City: **VALLEY TOWNSHIP**

MW MANUFACTURING

Site Information:

Site Name: MW MANUFACTURING

Address: VALLEY TOWNSHIP, PA

EPA ID: PAD980691372

EPA Region: 03

Site Alias Name(s):

DOMINO SALVAGE

DOMINO SALVAGE - WAREHOUSE #81

Record of Decision (ROD):

ROD Date: 03/31/1989

Operable Unit: 02

ROD ID: EPA/ROD/R03-89/067

Media: SOIL

Contaminant: VOCS, PCE, TCE, ORGANICS, PCBS, METALS, LEAD

Abstract: THE M.W. MANUFACTURING SITE IS A FORMER COPPER RECOVERY FACILITY LOCATED IN MONTOUR COUNTY, PENNSYLVANIA, TWO MILES NORTH OF DANVILLE. THE PENNSYLVANIA DEPARTMENT OF TRANSPORTATION (PENNDOT) MAINTAINS A STORAGE AREA IMMEDIATELY NORTH OF THE SITE, AND FARMLANDS AND WOODED LOTS ARE ADJACENT TO THE SITE ON THE WEST AND SOUTH. MAUSES CREEK FLOWS IN A SOUTHERLY DIRECTION PAST THE SITE. SEVERAL PRIVATE RESIDENCES, MOTELS, GAS STATIONS, RESTAURANTS, AND A HEAD START SCHOOL ARE LOCATED JUST NORTH OF THE PENNDOT STORAGE AREA AND RELY ON PRIVATE GROUND WATER WELLS FOR DRINKING WATER. M.W. MANUFACTURING WAS ENGAGED IN SECONDARY COPPER RECOVERY FROM SCRAP WIRE, USING BOTH MECHANICAL AND CHEMICAL PROCESSES. GRANULAR CARBON WASTES GENERATED BY THE CHEMICAL PROCESS WAS DUMPED ONSITE, AND SPENT SOLVENTS

AND ACIDS WERE ALLEGEDLY DISPOSED OF ONSITE. IN 1972, M.W. MANUFACTURING FILED FOR BANKRUPTCY AND THE PHILADELPHIA NATIONAL BANK ACQUIRED THE PROPERTY. WAREHOUSE 81 INC. ACQUIRED THE SITE IN 1976, AND SUBSEQUENTLY FORMED A LIMITED PARTNERSHIP WITH DOMINO SALVAGE, INC. TO RECOVER WIRE AT THE SITE USING MECHANICAL RECOVERY ONLY. THE INITIAL REMEDIAL INVESTIGATION REVEALED SEVERAL AREAS POSING POTENTIAL THREATS TO PUBLIC HEALTH: THE CARBON WASTE PILE, FOUR WIRE-FLUFF WASTE PILES, A SURFACE IMPOUNDMENT, BURIED LAGOON AND CONTAMINATED SOILS, DRUMS AND STORAGE TANKS. THIS REMEDIAL ACTION ADDRESSES THE CONCERNS FOR DIRECT CONTACT WITH AND MIGRATION TO GROUND WATER OF CONTAMINANTS FROM THE CARBON WASTE PILE. THE REMAINING AREAS ARE THE SUBJECT OF A LONG-TERM REMEDIAL INVESTIGATION AND FEASIBILITY STUDY. THE PRIMARY CONTAMINANTS OF CONCERN AFFECTING THE SOIL ARE VOCS INCLUDING PCE AND TCE; ORGANICS INCLUDING PCBS; AND METALS INCLUDING LEAD.

THE SELECTED REMEDIAL ACTION FOR THIS SITE INCLUDES EXCAVATING THE CARBON WASTE PILE (APPROXIMATELY 875 YD3 OF CONTAMINATED WASTE AND CONTAMINATED UNDERLYING SOILS) AND TRANSPORTING THE WASTE OFFSITE TO AN INCINERATOR FACILITY AND DISPOSING OF THE ASH IN AN OFFSITE RCRA HAZARDOUS WASTE LANDFILL. THE ESTIMATED CAPITAL COST FOR THIS REMEDIAL ACTION IS $2,061,000. SINCE ONSITE REMEDIATION ACTIVITIES ARE ANTICIPATED TO REQUIRE LESS THAN ONE YEAR, THERE ARE NO O&M COSTS.

Remedy: THIS INITIAL OPERABLE UNIT ADDRESSES THE SOURCE OF THE CONTAMINATION BY REMEDIATION OF THE "CARBON WASTE" PILE. THE FUNCTION OF THIS OPERABLE UNIT IS TO REMOVE THE CARBON WASTE PILE AS A THREAT TO HUMAN HEALTH AND AS A SOURCE OF CONTINUED GROUND WATER CONTAMINATION.

THE MAJOR COMPONENTS OF THE SELECTED REMEDY INCLUDE;

* EXCAVATION OF APPROXIMATELY 875 CUBIC YARDS OF CONTAMINATED WASTE AND CONTAMINATED

UNDERLYING SOILS. INCINERATION OF THE WASTES AND SOILS IN AN OFF-SITE RCRA PERMITTED INCINERATOR.
* DISPOSAL OF INCINERATOR ASH IN A RCRA PERMITTED HAZARDOUS WASTE LANDFILL.

THE ON GOING REMEDIAL INVESTIGATION AND FEASIBILITY STUDY WILL IDENTIFY THE RISKS ASSOCIATED WITH THE REMAINING PORTIONS OF THE SITE (LAGOONS, TANKS, SOILS, OTHER WASTE PILES, GROUNDWATER) AND WILL EVALUATE APPROPRIATE REMEDIAL ALTERNATIVES FOR EACH.

Text: Full-text ROD document follows on next page.

EPA/ROD/R03-89/067
1989

EPA Superfund
Record of Decision:

MW MANUFACTURING
EPA ID: PAD980691372
OU 02
VALLEY TOWNSHIP, PA
03/31/1989

FOUR WIRE-FLUFF
WASTE PILES, A SURFACE IMPOUNDMENT, A BURIED LAGOON, CONTAMINATED
SOILS, DRUMS AND STORAGE TANKS.

HOWEVER, THE CARBON WASTE PILE WAS SHOWN TO BE A RELATIVELY WELL-DEFINED CONTAMINANT SOURCE, UNIQUE FROM OTHER SOURCE AREAS IN SIZE, COMPOSITION, AND CONTAMINANT CONCENTRATIONS. THESE CHARACTERISTICS MAKE IT BOTH POSSIBLE AND DESIRABLE TO UNDERTAKE INTERIM REMEDIAL ACTIONS TO ADDRESS THIS WASTE PILE, PRIOR TO IMPLEMENTING OTHER REMEDIAL ACTIONS FOR THE REMAINDER OF THE SITE. THIS RESPONSE ACTION IS CONSISTENT WITH SECTION 300.68 (C) OF THE NATIONAL CONTINGENCY PLAN (NCP). THIS INITIAL OPERABLE UNIT IS BEING IMPLEMENTED TO PROTECT PUBLIC HEALTH AND THE ENVIRONMENT BY PREVENTING DIRECT CONTACT WITH CONTAMINATED WASTE AND REDUCING FURTHER MIGRATION OF CONTAMINANTS INTO THE GROUNDWATER. THE OPERABLE UNIT ADDRESSES ONLY THE CARBON WASTE PILE. THE USEPA AND PADER FEEL THAT DIRECT CONTACT WITH THE CONTAMINATED WASTE AND MIGRATION OF CONTAMINANTS INTO THE GROUND WATER ARE THE MAJOR CONCERNS POSED BY THIS SITE. THIS OPERABLE UNIT WAS INITIATED TO DEAL WITH THESE CONCERNS. IT IS FULLY CONSISTENT WITH ALL FUTURE SITE WORK.

#NEC

V. NATURE AND EXTENT OF CONTAMINATION

ELEVEN SAMPLES, INCLUDING ONE DUPLICATE, WERE COLLECTED FROM THE CARBON WASTE PILE DURING THE FIELD INVESTIGATION. THESE SAMPLES WERE ANALYZED FOR THE FULL TARGET COMPOUND LIST (TCL) AS SPECIFIED IN THE EPA CONTRACT LAB PROGRAM STATEMENT OF WORK. TABLE 1 IS A SUMMARY OF THEVALIDATED ANALYTICAL RESULTS. THE TABLE PRESENTS A LIST OF ALL THE ORGANIC CONTAMINANTS DETECTED AND INCLUDED BOTH CARCINOGENIC AND NONCARCINOGENIC COMPOUNDS. IN ADDITION TO THE ORGANICS, THE LEVELS OF LEAD AND COPPER ARE GREATLY ELEVATED IN THESE SAMPLES, AND WERE THEREFORE INCLUDED IN THIS TABLE. THE RANGE OF CONCENTRATIONS AT WHICH EACH COMPOUND WAS DETECTED, THE NUMBER OF SAMPLES IN WHICH IT WAS DETECTED, AND THE AVERAGE CONCENTRATIONS ARE PRESENTED. AN ARITHMETIC AVERAGE WAS USED TO GENERATE TYPICAL CONTAMINANT CONCENTRATIONS IN THE CARBON WASTE PILE. MANY OF THE CONTAMINANTS WERE FOUND IN EVERY SAMPLE,SO THE USE OF AN ARITHMETIC AVERAGE WAS FELT TO BE REPRESENTATIVE. AS THE TABLE SHOWS, TETRACHLOROETHENE, TRICHLOROETHENE, METHYLENE CHLORIDE, AND 1,1,2,2-TETRACHLOROETHANE ARE THE MOST PREVALENT VOLATILE ORGANIC CONTAMINANTS DETECTED IN THE CARBON WASTE. THE TOTAL CONCENTRATION OF ALL VOLATILE ORGANICS WAS AS HIGH AS 14,695.2 MG/KG (1.47 PERCENT) IN ONE SAMPLE. IT IS BELIEVED THAT THE PRESENCE OF THESE COMPOUNDS IN THE CARBON WASTE IS DUE TO THE USE OF A SOLVENT BATH IN THE HOT OIL STRIPPING PROCESS.

SAMPLING OF ONSITE MONITORING WELLS REVEALED THE PRESENCE OF SIGNIFICANT LEVELS OF ALL OF THE ABOVE COMPOUNDS IN THE GROUND WATER, THOUGH THE METHYLENE CHLORIDE IS QUESTIONABLE BECAUSE OF BLANK CONTAMINATION.

BIS(2-ETHYLHEXYL)PHTHALATE (DEHP), A COMMON PLASTICIZER, WAS DETECTED IN ALL SAMPLES AT CONCENTRATIONS BETWEEN 320 AND 70,000 MG/KG. THE AVERAGE CONCENTRATION WAS SLIGHTLY LESS THAN 1 PERCENT. DEHP AND DI-N-BUTYL PHTHTALATE WERE THE ONLY BASE/NEUTRAL EXTRACTABLES FOUND IN THE CARBON WASTE, EXCEPT FOR ONE DETECTION OF BENZOIC ACID. HOWEVER, BECAUSE THE LABORATORIES THAT ANALYZED THE SAMPLES DID NOT CONFORM TO ACCEPTED QUALITY CONTROL STANDARDS, THE POSITIVE DETECTIONS IN THIS SAMPLE PACKAGE WERE IDENTIFIED AS BEING ESTIMATED, AND THE REST OF THE PACKAGE WAS REJECTED. FOR LACK OF ANY OTHER ANALYSES, THE ESTIMATED RESULTS ARE USED IN THE ANALYSIS OF ALTERNATIVES. PCBS WERE DETECTED IN EVERY SAMPLE COLLECTED FROM THE CARBON WASTE PILE.

PCBS WERE PRESENT IN THE CARBON WASTE SAMPLES AT AN AVERAGE CONCENTRATION OF 7.60 MG/KG. THESE POSSIBLY CARCINOGENIC COMPOUNDS WERE LIKELY PRESENT IN THE HOT OIL BATH.

THE ELEVEN WASTE SAMPLES WERE ALSO ANALYZED FOR DIOXINS WHICH MAY HAVE BEEN CREATED WHEN THE PCB-LADEN WASTE OILS WERE SUBJECTED TO HIGH TEMPERATURES. BASED ON THE VALIDATED ANALYTICAL RESULTS, DIOXIN (2,3,7,8-ICDD EQUIVALENT) WAS NOT FOUND IN ANY OF THE 11 SAMPLES.

FINALLY, LEAD AND COPPER WERE FOUND IN ALL SAMPLES AT VERY HIGH CONCENTRATIONS. FOR EXAMPLE, COPPER CONCENTRATIONS RANGED FROM 6,390 MG/KG TO 69,100 MG/KG, WITH AN AVERAGE CONCENTRATION OF 32,660 MG/KG (3.27 PERCENT). LEAD WAS FOUND AT CONCENTRATIONS BETWEEN 9,450 AND 29,600 MG/KG, WITH AN AVERAGE CONCENTRATION OF 17,100 MG/KG (1.71 PERCENT). AVERAGE CONCENTRATIONS FOR' COPPER AND LEAD IN SOILS THROUGHOUT THE EASTERN U.S. ARE 22 MG/KG, AND 17 MG/KG, RESPECTIVELY. BASED UPON CURRENT SITE CONDITIONS, THE POTENTIAL EXPOSURE PATHWAYS ASSOCIATED WITH CONTAMINATION FROM THE CARBON WASTE PILE ARE 1) DIRECT CONTACT WITH THE CONTAMINATED WASTE, 2) INHALATION OF CONTAMINATED DUSTS; 3) INHALATION OF THE VOLATILIZED ORGANICS FROM THE

WASTE PILE AND 4) INGESTION OF CONTAMINATED DUSTS.

#SSR

I. SUMMARY OF SITE RISKS

UTILIZING DATA GENERATED DURING THE ON GOING RI, A RISK ASSESSMENT WAS CONDUCTED TO EVALUATE THE POTENTIAL IMPACT TO HUMAN HEALTH WHICH MAY RESULT FROM THE HIGHLY CONTAMINATED CARBON WASTE PILE.

IN ORDER TO ASSESS PUBLIC HEALTH RISKS, THREE MAJOR ASPECTS OF CHEMICAL CONTAMINATION AND ENVIRONMENTAL RATE AND TRANSPORT MUST BE CONSIDERED: (1) CONTAMINANTS WITH TOXIC CHARACTERISTICS MUST BE PRESENT, AND MUST BE RELEASED BY EITHER NATURAL PROCESSES OR HUMAN ACTION; (2) AN ACTUAL OR POTENTIAL EXPOSURE PATHWAY MUST BE PRESENT; AND (3) HUMAN RECEPTORS MUST BE PRESENT. RISK IS A FUNCTION OF BOTH TOXICITY AND EXPOSURE; WITHOUT ANY ONE OF THE ABOVE FACTORS, THERE WILL BE NO RISK. THIS RISK ASSESSMENT ESTIMATES THE POTENTIAL FOR HUMAN HEALTH RISKS AT THE SITE BY COMBINING INFORMATION ON THE TOXICITY OF THE CHEMICALS FOUND ONSITE WITH SITE-SPECIFIC ESTIMATES OF EXPOSURES.

TABLE 1 SUMMARIZED THE CHEMICAL ANALYTICAL RESULTS FOR THE SAMPLES COLLECTED FROM THE CARBON WASTE PILE. OF THE ORGANICS DETECTED, ONLY BENZOIC ACID HAS NO HEALTH-BASED STANDARDS OR CRITERIA. OTHER CONTAMINANTS THAT WERE NOT INCLUDED AS INDICATOR CHEMICALS FOR THE RISK ASSESSMENT WERE ACETONE, ETHYLBENZENE, XYLENES, 1,2-DICHLOROETHENE, CHLOROFORM, AND CARBON TETRACHLORIDE, PRIMARILY BECAUSE OF THEIR LESS FREQUENT OCCURRENCE AND LOWER CONCENTRATIONS.

OF THE INORGANICS DETECTED AT THE SITE, LEAD AND COPPER HAVE BEEN RETAINED AS INDICATOR CHEMICALS. ALTHOUGH CHROMIUM AND ANTIMONY APPEAR TO BE ELEVATED AT THIS SITE, LEAD AND COPPER WILL DRIVE THE RISK AND THE REMEDIATION BECAUSE OF THEIR OVERWHELMINGLY GREATER CONCENTRATIONS IN THE CARBON WASTE.

TOXIC EFFECTS CONSIDERED INCLUDE NONCARCINOGENIC (TOXIC) AND CARCINOGENIC HEALTH EFFECTS AND ENVIRONMENTAL EFFECTS. TOXICOLOGICAL ENDPOINTS, ROUTES OF EXPOSURE, AND DOSES IN HUMANS AND/OR ANIMAL STUDIES ARE DISCUSSED FOR NONCARCINOGENIC COMPOUNDS.

THE AVAILABLE TOXICOLOGICAL INFORMATION INDICATES THAT SEVERAL OF THE INDICATOR CHEMICALS HAVE BOTH NONCARCINOGENIC AND CARCINOGENIC HEALTH EFFECTS IN HUMANS AND/OR IN EXPERIMENTAL ANIMALS. ALTHOUGH THE INDICATOR CHEMICALS MAY CAUSE ADVERSE HEALTH AND ENVIRONMENTAL IMPACTS, DOSE-RESPONSE RELATIONSHIPS AND THE POTENTIAL FOR EXPOSURE MUST BE EVALUATED BEFORE THE RISKS TO RECEPTORS CAN BE DETERMINED. DOSE-RESPONSE RELATIONSHIPS CORRELATE THE MAGNITUDE OF THE DOSE WITH THE PROBABILITY FOR TOXIC EFFECTS, AS DISCUSSED IN THE FOLLOWING SECTION. AN IMPORTANT COMPONENT OF THE RISK ASSESSMENT PROCESS IS THE RELATIONSHIP BETWEEN THE DOSE OF A COMPOUND (AMOUNT TO WHICH AN INDIVIDUAL OR POPULATION IS EXPOSED) AND THE POTENTIAL FOR ADVERSE HEALTH EFFECTS RESULTING FROM EXPOSURE TO THAT DOSE. DOSE-RESPONSE RELATIONSHIPS PROVIDE A MEANS BY WHICH POTENTIAL PUBLIC HEALTH IMPACTS MAY BE EVALUATED. THE PUBLISHED INFORMATION ON DOSES AND RESPONSES IS USED IN CONJUNCTION WITH INFORMATION ON THE NATURE AND MAGNITUDE OF HUMAN EXPOSURE IN ORDER TO DEVELOP AN ESTIMATE OF HEALTH RISKS. STANDARD REFERENCE DOSES (RFDS) AND/OR CARCINOGENIC POTENCY FACTORS (CPFS) HAVE BEEN DEVELOPED FOR MANY OF THE CHEMICALS ON THE TARGET COMPOUND LIST.

VALUES OF AVAILABLE REGULATORY STANDARDS, REFERENCE DOSES, AND CPFS ARE PRESENTED IN TABLE 2. TABLE 2 PRESENTS VALUES BOTH FOR CHEMICALS THAT ARE KNOWN OR SUSPECTED HUMAN CARCINOGENS AND FOR CHEMICALS HAVING NONCARCINOGENIC EFFECTS. ALL AVAILABLE TOXICITY INFORMATION IS INCLUDED IN THIS TABLE. MOST OF THE DATA ARE FROM IRIS, EPA'S COMPUTERIZED TOXICOLOGICAL DATA BASE. HOWEVER, IF A PARAMETER S NOT CURRENTLY AVAILABLE IN IRIS, PREVIOUSLY PUBLISHED VALUES FROM OTHER EPA SOURCES ARE USED.

THE IRIS FILE INDICATES THAT IT IS INAPPROPRIATE TO DEVELOP AN RFD FOR LEAD AND THAT THE CPF FOR TETRACHLOROETHENE HAS BEEN SUSPENDED. HOWEVER, IN ORDER NOT TO LEAVE A SIGNIFICANT GAP IN THE RISK ASSESSMENT, OLDER PUBLISHED VALUES FOR THESE PARAMETERS ARE USED. EXPECTED DOSES OF THE INDICATOR CHEMICALS ARE PRESENTED LATER IN THIS SECTION.

THREE ACTUAL EXPOSURE ROUTES HAVE BEEN IDENTIFIED FOR CONTACT WITH THE CONTAMINANTS IN THE CARBON WASTE PILE. THE FIRST IS THE ROUTINE CONTACT WITH THE WASTE MATERIALS BY THE ONSITE RESIDENTS, WHICH CONSISTS OF DERMAL CONTACT WITH THE WASTE, ACCIDENTAL INGESTION OF CONTAMINATED DUSTS, AND INHALATION OF INDOOR AND OUTDOOR DUST. THE SECOND IS INHALATION OF VOLATILIZED CONTAMINANTS FROM THE WASTE MATERIAL FOR THE SITE RESIDENTS AND EMPLOYEES. THE THIRD IS THE ACCIDENTAL CONTACT WITH THE WASTE MATERIALS BY SITE EMPLOYEES OR TRESPASSERS

WHICH CONSISTS OF DERMAL CONTACT AND ACCIDENTAL INGESTION.

CARCINOGENIC RISKS CAN BE ESTIMATED BY COMBINING INFORMATION IN THE DOSE-RESPONSE ASSESSMENT (CARCINOGENIC POTENCY FACTORS) WITH AN ESTIMATE OF THE INDIVIDUAL INTAKES (DOSES) OF A CONTAMINANT BY A RECEPTOR. THESE RISKS ARE EXPRESSED AS NUMBERS OF EXCESS CANCER DEATHS EXPECTED TO OCCUR IN AN EXPOSED POPULATION. EPA POLICY REQUIRES THAT SUPERFUND SITES BE CLEANED SO THAT THIS EXCESS RISK FALLS BETWEEN 1/7 PER 10,000 AND 1 PER 10,000,000 (NORMALLY STATED AS 1X10(-4) AND 1X10(-7)) DEPENDING ONSITE CONDITIONS, FEASIBILITY OF CLEANUP, COSTS, EXPECTED FUTURE USE AND OTHER FACTORS (BARRING)* ANY MITIGATION FROM ANY OF THESE FACTORS, EPA'S NORMAL CLEANUP GOAL IS 1 PER 1,000,000 (1X10(-6) EXCESS CANCER RISK.

TABLE 3 PRESENTS A SUMMARY OF THE POTENTIAL CARCINOGENIC RISKSRESULTING FROM THE EXPOSURE ROUTES. THIS TOTAL POTENTIAL RISK IS THE MATHEMATICAL SUMMATION OF THE INDIVIDUAL RISKS POSED BY THE CHEMICALS IDENTIFIED IN TABLE 2. THE RISK IS PRIMARILY DUE TO THE ACCIDENTALINGESTION OF AND DERMAL CONTACT WITH TETRACHLOROETHENE, 1,1,2, 2-TETRACHLOROETHANE, 1,1,2-TRICHLOROETHANE, BIS(2-ETHYLHEXYL)PHTHALATE, AND PCBS. PCBS ARE PRESENT AT LOW CONCENTRATIONS, BUT THEIR HIGH CPF RESULTS IN HIGH RISKS. THE OTHER MAJOR CONTRIBUTORS TO RISK VIA THESE EXPOSURE ROUTES ARE TRICHLOROETHENE AND METHYLENE CHLORIDE.

THE RISKS ASSOCIATED WITH REGULAR, DAILY INHALATION OF CONTAMINANTS VOLATILIZING FROM THE CARBON WASTE PILE ARE SEVERAL ORDERS OF MAGNITUDE LOWER THAN THOSE ESTIMATED FOR PHYSICAL CONTACT WITH THE MATERIALS. HOWEVER, THE RISKS FOR BOTH SITE EMPLOYEES AND RESIDENTS EXCEED 1X10(-6) USING THE AVERAGE WASTE CONCENTRATIONS AND EXPOSURE DURATIONS OF 8 AND 24 HOURS/DAY, RESPECTIVELY. THE PRIMARY CONTRIBUTORS TO THIS RISK ARE 1,1,2-TRICHLOROETHANE AND TETRACHLOROETHENE, WHICH WERE THE VOLATILEORGANICS FOUND AT THE HIGHEST CONCENTRATIONS, AND METHYLENE CHLORIDE. OTHER CARCINOGENS CONTRIBUTING TO THE TOTAL RISK ARE TRICHLOROETHENE AND 1,1,2- TRICHLOROETHANE. THE TOTAL POTENTIAL CARCINOGENIC RISKS RESULTING FROM ACCIDENTAL DERMAL CONTACT OR INGESTION BY SITE EMPLOYEES OR TRESPASSERS ARE LOWER THAN THOSE RESULTING FROM THE OTHER EXPOSURE ROUTES. FOR EXAMPLE, THE POTENTIAL RISK FROM DERMAL CONTACT WITH THE CARBON WASTE BY EMPLOYEES IS 5.3X10(-6) AT THE AVERAGE CONTAMINANT CONCENTRATIONS, AND ACCIDENTAL INGESTION RESULTS IN A POTENTIAL RISK OF 2.1X10(-5).

POTENTIAL HEALTH RISKS RESULTING FROM EXPOSURE TO NONCARCINOGENIC COMPOUNDS ARE ESTIMATED BY COMPARING AN ANNUAL DAILY DOSE TO AN ACCEPTABLE LEVEL SUCH AS A REFERENCE DOSE (RFD). IF THE SUM OF THESE RATIOS, KNOWN AS THE HAZARD INDEX, EXCEEDS UNITY, THERE IS A POTENTIAL FOR NONCARCINOGENIC HEALTH RISKS (EPA, SEPTEMBER 24, 1986). THE HAZARD INDEX IS NOT A MATHEMATICAL PREDICTION OF THE SEVERITY OF TOXIC EFFECTS; IT IS SIMPLY A NUMERICAL INDICATOR OF THE TRANSITION FROM ACCEPTABLE TO UNACCEPTABLE LEVELS. TABLE 4 IS A SUMMARY OF THE TOTAL HAZARD INDICES RESULTING FROM EXPOSURES TO THE CARBON WASTE PILE.

ACCIDENTAL INGESTION, INHALATION AND DERMAL CONTACT WITH THE WASTE MATERIALS ON A ROUTINE BASIS BY AN ADULT WILL RESULT IN A POTENTIAL TOTAL HAZARD INDEX OF 138 USING AVERAGE CONTAMINANT CONCENTRATIONS. LEAD IS THE MOST SIGNIFICANT HAZARD UNDER THIS EXPOSURE SCENARIO, FOLLOWED BY COPPER, TETRACHLOROETHENE, AND BIS(2 ETHYLHEXYL)PHTHALATE. ACCIDENTAL INGESTION BY BOTH TRESPASSERS AND SITE EMPLOYEES CAN ALSO RESULT IN A SIGNIFICANT HAZARD INDEX (APPROACHING OR EXCEEDING UNITY). THE OTHER EXPOSURE ROUTES EXAMINED FOR THE SITE DO NOT PRESENT A SIGNIFICANT NONCARCINOGENIC HEALTH RISK. THE CARCINOGENIC RISKS RESULTING FROM PHYSICAL CONTACT WITH THE CONTAMINANTS IN THE CARBON WASTE PILE GREATLY EXCEED THE RANGE GENERALLY CONSIDERED TO BE ACCEPTABLE, THAT IS, BETWEEN 1X10(-4) AND 1X10(-7). THE CARCINOGENIC RISKS ASSOCIATED WITH THE REGULAR INHALATION OF CONTAMINANTS VOLATILIZING FROM THE CARBON WASTE PILE FALL INTO THE UPPER END OF THE "ACCEPTABLE" RANGE. THESE RESULTS INDICATE THE NEED FOR REMEDIAL ACTION OF THE CARBON WASTE PILE.

BASED ON THE RESULTS OF THIS RISK ASSESSMENT, IT IS EVIDENT THAT IT IS NECESSARY TO PROPOSE REMEDIAL ACTIONS FOR THE CARTON WASTE PILE IN ORDER TO REDUCE THE INCREMENTAL CANCER RISK LEVEL AND TO AVOID THE OCCURRENCE OF NONCARCINOGENIC HEALTH EFFECTS. THE WASTE PRESENTS A HIGH CARCINOGENIC AND NONCARCINOGENIC RISK TO SITE RESIDENTS AND EMPLOYEES UNDER SEVERAL OF THE PROPOSED EXPOSURE SCENARIOS.

THE POTENTIAL RISKS RESULTING FROM THE ROUTINE DERMAL CONTACT, INHALATION, AND INGESTION EXPOSURES WERE THE HIGHEST OF ALL EXPOSURE ROUTES EXAMINED. THEREFORE, THIS EXPOSURE ROUTE WAS SELECTED FOR THE DETERMINATION OF ACTION LEVELS. IF THE RESIDUAL RISK IS ACCEPTABLE VIA THIS EXPOSURE ROUTE, IT WILL ALSO BE ACCEPTABLE VIA ALL OTHERS.

TWO SETS OF ACTION LEVELS WERE DEVELOPED. ONE TOTAL CARCINOGENIC RISK GOAL WAS SET AT 1X10(-4) AND THE SECOND WAS SET AT 1X10(-6). ACTION LEVELS FOR NONCARCINOGENS WERE SET TO MEET A TOTAL HAZARD INDEX OF UNITY, AND, THEREFORE, ONLY ONE ACTION LEVEL IS NEEDED FOR EACH NONCARCINOGIC INDICATOR COMPOUND.

TABLE 5 PRESENTS THE CONCENTRATIONS OF CARCINOGENS REQUIRED TO MEET THE TOTAL 1X10(-4) AND 10(-6) RISK GOALS. THE TABLE SHOWS THAT TO MEET 1X10(-6) RISK GOAL, THE CONCENTRATIONS OF ALL THE INDICATOR COMPOUNDS WILL BE SIGNIFICANTLY BELOW DETECTING LIMITS. THE ACTION LEVELS FOR INDIVIDUAL CARCINOGENS UNDER THE 1X10(-4) RISK GOAL ARE LESS THAN 2 UG/KG. THESE ACTION LEVELS APPLY TO ONLY THE WASTE MATERIAL ITSELF ACTION LEVELS FOR THE SUBSURFACE SOILS THAT DO NOT CONTAIN ANY VISIBLE TRACES OF THE CARBON WASTE WILL BE ADDRESSED IN THE FEASIBILITY STUDY FOR THE REST OF THE SITE.

#AA

VII. ALTERNATIVE ANALYSIS

EACH OF THE FOLLOWING ALTERNATIVES, WITH THE EXCEPTION OF ALTERNATIVE 1, CONSIST OF EXCAVATING THE APPROXIMATELY 636 CUBIC YARD CARBON WASTE PILE PLUS AN ADDITIONAL 239 CUBIC YARDS OF SOIL WHICH CONTAINS CARBON WASTE IN VISIBLE QUANTITIES.

ALTERNATIVE 1 - NO ACTION

THIS ALTERNATIVE IS CONSIDERED IN THE DETAILED ANALYSIS TO PROVIDE A BASE LINE TO WHICH THE OTHER REMEDIAL ALTERNATIVES CAN BE COMPARED. THIS ALTERNATIVE INVOLVES TAKING NO ACTION AT THE M.W. MANUFACTURING SITE TO REMOVE, REMEDIATE, OR CONTAIN THE CONTAMINATED CARBON WASTE PILE. INSTITUTIONAL CONTROLS, SUCH AS DEED RESTRICTIONS, ARE NOT APPLICABLE TO THE PURPOSE OF THIS ANALYSIS AND WILL BE ADDRESSED IN THE ONGOING RI/FS FOR THE REST OF THE SITE.

SHORT-TERM EFFECTIVENESS

THIS ALTERNATIVE PROVIDES NO SHORT-TERM PROTECTION OF PUBLIC HEALTH FROM EXPOSURE TO THE CARBON WASTE PILE.

LONG-TERM EFFECTIVENESS

THIS ALTERNATIVE DOES NOT PROVIDE ANY REDUCTION IN THE MAGNITUDE OF EXISTING OR FUTURE HEALTH RISKS ASSOCIATED WITH THE CARBON WASTE PILE.

REDUCTION OF TOXICITY, MOBILITY, OR VOLUME

THIS ALTERNATIVE DOES NOT REDUCE THE TOXICITY, MOBILITY, OR VOLUME OF CONTAMINANTS IN THE CARBON WASTE PILE.

IMPLEMENTABILITY

THERE ARE NO IMPLEMENTABILITY CONSIDERATIONS ASSOCIATED WITH THIS ALTERNATIVE.

COST

THERE ARE NO CAPITAL OR OPERATING COSTS ASSOCIATED WITH THIS ALTERNATIVE

COMPLIANCE WITH ARARS.

THERE ARE NO ARARS DIRECTLY ASSOCIATED WITH NO ACTION.

OVERALL PROTECTION OF HUMAN HEALTH AND THE ENVIRONMENT.

THIS ALTERNATIVE WOULD NOT ACHIEVE THE REMEDIAL ACTION OBJECTIVE OF PROTECTING THE PUBLIC HEALTH FROM EXPOSURE RISKS (INGESTION,INHALATION, AND DERMAL CONTACT) ASSOCIATED WITH THE CARBON WASTEPILE. ADDITIONALLY, CONTAMINANTS WOULD LIKELY CONTINUE MIGRATING INTO THE GROUNDWATER.

ALTERNATIVE 2 - INTERIM CAPPING

THIS ALTERNATIVE INVOLVES THE INSTALLATION OF A LOW PERMEABILITY, SYNTHETIC MEMBRANE CAP OVER THE CARBON WASTE PILE TO PROVIDE AN INTERIM MEASURE OF PROTECTION UNTIL THE TOTAL SITE REMEDIATION IS EVALUATED IN THE COMPLETE RI/FS AND SUBSEQUENTLY IMPLEMENTED. A 3-INCH LAYER OF SOIL WOULD BE PLACED BETWEEN THE MEMBRANE AND

THE WASTE TO PREVENT DEGRADATION OF THE MEMBRANE BY THE SOLVENTS.

SHORT TERM EFFECTIVENESS

PROTECTION OF PUBLIC HEALTH FROM EXPOSURE TO THE CARBON WASTE PILE WOULD IMMEDIATELY BE ACHIEVED UPON INSTALLATION OF THE SYNTHETIC CAP. IN ADDITION, THE CAP WOULD REDUCE CONTAMINANT MIGRATION FROM THE CARBON WASTE PILE INTO UNDERLYING SOIL AND GROUNDWATER.

LONG-TERM EFFECTIVENESS

THIS ALTERNATIVE IS NOT CONSIDERED EFFECTIVE IN THE LONG TERM SINCE THE MEMBRANE WILL DEGRADE AND THE SYSTEM INTEGRITY WILL BE AFFECTED BY EROSION, WEATHERING, AND GENERAL DEGRADATION. THE CAP WOULD NOT BE DESIGNED FOR LONG-TERM EFFECTIVENESS AS THE OBJECTIVE IS IMMEDIATE PROTECTION.

REDUCTION OF TOXICITY, MOBILITY, OR VOLUME

THIS ALTERNATIVE WOULD NOT REDUCE THE TOXICITY OR VOLUME OF CONTAMINANTS IN THE CARBON WASTE PILE OR THE VOLUME OF CARBON MATERIAL ITSELF AND DOES NOT PROVIDE PERMANENT, IRREVERSIBLE TREATMENT OF THE CARBON WASTE PILE. THIS ALTERNATIVE WOULD PROVIDE SOME REDUCTION IN THE MOBILITY OF CONTAMINANTS IN THE CARBON PILE BY MINIMIZING MIGRATION OF WATER THROUGH THE WASTE. THE SOIL LAYER BETWEEN THE SYNTHETIC CAP AND THE WASTE WOULD INCREASE THE QUANTITY OF CONTAMINATED MATERIAL TO BE REMEDIATED BY APPROXIMATELY 13 PERCENT.

IMPLEMENTABILITY

THE TECHNOLOGIES PROPOSED FOR CAPPING ARE ALL DEMONSTRATED AND COMMERCIALLY AVAILABLE.

COST

THE ESTIMATED COST FOR THIS POTENTIAL REMEDIAL ALTERNATIVE TOTALS $78,000. SINCE ONSITE REMEDIATION ACTIVITIES ARE ANTICIPATED TO REQUIRE SIGNIFICANTLY LESS THAN ONE YEAR, THERE ARE NO O&M COSTS.

COMPLIANCE WITH ARARS

RCRA CLOSURE REQUIREMENTS (40 CFR PARTS 264.228, 264.258, AND 264.310) ARE APPLICABLE AND PENNSYLVANIA CLOSURE REQUIREMENTS (FA CODE, TITLE 25,CHAPTER 75, SUBCHAPTERS C AND D) ARE RELEVANT AND APPROPRIATE. HOWEVER, BECAUSE THE CAP IS DESIGNED AS AN INTERIM REMEDY, THESE ARARS WILL NOT BE MET AT THIS TIME. THEY WILL BE COMPLIED WITH AT THE CLOSE OF REMEDIAL ACTIVITIES AT THE SITE.

THERE ARE NO LOCATIONS SPECIFIC ARARS ASSOCIATED WITH THIS REMEDIAL ALTERNATIVE. SEE TABLE 6 FOR A SUMMARY OF SIGNIFICANT ARARS.

OVERALL PROTECTION OF HUMAN HEALTH AND THE ENVIRONMENT

THIS ALTERNATIVE WOULD ACHIEVE THE REMEDIAL ACTION OBJECTIVE OF PROTECTING THE PUBLIC HEALTH FROM EXPOSURE RISKS (INGESTION, INHALATION, AND DERMAL CONTACT) ASSOCIATED WITH THE CARBON WASTE PILE BUT WOULD NOT PROVIDE A PERMANENT REMEDIAL SOLUTION TO THE WASTE PILE. THIS ALTERNATIVE WOULD PROVIDE AN ADDITIONAL BENEFIT OF CONTROLLING THE CONTINUING GROUND WATER DEGRADATION RESULTING FROM THIS MATERIAL.

ALTERNATIVE 3 - EXCAVATION AND OFFSITE DISPOSAL IN HAZARDOUS WASTE LANDFILL

THIS ALTERNATIVE INVOLVES EXCAVATING THE CARBON WASTE PILE (APPROXIMATELY 636 CUBIC YARDS' OF CARBON AND 239 CUBIC YARDS OF UNDERLYING SOIL) AND TRANSPORTING IT OFFSITE FOR DISPOSAL IN A RCRA HAZARDOUS WASTE LANDFILL. THIS ALTERNATIVE WAS ANALYZED IN THE FOCUSED FEASIBILITY STUDY. THIS WASTE HAS BEEN DETERMINED TO BE AN F001 SPENT-SOLVENT WASTE, SUBJECT TO THE RCRA LAND DISPOSAL REGULATIONS AND, AS SUCH, CANNOT BE DISPOSED OF IN A HAZARDOUS WASTE LANDFILL WITHOUT PRIOR TREATMENT. THIS ALTERNATIVE, THEREFORE, DOES NOT COMPLY WITH ARARS AND NO WAIVER IS JUSTIFIABLE. NO FURTHER DISCUSSION OF IT WILL TAKE PLACE.

ALTERNATIVE 4 EXCAVATION, ONSITE SOLVENT EXTRACTION AND OFFSITE
DISPOSAL IN HAZARDOUS WASTE LANDFILL

THIS ALTERNATIVE INVOLVES EXCAVATING THE CARBON WASTE PILE, TREATING THE WASTE ONSITE USING A SOLVENT EXTRACTION TECHNOLOGY, AND THEN TRANSPORTING IT OFFSITE FOR DISPOSAL IN A RCRA HAZARDOUS WASTE LANDFILL. THIS ALTERNATIVE WOULD PROTECT THE PUBLIC HEALTH FROM EXPOSURE TO THE CARBON WASTE BY TREATING THE WASTE AND THEN REMOVING THE WASTE PILE FROM THE SITE.

SHORT-TERM EFFECTIVENESS

PROTECTION OF PUBLIC HEALTH FROM EXPOSURE TO THE CARBON WASTE PILE WOULD BE ACHIEVED UPON REMOVAL OF THE ENTIRE CARBON WASTE PILE FROM THE M.W. MANUFACTURING SITE.

LONG-TERM EFFECTIVENESS

THERE WOULD BE NO REMAINING LONG-TERM RISKS ASSOCIATED WITH THIS ALTERNATIVE AND NO LONG-TERM MANAGEMENT, OPERATION, OR MAINTENANCE REQUIREMENTS, BECAUSE THE CARBON WASTE PILE WOULD BE TREATED IN A SHORT TIME PERIOD AND THEN COMPLETELY REMOVED FROM THE SITE.

REDUCTION OF TOXICITY, MOBILITY, OR VOLUME

WITH RESPECT TO THE M.W. MANUFACTURING SITE, SOLVENT EXTRACTION TREATMENT FOLLOWED BY COMPLETE REMOVAL OF THE CARBON WASTE PILE FROM THE SITE IS A PERMANENT REMEDIAL ACTION WHICH REDUCES THE OVERALL TOXICITY AND VOLUME OF CONTAMINATION AT THE SITE.

SOLVENT EXTRACTION WOULD NOT REDUCE THE OVERALL VOLUME OF THE CARBON WASTE AND ALTHOUGH THE PROCESS WOULD REDUCE THE TOXICITY OF THE WASTE BY REMOVING A PERCENTAGE OF ORGANIC CONTAMINANTS, THE WASTE WOULD REMAIN HIGHLY TOXIC DUE PRIMARILY TO THE PRESENCE OF HIGH LEVELS OF LEAD. DISPOSAL OF THE WASTE IN AN OFFSITE, RCRA HAZARDOUS WASTE LANDFILL WOULD SIGNIFICANTLY REDUCE THE MOBILITY OF CONTAMINANTS IN THE WASTE BY PLACING THE WASTE IN A DOUBLE-LINED, MULTILAYER, CAPPED LANDFILL WITH A LEACHATE DETECTION AND COLLECTION/TREATMENT SYSTEM.

IMPLEMENTABILITY

THE TECHNOLOGIES PROPOSED FOR EXCAVATION, MATERIAL HANDLING, AND OFFSITE LANDFILLING ARE DEMONSTRATED AND COMMERCIALLY AVAILABLE ALTHOUGH THE NUMBER OF RCRA PERMITTED LANDFILLS IS LIMITED. SOLVENT EXTRACTION PROCESSES HAVE BEEN DEMONSTRATED FOR MANY CONTAMINATED SOILS AND SLUDGES. THEREFORE, TREATABILITY STUDIES WOULD BE NEEDED TO DETERMINE THE OVERALL IMPLEMENTABILITY AND OPERATING CONDITIONS OF THE EXTRACTION PROCESS USED ON THE CARBON WASTE.

COST

THE COSTS OF THIS ALTERNATIVE ARE MAINLY DEPENDENT ON THE TYPE OF SOLVENT EXTRACTION PROCESS USED AND THE MOBILIZATION/DEMOBILIZATION COSTS FOR THIS PROCESS.

THE CORRESPONDING LOW RANGE, BASELINE, AND HIGH RANGE COST ESTIMATES FOR THIS ALTERNATIVE, BASED ON THREE DIFFERENT COMMERCIALLY AVAILABLE SOLVENT EXTRACTION PROCESSES, ARE SHOWN BELOW:

LOW RANGE	$831,000
BASELINE	$1,397,000
HIGH RANGE	$2,299,000

COMPLIANCE WITH ARARS

IT IS EXPECTED THAT THE ONSITE SOLVENT EXTRACTION TREATMENT PROCESS WOULD TREAT THE CARBON WASTE TO THE BEST DEMONSTRATED AVAILABLE TECHNOLOGY (BDAT) TREATMENT STANDARDS FOR SPENT SOLVENTS, WHICH WOULD ALLOW THE WASTE TO COMPLY WITH THE RCRA LAND DISPOSAL REGULATIONS (40 CFR PART 268).

THERE ARE NO LOCATION-SPECIFIC ARARS ASSOCIATED WITH THIS REMEDIAL ALTERNATIVE. SEE TABLE 6 FOR A SUMMARY OF SIGNIFICANT ARARS.

OVERALL PROTECTION OF HUMAN HEALTH AND ENVIRONMENT

THIS ALTERNATIVE WOULD ACHIEVE THE REMEDIAL ACTION OBJECTIVE OF PROTECTING THE PUBLIC HEALTH FROM EXPOSURE RISKS (INGESTION, INHALATION, AND DERMAL CONTACT) ASSOCIATED WITH THE CARBON WASTE PILE AND WOULD PROVIDE A PERMANENT REMEDIAL SOLUTION TO THE WASTE PILE WITH RESPECT TO THE M.W. MANUFACTURING SITE. SINCE THE WASTES HAVE BEEN REMOVED FROM THE SITE THEY WOULD NO LONGER CONTINUE TO CONTAMINATE THE GROUNDWATER.

ALTERNATIVE 5 - EXCAVATION, ONSITE SOLVENT EXTRACTION, ONSITE SOLIDIFICATION, AND ONSITE DISPOSAL IN NONHAZARDOUS LANDFILL

THIS ALTERNATIVE INVOLVES: EXCAVATING THE CARBON WASTE PILE; TREATING THE WASTE ONSITE USING A SOLVENT EXTRACTION TECHNOLOGY TO REMOVE ORGANIC CONTAMINANTS; STABILIZING/SOLIDIFYING THE SOLVENT EXTRACTED WASTE USING A CEMENT/POZZOLAN-BASED TECHNOLOGY TO IMMOBILIZE HEAVY METALCONTAMINANTS; AND THEN DISPOSING THE SOLIDIFIED WASTE ONSITE IN A NONHAZARDOUS LANDFILL. THIS ALTERNATIVE WOULD PROTECT THE PUBLIC HEALTH FROM EXPOSURE TO THE CARBON WASTE BY TREATING/SOLIDIFYING THE WASTE TO REMOVE AND IMMOBILIZE CONTAMINANTS SO THAT THE WASTE COULD BE DELISTED AS A RCRA HAZARDOUS WASTE AND THEN PLACING THE TREATED WASTE IN AN UNDERGROUND, NONHAZARDOUS TYPE LANDFILL.

SHORT-TERM EFFECTIVENESS

PROTECTION OF PUBLIC HEALTH FROM EXPOSURE TO THE CARBON WASTE PILE WOULD BE ACHIEVED UPON ONSITE DISPOSAL OF THE TREATED/SOLIDIFIED CARBON WASTE MATERIAL.

LONG-TERM EFFECTIVENESS

THE LONG-TERM RELIABILITY OF SOLIDIFICATION TECHNOLOGY IS UNKNOWN.

ENVIRONMENTAL FORCES SUCH AS PRECIPITATION (WHICH IS SLIGHTLY ACIDIC) INFILTRATION, FREEZING/THAWING', AND WETTING/DRYING DUE TO GROUND WATER CONTACT MAY CAUSE THE SOLIDIFIED MATERIAL TO LOSE ITS STRUCTURAL INTEGRITY OVER TIME, ALLOWING CONTAMINANTS TO BECOME MORE MOBILE. LEACHING TESTS AND COMPRESSIVE STRENGTH TESTS WILL BE CONDUCTED DURING THE TREATABILITY STUDY TO DETERMINE THE INTEGRITY OF THE SOLID END PRODUCT. BECAUSE WASTES ARE BEING LEFT ONSITE, THE MANDATORY 5 YEAR REVIEW WOULD BE TRIGGERED. OPERATION AND MAINTENANCE ACTIVITIES WOULD BE NECESSARY TO ENSURE THE FUTURE INTEGRITY OF THE LANDFILL COVER.

REDUCTION OF TOXICITY, MOBILITY, OR VOLUME

SOLVENT EXTRACTION WOULD NOT REDUCE THE OVERALL VOLUME OF THE CARBON WASTE, AND ALTHOUGH THE PROCESS WOULD REDUCE THE TOXICITY OF WASTE BY REMOVING A PERCENTAGE OF ORGANIC CONTAMINANTS, THE WASTE WOULD REMAIN HIGHLY TOXIC DUE TO PRIMARILY TO THE PRESENCE OF HIGH LEVELS OF LEAD.

SOLIDIFICATION OF THE WASTE WOULD INCREASE THE VOLUME OF THE WASTE BY AS MUCH AS 100 PERCENT, BUT WOULD SIGNIFICANTLY REDUCE THE MOBILITY OF THE HEAVY METAL CONTAMINANTS IN THE WASTE.

IMPLEMENTABILITY

THE TECHNOLOGIES PROPOSED FOR EXCAVATION, MATERIAL HANDLING, AND ONSITE LANDFILLING ARE DEMONSTRATED AND COMMERCIALLY AVAILABLE. THE SOLVENT EXTRACTION AND SOLIDIFICATION PROCESS HAVE BEEN DEMONSTRATED FOR CONTAMINATED SOILS AND SLUDGES. THEREFORE, TREATABILITY STUDIES WOULD NEED TO DETERMINE THE OVERALL IMPLEMENTABILITY AND OPERATING CONDITIONS OF THE EXTRACTIONS AND THE SOLIDIFICATION PROCESSES USED ON THE CARBON WASTE.

COST

THE COST VARIABILITY OF THIS ALTERNATIVE IS MAINLY DEPENDENT ON THE TYPE OF SOLVENT EXTRACTION PROCESS USED AND THE MOBILIZATION/DEMOBILIZATION COSTS FOR THE PROCESS. THE CORRESPONDING LOW RANGE, BASELINE, AND HIGH RANGE TOTAL COST ESTIMATES FOR THIS ALTERNATIVE (INCLUDING SOLVENT EXTRACTION, SOLIDIFICATION, AND DISPOSAL) ARE SHOWN BELOW:

LOW RANGE $1,093,000

BASELINE $1,659,000

HIGH RANGE $2,556,000

COMPLIANCE WITH ARARS

IT IS ANTICIPATED THAT THE COMBINATION OF SOLVENT EXTRACTION AND SOLIDIFICATION WILL ALLOW THE TREATED WASTE TO BE DELISTED AS A RCRA HAZARDOUS WASTE.

THERE ARE NO LOCATION SPECIFIC ARARS ASSOCIATED WITH THIS REMEDIAL ALTERNATIVE. SEE TABLE 6 FOR A SUMMARY OF SIGNIFICANT ARARS.

OVERALL PROTECTION OF HUMAN HEALTH AND THE ENVIRONMENT

THIS ALTERNATIVE WOULD ACHIEVE THE REMEDIAL ACTION OBJECTIVE OF PROTECTING THE PUBLIC HEALTH FROM EXPOSURE RISKS (INGESTION, INHALATION, AND DERMAL CONTACT) ASSOCIATED WITH THE CARBON WASTE PILE. THE PERMANENCE OF THIS ALTERNATIVE IS DEPENDENT ON THE LONG-TERM RELIABILITY OF THE SOLIDIFIED WASTE WHICH IS UNKNOWN AT THIS SITE.

ALTERNATIVE 6 - EXCAVATION, ONSITE INCINERATION, AND OFFSITE DISPOSAL OF ASH IN HAZARDOUS WASTE LANDFILL

THIS ALTERNATIVE INVOLVES EXCAVATING THE CARBON WASTE PILE, INCINERATING THE WASTE ONSITE, AND THEN TRANSPORTING THE ASH FOR OFFSITE DISPOSAL AT A RCRA HAZARDOUS LANDFILL. THIS ALTERNATIVE WOULD PROTECT THE PUBLIC HEALTH FROM EXPOSURE TO THE CARBON WASTE BY DESTROYING THE CARBON WASTE AND CONTAMINANTS AND THEN REMOVING THE RESIDUAL ASH FROM THE SITE.

SHORT-TERM EFFECTIVENESS

THIS ALTERNATIVE WOULD REMOVE ALL RISKS POSED BY THE ORGANIC COMPOUNDS BECAUSE THEY WOULD BE DESTROYED BY INCINERATION. METALS WOULD REMAIN IN THE RESIDUAL ASH WHICH WOULD BE HAULED OFFSITE FOR DISPOSAL. THIS ACTION WOULD PROTECT THE PUBLIC HEALTH FROM EXPOSURE TO THE METALS I THE ASH.

LONG-TERM EFFECTIVENESS

THERE WOULD BE NO REMAINING LONG-TERM RISKS ASSOCIATED WITH THIS ALTERNATIVE AND NO LONG-TERM MANAGEMENT, OPERATION, OR MAINTENANCE REQUIREMENTS, BECAUSE THE CARBON WASTE PILE WOULD BE INCINERATED IN A SHORT TIME PERIOD AND THE ASH COMPLETELY REMOVED FROM THE SITE.

REDUCTION OF TOXICITY, MOBILITY, OR VOLUME

WITH RESPECT TO THE M.W. MANUFACTURING SITE, INCINERATION OF THE CARBON WASTE FOLLOWED BY COMPLETE REMOVAL OF THE ASH FROM THE SITE IS A PERMANENT REMEDIAL ACTION WHICH REDUCES THE OVERALL TOXICITY AND VOLUME OF CONTAMINATION AT THE SITE. ALL OF THE ORGANIC CONTAMINANTS IN THE CARBON WASTE WOULD BE DESTROYED TO THE RISK-BASED REMEDIAL ACTION LEVELS AND THE CARBON WASTE VOLUME WOULD BE REDUCED BY APPROXIMATELY 80 PERCENT.

RESIDUALS REMAINING AFTER IMPLEMENTATION OF THIS ALTERNATIVE INCLUDE THE INCINERATOR ASH, (APPROXIMATELY 130 TONS), DECONTAMINATION FLUIDS, AND THE WASTE WATER FROM AIR POLLUTION CONTROLS. THE ASH WOULD BE HAULED OFFSITE FOR DISPOSAL IN A RCRA HAZARDOUS WASTE LANDFILL AND THE WASTE WATERS WOULD BE TAKEN OFFSITE FOR TREATMENT.

IMPLEMENTABILITY

THE TECHNOLOGIES PROPOSED FOR EXCAVATION, INCINERATION, AND OFFSITE LANDFILING ARE DEMONSTRATED AND COMMERCIALLY AVAILABLE. A CLEAN AREA, LARGE ENOUGH TO FIT TWO TO THREE TRACTOR TRAILERS, IS REQUIRED TO SET UP THE INCINERATOR AND MATERIAL HANDLING EQUIPMENT. THE INCINERATOR WILL REQUIRE AN AUXILIARY FUEL SOURCE, POTABLE WATER, AND POSSIBLY ELECTRICITY.

COST

THE ESTIMATED COST OF THIS POTENTIAL REMEDIAL ALTERNATIVE TOTALS $4,757,000. SINCE ONSITE REMEDIATION ACTIVITIES ARE ANTICIPATED TO REQUIRE LESS THAN ON YEAR, THERE ARE NO O&M COSTS.

COMPLIANCE WITH ARARS

THIS ALTERNATIVE WILL COMPLY WITH ALL ARARS. SEE TABLE 6 FOR A SUMMARY OF SIGNIFICANT ARARS.

OVERALL PROTECTION OF HUMAN HEALTH AND THE ENVIRONMENT

THIS ALTERNATIVE WOULD ACHIEVE THE REMEDIAL ACTION OBJECTIVE OF PROTECTING THE PUBLIC HEALTH FROM EXPOSURE RISKS (INGESTION, INHALATION, AND DERMAL CONTACT) ASSOCIATED WITH THE CARBON WASTE PILE AND WOULD PROVIDE A PERMANENT REMEDIAL SOLUTION TO THE WASTE PILE WITH RESPECT TO THE M.W. MANUFACTURING SITE. SINCE THE ORGANICS ARE DESTROYED AND THE ASH TAKEN OFFSITE, THE MATERIALS WOULD NO LONGER CONTINUE TO CONTAMINATE THE GROUNDWATER.

ALTERNATIVE 7 EXCAVATION, OFFSITE INCINERATION, AND OFFSITE DISPOSAL OF ASH IN HAZARDOUS WASTE LANDFILL

THIS ALTERNATIVE INVOLVES EXCAVATING THE CARBON WASTE PILE, TRANSPORTING THE WASTE OFFSITE TO AN INCINERATOR FACILITY, AND THEN DISPOSING THE ASH IN AN OFFSITE RCRA HAZARDOUS WASTE LANDFILL. THIS ALTERNATIVE WOULD PROTECT THE PUBLIC HEALTH FROM EXPOSURE TO THE CARBON WASTE BY REMOVING THE WASTE FROM THE SITE AND THEN DESTROYING A SIGNIFICANT PERCENTAGE OF THE CARBON WASTE AND CONTAMINANTS BY INCINERATION.

