EPA/ROD/R02-87/045
1987

EPA Superfund
Record of Decision:

MONTGOMERY TOWNSHIP HOUSING DEVELOPMENT
EPA ID: NJD980654164
OU 01
MONTGOMERY TOWNSHIP, NJ
09/29/1987

- DRAFT OPERABLE UNIT REMEDIAL INVESTIGATION REPORT, MONTGOMERY TOWNSHIP HOUSING DEVELOPMENT, PREPARED BY WOODWARD-CLYDE CONSULTANTS, JULY 1987
- DRAFT OPERABLE UNIT FEASIBILITY STUDY REPORT, MONTGOMERY TOWNSHIP HOUSING DEVELOPMENT, PREPARED BY WOODWARD-CLYDE CONSULTANTS, JULY 1987
- PROPOSED REMEDIAL ACTION PLAN, MONTGOMERY TOWNSHIP HOUSING DEVELOPMENT, JULY 1987
- THE ATTACHED DECISION SUMMARY FOR THE MONTGOMERY TOWNSHIP HOUSING DEVELOPMENT SITE
- THE ATTACHED RESPONSIVENESS SUMMARY FOR THE SITE, WHICH INCORPORATES PUBLIC COMMENTS RECEIVED
- STAFF SUMMARIES AND RECOMMENDATIONS.

#DE
DECLARATIONS

CONSISTENT WITH THE COMPREHENSIVE ENVIRONMENTAL RESPONSE COMPENSATION, AND LIABILITY ACT, AS AMENDED, AND THE NATIONAL OIL AND HAZARDOUS SUBSTANCES POLLUTION CONTINGENCY PLAN, 40 CFR PART 300, I HAVE DETERMINED THAT THE SELECTED REMEDY IS PROTECTIVE OF HUMAN HEALTH AND THE ENVIRONMENT, ATTAINS FEDERAL AND STATE REQUIREMENTS THAT ARE APPLICABLE OR RELEVANT AND APPROPRIATE FOR THIS ACTION, AND IS COST-EFFECTIVE.

THE STATE OF NEW JERSEY HAS BEEN CONSULTED AND AGREES WITH THE SELECTED REMEDY, AS IS DOCUMENTED IN THE ATTACHED LETTER OF CONCURRENCE.

I HAVE ALSO DETERMINED THAT THE ACTIONS BEING TAKEN AT THE MONTGOMERY TOWNSHIP HOUSING DEVELOPMENT SITE ARE APPROPRIATE WHEN BALANCED AGAINST THE AVAILABILITY OF SUPERFUND MONIES FOR USE AT OTHER SITES.

SEPTEMBER 29, 1987
DATE

CHRISTOPHER J. DAGGETT
REGIONAL ADMINISTRATOR.

DECISION SUMMARY
MONTGOMERY TOWNSHIP HOUSING DEVELOPMENT SITE

#SLD
SITE LOCATION AND DESCRIPTION

MONTGOMERY TOWNSHIP HOUSING DEVELOPMENT (MTHD) IS A 72-ACRE TRACT OF LAND IN MONTGOMERY TOWNSHIP, SOMERSET COUNTY, NEW JERSEY. THE DEVELOPMENT IS LOCATED EAST OF ROUTE 206, NORTH OF ROUTE 518, WEST OF THE MILLSTONE RIVER, AND SOUTH OF BEDEN BROOK AND MONTGOMERY ROAD (SEE FIGURE 1, SHADED AREA).

PROPERTIES ALONG MONTGOMERY ROAD, THE NORTHERN BORDER OF THE SITE, ARE WOODED OR AGRICULTURAL LOTS. AN INDUSTRIAL RESEARCH FACILITY IS ALSO LOCATED IN THIS AREA. TO THE SOUTHWEST ARE TWO SHOPPING CENTERS AND AN OFFICE CENTER. THE BOROUGH OF ROCKY HILL (POPULATION 960) WHICH IS PRIMARILY RESIDENTIAL, IS LOCATED TO THE SOUTH. THE HOMES ON THE END OF CLEVELAND CIRCLE ARE BORDERED TO THE EAST BY THE MILLSTONE RIVER, WHICH PARALLELS THE DELAWARE AND RARITAN CANAL.

THE HOUSING DEVELOPMENT CONSISTS OF 71 HOME SITES, EACH OF APPROXIMATELY ONE ACRE. THE HOMES ARE SITUATED ON MONTGOMERY ROAD, SYCAMORE LANE, ROBIN DRIVE, OXFORD CIRCLE, AND CLEVELAND CIRCLE. THE ORIGINAL POTABLE WATER SOURCE FOR EACH HOME WAS A PRIVATE WELL DRAWING FROM THE AQUIFER IN THE BRUNSWICK FORMATION.

IN 1986, THE STUDY AREA WAS EXPANDED TO INCLUDE SIX ADDITIONAL RESIDENCES BEYOND THE BOUNDARIES OF THE MTHD. GROUND WATER INVESTIGATIONS HAVE INCLUDED THE WELLS OF RESIDENCES ALONG CANAL ROAD, EAST OF THE DELAWARE AND RARITAN CANAL, NORTH OF MONTGOMERY ROAD, AND ALONG ROUTE 206, AS WELL AS SOME COMMERCIAL ESTABLISHMENTS ALONG ROUTES 206 AND 518.

THE MTHD SITE LIES WITHIN THE PIEDMONT PHYSIOGRAPHIC PROVINCE AND IS UNDERLAIN BY BEDROCK OF THE BRUNSWICK FORMATION COVERED WITH A RELATIVELY THIN (UP TO ABOUT 30 FEET THICK) LAYER OF UNCONSOLIDATED SEDIMENTS. THE BRUNSWICK FORMATION CONTAINS THE PRINCIPAL AQUIFER IN THE REGION. GROUND WATER EXISTS IN A NUMBER OF WATER-BEARING ZONES WHICH ARE GENERALLY UNDER UNCONFINED TO SEMI-CONFINED CONDITIONS. INTERSECTING VERTICAL FRACTURES HAVE RESULTED FROM JOINTING AND PROVIDE THE PRINCIPAL MEANS OF STORAGE AND MOVEMENT OF GROUND WATER IN THE FORMATION.

THE GROUND WATER IN THE BRUNSWICK FORMATION IS EXTENSIVELY PUMPED FOR DOMESTIC AND INDUSTRIAL USE. MORE THAN 90 WELLS ARE KNOWN TO EXIST WITHIN A ONE MILE RADIUS FROM THE CENTER OF THE STUDY AREA. THE TOTAL REPORTED YIELDS OF THE PERMITTED WATER SUPPLY WELLS IS ON THE ORDER OF 2,000 GALLONS PER MINUTE (GPM).

#SH
SITE HISTORY

TAX RECORDS AND ACCOMPANYING MAPS INDICATE THAT THE HOUSING DEVELOPMENT SITE WAS PRIVATELY OWNED AND HAD BEEN USED FOR FARMING UNTIL 1961. THERE WAS NO KNOWLEDGE OF ANY UNDERGROUND TANKS OR LANDFILL AREAS ON THE PROPERTY AT THAT TIME. TRI-STATE DEVELOPMENT CORPORATION PURCHASED THE LAND IN 1961 AND BEGAN CONSTRUCTION OF 71 HOMES. THE POTABLE WATER SOURCE FOR ALL HOMES WAS ORIGINALLY INDIVIDUAL PRIVATE WELLS. ALL HOMES UTILIZE SEPTIC SYSTEMS.

IN 1978, A STUDY BY RUTGERS UNIVERSITY OF THE ROCKY HILL BOROUGH WELL REVEALED TRICHLOROETHENE (TCE) CONTAMINATION LEVELS OF APPROXIMATELY 25 MICROGRAMS PER LITER (UG/L). CONTINUED TESTING OF THIS WATER SUPPLY FROM 1978 TO 1983 DETECTED CONCENTRATIONS OF TCE RANGING FROM ABOUT 50 TO 200 UG/L.

CONCERN OVER GROUND WATER CONTAMINATION IN ROCKY HILL LED THE NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION (NJDEP) TO CONDUCT INITIAL SAMPLING OF COMMERCIAL AND DOMESTIC WELLS IN MONTGOMERY TOWNSHIP FROM DECEMBER 1979 TO JANUARY 1980. OTHER INVESTIGATIONS PERFORMED PRIOR TO 1984 INCLUDED SAMPLING FROM PRIVATE WELLS, INDUSTRIAL WATER SUPPLY WELLS, SOILS, SURFACE WATERS AND SEPTIC TANKS. FURTHER ENVIRONMENTAL INVESTIGATIONS CONTINUE THROUGH THE PRESENT. RESULTS INDICATE THAT APPROXIMATELY HALF OF THE PRIVATE WELLS IN THE DEVELOPMENT ARE CONTAMINATED WITH TCE AND OTHER HALOGENATED HYDROCARBONS, WHILE THE REMAINING ARE THREATENED.

FIGURE 2 SUMMARIZES THE RESULTS OF INVESTIGATIONS PRIOR TO THE INITIATION OF THE REMEDIAL INVESTIGATION AND FEASIBILITY STUDY (RI/FS) FOR THE MTHD AND THE RELATED ROCKY HILL MUNICIPAL WELL (RHMW) SITE. DATA SHOWN ARE MEAN AVERAGES OF TCE CONCENTRATIONS FOUND IN DOMESTIC WELLS BETWEEN 1979 AND 1984. RESIDENCES AT THE ENDS OF ROBIN DRIVE, OXFORD CIRCLE AND CLEVELAND CIRCLE WERE FOUND TO HAVE THE HIGHEST TCE CONCENTRATIONS, WHEREAS LOWER TCE CONCENTRATIONS WERE FOUND IN WELLS ALONG SYCAMORE LANE. TCE WAS NOT DETECTED IN ANY DOMESTIC WELLS ON THE NORTHERN PART OF MONTGOMERY ROAD, WHERE IT RUNS EAST-WEST. HOWEVER, THE DATA WERE INSUFFICIENT TO ADEQUATELY DELINEATE A PLUME OF CONTAMINATED GROUND WATER. IN GENERAL, TCE CONCENTRATIONS IN INDIVIDUAL WELLS DID NOT APPEAR TO VARY SIGNIFICANTLY WITH TIME.

ON AUGUST 21, 1980, MONTGOMERY TOWNSHIP PASSED AN ORDINANCE AUTHORIZING THE WATER LINE EXTENSIONS INTO THE SYCAMORE LANE AREA AND ASSESSMENT TO THE AREA HOMEOWNERS FOR COST. IN MARCH 1981, ELIZABETHTOWN WATER COMPANY WATER MAINS WERE INSTALLED IN THE MONTGOMERY TOWNSHIP HOUSING DEVELOPMENT, AND RESIDENTS WERE ADVISED NOT TO USE WELL WATER. INITIALLY, 20 HOMES ELECTED TO HOOK UP TO THE NEW WATER LINES. TO DATE, 38 RESIDENCES HAVE HOOKED UP. RESIDENCES CONNECTED TO THE ELIZABETHTOWN WATER SUPPLY ARE SHOWN IN FIGURE 3.

REMEDIAL ACTIONS

IN 1984, THE NJDEP ENTERED INTO A COOPERATIVE AGREEMENT WITH THE UNITED STATES ENVIRONMENTAL PROTECTION AGENCY (EPA) UNDER WHICH IT WOULD PERFORM THE RI/FS FOR THE MONTGOMERY TOWNSHIP HOUSING DEVELOPMENT AND THE ROCKY HILL MUNICIPAL WELL SITES. BECAUSE OF THE PROXIMITY OF THE TWO SITES AND THE SIMILARITY OF CONTAMINANTS FOUND, THE RI/FS FOR THE TWO SITES IS BEING PERFORMED UNDER ONE COOPERATIVE AGREEMENT. HOWEVER, THE MTHD/RHMW RI/FS IS NOT THE SUBJECT OF THIS RECORD OF DECISION (ROD). THIS ROD RELATES TO A DISCRETE PHASE OF THE MAIN STUDY, THE PROVISION OF AN ALTERNATE WATER SUPPLY FOR THE RESIDENTS OF THE MTHD.

IN JANUARY 1986, NJDEP'S DIVISION OF WATER RESOURCES PLACED A RESTRICTION ON FUTURE WELL DRILLING FOR WATER SUPPLY IN THE AREA.

PHASE 1 OF THE MTHD/RHMW REMEDIAL INVESTIGATION WAS COMPLETED IN JANUARY 1987. THIS PHASE INVOLVED A GEOHYDROLOGIC INVESTIGATION WHICH INCLUDED A GEOPHYSICAL SURVEY, PERMEABILITY TEST, WATER LEVEL SURVEY, AND A PUMPING TEST. THE OBJECTIVE OF PHASE 1 WAS TO CHARACTERIZE AND DETERMINE THE BOUNDARIES OF THE GROUND WATER CONTAMINANT PLUME.

SCOPE OF GROUNDWATER INVESTIGATION

TWENTY-SIX MONITORING WELLS WERE INSTALLED IN 13 CLUSTERS IN THE MTHD/RHMW SITE AREA. EACH CLUSTER CONSISTS OF ONE SHALLOW AND ONE DEEP WELL. WELLS WERE SAMPLED IN LATE NOVEMBER AND EARLY DECEMBER OF 1986. SIX WELLS WERE DRY AT THE TIME OF SAMPLING AND, THEREFORE, COULD NOT BE SAMPLED.

THIRTY-FIVE DOMESTIC WELLS WERE SAMPLED IN AND AROUND THE MTHD. THESE WELLS WERE INCLUDED DUE TO THEIR PROXIMITY TO PREVIOUSLY IDENTIFIED AREAS OF CONTAMINATION. LOCATIONS OF ALL DOMESTIC AND MONITORING WELLS ARE INCLUDED IN FIGURE 4.

SUMMARY OF RESULTS

RESULTS OF THE RI INDICATE THAT THE MTHD/RHMW SITES ARE UNDERLAIN BY A FRACTURED-BEDROCK AQUIFER, WHICH CONSISTS OF AN UPPER UNCONFINED SECTION AND A LOWER SEMI-CONFINED SECTION WHICH ARE HYDRAULICALLY CONNECTED. A DOWNWARD HYDRAULIC GRADIENT EXISTS BETWEEN THE TWO.

DEEP GROUND WATER FLOW IS GENERALLY TOWARD THE NORTHEAST AND IS LARGELY CONTROLLED BY THE VERTICAL FRACTURES. SHALLOW GROUND WATER FOLLOWS TOPOGRAPHIC FEATURES AND DISCHARGES INTO SURFACE WATER BODIES (I.E. MILLSTONE RIVER).

GROUND WATER SAMPLES FROM THE 23 MONITORING WELLS WERE COLLECTED AND ANALYZED IN LATE 1986. THE MOST COMMON ORGANIC CONTAMINANT FOUND IN THESE SAMPLES WAS TRICHLOROETHENE (TCE) AT LEVELS RANGING UP TO 650 PARTS PER BILLION. OTHER PRIORITY POLLUTANT ORGANIC COMPOUNDS IDENTIFIED INCLUDED: TRANS-1,2-DICHLOROETHENE, TETRACHLOROETHENE, CHLOROFORM, DIETHYLPHTHALATE, CHLORDANE AND PHENOLS. TABLE 1 LISTS TCE CONCENTRATIONS DETECTED IN MONITORING WELLS SAMPLED DURING THE FIRST PHASE OF THE RI/FS.

SEVERAL PRIORITY-POLLUTANT METALS WERE FOUND IN THE FIRST ROUND OF MONITORING WELL SAMPLES. ANALYSES OF GROUND WATER HAVE BEEN COMPARED TO DRINKING WATER STANDARDS TO ASSIST IN SUMMARIZING THE DATA. WITH THE EXCEPTION OF MW-3D, CHROMIUM IS THE ONLY PRIORITY-POLLUTANT METAL PRESENT IN CONCENTRATIONS EXCEEDING THE NATIONAL PRIMARY DRINKING WATER REGULATIONS (NPDWR). IN GENERAL, THERE IS NO APPARENT CORRELATION BETWEEN THE CONTAMINATION LEVELS OF ORGANIC COMPOUNDS AND PRIORITY-POLLUTANT METALS IDENTIFIED IN THE MONITORING WELL SAMPLES.

THIRTY-FIVE DOMESTIC WELLS WERE ALSO INCLUDED IN THE FIRST ROUND OF SAMPLING IN JUNE 1986. AGAIN, THE PRINCIPAL CONTAMINANT DETECTED WAS TCE, CONCENTRATIONS OF WHICH RANGED FROM BELOW DETECTABLE LEVELS TO 340 UG/L. A TOTAL OF 17 OF THE 35 WELLS SAMPLED WERE FOUND TO CONTAIN MORE THAN 4 UG/L TCE, AND NINE OF THOSE WELLS CONTAINED MORE THAN 50 UG/L. TABLE 2 LISTS TCE CONCENTRATIONS FOR THOSE RESIDENCES WHICH ARE NOT CURRENTLY CONNECTED TO PUBLIC WATER. (NOTE: THE 340 UG/L MAXIMUM CONCENTRATION MENTIONED ABOVE WAS DETECTED IN THE WELL OF A RESIDENCE ALREADY CONNECTED TO THE MUNICIPAL WATER SUPPLY AND SO IS NOT LISTED IN TABLE 2.). RESULTS FROM THIS ROUND OF ANALYSIS ARE CONSISTENT WITH PREVIOUS INVESTIGATIONS AS ALSO SHOWN IN TABLE 2. THE AREAS OF HIGHEST TCE CONTAMINATION FOUND EARLIER (THE END OF OXFORD CIRCLE, NEAR THE END OF ROBIN DRIVE AND CLEVELAND CIRCLE) ARE APPROXIMATELY THE SAME AS MEASURED IN THIS STUDY.

OTHER PRIORITY-POLLUTANT ORGANIC COMPOUNDS OF CONCERN WHICH WERE DETECTED INCLUDE 1,1-DICHLOROETHANE, DIETHYLPHTHALATE AND BROMODICHLOROMETHANE.

PRIORITY-POLLUTANT METALS (INORGANICS) WERE DETECTED IN A NUMBER OF THE DOMESTIC WELLS. THE OCCURRENCE OF INORGANIC CONTAMINATION IS SPORADIC AND DOES NOT APPEAR TO BE RELATED TO THE OCCURRENCE OF ORGANIC CONTAMINATION. THE WELLS DO NOT APPEAR TO HAVE ANY CONSISTENT RELATIONSHIP WITH EACH OTHER RELATIVE TO METAL CONCENTRATIONS.

CONTAMINANT PLUME

A SUMMARY OF GROUND WATER TCE CONCENTRATIONS OBTAINED DURING THE ROUND 1 SAMPLING PROGRAM IS ILLUSTRATED IN FIGURE 5. ALTHOUGH OTHER ORGANIC CONTAMINANTS HAVE BEEN DETECTED IN MONITORING AND DOMESTIC WELLS, TCE IS CONSIDERED THE MAIN CONTAMINANT OF CONCERN IN THIS DISCUSSION BECAUSE IT IS THE CONSISTENTLY PREDOMINANT SITE CONTAMINANT.

OBSERVED TCE CONTAMINATION APPEARS TO EXTEND FROM THE RHMW APPROXIMATELY NORTHWARD TO SYCAMORE LANE, AND FROM ROUTE 206 EASTWARD TO THE MILLSTONE RIVER. IT IS NOT KNOWN AT THIS TIME WHETHER THE PLUME CONTINUES EAST OF THE MILLSTONE RIVER, BUT THE ABSENCE OF CONTAMINATION IN THE CANAL ROAD WELLS INDICATES THAT IT EXTENDS NO FARTHER EAST THAN CANAL ROAD. FIGURE 6 DELINEATES AN APPROXIMATION OF THE TCE CONTAMINANT PLUME BASED ON MEAN AVERAGES OF ALL AVAILABLE HISTORICAL AND RECENT DATA ON GROUND WATER QUALITY. OTHER ORGANIC CONTAMINANTS FREQUENTLY ENCOUNTERED DURING ROUND I SAMPLING ARE FOUND THROUGHOUT THE TCE PLUME, BUT THEY OCCUR MORE SPORADICALLY ACROSS THE SITE.

THE PLUME APPEARS TO HAVE BEEN IN A STEADY STATE CONDITION FOR AT LEAST THE LAST EIGHT YEARS (1979 TO 1987). THIS MAY BE DUE TO TWO CONDITIONS: (1) THE SOURCE OR SOURCES OF CONTAMINATION HAVE BEEN CONSTANT SINCE 1979 OR PRIOR, OR (2) THE SOURCE OR SOURCES OF CONTAMINATION ARE NO LONGER PRESENT BUT THE RATE OF CONTAMINANT MIGRATION IS SO SLOW THAT THE PLUME HAS NOT YET BEEN APPRECIABLY DISPERSED.

BASED ON THE INFERRED DIRECTION OF GROUND WATER FLOW AND THE OBSERVED PLUME OF TCE CONTAMINATION, A REGION POTENTIALLY THREATENED BY GROUND WATER CONTAMINATION MAY BE OUTLINED (FIGURE 7).

#CSS
CURRENT SITE STATUS

BECAUSE OF THE POTENTIAL HEALTH RISKS ASSOCIATED WITH THE EXPOSURE TO CONTAMINATED GROUND WATER VIA INGESTION, INHALATION OR DERMAL (SKIN) ABSORPTION, AN "OPERABLE UNIT", OR DISCRETE PHASE, OF THE MONTGOMERY TOWNSHIP RI/FS WAS IDENTIFIED FOR MORE IMMEDIATE ACTION. THIS OPERABLE UNIT INVOLVED THE EVALUATION OF THE NEED FOR, AND IMPLEMENTATION OF, AN ALTERNATE WATER SUPPLY FOR THOSE RESIDENCES CONTINUING TO DRAW WATER FROM THE CONTAMINATED AQUIFER. THIS ACTION IS BASED ON DATA ACCUMULATED PRIOR TO AND DURING THE FIRST PHASE OF THE MTHD/RHMW RI/FS. IT IS THIS ACTION WHICH IS THE SUBJECT OF THIS ROD.

THE SECOND PHASE OF THE MTHD/RHMW RI/FS IS ONGOING AND INCLUDES THE INSTALLATION OF ADDITIONAL MONITORING WELLS TO BETTER DEFINE THE CONTAMINANT PLUME NORTH OF ROUTE 518 AND ALONG THE EASTERN BOUNDARY OF THE SITE ALONG THE MILLSTONE RIVER. SOIL BORINGS AND SEPTIC TANK SAMPLES HAVE BEEN COLLECTED DURING THIS PHASE TO ASSIST IN IDENTIFICATION OF THE SOURCE OR SOURCES OF CONTAMINATION. POSSIBLE REMEDIATION OF THE AQUIFER WILL ALSO BE EVALUATED IN A SUBSEQUENT FEASIBILITY STUDY.

RISK ASSESSMENT

THE PRIMARY POTENTIAL HUMAN HEALTH IMPACT AT THE MTHD IS THE EXPOSURE OF RESIDENTS TO CONTAMINATED GROUND WATER. IN ORDER TO EVALUATE THIS PUBLIC IMPACT, A HEALTH ASSESSMENT, WHICH EVALUATES RISKS TO USERS AS A RESULT OF THE EXPOSURE, WAS CONDUCTED. THIS ASSESSMENT PROVIDES A QUANTITATIVE ESTIMATE OF RISK LEVELS UNDER EXISTING CONDITIONS -- THAT IS, IN THE ABSENCE OF REMEDIAL ACTION. THIS SERVES AS A BASELINE AGAINST WHICH THE NEED FOR REMEDIAL ACTION IS EVALUATED. POTENTIAL INCREASES OR DECREASES IN RISKS ASSOCIATED WITH EACH REMEDIAL ALTERNATIVE CONSIDERED ARE QUALITATIVELY COMPARED TO THIS BASELINE.

