

**EPA Superfund  
Record of Decision:**

**SAND SPRINGS PETROCHEMICAL COMPLEX  
EPA ID: OKD980748446  
OU 01  
SAND SPRINGS, OK  
09/29/1987**

ALLYN M. DAVIS, DIRECTOR  
HAZARDOUS WASTE MANAGEMENT DIVISION

CARL E. EDLUND, CHIEF  
SUPERFUND PROGRAM BRANCH  
HAZARDOUS WASTE MANAGEMENT DIVISION

STEPHEN A. GILREIN, CHIEF  
ALONM REMEDIAL SECTION  
SUPERFUND PROGRAM BRANCH  
HAZARDOUS WASTE MANAGEMENT DIVISION

BONNIE J. DEVOS, CHIEF  
STATE PROGRAMS SECTION  
SUPERFUND PROGRAM BRANCH  
HAZARDOUS WASTE MANAGEMENT DIVISION

BENNETT STOKES, CHIEF  
SOLID WASTE AND EMERGENCY  
RESPONSE BRANCH  
OFFICE OF REGIONAL COUNSEL.

**DECLARATION FOR THE RECORD OF DECISION**

**SITE NAME AND LOCATION**

SANDS SPRINGS PETROCHEMICAL COMPLEX, TULSA COUNTY, OKLAHOMA.  
SOURCE CONTROL OPERABLE UNIT.

**STATEMENT OF PURPOSE**

THIS DECISION DOCUMENT REPRESENTS THE SELECTED REMEDIAL ACTION FOR THIS SITE DEVELOPED IN ACCORDANCE WITH 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 CONTINGENCY PLAN (40 CFR PART 300).

THE STATE OF OKLAHOMA CONCURS WITH THE ON-SITE SOLIDIFICATION AND/OR STABILIZATION AND OFF-SITE THERMAL DESTRUCTION OF CHLORINATED A ZINC CONTAMINANTS DESCRIBED IN THIS RECORD OF DECISION. THE STATE DOES NOT CONCUR WITH THE ON-SITE INCINERATION CONCEPT PROPOSED BY EPA AT THE START OF THE PUBLIC COMMENT PERIOD. (LETTER ATTACHED).

**#DR**

**STATEMENT OF BASIS**

THIS DECISION IS BASED UPON THE ADMINISTRATIVE RECORD FOR THE SAND SPRINGS PETROCHEMICAL COMPLEX SUPERFUND SITE (INDEX ATTACHED). THE ATTACHED INDEX IDENTIFIES THE ITEMS WHICH COMPRISE THE ADMINISTRATIVE RECORD UPON WHICH THE SELECTION OF A REMEDIAL ACTION IS BASED.

**#DE**

**DECLARATION**

THE ABOVE DESCRIBED REMEDY IS PROTECTIVE OF HUMAN HEALTH AND THE ENVIRONMENT, ATTAINS FEDERAL AND STATE REQUIREMENTS THAT ARE APPLICABLE OR RELEVANT AND APPROPRIATE, AND IS COST-EFFECTIVE COMPARED TO EQUALLY ENVIRONMENTALLY PROTECTIVE ALTERNATIVES. THIS REMEDY SATISFIES THE PREFERENCE FOR TREATMENT THAT REDUCES TOXICITY, MOBILITY, OR VOLUME AS A PRINCIPAL ELEMENT. FINALLY, IT IS DETERMINED THAT THIS REMEDY UTILIZES PERMANENT SOLUTIONS AND ALTERNATIVE TREATMENT TECHNOLOGIES TO THE MAXIMUM EXTENT PRACTICABLE.

9/29/87

DATE

ROBERT E. LAYTON JR., P.E.  
REGIONAL ADMINISTRATOR.

## **EXECUTIVE SUMMARY**

THE SAND SPRINGS SUPERFUND SITE IS LOCATED IN SAND SPRINGS, OKLAHOMA. THE SITE IS THE FORMER LOCATION OF THE SINCLAIR REFINERY WHICH OPERATED FROM THE TURN OF THE CENTURY THROUGH THE 1940'S. AFTER THE REFINERY WAS SHUT DOWN, MOST OF THE PROPERTY WAS CONVEYED TO THE SAND SPRINGS HOME. IN 1968, SINCLAIR MERGED WITH ATLANTIC RICHFIELD COMPANY (ARCO) AND THE REMAINING 38 ACRES RETAINED BY SINCLAIR WERE ABSORBED IN THE MERGER. THE PORTION OF THE COMPLEX IDENTIFIED IN THE REMEDIAL INVESTIGATION/FEASIBILITY STUDY AS THE GLEN WYNN SITE OPERATED AS A SOLVENT RECYCLING FACILITY DURING THE LATE 1960'S AND EARLY 1970'S.

THE TOTAL KNOWN WASTE VOLUME IS APPROXIMATELY 130,000 CUBIC YARDS. UNLINED SLUDGE PITS ON THE SITE CONTAIN SEVERAL THOUSAND CUBIC YARDS OF SULFURIC ACID SLUDGE. IN ADDITION TO THESE WASTES, THE LAGOONS, PITS, AND SPRAY PONDS ON THE SITE CONTAIN VARIOUS HEAVY METALS AND ORGANICS.

THE REMEDIAL ALTERNATIVES EVALUATED FOCUS ON CONTROLLING OR DESTROYING THE SOURCE OF THE CONTAMINATION. THE MAIN SITE OPERABLE UNIT WILL ADDRESS THE REMAINDER OF THE SITE, PRIMARILY THE GROUNDWATER CONTAMINATION.

**SUMMARY OF REMEDIAL ALTERNATIVE SELECTION  
SOURCE CONTROL OPERABLE UNIT FOR  
SAND SPRINGS PETROCHEMICAL COMPLEX  
TULSA COUNTY, OKLAHOMA**

**SEPTEMBER 1987**

**#SLD**

**I. SITE LOCATION AND DESCRIPTION**

THE SAND SPRINGS PETROCHEMICAL COMPLEX SUPERFUND SITE IS LOCATED IN SAND SPRINGS, OKLAHOMA. AS SHOWN IN FIGURE 1 THE SITE IS LOCATED ON THE NORTHERN BANK OF THE ARKANSAS RIVER, IMMEDIATELY WEST OF TULSA, OKLAHOMA. THE SITE ENCOMPASSES APPROXIMATELY 235 ACRES AND IS THE FORMER LOCATION OF A REFINERY. AS SHOWN IN FIGURE 2, THE SITE INCLUDES UNLINED ACID SLUDGE PITS, A SURFACE IMPOUNDMENT SURFICIAL SLUDGE CONTAMINATION, SOLVENT AND WASTE OIL LAGOONS AND CONTAMINATED SEDIMENTS. FIGURE 2 ALSO SHOWS SEVERAL SUBSURFACE SLUDGE PITS AND SPRAY PONDS WHICH WERE DISCOVERED SUBSEQUENT TO THE PUBLICATION OF THE SOURCE CONTROL OPERABLE UNIT REMEDIAL INVESTIGATION AND FEASIBILITY STUDY. THESE AREAS WILL ALSO BE ADDRESSED IN THIS OPERABLE UNIT. TOTAL KNOWN WASTE VOLUME IS APPROXIMATELY 130,000 CUBIC YARDS. THE SITE IS SITUATED IN A SANDY ALLUVIAL DEPOSIT WITH A THICKNESS RANGING FROM 26 TO 52 FEET. THIS DEPOSIT IS UNDERLAIN BY APPROXIMATELY 100 FEET OF SHALE. PITS AND LAGOONS HAVE CONTAMINATED SHALLOW GROUNDWATER.

**#SH**

**SITE HISTORY**

THE SITE OPERATED AS A REFINERY FROM THE TURN OF THE CENTURY THROUGH THE 1940'S. THE PROPERTY HAS SINCE BEEN DEVELOPED AS AN INDUSTRIAL AREA AND CONSISTS OF AN ABANDONED SOLVENT AND WASTE OIL RECYCLER, AN ACTIVE TRANSFORMER SALVAGE/RECYCLER, ACTIVE CHEMICAL MANUFACTURERS AND VARIOUS OTHER INDUSTRIES.

THE SINCLAIR REFINERY ACID SLUDGE PITS RESULTED FROM REFINERY OPERATIONS WHICH OCCURRED BETWEEN 1910 AND 1949. REFINERY OPERATIONS WERE SHUT DOWN IN 1949. BY OCTOBER 1953, SINCLAIR HAD CONVEYED MOST OF THE REFINERY PROPERTY TO THE SAND SPRINGS HOME, WITH 38 ACRES STILL RETAINED BY SINCLAIR. IN 1969, SINCLAIR MERGED WITH THE ATLANTIC RICHFIELD COMPANY (ARCO) AND THE 38 ACRE TRACT OF LAND WAS ABSORBED IN THE MERGER. IN DECEMBER 1986 THE CHEMLINK DIVISION OF ARCO, WHICH OCCUPIES THIS PROPERTY, WAS SOLD TO PONY INDUSTRIES.

SEVERAL THOUSAND CUBIC YARDS OF SULFURIC ACID SLUDGE, WITH A PH RANGING FROM 1.5 TO 2.5 AND CONTAINING HEAVY METALS AND ORGANICS, EXIST IN THE UNLINED SLUDGE PITS. THE SLUDGE DEPOSITS ON THE RIVER SIDE OF THE LEVEE ARE OF SIMILAR COMPOSITION AS THE ACID SLUDGE PITS NORTH OF THE LEVEE.

THE SURFACE IMPOUNDMENT, LOCATED BETWEEN THE LARGE AND SMALL ACID SLUDGE PITS, DRAINED SURFACE WATER TO THE ARKANSAS RIVER PRIOR TO CONSTRUCTION OF THE LEVEE. AN ANALYSIS OF THE SURFACE IMPOUNDMENT LIQUID BY THE U.S. ENVIRONMENTAL PROTECTION AGENCY (EPA) IN 1980 INDICATED A PH OF 2.1 AND THE PRESENCE OF CHRYSENE, ANTHRACENE, PHENANTHRENE, PYRENE, BENZENE, 1,1-DIFLUOROTETRACHLOROETHANE, TOLUENE, PHENOL, NITROBENZENE, AND FLUORONAPHTHALENE.

AN AREA DESIGNATED IN THE STUDIES AS THE "GLEN WYNN" PORTION OF THE SITE WAS A SOLVENT RECYCLING FACILITY WHICH OPERATED DURING THE LATE 1960'S AND EARLY 1970'S. DURING THE PERIOD OF OPERATION HAZARDOUS SUBSTANCES WERE STORED OR DISPOSED OF IN DRUMS, TANKS, UNLINED PITS AND LAGOONS OR BURIED ON-SITE. THESE SUBSTANCES INCLUDE VARIOUS VOLATILE AND NON-VOLATILE ORGANICS, CHLORINATED SOLVENTS, AND SLUDGES CONTAINING HEAVY METALS. WASTE PITS HAVE CONTAMINATED LOCAL GROUNDWATER AND CAUSED MIGRATION OF SURFACE CONTAMINANTS. SAMPLES FROM THE NORTH AND SOUTH GLEN

WYNN LAGOONS WERE COLLECTED IN 1982. SAMPLES FROM THE SOUTH LAGOON SHOWED SIGNIFICANT CONTAMINATION BY CHLORINATED VOLATILES, BENZENE, TOLUENE, AND NUMEROUS LONG-CHAIN ALIPHATIC HYDROCARBONS INDICATIVE OF OILS. LEAD AND ZINC LEVELS WERE ALSO HIGH. SAMPLES FROM THE NORTH LAGOON SHOWED THE SAME TYPES OF CONTAMINANTS AS THE SOUTH LAGOON. HOWEVER, SEDIMENTS FROM THE NORTH LAGOON HAVE SHOWN HIGHER LEVELS OF VOLATILE ORGANICS AND METALS.

IN SEPTEMBER 1983 THE SITE WAS PROPOSED FOR INCLUSION ON THE NATIONAL PRIORITIES LIST. PROMULGATION OF THE SITE WAS IN JUNE 1986. IN JUNE 1984, THE OKLAHOMA STATE DEPARTMENT OF HEALTH (OSDH) ENTERED INTO A COOPERATIVE AGREEMENT WITH EPA TO CONDUCT THE REMEDIAL INVESTIGATION/FEASIBILITY STUDY (RI/FS) AT THE SITE. UTILIZING FUNDS FROM THIS COOPERATIVE AGREEMENT, THE OSDH CONTRACTED WITH JOHN MATHES AND ASSOCIATES TO PERFORM THE SAMPLING, ANALYSIS, AND TECHNICAL ASSESSMENTS OF THE SITE.

IN AN EFFORT TO ADDRESS THE OBVIOUS CONTAMINATION IN AN EXPEDITIOUS MANNER, A SOURCE CONTROL OPERABLE UNIT WAS ESTABLISHED TO FOCUS ON THE WASTE IN THE PITS, PONDS, AND LAGOONS. THIS RECORD OF DECISION DEALS WITH THOSE SOURCES OF CONTAMINATION. BY PLACING A PORTION OF THE FULL FEASIBILITY STUDY ON AN EXPEDITED SCHEDULE THE MAJOR SOURCES OF CONTAMINATION CAN BE CONSIDERED WITHOUT WAITING FOR COMPLETION OF THE FULL FS. THE REMAINDER OF THE SITE, PRIMARILY THE GROUNDWATER WILL BE ADDRESSED IN THE FULL OR "MAIN SITE" FS. THE REMEDIAL INVESTIGATION REPORT ON SLUDGE AND SURFACE IMPOUNDMENT SAMPLING AND THE SOURCE CONTROL OPERABLE UNIT FEASIBILITY STUDY ARE DATED APRIL 1987.

#### **GEOLOGY**

THE SAND SPRINGS PETROCHEMICAL COMPLEX IS LOCATED IN THE ALLUVIAL FLOODPLAIN OF THE ARKANSAS RIVER. THE ALLUVIAL MATERIAL CONSISTS PRIMARILY OF SILTS AND FINE-MEDIUM GRAIN SANDS WITH AN ESTIMATED PERMEABILITY OF 82-300 GALLONS PER DAY PER SQUARE FOOT. THE DEPTH OF THE ALLUVIAL SANDS ON THE SITE RANGES FROM 26 TO 52 FEET WITH THE THINNER DEPOSITS OCCURRING NEAR THE RIVER. THE GROUNDWATER FLOW VELOCITY IN THE ALLUVIAL MATERIALS IS ESTIMATED TO BE IN THE RANGE OF 243 TO 764 FEET PER YEAR.

UNDERLYING THE FLOODPLAIN ALLUVIUM IS THE COFFEYVILLE FORMATION. THIS FORMATION IS COMPOSED OF SHALES, THIN RIPPLY BEDDED SANDSTONES, AND SILTSTONES APPROXIMATELY 335 FEET IN THICKNESS. FROM A REGIONAL PERSPECTIVE, 70 PERCENT OF THE FORMATION IS COMPOSED OF SHALES. INCLUDED IN THE UPPER HALF OF THE FORMATION IS A THICK (20 - 50 FEET) LAYER OF SANDSTONE TERMED LAYTON SANDSTONE. THIS SANDSTONE IS READILY IDENTIFIED IN THE ROCKY BLUFFS ON THE SOUTH SIDE OF THE ARKANSAS RIVER OPPOSITE THE SITE. SINCE THE SITE IS TOPOGRAPHICALLY LOWER THAN THE SANDSTONE OUTCROPS, THIS INDICATES THAT THE UPPER PORTION OF THE COFFEYVILLE FORMATION, INCLUDING THE LAYTON SANDSTONE, HAS BEEN ERODED AWAY IN THE AREA OF THE SAND SPRINGS PETROCHEMICAL COMPLEX. THE LOWER PORTION OF THE COFFEYVILLE IS REPORTED TO BE SHALE WITH THIN TONGUES OF SANDSTONE.

#### **REMEDIAL INVESTIGATION RESULTS**

ELEVEN DISTINCT WASTE DISPOSAL LOCATIONS WERE SAMPLED ON THE SAND SPRINGS PETROCHEMICAL COMPLEX SITE. AT THESE LOCATIONS, NUMEROUS DISCRETE INTERVAL AND COMPOSITE SAMPLES WERE COLLECTED FOR CHEMICAL ANALYSIS. THESE LOCATIONS (FIGURE 2) ARE REFERRED TO AS:

## SURFACE

- THE SMALL ACID SLUDGE PIT
- THE LARGE ACID SLUDGE PIT
- THE RIVER ACID SLUDGE PIT
- THE SOUTH GLEN WYNN LAGOON
- THE NORTH GLEN WYNN LAGOON
- THE CHEMLINK WASTE PITS
- THE SURFACE IMPOUNDMENT.

## SUBSURFACE

- THE ROUND RIVER PIT
- THE LEVEE PIT
- THE SPRAY PONDS
- THE CON-RAD SLUDGE

THE SOURCE CONTROL OPERABLE UNIT FEASIBILITY STUDY CONSIDERED THE SLUDGES AND LIQUIDS IN SEVEN IDENTIFIED SURFACE PITS, PONDS AND LAGOONS. FOUR SUBSURFACE AREAS CONSISTING OF PETROLEUM SLUDGES AND ACIDIC SLUDGES WERE DISCOVERED DURING THE PHASE II BORING AND DRILLING ACTIVITIES. SOIL AND GROUNDWATER DATA FROM BENEATH THESE IDENTIFIED AREAS INDICATE THEY ARE SOURCES OR POTENTIAL SOURCES OF GROUNDWATER CONTAMINATION. FOR THIS REASON VOLUME CALCULATIONS FOR THESE AREAS WERE INCLUDED BY ADDENDUM TO THE VOLUME ESTIMATES IN THE FEASIBILITY STUDY. ADDITIONAL ANALYTICAL DATA MAY BE DEVELOPED DURING THE DESIGN PHASE TO FURTHER DEFINE THESE WASTES. THE ADDITIONAL SUBSURFACE AREAS OF SLUDGES REPRESENT APPROXIMATELY A 23 PERCENT INCREASE IN VOLUME. A COST SENSITIVITY ANALYSIS HAD ALREADY BEEN DEVELOPED BASED ON A 25 PERCENT INCREASE IN VOLUME. BECAUSE THE ADDITIONALLY IDENTIFIED SUBSURFACE VOLUME (23 PERCENT INCREASE) SO CLOSELY APPROXIMATES THE COST SENSITIVITY ANALYSES (25 PERCENT INCREASE) NO ADDITIONAL COST ESTIMATES HAVE BEEN CALCULATED. THE COSTS SENSITIVITY ANALYSIS ESTIMATES HAVE BEEN ADOPTED FOR COMPARISON OF ALTERNATIVES.

TABLES 1 AND 2 SHOW THE COMPOUNDS WITH THE HIGHEST CONCENTRATIONS AS A RESULT OF SAMPLES COLLECTED FROM THE ELEVEN DISPOSAL LOCATIONS. LEAD HAD THE HIGHEST CONCENTRATION (3,775 MG/KG) OF ALL THE INORGANIC COMPOUNDS FOUND IN THE SOLID SAMPLES, WHILE TETRACHLOROETHENE HAD THE HIGHEST CONCENTRATION (19,000 MG/KG) OF ALL THE ORGANIC COMPOUNDS. IN THE LIQUID SAMPLES, CHROMIUM HAD THE HIGHEST CONCENTRATION (10,460 MG/L) OF THE INORGANIC COMPOUNDS FOUND AND BIS (2-ETHYLHEXYL) PHTHALATE HAD THE HIGHEST CONCENTRATION (11 MG/L) OF THE ORGANIC COMPOUNDS. THE MOST FREQUENTLY DETECTED ORGANIC PRIORITY POLLUTANT COMPOUNDS DETECTED IN SOLID SAMPLES WERE CHRYSENE AND TOTAL XYLENE. BIS (2-ETHYLHEXYL) PHTHALATE AND TOLUENE WERE THE MOST FREQUENTLY DETECTED ORGANIC PRIORITY POLLUTANT COMPOUNDS IN THE LIQUID SAMPLES. THE INORGANIC COMPOUNDS MOST FREQUENTLY DETECTED IN LIQUID AND SOLID SAMPLES WERE LEAD, ZINC, CHROMIUM AND BARIUM.

A MORE DETAILED DESCRIPTION OF THE ANALYTICAL RESULTS CAN BE FOUND IN THE SAND SPRINGS PETROCHEMICAL COMPLEX REMEDIAL INVESTIGATION REPORT.

### **POTENTIAL IMPACTS OF THE SITE ON HUMAN HEALTH AND THE ENVIRONMENT**

BASED ON THE INFORMATION GATHERED IN STUDIES OF THE SITE, EPA HAS CONCLUDED THAT THE SITE POSES FOUR MAJOR RISKS TO HUMAN HEALTH AND THE ENVIRONMENT. THESE ARE:

1. DIRECT CONTACT - MANY OF THE ORGANIC COMPOUNDS (BENZENE, TETRACHLOROETHYLENE, AND OTHERS) FOUND ON THE SITE HAVE BEEN DETERMINED TO BE CARCINOGENICS. ABSORPTION THROUGH THE SKIN OR OTHER ROUTES OF INADVERTENT INGESTION THEREFORE POSE POTENTIAL HEALTH RISKS. IN ADDITION, THE WASTES AND SURFACE WATERS WERE FOUND TO BE HIGHLY ACIDIC.
2. AIR EMISSIONS - CONSISTING OF ACID FUMES AND VOLATILE ORGANIC COMPOUNDS ALSO POSE POTENTIAL HEALTH THREATS. AN EXTREME EXAMPLE OF ACUTE MEDICAL IMPACT IS EVIDENT IN AN ACCIDENT THAT OCCURRED IN 1980. DURING EXCAVATION FOR SANITARY SEWER IMPROVEMENTS ON THE WEST SIDE OF THE LARGE ACID SLUDGE PIT, SLUDGE FROM THE PIT WAS UNCOVERED AND A NUMBER OF PEOPLE REQUIRED MEDICAL ATTENTION FROM BREATHING FUMES (PROBABLY SULPHURIC ACID). DURING THE REMEDIAL INVESTIGATION, LOW LEVELS OF TRICHLOROETHYLENE AND SULPHURIC OXIDES WERE

DETECTED IN THE AMBIENT AIR.

3. SURFACE WATERS - ARE POLLUTED BY THE RUNOFF FROM THE SITE, ESPECIALLY DURING HEAVY RAINS. THERE ARE 550,000 GALLONS OF CONTAMINATED LIQUIDS CONTAINED IN THE SURFACE IMPOUNDMENT AND 165,000 GALLONS OF LIQUID IN THE GLEN WYNN LAGOONS.
4. GROUNDWATER - IS BEING CONTAMINATED DIRECTLY BY THE GLEN WYNN LAGOONS AND INDIRECTLY BY RUNOFF FROM THE MAIN SITE. RELATIVELY CLEAN SANDS WERE FOUND BENEATH THE MAIN WASTE DEPOSITS ABOVE UNDERLYING GROUNDWATER, INDICATING THAT DIRECT CONTAMINATION BY THE MAIN WASTE DEPOSITS DOES NOT APPEAR TO BE SIGNIFICANT. LARGE VOLUMES OF RUNOFF WATER (IN HEAVY RAINS THE SITE IS SUBMERGED) DO, HOWEVER, CARRY CONTAMINANTS OFF THE MAIN WASTE DEPOSITS TO MIX WITH CONTAMINANTS FROM THE OTHER WASTE DEPOSITS. THIS EVENTUALLY SINKS INTO THE GROUNDWATER FROM STANDING POOLS OF WATER IN LOW PLACES ON-SITE.

IT SHOULD BE NOTED THAT THE STUDY OF SAND SPRINGS GROUNDWATER IS BEING CARRIED OUT SEPARATELY. EPA HAS DETERMINED HOWEVER, THAT REMEDIATING THE IDENTIFIED SOURCES OF CONTAMINATION WILL NOT CONFLICT WITH THE ULTIMATE REMEDY FOR THE SITE.

**#ENF**

## **II. ENFORCEMENT**

### **BACKGROUND**

APPROXIMATELY 300 POTENTIALLY RESPONSIBLE PARTIES (PRPS) HAVE BEEN IDENTIFIED AT THE SITE. SPECIAL NOTICE MAY BE PROVIDED TO THE PRPS TO CONDUCT THE REMEDIAL DESIGN AND ACTION.

TO DATE, TWO PRPS HAVE TAKEN ACTION AT THE SITE; ARCO AND THE SAND SPRINGS HOME. THE SAND SPRINGS HOME, PERFORMED A REMOVAL ACTION IN 1984 UNDER THE TERMS OF A UNILATERAL ADMINISTRATIVE ORDER. ARCO CONDUCTED PILOT STUDIES UNDER AN ADMINISTRATIVE ORDER.

### **PILOT STUDIES**

DURING THE SUMMER OF 1987, ARCO CONDUCTED TREATABILITY STUDIES ON THE ACID SLUDGE WASTES UNDER AN ADMINISTRATIVE ORDER ON CONSENT. THE RESULTS OF THESE STUDIES WERE SUBMITTED TO EPA ON JULY 15, 1987, IN THE "INTERIM REPORT - ACID SLUDGE TREATABILITY EVALUATIONS". THIS DOCUMENT WAS PLACED IN THE REPOSITORIES OF INFORMATION FOR REVIEW BY THE PUBLIC. THE THREE TREATMENT PROCESSES EVALUATED ARE THERMAL TREATMENT, STABILIZATION, AND SOLIDIFICATION. A FINAL VERSION OF THE REPORT WAS SUBMITTED ON SEPTEMBER 1, 1987.