SHORT TERM EFFECTIVENESS

PROTECTION OF PUBLIC HEALTH FROM EXPOSURE TO THE CARBON WASTE PILE WOULD BE ACHIEVED UPON REMOVAL OF THE ENTIRE CARBON WASTE PILE.

LONG-TERM EFFECTIVENESS

THERE WOULD BE NO REMAINING LONG-TERM RISKS ASSOCIATED WITH THIS ALTERNATIVE AND NO LONG-TERM MANAGEMENT, OPERATION, OR MAINTENANCE REQUIREMENTS, BECAUSE THE CARBON WASTE PILE WOULD BE COMPLETELY REMOVED FROM THE SITE.

REMOVAL OF THE CARBON WASTE FROM THE SITE FOLLOWED BY INCINERATION OF THE WASTE IS A PERMANENT REMEDIAL ACTION WHICH REDUCES THE OVERALL TOXICITY AND VOLUME OF CONTAMINATION AT THE SITE. ALL OF THE ORGANIC CONTAMINANTS IN THE CARBON WASTE WOULD BE DESTROYED TO THE RISK-BASED REMEDIAL ACTION LEVELS AND THE CARBON WASTE VOLUME WOULD BE REDUCED BY APPROXIMATELY 80 PERCENT.

IMPLEMENTABILITY

THE TECHNOLOGIES PROPOSED FOR EXCAVATION, INCINERATION, AND OFFSITE LANDFILLING ARE DEMONSTRATED AND COMMERCIALLY AVAILABLE.

COST

THE ESTIMATED COST FOR THIS POTENTIAL REMEDIAL ALTERNATIVE TOTALS $2,061,000. SINCE ONSITE REMEDIATION ACTIVITIES ARE ANTICIPATED TO REQUIRE LESS THAN ONE YEAR, THERE ARE NO O&M COSTS.

COMPLIANCE WITH ARARS

THIS ALTERNATIVE WOULD COMPLY WITH ALL ARARS. SEE TABLE 6 FOR A SUMMARY OF SIGNIFICANT ARARS.

OVERALL PROTECTION OF HUMAN HEALTH AND THE ENVIRONMENT

THIS ALTERNATIVE WOULD ACHIEVE THE REMEDIAL ACTION OBJECTIVE OF PROTECTING THE PUBLIC HEALTH FROM EXPOSURE RISKS (INGESTION, INHALATION, AND DERMAL CONTACT) ASSOCIATED WITH THE CARBON WASTE PILE AND WOULD PROVIDE A PERMANENT REMEDIAL SOLUTION TO THE WASTE PILE WITH RESPECT TO THE M.W. MANUFACTURING SITE. SINCE THE ORGANICS ARE DESTROYED AND THE ASH TAKEN OFFSITE, THIS MATERIAL WOULD NO LONGER CONTINUE TO CONTAMINATE THE GROUNDWATER.

VIII. COMPARISON AMONG ALTERNATIVES

THE REMEDIAL ALTERNATIVES ANALYZED IN DETAIL IN SECTION VII ARE COMPARED AGAINST EACH OTHER IN THIS SECTION. THE NINE EVALUATION CRITERIA USED IN SECTION VII WILL BE USED FOR THE COMPARISON.

SHORT-TERM EFFECTIVENESS

WITH THE EXCEPTION OF ALTERNATIVE 1, NO ACTION, ALL REMEDIAL ALTERNATIVES WOULD PROVIDE PROTECTION OF PUBLIC HEALTH FROM EXPOSURE TO THE CARBON WASTE PILE IN THE SHORT-TERM. ALTERNATIVE 2, INTERIM CAPPING, COULD BE IMPLEMENTED IN THE SHORTEST TIME PERIOD, APPROXIMATELY ONE TO TWO WEEKS AFTER THE START OF ONSITE REMEDIATION ACTIVITIES. ALTERNATIVE 4 AND 5 WOULD REQUIRE THE LONGEST PERIODS OF TIME TO IMPLEMENT DUE TO THE NEED FOR TREATABILITY STUDIES. ONCE ONSITE ACTION BEGINS, ALL ALTERNATIVES COULD BE IMPLEMENTED IN A SHORT AMOUNT OF TIME (LESS THAN SIX MONTHS) DUE TO THE RELATIVELY SMALL QUANTITY OF CARBON WASTE MATERIAL.

LONG-TERM EFFECTIVENESS

WITH RESPECT TO LONG-TERM RELIABILITY, ALTERNATIVES 2 AND 5 PRESENT THE GREATEST UNCERTAINTY. THE RESISTANCE OF THE TEMPORARY CAP TO PHYSICAL AND CHEMICAL DEGRADATION IS NOT EXPECTED TO EXCEED MORE THAN TWO YEARS. THE LONG-TERM RELIABILITY OF THE SOLIDIFICATION OF THIS HAZARDOUS WASTE HAS NOT BEEN PROVEN AND MUST BE EVALUATED THROUGH TREATABILITY STUDIES. ALTERNATIVES 6 AND 7, WHICH INCLUDE INCINERATION, PROVIDE THE MAXIMUM LONG TERM EFFECTIVENESS BECAUSE ALL OF THE ORGANIC CONTAMINANTS WOULD BE PERMANENTLY DESTROYED ALONG WITH APPROXIMATELY 80 PERCENT OF THE CARBON WASTE. ALTERNATIVES 3 AND 4, WHICH WOULD ULTIMATELY REMOVE THE CARBON WASTE MATERIAL FROM THE M.W. MANUFACTURING SITE AND PLACE THE WASTE IN A RCRA HAZARDOUS WASTE LANDFILL, WOULD ALSO BE EFFECTIVE IN THE LONG TERM BUT NOT AS EFFECTIVE AS ALTERNATIVES 6 AND 7 DUE TO THE VOLUME REDUCTION AND DESTRUCTION OF THE ORGANICS ACHIEVED BY THE INCINERATION PROCESS.

REDUCTION OF THE TOXICITY, MOBILITY, OR VOLUME

ALTERNATIVE 2. INTERIM CAPPING, WOULD NOT REDUCE THE TOXICITY OF VOLUME OF THE CARBON WASTE BUT WOULD PROVIDE SOME REDUCTION IN THE MOBILITY OF CONTAMINANTS IN THE CARBON PILE BY MINIMIZING MIGRATION OF WATER THROUGH THE WASTE.

WITH RESPECT TO THE M.W. MANUFACTURING SITE, ALTERNATIVE 3, 4, 6, AND 7 WOULD REDUCE THE OVERALL TOXICITY BY REMOVING A PERCENTAGE OF THE ORGANIC CONTAMINANTS FROM THE WASTE. ALTERNATIVE 5 WOULD REDUCE THE MOBILITY OF INORGANIC CONTAMINANTS IN THE WASTE THROUGH ONSITE SOLIDIFICATION, WHEREAS ALTERNATIVES 3, 4, 6, AND 7 WOULD REDUCE THE MOBILITY OF CONTAMINANTS, OR RESIDUAL CONTAMINANTS REMAINING AFTER TREATMENT, BY PLACING THE WASTE OR WASTE RESIDUALS IN AN OFFSITE RCRA HAZARDOUS WASTE LANDFILL. ALTERNATIVES 6 AND 7, WHICH INCLUDE INCINERATION, OFFER THE GREATEST REDUCTION IN TOXICITY AND VOLUME, BECAUSE ALL OF THE ORGANIC CONTAMINANTS WOULD BE PERMANENTLY DESTROYED ALONG WITH APPROXIMATELY 80 PERCENT OF THE CARBON WASTE.

IMPLEMENTABILITY

THE TECHNOLOGIES PROPOSED FOR ALL ALTERNATIVES ARE, IN GENERAL, DEMONSTRATED AND COMMERCIALLY AVAILABLE. WITH ALTERNATIVES 4 AND 5, HOWEVER, TREATABILITY STUDIES WOULD BE NEEDED TO DETERMINE THE OVERALL, IMPLEMENTABILITY AND OPERATING CONDITIONS OF THE SOLVENT EXTRACTION PROCESS. WITH RESPECT TO EASE OF IMPLEMENTABILITY, ALTERNATIVES 2, 3, AND 7 WOULD BE THE MOST READILY IMPLEMENTABLE BECAUSE THESE ALTERNATIVE DO NOT INVOLVE THE MOBILIZATION, OPERATION, AND DEMOBILIZATION OF ONSITE TREATMENT SYSTEMS.

COST

THE TOTAL ESTIMATED COSTS OF THE REMEDIAL ALTERNATIVES ARE SUMMARIZED IN TABLE 7. SINCE ONSITE REMEDIATION ACTIVITIES ARE ANTICIPATED TO REQUIRE LESS THAN ONE YEAR, THERE ARE NO O&M COSTS. OTHER LONG-TERM O&M CONSIDERATIONS, INCLUDING MONITORING, WILL BE INCLUDED IN THE OVERALL SITE RI/FS.

COMPLIANCE WITH ARARS

ALTERATIVE 1 (NO ACTION) HAS NO ARARS. ALTERNATIVES 2, AND 4 THROUGH 7 WOULD COMPLY WITH ALL ARARS. ALTERNATIVE 3 WOULD NOT COMPLY WITH THE RCRA LAND DISPOSAL TREATMENT STANDARDS FOR SPENT SOLVENT WASTE.

OVERALL PROTECTION OF HUMAN HEALTH AND THE ENVIRONMENT

WITH THE EXCEPTION OF ALTERNATIVE 1, NO ACTION, ALL ALTERNATIVES WOULD ACHIEVE THE REMEDIAL ACTION OBJECTIVE OF PROTECTING THE PUBLIC HEALTH FROM EXPOSURE RISKS (INGESTION, INHALATION, AND DERMAL CONTACT) ASSOCIATED WITH THE CARBON WASTE PILE AND WOULD DECREASE THE CURRENT MIGRATION OF CONTAMINANTS INTO THE ENVIRONMENT.

ALTERNATIVE 2 WOULD NOT PROVIDE A PERMANENT REMEDIAL SOLUTION TO THE WASTE PILE. WITH RESPECT TO THE M.M. MANUFACTURING SITE, ALTERNATIVES 3, 4, 6, AND 7, OFFER PERMANENT OVERALL PROTECTION TO THE COMMUNITY BY ULTIMATELY REMOVING THE CARBON WASTE MATERIAL FROM THE SITE. THE PERMANENCE OF PROTECTION PROVIDED BY ALTERNATIVE 5 IS DEPENDENT ON THE LONG-TERM RELIABILITY OF THE SOLIDIFIED WASTE WHICH IS UNKNOWN AND MUST BE EVALUATED THROUGH TREATABILITY STUDIES.

COMMUNITY ACCEPTANCE

A PUBLIC MEETING WAS HELD FOR THE SITE ON FEBRUARY 28,1989. NO ADVERSE COMMENTS WERE RECEIVED AT THE MEETING OR DURING THE FOLLOWING 30-DAY COMMENT PERIOD. IN GENERAL, THE COMMUNITY IS HAPPY TO SEE REMEDIATION STARTING AT THE SITE.

STATE ACCEPTANCE

THE COMMONWEALTH OF PENNSYLVANIA, THROUGH ITS DEPARTMENT OF ENVIRONMENTAL RESOURCES (DER), CONCURS WITH THE SELECTED REMEDY.

#SA

IX. SELECTED ALTERNATIVE

AFTER CAREFUL CONSIDERATION OF THE PROPOSED REMEDIAL ALTERNATIVES WITH REGARD TO THE CRITERIA SPECIFIED ABOVE, EPA'S SELECTED ALTERNATIVE FOR ADDRESSING THE CARBON WASTE PILE IS ALTERNATIVE 7: EXCAVATION, OFFSITE INCINERATION, AND DISPOSAL OF INCINERATOR ASH IN AN OFFSITE RCRA LANDFILL. THIS ALTERNATIVE WOULD PERMANENTLY REDUCE THE ON SITE MOBILITY, TOXICITY AND VOLUME OF THE CARBON WASTE SO AS TO ELIMINATE THE THREAT TO PUBLIC HEALTH FROM DIRECT CONTACT WITH WASTE. OFF SITE, THE TOXICITY AND VOLUME OF THE WASTE WOULD BE REDUCED BY INCINERATION AND THE MOBILITY OF THE RESIDUAL TOXIC COMPONENTS IN THE ASH WOULD BE LIMITED BY THEIR DEPOSITION IN A SECURE RCRA PERMITTED LANDFILL.

BY REMOVAL OF THE WASTE FROM THE SITE, THE POTENTIAL FOR FURTHER GROUND WATER CONTAMINATION FROM THE WASTE WOULD BE ELIMINATED.

#SD

X. STATUTORY DETERMINATIONS

THE SELECTED REMEDY IS PROTECTIVE OF HUMAN HEALTH AND THE ENVIRONMENT, ATTAINS ALL APPLICABLE, OR RELEVANT AND APPROPRIATE REQUIREMENTS FOR THIS OPERABLE UNIT, IS COST-EFFECTIVE, WILL UTILIZE PERMANENT SOLUTIONS AND ALTERNATIVE TREATMENT TECHNOLOGIES OR RESOURCE RECOVERY TECHNOLOGIES TO THE MAXIMUM EXTENT PRACTICABLE, AND SATISFIES THE PREFERENCE FOR TREATMENT AS A PRINCIPAL ELEMENT.

ATTAINMENT OF THE APPLICABLE OR RELEVANT OR APPROPRIATE REQUIREMENTS. THE SELECTED ALTERNATIVE WILL BE CONSISTENT WITH THOSE ARARS IDENTIFIED FOR THIS SITE.

* RCRA SUBTITLE C, HAZARDOUS WASTE MANAGEMENT REQUIREMENTS, 40 CFR 264, WHICH GOVERN THE TRANSPORTATION, TREATMENT, STORAGE AND DISPOSAL OF HAZARDOUS WASTES. (APPLICABLE) THE TREATMENT WILL BE CONDUCTED IN A RCRA PERMITTED FACILITY IN COMPLIANCE WITH ALL APPLICABLE REGULATIONS.

* RCRA SUBTITLE C LAND DISPOSAL RESTRICTIONS, 40 CFR 268, WHICH REGULATE THE LAND DISPOSAL OF HAZARDOUS WASTE. (APPLICABLE) FOR THIS F001 SPENT SOLVENT WASTE, THE TREATMENT METHOD (INCINERATION) WILL ACHIEVE THE TREATMENT STANDARDS SPECIFIED IN SUBPART 268.41.

* OSHA REQUIREMENTS (29 CFR 1910, 1926 AND 1904) WHICH PROVIDE OCCUPATIONAL SAFETY & HEALTH REQUIREMENTS APPLICABLE TO WORKERS

ENGAGED IN ONSITE FIELD ACTIVITIES. (APPLICABLE) ALL REMEDIAL CONTRACTORS EMPLOYED DURING THIS ACTION WILL BE REQUIRED TO CERTIFY THAT THEY COMPLY WITH ALL OSHA REQUIREMENTS.

* CLEAN AIR ACT, 40 CFR 50, NATIONAL AMBIENT AIR QUALITY STANDARDS (NAAQS). (APPLICABLE) THIS ACTION WILL CAUSE NO VIOLATION OF THE NAAQS DUE TO FUGITIVE DUST GENERATED DURING CONSTRUCTION ACTIVITIES.

* CLEAN AIR ACT, 40 CFR 52, STATE IMPLEMENTATION PLANS FOR NATIONAL AMBIENT AIR QUALITY STANDARDS. (APPLICABLE) FUGITIVE DUST EMISSIONS GENERATED DURING CONSTRUCTION ACTIVITIES WILL COMPLY WITH FUGITIVE DUST REGULATIONS IN THE FEDERALLY APPROVED STATE IMPLEMENTATION PLAN FOR THE COMMONWEALTH OF PENNSYLVANIA. ALSO, THE INCINERATOR WILL COMPLY WITH THE STATE IMPLEMENTATION PLAN FOR THE STATE IN WHICH IT IS LOCATED.

* PENNSYLVANIA SOLID WASTE DISPOSAL REGULATION, PA CODE TITLE 25, CHAPTER 75, SUBCHAPTER D, WHICH GOVERN THE TRANSPORTATION, TREATMENT, STORAGE AND DISPOSAL OF HAZARDOUS WASTE. (APPLICABLE) TRANSPORTATION AND STORAGE OF WASTES DURING THIS ACTION WILL COMPLY WITH THESE REGULATIONS.

COST-EFFECTIVENESS

THIS ALTERNATIVE AFFORDS A HIGH DEGREE OF OVERALL EFFECTIVENESS IN NOT ONLY PROTECTING THE ONSITE RESIDENTS AS WELL AS ANY FUTURE SITE VISITOR FROM DIRECT CONTACT WITH THE CARBON WASTE PILE, BUT ALSO IN REDUCING FUTURE CONTAMINATION MIGRATING TO THE GROUND WATER. THE US EPA BELIEVES THAT THE COSTS OF THE SELECTED REMEDY ARE PROPORTIONATE TO THE OVERALL EFFECTIVENESS IT AFFORDS SUCH THAT IT REPRESENTS A REASONABLE VALUE FOR THE MONEY.

UTILIZATION OF PERMANENT SOLUTIONS AND ALTERNATIVE TREATMENT TECHNOLOGIES TO THE MAXIMUM EXTENT PRACTICABLE

THE U.S. EPA BELIEVES THAT THE SELECTED ALTERNATIVE IS THE MOST APPROPRIATE SOLUTION FOR REMEDIATING THE CARBON WASTE PILE AT THE M.W MANUFACTURING SITE. AS THE CONTAMINATED WASTE WILL BE EXCAVATED AND REMOVED FROM THE SITE, THIS REPRESENTS THE MAXIMUM EXTENT TO WHICH PERMANENT SOLUTIONS CAN BE UTILIZED. THE WASTE WILL BE TREATED (INCINERATED) AT AN OFFSITE FACILITY WHICH ALSO REPRESENTS A PERMANENT SOLUTION.

PREFERENCE FOR TREATMENT AS A PRINCIPAL ELEMENT

THE STATUTORY PREFERENCE FOR PERMANENT TREATMENT IS SATISFIED AS SELECTED REMEDY CALLS FOR REMOVAL AND OFFSITE TREATMENT OF THE CARBON WASTE.

#TA
TABLES & ATTACHMENTS

TABLE 1

SUMMARY OF CHEMICAL ANALYTICAL DATA
CARBON WASTE PILE
MW MANUFACTURING SITE, MONTOUR COUNTY, PENNSYLVANIA

CONTAMINANT	RANGE OF POSITIVE DET. (MG/KG)	NO. OF POSITIVE DETECTIONS/SAMPLES	AVERAGE CONCENTRATION (MG/KG)
ACETONE	4.6-48	4/11	10.79
ETHYLBENZENE	1.7	1/11	0.15
TOLUENE	6.3-86	5/11	11.00
TOTAL XYLENES	3.2-8.0	3/11	1.44
TETRACHLORO-ETHENE	110 - 14,000	11/11	5,500
TRICHLORO-ETHENE	4.8-180	9/11	27.05
1,2-DICHLORO-ETHENE	19	1/11	1.73
1,1,2,2-TETRACHOLORO-ETHANE	1.7-170	3/11	24.70
1,1,2-TRICHLORO-ETHANE	7.3-510	11/11	215.75
METHYLENE-CHLORIDE	1.7-83	11/11	20.49
CHLOROFORM	1.2	1/11	0.109
CARBON-TETRACHLORIDE	36	1/11	3.27
BIS(2-ETHYLHEXYL)-PHTHALATE	320 - 70,000	11/11	9,354
DI-N-BUTYL-PHTHALATE	27 - 1,700	9/11	315
BENZOIN ACID	19	1/11	1.72
TOTAL PCBS	1.04-54.16	11/11	7.60
COPPER	6,390 - 69,100	11/11	32,660
LEAD	9,450 - 29,600	11/11	17,100

* AVERAGES ARE ARITHMETIC AVERAGES CALCULATED USING NONDETECTIONS AS ZERO.

TABLE 5
RISK-BASED ACTION LEVELS
CARBON WASTE PILE
MW MANUFACTURING SITE
MONTOUR COUNTY, PENNSYLVANIA

CONTAMINANT	CONCENTRATION FOR 10(-6) RISK (MG/KG)	CONCENTRATION FOR 10(-4) RISK (MG/KG)
TOLUENE	*	*
TETRACHLOROETHENE	1 X 10(-6)	5 X 10(-4)
TRICHLOROETHENE	1 X 10(-5)	1 X 10(-3)
1,1,2,2-TETRACHLOROETHANE	1 X 10(-6)	1 X 10(-4)
1,1,2-TRICHLOROETHANE	1 X 10(-6)	5 X 10(-4)
METHYLENE CHLORIDE	1 X 10(-5)	1 X 10(-3)
BIS(2-ETHYLHEXYL)PHTHALATE	1 X 10(-4)	2 X 10(-3)
DI-N-BUTYL PHTHALATE	200**	200**
COPPER	800**	800**

* NO ACTION LEVEL REQUIRED FOR THIS CONTAMINANT BASED ON MAXIMUM CONCENTRATIONS DETECTED ON SITE.

** ACTION LEVEL FOR THIS NONCARCINOGEN BASED ON TOTAL HAZARD INDEX LESS THAN OR EQUAL TO 1.0.

RESPONSIVENESS SUMMARY

THIS SECTION DOCUMENTS THE ISSUES AND CONCERNS THE LOCAL COMMUNITY EXPRESSED DURING THE PUBLIC COMMENT PERIOD AND THE EPA S RESPONSES TO THOSE CONCERNS. THESE VIEWS AND OPINIONS HAVE BEEN CONSIDERED BY THE EPA IN THE FINAL DECISION-MAKING PROCESS REGARDING THE SELECTED REMEDIAL ALTERNATIVE. APPROXIMATELY 30 PEOPLE PARTICIPATED IN THE PUBLIC MEETING, INCLUDING MONTOUR COUNTY AND VALLEY TOWNSHIP OFFICIALS, INTERESTED CITIZENS, AND MEMBERS OF THE MEDIA. QUESTIONS AND COMMENTS LASTED APPROXIMATELY 45 MINUTES FOLLOWING PRESENTATIONS BY EPA OFFICIALS. THESE COMMENTS FALL INTO THE FOLLOWING CATEGORIES OF CONCERN:

A. SUPERFUND PROCESS

B. POTENTIALLY RESPONSIBLE PARTIES (PRPS)

C. REMEDIAL ALTERNATIVES

D. CARBON WASTE PILE

E. FLUFF WASTE PILE AND OTHER ON-SITE WASTE

F. OFF-SITE MONITORING AND CONTAMINATION

A. SUPERFUND PROCESS

COMMENT: A COUNTY OFFICIAL COMMENTED ON THE LENGTHINESS OF THE SUPERFUND INVESTIGATION PROCESS. MONTOUR COUNTY AND VALLEY TOWNSHIP ARE EAGER TO HAVE THE SUPERFUND PROCESS FOR THE SITE COMPLETED SO THAT THE PROPERTY CAN BE RETURNED TO THE TAX ROLLS AND UTILIZED FOR INDUSTRIAL PURPOSES. THE OFFICIAL INQUIRED AS TO THE REASON FOR THE CURRENT AVAILABILITY OF FUNDS AUTHORIZING CLEANUP.

EPA RESPONSE: THE SUPERFUND INVESTIGATION PROCESS WAS DELAYED BECAUSE THE SUPERFUND PROGRAM RAN OUT OF FUNDS. WHEN CONGRESS REAUTHORIZED THE SUPERFUND PROGRAM, THROUGH THE 1986 SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT (SARA), THE PROGRAM HAD THE AUTHORITY AND FUNDS TO MOVE FORWARD WITH CLEANUP.

COMMENT: A COUNTY OFFICIAL ASKED WHETHER SUPERFUND COULD RUN OUT OF FUNDS IN THE MIDDLE OF THE CLEANUP PROCESS.

EPA RESPONSE: ALL FUNDS REQUESTED THUS FAR FOR THE M.W. MANUFACTURING SITE HAVE BEEN APPROVED. EPA EXPECTS THE SUPERFUND PROGRAM TO PROCEED FOR A NUMBER OF YEARS. THE ENVIRONMENTAL CONCERNS OF THE AMERICAN PUBLIC AND THE ASSOCIATED POLITICAL PRESSURE SHOULD CONTINUE TO MAKE THIS PROGRAM OPERATIVE AND KEEP THESE FUNDS AVAILABLE.

COMMENT: AN INDIVIDUAL INQUIRED AS TO THE TIME FRAME FOR THE ENTIRE INVESTIGATION AND CLEANUP.

EPA RESPONSE: THE FOLLOWING INFORMATION IS BASED ON EPA'S EXPERIENCE AT OTHER SUPERFUND SITES. AFTER THE PUBLIC MEETING, A 30-DAY PERIOD IS SET ASIDE FOR PUBLIC COMMENTS. EPA PREPARES A RECORD OF DECISION (ROD) (A DOCUMENT OUTLINING EPA'S PREFERRED REMEDIAL ALTERNATIVE) ON THE CARBON WASTE PILE, WHICH CONSTITUTES THE FIRST COMPONENT OF THE INVESTIGATION AT THE MW MANUFACTURING SITE. THE ROD INCORPORATES PUBLIC COMMENTS ON THE PROPOSED ALTERNATIVES. THEN THE EPA PROCEEDS TO THE REMEDIAL DESIGN PHASE, WHICH TAKES PLACE OVER A THREE TO FOUR MONTH PERIOD. FOLLOWING THE REMEDIAL DESIGN, CONTRACTORS BID ON THE WORK. THEREFORE, REMOVAL SHOULD TAKE PLACE BY THE END OF THE SUMMER THE SCHEDULE CAN BE DELAYED BY 60 DAYS IF THE PARTIES RESPONSIBLE FOR CONTAMINATION (PRPS) NEGOTIATE WITH THE EPA IN GOOD FAITH FOR THEIR ROLE IN THE COST OF CLEANUP.

THE SECOND PHASE OF THE WORK ADDRESSES CONTAMINATION OTHER THAN THE CARBON PILE AT THE MW MANUFACTURING SITE, INCLUDING THE FLUFF PILE, GROUNDWATER AND SOIL CONTAMINATION. THE FOLLOWING SCHEDULE WITH REGARD TO THE SECOND PHASE OF ACTIVITIES IS TENTATIVE. IF THE FEASIBILITY STUDY (FS) FOR OTHER PARTS OF THE SITE IS COMPLETED DURING THE SUMMER OF 1989, REMEDIAL ALTERNATIVES SHOULD BE PROPOSED BY LATE SUMMER/EARLY FALL OF 1989. A ROD COULD BE SIGNED BY SEPTEMBER 1989. THE REMEDIAL DESIGN FOR THE SITE WOULD TAKE APPROXIMATELY ONE YEAR TO COMPLETE, AND WOULD BE OVERSEEN BY THE US ARMY CORPS OF ENGINEERS. IF THE DESIGN IS COMPLETED BY

THE AUTUMN OF 1990, CONSTRUCTION COULD BEGIN BY THE SPRING OF 1991.

B. POTENTIALLY RESPONSIBLE PARTIES (PRPS)

COMMENT: AN INDIVIDUAL INQUIRED ABOUT THE EPA'S EFFORTS TO IDENTIFY THE PARTIES RESPONSIBLE FOR CONTAMINATION, AND TO SECURE THEIR COOPERATION WITH THE REMEDIAL PROGRAM OR THEIR REIMBURSEMENT OF COSTS.

EPA RESPONSE: THE EPA ENFORCEMENT DIVISION INVESTIGATES THE PRPS ASSOCIATED WITH A SUPERFUND SITE. THE ENFORCEMENT DIVISION GIVES THEM AN OPPORTUNITY TO PARTICIPATE IN THE REMEDIAL INVESTIGATION AND CLEANUP. AT THIS POINT, THE PRPS ASSOCIATED WITH MW MANUFACTURING SITE HAVE DECLINED TO PARTICIPATE. HOWEVER, THEIR LACK OF PARTICIPATION DOES NOT STOP THE CLEANUP PROCESS. THE EPA'S ENFORCEMENT BRANCH PURSUES THE PRP'S TO RECOVER THE COST OF EPA'S WORK AT THE SITE.

COMMENT: AN INDIVIDUAL INQUIRED AS TO WHETHER THE CURRENT OWNERS ARE CONSIDERED PRPS EVEN IF THEY DID NOT DUMP WASTES, AND THEREFORE, DID NOT CONTRIBUTE TO THE WASTES ON THE SITE.

EPA RESPONSE: THE ENFORCEMENT BRANCH OF THE EPA DETERMINES WHO CONSTITUTES A PRP. THE PRP CAN INCLUDE THE CURRENT OWNER.

C. REMEDIAL ALTERNATIVES

COMMENT: AN INDIVIDUAL ASKED IF THE SAME AMOUNT OF SOIL WILL BE REMOVED IN EACH ALTERNATIVE.

EPA RESPONSE: THE SAME AMOUNT OF SOIL IS EXCAVATED IN EACH PROPOSED ALTERNATIVE.

COMMENT: AN INDIVIDUAL WANTED TO KNOW IF THE EPA RETURNS AND MONITORS THE SOIL ONE YEAR FOLLOWING REMEDIATION. THIS CITIZEN EXPRESSED CONCERN THAT NOT ALL CONTAMINANTS WILL BE REMOVED AND THAT SOME MAY MIGRATE TO GREATER DEPTHS OR OFF-SITE.

EPA RESPONSE: IN THE PREFERRED ALTERNATIVE 7, THE EPA WOULD NOT RETURN TO MONITOR SOIL FOR CARBON WASTES. THE SUBSEQUENT PHASES OF THIS RI/FS WOULD ADDRESS THE CLEANUP OF THE SOIL. IT IS POSSIBLE THAT SOME CONTAMINATION WOULD BE MISSED, HOWEVER, ALL SUPERFUND SITES REMAIN ELIGIBLE FOR ADDITIONAL CLEANUP.

COMMENT: A RESIDENT OF VALLEY TOWNSHIP INQUIRED AS TO THE NEAREST LOCATIONS OF LANDFILLS AND INCINERATORS AUTHORIZED TO ACCEPT HAZARDOUS WASTES.

EPA RESPONSE: INCINERATORS ARE LOCATED IN NEW JERSEY, OHIO AND ALABAMA. LANDFILLS ARE LOCATED IN NORTH CAROLINA AND OHIO. THERE ARE NO APPROPRIATE LOCATIONS IN PENNSYLVANIA.

D. CARBON WASTE PILE

COMMENT: AN INDIVIDUAL ASKED IF THIS PROPOSED REMEDIAL ACTION PERTAINS TO ALL MATERIALS ON THE SITE.

EPA RESPONSE: THIS REMEDIAL ACTION PERTAINS ONLY TO THE CARBON WASTE PILE. REMEDIAL ALTERNATIVES FOR OTHER WASTE ON THE SITE HAVE NOT YET BEEN DEVELOPED.

COMMENT: MORE THAN ONE RESIDENT INQUIRED AS TO THE REASON FOR ADDRESSING ONLY THE CARBON WASTE PILE. THE CONCERNS PERTAINED TO WHETHER THE AREA WOULD BE RECONTAMINATED WITH THE FLUFF WASTE PILE AFTER REMOVING ONLY THE CARBON WASTE.

EPA RESPONSE: THE EPA IS ADDRESSING ONLY THE CARBON WASTE PILE AT THE PRESENT TIME DUE TO ITS HAZARDOUSNESS AND THE ASSOCIATED THREATS TO PUBLIC HEALTH. THE EPA CONSIDERS CONTAMINANTS IN THE CARBON WASTE PILE TO BE AT LEVELS 10,000 TIMES GREATER THAN ANY OTHER WASTES ASSOCIATED WITH THE SITE.

COMMENT: AN INDIVIDUAL ASKED ABOUT THE TIME FRAME FOR THE REMOVAL OF THE CARBON WASTE PILE.

EPA RESPONSE: THE EPA ANTICIPATES COMPLETING THE REMOVAL WITHIN SIX MONTHS.

COMMENT: A FOLLOW-UP QUESTION PERTAINED TO WHETHER SOLVENTS ARE CONTINUING TO LEACH FROM THE CARBON WASTE PILE.

EPA RESPONSE: THE EPA BELIEVES THAT LEACHING OF CONTAMINANTS CONTINUES TO OCCUR. THEREFORE, THE EPA PREFERS TO PREVENT THIS LEACHING OF CONTAMINANTS AS SOON AS POSSIBLE, EITHER THROUGH COVERING THE WASTE WITH AN IMPERMEABLE MEMBRANE OR BY REMOVING IT FROM THE SITE COMPLETELY. BOTH TECHNIQUES WOULD PREVENT THE TRANSPORT OF ADDITIONAL CONTAMINANTS INTO THE SOIL AND GROUNDWATER.

E. FLUFF WASTE PILE AND OTHER ON-SITE WASTE

COMMENT: SEVERAL INDIVIDUALS ASKED ABOUT WHETHER THE EPA CONSIDERS THE FLUFF PILE HAZARDOUS, SPECIFICALLY WHETHER IT HAD BEEN ANALYZED FOR ASBESTOS PARTICLES, AND WHETHER AIRBORNE CONTAMINANTS POSE A FIRE HAZARD.

EPA RESPONSE: THE RESULTS OF THE INVESTIGATION OF THE FLUFF PILE AND ITS FIRE HAZARDS HAVE NOT YET BEEN COMPLETELY ANALYZED. THE INVESTIGATION DID NOT LOOK SPECIFICALLY FOR ASBESTOS. THE FLUFF PILE CONTAINS PAPER AND PLASTICS, WHICH MAY POSE A FIRE HAZARD. THE FLUFF PILE ALSO CONTAINS SOLVENTS AND COPPER WIRE. EPA TOXICOLOGISTS ARE WILLING TO WORK WITH THE COMMUNITY TO ADDRESS HAZARD TO THE LOCAL POPULATION RESULTING FROM ANY POTENTIAL FLUFF PILE FIRE.

COMMENT: AN INDIVIDUAL ASKED IF THE EPA IS PREPARED TO EXCAVATE SOIL TO THE LEVEL OF THE WATER TABLE TO ADDRESS COMPLETELY ANY CONTAMINATION OF WELLS.

EPA RESPONSE: THIS APPROACH COULD BE TAKEN, BUT THE EPA PREFERS OTHER ENGINEERING METHODS TO ADDRESS AND REMEDIATE CONTAMINATION OTHER THAN THE EXCAVATION OF SOIL. THIS CONTAMINATION WILL BE ADDRESSED WITH THE REMAINDER OF THE SITE OTHER THAN THE CARBON WASTE PILE. AT SUCH TIME, THE PUBLIC WILL HAVE ANOTHER OPPORTUNITY TO COMMENT ON THE ADDITIONAL REMEDIAL ALTERNATIVES THAT WILL BE PROPOSED.

COMMENT: ONE RESIDENT ASKED THE EPA TO IDENTIFY THE SOLVENTS AT THE SITE, AND TO STATE WHETHER CHLORINATED SOLVENTS ARE PRESENT.

EPA RESPONSE: SOLVENTS AT THE SITE INCLUDE TRICHLOROETHYLENE, TETRACHLOROETHYLENE, AND OTHER SOLVENTS SUCH AS BENZENE AND VINYL CHLORIDE.

F. OFF-SITE MONITORING AND CONTAMINATION

COMMENT: AN INDIVIDUAL COMMENTED THAT HE BELIEVED THE SAMPLING OF OFF-SITE AIR WOULD REVEAL THE PRESENCE OF ASBESTOS STEMMING FROM THE SITE, AND THAT THIS WOULD CONFLICT WITH SCHOOL DISTRICT REQUIREMENTS FOR ASBESTOS-FREE AIR.

EPA RESPONSE: NO COMMENT.

COMMENT: A RESIDENT ASKED WHETHER THE REMEDIAL INVESTIGATION WOULD MOVE OFF-SITE IF HEAVY METALS WERE FOUND AT GREAT DEPTHS.

EPA RESPONSE: THIS IS NOT THE FOCUS OF THE CURRENT STUDY. IF HEAVY METALS WERE FOUND, EPA WOULD CONDUCT ADDITIONAL STUDIES OF CONTAMINATION.

COMMENTS: SEVERAL PARTICIPANTS ASKED ABOUT THE MONITORING OF GROUNDWATER TAKING PLACE AND THE OFF-SITE MIGRATION OF CONTAMINATION VIA GROUNDWATER.

EPA RESPONSE: THE EPA ESTABLISHED THIRTEEN WELLS ON-SITE AND ONE WELL OFF-SITE, AND ALSO ANALYZED NUMEROUS

EXISTING RESIDENTIAL WELLS. GROUNDWATER UNDER THE SITE IS CONTAMINATED. HOWEVER, EVIDENCE DOES NOT INDICATE THAT THE PLUME OF CONTAMINATION HAS MIGRATED OFF-SITE THUS FAR.

COMMENT: ONE PARTICIPANT DISAGREED WITH THIS ASSESSMENT DUE TO THE PRESENCE OF LEAD IN WELLS AT THE DAY-CARE CENTER. HE SURMISED THAT THERE HAD NOT YET BEEN ADEQUATE RAIN TO FORCE THE PLUME TO THE SCHOOLS IN THE AREA. ANOTHER INDIVIDUAL ASKED WHETHER THE WELLS AT THE DAY-CARE CENTER WOULD CONTINUE TO BE MONITORED.

EPA RESPONSE: THE EPA HAS NOT BEEN ABLE TO DUPLICATE THIS RESULT AND CONSIDERS IT ANOMALOUS. THE WELLS AT THE DAY-CARE CENTER WERE TESTED AS RECENTLY AS AUGUST 1988. EPA INTENDS TO CONDUCT ONE MORE ROUND OF PRIVATE WELL SAMPLES (INCLUDING THE DAY-CARE CENTER) AS PART OF THE DESIGN OF THE REMEDIAL ACTION. THIS WILL ASSURE THAT CONTAMINATION HAS NOT MOVED OFF-SITE IN THE PERIOD SINCE THE PREVIOUS SAMPLING. ANY LONG TERM MONITORING WILL BE CONDUCTED BY PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL RESOURCES (PADER) AS PART OF THE OPERATION AND MAINTENANCE PROGRAM AFTER COMPLETION OF THE SITE REMEDIATION.

COMMENT: A MEMBER OF THE COMMUNITY EXPRESSED CONCERN REGARDING THE IMPACT OF CONTAMINATION ON WELLS AT SOME DISTANCE FROM THE SITE.

EPA RESPONSE: IF THE NEXT ROUND OF SAMPLING SHOWS THAT CONTAMINATION HAS MOVED OFF-SITE, THE EPA MAY NEED TO TEST ADDITIONAL OFF-SITE WELLS; HOWEVER, IT IS NOT CLEAR AT THIS TIME WHETHER SAMPLING OF THIS TYPE IS NECESSARY.

COMMENTS: PARTICIPANTS AT THE MEETING INQUIRED ABOUT THE LOCATIONS OF THE OFF-SITE SAMPLING OF WELLS, AND ABOUT SAMPLING ACTIVITIES AT SEVERAL RESTAURANTS.

EPA RESPONSE: OFF-SITE SAMPLING CONCENTRATED ON RESIDENTIAL WELLS WHERE THE SAFETY OF CHILDREN COULD BE JEOPARDIZED. THE MAJORITY OF THE RESIDENCES WHERE SAMPLING TOOK PLACE ARE LOCATED SOUTH OF THE SITE IN MAUSDALE, IN ADDITION TO RESIDENCES ALONG STATE ROUTE 54 AND THE DAY-CARE CENTER. SAMPLING DID NOT TAKE PLACE AT THE RESTAURANTS IN PROXIMITY TO THE SITE.

COMMENTS: A MEMBER OF THE AUDIENCE INDICATED THAT THE WELLS AT MCDONALD'S RESTAURANT HAVE BEEN MONITORED BY ITS OWNERS EVERY SIX MONTHS. TESTS DID NOT SHOW THE PRESENCE OF HAZARDOUS CHEMICALS. THE WATER IS TREATED THERE, BUT IT IS NOT TREATED FOR THE PRESENCE OF CHEMICALS.

EPA RESPONSE: NO COMMENT.

COMMENT: AN INDIVIDUAL ASKED THE DIRECTION OF FLOW OF THE GROUNDWATER PLUME.

EPA RESPONSE: MOST OF THE GROUNDWATER IS FLOWING TO THE ON MAY BE FLOWING TO THE NORTHEAST.

COMMENTS: ONE PERSON WANTED TO KNOW IF BACKGROUND WELLS COULD BE TESTED FOR CHLORIDES TO HELP INDICATE THE PRESENCE OF CONTAMINANTS.

EPA RESPONSE: SUCH TESTS COULD BE PERFORMED. HOWEVER, THE RESULTS OF THESE TESTS MAY BE MISLEADING BECAUSE THERE ARE NATURALLY OCCURRING CHLORIDES IN THE AREA.

COMMENT: ONE WRITTEN COMMENT WAS RECEIVED DURING THE COMMENTS PERIOD. THE BOARD OF SUPERVISORS OF VALLEY TOWNSHIP RECOMMENDED THAT EPA CONTINUE TO MONITOR WELLS THAT ARE WITHIN THE AREA OF THE SITE ON A REGULAR BASIS. FURTHER, THE BOARD OF SUPERVISORS STATED THEIR BELIEF THAT FUNDS SHOULD BE MADE AVAILABLE TO PROVIDE A PUBLIC SOURCE OF WATER TO THE AREA NEAR AND SURROUNDING THE SITE TO ELIMINATE THE THREAT OF DRINKING CONTAMINATED GROUND WATER.

EPA RESPONSE: EPA IS CONDUCTING FURTHER INVESTIGATION OF THE GROUND WATER AT THE SITE. THIS STUDY WILL INCLUDE AT LEAST ONE MORE ROUND OF WELL SAMPLING TO DEFINE THE EXTENT OF CONTAMINATION AND TO INSURE THAT

NO PUBLIC WELLS HAVE BEEN CONTAMINATED. EPA SEES NO REASON TO INSTALL A PUBLIC WATER SUPPLY SYSTEM AT THIS TIME, AS NO CONTAMINATION HAS BEEN OBSERVED OFF-SITE. FUTURE REMEDIAL ACTIVITIES MAY INCLUDE SOME SORT OF GROUND WATER CLEAN UP WHICH MAKE SUCH A PUBLIC WATER SUPPLY UNNECESSARY.

MONITORING ON A ROUTINE BASIS WILL BE DONE BY THE COMMONWEALTH OF PENNSYLVANIA AS PART OF SCHEDULED OPERATION AND MAINTENANCE ACTIVITIES WHICH WILL TAKE PLACE AFTER ALL REMEDIAL ACTIVITIES HAVE BEEN COMPLETED.

MW MANUFACTURING

Site Information:

Site Name: MW MANUFACTURING
Address: VALLEY TOWNSHIP, PA

EPA ID: PAD980691372
EPA Region: 03

Site Alias Name(s):

DOMINO SALVAGE
DOMINO SALVAGE - WAREHOUSE #81

Record of Decision (ROD):

ROD Date: 06/29/1990
Operable Unit: 03
ROD ID: EPA/ROD/R03-90/087

Media: SOIL DEBRIS SURFACE WATER

Contaminant: VOCS, PCE, TCE, OTHER ORGANICS, PCBS, METALS, LEAD

Abstract: THE 15-ACRE MW MANUFACTURING SITE IS A FORMER COPPER RECOVERY FACILITY IN MONTOUR COUNTY, PENNSYLVANIA, TWO MILES NORTH OF DANVILLE. THE PENNSYLVANIA DEPARTMENT OF TRANSPORTATION (PENNDOT) MAINTAINS A STORAGE AREA IMMEDIATELY NORTH OF THE SITE, AND FARMLANDS AND WOODED LOTS ARE ADJACENT TO THE SITE ON THE WEST AND SOUTH. MAUSES CREEK FLOWS IN A SOUTHERLY DIRECTION PAST THE SITE. SEVERAL PRIVATE RESIDENCES, MOTELS, GAS STATIONS, RESTAURANTS, AND A HEAD START SCHOOL ARE LOCATED JUST NORTH OF THE PENNDOT STORAGE AREA AND RELY ON PRIVATE GROUND WATER WELLS FOR DRINKING WATER. FROM 1966 TO 1972, MW MANUFACTURING WAS ENGAGED IN SECONDARY COPPER RECOVERY FROM SCRAP WIRE, USING BOTH MECHANICAL AND CHEMICAL PROCESSES. GRANULAR CARBON WASTES GENERATED BY THE CHEMICAL PROCESS WERE DUMPED ONSITE, AND SPENT SOLVENTS AND ACIDS WERE ALLEGEDLY DISPOSED OF ONSITE. IN 1972, MW MANUFACTURING FILED FOR

BANKRUPTCY AND THE PHILADELPHIA NATIONAL BANK ACQUIRED THE PROPERTY. WAREHOUSE 81 INC. ACQUIRED THE SITE IN 1976 AND UNSUCCESSFULLY ATTEMPTED TO RECOVER COPPER FROM THE LARGE WASTE PILES OF FLUFF MATERIAL (FIBROUS INSULATION MATERIALS CONTAMINATED WITH METALS AND SOLVENTS). THE INITIAL REMEDIAL INVESTIGATION REVEALED SEVERAL AREAS POSING POTENTIAL THREATS TO PUBLIC HEALTH: THE CARBON WASTE PILE, FOUR WIRE-FLUFF WASTE PILES, A SURFACE IMPOUNDMENT, A BURIED LAGOON, AND CONTAMINATED SOIL, DRUMS AND STORAGE TANKS. A 1989 REMEDIAL ACTION ADDRESSED THE CONCERNS FOR DIRECT CONTACT WITH, AND MIGRATION OF CONTAMINANTS FROM, THE CARBON WASTE PILE BY EXCAVATING THE CARBON WASTE PILE AND INCINERATING THE WASTE OFFSITE. THIS SECOND REMEDIAL ACTION ADDRESSES THE REMAINING PRINCIPAL THREATS AT THE SITE BY TREATING THE ONSITE WASTE AND CONTAMINATED SOIL. A SUBSEQUENT REMEDIAL ACTION WILL ADDRESS POSSIBLE REMEDIATION OF CONTAMINATED GROUND WATER AND OFFIETE SOIL, SEDIMENT AND SURFACE WATER CONTAMINATION. THE PRIMARY CONTAMINANTS OF CONCERN AFFECTING THE SOIL, DEBRIS AND LAGOON WATER ARE VOCS INCLUDING PCE AND TCE; OTHER ORGANICS INCLUDING PCBS; AND METALS INCLUDING LEAD.

THE SELECTED REMEDIAL ACTION FOR THIS SITE INCLUDES EXCAVATION AND ONSITE INCINERATION OF APPROXIMATELY 32,000 CUBIC YARDS OF FLUFF WASTE, FOLLOWED BY STABILIZATION OF LEAD-CONTAMINATED ASH AND OFFSITE DISPOSAL OF RESIDUAL ASH; EXCAVATION AND ONSITE INCINERATION OF APPROXIMATELY 13,000 CUBIC YARDS OF CONTAMINATED SOIL, FOLLOWED BY ONSITE STABILIZATION, AS NECESSARY, BEFORE OFFSITE DISPOSAL; BACKFILLING AND CAPPING THE SOIL (LANDFILL CLOSURE) UNDER THE FLUFF WASTE PILES; COVERING THE SOIL NOT UNDER THE FLUFF PILES USING HYBRID CLOSURE (TOPSOIL COVER AND REVEGETATION); ONSITE TREATMENT OF APPROXIMATELY 86,000 GALLONS OF LAGOON WATER USING CARBON ADSORPTION AND METAL REMOVAL, FOLLOWED BY ONSITE DISCHARGE TO SURFACE WATER;

AND ONSITE INCINERATION OF APPROXIMATELY 40 CUBIC YARDS OF WASTE CONTAINED IN TANKS AND DRUMS, FOLLOWED BY STABILIZATION OF THE ASH AND OFFSITE DISPOSAL; AND GROUND WATER MONITORING. THE ESTIMATED PRESENT WORTH COST FOR THIS REMEDIAL ACTION IS $35,950,000, WHICH INCLUDES AN ESTIMATED ANNUAL O&M COST OF $39,000 AND AN ADDITIONAL ESTIMATED $20,000 EVERY 5 YEARS.

PERFORMANCE STANDARDS OR GOALS: ACTION LEVELS HAVE BEEN ESTABLISHED FOR SOIL/WASTE BASED ON A (10-6) CANCER RISK LEVEL OR AN HI OF 1.0, WHERE TECHNICALLY FEASIBLE. IF SOIL CANNOT BE FEASIBLY CLEANED TO THE (10-6) RISK LEVEL (E.G., EXCESSIVE VOLUME OF CONTAMINATED SOIL IN ONE PARTICULAR AREA ONSITE), CLEANUP WILL REDUCE THE ADDITIONAL INCREMENTAL RISK TO THE GROUND WATER TO (10-4) LEVELS OR TO MCLS, WHICHEVER ARE MORE STRINGENT. CHEMICAL- SPECIFIC CLEANUP LEVELS FOR SOIL, FLUFF WASTE, AND DRUMMED AND TANKED WASTES WERE PROVIDED FOR EIGHT INDICATOR CONTAMINANTS INCLUDING PCE, TCE, PCB, AND LEAD.

Remedy: THIS OPERABLE UNIT IS THE SECOND OPERABLE UNIT FOR THE SITE. THE FIRST OPERABLE UNIT INVOLVED REMOVAL OF THE CARBON WASTE PILE. THIS ACTION ADDRESSES THE PRINCIPAL THREATS AT THE SITE BY TREATING THE ONSITE WASTE AND CONTAMINATED SOILS. TREATMENT RESIDUALS WILL BE DISPOSED OF OFFSITE.

THE MAJOR COMPONENTS OF THE SELECTED REMEDY ARE;

* ONSITE INCINERATION OF FLUFF WASTE; STABILIZATION OF ASH AND DISPOSAL IN AN OFFSITE RCRA LANDFILL.
* ONSITE INCINERATION OF THE CONTAMINATED SOILS FOR ORGANICS REMOVAL, STABILIZATION OF THE METALS WHERE NECESSARY AND DISPOSAL IN AN OFFSITE RCRA LANDFILL.
* ONSITE TREATMENT OF THE LAGOON WATER FOR ORGANICS TREATMENT AND METALS REMOVAL AND DISCHARGE IN ACCORDANCE WITH FEDERAL NPDES AND PENNSYLVANIA REQUIREMENTS.
* ONSITE INCINERATION OF THE CONTENTS OF TANKS

AND DRUMS; STABILIZATION OF THE ASH AND DISPOSAL IN AN OFFSITE RCRA LANDFILL.
* COVERING OF THE SOILS UNDER THE FLUFF WASTE PILES, ONCE THE FLUFF WASTE HAS BEEN REMOVED, IN ACCORDANCE WITH RCRA SUBTITLE CLOSURE REQUIREMENTS.

A THIRD OPERABLE UNIT WILL INVOLVE CONTINUED STUDY AND POSSIBLE REMEDIATION OF GROUNDWATER CONTAMINATION AND OFFSITE CONTAMINATION IN THE SOIL, SURFACE WATER AND SEDIMENT.

Text: Full-text ROD document follows on next page.

EPA/ROD/R03-90/087
1990

EPA Superfund
Record of Decision:

MW MANUFACTURING
EPA ID: PAD980691372
OU 03
VALLEY TOWNSHIP, PA
06/29/1990

FOUR WIRE-FLUFF WASTE PILES, A SURFACE IMPOUNDMENT, A BURIED LAGOON, CONTAMINATED SOILS, DRUMS AND STORAGE TANKS.

EPA AND DER BELIEVE THAT DIRECT CONTACT WITH THE CONTAMINATED WASTE AND MIGRATION OF CONTAMINANTS INTO THE GROUNDWATER ARE THE MAJOR CONCERNS POSED BY THIS SITE. THIS OPERABLE UNIT WAS INITIATED TO DEAL WITH THESE CONCERNS. IT IS FULLY CONSISTENT WITH ALL FUTURE SITE WORK AND IS CONSISTENT WITH SECTION 300.430(A)(1) OF THE NATIONAL CONTINGENCY PLAN (NCP).

#SSC

5. SUMMARY OF SITE CHARACTERISTICS

FLUFF WASTE (32,000 CY.)

FOUR MAIN FLUFF PILES EXTEND ACROSS THE NORTHERN PORTION OF THE SITE.(SEE FIGURE 3) IN ADDITION, A SMALL QUANTITY (APPROXIMATELY 300 CY) OF FLUFF MATERIAL IS PRESENT INSIDE OF THE FORMER MW MANUFACTURING FACILITY. THE MAJOR FLUFF WASTE CONTAMINANTS INCLUDE TETRACHLOROETHENE, PCBS, LEAD, AND PERCENT LEVELS OF COPPER AND BIS(2-ETHYHEXYL) PHTHALATE. BASED ON THE RESULTS OBTAINED FROM THE RI, THERE APPEARS TO BE NO BURIAL OF THE FLUFF WASTE AT THE SITE.

SURFACE SOIL (2000 CY.)

THE SURFACE SOIL SAMPLES COLLECTED NEAR THE WASTE PILES WERE GENERALLY MORE CONTAMINATED THAN THOSE ELSEWHERE ON THE SITE. SURFACE SOILS WERE CONTAMINATED WITH TETRACHLOROETHENE, BIS(2-ETHYLHEXYL) PHTHALATE, COPPER, AND LEAD. THE PRESENCE OF THIS CONTAMINATION MAY BE INDICATIVE OF SOME ONSITE EROSION OF THE WASTE PILES OR INTENTIONAL MOVEMENT OF THE WASTES BY SITE OWNERS.

SUBSURFACE SOIL (INCLUDING BURIED LAGOON)
(APPROXIMATELY 11,000 CY.)

SUBSURFACE SOIL CONTAMINANTS WERE TYPICALLY THE SAME AS THE SURFACE SOILS. ALTHOUGH SUBSURFACE SOIL SAMPLES NEAR THE WASTE PILES GENERALLY CONTAINED THE HIGHEST LEVELS OF CONTAMINATION, OTHER "HOT SPOTS" WERE LOCATED THROUGHOUT THE SITE. THESE MAY BE RELATED TO PREVIOUS SOLVENT SPILLAGE, LEAKAGE FROM TANKS OR DRUMS, OR DISPOSAL OF SMALL AMOUNTS OF WASTE MATERIALS. ONE SOIL BORING (APPARENTLY THROUGH A BURIED LAGOON) HAD HIGH CONCENTRATIONS OF TETRACHLOROETHENE THROUGHOUT THE SOIL COLUMN.

SURFACE LAGOON (86,000 GALLONS)

THE WATER IN THE ONSITE LAGOON WAS SAMPLED AND FOUND TO CONTAIN LOW LEVELS OF ORGANIC COMPOUNDS, WHEREAS THE MAJOR CONTAMINANTS IN THE SEDIMENT WERE BIS(2-ETHYLHEXYL)PHTHALATE AND LEAD.

DRUMS AND TANKS (40 CY.)

SOLID WASTES IN DRUMS AND LIQUID WASTES IN TWO STORAGE TANKS WERE FOUND TO CONTAIN VOLATILE ORGANICS, PHTHALATES, LEAD AND COPPER. THE RESULTS OF THE GEOPHYSICAL INVESTIGATION INDICATE THAT THERE ARE A SMALL NUMBER OF BURIED DRUMS ON THE SITE.

#SSR

6. SUMMARY OF SITE RISKS

UTILIZING DATA GENERATED DURING THE RI, A RISK ASSESSMENT WAS CONDUCTED TO EVALUATE THE POTENTIAL IMPACT TO HUMAN HEALTH WHICH MAY RESULT FROM THE SITE. POTENTIAL IMPACT TO THE ENVIRONMENT WILL BE CONSIDERED IN THE NEXT OPERABLE UNIT.

RISKS TO HUMAN HEALTH

IN ORDER TO ASSESS PUBLIC HEALTH RISKS, THREE MAJOR ASPECTS OF CHEMICAL CONTAMINATION AND ENVIRONMENTAL FATE AND TRANSPORT MUST BE CONSIDERED: (1) CONTAMINANTS WITH TOXIC CHARACTERISTICS MUST BE PRESENT, AND MUST BE RELEASED BY EITHER NATURAL PROCESSES OR HUMAN ACTION; (2) AN ACTUAL OR POTENTIAL EXPOSURE PATHWAY MUST BE PRESENT; AND, (3) HUMAN RECEPTORS MUST BE PRESENT. RISK IS A FUNCTION OF BOTH TOXICITY AND EXPOSURE; WITHOUT ANY ONE OF THE ABOVE FACTORS, THERE WILL BE NO RISK. THIS RISK ASSESSMENT ESTIMATES THE POTENTIAL FOR HUMAN

HEALTH RISKS AT THE SITE BY COMBINING INFORMATION ON THE TOXICITY OF THE CHEMICALS FOUND ONSITE WITH SITE-SPECIFIC ESTIMATES OF EXPOSURES.

