APPENDIX B

# Ecological Risk Assessment Worksheet - Bromacil

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**General note:** Exposure parameters and equations in the following tables are described in more detail in the *Vegetation Treatments Programmatic EIS Ecological Risk Assessment Methodology* (ENSR 2005) and Section 4 of the ecological risk assessment for this herbicide.

## TABLE B-1

### Direct Spray of Terrestrial Receptors and Exposure From Indirect Contact With Foliage

| Parameter | | Pollinating Insect | Small Mammal | Units |
|---|---|---|---|---|
| **Duration of exposure (T)** | | 24 | 24 | hours |
| **Body weight (BW)** | | 0.000093 | 0.02 | kg |
| **Surface areas (A): $cm^2$ = 12.3 × BW(g)^0.65** [1] | | 2.63 | 86.21 | $cm^2$ |
| **Application rates (R)** | Typical | 4 | 4 | lb/acre |
| | Maximum | 12 | 12 | lb/acre |
| **Amount deposited on ½ receptor (Amnt):** | Typical | 0.05896 | 1.9326 | mg |
| **0.5 × A × R × cf** [2] | Maximum | 0.1769 | 5.7977 | mg |
| **Dose Estimate Assuming 100% Dermal Adsorption**[3] | | | | |
| **Absorbed Dose: Amnt × Prop / BW** | Typical | 6.34E+02 | 9.66E+01 | mg/kg bw |
| | Maximum | 1.90E+03 | 2.90E+02 | mg/kg bw |
| **Dose Estimate Assuming First Order Dermal Adsorption**[4] | | | | |
| **First-order dermal absorption coefficient (k)** | Central estimate | | 0.03466 | $hour^{-1}$ |
| **Proportion absorbed over period T (Prop):** | Typical | | 0.06723 | unitless |
| **1-exp(-k×T)** [5] | Maximum | | 0.06723 | unitless |
| **Absorbed dose: Amnt × Prop / BW** | Typical | | 6.50E+00 | mg/kg bw |
| | Maximum | | 1.95E+01 | mg/kg bw |

| RISK QUOTIENTS[6] - Direct Spray | Toxicity Reference Value (mg/kg bw)[7] | Typical Application | Maximum Application |
|---|---|---|---|
| Small mammal - 100% absorption | 1,311 | 5.21E-03 | 1.56E-02 |
| Pollinating insect - 100% absorption | 2,075 | 3.06E-01 | 9.17E-01 |
| Small mammal - 1st order dermal adsorption | 1,311 | 3.50E-04 | 1.05E-03 |

| RISK QUOTIENTS - Indirect Contact[8] | Toxicity Reference Value (mg/kg bw)[7] | Typical Application | Maximum Application |
|---|---|---|---|
| Small mammal - 100% absorption | 1,311 | 5.21E-04 | 1.56E-03 |
| Pollinating insect - 100% absorption | 2,075 | 3.06E-02 | 9.17E-02 |
| Small mammal - 1st order dermal adsorption | 1,311 | 3.50E-05 | 1.05E-04 |

[1]Surface area calculation for mammals from Stahl (1967; presented in USEPA 1993). No surface area calculation identified for insects. Mammalian equation used as a surrogate.
[2]A conversion factor (cf) of 0.011208493 was used to convert the application rate (R) from lb/acre to $mg/cm^2$.
[3]100% dermal absorption - all of the herbicide falling on the receptor was assumed to penetrate the skin within 24 hours.
[4]1st order dermal absorption - absorption occurs over 24 hours, taking into consideration the potential for some herbicide to not be absorbed.
[5]exp(-k×T) = e^(-k×T), where e is a constant = 2.7828.
[6]Risk Quotient = Estimated Dose/Toxicity Reference Value.
[7]Toxicity Reference Value (TRV) - TRVs relate the dose of a compound with a potentially adverse effect. TRVs were selected during a review of the ecotoxicological literature.
[8]Exposure from indirect contact assumed to be 1/10 of direct spray exposure (Harris and Solomon 1992).

**TABLE B-2**

**Potential Risks to Small Herbivorous/Omnivorous Mammal (Deer Mouse) From Consumption of Contaminated Fruit (Acute Exposure Scenario)**

| Parameters/Assumptions | | Value | Units |
|---|---|---|---|
| **Body weight (BW)** | | 0.02 | kg |
| **Food ingestion rate (dry weight [dw])** [1] | | 0.003364 | kg dw/day |
| **Food ingestion rate (wet weight [ww]) (ir)** [2] | | 0.01463 | kg ww/day |
| **Application rates (R)** | Typical | 4 | lb/acre |
| | Maximum | 12 | lb/acre |
| **Residue rate – berries (rr)** [3] | Typical | 1.5 | mg/kg per lb/acre |
| | Maximum | 7 | mg/kg per lb/acre |
| **Concentration on berries (C): R × rr** | Typical | 6 | mg/kg fruit |
| | Maximum | 84 | mg/kg fruit |
| **Dose estimates (D): C × ir / BW** | Typical | 4.39E+00 | mg/kg bw |
| | Maximum | 6.14E+01 | mg/kg bw |

| **RISK QUOTIENTS**[4] **- Ingestion** | **Toxicity Reference Value (mg/kg bw)**[5] | **Typical Application** | **Maximum Application** |
|---|---|---|---|
| Small mammalian herbivore/omnivore (acute exposure) | 1,311 | 3.35E-03 | 4.69E-02 |

[1]Calculated using algorithm developed by Nagy (1987) for rodents; where food ingestion rate (g dw/day) = 0.621× (BW g)^0.564; converted into kg dw/day.
[2]Assumes fruit is 77% water (USEPA 1993; Table 4-2 - value for fruit pulp and skin).
[3]Residue rates are vegetation-specific (Hoerger and Kenaga 1972).
[4]Risk Quotient = Estimated Dose/Toxicity Reference Value.
[5]Toxicity Reference Value (TRV) - TRVs relate the dose of a compound with a potentially adverse effect. TRVs were selected during a review of the ecotoxicological literature.

