EPA/ROD/R05-85/010
1985

EPA Superfund
Record of Decision:

BYRON SALVAGE YARD
EPA ID: ILD010236230
OU 01
BYRON, IL
03/13/1985

BYRON/JOHNSON SALVAGE YARD, BYRON, ILLINOIS.

#DR
DOCUMENTS REVIEWED:

I HAVE REVIEWED THE FOLLOWING DOCUMENTS DESCRIBING THE ANALYSIS OF THE COST-EFFECTIVENESS OF THE REMEDIAL ACTION ALTERNATIVES FOR THE BYRON/JOHNSON SALVAGE YARD, BYRON, ILLINOIS:

- REMEDIAL INVESTIGATION, FEASIBILITY ASSESSMENT FOR REMEDIAL CLEANUP AT BYRON/JOHNSON SITE, JUNE 1984
- FEASIBILITY STUDY, REMEDIAL ACTION BYRON/JOHNSON SITE, JUNE 1984
- BYRON SALVAGE YARD REMEDIAL ALTERNATIVE COST ESTIMATES, OCTOBER 1984
- SUMMARY OF REMEDIAL ALTERNATIVE SELECTION, BYRON/JOHNSON SALVAGE YARD, BYRON, ILLINOIS, MARCH 1985
- COMMUNITY RELATIONS RESPONSIVENESS SUMMARY FOR BYRON/JOHNSON SALVAGE YARD, BYRON, ILLINOIS, OCTOBER 1984.

#DE
DECLARATIONS:

CONSISTENT WITH THE COMPREHENSIVE ENVIRONMENTAL RESPONSE, COMPENSATION, AND LIABILITY ACT OF 1980 (CERCLA), AND THE NATIONAL OIL AND HAZARDOUS SUBSTANCES CONTINGENCY PLAN (NCP), 40 CFR, PART 300, I HAVE DETERMINED THAT TAKING AN OFF-SITE DISPOSAL ACTION AT THRESHOLD LEVEL IS A COST-EFFECTIVE REMEDIAL ACTION THAT PROVIDES ADEQUATE PROTECTION OF PUBLIC HEALTH, WELFARE, AND THE ENVIRONMENT. THE STATE OF ILLINOIS HAS BEEN CONSULTED AND AGREES WITH THE APPROVED REMEDIAL ACTION. IN ADDITION, THE ACTION WILL REQUIRE INTERIM FUTURE OPERATION AND MAINTENANCE ACTIVITIES TO ENSURE THE CONTINUED EFFECTIVENESS OF THE REMEDY UNTIL THE MODIFIED REMEDIAL INVESTIGATION/FEASIBILITY STUDY THAT ADDRESSES COMPLETE SOIL AND AQUIFER CLEANUP IS COMPLETED.

I HAVE ALSO DETERMINED THAT THE ACTION HAS BEEN APPROVED FOR FUNDING FROM THE HAZARDOUS SUBSTANCE RESPONSE FUND.

MARCH 13, 1985
DATE

VALDAS V. ADAMKUS
REGIONAL ADMINISTRATOR
UNITED STATES ENVIRONMENTAL
PROTECTION AGENCY REGION V.

SUMMARY OF REMEDIAL ALTERNATIVE SELECTION
BYRON (JOHNSON) SALVAGE YARD
BYRON, ILLINOIS

#SLD
SITE LOCATION AND DESCRIPTION:

THE BYRON (JOHNSON) SALVAGE YARD SITE CONSISTS OF APPROXIMATELY 20 ACRES OF WOODED LAND LOCATED ABOUT 4 MILES SOUTHWEST OF BYRON, ILLINOIS AND ABOUT 10 MILES SOUTHWEST OF ROCKFORD, ILLINOIS. GENERAL DOMESTIC REFUSE AND INDUSTRIAL DRUMS HAVE BEEN COLLECTED AND SOMETIMES BURIED ON-SITE. THE SITE IS PRESENTLY INACTIVE.

THE SITE IS IN A RURAL, PRIMARILY AGRICULTURAL AREA. THE BYRON (JOHNSON) SALVAGE YARD IS LOCATED IN THE WOODLAND CREEK DRAINAGE BASIN AND IS ON UPLANDS THAT ARE DISSECTED BY SEVERAL SMALL RAVINES TRENDING NORTH AND NORTHEAST. WOODLAND CREEK IS ABOUT TWO AND THREE-QUARTERS MILES LONG AND EMPTIES INTO THE ROCK RIVER. THE HEADWATER OF THE "RAVINE WATERWAY", AN INTERMITTENT TRIBUTARY OF THE SOUTH FORK OF WOODLAND CREEK, LIES WITHIN THE AREA OF THIS SITE. SURFACE ELEVATIONS VARY BETWEEN 740 AND 860 FEET ABOVE MEAN SEA LEVEL.

THE BYRON NUCLEAR POWER PLANT IS SITUATED TO THE IMMEDIATE SOUTHWEST OF THE SITE. THE NUCLEAR POWER PLANT IS UNDER CONSTRUCTION BY THE COMMONWEALTH EDISON COMPANY.

#SH
SITE HISTORY:

THE BYRON (JOHNSON) SALVAGE YARD, FORMERLY CALLED THE JOHNSON SALVAGE YARD, OPERATED DURING THE 1960'S AND EARLY 1970'S AS A SALVAGE YARD AND UNPERMITTED LANDFILL.

THE ILLINOIS ENVIRONMENTAL PROTECTION AGENCY (IEPA) INSPECTED THE SALVAGE YARD FOR THE FIRST TIME ON OCTOBER 23, 1970. SINCE THE EARLY 1970'S THE IEPA HAS CONDUCTED FIELD INSPECTIONS AT THE DIRK FARM, LOCATED WEST OF THE SALVAGE YARD SITE, ACROSS RAZORVILLE ROAD. THIS FARM WAS BOUGHT BY THE COMMONWEALTH EDISON COMPANY (CEC) LATER. THREE DEAD CATTLE WERE FOUND ON THIS PROPERTY IN MAY OF 1974. THE CAUSE OF THEIR DEATH WAS LATER ATTRIBUTED TO CYANIDE POISONING.

SUBSEQUENTLY, THE CEC RETAINED DAMES AND MOORE (DM), A CONSULTING FIRM, TO DETERMINE THE EXTENT OF CONTAMINATION AND TO RECOMMEND REMEDIAL ACTIONS WHICH WERE LATER IMPLEMENTED BY CEC TO REMOVE PRIMARILY CYANIDE IN THE SOILS. DM MADE A DETAILED STUDY IN THE AREA. ALTHOUGH THIS STUDY IS PRINCIPALLY FOR THE DIRK FARM, IT COVERS ALL NEIGHBORING AREAS, TO SOME EXTENT, AND SOME OF THE FINDINGS ARE ALSO APPLICABLE TO THE SALVAGE YARD. DM'S STUDY INDICATED THAT WASTES, CONTAINING LETHAL CONCENTRATIONS OF CYANIDE, ARSENIC, CADMIUM, AND CHROMIUM WERE DUMPED AND/OR BURIED IN CONTAINERS ON AND ADJACENT TO THE CEC PROPERTY, INCLUDING THE SALVAGE YARD. BLOOD TISSUE SAMPLES FROM THE DEAD CATTLE HAD HIGH CONCENTRATIONS OF CYANIDE AND OTHER TOXIC CHEMICALS. IT WAS CONCLUDED THAT LOCAL GROUNDWATER WAS NOT SUBSTANTIALLY CONTAMINATED. ON THE OTHER HAND, SAMPLES FROM WOODLAND CREEK NEAR THE YARD CONTAINED AN EXCESSIVE CONCENTRATION OF CYANIDE AND OTHER TOXIC CHEMICALS.

REPORTEDLY, CYANIDE CONTAINING PLATING WASTES WERE SPRAYED ONTO RAZORVILLE ROAD, THE ROADS IN THE BYRON SALVAGE YARD, AND ONTO THE ROAD IN THE AREA OF MOTORSPORT, INC., LOCATED IMMEDIATELY NORTHEAST OF THE SITE. SUCH WASTES WERE DUMPED INTO THE RAVINES (SOUTH WATERWAY AND WEST WATERWAY) ON THE NORTH AND EAST PARTS OF THE YARD. LIQUID WASTES WERE DUMPED AND BARRELS WERE BURIED BEHIND A MAN-MADE DAM, AND AROUND A BIG TREE NEAR THE SOUTH FENCE OF THE SALVAGE YARD.

IN DM'S REPORT (1974), THE HEAD OF A GULLY ADJACENT TO THE SALVAGE YARD WAS IDENTIFIED AS A MAJOR CONTAMINANT SOURCE, WHICH IS SITUATED ABOUT 900 TO 1,200 FEET TO THE EAST OF RAZORVILLE ROAD. THIS LOCATION APPEARS TO BE THE HEAD OF WEST WATERWAY AND WAS IDENTIFIED ON THE BASIS OF NUMEROUS BARRELS WHICH WERE LYING ON THE GROUND OR PARTIALLY BURIED. IT APPEARS THAT THERE WERE SEVERAL WASTE BURIAL LOCATIONS IN THE YARD.

ON JUNE 10, 1981, THROUGH AUGUST 7, 1981, TEN SURFACE WATER AND THREE GROUNDWATER SAMPLING POINTS WERE USED TO COLLECT A TOTAL OF 101 WATER SAMPLES BY IEPA. SOME OF THESE SAMPLING POINTS ARE IN WATERWAYS IN WHICH THE FLOW IS INTERMITTENT, SUCH AS AFTER HEAVY RAINFALLS. THE RESULT OF THESE SAMPLE ANALYSES SHOW THAT CYANIDE SEEMS TO BE LEACHING FROM THE SALVAGE YARD SITE INTO THE SURFACE AND SUBSURFACE DRAINAGE WAYS OF THE UPLAND AREAS. NO CYANIDE WAS FOUND IN PRIVATE WELLS, HOWEVER, TRICHLOROETHYLENE (TCE) IN CONCENTRATIONS UP TO 710 PPB IN SOME CASES HAS BEEN FOUND IN NEARBY PRIVATE RESIDENTIAL DRINKING WATER WELLS TO THE NORTH AND SOUTH OF THE SITE.