DEVELOPMENT OF A LIST OF INDICATOR CHEMICALS IS THE FIRST STAGE IN THE CHARACTERIZATION OF RISK. FACTORS CONSIDERED INCLUDE: MAXIMUM AND MEAN CONCENTRATIONS OF CONTAMINANTS AND THEIR COMPARISON TO STANDARDS, FREQUENCY OF OCCURRENCE IN GROUND WATER SAMPLES, AND CARCINOGENICITY. TEN COMPOUNDS WERE ULTIMATELY SELECTED AND ARE LISTED IN TABLE 3. TRICHLOROETHENE IS CONSIDERED THE MAIN CONTAMINANT OF CONCERN BASED ON THE ABOVE FACTORS. ACUTE INHALATION EXPOSURE TO TCE CAUSES CENTRAL NERVOUS SYSTEM DEPRESSION. TCE IS CLASSIFIED AS A PROBABLE HUMAN CARCINOGEN.

POTENTIAL EXPOSURE PATHWAYS TO HUMANS FROM THE USE OF CONTAMINATED GROUND WATER INCLUDE:

- INGESTION OF GROUND WATER
- INHALATION OF VOLATILE CHEMICALS RELEASED DURING WATER USE
- DIRECT DERMAL CONTACT WITH CONTAMINATED WATER.

PERSONS AT RISK OF EXPOSURE TO THE CONTAMINANTS IN GROUND WATER INCLUDE THOSE STILL USING CONTAMINATED OR THREATENED PRIVATE POTABLE WELLS IN THE MTHD. CENSUS DATA INDICATE THAT APPROXIMATELY 120 PERSONS STILL USE SUCH WELLS.

BASED ON ASSUMPTIONS INVOLVING THE ESTIMATED HUMAN DOSAGE FROM EXPOSURE AND THE FACT THAT TCE, THE PRIMARY CONTAMINANT OF CONCERN, READILY VOLATILIZES INTO THE ATMOSPHERE, THE LARGEST DOSAGE OF THE ORGANIC COMPOUNDS HAS BEEN ESTIMATED TO BE DUE TO INHALATION, FOLLOWED BY INGESTION AND DERMAL ABSORPTION.

#ENF
ENFORCEMENT ANALYSIS

SEVERAL INDUSTRIAL AND COMMERCIAL ESTABLISHMENTS WITHIN THE SITE AREA ARE BELIEVED TO BE POTENTIAL SOURCES OF CONTAMINATION. TO DATE, HOWEVER, EVIDENCE CONNECTING CERCLA POTENTIALLY RESPONSIBLE PARTIES (PRPS) TO THE CONTAMINATION OF THE STUDY AREA HAS NOT BEEN FULLY DEVELOPED. ACCORDINGLY, PRP IDENTIFICATION IS AN OBJECTIVE OF THE ONGOING MTHD/RHMW RI. A MORE DETAILED DISCUSSION OF POTENTIAL SOURCES WILL BE INCLUDED IN A SUBSEQUENT RECORD OF DECISION THAT ADDRESSES THE MTHD/RHMW SITES.

#CR
COMMUNITY RELATIONS

COMMUNITY RELATIONS ACTIVITIES FOR THE MTHD SITE WERE INITIATED BY THE NJDEP IN 1985 WITH THE DEVELOPMENT OF A COMMUNITY RELATIONS PLAN.

A PUBLIC MEETING WAS HELD IN JANUARY 1986 TO PRESENT NJDEP'S PLANS FOR THE RI/FS FOR THE MTHD/RHMW SITES.

ON JULY 10, 1987, THE RI/FS REPORT FOR PHASE 1 WAS MADE AVAILABLE AT FIVE PUBLIC INFORMATION REPOSITORIES TO INITIATE A 30-DAY PUBLIC COMMENT PERIOD. THIS PERIOD EXTENDED THROUGH AUGUST 14, 1987. ON JULY 29, 1987, A PUBLIC MEETING WAS HELD TO PRESENT THE RESULTS OF PHASE 1 OF THE MTHD/RHMW RI AND WATER SUPPLY ALTERNATIVES INCLUDING THE PREFERRED ALTERNATIVE TO AFFECTED RESIDENTS OF THE MTHD.

A HIGH LEVEL OF CONCERN EXIST AMONG THE AFFECTED MTHD RESIDENTS. SEVERAL ISSUES WERE RAISED BY RESIDENTS DURING THE COURSE OF THE REMEDIAL INVESTIGATION, AS WELL AS AT THE MOST RECENT PUBLIC MEETING. A RESPONSIVENESS SUMMARY, WHICH ADDRESSES THE COMMENTS AND QUESTIONS RAISED, IS ATTACHED TO THIS ROD.

#AE
EVALUATION OF ALTERNATIVES

THIS SECTION DESCRIBES REMEDIAL ALTERNATIVES FOR THE MTHD THAT HAVE BEEN DEVELOPED IN ORDER TO MEET THE OBJECTIVES OF THE COMPREHENSIVE ENVIRONMENTAL RESPONSE, COMPENSATION, AND LIABILITY ACT OF 1980, AS AMENDED (CERCLA); AND THE NATIONAL OIL AND HAZARDOUS SUBSTANCES POLLUTION CONTINGENCY PLAN (NCP), 40 CFR SS300.68.

THREE ALTERNATIVES WERE SPECIFICALLY DEVELOPED TO ADDRESS THE HEALTH RISK TO THOSE MTHD RESIDENTS CONTINUING TO UTILIZE CONTAMINATED OR THREATENED PRIVATE WELLS. THESE ALTERNATIVES, AS WELL AS A NO-ACTION ALTERNATIVE, WERE IDENTIFIED AND EVALUATED ACCORDING TO SPECIFIC CRITERIA REQUIRED BY CERCLA. THE FOLLOWING EVALUATION CRITERIA WERE APPLIED TO EACH ALTERNATIVE:

1) EFFECTIVENESS: -PROTECTION OF HUMAN HEALTH AND THE ENVIRONMENT
-REDUCTION OF TOXICITY, MOBILITY, AND VOLUME

2) IMPLEMENTABILITY: -TECHNICAL FEASIBILITY
-ADMINISTRATIVE FEASIBILITY
-AVAILABILITY OF RESOURCES

3) COST EFFECTIVENESS: -CAPITAL
-OPERATION AND MAINTENANCE.

TABLE 4 PROVIDES A BREAKDOWN OF ALL FACTORS CONSIDERED IN THE EVALUATION OF ALTERNATIVES FOR REMEDIAL ACTION. OF THESE FACTORS, ONLY THOSE RELEVANT TO THE EVALUATION OF REMEDIAL ALTERNATIVES FOR THE MTHD OPERABLE UNIT WERE CONSIDERED.

CERCLA REQUIRES THAT THE RECOMMENDED REMEDIAL ALTERNATIVE BE PROTECTIVE OF HUMAN HEALTH AND THE ENVIRONMENT, BE COST EFFECTIVE, AND UTILIZE PERMANENT SOLUTIONS AND ALTERNATIVE TREATMENT TECHNOLOGIES TO THE MAXIMUM EXTENT PRACTICABLE. THE PROPOSED REMEDY MUST ALSO ATTAIN LEGALLY APPLICABLE OR RELEVANT AND APPROPRIATE STANDARDS, REQUIREMENTS, CRITERIA, OR LIMITATIONS (ARARS) AND OTHER TO BE CONSIDERED GUIDANCES AND ADVISORIES THAT HAVE BEEN IDENTIFIED FOR THE SITE BY VARIOUS FEDERAL AND STATE AGENCIES TO PROTECT PUBLIC HEALTH AND THE ENVIRONMENT.

ARARS AND OTHER TO BE CONSIDERED CRITERIA, ADVISORIES, AND GUIDANCES USED IN THE EVALUATION OF ALTERNATIVES INCLUDE:

- NEW JERSEY MAXIMUM CONTAMINANT LEVELS - NJMCLS
- FEDERAL MAXIMUM CONTAMINANT LEVELS - MCLS.

DRINKING WATER HEALTH ADVISORIES AND REFERENCE LEVELS FOR CARCINOGENS HAVE BEEN INCLUDED AS REQUIREMENTS THAT ARE NOT ENFORCEABLE BUT ARE STILL CONSIDERED IN THE ANALYSIS OF REMEDIAL ALTERNATIVES. TABLE 3 LISTS ARARS, ADVISORIES, OR STATE CRITERIA, WHICHEVER IS MORE STRINGENT, FOR COMPOUNDS OF CONCERN AT THE MTHD SITE. ARARS, ADVISORIES, OR CRITERIA FOR TCE HAVE BEEN EXCEEDED AT THIS SITE.

INITIALLY, ALTERNATIVES WERE CONSIDERED AND SCREENED TO NARROW THE LIST OF POTENTIAL ALTERNATIVES FOR FURTHER DETAILED ANALYSIS. THE THREE PRIMARY CRITERIA LISTED ABOVE ARE IDENTIFIED BY CERCLA FOR USE IN JUSTIFYING THE ELIMINATION OF AN ALTERNATIVE FROM FURTHER EVALUATION.

THOSE ALTERNATIVES WHOSE COSTS FAR EXCEED THE COSTS OF OTHER ALTERNATIVES CONSIDERED AND WHICH DO NOT PROVIDE SUBSTANTIALLY GREATER PROTECTION OR TECHNICAL RELIABILITY WERE SCREENED FROM FURTHER CONSIDERATION. ALTERNATIVES NOT CONSIDERED APPROPRIATE FOR IMPLEMENTATION AND A BRIEF DISCUSSION OF REASON FOR THEIR EXCLUSION ARE PROVIDED IN TABLE 5.

THE FOLLOWING TEXT DISCUSSES EACH ALTERNATIVE CONSIDERED WITH REGARD TO THE THREE MAJOR CATEGORIES: EFFECTIVENESS, IMPLEMENTABILITY, AND COST. THE EVALUATION CRITERIA NOT DISCUSSED IN DETAIL ARE EITHER THE SAME FOR ALL OF THE ALTERNATIVES, OR CONSIDERED NOT RELEVANT TO THIS EVALUATION. TABLE 6 LISTS THOSE FOUR ALTERNATIVES RETAINED FOR MORE DETAILED ANALYSIS, AND SUMMARIZES THE SPECIFIC CRITERIA CONSIDERED BELOW.

ALTERNATIVE 1: NO-ACTION

AS REQUIRED BY THE NCP, A NO-ACTION ALTERNATIVE HAS BEEN EVALUATED. UNDER THIS ALTERNATIVE, RESIDENTS CURRENTLY USING CONTAMINATED OR THREATENED PRIVATE WELLS WOULD CONTINUE USING WATER DRAWN FROM THE CONTAMINATED AQUIFER. A GROUND WATER MONITORING PROGRAM WOULD BE IMPLEMENTED TO ALLOW PERIODIC REASSESSMENT OF POTENTIAL HEALTH IMPACTS RESULTING FROM CONTINUED USE.

FOR COSTING PURPOSES, THE ASSUMED TIMESPAN OF LONG-TERM GROUND WATER MONITORING IS 30 YEARS. RESIDENTIAL WELL WATER WOULD BE SAMPLED AND ANALYZED SEMI-ANNUALLY FOR PRIORITY POLLUTANT COMPOUNDS.

A DETAILED RISK CHARACTERIZATION ASSOCIATED WITH THE NO-ACTION ALTERNATIVE HAS BEEN PERFORMED AS PART OF THE RI/FS. EXCEPT FOR BERYLLIUM AND NICKEL, MAXIMUM CONCENTRATIONS OF THE CONTAMINANTS OF CONCERN (LISTED IN TABLE 3) EXCEED THE SITE-SPECIFIC CRITERIA, AS CITED. IN ADDITION, MEAN CONCENTRATIONS OF TRICHLOROETHENE, TETRACHLOROETHENE, ARSENIC, BARIUM, AND LEAD EXCEED THE CRITERIA CITED. HUMAN EXPOSURE TO THESE CONTAMINANTS IN GROUND WATER MAY LEAD TO ADVERSE HEALTH EFFECTS.

THEREFORE, THE NO-ACTION ALTERNATIVE IS NOT APPROPRIATE BECAUSE IT WOULD NOT PROVIDE PROTECTION TO HUMAN HEALTH AND THE ENVIRONMENT.

ANNUAL COST FOR MONITORING WOULD BE APPROXIMATELY $29,000 (SEE TABLE 6).

ALTERNATIVE 2: TEMPORARY DRINKING WATER

THE USE OF A TEMPORARY DRINKING WATER SOURCE FOR POTABLE WATER (I.E., BOTTLED WATER) IS A POTENTIAL ALTERNATIVE TO BE IMPLEMENTED UNTIL SUCH TIME THAT A PERMANENT ALTERNATIVE WATER SUPPLY CAN BE PROVIDED FOR THE MTHD RESIDENTS OR THE CONTAMINANT PLUME HAS BEEN REMEDIATED. A RANGE OF TWO TO TWELVE YEARS HAS BEEN ESTIMATED AS THE LENGTH OF TIME THAT MTHD RESIDENTS WILL NEED TO USE A TEMPORARY DRINKING WATER SOURCE.

BOTTLED WATER CAN BE SUPPLIED THROUGH DELIVERY TO EACH OF THE 39 AFFECTED HOMES. THE AVERAGE DAILY DEMAND FOR EACH RESIDENCE WAS ESTABLISHED FOR DRINKING AND COOKING PURPOSES ONLY. TEMPORARY SUPPLY TO MEET ALL DOMESTIC WATER NEEDS IS IMPRACTICAL SINCE A MAJORITY OF BOTTLED-WATER VENDORS SUPPLY FIVE OR SIX GALLON STORAGE CONTAINERS MOUNTED ON A FREE-STANDING DISPENSER (I.E., BULK STORAGE AND DISPENSING FACILITIES FOR PURCHASED WATER WOULD BE REQUIRED FOR EACH RESIDENCE). THEREFORE, UNDER ALTERNATIVE 2, ALL OTHER DOMESTIC WATER NEEDS (I.E., SANITARY, BATHING, WASHING, ETC.) WOULD CONTINUE TO BE MET THROUGH THE EXISTING CONTAMINATED WELL SUPPLIES.

BASED ON AN ASSUMED DOMESTIC WATER DEMAND OF ONE GALLON PER DAY PER PERSON, THE ESTIMATED DEMAND FOR DRINKING AND COOKING PURPOSES WOULD BE MET USING BOTTLED WATER WITH FREE-STANDING COLD WATER COOLER/DISPENSERS. WATER WOULD BE DELIVERED IN 11 FIVE-GALLON CONTAINERS TO EACH HOME EVERY THREE WEEKS. IT IS ESTIMATED THAT EACH WATER DELIVERY FOR 39 RESIDENCES WOULD CONSIST OF 2,145 GALLONS OF WATER, OR 429 FIVE-GALLON BOTTLES.

THE PROVISION OF A TEMPORARY WATER SUPPLY TO MEET DRINKING AND COOKING NEEDS WOULD REDUCE HEALTH RISKS RESULTING FROM THE INGESTION OF CONTAMINATED WELL WATER. HOWEVER, RISKS ASSOCIATED WITH AIRBORNE AND DERMAL EXPOSURE WOULD CONTINUE. THE MAGNITUDE OF THE HEALTH RISK FROM INHALATION AND DERMAL ABSORPTION IS EXPECTED TO BE COMPARATIVELY SMALL FOR A TWO-YEAR IMPLEMENTATION PERIOD AND WOULD INCREASE PROPORTIONATELY WITH INCREASED TIME OF EXPOSURE.

SUPPLYING TEMPORARY DRINKING AND COOKING WATER FROM A LOCAL BOTTLED WATER COMPANY IS EASILY AND IMMEDIATELY IMPLEMENTABLE. THE ANNUAL COST OF SUPPLYING 39 RESIDENCES WITH BOTTLED WATER INCLUDES AN ANNUAL RENTAL CHARGE OF $6,000 FOR THE FREE-STANDING DISPENSERS, AND A WATER CHARGE OF $53,000 FOR A TOTAL OF $59,000 PER YEAR. IMPLEMENTATION OF THIS ALTERNATIVE NECESSITATES FUTURE ACTION.

ALTERNATIVE 3: ELIZABETHTOWN WATER COMPANY SERVICE CONNECTIONS AND WATER-MAIN EXTENSION (PUBLIC WATER SUPPLY)

ELIZABETHTOWN WATER COMPANY IS CURRENTLY SUPPLYING WATER TO 38 OF THE 77 RESIDENCES IN THE MTHD STUDY AREA.

THE ELIZABETHTOWN WATER COMPANY'S EXISTING WATER DISTRIBUTION SYSTEM FOR THE MTHD IS SHOWN IN FIGURE 8. ADDRESSING THE PROBLEM OF THE CONTAMINATED RESIDENTIAL WELLS BY REPLACEMENT WITH A PUBLIC WATER SUPPLY WOULD REQUIRE THE EXTENSION OF THE ELIZABETHTOWN WATER SUPPLY SERVICE SYSTEM.

THE FACILITIES TO EXTEND THE ELIZABETHTOWN WATER SYSTEM, ALSO SHOWN IN FIGURE 8, INCLUDE APPROXIMATELY 4,000 FEET OF WATER MAIN AND 39 SERVICE CONNECTIONS. THE LOCATION OF WATER MAINS AND APPURTENANCES FOR THE WATER SERVICE WOULD BE FINALIZED DURING THE DESIGN PHASE.

THE IMPLEMENTATION OF THIS ALTERNATIVE WOULD NECESSITATE ABANDONMENT AND SEALING OF THE INDIVIDUAL RESIDENTIAL WELLS IN ACCORDANCE WITH STATE OF NEW JERSEY STANDARD SPECIFICATIONS FOR SEALING OF ABANDONED WELLS.

EXTENSION OF THE EXISTING SYSTEM IS A TECHNICALLY FEASIBLE AND READILY IMPLEMENTABLE ALTERNATIVE AND THE MOST COST-EFFECTIVE ALTERNATIVE CONSIDERED. THE CAPITAL COST FOR EXPANDING THE ELIZABETHTOWN WATER COMPANY SYSTEM IS ESTIMATED AT $319,000. THE PHYSICAL EXPANSION OF THESE FACILITIES COULD BE IMPLEMENTED IN SIX TO NINE MONTHS INCLUDING DESIGN, APPROVAL, AND CONSTRUCTION OF THE SYSTEM. SIX ADDITIONAL MONTHS ARE NECESSARY FOR ADMINISTRATIVE PURPOSES, SUCH AS SECURING CONTRACTS.

IMPLEMENTATION OF THIS ALTERNATIVE WOULD COMPLETELY ELIMINATE RISK DUE TO EXPOSURE TO CONTAMINATED GROUND WATER OF RESIDENTS USING THE AQUIFER FOR DRINKING WATER. IT IS A VIABLE ALTERNATIVE AND REPRESENTS A PERMANENT SOLUTION FOR PROVIDING A DRINKING WATER SOURCE THAT MEETS ALL CRITERIA FOR THE PROTECTION OF HUMAN HEALTH. THE ELIZABETHTOWN WATER SUPPLY IS A RELIABLE WATER SOURCE. THE NJDEP DIVISION OF WATER RESOURCES HAS CONFIRMED THAT THIS WATER COMPANY IS IN COMPLIANCE WITH THE SAFE DRINKING WATER ACT (SDWA) REQUIREMENTS. THE WATER SUPPLY IS MONITORED REGULARLY FOR A LIST OF COMPOUNDS, AS MANDATED BY THE SDWA.

ALTERNATIVE 4 NEW CENTRALIZED COMMUNITY WELL WITH WELL WATER TREATMENT UNDER THIS ALTERNATIVE A NEW COMMUNITY WELL WOULD BE INSTALLED ON A PURCHASED PARCEL OF LAND WITHIN THE MTHD OR THE SURROUNDING AREA. A TREATMENT SYSTEM OF SUFFICIENT CAPACITY TO MEET THE COMBINED WATER DEMAND OF THE 39 RESIDENTIAL HOUSEHOLDS WOULD BE CONSTRUCTED TO TREAT THE WELL WATER TO A LEVEL THAT MEETS APPLICABLE CRITERIA. THE TREATMENT FACILITY COMPONENTS, SHOWN IN FIGURE 9, ARE DESCRIBED BELOW.

THE COMMUNITY WELL TREATMENT SYSTEM WOULD BE COMPRISED OF AN AIR STRIPPING SYSTEM, IN CONJUNCTION WITH A GROUND WATER ACTIVATED CARBON ABSORPTION SYSTEM. CONTAMINATED WATER WOULD BE BROUGHT INTO CONTACT WITH AIR TO VAPORIZE THE VOLATILE COMPOUNDS, WHICH WOULD THEN BE REMOVED WITH THE EXHAUST AIR. THE WATER WOULD THEN BE PUMPED THROUGH ACTIVATED CARBON CARTRIDGES FOR REMOVAL OF THOSE CONTAMINANTS THAT ARE NOT REMOVED BY AIR STRIPPING.

RAW AND TREATED WATER STORAGE WOULD BE REQUIRED TO PROVIDE A BUFFER FOR FLUCTUATING DEMAND THROUGHOUT THE DAY. THE COMMUNITY WELL SYSTEM WOULD REQUIRE A DISTRIBUTION NETWORK SYSTEM TO COLLECT AND TRANSPORT THE WATER TO THE INDIVIDUAL RESIDENCES. DISTRIBUTION PUMPS WITH RECYCLE AND DISTRIBUTION PIPING WOULD BE USED FOR THIS PURPOSE. DISINFECTION WOULD BE PROVIDED BY CHLORINATION TO ENSURE RESIDUAL DISINFECTION THROUGHOUT THE DISTRIBUTION SYSTEM. A STANDBY GENERATOR WOULD BE INCLUDED IN CASE OF POWER FAILURE.

LIKE ALTERNATIVE 3, THE IMPLEMENTATION OF THIS ALTERNATIVE WOULD RESULT IN THE ABANDONMENT AND SEALING OF THE INDIVIDUAL RESIDENTIAL WELLS IN ACCORDANCE WITH STATE OF NEW JERSEY STANDARD SPECIFICATION FOR SEALING OF ABANDONED WELLS.

THE RELIABILITY OF THE SELECTED TREATMENT IS BASED ON THE EXISTING WATER QUALITY AND CONTAMINANTS PRESENTLY IDENTIFIED. POSSIBLE FUTURE VARIATIONS OF CONTAMINANT LEVELS OR NEWLY IDENTIFIED CONTAMINANT PARAMETERS COULD ADVERSELY AFFECT RELIABILITY, AND MAY REQUIRE THE UPGRADING OF THE TREATMENT SYSTEM.

BASED ON THE INDIVIDUAL CONTAMINANT LEVELS FOUND IN THE GROUND WATER TO DATE, THE WATER TREATMENT SYSTEMS DESCRIBED FOR ALTERNATIVE 4 WOULD MEET ALL FEDERAL AND STATE REQUIREMENTS FOR ORGANICS. HOWEVER, PILOT TESTING WOULD BE REQUIRED TO DETERMINE WHETHER STANDARDS FOR METALS WOULD BE MET. IF NOT, AN APPROPRIATE TREATMENT SYSTEM FOR METALS REMOVAL, BASED UPON LEVELS DETECTED IN THE WELL, MAY NEED TO BE DESIGNED AND EVALUATED. CONTINUED MONITORING OF CONTAMINANT LEVELS WOULD BE NECESSARY TO ENSURE THAT WATER QUALITY MEETS APPROPRIATE REQUIREMENTS.

AIR EMISSIONS FOR ANY OF THE TREATMENT SYSTEMS CONSIDERED WOULD BE EVALUATED AND TREATED TO MEET ANY ARARS.

