```
'Cs-137 Group 5'                        TITLE
-----------------------------------------------------------
GAUSSIAN QUADRATURE SOLUTION
MODEL OPTIONS
IMODE: 3
KFLAG: 1 (0)CONC VS TIME; (1)PEAK CONC AND LIMITING SOIL CONC
IMODEL:1 (1) SURF OR BURIED SOURCE; (2)POND SOURCE; (3) TABULATED SOURCE FUNCTION
>>> INPUT DATA
***********************************************************
NUMBER OF RADIOACTIVE PROGENY                      0
LENGTH OF SOURCE PARALLEL TO GW FLOW (m)           5.49E+00
WIDTH OF SOURCE PERPENDICULAR TO GW FLOW (m)       5.49E+00
THICKNESS OF SOURCE (m)                            3.05E+00
PERCOLATION RATE (darcy vel m/y)                   1.00E-01
VOLUMETRIC WATER CONTENT IN SOURCE                 4.10E-01
VOLUMETRIC WATER CONTENT IN UNSATURATED ZONE       4.10E-01
BULK DENSITY AT SOURCE  (g/cm**3)                  1.50E+00
SORPTION COEFFICIENT AT SOURCE (ml/g)              5.00E+02
BULK DENSITY IN UNSAT ZONE (g/cm**3)               1.90E+00
UNSATURATED ZONE THICKNESS (m)                     5.80E+00
SORPTION COEFFICIENT IN UNSAT ZONE (ml/g)          5.00E+01
OPTIONAL LOSS RATE CONSTANT FOR SOURCE (y**-1) 0.00E+00
INITIAL MASS OR ACTIVITY (mg or Ci)                4.87E-07
MOLECULAR WEIGHT (g/mole)                          1.00E+00
SOLUBILITY LIMIT (mg/L)                            1.00E+06
HALF-LIFE(S) OF CONTAMINANT AND PROGENY (y)        1.00E+38
BULK DENSITY OF AQUIFER (g/cm**3)                  1.90E+00
POROSITY OF AQUIFER                                1.00E-01
SORPTION COEFFICIENT(S) IN AQUIFER (ml/g)          5.00E+01
DISPERSIVITY X DIRECTION (m)                       9.00E+00
DISPERSIVITY Y DIRECTION (m)                       4.00E+00
PORE VELOCITY  (m/y)                               5.70E+02
WELL SCREEN THICKNESS (m)                          1.50E+01
DISTANCE TO RECEPTOR ALONG X AXIS        (m)       2.59E+00
DISTANCE TO RECEPTOR ALONG Y AXIS        (m)       0.00E+00
LIMITING RADIONUCLIDE GW CONCENTRATION (Ci/L)  6.00E-03
UNITS OF CONTAMINANT                               Ci
----------------------------------------------------------
LIMITING SOIL CONCENTRATION CALCULATION
>>> INITIAL ACTIVITY CONVERTED TO MASS (mg)  1.36E+29
>>> VALUES CALCULATED IN SOURCE SUBROUTINE
******************************************************
LEACH RATE CONSTANT (1/y)                   4.3692E-05
UNSATURATED PORE VELOCITY (m/y)             2.4390E-01
DECAY CONSTANT(S) (1/y)                     6.9315E-39
RETARDATION FACTOR(S) (SATURATED)           9.5100E+02
RETARDATION FACTOR (UNSATURATED)            2.3271E+02
SOLUBILITY LIMITED MASS (mg)                6.8983E+13
SOLUBILITY LIMITED ACTIVITY (Ci)            2.4682E-22
TRANSIT TIME IN UNSAT ZONE (years)          5.5338E+03
FRACTION DECAYED DURING UNSAT TRANSPORT  0.0000E+00
------------------------------------------------------
>>> EXPOSURE DATA FOR LIMITING SOIL CONCENTRATION
******************************************************
INTEGRATION TIME (years)           30
BODY WEIGHT (kg)                   7.000E+01
AVERAGING TIME (days)              2.550E+04
WATER INTAKE RATE (L/d)            2.000E+00
EXPOSURE FREQUENCY (days/year)     3.500E+02
EXPOSURE DURATION (years)          3.000E+01
RADIOLOGICAL DOSE LIMIT (rem/y)    4.000E-03
CARCINOGENIC RISK CRITERIA         1.000E-04
HAZARD QUOTIENT                    1.000E+00
------------------------------------------------------
>>> RESULTS OF CALCULATIONS
******************************************************
MAXIMUM RADIONUCLIDE CONCENTRATION LIMIT CALCULATION
LIMITING PARENT GW CONCENTRATION ADJUSTED FOR PROGENY = 6.00E-03 Ci/L
MAXIMUM GW CONCENTRATION FOR MBR #1:  1.17E-18 Ci/L
AVERAGE GW CONCENTRATION FOR MBR #1:  1.15E-18 Ci/L
PEAK TIME (y):                        5.560726E+03
```

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LIMITING SOIL CONCENTRATION (Ci/m**3):   2.769E+07
LIMITING SOIL CONCENTRATION (Ci/kg):     1.846E+04
LIMITING INVENTORY IN SOIL (Ci):         2.546E+09
LIMITING INVENTORY IN SOIL (mg):         7.115E+44
SPECIFIC ACTIVITY (Ci/g):  3.578E-33
```

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'U-234 Group 5'                              TITLE
----------------------------------------------------------------
GAUSSIAN QUADRATURE SOLUTION
MODEL OPTIONS
IMODE: 3
KFLAG: 1 (0)CONC VS TIME; (1)PEAK CONC AND LIMITING SOIL CONC
IMODEL:1 (1) SURF OR BURIED SOURCE; (2)POND SOURCE; (3) TABULATED SOURCE FUNCTION
>>> INPUT DATA
**********************************************************
NUMBER OF RADIOACTIVE PROGENY                      0
LENGTH OF SOURCE PARALLEL TO GW FLOW (m)          5.49E+00
WIDTH OF SOURCE PERPENDICULAR TO GW FLOW (m)      5.49E+00
THICKNESS OF SOURCE (m)                           3.05E+00
PERCOLATION RATE (darcy vel m/y)                  1.00E-01
VOLUMETRIC WATER CONTENT IN SOURCE                4.10E-01
VOLUMETRIC WATER CONTENT IN UNSATURATED ZONE      4.10E-01
BULK DENSITY AT SOURCE  (g/cm**3)                 1.50E+00
SORPTION COEFFICIENT AT SOURCE (ml/g)             6.00E+00
BULK DENSITY IN UNSAT ZONE (g/cm**3)              1.90E+00
UNSATURATED ZONE THICKNESS (m)                    5.80E+00
SORPTION COEFFICIENT IN UNSAT ZONE (ml/g)         6.00E-01
OPTIONAL LOSS RATE CONSTANT FOR SOURCE (y**-1) 0.00E+00
INITIAL MASS OR ACTIVITY (mg or Ci)               7.98E-08
MOLECULAR WEIGHT (g/mole)                         1.00E+00
SOLUBILITY LIMIT (mg/L)                           1.00E+06
HALF-LIFE(S) OF CONTAMINANT AND PROGENY (y)       1.00E+38
BULK DENSITY OF AQUIFER (g/cm**3)                 1.90E+00
POROSITY OF AQUIFER                               1.00E-01
SORPTION COEFFICIENT(S) IN AQUIFER (ml/g)         6.00E-01
DISPERSIVITY X DIRECTION (m)                      9.00E+00
DISPERSIVITY Y DIRECTION (m)                      4.00E+00
PORE VELOCITY  (m/y)                              5.70E+02
WELL SCREEN THICKNESS (m)                         1.50E+01
DISTANCE TO RECEPTOR ALONG X AXIS       (m)       2.59E+00
DISTANCE TO RECEPTOR ALONG Y AXIS       (m)       0.00E+00
LIMITING RADIONUCLIDE GW CONCENTRATION (Ci/L)     6.00E-03
UNITS OF CONTAMINANT                              Ci
---------------------------------------------------------------
LIMITING SOIL CONCENTRATION CALCULATION
>>> INITIAL ACTIVITY CONVERTED TO MASS (mg)   2.23E+28
>>> VALUES CALCULATED IN SOURCE SUBROUTINE
*****************************************************
LEACH RATE CONSTANT (1/y)                  3.4843E-03
UNSATURATED PORE VELOCITY (m/y)            2.4390E-01
DECAY CONSTANT(S) (1/y)                    6.9315E-39
RETARDATION FACTOR(S) (SATURATED)          1.2400E+01
RETARDATION FACTOR (UNSATURATED)           3.7805E+00
SOLUBILITY LIMITED MASS (mg)               8.6504E+11
SOLUBILITY LIMITED ACTIVITY (Ci)           3.0950E-24
TRANSIT TIME IN UNSAT ZONE (years)         8.9900E+01
FRACTION DECAYED DURING UNSAT TRANSPORT    0.0000E+00
-----------------------------------------------------
>>> EXPOSURE DATA FOR LIMITING SOIL CONCENTRATION
*****************************************************
INTEGRATION TIME (years)            30
BODY WEIGHT (kg)                    7.000E+01
AVERAGING TIME (days)               2.550E+04
WATER INTAKE RATE (L/d)             2.000E+00
EXPOSURE FREQUENCY (days/year)      3.500E+02
EXPOSURE DURATION (years)           3.000E+01
RADIOLOGICAL DOSE LIMIT (rem/y)     4.000E-03
CARCINOGENIC RISK CRITERIA          1.000E-04
HAZARD QUOTIENT                     1.000E+00
-----------------------------------------------------
>>> RESULTS OF CALCULATIONS
*****************************************************
MAXIMUM RADIONUCLIDE CONCENTRATION LIMIT CALCULATION
LIMITING PARENT GW CONCENTRATION ADJUSTED FOR PROGENY = 6.00E-03 Ci/L
MAXIMUM GW CONCENTRATION FOR MBR #1:  1.53E-17 Ci/L
AVERAGE GW CONCENTRATION FOR MBR #1:  1.71E-17 Ci/L
PEAK TIME (y):                        9.025134E+01
```

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LIMITING SOIL CONCENTRATION (Ci/m**3):    3.054E+05
LIMITING SOIL CONCENTRATION (Ci/kg):      2.036E+02
LIMITING INVENTORY IN SOIL (Ci):          2.808E+07
LIMITING INVENTORY IN SOIL (mg):          7.847E+42
SPECIFIC ACTIVITY (Ci/g):  3.578E-33
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'U-235 Group 5'                              TITLE
-----------------------------------------------------------
GAUSSIAN QUADRATURE SOLUTION
MODEL OPTIONS
IMODE: 3
KFLAG: 1 (0)CONC VS TIME; (1)PEAK CONC AND LIMITING SOIL CONC
IMODEL:1 (1) SURF OR BURIED SOURCE; (2)POND SOURCE; (3) TABULATED SOURCE FUNCTION
>>> INPUT DATA
***********************************************************
NUMBER OF RADIOACTIVE PROGENY                       0
LENGTH OF SOURCE PARALLEL TO GW FLOW (m)            5.49E+00
WIDTH OF SOURCE PERPENDICULAR TO GW FLOW (m)        5.49E+00
THICKNESS OF SOURCE (m)                             3.05E+00
PERCOLATION RATE (darcy vel m/y)                    1.00E-01
VOLUMETRIC WATER CONTENT IN SOURCE                  4.10E-01
VOLUMETRIC WATER CONTENT IN UNSATURATED ZONE        4.10E-01
