

**RECORD OF DECISION  
TEX TIN CORPORATION SUPERFUND SITE  
OPERABLE UNIT NO. 2- AMOCO PROPERTY  
TEXAS CITY, TEXAS**

**Prepared by:  
U. S. Environmental Protection Agency  
Region 6  
Dallas, Texas**

**TEX TIN CORPORATION SUPERFUND SITE  
OPERABLE UNIT NO. 2  
GALVESTON COUNTY, TEXAS CITY, TEXAS**

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**DECLARATION FOR THE RECORD OF DECISION  
TEX TIN CORPORATION SUPERFUND SITE  
OPERABLE UNIT NO. 2- AMOCO PROPERTY  
TEXAS CITY, TEXAS**

**Further Action Not Necessary For Protection  
Five-Year Review Is Required**

**SITE NAME AND LOCATION**

Tex Tin Corporation Superfund Site, Operable Unit No. 2  
Texas City, Galveston County, Texas  
CERCLIS ID # TXD062113329

**STATEMENT OF BASIS AND PURPOSE**

The United States Environmental Protection Agency (EPA) presents its decision in this Record of Decision (ROD) that no further action is required for Operable Unit (OU) No. 2 (Amoco Property) of the Tex Tin Corporation Superfund Site (Tex Tin Site) located in Texas City, Texas. The EPA's decision is in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA or Superfund), 42 U.S.C. § 9601 *et seq.*, and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), 40 C.F.R. Part 300. The decision is based on materials and documents contained in the Administrative Record which are available for public review at three repositories, one of which is located in Texas City, Texas, near the Tex Tin Site. The EPA bases this decision on the results of a remedial investigation and human health risk assessment conducted for the Tex Tin Site and the successful completion of a Response Action by Amoco Chemical Company (Amoco) (now known as BP Amoco Chemical Company) undertaken pursuant to the Texas Voluntary Cleanup Program (VCP) from November 1997 through June 1998 (Amoco Response Action). The determination that “no further action” is needed is made pursuant only to CERCLA requirements and is not a determination under the Texas VCP. Neither this determination nor the issuance of this ROD affects Amoco’s responsibilities under the Texas VCP Agreement and the VCP Response Action Work Plan.

The State of Texas concurs with the Selected Remedy.

**DESCRIPTION OF SELECTED REMEDY - NO FURTHER ACTION**

The EPA has determined that no further action is necessary under CERCLA for OU No. 2 of the Tex Tin Site because the Amoco Response Action abated the threat of release of hazardous substances from contaminants related to the former smelter facility. The threat was eliminated by placement of a protective soil cap over the contaminated areas that exceeded human health risk levels. Ongoing actions being taken to comply with the Texas VCP are not affected by this determination. The highest risk at OU No. 2 was presented by soil contaminated with arsenic and lead, which are hazardous substances, as defined in Section 101(14) of CERCLA, 42 U.S.C. §

9601(14), and listed in Section 302.4 of the NCP, 40 C.F.R. § 302.4. Exposure to the levels of arsenic and lead found at OU No.2 could pose health risks to site workers.

Amoco initiated the Response Action for OU No. 2 under the Texas VCP to address contamination on the property, take early response action, and provide long-term protection to current and future site workers. The Amoco Response Action is described in detail in the Administrative Record (AR) for the Tex Tin Site. Amoco's implemented Response Action for OU No. 2 consisted of:

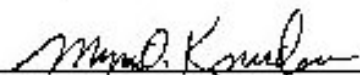
- Placement of a 2-foot soil/vegetative cover over the entire 27 acres of OU No. 2
- Construction of a slurry cutoff wall along the Amoco - Tex Tin property boundary.
- Initiation of a long-term ground water monitoring program and placement of deed restrictions on use of the site ground water.
- Filing of deed restrictions to limit site use for industrial purposes only and to notify potential users of the remaining site contaminants.

#### **STATUTORY DETERMINATION**

No further action is necessary under CERCLA to ensure protection of human health and the environment at OU No. 2 of the Tex Tin Site. The Amoco Response Action eliminated the need to conduct further remedial action under CERCLA. Specifically, Amoco's Final Closure Report (FCR) documents that the response action conducted by Amoco from November 1997 through June 1998 at OU No. 2 of the Tex Tin Site addressed health-based risk associated with high concentrations of arsenic and lead at OU No. 2, negating the need for further remedial action under CERCLA for OU No. 2.

Because the response action resulted in hazardous substances, pollutants, or contaminants remaining on-site above levels that allow for unlimited use and unrestricted exposure, a statutory review will be conducted within five years after initiation of the response action for OU No.2 to ensure that the remedy is protective of human health and the environment.

#### **AUTHORIZING SIGNATURE**

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

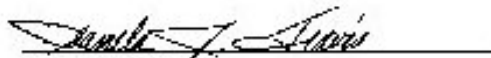
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RECORD OF DECISION  
TEX TIN CORPORATION SUPERFUND SITE  
OPERABLE UNIT NO. 2  
TEXAS CITY, GALVESTON COUNTY, TEXAS

CONCURRENCE SIGNATURES

  
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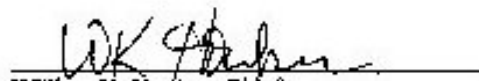
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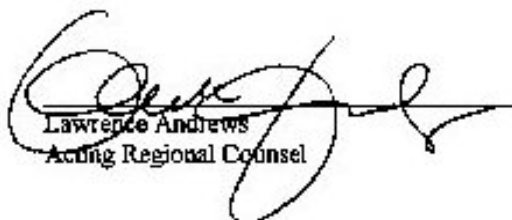
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**RECORD OF DECISION  
TEX TIN CORPORATION SUPERFUND SITE  
OPERABLE UNIT NO. 2  
DECISION SUMMARY**

**SITE NAME, LOCATION, AND DESCRIPTION**

The Tex Tin Corporation Superfund Site (Tex Tin Site) (CERCLIS ID # TXD062113329) is located in the cities of Texas City and La Marque, Galveston County, Texas (Figure 1).

The U.S. Environmental Protection Agency (EPA) Region 6 is the Lead Agency for this Site and the Texas Natural Resource Conservation Commission (TNRCC) is the Support Agency. Amoco Chemical Company, the owner of OU No. 2, conducted the OU No. 2 Response Action.