DESIGN AND CONSTRUCTION OF THE PLANNED TREATMENT SYSTEM COULD BE IMPLEMENTED WITHIN TWELVE MONTHS. IMPLEMENTATION OF THE CENTRALIZED TREATMENT SYSTEM WOULD ALSO REQUIRE TIME FOR PROPERTY ACQUISITION AND ASSOCIATED CONTRACTS.

FROM AN ADMINISTRATIVE STANDPOINT THIS ALTERNATIVE WOULD NOT BE AS EASILY IMPLEMENTED AS THE OTHER ALTERNATIVES DISCUSSED HEREIN. THE ESTABLISHMENT OF THE FACILITY COULD TAKE FROM A FEW MONTHS TO OVER A YEAR, BASED UPON THE COOPERATION OF THE RESIDENTS, AND THE PROPOSED OWNER (TOWN OR COUNTY). THE TIME REQUIRED TO COMPLETE ANY NECESSARY PILOT STUDIES, STUDIES, DESIGN, CONSTRUCTION AND START-UP OF THE TREATMENT SYSTEM WOULD BE LIKELY LONGER THAN THAT FOR ALTERNATIVE 3, ESPECIALLY SINCE ADDITIONAL LAND WOULD HAVE TO BE ACQUIRED.

THE CAPITAL COST FOR THIS ALTERNATIVE, $699,000, IS THE HIGHEST OF ALL CONSIDERED ALTERNATIVES. ANNUAL COSTS OF OPERATION AND MAINTENANCE INCLUDE COSTS FOR CARBON DISPOSAL AND REPLACEMENT (SEE TABLE 6).

SELECTED REMEDY

AFTER REVIEW AND EVALUATION OF THE REMEDIAL ALTERNATIVES DISCUSSED IN THE FEASIBILITY STUDY AND CONSIDERATION OF THE EVALUATION CRITERIA UNDER EACH ALTERNATIVE, EPA AND NJDEP PRESENTED ALTERNATIVE 3 TO THE PUBLIC AS THE PREFERRED ALTERNATIVE FOR THE MTHD SITE. DURING THE PUBLIC MEETING HELD ON JULY 29, 1987, CONCERN WAS EXPRESSED REGARDING THE QUALITY OF THE ELIZABETHTOWN WATER SUPPLY. HOWEVER, EPA AND NJDEP HAVE CONFIRMED THAT THIS WATER SUPPLY IS CONSISTENTLY IN COMPLIANCE WITH STATE AND FEDERAL WATER QUALITY STANDARDS.

ALTERNATIVE 3 REPRESENTS THE FIRST OPERABLE UNIT OF A PERMANENT REMEDY FOR THE MTHD/RHMW SITES. IDENTIFICATION OF SOURCES OF CONTAMINATION AND POSSIBLE REMEDIATION OF THE GROUND WATER PLUME WILL BE ADDRESSED IN A SUBSEQUENT RECORD OF DECISION FOR THE MTHD/RHMW SITES.

THE EXTENSION OF THE ELIZABETHTOWN WATER SUPPLY SYSTEM BEST MEETS ALL EVALUATION CRITERIA, AS PREVIOUSLY DESCRIBED HERE. SPECIFICALLY, THIS ALTERNATIVE WILL BEST MEET THE OBJECTIVES OF CERCLA IN THAT IT IS PROTECTIVE OF HUMAN HEALTH, IS COST EFFECTIVE, WILL PROVIDE A PERMANENT SOLUTION TO POTENTIAL EXPOSURE TO GROUND WATER CONTAMINANTS BY RESIDENTS OF THE MTHD, AND ATTAINS ARARS OR CRITERIA.

IMPLEMENTATION OF ALTERNATIVE 3 WILL EFFECTIVELY REMOVE THE RISK OF EXPOSURE TO CONTAMINANTS, AND THUS ALSO REMOVE POTENTIAL HEALTH RISKS OF THOSE MTHD RESIDENTS CURRENTLY USING THE CONTAMINATED

WATER SUPPLY.

ALTERNATIVE 3 REPRESENTS THE MOST COST EFFECTIVE OF ALL ALTERNATIVES CONSIDERED. IN ADDITION, ALTERNATIVE 3 REPRESENTS A PERMANENT SOLUTION TO THE PROBLEM OF POTENTIAL EXPOSURE OF MTHD RESIDENTS TO CONTAMINATED GROUND WATER. ADMINISTRATIVELY, ALTERNATIVE 3 IS THE MOST EASILY IMPLEMENTABLE, WHEN VIEWED OVER THE LONG TERM, AS COMPARED TO THE OTHER ALTERNATIVES (SEE TABLE 5). IT IS ALSO TECHNICALLY FEASIBLE.

IMPLEMENTATION OF ALTERNATIVE 3 IS CONSISTENT WITH ALL ARARS AND CRITERIA. SPECIFICALLY, THE SAFE DRINKING WATER ACT (SDWA), AS AMENDED IN 1984, ESTABLISHED THE BASIS FOR THE DEVELOPMENT OF THE NEW JERSEY MAXIMUM CONTAMINANT LEVELS AND THE FEDERAL MAXIMUM CONTAMINANT LEVELS WHICH WERE USED AS ARARS AND CRITERIA FOR THE MTHD SITE. IMPLEMENTATION OF AN EXTENSION OF THE ELIZABETHTOWN WATER DISTRIBUTION SYSTEM WOULD MEET THESE CRITERIA AND SO ENSURE COMPLIANCE WITH THE SDWA.

#TMA
TABLES, MEMORANDA, ATTACHMENTS

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION II

DATE: SEPTEMBER 16, 1987

SUBJECT: RECORD OF DECISION FOR MONTGOMERY
TOWNSHIP HOUSING DEVELOPMENT

FROM: STEPHEN D. LUFTIG, DIRECTOR
EMERGENCY & REMEDIAL RESPONSE DIVISION

TO: CHRISTOPHER J. DAGGETT
REGIONAL ADMINISTRATOR

ATTACHED FOR YOUR APPROVAL IS THE RECORD OF DECISION (ROD) FOR THE MONTGOMERY TOWNSHIP HOUSING DEVELOPMENT SITE IN MONTGOMERY TOWNSHIP, SOMERSET COUNTY, NEW JERSEY.

THE SELECTED REMEDY IS A FIRST OPERABLE UNIT FOR THE SITE WHICH INVOLVES THE PROVISION OF AN ALTERNATE WATER SUPPLY FOR RESIDENTS WITH IMPACTED OR POTENTIALLY THREATENED PRIVATE WELLS. THE REMEDIAL INVESTIGATION IS CONTINUING TO IDENTIFY THE CONTAMINANT SOURCE AS WELL AS THE FULL EXTENT OF GROUNDWATER CONTAMINATION. THESE ARE INTENDED TO BE ADDRESSED IN THE NEXT OPERABLE UNIT FOR THE SITE AND WILL BE THE SUBJECT OF A SUBSEQUENT ROD. THE COST FOR EXTENDING THE WATER MAIN AND PROVIDING THE RESIDENTIAL CONNECTIONS IS APPROXIMATELY $320,000.

A PUBLIC MEETING TO DISCUSS THE RECOMMENDED ALTERNATIVE WAS HELD ON JULY 29, 1987. THERE WAS GENERAL AGREEMENT BY THE PUBLIC WITH THE ALTERNATE WATER SUPPLY REMEDY. HOWEVER, A FEW RESIDENTS INDICATED A PREFERENCE TO CONTINUE USING THEIR OWN WELLS, QUESTIONING THE QUALITY OF THE PUBLIC SUPPLY, WHILE OTHERS EXPRESSED AN INTEREST IN MAINTAINING THEIR WELLS FOR NON-POTABLE PURPOSES.

THE ROD HAS BEEN REVIEWED BY THE APPROPRIATE PROGRAM OFFICES WITHIN REGION II AND THE STATE OF NEW JERSEY, AND THEIR INPUT AND COMMENTS ARE REFLECTED IN THIS DOCUMENT. IN ADDITION A LETTER FROM COMMISSIONER DEWLING OF THE DEPARTMENT OF ENVIRONMENTAL PROTECTION CONCURRING WITH THE SELECTED REMEDY IS ATTACHED.

IF YOU HAVE ANY QUESTIONS, I WOULD BE HAPPY TO DISCUSS THEM AT YOUR CONVENIENCE.

ATTACHMENTS.

#RS

MONTGOMERY TOWNSHIP HOUSING DEVELOPMENT
MONTGOMERY TOWNSHIP
SOMERSET COUNTY, NEW JERSEY

RESPONSIVENESS SUMMARY

THIS COMMUNITY RELATIONS RESPONSIVENESS SUMMARY IS DIVIDED INTO THE FOLLOWING SECTIONS:

SECTION I — OVERVIEW - THIS SECTION DISCUSSES THE NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION'S (DEP) AND THE UNITED STATES ENVIRONMENTAL PROTECTION AGENCY'S (EPA) PREFERRED ALTERNATIVE FOR REMEDIAL ACTION, AND LIKELY PUBLIC REACTION TO THIS ALTERNATIVE.

SECTION II — BACKGROUND ON COMMUNITY INVOLVEMENT AND CONCERNS - THIS SECTION PROVIDES A BRIEF HISTORY OF COMMUNITY INTEREST AND CONCERNS RAISED DURING REMEDIAL PLANNING ACTIVITIES AT THE MONTGOMERY TOWNSHIP HOUSING DEVELOPMENT (MTHD) SITE.

SECTION III — SUMMARY OF MAJOR COMMENTS RECEIVED DURING THE PUBLIC COMMENT PERIOD AND THE DEP/EPA RESPONSES TO THE COMMENTS - BOTH WRITTEN AND ORAL COMMENTS ARE CATEGORIZED BY RELEVANT TOPICS. DEP/EPA RESPONSES TO THESE MAJOR COMMENTS ARE ALSO PROVIDED.

SECTION IV — REMAINING CONCERNS - THIS SECTION DESCRIBES REMAINING COMMUNITY CONCERNS THAT DEP/EPA SHOULD BE AWARE OF IN CONDUCTING THE REMEDIAL DESIGN AND REMEDIAL ACTION AT THE MTHD SITE.

IN ADDITION TO THE ABOVE SECTIONS, ATTACHMENT A (INCLUDED AS PART OF THIS RESPONSIVENESS SUMMARY) IDENTIFIES THE COMMUNITY RELATIONS ACTIVITIES CONDUCTED BY DEP AND EPA DURING REMEDIAL RESPONSE ACTIVITIES AT THE MTHD SITE.

I. OVERVIEW

THE ALTERNATIVE SELECTED IN THE RECORD OF DECISION (ROD), WHICH ADDRESSES THE PRIVATE POTABLE WELL CONTAMINATION IN THE MTHD, INVOLVES SUPPLYING A PUBLIC WATER SUPPLY SYSTEM TO THOSE RESIDENTS WHOSE WELLS ARE THREATENED OR CONTAMINATED AND PERMANENTLY SEALING THE WELLS. THE EXISTING ELIZABETHTOWN WATER COMPANY WATER DISTRIBUTION SYSTEM WILL BE EXTENDED TO REPLACE USE OF THESE PRIVATE WELLS.

JUDGING FROM THE COMMENTS RECEIVED DURING THE PUBLIC COMMENT PERIOD, THE RESIDENTS AND MONTGOMERY TOWNSHIP OFFICIALS APPRECIATE DEP/EPA'S EFFORTS TO MITIGATE THE MTHD CONTAMINATION BUT ARE CONCERNED ABOUT THE QUALITY OF THE ELIZABETHTOWN WATER COMPANY SUPPLY. SEVERAL RESIDENTS ALSO EXPRESSED RESERVATIONS REGARDING THE SEALING OF PRIVATE WELLS. ADDITIONALLY, THE TOWNSHIP AND A NUMBER OF RESIDENTS FELT THAT A MARKED INEQUITY EXISTS WITH RESPECT TO PAYMENTS AND REIMBURSEMENTS FROM THE NEW JERSEY SPILL COMPENSATION FUND AND THE COMPREHENSIVE ENVIRONMENTAL RESPONSE COMPENSATION AND LIABILITY ACT (CERCLA OR SUPERFUND) FOR PAST ACTIONS TAKEN TO PROVIDE A SAFE WATER SUPPLY TO RESIDENTS.

THESE CONCERNS HAVE BEEN ADDRESSED BOTH IN THE JULY 29, 1987 PUBLIC MEETING AND WITHIN THIS RESPONSIVENESS SUMMARY. IT IS HOPED THAT THESE EFFORTS WILL RESULT IN INCREASED COMMUNITY SUPPORT FOR THE WATER HOOKUP PROGRAM.

II. BACKGROUND ON COMMUNITY INVOLVEMENT AND CONCERNS

COMMUNITY INTEREST IN THE MTHD EVOLVED AS INFORMATION ON THE CONTAMINATION BECAME AVAILABLE. THE

CONTAMINATION WAS FIRST DISCOVERED IN THE BOROUGH OF ROCKY HILL DURING A 1978-1979 WATER QUALITY STUDY BEING CONDUCTED BY RUTGERS UNIVERSITY. SOON AFTERWARD, THE PROBLEM WAS ALSO RECOGNIZED IN THE MTHD AND BY 1980, A CITIZENS' COMMITTEE HAD FORMED WITHIN THE COMMUNITY TO ADDRESS THE PROBLEM. THE COMMITTEE GATHERED INFORMATION, PRODUCED NEWSLETTERS AND A PETITION FOR CLEAN WATER, COORDINATED MEETINGS, AND HELPED TO ORGANIZE A SAMPLING PLAN. INTEREST IN THE ORGANIZED COMMITTEE WANED OVER THE NEXT THREE YEARS BUT COMMUNITY INTEREST CONTINUED.

THE MAJOR CONCERNS EXPRESSED AT THE JANUARY 14, 1986 PUBLIC MEETING AND THROUGHOUT THE RI/FS PROCESS, AND HOW DEP/EPA ADDRESSED THESE CONCERNS ARE DESCRIBED BELOW:

1) CONCERN WAS EXPRESSED REGARDING PROPERTY DAMAGE RELATED TO SITE ACTIVITIES.

RESPONSE: DEP/EPA MADE ASSURANCES THAT ANY DAMAGE WOULD BE REPAIRED (INCLUDING ANY NECESSARY LANDSCAPING) AND THAT THIS WOULD BE ENSURED THROUGH ACCESS AGREEMENTS.

2) A NUMBER OF RESIDENTS COMPLAINED THAT THEY HAD NOT RECEIVED FIRST ROUND SAMPLING RESULTS FOR THEIR WELLS. A FEW RESIDENTS WHO LATER RECEIVED SAMPLING RESULTS WERE CONFUSED AS TO THEIR CONTENT AND MEANING.

RESPONSE: THOSE RESIDENTS WHO CALLED BEFORE RESULTS HAD BEEN APPROVED THROUGH THE DEP QUALITY ASSURANCE PROGRAM WERE TOLD THAT RESULTS WOULD BE TRANSMITTED, WHEN FINALIZED, THROUGH THE MUNICIPAL HEALTH OFFICER. THEY WERE ALSO TOLD TO CONTACT DEP BY A SPECIFIED DATE IF THEY HAD NOT RECEIVED THEM. FURTHER FOLLOW-UP CONTACTS WERE MADE BY DEP'S BUREAU OF COMMUNITY RELATIONS TO THE DEP BUREAU OF SAFE DRINKING WATER, THE MONTGOMERY TOWNSHIP DEPARTMENT OF HEALTH AND THE FRANKLIN TOWNSHIP HEALTH DEPARTMENT (SOME SAMPLES WERE ALSO TAKEN IN FRANKLIN TOWNSHIP) TO ENSURE THAT THE PROPER INFORMATION WAS SENT. FOLLOW-UP CALLS WERE MADE TO DEP TO CLARIFY AND EXPLAIN RESULTS TO RESIDENTS WITH QUESTIONS.

3) CONCERN WAS EXPRESSED REGARDING BOTH PAYMENTS FOR PAST ACTIONS AND THE POSSIBILITY OF MANDATORY HOOKUPS TO THE ELIZABETHTOWN WATER COMPANY SUPPLY.

RESPONSE: SEE SECTION 3, "CONCERN REGARDING HOOKUP TO ELIZABETHTOWN WATER COMPANY SUPPLY" AND "REIMBURSEMENT FOR PAST ACTIONS" FOR DETAILED RESPONSES TO THESE CONCERNS.

III. SUMMARY OF PUBLIC COMMENTS DURING THE JULY 15 - AUGUST 14, 1987 COMMENT PERIOD

CONCERN REGARDING HOOKUP TO ELIZABETHTOWN WATER COMPANY SUPPLY

1) AN INQUIRY WAS MADE AS TO WHETHER THE ELIZABETHTOWN WATER COMPANY SUPPLY IS PERIODICALLY TESTED AND IF IT IS KNOWN TO CONTAIN THE CONTAMINANTS OF CONCERN. SEVERAL COMMENTS WERE MADE REGARDING THE POOR QUALITY OF THE ELIZABETHTOWN WATER SOURCES, SPECIFICALLY THE DELAWARE AND RARITAN CANAL AND WHETHER THOSE SOURCES ARE TESTED. A RESIDENT STATED THAT THE ELIZABETHTOWN WATER COMPANY, WHEN ASKED, COULD NOT GUARANTEE THEIR SUPPLY WAS OF BETTER QUALITY THAN HER HOME-FILTERED WATER. A REQUEST WAS MADE FOR "PROOF" THAT THE ELIZABETHTOWN WATER QUALITY WOULD BE MAINTAINED.

RESPONSE: THE WATER THAT THE ELIZABETHTOWN WATER COMPANY SUPPLIES TO ITS CUSTOMERS IS SAMPLED ON A REGULAR BASIS TO ASSURE THAT STATE AND FEDERAL DRINKING WATER QUALITY REQUIREMENTS ARE MET. THIS SUPPLY HAS CONSISTENTLY BEEN IN COMPLIANCE WITH THESE REQUIREMENTS AND SAMPLE RESULTS FOR RECENT ANALYSES ARE INCLUDED IN THE MTHD OPERABLE UNIT REMEDIAL INVESTIGATION/FEASIBILITY STUDY (RI/FS) FOR PRIVATE POTABLE WELLS (HEREINAFTER REFERRED TO AS THE "MTHD RI/FS REPORT"). THIS SAMPLING INCLUDES THE FOLLOWING:

-- HAZARDOUS CONTAMINANTS (INCLUDING TRICHLOROETHENE AND METHYLENE CHLORIDE) AS SPECIFIED IN THE NEW JERSEY SAFE DRINKING WATER ACT (COMMONLY KNOWN AS "A-280") - ON A SIX MONTH INTERVAL.

-- VOLATILE ORGANIC SCAN (INCLUDING TRICHLOROETHENE) - ON A MONTHLY BASIS. (THIS IS DONE VOLUNTARILY BY ELIZABETHTOWN, IT IS NOT A STATE REQUIREMENT.).

-- ORGANIC PESTICIDES - REQUIRED TO SAMPLE ONCE EVERY THREE YEARS.

-- TRIHALOMETHANES - VOLUNTARILY ON A MONTHLY BASIS. STATE REQUIRES QUARTERLY SAMPLING.

-- INORGANICS (INCLUDING LEAD AND CHROMIUM) - REQUIRED ON A ONE YEAR INTERVAL.

-- COLIFORM BACTERIA - TEN SAMPLES PER DAY. REQUIREMENT VARIES BY POPULATION SERVED.

-- TURBIDITY - REQUIRED ON A DAILY BASIS.

-- RADIONUCLEIDS - REQUIRED ONCE EVERY FOUR YEARS.

WHILE REGULAR SAMPLING INDICATES THAT THE PUBLIC WATER SUPPLY IS OF GOOD DRINKING QUALITY, SAMPLING OF THE GROUND WATER ENTERING HOMES IN THE MTHD HAVE CONSISTENTLY SHOWN EVIDENCE OF CONTAMINATION. LEVELS OF TRICHLOROETHENE HAVE BEEN FOUND IN PRIVATE WELLS IN CONCENTRATIONS OF 340 PARTS PER BILLION (PPB), WELL OVER THE PRESENT DRINKING WATER QUALITY REQUIREMENTS OF 5 PPB.

IN CONTRAST TO THE ASSURANCES PROVIDED REGARDING THE PUBLIC WATER SUPPLY QUALITY, FEW SIMILAR ASSURANCES EXIST REGARDING THE EFFECTIVENESS OF A HOME-FILTER UNIT.

2) A REPRESENTATIVE OF SECURITY AND SAFETY SYSTEMS (A DISTRIBUTOR OF RESIDENTIAL WATER FILTER SYSTEMS) SUGGESTED THAT THE FS INCLUDE A LISTING OF CHEMICALS THAT ARE LIKELY TO BE REGULATED UNDER "A-280" IN THE FUTURE (ACCORDING TO A REPORT ISSUED BY CONGRESSMAN CHRISTOPHER SMITH).

RESPONSE: THE MTHD RI/FS REPORT HAS INCLUDED IN ITS ANALYSES, CHEMICALS WHICH ARE LIKELY TO BE REGULATED FOR DRINKING WATER SUPPLIES IN THE NEAR FUTURE. DEP/EPA CONSIDER THE INCLUSION OF ANY MORE PRELIMINARY FINDINGS TO BE PREMATURE AT THIS TIME. IN MARCH 1987, THE NEW JERSEY DRINKING WATER QUALITY INSTITUTE, WHICH CONSISTS OF MEMBERS OF THE GOVERNMENT, RESEARCH AND PRIVATE SECTORS, RELEASED NEW RECOMMENDED MAXIMUM CONTAMINANT LEVELS FOR DRINKING WATER REGULATED UNDER THE NEW JERSEY SAFE DRINKING WATER ACT. ONCE ADOPTED IN A REGULATION, ELIZABETHTOWN WATER COMPANY WILL BE REQUIRED TO MEET THESE LEVELS. IN THE MEANTIME, IT CAN BE NOTED THAT BASED ON RECENT DATA, THE ELIZABETHTOWN WATER SUPPLY CURRENTLY MEETS THESE PROPOSED LEVELS.

3) ONE RESIDENT NOTED THAT WITH HOOKUP TO THE ELIZABETHTOWN SYSTEM, THERE IS NO CONTROL OVER COSTS, AS THERE IS WITH A PRIVATE WELL.

RESPONSE: ELIZABETHTOWN WATER COMPANY RATES ARE REGULATED BY THE NEW JERSEY BOARD OF PUBLIC UTILITIES (BPU). IF A RATE INCREASE IS DEEMED NECESSARY BY ELIZABETHTOWN, THEY MUST FILE A RATE-CASE PETITION. THE BPU HAS 10 MONTHS IN WHICH TO ACT ON THE REQUEST. DURING THIS TIME, THE BPU FORWARDS THE PETITION TO THE NEW JERSEY DEPARTMENT OF THE PUBLIC ADVOCATE, THE AGENCY CHARGED WITH DEFENDING THE PUBLIC'S POINT OF VIEW. IN ADDITION, A PUBLIC HEARING, WHICH IS ANNOUNCED IN LOCAL NEWSPAPERS, IS HELD BY THE BPU.

4) A RESIDENT SUBMITTED A WRITTEN COMMENT WHICH EXPRESSED CONCERNS ABOUT THE HEALTH EFFECTS OF TRIHALOMETHANES (THMS) THAT ARE CREATED THROUGH CHLORINATION OF A PUBLIC WATER SUPPLY (SEE ATTACHMENT B).

