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OVERHEADS FROM MEETING MINUTES PUBLIC SESSION 5-13-1993 FOR SITE 11
5/13/1993

PUBLIC INFORMATION SESSION

GROUNDWATER INVESTIGATION

HUMAN HEALTH SCREENING RISK EVALUATION

OLD COUNTY LANDFILL

13 MAY 1993

31547.000
13.05.00.0008
C/11/83

INFORMATION SESSION AGENDA

- HISTORICAL OVERVIEW**
- PROGRESS OF THE GROUNDWATER INVESTIGATION**
- RESULTS OF THE SCREENING RISK EVALUATION**
- SUMMARY AND DISCUSSION**

HISTORICAL OVERVIEW

- JAN. 1992 INVESTIGATION OF OLD COUNTY LANDFILL INITIATED
- AUG. 1992 VINYL CHLORIDE AND OTHER VOLATILE ORGANIC COMPOUNDS (VOCs) DETECTED IN GROUNDWATER ON RIGHT-OF-WAY OF GEORGIA SPUR 40'
- CITY, COUNTY, STATE, USEPA, AND GENERAL PUBLIC INFORMED.
- FIRST PUBLIC MEETING HELD
- OCTOBER 1992 SECOND PUBLIC MEETING
- PRIVATE IRRIGATION WELL QUESTIONNAIRES
 - PRIVATE WELL SAMPLING PERMISSION FORMS
- OCT. - NOV. 1992 MAJOR GROUNDWATER INVESTIGATION INITIATED
- HYDROCONE STUDIES
 - PRIVATE IRRIGATION WELLS SAMPLED
 - PORCUPINE LAKE WATER AND SEDIMENTS SAMPLED
 - SCREENING AIR ANALYSIS
- OCT. - NOV. 1992 TECHNICAL REVIEW COMMITTEE ESTABLISHED
COMMUNITY RELATIONS PLAN INITIATED
ADMINISTRATIVE RECORD STARTED

HISTORICAL OVERVIEW (CONTINUED)

DEC. 1992

TWO TRC MEETINGS HELD

- STATUS OF THE GROUNDWATER INVESTIGATION**

THIRD PUBLIC MEETING

- PRIVATE WELL RESULTS**
- PRIVATE PROPERTY GROUNDWATER RESULTS**

JAN. 1993

NAVY, ABB, STATE, AND USEPA MEETING

- SCREENING RISK EVALUATION METHODOLOGY**

FEB. 1993

TRC MEETING

- INTERIM CORRECTIVE MEASURES STUDY DOCUMENT REVIEW**

APR. 1993

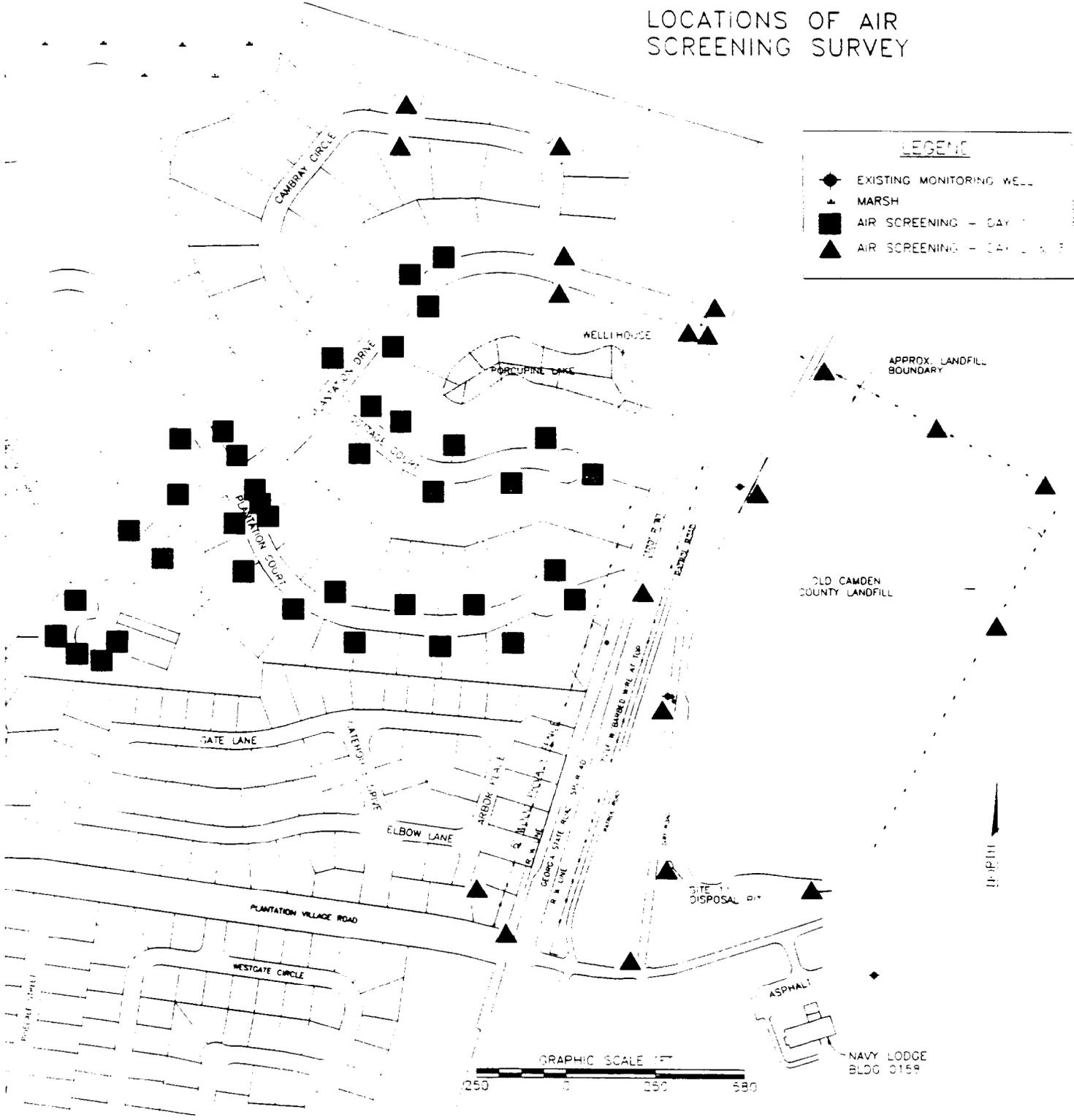
INTERIM CORRECTIVE MEASURES STUDY DOCUMENT RELEASED TO REGULATORY AGENCIES FOR REVIEW