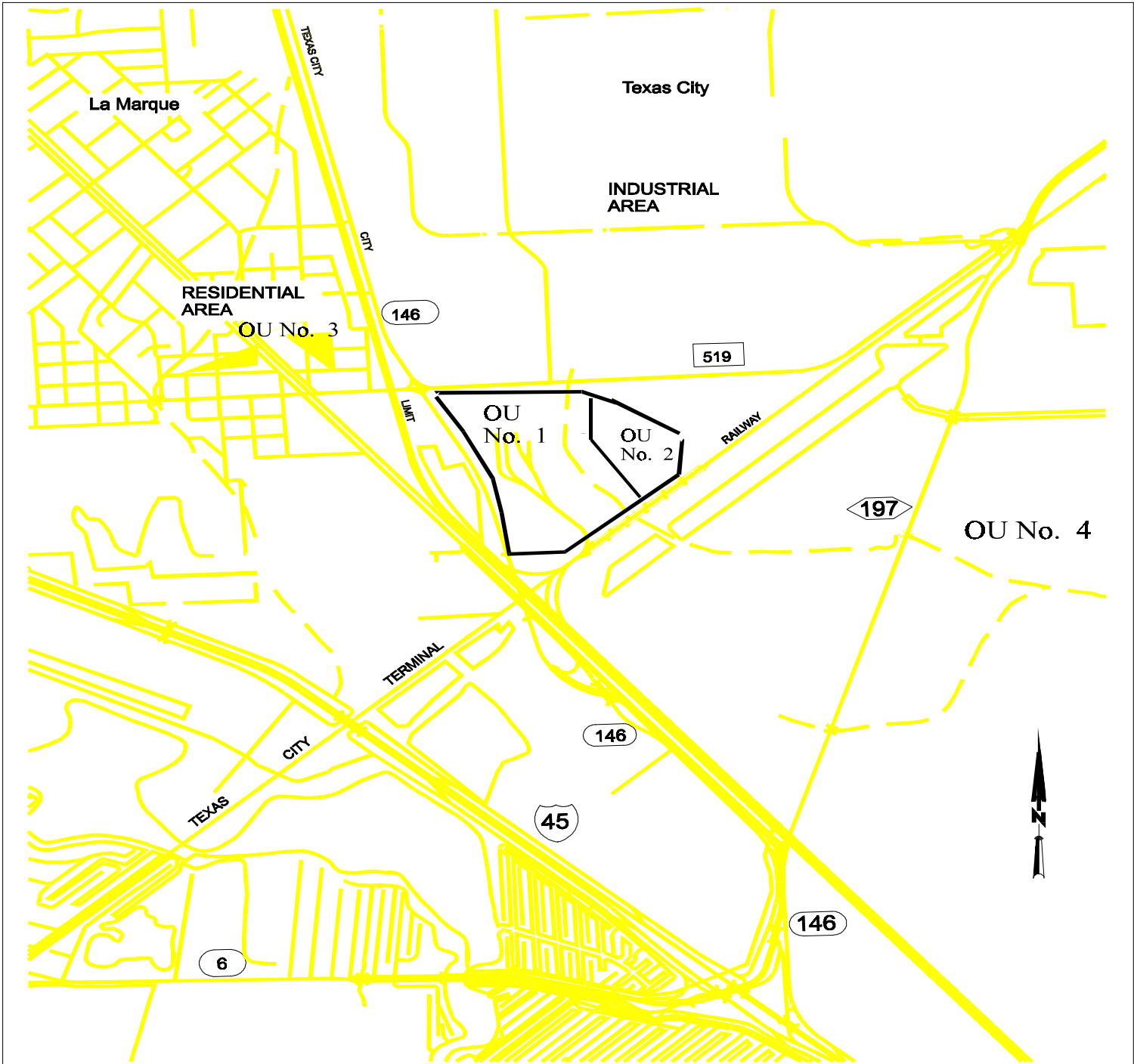
The former Tex Tin Corporation smelter facility is located in Texas City, Texas in the southeast quadrant of the intersection of State Highway (SH) 146 and Farm-to-Market (FM) Road 519 (Figure 1). The Tex Tin site was separated into four operable units in the course of Superfund investigation, cleanup and enforcement activities. Primary and secondary tin and copper smelting operations were conducted in the area currently referred to as OU No. 1, which encompasses approximately 140 acres and includes ponds outside the fenceline as well. Operable Unit No. 3 is the La Marque residential area located approximately 2,000 feet west-northwest from the former smelter facility. OU No. 4 includes the Swan Lake ecosystem located between the hurricane levee and the shell barrier islands separating Swan Lake from Galveston Bay and portions of Swan Lake, its associated salt marsh habitats, and the Wah Chang ditch east of Loop 197.

This Record of Decision (ROD) addresses only EPA's determination that the Response Action has been completed for OU No. 2 (also known as Area H) of the Tex Tin Superfund Site. It does not affect the ongoing actions being taken to comply with the Texas VCP. OU No. 2 encompasses approximately 27 acres, where unlined pits created for storage of waste acid solution from smelter operations were historically located. OU No. 2 is now part of Amoco's Plant C which totals approximately 71 acres.

**SITE HISTORY AND ENFORCEMENT ACTIVITIES**

The tin smelter at Texas City was constructed by a corporation under contract to the United States Government as an emergency tin supply plant for World War II, and operated under a Government contract from 1941 to 1956 as the Tin Processing Corporation. The facility was sold to private industry in 1957 and was operated by a succession of companies until it ceased operations in 1991.

From 1941 through 1989, the facility primarily produced tin. Waste products generated by the operation included iron-rich liquid acid (ferrous chloride) and tin slag. The liquids were transferred to holding ponds to the south and east of the smelting facility. Various other



**SITE VICINITY MAP**

**Tex Tin Corporation Superfund Site  
FIGURE 1**

production operations were reportedly carried out on site, including an ammonia-based copper washing process, which started in 1972 and continued for an undetermined number of years, and a secondary copper smelting process, which replaced the tin smelting operations in 1989 and continued through 1991. Until the late 1960s, the Wah Chang Ditch, an industrial canal running through the smelter site, drained wastes from it and other industrial facilities in Texas City. The Wah Chang Ditch drainage flowed through the Swan Lake Salt Marsh area and into Swan Lake.