RESPONSE: TRIHALOMETHANES (THMS) ARE A CLASS OF CHEMICALS CONSISTING OF THREE HALOGENS (EITHER CHLORINE, BROMINE OR IODINE) AROUND A METHANE BASE. COMMON THMS ARE CHLOROFORM, BROMODICHLOROMETHANE, DIBROMOCHLOROMETHANE AND TRIBROMOMETHANE. THESE COMPOUNDS ARE LARGELY FORMED WHEN SELECTED ORGANIC MATERIALS IN THE WATER ARE COMBINED WITH CHLORINE, WHICH IS INTRODUCED TO KILL HARMFUL MICROORGANISMS. THE RECOMMENDED CHLORINATION PRACTICE IS TO ADD A MINIMUM OF 1 PARTS PER MILLION (PPM) CHLORINE TO THE WATER AND MAINTAIN A RESIDUAL AMOUNT OF AT LEAST 0.2 PPM AS THE WATER ENTERS THE DISTRIBUTION SYSTEM.

POTENTIAL RISKS FROM THMS ARE BEING ADDRESSED BY EPA, BY REQUIRING THAT TOTAL AVERAGE THMS ARE BELOW 100 PPB IN DRINKING WATER. THIS REQUIREMENT IS SIMILAR TO THE 5 PPB REQUIREMENT FOR TRICHLOROETHENE. THIS LEVEL IS CURRENTLY BEING REVIEWED BY A SUBCOMMITTEE OF THE NEW JERSEY DRINKING WATER QUALITY INSTITUTE, AS WELL AS BY EPA. IF LEVELS BELOW 100 PPB ARE DETERMINED TO BE APPROPRIATE, NEW REGULATIONS WOULD BE ISSUED ACCORDINGLY.

IN RESPONSE TO THE CONCERN REGARDING THMS, ELIZABETHTOWN WATER COMPANY CAREFULLY REGULATES THE AMOUNT OF CHLORINE USED FOR DISINFECTION. AS A RESULT, THM LEVELS ARE CONSISTENTLY BELOW 20 PPB, WHICH ARE THE LOWEST LEVELS OF ANY MAJOR NEW JERSEY WATER COMPANY.

THE CHOICE CURRENTLY BEING MADE BY THE CONCERNED RESIDENT IS TO START WITH WATER FROM A SEVERELY CONTAMINATED AQUIFER AND TAKE ON THE RESPONSIBILITIES AND ASSOCIATED RISKS OF TREATING THE WATER TO POTABLE LEVELS. DEP/EPA FEEL THAT A MORE PRUDENT ACTION MAY BE TO START WITH WATER FROM AN APPROVED POTABLE SOURCE AND MAKE THE CHOICE TO TREAT THE WATER IN SOME PERSONALLY ACCEPTABLE MANNER. IN THIS WAY THE CONSEQUENCES OF A HOME TREATMENT SYSTEM FAILURE WOULD NOT BE ONE OF DRINKING CONTAMINATED WATER.

WELL SEALING AND HOOKUPS

1) A RESIDENT EXPRESSED CONCERN THAT THE "BAD" WELLS HAD NOT BEEN SEALED WHICH HE FELT AFFECTED THE MOVEMENT OF CONTAMINATED GROUND WATER THROUGH THE COMMUNITY. ANOTHER RESIDENT QUESTIONED WHY HIS WELL SHOULD BE SEALED IF IT'S CLEAN. FURTHERMORE, BECAUSE SOME RESIDENTS HAVE RESIDENTIAL FILTERS, THERE WAS RESISTANCE TO A MANDATORY HOOKUP. THERE WAS ALSO AN ALLEGATION MADE THAT THE PUBLIC WATER SUPPLY ALTERNATIVE HAD ALREADY BEEN SELECTED. A RESIDENT QUESTIONED WHY DEP WAS DISCUSSING LEAVING A FEW PRIVATE WELLS UNSEALED FOR MONITORING PURPOSES.

RESPONSE: IT IS DEP/EPA'S RESPONSIBILITY TO PROTECT RESIDENTS FROM THE FLUCTUATIONS OF CONTAMINANTS IN GROUND WATER AND TO ENSURE THAT FUTURE HOMEOWNERS DO NOT DRINK CONTAMINATED WATER. AS THE MTHD RI/FS REPORT INDICATES, CONTAMINANT LEVELS CAN CHANGE WITH TIME AND LOCATION. SEALING OF THE PRIVATE WELLS PROVIDES A UNIFORM SOLUTION AND ASSURANCE THAT PRESENT OR FUTURE PUBLIC HEALTH WILL NOT BE THREATENED BY THIS SUPPLY. THE MTHD RI/FS ATTEMPTS TO SPECIFICALLY FOCUS ATTENTION ON THE FACT THAT SEVERAL RESIDENTS ARE USING CONTAMINATED WATER, AND PROVIDE A PROGRAM TO CORRECT THIS SITUATION. SEALING OF THE NEWLY CLOSED WELLS WAS INCLUDED IN SOME OF THE ALTERNATIVES (INCLUDING THE SELECTED ALTERNATIVE). REASONS FOR PERMANENTLY SEALING THE WELLS INCLUDE:

- -- AN UNSEALED WELL COULD PROVIDE A CONDUIT FOR FURTHER VERTICAL MIGRATION OF CONTAMINATION EITHER FROM THE SURFACE OR, FROM SUBSURFACE LAYERS.
- -- STATE LAW STIPULATES THAT ABANDONED WELLS MUST BE SEALED.
- -- INCIDENTAL CONTACT WITH CONTAMINATED WATER COULD OCCUR WITH THESE UNSECURED WELLS.
- -- A NEW HOMEOWNER COULD UNKNOWINGLY RECONNECT THE WELL AND START DRINKING CONTAMINATED WATER.
- -- IMPROPER PLUMBING COULD LEAD TO A CROSS CONNECTION BETWEEN THE WELL AND THE PUBLIC WATER SUPPLY, RESULTING IN CONTAMINATION OF THE PUBLIC WATER SUPPLY.

THE DECISION TO SEAL THESE 39 WELLS AT THIS TIME WAS BASED ON THE EASE WITH WHICH THIS COULD BE CARRIED OUT UNDER THIS PROGRAM. SEALING OF OTHER ABANDONED WELLS IN THE SITE AREA ARE NOT BEING ADDRESSED HERE, BUT WILL BE INCLUDED WITHIN THE MAIN STUDY.

PRIVATE WELLS WHICH HAVE NOT YET BEEN SEALED HAVE PROBABLY NOT EXERTED A GREAT DEAL OF INFLUENCE ON MOVEMENT OF CONTAMINATION THROUGH THE AQUIFER IN THE SHORT-TERM, ALTHOUGH THERE IS CERTAINLY SOME EFFECT ON GROUND WATER FLOW. SEALING OF THE WELLS IS NONETHELESS DESIRABLE REGARDLESS OF THESE FACTS.

WELLS LEFT UNSEALED FOR MONITORING PURPOSES ONLY WOULD ALLOW US TO TRACK THE FLOW AND LEVELS OF CONTAMINATION AND TO PREDICT AND AVOID ANY UNFORESEEN PUBLIC HEALTH OR ENVIRONMENTAL THREATS.

WITH RESPECT TO RESIDENTIAL FILTERS; BECAUSE THE DESIGN AND MAINTENANCE OF INDIVIDUAL HOUSEHOLD FILTERS ARE CRITICAL TO THEIR PERFORMANCE, DEP/EPA CANNOT READILY ENSURE THE RELIABILITY OF THE TREATED SUPPLY.

THE PUBLIC WATER SUPPLY ALTERNATIVE, OR ANY OTHER ALTERNATIVE, HAD NOT BEEN SELECTED PRIOR TO THE ISSUANCE OF THE ROD AND THIS RESPONSIVENESS SUMMARY WHICH INCORPORATES PUBLIC COMMENTS. STATEMENTS MADE AT THE JULY 29, 1987 PUBLIC MEETING REGARDING THE PUBLIC WATER SUPPLY ALTERNATIVE WERE BASED ON DEP/EPA'S PREFERRED ALTERNATIVE AS RECOMMENDED TO THE PUBLIC.

2) A RESIDENT ASKED IF THE WELLS COULD BE UNCAPPED ONCE SEALED IF THE AQUIFER WERE EVER AGAIN DEEMED POTABLE.

RESPONSE: A WELL IS SEALED BY REMOVING THE PUMP AND FILLING THE WELL WITH A CEMENT SLURRY. THIS IS AN IRREVERSIBLE PROCESS AND IS DONE TO ASSURE THAT THE AQUIFER IS NOT USED WHILE IT IS CONTAMINATED. AS A RESULT, THE WELL COULD NOT BE REUSED AT A FUTURE DATE.

OTHER PROPOSED ALTERNATIVES

1) A RESIDENT SUGGESTED THAT WE EXPLORE THE POSSIBILITY OF THE MTHD CONNECTING TO THE ROCKY HILL MUNICIPAL WELL WHICH IS BEING TREATED TO MEET DRINKING WATER STANDARDS. THE TOWNSHIP HEALTH OFFICER QUESTIONED WHETHER THE ROCKY HILL TREATMENT SYSTEM WAS ADEQUATE FOR HEAVY METALS.

RESPONSE: THE MOST EFFICIENT WAY TO PROVIDE WATER TO THE MTHD FROM THE ROCKY HILL MUNICIPAL WELLFIELD WOULD BE TO DISCONNECT THE TIE-IN TO ELIZABETHTOWN WATER AT THE INTERSECTION OF ROUTE 206 AND SYCAMORE LANE, AND CONNECT TO A ROCKY HILL MUNICIPAL WATER MAIN ON MONTGOMERY ROAD. IT SHOULD BE NOTED HERE THAT AS WITH ELIZABETHTOWN WATER, ROCKY HILL WATER IS REGULARLY TESTED FOR BOTH ORGANIC AND INORGANIC CONTAMINANTS. THE FOLLOWING CONCERNS WERE RAISED WHEN DEP/EPA CONSIDERED THIS SUGGESTION:

A) THE BOROUGH OF ROCKY HILL MUST FIRST AGREE TO SUCH A CONNECTION.
B) AN ADEQUATE SUPPLY MUST BE AVAILABLE FROM THE EXISTING FACILITY.
C) LIMITATIONS MAY EXIST BECAUSE OF FRANCHISES HELD BY ELIZABETHTOWN WATER COMPANY.
D) BILLING AND WATER LINE MAINTENANCE WOULD HAVE TO BE ADDRESSED IN SOME MANNER.

SUBSEQUENT CONTACT WITH MAYOR RAYMOND WHITLOCK OF ROCKY HILL INDICATED THAT HE DID NOT INITIALLY OBJECT TO DEP/EPA'S EXPLORING THE POSSIBILITY OF SUCH A PROGRAM. HE NOTED HOWEVER THAT ACTUAL APPROVAL WOULD HAVE TO BE GAINED FROM THE CITY COUNCIL WHEN DETAILS OF THE PLAN WERE FULLY DEVELOPED.

BOTH MAYOR WHITLOCK AND THE ROCKY HILL BOROUGH WATER SUPERINTENDENT AGREED THAT THE SYSTEM WOULD PROBABLY BE CAPABLE OF HANDLING THE ADDITIONAL DEMAND AT THE CURRENT USAGE RATES. HOWEVER, IT WAS NOTED THAT SIGNIFICANT PORTIONS OF ROCKY HILL ARE AS YET UNDEVELOPED AND ANY COMMITMENT TO SUPPLY MTHD WITH WATER WOULD IMPACT FUTURE DEVELOPMENT PLANS.

ACCORDING TO THE BOARD OF PUBLIC UTILITIES, ALTHOUGH ELIZABETHTOWN WATER COMPANY MAINTAINS A FRANCHISE TO SUPPLY WATER IN THE AREA, ALTERNATIVE SUPPLY SOURCES CAN BE DEVELOPED. THE MTHD WATER MAINS, HOWEVER, ARE UNDER THE CONTROL OF ELIZABETHTOWN WATER. IF AN AGENCY OTHER THAN ELIZABETHTOWN WATER WERE TO USE THESE MAINS, THEY WOULD HAVE TO ASSUME CONTROL OF THE DISTRIBUTION SYSTEM. SUCH AN ARRANGEMENT, WHICH COULD BE FAIRLY SIMPLE OR FAIRLY COMPLEX (AND EXPENSIVE), COULD ONLY BE DETERMINED FOLLOWING A THOROUGH REVIEW OF THE CONTRACT DOCUMENTS BETWEEN MONTGOMERY TOWNSHIP AND ELIZABETHTOWN WATER. IT SHOULD BE NOTED THAT THE LIKELY OUTCOME OF THIS REVIEW IS THAT CONTROL CAN BE SHIFTED WITH ONLY MINOR EFFORTS.

BILLING AND WATER SYSTEM MAINTENANCE COULD BE HANDLED BY EITHER MONTGOMERY TOWNSHIP, ROCKY HILL BOROUGH, OR ELIZABETHTOWN WATER UNDER A VARIETY OF PROCEDURES. AS COMPARED TO THE OTHER GROUPS, MONTGOMERY TOWNSHIP WOULD PROBABLY BE INAPPROPRIATE FOR THIS TASK, SINCE THEY DO NOT CUSTOMARILY PERFORM THESE FUNCTIONS. ROCKY HILL WOULD PROBABLY BE CAPABLE OF PERFORMING THESE FUNCTIONS, THOUGH THEY WOULD HAVE TO ACT IN THE FUNCTION OF A UTILITY WITH REGARD TO SAMPLING AND ACCOUNTING. LIKEWISE THEY WOULD HAVE TO ASSUME ADDED MAINTENANCE TASKS. THE COMPLICATIONS WOULD BE MINIMIZED IF ELIZABETHTOWN WATER WERE TO RETAIN BILLING AND MAINTENANCE RESPONSIBILITIES, AND OPERATE UNDER A BULK SALE AGREEMENT WITH ROCKY HILL.

IN SUMMARY, WATER CAN POSSIBLY BE OBTAINED FROM ROCKY HILL WELLFIELD ONLY FOR THE PRESENT TIME. THE OPTIMAL MECHANISMS BY WHICH THIS WOULD BE DONE IS BY ELIZABETHTOWN WATER BUYING WATER IN BULK FROM ROCKY HILL AND DISTRIBUTING IT TO THE HOUSING DEVELOPMENT. OTHER METHODS WOULD FACE SEVERAL POTENTIAL OBSTACLES. BECAUSE THE ELIZABETHTOWN WATER SUPPLY IS OF GOOD DRINKING WATER QUALITY, IS THE READILY AVAILABLE WATER SUPPLY, AND IS A MORE RELIABLE LONG TERM WATER SUPPLY, AN ALTERNATIVE SUPPLY IS NOT WARRANTED UNDER THIS PROGRAM. IT IS RECOMMENDED THAT ANY DISCUSSION BETWEEN ELIZABETHTOWN WATER COMPANY, ROCKY HILL, AND MONTGOMERY TOWNSHIP BE PURSUED FURTHER OUTSIDE THE REALM OF THIS PROGRAM.

2) A PROPOSAL WAS MADE BY A TOWNSHIP COMMITTEEMAN TO COMBINE THE ALTERNATIVE TO CONNECT TO AVAILABLE WATER MAINS WITH THE HOME AIR-STRIPPING ALTERNATIVE, APPLYING THE LATTER TO THE FOUR RESIDENCES ON MONTGOMERY ROAD WHO DO NOT HAVE AVAILABLE MAINS. THIS WOULD AVOID THE SUBSTANTIAL COSTS INVOLVED IN PROVIDING A WATER MAIN TO CONNECT THESE FOUR RESIDENCES TO THE ELIZABETHTOWN SUPPLY. HE FURTHER SUGGESTED THAT THE SAVINGS MAY BE APPLICABLE TO THE REMAINING HOMES THEREBY ALLOWING HOUSEHOLDS TO CONTINUE USING PRIVATE WELLS WITH FILTER SYSTEMS.

RESPONSE: THIS HYBRID ALTERNATIVE IS DESCRIBED IN ATTACHMENT C. THE COST ESTIMATES FOR THIS ALTERNATIVE ARE $266,000 CAPITAL COSTS AND $11,000 FOR ANNUAL COSTS. THE NET PRESENT COST OF THIS ALTERNATIVE IS $369,696 (@ 10% FOR 30 YEARS) COMPARED TO COMPLETE PUBLIC WATER SUPPLY CONNECTION COSTS OF $319,000. (SEE ITEM 2 IN "COSTS OF ALTERNATIVES" FOR DISCUSSION OF POSSIBLE TAX IMPACTS). SINCE THE ACCURACY OF THE COST ESTIMATE IS LIMITED, DEP/EPA DO NOT CONSIDER THE DIFFERENCE IN ESTIMATED SYSTEM COSTS OF LESS THAN 30% TO BE SIGNIFICANT. THEREFORE, A COMPARISON IS MADE BASED ON TECHNICAL PARAMETERS ONLY.

BECAUSE OF THE RELATIVE EASE OF IMPLEMENTATION AND RELATIVE PERMANENCE OF THE REMEDY, THE PUBLIC WATER CONNECTION ALTERNATIVE IS THE SELECTED ALTERNATIVE.

3) THE SECURITY AND SAFETY SYSTEMS REPRESENTATIVE ALSO REQUESTED THAT OTHER NEW TECHNOLOGIES BE EVALUATED IN THE FINAL MTHD FS REPORT. INFORMATION HE HAS SUBMITTED TO DEP/EPA IS INCLUDED IN ATTACHMENT D. THESE TECHNOLOGIES MAY BE APPLICABLE AS AN EXCLUSIVE ALTERNATIVE, OR AS A MEANS OF PROVIDING WATER PRIOR TO THE IMPLEMENTATION OF OTHER REMEDIAL PROGRAMS.

RESPONSE: ATTACHMENT D IS A PROPOSAL FOR A CARBON ADSORPTION HOME FILTRATION UNIT. THE USE OF THIS UNIT IN REMEDIATING THE POTABLE WELL CONTAMINATION WAS CONSIDERED, AND THE FOLLOWING POINTS WERE NOTED:

A) THE UNIT ONLY ADDRESSES WATER INGESTION AND DOES NOT ADDRESS INHALATION THREATS ASSOCIATED WITH BATHING. THE RI/FS HAS IDENTIFIED THIS AS A SIGNIFICANT THREAT.

B) THOUGH THE UNIT IS CAPABLE OF REMOVING TRICHLOROETHENE, WHICH IS THE MAJOR CONTAMINANT, IT DOES NOT ADDRESS OTHER LESS PREVALENT POTENTIAL PROBLEMS, INCLUDING BIOLOGICAL BUILDUP AND CONTAMINATION BY METHYLENE CHLORIDE AND METALS. (IT SHOULD BE NOTED THAT THE ACTIVATED CARBON UNITS DISCUSSED IN THE MTHD RI/FS ALSO DO NOT ADDRESS METHYLENE CHLORIDE AND METALS, THOUGH THE PUBLIC WATER CONNECTION ALTERNATIVE DOES ADDRESS THIS POINT.).

C) THE ONLY INFORMATION REGARDING TRICHLOROETHENE REMOVAL IS A CALCULATION OF TOTAL LOADING FOR A 34 PPB INFLUENT IN A FAMILY UNIT. NO DATA IS PRESENTED FOR A CONCENTRATION CLOSER TO THE LEVELS FOUND ON SITE (160 PPB OR 0.16 MG/L AVERAGE). IF THE TOTAL LOADING VALUE PRESENTED OF 102.1 MG IS USED, APPROXIMATELY A TWO MONTH UNIT LIFE WOULD BE EXPECTED AS AN AVERAGE. (102.1 MG DIVIDED BY 0.16 MG/L DIVIDED BY 12 1/DAY = 53 DAYS). THIS IS SIGNIFICANTLY BELOW THE ONE YEAR FIGURE PRESENTED IN THE PROPOSAL. THIS FACTOR RESULTS IN A POTENTIAL FOR PROPOSED COSTS TO BE UNDERESTIMATED, SINCE BOTH FILTER REPLACEMENT AND ANALYSIS WOULD BE PERFORMED MORE FREQUENTLY.

THE PROPOSED HOME FILTRATION SYSTEM (FOR DRINKING AND COOKING USES) IS NOT RECOMMENDED AS PART OF THIS PROGRAM. AT BEST, THE PROPOSED UNIT WOULD BE ONLY AS PROTECTIVE AS THE BOTTLED WATER ALTERNATIVE, AND THIS ALTERNATIVE WAS ELIMINATED FROM CONSIDERATION IN THE FS BECAUSE IT FAILED TO EFFECTIVELY LIMIT INHALATION RISKS. THOSE FACTORS LISTED IN POINTS B) AND C) ABOVE COULD BE ADDRESSED WITH ADDED MONITORING AND MAINTENANCE, BUT WITH RESULTANT INCREASED COSTS.

REIMBURSEMENT FOR PAST ACTIONS

1) TOWNSHIP OFFICIALS EXPRESSED CONCERN OVER THE INEQUITIES OF REIMBURSEMENTS TO RESIDENTS (SEE ATTACHMENT E). A NUMBER OF RESIDENTS HAVE NOT BEEN PAID FOR HOOKUPS TO THE ELIZABETHTOWN SUPPLY OR FOR ASSESSMENTS FOR THE INSTALLATION OF A WATER LINE. THE HEALTH OFFICER FURTHER STATED THAT THE TOWNSHIP COMMITTEE WOULD PROBABLY TAKE THESE APPARENT INEQUITIES INTO CONSIDERATION WHEN ADDRESSING THEIR PLANS TO PASS AN ORDINANCE CONDEMNING THE WELLS. THE TOWNSHIP COMMITTEEMAN SUGGESTED THAT THE COST OF THE EXISTING WATER MAINS BE FACTORED INTO THE ALTERNATIVES.

ONE RESIDENT STATED THAT THE STARTING POINT FOR THE CLEANUP PROGRAM SHOULD BE 1979 WHEN THE CONTAMINATION WAS FIRST DISCOVERED AND CLEANUP COSTS SHOULD INCLUDE ANY CLEANUP ACTIONS TAKEN FROM THAT DATE.

RESPONSE: SEVERAL CLAIMS RELATED TO MTHD HAVE BEEN FILED UNDER A STATE PROGRAM INTENDED TO REMEDIATE A VARIETY OF PROBLEMS AT HAZARDOUS WASTE SITES (NEW JERSEY SPILL COMPENSATION AND CONTROL ACT, OTHERWISE KNOWN AS SPILL FUND). THESE CLAIMS ARE CURRENTLY BEING HANDLED ON AN INDIVIDUAL BASIS, WITH ROUGHLY HALF ALREADY PROCESSED. THE LAW GOVERNING THIS PROGRAM IS EXPLICIT IN DEFINING FILING REQUIREMENTS AND THE APPROVAL OF CLAIMS IS ENTIRELY DEPENDENT ON THE LIMITATIONS OF THIS LAW.

AS A MATTER OF EPA POLICY, SUPERFUND IS NOT USED FOR REIMBURSEMENT PROGRAMS UNDER THE CONDITIONS ADDRESSED AT MTHD. THE FACT THAT THE OBLIGATION OF MUNICIPAL FUNDS OCCURRED PRIOR TO THE ENACTMENT OF THE SUPERFUND LAW PASSED DECEMBER 11, 1980, RAISES AN ISSUE REGARDING STATE CREDITS UNDER CERCLA. UNDER SECTION 104(C)(5) OF CERCLA (ATTACHMENT F), THE STATE IS ELIGIBLE FOR A CREDIT FOR RESPONSE ACTIONS THAT OCCURRED BEFORE DECEMBER 11, 1980 TAKEN BY A POLITICAL SUBDIVISION. THIS GRANTING OF CREDIT COULD CONCEIVABLY BE PASSED ON TO MONTGOMERY TOWNSHIP. EPA AND DEP ARE CURRENTLY DISCUSSING THE APPLICABILITY AND MECHANICS OF SUCH A PROGRAM AND WILL CONTINUE TO PURSUE IT TO RESOLUTION.