BULK DENSITY AT SOURCE  (g/cm**3)                   1.50E+00
SORPTION COEFFICIENT AT SOURCE (ml/g)               6.00E+00
BULK DENSITY IN UNSAT ZONE (g/cm**3)                1.90E+00
UNSATURATED ZONE THICKNESS (m)                      5.80E+00
SORPTION COEFFICIENT IN UNSAT ZONE (ml/g)           6.00E-01
OPTIONAL LOSS RATE CONSTANT FOR SOURCE (y**-1)      0.00E+00
INITIAL MASS OR ACTIVITY (mg or Ci)                 3.67E-09
MOLECULAR WEIGHT (g/mole)                           1.00E+00
SOLUBILITY LIMIT (mg/L)                             1.00E+06
HALF-LIFE(S) OF CONTAMINANT AND PROGENY (y)         1.00E+38
BULK DENSITY OF AQUIFER (g/cm**3)                   1.90E+00
POROSITY OF AQUIFER                                 1.00E-01
SORPTION COEFFICIENT(S) IN AQUIFER (ml/g)           6.00E-01
DISPERSIVITY X DIRECTION (m)                        9.00E+00
DISPERSIVITY Y DIRECTION (m)                        4.00E+00
PORE VELOCITY  (m/y)                                5.70E+02
WELL SCREEN THICKNESS (m)                           1.50E+01
DISTANCE TO RECEPTOR ALONG X AXIS       (m)         2.59E+00
DISTANCE TO RECEPTOR ALONG Y AXIS       (m)         0.00E+00
LIMITING RADIONUCLIDE GW CONCENTRATION (Ci/L)       6.00E-03
UNITS OF CONTAMINANT                                Ci
----------------------------------------------------------
LIMITING SOIL CONCENTRATION CALCULATION
>>> INITIAL ACTIVITY CONVERTED TO MASS (mg)   1.03E+27
>>> VALUES CALCULATED IN SOURCE SUBROUTINE
******************************************************
LEACH RATE CONSTANT (1/y)                   3.4843E-03
UNSATURATED PORE VELOCITY (m/y)             2.4390E-01
DECAY CONSTANT(S) (1/y)                     6.9315E-39
RETARDATION FACTOR(S) (SATURATED)           1.2400E+01
RETARDATION FACTOR (UNSATURATED)            3.7805E+00
SOLUBILITY LIMITED MASS (mg)                8.6504E+11
SOLUBILITY LIMITED ACTIVITY (Ci)            3.0950E-24
TRANSIT TIME IN UNSAT ZONE (years)          8.9900E+01
FRACTION DECAYED DURING UNSAT TRANSPORT     0.0000E+00
------------------------------------------------------
>>> EXPOSURE DATA FOR LIMITING SOIL CONCENTRATION
******************************************************
INTEGRATION TIME (years)           30
BODY WEIGHT (kg)                   7.000E+01
AVERAGING TIME (days)              2.550E+04
WATER INTAKE RATE (L/d)            2.000E+00
EXPOSURE FREQUENCY (days/year)     3.500E+02
EXPOSURE DURATION (years)          3.000E+01
RADIOLOGICAL DOSE LIMIT (rem/y)    4.000E-03
CARCINOGENIC RISK CRITERIA         1.000E-04
HAZARD QUOTIENT                    1.000E+00
------------------------------------------------------
>>> RESULTS OF CALCULATIONS
******************************************************
MAXIMUM RADIONUCLIDE CONCENTRATION LIMIT CALCULATION
LIMITING PARENT GW CONCENTRATION ADJUSTED FOR PROGENY = 6.00E-03 Ci/L
MAXIMUM GW CONCENTRATION FOR MBR #1:  7.01E-19 Ci/L
AVERAGE GW CONCENTRATION FOR MBR #1:  7.84E-19 Ci/L
PEAK TIME (y):                           9.025134E+01
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LIMITING SOIL CONCENTRATION (Ci/m**3):    3.054E+05
LIMITING SOIL CONCENTRATION (Ci/kg):      2.036E+02
LIMITING INVENTORY IN SOIL (Ci):          2.808E+07
LIMITING INVENTORY IN SOIL (mg):          7.847E+42
SPECIFIC ACTIVITY (Ci/g):  3.578E-33
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'U-238 Group 5'                          TITLE
-----------------------------------------------------------
GAUSSIAN QUADRATURE SOLUTION
MODEL OPTIONS
IMODE: 3
KFLAG: 1 (0)CONC VS TIME; (1)PEAK CONC AND LIMITING SOIL CONC
IMODEL:1 (1) SURF OR BURIED SOURCE; (2)POND SOURCE; (3) TABULATED SOURCE FUNCTION
>>> INPUT DATA
***********************************************************
NUMBER OF RADIOACTIVE PROGENY                      0
LENGTH OF SOURCE PARALLEL TO GW FLOW (m)           5.49E+00
WIDTH OF SOURCE PERPENDICULAR TO GW FLOW (m)       5.49E+00
THICKNESS OF SOURCE (m)                            3.05E+00
PERCOLATION RATE (darcy vel m/y)                   1.00E-01
VOLUMETRIC WATER CONTENT IN SOURCE                 4.10E-01
VOLUMETRIC WATER CONTENT IN UNSATURATED ZONE       4.10E-01
BULK DENSITY AT SOURCE  (g/cm**3)                  1.50E+00
SORPTION COEFFICIENT AT SOURCE (ml/g)              6.00E+00
BULK DENSITY IN UNSAT ZONE (g/cm**3)               1.90E+00
UNSATURATED ZONE THICKNESS (m)                     5.80E+00
SORPTION COEFFICIENT IN UNSAT ZONE (ml/g)          6.00E-01
OPTIONAL LOSS RATE CONSTANT FOR SOURCE (y**-1)     0.00E+00
INITIAL MASS OR ACTIVITY (mg or Ci)                7.14E-08
MOLECULAR WEIGHT (g/mole)                          1.00E+00
SOLUBILITY LIMIT (mg/L)                            1.00E+06
HALF-LIFE(S) OF CONTAMINANT AND PROGENY (y)        1.00E+38
BULK DENSITY OF AQUIFER (g/cm**3)                  1.90E+00
POROSITY OF AQUIFER                                1.00E-01
SORPTION COEFFICIENT(S) IN AQUIFER (ml/g)          6.00E-01
DISPERSIVITY X DIRECTION (m)                       9.00E+00
DISPERSIVITY Y DIRECTION (m)                       4.00E+00
PORE VELOCITY  (m/y)                               5.70E+02
WELL SCREEN THICKNESS (m)                          1.50E+01
DISTANCE TO RECEPTOR ALONG X AXIS        (m)       2.59E+00
DISTANCE TO RECEPTOR ALONG Y AXIS        (m)       0.00E+00
LIMITING RADIONUCLIDE GW CONCENTRATION (Ci/L)      6.00E-03
UNITS OF CONTAMINANT                               Ci
----------------------------------------------------------
LIMITING SOIL CONCENTRATION CALCULATION
>>> INITIAL ACTIVITY CONVERTED TO MASS (mg)   2.00E+28
>>> VALUES CALCULATED IN SOURCE SUBROUTINE
*******************************************************
LEACH RATE CONSTANT (1/y)                   3.4843E-03
UNSATURATED PORE VELOCITY (m/y)             2.4390E-01
DECAY CONSTANT(S) (1/y)                     6.9315E-39
RETARDATION FACTOR(S) (SATURATED)           1.2400E+01
RETARDATION FACTOR (UNSATURATED)            3.7805E+00
SOLUBILITY LIMITED MASS (mg)                8.6504E+11
SOLUBILITY LIMITED ACTIVITY (Ci)            3.0950E-24
TRANSIT TIME IN UNSAT ZONE (years)          8.9900E+01
FRACTION DECAYED DURING UNSAT TRANSPORT     0.0000E+00
-------------------------------------------------------
>>> EXPOSURE DATA FOR LIMITING SOIL CONCENTRATION
*******************************************************
INTEGRATION TIME (years)           30
BODY WEIGHT (kg)                   7.000E+01
AVERAGING TIME (days)              2.550E+04
WATER INTAKE RATE (L/d)            2.000E+00
EXPOSURE FREQUENCY (days/year)     3.500E+02
EXPOSURE DURATION (years)          3.000E+01
RADIOLOGICAL DOSE LIMIT (rem/y)    4.000E-03
CARCINOGENIC RISK CRITERIA         1.000E-04
HAZARD QUOTIENT                    1.000E+00
-------------------------------------------------------
>>> RESULTS OF CALCULATIONS
*******************************************************
MAXIMUM RADIONUCLIDE CONCENTRATION LIMIT CALCULATION
LIMITING PARENT GW CONCENTRATION ADJUSTED FOR PROGENY = 6.00E-03 Ci/L
MAXIMUM GW CONCENTRATION FOR MBR #1:  1.36E-17 Ci/L
AVERAGE GW CONCENTRATION FOR MBR #1:  1.53E-17 Ci/L
PEAK TIME (y):                              9.025134E+01
```

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LIMITING SOIL CONCENTRATION (Ci/m**3):    3.054E+05
LIMITING SOIL CONCENTRATION (Ci/kg):      2.036E+02
LIMITING INVENTORY IN SOIL (Ci):          2.808E+07
LIMITING INVENTORY IN SOIL (mg):          7.847E+42
SPECIFIC ACTIVITY (Ci/g):  3.578E-33
```

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'Aroclor-1254 Group 6'
-----------------------------------------------------------
GAUSSIAN QUADRATURE SOLUTION
MODEL OPTIONS
IMODE: 4
KFLAG: 1 (0)CONC VS TIME; (1)PEAK CONC AND LIMITING SOIL CONC
IMODEL:1 (1) SURF OR BURIED SOURCE; (2)POND SOURCE; (3) TABULATED SOURCE FUNCTION
>>> INPUT DATA
***********************************************************
NUMBER OF RADIOACTIVE PROGENY                        0
LENGTH OF SOURCE PARALLEL TO GW FLOW (m)             2.18E+01
WIDTH OF SOURCE PERPENDICULAR TO GW FLOW (m)         2.18E+01
THICKNESS OF SOURCE (m)                              3.05E+00
PERCOLATION RATE (darcy vel m/y)                     1.00E-01
VOLUMETRIC WATER CONTENT IN SOURCE                   4.10E-01
VOLUMETRIC WATER CONTENT IN UNSATURATED ZONE         4.10E-01
BULK DENSITY AT SOURCE  (g/cm**3)                    1.50E+00
SORPTION COEFFICIENT AT SOURCE (ml/g)                1.50E+03
BULK DENSITY IN UNSAT ZONE (g/cm**3)                 1.90E+00
UNSATURATED ZONE THICKNESS (m)                       5.80E+00
SORPTION COEFFICIENT IN UNSAT ZONE (ml/g)            1.50E+02
OPTIONAL LOSS RATE CONSTANT FOR SOURCE (y**-1) 0.00E+00
INITIAL MASS OR ACTIVITY (mg or Ci)                  5.52E+05
MOLECULAR WEIGHT (g/mole)                            1.00E+00
SOLUBILITY LIMIT (mg/L)                              1.00E+06
HALF-LIFE(S) OF CONTAMINANT AND PROGENY (y)          1.00E+38
BULK DENSITY OF AQUIFER (g/cm**3)                    1.90E+00
POROSITY OF AQUIFER                                  1.00E-01