THE THERMAL TREATMENT PROCESSES STUDIED WERE INFRARED, ROTARY KILN, FLUIDIZED BED, AND CIRCULATING FLUIDIZED BED. THE ACTUAL PILOT TESTS WERE CONDUCTED USING AN INFRARED INCINERATOR, BUT THE RESULTS OF THESE TESTS SHOULD BE REPRESENTATIVE OF THE OTHER PROCESSES. HIGH TEMPERATURE INCINERATION WAS USED TO DESTROY THE ACID SLUDGES AND SCRUB THE COMBUSTION GASES. INDICATOR ORGANIC COMPOUNDS, KNOWN AS PRINCIPAL ORGANIC HAZARDOUS CONSTITUENTS (POHC'S), WERE MEASURED TO DETERMINE IF THE INCINERATOR COULD ATTAIN A DESTRUCTION AND REMOVAL EFFICIENCY OF 99.99% FOR ORGANICS. THIS DESTRUCTION AND REMOVAL EFFICIENCY IS REQUIRED BY RCRA FOR MOST HAZARDOUS WASTES. THE RESULTS OBTAINED FROM THE PILOT TEST VERIFIED THAT THE THERMAL TREATMENT UNIT COULD ATTAIN THE 99.99% CRITERIA.

STABILIZATION WAS EVALUATED AS A POTENTIAL REMEDY FOR THE ACID SLUDGES. THIS TECHNOLOGY USES A STABILIZING AGENT, SUCH AS LIME, TO REDUCE THE MOBILITY OF THE CONTAMINANTS AND INCREASE THE BEARING CAPACITY OF THE MASS CONTAINING THE CONTAMINANTS. THE TOXICITY CHARACTERISTICS LEACHING PROCEDURE (TCLP) WAS USED TO EVALUATE THE PERFORMANCE OF THIS TECHNOLOGY.



THE ANALYTICAL RESULTS SHOW THAT WITHOUT FURTHER TREATMENT FREE LIQUID CONTAMINANT CONCENTRATIONS WERE NOT REDUCED TO MEET RCRA LAND BAN RESTRICTIONS. THE UNCONFINED COMPRESSIVE STRENGTH OF THE STABILIZED MATERIAL WAS DETERMINED BY THE EPA CINCINNATI LABORATORY TO BE 1.8 POUNDS PER SQUARE INCH (PSI), WHICH DOES NOT MEET THE RECOMMENDED DISPOSAL CRITERIA REQUIRING A COMPRESSIVE STRENGTH OF 150 PSI.

THE PILOT STUDY OF SOLIDIFICATION INVOLVED MIXING A CEMENTING AGENT WITH THE WASTE TO PRODUCE A BRICK-LIKE MATERIAL. THIS PROCESS IS ALSO USED TO REDUCE THE MOBILITY OF THE CONTAMINANTS AND INCREASE THE BEARING CAPACITY OF THE MASS CONTAINING THE CONTAMINANTS. ALTHOUGH THIS PROCESS MEETS THE RCRA LAND BAN REQUIREMENTS, LEACHING TESTS CONDUCTED BY EPA'S CINCINNATI LABORATORY SHOW THAT THE SOLIDIFIED MATERIAL LEACHES CONTAMINANTS, ALTHOUGH LEACHING MAY DIMINISH OVER TIME. LEACHING OF CONTAMINANTS, AND INCOMPLETE ENCAPSULATION RAISES QUESTIONS ABOUT THE LONG TERM EFFECTIVENESS AND PERMANENCE OF THE PROCESS. VISUAL EXAMINATION OF THE SOLIDIFIED WASTE SHOWS SMALL GLOBULES OF WASTE WHICH ARE NOT FULLY ENCAPSULATED.

**#CR**

### **III. COMMUNITY RELATIONS HISTORY**

ON JULY 24, 1984, THE U.S. ENVIRONMENTAL PROTECTION AGENCY (EPA) ISSUED A NEWS RELEASE ANNOUNCING THAT FUNDS HAD BEEN AWARDED TO THE OKLAHOMA STATE DEPARTMENT OF HEALTH (OSDH) TO CONDUCT THE RI/FS AT THE SAND SPRINGS SITE.

THE COMPLETION OF THE STUDIES WAS ANNOUNCED TO THE PUBLIC VIA NEWS RELEASES ISSUED BY THE OSDH ON JULY 9, 1987, AND BY EPA ON JULY 15, 1987. THE AUGUST 4, 1987, PUBLIC MEETING TO DISCUSS THE PROPOSED REMEDY FOR THE SITE WAS ALSO ANNOUNCED. EPA PREPARED A FACT SHEET DESCRIBING ALTERNATIVE CLEANUP PLANS AND THE EPA PREFERRED ALTERNATIVE WHICH WAS SENT TO THE INTERESTED AND AFFECTED PUBLIC ON JULY 29, 1987. THE FACT SHEET GAVE A BRIEF SITE HISTORY, DESCRIBED THE REMEDY SELECTION PROCESS AND ALTERNATIVES AND GAVE DETAILS ABOUT THE PUBLIC COMMENT PERIOD AND MEETING.

THE PUBLIC MEETING WAS HELD IN SAND SPRINGS ON AUGUST 4, 1987. THE MEETING WAS CHANGED FROM THE ORIGINAL PUBLIC LIBRARY LOCATION TO THE CITY COUNCIL CHAMBERS SO THAT THE LARGE CROWD OF INTERESTED PEOPLE COULD BE ACCOMMODATED. ABOUT 180 PEOPLE ATTENDED THE MEETING WHICH BEGAN AT 7:00 PM AND ENDED AT MIDNIGHT.

DURING THE MEETING, REQUESTS WERE MADE FOR EPA TO EXTEND THE PUBLIC COMMENT PERIOD. THAT REQUEST WAS GRANTED BY THE PRESIDING OFFICIAL AND THE COMMENT PERIOD WAS EXTENDED UNTIL SEPTEMBER 1, 1987. A NEWS RELEASE WAS ISSUED BY THE EPA ON AUGUST 7 ANNOUNCING THE EXTENSION. IN ADDITION TO THE AGENCY MEDIA LIST, THE NEWS RELEASE WAS MAILED TO ALL PERSONS KNOWN TO HAVE AN INTEREST IN THE SITE.

COMMUNITY CONCERNS CENTERED ON POTENTIAL AIR POLLUTION FROM THERMAL DESTRUCTION, POTENTIAL ADVERSE ECONOMIC IMPACTS ON THE CITY AND WHETHER EPA WOULD GUARANTEE THAT, IF THERMAL DESTRUCTION WERE SELECTED, THE DEVICE WOULD BE REMOVED AFTER CLEANUP WAS COMPLETED. FURTHER DETAILS CONCERNING COMMUNITY RELATIONS ARE CONTAINED IN APPENDIX C.

**#AE**

### **IV. ALTERNATIVES EVALUATION**

#### **EVALUATION CRITERIA**

SECTION 121(A)(B) AND (D) OF THE SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT CONTAINS NINE FACTORS WHICH EPA MUST CONSIDER IN SELECTING A REMEDY FOR A SUPERFUND SITE. THESE ARE SUMMARIZED BELOW:

#OEL

1. CONSISTENCY WITH OTHER ENVIRONMENTAL LAWS (ARARS)

IN DETERMINING APPROPRIATE REMEDIAL ACTIONS AT SUPERFUND SITES, CONSIDERATION MUST BE GIVEN TO THE REQUIREMENTS OF OTHER FEDERAL AND STATE ENVIRONMENTAL LAWS, IN ADDITION TO CERCLA AS AMENDED BY SARA. PRIMARY CONSIDERATION IS GIVEN TO ATTAINING APPLICABLE OR RELEVANT AND APPROPRIATE FEDERAL AND STATE PUBLIC HEALTH AND ENVIRONMENTAL REGULATIONS AND STANDARDS. NOT ALL FEDERAL AND STATE ENVIRONMENTAL LAWS AND REGULATIONS ARE APPLICABLE TO EACH SUPERFUND RESPONSE ACTION. THE COMPLIANCE OF EACH REMEDIAL ALTERNATIVE WITH ALL APPLICABLE OR RELEVANT AND APPROPRIATE ENVIRONMENTAL LAWS IS SHOWN IN TABLE 3.

2. REDUCTION OF TOXICITY, MOBILITY OR VOLUME

THE DEGREE TO WHICH ALTERNATIVES EMPLOY TREATMENT THAT REDUCES TOXICITY, MOBILITY, OR VOLUME MUST ALSO BE ASSESSED. RELEVANT FACTORS ARE:

- S THE TREATMENT PROCESSES THE REMEDIES EMPLOY AND MATERIALS THEY WILL TREAT;
- S THE AMOUNT OF HAZARDOUS MATERIALS THAT WILL BE DESTROYED OR TREATED;
- S THE DEGREE OF EXPECTED REDUCTION IN TOXICITY, MOBILITY, OR VOLUME;
- S THE DEGREE TO WHICH THE TREATMENT IS IRREVERSIBLE;
- S THE RESIDUALS THAT WILL REMAIN FOLLOWING TREATMENT, CONSIDERING THE PERSISTENCE, TOXICITY, MOBILITY, AND PROPENSITY FOR BIOACCUMULATION OF SUCH HAZARDOUS SUBSTANCES AND THEIR CONSTITUENTS.

3. SHORT-TERM EFFECTIVENESS

THE SHORT-TERM EFFECTIVENESS OF ALTERNATIVES MUST BE ASSESSED; CONSIDERING APPROPRIATE FACTORS AMONG THE FOLLOWING:

- S MAGNITUDE OF REDUCTION OF EXISTING RISKS;
- S SHORT-TERM RISKS THAT MIGHT BE POSED TO THE COMMUNITY, WORKERS, OR THE ENVIRONMENT DURING IMPLEMENTATION OF AN ALTERNATIVE INCLUDING POTENTIAL THREATS TO HUMAN HEALTH AND THE ENVIRONMENT ASSOCIATED WITH EXCAVATION, TRANSPORTATION, AND REDISPOSAL OR CONTAINMENT;
- S TIME UNTIL FULL PROTECTION IS ACHIEVED.

4. LONG-TERM EFFECTIVENESS AND PERMANENCE

ALTERNATIVES ARE ASSESSED FOR THE LONG-TERM EFFECTIVENESS AND PERMANENCE THEY AFFORD ALONG WITH THE DEGREE OF CERTAINTY THAT THE REMEDY WILL PROVE SUCCESSFUL. FACTORS CONSIDERED ARE:

- S MAGNITUDE OF RESIDUAL RISKS IN TERMS OF AMOUNTS AND CONCENTRATIONS OF WASTE REMAINING FOLLOWING IMPLEMENTATION OF A REMEDIAL ACTION, CONSIDERING THE PERSISTENCE, TOXICITY, MOBILITY, AND PROPENSITY TO BIOACCUMULATE OF SUCH HAZARDOUS SUBSTANCES AND THEIR CONSTITUENTS;
- S TYPE AND DEGREE OF LONG-TERM MANAGEMENT REQUIRED, INCLUDING MONITORING AND OPERATION AND MAINTENANCE;
- S POTENTIAL FOR EXPOSURE OF HUMAN AND ENVIRONMENTAL RECEPTORS TO REMAINING WASTE CONSIDERING THE POTENTIAL THREAT TO HUMAN HEALTH AND THE ENVIRONMENT ASSOCIATED WITH EXCAVATION, TRANSPORTATION, REDISPOSAL, OR CONTAINMENT;
- S LONG-TERM RELIABILITY OF THE ENGINEERING AND INSTITUTIONAL CONTROLS, INCLUDING UNCERTAINTIES ASSOCIATED WITH LAND DISPOSAL OF UNTREATED WASTES AND RESIDUALS;
- S POTENTIAL NEED FOR REPLACEMENT OF THE REMEDY.

5. IMPLEMENTABILITY

THE EASE OR DIFFICULTY OF IMPLEMENTING THE ALTERNATIVES ARE ASSESSED BY CONSIDERING THE FOLLOWING TYPES OF FACTORS:

- S DEGREE OF DIFFICULTY ASSOCIATED WITH CONSTRUCTING THE TECHNOLOGY;
- S EXPECTED OPERATIONAL RELIABILITY OF THE TECHNOLOGIES;
- S NEED TO COORDINATE WITH AND OBTAIN NECESSARY APPROVALS AND PERMITS (E.G., NPDES, DREDGE AND FILL PERMITS FOR OFF-SITE ACTIONS) FROM OTHER OFFICES AND AGENCIES;
- S AVAILABILITY OF NECESSARY EQUIPMENT AND SPECIALISTS;
- S AVAILABLE CAPACITY AND LOCATION OF NEEDED TREATMENT, STORAGE, AND DISPOSAL SERVICES.

6. COST

THE TYPES OF COSTS THAT SHOULD BE ASSESSED INCLUDE THE FOLLOWING:

- S CAPITAL COST;
- S OPERATION AND MAINTENANCE COSTS;
- S NET PRESENT VALUE OF CAPITAL AND O&M COSTS;
- S POTENTIAL FUTURE REMEDIAL ACTION COSTS.

7. COMMUNITY ACCEPTANCE

THIS ASSESSMENT SHOULD LOOK AT:

- S COMPONENTS OF THE ALTERNATIVES THAT THE COMMUNITY SUPPORTS;
- S FEATURES OF THE ALTERNATIVES ABOUT WHICH THE COMMUNITY HAS RESERVATIONS;
- S ELEMENTS OF THE ALTERNATIVES WHICH THE COMMUNITY STRONGLY OPPOSES.

8. STATE ACCEPTANCE

EVALUATION FACTORS INCLUDE ASSESSMENTS OF:

- S COMPONENTS OF THE ALTERNATIVES THE STATE SUPPORTS;
- S FEATURES OF THE ALTERNATIVES ABOUT WHICH THE STATE HAS RESERVATIONS;
- S ELEMENTS OF THE ALTERNATIVES UNDER CONSIDERATION THAT THE STATE STRONGLY OPPOSES.

9. OVERALL PROTECTION OF HUMAN HEALTH AND THE ENVIRONMENT

FOLLOWING THE ANALYSIS OF THE REMEDIAL OPTIONS AGAINST INDIVIDUAL EVALUATION CRITERIA, THE ALTERNATIVES ARE ASSESSED FROM THE STANDPOINT OF WHETHER THEY PROVIDE ADEQUATE PROTECTION OF HUMAN HEALTH AND THE ENVIRONMENT CONSIDERING THE MULTIPLE CRITERIA.

EPA IS ALSO DIRECTED BY SARA TO GIVE PREFERENCE TO REMEDIAL ACTIONS THAT UTILIZE TREATMENT TO REMOVE CONTAMINANTS FROM THE ENVIRONMENT. OFF-SITE TRANSPORT AND DISPOSAL WITHOUT TREATMENT IS THE LEAST PREFERRED OPTION WHERE PRACTICABLE TREATMENT TECHNOLOGIES ARE AVAILABLE.

**DESCRIPTION OF ALTERNATIVES**

IN CONFORMANCE WITH THE NATIONAL CONTINGENCY PLAN, INITIAL REMEDIAL APPROACHES WERE SCREENED TO DETERMINE WHICH MIGHT BE APPROPRIATE FOR THIS SITE. (SEE THE FEASIBILITY STUDY FOR DETAILS OF THIS EVALUATION). FROM THESE POSSIBLE REMEDIES, SIX ALTERNATIVES WERE CHOSEN FOR

MORE DETAILED EVALUATION AND COMPARISON WITH THE REMEDY SELECTION CRITERIA OUTLINED ABOVE. EACH IS SUMMARIZED BELOW:

ALTERNATIVE 1, NO ACTION - THIS REMEDY CONSISTS PRIMARILY OF RESTRICTING PUBLIC ACCESS TO THE CONTAMINATED AREAS AND MONITORING THE SITE. THE AREAS WOULD BE SECURED USING FENCING AND WARNING SIGNS. SITE MONITORING WILL INVOLVE AIR MONITORING AND AN ESTABLISHED WARNING SYSTEM FOR EVACUATION OF THE NEARBY PUBLIC IN CASE CONTAMINATION IS DETECTED ABOVE ANY APPLICABLE STANDARDS. GROUNDWATER AND BERM CONDITIONS WILL BE MONITORED PERIODICALLY. THE ESTIMATED COST TO IMPLEMENT THE "NO ACTION" ALTERNATIVE IS \$525,000.

ALL FIVE OF THE REMAINING ALTERNATIVES REQUIRE EXCAVATION OF THE CONTAMINATED MATERIALS. IF ANY WASTE REMAINS ON-SITE, A LANDFILL CONSTRUCTED IN COMPLIANCE WITH RCRA REQUIREMENTS WILL BE USED TO REDUCE GROUNDWATER INFILTRATION AND THE CHANCES OF ANY CONTAMINANTS MIGRATING OFF-SITE. IN ADDITION THE SITE WILL BE MONITORED FOR AT LEAST 30 YEARS.

EACH REMEDIAL ACTION ALTERNATIVE ALSO INCLUDES REMOVAL AND TREATMENT OF THE LIQUIDS IN THE SURFACE IMPOUNDMENTS, THE NORTH AND SOUTH GLEN WYNN LAGOONS AND COLLECTED STORMWATER. SURFACE IMPOUNDMENT LIQUIDS AND LIQUIDS FROM THE NORTH AND SOUTH GLEN WYNN LAGOONS WILL BE PUMPED, TREATED, AND DISCHARGED.

THE SPECIFIED TREATMENT UNIT WILL BE CAPABLE OF REMOVING THE METAL AND ORGANIC CONTAMINANTS FROM THE LIQUIDS TO RESULT IN CONCENTRATIONS THAT COMPLY WITH FEDERAL AND/OR STATE STANDARDS FOR DIRECT DISCHARGE TO THE ARKANSAS RIVER. STORMWATER WILL BE COLLECTED WITHIN THE INDIVIDUAL AREAS AS THEY ARE BEING REMEDIATED. IT IS ASSUMED THAT THE COLLECTED STORMWATER WILL HAVE SIMILAR OR LOWER CONCENTRATIONS OF HAZARDOUS SUBSTANCES AS THE SURFACE IMPOUNDMENT LIQUIDS AND WILL BE TREATED IN THE SAME MANNER.

ALTERNATIVE 2, ON-SITE THERMAL DESTRUCTION - INVOLVES REMOVING AND TRANSPORTING THE HAZARDOUS MATERIAL TO AN ON-SITE THERMAL TREATMENT UNIT. MATERIALS HANDLING WILL LIKELY INCLUDE HAULING THE HAZARDOUS WASTE TO THE THERMAL DESTRUCTION UNIT, POSSIBLY ADDING CHEMICALS TO NEUTRALIZE THE LOW PH SLUDGES, MIXING THE WASTE AND CHEMICALS TO MAKE THEM AS HOMOGENEOUS AS POSSIBLE, AND REDUCING THE SOLID MATERIALS TO A SUITABLE SIZE FOR THERMAL DESTRUCTION. STACK GASES WILL BE SCRUBBED AND TREATED PRIOR TO ATMOSPHERIC RELEASE. THE RESIDUAL ASH WILL BE TESTED, SOLIDIFIED, AND LANDFILLED TO COMPLY WITH RCRA REQUIREMENTS, IF NECESSARY. THE ESTIMATED COST OF THIS ALTERNATIVE IS \$67 MILLION.

ALTERNATIVE 3, SOLIDIFICATION AND ON-SITE LANDFILL - IN GENERAL, SOLIDIFICATION TECHNOLOGIES INVOLVE UNIFORMLY COMBINING THE HAZARDOUS MATERIAL WITH CEMENTITIOUS MATERIALS, SUCH AS PORTLAND CEMENT OR FLY ASH AND LETTING THE MIXTURE HARDEN. THIS REMEDY INVOLVES NEUTRALIZING AND EXCAVATING THE HAZARDOUS MATERIAL AND PLACING IT IN AN ON-SITE BLENDING UNIT FOR MIXING WITH THE SOLIDIFICATION AGENT. THE SOLIDIFIED MIXTURE WOULD BE DISPOSED OF IN AN ON-SITE RCRA SPECIFICATION LANDFILL. PRIOR TO LANDFILLING, RELEVANT TESTS WOULD BE PERFORMED TO CONFIRM THE EFFECTIVENESS OF THE SOLIDIFICATION TECHNOLOGY. IMPLEMENTATION OF THIS ALTERNATIVE MAY PRODUCE A TOTAL VOLUME INCREASE OF 50 TO 200 PERCENT THAT OF THE ORIGINAL VOLUME. A FENCE WOULD BE INSTALLED TO RESTRICT SITE ACCESS AND GROUNDWATER MONITORING WOULD BE PERFORMED FOR AT LEAST A 30 YEAR PERIOD FOLLOWING CLOSURE. THE COST OF THIS ALTERNATIVE IS ESTIMATED TO BE \$38 MILLION.

ALTERNATIVE 4, ON-SITE SOLVENT EXTRACTION - THIS REMEDY ENTAILS THE EXCAVATION AND NEUTRALIZATION OF THE HAZARDOUS SLUDGES, TREATMENT IN AN ON-SITE FACILITY, AND PROPER DISPOSAL OF THE THREE BY-PRODUCTS (OIL, WATER, AND SOLIDS). SOLVENT EXTRACTION TREATMENT INCLUDES SIZING AND PRETREATING THE MATERIAL PRIOR TO EXTRACTING THE OIL WITH A SOLVENT. EACH WASTE SYSTEM OF OIL, WATER, AND SOLIDS WILL REQUIRE SAMPLING AND ANALYSIS TO DETERMINE THE APPROPRIATE METHOD OF DISPOSAL. THIS ALTERNATIVE WOULD REQUIRE PILOT

STUDIES PRIOR TO DEVELOPMENT OF PERFORMANCE SPECIFICATIONS TO DETERMINE THE DEGREE TO WHICH PRODUCTS MAY BE CONTAMINATED AND HOW TO TREAT THE OIL, WATER, AND SOLIDS PRODUCT STREAMS, IF NECESSARY. THE ESTIMATED COST OF THIS REMEDY IS \$272 MILLION.

ALTERNATIVE 5, OFF-SITE THERMAL DESTRUCTION - THIS REMEDY WOULD INVOLVE REMOVAL AND TRANSPORT OF HAZARDOUS MATERIAL TO AN OFF-SITE THERMAL DESTRUCTION UNIT IN COMPLIANCE WITH THE SUPERFUND OFF-SITE POLICY. THE DESCRIPTION OF THE OFF-SITE THERMAL DESTRUCTION TECHNOLOGY IS SIMILAR TO ALTERNATIVE 2. THE ESTIMATED COST OF THE REMEDY IS \$429 MILLION. TRANSPORTATION COST IS THE PRIMARY REASON FOR THE COST DIFFERENTIAL BETWEEN ALTERNATIVE 2 AND ALTERNATIVE 5.

ALTERNATIVE 6, OFF-SITE SOLVENT EXTRACTION - THIS REMEDY IS SIMILAR TO ALTERNATIVE 4, ALTHOUGH IT REQUIRES TRANSPORTING THE MATERIAL OFF-SITE TO A TREATMENT FACILITY IN COMPLIANCE WITH THE SUPERFUND OFF-SITE POLICY. THE ESTIMATED COST OF THE OFF-SITE SOLVENT EXTRACTION ALTERNATIVE IS \$294 MILLION.

#### **EVALUATION OF ALTERNATIVES**

THE DEGREE THAT THE SIX REMEDIAL ALTERNATIVES MEET THE NINE SELECTION CRITERIA IS CONTAINED IN TABLE 4. THE FOLLOWING VALUES WERE ASSIGNED TO COMPARE REMEDIAL SELECTION CRITERIA:

- ++ ALTERNATIVE WOULD GREATLY EXCEED A SELECTION CRITERION WHEN COMPARED TO OTHER ALTERNATIVES.
- + ALTERNATIVE WOULD EXCEED A CRITERION IN COMPARISON TO OTHER ALTERNATIVES.
- 0 ALTERNATIVE CAN BE DESIGNED TO MEET THE SELECTION CRITERION.
- SPECIAL EFFORTS WILL BE NECESSARY IN THE DESIGN OF THE REMEDY TO MEET THE SELECTION CRITERION.
- IN COMPARISON TO OTHER REMEDIES, THESE ALTERNATIVES WOULD PRESENT MOST DIFFICULTY IN ACHIEVING A SELECTION CRITERION.