COSTS OF ALTERNATIVES

1) THERE WAS GENERAL CONSENSUS AMONG RESIDENTS AND OFFICIALS THAT SOME OF THE ESTIMATED COSTS FOR THE ALTERNATIVES MAY BE INACCURATE AND HIGHLY INFLATED.

RESPONSE: THE COSTS PRESENTED ARE HIGHER THAN MAY HAVE BEEN ANTICIPATED FOR THE FOLLOWING REASONS:

A) CONTAMINATION LEVELS USED FOR SYSTEM DESIGN ARE THE AVERAGE SITE CONTAMINANTS FOUND IN RECENT PRIVATE AND MONITORING WELL SAMPLES (160 PPB). DUE TO THE HIGHLY VARIABLE NATURE OF THE GROUND WATER SAMPLE RESULTS, IT IS NECESSARY TO USE THESE LEVELS TO SAFELY SIZE TREATMENT SYSTEMS.

B) ANALYSIS PROCEDURES REQUIRED UNDER THIS PROGRAM ARE BOTH MORE EXPENSIVE AND MORE FREQUENT THAN THOSE CUSTOMARILY SEEN BY RESIDENTS. AS AN EXAMPLE, THE MONITORING FOR INDIVIDUAL ACTIVATED CARBON UNITS IS ON A 30-DAY SCHEDULE AT A COST OF $750 PER SAMPLING EVENT. DUE TO THE HIGHLY VARIABLE NATURE OF THE CONTAMINATION, A FREQUENT SAMPLING PROGRAM IS NECESSARY.

C) MISCELLANEOUS ITEMS SUCH AS BACTERIAL BUILDUP AND WINTERIZING OF OUTDOOR EQUIPMENT ARE ALSO ADDRESSED IN THE ALTERNATIVES, RESULTING IN INCREASED COST ESTIMATES.

FURTHER DETAILS OF THE COST ELEMENTS ARE DISCUSSED IN THE BODY OF THE RI/FS REPORT.

2) A RESIDENT SUGGESTED THAT WE FACTOR INTO OUR COST ANALYSIS THE 66% STATE OR FEDERAL TAX ON THE 4,000-FOOT WATER LINE.

RESPONSE: THE ADDITIONAL PROJECT COSTS RESULTING FROM ELIZABETHTOWN WATER POTENTIALLY BEING TAXED FOR THE VALUE OF THE NEW MAIN HAVE NOT BEEN INCORPORATED. THIS IS BECAUSE OF THE LIKELIHOOD THAT THESE COSTS WOULD BE ADDRESSED OUTSIDE OF THIS PROGRAM. THE TABLE BELOW SHOWS THE POTENTIAL IMPACTS OF THIS TAX.

ALTERNATIVE	CAPITAL COST	ANNUAL COST	PRESENT WORTH (ROUNDED)
BOTTLED WATER	-	59,000	556,200
PUBLIC WATER	458,425	-	458,400
HOME AIR STRIPPING	1,255,000	105,000	2,244,800
HOME CARBON	559,000	378,000	4,122,400
NEW COMMUNITY WELL (ASSUMES WELL OPERATED BY TOWNSHIP)	699,000	31,000	991,200
HYBRID SYSTEM	266,000	11,000	369,700.

THE ONLY SHIFT IN RANKING OF SYSTEMS OCCURS BETWEEN THE COMPLETE PUBLIC WATER CONNECTION AND THE HYBRID SYSTEM, BUT THE RESULTING VARIATION IS STILL WITHIN THE ACCURACIES OF THE ESTIMATE (30%).

RESPONSIBLE PARTIES

1) THE TOWNSHIP COMMITTEEMAN ASKED IF DEP/EPA IS FOCUSING IN ON A RESPONSIBLE PARTY AND IF SO, WILL THEY BE RESPONSIBLE FOR THE COSTS INCURRED?

RESPONSE: A PRIME OBJECTIVE IN ANY SUPERFUND REMEDIAL ACTION IS IDENTIFICATION OF A RESPONSIBLE PARTY OR PARTIES. THE SUPERFUND LAW MANDATES THAT ANY OR ALL IDENTIFIED RESPONSIBLE PARTIES PAY ALL COSTS ASSOCIATED WITH THE CLEANUP PROCESS (INCLUDING COSTS OF THE RI/FS). SHOULD A RESPONSIBLE PARTY CHOOSE NOT TO PAY THE INCURRED COSTS, THE LAW ALLOWS EPA TO SUE THAT PARTY FOR UP TO THREE TIMES THE CLEANUP COSTS.

DEP/EPA ARE CONTINUING TO NARROW THE LIST OF POTENTIAL RESPONSIBLE PARTIES THROUGH THE MORE COMPREHENSIVE, ONGOING RI/FS BEING CONDUCTED FOR BOTH THE ROCKY HILL MUNICIPAL WELLFIELD AND MTHD SITES.

DECISION PROCESS

1) A RESIDENT ASKED WHAT THE MECHANISM WAS FOR SELECTING THE REMEDIAL ALTERNATIVE. AFTER BEING TOLD THAT THE REGIONAL ADMINISTRATOR MAKES THE FINAL DECISION, HE ASKED WHY A REFERENDUM COULD NOT BE HELD INSTEAD OF A "CZAR" MAKING THE DECISION.

RESPONSE: THE SUPERFUND COMMUNITY RELATIONS PROGRAM IS VERY SPECIFIC IN ITS REQUIREMENTS FOR CITIZEN INPUT INTO THE CLEANUP PROCESS IN ORDER TO MEET THE MANDATES OF THE LAW. AS IS EVIDENT IN THE ROD AND THIS RESPONSIVENESS SUMMARY, THE MECHANISM FOR SELECTING THE REMEDIAL ACTION ALTERNATIVE IS RELATIVELY COMPLEX. THE SUPERFUND LAW AND THE ACCOMPANYING REGULATIONS LISTED IN THE NATIONAL CONTINGENCY PLAN CLEARLY OUTLINE THE PROCESS BY WHICH A SUPERFUND CLEANUP IS CONDUCTED, INCLUDING THE ALTERNATIVE SELECTION PROCESS.

PUBLIC INPUT DOES INDEED PLAY AN IMPORTANT ROLE IN THIS PROCESS. THE PUBLIC'S CONCERNS ARE SOLICITED THROUGHOUT THE RI/FS PROCESS. THESE CONCERNS ARE ADDRESSED IN THE RESPONSIVENESS SUMMARY AND ARE PRESENTED TO THE REGIONAL ADMINISTRATOR PRIOR TO FINAL SELECTION OF A REMEDIAL ALTERNATIVE.

THE ROD IS BASED ON MONTHS OF RESEARCH, DATA GATHERING, ANALYSES, AND ALTERNATIVE REVIEWS BY A NUMBER OF GEOLOGISTS, HYDROGEOLOGISTS, ENGINEERS, TOXICOLOGISTS, ATTORNEYS, ETC. AND EACH DOCUMENT OF THE RI/FS AND ROD GOES THROUGH SEVERAL DRAFTS BEFORE REACHING THE REGIONAL ADMINISTRATOR.

THUS, THE ROD ACTUALLY REPRESENTS THE CONCERTED EFFORTS OF DEP, EPA AND THE AFFECTED COMMUNITIES.

AQUIFER CONTAMINATION

1) A RESIDENT HAD NOT HEARD PRIOR TO THIS PUBLIC MEETING THAT METALS CONTAMINATION WAS A CONCERN. SHE ASKED WHAT LEVELS OF HEAVY METALS CONTAMINATION WERE FOUND.

RESPONSE: THE METALS CONTAMINATION FOUND RANDOMLY IN THE AREA IS NOT NECESSARILY PART OF THE GROUNDWATER PLUME. OF THE 35 PRIVATE WELLS RECENTLY SAMPLED FOR INORGANICS, THE FOLLOWING MATERIALS WERE FOUND IN EXCESS OF STANDARDS:

CHROMIUM (50 PPB DRINKING WATER STANDARD) - IN ONE WELL AT 117 PPB.

LEAD (50 PPB DRINKING WATER STANDARD) - IN FOUR WELLS AT LEVELS OF 91, 143, 740, AND 2,170 PPB.

2) A RESIDENT ASKED HOW MANY WELLS HAVE GONE "BAD" SINCE THE STUDY STARTED IN THE AREA.

RESPONSE: A COMPARISON OF 1986 DATA WITH PREVIOUS DATA FOR CHANGES IN TRICHLOROETHENE DETECTION WAS MADE. OF 29 HOMES THAT HAD BOTH A 1986 SAMPLE AND A SAMPLE PRIOR TO 1986, FOUR HOMES SHOWED A NEWLY DETECTED PRESENCE OF TRICHLOROETHENE WHILE ONE HOME WHERE TRICHLOROETHENE WAS PREVIOUSLY DETECTED, WAS CLEAN. THE FOUR HOMES WITH RECENT DETECTIONS WERE ON SYCAMORE LANE AND MONTGOMERY ROAD, ALONG THE NORTHERN EDGES OF THE IDENTIFIED PLUME.

3) A RESIDENT ASKED WHAT ARE THE ODDS THAT THE AQUIFER WILL BE CLEAN IN TEN YEARS.

RESPONSE: BECAUSE THE SOURCE IS NOT YET KNOWN, IT IS IMPOSSIBLE TO PREDICT WHETHER, OR HOW LONG IT WILL BE UNTIL ALL OF THE CONTAMINANTS HAVE TRAVELED THROUGH THE AQUIFER. THE SOURCE MAY, IN FACT, NO LONGER BE DISCHARGING CONTAMINANTS. THE MORE COMPREHENSIVE, ONGOING RI/FS WILL ADDRESS THE CONTAMINATION OF THE AQUIFER AS A WHOLE. THE PRESENT MTHD RI/FS ADDRESSES ONLY THE PRIVATE POTABLE WELLS.

IV. REMAINING PUBLIC CONCERNS

THE COMMUNITY WILL BE AWAITING THE RESULTS OF THE MORE COMPREHENSIVE RI/FS FOR MTHD AND RHMW. THIS WILL ADDRESS THEIR CONCERNS REGARDING THE IDENTIFICATION OF RESPONSIBLE PARTIES AND THE LONG-TERM CLEANUP OF THE AQUIFER.

DEP/EPA ARE CONFIDENT THAT THE JULY 29, 1987 PUBLIC MEETING REGARDING THE MTHD RI/FS AND THIS RESPONSIVENESS SUMMARY WILL HELP TO FOSTER FURTHER PUBLIC ACCEPTANCE OF THE PUBLIC WATER SUPPLY HOOKUP AND PRIVATE WELL SEALING DECISION.

ATTACHMENT A

SUMMARY OF
COMMUNITY RELATIONS ACTIVITIES
COMMUNITY RELATIONS ACTIVITIES CONDUCTED
AT
MONTGOMERY TOWNSHIP HOUSING DEVELOPMENT

COMMUNITY RELATIONS ACTIVITIES CONDUCTED AT THE MTHD SITE TO DATE INCLUDE THE FOLLOWING:

-- A COMMUNITY RELATIONS PLAN WAS PREPARED (JUNE, 1985).

-- MUNICIPAL OFFICIALS WERE CONTACTED TO ADVISE THEM OF A CONTRACT AWARD TO CONDUCT THE RI/FS FOR THE MTHD AND THE ROCKY HILL MUNICIPAL WELLFIELD SITES (AUGUST, 1985).

-- AN INFORMATIONAL FLYER WAS DISTRIBUTED TO HOMES IN THE MTHD REGARDING THE RI/FS AND PLANNED ACTIVITIES (NOVEMBER, 1985).

-- DEP HELD A BRIEFING FOR MUNICIPAL OFFICIALS (NOVEMBER 14, 1985).

-- NOTICES WERE SENT TO THOSE LISTED ON THE CONTACTS LIST OF THE COMMUNITY RELATIONS PLAN AND PRESS RELEASES WERE SENT TO THE MEDIA ANNOUNCING THE JANUARY 14, 1986 AND JULY 29, 1987 PUBLIC MEETINGS (DECEMBER 1985 & JULY 1987).

-- A PUBLIC MEETING WAS HELD AT THE MONTGOMERY TOWNSHIP MUNICIPAL BUILDING TO DISCUSS THE INITIATION OF THE RI/FS. APPROXIMATELY 35 PEOPLE ATTENDED INCLUDING CITIZENS, LOCAL OFFICIALS AND MEDIA REPRESENTATIVES (JANUARY 14, 1986).

-- THE OPERABLE UNIT MTHD RI/FS REPORT WAS PLACED IN REPOSITORY FOR PUBLIC REVIEW AND COMMENT AT FOUR LOCATIONS: THE MONTGOMERY TOWNSHIP MUNICIPAL BUILDING, THE MARY JACOBS LIBRARY IN ROCKY HILL, THE SOMERSET COUNTY LIBRARY MAIN BRANCH AND DEP IN TRENTON. THE PUBLIC COMMENT PERIOD WAS FROM JULY 15, 1987 TO AUGUST 14, 1987.

-- A PUBLIC MEETING WAS HELD AT THE MONTGOMERY TOWNSHIP MUNICIPAL BUILDING TO DISCUSS THE COMPLETION OF THE OPERABLE UNIT RI/FS FOR PRIVATE POTABLE WELLS. APPROXIMATELY 35 PEOPLE ATTENDED INCLUDING CITIZENS, LOCAL OFFICIALS AND MEDIA REPRESENTATIVES (JULY 29, 1987).

-- TELEPHONE CONTACT AND WRITTEN CORRESPONDENCE WAS MAINTAINED BETWEEN DEP AND MUNICIPAL OFFICIALS AND THE PRESS (ONGOING THROUGHOUT RI/FS).

ATTACHMENT B

LETTER FROM RESIDENT

REGARDING TRIHALOMETHANES

AUGUST 11, 1987

JAN GAJEWSKI
167 MONTGOMERY ROAD
SKILLMAN, NJ 08558

JEFFREY FOLMER, SENIOR AREA COORDINATOR
NJ DEPARTMENT OF ENVIRONMENTAL PROTECTION
401 EAST STATE STREET
TRENTON, NJ 08625

DEAR SIR:

AS A RESIDENT OF MONTGOMERY ROAD I WISH TO VOICE MY CONCERN OVER THE MANDATORY HOOKUP TO ELIZABETHTOWN PUBLIC WATER PROPOSED BY THE NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION FOR HOMES IN THE MONTGOMERY ROAD SYCAMORE LANE AREA.

THROUGH ITS PAST ACTIONS THE NJDEP HAS MADE AVAILABLE TO RESIDENTS IN THE AREA AN ALTERNATIVE TO PRIVATE WELL WATER IN THE FORM OF ELIZABETHTOWN PUBLIC WATER. EACH RESIDENT HAS MADE A CONSCIOUS DECISION AS TO THE BEST SOURCE OF WATER. I AM ONE OF SEVERAL RESIDENTS WHO HAS CHOSEN ACTIVATED CHARCOAL FILTERED PRIVATE WELL WATER. THIS SOURCE OF WATER HAS BEEN SHOWN TO CONTAIN NO DETECTABLE ORGANIC CONTAMINANTS PER ANALYSIS OF PRINCETON TESTING LABORATORY, P.O. BOX 3108, PRINCETON, NJ 08540. IN MANDATING HOOKUP TO ELIZABETHTOWN PUBLIC WATER THE STATE WILL BE FORCING ME TO INGEST CHLORINE DISINFECTED WATER AGAINST MY BETTER JUDGEMENT. RECENT EPIDEMIOLOGIC STUDIES, SUCH AS THE ONE ENCLOSED, HAVE DEMONSTRATED HEALTH RISKS WHICH HAVE RESULTED FROM DRINKING CHLORINATED WATER WHICH MEETS PRESENT STANDARDS. NUMEROUS RESEARCHERS HAVE DOCUMENTED THE INCREASED MUTAGENICITY OF CHLORINATED WATER VIA STANDARD AMES TESTS. PRESENT STUDIES OF CHLORINATED WATER ARE QUITE REMINISCENT OF ASBESTOS RESEARCH DURING THE 1950'S. IN MANDATING PUBLIC WATER THE STATE IS ASSUMING A CUSTODIAL ROLE WITH ALL THE RESPONSIBILITIES WHICH THIS IMPLIES. I URGE THE NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION TO CONSIDER THE LONG TERM CONSEQUENCES OF ITS DECISION.

SINCERELY,

JAN GAJEWSKI.

ATTACHMENT C

DESCRIPTION OF HYBRID ALTERNATIVE

(THIS ALTERNATIVE HAS BEEN IDENTIFIED AS ALTERNATIVE 5
IN KEEPING WITH THE RI/FS NUMBERING SYSTEM.).

ALTERNATIVE DESCRIPTION

ALTERNATIVE 5

THIS ALTERNATIVE IS A HYBRID OF ALTERNATIVES 2 AND 3A. ELIZABETHTOWN WATER COMPANY'S SUPPLY SYSTEM WILL BE HOOKED-UP TO HOMES ON STREETS WHERE THE COMPANY'S DISTRIBUTION LINES ARE ALREADY IN PLACE, INCLUDING HOMES ON SYCAMORE LANE, ROBIN DRIVE, OXFORD CIRCLE, AND CLEVELAND CIRCLE. THE FOUR HOMES ON MONTGOMERY ROAD WILL REMAIN ON THEIR WELLS, HOWEVER A WELL TREATMENT SYSTEM, SUCH AS THAT DESCRIBED IN ALTERNATIVE 3A WITH AIR-STRIPPING AND ACTIVATED CARBON ADSORPTION, WILL BE PROVIDED FOR EACH OF THESE HOMES.

ALTERNATIVE EVALUATION

PUBLIC HEALTH EVALUATION

ALTERNATIVE 5. FOR THE 35 RESIDENTS WHO WILL BE HOOKED-UP TO THE ELIZABETHTOWN WATER COMPANY SUPPLY SYSTEM, HEALTH EFFECTS WILL BE THE SAME AS THOSE DESCRIBED FOR ALTERNATIVE 2, IN THAT ARARS WILL BE MET OR EXCEEDED BASED ON AVAILABLE DATA. THE INDIVIDUAL WELL TREATMENT SYSTEM PROPOSED FOR EACH OF THE FOUR REMAINING RESIDENTS WILL MEET THE ARARS FOR THE ORGANIC CONTAMINANTS PROVIDED THE SYSTEM IS WELL MONITORED AND MAINTAINED. THERE IS NO GUARANTEE, HOWEVER, THAT HEAVY METALS WILL BE REMOVED TO A LEVEL THAT WILL MEET THE ARARS.

ENVIRONMENTAL ASSESSMENT

ALTERNATIVE 5. ALTHOUGH THE OFF-GAS FROM THE AIR-STRIPPING COLUMN WILL CONTAIN THE STRIPPED VOLATILE ORGANICS, CONCENTRATIONS FROM THESE UNITS IS EXPECTED TO BE MINIMAL WHEN DISPERSED TO THE OPEN AIR, THEREFORE THE ENVIRONMENTAL IMPACT OF THE OFF-GAS FROM THE FOUR COLUMNS IS MINIMAL. ACTIVATED CARBON REPLACEMENT WILL BE HANDLED BY THE VENDOR, AND DISPOSAL OR REGENERATION WILL BE CONDUCTED OFF-SITE.

ASSESSMENT OF TECHNICAL FEASIBILITY

ALTERNATIVE 5. EXTENSION OF THE ELIZABETHTOWN WATER COMPANY SUPPLY SYSTEM CAN BE EASILY IMPLEMENTED SINCE, FOR THIS ALTERNATIVE, THE WATER MAINS ARE ALREADY IN PLACE. INSTALLATION OF INDIVIDUAL WELL TREATMENT FOR THE FOUR RESIDENTS ON MONTGOMERY ROAD WILL BE IMPLEMENTED USING WELL ESTABLISHED TECHNOLOGIES. LIKE ALTERNATIVE 4, THE RELIABILITY OF THE TREATMENT SYSTEMS IS BASED ON EXISTING WATER QUALITY AND CONTAMINANTS IDENTIFIED. POSSIBLE FUTURE VARIATIONS OF CONTAMINANT LEVELS OR NEWLY IDENTIFIED CONTAMINANT PARAMETERS COULD ADVERSELY AFFECT THE RELIABILITY.

THE CAPITAL COST FOR THIS ALTERNATIVE IS $266,000, AS PRESENTED IN TABLE 5-3. THE ANNUAL O&M COST, ASSOCIATED WITH SAMPLING AND MAINTENANCE OF THE INDIVIDUAL WELL TREATMENT SYSTEMS, IS $11,000.

ATTACHMENT D

LETTER FROM SECURITY & SAFETY SYSTEMS REPRESENTATIVE REGARDING ACTIVATED CARBON ADSORPTION

SECURITY & SAFETY SYSTEMS

JULY 31, 1987

MR. DOUGLAS E. SEELY
SENIOR PROJECT SCIENTIST
METCALF AND EDDY, INC.
P.O. BOX 4043
WOBURN, MASS. 01888-4043

DEAR DOUGLAS:

THIS LETTER IS IN RESPONSE TO OUR DISCUSSION FOLLOWING THE DOCUMENTATION AND PRESENTATION OF THE MONTGOMERY TOWNSHIP REMEDIAL INVESTIGATION/FEASIBILITY STUDY OF 39 PRIVATE CONTAMINATED WELLS.

ENCLOSED PER YOUR REQUEST ARE COPIES OF THE RESULTS OF EXTENSIVE EPA 601 & 604 PROTOCOL TESTING AND INFORMATION REFLECTING OVER $10 MILLION OF PRODUCT DEVELOPMENT AND RESEARCH. THE TECHNICAL FEASIBILITY AND ECONOMIC VIABILITY OF THE METHODS WE RECOMMEND ARE WELL DOCUMENTED IN DETAILED EPA REPORTS, MAJOR EDUCATIONAL INSTITUTIONAL STUDIES, PRIVATE INDUSTRY RESEARCH, INDEPENDENT LABORATORY TESTING, AND BY MANY ENVIRONMENTAL ENGINEERING CONSULTANTS.

THIS INFORMATION SCIENTIFICALLY SUBSTANTIATES THE SUPERIOR PERFORMANCE CAPABILITIES OF SOLID CARBON BLOCK FILTRATION OVER LESS SOPHISTICATED ACTIVATED GRANULAR CARBON FILTERS. CLEARLY, THE TWO MOST IMPORTANT STATE-OF-THE-ART BREAKTHROUGHS ARE:

1. THE ABILITY OF SOLID CARBON BLOCK TECHNOLOGY TO REMOVE OVER 100+ OF THE EPA 128 PRIORITY POLLUTANTS. (NO OTHER FILTER TECHNOLOGY CAN EFFECTIVELY REMOVE MORE THAN 40 OF THE 83 TOXIC CHEMICALS REQUIRED BY EPA UNDER THE 1986 SAFE WATER ACT GUIDELINES).

2. SOLID CARBON BLOCK CONSTRUCTION PROVIDES A MAJOR SAFETY ADVANTAGE BECAUSE EVERY DROP OF WATER PASSES THROUGH THE CARBON AND IS FILTERED. (GRANULAR ACTIVATED CARBON FILTER DEPENDABILITY IS OFTEN PLAGUED WITH CHANNELING AND FREQUENTLY DETERIORATES RAPIDLY IN USE WITH NO INDICATION THAT THEY ARE PERFORMING POORLY AND/OR ARE NO LONGER EFFECTIVE).