SORPTION COEFFICIENT(S) IN AQUIFER (ml/g)            1.50E+02
DISPERSIVITY X DIRECTION (m)                         9.00E+00
DISPERSIVITY Y DIRECTION (m)                         4.00E+00
PORE VELOCITY  (m/y)                                 5.70E+02
WELL SCREEN THICKNESS (m)                            1.50E+01
DISTANCE TO RECEPTOR ALONG X AXIS         (m)        1.09E+01
DISTANCE TO RECEPTOR ALONG Y AXIS         (m)        0.00E+00
LIMITING CONTAMINANT GW CONCENTRATION (mg/L)         6.00E-03
UNITS OF CONTAMINANT                                 mg
----------------------------------------------------------
LIMITING SOIL CONCENTRATION CALCULATION
>>> VALUES CALCULATED IN SOURCE SUBROUTINE
******************************************************
LEACH RATE CONSTANT (1/y)                     1.4569E-05
UNSATURATED PORE VELOCITY (m/y)               2.4390E-01
DECAY CONSTANT(S) (1/y)                       6.9315E-39
RETARDATION FACTOR(S) (SATURATED)             2.8510E+03
RETARDATION FACTOR (UNSATURATED)              6.9612E+02
SOLUBILITY LIMITED MASS (mg)                  3.2619E+15
SOLUBILITY LIMITED ACTIVITY (Ci)              0.0000E+00
TRANSIT TIME IN UNSAT ZONE (years)            1.6554E+04
FRACTION DECAYED DURING UNSAT TRANSPORT       0.0000E+00
------------------------------------------------------
>>> EXPOSURE DATA FOR LIMITING SOIL CONCENTRATION
******************************************************
INTEGRATION TIME (years)              30
BODY WEIGHT (kg)                      7.000E+01
AVERAGING TIME (days)                 2.550E+04
WATER INTAKE RATE (L/d)               2.000E+00
EXPOSURE FREQUENCY (days/year)        3.500E+02
EXPOSURE DURATION (years)             3.000E+01
RADIOLOGICAL DOSE LIMIT (rem/y)       4.000E-03
CARCINOGENIC RISK CRITERIA            1.000E-04
HAZARD QUOTIENT                       1.000E+00
------------------------------------------------------
>>> RESULTS OF CALCULATIONS
******************************************************
MAXIMUM NON RADIOLOGICAL CONTAMINANT CALCULATION
MAXIMUM CONCENTRATION    2.60E-07 mg/L
AVERAGE CONCENTRATION    2.60E-07 mg/L
PEAK TIME (y):                                1.688070E+04
LIMITING SOIL CONCENTRATION (mg/m**3):        8.794E+06
LIMITING SOIL CONCENTRATION (mg/kg):          5.863E+03
```

LIMITING INVENTORY IN SOIL (mg): 1.275E+10

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'Arsenic Group 6'
------------------------------------------------------------
GAUSSIAN QUADRATURE SOLUTION
MODEL OPTIONS
IMODE: 4
KFLAG: 1 (0)CONC VS TIME; (1)PEAK CONC AND LIMITING SOIL CONC
IMODEL:1 (1) SURF OR BURIED SOURCE; (2)POND SOURCE; (3) TABULATED SOURCE FUNCTION
>>> INPUT DATA
************************************************************
NUMBER OF RADIOACTIVE PROGENY                     0
LENGTH OF SOURCE PARALLEL TO GW FLOW (m)          2.18E+01
WIDTH OF SOURCE PERPENDICULAR TO GW FLOW (m)      2.18E+01
THICKNESS OF SOURCE (m)                           3.05E+00
PERCOLATION RATE (darcy vel m/y)                  1.00E-01
VOLUMETRIC WATER CONTENT IN SOURCE                4.10E-01
VOLUMETRIC WATER CONTENT IN UNSATURATED ZONE      4.10E-01
BULK DENSITY AT SOURCE  (g/cm**3)                 1.50E+00
SORPTION COEFFICIENT AT SOURCE (ml/g)             3.00E+00
BULK DENSITY IN UNSAT ZONE (g/cm**3)              1.90E+00
UNSATURATED ZONE THICKNESS (m)                    5.80E+00
SORPTION COEFFICIENT IN UNSAT ZONE (ml/g)         3.00E-01
OPTIONAL LOSS RATE CONSTANT FOR SOURCE (y**-1) 0.00E+00
INITIAL MASS OR ACTIVITY (mg or Ci)               1.76E+07
MOLECULAR WEIGHT (g/mole)                         1.00E+00
SOLUBILITY LIMIT (mg/L)                           1.00E+06
HALF-LIFE(S) OF CONTAMINANT AND PROGENY (y)       1.00E+38
BULK DENSITY OF AQUIFER (g/cm**3)                 1.90E+00
POROSITY OF AQUIFER                               1.00E-01
SORPTION COEFFICIENT(S) IN AQUIFER (ml/g)         3.00E-01
DISPERSIVITY X DIRECTION (m)                      9.00E+00
DISPERSIVITY Y DIRECTION (m)                      4.00E+00
PORE VELOCITY  (m/y)                              5.70E+02
WELL SCREEN THICKNESS (m)                         1.50E+01
DISTANCE TO RECEPTOR ALONG X AXIS       (m)       1.09E+01
DISTANCE TO RECEPTOR ALONG Y AXIS       (m)       0.00E+00
LIMITING CONTAMINANT GW CONCENTRATION (mg/L)      6.00E-03
UNITS OF CONTAMINANT                              mg
------------------------------------------------------------
LIMITING SOIL CONCENTRATION CALCULATION
>>> VALUES CALCULATED IN SOURCE SUBROUTINE
*****************************************************
LEACH RATE CONSTANT (1/y)                    6.6776E-03
UNSATURATED PORE VELOCITY (m/y)              2.4390E-01
DECAY CONSTANT(S) (1/y)                      6.9315E-39
RETARDATION FACTOR(S) (SATURATED)            6.7000E+00
RETARDATION FACTOR (UNSATURATED)             2.3902E+00
SOLUBILITY LIMITED MASS (mg)                 7.1170E+12
SOLUBILITY LIMITED ACTIVITY (Ci)             0.0000E+00
TRANSIT TIME IN UNSAT ZONE (years)           5.6840E+01
FRACTION DECAYED DURING UNSAT TRANSPORT  0.0000E+00
-----------------------------------------------------
>>> EXPOSURE DATA FOR LIMITING SOIL CONCENTRATION
*****************************************************
INTEGRATION TIME (years)            30
BODY WEIGHT (kg)                    7.000E+01
AVERAGING TIME (days)               2.550E+04
WATER INTAKE RATE (L/d)             2.000E+00
EXPOSURE FREQUENCY (days/year)      3.500E+02
EXPOSURE DURATION (years)           3.000E+01
RADIOLOGICAL DOSE LIMIT (rem/y)     4.000E-03
CARCINOGENIC RISK CRITERIA          1.000E-04
HAZARD QUOTIENT                     1.000E+00
-----------------------------------------------------
>>> RESULTS OF CALCULATIONS
*****************************************************
MAXIMUM NON RADIOLOGICAL CONTAMINANT CALCULATION
MAXIMUM CONCENTRATION   3.80E-03 mg/L
AVERAGE CONCENTRATION   3.61E-03 mg/L
PEAK TIME (y):                               5.760828E+01
LIMITING SOIL CONCENTRATION (mg/m**3):    2.018E+04
LIMITING SOIL CONCENTRATION (mg/kg):      1.345E+01
```

LIMITING INVENTORY IN SOIL (mg): 2.925E+07

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'Lead Group 6'
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GAUSSIAN QUADRATURE SOLUTION
MODEL OPTIONS
IMODE: 4
KFLAG: 1 (0)CONC VS TIME; (1)PEAK CONC AND LIMITING SOIL CONC
IMODEL:1 (1) SURF OR BURIED SOURCE; (2)POND SOURCE; (3) TABULATED SOURCE FUNCTION
>>> INPUT DATA
***********************************************************
NUMBER OF RADIOACTIVE PROGENY                     0
LENGTH OF SOURCE PARALLEL TO GW FLOW (m)          2.18E+01
WIDTH OF SOURCE PERPENDICULAR TO GW FLOW (m)      2.18E+01
THICKNESS OF SOURCE (m)                           3.05E+00
PERCOLATION RATE (darcy vel m/y)                  1.00E-01
VOLUMETRIC WATER CONTENT IN SOURCE                4.10E-01
VOLUMETRIC WATER CONTENT IN UNSATURATED ZONE      4.10E-01
BULK DENSITY AT SOURCE  (g/cm**3)                 1.50E+00
SORPTION COEFFICIENT AT SOURCE (ml/g)             1.00E+02
BULK DENSITY IN UNSAT ZONE (g/cm**3)              1.90E+00
UNSATURATED ZONE THICKNESS (m)                    5.80E+00
SORPTION COEFFICIENT IN UNSAT ZONE (ml/g)         1.00E+01
OPTIONAL LOSS RATE CONSTANT FOR SOURCE (y**-1) 0.00E+00
INITIAL MASS OR ACTIVITY (mg or Ci)               3.07E+07
MOLECULAR WEIGHT (g/mole)                         1.00E+00
SOLUBILITY LIMIT (mg/L)                           1.00E+06
HALF-LIFE(S) OF CONTAMINANT AND PROGENY (y)       1.00E+38
BULK DENSITY OF AQUIFER (g/cm**3)                 1.90E+00
POROSITY OF AQUIFER                               1.00E-01
SORPTION COEFFICIENT(S) IN AQUIFER (ml/g)         1.00E+01
DISPERSIVITY X DIRECTION (m)                      9.00E+00
DISPERSIVITY Y DIRECTION (m)                      4.00E+00
PORE VELOCITY  (m/y)                              5.70E+02
WELL SCREEN THICKNESS (m)                         1.50E+01
DISTANCE TO RECEPTOR ALONG X AXIS        (m)      1.09E+01
DISTANCE TO RECEPTOR ALONG Y AXIS        (m)      0.00E+00
LIMITING CONTAMINANT GW CONCENTRATION (mg/L)      6.00E-03
UNITS OF CONTAMINANT                              mg
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
LIMITING SOIL CONCENTRATION CALCULATION
>>> VALUES CALCULATED IN SOURCE SUBROUTINE
*****************************************************
LEACH RATE CONSTANT (1/y)                   2.1798E-04
UNSATURATED PORE VELOCITY (m/y)             2.4390E-01
DECAY CONSTANT(S) (1/y)                     6.9315E-39
RETARDATION FACTOR(S) (SATURATED)           1.9100E+02
RETARDATION FACTOR (UNSATURATED)            4.7341E+01
SOLUBILITY LIMITED MASS (mg)                2.1802E+14
SOLUBILITY LIMITED ACTIVITY (Ci)            0.0000E+00
TRANSIT TIME IN UNSAT ZONE (years)          1.1258E+03
FRACTION DECAYED DURING UNSAT TRANSPORT  0.0000E+00
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
>>> EXPOSURE DATA FOR LIMITING SOIL CONCENTRATION
*****************************************************
INTEGRATION TIME (years)           30