MAY 1993

FOURTH PUBLIC MEETING

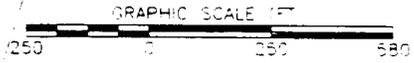
- STATUS OF THE INVESTIGATION**
- RESULTS OF HUMAN HEALTH PRELIMINARY SCREENING RISK EVALUATION**

LOCATIONS OF AIR SCREENING SURVEY



LEGEND

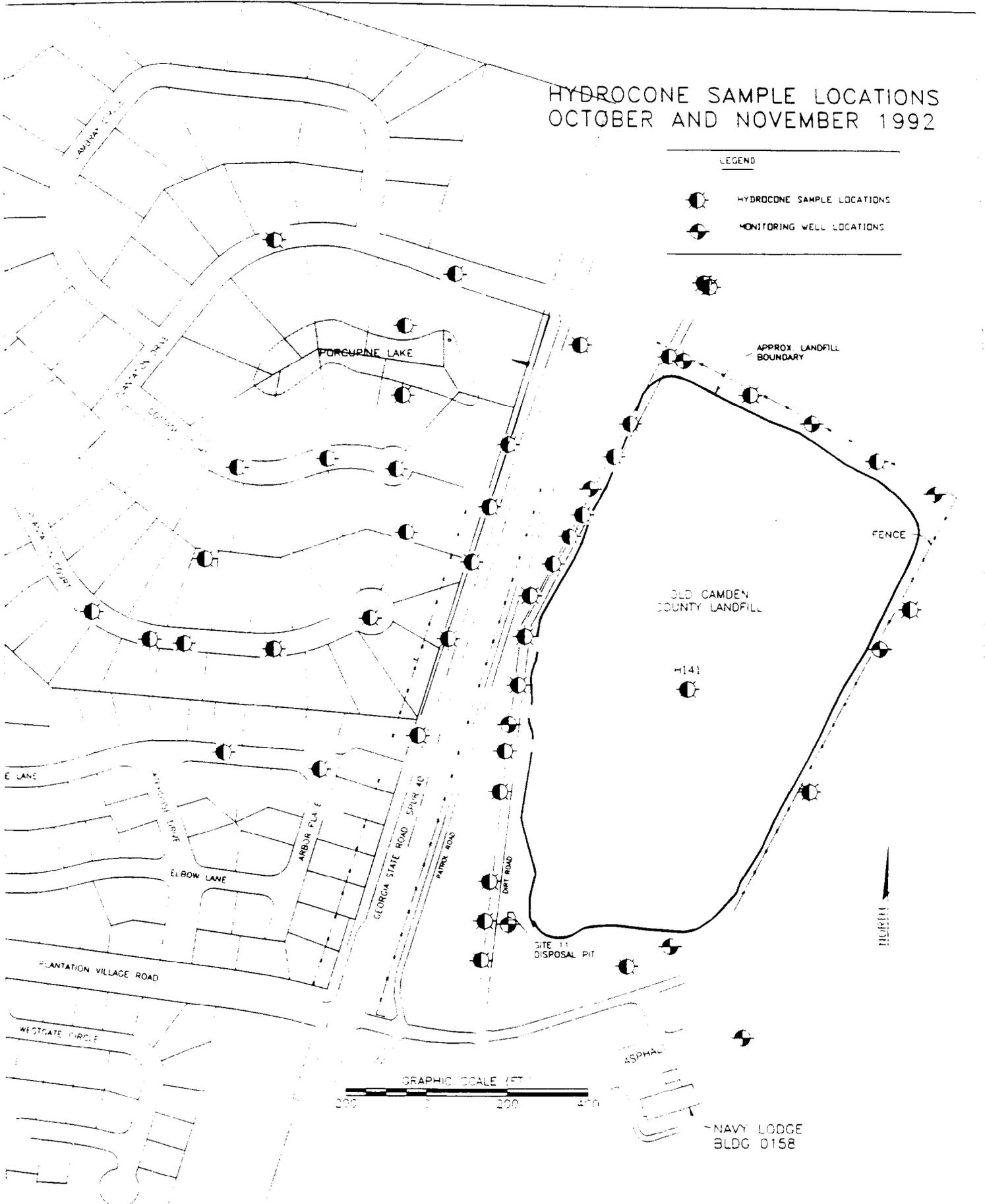
- ◆ EXISTING MONITORING WELL
- ▲ MARSH
- AIR SCREENING - DAY
- ▲ AIR SCREENING - NIGHT