TOXICITY ASSESSMENT

TABLE 1 SUMMARIZES THE CHEMICAL ANALYTICAL RESULTS FOR THE SAMPLES COLLECTED AT THE SITE. TABLE 2 LISTS THE COMPOUNDS THAT WERE CHOSEN AS INDICATOR CHEMICALS. THOSE COMPOUNDS NOT CHOSEN WERE OMITTED PRIMARILY BECAUSE OF THEIR LESS FREQUENT OCCURRENCE OR LOWER CONCENTRATION.

THE AVAILABLE TOXICOLOGICAL INFORMATION INDICATES THAT MANY OF THE INDICATOR CHEMICALS HAVE BOTH NONCARCINOGENIC AND CARCINOGENIC HEALTH EFFECTS IN HUMANS AND/OR IN EXPERIMENTAL ANIMALS. ALTHOUGH THE INDICATOR CHEMICALS MAY CAUSE ADVERSE HEALTH AND ENVIRONMENTAL IMPACTS, DOSE-RESPONSE RELATIONSHIPS AND THE POTENTIAL FOR EXPOSURE MUST BE EVALUATED BEFORE THE RISKS TO RECEPTORS CAN BE DETERMINED. DOSE RESPONSE RELATIONSHIPS CORRELATE THE MAGNITUDE OF THE DOSE WITH THE PROBABILITY OF TOXIC EFFECTS.

CANCER POTENCY FACTORS (CPFS) HAVE BEEN DEVELOPED BY EPA'S CARCINOGENIC ASSESSMENT GROUP FOR ESTIMATING EXCESS LIFETIME CANCER RISKS ASSOCIATED WITH EXPOSURE TO POTENTIALLY CARCINOGENIC CHEMICALS. CPFS, EXPRESSED IN UNITS OF (MG/KG-DAY)-1, ARE MULTIPLIED BY THE ESTIMATED INTAKE OF A POTENTIAL CARCINOGEN, IN MG/KG-DAY, TO PROVIDE AN UPPER-BOUND ESTIMATE OF THE EXCESS LIFETIME CANCER RISK ASSOCIATED WITH EXPOSURE AT THAT INTAKE LEVEL. THE TERM "UPPER BOUND" REFLECTS THE CONSERVATIVE ESTIMATE OF THE RISKS CALCULATED FROM THE CPF. USE OF THIS APPROACH MAKES UNDERESTIMATION OF THE ACTUAL CANCER RISK HIGHLY UNLIKELY. CANCER POTENCY FACTORS ARE DERIVED FROM THE RESULTS OF HUMAN EPIDEMIOLOGICAL STUDIES OR CHRONIC ANIMAL BIOASSAYS TO WHICH ANIMAL-TO-HUMAN EXTRAPOLATION AND UNCERTAINTY FACTORS HAVE BEEN APPLIED.

REFERENCE DOSES (RFDS) HAVE BEEN DEVELOPED BY EPA TO INDICATE THE POTENTIAL FOR ADVERSE HEALTH EFFECTS FROM EXPOSURE TO CHEMICALS EXHIBITING NONCARCINOGENIC EFFECTS. RFDS, EXPRESSED UNITS OF MG/KG DAY, ARE ESTIMATES OF LIFETIME DAILY EXPOSURE LEVELS FOR HUMANS, INCLUDING SENSITIVE INDIVIDUALS. ESTIMATED INTAKES OF CHEMICALS FROM ENVIRONMENTAL MEDIA (E.G., THE AMOUNT OF CHEMICAL INGESTED FROM CONTAMINATED DRINKING WATER) CAN BE COMPARED TO THE RFD. RFDS ARE DERIVED FROM HUMAN EPIDEMIOLOGICAL STUDIES OR ANIMAL STUDIES TO WHICH UNCERTAINTY FACTORS HAVE BEEN APPLIED (E.G., TO ACCOUNT FOR THE USE OF ANIMAL DATA TO PREDICT EFFECTS ON HUMANS). THESE UNCERTAINTY FACTORS HELP ENSURE THAT THE RFDS WILL NOT UNDERESTIMATE THE POTENTIAL FOR ADVERSE NONCARCINOGENIC EFFECTS TO OCCUR.

AN IMPORTANT COMPONENT OF THE RISK ASSESSMENT PROCESS IS THE RELATIONSHIP BETWEEN THE DOSE OF A COMPOUND (AMOUNT TO WHICH AN INDIVIDUAL OR POPULATION IS EXPOSED) AND THE POTENTIAL FOR ADVERSE HEALTH EFFECTS RESULTING FROM EXPOSURE TO THAT DOSE. DOSE-RESPONSE RELATIONSHIP PROVIDE A MEANS BY WHICH POTENTIAL PUBLIC HEALTH IMPACTS MAY BE EVALUATED. THE PUBLISHED INFORMATION ON DOSES AND RESPONSES IS USED IN CONJUNCTION WITH INFORMATION ON THE NATURE AND MAGNITUDE OF HUMAN EXPOSURE IN ORDER TO DEVELOP AN ESTIMATE OF HEALTH RISKS.

VALUES OF AVAILABLE REGULATORY STANDARDS, REFERENCE DOSES, AND CARCINOGENIC POTENCY FACTORS ARE PRESENTED IN TABLE 3. TABLE 3 PRESENTS VALUES BOTH FOR CHEMICALS THAT ARE KNOWN OR SUSPECTED HUMAN CARCINOGENS AND FOR CHEMICALS HAVING NONCARCINOGENIC EFFECTS. ALL AVAILABLE TOXICITY INFORMATION IS INCLUDED IN THIS TABLE. EXPECTED DOSES OF THE INDICATOR CHEMICALS ARE PRESENTED LATER IN THIS SECTION.

RISK CHARACTERIZATION

THREE ACTUAL EXPOSURE ROUTES HAVE BEEN IDENTIFIED FOR CONTACT WITH THE CONTAMINANTS ONSITE. THE FIRST IS THE ROUTINE CONTACT WITH THE SOILS AND WASTE MATERIALS (FLUFF) BY THE ONSITE RESIDENTS, THAT CONSISTS OF DERMAL CONTACT WITH THE SOILS AND WASTES, ACCIDENTAL INGESTION OF CONTAMINATED DUSTS, AND INHALATION OF INDOOR AND OUTDOOR DUST. THE SECOND IS INHALATION OF VOLATILIZED CONTAMINANTS FROM THE SOILS AND WASTES FOR THE SITE RESIDENTS. THE THIRD IS HOUSEHOLD USE OF GROUNDWATER.

CARCINOGENIC RISKS CAN BE ESTIMATED BY COMBINING INFORMATION IN THE DOSE-RESPONSE ASSESSMENT (CARCINOGENIC POTENCY FACTORS) WITH AN ESTIMATE OF THE INDIVIDUAL INTAKES (DOSES) OF A CONTAMINANT BY A RECEPTOR. THESE RISKS ARE EXPRESSED AS NUMBERS OF EXCESS CANCER DEATHS EXPECTED TO OCCUR IN AN EXPOSED POPULATION. EXCESS LIFETIME CANCER RISKS ARE DETERMINED BY MULTIPLYING THE INTAKE LEVEL BY THE CANCER POTENCY FACTOR. THESE RISKS ARE PROBABILITIES THAT ARE GENERALLY EXPRESSED IN SCIENTIFIC NOTATION (E.G., 1 X (10-6) OR 1E-6). AN EXCESS LIFETIME CANCER RISK OF 1 X (10-6) INDICATES THAT, AS A PLAUSIBLE UPPER BOUND, AN INDIVIDUAL HAS A ONE IN ONE MILLION CHANCE OF DEVELOPING CANCER AS A RESULT OF SITE RELATED EXPOSURE TO A CARCINOGEN OVER A

70-YEAR LIFETIME UNDER THE SPECIFIC EXPOSURE CONDITIONS AT A SITE.

EPA POLICY REQUIRES THAT SUPERFUND SITES BE CLEANED SO THAT THIS EXCESS RISK FALLS BETWEEN 1 PER 10,000 AND 1 PER 1,000,000 (NORMALLY STATED AS 1 X (10-4) AND 1 X (10-6) DEPENDING ON SITE CONDITIONS, FEASIBILITY OF CLEANUP, COSTS, EXPECTED FUTURE USE AND OTHER FACTORS. BARRING ANY MITIGATION FROM ANY OF THESE FACTORS, EPA'S NORMAL CLEANUP GOAL IS 1 PER 1,000,000 1 X (10-6) EXCESS CANCER RISK. TABLE 4 PRESENTS A SUMMARY OF THE POTENTIAL CARCINOGENIC RISKS RESULTING FROM THE EXPOSURE ROUTES. THIS TOTAL POTENTIAL RISK IS THE MATHEMATICAL SUMMATION OF THE INDIVIDUAL RISKS POSED BY THE CHEMICALS IDENTIFIED IN TABLE 4. THE RISK IS PRIMARILY DUE TO THE ACCIDENTAL INGESTION OF AND DERMAL CONTACT WITH 1,1,2,2-TETRACHLOROETHANE, 1,1,2-TRICHLOROTHANE, TETRACHLOROETHENE, BIS(2-ETHYLHEXYL)-PHTHALATE, PCBS AND DIOXINS. THE PCBS AND DIOXINS ARE PRESENT AT ACTION LEVELS AND CONCENTRATIONS BELOW THEIR RESPECTIVE ACTION LEVELS, BUT THEIR HIGH CPF RESULTS IN HIGH RISKS. THE OTHER MAJOR CONTRIBUTORS TO RISK VIA THESE EXPOSURE ROUTES ARE TRICHLOROETHENE AND METHYLENE CHLORIDE.

THE RISKS ASSOCIATED WITH REGULAR, DAILY INHALATION OF CONTAMINANTS VOLATILIZING FROM THE SITE ARE SEVERAL ORDERS OF MAGNITUDE LOWER THAN THOSE ESTIMATED FOR PHYSICAL CONTACT WITH THE WASTES OR SOILS. HOWEVER, THE RISKS FOR BOTH SITE EMPLOYEES AND RESIDENTS EXCEED 1 X (10-6), USING THE AVERAGE WASTE CONCENTRATIONS AND EXPOSURE DURATIONS OF 8 AND 24 HOURS/DAY, RESPECTIVELY. THE PRIMARY CONTRIBUTORS TO THIS RISK ARE 1,1,2-TRICHLOROETHANE, TETRACHLOROETHENE, AND METHYLENE CHLORIDE. OTHER CARCINOGENS CONTRIBUTING TO THE TOTAL RISK ARE TRICHLOROETHENE AND 1,1,2-TRICHLOROETHANE. THE TOTAL POTENTIAL CARCINOGENIC RISKS RESULTING FROM ACCIDENTAL DERMAL CONTACT OR INGESTION BY SITE EMPLOYEES OR TRESPASSERS ARE LOWER THAN THOSE RESULTING FROM THE OTHER EXPOSURE ROUTES. FOR EXAMPLE, THE POTENTIAL RISK FROM DERMAL CONTACT WITH THE FLUFF WASTE BY EMPLOYEES IS 2.2 X (10-6) AT THE AVERAGE CONTAMINANT CONCENTRATIONS, AND ACCIDENTAL INGESTION RESULTS IN A POTENTIAL RISK OF 9.7 X (10-6). THE RISKS DUE TO HOUSEHOLD USE OF GROUNDWATER POSED BY CONTAMINATION LEACHING FROM THE WASTES AND SOILS IS 9.1 X (10-5) FOR SITE RESIDENTS.

POTENTIAL CONCERN FOR NONCARCINOGENIC EFFECTS OF A SINGLE CONTAMINANT IN A SINGLE MEDIUM IS EXPRESSED AS THE HAZARD QUOTIENT (HQ) (OR THE RATIO OF THE ESTIMATED INTAKE DERIVED FROM THE CONTAMINANT CONCENTRATION IN A GIVEN MEDIUM TO THE CONTAMINANT'S REFERENCE DOSE). BY ADDING THE HQS FOR ALL CONTAMINANTS WITHIN A MEDIUM OR ACROSS ALL MEDIA TO WHICH A GIVEN POPULATION MAY REASONABLY BE EXPOSED, THE HAZARD INDEX (HI) CAN BE GENERATED. IF THE HAZARD INDEX EXCEEDS UNITY (1.0) THERE IS A POTENTIAL FOR NONCARCINOGENIC HEALTH RISKS. THE HAZARD INDEX IS NOT A MATHEMATICAL PREDICTION OF THE SEVERITY OF TOXIC EFFECTS, BUT IS SIMPLY A NUMERICAL INDICATOR OF THE TRANSITION FROM ACCEPTABLE TO UNACCEPTABLE LEVELS. TABLE 4 ALSO LISTS THE TOTAL HAZARD INDICES RESULTING FROM EXPOSURES TO THE SITE CONTAMINATION.

ACCIDENTAL INGESTION, INHALATION AND DERMAL CONTACT WITH THE FLUFF WASTE ON A ROUTINE BASIS BY AN ADULT WILL RESULT IN A POTENTIAL TOTAL HAZARD INDEX OF 104 USING AVERAGE CONTAMINANT CONCENTRATIONS. LEAD IS THE MOST SIGNIFICANT HAZARD UNDER THIS EXPOSURE SCENARIO, ALONG WITH COPPER, ANTIMONY, AND BIS(2-ETHYLHEXYL)PHTHALATE. HOUSEHOLD USE OF CONTAMINATED GROUNDWATER WILL RESULT IN A HAZARD INDEX OF 0.86 FOR THE AVERAGE CONCENTRATIONS OF CONTAMINATION, BUT 2.4 BASED ON THE MAXIMUMS. THE OTHER EXPOSURE ROUTES EXAMINED FOR THE SITE DO NOT PRESENT A SIGNIFICANT NONCARCINOGENIC HEALTH RISK. THE CARCINOGENIC RISKS RESULTING FROM PHYSICAL CONTACT WITH THE CONTAMINANTS AT THE SITE EXCEED THE RANGE GENERALLY CONSIDERED TO BE ACCEPTABLE, THAT IS, BETWEEN 1 X (10-4) AND 1 X (10-7). THE CARCINOGENIC RISKS ASSOCIATED WITH THE REGULAR INHALATION OF CONTAMINANTS VOLATILIZING FROM THE CARBON WASTE PILE FALL JUST OUTSIDE THE UPPER END OF THE "ACCEPTABLE" RANGE. THESE RESULTS INDICATE THE NEED FOR REMEDIAL ACTION AT THE SITE.

BASED ON THE RESULTS OF THIS RISK ASSESSMENT, IT IS NECESSARY TO PROPOSE REMEDIAL ACTIONS FOR THE FLUFF WASTE AND SOILS IN ORDER TO REDUCE THE INCREMENTAL CANCER RISK LEVEL AND TO AVOID THE OCCURRENCE OF NONCARCINOGENIC HEALTH EFFECTS. THE SITE PRESENTS A HIGH CARCINOGENIC AND NONCARCINOGENIC RISK TO SITE RESIDENTS AND EMPLOYEES UNDER SEVERAL OF THE PROPOSED EXPOSURE SCENARIOS.

THE POTENTIAL RISKS RESULTING FROM THE ROUTINE DERMAL CONTACT, INHALATION, AND INGESTION EXPOSURES WERE THE HIGHEST OF ALL EXPOSURE ROUTES EXAMINED. THEREFORE, THIS EXPOSURE ROUTE WAS SELECTED FOR THE DETERMINATION OF ACTION LEVELS.

TWO SETS OF ACTION LEVELS WERE DEVELOPED. ONE TOTAL CARCINOGENIC RISK GOAL WAS SET AT 1 X (10-4) AND THE OTHER WAS SET AT 1 X (10-6). ACTION LEVELS FOR NONCARCINOGENS WERE SET TO MEET A TOTAL HAZARD INDEX OF UNITY (1.0), AND, THEREFORE, ONLY ONE ACTION LEVEL IS NEEDED FOR EACH NONCARCINOGENIC INDICATOR COMPOUND.

REMEDIAL ACTION LEVELS BASED ON RISK ASSESSMENT ARE SHOWN IN TABLE 5 FOR RISK TO RESIDENTS AND NONRESIDENTS

(ASSOCIATED WITH THE SOILS/WASTES), RESPECTIVELY. OF THE CONTAMINANTS PRESENT IN THE VARIOUS MEDIA, CERTAIN ORGANIC AND INORGANIC CONTAMINANTS ARE IDENTIFIED THAT ARE PRESENT IN EACH MEDIA AND IN MUCH GREATER CONCENTRATIONS THAN THE OTHER CONTAMINANTS AND/OR PRESENT THE GREATEST RISK TO HUMAN HEALTH AND THE ENVIRONMENT. REMEDIATION OF THESE PRIMARY CONTAMINANTS TO THEIR RESPECTIVE REMEDIAL ACTION CLEANUP LEVELS SHOULD ALSO SUFFICIENTLY TREAT THE OTHER ORGANIC AND INORGANIC CONTAMINANTS THAT ARE PRESENT IN THE MEDIA AT MUCH LOWER CONCENTRATIONS, SINCE THE SECONDARY CONTAMINANTS HAVE PROPERTIES SIMILAR TO THE PRIMARY CONTAMINANTS.

THE SURFACE SOIL AND FLUFF WASTE ACTION LEVELS PROTECT AGAINST ROUTINE CONTACT WITH THE CONTAMINATION, WHILE THE SUBSURFACE ACTION LEVELS ARE SET TO REDUCE THE FUTURE IMPACT TO GROUNDWATER. WHEN IT WAS DETERMINED THAT SEVERAL OF THE (10-4) SUBSURFACE RISK LEVELS WOULD NOT BE PROTECTIVE OF THE MCLS, ACTION LEVELS WERE DETERMINED FOR THOSE COMPOUNDS TO REDUCE THE IMPACT TO THE GROUNDWATER TO THE MCL LEVELS. THESE LEVELS ALSO APPEAR IN TABLE 5.

BASED ON THE ABOVE ANALYSIS, EPA BELIEVES THAT ACTUAL OR THREATENED RELEASES OF HAZARDOUS SUBSTANCES FROM THIS SITE, IF NOT ADDRESSED BY IMPLEMENTING THE RESPONSE ACTION SELECTED IN THIS ROD, MAY REPRESENT AN IMMINENT AND SUBSTANTIAL ENDANGERMENT TO PUBLIC HEALTH, WELFARE OR THE ENVIRONMENT.

#AA

7. ALTERNATIVE ANALYSIS

EACH OF THE FOLLOWING ALTERNATIVES, WITH THE EXCEPTION OF ALTERNATIVE 1, INVOLVES THE PLACEMENT OF RCRA HAZARDOUS WASTES. DURING THE REMEDIAL INVESTIGATION/FEASIBILITY STUDY (RI/FS) THE TOXICITY CHARACTERISTIC LEACHING PROCEDURE (TCLP) WAS USED TO DETERMINE IF CHARACTERISTIC WASTES WERE PRESENT, IN ANTICIPATION OF AN IMMINENT CHANGE IN THE RCRA REGULATIONS. THE REGULATIONS PROMULGATING THE TCLP TESTING PROCEDURE HAVE NOW BEEN FINALIZED. TABLE 6 LISTS THE VARIOUS CONTAMINATED MEDIA AND THE PRETREATMENT ASSUMED TO BE NECESSARY, BASED ON THE TCLP RESULTS, IN ORDER TO COMPLY WITH THE LAND DISPOSAL RESTRICTIONS (40 CFR PART 268).

EACH OF THE ALTERNATIVES, EXCEPT THE NO ACTION ALTERNATIVE, REQUIRES THE EXCAVATION OF THE SAME AREAS AND QUANTITIES OF SOILS. AREA C SOILS (SEE FIGURE 4) WILL BE EXCAVATED AND BACKFILLED SO AS TO REDUCE THE RISK TO ONSITE RESIDENTS FROM ROUTINE CONTACT TO THE (10-6) LEVELS PREFERRED BY EPA. HOWEVER, EPA BELIEVES THAT THERE IS NO FEASIBLE TECHNOLOGY THAT CAN CLEAN AREA A/B SUBSURFACE SOILS (SEE FIGURE 5) SO THAT THE ADDITIONAL INCREMENTAL RISK POSED BY DRINKING GROUNDWATER CONTAMINATED BY LEACHATE FROM THOSE SOILS IS LESS THAN OR EQUAL TO THE (10-6) RISK LEVEL (EQUIVALENT, FOR EXAMPLE, TO 3.8 PPB OF TCE IN THE WATER). TO ACHIEVE THIS RISK LEVEL, OVER 200,000 CUBIC YARDS OF SOIL WOULD HAVE TO BE EXCAVATED AND SUBSEQUENTLY TREATED AND/OR DISPOSED OF, MAKING NONE OF THE ALTERNATIVES FEASIBLE. EPA HAS REVIEWED ONLY THOSE ALTERNATIVES THAT REDUCE THE ADDITIONAL INCREMENTAL RISK TO THE GROUNDWATER TO (10-4) LEVELS OR TO MCLS WHICHEVER ARE MORE PROTECTIVE.

ALTERNATIVES 1 TROUGH 6 WOULD LEAVE CONTAMINATION ONSITE AT LEVELS THAT WOULD NOT ALLOW FOR UNLIMITED USE OR UNRESTRICTED EXPOSURE AND, THEREFORE, 5-YEAR REVIEWS PURSUANT TO SECTION 121(C) OF CERCLA WOULD BE REQUIRED FOR EACH.

ALTERNATIVE 1 - NO ACTION

* FLUFF WASTE: NO ACTION
* TANKS AND DRUMS: NO ACTION
* SOILS: NO ACTION
* LAGOON WATER: NO ACTION

THIS ALTERNATIVE IS CONSIDERED TO PROVIDE A BASELINE AGAINST WHICH THE OTHER REMEDIAL ALTERNATIVES CAN BE COMPARED. THIS ALTERNATIVE INVOLVES TAKING NO ACTION AT THE MW MANUFACTURING SITE TO REMOVE, REMEDIATE, OR CONTAIN THE CONTAMINATED SOILS/WASTES OR LAGOON WATER.

PERIODIC GROUNDWATER MONITORING OF RESIDENTIAL WELLS AND ONSITE MONITORING WELLS WOULD BE CONDUCTED TO PREVENT CONTACT WITH CONTAMINATED GROUNDWATER. FOUR EXISTING ONSITE WELLS AND THREE RESIDENTIAL WELLS (THE CLOSEST DOWNGRADIENT RESIDENCES), WOULD BE PERIODICALLY SAMPLED. THE REQUIRED SAMPLING FREQUENCY OF THESE WELLS, THAT COULD RANGE FROM QUARTERLY TO ANNUALLY, IS DEPENDENT ON THE EXTENT OF GROUNDWATER CONTAMINATION.

FOR COSTING PURPOSES, A QUARTERLY SAMPLING PERIOD WILL BE USED FOR ALL WELLS.

COST

THE PRESENT-WORTH COST ESTIMATE FOR THIS ALTERNATIVE IS $532,000.

COMPLIANCE WITH APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS (ARARS)

WITH RESPECT TO ACTION-SPECIFIC ARARS, THIS ALTERNATIVE DOES NOT COMPLY WITH ANY OF THE RCRA CLOSURE OPTIONS (CLEAN CLOSURE OR LANDFILL CLOSURE) THAT ARE APPLICABLE OR RELEVANT AND APPROPRIATE FOR CERCLA REMEDIAL ACTIONS (40 CFR SS 264.111 OR 264.258).

ALTERNATIVE 2 - ONSITE DISPOSAL OF FLUFF WASTE IN RCRA HAZARDOUS WASTE LANDFILL, ONSITE PHYSICAL/CHEMICAL TREATMENT OF SOILS WITH ONSITE LANDFILL DISPOSAL, CAP CLOSURE OVER RCRA UNITS.

THIS ALTERNATIVE INVOLVES CONTAINMENT OF THE FLUFF WASTE MATERIAL AND SOILS ABOVE THE (10-4) RISK SUBSURFACE SOIL ACTION LEVELS IN AN ONSITE HAZARDOUS WASTE LANDFILL; INCINERATING THE CONTENTS OF THE TANKS/DRUMS IN AN OFFSITE INCINERATOR FACILITY; AND TREATING THE LAGOON WATER ONSITE USING A CARBON ADSORPTION UNIT AND THEN DISCHARGING THE TREATED WATER IN ACCORDANCE WITH NPDES REQUIREMENTS.

TANKS AND DRUMS: APPROXIMATELY 40 CUBIC YARDS OF MATERIAL WOULD BE REMOVED FROM THE TANKS AND DRUM SHIPMENTS AND HAULED IN BULK SHIPMENTS TO A RCRA-APPROVED INCINERATOR. THE REMAINING EMPTY DRUMS AND TANKS WOULD BE TRANSPORTED TO A RCRA-APPROVED HAZARDOUS WASTE LANDFILL. THE INCINERATOR ASH WOULD BE DISPOSED IN A RCRA-APPROVED HAZARDOUS WASTE LANDFILL.

LAGOON WATER: APPROXIMATELY 86,000 GALLONS OF LAGOON WATER WOULD BE PUMPED THROUGH A 55-GALLON CARBON ADSORPTION UNIT (AFTER ANY NECESSARY PRETREATMENT) AND THEN DISCHARGED IN ACCORDANCE WITH NPDES REQUIREMENTS. THE SPENT CARBON UNIT WOULD BE EITHER INCINERATED OR DISPOSED IN A RCRA APPROVED HAZARDOUS WASTE LANDFILL.

FLUFF WASTE (32,000 CY.) THIS ALTERNATIVE ASSUMES THAT THE FLUFF MATERIAL WOULD REQUIRE PRETREATMENT FOR METALS ONLY (PRIMARILY LEAD) TO MEET THE LDR REQUIREMENTS BEFORE DISPOSAL. THE LDR TREATMENT LEVELS FOR RCRA CHARACTERISTIC WASTES WERE NOT PROMULGATED DURING THE FS AND, THEREFORE, THE EP TOXICITY LEVELS WERE USED AS A BASIS FOR THE PRETREATMENT ASSUMPTION. THIS ALTERNATIVE INCLUDES THE COST OF USING A CEMENT/POZZOLAN-BASED STABILIZATION TECHNOLOGY TO MEET THE LDR REQUIREMENTS.

SOIL AREA A/B (7,000 CY.) AND AREA C (6,000 CY.) UNDER THIS ALTERNATIVE, THE SOILS WOULD BE EXCAVATED, TREATED ON SITE AND DISPOSED OF IN AN ON SITE LANDFILL. TESTING IS REQUIRED TO DETERMINE WHICH TREATABILITY TREATMENT OPTION IS MOST SUITABLE TO THE MW MANUFACTURING SITE SOLVENT CONTAMINATION.

PLACEMENT OF SOIL INTO THE ONSITE HAZARDOUS WASTE LANDFILL WILL INVOKE THE LDR RESTRICTIONS. IT IS ASSUMED THAT AREA A/B SOILS WOULD REQUIRE PRETREATMENT FOR METALS (PRIMARILY LEAD) AND SOLVENTS (PRIMARILY PCE) TO MEET THE LDR REQUIREMENTS BEFORE DISPOSAL, BUT THAT AREA C SOILS WOULD REQUIRE TREATMENT FOR SOLVENTS ONLY. THE SAME STABILIZATION TECHNOLOGY USED TO STABILIZE THE METALS IN THE FLUFF MATERIAL WOULD MOST LIKELY BE USED FOR THE SOILS. THE SOILS WOULD REQUIRE TREATMENT OF THE SOLVENTS TO THE BDAT-BASED TREATMENT LEVELS PRIOR TO PLACEMENT IN THE LANDFILL. IF THE BDAT-BASED LEVELS COULD NOT BE ACHIEVED, A TREATMENT VARIANCE WOULD BE ISSUED BASED ON THE EXISTING TREATMENT GUIDELINES.

THOUGH THE POSSIBILITY EXISTS THAT TREATMENT OF THE SOILS MAY RENDER SOME OR ALL OF THEM NON-HAZARDOUS AND, THEREFORE, ABLE TO BE DISPOSED OF IN A NON-HAZAROUS WASTE LANDFILL, FOR COSTING PURPOSES, IT WILL BE ASSUMED THAT ALL EXCAVATED SOILS WILL BE PLACED IN THE ONSITE LANDFILL AFTER TREATMENT.

THE LAGOON AND ANY EXCAVATED AREAS WOULD BE BACKFILLED WITH CLEAN SOIL. FOR THE SOILS SURROUNDING THE LANDFILL AND NOT CONTAINED UNDER THE FLUFF PILES, A HYBRID CLOSURE WOULD BE USED THAT WOULD CONSIST OF PLACEMENT OF A LAYER OF TOPSOIL (APPROXIMATELY 6 INCHES) FOLLOWED BY REVEGETATION.

SINCE THE FLUFF PILES ARE CONSIDERED TO BE A RCRA UNIT, THE SOIL UNDER THE PILES MUST BE MANAGED ACCORDING TO THE RCRA CLOSURE REQUIREMENTS (40 CFR PART 264.258). A CLEAN CLOSURE CANNOT BE ACHIEVED FOR THE RCRA UNIT FOR THE FOLLOWING TWO REASONS: (1) THE PHYSICAL/CHEMICAL TREATMENT PROCESSES CANNOT DECONTAMINATE THE SOILS TO THE REMEDIAL ACTION LEVELS FOR SURFACE SOILS FOR RESIDENTS, THAT ARE NECESSARY FOR THE "EDIBLE SOILS" CRITERION TO BE MET; AND (2) RESIDUAL CONTAMINATION, OUTSIDE OFTHE "HOT SPOT" AREAS, WILL REMAIN IN THE SUBSOILS UNDER THE FLUFF MATERIAL AT THE END OF REMEDIATION. FOR THESE REASONS, IN ORDER TOCOMPLY WITH RCRA CLOSURE REQUIREMENTS, THE SOILS UNDER THE FLUFF MATERIAL MUST BE COVERED WITH A CAP OF EQUAL OR LOWER

PERMEABILITY THAN THAT OF THE SUBSOILS (LANDFILL CLOSURE). FOR COSTING PURPOSES, A SYNTHETIC CAP, SIMILAR TO THE LANDFILL CAP, WILL BE ASSUMED.

COST

THE TREATMENT COSTS OF THE VARIOUS PHYSICAL/CHEMICAL PROCESS OPTIONS USED FOR REMOVAL OF THE SOLVENTS AND OTHER ORGANICS RANGE FROM APPROXIMATELY $65/CY. TO $230/CY. OF SOIL. AS THE TREATMENT COSTS ARE VERY MATRIX-DEPENDENT, TREATABILITY TESTING IS NEEDED TO FURTHER REFINE THE COST ESTIMATES AMONG THE VARIOUS PHYSICAL/CHEMICAL PROCESS OPTIONS. THE APPROXIMATE MEDIAN TREATMENT COST OF $150/CY. WAS USED IN THE COST ESTIMATE. THE PRESENT-WORTH COST ESTIMATE FOR THIS ALTERNATIVE, INCLUDING THE COST OF INSTALLING A RCRA-APPROVED SYNTHETIC CAP OVER THE SOIL THAT LIES BENEATH THE REMEDIATED FLUFF PILES, IS $16,843,000.

COMPLIANCE WITH ARARS

THE LANDFILL MUST BE CONSTRUCTED TO THE MINIMUM TECHNOLOGY REQUIREMENTS OF RCRA (40 CFR SS 264.301 AND 264.303) AND PENNSYLVANIA CLOSURE REQUIREMENTS (25 PA CODE S75.264(V)).

THE SUBSOILS UNDER THE FLUFF WASTE PILES MUST BE CLOSED ACCORDING TO RCRA CLOSURE REQUIREMENTS (40 CFR S264.258)AND 25 PA CODE SS75.264(O) AND 75.264(T).

THE SURFACE IMPOUNDMENT MUST BE CLOSED ACCORDING TO RCRA CLOSURE REQUIREMENTS (40 CFR S264.258) AND 25 PA CODE SS75.264(O) AND 75.264(S).

OSHA STANDARDS (29 CFR SS1910.120(B)-(O)) WILL BE FOLLOWED DURING ALL SITE WORK.

THIS ACTION WILL CAUSE NO VIOLATION OF NAAQS DUE TO FUGITIVE DUST GENERATED DURING CONSTRUCTION ACTIVITIES (CLEAN AIR ACT, 40 CFR S50.6 AND 40 CFR S52.21(J).

FUGITIVE DUST EMISSIONS GENERATED DURING CONSTRUCTION ACTIVITIES WILL COMPLY WITH FUGITIVE DUST REGULATIONS IN THE FEDERALLY APPROVED STATE IMPLEMENTATION PLAN FOR THE COMMONWEALTH OF PENNSYLVANIA (CLEAN AIR ACT, 40 CFR PART 52, SUBPART NN, SS 52.2020 - 52.2023).

ANY SURFACE WATER DISCHARGE WILL COMPLY WITH THE CLEAN WATER ACT NPDES DISCHARGE REGULATIONS (40 CFR SS122.41 - 122.50), THE PENNSYLVANIA NPDES REGULATIONS (25 PA CODE S92.31), AND THE PENNSYLVANIA WASTEWATER TREATMENT REGULATIONS (25 PA CODE SS95.1 - 95.3).

"PLACEMENT" OF THE WASTES WILL INVOKE THE RCRA LAND DISPOSAL RESTRICTIONS. THIS ALTERNATIVE WILL COMPLY WITH 40 CFR PART 268.

TRANSPORTATION OF MATERIAL TO A RCRA PERMITTED HAZARDOUS WASTE LANDFILL OR INCINERATOR WILL BE DONE IN COMPLIANCE WITH FEDERAL REGULATIONS APPLICABLE TO GENERATORS AND TRANSPORTERS OF HAZARDOUS WASTES (40 CFR PART 262 AND 40 CFR PART 263) AS WELL AS WITH PENNSYLVANIA REGULATIONS (25 PA CODE S75.263).

ONSITE TREATMENT WILL COMPLY WITH RCRA REGULATIONS AND STANDARDS FOR OWNERS AND OPERATORS OF HAZARDOUS WASTE TREATMENT, STORAGE, AND DISPOSAL FACILITIES 40 CFRSS 264.170 - 264.178(CONTAINERS), SS 264.190 264.200 (TANKS), SS 264.220 - 264.249 (SURFACE IMPOUNDMENTS) AND SS 264.250 - 264.259 (WASTE PILES).

ALTERNATIVE 3 - OFFSITE DISPOSAL OF FLUFF WASTE IN RCRA HAZARDOUS WASTE LANDFILL, ONSITE PHYSICAL/CHEMICAL TREATMENT OF SOILS WITH OFFSITE LANDFILL DISPOSAL, CAP CLOSURE OVER RCRA UNITS

THIS ALTERNATIVE INVOLVES DISPOSING THE FLUFF WASTE MATERIAL AND SOILS, CONTAMINATED ABOVE THE (10-4) RISK SUBSURFACE SOIL ACTION LEVELS IN AN OFFSITE, RCRA-APPROVED, HAZARDOUS WASTE LANDFILL; INCINERATING THE CONTENTS OF THE TANKS/DRUM IN AN OFFSITE INCINERATOR FACILITY; AND TREATING THE LAGOON WATER USING AN ONSITE CARBON ADSORPTION UNIT AND THEN DISCHARGING THE TREATED WATER IN ACCORDANCE WITH NPDES REQUIREMENTS. THIS ALTERNATIVE IS SIMILAR TO ALTERNATIVE 2 EXCEPT THE FLUFF WASTE AND ANY EXCAVATED SOIL WOULD BE DISPOSED IN AN OFFSITE LANDFILL RATHER THAN AN ONSITE LANDFILL.

COST

THE PRESENT-WORTH COST ESTIMATE FOR THIS ALTERNATIVE, INCLUDING THE COST OF INSTALLING A RCRA-APPROVED SYNTHETIC CAP OVER THE SOIL THAT LIES BENEATH THE FLUFF PILES, IS $32,186,000.

COMPLIANCE WITH ARARS

THE SUBSOILS UNDER THE FLUFF WASTE PILES MUST BE CLOSED ACCORDING TO RCRA CLOSURE REQUIREMENTS (40 CFR S264.258) AND 25 PA CODE SS75.264(O) AND 75.264(T).

THE SURFACE IMPOUNDMENT MUST BE CLOSED ACCORDING TO RCRA CLOSURE REQUIREMENTS (40 CFR S264.258) AND 25 PA CODE SS75.264(O) AND 75.264(S).

OSHA STANDARDS (29 CFR SS1910.120(B)-(O)) WILL BE FOLLOWED DURING ALL SITE WORK.

THIS ACTION WILL CAUSE NO VIOLATION OF NAAQS DUE TO FUGITIVE DUST GENERATED DURING CONSTRUCTION ACTIVITIES (CLEAN AIR ACT, 40 CFR S50.6 AND 40 CFR S52.21(J), NATIONAL AMBIENT AIR QUALITY STANDARDS).

FUGITIVE DUST EMISSIONS GENERATED DURING CONSTRUCTION ACTIVITIES WILL COMPLY WITH FUGITIVE DUST REGULATIONS IN THE FEDERALLY APPROVED STATE IMPLEMENTATION PLAN FOR THE COMMONWEALTH OF PENNSYLVANIA (CLEAN AIR ACT, 40 CFR PART 52, SUBPART NN, SS 52.2020 - 52.2023, STATE IMPLEMENTATION PLANS FOR NATIONAL AMBIENT AIR QUALITY STANDARDS).

ANY SURFACE WATER DISCHARGE WILL COMPLY WITH THE CLEAN WATER ACT NPDES DISCHARGE REGULATIONS (40 CFR 122 SS122.41 - 122.50), THE PENNSYLVANIA NPDES REGULATIONS (25 PA CODE S92.31), AND THE PENNSYLVANIA WASTEWATER TREATMENT REGULATIONS (25 PA CODE SS95.1 - 95.3).

"PLACEMENT" OF THE WASTES WILL INVOKE THE RCRA LAND DISPOSAL RESTRICTIONS. THIS ALTERNATIVE WILL COMPLY WITH 40 CFR PART 268.

TRANSPORTATION OF MATERIAL TO A RCRA PERMITTED HAZARDOUS WASTE LANDFILL OR INCINERATOR WILL BE DONE IN COMPLIANCE WITH FEDERAL REGULATIONS APPLICABLE TO GENERATORS AND TRANSPORTERS OF HAZARDOUS WASTES (40 CFR PART 262 AND 40 CFR PART 263 AS WELL AS WITH PENNSYLVANIA REGULATIONS (25 PA CODE S75.263).

ONSITE TREATMENT WILL COMPLY WITH RCRA REGULATIONS AND STANDARDS FOR OWNERS AND OPERATORS OF HAZARDOUS WASTE TREATMENT, STORAGE, AND DISPOSAL FACILITIES 40 CFR SS 264.170 - 264.178(CONTAINERS), SS 264.190 264.200 (TANKS), SS 264.220 - 264.249 (SURFACE IMPOUNDMENTS) AND SS 264.250 - 264.259 (WASTE PILES).

ALTERNATIVE 4 - ONSITE INCINERATION, CAP CLOSURE OVER RCRA UNITS

THIS ALTERNATIVE INVOLVES INCINERATING THE FLUFF WASTE MATERIAL AND SOILS, CONTAMINATED ABOVE THE (10-4) RISK SUBSURFACE SOIL ACTION LEVELS, IN AN ONSITE ROTARY KILN INCINERATOR; INCINERATING THE CONTENTS OF THE TANKS/DRUMS IN AN ONSITE ROTARY KILN INCINERATOR; AND TREATING THE LAGOON WATER IN AN ONSITE CARBON ADSORPTION UNIT AND THEN DISCHARGING TO MAUSES CREEK.

TANKS AND DRUMS: APPROXIMATELY 40 CUBIC YARDS OF MATERIAL WOULD BE REMOVED FROM THE TANKS AND DRUMS AND HAULED IN BULK SHIPMENTS TO A RCRA APPROVED INCINERATOR. THE REMAINING EMPTY DRUMS AND TANKS WOULD BE CRUSHED AND/OR DISMANTLED AND THEN TRANSPORTED TO A RCRA-APPROVED HAZARDOUS WASTE LANDFILL.

THE INCINERATOR ASH GENERATED FROM THE TANK/DRUM WASTES WOULD MOST LIKELY STILL BE CLASSIFIED AS A HAZARDOUS WASTE (DUE TO EP TOXICITY CHARACTERISTIC FOR LEAD) AND WOULD THEREFORE BE DISPOSED OF IN AN OFFSITE RCRA-APPROVED HAZARDOUS WASTE LANDFILL.

LAGOON WATER: APPROXIMATELY 86,000 GALLONS OF LAGOON WATER WOULD BE PUMPED THROUGH A 55-GALLON CARBON ADSORPTION UNIT (AFTER ANY NECESSARY PRETREATMENT) AND THEN DISCHARGED IN ACCORDANCE WITH NPDES REQUIREMENTS.

FLUFF WASTE: THE ASH CONTENT OF THE FLUFF WASTE IS APPROXIMATELY 12 PERCENT AND THEREFORE AN ESTIMATED 6,700 TONS OF ASH WOULD BE GENERATED FROM INCINERATION OF THE FLUFF MATERIAL. DUE TO THE HIGH LEAD CONCENTRATION IN THE FLUFF WASTE, THE ASH WOULD MOST LIKELY EXHIBIT THE EP TOXICITY CHARACTERISTIC FOR LEAD. TO COMPLY WITH THE LDR REQUIREMENTS THE ASH WOULD REQUIRE STABILIZATION OF THE LEAD. FOR COSTING PURPOSES, IT IS ASSUMED THAT THE ASH WOULD BE STABILIZED ONSITE USING A CEMENT/POZZOLAN-BASED PROCESS AND THEN TRANSPORTED TO A RCRA PERMITTED HAZARDOUS WASTE LANDFILL.

SOILS: ASSUMING THAT THE ASH CONTENT OF THE SOILS IS 80 PERCENT BY WEIGHT, AN ESTIMATED 15,800 TONS OF SOILS WOULD REMAIN AFTER INCINERATION. THE INCINERATION PROCESS WOULD REDUCE THE ORGANIC CONTAMINANT LEVELS TO THE SURFACE SOIL ACTION LEVELS. THE INCINERATION MAY ALSO VOLATILIZE THE LEAD IN AREA A/B SOILS TO ITS SURFACE SOIL REMEDIAL ACTION LEVEL (500 MG/KG), OR TO THE POINT THAT THE SOIL DOES NOT NEED TREATMENT TO COMPLY WITH RCRA LDR STANDARDS, ALTHOUGH THIS CANNOT BE DETERMINED AT THIS TIME. IT IS ASSUMED THAT 8500 TONS OF AREA A/B SOIL WILL NEED TO BE STABILIZED AND DISPOSED OF IN AN OFFSITE RCRA SUBTITLE C LANDFILL. AN ESTIMATED 7300 TONS OF AREA C SOILS WILL NOT NEED FURTHER TREATMENT BEFORE DISPOSAL IN THE SUBTITLE C FACILITY.

FOLLOWING INCINERATION OF THE SOILS AND FLUFF WASTE, EXCAVATED AREAS WOULD BE BACKFILLED WITH CLEAN SOIL. FOR THE SOILS NOT CONTAINED UNDER THE FLUFF PILES, A HYBRID CLOSURE, CONSISTING OF PLACEMENT OF A LAYER OF TOPSOIL (APPROXIMATELY 6 INCHES) FOLLOWED BY REVEGETATION, WOULD BE USED.

SINCE THE FLUFF PILES ARE CONSIDERED TO BE A RCRA UNIT, THE SOIL UNDER THE PILES MUST BE MANAGED ACCORDING TO THE RCRA CLOSURE REQUIREMENTS (40 CFR S264.258). A CLEAN CLOSURE CANNOT BE ACHIEVED FOR THE RCRA UNIT, BECAUSE RESIDUAL CONTAMINATION OUTSIDE OF THE "HOT SPOT" AREAS WILL REMAIN IN THE SUBSOILS UNDER THE FLUFF MATERIAL AFTER REMEDIATION. FOR THIS REASON, TO COMPLY WITH RCRA CLOSURE REQUIREMENTS, THE SOILS UNDER THE FLUFF MATERIAL MUST BE COVERED WITH A CAP OF EQUAL OR LOWER PERMEABILITY THAN THAT OF THE SUBSOILS (LANDFILL CLOSURE). FOR COSTING PURPOSES, A SYNTHETIC CAP WILL BE ASSUMED.

COST

THE PRESENT-WORTH COST ESTIMATE FOR THIS ALTERNATIVE, INCLUDING THE COST OF INSTALLING A RCRA-APPROVED SYNTHETIC CAP OVER THE SOIL THAT LIES BENEATH THE REMEDIATED FLUFF PILES, IS $35,950,000.

COMPLIANCE WITH ARARS

THE SUBSOILS UNDER THE FLUFF WASTE PILES MUST BE CLOSED ACCORDING TO RCRA CLOSURE REQUIREMENTS (40 CFR S264.258) AND 25 PA CODE SS75.264(O) AND 75.264(T).

THE SURFACE IMPOUNDMENT MUST BE CLOSED ACCORDING TO RCRA CLOSURE REQUIREMENTS (40 CFR S264.258) AND 25 PA CODE SS75.264(O) AND 75.264(S).

OSHA STANDARDS (29 CFR SS1910.120(B) - (O)) WILL BE FOLLOWED DURING ALL SITE WORK.

THIS ALTERNATIVE WILL COMPLY WITH THE RCRA INCINERATOR REGULATIONS (40 CFR SS264.340 - 264.999) AND THE PENNSYLVANIA REGULATIONS FOR HAZARDOUS WASTE INCINERATION (25 PA CODE S75.264(W)).

ANY RESIDUAL ASH CONSIDERED A HAZARDOUS WASTE UNDER 40 CFR S261.3 WILL COMPLY WITH 40 CFR SS 264.1 - 264.50 AND 25 PA CODE S75.264(V) WHICH REQUIREMENTS REGULATE THE LAND DISPOSAL OF HAZARDOUS WASTES.

THIS ACTION WILL CAUSE NO VIOLATION OF NAAQS DUE TO FUGITIVE DUST GENERATED DURING CONSTRUCTION ACTIVITIES (CLEAN AIR ACT, 40 CFR S50.6 AND 40 CFR S52.21(J).

FUGITIVE DUST EMISSIONS GENERATED DURING CONSTRUCTION ACTIVITIES WILL COMPLY WITH FUGITIVE DUST REGULATIONS IN THE FEDERALLY APPROVED STATE IMPLEMENTATION PLAN FOR THE COMMONWEALTH OF PENNSYLVANIA (CLEAN AIR ACT, 40 CFR PART 52, SUBPART NN, SS 52.2020 - 52.2023).

ANY SURFACE WATER DISCHARGE WILL COMPLY WITH THE CLEAN WATER ACT NPDES DISCHARGE REGULATIONS (40 CFR SS122.41 - 122.50), THE PENNSYLVANIA NPDES REGULATIONS (25 PA CODE S92.31), AND THE PENNSYLVANIA WASTEWATER TREATMENT REGULATIONS (25 PA CODE SS95.1 - 95.3).

ALTERNATIVE 5 - OFFSITE INCINERATION, CAP CLOSURE OVER RCRA UNITS

THIS ALTERNATIVE INVOLVES INCINERATING THE FLUFF WASTE MATERIAL AND THOSE SOILS CONTAMINATED ABOVE THE (10-4) RISK SUBSURFACE SOIL ACTION LEVELS, IN AN OFFSITE ROTARY KILN INCINERATOR; INCINERATING THE CONTENTS OF THE TANKS/DRUMS IN AN OFFSITE ROTARY KILN INCINERATOR; AND TREATING THE LAGOON WATER IN AN ONSITE CARBON ADSORPTION UNIT AND THEN DISCHARGING THE TREATED WATER TO MAUSES CREEK.

TANKS AND DRUMS: AS DESCRIBED IN THE PREVIOUS ALTERNATIVES, APPROXIMATELY 40 CUBIC YARDS OF MATERIAL WOULD BE

REMOVED FROM THE TANKS AND DRUMS, LOADED ONTO TRUCKS, AND HAULED IN BULK SHIPMENTS TO A RCRA APPROVED INCINERATOR. THE INCINERATOR ASH GENERATED FROM THE TANK/DRUM WASTES WOULD BE DISPOSED IN A RCRA-APPROVED HAZARDOUS WASTE LANDFILL.

LAGOON WATER: AS DESCRIBED IN THE PREVIOUS ALTERNATIVES, APPROXIMATELY 86,000 GALLONS OF LAGOON WATER WOULD BE PUMPED THROUGH A 55-GALLON CARBON ADSORPTION UNIT (AFTER ANY NECESSARY PRETREATMENT) AND THEN DISCHARGED IN ACCORDANCE WITH NPDES REQUIREMENTS.

FLUFF WASTE (32,000 CY.) THE ASH CONTENT OF THE FLUFF WASTE IS APPROXIMATELY 12 PERCENT AND THEREFORE AN ESTIMATED 6,700 TONS OF ASH WOULD BE GENERATED FROM INCINERATION OF THE FLUFF MATERIAL. DUE TO THE HIGH LEAD CONCENTRATION IN THE FLUFF WASTE, THE ASH WOULD MOST LIKELY EXHIBIT THE EP TOXICITY CHARACTERISTIC FOR LEAD. TO COMPLY WITH THE LDR REQUIREMENTS THE ASH WOULD REQUIRE STABILIZATION OF THE LEAD. THE ADDITIONAL COST OF STABILIZING THE ASH, WHICH WOULD BE INCLUDED IN THE INCINERATIONS CONTRACT, IS INCLUDED IN THE COST ESTIMATE FOR THIS ALTERNATIVE. THE STABILIZED ASH WOULD THEN BE DISPOSED IN AN OFFSITE RCRA-PERMITTED HAZARDOUS WASTE LANDFILL.

AREA A/B SOIL (7,000 CY.) FOR COSTING PURPOSES, THE ASH CONTENT OF THE SOILS IS ASSUMED TO BE APPROXIMATELY 80 PERCENT, BY WEIGHT. AN ESTIMATED 8,500 TONS OF TREATED SOIL WOULD BE PRODUCED BY INCINERATION. THE INCINERATION PROCESS WOULD REDUCE THE ORGANIC CONTAMINANT LEVELS TO THE SURFACE SOIL ACTION LEVELS. ALTHOUGH THE LEVEL OF LEAD IN THE ASH MAY BE LOW ENOUGH THAT IT DOES NOT REQUIRE STABILIZATION TO COMPLY WITH THE UPCOMING LDR STANDARDS, THE COST OF ONSITE STABILIZATION WILL BE INCLUDED IN THE COST ESTIMATE. FOLLOWING STABILIZATION, THE ASH WOULD BE DISPOSED OF IN AN OFFSITE RCRA PERMITTED HAZARDOUS WASTE LANDFILL.

AREA C SOIL (6,000 CY.) AN ESTIMATED 7,300 TONS OF TREATED SOIL WOULD BE PRODUCED BY INCINERATION. FOLLOWING INCINERATION, THE ASH WOULD BE DISPOSED IN AN OFFSITE RCRA-PERMITTED HAZARDOUS WASTE LANDFILL. STABILIZATION OF THE ASH PRIOR TO DISPOSAL WOULD NOT BE REQUIRED.

FOLLOWING OFFSITE INCINERATION OF THE SOILS AND FLUFF WASTE, ANY EXCAVATED AREAS WOULD BE BACKFILLED WITH CLEAN SOIL. FOR THE SOILS NOT CONTAINED UNDER THE FLUFF PILES, A HYBRID CLOSURE COULD BE USED, THAT WOULD CONSIST OF PLACEMENT OF A LAYER OF TOPSOIL (APPROXIMATELY 6 INCHES) FOLLOWED BY REVEGETATION.

SINCE THE FLUFF PILES ARE CONSIDERED TO BE A RCRA UNIT, THE SOIL UNDER THE PILES MUST BE MANAGED ACCORDING TO THE RCRA CLOSURE REQUIREMENTS (40 CFR PART 264.258). A CLEAN CLOSURE CANNOT BE ACHIEVED FOR THE RCRA UNIT, BECAUSE RESIDUAL CONTAMINATION OUTSIDE OF THE "HOT SPOT" AREAS WILL REMAIN IN THE SUBSOILS UNDER THE FLUFF MATERIAL AFTER REMEDIATION. FOR THIS REASON, TO COMPLY WITH RCRA CLOSURE REQUIREMENTS, THE SOILS UNDER THE FLUFF MATERIAL MUST BE COVERED WITH A CAP OF EQUAL OR LOWER PERMEABILITY THAN THAT OF THE SUBSOILS (LANDFILL CLOSURE). FOR COSTING PURPOSES, A SYNTHETIC CAP WILL BE ASSUMED.

COST

THE PRESENT-WORTH COST ESTIMATE FOR THIS ALTERNATIVE, INCLUDING THE COST OF INSTALLING A RCRA-APPROVED SYNTHETIC CAP OVER THE SOIL THAT LIES BENEATH THE FLUFF PILES, IS $58,904,000.

COMPLIANCE WITH ARARS

THE SUBSOILS UNDER THE FLUFF WASTE PILES MUST BE CLOSED ACCORDING TO RCRA CLOSURE REQUIREMENTS (40 CFR S264.258) AND 25 PA CODE SS75.264(O) AND 75.264(T).

THE SURFACE IMPOUNDMENT MUST BE CLOSED ACCORDING TO RCRA CLOSURE REQUIREMENTS (40 CFR S264.258) AND 25 PA CODE SS75.264(O) AND 75.264(S).

OSHA STANDARDS (29 CFR SS1910.120(B)-(O)) WILL BE FOLLOWED DURING ALL SITE WORK.

ANY RESIDUAL CONSIDERED A HAZARDOUS WASTE UNDER 40 CFR S261.3 WILL COMPLY WITH 40 CFR SS 264.1 - 264.50 AND 25 PA CODE S75.264(V) WHICH REQUIREMENTS REGULATE THE LAND DISPOSAL OF HAZARDOUS WASTES.

THIS ACTION WILL CAUSE NO VIOLATION OF NAAQS DUE TO FUGITIVE DUST GENERATED DURING CONSTRUCTION ACTIVITIES (CLEAN AIR ACT, 40 CFR S50.6 AND 40 CFR S52.21(J).

FUGITIVE DUST EMISSIONS GENERATED DURING CONSTRUCTION ACTIVITIES WILL COMPLY WITH FUGITIVE DUST REGULATIONS

IN THE FEDERALLY APPROVED STATE IMPLEMENTATION PLAN FOR THE COMMONWEALTH OF PENNSYLVANIA (CLEAN AIR ACT, 40 CFR PART 52, SUBPART NN, SS 52.2020 - 52.2023).

OFFSITE TRANSPORTATION OF THE ASH AND OTHER TREATMENT RESIDUALS WILL BE DONE IN COMPLIANCE WITH FEDERAL REGULATIONS APPLICABLE TO GENERATORS AND TRANSPORTERS OF HAZARDOUS WASTES (40 CFR PART 262 AND 40 CFR PART 263) AS WELL AS WITH PENNSYLVANIA REGULATIONS (25 PA CODE S75.263).

ANY SURFACE WATER DISCHARGE WILL COMPLY WITH THE CLEAN WATER ACT NPDES DISCHARGE REGULATIONS (40 CFR SS122.41 - 122.50), THE PENNSYLVANIA NPDES REGULATIONS (25 PA CODE S92.31), AND THE PENNSYLVANIA WASTEWATER TREATMENT REGULATIONS (25 PA CODE SS95.1 - 95.3).

ALTERNATIVE 6 - OFFSITE INCINERATION OF FLUFF WASTE, ONSITE PHYSICAL CHEMICAL TREATMENT OF SOILS WITH OFFSITE LANDFILL DISPOSAL, CAP CLOSURE OVER RCRA UNITS.