THE RATIONALE FOR THE RATINGS ASSIGNED IN THIS TABLE IS AS FOLLOWS:

1. COMPLIES WITH ARARS (I.E., MEETS OR EXCEEDS APPLICABLE, OR RELEVANT AND APPROPRIATE FEDERAL AND STATE REQUIREMENTS).
  - A. NO ACTION WAS ASSIGNED A "--" BECAUSE IT WOULD VIOLATE RCRA CORRECTIVE ACTION REQUIREMENTS REQUIRING REMEDIATION OF A HAZARDOUS WASTE SITE AND DOES NOT COMPLY WITH THE NATIONAL CONTINGENCY PLAN PROVISIONS TO RESPOND TO A THREAT OF RELEASE.
  - B. ON-SITE THERMAL DESTRUCTION WAS RATED "+" BASED ON THE GROWING BODY OF KNOWLEDGE THE AGENCY HAS ABOUT THE ABILITY OF THIS PROCESS TO MEET ENVIRONMENTAL STANDARDS AND THE HIGHLY INCINERABLE CHARACTERISTICS OF WASTE AT THE SITE. IN ADDITION, AN ON-SITE PILOT TEST OF A THERMAL DESTRUCTION UNIT SHOWED THAT 99.99% DESTRUCTION OF ORGANICS (A RCRA REQUIREMENT) WAS ACHIEVABLE AFTER FUEL TO AIR RATIOS WERE ADJUSTED. ALL OTHER STANDARDS (AND WATER QUALITY STANDARDS) SHOULD BE MET AS WELL.
  - C. ON-SITE SOLIDIFICATION AND LANDFILL WAS RATED "-" FOR BOTH THE SOLIDIFICATION AND STABILIZATION PROCESSES EVALUATED BROADLY IN THE FEASIBILITY STUDY AND IN MORE DETAIL IN THE FIELD PILOT STUDIES. THE WASTE AT THIS SITE CONTAINS 50% ORGANIC COMPOUNDS RAISING DOUBTS ABOUT THE ABILITY OF STABILIZED OR SOLIDIFIED WASTE TO MEET

RCRA REQUIREMENTS IN THE LONG TERM. THE STABILIZATION PILOT TESTS SHOWED THAT STABILIZED WASTE MAY REQUIRE A SUPPORT STRUCTURE \* TO SUPPORT A RCRA CAP DUE TO LOW COMPRESSIVE STRENGTHS (1.8 PSI). IT IS RECOMMENDED THAT LANDFILLED SOLIDS ATTAIN 150 PSI IF A CAP IS INSTALLED WITHOUT A SUPPORT STRUCTURE. LIQUIDS (UP TO 40% BY VOLUME) SEPARATED FROM STABILIZED MATERIAL WOULD REQUIRE FURTHER TREATMENT \* BEFORE DISPOSAL TO MEET RCRA REQUIREMENTS. THE SOLIDIFIED WASTE CONTAINED VISIBLE CHUNKS OF WASTE FROM PEA TO FIST SIZE AND HAD A WIDE VARIATION IN COMPRESSIVE STRENGTHS (FROM 180 TO 650 PSI). TESTS TO DETERMINE THE LONG TERM ABILITY OF THE SOLIDIFYING MATRIX TO CONTAIN THE WASTE WERE NOT INCLUSIVE DUE TO THE LACK OF A RELIABLE TEST METHODOLOGY. A MODIFIED LEACHING TEST (SEE ORD REPORT) ON PILOT STUDY SAMPLES DID SHOW OBVIOUS DEGRADATION OF THE SOLIDIFYING MATRIX FOLLOWING ANALYSES FOR TOTAL ORGANIC CONTENT.

\* NOT INCLUDED IN FEASIBILITY STUDY COST ESTIMATES.

FINALLY, AVAILABLE PILOT PROJECT DATA INDIRECTLY POINTS TO THE POTENTIAL FOR SIGNIFICANT AIR EMISSIONS FROM BOTH THE SOLIDIFICATION AND STABILIZATION PROCESSES. ANALYSIS OF SOLIDIFIED OR STABILIZED WASTE SHOWS THAT THE QUANTITY OF LOW VOLATILE COMPOUNDS REMAINED UNCHANGED IN TREATED SAMPLES. COMPOUNDS WITH HIGHER VOLATILITY HOWEVER, NEARLY DISAPPEARED. TULSA COUNTY IS DESIGNATED BY EPA AS NONATTAINMENT FOR OZONE; THE POSSIBILITY OF SIGNIFICANT ADDITIONS OF HYDROCARBON COMPOUNDS MUST BE CONSIDERED.

THE NET ASSESSMENT IS THAT SOLIDIFICATION OR STABILIZATION PROCESSES PRESENT DIFFICULT PROBLEMS WITH RESPECT TO MEETING ARARS.

D. OTHER ALTERNATIVES WERE ALL RATED "0" BECAUSE ALL INVOLVED TREATMENT PROCESSES THAT CAN BE DESIGNED TO MEET ARARS.

2. REDUCES: TOXICITY, MOBILITY, AND VOLUME

A. NO ACTION WAS RATED "-" BECAUSE IT DOES NOTHING TO REDUCE ANY OF THESE PARAMETERS.

B. ON-SITE THERMAL DESTRUCTION WAS RATED "+" IN EACH CATEGORY BECAUSE THIS PROCESS WOULD ELIMINATE ORGANIC COMPOUNDS THAT CONSTITUTE 50% OF THE WASTE.

C. SOLIDIFICATION/STABILIZATION WAS RATED DIFFERENTLY FOR EACH OF THE PARAMETERS.

I. MOBILITY - WAS RATED "+" BECAUSE PILOT STUDIES SUGGEST THIS REMEDY REDUCES MOBILITY. IT WAS NOT RATED "++" BECAUSE OF THE POSSIBILITY FOR LEACHING EXISTS EVEN THOUGH THE CONTAMINANTS WILL BE FIXED TO A SOLIDIFYING AGENT.

II. TOXICITY - WAS RATED "-" BECAUSE NONE OF THE METALS OR ORGANIC COMPOUNDS WERE REMOVED FROM THE WASTE EXCEPT THE ELIMINATION OF POSSIBLE AIR EMISSIONS.

III. VOLUME - WAS RATED "--" BECAUSE OF PILOT DATA SHOWING A VOLUMETRIC INCREASE OF 50% TO 200% FOR THESE REMEDIAL TECHNIQUES.

D. OTHER REMEDIES - WERE ALL RATED "+" BECAUSE EACH INVOLVES REMOVAL OF THE ORGANIC COMPONENTS OF THE WASTE.

3. SHORT-TERM EFFECTIVENESS

WITH THE EXCEPTION OF THE NO ACTION REMEDY ALL ALTERNATIVES WERE RATED AT LEAST "-"

BECAUSE OF THE POTENTIAL FOR RELEASE OF ACID FUMES OR OTHER NOXIOUS GASES DURING WASTE EXCAVATION. THIS PROBLEM CAN PROBABLY BE AVOIDED BY THE USE OF FOAMS, CAUTIOUS WORK PRACTICES, OR TEMPORARY ENCLOSURES AND WILL NEED TO BE ADDRESSED IN THE DESIGN OF THE REMEDY.

OFF-SITE REMEDIES WERE ALL RATED "--" BECAUSE, IN ADDITION TO THE EXCAVATION PROBLEMS, TRANSPORTATION OF THE WASTE OFF-SITE POSES ADDITIONAL ENVIRONMENTAL RISKS. NO ACTION WAS ALSO, RATED "--" BECAUSE OF THE RISK THE SITE PRESENTS, AS DEMONSTRATED BY THE WATER COMPANY WORKER INJURIES.

#### 4. LONG-TERM EFFECTIVENESS AND PERMANENCE

THE HIGHEST RATINGS, "++" WERE GIVEN TO THE THERMAL DESTRUCTION OPTIONS SINCE THEY ENTAILED THE DESTRUCTION OF ORGANICS AND SOLIDIFICATION OF ANY TOXIC ASH. SOLIDIFIED ASH SHOULD BE EXTREMELY STABLE IN THE ENVIRONMENT BECAUSE THE ORGANIC COMPOUNDS WILL HAVE BEEN ELIMINATED. LOWER RATINGS OF "+" WERE GIVEN TO THE SOLVENT EXTRACTION OPTIONS BECAUSE SLIGHT INEFFICIENCIES IN THE WATER-OIL-SOLIDS SEPARATION PROCESS WILL RESULT IN SOMEWHAT "DIRTIER" END PRODUCTS THAN THE THERMAL DESTRUCTION TECHNIQUES. THE SOLIDIFICATION ALTERNATIVE WAS GIVEN A "-" DUE TO THE GENERAL LACK OF PROVEN EFFECTIVENESS, PILOT STUDY DATA, AND DOUBTS ABOUT THE LONG TERM STABILITY. THE NO ACTION ALTERNATIVE WAS RATED "--" BECAUSE OF THE RISKS INVOLVED WITH LEAVING THE UNTREATED WASTE ON-SITE.

#### 5. IMPLEMENTABILITY

ALL ALTERNATIVES THAT ENTAILED THE EXCAVATION OF THE WASTE WERE RATED AT LEAST "-" DUE TO EXPECTED DIFFICULTIES IN MATERIALS HANDLING. THESE PROBLEMS BECAME APPARENT DURING THE PILOT STUDIES AND WILL REQUIRE ATTENTION DURING THE DESIGN PHASE. THE PROCESSES THAT WOULD TREAT THE WASTE ON-SITE ARE JUDGED TO EACH HAVE THE SAME DEGREE OF IMPLEMENTABILITY. SOLIDIFICATION AND STABILIZATION WOULD LIKELY REQUIRE WASTE TO BE MORE FINELY PULVERIZED THAN MANY THERMAL DESTRUCTION TECHNIQUES AND REQUIRE STAGING AND CURING AREAS WITH ASSOCIATED LEACHATE COLLECTION AND TREATMENT SYSTEMS. ON THE OTHER HAND, THERMAL DESTRUCTION SYSTEMS WOULD REQUIRE EXHAUST GAS CAPTURE, POLLUTANT REMOVAL, AND TREATMENT SYSTEMS THAT WOULD NOT BE REQUIRED BY THE SOLIDIFICATION/STABILIZATION TECHNIQUES. OFF-SITE REMEDIES RECEIVED AN ADDITIONAL "-" DUE TO THE ADDED TRANSPORTATION PROBLEMS.

#### 6. COST

ESTIMATED COSTS FOR EACH REMEDIAL ACTION ALTERNATIVE ARE SUMMARIZED IN TABLE 5. INCLUDED IN THIS TABLE ARE TOTAL CAPITAL AND IMPLEMENTATION COSTS, ANNUAL OPERATION AND MAINTENANCE COSTS, TOTAL PRESENT WORTH, AND REPLACEMENT COSTS. REPLACEMENT COSTS WERE INCLUDED TO EVALUATE THE COSTS INVOLVED IN REMEDIATION IF THE ALTERNATIVE WERE TO FAIL. THE POTENTIAL FOR FAILURE WAS DETERMINED TO BE GREATEST FOR THE ON-SITE SOLIDIFICATION REMEDY, SINCE THE POTENTIAL FOR CONTAMINANTS LEACHING FROM THE SOLIDIFIED MATERIAL EXISTS. REPLACEMENT COST IS ESTIMATED TO BE \$100 MILLION, ASSUMING ON-SITE THERMAL DESTRUCTION IS THE REPLACEMENT CLEAN UP TECHNOLOGY.

THE NO ACTION REMEDY HAS THE LOWEST PRESENT WORTH OF THE ALTERNATIVES, BUT HAS AN ANNUAL OPERATING AND MAINTENANCE COST OF OVER \$25,000. THIS EXPENSE IS DUE TO GROUNDWATER MONITORING, AIR MONITORING, AND SITE INSPECTIONS.

THE PROJECTED COST FOR ON-SITE THERMAL DESTRUCTION IS \$67 MILLION, WHICH IS OVER \$350 MILLION LESS THAN OFF-SITE THERMAL DESTRUCTION. THE PRIMARY REASON FOR THIS DIFFERENCE IS THE HIGHER COST THAT VENDORS CHARGE AT PERMITTED OFF-SITE FACILITIES. THESE COSTS CAN BE ATTRIBUTED TO OFF-SITE PERMITTING REQUIREMENTS AND THE LIABILITIES INCURRED BY THE OPERATORS.

THE ON-SITE SOLIDIFICATION ALTERNATIVE WAS ESTIMATED TO COST \$38 MILLION. THE LARGEST

PORTION OF THIS COST CAN BE ATTRIBUTED TO CONSTRUCTION AND IMPLEMENTATION EXPENSES.

TRANSPORTATION COSTS ARE THE PRIMARY REASON FOR THE DIFFERENCE IN THE COST BETWEEN ON-SITE AND OFF-SITE SOLVENT EXTRACTION. ALTHOUGH ON-SITE SOLVENT EXTRACTION IS LESS EXPENSIVE THAN OFF-SITE SOLVENT EXTRACTION, THE ON-SITE VERSION ALSO REQUIRES ANNUAL OPERATION AND MAINTENANCE WHICH IS NOT REQUIRED FOR OFF-SITE TREATMENT.

7. COMMUNITY ACCEPTANCE

AT THE PUBLIC MEETING ON AUGUST 4, 1987, THE RESIDENTS' COMMENTS CENTERED ON THE ON-SITE THERMAL DESTRUCTION AND THE SOLIDIFICATION ALTERNATIVES. THERE WAS GENERAL AGREEMENT FAVORING SOME FORM OF REMEDIAL ACTION FOR THE SITE.

THE COMMUNITY WAS CONCERNED THAT THE SITE WOULD BE USED IN THE FUTURE TO DESTROY HAZARDOUS WASTE FROM OTHER SITES, THAT THE THERMAL DESTRUCTION OPTION WOULD ADD TO EXISTING AIR POLLUTION AND THAT THE LOCAL ECONOMY MIGHT SUFFER FROM THE PRESENCE OF A HAZARDOUS WASTE INCINERATOR. SOME RESIDENTS FAVORED DESTRUCTION OF THE WASTE, HOWEVER. BECAUSE OF THE AFOREMENTIONED CONCERNS, THE ON-SITE THERMAL DESTRUCTION OPTION WAS RATED AS LESS ACCEPTABLE TO THE COMMUNITY THAN SOLIDIFICATION/STABILIZATION. ON-SITE THERMAL DESTRUCTION RECEIVED A RATING OF "-", WHILE THE SOLIDIFICATION REMEDY RECEIVED A RATING OF "+". A RATING OF "0" WAS GIVEN TO THE OTHER REMEDIAL ALTERNATIVES DUE TO A LACK OF COMMENT ABOUT THESE OPTIONS.

8. STATE ACCEPTANCE

THE OKLAHOMA STATE DEPARTMENT OF HEALTH CITED CONCERNS SIMILAR TO THOSE VOICED BY RESIDENTS. LIKewise, THE ON-SITE THERMAL DESTRUCTION REMEDY RECEIVED A RATING OF "-", THE SOLIDIFICATION REMEDY RECEIVED A RATING OF "+", AND ALL OTHER REMEDIES WERE RATED "0".

9. OVERALL PROTECTION OF HUMAN HEALTH AND THE ENVIRONMENT

ON-SITE AND OFF-SITE THERMAL DESTRUCTION RECEIVED THE HIGHEST RATING OF "++". THERMAL TREATMENT RESULTS IN ELIMINATION OF THE CONTAMINATED MATERIAL. THE THERMAL TREATMENT UNIT WILL BE DESIGNED TO MEET RCRA STANDARDS. IT IS POSSIBLE THAT NOXIOUS GASES WILL BE GIVEN OFF BY EXCAVATION ACTIVITY, BUT A CONTINGENCY PLAN WILL BE DEVELOPED TO ADDRESS THIS PROBLEM. THAT LEVEL OF DESTRUCTION REQUIRED BY RCRA, 99.99% OF THE ORGANIC CONTAMINATION, SHOULD BE DESTROYED. SOLIDIFICATION OF THE FLY ASH THAT MIGHT CONTAIN METALS, HAS BEEN SHOWN TO BE VERY STABLE IN THE ENVIRONMENT.

ON-SITE SOLIDIFICATION WAS GIVEN A LOWER RATING OF "+". THIS RATING IS LARGELY DUE TO THE FACT THAT THE SOURCE OF THE CONTAMINATION WILL NOT BE DESTROYED AND THE POTENTIAL FOR LEACHING OF CONTAMINANTS EXISTS.

ON-SITE AND OFF-SITE SOLVENT EXTRACTION WERE GIVEN A RATING OF "0". SOLVENT EXTRACTION WOULD SEPARATE THE OIL, WATER AND SOLID PHASES BUT MAY REQUIRE FURTHER TREATMENT OF EACH WASTE STREAM TO MEET RCRA DISPOSAL CRITERIA. THE CONTAMINANTS WILL NOT BE DESTROYED AND THE POTENTIAL FOR FUTURE EXPOSURE EXISTS.

THE RISK INVOLVED WITH LEAVING UNTREATED WASTE ON-SITE IS THE PRINCIPAL REASON THAT THE NO ACTION ALTERNATIVE RECEIVED A RATING OF "--".

**#OM  
OPERATION AND MAINTENANCE (O&M)**



THE NEED FOR FUTURE OPERATION AND MAINTENANCE WILL BE MINIMIZED SINCE THE SOURCE OF THE CONTAMINATION WILL BE REMOVED. SITE OPERATION AND MAINTENANCE WILL INCLUDE A MONITORING WELL SAMPLING AND ANALYSIS PROGRAM. ADDITIONAL SITE MAINTENANCE WILL ENTAIL THE INSPECTION OF SURFACE VEGETATION, PERIODIC REPAIR OF THE PERIMETER FENCING, AND INSPECTION OF THE ON-SITE RCRA LANDFILL. THE STATE OF OKLAHOMA WILL BE RESPONSIBLE FOR THE COST OF O&M FOR A PERIOD OF AT LEAST 30 YEARS AFTER THE COMPLETION OF THE REMEDIAL ACTION.

**#FA**

**FUTURE ACTIONS**

NO FUTURE ACTIONS ARE ANTICIPATED FOR THE SOURCE CONTROL OPERABLE UNIT. FUTURE GROUNDWATER REMEDIATION WILL BE ADDRESSED IN THE MAIN SITE OPERABLE UNIT. THE PROPOSED REMEDIAL ACTION IS CONSIDERED PERMANENT. IF, HOWEVER, SIGNIFICANT, UNFORESEEN, OFF-SITE MIGRATION OR CONTAMINATION OCCURS AS A RESULT OF THE SITE, APPROPRIATE REMEDIAL MEASURES WILL BE TAKEN.

**#SCH**

**REMEDIAL ACTION SCHEDULE**

APPROVE REMEDIAL ACTION (SIGN ROD)	SEPTEMBER 1987
COMPLETE ENFORCEMENT NEGOTIATIONS	JANUARY 1988
OBLIGATE FUNDS (START REMEDIAL DESIGN) FOR STATE OR US ARMY CORPS OF ENGINEERS TO CONDUCT REMEDIAL DESIGN (ASSUMING THE PRPS DO NOT TAKE OVER)	JANUARY 1988
COMPLETE DESIGN	MARCH 1989
OBLIGATE FUNDS TO START REMEDIAL ACTION	MARCH 1989
COMPLETE REMEDIATION	NOVEMBER 1991.

#TMA

TABLES, MEMORANDA, ATTACHMENTS

APPENDIX A

TABLE 1

HIGHEST COMPOUND CONCENTRATIONS FOR SOLID SAMPLES

	HIGHEST CONCENTRATION INORGANIC COMPOUNDS (MG/KG)		HIGHEST (A) CONCENTRATION ORGANIC COMPOUNDS (MG/KG)	
SMALL ACID SLUDGE PIT	LEAD * BARIUM ZINC *	317.5 66.5 38.9	BENZOIC ACID CHRYSENE * TOTAL XYLENE	1,700 240 81
LARGE ACID SLUDGE PIT	LEAD * BARIUM CHROMIUM *	617.5 239.1 235.6	CHRYSENE * BENZO(A)PYRENE * BENZOIC ACID	480 390 240
RIVER ACID SLUDGE PIT	ZINC * LEAD * CHROMIUM *	235.9 192.8 151.1	CHRYSENE * TOTAL XYLENE PHENANTHRENE *	57.0 24.0 18.0 (B)
SOUTH GLEN WYNN LAGOON	LEAD * ZINC * BARIUM	2,022 1,845 760.5	TETRACHLOROETHENE * TRICHLOROETHANE * TOTAL XYLENE	19,000 3,400 5,400
NORTH GLEN WYNN LAGOON	LEAD * ZINC * COPPER *	3,775 3,422 2,745	TOLUENE * TETRACHLOROETHANE * TOTAL XYLENE	3,500 3,000 2,300
CHEMLINK WASTE PITS	BARIUM LEAD * ZINC *	164.8 27.4 23.7	TOTAL XYLENE 4-METHYL-2-PENTANONE 2-METHYLNAPHTHALENE	380 350 130
SURFACE IMPOUNDMENT	ZINC * LEAD * BARIUM	3,504 2,077 1,246	2-METHYLNAPHTHALENE * P-CHLORO-M-CRESOL * BIS-(2-ETHYLHEXYL) PHTHALATE *	300 260 240

\* PRIORITY POLLUTANT COMPOUND

(A) TENTATIVELY IDENTIFIED COMPOUNDS WERE NOT INCLUDED (E.G., HYDROCARBONS)

(B) AN ESTIMATED VALUE.

TABLE 2

HIGHEST COMPOUND CONCENTRATIONS FOR LIQUID SAMPLES

HIGHEST CONCENTRATION INORGANIC COMPOUNDS (MG/L)		HIGHEST (A) CONCENTRATION ORGANIC COMPOUNDS (MG/L)	
SOUTH GLEN			
WYNN LAGOON			
ZINC *	627	BIS(2-ETHYLHEXYL) PHTHALATE *	11.0
BARIUM	596	TRANS 1,2-DICHLOROETHENE *	1.20
LEAD *	593	TOLUENE *	0.620
NORTH GLEN			
WYNN LAGOON			
CHROMIUM *	10,460	TOLUENE *	0.490
ZINC *	5,873	BIS(2-ETHYLHEXYL) PHTHALATE *	0.330
LEAD *	2,692	TRANS 1,2-DICHLOROETHENE *	0.280
SURFACE			
IMPOUNDMENT			
ZINC *	742	CHRYSENE *	0.040
LEAD *	366	BENZO(A)PYRENE *	0.0076
BARIUM	189	BIS(2-ETHYLHEXYL) PHTHALATE *	0.0049

\* PRIORITY POLLUTANT COMPOUND

(A) TENTATIVELY IDENTIFIED COMPOUNDS NOT INCLUDED (E.G., HYDROCARBONS).

TABLE 6

ANTICIPATED EXCAVATIONS

LOCATION	CONTAMINATED INTERVAL	ESTIMATED VOLUME
SMALL ACID PIT	0 TO 6' - 9'	14,489
LARGE ACID PIT	0 TO 6' - 9'	46,775
RIVER ACID PIT	0' TO 8' - 10'	37,995
SOUTH GLEN WYNN LAGOON	0' TO 5' - 7'	1,133
NORTH GLEN WYNN LAGOON	0 TO 2' - 3'	648
CHEMLINK WASTE PITS	0' TO 1' - 2'	627
ROUND RIVER PIT	0' TO 16' - 18'	2,844
LEVEE PIT	3' - 10'	4,537
EAST SPRAY POND	4' - 8'	1,589
WEST SPRAY POND	2' - 8'	3,756
CON-RAD SLUDGE	0' TO 7' - 8'	8,889
SURFACE IMPOUNDMENT SEDIMENTS	0' TO 1' - 2'	2,055
	TOTAL	125,337 CU. YDS

CONTAMINATED LIQUIDS

SOUTH GLEN WYNN LAGOON	76,300
NORTH GLEN WYNN LAGOON	89,000
SURFACE IMPOUNDMENT	545,987
TOTAL	711,287 GALS.

**APPENDIX B**

DEPARTMENT OF HEALTH & HUMAN SERVICES

MEMORANDUM

DATE: SEPTEMBER 29, 1987

FROM: SENIOR REGIONAL REPRESENTATIVE  
REGIONAL OFFICE FOR HEALTH RESPONSE  
ATSDR/ROHR-VI

TO: PAUL SIEMINISKI  
REMEDIAL PROJECT MANAGER  
ALONM SECTION (6H-SA)

THE AGENCY FOR TOXIC SUBSTANCES AND DISEASE REGISTRY (ATSDR) HAS BEEN REQUESTED BY THE ENVIRONMENTAL PROTECTION AGENCY (EPA) TO REVIEW AND EVALUATE THE REMEDIAL INVESTIGATION/FEASIBILITY STUDY AND ENDANGERMENT ASSESSMENT DATA THAT WAS GENERATED FROM THE SAND SPRINGS SUPERFUND SITE LOCATED IN SAND SPRINGS, OK.

CURRENTLY THE ATSDR IS REVIEWING THESE DOCUMENTS TO PROVIDE EPA WITH A COMPREHENSIVE HEALTH ASSESSMENT FOR THIS SITE.

BASED ON OUR REVIEW TO DATE, THE ATSDR REGIONAL OFFICE FOR HEALTH RESPONSE IN CONSULTATION WITH STAFF AT ATSDR - HEADQUARTERS IS OF THE OPINION THAT THE SAND SPRINGS SUPERFUND SITE DOES POSE A CURRENT AND POTENTIAL PUBLIC HEALTH THREAT.

INITIAL INDICATIONS ARE THAT ATSDR RECOMMENDATIONS WILL BE DIRECTED TOWARD UNACCEPTABLE RISKS ASSOCIATED WITH DIRECT PUBLIC CONTACT AND/OR POTENTIAL AIR RELEASES FROM THIS SITE.

CARL R. HICKAM, R.S.

## APPENDIX C

#RS

### SAND SPRINGS (PETROCHEMICAL COMPLEX) SAND SPRINGS, OKLAHOMA RESPONSIVENESS SUMMARY

THIS COMMUNITY RELATIONS RESPONSIVENESS SUMMARY IS DIVIDED INTO TWO SECTIONS:

SECTION I: BACKGROUND ON COMMUNITY INVOLVEMENT AND CONCERNS. THIS SECTION PROVIDES A BRIEF HISTORY OF COMMUNITY INTEREST AND CONCERN RAISED DURING THE REMEDIAL PLANNING ACTIVITIES AT THE SAND SPRINGS SUPERFUND SITE.