In 1969, Amoco Chemical Company purchased approximately 27 acres of land from Wah Chang Corporation, owner of the smelter at that time.

The EPA first proposed the Site for inclusion on the National Priorities List (NPL) in 1988. In 1990, Tex Tin Corporation and Amoco Chemical Company entered into an Administrative Order on Consent (AOC) with EPA to conduct a Remedial Investigation and Feasibility Study (RI/FS) of the site. Tex Tin Corporation challenged the NPL listing and, after a remand order in 1991, ceased performance of the RI/FS work required by the AOC; Amoco Chemical Company continued the RI/FS work alone. The U.S. Court of Appeals for the D.C. Circuit ordered the site removed from the NPL in 1993. By that time, Amoco Chemical Company had completed the Remedial Investigation and was in the process of conducting the risk assessment and Feasibility Study.

In April 1996, Amoco applied to the Texas Voluntary Cleanup Program to perform response activities on its OU2 property. After consultation between EPA and TNRCC, Amoco was accepted into the VCP. The EPA agreed to provide technical assistance to TNRCC in overseeing the Amoco project.

On June 17, 1996, EPA again proposed to add the Tex Tin Corporation Site to the National Priorities List (NPL) of Superfund sites. 61 FR 30575 (June 17, 1996). The Tex Tin NPL listing became final on September 18, 1998. 63 FR 49855.

## **COMMUNITY PARTICIPATION**

Public participation activities for OU No. 2 have been satisfied as required in CERCLA Section 113(k), 42 U.S.C. § 9613(k), and Section 117, 42 U.S.C. § 9617. The Proposed Plan for OU No. 2 of the Tex Tin Site was released to the public on July 27, 2001. Information for the OU No. 2 Response Action can be found in the **Response Action Work Plan** and the **Final Closure Report**, which are included in the Administrative Record (AR) file for the Tex Tin Site, along with other pertinent reports and documents that EPA relied on or considered in recommending that no further action is necessary at OU No. 2. Beginning on July 27, 2001, the AR file for OU No. 2 has been available to the public in three repositories; the Texas City Memorial Library located in Texas City, Texas, the EPA Region 6 library in Dallas, Texas, and the TNRCC library in Austin, Texas. The notice of the availability of the Proposed Plan and the AR file was published in the Texas City Sun and The Galveston County Daily News on July 27, 2001. The 30-day public comment period was held from July 27, 2001 through August 27, 2001. A public meeting was held on August 9, 2001, at the Charles T. Doyle Convention Center to receive input from the community.



## **SCOPE AND ROLE OF OPERABLE UNIT RESPONSE ACTION**

As noted above, EPA separated the Tex Tin Site into four (4) operable units to prioritize investigations and enforcement actions, and to conduct response actions. The former smelter facility included the property now designated as Operable Units No. 1 and 2 until 1969 when Amoco purchased 27 acres from Wah Chang Corporation. Additional field investigations by TNRCC and EPA in 1994-95 led to the identification of Operable Unit No. 3, the La Marque residential area. Operable Unit No. 4 was subsequently designated based on ecological risk investigations.

The ROD for OU No. 1 was signed on May 17, 1999, and subsequently amended on September 28, 2000. The remedy for OU No. 1 will address contaminants found on the former smelter facility. The amended remedy consists of: neutralizing and disposing of the acid liquids, stabilizing drum and supersack inorganic contents, on-site disposing of Naturally Occurring Radioactive Materials (NORM) slag, on-site disposing of hazardous non-NORM slag covering with a RCRA Type C cap, covering of soils exceeding the preliminary remediation goals (PRGs) with a Clay Soil Cover (including the existing Low-Level Radioactive Landfill area), draining and backfilling of site ponds, demolishing and recycling aboveground storage tanks and offsite disposal of organic contents, demolition of buildings and recycling, and on-site disposing of construction debris. The ground water portion of the remedy includes installation of a slurry wall barrier near the western end of the smelter property, planting an enhanced evapotranspiration system, placement of an impermeable cap over Pond 7, and long-term ground water monitoring. A group of settling defendants agreed to conduct the remedial design and remedial action for OU No. 1 in a Consent Decree entered by the court on August 4, 2000. A remedial design/remedial action contractor was selected by the settling defendants in September 2001 and plans are to start remedial action activities early in 2002.

OU No. 2, the subject of this Record of Decision, was purchased by Amoco Chemical Company (now BP Amoco Chemical Company) in 1969. Six (6) ponds were located on the property, which had been used to store acid waste from the tin smelting process. Under an Administrative Order on Consent with EPA signed in 1990, Amoco conducted a RI on the Tex Tin Site as then configured. The Amoco property, designated Area H in the RI, was one of sixteen (16) study areas examined in the RI. The RI Report was completed in June 1993. In April 1995, prior to placement of the Site on the NPL, Amoco applied to the Texas VCP to remediate the Area H property. After consultation between TNRCC and EPA, the application was accepted. Under the Texas VCP and a partial Consent Decree between Amoco and EPA, Amoco completed construction of the response action for this portion of the Tex Tin site in June 1998. Amoco submitted the Final Closure Report in June 1998 and TNRCC signed the Conditional Certificate of Completion on August 27, 1999. Amoco continues to implement actions in accordance with the Texas VCP requirements, the Texas VCP Agreement, and the Texas VCP Response Action Work Plan for OU No. 2. The EPA provided technical assistance to TNRCC VCP staff during the course of this project.

The implemented response action for OU No. 2 addressed site contaminants that present an exposure risk to industrial workers. The response action consisted of providing a minimum two-foot soil cover over the entire OU No. 2 site, construction of a bentonite slurry wall, long-term

ground water monitoring, and institutional controls. The response action is consistent with the remedy selected in the Record of Decision for the former smelter facility, OU No.1. The response action for OU No. 2 meets the remedial action goals for the site and is protective of human health and the environment.

OU No. 3 consists of a residential area in La Marque, Texas, located west-northwest from the former smelter facility. In 1999, EPA conducted a Time-Critical Removal Action for the residential properties having soil contaminated with heavy metals (arsenic contributed the highest risk) in excess of health-based levels within OU No. 3. The ROD for OU No. 3 was signed on September 29, 2000. The ROD presented EPA's decision that no further action is necessary for the residential properties of La Marque, OU No. 3, to protect human health and the environment because EPA eliminated the health threat through the removal action completed in June 1999.