THIS ALTERNATIVE INVOLVES INCINERATING THE FLUFF WASTE MATERIAL IN AN OFFSITE ROTARY KILN INCINERATOR; TREATING THE SOILS CONTAMINATED ABOVE THE (10-4) RISK SUBSURFACE SOIL ACTION LEVELS USING A PHYSICAL/ CHEMICAL TECHNOLOGY; INCINERATING THE CONTENTS OF THE TANKS/DRUMS IN AN OFFSITE ROTARY KILN INCINERATOR; AND TREATING THE LAGOON WATER IN AN ONSITE CARBON ADSORPTION UNIT AND THEN DISCHARGING THE TREATED WATER INTO MAUSES CREEK. THIS ALTERNATIVE IS IDENTICAL TO ALTERNATIVE 3, OFFSITE DISPOSAL, EXCEPT THAT THE FLUFF WASTE WOULD BE INCINERATED OFFSITE UNDER THIS ALTERNATIVE RATHER THAN DISPOSED IN AN OFFSITE HAZARDOUS LANDFILL.

COST

BECAUSE THE TREATMENT COSTS ARE VERY MATRIX-DEPENDENT, TREATABILITY TESTING IS NEEDED TO FURTHER REFINE THE COST ESTIMATES AMONG THE VARIOUS PHYSICAL/CHEMICAL PROCESS OPTIONS. THE APPROXIMATE MEDIAN TREATMENT COST OF $150/CY. OF SOIL WAS USED IN THE COST ESTIMATE. THE PRESENT-WORTH COST ESTIMATE FOR THIS ALTERNATIVE, INCLUDING THE COST OF INSTALLING A RCRA-APPROVED SYNTHETIC CAP OVER THE SOIL THAT LIES BENEATH THE FLUFF PILES, IS $41,060,000.

COMPLIANCE WITH ARARS

THE SUBSOILS UNDER THE FLUFF WASTE PILES MUST BE CLOSED ACCORDING TO RCRA CLOSURE REQUIREMENTS (40 CFR S264.258) AND 25 PA CODE SS75.264(O) AND 75.264(T).

THE SURFACE IMPOUNDMENT MUST BE CLOSED ACCORDING TO RCRA CLOSURE REQUIREMENTS (40 CFR S264.258) AND 25 PA CODE SS75.264(O) AND 75.264(S).

ONSITE TREATMENT WILL COMPLY WITH RCRA REGULATIONS AND STANDARDS FOR OWNERS AND OPERATORS OF HAZARDOUS WASTE TREATMENT, STORAGE, AND DISPOSAL FACILITIES 40 CFR SS 264.170 - 264.178 (CONTAINERS), SS 264.190 264.200 (TANKS), SS 264.220 - 264.249 (SURFACE IMPOUNDMENTS) AND SS 264.250 - 264.259 (WASTE PILES).

OSHA STANDARDS (29 CFR SS1910.120(B) - (O)) WILL BE FOLLOWED DURING ALL SITE WORK.

THIS ACTION WILL CAUSE NO VIOLATION OF NAAQS DUE TO FUGITIVE DUST GENERATED DURING CONSTRUCTION ACTIVITIES (CLEAN AIR ACT, 40 CFR S50.6 AND 40 CFR S52.21(J).

FUGITIVE DUST EMISSIONS GENERATED DURING CONSTRUCTION ACTIVITIES WILL COMPLY WITH FUGITIVE DUST REGULATIONS IN THE FEDERALLY APPROVED STATE IMPLEMENTATION PLAN FOR THE COMMONWEALTH OF PENNSYLVANIA (CLEAN AIR ACT, 40 CFR PART 52, SUBPART NN, SS 52.2020 - 52.2023).

ANY ONSITE SURFACE WATER DISCHARGE WILL COMPLY WITH THE CLEAN WATER ACT NPDES DISCHARGE REGULATIONS (40 CFRSS122.41 - 122.50), THE PENNSYLVANIA NPDES REGULATIONS (25 PA CODE S92.31), AND THE PENNSYLVANIA WASTEWATER TREATMENT REGULATIONS (25 PA CODE SS95.1 - 95.3).

"PLACEMENT" OF THE WASTES WILL INVOKE THE RCRA LAND DISPOSAL RESTRICTIONS. THIS ALTERNATIVE WILL COMPLY WITH 40 CFR PART 268.

TRANSPORTATION OF MATERIAL TO A RCRA PERMITTED HAZARDOUS WASTE LANDFILL OR INCINERATOR WILL BE DONE IN COMPLIANCE WITH FEDERAL REGULATIONS APPLICABLE TO GENERATORS AND TRANSPORTERS OF HAZARDOUS WASTES (40 CFR

PART 262 AND 40 CFR PART 263 AS WELL AS WITH PENNSYLVANIA REGULATIONS (25 PA CODE S75.263).

#CAA

8. COMPARISON AMONG ALTERNATIVES

THE REMEDIAL ALTERNATIVES ANALYZED IN DETAIL IN SECTION 7 ARE COMPARED AGAINST EACH OTHER IN THIS SECTION.

SHORT-TERM EFFECTIVENESS

WITH THE EXCEPTION OF ALTERNATIVE 1, "NO ACTION", ALL REMEDIAL ALTERNATIVES WOULD PROVIDE PROTECTION OF PUBLIC HEALTH FROM EXPOSURE TO THE WASTES AND CONTAMINATED SOILS IN THE SHORT-TERM. ALTERNATIVE 1 INCLUDES ONLY A MINIMAL DEGREE OF PROTECTION PROVIDED BY THE EXISTING FENCE SURROUNDING THE SITE. ALTERNATIVE 5, OFFSITE INCINERATION, COULD BE IMPLEMENTED IN THE SHORTEST TIME PERIOD, APPROXIMATELY 8 TO 10 MONTHS, FOLLOWED BY ALTERNATIVE 4, ONSITE INCINERATION, IN APPROXIMATELY 16 TO 20 MONTHS. THE REMAINING ALTERNATIVES, WHICH ALL INCLUDE A PHYSICAL/CHEMICAL PROCESS FOR THE SOILS, WOULD TAKE ABOUT 15-28 MONTHS TO IMPLEMENT, ONCE ONSITE ACTIVITIES BEGIN INCLUDING AN AVERAGE 6-8 MONTHS FOR TREATABILITY STUDIES. BECAUSE THERE WOULD BE DUST AND/OR VOLATILE ORGANICS RELEASED DURING EXCAVATION, TREATMENT, AND MATERIAL HANDLING ACTIVITIES, ALTERNATIVES 2 THROUGH 6 ALL WOULD REQUIRE CONTROL MEASURES TO MINIMIZE THE SHORT-TERM RISKS TO WORKERS AND THE COMMUNITY DURING ONSITE REMEDIAL ACTIONS.

LONG-TERM EFFECTIVENESS

ALTERNATIVE 1, NO ACTION, DOES NOT PROVIDE ANY ADDITIONAL LONG-TERM PROTECTION OF PUBLIC HEALTH FROM EXPOSURE TO THE SOILS/WASTES AND ALSO DOES NOT PROTECT THE GROUNDWATER FROM FURTHER CONTAMINATION. WITH RESPECT TO LONG-TERM RELIABILITY, ALL ALTERNATIVES INVOLVING TREATMENT (ALTERNATIVES 2-6), ARE CONSIDERED RELIABLE. ALTERNATIVES 2, 3, AND 7 ARE INTENDED TO TREAT THE SOILS TO THE (10-4) RISK SUBSURFACE SOIL ACTION LEVELS, AS A MINIMUM, IN ORDER TO PROTECT THE GROUNDWATER. ALTERNATIVES 4 AND 5, WHICH INCLUDE INCINERATION, PROVIDE THE MAXIMUM LONG-TERM EFFECTIVENESS, AS INCINERATION WOULD, AT A MINIMUM, REMEDIATE THE ORGANIC CONTAMINANTS TO THE (10-4) RISK SURFACE SOIL ACTION LEVELS FOR RESIDENTS. REGARDLESS OF WHICH TECHNOLOGY IS USED TO TREAT THE SOILS, SOME RESIDUAL CONTAMINATION WILL REMAIN AT THE SITE, REQUIRING PLACEMENT OF SOME TYPE OF FINAL COVER MATERIAL (I.E., RCRA CAP AND/OR SOIL COVER) TO ELIMINATE THE DIRECT CONTACT EXPOSURE ROUTE.

WITH RESPECT TO THE IMPACT OF THE FLUFF WASTE ON THE MW MANUFACTURING SITE, ALTERNATIVES 3 THROUGH 6, WHICH INCLUDE OFFSITE INCINERATION OR OFFSITE DISPOSAL OF THE FLUFF MATERIAL, ARE EQUALLY EFFECTIVE IN THE LONG-TERM, AS THE CONTAMINATED MATERIAL WOULD BE PERMANENTLY REMOVED FROM THE SITE. ON AN OVERALL BASIS, HOWEVER, ALTERNATIVES 4 THROUGH 6, ARE MORE EFFECTIVE THAN ALTERNATIVE 3, AS INCINERATION OF THE MATERIAL WOULD PERMANENTLY DESTROY THE ORGANIC CONTAMINANTS. UNDER ALTERNATIVE 3, OFFSITE DISPOSAL, LONG-TERM RISKS ASSOCIATED WITH THE FLUFF MATERIAL WOULD REMAIN AT THE OFFSITE DISPOSAL FACILITY.

ALTERNATIVE 2, ONSITE DISPOSAL, OFFERS A SLIGHTLY LOWER DEGREE OF LONG TERM EFFECTIVENESS AND RELIABILITY THAN THAT PROVIDED BY THE OTHER ALTERNATIVES (EXCEPT FOR ALTERNATIVE 1), AS CONTAMINATED MATERIAL WOULD REMAIN ONSITE AND ACT AS A POTENTIAL SOURCE OF GROUNDWATER CONTAMINATION. THE LINER SYSTEM AND LEACHATE DETECTION AND COLLECTION ZONES, HOWEVER, SHOULD SERVE TO ADEQUATELY PROTECT THE GROUNDWATER IF THEY ARE CONSTRUCTED AND MAINTAINED PROPERLY.

REDUCTION OF TOXICITY, MOBILITY, OR VOLUME

ALTERNATIVE 1, NO ACTION, WOULD NOT REDUCE THE TOXICITY, MOBILITY, OR VOLUME OF CONTAMINATION AT THE MW MANUFACTURING SITE. ALL OF THE OTHER ALTERNATIVES INCLUDE TREATMENT OF THE WASTES AND SOILS, AND THEREFORE WOULD REDUCE THE TOXICITY OF THESE MATERIALS.

WITH REGARD TO THE FLUFF WASTE, ALTERNATIVES 4, 5, AND 6, WHICH INCLUDE INCINERATION OF THE FLUFF MATERIAL, WOULD SIGNIFICANTLY REDUCE THE VOLUME OF THE FLUFF BY APPROXIMATELY 88 PERCENT. THESE THREE ALTERNATIVES WOULD ALSO PROVIDE THE MAXIMUM REDUCTION OF TOXICITY FOR THE FLUFF WASTE BY DESTROYING THE ORGANIC CONTAMINANTS IN THE MATRIX. ALTERNATIVE 3, OFFSITE DISPOSAL, WOULD NOT REDUCE THE VOLUME OF FLUFF MATERIAL, AS THE INCINERATION ALTERNATIVES WOULD, BUT IT WOULD REDUCE THE VOLUME OF CONTAMINATION AT THE MW MANUFACTURING SITE BY REMOVING THE MATERIAL FROM THE SITE. STABILIZATION OF THE FLUFF MATERIAL, WHICH MAY SLIGHTLY INCREASE THE FLUFF VOLUME, WOULD REDUCE THE TOXICITY OF THE FLUFF WASTE BY REDUCING THE MOBILITY OF THE METAL CONTAMINANTS, PARTICULARLY LEAD, IN THE MATERIAL.

FOR THE SOILS, ALTERNATIVES 4 AND 5 OFFER THE GREATEST REDUCTION IN TOXICITY THROUGH INCINERATION. INCINERATION WOULD, AT A MINIMUM, REDUCE THE ORGANIC CONTAMINANTS IN THE SOILS TO THE (10-4) RISK SURFACE SOIL ACTION LEVELS FOR RESIDENTS. ALTERNATIVES 2, 3, AND 6 WOULD, AT A MINIMUM, REDUCE THE TOXICITY OF THE SOILS TO THE (10-4) RISK ACTION SUBSURFACE SOIL ACTION LEVELS OR TO THE LDR TREATMENT LEVELS.

FOR THE ALTERNATIVES THAT INCLUDE TREATMENT, ALTERNATIVE 2, ONSITE DISPOSAL, WOULD LEAVE THE GREATEST AMOUNT OF CONTAMINATED MATERIAL (FLUFF WASTE AND SOILS) PERMANENTLY AT THE SITE. FOR THE OTHER ALTERNATIVES (EXCEPT NO ACTION), THE AMOUNT OF RESIDUAL CONTAMINATION REMAINING AT THE SITE DEPENDS ON HOW THE SOIL IS TREATED AND DISPOSED. WITH ALL OF THE ALTERNATIVES, RESIDUAL CONTAMINATION, WOULD REMAIN IN THE SUBSURFACE SOILS LOCATED OUTSIDE OF THE "HOT SPOT" AREAS BUT WOULD BE BELOW THE (10-4) RISK SUBSURFACE SOIL ACTION LEVELS.

IMPLEMENTABILITY

THE TECHNOLOGIES PROPOSED FOR ALL ALTERNATIVES ARE, IN GENERAL, DEMONSTRATED AND COMMERCIALLY AVAILABLE. WITH ALTERNATIVES 2, 3, AND 6, HOWEVER, TREATABILITY STUDIES WOULD BE NEEDED TO DETERMINE THE OVERALL IMPLEMENTABILITY AND OPERATING CONDITIONS OF THE PHYSICAL/CHEMICAL PROCESS OPTIONS AND TO DETERMINE WHICH PROCESS IS BEST SUITED TO THE SITE. WITH RESPECT TO EASE OF IMPLEMENTABILITY, ALTERNATIVE 5 WOULD BE THE MOST READILY IMPLEMENTABLE BECAUSE THIS ALTERNATIVE WOULD NOT INVOLVE MOBILIZATION, OPERATION, AND DEMOBILIZATION OF AN ONSITE TREATMENT SYSTEM AS INCLUDED IN THE OTHER ALTERNATIVES THAT REQUIRE ONSITE TREATMENT.

WITH RESPECT TO ADMINISTRATIVE FEASIBILITY, THE NEARNESS OF RESIDENCES AND A SCHOOL COULD CAUSE PUBLIC ACCEPTANCE PROBLEMS FOR THE ONSITE INCINERATOR INCLUDED IN ALTERNATIVE 4, AS WELL AS FOR AN ONSITE PHYSICAL/CHEMICAL PROCESS IN WHICH TOXIC EMISSIONS COULD POTENTIALLY BE RELEASED INTO THE AIR (ALTERNATIVES 2, 3, AND 6).

REGARDING INTERFERENCES OF ALTERNATIVES WITH OTHER REMEDIAL ACTIONS AT THE SITE, CONSTRUCTION OF THE ONSITE LANDFILL, INCLUDED IN ALTERNATIVE 2, COULD POTENTIALLY INTERFERE WITH THE INSTALLATION OF A PUMP AND TREATMENT SYSTEM. UNDER THIS ALTERNATIVE, GROUNDWATER EXTRACTION/INJECTION WELLS COULD NOT BE INSTALLED IN THE LANDFILL AREA, WHICH COULD POTENTIALLY DECREASE THE EFFECTIVENESS OF ANY FUTURE GROUNDWATER EXTRACTION SYSTEM. UNDER ALL OF THE ALTERNATIVES (EXCEPT NO ACTION) INSTALLATION OF A RCRA-APPROVED IMPERMEABLE CAP OVER THE RCRA UNITS (FLUFF PILE AREA) MAY ALSO INTERFERE WITH THE INSTALLATION OF GROUNDWATER EXTRACTION/INJECTION WELLS.

COST

THE PRESENT-WORTH COSTS OF THE REMEDIAL ALTERNATIVES ARE SUMMARIZED IN TABLE 7.

COMPLIANCE WITH ARARS

FOR ALL ALTERNATIVES, EXCEPT ALTERNATIVE 1, NO ACTION, THE SUBSOILS UNDER THE FLUFF WASTE PILES MUST BE CLOSED ACCORDING TO RCRA CLOSURE REQUIREMENTS FOR WASTE PILES (40 CFR S264.258), WHICH REQUIRES A LOW PERMEABLE CAP TO BE INSTALLED OVER THE RESIDUAL CONTAMINATION WHEN A CLEAN CLOSURE IS NOT PERFORMED UNDER 40 CFRS264.310, AS WELL AS 25 PA CODE SS75.264(O) AND 75.264(T). A CLEAN CLOSURE CANNOT BE PERFORMED FOR THE MW MANUFACTURING SITE BECAUSE OF THE RESIDUAL CONTAMINATION THAT WILL REMAIN IN THE SUBSURFACE SOILS FOLLOWING REMEDIATION. FOR ALTERNATIVE 2 THROUGH 6, A HYBRID CLOSURE USING A SOIL CAP WOULD BE IMPLEMENTED FOR THE SOILS NOT CONTAINED WITHIN THE RCRA UNIT.

FOR ALL ALTERNATIVES EXCEPT ALTERNATIVE 1, THE SURFACE IMPOUNDMENT MUST BE CLOSED ACCORDING TO RCRA CLOSURE REQUIREMENTS (40 CFR S264.258) AND 25 PA CODE SS75.264(O) AND 75.264(S).

ONSITE ACTIVITIES, INVOLVED WITH ALTERNATIVES 2 THROUGH 6, MUST COMPLY WITH OSHA STANDARDS (29 CFR SS1910.120(B)-(O)) FOR WORKER PROTECTION DURING REMEDIATION AS WELL AS WITH CLEAN AIR ACT AND PENNSYLVANIA AIR EMISSION REQUIREMENTS.

ALTERNATIVES 2 THROUGH 6 WILL INVOLVE OFFSITE TRANSPORTATION OF WASTES/SOILS AND/OR TREATMENT RESIDUALS AND MUST COMPLY WITH FEDERAL (40 CFR PARTS 262 AND 263) AND STATE (25 PA CODE S75.263) REGULATIONS APPLICABLE TO GENERATORS AND TRANSPORTERS OF HAZARDOUS WASTES AS WELL AS WITH FEDERAL (49 CFR SS107.171 - 179) AND STATE DOT REGULATIONS PERTAINING TO TRANSPORTATION OF HAZARDOUS MATERIALS.

ALTERNATIVES 2 THROUGH 6, WILL INVOLVE ONSITE OR OFFSITE DISPOSAL OF THE WASTES/SOILS AND/OR TREATMENT RESIDUALS AND MUST COMPLY WITH THE RCRA LAND DISPOSAL RESTRICTIONS (40 CFR PART 268) FOR HAZARDOUS WASTES.

ALTERNATIVES 2 THROUGH 6 INVOLVE TREATMENT, EITHER ONSITE OR OFFSITE, AND MUST COMPLY WITH RCRA REGULATIONS AND STANDARDS FOR OWNERS AND OPERATORS OF HAZARDOUS WASTE TREATMENT, STORAGE, AND DISPOSAL FACILITIES (40 CFR PART 264). ANY OFFSITE TREATMENT AND/OR DISPOSAL FACILITIES USED IN ALTERNATIVES 2 THROUGH 6 MUST ALL BE RCRA PERMITTED (40 CFR PART 265).

ALTERNATIVES 2 THROUGH 6 MAY REQUIRE ONSITE SURFACE WATER DISCHARGE OF PROCESS WASTEWATER AND THEREFORE MUST COMPLY WITH FEDERAL NPDES DISCHARGE REGULATIONS (40 CFR PART 122), THE PENNSYLVANIA NPDES REGULATIONS (25 PA CODE S92.31), AND THE PENNSYLVANIA WASTEWATER TREATMENT REGULATIONS (25 PA CODE S95.1 - 95.3).

RCRA INCINERATOR REGULATIONS (40 CFR PART 264, SUBPART 0) AS WELL AS 25 PA CODE S75.264(W) ARE APPLICABLE TO ALTERNATIVES 4 THROUGH 6, WHICH INVOLVE EITHER ONSITE OR OFFSITE INCINERATION.

ALTERNATIVE 1, NO ACTION, DOES NOT COMPLY WITH THE GOAL OF CERCLA/SARA TO USE TREATMENT THAT PERMANENTLY REDUCES THE VOLUME, TOXICITY, OR MOBILITY OF THE CONTAMINANTS AT THE SITE. ALL OF THE OTHER ALTERNATIVES ACHIEVE THIS GOAL.

OVERALL PROTECTION

ALTERNATIVE 1, NO ACTION, DOES NOT PROVIDE ANY ADDITIONAL PROTECTION OF PUBLIC HEALTH FROM EXPOSURE TO THE SOILS/WASTES OTHER THAN THE MINIMAL PROTECTION OFFERED BY THE EXISTING FENCE. THIS ALTERNATIVE ALSO DOES NOT PROTECT THE GROUNDWATER FROM FURTHER CONTAMINATION. ALL OF THE OTHER ALTERNATIVES WOULD PROTECT THE PUBLIC HEALTH FROM EXPOSURE RISKS (INGESTION, INHALATION, AND DERMAL CONTACT) ASSOCIATED WITH THE SOILS/WASTES. ALTERNATIVES 2 THROUGH 6 WOULD ALSO PREVENT MIGRATION OF CONTAMINANTS TO GROUNDWATER. WITH ALTERNATIVE 2, HOWEVER, THERE MAY BE A SLIGHTLY GREATER RISK OF GROUNDWATER CONTAMINATION THAN WITH THE OTHER ALTERNATIVES (EXCEPT ALTERNATIVE 1) DUE TO POTENTIAL LEAKAGE FROM THE ONSITE LANDFILL.

SUMMARY MATRIX OF DETAILED ANALYSIS OF ALTERNATIVES

A SUMMARY MATRIX OF THE DETAILED ANALYSIS OF ALTERNATIVES IS PRESENTED IN TABLE 8.

#SA

9. SELECTED ALTERNATIVE

AFTER CAREFUL CONSIDERATION OF THE PROPOSED REMEDIAL ALTERNATIVES WITH REGARD TO THE CRITERIA SPECIFIED ABOVE, EPA'S SELECTED ALTERNATIVE FOR ADDRESSING THE ONSITE CONTAMINATION AT THE MW MANUFACTURING SITE IS ALTERNATIVE 4 - ONSITE INCINERATION OF WASTES AND SOILS, STABILIZATION OF THE ASH AND DISPOSAL IN RCRA SUBTITLE C HAZARDOUS WASTE LANDFILL. THIS ALTERNATIVE WOULD PERMANENTLY REDUCE THE ONSITE MOBILITY, TOXICITY AND VOLUME OF CONTAMINATED MATERIAL SO AS TO ELIMINATE THE THREAT TO PUBLIC HEALTH FROM DIRECT CONTACT. BY REMOVING THE WASTE FROM THE SITE, THE POTENTIAL FOR FURTHER GROUNDWATER CONTAMINATION WILL BE REDUCED.

THIS ALTERNATIVE PRESENTS THE MOST CONSERVATIVE APPROACH TO DEAL WITH THE CONTAMINATION PRESENT AT THIS SITE. SOME OF THE ARARS FOR THIS SITE INVOLVE DECISION POINTS WITH REGARD TO VARYING TREATMENT REQUIREMENTS BASED ON FUTURE SAMPLING OF RESIDUALS FROM THE CHOSEN TREATMENT PROCESSES. FOR EXAMPLE, THE LDR REGULATIONS WILL REQUIRE THAT THE INCINERATOR ASH BE TREATED BEFORE DISPOSAL IF LEACHATE TESTING RESULTS ARE ABOVE ALLOWABLE LIMITS. IN ADDITION, THE PENNSYLVANIA REGULATIONS REGARDING DISPOSAL OF RESIDUALS FROM WASTE TREATMENT PROCESSES MANDATE DIFFERENT DISPOSAL OPTIONS BASED ON VARIOUS FACTORS, INCLUDING CHEMICAL ANALYSIS OF THE RESIDUALS AND POTENTIAL DISPOSAL FACILITY. THE SELECTED ALTERNATIVE REPRESENTS THE MAXIMUM AMOUNT OF TREATMENT AND THE MOST RIGOROUS FORM OF DISPOSAL THAT MAY BE REQUIRED UNDER THESE ARARS. IT ALSO REPRESENTS, THEREFORE, THE MAXIMUM COSTS.

AT THIS TIME, EPA BELIEVES THAT THIS ALTERNATIVE WILL ATTAIN THE BEST DEMONSTRATED AVAILABLE TECHNOLOGY TREATMENT LEVELS THAT APPEAR IN 40 CFR S268.43, AS INCINERATION IS THE SPECIFIED TREATMENT METHOD. HOWEVER, EXISTING AND AVAILABLE DATA DO NOT DEMONSTRATE THAT INCINERATION CAN ATTAIN THE LDR TREATMENT STANDARDS CONSISTANTLY FOR THE SOIL AND DEBRIS WASTE TO BE ADDRESSED BY THIS ACTION. IN THE UNLIKELY EVENT THAT BDAT STANDARDS CANNOT BE MET FOR THE CONTAMINATED SOILS, AND IN ORDER FOR THIS ALTERNATIVE TO PROCEED IN A TIMELY FASHION, EPA IS, AT THIS TIME, APPLYING FOR A TREATABILITY VARIANCE IN ACCORDANCE WITH 40 CFR 268.44. THE ALTERNATIVE TREATMENT LEVELS TO BE ATTAINED WILL BE A REDUCTION IN CONTAMINANT LEVELS BY 90-99 PERCENT.

ALTERNATIVELY, IF SAMPLING SHOWS THAT THESE ARARS CAN BE COMPLIED WITH BY ELIMINATING TREATMENT OF THE INCINERATION RESIDUALS OR BY DISPOSING OF THOSE RESIDUALS IN A LESS COSTLY MANNER WHILE STILL PROVIDING EQUIVALENT PROTECTION OF PUBLIC HEALTH AND THE ENVIRONMENT, EPA INTENDS TO EXPLORE THESE OPTIONS.

IN ADDITION, BECAUSE THIS REMEDY WILL NOT CLEAN THE SOILS TO LEVELS SUCH THAT THE ADDITIONAL INCREMENTAL RISK POSED BY DRINKING GROUNDWATER CONTAMINATED BY LEACHATE FROM THOSE SOILS IS LESS THAN (10-6), EPA CONSIDERS THIS TO BE AN INTERIM REMEDY FOR PROTECTION OF THE GROUNDWATER. EPA INTENDS TO CONDUCT A FURTHER INVESTIGATION OF THE GROUNDWATER IN THE NEAR FUTURE AND WILL CONTINUE TO SEARCH FOR TECHNOLOGIES THAT WILL ALLOW THE (10-6) LEVELS TO BE ACHIEVED. IF FOUND THESE REMEDIES WILL BE INCORPORATED INTO A ROD FOR THE REMEDIATION OF GROUNDWATER AT THIS SITE.

#SD

10. STATUTORY DETERMINATIONS

THE SELECTED REMEDY IS PROTECTIVE OF HUMAN HEALTH AND THE ENVIRONMENT, ATTAINS ALL APPLICABLE, OR RELEVANT AND APPROPRIATE REQUIREMENTS FOR THIS OPERABLE UNIT, IS COST-EFFECTIVE, WILL UTILIZE PERMANENT SOLUTIONS AND ALTERNATIVE TREATMENT TECHNOLOGIES OR RESOURCE RECOVERY TECHNOLOGIES TO THE MAXIMUM EXTENT PRACTICABLE, AND SATISFIES THE PREFERENCE FOR TREATMENT AS A PRINCIPAL ELEMENT.

BECAUSE THIS REMEDY WILL RESULT IN HAZARDOUS SUBSTANCES REMAINING ONSITE AT LEVELS THAT WOULD NOT ALLOW FOR UNLIMITED USE AND UNRESTRICTED EXPOSURE, THE FIVE-YEAR REVIEW WILL APPLY TO THIS ACTION.

ATTAINMENT OF THE APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS

THE SELECTED ALTERNATIVE WILL BE CONSISTENT WITH THOSE ARARS IDENTIFIED FOR THIS SITE:

THE SUBSOILS UNDER THE FLUFF WASTE PILES MUST BE CLOSED ACCORDING TO RCRA CLOSURE REQUIREMENTS (40 CFR S264.258) AND 25 PA CODE SS75.264(O) AND 75.264(T).

THE SURFACE IMPOUNDMENT MUST BE CLOSED ACCORDING TO RCRA CLOSURE REQUIREMENTS (40 CFR S264.258) AND 25 PA CODE SS75.264(O) AND 75.264(S).

OSHA STANDARDS (29 CFR SS1910.120(B) - (O)) WILL TO BE FOLLOWED DURING ALL SITE WORK.

THIS ALTERNATIVE WILL COMPLY WITH THE RCRA INCINERATOR REGULATIONS (40 CFR SS 264.340 - 264.999) AND THE PENNSYLVANIA REGULATIONS FOR HAZARDOUS WASTE INCINERATION (25 PA CODE S75.264(W)).

ANY RESIDUAL ASH CONSIDERED A HAZARDOUS WASTE UNDER 40 CFR S261.3 WILL COMPLY WITH 40 CFR PART 264 AND 25 PA CODE S75.264(V) WHICH REQUIREMENTS REGULATE THE LAND DISPOSAL OF HAZARDOUS WASTES.

THIS ACTION WILL CAUSE NO VIOLATION OF NAAQS DUE TO FUGITIVE DUST GENERATED DURING CONSTRUCTION ACTIVITIES (CLEAN AIR ACT, 40 CFR S50.6 AND 40 CFR S52.21(J).

FUGITIVE DUST EMISSIONS GENERATED DURING CONSTRUCTION ACTIVITIES WILL COMPLY WITH FUGITIVE DUST REGULATIONS IN THE FEDERALLY APPROVED STATE IMPLEMENTATION PLAN FOR THE COMMONWEALTH OF PENNSYLVANIA (CLEAN AIR ACT, 40 CFR PART 52, SUBPART NN, SS 52.2020 - 52.2023).

ANY SURFACE WATER DISCHARGE WILL COMPLY WITH THE CLEAN WATER ACT NPDES DISCHARGE REGULATIONS (40 CFR SS122.41 - 122.50), THE PENNSYLVANIA NPDES REGULATIONS (25 PA CODE S92.31), AND THE PENNSYLVANIA WASTEWATER TREATMENT REGULATIONS (25 PA CODE S95.1 - 5.3).

COST-EFFECTIVENESS

THIS ALTERNATIVE AFFORDS A HIGH DEGREE OF OVERALL COST EFFECTIVENESS IN NOT ONLY PROTECTING THE ONSITE RESIDENTS, AS WELL AS ANY FUTURE SITE VISITOR, FROM DIRECT CONTACT WITH THE WASTES AND CONTAMINATED SOILS, BUT ALSO IN REDUCING FUTURE CONTAMINATION MIGRATING TO THE GROUNDWATER. THE US EPA BELIEVES THAT THE COSTS OF THE SELECTED REMEDY ARE PROPORTIONATE TO ITS OVERALL EFFECTIVENESS, THEREFORE REPRESENTING A REASONABLE VALUE FOR THE MONEY.

UTILIZATION OF PERMANENT SOLUTIONS AND ALTERNATIVE TREATMENT

TECHNOLOGIES TO THE MAXIMUM EXTENT PRACTICABLE

THE US EPA BELIEVES THAT THE SELECTED ALTERNATIVE IS THE MOST APPROPRIATE SOLUTION FOR REMEDIATING THE CONTAMINATION AT THE MW MANUFACTURING SITE. THE ORGANICS IN THE SOILS AND WASTES WILL BE DESTROYED BY INCINERATION AND THE INORGANICS IN THE ASH IMMOBILIZED BY STABILIZATION. THIS REPRESENTS THE MAXIMUM EXTENT TO WHICH PERMANENT SOLUTIONS CAN BE UTILIZED.

PREFERENCE FOR TREATMENT AS A PRINCIPAL ELEMENT

THE STATUTORY PREFERENCE FOR PERMANENT TREATMENT IS SATISFIED AS THE SELECTED REMEDY CALLS FOR ONSITE TREATMENT OF WASTE MATERIALS AND SOILS.

#RS
RESPONSIVENESS SUMMARY

THIS RESPONSIVENESS SUMMARY DOCUMENTS CONCERNS AND COMMENTS EXPRESSED BY RESIDENTS OF THE COMMUNITY SURROUNDING THE MW MANUFACTURING SUPERFUND SITE DURING THE PUBLIC COMMENT PERIOD HELD BY THE EPA REGARDING A PROPOSED REMEDIAL ACTION PLAN FOR REMEDIATING A CONTAMINATED FLUFF WASTE PILE (THE SECOND OF THREE ANTICIPATED OPERABLE UNITS). THIS SUMMARY ALSO DOCUMENTS EPA'S RESPONSES TO THE COMMENTS AND CONCERNS EXPRESSED BY MEMBERS OF THE COMMUNITY.

SUMMARY OF MAJOR QUESTIONS AND COMMENTS RECEIVED DURING THE PUBLIC COMMENT PERIOD AND EPA'S RESPONSES

DURING THE COMMENT PERIOD NO WRITTEN COMMENTS WERE RECEIVED AT THE REGION III EPA OFFICE BY EITHER THE REMEDIAL PROJECT MANAGER OR THE COMMUNITY RELATIONS COORDINATOR. BOTH RECEIVED FREQUENT CALLS FROM NEWS REPORTERS IN THE AREA AND THE RPM WAS INTERVIEWED FOR ARTICLES THAT APPEARED IN THE AREA DAILY NEWSPAPERS AS WELL AS FOR THE ABC-TV STATION IN SCRANTON, PENNSYLVANIA, WHICH ALSO SERVES THE DANVILLE AREA.

BECAUSE OF THE LEVEL OF PUBLIC RESPONSE DURING THE COMMENT PERIOD, REPRESENTATIVE QUESTIONS ARE GROUPED BELOW BY TOPICAL AREAS OF CONCERN:

PHASE 1 - CARBON WASTE:

Q. THE CARBON WASTE REMOVAL WAS SCHEDULED TO BEGIN LAST WINTER; WHY HAS IT BEEN DELAYED AND WHEN WILL IT TAKE PLACE?

A. FUNDING DIFFICULTIES FORCED A DELAY IN THE CARBON WASTE REMOVAL. IT IS NOW SET TO BE MOVED OFF SITE BY THE END OF THIS SPRING.

Q. IF THE CARBON WASTE CAN BE MOVED OFFSITE FOR DISPOSAL, WHY CAN'T THE FLUFF WASTE BE HANDLED THE SAME WAY?

A. AFTER LOOKING AT SEVERAL ALTERNATIVES, INCLUDING OFFSITE DISPOSAL, IT WAS DECIDED THAT THE MOST PROTECTIVE AND COST EFFECTIVE METHOD OF DISPOSAL WOULD BE ONSITE INCINERATION.

PUBLIC INVOLVEMENT IN SUPERFUND:

Q. HOW WIDESPREAD IS PUBLIC INVOLVEMENT IN SUPERFUND? DO THESE TYPE OF MEETINGS TAKE PLACE ELSEWHERE?

A. THE COMPREHENSIVE ENVIRONMENTAL COMPENSATION AND LIABILITY ACT (CERCLA) IS THE LAW WHICH ORIGINALLY AUTHORIZED FUNDS TO EPA UNDER SUPERFUND. CONGRESS MANDATES THAT AT EVERY SIGNIFICANT TECHNICAL MILESTONE, THE PUBLIC IS ENCOURAGED TO PARTICIPATE BASED ON PUBLISHED NOTICES IN NEWSPAPERS, FACT SHEETS AND PUBLIC MEETINGS. THE DECISION TO CHOOSE A PARTICULAR TYPE OF REMEDIATION CAN ONLY OCCUR AFTER THERE HAS BEEN AN OPPORTUNITY FOR PUBLIC COMMENT AFTER THE FORMAL PRESENTATION OF THE VARIOUS ALTERNATIVES.

Q. CAN THE PUBLIC HAVE ANY INPUT INTO THE TYPE OF INCINERATOR THAT'S SELECTED? DO WE GET A CHANCE TO COMMENT ON THE REMEDIAL DESIGN?

A. THERE WILL BE A PRESENTATION OF THE FINAL DESIGN FOR THE INCINERATOR AND OTHER ELEMENTS OF THE PHASE II CLEANUP. EPA HAS ALSO ASKED THAT A LOCAL OFFICIAL BE DESIGNATED AS A CONTACT POINT SO THAT ALL INFORMATION CAN BE CHANNELED THROUGH A SINGLE INDIVIDUAL.

RISK FACTORS/SAFETY:

Q. WHO WILL MONITOR THE OPERATION OF THE INCINERATOR? WILL THERE BE AIR MONITORING?

A. IT IS MOST LIKELY THAT THE ARMY CORPS OF ENGINEERS, WHICH HAS DECADES OF EXPERIENCE IN MOUNTING LARGE OPERATIONS SUCH AS THIS, WOULD HIRE CONTRACTORS, AND OVERSEE EVERY SINGLE ASPECT OF OPERATIONS. THE REMEDIAL PROJECT MANAGER WOULD, IN TURN, BE RESPONSIBLE FOR OVERSEEING THE WHOLE PROJECT, TAKING ANY PUBLIC CONCERNS BACK TO THE ARMY CORPS TO HAVE PROBLEMS CORRECTED, IF NEEDED.

Q. IF THE HEAD START SCHOOL IS NEXT TO THE SITE, IS IT SAFE FOR THE CHILDREN AND STAFF TO BE THERE WHILE THE INCINERATOR IS BURNING?

A. YES, BECAUSE THE PERMITTING REQUIREMENTS FOR THE INCINERATOR ARE SO STRINGENT, WE WILL HAVE TO GIVE VERY HIGH ASSURANCE THAT IT WILL BURN THE WASTES SAFELY. THE DESTRUCTION OF THE TOXIC MATERIALS HAS TO BE DOWN TO 99.99 PERCENT. IN SOME CASES, THE PERCENTAGE IS 99.9999 PERCENT FOR HIGHLY TOXIC SUBSTANCES.

Q. HOW DO YOU DETERMINE THE RELATIVE SAFETY OF INCINERATION?

A. THE RISKS ARE CALCULATED ON A VERY CONSERVATIVE BASIS, USING AS A FRAMEWORK AN EXPOSURE SCENARIO OF 70 YEARS.EVEN SOMEONE LIVING ON THE SITE WOULD NOT HAVE THE EXPOSURE FREQUENCY THAT WE USE IN OUR CALCULATIONS.

FUNDING THE PROPOSED PLAN:

Q. ARE YOU SURE THERE'S ENOUGH MONEY TO PAY FOR SUCH A PROPOSAL? WHERE DO WE STAND RELATIVE TO OTHER SITES AND OTHER REGIONS?

A. WE HAVE SUCCESSFULLY STATED OUR CASE WITH WASHINGTON THAT THE MW SITE NEEDS TO BE ADDRESSES AS QUICKLY AS POSSIBLE. OUR MANAGEMENT SUPPORTS THIS PROPOSAL AND AT THE CURRENT RATE OF FUNDING, THE MONEY IS AVAILABLE. OUR PERFORMANCE IN THIS REGION HAS HAD ONE OF THE BEST ENFORCEMENT RECORDS IN THE COUNTRY. IN PENNSYLVANIA, WE HAVE BEEN ABLE TO START AND COMPLETE THE MOST CONSTRUCTIONS IN THE UNITED STATES.

Q. WHAT HAPPENS TO THE PEOPLE WHO ORIGINALLY CREATED THIS MESS? ISN'T IT TRUE THAT NOWADAYS, THERE ARE ENOUGH LAWS ON THE BOOKS TO PREVENT SUCH A PROBLEM?

A. YES, MOST OF THE ACTIVITY AS IT OCCURRED DURING THE 1960'S AND 1970'S WOULD BE ILLEGAL AT THIS TIME. THE PARTIES RESPONSIBLE IN THIS CASE ARE BANKRUPT, BUT EPA WILL CONTINUE ON WITH THE CLEANUP.

#TA
TABLES AND ATTACHMENTS

TABLE 1
CHEMICAL ANALYTICAL RESULTS
FLUFF WASTE SAMPLES

CONTAMINANT	RANGE OF POSITIVE DETECTIONS	NUMBER OF POSITIVE DETECTIONS/ NUMBER OF SAMPLES	AVERAGE CONCENTRATION
	(UG/KG)		(UG/KG)
2-BUTANONE	2,800-6,400	6/7	1,647
TOLUENE	250-2,000	10/17	507
TETRACHLOROETHENE	720-18,000	15/17	4,436
METHYLENE CHLORIDE	7,700	1/17	453
BIS(2-ETHYLHEXYL)	72,000,000-	17/17	148,820,000
PHTHALATE	230,000,000	17/17	148,820,000
DI-N-OCTYL	1,8000,000-	13/17	4,388,235
PHTHALATE	13,000,000	13/17	4,388,235
PCB-1254	898-18,100	17/17	9,384
	(MG/KG)	(MG/KG)	
ANTIMONY	80-143	10/17	65
BARIUM	20-232	17/17	93
CADMIUM	0.65-4.4	17/17	2.4
CHROMIUM	24-59	17/17	40
COPPER	5,910-130,000	17/17	49,636
LEAD	1,600-3,600	17/17	2,415
NICKEL	4.1-15	10/17	5.6
SILVER	1.6-5.7	11/17	1.8
ZINC	135-2,580	17/17	623

AVERAGES REPORTED ARE THE ARITHMETIC AVERAGES CALCULATED USING NONDETECTIONS AS ZERO.

TABLE 1
CHEMICAL ANALYTICAL RESULTS
WASTES IN DRUM AND BARRELS

CONTAMINANT	RANGE OF POSITIVE DETECTIONS	NUMBER OF POSITIVE DETECTIONS/ NUMBER OF SAMPLES	AVERAGE CONCENTRATION
	(UG/KG)		(UG/KG)
2-HEXANONE	970	1/19	51
BENZENE	2,100-210,000	3/19	11,294
TOTAL XYLENES	1,200	1/19	63
1,1, 2-TRICHLOROETHANE	890-680,000	11/19	127,920
TETRACHLOROETHENE	3,600-640,000,000	19/19	9,804,190
TRICHLOROETHENE	1,500-18,000	3/19	1,2OO
CHLOROMETHANE	560-6,200	3/19	529
BIS(2-ETHYLHEXYL) PHTHALATE	230,000-690,000	3/19	65,263
DI-N-OCYL PHTHALATE	2,000-220,000	8/19	14,737
DI-N-BUTYL PHTHALATE	4,000-15,000	3/19	1,632
BUTYL BENZYL PHTHALATE	3,000-16,000	2/19	1,000
DIMETHYL PHTHALATE	3,000-4,000	2/19	368
ANTHRACENE	7,000	1/19	368
BENZO ANTHRACENE	2,000	1/19	105
CHRYSENE	3,000-8,000	5/19	1,316
FLUORANTHENE	2,000-5,000	2/19	368
FLUORENE	4,000	1/19	210
NAPHTHALENE	2,000-14,000	9/19	2,368
2-METHYLNAPTHALENE	3,000-24,000	7/19	2,789
PHENANTHRENE	5,000-32,000	7/19	5,474
PYRENE	3,000-11,000	3/19	947
1, 2-DICHLOROBENZENE	4,000	1/19	210
1,2, 4-TRICHLOROBENZENE	9,000	1/19	474
BENZOIC ACID	13,000-810,000	3/19	45,526
ISOPHORONE	13,000	1/19	684
PHENOL	12,000	1/19	632
4- MENTHYLPHENOL	4,000-11,000	3/19	1,263
	(MG/KG)		(MG/KG)
ANTIMONY	22-2,200	11/19	403
CHROMIUM	62-200	15/19	96
COPPER	155-496,000	18/19	61,413
LEAD	624-66,500	18/19	31,221
MERCURY	0.31-4.3	9/19	0.46
NICKEL	44-102	5/19	16
ZINC	85-1,400	16/19	471

AVERAGES REPORTED ARE ARITHMETIC AVERAGES CALCULATED USING NONDETECTIONS AS ZERO.

TABLE 1
CHEMICAL ANALYTICAL RESULTS
LIQUID WASTES (NON-WATER MISCIBLE) IN STORAGE TANKS

CONTAMINANT	TANK 1 (UG/KG)	TANK 2 (UG/KG)	TANK 3 (AVERAGE) (UG/KG)
4-METHYL-2-PENTANONE	4,000	ND	ND
TOLUENE	2,000	2,000	2,500
TOTAL XYLENES	ND	2,000	10,500
TETRACHLOROETHENE	82,000	76,000	44,500
TRICHLOROETHENE	1,000	ND	25,000
PCB-1248	ND	ND	43,000
	(MG/KG)		(MG/KG)
CHROMIUM	39	31	ND
NICKEL	ND	ND	20
SILVER	55	ND	ND

ND = NOT DETECTED

AVERAGES REPORTED FOR TANK 3 ARE THE ARITHMETIC AVERAGES FOR THE DUPLICATE SAMPLES COLLECTED, USING NONDETECTIONS AS ZERO.

TABLE 1
CHEMICAL ANALYTICAL RESULTS
ON-SITE SURFACE SOILS

CONTAMINANT	RANGE OF POSITIVE DETECTIONS	NUMBER OF POSITIVE DETECTIONS/ NUMBER OF SAMPLES	AVERAGE CONCENTRATION
	(UG/KG)		(UG/KG)
ACETONE	450	1/21	21
TOTAL XYLENES	42	1/21	2
1,1,2,2- TETRACHLOROETHANE	33	1/21	2
1,1,2- THRICHLOROETHANE	3-2,800	10/21	275
TETRACHLOROETHENE	23-67,000	18/21	10,151
TRICHLOROETHENE	2-21,000	8/21	1,027
1,2- DICHLOROETHENE	2-10,000	5/21	486
CHLOROFORM	64	1/21	3
METHYLENE CHLORIDE	830	1/21	39
BIS(2- ETHYLEXYL) PHTHALATE	3,900-3,800,000	21/21	835,948
DI-N-OCTYL PHTHALATE	200-140,00	18/21	36,576
DI-N-BUTYL PHTHALATE	480	1/21	23
DIMETHYL PHTHALATE	130-270	2/21	19
ANTHRACENE	110	1/21	5
CHRYSENE	380	1/21	18
NAPHTHALENE	140-190	2/21	16
2-METHYL NAPHTHALENE	82-130	2/21	10
PHENANTHRENE	100-470	3/21	39
BENZOIC ACID	430-1,300	2/21	82
PHENOL	170-330	2/21	24
4- METHYPHENOL	620-870	3/21	101
2,4 DIMETHYL- PHENOL	300-240	3/21	38
2,4- DICHLORO- PHENOL	43	1/21	2
2,4,6- TRICHLORO- PHENOL	36-41	2/21	4
4-CHLORO- 3 METHYL- PHENOL	170-220	2/21	19
HEPTACHLOR EPOXIDE	41	1/21	2
4,4-DOT	100-170	2/21	13
PCB-1242	210-920	5/21	112
PCB-1248	290-6,300	2/21	314
PCB-1254	61-3,700	6/21	210
DIOXIN	0.102-0.222	4/21	0.03

	(MG/KG)		(MG/KG)
ANTIMONY	62.1-118	4/21	16
BARIUM	22.4-107	21/21	74
CADMIUM	1.2-11.9	15/21	2
CHROMIUM	7.1-59	21/21	27
COPPER	742-171,000	21/21	21,635
LEAD	319-9,770	21/21	1,453
NICKEL	8.5-40.2	21/21	22
SILVER	8.6	1/21	0.4
ZINC	54.8-787	21/21	242

AVERAGES REPORTED ARE ARITHMETIC AVERAGES CALCULATED USING NONDETECTIONS AS ZERO.

TABLE 2
INDICATOR CHEMICALS

KNOWN OR PROBABLE CARCINOGENS	NONCARCINOGENICS
BENZENE	2-BUTAONE
TERACHLOROETHENE	TOLUENE
TRICHLOROETHENE	1,1,1,-THRICHLOROETHANE
1,1-DICHLOROETHENE	DI-N-BUTYL PHTHALATE
VINYL CHLORIDE	NAPHTHALENE
1,1,2,2-TETRACHLOROETHANE	ANTIMONY
1,1,2-TRICHLOROETHANE	COPPER
METHYLENE CHLORIDE	LEAD
CHLOROMETHANE	ZINC
BIS(2-ETHYLEXYL) PHTHALATE	
POLYCHLORINATED BIPHENYLS	
DIOXIN (23,7,8-TCDD)	
NICKEL	

CHEMICAL ALSO CAUSES NONCARCINOGENIC HEALTH EFFECTS.

TABLE 4
SIGNIFICANT RISK LEVELS AT MW MANUFACTURING
TOTAL CARCINOGENIC RISK
ROUTINE CONTACT WITH SURFICIAL MATERIAL
BY ONSITE RESIDENTS

SOURCE OF CONTAMINATION	CONTAMINANT CONCENTRATION	TOTAL RICKS
SURFACE SOILS	AVERAGE	1.4 X 10-5
	MAXIMUM	1.2 X 10-4
FLUFF WASTE	AVERAGE	3.1 X 10-4
	MAXIMUM	5.2 X 10-4

TABLE 4
TOTAL HAZARD INDEX
ROUTINE CONTRACT WITH SURFICIAL MATERIALS
BY ONSITE RESIDENTS

SOURCE OF CONTAMINATION	CONTAMINANT CONCENTRATION	TOTAL HI
SURFACE SOILS	AVERAGE	17
	MAXIMUM	121
FLUFF WASTE	AVERAGE	104
	MAXIMUM	177

TABLE 4
TOTAL CARCINOGENIC RISK
EXPOSURES THROUGH HOUSEHOLD USE
OF GROUNDWATER

SOURCE OF CONTAMINATION	CONTAMINANT CONCENTRATION	TOTAL POTENTIAL RICKS FOR ONSITE RECEPTORS	TOTAL POTENTIAL RISKS FOR OFFSITE RECEPTORS
EXISTING PLUME	AVERAGE	4.0 X 10-2	3.7 X 10-2
	MAXIMUM	6.0 X 10-1	5.7 X 10-1
SOILS & WASTES	AVERAGE	9.1 X 10-5	7.4 X 10-5
	MAXIMUM	7.0 X 10-4	6.6 X 10-4

TABLE 4
TOTAL HAZARD INDEX
EXPOSURES THROUGH HOUSEHOLD USE OF GROUNDWATER

SOURCE OF CONTAMINATION	CONTAMINANT CONCENTRATION	TOTAL POTENTIAL RICKS FOR ONSITE RECEPTORS	TOTAL POTENTIAL RISKS FOR OFFSITE RECEPTORS
EXISTING PLUME	AVERAGE	24	22
	MAXIMUM	124	115
SOILS & WASTES	AVERAGE	8.6 X 10-1	6.4 X 10-1
	MAXIMUM	2.4	2.1

TABLE 4
TOTAL CARCINOGENIC RISK
EXPOSURES TO VOLATILE EMISSIONS

SOURCE OF CONTAMINATION	SITE WORKERS	SITE RESIDENTS
SURFACE SOILS	2.4 X 10-5	4.2 X 10-4
FLUFF WASTE	9.4 X 10-6	1.7 X 10-4

TABLE 7
SUMMARY OF PRESENT-WORTH COSTS
ALTERNATIVES 1 THROUGH 6

ALTERNATIVE NUMBER	ABBREVIATED TITLE	PRESENT-WORTH COST ($1,000S)
1	NO ACTION	532
2	ONSITE HAZARDOUS WASTE LANDFILL DISPOSAL	16,843
3	OFFSITE HAZARDOUS WASTE LANDFILL DISPOSAL	32,186
4	ONSITE INCINERATION	35,950
5	OFFSITE INCINERATION	58,904
6	OFFSITE INCINERATION OF FLUFF WASTE OFFSITE HAZARDOUS WASTE DISPOSAL OF SOILS	41,060

MW MANUFACTURING

Site Information:

Site Name: MW MANUFACTURING
Address: VALLEY TOWNSHIP, PA

EPA ID: PAD980691372
EPA Region: 03

Site Alias Name(s):

DOMINO SALVAGE
DOMINO SALVAGE - WAREHOUSE #81

Record of Decision (ROD):

ROD Date: 06/30/1992
Operable Unit: 01
ROD ID: EPA/ROD/R03-92/153

Media: Ground water

Contaminant: VOCs, Other Organics, Metals

Abstract: SITE HISTORY/DESCRIPTION: The 15-acre MW Manufacturing Site is a former copper recovery facility in Monitor County, Pennsylvania. Land use in the area is mixed farmland and residential with a wetlands area, Amuses Creek, located 700 feet west of the site. The estimated 5,200 people who reside within 1/4 mile of the site use private ground water wells as their drinking water source. From 1969 to 1972, MW Manufacturing Company, which is a subsidiary of Nile Corporation, used the site for copper recovery from scrap wire, using both mechanical and chemical processes. During this time generated carbon wastes by the chemical process and generated fluff material (fibrous insulation materials contaminated with metals and solvents) were dumped onsite, and spent solvents were allegedly disposed of onsite. In 1972, MW Manufacturing filed for bankruptcy and the Philadelphia National Bank acquired the property by default. In 1976, Warehouse 81, Inc., acquired the site and unsuccessfully attempted to recover copper from the large waste piles of fluff material. In 1982, the state performed an initial remedial investigation that revealed several areas posing potential threats to public health: the carbon waste pile; four wire-fluff waste piles; a surface impoundment; a buried lagoon;

and contaminated soil, drums, and storage tanks. Based on this investigation, the site has been divided into three OUs to address cleanup of all contaminated media. A 1989 ROD (OU1) addressed the carbon waste pile by excavating the carbon waste pile and incinerating the waste offsite. A 1990 ROD (OU2) addressed treating the fluff waste, contaminated soil, drums, tanks, and the lagoon. This ROD provides a final remedy for the contaminated of the ground water and the adjacent wetland areas as OU3. The primary contaminants of concern affecting the ground water are VOCs, including benzene, PCE, and TCE; other organics, including PAHs, pesticides, and phenols; and metals. PERFORMANCE STANDARDS OR GOALS: Ground water clean-up goals are based on state standards, SDWA MCLs and MCLGs under SDWA, CWA, Pennsylvania Clean Streams Law, and background levels. The clean-up goals will attain background concentrations that will be determined during the remedial design. In the event that the background concentration of the contaminant is not detected, the most stringent chemicalspecific ground water clean-up goal will be met. INSTITUTIONAL CONTROLS: As part of a contingency, institutional controls may be implemented if necessary to restrict access to portions of the aquifer.

Remedy: SELECTED REMEDIAL ACTION: The selected remedial action for this site includes constructing a public water supply system to supply drinking water to present and future affected residences; extracting contaminated ground water and treating the water onsite using chemical precipitation to remove inorganics, and airstripping to remove VOCs; treating effluent from the air stripping process using carbon adsorption to remove organics, followed by onsite discharge to surface water; treating air emissions from the air stripping process using thermal destruction, and recycling the residual carbon waste offsite; disposing of any collected free product offsite; dewatering and disposing of sludge generated during the treatment process offsite at a RCRA landfill; and implementing a ground water monitoring program. If it is determined by EPA and the state that certain portions of the aquifer cannot be restored to background levels, the ROD specifies modification of the selected remedy, which include engineering controls; physical barriers, or long-term pumping to contain contamination; institutional controls to limit access; and waiver of chemicalspecific ARARs for portions of the aquifer where further contaminant reduction is impracticable. The estimated present worth cost for this remedial action is $37,402,000, which includes an annual O&M cost of $1,568,000 for 30 years, with $20,000 additional every 5 years.

Text: Full-text ROD document follows on next page.

EPA/ROD/R03-92/153
1992

EPA Superfund
Record of Decision:

MW MANUFACTURING
EPA ID: PAD980691372
OU 01
VALLEY TOWNSHIP, PA
06/30/1992

Text:

RECORD OF DECISION MW MANUFACTURING SITE OPERABLE UNIT THREE

DECLARATION

SITE NAME AND LOCATION

MW Manufacturing Site
Montour County, Pennsylvania

STATEMENT OF BASIS AND PURPOSE

This decision document presents the selected remedial action for the MW Manufacturing Site in Valley Township, Montour County, Pennsylvania (the "Site"), developed in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA) and is consistent, to the extent practicable, with the National Oil and Hazardous SubstancesContingency Plan (NCP), 40 CFR Part 300.