HYDROCONE SAMPLE LOCATIONS OCTOBER AND NOVEMBER 1992

LEGEND

-  HYDROCONE SAMPLE LOCATIONS
-  MONITORING WELL LOCATIONS



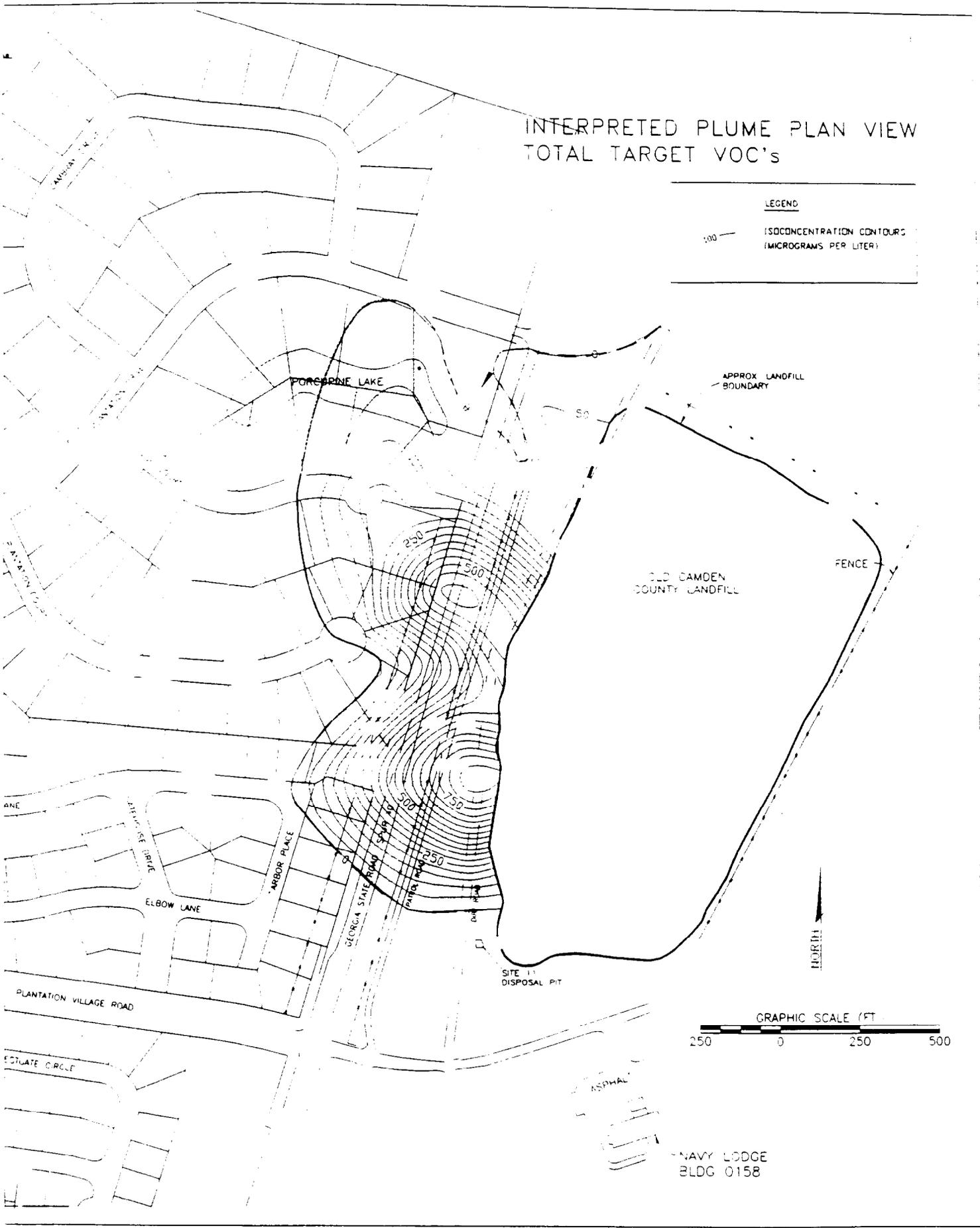
GRAPHIC SCALE (FT)
200 200 400

ASPHALT
NAVY LODGE
BLDG 0158

INTERPRETED PLUME PLAN VIEW TOTAL TARGET VOC's

LEGEND

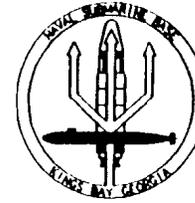
100 ——— ISOCONCENTRATION CONTOUR
(MICROGRAMS PER LITER)



HOW DID WE REACH THESE CONCLUSIONS?

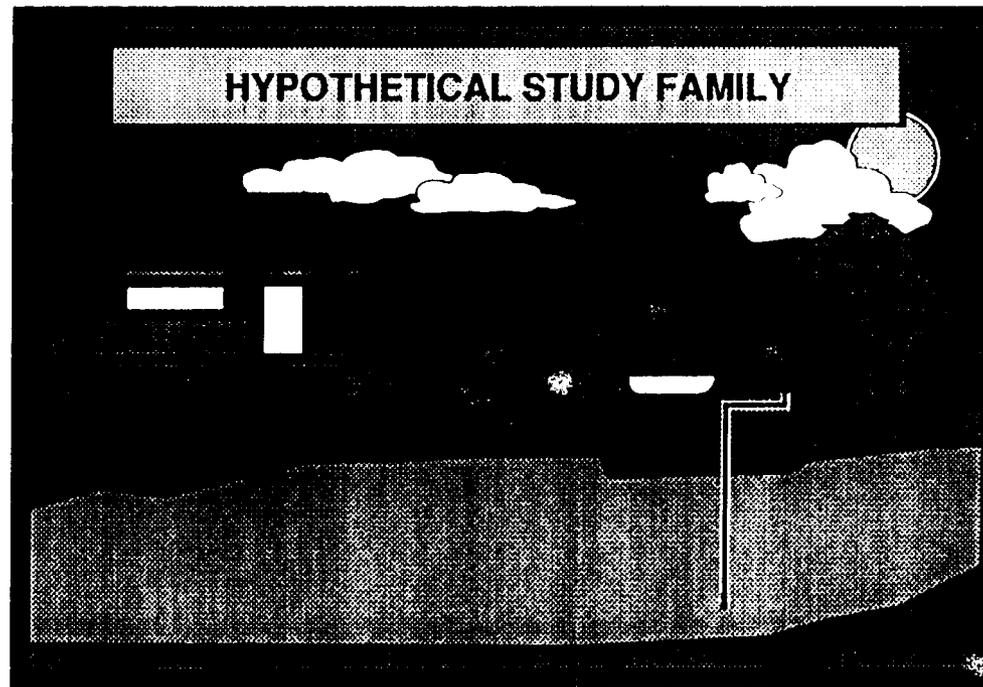


A B B



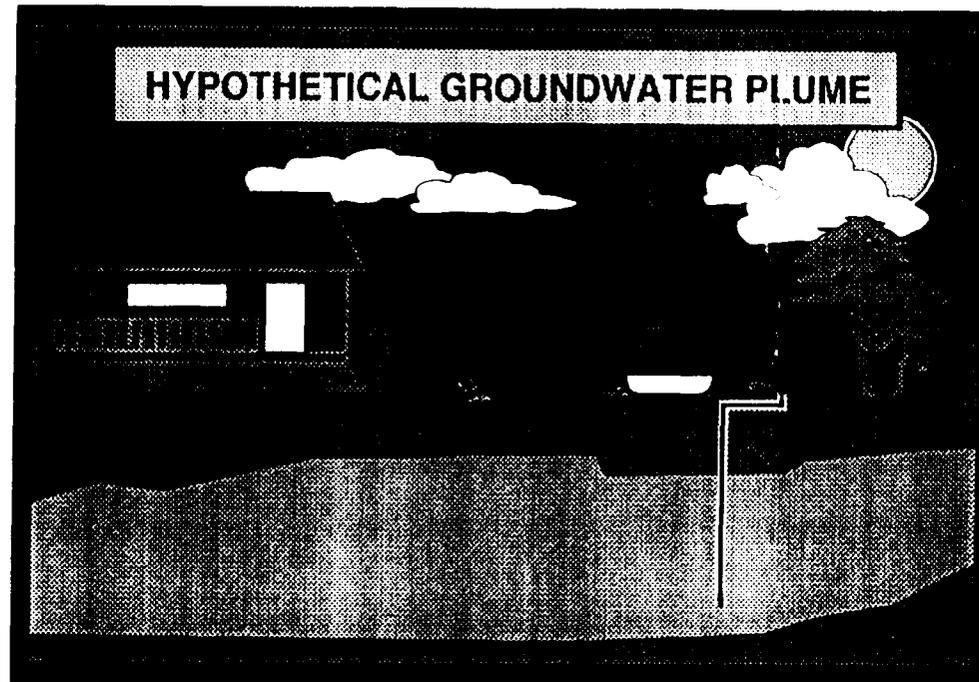
RISK = EXPOSURE x TOXICITY

RISK = EXPOSURE x TOXICITY



THE HYPOTHETICAL FAMILY STUDIED IN THE SCREENING RISK EVALUATION

- PRIVATE IRRIGATION WELL IN PLUME
- GROUNDWATER USED FOR:
 - IRRIGATION OF LAWNS AND GARDENS
 - WASHING OF OUTDOOR ITEMS
 - FILLING SWIMMING POOLS
- THE FAMILY LIVES IN THE HOME FOR 30 YEARS

