RISK ASSESSMENT SPREADSHEET (PAGE 1)

SITE NAME:	JACK'S CREEK	FILENAME:	DERSOA92.WK1
LOCATION:	MIFFLIN, PA	VERSION:	2
DATE:	04/13/93	PATH:	C:\RJL\JC\

EXPOSURE ROUTE: DERMAL CONTACT
MEDIA: SOIL -- UNCONFINED SCRAP YARD AREA
RECEPTOR: ADULT TRESPASSER
CONCENTRATION: 95% UCL OF THE MEAN

ADDTIONAL COMMENTS: THIS SPREADSHEET CALCULATES INCREMENTAL CANCER RISK AND THE HAZARD INDEX FOR AN INDIVIDUAL EXPOSED TO CONTAMINANTS THROUGH DERMAL CONTACT WITH CONTAMINATED SOIL.
THE SOURCES OF CONTAMINATED SOIL ARE ASSUMED TO BE IN UNCONFINED SCRAP YARDAREA IN THIS SCENARIO.

RELEVANT EQUATION: DERMALLY ABSORBED DOSE (MG/KG-DAY) = (CS*AF*ABS*EF*ED*SA*CF) / (BW*AT)

		INPUT VALUE
WHERE: SA	= SKIN SURFACE AREA FOR CONTACT (CM2)	3120
AF	= ADHERENCE FACTOR FOR SOIL TO SKIN (MG/CM2/EVENT)	1.0
ABS	= ABSORPTION FACTOR (SEE PAGE 2)	
EF	= EXPOSURE FREQUENCY (EVENTS/YEAR)	12
ED	= EXPOSURE DURATION (YEARS)	30
BW	= BODY WEIGHT (KG)	70
AT	= AVERAGING TIME (SEE BELOW)	
CF	= CONVERSION FACTOR (KG/MG)	1.0E-06
CS	= CONTAMINANT CONCENTRATION IN SOIL (MG/KG) (SEE PAGE 2 FOR SITE-SPECIFIC DATA)	

DETERMINE AVERAGING TIME

AVERAGING TIME FOR FOR NONCARCINOGENS (i.e., ED*365 DAYS / YEAR):	1.0950E+04
AVERAGING TIME FOR CARCINOGENS (i.e., 70 YEARS*365 DAYS/YEAR):	2.5550E+04

RISK ASSESSMENT SPREADSHEET
SITE NAME: JACK'S CREEK
LOCATION: MIFFLIN, PA

EXPOSURE ROUTE: DERMAL CONTACT
MEDIA: SOIL -- UNCONFINED SCRAP YARD AREA

RECEPTOR: ADULT TRESPASSER
CONCENTRATION: 95% UCL OF THE MEAN

FILENAME: DERSOA92.WK1

CALCULATE INTAKES:

CHEMICAL	CONCENTRATION IN SOIL (MG/KG)	ABSORPTION FACTOR	ABSORBED DOSE (MG/KG)	NONCARCINOGENIC TIME-WEIGHTED AVERAGE ABSORBED DOSE (MG/KG/DAY)	CARCINOGENIC TIME-WEIGHTED AVERAGE ABSORBED DOSE (MG/KG/DAY)
CADMIUM	56.100	0.01	9.0016E-03	8.2207E-07	3.5231E-07
POLYCHLORINATED BIPHENYLS	0.008	0.06	7.7019E-06	7.0337E-10	3.0145E-10
DIOXIN	0.000034	0.03	1.6367E-08	1.4947E-12	6.4057E-13

RISK ASSESSMENT SPREADSHEET
SITE NAME: JACK'S CREEK
LOCATION: MIFFLIN, PA

EXPOSURE ROUTE: DERMAL CONTACT
MEDIA: SOIL -- UNCONFINED SCRAP YARD AREA

RECEPTOR: ADULT TRESPASSER
CONCENTRATION: 95% UCL OF THE MEAN

FILENAME: DERSOA92.WK1

DETERMINE HAZARD INDICIES AND CANCER RISK:

CHEMICAL	ORAL RfD (MG/KG/DAY)	ORAL SLOPE FACTOR (KG-DAY/MG)	HAZARD INDEX	CANCER RISK LIFETIME
CADMIUM	5.00E-04		1.6441E-03	
POLYCHLORINATED BIPHENYLS		7.70E+00		2.3211E-09
DIOXIN		1.50E+05		9.6086E-08
TOTAL			1.64E-03	9.84E-08

RISK ASSESSMENT SPREADSHEET

SITE NAME:	JACK'S CREEK	FILENAME:	DERSOC92.WK1
LOCATION:	MIFFLIN, PA	VERSION:	2
DATE:	04/13/93	PATH:	C:\RJL\JC\

EXPOSURE ROUTE: DERMAL CONTACT
MEDIA: SOIL -- UNCONFINED SCRAP YARD AREA
RECEPTOR: CHILD TRESPASSER
CONCENTRATION: 95% UCL OF THE MEAN

ADDTIONAL COMMENTS: THIS SPREADSHEET CALCULATES INCREMENTAL CANCER RISK AND THE HAZARD INDEX FOR AN INDIVIDUAL EXPOSED TO COMTAMINANTS THROUGH DERMAL CONTACT WITH CONTAMINATED SOIL.
THE SOURCES OF CONTAMINATED SOIL ARE ASSUMED TO BE IN UNCONFINED SCRAP YARDAREA IN THIS SCENARIO.

RELEVANT EQUATION: DERMALLY ABSORBED DOSE (MG/KG-DAY) = (CS*AF*ABS*EF*ED*SA*CF) / (BW*AT)

		INPUT VALUE
WHERE: SA	= SKIN SURFACE AREA FOR CONTACT (CM2)	5000
AF	= ADHERENCE FACTOR FOR SOIL TO SKIN (MG/CM2/EVENT)	1.0
ABS	= ABSORPTION FACTOR (SEE PAGE 2)	
EF	= EXPOSURE FREQUENCY (EVENTS/YEAR)	12
ED	= EXPOSURE DURATION (YEARS)	6
BW	= BODY WEIGHT (KG)	30
AT	= AVERAGING TIME (SEE BELOW)	
CF	= CONVERSION FACTOR (KG/MG)	1.0E-06
CS	= CONTAMINANT CONCENTRATION IN SOIL (MG/KG) (SEE PAGE 2 FOR SITE-SPECIFIC DATA)	

DETERMINE AVERAGING TIME

AVERAGING TIME FOR FOR NONCARCINOGENS (i.e., ED*365 DAYS / YEAR):	2.1900E+03
AVERAGING TIME FOR CARCINOGENS (i.e., 70 YEARS*365 DAYS/YEAR):	2.5550E+04

RISK ASSESSMENT SPREADSHEET
SITE NAME: JACK'S CREEK
LOCATION: MIFFLIN, PA

EXPOSURE ROUTE: DERMAL CONTACT
MEDIA: SOIL -- UNCONFINED SCRAP YARD AREA

RECEPTOR: CHILD TRESPASSER
CONCENTRATION: 95% UCL OF THE MEAN

FILENAME: DERSOC92.WK1

CALCULATE INTAKES:

CHEMICAL	CONCENTRATION IN SOIL (MG/KG)	ABSORPTION FACTOR	ABSORBED DOSE (MG/KG)	NONCARCINOGENIC TIME-WEIGHTED AVERAGE ABSORBED DOSE (MG/KG/DAY)	CARCINOGENIC TIME-WEIGHTED AVERAGE ABSORBED DOSE (MG/KG/DAY)
CADMIUM	56.100	0.01	6.7320E-03	3.0740E-06	2.6348E-07
POLYCHLORINATED BIPHENYLS	0.008	0.06	5.7600E-06	2.6301E-09	2.2544E-10
DIOXIN	0.000034	0.03	1.2240E-08	5.5890E-12	4.7906E-13

RISK ASSESSMENT SPREADSHEET (PAGE 3)

SITE NAME: JACK'S CREEK EXPOSURE ROUTE: DERMAL CONTACT RECEPTOR: CHILD TRESPASSER FILENAME: DERSOC92.WK1

LOCATION: MIFFLIN, PA MEDIA: SOIL -- UNCONFINED SCRAP YARD AREA CONCENTRATION: 95% UCL OF THE MEAN

DETERMINE HAZARD INDICIES AND CANCER RISK:

CHEMICAL	ORAL RfD (MG/KG/DAY)	ORAL SLOPE FACTOR (KG-DAY/MG)	HAZARD INDEX	CANCER RISK LIFETIME
CADMIUM	5.00E-04		6.1479E-03	
POLYCHLORINATED BIPHENYLS		7.70E+00		1.7359E-09
DIOXIN		1.50E+05		7.1859E-08
TOTAL			6.15E-03	7.36E-08

RISK ASSESSMENT SPREADSHEET

SITE NAME: JACK'S CREEK
LOCATION: MIFFLIN, PA
DATE: 04/13/93

FILENAME: DERSOA93.WK1
VERSION: 3
PATH: C:\RJL\JC\

EXPOSURE ROUTE: DERMAL CONTACT
MEDIA: SOIL -- UNCONFINED AREA
RECEPTOR: ADULT
CONCENTRATION: 95% UCL OF THE MEAN

ADDTIONAL COMMENTS: THIS SPREADSHEET CALCULATES INCREMENTAL CANCER RISK AND THE HAZARD INDEX FOR AN INDIVIDUAL EXPOSED TO CONTAMINANTS THROUGH DERMAL CONTACT WITH CONTAMINATED SOIL.
THE SOURCES OF CONTAMINATED SOIL ARE ASSUMED TO BE IN UNCONFINED AREA IN THIS SCENARIO.

RELEVANT EQUATION: DERMALLY ABSORBED DOSE (MG/KG-DAY) = (CS*AF*ABS*EF*ED*SA*CF) / (BW*AT)

		INPUT VALUE
WHERE: SA	= SKIN SURFACE AREA FOR CONTACT (CM2)	3120
AF	= ADHERENCE FACTOR FOR SOIL TO SKIN (MG/CM2/EVENT)	1.0
ABS	= ABSORPTION FACTOR (SEE PAGE 2)	
EF	= EXPOSURE FREQUENCY (EVENTS/YEAR)	50
ED	= EXPOSURE DURATION (YEARS)	30
BW	= BODY WEIGHT (KG)	70
AT	= AVERAGING TIME (SEE BELOW)	
CF	= CONVERSION FACTOR (KG/MG)	1.0E-06
CS	= CONTAMINANT CONCENTRATION IN SOIL (MG/KG) (SEE PAGE 2 FOR SITE-SPECIFIC DATA)	

DETERMINE AVERAGING TIME

AVERAGING TIME FOR FOR NONCARCINOGENS (i.e., ED*365 DAYS / YEAR):	1.0950E+04
AVERAGING TIME FOR CARCINOGENS (i.e., 70 YEARS*365 DAYS/YEAR):	2.5550E+04

RISK ASSESSMENT SPREADSHEET
SITE NAME: JACK'S CREEK
LOCATION: MIFFLIN, PA

EXPOSURE ROUTE: DERMAL CONTACT
MEDIA: SOIL -- UNCONFINED AREA

RECEPTOR: ADULT
CONCENTRATION: 95% UCL OF THE MEAN

FILENAME: DERSOA93.WK1

CALCULATE INTAKES:

CHEMICAL	CONCENTRATION IN SOIL (MG/KG)	ABSORPTION FACTOR	ABSORBED DOSE (MG/KG)	NONCARCINOGENIC TIME-WEIGHTED AVERAGE ABSORBED DOSE (MG/KG/DAY)	CARCINOGENIC TIME-WEIGHTED AVERAGE ABSORBED DOSE (MG/KG/DAY)
CADMIUM	64.500	0.01	4.3123E-02	3.9382E-06	1.6878E-06
DIOXIN	0.002	0.03	3.8109E-06	3.4802E-10	1.4915E-10

RISK ASSESSMENT SPREADSHEET
SITE NAME: JACK'S CREEK
LOCATION: MIFFLIN, PA

EXPOSURE ROUTE: DERMAL CONTACT
MEDIA: SOIL -- UNCONFINED AREA

RECEPTOR: ADULT
CONCENTRATION: 95% UCL OF THE MEAN

FILENAME: DERSOA93.WK1

DETERMINE HAZARD INDICIES AND CANCER RISK:

CHEMICAL	ORAL RfD (MG/KG/DAY)	ORAL SLOPE FACTOR (KG-DAY/MG)	HAZARD INDEX	CANCER RISK LIFETIME
CADMIUM	5.00E-04		7.8763E-03	
DIOXIN		1.50E+05		2.2373E-05
TOTAL			7.88E-03	2.24E-05

RISK ASSESSMENT SPREADSHEET

SITE NAME: JACK'S CREEK
LOCATION: MIFFLIN, PA
DATE: 04/13/93

FILENAME: DERSOC93.WK1
VERSION: 3
PATH: C:\RJL\JC\

EXPOSURE ROUTE: DERMAL CONTACT
MEDIA: SOIL -- UNCONFINED AREA
RECEPTOR: CHILD
CONCENTRATION: 95% UCL OF THE MEAN

ADDTIONAL COMMENTS: THIS SPREADSHEET CALCULATES INCREMENTAL CANCER RISK AND THE HAZARD INDEX FOR AN INDIVIDUAL EXPOSED TO CONTAMINANTS THROUGH DERMAL CONTACT WITH CONTAMINATED SOIL.
THE SOURCES OF CONTAMINATED SOIL ARE ASSUMED TO BE IN UNCONFINED AREA IN THIS SCENARIO.

RELEVANT EQUATION: DERMALLY ABSORBED DOSE (MG/KG-DAY) = (CS*AF*ABS*EF*ED*SA*CF) / (BW*AT)

		INPUT VALUE
WHERE: SA	= SKIN SURFACE AREA FOR CONTACT (CM2)	5000
AF	= ADHERENCE FACTOR FOR SOIL TO SKIN (MG/CM2/EVENT)	1.0
ABS	= ABSORPTION FACTOR (SEE PAGE 2)	200
EF	= EXPOSURE FREQUENCY (EVENTS/YEAR)	6
ED	= EXPOSURE DURATION (YEARS)	30
BW	= BODY WEIGHT (KG)	1.0E-06
AT	= AVERAGING TIME (SEE BELOW)	
CF	= CONVERSION FACTOR (KG/MG)	
CS	= CONTAMINANT CONCENTRATION IN SOIL (MG/KG) (SEE PAGE 2 FOR SITE-SPECIFIC DATA)	

DETERMINE AVERAGING TIME

AVERAGING TIME FOR FOR NONCARCINOGENS (i.e., ED*365 DAYS / YEAR):	2.1900E+03
AVERAGING TIME FOR CARCINOGENS (i.e., 70 YEARS*365 DAYS/YEAR):	2.5550E+04

RISK ASSESSMENT SPREADSHEET
SITE NAME: JACK'S CREEK
LOCATION: MIFFLIN, PA

EXPOSURE ROUTE: DERMAL CONTACT
MEDIA: SOIL -- UNCONFINED AREA

RECEPTOR: CHILD
CONCENTRATION: 95% UCL OF THE MEAN

FILENAME: DERSOC93.WK1

CALCULATE INTAKES:

CHEMICAL	CONCENTRATION IN SOIL (MG/KG)	ABSORPTION FACTOR	ABSORBED DOSE (MG/KG)	NONCARCINOGENIC TIME-WEIGHTED AVERAGE ABSORBED DOSE (MG/KG/DAY)	CARCINOGENIC TIME-WEIGHTED AVERAGE ABSORBED DOSE (MG/KG/DAY)
CADMIUM	64.500	0.01	1.2900E-01	5.8904E-05	5.0489E-06
DIOXIN	0.002	0.03	1.1400E-05	5.2055E-09	4.4618E-10

RISK ASSESSMENT SPREADSHEET
SITE NAME: JACK'S CREEK
LOCATION:. MIFFLIN, PA

EXPOSURE ROUTE: DERMAL CONTACT
MEDIA: SOIL -- UNCONFINED AREA

RECEPTOR: CHILD
CONCENTRATION: 95% UCL OF THE MEAN

FILENAME: DERSOC93.WK1

DETERMINE HAZARD INDICIES AND CANCER RISK:

CHEMICAL	ORAL RfD (MG/KG/DAY)	ORAL SLOPE FACTOR (KG-DAY/MG)	HAZARD INDEX	CANCER RISK LIFETIME
CADMIUM	5.00E-04			
DIOXIN		1.50E+05	1.1781E-01	6.6928E-05
TOTAL			1.18E-01	6.69E-05

Inhalation of Fugitive Dust

RISK ASSESSMENT SPREADSHEET (PAGE 1)

SITE NAME:	JACK'S CREEK	FILENAME:	INHFUE9 .WK1
LOCATION:	MIFFLIN, PA	VERSION:	
DATE:	04/12/93	PATH:	C:\RJL\JC\

EXPOSURE ROUTE: INHALATION
MEDIA: FUGITIVE DUST
RECEPTOR: EMPLOYEE
CONCENTRATION: 95% UCL OF THE MEAN

ADDTIONAL COMMENTS: THIS SPREADSHEET CALCULATES INCREMENTAL CANCER RISK AND THE HAZARD INDEX FOR AN INDIVIDUAL EXPOSED TO CONTAMINANTS THROUGH INHALATION OF CONTAMINATED DUST PARTICLES.

RELEVANT EQUATION: INTAKE (MG/KG-DAY) = (CD*IN*ET*EF*ED) / (BW*AT)

		INPUT VALUE
WHERE: IN	= INHALATION RATE (M3/HR)	1.250
ET	= EXPOSURE TIME (HR/DAY)	8
EF	= EXPOSURE FREQUENCY (DAY/YEAR)	250
ED	= EXPOSURE DURATION (YEARS)	30
BW	= BODY WEIGHT (KG)	70
AT	= AVERAGING TIME (SEE BELOW)	
CD	= CONTAMINANT CONCENTRATION IN AIR DUST (MG/M3) (SEE PAGE 2 FOR SITE-SPECIFIC DATA)	

DETERMINE AVERAGING TIME

AVERAGING TIME FOR FOR NONCARCINOGENS (i.e., ED*365 DAYS / YEAR):	1.0950E+04
AVERAGING TIME FOR CARCINOGENS (i.e., 70 YEARS*365 DAYS/YEAR):	2.5550E+04

RISK ASSESSMENT SPREADSHEET
SITE NAME: JACK'S CREEK
LOCATION: MIFFLIN, PA

EXPOSURE ROUTE: INHALATION
MEDIA: FUGITIVE DUST

RECEPTOR: EMPLOYEE
CONCENTRATION: 95% UCL OF THE MEAN

FILENAME: INHFUE9 .WK1

CALCULATE INTAKES:

CHEMICAL	CONCENTRATION IN AIR DUST (MG/M3)	INTAKE (MG/KG)	NONCARCINOGENIC TIME-WEIGHTED AVERAGE INTAKE (MG/KG/DAY)	CARCINOGENIC TIME-WEIGHTED AVERAGE INTAKE (MG/KG/DAY)
ALUMINUM	1.64E-03	1.7593E+00	1.6067E-04	6.8857E-05
COPPER	9.84E-04	1.0543E+00	9.6282E-05	4.1264E-05
IRON	1.58E-03	1.6875E+00	1.5411E-04	6.6047E-05
LEAD	7.67E-04	8.2179E-01	7.5049E-05	3.2164E-05
MANGANESE	7.80E-05	8.3571E-02	7.6321E-06	3.2709E-06
MERCURY	2.20E-07	2.3571E-04	2.1526E-08	9.2256E-09
SELENIUM	6.00E-06	6.4286E-03	5.8708E-07	2.5161E-07
ZINC	5.60E-03	6.0000E+00	5.4795E-04	2.3483E-04

RISK ASSESSMENT SPREADSHEET (PAGE 3)

SITE NAME: JACK'S CREEK | EXPOSURE ROUTE: INHALATION | RECEPTOR: EMPLOYEE | FILENAME: INHFUE9 .WK1

LOCATION: MIFFLIN, PA | MEDIA: FUGITIVE DUST | CONCENTRATION: 95% UCL OF THE MEAN

DETERMINE HAZARD INDICIES AND CANCER RISK:

CHEMICAL	RfD (MG/KG/DAY)	SLOPE FACTOR (KG-DAY/MG)	HAZARD INDEX	CANCER RISK LIFETIME
ALUMINUM				
COPPER				
IRON				
LEAD				
MANGANESE	1.14E-04		6.6781E-02	
MERCURY				
SELENIUM				
ZINC				
TOTAL			6.68E-02	0.00E+00

RISK ASSESSMENT SPREADSHEET (PAGE 1)

SITE NAME:	JACK'S CREEK	FILENAME:	INHFUA91.WK1
LOCATION:	MIFFLIN, PA	VERSION:	1
DATE:	04/12/93	PATH:	C:\RJL\JC\

EXPOSURE ROUTE: INHALATION
MEDIA: FUGITIVE DUST
RECEPTOR: ADULT RESIDENT
CONCENTRATION: 95% UCL OF THE MEAN

ADDTIONAL COMMENTS: THIS SPREADSHEET CALCULATES INCREMENTAL CANCER RISK AND THE HAZARD INDEX FOR AN INDIVIDUAL EXPOSED TO CONTAMINANTS THROUGH INHALATION OF CONTAMINATED DUST PARTICLES.

RELEVANT EQUATION: INTAKE (MG/KG-DAY) = (CD*IN*ET*EF*ED) / (BW*AT)

		INPUT VALUE
WHERE: IN	= INHALATION RATE (M3/HR)	0.833
ET	= EXPOSURE TIME (HR/DAY)	24
EF	= EXPOSURE FREQUENCY (DAY/YEAR)	350
ED	= EXPOSURE DURATION (YEARS)	30
BW	= BODY WEIGHT (KG)	70
AT	= AVERAGING TIME (SEE BELOW)	
CD	= CONTAMINANT CONCENTRATION IN AIR DUST (MG/M3) (SEE PAGE 2 FOR SITE-SPECIFIC DATA)	

DETERMINE AVERAGING TIME

AVERAGING TIME FOR FOR NONCARCINOGENS (i.e., ED*365 DAYS / YEAR):	1.0950E+04
AVERAGING TIME FOR CARCINOGENS (i.e., 70 YEARS*365 DAYS/YEAR):	2.5550E+04

RISK ASSESSMENT SPREADSHEET
SITE NAME: JACK'S CREEK
LOCATION: MIFFLIN, PA

EXPOSURE ROUTE: INHALATION
MEDIA: FUGITIVE DUST

RECEPTOR: ADULT RESIDENT
CONCENTRATION: 95% UCL OF THE MEAN

FILENAME: INHFUA91.WK1

CALCULATE INTAKES:

CHEMICAL	CONCENTRATION IN AIR DUST (MG/M3)	INTAKE (MG/KG)	NONCARCINOGENIC TIME-WEIGHTED AVERAGE INTAKE (MG/KG/DAY)	CARCINOGENIC TIME-WEIGHTED AVERAGE INTAKE (MG/KG/DAY)
ALUMINUM	2.27E-03	6.8073E+00	6.2167E-04	2.6643E-04
COPPER	1.85E-04	5.5478E-01	5.0665E-05	2.1713E-05
IRON	8.56E-04	2.5670E+00	2.3443E-04	1.0047E-04
LEAD	6.60E-05	1.9792E-01	1.8075E-05	7.7464E-06
MERCURY	1.70E-07	5.0980E-04	4.6557E-08	1.9953E-08
SELENIUM	7.00E-06	2.0992E-02	1.9170E-06	8.2159E-07

RISK ASSESSMENT SPREADSHEET (PAGE 3)

SITE NAME: JACK'S CREEK EXPOSURE ROUTE: INHALATION RECEPTOR: ADULT RESIDENT FILENAME: INHFUA91.WK1

LOCATION: MIFFLIN, PA MEDIA: FUGITIVE DUST CONCENTRATION: 95% UCL OF THE MEAN

DETERMINE HAZARD INDICIES AND CANCER RISK:

CHEMICAL	RfD (MG/KG/DAY)	SLOPE FACTOR (KG-DAY/MG)	HAZARD INDEX	CANCER RISK LIFETIME
ALUMINUM				
COPPER				
IRON				
LEAD				
MERCURY				
SELENIUM				
TOTAL			0.00E+00	0.00E+00

RISK ASSESSMENT SPREADSHEET (PAGE 1)

SITE NAME:	JACK'S CREEK	FILENAME:	INHFUC91.WK1
LOCATION:	MIFFLIN, PA	VERSION:	1
DATE:	04/12/93	PATH:	C:\RJL\JC\

EXPOSURE ROUTE: INHALATION
MEDIA: FUGITIVE DUST
RECEPTOR: CHILD (1-6 YEARS OLD)
CONCENTRATION: 95% UCL OF THE MEAN

ADDTIONAL COMMENTS: THIS SPREADSHEET CALCULATES INCREMENTAL CANCER RISK AND THE HAZARD INDEX FOR AN INDIVIDUAL EXPOSED TO COMTAMINANTS THROUGH INHALATION OF CONTAMINATED DUST PARTICLES.

RELEVANT EQUATION: INTAKE (MG/KG-DAY) = (CD*IN*ET*EF*ED) / (BW*AT)

		INPUT VALUE
WHERE: IN	= INHALATION RATE (M3/HR)	0.417
ET	= EXPOSURE TIME (HR/DAY)	24
EF	= EXPOSURE FREQUENCY (DAY/YEAR)	350
ED	= EXPOSURE DURATION (YEARS)	30
BW	= BODY WEIGHT (KG)	15
AT	= AVERAGING TIME (SEE BELOW)	
CD	= CONTAMINANT CONCENTRATION IN AIR DUST (MG/M3) (SEE PAGE 2 FOR SITE-SPECIFIC DATA)	

DETERMINE AVERAGING TIME

AVERAGING TIME FOR FOR NONCARCINOGENS (i.e., ED*365 DAYS / YEAR):	1.0950E+04
AVERAGING TIME FOR CARCINOGENS (i.e., 70 YEARS*365 DAYS/YEAR):	2.5550E+04

RISK ASSESSMENT SPREADSHEET
SITE NAME: JACK'S CREEK
LOCATION: MIFFLIN, PA

EXPOSURE ROUTE: INHALATION
MEDIA: FUGITIVE DUST

RECEPTOR: CHILD (1-6 YEARS OLD) FILENAME: INHFUC91.WK1
CONCENTRATION: 95% UCL OF THE MEAN

CALCULATE INTAKES:

CHEMICAL	CONCENTRATION IN AIR DUST (MG/M3)	INTAKE (MG/KG)	NONCARCINOGENIC TIME-WEIGHTED AVERAGE INTAKE (MG/KG/DAY)	CARCINOGENIC TIME-WEIGHTED AVERAGE INTAKE (MG/KG/DAY)
ALUMINUM	2.27E-03	1.5903E+01	1.4523E-03	6.2242E-04
COPPER	1.85E-04	1.2960E+00	1.1836E-04	5.0725E-05
IRON	8.56E-04	5.9968E+00	5.4765E-04	2.3471E-04
LEAD	6.60E-05	4.6237E-01	4.2226E-05	1.8097E-05
MERCURY	1.70E-07	1.1910E-03	1.0876E-07	4.6613E-08
SELENIUM	7.00E-06	4.9039E-02	4.4785E-06	1.9193E-06

RISK ASSESSMENT SPREADSHEET (PAGE 3)

SITE NAME: JACK'S CREEK EXPOSURE ROUTE: INHALATION RECEPTOR: CHILD (1-6 YEARS OLD) FILENAME: INHFUC91.WK1

LOCATION: MIFFLIN, PA MEDIA: FUGITIVE DUST CONCENTRATION: 95% UCL OF THE MEAN

DETERMINE HAZARD INDICIES AND CANCER RISK:

CHEMICAL	RfD (MG/KG/DAY)	SLOPE FACTOR (KG-DAY/MG)	HAZARD INDEX	CANCER RISK LIFETIME
ALUMINUM				
COPPER				
IRON				
LEAD				
MERCURY				
SELENIUM				
TOTAL			0.00E+00	0.00E+00

Accidental Ingestion of Surface Water

RISK ASSESSMENT SPREADSHEET (PAGE 1)

SITE NAME:	JACK'S CREEK SITE	FILENAME:	INGSUA91.WK1
LOCATION:	MIFFLIN COUNTY, PA	VERSION:	1
DATE:	04/13/93	PATH:	C:\RJL\JC\

EXPOSURE ROUTE: INGESTION
MEDIA: SURFACE WATER
RECEPTOR: ADULT
CONCENTRATION: 95% OF THE MEAN

ADDTIONAL COMMENTS: THIS SPREADSHEET CALCULATES INCREMENTAL CANCER RISK AND THE HAZARD INDEX FOR AN INDIVIDUAL EXPOSED TO COMTAMINANTS THROUGH INGESTION OF CONTAMINATED SURFACE WATER WHILE SWIMMING.
THE SOURCE OF CONTAMINATED WATER IS ASSUMED TO BE IN JACK'S CREEK IN THIS SCENARIO.

RELEVANT EQUATION: INTAKE (MG/KG-DAY) = (CW*CR*ET*EF*ED) / (BW*AT)

		INPUT VALUES
WHERE: CR	= CONTACT RATE (L/HOUR)	0.05
ET	= EXPOSURE TIME (HOURS/DAY)	1
EF	= EXPOSURE FREQUENCY (DAY/YEAR)	7
ED	= EXPOSURE DURATION (YEARS)	30
BW	= BODY WEIGHT (KG)	70
AT	= AVERAGING TIME (SEE BELOW)	
CW	= CONTAMINANT CONCENTRATION IN WATER (MG/L) (SEE PAGE 2 FOR SITE-SPECIFIC DATA)	

DETERMINE AVERAGING TIME

AVERAGING TIME FOR FOR NONCARCINOGENS (i.e., ED*365 DAYS / YEAR):	1.0950E+04
AVERAGING TIME FOR CARCINOGENS (i.e., 70 YEARS*365 DAYS/YEAR):	2.5550E+04

RISK ASSESSMENT SPREADSHEET (PAGE 2)

SITE NAME: JACK'S CREEK SITE EXPOSURE ROUTE: INGESTION RECEPTOR: ADULT FILENAME: INGSUA91.WK1

LOCATION: MIFFLIN COUNTY, PA MEDIA: SURFACE WATER CONCENTRATION: 95% OF THE MEAN

CALCULATE INTAKES:

CHEMICAL	CONCENTRATION IN WATER (MG/L)	INTAKE (MG/KG)	NONCARCINOGENIC TIME-WEIGHTED AVERAGE INTAKE (MG/KG/DAY)	CARCINOGENIC TIME-WEIGHTED AVERAGE INTAKE (MG/KG/DAY)
ALUMINUM	0.254	3.8100E-02	3.4795E-06	1.4912E-06
ARSENIC	0.003	3.9000E-04	3.5616E-08	1.5264E-08
BARIUM	0.063	9.4500E-03	8.6301E-07	3.6986E-07
LEAD	0.003	3.9000E-04	3.5616E-08	1.5264E-08
MANGANESE	0.034	5.1450E-03	4.6986E-07	2.0137E-07
NICKEL	0.003	4.2000E-04	3.8356E-08	1.6438E-08

RISK ASSESSMENT SPREADSHEET (PAGE 3)

SITE NAME: JACK'S CREEK SITE EXPOSURE ROUTE: INGESTION RECEPTOR: ADULT FILENAME: INGSUA91.WK1

LOCATION: MIFFLIN COUNTY, PA MEDIA: SURFACE WATER CONCENTRATION: 95% OF THE MEAN

DETERMINE HAZARD INDICIES AND CANCER RISK:

CHEMICAL	ORAL RfD (MG/KG/DAY)	ORAL SLOPE FACTOR (KG-DAY/MG)	HAZARD INDEX	CANCER RISK LIFETIME
ALUMINUM	2.90E+00		1.1998E-06	
ARSENIC	3.00E-04		1.1872E-04	
BARIUM	7.00E-02		1.2329E-05	
LEAD				
MANGANESE	5.00E-03		9.3973E-05	
NICKEL	2.00E-02		1.9178E-06	
TOTAL			2.28E-04	0.00E+00

RISK ASSESSMENT SPREADSHEET (PAGE 1)

SITE NAME:	JACK'S CREEK SITE	FILENAME:	INGSUC91.WK1
LOCATION:	MIFFLIN COUNTY, PA	VERSION:	1
DATE:	04/13/93	PATH:	C:\RJL\JC\

EXPOSURE ROUTE: INGESTION
MEDIA: SURFACE WATER
RECEPTOR: CHILD
CONCENTRATION: 95% OF THE MEAN

ADDTIONAL COMMENTS: THIS SPREADSHEET CALCULATES INCREMENTAL CANCER RISK AND THE HAZARD INDEX FOR AN INDIVIDUAL EXPOSED TO COMTAMINANTS THROUGH INGESTION OF CONTAMINATED SURFACE WATER WHILE SWIMMING. THE SOURCE OF CONTAMINATED WATER IS ASSUMED TO BE IN JACK'S CREEK IN THIS SCENARIO.