SECTION II: SUMMARY OF MAJOR COMMENTS RECEIVED DURING THE PUBLIC COMMENT PERIOD AND THE EPA RESPONSES TO THE COMMENTS. BOTH WRITTEN AND SPOKEN COMMENTS ARE CATEGORIZED BY TOPICS. EPA RESPONSES TO THESE RELEVANT MAJOR TOPICS ARE ALSO PRESENTED.

#### I. BACKGROUND ON COMMUNITY INVOLVEMENT

THE SAND SPRINGS PETROCHEMICAL COMPLEX SUPERFUND SITE LIES THREE MILES WEST OF TULSA ALONG THE ARKANSAS RIVER, IN THE CITY OF SAND SPRINGS, OKLAHOMA. THE SITE IS IN AN INDUSTRIAL COMPLEX WITH NO RESIDENTIAL NEIGHBORHOODS NEARBY. THERE IS ONE FAMILY LIVING WITHIN THE SITE BOUNDARIES.

DURING THE AUGUST 1984 ON-SITE ASSESSMENT CONDUCTED BY THE OSDH, EVERY BUSINESS AND INDUSTRY OCCUPYING THE SITE WAS CONTACTED ALONG WITH THE RESIDENT FAMILY. MANY PEOPLE EXPRESSED CONCERN ABOUT ACID PITS FROM THE OLD ON-SITE REFINERY. CONCERN WAS EXPRESSED ABOUT AN INCIDENT WHERE CONSTRUCTION ACTIVITIES EXPOSED PART OF ONE PIT AND THE RELEASED FUMES CAUSED A FACTORY TO BE EVACUATED. SEVERAL PEOPLE REQUIRED MEDICAL ATTENTION. THE FAMILY LIVING ON SITE EXPRESSED CONCERN ABOUT THE POOR QUALITY OF GROUNDWATER. THEY HAD DRILLED TWO WELLS, NEITHER OF WHICH COULD BE USED BECAUSE OF THE POOR WATER QUALITY.

ON THE AFTERNOON OF AUGUST 4, 1987, OFFICIALS OF THE EPA MET WITH SAND SPRINGS CITY OFFICIALS TO BRIEF THEM ABOUT THE RESULTS OF THE STUDIES ON THE SITE AND DISCUSS EPA'S PREFERRED REMEDY. AMONG THOSE IN ATTENDANCE WERE MAYOR GEORGE HOOPER, CITY MANAGER LOY CALHOUN, CHAMBER OF COMMERCE REPRESENTATIVE JIM DOUGHERTY, COUNTY COMMISSIONER JOHN SELPH AND SOME FIFTEEN OTHER OFFICIALS. DURING THE MEETING A GREAT DEAL OF CONCERN WAS EXPRESSED THAT IF EPA FINALLY SELECTED ON-SITE INCINERATION AS THE REMEDY, CONSIDERABLE ECONOMIC HARDSHIP COULD BE SUFFERED BY THE CITY. IT IS BELIEVED THAT INCINERATION GOING ON IN SAND SPRINGS WOULD DISCOURAGE NEW BUSINESS FROM LOCATING IN THE CITY. FURTHER FEARS WERE EXPRESSED THAT ONCE AN INCINERATOR WAS ON-SITE, IT COULD BE USED TO INCINERATE HAZARDOUS MATERIALS FROM OTHER SOURCES. THE LEADERSHIP WAS ADAMANT THAT THE PEOPLE OF SAND SPRINGS WOULD NOT WANT THAT OUTCOME. THAT EVENING AT 7:00 P.M., THE PUBLIC MEETING WAS SCHEDULED TO BEGIN AT THE PAGE MEMORIAL LIBRARY. SO MANY PEOPLE ARRIVED THAT THE MAYOR AND CITY MANAGER OFFERED THE CITY COUNCIL CHAMBERS. THE PRESENTORS AND AUDIENCE WENT ACROSS THE STREET TO THE CITY OFFICES AND THE MEETING COMMENCED. SOME 180 PEOPLE WERE IN ATTENDANCE.

#### II. SUMMARY OF MAJOR COMMENTS RECEIVED DURING THE PUBLIC COMMENT PERIOD AND THE EPA RESPONSES TO THE COMMENTS.

1. COMMENT: THERE IS NOT A GOOD ESTIMATE OF THE AMOUNT OF CONTAMINATED SOILS ON-SITE.

RESPONSE: EPA DISAGREES. SUFFICIENT INFORMATION HAS BEEN GATHERED TO FORMULATE A DECISION ON BASIC CLEAN UP CONCEPT. ADDITIONAL INFORMATION WILL BE GATHERED DURING DESIGN

STUDIES, TO THE EXTENT IT IS NEEDED, TO ACCURATELY FIX CONSTRUCTION SPECIFICATIONS.

2. COMMENT: EPA FAILED TO PROVIDE SUFFICIENT TIME TO REVIEW AND EVALUATE THE IMPACT ON THE PLAN BY THE COMMUNITY AND BY POTENTIALLY RESPONSIBLE PARTIES (PRPS).

RESPONSE: A TWO WEEK PUBLIC NOTICE AND THREE WEEK PUBLIC COMMENT PERIOD WAS PROVIDED. AS A TWENTY ONE DAY PUBLIC COMMENT PERIOD IS REQUIRED BY THE NATIONAL CONTINGENCY PLAN. IN ADDITION, A TWO WEEK EXTENSION TO THE PUBLIC COMMENT PERIOD, FOR A TOTAL OF SEVEN WEEKS, WAS PROVIDED. IN ADDITION, SEPARATE NOTICES WERE SENT TO THE PRPS TO ALERT THEM TO THE IMPENDING DECISION THOUGH NOT REQUIRED BY THE STATUTE OR REGULATIONS. DESIGN PLANS WILL NOT COMMENCE UNTIL PRP'S HAVE BEEN GIVEN TIME TO INDICATE WHETHER THEY WISH TO TAKE OVER THE PROJECT. MOST OF THE QUESTIONS RAISED BY THE PUBLIC RELATE TO DESIGN ISSUES AND WILL BE THE TOPIC OF THE FUTURE PUBLIC MEETINGS AS THE DESIGN PLANS PROGRESS.

3. COMMENT: LITTLE OR NO CONSIDERATION HAS BEEN GIVEN TO THE HORRENDOUS COST IMPOSED ON PRIVATE INDUSTRY THAT IS OBVIOUSLY PASSED ON TO THE CONSUMER.

RESPONSE: EPA DISAGREES WITH THIS CONCLUSION; COST EFFECTIVENESS IS A MAJOR CONSIDERATION IN SELECTING A REMEDY. THE COMPREHENSIVE ENVIRONMENTAL RESPONSE COMPENSATION AND LIABILITY ACT (CERCLA) AS AMENDED BY THE SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT OF 1986 (SARA) AND THE NATIONAL CONTINGENCY PLAN OF 1985 (NCP) REQUIRES CONSIDERATION OF COST FROM THE STANDPOINT OF ELIMINATING HIGHER COSTS ALTERNATIVES WHEN COMPARING ALTERNATIVES WHICH ARE EQUALLY PROTECTIVE OF PUBLIC HEALTH AND THE ENVIRONMENT.

4. COMMENT: EPA HAS FAILED TO GIVE ADEQUATE CONSIDERATION TO THE POTENTIAL ENVIRONMENTAL AND HEALTH RISKS THAT WOULD BE IMPOSED BY THE THERMAL DESTRUCTION PROCESS.

RESPONSE: EPA DISAGREES WITH THIS CONCLUSION. MUCH MORE INFORMATION IS AVAILABLE REGARDING THE REDUCTION AND CONTROL OF EMISSIONS FROM THERMAL TREATMENT PROCESSES. FURTHERMORE, STANDARDS FOR EMISSIONS HAVE BEEN SET AND CAN BE MET WITH THE THERMAL TREATMENT PROCESS. VOLATILE ORGANIC RELEASES, REACTIVE PROCESSES AND CONTROLLABILITY OF EMISSIONS FROM THE STABILIZATION AND SOLIDIFICATION PROCESSES ARE NOT AS WELL KNOWN.

5. COMMENT: EPA HAS FAILED TO GIVE ADEQUATE CONSIDERATION TO THE POTENT ECONOMIC AND SOCIAL IMPACT ON THE COMMUNITY WHICH WOULD BE IMPOSED BY THE THERMAL DESTRUCTION PROCESS.

RESPONSE: CONCERNS OF THE LOCAL COMMUNITY HAVE BEEN INCORPORATED INTO THIS RECORD OF DECISION AND WILL BE ADDRESSED IN MORE DETAIL IN THE DESIGN OF THE REMEDY. THE THERMAL DESTRUCTION SYSTEM HAS BEEN DEFINED AS A TEMPORARY OPERATION THAT WILL BE REMOVED FROM THE SITE. THE DESIGN WILL ENSURE THAT THE OPERATION OF THIS SYSTEM WILL BE ENVIRONMENTALLY SOUND AND UNOBTRUSIVE. WASTES FROM OTHER SITES WILL NOT BE TREATED AT SAND SPRINGS. FINALLY, BY ELIMINATING THE EXPOSED HAZARDOUS WASTE, EPA BELIEVES THAT THE COMMUNITY WILL BENEFIT SOCIALLY AND ECONOMICALLY AS WELL.

6. COMMENT: "SOLIDIFICATION WOULD MORE EFFECTIVELY DEAL WITH THE PROBLEM OF A MAJORITY OF THE WASTE AND WOULD PROTECT PUBLIC HEALTH AND ENVIRONMENT WITHOUT AIR, WATER AND HAZARDOUS ASH GENERATED BY INCINERATION AT A DRASTICALLY LOWER COST."

RESPONSE: WHILE A HAZARDOUS WASTE LANDFILL OF SOLIDIFIED WASTE WOULD PROTECT PUBLIC HEALTH IN THE SHORT TERM, THE LONG TERM STABILITY OF THIS MATERIAL IS NOT PROVEN.

7. COMMENT: WHAT GUARANTEE IS THERE TO THE CITIZENS OF SAND SPRINGS THAT THE SITE WILL NOT BE USED AS A COMMERCIAL INCINERATOR FOR WASTES FROM OTHER SITES IN THE FUTURE?

RESPONSE: THE EPA PROPOSAL STATED THAT THE THERMAL DESTRUCTION UNIT WOULD BE USED ONLY DURING REMEDIAL ACTIVITIES AT THE SAND SPRINGS SITE AND WOULD BE DISMANTLED AND REMOVED FROM THE SITE FOLLOWING THOSE ACTIVITIES.

8. COMMENT: CITIZENS NEED A WRITTEN GUARANTEE THAT THE THERMAL DESTRUCTION UNIT WILL OPERATE 99.99 PERCENT EFFICIENTLY ALL THE TIME.

RESPONSE: IF EMPLOYED, STATES THAT THE THERMAL DESTRUCTION UNIT WILL BE REQUIRED TO MEET THE 99.99 PERCENT COMBUSTION STANDARDS OF RCRA IN ADDITION TO ALL STATE AND FEDERAL EMISSIONS STANDARDS.

9. COMMENT: SOLIDIFICATION MEETS THE REQUIREMENTS OF SARA FOR TREATMENT WHICH PERMANENTLY AND SIGNIFICANTLY REDUCES THE VOLUME, TOXICITY, OR MOBILITY OF THE HAZARDOUS SUBSTANCES.

RESPONSE: EPA DISAGREES WITH MUCH OF THESE CLAIMS. BASED ON THE TECHNICAL INFORMATION OBTAINED DURING THE PILOT STUDIES, SOLIDIFICATION INCREASES, RATHER THAN REDUCES, VOLUME; TOXICITY REMAINS ESSENTIALLY THE SAME; AND, THE MOBILITY OF ORGANIC CONTAMINANTS IS UNKNOWN OVER THE LONG TERM. A MORE DETAILED DISCUSSION OF THESE FINDINGS IS PROVIDED IN THE BODY OF THE RECORD OF DECISION.

10. COMMENT: WHY DOES EPA NOT HAVE TO GO THROUGH THE PERMIT PROCESS AS WOULD PRIVATE INDUSTRY?

RESPONSE: CERCLA AS AMENDED BY SARA EXEMPTS EPA REMEDIAL ACTION FROM GOING THROUGH THE ADMINISTRATIVE PROCESS OF ACQUIRING A PERMIT FOR ON-SITE ACTIVITY, HOWEVER, EPA IS REQUIRED TO MEET STANDARDS OF STATE AND FEDERAL ENVIRONMENTAL LAWS.

11. COMMENT: TULSA CITY-COUNTY DEPARTMENT OF HEALTH HAS NOT BEEN ADEQUATELY INVOLVED IN THE SANDS SPRINGS PROJECT.

RESPONSE: THE TULSA CITY-COUNTY DEPARTMENT OF HEALTH ENTERED INTO AN INTERAGENCY AGREEMENT WITH THE OKLAHOMA STATE DEPARTMENT OF HEALTH (OSDH) AND RECEIVED FUNDING FROM THE OSDH-EPA COOPERATIVE AGREEMENT TO CONDUCT SAMPLING AT THE SITE. THE SANDS SPRINGS SITE ACTIVITIES WERE A "STATE-LEAD" PROJECT AND COORDINATION SHOULD BE INITIATED AT THE CITY/COUNTY HEALTH DEPARTMENT LEVEL BY THE STATE.

12. COMMENT: CAN A LOCAL GOVERNMENT OR AGENCY BE A PARTY TO AN EPA CONSENT DECREE WITH A POTENTIALLY RESPONSIBLE PARTY (PRP) TO INSURE THAT AN ON-SITE THERMAL DESTRUCTION UNIT WOULD NOT BE USED TO TREAT WASTE FROM OTHER SITES?

RESPONSE: YES, SECTION 113(I) OF CERCLA (42 U.S.C. SS9613(I)) PROVIDES THE RIGHT OF INTERVENTION TO ANY PERSON WHO HAS AN INTEREST RELATING TO THE SUBJECT OF A COURT ACTION WHICH MAY BE IMPAIRED OR IMPEDED BY JUDICIAL DISPOSITION OF THAT ACTION. THUS, IF A LOCAL GOVERNMENT OR AGENCY CAN SHOW THE COURT THAT IT HAS AN INTEREST IN THE ACTION AND THAT THE LOCAL GOVERNMENT'S INTEREST WILL BE IMPAIRED IF THE GOVERNMENT IS NOT ALLOWED TO BE A PARTY TO THE ACTION, THAT GOVERNMENT MAY INTERVENE AS A PARTY. IF IT CHOOSES TO BE SO, THE INTERVENOR WILL SHARE ALL THE RIGHTS AND RESPONSIBILITIES AND COSTS BORNE BY OTHER PARTIES.

13. COMMENT: IF ON-SITE THERMAL DESTRUCTION IS SELECTED, HOW LONG WILL THE PROCESS TAKE?

RESPONSE: THE FEASIBILITY STUDY ESTIMATED 3.5-4 YEARS TO CONDUCT THE REMEDIAL DESIGN, PROCUREMENT OF CONTRACTOR AND ON-SITE THERMAL DESTRUCTION OF THE WASTES.



14. COMMENT: "INCINERATION IS NOT FAVORED AT THE SAND SPRINGS SITE BECAUSE TULSA COUNTY ALREADY HAS EXISTING AIR POLLUTION PROBLEMS. ANOTHER SOURCE OF AIR POLLUTION WHICH MIGHT CAUSE TULSA COUNTY TO EXCEED AMBIENT AIR QUALITY STANDARDS IS NOT WANTED."

RESPONSE: THE EXISTING MAJOR SOURCE OF PARTICULATE MATTERS, SHEFFIELD STEEL, IS SCHEDULED TO COME INTO COMPLIANCE IN THE NEXT YEAR. THE INCINERATOR EMISSIONS WOULD HAVE AN INSIGNIFICANT IMPACT ON AIR QUALITY.

15. COMMENT: SOLIDIFICATION SHOULD GET MORE CONSIDERATION BEFORE A DECISION IS MADE.

RESPONSE: SOLIDIFICATION WAS CONSIDERED IN DETAIL DURING THE FEASIBILITY STUDY AND ACTUAL PILOT STUDIES. ADEQUATE INFORMATION IS AVAILABLE ON WHICH TO BASE A DECISION.

16. COMMENT: "HOW DANGEROUS IS THE ACID SLUDGE TO WORKERS IN THE AREA?"

RESPONSE: ACID SLUDGE AT THE SAND SPRINGS SITE CURRENTLY POSES A DIRECT CONTACT THREAT DUE TO THE HIGHLY ACIDIC CHARACTERISTIC OF THE WASTE (THIS MEANS SKIN BURNS CAN RESULT FROM TOUCHING THE MATERIAL). THERE HAVE ALSO BEEN REPORTS OF RESPIRATORY TRACT IRRITATIONS REQUIRING HOSPITAL TREATMENT OF WORKERS IN AND AROUND THE ACID SLUDGE MATERIAL DUE TO THE RELEASE OF SULFURIC ACID GASES. THE POTENTIAL ALSO EXISTS FOR WORKERS TO COME IN CONTACT WITH ACIDIC SURFACE RUNOFF WATERS. A HEALTH AND SAFETY PLAN WILL BE DEVELOPED PRIOR TO THE INITIATION OF ON-SITE ACTIVITIES.

17. COMMENT: DID EPA MAKE ITS FINAL DECISION ON SELECTING A REMEDY FOR SAND SPRINGS PRIOR TO THE PUBLIC MEETING?

RESPONSE: NO. CERCLA REQUIRES EPA TO INDICATE A PREFERENCE TO ALLOW THE PUBLIC AN OPPORTUNITY TO FOCUS THEIR COMMENTS. A FINAL DECISION ON SELECTING A REMEDY IS NOT MADE UNTIL AFTER THE PUBLIC COMMENT PERIOD, THEN ALL COMMENTS ARE REVIEWED AND CONSIDERED AND THE RECORD OF DECISION IS SIGNED.

18. COMMENT: SOLIDIFICATION TECHNOLOGIES ARE ONLY EXPERIMENTAL AND HAVE NOT BEEN PROVEN.

RESPONSE: SOLIDIFICATION TECHNOLOGIES CAN BE EFFECTIVE ON LOW ORGANIC WASTES AND HEAVY METALS. HIGH ORGANIC WASTE SUCH AS THE ACID SLUDGE AT THE SAND SPRINGS SITE CREATES DIFFICULTIES IN PRODUCING A NON-LEACHABLE PRODUCT, AS SHOWN IN THE PILOT STUDIES.

19. COMMENT: "WHAT INTERACTION WILL THERE BE BETWEEN THE CURRENTLY ON-GOING GROUNDWATER STUDY AND THOSE RECOMMENDATIONS FOR CLEAN-UP COMPARED TO WHAT EPA IS RECOMMENDING TO DO WITH THE ACID SLUDGE PITS."

RESPONSE: THE NCP REQUIRES OPERABLE UNITS TO BE CONSISTENT WITH OVERALL REMEDIES. INFORMATION FROM THE GROUNDWATER STUDY IS CURRENTLY BEING UTILIZED. THE FEASIBILITY STUDY FOR THE GROUNDWATER IS SCHEDULED FOR COMPLETION IN EARLY 1988, WHICH COINCIDES WITH THE BEGINNING OF THE DESIGN PHASE FOR THE SOURCE CONTROL REMEDY. COORDINATION FOR TREATMENT OPTIONS AND IMPLEMENTATION LOGISTICS WILL BE ADDRESSED AT THAT TIME.

20. COMMENT: NO SAMPLES WERE TAKEN OUTSIDE THE ACTUAL SLUDGE PITS.

RESPONSE: PHASE I OF THE REMEDIAL INVESTIGATION ADDRESSES THE KNOWN MAJOR SOURCES OF CONTAMINATION AND SAMPLES WERE TAKEN FROM THESE AREAS PRIMARILY TO CHARACTERIZE AND QUANTIFY THESE KNOWN SOURCES.

PHASE II SAMPLING WAS CONDUCTED OVER THE ENTIRE 235 ACRE SITE AND THIS INFORMATION IS

BEING UTILIZED, AS EVIDENCED IN THE INCLUSION OF THE ADDITIONAL SUBSURFACE AREAS OF CONTAMINATION IN THE SOURCE CONTROL OPERABLE UNIT.

21. COMMENT: HOW MANY TIMES HAS THERMAL DESTRUCTION BEEN USED AND WHAT HAS BEEN THE OUTCOME WHEN IT WAS USED?

RESPONSE: THERMAL DESTRUCTION HAS BEEN SHOWN TO BE EFFECTIVE IN DESTROYING ORGANIC POLLUTANTS IN LITERALLY THOUSANDS OF APPLICATIONS. EPA IS CONVINCED THAT, WITH ADEQUATE POLLUTION CONTROL ENGINEERING, THERMAL DESTRUCTION CAN BE EFFECTIVE AT THE SAND SPRINGS SITE.

22. COMMENT: WHY IS THERE SUCH A GREAT DIFFERENCE IN COST BETWEEN ON AND OFF-SITE INCINERATION?

RESPONSE: TRANSPORTATION IS A PORTION OF THE COST DIFFERENCE. THE COST FOR INCINERATION BOTH ON AND OFF-SITE AS WELL AS ALL OTHER ALTERNATIVES ARE BASED ON ACTUAL VENDOR QUOTES AND HISTORICAL INFORMATION.

23. COMMENT: WHAT IS THE BASIS FOR NAMING THE FOUR EASTERN SLUDGE PITS IDENTIFIED IN THE FACT SHEET AS THE CHEM LINK WASTE PITS. CAN THE NAME BE CHANGED?

RESPONSE: THESE PITS WERE NAMED THE CHEM LINK PITS FOR EASE OF IDENTIFICATION BECAUSE THEY ARE WITHIN THE CHEM LINK FACILITY BOUNDARY. THEIR NAMES MAY BE CHANGED IN THE DESIGN PHASE OF THIS PROJECT.

24. COMMENT: INCINERATION OF THE SAND SPRINGS SLUDGES WILL RESULT IN A VOLUME REDUCTION OF ONLY 40-50%.

RESPONSE: PILOT STUDIES WERE CONDUCTED USING ONE PARTICULAR THERMAL DESTRUCTION TECHNOLOGY WHICH REQUIRED THE ADDITION OF NEUTRALIZERS PRIOR TO PROCESSING. OTHER TECHNOLOGIES COULD REQUIRE CONSIDERABLY LESS OR NO NEUTRALIZATION. LABORATORY INCINERATION TESTS ON 19 SAMPLES INDICATE AN AVERAGE VOLUME REDUCTION OF APPROXIMATELY 85%. EVEN 40% OR 50% REDUCTION IN VOLUME IS CONSIDERED "SIGNIFICANT".

25. COMMENTS: THE FEDERAL GUIDELINES WHICH OSDH HAD TO FOLLOW TO PRODUCE THE REMEDIAL INVESTIGATION AND FEASIBILITY STUDY (RI/FS) REPORTS ARE FAULTY AND DO NOT ALLOW THE FREEDOM TO GATHER DETAILED ENGINEERING DATA NEEDED TO BUILD A DESIGN. NOT ENOUGH ENGINEERING DATA IS AVAILABLE TO MAKE A TREATMENT SELECTION AT THIS TIME.

RESPONSE: EPA DISAGREES WITH THIS VIEWPOINT. THE RI/FS MET THE STATUTORY AND REGULATORY REQUIREMENTS. DETAILED ENGINEERING INFORMATION, NECESSARY FOR THE DESIGN STAGE, IS NOT NEEDED TO SELECT A REMEDIAL CONCEPT.

26. COMMENT: THE RISK OF AIR EMISSIONS AND RUNOFF CONTAMINATION HAVE NOT BEEN ADDRESSED.

RESPONSE: EPA DISAGREES. THESE ROUTES OF EXPOSURE HAVE BEEN FULLY ADDRESSED IN THE FEASIBILITY STUDY AND SUMMARIZED IN THE BODY OF THE RECORD OF DECISION.

27. COMMENT: HOW ARE YOU GOING TO PROTECT THE GROUNDWATER FROM FURTHER CONTAMINATION WHILE EXCAVATING FOR THE REMOVAL OPTIONS.

RESPONSE: DETAILS OF PROTECTION OF THE GROUNDWATER DURING EXCAVATION WILL BE ADDRESSED IN THE UPCOMING DESIGN PHASE.

28. COMMENT: THE FEASIBILITY STUDY DOES NOT GIVE THE SOLVENT EXTRACTION ALTERNATIVE CREDIT FOR 200,000 BARRELS OF OIL THAT COULD BE RECOVERED BY SOLVENT EXTRACTION.

RESPONSE: THE FEASIBILITY STUDY VIEWED THE OIL BEING EXTRACTED FROM THE HAZARDOUS WASTE AS ALSO BEING HAZARDOUS UNDER RCRA. THIS WOULD RENDER IT A NON-SALABLE PRODUCT AND THEREFORE REQUIRING ADDITIONAL TREATMENT.

29. COMMENT: TREATED MATERIAL PRODUCED DURING THE STABILIZATION/SOLIDIFICATION PILOT STUDIES PASSED THE TOXICITY CHARACTERISTIC LEACHING PROCEDURE (TCLP) TEST AND THEREFORE THESE PROCESSES SHOULD BE CONSIDERED EFFECTIVE.