BODY WEIGHT (kg)                   7.000E+01
AVERAGING TIME (days)              2.550E+04
WATER INTAKE RATE (L/d)            2.000E+00
EXPOSURE FREQUENCY (days/year)     3.500E+02
EXPOSURE DURATION (years)          3.000E+01
RADIOLOGICAL DOSE LIMIT (rem/y)    4.000E-03
CARCINOGENIC RISK CRITERIA         1.000E-04
HAZARD QUOTIENT                    1.000E+00
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
>>> RESULTS OF CALCULATIONS
*****************************************************
MAXIMUM NON RADIOLOGICAL CONTAMINANT CALCULATION
MAXIMUM CONCENTRATION   2.16E-04 mg/L
AVERAGE CONCENTRATION   2.08E-04 mg/L
PEAK TIME (y):                              1.147682E+03
LIMITING SOIL CONCENTRATION (mg/m**3):    6.101E+05
LIMITING SOIL CONCENTRATION (mg/kg):      4.067E+02
```

LIMITING INVENTORY IN SOIL (mg): 8.843E+08

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'Manganese Group 6'
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GAUSSIAN QUADRATURE SOLUTION
MODEL OPTIONS
IMODE: 4
KFLAG: 1 (0)CONC VS TIME; (1)PEAK CONC AND LIMITING SOIL CONC
IMODEL:1 (1) SURF OR BURIED SOURCE; (2)POND SOURCE; (3) TABULATED SOURCE FUNCTION
>>> INPUT DATA
***********************************************************
NUMBER OF RADIOACTIVE PROGENY                     0
LENGTH OF SOURCE PARALLEL TO GW FLOW (m)          2.18E+01
WIDTH OF SOURCE PERPENDICULAR TO GW FLOW (m)      2.18E+01
THICKNESS OF SOURCE (m)                           3.05E+00
PERCOLATION RATE (darcy vel m/y)                  1.00E-01
VOLUMETRIC WATER CONTENT IN SOURCE                4.10E-01
VOLUMETRIC WATER CONTENT IN UNSATURATED ZONE      4.10E-01
BULK DENSITY AT SOURCE  (g/cm**3)                 1.50E+00
SORPTION COEFFICIENT AT SOURCE (ml/g)             5.00E+01
BULK DENSITY IN UNSAT ZONE (g/cm**3)              1.90E+00
UNSATURATED ZONE THICKNESS (m)                    5.80E+00
SORPTION COEFFICIENT IN UNSAT ZONE (ml/g)         5.00E+00
OPTIONAL LOSS RATE CONSTANT FOR SOURCE (y**-1) 0.00E+00
INITIAL MASS OR ACTIVITY (mg or Ci)               6.51E+08
MOLECULAR WEIGHT (g/mole)                         1.00E+00
SOLUBILITY LIMIT (mg/L)                           1.00E+06
HALF-LIFE(S) OF CONTAMINANT AND PROGENY (y)       1.00E+38
BULK DENSITY OF AQUIFER (g/cm**3)                 1.90E+00
POROSITY OF AQUIFER                               1.00E-01
SORPTION COEFFICIENT(S) IN AQUIFER (ml/g)         5.00E+00
DISPERSIVITY X DIRECTION (m)                      9.00E+00
DISPERSIVITY Y DIRECTION (m)                      4.00E+00
PORE VELOCITY  (m/y)                              5.70E+02
WELL SCREEN THICKNESS (m)                         1.50E+01
DISTANCE TO RECEPTOR ALONG X AXIS         (m)     1.09E+01
DISTANCE TO RECEPTOR ALONG Y AXIS         (m)     0.00E+00
LIMITING CONTAMINANT GW CONCENTRATION (mg/L)      6.00E-03
UNITS OF CONTAMINANT                              mg
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
LIMITING SOIL CONCENTRATION CALCULATION
>>> VALUES CALCULATED IN SOURCE SUBROUTINE
*****************************************************
LEACH RATE CONSTANT (1/y)                   4.3478E-04
UNSATURATED PORE VELOCITY (m/y)             2.4390E-01
DECAY CONSTANT(S) (1/y)                     6.9315E-39
RETARDATION FACTOR(S) (SATURATED)           9.6000E+01
RETARDATION FACTOR (UNSATURATED)            2.4171E+01
SOLUBILITY LIMITED MASS (mg)                1.0931E+14
SOLUBILITY LIMITED ACTIVITY (Ci)            0.0000E+00
TRANSIT TIME IN UNSAT ZONE (years)          5.7478E+02
FRACTION DECAYED DURING UNSAT TRANSPORT     0.0000E+00
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>>> EXPOSURE DATA FOR LIMITING SOIL CONCENTRATION
*****************************************************
INTEGRATION TIME (years)           30
BODY WEIGHT (kg)                   7.000E+01
AVERAGING TIME (days)              2.550E+04
WATER INTAKE RATE (L/d)            2.000E+00
EXPOSURE FREQUENCY (days/year)     3.500E+02
EXPOSURE DURATION (years)          3.000E+01
RADIOLOGICAL DOSE LIMIT (rem/y)    4.000E-03
CARCINOGENIC RISK CRITERIA         1.000E-04
HAZARD QUOTIENT                    1.000E+00
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
>>> RESULTS OF CALCULATIONS
*****************************************************
MAXIMUM NON RADIOLOGICAL CONTAMINANT CALCULATION
MAXIMUM CONCENTRATION   9.15E-03 mg/L
AVERAGE CONCENTRATION   8.50E-03 mg/L
PEAK TIME (y):                              5.857882E+02
LIMITING SOIL CONCENTRATION (mg/m**3):      3.168E+05
LIMITING SOIL CONCENTRATION (mg/kg):        2.112E+02
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LIMITING INVENTORY IN SOIL (mg): 4.593E+08

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'Am-241 Group 6'
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GAUSSIAN QUADRATURE SOLUTION
MODEL OPTIONS
IMODE: 3
KFLAG: 1 (0)CONC VS TIME; (1)PEAK CONC AND LIMITING SOIL CONC
IMODEL:1 (1) SURF OR BURIED SOURCE; (2)POND SOURCE; (3) TABULATED SOURCE FUNCTION
>>> INPUT DATA
**********************************************************
NUMBER OF RADIOACTIVE PROGENY                         0
LENGTH OF SOURCE PARALLEL TO GW FLOW (m)             2.18E+01
WIDTH OF SOURCE PERPENDICULAR TO GW FLOW (m)         2.18E+01
THICKNESS OF SOURCE (m)                              3.05E+00
PERCOLATION RATE (darcy vel m/y)                     1.00E-01
VOLUMETRIC WATER CONTENT IN SOURCE                   4.10E-01
VOLUMETRIC WATER CONTENT IN UNSATURATED ZONE         4.10E-01
BULK DENSITY AT SOURCE  (g/cm**3)                    1.50E+00
SORPTION COEFFICIENT AT SOURCE (ml/g)                3.40E+02
BULK DENSITY IN UNSAT ZONE (g/cm**3)                 1.90E+00
UNSATURATED ZONE THICKNESS (m)                       5.80E+00
SORPTION COEFFICIENT IN UNSAT ZONE (ml/g)            3.40E+01
OPTIONAL LOSS RATE CONSTANT FOR SOURCE (y**-1)       0.00E+00
INITIAL MASS OR ACTIVITY (mg or Ci)                  1.13E-06
MOLECULAR WEIGHT (g/mole)                            1.00E+00
SOLUBILITY LIMIT (mg/L)                              1.00E+06
HALF-LIFE(S) OF CONTAMINANT AND PROGENY (y)          1.00E+38
BULK DENSITY OF AQUIFER (g/cm**3)                    1.90E+00
POROSITY OF AQUIFER                                  1.00E-01
SORPTION COEFFICIENT(S) IN AQUIFER (ml/g)            3.40E+01
DISPERSIVITY X DIRECTION (m)                         9.00E+00
DISPERSIVITY Y DIRECTION (m)                         4.00E+00
PORE VELOCITY  (m/y)                                 5.70E+02
WELL SCREEN THICKNESS (m)                            1.50E+01
DISTANCE TO RECEPTOR ALONG X AXIS          (m)       1.09E+01
DISTANCE TO RECEPTOR ALONG Y AXIS          (m)       0.00E+00
LIMITING RADIONUCLIDE GW CONCENTRATION (Ci/L)        6.00E-03
UNITS OF CONTAMINANT                                 Ci
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
LIMITING SOIL CONCENTRATION CALCULATION
>>> INITIAL ACTIVITY CONVERTED TO MASS (mg)   3.16E+29
>>> VALUES CALCULATED IN SOURCE SUBROUTINE
*****************************************************
LEACH RATE CONSTANT (1/y)                  6.4236E-05
UNSATURATED PORE VELOCITY (m/y)            2.4390E-01
DECAY CONSTANT(S) (1/y)                    6.9315E-39
RETARDATION FACTOR(S) (SATURATED)          6.4700E+02
RETARDATION FACTOR (UNSATURATED)           1.5856E+02
SOLUBILITY LIMITED MASS (mg)               7.3983E+14
SOLUBILITY LIMITED ACTIVITY (Ci)           2.6470E-21
TRANSIT TIME IN UNSAT ZONE (years)         3.7706E+03
FRACTION DECAYED DURING UNSAT TRANSPORT    0.0000E+00
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
>>> EXPOSURE DATA FOR LIMITING SOIL CONCENTRATION
*****************************************************
INTEGRATION TIME (years)            30
BODY WEIGHT (kg)                    7.000E+01
AVERAGING TIME (days)               2.550E+04
WATER INTAKE RATE (L/d)             2.000E+00
EXPOSURE FREQUENCY (days/year)      3.500E+02
EXPOSURE DURATION (years)           3.000E+01
RADIOLOGICAL DOSE LIMIT (rem/y)     4.000E-03
CARCINOGENIC RISK CRITERIA          1.000E-04
HAZARD QUOTIENT                     1.000E+00
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
>>> RESULTS OF CALCULATIONS
*****************************************************
MAXIMUM RADIONUCLIDE CONCENTRATION LIMIT CALCULATION
LIMITING PARENT GW CONCENTRATION ADJUSTED FOR PROGENY = 6.00E-03 Ci/L
MAXIMUM GW CONCENTRATION FOR MBR #1:  2.35E-18 Ci/L
AVERAGE GW CONCENTRATION FOR MBR #1:  2.34E-18 Ci/L
PEAK TIME (y):                         3.844771E+03
```

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LIMITING SOIL CONCENTRATION (Ci/m**3):    1.999E+06
LIMITING SOIL CONCENTRATION (Ci/kg):      1.333E+03
LIMITING INVENTORY IN SOIL (Ci):          2.898E+09
LIMITING INVENTORY IN SOIL (mg):          8.100E+44
SPECIFIC ACTIVITY (Ci/g):  3.578E-33
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'Cs-137 Group 6'
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GAUSSIAN QUADRATURE SOLUTION
MODEL OPTIONS
IMODE: 3
KFLAG: 1 (0)CONC VS TIME; (1)PEAK CONC AND LIMITING SOIL CONC