OU No. 4 refers to the Swan Lake ecosystem located between the hurricane levee and the shell barrier islands separating Swan Lake from Galveston Bay and includes portions of Swan Lake, its associated salt marsh habitats, and the Wah Chang ditch east of Loop 197. The focus for OU No. 4 is the impact of smelter contaminants, particularly heavy metals in sediments, to ecological receptors. The public comment period for the OU No. 4 proposed plan ended on May 21, 2001. The EPA's preferred alternative consists of construction of segmented wave barriers totaling approximately 5,200 feet. The segmented wave barriers would prevent future shore erosion and releases of contaminated marsh sediments. Preventing sediment releases would reduce ecological and human exposure to site contaminants. Implementing the preferred alternative would not destroy the existing benthic macroinvertebrate ecosystem. Plans are to sign the ROD for OU No. 4 before the end of September 2001.

With the publication of the ROD for OU No. 2, EPA has selected response actions for all operable units of the Tex Tin Superfund Site. Response actions have been initiated on OU No. 1 and completed at OU Nos. 2 and 3.

### **OPERABLE UNIT CHARACTERISTICS**

OU No. 2 includes an area of approximately 27 acres that was part of the Tex Tin smelter facility until 1969, when the property was purchased by Amoco. OU No. 2 is referred to in the RI and other reports as Area H. Area H included six (6) ponds (Ponds 9 through 14) that at one time were used to dispose of acidic ferrous-chloride waste solution from the tin smelting process. Beginning in 1969, when Amoco bought the property, the ponds were no longer used for disposal of smelter waste. In 1988 they were drained and backfilled by Amoco. OU No. 2 is currently part of Amoco's Plant C property, a total of approximately 71 undeveloped acres situated across FM 519 from the Amoco Refinery and the Amoco Chemical Plant in Texas City.

The RI conducted in 1992 for the Tex Tin Site included OU No. 2. The RI found metal concentrations in the surface soils, near-surface soils, and fill material in the OU No. 2 area that exceeded health based levels. Arsenic and lead are the metals that were found at the highest concentrations and which contributed the highest health risk at OU No. 2. A summary of the highest concentrations of arsenic and lead detected in soils in OU No.2 (Ponds 9 through 14) is presented below.

Sample Location	Arsenic (mg/kg)	Lead (mg/kg)
Pond 9	1,283	2,668
Pond 10	1,122	3,186
Pond 11	1,795	2,647
Pond 12	351	831
Pond 13	1,155	3,505
Pond 14	2,537	1,928

Additional investigations for OU No. 2 were conducted in 1996 by KMA Environmental (KMA) for Amoco. Results of the investigations conducted by KMA are presented in the Surface Soils Response Action Work Plan and the Groundwater Response Action Work Plan which are included in the Response Action Work Plan dated October 1996. Test results found lead concentrations at 3,120 mg/kg, arsenic at 1,550 mg/kg, and chromium at 25.8 mg/kg.

Findings from KMA investigations and the RI indicated that contaminants were present at OU No. 2 that may pose a risk to human health and the environment. Because the extensive RI conducted in 1992 for the former smelter facility included both OU No. 1 and OU No. 2, the selection of contaminants of concern (COCs) and the preliminary remediation goals (PRGs) identified for OU No. 1 are appropriate for OU No. 2. Likewise, soil and ground water remedies selected in the ROD for OU No. 1, for an industrial setting, are applicable to OU No. 2.

### **CURRENT AND POTENTIAL FUTURE SITE USE**

The current land use for OU No. 2 is industrial. The properties surrounding OU No. 2 are also industrial properties. Amoco's plans for Plant C, which includes OU No. 2, are for future industrial development. Therefore, it is anticipated that future land use for OU No.2 will remain industrial. The response action implemented by Amoco provides protection for industrial workers at the site.

### **SUMMARY OF SITE RISKS PRIOR TO RESPONSE ACTION**

A human health risk assessment for OU No. 2 was conducted by KMA in 1996 and is included in the Response Action Work Plan. KMA stated that data collected for OU No. 2 during the RI indicated that the risk associated with arsenic, lead, and chromium contamination in the surface soils exceeded allowable risks for industrial workers. The model identified the baseline (prior to response action) risk to site workers associated with contaminants found in OU No. 2 surface soils.

Receptor	Carcinogenic Risk	Non-Carcinogenic Risk
Industrial Worker	2.04E-4	2.5E-1

Receptor	Carcinogenic Risk	Non-Carcinogenic Risk
Trespasser	8.45E-6	7.58E-2
Offsite Resident	6.43E-6	6.0E-8
Construction Worker	3.33E-6	5.68E-1

1E-6 means one in a million or 10<sup>-6</sup>.

The carcinogenic risk values presented are expressed in terms of the chance of developing cancer after a lifetime of exposure to site contaminants. The level of concern for non-carcinogenic contaminants (those that cause health problems like liver and kidney damage) is determined by calculating a hazard index (HI), which is established by determining the threshold level of a contaminant that is safe to human health. If the hazard index exceeds one (1), there may be concern for potential non-cancer effects from lifetime exposure to the site contaminants.

The national risk, or probability, that an individual may develop some form of cancer over a 70-year life span is estimated at one in three. To protect human health, EPA has set the range from one in ten thousand to one in one million (expressed as 1 x 10<sup>-4</sup> to 1 x 10<sup>-6</sup>) lifetime excess cancer incidents as the remedial goal for Superfund sites. A risk of one in one million means that one person out of one million people could be expected to develop cancer as a result of lifetime exposure to site contaminants.