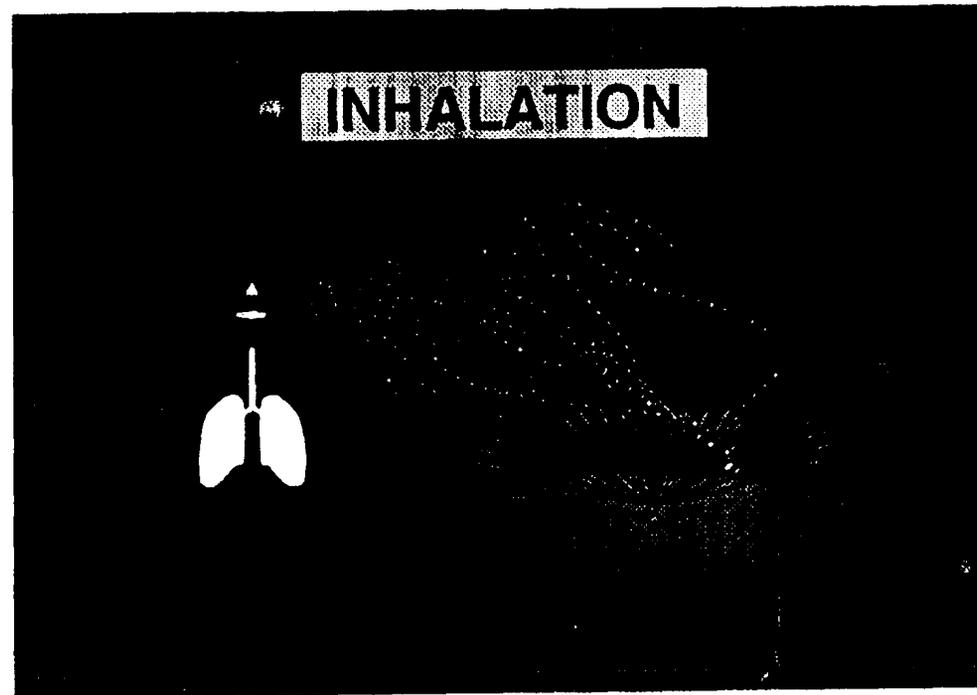


- THE HYPOTHETICAL GROUNDWATER PLUME USED IN THE SCREENING RISK EVALUATION**
 - THE PLUME HAS ALL THE CONTAMINANTS DETECTED**
 - THE CONTAMINANTS ARE PRESENT IN THE HIGHEST CONCENTRATION DETECTED ANYWHERE IN THE PLUME**
 - THE PLUME DOESN'T MOVE OR CHANGE FOR 30 YEARS**