RESPONSE: THE TCLP TEST WAS ONLY ONE OF MANY ANALYTICAL AND PHYSICAL TESTS PERFORMED AND CONSIDERED DURING THE REMEDY SELECTION PROCESS. ALTHOUGH SOME SAMPLES MET EXISTING LEACHING STANDARDS FOR LANDFILLABLE MATERIALS UNDER RCRA, OTHER SAMPLES DID SHOW EVIDENCE OF LEACHING CONTAMINANTS. LEACHING OF CONTAMINANTS WAS ALSO SEEN IN OTHER ANALYTICAL EXTRACTION TECHNIQUES CONDUCTED BY THE EPA CINCINNATI LABORATORY. LEACHING OF CONTAMINANTS, EVEN AT LOW LEVELS, INDICATES QUESTIONABLE LONG TERM EFFECTIVENESS AND PERMANENCE OF THESE STABILIZATION/SOLIDIFICATION TECHNIQUES. ALSO THERE IS CONCERN THAT THE TCLP TEST MAY NOT DETECT ALL POTENTIAL CONTAMINANTS DUE TO THE FILTERING MECHANISM OF THE TEST AND THE OILY NATURE OF THE WASTE.

30. COMMENT: DO PRPS HAVE TO IMPLEMENT THE RECORD OF DECISION OR CAN NEW CONCEPTS AND IDEAS FOR STUDY BE REVIEWED?

RESPONSE: AFTER THE RECORD OF DECISION IS SIGNED FOR A CONCEPTUAL REMEDY A TREATMENT PROCESS WITHIN THOSE TECHNOLOGIES SHOULD BE IMPLEMENTED EITHER BY THE PRP OR EPA. THE DETAILS OF IMPLEMENTATION OF THE REMEDY ARE ADDRESSED IN THE DESIGN PHASE.

31. COMMENT: HOW CAN PEOPLE WHO HAVE RECEIVED NOTIFICATION LETTERS OF BEING A PRP FIND OUT ADDITIONAL INFORMATION REGARDING THEIR POSITION.

RESPONSE: CONTACT FOIA REQUESTOR BRANCH CHIEF, EPA REGION 6 ENFORCEMENT BRANCH.

32. COMMENT: "WHY ARE SEPARATE ENTITIES ON ONE GEOGRAPHIC LOCATION BOUND INTO ONE SUPERFUND SITE CREATING PRPS THAT SHOULD HAVE A SMALL RESPONSIBILITY AND A SMALL SITE, INTO A PRP WITH A LARGER RESPONSIBILITY AND A LARGE SITE?".

RESPONSE: THE SUPERFUND SITE BOUNDARIES WERE DELINEATED BASED ON THE EXPECTED EXTENT OF CONTAMINATION.

33. COMMENT: ARE THE COST ESTIMATES IN THE FEASIBILITY STUDY ACTUAL CONTRACTOR COSTS TO DO THE WORK OR ARE THEY SITE COSTS PLUS STATE AND EPA OVERSIGHT COSTS.

RESPONSE: COST ESTIMATES IN THE FEASIBILITY STUDY ARE ESTIMATES WITHIN THE RANGE OF -30% TO +50% OF THE COSTS TO IMPLEMENT THE REMEDIES AND DO NOT INCLUDE STATE OR EPA OVERSIGHT COSTS. THESE COST FIGURES ARE ONLY VALID FOR COMPARISON OF THE ALTERNATIVES STUDIED, THEY DO NOT REPRESENT ACTUAL BIDS.

34. COMMENT: THE FINAL REMEDY THAT EPA SELECTS SHOULD RECOGNIZE THE DIFFERENT TYPES OF WASTE PRESENT AT THE SAND SPRINGS SITE.

RESPONSE: EPA AGREES. THE VARIABILITY IN WASTES HAS BEEN TAKEN INTO CONSIDERATION.

35. COMMENT: IT WOULD BE FEASIBLE TO SOLIDIFY THE ACID SLUDGES ON THE SITE IN ONE YEAR WHICH

IS NOT ACHIEVABLE BY THERMAL DESTRUCTION.

RESPONSE: THE FEASIBILITY STUDY INDICATES ALL REMEDIES COULD BE IMPLEMENTED IN APPROXIMATELY 3-4 YEARS. ACTUAL IMPLEMENTATION TIME FOR SOLIDIFICATION AND THERMAL DESTRUCTION IS COMPARABLE, HOWEVER, IT IS VARIABLE DEPENDING ON THE AMOUNT OF EQUIPMENT, NUMBER OF TREATMENT UNITS ETC., WHICH IS UTILIZED.

36. COMMENT: WHERE DID THE TESTING CRITERIA FOR THE SOLIDIFICATION PILOT STUDIES COME FROM?

RESPONSE: THE EPA CINCINNATI LABORATORY SUPPLIED THE DOCUMENT "TEST METHODS FOR SOLIDIFIED WASTE CHARACTERIZATION" WHICH WAS INCORPORATED INTO THE WORKPLAN OF THE EPA ADMINISTRATIVE ORDER WITH ARCO.

37. COMMENT: AN ADEQUATE HEALTH RISK ASSESSMENT OF THE EXISTING HEALTH RISKS AT THE SITE AND DETERMINATION OF THE HEALTH RISKS OF THE REMEDIAL ALTERNATIVES HAS NOT BEEN CONDUCTED.

RESPONSE: AT SITES WHERE SOURCE CONTROL REMEDIAL MEASURES ARE EVALUATED, AS FOR THE SAND SPRINGS SITE, A QUALITATIVE ASSESSMENT OF THE POTENTIAL PUBLIC HEALTH THREATS IN THE ABSENCE OF REMEDIAL ACTION IS GENERALLY CONDUCTED. THIS WAS ACCOMPLISHED IN THE SAND SPRINGS SOURCE CONTROL OPERABLE UNIT ENDANGERMENT ASSESSMENT UNDER THE COOPERATIVE AGREEMENT WITH OSDH. QUANTITATIVE HEALTH RISK ASSESSMENTS ARE NOT REQUIRED FOR ALTERNATIVE SELECTION OR DESIGN OF SOURCE CONTROL REMEDIES.

38. COMMENT: THE SOURCE CONTROL OPERABLE UNIT FEASIBILITY STUDY DOES NOT SATISFY THE NATIONAL CONTINGENCY PLAN BECAUSE IT IS BASED ON INADEQUATE DATA AND ON EVALUATIONS WHICH HAVE NOT ADEQUATELY ADDRESSED THE REQUIREMENTS OF THE NATIONAL CONTINGENCY PLAN, THE SUPERFUND AMENDMENTS AND AUTHORIZATION ACT, OR THE EPA GUIDANCE ON FEASIBILITY STUDIES UNDER CERCLA.

RESPONSE: ADEQUATE DATA HAS BEEN GATHERED AND THE EVALUATIONS HAVE BEEN CONDUCTED TO SATISFY THOSE NECESSARY GUIDANCE DOCUMENTS AND STATUTORY REQUIREMENTS ON WHICH TO BASE A DECISION FOR A SOURCE CONTROL REMEDY.

39. COMMENT: THE SELECTION OF A SOURCE CONTROL REMEDY FOR THE GLEN WYNN LAGOONS IS UNNECESSARY SINCE REMOVAL OF THE MAJORITY OF WASTE AT THIS FACILITY HAS ALREADY BEEN COMPLETED.

RESPONSE: ONLY THE DRUMMED AND CONTAINERIZED WASTE HAVE BEEN REMOVED FROM THE GLEN WYNN FACILITY. NO WASTES HAVE BEEN REMOVED FROM THE GLEN WYNN LAGOONS.

40. COMMENT: IN ACCORDANCE WITH A CONSENT ORDER, ARCO DEVELOPED FOR EPA SITE PERFORMANCE DATA SPECIFIC TO THE EFFECTIVENESS OF THREE REMEDIAL ALTERNATIVES (I.E., THERMAL DESTRUCTION, STABILIZATION AND SOLIDIFICATION) FOR THE ACID SLUDGE AT THE SAND SPRINGS PETROCHEMICAL COMPLEX. USE OF THIS DATA GIVES THE AGENCY A BASIS FOR SELECTING A REMEDIAL ALTERNATIVE FOR THE ACID SLUDGE PONDS CONSISTENT WITH A PERMANENT REMEDY FOR THE SITE, AS PREFERRED UNDER SARA.

RESPONSE: EPA AGREES. THE PILOT STUDIES HAD A MAJOR INFLUENCE ON THE REMEDY SELECTED.

41. COMMENT: HUMAN HEALTH AND THE ENVIRONMENT CAN BE PROTECTED AS WELL AS THE STUDIED ALTERNATIVES BY MUCH SIMPLER REMEDIES. WHY NOT JUST ADD ADDITIONAL FENCING AROUND THE SITE AND INCREASE SECURITY OR COVER THE WASTES WITH A SIMPLE EARTHEN CAP?

RESPONSE: INCREASED SECURITY AT THE SITE MAY REDUCE THE CHANCE FOR DIRECT HUMAN CONTACT WITH THE WASTES BUT IT WOULD DO NOTHING TO SOLVE THE SURFACE AND GROUNDWATER POLLUTION

THAT IS TAKING PLACE. INSTALLATION OF A SIMPLE CAP IS NOT PRACTICAL BECAUSE OF THE INSTABILITY OF THE TARRY SLUDGES; ON WARM DAYS THE WEIGHT OF THE CAP WOULD CAUSE SLUDGES TO OOZE OUT FROM UNDER OR THROUGH THE CAP. BOTH OF THESE APPROACHES FALL FAR SHORT OF MEETING THE MINIMUM REQUIREMENTS OF THE CERCLA.

42. COMMENT: WHY NOT USE AN OIL EXTRACTION THERMAL PROCESS TO TREAT THE WASTE? THE SALE OF THE THOUSANDS OF BARRELS OF OIL DERIVED WOULD OFFSET EXPENSES AND BRING THE TOTAL COST DOWN TO \$24 MILLION.

RESPONSE: THE OIL EXTRACTION THERMAL PROCESS IS SIMILAR TO THE SOLVENT EXTRACTION PROCESS, EXCEPT THAT IT USES HEAT INSTEAD OF SOLVENTS TO SEPARATE THE OIL, WATER, AND SOLIDS. UNFORTUNATELY, RCRA REGULATIONS STATE THAT ANY CONSTITUENT DERIVED FROM A HAZARDOUS WASTE MUST BE TREATED AS HAZARDOUS UNTIL PROVEN OTHERWISE. THE OVERALL COST OF THIS ALTERNATIVE WOULD BE MUCH GREATER THAN \$24 MILLION SINCE THE OIL COULD NOT BE SOLD AND THE REMAINING HAZARDOUS CONSTITUENTS WOULD REQUIRE FURTHER TREATMENT PRIOR TO DISPOSAL.

43. COMMENT: HOW MUCH RESIDUAL ASH WILL BE CREATED BY THERMAL DESTRUCTION AND WHERE WILL IT BE DISPOSED?

RESPONSE: THERMAL DESTRUCTION WOULD BE USED TO TREAT APPROXIMATELY 125,000 CUBIC YARDS OF WASTE. EPA STUDIES INDICATE THAT THERMAL DESTRUCTION WILL ATTAIN AN 85 PERCENT REDUCTION IN VOLUME, WHILE ARCO'S STUDIES, USING A NEUTRALIZING MATERIAL BEFORE THERMAL TREATMENT, INDICATE A 40 TO 50 PERCENT REDUCTION IN VOLUME. IF THE NEUTRALIZING MATERIAL IS NOT REQUIRED TO TREAT THE WASTE, AN ESTIMATED 18,750 CUBIC YARDS OF RESIDUAL ASH WILL REMAIN AFTER THERMAL DESTRUCTION. THE RESIDUAL ASH WOULD BE SOLIDIFIED, IF NECESSARY, AND LANDFILLED ON-SITE.

44. COMMENT: WHAT TYPES OF AIR QUALITY PROBLEMS DOES SOLIDIFICATION POSE?

RESPONSE: PILOT STUDIES HAVE SHOWN THAT SOME VOLATILE COMPOUNDS ARE DRIVEN OFF DURING EXCAVATION AND MIXING OF THE WASTE WITH THE SOLIDIFYING AGENT. MASS EMISSION RATES HAVE NOT BEEN QUANTIFIED.

45. COMMENT: HAS THE SOLIDIFICATION REMEDY BEEN SUFFICIENTLY TESTED OVER THE RANGE OF THE WASTE?

RESPONSE: SOLIDIFICATION PILOT STUDIES WERE ONLY CONDUCTED ON THE SURFICIAL ACID SLUDGE WASTE. ADDITIONAL WASTE CHARACTERIZATION AND PRETREATMENT STUDIES WILL NEED TO BE PERFORMED ON THE SUBSURFACE PETROLEUM WASTES.

46. COMMENT: "IT SEEMS SURPRISING THAT AFTER FIVE YEARS OF PRELIMINARY STUDY WHEN NO INFORMATION WAS AVAILABLE ON THE SITE, A HURRIED ROD MUST BE PREPARED."

RESPONSE: A HURRIED ROD HAS NOT BEEN PREPARED. THE ALTERNATIVE EVALUATION PROCESS HAS BEEN ONGOING SINCE THE INITIAL STAGES OF THE REMEDIAL INVESTIGATION/FEASIBILITY STUDY. THE RECORD OF DECISION IS MERELY A SUMMARIZATION AND CULMINATION OF THESE STUDIES.

**APPENDIX D**

**ADMINISTRATIVE RECORD**

JOB. NO. SS-1977

DOCUMENT DATE	6/22/77
DOCUMENT TYPE	INSPECTION REPORT
ORIGINATOR	ROB SIMMS
ORIGINATOR - AFFILIATION	OKLAHOMA WATER RESOURCES BOARD
RECIPIENT	
RECIPIENT - AFFILIATION	
DESCRIPTION	INVESTIGATION OF COMPLAINT
NUMBER OF PAGES	2
DOCUMENT NUMBER SEQUENCE	1

JOB NO. SS-1980

DOCUMENT DATE	6/12/80
DOCUMENT TYPE	POTENTIAL HAZARDOUS WASTE SITE INSPECTION RPT.
ORIGINATOR	GARY MCDONALD
ORIGINATOR - AFFILIATION	OSDH
RECIPIENT	FOR HAZARDOUS WASTE LOG FILE
RECIPIENT - AFFILIATION	
DESCRIPTION	OIL BOTTOM SLUDGE PIT IMPROVEMENT
NUMBER OF PAGES	9
DOCUMENT NUMBER SEQUENCE	2

DOCUMENT DATE	6/13/80
DOCUMENT TYPE	INTEROFFICE CORRESPONDENCE
ORIGINATOR	TOM DRAKE
ORIGINATOR - AFFILIATION	OKLAHOMA AIR QUALITY SERVICE
RECIPIENT	
RECIPIENT - AFFILIATION	
DESCRIPTION	INITIAL INVESTIGATION OF SPILL
NUMBER OF PAGES	1
DOCUMENT NUMBER SEQUENCE	3

DOCUMENT DATE	6/18/80
DOCUMENT TYPE	POTENTIAL HAZARDOUS WASTE SITE INSPECTION RPT.
ORIGINATOR	GARY MCDONALD
ORIGINATOR - AFFILIATION	OSDH
RECIPIENT	FOR HAZARDOUS WASTE LOG FILE
RECIPIENT - AFFILIATION	
DESCRIPTION	OIL BOTTOM SLUDGE PIT IMPOUNDMENT
NUMBER OF PAGES	9
DOCUMENT NUMBER SEQUENCE	4

DOCUMENT DATE 8/1/80  
DOCUMENT TYPE COMMUNICATION/RECORD  
ORIGINATOR LARRY WRIGHT  
ORIGINATOR - AFFILIATION USEPA (6AE6H)  
RECIPIENT MIKE WRIGHT  
RECIPIENT - AFFILIATION TULSA COUNTY HEALTH DEPT.  
DESCRIPTION ACCIDENT AT SS PIT  
NUMBER OF PAGES 1  
DOCUMENT NUMBER SEQUENCE 5

JOB. NO. SS-1981

DOCUMENT DATE 1/9/81  
DOCUMENT TYPE RCRA COMPLIANCE INSPECTION RPT.  
FACILITIES CHECKLIST  
ORIGINATOR INDUSTRIAL WASTE DIVISION  
ORIGINATOR - AFFILIATION OSDH  
RECIPIENT INDUSTRIAL SOLID WASTE DIVISION  
RECIPIENT - AFFILIATION OSDH  
DESCRIPTION MONTHLY RPT. W/SHIPPING MANIFESTS  
NUMBER OF PAGES 11  
DOCUMENT NUMBER SEQUENCE 6

DOCUMENT DATE 2/2/81  
DOCUMENT TYPE MONTHLY REPORT CONTROLLED  
INDUSTRIAL WASTE RECEIVING SITE  
ORIGINATOR GLENN WYNN  
ORIGINATOR - AFFILIATION SITE OWNER/OPERATOR  
RECIPIENT INDUSTRIAL AND SOLID WASTE  
DIVISION  
RECIPIENT - AFFILIATION OSDH  
DESCRIPTION MONTHLY REPORT WITH SHIPPING  
MANIFESTS  
NUMBER OF PAGES 11  
DOCUMENT NUMBER SEQUENCE 7

DOCUMENT DATE 2/19/81  
DOCUMENT TYPE LETTER  
ORIGINATOR DIANA DUTTON  
ORIGINATOR - AFFILIATION USEPA (6AE)  
RECIPIENT GLENN WYNN  
RECIPIENT - AFFILIATION -----  
DESCRIPTION INITIAL INSPECTION OF SITE  
NUMBER OF PAGES 7  
DOCUMENT NUMBER SEQUENCE 8

DOCUMENT DATE 2/25/81  
DOCUMENT TYPE COMMUNICATION  
ORIGINATOR JIM TURNER  
ORIGINATOR - AFFILIATION USEPA (6AELG)  
RECIPIENT RICHARD HOLMES  
RECIPIENT - AFFILIATION ATTORNEY  
DESCRIPTION PHONE CALL CONCERNING GLENN WYNN  
NUMBER OF PAGES 1  
DOCUMENT NUMBER SEQUENCE 9

JOB NO. SS-1981

DOCUMENT DATE 2/27/81  
DOCUMENT TYPE CONTROLLED INDUSTRIAL WASTE  
SHIPPING MANIFEST  
ORIGINATOR GLENN E. WYNN  
ORIGINATOR - AFFILIATION VACUUM & PRESSURE TANK TRUCK SVCS., INC.  
RECIPIENT INDUSTRIAL WASTE DIVISION  
RECIPIENT - AFFILIATION OSDH  
DESCRIPTION HAZARDOUS WASTE MANIFESTS FOR MONTH  
NUMBER OF PAGES 11  
DOCUMENT NUMBER SEQUENCE 10

JOB NO. SS-1981

DOCUMENT DATE 2/27/81  
DOCUMENT TYPE PLAN  
ORIGINATOR GLENN E. WYNN  
ORIGINATOR - AFFILIATION VACUUM & PRESSURE TANK TRUCK SVCS., INC.  
RECIPIENT IND. & SOLID WASTE DIV., OSDH  
RECIPIENT - AFFILIATION  
DESCRIPTION CONTROLLED IND. WASTE DISPOSAL PLAN  
NUMBER OF PAGES 8  
DOCUMENT NUMBER SEQUENCE 11

DOCUMENT DATE 3/6/81  
DOCUMENT TYPE ORDER/TULSA CITY-COUNTY HEALTH DEPT.  
ORIGINATOR RAY BISHOP, R.P.S.  
ORIGINATOR - AFFILIATION TULSA CITY-COUNTY HEALTH DEPT.  
RECIPIENT FRED WHITAKER  
RECIPIENT - AFFILIATION RESOURCE RECOVERY & REFINING CORP.  
DESCRIPTION ORDER TO CEASE OPERATION OF FACILITY  
NUMBER OF PAGES 1  
DOCUMENT NUMBER SEQUENCE 12

DOCUMENT DATE 5/27/81  
DOCUMENT TYPE SUPPLEMENTAL LABORATORY REPORT  
ORIGINATOR WILLIAM D. LANGLEY  
ORIGINATOR - AFFILIATION CHIEF LABORATORY SVCS. SECTION, 65A-HL  
RECIPIENT WILLIAM J. LIBRIZZI  
RECIPIENT - AFFILIATION DIR. SURVEILLANCE & ANALYSIS DIV. 65A  
DESCRIPTION SUPPLEMENT TO 3/19/81 PRELIMINARY DATA REPORT  
NUMBER OF PAGES 4  
DOCUMENT NUMBER SEQUENCE 13



DOCUMENT DATE 6/29/81  
DOCUMENT TYPE MAGAZINE ARTICLE  
ORIGINATOR  
ORIGINATOR - AFFILIATION CHEMICAL BUSINESS, PAGE 7  
RECIPIENT  
RECIPIENT - AFFILIATION  
DESCRIPTION ARTICLE ON SOLVENT RECOVERY BUSINESS & PROCESS  
NUMBER OF PAGES 2  
DOCUMENT NUMBER SEQUENCE 14

JOB. NO. SS-1981

DOCUMENT DATE 10/2/81  
DOCUMENT TYPE CONTROLLED INDUSTRIAL WASTE SHIPPING MANIFEST  
ORIGINATOR BOB OSSERY  
ORIGINATOR - AFFILIATION VACUUM PRESSURE TANK TRUCK SERVICES  
RECIPIENT INDUSTRIAL & SAND WASTE DIVISION  
RECIPIENT - AFFILIATION OSDH  
DESCRIPTION WASTE SHIPPING MANIFESTS &  
MONTHLY RECEIVING SITE REPORTS  
NUMBER OF PAGES 2  
DOCUMENT NUMBER SEQUENCE 15

DOCUMENT DATE 10/22/81  
DOCUMENT TYPE RCRA INSPECTION SITE  
IDENTIFICATION  
ORIGINATOR KENNETH C. BURNS, SENIOR  
ENVIRONMENTAL SPECIALIST  
ORIGINATOR - AFFILIATION OSDH  
RECIPIENT  
RECIPIENT - AFFILIATION  
DESCRIPTION COMPLIANCE INSPECTION RPT. OF  
RESOURCE RECOVERY & REFINING CORP.  
NUMBER OF PAGES 7  
DOCUMENT NUMBER SEQUENCE 16

DOCUMENT DATE 10/22/81  
DOCUMENT TYPE RCRA COMPLIANCE INSPECTION  
REPORT  
ORIGINATOR INDUSTRIAL WASTE DIVISION  
ORIGINATOR - AFFILIATION OSDH  
RECIPIENT RCRA FILE  
RECIPIENT - AFFILIATION  
DESCRIPTION FACILITY STANDARDS CHECKLIST  
NUMBER OF PAGES 13  
DOCUMENT NUMBER SEQUENCE 17

DOCUMENT DATE 10/22/81  
DOCUMENT TYPE RCRA INSPECTION  
ORIGINATOR KENNETH C. BURNS, SR. ENVIRONMENTAL SPECIALIST  
ORIGINATOR - AFFILIATION DH  
RECIPIENT RCRA FILE  
RECIPIENT - AFFILIATION  
DESCRIPTION SITE IDENTIFICATION & INSPECTION INFORMATION  
NUMBER OF PAGES 1  
DOCUMENT NUMBER SEQUENCE 18

JOB NO. SS-1981

DOCUMENT DATE 10/23/81  
DOCUMENT TYPE INDUSTRIAL WASTE RECEIVING SITE MONTHLY RPT.  
ORIGINATOR INDUSTRIAL & SOLID WASTE DIVISION  
ORIGINATOR - AFFILIATION OSDH  
RECIPIENT RCRA FILE  
RECIPIENT - AFFILIATION  
DESCRIPTION MONTHLY RPT. OF DELIVERED WASTE FOR SEPTEMBER, 1981  
NUMBER OF PAGES 1  
DOCUMENT NUMBER SEQUENCE 19

DOCUMENT DATE 11/16/81  
DOCUMENT TYPE LEASE  
ORIGINATOR S. NEAL JOHNSON  
ORIGINATOR - AFFILIATION SANDSPRINGS HOME  
RECIPIENT SAM FARMER  
RECIPIENT - AFFILIATION RECYCLON CORPORATION  
DESCRIPTION LEASE FOR PURPOSE OF CONDUCTING  
RE-REFINING & TREATMENT OF  
SOLVENTS, CRUDE & LUBE OILS  
NUMBER OF PAGES 6  
DOCUMENT NUMBER SEQUENCE 20

DOCUMENT DATE 12/18/81  
DOCUMENT TYPE SPILL PREVENTION CONTROL & COUNTERMEASURE PLAN  
ORIGINATOR DENNIS G. KELLEY  
ORIGINATOR - AFFILIATION O'KELLEY ENGINEERS  
RECIPIENT GLENN WYNN SERVICES, INC.  
DESCRIPTION PLAN TO PREVENT AND CONTAIN OIL SPILLS  
NUMBER OF PAGES 9  
DOCUMENT NUMBER SEQUENCE 21

JOB NO. 1982

DOCUMENT DATE	2/4/82
DOCUMENT TYPE	INDUSTRIAL WASTE RECEIVING SITE MONTHLY RPT. & SHIPPING MANIFESTS
ORIGINATOR	BOB USSERY
ORIGINATOR - AFFILIATION	SITEOWNER/OPERATOR
RECIPIENT	INDUSTRIAL & SOLID WASTE DIVISION
RECIPIENT - AFFILIATION	OSDH
DESCRIPTION	WASTE SHIPPING MANIFESTS & MONTHLY RECEIVING SITE REPORTS
NUMBER OF PAGES	9
DOCUMENT NUMBER SEQUENCE	22