As indicated in the carcinogenic risk values presented above (prior to response action), the risk to an industrial worker exceeds the acceptable cancer risk range for Superfund sites. Exposure to lead was evaluated separately from the other site contaminants because toxicity values are not available for lead. The following PRGs were identified for OU No. 1 and are applicable for OU No. 2. The human health risk based industrial PRG for arsenic was calculated at 194 mg/kg or parts per million (ppm). The PRG for arsenic meets EPA's acceptable risk range of 1E-4 to 1E-6 and meets TNRCC's arsenic cleanup level of 200 ppm for an industrial site. The lead PRG of 2,000 ppm was based on Bower's model for adult lead exposure at an industrial setting. Since the other metal contaminants of concern do not have a cancer slope factor, their PRGs were based on a concentration level that would not exceed the hazard index quotient of one (1) for an industrial land use. The hazard quotient represents a level at which there may be concern for potential non-cancer effects from lifetime exposure to contaminants.

Synthetic Precipitation Leaching Procedure (SPLP) testing conducted by Amoco for Area H indicated that lead levels in surface soil as high as 3,120 ppm and arsenic levels in surface soils as high as 1,550 ppm would pass the SPLP test. The SPLP test is a test used to determine the potential of leaching contaminants to the ground water. Therefore the selected PRGs for arsenic and lead would also be protective of the site ground water.

Comparison of Contaminants of Concern To Soil PRGs		
Analyte	Maximum Concentration (mg/kg)	PRGs Cleanup Objectives (mg/kg)

<b>Comparison of Contaminants of Concern To Soil PRGs</b>		
<b>Arsenic</b>	<b>2,537</b>	194
Cadmium	5.0	2,044
Chromium (total)	125	1,577
Copper	442	75,628
<b>Lead</b>	<b>3,505</b>	2,000
Mercury	0.4	613
Nickel	8.2	40,880
Zinc	119	613,200

**Bold** - Contaminants exceeding the preliminary remediation goals.

Site contaminants exceeding the PRGs could pose a threat to human health and the environment. As indicated in the comparison of contaminants and their concentration and results of the risk assessment, arsenic and lead contribute the highest risk to human health and the environment at OU No. 2.

The Remedial Action Objectives (RAOs) formulated for OU No. 1 contaminants that are also applicable to OU No. 2 consist of:

1. Prevent direct contact, ingestion, and inhalation of surface and subsurface soil, sediments, waste piles, drummed (spent catalyst) materials and ground water containing contaminants that exceed PRGs.
2. Prevent further degradation of the Shallow and Medium Transmissive Zone ground water outside the operable unit boundaries.
3. Prevent migration of contaminated ground water outside the operable unit boundaries in the Deep Transmissive Zone by addressing the site source materials and preventing further degradation of the shallow and medium transmissive zones.

### **OU NO. 2 RESPONSE ACTION**

The Tex Tin OU No. 2 response action, conducted under the authority of the Texas Voluntary Cleanup Program met the RAOs for OU No. 1 which are also applicable to OU No. 2. The implemented remedy for OU No. 2 included the following elements:

- Placement of a minimum 2-foot soil/vegetative cover over the entire OU No. 2 area (to prevent exposure to surface soil contaminants above health-based action levels found on portions of the property);
- Construction of a bentonite/soil (slurry) cutoff wall located along the Amoco - Tex Tin property boundary (to prevent further movement of the contaminated shallow ground

water from OU No. 1 to OU No. 2);

- Initiation of a long-term ground water monitoring program and placement of deed restrictions on the property to prevent use of the ground water for purposes other than monitoring and remediation;
- Filing deed restrictions (to restrict site use for industrial purposes only and to notify potential users of the remaining site contaminants. Concentrations of all detected constituents will be recorded on the property deed).

In addition, O&M requirements will include semiannual to annual inspections of the soil cover to ensure its effectiveness and integrity.

The long-term ground water monitoring program consists of:

- Sampling twenty-four (24) shallow and seven medium transmissive zone wells on a quarterly basis for the first two years after completion of the response action, semi-annually for the next three years, and yearly thereafter;
- Establishing a compliance monitoring program at the limit of the contaminant plume boundary to ensure that no further migration of the contaminated shallow ground water is occurring. Samples will be collected from nine (9) shallow ground water wells quarterly for a minimum of two years. If no migration is indicated during the first two years, sampling will be conducted semi-annually for the next three years, and annually thereafter. If migration of the contaminated shallow ground water is indicated at the compliance monitoring locations, a proposed response action will be submitted to TNRCC and EPA in a Groundwater Monitoring Response Action Report.

The RAOs are met by the OU No. 2 response action by construction of the slurry wall to prevent further movement of contaminated shallow ground water from OU No. 1 to OU No. 2 and initiation of long-term ground water monitoring to ensure that the contaminated ground water plume underlying OU No. 2 does not extend or migrate beyond the property boundaries.

The environmental contaminants and risks to human health and the environment at OU No. 2 are similar to the contaminants and risks identified at certain areas of OU No. 1, although much more limited in size and scope. The response action taken at OU No. 2 has eliminated the exposure pathway between human or environmental receptors and surface or subsurface contaminants by creating a permanent clean cover over the entire OU No. 2 property. Unacceptable levels of risk to industrial workers caused by exposure to hazardous substances at OU No. 2 have been abated by the VCP response action.

A CERCLA comparison of the selected remedy for OU No. 1, which met the nine criteria evaluation used in selecting remedies for Superfund sites, with the remedy implemented for OU No. 2 under the Texas VCP indicates that the remedy for OU No. 2 is consistent with the remedy selected for OU No. 1.

Because the response action resulted in hazardous substances, pollutants, or contaminants remaining on-site above health-based levels, a review will be conducted to ensure that the

remedy continues to provide adequate protection of human health and the environment within five years after commencement of the response action for OU No. 2 of the Tex Tin site. The response action began in October 1997; therefore, the first five year review for OU No. 2 will be scheduled for October 2002. Moreover, Amoco will continue the ground water monitoring program to verify that contaminants in the shallow transmissive zone are not migrating to the deep transmissive ground water zone that can potentially be used as a drinking water source. In addition, the Texas VCP will review site conditions on a semiannual basis to ensure compliance with the Conditional Certificate of Completion until TNRCC determines that all VCP requirements have been met and a Final Certificate of Completion is issued to Amoco regarding OU No. 2.

### **DOCUMENTATION OF SIGNIFICANT CHANGES**

The Proposed Plan for OU No. 2 was released for public comment on July 27, 2001. The Proposed Plan discussed the basis for EPA's recommended alternative of No Further Action under CERCLA for OU No. 2. The EPA reviewed all written and oral comments received during the 30-day public comment period. The EPA has determined that no significant change to the recommended alternative identified in the Proposed Plan is necessary for OU No. 2.