IN 1983 A STATE LEAD COOPERATIVE AGREEMENT WAS SIGNED. A REMEDIAL INVESTIGATION/FEASIBILITY STUDY

(RI/FS) WAS CONDUCTED BY D'APPOLONIA UNDER CONTRACT TO IEPA.

#CSS
CURRENT SITE STATUS:

THE APPROXIMATELY 20-ACRE SITE IS PRESENTLY INACTIVE. GENERAL RUBBLE AND DOMESTIC REFUSE SUCH AS REFRIGERATORS, OLD CARS AND CAR PARTS ARE SCATTERED THROUGHOUT THE SITE. MOST OF THE DRUMS ARE BURIED, BUT SOME SURFACE DRUMS CAN BE NOTED THROUGHOUT THE GENERAL AREA OF THE SITE. MOST OF THESE SURFACE DRUMS APPEAR TO HAVE BEEN BURNED AT ONE TIME. EXPOSED PARTS OF DRUMS CAN BE SEEN.

ACCORDING TO THE RI THAT WAS DONE BY D'APPOLONIA THERE ARE 504 SURFACE DRUMS ON-SITE AND AN ESTIMATED 11,400 BURIED DRUMS. THE CONTAMINANTS IN SOME OF THE DRUMS ARE LEAD, ARSENIC, CYANIDE, HALOGENATED ORGANICS, AND LOW LEVEL PCB'S. SOME OF THE DRUMS ARE NOTED TO BE FLAMMABLE ACCORDING TO THE CLOSED CUP FLASH TEST (UNDER 140 DEGREES FAHRENHEIT).

A SUMMARY OF THE TYPES OF DRUMS IDENTIFIED ON THE SURFACE AND AN ESTIMATE OF THE NATURE OF BURIED DRUMS ARE PRESENTED ON TABLE 1 (SEE PAGE 4). THIS INFORMATION WAS GENERATED BY D'APPOLONIA.

THE ESTIMATES FOR EXCESSIVELY CONTAMINATED SOIL ON-SITE IS APPROXIMATELY 3,600 CUBIC YARDS. THE SOILS ARE CONTAMINATED WITH LEAD, NICKEL, ZINC, CYANIDE, AND ORGANIC HALOGENS ACCORDING TO THE RI REPORT.

TCE AS HIGH AS 710 PPB HAS BEEN FOUND IN SOME OF THE NEARBY RESIDENTIAL WELLS. ALL THE RESIDENTS IN THIS AREA HAVE INDIVIDUAL HOME WATER WELLS SINCE THERE IS NO CLOSE-BY TOWN. THE AFFECTED RESIDENTS ARE PRESENTLY ON BOTTLED WATER SUPPLIES FROM THE U.S. EPA UNDER AN IMMEDIATE REMOVAL STATUS. THE SOURCE OF THE TCE IS NOT CERTAIN AT THIS TIME; HOWEVER, TCE HAS BEEN FOUND IN AT LEAST TWO TEST PIT LOCATIONS ON THE SALVAGE YARD SITE. THE AQUIFER OF CONCERN IS THE GALENA-PLATTEVILLE AND POSSIBLY THE ST. PETER AQUIFER SYSTEMS. MOST OF THE PRIVATE RESIDENCES THAT ARE AFFECTED ARE LOCATED NORTHWEST OF THE SITE. HOWEVER, THERE IS ONE CONTAMINATED WELL THAT IS LOCATED DIRECTLY SOUTH OF THE SITE. THERE APPEARS TO BE A GROUNDWATER DIVIDE ON THE SALVAGE YARD THAT RUNS FROM THE SOUTHEAST TO THE NORTHWEST BENEATH THE SITE, PLUNGING TO THE NORTHWEST. A RI/FS WILL BE CONDUCTED BY CH2M-HILL TO MORE FULLY ADDRESS GROUNDWATER CONTAMINATION. IN ADDITION, THE RI/FS WILL ADDRESS RESIDUAL SOIL CONTAMINATION REMAINING AFTER COMPLETION OF THE ACTION RECOMMENDED IN THIS RECORD OF DECISION AND SUPPLEMENT THE STATE LEAD RI/FS DONE BY D'APPOLONIA.

#ENF
ENFORCEMENT:

STATE ACTIONS:

IN 1974, THE IEPA FILED A COMPLAINT WITH THE ILLINOIS POLLUTION CONTROL BOARD AGAINST OWNERS OF THE SALVAGE YARD, WILFORD E. JOHNSON AND NORMA J. JOHNSON. THE COMPLAINT WAS CONCERNING THE WATER POLLUTION WHICH RESULTED FROM THE WASTE DISPOSAL WORK. THE BASIS FOR THE COMPLAINT WAS FIELD INSPECTIONS, PICTURE TAKING, INTERVIEWS, AND COLLECTION AND ANALYSES OF WASTE, SURFACE WATER, AND GROUNDWATER SAMPLES. THESE SAMPLES WERE COLLECTED UNTIL 1981 BY THE IEPA IN ORDER TO MONITOR THE ENVIRONMENT IN AND AROUND THE SALVAGE YARD. THIS INVESTIGATIVE WORK REVEALED THAT CYANIDE-CONTAINING PLATING WASTE WAS SPRAYED ONTO THE ROADS IN AND AROUND THE SALVAGE YARD, AND THAT PLATING WASTES AND OTHER WASTES WITH OR WITHOUT CONTAINERS WERE DUMPED AND BURIED IN THE AREA OF THE SALVAGE YARD. THESE ACTIVITIES RESULTED IN HIGH CONCENTRATIONS OF CYANIDE AND TOXIC METALS IN SOILS, SURFACE WATER, AND GROUNDWATER WHICH HAVE DECREASED OVER TIME SINCE THE SALVAGE YARD STOPPED OPERATIONS. DESPITE THE IEPA FILED COMPLAINT, THE SITE STILL HAS NOT BEEN CLEANED UP. THE SITE HAS BEEN INACTIVE SINCE 1973.

THE OWNERSHIP OF THE PROPERTY HAS CHANGED IN THE PAST 5 YEARS. MR. WILFORD E. JOHNSON, THE ORIGINAL OWNER OF THE PROPERTY, FAILED TO PAY PROPERTY TAXES, AND THE LAND WAS TRANSFERRED TO OGLE COUNTY. THE COUNTY SOLD THE PROPERTY TO MR. DEAN JOHNSON. MR. DEAN JOHNSON SOLD A PORTION OF THE PROPERTY TO CEC. IN NOVEMBER OF 1980, MR. DEAN JOHNSON SOLD THE REMAINING PROPERTY TO MR. BILL SCHNABEL, THE PRESENT OWNER OF THE WEST 7.5 ACRES OF THE PROPERTY. MR. WILLIAM MOSLEY OWNS THE EAST 2.5 ACRES OF THE PROPERTY. MR. DELOS BLANCHARD, WHO IN 1984 WAS PLACED IN A NURSING HOME, OWNS THE SOUTHERN 10 ACRES OF THE SITE.

FEDERAL ACTIONS:

AT THE INITIATION OF THE RI/FS AND WITH IEPA CONCURRENCE, NOTICE LETTERS WERE SENT BY THE U.S. EPA TO THE PRESENT AND PAST OPERATORS AND OWNERS OF THE SITE BY CERTIFIED MAIL. NO NEGOTIATIONS HAVE BEEN SCHEDULED OR ARE ANTICIPATED AS A RESULT OF THESE NOTICES.

SINCE THE COMPLETION OF THE RI/FS, IT WAS NOTED THAT SOME OF THE WASTES WERE ON THE CEC PROPERTY.

ALSO, THE IEPA HAS SENT TO U.S. EPA SOME DOCUMENTATION WHICH INDICATES THAT THE COMPANIES OF ROTO-ROOTER AND NATIONAL LOCK WERE POTENTIAL DISPOSERS OF WASTE PRODUCTS AT THE SALVAGE YARD.

PRIOR TO PROVIDING BOTTLED DRINKING WATER TO THE NEARBY RESIDENTS, THE LAND OWNERS AND THE ABOVE MENTIONED COMPANIES WERE VERBALLY NOTIFIED BY THE U.S. EPA. THE VERBAL NOTIFICATION WAS GIVEN TO PERMIT THE POTENTIALLY RESPONSIBLE PARTIES TO INITIATE THIS IMMEDIATE REMOVAL ACTION. WRITTEN LETTERS WERE SENT BY REGIONAL COUNSEL WHICH RE-STATED TO THE POTENTIALLY RESPONSIBLE PARTIES WHAT WAS VERBALLY READ TO THEM OVER THE TELEPHONE.

PRIOR TO REMEDIAL DESIGN/REMEDIAL ACTION AND WITH IEPA CONCURRENCE, NOTICE LETTERS WERE SENT TO THE PRESENT AND PAST OWNERS AND OPERATORS OF THE SITE. LETTERS WERE ALSO SENT TO CEC, ROTO-ROOTER, AND NATIONAL LOCK. SETTLEMENT IS NOT ANTICIPATED. THE NOTIFIED PARTIES HAVE NOT EXPRESSED ANY INTEREST IN NEGOTIATING OR SETTLING THIS MATTER. MANY OF THE NOTIFIED PARTIES APPARENTLY HAVE INSUFFICIENT FUNDS TO PERFORM THE CLEANUP. OTHERS APPARENTLY FEEL THAT THEY ARE NOT RESPONSIBLE FOR THE CLEANUP OR DO NOT CHOOSE TO PARTICIPATE AT THE PRESENT TIME. BASED ON THIS ASSESSMENT OF THE PARTIES, NO ADMINISTRATIVE ORDERS WILL BE SENT BY REGIONAL COUNSEL.

#AE
ALTERNATIVES EVALUATION:

REMEDIAL OBJECTIVES:

IN ACCORDANCE WITH THE NATIONAL OIL AND HAZARDOUS SUBSTANCES CONTINGENCY PLAN (NCP), 40 CFR, SECTION 300.68, THE OBJECTIVE OF THE D'APPOLONIA RI/FS WAS TO IDENTIFY AND EVALUATE REMEDIAL ACTION ALTERNATIVES AND TO PROVIDE INFORMATION NECESSARY TO SELECT THE MOST APPROPRIATE, COST-EFFECTIVE, AND ENVIRONMENTALLY SAFE METHOD(S) FOR THE PREVENTION OF FURTHER CONTAMINATION AND MITIGATION OF EXISTING CONTAMINATION AT THE BYRON/JOHNSON SITE.