IMODEL:1 (1) SURF OR BURIED SOURCE; (2)POND SOURCE; (3) TABULATED SOURCE FUNCTION
>>> INPUT DATA
*********************************************************
NUMBER OF RADIOACTIVE PROGENY                    0
LENGTH OF SOURCE PARALLEL TO GW FLOW (m)         2.18E+01
WIDTH OF SOURCE PERPENDICULAR TO GW FLOW (m)     2.18E+01
THICKNESS OF SOURCE (m)                          3.05E+00
PERCOLATION RATE (darcy vel m/y)                 1.00E-01
VOLUMETRIC WATER CONTENT IN SOURCE               4.10E-01
VOLUMETRIC WATER CONTENT IN UNSATURATED ZONE     4.10E-01
BULK DENSITY AT SOURCE  (g/cm**3)                1.50E+00
SORPTION COEFFICIENT AT SOURCE (ml/g)            5.00E+02
BULK DENSITY IN UNSAT ZONE (g/cm**3)             1.90E+00
UNSATURATED ZONE THICKNESS (m)                   5.80E+00
SORPTION COEFFICIENT IN UNSAT ZONE (ml/g)        5.00E+01
OPTIONAL LOSS RATE CONSTANT FOR SOURCE (y**-1)   0.00E+00
INITIAL MASS OR ACTIVITY (mg or Ci)              1.85E-06
MOLECULAR WEIGHT (g/mole)                        1.00E+00
SOLUBILITY LIMIT (mg/L)                          1.00E+06
HALF-LIFE(S) OF CONTAMINANT AND PROGENY (y)      1.00E+38
BULK DENSITY OF AQUIFER (g/cm**3)                1.90E+00
POROSITY OF AQUIFER                              1.00E-01
SORPTION COEFFICIENT(S) IN AQUIFER (ml/g)        5.00E+01
DISPERSIVITY X DIRECTION (m)                     9.00E+00
DISPERSIVITY Y DIRECTION (m)                     4.00E+00
PORE VELOCITY  (m/y)                             5.70E+02
WELL SCREEN THICKNESS (m)                        1.50E+01
DISTANCE TO RECEPTOR ALONG X AXIS        (m)     1.09E+01
DISTANCE TO RECEPTOR ALONG Y AXIS        (m)     0.00E+00
LIMITING RADIONUCLIDE GW CONCENTRATION (Ci/L)    6.00E-03
UNITS OF CONTAMINANT                             Ci
-----------------------------------------------------------
LIMITING SOIL CONCENTRATION CALCULATION
>>> INITIAL ACTIVITY CONVERTED TO MASS (mg)   5.17E+29
>>> VALUES CALCULATED IN SOURCE SUBROUTINE
*******************************************************
LEACH RATE CONSTANT (1/y)                 4.3692E-05
UNSATURATED PORE VELOCITY (m/y)           2.4390E-01
DECAY CONSTANT(S) (1/y)                   6.9315E-39
RETARDATION FACTOR(S) (SATURATED)         9.5100E+02
RETARDATION FACTOR (UNSATURATED)          2.3271E+02
SOLUBILITY LIMITED MASS (mg)              1.0877E+15
SOLUBILITY LIMITED ACTIVITY (Ci)          3.8917E-21
TRANSIT TIME IN UNSAT ZONE (years)        5.5338E+03
FRACTION DECAYED DURING UNSAT TRANSPORT   0.0000E+00
-------------------------------------------------------
>>> EXPOSURE DATA FOR LIMITING SOIL CONCENTRATION
*******************************************************
INTEGRATION TIME (years)            30
BODY WEIGHT (kg)                    7.000E+01
AVERAGING TIME (days)               2.550E+04
WATER INTAKE RATE (L/d)             2.000E+00
EXPOSURE FREQUENCY (days/year)      3.500E+02
EXPOSURE DURATION (years)           3.000E+01
RADIOLOGICAL DOSE LIMIT (rem/y)     4.000E-03
CARCINOGENIC RISK CRITERIA          1.000E-04
HAZARD QUOTIENT                     1.000E+00
-------------------------------------------------------
>>> RESULTS OF CALCULATIONS
*******************************************************
MAXIMUM RADIONUCLIDE CONCENTRATION LIMIT CALCULATION
LIMITING PARENT GW CONCENTRATION ADJUSTED FOR PROGENY = 6.00E-03 Ci/L
MAXIMUM GW CONCENTRATION FOR MBR #1:  2.61E-18 Ci/L
AVERAGE GW CONCENTRATION FOR MBR #1:  2.61E-18 Ci/L
PEAK TIME (y):                          5.642830E+03
```

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LIMITING SOIL CONCENTRATION (Ci/m**3):   2.936E+06
LIMITING SOIL CONCENTRATION (Ci/kg):     1.957E+03
LIMITING INVENTORY IN SOIL (Ci):         4.255E+09
LIMITING INVENTORY IN SOIL (mg):         1.189E+45
SPECIFIC ACTIVITY (Ci/g):  3.578E-33
```

```
'Pu-238 Group 6'
-----------------------------------------------------------
GAUSSIAN QUADRATURE SOLUTION
MODEL OPTIONS
IMODE: 3
KFLAG: 1 (0)CONC VS TIME; (1)PEAK CONC AND LIMITING SOIL CONC
IMODEL:1 (1) SURF OR BURIED SOURCE; (2)POND SOURCE; (3) TABULATED SOURCE FUNCTION
>>> INPUT DATA
***********************************************************
NUMBER OF RADIOACTIVE PROGENY                        0
LENGTH OF SOURCE PARALLEL TO GW FLOW (m)             2.18E+01
WIDTH OF SOURCE PERPENDICULAR TO GW FLOW (m)         2.18E+01
THICKNESS OF SOURCE (m)                              3.05E+00
PERCOLATION RATE (darcy vel m/y)                     1.00E-01
VOLUMETRIC WATER CONTENT IN SOURCE                   4.10E-01
VOLUMETRIC WATER CONTENT IN UNSATURATED ZONE         4.10E-01
BULK DENSITY AT SOURCE  (g/cm**3)                    1.50E+00
SORPTION COEFFICIENT AT SOURCE (ml/g)                1.50E+03
BULK DENSITY IN UNSAT ZONE (g/cm**3)                 1.90E+00
UNSATURATED ZONE THICKNESS (m)                       5.80E+00
SORPTION COEFFICIENT IN UNSAT ZONE (ml/g)            1.50E+02
OPTIONAL LOSS RATE CONSTANT FOR SOURCE (y**-1) 0.00E+00
INITIAL MASS OR ACTIVITY (mg or Ci)                  1.13E-06
MOLECULAR WEIGHT (g/mole)                            1.00E+00
SOLUBILITY LIMIT (mg/L)                              1.00E+06
HALF-LIFE(S) OF CONTAMINANT AND PROGENY (y)          1.00E+38
BULK DENSITY OF AQUIFER (g/cm**3)                    1.90E+00
POROSITY OF AQUIFER                                  1.00E-01
SORPTION COEFFICIENT(S) IN AQUIFER (ml/g)            1.50E+02
DISPERSIVITY X DIRECTION (m)                         9.00E+00
DISPERSIVITY Y DIRECTION (m)                         4.00E+00
PORE VELOCITY  (m/y)                                 5.70E+02
WELL SCREEN THICKNESS (m)                            1.50E+01
DISTANCE TO RECEPTOR ALONG X AXIS        (m)         1.09E+01
DISTANCE TO RECEPTOR ALONG Y AXIS        (m)         0.00E+00
LIMITING RADIONUCLIDE GW CONCENTRATION (Ci/L)  6.00E-03
UNITS OF CONTAMINANT                                 Ci
-----------------------------------------------------------
LIMITING SOIL CONCENTRATION CALCULATION
>>> INITIAL ACTIVITY CONVERTED TO MASS (mg)   3.16E+29
>>> VALUES CALCULATED IN SOURCE SUBROUTINE
******************************************************
LEACH RATE CONSTANT (1/y)                  1.4569E-05
UNSATURATED PORE VELOCITY (m/y)            2.4390E-01
DECAY CONSTANT(S) (1/y)                    6.9315E-39
RETARDATION FACTOR(S) (SATURATED)          2.8510E+03
RETARDATION FACTOR (UNSATURATED)           6.9612E+02
SOLUBILITY LIMITED MASS (mg)               3.2619E+15
SOLUBILITY LIMITED ACTIVITY (Ci)           1.1671E-20
TRANSIT TIME IN UNSAT ZONE (years)         1.6554E+04
FRACTION DECAYED DURING UNSAT TRANSPORT  0.0000E+00
------------------------------------------------------
>>> EXPOSURE DATA FOR LIMITING SOIL CONCENTRATION
******************************************************
INTEGRATION TIME (years)          30
BODY WEIGHT (kg)                  7.000E+01
AVERAGING TIME (days)             2.550E+04
WATER INTAKE RATE (L/d)           2.000E+00
EXPOSURE FREQUENCY (days/year)    3.500E+02
EXPOSURE DURATION (years)         3.000E+01
RADIOLOGICAL DOSE LIMIT (rem/y)   4.000E-03
CARCINOGENIC RISK CRITERIA        1.000E-04
HAZARD QUOTIENT                   1.000E+00
------------------------------------------------------
>>> RESULTS OF CALCULATIONS
******************************************************
MAXIMUM RADIONUCLIDE CONCENTRATION LIMIT CALCULATION
LIMITING PARENT GW CONCENTRATION ADJUSTED FOR PROGENY = 6.00E-03 Ci/L
MAXIMUM GW CONCENTRATION FOR MBR #1:  5.32E-19 Ci/L
AVERAGE GW CONCENTRATION FOR MBR #1:  5.32E-19 Ci/L
PEAK TIME (y):                           1.688070E+04
```

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LIMITING SOIL CONCENTRATION (Ci/m**3):    8.794E+06
LIMITING SOIL CONCENTRATION (Ci/kg):      5.863E+03
LIMITING INVENTORY IN SOIL (Ci):          1.275E+10
LIMITING INVENTORY IN SOIL (mg):          3.563E+45
SPECIFIC ACTIVITY (Ci/g):  3.578E-33
```

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'Pu-239/240 Group 6'
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GAUSSIAN QUADRATURE SOLUTION
MODEL OPTIONS
IMODE: 3
KFLAG: 1 (0)CONC VS TIME; (1)PEAK CONC AND LIMITING SOIL CONC
IMODEL:1 (1) SURF OR BURIED SOURCE; (2)POND SOURCE; (3) TABULATED SOURCE FUNCTION
>>> INPUT DATA
***********************************************************
NUMBER OF RADIOACTIVE PROGENY                    0
LENGTH OF SOURCE PARALLEL TO GW FLOW (m)         2.18E+01
WIDTH OF SOURCE PERPENDICULAR TO GW FLOW (m)     2.18E+01
THICKNESS OF SOURCE (m)                          3.05E+00
PERCOLATION RATE (darcy vel m/y)                 1.00E-01
VOLUMETRIC WATER CONTENT IN SOURCE               4.10E-01
VOLUMETRIC WATER CONTENT IN UNSATURATED ZONE     4.10E-01
BULK DENSITY AT SOURCE  (g/cm**3)                1.50E+00
SORPTION COEFFICIENT AT SOURCE (ml/g)            1.50E+03
BULK DENSITY IN UNSAT ZONE (g/cm**3)             1.90E+00
UNSATURATED ZONE THICKNESS (m)                   5.80E+00
SORPTION COEFFICIENT IN UNSAT ZONE (ml/g)        1.50E+02
OPTIONAL LOSS RATE CONSTANT FOR SOURCE (y**-1) 0.00E+00