The information supporting this remedial action is contained in the Administrative Record for the Site.

The Commonwealth of Pennsylvania concurs with the selected remedy.

ASSESSMENT OF THE SITE

Actual or threatened releases of hazardous substances from this Site, if not addressed by implementing the response action selected in this Record Of Decision (ROD), will present an imminent and substantial endangerment to public health or welfare or the environment.

DESCRIPTION OF THE SELECTED REMEDY

This Operable Unit is the final action of three operable units for the Site. Operable Unit One at the Site remediated the carbon waste pile as a focused remedial action. Operable Unit Two (currently in the Remedial Design phase) addresses remediation of the fluff waste, the contaminated soils, drums, tanks, and the onsite lagoon. Operable Unit Three addresses the threat remaining at the Site by restoring the contaminated ground water to background levels and providing an alternative water source toaffected area properties. The major components of the selected remedy include:

. Provide a public water supply to affected properties;

. Construct and operate a ground water extraction and treatment system. The process option includes air stripping, carbon adsorption, precipitation, sedimentation, filtration, and thermal destruction for emission control. However, other process options (such as oxidation) could be considered during the remedial design;

. Discharge of the treated ground water to Mauses Creek and/or the Susquehanna River;

. Dispose the hazardous waste residuals from the treatment system off-site at hazardous waste disposal facilities or a residual waste facility as appropriate; and

. Provide periodic ground water monitoring during and after completion of the remediation

STATUTORY DETERMINATIONS

The selected remedy is protective of human health and the environment, complies with federal and state requirements that are applicable or relevant and appropriate to the Remedial Action and is cost-effective. This remedy utilizes permanent solutions and treatment (or resource recovery) technologies to the maximum extent practicable and satisfies the statutory preference for remedies that employ treatment that reduces toxicity, mobility or volume as a principal element.

Because some contaminated ground water may remain at the Site, the 5 year site reviews will apply to this action, as required by Section 121(c) of CERCLA, 42 U.S.C. S 9621(c), to ensure that the remedy continues to provide adequate protection to human health and the environment.

RECORD OF DECISION
OPERABLE UNIT THREE
MW MANUFACTURING SITE
MONTOUR COUNTY, PENNSYLVANIA

DECISION SUMMARY

I. SITE NAME, LOCATION AND DESCRIPTION

The 15 acre MW Manufacturing Superfund Site is located in Montour County, Pennsylvania 2 miles north of Danville, 700 feet west of State Route 54, and about 1/2 mile south of Interstate 80 (the "Site") (see Figure 1 for the Site location map). The Site is located on the Riverside USGS quadrangle map. The Pennsylvania Department of Transportation (PennDOT) maintains a storage area immediately north of the Site. Farmlands and wooded lots are adjacent to the Site on the west and south. Mauses Creek flows in a southerlydirection past the Site on the east side of Route 54.

Mausdale, a residential area with approximately 24 homes, is located approximately 1/4 mile southeast of the Site and Danville (estimated population 5,200) is located 2 miles south. At the intersection of Routes 54 and I-80 there are a number of private residences, three motels, two gas stations and several restaurants. These properties, as well as a Head Start School located just north of the PennDOT storage area, rely upon private groundwater wells for drinking water.

On September 6, 1984, after evaluating the Site, the EPA determined an overall Hazardous Ranking System (HRS) score of 46.44 based on a 79.59 groundwater score and a 10.91 surface water score. The Site was proposed for the National Priorities List ("NPL") on October 1, 1984 and was placed on the NPL on June 10, 1986.

II. SITE HISTORY AND ENFORCEMENT ACTIVITIES

The MW Manufacturing Company, a subsidiary of Nivel Corporation, began operations in 1966. The MW Manufacturing Company was engaged in copper recovery from scrap wire, using both mechanical and chemical processes from 1969 to 1972. During this time, the mechanical process generated the largest volume of waste (the fluff material that consists of insulating materials), and the chemical process generated a waste containing high concentrations of organic compounds (the carbon waste). On November 22, 1972, the Commonwealth of Pennsylvania issued an order to MW Manufacturing Company to submit a plan to remove the fluff pile and remove contaminated water within 90 days. In 1973, Nivel Corporation filed for bankruptcy in U.S. District Court for the Middle District of Pennsylvania. Philadelphia National Bank foreclosed the property and held the property until 1976. Warehouse 81, a limited partnership, acquired the property in 1976. From June 1982 to October 1983, Warehouse 81 conducted amechanical recovery process to separate and salvage copper, plastic, and paper. Warehouse 81 is no longer active in the secondary recovery of copper from fluff.

A potentially responsible party (PRP) search was conducted for the Site, but little information was obtained. The previous owners and operators of the Site have gone out of business and records of generators, transporters and Site operations were not available.

In February 1987, a removal consent order was signed by EPA and the current owners of the Site, Michael G. Sabia and Michael G. Sabia, Jr. doing business as Warehouse 81 Limited Partnership, to supply water to the person living on Site and to keep records of the water supply for 5 years. On February 8, 1989, a special notice letter was sent to Michael G. Sabia and Michael G. Sabia, Jr. to perform a RI/FS for operable units one and two, but they did not agree to perform the studies. A special notice letter for the RD/RA for operable unit one was sent to Warehouse 81 on March 6, 1989; Warehouse 81 again declined to participate.

Additional PRP investigation in 1992 identified records that led to AT&T as a potential responsible party. A general notice letter was sent to AT&T on May 19, 1992.

Table 1 provides a history of Site activities and violations cited against the various owners of the Site.

III. HIGHLIGHTS OF COMMUNITY PARTICIPATION

Most of the residents who were interviewed in the Danville and Valley Township areas said that they first learned about the problem at the MW Manufacturing Site through an EPA news release in the local papers in March 1986. In 1985, the EPA Field Investigation Team and Pennsylvania Department Environmental Resources (PADER) conducted joint sampling of the residential wells near the Site and discovered elevated lead concentrations in a Head Start School. Upon recommendations from the Agency for Toxic Substances and Disease Registry (ATSDR), EPA supplied the Head Start School with bottled water and conducted additional sampling. In addition, EPA hosted a public meeting on March 11, 1986, to discuss the groundwater situation with officials and parents. Approximately 50 people attended the meeting. EPA supplied the school with bottled water until later samples revealed levels below the action levels for lead in the well water. The original levels have never been observed since then. EPA believes that any lead in the original sample may have been from lead solder in the plumbing. All later samples, taken after the water had been run for a few minutes to flush the lines, have not shown any lead above the action level (15 ug/L).

On April 16, 1992, EPA released the Focused Feasibility Study ("FS") and Proposed Plan ("PP") for Operable Unit ("OU") Three (ground water contamination) to the public for comment. Both documents were placed in the administrative record file maintained at the EPA Docket Room in Region III and at the information repository set up at the Thomas Beaver Library in Danville, PA. EPA also placed an advertisement in three local newspapers announcing the availability of these documents, and invited the public to comment on the Proposed Plan between April 16 and May 16, 1992. The advertisement appeared in the Danville News, Danville Item and Press Enterprise on April 16, 1992. Subsequently, after receiving a timely request to extend the comment period, EPA extended the comment period for an additional 30 days. Notice of this extension was advertised in the Press Enterprise and Danville News on May 29, 1992.

EPA held a public meeting on May 7, 1992 at the Montour County Court House to present its proposed plan to remediate the ground water contamination. Approximately 60 people attended the public meeting, includinglocal residents, officials representing the township, borough and county, representatives from PADER, and the media. Comments received during the public comment period, including those expressed at the public meeting, are addressed in the Responsiveness Summary at the end of this document.

EPA has thus met the public participation requirements of Sections 113(k)(2)(b)(i-v) and 117 of CERCLA.

IV. SCOPE AND ROLE OF THIS OPERABLE UNIT

As with many Superfund sites, the problems at the MW Manufacturing Site are complex. As a result, EPA organized the work into three operable units (OUs).

- OU One -- Carbon waste
- OU Two -- Fluff waste, contaminated soils, drums, tanks, and lagoon
- OU Three -- Contamination of ground water

EPA already selected remedies for OU One in a ROD signed on March 31, 1989 and OU Two in a ROD signed on June 29, 1990. Implementation of the ROD for OU One was completed in March of 1992 and OU Two is in the Remedial Design Phase. Actual construction for OU Two is planned to begin in Fall of 1993. Remediation of these OUs is being implemented to protect public health and the environment by preventing direct contact with contaminated waste and reducing the further migration of contaminants into the ground water.

The OU Three, the subject of this ROD, addresses the contamination of the ground water and the wetland areas adjacent to the Site. Potential ingestion of ground water poses the principal risk to human health being addressed by OU Three because EPA's acceptable risk range is exceeded and concentrations are greater than the Maximum Contaminant Levels ("MCLS") for ground water. The purpose of this response is to prevent current or future exposure to the contaminated ground water, to protect uncontaminated ground water for current and future use and to restore contaminated ground water for future use to the remedial action cleanup levels.

V. SUMMARY OF SITE CHARACTERISTICS

A. General Overview

The major Site features include several piles of fluff waste (wire insulation), a lagoon, a small excavated pit in the ground (the former location of the carbon waste), and a large manufacturing building and office in which one person is living. There are also several drums and two storage tanks on the Site. The Site features are shown in Figure 2. The office water well is permanently plugged and potable water is supplied from an outside source.

B. Natural Resources

The natural resources that could be affected by Site contamination include Mauses Creek, wetlands, and local ground water. Mauses Creek is a cold-water fishery. It flows into Mahoning Creek, which is a stocked trout stream. Mahoning Creek eventually flows into the Susquehanna River, which is a major source of potable water. The water intake for the Danville Water Company is upstream of Mahoning Creek. Many local residents and businesses use private wells for their potable water supply.

There are no known threatened or endangered species in Mauses Creek or at the Site and no known critical habitats at or in the vicinity of the Site. However, the area between Washingtonville Road and Mauses Creek has been designated a wetland by the EPA. In addition, Mauses Creek supports a abundant fish population, including chubs, darters, dace, minnows, trout, and bass.

C. Surface Water Hydrogeology

Surface waters and runoff from the MW Manufacturing Site generally flow in an easterly direction and eventually enter Mauses Creek. One drainageway originates in the northwestern corner of the Site and is an openditch until it reaches the area near the lagoon. At that point, flow enters an 18-inch-diameter corrugated metal pipe (CMP). An inlet grate is located in the northeastern corner of the property, and at that point, the CMP turns southward. Once the flow passes beneath the Site access road, it becomes an open ditch again. A second small drainageway originates south of the main building. These two ditches join and pass beneath Washingtonville Road via an 18inch-diameter CMP culvert. Surface water then flows through a marshy area and into Mauses Creek, approximately 600 feet east of the Site.

Mauses Creek, located near the Site on the north and east, flows in a general southeasterly direction to its confluence with Mahoning Creek, approximately 1/2 mile downstream of the Site. From this confluence, Mahoning Creek meanders for 3 miles before entering the Susquehanna River immediately north of the community of Riverside.

D. Site Hydrogeology

The water table at the Site is located within unconsolidated material above the top of bedrock. Depths to ground water range from approximately 3 to 23 feet below ground surface throughout the study area. The standing water in the wetland area east of the Site is an expression of the water table. All water-level measurement data was obtained during a period of abnormally low precipitation, and normal ground water elevations may therefore be higher than those reported.

Based on the 1988 Remedial Investigation ("RI"), ground water generally flowed across the Site toward the northeast or east toward Mauses Creek. However, based on new data from the 1991 RI, ground water flow direction also appears to be toward the south and southeast. A potentiometric surface map showing contours and ground water flow directions for the overburden wells are shown on Figure 3. The overburden, shallow, and intermediate bedrock maps all appear to have a similar ground water flow pattern, with minor variations due to upward gradient in some wells.

A hydraulic connection was observed between the aquifer zones, and all the zones act as a single unconfined aquifer. From data generated during ground water pumping tests, it is evident that the aquifer is heterogeneous and anisotropic. The bedrock was found to be moderately to highly fractured. The fracture pattern varies from one location to another, although generally the degree of fracturing and number of fractures per foot decreased with increasing depth below ground surface. The top of bedrock generally slopes toward the east across the Site while the bedding planes dip toward the northnorthwest.

E. Nature and Extent of Contamination

Sampling and analysis of the ground water, surface water, and sediment indicate that off-Site media have been affected by contamination that originated on Site. The results are summarized below.

The primary contaminants in the ground water are halogenated aliphatics, although several other chemicals such as phthalate esters and phenols also were detected less frequently and at lower concentrations. The most prevalent organic chemicals found in the ground water are tetrachloroethene (PCE), trichloroethene (TCE), 1,2-dichloroethene, vinyl chloride, and 1,1,2-trichloroethane. Concentrations were generally found to be highest in the wells closest to the original source (the former carbon waste pile) area and decreased with increasing distance from that source. Several metals are also notable Site-related contaminants, such as copper, lead, nickel, zinc, and antimony. Contamination was observed in the deep wells, and in wells installed on the eastern side of Mauses Creek. A summary of the organic and inorganic analytical results for the monitoring wells from the 1991 investigation are presented in Tables 2 and 3.

A contaminant plume that generally is elongated in the west/east direction was identified during the evaluation of the chemical analytical results, although gaps in the data include the southern boundary of the shallow bedrock and overburden plumes and vertical extension in the deep bedrock. The wells installed around the Site have defined the approximate lateral extent of contamination in the eastern and northern directions at the depths monitored. Data gaps relative to the plume size will be addressed during the design phase. The approximately horizontal extent of the ground water contamination is shown in Figure 4.

The 1991 residential well analytical results appear to indicate that the plume has migrated beneath Mauses Creek. Twelve active and one abandoned well were sampled in 1991. The locations of these wells are shown in Figure 5. The analytical results are summarized in Table 4.

Surface water samples collected from the wetland contain several of the same volatile organic chemicals that were found in the ground water. The concentrations of the organics were higher in the wetland than in Mauses Creek, which is expected to dilute the discharged ground water. Surface water samples collected upstream of the Site were free of Site-related volatile organic chemicals. The organic analytical results for surface water samples are summarized in Table 5. Surface water inorganic analytical results are summarized in Table 6.

Sediment samples collected from the wetland generally contained higher concentrations of insoluble Site contaminants such as phthalate esters and metals. These data indicate that surface material on the Site might have been eroded and deposited in the wetland. The sediments also contained some Site-related volatile organic chemicals. The organic and inorganic analytical results are summarized in Tables 7 and 8, respectively.

A sediment sample from each location was also subjected to the Toxicity Characteristic Leaching Procedure, and the extract was analyzed for the full Targeted Compound List and Targeted Analyate List ("TCL/TAL"). These results are summarized in Table 9. None of these sediment samples would be considered a hazardous wastes under the regulatory criteria.

F. Contaminant Migration Routes

This section identifies the potential contaminant release mechanisms and migration routes at the MW Manufacturing Site. This discussion focuses on the ground water, surface water, and sediment media that were sampled during the 1991 RI. These mechanisms were identified through an evaluation of the chemical analytical data base and known Site characteristics.

The primary groundwater contaminants detected at the Site were volatile organics, most of which were the halogenated aliphatics. These chemicals were used in the metal recovery operations at the facility. Once the carbon waste was disposed on the ground surface, the high concentrations of organic contaminants acted as a source. Rainfall leached the soluble components of the waste, which eventually reached the water table. Once in the ground water, soluble components of the waste were transported downgradient.

These organic contaminants are relatively mobile and have low organic carbon partition coefficients and, therefore, are highly susceptible to groundwater transport. As described above, the groundwater regime at the Site consists of one aquifer system with a varying vertical gradient from the water table surface to the deep bedrock. In some places (e.g., MW01/02/03 cluster) there are overall downward groundwater flow gradients. In other locations (e.g., MW07/08/09 cluster) there is an upward gradient. A downward gradient will naturally aid in the downward migration of contamination, as well as the outward migration facilitated by the change in the potentiometric surface gradient across the site. Once in the ground water, these dissolved constituents migrate in dissolved state along with moving water, being somewhat retarded by the presence of organic carbon in overburden or bedrock materials which tends to retain some of these contaminants.

The upward vertical gradient of the ground water below the former carbon waste pile source area normally would be expected to inhibit the downward vertical migration of dissolved contaminants in the groundwater. However, high concentrations of the organic chemicals found in the source area wells may be indicative of another contaminant migration mechanism; i.e., the bulk movement of pure chemical product. The slightly soluble chemical compound commonly is referred to as non-aqueous phase liquid (NAPL). When the NAPL is heavier than water it is referred to as a dense non-aqueous phase liquid (DNAPL). The presence of a DNAPL commonly is suspected when the concentrations of dissolved product reach approximately 2 to 5 percent of a chemical solubility.

PCE, assumed to be used at the Site, was found at a maximum concentration that is 22 percent of its solubility and the possible degradation products of PCE were detected at lower percentages of solubility. PCE is more dense than water, having a specific gravity of 1.63. These facts lead to the conclusion that a DNAPL may be present at the Site. DNAPLs may have moved downward through the soil to the water table, and thence downward without being affected by the upward ground water flow. These DNAPLs may also partially explain the observation of increasing concentrations of particular contaminants with increasing depth. The sample results led EPA to believe that DNAPLs are present at the Site.

Contamination in wells located outside the Plant (The "Plant" consists of the property on which the MW Manufacturing Company conducted its business; the boundaries of the Plant are delineated on the map which is attachedas Figure 12) in the north, south, and east directions, can be traced to source areas (the "source areas" are areas of disposal of hazardous substances) at the Plant. In addition, the analytical data suggests that contamination extends across Mauses Creek and that the creek may not act as a hydrologic barrier to migration. Low concentrations of some Site-related organic chemicals were also detected in several residential/business wells located north of the Plant. A residential well at the southeastern boundary of the Site showed contamination.

Contaminated ground water may also be discharging in the wetland area on the west side of Mauses Creek. Site-related contaminants were detected in standing water collected from the wetland area and the sediments in the wetland drainageways including volatile organics, phthalate esters, and metals. The presence of these contaminants is believed to be related to erosion from surface materials on Site and from on-Site drainage ditches to culverts beneath Washingtonville Road.

EPA has concluded that there is also some discharge of contaminated ground water to Mauses Creek ("the Creek"), as evidenced by the detections of TCE and 1,2-dichloroethene in the Creek in the vicinity of the Site. These chemicals were not detected in the Creek upstream of the Site.

VI. SUMMARY OF SITE RISKS

This section of the ROD summarizes the results of the risk assessment. The baseline risk assessment provides the basis for taking action and indicates the exposure pathways that need to be addressed by remedial action. It also details the risks related to the no-action scenario.

The first task in the risk assessment was to select chemicals of concern for each medium under investigation. The list was based on chemical toxicity characteristics, the occurrence and distribution of the chemical in the medium, potential exposure routes, and contaminant migrationcharacteristics.

For the monitoring wells, from which potential future residential exposures were evaluated, the chemical list included a wide variety of volatile organic chemicals (mostly halogenated aliphatics and monocyclic aromatics), base neutral extractable compounds (phthalate esters), acid-extractable compounds (phenols) and metals. Toxic compounds detected in the residential wells were retained for public health evaluation. Separate lists of chemicals of concern were developed for the surface water of Mauses Creek, the sediment of Mauses Creek and the wetland sediment. Small areas of standing water in the wetland were considered insignificant for potential human exposures.

As described above, the Site is currently surrounded by residential areas, farmland, and small businesses. In addition, there is a Head Start School located a few hundred feet north of the plant. Specific receptors were considered during the risk assessment process. At present, one abandoned residential well and a business well are identified in the immediate plume area. A few of the outlying domestic and business wells exhibited sporadic occurrences of some volatile organics, as well as lead which may not be related to the Site.

A separate risk assessment was performed for each existing domestic or business well that was sampled. These assessments considered whether the well served a home (both children and adult receptors exposed via ingestion, inhalation, and dermal contact) or a business (ingestion and dermal contact only using employment/student characteristics to define receptors). Direct exposures to surface water and sediment were evaluated for adolescents only. As far as potential exposures to contaminated groundwater identified in a plume extending eastward from the site, both adults and children were seen as potential receptors should a new well be installed for residential use in the downgradient area of the plume. In addition, the potential human ingestion of fish caught in Mauses Creek was also addressed. This exposure route was based on the observed surface water concentrations and nonspecific bioconcentration factors to determine contaminant concentrations in fish tissue. An earlier RI report (1988) addressed the risks associated with fish ingestion based on actual fish tissue data.

All exposure parameters used at this Site were based on the current risk assessment guidance from the USEPA (USEPA, December 1989 and March 25, 1991). However, every attempt was made to make the scenarios more sitespecific. These assumptions were detailed in the RI report to determine chemicalspecific intakes for each chemical and exposure route.

Potential human exposures to the chemicals of concern under the defined exposure scenarios were then quantified using EPA-published dose-response parameters. Noncarcinogenic risks are presented in the form of Hazard Quotients that were determined by comparing the predicted intake of a chemical to a parameter known as a Reference Dose, that represents the intake of a chemical that is not expected to result in any adverse health effects even in sensitive populations. However, because of the uncertainties involved in its development (the dose is adjusted by orders of magnitude for various parameters), the Reference Dose cannot be used for risk quantitation and it is necessary to know whether the Hazard Quotient for a chemical exceeds unity (or, in other words, whether the estimated intake exceeds the Reference Dose). Individual Hazard Quotients are summed to generate a Hazard Index that also should not exceed unity.

Carcinogenic risks are provided in the form of dimensionless probabilities that are based on Cancer Slope Factors (CSF(s). A CSF generally is derived from animal studies of chemical toxicity. The high doses administered to laboratory animals are extrapolated to the low doses generally received by humans in a linear relationship. The value used in reporting the CSF is theupper 95 percent confidence limit. The CSF is multiplied by the predicted intake to result in a unitless expression of an individual's likelihood of developing cancer as a result of the defined exposure. The defined exposure assumes an adult receptor will be exposed to the chemicals of concern through ingestion, inhalation and dermal exposure over the course of a life time (with 30 years exposure duration). An incremental cancer risk of 10[-6] indicates that the exposed receptor has an additional risk of one in one million of developing cancer. Again, the risks associated with multiple chemicals may be added together.

The EPA generally has defined "acceptable" risk range somewhere between 10[-4] and 10[-6]. However, this level is sometimes modified by regulatory requirements (that can be more stringent) or more stringent chemical specific cleanup requirements that are not based on residual risk.

Each residential and business well at the Site was considered in a separate risk assessment. The assessments were based on the maximum detected contaminant concentrations in an effort to ensure that risks were not underestimated. However, because the two rounds of sampling that were conducted did not always agree (i.e., a chemical may have been detected in one sample and not in the other), this approach is extremely conservative. Exposure to water from several of the wells resulted in Hazard Indices that exceeded unity solely because of the presence of lead. However, in neither case could a continuous "plume" of lead be drawn from the Site to these wells because of intervening clean wells.

In addition, exposure to water from four potable wells was found to result in carcinogenic risks greater than 10[-6]. Two of these wells (both residential or business wells) contained vinyl chloride at a concentration of about one-half the MCL in one sampling round. The third well is a now-abandoned well at a roadside rest stop, and the fourth is an abandoned dug well immediately adjacent to the Site. With the exception of the abandoned dug well, all risks were less than 10[-4]. Tables 10, 11 and 12 summarize the risks associated with potable water use from the residential and business wells.

However, potential exposure to the groundwater in the plume presents clearly unacceptable risks. The total Hazard Index exceeds unity and the incremental cancer risk was estimated at 3 x 10[-2]. The halogenated aliphatics (such as 1,1,2-trichloroethane, TCE, and vinyl chloride) were the most significant contributors to this risk.

The risks estimated for potential exposure to adolescents from surface water and sediment by adolescents were within the acceptable limits under current EPA guidance. That is, the Hazard Indices were less than 1.0, and the incremental cancer risks were 1.5 x 10[-6].

The ingestion of fish by adult residents on a routine basis resulted in estimated risks of 1.3 x 10[-5], primarily because of the presence of PCE in the creek at a concentration of 0.13 mg/L. In 1988, when actual fish tissue contaminant concentrations were measured, the risks were found to be unacceptable for long-term exposure (greater than 10[-4]) using both the methodologies in place at that time and using current guidance on the same concentrations. However, the unacceptable risks were due solely to the presence of bis(2-ethylhexyl) phthalate in one sample at a very high concentration. However, fish have a very short lifespan and once the fluff pile is remediated under RD/RA for OU Two, the influx of contaminated sediment will cease and the risks are predicted to become acceptable eventually.

An environmental assessment was also performed for Mauses Creek. The results indicated that while the Creek shows some minor adverse effects near the wetland discharge point, the downstream station showed full recovery of all ecological parameters. Therefore, it can be concluded that the Site presently has some adverse impact on the Creek. However, as the on-Site fluff pile and contaminated ground water are remediated, inputs of contaminated runoff to the wetland and the discharge of contaminated groundwater to the creek should be eliminated, thereby resulting in a reduction of contaminants entering these systems.

Table 13 summarizes the total risks based on media and exposure route. Based on the results of the risk assessment, the only medium of concern for this phase of the investigation of the Site is groundwater.

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

VII. DESCRIPTION OF ALTERNATIVES

This section provides an understanding of the remedial alternatives developed for OU Three and each alternatives components, and compares their effectiveness, implementability, cost and compliance with applicable or relevant and appropriate requirements (ARARs). Only a summary comparison of the ARARs is presented in this section. A detailed description of ARARs for the selected remedy for OU Three is set forth in Sections IX and X below.

A. Alternative 1: No Action

This alternative is considered in the detailed analysis to provide a baseline to which the other remedial alternatives can be compared. This alternative involves taking no action at the Site to remove, remediate, or contain the contaminated groundwater. Periodic groundwater monitoring of residential wells and monitoring wells in the area of potential groundwater contamination would be conducted to provide information adequate to trigger independent measures to prevent contact (primarily ingestion and inhalation) with contaminated groundwater. An estimated 13 monitoring wells and 5 residential wells would be sampled periodically. The locations of these wells are shown in Figure 6. Existing monitoring wells could be used for 11 wells, thus, it is assumed that only two additional wells outside the Plant would be required. The exact number and locations for the monitoring wells would be determined during the Remedial Design phase. For costing purposes, a quarterly sampling period would be used for all wells, which would provide a maximum degree of protection to the public health. Because this alternative would result in contaminated groundwater remaining on the Site, 5-year site reviews pursuant to Section 121(c) of CERCLA, 42 U.S.C. S 9621, would be required to monitor the effectiveness of this alternative.

Effectiveness

Since no action would be taken to remediate the ground water under this alternative, the health risks remaining after implementation of this alternative would be identical to those presently posed by use of contaminated ground water. For ground water users residing downgradient of the current extent of contamination, this alternative would help to identify the potential or likelihood of future exposure to contaminated groundwater. With regard to reliability, monitoring is usually less effective in fractured bedrock than in more homogeneous formations since contaminants can potentially remain undetected by migrating beyond the monitoring wells in fractures.

With respect to environmental risks, the contaminants in the ground water would continue to migrate over time.

This alternative does not reduce the toxicity, mobility, or volume of contaminants in the ground water. Over time, contaminant levels in the present areas of contamination may gradually decrease through natural dilution, although the current extent of ground water contamination may spread into uncontaminated areas.

Implementability

Ground water monitoring is used widely at hazardous waste sites. Monitoring wells could be readily installed and maintained at the Site.

Since the only remedial action involved with this alternative is the installation of monitoring wells and periodic sampling; protection of workers and the community from exposure to contaminated materials during remedial actions is not a major consideration. Monitoring wells could be installed in approximately 2 weeks once a field crew and equipment are mobilized.

Compliance with ARARs

For the contaminants of concern, this alternative would not meet the Safe Drinking Water Act (SDWA), 42 U.S.C. 300, Maximum Contaminant Level (MCLs) and Maximum Contaminant Level Goals (MCLGs), nor the risk-based action levels, all of which are referenced by the National Oil and Hazardous Substance Contingency Plan, 40 C.F.R. Part 300 ("NCP"), as appropriate ground water cleanup criteria, depending on the circumstances of the Site. This alternative would also not comply with the Pennsylvania Hazardous Regulations, 25 Pa.Code 264.90-264.100 and in particular, 25 Pa.Code 264.97(i)(j) and 264.100(a)(9) that require contaminated ground water to be remediated to background levels.

With respect to location-specific ARARs, this alternative does not comply with the EPA's Ground Water Protection Strategy policy for a Class 2 aquifer, which is a "To Be Considered" (TBC) -type requirement.

This alternative would comply with the ground water monitoring requirements of the Pennsylvania Hazardous Waste Management Regulation, 25 Pa. Code, Chapter 264. However, this alternative would not comply with the Pennsylvania Hazardous Regulations, 25 Pa. Code Section 264.100(a), regarding thesubmission of a ground water abatement plan to be developed and implemented if ground water pollution is detected in one or more monitoring wells.

Cost

The present-worth of this alternative is estimated to be $2,216,000, with a capital cost of $25,000 and an O&M cost of $139,000 annually plus $20,000 every 5-years. The cost for 5-year site reviews are included in the O&M and present-worth costs for this alternative.

B. Alternative 2: Connection to Public Water System

This alternative involves the connection of new water service lines, mains, hydrants, valves to the Danville Municipal Authority water mains (near First Street, see Figure 7) to provide a new water service to certain properties. This alternative is intended to eliminate the present and future health risks associated with the use of contaminated groundwater.

This alternative involves installing ductile iron water mains of approximately 10-inch-diameter and 3/4-inch-diameter polyethylene service lines with curb box and a water meter and valve for each connected user. The remedial action does not include the responsibility for the operation and maintenance of the water supply system once it is operational. Control of the new water lines shall be transferred to the Danville Municipal Authority as soon as construction is complete. Therefore, construction details (i.e., diameter of lines, spacing of fire hydrants, etc.) must meet the requirements of the Danville Municipal Authority and local fire codes.

Based on existing and potential risks, the costing of this alternative assumes that all of the residences and businesses in the immediate area near the ground water plume would be connected to the municipal water supply. New water mains and service lines would be installed to service the Mausdale Community (approximately 24 homes a quarter mile southeast of the Plant) andthe residences and businesses located north and east of the Plant (approximately 4 residences and 7 businesses). The exact size, materials, and location of the water lines and number of residences/businesses to be connected would be determined during the Remedial Design Phase.

Effectiveness

Implementation of this alternative would prevent exposure to contaminated ground water for those residences and businesses connected with the municipal water supply. This alternative will not protect uncontaminated ground water, or restore the contaminated ground water to background levels; nor will it protect environmental receptors.

Those residents who elect to continue to use their private wells for nonpotable and nonshowering purposes are not expected to incur any significant health risk. If some residents use both wells and public water, the well system must be kept separate of the public water system to prevent possible cross contamination. To prevent possible cross contamination and continued unacceptable human health risks some existing domestic and business wells in the areas of concern must be sealed. This could be implemented on an individual voluntary basis.

This alternative does not reduce the toxicity, mobility, or volume of contaminants in the ground water. Over time, contaminant levels in the present areas of contamination may gradually decrease through natural dilution, although the current extent of ground water contamination will spread into uncontaminated areas.

Implementability

The technologies associated with this alternative are well established and use common engineering and construction practices. The effectiveness of the public water supply under this action, would be monitored by the Danville Municipal Authority will be monitored and pursuant to the Safe Drinking Water Act.

This alternative will require the participation of the Danville Municipal Authority. The water treatment plant currently has excess capacity (approximately 2 mgd excess) and the authority is interested in supplying additional communities, so the implementability of this alternative is good. The construction of new water mains and service lines would require the coordination of EPA and the Danville Municipal Authority to insure that the new construction complies with the design and construction standards of the Authority. The water main extension could be constructed within the existing right-of-way of state and local roads (with the approval of state and local authorities). No serious obstacles to the implementation of this alternative are anticipated. Service lines from the water main to individual residences would not require any easements since they typically are maintained by the resident, not the water authority.

This alternative has no apparent occupational or community health risks associated with implementation. There is a low probability of construction-type accidents associated with heavy equipment operation and material handling. Occupational exposure during construction is not anticipated, but could be readily controlled using conventional health and safety techniques. Environmental receptors should not be affected by short-term excavation and installation activities.

Since the ground water would not be collected and treated under this alternative, no residuals would be generated. This alternative could be implemented relatively quick. The estimated construction time for installation of additional lines in the community near the Site is approximately 6 months from the construction initiation.

Compliance with ARARs

Once connected to the Danville Municipal Authority public watersystem, the water quality will be regulated by the National Primary Drinking Water Regulations. Danville Municipal Authority currently is in compliance with those health based ARARs.

However, this alternative would not comply with the Pennsylvania Hazardous Regulations, 25 PA. Code 264.90-264.100 and in particular, 25 PA. Code 264.97(i)(j) and 264.100(a)(9) that require contaminated ground water to be remediated to background levels. With respect to location-specific ARARs, this alternative does not comply with the EPA's Ground Water Protection Strategy Policy for a Class 2 aquifer, which is a "To Be Considered" (TBC) standard because it does not clean up the ground water plume.

Cost

The present-worth and capital cost of this alternative is estimated at $1,200,000, since the O&M cost associated with this alternative would be paid by the users of the system. Typically, for an average homeowner, O&M would cost approximately $ 36 per quarter.

C. Alternative 3: Groundwater Extraction, Treatment, Discharge, and Connection to Public Water System

1. Connection to Public Water System

This alternative fully incorporates Alternative 2 to provide public health protection while other components of Alternative 3 are being designed, constructed, and implemented. The key features of Alternative 3 include extracting contaminated ground water, treating the ground water on Site and discharging the treated ground water to Mauses Creek and/or the Susquehanna River. This alternative was developed to achieve the background action levels to comply with the Pennsylvania Hazardous Waste Management Regulations, 25 Pa.Code, Article VII, Chapter 264), and to eliminate the existing and future threat to residential wells and uncontaminated ground water. The conceptual design for the extraction system is shown in Figure

8. Because the current depth of contamination is uncertain, a number of assumptions concerning the extent of the contaminated plume were made in developing this conceptual design. Additional monitoring wells and pump tests, including concerning number, locations and depth of wells, screen intervals and discharge rate, will be required during the remedial design phase, prior to preparing any final design.

The conceptual design developed for Alternative 3 places extraction wells along the perimeter and the interior of the plume and includes pumping at a rate sufficient to extend the capture zone beyond the plume boundaries in all directions. The system effectively flushes contaminants from the saturated portion of the aquifer surrounding the Site by pulling uncontaminated water from outside of the plume boundary, across the plume boundaries to the wells. EPA does not anticipate the need to conduct a treatablitiy study, however, if it is necessary it will be incorporated into the Remedial Design.

2. Treatment System Component

The following description of the treatment system for Alternative 3 is only conceptual and other systems could be considered during the Remedial Design phase. Under Alternative 3, the contaminated groundwater would be extracted from 10 wells each pumping at an average rate of 80 gpm for total extraction rate of 800 gpm. See Figure 9 for the Groundwater Treatment Flow Diagram. The combined groundwater flow would first enter a cone-bottom predecantation tank for the separation of any free contaminants that may be extracted. Free contaminants would be collected from the bottom of the predecantation tank to a storage tank and periodically disposed off-site at an EPA approved facility.

The groundwater would then be subjected to chemical precipitation and iron removal. The precipitated metal hydroxide sludge will be separatedout in an inclined plate gravity settler. The residual sludge which is anticipated to be a hazardous waste, will be dewatered utilizing a filter press and the sludge cake will be transported away to an off-site RCRA approved landfill.

The volatile organics in the effluent water from the chemical precipitation unit water will be removed using an air stripper. Chlorinated volatile (PCE, TCE, DCE, and VC) emissions from the air stripper are estimated to average about 99 pounds per day, considerably in excess of the allowable maximum of 15 pounds per day under "OSWER Directive 9355.0-28, To Be Considered (TCB) nonenforceable guidelines." Therefore, an emission control system must be provided. Emissions from the air stripper will be subjected to a thermal destruction unit to break down all organics including vinyl chloride. The effluent water from the air stripper will be subjected to a carbon adsorption system to remove remaining organic compounds before discharging to Mauses Creek and\or the Susquehanna River. The spent carbon will be regenerated off-site at an EPA approved facility. Because the 10-year, 7-day average minimum flow for Mauses Creek is about 63 gpm, discharge to Mauses Creek may be limited and, therefore, all or part of the treated groundwater may need to be discharged to the Susquehanna River. For the purpose of costing, the cost of discharge of all the treated groundwater to the Susquehanna River was included as a "worst-case" scenario for this alternative. During the Remedial design phase, discharge to Mauses Creek, and/or the Susquehanna River will be considered.

Once the cleanup levels, as further detailed in the performance standards section below, are measured to be achieved, there may be some residual contamination remaining in the ground water because some of the ground water, most of which flows in fractured bedrock, may not be intercepted by the extraction well system. In addition, contaminants may exist and/or migrate into fractures that are not interconnected (i.e., dead-end fractures) and, as a result, may not be readily extractable. After the completion of remediation, contaminants may reappear with time. For this reason, periodic ground water monitoring and 5-year site reviews pursuant to Section 121(c) of CERCLA, 42 U.S.C. 9621(c), would be required to monitor the effectiveness of this alternative.

Effectiveness

Alternative 3 would provide a public water supply and is designed to remove ground water contaminants down to background levels. As such, this alternative would prevent exposure to ground water contaminants, protect uncontaminated ground water, and restore contaminated ground water to background cleanup levels.

Ground water extraction wells, pumps, conveyance systems, and ground water monitoring are used widely at hazardous waste sites and are proven technology. There would be minimal risk to workers and the community associated with implementation of Alternative 3. Air strippers and carbon adsorption vessels commonly are used for water and wastewater treatment and are highly reliable if periodic inspections and maintenance are performed.

Air stripping and granular activated carbon adsorption, as included in this alternative, are irreversible treatment processes that would reduce the toxicity of the contaminated ground water through essentially complete removal (99.9 percent plus) of the volatile chlorinated organic contaminants. Thermal treatment of air stripping off-gas and activated carbon regeneration would destroy irreversibly the contaminants removed in the stripping and adsorption processes. The chemical precipitation and solids separation processes of this alternative would remove most of the iron and manganese from the ground water. About 90 percent of the remaining metals except for antimony, would be removed by chemical precipitation, sedimentation, and filtration. The treatment system is not expected to remove the very low concentrations of acetone (47 ug/l) and antimony (43.8 ug/l) in extraction water. Because of its very high water solubility, acetone neither air strips nor adsorbs on activated carbon in an effective manner and only responds well to biodegradation. However, biological treatment of such a low level of contamination is not practical to achieve. The chemical precipitation process of this alternative would probably achieve only up to 50 percent removal of the antimony. However discharge to the Susquehanna River and/or Mauses Creek would result in a minimum risk via ingestion.

Implementability

The treatment processes included in Alternative 3 are well demonstrated and readily implementable. Multiple suppliers are available for each proposed treatment unit.

Operation and maintenance of the groundwater extraction wells and treatment system would be required on a regular and ongoing basis. It is anticipated that at least six operators would be required for the treatment system on an 24-hour-a-day, 5-day-a-week basis.

During remediation, treatment system operators and the neighboring community would be protected from air stripping fugitive emissions by a thermal off-gas treatment system. Perimeter air monitoring and work area breathing zone monitoring may be required to verify the effectiveness of the offgas treatment system, but this determination cannot be made until the treatment system is designed. Also during the remediation, special procedures, including wearing the appropriate protective clothing, would have to be followed by treatment system operators for the handling of residuals including spent activated carbon and filter press cake.

Residuals generated by the treatment process would be limited toabout 3 cubic yards of filter press cake per day and approximately 10 tons of spent carbon to be regenerated off-site every six months. The remediation time required to achieve the background levels is dependent on the extent of ground water contamination, aquifer properties, and source characteristics that are uncertain at this time. Based on contaminant transport modeling analysis, the estimated time to restore the ground water to background levels is approximately 15 years. Because of the uncertainties associated with the volume of contamination (depth of plume) and the potential for DNAPLs at the Site, the cleanup of the ground water is expected to take considerably longer than the 15 year estimate. Construction time for this alternative is estimated at 18 months.

Compliance with ARARs

Alternative 3 is designed to meet the SDWA MCLs and MCLGs for the contaminants of concern. Also, this alternative would meet the risk-based action levels as referenced in the NCP as acceptable ground water cleanup criteria.

Alternative 3 would comply with the Pennsylvania Hazardous Regulations, 25 Pa.Code 264.90-264.100 and in particular, 25 Pa.Code 264.97(i)(j) and 264.100(a)(9), which require contaminated ground water to be remediated to background levels.

Alternative 3 would comply with the U.S. EPA's Ground water Protection Strategy Policy for a Class 2 aquifer which is a "To Be Considered" (TBC) standard.

Alternative 3 would comply with the ground water monitoring requirements of the Pennsylvania Hazardous Management Regulations, 25 Pa.Code Chapter 264.

Alternative 3 would comply with fugitive emissions control requirements according with the Clean Air Act, The Pennsylvania Air Quality Regulations, 25 Pa.Code Chapter 127, and OSWER Directive 9355 0-28. There may be an additional requirement of air monitoring to verify compliance. For this alternative, discharge of the treated ground water would be in compliance with the provisions of the Clean Water Act, including water quality standards and the requirements of the Pennsylvania NPDES discharge program and Clean Streams Law.

For this alternative, pumping of ground water and discharge of treated water would be in compliance with the requirements of the Susquehanna River Basin Commission.

All residuals generated as part of the implementation of this alternative would be handled, transported, treated, and disposed of in accordance with the requirements of RCRA Title C Hazardous Waste Regulations, the Pennsylvania Hazardous Waste Management Regulations, Proposed Pennsylvania Residual Waste Regulation (a TBC), U.S. DOT Rules for Hazardous Materials Transport, and Pennsylvania Hazardous Transportation Regulations.

This alternative fully complies with one of the goals of CERCLA: to utilize treatment that permanently reduces the volume, toxicity, or mobility of the contaminants at the site.

Cost

Costs associated with Alternative 3 are based on a 30 year remediation period (the maximum period of performance used by EPA for costing purposes) because of the potential DNAPLs on Site. The present-worth of this alternative is estimated to be $37,402,000 with a capital cost of $13,234,000 and an O&M cost of $1,568,000 annually plus $20,000 every 5 years.

D. Alternative 4: Groundwater Extraction, Treatment/Reinjection, Discharge, and Connection to Public Water System

This alternative also includes Alternative 2 to provide public health protection while remaining components of Alternative 4 are being designed, constructed, and implemented. The key features of Alternative 4 include extracting contaminated ground water, treating the ground water on Site, reinjecting a portion of the treated ground water, and then discharging the balance of the treated ground water. This alternative was developed to achieve background contaminant levels to comply with the Pennsylvania Hazardous Waste Management Regulations (25 Pa.Code Chapter 264) and to eliminate the existing and future threat to residential wells and uncontaminated ground water.

The conceptual design for the ground water extraction and reinjection system is shown in Figure 10. Because the current depth of contamination is uncertain, a number of assumptions were required concerning the extent of the contaminated plume to develop this conceptual design. Additional monitoring wells and pumping tests will be required during the remedial design phase prior to preparing final design concerning number, locations and depth of wells, screen intervals and discharge rate. Treatability testing is not anticipated.

The conceptual design developed for Alternative 4 includes 15 extraction wells located in the interior of the plume and 12 reinjection wells located along the upgradient and downgradient edges of the Site. The ground water reinjection wells establish a hydraulic gradient that reduces dilution of the contaminant plume by controlling the influx of adjacent waters. This action of the reinjection wells serves to shorten the ground water remediation time. The proposed conceptual design is based on extracting a total of 1,200 gallons of water per minute (gpm) from within the contaminant plume. After treatment under an ideal closed system scenario, treated water would be reinjected into the ground. Unfortunately, the depth to ground water at the Site is very shallow (0 to 23 feet below ground surface). This, combined with the fractured nature of the bedrock, restricts the total volume of water that the aquifer can absorb in any given period of time through reinjection. Based on ground water pumping rate calculations, the maximum volume of reinjection water theaquifer could accept using 12 injection wells (optimum for the given scenario) is approximately 400 gpm. The remaining 800 gpm would therefore have to be discharged off Site to a receptor such as Mauses Creek, and/or the Susquehanna River.

The following description of the treatment system for Alternative 4 is only conceptual and other systems could be considered during the Remedial Design Phase. Under Alternative 4, the contaminated ground water would be extracted from 15 wells each pumping at an average rate of 80 gpm for an overall extraction rate of 1,200 gpm. See Figure 11 for the Ground water Treatment Flow Diagram. The combined groundwater flow would first enter a conebottom predecantation tank for the separation of any free product that may be extracted. Free product would be collected from the bottom of the predecantation tank to a storage tank and periodically disposed of off-site at an EPA approved facility. The groundwater would then be subjected to chemical precipitation and iron removal. The precipitated metal hydroxide sludge will be separated out in an inclined plate gravity settler. The residual sludge will be dewatered utilizing a filter press and the sludge cake, which is anticipated to be a hazardous waste, will be transported to an off-site RCRA approved landfill.

The volatile organics from the chemical precipitation unit effluent water will be removed using an air stripper. Chlorinated volatile (PCE, TCE, DCE, and VC) emissions from the air stripper are estimated to average about 149 pounds per day which considerably exceeds the allowable maximum of 15 pounds per day, under OSWER Directive 9355.0-28 To Be Considered (TBC) standards. Therefore, an emission control system will be provided. Emissions from the air stripper will be subjected to a thermal destruction unit which will break down organics including vinyl chloride. The effluent from the air stripper will be subjected to a carbon adsorption system to remove remaining organics. The effluent from the granular activated carbon adsorption system would then be treated in an ion exchange system for the removal of residual metals to the background contaminant levels.

The effluent from the ion exchange system would be collected in a 10,000-gallon clear well tank and pumped from there to 12 strategically located reinjection wells. The waste brine generated by the ion exchange system regeneration would be stored in a mixed tank and concentrated in a evaporation system. The clean condensate from the evaporator would be collected in the final effluent clear well for reinjection and the concentrated brine would be hauled off-site to a RCRA approved facility for treatment and disposal.

Under this alternative, 800 gpm of the effluent of the treatment system would be pumped for discharge to either Mauses Creek, the Susquehanna River, or possibly both by a 10-inch-diameter pipe, and 400 gpm of the effluent would be reinjected into the aquifer using 12 injection wells at 33 gpm each. Because the 10-year, 7-day average minimum flow for Mauses Creek is only 63 gpm, discharge to Mauses Creek may be limited and, therefore, all or part of the treated groundwater may need to be discharged to the Susquehanna River. For the purpose of costing, the cost of discharging all the treated ground water to the Susquehanna River was included as a "worst case" scenario in this alternative. During the design phase, discharge to the wetland area, Mauses Creek, and/or the Susquehanna River will be considered.

Once the cleanup levels as set in performance standards are achieved (Performance Standards are set forth in detail in Section IX, below), there may be some residual contamination remaining in the ground water. Some of the ground water, most of which flows in fractured bedrock, may not be intercepted by the extraction well system. In addition, contaminants may exit and/or migrate into fractures that are not interconnected (i.e., dead-end fractures) and, as a result, may not be readily extractable. Once the cleanup levels as set in the performance standards are achieved, contaminants may reappear with time. For this reason, periodic ground water monitoring and 5-year site reviews pursuant to Section 121(c) of CERCLA, 42 U.S.C. 9621(c), would be required to monitor the effectiveness of this alternative.

Effectiveness

Alternative 4 would provide a public water supply and remove groundwater contaminants down to background levels. As such, this alternative would prevent human exposure to ground water contaminants, protect uncontaminated ground water, and restore contaminated ground water to background cleanup levels.

Ground water extraction and reinjection wells, pumps, conveyance systems, and ground water monitoring are widely used at hazardous waste sites and are a proven technological system. There would be minimal risk to workers and the community associated with implementation of Alternative 4. Air strippers and carbon adsorption vessels commonly are used for water and wastewater treatment and are highly reliable if periodic inspections and maintenance are performed.

Air stripping and granular activated carbon adsorption, as included in this alternative, are irreversible treatment processes that would reduce the toxicity of the contaminated groundwater through essentially complete removal (99.9 percent plus) of the volatile chlorinated organic contaminants. Thermal treatment of air stripping off-gas and activated carbon regeneration would break down irreversibly the contaminants removed in the stripping and adsorption processes. The chemical precipitation, solids separation, and ion exchange processes of this alternative would irreversibly remove more than 90 percent of the metals from the discharge water.

The treatment system is not expected to remove the very low concentrations of acetone (47 ug/l) in the extraction water. Because of its very high water solubility, acetone neither air strips or adsorbs on activated carbon in an effective manner, it only responds well to biodegradation. However, biological treatment of such a low level of contamination is not practical and risk from long-term ingestion is low.

Implementability

The treatment processes included in Alternative 4 are well demonstrated and readily implementable. Multiple suppliers are available to provide each of the proposed treatment units.

It is desirable to create a closed-loop system using the ground water extraction and injection wells where all of the reinjected water is controlled and eventually captured by the extraction wells. However, establishment of a closed system in fractured bedrock would be difficult. Reinjected water that is transported in discrete fractures may not be captured by the extraction wells and potentially could force contaminated groundwater into lesser contaminated areas.

If reinjection is performed offsite, it will be necessary to obtain a Water Quality Management permit from Pennsylvania.

Operation and maintenance of the groundwater extraction wells and treatment system would be required on a regular and ongoing basis. It is anticipated that at least six operators would be required for the treatment system on an 24-hour-a-day, 5-day-a-week basis.

During remediation, treatment system operators and the neighboring community would be protected from air stripping fugitive emissions by a thermal off-gas treatment system. Perimeter air monitoring and work area breathing zone monitoring may be required to verify the effectiveness of the offgas treatment system, but this determination cannot be made until the treatment system is actually designed. Also, during the remediation, special procedures, including wearing of appropriate protective clothing, would have to be followed by treatment system operators for the handling of residuals including spent activated carbon, filter press cake, and concentrated ion exchange regeneration brine.

Residuals generated by the treatment processes would be limited to about 4.5 cubic yards per day of filter press cake and approximately 3,000 gallons per day of concentrated ion exchange regeneration brine. The remediation time required to achieve the background levels is dependent on the extent of ground water contamination, aquifer properties, and source characteristics that are uncertain at this time. Based on contaminant transport modeling analysis, the estimated time to restore the ground water to background levels for all contaminants except antimony is approximately 10 years. Because of the uncertainties associated with the volume of contamination (depth of plume) and the potential for DNAPLs on the Site, the cleanup of the ground water is expected to take considerably longer than the 10-year estimate. Construction time for this alternative is estimated at 18 months.

Compliance with ARARs

Alternative 4 would meet the SWDA MCLs, and MCLGs for the contaminants of concern. This alternative would meet the risk-based action levels as referenced in the NCP as acceptable ground water cleanup criteria.

Alternative 4 would comply with the Pennsylvania Hazardous Regulations, 25 Pa.Code 264.90-264.100 and in particular, 25 Pa.Code 264.97(i)(j) and 264.100(a)(9), that require contaminated ground water to be remediated to background levels.

Alternative 4 would comply with the EPA's Ground water Protection Strategy Policy for a Class 2 aquifer which is a "To Be Considered" (TBC) standard. Alternative 4 would comply with the ground water monitoring requirements of the Pennsylvania Hazardous Management Regulations (25 Pa.Code Chapter 264).

For this alternative, discharge of the treated ground water would be in compliance with the provisions of the Clean Water Act and would meet the requirements of the Pennsylvania NPDES discharge program.

Extraction of contaminated ground water, reinjection and discharge of the treated ground water would meet the requirements of the Susquehanna River Basin Commission.

Alternative 4 would comply with fugitive emissions control requirements promulgated under with the Clean Air Act, Pennsylvania Air Quality Regulations, 25 Pa.Code Chapter 127, and OSWER Directive 9355 0-28.

All residuals generated as part of the implementation of this alternative would be handled, transported, treated, and disposed of in accordance with the requirements of RCRA Title C Hazardous Waste Regulations (40 C.F.R. Part 262), Pennsylvania Municipal Waste Regulations, 25 Pa.Code Chapter 75, a TBC standard, proposed Pennsylvania Residual Waste Regulations, 25 Pa.Code Chapters 287 to 299 (a TBC), U.S. DOT Rules for Hazardous Materials Transport (40 C.F.R. Part 263), and Pennsylvania Hazardous Transportation Regulations.

This alternative fully complies with one of the goals of CERCLA: to utilize treatment that permanently reduces the volume, toxicity, or mobility of the contaminants at the site.

Cost

Costs associated with Alternative 4 are based on a 30-year remediation period (the maximum period of performance used by EPA for costing purposes) because of the potential DNAPLs on Site. The present-worth cost of this alternative is estimated to be $69,334,000 with a capital cost of $20,830,000 and an O&M cost of $3,151,000 annually plus $20,000 every 5 years. VIII. SUMMARY OF COMPARATIVE ANALYSIS OF ALTERNATIVES

A detailed analysis was performed on all of the alternatives using the nine criteria specified in the NCP in order to select a remedy for OU 3. The following is a summary of the comparison of each of the alternative's strengths and weaknesses with respect to the nine criteria. EPA is required to compare and balance these criteria in selecting a remedy.

A. Overall Protection of Human Health and the Environment

Alternative 1, which only includes monitoring, would not provide any additional reduction in the risks associated with use of contaminated ground water other than that offered by natural attenuation and dilution of the ground water contamination. For ground water users residing outside of the current extent of contamination, however, Alternative 1 would help to reduce the potential or likelihood of future exposure to contaminated groundwater.

By providing a public water supply, Alternative 2 would provide a higher degree of overall protection of the human health than Alternative 1. Neither Alternatives 1 or 2 would help to protect uncontaminated ground water for current and future use nor restore the ground water to acceptable drinking water levels. Alternatives 1 and 2 would not reduce migration of contaminants into the wetland areas.

Alternatives 3 and 4 would restore contaminated ground water to the contaminant background levels. Following startup of the ground water extraction system in Alternatives 3 and 4, a hydraulic gradient or barrier would be established by the pumping system. This hydraulic barrier would help to contain the contaminant plume and therefore reduce the potential for migration of contaminants into uncontaminated ground water. By providing a public water supply with Alternatives 3 and 4, the public health would be protected from exposure to contaminated ground water while the ground water aquifer is being restored. Alternatives 3 and 4 would achieve a greater degree of overall protection of human health and the environment than Alternatives 1 and 2.

B. Compliance with ARARs

CERCLA requires that remedial actions meet applicable or relevant and appropriate requirements (ARARs) of other federal and state environmental laws. These laws may include: the Toxic Substances Control Act, the Clean Water Act, the Safe Drinking Water Act, and the Resource Conservation and Recovery Act.

An "applicable" requirement is one that would legally apply to the response action if that action were not taken pursuant to Sections 104, 106 or 122 of CERCLA. A "relevant and appropriate" requirement is one that, while not applicable, is designed to apply to a sufficiently similar problem and its application is appropriate.

For the contaminants of concern (Table 14), Alternative 1 would not meet the SDWA MCLs and MCLGs, nor the risk-based action levels, all of which are referenced by the NCP as acceptable ground water cleanup criteria depending on the circumstances of the Site.

Alternatives 1 and 2 would not comply with the requirements of the Pennsylvania Hazardous Regulations, 25 Pa.Code 264.90-264.100 and in particular, 25 Pa.Code 264.97(i)(j) and 264.100(a)(9), that require contaminated ground water to be remediated to background levels. With respect to location-specific ARARs, Alternatives 1 and 2 would not comply with EPA's Ground Water Protection Strategy policy for a Class 2 aquifer, which is a "To Be Considered" (TBC) standard. Nor would these alternatives comply with Pennsylvania water quality monitoring regulations that require a ground water abatement plan to be developed and implemented if ground water pollution is detected in one or more monitoring wells.

With respect to location-specific ARARs, Alternatives 3 and 4 comply with the EPA's Ground Water Protection Strategy policy for a Class 2 aquifer, which is a "To Be Considered" (TBC) standard by protecting current and potential sources of drinking water and waters having other beneficial uses.

