PB94-964011
EPA/ROD/R04-94/177
July 1994

EPA Superfund
Record of Decision:

Standard Auto Bumper Corp. Site, Hialeah, FL

DECLARATION STATEMENT

RECORD OF DECISION - OPERABLE UNIT TWO

STANDARD AUTO BUMPER CORPORATION SITE

Site Name and Location

Standard Auto Bumper Corporation Site
Hialeah, Dade County, Florida

Statement of Basis and Purpose

This decision document presents the selected remedial action for the Standard Auto Bumper Corporation site, in Hialeah, Dade County, Florida, which was chosen in accordance with the requirements of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA) and to the extent practicable, the National Oil and Hazardous Substance Pollution 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 Protection (FDEP), has been the support agency during the Remedial Investigation (RI) and Feasibility Study (FS) process for the Standard Auto Bumper Co. site. In accordance with 40 CFR 300.430, as the support agency, FDEP 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 this site, if not addressed by implementing the response action selected in the Record of Decision (ROD), may present an imminent and substantial endangerment to public health, welfare, or the environment.

Description of the Selected Remedy

The response action described in this document addresses the second and final operable unit for the site, the contaminated groundwater.

The major components of the selected remedy include the following:

- Natural attenuation
- Groundwater use controls
- Groundwater monitoring

Statutory Determinations

The selected remedy is protective of human health and the environment, complies with Federal and State requirements that are legally applicable or relevant and appropriate to the remedial action, and is cost-effective. This remedy utilizes permanent solutions and alternative treatment (or resource recovery) technology to the maximum extent practicable for this site. Based on the limited area of the groundwater plume; the apparent low mobility of groundwater contaminants due to site-specific hydrogeologic factors; the groundwater contaminants present and their concentrations, relative to drinking water quality standards; and the fact that the source of the contamination, the soil, will be removed this year, EPA concluded that it was impracticable to treat the groundwater effectively. Thus, this remedy does not satisfy the statutory preference for treatment as a principal element.

This remedy will serve to mitigate the threat to human health through the natural attenuation of hazardous substances released from the site. Because this remedy will result in hazardous substances remaining onsite above health-based levels, a review of the remedial action will be conducted within five years after the initiation of the remedy to ensure that the remedy continues to provide adequate protection to human health and the environment. The review will be performed every five years thereafter until health-based levels are achieved.

Patrick M Tobin

Patrick M. Tobin
Acting Regional Administrator

December 10, 1993

Date

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THE DECISION SUMMARY

1.0 SITE DESCRIPTION

The Standard Auto Bumper Corporation site is located in an industrialized area of northeast Dade County, Florida at 2500 West 3rd Court, approximately six miles northwest of downtown Miami (Figure 1) and is defined as all contamination associated with and emanating from the site. Standard Auto Bumper Corporation was a chromium and nickel plating facility which operated at this Hialeah address from 1959 until late 1992/early 1993. The property area is approximately 42,000 square feet and is geographically located at 25°50'40" N latitude, 80°17'15" W longitude. The site is shown in Figure 2 on the Hialeah, Florida USGS 7.5 minute topographic quadrangle map.

Standard Auto Bumper is bordered on the north by Quality Manufacturing Products, Inc. and World Metals; on the east, across West 3rd Court by Nela Junk Yard; on the south by Fernandez Transport Corporation; and on the west, across the railroad track, by the Gilda Bakery (Figure 3). The Red Road Canal is located approximately 300 feet west of the site running parallel to West 3rd Court and the railroad.

Hialeah is an incorporated city that consists of heavy development with mixed zoning. The city has an approximate population of 188,000 people and a strong manufacturing, wholesale, service and retail industry. Twenty percent of the property within a mile radius of the site is utilized for commercial and industrial purposes, sixty percent is residential, and the remaining 20 percent is used for recreational parks and schools. It is estimated that 11,000 people live or work within a mile radius of the site.

2.0 SITE HISTORY

Standard Auto Bumper has owned the electroplating portion of the site since 1959. Prior to 1959, this property was divided into 2 facilities: located on the southern half of the site was a slaughterhouse, and on the northern half of the property was a furnace/smelting company (Yacco, 1991). In 1959 Standard Auto Bumper began chromium and nickel plating operations on the site. Prior to installation of a treatment system in 1972, the wastewater from the electroplating and stripping process was discharged to a drainage ditch/swale area west of the facility. In 1972, the wastewater treatment system was constructed onsite to convert hexavalent chromium to trivalent chromium. Approximately 5,760 gallons of wastewater per day were processed. Between 1972 and 1979 the effluent from the treatment system was discharged to an underground, slab-covered drainage trench located adjacent to the treatment tanks. In 1979, use of this trench was discontinued when