INITIAL MASS OR ACTIVITY (mg or Ci)              4.98E-07
MOLECULAR WEIGHT (g/mole)                        1.00E+00
SOLUBILITY LIMIT (mg/L)                          1.00E+06
HALF-LIFE(S) OF CONTAMINANT AND PROGENY (y)      1.00E+38
BULK DENSITY OF AQUIFER (g/cm**3)                1.90E+00
POROSITY OF AQUIFER                              1.00E-01
SORPTION COEFFICIENT(S) IN AQUIFER (ml/g)        1.50E+02
DISPERSIVITY X DIRECTION (m)                     9.00E+00
DISPERSIVITY Y DIRECTION (m)                     4.00E+00
PORE VELOCITY  (m/y)                             5.70E+02
WELL SCREEN THICKNESS (m)                        1.50E+01
DISTANCE TO RECEPTOR ALONG X AXIS        (m)     1.09E+01
DISTANCE TO RECEPTOR ALONG Y AXIS        (m)     0.00E+00
LIMITING RADIONUCLIDE GW CONCENTRATION (Ci/L)  6.00E-03
UNITS OF CONTAMINANT                             Ci
-----------------------------------------------------------
LIMITING SOIL CONCENTRATION CALCULATION
>>> INITIAL ACTIVITY CONVERTED TO MASS (mg)   1.39E+29
>>> VALUES CALCULATED IN SOURCE SUBROUTINE
*****************************************************
LEACH RATE CONSTANT (1/y)                   1.4569E-05
UNSATURATED PORE VELOCITY (m/y)             2.4390E-01
DECAY CONSTANT(S) (1/y)                     6.9315E-39
RETARDATION FACTOR(S) (SATURATED)           2.8510E+03
RETARDATION FACTOR (UNSATURATED)            6.9612E+02
SOLUBILITY LIMITED MASS (mg)                3.2619E+15
SOLUBILITY LIMITED ACTIVITY (Ci)            1.1671E-20
TRANSIT TIME IN UNSAT ZONE (years)          1.6554E+04
FRACTION DECAYED DURING UNSAT TRANSPORT     0.0000E+00
-----------------------------------------------------
>>> EXPOSURE DATA FOR LIMITING SOIL CONCENTRATION
*****************************************************
INTEGRATION TIME (years)           30
BODY WEIGHT (kg)                   7.000E+01
AVERAGING TIME (days)              2.550E+04
WATER INTAKE RATE (L/d)            2.000E+00
EXPOSURE FREQUENCY (days/year)     3.500E+02
EXPOSURE DURATION (years)          3.000E+01
RADIOLOGICAL DOSE LIMIT (rem/y)    4.000E-03
CARCINOGENIC RISK CRITERIA         1.000E-04
HAZARD QUOTIENT                    1.000E+00
-----------------------------------------------------
>>> RESULTS OF CALCULATIONS
*****************************************************
MAXIMUM RADIONUCLIDE CONCENTRATION LIMIT CALCULATION
LIMITING PARENT GW CONCENTRATION ADJUSTED FOR PROGENY = 6.00E-03 Ci/L
MAXIMUM GW CONCENTRATION FOR MBR #1:  2.34E-19 Ci/L
AVERAGE GW CONCENTRATION FOR MBR #1:  2.34E-19 Ci/L
PEAK TIME (y):                          1.688070E+04
```

```
LIMITING SOIL CONCENTRATION (Ci/m**3):    8.794E+06
LIMITING SOIL CONCENTRATION (Ci/kg):      5.863E+03
LIMITING INVENTORY IN SOIL (Ci):          1.275E+10
LIMITING INVENTORY IN SOIL (mg):          3.563E+45
SPECIFIC ACTIVITY (Ci/g):  3.578E-33
```

```
'Th-228 Group 6'
------------------------------------------------------------
GAUSSIAN QUADRATURE SOLUTION
MODEL OPTIONS
IMODE: 3
KFLAG: 1 (0)CONC VS TIME; (1)PEAK CONC AND LIMITING SOIL CONC
IMODEL:1 (1) SURF OR BURIED SOURCE; (2)POND SOURCE; (3) TABULATED SOURCE FUNCTION
>>> INPUT DATA
************************************************************
NUMBER OF RADIOACTIVE PROGENY                      0
LENGTH OF SOURCE PARALLEL TO GW FLOW (m)           2.18E+01
WIDTH OF SOURCE PERPENDICULAR TO GW FLOW (m)       2.18E+01
THICKNESS OF SOURCE (m)                            3.05E+00
PERCOLATION RATE (darcy vel m/y)                   1.00E-01
VOLUMETRIC WATER CONTENT IN SOURCE                 4.10E-01
VOLUMETRIC WATER CONTENT IN UNSATURATED ZONE       4.10E-01
BULK DENSITY AT SOURCE  (g/cm**3)                  1.50E+00
SORPTION COEFFICIENT AT SOURCE (ml/g)              1.00E+02
BULK DENSITY IN UNSAT ZONE (g/cm**3)               1.90E+00
UNSATURATED ZONE THICKNESS (m)                     5.80E+00
SORPTION COEFFICIENT IN UNSAT ZONE (ml/g)          1.00E+01
OPTIONAL LOSS RATE CONSTANT FOR SOURCE (y**-1) 0.00E+00
INITIAL MASS OR ACTIVITY (mg or Ci)                1.83E-04
MOLECULAR WEIGHT (g/mole)                          1.00E+00
SOLUBILITY LIMIT (mg/L)                            1.00E+06
HALF-LIFE(S) OF CONTAMINANT AND PROGENY (y)        1.00E+38
BULK DENSITY OF AQUIFER (g/cm**3)                  1.90E+00
POROSITY OF AQUIFER                                1.00E-01
SORPTION COEFFICIENT(S) IN AQUIFER (ml/g)          1.00E+01
DISPERSIVITY X DIRECTION (m)                       9.00E+00
DISPERSIVITY Y DIRECTION (m)                       4.00E+00
PORE VELOCITY  (m/y)                               5.70E+02
WELL SCREEN THICKNESS (m)                          1.50E+01
DISTANCE TO RECEPTOR ALONG X AXIS         (m)      1.09E+01
DISTANCE TO RECEPTOR ALONG Y AXIS         (m)      0.00E+00
LIMITING RADIONUCLIDE GW CONCENTRATION (Ci/L)  6.00E-03
UNITS OF CONTAMINANT                               Ci
------------------------------------------------------------
LIMITING SOIL CONCENTRATION CALCULATION
>>> INITIAL ACTIVITY CONVERTED TO MASS (mg)   5.11E+31
>>> VALUES CALCULATED IN SOURCE SUBROUTINE
*******************************************************
LEACH RATE CONSTANT (1/y)                    2.1798E-04
UNSATURATED PORE VELOCITY (m/y)              2.4390E-01
DECAY CONSTANT(S) (1/y)                      6.9315E-39
RETARDATION FACTOR(S) (SATURATED)            1.9100E+02
RETARDATION FACTOR (UNSATURATED)             4.7341E+01
SOLUBILITY LIMITED MASS (mg)                 2.1802E+14
SOLUBILITY LIMITED ACTIVITY (Ci)             7.8004E-22
TRANSIT TIME IN UNSAT ZONE (years)           1.1258E+03
FRACTION DECAYED DURING UNSAT TRANSPORT  0.0000E+00
-------------------------------------------------------
>>> EXPOSURE DATA FOR LIMITING SOIL CONCENTRATION
*******************************************************
INTEGRATION TIME (years)              30
BODY WEIGHT (kg)                      7.000E+01
AVERAGING TIME (days)                 2.550E+04
WATER INTAKE RATE (L/d)               2.000E+00
EXPOSURE FREQUENCY (days/year)        3.500E+02
EXPOSURE DURATION (years)             3.000E+01
RADIOLOGICAL DOSE LIMIT (rem/y)       4.000E-03
CARCINOGENIC RISK CRITERIA            1.000E-04
HAZARD QUOTIENT                       1.000E+00
-------------------------------------------------------
>>> RESULTS OF CALCULATIONS
*******************************************************
MAXIMUM RADIONUCLIDE CONCENTRATION LIMIT CALCULATION
LIMITING PARENT GW CONCENTRATION ADJUSTED FOR PROGENY = 6.00E-03 Ci/L
MAXIMUM GW CONCENTRATION FOR MBR #1:  1.29E-15 Ci/L
AVERAGE GW CONCENTRATION FOR MBR #1:  1.24E-15 Ci/L
PEAK TIME (y):                            1.147682E+03
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LIMITING SOIL CONCENTRATION (Ci/m**3):   6.101E+05
LIMITING SOIL CONCENTRATION (Ci/kg):     4.067E+02
LIMITING INVENTORY IN SOIL (Ci):         8.843E+08
LIMITING INVENTORY IN SOIL (mg):         2.472E+44
SPECIFIC ACTIVITY (Ci/g):  3.578E-33
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'Th-230 Group 6'
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GAUSSIAN QUADRATURE SOLUTION
MODEL OPTIONS
IMODE: 3
KFLAG: 1 (0)CONC VS TIME; (1)PEAK CONC AND LIMITING SOIL CONC
IMODEL:1 (1) SURF OR BURIED SOURCE; (2)POND SOURCE; (3) TABULATED SOURCE FUNCTION
>>> INPUT DATA
************************************************************
NUMBER OF RADIOACTIVE PROGENY                      0
LENGTH OF SOURCE PARALLEL TO GW FLOW (m)           2.18E+01
WIDTH OF SOURCE PERPENDICULAR TO GW FLOW (m)       2.18E+01
THICKNESS OF SOURCE (m)                            3.05E+00
PERCOLATION RATE (darcy vel m/y)                   1.00E-01
VOLUMETRIC WATER CONTENT IN SOURCE                 4.10E-01
VOLUMETRIC WATER CONTENT IN UNSATURATED ZONE       4.10E-01
BULK DENSITY AT SOURCE  (g/cm**3)                  1.50E+00
SORPTION COEFFICIENT AT SOURCE (ml/g)              1.00E+02
BULK DENSITY IN UNSAT ZONE (g/cm**3)               1.90E+00
UNSATURATED ZONE THICKNESS (m)                     5.80E+00
SORPTION COEFFICIENT IN UNSAT ZONE (ml/g)          1.00E+01
OPTIONAL LOSS RATE CONSTANT FOR SOURCE (y**-1)     0.00E+00
INITIAL MASS OR ACTIVITY (mg or Ci)                5.24E-06
MOLECULAR WEIGHT (g/mole)                          1.00E+00
SOLUBILITY LIMIT (mg/L)                            1.00E+06
HALF-LIFE(S) OF CONTAMINANT AND PROGENY (y)        1.00E+38
BULK DENSITY OF AQUIFER (g/cm**3)                  1.90E+00
POROSITY OF AQUIFER                                1.00E-01
SORPTION COEFFICIENT(S) IN AQUIFER (ml/g)          1.00E+01
DISPERSIVITY X DIRECTION (m)                       9.00E+00
DISPERSIVITY Y DIRECTION (m)                       4.00E+00
PORE VELOCITY  (m/y)                               5.70E+02
WELL SCREEN THICKNESS (m)                          1.50E+01
DISTANCE TO RECEPTOR ALONG X AXIS        (m)       1.09E+01
DISTANCE TO RECEPTOR ALONG Y AXIS        (m)       0.00E+00
LIMITING RADIONUCLIDE GW CONCENTRATION (Ci/L)      6.00E-03
UNITS OF CONTAMINANT                               Ci
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