ALTERNATIVES CONSIDERED:

THE FOLLOWING REMEDIAL ACTION ALTERNATIVES WERE CONSIDERED:

1. NO ACTION

2. SOURCE CONTROL

! REMOVAL OF SURFACE AND BURIED CONTAMINANTS AND CONTAMINATED SOILS TO BACKGROUND LEVELS. DISPOSAL OF REMOVED WASTES AND CONTAMINATED SOILS AT A LICENSED OFF-SITE HAZARDOUS WASTE DISPOSAL AREA.

! REMOVAL OF SURFACE AND BURIED CONTAMINANTS AND CONTAMINATED SOILS TO THRESHOLD LEVELS. DISPOSAL OF REMOVED WASTES AND CONTAMINATED SOILS AT A LICENSED OFF-SITE HAZARDOUS WASTE DISPOSAL AREA.

! REMOVAL OF SURFACE AND BURIED CONTAMINANTS AND CONTAMINATED SOILS TO THRESHOLD LEVELS. PLACEMENT AND COVERING OF REMOVED NON-LIQUID WASTES IN THE EAST RAVINE. INCINERATION OF LIQUID WASTES AT A LICENSED HAZARDOUS WASTE INCINERATION FACILITY.

! REMOVAL OF SURFACE AND BURIED CONTAMINANTS AND CONTAMINATED SOILS TO BACKGROUND LEVELS. DISPOSAL OF REMOVED WASTES AND CONTAMINATED SOIL IN AN ON-SITE EARTHEN VAULT.

! REMOVAL OF SURFACE AND BURIED CONTAMINANTS AND CONTAMINATED SOIL TO THRESHOLD LEVELS. DISPOSAL OF REMOVED WASTES AND CONTAMINATED SOIL IN AN ON-SITE EARTHEN VAULT.

! IN SITU TREATMENT OF SURFACE AND BURIED CONTAMINATION.

3. OFF-SITE CONTROL

! RELOCATION OF RESIDENTS TO UNAFFECTED AREAS.
! PROVISION OF ALTERNATE WATER SUPPLIES FOR AFFECTED RESIDENTS.
! TREATMENT OF GROUNDWATER PRIOR TO USAGE.

INITIAL SCREENING OF ALTERNATIVES:

AS REQUIRED BY THE NCP, THE ABOVE ALTERNATIVES WERE INITIALLY SCREENED USING THE CRITERIA OF ESTIMATED

COSTS, EFFECTS OF THE ALTERNATIVE, AND ACCEPTABLE ENGINEERING PRACTICES. THE FOLLOWING ALTERNATIVES WERE ELIMINATED FROM FURTHER CONSIDERATION:

1. NO ACTION. THIS ALTERNATIVE WAS REJECTED BECAUSE IT WAS JUDGED TO BE INEFFECTIVE IN PREVENTING FURTHER CONTAMINATION AND WOULD NOT MITIGATE EXISTING CONTAMINATION AT THE SITE. HIGH CONCENTRATIONS OF BURIED AND SURFACE WASTES WERE FOUND AT THE SITE. THESE WASTES ARE SITUATED OVER BEDROCK FORMATIONS WHICH MAY HAVE ENLARGED SOLUTION OPENINGS ALONG JOINTS, FRACTURES, AND BEDDING PLANES ALONG WHICH THESE WASTES COULD POSSIBLY TRAVEL AND REACH GROUNDWATER SUPPLIES. TCE HAS BEEN FOUND IN NEARBY RESIDENCES AND MAY BE COMING FROM THE SITE.

2. IN SITU TREATMENT OF SURFACE AND BURIED CONTAMINATION. THE HETEROGENITY OF HAZARDOUS MATERIALS PREVIOUSLY DUMPED AT THE SALVAGE YARD, AND THE PRESENCE OF UNKNOWN QUANTITIES OF BURIED WASTES, SUGGEST THAT IN SITU TREATMENT TECHNIQUES MAY HAVE VERY LIMITED APPLICABILITY. THIS ALTERNATIVE WAS ELIMINATED FROM FURTHER CONSIDERATION BECAUSE NO PROVEN APPROPRIATE PHYSICAL, CHEMICAL, OR BIOLOGICAL TREATMENT TECHNIQUES WERE IDENTIFIED THAT COULD TREAT ALL THE VARIOUS WASTES OF CONCERN. HOWEVER, LIMITED IN SITU TREATMENT OF CYANIDE WASTES HAS BEEN INCORPORATED INTO SOME OF THE ALTERNATIVES REMAINING.

3. OFF-SITE CONTROL REMEDIAL ALTERNATIVES. CONSIDERABLE UNCERTAINTY STILL EXISTS CONCERNING THE EXTENT AND SOURCES(S) OF GROUNDWATER CONTAMINATION. THE D'APPOLONIA RI/FS DID NOT ADDRESS THIS MATTER. THEREFORE, ALL OFF-SITE CONTROL REMEDIAL ALTERNATIVES WERE ELIMINATED FROM FURTHER CONSIDERATION AT THIS TIME AND WILL BE EVALUATED AFTER A SITE HYDROGEOLOGICAL INVESTIGATION IS CONDUCTED (SEE FUTURE ACTIONS).

DETAILED DESCRIPTION OF REMAINING ALTERNATIVES:

ALL THE ALTERNATIVES INCLUDE LIQUID WASTES THAT MAY BE INCINERATED, TREATED, OR SOLIDIFIED TO THE EXTENT OF NOT RELEASING LIQUID UNDER OVERBURDEN PRESSURE. A DETAILED DESCRIPTION OF THE FIVE REMAINING ALTERNATIVES FOLLOWS:

1. OFF-SITE DISPOSAL (BACKGROUND LEVELS). THIS ALTERNATIVE CONSISTS OF REMOVAL AND OFF-SITE DISPOSAL OF SURFACE AND BURIED HAZARDOUS WASTES, INCLUDING CONTAMINATED SOIL. AS PER THE D'APPOLONIA RI/FS REPORT, SURFACE SOIL ON THE ENTIRE 20-ACRE SITE IS CONTAMINATED ABOVE BACKGROUND LEVELS AND WILL REQUIRE REMOVAL TO A DEPTH OF 1.5 FEET. BURIED WASTES TO BE REMOVED CONSIST OF THOSE WASTES PREVIOUSLY PLACED IN THE EAST AND WEST RAVINES. IN ADDITION, CONTAMINATED SOIL FROM THE TWO TEST PITS WOULD BE EXCAVATED.

ALL EXCAVATED WASTES WOULD BE STAGED AT THE SITE, PREPARED FOR SHIPMENT, AND TRUCKED TO PERMITTED HAZARDOUS WASTE TREATMENT, STORAGE, DISPOSAL (TSD) FACILITIES FOR FINAL DISPOSITION. LIQUID WASTES WOULD BE INCINERATED (COST ESTIMATES ARE BASED ON THE SCA LIQUID HAZARDOUS WASTE INCINERATOR LOCATED NEAR CALUMET CITY, ILLINOIS). NON-LIQUID HAZARDOUS WASTES AND CONTAMINATED SOIL WILL BE REMOVED TO AN APPROVED LANDFILL (COST ESTIMATES ARE BASED ON THE CHEMICAL WASTE MANAGEMENT LANDFILL DISPOSAL AREA, ALSO IN CALUMET CITY). ALL HAZARDOUS WASTES WILL BE PLACED IN CELLS WHICH MEET RCRA REQUIREMENTS. HAULING DISTANCE FROM THE BYRON SITE TO CALUMET CITY IS APPROXIMATELY 100 MILES ONE-WAY.

2. OFF-SITE DISPOSAL (THRESHOLD LEVELS). THIS ALTERNATIVE CONSISTS OF REMOVAL AND OFF-SITE DISPOSAL OF SURFACE AND BURIED HAZARDOUS WASTES, INCLUDING SOILS CONTAMINATED ABOVE A DEFINED THRESHOLD LEVEL. THE EP TOXICITY CHARACTERISTICS, AS DEFINED UNDER 40 CFR 261.24, WILL BE USED AS AN INDICATOR FOR HIGHLY CONTAMINATED SOILS WHICH SHOULD BE REMOVED AS PART OF THE SOURCE CONTROL MEASURE. TEST METHODS DESCRIBED IN 40 CFR 261.24 WILL BE APPLIED TO SOIL SAMPLES. SOIL LEACHATES ARE TO BE ANALYZED FOR THE METAL CONTAMINANTS LISTED IN 40 CFR 261.24, TABLE I. SOILS WITH LEACHATES THAT HAVE METAL CONCENTRATIONS EXCEEDING 100 X DRINKING WATER STANDARDS WILL BE DESIGNATED FOR REMOVAL. THIS APPROACH IS ADEQUATE TO DETERMINE A CUT-OFF FOR HIGHLY CONTAMINATED SOIL BECAUSE THE RESIDUAL CONTAMINATION WILL BE EVALUATED IN THE SUBSEQUENT RI/FS TO DETERMINE IF THE RESIDUAL CONTAMINATION REQUIRES REMEDIAL ACTION. THE IMPACT OF SUBSEQUENT MIGRATION FROM THE SITE WILL BE REDUCED DUE TO SIGNIFICANT REDUCTION OF THE ON-SITE CONTAMINATION. THE NEXT PHASE OF THE RI/FS WILL ADDRESS RESIDUAL CONTAMINATION AT THE SITE WHICH MAY CONTRIBUTE TO THE GROUNDWATER CONTAMINATION.

AS WITH THE PREVIOUS ALTERNATIVE, LIQUID WASTES WOULD BE INCINERATED AND NON-LIQUID WASTES AND CONTAMINATED SOIL WOULD BE LANDFILLED. CLEAN FILL WOULD BE PLACED IN EXCAVATED AREAS WHERE CONTAMINATED SURFACE SOIL WAS REMOVED AND IN THE TWO RAVINES.