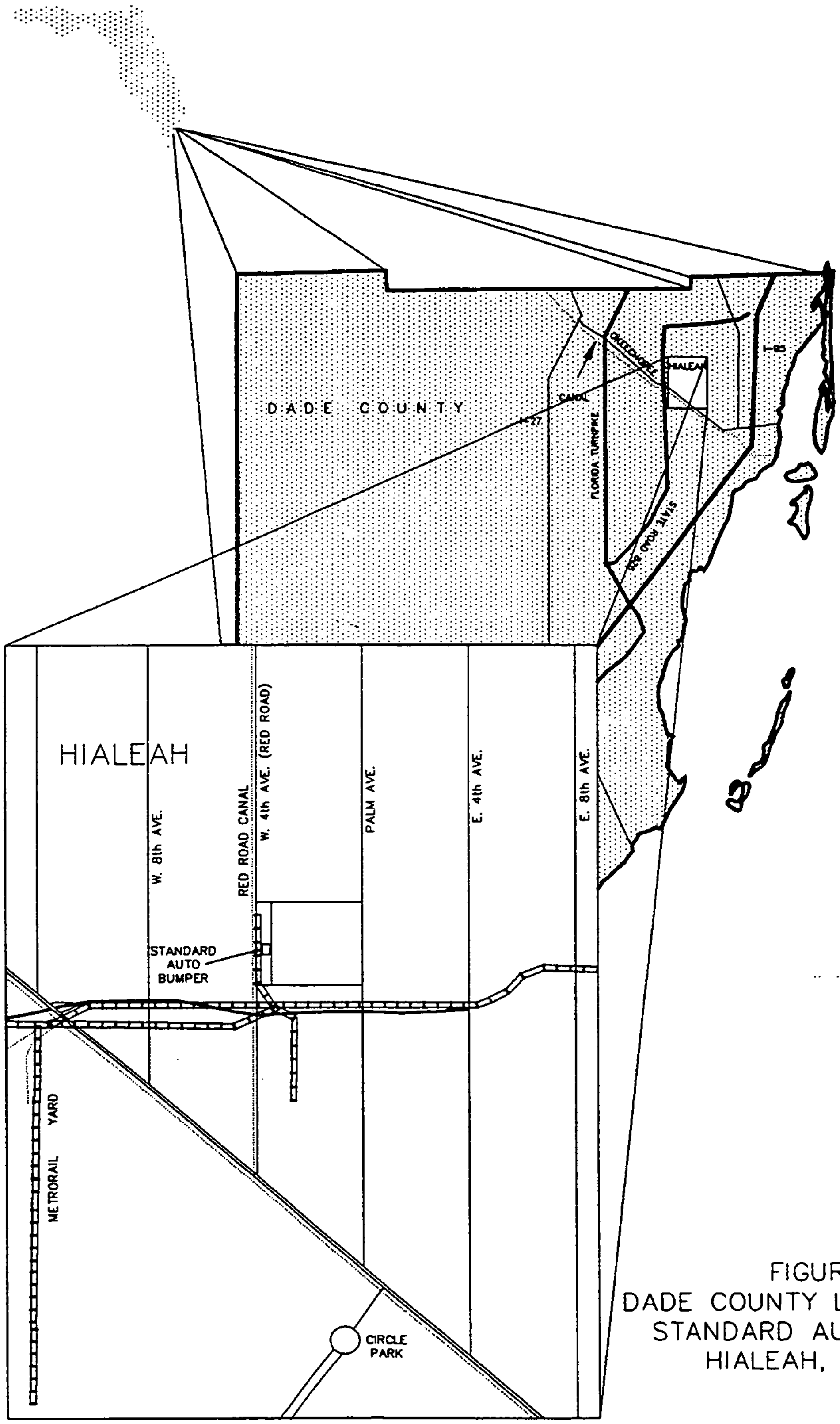


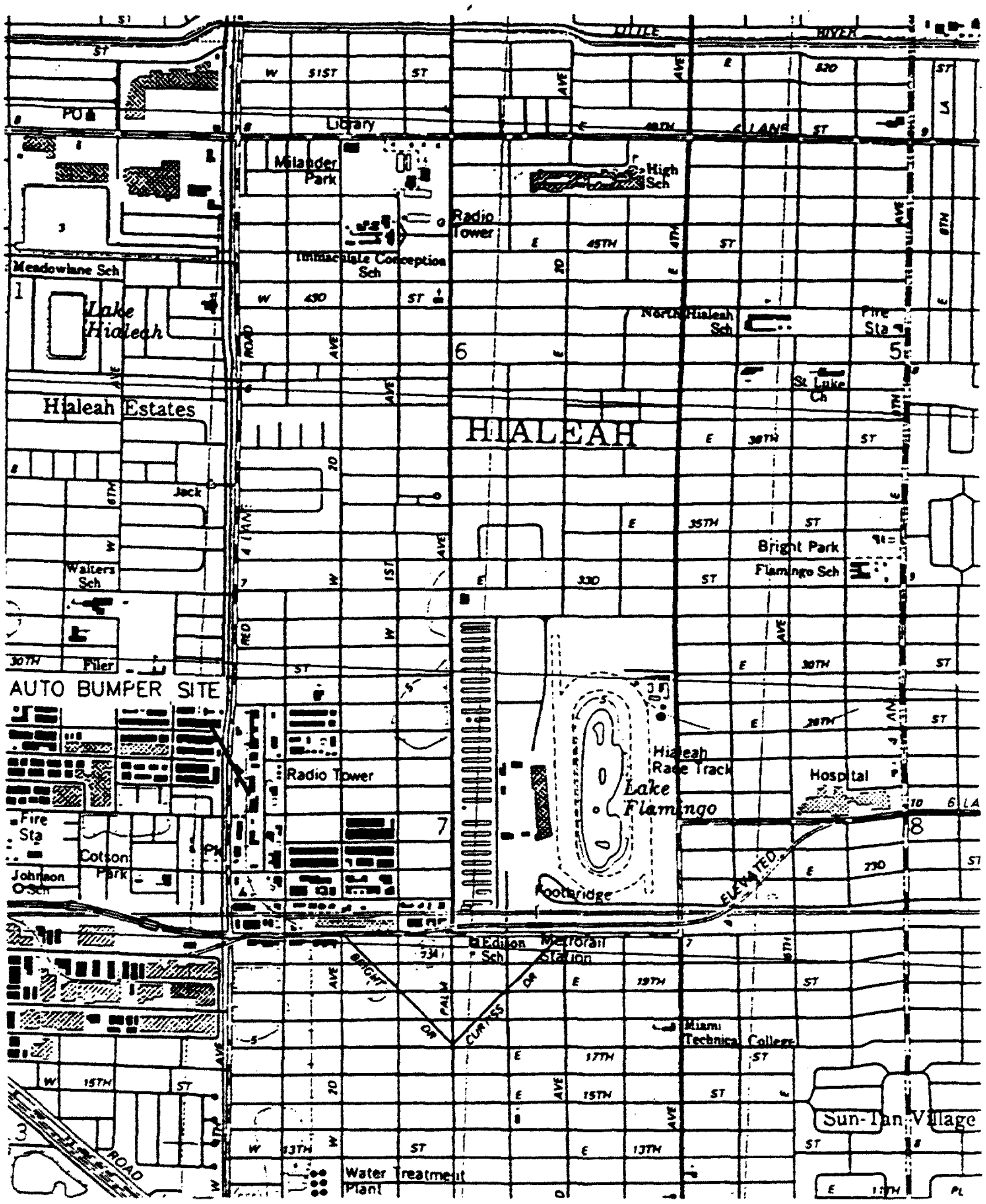
FIGURE 1
DADE COUNTY LOCATION MAP
STANDARD AUTO BUMPER
HIALEAH, FLORIDA

JVSAB

EPA

DRAWING NOT TO SCALE

SAB.CDR



APPROXIMATE SCALE

2000 0 1000 2000

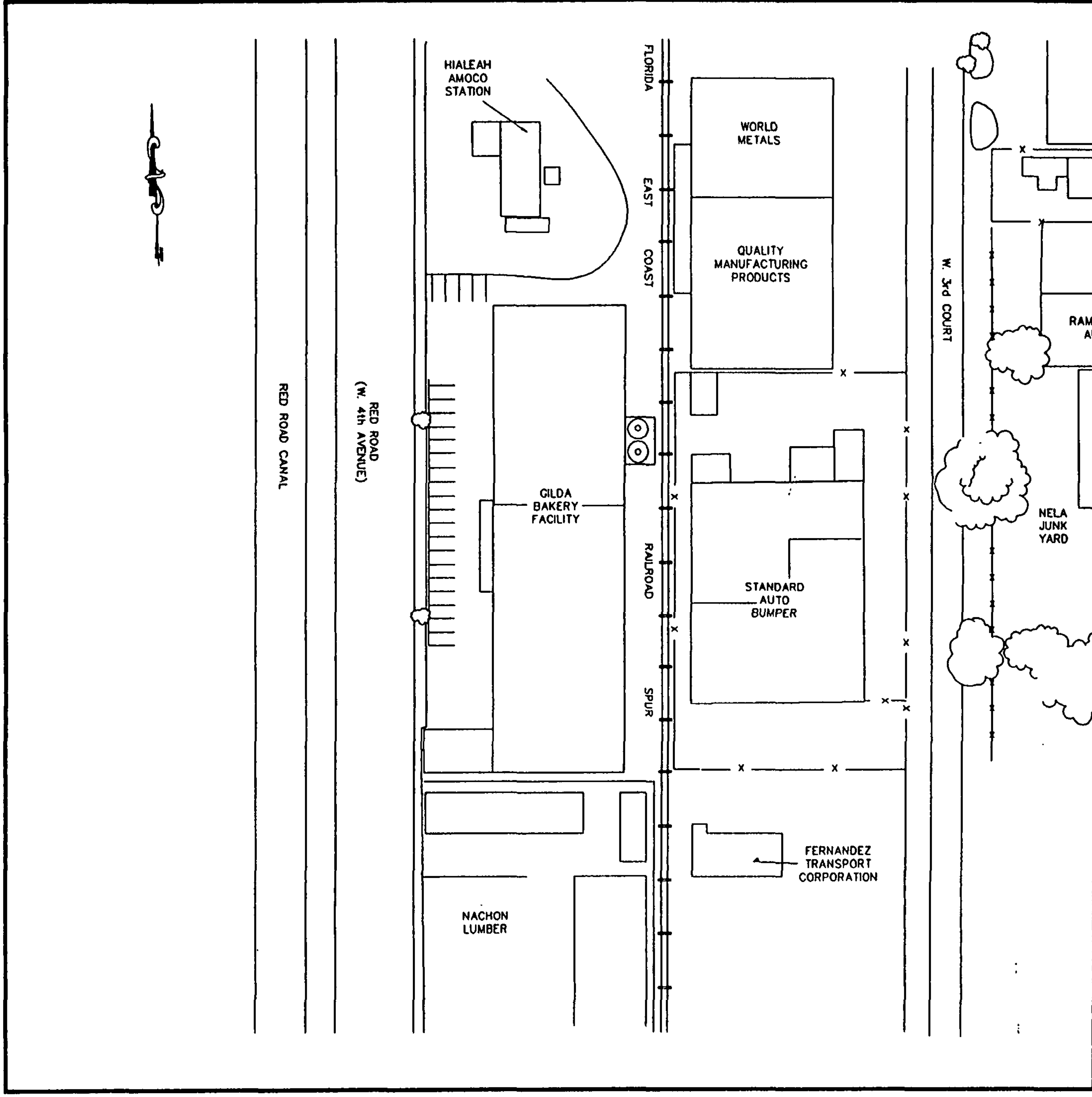
(IN FEET)

1 inch = 2000ft.

EPA

FIGURE 2
TOPOGRAPHIC LOCATION MAP
STANDARD AUTO BUMPER
HIALEAH, FLORIDA

SOURCE: USGS HIALEAH, FLORIDA
7.5 MINUTE SERIES QUADRANGLE, 1988



LEGEND

GRAPHIC SCALE

100 0 50 100

(IN FEET)

FIGURE 3
SITE BASE MAP

STANDARD AUTO BUMPER CORPORATION
HIALEAH, FLORIDA

EPA

BASE MAP SOURCE: U.S. EPA, EPIC AERIAL PHOTO 12/20/89 AND LOCATIONS LOCATED RELATIVE TO BOUNDARY SURVEY 01/02/92 the Hialeah sewer system became the receptor for the effluent discharge. In early 1993, Standard Auto Bumper ceased operations and abandoned the facility leaving tanks with processing water and drums onsite.

With the implementation of the wastewater treatment system and an acceptable method of discharge (sewer), releases of hazardous substances to the environment diminished. However, numerous illegal discharges of treated and untreated wastes to the ground have been documented by Dade County authorities.

A Metropolitan Dade County Department of Environmental Resources Management (DERM) inspector observed effluent being discharged to a soakage trench in the back alley on May 10, 1977. The owner was ordered to correct the violations. However, on November 16, 1981, a county inspector observed that metal cleaning waste was being discharged into an on-site drain. A county inspector on June 4, 1982, found open and leaking drums and discharges of plating liquids onto the ground. A pipe was also discovered leading from the facility into an off-site ditch. Laboratory analysis by the county revealed that water in the ditch contained nickel (160 mg/l), chromium (160 mg/l) and copper (7.52 mg/l).

A county Waste Dumping Citation was also issued to the facility on June 4, 1982, and subsequent inspections found the facility had not ceased illegal discharges. A Final Notice of Violation was issued on October 5, 1983. A county inspector, on March 3, 1985, observed evidence of untreated wastewater discharges into the city sewer system from the site.

On August 14, 1985 soil and groundwater samples collected onsite contained numerous contaminants associated with metal plating activities. On December 3, 1985, waste samples collected by county officials contained concentrations of total cadmium and nickel which exceeded county groundwater quality standards. On September 10, 1986, county officials observed illegal discharges and an overflow pipe leading offsite.

An Expanded Site Investigation (ESI) was conducted at the site in March 1987 by the NUS Corporation, the U.S. EPA Region IV Field Investigation Team (FIT). Numerous soil and groundwater samples were collected at the site as part of the ESI, and were used to document the Hazard Ranking System (HRS) package data and to expedite the Remedial Investigation (RI/FS).

The ESI samples were analyzed for the parameters in the Hazardous Substance List. This list, which was a precursor to the Target Compound List and Target Analyte List, included organic and inorganic chemicals. Elevated concentrations of heavy metals were found in the former disposal areas and other areas of interest. Similar contaminants were identified in the soils, groundwater, and waste effluent samples, indicating that the source of groundwater contamination is soil leachate from the discharge areas. The detected organic compounds included polynuclear aromatic hydrocarbons (PAHs) and pesticides. PAHs are associated with creosote products that can be found in railroad ties and asphalt paving. Pesticides are not related to the electroplating process and were not attributed to the Standard Auto Bumper Corp. site. No groundwater samples contained concentrations of any organic compounds above Federal or State drinking water standards.

The ESI recommended excavation of the contaminated soil from particular areas on-site to decrease the source of heavy metal contamination. This report also suggested that the extent and nature of offsite contamination be ascertained. Groundwater contamination and its extent to the west, and the impact from a local canal on groundwater flow should be further defined. The report noted that even with the high transmissivity of the Biscayne aquifer and the depth of the confining layer, groundwater remediation was possible.

The site was proposed for inclusion to the National Priority List (NPL) list in June 1988 and became finalized in October 1989 based on the HRS package (1987).

Standard Auto Bumper entered into a consent agreement with DERM in 1988 to implement a Remedial Action Plan (RAP). The plan's objectives were to address the extent of contamination; design plans for soil removal, groundwater monitoring and facility improvements; and establish time schedules and estimate costs for remediation. Before work outlined in the RAP began, an Administrative Order (AO) for Removal (1989) between EPA and Standard Auto Bumper was developed to remove contaminated soils.

The AO for Removal specified soil clean-up levels based on the Extraction Procedure (E.P.) Toxicity test method for the contaminants at the site. During the removal action these clean up goals were reevaluated based on a site-specific soil partitioning coefficient and the potential for the soil contaminants to migrate to the groundwater. A cleanup level of 300 mg/kg for nickel was calculated using a Maximum Contaminant Level (MCL) of 140 ug/l. DERM proposed an alternative nickel cleanup concentration of 200 mg/kg. EPA concurred with DERM's suggestion and proposed to change the AO to reflect the new cleanup goal, which would more likely be attainable at the site. However, the Potentially Responsible Party (PRP), Standard Auto Bumper, did not respond to this proposal.

In 1989, under the removal AO, the PRP excavated the soil and sludge in the bottom of the slab-covered trench and sent it to the Chemical Waste Management facility in Emelle, Alabama for disposal. Soils excavated from the drainage ditch and south areas of the site were not deemed hazardous waste and were sent to the local landfill. Confirmatory samples of the soil remaining in the ground after excavation contained nickel above the cleanup concentration.

The PRP did not continue excavating and the soil remained in the ground. This remaining soil was the focus of the operable unit (OU) one RI/FS.

On February 28, 1990 an AO by Consent was signed between Standard Auto Bumper and EPA to implement the RI/FS. Pursuant to the 1990 RI/FS AO, Standard Auto prepared and submitted a RI/FS Work Plan, which was approved by the EPA. However, prior to implementing the work outlined in the plan, the company indicated that they were financially unable to continue the RI/FS. Subsequently, EPA took over the site activities and Region IV, Atlanta, performed an in-house RI/FS. In 1991 EPA conducted soil, sediment, surface water and groundwater sampling as part of the RI/FS.

The FS for the soil, OU one, was completed in September 1992 and the ROD issued on September 28, 1992. The ROD determined that all soil containing concentrations of total chromium, hexavalent chromium or nickel above 519 ppm, 52 ppm or 370 ppm, respectively, would be excavated and disposed at a Florida Class I Landfill. Groundwater monitoring was also specified to determine the effectiveness of the source remedy.

On October 14, 1992 the EPA issued a notice letter to the PRP, pursuant to Section 122(a) of CERCLA, for the Remedial Design/Remedial Action (RD/RA). The PRP did not respond and EPA began the remedial design for the OU one source removal in early 1993. EPA is currently negotiating a State Superfund Contract with the State of Florida to assure the State's cost share of the soil remedy in accordance with the requirement for a state to share 10% of the cost of a remedial action which uses Superfund monies. Emergency Response Contract Support (ERCS) is planning to conduct the remedial action for EPA. Confirmatory sampling during OU one will determine that all contaminated soil above cleanup goals stated above is excavated.

In addition to these current remedial activities, an emergency removal is being conducted at the site to address the immediate threats of the drums and tanks left at the abandoned facility.

3.0 HIGHLIGHTS OF COMMUNITY PARTICIPATION

Prior to the site-wide RI/FS the EPA conducted an Information Availability session to introduce the Superfund process and the site to the community, explain the activities planned for the site, and answer any questions. The meeting, held on January 10, 1991 in a local school, was publicized in local papers and by door to door canvassing in the community. At the completion of the RI/FS for OU one, the RI/FS Report and Proposed Plan for the soil were released to the public in August 1992. Similarly at the completion of the RI/FS for OU two, the RI/FS Report and Proposed Plan for the groundwater were released to the public in August 1993. All documents were made available to the public in both the

Administrative Record and an information repository maintained at the EPA Records Center in Region IV and the John F. Kennedy Memorial Library in Hialeah.

The notice of availability for the documents for the second OU was published in the Miami Herald on August 26, 1993, and the Spanish newspaper, Diario Las Americas, on August 24 and 31, 1993.

The Proposed Plan for the groundwater was sent to approximately 500 people in the community, government, and media. A public comment period was held from August 24 to September 23, 1993. A public meeting, announced in the public notices and in the Proposed Plan, was held in the library on September 2, 1993. The purpose of the meeting was to present the proposed plan and answer questions. No Hialeah citizens attended the public meeting. One staff member from DERM attended the meeting and provided a written comment to EPA in a letter dated August 31, 1993. This comment was the only comment received during this period and is included in the Responsiveness Summary, which is part of this ROD (Appendix B).

4.0 SCOPE AND ROLE OF OPERABLE UNIT TWO

As with many Superfund sites, studying and addressing contaminated media in the most efficient manner can be a difficult endeavor, due to complex characteristics of each site. As a result, EPA organized the site into two OUs: one to address contaminant source areas (OU one) and the other to evaluate groundwater conditions (OU two). OU two includes the contaminated groundwater associated with and emanating from the site. This decision document presents the selected remedial action for OU two of the Standard Auto Bumper Corporation Superfund Site, chosen in accordance with CERCLA, as amended by SARA. The decision for this site is based on the Administrative Record.

The groundwater poses a principal threat to human health and the environment due to ingestion of contaminated groundwater by future residents. The remedial objectives for this OU are to prevent current or future exposure to the groundwater contaminated with nickel and other inorganic compounds through groundwater use controls and to restore groundwater to health-based levels through natural attenuation.

5.0 SITE CHARACTERISTICS

The nature and extent of the contamination at the site was investigated during the RI/FS. Based on these studies, a summary of the geology, hydrogeology, subsurface features, and the sampling results are provided in this section. The discussion on the sampling studies includes groundwater, surface water and sediment sampling results.

5.1 Geology

In south Florida, the upper 3,000 feet of rocks are composed chiefly of limestone, dolomite, sand, clay, marl, and shells. Geologically, the Biscayne Aquifer is composed of soils of Holocene age and rock ranging in age from Pleistocene through Pliocene. The 1987 ESI documented mostly unconsolidated surficial deposits at the site consisting of calcareous sands and gravels to a depth of approximately 28 feet below land surface and quartz sands to a depth of approximately 48 feet. A harder, consolidated bedrock unit was reportedly encountered below the surficial deposits and was described as cavity-riddled, fossiliferous, marine limestone. At the site, the Biscayne Aquifer extends to a depth of approximately 110 feet below sea level.

Solution cavities occupy a significant volume of the limestone in the Biscayne Aquifer, causing it to have high horizontal and vertical permeabilities. The lower part of the oolitic limestone is also cavity riddled and is identified by the presence of bryozoans. A hard cavernous limestone underlies the bryozoan layer. Because of the extremely high permeability of this limestone, all large capacity wells are completed in this part of the aquifer, generally 40 to 100 feet below the land surface.