Onsite treatment (Alternatives 3 and 4) and transportation of any treatment residuals off-site would comply with the various RCRA regulations as well as the DOT Rules for Hazardous Materials Transport (49 C.F.R. Parts 107 and 171 -179) and Pennsylvania requirements for the transportation of treated residue off-site.

Only Alternatives 3 and 4 would comply with the Pennsylvania Hazardous Regulations, 25 PA. Code 264.90-264.100 and in particular, 25 PA. Code 264.97(i)(j) and 264.100(a)(9), which require contaminated ground water to be remediated to background levels.

For Alternative 4, subsurface reinjection does not need to comply with RCRA LDR requirements, since the actions are CERCLA remedial responses.

Operation of the on-site treatment system (Alternatives 3 and 4), would comply with OSWER Directive 9355.0-28 as well as with the various air quality permitting criteria of the Pennsylvania Air Quality Control regulation, 25 Pa.Code Chapter 127, Construction, Modification, Reactivation and Operation of Sources.

For Alternatives 3 and 4, discharge of treated ground water would comply with all state and federal NPDES discharge regulations (40 C.F.R. Part 122) and any other applicable or relevant and appropriate state and local regulations that pertain to discharges.

Alternatives 3 and 4 fully comply with one of the goals of CERCLA: to utilize treatment that permanently reduces the volume, toxicity, or mobility of the contaminants at the site, whereas Alternatives 1 and 2 would not comply with this objective.

C. Short-term Effectiveness

Since the only remedial action involved with Alternatives 1 and 2 is the installation of monitoring wells and the construction of water mains and service lines, protection of workers and the community from exposure to contaminated materials during remedial actions is not a major consideration for these two alternatives. Monitoring wells could be installed in approximately 2 weeks, once a field crew and equipment are mobilized. The estimated construction time for installation of additional water lines for the community near the Site is approximately 6 months.

Based on modeling analysis, the estimated remediation time is approximately 15 years for Alternative 3 and 10 years for Alternative 4 (based on the assumed plume volume). These treatment times were developed for costing and alternative comparison purposes only. They are not intended to represent accurately the actual times required to restore the aquifer to the cleanup levels because of the uncertainties associated with the plume volume and the potential for DNAPLs on the Site. The construction time for Alternatives 3 and 4 is estimated at 18 months.

With respect to Alternatives 3 and 4, air strippers, carbon adsorption vessels, ground water extraction wells, and ground water monitoring are widely used at hazardous waste sites and are highly reliable if periodic inspections and maintenance are performed. There may be some degree of inhalation risk to workers and the community associated with failure of the off-gas collection and treatment system. Perimeter air monitoring and breathing zone monitoring in work areas would be performed during operation of the air stripper to determine whether steps are needed to protect the community and workers from adverse air emissions during implementation and operation of this alternative. Careful monitoring and maintenance of the process controls would minimize exposure risks associated with failures of the treatment system.

D. Long-term Effectiveness and Permanence

Since no actions would be taken to remediate the ground water under Alternative 1, the health risks remaining after implementation of this alternative would be identical to those presently posed by use of contaminated ground water. For ground water users residing downgradient of the contaminated area, ground water monitoring provides a minimal degree of long-term protection from exposure to contaminated ground water.

Alternative 2 meets the objective of eliminating the public health risk associated with potable and nonpotable use of contaminated groundwater. Alternative 2 would achieve a higher degree of long-term effectiveness than Alternative 1.

With respect to environmental risks, the contaminants in the ground water would continue to migrate over time under Alternatives 1 and 2. Due to the characteristic fracturing of the bedrock within the area, an accurate flow rate can not be assigned to contaminant migration. Aquifer testing indicates potential flow rates range from a minimum of 0.006 feet per day in the overburden to a maximum of 378 feet per day in the shallow (fractured) bedrock.

Alternatives 3 and 4 would provide long-term protection of public health from exposure to contaminated ground water by providing a public water supply and by removing the contaminants of concern to background levels, except for antimony. These alternatives would also prevent significant contaminant migration within the aquifer by establishing a hydraulic barrier.

E. Reduction of Toxicity, Mobility, or Volume

Alternatives 1 and 2 would not reduce the toxicity, mobility, or volume of contaminants in the ground water. Over time, contaminant levels inthe present areas of contamination may decrease gradually through natural dilution, although the ground water plume itself may increase in area. Further, some of the plume would discharge into the wetland and Mauses Creek and could further degrade the environment there.

Alternatives 3 and 4, over the long-term, would restore ground water in the area of contamination to the background action levels. Unlike Alternatives 1 and 2, Alternatives 3 and 4 would provide an irreversible treatment process that would significantly reduce the toxicity of the contaminated ground water.

F. Implementability

Of the four alternatives, Alternative 1, No Action, would be the easiest to implement. Under Alternative 1, monitoring wells could be installed readily and maintained at the Site, and a ground water monitoring program implemented easily. A ground water monitoring program would not interfere with any future remedial actions to be taken at the Site.

Alternative 2 can also be implemented easily, but would require the participation of the Danville Municipal Authority and state and local municipalities for the construction of water mains within existing road right-of-ways. The public water supply is regulated under the Safe Drinking Water Act. The Danville Municipal Authority is in compliance with the Safe Drinking Water Act and operates under a state permit.

Because Alternatives 3 and 4 involve the extraction and treatment of ground water, there are more implementation and operation considerations associated with these two alternatives than with Alternatives 1 and 2.

The components of the air stripping and carbon adsorption system (Alternatives 3 and 4) are readily implementable using existing technologies. No special materials or equipment would be required. Operation and maintenance considerations include cleaning and replacement of wells and well pumps; maintenance of blower units; cleaning of fouled packing; and regeneration of the liquid and vapor phase carbon units. Also, monitoring of the effluent water and exhaust gas would be required to ensure compliance and reliability of the systems.

While Alternative 4 is predicted to restore the aquifer sooner than Alternative 3, Alternative 4 is more difficult to implement. With respect to Alternative 4, it would be desirable to create a closed system using the ground water extraction and injection wells in which all reinjected water is controlled and eventually captured by the extraction wells. However, establishment of a closed system in fractured bedrock would be difficult. Reinjected water that is transported in discrete fractures may not be captured by the extraction wells and potentially could force contaminated groundwater into lesser contaminated areas. Also, the multi-directional flow of the groundwater across the Site would make a closed-loop system difficult to implement.

The requirement of the selected remedy is to achieve the background levels of chemicals of Concern (Table 14) in the ground water, which is a relevant and appropriate requirement under the PA Hazardous Waste Management Regulations.

G. Cost

The present-worth cost for Alternative 1 is $2,216,000 and the present-worth cost for Alternative 2 is $1,184,000. Costs associated with Alternatives 3 and 4 are based on a remediation time of 30-years (the maximum period of performance used by EPA for costing purposes) because of the potential presence of DNAPLs on the Site. The present-worth costs for Alternatives 3 and 4 are $37,402,000 and $69,334,000, respectively.

H. State Acceptance

The Commonwealth of Pennsylvania has concurred with the selected remedy (Alternative 3). The Commonwealth has also indicated that PADERagrees with the proposed remediation standards which provides that "background" quality is the required level of the ground water remediation plan.

I. Community Acceptance

Community acceptance is assessed in the attached Responsiveness Summary. In general, the community has accepted the remedy. The Responsiveness Summary provides a thorough review of the comments received on the 1992 the Focused Feasibility Study (FFS) and the Proposed Plan.

In selecting a remedy for the Site, EPA evaluated and balance each of the nine criteria discussed above.

IX. SELECTED REMEDY

A. General Description of Remedy

The remedy selected by EPA at the MW Manufacturing Site for Operable Unit 3 is Alternative 3, to restore the groundwater in the area of attainment to background levels for chemicals of concern (listed in Table 14) and to protect the public from exposure to contaminated water. The area of attainment is at and beyond the boundary of the Plant and throughout the contaminant plume as shown in the Figure 4. The selected remedy shall be accomplished through the implementation of certain tasks including ground water extraction, treatment, discharge and connection of well water users to a Public Water System. Based on current information, this alternative provides the best balance among the alternatives with respect to the nine criteria EPA uses to evaluate each alternative.

B. Strategy if the Remedy is not Achieved

Based on the information obtained during the RI, and the analysis of the remedial alternatives, EPA and the Commonwealth of Pennsylvania believe that it may be possible to achieve the selected remedy. However, ground water contamination may be especially persistent in the immediatevicinity of the contaminants' source, where concentrations are relatively high and a DNAPL likely is present. The ability to achieve cleanup requirements at all points throughout the area of attainment, or plume, cannot be determined until the extraction system has been implemented, modified as necessary, and plume response monitored over time.

If it is determined by EPA, in consultation with PADER, that on the basis of the system performance data, that certain portions of the aquifer cannot be restored to background levels, and/or if it is technically impracticable to restore the aquifer, EPA will amend the ROD or issue an Explanation of Significant Differences. In such event, the likely alternative actions will attempt to remediate the ground water to its beneficial use, that would be used as a drinking water source. If the aquifer can not be restored to its beneficial use, all of the following measures involving long-term management could occur, as determined by EPA in consultation with PADER, for an indefinite period of time, as a modification of the existing system:

1) engineering control such as physical barriers, or long-term gradient control provided by low level pumping, as containment measures;

2) waiver of chemical-specific ARARs for the cleanup of those portions of the aquifer based on the technical impracticability of achieving further contaminant reduction;

3) institutional controls to restrict access to those portions of the aquifer which remain above remediation goals;

4) continued monitoring of specified wells; and

5) periodic reevaluation of remedial technologies for ground water restoration.

A pre-design study must be implemented that will include gathering additional field data for design information. Treatability studies may also be needed to develop an adequate treatment system.

C. Description of the Selected Remedy

The Selected Remedy shall consist of the following elements:

1. Constructing public water supply lines and providing connections to the residences and businesses depicted in Figure 6 to the supply lines:

2. Installing a well system to pump ground water from the contamination plume; and

3. Constructing and installing a treatment system to remove contamination from the extracted ground water including:

a. A Chemical Precipitation Unit;

b. An Air Stripper;

c. A Carbon Adsorption Unit; and,

d. A Thermal Destruction Unit.

4. Pumping ground water from installed wells and treating extracted water;

5. Discharging treated water to Mauses Creek and/or the Susquehanna River;

6. Monitoring treatment progress by collecting samples from the monitoring

wells and analyzing the samples; and

7. Achieving all performance standards detailed in D., below.

D. Performance Standards

1. Connection to the Public Water Supply

The public water supply lines shall be constructed in compliance with the Danville Municipal Authority, local and state requirements. Connections shall be offered and provided to the residences and businesses depicted in Figure 6.

2. Ground Water Cleanup Levels

The well system for extracting groundwater shall be operated until the groundwater is cleaned up to background levels throughout theentire Site. The Pennsylvania ARAR for ground water for hazardous substances is that all ground water must be remediated to "background" quality as specified by 25 Pa.Code 264.90 - 264.100, specifically 25 Pa.Code 264.97(i) and (j) and 264.100(a)(9), which are relevant and appropriate requirements under the Pennsylvania Hazardous Waste Management Regulation. The Commonwealth of Pennsylvania also maintains that the requirement to remediate to background is also found in other legal authorities. The cleanup level for each contaminant of concern in the ground water is the background concentration of that contaminant. The background concentration for each contaminant of concern shall be established by EPA during Remedial Design. In the event that a contaminant of concern is not detected in samples taken for the establishment of background concentrations, the method detection limits of EPA approved low level drinking water analytical methods with respect to that contaminant of concern or MCLs, whichever are more stringent, shall constitute the "background" concentration of the contaminant.

3. Ground Water Extraction System

The ground water shall be decontaminated through extraction and treatment of the contaminated ground water throughout the plume. The extraction shall create a capture zone to capture contaminated ground water throughout the plume. Ground water shall be extracted using multiple extraction wells, the exact location, extraction rate and number of which shall be determined during Remedial Design and shall be approved by EPA in consultation with PADER.

4. Chemical Precipitation

Extracted ground water shall be treated in a Chemical Precipitation unit. The size of the Chemical Precipitation unit shall be determined during the remedial design and shall be approved by EPA. Treatment residuals from the Chemical Precipitation unit shall be disposed of in accordance with the requirements under Pennsylvania Law, 25 Pa.Code Chapter 75, a municipal waste regulation, a TBC standard, proposed Pennsylvania Residual Waste Regulation, 25 Pa.Code Chapters 287-299, a TCB standard, RCRA Title C Hazardous Waste Management Regulations, the Pennsylvania Hazardous Waste Management Regulations.

5. Air Stripper

The effluent water from the Chemical Precipitation unit shall be treated using a packed column air stripper. Air flow rates and air stripper dimensions shall be determined during the remedial design and shall be approved by EPA in consultation with PADER.

6. Carbon Adsorber

The effluent water from the stripping shall be treated by a carbon adsorption unit, the size of which shall be determined during Remedial Design and shall be approved by EPA in consultation with PADER. The spent carbon shall be regenerated off-site in an EPA approved facility.

7. Thermal Destruction Unit

Contaminants in the effluent air from the Air Stripper unit shall be thermally broken down in a thermal destruction unit, the size of which shall be determined during Remedial Design and shall be approved by EPA in consultation with PADER. The levels of contaminants in the effluent air shall meet the PADER requirements of Best Available Treatment and shall be approved by EPA in consultation with PADER.

8. Discharge of Treated Water

The treated water from the carbon adsorption unit shall be discharged into Mauses Creek or the Susquehanna River. The point of discharge shall be determined during the remedial design and shall be approved by EPA in consultation with PADER. The discharging of water shall comply with requirements of NPDES standards. The specific discharge criteriashall be established by EPA during Remedial Design.

9. Quality Control Monitoring

Parameters, frequency and type of monitoring of process variables including effluent air from the Thermal Destruction unit and discharge water from the Carbon Adsorption unit shall be determined during Remedial Design and shall be approved by EPA.

10. Area of Attainment

The area of attainment for the cleanup is the extent of contamination plume and is shown in Figure 4.

11. Monitoring of Cleanup

A system of monitoring wells shall be designed to monitor the cleanup progress throughout the plume and shall be installed. Number and locations of these monitoring wells shall be approved by EPA in consultation with PADER. The wells shall be sampled quarterly for the first two years and semiannually thereafter until the levels of contaminants of concern in these wells have reached the background levels. Once background cleanup levels are reached throughout the plume, these wells shall be sampled for twelve consecutive quarters and if contaminant levels remain at these levels, the operation of the extraction system shall be shutdown. Semi-annual monitoring of the ground water shall continue for five years. If subsequent to the extraction system shutdown, monitoring shows the ground water concentrations of any contaminant of concern to be above background or other agreed upon cleanup level, the system shall be restarted and continued until the levels have once more been attained for twelve consecutive quarters. Semi-annual monitoring shall continue until EPA determines in consultation with PADER that contaminants have reached stable levels below background.

12. Five Year Review

Because DNAPLs may remain on-site as a source of future ground water contamination, Five Year Reviews shall be conducted after the remedy is implemented to assure that the remedy continues to protect human health and the environment. A Five Year Review work plan shall be drafted after the remedy is implemented and shall be approved by EPA in consultation with PADER.

X. STATUTORY DETERMINATIONS

A. Protection of Human Health and the Environment

The selected remedy will provide adequate protection of human health and the environment by providing a public water supply, by extracting the contaminated ground water to achieve background levels, and by treating the ground water prior to discharge to Mauses Creek and/or the Susquehanna River. Once the background cleanup levels are achieved, the ground water exposure levels will be reduced to background contaminant levels.

Implementation of the selected remedy will not pose unacceptable short-term risks or cross-media impacts.

The environmental assessment indicated the Site has had some minor adverse effects on the biota of Mauses Creek nearest the Site, but that the downstream station was shown to have fully recovered. The remediation of ground water will reduce the quantity of contaminants discharged to the creek, thereby improving the aquatic habitat.

B. Compliance with Applicable or Relevant and Appropriate Requirements

The Selected Remedy restores the ground water to background cleanup levels for the contaminants of concern (Table 14), and shall comply with the ARARs contained in this section. The Pennsylvania ARAR for ground water for hazardous substances is that all ground water must be remediated to "background" quality as specified by 25 Pa.Code 264.97(i) and (j) and 264.100(a)(9), which is a relevant and appropriate requirement under the Pennsylvania Hazardous Waste Management regulation.

The Commonwealth of Pennsylvania also maintains that the requirement to remediate to background is also found in other legal authorities. The Commonwealth of Pennsylvania's Ground Water Quality Protection Strategy is a TBC standard if the background goal is not achievable.

With respect to location-specific ARARs, the selected remedy complies with the EPA's Ground Water Protection Strategy policy for an aquifer that is a current source of drinking water, a "To Be Considered" (TBC), by protecting current and potential sources of drinking water and waters having other beneficial uses. On-site treatment and transportation of any treatment residuals off-site would need to comply with the following RCRA regulations:

- Standards Applicable to Generators of Hazardous Waste (40 C.F.R. Part 262)

- Standards Applicable to Transporters of Hazardous Waste (40 C.F.R. Part 263)

- Regulations and standards for owners and operators of Hazardous Waste Treatment, Storage, and Disposal Facilities (40 C.F.R. Part 264)

- Interim status standards for owners and operators of Hazardous Waste Treatment, Storage, and Disposal Facilities (40 C.F.R. Part 265)

- Land Disposal Restrictions (40 C.F.R. Part 268)

- PA Hazardous Waste Management Regulations (25 Pa.Code, Chapters 262, 263, 264, and 265)

Further, proposed Pennsylvania Residual Waste Regulations, 25 Pa.Code Chapters 287 - 299, are a TBC and would be complied with in the implementation of this remedy.

Transportation of any treatment residuals off-site shall also comply with the DOT Rules for Hazardous Materials Transport (49 C.F.R. Parts 107 and 171 -179).

Under this remedy, discharge of treated ground water shall comply with the following:

- Clean Water Act NPDES discharge regulations (40 C.F.R. Parts 122-124)

- Pennsylvania Clean Streams Law (25 Pa. Code Chapter 5)

- Pennsylvania NPDES Regulations:

25 Pa.Code Chapter 16 (Water Quality Toxics)
25 Pa.Code Chapter 91 (General Provisions)
25 Pa.Code Chapter 92 (NPDES)
25 Pa.Code Chapter 93 (Water Quality Standards)
25 Pa.Code Chapter 95 (Water Treatment Requirements)
25 Pa.Code Chapter 101 (Special Water Pollution)

- Extraction of groundwater and discharge of treated water shall comply with the Susquehanna River Basin Commission requirements

Under this remedy, discharge of contaminants in the air shall need to comply with the following:

- Clean Air Act requirements, 42 U.S.C. 7401 et seq.

- Pennsylvania Air Pollution Control Act

- PA Air Quality Regulations:

25 Pa. Code Chapter 123 (Standards for Contaminants)

25 Pa. Code Chapter 127 (Construction, Modification, Reactivation, and Opertion of Sources)

- PA Bureau of Air Quality Memorandum (TBC) Air Quality Permitting Criteria for Remediation Projects Involving Air Strippers and Soil Decontamination Units

C. Cost-Effectiveness

The selected remedy affords overall effectiveness proportionate to its costs. While Alternatives 1 and 2 can be implemented at lower costs than the selected remedy, they are less protective of human health and the environment and do not meet ARARs. Alternative 4 would remediate the ground water in less time than the selected remedy but is significantly more costly to construct and operate and also more difficult to implement than the selected remedy.

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

EPA has determined that the selected remedy represents the maximum extent to which permanent solutions and treatment technologies can be utilized while providing the best balance among the other evaluation criteria. Of the alternatives that are protective of human health and the environment and meet ARARs, EPA has determined that the selected remedy provides the best balance in terms of long-term effectiveness and permanence; reduction of toxicity, mobility, or volume through treatment; short-term effectiveness; implementability; and cost.

The selected remedy addresses threats posed by the contaminated ground water. The remedy is protective of human health and the environment, meets ARARs, incorporates treatment as a principal element, and is costeffective. If the selected remedy cannot be achieved, this ROD will be amended or an ESD will be yissued. Of the alternatives, only Alternatives 3 and 4 would restore the contaminated aquifer to its beneficial uses.

Alternative 3 would provide long-term protection of public health from exposure to contaminated ground water by providing a public water supply and by removing the contaminants of concern to background levels. This alternative would also prevent significant contaminant migration by establishing a hydraulic barrier. This alternative would also reduce the toxicity and volume of contaminated ground water. For these reasons, the selected remedy (Alternative 3) provides the best balance of trade-offs in terms of the evaluating criteria.

E. Preference for Treatment as a Principal Element

The selected remedy satisfies the CERCLA preference for remedies that incorporate treatment as a principal component.

XI. DOCUMENTATION OF SIGNIFICANT CHANGES

The Proposed Plan for the MW Manufacturing Site was released for public comment in April 1991. The Proposed Plan identified Alternative 3 (ground water extraction, treatment, discharge, and connection to public water system) as the preferred alternative. EPA reviewed all written and verbal comments submitted during the public comment period. Upon review of these comments, it was determined that no significant changes to the remedy, as it was originally identified as in the Proposed Plan, were necessary.

GLOSSARY

Administrative Record: An official compilation of documents, data, reports, and other information that is considered important to the status of and decisions made relative to a Superfund Site. The public has access to this material.

Applicable or Relevant and Appropriate Requirements (ARARs): The Federal and state requirements that a selected remedy must attain. These requirements may vary among sites and alternatives.

Aquifer: A zone below the surface of the earth capable of producing water, as from a well.

Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), or Superfund: A Federal law passed in 1980 and modified in 1986 by the Superfund Amendments and Reauthorization Act. The Act created a trust fund, known as Superfund, to investigate and clean up abandoned or uncontrolled hazardous waste sites.

Fractured Bedrock: Breaks in underground rock formations caused by intense folding or faulting.

Groundwater: Water found beneath the earth's surface in geologic formations that are fully saturated. When it occurs in sufficient quantity, groundwater can be used as a water supply.

Halogenated Aliphatics: Group of chemicals with an open chain structure containing chlorine or other halogen(s) (e.g., bromine or fluorine).

Hazard Index: A value used to evaluate the potential for noncarcinogenic effects that occur in humans.

National Pollutant Discharge and Elimination System (NPDES): Federal or state regulations that pertain to the discharge to surface waters.

National Priorities List (NPL): EPA's list of the nation's top priority hazardous waste sites that are eligible to receive Federal money for response under Superfund.

Non-Aqueous Phase Liquid (NAPL): Separate phase hydrocarbon liquids, such as chlorinated solvents, petroleum fuels, coal tars, or wood preservative (creosote) wastes. May be either more dense or less dense than water, and may be found in either a free phase or trapped in soil or rock.

Operable Unit (OU): A portion of a Superfund Site that has been conceptually separated from the rest of the site to allow for easier management.

Phenols: Acidic compounds that are hydroxyl derivatives of aromatic (ring-structured) hydrocarbons.

Phthalate Esters: Plasticizing compounds formed by the reaction of phthalic acid and alcohol used to give flexibility to polyvinyl chloride (PVC).

Present Worth: A term used to indicate the discounting of sums to be received in the future to their present value equivalent, or the amount which will accumulate to that sum if invested at prevailing interest rates.

Record of Decision (ROD): A legal document that describes the final remedial actions selected for a Superfund site, why the remedial actions were chosen and others not, how much they cost, and how the public responded.

Remedial Investigation/Feasibility Study (RI/FS): A two-part study of a hazardous waste site that supports the selection of a remedial action for a site. The first part, the RI, identifies the nature and extent of contamination at the site. The second part, the FS, identifies and evaluates alternatives for addressing the contamination.

Resource Conservation and Recovery Act (RCRA): A Federal statute which regulates the active generation, transport, treatment, storage, and disposal of hazardous wastes.

Volatile Organic Compounds (VOCs): Organic liquids that readily evaporate under atmospheric conditions. Example VOCs include vinyl chloride and trichloroethene (TCE).

Best Demonstrated Available Technology (BDAT) Best availabletechnology is the technology which is presently available and demonstrated to give best possible removal of contaminants. Further definition is given in the RCRA Land Disposal Restriction regulation.

MW MANUFACTURING

Site Information:

Site Name: MW MANUFACTURING
Address: VALLEY TOWNSHIP, PA

EPA ID: PAD980691372
EPA Region: 03

Site Alias Name(s):

DOMINO SALVAGE
DOMINO SALVAGE - WAREHOUSE #81

Record of Decision (ROD):

ROD Date: 12/22/1997
Operable Unit: 05
ROD ID: EPA/ROD/R03-98/013

Media: Sediment, Soil, Solid Waste, Surface Water

Contaminant: Metals, PAH, PCBs, VOC

Abstract: Please note that the text in this document summarizes the Record of Decision for the purposes of facilitating searching and retrieving key text on the ROD. It is not the officially approved abstract drafted by the EPA Regional offices. Once EPA Headquarters receives the official abstract, this text will be replaced.

The 15-acre MW Manufacturing Site is located in Montour County, Pennsylvania (PA). The PA Department of Transportation (PennDOT) maintains a storage area immediately north of the site. Farmlands and wooded lots are adjacent to the site on the west and south. Mauses Creek flows in a southerly direction past the site on the east side of Route 54.

The MW Manufacturing Company, a subsidiary of Nivel Corporation, began operations in 1966. The MW Manufacturing Company was engaged in copper recovery from scrap wire, using both mechanical and chemical processes from 1969 to 1972. During this time, the mechanical processes generated the largest volume of waste (the fluff material that consists of insulating materials), and the chemical processes generated a waste containing high concentrations

of organic compounds (the carbon waste). In November 1992, the State issued an order to MW Manufacturing Company to submit a plan to remove the fluff pile and remove contaminated water within 90 days. In 1973, Nivel Corporation filed for bankruptcy. Philadelphia National Bank forclosed the property and held it until 1976. In 1976, the property was acquired by a limited partnership between Warehouse 81 Inc., and Domino Salvage. From June 1982 to October 1983, Warehouse 81 conducted a mechanical recovery process to separate and salvage copper, plastic, and paper. Warehouse 81 is no longer active in the secondary recovery of copper from fluff.

In February 1987, a removal consent order was signed by the Environmental Protection Agency (EPA) and the current owners of the site, to supply water to the person living on site and to keep records of the water supply for five years. The site was proposed for the National Priorities List (NPL) in October 1984, and was placed on the NPL in June 1986. EPA organized the work at the site into three Operable Units (OUs).

OU1:
OU1 consists of the carbon waste pile, a well-defined contaminant source, unique from other areas insize, composition, and contaminant concentrations. The granular carbon waste material was dumped on-site in a pile about 200 feet west of the main plant. This pile appears as a black, stained area on historical aerial photographs. A Record of Decision (ROD) was issued in March 1989, for OU1 and remedial action was completed in March 1992.

OU2:
OU2 addresses the following areas: four wire-fluff waste piles, a surface impoundment, a buried lagoon, contaminated soils, drums, and storage tanks. The fluff waste consists of fibrous insulation material mixed with bits of plastic. Phthalate esters, copper, lead, and chlorinated solvents are all present in this material. It appears that the solvents were introduced into the fluff waste when Warehouse 81 Inc. used contaminated groundwater in their fluff recovery operations as no solvents were used during the original mechanical stripping operations. A ROD for OU2 was issued in June 1990, but was reopened by petition in 1993, and a second ROD was issued in December 1997 as a re-evaluation of the 1990 OU2 ROD as OU5.

OU3:
A ROD for OU3, which addresses the contamination of the groundwater and the wetland areas adjacent to the site, was signed in September 1992. Unilateral Administrative Orders were issued in

March 1993, to each PRP to conduct the Remedial Design/Remedial Action for OU3. During the design phase of OU3, EPA decided to split it into two operable units: OU3 and OU4.

Remedy: The selected remedy involves preparing the site by clearing vegetation and providing temporary sedimentation and erosion control. Soils, lagoon sediments, and fluff will undergo ex-situ stabilization; stabilized materials will backfill excavated areas. Low temperature thermal desorption will be employed to treat soils containing nonaqueous phase liquids. Areas of the site will be covered with two feet of soil and revegetated to control ponding and soil erosion. All debris will be removed, and materials in tanks and drums will be disposed of off-site in an appropriate facility. Lagoon water will be drained, treated physically and or chemically if needed, and discharged to an unnamed tributary of Mauses Creek adjacent to the site and/or to an industrial process. Institutional controls, including deed restriction, and long-term operation and maintenance activities will restrict land uses and provide site security.

Estimated Capital Costs: $6,924,062
Estimated Annual O&M Costs: $346,203 (years 1-2); $12,000 (years 3-30) Estimated Present Worth Costs: $8,752,530

Text: Full-text ROD document follows on next page.

EPA/ROD/R03-98/013
1998

EPA Superfund
Record of Decision:

MW MANUFACTURING
EPA ID: PAD980691372
OU 05
VALLEY TOWNSHIP, PA
12/22/1997

EPA 541-R98-013
<IMG SRC 980130>

RECORD OF DECISION
MW MANUFACTURING SITE
DECLARATION

SITE NAME AND LOCATION

MW Manufacturing Superfund Site
Operable Unit 5
Valley Township, Pennsylvania

STATEMENT OF BASIS AND PURPOSE

This Record of Decision (ROD) presents the selected remedial action for the MW Manufacturing Site located in Valley Township, Montour County, Pennsylvania (the Site), developed in accordance with the Comprehensive Environmental Response, Compensation, and Liability act of 1980 as amended by the Superfund Amendments and Reauthorization Act, (CERCLA), 42 U.S.C. ºº9601 et. seq. and is consistent, to the extent practicable, with the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), 40 CFR Part 300. This decision is based upon the contents of the Administrative Record for the MW Manufacturing Site.

The Commonwealth of Pennsylvania has concurred with the selected remedy. A copy of the letter of concurrence is attached.

ASSESSMENT OF THE SITE

Pursuant to duly delegated authority, I hereby determine, in accordance with Section 106 of CERCLA, 42 U.S.C. º9606, that actual or threatened releases of hazardous substances from this Site, as discussed in Section VI (Summary of Site Risks), if not addressed by implementing the response action selected in this ROD, may present an imminent and substantial endangerment to public health, welfare or the environment.

DESCRIPTION OF THE SELECTED REMEDY

The following remedy, as subsequently described, is one of five operable units that comprise a comprehensive remedy for the Site. Operable Unit 1 (OU-1), completed in March 1992 addressed carbon waste at the Site. Operable Unit 2 (OU-2) addressed the chopped and shredded pieces of wire insulation (referred to as "Fluff") resulting from the copper reclamation process; it also addressed contaminated soils, lagoon water and containerized material on-site. OU-2 called for the use of on-site incineration; the remedy for OU-2 is reevaluated in this ROD. Operable Unit 3 (OU-3) addresses long-term contaminated groundwater impacts from the Site. OU-3 is currently in design phase. Operable Unit 4 (OU-4) consisted of the design and installation of a public water supply for certain residences and businesses. OU-4 was completed in August 1996. The Remedial Design (RD) for OU-2 included a series of treatability studies which were completed in November 1995. The treatability studies revealed that the selected remedy for OU-2 has the potential for adverse impacts on human health and the environment. Operable Unit (OU-5) was undertaken to reevaluate the remedy for the Site contaminants previously addressed under OU-2. The original selected remedy (OU-2) included the following major components:

- on-site incineration of Fluff, stabilization of ash, and disposal of ash in an off-site landfill permitted pursuant to the Resource Conservation and Recovery Act of 1976 (42 U.S.C. ºº 6901-6986)(RCRA);
- on-site incineration of impacted soils for organics removal, stabilization of metals in ash where necessary and, disposal of ash in an off-site RCRA landfill;
- on-site treatment of lagoon water for organics and metals and discharge in accordance with Federal National Pollution Discharge Elimination System (NPDES) and the Commonwealth of Pennsylvania requirements;
- on-site incineration of the contents of tanks and drums, stabilization of the ash, and disposal of the ash in an off-site RCRA landfill and;

- covering of the soils under the Fluff once the Fluff has been removed in accordance with RCRA Subtitle C requirements.

The selected remedy in this ROD, referred to as OU-5, will protect the public from exposure to impacted soil, Fluff, lagoon sediments and water, the contents of tanks and drums located on-site. In addition, the selected remedy will provide both short-term and long-term protection of human health and the environment.

The elements of the selected remedy for this amended ROD (OU-5) are:

- Site preparation which includes temporary sedimentation and erosion control and the clearing of vegetation around the Fluff and lagoon;

- Treatment/containment of contaminants in Fluff, lagoon sediment, and surface soils through ex-situ stabilization and backfilling excavated areas with the stabilized material;

- Treatment of soil containing Non Aqueous Phase Liquids (NAPLs) utilizing low temperature thermal desorption;

- Covering the stabilized material and any other areas of concern with an EPA and PADEP approved two-foot soil cover. The cover will be graded and vegetated to prevent ponding and to control erosion.

- Site restoration by removing all debris from the Site;

- Off-site transport of materials in tanks and drums at the Site to an appropriate facility;

- Draining of lagoon water, treatment of the water in a physical/chemical treatment process (if needed), and discharge of the treated water to an unnamed tributary of Mauses Creek adjacent to the Site and/or to an industrial process;

- Implementation/enforcement of institutional controls at the Site (such as deed restrictions);

- Long-term operation and maintenance (O&M) activities including Site security through the maintenance of existing Site fence.

DECLARATION OF STATUTORY DETERMINATIONS

The selected remedy is protective of human health and the environment, complies with Federal and State requirements that are legally applicable or relevant and appropriate to the Remedial Action and is cost-effective. This remedy utilizes permanent solutions and alternative treatment technologies to the maximum extent practicable and satisfies the statutory preference for remedies that employ treatment that reduces toxicity, mobility or volume.

The components of the selected remedy, in conjunction with the OU-1, OU-3, and OU-4 remedies, represent the maximum extent to which a permanent solution and treatment technology can be utilized in a cost-effective manner for the Site.

Pursuant to CERCLA Section 121(c), 42 U.S.C. º9621(c), the 5-year Site reviews will apply to the remedial action, because this remedy will result in hazardous substances remaining on-site at levels that would not allow for unrestricted use of the Site. The 5-year Site reviews will ensure that the remedy continues to provide adequate protection to human health and the environment.

<IMG SRC 98013A>

RECORD OF DECISION

MW MANUFACTURING SITE, OU-5
VALLEY TOWNSHIP, MONTOUR COUNTY, PENNSYLVANIA

DECISION SUMMARY

I. SITE NAME, LOCATION, AND DESCRIPTION

The approximately 15-acre MW Manufacturing Superfund Site (the Site) is located in Valley Township, Montour County, Pennsylvania, 2 miles north of Danville, 700 feet west of State Route 54, and about E mile south of Interstate 80 (see Figure 1 for the Site location map). The Site is located on the Riverside USGS quadrangle map. The Pennsylvania Department of Transportation (PennDOT) maintains a storage area immediately north of the Site. Farmlands and wooded lots are adjacent to the Site to the west and south. Mauses Creek flows in a southerly direction past the Site on the west side of Route 54.

Mausdale, a residential area with approximately 24 homes, is located approximately 1/4 mile southeast of the Site, and Danville (estimated population 5,200) is located 2 miles south. At the intersection of Routes 54 and 1-80, there are a number of private residences, three motels, three gas stations, and several restaurants. These properties, as well as a Head Start school located just north of the PennDOT storage area, have been provided with a public water supply as their source of potable water. The public water supply was provided as part of the remedial action for OU-4 for the Site.

The Site is surrounded by a fence equipped with a locked gate. Facilities located on the Site consist of one large, inactive building which occupies approximately one acre of the property. In addition, there is a smaller building which occupies approximately 3,350 square feet to the south of the main building. The rear portion of the main building is partially collapsed. The remainder of the Site consists of open land, above ground storage tanks, underground storage tanks, miscellaneous drums, piles of Fluff, and a lagoon containing surface water.

II. SITE HISTORY AND ENFORCEMENT ACTIVITIES

The Site is inactive, in part due to legal actions by the Pennsylvania Department of Environmental Protection (PADEP). PADEP records indicate that Mr. Allan Levin of Doylestown, Pennsylvania, proprietor of MW Manufacturing Corporation, owned the property from about 1966 to 1972. MW Manufacturing engaged in secondary copper recovery from scrap wire, using both mechanical and chemical processes, until it ceased operations. In 1972, MW Manufacturing filed for protection under Chapter 11 of the United States Bankruptcy Code, and the Philadelphia National Bank acquired the property.

Warehouse 81 Inc. acquired the Site in 1976. Subsequently, Warehouse 81 Inc. and Domino Salvage, Inc. formed a limited partnership to recover wire at the Site. Records indicate that the only activities conducted by the Warehouse 81/Domino Salvage partnership were mechanical recovery operations. While the mechanical processes generated the largest waste piles of Fluff, the chemical process used by MW Manufacturing generated the largest environmental impact (the carbon waste material and the lagoons, see Figure 2).

The chemical process used a hot bath to melt the polyvinyl chloride (PVC) plastic insulation away from the the scrap copper wire. The high temperatures decomposed plastic insulation into carbon, which separated out as a granular black material, and also enhanced the dissolution of lead from the plastic insulation and copper from the metal wire. The chlorinated solvent tetrachloroethene (PCE) was then used to remove the residual oil from the separated copper. These inorganic and organic compounds have been identified throughout the Site.

The mechanical process generated the Fluff waste. The Fluff waste consists of fibrous insulation material mixed with bits of plastic and copper. Phthalate esters, copper, lead and chlorinated solvents are all present in this Fluff waste. The source of the low levels of chlorinated solvents in the Fluff is not clear as no solvents were used during the mechanical stripping operations.

A Potentially Responsible Party (PRP) search was conducted for the Site. As a result of this search, EPA determined that the previous owners and operators of the Site had gone out of business. EPA notified current owners of the Site, Michael G. Sabia and Michael G. Sabia, Jr., doing business as Warehouse 81 Limited Partnership, of their potential liability at the Site and offered them the opportunity to conduct the Remedial Investigation/Feasibility Study (RI/FS), but they elected not to participate. EPA conducted the RI/FS beginning in August 1988. Following the completion of the RI/FS, EPA divided response actions at the Site into 5 Operable Units. OU-1 addresses the carbon waste that has been left on-site from the copper recovery process. In March 1989, EPA issued a ROD which selected off site incineration for the carbon waste as the remedy for OU-1. A Special Notice Letter to conduct the Remedial Design and Remedial Action (RD/RA) for OU-1 was sent to Warehouse 81 on March 6, 1989. Again, Warehouse 81 declined to participate. The excavation and off-site incineration of the carbon waste were completed by EPA in March 1992.

Additional PRP investigations in 1992 discovered records that led to the identification of AT&T Nassau Metals (Nassau) and Pennsylvania Power and Light (PP&L) as additional PRPs. A general notice letter regarding their Potential liability for the Site was sent to Nassua and PP&L on May 19, 1992.

EPA issued the ROD for OU-2 in June 1990, this ROD addressed the Fluff, impacted soils and impacted lagoon water at the Site. In December 1992, Nassau petitioned EPA to reopen the OU-2 ROD. EPA reopened the public comment period and Nassau submitted commcnts to supplement their petition to reopen the ROD in October 1993. In March, 1994 EPA agreed to consider alternatives proposed by Nassua provided that Nassua conducted a treatability study and a Focus Feasibility Study (FFS) to reevaluate the remedial alternatives. Between 1993-1995, Nassau undertook a series of studies to evaluate an alternate remedy for the Site. These studies are summarized in Section IV.B of this ROD.

On June 30, 1992 EPA issued the ROD for OU-3 which addresses groundwater contamination. By letter dated September 30, 1992, EPA sent Special Notice to Nassau, PP&L and Warehouse 81 and its general partner, Michael G Sabia, Sr. which informed those PRPs that the EPA was willing to enter into a federal consent decree with them to conduct the Remedial Design/Remedial Action (RD/RA) contemplated by the OU-3 ROD. Nassua and PP&L responded, but failed to make an acceptable good faith offer to the Agency in regard to OU-3. Warehouse 81 and Michael G. Sabia, Sr. did not respond to the Special Notice letter. On March 31, 1993, a Unilateral Administrative Order was issued to the each PRP to conduct the RD/RA for OU-3. Nassua and PP&L agreed to conduct the RD/RA for OU-3. During the design phase, EPA decided to split OU-3 in to two operable units: OU-3 and OU4. OU-3 addresses the long-term groundwater cleanup, and OU-4 provides public water to affected residences. The construction of a public water supply was completed in August 1996.

III. HIGHLIGHTS OF COMMUNITY PARTICIPATION

Most of the residents who were interviewed in the Danville and Valley Township areas said that they first became aware of the problem at the MW Manufacturing Site in March 1986. At that time, EPA discovered lead contamination in a well near the Site. EPA noted that discovery in a news release which was carried in the local papers. EPA also hosted a public meeting on March 11, 1986, to discuss the water situation with residents and officials. Approximately 50 people attended the meeting. EPA supplied bottled water to the users of the well until later samples revealed safe levels of lead in the well water. The original levels of lead have not been observed since then and the EPA believes that any lead in the original sample may have been from lead solder in the plumbing. Lead above the action levels has not been detected in any of the later samples taken after the water had been run for a few minutes to flush the lines (see OU-3 ROD section III). A continuous "Plume" of lead could not be identified as emanating from the Site to the residential wells tested. Additionally, as part of the implementation of the OU-4 remedy, a public water supply has been provided to certain local residents and businesses. The existence of these safeguards contributes to reducing concern about the Site on the part of local hotel and restaurant owners and employees who comprise a large segment of the local business community. The provision of a public water supply has also mitigated the concern of local residents associated with utilizing potentially impacted private wells.

The Proposed Plan for the carbon pile remedial action (OU-1) was placed in the designated information repository on February 24, 1989. Concurrently, a public comment period, which ran until March 27, 1989, was announced in a newspaper advertisement. A public meeting was held on February 28, 1989, to present the Proposed Plan and preferred alternative for removing the carbon waste pile. Approximately twenty citizens attended as well as local township and county officials and the media. A ROD for the carbon waste pile was signed on March 30, 1989. EPA completed the excavation and off-site incineration of the carbon waste in March 1992.

On April 16, 1992, EPA released the Focused Feasibility Study and Proposed Plan for OU-3 for public comment. EPA placed the Administrative Record in the Docket Room in EPA Region III (Philadelphia) as well as the Thomas Beaver Library in Danville, PA. EPA placed an advertisement in three local newspapers announcing public comment period on the Proposed Plan that ran from April 16, 1992 to May 16, 1992. EPA subsequently extended the public comment period 30 days. A notice of the extension was advertised in two newspapers on May 29, 1992.

EPA held a public meeting on May 7, 1992 at the Montour County Court House to present the Proposed Plan for OU-3. Approximately 60 people attended the public meeting. Comments obtained throughout the public comment period, including the public meeting, were addressed in the Responsiveness Summary of the ROD for OU-3. This ROD was subsequently divided in to two operable units: OU-3 (addressing groundwater cleanup) and OU-4 (addressing provision for public water supply).

As part of the design and construction activities related to the implementation of OU-3 and OU-4, particularly the installation of a public water supply, local officials and interested members of the public were apprised of the status of OU-2 and OU-5. The installation of the waterline has facilitated the participation and cooper-ation of local officials, residents, Nassau, EPA and PADEP. A public ceremony was held to initiate waterline construction on October 31, 1995 and periodic Fact Sheets have been transmitted to local businesses and residents regarding the overall Site and particularly, the installation of the waterline.

The Remedial Investigation Report, Risk Assessment Report, Feasibility Study Report and Proposed Plan for OU-2 were placed in the information repository on February 19, 1990. A public comment period was announced in newspaper advertisements on February 24, and 25, 1990. A public meeting was held on February 27, 1990, to present the Proposed Plan and preferred alternative for remediating on-site wastes and soils. One private citizen attended, as well as local township and county officials and the media. In December 1992, AT&T Nassau Metals Corp. (Nassau) petitioned EPA to reopen the ROD for OU-2. EPA reopened the public comment period and Nassau submitted comments to supplement the petition to reopen the ROD in October 1993. Between 1993 and 1995, Nassau undertook a series of studies to evaluate an alternate remedy for the Site. These studies included a Reevaluation of the Risk Assessment and a Focused Feasibility Study which were performed and submitted to EPA on May 22, 1995. These documents supported an alternate remedy for the Site designated as OU-5.

The Focused Feasibility Study Report, Treatability Study Report, Reevaluation of the Risk Assessment Report, Proposed Plan and other documents prepared to support the remedial action for OU-5 were placed in the information repository on August 8, 1997. A public comment period was announced in a newspaper advertisement on August 11, 1997. A public meeting was held on August 20, 1997 to discuss the proposed remedial action. Approximately 20 people attended the public meeting. Response to public comment can be found in the Responsiveness Summary at the end of this document.

Based on the aforementioned community relations activities EPA has met the public participation requirements of Sections 113(k)(2)(b)(iv) and 117 of CERCLA.

IV. SUMMARY OF SITE CHARACTERISTICS

A. Site Geology and Hydrogeology

1. Site Geology

The Site lies within the Valley and Ridge physiographic province of the Appalachian region. The province is dominated by tightly folded mountains that create alternating valleys and ridges. While valley floors and ridge tops may be flat locally, bedrock generally consists of layered sequences of sedimentary rock dipping at angles up to 40 degrees. Late Pleistocene glacial events have covered the bedrock in some areas with till that ranges in thickness from zero to 40 feet.

At the Site, 8 to 26 feet of unconsolidated clay, silt, sand, gravel and boulders overlie a predominantly shale and limestone bedrock. Bedrock in the region of the Site consists of mainly silt, shale and limestone units of Upper Silurian/Lower Devonian age. In descending order (top to bottom) the bedrock units are the Tonoloway Formation, the Wills Creek Formation, and the Bloomsburg Formation. The contact between the Tonoloway Formation and the Wills Creek Formation is reported to occur in the northern portion of the Site over a transition interval greater than 200 feet. In the southern portion of the Site, bedrock comprises the Upper and Lower Wills Creek Formations. These units are dominated by alternating beds of limestone and clastic and calcareous shale.

Bedrock underlying the Site is moderately fractured, with prominent fractures present in the bedrock at depths less than 100 feet. Fractures occur less frequently with increasing depth, which is indicative of decreasing permeability with depth. Fractures are generally oriented parallel to bedding and dip to the northwest.

2. Site Hydrogeology

In the overburden deposits at the Site, groundwater is generally present at depths ranging from 10 to 20 feet below ground surface. Groundwater flow in the overburden is generally eastward, toward Mauses Creek.

In the bedrock aquifer, groundwater occurs primarily in secondary porosity structures such as fractures and bedding planes. Groundwater flow in the shallow, intermediate and deep bedrock is generally eastward, toward Mauses Creek. Data indicate that the different geologic formations that compose the bedrock behave as one hydrastratigraphic unit.

Groundwater flow at the Site is naturally constrained to a narrow flow path discharging into Mauses Creek rather than dispersing over a large area off-site. Along the southern boundary of the Site, groundwater flow has a northern component, and then flows northeast and east toward Mauses Creek. Groundwater across the north Site boundary flows to the east, toward the discharge point at Mauses Creek. Vertical gradients are generally downward in the overburden and upward in the deep bedrock, creating a natural hydraulic barrier at depth.

B. Summary of the Previous Investigations and Findings

A number of environmental activities have been performed at the Site by EPA and Nassua in connection with OU-2 and OU-5, including:

- OU-2 Remedial Investigation/Feasibility Study (EPA);
- OU-2 Pre-Design Investigations (performed by Weston for EPA under a contract with US Army Corps of Engineers (ACOE));
- OU-2 Remedial Design activities (EPA/ACOE);
- OU-5 Fluff Leachability testing (Nassau); and
- OU-5 Supplemental Site Characterization (Nassau);
- OU-5 Re-Evaluation of Risk Assessment (Nassau); and
- OU-5 Focused Feasibility Study including two supplements (Nassau); and
- OU-5 Treatability Study (Nassau).

1. Remedial Investigation

EBASCO (and its subcontractor NUS) conducted the RI for OU-2 at the Site on behalf of EPA. RI field sampling activities began in May 1988. In addition to the field sampling and analyses, a risk assessment was also conducted by NUS as part of the RI. The RI results were presented in the Final Remedial Investigation Report dated July 1989; this was subsequently amended as the Revised Final RI Report dated April 1990.

The results of the RI are summarized below:

- During the course of the RI, a number of areas were identified and sampled to determine whether they were sources of chemical constituents detected in the environment and/or presented a potential risk to human health. These areas included several piles of Fluff, eighteen (18) drums and barrels at various locations throughout the Site, three storage tanks, a lagoon, and a pile of carbon waste. These areas are shown in Figure 2.

- The primary chemicals of interest (COIs) detected in water at the Site were volatile organic compounds (VOCs) (primarily PCE), while bis(2-ethylhexyl) phthalate (BEHP), polychlorinated biphenyls (PCBs), copper, lead and di-n-octyl phthalate were the primary COIs in the Fluff.

- The Fluff contains high levels of BEHP, di-n-octyl phthalate, copper, antimony and lead; moderate levels of PCBs; and low levels of VOCs. The carbon waste contained numerous VOCs at high levels. In light of these findings, the Fluff was determined to be a source of the BEHP, di-n-octyl phthalate, copper, antimony and lead detected in soils, and the carbon waste was interpreted to be a source of the VOCs in groundwater at the Site.

  Materials in drums present at the Site were similar in composition to the carbon waste, but the volume of drummed material was small in comparison to the total volume of carbon waste. Carbon waste was addressed as a separate operable unit (OU-1) and was been removed from the Site in a remedial action performed by EPA.

- The surface soil samples collected near the Fluff and carbon waste piles generally contained higher concentrations of contaminants than soil samples collected elsewhere at the Site. Surface soils throughout the Site contained BEHP, PCE, lead, antimony and copper. The presence of these constituents is considered to be indicative of on-site erosion of the Fluff/carbon waste, or of prior bulk movement of the wastes. Soils beneath the Fluff/carbon waste piles were not sampled.

- Subsurface soil samples collected in the northern portion of the Site (in the Fluff/carbon waste/lagoon area) contained the same COIs. In some borings, Fluff was reported to constitute the upper few feet of the sampled column. In general, evidence of Fluff presence in the samples collected below two feet decreased significantly. One boring, located near the northwestern comer of the building, apparently penetrated a former lagoon. Elevated concentrations of PCE were reported throughout the soil column in that area.

- Soil contamination from VOCs and inorganic constituents is randomly scattered throughout the southern portion of the Site. In some areas of the Site, soils containing elevated concentrations of VOCs were observed only in the lower intervals of the soil borings, at the water table. In these cases, the presence of VOCs was attributed to groundwater transport from a source area, rather than indicating downward migration of VOCs from the ground surface in the immediate vicinity of the sampling location.

- The on-site monitoring wells downgradient of the identified source areas contained elevated concentrations of VOCs. The well cluster closest to the carbon waste pile displayed the highest VOC concentrations. Well monitoring of both the overburden and the bedrock units displayed VOC concentrations in this area.

2. OU-2 Feasibility Study

The Feasibility Study for OU-2 was completed by NUS on behalf of EPA in November, 1989.

The alternatives evaluated by the EPA, as presented in the Feasibility Study, include:

- No action;

- On-site disposal of Fluff waste in a RCRA hazardous waste landfill, on-site physical/chemical treatment of soils with on-site landfill disposal, cap closure over RCRA units;

- Off-site disposal of Fluff waste in a RCRA hazardous waste landfill, on-site physical/chemical treatment of soils with off-site landfill disposal, cap closure over RCRA units;

- On-site incineration, cap closure over RCRA units;

- Off-site incineration, cap closure over RCRA units; and,

- Off-site incineration of Fluff waste, on-site physical/chemical treatment of soils with off-site landfill disposal, cap closure over RCRA units.

Based on the results of the RI/FS, EPA selected the following remedy for the Site as documented in the ROD issued June 29, 1990:

- on-site incineration of Fluff and stabilization of ash and disposal in an off-site RCRA landfill;

- on-site incineration of impacted soils for organics removal, stabilization of metals where necessary and, disposal in an off-site RCRA landfill;

- on-site treatment of lagoon water for organics and metals and discharge in accordance with Federal NPDES and the Commonwealth of Pennsylvania requirements;

- on-site incineration of the contents of tanks and drums and, stabilization of the ash and disposal in an off-site RCRA landfill and/

- covering of the soils under the Fluff once the Fluff has been removed in accordance with RCRA Subtitle C requirements.

3. OU-2 Pre-Design Investigations

Several predesign investigation efforts have been conducted for OU-2 at the Site. These activities and the results are summarized in the following sections.

a. Weston Pre-Design Investigation

Weston was contracted by ACOE to conduct predesign activities on behalf of EPA. Predesign activities included field investigations such as treatability study sampling, surveying, and geochemical and geotechnical subsurface soil sampling. In addition, two treatability tests were completed, including a muffle furnace test and a rotary kiln simulator pilot-scale test. Weston completed the following field activities in October, 1991: installation of 19 geochemical soil borings and the collection of 50 soil samples; installation of 13 geotechnical soil borings and the collection of 14 treatability study samples; and surveying of surface and subsurface features.

The Weston predesign field investigation was used to provide data on the characteristics of Fluff and Site soils for muffle furnace and pilot-scale rotary kiln studies. Through the predesign investigations, Weston identified similar constituents in the Fluff, and surface and subsurface soils at the Site. However, the Fluff contained PCE and BEHP concentrations which were an order of magnitude less than the respective average concentrations of these constituents identified in the Fluff during the RI. In addition, concentrations of di-n-octyl phthalate and copper were approximately three times less than the average concentrations of these constituents identified during the RI.

The results of the pilot-scale rotary kiln treatability study detected dioxins and furans in bottom ash, flue ash, and flue gas samples. Weston indicated that increased operating temperatures in the kiln and secondary combustion chamber might be necessary to prevent the formulation of dioxins/furans in the bottom and flue ash. In addition, the rotary kiln simulator testing indicated that the baghouse filter capture efficiencies for particulates and inorganic constituents were lower than expected due to the high fraction of small particles in the waste streams.

b. EPA Pilot-Scale Incineration Testing

EPA and ACOE requested that a pilot-scale test program be conducted at the EPA's Incineration Research Facility in Jefferson, Arkansas to support evaluation to the suitability of incineration at the Site. The objective of the additional pilot-scale testing was to conduct testing on a larger scale, which would be more representative of the size of incinerator proposed to be used at the Site, in order to provide flue gas emission and ash residue characteristic data. The data from this study confirmed the formation of dioxin.

The major conclusions of the pilot-scale incineration testing include the following:

- kiln-ash discharge from the incineration of both Fluff and soils is dioxin-contaminated and requires management as a dioxin-contaminated material;

- flue gas particulate collected as baghouse ash is a cadmium and lead-contaminated toxicity characteristic hazardous waste and requires management as a hazardous waste; and

- Dioxins were generated during the incineration of Fluff and may pose a human health risk.

C. Synthetic Precipitation Leaching Procedure (SPLP) Testing for Fluff

McLaren/Hart on behalf of Nassau conducted SPLP testing on the Fluff for Semi-VOCs (SVOCs), (particularly BEHP). This was done because during the RI concentrations of BEHP in the Fluff were measured in the percent range. Given the extremely high concentrations of BEHP measured in the Fluff and the relatively high levels of BEHP in plastic when used as plasticizers, it was hypothesized that BEHP detected in the Site soil is simply a constituent of the original plastic portion of the cable product contained in the Fluff rather than leaching of BEHP. The leaching test data are presented in the Fluff Leachability Testing Summary Report dated August 1994 submitted to EPA and PADEP.

The findings of the leaching test indicate that the amount of phthalate compounds released to the environment from the plastic portion of the Fluff under Site conditions is likely to be extremely low. The Fluff primarily consists of plastic, and the plastic contains high concentrations of BEHP, and other phthalates. However, under normal site degradation and weathering conditions, as simulated in the leaching test, the phthalate compounds do not readily leach from the Fluff. This testing indicated that the leaching of SVOCs from the Fluff is apparently not occurring under normal Site weathering conditions. The groundwater monitoring results confirmed this hypothesis. The phthalate were not found in appreciable amount in the groundwater samples (see table 2 of OU-3 ROD). In conclusion although the phthalates are present in percentage range in the Fluff, they do not leach to the groundwater from the Fluff.