GROUNDWATER NOT USED FOR DRINKING WATER

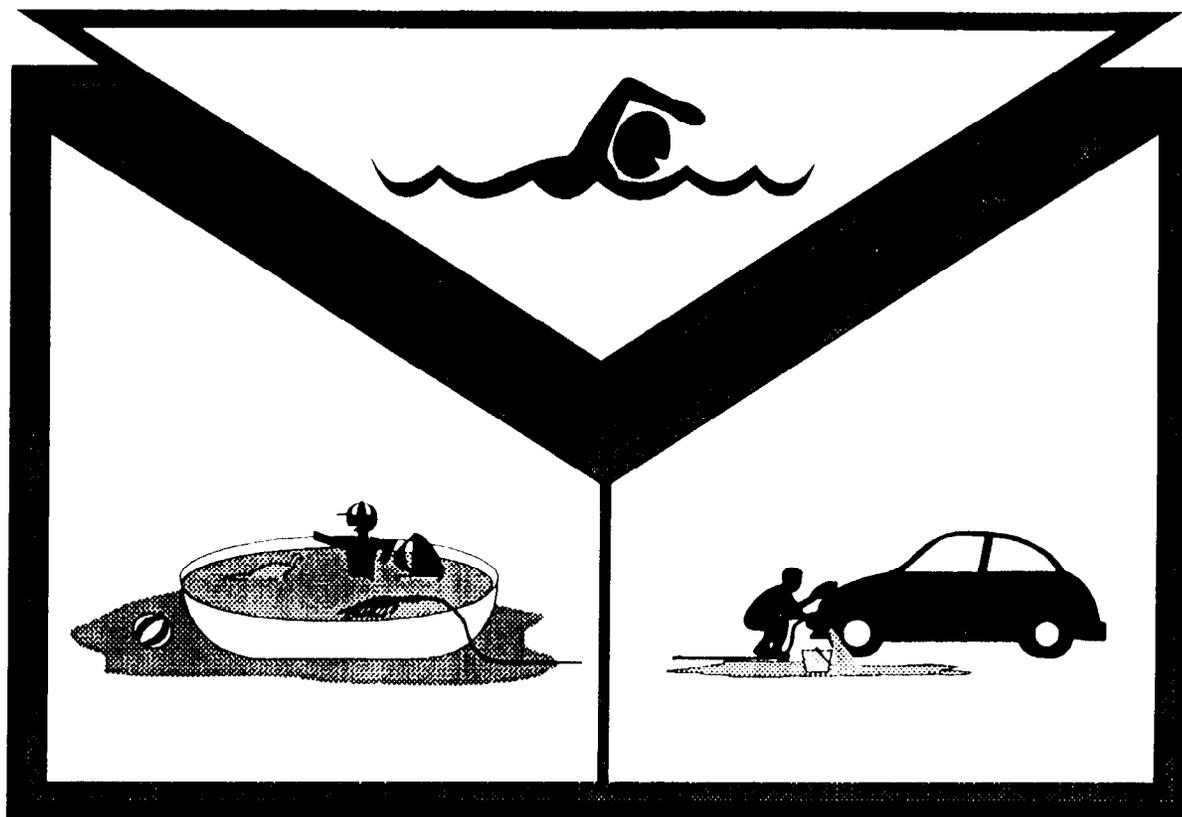


**IN THE SCREENING RISK EVALUATION THE
GROUNDWATER IS NOT USED FOR DRINKING WATER**



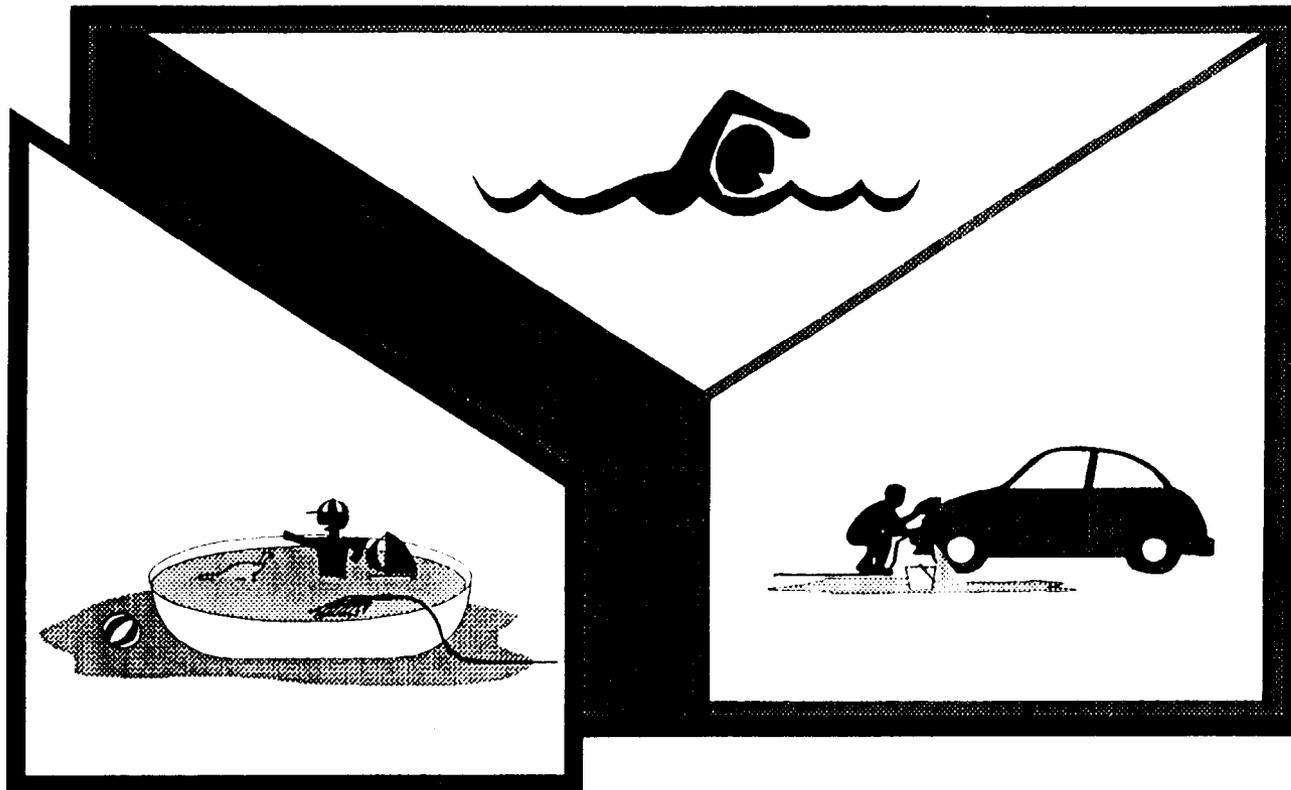
THE ASSUMPTIONS USED TO CALCULATE INHALATION EXPOSURE

- ALL 18 IRRIGATION SYSTEMS WITHIN THE BOUNDARIES OF THE PLUME ARE USED 2 HOURS / DAY; 350 DAYS / YEAR
- WATER FLOW RATE IS 12 GALLON / MINUTE
- 90% OF ALL CONTAMINANTS VOLATIZE INTO THE AIR
- HIGHEST AIR CONCENTRATIONS PREDICTED FROM THE AIR MODELING WERE USED FOR ALL CALCULATIONS
- EXPOSURE 24 HOURS / DAY; 350 DAYS / YEAR
 - CHILDREN 3 AND 6 YEARS,
 - ADULTS 3 AND 30 YEARS



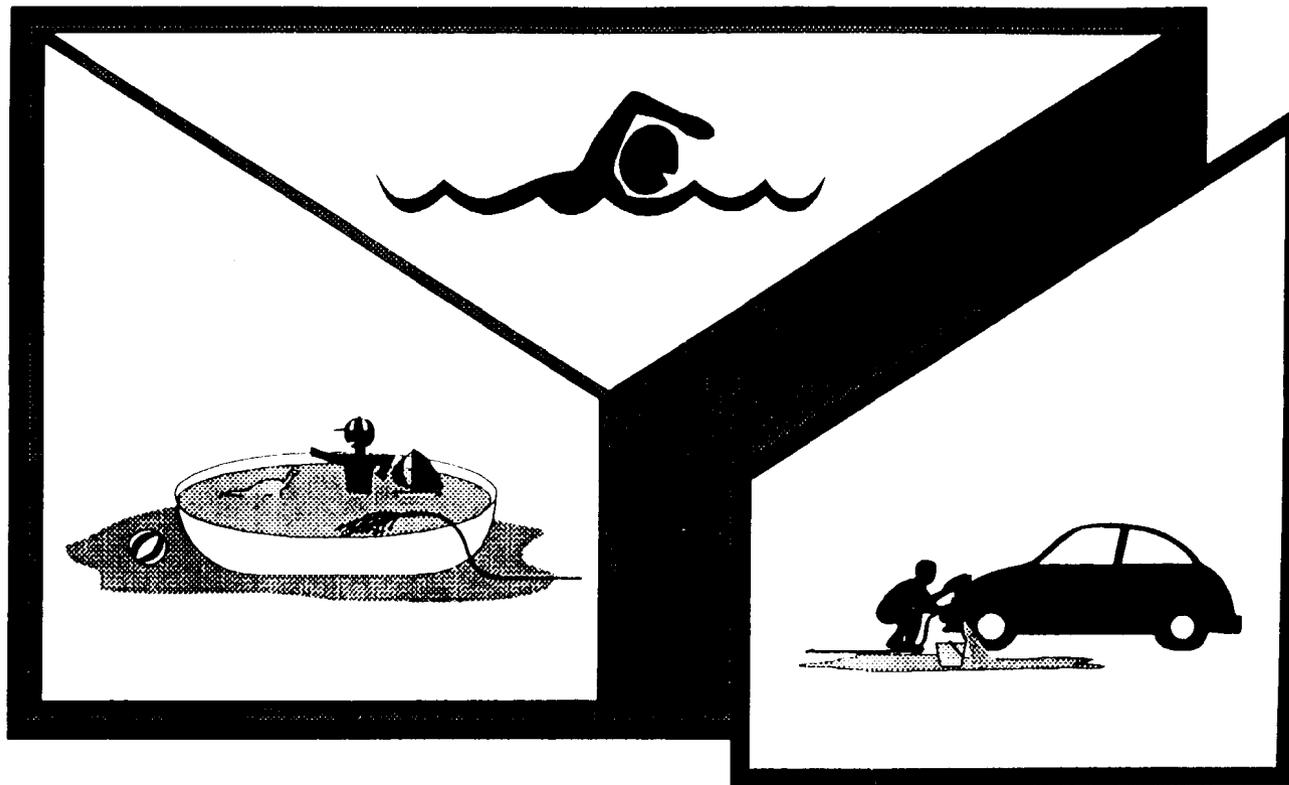
ASSUMPTIONS USED FOR INCIDENTAL INGESTION EXPOSURE IN POOL (ADULT)