**RECORD OF DECISION FOR  
TEX TIN CORPORATION SUPERFUND SITE  
OPERABLE UNIT NO. 2  
RESPONSIVENESS SUMMARY**

The United States Environmental Protection Agency (EPA) has prepared this Responsiveness Summary for the Tex Tin Corporation Superfund Site (Tex Tin Site), as part of the process for making final remedial action decisions for Operable Unit No. 2 (OU No. 2). This Responsiveness Summary documents, for the Administrative Record, public comments and issues raised during the public comment period on EPA's recommendation for no further action presented in the Proposed Plan for OU No. 2, and provides EPA's responses to those comments. The EPA's actual decision for OU No. 2 is detailed in the Record of Decision (ROD) for OU No. 2. Pursuant to Section 117 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), 42 U.S.C. § 9617, EPA has considered all comments received during the public comment period in making the final decision contained in the ROD for OU No. 2.

**Overview of Public Comment Period.**

The EPA issued a Proposed Plan detailing EPA's No Further Action recommendation for OU No. 2 for public review and comment on July 27, 2001. Documents and information EPA relied on in making its recommendations in the Proposed Plan were made available to the public on or before July 27, 2001 in three Administrative Record File locations, including the Moore Public Library located in Texas City, Texas. The 30-day Public Comment Period ended on August 27, 2001. The EPA held a public meeting to receive comments and answer questions on August 9, 2001, at Charles T. Doyle Convention Center in Texas City, Texas. All written comments as well as the transcript of oral comments received during the public comment period are included in the Administrative Record for OU No. 2 and are available at the three Administrative Record repositories.

This Responsiveness Summary summarizes significant comments, criticisms, and relevant information submitted during the public comment period and presents EPA's written response to each issue, in satisfaction of community relations requirements of the National Contingency Plan.

The EPA responses to comments received during the public meeting are provided below and in some cases include subsequent expanded responses to those comments as appropriate.

**Comments and Issues Raised During the Comment Period:**

**Public Meeting, August 9, 2001, Texas City, Convention Center - Comments received.**

**COMMENT:** Mayor Carlos Garza of the City of Texas City. As the mayor I want to publicly announce that the City of Texas City has been working with the EPA now for a number of years on the Tex Tin project. We have addressed many concerns, including the emergency action taken last year to remove during this first phase probably the most dangerous buildings over there that were likely to become loose in case a hurricane were to strike in this Texas City area. That was accomplished very expeditiously.



We're currently into the second phase of the tear-down of the Tex Tin building, which is OU 1. And what we're here to discuss tonight is OU 2, the one that BP Amoco Refining Chemical Company has been working on with EPA to clean up, and we certainly are in concurrence with the EPA's announced proposed plan for OU 2, the Amoco property, as it relates to the finding of no further action to be taken in this matter. Thank you.

**EPA RESPONSE:** Thank you, Mayor Garza for your support for EPA's recommendation that no further action is needed for OU No. 2.

**COMMENT:** Who are the responsible parties?

**EPA RESPONSE:** The responsible parties for the Tex Tin Site are former owners and operators of the facility and generators who brought materials to the facility for processing. There are somewhat different responsible parties for some of the four Tex Tin operable units. The names of the parties who were brought into the CERCLA action in connection with the Site can be found in the Complaints filed in the following two actions: Tex Tin Corporation v. United States, Civil Action No. 96-272 and Amoco Chemical Company v. United States et al., Civil Action No. 96- (S.D. Tex., Galveston Division, 1996). Many of the parties who were originally sued in this matter have reached settlements with the United States and the State of Texas; the consent documents are also on file with the U.S. District Court in Galveston.

**COMMENT:** How do you enforce the maintenance?

**EPA/TNRCC RESPONSE:** The maintenance will be evaluated by reviewing annual reports and by conducting site inspections. The TNRCC can enforce it through the threat of revocation of the certification if the required maintenance is not conducted. If the lack of maintenance results in potential exposure to contaminants above health based levels, EPA can take actions using administrative or judicial orders to enforce maintenance requirements or may conduct another response action to address risk to human health and the environment.

**COMMENT:** Does the conditional certificate of completion by the TNRCC allow development of that property as an industrial site and provide protection of future liability to whoever develops the site?

**EPA/TNRCC RESPONSE:** The conditional certificate of completion allows development, but places some limited restrictions on it. There is a restriction on land use at the site; it is an industrial site and future land use must be industrial in nature. There are restrictions about excavating or damaging the cap. The cap was constructed as a preventative measure, to prevent exposure of future workers and others to site contaminants. If the cap is removed, then TNRCC believes that receptors may not be adequately protected. In the closure certificate filed in the county deed records, as an attachment, there is a requirement that no excavation of the cap should occur without prior written approval from the TNRCC. The EPA would have similar requirements to maintain the protectiveness of the cap. Development for industrial use can take place over the OU No. 2 area if precautions are taken to protect workers and prevent future exposure to site contaminants.

**COMMENT:** As a member of the Texas Department of Transportation, I am concerned that there is a certain area where we have a bridge project right now that used to be part of Tex Tin or

that property in there that we know is contaminated that's not part of this cleanup effort. In 1991 and 1993 there were several studies made. The 1993 study was made available to the EPA for their review and comments at that time, and it was found that contamination was there and several things of concern, especially when trying to put a new bridge in there. There's water-bearing sand, and there's ground water, and then there's another water-bearing sand on the bottom land. It's my understanding from what the study says that some of this water is probably used for consumption for the cities around this community. The bridge construction involves putting piles in there, which will penetrate those strata and raise the possibility of migration of contaminants to an area that might not be contaminated. The whole site where the bridge is going to be is not considered, according to analysis, contaminated. The smelter site has been finalized as contaminated and determined hazardous, hazardous to the construction workers and hazardous to anybody that is around it. I'm issuing an invitation to the EPA and all the parties involved to meet with us and further discuss this issue.