4. OU-5 Supplemental Site Characterization

McLaren/Hart conducted a field investigation of the Site on behalf of Nassau to obtain additional data for the re-evaluation of the remedial alternatives considered in OU-2. The field work was completed in July 1994. The purpose of the supplemental sampling and characterization was to obtain additional data to design treatability studies and reevaluate alternatives. The supplemental characterization also provided more recent data on COI and an updated estimate of the Fluff volume. Details regarding the Supplemental Site Characterization work are provided in the Supplemental Site Characterization Report dated October 1994 submitted to EPA and PADEP.

The configuration of one of the Fluff piles had changed between topographic surveys conducted in 1986 and 1992. This Fluff pile appeared to have been reworked into two mounds, with some material located between the mounds in a relatively level area. However, it did not appear that there was any mixing of Fluff and the underlying soils prior to the reworking of the pile. McLaren/Hart estimated the Fluff volume on-site to be approximately 30,000 cubic yards, which was comparable with the 32,000 cubic yard estimate presented in the OU-2 RI report.

The Fluff contained similar VOCs to those identified during the OU-2 RI. The maximum PCE concentration detected during the Supplemental Site Characterization investigation (146.5 mg/kg) was almost an order of magnitude higher than the maximum PCE concentration detected in the Fluff during the RI (18 mg/kg). The average PCE concentration detected was 17.2 mg/kg. The concentrations of VOCs in the Fluff varied a great deal both vertically and laterally in each of the Fluff piles. There was no obvious pattern to the distribution of VOCs; either by depth or location. The source of VOCs in Fluff is unknown.

The Fluff was also analyzed for PCBs. Four PCB Aroclors were identified in the Fluff samples: Aroclors 1242,1254,1260, and 1268. The concentration of total PCBs in the Fluff samples ranged from 1.2 to 162 mg/kg, with an average of approximately 49 mg/kg. The maximum PCB (total) concentration detected during the Supplemental Site Characterization exceeded the maximum concentration detected in the Fluff during the RI.

The soils beneath and adjacent to the Fluff piles were sampled and were found to contain primarily PCE and TCE. The presence of these VOCs was not laterally continuous across the

Fluff pile area.

Subsurface soils in areas of the Site with no visible Fluff were also sampled and analyzed for VOCs. The most frequently detected VOC in these locations was PCE, at concentrations ranging from 4 to 180,000 ug/kg, with an average of approximately 11,000 ug/kg.

5. OU-5 Focused Feasibility Study (FFS) and FFS Supplement

A Focused Feasibility Study was completed by McLaren/Hart on behalf of Nassau in May, 1995.

The alternatives evaluated, as presented in the Focused Feasibility Study, include:

1. No Action;
2. Surface Capping;
3. Ex-Situ Stabilization/Vapor Phase Carbon Treatment, Low Temperature Thermal Desorption (LTTD) of NAPLs and a Soil cover;
4. Soil Vapor Extraction/Bioventing, Surface Capping;
5. Soil Vapor Extraction/Bioventing, Ex-Situ Stabilization, Surface Capping;
6. LTTD, Surface Capping;
7. On-Site Incineration, Stabilization and Off-Site Disposal of Ash, Surface Capping;
8. Off-Site Incineration, Surface Capping.

Alternatives given in bullets 2 to 8 above have common elements as follows:

- Site preparation which includes temporary sedimentation and erosion control and the clearing of vegetation around the Fluff and lagoon;
- Off-site transport of materials in tanks and drums at the Site to an appropriate facility;
- Draining of lagoon water, treatment of the water in a physical/chemical treatment process (if needed), and discharge of the treated water to an unnamed tributary of Mauses Creek, adjacent to the Site and/or to an industrial process;
- Long-term operation and maintenance (O&M) activities, including Site security through the maintenance of existing Site fence; and
- Implementation/enforcement of institutional controls at the Site (such as deed restrictions).

The results of the FFS evaluation are summarized in Section VII of the ROD.

In June 1996, as part of the Pre-Design Investigation for OU-3, a GeoProbe Investigation was conducted at the Site. The objective of the GeoProbe Investigation was to collect groundwater quality data in the overburden to evaluate the nature and extent of impacts from potential source areas.

Field observations for soil indicated the presence of residual and pooled non-aqueous phase liquid (NAPL). Although these areas of pooled NAPL were primarily identified below the water table (and therefore, are subject to OU-3), one area immediately south of the main building NAPL in overburden soils. This area (approximately 225 cubic yards (CY)) was identified as appropriate for inclusion in the OU-5 remedial action due to finding of NAPL. The presence of NAPLs in soil poses a principle threat to the groundwater.

The results of the FFS Supplement evaluation are summarized in Section VII of the ROD.

6. OU-5 Treatability Study Report

A Treatability Study was conducted to evaluate the potential feasibility of ex-situ stabilization of Fluff and impacted soils.

The primary objectives of the Treatability Study were as follows:

- Identify the appropriate ratio of solidification/stabilization mixing reagents that meet the analytical and physical treatability test objectives;

- Identify key process parameters such as mix/cure time, critical analytes that may exhibit limitations during solidification/stabilization handling and procedures;

- Provide data necessary to scope, cost and implement full-scale treatment using the solidification/stabilization technology; and,

- Provide additional leaching data on untreated and treated Site materials using the Synthetic Precipitation Leaching Procedure (SPLP) and using Toxic Chemical Leaching Procedure (TCLP).

The results of the treatability study are reported in the Treatability Study Report submitted to the EPA in May 1996. The results of this Treatability Study indicate that the use of a 10% Type I Portland Cement mix design on a combined soil and Fluff matrix will provide a physically strong and relatively impermeable matrix which would be a viable remedial action for the Site.

V. SCOPE AND ROLE OF RESPONSE ACTIONS

The remedial action at this Site has been divided into five operable units; OU-1 (carbon waste pile remediation), OU-2 (on-site incineration of wastes and impacted soils), OU-3 (groundwater remediation) OU-4 (installation of a public water supply) and OU-5 (re-evaluation of OU-2 remedy). The principal threat to human health and the environment at the Site addressed in OU-5 is from the direct contact with PCE, BEHP, PCBs, and metals including lead, antimony and copper. The principle threat to groundwater is from presence of NAPLs in soils. The remedy which is the subject of this ROD is being implemented to protect human health and the environment by preventing direct contact with Fluff and impacted soils and reducing further migration of contaminants into the groundwater. In addition the remedy will address the principle threat to the groundwater. This remedy addresses the following areas: four wire-Fluff waste piles, impacted soils, lagoon water and sediments, soils with NAPLs, drums and storage tanks. The remedy is consistent with Section 300.430(a)(1) of the National Contingency Plan (NCP).

VI. SUMMARY OF SITE RISKS

This section of the ROD summarizes the results of the human health risk assessment which was performed during the RI/FS. The baseline risk assessment provides the basis for taking a response action and indicates the exposure pathway(s) that need to be addressed by the remedial action. It also details the potential risks related to the no-action scenario.

A. Baseline Risk Assessment

As part of the comprehensive assessment of the remedy for OU-2, a human health risk assessment was performed during the RI/FS. MacLaren and Hart on behalf of Nassau performed a re-evaluation of the risk assessment. The re-evaluation of the risk assessment incorporated certain site-specific exposure and environmental quality data, as well as current chemical-specific toxicity information, scientific approaches, and EPA guidance. The risk assessment included several tasks for the media of interest at the Site including: 1) identification and quantification of chemicals which could potentially impact human health; 2) comparison of these chemical concentrations to background levels and to risk-based screening concentrations to determine the COIs on-site, 3) identification and quantification of the potentially exposed populations; 4) identification of complete exposure pathways; 5) derivation of potential contaminant intakes for each exposure pathway; and 6) comparison of predicted chemical exposures to available toxicological information, in order to derive estimates of noncarcinogenic hazards and carcinogenic risks potentially posed to each population group.

EPA requires a remedial action at a site when the carcinogenic risk level exceeds 1 x 10 -4, or in other words, when there is a probability of one additional case of cancer in a population of 10,000 exposed to Site contaminations. The potential for health effects resulting from exposure to noncarcinogenic compounds is evaluated by comparing an estimated daily dose presented by Site conditions to an acceptable level. If this ratio exceeds 1.0, there is a potential for impact based on hazards from that particular compound. These ratios can be added for exposure to multiple contaminants. The sum, known as the Hazard Index (HI), is not a mathematical prediction for the severity of toxic effects, but rather a numerical indicator of the transition from acceptable to unacceptable levels. Higher HI generally indicates greater adverse health effect.

The conclusions of the Risk Assessment related to human health and the environment are presented below.

Current Land Use - Currently the Site is vacant. Individuals who could currently be exposed to contaminants at the Site include: trespassers and residential communities downwind of the Site. The baseline risk assessment found that Site contaminants currently do not pose an unacceptable health risk to any of these individuals.

Future Land Use - A Re-Evaluation of Risk (April 1996) was performed for this Site. In this re-evaluation new toxicity information was incorporated into the risk analysis. However, the Site risk was determined for a potential resident, while in fact, the Site has been classified and zoned for industrial use only. Therefore, Site risks and cleanup levels were recalculated by EPA using an industrial worker scenario. The contaminant concentration data used in these analyses can be found in the RI (July 1989). The analytical data found in the Revised Final Remedial Investigation Report (1990) may differ from that found in the Supplemental Site Characterization report. Generally, the contaminants levels found during the Supplemental Site Characterization activities are higher than the levels found during the RI. Table 1 summarizes the potential carcinogenic and noncarcinogenic risk to future industrial use of the Site and exposed to the Fluff pile and soil.

Table 1
Summary of Site Risks to Future Industrial Workers

Media	Carcinogenic Risk	Noncarcinogenic Risk (HI)
Fluff Waste	7.8×10^{-3}	87.0
Soil	6.3×10^{-5}	1.2
Total Risk	7.8×10^{-3}	88.2

B. Remedial Cleanup Action Levels

It should be noted that seventeen PCBs samples of Fluff collected during the RI yielded a PCB concentration range of 1 to 18 mg/kg with an average of 9 mg/kg. Six PCBs samples of Fluff collected during the Supplemental Site Characterization revealed a PCB concentration range of 1.2 to 162 mg/kg with an average of 49 mg/kg. The combined weighted average based on the number of samples collected during the RI and Supplemental Site Characterization is 19 mg/kg which is less than Toxic Substance Control Act (TSCA) regulated level of 50 mg/kg and, therefore, TSCA requirements do not apply. Also, the EPA Office of Solid Waste and Emergency Response (OSWER) directive 9355.4-01 states that, for an industrial setting, material containing PCBs two to three order of magnitude above site specific action levels constitutes a "principle threats" and must be addressed as such. For this Site, this translates into PCBs levels above 1000 mg/kg. The concentration of PCBs found at this Site are an order of magnitude less than 1000 mg/kg, and, therefore, there is no "principle threat" at the Site due to PCBs. PCBs were used as plasticizer in the wire insulation material and they are imbedded in the plastic matrix of the Fluff. The groundwater does not have detectable levels of PCBs indicating that PCBs in the Fluff are not leaching to the groundwater. Also, the leachability test on Fluff did not show any leachable PCBs. The following table gives remedial action levels based on the future industrial land use scenario considering three pathways i.e., dermal, inhalation and ingestion.

Table 2
Remedial Actions Levels (RALs)

Contaminants	Soil, Fluff and Lagoon Sediments			
	RALs based on Carcinogenic Risk		RALs based on Noncarcinogenic	RALs based on EPA Directives
	10 -4	10 -6	(HI)	
BEHP	34,800 mg/kg	348 mg/kg	-	-
PCBs 1	-	-	-	10 mg/kg
Lead 2	-	-	-	1000 mg/kg
Antimony	-	-	65 mg/kg	-
Copper	-	-	27,684 mg/kg	-
di-n-octyl phthalate	-	-	1828 mg/kg	-
PCE	375 mg/kg	3.75 mg/kg	-	-

1 Recommended cleanup levels for PCBs are 10 mg/kg for an industrial use (OSWER Directive 83554-01).
2 Recommended screening levels is level of 1000 mg/kg for an industrial use (OSWER Directive # 9355.4-12)

Based on information collected at the Site and the recommended cleanup levels, estimates of the volume of materials which need to be addressed under OU-5 are as follows:

- Lagoon water - 301,000 gallons
- Tanks and drums - 40 cubic yards
- Fluff waste - 32,000 cubic yards
- Soils and sediments - 6,895 cubic yards
- Soils containing NAPL - 225 cubic yards.

VII. DESCRIPTION OF ALTERNATIVES

The Superfund process requires that the alternatives selected to address a site meet several criteria. The alternative must be protective of human health and the environment and comply with ARARs. Permanent solutions to environmental problems should be developed whenever possible. The solutions should also reduce the volume, toxicity and mobility of the contaminants.

The FFS identified and evaluated a variety of technologies and alternatives to determine if they were capable of being protective of human health and the environment and complying with ARARs.

All costs and other considerations specified below are scoping estimates based on best available information. Present-worth is defined as the total cost of implementing the remedy including capital costs, and operation and maintenance costs of the remedial action for a period of 30 years.

Subsection A, below, discusses a Baseline No Action Alternative. Then, seven other alternatives are discussed (Subsection B). As certain elements are common to all seven alternatives, these common alternatives are discussed first. The alternative originally contemplated in the June 29, 1990 ROD for OU-2 is also evaluated.

A. Baseline Alternative No Action

Estimated Capital Cost: $0
Estimated Annual 0&M Cost: $55,000
Estimated Present-Worth Cost: $845,460

The No Action alternative is considered in the detailed analysis to provide a baseline against which the other remedial alternatives can be compared. This alternative involves taking no further action at the Site to remove, remediate, or contain the Fluff, impacted soils or lagoon water associated with OU-5.

Implementation of this alternative would not achieve remedial action objectives and would not reduce the migration of COIs into the groundwater. There are no major implementability considerations associated with this alternative. Since this alternative would result in wastes remaining on-site, five year site reviews would be required to monitor the effectiveness of this alternative.

The costs associated with this alternative are Site maintenance and repair costs.

B. Elements Common to the Remaining Alternatives

Estimated Capital Cost:	$166,802
Estimated Annual O&M Cost:	$55,000
Estimated Present-Worth Cost:	$1,012,262

The following common elements are included in each of the subsequent remedial alternatives that were evaluated:

- Site preparation which includes temporary sedimentation and erosion control and the clearing of vegetation around the Fluff and lagoon;
- Off-site transport of materials in tanks and drums at the Site to an appropriate facility;
- Draining of lagoon water, treatment of the water in a physical/chemical treatment process (if needed), and discharge of the treated water to an unnamed tributary of Mauses Creek, adjacent to the Site and/or to an industrial process;
- Long-term operation and maintenance (O&M) activities, including Site security through the maintenance of existing Site fence; and
- Implementation/enforcement of institutional controls at the Site (such as deed restrictions).

B.1 Alternative 1 - Surface Capping

Estimated Capital Cost:	$1,596,354
Estimated Annual O&M Cost:	$12,000
Estimated Present-Worth Cost*	$2,793,080

* Cost includes common elements

This alternative consists of the consolidation and regrading of lagoon sediment, Fluff and surface soil, and the installation of a surface cap meeting RCRA Subtitle C requirements over the regraded material. The common elements previously described would also be implemented.

For this alternative, the lagoon sediment would be excavated and consolidated with the Fluff piles. The Fluff piles would be regraded and compacted to form a stable surface with suitable slopes, and a RCRA Subtitle C cap would be installed over the Fluff/sediment/soils. The cap would cover an area of approximately 8 acres.

The deed restrictions included in the common elements would serve to prohibit future use of the property which might compromise the integrity of the cap. Site security measures (also a common element) would be maintained to prevent inadvertent damage to the cap by trespassers.

Implementation of this alternative would result in effectively reducing the infiltration of precipitation, thus mitigating the potential for the migration of COIs to the groundwater. In addition, placement of the cap would eliminate potential exposure pathways including dermal contact, runoff, and wind dispersion.

B.2 Alternative 2 - Ex-Situ Stabilization/Vapor Phase Carbon Treatment/Low Temperature Thermal Desorption

Estimated Capital Cost:	$6,924,062
Estimated Annual O&M Cost (Years 1-2):	$346,203
Estimated O&M Cost (Years 3-30):	$ 12,000
Estimated Present-Worth Cost*:	$8,752,530

* Cost includes common elements

This alternative involves the treatment/containment of COIs in Fluff, lagoon sediment, and surface soils through ex-situ stabilization, followed by Site restoration and placement of a two-foot soil cover. The RCRA Subtitle C cap need not to be placed over the backfilled area as the stabilized waste will provide equivalent performance. Fluff was reported to constitute the upper few feet of the soil column underneath the Fluff, this remedy calls for excavating down to two feet of the soil underneath the Fluff. The common elements would also be implemented

Site preparation would involve the leveling of the Fluff area and spreading the Fluff to a uniform depth. Fluff, lagoon sediments, and two feet of soils underneath the Fluff would be excavated and stockpiled for subsequent stabilization.

The excavation activities would occur inside a temporary, moveable structure intended to prevent the introduction of precipitation into the excavation and to control dust and VOC emissions. All material would be stockpiled and treated in a staged treatment area. The structures would be operated under slight negative pressure, and the exhaust air flow would be routed through a vapor-phase carbon adsorption unit.

Excavation would be performed at a rate necessary to provide a stockpile of materials sufficient to support three to five days of treatment (approximately 750 to 1,250 cubic yards). Based on the treatability study results, stabilization would be performed by mixing the materials with 10% Type I Portland Cement. Following mixing, the resulting slurry would be placed into the excavation and allowed to cure. Excavation activities would continue on the remaining trenches within the excavation structure. Once all materials are treated within the excavation structure, the structure would be moved to the next excavation area.

The excavated areas would be backfilled with the stabilized material in a manner intended to promote drainage following curing of the stabilized materials. ITic surface soil inside the current fenced area will be covered, with a two foot layer of soil and vegetated to prevent ponding of liquids and to minimize erosion. All the surface soils having contaminants levels above the RALs in the excavated area will be covered to eliminate the direct contact threat.

The resulting fixed/stabilized solid matrix will minimize the potential migration of COIs to groundwater; the stabilization process and subsequent soil cover also would prevent direct contact. The potential for uncontrolled volatile and dust emissions would be mitigated through the use of the temporary structures covering the excavation and stockpile/process areas.

The presence of NAPLs in overburden soils would be treated through the use of low temperature thermal desorption (LTTD). The area identified contains approximately 225CY of soil containing NAPL. The extent of this area and the total volume of soil treated with LTTD would be subject to change if new discoveries of NAPLs in soil are made during the implementation of the remedial action.

LTTD can effectively remove NAPL from the soil by heating the soil under vacuum conditions to induce volatization. The optimal temperature and pressure will be determined during a pre-design treatability study. The soils treated by LTTD will be backfilled into the excavations (with prior stabilization, if necessary).

B.3 Alternative 3 - Soil Vapor Extraction/Bioventing, Surface Capping

Estimated Capital Cost:	$8,697,147
Estimated Annual O&M Cost (Years 1-2):	$ 175,000
Estimated O&M Cost (Years 3-30):	$ 12,000
Estimated Present-Worth Cost*	$10,210,034

*Cost includes common elements

This alternative consists of the installation of an SVE/bioventing system in the targeted soil and Fluff areas for remediation of volatile and some semi-volatile COIs through vapor extraction and biological treatment. Lagoon sediments would be excavated and consolidated with soils and Fluff in the area of the SVE/bioventing system. The common elements would also be implemented.

Soil and Fluff would be graded to a level surface. Extraction/injection wells and the associated piping for the vapor extraction and air/nutrient addition systems would be installed following grading activities. The area to be addressed by the SVE/bioventing system would be approximately 4.5 acres. Assuming a 10 foot radius of influence for soils, the number of extraction wells is estimated to be 90. Therefore, a total of 90 extraction wells are assumed for this remedial alternative. The final configuration of the SVE/bioventing system would be determined during the remedial design phase. Injection of oxygen into the soils would be accomplished by closing specific extraction wells to allow for a passive injection system. A 10-mil High Density Polyethylene (HDPE) cover would be installed and secured over the area to be treated to prevent "short-circuiting" of the air flow. Portable blowers would be installed, and off-gas would be passed through vapor-phase activated carbon canisters.

Following completion of the SVE/bioventing organic constituent treatment cycle (assumed to be two years), the synthetic cover and process unit components (e.g., wells, piping, etc.) would be removed, and the treated materials would be regraded and compacted to form a stable surface with suitable slopes. A RCRA Subtitle C cap would then be installed over the area to prevent surface water infiltration. The cap would cover approximately 8 acres.

Through the combination of the treatment of organic constituents and the use of surface capping to address residual COIs not treated through the SVE/bioventing process (i.e. metals), this alternative would be effective by eliminating the direct contact pathway, as well as mitigating the potential for migration of COIs from soils to groundwater. With proper routine maintenance, the cap would remain reliable and effective in the long-term. Excavation/grading activities would increase the short-term potential for exposure, as well as the potential for exposure, as well as the potential for migration of COIs from these areas. These short-term exposures from COIs could be mitigated during excavation/grading activities through the implementation of conventional health and safety techniques, as well as dust and erosion/runoff controls.

B.4 Alternative 4 - Soil Vapor Extraction/Bioventing, Ex-Situ Stabilization, Surface Capping

Estimated Capital Cost:	$12,030,443
Estimated Annual O&M Cost (Years 1-2):	$ 175,000
Estimated O&M Cost (Years 3-30):	$ 12,000
Estimated Present-Worth Cost*:	$13,543,330

*Cost includes common elements

This alternative represents a combination of Alternatives 2 and 3. The ex-situ stabilization technology of Alternative 2 would be employed following the completion of the SVE/bioventing organic constituent treatment cycle of Alternative 3, in order to address any residual COIs. The RCRA Subtitle C cap need not to be placed over the backfilled area as the stabilized waste will provide equivalent performance. Fluff was reported to constitute the upper few feet of soil column underneath the Fluff. This remedy calls for excavating two feet of soil underneath the Fluff. The common elements would also be implemented.

The deed restrictions included in the common elements would serve to prohibit future use of the property which might compromise the integrity of the cap. Site security measures (also a common element) would be maintained to prevent inadvertent damage to the cap by trespassers.

Through the combination of the treatment of organic constituents and the use of stabilization and surface capping to address residual constituents not treated through the SVE/bioventing process (i.e., metals) this alternative would be effective by eliminating the direct contact pathway, as well as reducing the potential for migration of COIs from soils to groundwater. With proper routine maintenance, the cap would remain reliable and effective in the long-term.

Excavation/grading activities for both the SVE/bioventing and the ex-situ stabilization element of the alternative would increase the short-term potential for exposure, as well as the potential for migration of COIs from these areas. The potential short-term exposure of COIs can be mitigated during excavation/grading activities through the implementation of conventional health and safety techniques, as well as dust and erosion/runoff controls. The temporary structures employed during the stabilization process would also serve to reduce the short-term potential for exposure to dust and VOCs.

B.5 Alternative 5 - Low Temperature Thermal Desorption, Surface Capping

Estimated Capital Cost:	$10,499,000
Estimated Annual O&M Cost:	$ 12,000
Estimated Present-Worth Cost*:	$11,712,262

*Cost includes common elements

The LTTD alternative consists of the excavation of Fluff, lagoon sediment, and surface soil treatment of these materials using LTTD, backfilling of the treated materials into the excavated area, regrading and compacting the backfilled area, and constructing a RCRA Subtitle C cap over the backfilled area to prevent surface water infiltration. The common elements would also be implemented.

Targeted materials would be excavated and stockpiled in a temporary structure that would prevent precipitation or inclement weather conditions from increasing the material moisture content or otherwise affecting remedial activities. Excavation of targeted material would be performed at a rate necessary to provide a stockpile of materials sufficient to support tree to five days of treatment (approximately 750 to 1250 cubic yards). Any precipitation collected in the excavation treatment would be routed to the lagoon water treatment system and ultimately discharged to surface water (discussed as a common element).

Materials to be treated would be moved from the temporary structure and loaded into the LTTD treatment unit. The unit would be a continuous system in which contaminants would be removed from the soil through volatilization. Volatilization would be accomplished through agitation of the soil in the presence of heat and vacuum pressure.

Following the LTTD treatment cycle, the materials would be removed from the treatment unit via a conveyor belt system and placed in a temporary stockpile for cooling and confirmatory sampling.

Upon verification that treatment objectives have been achieved, the treated materials would be used as backfill for the excavations. Following the completion of the treatment activities, the excavated/backfilled area would be graded and compacted to form a stable surface with suitable slopes, and a RCRA Subtitle C cap would be installed over the backfilled area to prevent infiltration of surface water and to prevent subsequent leaching of metal and non volatile organic contamination . The cap would cover an area of approximately 8 acres. The surface of the cap would be vegetated and maintained for a period of 30 years.

The deed restrictions included in the common elements would serve to prohibit future use of the property which might compromise the integrity of the cap. Site security measures (also a common element) would be maintained to prevent inadvertent damage to the cap by trespassers.

Through the combination of the treatment of organic constituents and the use of surface capping to address residual constituents not treated through the LTTD process (i.e., metals), this alternative would be effective by eliminating the direct contact pathway, as well as mitigating the potential for migration of COIs from soils to groundwater. With proper routine maintenance, the cap would remain reliable and effective in the long-term.

Excavation/grading activities for both the LTTD element of the alternative as well as the surface capping element of the alternative would increase the short-term potential for exposure, as well as the potential for migration of COIs from these areas. These potential short-term exposures can be mitigated during excavation/grading activities through the implementation of conventional health and safety techniques, as well as dust and erosion/runoff controls. The temporary structures employed during the LTTD stockpiling activities would also serve to reduce the short-term potential for exposure from dust and VOCs.

B.6. Alternative 6 - On-site Incineration, Stabilization and Off-site Disposal of Ash, Surface Capping

This alternative is the remedy selected in the June 29, 1990 Record of Decision (ROD) for OU-2.

Estimated Capital Cost:	$35,556,000
Estimated Annual O&M Cost (Years 1-2):	$175,000
Estimated Present-Worth Cost*:	$36,889,405

*Cost includes common elements

Based on the Final Feasibility Study (November, 1989), capital costs for on-site incineration is $34,329,000. However, based on the new volume calculation, the estimated capital cost of Alternative 6 is $35,556,000.

This remedy which is defined in the June 29, 1990 ROD for OU-2, consists of the following elements:

- On-site incineration of the Fluff, stabilization of ash and disposal of stabilized ash in an off-site RCRA landfill;

- On-site incineration of the contaminated soils for organics removal, stabilization of the metals where necessary, and disposal in an off-site RCRA landfill;

- On-site treatment of the lagoon water for organics treatment and metals removal and discharge in accordance with Federal NPDES and Pennsylvania requirements (discussed as a common element);

- Covering of the soils under the Fluff piles, after the Fluff has been removed, in accordance with RCRA Subtitle C closure requirements.

The common elements would also be implemented.

A transportable rotary kiln incineration system would be used to implement this alternative. Fluff would be graded to form a level surface, excavated, and stockpiled in a temporary structure. Excavation would be performed at a rate necessary to provide a stockpile of materials sufficient to support three to five days of treatment. Stormwater collected in the excavation would be routed to the lagoon water treatment system and discharged to Mauses Creek (common element).

Following incineration, combined bottom and fly ash would be stabilized on-site as needed using a cement-based or other suitable stabilizing agent and placed in a temporary stockpile for hardening and confirmatory sampling. Upon verification that the treatment goals/disposal requirements have been achieved, the stabilized ash would be loaded onto trucks for transport to a permitted off-site hazardous waste disposal facility.

Quench water and other fluids generated during the incineration/stabilization processes would be collected and treated on-site using a physical/chemical process, and discharges to Mauses Creek.

The excavated area would be backfilled and graded to promoted drainage, and covered with a RCRA Subtitle C cap to prevent infiltration of surface water.

The deed restrictions included in the common elements would serve to prohibit future use of the property which might compromise the integrity of the cap. Site security measures (also a common element) would be maintained to prevent inadvertent damage to the cap by trespassers.

Through the combination of the treatment of organic constituents, the use of stabilization and off-site disposal to address residual constituents not treated through the incineration process, and the use of surface capping to address any residual constituent concentrations remaining in the excavated area followed by backfilling, this alternative would be effective in meeting the remedial action objectives by eliminating the direct contact pathway, as well as reducing the potential for migration of COIs from soils to groundwater. With proper routine maintenance, the cap would remain reliable and effective in the long-term.

Excavation, material handling, and off-site transportation activities would increase the short-term potential for exposure, as well as the potential for migration of COIs from these areas. These potential short-term exposures can be mitigated during these activities through the implementation of conventional health and safety techniques, as well as dust and erosion/runoff controls. The temporary structure employed during the stockpiling activities would also serve to reduce the short-term potential for exposure. Emissions control on the incineration unit would serve to reduce the short-term potential for exposure to constituents released during the incineration process, but there may be an increased risk, based on pilot-scale tests, to on- and off-site receptors to dioxin and furan emissions.

B.7 Alternative 7 - Off-site Incineration, Surface Capping

Estimated Capital Cost:	$49,928,000
Estimated Annual O&M Cost:	$12,000
Estimated Present-Worth Cost*:	$51,124,702

*Cost includes common elements

This alternative involves the incineration of the Fluff, lagoon sediment, surface and subsurface soil in an off-site rotary kiln incinerator. This alternative includes the excavation and off-site transport of Fluff/sediment/soils to a permitted incineration facility for treatment and subsequent disposal of the resultant ash, the backfilling of the excavated area, and the construction of a RCRA Subtitle C cap over the backfilled area to prevent infiltration of surface water. The cap would cover approximately 8 acres. The common elements would also be implemented.

The deed restrictions included in the common elements would serve to prohibit future use of the property which might compromise the integrity of the cap. Site security measures (also a common element) would be maintained to prevent inadvertent damage to the cap by trespassers.

Through the combination of the off-site transport and treatment/disposal actions, and the use of surface capping to address any residual constituent concentrations remaining in the excavated area following backfilling, this alternative would be effective by eliminating the direct contact pathway, as well as reducing the potential for migration of C0Is from soils to the groundwater. With proper routine maintenance, the cap would remain reliable and effective in the long term.

Excavation, material handling, and off-site transportation activities would increase the short-term potential for exposure, as well as the potential for migration of COIs from these areas. These can be mitigated during construction activities through the implementation of conventional health and safety techniques, as well as dust and erosion/runoff controls.

VIII. COMPARATIVE EVALUATION OF ALTERNATIVES

Each of the remedial alternatives summarized in this plan has been evaluated with respect to the nine (9) evaluation criteria set forth in the NCP, 40 C.F.R. Section 300.430(e)(9). These nine criteria can be categorized into three groups: threshold criteria, primary balancing criteria, and modifying criteria. A description of the evaluation criteria is presented below:

Threshold Criteria:

1. Overall Protection of Human Health and the Environment addresses whether a remedy provides adequate protection and describes how risks are eliminated, reduced, or controlled.

2. Compliance with Applicable or Relevant and Appropriate Requirements (ARARs) addresses whether a remedy will meet all of the applicable, or relevant and appropriate requirements of environmental statutes.

Primary Balancing Criteria:

3. Long-term Effectiveness refers to the ability of a remedy to maintain reliable protection of human health and the environment over time once cleanup goals are achieved.

4. Reduction of Toxicity, Mobility, or Volume through Treatment addresses the degree to which alternatives employ recycling or treatment that reduces toxicity, mobility, or volume of contaminants.

5. Short-term Effectiveness addresses the period of time needed to achieve protection and any adverse impacts on human health and environment that may be posed during the construction and implementation period until cleanup goals are achieved.

6. Implementability addresses the technical and administrative feasibility of a remedy, including the availability of materials and services needed to implement a particular option.

7. Cost includes estimated capital, operation and maintenance costs, and present worth costs.

Modifying Criteria:

8. State Acceptance indicates whether, based on its review of backup documents and the Proposed Plan, the State concurs with, opposes, or has no comment on the preferred alternative.

9. Community Acceptance includes assessments of issues and concerns the public may have regarding each alternative based on a review of public comments received on the Administrative Record and the Proposed Plan.

The comparison of the remedial alternatives based on these criteria is presented below.

1. Overall Protection of Human Health and the Environment

The implementation of the No Action Alternative would not provide protection of human health and the environment. Exposure to contaminants in the Fluff waste and Site soils would pose a health threat to individuals who come in contact with these materials, particularly if exposure occurs regularly. Because this alternative does no meet this threshold criterion, it will not be further evaluated under the remaining criteria.

Alternatives 1 - 7 provide overall protection of human health and the environment by either removing contaminants in the Fluff, soil, and sediment and/or isolating them to prevent direct contact and the potential for further migration. Alternative 1 (Multilayer Cap) prevents direct contact with contaminants in the Fluff waste, soils, and sediments and reduces the potential for contaminant migration by consolidating the material and covering it with an impermeable cap.

Alternative 2 (Stabilization with Soil Cover) immobilizes contaminants by mixing the Fluff, soil, and sediment with cement-like material prior to covering with soil. Stabilization of the Fluff material and soil reduces both the potential for individuals to come in direct contact with the contaminants and the potential for contaminants to migrate to the groundwater. The soil cover provides additional protection against direct contact with the stabilized contaminants. The treatment of the NAPLs provides additional protection against migration of contaminants in the soil to groundwater. Protection from the release of VOCs into the environment during the stabilization process is achieved through the utilization of a temporary enclosed structure capable of capturing and treating VOC emissions. Such emissions would be treated through a vapor phase carbon adsorption unit.

Alternatives 3, 4, and 5 each use a combination of treatment and an impermeable cap to prevent direct contact with contaminants in the Fluff, soil and sediment and to reduce the potential for contaminant migration to groundwater. Alternatives 3 and 5 remove organic contaminants in the Fluff and soil through SVE/bioventing prior and LTTD, respectively, prior to capping.

Alternative 4 includes the components of Alternative 3 and adds stabilization to further immobilize the inorganic contaminants prior to capping.

Alternatives 6 and 7 also use a combination of treatment and an impermeable cap to prevent direct contact with contaminants and to reduce the potential for contaminant migration to groundwater. These alternatives destroy the organic contaminants through on- or off-site incineration. Residual contamination in the ash is stabilized (if necessary) and disposed off-site. Therefore, the amount of contamination remaining on-site and capped is reduced.

2. Compliance with ARARs

Any cleanup alternative considered by EPA must comply with all applicable or relevant and appropriate federal and state environmental requirements. Applicable requirements are those substantive environmental standards, requirements, criteria, or limitations promulgated under federal or state law that are legally applicable to the remedial action to be implemented at the Site. Relevant and appropriate requirements, while not being directly applicable, address problems or situations sufficiently similar to those encountered at the Site that their use is well-suited to the particular site. All the alternatives comply with the following ARARs, as appropriate:

Chemical-Specific ARARs

The Pennsylvania Land Recycling Program Regulations at 25 Pa. Code 250.305 identify soil remedial standards which are applicable to the implementation of the remedy.

Action-Specific ARARs

Multilayer Cap: The following provisions of the Pennsylvania Residual Waste Management Regulations, 25 Pa. Code Chapter 288, Subchapter C, regarding the closure of landfills are relevant and appropriate to the covering or capping of the landfilled industrial waste materials in Alternatives 2, 3, and 4: (1) access to the Site shall be controlled as set forth in 25 Pa. Code º288.212 (a); (2) the cover shall be constructed in conformance with the requirements of 25 Pa. Code º288.234; (3) revegetation of the cover shall be established in accordance with the requirements of 25 Pa. Code º288.236, and shall meet the standard for successful revegetation as set forth in 25 Pa. Code º288.237; and (4) soil erosion and sediment control shall be conducted in accordance with the requirements of 25 Pa. Code º288.242. The following provisions of the Pennsylvania Hazardous Waste Regulations, 25 Pa. Code Chapter 264, regarding the maintenance of landfill caps are relevant and appropriate to the maintenance of the capped area of the Site in Alternatives 1, 3, 4, 5, 6 and 7: (1) closure performance standards shall be achieved as set forth in 25 Pa. Code º 264.111; (2) post closure care and use of the Site shall be carried out in accordance with the requirements of 25 Pa. Code º 264.117; (3) the final cover shall meet the requirements of 25 Pa. Code º 264.3 10(1); (4) vegetation of the cover shall meet the requirements of 25 Pa. Code º 264.310(4); and (5) the closure shall meet the performance objectives of 25 Pa. Code º 264.310(5).

Excavation: The provisions of Pennsylvania's Erosion and Sedimentation Control and Restoration Regulations set forth in 25 Pa. Code ºº 102.4-24 are applicable to earth-moving activities associated with the multilayer cap to be installed in Alternatives 2, 3 and 4. In addition, Pennsylvania regulations regarding the Prohibition of Certain Fugitive Emissions and Particulate Matter set forth at 25 Pa. Code ºº 123.1 and 123.2 are applicable to the dust suppression controls required to be used in conjunction with these earth-moving activities.

Discharge of Treated Lagoon Water: A common element under all the alternatives is treating the water in the lagoons, if necessary, in a physical/chemical treatment process and discharging the treated water to an unnamed tributary of Mauses Creek or to an industrial process. The following substanitive requirements of the National Pollutant Discharge Elimination System are applicable to these discharges: 40 C.F.R. ºº 122.2, 122.4, 122.5, 122.21, 122.26, 122.29, 122.41, 122.43-45, 122.47, 122.48, and 25 Pa. Code ºº 92.1, 92.3, 92.31, 92.41, 92.51, 92.55, 92.57, and 92.73. The following requirements of the Pennsylvania Drinking Water standards are relevant and appropriate to all discharges to an industrial process: 25 Pa. Code ºº 109.201-203. The following water quality standards are applicable to all discharges (regardless of where discharged): 40 C.F.R. º 131.32 and 25 Pa. Code ºº 93.1-9z. The following requirements for controlling the discharge of toxic substances are applicable to all discharges (regardless of where discharged): 25 Pa. Code ºº 16.1, 16.24, 16.31-51, 16.101-102.

Hazardous Waste Generation: The alternatives involving on-site treatment (Alternatives 2 through 6) may result in the generation of wastes that would be regulated under current hazardous waste regulations. Any hazardous waste generated shall be analyzed and characterized according to the requirements of 25 Pa. Code º 262.11 and identified pursuant to the requirements of 25 Pa. Code º 262.12. Authorization for shipment of hazardous waste shall be obtained pursuant to 25 Pa. Code º 262.13. All shipments of hazardous waste for treatment at a separate location on the Site shall be manifested according to the requirements of 25 Pa. Code ºº 262.20, 262.22, 262.23, and shall meet all of the packing, placarding and labeling requirements of 25 Pa. Code ºº 262.30, 262.33. If hazardous waste is accumulated on the Site, it shall be done so in accordance with all of the requirements of 25 Pa. Code º 262.34. Transportation of hazardous waste for treatment on the Site shall comply with all the requirements of 25 Pa. Code Part 263. Hazardous wastes shall be stored in accordance with the requirements of 25 Pa. Code Part 264 subparts I and J.

3. Long-Term Effectiveness and Permanence

Alternative 1 (Multilayer Cap) will provide an effective remedy in the long term provided that the cap is properly maintained. Permanence of the remedy is also dependent on proper maintenance. Although 30 years of maintenance has been included for cost-estimating purposes, maintenance will be required for an indefinite period and components of the cap could eventually require replacement.

Alternative 2 (Stabilization with Soil Cover) provides a greater level of long-term effectiveness and permanence than Alternative 1 because it relies less on maintenance. Stabilization of the Fluff material and soil will immobilize the contaminants and reduce the potential for leaching into the groundwater. Additionally, the two-foot soil cover will prevent direct contact with the stabilized mass. The soil cover over the stabilized mass is expected to provide equivalent performance to a RCRA Subtitle C Cap. Maintenance of the soil cover and institutional controls to prevent its disturbance would be required to ensure permanence.

Alternative 3 (SVE/Bioventing and Cap) and Alternative 5 (LTTD and Cap) will both provide greater long-term effectiveness and permanence than the multilayer cap alone (Alternative 1), but may be less effective than Alternative 2 since neither SVE/Bioventing or LTTD will immobilize the inorganic contaminants. Therefore, Alternatives 3 and 5, like Alternative 1, requires greater reliance on proper maintenance of the cap to achieve long-term effectiveness and permanence.

Alternatives 4, 6, and 7 provide the greatest degree of long-term effectiveness and permanence. Alternative 4 reduces the level of organic contamination to be capped through SVE/bioventing and immobilizes the inorganic contaminants through stabilization, thus reducing reliance of proper cap maintenance. Alternatives 6 and 7 reduce the level of both organic and inorganic contaminants to be capped. Organic contaminants are destroyed in the incineration process and inorganic contaminants which remain in the ash are stabilized, if necessary, and disposed off-site. Use of a multilayer cap in Alternatives 4, 6, and 7 may also provide somewhat greater long-term effectiveness and permanence that use of a soil cover (Alternative 2).

4. Reduction of the Toxicity, Mobility or Volume of Contaminants Through Treatment

Alternative 1 does not provide any reduction in the toxicity, mobility or volume of Site contaminants through treatment. The use of a multilayer cap does, however, reduce the mobility of contaminants by preventing rain from moving through the contaminated material and transporting contaminants to the groundwater.

The use of stabilization in Alternatives 2 and 4 primarily reduces the mobility of Site contaminants. This treatment process may, however, increase the volume of material due to the addition of the curing agents. While the mobility of organic contaminants may increase during the treatment process, particularly VOCs, the treatment area would be covered to capture volatilized contaminants. In addition, the process of stabilization facilities volatilization of volatile organics due to heat generation and mixing. Thus alternatives 2 and 4 reduce the volume of organics in the stabilized waste. The SVE/bioventing treatment in Alternatives 3 and 4 reduce the toxicity and volume of Site organic contaminants by encouraging biological degradation and extraction of volatile organics.

Alternative 5 (and Alternative 2 in the NAPL areas) reduces the toxicity, mobility and volume of primarily volatile organic contaminants by volatilizing and capturing the contaminants through the LTTD process. Inorganic contaminants would remain in the treated material and would be capped on-site. Alternatives 6 and 7 reduce the toxicity, mobility and volume of organic contaminants by destroying them through incineration. However, incineration has the potential create and release contaminants through air emissions which are more toxic than those entering the process. Controls measures must be properly implemented to ensure unacceptable releases do not occur. Inorganic contaminants that cannot be destroyed will remain in the ash and may be immobilized through stabilization if required prior to landfilling at an off-site facility.

5. Short-Term Effectiveness

Alternative 1 (Multilayer Cap) provides short-term effectiveness because it requires minimal disturbance of the contaminated material and can be implemented relatively quickly. Relatively few controls are needed during construction to ensure safety.

Alternatives 2, 4, and 5 also provide short-term effectiveness, but require use of air emission controls (e.g., temporary enclosed structures over excavation) and monitoring devices during excavation to ensure the safety of on-site workers and others in close proximity of the Site. These measures can be readily implemented though the required Site health and safety program.

Alternative 3 does not require excavation, but similar air emission controls and monitoring devises are required to ensure that contaminants volatilized through the SVE/bioventing process are not released from the Site. Alternatives 4 and 5 also require such measures to volatilized emissions.

Alternative 6 can provide short-term effectiveness, but this effectiveness is highly dependent on proper control measures. Alternative 6 has the potential to release toxic air emissions (ie., furans and dioxins) from the on-site incinerator based on the results of pilot-scale tests. The chlorine content of Fluff waste is very high because of the polyvinyl chloride insulation used. Along with the presence of polyvinyl chloride, the presence of copper as a catalyst makes an ideal condition for the formation of dioxins during the incineration. Short-term effectiveness of this alternative depends on proper implementation of air emission control devices for the incinerator stacks to monitor and control these emissions. Flue gas particulate collected as baghouse ash is cadmium and lead-contaminated and would require management as a hazardous waste. Proper handling of the kiln ash discharge and baghouse ash is required to ensure that these materials do not pose a health threat to on-site workers. Alternative 6 also involves off-site transportation of the incinerator ash, thus requiring additional measures to ensure safety.

The short-term effectiveness of Alternative 7 depends on the use of proper controls during excavation as described for Alternatives 2, 4, and 5 and on proper precautions during transportation of the excavated material off-site. These controls can be readily implemented through the required Site health and safety program.

6. Implementabilily

The technology and materials required to construct the multilayer cap in Alternative 1 (also a component of Alternatives 3 through 7) are readily available, so this alternative can be easily implemented. The soil cover in Alternative 2 can also be readily constructed.

The stabilization process in Alternatives 2 and 4 would not be difficult to implement since 10% Type I Portland Cement is readily available. The SVE/bioventing processes in Alternatives 3 and 4 have been demonstrated to work effectively at other sites and are commercially available technologies. However, performance of SVE/bioventing is dependent on Site-specific characteristics of the material being treated (e.g., temperature, moisture, pH, nutrient content) and the success and duration of treatment is difficult to predict. SVE/bioventing is expected to require a longer time frame to implement than stabilization.

The LTTD treatment process of Alternatives 2 and 5 has been demonstrated to be effective for volatile organics at other sites and is a commercially available technology. Successful implementation of LTTD is less dependent on Site-specific factors than SVE/bioventing and can be readily implemented. LTTD requires controls to ensure that contaminants volatilized during the process are not released to the air at unacceptable levels.

On-site incineration in Alternative 6 is a demonstrated and commercially available treatment technology. However, optimization of the system for the Site-specific characteristics of the material to be incinerated may be difficult. Incineration must comply with stringent RCRA incinerator operating regulations and standards. The close proximity of residences and a school may make implementation difficult, and the public has historically opposed on-site incineration.

Alternative 7 requires no on-site treatment and can be readily implemented. Off-site incineration facilities are commercially available to handle the materials from the Site. The equipment and materials needed to safely excavate and transport the contaminated Fluff, soil, and sediment are readily available.

7. Cost

Table 3 presents a comparative cost summary of the alternatives discussed in this Proposed Plan.

Table 3
Remedial Alternatives Cost Summary

Alternative	Capital Cost	Annual O&M Cost 1-2 Years	Annual O&M Cost 3-30 Years	Present Worth
1	$1,596,354	$12,000	$12,000	$2,793,080
2	$6,924,062	$346,203	$12,000	$8,752,530
3	$8,697,147	$175,000	$12,000	$10,210,034
4	$12,030,443	$175,000	$12,000	$13,543,330
5	$10,499,000	$12,000	$12,000	$11,712,262
6	$35,556,000	$175,000	$0	$36,889,405
7	$49,928,000	$12,000	$12,000	$51,124302

8. State Acceptance

The Commonwealth of Pennsylvania has concurred with the selected remedy, Alternative 2.

9. Community Acceptance

In general, the community has accepted the selected Fluff, soil, the lagoon water and the on-site tanks & drums remedy for the OU-5. The Responsive Summary, attached, provides a through review of questions and comments received during the Public Comment Period including EPA's responses.

IX. SELECTED REMEDY

A. General Description of Selected Remedy

The selected remedy for OU-5 - surface soil, lagoon water and sediment, Fluff (chopped and shredded wire insulation material mixed with bits of plastic and copper), and waste materials contained in tanks and drums, is Alternative 2 - Ex-Situ Stabilization/Low Temperature Thermal Desorption. This alternative involves the following components:

- Site preparation which includes temporary sedimentation and erosion control and the clearing of vegetation around the Fluff and lagoon;
- Treatment/containment of contaminants of interest in Fluff, lagoon sediment, and surface soils through ex-situ stabilization and backfilling excavated areas with the stabilized material;.
- Treatment of soil containing Non-Aqueous Phase Liquids utilizing Low Temperature Thermal Desorption desorption to reduce tetrachloroethene (PCE) levels below the level that constitutes a principle threat;
- Covering the areas on the Site within the fenced area shown in Figure 2 with two-foot of EPA and PADEP approved soil layer and vegetation contour to prevent ponding and to control erosion;
- Site restoration by removing all the debris;
- Off-site transport of materials in tanks and drums at the Site to an appropriate facility;
- Excavation and off-site disposal to an appropriate facility of drums, tanks and contaminated soil due to any leaking drums and/or tanks.

- Draining of lagoon water, treatment of the water in a physical/chemical treatment process (if needed), and discharge of the treated water to an unnamed tributary of Mauses Creek, adjacent to the Site and/or to an industrial process;

- Implementation/enforcement of institutional controls at the Site, including but not limited to, deed restrictions;

- Long-term operation and maintenance (O&M) activities including Site security through the maintenance of existing Site fence.

Site preparation shall include the leveling of the Fluff piles and spreading the stabilized Fluff to a uniform depth. All Fluff, minimum of two feet of lagoon sediments, and minimum of two feet of soils underneath the Fluff piles shall be excavated and stockpiled for subsequent stabilization. The extent of the sediments and the soils excavation beyond the minimum shall be determined by field observations for the presence of visible Fluff. The excavation activities shall occur inside a temporary, moveable structure intended to prevent the introduction of precipitation into the excavation and to control dust and volatile organic compound (VOC) emissions. All material shall be stockpiled and treated in a staged treatment area. The structures shall be operated under slight negative pressure, and the exhaust air flow shall be routed through a vapor-phase carbon adsorption unit to treat VOC emissions.

Excavation shall be performed at a rate necessary to provide a stockpile of materials sufficient to support three to five days of treatment (750 to 1,250 cubic yards). Stabilization shall be performed by mixing the materials with 10% or greater Type I Portland Cement. Following mixing, the resulting slurry shall be placed into the excavation and allowed to cure. Excavation activities shall continue on the remaining trenches within the excavation structure. Once all materials are treated within the excavation structure, the structure shall be moved to the next area of excavation.

The excavated areas shall be backfilled with the stabilized material in a manner intended to promote drainage following curing of the stabilized materials. The fenced area shown in Figure 2 shall be covered with a two-foot topsoil layer and vegetated to prevent ponding of liquids and minimize erosion.

The presence of Non-Aqueous Phase Liquids in overburden soils shall be treated through the use of Low Temperature Thermal Desorption. The extent of this area and the total volume of soil treated with Low Temperature Thermal Desorption may be subject to change based on the results of the investigation for the presence of Non-Aqueous Phase Liquids in soil to be conducted during the implementation of the remedial action.

Low Temperature Thermal Desorption can effectively remove Non-Aqueous Phase Liquids from the soil by heating the soil under vacuum conditions to induce volatization. The optimal temperature and pressure shall be determined during a pre-design treatability study. The soils treated by Low Temperature Thermal Desorption shall be backfilled into the excavations (with prior stabilization if the treated soil demonstrates the characteristic of a hazardous waste based upon the results of a Toxicity Characteristic Leaching Procedure test. 40 C.F.R. º261.24.).

The resulting fixed/stabilized solid matrix minimizes the potential migration of contaminants of interest to groundwater; the stabilization process and subsequent soil cover also prevent direct contact. The potential for exposure to volatile and dust emissions is mitigated through the use of the temporary structures covering the excavation and stockpile/process areas and treatment of VOCs through vapor-phase carbon adsorption.

The South West area (as shown in the Figure 2) of the Site shall be investigated for any buried drums and if the drums are found excavation of the subsurface soil shall be performed. If the drums or tanks are discovered, they shall be excavated and removed. If characterization testing of the drum contents indicates the presence of listed waste (40 C.F.R. Part 261, Subpart D) or if the contents exhibit a characteristic of hazardous waste (40 C.F.R. 261, Subpart C), they shall be managed in accordance with the federal land disposal restrictions (40 C.F.R. Part 268). The drum debris shall be managed in similar manner. Subsurface soil in the area surrounding the drums shall be tested for the presence of Non-Aqueous Phase Liquids. If Non-Aqueous Phase Liquids are discovered, the Non-Aqueous Phase Liquid containing soils shall be treated, with Low Temperature Thermal Desorption as discussed more fully in subsection B. 10 below.

B. Performance Standards/Cleanup Criteria

To reduce the risk to human health and the environment, impacted surface and subsurface soils, lagoon water and sediment, Fluff, and waste materials contained in tanks and drums, shall be remediated as described in Section IX, Description of Selected Remedy. Remediation shall be performed for materials which exceed the Remedial Action Levels presented in the table 2, in accordance with the ARARs; and other criteria listed in Section X, Statutory Determinations. All components of the selected remedy, Alternative 2, shall be implemented in accordance with the performance standards detailed herein and ARARs; listed in Section X, Statutory Determinations.

1. Erosion Control

Erosion and sediment control measures shall be installed in accordance with the substantive requirements of the Commonwealth Pennsylvania Clean Stream Law and in accordance with any related local regulations. Prior to commencement of excavation or soil disturbance work, an erosion and sedimentation control plan shall be developed and implemented to address control measures for all activities that potentially transport soil or sediment. The plan shall be developed and submitted to EPA for acceptance and to PADEP and the local goveriunent for approval.

2. Pilot Testing of Stabilization Process

During the remedial design phase, field pilot testings of the stabilization process shall be performed to obtain optimal stabilization process parameters as set forth in "Solidification/Stabilization and its Application to Waste Material (EPA/530/R-93/012 June 1993)."

3. Stabilization of Fluff and Two Feet of Soil underneath the Fluff.

The Fluff and soil shall be screened and separated before stabilization to achieve the parameters developed during the field pilot testings. The proper ratio of Fluff and soil shall be mixed with appropriate amount of binding material to achieve the standards developed during the field pilot testings. The stabilized waste shall be checked in accordance with "Stabilization/Solidification of CERCLA and RCRA Wastes, Physical Tests, Chemical Testing Procedures, Technology Screening, and Field Activities (EPA 625/6-89/022 May 1989)." Soil beneath the Fluff piles shall be excavated to a minimum of two feet. The extent of excavation of soil beyond two feet underneath Fluff piles shall be determined by visual observation of Fluff presence. The stabilized mass shall pass the SPLP leachability test.

4. Backfilling of the Excavated Areas

The excavated areas shall be backfilled with the stabilized material.

5. Placing of Two Feet of Soil Cover within the Fence Area shown in the Figure 2.

a. The two feet of soil cover shall be placed over the entire area of the Site within the fenced area shown in Figure 2.

b. The soil cover shall be covered with vegetation to control air and water erosion of the soil and to maintain aesthetic value of the area.

C. The soil cover shall protect Site users from being exposed to the soil contaminants either by the direct contact with contaminated waste/soil or by inhalation/ingestion of soil and/or Fluff dust.

d. The final soil cover shall be designed and constructed in accordance with the Pennsylvania Residual Waste Management Regulations, 25 Pa. Code Chapter 288, Subchapter C, regarding closure of landfills. Relevant provisions include, but are not limited to, 288.212 (access control), 288.234 (final cover and grading), 288.236 (revegetation), 288.237 (standards for successful revegetation), and 288.242 (soil erosion and sedimentation control).

6. Monitoring Program

The groundwater and surface water monitoring requirements for OU-5 are covered under the OU-3 groundwater monitoring program. Perimeter air monitoring shall be performed at a minimum of four locations at each of the four compass points at the perimeter of the Site for the contaminants identified in table 2. The fugitive emissions control actions levels shall be set according to Occupational Safety & Health Act (OSHA) permissible exposure levels (PELs) if available or according to adverse human health effect threshold. Fugitive emissions shall be controlled in accordance with applicable Pennsylvania Air Resources Rules and Regulations. The monitoring for VOCs and total dust shall be performed using on-site monitors to obtain real time readings. A fugitive emissions control plan shall be developed based on the fugitive emissions control action levels and submitted to EPA for acceptance and to PADEP for their review and approval if required by the law.

7. Storm Water Control

A storm water control plan shall be developed to minimize runoff and erosion from all areas of soil/Fluff disturbance associated with Site remediation activities and to prevent migration of Fluff off Site. The plan shall be submitted to EPA for acceptance. The plan shall be submitted to PADEP, the local county and the local government for their approval.

8. Surface Water Discharge

Any surface water discharge to Mauses Creek shall comply with substantive requirements of the Commonwealth of Pennsylvania National Pollution Discharge Elimination System regulations, 25 Pa. Code Chapter 92. A plan to comply with those requirements shall be submitted to EPA and PADEP for review and approval.

9. Use of Treated Water

If the treated water is used for an industrial purpose, it shall meet PADEP drinking water standards set forth at 25 Pa. Code Subchapter 109.13.

