination is related to the Reeves Southeastern site, then the users of that well should be offered the opportunity to be hooked up to the public water at no charge.

CONDITION TWO As a task in the OU2 RD, a Floridan monitor well shall be constructed in the general vicinity of the former production wells on the SEG facility. This well shall be monitored for violations of

Florida's secondary drinking water standards as designated in F.A.C. 17-550.

These conditions are added in order to make a showing that the northern surficial aquifer is exempt from compliance with Florida secondary drinking water standards under F.A.C. 17-520. If during the RD/RA phase, these conditions are not met or a showing is made that that the northern surficial aquifer is a likely potable drinking water source, then the Performance Standards will revert to the following:

Contaminant of Concern	Cleanup Level (UG/L)	Source of Cleanup Level
Arsenic	50	Federal MCL
Cadmium	5	Federal MCL; value from 56CFR 3528, 1/30/91; effective date 7/30/92
Chromium	100	Federal MCL; value from 56CFR 3528, 1/30/91; effective date 7/30/92
Lead	15	Current Action Level, EPA OSWER Directive #9355.4-02
Nickel	100	Federal MCL, proposed value 55CFR 30370-448, 7/25/90
Zinc	5,000	F.A.C. Chapter 17-550, January 1993
Aluminum	200	F.A.C. Chapter 17-550, January 1993

Because certain performance standards may not be determined until the Remedial Design phase, it shall be understood that the list of performance standards in this section is not exclusive and may be subject to addition and/or modification by the Agency in the RD/RA phase.

ARARs Component. The major federal ARARs and TBCs for this alternative are as follows:

- Safe Drinking Water Act (SWA), 40 CFR 141.11-141.16, 141.50-141.51
- Clean Water Act (CWA) Section 304(a)(1), Ambient Water Quality Criteria (AWQC)
- Endangered Species Act, (50 CFR Part 402)

- Executive Order on Protection of Wetlands, 40 CFR Part 6, Appendix A
- CWA Water Quality Standards [CWA 402 (a)(1)]
- CWA Discharge to Publicly Owned Treatment Works (POTW), CWA 307, 40 CFR 403

The major State ARARs and TBCs are as follows:

- Florida Surface Water Quality Standards, FAC 17-302
- Florida Drinking Water Standards, FAC 17-550
- Florida Groundwater Classes, Standards and Exemptions, FAC 17-520
- Florida Underground Injection Control Regulations, FAC 17-28.700
- Potable Water Well Permitting in Delineated Areas, FAC 17-524 and Florida Statute 373.309
- FAC 17-555.312
- FAC 17-555.312
- Florida Rules on Hazardous Waste Warning Signs, FAC 17-736

This alternative shall meet all Federal and State ARARs.

10.0 STATUTORY DETERMINATIONS

10.1 Purpose

Under CERCLA section 121, EPA must select remedies that are protective of human health and the environment, comply with ARARs (unless a statutory waiver is justified), are cost-effective, and utilize permanent solutions and alternative treatment technologies to the maximum extent practicable. In addition, CERCLA includes a preference for remedies that employ treatment that permanently and significantly reduce the volume, toxicity, or mobility of hazardous wastes as their principal element. The following sections discuss how the selected remedy meets these statutory requirements.

10.2 Protective of Human Health and the Environment

The selected remedy protects human health and the environment by removing contamination from the groundwater before it can either be ingested by humans or migrate into a surface water body and

cause damage to the environment.

10.3 Attainment of the Applicable or Relevant and Appropriate Requirements (ARARs)

The selected remedy complies with all Federal and State ARARs.

10.4 Cost Effectiveness

EPA believes that the selected remedy will reduce the risk to human health and the environment from the groundwater at a cost of $140,000. The selected remedy will achieve performance standards at a significantly lower cost than the other alternatives.