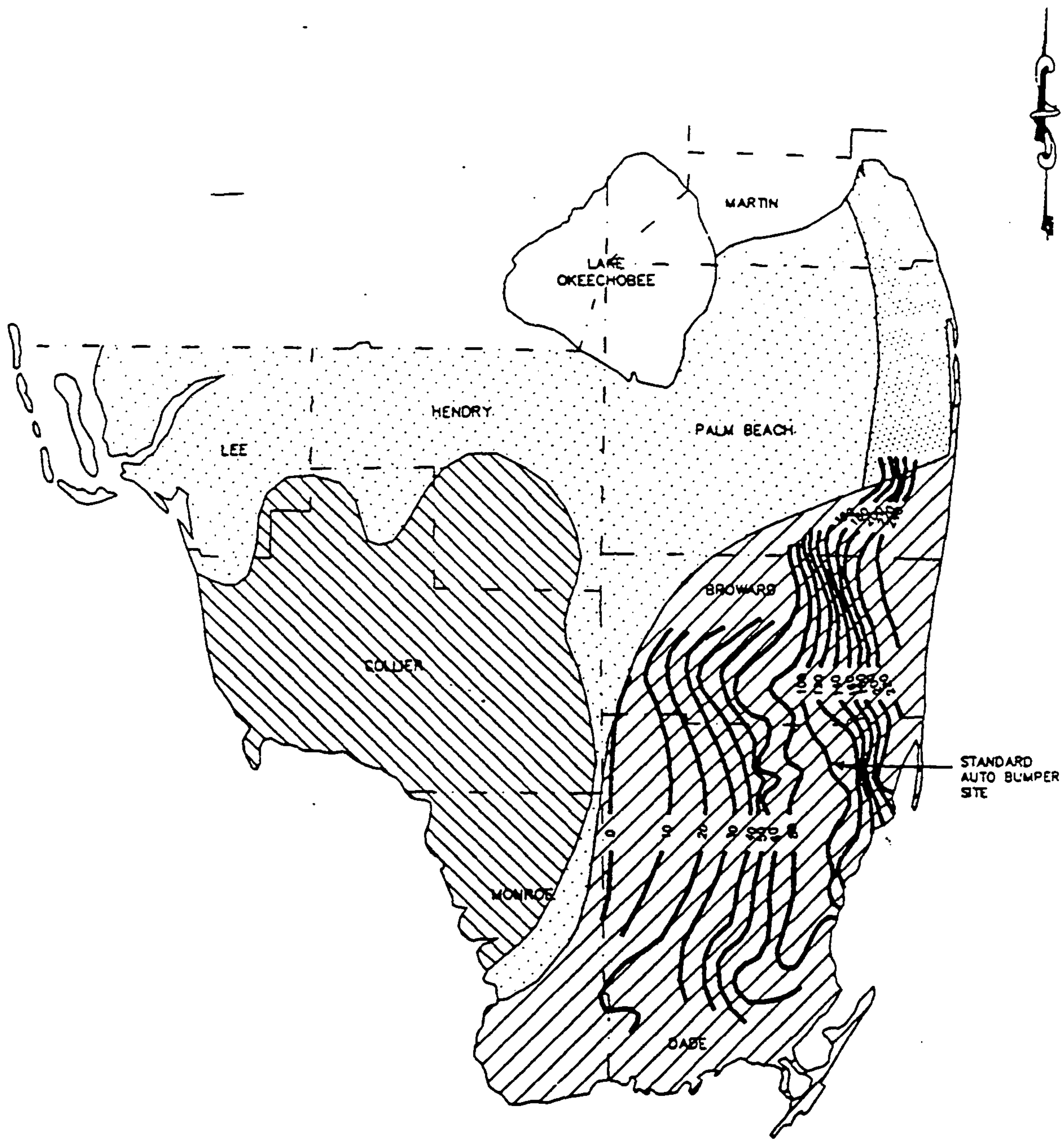
5.2 Hydrogeology

The uppermost hydrogeological water bearing unit in the study area is the Biscayne Aquifer. The Biscayne Aquifer is the major source of all the municipal water for the residents of the southeast coast of Florida from Boca Raton southward and is composed of limestone, sandstone, and sand.

The major aquifers in south Florida are composed primarily of limestone and supply varying yields of potable and non-potable brackish water for municipal and irrigation water use in southern Florida. The aquifers, ranging from highest to lowest yield, are: the Biscayne Aquifer of southeast Florida, the Shallow Aquifer of South West Florida, and the Coastal Aquifer of Palm Beach and Martin Counties (Figure 4). Underlying these aquifers is a thick confining layer composed of relatively impermeable beds of clay and marl which overlie the Floridan aquifer.

The Floridan Aquifer in southern Florida is composed of permeable limestone and contains non-potable brackish water. The impermeable beds separating the shallow aquifers and the deeper Floridan aquifer shield against the upward intrusion of brackish water. However, there is no shield against the lateral encroachment of seawater.

Recharge to the Biscayne Aquifer is primarily by local rainfall. Infiltration is rapid in the areas covered by sand, or where soil is absent. In the site vicinity, the soil type consists of fine quartz sand. Discharge is by evapotranspiration, canal drainage, coastal seepage, and pumping.



LEGEND

- BISCAYNE AQUIFER, HIGH YIELD
- SHALLOW AQUIFER OF SOUTH WEST FLORIDA, MODERATE TO HIGH YIELD
- COASTAL AQUIFER OF PALM BEACH AND MARTIN COUNTIES, MODERATE YIELD
- LOCAL, DISCONTINUOUS, WATERBEARING MATERIAL, LOW YIELD
- —40— LINE OF EQUAL DEPTH OF BASE OF AQUIFER, FEET BELOW SEA LEVEL (NGVD29) (EQUIDISTANCE – 20 FEET = 6.1 METRES)

FIGURE 4

SHALLOW AQUIFERS IN SOUTHERN FLORIDA

EPA

STANDARD AUTO BUMPER
HIALEAH, FLORIDA

APPROXIMATE SCALE

25 0 12.5 25

(IN MILES)

1 in. = 25 miles

(Modified from Klein and others, 1975, page 31 and Franks, 1982, sheet 3)

Transmissivity (T) of the Biscayne Aquifer ranges from 5.4 X 10^4 ft^2/day (581 cm^2/sec) where the aquifer is mostly sand to greater than 1.6 X 10^6 ft^2/day (17,200 cm^2/sec) in the limestone-rich areas. During the ESI conducted in 1987, site specific values of hydraulic conductivity (K) were determined to range between 42.8 ft/day (0.0151 cm/sec) to 102 ft/day (0.036 cm/sec) or an average of 62.6 ft/day (0.0221 cm/sec). Using the relationship T=Kb, a site specific value for the transmissivity of the unconsolidated calcareous sands and gravels and quartz sand zone can be estimated: T = 62.6 ft/day X 48 ft = 3000 ft^2/day (32.3 cm^2/sec). This site specific value for the transmissivity of the unconsolidated zone is an order of magnitude lower than the published value for the sandy portion of the Biscayne Aquifer.

Regional flow of ground water in the Biscayne Aquifer of southeast Florida is seaward. Locally, however, the direction and rate of flow may be significantly influenced by the direct surface water connection of the canal system, other surface water features, and/or by pumping from well fields.

5.3 Subsurface Features

In the northwest corner of the site there is an unused underground storage tank. A gas line extends from the east side to the west of the site on the north edge of the property. No other underground structures are known to exist at the site.

5.4 Sampling Results

The following summarizes groundwater sampling data contained in the RI Report on Groundwater Conditions at the Standard Auto Bumper Corporation Site, May 1993. The surface water and sediment sampling results addressed during OU one are also briefly described due to the groundwater's potential impact on surface waters. This information was culled from the RI Report for Standard Auto Bumper Corporation, July 1992. Both of these documents can be found in the Administrative Record.

5.4.1 Groundwater

The primary purpose of the groundwater RI/FS was to determine the condition of the groundwater by intermittently sampling the groundwater at the site over a year and a half period. From April 1991 through November 1992 four rounds of groundwater samples were collected from the monitoring wells onsite and offsite.

Similar contaminants were detected in the groundwater during each of the four sampling events at the site. The sampling phases were as follows:

- Preliminary RI Phase in April 1991
- Phase I in January 1992

- Phase II in May 1992
- Phase III in November 1992

This periodic sampling provided an accurate determination of contaminant concentrations and groundwater flow direction. Highest concentrations of contaminants were consistently found in offsite monitoring well MW-2S, located downgradient and adjacent to the drainage ditch on the western side of the building.

During the Preliminary RI Phase all existing monitor wells at the site were sampled. Federal Maximum Contaminant Levels (MCLs) for chromium, lead and arsenic and Florida Drinking Water Standards (DWS) for chromium, copper, iron, lead, manganese, and arsenic were exceeded in most groundwater samples collected during the Preliminary RI Phase. The groundwater regulatory levels are shown in Table 1 and contaminant concentrations are shown in Figure 5. The Preliminary RI Phase was the only time when the deeper monitoring wells exceeded MCLs or primary DWS.

During Phase I, the Secondary MCL (SMCL) and secondary DWS for iron, the MCLs for chromium, nickel, and lead, and the primary DWS for chromium and lead were exceeded in the temporary monitoring wells (Figure 6). In the permanent monitoring wells chromium, nickel and lead concentrations exceeded MCLs (Figure 7). Hexavalent chromium, the more toxic form of chromium, was not detected in any of the shallow monitoring wells.

Phase II of the RI yielded results that were a departure from the earlier observed conditions (Figure 8). No chromium, copper, lead or zinc was detected in the shallow monitoring wells. Nickel was the only contaminant which exceeded the MCL in the shallow monitoring wells. No MCLs or primary DWS were exceeded in the deeper monitoring wells. Two new deep monitoring wells, that were installed as part of Phase II, contained the most inorganic analytes. The RI Report determined that the low concentrations of chromium, nickel, lead, and zinc slightly above their respective detection limits and only in these two deep monitoring wells did not appear to be indicative of representative groundwater concentrations. It was noted that aluminum levels in these two monitoring wells were two orders of magnitude higher than in any other sample. Based on these results, and the sample clarity with respect to that obtained in the other shallow or deep groundwater samples, it is likely that the samples were collected prior to adequate development of the wells.

The fourth and final round of sampling, Phase III, confirmed the results found during the third round of sampling, Phase II. Sampling results are contained in Appendix A. Chromium, copper, and lead were not detected in any of the ground water samples from the shallow or deep monitoring wells. In the shallow monitoring wells, nickel concentrations slightly exceeded MCLs in two onsite groundwater samples (120 ug/l in MW-4S and MW-11S) and in an

TABLE 1
GROUNDWATER REGULATORY LEVELS

Chemical	MCL	SMCL (ppm)	PDWS	SDWS
Aluminum	--	--	0.2	--
Arsenic	0.05	--	0.05	--
Chromium	0.1	--	0.1[b]	--
Copper	--	--	--	1.0
Iron	--	0.3	--	0.3
Lead	0.015[a]	--	0.05	--
Manganese	--	0.05	--	0.05
Nickel	0.1	--	0.01	--
Zinc	--	5	--	5

a Action Level
b level currently being revised from 0.05 to 0.1
MCL Maximum Contaminant Level
SMCL Secondary Maximum Contaminant Level
PDWS Florida Primary Drinking Water Standard
SDWS Florida Secondary Drinking Water Standard
ppm parts per million

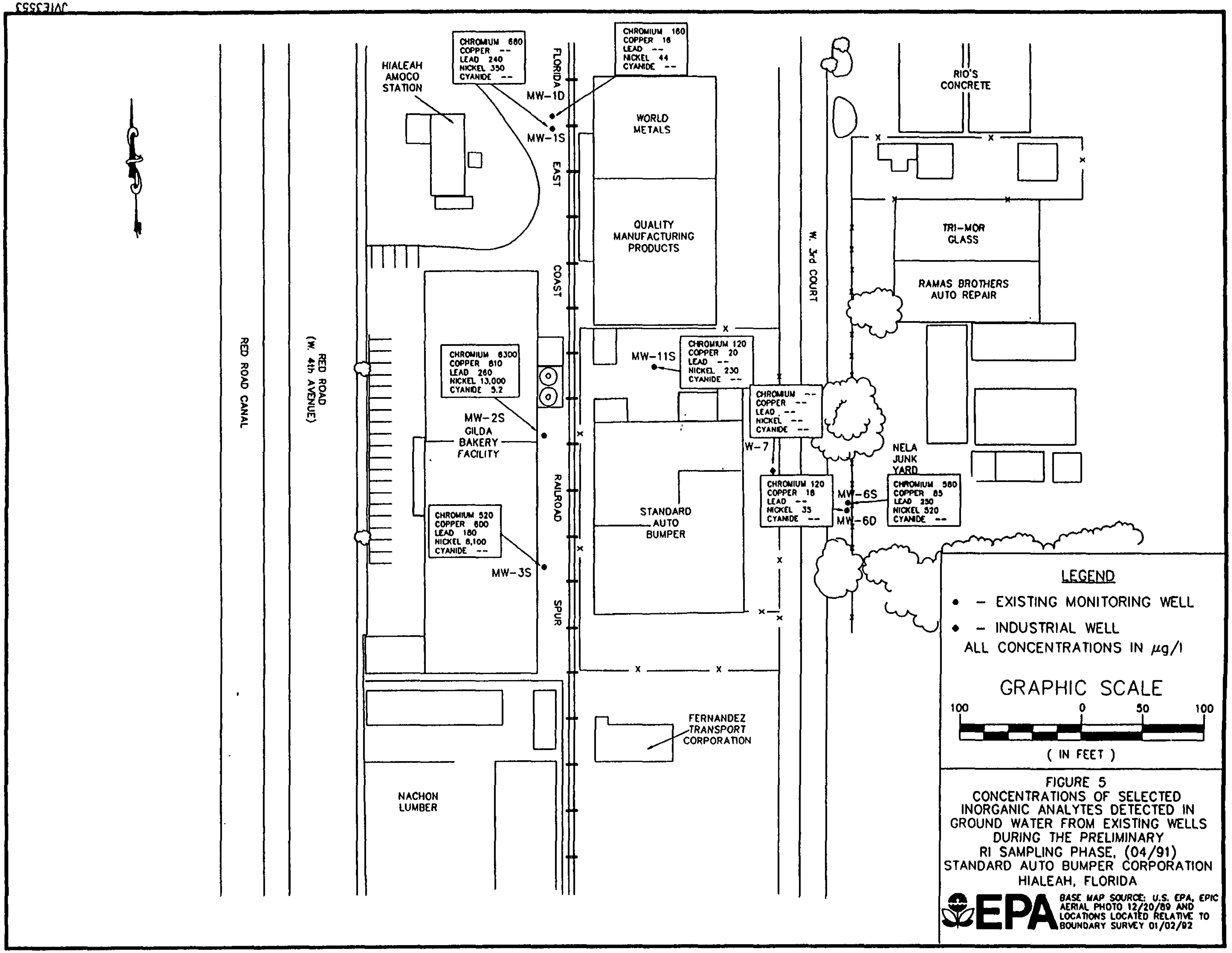


FIGURE 5
CONCENTRATIONS OF SELECTED INORGANIC ANALYTES DETECTED IN GROUND WATER FROM EXISTING WELLS DURING THE PRELIMINARY RI SAMPLING PHASE, (04/91)
STANDARD AUTO BUMPER CORPORATION
HIALEAH, FLORIDA