IN SITU TREATMENT WOULD BE PROVIDED FOR AREAS WHERE CYANIDE CONTAMINATION IN SURFACE SOIL EXCEEDS 100 TIMES THE LEVEL RECOMMENDED FOR PROTECTION OF HUMAN HEALTH AND AQUATIC LIFE, I.E., .01 PPM AS DEFINED IN THE AMBIENT WATER QUALITY CRITERIA FOR CYANIDES, EPA 440/5-80-037, OCTOBER 1980. TREATMENT WOULD CONSIST OF SPREADING SODIUM HYPOCHLORITE IN THESE AREAS AND TILLING THE UPPER 6-12 INCHES OF SOIL. LIQUID AMMONIA WOULD THEN BE SPRAYED ON THESE AREAS, AND THE SOIL WOULD BE TILLED AGAIN. A MINIMUM OF

2 DAYS WOULD THEN BE ALLOWED TO PASS BEFORE PLACEMENT OF CLEAN FILL OVER THE AREAS.

3. ON-SITE DISPOSAL - CONTAINMENT (THRESHOLD LEVELS). IN THIS ALTERNATIVE, ONLY LIQUID HAZARDOUS WASTES REMOVED FROM THE SURFACE ARE HAULED OFF-SITE AND INCINERATED. CONTAMINATED SURFACE SOIL, DRUMMED SOLID WASTES, AND THE LIMITED MATERIALS IN THE WEST RAVINE WOULD BE TAKEN TO THE EAST RAVINE AND USED TO BRING THIS AREA TO GRADE. A LOW-PERMEABILITY CAP OF 2 FEET OF CLAY AND A SYNTHETIC MEMBRANE WOULD BE PLACED OVER THIS AREA TO MINIMIZE FUTURE SURFACE WATER INFILTRATION AND THEREBY ELIMINATE THE MECHANISM FOR GROUNDWATER DEGRADATION. THIS WOULD BE COVERED BY A 12-INCH THICK BLANKET OF CLEAN SAND AND GRAVEL, OR EQUIVALENT, WHICH WOULD ACT AS A FLOW ZONE TO MINIMIZE THE HYDRAULIC HEAD ON THE MEMBRANE AND ALLOW FOR A CONDUIT FOR DISCHARGING INFILTRATING WATERS. A 12-INCH BLANKET OF TOPSOIL WOULD BE PLACED ABOVE THIS FLOW ZONE AS THE VEGETATIVE GROWTH MEDIUM. THE SURFACE WOULD BE SEEDED AND MULCHED TO LIMIT POTENTIAL EROSION. A PERMANENT CHAIN LINK FENCE WOULD BE CONSTRUCTED AROUND THIS CLOSURE AREA. IN SITU TREATMENT OF CYANIDE CONTAMINATED SURFACE SOIL, AS DESCRIBED PREVIOUSLY, WOULD ALSO BE PROVIDED AS PART OF THIS ALTERNATIVE.

4. ON-SITE DISPOSAL - VAULT (BACKGROUND LEVELS). THIS ALTERNATIVE WOULD CONSIST OF CONSTRUCTION OF AN ON-SITE EARTHEN VAULT FOR THE DISPOSAL OF SURFACE AND EXCAVATED WASTES AND CONTAMINATED SOILS. LIQUID WASTES OR OTHER MATERIALS NOT FULLY AMENABLE TO ON-SITE LANDFILLING WOULD BE TRUCKED OFF-SITE FOR INCINERATION. THE ON-SITE VAULT WOULD SATISFY RCRA REQUIREMENTS AND INCLUDE LINERS, A LEACHATE COLLECTION AND DETECTION SYSTEM, AND A MULTI-LAYERED CAP.

AN AREA IN THE SOUTHWEST PORTION OF THE SITE WOULD BE CLEARED AND EXCAVATED FOR CONSTRUCTION OF THE VAULT. THE REMOVED SOIL WOULD BE USED TO CONSTRUCT A SURFACE WATER RUNOFF DIVERSION DIKE AROUND THE VAULT AREA. THE LINER WOULD CONSIST OF DUAL SYNTHETIC MEMBRANES, WITH AN OVERLYING LEACHATE COLLECTION SYSTEM AND LEACHATE DETECTION SYSTEMS BENEATH EACH MEMBRANE.

CONTAMINATED SOIL WOULD BE PLACED IN THE VAULT IN THIN LIFTS AND COMPACTED TO THE EXTENT PRACTICAL TO FILL THE VAULT AREA. DRUMS WOULD BE PLACED EITHER IN SINGLE LAYERS (SANDWICHED BY CONTAMINATED SOIL) OR CRUSHED AND COMPACTED TO THE EXTENT PRACTICAL.

A 2-FOOT LAYER OF COMPACTED CLAY (PERMEABILITY NOT GREATER THAN 1 X 10-7 CENTIMETER PER SECOND) WOULD BE PLACED ATOP THE WASTE AS THE LOWER COMPONENT OF THE CAP. A SYNTHETIC MEMBRANE WOULD BE PLACED ATOP THE CLAY TAKEN FROM VAULT EXCAVATION, WHICH WILL IN TURN BE OVERLAIN BY A BLANKET OF SAND AND GRAVEL TO SERVE AS THE FLOW ZONE AND A BLANKET OF TOPSOIL AS THE VEGETATIVE GROWTH MEDIUM.

5. ON-SITE DISPOSAL - VAULT (THRESHOLD LEVELS). THIS ALTERNATIVE IS SIMILAR TO THE PREVIOUS ONE (ON-SITE DISPOSAL - VAULT (BACKGROUND LEVELS)) WITH THE EXCEPTION THAT SURFACE SOILS WOULD ONLY BE REMOVED IF CONTAMINANT CONCENTRATIONS EXCEED THRESHOLD LEVELS. THE SAME THRESHOLD LIMITS HAVE BEEN DEFINED FOR THIS ALTERNATIVE AS FOR OFF-SITE DISPOSAL THRESHOLD LEVELS, I.E., 100 TIMES PRIMARY DRINKING WATER STANDARDS.

DETAILED EVALUATION OF ALTERNATIVES:

THE EFFECTIVENESS AND RAMIFICATIONS OF THESE ALTERNATIVES WERE EVALUATED ON THE BASIS OF COST, PUBLIC HEALTH CONSIDERATIONS, ENVIRONMENTAL CONSIDERATIONS, TECHNICAL CONSIDERATIONS, AND PUBLIC REACTION AND ACCEPTABILITY. A COMPARATIVE EVALUATION OF THE ALTERNATIVES IS PRESENTED BELOW AND SUMMARIZED IN TABLE 2.

OFF-SITE DISPOSAL (BACKGROUND LEVELS). IMPLEMENTATION OF THIS ALTERNATIVE MAY BE IMPRACTICAL OR VERY DIFFICULT DUE TO THE MANNER IN WHICH WASTE MATERIALS, BOTH HAZARDOUS AND NON-HAZARDOUS, WERE ORIGINALLY DEPOSITED ON THE SITE. CONSEQUENTLY, IT IS ESTIMATED THAT 51,400 CUBIC YARDS OF CONTAMINATED SOIL WOULD HAVE TO BE REMOVED FROM THE SITE IN ORDER TO REDUCE RESIDUAL CONCENTRATIONS TO BACKGROUND LEVELS.

THIS IS THE HIGHEST COST ALTERNATIVE EVALUATED (TOTAL ESTIMATED COST $7,257,430). THE GREATEST PORTION OF THIS COST (APPROXIMATELY $4.2 MILLION) IS ASSOCIATED WITH TRANSPORTATION AND DISPOSAL OF THE REMOVED WASTES AND CONTAMINATED SOIL.

THIS ALTERNATIVE WOULD ACHIEVE THE HIGHEST LEVEL OF CLEAN UP OF THOSE EVALUATED AND WOULD MOST EFFECTIVELY ELIMINATE POTENTIAL PATHWAYS OF MIGRATION. BECAUSE IT ENTAILS THE GREATEST AMOUNT OF OFF-SITE HAULING, IT PRESENTS THE GREATEST POSSIBILITY OF HUMAN EXPOSURE DURING TRANSPORT.

IMPLEMENTATION OF THIS ALTERNATIVE COULD ALLOW RELEASE OF THE SITE FOR FUTURE USAGE. ALTHOUGH FUTURE USE (EITHER PARTIAL OR FULL) MAY BE POSSIBLE WITH OTHER ALTERNATIVES, ITS CHANCES ARE CONSIDERED GREATEST WITH THIS ALTERNATIVE.

OFF-SITE DISPOSAL (THRESHOLD LEVELS). THIS ALTERNATIVE ENTAILS OFF-SITE DISPOSAL OF THE SAME QUANTITIES OF HAZARDOUS WASTES AS THE OFF-SITE DISPOSAL (BACKGROUND LEVELS) ALTERNATIVE, BUT CONSIDERABLY LESS QUANTITIES OF CONTAMINATED SOIL (3,600 CUBIC YARDS VERSUS 51,400 CUBIC YARDS). CONSEQUENTLY, THE ESTIMATED COST TO IMPLEMENT THIS ALTERNATIVE IS REDUCED TO $1,170,919.

IN COMPARISON TO THE OFF-SITE DISPOSAL (BACKGROUND LEVELS) ALTERNATIVE, THIS OPTION DOES NOT PRESENT AS HIGH A DEGREE OF SITE CLEANUP OR AS SURE A PROTECTION OF GROUNDWATER RESOURCES, BUT IT DOES PROVIDE FOR CLEANUP OF HIGHLY CONTAMINATED SURFACE SOILS. RESIDUAL CONTAMINATION WILL BE ADDRESSED IN THE UPCOMING RI/FS ALONG WITH OFF-SITE CONTAMINATION IMPACTS, IF ANY.

THIS ALTERNATIVE OFFERS THE ADVANTAGES OF MINIMAL OPERATIONAL AND MAINTENANCE REQUIREMENTS AFTER IMPLEMENTATION, AND RELATIVELY A SHORT TIME TO IMPLEMENT. POTENTIAL THREATS TO PUBLIC HEALTH DUE TO AN ACCIDENT DURING TRUCKING TO THE DISPOSAL SITE ARE LESS THAN FOR THE OTHER OFF-SITE DISPOSAL ALTERNATIVE, BUT GREATER THAN FOR ANY OF THE ON-SITE DISPOSAL OPTIONS.

THIS ALTERNATIVE IS FAVORED BY THE LOCAL COMMUNITY.