OTHER OUTSTANDING PERFORMANCE BENEFITS OF SOLID CARBON BLOCK POINT-OF-USE FILTRATION INCLUDE:

- HIGHEST WATER QUALITY REMEDIAL TECHNOLOGY AVAILABLE]
- MAJOR DRINKING WATER PROBLEMS ARE SOLVED IMMEDIATELY]
- LESS EXPENSIVE AND HEALTHIER THAN BOTTLED WATER]
- CONVENIENT BECAUSE SAFE WATER IS ALWAYS AVAILABLE]
- ELIMINATES COSTLY AND UNNECESSARY FILTRATION AT PUBLIC WATER PROCESSING PLANTS]
- REMOVES THE UNPLEASANT SMELL, TASTE AND HARMFUL SIDE AFFECTS OF CHLORINATION AT THE POINT-OF-USE]
- FILTERS CAN BE EASILY REPLACED ON A CONTROLLED BASIS]
- ELIMINATES INDIVIDUAL RISK IN SITUATIONS OF COMMON WATER CONTAMINATION]

EQUALLY IMPORTANT, SECURITY AND SAFETY SYSTEMS IS A FULL SERVICE COMPANY. WE PROVIDE WATER QUALITY TESTING AND MONITORING, USE ONLY THE MOST EFFECTIVE STATE-OF-THE-ART SOLID BLOCK CARBON FILTER TECHNOLOGY, UTILIZE EXPERIENCED AND LICENSED TRADES PEOPLE FOR INSTALLATION AND SERVICE. OUR WATER TREATMENT SYSTEMS ARE BACKED WITH A MANUFACTURING FIVE YR. WARRANTY AND 100% CUSTOMER SATISFACTION GUARANTEE.

WATER QUALITY TESTING IS CONDUCTED BY OUR FIRM THROUGH AQUA ASSOCIATES INC. AND *AA LABS, INC. BOTH FIRMS ARE A N.J. STATE CERTIFIED WATER CHEMISTRY SPECIALISTS.

COSTS RANGE FROM $45.00 TO $75.00 - $100.00+.

SOLID CARBON BLOCK WATER TREATMENT SYSTEM POINT-OF-USE TECHNOLOGY MANUFACTURED EXCLUSIVELY BY THE AMWAY CORPORATION IS CONFIGURED TO MEET THE SPECIFIC NEEDS OF EACH SITUATION.

* 500 GAL. FAMILY MODEL	COST	$ 295.00
100 GAL. COMPACT MODEL	COST	$ 99.95.

INSTALLATION & MAINTENANCE IS PROVIDED BY SEVERAL LOCAL CONTRACTORS (INCL'D JEFFERSON PLUMBING OF PRINCETON). WE REPLACE THE SOLID BLOCK FILTERS ON A SCHEDULED AND ROUTINE BASIS. THIS IS DONE TO INSURE PROPER WORKING CONDITIONS AND AVOID THE CONCERN OF NEGLECT ON THE PART OF THE SYSTEM USER. WE ACCOMPLISH THIS BY REGISTERING EACH UNIT ON A COMPUTER, PERIODIC WATER METER READINGS, SCHEDULED WATER TESTING CYCLES AND/OR ANY REASONABLE SPECIFIC ARRANGEMENTS TO COMPLY WITH REGULATIONS.

* INSTALLATION PER UNIT	COST	$ 50.00
MAINTENANCE CALL	COST	$ 25.00.

SECURITY & SAFETY SYSTEMS IS AN APPROVED CONTRACTOR WITH THE STATE OF NEW JERSEY.

THE FOLLOWING ANALYSIS REFLECTS OUR ORDER OF MAGNITUDE ESTIMATE OF THE COST OF BOTH THE SHORT TERM AND LONG TERM BENEFITS OF INCLUDING SOLID BLOCK FILTRATION IN ALTERNATIVE 1 IN LIEU OF $130,000 FOR ONLY 2 YEARS OF BOTTLED WATER.

EQUIPMENT INVESTMENT *		
39 FAMILY 500 GAL. MODELS	COST	$ 12,000
39 COMPACT 100 GAL. MODELS	COST	3,900
78 2ND YEAR (ANNUAL) FILTER REPLACEMENTS		780
INSTALLATION AND MAINTENANCE		
39 FAMILY 500 GAL. MODELS		$ 3,000
39 COMPACT 100 GAL. MODELS		$ 2,000

* EQUIPMENT COST INCLUDES 5 YEAR WARRANTY.

WE LOOK FORWARD IN ASSISTING WOODWARD CLYDE, METCALF AND EDDY, INC., THE N.J. DEP, THE EPA, THE TOWNSHIP OF MONTGOMERY AND THE ELIZABETHTOWN WATER CO. IN THEIR EFFORTS TO ASSURE EVERYONE WHO LIVES AND WORKS IN MONTGOMERY TOWNSHIP THAT THEIR WATER CAN BE HEALTHIER AND BETTER TASTING THAN EVER]

WE OFFER OUR HELP IN COMMUNICATING AND DEMONSTRATING THE OPPORTUNITY FOR YOUR NEIGHBORS TO BE FULLY AWARE OF AND PROTECTED WITH THE BEST STATE-OF-THE-ART NOW AVAILABLE IN THE FORM OF SOLID BLOCK CARBON FILTRATION SYSTEMS.

WE APPRECIATE THE OPPORTUNITY TO BE CONSIDERED IN YOUR EVALUATION OF EXPERIENCED CONTRACTORS WHO CAN EFFECTIVELY, PROFESSIONALLY, ECONOMICALLY AND IMMEDIATELY RESPOND TO THE WATER TREATMENT PROBLEMS YOU ARE WORKING HARD TO RESOLVE]

SINCERELY,

WARREN TUNKEL
PRESIDENT

CC:
EDWARD PUTNAM
ROBERT GAIBROIS
KEVIN M. PSARIANOS
CHARLEY SEAFASS
JEFFREY FOLMER.

THE AMWAY WATER TREATMENT SYSTEM

DISTRIBUTOR/CUSTOMER INFORMATION PACKET

THIS DOCUMENT IS TO HELP UNDERSTAND THE PRINCIPLES BEHIND THE AMWAY WATER TREATMENT SYSTEM AND THE CLAIMS DOCUMENTATION TESTING THAT WAS DONE.

THE AMWAY WATER TREATMENT SYSTEM IS A POINT OF USE WATER FILTER UTILIZING PRESSED CARBON BLOCK TECHNOLOGY. THE PRESSED CARBON BLOCK IS MADE BY COMPRESSING VERY FINELY DIVIDED ACTIVATED CARBON INTO A POROUS BLOCK. THE WATER IS FORCED THROUGH THE SUBMICRON PORE STRUCTURE BY WATER PRESSURE.

THE FILTER CARTRIDGE CONSISTS OF THREE STAGES. THE FIRST IS A SYNTHETIC, NON-WOVEN FABRIC THAT ACTS AS A PRE-FILTER. THE NEXT IS THE PRESSED CARBON BLOCK WHERE ORGANIC CONTAMINANTS AND SUB-MICRON PARTICULATES ARE REMOVED. THE FINAL STAGE IS A SINTERED POLYETHYLENE CORE THAT ACTS AS A SUPPORT MEDIA FOR THE CARBON BLOCK.

INCLUDED IN THIS PACKET ARE THE FOLLOWING:

1. CLAIMS PLATFORM
2. PRODUCT SPECIFICATIONS
3. QUALIFICATIONS FOR USE
4. ABSTRACTS OF THE TEST PROTOCOLS AND RESULTS FOR EACH CLAIM
5. AMWAY WATER TREATMENT SYSTEM BROCHURE
6. AMWAY WATER TREATMENT SYSTEM OWNERS MANUAL.

CLAIMS PLATFORM

1. EFFECTIVELY REMOVES IMPURITIES FROM WATER, INCLUDING OVER 100 EPA PRIORITY POLLUTANTS SUCH AS ORGANIC CONTAMINANTS, PESTICIDES AND TRIHALOMETHANES.
2. EFFECTIVELY REMOVES PRECIPITATED HEAVY METALS, ASBESTOS, SEDIMENT, DIRT AND SCALE.
3. REMOVES GIARDIA LAMBLIA CYSTS.
4. REMOVES CHLORINE.
5. DOES NOT REMOVE BENEFICIAL MINERALS AND FLUORIDE.
6. IMPROVES WATER TASTE AND ODOR.
7. IMPROVES TASTE OF COFFEE, TEA, JUICES, ICE CUBES AND SOUP.
8. FITS STANDARD WATER FAUCETS.
9. EASILY REPLACEABLE FILTER CARTRIDGE.
10. WILL TREAT ENOUGH DRINKING AND COOKING WATER FOR THE AVERAGE FAMILY FOR ONE YEAR.

SPECIFICATIONS

1. HOUSING: HEIGHT - 13 1/2" NOMINAL. DIAMETER - 6 31/32" NOMINAL. CONSTRUCTED OF DURABLE, HIGH IMPACT, NORYL PLASTIC.

2. FILTER BLOCK: THREE-STAGE, PRESSED ACTIVATED CARBON BLOCK CARTRIDGE.

3. MATERIALS: WATER CONTACT SURFACES MADE WITH F.D.A.-APPROVED MATERIALS.

4. FLOW RATE: 0.72 TO 0.98 GALLONS PER MINUTE AT 60 PSI OF WATER PRESSURE WITH A NEW FILTER. (FLOW RATE WILL VARY DIRECTLY WITH WATER PRESSURE AND TIME FILTER HAS BEEN IN SERVICE.).

5. FILTER LIFE: THE FILTER IS DESIGNED TO SERVE THE AVERAGE FAMILY FOR ONE YEAR. FILTER LIFE WILL VARY WITH THE AMOUNT OF USE AND THE QUALITY OF THE INFLUENT WATER.

6. INSTALLATION: THE FILTER CAN EITHER BE INSTALLED ON AN EXISTING FAUCET VIA A DUAL LINE DIVERTER OR PLUMBED IN USING A SELF PIERCING SADDLE VALVE AND AN AUXILIARY FAUCET.

QUALIFICATIONS FOR USE

THE FOLLOWING QUALIFICATIONS FOR USE OF THE AMWAY WATER TREATMENT SYSTEM SHOULD BE NOTED:

1. THE AMWAY WATER TREATMENT SYSTEM IS DESIGNED FOR USE ONLY WITH COLD POTABLE WATER.

2. DO NOT USE WITH WARM OR HOT WATER.

3. DURING NORMAL OPERATION, IF THE SYSTEM HAS NOT BEEN USED FOR SEVERAL HOURS, RUN WATER THROUGH THE UNIT FOR ONE TO TWO MINUTES PRIOR TO USE.

4. THE FILTER CARTRIDGE SHOULD BE REPLACED AT LEAST ONCE A YEAR. IN AREAS OF VERY POOR WATER QUALITY, MORE FREQUENT REPLACEMENT MAY BE NEEDED. A DROP IN THE FLOW RATE IS A GOOD INDICATION THAT THE FILTER IS FILLING UP WITH CONTAMINANTS AND NEEDS TO BE REPLACED. HOWEVER, EVEN IF WATER FLOW RATE IS NOT AFFECTED, AFTER A YEAR OF OPERATION, THE FILTER SHOULD STILL BE REPLACED TO ASSURE ADEQUATE FILTRATION OF ALL CONTAMINANTS.

ABSTRACTS

THE ACCOMPANYING ABSTRACTS ARE ORGANIZED AS FOLLOWS:

1. CLAIM
2. INTRODUCTION
3. ANALYTICAL PROCEDURE
4. RESULTS.

ABSTRACT:

1. EFFECTIVELY REMOVES IMPURITIES FROM WATER, INCLUDING OVER 100 EPA PRIORITY POLLUTANTS SUCH AS ORGANIC CONTAMINANTS, PESTICIDES, AND TRIHALOMETHANES.

INTRODUCTION:

THIS CLAIM WAS DOCUMENTED IN THREE SECTIONS: 1) REMOVAL OF SOLUBLE, ORGANIC EPA PRIORITY POLLUTANTS; 2) REMOVAL OF INSOLUBLE, ORGANIC EPA PRIORITY POLLUTANTS; AND 3) REMOVAL OF TRIHALOMETHANES. THE FILTERS WERE TESTED OVER THEIR RATED LIFE, AND TO AN ADDITIONAL 50% TO INSURE A MARGIN OF SAFETY.

ANALYTICAL PROCEDURE - SOLUBLE ORGANICS:

THE EPA ORGANIC PRIORITY POLLUTANTS WERE SEPARATED INTO TWO GROUPS CLASSIFIED AS SOLUBLE AND INSOLUBLE. THE DEFINITION OF SOLUBLE WAS BASED ON GETTING MEASURABLE QUANTITIES OF THE COMPOUNDS INTO SOLUTIONWITHIN THE TEST CONSTRAINTS. COMPOUNDS NOT MEETING THIS CRITERIA WERE RUN UNDER THE INSOLUBLE PROTOCOL. THE ORGANIC PRIORITY POLLUTANTS WERE ADDED TO WATER IN A SERIES OF 200 GALLON TANKS AND RECIRCULATED WHEN NOT BEING PUMPED THROUGH THE FILTER. THE FILTERS WERE TESTED IN DUPLICATE. THE INFLUENT TO, AND EFFLUENT FROM, EACH OF THE FILTERS WAS SAMPLED AT 1, 5, 50, AND 150 GALLONS AND THEN AT 100 GALLON INTERVALS TO MEASURE THE ACTUAL QUANTITY OF ORGANIC MATERIAL GETTING TO THE FILTER. THIS PROVIDED AN ANALYSIS FROM EACH TANK OF SPIKED WATER USED THROUGHOUT THE TEST.

ALL SAMPLES WERE TAKEN ACCORDING TO EPA PROTOCOLS AND WERE ANALYZED BY EPA METHOD 624 AND 601 (PURGEABLES) OR 625 (BASE/NEUTRALS AND ACIDS). THE METHODS USE GC/MS DETECTION AND QUANTIFICATION. ONE MODIFICATION TO THE METHODS WAS THE USE OF THE TRACOR/HALL DETECTOR IN PLACE OF THE GC/MS FOR THE PURGEABLES.

DUPLICATE SAMPLES FROM TWO SAMPLE POINTS WERE ANALYZED BY AN OUTSIDE TEST AGENCY FOR CONFIRMATION.

RESULTS:

LISTED BELOW ARE THE COMPOUNDS TESTED, THE DETECTION LIMIT FOR EACH COMPOUND, THE MEASURED AVERAGE INFLUENT, THE EFFLUENT AT RATED LIFE AND 50% BEYOND, AND THE CALCULATED TOTAL LOADING ON THE FILTER. THE MEASURED AVERAGE INFLUENT IS AN AVERAGE OF THE INFLUENT CONCENTRATIONS DETERMINED AT EACH SAMPLE POINT. THE CALCULATED TOTAL LOADING IS THE SUMMATION OF THE INFLUENT CONCENTRATIONS TIMES THE GALLONS OF WATER PASSED AT THAT CONCENTRATION.

COMPOUND	DETECTION LIMIT (PPB)	MEASURED AVERAGE INFLUENT (PPB)	EFFLUENT AT RATED LIFE (PPB)	EFFLUENT AT 50% BEYOND (PPB)	CALCULATED TOTAL LOADING (MG)
ACENAPHTHENE	0.1	52	LT DL *	LT DL	156.6
CHLOROBENZENE	0.1	8	LT DL	LT DL	22.9
1,2,4-TRICHLORO-BENZENE	0.1	81	LT DL	LT DL	245.7
1,2-DICHLOROETHANE	0.1	11	LT DL	LT DL	33.5
1,1,1-TRICHLORO-ETHANE (1)	0.1	7	LT DL	LT DL	20.1
1,1,2,2-TETRA-CHLOROETHANE (2)	0.1	7	LT DL	LT DL	21.7
BIS (2-CHLOROETHYL) ETHER	0.3	19	LT DL	LT DL	57.3
2-CHLORONAPHTHALENE	0.1	84	LT DL	LT DL	253.2
2,4,5-TRICHLORO-PHENOL	0.1	96	LT DL	LT DL	290.8
PARA-CHLORO-META-CRESOL	0.1	18	LT DL	LT DL	53.3
2-CHLOROPHENOL	0.1	29	LT DL	LT DL	89.1
1,2-DICHLOROBENZENE	0.1	67	LT DL	LT DL	202.1
1,3-DICHLOROBENZENE	0.1	25	LT DL	LT DL	74.7
1,4-DICHLOROBENZENE	0.1	78	LT DL	LT DL	235.9
1,1-DICHLOROETHYLENE	0.1	1	LT DL	LT DL	2.8
1,2-TRANS-DICHLORO-ETHYLENE	0.1	11	LT DL	LT DL	34.1
2,4-DICHLOROPHENOL	0.1	49	LT DL	LT DL	147.0
1,2-DICHLOROPROPANE	0.1	14	LT DL	LT DL	41.0
1,3-DICHLORO-PROPYLENE (3)	0.1	168	LT DL	LT DL	508.4
2,4-DIMETHYLPHENOL	0.1	5	LT DL	LT DL	16.0
2,4-DINITROTOLUENE	0.1	93	LT DL	LT DL	280.0
2,6-DINITROTOLUENE	1.0	111	LT DL	LT DL	334.0
FLUORANTHENE	0.1	34	LT DL	LT DL	102.05

COMPOUND	DETECTION LIMIT (PPB)	MEASURED AVERAGE INFLUENT (PPB)	EFFLUENT AT RATED LIFE (PPB)	EFFLUENT AT 50% BEYOND (PPB)	CALCULATED TOTAL LOADING (MG)
4-CHLOROPHENYL PHENYL ETHER	0.2	56	LT DL	LT DL	170.8
4-BROMOPHENYL PHENYL ETHER	0.1	33	LT DL	LT DL	100.3
BIS (2-CHLORO-ISOPROPYL) ETHER	0.2	105	LT DL	LT DL	318.9
BIS (2-CHLORO-ETHOXY) METHANE	0.3	91	LT DL	LT DL	274.7
BROMOFORM	0.1	6	LT DL	LT DL	18.5
TRICHLOROFLUORO-METHANE	0.1	3	LT DL	LT DL	8.1
DICHLOROBROMOMETHANE	0.1	31	LT DL	LT DL	93.4
CHLORODIBROMO-METHANE (3)	0.1	168	LT DL	LT DL	508.4
HEXACHLOROBUTADIENE	0.1	20	LT DL	LT DL	61.0
HEXACHLOROCYCLO-PENTADIENE	0.1	43	LT DL	LT DL	131.4
ISOPHORONE	0.1	104	LT DL	LT DL	314.1
NAPHTHALENE	0.1	55	LT DL	LT DL	167.7
NITROBENZENE	0.1	111	LT DL	LT DL	334.1
2-NITROPHENOL	0.1	78	LT DL	LT DL	236.0
4-NITROPHENOL	0.1	127	LT DL	LT DL	383.4
2,4-DINITROPHENOL	0.2	32	LT DL	LT DL	96.6
4,6-DINITRO-O-CRESOL	0.2	77	LT DL	LT DL	233.6
N-NITROSODIPHENYL-AMINE	1.0	72	LT DL	LT DL	218.6
PENTACHLOROPHENOL	0.1	45	LT DL	LT DL	135.5
PHENOL	0.1	31	LT DL	LT DL	94.1
BUTYL BENZYL PHTHALATE	0.2	86	LT DL	LT DL	260.7
DI-N-OCTYL PHTHALATE	0.1	12	LT DL	LT DL	37.4

COMPOUND	DETECTION LIMIT (PPB)	MEASURED AVERAGE INFLUENT (PPB)	EFFLUENT AT RATED LIFE (PPB)	EFFLUENT AT 50% BEYOND (PPB)	CALCULATED TOTAL LOADING (MG)
DI-N-BUTYL PHTHALATE	0.2	51	1.3	1.5	155.0
DIETHYL PHTHALATE	1.0	65	LT DL	LT DL	195.7
DIMETHYL PHTHALATE	0.5	90	LT DL	LT DL	270.8
ACENAPHTHALENE	0.2	58	LT DL	LT DL	174.1
ANTHRACENE	0.1	8	LT DL	LT DL	23.4
FLUORENE	0.1	50	LT DL	LT DL	152.0
PHENANTHRENE	0.3	18	LT DL	LT DL	55.7
PYRENE	0.1	20	LT DL	LT DL	59.3
TETRACHLORO-ETHYLENE (2)	0.1	7	LT DL	LT DL	21.7
TRICHLOROETHYLENE	0.1	34	LT DL	LT DL	102.1
DIELDRIN	0.2	144	LT DL	LT DL	436.3
ENDRIN	0.2	216	LT DL	LT DL	652.0
HEPTACHLOR	0.1	85	LT DL	LT DL	256.1
HEPTACHLOR EPOXIDE	0.1	4	LT DL	LT DL	13.1
GAMMA-BHC (LINDANE)	0.1	149	LT DL	LT DL	451.7
HEXACHLOROETHANE	0.1	44	LT DL	LT DL	133.1
1,1-DICHLOROETHANE	0.1	13	LT DL	LT DL	40.1
1,1,2-TRICHLORO-ETHANO (1)	0.1	7	LT DL	LT DL	20.1
CHLOROFORM	0.1	30	LT DL	0.2	91.1
4,4-DDD	0.2	101	LT DL	LT DL	306.9

* BELOW DETECTION LIMIT

(1) 1,1,1-TRICHLOROETHANE AND 1,1,2-TRICHLOROETHANE: VALUES ARE THE SUM OF THE TWO COMPOUNDS DUE TO CHROMATOGRAPHIC OVERLAP
(2) 1,1,2,2-TETRACHLOROETHANE AND TETRACHLOROETHYLENE: VALUES ARE THE SUM OF THE TWO COMPOUNDS DUE TO CHROMATOGRAPHIC OVERLAP
(3) 1,3-DICHLOROPROPYLENE AND CHLORODIBROMOMETHANE: VALUES ARE THE SUM OF THE TWO COMPOUNDS DUE TO CHROMATOGRAPHIC OVERLAP.

ANALYTICAL PROCEDURE: INSOLUBLE ORGANICS

THIS TEST WAS PERFORMED BY INJECTING THE INSOLUBLE EPA ORGANIC PRIORITY POLLUTANTS, DISSOLVED IN A MINIMUM OF A METHANOL/ACETONE SOLVENT MIXTURE, INTO A MOVING STREAM OF WATER WITH HIGH PRESSURE, LIQUID CHROMATOGRAPHY PUMPS. THE WATER SOURCE WAS THE MUNICIPAL SUPPLY. THE FILTERS WERE TESTED IN DUPLICATE, WITH A SEPARATE PUMP FOR EACH FILTER. THE INJECTION WAS DONE CONTINUOUSLY AT A POINT JUST INSIDE THE FILTER HOUSING. THE EFFLUENT FROM EACH OF THE FILTERS WAS SAMPLED AT 1, 5, 50 AND 150 GALLONS AND THEN AT 100 GALLON INTERVALS.

ALL SAMPLES WERE TAKEN ACCORDING TO EPA PROTOCOLS AND WERE ANALYZED BY EPA METHOD 624 (PURGEABLES) OR 625 (BASE/NEUTRALS AND ACIDS). THE METHODS USE GC/MS DETECTION AND QUANTIFICATION. DUPLICATE SAMPLES WERE ANALYZED BY AN OUTSIDE TEST LAB FOR CONFIRMATION USING THE SAME EPA PROTOCOLS.

RESULTS:

LISTED BELOW ARE THE COMPOUNDS TESTED, THE DETECTION LIMIT FOR EACH COMPOUND, THE CALCULATED AVERAGE INFLUENT, THE EFFLUENT AT RATED LIFE AND 50% BEYOND, AND THE CALCULATED TOTAL LOADING ON THE FILTER. THE CALCULATED AVERAGE INFLUENT IS THE AVERAGE CONCENTRATION REACHING THE FILTER DURING THE TEST. THE CALCULATED TOTAL LOADING IS THE TOTAL QUANTITY OF EACH COMPOUND INJECTED INTO EACH FILTER.