**EPA RESPONSE:** This comment pertains more to OU No. 1 than to OU No. 2. The remedy selected for OU No. 1 will address some of your concerns. In selecting the remedy for OU No. 1 the EPA was not suggesting that contaminants were not present in the proposed bridge construction area. The information that EPA has indicates the presence of contaminants in this area, but not at concentrations that exceed industrial cleanup levels. This area will be further evaluated during the remedial design phase to determine if indeed certain areas (hot spots) may require a response action under OU No.1. The EPA participated by phone in a meeting among the Texas Department of Transportation (TXDOT), TNRCC, and the PRPs. The EPA's understanding is that the PRPs will further discuss this issue with TXDOT during the remedial design phase. The EPA and TNRCC will participate in future meetings with TXDOT and the PRPs to address TXDOT concerns and ensure that construction activities by TXDOT do not contribute to contamination of the ground water.

**COMMENT:** We are concerned that some of the remedies that are being proposed in here are going to channelize the contaminated ground water even further into the proposed bridge site.

**EPA RESPONSE:** The slurry walls will channelize the contaminated shallow ground water but not toward the proposed TXDOT bridge construction area. The slurry wall that was constructed as part of the response action conducted by Amoco is located between the Amoco property and the smelter site, OU No. 1. The slurry wall constructed for OU No. 2 is not close to the proposed bridge construction area and does not cause ground water movement toward the bridge area. One of the remedy components for OU No. 1 calls for construction of a slurry wall along the western edge of the former smelter facility. We believe that construction of the western slurry wall will address some of the concerns that TXDOT has regarding future migration of contaminants to the bridge area. Once the western slurry wall is in place, the shallow ground water will be channelized toward the south-southeast direction from the site, away from the proposed bridge construction area.

**COMMENT:** The slurry wall constructed would not decrease the amount of groundwater flow toward the south. It is preventing it from moving east because it is a north/south alignment wall. If groundwater is flowing that way and it hits that dam, it basically slides.

**EPA RESPONSE:** The slurry wall constructed for OU No.2 will prevent ground water movement toward the east direction and channel that water to the south. Although there is not

significant ground water movement because of the flat gradient, the shallow ground water would move to the south - southeast direction, away from the proposed bridge construction area which is located to the west - southwest direction from the Tex Tin site.

**COMMENT:** There was a comment made that this site would not have been accepted into the current VCP program. Why?

**EPA RESPONSE:** The current VCP program is governed by a Memorandum of Agreement (MOA) between TNRCC and EPA, signed on May 1, 1996. The MOA provides that sites where ranking packages have been submitted to EPA Headquarters proposing inclusion to the NPL and sites already on the NPL are not eligible for the VCP. In the MOA, EPA also agreed that it would not take a federal response action for sites implementing investigation and cleanup under the VCP. Federal action can be taken, however, if the VCP applicant fails or refuses to complete the necessary cleanup, and TNRCC is unable to ensure completion of response actions at those sites, or if an emergency situation arises that would require federal intervention.

Addressing OU No. 2 under both the VCP and the federal Superfund program is based on this operable unit's unique history and the willingness of the property owner to conduct an early response action. The Tex Tin site (including OU No. 1, owned by Tex Tin Corporation and OU No. 2, owned by Amoco Chemical Company) was initially listed as a Superfund site in the early 1990's. In 1993, by court order, the Tex Tin site was removed from the National Priorities List (NPL) for Superfund. The owner/operators of OU No. 1 were unwilling to fund and/or conduct site investigation and cleanup. However, Amoco was willing to fund and conduct a response action on the adjacent OU No. 2 property. After meeting with EPA and TNRCC with the proposal, Amoco applied and OU No. 2 was accepted into the Texas VCP program in 1995. In 1996, EPA proposed to add the Tex Tin site to the NPL a second time (to access the Hazardous Substance Trust Fund, if necessary, to secure cleanup of OU No. 1). As noted above, in May of 1996, after Amoco's entry of OU No. 2 into the VCP program, EPA and TNRCC concluded the VCP MOA. The Site (then comprised of OU No. 1, 2, and 3) was added to the NPL on September 18, 1998.

**COMMENT:** The comment with VCP limited future liability, does that apply only to on site or to on and off site?

**TNRCC/EPA COMMENT:** From the perspective of TNRCC VCP, it will apply to all the contamination emanating from the facility, but it applies only to those people who are not responsible parties and acquired the property after a certificate has been issued or were on an application and a certificate has been issued. So it applies to contamination which is emanating from the property.

In order to secure cleanup and funds for cleanup of the Tex Tin Site, EPA under CERCLA has entered into settlement agreements with several combinations of potentially responsible parties, including the OU No. 2 property owner, Amoco Chemical Company. These agreements, which specify the terms of settlement including the extent of the settling parties' future liability under CERCLA, are embodied in consent decrees entered by the district court in Galveston.

**COMMENT:** My question was on the slurry wall design. How deep will that slurry wall be? You said up to possibly 36 feet.

**EPA RESPONSE:** The depth of the slurry wall for OU No. 1 will be approximately 30 to 35 feet. The slurry wall will be designed to prevent movement of the contaminated shallow ground water in a westerly direction. The slurry wall constructed for OU No. 2 was approximately 24 to 34 feet deep and prevents shallow ground water movement from an easterly direction.

**COMMENT:** Former Texas City Mayor Chuck Doyle. I think that Amoco should be commended. They were an innocent party who bought the property in 1969 or somewhere in that area when the laws were much different, and they submitted the closure in 1998, and here we are in 2001 and we're trying to finish the project. I think that the process is far too extended. It's bureaucratic. It's too slow. And the people in this room had nothing to do with that, but I want it a matter of record that we object to that, and the fact that the United States government was responsible for it in the beginning is even more on the defense to us locally because they created the problem, and they have done very little to expedite the problem, either through the EPA or any of the other alphabetical organizations and agencies that are involved. So I want that stated as a matter of record. The other thing is that I hope that all of the other operable units, 1, 3 and 4, move at a much faster pace than they have thus far. It seems to me that on and off of a Superfund site certainly created problems for you and the EPA, but by the same token, it's been far too lengthy in trying to resolve the entire matter. It seems to me also that there is still a questionable usage problem. I mean, when you give a closure certificate conditional, that means we don't know really, the 27 acres that are a part of the 71 that Amoco owns, what they can do of economic value to the future of this city. And we're going to have the same issue on all the other operable units that will be raised, homeowners on the resale of their property, the site itself or the city, whoever becomes the owner of the property once Operable Unit No. 1 has been completed, and then later on Swan Lake because it's close to our new proposed mega-port and the possible uses of those areas that may be impacted by that. So I would hope that we become as definitive as possible so that the mayor, the commission, the property owners, Amoco and the homeowners and the other parties involved will not have to guess at what their use of the property might be. I support strongly this closure request by Amoco.