ON-SITE DISPOSAL - CONTAINMENT (THRESHOLD LEVELS). THIS ALTERNATIVE IS THE LOWEST COST OF THOSE EVALUATED. IT PRESENTS THE LOWEST LEVEL OF SITE CLEANUP AND, HENCE, THE GREATEST RISK OF FAILURE. BECAUSE IT DOES NOT INCLUDE EXCAVATION AND REMOVAL OF WASTES BURIED IN THE EAST RAVINE, IT OFFERS NO LONG-TERM ASSURANCE THAT THESE CONTAMINANTS WILL NOT EVENTUALLY BE RELEASED AND MIGRATE TO THE AQUIFER THROUGH LATERAL AND VERTICAL MIGRATION ROUTES.

THE LOCAL COMMUNITY HAS INDICATED DISFAVOR WITH THIS ALTERNATIVE.

ON-SITE DISPOSAL VAULT (BACKGROUND LEVELS). THIS ALTERNATIVE OFFERS CLEANUP OF THE SITE TO THE SAME LEVEL AS OFF-SITE DISPOSAL BACKGROUND LEVELS) WITH THE EXCEPTION OF THAT AREA ON THE SITE WHERE THE VAULT WOULD BE LOCATED. REQUIRED DIMENSIONS FOR THE TRUNCATED PYRAMID VAULT WOULD BE APPROXIMATELY 240 FEET BY 240 FEET BY 20 FEET DEPTH. THE PRESENCE OF THE VAULT ON-SITE AND FILLED WITH HAZARDOUS WASTES WOULD LIMIT FUTURE USE OF THE SITE. IT COULD ALSO HAVE A NEGATIVE IMPACT ON AREA AESTHETICS.

RECENT GEOLOGIC STUDIES AND EVALUATIONS BY THE ILLINOIS GEOLOGICAL SURVEY INDICATE THAT A PREDOMINANT GEOLOGIC FEATURE, THE DUNLEITH FORMATION, ENCOMPASSING AN AREA THAT INCLUDES BYRON, ILLINOIS, IS HEAVILY FRACTURED, JOINTED, AND VUGGY. THE DEVELOPMENT OF SINKHOLES IN THE VICINITY HAS BEEN OBSERVED. THE GEOLOGICAL CONDITION PRESENTS A POTENTIAL RISK TO LOCATING A HAZARDOUS WASTE STORAGE VAULT IN THE AREA. THEREFORE, LONG-TERM RELIABILITY CANNOT BE ASSURED.

THIS ALTERNATIVE WOULD REQUIRE THE MOST TIME TO IMPLEMENT. AN ENGINEERING DESIGN OF THE VAULT WOULD BE REQUIRED. THIS ALTERNATIVE PRESENTS THE GREATEST MONITORING AND OPERATION AND MAINTENANCE REQUIREMENTS AFTER CONSTRUCTION. THE ESTIMATED COST TO IMPLEMENT IS APPROXIMATELY 40 PERCENT OF THAT TO REMOVE CONTAMINATION TO BACKGROUND LEVELS AND DISPOSE OFF-SITE.

ON-SITE DISPOSAL - VAULT (THRESHOLD LEVELS). THIS ALTERNATIVE WOULD ENTAIL ON-SITE CONSTRUCTION OF A 75-FOOT BY 75-FOOT BY 16-FOOT DEEP EARTHEN STORAGE VAULT FOR CONTAINING SURFACE AND BURIED WASTES AND SURFACE SOIL CONTAMINATED ABOVE THE SPECIFIED THRESHOLD CONCENTRATIONS. WHILE IT DOES PROVIDE FOR SURFACE SOIL CLEANUP TO ACCEPTABLE EP TOXICITY LEVELS, AS DEFINED BY RCRA REGULATIONS, IT DOES NOT OFFER AS EFFECTIVE OR COMPLETE A CLEANUP AS OFF-SITE DISPOSAL.

ESTIMATED COSTS TO IMPLEMENT THIS ALTERNATIVE ARE ONLY SLIGHTLY LESS THAN FOR THE OFF-SITE DISPOSAL (THRESHOLD LEVELS) OPTION. THE SAME CONCERNS FOR SINKHOLE FORMATION DUE TO UNSTABLE GEOLOGIC CONDITIONS, AS DISCUSSED PREVIOUSLY, APPLY TO THIS ALTERNATIVE.

AS WITH THE LARGER VAULT DESCRIBED IN THE PREVIOUS ALTERNATIVE, THE PRESENCE OF THE ON-SITE VAULT COULD DETRACT FROM AREA AESTHETICS, CAUSE DEPRESSION OF NEIGHBORING REAL ESTATE VALUES, AND LIMIT FUTURE USAGE OF THE SITE.

THE LOCAL COMMUNITY HAS INDICATED THAT THIS ALTERNATIVE IS LESS PREFERABLE THAN OFF-SITE DISPOSAL.

#CR
COMMUNITY RELATIONS:

THE IEPA HAS PREPARED A SUMMARY SHEET TO ACCOMPANY THE RELEASE OF THE RI/FS TO THE GENERAL PUBLIC. A PRE-MEETING WITH LOCAL OFFICIALS WAS HELD BY THE IEPA ON AUGUST 20, 1984, AND A PUBLIC MEETING WAS HELD BY THE IEPA ON AUGUST 30, 1984, WITH THE U.S. EPA IN ATTENDANCE. THE RI/FS HAS BEEN MADE AVAILABLE FOR PUBLIC COMMENT DURING THE WEEK OF AUGUST 13, 1984. A PUBLIC HEARING WAS HELD ON SEPTEMBER 19, 1984, WITH THE U.S. EPA IN ATTENDANCE. THE PUBLIC COMMENT PERIOD ENDED ON SEPTEMBER 26,

1984. THE RESPONSIVENESS SUMMARY IS ATTACHED, ALONG WITH A COMMUNITY PETITION.

#OEL
CONSISTENCY WITH OTHER ENVIRONMENTAL LAWS:

THE PROPOSED ACTION WILL NOT REQUIRE ON-SITE STORAGE OR DISPOSAL OF HAZARDOUS WASTES. OFF-SITE DISPOSAL OF HAZARDOUS SOLID WASTES WILL BE SENT TO A LINED RCRA-APPROVED LANDFILL; AND LIQUID WASTES WILL BE INCINERATED, TREATED, OR SOLIDIFIED, IF POSSIBLE.

#RA
RECOMMENDED ALTERNATIVE:

THE NCP, 40 CFR PART 300.68(E)(2), STATES THAT SOURCE CONTROL REMEDIAL ACTIONS MAY BE APPROPRIATE, IF A SUBSTANTIAL CONCENTRATION OF HAZARDOUS SUBSTANCES REMAIN AT OR NEAR THE AREA WHERE THEY WERE ORIGINALLY LOCATED, AND INADEQUATE BARRIERS EXIST TO RETARD MIGRATION OF SUBSTANCES INTO THE ENVIRONMENT. BASED ON EACH PROPOSED OPTION, THE COMMENTS RECEIVED FROM THE PUBLIC AND THE IEPA, AND THE STATE AND FEDERAL ENVIRONMENTAL REQUIREMENTS, THE FOLLOWING OPTION HAS BEEN DETERMINED TO BE COST-EFFECTIVE AS DEFINED BY THE NCP SECTION 300.68

(J).

OFF-SITE DISPOSAL (THRESHOLD LEVELS).

THE WASTES WOULD BE EXCAVATED AND REMOVED TO OFF-SITE DISPOSAL INCINERATION FACILITIES. THE CLOSEST INCINERATION FACILITIES WOULD BE THE SCA INCINERATOR IN CALUMET CITY, ILLINOIS. AN AVAILABLE LINED LANDFILL IN THE AREA WOULD BE THE CHEMICAL WASTE MANAGEMENT LANDFILL IN CALUMET CITY, ILLINOIS. DETAILED COSTS HAVE BEEN BROKEN DOWN AND ARE SHOWN IN TABLES 3 - 7.

THE RECOMMENDED ACTION IS CONSIDERED A SOURCE CONTROL REMEDIAL ACTION AS DEFINED IN SECTION 300.68(E) OF THE NCP. THE OBJECTIVE OF THE ACTION IS SOURCE CONTROL TO MITIGATE AGAINST THE CONTINUED SPREAD OF THE CONTAMINANT PLUME, AND TO REMOVE THE PRESENT IMMINENT THREAT TO THE LOCAL HEALTH AND WELFARE OF THE NEARBY RESIDENTS.

#OM
OPERATIONS AND MAINTENANCE:

EACH OPTION WAS EVALUATED FOR THE OPERATION AND MAINTENANCE AS SHOWN IN TABLE 8. THE OPERATIONS AND MAINTENANCE (O&M) COSTS WERE ESTIMATED ON AN ANNUAL BASIS. SINCE THE REMEDIAL DESIGN AND REMEDIAL ACTION WILL BE A STATE LEAD PROJECT, THE COOPERATIVE AGREEMENT WILL INCLUDE THE O&M ASSURANCES REGARDING THIS SITE.

#SCH
SCHEDULE:

APPROVE REMEDIAL ACTION (SIGN ROD)	12/30/84
AWARD AMENDED COOPERATIVE AGREEMENT FOR REMEDIAL DESIGN	1/30/85
COMPLETE DESIGN	4/15/85
COMPLETE CONSTRUCTION	9/30/85.

#FA
FUTURE ACTIONS:

A HYDROGEOLOGICAL INVESTIGATION WILL BE NEEDED TO ADDRESS THE RESIDUAL SOIL CONTAMINATION AND THE OFF-SITE DOMESTIC WELL WATER CONTAMINATION WITH VOLATILE ORGANIC CONTAMINANTS TO DETERMINE IF THIS SITE IS THE MAIN CONTRIBUTOR OF THE CONTAMINATION. IF THE WELLS ARE CONTAMINATED DUE TO MIGRATION FROM THE SALVAGE YARD, A FS WILL BE CONDUCTED TO EVALUATE ALTERNATIVES FOR A MORE PERMANENT WATER SUPPLY WILL NEED TO BE ADDRESSED, AS THE RESIDENTS ARE PRESENTLY RECEIVING BOTTLED WATER SUPPLIES FROM THE U.S. EPA UNDER AN IMMEDIATE REMOVAL ACTION. THIS STUDY IS TO BE DONE BY CH2M-HILL.