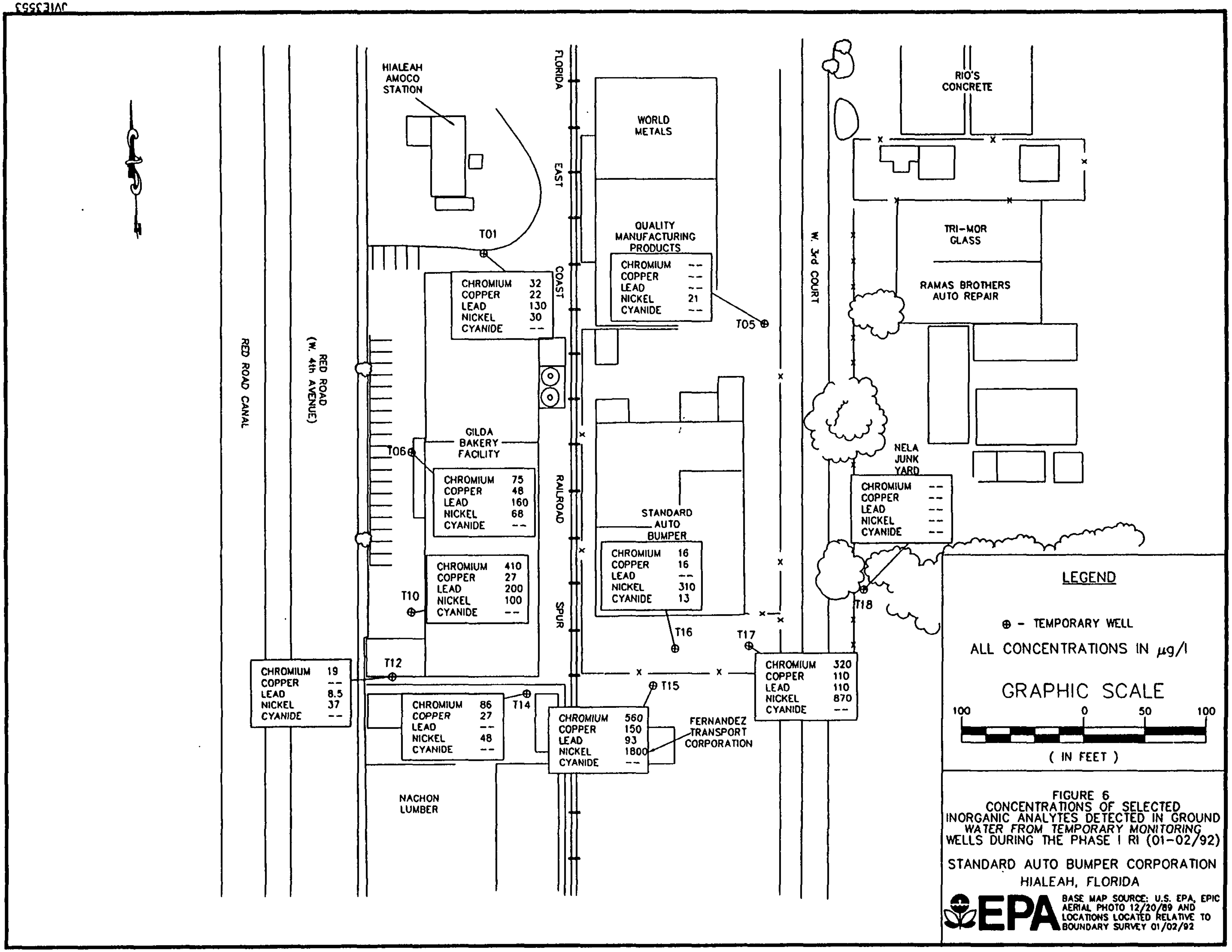


FIGURE 6
CONCENTRATIONS OF SELECTED INORGANIC ANALYTES DETECTED IN GROUND WATER FROM TEMPORARY MONITORING WELLS DURING THE PHASE I RI (01-02/92)

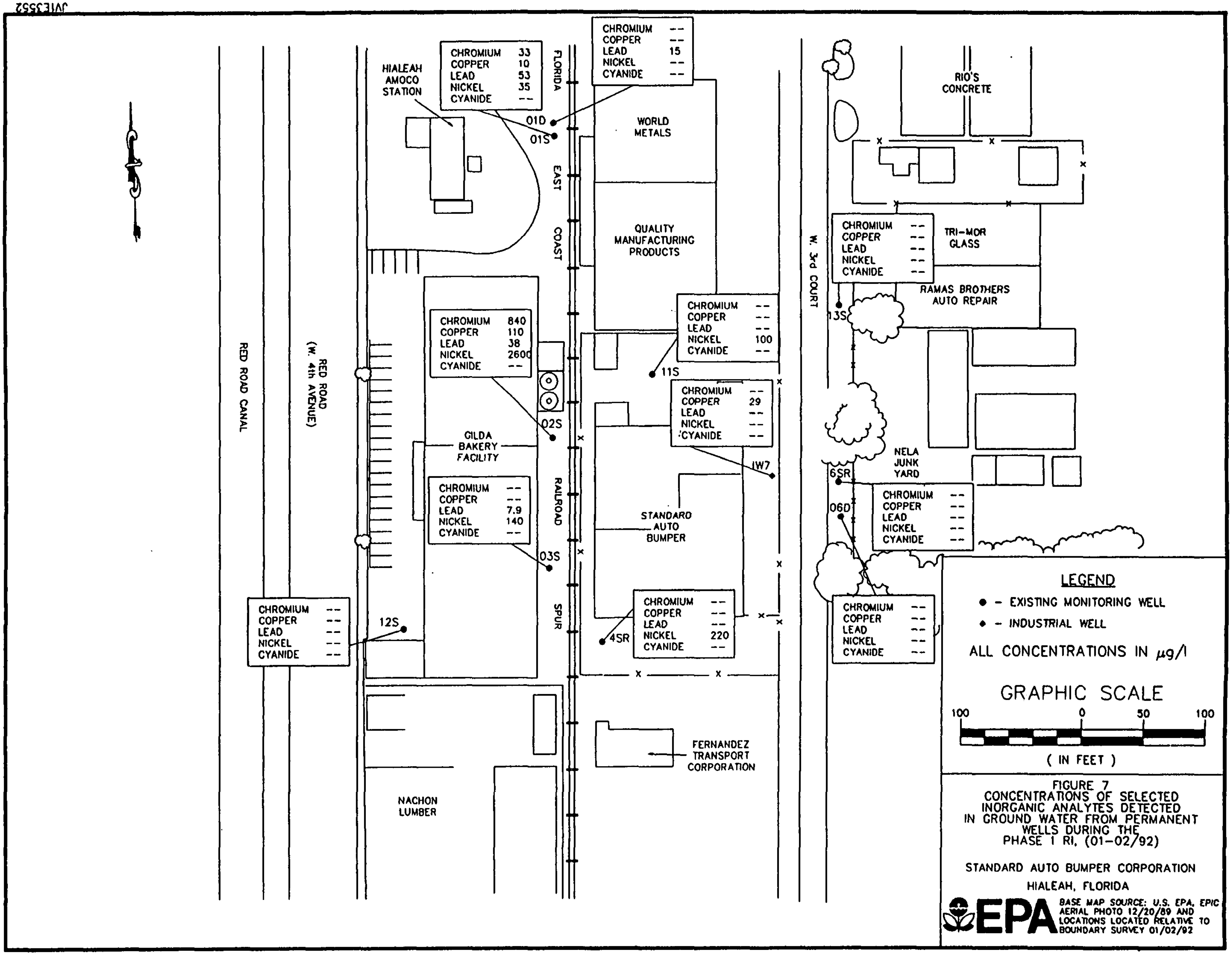


FIGURE 7
CONCENTRATIONS OF SELECTED INORGANIC ANALYTES DETECTED IN GROUND WATER FROM PERMANENT WELLS DURING THE PHASE 1 RI, (01-02/92)

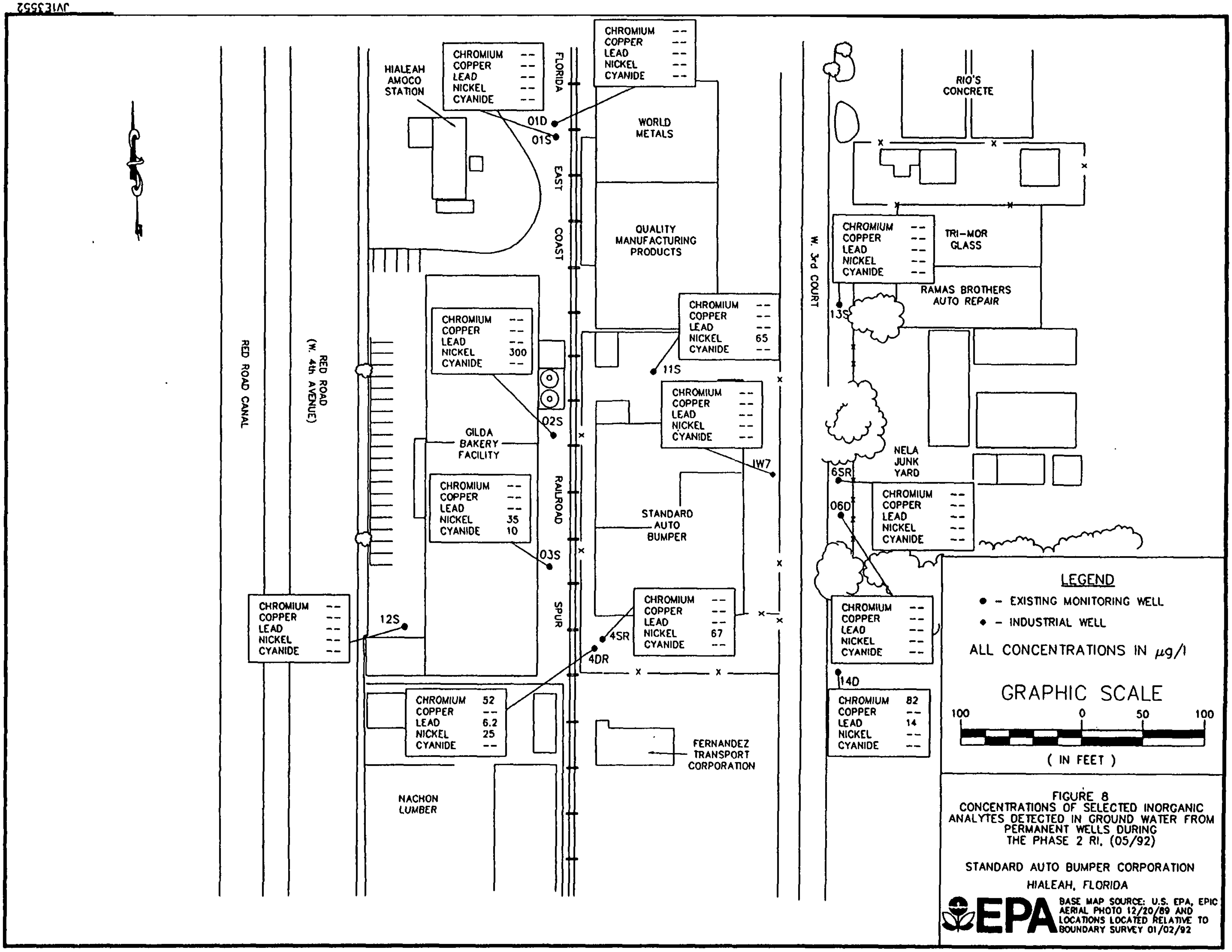


FIGURE 8
CONCENTRATIONS OF SELECTED INORGANIC ANALYTES DETECTED IN GROUND WATER FROM PERMANENT WELLS DURING THE PHASE 2 RI. (05/92)

STANDARD AUTO BUMPER CORPORATION
HIALEAH, FLORIDA

offsite groundwater sample (270 ug/l in MW-02). Secondary DWS for aluminum and iron were exceeded in the shallow monitoring wells also.