RELEVANT EQUATION: INTAKE (MG/KG-DAY) = (CW*CR*ET*EF*ED) / (BW*AT)

		INPUT VALUES
WHERE: CR	= CONTACT RATE (L/HOUR)	0.05
ET	= EXPOSURE TIME (HOURS/DAY)	2.6
EF	= EXPOSURE FREQUENCY (DAY/YEAR)	36
ED	= EXPOSURE DURATION (YEARS)	6
BW	= BODY WEIGHT (KG)	30
AT	= AVERAGING TIME (SEE BELOW)	
CW	= CONTAMINANT CONCENTRATION IN WATER (MG/L) (SEE PAGE 2 FOR SITE-SPECIFIC DATA)	

DETERMINE AVERAGING TIME

AVERAGING TIME FOR FOR NONCARCINOGENS (i.e., ED*365 DAYS / YEAR):	2.1900E+03
AVERAGING TIME FOR CARCINOGENS (i.e., 70 YEARS*365 DAYS/YEAR):	2.5550E+04

RISK ASSESSMENT SPREADSHEET (PAGE 2)
SITE NAME: JACK'S CREEK SITE EXPOSURE ROUTE: INGESTION RECEPTOR: CHILD FILENAME: INGSUC91.WK1
LOCATION: MIFFLIN COUNTY, PA MEDIA: SURFACE WATER CONCENTRATION: 95% OF THE MEAN

CALCULATE INTAKES:

CHEMICAL	CONCENTRATION IN WATER (MG/L)	INTAKE (MG/KG)	NONCARCINOGENIC TIME-WEIGHTED AVERAGE INTAKE (MG/KG/DAY)	CARCINOGENIC TIME-WEIGHTED AVERAGE INTAKE (MG/KG/DAY)
ALUMINUM	0.254	2.3774E-01	1.0856E-04	9.3050E-06
ARSENIC	0.003	2.4336E-03	1.1112E-06	9.5249E-08
BARIUM	0.063	5.8968E-02	2.6926E-05	2.3079E-06
LEAD	0.003	2.4336E-03	1.1112E-06	9.5249E-08
MANGANESE	0.034	3.2105E-02	1.4660E-05	1.2565E-06
NICKEL	0.003	2.6208E-03	1.1967E-06	1.0258E-07

RISK ASSESSMENT SPREADSHEET (PAGE 3)

SITE NAME: JACK'S CREEK SITE | EXPOSURE ROUTE: INGESTION | RECEPTOR: CHILD | FILENAME: INGSUC91.WK1

LOCATION: MIFFLIN COUNTY, PA | MEDIA: SURFACE WATER | CONCENTRATION: 95% OF THE MEAN

DETERMINE HAZARD INDICIES AND CANCER RISK:

CHEMICAL	ORAL RfD (MG/KG/DAY)	ORAL SLOPE FACTOR (KG-DAY/MG)	HAZARD INDEX	CANCER RISK LIFETIME
ALUMINUM	2.90E+00		3.7434E-05	
ARSENIC	3.00E-04		3.7041E-03	
BARIUM	7.00E-02		3.8466E-04	
LEAD				
MANGANESE	5.00E-03		2.9319E-03	
NICKEL	2.00E-02		5.9836E-05	
TOTAL			7.12E-03	0.00E+00

AR302612

Dermal Contact with Surface Water

RISK ASSESSMENT SPREADSHEET (PAGE 1)

SITE NAME:	JACK'S CREEK	FILENAME:	DERSUE91.WK1
LOCATION:	MIFFLIN, PA	VERSION:	1
DATE:	04/12/93	PATH:	C:\RJL\JC\

EXPOSURE ROUTE: DERMAL CONTACT
MEDIA: SURFACE WATER -- CONFINED AREA
RECEPTOR: EMPLOYEE
CONCENTRATION: 95% UCL OF THE MEAN

ADDTIONAL COMMENTS: THIS SPREADSHEET CALCULATES INCREMENTAL CANCER RISK AND THE HAZARD INDEX FOR AN INDIVIDUAL EXPOSED TO COMTAMINANTS THROUGH DERMAL CONTACT WITH CONTAMINATED WATER.
THE SOURCES OF CONTAMINATED SURFACE WATER ARE ASSUMED TO BE IN CONFINED AREA IN THIS SCENARIO.

RELEVANT EQUATION: ABSORBED DOSE (MG/KG-DAY) = (CW*SA*KP*ET*EF*ED*CF) / (BW*AT)

		INPUT VALUE
WHERE: SA	= SKIN SURFACE AREA FOR CONTACT (CM2)	3120
KP	= PERMEABILITY COEFFICIENT (CM/HR)	1.0E-03
ET	= EXPOSURE TIME (MIN/DAY)	60
EF	= EXPOSURE FREQUENCY (DAYS/YEAR)	12
ED	= EXPOSURE DURATION (YEARS)	30
BW	= BODY WEIGHT (KG)	70
AT	= AVERAGING TIME (SEE BELOW)	
CF	= CONVERSION FACTOR	1.7E-05
CW	= CONTAMINANT CONCENTRATION IN WATER (MG/L) (SEE PAGE 2 FOR SITE-SPECIFIC DATA)	

DETERMINE AVERAGING TIME

AVERAGING TIME FOR FOR NONCARCINOGENS (i.e., ED*365 DAYS / YEAR):	1.0950E+04
AVERAGING TIME FOR CARCINOGENS (i.e., 70 YEARS*365 DAYS/YEAR):	2.5550E+04

RISK ASSESSMENT SPREADSHEET (PAGE 2)

SITE NAME: JACK'S CREEK EXPOSURE ROUTE: DERMAL CONTACT RECEPTOR: EMPLOYEE FILENAME: DERSUE91.WK1

LOCATION: MIFFLIN, PA MEDIA: SURFACE WATER -- CONFINED AREA CONCENTRATION: 95% UCL OF THE MEAN

CALCULATE INTAKES:

CHEMICAL	CONCENTRATION IN WATER (MG/L)	DERMAL PERMEABILITY (CM/HR)	ABSORBED DOSE (MG/KG)	NONCARCINOGENIC TIME-WEIGHTED AVERAGE ABSORBED DOSE (MG/KG/DAY)	CARCINOGENIC TIME-WEIGHTED AVERAGE ABSORBED DOSE (MG/KG/DAY)
ALUMINUM	19.100	1.00E-03	3.0647E-01	2.7988E-05	1.1995E-05
ARSENIC	0.013	1.00E-03	2.1501E-04	1.9636E-08	8.4154E-09
BARIUM	0.180	1.00E-03	2.8882E-03	2.6377E-07	1.1304E-07
BERYLLIUM	0.010	1.00E-03	1.6206E-04	1.4800E-08	6.3429E-09
CADMIUM	0.064	1.00E-03	1.0301E-03	9.4076E-08	4.0318E-08
CHROMIUM	0.019	1.00E-03	3.0487E-04	2.7842E-08	1.1932E-08
COPPER	8.520	1.00E-03	1.3671E-01	1.2485E-05	5.3507E-06
IRON	25.400	1.00E-03	4.0756E-01	3.7220E-05	1.5952E-05
LEAD	4.620	1.00E-03	7.4131E-02	6.7700E-06	2.9014E-06
MANGANESE	1.010	1.00E-03	1.6206E-02	1.4800E-06	6.3429E-07
MERCURY	0.00076	1.00E-03	1.2195E-05	1.1137E-09	4.7729E-10
NICKEL	0.148	1.00E-03	2.3748E-03	2.1687E-07	9.2946E-08
SELENIUM	0.025	1.00E-03	4.0756E-04	3.7220E-08	1.5952E-08
SILVER	0.007	1.00E-03	1.0430E-04	9.5249E-09	4.0821E-09
VANADIUM	0.019	1.00E-03	2.9685E-04	2.7109E-08	1.1618E-08
ZINC	33.800	1.00E-03	5.4235E-01	4.9529E-05	2.1227E-05

RISK ASSESSMENT SPREADSHEET (PAGE 3)

SITE NAME: JACK'S CREEK | EXPOSURE ROUTE: DERMAL CONTACT | RECEPTOR: EMPLOYEE | FILENAME: DERSUE91.WK1

LOCATION: MIFFLIN, PA | MEDIA: SURFACE WATER -- CONFINED AREA | CONCENTRATION: 95% UCL OF THE MEAN

DETERMINE HAZARD INDICIES AND CANCER RISK:

CHEMICAL	ORAL RfD (MG/KG/DAY)	ORAL SLOPE FACTOR (KG-DAY/MG)	HAZARD INDEX	CANCER RISK LIFETIME
ALUMINUM	2.90E+00		9.6512E-06	
ARSENIC	3.00E-04		6.5453E-05	
BARIUM	7.00E-02		3.7681E-06	
BERYLLIUM	5.00E-03	4.30E+00	2.9600E-06	2.7275E-08
CADMIUM	5.00E-04		1.8815E-04	
CHROMIUM	5.00E-03		5.5684E-06	
COPPER	3.71E-02		3.3652E-04	
IRON				
LEAD				
MANGANESE	5.00E-03		2.9600E-04	
MERCURY	3.00E-04		3.7123E-06	
NICKEL	2.00E-02		1.0844E-05	
SELENIUM	5.00E-03		7.4440E-06	
SILVER	5.00E-03		1.9050E-06	
VANADIUM	9.00E-03		3.0121E-06	
ZINC	3.00E-01		1.6510E-04	
TOTAL			1.10E-03	2.73E-08

RISK ASSESSMENT SPREADSHEET (PAGE 1)

SITE NAME:	JACK'S CREEK	FILENAME:	DERSUA92.WK1
LOCATION:	MIFFLIN, PA	VERSION:	2
DATE:	04/12/93	PATH:	C:\RJL\JC\

EXPOSURE ROUTE: DERMAL CONTACT
MEDIA: SURFACE WATER -- UNCONFINED AREA
RECEPTOR: ADULT TRESPASSER
CONCENTRATION: 95% UCL OF THE MEAN

ADDTIONAL COMMENTS: THIS SPREADSHEET CALCULATES INCREMENTAL CANCER RISK AND THE HAZARD INDEX FOR AN INDIVIDUAL EXPOSED TO COMTAMINANTS THROUGH DERMAL CONTACT WITH CONTAMINATED WATER.
THE SOURCES OF CONTAMINATED SURFACE WATER ARE ASSUMED TO BE IN UNCONFINED AREA IN THIS SCENARIO.

RELEVANT EQUATION: ABSORBED DOSE (MG/KG-DAY) = (CW*SA*KP*ET*EF*ED*CF) / (BW*AT)

		INPUT VALUE
WHERE: SA	= SKIN SURFACE AREA FOR CONTACT (CM2)	3120
KP	= PERMEABILITY COEFFICIENT (CM/HR)	1.0E-03
ET	= EXPOSURE TIME (MIN/DAY)	60
EF	= EXPOSURE FREQUENCY (DAYS/YEAR)	7
ED	= EXPOSURE DURATION (YEARS)	30
BW	= BODY WEIGHT (KG)	70
AT	= AVERAGING TIME (SEE BELOW)	
CF	= CONVERSION FACTOR	1.7E-05
CW	= CONTAMINANT CONCENTRATION IN WATER (MG/L) (SEE PAGE 2 FOR SITE-SPECIFIC DATA)	

DETERMINE AVERAGING TIME

AVERAGING TIME FOR FOR NONCARCINOGENS (i.e., ED*365 DAYS / YEAR):	1.0950E+04
AVERAGING TIME FOR CARCINOGENS (i.e., 70 YEARS*365 DAYS/YEAR):	2.5550E+04

RISK ASSESSMENT SPREADSHEET (PAGE 2)

SITE NAME: JACK'S CREEK EXPOSURE ROUTE: DERMAL CONTACT RECEPTOR: ADULT TRESPASSER FILENAME: DERSUA92.WK1

LOCATION: MIFFLIN, PA MEDIA: SURFACE WATER -- UNCONFINED AREA CONCENTRATION: 95% UCL OF THE MEAN

CALCULATE INTAKES:

CHEMICAL	CONCENTRATION IN WATER (MG/L)	DERMAL PERMEABILITY (CM/HR)	ABSORBED DOSE (MG/KG)	NONCARCINOGENIC TIME-WEIGHTED AVERAGE ABSORBED DOSE (MG/KG/DAY)	CARCINOGENIC TIME-WEIGHTED AVERAGE ABSORBED DOSE (MG/KG/DAY)
ALUMINUM	3.100	1.00E-03	2.9016E-02	2.6499E-06	1.1357E-06
ARSENIC	0.003	1.00E-03	2.6208E-05	2.3934E-09	1.0258E-09
BARIUM	0.077	1.00E-03	7.1604E-04	6.5392E-08	2.8025E-08
CHROMIUM	0.002	1.00E-03	1.4976E-05	1.3677E-09	5.8614E-10
COPPER	0.071	1.00E-03	6.6362E-04	6.0605E-08	2.5974E-08
IRON	4.620	1.00E-03	4.3243E-02	3.9492E-06	1.6925E-06
LEAD	0.098	1.00E-03	9.1728E-04	8.3770E-08	3.5901E-08
MANGANESE	0.401	1.00E-03	3.7534E-03	3.4277E-07	1.4690E-07
NICKEL	0.004	1.00E-03	3.9312E-05	3.5901E-09	1.5386E-09
SELENIUM	0.015	1.00E-03	1.4040E-04	1.2822E-08	5.4951E-09
ZINC	0.426	1.00E-03	3.9874E-03	3.6414E-07	1.5606E-07

RISK ASSESSMENT SPREADSHEET (PAGE 3)

SITE NAME: JACK'S CREEK EXPOSURE ROUTE: DERMAL CONTACT RECEPTOR: ADULT TRESPASSER FILENAME: DERSUA92.WK1

LOCATION: MIFFLIN, PA MEDIA: SURFACE WATER -- UNCONFINED AREA CONCENTRATION: 95% UCL OF THE MEAN

DETERMINE HAZARD INDICIES AND CANCER RISK:

CHEMICAL	ORAL RfD (MG/KG/DAY)	ORAL SLOPE FACTOR (KG-DAY/MG)	HAZARD INDEX	CANCER RISK LIFETIME
ALUMINUM	2.90E+00		9.1375E-07	
ARSENIC	3.00E-04		7.9781E-06	
BARIUM	7.00E-02		9.3417E-07	
CHROMIUM	5.00E-03		2.7353E-07	
COPPER	3.71E-02		1.6336E-06	
IRON				
LEAD				
MANGANESE	5.00E-03		6.8555E-05	
NICKEL	2.00E-02		1.7951E-07	
SELENIUM	5.00E-03		2.5644E-06	
ZINC	3.00E-01		1.2138E-06	
TOTAL			8.42E-05	0.00E+00

RISK ASSESSMENT SPREADSHEET (PAGE 1)

SITE NAME:	JACK'S CREEK	FILENAME:	DERSUC92.WK1
LOCATION:	MIFFLIN, PA	VERSION:	2
DATE:	04/12/93	PATH:	C:\RJL\JC\

EXPOSURE ROUTE: DERMAL CONTACT
MEDIA: SURFACE WATER -- UNCONFINED AREA
RECEPTOR: CHILD AGE 6-12
CONCENTRATION: 95% UCL OF THE MEAN

ADDTIONAL COMMENTS: THIS SPREADSHEET CALCULATES INCREMENTAL CANCER RISK AND THE HAZARD INDEX FOR AN INDIVIDUAL EXPOSED TO COMTAMINANTS THROUGH DERMAL CONTACT WITH CONTAMINATED WATER.
THE SOURCES OF CONTAMINATED SURFACE WATER ARE ASSUMED TO BE IN UNCONFINED AREA IN THIS SCENARIO.

RELEVANT EQUATION: ABSORBED DOSE (MG/KG-DAY) = (CW*SA*KP*ET*EF*ED*CF) / (BW*AT)

		INPUT VALUE
WHERE: SA	= SKIN SURFACE AREA FOR CONTACT (CM2)	5000
KP	= PERMEABILITY COEFFICIENT (CM/HR)	1.0E-03
ET	= EXPOSURE TIME (MIN/DAY)	60
EF	= EXPOSURE FREQUENCY (DAYS/YEAR)	26
ED	= EXPOSURE DURATION (YEARS)	6
BW	= BODY WEIGHT (KG)	30
AT	= AVERAGING TIME (SEE BELOW)	
CF	= CONVERSION FACTOR	1.7E-05
CW	= CONTAMINANT CONCENTRATION IN WATER (MG/L) (SEE PAGE 2 FOR SITE-SPECIFIC DATA)	

DETERMINE AVERAGING TIME

AVERAGING TIME FOR FOR NONCARCINOGENS (i.e., ED*365 DAYS / YEAR):	2.1900E+03
AVERAGING TIME FOR CARCINOGENS (i.e., 70 YEARS*365 DAYS/YEAR):	2.5550E+04

RISK ASSESSMENT SPREADSHEET (PAGE 2)

SITE NAME: JACK'S CREEK EXPOSURE ROUTE: DERMAL CONTACT RECEPTOR: CHILD AGE 6-12 FILENAME: DERSUC92.WK1

LOCATION: MIFFLIN, PA MEDIA: SURFACE WATER -- UNCONFINED AREA CONCENTRATION: 95% UCL OF THE MEAN

CALCULATE INTAKES:

CHEMICAL	CONCENTRATION IN WATER (MG/L)	DERMAL PERMEABILITY (CM/HR)	ABSORBED DOSE (MG/KG)	NONCARCINOGENIC TIME-WEIGHTED AVERAGE ABSORBED DOSE (MG/KG/DAY)	CARCINOGENIC TIME-WEIGHTED AVERAGE ABSORBED DOSE (MG/KG/DAY)
ALUMINUM	3.100	1.00E-03	8.0600E-02	3.6804E-05	3.1546E-06
ARSENIC	0.003	1.00E-03	7.2800E-05	3.3242E-08	2.8493E-09
BARIUM	0.077	1.00E-03	1.9890E-03	9.0822E-07	7.7847E-08
CHROMIUM	0.002	1.00E-03	4.1600E-05	1.8995E-08	1.6282E-09
COPPER	0.071	1.00E-03	1.8434E-03	8.4174E-07	7.2149E-08
IRON	4.620	1.00E-03	1.2012E-01	5.4849E-05	4.7014E-06
LEAD	0.098	1.00E-03	2.5480E-03	1.1635E-06	9.9726E-08
MANGANESE	0.401	1.00E-03	1.0426E-02	4.7607E-06	4.0806E-07
NICKEL	0.004	1.00E-03	1.0920E-04	4.9863E-08	4.2740E-09
SELENIUM	0.015	1.00E-03	3.9000E-04	1.7808E-07	1.5264E-08
ZINC	0.426	1.00E-03	1.1076E-02	5.0575E-06	4.3350E-07

RISK ASSESSMENT SPREADSHEET (PAGE 3)

SITE NAME: JACK'S CREEK | EXPOSURE ROUTE: DERMAL CONTACT | RECEPTOR: CHILD AGE 6-12 | FILENAME: DERSUC92.WK1

LOCATION: MIFFLIN, PA | MEDIA: SURFACE WATER -- UNCONFINED AREA | CONCENTRATION: 95% UCL OF THE MEAN

DETERMINE HAZARD INDICIES AND CANCER RISK:

CHEMICAL	ORAL RfD (MG/KG/DAY)	ORAL SLOPE FACTOR (KG-DAY/MG)	HAZARD INDEX	CANCER RISK LIFETIME
ALUMINUM	2.90E+00		1.2691E-05	
ARSENIC	3.00E-04		1.1081E-04	
BARIUM	7.00E-02		1.2975E-05	
CHROMIUM	5.00E-03		3.7991E-06	
COPPER	3.71E-02		2.2688E-05	
IRON				
LEAD				
MANGANESE	5.00E-03		9.5215E-04	
NICKEL	2.00E-02		2.4932E-06	
SELENIUM	5.00E-03		3.5616E-05	
ZINC	3.00E-01		1.6858E-05	
TOTAL			1.17E-03	0.00E+00

RISK ASSESSMENT SPREADSHEET (PAGE 1)

SITE NAME:	JACK'S CREEK	FILENAME:	DERSUA93.WK1
LOCATION:	MIFFLIN, PA	VERSION:	3
DATE:	04/12/93	PATH:	C:\RJL\JC\

EXPOSURE ROUTE: DERMAL CONTACT
MEDIA: SURFACE WATER -- JACK'S CREEK
RECEPTOR: ADULT SWIMMER
CONCENTRATION: 95% UCL OF THE MEAN

ADDTIONAL COMMENTS: THIS SPREADSHEET CALCULATES INCREMENTAL CANCER RISK AND THE HAZARD INDEX FOR AN INDIVIDUAL EXPOSED TO COMTAMINANTS THROUGH DERMAL CONTACT WITH CONTAMINATED WATER.
THE SOURCES OF CONTAMINATED SURFACE WATER ARE ASSUMED TO BE IN JACK'S CREEK IN THIS SCENARIO.

RELEVANT EQUATION: ABSORBED DOSE (MG/KG-DAY) = (CW*SA*KP*ET*EF*ED*CF) / (BW*AT)

		INPUT VALUE
WHERE: SA	= SKIN SURFACE AREA FOR CONTACT (CM2)	18200
KP	= PERMEABILITY COEFFICIENT (CM/HR)	1.0E-03
ET	= EXPOSURE TIME (MIN/DAY)	60
EF	= EXPOSURE FREQUENCY (DAYS/YEAR)	7
ED	= EXPOSURE DURATION (YEARS)	30
BW	= BODY WEIGHT (KG)	70
AT	= AVERAGING TIME (SEE BELOW)	
CF	= CONVERSION FACTOR	1.7E-05
CW	= CONTAMINANT CONCENTRATION IN WATER (MG/L) (SEE PAGE 2 FOR SITE-SPECIFIC DATA)	

DETERMINE AVERAGING TIME

AVERAGING TIME FOR FOR NONCARCINOGENS (i.e., ED*365 DAYS / YEAR):	1.0950E+04
AVERAGING TIME FOR CARCINOGENS (i.e., 70 YEARS*365 DAYS/YEAR):	2.5550E+04

RISK ASSESSMENT SPREADSHEET
SITE NAME: JACK'S CREEK
LOCATION: MIFFLIN, PA

EXPOSURE ROUTE: DERMAL CONTACT
MEDIA: SURFACE WATER -- JACK'S CREEK

RECEPTOR: ADULT SWIMMER
CONCENTRATION: 95% UCL OF THE MEAN

FILENAME: DERSUA93.WK1

CALCULATE INTAKES:

CHEMICAL	CONCENTRATION IN WATER (MG/L)	DERMAL PERMEABILITY (CM/HR)	ABSORBED DOSE (MG/KG)	NONCARCINOGENIC TIME-WEIGHTED AVERAGE ABSORBED DOSE (MG/KG/DAY)	CARCINOGENIC TIME-WEIGHTED AVERAGE ABSORBED DOSE (MG/KG/DAY)
ALUMINUM	0.254	1.00E-03	1.3868E-02	1.2665E-06	5.4279E-07
ARSENIC	0.003	1.00E-03	1.4196E-04	1.2964E-08	5.5562E-09
BARIUM	0.063	1.00E-03	3.4398E-03	3.1414E-07	1.3463E-07
LEAD	0.003	1.00E-03	1.4196E-04	1.2964E-08	5.5562E-09
MANGANESE	0.034	1.00E-03	1.8728E-03	1.7103E-07	7.3299E-08
NICKEL	0.003	1.00E-03	1.5288E-04	1.3962E-08	5.9836E-09

RISK ASSESSMENT SPREADSHEET
SITE NAME: JACK'S CREEK
LOCATION: MIFFLIN, PA

EXPOSURE ROUTE: DERMAL CONTACT
MEDIA: SURFACE WATER -- JACK'S CREEK

RECEPTOR: ADULT SWIMMER
CONCENTRATION: 95% UCL OF THE MEAN

FILENAME: DERSUA93.WK1

DETERMINE HAZARD INDICIES AND CANCER RISK:

CHEMICAL	ORAL RfD (MG/KG/DAY)	ORAL SLOPE FACTOR (KG-DAY/MG)	HAZARD INDEX	CANCER RISK LIFETIME
ALUMINUM	2.90E+00		4.3673E-07	
ARSENIC	3.00E-04		4.3215E-05	
BARIUM	7.00E-02		4.4877E-06	
LEAD				
MANGANESE	5.00E-03		3.4206E-05	
NICKEL	2.00E-02		6.9808E-07	
TOTAL			8.30E-05	0.00E+00

RISK ASSESSMENT SPREADSHEET

SITE NAME:	JACK'S CREEK	FILENAME:	DERSUC93.WK1
LOCATION:	MIFFLIN, PA	VERSION:	3
DATE:	04/12/93	PATH:	C:\RJL\JC\

EXPOSURE ROUTE: DERMAL CONTACT
MEDIA: SURFACE WATER -- JACK'S CREEK
RECEPTOR: CHILD SWIMMER
CONCENTRATION: 95% UCL OF THE MEAN

ADDTIONAL COMMENTS: THIS SPREADSHEET CALCULATES INCREMENTAL CANCER RISK AND THE HAZARD INDEX FOR AN INDIVIDUAL EXPOSED TO COMTAMINANTS THROUGH DERMAL CONTACT WITH CONTAMINATED WATER.
THE SOURCES OF CONTAMINATED SURFACE WATER ARE ASSUMED TO BE IN JACK'S CREEK IN THIS SCENARIO.

RELEVANT EQUATION: ABSORBED DOSE (MG/KG-DAY) = (CW*SA*KP*ET*EF*ED*CF) / (BW*AT)

		INPUT VALUE
WHERE: SA	= SKIN SURFACE AREA FOR CONTACT (CM2)	10430
KP	= PERMEABILITY COEFFICIENT (CM/HR)	1.0E-03
ET	= EXPOSURE TIME (MIN/DAY)	156
EF	= EXPOSURE FREQUENCY (DAYS/YEAR)	36
ED	= EXPOSURE DURATION (YEARS)	6
BW	= BODY WEIGHT (KG)	30
AT	= AVERAGING TIME (SEE BELOW)	
CF	= CONVERSION FACTOR	1.7E-05
CW	= CONTAMINANT CONCENTRATION IN WATER (MG/L) (SEE PAGE 2 FOR SITE-SPECIFIC DATA)	

DETERMINE AVERAGING TIME

AVERAGING TIME FOR FOR NONCARCINOGENS (i.e., ED*365 DAYS / YEAR):	2.1900E+03
AVERAGING TIME FOR CARCINOGENS (i.e., 70 YEARS*365 DAYS/YEAR):	2.5550E+04

RISK ASSESSMENT SPREADSHEET
SITE NAME: JACK'S CREEK **EXPOSURE ROUTE: DERMAL CONTACT** **RECEPTOR: CHILD SWIMMER** **FILENAME: DERSUC93.WK1**
LOCATION: MIFFLIN, PA MEDIA: SURFACE WATER -- JACK'S CREEK CONCENTRATION: 95% UCL OF THE MEAN

CALCULATE INTAKES:

CHEMICAL	CONCENTRATION IN WATER (MG/L)	DERMAL PERMEABILITY (CM/HR)	ABSORBED DOSE (MG/KG)	NONCARCINOGENIC TIME-WEIGHTED AVERAGE ABSORBED DOSE (MG/KG/DAY)	CARCINOGENIC TIME-WEIGHTED AVERAGE ABSORBED DOSE (MG/KG/DAY)
ALUMINUM	0.254	1.00E-03	4.9593E-02	2.2645E-05	1.9410E-06
ARSENIC	0.003	1.00E-03	5.0765E-04	2.3180E-07	1.9869E-08
BARIUM	0.063	1.00E-03	1.2301E-02	5.6168E-06	4.8144E-07
LEAD	0.003	1.00E-03	5.0765E-04	2.3180E-07	1.9869E-08
MANGANESE	0.034	1.00E-03	6.6971E-03	3.0580E-06	2.6212E-07
NICKEL	0.003	1.00E-03	5.4670E-04	2.4963E-07	2.1397E-08

RISK ASSESSMENT SPREADSHEET (PAGE 3)

SITE NAME: JACK'S CREEK **EXPOSURE ROUTE:** DERMAL CONTACT **RECEPTOR:** CHILD SWIMMER **FILENAME:** DERSUC93.WK1

LOCATION: MIFFLIN, PA **MEDIA:** SURFACE WATER -- JACK'S CREEK **CONCENTRATION:** 95% UCL OF THE MEAN

DETERMINE HAZARD INDICIES AND CANCER RISK:

CHEMICAL	ORAL RfD (MG/KG/DAY)	ORAL SLOPE FACTOR (KG-DAY/MG)	HAZARD INDEX	CANCER RISK LIFETIME
ALUMINUM	2.90E+00		7.8088E-06	
ARSENIC	3.00E-04		7.7268E-04	
BARIUM	7.00E-02		8.0240E-05	
LEAD				
MANGANESE	5.00E-03		6.1160E-04	
NICKEL	2.00E-02		1.2482E-05	
TOTAL			1.48E-03	0.00E+00

Accidental Ingestion of Sediments

RISK ASSESSMENT SPREADSHEET (PAGE 1)

SITE NAME:	JACK'S CREEK	FILENAME:	INGSEE91.WK1
LOCATION:	MIFFLIN, PA	VERSION:	1
DATE:	04/13/93	PATH:	C:\RJL\JC\

EXPOSURE ROUTE: INGESTION
MEDIA: SEDIMENT
RECEPTOR: EMPLOYEE
CONCENTRATION: 95% UCL OF THE MEAN

ADDTIONAL COMMENTS: THIS SPREADSHEET CALCULATES INCREMENTAL CANCER RISK AND THE HAZARD INDEX FOR AN INDIVIDUAL EXPOSED TO COMTAMINANTS THROUGH INGESTION OF CONTAMINATED SEDIMENT.
THE SOURCE OF CONTAMINATED SEDIMENT IS ASSUMED TO BE CONFINED AERA.