LIMITING SOIL CONCENTRATION CALCULATION
>>> INITIAL ACTIVITY CONVERTED TO MASS (mg)   1.46E+30
>>> VALUES CALCULATED IN SOURCE SUBROUTINE
*******************************************************
LEACH RATE CONSTANT (1/y)                   2.1798E-04
UNSATURATED PORE VELOCITY (m/y)             2.4390E-01
DECAY CONSTANT(S) (1/y)                     6.9315E-39
RETARDATION FACTOR(S) (SATURATED)           1.9100E+02
RETARDATION FACTOR (UNSATURATED)            4.7341E+01
SOLUBILITY LIMITED MASS (mg)                2.1802E+14
SOLUBILITY LIMITED ACTIVITY (Ci)            7.8004E-22
TRANSIT TIME IN UNSAT ZONE (years)          1.1258E+03
FRACTION DECAYED DURING UNSAT TRANSPORT     0.0000E+00
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>>> EXPOSURE DATA FOR LIMITING SOIL CONCENTRATION
*******************************************************
INTEGRATION TIME (years)             30
BODY WEIGHT (kg)                     7.000E+01
AVERAGING TIME (days)                2.550E+04
WATER INTAKE RATE (L/d)              2.000E+00
EXPOSURE FREQUENCY (days/year)       3.500E+02
EXPOSURE DURATION (years)            3.000E+01
RADIOLOGICAL DOSE LIMIT (rem/y)      4.000E-03
CARCINOGENIC RISK CRITERIA           1.000E-04
HAZARD QUOTIENT                      1.000E+00
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
>>> RESULTS OF CALCULATIONS
*******************************************************
MAXIMUM RADIONUCLIDE CONCENTRATION LIMIT CALCULATION
LIMITING PARENT GW CONCENTRATION ADJUSTED FOR PROGENY = 6.00E-03 Ci/L
MAXIMUM GW CONCENTRATION FOR MBR #1:  3.69E-17 Ci/L
AVERAGE GW CONCENTRATION FOR MBR #1:  3.56E-17 Ci/L
PEAK TIME (y):                              1.147682E+03
```

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LIMITING SOIL CONCENTRATION (Ci/m**3):   6.101E+05
LIMITING SOIL CONCENTRATION (Ci/kg):     4.067E+02
LIMITING INVENTORY IN SOIL (Ci):         8.843E+08
LIMITING INVENTORY IN SOIL (mg):         2.472E+44
SPECIFIC ACTIVITY (Ci/g):  3.578E-33
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'Th-232 Group 6'
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GAUSSIAN QUADRATURE SOLUTION
MODEL OPTIONS
IMODE: 3
KFLAG: 1 (0)CONC VS TIME; (1)PEAK CONC AND LIMITING SOIL CONC
IMODEL:1 (1) SURF OR BURIED SOURCE; (2)POND SOURCE; (3) TABULATED SOURCE FUNCTION
>>> INPUT DATA
***********************************************************
NUMBER OF RADIOACTIVE PROGENY                     0
LENGTH OF SOURCE PARALLEL TO GW FLOW (m)          2.18E+01
WIDTH OF SOURCE PERPENDICULAR TO GW FLOW (m)      2.18E+01
THICKNESS OF SOURCE (m)                           3.05E+00
PERCOLATION RATE (darcy vel m/y)                  1.00E-01
VOLUMETRIC WATER CONTENT IN SOURCE                4.10E-01
VOLUMETRIC WATER CONTENT IN UNSATURATED ZONE      4.10E-01
BULK DENSITY AT SOURCE  (g/cm**3)                 1.50E+00
SORPTION COEFFICIENT AT SOURCE (ml/g)             1.00E+02
BULK DENSITY IN UNSAT ZONE (g/cm**3)              1.90E+00
UNSATURATED ZONE THICKNESS (m)                    5.80E+00
SORPTION COEFFICIENT IN UNSAT ZONE (ml/g)         1.00E+01
OPTIONAL LOSS RATE CONSTANT FOR SOURCE (y**-1) 0.00E+00
INITIAL MASS OR ACTIVITY (mg or Ci)               4.13E-06
MOLECULAR WEIGHT (g/mole)                         1.00E+00
SOLUBILITY LIMIT (mg/L)                           1.00E+06
HALF-LIFE(S) OF CONTAMINANT AND PROGENY (y)       1.00E+38
BULK DENSITY OF AQUIFER (g/cm**3)                 1.90E+00
POROSITY OF AQUIFER                               1.00E-01
SORPTION COEFFICIENT(S) IN AQUIFER (ml/g)         1.00E+01
DISPERSIVITY X DIRECTION (m)                      9.00E+00
DISPERSIVITY Y DIRECTION (m)                      4.00E+00
PORE VELOCITY  (m/y)                              5.70E+02
WELL SCREEN THICKNESS (m)                         1.50E+01
DISTANCE TO RECEPTOR ALONG X AXIS        (m)      1.09E+01
DISTANCE TO RECEPTOR ALONG Y AXIS        (m)      0.00E+00
LIMITING RADIONUCLIDE GW CONCENTRATION (Ci/L)  6.00E-03
UNITS OF CONTAMINANT                              Ci
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
LIMITING SOIL CONCENTRATION CALCULATION
>>> INITIAL ACTIVITY CONVERTED TO MASS (mg)   1.15E+30
>>> VALUES CALCULATED IN SOURCE SUBROUTINE
*****************************************************
LEACH RATE CONSTANT (1/y)                   2.1798E-04
UNSATURATED PORE VELOCITY (m/y)             2.4390E-01
DECAY CONSTANT(S) (1/y)                     6.9315E-39
RETARDATION FACTOR(S) (SATURATED)           1.9100E+02
RETARDATION FACTOR (UNSATURATED)            4.7341E+01
SOLUBILITY LIMITED MASS (mg)                2.1802E+14
SOLUBILITY LIMITED ACTIVITY (Ci)            7.8004E-22
TRANSIT TIME IN UNSAT ZONE (years)          1.1258E+03
FRACTION DECAYED DURING UNSAT TRANSPORT     0.0000E+00
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
>>> EXPOSURE DATA FOR LIMITING SOIL CONCENTRATION
*****************************************************
INTEGRATION TIME (years)           30
BODY WEIGHT (kg)                   7.000E+01
AVERAGING TIME (days)              2.550E+04
WATER INTAKE RATE (L/d)            2.000E+00
EXPOSURE FREQUENCY (days/year)     3.500E+02
EXPOSURE DURATION (years)          3.000E+01
RADIOLOGICAL DOSE LIMIT (rem/y)    4.000E-03
CARCINOGENIC RISK CRITERIA         1.000E-04
HAZARD QUOTIENT                    1.000E+00
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
>>> RESULTS OF CALCULATIONS
*****************************************************
MAXIMUM RADIONUCLIDE CONCENTRATION LIMIT CALCULATION
LIMITING PARENT GW CONCENTRATION ADJUSTED FOR PROGENY = 6.00E-03 Ci/L
MAXIMUM GW CONCENTRATION FOR MBR #1:  2.91E-17 Ci/L
AVERAGE GW CONCENTRATION FOR MBR #1:  2.80E-17 Ci/L
PEAK TIME (y):                              1.147682E+03
```

```
LIMITING SOIL CONCENTRATION (Ci/m**3):   6.101E+05
LIMITING SOIL CONCENTRATION (Ci/kg):     4.067E+02
LIMITING INVENTORY IN SOIL (Ci):         8.843E+08
LIMITING INVENTORY IN SOIL (mg):         2.472E+44
SPECIFIC ACTIVITY (Ci/g):  3.578E-33
```

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'U-234 Group 6'
-----------------------------------------------------------
GAUSSIAN QUADRATURE SOLUTION
MODEL OPTIONS
IMODE: 3
KFLAG: 1 (0)CONC VS TIME; (1)PEAK CONC AND LIMITING SOIL CONC
IMODEL:1 (1) SURF OR BURIED SOURCE; (2)POND SOURCE; (3) TABULATED SOURCE FUNCTION
>>> INPUT DATA
***********************************************************
NUMBER OF RADIOACTIVE PROGENY                    0
LENGTH OF SOURCE PARALLEL TO GW FLOW (m)         2.18E+01
WIDTH OF SOURCE PERPENDICULAR TO GW FLOW (m)     2.18E+01
THICKNESS OF SOURCE (m)                          3.05E+00
PERCOLATION RATE (darcy vel m/y)                 1.00E-01
VOLUMETRIC WATER CONTENT IN SOURCE               4.10E-01
VOLUMETRIC WATER CONTENT IN UNSATURATED ZONE     4.10E-01
BULK DENSITY AT SOURCE  (g/cm**3)                1.50E+00
SORPTION COEFFICIENT AT SOURCE (ml/g)            6.00E+00
BULK DENSITY IN UNSAT ZONE (g/cm**3)             1.90E+00
UNSATURATED ZONE THICKNESS (m)                   5.80E+00
SORPTION COEFFICIENT IN UNSAT ZONE (ml/g)        6.00E-01
OPTIONAL LOSS RATE CONSTANT FOR SOURCE (y**-1)   0.00E+00
INITIAL MASS OR ACTIVITY (mg or Ci)              5.26E-06
MOLECULAR WEIGHT (g/mole)                        1.00E+00
SOLUBILITY LIMIT (mg/L)                          1.00E+06
HALF-LIFE(S) OF CONTAMINANT AND PROGENY (y)      1.00E+38
BULK DENSITY OF AQUIFER (g/cm**3)                1.90E+00
POROSITY OF AQUIFER                              1.00E-01
SORPTION COEFFICIENT(S) IN AQUIFER (ml/g)        6.00E-01
DISPERSIVITY X DIRECTION (m)                     9.00E+00
DISPERSIVITY Y DIRECTION (m)                     4.00E+00
PORE VELOCITY  (m/y)                             5.70E+02
WELL SCREEN THICKNESS (m)                        1.50E+01
DISTANCE TO RECEPTOR ALONG X AXIS        (m)     1.09E+01
DISTANCE TO RECEPTOR ALONG Y AXIS        (m)     0.00E+00
LIMITING RADIONUCLIDE GW CONCENTRATION (Ci/L)    6.00E-03
UNITS OF CONTAMINANT                             Ci
-----------------------------------------------------------
LIMITING SOIL CONCENTRATION CALCULATION
>>> INITIAL ACTIVITY CONVERTED TO MASS (mg)   1.47E+30
>>> VALUES CALCULATED IN SOURCE SUBROUTINE
*****************************************************
LEACH RATE CONSTANT (1/y)                 3.4843E-03
UNSATURATED PORE VELOCITY (m/y)           2.4390E-01
DECAY CONSTANT(S) (1/y)                   6.9315E-39
RETARDATION FACTOR(S) (SATURATED)         1.2400E+01
RETARDATION FACTOR (UNSATURATED)          3.7805E+00
SOLUBILITY LIMITED MASS (mg)              1.3640E+13
SOLUBILITY LIMITED ACTIVITY (Ci)          4.8801E-23
TRANSIT TIME IN UNSAT ZONE (years)        8.9900E+01
FRACTION DECAYED DURING UNSAT TRANSPORT   0.0000E+00
-----------------------------------------------------
>>> EXPOSURE DATA FOR LIMITING SOIL CONCENTRATION
*****************************************************
INTEGRATION TIME (years)            30
BODY WEIGHT (kg)                    7.000E+01
AVERAGING TIME (days)               2.550E+04