In all four deeper monitoring wells and the one onsite industrial well, nickel was undetected and all contaminants were below the MCLs and primary DWS. The fact that secondary DWS for iron were exceeded in all the deep monitoring wells, the industrial well, and seven of the eight shallow monitoring wells may indicate that high iron levels are widespread in this industrial area. The secondary DWS for aluminum was only slightly exceeded in one deep monitoring well. Table 2 contains a summary of the results of the groundwater analysis during the fourth round of sampling, including the contaminants detected, the range of concentrations, frequency of detection, detection limit (DL) and background/control levels. Because the shallow and deeper aquifers lacked any definitive hydrogeologic layer separating the contaminants detected, the groundwater sampling data from both the shallow and deeper wells were combined. Selected groundwater contaminant concentrations for the final round of sampling are depicted in Figure 9.

The RI data indicates a trend towards decreasing chromium concentrations, particularly in the monitoring well where most of the high contaminant levels have been found, MW-02. Offsite chromium migration in the groundwater was not observed. The RI Report determined that nickel is the only one of the five chemicals selected in the report as the contaminants of interest (chromium, copper, lead, nickel, and cyanide) that currently impacts the groundwater. The DWS for nickel was only slightly exceeded in the two onsite monitoring wells during the fourth and final round of sampling. Nickel exceeded its DWS in one offsite monitoring well (MW-2S), approximately 20 feet from the site, during the last sampling event; however, the level was the lowest concentration for that well detected during any of the sampling events. There has been a noticeable decrease in the nickel concentration during each sampling event as shown in Figure 10. The RI report stated that there was a change in sampling method between April 1991, and January 1992, that may have accounted for a majority of this decrease. However, after January 1992, sampling methods remained the same and the decrease continued. No vertical migration was observed during the sampling events. Horizontally, nickel appears to be somewhat localized to the site, but is influenced by the fluctuating groundwater flow direction.

The RI documented fluctuating directions and rates of groundwater flow in the Biscayne Aquifer. The groundwater movement in the aquifer appears to be directly influenced by the canal system (particularly nearby Red Road Canal) and the pumping from wells in the vicinity of the site.

The data confirmed that the source of groundwater contamination is most likely the contaminated soil in the former drainfield area

TABLE 2

CONTAMINANTS DETECTED IN GROUNDWATER SAMPLES

(ug/l)

CONTAMINANT	DETECTED CONCENTRATION RANGE	DETECTION LIMIT	AVERAGE CONCENTRATION OF DETECTED	BACKGROUND LEVEL	DETECTION FREQUENCY
Barium	12 - 36	NA	19.8	17	12/12
Nickel	26 - 270	20	134	20U	4/12
Strontium	360 - 870	NA	726	830	13/12
Titanium	11 - 15	10	13	10U	2/12
Zinc	12 - 81	10	24.2	17	11/12
Aluminum	120 - 460	100	278	100U	4/12
Manganese	11 - 50	10	24.3	23	11/12
Calcium	57000 - 89000	NA	76499	94000	12/12
Magnesium	2700 - 10000	NA	7325	7200	12/12
Iron	180 - 2700	NA	1031	2300	12/12
Sodium	17000 - 45000	NA	35916	37000	12/12
Potassium	2100 - 3200	2000	2481	2800	8/12

NA: Not Available

Sources: <u>Final Baseline Risk Assessment for the Groundwater Pathway, Standard Auto Bumper Site</u>

<u>Remedial Investigation Report on Ground Water Conditions at the Standard Auto Bumper Corporation Site</u>

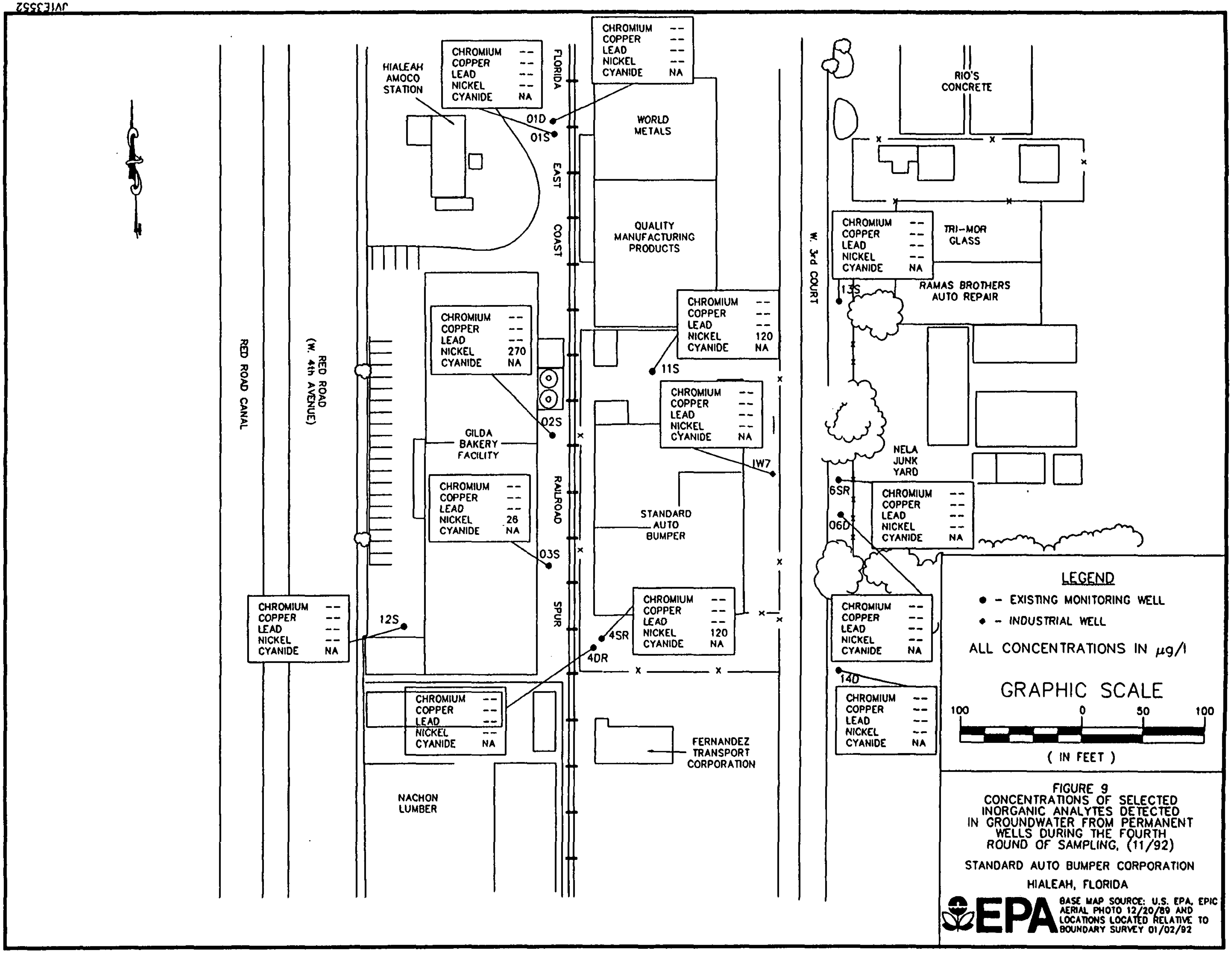
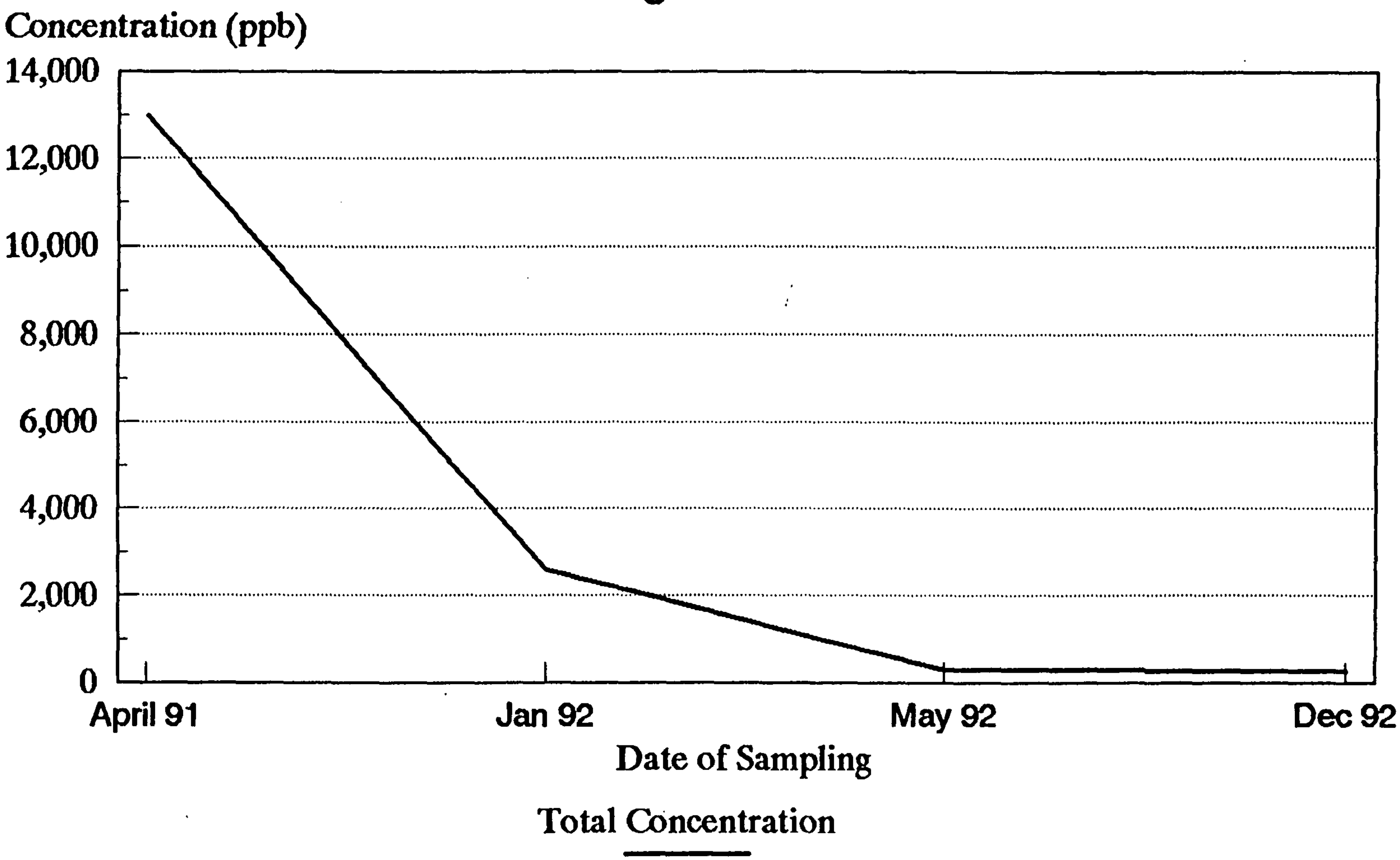

HIALEAH AMOCO STATION
CHROMIUM -- COPPER -- LEAD -- NICKEL -- CYANIDE NA
CHROMIUM -- COPPER -- LEAD -- NICKEL -- CYANIDE NA
01D
01S
WORLD METALS
RIO'S CONCRETE
QUALITY MANUFACTURING PRODUCTS
FLORIDA EAST COAST RAILROAD SPUR
W. 3rd COURT
TRI-MOR GLASS
CHROMIUM -- COPPER -- LEAD -- NICKEL -- CYANIDE NA
13S
RAMAS BROTHERS AUTO REPAIR
CHROMIUM -- COPPER -- LEAD -- NICKEL 120 CYANIDE NA
11S
CHROMIUM -- COPPER -- LEAD -- NICKEL 270 CYANIDE NA
02S
RED ROAD CANAL
RED ROAD (W. 4th AVENUE)
CHROMIUM -- COPPER -- LEAD -- NICKEL -- CYANIDE NA
IW7
GILDA BAKERY FACILITY
NELA JUNK YARD
6SR
06D
CHROMIUM -- COPPER -- LEAD -- NICKEL -- CYANIDE NA
CHROMIUM -- COPPER -- LEAD -- NICKEL 26 CYANIDE NA
03S
STANDARD AUTO BUMPER
CHROMIUM -- COPPER -- LEAD -- NICKEL -- CYANIDE NA
12S
CHROMIUM -- COPPER -- LEAD -- NICKEL 120 CYANIDE NA
4SR
4DR
CHROMIUM -- COPPER -- LEAD -- NICKEL -- CYANIDE NA
14D
CHROMIUM -- COPPER -- LEAD -- NICKEL -- CYANIDE NA
CHROMIUM -- COPPER -- LEAD -- NICKEL -- CYANIDE NA
FERNANDEZ TRANSPORT CORPORATION
NACHON LUMBER
LEGEND
● - EXISTING MONITORING WELL
♦ - INDUSTRIAL WELL
ALL CONCENTRATIONS IN µg/l
GRAPHIC SCALE
100 0 50 100
(IN FEET)
FIGURE 9
CONCENTRATIONS OF SELECTED INORGANIC ANALYTES DETECTED IN GROUNDWATER FROM PERMANENT WELLS DURING THE FOURTH ROUND OF SAMPLING, (11/92)
STANDARD AUTO BUMPER CORPORATION
HIALEAH, FLORIDA
EPA
BASE MAP SOURCE: U.S. EPA, EPIC AERIAL PHOTO 12/20/89 AND LOCATIONS LOCATED RELATIVE TO BOUNDARY SURVEY 01/02/92

FIGURE 10

Nickel Concentration
Monitoring Well MW-2S



north of the building and the surface drainage areas west and south of the facility building, as determined during the soil investigation for OU one. During OU one, contamination was found in some of these areas in soil located six feet below the surface where soil interfaces with groundwater.