COMPOUND	DETECTION LIMIT (PPB)	CALCULATED AVERAGE INFLUENT (PPB)	EFFLUENT AT RATED LIFE (PPB)	EFFLUENT AT 50% BEYOND (PPB)	CALCULATED TOTAL LOADING (MG)
ACROLEIN	0.1	121	LT DL *	LT DL	336
BENZENE	0.1	95	LT DL	LT DL	264
CARBON TETRACHLORIDE	0.1	229	LT DL	LT DL	636
BIS (CHLOROMETHYL) ETHER	0.1	19	LT DL	LT DL	52
2-CHLOROETHYL VINYL ETHER (MIXED)	0.1	155	LT DL	LT DL	431
1,2-DIPHENYL-HYDRAZINE	0.1	14	LT DL	LT DL	38
ETHYLBENZENE	0.1	156	LT DL	LT DL	433

COMPOUND	DETECTION LIMIT (PPB)	CALCULATED AVERAGE INFLUENT (PPB)	EFFLUENT AT RATED LIFE (PPB)	EFFLUENT AT 50% BEYOND (PPB)	CALCULATED TOTAL LOADING (MG)
DICHLORODI-FLUOROMETHANE	0.1	36	LT DL	LT DL	100
N-NITROSODI-N-PROPYLAMINE	0.1	74	LT DL	LT DL	206
N-NITROSODI-METHYLAMINE	0.1	145	LT DL	LT DL	403
1,2-BENZOANTHRACENE	0.1	18	LT DL	LT DL	50
3,4-BENZOPYRENE	0.1	94	LT DL	LT DL	260
3,4-BENZO-FLUORANTHENE	0.1	71	LT DL	LT DL	197
11,12-BENZO-FLUORANTHENE	0.1	70	LT DL	LT DL	195
CHRYSENE	0.1	72	LT DL	LT DL	201
1,12-BENZO-PERYLENE	0.1	72	LT DL	LT DL	200
1,2:5,6-DIBENZO-ANTHRACENE	0.1	91	LT DL	LT DL	252
TOLUENE	0.1	145	LT DL	LT DL	404
ALDRIN	0.1	68	LT DL	LT DL	190
CHLORDANE (TECHNICAL MIXTURE AND METABOLITES)	0.1	15	LT DL	LT DL	43
4,4'-DDT	0.1	78	LT DL	LT DL	218
4,4'-DDE	0.1	160	LT DL	LT DL	445
ALPHA-ENDOSULFAN	0.1	20	LT DL	LT DL	55
BETA-ENDOSULFAN	0.1	20	LT DL	LT DL	57
ENDOSULFAN SULFATE	0.1	29	LT DL	LT DL	80
ALPHA-BHC	0.1	38	LT DL	LT DL	106

COMPOUND	DETECTION LIMIT (PPB)	CALCULATED AVERAGE INFLUENT (PPB)	EFFLUENT AT RATED LIFE (PPB)	EFFLUENT AT 50% BEYOND (PPB)	CALCULATED TOTAL LOADING (MG)
BETA-BHC	0.1	12	LT DL	LT DL	34
DELTA-BHC	0.1	20	LT DL	LT DL	56
PCB-1016 (AROCHLOR 1016)	0.1	64	LT DL	LT DL	179
PCB-1221 (AROCHLOR 1221)	0.1	51	LT DL	LT DL	143
PCB-1232 (AROCHLOR 1232)	0.1	27	LT DL	LT DL	75
PCB-1248 (AROCHLOR 1248)	0.1	79	LT DL	LT DL	220
PCB-1254 (AROCHLOR 1254)	0.1	65	LT DL	LT DL	181
PCB-1260 (AROCHLOR 1260)	0.1	119	LT DL	LT DL	330
TOXAPHENE	0.1	73	LT DL	LT DL	203
3,3'-DICHLORO-BENZIDINE	0.1	54	LT DL	LT DL	150
CHLOROFORM	0.1	50	5.6	4.3	139

* BELOW DETECTION LIMIT.

ANALYTICAL PROCEDURES: TRIHALOMETHANES

TRIHALOMETHANE REMOVAL WAS MEASURED USING GRAND RAPIDS CITY WATER AS THE SOURCE. A SHORT TERM TEST (4 WEEKS) AND A LONG TERM TEST (6 MONTHS) WERE RUN ON REPLICATE FILTERS BEING CYCLED EACH HOUR, WITH AN 8 HOUR STAGNATION PERIOD EACH DAY AND TWO DAYS PER WEEK STAGNATION. SHORT TERM TEST HAD WATER ON FOR 2.3 MINUTES PER HOUR WITH THE LONG TERM TEST CYCLING AT 0.5 MINUTES PER HOUR.

SAMPLES WERE TAKEN EVERY 100 GALLONS ACCORDING TO EPA PROTOCOLS AND WERE ANALYZED BY EPA TEST METHOD 601.

RESULTS:

LISTED BELOW ARE THE AVERAGE INFLUENT AND EFFLUENT LEVELS AT THE RATED LIFE AND 50% BEYOND AS WELL AS PERCENT REMOVAL.

TRIHALOMETHANES (THM'S) (AVERAGES)

	RATED LIFE INFLUENT	RATED LIFE EFFLUENT	% REMOVAL	RATED LIFE PLUS 50% INFLUENT	RATED LIFE PLUS 50% EFFLUENT	% REMOVAL
LONG TERM	64.7 PPB	1.4 PPB	97.8	58.4 PPB	2.5 PPB	95.7
SHORT TERM	59.5 PPB	.3 PPB	99.5	56.7 PPB	.3 PPB	99.5
	62.1	.85	98.6	57.3	1.4	97.6

THE RESULTS SHOW EFFECTIVE REMOVAL THROUGH THE 750 GALLON POINT.

ABSTRACT:

2. EFFECTIVELY REMOVES PRECIPITATED HEAVY METALS, ASBESTOS, SEDIMENT, DIRT AND SCALE.

INTRODUCTION:

THIS CLAIM WAS DOCUMENTED IN THREE MAJOR TESTS: 1) PRECIPITATED HEAVY METALS REMOVAL, 2) PARTICULATE REMOVAL, AND 3) ASBESTOS REMOVAL.

ANALYTICAL PROCEDURE: PRECIPITATED HEAVY METALS REMOVAL

IN THE PRECIPITATED HEAVY METALS STUDY, WATER SPIKED WITH WATER-INSOLUBLE HEAVY METAL COMPOUNDS WAS PUMPED FROM A 200 GALLON TANK THROUGH DUPLICATE FILTERS. SAMPLES WERE COLLECTED JUST PRIOR TO, AND AFTER THE FILTER UNITS EVERY 100 GALLONS TO EVALUATE THE REMOVAL CAPABILITIES OF THE UNITS OVER THE RATED LIFE OF THE FILTER AND TO AN ADDITIONAL 50% OF RATED LIFE TO INSURE A MARGIN OF SAFETY.

THE METAL COMPOUNDS WERE GROUND TO PASS A 250 UM SCREEN BEFORE BEING DISPERSED INTO THE WATER. AGITATION WAS ABLE TO KEEP A PORTION OF THE PARTICULATES IN SUSPENSION SO THAT A MEASURABLE QUANTITY REACHED THE FILTERS. REMOVAL IS BASED ON PHYSICAL REMOVAL OF THE PARTICULATES. NO CLAIM IS MADE FOR METALS WHICH ARE IN SOLUTION PRIOR TO THE FILTER.

INFLUENT AND EFFLUENT SAMPLES WERE PASSED THROUGH A 0.45 UM FILTER. (SEVERAL SOURCES, REFERENCES 1-5, HAVE DEFINED INSOLUBLE AS ANY MATERIAL THAT WILL NOT PASS THROUGH A 0.45 UM MEMBRANE FILTER). HYDROCHLORIC ACID WAS USED TO BRING THE INSOLUBLE MATERIALS COLLECTED ON THE 0.45 UM FILTER INTO SOLUTION PRIOR TO ANALYSIS BY OPTIMIZED ATOMIC ABSORPTION.

RESULTS:

REMOVAL BASED ON PARTICULATE FILTRATION CAPABILITY REMOVES DEPENDENCE ON PARTICULAR COMPOUND SELECTIVITY TO THE ACTIVATED CARBON. ANY METAL PRESENT AS AN INSOLUBLE PARTICULATE GREATER THAN 0.45 UM DIAMETER, WILL BE EFFECTIVELY REMOVED.

REFERENCES

1. VOGI, E.C. AND ANGINO, E.E., CHEMICAL EFFECTS OF SELECTED TRACE-METALS FROM SANITARY LANDFILL LEACHATES ON GROUND WATER QUALITY, KANSAS WATER RESOURCES RESEARCH INSTITUTE, MANHATTAN, (DEC, 1981).

2. SCHOCK, M.R., RESPONSE OF LEAD SOLUBILITY TO DISSOLVED CARBONATES IN DRINKING WATER, J. AWWA, (DEC, 1980), VOL. 72, NO. 12, PP. 695-704.

3. TANAKA, S., DARZL, M., AND WINCHESTER, J.W., ELEMENTAL ANALYSIS OF SOLUBLE AND INSOLUBLE FRACTIONS OF RAIN AND SURFACE WATERS BY PARTICLE-INDUCED X-RAY EMISSION, ENVIRON. SCIENCES AND TECHNOLOGY, (MAR, 1981), VOL. 15, NO. 3, PP. 354-357.

4. WANGEN, L.E. AND WILLIAMS, J.M., CONTROL BY ALKALINE NEUTRALIZATION OF TRACE ELEMENTS IN ACIDIC COAL CLEANING WASTE LEACHATES, J. WPCF, (SEPT, 1982), VOL. 54, NO. 9, PP. 1302-1310.

5. THEIS, T.L., WESTRICK, J.D., HSU, C.L., AND MARLEY, J.J., FIELD INVESTIGATION OF TRACE METALS IN GROUND WATER FROM FLY ASH DISPOSAL, J. WPCF, (NOV, 1978), VOL. 50, NO. 111, PP. 2457-2469.

ANALYTICAL PROCEDURE: PARTICULATE REMOVAL

THE FILTER EFFICIENCY WAS TESTED FOR SMALL SPHERICAL PARTICLES. A SUSPENSION OF PARTICLES CONSISTING OF TITANIUM DIOXIDE (TIO2) IN A SIZE RANGE BETWEEN 0.1-10 UM IN DIAMETER IN FILTERED, DISTILLED WATER WAS PASSED THROUGH THE FILTERS. SAMPLES WERE COLLECTED OF THE INFLUENT TO, AND EFFLUENT FROM, THE FILTER AT 3 AND 5 GALLONS THROUGHPUT. SAMPLES WERE FILTERED AND PARTICULATES COLLECTED ON 0.2 UM NUCLEPORE SUBSTRATE FILTERS. THE FILTERS WERE EXAMINED BY COMPUTER CONTROLLED SCANNING ELECTRON MICROSCOPY (CCSEM). PARTICLES WERE LOCATED, SIZED, ANALYZED BY X-RAY FLUORESCENCE (XRF), CLASSIFIED BY TYPE BASED ON THE ANALYSIS, COUNTED AND REMOVAL CALCULATED BASED ON TITANIUM CONTAINING PARTICLES. THIS ENSURED THAT REMOVAL WAS BASED ON A REDUCTION OF THE CHALLENGING PARTICULATES. TESTING WAS CONDUCTED AT AN OUTSIDE TEST AGENCY.

3 GALLON TEST

INLET		OUTLET		REMOVAL EFFICIENCIES	
WT. %	PART/CM2	WT. %	PART/CM2	WT. %	NUMBER %
97.8	1.5 X 10(7)	0.0	0.0	100%	100%

5 GALLON TEST

INLET		OUTLET		REMOVAL EFFICIENCIES	
WT. %	PART/CM2	WT. %	PART/CM2	WT. %	NUMBER %
98.6	2.2 X 10(7)	0.3	1.2 X 10(4)	99.7%	99.9%.

THE FILTER BLOCK IS AT LEAST 99.7% EFFICIENT IN REMOVING PARTICULATES DOWN TO AND BELOW 0.2 MICROMETERS IN DIAMETER.

ANALYTICAL PROCEDURES: ASBESTOS REMOVAL

IN ORDER TO ACCURATELY MEASURE THE REMOVAL EFFICIENCIES OF THE AMWAY FILTRATION SYSTEM FOR ASBESTOS, A SUSPENSION OF CHRYSOTILE ASBESTOS (PARTICLE SIZE DISTRIBUTION OF 0.1-10 UM IN DIAMETER) IN FILTERED, DISTILLED WATER WAS PASSED THROUGH THE FILTERS. REPLICATE SAMPLES WERE COLLECTED AT THE THREE AND FIVE GALLON POINTS FOR BOTH INFLUENT AND EFFLUENT. RESULTING SAMPLES WERE FILTERED ONTO 0.2 UM NUCLEPORE SUBSTRATE FILTERS. EACH NUCLEPORE FILTER WAS EXAMINED USING COMPUTER CONTROLLED SCANNING ELECTRON MICROSCOPY (CCSEM). TESTING WAS CONDUCTED AT AN OUTSIDE TEST AGENCY.

RESULTS:

PARTICLES WERE SIZED, ANALYZED BY X-RAY FLUORESCENCE (XRF), CLASSIFIED BY TYPE BASED ON THE XRF RESULTS, COUNTED, AND REMOVAL CALCULATED ON ONLY ASBESTOS FIBER REMOVAL. GIVEN BELOW ARE THE ASBESTOS REMOVALS SHOWN AS BOTH A WEIGHT PERCENT AND PARTICLE NUMBER PERCENT REMOVALS:

3 GALLON TEST

INLET		OUTLET		REMOVAL EFFICIENCY	
WT. %	PART/CM2	WT. %	PART/CM2	WT. %	NUMBER %
58.8	1.9 X 10(6)	0.3	5.0 X 10(1)	99.5%	99.9%

5 GALLON TEST

INLET		OUTLET		REMOVAL EFFICIENCY	
WT. %	PART/CM2	WT. %	PART/CM2	WT. %	NUMBER %
68.1	3.1 X 10(6)	0.0	0.0	100%	100%.

THE FILTER BLOCK IS AT LEAST 99.5% EFFICIENT IN REMOVING ASBESTOS PARTICLES.

3. REMOVES GIARDIA LAMBLIA CYSTS.

INTRODUCTION:

GIARDIA LAMBLIA IS AN INTESTINAL PARASITE THAT IS KNOWN TO POPULATE MOUNTAINOUS AREAS OF THE UNITED STATES BUT IN THE PAST FEW YEARS, IS SHOWING UP ACROSS THE COUNTRY.

GIARDIA CAUSES SEVERE INTESTINAL DISTRESS AND IS VERY DIFFICULT TO TREAT, IN MOST WATER SYSTEMS, SINCE IT IS EXTREMELY RESISTANT TO NORMAL CHLORINATION AND WATER TREATMENT TECHNIQUES.

ANALYTICAL PROCEDURE:

LIVE GIARDIA LAMBLIA CYSTS WERE INTRODUCED INTO REPLICATE FILTERS AT THE 0, 500 RATE LIFE AND AN ADDITIONAL 50% OF RATED LIFE WITH 50,000 CYSTS PER FILTER. A FOUR LITER EFFLUENT SAMPLE WAS COLLECTED FROM EACH FILTER AFTER EACH SPIKE, ALLOWED TO SETTLE, AND WAS CONCENTRATED TO 1 ML AND EXAMINED MICROSCOPICALLY FOR CYSTS. TESTING WAS DONE AT AN OUTSIDE TEST AGENCY.

RESULTS:

GIVEN BELOW ARE THE CYST COUNTS INTRODUCED AND RECOVERED FOR EACH REPLICATE:

GALLONS	CYSTS INTRODUCED	CYSTS RECOVERED	% EFFICIENCY
0	50,800	0	100%
	50,800	0	100%
	50,800	0	100%
500	50,800	0	100%
	50,800	0	100%
	50,800	0	100%
750	50,800	0	100%
	50,800	0	100%
	50,800	0	100%.

THE AMWAY WATER TREATMENT SYSTEM REMOVES GIARDIA LAMBLIA CYSTS.

ABSTRACT:

4. REMOVES CHLORINE.

INTRODUCTION:

CHLORINE REMOVAL WAS EVALUATED USING REPLICATE FILTERS AND WAS TESTED TO 50% GREATER THAN RATED FILTER LIFE.

ANALYTICAL PROCEDURE:

FREE AND TOTAL CHLORINE REMOVAL WAS MEASURED USING GRAND RAPIDS CITY WATER AS THE SOURCE IN A LONG TERM TEST (7 MONTHS). EACH FILTER WAS RUN DAILY WITH AN 8 HOUR STAGNATION PERIOD EACH DAY AND A TWO DAY STAGNATION PERIOD EACH WEEK. INFLUENT AND EFFLUENT SAMPLES WERE TAKEN DAILY, AFTER A SIX MINUTE FLUSH PERIOD.

SAMPLES WERE ANALYZED USING HACH DPD 14077 AND 14076 TEST KITS THAT MEASURED TO THE NEAREST 0.1 PPM. REPLICATE SAMPLES WERE RUN FOR EACH FILTER.

RESULTS:

LISTED BELOW ARE THE AVERAGE INFLUENT AND EFFLUENT RESULTS FOR THE LONG TERM TEST FOR BOTH FREE AND TOTAL CHLORINE.

FREE CHLORINE (AVERAGE)	INFLUENT	EFFLUENT	% REMOVAL
LONG TERM	.5 PPM	0 PPM	100%

TOTAL CHLORINE (AVERAGE)	INFLUENT	EFFLUENT	% REMOVAL
LONG TERM	.5 PPM	0 PPM	100%.

CHLORINE WAS NOT DETECTABLE, IN THE EFFLUENT, THROUGHOUT THE TESTING PERIOD.

ABSTRACT:

5. DOES NOT REMOVE BENEFICIAL MINERALS AND FLUORIDE.

INTRODUCTION:

THIS CLAIM HAS BEEN DOCUMENTED IN TWO PARTS:

1) REMOVAL OF MINERALS AND 2) REMOVAL OF FLUORIDE.

ANALYTICAL PROCEDURE: REMOVAL OF MINERALS

AMWAY WELL NUMBER 11 WAS THE SOURCE OF WATER FOR A LONG TERM (8 MONTH) TEST OF THE WATER FILTER TO A POINT 50% BEYOND THE RATED LIFE. THIS IS A WELL ON THE AMWAY COMPLEX. EACH REPLICATE FILTER WAS CYCLED ON AND OFF EACH HOUR FOR 16 HOURS WITH AN EIGHT HOUR STAGNATION PERIOD EACH DAY AND A TWO DAY STAGNATION PERIOD EACH WEEK.

INFLUENT AND EFFLUENT SAMPLES WERE TAKEN BI-WEEKLY AFTER A SIX MINUTE FLUSH PERIOD. HARDNESS WAS MEASURED WITH DISODIUM EDTA USING AMMONIUM CHLORIDE AND AMMONIUM HYDROXIDE AS A BUFFER AND FILTRATING TO AN ERICHROME BLACK T END POINT.

RESULTS:

NUMBERS GIVEN BELOW ARE THE AVERAGE OF ALL INFLUENT AND EFFLUENT SAMPLES.

INFLUENT	EFFLUENT	% REMOVAL
34.9 GRAINS	34.9 GRAINS	0%.

CALCIUM : MAGNESIUM RATIO 4:1.

THE MINERALS CALCIUM AND MAGNESIUM ARE NOT REMOVED BY THE CARBON BLOCK BASED ON THE ABOVE RESULTS.

ANALYTICAL PROCEDURE: REMOVAL OF FLUORIDE

GRAND RAPIDS CITY WATER WAS THE SOURCE OF A LONG TERM (7 MONTHS) FLUORIDE REMOVAL TEST. EACH REPLICATE FILTER WAS CYCLED ON AND OFF EACH HOUR FOR 16 HOURS WITH AN 8 HOUR STAGNATION PERIOD EACH DAY AND A 2 DAY STAGNATION PERIOD EACH WEEK.

INFLUENT AND EFFLUENT SAMPLES WERE TAKEN WEEKLY AFTER A SIX MINUTE FLUSH PERIOD. ANALYSIS WAS DONE BY SPECIFIC ION ELECTRODE.

RESULTS:

RESULTS BELOW ARE THE AVERAGE OF ALL DATA POINTS FOR THE TEST:

INFLUENT	EFFLUENT	% REMOVAL
0.95 PPM	0.91 PPM	4.2%.

WHILE THERE IS A SLIGHT NUMERICAL REDUCTION IN FLUORIDE, THE LEVELS ARE STATISTICALLY THE SAME AT THE 95% CONFIDENCE LEVEL.

ABSTRACT:

6. IMPROVES WATER TASTE AND ODOR.

7. IMPROVES TASTE OF COFFEE, TEA, JUICES, ICE CUBES AND SOUP.

INTRODUCTION:

THESE TWO CLAIMS WILL BE COVERED IN ONE ABSTRACT SINCE THEY ARE BOTH DOCUMENTED BY THE SAME PANEL TESTS.

PROCEDURE:

TWO PANEL TESTS WERE CONDUCTED ON THIS PRODUCT. THE FIRST WAS A PANEL TEST USING AMWAY EMPLOYEE FAMILIES AND CONDUCTED BY OUR PRODUCT EVALUATION LABORATORY. THE SECOND WAS CONDUCTED BY AN OUTSIDE AGENCY, IN ANOTHER STATE, USING ALL NON-AMWAY PERSONNEL. TESTS WERE COORDINATED AND THE RESULTS TABULATED BY THE AMWAY PRODUCT EVALUATION LABORATORY.

THE QUESTIONNAIRES USED CONTAINED NUMEROUS QUESTIONS AS TO INSTALLATION AND FUNCTION OF THE UNITS AS WELL AS SPECIFIC QUESTIONS ON WATER QUALITY IMPROVEMENTS, WATER TASTE AND ODOR AND IMPROVED TASTE OF COFFEE, TEA, JUICES, ICE CUBES AND SOUP.

THE PANELISTS, IN EACH STUDY, WERE BROKEN DOWN BY WATER SOURCE INTO TWO-THIRDS MUNICIPALLY TREATED WATER AND ONE-THIRD WELL WATER.

RESULTS:

GIVEN BELOW ARE THE AVERAGES FOR BOTH PANEL TESTS AND BOTH CLAIMS:

IMPROVES WATER TASTE AND ODOR

PANEL TEST	IMPROVED TASTE	IMPROVED ODOR
65 AMWAY FAMILIES	82%	59%
70 OUTSIDE, NON-AMWAY FAMILIES	69%	67%

IMPROVES TASTE OF COFFEE, TEA, JUICES, ICE CUBES, AND SOUP.

PANEL TEST	IMPROVED TASTE
65 AMWAY FAMILIES	70%
70 OUTSIDE, NON-AMWAY FAMILIES	63%.

ABSTRACT:

8. FITS STANDARD WATER FAUCETS

INTRODUCTION:

THIS CLAIM CAN BE DOCUMENTED BY PANEL TEST RESULTS FROM BOTH THE AMWAY FAMILY AND OUTSIDE, NON-AMWAY PANEL TEST AS WELL AS A SURVEY OF PLUMBING SUPPLY HOUSES.

PROCEDURE:

TWO PANEL TESTS WERE CONDUCTED ON THE WATER TREATMENT SYSTEM. THE FIRST WAS A PANEL TEST USING AMWAY EMPLOYEE FAMILIES AND CONDUCTED BY OUR PRODUCT EVALUATION LABORATORY. THE SECOND WAS CONDUCTED BY AN OUTSIDE AGENCY, IN ANOTHER STATE, USING ALL NON-AMWAY PERSONNEL. THE TEST WAS COORDINATED AND THE RESULTS TABULATED BY THE AMWAY PRODUCT EVALUATION LABORATORY.

AN INITIAL INSTALLATION QUESTIONNAIRE WAS A PORTION OF BOTH THESE PANEL TESTS. QUESTIONS ON EASE OF INSTALLATION AND SPECIFIC PROBLEMS WITH INSTALLATION WERE INCLUDED FOR RESPONSE.