10.5 Utilization of Permanent Solutions to the Maximum Extent Practicable

EPA has determined that the selected remedy represents the maximum extent to which permanent solutions and treatment technologies can be utilized in a cost-effective manner for the final groundwater management of migration operable unit at the Reeves Southeastern site. Of those alternatives that are protective of human health and the environment and comply with ARARs, EPA has determined that this selected remedy provides the best balance of trade-offs in terms of long-term effectiveness and permanence, reduction in toxicity, mobility, or volume achieved through treatment, short-term effectiveness, implementability, and cost, while also considering the statutory preference for treatment as a principle element and considering state and community acceptance.

10.6 Preference for Treatment as a Principle Element

By reducing the level of contamination in the northern surficial aquifer to levels protective of human health and the environment, EPA will meet the statutory preference for treatment as a principal element of the remedy.

11.0 EXPLANATION OF SIGNIFICANT DIFFERENCES

The Proposed Plan for the groundwater at the site specified four alternatives for the cleanup of the northern surficial aquifer and identified Alternative 2C as EPA's preferred alternative. The Proposed Plan also identified secondary drinking water standards for zinc and aluminum as cleanup goals/performance standards. EPA received information during the public comment period that led it to select Alternative 1 as the appropriate remedy, with Alternative 2C being selected as the contingency remedy. The information received during the public comment period also led to the lead agency adding three modifications to Alternative 1 and to the selection of a different performance

standard for zinc and dropping aluminum from the list of COCs altogether. The explanations for the addition of each modification to Alternative 1 and for the differing performance standards are presented in more detail in the remainder of this section.

The choice of Alternative 1 was based partially on EPA's understanding from the groundwater model done for the FS (Appendix A in FS and December 4, 1992 letter from Canonie to Martha Berry, EPA and enclosure) that the active restoration scenarios would clean up the groundwater in 3.5 years. Without active groundwater restoration, then the groundwater model estimated that acceptable levels would be reached by natural attenuation in 7.6 years. The contaminant used in the groundwater model was zinc, and the acceptable level that was used was 10,000 ug/l (health based number used in the source characterization RI/FS and approved by EPA - EPA has no MCL for zinc). EPA also had in its possession the following information regarding land and aquifer use in the area of the site:

- Areawide RI, Section 2.4 **Land Use and Zoning**, Pages 2-7 through 2-13 - This section describes the land use and zoning for the property in the area of the three sites. According to the third paragraph on page 2-10 and the map on page 2-8, there are no areas on or immediately downgradient of the site that are zoned for residential use. Given that there are a number of other industrial and/or commercial facilities in the vicinity of the three sites, it is not likely that these properties will be rezoned for residential use in the future.

- Areawide FS, Section 4.3 **Private Well Survey**, pages 4-38 through 4-43 - This section describes the results of the private well survey conducted during the areawide groundwater RI/FS. No potable water wells in the surficial aquifer were discovered in this survey.

- **Ground-Water Quality of the Southwest Florida Water Management District, Central Region, Section 2, April 1991, page 40** - This report states that the surficial aquifer in the general region is only used to a limited extent for lawn irrigation and stock watering.

- **Map of the water mains** in the area of the three sites. Public water service is readily available to properties at and around the sites.

- **FAC 17-524.300, General Requirements for New Potable Water Well Permitting in Delineated Areas** - These regulations would appear to prevent the installation of any potable water wells in the surficial aquifer for two reasons.

1) Under FAC 17-524.420, the procedures for delineating areas where these permit requirements are applicable are outlined. Under these procedures, the area where these three sites are located has been designated a delineated area. FAC 17-524.430 incorporates, by reference, the various maps showing the delineated areas around the state.

2) In delineated areas, permitting of a new potable water well, with certain well defined restrictions, is prohibited in areas of groundwater contamination where a distribution line of an available potable water supply is within 500 feet of the boundary of the property for which a well construction permit is being sought.

- If a potable water well was installed in the surficial aquifer, FAC 17-524.600 would require that the well shall be tested "...for the presence in the untreated water of the ground water contamination which resulted in the delineation." If groundwater contamination was then detected, then FAC 17-524.650 would require "...a well not be cleared for use without a demonstration, through water quality testing, that a filter or other permanent remedy prevents the users of the well from being exposed to groundwater contamination."