5.4.2 Surface Water and Sediment

Three sediment samples and surface water samples were collected in Red Road Canal and analyzed for TCL/TAL and TAL, respectively. The sediment samples contained metals which did not appear to be related to the site, with the exception of lead at a maximum concentration of 120 mg/kg. The surface water samples from the same location contained no detectable chromium, copper, cadmium, nickel, lead, arsenic, or cyanide.

The RI for the soils concluded that surface water data could not be correlated with the soil and groundwater data for the site. Also the upgradient surface water concentrations were nearly identical to the downgradient concentrations.

6.0 SUMMARY OF SITE RISKS

As part of the RI/FS, EPA prepared a Baseline Risk Assessment for the Standard Auto Bumper Corp. site. This risk assessment was carried out to characterize, in the absence of remedial action (i.e., the "no-action" alternative), the current and potential threats to human health and the environment that may be posed by exposure to contaminants migrating from the groundwater. Results are contained in the Final Baseline Risk Assessment report, July 1993. The assessment 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 risk assessment process can be divided into four components: contaminant identification, exposure assessment, toxicity assessment, and risk characterization.

6.1 Contaminants of Concern

Contaminants of concern (COCs) are contaminants that are detected in the groundwater and that may pose health risks to humans coming in contact with them. The contaminants of concern identified for this site are shown below in Table 3. Estimates are also made for concentrations of COCs used to estimate the uptake by exposed populations. In general, the 95% upper confidence limit (UCL) of the arithmetic average is used as the exposure concentration value unless the 95% UCL exceeds the maximum concentration of the COC. For this risk assessment, maximum concentrations of the COCs were used for all exposure point concentrations. The range of detected concentrations, which includes the maximum values for these COCs are included in Table 2 presented earlier in this document.

TABLE 3 CONTAMINANTS OF CONCERN
GROUNDWATER
Barium
Manganese
Nickel
Zinc

6.2 Exposure Assessment

The exposure assessment estimated potential adverse health effects that may result from exposure to hazardous constituents in the groundwater at the site. The analysis identified and quantified risk for four different potential exposure receptors, the current onsite worker, the current site visitor, the hypothetical future adult resident and future child resident. The EPA, OSWER Directive 9355.0-30, April 22, 1991, asserts that "The potential land use associated with the highest level of exposure and risk that can reasonably be expected to occur should be addressed in the baseline risk assessment. Further, this land use and these exposure assumptions should be used in developing remediation goals".

Based on EPA guidance and the industrial nature of the site and surrounding businesses, future industrial land use at this site was primarily considered. However, since residences are located near the site, future residential land use was evaluated. Businesses which surround the site include a car repair, a junk yard, a trucking company, a lumber company, gas stations, a hardware store, and a bakery. These companies are all located on the same block as Standard Auto Bumper or are across the street from the site. The nearest residence to the site is located approximately 350 feet to the west.

No current exposure routes were identified for the onsite workers and site visitors because there are no public or private drinking water wells in the area. Regardless, oral exposures were evaluated in the risk assessment. Inhalation exposure could not be determined since metals do not volatilize. Dermal exposure would produce negligible results since heavy metals do not readily penetrate skin tissue. Receptors subjected to reasonable maximum exposure under a future scenario are hypothetical residents who would live onsite and use the groundwater for drinking and household purposes. All receptors were exposed to either the reasonable maximum exposure or the maximum concentration detected.

Reasonable maximum exposure point concentrations of contaminants of concern in the groundwater were estimated to quantify intakes of chemicals for each exposure pathway. General assumptions for the calculation of the intake factor regardless of pathway and specific assumptions for each exposure scenario were used to estimate intakes. Assumptions for the hypothetical residential exposure scenario include: 1) the body weights for the adult and child are 70 kg and 15 kg, respectively, 2) the exposure frequency is 350 days/year, 3) the national upper-bound time at a single residence is 30 years for an adult and 6 years for a child, 4) the exposed skin area for the adult and child is approximately 5300 cm^2 and 5000 cm^2, respectively, 5) the adult's average time (AT) for noncarcinogenic chemicals exposure is calculated by averaging 365 days/year over a period of 30 years to yield an AT of 10,950 days, and 6) the child's AT for noncarcinogens is 6 years x 365 days/year or 2190 days.

6.3 Toxicity Assessment

To assess the possible toxicological effects from exposure, health effects criteria are derived from a review of health and environmental standards and published toxicological studies. Toxicity values were extracted from the Integrated Risk Information System. For the risk assessment, contaminants are separated into two toxicity categories, depending on whether they exhibit carcinogenic or noncarcinogenic effects. None of the COCs at this site were carcinogens. Therefore, noncarcinogenic hazard risk levels were determined for each COC in each exposure scenario. Toxicity values, which estimate the relationship between the dose and response, were determined to assess exposure risk levels for the ingestion of groundwater pathway.

Reference doses (RfDs) have been developed by EPA for indicating the potential for adverse health effects from exposure to COCs exhibiting noncarcinogenic effects. RfDs, which are expressed in units of mg/kg-day, are estimates of lifetime daily exposure levels for humans including sensitive individuals. Estimated intakes of COCs from environmental media (e.g., the amount of a COC 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). These uncertainty factors help ensure that the RfDs will not underestimate the potential for adverse effects to occur. The RfDs utilized in the risk assessment are listed on Table 4.

6.4 Characterization of Risk

Potential noncarcinogenic and carcinogenic risks posed by the contaminants of concern in the various exposure pathways were evaluated for the risk assessment; however, all the COCs for this site are noncarcinogenic. The potential for noncarcinogenic

TABLE 4

NONCARCINOGENIC TOXICITY VALUES FOR CONTAMINANTS OF CONCERN

CONTAMINANT	INGESTION RfD (mg/kg-day)
Barium	7.0E-02[1]
Manganese	5.0E-03[1]
Nickel	2.0E-02[1]
Zinc	3.0E-01[1]

1 IRIS (EPA 1993)

Source: Final Baseline Risk Assessment for the Groundwater Pathway, Standard Auto Bumper effects was 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. Hazard quotients were summed in order to screen for possible cumulative effects due to exposure to yield a hazard index. If either the hazard quotient or the hazard index exceed one, the potential for adverse health effects exists.

The noncarcinogenic risk levels for the groundwater are presented in Table 5. All COCs have hazard quotients less than one for the future hypothetical adult resident; therefore, the hazard index is below one. Barium and zinc posed cumulative hazard quotients below one for the future hypothetical child resident. However, manganese and nickel exceeded the acceptable hazard quotients for the child resident scenario, contributing to an overall hazard index of 3.07. By combining the hazard quotients of the adult and child residents, it is possible to determine an overall future hazard index. The noncarcinogenic hazard index for the hypothetical resident associated with ingestion of groundwater is 3.728.

In summary, an unacceptable noncarcinogenic risk is present, primarily from nickel and manganese at this site. Actual or threatened releases of hazardous substances from this 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.

6.5 Environmental Risks

As discussed earlier, this site is located in an industrial/commercial setting and was expected to have limited environmental impacts. The primary habitats identified at the site and surrounding areas are limited grass areas. This site does not provide many habitat resources for wildlife, due to the industrial nature of the site. Canals in proximity to the site also serve as habitats. The site and canal sampling data and the nature of the relationship of the canal to the site do not indicate there is an offsite environmental risk. Contaminants identified in the Red Road Canal have not been determined to be from the site and upgradient surface water samples were similar to downgradient concentrations. Sediments indicate minor levels of contamination that are not necessarily linked to the site, i.e. lead exceeded its Effects Range-Low (ER-L) concentration in sediments, but lead was not detected in the three monitoring wells west of the site during the past two groundwater sampling events. DERM has been made aware of these results for the canal. It is likely that the lead and zinc could be a result of traffic or industrial influences and not the site. Contamination from the site via surface water discharge is not likely due to the businesses, elevated railroad, and four-lane road located between the site and the canal.

TABLE 5

HAZARD QUOTIENTS FOR INGESTION OF GROUNDWATER FOR FUTURE HYPOTHETICAL RESIDENTS

CONTAMINANT	AVERAGE DAILY INTAKE (mg/kg-day)	ORAL REFERENCE DOSE (mg/kg-day)	HAZARD QUOTIENTS
<u>Adult</u>			
Barium	9.86E-04	7.0E-02	1.41E-02
Manganese	1.37E-03	5.0E-03	2.74E-01
Nickel	7.26E-03	2.0E-02	3.63E-01
Zinc	2.22E-03	3.9E-01	7.40E-03
		HAZARD INDEX:	6.58E-01
<u>Child</u>			
Barium	4.61E-03	7.0E-02	6.59E-02
Managanese	6.40E-03	5.0E-03	1.28E+00
Nickel	3.39E-02	2.0E-02	1.69E+00
Zinc	1.04E-02	3.0E-01	3.47E-02
		HAZARD INDEX:	3.07E+00

Source: <u>Final Baseline Risk Assessment for the Groundwater Pathway, Standard Auto Bumper</u>

No occurrences of Federally or State protected species or habitats were identified for the site.

6.6 Remediation Goals

The risk assessment determined site-specific remediation goals for the groundwater to initially establish levels suitable for drinking. Because all the COCs have MCLs, the MCL values were utilized as remedial goals for this site. The remediation goals for the COCs are included in Table 6. Site groundwater samples did show aluminum and iron above State secondary DWS. Those standards are included in Table 6 also.

7.0 DESCRIPTION OF ALTERNATIVES

Based on the results of the RI and Baseline Risk Assessment, EPA concluded that former operations conducted at the Standard Auto Bumper facility have resulted in the contamination of groundwater in close proximity to the site. A feasibility study was conducted to develop and evaluate remedial alternatives for contaminated groundwater at the site. Preliminary remedial alternatives were assembled from applicable remedial technology process options and were initially evaluated for effectiveness, implementability, and cost. Based on this evaluation, the following remedial alternatives were selected for the site. The NCP requires that a no action alternative be considered at every site to serve primarily as a point of comparison for other alternatives.

7.1 Alternative 1 - No Action

This alternative does not provide any remedial activities to address the source of contamination. Monitoring for at least 30 years would be included to evaluate trends in the contaminants' concentrations in the groundwater. Existing monitoring wells would be used for long-term groundwater monitoring.

Because this alternative would result in contaminants remaining on-site, CERCLA requires that the site be reviewed every five years. If indicated by the review, remedial actions would be implemented at that time to address the contaminated groundwater.

As stated above, the No Action alternative was considered as a baseline option for comparison to other remedial action alternatives. The total present worth cost, due to the operation and maintenance (O&M) costs for groundwater monitoring activities, is $94,700. No construction is involved with this alternative.

7.2 Alternative 2 - Natural Attenuation and Institutional Controls

Institutional controls, or access controls, refer to obtaining

TABLE 6

REMEDIATION GOALS FOR WATER

CONTAMINANT	MAXIMUM CONTAMINANT LEVEL (mg/l)
Barium	2[1]
Manganese	0.05[2]
Nickel	0.1[1]
Zinc	5[2]

1 MCL
2 SMCL

CONTAMINANT	SECONDARY STATE DRINKING WATER STANDARD (mg/l)
Aluminum	0.2
Iron	0.3

Source: Final Baseline Risk Assessment for the Groundwater Pathway, Standard Auto Bumper easements or other instruments from property owners above groundwater exceeding the cleanup level guaranteeing that they will not use water from the surficial aquifer for drinking water purposes. The agreements would remain in force until at least one year beyond such time as the groundwater cleanup level is achieved. The covenants run with the land and so once the agreement is recorded, the prohibition on groundwater use would be enforced against the current landowner and all subsequent purchasers of the property.

This alternative would also provide for groundwater monitoring to ensure that contaminant levels decrease during natural attenuation of the groundwater or that contamination is not migrating. Monitoring would continue for at least one year after the concentrations in all monitored wells decrease below the cleanup levels. Should any concentrations above cleanup goals be detected within this post-remediation monitoring period, actions would be taken to verify the contaminant levels, and, if verified, additional control measures would be triggered. One of the two extraction alternatives would be implemented as a contingency remedy.

The cost of this alternative is dependent upon obtaining deed restrictions. It is estimated that these could be put in place within a few months. Capital costs for the institutional controls or deed restrictions are estimated at $19,250. The O&M would include the same activities and costs as those described for Alternative 1 ($94,700). Total present worth costs for Alternative 2 are $113,950.

7.3 Alternative 3 - Extraction and Discharge

This alternative would control the plume and recover contaminants from the groundwater to actively reduce the contaminants' concentrations. The contaminated groundwater would be collected through a single recovery well or a series of recovery wells and piped to a central location onsite. Extracted site groundwater would then be pumped to the sewer system where it would flow to the local publicly owned treatment works (POTW) after EPA receives approval from DERM for disposal. Dilution of the contaminant concentrations would occur upon mixing with the other wastewater in the sewer system. Long-term periodic groundwater monitoring would document that contaminated groundwater is being removed from the groundwater.

Alternative 3 is projected to require four months for implementation. Assuming three recovery wells are utilized, the estimated construction costs for this remedial action are $554,825 and the estimated annual O&M costs are $212,150. The total present worth cost for this alternative is approximately $3,816,101.

7.4 Alternative 4 - Extraction, Treatment, and Discharge

Alternative 4 involves a similar type of groundwater recovery system as Alternative 3. However, prior to discharge the metals would be removed by a physical/chemical treatment process such as ion exchange or precipitation. The treated water would be transferred from the treatment tank to offsite surface waters, to onsite soakage pits, or to a regulated underground injection well system. The recovery, treatment and disposal system will be characterized during remedial design.