#TMA
TABLES, MEMORANDA, ATTACHMENTS

#RS
COMMUNITY RELATIONS RESPONSIVENESS SUMMARY
BYRON SALVAGE
BYRON, ILLINOIS

THE ILLINOIS ENVIRONMENTAL PROTECTION AGENCY (IEPA) HAS BEEN RESPONSIBLE FOR CONDUCTING A COMMUNITY RELATIONS PROGRAM FOR THIS SITE. COMMUNITY RELATIONS ACTIVITIES HAVE BEEN CONDUCTED THROUGHOUT THE REMEDIAL INVESTIGATION AND FEASIBILITY STUDY. DURING THE FEASIBILITY STUDY A SIX WEEK PUBLIC COMMENT PERIOD WHICH INCLUDED A PUBLIC MEETING AND A PUBLIC HEARING WAS HELD TO RECEIVE PUBLIC COMMENT. THIS COMMUNITY RELATIONS RESPONSIVENESS SUMMARY DOCUMENTS MILESTONE COMMUNITY RELATIONS ACTIVITIES ALONG WITH CITIZEN COMMENTS AND QUESTIONS RECEIVED BEFORE AND DURING THE PUBLIC COMMENT PERIOD AND THE IEPA RESPONSE.

COMMUNITY RELATIONS

REMEDIAL INVESTIGATION

A COMMUNITY RELATIONS PLAN WAS SUBMITTED TO THE UNITED STATES ENVIRONMENTAL PROTECTION AGENCY (USEPA) IN APRIL, 1983. THE EMPHASIS OF THIS FIRST PHASE OF THE COMMUNITY RELATIONS PROGRAM WAS DIRECTED AT INFORMAL MEETINGS WITH LOCAL OFFICIALS AND CITIZENS RESPONDING TO COMMUNITY CONCERN ABOUT DRINKING WATER. A SAMPLING AND ANALYSIS OF PRIVATE DRINKING WATER WELLS WAS COORDINATED BETWEEN THE OGLE COUNTY HEALTH DEPARTMENT, THE ILLINOIS DEPARTMENT OF PUBLIC HEALTH, AND THE IEPA. AS A RESULT BOTTLED DRINKING WATER IS BEING PROVIDED TO 10 RESIDENCES. MILESTONE ACTIVITIES CONDUCTED DURING THE REMEDIAL INVESTIGATION INCLUDE:

! NOTIFICATION LETTERS

! NEWS RELEASE (ANNOUNCING THE START OF THE REMEDIAL INVESTIGATION AND FEASIBILITY STUDY)

! LOCAL DEPOSITORIES (A NEARBY SOURCE OF PRINTED INFORMATION ABOUT SITE CLEANUP)

! FACT SHEET #1 (EXPLANATION OF THE CLEANUP PROCESS).

FEASIBILITY STUDY

THE START OF THE PUBLIC COMMENT PERIOD AND THE DATE AND LOCATION OO A PUBLIC MEETING WAS ANNOUNCED THROUGH A PAID LEGAL NOTICE, NEWS TELEGRAPH, BYRON TEMPO, AND THE OGLE COUNTY LIFE. FACT SHEET #2, A SUMMARY OF THE THREE CLEANUP OPTIONS, WAS MAILED TO THOSE ON THE COMMUNITY RELATIONS PLAN MAILING LIST AND DISTRIBUTED AT TWO LOCAL DEPOSITORIES.

A PUBLIC MEETING WAS HELD AT THE BYRON CULTURAL CENTER ON AUGUST 30 TO DISCUSS THE CLEANUP OPTIONS. APPROXIMATELY NINE OF THE 35 ATTENDEES ASKED QUESTIONS AND PROVIDED COMMENTS REGARDING THE PROPOSED OPTIONS.

ON SEPTEMBER 19, THE BYRON CULTURAL CENTER WAS THE SITE OF A SECOND MEETING, THIS TIME A PUBLIC HEARING. A PUBLIC HEARING WAS HELD TO MEET STATE REGULATIONS FOR SOLICITING PUBLIC COMMENTS AND TO PROVIDE AMPLE OPPORTUNITY TO DISCUSS CLEANUP OPTIONS FOR THOSE RESIDENTS WHO MIGHT HAVE MISSED THE FIRST MEETING. APPROXIMATELY SIX OF THE ATTENDEES ASKED QUESTIONS AND PROVIDED COMMENTS AT THIS HEARING.

FOUR WRITTEN STATEMENTS WERE RECEIVED BY THE IEPA. TWO OF THESE STATEMENTS OPPOSED DISPOSAL OF HAZARDOUS WASTE AT THE BFI LANDFILL IN NEARBY DAVIS JUNCTION. THE OTHER TWO COMMENTS EXPRESSED SUPPORT FOR CLEANUP OPTION #1.

CITIZEN QUESTIONS AND CONCERNS

ISSUE: DRINKING WATER

QUESTION: WHAT ARE THE COMPOUNDS FOUND IN DRINKING WATER WELLS NEAR THE SITE?

RESPONSE: TRICHLOROETHYLENE IS THE PRIMARY COMPOUND. TETRACHLOROETHYLENE, DICHLOROETHANE, DICHLOROETHYLENE, CARBON TETRACHLORIDE, 1,1,1-TRICHLOROETHANE, AND THEIR ISOMERS WERE FOUND IN TRACE AMOUNTS.

QUESTION: HOW OFTEN WILL DRINKING WATER WELLS BE TESTED?

RESPONSE: A SAMPLING SCHEDULE IS BEING PREPARED BY THE ILLINOIS DEPARTMENT OF PUBLIC HEALTH. WHILE BOTTLED DRINKING WATER IS BEING PROVIDED, FEW SAMPLES, IF ANY, WILL BE NEEDED. HOWEVER, QUARTERLY OR SEMI-ANNUAL SAMPLING SEEMS LIKELY.

QUESTION: HOW LARGE OF AN AREA IS BEING SAMPLED?

RESPONSE: DRINKING WATER WELLS IN AN APPROXIMATELY ONE SQUARE MILE AREA HAVE BEEN SAMPLED. MOST OF THE CONTAMINATION APPEARS TO BE CONCENTRATED IN TWO WELLS ON THE WESTSIDE OF THE SITE AND IN WELLS ON ACORN ROAD.

QUESTION: WHAT IS THE DEPTH OF THE WELLS BEING SAMPLED?

RESPONSE: THE DEPTH OF THE WELLS RANGE FROM 40 TO SLIGHTLY OVER 300 FEET.

QUESTION: ARE THERE ANY PLANS TO CONSTRUCT MORE WATER TESTING LABORATORIES?

RESPONSE: THE LABORATORY CAPACITY OF BOTH THE IEPA AND THE IDPH IS STRAINED. SOME OF THE MONEY SET ASIDE BY GOVERNOR THOMPSON FOR THE "CLEAN ILLINOIS" PROGRAM WILL BE USED FOR GROUNDWATER MONITORING.

QUESTION: HOW LONG WILL IT TAKE TO CLEANUP THE GROUNDWATER?

RESPONSE: CONSIDERING THE CONCENTRATIONS THAT CURRENTLY EXIST IN THE GROUNDWATER, IT MAY TAKE AT LEAST SEVERAL MORE YEARS FOR THE CONTAMINATION ALREADY IN THE GROUNDWATER TO DISSIPATE. IT IS IMPORTANT TO NOTE THAT GROUNDWATER CONTAMINATION HAS DECLINED SIGNIFICANTLY SINCE THE MID-1970'S AND SHOULD CONTINUE TO DECLINE ONCE THE SOURCE OF CONTAMINATION IS REMOVED.

ISSUE: SITE BACKGROUND

QUESTION: WASN'T WILFORD JOHNSON OPERATING A LANDFILL AT THIS SITE IN COMPLIANCE WITH EXISTING LAWS?

RESPONSE: NO. JOHNSON DID NOT HAVE A PERMIT TO OPERATE A DISPOSAL FACILITY AND WAS TOLD TO COVER THE WASTE WITH SOIL.

QUESTION: WHAT IS THE DEPTH TO BEDROCK AT THIS SITE?

RESPONSE: THE DEPTH TO BEDROCK AT THIS SITE VARIES IN RANGE FROM 10 FEET TO 80 FEET.

QUESTION: HOW MANY BARRELS ARE STILL INTACT?

RESPONSE: APPROXIMATELY 300.

ISSUE: CLEANUP OPTIONS

QUESTION: HOW MANY TRUCKLOADS OF WASTE WILL BE REMOVED FROM THE SITE IF CLEANUP OPTION #1 IS SELECTED?

RESPONSE: APPROXIMATELY 400 TRUCKLOADS OF WASTE AND CONTAMINATED SOIL WOULD LEAVE THE SITE.

QUESTION: WOULD THE LEACHATE COLLECTION SYSTEM PROPOSED IN CLEANUP OPTION #2 RUN THROUGH THE INTERIOR OF THE ON-SITE VAULT?

RESPONSE: NO. THE LEACHATE COLLECTION SYSTEM WOULD RUN AROUND THE SIDES AND BENEATH THE BOTTOM OF THE VAULT.

COMMENT: THE GEOLOGY OF THIS AREA LENDS GROUNDWATER SUSCEPTIBLE TO CONTAMINATION. SINKHOLES AND CRACKED LIMESTONE ARE DRAWBACKS TO CLEANUP OPTION #2.

RESPONSE: THE IEPA SHARES THIS CONCERN. A SUBSTANTIAL QUANTITY OF RELATIVELY IMPERMEABLE SOIL WOULD HAVE TO BE TRANSPORTED TO THE SITE WITH ADDITIONAL LAYERS OF PROTECTION BETWEEN THE VAULT AND THE GROUNDWATER BEFORE AN ENVIRONMENTALLY ACCEPTABLE ON-SITE VAULT COULD BE CONSTRUCTED.

QUESTION: WILL SOIL SAMPLES BE TAKEN WHILE EXCAVATION IS UNDERWAY?