JOB NO. SS-1982

DOCUMENT DATE	2/26/82
DOCUMENT TYPE	DATA REPORTS W/COVER LETTERS
ORIGINATOR	PETERS, CHIEF
ORIGINATOR - AFFILIATION	HAZARDOUS WASTE SECTION (GES-SH)
RECIPIENT	NOTT, CHIEF
RECIPIENT - AFFILIATION	ENFORCEMENT SECTION (GAW-SE)
DESCRIPTION	COPIES OF THE ANALYSIS OF SAMPLES COLLECTED AT VACUUM & PRESSURE TANK TRUCK SERVICES.
NUMBER OF PAGES	5
DOCUMENT NUMBER SEQUENCE	23

DOCUMENT DATE	8/1/82
DOCUMENT TYPE	ACKNOWLEDGEMENT OF NOTIFICATION OF HAZARDOUS WASTE ACTIVITY
ORIGINATOR	DWIGHT CORLEY
ORIGINATOR - AFFILIATION	RCRA
RECIPIENT	WHITIER
RECIPIENT - AFFILIATION	RESOURCE RECOVERY & REFINING CORP.
DESCRIPTION	LETTER CHANGING ORGANIZATION'S EPA I.D. NUMBER
NUMBER OF PAGES	10
DOCUMENT NUMBER SEQUENCE	24

DOCUMENT DATE	8/10/82
DOCUMENT TYPE	CIVIL ACTION BRIEF
ORIGINATOR	CAROL E. DINKINS
ORIGINATOR - AFFILIATION	ASST. ATTY. GENERAL, LAND & NATURAL RESOURCES DIVISION, DOJ
RECIPIENT	NORTHERN DISTRICT OF OKLAHOMA
RECIPIENT - AFFILIATION	COMPLAINT OF EPA VS. DEF. SITE OWNERS (PRP'S)
DESCRIPTION	PETITION FOR A T.R.O. PROHIBITING RECYCLING
NUMBER OF PAGES	23
DOCUMENT NUMBER SEQUENCE	25

DOCUMENT DATE 8/11/82  
DOCUMENT TYPE MEMORANDUM  
ORIGINATOR ROD HUFFMAN  
ORIGINATOR - AFFILIATION  
RECIPIENT PILES  
RECIPIENT - AFFILIATION  
DESCRIPTION LISTING OF VIOLATIONS BY  
RECYCLON FOUND DURING INSPECTION  
NUMBER OF PAGES 1  
DOCUMENT NUMBER SEQUENCE 26

JOB NO. SS-1982

DOCUMENT DATE 8/27/82  
DOCUMENT TYPE PETITION  
ORIGINATOR STATE OF OKLAHOMA  
ORIGINATOR - AFFILIATION  
RECIPIENT DISTRICT COURT TULSA COUNTY  
RECIPIENT - AFFILIATION STATE OF OKLAHOMA  
DESCRIPTION PET. FOR A TRO PROHIBITING  
RECYCLON FROM RECEIVING AT SITE  
NUMBER OF PAGES 9  
DOCUMENT NUMBER SEQUENCE 27

DOCUMENT DATE 8/27/82  
DOCUMENT TYPE AFFIDAVIT  
ORIGINATOR ROD HUFFMAN  
ORIGINATOR - AFFILIATION INSPECTOR  
RECIPIENT DISTRICT COURT TULSA COUNTY  
RECIPIENT - AFFILIATION STATE OF OKLAHOMA  
DESCRIPTION DEPOSITION OF UNCHANGED CONDITIONS AT SITE AFTER  
SEVERAL VISITS W/REMEDIAL ORDERS.  
NUMBER OF PAGES 3  
DOCUMENT NUMBER SEQUENCE 28

DOCUMENT DATE 8/27/82  
DOCUMENT TYPE MEMORANDUM  
ORIGINATOR WILLIAM W. GORDON, JR., ENFORCEMENT OFFICER  
ORIGINATOR - AFFILIATION OSDH  
RECIPIENT MARK S. COLEMAN  
RECIPIENT - AFFILIATION DEPUTY COMMISSIONER FOR ENVIRONMENTAL HEALTH SVCS.  
DESCRIPTION MEMO TELLS OF "RECYCLON" CLEANUP AFTER HEARING OF  
POTENTIAL LAWSUIT AND LISTS ALTERNATIVES  
NUMBER OF PAGES 1  
DOCUMENT NUMBER SEQUENCE 29

DOCUMENT DATE 8/27/82  
DOCUMENT TYPE CORRESPONDENCE  
ORIGINATOR JOAN M. LEAVITT, M.D.,  
COMMISSIONER OF HEALTH  
ORIGINATOR - AFFILIATION OSDH  
RECIPIENT HON. DAVID MOSS, DISTRICT ATTORNEY  
RECIPIENT - AFFILIATION TULSA COUNTY COURTHOUSE  
DESCRIPTION REQUEST FOR PROSECUTORIAL  
PROCEDURES TO FACILITATE COMPLIANCE AT SITE.  
NUMBER OF PAGES 1  
DOCUMENT NUMBER SEQUENCE 30

JOB NO. SS-1982

DOCUMENT DATE 9/1/82  
DOCUMENT TYPE MEMORANDUM  
ORIGINATOR ROD HUFFMAN  
ORIGINATOR - AFFILIATION OSDH  
RECIPIENT FILES  
RECIPIENT - AFFILIATION  
DESCRIPTION FOLLOW-UP INSPECTION ON 8/20/82  
SHOWED VIOLATIONS PERSISTED.  
NUMBER OF PAGES 1  
DOCUMENT NUMBER SEQUENCE 31

DOCUMENT DATE 9/9/82  
DOCUMENT TYPE MEMORANDUM & WATER ANALYSIS REPORT  
ORIGINATOR ROD HUFFMAN  
ORIGINATOR - AFFILIATION OSDH  
RECIPIENT FILES  
RECIPIENT - AFFILIATION  
DESCRIPTION SAMPLES TAKEN @ RECYCLON 9/7/82 OF BARRELS & SOIL  
NUMBER OF PAGES 5  
DOCUMENT NUMBER SEQUENCE 32

DOCUMENT DATE 9/30/82  
DOCUMENT TYPE MEMORANDUM  
ORIGINATOR ROD HUFFMAN  
ORIGINATOR - AFFILIATION OSDH  
RECIPIENT FILES  
RECIPIENT - AFFILIATION  
DESCRIPTION UNCHANGED CONDITION OF SITE AS OF 9/24/82  
NUMBER OF PAGES 1  
DOCUMENT NUMBER SEQUENCE 33

JOB. NO. SS-1983

DOCUMENT DATE	2/1/83
DOCUMENT TYPE	INDUSTRIAL WASTE RECEIVING SITE MONTHLY RPTS.
ORIGINATOR	BOB USSERY
ORIGINATOR - AFFILIATION	SITE OWNER/OPERATOR
RECIPIENT	INDUSTRIAL & SOLID WASTE DIVISION
RECIPIENT - AFFILIATION	OSDH
DESCRIPTION	MONTHLY REPORTS OF DELIVERED WASTE (JANUARY 1983)
NUMBER OF PAGES	5
DOCUMENT NUMBER SEQUENCE	34

JOB. NO. SS-1983

DOCUMENT DATE	4/10/83
DOCUMENT TYPE	PETITION
ORIGINATOR	STATE OF OKLAHOMA (OSDH)
ORIGINATOR - AFFILIATION	
RECIPIENT	DISTRICT COURT TULSA COUNTY
RECIPIENT - AFFILIATION	STATE OF OKLAHOMA
DESCRIPTION	REQUEST FOR TRO & PERMANENT INJUNCTION PROHIBITING OPERATION.
NUMBER OF PAGES	5
DOCUMENT NUMBER SEQUENCE	35

DOCUMENT DATE	6/8/83
DOCUMENT TYPE	CORRESPONDENCE
ORIGINATOR	JOAN K. LEAVITT, J.D., COMMISSIONER OF HEALTH
ORIGINATOR - AFFILIATION	OSDH
RECIPIENT	HON. DAVID MOSS, DISTRICT ATTORNEY
RECIPIENT - AFFILIATION	TULSA COUNTY COURTHOUSE
DESCRIPTION	REQUEST FOR PROSECUTORIAL PROCEEDINGS UNDER 63 (O.S. 198)
NUMBER OF PAGES	1
DOCUMENT NUMBER SEQUENCE	36

DOCUMENT DATE	6/8/83
DOCUMENT TYPE	QA SUMMARY
ORIGINATOR	CYNTHIA PACHUNAS
ORIGINATOR - AFFILIATION	
RECIPIENT	OSDH
RECIPIENT - AFFILIATION	OKLAHOMA STATE AGENCY
DESCRIPTION	SUMMARY SHEET - NPL
NUMBER OF PAGES	2
DOCUMENT NUMBER SEQUENCE	37

DOCUMENT DATE	7/5/83
DOCUMENT TYPE	INDUSTRIAL WASTE RECEIVING SITE
	MONTHLY RPTS. (JUNE-DEC. 1983)
ORIGINATOR	BOB USSERY
ORIGINATOR - AFFILIATION	SITE OWNER/OPERATOR
RECIPIENT	INDUSTRIAL AND SOLID WASTE DIVISION
RECIPIENT - AFFILIATION	OSDH
DESCRIPTION	MONTHLY REPORTS OF DELIVERED WASTE
NUMBER OF PAGES	8
DOCUMENT NUMBER SEQUENCE	38
DOCUMENT DATE	8/11/83
DOCUMENT TYPE	PETITION
ORIGINATOR	STATE OF OKLAHOMA (OSDH)
ORIGINATOR - AFFILIATION	
RECIPIENT	DISTRICT COURT TULSA COUNTY
RECIPIENT - AFFILIATION	STATE OF OKLAHOMA
DESCRIPTION	PRAYER FOR CIVIL PENALTY ASSESSMENT FOR DESCRIBED VIOLATIONS
NUMBER OF PAGES	7
DOCUMENT NUMBER SEQUENCE	39
DOCUMENT DATE	1/25/84
DOCUMENT TYPE	ROUTE SLIP
ORIGINATOR	KEN BURNS
ORIGINATOR - AFFILIATION	OSDH
RECIPIENT	JEFF GILLEY
RECIPIENT - AFFILIATION	EPA-6
DESCRIPTION	FILE LISTINGS OF LIKELY TO BE FOUND SAND SPRINGS MATERIAL
NUMBER OF PAGES	13
DOCUMENT NUMBER SEQUENCE	40
DOCUMENT DATE	2/2/84
DOCUMENT TYPE	INDUSTRIAL WASTE RECEIVING SITE
	MONTHLY REPORTS (JAN-APRIL '84)
ORIGINATOR	BOB USSERY
ORIGINATOR - AFFILIATION	SITE OWNER/OPERATOR
RECIPIENT	INDUSTRIAL AND SOLID WASTE DIVISION
RECIPIENT - AFFILIATION	OSDH
DESCRIPTION	MONTHLY RECEIVING SITE REPORTS
NUMBER OF PAGES	
DOCUMENT NUMBER SEQUENCE	41
DOCUMENT DATE	3/1/84
DOCUMENT TYPE	ACTION MEMO
ORIGINATOR	DICK WHITTINGTON, P.E.
ORIGINATOR - AFFILIATION	REGIONAL ADMINISTRATOR (6A)
RECIPIENT	LEE M. THOMAS, ASSISTANT ADMINISTRATOR
RECIPIENT - AFFILIATION	SOLID WASTE AND EMERGENCY RESPONSE
DESCRIPTION	BASIS FOR DECISION TO SPEND SUPERFUND MONEY FOR IMMEDIATE REMOVAL ACTION
NUMBER OF PAGES	4
DOCUMENT NUMBER SEQUENCE	42

DOCUMENT DATE 3/2/84  
DOCUMENT TYPE ADMINISTRATIVE ORDER  
ORIGINATOR DICK WHITTINGTON, P.E.  
ORIGINATOR - AFFILIATION USEPA  
RECIPIENT RODNEY WILSON, CLAIRE WILSON,  
BILL CREEL, DENNIS BERGSTROM,  
DAVID NIEMAN, FRED WHITTIER  
RECIPIENT - AFFILIATION WYNN SITE OPERATING CORPORATIONS  
DESCRIPTION ORDERS VARIOUS ACTIONS TO BE  
TAKEN BY SITE OPERATORS  
NUMBER OF PAGES 13  
DOCUMENT NUMBER SEQUENCE 43

DOCUMENT DATE 3/13/84  
DOCUMENT TYPE ADMINISTRATIVE ORDER  
ORIGINATOR DICK WHITTINGTON  
ORIGINATOR - AFFILIATION U.S.E.P.A.  
RECIPIENT SAMUEL C. FARMER, PEGGY FARMER, JEFFREY B. NOOLEEN  
RECIPIENT - AFFILIATION RECYCLON CORPORATION, WYNN SITE  
DESCRIPTION ORDER DIRECTS ACTION TO PROTECT PUBLIC HEALTH AND  
THE ENVIRONMENT  
NUMBER OF PAGES 12  
DOCUMENT NUMBER SEQUENCE 44

DOCUMENT DATE 5/9/84  
DOCUMENT TYPE NOTICE OF PUBLIC MEETING  
ORIGINATOR OSDH  
ORIGINATOR - AFFILIATION  
RECIPIENT GENERAL PUBLIC  
RECIPIENT - AFFILIATION  
DESCRIPTION SUMMARY OF WORK TO BE PERFORMED AT SITE  
NUMBER OF PAGES 12  
DOCUMENT NUMBER SEQUENCE 45

DOCUMENT DATE 5/31/84  
DOCUMENT TYPE COMMUNITY RELATIONS PLAN  
ORIGINATOR OSDH  
ORIGINATOR - AFFILIATION  
RECIPIENT INTERESTED PARTIES  
RECIPIENT - AFFILIATION  
DESCRIPTION PLAN TO KEEP INTERESTED PARTIES INFORMED OF  
PROGRESSION SITE  
NUMBER OF PAGES 11  
DOCUMENT NUMBER SEQUENCE 46



DOCUMENT DATE	5/31/84
DOCUMENT TYPE	SITE HISTORY AND LOCATION
ORIGINATOR	U.S.E.P.A.
ORIGINATOR - AFFILIATION	
RECIPIENT	INTERESTED PARTIES
RECIPIENT - AFFILIATION	
DESCRIPTION	SITE HISTORY AND SUMMARY OF INSPECTIONS AND LAB ANALYSIS
NUMBER OF PAGES	
DOCUMENT NUMBER SEQUENCE	47
DOCUMENT DATE	5/31/84
DOCUMENT TYPE	FILE SUMMARY
ORIGINATOR	U.S.E.P.A.
ORIGINATOR - AFFILIATION	
RECIPIENT	INTERESTED PARTIES
RECIPIENT - AFFILIATION	
DESCRIPTION	FILE SUMMARY OF INSPECTIONS AND ANALYSIS (JUNE 13, 1980 - MAY 31, 1984)
NUMBER OF PAGES	4
DOCUMENT NUMBER SEQUENCE	48
DOCUMENT DATE	6/22/84
DOCUMENT TYPE	CORRESPONDENCE
ORIGINATOR	WILLIAM C. ANDERSON
ORIGINATOR - AFFILIATION	DOERNER, STUART, SAUNDER, DANIEL & ANDERSON
RECIPIENT	ALL PARTIES LISTED AS "GENERATORS"
RECIPIENT - AFFILIATION	WYNN SITE OPERATION
DESCRIPTION	DEMAND ON "GENERATORS" TO REIMBURSE THE HOME FOR PHASE I CLEANUP
NUMBER OF PAGES	5
DOCUMENT NUMBER SEQUENCE	49
DOCUMENT DATE	7/1/84
DOCUMENT TYPE	HEALTH AND SAFETY PLAN FOR S.S.P.C.C. RI
ORIGINATOR	WASTE MANAGEMENT SERVICE
ORIGINATOR - AFFILIATION	OSDH
RECIPIENT	INTERESTED PARTIES
RECIPIENT - AFFILIATION	
DESCRIPTION	TO PROTECT HEALTH OF PUBLIC NEAR THE SITE AND PROVIDE INFORMATION CONCERNING HEALTH OF PERSONNEL WORKING ON SITE DURING RI PERIOD
NUMBER OF PAGES	31
DOCUMENT NUMBER SEQUENCE	50
DOCUMENT DATE	MARCH 1, 1985
DOCUMENT TYPE	WORK PLAN SUMMARY
ORIGINATOR	OKLAHOMA STATE DEPT. OF HEALTH
ORIGINATOR - AFFILIATION	
RECIPIENT	PUBLIC
RECIPIENT - AFFILIATION	
DESCRIPTION	SUMMARY OF TECHNICAL WORK PLAN - SAND SPRINGS
NUMBER OF PAGES	5
DOCUMENT NUMBER SEQUENCE	51

DOCUMENT DATE	3/1/85
DOCUMENT TYPE	INFORMATION SHEET
ORIGINATOR	OKLAHOMA STATE DEPT. OF HEALTH
ORIGINATOR - AFFILIATION	
RECIPIENT	PUBLIC
RECIPIENT - AFFILIATION	
DESCRIPTION	EMERGENCY RESPONDER INFORMATION SHEET - SAND SPRINGS
NUMBER OF PAGES	2
DOCUMENT NUMBER SEQUENCE	52
DOCUMENT DATE	3/19/85
DOCUMENT TYPE	COVER LETTER, RESPONSE PLAN
ORIGINATOR	DENNIS KELLEY - PRESIDENT
ORIGINATOR - AFFILIATION	O'KELLEY ENGINEERS, INC.
RECIPIENT	KENNETH BURNS
RECIPIENT - AFFILIATION	OKLAHOMA STATE HEALTH DEPT.
DESCRIPTION	COVER LETTER, RESPONSE PLAN (4 ACRE WYNN'S SITE - SAND SPRINGS)
NUMBER OF PAGES	42
DOCUMENT NUMBER SEQUENCE	53
DOCUMENT DATE	3/19/85
DOCUMENT TYPE	REPORT
ORIGINATOR	DENNIS KELLY & SAMI MALAEB
ORIGINATOR - AFFILIATION	O'KELLEY ENGINEERS
RECIPIENT	USEPA
RECIPIENT - AFFILIATION	
DESCRIPTION	SITE EVALUATION REPORT
NUMBER OF PAGES	34
DOCUMENT NUMBER SEQUENCE	54
DOCUMENT DATE	1/2/86
DOCUMENT TYPE	SAMPLING PLAN
ORIGINATOR	OKLAHOMA STATE DEPARTMENT OF HEALTH
ORIGINATOR - AFFILIATION	AFFILIATION
RECIPIENT	OKLAHOMA STATE DEPT. OF HEALTH
RECIPIENT - AFFILIATION	
DESCRIPTION	SURFACE RUNOFF WATER SAMPLING PLAN FOR SAND SPRINGS
NUMBER OF PAGES	7
DOCUMENT NUMBER SEQUENCE	55
DOCUMENT DATE	3/11/86
DOCUMENT TYPE	RECORD OF COMMUNICATION
ORIGINATOR	DAVE MCCARTNEY
ORIGINATOR - AFFILIATION	EPA REGION VI
RECIPIENT	DENNIS HREBEC
RECIPIENT - AFFILIATION	OKLAHOMA STATE DEPT. OF HEALTH
DESCRIPTION	POSSIBLE PHASE II ACTIVITIES - SAND SPRINGS
NUMBER OF PAGES	12
DOCUMENT NUMBER SEQUENCE	56

DOCUMENT DATE 5/28/86  
DOCUMENT TYPE RECORD OF COMMUNICATION TO FILE  
ORIGINATOR DAVE MCCARTNEY  
ORIGINATOR - AFFILIATION EPA - REGION VI  
RECIPIENT DENNIS HREBEC, HAL CANTWELL  
RECIPIENT - AFFILIATION OKLAHOMA STATE DEPT. OF HEALTH  
DESCRIPTION SAND SPRINGS RI/FS; QA/QC CHECK OF LAB DATA  
NUMBER OF PAGES 1  
DOCUMENT NUMBER SEQUENCE 57

DOCUMENT DATE 6/5/86  
DOCUMENT TYPE REQUEST LETTER  
ORIGINATOR DENNIS HREBEC, ENVIRONMENTAL CONSULTANT  
ORIGINATOR - AFFILIATION OKLAHOMA STATE DEPT. OF HEALTH  
RECIPIENT BILL ANDERSON  
RECIPIENT - AFFILIATION  
DESCRIPTION REQUESTS PERMISSION TO CONDUCT  
ACTIVITIES AT SAND SPRINGS  
NUMBER OF PAGES 1  
DOCUMENT NUMBER SEQUENCE 58

DOCUMENT DATE 8/11/86  
DOCUMENT TYPE CT. PETITION, CERTIFICATE  
ORIGINATOR DISTRICT CT. OF TULSA CO. - STATE OF OKLA.  
ORIGINATOR - AFFILIATION  
RECIPIENT OKLAHOMA STATE DEPT. OF HEALTH  
RECIPIENT - AFFILIATION  
DESCRIPTION SUIT BROUGHT AGAINST SAND  
SPRINGS PARTIES BY STATE OF OKLAHOMA  
NUMBER OF PAGES 5  
DOCUMENT NUMBER SEQUENCE 59

DOCUMENT DATE 8/29/86  
DOCUMENT TYPE LETTER  
ORIGINATOR CHRIS SWANBERG  
ORIGINATOR - AFFILIATION ARCO  
RECIPIENT REGIONAL ADMINISTRATOR (VI)  
RECIPIENT - AFFILIATION USEPA  
DESCRIPTION MAINTENANCE OF DYKE  
NUMBER OF PAGES 1  
DOCUMENT NUMBER SEQUENCE 60

DOCUMENT DATE 9/2/86  
DOCUMENT TYPE SAMPLING PLAN  
ORIGINATOR OKLAHOMA STATE DEPT. OF HEALTH  
ORIGINATOR - AFFILIATION  
RECIPIENT OKLAHOMA STATE DEPT. OF HEALTH  
RECIPIENT - AFFILIATION  
DESCRIPTION ORGANIC SCREENING SAMPLING PLAN - SAND SPRINGS  
NUMBER OF PAGES 3  
DOCUMENT NUMBER SEQUENCE 61

DOCUMENT DATE 9/10/86  
DOCUMENT TYPE MEMO  
ORIGINATOR DAVID MCCARTNEY  
ORIGINATOR - AFFILIATION USEPA (6H-SA)  
RECIPIENT ADDRESSEES  
RECIPIENT - AFFILIATION USEPA  
DESCRIPTION PROGRESS & PLANNING  
NUMBER OF PAGES 2  
DOCUMENT NUMBER SEQUENCE 62

DOCUMENT DATE 9/30/86  
DOCUMENT TYPE SAMPLING PLAN  
ORIGINATOR OKLAHOMA STATE DEPT. OF HEALTH OKLAHOMA  
ORIGINATOR - AFFILIATION  
RECIPIENT OKLAHOMA STATE DEPT. OF HEALTH OKLAHOMA  
RECIPIENT - AFFILIATION  
DESCRIPTION SLUDGE SAMPLING PLAN - SAND SPRINGS  
NUMBER OF PAGES 7  
DOCUMENT NUMBER SEQUENCE 63

DOCUMENT DATE 11/15/86  
DOCUMENT TYPE SAMPLING PLAN  
ORIGINATOR OKLAHOMA STATE DEPT. OF HEALTH OKLAHOMA  
ORIGINATOR - AFFILIATION  
RECIPIENT OKLAHOMA STATE DEPT. OF HEALTH OKLAHOMA  
RECIPIENT - AFFILIATION  
DESCRIPTION SURFACE IMPOUNDMENTS SAMPLING PLAN - SAND SPRINGS  
NUMBER OF PAGES 20  
DOCUMENT NUMBER SEQUENCE 64

DOCUMENT DATE 11/20/86  
DOCUMENT TYPE COVER LETTER, SAMPLE ANALYSIS  
ORIGINATOR LISA LYHANE - ENVIRONMENTAL ENGINEER  
ORIGINATOR - AFFILIATION OKLAHOMA STATE DEPT. OF HEALTH  
RECIPIENT MARK KROENIG, P.E.  
RECIPIENT - AFFILIATION JOHN MATHES & ASSOC.  
DESCRIPTION SURFACE RUN-OFF/DRAINAGE SEDIMENT SAMPLE ANALYSIS  
NUMBER OF PAGES 11  
DOCUMENT NUMBER SEQUENCE 65

DOCUMENT DATE 12/1/86  
DOCUMENT TYPE SAMPLING PLAN  
ORIGINATOR OKLA. STATE DEPT. OF HEALTH  
ORIGINATOR - AFFILIATION  
RECIPIENT OKLA. STATE DEPT. OF HEALTH  
RECIPIENT - AFFILIATION  
DESCRIPTION SEDIMENTS SAMPLING PLAN  
NUMBER OF PAGES 6  
DOCUMENT NUMBER SEQUENCE 66

DOCUMENT DATE 1/16/87  
DOCUMENT TYPE COVER LETTER WITH DATA ATTACHMENTS  
ORIGINATOR LISA LYHANE, ENVIRONMENTAL ENGINEER  
ORIGINATOR - AFFILIATION SOLID WASTE DIVISION, OSDH  
RECIPIENT MARK H. KROENIG, P.E.  
RECIPIENT - AFFILIATION JOHN MATHES & ASSOCIATES, INC.  
DESCRIPTION SAMPLE ANALYSIS FOR METALS,  
ORGANICS AND INORGANICS (SAMPLE NUMBERS 88-111)  
NUMBER OF PAGES 6  
DOCUMENT NUMBER SEQUENCE 67