Also during or prior to the remedial design, additional field activities would be conducted to verify the levels and extent of the inorganic plume. The field activities would include periodic groundwater monitoring and, if necessary, installation of additional monitoring wells. The initiation of the construction activities may be deferred based on the results of the sampling effort conducted during the remedial design. Failure to meet the drinking water standards would require the initiation of the construction phase for the remedial action. Exceedance of the MCLS during a single sampling effort would be confirmed by EPA during the subsequent sampling.

The last two components to this alternative are treatment effluent monitoring and long-term groundwater monitoring to monitor the progress of the cleanup.

The total present worth cost for this remedy, based on ion exchange and reinjection, is estimated at $8,035,266. Implementation of this remedy is estimated to require six months. The capital costs are estimated at $1,191,045 and the annual O&M costs are estimated at $445,225.

8.0 SUMMARY OF COMPARATIVE ANALYSIS OF ALTERNATIVES

This section provides the basis for determining which alternative provides the "best balance" of trade-offs with respect to nine criteria in CERCLA. A summary of the evaluation criteria are provided in Table 7. The following is an evaluation and comparison of the alternatives in light of these criteria.

Overall Protection of Human Health and the Environment

All alternatives except Alternative 1 would provide protection of human health and the environment. Alternatives 2, 3, and 4 would provide for the restoration of the aquifer. Alternative 4 would rely on active restoration of the shallow groundwater contamination through pumping and treating. Alternative 3 would rely on containment and eventual removal of the contaminated groundwater in the aquifer. Alternative 2 would provide for protectiveness through the use of institutional controls to restrict human exposure to contaminated groundwater and through the use of natural

TABLE 7
EVALUATION CRITERIA FOR REMEDIAL ALTERNATIVES
Standard Auto Bumper Corp. Site
Hialeah, Florida

Threshold Requirements

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 ARARs: Assesses compliance with Federal and State requirements.

Primary Balancing Criteria

Cost: Weighing of 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 remedy.

Long-Term Effectiveness and Permanence: Degree to which a remedy can maintain protection of health and the environment once cleanup goals are 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.

Modifying Criteria

State Acceptance: Consideration of State's opinion of the preferred alternative.

Community Acceptance: Consideration of public comments on the Proposed Plan.

Source: 40 CFR 300.430(e)(9) (1990) or 55 FR 8849.

attenuation and dispersion of contaminated groundwater. Although each of these three alternatives would eventually provide protection of human health and the environment, Alternatives 3 and 4 would achieve protectiveness more quickly than Alternative 2. Alternative 1 would not provide any active cleanup to reduce the risk levels nor would provide access controls to restrict human exposure to contaminated groundwater and would, therefore, not provide protection.

Compliance with ARARs

Alternatives 3 and 4 would include active remediation of the groundwater and would be designed to comply with relevant Federal and State ARARs and local regulations. Alternative 2 would allow for attainment of the MCLs through natural attenuation of the groundwater contaminants. Potential compliance with ARARs would be monitored during groundwater monitoring. Alternative 2 would not attain ARARs as quickly as Alternatives 3 or 4. Alternative 1 would not comply with Federal and State drinking water standards. Because the No Action alternative would not comply with the two primary criteria (Table 7), it will not be considered further in the analysis of alternatives.

Long-Term Effectiveness and Permanence

Alternative 4 would provide for the recovery of the plume and reduction in risks on a long-term basis through treatment. Alternative 3 would be designed to remove the groundwater contamination to achieve long-term effectiveness and permanence. Alternative 2 would not provide for active remediation and would attain a long-term and permanent reduction in risk more slowly than active restoration (Alternatives 3 and 4). Alternatives 3 and 4 would restore groundwater to cleanup goals more expeditiously than Alternative 2. There would also be a potential of exposure from residual contamination in Alternative 2. However, the removal of the source of contamination for OU one will promote quicker natural attenuation of the groundwater. One of the objectives of in determining the soil cleanup goals was to eliminate the migration of contaminants from the soil to the groundwater.

Reduction of Toxicity, Mobility, or Volume

Alternative 4 would satisfy this criterion more thoroughly than the other 3 alternatives. Only Alternative 4 would employ treatment to reduce the toxicity, mobility and volume of all groundwater contaminants posing a hazard index for noncarcinogens greater than one for ingestion. Alternative 3 would remove contaminants from the aquifer thereby reducing the mobility and volume of the plume. Dilution would reduce the toxicity of the contamination. In both of these alternatives, pumping would create a zone of capture preventing or reducing contaminant migration.

Alternative 2 allows the contaminated groundwater to continue migrating and does not satisfy this criteria in the short term. However, implementation of the OU one remedy would facilitate natural dispersion/attenuation of the plume to below cleanup goals.

Short-Term Effectiveness

Alternative 2 would involve the least amount of short-term risk, because it does not involve construction. This alternative would be the quickest to administer, but slowest to achieve protectiveness. Active restoration would achieve protectiveness more rapidly than natural attenuation, but EPA's conclusion derived from the graph of previous sampling events (Figure 10) shows that Alternative 2 may be effective in eighteen to twenty four months. Quarterly groundwater monitoring would be used to assess the adequacy of Alternative 2. Alternatives 3 and 4 would involve some potential for short-term risk to workers during the installation of the recovery wells and disposal system. Alternative 4 also would involve risks during the construction of the treatment system. Any risks to workers involved during construction of Alternatives 3 or 4 would be reduced through implementation of a health and safety plan. Although Alternative 4 would take the longest to implement, it would be the quickest to achieve protection of human health.

Implementability

Alternative 2 would be the simplest to accomplish. Institutional controls and natural attenuation do not require construction equipment as in the other alternatives. While, Alternatives 3 and 4 would both involve straightforward construction and maintenance of equivalent recovery systems, Alternative 4 would also require construction and maintenance of a treatment system. As Alternative 3 would involve the disposal of groundwater to the POTW, it may be administratively difficult to send groundwater for a long period of time to the treatment plant.

Cost

Table 8 shows that Alternative 2 has the lowest present worth, capital and O&M cost than Alternative 3 or 4, because it does not require construction. Alternative 4 has the highest capital, O&M, and present worth cost of the other two alternatives, due to the treatment component.

State Acceptance

The State of Florida, as represented by the Department of Environmental Protection, has been the support agency during the Remedial Investigation and Feasibility Study process for the Standard Auto Bumper site. In accordance with 40 CFR 300.430, as the support agency FDER has provided input during this process. Based upon comments received from FDER, it is expected that

TABLE 8

REMEDIAL ALTERNATIVE COST ESTIMATES
Standard Auto Bumper Site

Alternative	Capital Cost	O&M Annual Cost	Present Worth 30 Year O&M	**Total Cost**
#1 No Action	$0	NA	$94,700	$94,700
#2 Natural Attenuation & Institutional Controls	$19,250	NA	$94,700	$113,950
#3 Extraction & POTW Discharge	$554,825	$212,150	$3,261,276	$3,816,101
#4 Extraction, Ion Exchange & Injection Well Discharge	$1,191,045	$445,225	$6,844,221	$8,035,266

NA: Not Available

concurrence will be forthcoming; however, a formal letter of concurrence has not yet been received.

Community Acceptance

EPA solicited public comment on the remedial alternatives discussed in Section 7.0 of this document during the period of August 24 through September 23, 1993. The public meeting at which EPA presented the proposed plan was not attended by any local citizens. One staff member from DERM attended the meeting and provided the only written comment that EPA received during the comment period (see Appendix B). Overall, there has been very little community interest at this site throughout the Superfund process, even though over 400 proposed plans were sent to the community, media, and government officials. There is no indication the public would not support the selected remedy.

9.0 SELECTED REMEDY

Based upon consideration of the requirements of CERCLA, the NCP, the detailed analysis of alternatives and public and state comments, EPA has selected Alternative 2 as the groundwater remedy for this site. This remedy was selected since it will be protective of human health, comply with ARARs, and provide the best balance among the alternatives with regard to effectiveness, implementability, and cost.

9.1 Groundwater Remediation

Implementation of this alternative will include the natural attenuation of the metals in the shallow groundwater and measures to restrict human consumption of contaminated groundwater. These measures include groundwater use controls such as deed notices and prevention of new potable wells under FAC Chapter 17-524. Groundwater monitoring activities would be conducted to verify the levels and extent of the inorganic contamination in the groundwater. The major components of this remedy include the following:

a) Natural attenuation of groundwater contaminants above MCLs to concentrations below MCLs

b) Groundwater use controls on properties containing contaminated groundwater

c) Groundwater monitoring for a minimum of 18 months

In addition to these components of the OU2 remedy, the remedy for the source control, selected in the **Record of Decision - Operable Unit One, September 1992** will be fully implemented. OU1 remediation goals or performance standards were developed for chromium and nickel which were two OU2 COCs. The general components of the OU1 remedy include the following:

a) Excavation of contaminated soils

b) Groundwater monitoring for up to 5 years

The purpose of the OU1 and OU2 groundwater monitoring will be, in part, to verify that removal of the source and that natural attenuation are reducing the concentrations of the indicator chemicals to below MCLs. The remedy for OU1 did not contemplate installation of additional monitoring wells; however, the OU2 remedy contains the following modification to the original OU2 Alternative 2 stated in the FS:

a) Installation of additional monitoring well

9.2 Performance Standards

The restoration of the aquifer will be monitored quarterly for indicator chemicals. The indicator chemicals for this site include contaminants that are currently exceeding MCLs and contaminants whose concentrations may be questionable. Performance standards are determined for these chemicals and are as follows:

Nickel	100 ug/l
Chromium	100 ug/l
Thallium	2 ug/l

Performance standards are based on Federal MCL values. The major ARARs for this remedy include but are not limited to the Federal Safe Drinking Water Act MCLs (40 CRF Part 141) and the Florida Primary DWS, FAC 17-550, which are relevant and appropriate.

9.3 Compliance Testing

A groundwater compliance program will monitor the progress of the natural aquifer restoration. Groundwater samples will be collected from existing monitoring wells and from an additional monitoring well to be installed downgradient of MW-02S on the Gilda Bakery property. The new monitoring well will provide further confirmation that nickel levels are continuing to decline and that contamination has not migrated to the Red Road Canal.

Compliance testing will be performed in conjunction with the soils remediation in OU1. Quarterly groundwater samples will be collected from the monitoring wells and analyzed for the indicator chemicals for 18 months after soil cleanup is complete. At the end of this 18 month period, if groundwater is no longer in violation of the performance standards for the indicator chemicals set forth in Section 9.2, no active groundwater remediation will be necessary. If levels are exceeded, EPA and FDEP will evaluate the need for further action. Irregardless, monitoring will continue until the performance standards are met. Post remediation monitoring will be conducted for a minimum of one year to confirm that the performance standards have been attained.

10.0 STATUTORY DETERMINATIONS

EPA's primary responsibility at Superfund Sites is to select remedial actions that are protective of human health and the environment. CERCLA also requires that the selected remedial action for the site comply with ARARs, be cost-effective and utilize permanent solutions or alternative treatment technologies to the maximum extent practicable. The statute contains a preference for remedies that include treatment as a principal element. The following sections discuss how the selected remedy for contaminated groundwater meets all the statutory requirements with the exception of the preference for treatment.

10.1 Protection of Human Health and Environment

The selected remedy protects human health and the environment by reducing levels of contaminants in the groundwater to levels within Federal and State MCLs. Natural attenuation of the groundwater contaminants will reduce the risk to human health to a hazard index of below one for noncarcinogens. Groundwater use controls for properties that are above the contaminated groundwater will reduce the risk of human exposure to contaminants. No unacceptable short-term risks or cross-media impacts will be caused by implementation of the remedy.

10.2 Compliance with ARARs

Implementation of this remedy will comply with all Federal and State ARARs and will not require a waiver.

Chemical-Specific ARARs. The performance standards for the indicator chemicals specified in Section 9.2 are based on Federal and State MCLs. Federal and State MCLs are considered relevant and appropriate when determining acceptable exposure to groundwater. During the most recent round of sampling, nickel was the only chemical detected at a concentration above its MCL. Aluminum and iron exceeded State secondary DWS in a number of monitoring wells. As a result, the State identified the secondary DWS for aluminum and iron as a potential ARAR, pursuant to FAC Chapters 17-550.320 and 17-520.420. However, the elevated levels of aluminum and iron appear to reflect the general groundwater quality in the area. Properties surrounding the site are industrial or commercial and include a junk yard. These two chemicals are not considered to be site related; therefore, such compounds will not be used as indicator chemicals and their secondary standards are not applicable or relevant and appropriate. Similarly, one groundwater sample contained manganese at a level equivalent to its Federal secondary MCL of 50 ug/l. EPA also does not consider this to be representative of groundwater conditions at the site; however, EPA expects that remediation of groundwater will result in reduction of manganese to below the secondary MCL.

Action-Specific ARARs. ARARs for groundwater use controls include FAC Chapter 17-524, "New Potable Water Well Permitting in Delineated Areas". This Florida rule restricts installation of new wells in delineated areas of known contamination.

Location-Specific ARARs. No location specific ARARs are applicable or relevant and appropriate for the site.

10.3 Cost-Effectiveness

After evaluating all of the alternatives which satisfy the two threshold criteria above, EPA has concluded the selected remedy affords the highest level of overall effectiveness proportional to its cost. Section 300.430(f)(1)(ii)(D) of the NCP also requires EPA to evaluate three out of the five balancing criteria: long-term effectiveness and permanence; reduction of toxicity, mobility or volume through treatment; and short-term effectiveness, to determine overall effectiveness. Cost-effectiveness is determined by evaluating these balancing criteria to determine overall effectiveness. Overall effectiveness is then compared to cost to ensure that the remedy is cost-effective. The selected remedy provides for overall effectiveness in proportion to its cost.