RESPONSE: YES. SOIL SAMPLES WILL BE USED TO DETERMINE EXACTLY HOW MUCH SOIL SHOULD BE TREATED AND MOVED. THE RESULTS OF THE REMEDIAL INVESTIGATION INDICATE APPROXIMATELY 3,300 CUBIC YARDS CONTAIN

SUBSTANTIAL CONTAMINATION. IF MORE CONTAMINATED SOIL IS FOUND, IT WILL BE TREATED OR MOVED.

QUESTION: DOES THE STATE OWN THE SITE NOW, AND IF NOT, WILL THE STATE BECOME THE OWNER AFTER THE CLEANUP IF COMPLETED?

RESPONSE: THE STATE OF ILLINOIS DOES NOT PRESENTLY OWN ANY PORTION OF THIS SITE NOR DOES IT INTEND TO PURCHASE THE PROPERTY AFTER CLEANUP IS COMPLETED. THE IEPA AND USEPA WILL NEED ACCESS TO THE PROPERTY TO CONDUCT MONITORING ACTIVITIES AFTER CLEANUP IS FINISHED REGARDLESS OF WHICH OPTION IS SELECTED.

QUESTION: CAN USEPA TAKE ACTION IN 1984 AGAINST HAULERS OR OTHER PARTIES WHO WERE RESPONSIBLE FOR DUMPING AT THE SITE YEARS AGO?

RESPONSE: YES. FEDERAL REGULATIONS ALLOW LEGAL ACTION ON SUPERFUND CLEANUPS ON A RETROACTIVE BASIS; HOWEVER, THE COURTS WILL DETERMINE THE DEGREE OF RESPONSIBILITY AND PENALTIES.

QUESTION: AFTER CLEANUP IS COMPLETED, HOW CAN WE (THE COMMUNITY) BE SURE THAT THE SITE WILL NOT BE USED FOR HAZARDOUS WASTE DISPOSAL?

RESPONSE: BEFORE A HAZARDOUS WASTE DISPOSAL SITE CAN BE DEVELOPED, THE OWNER OR OPERATOR MUST OBTAIN LOCAL APPROVAL, USUALLY FROM MUNICIPAL OFFICIALS OR THE COUNTY BOARD. IF LOCAL APPROVAL IS OBTAINED, THEN A PERMIT APPLICATION MUST BE SUBMITTED TO THE IEPA. IT IS UNLIKELY THAT LOCAL APPROVAL OR A PERMIT COULD BE OBTAINED TO DEVELOP A HAZARDOUS WASTE FACILITY AT THIS SITE. IF 'MIDNIGHT HAULERS' ARE OBSERVED DUMPING WASTE AT THIS SITE OR ANY OTHER LOCATION IN THE COUNTY, THE COUNTY SHERIFF OR THE IEPA SHOULD BE CONTACTED.

QUESTION: WILL AREA RESIDENTS BE EXPOSED TO THE HAZARDOUS WASTE WHILE IT IS BEING REMOVED FROM THE SITE?

RESPONSE: EXPOSURE SHOULD BE MINIMAL OR NONE. THE IEPA WILL SELECT A CONTRACTOR WHO IS EXPERIENCED WITH TRANSPORTING AND HANDLING HAZARDOUS SUBSTANCES. SAFETY PRECAUTIONS, INCLUDING A SAFETY PLAN, AND PROPER EQUIPMENT WILL BE DISCUSSED BETWEEN THE IEPA AND THE CONTRACTOR. ALL ENVIRONMENTAL AND TRANSPORTATION REGULATIONS MUST BE FOLLOWED DURING REMOVAL OF THE WASTE. IN ADDITION, THE IEPA'S EMERGENCY RESPONSE UNIT AND STATE POLICY WILL BE ON STANDBY SHOULD ANY ACCIDENTS OCCUR INVOLVING THE TRUCKS CARRYING HAZARDOUS WASTE FROM THE SITE.

GM:RD/SP1821D/1-6.

ATTN GREG MICHAUD
2200 CHURCHILL RD
SPRINGFIELD, ILL

SEPT 17, 1984

THIS PETITION IS SIGNED BY RESIDENTS AND LAND OWNERS LIVING CURRENTLY IN THE ROCKVALE TOWNSHIP AREA (CLOSE TO THE 'BYRON SALVAGE YARD').

THE UNDERSIGNED PETITIONERS HAVE READ THE ATTACHED FACT SHEET #2 PUT OUT BY THE IEPA, AND FEEL THAT THE ONLY PROPER WAY TO DEAL WITH THE BYRON SALVAGE YARD IS TO SUPPORT THE 'PROPOSAL #1' APPROACH.

(PROPOSAL NUMBER 1 EST COST $1,608,660)

THE FOLLOWING NAMES SUPPORT THE IEPA IN USING EVERY RESOURCE TO COMPLETELY REMOVE THE WASTE MATERIAL AND ASSOCIATED HAZARDS.

TABLE 1
SUMMARY OF TYPES OF DRUMS

TYPE OF DRUM	ON SURFACE (1)	BURIED (2)	TOTAL
LIQUIDS	68	77	145
SLUDGES	17	19	36
SOLIDS	117	1,323	1,440
NON-HAZARDOUS WASTES	46	520	566
EMPTY	256	9,461	9,717
TOTALS	504	11,400	11,904

(1) - INVENTORIED AND ANALYZED
(2) - ESTIMATED.

TABLE 3
CAPITAL COST ESTIMATE
OFF-SITE DISPOSAL (BACKGROUND LEVELS)

	QUANTITY	UNIT COST	TOTAL COST
MOBILIZATION AND SETUP	JOB	$40,000	$40,000
SURFACE CONTAMINATION			
REMOVAL OF SURFACE DRUMS TO STAGING AREA	504 DRUMS	20	10,080
EXCAVATION OF CONTAMINATED SURFACE SOIL	48,400 CY	3	145,200
BURIED CONTAMINATION			
EXCAVATION OF RAVINES	5,700 CY	5	28,500
SEGREGATION AND STAGING OF EXCAVATED DRUMS	11,400 DRUMS	20	228,000
SAMPLING AND ANALYSIS OF DRUMMED WASTES	1,419 DRUMS	50	70,950
EXCAVATION OF TEST PITS	100 CY	3	300
PLACEMENT OF CLEAN FILL IN RAVINES AND TEST PITS	2,000 CY	8	16,000
COMBINED WASTES			
TRANSPORTATION AND DISPOSAL OF:			
- EMPTY DRUMS	9,717 DRUMS	2	19,434
- NON-HAZARDOUS DEBRIS	566 DRUMS	6	3,396
- LIQUIDS AND SLUDGES	181 DRUMS	85	15,385
- SOLIDS	1,440 DRUMS	20	28,800
- CONTAMINATED SOIL	51,400 CY	80	4,112,000
SEEDING AND MULCHING	3,000 SY	0.20	600
SUBTOTAL			$4,718,645
ENGINEERING/CONSTRUCTION MANAGEMENT			707,800
CONTINGENCY -- 30%			1,415,600
SUBTOTAL			$6,842,000

REQUIREMENTS NEEDED FOR 11/84 RCRA AMENDMENT:

ASSUME THAT ALL WASTES ARE TO BE DISPOSED AT A DEPTH OF 20 FEET IN THE LANDFILL

	QUANTITY	UNIT COST	TOTAL COST
DRAINAGE AND GRAVEL	5,300 CY	$10.95	$58,035
SYNTHETIC LINERS (2) 30 MIL, HYPALON	16,000 SY	6.00	96,000
GEOTEXTILE FABRICS (5)	40,000 SY	1.85	73,540
LEACHATE PIPING FOR COLLECTION 4" PVC PERFORATED, INSTALLED	3,780 LF	14.00	52,920
8" PVC DRAINAGE, INSTALLED	300 LF	20.00	6,000
ASSUME NATURAL CLAY ALREADY IN PLACE AT LANDFILL			
ENGINEERING/CONSTRUCTION MANAGEMENT			42,975
CONTINGENCY -- 30%			85,950
SUBTOTAL			415,430
TOTAL			$7,257,430.

TABLE 4
CAPITAL COST ESTIMATE
OFF-SITE DISPOSAL (THRESHOLD LEVELS)

	QUANTITY		UNIT COST	TOTAL COST
MOBILIZATION AND SETUP	JOB		$30,000	$30,000
SURFACE CONTAMINATION				
REMOVAL OF SURFACE DRUMS TO STAGING AREA	504	DRUMS	20	10,080
EXCAVATION OF CONTAMINATED SURFACE SOIL	600	CY	3	1,800
PLACEMENT OF CLEAN FILL IN EXCAVATED AREAS (2 FT)	800	CY	8	6,400
IN SITU CYANIDE TREATMENT	3,000	CY	10	30,000
BURIED CONTAMINATION				
EXCAVATION OF RAVINES	5,700	CY	5	28,500
SEGREGATION AND STAGING OF EXCAVATED DRUMS	11,400	DRUMS	20	228,000
SAMPLING AND ANALYSIS OF DRUMMED WASTES	1,419	DRUMS	50	70,950
EXCAVATION OF TEST PITS	100	CY	3	300
PLACEMENT OF CLEAN FILL IN RAVINES AND TEST PITS	2,000	CY	8	16,000
COMBINED WASTES				
TRANSPORTATION AND DISPOSAL OF:				
-EMPTY DRUMS	9,717	DRUMS	2	19,434
-NON-HAZARDOUS DEBRIS	566	DRUMS	6	3,396
-LIQUIDS AND SLUDGES	181	DRUMS	85	15,385
-SOLIDS	1,440	DRUMS	20	28,800
-CONTAMINATED SOIL	3,600	CY	80	288,000
SEEDING AND MULCHING	3,000	SY	0.20	600
SUBTOTAL				$777,645
ENGINEERING/CONSTRUCTION MANAGEMENT				116,650
CONTINGENCY -- 30%				233,300
SUBTOTAL				$1,127,600

REQUIREMENTS NEEDED FOR 11/84 RCRA AMENDMENT:

ASSUME THAT ALL WASTES ARE TO BE DISPOSED AT A DEPTH OF 20 FEET IN THE LANDFILL

	QUANTITY		UNIT COST	TOTAL COST
DRAINAGE AND GRAVEL	520	CY	$10.95	$5,700
SYNTHETIC LINERS (2) 30 MIL, HYPALON	1,560	SY	6.00	9,360
GEOTEXTILE FABRIC (5)	3,900	SY	1.85	7,215
LEACHATE PIPING FOR COLLECTION	400	LF	14.00	5,600
4" PVC PERFORATED, INSTALLED				
8" PVC DRAINAGE, INSTALLED	100	LF	20.00	2,000
ASSUME NATURAL CLAY ALREADY IN PLACE AT LANDFILL				
ENGINEERING/CONSTRUCTION MANAGEMENT				4,481
CONTINGENCY -- 30%				8,963
SUBTOTAL				43,319
TOTAL				$1,170,919.