DOCUMENT DATE 2/11/87  
DOCUMENT TYPE ORDER  
ORIGINATOR LARRY GUTTERRIDGE  
ORIGINATOR - AFFILIATION ARCO  
RECIPIENT JAMES TURNER  
RECIPIENT - AFFILIATION USEPA (6C-H)  
DESCRIPTION CONSENT ORDER  
NUMBER OF PAGES 22  
DOCUMENT NUMBER SEQUENCE 68

DOCUMENT DATE 4/10/87  
DOCUMENT TYPE ADDENDUM TO THE ENDANGERMENT  
ASSESSMENT  
ORIGINATOR JOHN MATHES & ASSOCIATES  
ORIGINATOR - AFFILIATION  
RECIPIENT WASTE MANAGEMENT SERVICE  
RECIPIENT - AFFILIATION OSDH  
DESCRIPTION TOXICANT PROFILES, EXHIBITS  
A-6  
NUMBER OF PAGES 150  
DOCUMENT NUMBER SEQUENCE 69

DOCUMENT DATE 4/14/87  
DOCUMENT TYPE ROUTE SLIP  
ORIGINATOR DENNIS HREBEC  
ORIGINATOR - AFFILIATION OSDH  
RECIPIENT JULIE BOZICH  
RECIPIENT - AFFILIATION USEPA (6H-EC)  
DESCRIPTION MAP OF SITE BOUNDARIES  
NUMBER OF PAGES 2  
DOCUMENT NUMBER SEQUENCE 70

DOCUMENT DATE 5/1/87  
DOCUMENT TYPE FEASIBILITY STUDY REPORT  
ORIGINATOR JOHN MATHES & ASSOCIATES, INC.  
ORIGINATOR - AFFILIATION  
RECIPIENT WASTE MANAGEMENT SERVICE  
RECIPIENT - AFFILIATION OSDH  
DESCRIPTION FEASIBILITY STUDY REPORT FOR  
OPERABLE UNIT OF SS SITE  
NUMBER OF PAGES 144  
DOCUMENT NUMBER SEQUENCE 71

DOCUMENT DATE 5/4/87  
DOCUMENT TYPE REMEDIAL INVESTIGATION REPORT  
ORIGINATOR JOHN MATHES & ASSOCIATES  
ORIGINATOR - AFFILIATION  
RECIPIENT WASTE MANAGEMENT SERVICE  
RECIPIENT - AFFILIATION OSDH  
DESCRIPTION SLUDGE AND SURFACE IMPOUNDMENT SAMPLING  
NUMBER OF PAGES 126  
DOCUMENT NUMBER SEQUENCE 72

DOCUMENT DATE 5/4/87  
DOCUMENT TYPE REMEDIAL INVESTIGATION REPORT,  
APPENDIX E, ANALYTICAL DATA, VOLUME I  
ORIGINATOR JOHN MATHES & ASSOCIATES, INC.  
ORIGINATOR - AFFILIATION  
RECIPIENT WASTE MANAGEMENT SERVICE  
RECIPIENT - AFFILIATION OSDH  
DESCRIPTION SLUDGE AND SURFACE IMPOUNDMENT SAMPLING  
NUMBER OF PAGES 281  
DOCUMENT NUMBER SEQUENCE 73

DOCUMENT DATE 5/4/87  
DOCUMENT TYPE REMEDIAL INVESTIGATION REPORT,  
APPENDIX E, ANALYTICAL DATA, VOLUME II  
ORIGINATOR JOHN MATHES & ASSOCIATES  
ORIGINATOR - AFFILIATION  
RECIPIENT WASTE MANAGEMENT SERVICE  
RECIPIENT - AFFILIATION OSDH  
DESCRIPTION SLUDGE AND SURFACE IMPOUNDMENT SAMPLING  
NUMBER OF PAGES 273  
DOCUMENT NUMBER SEQUENCE 74

DOCUMENT DATE 5/5/87  
DOCUMENT TYPE QUALITY ASSURANCE PROCEDURES  
ORIGINATOR SPECIAL MATERIALS DIVISION  
ORIGINATOR - AFFILIATION EAGLE-PICHER INDUSTRIES, INC.  
RECIPIENT WASTE MANAGEMENT SERVICE  
RECIPIENT - AFFILIATION OSDH  
DESCRIPTION QUALITY ASSURANCE PROCEDURES  
FOR THE ANALYTICAL LABORATORY  
NUMBER OF PAGES 156  
DOCUMENT NUMBER SEQUENCE 75

DOCUMENT DATE 5/6/87  
DOCUMENT TYPE ORDER  
ORIGINATOR JAMES TURNER  
ORIGINATOR - AFFILIATION USEPA (6C-H)  
RECIPIENT LARRY GUTTERRIDGE  
RECIPIENT - AFFILIATION ARCO  
DESCRIPTION ADMINISTRATIVE ORDER (FINAL  
REVISION) ARCO TEST BURN STUDY  
NUMBER OF PAGES 23  
DOCUMENT NUMBER SEQUENCE 76

DOCUMENT DATE 5/7/87  
DOCUMENT TYPE ENDANGERMENT ASSESSMENT  
ORIGINATOR JOHN MATHES & ASSOCIATES, INC.  
ORIGINATOR - AFFILIATION  
RECIPIENT WASTE MANAGEMENT SERVICES  
RECIPIENT - AFFILIATION OSDH  
DESCRIPTION ENDANGERMENT ASSESSMENT FOR  
THE OPERABLE UNIT AT SITE  
NUMBER OF PAGES 145  
DOCUMENT NUMBER SEQUENCE 77

DOCUMENT DATE 5/7/87  
DOCUMENT TYPE WORK PLAN  
ORIGINATOR R. WALTER SIMMONS  
ORIGINATOR - AFFILIATION ARCO  
RECIPIENT ROBERT LAYTON, JR.  
RECIPIENT - AFFILIATION USEPA - (6A)  
DESCRIPTION WORK PLAN FOR SOLIDIFICATION  
NUMBER OF PAGES 12  
DOCUMENT NUMBER SEQUENCE 78

DOCUMENT DATE 5/7/87  
DOCUMENT TYPE BROCHURE  
ORIGINATOR R. WALTER SIMMONS  
ORIGINATOR - AFFILIATION ARCO  
RECIPIENT ROBERT LAYTON  
RECIPIENT - AFFILIATION USEPA (6A)  
DESCRIPTION SOLIDIFICATION BROCHURE  
NUMBER OF PAGES 8  
DOCUMENT NUMBER SEQUENCE 79

DOCUMENT DATE 5/8/87  
DOCUMENT TYPE PLAN  
ORIGINATOR LARRY GUTTERRIDGE  
ORIGINATOR - AFFILIATION ARCO  
RECIPIENT JAMES TURNER  
RECIPIENT - AFFILIATION USEPA (6C-H)  
DESCRIPTION FINAL PORTION OF WORKPLAN  
NUMBER OF PAGES 8  
DOCUMENT NUMBER SEQUENCE 80

DOCUMENT DATE 5/13/87  
DOCUMENT TYPE COVER LETTER WITH DATA ANALYSIS  
ORIGINATOR DALE C. MARKLEY, SENIOR  
HYDROGEOLOGIST  
ORIGINATOR - AFFILIATION JOHN MATHES & ASSOCIATES, INC.  
RECIPIENT LISA LYHANE  
RECIPIENT - AFFILIATION OSDH  
DESCRIPTION REMAINING ANALYSIS FOR DIOXIN  
AND FURANS RUN AT THE 0.1 PPB  
DETECTION LIMITS. (FIRST DATA SENT 4/10/87)  
NUMBER OF PAGES 3  
DOCUMENT NUMBER SEQUENCE 81

DOCUMENT DATE 5/15/87  
DOCUMENT TYPE LETTER  
ORIGINATOR ROBERT HANNESCHLAGER  
ORIGINATOR - AFFILIATION USEPA (6H-E)  
RECIPIENT ROSEANN STEVENSON  
RECIPIENT - AFFILIATION ARCO  
DESCRIPTION COMMENTS ON WORKPLAN  
NUMBER OF PAGES 3  
DOCUMENT NUMBER SEQUENCE 82

DOCUMENT DATE 5/15/87  
DOCUMENT TYPE COMMUNICATION RECORD  
ORIGINATOR STEVE LEMONS  
ORIGINATOR - AFFILIATION USEPA (6E-Q)  
RECIPIENT PAUL SIEMINSKI  
RECIPIENT - AFFILIATION USEPA (6H-SA)  
DESCRIPTION REVIEW SS WORKPLAN  
NUMBER OF PAGES 8  
DOCUMENT NUMBER SEQUENCE 83

DOCUMENT DATE 5/18/87  
DOCUMENT TYPE ORDER  
ORIGINATOR JAMES TURNER  
ORIGINATOR - AFFILIATION USEPA (6C-H)  
RECIPIENT ROBERT LAYTON  
RECIPIENT - AFFILIATION USEPA (6A)  
DESCRIPTION ADMINISTRATIVE ORDER  
NUMBER OF PAGES 23  
DOCUMENT NUMBER SEQUENCE 84

DOCUMENT DATE 5/27/87  
DOCUMENT TYPE NEWS RELEASE  
ORIGINATOR JOAN K. LEAVITT, M.D.  
ORIGINATOR - AFFILIATION OSDH  
RECIPIENT  
RECIPIENT - AFFILIATION  
DESCRIPTION ANNOUNCEMENT THAT R.I. REPORT  
IS COMPLETED AND AVAILABLE.  
NUMBER OF PAGES 2  
DOCUMENT NUMBER SEQUENCE 85

DOCUMENT DATE 6/29/87  
DOCUMENT TYPE LETTER  
ORIGINATOR ROBERT HANNESCHLAGER  
ORIGINATOR - AFFILIATION USEPA (6H-E)  
RECIPIENT ROSEANN STEVENSON  
RECIPIENT - AFFILIATION ARCO  
DESCRIPTION RESPONSE TO JUNE 2, '87 LETTER  
NUMBER OF PAGES 1  
DOCUMENT NUMBER SEQUENCE 86



DOCUMENT DATE 7/15/87  
DOCUMENT TYPE NEWS RELEASE  
ORIGINATOR KAREN L. BROWN  
ORIGINATOR - AFFILIATION OSDH  
RECIPIENT  
RECIPIENT - AFFILIATION  
DESCRIPTION ANNOUNCEMENT OF 8/4/87 PUBLIC  
MEETING EXPLAINING CLEANUP OPERATIONS  
NUMBER OF PAGES 2  
DOCUMENT NUMBER SEQUENCE 87

DOCUMENT DATE 7/30/87  
DOCUMENT TYPE REPORT  
ORIGINATOR KEVIN JACKSON  
ORIGINATOR - AFFILIATION JACOBS ENGINEERING GROUP, INC.  
RECIPIENT JUNE BOZICH  
RECIPIENT - AFFILIATION EPA REGION 6  
DESCRIPTION SUMMARY OF COMPLIANCE MONITORING ACTIVITIES  
NUMBER OF PAGES 12  
DOCUMENT NUMBER SEQUENCE 88.

ADMINISTRATIVE RECORDS INDEX ADDENDUM

JOB NAME: SAND SPRINGS PETRO-CHEMICAL COMPLEX  
JOB NUMBER: OKD980748446

DOCUMENT DATE UNDATED  
DOCUMENT TYPE EVALUATION  
ORIGINATOR RESEARCH TRIANGLE INSTITUTE & U.S. E.P.A.  
ORIGINATOR - AFFILIATION  
RECIPIENT U.S. E.P.A REGION VI  
RECIPIENT - AFFILIATION  
DESCRIPTION "EVALUATION OF TCLP..."  
NUMBER OF PAGES 1  
DOCUMENT NUMBER

DOCUMENT DATE UNDATED  
DOCUMENT TYPE ANSWERS TO NOTICE  
ORIGINATOR CHEMLINK PETROLEUM  
ORIGINATOR - AFFILIATION  
RECIPIENT U.S. E.P.A (6) SAND SPRINGS FILE  
RECIPIENT - AFFILIATION  
DESCRIPTION RESPONSE TO U.S. E.P.A NOTICE  
NUMBER OF PAGES 1  
DOCUMENT NUMBER

DOCUMENT DATE UNDATED  
DOCUMENT TYPE TEST METHODS  
ORIGINATOR U.S. E.P.A. (6) SAND SPRINGS FILE  
ORIGINATOR - AFFILIATION  
RECIPIENT U.S. E.P.A (6) SAND SPRINGS FILE  
RECIPIENT - AFFILIATION  
DESCRIPTION TEST METHODS/SOLIDIFIED WASTE CHARACTER  
NUMBER OF PAGES 91  
DOCUMENT NUMBER

DOCUMENT DATE 06/86  
DOCUMENT TYPE HANDBK.  
ORIGINATOR M. JN. CULLINANE, JR., ET AL  
ORIGINATOR - AFFILIATION USAE WATERWAYS EXPERIMENT STA.  
RECIPIENT U.S. E.P.A REGION VI  
RECIPIENT - AFFILIATION  
DESCRIPTION HANDBK. STABILIZATION/SOLIDIFICATION  
NUMBER OF PAGES 168  
DOCUMENT NUMBER

JOB NAME: SAND SPRINGS PETRO-CHEMICAL COMPLEX  
JOB NUMBER: OKD980748446

DOCUMENT DATE 09/86  
DOCUMENT TYPE MANUAL  
ORIGINATOR U.S. E.P.A. (6) SAND SPRINGS FILE  
ORIGINATOR - AFFILIATION  
RECIPIENT U.S. E.P.A. (6) SAND SPRINGS FILE  
RECIPIENT - AFFILIATION  
DESCRIPTION TEST METHODS FOR EVALUATING SOLID WASTE  
NUMBER OF PAGES 59  
DOCUMENT NUMBER

DOCUMENT DATE 09/22/86  
DOCUMENT TYPE COVER LETTER/CLOSURE REPORT  
ORIGINATOR DAVID MCCARTHEY  
ORIGINATOR - AFFILIATION  
RECIPIENT MARY ELLEN MCLEARY, BILL TAYLOR, ET AL  
RECIPIENT - AFFILIATION  
DESCRIPTION CLOSURE REPORT - WYNN TANK  
NUMBER OF PAGES 28  
DOCUMENT NUMBER

DOCUMENT DATE 10/15/86  
DOCUMENT TYPE COVER LETTER/REPORT  
ORIGINATOR JN. MATHES & ASSOC., INC.  
ORIGINATOR - AFFILIATION  
RECIPIENT PAUL SIEMINSKI  
RECIPIENT - AFFILIATION U.S. E.P.A. (6) SAND SPRINGS FILE  
DESCRIPTION RI REPORT 2 - SURFACE IMPOUNDMENT TECH. MEMO  
NUMBER OF PAGES 17  
DOCUMENT NUMBER

DOCUMENT DATE 1987  
DOCUMENT TYPE RESEARCH ARTICLE  
ORIGINATOR HAZARDOUS WASTE & HAZARDOUS MATERIALS  
ORIGINATOR - AFFILIATION  
RECIPIENT U.S. E.P.A. REGION VI  
RECIPIENT - AFFILIATION  
DESCRIPTION EFFECT OF THREE ORGANIC COMPOUNDS  
NUMBER OF PAGES 12  
DOCUMENT NUMBER

JOB NAME: SAND SPRINGS PETRO-CHEMICAL COMPLEX  
JOB NUMBER: OKD980748446

DOCUMENT DATE 04/1987  
DOCUMENT TYPE PLAN  
ORIGINATOR ARCO PETROLEUM PROD. CO.

ORIGINATOR - AFFILIATION  
RECIPIENT U.S. E.P.A. (6) SAND SPRINGS FILE  
RECIPIENT - AFFILIATION  
DESCRIPTION WORK PLAN - PILOT THERMAN TREATMENT  
NUMBER OF PAGES 165  
DOCUMENT NUMBER

DOCUMENT DATE 04/30/87  
DOCUMENT TYPE FOLLOW-UP LETTER  
ORIGINATOR CARLTON C. WILES/CHIEF  
ORIGINATOR - AFFILIATION U.S. E.P.A.  
RECIPIENT WALT SIMMONS  
RECIPIENT - AFFILIATION ARCO PETROLEUM PRODUCTS CO.  
DESCRIPTION SAMPLE TESTS AND ANALYSES  
NUMBER OF PAGES 2  
DOCUMENT NUMBER

DOCUMENT DATE 04/30/87  
DOCUMENT TYPE LETTER  
ORIGINATOR CARLTON WILES - OFFICE OF R & D  
ORIGINATOR - AFFILIATION U.S. E.P.A. WASHINGTON  
RECIPIENT WALT SIMMONS  
RECIPIENT - AFFILIATION ARCO PETROLEUM PRODUCTS CO.  
DESCRIPTION FOLLOWUP TO PHONE CONVERSATION  
00/29/87  
NUMBER OF PAGES 2  
DOCUMENT NUMBER

DOCUMENT DATE 05/07/87  
DOCUMENT TYPE PLAN  
ORIGINATOR ARCO PETROLEUM PROD. CO.  
ORIGINATOR - AFFILIATION  
RECIPIENT U.S. E.P.A. (6) SAND SPRINGS FILE  
RECIPIENT - AFFILIATION  
DESCRIPTION WORK PLAN - WASTE SOLIDIFICATION/STABIL.  
NUMBER OF PAGES 14  
DOCUMENT NUMBER

JOB NAME: SAND SPRINGS PETRO-CHEMICAL COMPLEX  
JOB NUMBER: OKD980748446

DOCUMENT DATE 05/11/87  
DOCUMENT TYPE LETTER  
ORIGINATOR WALTER SIMMONS, MGR.  
ORIGINATOR - AFFILIATION U.S. E.P.A.  
RECIPIENT CARLETON WILES  
RECIPIENT - AFFILIATION U.S. E.P.A. - HWERL  
DESCRIPTION ARCO'S SOLIDIFICATION TESTING  
NUMBER OF PAGES 1  
DOCUMENT NUMBER

DOCUMENT DATE 05/11/87  
DOCUMENT TYPE LETTER  
ORIGINATOR R. WALTER SIMMONS, MGR. ENVIRON. PROTECT.  
ORIGINATOR - AFFILIATION ARCO PETROLEUM PRODUCTS CO.  
RECIPIENT CARLETON WILES (HWERL)  
RECIPIENT - AFFILIATION U.S. E.P.A. (CINCINNATI, OH)  
DESCRIPTION SOLIDIFICATION PORTION - WORK PLAN  
NUMBER OF PAGES 1  
DOCUMENT NUMBER

DOCUMENT DATE 05/21/87  
DOCUMENT TYPE MEMORANDUM  
ORIGINATOR PAUL SIEMINSKI (HWD)  
ORIGINATOR - AFFILIATION U.S. E.P.A. REGION VI  
RECIPIENT ED BARTH, ENVIRON. ENGR.  
RECIPIENT - AFFILIATION U.S. E.P.A. (CINCINNATI, OH)  
DESCRIPTION REVIEW -  
SOLIDIFICATION/STABILIZATION WORK PLAN  
NUMBER OF PAGES 2  
DOCUMENT NUMBER

DOCUMENT DATE 05/21/87  
DOCUMENT TYPE MEMORANDUM  
ORIGINATOR ED BARTH, ENVIRONMENTAL ENGINEER  
ORIGINATOR - AFFILIATION U.S. E.P.A. - REMEDIAL ACTION STAFF  
RECIPIENT PAUL SIEMINSKI  
RECIPIENT - AFFILIATION U.S. E.P.A. - HAZARDOUS WASTE MGMT. DIV.  
DESCRIPTION REVIEW OF WORK PLAN  
NUMBER OF PAGES 2  
DOCUMENT NUMBER

JOB NAME: SAND SPRINGS PETRO-CHEMICAL COMPLEX  
JOB NUMBER: OKD980748446

DOCUMENT DATE 09/25/84  
DOCUMENT TYPE MEMO/PLAN  
ORIGINATOR RONNIE ROMO - QA  
ORIGINATOR - AFFILIATION U.S. E.P.A. (6)  
RECIPIENT PAUL SIEMINSKI, PROJECT OFFICER  
RECIPIENT - AFFILIATION U.S. E.P.A. (6) 6AW-SS  
DESCRIPTION REVISED QA/QC PLAN PAGES  
NUMBER OF PAGES 21  
DOCUMENT NUMBER

JOB NAME: SAND SPRINGS PETRO-CHEMICAL COMPLEX  
JOB NUMBER: OKD980748446

DOCUMENT DATE 06/02/87  
DOCUMENT TYPE LETTER  
ORIGINATOR R. WALTER SIMMONS, MGR.  
ORIGINATOR - AFFILIATION ARCO PETROLEUM PRODUCTS CO.  
RECIPIENT ROBERT E. HANNESCHLAGER  
RECIPIENT - AFFILIATION U.S. E.P.A. (6) SAND SPRINGS FILE  
DESCRIPTION UPDATED WORK PLAN - INCINERATION/SOLIDIF.  
NUMBER OF PAGES 3  
DOCUMENT NUMBER

DOCUMENT DATE 06/29/87  
DOCUMENT TYPE COVER LETTER/SAMPLE ANALYSES FOR WELLS  
ORIGINATOR LISA LYHANE - ENVIRONMENTAL ENGINEER  
ORIGINATOR - AFFILIATION U.S. E.P.A. SUPERFUND PROGRAM/SOLID WASTE DIV.  
RECIPIENT PAUL SIEMINSKI  
RECIPIENT - AFFILIATION U.S. E.P.A. REGION VI  
DESCRIPTION SAMPLE ANALYSIS FOR PHASE II MONITOR WELLS  
NUMBER OF PAGES 43  
DOCUMENT NUMBER

DOCUMENT DATE 06/30/87  
DOCUMENT TYPE MEMORANDUM  
ORIGINATOR RAGAN BROYLES, CHIEF  
ORIGINATOR - AFFILIATION U.S. E.P.A. REGION VI (6T-AS)  
RECIPIENT STEVE GILREIN, CHIEF  
RECIPIENT - AFFILIATION U.S. E.P.A. REGION VI (6H-SA)  
DESCRIPTION SOLIDIFICATION PROCESS AIR MONITORING  
NUMBER OF PAGES 2  
DOCUMENT NUMBER

DOCUMENT DATE 06/30/87  
DOCUMENT TYPE MEMORANDUM  
ORIGINATOR RAGAN BROYLES, CHIEF  
ORIGINATOR - AFFILIATION U.S. E.P.A. - STATE PROGRAMS SECTION  
RECIPIENT STEVE GILREIN, CHIEF  
RECIPIENT - AFFILIATION U.S. E.P.A. - ALONM REMEDIAL SECTION  
DESCRIPTION AIR MONITORING METHODS  
NUMBER OF PAGES 2  
DOCUMENT NUMBER

JOB NAME: SAND SPRINGS PETRO-CHEMICAL COMPLEX  
JOB NUMBER: OKD980748446

DOCUMENT DATE 07/08/87  
DOCUMENT TYPE RESEARCH ARTICLE  
ORIGINATOR PAUL MARSDEN, ET AL  
ORIGINATOR - AFFILIATION S-CUBED  
RECIPIENT U.S. E.P.A. REGION VI  
RECIPIENT - AFFILIATION  
DESCRIPTION "MODIFICATION OF THE TCLP..."  
NUMBER OF PAGES 8  
DOCUMENT NUMBER

DOCUMENT DATE 07/15/87  
DOCUMENT TYPE INTERIM REPORT  
ORIGINATOR ARCO PETROLEUM PRODUCTS COMPANY  
ORIGINATOR - AFFILIATION  
RECIPIENT U.S. E.P.A. (6) SAND SPRINGS FILE  
RECIPIENT - AFFILIATION  
DESCRIPTION ACID SLUDGE TREATABILITY EVALUATIONS  
NUMBER OF PAGES 486  
DOCUMENT NUMBER

DOCUMENT DATE 08/04/87  
DOCUMENT TYPE LETTER  
ORIGINATOR JERRY CLEVELAND - ASSISTANT DIRECTOR  
ORIGINATOR - AFFILIATION TULSA CITY - COUNTY HEALTH DEPARTMENT  
RECIPIENT CARL EDLUND, CHIEF  
RECIPIENT - AFFILIATION U.S. E.P.A. (6) SUPERFUND PROGRAMS  
DESCRIPTION SUPPORTS SOLIDIFICATION  
NUMBER OF PAGES 1  
DOCUMENT NUMBER

DOCUMENT DATE 08/04/87  
DOCUMENT TYPE LETTER/ATTACHMENT  
ORIGINATOR REEVES D. INGOLD  
ORIGINATOR - AFFILIATION CRESTWOOD DISTRIBUTORS, INC.  
RECIPIENT DENNIS HREBEC  
RECIPIENT - AFFILIATION OKLAHOMA STATE DEPARTMENT OF HEALTH  
DESCRIPTION SUMMARY OF TREATMENT OF SAMPLES  
NUMBER OF PAGES 7  
DOCUMENT NUMBER

JOB NAME: SAND SPRINGS PETRO-CHEMICAL COMPLEX  
JOB NUMBER: OKD980748446

DOCUMENT DATE 08/04/87  
DOCUMENT TYPE PUBLIC MEETING TRANSCRIPT  
ORIGINATOR ANN HART - CERTIFIED SHORTHAND REPORTER  
ORIGINATOR - AFFILIATION  
RECIPIENT U.S. E.P.A. (6) SAND SPRINGS FILE  
RECIPIENT - AFFILIATION  
DESCRIPTION TRANSCRIPT  
NUMBER OF PAGES 172  
DOCUMENT NUMBER