RELEVANT EQUATION: INTAKE (MG/KG-DAY) = (CS*IR*CF*FI*EF*ED) / (BW*AT)

		INPUT VALUES
WHERE: IR	= INGESTION RATE (G/DAY)	0.25
CF	= CONVERSION FACTOR (KG/G)	1.0E-03
FI	= FRACTION INGESTED FROM CONTAMINATED SOURCE (UNITLESS)	1
EF	= EXPOSURE FREQUENCY (DAYS/YEAR)	12
ED	= EXPOSURE DURATION (YEARS)	30
BW	= BODY WEIGHT (KG)	70
AT	= AVERAGING TIME (SEE BELOW)	
CS	= CONTAMINANT CONCENTRATION IN SOIL (MG/KG) (SEE PAGE 2 FOR SITE-SPECIFIC DATA)	

DETERMINE AVERAGING TIME

AVERAGING TIME FOR FOR NONCARCINOGENS (i.e., ED*365 DAYS / YEAR):	1.0950E+04
AVERAGING TIME FOR CARCINOGENS (i.e., 70 YEARS*365 DAYS/YEAR):	2.5550E+04

RISK ASSESSMENT SPREADSHEET (PAGE 2)

SITE NAME: JACK'S CREEK EXPOSURE ROUTE: INGESTION RECEPTOR: EMPLOYEE FILENAME: INGSEE91.WK1

LOCATION: MIFFLIN, PA MEDIA: SEDIMENT CONCENTRATION: 95% UCL OF THE MEAN

CALCULATE INTAKES:

CHEMICAL	CONCENTRATION IN SEDIMENT (MG/KG)	INTAKE (MG/KG)	NONCARCINOGENIC TIME-WEIGHTED AVERAGE INTAKE (MG/KG/DAY)	CARCINOGENIC TIME-WEIGHTED AVERAGE INTAKE (MG/KG/DAY)
ARSENIC	12.1	1.5557E-02	1.4207E-06	6.0889E-07
BERYLLIUM	1.1	1.4143E-03	1.2916E-07	5.5354E-08
CHROMIUM	15.9	2.0443E-02	1.8669E-06	8.0011E-07
COPPER	1040.0	1.3371E+00	1.2211E-04	5.2334E-05
LEAD	900.0	1.1571E+00	1.0568E-04	4.5289E-05
MANGANESE	1310.0	1.6843E+00	1.5382E-04	6.5921E-05
NICKEL	31.6	4.0629E-02	3.7104E-06	1.5902E-06
THALLIUM	0.3	3.6000E-04	3.2877E-08	1.4090E-08
ZINC	1770.00	2.2757E+00	2.0783E-04	8.9069E-05
POLYCYCLIC AROMATIC HYDROC	3.75	4.8214E-03	4.4031E-07	1.8871E-07
BIS(2-ETHYLHEXYL)PHTHALATE	0.33	4.2557E-04	3.8865E-08	1.6656E-08
POLYCHLORINATED BIPHENYLS	0.31	3.9857E-04	3.6399E-08	1.5600E-08

RISK ASSESSMENT SPREADSHEET (PAGE 3)

SITE NAME: JACK'S CREEK EXPOSURE ROUTE: INGESTION RECEPTOR: EMPLOYEE FILENAME: INGSEE91.WK1

LOCATION: MIFFLIN, PA MEDIA: SEDIMENT CONCENTRATION: 95% UCL OF THE MEAN

DETERMINE HAZARD INDICIES AND CANCER RISK:

CHEMICAL	ORAL RfD (MG/KG/DAY)	ORAL SLOPE FACTOR (KG-DAY/MG)	HAZARD INDEX	CANCER RISK LIFETIME
ARSENIC	3.00E-04		4.7358E-03	
BERYLLIUM	5.00E-03	4.30E+00	2.5832E-05	2.3802E-07
CHROMIUM	5.00E-03		3.7339E-04	
COPPER	3.71E-02		3.2915E-03	
LEAD				
MANGANESE	5.00E-03		3.0763E-02	
NICKEL	2.00E-02		1.8552E-04	
THALLIUM				
ZINC	3.00E-01		6.9276E-04	
POLYCYCLIC AROMATIC HYDROC		7.30E+00		1.3776E-06
BIS(2-ETHYLHEXYL)PHTHALATE	2.00E-02	1.40E-02	1.9432E-06	2.3319E-10
POLYCHLORINATED BIPHENYLS		7.70E+00		1.2012E-07
TOTAL			4.01E-02	1.74E-06

RISK ASSESSMENT SPREADSHEET (PAGE 1)

SITE NAME:	JACK'S CREEK	FILENAME:	INGSEA92.WK1
LOCATION:	MIFFLIN, PA	VERSION:	2
DATE:	04/08/93	PATH:	C:\RJL\JC\

EXPOSURE ROUTE: INGESTION
MEDIA: SEDIMENT
RECEPTOR: ADULT
CONCENTRATION: 95% UCL OF THE MEAN

ADDTIONAL COMMENTS: THIS SPREADSHEET CALCULATES INCREMENTAL CANCER RISK AND THE HAZARD INDEX FOR AN INDIVIDUAL EXPOSED TO COMTAMINANTS THROUGH INGESTION OF CONTAMINATED SEDIMENT.
THE SOURCE OF CONTAMINATED SEDIMENT IS ASSUMED TO BE UNCONFINED AERA.

RELEVANT EQUATION: INTAKE (MG/KG-DAY) = (CS*IR*CF*FI*EF*ED) / (BW*AT)

		INPUT VALUES
WHERE: IR	= INGESTION RATE (G/DAY)	0.01
CF	= CONVERSION FACTOR (KG/G)	1.0E-03
FI	= FRACTION INGESTED FROM CONTAMINATED SOURCE (UNITLESS)	1
EF	= EXPOSURE FREQUENCY (DAYS/YEAR)	7
ED	= EXPOSURE DURATION (YEARS)	30
BW	= BODY WEIGHT (KG)	70
AT	= AVERAGING TIME (SEE BELOW)	
CS	= CONTAMINANT CONCENTRATION IN SOIL (MG/KG) (SEE PAGE 2 FOR SITE-SPECIFIC DATA)	

DETERMINE AVERAGING TIME

AVERAGING TIME FOR FOR NONCARCINOGENS (i.e., ED*365 DAYS / YEAR):	1.0950E+04
AVERAGING TIME FOR CARCINOGENS (i.e., 70 YEARS*365 DAYS/YEAR):	2.5550E+04

RISK ASSESSMENT SPREADSHEET (PAGE 2)

SITE NAME: JACK'S CREEK EXPOSURE ROUTE: INGESTION RECEPTOR: ADULT FILENAME: INGSEA92.WK1

LOCATION: MIFFLIN, PA MEDIA: SEDIMENT CONCENTRATION: 95% UCL OF THE MEAN

CALCULATE INTAKES:

CHEMICAL	CONCENTRATION IN SEDIMENT (MG/KG)	INTAKE (MG/KG)	NONCARCINOGENIC TIME-WEIGHTED AVERAGE INTAKE (MG/KG/DAY)	CARCINOGENIC TIME-WEIGHTED AVERAGE INTAKE (MG/KG/DAY)
ARSENIC	9.6	2.8800E-04	2.6301E-08	1.1272E-08
BERYLLIUM	11.5	3.4500E-04	3.1507E-08	1.3503E-08
CADMIUM	32.6	9.7800E-04	8.9315E-08	3.8278E-08
CHROMIUM	23.8	7.1400E-04	6.5205E-08	2.7945E-08
COPPER	8520.0	2.5560E-01	2.3342E-05	1.0004E-05
LEAD	5130.0	1.5390E-01	1.4055E-05	6.0235E-06
MANGANESE	1380.0	4.1400E-02	3.7808E-06	1.6204E-06
NICKEL	129.0	3.8700E-03	3.5342E-07	1.5147E-07
THALLIUM	0.3	7.8000E-06	7.1233E-10	3.0528E-10
ZINC	33300.0	9.9900E-01	9.1233E-05	3.9100E-05
POLYCHLORINATED BIPHENYLS	1.04	3.1200E-05	2.8493E-09	1.2211E-09

RISK ASSESSMENT SPREADSHEET (PAGE 3)

SITE NAME: JACK'S CREEK EXPOSURE ROUTE: INGESTION RECEPTOR: ADULT FILENAME: INGSEA92.WK1

LOCATION: MIFFLIN, PA MEDIA: SEDIMENT CONCENTRATION: 95% UCL OF THE MEAN

DETERMINE HAZARD INDICIES AND CANCER RISK:

CHEMICAL	ORAL RfD (MG/KG/DAY)	ORAL SLOPE FACTOR (KG-DAY/MG)	HAZARD INDEX	CANCER RISK LIFETIME
ARSENIC	3.00E-04		8.7671E-05	
BERYLLIUM	5.00E-03	4.30E+00	6.3014E-06	5.8063E-08
CADMIUM	5.00E-04		1.7863E-04	
CHROMIUM	5.00E-03		1.3041E-05	
COPPER	3.71E-02		6.2918E-04	
LEAD				
MANGANESE	5.00E-03		7.5616E-04	
NICKEL	2.00E-02		1.7671E-05	
THALLIUM				
ZINC	3.00E-01		3.0411E-04	
POLYCHLORINATED BIPHENYLS		7.70E+00		9.4027E-09
TOTAL			1.99E-03	6.75E-08

RISK ASSESSMENT SPREADSHEET (PAGE 1)

SITE NAME:	JACK'S CREEK	FILENAME:	INGSEC92.WK1
LOCATION:	MIFFLIN, PA	VERSION:	2
DATE:	04/08/93	PATH:	C:\RJL\JC\

EXPOSURE ROUTE: INGESTION
MEDIA: SEDIMENT
RECEPTOR: CHILDREN
CONCENTRATION: 95% UCL OF THE MEAN

ADDTIONAL COMMENTS: THIS SPREADSHEET CALCULATES INCREMENTAL CANCER RISK AND THE HAZARD INDEX FOR AN INDIVIDUAL EXPOSED TO COMTAMINANTS THROUGH INGESTION OF CONTAMINATED SEDIMENT.
THE SOURCE OF CONTAMINATED SEDIMENT IS ASSUMED TO BE UNCONFINED AERA.

RELEVANT EQUATION: INTAKE (MG/KG-DAY) = (CS*IR*CF*FI*EF*ED) / (BW*AT)

		INPUT VALUES
WHERE: IR	= INGESTION RATE (G/DAY)	0.01
CF	= CONVERSION FACTOR (KG/G)	1.0E-03
FI	= FRACTION INGESTED FROM CONTAMINATED SOURCE (UNITLESS)	1
EF	= EXPOSURE FREQUENCY (DAYS/YEAR)	26
ED	= EXPOSURE DURATION (YEARS)	6
BW	= BODY WEIGHT (KG)	30
AT	= AVERAGING TIME (SEE BELOW)	
CS	= CONTAMINANT CONCENTRATION IN SOIL (MG/KG) (SEE PAGE 2 FOR SITE-SPECIFIC DATA)	

DETERMINE AVERAGING TIME

AVERAGING TIME FOR FOR NONCARCINOGENS (i.e., ED*365 DAYS / YEAR):	2.1900E+03
AVERAGING TIME FOR CARCINOGENS (i.e., 70 YEARS*365 DAYS/YEAR):	2.5550E+04

RISK ASSESSMENT SPREADSHEET (PAGE 2)

SITE NAME: JACK'S CREEK EXPOSURE ROUTE: . INGESTION RECEPTOR: CHILDREN FILENAME: INGSEC92.WK1

LOCATION: MIFFLIN, PA MEDIA: SEDIMENT CONCENTRATION: 95% UCL OF THE MEAN

CALCULATE INTAKES:

CHEMICAL	CONCENTRATION IN SEDIMENT (MG/KG)	INTAKE (MG/KG)	NONCARCINOGENIC TIME-WEIGHTED AVERAGE INTAKE (MG/KG/DAY)	CARCINOGENIC TIME-WEIGHTED AVERAGE INTAKE (MG/KG/DAY)
ARSENIC	9.6	4.9920E-04	2.2795E-07	1.9538E-08
BERYLLIUM	11.5	5.9800E-04	2.7306E-07	2.3405E-08
CADMIUM	32.6	1.6952E-03	7.7406E-07	6.6348E-08
CHROMIUM	23.8	1.2376E-03	5.6511E-07	4.8438E-08
COPPER	8520.0	4.4304E-01	2.0230E-04	1.7340E-05
LEAD	5130.0	2.6676E-01	1.2181E-04	1.0441E-05
MANGANESE	1380.0	7.1760E-02	3.2767E-05	2.8086E-06
NICKEL	129.0	6.7080E-03	3.0630E-06	2.6254E-07
THALLIUM	0.3	1.3520E-05	6.1735E-09	5.2916E-10
ZINC	33300.0	1.7316E+00	7.9068E-04	6.7773E-05
POLYCHLORINATED BIPHENYLS	1.04	5.4080E-05	2.4694E-08	2.1166E-09

RISK ASSESSMENT SPREADSHEET (PAGE 3)

SITE NAME: JACK'S CREEK | EXPOSURE ROUTE: INGESTION | RECEPTOR: CHILDREN | FILENAME: INGSEC92.WK1

LOCATION: MIFFLIN, PA | MEDIA: SEDIMENT | CONCENTRATION: 95% UCL OF THE MEAN

DETERMINE HAZARD INDICIES AND CANCER RISK:

CHEMICAL	ORAL RfD (MG/KG/DAY)	ORAL SLOPE FACTOR (KG-DAY/MG)	HAZARD INDEX	CANCER RISK LIFETIME
ARSENIC	3.00E-04		7.5982E-04	
BERYLLIUM	5.00E-03	4.30E+00	5.4612E-05	1.0064E-07
CADMIUM	5.00E-04		1.5481E-03	
CHROMIUM	5.00E-03		1.1302E-04	
COPPER	3.71E-02		5.4529E-03	
LEAD				
MANGANESE	5.00E-03		6.5534E-03	
NICKEL	2.00E-02		1.5315E-04	
THALLIUM				
ZINC	3.00E-01		2.6356E-03	
POLYCHLORINATED BIPHENYLS		7.70E+00		1.6298E-08
TOTAL			1.73E-02	1.17E-07

RISK ASSESSMENT SPREADSHEET (PAGE 1)

SITE NAME:	JACK'S CREEK	FILENAME:	INGSEA93.WK1
LOCATION:	MIFFLIN, PA	VERSION:	3
DATE:	04/13/93	PATH:	C:\RJL\JC\

EXPOSURE ROUTE: INGESTION
MEDIA: SEDIMENT
RECEPTOR: ADULT
CONCENTRATION: 95% UCL OF THE MEAN

ADDTIONAL COMMENTS: THIS SPREADSHEET CALCULATES INCREMENTAL CANCER RISK AND THE HAZARD INDEX FOR AN INDIVIDUAL EXPOSED TO COMTAMINANTS THROUGH INGESTION OF CONTAMINATED SEDIMENT.
THE SOURCE OF CONTAMINATED SEDIMENT IS ASSUMED TO BE JACK'S CREEK.

RELEVANT EQUATION: INTAKE (MG/KG-DAY) = (CS*IR*CF*FI*EF*ED) / (BW*AT)

		INPUT VALUES
WHERE: IR	= INGESTION RATE (G/DAY)	0.01
CF	= CONVERSION FACTOR (KG/G)	1.0E-03
FI	= FRACTION INGESTED FROM CONTAMINATED SOURCE (UNITLESS)	1
EF	= EXPOSURE FREQUENCY (DAYS/YEAR)	7
ED	= EXPOSURE DURATION (YEARS)	30
BW	= BODY WEIGHT (KG)	70
AT	= AVERAGING TIME (SEE BELOW)	
CS	= CONTAMINANT CONCENTRATION IN SOIL (MG/KG) (SEE PAGE 2 FOR SITE-SPECIFIC DATA)	

DETERMINE AVERAGING TIME

AVERAGING TIME FOR FOR NONCARCINOGENS (i.e., ED*365 DAYS / YEAR):	1.0950E+04
AVERAGING TIME FOR CARCINOGENS (i.e., 70 YEARS*365 DAYS/YEAR):	2.5550E+04

RISK ASSESSMENT SPREADSHEET (PAGE 2)

SITE NAME: JACK'S CREEK | EXPOSURE ROUTE: INGESTION | RECEPTOR: ADULT | FILENAME: INGSEA93.WK1

LOCATION: MIFFLIN, PA | MEDIA: SEDIMENT | CONCENTRATION: 95% UCL OF THE MEAN

CALCULATE INTAKES:

CHEMICAL	CONCENTRATION IN SEDIMENT (MG/KG)	INTAKE (MG/KG)	NONCARCINOGENIC TIME-WEIGHTED AVERAGE INTAKE (MG/KG/DAY)	CARCINOGENIC TIME-WEIGHTED AVERAGE INTAKE (MG/KG/DAY)
ARSENIC	14.3	4.2900E-04	3.9178E-08	1.6791E-08
BERYLLIUM	2.2	6.6000E-05	6.0274E-09	2.5832E-09
CHROMIUM	41.5	1.2450E-03	1.1370E-07	4.8728E-08
COPPER	647.0	1.9410E-02	1.7726E-06	7.5969E-07
LEAD	264.0	7.9200E-03	7.2329E-07	3.0998E-07
MANGANESE	883.0	2.6490E-02	2.4192E-06	1.0368E-06
NICKEL	24.3	7.2900E-04	6.6575E-08	2.8532E-08
ZINC	2190.0	6.5700E-02	6.0000E-06	2.5714E-06
POLYCYCLIC AROMATIC HYDROC	0.06	1.8000E-06	1.6438E-10	7.0450E-11
BIS(2-ETHYLHEXYL)PHTHALATE	2.24	6.7200E-05	6.1370E-09	2.6301E-09
POLYCHLORINATED BIPHENYLS	0.47	1.4100E-05	1.2877E-09	5.5186E-10

RISK ASSESSMENT SPREADSHEET (PAGE 3)
SITE NAME: JACK'S CREEK EXPOSURE ROUTE: INGESTION RECEPTOR: ADULT FILENAME: INGSEA93.WK1
LOCATION: MIFFLIN, PA MEDIA: SEDIMENT CONCENTRATION: 95% UCL OF THE MEAN

DETERMINE HAZARD INDICIES AND CANCER RISK:

CHEMICAL	ORAL RfD (MG/KG/DAY)	ORAL SLOPE FACTOR (KG-DAY/MG)	HAZARD INDEX	CANCER RISK LIFETIME
ARSENIC	3.00E-04		1.3059E-04	
BERYLLIUM	5.00E-03	4.30E+00	1.2055E-06	1.1108E-08
CHROMIUM	5.00E-03		2.2740E-05	
COPPER	3.71E-02		4.7779E-05	
LEAD				
MANGANESE	5.00E-03		4.8384E-04	
NICKEL	2.00E-02		3.3288E-06	
ZINC	3.00E-01		2.0000E-05	
POLYCYCLIC AROMATIC HYDROC		7.30E+00		5.1429E-10
BIS(2-ETHYLHEXYL)PHTHALATE	2.00E-02	1.40E-02	3.0685E-07	3.6822E-11
POLYCHLORINATED BIPHENYLS		7.70E+00		4.2493E-09
TOTAL			7.10E-04	1.59E-08

RISK ASSESSMENT SPREADSHEET (PAGE 1)

SITE NAME:	JACK'S CREEK	FILENAME:	INGSEC93.WK1
LOCATION:	MIFFLIN, PA	VERSION:	3
DATE:	04/13/93	PATH:	C:\RJL\JC\

EXPOSURE ROUTE: INGESTION
MEDIA: SEDIMENT
RECEPTOR: CHILDREN
CONCENTRATION: 95% UCL OF THE MEAN

ADDTIONAL COMMENTS: THIS SPREADSHEET CALCULATES INCREMENTAL CANCER RISK AND THE HAZARD INDEX FOR AN INDIVIDUAL EXPOSED TO CONTAMINANTS THROUGH INGESTION OF CONTAMINATED SEDIMENT.
THE SOURCE OF CONTAMINATED SEDIMENT IS ASSUMED TO BE JACK'S CREEK.

RELEVANT EQUATION: INTAKE (MG/KG-DAY) = (CS*IR*CF*FI*EF*ED) / (BW*AT)

		INPUT VALUES
WHERE: IR	= INGESTION RATE (G/DAY)	0.01
CF	= CONVERSION FACTOR (KG/G)	1.0E-03
FI	= FRACTION INGESTED FROM CONTAMINATED SOURCE (UNITLESS)	1
EF	= EXPOSURE FREQUENCY (DAYS/YEAR)	36
ED	= EXPOSURE DURATION (YEARS)	6
BW	= BODY WEIGHT (KG)	30
AT	= AVERAGING TIME (SEE BELOW)	
CS	= CONTAMINANT CONCENTRATION IN SOIL (MG/KG) (SEE PAGE 2 FOR SITE-SPECIFIC DATA)	

DETERMINE AVERAGING TIME

AVERAGING TIME FOR FOR NONCARCINOGENS (i.e., ED*365 DAYS / YEAR):	2.1900E+03
AVERAGING TIME FOR CARCINOGENS (i.e., 70 YEARS*365 DAYS/YEAR):	2.5550E+04

RISK ASSESSMENT SPREADSHEET (PAGE 2)

SITE NAME: JACK'S CREEK EXPOSURE ROUTE: INGESTION RECEPTOR: CHILDREN FILENAME: INGSEC93.WK1

LOCATION: MIFFLIN, PA MEDIA: SEDIMENT CONCENTRATION: 95% UCL OF THE MEAN

CALCULATE INTAKES:

CHEMICAL	CONCENTRATION IN SEDIMENT (MG/KG)	INTAKE (MG/KG)	NONCARCINOGENIC TIME-WEIGHTED AVERAGE INTAKE (MG/KG/DAY)	CARCINOGENIC TIME-WEIGHTED AVERAGE INTAKE (MG/KG/DAY)
ARSENIC	14.3	1.0296E-03	4.7014E-07	4.0297E-08
BERYLLIUM	2.2	1.5840E-04	7.2329E-08	6.1996E-09
CHROMIUM	41.5	2.9880E-03	1.3644E-06	1.1695E-07
COPPER	647.0	4.6584E-02	2.1271E-05	1.8232E-06
LEAD	264.0	1.9008E-02	8.6795E-06	7.4395E-07
MANGANESE	883.0	6.3576E-02	2.9030E-05	2.4883E-06
NICKEL	24.3	1.7496E-03	7.9890E-07	6.8477E-08
ZINC	2190.0	1.5768E-01	7.2000E-05	6.1714E-06
POLYCYCLIC AROMATIC HYDROC	0.06	4.3200E-06	1.9726E-09	1.6908E-10
BIS(2-ETHYLHEXYL)PHTHALATE	2.24	1.6128E-04	7.3644E-08	6.3123E-09
POLYCHLORINATED BIPHENYLS	0.47	3.3840E-05	1.5452E-08	1.3245E-09

RISK ASSESSMENT SPREADSHEET (PAGE 3)

SITE NAME: JACK'S CREEK | EXPOSURE ROUTE: INGESTION | RECEPTOR: CHILDREN | FILENAME: INGSEC93.WK1

LOCATION: MIFFLIN, PA | MEDIA: SEDIMENT | CONCENTRATION: 95% UCL OF THE MEAN

DETERMINE HAZARD INDICIES AND CANCER RISK:

CHEMICAL	ORAL RfD (MG/KG/DAY)	ORAL SLOPE FACTOR (KG-DAY/MG)	HAZARD INDEX	CANCER RISK LIFETIME
ARSENIC	3.00E-04		1.5671E-03	
BERYLLIUM	5.00E-03	4.30E+00	1.4466E-05	2.6658E-08
CHROMIUM	5.00E-03		2.7288E-04	
COPPER	3.71E-02		5.7335E-04	
LEAD				
MANGANESE	5.00E-03		5.8060E-03	
NICKEL	2.00E-02		3.9945E-05	
ZINC	3.00E-01		2.4000E-04	
POLYCYCLIC AROMATIC HYDROC		7.30E+00		1.2343E-09
BIS(2-ETHYLHEXYL)PHTHALATE	2.00E-02	1.40E-02	3.6822E-06	8.8373E-11
POLYCHLORINATED BIPHENYLS		7.70E+00		1.0198E-08
TOTAL			8.52E-03	3.82E-08

Ingestion of Fish

RISK ASSESSMENT SPREADSHEET (PAGE 1)

SITE NAME:	JACK'S CREEK	FILENAME:	INGFIA9.WK1
LOCATION:	MIFFLIN, PA	VERSION:	
DATE:	04/08/93	PATH:	C:\RJL\JC\

EXPOSURE ROUTE: INGESTION
MEDIA: FISH AND SHELLFISH (WHOLE-BODIES)
RECEPTOR: ADULT
CONCENTRATION: 95% UCL OF THE MEAN

ADDTIONAL COMMENTS: THIS SPREADSHEET CALCULATES INCREMENTAL CANCER RISK AND THE HAZARD INDEX FOR AN INDIVIDUAL EXPOSED TO COMTAMINANTS THROUGH INGESTION OF CONTAMINATED FISH AND SHELLFISH.

RELEVANT EQUATION: INTAKE (MG/KG-DAY) = (CF*IR*CV*FI*EF*ED) / (BW*AT)

		INPUT VALUE
WHERE: IR	= INGESTION RATE (G/DAY)	54
CV	= CONVERSION FACTOR (KG/G)	0.001
FI	= FRACTION INGESTED FROM CONTAMINATED SOURCE (UNITLESS)	0.25
EF	= EXPOSURE FREQUENCY (DAYS/YEAR)	350
ED	= EXPOSURE DURATION (YEARS)	30
BW	= BODY WEIGHT (KG)	70
AT	= AVERAGING TIME (SEE BELOW)	
CF	= CONTAMINANT CONCENTRATION IN FISH (MG/KG) (SEE PAGE 2 FOR SITE-SPECIFIC DATA)	

DETERMINE AVERAGING TIME

AVERAGING TIME FOR FOR NONCARCINOGENS (i.e., ED*365 DAYS / YEAR):	1.0950E+04
AVERAGING TIME FOR CARCINOGENS (i.e., 70 YEARS * 365 DAYS/YEAR):	2.5550E+04

RISK ASSESSMENT SPREADSHEET (PAGE 2)
SITE NAME: JACK'S CREEK EXPOSURE ROUTE: INGESTION RECEPTOR: ADULT FILENAME: INGFIA9.WK1
LOCATION: MIFFLIN, PA MEDIA: FISH AND SHELLFISH (WHOLE-BODIES) CONCENTRATION: 95% UCL OF THE MEAN

CALCULATE INTAKES:

CHEMICAL	CONCENTRATION IN FISH (MG/KG)	INTAKE (MG/KG)	NONCARCINOGENIC TIME-WEIGHTED AVERAGE INTAKE (MG/KG/DAY)	CARCINOGENIC TIME-WEIGHTED AVERAGE INTAKE (MG/KG/DAY)
ALUMINUM	32.070	6.4942E+01	5.9308E-03	2.5418E-03
BARIUM	4.406	8.9222E+00	8.1481E-04	3.4920E-04
MANGANESE	17.172	3.4773E+01	3.1756E-03	1.3610E-03
NICKEL	4.255	8.6164E+00	7.8688E-04	3.3724E-04
VANADIUM	1.130	2.2883E+00	2.0897E-04	8.9560E-05
ZINC	54.448	1.1026E+02	1.0069E-02	4.3154E-03
4,4'-DDE	0.002	4.0500E-03	3.6986E-07	1.5851E-07
POLYCHLORINATED BIPHENYLS	1.454	2.9444E+00	2.6889E-04	1.1524E-04

RISK ASSESSMENT SPREADSHEET (PAGE 3)

SITE NAME: JACK'S CREEK EXPOSURE ROUTE: INGESTION RECEPTOR: ADULT FILENAME: INGFIA9.WK1

LOCATION: MIFFLIN, PA MEDIA: FISH AND SHELLFISH (WHOLE-BODIES) CONCENTRATION: 95% UCL OF THE MEAN

DETERMINE HAZARD INDICIES AND CANCER RISK:

CHEMICAL	ORAL RfD (MG/KG/DAY)	ORAL SLOPE FACTOR (KG-DAY/MG)	HAZARD INDEX	CANCER RISK LIFETIME
ALUMINUM	2.90E+00		2.0451E-03	
BARIUM	7.00E-02		1.1640E-02	
MANGANESE	5.00E-03		6.3513E-01	
NICKEL	2.00E-02		3.9344E-02	
VANADIUM	9.00E-03		2.3219E-02	
ZINC	3.00E-01		3.3564E-02	
4,4'-DDE		3.40E-01		5.3894E-08
POLYCHLORINATED BIPHENYLS		7.70E+00		8.8734E-04
TOTAL			7.4494E-01	8.8739E-04

RISK ASSESSMENT SPREADSHEET (PAGE 1)

SITE NAME: JACK'S CREEK FILENAME: INGFIC9.WK1
LOCATION: MIFFLIN, PA VERSION:
DATE: 04/08/93 PATH: C:\RJL\JC\

EXPOSURE ROUTE: INGESTION
MEDIA: FISH AND SHELLFISH (WHOLE-BODIES)
RECEPTOR: CHILDREN
CONCENTRATION: 95% UCL OF THE MEAN

ADDTIONAL COMMENTS: THIS SPREADSHEET CALCULATES INCREMENTAL CANCER RISK AND THE HAZARD INDEX FOR AN INDIVIDUAL EXPOSED TO COMTAMINANTS THROUGH INGESTION OF CONTAMINATED FISH AND SHELLFISH.