10. Investigation of Presence of Non-Aqueous Phase Liquids in the soil

Areas identified as the former carbon pile area, buried lagoon area and the area adjacent to the west side of the plant building (see figure 2) shall be sampled using a geoprobe and checked for Non-Aqueous Phase Liquids presence using soil water shake test as described in the document EPA/600/R-93/022. A sampling and analysis plan for Non-Aqueous Phase Liquid testing shall be submitted to EPA and PADEP for their approval.

11. Thermal Desorption

The soils with Non-Aqueous Phase Liquids shall be treated with the Low Temperature Thermal Desorption to drive off Non-Aqueous Phase Liquids and to achieve PCE cleanup levels of 375 mg/kg. The low temperature thermal desorption system shall have air pollution control measures as needed to meet Commonwealth of Pennsylvania Control and Abatement of Air Pollution requirements and specifically shall meet federal and Commonwealth of Pennsylvania air emissions standards. Any residual carbon waste generated during the treatment shall be disposed off-site at an approved RCRA Subtitle C facility. If the thermal treatment is not successful in achieving the cleanup levels for PCE, soils with Non-Aqueous Phase Liquids shall be sent off-site for the treatment and disposal at RCRA Subtitle C approved facility.

12. Investigation of Possible Buried Drums

The South West area (as shown in the figure 2) of the Site shall be investigated for any buried drums or tanks by using geophysical screening technique. If evidence of drums or tanks is indicated, excavation of the subsurface soil shall be performed. If the drums or tanks are discovered, they shall be excavated and removed. If characterization testing of the drum contents indicates the precence of a listed waste (40 C.F.R. Part 261, Subpart D) or if the contents exhibit a characteristic of a hazardous waste (40 C.F.R. 261, Subpart C), they shall be managed in accordance with the federal land disposal restrictions (40 C.F.R. Part 268). The drum debris shall be managed in similar manner. Subsurface soil in the area surrounding the drums shall be tested for the presence of Non-Aqueous Phase Liquids. If Non-Aqueous Phase Liquids are discovered, the Non-Aqueous Phase Liquid containing soils shall be treated with

Low Temperature Thermal Desorption as discussed more fully in subsection B.10 above.

13. Removal of Above Ground Drums and Above Ground Tanks

If the contents of the above ground drums and above ground tanks are listed wastes (40 C.F.R. Part 261, Subpart D), they shall be managed in accordance with the federal land disposal restrictions (40 C.F.R. Part 268). The drum debris shall be managed in a similar manner.

14. Removal Plans for the Drums and Tanks

A removal plan shall be submitted to EPA and PADEP for their review and acceptance detailing the assessment and removal of all drums and tanks.

15. Removal of Non Hazardous Contents and Debris

The Site shall be cleared of all debris and non hazardous waste in accordance with Pennsylvania Municipal Waste Landfill Regulations, specifically those regulations applicable for construction debris landfills, Pennsylvania Code Title 25, Chapter 277, and those relating to residual waste management, Pennsylvania Code Title 25, Chapter 287.

16. Institutional Control

Institution controls, including but not limited to deed restrictions, shall be implemented to restrict land and groundwater use at the Site and reduce the potential for human exposure to contamination by prohibiting residential development and any use that would decrease the performance of the soil cover, and/or involve the use of groundwater at the Site.

17. Operation and Maintenance

The stabilized waste and the soil cover shall be maintained in accordance with the requirements set forth in 25 Pa. Code Section 264.111, 264.117, and 264.310(l), (4) and (5).

18. Quality Control Monitoring

Quality control monitoring shall be performed to evaluate the stabilized waste and the cover. The frequency and the nature of quality control monitoring shall be determined during the Remedial Design and shall be approved by EPA in consultation with PADEP prior to implementation.

X. STATUTORY DETERMINATIONS

EPA's primary responsibility at Superfund sites is to undertake remedial actions that are protective of human health and the environment. In addition, 121 (b) of CERCLA, 42 U.S.C 9621, established several other statutory requirements and preferences. These requirements specify that upon completion, the selected remedial action for each site must comply with applicable or relevant and appropriate ("ARARs") environmental standards established under federal and state environmental laws unless a statutory waiver is invoked. The selected remedy must also be cost effective and must utilize treatment technologies to the maximum extent practicable. Finally, the statute includes a preference for remedies that permanently and significantly reduces the volume, toxicity, or mobility of hazardous substances. The following sections discuss how the selected remedy for this Site meets these statutory requirements.

A. Protection of Human Health and the Environment

The selected remedy for Fluff, soil, lagoon water and sediments is protective of human health and the environment and eliminates the potential for a direct contact with contaminants by placing of a vegetated soil cover over the stabilized waste. The remediation will also minimize soil, Fluff and sediment as a continuing sources of impacts to groundwater, and surface water, and subsurface soils. In addition, the contaminated groundwater under the Site shall be extracted and contained under the OU-3.

Air monitoring shall be performed during the excavation phase to monitor air emissions and to provide information for control measures and worker's exposure. Appropriate safety equipment shall be worn by Site workers to protect against exposure during the remediation effort. With the addition of long-term monitoring and institutional controls, this remedy is protective of human health and the environment.

B. Compliance with Applicable or Relevant and Appropriate Requirements (ARARs)

The selected remedy includes excavation and ex-situ stabilization of soils, sediment, and Fluff in exceedance of specified action levels for the Site. The remedy will comply with ARARs and To Be Considered (TBC) Material detailed in this section.

Chemical-specific ARARs and TBCs:

Pennsylvania Water Quality Standards, Pennsylvania Code Title 25, Sections 93.1-9z which identify surface water quality standards and protected uses of surface water. This Act is applicable to the discharges of lagoon water to Mauses Creek.

Administration of the Land Recycling Program, 25 Pa. Code, Section 250.305 which identifies soil cleanup levels. This Act is applicable to determine the soil remediation standards.

Location-specific ARARs and TBCs

The Fish and Wildlife Coordination Act, 16 USC 661, which provides for consideration of the impacts on wetlands and protected habitats. The Act is applicable to the treatment of the lagoon water and sediment.

The Fish and Wildlife Improvement Act of 1978 and the Fish and Wildlife Conservation Act of 1980, 16 USC 742a and 16 USC 2901, which provide for consideration of the impacts on wetlands and protected habitats. The Acts are applicable to the treatment of the lagoon water and sediment.

Pennsylvania Dam Safety and Encroachment Act, Act of 1978, 25 Pa. Code, Sections 105 et seq. This Act, and the regulations promulgated thereto, are applicable to any response actions conducted in or near wetlands areas.

Action specific ARARs:

Toxic Substances Control Act (TSCA) of 1976, 40 CFR Part 761, which pertains to the regulation and enforcement for testing of commercial chemical substances entering the environment. This Act is applicable to PCB testing.

Pennsylvania Hazardous Waste Regulations, Pennsylvania Code Title 25, Sections 262.11-13, 262.20-23, 262.30, 262.33, 262.34,264.111, 264.117, 264.310(l),264.310(4), 264.310(5), as well as Part 263 and Subparts 264 I and J which are applicable to the on-site hazardous waste treatment, storage and disposal alternatives.

Pennsylvania Hazardous Waste Activity Rules, Pennsylvania Code Title 25, Sections 266.20-24, which pertains to the standards for recycled material used in a manner consistent with disposal. These rules are applicable to on-site stabilization and disposal of Fluff waste as well as reuse of treated water for any industrial purpose.

Pennsylvania Municipal Waste Landfill Regulations, Pennsylvania Code Title 25, Sections 277.132-151, 277.217, 277.218, 277.220, 277.234, 277.235 which pertain to the construction of debris landfills. These rules are relevant and appropriate to on-site stabilization and disposal of Fluff waste.

Clean Water Act's National Pollution Discharge Elimination System (NPDES) Regulations, 40 CFR Sections 122.2, 122.4, 122.5, 122.21, 122.26, 122.29, 122.41, 122.43-45, 122.47, 122.48, which regulate discharge of pollutants into navigable waters. These regulations are applicable to the discharge of lagoon water to Mauses Creek.

Pennsylvania Clean Streams Law, Pennsylvania Code Title 25, Sections 16.1, 16.24, 16.31-5 1, 16.101-102, which provide protection for the protection of streams and water quality control. This Act and regulations are applicable to the discharge of lagoon water to Mauses Creek.

Pennsylvania NPDES Rules, Pennsylvania Code Title 25, Sections 92.1, 92.3, 92.31, 92.41, 92.51, 92.55, 92.57, and 92.73, which provides regulations which govern point-source discharges to Pennsylvania waters. These rules are applicable to the discharge of lagoon water to Mauses Creek.

Pennsylvania Wastewater Treatment Regulations, Pennsylvania Code Title 25, Sections 95.1-3, 95.7, 95.9, outline regulations which govern wastewater treatment. These regulations are applicable to the discharge of lagoon water to Mauses Creek and industrial reuse of the treated water.

Pennsylvania Industrial Waste Treatment Regulations, Pennsylvania Code Title 25, Sections 97.1, 97.2, 97.14, 97.15, 97.81-83, outline regulations which provides requirements and standards for the treatment of industrial waste discharges to surface water. These regulations are relevant and appropriate to the discharge of lagoon water to Mauses Creek.

Pennsylvania Special Water Pollution Control Regulations, Pennsylvania Code Title 25, Sections 101.1-2, which outlines regulations requiring notification of downstream users in the event of a release of toxic substances. These regulations are relevant and appropriate to the discharge of lagoon water to Mauses Creek.

Pennsylvania Safe Drinking Water Regulations, Pennsylvania Code Title 25, Sections 109.201 - 203, which provide the required contaminant levels that must be met if water is to be used for drinking water. These regulations are relevant and appropriate if the lagoon water is used for an industrial purpose.

Pennsylvania Storm Water Management Act requires that measures be taken to control stormwater runoff during alterations or development of land. This Act is applicable to the excavation and regrading that will take place on the Site.

Pennsylvania Erosion Control Regulations, Pennsylvania Code Title 25, Sections 102.4-24, which outline requirements that measures should be taken to control erosion and sedimentation during remedial activities. These regulations are applicable to the excavation and regrading that will take place at the Site.

Air Resources, Pennsylvania Code, Title 25, Sections 123.1, 123.2 and 127.1 which are applicable to fugitive dust control and Best Available Technology (BAT). These regulations are applicable to the air pollution control measures to be employed during the excavation and ex-situ stabilization process as well as the LTTD operation.

C. Cost-Effectiveness

The NCP requires EPA to evaluate cost-effectiveness after first determining if the alternative satisfies the threshold criteria: Protection of human health and the environment and compliance with ARARS. As indicated above the selected remedy meets the threshold criteria; therefore the cost effectiveness of the remedy is discussed below.

The selected remedy is considered cost-effective because the total costs are proportional its overall effectiveness. The estimated present-worth cost for the selected remedy, including a thirty year operation and maintenance cost, is $8,752,530. While the No Action Alterative and Alternative 1 would be less costly to implement than the selected alternative (Alternative 2), they are less protective of human health and the environment and do not satisfy ARARS in some cases. Also, alternative 1 in long term may not provide as much physical strength as alternative 2 which incorporates stabilization of Fluff waste. The increased compressive strength provided by the stabilized Fluff will increase cap performance and life. The use of Alternatives 3,4, and 5 would potentially provide the same level of protection to human health and the environment as Alternative 2, however, these alternatives are more costly and more difficult to implement than the selected remedy. Implementation of Alternatives 6 and 7 would result in reducing the potential for leaching of COIs to the groundwater through destructive removal at a much higher cost than Alternative 2,3,4 and 5, but would pose a risk to on- and off- site receptors due to the potential generation of dioxin contaminated material and cadmium/lead contaminated baghouse ash, a characteristic hazardous waste.

D. Utilization of Permanent Solutions and Alternative Treatment Technologies to the Maximum Extent Practicable

EPA has determined that the selected remedy represents the maximum extent to which permanent solutions and treatment technologies can be utilized while providing the best balance among the other evaluation criteria. Of the alternatives that are protective of human health and the environment and meet ARARs, EPA has determined that the selected remedy provides the best balance in terms of long-term effectiveness and permanence, reduction of toxicity, mobility, or volume, short-term effectiveness, implementability, cost, state and community acceptance.

The selected remedy addressed threats posed by the impacts at the Site. The remedy is protective of human health and the environment, meets ARARs, and is cost effective.

E. Preference for Treatment as a Principal Element

EPA has determined that the selected remedy represents the maximum extent to which permanent solutions and treatment technologies can be utilized while providing the best balance among the other evaluation criteria.

MW Manufacturing Superfund Site
Valley Township, Montour County, Pennsylvania
Responsiveness Summary

This community relations responsiveness summary is divided into the following sections:

Overview: A summary of EPA's selected remedy for Operable Unit 5 (OU-5) at the Site.

Background: A brief history of community interest and involvement during remedial activities at the Site.

Comments and Responses: A summary of the comments, questions, issues, and concerns received by EPA during the public comment period and EPA's responses to those comments, questions, issues and concerns.

Overview

In order to better address the complex conditions at the MW Manufacturing Site, EPA divided the Site into five separate areas called operable units (OUs). Each OU, described below, represents a different area of concern at the Site.

OU-1 - carbon waste sludge;
OU-2 - fluff waste, soils, storage tanks, lagoon water, and sediments;
OU-3 - contaminated ground water;
OU-4 - public water supply; and
OU-5 - fluff waste, soils, storage tanks, lagoon water, and sediments.

EPA completed the cleanup of OU-1 in 1992 and issued a Record of Decision (ROD) for OU-3 and OU-4 in 1993. In addition, after evaluating several clean-up alternatives for OU-2, EPA conducted a Focused Feasibility Study 1995, and chose to reevaluate the remedy chosen for OU-2 in the ROD for OU-5.

In connection with the remedies considered for OU-5, EPA issued a Proposed Remedial Action Plan (Proposed Plan) on August 12, 1997. The Proposed Plan outlined several clean-up alternatives including EPA's preferred altemative. EPA's preferred clean-up alternative includes:

- Excavating, stabilizing, and backfilling the fluff waste, lagoon sediment, and the surface soil;
- Treating soils containing visible oil/solvent with low temperature thermal desorption;
- Disposing of tanks and drums off-site;
- Draining, treating, and discharging lagoon water to a tributary next to the Site;
- Covering the backfilled area with two feet of top soil and seeding; and
- Limiting future use of the area through controls such as deed restrictions.

After considering information received during the public comment period, EPA selected this clean-up alternative for OU-5 and presented this in the Record of Decision. EPA believes that the selected remedy best meets EPA's evaluation criteria, is protective of human health and the environment, and is cost effective.

Background

After releasing the Proposed Plan, EPA held a 30-day public comment period from August 12, 1997, to September 11, 1997. During the public comment period, EPA accepted written comments on the clean-up alternatives and held a public meeting on August 27, 1997 to present the Proposed Plan for OU-5 to the community. The public meeting also provided an opportunity for community members to have their questions and comments answered and documented in the public meeting transcript. EPA announced the public meeting in the Press Enterprise and the Danville News on August 12, 1997, and in a fact sheet mailed to the entire site mailing list. During the meeting, EPA addressed citizen's comments and answered questions on the clean-up alternatives and future Site work.

Before selecting its preferred alternative as the final clean-up alternative for OU-5, EPA considered all comments received during the public comment period, as well as those voiced at the August 27, 1997 public meeting.

Community involvement and interest in the MW Manufacturing Site is extensive. Although the potentially responsible parties (PRPs) for the Site installed a waterline to connect residents to the public water supply in 1996, the community is still very concerned about contaminated ground water and the economic impact of the Site on the community. In addition, EPA interviewed several community members in May 1997 to gather information about current community concerns regarding the Site and its cleanup. EPA will use this information to revise the Community Relations Plan for the Site and to better address the community's needs and concerns.

Comments and Responses

Comments Received During the Public Meeting

This section provides a summary of the comments, questions, issues, and concerns received by EPA during the August 20, 1997 public meeting. The comments and questions are grouped in the following categories:

1. Cleanup Schedule
2. Soil and Fluff Waste Cleanup/Stabilization Process
3. Ground Water and Lagoon Cleanup
4. Economic Impacts and Future Site Development
5. Technical and Potential Responsible Parties Comments

1. Cleanup Schedule

A few citizens expressed concern about the planned time table for Site cleanup.

EPA Response: After receiving public comments, EPA will officially document a clean-up decision in a Record of Decision (ROD) for OU-5. The ROD is a formal document that describes the clean-up plan EPA will use to address contamination at the Site. After issuing the ROD, EPA will require that the PRPs prepare a work plan and implement the clean-up actions. EPA expects the soil stabilization and construction of a ground water treatment system to be complete by the year 2000. However, the ground water treatment system will operate for 30 years or until EPA's clean-up standards are achieved.

A citizen asked if EPA will inspect the Site following clean-up activities to determine whether the actions outlined in the ROD are working.

EPA Response: When the design plan is finalized it will include a quality assurance plan. The quality assurance plan is a schedule of routine testing and monitoring that evaluates the success of the clean-up actions implemented. EPA will also conduct long-term monitoring during the operation and maintenance of the clean-up actions to ensure that clean-up goals EPA identified in the ROD are achieved.

2. Soil and Fluff Waste Cleanup/Stabilization Process

- A citizen asked if stabilization is a proven process; if it has been tried with the same materials found at the Site; and if it was successful.

EPA Response: Stabilization is an established process that involves mixing waste material with another substance to solidify and immobilize the chemicals in the waste.

Once the waste is solidified, water infiltration is reduced significantly reducing the ability of contaminants to leach out. The stabilization process has been implemented using different kinds of materials with different characteristics, and it has worked very well. Although the process has not been implemented with the exact waste material found at the MW Manufacturing Site, fluff and contaminated soil from the site have been successfully stabilized in lab testing.

The stabilization process is often based on site-specific material. For example, contaminated soil can be stabilized using plain lime. The lime naturally stabilizes the soil and prevents chemicals from moving through the soil into the ground water. Cement is being used to stabilize the waste material at the MW Manufacturing Site because the material contains small pieces of hard copper wire. Studies showed that the cement mixture has low permeability, good strength, and longevity which will stabilize the waste and prevent it from causing further contamination.

- A citizen asked what happens to the stabilized material.

EPA Response: Once the material is stabilized it will be put back into the ground and covered by two feet of clean soil.

- A citizen asked if contaminants will travel through the stabilized fluff, and if so, does that mean that the contaminants are undetectable, or that they are below EPA standards.

EPA Response: The stabilized soil and fluff will be impermeable, like a rock, therefore immobilizing the contaminants, However, like a rock, the stabilized material may crack if it is exposed to corrosive material. EPA will monitor the area to make sure this doesn't happen.

Of the principal contaminants found in the fluff (lead, bis(2-ethylhexyl) phthalate (BEHP), di-n-octyl phthalate and copper) only copper, which is relatively less toxic, has been detected the ground water in appreciable amount. Therefore, even prior to stabilization, the leaching of the principal toxic compounds from the fluff material is not occurring.

- A citizen asked how long the finished product (stabilization) will retain its quality of impermeability.

EPA Response: Combining the contaminated soil and fluff with cement solidifies the materials into a rock-like substance. This substance may crack, but it will still remain impermeable. EPA will continue to monitor the stabilized materials and perform routine tests to ensure the clean-up plan's long-term effectiveness.

- A citizen asked why EPA doesn't transport the stabilized material to a landfill or some other location.

EPA Response: EPA considered moving the material off-site, however, several factors made it unfeasible:

- Heavy truck traffic involved in transporting the contaminated materials creates the possibility of spills or accidents;

- The ground water at the site is already contaminated. Therefore, moving the stabilized material would not enhance the use of the Site because there will still be restrictions imposed regarding future development on the site as a result of the ground water contamination; and

- The material would present the same issues to the community where it was moved.

- A citizen asked whether EPA will consider and address the aerosols (air particles) that might be generated during the soil removal and stabilization process.

EPA Response: The actual stabilization will be done in a portable enclosed structure on the site. The contaminated soil and fluff will be transported into the enclosed structure and mixed with the cement inside. The air inside the enclosed structure will then be treated through a ventilation system before it is released to the environment. The only time dust will be generated from the soil and fluff will be during the transportation into the enclosed structure. In order to control this dust, the material will be sprayed with water. In addition, there will be constant real-time air monitoring performed during all clean-up actions at the Site. If elevated levels of contamination are detected in the air, all operations will cease.

The stabilization process is designed to provide three layers of protection to both residents and on-site workers. First, the process will be conducted in an enclosed structure; second, the workers will wear protective clothing inside the structure and the air coming out of the structure will be cleaned; and third, the air outside the work area will be constantly monitored to ensure safe levels. These procedures will be implemented the entire time the stabilization process is being implemented.

- A citizen asked how water runoff will be handled once the soil and fluff are stabilized and the area is re-capped.

EPA Response: Prior to designing the actual stabilization plan, engineers will consider the annual rainfall and expected runoff for the Site. It is probable that drainage pipes will be built on the Site to discharge the runoff into a nearby creek. The runoff water from the Site will not become contaminated because it will not pass through the stabilized contamination.

- A citizen summarized the current plan, noting that the previous plan to use incineration is no longer an option: EPA will excavate contaminated soil, combine the soil with the fluff material, mix both with Portland cement, put the mixture under the ground, cover the mixture with soil and vegetation, and then install a drainage system so the water flows away from the Site.

EPA Response: EPA agrees that this is an accurate assessment.

3. Ground Water and Lagoon Cleanup

- A citizen asked what will happen to the contaminated water in the lagoon on the Site.

EPA Response: First the water in the lagoon will be analyzed to determine if it is contaminated. If the water is not contaminated, then it will be legally discharged into a nearby stream or creek, probably Mauses Creek or Mahoning Creek. If the water is contaminated, it will be pumped to a water treatment system where it will be cleaned to Clean Water Act and Clean Streams Law standards and then discharged into a nearby stream or creek.

- A few citizens asked if there is going to be a water treatment system installed at the Site and if the water pumped up from the ground will go through some type of treatment process before it is discharged into a stream or creek. And if so, how many wells have been or will be drilled.

EPA Response: EPA has determined that the ground water at the Site is contaminated and that it is likely that a water treatment system will be used to treat the groundwater and possibly the water in the lagoon. However, a ground water treatment system has not yet been designed, so no extraction wells have been drilled and the total number of wells needed will not be determined until a system is designed.

- A citizen asked where the ground water system will be built.

EPA Response: The exact location of the ground water system cannot be determined until the system is designed; however, the system will likely be built in an area of the site where future development is restricted. Once the ground water treatment system is built, a fence will be erected around the system to restrict access.

- A few citizens expressed concern about the amount of water that will be pumped from the ground and how this will affect the wells in the area.

EPA Response: According to a recent study conducted by the PRPs, pump tests showed that an estimated volume of 12 to 20 gallons per minute can be pumped out of extraction wells without adversely affecting other wells in the area. This amounts to about 25,000 gallons per day. The alternative outlined in the ROD is a conceptual design based on site investigations and studies. During the Remedial Design, EPA will determine specifications for each clean-up action and make sure that they do not adversely impact the community.

Before a ground water treatment system is constructed, there are additional tests and studies needed to determine how the system is affecting the ground water level. These studies can determine even the slightest drop in the ground water level. The wells outside the area where the pumping will be occurring will be monitored to ensure that the extraction wells are not adversely affecting the water level in these wells. Also, the actual ground water system will be routinely monitored.

- A citizen asked if EPA can project how long the ground water remediation will last.

EPA Response: It is hard to predict how long the ground water remediation will last until the system is operating. Once the groundwater treatment system is operating, sampling results will provide data that can be analyzed to determine the rate at which the groundwater is being cleaned. This data will also provide an estimate of how long the groundwater system will need to operate to reach EPA's clean-up levels.

It is also hard to predict the length of the groundwater cleanup because the solvents that are contaminating the groundwater are dense non-aqueous phase liquids (DNAPL). DNAPLs are not easy to capture during a pump and treat cleanup because the DNAPLs enter fractures in the bedrock and are difficult to extract. Once in the bedrock fractures, the DNAPLs serve as a constant source of continued contamination. This makes it hard to predict how long groundwater remediation will last.

4. Economic Impact and Future Site Development

- A few citizens expressed concern about the future development of the site. One citizen compared it to a nuclear waste dump and commented that stabilization seems like the cheapest or easiest alternative.

EPA Response: EPA will place restrictions on the property that will limit the future use of the property. Such restrictions will include fencing the 8-acre area of stabilization. Because the ground water at the site is contaminated, and the ground water clean up process will be on-going for some time. EPA chose this alternative because it best satisfies EPA's cleanup standards including:

Threshold Criteria
Overall protection of human health and the environment
Compliance with applicable laws

Balancing Criteria
Long-term effectiveness and performance
Reduction of toxicity, mobility, and volume through treatment
Short-term effectiveness
Ability to implement
Cost

Modifying Criteria
State acceptance
Community acceptance.

- A citizen expressed concern over the economic impact caused by the appearance of the Site, and asked when the building located on the site will be demolished.

EPA Response: EPA is in the process of issuing an Administrative Order to the Site owner regarding the building. The Administrative Order requires the Site owner to demolish and remove the building. Once EPA issues the Administrative Order, the Site owner will have a 60-day period to respond to the Order or negotiate with EPA. EPA expects the building to be demolished by Spring 1998.

Written Comments Received During the Comment Period

1. It should be clarified that the dioxins and furans [are] formed (and unable to be destroyed) as part of the incineration process, rather than being contained in the fluff material that is subject to stabilization.

EPA Response: EPA agrees that detections of the Dioxins and Furans in the pilot incineration testing were due to formation of dioxins and furans as by products of the combustion. EPA has modified texts in the ROD in Section IV B3 b on page 12.

2. Combining Portland cement, which contains lime, with the elements of cooper and lead could lead to precipitation of these metals and promote leaching of the metals to the groundwater.

EPA Response: Alkaline compounds such as lime (calcium oxide) and cement (anhydrous calcium silicate) act as binders and immobilize many inorganic compounds including lead and copper. Alkaline compounds keep pH levels high in the solidified waste which prevents leaching by converting metals into insoluble metal hydroxides. EPA has identified solidification and stabilization using cement as a Best Demonstrated Available Treatment Technology (BDAT) for metal containing waste. (EPA/530/R-93/012 June 1993.)

3. The removal of junk and debris from the Site is appropriate but the responsibility for this activity should be with the Site owner.

EPA Response: The Record of Decision is a decision document that is intended to set forth EPA's chosen remedial action to be implemented at a site. Discussions of individual parties' liability is not appropriate in the Record of Decision. The Superfund statute defines liability for various classes of parties, and EPA will negotiate with potentially responsible or consider other appropriate enforcement actions in the context of its enforcement process.

4. The description of preferred alternative includes placement of a cover that meets PADEP Residual Waste cover requirements. It is Nassau understanding that the stabilized material will have two-foot soil cover placed over it that is vegetated to prevent the ponding of liquids and minimize erosion. Although the estimated area of the two-foot cover is 8 acres, the final configuration of the area subject to soil cover will be determined during the remedial design phase of the project.

EPA Response: During the prepublic meeting with Nassau, the Commonwealth of Pennsylvania and local township representatives, it was determined that the most environmentally sound approach would be to extend the soil cover over the entire area inside the MW Manufacturing fence to make certain no area is left exposed which could pose any public health threat. In addition, the full soil cover would maintain the aesthetics of the land. This position was discussed at the public meeting, and was depicted in a graphic prepared by Nassau.

5. The total risks presented in the Proposed Plan Table 1 represent EPA's assessment of the cumulative risk or hazard indices for chemicals of concern in fluff material and surface soil based upon the worst case residential; exposure scenarios presented in Appendix D of the Re-Evaluation of the Risk Assessment dated May 1995. However, the non-

carcinogenic risk estimates of 1.42 (adult plus child) and 4.63 (child) for exposure to soil is not equal to the total cumulative non-cancer risk, and it is unclear what this number represents. The risk estimates in the Re-Evaluation of the Risk Assessment dated May 1995 were representative of exposure scenarios that were considered to be "reasonable exposures" for a residential receptor rather that a "worst case". Evaluating risks related to reasonable exposure scenarios is considered to be more appropriate than estimating the potential risk for a hypothetical resident considering the low potential for future land use to be residential.

EPA Response: There are three issues as follows to address in this statement: (1) As stated in the Proposed Plan, Table 1 is a representation of the total risk for Chemicals of Concern (COCs) in fluff material and surface soil based on a future residential land use scenario. Residential areas exist near the MW Manufacturing Site, therefore, the evaluation of risk to future potential residents was warranted. The total non-cancer risk for the residential scenario is a summation of the risks associated with those COCs that possess non-cancer risks in fluff material (polychlorinated biphenyls (PCBs), antimony, and copper) and in the surface soil (PCBs and copper). It should be noted that the non-cancer risks identified as "Total Estimated Hazard" found in Appendix D of the Re-Evaluation of Risk Report (1996) are not correct. The "Total Estimated Hazard" for surface soil and fluff material as reported in Appendix D is actually the risk associated solely with PCBs and copper, respectively.

(2) To address the issue of "reasonable" versus "worst case" exposure scenarios it is important to understand the definitions of these scenarios as presented in the Re-Evaluation of Risk Report and in EPA Guidance. The "reasonable" exposure in the Report corresponds to a "central tendency" estimate of the risk as defined by EPA. This estimate can be defined as the average risk. The "worst case" exposure in the Report corresponds to a "reasonable maximum exposure (RME)" estimate of the risk as defined by EPA. The RME estimate is defined as the highest exposure that is reasonably expected to occur at a site [Risk Assessment Guidance for Superfund (RAGS): Human Health Evaluation Manual (Part A)/EPA/1989] and, therefore, corresponds to the potential risk to sensitive subgroups or populations. EPA recommends that both the central tendency risk estimate and the RME risk estimate be determined for Superfund sites (Guidance on Risk Characterization for Risk Managers and Risk Assessors/EPA/1992). The RME exposure scenario is the preferred risk scenario for the determination of human health risk (RAGS/1989).

(3) It should be noted that both future residential and future Industrial exposure scenarios should have been evaluated in Appendix D of the Re-Evaluation of Risk Report. Unfortunately, the future industrial exposure was not calculated in the Re-Evaluation of Risk Report. For this reason, EPA, in the Proposed Plan, made a determination of the potential risk to a future industrial worker exposed to current Site conditions.

6. The cleanup goals in the Focused Feasibility Study dated May 1995 were developed for those chemicals of concern demonstrating carcinogenic risk estimated in excess of 10 -6 or non-cancer hazard quotients greater than 1 for future residential exposure. The Proposed Plan states that cleanup levels for fluff and surface soil were developed for the Site contaminants (BEHP[bis(ethylhexyl)phthalate], PCBs[polychlorinated biphenyls], copper and antimony) that present unacceptable risk estimates for routine exposure under an industrial land use scenario. However, the Proposed Plan uses EPA Region III risk-based Remedial Action Levels. Based on a site-specific industrial use scenario, the only chemicals of concern in surface soil that would warrant development of risk based cleanup levels are BEHP, and perchloroehtylene (PCE). However, BEHP is not considered a chemical of concern since it appears at the Site in an inert form (plastic) and was found to be immobile in the leachability studies as presented in the Fluff Leacability Testing Summary Report dated August 1994.

EPA Response: The COCs in surface soil were determined by EPA based on the RME scenario for a potential industrial worker as explained in the response to

Statement 5. The COCs are tetrachloroethylene (PCE), PCBs, BEHP, antimony, and copper. The cleanup level for PCE was omitted from the Proposed Plan. Site-specific cleanup levels for these compounds will appear in the Record of Decision. BEHP is considered to be a COC because it was detected in soil in its free form.

<IMG SRC 98013B>
<IMG SRC 98013C>

MW MANUFACTURING

Site Information:

Site Name:	MW MANUFACTURING
Address:	VALLEY TOWNSHIP, PA
EPA ID:	PAD980691372
EPA Region:	03

Site Alias Name(s):

DOMINO SALVAGE
DOMINO SALVAGE - WAREHOUSE #81

Record of Decision (ROD) - Explanation of Significant Differences (ESD):

ROD Date:	09/27/2000
Operable Unit:	01
ROD ID:	EPA/ESD/R03-00/066
Text:	Full-text ROD document follows on next page.

EPA/ESD/R03-00/066
2000

EPA Superfund
Explanation of Significant Differences:

MW MANUFACTURING
EPA ID: PAD980691372
OU 01
VALLEY TOWNSHIP, PA
09/27/2000

EXPLANATION OF SIGNIFICANT DIFFERENCES

MW MANUFACTURING – OU3

VALLEY TOWNSHIP, PA

1.0 INTRODUCTION

SITE NAME:	MW Manufacturing Superfund Site
SITE LOCATION:	Valley Township, Montour County, Pennsylvania
LEAD AGENCY:	U.S. Environmental Protection Agency, Region III (“EPA” or the “Agency”)
SUPPORT AGENCY:	Pennsylvania Department of Environmental Protection (PADEP)

1.1 Statement of Purpose

This explanation of Significant Difference (“ESD”) is issued in accordance with Section 117 (c) of the Comprehensive Environmental Response, Compensation and Liability Act, as amended (“CERCLA”), and is now a part of the Administrative Record for the MW Manufacturing Superfund Site (“Site”). This document explains significant differences to the remedy selected in the Record of Decision (“ROD”) for the Site signed by the Regional Administrator on June 30, 1992. This ESD makes changes to the ROD previously issued which is attached as Exhibit 1. In effect this ESD changes groundwater cleanup levels and requires the use of an overburden groundwater extraction system along with intermittent pumping from bedrock wells. The remedial changes proposed in this ESD will achieve mass removal of groundwater contamination from the area of highest impact; namely overburden groundwater.

1.2 SUMMARY OF THE SITE HISTORY, SITE CONDITIONS, AND SELECTED REMEDY.

The MW Manufacturing Superfund Site (Site), located in Valley Township, Montour

County, Pennsylvania, occupies approximately 15 acres of land along Washingtonville Road. The Site is bordered on the north by a Pennsylvania Department of Transportation (PADOT) storage facility, on the west and south by agricultural and wooded properties, and on the east by Washingtonville Road and a wetland area. Mauses Creek is east of the Site between Washingtonville Road and State Road 54.

MW Manufacturing engaged in secondary copper recovery from scrap wire, using both mechanical and chemical processes, until it ceased operations. In 1972, MW Manufacturing filed for protection under Chapter 11 of the United States Bankruptcy Code, and the Philadelphia National Bank acquired the property. The Site is currently inactive, in part due to legal actions by the Pennsylvania Department of Environmental Protection (PADEP) (formerly known as the Pennsylvania Department of Environmental Resources). PADEP records indicate that Mr. Allan Levin of Doylestown, Pennsylvania, proprietor of MW Manufacturing Corporation, owned the property from about 1966 to 1972.

The chemical recovery process employed the use of a hot bath to melt the polyvinyl chloride (PVC) plastic insulation away from the the scrap copper wire. The high temperatures decomposed the plastic insulation into carbon, which separated out as a granular black material, and also enhanced the dissolution of lead from the plastic insulation and copper from the metal wire. Chlorinated solvents such as tetrachloroethene (PCE) were then used to remove the residual oil from the separated copper. The inorganic and organic compounds associated with this process have been identified throughout the Site.

The mechanical recovery process consisted of the shredding of wire and the generation of "Fluff" waste. The Fluff waste consists of fibrous insulation material mixed with bits of plastic and copper. Phthalate esters, copper, lead and chlorinated solvents are all present in the Fluff.

Warehouse 81 Inc. acquired the Site in 1976. Subsequently, Warehouse 81 Inc. and Domino Salvage, Inc. formed a limited partnership to recover wire at the Site. Records indicate that the only activities conducted by the Warehouse 81/Domino Salvage partnership were mechanical recovery operations.

The main facility at the Site consists of a single, large empty building which occupies approximately one acre of property. Most of this building is collapsed and will be fully demolished and removed by the site owner. In addition, there is a smaller building which occupies approximately 3,350 square feet to the south of the main building. The remainder of the Site consists of open land, piles of Fluff and a small surface water impoundment. Currently the Site is fenced, and access to the Site is restricted.

Investigations of environmental conditions at the Site began in the early 1980s. In 1981-1982, PADEP inspected the Site, installed four monitoring wells, and collected groundwater samples. In late 1982, Warehouse 81 retained Dunn Geoscience Corporation (Dunn) to evaluate conditions at the Site. Dunn installed seven additional groundwater monitoring wells. Together with the four PADEP wells, the groundwater monitoring network consisted of a total of 11 wells. In addition, Dunn conducted a pumping test and collected soil and groundwater samples.

The Site was proposed for the National Priorities List (NPL) on October 1, 1984 and was placed on the NPL on June 10, 1986. In February 1987, a Removal Consent Order was signed by the EPA and the current owners of the Site, Michael G. Sabia and Michael G. Sabia, Jr., doing business as Warehouse 81 Limited Partnership, were directed to supply water to the person living on-Site and to keep records of the water supply for 5 years.

A Potentially Responsible Party (PRP) search was conducted for the Site. As a result of this search, EPA determined that the previous owners and operators of the Site had gone out of business. EPA notified current owners of the Site, Michael G. Sabia and Michael G. Sabia, Jr., doing business as Warehouse 81 Limited Partnership, of their potential liability at the Site and offered them the opportunity to conduct the Remedial Investigation/Feasibility Study (RI/FS), but they elected, not to participate. EPA conducted the RI/FS beginning in August 1988. Following the completion of the RI/FS, EPA divided response actions at the Site into six Operable Units (OUs). OU-1 addresses the carbon waste that has been left on-site from the copper recovery process. In March 1989, EPA issued a ROD which selected off site incineration for the carbon waste as the remedy for OU-1. A Special Notice Letter to conduct the Remedial Design and Remedial Action (RD/RA) for OU-1 was sent to Warehouse 81 on March 6, 1989. Again, Warehouse 81 declined to participate. The excavation and off-site incineration of the carbon waste were completed by EPA in March 1992.

Additional PRP investigations in 1992 discovered records that led to the identification of AT&T Nassau Metals (Nassau) and Pennsylvania Power and Light (PP&L) as additional PRPs. A general notice letter regarding their Potential liability for the Site was sent to Nassua and PP&L on May 19, 1992.

EPA issued the ROD for OU-2 in June 1990, this ROD addressed the Fluff, impacted soils and impacted lagoon water at the Site. In December 1992, Nassau petitioned EPA to reopen the OU-2 ROD. EPA reopened the public comment period and Nassau submitted comments to supplement their petition to reopen the ROD in October 1993. In March, 1994 EPA agreed to consider alternatives proposed by Nassua provided that Nassua conducted a treatability study and a Focus Feasibility Study (FFS) to reevaluate the remedial alternatives. Between 1993-1995, Nassau undertook a series of studies to evaluate an alternate remedy for the Site. During this period EPA continued to pursue the Remedial Design (RD) of the OU-2 remedy. During the RD for OU-2 a series of treatability studies involving incineration of Fluff and contaminated soils were conducted. The treatability studies which were completed in November 1995, revealed that the selected remedy for OU-2 had the potential for adverse impacts on human health and environment. Ultimately, EPA abandoned the OU-2 Remedy involving incineration and instead selected the OU-5 remedy involving stabilization and solidification of Fluff and contaminated soils, a remediation technology similar to that proposed by Nassau. Thus, OU-5 remedy addresses the Site contaminants previously addressed under OU-2.

On June 30, 1992, EPA issued the ROD for OU-3 which addresses groundwater contamination. By letter dated September 30, 1992, EPA sent a Special Notices to Nassau, PP&L and Warehouse 81 and its general partner, Michael G. Sabia, Sr. which informed those PRPs that the EPA was willing to enter into a federal consent decree with them to conduct the RD/RA contemplated by the OU-3 ROD. Nassau and PP&L responded, but failed to make an acceptable good faith offer to the Agency in regard to OU-3. Warehouse 81 and Michael G. Sabia, Sr. did not respond to the Special Notice letter. On March 31, 1993, a Unilateral Administrative Order was issued to the each PRP to conduct the RD/RA for OU-3. Nassua and PP&L agreed to conduct the RD/RA for OU-3. During the design phase, EPA decided to split OU-3 in to two operable units: OU-3 and OU-4. OU-3 addresses the long-term groundwater cleanup, and OU-4 provides public water to potentially affected residences and businesses. The construction of a public water supply was completed in August 1996.

The OU-6 addresses the main building which it has structurally become unsafe, creating potential for release of the Fluff from the Fluff piles.

Thus, the Site has been divided into the following six operable units.

- OU-1: Carbon waste pile
- OU-2: Fluff waste and Site soils (OU-2 was replaced by OU-5 in 1995)
- OU-3: Groundwater Cleanup
- OU-4: Public water supply
- OU-5: Fluff waste (previously addressed under OU-2), storage tanks, lagoon water and sediments, and Site soils (also previously addressed under OU-2).
- OU-6: Building demolishing and debris removal.

OU-1, the removal of the carbon pile, was completed in 1992. OU-4, construction of a 17,400 foot public water distribution system throughout Valley Township was completed in 1996, providing water to 39 residences and 13 commercial establishments. The public water supply is operating as designed providing safe drinking water to the affected residences and commercial establishments. The Operation and Maintenance ("O&M) of the public water system has been taken over by the Valley Township Water Authority, and it is being operated in compliance with the Commonwealth of Pennsylvania drinking water standards.

From 1996 to 1998, a series of Pre-Design Investigation activities were conducted for OU-3 by Nassau. The principal objectives of the Pre-Design Investigation activities were to: (1) acquire additional groundwater quality and water level data at the Site and from the surrounding areas to fill data gaps regarding the extent of groundwater impacts and the direction of groundwater flow; (2) further assess the hydrogeologic setting which influences groundwater conditions at, and adjacent to, the Site; and (3) evaluate the anticipated groundwater treatment efficiencies through bench-scale treatability studies.

Pre-Design Investigation activities included:

1) installation of additional on-site and off-site groundwater monitoring wells;
2) measurement of discrete and continuous water levels;
3) groundwater sampling for evaluation of VOCs (Shallow Groundwater Grab Sampling Plan);
4) Geoprobe® investigation;
5) evaluation of product recovery from bedrock wells Dunn-3 and Dunn-4;
6) overburden extraction well installation;
7) overburden aquifer test;
8) groundwater sampling and analysis in support of natural attenuation;
9) surface water and sediment sampling in Mauses Creek;
10) human health risk assessment for surface water in Mauses Creek;
11) groundwater modeling; and
12) confirmatory treatability testing.

Based on the conclusions summarized in the Pre-Design Investigation, a conceptual model of the Site conditions was developed. This Conceptual Site Model indicated the following:

1. The primary environmental impacts at the Site result from VOCs present within groundwater in the overburden and bedrock beneath, and east of, the site;
2. The highest degree of contamination is found in the overburden;
3. Site groundwater eventually discharges to the wetlands and Mauses Creek east of the site;
4. The hydrogeologic setting effectively contains the impacted groundwater to a defined area. The contamination of impacted groundwater is a function of topographic features, the orientation of the bedrock strike, steeply dipping beds, and hydraulic gradients (including upward vertical flow within the bedrock and the discharge of groundwater to the wetlands and creek system);
5. Migration of contamination has been further reduced by the installation of a public water supply in 1996 which effectively eliminated known groundwater withdrawal in the vicinity of the plume; and
6. Concentrations of VOCs in groundwater are expected to slowly decrease in future years as a function of overburden groundwater remediation in conjunction with natural attenuation, including degradation within the aquifer, and dilution and volatilization in the surface water environment.

The results of these activities are presented in the Pre-Design Report dated November 1995 and the Supplemental Pre-Design Investigation Report (SPDIR) dated April 2000.

The aforementioned OU-3 investigations, in conjunction with other investigations addressing other operable units, have provided substantial information regarding environmental conditions at the Site. In summary, soil and groundwater at the Site have been impacted as follows: the presence of approximately 32,000 cubic yards (CY) of Fluff waste which contains VOCs (mainly chlorinated solvents), semi-volatile compounds (inert plasticizer compounds), and metals (mainly copper and lead); the former presence of approximately 1,700 CY of carbon waste which contained significant concentrations of chlorinated solvents (particularly TCE/PCE) and PCBs; the presence of above and underground storage tanks which contained chlorinated solvent product and petroleum products (gasoline, oil); and the haphazard storage and disposal of drummed material (mainly carbon waste and Fluff waste) throughout the rear of the Site. The presence of Non Aqueous Phase Liquid (NAPL) at the Site in soil and groundwater has been established. Based on the findings of the investigations, it is estimated that approximately 10,000 CY of soil containing NAPL will be addressed utilizing low temperature thermal desorption (LTTD) as part of OU-5.

2.0 EPA's Selected Remedy

EPA's ROD for OU-3 was issued in June 1992. The ROD addressed Site groundwater and adjacent wetland areas.

The major components of the OU-3 remedy described in the 1992 ROD are as follows:

1. Provide a connection from the Danville public water supply system to the community of Mausdale;
2. Extraction of impacted groundwater from the plume at the Site;
3. Treatment of the impacted water in a chemical precipitation unit to remove inorganic contaminants;
4. Removal of organic contaminants from the groundwater by air stripping followed by destruction of organic contaminants from the air stream by thermal destruction;
5. Removal of remaining organic contaminants using carbon adsorption and discharging the treated water to Mausdale Creek, or/and the Susquehanna River.

Component 1, the construction of a public water supply system was completed under OU-4, as described previously. This ESD is issued to explain significant changes to component 2. All other components of the remedy remain same.

3.0 BASIS FOR ESD

3.1 Information Supporting ESD

Several components of the Pre-Design Investigation contributed to a better understanding of the Site conditions, which highlighted a need for a modification of the selected remedy. Most importantly, a Geoprobe investigation of the saturated overburden defined a huge concentration of residual an/or pooled Dense Non Aqueous Phase Liquid (DNAPL). The DNAPL areas act as an ongoing source of groundwater VOC plume generation as the dissolution of NAPL from saturated and unsaturated, soils occurs. The groundwater gradient study conducted supported that the naturally occurring groundwater flow system contains the dissolved VOC plume to the area bounded by Mauses Creek.

The Shallow Groundwater Grab Sampling Program conducted at the Site indicates that overburden groundwater is more adversely impacted with respect to chlorinated VOCs than was previously known. The chemical composition of the product varies from types of Light Non Aqueous Phase Liquid (LNAPL) and DNAPL to a combination of both. Concentrations of dissolved chemicals are several orders of magnitude higher near the source areas than within the periphery of the overburden VOC plume.

Sufficient residual product is present in these saturated overburden source areas to act, through the process of gradual dissolution, as a long-term and continuing source of VOCs to the overburden groundwater beneath the Site. Physical and chemical properties of non-aqueous phase chlorinated solvents as found on-site tend to cause residual product to persist in the subsurface for long periods of time, with no long-term reduction in concentration, even when traditional downgradient groundwater extraction systems are installed and operated. The high densities of chlorinated solvents relative to water and the low absolute solubilities allow chlorinated solvents to penetrate the water table and potentially pool on top of less permeable layers at depth in the saturated overburden. The solubilities in water are high for chlorinated solvents, meaning that small amounts of residual product at a Site can cause persistently high levels of groundwater impacts.

The Pre-Design Investigation compared: 1) groundwater extraction from the overburden via wells and an interceptor trench; with 2) pumping from the intermediate and deeper bedrock. Overburden aquifer testing conducted during pre-design activities indicates that the overburden extraction well scheme would be difficult and inefficient due to the low hydraulic conductivity of the overburden as compared to the intermediate bedrock.

Groundwater modeling indicates that long-term pumping of the bedrock aquifer as envisioned in OU-3 remedy would result in the de-watering of the wetland area adjacent to Mauses Creek and would adversely impact the flow within the creek, especially during low flow conditions. In addition, long-term pumping of the bedrock aquifer could cause the downward migration of DNAPL, potentially compounding the extent of current groundwater impacts at the Site.

Based upon results from all the various model simulations that were run, the on-site interceptor trench scenario appears to produce the most effective hydraulic control and mass removal of dissolved VOCs from overburden groundwater within the Site. This scenario resulted in a capture zone that extended approximately 600 feet downgradient of the trench. The groundwater flow rate between the downgradient extent of this capture zone and Mauses Creek was reduced, allowing more time for natural attenuation effects to occur. In addition, this scenario also appears to result in the collection of impacted groundwater ater from shallow bedrock underlying the trench. Furthermore, model simulation of the on-site trench scenario in concert with limited bedrock pumping from the two highly impacted Dunn wells (i.e. Dunn-3 and Dunn-4), indicated improved contaminant mass removal benefits without adversely impacting hydraulic conditions in Mauses Creek and the adjacent wetlands. Additional analyses should be conducted as part of remedial design activities to more closely examine specific on-site interceptor trench alternatives, including optimazing the trench configuration that will best achieve the program objectives.

References providing detailed information regarding the aforementioned pre-design activities are provided below:

1. Pre-Design Investigation Report (November 1995) prepared by S. S. Papadopulas & Associates;
2. Remedial Design Work Plan Addendum (August 1996) prepared by McLaren/Hart;
3. Remedial Design Work Plan Addendum – Supplement 1 (October 1996) prepared by McLaren/Hart;
4. Remedial Design Work Plan Addendum – Supplement 2 (March 1997) prepared by McLaren/Hart;
5. Draft Supplemental Pre-Design Investigation Report (March 1999) prepared by McLaren/Hart; and
6. Draft Supplemental Pre-Design Investigation Report – Addendum 1 (April 2000) prepared by McLaren/Hart.
7. Supplemental Pre-Design Investigation Report –Addendum 1 and 2 (July 2000)

This technical information is available in the Administrative Record file.

4.0 DESCRIPTION OF SIGNIFICANT DIFFERENCES

4.1 Conceptual Groundwater Extraction System

The ROD includes a brief conceptual design for the groundwater extraction system based on information obtained during the RI, and assumptions made during development of the ROD concerning the extent of impacted groundwater. The conceptual design presented in the ROD includes the installation of bedrock extraction wells along the perimeter and the interior of the VOC plume and contemplates pumping at a rate sufficient to extend the capture zone beyond the plume boundaries in all directions (800 gpm). This traditional design accomplishes two objectives: 1) to provide hydraulic containment of a plume, and 2) to remove dissolved chemicals from the groundwater. At many Sites, this approach succeeds in providing hydraulic containment of dissolved plumes.

In addition, the ROD calls for groundwater cleanup to the background levels. However, as acknowledged in the ROD issued in June 1992, DNAPL in the subsurface acts as a persistent source of groundwater impacts, preventing reduction of long-term dissolved VOC concentrations in groundwater. The common futility of groundwater extraction for restoration of DNAPL sites has been well established now and is a consideration at the Site. Also, the Commonwealth of Pennsylvania no longer requires cleanup of contaminated groundwater to the background levels. Therefore, EPA is changing groundwater cleanup levels from background to Maximum Contaminant Levels (MCL) given in EPA drinking water standard or Medium Specific Concentration (MSC) given in ACT 2 under the Land Recycling Program of PADEP, whichever is more stringent.

Evaluation of conditions observed at the Site and the analysis of further data as part of the Pre-Design Investigation indicates that a modification of the ROD's conceptual design of the groundwater extraction system is appropriate and warranted. The natural groundwater flow conditions at the Site achieve the first objective described above, namely providing lateral and vertical hydraulic containment of the dissolved plume. This is based on groundwater surface elevation measurements, and is confirmed by groundwater analytical data from monitoring and residential well sampling.

With regard to the second objective removal of dissolved contaminants, the modified conceptual remedial design presented herein maximizes the efficiency of chemical removal from the overburden groundwater by capturing overburden groundwater emanating from areas present on the Site demonstrating the highest concentrations of organic compounds. The difference in the overburden groundwater extraction system is the use of an overburden interceptor trench rather than the installation of bedrock extraction wells along the perimeter and interior of the VOC plume. The interceptor trench would be used to capture highly impacted overburden groundwater before it travels off-site and reaches Mauses Creek. In addition, limited pumping of the bedrock using Dunn wells will be beneficial to the mass removal of contaminants.

If it is determined during operation of the proposed system that additional benefit could be achieved by alternate or additional overburden or bedrock groundwater recovery, additional recovery wells or trenches will be constructed as appropriate.

This overburden extraction system is not intended to intercept the downgradient portion of the plume in the bedrock, nor to capture all potentially impacted groundwater.

The groundwater model indicated that the interceptor trench recovered 25 gpm of overburden groundwater. The final design of the recovery trench, including its location on the Site; length; depth; etc., will be determined during the remedial design phase of the project. A more refined groundwater model will be developed as part of the preliminary design to determine the optimum trench design to achieve the desired objectives. The expected volume of groundwater to be captured by the interceptor trench will be used to design the overburden groundwater treatment system. The expected flow to the overburden treatment system will be significantly lower than 800 gpm of total flow proposed in the original June 1992 ROD.

The ROD requires that treated groundwater from the Site will be discharged to either the Susquehanna River or Mauses Creek. The Susquehanna River was considered a viable discharge option due to the proposed discharge rates presented in the ROD of 800 gpm. However, based on the anticipated significantly lower flow from the overburden interceptor trench as well as the distance to the Susquehanna River, discharging to the Susquehanna River is not a viable or beneficial alternative for the overburden remediation.

During the design, scenario for discharging treated groundwater in the wetland area adjacent to Mauses Creek will be evaluated to minimize potential impacts to wetlands due to groundwater withdrawal using the collection trench. If it is determined to be feasible and beneficial, the collected groundwater after the treatment will be discharged to the wetland.

If it is determined to be not feasible or beneficial, the treated groundwater will be discharged directly to Mauses Creek.

4.2 Comparison of Rod to Proposed Revisions

A side-by-side comparison of the ROD and the significant differences is provided as Table 1. Table 1 highlights the new information obtained as a result of the pre-design activities which formed the basis for evaluating an alternative remedial approach.

ROD Component	New Information	Ramification	Difference
Extraction System	Geoprobe® Investigation	Extent & magnitude of free product and DNAPL in soil/GW much greater than previously known	Interceptor trench vs. well system would collect highly impacted GW more efficiently
Extraction System	GW Sampling for VOCs	Extent & magnitude of free product and DNAPL in GW much greater than previously known	Interceptor trench vs. well system would collect highly impacted GW more efficiently
Extraction System	Overburden Aquifer Test	Revealed constraint of extracting limited volume of GW (<1 gpm) in overburden. Well extraction system would require numerous wells/ high maintenance	Interceptor trench vs. well system would collect highly impacted GW more efficiently
Extraction System	Natural Attenuation Evaluation	Capacity for natural attenuation beyond site boundary would contribute to mitigating need for active extraction in wetlands	Interceptor trench vs. well system would collect highly impacted GW more efficiently
Extraction System	Modeling	ROD scenario modeled and shown to have dewatered wetlands	Interceptor trench vs. well system would not dewater wetlands and more efficiently collect highly impacted GW

5.0 SUPPORT AGENCY COMMENTS

PADEP concurs with EPA’s proposed modification of the remedy given in the June 30, 1992 ROD to the remedial approach outlined in this ESD.

6.0 STATUTORY DETERMINATIONS

The modified remedy proposed within this ESD complies with the NCP and the statutory requirements of CERCLA. The ROD remains protective and continues to meet ARARs.

The modification of the remedy proposed within the ESD acknowledges the existence of highly impacted groundwater caused by the presence of DNAPL.

The new information obtained during the pre-design investigations mitigated the need to construct an extraction system utilizing recovery wells. Specifically, the pre-design investigations revealed that the presence and magnitude of DNAPL in several areas required a modification of the Conceptual Site Model and, consequently, the remedial approach. A remedial approach using an interceptor trench in conjunction with intermittent bedrock wells pumping to collect highly impacted groundwater is an efficient way of removing the bulk of contaminant and will be protective in conjunction with provision of public water supply.

7.0 PUBLIC PARTICIPATION

This ESD and the information upon which it is bases have been included in the Administrative Record file for this Site. The Administrative Record also includes the ROD for this OU and all documents that formed the basis for EPA's selection of the remedy. The Administrative Record is available for public review at the locations listed below:

U.S. EPA, Region III
1650 Arch Street
Philadelphia, PA 19103
Hours: Mon.-Fri., 9 a.m. to 4 p.m.

Thomas Braver Free Library
25 East Market Street
Danville, Pennsylvania
Hours Monday 1p.m. to 9 p.m.
Hours Tue. & Sat., 10 a.m. to 5 p.m.
Hours Thur. & Fri., 7 p.m. to 9 p.m.

Abraham Ferdas, Division Director
Hazardous Site Cleanup Division

9/27/00
Date