- ONLY GROUNDWATER USED TO FILL POOL
- WATER REMAINS IN POOL BETWEEN SWIMMING EVENTS
- DURING THIS TIME 90% OF CONTAMINANTS LOST TO EVAPORATION
- USEPA REGION IV GUIDANCE SAYS:
 - ADULT SWIMS 4 HOURS / DAY; 88 DAYS PER YEAR
 - ADULT INGESTS 50 ml (1.6 OUNCES) OF WATER PER HOUR



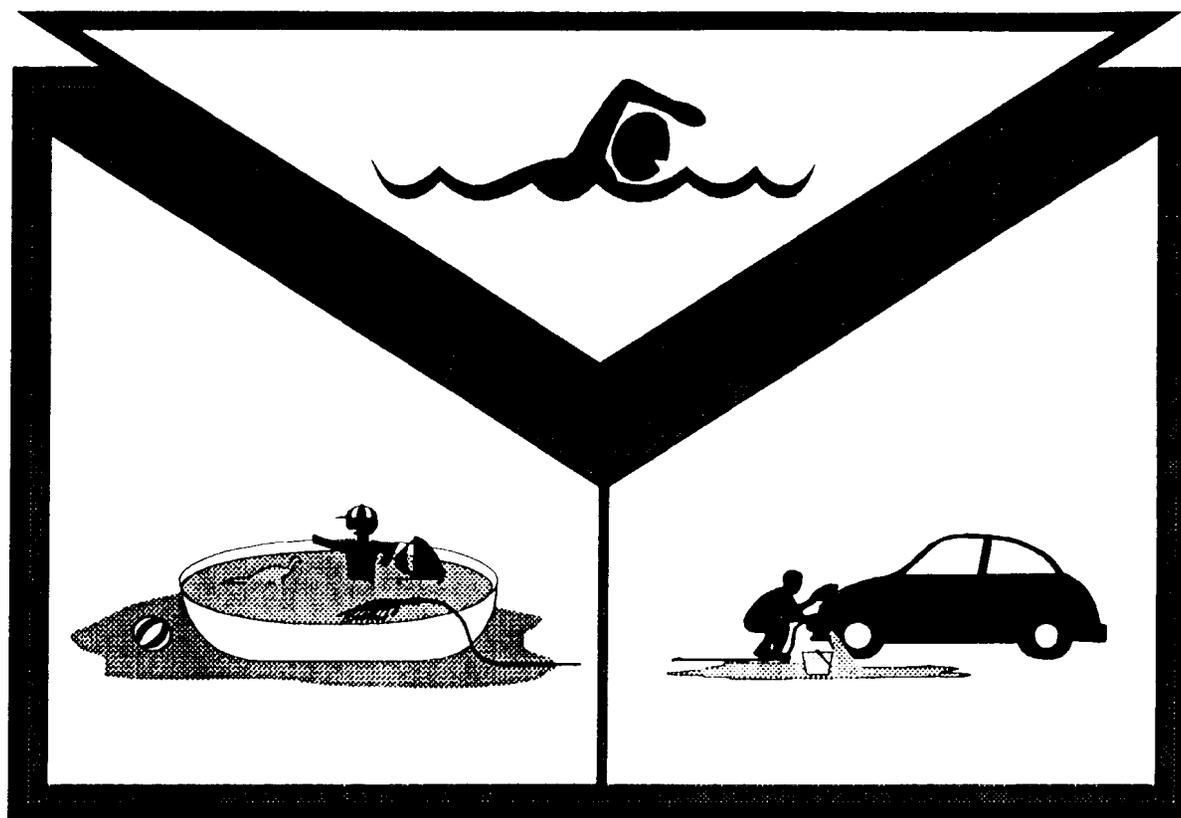
ASSUMPTIONS USED FOR INCIDENTAL INGESTION EXPOSURE IN POOL (CHILD)

- ONLY GROUNDWATER USED TO FILL POOL OR FOR WATER PLAY DEVICE
- WATER IS CONSTANTLY BEING REPLENISHED SO NET RESULT IS NO LOSS IN CONTAMINANT CONCENTRATION DUE TO EVAPORATION
- USEPA REGION IV GUIDANCE SAYS:
 - A CHILD SWIMS 4 HOURS / DAY; 88 DAYS PER YEAR
 - CHILD INGESTS 50 ml (1.6 OUNCES) OF WATER PER HOUR