RELEVANT EQUATION: INTAKE (MG/KG-DAY) = (CF*IR*CV*FI*EF*ED) / (BW*AT)

		INPUT VALUE
WHERE: IR	= INGESTION RATE (G/DAY)	27
CV	= CONVERSION FACTOR (KG/G)	0.001
FI	= FRACTION INGESTED FROM CONTAMINATED SOURCE (UNITLESS)	0.25
EF	= EXPOSURE FREQUENCY (DAYS/YEAR)	350
ED	= EXPOSURE DURATION (YEARS)	6
BW	= BODY WEIGHT (KG)	15
AT	= AVERAGING TIME (SEE BELOW)	
CF	= CONTAMINANT CONCENTRATION IN FISH (MG/KG) (SEE PAGE 2 FOR SITE-SPECIFIC DATA)	

DETERMINE AVERAGING TIME

AVERAGING TIME FOR FOR NONCARCINOGENS (i.e., ED*365 DAYS / YEAR):	2.1900E+03
AVERAGING TIME FOR CARCINOGENS (i.e., 70 YEARS * 365 DAYS/YEAR):	2.5550E+04

RISK ASSESSMENT SPREADSHEET (PAGE 2)

SITE NAME: JACK'S CREEK EXPOSURE ROUTE: INGESTION RECEPTOR: CHILDREN FILENAME: INGFIC9.WK1

LOCATION: MIFFLIN, PA MEDIA: FISH AND SHELLFISH (WHOLE-BODIES) CONCENTRATION: 95% UCL OF THE MEAN

CALCULATE INTAKES:

CHEMICAL	CONCENTRATION IN FISH (MG/KG)	INTAKE (MG/KG)	NONCARCINOGENIC TIME-WEIGHTED AVERAGE INTAKE (MG/KG/DAY)	CARCINOGENIC TIME-WEIGHTED AVERAGE INTAKE (MG/KG/DAY)
ALUMINUM	32.070	3.0306E+01	1.3838E-02	1.1862E-03
BARIUM	4.406	4.1637E+00	1.9012E-03	1.6296E-04
MANGANESE	17.172	1.6228E+01	7.4098E-03	6.3513E-04
NICKEL	4.255	4.0210E+00	1.8361E-03	1.5738E-04
VANADIUM	1.130	1.0679E+00	4.8760E-04	4.1795E-05
ZINC	54.448	5.1453E+01	2.3495E-02	2.0138E-03
4,4'-DDE	0.002	1.8900E-03	8.6301E-07	7.3973E-08
POLYCHLORINATED BIPHENYLS	1.454	1.3740E+00	6.2741E-04	5.3778E-05

RISK ASSESSMENT SPREADSHEET (PAGE 3)

SITE NAME: JACK'S CREEK EXPOSURE ROUTE: INGESTION RECEPTOR: CHILDREN FILENAME: INGFIC9.WK1

LOCATION: MIFFLIN, PA MEDIA: FISH AND SHELLFISH (WHOLE-BODIES) CONCENTRATION: 95% UCL OF THE MEAN

DETERMINE HAZARD INDICIES AND CANCER RISK:

CHEMICAL	ORAL RfD (MG/KG/DAY)	ORAL SLOPE FACTOR (KG-DAY/MG)	HAZARD INDEX	CANCER RISK LIFETIME
ALUMINUM	2.90E+00		4.7719E-03	
BARIUM	7.00E-02		2.7160E-02	
MANGANESE	5.00E-03		1.4820E+00	
NICKEL	2.00E-02		9.1803E-02	
VANADIUM	9.00E-03		5.4178E-02	
ZINC	3.00E-01		7.8316E-02	
4,4'-DDE		3.40E-01		2.5151E-08
POLYCHLORINATED BIPHENYLS		7.70E+00		4.1409E-04
TOTAL			1.7382E+00	4.1412E-04

RISK ASSESSMENT SPREADSHEET (PAGE 1)

SITE NAME:	JACK'S CREEK	FILENAME:	INGFIA91.WK1
LOCATION:	MIFFLIN, PA	VERSION:	1
DATE:	04/08/93	PATH:	C:\RJL\JC\

EXPOSURE ROUTE: INGESTION
MEDIA: FISH AND SHELLFISH (FILLET)
RECEPTOR: ADULT
CONCENTRATION: 95% UCL OF THE MEAN

ADDTIONAL COMMENTS: THIS SPREADSHEET CALCULATES INCREMENTAL CANCER RISK AND THE HAZARD INDEX FOR AN INDIVIDUAL EXPOSED TO CONTAMINANTS THROUGH INGESTION OF CONTAMINATED FISH AND SHELLFISH.

RELEVANT EQUATION: INTAKE (MG/KG-DAY) = (CF*IR*CV*FI*EF*ED) / (BW*AT)

		INPUT VALUE
WHERE: IR	= INGESTION RATE (G/DAY)	54
CV	= CONVERSION FACTOR (KG/G)	0.001
FI	= FRACTION INGESTED FROM CONTAMINATED SOURCE (UNITLESS)	0.25
EF	= EXPOSURE FREQUENCY (DAYS/YEAR)	350
ED	= EXPOSURE DURATION (YEARS)	30
BW	= BODY WEIGHT (KG)	70
AT	= AVERAGING TIME (SEE BELOW)	
CF	= CONTAMINANT CONCENTRATION IN FISH (MG/KG) (SEE PAGE 2 FOR SITE-SPECIFIC DATA)	

DETERMINE AVERAGING TIME

AVERAGING TIME FOR FOR NONCARCINOGENS (i.e., ED*365 DAYS / YEAR):	1.0950E+04
AVERAGING TIME FOR CARCINOGENS (i.e., 70 YEARS * 365 DAYS/YEAR):	2.5550E+04

RISK ASSESSMENT SPREADSHEET (PAGE 2)

SITE NAME: JACK'S CREEK EXPOSURE ROUTE: INGESTION RECEPTOR: ADULT FILENAME: INGFIA91.WK1

LOCATION: MIFFLIN, PA MEDIA: FISH AND SHELLFISH (FILLET) CONCENTRATION: 95% UCL OF THE MEAN

CALCULATE INTAKES:

CHEMICAL	CONCENTRATION IN FISH (MG/KG)	INTAKE (MG/KG)	NONCARCINOGENIC TIME-WEIGHTED AVERAGE INTAKE (MG/KG/DAY)	CARCINOGENIC TIME-WEIGHTED AVERAGE INTAKE (MG/KG/DAY)
ALUMINUM	48.651	9.8518E+01	8.9971E-03	3.8559E-03
BARIUM	4.574	9.2624E+00	8.4588E-04	3.6252E-04
CHROMIUM	4.504	9.1206E+00	8.3293E-04	3.5697E-04
LEAD	2.481	5.0240E+00	4.5882E-04	1.9664E-04
MANGANESE	377.000	7.6343E+02	6.9719E-02	2.9880E-02
NICKEL	8.845	1.7911E+01	1.6357E-03	7.0102E-04
SELENIUM	1.377	2.7884E+00	2.5465E-04	1.0914E-04
VANADIUM	1.536	3.1104E+00	2.8405E-04	1.2174E-04
ZINC	109.651	2.2204E+02	2.0278E-02	8.6905E-03
4,4'-DDE	0.001	2.6325E-03	2.4041E-07	1.0303E-07
POLYCHLORINATED BIPHENYLS	0.431	8.7278E-01	7.9705E-05	3.4159E-05

RISK ASSESSMENT SPREADSHEET (PAGE 3)

SITE NAME: JACK'S CREEK | EXPOSURE ROUTE: INGESTION | RECEPTOR: ADULT | FILENAME: INGFIA91.WK1

LOCATION: MIFFLIN, PA | MEDIA: FISH AND SHELLFISH (FILLET) | CONCENTRATION: 95% UCL OF THE MEAN

DETERMINE HAZARD INDICIES AND CANCER RISK:

CHEMICAL	ORAL RfD (MG/KG/DAY)	ORAL SLOPE FACTOR (KG-DAY/MG)	HAZARD INDEX	CANCER RISK LIFETIME
ALUMINUM	2.90E+00		3.1024E-03	
BARIUM	7.00E-02		1.2084E-02	
CHROMIUM	5.00E-03		1.6659E-01	
LEAD				
MANGANESE	5.00E-03		1.3944E+01	
NICKEL	2.00E-02		8.1786E-02	
SELENIUM	5.00E-03		5.0930E-02	
VANADIUM	9.00E-03		3.1562E-02	
ZINC	3.00E-01		6.7593E-02	
4,4'-DDE		3.40E-01		3.5031E-08
POLYCHLORINATED BIPHENYLS		7.70E+00		2.6303E-04
TOTAL			1.4357E+01	2.6306E-04

RISK ASSESSMENT SPREADSHEET (PAGE 1)

SITE NAME:	JACK'S CREEK	FILENAME:	INGFIC91.WK1
LOCATION:	MIFFLIN, PA	VERSION:	1
DATE:	04/08/93	PATH:	C:\RJL\JC\

EXPOSURE ROUTE: INGESTION
MEDIA: FISH AND SHELLFISH (FILLET)
RECEPTOR: CHILDREN
CONCENTRATION: 95% UCL OF THE MEAN

ADDTIONAL COMMENTS: THIS SPREADSHEET CALCULATES INCREMENTAL CANCER RISK AND THE HAZARD INDEX FOR AN INDIVIDUAL EXPOSED TO COMTAMINANTS THROUGH INGESTION OF CONTAMINATED FISH AND SHELLFISH.

RELEVANT EQUATION: INTAKE (MG/KG-DAY) = (CF*IR*CV*FI*EF*ED) / (BW*AT)

		INPUT VALUE
WHERE:	IR = INGESTION RATE (G/DAY)	27
	CV = CONVERSION FACTOR (KG/G)	0.001
	FI = FRACTION INGESTED FROM CONTAMINATED SOURCE (UNITLESS)	0.25
	EF = EXPOSURE FREQUENCY (DAYS/YEAR)	350
	ED = EXPOSURE DURATION (YEARS)	6
	BW = BODY WEIGHT (KG)	15
	AT = AVERAGING TIME (SEE BELOW)	
	CF = CONTAMINANT CONCENTRATION IN FISH (MG/KG) (SEE PAGE 2 FOR SITE-SPECIFIC DATA)	

DETERMINE AVERAGING TIME

AVERAGING TIME FOR FOR NONCARCINOGENS (i.e., ED*365 DAYS / YEAR):	2.1900E+03
AVERAGING TIME FOR CARCINOGENS (i.e., 70 YEARS * 365 DAYS/YEAR):	2.5550E+04

RISK ASSESSMENT SPREADSHEET (PAGE 2)

SITE NAME: JACK'S CREEK EXPOSURE ROUTE: INGESTION RECEPTOR: CHILDREN FILENAME: INGFIC91.WK1

LOCATION: MIFFLIN, PA MEDIA: FISH AND SHELLFISH (FILLET) CONCENTRATION: 95% UCL OF THE MEAN

CALCULATE INTAKES:

CHEMICAL	CONCENTRATION IN FISH (MG/KG)	INTAKE (MG/KG)	NONCARCINOGENIC TIME-WEIGHTED AVERAGE INTAKE (MG/KG/DAY)	CARCINOGENIC TIME-WEIGHTED AVERAGE INTAKE (MG/KG/DAY)
ALUMINUM	48.651	4.5975E+01	2.0993E-02	1.7994E-03
BARIUM	4.574	4.3224E+00	1.9737E-03	1.6918E-04
CHROMIUM	4.504	4.2563E+00	1.9435E-03	1.6659E-04
LEAD	2.481	2.3445E+00	1.0706E-03	9.1763E-05
MANGANESE	377.000	3.5627E+02	1.6268E-01	1.3944E-02
NICKEL	8.845	8.3585E+00	3.8167E-03	3.2714E-04
SELENIUM	1.377	1.3013E+00	5.9418E-04	5.0930E-05
VANADIUM	1.536	1.4515E+00	6.6279E-04	5.6811E-05
ZINC	109.651	1.0362E+02	4.7315E-02	4.0556E-03
4,4'-DDE	0.001	1.2285E-03	5.6096E-07	4.8082E-08
POLYCHLORINATED BIPHENYLS	0.431	4.0730E-01	1.8598E-04	1.5941E-05

RISK ASSESSMENT SPREADSHEET (PAGE 3)

SITE NAME: JACK'S CREEK EXPOSURE ROUTE: INGESTION RECEPTOR: CHILDREN FILENAME: INGFIC91.WK1

LOCATION: MIFFLIN, PA MEDIA: FISH AND SHELLFISH (FILLET) CONCENTRATION: 95% UCL OF THE MEAN

DETERMINE HAZARD INDICIES AND CANCER RISK:

CHEMICAL	ORAL RfD (MG/KG/DAY)	ORAL SLOPE FACTOR (KG-DAY/MG)	HAZARD INDEX	CANCER RISK LIFETIME
ALUMINUM	2.90E+00		7.2390E-03	
BARIUM	7.00E-02		2.8196E-02	
CHROMIUM	5.00E-03		3.8870E-01	
LEAD				
MANGANESE	5.00E-03		3.2536E+01	
NICKEL	2.00E-02		1.9083E-01	
SELENIUM	5.00E-03		1.1884E-01	
VANADIUM	9.00E-03		7.3644E-02	
ZINC	3.00E-01		1.5772E-01	
4,4'-DDE		3.40E-01		1.6348E-08
POLYCHLORINATED BIPHENYLS		7.70E+00		1.2275E-04
TOTAL			3.3501E+01	1.2276E-04

Ingestion of Particulates Coating Interior Building Surfaces

RISK ASSESSMENT SPREADSHEET

SITE NAME:	JACK'S CREEK	FILENAME:	INGDUE96.WK1
LOCATION:	MIFFLIN, PA	VERSION:	6
DATE:	04/14/93	PATH:	C:\RJL\JC\

EXPOSURE ROUTE: INGESTION OF BUILDING DUST
MEDIA: DUST
RECEPTOR: EMPLOYEE
CONCENTRATION: 95% UCL OF THE MEAN

ADDTIONAL COMMENTS: THIS SPREADSHEET CALCULATES INCREMENTAL CANCER RISK AND THE HAZARD INDEX FOR AN INDIVIDUAL EXPOSED TO COMTAMINANTS THROUGH INGESTION OF CONTAMINATED DUST.
THE SOURCE OF CONTAMINATED DUST IS ASSUMED TO BE FROM SMELTER LABORATORY.

RELEVANT EQUATION: INTAKE (MG/KG-DAY) = (C*SA*EF*ED) / (BW*AT)

		INPUT VALUES
WHERE: SA	= SURFACE AREA OF HAND FROM WHICH MATERIAL IS ACCIDENTALLY INGESTED ON A DAILY BASIS (CM2/DAY)	59
EF	= EXPOSURE FREQUENCY (DAYS/YEAR)	250
ED	= EXPOSURE DURATION (YEARS)	30
BW	= BODY WEIGHT (KG)	70
AT	= AVERAGING TIME (SEE BELOW)	
C	= CONTAMINANT CONCENTRATION FROM WIPE SAMPLE (MG/CM2) (SEE PAGE 2 FOR SITE-SPECIFIC DATA)	

DETERMINE AVERAGING TIME

AVERAGING TIME FOR FOR NONCARCINOGENS (i.e., ED*365 DAYS / YEAR):	1.0950E+04
AVERAGING TIME FOR CARCINOGENS (i.e., 70 YEARS*365 DAYS/YEAR):	2.5550E+04

RISK ASSESSMENT SPREADSHEET (PAGE 2)

SITE NAME: JACK'S CREEK EXPOSURE ROUTE: INGESTION OF BUILDING DUST RECEPTOR: EMPLOYEE FILENAME: INGDUE96.WK1

LOCATION: MIFFLIN, PA MEDIA: DUST CONCENTRATION: 95% UCL OF THE MEAN

CALCULATE INTAKES:

CHEMICAL	CONCENTRATION IN WIPE SAMPLE (MG/CM2)	INTAKE (MG/KG)	NONCARCINOGENIC TIME-WEIGHTED AVERAGE INTAKE (MG/KG/DAY)	CARCINOGENIC TIME-WEIGHTED AVERAGE INTAKE (MG/KG/DAY)
ANTIMONY	3.70E-04	2.3389E+00	2.1360E-04	9.1543E-05
ARSENIC	2.00E-05	1.2643E-01	1.1546E-05	4.9483E-06
BARIUM	1.45E-03	9.1661E+00	8.3708E-04	3.5875E-04
BERYLLIUM	7.50E-06	4.7411E-02	4.3297E-06	1.8556E-06
CADMIUM	3.90E-04	2.4654E+00	2.2515E-04	9.6491E-05
CHROMIUM	4.00E-06	2.5286E-02	2.3092E-06	9.8966E-07
LEAD	1.43E-02	9.0396E+01	8.2554E-03	3.5380E-03
MANGANESE	3.27E-03	2.0671E+01	1.8878E-03	8.0904E-04
MERCURY	6.00E-06	3.7929E-02	3.4638E-06	1.4845E-06
NICKEL	1.15E-03	7.2696E+00	6.6389E-04	2.8453E-04
SELENIUM	2.00E-06	1.2643E-02	1.1546E-06	4.9483E-07
SILVER	7.00E-05	4.4250E-01	4.0411E-05	1.7319E-05
VANADIUM	9.00E-05	5.6893E-01	5.1957E-05	2.2267E-05
ZINC	5.75E-02	3.6348E+02	3.3195E-02	1.4226E-02
ALUMINUM	6.83E-02	4.3175E+02	3.9430E-02	1.6898E-02
COBALT	4.00E-05	2.5286E-01	2.3092E-05	9.8966E-06
COPPER	1.27E-01	8.0282E+02	7.3317E-02	3.1422E-02
IRON	9.80E-02	6.1950E+02	5.6575E-02	2.4247E-02

RISK ASSESSMENT SPREADSHEET (PAGE 3)
SITE NAME: JACK'S CREEK EXPOSURE ROUTE: INGESTION OF BUILDING DUST RECEPTOR: EMPLOYEE FILENAME: INGDUE96.WK1
LOCATION: MIFFLIN, PA MEDIA: DUST CONCENTRATION: 95% UCL OF THE MEAN

DETERMINE HAZARD INDICIES AND CANCER RISK:

CHEMICAL	ORAL RfD (MG/KG/DAY)	ORAL SLOPE FACTOR (KG-DAY/MG)	HAZARD INDEX	CANCER RISK LIFETIME
ANTIMONY	4.00E-04		5.3400E-01	
ARSENIC	3.00E-04		3.8487E-02	
BARIUM	7.00E-02		1.1958E-02	
BERYLLIUM	5.00E-03	4.30E+00	8.6595E-04	7.9791E-06
CADMIUM	5.00E-04		4.5029E-01	
CHROMIUM	5.00E-03		4.6184E-04	
LEAD				
MANGANESE	5.00E-03		3.7755E-01	
MERCURY	3.00E-04		1.1546E-02	
NICKEL	2.00E-02		3.3195E-02	
SELENIUM	5.00E-03		2.3092E-04	
SILVER	5.00E-03		8.0822E-03	
VANADIUM	9.00E-03		5.7730E-03	
ZINC	3.00E-01		1.1065E-01	
ALUMINUM	2.90E+00		1.3596E-02	
COBALT				
COPPER	3.71E-02		1.9762E+00	
IRON				
TOTAL			3.57E+00	7.98E-06

RISK ASSESSMENT SPREADSHEET (PAGE 1)

SITE NAME:	JACK'S CREEK	FILENAME:	INGDUE95.WK1
LOCATION:	MIFFLIN, PA	VERSION:	5
DATE:	04/14/93	PATH:	C:\RJL\JC\

EXPOSURE ROUTE: INGESTION OF BUILDING DUST
MEDIA: DUST
RECEPTOR: EMPLOYEE
CONCENTRATION: 95% UCL OF THE MEAN

ADDTIONAL COMMENTS: THIS SPREADSHEET CALCULATES INCREMENTAL CANCER RISK AND THE HAZARD INDEX FOR AN INDIVIDUAL EXPOSED TO COMTAMINANTS THROUGH INGESTION OF CONTAMINATED DUST.
THE SOURCE OF CONTAMINATED DUST IS ASSUMED TO BE FROM SMELTER BUILDING.

RELEVANT EQUATION: INTAKE (MG/KG-DAY) = (C*SA*EF*ED) / (BW*AT)

		INPUT VALUES
WHERE: SA	= SURFACE AREA OF HAND FROM WHICH MATERIAL IS ACCIDENTALLY INGESTED ON A DAILY BASIS (CM2/DAY)	59
EF	= EXPOSURE FREQUENCY (DAYS/YEAR)	250
ED	= EXPOSURE DURATION (YEARS)	30
BW	= BODY WEIGHT (KG)	70
AT	= AVERAGING TIME (SEE BELOW)	
C	= CONTAMINANT CONCENTRATION FROM WIPE SAMPLE (MG/CM2) (SEE PAGE 2 FOR SITE-SPECIFIC DATA)	

AR302662

DETERMINE AVERAGING TIME

AVERAGING TIME FOR FOR NONCARCINOGENS (i.e., ED*365 DAYS / YEAR):	1.0950E+04
AVERAGING TIME FOR CARCINOGENS (i.e., 70 YEARS*365 DAYS/YEAR):	2.5550E+04

RISK ASSESSMENT SPREADSHEET
SITE NAME: JACK'S CREEK
LOCATION: MIFFLIN, PA

EXPOSURE ROUTE: INGESTION OF BUILDING DUST
MEDIA: DUST

RECEPTOR: EMPLOYEE
CONCENTRATION: 95% UCL OF THE MEAN

FILENAME: INGDUE95.WK1

CALCULATE INTAKES:

CHEMICAL	CONCENTRATION IN WIPE SAMPLE (MG/CM2)	INTAKE (MG/KG)	NONCARCINOGENIC TIME-WEIGHTED AVERAGE INTAKE (MG/KG/DAY)	CARCINOGENIC TIME-WEIGHTED AVERAGE INTAKE (MG/KG/DAY)
ANTIMONY	1.30E-03	8.2179E+00	7.5049E-04	3.2164E-04
ARSENIC	1.50E-04	9.4821E-01	8.6595E-05	3.7112E-05
BARIUM	3.70E-03	2.3389E+01	2.1360E-03	9.1543E-04
BERYLLIUM	5.00E-05	3.1607E-01	2.8865E-05	1.2371E-05
CADMIUM	2.50E-03	1.5804E+01	1.4432E-03	6.1854E-04
CHROMIUM	3.30E-04	2.0861E+00	1.9051E-04	8.1647E-05
LEAD	2.19E-01	1.3844E+03	1.2643E-01	5.4184E-02
MANGANESE	6.40E-03	4.0457E+01	3.6947E-03	1.5834E-03
MERCURY	4.00E-05	2.5286E-01	2.3092E-05	9.8966E-06
NICKEL	1.97E-03	1.2453E+01	1.1373E-03	4.8741E-04
SELENIUM	8.00E-06	5.0571E-02	4.6184E-06	1.9793E-06
SILVER	1.70E-04	1.0746E+00	9.8141E-05	4.2060E-05
THALLIUM	1.00E-05	6.3214E-02	5.7730E-06	2.4741E-06
VANADIUM	6.00E-05	3.7929E-01	3.4638E-05	1.4845E-05
ZINC	1.84E+00	1.1631E+04	1.0622E+00	4.5524E-01
ALUMINUM	5.61E-02	3.5463E+02	3.2386E-02	1.3880E-02
COBALT	4.00E-05	2.5286E-01	2.3092E-05	9.8966E-06
COPPER	2.01E-01	1.2706E+03	1.1604E-01	4.9730E-02
IRON	4.47E-01	2.8257E+03	2.5805E-01	1.1059E-01

RISK ASSESSMENT SPREADSHEET (PAGE 3)

SITE NAME: JACK'S CREEK EXPOSURE ROUTE: INGESTION OF BUILDING DUST RECEPTOR: EMPLOYEE FILENAME: INGDUE95.WK1

LOCATION: MIFFLIN, PA MEDIA: DUST CONCENTRATION: 95% UCL OF THE MEAN

DETERMINE HAZARD INDICIES AND CANCER RISK:

CHEMICAL	ORAL RfD (MG/KG/DAY)	ORAL SLOPE FACTOR (KG-DAY/MG)	HAZARD INDEX	CANCER RISK LIFETIME
ANTIMONY	4.00E-04		1.8762E+00	
ARSENIC	3.00E-04		2.8865E-01	
BARIUM	7.00E-02		3.0514E-02	
BERYLLIUM	5.00E-03	4.30E+00	5.7730E-03	5.3194E-05
CADMIUM	5.00E-04		2.8865E+00	
CHROMIUM	5.00E-03		3.8102E-02	
LEAD				
MANGANESE	5.00E-03		7.3894E-01	
MERCURY	3.00E-04		7.6973E-02	
NICKEL	2.00E-02		5.6864E-02	
SELENIUM	5.00E-03		9.2368E-04	
SILVER	5.00E-03		1.9628E-02	
THALLIUM				
VANADIUM	9.00E-03		3.8487E-03	
ZINC	3.00E-01		3.5408E+00	
ALUMINUM	2.90E+00		1.1168E-02	
COBALT				
COPPER	3.71E-02		3.1277E+00	
IRON				
TOTAL			1.27E+01	5.32E-05

RISK ASSESSMENT SPREADSHEET (PAGE 1)

SITE NAME:	JACK'S CREEK	FILENAME:	INGDUE91.WK1
LOCATION:	MIFFLIN, PA	VERSION:	1
DATE:	04/14/93	PATH:	C:\RJL\JC\

EXPOSURE ROUTE: INGESTION OF BUILDING DUST
MEDIA: DUST
RECEPTOR: EMPLOYEE
CONCENTRATION: 95% UCL OF THE MEAN

ADDTIONAL COMMENTS: THIS SPREADSHEET CALCULATES INCREMENTAL CANCER RISK AND THE HAZARD INDEX FOR AN INDIVIDUAL EXPOSED TO COMTAMINANTS THROUGH INGESTION OF CONTAMINATED DUST.
THE SOURCE OF CONTAMINATED DUST IS ASSUMED TO BE FROM BALL MILL TAILINGS BUILDING.

RELEVANT EQUATION: INTAKE (MG/KG-DAY) = (C*SA*EF*ED) / (BW*AT)

		INPUT VALUES
WHERE: SA	= SURFACE AREA OF HAND FROM WHICH MATERIAL IS ACCIDENTALLY INGESTED ON A DAILY BASIS (CM2/DAY)	59
EF	= EXPOSURE FREQUENCY (DAYS/YEAR)	50
ED	= EXPOSURE DURATION (YEARS)	30
BW	= BODY WEIGHT (KG)	70
AT	= AVERAGING TIME (SEE BELOW)	
C	= CONTAMINANT CONCENTRATION FROM WIPE SAMPLE (MG/CM2) (SEE PAGE 2 FOR SITE-SPECIFIC DATA)	

DETERMINE AVERAGING TIME

AVERAGING TIME FOR FOR NONCARCINOGENS (i.e., ED*365 DAYS / YEAR):	1.0950E+04
AVERAGING TIME FOR CARCINOGENS (i.e., 70 YEARS*365 DAYS/YEAR):	2.5550E+04

RISK ASSESSMENT SPREADSHEET (PAGE 2)

SITE NAME: JACK'S CREEK EXPOSURE ROUTE: INGESTION OF BUILDING DUST RECEPTOR: EMPLOYEE FILENAME: INGDUE91.WK1

LOCATION: MIFFLIN, PA MEDIA: DUST CONCENTRATION: 95% UCL OF THE MEAN

CALCULATE INTAKES:

CHEMICAL	CONCENTRATION IN WIPE SAMPLE (MG/CM2)	INTAKE (MG/KG)	NONCARCINOGENIC TIME-WEIGHTED AVERAGE INTAKE (MG/KG/DAY)	CARCINOGENIC TIME-WEIGHTED AVERAGE INTAKE (MG/KG/DAY)
ANTIMONY	1.88E-03	2.3769E+00	2.1706E-04	9.3028E-05
ARSENIC	3.60E-04	4.5514E-01	4.1566E-05	1.7814E-05
BARIUM	1.42E-03	1.7953E+00	1.6395E-04	7.0266E-05
BERYLLIUM	7.00E-05	8.8500E-02	8.0822E-06	3.4638E-06
CADMIUM	3.80E-04	4.8043E-01	4.3875E-05	1.8803E-05
CHROMIUM	2.70E-04	3.4136E-01	3.1174E-05	1.3360E-05
LEAD	4.42E-01	5.5881E+02	5.1033E-02	2.1871E-02
MANGANESE	1.09E-02	1.3793E+01	1.2597E-03	5.3986E-04
MERCURY	4.00E-07	5.0571E-04	4.6184E-08	1.9793E-08
NICKEL	3.44E-03	4.3491E+00	3.9718E-04	1.7022E-04
SELENIUM	2.30E-05	2.9079E-02	2.6556E-06	1.1381E-06
SILVER	4.80E-05	6.0686E-02	5.5421E-06	2.3752E-06
THALLIUM	7.60E-06	9.6086E-03	8.7750E-07	3.7607E-07
ZINC	6.40E-01	8.0914E+02	7.3894E-02	3.1669E-02
ALUMINUM	3.49E-02	4.4124E+01	4.0295E-03	1.7269E-03
COBALT	6.60E-05	8.3443E-02	7.6204E-06	3.2659E-06
COPPER	2.18E-01	2.7561E+02	2.5170E-02	1.0787E-02
IRON	6.88E-02	8.6983E+01	7.9436E-03	3.4044E-03

RISK ASSESSMENT SPREADSHEET
SITE NAME: JACK'S CREEK
LOCATION: MIFFLIN, PA

EXPOSURE ROUTE: INGESTION OF BUILDING DUST
MEDIA: DUST

RECEPTOR: EMPLOYEE
CONCENTRATION: 95% UCL OF THE MEAN

FILENAME: INGDUE91.WK1

DETERMINE HAZARD INDICIES AND CANCER RISK:

CHEMICAL	ORAL RfD (MG/KG/DAY)	ORAL SLOPE FACTOR (KG-DAY/MG)	HAZARD INDEX	CANCER RISK LIFETIME
ANTIMONY	4.00E-04		5.4266E-01	
ARSENIC	3.00E-04		1.3855E-01	
BARIUM	7.00E-02		2.3422E-03	
BERYLLIUM	5.00E-03	4.30E+00	1.6164E-03	1.4894E-05
CADMIUM	5.00E-04		8.7750E-02	
CHROMIUM	5.00E-03		6.2348E-03	
LEAD				
MANGANESE	5.00E-03		2.5193E-01	
MERCURY	3.00E-04		1.5395E-04	
NICKEL	2.00E-02		1.9859E-02	
SELENIUM	5.00E-03		5.3112E-04	
SILVER	5.00E-03		1.1084E-03	
THALLIUM				
ZINC	3.00E-01		2.4631E-01	
ALUMINUM	2.90E+00		1.3895E-03	
COBALT				
COPPER	3.71E-02		6.7844E-01	
IRON				
TOTAL			1.98E+00	1.49E-05

RISK ASSESSMENT SPREADSHEET (PAGE 1)

SITE NAME:	JACK'S CREEK	FILENAME:	INGDUE92.WK1
LOCATION:	MIFFLIN, PA	VERSION:	2
DATE:	04/14/93	PATH:	C:\RJL\JC\

EXPOSURE ROUTE: INGESTION OF BUILDING DUST
MEDIA: DUST
RECEPTOR: EMPLOYEE
CONCENTRATION: 95% UCL OF THE MEAN

ADDTIONAL COMMENTS: THIS SPREADSHEET CALCULATES INCREMENTAL CANCER RISK AND THE HAZARD INDEX FOR AN INDIVIDUAL EXPOSED TO COMTAMINANTS THROUGH INGESTION OF CONTAMINATED DUST.
THE SOURCE OF CONTAMINATED DUST IS ASSUMED TO BE FROM PRECIOUS METALS BUILDING.