This remedy has a relative low present worth, capital and O&M cost compared to more exotic remedies, while satisfying the criteria for long-term effectiveness and permanence and short term effectiveness. This alternative would not reduce toxicity, mobility, or volume through treatment; however, the reduction of toxicity, mobility, or volume through this action would be monitored until cleanup is attained.

The estimated total present worth cost for the selected remedy is $113,950.

10.4 Utilization of Permanent Solutions and Alternative Treatment Technologies or Resource Recovery Technologies to the Maximum Extent Practicable ("MEP")

EPA believes the selected remedy represents the maximum extent to which permanent solutions can be utilized in a cost-effective manner for the site. After evaluating the alternatives that are protective of human health and the environment and comply with ARARs, EPA has determined that the selected remedy provides the best balance in terms of the remaining criteria.

The NCP Preamble, 55 FR 8734, states that natural attenuation is generally recommended only when active restoration is not practicable, cost effective or warranted because of site specific conditions. The following factors were considered in determining that groundwater contaminants should decrease to levels below Federal or State MCLs through natural attenuation and dispersion: a) soil cleanup and removal of the source of contamination; b) low levels of concentration of contaminants; and, c) observed decline in contaminants concentrations during the RI. Given that the soil remediation will eliminate the primary source of contamination aquifer restoration would be extremely likely to occur naturally at this site. Based on the observed drop in concentrations of contaminants during the successive sampling rounds in the RI, EPA anticipates that concentration of contaminants in groundwater will be reduced to below the performance standards within a reasonable timeframe.

10.5 Preference for Treatment as a Principal Element

The statutory preference for treatment is not satisfied by the selected remedy; however, natural attenuation utilizes a cost-effective method to address the residual threat to the groundwater posed by the source following OU1 cleanup. Based on the limited area of the groundwater plume; the apparent low mobility of groundwater contaminants due to site-specific hydrogeologic factors; the groundwater contaminants present and their concentrations, relative to drinking water quality standards; and the fact that the source of the contamination, the soil, will be removed this year, EPA concluded that it was impracticable to treat the groundwater effectively. The remedial objectives of the selected remedy address the health and environmental threats at the site: ingestion of contaminated groundwater.

APPENDIX A

Fourth Round Groundwater Analytical Data

TABLE 4-15
FOURTH ROUND GROUND WATER ANALYTICAL DATA FROM SHALLOW WELLS
STANDARD AUTO BUMPER CORPORATION
HIALEAH, FLORIDA
NOVEMBER, 1992

INORGANIC ELEMENTS	01S-GW 11/18/92 0935	02S-GW 11/18/92 0955	03S-GW 11/18/92 1055	4SR-GW 11/17/92 1140	6SR-GW 11/17/92 1505	11S-GW 11/17/92 1310	12S-GW 11/18/92 1420	13S-GW 11/17/92 1520
	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L
SILVER	10U	10U	10U	10U	10U	10U	10U	10U
ARSENIC	30U	30U	30U	30U	30U	30U	30U	30U
BARIUM	33	16	21	22	22	14	36	17
BERYLLIUM	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U
CADMIUM	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U
COBALT	10U	10U	10U	10U	10U	10U	10U	10U
CHROMIUM	10U	10U	10U	10U	10U	10U	10U	10U
COPPER	10U	10U	10U	10U	10U	10U	10U	10U
MOLYBDENUM	10U	10U	10U	10U	10U	10U	10U	10U
NICKEL	20U	270	26	120	20U	120	20U	20U
LEAD	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U
ANTIMONY	30U	30U	30U	30U	30U	30U	30U	30U
SELENIUM	40U	40U	40U	40U	40U	40U	40U	40U
TIN	25U	25U	25U	25U	25U	25U	25U	25U
STRONTIUM	860	700	870	800	750	360	600	830
TELLURIUM	50U	50U	50U	50U	50U	50U	50U	50U
TITANIUM	10U	10U	10U	10U	10U	10U	15	10U
THALLIUM	100U	100U	100U	100U	100U	100U	100U	100U
VANADIUM	10U	10U	10U	10U	10U	10U	10U	10U
YTTRIUM	10U	10U	10U	10U	10U	10U	10U	10U
ZINC	18	18	17	10U	12	12	22	17
MERCURY	0.2U	0.2U	0.2U	0.2U	0.2U	0.2U	0.2U	0.2U
ALUMINUM	240	120	100U	100U	100U	100U	460	100U
MANGANESE	12	38	50	18	38	18	29	23
	MG/L	MG/L	MG/L	MG/L	MG/L	MG/L	MG/L	MG/L
CALCIUM	78	84	89	82	84	57	61	94
MAGNESIUM	9.6	4.0	8.3	6.8	7.3	2.7	7.2	7.2
IRON	0.46	1.2	1.8	1.6	2.7	0.18	0.32	2.3
SODIUM	41	25	35	36	37	17	40	37
POTASSIUM	2.4	2.8	3.2	2.1	2.2	2.0U	2.7	2.8

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FOOTNOTES
NA - NOT ANALYZED
U - MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS THE MINIMUM QUANTITATION LIMIT

TABLE 4-16
FOURTH ROUND GROUND WATER ANALYTICAL DATA FROM DEEPER WELLS
STANDARD AUTO BUMPER CORPORATION
HIALEAH, FLORIDA
NOVEMBER, 1992

	IW7-IW 11/17/92 1205	01D-GW 11/18/92 1000	4DR-GW 11/17/92 1220	06D-GW 11/17/92 1305	14D-GW 11/17/92 1245
INORGANIC ELEMENTS	UG/L	UG/L	UG/L	UG/L	UG/L
SILVER	10U	10U	10U	10U	10U
ARSENIC	30U	30U	30U	30U	30U
BARIUM	12	12	13	18	18
BERYLLIUM	5.0U	5.0U	5.0U	5.0U	5.0U
CADMIUM	5.0U	5.0U	5.0U	5.0U	5.0U
COBALT	10U	10U	10U	10U	10U
CHROMIUM	10U	10U	10U	10U	10U
COPPER	10U	10U	10U	10U	10U
MOLYBDENUM	10U	10U	10U	10U	10U
NICKEL	20U	20U	20U	20U	20U
LEAD	5.0U	5.0U	5.0U	5.0U	5.0U
ANTIMONY	30U	30U	30U	30U	30U
SELENIUM	40U	40U	40U	40U	40U
TIN	25U	25U	25U	25U	25U
STRONTIUM	720	760	820	780	690
TELLURIUM	50U	50U	50U	50U	50U
TITANIUM	10U	10U	10U	10U	11
THALLIUM	100U	100U	100U	100U	100U
VANADIUM	10U	10U	10U	10U	10U
YTTRIUM	10U	10U	10U	10U	10U
ZINC	27	17	10U	18	81
MERCURY	0.2U	0.2U	0.2U	0.2U	0.2U
ALUMINUM	100U	100U	100U	100U	290
MANGANESE	11	12	10U	10U	17
	MG/L	MG/L	MG/L	MG/L	MG/L
CALCIUM	77	78	77	78	73
MAGNESIUM	7.6	9.8	10	7.2	7.4
IRON	1.0	0.93	0.68	0.79	0.72
SODIUM	38	44	45	38	35
POTASSIUM	2.0U	2.0U	2.2	2.0U	2.0U

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FOOTNOTES
NA - NOT ANALYZED
U - MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS THE MINIMUM QUANTITATION LIMIT

TABLE 4-17
FOURTH ROUND QUALITY ASSURANCE/QUALITY CONTROL ANALYTICAL DATA
STANDARD AUTO BUMPER CORPORATION
HIALEAH, FLORIDA
NOVEMBER, 1992

	02S-GW 11/18/92 0955	DUP-GW 11/18/92	PB4-GW 11/18/92 1430
INORGANIC ELEMENTS	UG/L	UG/L	UG/L
SILVER	10U	10U	10U
ARSENIC	30U	30U	30U
BARIUM	16	17	10U
BERYLLIUM	5.0U	5.0U	5.0U
CADMIUM	5.0U	5.0U	5.0U
COBALT	10U	10U	10U
CHROMIUM	10U	10U	10U
COPPER	10U	10U	10U
MOLYBDENUM	10U	10U	10U
NICKEL	270	260	20U
LEAD	5.0U	5.0U	5.0U
ANTIMONY	30U	30U	30U
SELENIUM	40U	40U	40U
TIN	25U	25U	25U
STRONTIUM	700	710	10U
TELLURIUM	50U	50U	50U
TITANIUM	10U	10U	10U
THALLIUM	100U	100U	100U
VANADIUM	10U	10U	10U
YTTRIUM	10U	10U	10U
ZINC	18	18	10U
MERCURY	0.2U	0.2U	0.2U
ALUMINUM	120	100U	100U
MANGANESE	38	37	10U
	MG/L	MG/L	MG/L
CALCIUM	84	84	0.50U
MAGNESIUM	4.0	4.0	0.10U
IRON	1.2	1.2	0.050U
SODIUM	25	25	1.0U
POTASSIUM	2.8	2.1	2.0U

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FOOTNOTES
NA - NOT ANALYZED
U - MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS THE MINIMUM QUANTITATION LIMIT

APPENDIX B

RESPONSIVENESS SUMMARY

RESPONSIVENESS SUMMARY

This summary presents the Agency's responses to any comments that were received from the community, local officials, or potentially responsible parties (PRPs) for the Standard Auto Bumper Corporation site operable unit two, groundwater. EPA received only one comment, submitted by the Pollution Prevention Division of the Dade County Department of Environmental Resources Management (DERM).

A. OVERVIEW

At the start of the public comment period, EPA issued its selection for the preferred alternative via the media and the Proposed Plan. EPA's recommended alternative was natural attenuation, groundwater use controls and groundwater monitoring. This alternative, Alternative 2, was specified in the final ROD.

Since no comments were received from the residents in the community during the public comment period, EPA can conclude that the community would not be adverse to natural attenuation, groundwater use controls and groundwater monitoring. DERM's comment is addressed below. The local citizens did not voice objections to any of the alternatives.

B. BACKGROUND ON COMMUNITY INVOLVEMENT

Community interest in the Standard Auto Bumper Corporation site has been very limited dating back to the start of the Remedial Investigation when EPA held a public availability session at the Henry M. Filer Middle/Community School. The meeting, held on January 10, 1991, was announced in the local newspaper and an EPA fact sheet. The only person from the community who attended the meeting, was an employee of the Standard Auto Bumper Corporation. EPA has made information on the site available at the local library and the Regional office in Atlanta, Georgia. These files are updated as new material is generated concerning the site.

During the Remedial Investigation/Feasibility Study (RI/FS), public interest remained at the same low level.

At the completion of the groundwater FS, the Proposed Plan for the groundwater was sent to approximately 500 people in the community, government, and media. A public comment period was held from August 24 to September 23, 1993. A public meeting, announced in public notices and in the Proposed Plan, was held in the John F. Kennedy Memorial Library in Hialeah on September 2, 1993. The purpose of the meeting was to present the Proposed Plan and answer questions. No local citizens attended the public meeting; however, one staff member from DERM was present.

C. SUMMARY OF COMMENTS RECEIVED DURING THE PUBLIC COMMENT PERIOD AND AGENCY RESPONSES

Only one comment was received regarding the Standard Auto Bumper site during the comment period. No comments were received from the community or from the PRP. A summary of the written comment and EPA's response to that comment is set out below.

Summary and Response to Dade County DERM's Concerns

1. Staff at the Hazardous Waste Section of DERM support Alternative 4, extraction, treatment and discharge as the treatment methodology best suited for the site.

   EPA Response: EPA sent out a draft ROD to a peer review committee for comments. The recommended remedy in the draft ROD was Alternative 4 in part due to the Superfund statutory preference to employ treatment to reduce toxicity, mobility, or volume as a principal element. The Florida Department of Environmental Protection (FDEP) commented on the draft ROD and recommended that groundwater monitoring be performed for 18 months. At the end of the monitoring period, if groundwater was no longer in violation of drinking water standards for site related contaminants, no active groundwater remediation would be necessary. If levels were still exceeded, EPA and FDEP would re-evaluate the need for a more pro-active approach. EPA concluded that it was impracticable to treat the groundwater effectively based on the limited area of the groundwater plume; the apparent low mobility of groundwater contaminants due to site-specific hydrogeologic factors; the groundwater contaminants present and their concentrations, relative to drinking water quality standards; and the fact that the source of the contamination, the soil, will be removed this year. In addition, groundwater use controls will address the health and environmental threat posed by the site, ingestion of contaminated groundwater. EPA agreed with FDEP and determined that the cost of pumping and treating the groundwater relative to other alternatives that provide overall effectiveness was excessive. Therefore, Alternative 2 was recommended in the Proposed Plan and selected in the final ROD as the remedy for the contaminated groundwater. The final ROD contains further details of the process for selecting the remedial alternative.

D. REMAINING CONCERNS

EPA is mainly concerned with determining whether groundwater contamination is abated by cleaning up the soils, the source of the contamination. EPA is confident that the soil cleanup will minimize the need for groundwater pumping and treatment. Groundwater will be monitored to determine the impact of soil remediation.

In the event an active groundwater recovery is necessary at the site, the public will be notified.

E. RE-OPENING OF THE PUBLIC COMMENT PERIOD

Due to the addition of several documents to the administrative record after the issuance of the proposed plan, the decision was made to re-open the public comment period for the receipt of comments on the added documents. The documents that were added to the record analyzed remediation timeframes under the different alternatives.

The public comment period was held from October 28, 1993 to November 27, 1993. No comments were received during the re-opened or second public comment period.