TABLE 5
CAPITAL COST ESTIMATE
ON-SITE DISPOSAL -- CONTAINMENT (THRESHOLD LEVELS)

	QUANTITY		UNIT COST	TOTAL COST
MOBILIZATION AND SETUP		JOB	$30,000	$30,000
SURFACE CONTAMINATION				
REMOVAL OF SURFACE DRUMS TO STAGING AREA	504	DRUMS	20	10,080
PLACEMENT OF SURFACE DRUMS IN EAST RAVINE	436	DRUMS	4	1,744
TRANSPORTATION AND DISPOSAL OF LIQUID WASTES	68	DRUMS	85	5,780
EXCAVATION OF CONTAMINATED SURFACE SOIL AND PLACEMENT IN EAST RAVINE	600	CY	7	4,200
PLACEMENT OF CLEAN FILL IN EXCAVATED AREAS (2 FT)	800	CY	8	6,400
IN SITU CYANIDE TREATMENT	3,000	CY	10	30,000
WEST RAVINE AND TEST PITS				
EXCAVATION OF FILL MATERIAL AND PLACEMENT IN EAST RAVINE	300	CY	5	1,500
PLACEMENT OF CLEAN FILL	200	CY	8	1,600
EAST RAVINE CAP				
CLAY CAP (24 IN)	2,500	CY	5	12,500
SYNTHETIC MEMBRANE	3,800	SY	9	34,200
FLOW ZONE (12 IN) - SAND/GRAVEL	1,900	CY	10	19,000
TOP SOIL (12 IN)	1,300	CY	8	10,400
SEEDING AND MULCHING	4,000	SY	0.20	800
PERIMETER FENCING	1,200	LF	14	16,800
INTERCEPTOR DITCH	3,700	CY	3	11,100
SUBTOTAL				$196,104
ENGINEERING/CONSTRUCTION - MANAGEMENT				29,400
CONTINGENCY -- 30%				58,800
TOTAL				$284,300

TABLE 6
CAPITAL COST ESTIMATE
ON-SITE DISPOSAL -- VAULT (BACKGROUND LEVELS)

	QUANTITY		UNIT COST	TOTAL COST
MOBILIZATION AND SETUP	JOB		$50,000	$50,000
SURFACE CONTAMINATION				
REMOVAL OF SURFACE DRUMS TO STAGING AREA	504	DRUMS	20	10,080
EXCAVATION OF CONTAMINATED SURFACE SOIL AND PLACEMENT IN VAULT	48,400	CY	6	290,400
BURIED CONTAMINATION				
EXCAVATION OF RAVINES	5,700	CY	5	28,500
PLACEMENT OF RAVINE SOIL IN VAULT	2,850	CY	1	2,850
SEGREGATION AND STAGING OF EXCAVATED DRUMS	11,400	DRUMS	20	228,000
EXCAVATION OF TEST PITS AND PLACEMENT IN VAULT	100	CY	4	400
PLACEMENT OF CLEAN FILL IN RAVINES AND TEST PITS	2,000	CY	8	16,000
DRUMS				
SAMPLING AND ANALYSIS OF EXCAVATED DRUMMED WASTES	1,419	DRUMS	50	70,950
TRANSPORTATION AND DISPOSAL OF LIQUID WASTES	145	DRUMS	85	12,325
CRUSHING OF EMPTY DRUMS AND PLACEMENT IN VAULT	9,717	DRUMS	2	19,434
PLACEMENT OF DRUMMED WASTES IN VAULT	2,042	DRUMS	2	4,084
VAULT				
CLEARING AND GRUBBING	11,400	SY	1	11,400
EXCAVATION	49,300	CY	3	147,900
LEACHATE SYSTEM -- SAND/GRAVEL	10,700	CY	10	107,000
LEACHATE SYSTEM -- MANHOLES	3	EACH	1500	4,500
LEACHATE SYSTEM -- PIPING	16,400	LF	8	131,200
SYNTHETIC MEMBRANE (2) -- UNDER FILL	22,800	SY	9	205,200
GEOTEXTILE FILTER FABRIC	11,400	SY	1.85	21,090
CLAY CAP (24 IN)	6,850	CY	5	34,250
SYNTHETIC MEMBRANE (CAP)	11,400	SY	9	102,600
FLOW ZONE (12 IN) -- SAND/GRAVEL	3,450	CY	10	34,500
TOP SOIL (12 IN)	3,450	CY	8	27,600
SEEDING/MULCHING	11,400	SY	0.20	2,280
PERIMETER FENCING	1,300	LF	14	18,200
SUBTOTAL				$1,580,743
ENGINEERING/CONSTRUCTION MANAGEMENT				237,100
CONTINGENCY -- 30%				474,200
TOTAL				$2,292,000.

TABLE 7
CAPITAL COST ESTIMATE
ON-SITE DISPOSAL -- VAULT (THRESHOLD LEVELS)

	QUANTITY		UNIT COST	TOTAL COST
MOBILIZATION AND SETUP	JOB		$40,000	$40,000
SURFACE CONTAMINATION				
REMOVAL OF SURFACE DRUMS TO STAGING AREA	504	DRUMS	20	10,080
EXCAVATION OF CONTAMINATED SURFACE SOIL AND PLACEMENT IN VAULT	600	CY	6	3,600
PLACEMENT OF CLEAN FILL IN EXCAVATED AREAS (2 FT)	800	CY	8	6,400
IN SITU CYANIDE TREATMENT	3,000	CY	10	30,000
BURIED CONTAMINATION				
EXCAVATION OF RAVINES	5,700	CY	5	28,500
PLACEMENT OF RAVINE SOIL IN VAULT	2,850	CY	1	2,850
SEGREGATION AND STAGING OF EXCAVATED DRUMS	11,400	DRUMS	20	228,000
EXCAVATION OF TEST PITS AND PLACEMENT IN VAULT	100	CY	4	400
PLACEMENT OF CLEAN FILL IN RAVINES AND TEST PITS	2,000	CY	8	16,000
DRUMS				
SAMPLING AND ANALYSIS OF EXCAVATED DRUMMED WASTES	1,419	DRUMS	50	70,950
TRANSPORTATION AND DISPOSAL OF LIQUID WASTES	145	DRUMS	85	12,325
CRUSHING OF EMPTY DRUMS AND PLACEMENT IN VAULT	9,717	DRUMS	2	19,434
PLACEMENT OF DRUMMED WASTES IN VAULT	2,042	DRUMS	2	4,084
VAULT				
CLEARING AND GRUBBING	2,400	SY	1	2,400
EXCAVATION	8,100	CY	3	24,300
LEACHATE SYSTEM -- SAND/GRAVEL	2,025	CY	10	20,250
LEACHATE SYSTEM -- MANHOLES	2	EACH	1500	3,000
LEACHATE SYSTEM -- PIPING	3,720	LF	8	29,760
SYNTHETIC MEMBRANE (2) -- UNDER FILL	4,050	SY	9	36,450
GEOTEXTILE FILTER FABRIC	2,025	SY	1.85	3,746
CLAY CAP (24 IN)	1,240	CY	5	6,200
SYNTHETIC MEMBRANE (CAP)	2,025	SY	9	18,225
FLOW ZONE (12 IN) -- SAND/GRAVEL	620	CY	10	6,200
TOP SOIL (12 IN)	620	CY	8	4,960
SEEDING/MULCHING	2,025	SY	0.20	405
PERIMETER FENCING	540	LF	14	7,560
SUBTOTAL				$636,079
ENGINEERING/CONSTRUCTION MANAGEMENT				95,400
CONTINGENCY -- 30%				190,800
TOTAL				$922,300.

TABLE 8
ANNUAL OPERATING AND MAINTENANCE COST ESTIMATES

	ANNUAL QUANTITY	UNIT COST	TOTAL COST
OFFSITE DISPOSAL (BACKGROUND LEVELS)			
SITE INSPECTION	2	$1,000	$2,000
GROUNDWATER MONITORING (4 WELLS)	4	250	4,000
TOTAL			$6,000
OFFSITE DISPOSAL (THRESHOLD LEVELS)			
SITE INSPECTION	2	1,000	2,000
GROUNDWATER MONITORING (4 WELLS)	4	250	4,000
TOTAL			$6,000
ONSITE DISPOSAL -- CONTAINMENT (THRESHOLD LEVELS)			
SITE INSPECTION	2	1,000	2,000
GROUNDWATER MONITORING (4 WELLS)	4	250	4,000
SURFACE WATER MONITORING (2 LOCATIONS)	4	250	2,000
CLAY CAP INSPECTION	2	1,000	2,000
FENCE MAINTENANCE	5% OF CONSTRUCTION COST		840
CLAY CAP MAINTENANCE	5% OF CONSTRUCTION COST		3,850
TOTAL			$14,690
ONSITE DISPOSAL -- VAULT (BACKGROUND LEVELS)			
SITE INSPECTION	4	1,000	4,000
VAULT INSPECTION	4	1,500	6,000
GROUNDWATER MONITORING (4 WELLS)	4	250	4,000
LEACHATE SYSTEM TESTING	4	500	2,000
FENCE MAINTENANCE	5% OF CONSTRUCTION COST		910
VAULT MAINTENANCE	5% OF CONSTRUCTION COST		33,510
TOTAL			$50,420
ONSITE DISPOSAL -- VAULT (THRESHOLD LEVELS)			
SITE INSPECTION	4	1,000	4,000
VAULT INSPECTION	4	1,250	5,000
GROUNDWATER MONITORING (4 WELLS)	4	250	4 000
LEACHATE SYSTEM TESTING	4	500	2,000
FENCE MAINTENANCE	5% OF CONSTRUCTION COST		380
VAULT MAINTENANCE	5% OF CONSTRUCTION COST		6,460
TOTAL			$21,840.