RELEVANT EQUATION: INTAKE (MG/KG-DAY) = (C*SA*EF*ED) / (BW*AT)

		INPUT VALUES
WHERE: SA	= SURFACE AREA OF HAND FROM WHICH MATERIAL IS ACCIDENTALLY INGESTED ON A DAILY BASIS (CM2/DAY)	59
EF	= EXPOSURE FREQUENCY (DAYS/YEAR)	50
ED	= EXPOSURE DURATION (YEARS)	30
BW	= BODY WEIGHT (KG)	70
AT	= AVERAGING TIME (SEE BELOW)	
C	= CONTAMINANT CONCENTRATION FROM WIPE SAMPLE (MG/CM2) (SEE PAGE 2 FOR SITE-SPECIFIC DATA)	

DETERMINE AVERAGING TIME

AVERAGING TIME FOR FOR NONCARCINOGENS (i.e., ED*365 DAYS / YEAR):	1.0950E+04
AVERAGING TIME FOR CARCINOGENS (i.e., 70 YEARS*365 DAYS/YEAR):	2.5550E+04

RISK ASSESSMENT SPREADSHEET
SITE NAME: JACK'S CREEK
LOCATION: MIFFLIN, PA

EXPOSURE ROUTE: INGESTION OF BUILDING DUST
MEDIA: DUST

RECEPTOR: EMPLOYEE
CONCENTRATION: 95% UCL OF THE MEAN

FILENAME: INGDUE92.WK1

CALCULATE INTAKES:

CHEMICAL	CONCENTRATION IN WIPE SAMPLE (MG/CM2)	INTAKE (MG/KG)	NONCARCINOGENIC TIME-WEIGHTED AVERAGE INTAKE (MG/KG/DAY)	CARCINOGENIC TIME-WEIGHTED AVERAGE INTAKE (MG/KG/DAY)
ANTIMONY	5.70E-04	7.2064E-01	6.5812E-05	2.8205E-05
ARSENIC	8.00E-04	1.0114E+00	9.2368E-05	3.9586E-05
BARIUM	4.60E-04	5.8157E-01	5.3112E-05	2.2762E-05
BERYLLIUM	2.60E-04	3.2871E-01	3.0020E-05	1.2866E-05
CADMIUM	7.10E-04	8.9764E-01	8.1977E-05	3.5133E-05
CHROMIUM	1.09E-03	1.3781E+00	1.2585E-04	5.3936E-05
LEAD	7.02E-02	8.8753E+01	8.1053E-03	3.4737E-03
MANGANESE	9.60E-04	1.2137E+00	1.1084E-04	4.7503E-05
MERCURY	5.00E-06	6.3214E-03	5.7730E-07	2.4741E-07
NICKEL	1.37E-03	1.7321E+00	1.5818E-04	6.7791E-05
SELENIUM	9.00E-06	1.1379E-02	1.0391E-06	4.4535E-07
SILVER	2.70E-04	3.4136E-01	3.1174E-05	1.3360E-05
VANADIUM	7.00E-06	8.8500E-03	8.0822E-07	3.4638E-07
ZINC	4.15E+00	5.2468E+03	4.7916E-01	2.0535E-01
CYANIDE	4.80E-04	6.0686E-01	5.5421E-05	2.3752E-05
POLYCHLORINATED BIPHENYLS	1.30E-03	1.6436E+00	1.5010E-04	6.4328E-05
ALUMINUM	1.08E-02	1.3654E+01	1.2470E-03	5.3441E-04
COBALT	7.00E-05	8.8500E-02	8.0822E-06	3.4638E-06
COPPER	6.68E-02	8.4454E+01	7.7127E-03	3.3055E-03
IRON	7.24E-02	9.1534E+01	8.3593E-03	3.5826E-03

RISK ASSESSMENT SPREADSHEET (PAGE 3)

SITE NAME: JACK'S CREEK EXPOSURE ROUTE: INGESTION OF BUILDING DUST RECEPTOR: EMPLOYEE FILENAME: INGDUE92.WK1

LOCATION: MIFFLIN, PA MEDIA: DUST CONCENTRATION: 95% UCL OF THE MEAN

DETERMINE HAZARD INDICIES AND CANCER RISK:

CHEMICAL	ORAL RfD (MG/KG/DAY)	ORAL SLOPE FACTOR (KG-DAY/MG)	HAZARD INDEX	CANCER RISK LIFETIME
ANTIMONY	4.00E-04		1.6453E-01	
ARSENIC	3.00E-04		3.0789E-01	
BARIUM	7.00E-02		7.5874E-04	
BERYLLIUM	5.00E-03	4.30E+00	6.0039E-03	5.5322E-05
CADMIUM	5.00E-04		1.6395E-01	
CHROMIUM	5.00E-03		2.5170E-02	
LEAD				
MANGANESE	5.00E-03		2.2168E-02	
MERCURY	3.00E-04		1.9243E-03	
NICKEL	2.00E-02		7.9090E-03	
SELENIUM	5.00E-03		2.0783E-04	
SILVER	5.00E-03		6.2348E-03	
VANADIUM	9.00E-03		8.9802E-05	
ZINC	3.00E-01		1.5972E+00	
CYANIDE	2.00E-02		2.7710E-03	
POLYCHLORINATED BIPHENYLS		7.70E+00		4.9532E-04
ALUMINUM	2.90E+00		4.2999E-04	
COBALT				
COPPER	3.71E-02		2.0789E-01	
IRON				
TOTAL			2.52E+00	5.51E-04

RISK ASSESSMENT SPREADSHEET (PAGE 1)

SITE NAME:	JACK'S CREEK	FILENAME:	INGDUE93.WK1
LOCATION:	MIFFLIN, PA	VERSION:	3
DATE:	04/14/93	PATH:	C:\RJL\JC\

EXPOSURE ROUTE: INGESTION OF BUILDING DUST
MEDIA: DUST
RECEPTOR: EMPLOYEE
CONCENTRATION: 95% UCL OF THE MEAN

ADDTIONAL COMMENTS: THIS SPREADSHEET CALCULATES INCREMENTAL CANCER RISK AND THE HAZARD INDEX FOR AN INDIVIDUAL EXPOSED TO COMTAMINANTS THROUGH INGESTION OF CONTAMINATED DUST.
THE SOURCE OF CONTAMINATED DUST IS ASSUMED TO BE FROM BATTERY BREAKING SHED.

RELEVANT EQUATION: INTAKE (MG/KG-DAY) = (C*SA*EF*ED) / (BW*AT)

		INPUT VALUES
WHERE: SA	= SURFACE AREA OF HAND FROM WHICH MATERIAL IS ACCIDENTALLY INGESTED ON A DAILY BASIS (CM2/DAY)	59
EF	= EXPOSURE FREQUENCY (DAYS/YEAR)	50
ED	= EXPOSURE DURATION (YEARS)	30
BW	= BODY WEIGHT (KG)	70
AT	= AVERAGING TIME (SEE BELOW)	
C	= CONTAMINANT CONCENTRATION FROM WIPE SAMPLE (MG/CM2) (SEE PAGE 2 FOR SITE-SPECIFIC DATA)	

DETERMINE AVERAGING TIME

AVERAGING TIME FOR FOR NONCARCINOGENS (i.e., ED*365 DAYS / YEAR):	1.0950E+04
AVERAGING TIME FOR CARCINOGENS (i.e., 70 YEARS*365 DAYS/YEAR):	2.5550E+04

RISK ASSESSMENT SPREADSHEET
SITE NAME: JACK'S CREEK
LOCATION: MIFFLIN, PA

EXPOSURE ROUTE: INGESTION OF BUILDING DUST
MEDIA: DUST

RECEPTOR: EMPLOYEE
CONCENTRATION: 95% UCL OF THE MEAN

FILENAME: INGDUE93.WK1

CALCULATE INTAKES:

CHEMICAL	CONCENTRATION IN WIPE SAMPLE (MG/CM2)	INTAKE (MG/KG)	NONCARCINOGENIC TIME-WEIGHTED AVERAGE INTAKE (MG/KG/DAY)	CARCINOGENIC TIME-WEIGHTED AVERAGE INTAKE (MG/KG/DAY)
ANTIMONY	1.52E-02	1.9217E+01	1.7550E-03	7.5214E-04
ARSENIC	1.51E-03	1.9091E+00	1.7434E-04	7.4719E-05
BARIUM	3.50E-04	4.4250E-01	4.0411E-05	1.7319E-05
BERYLLIUM	2.00E-05	2.5286E-02	2.3092E-06	9.8966E-07
CADMIUM	3.00E-05	3.7929E-02	3.4638E-06	1.4845E-06
CHROMIUM	7.00E-05	8.8500E-02	8.0822E-06	3.4638E-06
LEAD	2.19E+00	2.7688E+03	2.5286E-01	1.0837E-01
MANGANESE	2.00E-05	2.5286E-02	2.3092E-06	9.8966E-07
NICKEL	6.00E-04	7.5857E-01	6.9276E-05	2.9690E-05
SILVER	2.00E-05	2.5286E-02	2.3092E-06	9.8966E-07
THALLIUM	5.00E-05	6.3214E-02	5.7730E-06	2.4741E-06
ZINC	3.62E-02	4.5767E+01	4.1796E-03	1.7913E-03
ALUMINUM	1.05E-02	1.3275E+01	1.2123E-03	5.1957E-04
COBALT	1.00E-05	1.2643E-02	1.1546E-06	4.9483E-07
COPPER	1.67E-02	2.1114E+01	1.9282E-03	8.2636E-04
IRON	2.60E-02	3.2871E+01	3.0020E-03	1.2866E-03

RISK ASSESSMENT SPREADSHEET
SITE NAME: JACK'S CREEK
LOCATION: MIFFLIN, PA

EXPOSURE ROUTE: INGESTION OF BUILDING DUST
MEDIA: DUST

RECEPTOR: EMPLOYEE
CONCENTRATION: 95% UCL OF THE MEAN

FILENAME: INGDUE93.WK1

DETERMINE HAZARD INDICIES AND CANCER RISK:

CHEMICAL	ORAL RfD (MG/KG/DAY)	ORAL SLOPE FACTOR (KG-DAY/MG)	HAZARD INDEX	CANCER RISK LIFETIME
ANTIMONY	4.00E-04		4.3875E+00	
ARSENIC	3.00E-04		5.8115E-01	
BARIUM	7.00E-02		5.7730E-04	
BERYLLIUM	5.00E-03	4.30E+00	4.6184E-04	4.2555E-06
CADMIUM	5.00E-04		6.9276E-03	
CHROMIUM	5.00E-03		1.6164E-03	
LEAD				
MANGANESE	5.00E-03		4.6184E-04	
NICKEL	2.00E-02		3.4638E-03	
SILVER	5.00E-03		4.6184E-04	
THALLIUM				
ZINC	3.00E-01		1.3932E-02	
ALUMINUM	2.90E+00		4.1804E-04	
COBALT				
COPPER	3.71E-02		5.1973E-02	
IRON				
TOTAL			5.05E+00	4.26E-06

RISK ASSESSMENT SPREADSHEET (PAGE 1)

SITE NAME:	JACK'S CREEK	FILENAME:	INGDUE94.WK1
LOCATION:	MIFFLIN, PA	VERSION:	4
DATE:	04/14/93	PATH:	C:\RJL\JC\

EXPOSURE ROUTE: INGESTION OF BUILDING DUST
MEDIA: DUST
RECEPTOR: EMPLOYEE
CONCENTRATION: 95% UCL OF THE MEAN

ADDTIONAL COMMENTS: THIS SPREADSHEET CALCULATES INCREMENTAL CANCER RISK AND THE HAZARD INDEX FOR AN INDIVIDUAL EXPOSED TO COMTAMINANTS THROUGH INGESTION OF CONTAMINATED DUST.
THE SOURCE OF CONTAMINATED DUST IS ASSUMED TO BE FROM WASCO INCINERATOR SHED.

RELEVANT EQUATION: INTAKE (MG/KG-DAY) = (C*SA*EF*ED) / (BW*AT)

		INPUT VALUES
WHERE: SA	= SURFACE AREA OF HAND FROM WHICH MATERIAL IS ACCIDENTALLY INGESTED ON A DAILY BASIS (CM2/DAY)	59
EF	= EXPOSURE FREQUENCY (DAYS/YEAR)	50
ED	= EXPOSURE DURATION (YEARS)	30
BW	= BODY WEIGHT (KG)	70
AT	= AVERAGING TIME (SEE BELOW)	
C	= CONTAMINANT CONCENTRATION FROM WIPE SAMPLE (MG/CM2) (SEE PAGE 2 FOR SITE-SPECIFIC DATA)	

DETERMINE AVERAGING TIME

AVERAGING TIME FOR FOR NONCARCINOGENS (i.e., ED*365 DAYS / YEAR):	1.0950E+04
AVERAGING TIME FOR CARCINOGENS (i.e., 70 YEARS*365 DAYS/YEAR):	2.5550E+04

RISK ASSESSMENT SPREADSHEET
SITE NAME: JACK'S CREEK
LOCATION: MIFFLIN, PA

EXPOSURE ROUTE: INGESTION OF BUILDING DUST
MEDIA: DUST

RECEPTOR: EMPLOYEE
CONCENTRATION: 95% UCL OF THE MEAN

FILENAME: INGDUE94.WK1

CALCULATE INTAKES:

CHEMICAL	CONCENTRATION IN WIPE SAMPLE (MG/CM2)	INTAKE (MG/KG)	NONCARCINOGENIC TIME-WEIGHTED AVERAGE INTAKE (MG/KG/DAY)	CARCINOGENIC TIME-WEIGHTED AVERAGE INTAKE (MG/KG/DAY)
ANTIMONY	2.90E-04	3.6664E-01	3.3483E-05	1.4350E-05
ARSENIC	4.00E-05	5.0571E-02	4.6184E-06	1.9793E-06
BARIUM	1.50E-04	1.8964E-01	1.7319E-05	7.4224E-06
BERYLLIUM	7.00E-06	8.8500E-03	8.0822E-07	3.4638E-07
CADMIUM	1.10E-04	1.3907E-01	1.2701E-05	5.4431E-06
CHROMIUM	6.00E-05	7.5857E-02	6.9276E-06	2.9690E-06
LEAD	4.40E-02	5.5629E+01	5.0802E-03	2.1772E-03
MANGANESE	1.50E-03	1.8964E+00	1.7319E-04	7.4224E-05
MERCURY	1.00E-05	1.2643E-02	1.1546E-06	4.9483E-07
NICKEL	2.00E-04	2.5286E-01	2.3092E-05	9.8966E-06
SELENIUM	0.00E+00	0.0000E+00	0.0000E+00	0.0000E+00
SILVER	2.10E-04	2.6550E-01	2.4247E-05	1.0391E-05
THALLIUM	0.00E+00	0.0000E+00	0.0000E+00	0.0000E+00
VANADIUM	1.00E-05	1.2643E-02	1.1546E-06	4.9483E-07
ZINC	1.90E-02	2.4021E+01	2.1937E-03	9.4017E-04
ALUMINUM	8.49E-03	1.0734E+01	9.8025E-04	4.2011E-04
COBALT	9.0E-06	1.1379E-02	1.0391E-06	4.4535E-07
COPPER	3.10E-02	3.9193E+01	3.5793E-03	1.5340E-03
IRON	6.78E-02	8.5719E+01	7.8282E-03	3.3549E-03

RISK ASSESSMENT SPREADSHEET (PAGE 3)

SITE NAME: JACK'S CREEK EXPOSURE ROUTE: INGESTION OF BUILDING DUST RECEPTOR: EMPLOYEE FILENAME: INGDUE94.WK1

LOCATION: MIFFLIN, PA MEDIA: DUST CONCENTRATION: 95% UCL OF THE MEAN

DETERMINE HAZARD INDICIES AND CANCER RISK:

CHEMICAL	ORAL RfD (MG/KG/DAY)	ORAL SLOPE FACTOR (KG-DAY/MG)	HAZARD INDEX	CANCER RISK LIFETIME
ANTIMONY	4.00E-04		8.3708E-02	
ARSENIC	3.00E-04		1.5395E-02	
BARIUM	7.00E-02		2.4741E-04	
BERYLLIUM	5.00E-03	4.30E+00	1.6164E-04	1.4894E-06
CADMIUM	5.00E-04		2.5401E-02	
CHROMIUM	5.00E-03		1.3855E-03	
LEAD				
MANGANESE	5.00E-03		3.4638E-02	
MERCURY	3.00E-04		3.8487E-03	
NICKEL	2.00E-02		1.1546E-03	
SELENIUM	5.00E-03			
SILVER	5.00E-03		4.8493E-03	
THALLIUM				
VANADIUM	9.00E-03		1.2829E-04	
ZINC	3.00E-01		7.3125E-03	
ALUMINUM	2.90E+00		3.3802E-04	
COBALT				
COPPER	3.71E-02		9.6476E-02	
IRON				
TOTAL			2.75E-01	1.49E-06

D-4

Uptake/Biokinetic Model Run for Lead

Appendix D-4 is being deleted at this time.

The uptake/biokinetic model for lead is currently under development by EPA.

D-5

Ecological Data

RAPID BIOASSESSMENT

WORKSHEETS

SAMPLE STATION PHYSICAL AND WATER QUALITY CHARACTERIZATION FIELD DATA SHEET

Date: 6/3/91 Biologist: OLDS Client: JC

Station Number: 1-MACROS Job #:

Station Description: Photographs: Yes No Weather: Clear, WARM

Riparian Zone Characteristics

Predominant Surrounding Land Uses: (Forest) (Field/Pasture) Agricultural Residential Commercial Industrial Other

Canopy cover (Percent Shaded): Open(0-25%) (Mostly Open(25-50%)) (Mostly Shaded(50-75%)) Shaded(75-100%)

Sediment/Substrate Characteristics

Odors: (None) Sewage Petroleum Chemical Anaerobic

Oils: (Absent) Slight Moderate Profuse

Deposits: Sludge Sand Shells Sawdust Paper Fiber

Describe below any surface color imparted to stones by water or sediment.

NONE

Inorganic Substrate Components

Substrate	Size	Pct Comp
Bedrock		
Boulder	>256mm(>10in)	
Cobble	64-256mm(2.5-10in)	30
Gravel	2-64mm(0.1-2.5in)	65
Sand	0.06-2mm(gritty)	5
Silt	0.004-0.06mm	
Clay	<0.004mm	

Organic Substrate Components

Substrate	Description	Pct Comp
CPOM	wood	
	leaves, sticks	
FPOM	Fragmented	
	or decomposing CPOM	
Marl	Grey, shell fragments	

Water Quality

Temperature: pH:

Dissolved Oxygen: Conductivity:

Velocity: Flow:

Water / Stream Characteristics

Turbidity: Clear Slightly Turbid Turbid Opaque

Color: Visibility:

Odors: none Sewage Petroleum Chemical Anaerobic

Surface Oils: None Slick Sheen Globs Flecks

Stream Width - Average: Maximum: Minimum:

Stream Depth - Average: Riffle: Run: Pool:

High Water Mark (above current level):

Comments:

AR302681

SAMPLE STATION PHYSICAL AND WATER QUALITY CHARACTERIZATION FIELD DATA SHEET

Date: 6/4/91 Biologist: OLDS Client: JC

Station Number: 2 Job #:

Station Description: Photographs: Yes No Weather: Clear, warm

Riparian Zone Characteristics

Predominant Surrounding Land Uses: (Forest) (Field/Pasture) Agricultural Residential Commercial Industrial Other

Canopy cover (Percent Shaded): Open(0-25%) Mostly Open(25-50%) (Mostly Shaded(50-75%)) Shaded(75-100%)

Sediment/Substrate Characteristics

Odors: (None) Sewage Petroleum Chemical Anaerobic

Oils: (Absent) slight Moderate Profuse

Deposits: Sludge Sand Shells Sawdust Paper Fiber

Describe below any surface color imparted to stones by water or sediment.

NONE

Inorganic Substrate Components

Substrate	Size	Pct Comp
Bedrock		
Boulder	>256mm(>10in)	
Cobble	64-256mm(2.5-10in)	40
Gravel	2-64mm(0.1-2.5in)	60
Sand	0.06-2mm(gritty)	
Silt	0.004-0.06mm	
Clay	<0.004mm	

Organic Substrate Components

Substrate	Description	Pct Comp
CPOM	wood	80
	leaves, sticks	
FPOM	Fragmented	20
	or decomposing CPOM	
Marl	Grey, shell fragments	

Water Quality

Temperature: 18°C pH: 7.8

Dissolved Oxygen: 8.3 Conductivity: .262 mV/cm

Velocity: 1.5fps(est.) Flow: 12 cfs (est)

Water / Stream Characteristics

Turbidity: (Clear) slightly Turbid Turbid Opaque

Color: Visibility:

Odors: (None) Sewage Petroleum Chemical Anaerobic

Surface Oils: (None) Slick Sheen Globs Flecks

Stream Width - Average: 20ft Maximum: Minimum:

Stream Depth - Average: 10 in Riffle: Run: Pool:

High Water Mark (above current level):

Comments:

SAMPLE STATION PHYSICAL AND WATER QUALITY CHARACTERIZATION FIELD DATA SHEET

Date: 6/4/91 Biologists: OLD'S Client: JC

Station Number: 3 Job #:

Station Description: Photographs: (Yes) No Weather: Clear, warm

Riparian Zone Characteristics

Predominant Surrounding Land Uses: (Forest) Field/Pasture Agricultural Residential Commercial (Industrial) Other

Canopy cover (Percent Shaded): Open(0-25%) (Mostly Open(25-50%)) Mostly Shaded(50-75%) Shaded(75-100%)

Sediment/Substrate Characteristics

Odors: (None) Sewage Petroleum Chemical Anaerobic

Oils: (Absent) Slight Moderate Profuse

Deposits: Sludge Sand Shells Sawdust Paper Fiber

Describe below any surface color imparted to stones by water or sediment.

NONE

Inorganic Substrate Components

Substrate	Size	Pct Comp
Bedrock		
Boulder	>256mm(>10in)	20
Cobble	64-256mm(2.5-10in)	50
Gravel	2-64mm(0.1-2.5in)	30
Sand	0.06-2mm(gritty)	
Silt	0.004-0.06mm	
Clay	<0.004mm	

Organic Substrate Components

Substrate	Description	Pct Comp
CPOM	wood	50
	leaves, sticks	
FPOM	Fragmented	50
	or decomposing CPOM	
Marl	Grey, shell fragments	

Water Quality

Temperature: 21.1 °C pH: 8.20

Dissolved Oxygen: 10.1 Conductivity: .140 mV/cm

Velocity: 1 fps (est.) Flow: 12 cfs (est.)

Water / Stream Characteristics

Turbidity: (Clear) Slightly Turbid Turbid Opaque

Color: Visibility:

Odors: (none) Sewage Petroleum Chemical Anaerobic

Surface Oils: (None) Slick Sheen Globs Flecks

Stream Width - Average: 16 Maximum: Minimum:

Stream Depth - Average: 7" Riffle: Run: Pool:

High Water Mark (above current level):

Comments:

AR302683

SAMPLE STATION PHYSICAL AND WATER QUALITY CHARACTERIZATION FIELD DATA SHEET

Date: 6/5/91 Biologist: OLDS Client: JC

Station Number: 4 Job #:

Station Description: Photographs: (Yes) No Weather: clear, warm

Riparian Zone Characteristics

Predominant Surrounding Land Uses: (Forest) Field/Pasture Agricultural Residential Commercial (Industrial) Other

Canopy cover (Percent Shaded): Open(0-25%) (Mostly Open(25-50%)) Mostly Shaded(50-75%) Shaded(75-100%)

Sediment/Substrate Characteristics

Odors: (None) Sewage Petroleum Chemical Anaerobic

Oils: (Absent) Slight Moderate Profuse

Deposits: Sludge Sand Shells Sawdust Paper Fiber

Describe below any surface color imparted to stones by water or sediment.

Inorganic Substrate Components

Substrate	Size	Pct Comp
Bedrock		
Boulder	>256mm(>10in)	
Cobble	64-256mm(2.5-10in)	10
Gravel	2-64mm(0.1-2.5in)	50
Sand	0.06-2mm(gritty)	20
Silt	0.004-0.06mm	20
Clay	<0.004mm	

Organic Substrate Components

Substrate	Description	Pct Comp
CPOM	wood	50
	leaves, sticks	
FPOM	Fragmented	50
	or decomposing CPOM	
Marl	Grey, shell fragments	

Water Quality

Temperature: 15.5 °C pH: 7.82

Dissolved Oxygen: 9.8 Conductivity: .274 mV/cm

Velocity: <1fps Flow: 10 cfs (est.)

Water / Stream Characteristics

Turbidity: Clear (Slightly Turbid) Turbid Opaque

Color: Visibility:

Odors: (None) Sewage Petroleum Chemical Anaerobic

Surface Oils: (None) Slick Sheen Globs Flecks

Stream Width - Average: 20 ft Maximum: Minimum:

Stream Depth - Average: 7 in Riffle: Run: Pool:

High Water Mark (above current level):

Comments:

AR302684

SAMPLE STATION PHYSICAL AND WATER QUALITY CHARACTERIZATION FIELD DATA SHEET

Date: 6/5/91 Biologist: OLDS

Station Number: 5

Station Description:

Client: JC

Job #:

Photographs: Yes No Weather: Clear, warm

Riparian Zone Characteristics

Predominant Surrounding Land Uses: (Forest) Field/Pasture Agricultural Residential Commercial (Industrial) Other

Canopy cover (Percent Shaded): Open(0-25%) Mostly Open(25-50%) Mostly Shaded(50-75%) (Shaded(75-100%))

Sediment/Substrate Characteristics

Odors: (None) Sewage Petroleum Chemical Anaerobic

Oils: (Absent) slight Moderate Profuse

Deposits: Sludge Sand Shells Sawdust Paper Fiber

Describe below any surface color imparted to stones by water or sediment.

Inorganic Substrate Components

Substrate	Size	Pct Comp
Bedrock		
Boulder	)256mm()10in)	
Cobble	64-256mm(2.5-10in)	25
Gravel	2-64mm(0.1-2.5in)	65
Sand	0.06-2mm(gritty)	10
Silt	0.004-0.06mm	
Clay	(0.004mm	

Organic Substrate Components

Substrate	Description	Pct Comp
CPOM	wood	60
	leaves, sticks	
FPOM	Fragmented	40
	or decomposing CPOM	
Marl	Grey, shell fragments	

Water Quality

Temperature: 18.0°C pH: 7.45

Dissolved Oxygen: 7.95 Conductivity: .264 mmhos/cm

Velocity: 1fps(est.) Flow: 10-12 cfs (est.)

Water / Stream Characteristics

Turbidity: Clear (slightly Turbid) Turbid Opaque

Color: Visibility:

Odors: (None) Sewage Petroleum Chemical Anaerobic

Surface Oils: (None) Slick Sheen Globs Flecks

Stream Width - Average: 15-20 Maximum: Minimum:

Stream Depth - Average: 8 Riffle: Run: Pool:

High Water Mark (above current level):

Comments:

AR302685

SAMPLE STATION PHYSICAL AND WATER QUALITY CHARACTERIZATION FIELD DATA SHEET

Date: 6/5/91 Biologist: OLDS Client: JC

Station Number: 6 Job #:

Station Description: Photographs: (Yes) No Weather: Cloudy, warm

Riparian Zone Characteristics

Predominant Surrounding Land Uses: (Forest) Field/Pasture Agricultural Residential Commercial Industrial Other

Canopy cover (Percent Shaded): Open(0-25%) (Mostly Open(25-50%)) (Mostly Shaded(50-75%)) Shaded(75-100%)

50 %

Sediment/Substrate Characteristics

Odors: (None) Sewage Petroleum Chemical Anaerobic

Oils: (Absent) Slight Moderate Profuse

Deposits: Sludge Sand Shells Sawdust Paper Fiber

Describe below any surface color imparted to stones by water or sediment.

Inorganic Substrate Components

Substrate	Size	Pct Comp
Bedrock		
Boulder	>256mm(>10in)	
Cobble	64-256mm(2.5-10in)	15
Gravel	2-64mm(0.1-2.5in)	75
Sand	0.06-2mm(gritty)	5
Silt	0.004-0.06mm	5
~~Clay~~	<0.004mm	

Organic Substrate Components

Substrate	Description	Pct Comp
CPOM	wood	60
	leaves, sticks	
FPOM	Fragmented	40
	or decomposing CPOM	
Marl	Grey, shell fragments	

Water Quality

Temperature: 18.8°C pH: 8.27

Dissolved Oxygen: 9.49 Conductivity: .220 mV/cm

Velocity: 1fps(est.) Flow: 12 cfs (est.)