JOB NAME: SAND SPRINGS PETRO-CHEMICAL COMPLEX  
JOB NUMBER: OKD980748446

DOCUMENT DATE 08/06/87  
DOCUMENT TYPE LETTER  
ORIGINATOR RUSSELL HARBAUGH, JR. - ATTORNEY  
ORIGINATOR - AFFILIATION LAW OFFICE - CONNER & WINTERS  
RECIPIENT CARL EDLUND, CHIEF  
RECIPIENT - AFFILIATION U.S. E.P.A. (6) SUPERFUND PROGRAMS  
DESCRIPTION COMMENTS RE: ROD  
NUMBER OF PAGES 1  
DOCUMENT NUMBER

DOCUMENT DATE 08/07/87  
DOCUMENT TYPE LETTER  
ORIGINATOR R. J. MORRIS - SR. STAFF ENGINEER  
ORIGINATOR - AFFILIATION CHEMLINK PETROLEUM  
RECIPIENT CARL EDLUND, CHIEF  
RECIPIENT - AFFILIATION U.S. E.P.A. (6) SUPERFUND PROGRAMS  
DESCRIPTION COMMENTS RE: ROD  
NUMBER OF PAGES 1  
DOCUMENT NUMBER

JOB NAME: SAND SPRINGS PETRO-CHEMICAL COMPLEX  
JOB NUMBER: OKD980748446

DOCUMENT DATE 08/10/87  
DOCUMENT TYPE COVER LETTER/ATTACHMENTS  
ORIGINATOR LISA LYHANE - ENVIRONMENTAL ENGINEER  
ORIGINATOR - AFFILIATION SUPERFUND PROGRAM/SOLID WASTE DIVISION/U.S. E.P.A.  
RECIPIENT PAUL SIEMINSKI  
RECIPIENT - AFFILIATION U.S. E.P.A. REGION VI  
DESCRIPTION MAP AND SAMPLE RESULTS  
NUMBER OF PAGES 83  
DOCUMENT NUMBER



DOCUMENT DATE 08/12/87  
DOCUMENT TYPE LETTER  
ORIGINATOR WAYNE HILLIN - ATTORNEY  
ORIGINATOR - AFFILIATION RESOURCES CONSERVATION COMPANY  
RECIPIENT JN. MATHES & ASSOC., INC.  
RECIPIENT - AFFILIATION  
DESCRIPTION ESTIMATED COST CLEANUP REMEDY  
NUMBER OF PAGES 4  
DOCUMENT NUMBER

DOCUMENT DATE 08/12/87  
DOCUMENT TYPE LETTER  
ORIGINATOR FRANK SMITH - ENVIRONMENTAL ENGINEER  
ORIGINATOR - AFFILIATION BURGESS-NORTON MANUFACTURING  
COMPANY  
RECIPIENT AL DAVIS, DIRECTOR (HWD)  
RECIPIENT - AFFILIATION U.S. E.P.A. (6)  
DESCRIPTION PUBLIC HEARING 08/04/87  
NUMBER OF PAGES 3  
DOCUMENT NUMBER

JOB NAME: SAND SPRINGS PETRO-CHEMICAL COMPLEX  
JOB NUMBER: OKD980748446

DOCUMENT DATE 08/13/87  
DOCUMENT TYPE COVER LETTER/REPORT  
ORIGINATOR LISA LYHANE - ENVIRONMENTAL ENGINEER  
ORIGINATOR - AFFILIATION U.S. E.P.A. SUPERFUND PROGRAM  
RECIPIENT PAUL SIEMINSKI  
RECIPIENT - AFFILIATION U.S. E.P.A.  
DESCRIPTION COVER LETTER/DRAFT RI REPORT  
NUMBER OF PAGES 114  
DOCUMENT NUMBER

DOCUMENT DATE 08/14/87  
DOCUMENT TYPE LETTER  
ORIGINATOR M. F. REECE - ASSISTANT DIRECTOR  
ORIGINATOR - AFFILIATION TULSA CITY -COUNTY HEALTH DEPARTMENT  
RECIPIENT CARL EDLUND, CHIEF  
RECIPIENT - AFFILIATION U.S. E.P.A. (6) SUPERFUND PROGRAMS  
DESCRIPTION COMMENTS RE: ROD  
NUMBER OF PAGES 2  
DOCUMENT NUMBER

DOCUMENT DATE 08/14/87  
DOCUMENT TYPE LETTER  
ORIGINATOR CHAS. SCOTT - ACTING FIELD SUPERVISOR  
ORIGINATOR - AFFILIATION U.S. DEPARTMENT OF INTERIOR  
- FISH/WILDLIFE SERV.  
RECIPIENT CARL EDLUND, CHIEF  
RECIPIENT - AFFILIATION U.S. E.P.A. (6) SUPERFUND PROGRAMS  
DESCRIPTION PRELIMINARY COMMENTS RE:  
COMPLETED STUDIES  
NUMBER OF PAGES 2  
DOCUMENT NUMBER

DOCUMENT DATE 08/18/87  
DOCUMENT TYPE LETTER  
ORIGINATOR STEVEN P. CASE - ATTORNEY  
ORIGINATOR - AFFILIATION LAW FIRM - MCGRATH, NORTH, ET AL  
RECIPIENT JULIE BOZICH - COMPLIANCE SEC.  
RECIPIENT - AFFILIATION E.P.A. (6H-EC)  
DESCRIPTION COMMENTS RE: FS REPORT - OPERABLE UNIT  
NUMBER OF PAGES 5  
DOCUMENT NUMBER

JOB NAME: SAND SPRINGS PETRO-CHEMICAL COMPLEX  
JOB NUMBER: OKD980748446

DOCUMENT DATE 08/18/87  
DOCUMENT TYPE LETTER  
ORIGINATOR JOEL BURCAT - ATTORNEY  
ORIGINATOR - AFFILIATION LAW FIRM - RHOADS & SINON  
RECIPIENT CARL EDLUND, CHIEF  
RECIPIENT - AFFILIATION U.S. E.P.A. (6) SUPERFUND PROGRAMS  
DESCRIPTION PUBLIC COMMENTS RE: RI/FS  
NUMBER OF PAGES 2  
DOCUMENT NUMBER

DOCUMENT DATE 08/18/87  
DOCUMENT TYPE LETTER  
ORIGINATOR L. R. DOSS  
ORIGINATOR - AFFILIATION CITIZEN - SAND SPRINGS, OKLAHOMA  
RECIPIENT CARL EDLUND, CHIEF  
RECIPIENT - AFFILIATION U.S. E.P.A. (6) SUPERFUND PROGRAMS  
DESCRIPTION COMMENTS RE: CLEANUP  
NUMBER OF PAGES 1  
DOCUMENT NUMBER

DOCUMENT DATE 08/21/87  
DOCUMENT TYPE LAB RESULTS  
ORIGINATOR EDWIN BARTH - ENVIRONMENTAL ENGINEER  
ORIGINATOR - AFFILIATION U.S. E.P.A. (WASHINGTON, D.C.)  
RECIPIENT PAUL SIEMINSKI - RPM  
RECIPIENT - AFFILIATION U.S. E.P.A. REGION VI  
DESCRIPTION PILOT WORK  
NUMBER OF PAGES 8  
DOCUMENT NUMBER

DOCUMENT DATE 08/21/87  
DOCUMENT TYPE MEMORANDUM  
ORIGINATOR EDWIN F. BARTH - ENVIRONMENTAL ENGINEER  
ORIGINATOR - AFFILIATION U.S. E.P.A. - REMEDIAL ACTION STAFF  
RECIPIENT PAUL SIEMINSKI, RPM - REGION VI  
RECIPIENT - AFFILIATION U.S. E.P.A.  
DESCRIPTION SUMMARY OF SOLIDIFIED MATERIALS TESTS  
NUMBER OF PAGES 8  
DOCUMENT NUMBER

JOB NAME: SAND SPRINGS PETRO-CHEMICAL COMPLEX  
JOB NUMBER: OKD980748446

DOCUMENT DATE 08/24/87  
DOCUMENT TYPE MEMORANDUM/ATTACHMENTS  
ORIGINATOR ALLYN M. DAVIS, DIRECTOR  
ORIGINATOR - AFFILIATION U.S. E.P.A. REGION VI (6H)  
RECIPIENT WALTER KOVALICK, DEPUTY DIRECTOR  
RECIPIENT - AFFILIATION U.S. E.P.A. WASHINGTON (WH-548)  
DESCRIPTION FOLLOW-UP TO ROD BRIEFING  
NUMBER OF PAGES 5  
DOCUMENT NUMBER

DOCUMENT DATE 08/24/87  
DOCUMENT TYPE MEMORANDUM  
ORIGINATOR ALLYN DAVIS, DIRECTOR  
ORIGINATOR - AFFILIATION U.S. E.P.A. HWMGTD  
RECIPIENT WALTER KOVALICK, DEPUTY DIRECTOR  
RECIPIENT - AFFILIATION U.S. E.P.A.  
DESCRIPTION RECORD OF DECISION (ROD) BRIEFING  
NUMBER OF PAGES 5  
DOCUMENT NUMBER

DOCUMENT DATE 08/25/87  
DOCUMENT TYPE LETTER  
ORIGINATOR GEORGE HOOPER, MAYOR  
ORIGINATOR - AFFILIATION CITY OF SAND SPRINGS  
RECIPIENT ROBERT LAYTON, JR. - REGIONAL AD.  
RECIPIENT - AFFILIATION U.S. E.P.A. REGION VI  
DESCRIPTION RESPONSE TO ROD  
NUMBER OF PAGES 3  
DOCUMENT NUMBER

DOCUMENT DATE 08/27/87  
DOCUMENT TYPE LETTER/ENCLOSURES  
ORIGINATOR R. FENTON ROOD, DIRECTOR  
ORIGINATOR - AFFILIATION OKLAHOMA STATE DEPARTMENT OF HEALTH  
RECIPIENT CARL EDLUND, CHIEF  
RECIPIENT - AFFILIATION SUPERFUND PROGRAMS BRANCH  
DESCRIPTION COMMENTS RE: REMEDY  
NUMBER OF PAGES 9  
DOCUMENT NUMBER

JOB NAME: SAND SPRINGS PETRO-CHEMICAL COMPLEX  
JOB NUMBER: OKD980748446

DOCUMENT DATE 08/27/87  
DOCUMENT TYPE LETTER  
ORIGINATOR STANLEY REIGEL - ATTORNEY  
ORIGINATOR - AFFILIATION LAW FIRM - MORRISON, HECKER, ET AL  
RECIPIENT JULIE BOZICH  
RECIPIENT - AFFILIATION U.S. E.P.A. (6) COMPLIANCE SECTION  
DESCRIPTION RESPONSE TO 07/15/87 U.S. E.P.A. LETTER  
NUMBER OF PAGES 3  
DOCUMENT NUMBER

DOCUMENT DATE 08/27/87  
DOCUMENT TYPE LETTER  
ORIGINATOR M. LOUISE MCFALL - CORP. COUNSEL  
ORIGINATOR - AFFILIATION SCRIVNER, INC.  
RECIPIENT CARL EDLUND, CHIEF  
RECIPIENT - AFFILIATION U.S. E.P.A. (6) SUPERFUND PROGRAMS  
DESCRIPTION CONSIDERATION OF ALL REMEDIES  
NUMBER OF PAGES 1  
DOCUMENT NUMBER

DOCUMENT DATE 08/28/87  
DOCUMENT TYPE LETTER  
ORIGINATOR TIMOTHY L. OLSEN  
ORIGINATOR - AFFILIATION SAVAGE, O'DONNELL, SCOTT, ET AL  
RECIPIENT JULIE L. BOZICH  
RECIPIENT - AFFILIATION U.S. E.P.A. REGION VI  
DESCRIPTION PUBLIC COMMENT BY ADVANCE CHEMICAL DIST., INC.  
NUMBER OF PAGES 4  
DOCUMENT NUMBER

DOCUMENT DATE 08/31/87  
DOCUMENT TYPE LETTER  
ORIGINATOR VINCENT A. MIETLICKI - ATTORNEY  
ORIGINATOR - AFFILIATION DESOTO, INC.  
RECIPIENT CARL EDLUND, CHIEF  
RECIPIENT - AFFILIATION U.S. E.P.A. (6) SUPERFUND PROGRAM  
DESCRIPTION COMMENTS RE: RI/FS  
NUMBER OF PAGES 4  
DOCUMENT NUMBER

JOB NAME: SAND SPRINGS PETRO-CHEMICAL COMPLEX  
JOB NUMBER: OKD980748446

DOCUMENT DATE 08/31/87  
DOCUMENT TYPE LETTER  
ORIGINATOR MATTHEW G. LIVINGOOD - ATTORNEY  
ORIGINATOR - AFFILIATION LAW FIRM - HALL, ESTILL, HARDWICK, ET AL  
RECIPIENT CARL EDLUND, CHIEF  
RECIPIENT - AFFILIATION U.S. E.P.A. (6) SUPERFUND PROGRAM  
DESCRIPTION COMMENTS RE: RI/FS  
NUMBER OF PAGES 9  
DOCUMENT NUMBER

DOCUMENT DATE 08/31/87  
DOCUMENT TYPE REPORT  
ORIGINATOR ARCO PETROLEUM PRODUCTS COMPANY  
ORIGINATOR - AFFILIATION CONTRACTOR  
RECIPIENT U.S. E.P.A. REGION VI  
RECIPIENT - AFFILIATION  
DESCRIPTION REVIEW OF OPERABLE UNIT 75  
NUMBER OF PAGES 33  
DOCUMENT NUMBER

DOCUMENT DATE 08/31/87  
DOCUMENT TYPE LETTER  
ORIGINATOR LINDA GILL TAYLOR - ATTORNEY  
ORIGINATOR - AFFILIATION LAW FIRM - GAGE & TUCKER  
RECIPIENT CARL EDLUND, CHIEF  
RECIPIENT - AFFILIATION U.S. E.P.A. REGION VI SUPERFUND  
DESCRIPTION COMMENT RE: SELECTION - RESPONSE ACTION  
NUMBER OF PAGES 3  
DOCUMENT NUMBER

DOCUMENT DATE 08/31/87  
DOCUMENT TYPE LETTER/ATTACHMENT  
ORIGINATOR SHERRY D. BLUM  
ORIGINATOR - AFFILIATION TERRA RESOURCE MANAGEMENT, INC.  
RECIPIENT DENNIS REBECK/FENTON ROOD  
RECIPIENT - AFFILIATION  
DESCRIPTION REPORT ADDENDUM  
NUMBER OF PAGES 3  
DOCUMENT NUMBER

JOB NAME: SAND SPRINGS PETRO-CHEMICAL COMPLEX  
JOB NUMBER: OKD980748446

DOCUMENT DATE 08/31/87  
DOCUMENT TYPE LETTER  
ORIGINATOR MICHAEL D. GRAVES  
ORIGINATOR - AFFILIATION HALL, ESTILL, HARDWICK, ET AL  
RECIPIENT CARL EDLUND, CHIEF  
RECIPIENT - AFFILIATION U.S. E.P.A. REGION VI  
DESCRIPTION COMMENTS UPON THE RI/FS  
NUMBER OF PAGES 9  
DOCUMENT NUMBER

DOCUMENT DATE 08/31/87  
DOCUMENT TYPE REPORT  
ORIGINATOR RIVKIN, RADLER , ET AL/MITTELHAUSER, INC.  
ORIGINATOR - AFFILIATION LAW FIRM/CONSULTANTS  
RECIPIENT CARL EDLUND, CHIEF  
RECIPIENT - AFFILIATION U.S. E.P.A. (6) SUPERFUND PROGRAMS  
DESCRIPTION COMMENTS RE: PROPOSED FS (OPERABLE UNIT)  
NUMBER OF PAGES 63  
DOCUMENT NUMBER

DOCUMENT DATE 08/31/87  
DOCUMENT TYPE LETTER/ENCLOSURE  
ORIGINATOR JERRY L. RIDDLES, CORP. DIRECTOR  
ORIGINATOR - AFFILIATION TRINITY INDUSTRIES, INC.  
RECIPIENT CARL EDLUND, CHIEF  
RECIPIENT - AFFILIATION U.S. E.P.A. (6) SUPERFUND PROGRAM  
DESCRIPTION COMMENTS RE: RI/FS  
NUMBER OF PAGES 5  
DOCUMENT NUMBER

DOCUMENT DATE 08/31/87  
DOCUMENT TYPE LETTER  
ORIGINATOR PAUL MCGOUGH - VICE PRESIDENT  
ORIGINATOR - AFFILIATION RESOURCES CONSERVATION COMPANY  
RECIPIENT CARL EDLUND, CHIEF  
RECIPIENT - AFFILIATION U.S. E.P.A. (6) SUPERFUND PROGRAM  
DESCRIPTION OPERABLE UNIT FS  
NUMBER OF PAGES 16  
DOCUMENT NUMBER

JOB NAME: SAND SPRINGS PETRO-CHEMICAL COMPLEX  
JOB NUMBER: OKD980748446

DOCUMENT DATE 08/31/87  
DOCUMENT TYPE LETTER  
ORIGINATOR JN. SELPH - CO. COMMISSIONER  
ORIGINATOR - AFFILIATION BOARD OF CO. COMMISSIONERS  
RECIPIENT CARL EDLUND, CHIEF  
RECIPIENT - AFFILIATION U.S. E.P.A. (6) SUPERFUND PROGRAMS  
DESCRIPTION RESPONSE TO ROD  
NUMBER OF PAGES 2  
DOCUMENT NUMBER

DOCUMENT DATE 08/31/87  
DOCUMENT TYPE REPORT (FINAL)  
ORIGINATOR ARCO PETROLEUM PRODUCTS COMPANY  
ORIGINATOR - AFFILIATION  
RECIPIENT U.S. E.P.A. - REGION VI  
RECIPIENT - AFFILIATION  
DESCRIPTION ACID SLUDGE TREATABILITY EVALUATIONS  
NUMBER OF PAGES 678  
DOCUMENT NUMBER

DOCUMENT DATE 09/01/87  
DOCUMENT TYPE LETTER  
ORIGINATOR JOE A. WILLIAMS, PRESIDENT  
ORIGINATOR - AFFILIATION SAND SPRINGS HOME  
RECIPIENT JULIE BOZICH  
RECIPIENT - AFFILIATION U.S. E.P.A. (6) COMPLIANCE SECTION  
DESCRIPTION RESPONSE TO BOZICH LETTER (07/15/87)  
NUMBER OF PAGES 4  
DOCUMENT NUMBER

DOCUMENT DATE 09/01/87  
DOCUMENT TYPE LETTER  
ORIGINATOR ROSEANN C. STEVENSON - MANAGER  
ORIGINATOR - AFFILIATION ARCO PETROLEUM PRODUCT COMPANY  
RECIPIENT ALLYN M. DAVIS, DIRECTOR  
RECIPIENT - AFFILIATION U.S. E.P.A. (6) SAND SPRINGS FILE  
DESCRIPTION PROPOSAL TO PERFORM RD/RA  
NUMBER OF PAGES 3  
DOCUMENT NUMBER

JOB NAME: SAND SPRINGS PETRO-CHEMICAL COMPLEX  
JOB NUMBER: OKD980748446

DOCUMENT DATE 09/01/87  
DOCUMENT TYPE LETTER  
ORIGINATOR THOMAS A. WAITE - COUNSEL  
ORIGINATOR - AFFILIATION BOEING CO. - OFFICE GENERAL COUNSEL  
RECIPIENT CARL EDLUND, CHIEF  
RECIPIENT - AFFILIATION U.S. E.P.A. REGION VI SUPERFUND PROGRAM  
DESCRIPTION RI/FS - FIRST OPERABLE UNIT  
NUMBER OF PAGES 2  
DOCUMENT NUMBER

DOCUMENT DATE 09/01/87  
DOCUMENT TYPE LETTER  
ORIGINATOR MARK D. EDIE - STAFF ATTORNEY  
ORIGINATOR - AFFILIATION FORD CO. - OFFICE OF GENERAL COUNSEL  
RECIPIENT CARL EDLUND, CHIEF  
RECIPIENT - AFFILIATION U.S. E.P.A. (6) SUPERFUND PROGRAM  
DESCRIPTION PUBLIC COMMENT PERIOD RE: RI/FS  
NUMBER OF PAGES 2  
DOCUMENT NUMBER

DOCUMENT DATE 09/01/87  
DOCUMENT TYPE LETTER  
ORIGINATOR R. FENTON ROOD, DIRECTOR  
ORIGINATOR - AFFILIATION STATE OF OKLAHOMA HEALTH DEPARTMENT  
RECIPIENT CARL EDLUND, CHIEF (6H-S)  
RECIPIENT - AFFILIATION U.S. E.P.A. (6) SUPERFUND PROGRAM  
DESCRIPTION PUBLIC COMMENTS RE: REMEDY  
NUMBER OF PAGES 2  
DOCUMENT NUMBER

DOCUMENT DATE 09/01/87  
DOCUMENT TYPE LETTER/ATTACHMENT  
ORIGINATOR LISA SEGLIN/DAVID STRINGHAM  
ORIGINATOR - AFFILIATION WASTE MANAGEMENT NORTH AMERICA, INC.  
RECIPIENT CARL EDLUND, CHIEF  
RECIPIENT - AFFILIATION U.S. E.P.A. (6) SUPERFUND PROGRAMS  
DESCRIPTION COMMENTS RE: RI/FS  
NUMBER OF PAGES 11  
DOCUMENT NUMBER



JOB NAME: SAND SPRINGS PETRO-CHEMICAL COMPLEX  
JOB NUMBER: OKD980748446

DOCUMENT DATE 09/01/87  
DOCUMENT TYPE LETTER  
ORIGINATOR MARK D. EDIE - STAFF ATTORNEY  
ORIGINATOR - AFFILIATION OFFICE OF GENERAL COUNSEL - FORD CO.  
RECIPIENT CARL EDLUND, CHIEF  
RECIPIENT - AFFILIATION U.S. E.P.A. (6) SUPERFUND PROGRAMS  
DESCRIPTION PUBLIC COMMENT PERIOD - RI/FS  
NUMBER OF PAGES 2  
DOCUMENT NUMBER

DOCUMENT DATE 09/03/87  
DOCUMENT TYPE LETTER  
ORIGINATOR D. H. SMITH  
ORIGINATOR - AFFILIATION  
RECIPIENT ALLYN M. DAVIS - DIRECTOR  
RECIPIENT - AFFILIATION U.S. E.P.A. (6) SAND SPRINGS  
DESCRIPTION PROPOSAL TO PERFORM RD/RA  
NUMBER OF PAGES 3  
DOCUMENT NUMBER

DOCUMENT DATE 09/05/87  
DOCUMENT TYPE LETTER  
ORIGINATOR LONNIE N. BOBO  
ORIGINATOR - AFFILIATION CITIZEN - EDMOND, OKLAHOMA  
RECIPIENT CARL EDLUND, CHIEF  
RECIPIENT - AFFILIATION U.S. E.P.A. REGION VI - SUPERFUND  
DESCRIPTION COMMENTS RE: PUBLIC MEETING  
NUMBER OF PAGES 2  
DOCUMENT NUMBER

DOCUMENT DATE 09/10/87  
DOCUMENT TYPE LETTER  
ORIGINATOR JERRY LASKER - EXECUTIVE DIRECTOR  
ORIGINATOR - AFFILIATION INDIAN NATIONS COUNCIL OF GOVERNMENTS  
RECIPIENT ROBERT LAYTON - REGIONAL ADMIN.  
RECIPIENT - AFFILIATION U.S. E.P.A. REGION VI  
DESCRIPTION COMMENTS RE: ROD  
NUMBER OF PAGES 3  
DOCUMENT NUMBER.

APPENDIX E

OKLAHOMA STATE  
DEPARTMENT OF HEALTH

SEPTEMBER 16, 1987

ALLYN M. DAVIS, DIRECTOR  
HAZARDOUS WASTE MANAGEMENT DIVISION  
U.S. ENVIRONMENTAL PROTECTION AGENCY  
REGION VI  
1445 ROSS AVENUE  
DALLAS, TEXAS 75202-2733

DEAR DR. DAVIS:

THE OKLAHOMA STATE DEPARTMENT OF HEALTH (OSDH) DOES NOT CONCUR WITH THE ALTERNATIVE OF ON-SITE INCINERATION CHOSEN BY THE REGION VI ENVIRONMENTAL PROTECTION AGENCY FOR THE SAND SPRINGS PETROCHEMICAL COMPLEX SUPERFUND SITE.

AS STATED IN THE PUBLIC MEETING AND THROUGH WRITTEN COMMENTS, THE OSDH PREFERS A SOLIDIFICATION PROCESS FOR THE ACID SLUDGE WASTES WHICH WILL BE MORE PROTECTIVE OF PUBLIC HEALTH THAN INCINERATION. INCLUDED IN THOSE COMMENTS IS THE RATIONALE FOR OUR PREFERENCE AND AN EXPLANATION OF HOW SOLIDIFICATION MEETS THE REQUIREMENTS OF THE NCP AND CERCLA AS AMENDED BY SARA. PLEASE REFER TO OUR PREVIOUS FORMAL COMMENTS FOR THE APPROPRIATE EXPLANATIONS AND RATIONALE.

ENCLOSED ARE OSDH COMMENTS ON THE DRAFT RECORD OF DECISION RECEIVED ON SEPTEMBER 8, 1987.

SINCERELY,

MARK S. COLEMAN, DEPUTY COMMISSIONER  
FOR ENVIRONMENTAL HEALTH SERVICES

ENCLOSURE.