Initially, FDEP had opposed the selection of Alternative 1. FDEP's position was that the four year difference between the completion of one of the active restoration remedies and the completion of the natural attenuation remedy was unacceptable. For this reason, EPA selected Alternative 2C as the preferred alternative for the OU2 Proposed Plan. However, because the above information concerning land use supported the unlikelihood of the use of the northern surficial aquifer as a potable water source, FDEP later decided that a modified version of Alternative 1 would be acceptable. Based on the Canonie groundwater model, 2.6 years after the completion of the source control remedy was selected as an appropriate interim point at which to sample to determine whether the natural attenuation remedy was reaching the performance standards in the time period predicted by the groundwater model. Modifications One and Two were added to the remedy based on this decision. If Alternative 1 does not performed as predicted, then Alternative 2C would be implemented as the contingency remedy.

As stated before, the Proposed Plan identified Florida's secondary drinking water standards for zinc and aluminum as performance standards. In the final October 1992 FS developed for the site, secondary drinking water standards (SDWSs) were specifically excluded as ARARs. Therefore no SDWSs were identified as performance standards for the COCs for the northern

surficial aquifer (in the FS). In December 1992, FDEP identified to EPA regulations that would require the application of Florida SDWSs as State ARARs. These regulations were F.A.C. Chapters 17-520 and 550. After several exchanges of information with FDEP, EPA agreed that SDWSs were State ARARs. These exchanges of information are documented more thoroughly in a February 18, 1993 memorandum from Martha Berry, EPA RPM to the Reeves site file, which was included in the Administrative Record that was available to the public during the public comment period. This change did not affect the proposed performance standards for arsenic, lead, nickel, cadmium or chromium. However it did require the lowering of the proposed performance standard for zinc from 10,000 ug/l (a health based number recommended by EPA Region IV Office of Health Assessment) to 5,000 ug/l (Florida SDWS). It also required the addition of aluminum as a COC with a proposed performance standard of 200 ug/l (Florida SWDS). These were the proposed performance standards that were listed in the OU2 Proposed Plan.

During the public comment period, FDEP submitted a March 30, 1993 letter clarifying its position regarding the use of SDWSs as State ARARs. Following is a quote from this letter:

> Florida Secondary drinking water standards, as defined in Chapter 17-550, F.A.C., and as they apply to Class G-II groundwater, as defined in Chapter 17-520, F.A.C., are applicable or relevant and appropriate requirements (ARARs) at NPL sites. The criteria and standards in these rules fulfill the initial requirements as ARARs pursuant to CERCLA 121 (d)(2)(A).
>
> Under the FDEP's administrative rules, an existing installation is exempt from compliance with secondary standards "...unless the Department determines that compliance with one or more secondary standards by such installation is necessary to protect groundwater used or reasonably likely to be used as a potable water source " (17-520.520, F.A.C.). While such an exemption is probable at the Reeves site under F.A.C., the secondary standards specified in 17-550, F.A.C., are relevant and appropriate. In other words, FDEP must consider exceedances of secondary standards and make further determinations as to whether these exceedances are violations which require cleanup to the standards as part of a CERCLA remedial action.

Also in its March 30, 1993 letter, FDEP lists the conditions that, if fulfilled, would result in the exemption from compliance with secondary drinking water standards. This conditions are listed as Conditions One and Two in the performance standards section of the selected remedy chapter.

In this same letter, FDEP also asserted that Class III surface

water standards as defined in 17-302, F.A.C. were ARARs that should be applied to the surface water in the unnamed creek. This is relevant to the groundwater remedy in that, during certain hydrological periods, the contaminated groundwater discharges into the unnamed creek. FDEP asserted that the groundwater discharge into the unnamed creek was a significant cause of the violations of those standards that were found in the surface water during the RI/FS; therefore this discharge should be addressed during the OU2 ROD, rather than waiting for the wetlands ROD as EPA had originally intended to do. Based on this, EPA added Modification Three to the selected remedy.