Water / Stream Characteristics

Turbidity: Clear (slightly Turbid) Turbid Opaque

Color: Visibility:

Odors: (None) Sewage Petroleum Chemical Anaerobic

Surface Oils: (None) Slick Sheen Globs Flecks

Stream Width - Average: 20 ft Maximum: Minimum:

Stream Depth - Average: 8 in Riffle: Run: Pool:

High Water Mark (above current level):

Comments:

AR302686

TABLE D-1

STATION 1
INVERTEBRATE COMMUNITY CHARACTERIZATION DATA SHEET

JACK'S CREEK SITE

Taxa: June 3, 1991	Total Number of Individuals	Taxa Richness	Family Biotic Index (modified)	Ratio of Scrapers to Filterers/Collectors		Ratio of EPT and Chironomidae		% Contribution of Dominant Family	EPT Index	Community Similarity Index
				S	F	EPT	Chironomidae			
Phylum Nematoda	2	T	-	-	-					
Phylum Annelida										
Class Oligochaeta										
Order Haplotaxida	50	T	1.2048	-	50					
Phylum Arthropoda										
Class Insecta										
Order Ephemeroptera										
Family Siphlonuridae	4	T	0.0843	-	4	4			E	
Family Baetidae	9	T	0.1084	-	9	9			E	
Family Heptageniidae	1	T	0.0120	1	-	1			E	
Family Ephemerellidae	30	T	0.0904	-	30	30			E	
Family Ephemeridae	1	T	0.0120	-	1	1			E	
Order Plecoptera										
Family Leuctridae	1	T	0.0000	-	-	1			P	
Family Perlidae	5	T	0.0151	-	-	5			P	
Family Perlodidae	1	T	0.0060	-	-	1			P	

TABLE D-1
STATION 1
INVERTEBRATE COMMUNITY CHARACTERIZATION DATA SHEET
JACK'S CREEK SITE
PAGE 2

Taxa: June 3, 1991	Total Number of Individuals	Taxa Richness	Family Biotic Index (modified)	Ratio of Scrapers to Filterers/Collectors		Ratio of EPT and Chironomidae		% Contribution of Dominant Family	EPT Index	Community Similarity Index
				S	F	EPT	Chironomidae			
Order Megaloptera										
Family Sialidae	1	T	0.0120	-	-					
Family Corydalidae	3	T	0.0000	-	-					
Order Trichoptera										
Family Philopotamidae	1	T	0.0090	-	1	1			T	
Family Hydropsychidae	71	T	0.8554	-	71	71			T	
Family Rhyacophilidae	4	T	0.0000	-	-	4			T	
Family Limnephilidae	1	T	0.0120	-	-	1			T	
Order Coleoptera										
Family Psephenidae	21	T	0.2530	21	-					
Family Elmidae	34	T	0.4096	-	34					
Order Diptera										
Family Tipulidae	19	T	0.1717	-	-					
Family Simulidae	1	T	0.0181	-	1					
Family Chironomidae	72	T	1.3012	-	72		72	72		
RESULT	332	21	4.5750	22/273 = 0.0806		129/72 = 1.7917		72/332 = 0.2169	12	N/A

AR302688

TABLE D-2

STATION 2
INVERTEBRATE COMMUNITY CHARACTERIZATION DATA SHEET

JACK'S CREEK SITE

Taxa: June 4, 1991	Total Number of Individuals	Taxa Richness	Family Biotic Index (modified)	Ratio of Scrapers to Filterers/Collectors		Ratio of EPT and Chironomidae		% Contribution of Dominant Family	EPT Index	Community Similarity Index
				S	F	EPT	Chironomidae			
Phylum Mullusca										
Class Gastropoda										
Order Limnophila										
Family Ancylidae	14	T	0.0949	14	-					
Phylum Annelida										
Class Oligochaeta										
Order Haplotaxida	22	T	0.1492	-	22					
Phylum Arthropoda										
Class Crustacea										
Order Decapoda										
Family Astacidae	1	T	0.0051	-	-					
Class Insecta										
Order Ephemeroptera										
Family Siphlonuridae	1	T	0.0059	-	1	1			E	
Family Baetidae	9	T	0.0305	-	9	9			E	
Family Oligoneuriidae	5	T	0.0085	-	5	5			E	
Family Heptageniidae	29	T	0.0983	29	-	29			E	

TABLE D-2
STATION 2
INVERTEBRATE COMMUNITY CHARACTERIZATION DATA SHEET
JACK'S CREEK SITE
PAGE 2

Taxa: June 4, 1991	Total Number of Individuals	Taxa Richness	Family Biotic Index (modified)	Ratio of Scrapers to Filterers/Collectors		Ratio of EPT and Chironomidae		% Contribution of Dominant Family	EPT Index	Community Similarity Index
				S	F	EPT	Chironomidae			
Family Ephemerellidae	113	T	0.0958	-	113	113			E	
Family Caenidae	14	T	0.0831	-	14	14			E	
Family Leptophlebiidae	18	T	0.0305	-	18	18			E	
Order Plecoptera										
Family Pteronarcyidae	2	T	0.0000	-	-	2			P	
Family Perlidae	30	T	0.0254	-	-	30			P	
Order Megaloptera										
Family Sialidae	1	T	0.0034	-	-					
Family Corydalidae	4	T	0.0000	-	-					
Order Trichoptera										
Family Psychmyiidae	2	T	0.0034	-	2	2			T	
Family Hydropsychidae	398	T	1.3492	-	398	398		398	T	
Family Rhyacophilidae	1	T	0.0000	-	-	1			T	
Family Hydroptilidae	1	T	0.0034	-	-	1			T	
Order Coleoptera										
Family Psephenidae	64	T	0.2169	64	-					
Family Elmidae	140	T	0.4746	-	140					

TABLE D-2
STATION 2
INVERTEBRATE COMMUNITY CHARACTERIZATION DATA SHEET
JACK'S CREEK SITE
PAGE 3

Taxa: June 4, 1991	Total Number of Individuals	Taxa Richness	Family Biotic Index (modified)	Ratio of Scrapers to Filterers/Collectors		Ratio of EPT and Chironomidae		% Contribution of Dominant Family	EPT Index	Community Similarity Index
				S	F	EPT	Chironomidae			
Order Diptera										
Family Tipulidae	22	T	0.0559	-	-					
Family Ceratopogonidae	1	T	0.0051	-	-					
Family Chironomidae	288	T	1.4644	-	288		288			
RESULT	1,180	23	4.2035	107/1,010 = 0.1059		623/288 = 2.1632		398/1,180 = 0.3373	13	CL: 0.3043 JC: 0.4667

AR302691

TABLE D-3

STATION 3
INVERTEBRATE COMMUNITY CHARACTERIZATION DATA SHEET

JACK'S CREEK SITE

Taxa: June 4, 1991	Total Number of Individuals	Taxa Richness	Family Biotic Index (modified)	Ratio of Scrapers to Filterers/Collectors		Ratio of EPT and Chironomidae		% Contribution of Dominant Family	EPT Index	Community Similarity Index
				S	F	EPT	Chironomidae			
Phylum Nematoda	4	T	-	-	-					
Phylum Annelida										
Class Oligochaeta										
Order Haplotaxida	1	T	0.0134	-	1					
Order Decapoda										
Family Astacidae	1	T	0.0101	-	-					
Class Insecta										
Order Ephemeroptera										
Family Baetidae	7	T	0.0469	-	7	7			E	
Family Oligoneuriidae	2	T	0.0067	-	2	2			E	
Family Heptageniidae	4	T	0.0268	4	-	4			E	
Family Ephemerellidae	38	T	0.0637	-	38	38			E	
Order Plecoptera										
Family Pteronarcyidae	2	T	0.0000	-	-	2			P	
Family Perlidae	6	T	0.0117	-	-	6			P	
Order Megaloptera										
Family Sialidae	2	T	0.0134	-	-					

TABLE D-3
STATION 3
INVERTEBRATE COMMUNITY CHARACTERIZATION DATA SHEET
JACK'S CREEK SITE
PAGE 2

Taxa: June 4, 1991	Total Number of Individuals	Taxa Richness	Family Biotic Index (modified)	Ratio of Scrapers to Filterers/Collectors		Ratio of EPT and Chironomidae		% Contribution of Dominant Family	EPT Index	Community Similarity Index
				S	F	EPT	Chironomidae			
Family Corydalidae	9	T	0.0000	-	-					
Order Trichoptera										
Family Psychmyiidae	1	T	0.0034	-	1	1			T	
Family Hydropsychidae	258	T	1.7286	-	258	258		258	T	
Family Rhyacophilidae	1	T	0.0000	-	-	1			T	
Order Coleoptera										
Family Psephenidae	12	T	0.0804	12	-					
Family Elmidae	45	T	0.3015	-	45					
Order Diptera										
Family Tipulidae	27	T	0.1357	-	-					
Family Chironomidae	177	T	1.7789	-	177		177			
RESULT	597	18	4.2212	16/529 = 0.0302		319/177 = 1.8023		258/597 = 0.4322	9	CL: 0.3889 JC: 0.5600

TABLE D-4

STATION 4
INVERTEBRATE COMMUNITY CHARACTERIZATION DATA SHEET

JACK'S CREEK SITE

Taxa: June 5, 1991	Total Number of Individuals	Taxa Richness	Family Biotic Index (modified)	Ratio of Scrapers to Filterers/Collectors		Ratio of EPT and Chironomidae		% Contribution of Dominant Family	EPT Index	Community Similarity Index
				S	F	EPT	Chironomidae			
Phylum Rynchocoela										
Class Enopla										
Order Bdellonemertina										
Family Prostomidae	1	T	-	-	-					
Phylum Nematoda	1	T	-	-	-					
Phylum Annelida										
Class Oligochaeta										
Order Haplotaxida	35	T	0.7035	-	35					
Phylum Arthropoda										
Class Crustacea										
Order Decapoda										
Family Astacidae	1	T	0.0151	-	-					
Class Insecta										
Order Ephemeroptera										
Family Siphlonuridae	3	T	0.0528	-	3	3			E	
Family Oligoneuriidae	10	T	0.0503	-	10	10			E	
Family Heptageniidae	6	T	0.0603	6	-	6			E	

TABLE D-4
STATION 4
INVERTEBRATE COMMUNITY CHARACTERIZATION DATA SHEET
JACK'S CREEK SITE
PAGE 2

Taxa: June 5, 1991	Total Number of Individuals	Taxa Richness	Family Biotic Index (modified)	Ratio of Scrapers to Filterers/Collectors		Ratio of EPT and Chironomidae		% Contribution of Dominant Family	EPT Index	Community Similarity Index
				S	F	EPT	Chironomidae			
Family Ephemerellidae	5	T	0.0126	-	5	5			E	
Order Plecoptera										
Family Perlidae	2	T	0.0050	-	-	2			P	
Order Hemiptera										
Family Corixidae	1	T	-	-	-					
Order Megaloptera										
Family Sialidae	3	T	0.0302	-	-					
Family Corydalidae	5	T	0.0000	-	-					
Order Trichoptera										
Family Psychmyiidae	2	T	0.0101	-	2	2			T	
Family Hydropsychidae	136	T	1.3668	-	136	136		136	T	
Family Glossosomatidae	1	T	0.0000	1	-	1			T	
Family Hydroptilidae	4	T	0.0402	-	-				T	
Order Coleoptera										
Family Psephenidae	11	T	0.1106	11	-					
Family Elmidae	31	T	0.3116	-	31					
Order Diptera										

AR302695

TABLE D-4
STATION 4
INVERTEBRATE COMMUNITY CHARACTERIZATION DATA SHEET
JACK'S CREEK SITE
PAGE 3

Taxa: June 5, 1991	Total Number of Individuals	Taxa Richness	Family Biotic Index (modified)	Ratio of Scrapers to Filterers/Collectors		Ratio of EPT and Chironomidae		% Contribution of Dominant Family	EPT Index	Community Similarity Index
				S	F	EPT	Chironomidae			
Family Tipulidae	13	T	0.980	-	-					
Family Chironomidae	122	T	1.8392	-	122		122			
Family Tabanidae	1	T	0.0151	-	-					
Family Athericidae	4	T	0.0201	-	-					
RESULT	398	22	5.6235	18/344 = 0.0523		165/122 = 1.3525		136/398 = 0.3417	9	CL: 0.3636 JC: 0.4333

TABLE D-5

STATION 5
INVERTEBRATE COMMUNITY CHARACTERIZATION DATA SHEET

JACK'S CREEK SITE

Taxa: June 5, 1991	Total Number of Individuals	Taxa Richness	Family Biotic Index (modified)	Ratio of Scrapers to Filterers/Collectors		Ratio of EPT and Chironomidae		% Contribution of Dominant Family	EPT Index	Community Similarity Index
				S	F	EPT	Chironomidae			
Phylum Nematoda	2	T	-	-	-					
Phylum Annelida										
Class Oligochaeta										
Order Haplotaxida	2	T	0.0120	-	2					
Phylum Platyhelminthes										
Class Turbellaria										
Order Tricladida										
Family Planaridae	1	T	0.0030	-	1					
Phylum Arthropoda										
Class Crustacea										
Order Amphipoda										
Family Gammaridae	1	T	0.0030	-	1					
Order Decapoda										
Family Astacidae	1	T	0.0045	-	-					
Class Insecta										
Order Ephemeroptera										
Family Siphlonuridae	2	T	0.0105	-	2	2			E	

TABLE D-5
STATION 5
INVERTEBRATE COMMUNITY CHARACTERIZATION DATA SHEET
JACK'S CREEK SITE
PAGE 2

Taxa: June 5, 1991	Total Number of Individuals	Taxa Richness	Family Biotic Index (modified)	Ratio of Scrapers to Filterers/Collectors		Ratio of EPT and Chironomidae		% Contribution of Dominant Family	EPT Index	Community Similarity Index
				S	F	EPT	Chironomidae			
Family Baetidae	1	T	0.0030	-	1	1			E	
Family Oligoneuriidae	76	T	0.1136	-	76	76			E	
Family Heptageniidae	7	T	0.0209	7	-	7			E	
Family Ephemerellidae	37	T	0.0277	-	37	37			E	
Order Odonata (Anisuptera)										
Family Gomphidae	1	T	0.0007	-	-					
Order Plecoptera										
Family Pteronarcyidae	2	T	0.0000	-	-	2			P	
Family Perlidae	15	T	0.0112	-	-	15			P	
Order Megaloptera										
Family Sialidae	5	T	0.0149	-	-					
Family Corydalidae	17	T	0.0000	-	-					
Order Trichoptera										
Family Psychmyiidae	1	T	0.0015	-	1	1			T	
Family Hydropsychidae	613	T	1.8326	-	613	613		613	T	
Family Hydroptilidae	105	T	0.3139	-	-	105			T	
Family Limnephilidae	17	T	0.0508	-	-	17			T	

TABLE D-5
STATION 5
INVERTEBRATE COMMUNITY CHARACTERIZATION DATA SHEET
JACK'S CREEK SITE
PAGE 3

Taxa: June 5, 1991	Total Number of Individuals	Taxa Richness	Family Biotic Index (modified)	Ratio of Scrapers to Filterers/Collectors		Ratio of EPT and Chironomidae		% Contribution of Dominant Family	EPT Index	Community Similarity Index
				S	F	EPT	Chironomidae			
Order Coleoptera										
Family Dytiscidae	1	T	-	-	-					
Family Psephenidae	19	T	0.0568	19	-					
Family Elmidae	231	T	0.6906	-	231					
Order Diptera										
Family Tipulidae	11	T	0.0247	-	-					
Family Chironomidae	168	T	0.7534	-	168		168			
Family Athericidae	3	T	0.0045	-	-					
RESULT	1,338	25	3.9538	26/1,133 = 0.0229		876/168 = 5.2143		613/1,338 = 0.4581	11	CL: 0.2400 JC: 0.4839

AR302699

TABLE D-6

STATION 6
INVERTEBRATE COMMUNITY CHARACTERIZATION DATA SHEET

JACK'S CREEK SITE

Taxa: June 5, 1991	Total Number of Individuals	Taxa Richness	Family Biotic Index (modified)	Ratio of Scrapers to Filterers/Collectors		Ratio of EPT and Chironomidae		% Contribution of Dominant Family	EPT Index	Community Similarity Index
				S	F	EPT	Chironomidae			
Phylum Mullusca										
Class Gastropoda										
Order Limnophila										
Family Ancylidae	2	T	0.0362	2	-					
Phylum Rhynchocoela										
Class Enopla										
Order Bdellonemertina										
Family Prostomidae	2	T	-	-	-					
Phylum Annelida										
Class Oligochaeta										
Order Haplotaxida	70	T	1.2700	-	70					
Phylum Arthropoda										
Class Crustacea										
Order Amphipoda										
Family Gammaridae	1	T	0.0090	-	1					
Order Decapoda										
Family Astacidae	2	T	0.0271	-	-					

AR302700

TABLE D-6
STATION 6
INVERTEBRATE COMMUNITY CHARACTERIZATION DATA SHEET
JACK'S CREEK SITE
PAGE 2

Taxa: June 5, 1991	Total Number of Individuals	Taxa Richness	Family Biotic Index (modified)	Ratio of Scrapers to Filterers/Collectors		Ratio of EPT and Chironomidae		% Contribution of Dominant Family	EPT Index	Community Similarity Index
				S	F	EPT	Chironomidae			
Class Insecta										
Order Ephemeroptera										
Family Siphlonuridae	1	T	0.0158	-	1	1			E	
Family Oligoneuriidae	1	T	0.0045	-	1	1			E	
Family Heptageniidae	1	T	0.0090	1	-	1			E	
Family Ephemerellidae	26	T	0.0588	-	26	26			E	
Order Plecoptera										
Family Pteronarcyidae	1	T	0.0000	-	-	1			P	
Family Perlidae	1	T	0.0023	-	-	1			P	
Order Megaloptera										
Family Sialidae	1	T	0.0090	-	-					
Family Corydalidae	6	T	0.0000	-	-					
Order Trichoptera										
Family Psychmyiidae	1	T	0.0045	-	1	1			T	
Family Hydropsychidae	109	T	0.9864	-	109	109		109	T	
Family Hydroptilidae	1	T	0.0090	-	-	1			T	
Family Limnephilidae	15	T	0.1357	-	-	15			T	

TABLE D-6
STATION 6
INVERTEBRATE COMMUNITY CHARACTERIZATION DATA SHEET
JACK'S CREEK SITE
PAGE 3

Taxa: June 5, 1991	Total Number of Individuals	Taxa Richness	Family Biotic Index (modified)	Ratio of Scrapers to Filterers/Collectors		Ratio of EPT and Chironomidae		% Contribution of Dominant Family	EPT Index	Community Similarity Index
				S	F	EPT	Chironomidae			
Order Coleoptera										
Family Psephenidae	14	T	0.1267	14	-					
Family Elmidae	92	T	0.8326	-	92					
Order Diptera										
Family Tipulidae	14	T	0.0950	-	-					
Family Chironomidae	81	T	1.0995	-	81		81			
RESULT	442	21	4.7311	17/382 = 0.0445		157/81 = 1.9383		109/442 = 0.2466	10	CL: 0.3810 JC: 0.4483

TABLE D-7
FISH SPECIES
JACK'S CREEK SITE

Scientific Name	Common Name	Water Column Species	Benthic Insectivore Species	Sucker Species	Intolerant Species	Tolerant Species	Omnivore	Insectivore	Top Carnivore
Rhinichthys atratulus	blacknose dace	Yes	Yes	No	No	Yes	Yes	No	No
Rhinichthys cataractae	longnose dace	Yes	No	No	Yes	No	No	Yes	No
Notropis hudsonius	spottail shiner	Yes	No	No	No	No	No	Yes	No
Notropis cornutus	common shiner	Yes	No	No	No	No	No	Yes	No
Semotilus corporalis	fallfish	No	No	No	No	No	No	Yes	No
Campostoma anomalum	common stoneroller	No	No	No	No	No	No	No	No
Exoglossum maxillingua	cutlips minnow	No	No	No	No	No	No	Yes	No
Semotilus atromaculatus	creek chub	No	No	No	No	Yes	Yes	No	No
Cyprinus carpio	carp	No	No	No	No	Yes	Yes	No	No
Catostomus commersoni	white sucker	No	No	Yes	No	Yes	Yes	No	No
Etheostoma olmstedi	tesselated darter	No	No	No	No	No	No	Yes	No
Notorus insignis	eastern madtom	No	No	No	No	No	No	Yes	No
Cottus cognatus	slimy sculpin	No	Yes	No	No	No	No	Yes	No
Ambloplites rupestris	rock bass	Yes	No	No	No	No	No	No	Yes
Lepomis gibbosus	pumpkinseed	Yes	No	No	No	No	No	Yes	No
Lepomis macrochirus	bluegill	Yes	No	No	No	No	No	Yes	No
Salmo trutta	brown trout	Yes	No	No	No	No	No	Yes	Yes

TABLE D-8
DATA SUMMARY FOR RPB V-STATION 2
JACK'S CREEK SITE

Station No. Biota Stream Sampling Station 2

Site: Jack's Creek Date: 6/10/91

	Metrics	Scoring Criteria 5 (%)	3 (%)	1 (%)	Metric Value	Metric Score
1	Total Number of Species	>67	33-67	<33	11/11	5
2	Number of Benthic Insectivores	>67	33-67	<33	2/2	5
3	Number of Water Column Species	>67	33-67	<33	4/4	5
4	Number of Sucker Species	>67	33-67	<33	1/1	5
5	Number of Intolerant Species	>67	33-67	<33	1/1	5
6	% White Sucker	<10	10-25	>25	7%	5
7	% Omnivore	<20	20-45	>45	57%	1
8	% Insectivore	>45	20-45	<20	43%	3
9	% Top Carnivore	>5	1-5	<1	2%	3
10	Number of Individuals	>67	33-67	<33	191/191	5
11	% Hybrids	0	0-1	>1	0%	5
12	% Diseased	<1	1-5	>5	0%	5
Scorer					IBI Score	52

Comments: Integrity Class - Good

All fish appeared healthy. No observed deformities, no lesions, no frayed fins, all have good color

TABLE D-9
DATA SUMMARY FOR RPB V-STATION 4
JACK'S CREEK SITE

Station No. Biota Stream Sampling Station 4						
Site: Jack's Creek						Date: 6/11/91
Metrics		Scoring Criteria			Metric Value	Metric Score
		5 (%)	3 (%)	1 (%)		
1	Total Number of Species	>67	33-67	<33	14/11	5
2	Number of Benthic Insectivores	>67	33-67	<33	1/2	3
3	Number of Water Column Species	>67	33-67	<33	7/4	5
4	Number of Sucker Species	>67	33-67	<33	1/1	5
5	Number of Intolerant Species	>67	33-67	<33	1/1	5
6	% White Sucker	<10	10-25	>25	8%	5
7	% Omnivore	<20	20-45	>45	58%	1
8	% Insectivore	>45	20-45	<20	39%	3
9	% Top Carnivore	>5	1-5	<1	5%	3
10	Number of Individuals	>67	33-67	<33	193/191	5
11	% Hybrids	0	0-1	>1	0%	5
12	% Diseased	<1	1-5	>5	0%	5
Scorer					IBI Score	50
Comments: Integrity Class - Good						
All fish appeared healthy. No observed deformities, no lesions, no frayed fins, all have good color						
Noted signs of reproduction: Ripe male carp, two four-inch brown trout						

TABLE D-10
DATA SUMMARY FOR RPB V-STATION 5
JACK'S CREEK SITE

Station No. Biota Stream Sampling Station 5						
Site: Jack's Creek						Date: 6/12/91
Metrics		Scoring Criteria			Metric Value	Metric Score
		5 (%)	3 (%)	1 (%)		
1	Total Number of Species	>67	33-67	<33	11/11	5
2	Number of Benthic Insectivores	>67	33-67	<33	1/2	5
3	Number of Water Column Species	>67	33-67	<33	8/4	5
4	Number of Sucker Species	>67	33-67	<33	1/1	5
5	Number of Intolerant Species	>67	33-67	<33	1/1	5
6	% White Sucker	<10	10-25	>25	3%	5
7	% Omnivore	<20	20-45	>45	47%	1
8	% Insectivore	>45	20-45	<20	38%	3
9	% Top Carnivore	>5	1-5	<1	16%	5
10	Number of Individuals	>67	33-67	<33	125/191	3
11	% Hybrids	0	0-1	>1	0%	5
12	% Diseased	<1	1-5	>5	0%	5
Scorer					IBI Score	52
Comments: Integrity Class - Good						
All fish appeared healthy. No observed deformities, no lesions, no frayed fins, all have good color						
Noted signs of reproduction: Female bluegill full of eggs						

WETLAND DATA SHEETS

DATA FORM
ROUTINE ONSITE DETERMINATION METHOD[1]

Field Investigator(s): OLDS CAMPBELL Date: 6/20/91
Project/Site: JACKS CR State: PA County: Mifflin
Applicant/Owner: _____ Plant Community #/Name: Wetland 1
Note: If a more detailed site description is necessary, use the back of data form or a field notebook.

Do normal environmental conditions exist at the plant community? PEMIA
Yes X No _____ (If no, explain on back)
Has the vegetation, soils, and/or hydrology been significantly disturbed?
Yes _____ No X (If yes, explain on back)

VEGETATION

Dominant Plant Species	Indicator Status	Stratum	Dominant Plant Species	Indicator Status	Stratum
1. Typha latifolia	OBL	H	11.		
2. Calamagrostis canadensis	FACW+	H	12.		
3.			13.		
4.			14.		
5.			15.		
6.			16.		
7.			17.		
8.			18.		
9.			19.		
10.			20.		

Percent of dominant species that are OBL, FACW, and/or FAC 100 %
Is the hydrophytic vegetation criterion met? Yes X No _____
Rationale: >50 percent FAC or wetter.

SOILS

Series/phase: Disturbed-unknown Subgroup:[2] _____
Is the soil on the hydric soils list? Yes _____ No _____ Undetermined X
Is the soil a Histosol? Yes _____ No X Histic epipedon present? Yes _____ No X
Is the soil: Mottled? Yes X No _____ Gleyed? Yes X No _____
Matrix Color: 2.5YR 4/2 5Y 5/1 Mottle Colors: 7.5YR 5/6 (abundant)
Other hydric soil indicators: _____
Is the hydric soil criterion met? Yes X No _____
Rationale: Low chromas and gleying, and mottling - abundant

HYDROLOGY

Is the ground surface inundated? Yes _____ No X Surface water depth: _____
Is the soil saturated? Yes _____ No X
Depth to free-standing water in pit/soil probe hole: _____
List other field evidence of surface inundation or soil saturation.
Evidence sparse due to season
Is the wetland hydrology criterion met? Yes X No _____
Rationale: Enhanced by the presence of hydric soils and hydrophytic vegetation.

JURISDICTIONAL DETERMINATION AND RATIONALE

Is the plant community a wetland? Yes X No _____
Rationale for jurisdictional decision: All 3 parameters met

[1] This data form can be used for the Hydric Soil Assessment Procedure and the Plant Community Assessment Procedure.
[2] Classification according to "Soil Taxonomy."

Project JC 1991
Wetland Site Number 1

RELATIVE WETLAND QUALITY BASED ON WETLAND FUNCTIONS

CHECKLIST

A. OCCURRENCE

Potential functions ranked in descending order of probable occurrence.

____ 1. Passive Recreation and Natural Heritage Value** (occurs often).

__X__ 2. Habitat for Terrestrial Wildlife

____ 3. Habitat for Aquatic Wildlife

____ 4. Sediment Trapping

__X__ 5. Flood Desynchronization

____ 6. Nutrient Retention

____ 7. Food Web Support (nutrient export)

____ 8. Dissipation of Erosive Forces

____ 9. Active Recreation

____ 10. Groundwater Discharge

____ 11. Shoreline Anchoring

____ 12. Ground Water Recharge (few occurrences)

B. VALUE

Rating	Value
Any combination of functions including 2 or 3 and 7.	High
Any combination of three functions from the functions list, excluding 2, 3 and 7.	Medium
Less than three functions total.	(Low)

C. TYPE OF WETLANDS

____ Tidal

__X__ Non-tidal

**Threatened or Endangered Species habitat or Areas of State Critical Concern are always "high" valued wetlands regardless of function, size, or location.

Source: Adapted from "A Method for Wetland Functional Assessment", Federal Highway Administration, 1983.

AR302709

DATA FORM
ROUTINE ONSITE DETERMINATION METHOD[1]

Field Investigator(s): OLDS, CAMPBELL Date: 7/1/91
Project/Site: Jacks Creek State: PA County: Mifflin
Applicant/Owner: _____ Plant Community #/Name: Wetland 2
Note: If a more detailed site description is necessary, use the back of data form or a field notebook.

Do normal environmental conditions exist at the plant community? PEM 2A
Yes X No _____ (If no, explain on back)
Has the vegetation, soils, and/or hydrology been significantly disturbed?
Yes _____ No X (If yes, explain on back)

VEGETATION

Dominant Plant Species	Indicator Status	Stratum	Dominant Plant Species	Indicator Status	Stratum
1. Symplocarpus foetidus	OBL	H	11.		
2. Impatiens capensis	FACW	H	12.		
3.			13.		
4.			14.		
5.			15.		
6.			16.		
7.			17.		
8.			18.		
9.			19.		
10.			20.		

Percent of dominant species that are OBL, FACW, and/or FAC 100 %
Is the hydrophytic vegetation criterion met? Yes X No
Rationale: >50 percent FAC or wetter

SOILS

Series/phase: Disturbed - unknown Subgroup:[2]
Is the soil on the hydric soils list? Yes _____ No _____ Undetermined _____
Is the soil a Histosol? Yes _____ No X Histic epipedon present? Yes _____ No X
Is the soil: Mottled? Yes X No _____ Gleyed? Yes X No _____
Matrix Color: 5Y 5/1 5GY 6/1 Mottle Colors: 7.5 YR 5/6
Other hydric soil indicators: _____
Is the hydric soil criterion met? Yes X No _____
Rationale: Low chroma, mottling, gleying

HYDROLOGY

Is the ground surface inundated? Yes _____ No X Surface water depth: _____
Is the soil saturated? Yes X No _____
Depth to free-standing water in pit/soil probe hole: _____
List other field evidence of surface inundation or soil saturation: Swale/channel carries intermittent flows; located below surrounding floodplain
Is the wetland hydrology criterion met? Yes X No _____
Rationale: Saturated soils, topographical situation also vegetation and soils indicate wetland condition

JURISDICTIONAL DETERMINATION AND RATIONALE

Is the plant community a wetland? Yes X No _____
Rationale for jurisdictional decision: All 3 parameters met

[1] This data form can be used for the Hydric Soil Assessment Procedure and the Plant Community Assessment Procedure.
[2] Classification according to "Soil Taxonomy."

Project JC 1991
Wetland Site Number 2

RELATIVE WETLAND QUALITY BASED ON WETLAND FUNCTIONS

CHECKLIST

A. OCCURRENCE

Potential functions ranked in descending order of probable occurrence.

____ 1. Passive Recreation and Natural Heritage Value** (occurs often).

____ 2. Habitat for Terrestrial Wildlife

____ 3. Habitat for Aquatic Wildlife

_X_ 4. Sediment Trapping

____ 5. Flood Desynchronization

____ 6. Nutrient Retention

____ 7. Food Web Support (nutrient export)

____ 8. Dissipation of Erosive Forces

____ 9. Active Recreation

____ 10. Groundwater Discharge

____ 11. Shoreline Anchoring

____ 12. Ground Water Recharge (few occurrences)

B. VALUE

Rating	Value
Any combination of functions including 2 or 3 and 7.	High
Any combination of three functions from the functions list, excluding 2, 3 and 7.	Medium
Less than three functions total.	(Low)

C. TYPE OF WETLANDS

____ Tidal

_X_ Non-tidal

**Threatened or Endangered Species habitat or Areas of State Critical Concern are always "high" valued wetlands regardless of function, size, or location.

Source: Adapted from "A Method for Wetland Functional Assessment", Federal Highway Administration, 1983.

CHRONIC TOXICITY TESTING REPORT

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION III
Wheeling Office
303 Methodist Bldg., 11th and Chapline Streets
Wheeling, West Virginia 26003

December 29, 1992

Emily Olds
c/o Gannett Fleming
PO Box 67100
Harrisburg, PA 17106-7100

Dear Ms. Olds:

Enclosed are the results of a toxicity study conducted on surface water and sediment samples collected from three stations on Jack's Creek, Mifflin County, Pennsylvania, in November 1992.

If you have any questions concerning the results or require additional information, please contact me at 304/234-0241.

Sincerely,

Robert Donaghy

Robert Donaghy, Biologist
Wheeling Operations Section

Enclosure

cc: RKramer
KAndersen
RDavis
GConnor

INTRODUCTION

Chronic and acute toxicity tests were conducted on surface water and sediment samples collected from three stations (SW-01, SW-03 and SW-05) on Jack's Creek in Mifflin County, Pennsylvania. The Superfund samples were collected by personnel from Gannett Fleming and shipped iced via Federal Express to the Wheeling Laboratory. Surface water samples were collected on 11/16, 11/18 and 11/20 and the sediment samples were collected on 11/16. All samples were shipped on the day collected and received in the laboratory on the following day. Fathead minnow and Ceriodaphnia chronic toxicity tests on the water samples were conducted 11/17-24/92. Hyallela acute tests on the sediment samples were conducted 11/20-30/92. All samples were refrigerated when not in use.

STUDY DESIGN AND DEFINITIONS

Toxicity tests were performed with these samples to measure their effect on the survival and growth of larval fathead minnows, and the survival and reproduction of Ceriodaphnia. The sediment samples were used in ten day mortality tests with Hyallela azteca.

CONCLUSIONS

Surface Water Samples

The results of the tests conducted on samples collected at locations SW-03 and SW-05 were not significantly different from location SW-01. This indicates that water originating on the site was not causing toxicity in Jack's Creek at the time of the survey.

A statistical comparison of the weights of fish exposed to the water from location SW-03 with the Laboratory Control indicated that growth was significantly impaired. The mean fish weights at each of the locations were very similar, and the weight of the fish from SW-03 (0.395 mg) was slightly greater than those from SW-01 (0.393 mg) and SW-05 (0.37 mg). The weights

of the four replicates at SW-03 were 0.39, 0.40, 0.39, and 0.40 mg. This degree of homogeneity among replicates is abnormal and was at least partially responsible for the statistical difference determined in the Steels Many One-Rank Test. It is unlikely that the difference detected resulted from sample toxicity.