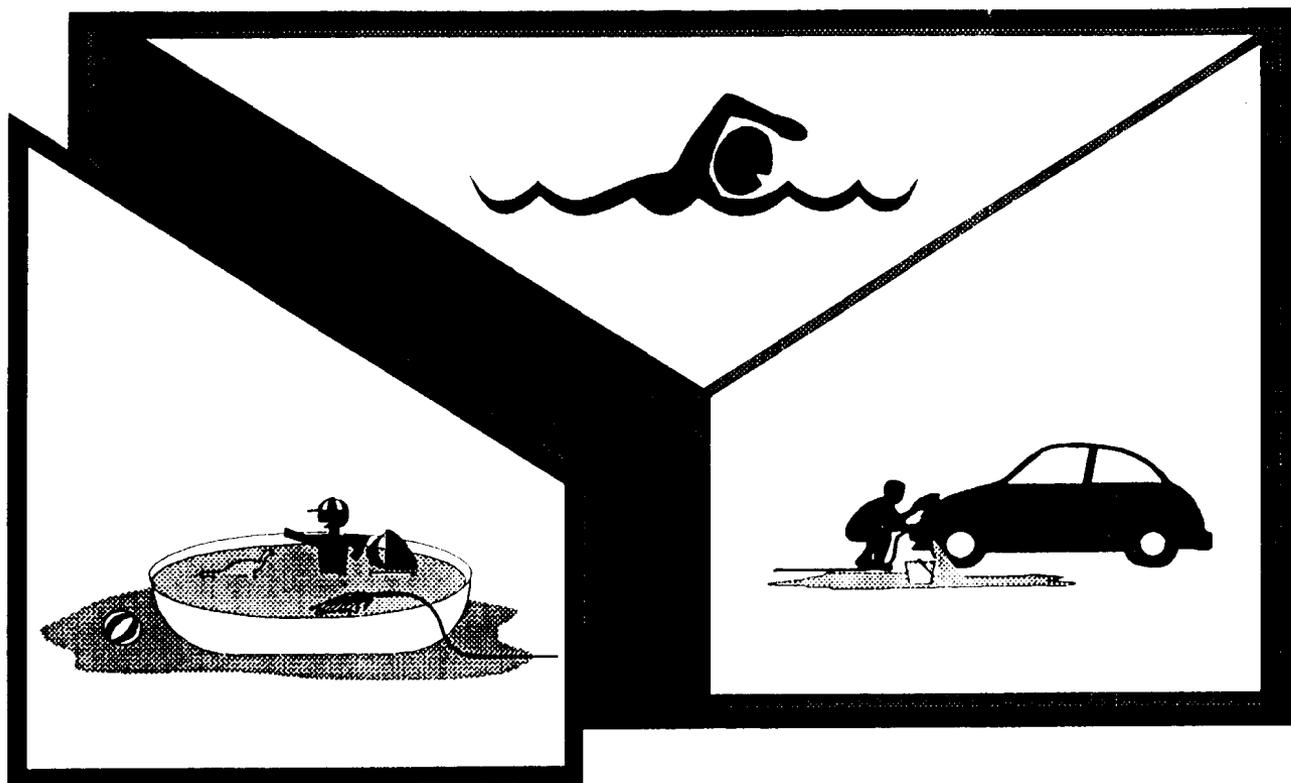
ASSUMPTIONS USED FOR INCIDENTAL INGESTION EXPOSURE FROM WASHING OF OUTDOOR ITEMS

- ONLY GROUNDWATER USED TO WASH OUTDOOR ITEMS
- 90% OF CHEMICALS LOST DUE TO EVAPORATION
- OCCURS 10 MINUTES / DAY; 350 DAYS PER YEAR (2.4 HOURS / DAY; 2 DAYS / MONTH)
- INGESTS 50 ml (1.6 OUNCES) OF WATER PER HOUR



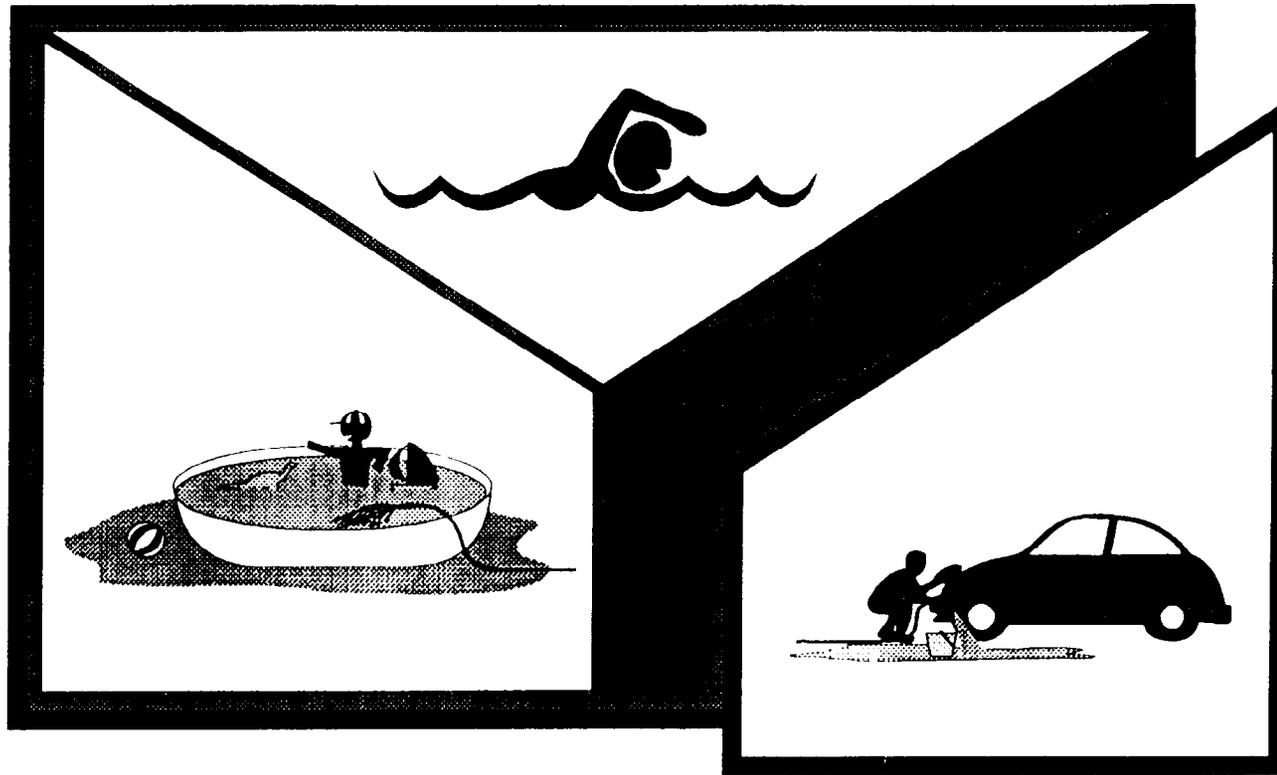
**❑ ASSUMPTIONS USED FOR DERMAL ABSORPTION EXPOSURE
IN POOL (ADULT)**

- ❑ ONLY GROUNDWATER USED TO FILL POOL
- ❑ WATER REMAINS IN POOL BETWEEN SWIMMING EVENTS
- ❑ DURING THIS TIME 90% OF CONTAMINANTS LOST TO EVAPORATION
- ❑ USEPA REGION IV GUIDANCE SAYS:
 - ❑ ADULT SWIMS 4 HOURS / DAY; 88 DAYS PER YEAR
 - ❑ ABSORPTION OCCURS THROUGH ENTIRE SKIN AREA OF ADULT (19,400cm²)



**ASSUMPTIONS USED FOR DERMAL ABSORPTION EXPOSURE
IN POOL (CHILD)**

- ONLY GROUNDWATER USED TO FILL POOL OR FOR WATER PLAY DEVICE
- WATER IS CONSTANTLY BEING LOST AND REPLENISHED SO NET RESULT IS NO LOSS IN CONTAMINANT CONCENTRATION DUE TO EVAPORATION
- USEPA REGION IV GUIDANCE SAYS:
 - CHILD SWIMS 4 HOURS / DAY; 88 DAYS PER YEAR
 - ABSORPTION OCCURS THROUGH ENTIRE SKIN AREA OF CHILD (7,280 cm²)