WATER INTAKE RATE (L/d)             2.000E+00
EXPOSURE FREQUENCY (days/year)      3.500E+02
EXPOSURE DURATION (years)           3.000E+01
RADIOLOGICAL DOSE LIMIT (rem/y)     4.000E-03
CARCINOGENIC RISK CRITERIA          1.000E-04
HAZARD QUOTIENT                     1.000E+00
-----------------------------------------------------
>>> RESULTS OF CALCULATIONS
*****************************************************
MAXIMUM RADIONUCLIDE CONCENTRATION LIMIT CALCULATION
LIMITING PARENT GW CONCENTRATION ADJUSTED FOR PROGENY = 6.00E-03 Ci/L
MAXIMUM GW CONCENTRATION FOR MBR #1:  5.92E-16 Ci/L
AVERAGE GW CONCENTRATION FOR MBR #1:  5.86E-16 Ci/L
PEAK TIME (y):                          9.132189E+01
```

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LIMITING SOIL CONCENTRATION (Ci/m**3):   3.715E+04
LIMITING SOIL CONCENTRATION (Ci/kg):     2.477E+01
LIMITING INVENTORY IN SOIL (Ci):         5.385E+07
LIMITING INVENTORY IN SOIL (mg):         1.505E+43
SPECIFIC ACTIVITY (Ci/g):  3.578E-33
```

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'U-235 Group 6'
-----------------------------------------------------------
GAUSSIAN QUADRATURE SOLUTION
MODEL OPTIONS
IMODE: 3
KFLAG: 1 (0)CONC VS TIME; (1)PEAK CONC AND LIMITING SOIL CONC
IMODEL:1 (1) SURF OR BURIED SOURCE; (2)POND SOURCE; (3) TABULATED SOURCE FUNCTION
>>> INPUT DATA
*********************************************************
NUMBER OF RADIOACTIVE PROGENY                    0
LENGTH OF SOURCE PARALLEL TO GW FLOW (m)         2.18E+01
WIDTH OF SOURCE PERPENDICULAR TO GW FLOW (m)     2.18E+01
THICKNESS OF SOURCE (m)                          3.05E+00
PERCOLATION RATE (darcy vel m/y)                 1.00E-01
VOLUMETRIC WATER CONTENT IN SOURCE               4.10E-01
VOLUMETRIC WATER CONTENT IN UNSATURATED ZONE     4.10E-01
BULK DENSITY AT SOURCE  (g/cm**3)                1.50E+00
SORPTION COEFFICIENT AT SOURCE (ml/g)            6.00E+00
BULK DENSITY IN UNSAT ZONE (g/cm**3)             1.90E+00
UNSATURATED ZONE THICKNESS (m)                   5.80E+00
SORPTION COEFFICIENT IN UNSAT ZONE (ml/g)        6.00E-01
OPTIONAL LOSS RATE CONSTANT FOR SOURCE (y**-1)   0.00E+00
INITIAL MASS OR ACTIVITY (mg or Ci)              1.44E-07
MOLECULAR WEIGHT (g/mole)                        1.00E+00
SOLUBILITY LIMIT (mg/L)                          1.00E+06
HALF-LIFE(S) OF CONTAMINANT AND PROGENY (y)      1.00E+38
BULK DENSITY OF AQUIFER (g/cm**3)                1.90E+00
POROSITY OF AQUIFER                              1.00E-01
SORPTION COEFFICIENT(S) IN AQUIFER (ml/g)        6.00E-01
DISPERSIVITY X DIRECTION (m)                     9.00E+00
DISPERSIVITY Y DIRECTION (m)                     4.00E+00
PORE VELOCITY  (m/y)                             5.70E+02
WELL SCREEN THICKNESS (m)                        1.50E+01
DISTANCE TO RECEPTOR ALONG X AXIS        (m)     1.09E+01
DISTANCE TO RECEPTOR ALONG Y AXIS        (m)     0.00E+00
LIMITING RADIONUCLIDE GW CONCENTRATION (Ci/L)    6.00E-03
UNITS OF CONTAMINANT                             Ci
-------------------------------------------------------------
LIMITING SOIL CONCENTRATION CALCULATION
>>> INITIAL ACTIVITY CONVERTED TO MASS (mg)   4.02E+28
>>> VALUES CALCULATED IN SOURCE SUBROUTINE
*****************************************************
LEACH RATE CONSTANT (1/y)                 3.4843E-03
UNSATURATED PORE VELOCITY (m/y)           2.4390E-01
DECAY CONSTANT(S) (1/y)                   6.9315E-39
RETARDATION FACTOR(S) (SATURATED)         1.2400E+01
RETARDATION FACTOR (UNSATURATED)          3.7805E+00
SOLUBILITY LIMITED MASS (mg)              1.3640E+13
SOLUBILITY LIMITED ACTIVITY (Ci)          4.8801E-23
TRANSIT TIME IN UNSAT ZONE (years)        8.9900E+01
FRACTION DECAYED DURING UNSAT TRANSPORT   0.0000E+00
-----------------------------------------------------------
>>> EXPOSURE DATA FOR LIMITING SOIL CONCENTRATION
*****************************************************
INTEGRATION TIME (years)            30
BODY WEIGHT (kg)                    7.000E+01
AVERAGING TIME (days)               2.550E+04
WATER INTAKE RATE (L/d)             2.000E+00
EXPOSURE FREQUENCY (days/year)      3.500E+02
EXPOSURE DURATION (years)           3.000E+01
RADIOLOGICAL DOSE LIMIT (rem/y)     4.000E-03
CARCINOGENIC RISK CRITERIA          1.000E-04
HAZARD QUOTIENT                     1.000E+00
-----------------------------------------------------------
>>> RESULTS OF CALCULATIONS
*****************************************************
MAXIMUM RADIONUCLIDE CONCENTRATION LIMIT CALCULATION
LIMITING PARENT GW CONCENTRATION ADJUSTED FOR PROGENY = 6.00E-03 Ci/L
MAXIMUM GW CONCENTRATION FOR MBR #1:  1.62E-17 Ci/L
AVERAGE GW CONCENTRATION FOR MBR #1:  1.60E-17 Ci/L
PEAK TIME (y):                          9.132189E+01
```

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LIMITING SOIL CONCENTRATION (Ci/m**3):   3.715E+04
LIMITING SOIL CONCENTRATION (Ci/kg):     2.477E+01
LIMITING INVENTORY IN SOIL (Ci):         5.385E+07
LIMITING INVENTORY IN SOIL (mg):         1.505E+43
SPECIFIC ACTIVITY (Ci/g):  3.578E-33
```

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'U-238 Group 6'
-----------------------------------------------------------
GAUSSIAN QUADRATURE SOLUTION
MODEL OPTIONS
IMODE: 3
KFLAG: 1 (0)CONC VS TIME; (1)PEAK CONC AND LIMITING SOIL CONC
IMODEL:1 (1) SURF OR BURIED SOURCE; (2)POND SOURCE; (3) TABULATED SOURCE FUNCTION
>>> INPUT DATA
***********************************************************
NUMBER OF RADIOACTIVE PROGENY                   0
LENGTH OF SOURCE PARALLEL TO GW FLOW (m)        2.18E+01
WIDTH OF SOURCE PERPENDICULAR TO GW FLOW (m)    2.18E+01
THICKNESS OF SOURCE (m)                         3.05E+00
PERCOLATION RATE (darcy vel m/y)                1.00E-01
VOLUMETRIC WATER CONTENT IN SOURCE              4.10E-01
VOLUMETRIC WATER CONTENT IN UNSATURATED ZONE    4.10E-01
BULK DENSITY AT SOURCE  (g/cm**3)               1.50E+00
SORPTION COEFFICIENT AT SOURCE (ml/g)           6.00E+00
BULK DENSITY IN UNSAT ZONE (g/cm**3)            1.90E+00
UNSATURATED ZONE THICKNESS (m)                  5.80E+00
SORPTION COEFFICIENT IN UNSAT ZONE (ml/g)       6.00E-01
OPTIONAL LOSS RATE CONSTANT FOR SOURCE (y**-1) 0.00E+00
INITIAL MASS OR ACTIVITY (mg or Ci)             3.56E-06
MOLECULAR WEIGHT (g/mole)                       1.00E+00
SOLUBILITY LIMIT (mg/L)                         1.00E+06
HALF-LIFE(S) OF CONTAMINANT AND PROGENY (y)     1.00E+38
BULK DENSITY OF AQUIFER (g/cm**3)               1.90E+00
POROSITY OF AQUIFER                             1.00E-01
SORPTION COEFFICIENT(S) IN AQUIFER (ml/g)       6.00E-01
DISPERSIVITY X DIRECTION (m)                    9.00E+00
DISPERSIVITY Y DIRECTION (m)                    4.00E+00
PORE VELOCITY  (m/y)                            5.70E+02
WELL SCREEN THICKNESS (m)                       1.50E+01
DISTANCE TO RECEPTOR ALONG X AXIS        (m)    1.09E+01
DISTANCE TO RECEPTOR ALONG Y AXIS        (m)    0.00E+00
LIMITING RADIONUCLIDE GW CONCENTRATION (Ci/L)   6.00E-03
UNITS OF CONTAMINANT                            Ci
-----------------------------------------------------------
LIMITING SOIL CONCENTRATION CALCULATION
>>> INITIAL ACTIVITY CONVERTED TO MASS (mg)    9.95E+29
>>> VALUES CALCULATED IN SOURCE SUBROUTINE
*****************************************************
LEACH RATE CONSTANT (1/y)                   3.4843E-03
UNSATURATED PORE VELOCITY (m/y)             2.4390E-01
DECAY CONSTANT(S) (1/y)                     6.9315E-39
RETARDATION FACTOR(S) (SATURATED)           1.2400E+01
RETARDATION FACTOR (UNSATURATED)            3.7805E+00
SOLUBILITY LIMITED MASS (mg)                1.3640E+13
SOLUBILITY LIMITED ACTIVITY (Ci)            4.8801E-23
TRANSIT TIME IN UNSAT ZONE (years)          8.9900E+01
FRACTION DECAYED DURING UNSAT TRANSPORT     0.0000E+00
-----------------------------------------------------
>>> EXPOSURE DATA FOR LIMITING SOIL CONCENTRATION
*****************************************************
INTEGRATION TIME (years)             30
BODY WEIGHT (kg)                     7.000E+01
AVERAGING TIME (days)                2.550E+04
WATER INTAKE RATE (L/d)              2.000E+00
EXPOSURE FREQUENCY (days/year)       3.500E+02
EXPOSURE DURATION (years)            3.000E+01
RADIOLOGICAL DOSE LIMIT (rem/y)      4.000E-03
CARCINOGENIC RISK CRITERIA           1.000E-04
HAZARD QUOTIENT                      1.000E+00
-----------------------------------------------------
>>> RESULTS OF CALCULATIONS
*****************************************************
MAXIMUM RADIONUCLIDE CONCENTRATION LIMIT CALCULATION
LIMITING PARENT GW CONCENTRATION ADJUSTED FOR PROGENY = 6.00E-03 Ci/L
MAXIMUM GW CONCENTRATION FOR MBR #1:  4.01E-16 Ci/L
AVERAGE GW CONCENTRATION FOR MBR #1:  3.97E-16 Ci/L
PEAK TIME (y):                              9.132189E+01
```

```
LIMITING SOIL CONCENTRATION (Ci/m**3):    3.715E+04
LIMITING SOIL CONCENTRATION (Ci/kg):      2.477E+01
LIMITING INVENTORY IN SOIL (Ci):          5.385E+07
LIMITING INVENTORY IN SOIL (mg):          1.505E+43
SPECIFIC ACTIVITY (Ci/g):  3.578E-33
```