There were no statistically significant differences between the Laboratory Control and any of the other measures, i.e., fathead or Cerio survival or Cerio reproduction.

Sediment Samples

The sediment from SW-03 was lethal to the Hyallela and the sediment from SW-05 may have had an adverse effect on their growth.

At the conclusion of the 10-day test, there were no survivors in any of the SW-03 sediment replicates. The analyst who terminated the tests also noted that the animals exposed to SW-05 were alive, but had grown less than the animals exposed to the sediment from Stations SW-01 or the reference sample.

TEST METHODS

General

In general, the fathead and Ceriodaphnia test methods conformed with the "Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms", 2nd edition. The ASTM "New Standard Guide for Conducting Solid-Phase Sediment Toxicity Tests with Freshwater Invertebrates" Draft No. 4, 08/28/89 was followed for the Hyallela aacute tests.

Each day the water samples were filtered through a 60 micron nylon net and then warmed to test temperature. Diluted mineral water (DMW), 1 part mineral water to 4 parts deionized water, was used as the laboratory control. Stream samples were tested undiluted. Specific

conductance, pH and dissolved oxygen were measured daily in an aliquot of the fresh test solutions. Test solutions were then distributed to the appropriate test chambers. Temperature was measured in "dummy" exposure chambers every two hours throughout the test. Dissolved oxygen and pH measurements were also determined at the end of each 24-hour exposure period. Hardness and alkalinity analyses were performed on every sample and batch of laboratory control water. Chemical/physical measurements from the laboratory can be found in Table 2.

All data were analyzed at a significance level of $p=0.05$.

The fathead survival and growth data were analyzed using a 1 tailed Dunnetts Test. Growth data were analyzed with a 1 tailed Steels Many-One Rank Test. Ceriodaphnia survival and reproduction data were analyzed using Fisher's Exact Test and a 1 tailed Steels Many-One Rank Test, respectively.

Hyallela mortality data were analyzed using Fisher's Exact Test.

Ceriodaphnia Test Methods

The test organisms were obtained from cultures maintained by the EPA Laboratory in Newtown, OH. Animals less than 24 hours old, hatched while in transit, were used in the test. Thirty milliliter plastic cups were used for test containers. These cups had been rinsed with distilled water and mineral water-deionized water (1:4) prior to use. The test was initiated by randomly selecting neonates and transferring them one at a time to the test solutions. Each cup contained 20 ml of test solution and 300 μl of food (200 μl of a fish flake food, yeast, cerophyll mixture and 100 μl of concentrated Selenastrum capricornutum). The daily renewals were accomplished by dispensing fresh food and new test solutions to new cups. The test organisms were transferred from the old test solution to the new solution with an eye dropper. When young were present, they were counted and discarded. The number of surviving adults and the number

of young produced were recorded daily. The test was terminated on day seven after 80% of the laboratory control animals had produced their third brood.

Fathead Minnow Test Methods

The fathead minnows used for these tests were obtained from Wheeling Laboratory cultures. They were <24 hours old at the start of the tests. Crystallizing dishes, 125 mm diameter by 65 mm deep, were used as exposure chambers. They were washed with soap and hot water and rinsed with tapwater, then rinsed with 15% hydrochloric acid and tapwater, rinsed with acetone and tapwater and allowed to air dry. Four replicate chambers each received 250 ml of test solution. The chambers were randomly positioned on two laboratory carts and ten randomly selected larval fatheads were introduced. They were fed 0.1 ml of concentrated newly hatched brine shrimp once on November 17, and twice on November 18-23. No food was provided on the final day of the test, November 24. The number of surviving fish in each container was counted and recorded daily. The test containers were siphoned daily to remove uneaten brine shrimp, dead fish and any other debris. They were siphoned down until there were only a few millimeters of water remaining. To complete the daily renewal, 250 ml of new test solution was then gently added. The test was terminated at the end of seven days by sacrificing the surviving fish in 70% ethanol, rinsing with distilled water, dispensing to pre-weighed pans, and oven-drying overnight at 98-103 degrees centigrade. Following drying, the fish were weighed to 0.01 mg on an analytical balance. For each replicate the pan weight, number of fish and dried weight were transferred to an electronic spreadsheet and mean dry weights were calculated.

Hyallela Test Methods

The Hyallela azteca were obtained from Wheeling Laboratory cultures. They were 7 - 12 days old at the start of the tests. Crystallizing dishes, 175 mm x 65 mm, were used as exposure

chambers. They were washed with soap and hot water and rinsed with tap water, then rinsed with acetone, allowed to air dry, rinsed with 15% HCl and tap water, rinsed with distilled water and allowed to air dry. Upon receipt, the sample temperatures were measured and the samples were then refrigerated in the original containers until testing was initiated.

Samples were screened through 1/4" and No. 8 stainless steel sieves and then mixed well. The pH was measured and the moisture fractions determined. Four replicate chambers each received 100 mls of sample and 400 ml of overlay water. The overlay water was aged,dechlorinated, carbon-filtered city tap water. The sample replicates were allowed to equilibrate for 24 hours with gentle (1 bubble/second) aeration. The test animals were introduced 10 per replicate and 0.01 gms of ground, soaked, Tetramin® flakes were fed to each replicate. Initial pH, DO and conductivity readings were taken for each sample prior to adding the animals and food. The replicates were randomly placed in an incubator with a lighting intensity of 1200 lux, and a 16 light/8 dark 24-hour cycle. A control sediment, which was determined to be non-toxic, was run concurrently. All test and control replicates were renewed with 350 mls of overlay water and 0.01 gms of fresh food on day three and day seven of the 10-day test. The containers were covered to prevent evaporation during the test period and the DO was determined prior to each renewal. The DO, pH, conductivity, alkalinity and hardness were measured on each sample at the end of the test. Chemical and physical measurements can be found in Table 2. At the end of the test, each replicate's overlay water was examined for survivors and as much sediment sieved through a #50 s.s. sieve as necessary to recover all the survivors.

RESULTS

Ceriodaphnia dubia (Table 1, Appendix A)

Survival was 100% at all stations except SW-03 at which there was 90% survival. The young produced was greater at all stations than the laboratory control which was 28.10: SW-01 - 36.40, SW-03 - 35.91, and SW-05 - 31.30.

Fathead Minnows (Table 1, Appendix B)

Percent survival was slightly lower at all stations than the laboratory control's 89.8: SW-01 - 82.5, SW-03 - 84.8 and SW-05 - 85.0.

The mean dried weights were slightly less at all stations than the laboratory control's 0.45 mg: SW-01 - 0.39, SW-03 - 0.40 and SW-05 - 0.37.

Hyallela azteca

The percent survival was 97.5 in the Control and the SW-05 station sample. There was a 100% survival in the sample from station SW-01 and 0% survival at station SW-03.

Jack's Creek

Table 1
Data Summary

Station	Hyallela Percent Survival	Ceriodaphnia dubia Percent Adult Survival	Ceriodaphnia dubia Mean Young Produced	Fathead Minnow Percent Survival	Fathead Minnow Mean Dry Weight (mg)
SW-01	100	100	36.40	82.5	0.39
SW-03	0	90	35.91	84.8	0.40
SW-05	97.5	100	31.30	85.0	0.37
Control	97.5	100	28.10	89.8	0.45

Table 2
Physical/Chemical Data

Concentration	D.O. (mg/l)	pH	Cond. (umhos/cm)	Alk. (mg/l)	Hardness (mg/l)
Surface Water Samples					
SW-01	4.9-11.4	7.11-7.99	184-255	49-80	76-112
SW-03	5.4-11.9	7.12-8.03	184-243	52-79	76-114
SW-05	5.0-11.4	7.13-8.03	182-239	51-80	76-108
Control	5.7- 9.2	7.00-8.14	159-178	63-72	78-88
Sediment Overlay Water					
SW-01	6.0-7.6	6.78-8.36	343-436	46-99	128-182
SW-03	6.9-8.2	7.49-8.08	334-378	46-62	128-148
SW-05	5.9-8.2	7.39-8.20	371-386	46-73	128-146
Control	5.4-7.3	7.83-8.49	452-453	46-116	128-188

The temperatures for the Ceriodaphnia ranged from 23.0-25.7 degrees Centigrade. The temperature range for the fathead minnow test was 22.9-25.5 degrees Centigrade. The temperature ranged from 21.5 to 22.5 degrees Centigrade for the Hyallela azteca.

SAMPLE : Control

DAY	REPLICATE 1	2	3	4	5	6	7	8	9	10	MEAN % SURV.	MIM
1	A 0	A 0	A 0	A 0	A 0	A 0	A 0	A 0	A 0	A 0	100	0.00
2	A 0	A 0	A 0	A 0	A 0	A 0	A 0	A 0	A 0	A 0	100	0.00
3	A 0	A 0	A 0	A 0	A 0	A 0	A 0	A 0	A 0	A 0	100	0.00
4	A 0	A 0	A 8	A 6	A 7	A 7	A 6	A 0	A 4	A 0	100	3.80
5	A 6	A 2	A 0	A 0	A 0	A 0	A 0	A 7	A10	A 0	100	2.50
6	A12	A 0	A12	A13	A 7	A12	A11	A11	A 0	A 1	100	7.90
7	A16	A 9	A18	A17	A18	A16	A19	A13	A12	A 1	100	13.90
TOTL	34	11	38	36	32	35	36	31	26	2	100	28.10

SAMPLE : JCSW-01 (RED)

DAY	REPLICATE 1	2	3	4	5	6	7	8	9	10	MEAN % SURV.	MIM
1	A 0	A 0	A 0	A 0	A 0	A 0	A 0	A 0	A 0	A 0	100	0.00
2	A 0	A 0	A 0	A 0	A 0	A 0	A 0	A 0	A 0	A 0	100	0.00
3	A 0	A 0	A 0	A 0	A 5	A 0	A 0	A 0	A 0	A 0	100	0.50
4	A 1	A 7	A 8	A 7	A 0	A 7	A 5	A 5	A 5	A 0	100	4.50
5	A 0	A 0	A 0	A 0	A12	A 0	A 0	A 0	A15	A 4	100	3.10
6	A 3	A11	A18	A15	A14	A12	A12	A13	A 0	A11	100	10.90
7	A21	A22	A14	A17	A14	A18	A16	A16	A21	A15	100	17.40
TOTL	25	40	40	39	45	37	33	34	41	30	100	36.40

SAMPLE : JCSW-03 (YELLOW)

D FILENAME:

DAY	REPLICATE 1	2	3	4	5	6	7	8	9	10	MEAN % SURV.	MIM
1	A 0	A 0	A 0	A 0	A 0	A 0	A 0	A 0	A 0	A 0	100	0.00
2	A 0	A 0	A 0	A 0	A 0	A 0	A 0	A 0	A 0	A 0	100	0.00
3	A 0	A 0	A 0	A 0	A 0	A 0	A 0	A 0	A 0	A 0	100	0.00
4	A 8	A 8	A 6	A 8	A 9	A 5	A 8	A 7	A 6	A 8	100	7.30
5	A 0	A 0	D 0	A 0	A 0	A 9	A 0	A 0	A 0	A 0	95	0.95
6	A 8	A15		A14	A12	A 0	A15	A18	A 4	A14	90	11.11
7	A10	A14		A17	A18	A24	A20	A15	A16	A15	90	16.56
TOTL	26	37	6	39	39	38	43	40	26	37	90	35.91

SAMPLE : JCSW-05 (ORANGE)

DAY	REPLICATE 1	2	3	4	5	6	7	8	9	10	MEAN % SURV.	MIM
1	A 0	A 0	A 0	A 0	A 0	A 0	A 0	A 0	A 0	A 0	100	0.00
2	A 0	A 0	A 0	A 0	A 0	A 0	A 0	A 0	A 0	A 0	100	0.00
3	A 0	A 0	A 0	A 0	A 0	A 0	A 0	A 0	A 0	A 0	100	0.00
4	A 3	A 4	A 8	A 0	A 7	A 8	A 7	A 5	A 8	A 7	100	5.70
5	A 0	A11	A 0	A 0	A 0	A 0	A 0	A 0	A 0	A 0	100	1.10
6	A 8	A13	A13	A 5	A15	A11	A15	A 9	A12	A13	100	11.40
7	A 9	A 0	A19	A 0	A15	A19	A22	A 7	A20	A20	100	13.10
TOTL	20	28	40	5	37	38	44	21	40	40	100	31.30

MIM - Mean young Ignoring Mortality
A - animal Alive
D - animal Dead

Fathead Minnow, Chronic Test Data

Sample Descrip.	Rep.	No. Fish	Pan Wt.	Total Wt.	Net Wt.	Mean Wt.	% Sur.
Laboratory	A	8	1385.25	1388.64	3.39	0.42	89
Control	B	7	1389.48	1392.60	3.12	0.45	70
20% Perrier	C	10	1370.12	1374.74	4.62	0.46	100
	D	10	1348.37	1353.17	4.80	0.48	100
				Overall Mean		0.45	89.8
				Standard Deviation		0.02	12.3
				Coe. of Var.		4.58	13.7
Jack's Cr.	A	8	1354.21	1356.80	2.59	0.32	80
SW-01	B	8	1364.51	1368.40	3.89	0.49	80
	C	7	1381.43	1383.83	2.40	0.34	70
	D	10	1385.74	1389.93	4.19	0.42	100
				Overall Mean		0.39	82.5
				Standard Deviation		0.06	10.9
				Coe. of Var.		16.43	13.2
Jack's Cr.	A	7	1391.70	1394.51	2.81	0.40	70
SW-03	B	10	1355.69	1359.63	3.94	0.39	100
	C	8	1368.38	1371.59	3.21	0.40	89
	D	8	1359.11	1362.19	3.08	0.39	80
				Overall Mean		0.40	84.8
				Standard Deviation		0.01	11.1
				Coe. of Var.		1.70	13.1
Jack's Cr.	A	7	1381.37	1384.40	3.03	0.43	70
SW-05	B	8	991.84	994.61	2.77	0.35	80
	C	10	1389.99	1393.58	3.59	0.36	100
	D	9	1368.00	1371.08	3.08	0.34	90
				Overall Mean		0.37	85.0
				Standard Deviation		0.04	11.2
				Coe. of Var.		9.94	13.2
Blank X	A		1364.15	1364.13	-0.02		
Blank Y	B		1358.23	1358.22	-0.01		
Blank Z	C		1373.12	1373.10	-0.02		
			Initial	Final			
Class S 100.02 mg			100.05	100.03			
Class S 1000.02 mg			1000.02	1000.03			
Class S 2000.06 mg			2000.04	2000.07			

All weights in milligrams

D-6

NEPA Compliance Information and Correspondence

LETTERS OF CONSULTATION

ORGANIZATION	SENDER
United States Fish and Wildlife Service	Charles Kulp
Pennsylvania Fish and Boat Commission	Clark Shiffer
Pennsylvania Department of Environmental Resources, Bureau of Forestry	Edward Dix
Pennsylvania Natural Diversity Inventory	Jill Belfonti
Pennsylvania Game Commission	G.J. Grabowicz
Pennsylvania Historical and Museum Commission	Kurt Carr

United States Department of the Interior
FISH AND WILDLIFE SERVICE
Suite 322
315 South Allen Street
State College, Pennsylvania 16801

November 25, 1991

Mr. Roger D. Myers
Project Engineer
Gannett Fleming, Inc.
P.O. Box 1963
Harrisburg, PA 17105-1963

Dear Mr. Myers:

This responds to your letter of November 19, 1991 requesting information concerning the presence of federally listed or proposed endangered and threatened species within the area affected by the Jack's Creek Superfund Site located in Mifflin County, Pennsylvania.

Except for occasional transient species, no federally listed or proposed threatened or endangered species under our jurisdiction are known to exist in the project impact area. Therefore, no Biological Assessment or further Section 7 consultation under the Endangered Species Act (87 Stat. 884, as amended; 16 U.S.C. 1531 et seq.) is required with the Fish and Wildlife Service. Should project plans change, or if additional information on listed or proposed species becomes available, this determination may be reconsidered. A compilation of federally listed endangered and threatened species in Pennsylvania is enclosed for your information. Requests for information regarding State-listed endangered or threatened species should be directed to the Pennsylvania Game Commission (wildlife), the Pennsylvania Fish Commission (fish, reptiles and amphibians) and the Pennsylvania Department of Environmental Resources (plants).

This response relates only to endangered or threatened species under our jurisdiction, based on an office review of the proposed project's location. No field inspection of the project area has been conducted by this office. Consequently, this letter is not to be construed as addressing other Service concerns under the Fish and Wildlife Coordination Act or other legislation.

If we can be of further assistance, please contact Philip Edmunds of this office at 814-234-4090.

Sincerely,

Charles J. Kulp
Supervisor

Enclosure

FEDERALLY LISTED ENDANGERED AND THREATENED SPECIES IN PENNSYLVANIA

COMMON NAME	SCIENTIFIC NAME	STATUS	DISTRIBUTION
FISHES:			
Sturgeon, shortnose*	Acipenser brevirostrum	E	Delaware River and Other Atlantic Coastal waters
REPTILES:			
NONE			
BIRDS:			
Eagle, bald	Haliaeetus leucocephalus	E	Entire State
Falcon, American peregrine	Falco peregrinus anatum	E	Entire State - re-establishment to former breeding range in progress
Falcon, Artic	Falco peregrinus tundrius	E	Entire State migratory - no nesting
MAMMALS:			
Bat, Indiana	Myotis sodalis	E	Entire State
Cougar, Eastern	Felis concolor cougar	E	Entire State - probably extinct
MOLLUSKS:			
NONE			
PLANTS:			
Pogonia, small whorled	Isotria medeoloides	E	Bucks, Centre, Chester, Greene, Monroe, Montgomery, Philadelphia & Venango Counties

* Principal responsibility for this species is vested with the National MA. Fisheries Service.

Region 5 6/3/85 - 1 p.

COMMONWEALTH OF PENNSYLVANIA
PENNSYLVANIA FISH COMMISSION
Division of Fisheries Management
450 Robinson Lane
Bellefonte, PA 16823-9616

November 25, 1991

GANNETT FLEMING, INC.
Roger D. Myers, Project Engineer
P.O. Box 1963
Harrisburg, PA 17105-1963

Dear Mr Myers:

I have examined the map accompanying your recent correspondence which shows the location of the proposed environmental assessment on the Jack's Creek Superfund site in Mifflin County, Pennsylvania.

Presently, none of the fishes, amphibians, or reptiles we list as endangered or threatened are known to occur at or in the immediate vicinity of the study area.

Sincerely,

Clark N. Shiffer

Clark N. Shiffer
Herpetology and Endangered Species Coordinator

mam

cc: R. Snyder

RESOURCE FIRST
PROTECT • CONSERVE • ENHANCE

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL RESOURCES

Bureau of Forestry
Forest Advisory Services
P.O. Box 8552
Harrisburg, PA 17105-8552

717/787-3444

December 23, 1991

Roger D. Myers, Project Engineer
Gannett Fleming, Inc.
P.O. Box 1963
Harrisburg, PA 17105-1963

Dear Mr. Myers:

Re: PNDI Review of a Site in Mifflin County, Pennsylvania.

Your request of November 19 to review a location within the Alfarata Quadrangle for the presence of natural resources of special concern was processed by using the Pennsylvania Natural Diversity Inventory (PNDI) information system. A review of PNDI in comparison with the proposed project site did not reveal any natural resources of special concern.

Be advised that legal authority for Pennsylvania's biological resources resides with three administrative agencies. The enclosure titled, PNDI Species List, outlines which species groups are managed by these agencies. Although, PNDI functions solely as an information system for natural resources of concern, the Pennsylvania Game Commission maintains the Fish and Wildlife Data Base which can provide data descriptive of all mammals and birds common to Pennsylvania.

PNDI is a site specific information system which describes significant natural resources of Pennsylvania. PNDI includes data descriptive of plant and animal species of special concern, exemplary natural communities and unique geological features. The information system is a cooperative project of the Department of Environmental Resources, The Nature Conservancy and the Western Pennsylvania Conservancy. This response represents the most up-to-date summary of the PNDI data files. However, the data is not intended to be a conclusive compilation of the special concern resources at the project site. Only on-site biological surveys can provide a total assessment of the natural resources present in any specific area.

The PNDI project is funded largely through contributions to the Wild Resource Conservation Fund. This fund was established in 1982 by the Pennsylvania Legislature to provide support for the research and conservation of significant natural resources within

the Commonwealth. I trust that you will find our response to your request for site specific information to be of value to your business. Therefore, please consider making a contribution to the Fund.

Please phone this office if you should have questions pertinent to this response, PNDI or the Department of Environmental Resources plant program.

Sincerely,

Edward T. Dix, Botanist
Div. of Forest Advisory Services
Bureau of Forestry
Dept. of Environmental Resources

Enclosures

cc: Anthony Wilkinson, PNDI-East

PENNSYLVANIA NATURAL DIVERSITY INVENTORY

SPECIES LISTS

The statutory authority for Pennsylvania's animals and plants resides with three separate agencies. The Pennsylvania Department of Environmental Resources has the responsibility for management of the Commonwealth's native wild plants. The Pennsylvania Fish Commission is responsible for management of fish, reptiles, amphibians and aquatic organisms within the Commonwealth. The Pennsylvania Game Commission has the responsibility for managing the state's wild birds and mammals.

For information on current official status for a species, please consult the appropriate agency. Requests for information should be directed to:

PLANTS and PNDI - general	Plant Program Manager Pa. Department of Environmental Resources Bureau of Forestry Forest Advisory Services P. O. Box 8552 Harrisburg, PA 17105-8552 (717)787-3444
FISH, REPTILES, AMPHIBIANS, AQUATIC ORGANISMS	Endangered Species & Herpetology Coordinator Pennsylvania Fish Commission Bureau of Fisheries and Engineering 450 Robinson Lane Bellefonte, PA 16823 (814)359-5113
BIRDS and MAMMALS	Pennsylvania Game Commission Bureau of Wildlife Management 2001 Elmerton Avenue Harrisburg, PA 17110-9797 (717)787-5529

Invertebrate species are recommended for inclusion in PNDI by the Pennsylvania Biological Survey. For information concerning invertebrates with federal status contact:

Endangered Species Specialist
U.S. Fish and Wildlife Service
One Gateway Center, Suite 700
Newton Corner, MA 02158
(617)965-5100

Thank you for your request. Feel free to contact PNDI if we can be of further assistance.

Pennsylvania Natural Diversity Inventory

PNDI — Eastern Office
34 Airport Drive
Middletown, PA 17057
(717) 948-3962

December 11, 1990

Mr. Roger D. Myers
Gannett Fleming, Inc.
P.O. Box 1963
Harrisburg, PA 17105-1963

Re: PNDI Review of Jack's Creek Superfund Site, Mifflin County.

Dear Mr. Myers:

In response to your request of November 19, a review of the Pennsylvania Natural Diversity Inventory (PNDI-E) files for the above mentioned project indicates that we have no records of species of special concern from the vicinity of the project area.

Please take note that the Pennsylvania Game Commission has statutory authority for birds and mammals, and the Pennsylvania Fish Commission has statutory authority for herptiles, fishes, and aquatic organisms. These agencies should be notified to insure a complete review of the project area.

As you know, the Inventory is a cumulative process through which information is continuously updated and refined. Old records are checked in the field, new areas are surveyed, known sites are monitored, and new changes in land conservation status are recorded. As a result, the assessment of Pennsylvania's ecological resources is current and increasingly accurate. Consequently, information given to you now may be out of date in the near future.

The Pennsylvania Natural Diversity Inventory has compiled data on Pennsylvania's rare, endangered, or otherwise significant plant and animal species, plant communities, and other natural features. The Pennsylvania Natural Diversity Inventory is a cooperative program among the Department of Environmental Resources, The Nature Conservancy and the Western Pennsylvania Conservancy. While this information is available for preparation and review of environmental assessments, it is not a substitute for on-site surveys. The quantity and quality of data collected by the Inventory are dependent on the research and observations of many individuals and organizations. In most cases, information on environmental elements is not the result of comprehensive field surveys. For this reason, the Pennsylvania Natural Diversity Inventory cannot provide a definitive statement on the presence, absence, or degree of health of environmental elements in any par

of Pennsylvania. The Inventory welcomes coordination with individuals or organizations proposing environmental alteration, and/or conducting environmental assessments; however, the information, or lack thereof, provided by the Inventory should never be regarded as a complete statement on the elements being considered. If data provided by the Pennsylvania Natural Diversity Inventory are to be published in any form, the Inventory should be informed at the outset and credited as the source.

If construction on this project has not been initiated one year from now, we suggest that you contact us again so that we may update our response.

Thank you for using PNDI as part of your environmental review procedure. Partial support for PNDI is derived from the Wild Resource Conservation Fund, which accumulates from the Pennsylvania State Income Tax check-off and from direct donations. Enclosed is a flyer which explains the procedure whereby a donation can be made to the fund, should your firm wish to contribute.

Sincerely,

Jill R. Belfonti

Jill R. Belfonti
Information Manager
PNDI - E
The Nature Conservancy

ENCL: Statutory Authority and as stated
cc: Kathy McKenna, Botanist, Bureau of Forestry

COMMONWEALTH OF PENNSYLVANIA

PENNSYLVANIA GAME COMMISSION

2001 ELMERTON AVENUE
HARRISBURG, PA 17110-9797

ADMINISTRATIVE BUREAUS:

ADMINISTRATION	787-5670
AUTOMOTIVE AND PROCUREMENT DIVISION	787-6594
LICENSE DIVISION	787-2084
PERSONNEL DIVISION	787-7836
WILDLIFE MANAGEMENT	[illegible]
INFORMATION & EDUCATION	[illegible]
LAW ENFORCEMENT	[illegible]
LAND MANAGEMENT	[illegible]
REAL ESTATE DIVISION	787-6568
MANAGEMENT INFORMATION SYSTEMS	787-4076

December 23, 1991

Mr. Roger D. Myers
Gannett Fleming
PO Box 1963
Harrisburg, PA 17105-1963

Dear Mr. Myers:

In response to your request for information services, we are providing the enclosed printout from the Pennsylvania Fish and Wildlife Data Base. The information was provided for species occurring at or near the Jacks Creek Superfund Site, Bucks County, Pennsylvania.

We have record of one threatened species (Eastern Small-footed Myotis) historically occurring near your project area. However, we have no record of this species within your project area. Additional comments concerning this data search are included on the following page.

The bill for this service is as follows:

Staff Time	7.50
Printing	.70
Mailing Cost	.98
TOTAL	9.18

Please make reimbursement to the Pennsylvania Game Commission, Division of Wildlife Data Base, 2001 Elmerton Avenue, Harrisburg, PA 17110-9797.

If you have any questions or require assistance interpreting this printout, please contact Ms. Bullock or Mr. Hardisky at (717) 787-1570.

Very truly yours,

G. J. Grabowicz

G.J. Grabowicz, Director
Bureau of Land Management

Pennsylvania Fish and Wildlife Data Base

The following species information was generated from the Pennsylvania Fish and Wildlife Data Base for your use in determining species likely to occur in your project area.

This information was provided upon request and should not be viewed as an official review or opinion of the Pennsylvania Game Commission. Species lists generated for this request should be viewed as likely or probable occurrence lists that might warrant further investigation. These lists are based on known, documented species occurrence within the counties, watershed, land use, and/or habitat types specified in your request.

Information pertaining to aquatic vertebrates and invertebrates contained in these lists is based solely on literature sources and expert opinion. Use of the aquatic species information contained in this report should be coordinated with the Pennsylvania Fish Commission for compliance with their standards and data sources.

This report does not contain information on plants. For plant species information in your project area, please contact the Bureau of Forestry, Pennsylvania Department of Environmental Resources.

The Pennsylvania Game Commission considers wetlands critical and unique wildlife habitat. If your proposed project is in the vicinity of wetlands, streams, rivers, lakes, or other bodies of water, please be aware that any impact to these areas requires a permit from the U.S. Army Corps of Engineers and the Bureau of Dams and Waterway Management, Pennsylvania Department of Environmental Resources.

Note: Bird species occurrence is based upon recorded sightings and may not imply nesting activity or year-round residence.

Contents

Pennsylvania Fish and Wildlife Data Base
LIST A: Endangered and Threatened Species
** Jacks Creek Superfund Site **
Alfarata Quadrangle
23 DEC 1991

Note: The purpose of the following list is to identify endangered or threatened species which occur or are likely to occur on a designated site. We have record of the following species occurring in or near your project area. Their occurrence may depend on season, habitat type, and individual movements or migration patterns. Field surveys may be required to determine whether these species exist on your project area. If an endangered/threatened bird or mammal survey is planned for a project site, please contact the Division of Wildlife Data Base, Pennsylvania Game Commission (717-787-1570).

Land Use/Cover Types Included:

Urban - Residential
Urban - Commercial/Services
Urban - Transportation/Utilities
Rangeland - Herbaceous
Forest - Deciduous
Barren - Strip Mines/Quarries/Gravel Pits

Common Name.....	Scientific Name.....	Status.....
Myotis, Eastern Small-footed	Myotis leibii	PA Threatened

Pennsylvania Fish and Wildlife Data Base
LIST B: Potential Endangered, Threatened, and Special Concern Species
(Includes Accidental and Migrant Species)
** Jacks Creek Superfund Site **
Mifflin County
23 DEC 1991

Note: The purpose of the following list is to identify endangered, threatened, and special concern species which may potentially occur within a designated area. This list includes species which may exist on your project area as well as migrating and accidental species. This information is based on records of these animals inhabiting specific habitat types within Mifflin County.