ASSUMPTIONS USED FOR DERMAL ABSORPTION EXPOSURE DURING WASHING OF OUTDOOR ITEMS

- ONLY GROUNDWATER USED TO WASH OUTDOOR ITEMS
- 90% OF CHEMICALS LOST DUE TO EVAPORATION
- OCCURS 10 MINUTES / DAY; 350 DAYS PER YEAR (2.4 HOURS / DAY; 2 DAYS / MONTH)
- ABSORPTION OCCURS THROUGH SKIN AREA OF HEAD, HANDS, AND FOREARMS, AND LEGS OF CHILD (1,900 cm²) or adult (5,500 cm²)

RISK = EXPOSURE x TOXICITY

USEPA TOXICITY FACTORS

- THE USEPA PROVIDES TOXICITY FACTORS FOR ALL OF THE CONTAMINANTS DETECTED IN THE PLUME**

- CARCINOGENS: CANCER SLOPE FACTOR -**

AN ESTIMATE OF THE UPPER-BOUND PROBABILITY OF AN INDIVIDUAL DEVELOPING CANCER OVER A LIFETIME IN RESPONSE TO EXPOSURE TO A CONCENTRATION OF A POTENTIAL CARCINOGEN

- NON-CARCINOGENS: REFERENCE DOSE -**

AN ESTIMATE OF A DAILY EXPOSURE CONCENTRATION FOR HUMAN POPULATION, INCLUDING SENSITIVE SUBPOPULATIONS, THAT IS LIKELY TO BE WITHOUT AN APPRECIABLE RISK OF DELETERIOUS EFFECTS

- USEPA REGION IV REQUIRES AN EXTRA 10-FOLD LEVEL OF PROTECTION FOR USE OF REFERENCE DOSES IN CHILDREN**

RISK = EXPOSURE x TOXICITY

LIFETIME CARCINOGENIC RISKS

(PER MILLION PEOPLE)

RISK = EXPOSURE DOSE x CANCER SLOPE FACTOR

HUMAN RECEPTOR	3 YEARS	6 YEARS	30 YEARS
CHILD	88	180	-----
ADULT	0.21	-----	2.1

----- DENOTES NOT CALCULATED

**THE USEPA SUGGESTS AN ACCEPTABLE
RISK RANGE OF 1 TO 100 IN A MILLION
PEOPLE**

TOTAL NON-CARCINOGENIC HAZARD INDEX (HI)

$$HI = \frac{\text{EXPOSURE DOSE}}{\text{REFERENCE DOSE}}$$

HUMAN RECEPTOR	3 YEARS	6 YEARS	30 YEARS
CHILD	5.3	5.3	-----
ADULT	0.3	-----	0.3

----- DENOTES NOT CALCULATED

**USEPA SUGGESTS IF HI IS GREATER
THAN 1.0, FURTHER ANALYSIS REQUIRED**

ADDITIONAL HAZARD INDEX ANALYSIS

- MOSTLY DUE TO *cis*-1,2-DICHLOROETHENE (53%) AND TOLUENE (26%)**
- REFERENCE DOSES (Rfd) BASED UPON HIGH DOSE RAT FEEDING STUDIES**
 - ≥ 1000 UNCERTAINTY FACTORS**
 - LOW TO MEDIUM CONFIDENCE LEVELS**
- HIGHEST TOLUENE CONCENTRATION BELOW MAXIMUM CONTAMINANT LEVEL (MCL) FOR DRINKING WATER**
- TOLUENE IS A VERY COMMON SOLVENT**
- cis*-1,2-DICHLOROETHENE ONCE USED AS A GENERAL ANESTHETIC IN HUMANS**
- USEPA REGION IV REQUIRES AN EXTRA 10-FOLD LEVEL OF PROTECTION FOR USE OF REFERENCE DOSES IN CHILDREN**

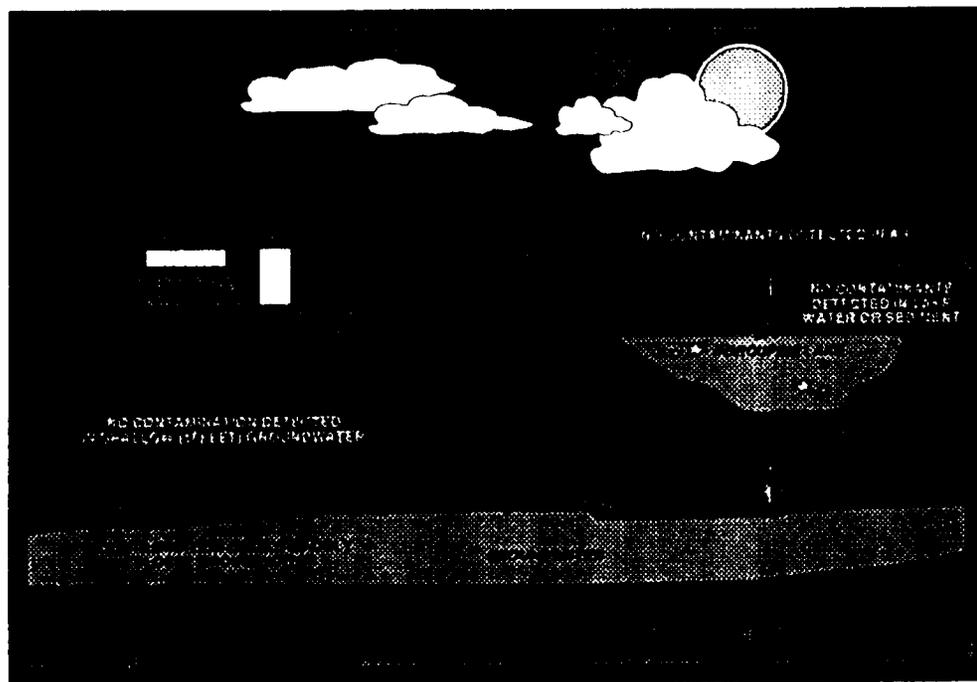
RESULTS OF THE SCREENING RISK EVALUATION

CARCINOGENS:

NO EVIDENCE OF AN
EXCESS CANCER RISK

NON-CARCINOGENS

NO EVIDENCE OF
NON-CARCINOGENIC
HEALTH THREAT.



- NO CONTAMINANTS DETECTED IN THE AIR
- NO CONTAMINANTS DETECTED IN PORCUPINE LAKE
- NO CONTAMINANTS DETECTED IN SHALLOW (<16 FEET) GROUNDWATER
- CONTAMINATION DETECTED ONLY IN DEEP GROUNDWATER

SCREENING RISK EVALUATION

CROOKED RIVER
PLANTATION SUBDIVISION