**EPA RESPONSE:** Thank you former Mayor Doyle for your comments. The construction work for OU No. 2 was completed in 1998. The Proposed Plan and the signing of a Record of Decision for OU No. 2 will officially document the response action conducted by Amoco. The EPA is moving forward in addressing the other operable units associated with the Tex Tin site. In 1999, EPA completed a removal action for the residential areas of La Marque, OU No. 3. The EPA and the PRPs conducted a response action in the Summer of 2001 to address concerns regarding two large site buildings at OU No. 1. In August 2000, the court approved a Consent Decree between EPA, the PRPs (private and Federal), TNRCC, and Federal and State Trustees for the Tex Tin site. The EPA plans to select a remedy for OU No. 4 in September 2001. With the signing of the ROD for OU No. 2, EPA will have selected remedies for all four operable units of the Tex Tin site. Based on the response action conducted by EPA for OU No. 3 and Amoco for OU No. 2, cleanup activities have been completed at two of the four operable units.

**COMMENT:** I live by the Tex Tin site and my grand babies have been tested for lead. They can't play outside because they break out in sores. They dug a house on my right, one on my left. They never dug my yard. How can it be on both sides of me and not be in my yard? I have lost three dogs. These people have lots of horses and stuff over there by that plant. Now, what are we going to do about the stuff in our houses?

**EPA RESPONSE:** The EPA sampled two hundred and fifty three (253) residential properties to determine which ones exceeded health-based residential cleanup levels. The residential areas of La Marque received smelter contaminants through air emissions. Some properties exceeded the residential cleanup levels and others did not. This is not to say that those locations did not receive contaminants from the site; it just means that the levels do not exceed the residential cleanup levels.

The contaminant levels found in the La Marque residential areas are not at critical concentrations that would cause animal deaths, even the locations that were cleaned up. The EPA recommends that you report this information to the local health office or the Texas Department of Health and have your grandchildren checked by a physician.

**COMMENT:** They didn't tell us anything about the residential cleanup. They didn't tell our children to stay in the home. The workers were all suited up. They didn't give us anything. I've been there since '72. Nobody sent me no mail. Nobody came to the door to tell us anything. We just see them out there digging.

**EPA RESPONSE:** The EPA conducted a public meeting to inform the community about the start of the residential removal action. A public notice about the meeting was published in the local newspaper and information was mailed to community members. The EPA's On-Scene Coordinator was out in the community during the cleanup activities that were conducted over a three month period and he was available to answer questions that the residents had or address their concerns. The "suits" that the workers wore during the cleanup activities are about the same as a coverall that many workers use on a daily basis. Regarding potential contamination of residents during the cleanup activities, removal activities were conducted to prevent releases of contaminants and air monitoring was used to ensure that the removal action was conducted in a safe manner.

**COMMENT:** Is this supposed to be a full cleanup, is what this meeting is about? If they didn't do no more good on this one than they done on the last one over there, I can't bet nothing as far as being for it or against it. What are they cleaning up over there, the tin smelter?

**EPA RESPONSE:** The area you are referring to is the smelter site, OU No.1. During the Summer of 2000, two large site buildings were demolished. That remedial action has not been completed and will continue for several years. This public meeting is to discuss OU No. 2, the Amoco property where cleanup activities have been completed. The former smelter site, OU No. 1, will be handled separately from OU No. 2, the Amoco property. OU No. 2 had six former waste ponds that were backfilled, covered with a clean soil cap, and vegetated.

**COMMENT:** When will this transcript be available and how can anyone obtain a copy?

**EPA RESPONSE:** The EPA will receive the transcript from the contractor within three weeks. Following EPA's review of the transcript, it will be made part of the Administrative Record File for the site. Plans are to have the transcript available at the Moore Public Library by September 14, 2001. You can call Donn Walters, Community Relations Coordinator, to obtain a copy of the transcript.

**COMMENT:** Monitoring wells were mentioned in the FM 519 area as part of the cleanup for

OU No. 2. How often are publications made when the monitoring wells are tested? Just in case we have construction going on in this area, we'd like to know the levels in that area.

**TNRCC/EPA RESPONSE:** Those reports are submitted to TNRCC and EPA after compiling all the information. Those reports are currently being submitted on a semi-annual basis. After completing the response action in 1998, Amoco submitted the ground water monitoring reports on a quarterly basis for the first two years. Beginning in 2001, the report will be submitted on a semi-annual basis. All reports submitted up to the start of the Proposed Plan comment period are part of the Administrative Record for the site and copies are available at the information repositories, including the Moore Public Library located in Texas City, Texas. Copies of future reports can be obtained from TNRCC or EPA.

**Submitted Written Comment dated August 4, 2001**

**COMMENT:** Comment concerning the re-cycling of steel from site demolition and burying of contaminated debris onsite. Citizen believes someone is making money and steel being sold as scrap metal without regard to health risk of nearby residents.

**EPA RESPONSE:** When consistent with the cleanup goals at a Superfund site, EPA tries to recycle as much material from the site as possible to minimize the materials that have to be disposed of onsite or offsite at permitted facilities. Materials are recycled only if they can be adequately decontaminated and meet acceptance requirements from the recycling facilities. Money received from the recycling of site materials is used to decrease the site cleanup costs. As part of demolition of the two large site buildings on the Tex Tin Site, conducted during the Summer of 2000, steel and other materials were recycled and remaining contaminated debris was landfilled onsite. Landfilling debris onsite will prevent exposure to human health and the environment from contaminated materials and will reduce disposal costs associated with taking the materials to an offsite facility. Nearby residents were a major concern during demolition of site buildings. Construction methods and dust controls were used at the site to prevent releases of contaminants to the nearby residential area. In addition, perimeter air monitoring was conducted throughout the demolition activities to ensure that ambient air standards were not being exceeded. Ambient air standards were not exceeded.