Land Use/Cover Types Included:

Urban - Residential
Urban - Commercial/Services
Urban - Transportation/Utilities
Rangeland - Herbaceous
Forest - Deciduous
Barren - Strip Mines/Quarries/Gravel Pits

..us.....	No. of Species Listed
PA / Fed Endangered	3
PA Endangered	2
PA Threatened	4
Candidate Species	22
Total Species Listed:	31

Pennsylvania Fish and Wildlife Data Base
LIST B: Potential Endangered, Threatened, and Special Concern Species
(Includes Accidental and Migrant Species)
** Jacks Creek Superfund Site **
Mifflin County
23 DEC 1991

Common Name	Scientific Name	Status
Eagle, Bald	Haliaeetus leucocephalus	PA / Fed Endangered
Falcon, Peregrine	Falco peregrinus	PA / Fed Endangered
Myotis, Indiana	Myotis sodalis	PA / Fed Endangered
Osprey	Pandion haliaetus	PA Endangered
Owl, Short-eared	Asio flammeus	PA Endangered
Flycatcher, Yellow-bellied	Empidonax flaviventris	PA Threatened
Sandpiper, Upland	Bartramia longicauda	PA Threatened
Myotis, Eastern Small-footed	Myotis leibii	PA Threatened
Woodrat, Eastern	Neotoma floridana	PA Threatened
Harrier, Northern	Circus cyaneus	Candidate - At Risk
S[illegible]e, Common	Gallinago gallinago	Candidate - At Risk
S[illegible]row, Henslow's	Ammodramus henslowii	Candidate - At R[illegible]
Bobcat	Felis rufus	Candidate - At R[illegible]
Cottontail, New England	Sylvilagus transitionalis	Candidate - At Risk
Hare, Snowshoe	Lepus americanus	Candidate - At Risk
Goshawk, Northern	Accipiter gentilis	Candidate - Rare
Grosbeak, Blue	Guiraca caerulea	Candidate - Rare
Tanager, Summer	Piranga rubra	Candidate - Rare
Teal, Green-winged	Anas crecca	Candidate - Rare
Thrush, Swainson's	Catharus ustulatus	Candidate - Rare
Shrew, Northern Water	Sorex palustris albibarbis	Candidate - Rare
Bobwhite, Northern	Colinus virginianus	Candidate - Undeterm
Crossbill, Red	Loxia curvirostra	Candidate - Undeterm
Dickcissel	Spiza americana	Candidate - Undeterm
Gadwall	Anas strepera	Candidate - Undeterm
Nighthawk, Common	Chordeiles minor	Candidate - Undeterm
Owl, Northern Saw-whet	Aegolius acadicus	Candidate - Undeterm
Whip-poor-will	Caprimulgus vociferus	Candidate - Undeterm
Wigeon, American	Anas americana	Candidate - Undeterm
Weasel, Least	Mustela nivalis	Candidate - Undeterm

Pennsylvania Fish and Wildlife Data Base
LIST B: Potential Endangered, Threatened, and Special Concern Species
(Includes Accidental and Migrant Species)
** Jacks Creek Superfund Site **
Mifflin County
23 DEC 1991

Common Name.....	Scientific Name.....	Status.....
Rattlesnake, Timber	Crotalus horridus	Candidate Species

Pennsylvania Fish and Wildlife Data Base
Land Use/Cover Type Species List
** Jacks Creek Superfund Site **
Mifflin County
23 DEC 1991

Land Use/Cover Type	No. Species
Urban Land	9
Agricultural Land - Cropland/Pasture	19
Agricultural Land - Orchards/Vineyards/Nurseries	7
Agricultural Land - Confined Feeding Operations	2
Rangeland - Herbaceous	18
Rangeland - Shrub/Brush	15
Rangeland - Mixed	11
Forest Land - Deciduous	24
Forest Land - Evergreen	23
Forest Land - Mixed	24
Water - Streams/Rivers/Canals	9
Water - Lakes	7
Water - Reservoirs	5
Water - Estuaries	5
Wetland - Forested	22
Wetland - Nonforested	14
Barren Land	9

Pennsylvania Fish and Wildlife Data Base
Land Use/Cover Type Species List
** Jacks Creek Superfund Site **
Mifflin County
23 DEC 1991

Species		Feeding Behavior		Land Use/Cover Type																
Common Name.....	*Stat.	Herb	Omni	Carn..	Urban.. (10's)	Agric Crops (21)	Agric Orchd (22)	Agric.. Feed (23)	Range Herb (31)	Range Shrub (32)	Range.. Mix (33)	Forest Decid (41)	Forest Conif (42)	Forest.. Mix (43)	Water. Stream (51)	Water Lake (52)	Water. Reserv (54)	Water.. Bay (54)	Wetlnd Forest (61)	Wetlnd.. Non-For (62)	Barren. (70's)
Rattlesnake, Timber	Y			X		X	X			X	X	X	X	X							
Bobwhite, Northern	W		X			X			X	X	X	X	X	X					X		
Crossbill, Red	W		X				X					X	X	X					X		
Dickcissel	W		X		X	X	X		X	X	X										
Eagle, Bald	E			X		X						X	X	X	X	X	X		X	X	
Falcon, Peregrine	E			X	X	X			X	X	X			X					X	X	X
Flycatcher, Yellow-bellied	T		X									X	X	X					X		
Gadwall	W		X			X			X				X		X	X	X	X	X	X	
Goshawk, Northern	V			X		X		X	X			X	X	X					X		
Grosbeak, Blue	V		X						X	X	X	X									
Harrier, Northern	U			X	X	X			X	X	X									X	X
Nighthawk, Common	W			X	X	X			X												
Osprey	E			X	X							X	X	X	X	X	X	X	X	X	
Owl, Northern Saw-whet	W			X		X						X	X	X					X		
Owl, Short-eared	E			X		X			X	X	X							X		X	X
Sandpiper, Upland	T		X		X	X			X			X	X	X							
Snipe, Common	U		X			X	X		X	X	X	X	X	X					X	X	X
Sparrow, Henslow's	U		X			X			X											X	
Tanager, Summer	V		X				X					X		X					X		
Teal, Green-winged	V		X			X			X			X	X	X	X	X	X	X	X	X	X
Thrush, Swainson's	V		X		X							X	X	X					X		
Whip-poor-will	W			X		X	X		X	X	X	X	X	X					X		
Wigeon, American	W		X			X						X	X	X	X	X	X	X	X	X	

* Status Codes: E = Endangered; T = Threatened; Candidate Classifications: U = At Risk; V = Rare; W = Undetermined Status; Y = Unspecified.

Pennsylvania Fish and Wildlife Data Base
Land Use/Cover Type Species List
** Jacks Creek Superfund Site **
Mifflin County
23 DEC 1991

Species		Feeding Behavior			Land Use/Cover Type																
Common Name.....	*Stat.	Herb	Omni	Carn..	Urban.. (10's)	Agric Crops (21)	Agric Orchd (22)	Agric.. Feed (23)	Range Herb (31)	Range Shrub (32)	Range.. Mix (33)	Forest Decid (41)	Forest Conif (42)	Forest.. Mix (43)	Water. Stream (51)	Water Lake (52)	Water. Reserv (53)	Water.. Bay (54)	Wetlnd Forest (61)	Wetlnd.. Non-For (62)	Barren. (70's)
Bobcat	U			X		X	X	X	X	X	X	X	X	X					X	X	X
Cottontail, New England	U	X								X		X	X	X							
Hare, Snowshoe	U	X								X		X	X	X					X		
Myotis, Eastern Small-footed	T			X	X				X	X		X	X	X	X	X			X	X	X
Myotis, Indiana	E			X								X	X	X	X				X		X
Shrew, Northern Water	V			X					X			X	X	X	X	X			X	X	
Weasel, Least	W			X	X	X			X	X		X	X	X	X				X	X	
Woodrat, Eastern	T		X							X	X	X	X	X					X		X

* Status Codes: E = Endangered; T = Threatened; Candidate Class[illegible]tions: U = At Risk; V = Rare; W = Undetermined Status; Y = Unspeci[illegible]

Pennsylvania Fish and Wildlife Data Base
Project Area Species List - MASTER LIST
** Jacks Creek Superfund Site **
Mifflin County
23 DEC 1991

Note: The purpose of the following list is to identify all vertebrate species which could occur within a designated area. This MASTER LIST includes resident, migratory, and accidental species. Occurrence of each species may depend upon season, habitat type, and individual movements and migration patterns. This information is based on records of these animals inhabiting specific habitat types within Mifflin County.

Land Use/Cover Types Included:

Urban - Residential
Urban - Commercial/Services
Urban - Transportation/Utilities
Rangeland - Herbaceous
Forest - Deciduous
Barren - Strip Mines/Quarries/Gravel Pits

Category.....	No. of Species Listed
Amphibians	21
Reptiles	18
Birds	179
Mammals	46
Total Species Listed:	264

Pennsylvania Fish and Wildlife Data Base
Project Area Species List - MASTER LIST
** Jacks Creek Superfund Site **
Mifflin County
23 DEC 1991

Category....	Common Name.....	Scientific Name.....
Amphibians	Bullfrog	Rana catesbeiana
Amphibians	Frog, Green	Rana clamitans
Amphibians	Frog, Pickerel	Rana palustris
Amphibians	Frog, Upland Chorus	Pseudacris triseriata feriaru
Amphibians	Frog, Wood	Rana sylvatica
Amphibians	Newt, Eastern	Notophthalmus viridescens
Amphibians	Newt, Red-spotted	Notophthalmus viridescens vir
Amphibians	Peeper, Northern Spring	Hyla crucifer
Amphibians	Salamander, Four-toed	Hemidactylium scutatum
Amphibians	Salamander, Jefferson	Ambystoma jeffersonianum
Amphibians	Salamander, Longtail	Eurycea longicauda
Amphibians	Salamander, Marbled	Ambystoma opacum
Amphibians	Salamander, Northern Dusky	Desmognathus fuscus fuscus
Amphibians	Salamander, Northern Two-lined	Eurycea bislineata
Amphibians	Salamander, Redback	Plethodon cinereus
Amphibians	Salamander, Slimy	Plethodon glutinosus
Amphibians	Salamander, Spotted	Ambystoma maculatum
Amphibians	Salamander, Valley And Ridge	Plethodon hoffmani
Amphibians	Spadefoot, Eastern	Scaphiopus holbrookii
Amphibians	Toad, American	Bufo americanus
Amphibians	Toad, Fowler's	Bufo woodhousei fowleri
Reptiles	Copperhead, Northern	Agkistrodon contortrix
Reptiles	Lizard, Northern Fence	Sceloporus undulatus
Reptiles	Racer	Coluber constrictor
Reptiles	Rattlesnake, Timber	Crotalus horridus
Reptiles	Skink, Five-lined	Eumeces fasciatus
Reptiles	Skink, Northern Coal	Eumeces anthracinus anthracin
Reptiles	Snake, Black Rat	Elaphe obsoleta
Reptiles	Snake, Common Garter	Thamnophis sirtalis
Reptiles	Snake, Eastern Milk	Lampropeltis triangulum
Reptiles	Snake, Northern Red-bellied	Storeria occipitomaculata
Reptiles	Snake, Northern Water	Nerodia sipedon sipedon
Reptiles	Snake, Ring-neck	Diadophis punctatus arnyi
Reptiles	Snake, Smooth Green	Opheodrys vernalis
Reptiles	Snake, Worm	Carphophis amoenus
Reptiles	Stinkpot	Sternotherus odoratus
Reptiles	Turtle, Common Snapping	Chelydra serpentina
Reptiles	Turtle, Eastern Box	Terrapene carolina
Reptiles	Turtle, Wood	Clemmys insculpta
Birds	Blackbird, Red-winged	Agelaius phoeniceus
Birds	Bluebird, Eastern	Sialia sialis
Birds	Bobolink	Dolichonyx oryzivorus
Birds	Bobwhite, Northern	Colinus virginianus

Pennsylvania Fish and Wildlife Data Base
Project Area Species List - MASTER LIST
** Jacks Creek Superfund Site **
Mifflin County
23 DEC 1991

Category....	Common Name.....	Scientific Name.....
Birds	Bufflehead	Bucephala albeola
Birds	Bunting, Indigo	Passerina cyanea
Birds	Bunting, Snow	Plectrophenax nivalis
Birds	Cardinal, Northern	Cardinalis cardinalis
Birds	Catbird, Gray	Dumetella carolinensis
Birds	Chat, Yellow-breasted	Icteria virens
Birds	Chickadee, Black-capped	Parus atricapillus
Birds	Chickadee, Carolina	Parus carolinensis
Birds	Cowbird, Brown-headed	Molothrus ater
Birds	Creeper, Brown	Certhia americana
Birds	Crossbill, Red	Loxia curvirostra
Birds	Crossbill, White-winged	Loxia leucoptera leucoptera
Birds	Crow, American	Corvus brachyrhynchos
Birds	Cuckoo, Black-billed	Coccyzus erythropthalmus
Birds	Cuckoo, Yellow-billed	Coccyzus americanus
Birds	Dickcissel	Spiza americana
Birds	Dove, Mourning	Zenaida macroura
Birds	Dove, Rock	Columba livia
Birds	Duck, Ring-necked	Aythya collaris
Birds	Duck, Wood	Aix sponsa
Birds	Dunlin	Calidris alpina
Birds	Eagle, Bald	Haliaeetus leucocephalus
Birds	Eagle, Golden	Aquila chrysaetos
Birds	Falcon, Peregrine	Falco peregrinus
Birds	Finch, House	Carpodacus mexicanus
Birds	Finch, Purple	Carpodacus purpureus
Birds	Flicker, Northern	Colaptes auratus
Birds	Flycatcher, Acadian	Empidonax virescens
Birds	Flycatcher, Alder	Empidonax alnorum
Birds	Flycatcher, Great Crested	Myiarchus crinitus
Birds	Flycatcher, Olive-sided	Contopus borealis
Birds	Flycatcher, Willow	Empidonax traillii
Birds	Flycatcher, Yellow-bellied	Empidonax flaviventris
Birds	Gadwall	Anas strepera
Birds	Gnatcatcher, Blue-gray	Polioptila caerulea
Birds	Goldeneye, Common	Bucephala clangula
Birds	Goldfinch, American	Carduelis tristis
Birds	Goose, Canada	Branta canadensis
Birds	Goshawk, Northern	Accipiter gentilis
Birds	Grackle, Common	Quiscalus quiscula
Birds	Grosbeak, Blue	Guiraca caerulea
Birds	Grosbeak, Evening	Coccothraustes vespertinus
Birds	Grosbeak, Rose-breasted	Pheucticus ludovicianus
Birds	Grouse, Ruffed	Bonasa umbellus
Birds	Harrier, Northern	Circus cyaneus
Birds	Hawk Broad-winged	Buteo platypterus
Birds	Hawk, Cooper's	Accipiter cooperii
Birds	Hawk, Red-shouldered	Buteo lineatus
Birds	Hawk, Red-tailed	Buteo jamaicensis

Pennsylvania Fish and Wildlife Data Base
Project Area Species List - MASTER LIST
** Jacks Creek Superfund Site **
Mifflin County
23 DEC 1991

Category....	Common Name.....	Scientific Name.....
Birds	Hawk, Rough-legged	Buteo lagopus
Birds	Hawk, Sharp-shinned	Accipiter striatus
Birds	Heron, Great Blue	Ardea herodias
Birds	Heron, Green-backed	Butorides striatus
Birds	Hummingbird, Ruby-throated	Archilochus colubris
Birds	Jay, Blue	Cyanocitta cristata
Birds	Junco, Dark-eyed	Junco hyemalis
Birds	Kestrel, American	Falco sparverius
Birds	Killdeer	Charadrius vociferus
Birds	Kingbird, Eastern	Tyrannus tyrannus
Birds	Kingfisher, Belted	Ceryle alcyon
Birds	Kinglet, Golden-crowned	Regulus satrapa
Birds	Kinglet, Ruby-crowned	Regulus calendula
Birds	Lark, Horned	Eremophila alpestris praticol
Birds	Longspur, Lapland	Calcarius lapponicus
Birds	Mallard	Anas platyrhynchos
Birds	Martin, Purple	Progne subis
Birds	Meadowlark, Eastern	Sturnella magna
Birds	Merganser, Common	Mergus merganser
Birds	Merganser, Hooded	Lophodytes cucullatus
Birds	Merlin	Falco columbarius
Birds	Mockingbird, Northern	Mimus polyglottos
Birds	Nighthawk, Common	Chordeiles minor
Birds	Nuthatch, White-breasted	Sitta carolinensis
Birds	Oriole, Northern	Icterus galbula
Birds	Oriole, Orchard	Icterus spurius
Birds	Osprey	Pandion haliaetus
Birds	Ovenbird	Seiurus aurocapillus
Birds	Owl, Barred	Strix varia
Birds	Owl, Eastern Screech	Otus asio
Birds	Owl, Great Horned	Bubo virginianus
Birds	Owl, Northern Saw-whet	Aegolius acadicus
Birds	Owl, Short-eared	Asio flammeus
Birds	Pewee, Eastern Wood	Contopus virens
Birds	Pheasant, Ring-necked	Phasianus colchicus
Birds	Phoebe, Eastern	Sayornis phoebe
Birds	Raven, Common	Corvus corax
Birds	Redpoll, Common	Carduelis flammea
Birds	Redstart, American	Setophaga ruticilla
Birds	Robin, American	Turdus migratorius
Birds	Sandpiper, Pectoral	Calidris melanotos
Birds	Sandpiper, Semipalmated	Calidris pusilla
Birds	Sandpiper, Solitary	Tringa solitaria
Birds	Sandpiper, Upland	Bartramia longicauda
Birds	Scaup, Lesser	Aythya affinis
Birds	Shrike, Loggerhead	Lanius ludovicianus
Birds	Shrike, Northern	Lanius excubitor
Birds	Snipe, Common	Gallinago gallinago
Birds	Sparrow, American Tree	Spizella arborea

Pennsylvania Fish and Wildlife Data Base
Project Area Species List - MASTER LIST
** Jacks Creek Superfund Site **
Mifflin County
23 DEC 1991

Category....	Common Name.....	Scientific Name.....
Birds	Sparrow, Chipping	Spizella passerina
Birds	Sparrow, Field	Spizella pusilla
Birds	Sparrow, Grasshopper	Ammodramus savannarum
Birds	Sparrow, Henslow's	Ammodramus henslowii
Birds	Sparrow, House	Passer domesticus
Birds	Sparrow, Savannah	Passerculus sandwichensis
Birds	Sparrow, Sharp-tailed	Ammodramus caudacutus
Birds	Sparrow, Song	Melospiza melodia
Birds	Sparrow, Vesper	Pooecetes gramineus
Birds	Sparrow, White-throated	Zonotrichia albicollis
Birds	Starling, European	Sturnus vulgaris
Birds	Swallow, Bank	Riparia riparia
Birds	Swallow, Barn	Hirundo rustica
Birds	Swallow, Cliff	Hirundo pyrrhonota
Birds	Swallow, Northern Rough-winged	Stelgidopteryx serripennis
Birds	Swallow, Tree	Tachycineta bicolor
Birds	Swift, Chimney	Chaetura pelagica
Birds	Tanager, Scarlet	Piranga olivacea
Birds	Tanager, Summer	Piranga rubra
Birds	Teal, Blue-winged	Anas discors
Birds	Teal, Green-winged	Anas crecca
Birds	Thrasher, Brown	Toxostoma rufum
Birds	Thrush, Gray-cheeked	Catharus minimus
Birds	Thrush, Hermit	Catharus guttatus
Birds	Thrush, Swainson's	Catharus ustulatus
Birds	Thrush, Wood	Hylocichla mustelina
Birds	Titmouse, Tufted	Parus bicolor
Birds	Towhee, Rufous-sided	Pipilo erythrophthalmus
Birds	Turkey, Wild	Meleagris gallopavo
Birds	Veery	Catharus fuscescens
Birds	Vireo, Philadelphia	Vireo philadelphicus
Birds	Vireo, Red-eyed	Vireo olivaceus
Birds	Vireo, Solitary	Vireo solitarius
Birds	Vireo, Warbling	Vireo gilvus
Birds	Vireo, White-eyed	Vireo griseus
Birds	Vireo, Yellow-throated	Vireo flavifrons
Birds	Vulture, Black	Coragyps atratus
Birds	Vulture, Turkey	Cathartes aura
Birds	Warbler, Bay-breasted	Dendroica castanea
Birds	Warbler, Black-and-white	Mniotilta varia
Birds	Warbler, Black-throated Blue	Dendroica caerulescens
Birds	Warbler, Black-throated Green	Dendroica virens
Birds	Warbler, Blackburnian	Dendroica fusca
Birds	Warbler, Blackpoll	Dendroica striata
Birds	Warbler, Blue-winged	Vermivora pinus
Birds	Warbler, Canada	Wilsonia canadensis
Birds	Warbler, Cape May	Dendroica tigrina
Birds	Warbler, Cerulean	Dendroica cerulea
Birds	Warbler, Chestnut-sided	Dendroica pennsylvanica

Pennsylvania Fish and Wildlife Data Base
Project Area Species List - MASTER LIST
** Jacks Creek Superfund Site **
Mifflin County
23 DEC 1991

Category....	Common Name.....	Scientific Name.....
Birds	Warbler, Golden-winged	Vermivora chrysoptera
Birds	Warbler, Hooded	Wilsonia citrina
Birds	Warbler, Magnolia	Dendroica magnolia
Birds	Warbler, Mourning	Oporornis philadelphia
Birds	Warbler, Nashville	Vermivora ruficapilla
Birds	Warbler, Northern Parula	Parula americana
Birds	Warbler, Pine	Dendroica pinus
Birds	Warbler, Prairie	Dendroica discolor
Birds	Warbler, Tennessee	Vermivora peregrina
Birds	Warbler, Wilson's	Wilsonia pusilla
Birds	Warbler, Worm-eating	Helmitheros vermivorus
Birds	Warbler, Yellow	Dendroica petechia
Birds	Warbler, Yellow-rumped	Dendroica coronata
Birds	Warbler, Yellow-throated	Dendroica dominica
Birds	Waterthrush, Louisiana	Seiurus motacilla
Birds	Waterthrush, Northern	Seiurus noveboracensis
Birds	Waxwing, Cedar	Bombycilla cedrorum
Birds	Whip-poor-will	Caprimulgus vociferus
Birds	Wigeon, American	Anas americana
Birds	Woodcock, American	Scolopax minor
Birds	Woodpecker, Downy	Picoides pubescens
Birds	Woodpecker, Hairy	Picoides villosus
Birds	Woodpecker, Pileated	Dryocopus pileatus
Birds	Woodpecker, Red-bellied	Melanerpes carolinus
Birds	Wren, Carolina	Thryothorus ludovicianus
Birds	Wren, House	Troglodytes aedon
Birds	Wren, Winter	Troglodytes troglodytes
Birds	Yellowthroat, Common	Geothlypis trichas brachidacty
Mammals	Bat, Big Brown	Eptesicus fuscus
Mammals	Bat, Hoary	Lasiurus cinereus
Mammals	Bat, Red	Lasiurus borealis
Mammals	Bear, Black	Ursus americanus
Mammals	Beaver	Castor canadensis
Mammals	Bobcat	Felis rufus
Mammals	Chipmunk, Eastern	Tamias striatus
Mammals	Cottontail, Eastern	Sylvilagus floridanus
Mammals	Cottontail, New England	Sylvilagus transitionalis
Mammals	Coyote	Canis latrans
Mammals	Deer, White-tailed	Odocoileus virginianus
Mammals	Fox, Gray	Urocyon cinereoargenteus
Mammals	Fox, Red	Vulpes vulpes
Mammals	Hare, Snowshoe	Lepus americanus
Mammals	Mink	Mustela vison
Mammals	Mole, Eastern	Scalopus aquaticus
Mammals	Mole, Star-nosed	Condylura cristata
Mammals	Mouse, Deer	Peromyscus maniculatus

Pennsylvania Fish and Wildlife Data Base
Project Area Species List - MASTER LIST
** Jacks Creek Superfund Site **
Mifflin County
23 DEC 1991

Category....	Common Name.....	Scientific Name.....
Mammals	Mouse, House	Mus musculus
Mammals	Mouse, Meadow Jumping	Zapus hudsonius
Mammals	Mouse, White-footed	Peromyscus leucopus
Mammals	Mouse, Woodland Jumping	Napaeozapus insignis
Mammals	Muskrat	Ondatra zibethicus
Mammals	Myotis, Eastern Small-footed	Myotis leibii
Mammals	Myotis, Indiana	Myotis sodalis
Mammals	Myotis, Keen's	Myotis keenii
Mammals	Myotis, Little Brown	Myotis lucifugus
Mammals	Opossum, Virginia	Didelphis virginiana
Mammals	Pipistrelle, Eastern	Pipistrellus subflavus
Mammals	Porcupine	Erethizon dorsatum
Mammals	Raccoon	Procyon lotor
Mammals	Rat, Norway	Rattus norvegicus
Mammals	Shrew, Masked	Sorex cinereus
Mammals	Shrew, Northern Short-tailed	Blarina brevicauda
Mammals	Shrew, Northern Water	Sorex palustris albibarbis
Mammals	Shrew, Smoky	Sorex fumeus
Mammals	Skunk, Striped	Mephitis mephitis
Mammals	Squirrel, Gray	Sciurus carolinensis
Mammals	Squirrel, Red	Tamiasciurus hudsonicus
Mammals	Squirrel, Southern Flying	Glaucomys volans
Mammals	Vole, Meadow	Microtus pennsylvanicus
Mammals	Vole, Woodland	Microtus pinetorum
Mammals	Weasel, Least	Mustela nivalis
Mammals	Weasel, Long-tailed	Mustela frenata
Mammals	Woodchuck	Marmota monax
Mammals	Woodrat, Eastern	Neotoma floridana

COMMONWEALTH OF PENNSYLVANIA
PENNSYLVANIA HISTORICAL AND MUSEUM COMMISSION
BUREAU FOR HISTORIC PRESERVATION
BOX 1026
HARRISBURG, PENNSYLVANIA 17108-1026

December 10, 1991

Roger D. Myers
Gannett Fleming, Inc.
P O Box 1963
Harrisburg, PA 17105-1963

To Expedite Review
Use Bhp Reference Numbe

Re: ER 92-0543-087-A
Derry & Decatur Township, Mifflin County Site: Pennvest Project

Dear Mr. Myers:

The above named project has been reviewed by the Bureau for Historic Preservation (the State Historic Preservation Office) in accordance with Section 106 of the National Historic Preservation Act of 1966, as amended in 1980, and the regulations (36 CFR Part 800) of the Advisory Council on Historic Preservation. These requirements include consideration of the project's potential effect upon both historic and archaeological resources.

There is a high probability that prehistoric and historic archaeological resources are located in the project area and may be affected by this project. A Phase I archaeological survey of the project area is required to locate potentially significant archaeological resources. Guidelines and information for survey are enclosed.

Because your request does not include sufficient information, we are unable to proceed with our review for historic structures until the information on the attached form is provided.

If you need further information in concerning archaeological survey please the Archaeology Section. If your need further information concerning historic survey consult Susan M. Zacher at (717) 783-8946 or 783-8947.

Sincerely,

Kurt Carr, Chief
Division of Archaeology & Protection

Enclosures
KC/smz

92-0543-087-A

PENNSYLVANIA HISTORICAL AND MUSEUM COMMISSION
BUREAU FOR HISTORIC PRESERVATION

Section 106 Review
Information Request (36 CFR 800.4)

( ) A. FUNDING PROGRAM
1. federal and/or state agency
2. type of assistance (grant, loan, permit, etc.)
3. name of assistance program
4. name and address of office at which application has been/will be filed

B. PROJECT DESCRIPTION
( ) 1. narrative/description of assisted and related work including:
( ) a. new construction, demolition or rehabilitation
( ) b. size of project (# buildings, # units, # stories, acreage)
( ) c. use or purpose
( ) d. extent and nature of ground disturbing activities (trenching, grading, foundation excavation, etc.)
( ) 2. annotated site plan/map
( ) 3. architectural plans and specifications
(X) 4. 3" x 5" black & white photographs of all bdgs. c 40 yr. Keyed to a map
(X) a. exterior
( ) b. interior
( ) c. surrounding environment

C. PROJECT LOCATION
(X) 1. map
(X) a. U.S.G.S. 7.5 min. series (topographic) with project location(s) and limits clearly marked. If you send a copy, be sure to identify quadrangle name.
( ) b. street map (for projects in populated areas)
( ) 2. identify project address

D. PROJECT SITE
( ) 1. describe all buildings on site - complete Bureau for Historic Preservation Resource Form (attached with instructions) for each building built before 1940.
( ) 2. describe previous land uses
( ) 3. what National Register listed or potentially eligible sites (buildings, historic districts, archaeological sites) are known to be in the area? Tell us what sources were consulted (local historical societies, local or county planning agencies, previous historic site surveys, etc.).

(+) Please explain how these bldgs. will be affected by the project? If the bldgs. are to be retain Please submit a copy of the development plan which shows the bldgs.

AR302753

Gannett Fleming
ENGINEERS AND PLANNERS

GANNETT FLEMING, INC.
P.O. Box 1963
Harrisburg, PA 17105-1963
Location:
207 Senate Avenue
Camp Hill, PA 17011
Fax: (717) 763-8150
Office: (717) 763-7211

February 21, 1992

Commonwealth of Pennsylvania
Pennsylvania Historical and Museum Commission
Bureau for Historic Preservation
Box 1026
Harrisburg, Pennsylvania 17108-1026

Attn: Mr. Kurt Carr, Chief
Division of Archaeology & Protection

Re: ER 92-0543-087-A - Jacks Creek Superfund Site
Derry & Decatur Township, Mifflin County site: Pennvest Project

Dear Mr. Carr:

This letter is in response to your correspondence dated December 10, 1992. You requested additional information on the historical structures located in and around the project area. The photographs of buildings on the site and adjacent to the site are enclosed along with a detailed map of the site. A copy of the Alfarata, Pa U.S.G.S. topographic map has been supplied. The final information request is regarding the buildings and how they will be affected by the project. The buildings that are not on site will not be affected by the project. The fate of the on-site buildings has yet to be determined. The project is only at the remedial investigation stage and a feasibility study of various clean up activities for the site has not been determined.

I hope this information will help you complete your review for historic structures. Thank you for your time on this project. If you have any questions or comments please feel free to contact me at extension 2228.

Sincerely,

Roger D. Myers

Roger D. Myers
Project Engineer

Enclosures

List of Photographs

1. Old Sitkin Smelter building (#1) on right side of picture (camera pointing south).

2&3. Close up of storage sheds (camera pointing northwest).

4. Back of the Ball Mill building (#2) (camera pointing south-southeast).

5. Back of the Ball Mill building (#2) (camera pointing southeast).

6. Side of the Ball Mill building (#2) (camera pointing northeast).

7. Front of the Ball Mill building (#2) (camera pointing north).

8. Maintenance shed building (#3) (camera pointing south).

9. Maintenance shed building (#3) (camera pointing north east).

10. C.I.T building (#4) (camera pointing southeast).

11. C.I.T building (#4) (camera pointing east-southeast).

12. Noerr maintenance building (#5) (camera pointing north-northeast).

13. Abandoned house (#6) (camera pointing northwest). This building is off the map but it is located on the Krentzman & Son scrap yard property along Maitland road southwest of the project area.

COMMONWEALTH OF PENNSYLVANIA
PENNSYLVANIA HISTORICAL AND MUSEUM COMMISSION
BUREAU FOR HISTORIC PRESERVATION
BOX 1026
HARRISBURG, PENNSYLVANIA 17108-1026

March 11, 1992

Roger D. Myers
Gannett Fleming Inc.
P.O. Box 1963
Harrisburg, PA 17105-1963

TO EXPEDITE REVIEW
USE BHP REFERENCE NUMBER

RE: ER 92-0543-087-B
Decatur & Derry Twps.,
Mifflin County
Pennvest Project
Jacks Creek Superfund Site

Dear Mr. Myers:

The above named project has been reviewed by the Bureau for Historic Preservation (the State Historic Preservation Office) in accordance with Section 106 of the National Historic Preservation Act of 1966, as amended in 1980, and the regulations (36 CFR Part 800) of the Advisory Council on Historic Preservation. These requirements include consideration of the projects' potential effects upon both historic and archaeological resources.

In our opinion this project will have no effect on historic structures.

As stated in our correspondence of December 10, 1991, there is a high probability that prehistoric and historic archaeological resources are located in the project area and may be affected by this project. A Phase I archaeological survey of the project area is required to locate potentially significant archaeological resources.

If you need further information in this matter please consult Caroline Henry or the Archaeology Section at (717) 783-8946 or 783-8947.

Sincerely,

Kurt Carr, Chief
Division of Archaeology & Protection

KC/ch

AR302756