THE WATER TREATMENT SYSTEM, EXISTING FAUCET OPTION, COMES WITH THREE ADAPTORS FOR ATTACHING THE DUAL LINE DIVERTER TO A FAUCET. A SURVEY WAS DONE OF PLUMBING SUPPLY HOUSES TO DETERMINE WHAT PORTION OF FAUCETS COULD BE ACCOMMODATED BY THE DIVERTER ITSELF AND THE THREE ADAPTORS.

RESULTS:

RESULTS GIVEN BELOW ARE A COMBINATION OF BOTH PANEL TESTS.

- 99.1% OF ALL RESPONDENTS SAID THE ADAPTORS FIT THEIR FAUCETS.

- 1.8% OF ALL RESPONDENTS ENCOUNTERED PROBLEMS WITH PORTABLE DISHWASHERS. (AS A RESULT OF THIS INPUT, AMWAY OFFERS THE APPROPRIATE QUICK - CONNECT ADAPTORS FOR PORTABLE DISHWASHERS AS AN EXTRA ITEM).

- 87.8% OF ALL RESPONDENTS FOUND THE WATER FILTER EASY OR VERY EASY TO INSTALL.

THE SURVEY OF PLUMBING SUPPLY HOUSES SHOWED THAT 90% OF THE FAUCETS BEING INSTALLED HAD THREADS THAT MATCHED THOSE ON THE DUAL-LINE DIVERTER VALVE. ANOTHER 5% CAN BE ACCOMMODATED BY THREE ADAPTORS SUPPLIED WITH THE INSTALLATION KIT. THIS GIVES A TOTAL OF 95% OF FAUCETS THAT CAN BE ACCOMMODATED DIRECTLY. THE POTENTIAL REMAINING 5% HAVE TWO OPTIONS. FIRST, THE AUXILIARY FAUCET KIT CAN BE USED AS THIS DOES NOT REQUIRE ATTACHMENT TO AN EXISTING FAUCET. SECOND, IF A CONSUMER KNOWS WHAT TYPE OF FAUCET THEY HAVE, A CALL TO THE WATER TREATMENT HOTLINE WILL HELP IDENTIFY THE PROPER ADAPTOR REQUIRED.

ABSTRACT:

9. EASILY REPLACEABLE FILTER CARTRIDGE.

INTRODUCTION:

THIS CLAIM WAS DOCUMENTED USING LABORATORY PERSONNEL AND A PROTOTYPE FILTER HOUSING.

PROCEDURE:

PANELISTS WERE GIVEN A WATER FILTER WITH A CARTRIDGE ALREADY IN PLACE AND A NEW FILTER WITH FILTER CHANGE INSTRUCTIONS. PANELISTS WERE CHOSEN BASED ON AN EQUAL MIX OF MALE AND FEMALE BUT ALL WITH LIMITED KNOWLEDGE OF THE WATER TREATMENT SYSTEM. THEY WERE ASKED TO READ THE INSTRUCTIONS AND CHANGE THE FILTER.

RESULTS:

ALL PANELISTS CHANGED THE FILTER IN LESS THAN 15 MINUTES AND FOUND NO MAJOR PROBLEMS IN DOING SO.

ABSTRACT:

10. WILL TREAT ENOUGH DRINKING WATER AND COOKING WATER FOR AN AVERAGE FAMILY FOR ONE YEAR.

INTRODUCTION:

IN ORDER TO EVALUATE THE AMWAY WATER TREATMENT SYSTEM, SOME RATED LIFE NEEDED TO BE ESTABLISHED.

RESULTS:

REFERENCES (1, 2, 3) INDICATE THAT AN AVERAGE FAMILY USES A GIVEN QUANTITY OF WATER PER YEAR FOR COOKING AND DRINKING. ALL TESTING WAS CONDUCTED TO 50% BEYOND THIS POINT IN ORDER TO INSURE THE RECOMMENDED ONE YEAR LIFE.

AMWAY HAS ALSO PUT IN PLACE A REMINDER SYSTEM. BASED UPON REGISTRATION COST CARD INFORMATION, CONTACT WILL BE MADE WITH THE CONSUMER 10 MONTHS AFTER THE FILTER INSTALLATION TO REMIND THEM THAT A FILTER CHANGE IS DUE.

1. NATIONAL WATER SUMMARY 1983 - HYDROLOGIC EVENTS AND ISSUES. U.S. GEOLOGIC SURVEY WATER SUPPLY PAPER 2250.

2. WATER QUALITY ASSOCIATION - POINT OF USE TREATMENT FOR COMPLIANCE WITH DRINKING WATER STANDARDS. MAY 5, 1983.

3. STATISTICAL ABSTRACT OF THE UNITED STATES 1984, U.S. DEPARTMENT OF COMMERCE, BUREAU OF THE CENSUS.

ATTACHMENT E

WRITTEN COMMENTS
FROM MONTGOMERY TOWNSHIP

MASON, GRIFFIN & PIERSON
COUNSELLORS AT LAW

AUGUST 12, 1987

JEFFREY FOLMER
SENIOR AREA COORDINATOR
BUREAU OF COMMUNITY RELATIONS
DIVISION OF HAZARDOUS SITE MITIGATION
NEW JERSEY DEPARTMENT OF
ENVIRONMENTAL PROTECTION
C.N. 413, 6TH FLOOR
401 EAST STATE STREET
TRENTON, NJ 08625

RE: WRITTEN COMMENTS OF MONTGOMERY TOWNSHIP IN RESPONSE TO THE REMEDIAL INVESTIGATION/FEASIBILITY STUDY AND THE PROPOSED REMEDIAL ACTION PLAN FOR THE MONTGOMERY TOWNSHIP HOUSING DEVELOPMENT SUPERFUND SITE

DEAR MR. FOLMER:

IN RESPONSE TO THE RI/FS AND THE PRAP FOR THE WELL WATER CONTAMINATION IN AND AROUND THE SYCAMORE LANE AREA OF MONTGOMERY TOWNSHIP WHICH WAS THE SUBJECT OF A PUBLIC MEETING ON JULY 29, 1987, MONTGOMERY TOWNSHIP SUBMITS THE FOLLOWING COMMENTS:

1. MONTGOMERY TOWNSHIP CONTINUES TO MAINTAIN THE POSITION THAT IT HAS CONSISTENTLY ESPOUSED SINCE THE TIME THE CONTAMINATION WAS INITIALLY DISCOVERED WITH RESPECT TO THE ISSUE OF REIMBURSEMENT OF COSTS FOR REMEDIAL MEASURES TO THE CITIZENS OF THE AFFECTED AREA. TO REITERATE THIS POSITION, MONTGOMERY TOWNSHIP CONTENDS THAT REIMBURSEMENT FOR CORRECTIVE MEASURES MUST BE EQUITABLY ACHIEVED, TREATING EACH RESIDENT IN THE AREA IN A SIMILAR FASHION.

NEEDLESS TO SAY, THE RESIDENTS IN THE AREA AFFECTED BY THE GROUND WATER POLLUTION ARE NOT RESPONSIBLE FOR THE PROBLEM. IN RESPONSE TO THE POTENTIAL PUBLIC HEALTH THREAT PRESENTED BY THE GROUND WATER POLLUTION, THE TOWNSHIP CONTRACTED FOR AND PROVIDED PUBLIC WATER TO THE AREAS AFFECTED AT THAT TIME. RESIDENTS WERE ENCOURAGED TO TIE INTO THE PUBLIC WATER LINES, BUT SOME CHOSE TO DEAL WITH THE PROBLEM BY THE INSTALLATION OF INDIVIDUAL WELL WATER TREATMENT SYSTEMS. STILL OTHERS IN THE AFFECTED AREA, WHOSE WELLS SHOWED NO SIGN OF TCE CONTAMINATION, CHOSE TO MONITOR THEIR DRINKING WATER TO ASCERTAIN THE EXTENT OF THE PROBLEM BEFORE DECIDING ON AN APPROPRIATE COURSE OF ACTION.

REGARDLESS OF THE CORRECTIVE CHOICES MADE, ALL AREA RESIDENTS WERE ASSESSED EQUALLY FOR THE EXTENSION OF THE PUBLIC WATER LINES INTO THE AREA. LOGIC DICTATES THAT THESE RESIDENTS ALSO SHARE ANY REIMBURSEMENT RESULTING FROM THE CORRECTION OF THE PROBLEM EQUALLY.

2. MONTGOMERY TOWNSHIP HAS ALREADY NOTED FOR THE RECORD ITS OBJECTION TO THE PARAMETERS ORIGINALLY USED TO DETERMINE ELIGIBILITY FOR REIMBURSEMENT FROM THE SPILL COMPENSATION FUND, N.J.S.A. 58:10-23.11 ET. SEQ. OFFICIALS OF THE FUND ORIGINALLY REQUIRED BOTH TIMELY HOOK-UP TO THE WATER LINE AND TIMELY FILING OF A CLAIM FOR REIMBURSEMENT TO HOMEOWNERS. FOLLOWING THE INSTITUTION OF SEVERAL LAW SUITS ON THE SUBJECT, AND NEGOTIATIONS WITH VARIOUS PARTIES, A LATER DATE FOR CLAIM FILING WAS ALLOWED, COUPLED WITH NO DATE SPECIFIED FOR HOOK-UP TO THE PUBLIC WATER SYSTEM. HOWEVER, NEITHER THE OFFICIALS FROM THE SPILL COMPENSATION FUND, NOR ANY OTHER REPRESENTATIVES FROM THE DEPARTMENT OF ENVIRONMENTAL PROTECTION PROVIDED NOTICE TO THE GENERAL PUBLIC OR THE AFFECTED HOMEOWNERS CONCERNING THE CHANGES IN THE REQUIREMENTS NECESSARY FOR REIMBURSEMENT FROM

THE SPILL COMPENSATION FUND. AS A RESULT, SOME HOMEOWNERS FAILED TO TAKE THE ACTION NECESSARY TO INSURE REIMBURSEMENT FROM THE FUND EVEN THOUGH THEY HAD PAID THEIR FAIR SHARE FOR THE PUBLIC WATER LINES, WHILE OTHER AREA HOMEOWNERS SIMILARLY SITUATED FROM A PUBLIC HEALTH STANDPOINT WERE FULLY REIMBURSED. MONTGOMERY TOWNSHIP BELIEVES THE SPILL COMPENSATION FUND WAS CREATED WITH THE INTENT TO FULLY COMPENSATE THE VICTIMS OF THE SAME POLLUTION INCIDENT EQUALLY. FOR THIS REASON, WE FEEL THAT ANY COSTS ASSOCIATED WITH THE FINAL RESOLUTION OF THE PROBLEM WHICH WILL NOT BE COVERED BY SUPERFUND SHOULD BE ALLOWED BY WAY OF CLAIM SUBMISSION TO THE SPILL COMPENSATION FUND.

3. WITH RESPECT TO SUPERFUND PAYMENT OF COSTS ASSOCIATED WITH REMEDIAL ACTION, DEP HAS STATED THAT SUPERFUND WILL NOT COVER PAST COSTS ALREADY INCURRED, BUT WILL COVER ANY NEW COSTS ASSOCIATED WITH THE RECOMMENDED CORRECTIVE ACTION. IF DEP'S PREFERRED ALTERNATIVE IS CHOSEN, SUPERFUND WOULD REIMBURSE HOMEOWNERS FOR EXTENSIONS OF THE PUBLIC WATER LINE AND CONNECTION TO THE NEW OR EXISTING WATER MAINS. HOWEVER, SUPERFUND WOULD NOT REIMBURSE HOMEOWNERS FOR THE WATER ASSESSMENTS ALREADY ASSESSED TO PAY FOR THE ORIGINAL PUBLIC WATER LINES IN 1981.

THE TOWNSHIP HAS TWO RELATED COMMENTS CONCERNING SUPERFUND REIMBURSEMENT. FIRST, CONCEPTUALLY THE ASSESSMENT FOR PUBLIC WATER CAN BE VIEWED AS A PRESENT COST, SINCE PAYMENTS FOR LOCAL IMPROVEMENTS ARE GENERALLY ANNUALIZED IN EQUAL PAYMENTS OVER A TEN-YEAR PERIOD. SUCH IS THE CASE WITH THE WATER LINES INSTALLED AND ASSESSED FOR BY THE TOWNSHIP IN 1981. IN THAT SENSE, THE ASSESSMENT IS ON-GOING AND, THEREFORE, PART OF THE CURRENT REMEDIAL COSTS PRESENTLY BEING INCURRED BY THE AFFECTED HOMEOWNERS. IT IS SUBMITTED THAT SUPERFUND COULD REIMBURSE FOR ASSESSMENT COSTS IF THEY ARE VIEWED IN THIS MATTER.

SECOND, THE SUPERFUND LEGISLATION WAS ENACTED BY CONGRESS ON DECEMBER 11, 1980. HOWEVER, THE ORDINANCE AUTHORIZING THE WATER LINE EXTENSIONS INTO THE SYCAMORE LANE AREA AND ASSESSMENT TO THE AREA HOMEOWNERS WAS PASSED BY MONTGOMERY TOWNSHIP ON AUGUST 21, 1980, APPROXIMATELY FOUR MONTHS PRIOR TO THE ENACTMENT OF SUPERFUND. ARGUABLY, REMEDIAL MEASURES WHICH PRE-DATE ENACTMENT OF SUPERFUND, BUT WHICH ARE ALSO TOTALLY CONSISTENT WITH THE RECOMMENDED REMEDIAL ACTION PROPOSED BY DEP AND FUNDED UNDER SUPERFUND, SHOULD LIKEWISE BE INCLUDED IN THE SUPERFUND REIMBURSEMENT. IF THE TOWNSHIP HAD ACTED LESS PROMPTLY AND EFFECTIVELY TO SOLVE THE PUBLIC HEALTH PROBLEM PRESENTED BY THE GROUND WATER POLLUTION, SUPERFUND WOULD UNQUESTIONABLY BE REIMBURSING ALL THE HOMEOWNERS FOR ALL THE COSTS ASSOCIATED WITH THE CLEAN-UP. THE AREA HOMEOWNERS SHOULD NOT NOW BE PENALIZED FOR THE DILIGENCE OF THE TOWNSHIP IN ATTEMPTING TO SOLVE THE PROBLEM AT THE SITE SEVEN YEARS AGO.

4. AS FOLLOW-UP TO SOME OF THE COMMENTS WHICH WERE MADE AT THE PUBLIC MEETING OF JULY 29, 1987, MONTGOMERY TOWNSHIP BELIEVES THAT THE METHODOLOGY EMPLOYED IN EXAMINATION OF THE FOUR PROPOSED ALTERNATIVES WHICH LED TO THE DESIGNATION OF THE PREFERRED ALTERNATIVE MAY HAVE BEEN TOO RIGID IN THAT POSSIBLE COMBINATIONS OF THE VARIOUS ALTERNATIVES, IF CONSIDERED, COULD POSSIBLY PROVIDE A SATISFACTORY RESOLUTION TO THE HEALTH PROBLEM AT THE SITE IN A MORE COST-EFFECTIVE MANNER. THE EXTENSION OF THE WATER LINE ALONG MONTGOMERY ROAD FROM ROUTE 206 TO THE BORDER OF ROCKY HILL TO SERVE ONLY A FEW RESIDENCES SHOULD BE REEXAMINED TO SEE IF IT TRULY REPRESENTS THE BEST OVERALL SOLUTION TO THE PROBLEM.

5. FINALLY, IT APPEARS OBVIOUS FROM THE PUBLIC MEETING THAT THE AREA RESIDENTS ARE CONCERNED WITH THE WATER QUALITY FROM THE ELIZABETHTOWN WATER COMPANY DISTRIBUTION SYSTEM. TO DATE, DEP'S EMPHASIS HAS FOCUSED ON THE POOR QUALITY OF THE CONTAMINATED WELL WATER IN THE AREA. ANY DECISION CONCERNING A PREFERRED ALTERNATIVE MUST CONSIDER THE QUALITY OF THE WATER WHICH IS BEING SUGGESTED AS AN ALTERNATIVE TO THE PRESENT SOURCE. IN ADDITION, DEP SHOULD BE COGNIZANT OF, AND SENSITIVE TO, PUBLIC SENTIMENT CONCERNING THIS ISSUE BY ADDRESSING THE AREA RESIDENTS' MISGIVINGS ABOUT THE QUALITY OF THE ELIZABETHTOWN PUBLIC WATER DURING THE DECISION-MAKING PROCESS.

ON BEHALF OF MONTGOMERY TOWNSHIP, I WOULD LIKE TO THANK THE DEPARTMENT FOR THE OPPORTUNITY TO PRESENT THESE WRITTEN COMMENTS CONCERNING THIS MOST IMPORTANT ISSUE. IT IS OUR HOPE THAT THESE COMMENTS WILL HELP THE DEPARTMENT DEVELOP A FAIR AND REASONABLE COURSE OF ACTION TO ELIMINATE THE PROBLEM AT THE SITE. THE TOWNSHIP ANTICIPATES THAT SUCH A COURSE OF ACTION CAN AND WILL BE DEVELOPED. TO THAT END, MONTGOMERY TOWNSHIP IS EAGER TO ASSIST THE DEPARTMENT WHENEVER POSSIBLE IN ITS TASK.

MASON, GRIFFIN & PIERSON

BY:
DAVID E. TOMLINSON

CC: PETER N. RAYNER, TOWNSHIP ADMINISTRATOR
CHARLES G. SEARFOSS, HEALTH OFFICER.

(ATTACHMENT)

TABLE 4-1. TREATABILITY INDICATORS FOR CONTAMINANTS IN MONTGOMERY TOWNSHIP HOUSING DEVELOPMENT RESIDENTIAL WELLS

CONTAMINANT	HENRY'S LAW CONSTANT @ 10 DEGREES C (1)	CARBON REQUIREMENT MG CONTAMINANT ADSORBED/GM CARBON (2)
TRICHLOROETHENE	336	0.39
1,1,1-TRICHLOROETHANE	223	2.5
1,1-DICHLOROETHANE	140	1.8
1,2-DICHLOROETHANE	30.4	3.6
1,1-DICHLOROETHENE	709	4.9
1,2-DICHLOROETHENE	91.7 (4)	3.0
TETRACHLOROETHENE	564	50
METHYLENE CHLORIDE	140 (3)	1.3 (5)
ETHYLBENZENE	350 (3)	53
CARBON TETRACHLORIDE	720	11
TOLUENE	154	26
CHLOROFORM	97	2.6
1,2-DICHLOROBENZENE	37.1	129

(1) M.C. KAVANAUGH, R. TRUSSEL, 1980
(2) EPA, CARBON ADSORPTION ISOTHERMS FOR TOXIC ORGANICS, EPA-600/8-80-023, APRIL 1980, UNLESS OTHERWISE NOTED
(3) NYER, GROUNDWATER TREATMENT TECHNOLOGY, (20 DEGREES C)
(4) METCALF & EDDY DATA BASE
(5) BASED ON AVAILABLE DATA, THIS COMPOUND IS NOT READILY ADSORBED ONTO ACTIVATED CARBON (BECKER, 1978; METCALF & EDDY, 1987; CALGON, 1987).

(ATTACHMENT)

TABLE 5-5. CAPITAL AND O&M COSTS "HYBRID" ELIZABETHTOWN WATER - INDIVIDUAL TREATMENT SYSTEMS - ALTERNATIVE 5

COST ITEM	COST, $ *
EXTENSION OF ELIZABETHTOWN WATER	
VALVES (4)	11,000
WELL SEALING	35,000
SERVICE CONNECTIONS	46,000
PAVEMENT REPAIR	5,000
SUBTOTAL	97,000
ENGINEERING AND CONTINGENCIES (25%)	24,000
SUBTOTAL	121,000
INDIVIDUAL WELL TREATMENT - 4 RESIDENCES (SEE TABLE I-1 FOR DETAILS)	102,000
- ANALYTICAL (STARTUP)	2,000
- ENGINEERING & CONTINGENCIES (40%)	41,000
SUBTOTAL	145,000
TOTAL CAPITAL COST	$266,000
ANNUAL O&M FOR WELL TREATMENT	
- 4 RESIDENCES (SEE TABLE I-1 FOR DETAILS)	$11,000

DOES NOT INCLUDE TAX IMPACTS.

TABLE 1
TCE CONTENTS OF MONITORING WELLS

WELL	TCE CONCENTRATION 11/18/86-11/21/86, 12/3/86-12/4/86 (UG/L)
MW-ID	ND
MW-IS	ND
MW-2D	34
MW-2S	ND
MW-3D	ND
MW-3D DUP	13
MW-3S	320
MW-4D	240
MW-4D AIRPORT	ND
MW-4S AIRPORT	ND
MW-5D	ND
MW-5D AIRPORT	ND
MW-6D	ND
MW-7D	650
MW-7S	650
MW-9D	6.3
MW-9D DUP	6.3
MW-10D	ND
MW-11D	ND
MW-11S	ND
MW-13D	ND
MW-13S	ND
MW-14D	ND
MW-14S	ND
MW-15D	ND

ND: NOT DETECTED AT DETECTION LIMIT OF 5 UG/L.

TABLE 2
MONTGOMERY RESIDENTS NOT CONNECTED TO PUBLIC WATER AS OF 7 MAY 1987

BLOCK	LOT	TCE CONCENTRATION UG/L JUNE 1986 SAMPLING DATE	TCE CONCENTRATION UG/L AVERAGE 1979-1986
23001	20	1.9	1.9
23001	27	60	73
23001	28	140	85
29002	1		1.6
29002	3		
29002	4	58	58
29002	5		ND
29002	6		
29002	7		9.9
29002	8	18	18
29002	12	64	35
29002	13		39
29002	14	72	23
29002	15		ND
29002	16	3.9	ND
29002	17		3.9
29002	18		
29002	19		
29002	24	46	29
29002	28	ND	237
29002	37	2.5	11
29002	40	40/44 (DUPLICATES)	41
29002	43	35	31
29003	2		
29003	3		
29003	4		
29003	5	3.8	3.8
29003	6		
29003	7		
29003	8	ND	6.7
29003	10		
29003	11		
29003	12	32	13
29003	13		
29003	18	ND	ND
29001	2	ND	ND
29001	3	ND	
29001	5A	ND	ND
29001	6A	ND.	

TABLE 5
SCREENED ALTERNATIVES

ALTERNATIVE	REASON SCREENED
TEMPORARY WATER PROVIDED BY TAPS ON ELIZABETHTOWN WATER COMPANY MAINS	- NOT AS EASILY IMPLEMENTABLE AS BOTTLED WATER ALTERNATIVE - ENGINEERING AND CONSTRUCTION TIME REQUIRED BEFORE TAPS WOULD BE AVAILABLE FOR USE - USE OF BOTTLED WATER CAN BEGIN IMMEDIATELY
INDIVIDUAL WELL TREATMENT AIR STRIPPING WITH GRANULAR ACTIVATED CARBON ADSORPTION	- HIGH COST OF IMPLEMENTATION WITHOUT BENEFIT OF GREATER DEGREE OF TREATMENT THAN EXTENSION OF ELIZABETHTOWN SUPPLY OR INSTALLATION OF A COMMUNITY WELL
INDIVIDUAL WELL TREATMENT GRANULAR ACTIVATED CARBON ADSORPTION	- EXCESSIVELY HIGH OPERATION AND MAINTENANCE COSTS (SPECIFICALLY FOR CARBON REPLACEMENT) WILL BE REQUIRED TO ENSURE THE EFFECTIVE OPERATION OF THIS ALTERNATIVE - METHYLENE CHLORIDE, A POSSIBLE GROUND WATER CONTAMINANT, IS NOT EFFECTIVELY REMOVED BY THIS TECHNOLOGY.