**TABLE B-3**

**Potential Risks to Small Herbivorous/Omnivorous Mammal (Deer Mouse) From Consumption of Contaminated Fruit (Chronic Exposure Scenario)**

| Parameters/Assumptions | | Value | Units |
|---|---|---|---|
| **Duration of exposure (T)** | | 90 | days |
| **Body weight (BW)** | | 0.02 | kg |
| **Food ingestion rate (dry weight [dw])** [1] | | 0.003364 | kg dw/day |
| **Food ingestion rate (wet weight [ww]) (ir)** [2] | | 0.01463 | kg ww/day |
| **Half life on vegetation ($t_{50}$)** | Herbicide specific | 20 | days |
| **Application rates (R)** | Typical | 4 | lb/acre |
| | Maximum | 12 | lb/acre |
| **Residue rate - berries (rr)** [3] | Typical | 1.5 | mg/kg per lb/acre |
| | Maximum | 7 | mg/kg per lb/acre |
| **Drift (Drift)** | Typical | 1 | unitless |
| | Maximum | 1 | unitless |
| **Decay coefficient (k): ln(2) / $t_{50}$** [4] | Typical | 0.03466 | $days^{-1}$ |
| | Maximum | 0.03466 | $days^{-1}$ |
| **Initial concentration on berries ($C_0$): R × rr × Drift** | Typical | 6 | mg/kg fruit |
| | Maximum | 84 | mg/kg fruit |
| **Concentration on berries at time T: $C_0$ × exp(-k×T)** [5] | Typical | 0.2652 | mg/kg fruit |
| | Maximum | 3.7123 | mg/kg fruit |
| **Time-weighted average concentration on vegetation** | Typical | 1.8386 | mg/kg fruit |
| **(CTWA): $C_0$ × (1-exp(-k×T)) / (k×T)** [5] | Maximum | 25.7401 | mg/kg fruit |
| **Proportion of diet contaminated (PC)** | Typical | 1 | unitless |
| | Maximum | 1 | unitless |
| **Dose estimates (D): (CTWA × ir × PC) / BW** | Typical | 1.3446 | mg/kg bw/day |
| | Maximum | 18.8246 | mg/kg bw/day |

| **RISK QUOTIENTS**[6] **- Ingestion** | **Toxicity Reference Value (mg/kg bw/day)**[7] | **Typical Application** | **Maximum Application** |
|---|---|---|---|
| Small mammalian herbivore/omnivore (chronic exposure) | 27 | 4.98E-02 | 6.97E-01 |

[1]Calculated using algorithm developed by Nagy (1987) for rodents; where food ingestion rate (g dw/day) = 0.621×(BW g)^0.564; converted into kg dw/day.
[2]Assumes fruit is 77% water (USEPA 1993; Table 4-2 - value for fruit pulp and skin).
[3]Residue rates are vegetation-specific (Hoerger and Kenaga 1972).
[4]ln = Natural log function
[5]exp(-k×T) = e^(-k×T), where e is a constant = 2.7828.
[6]Risk Quotient = Estimated Dose/Toxicity Reference Value.
[7]Toxicity Reference Value (TRV) - TRVs relate the dose of a compound with a potentially adverse effect. TRVs were selected during a review of the ecotoxicological literature.

**TABLE B-4**

**Potential Risks to Large Herbivorous Mammal (Mule Deer) From Consumption of Contaminated Vegetation (Acute Exposure Scenario)**

| Parameters/Assumptions | | Value | Units |
|---|---|---|---|
| **Body weight (BW)** | | 70 | kg |
| **Food ingestion rate (dry weight [dw])** [1] | | 1.9212 | kg dw/day |
| **Food ingestion rate ( wet weight [ww])(ir)** [2] | | 6.4038 | kg ww/day |
| **Duration of exposure (D)** | | 1 | day |
| **Application rates (R)** | Typical | 4 | lb/acre |
| | Maximum | 12 | lb/acre |
| **Residue rate - grass (rr)** [3] | Typical | 92 | mg/kg per lb/acre |
| | Maximum | 110 | mg/kg per lb/acre |
| **Concentration on grass (C): R × rr** | Typical | 368 | mg/kg grass |
| | Maximum | 1,320 | mg/kg grass |
| **Drift (Drift)** | Typical | 1 | unitless |
| | Maximum | 1 | unitless |
| **Proportion of diet contaminated (PC)** | Typical | 1 | unitless |
| | Maximum | 1 | unitless |
| **Dose estimates: (Drift × PC × C × ir) / BW** | Typical | 3.37E+01 | mg/kg bw/day |
| | Maximum | 1.21E+02 | mg/kg bw/day |

| **RISK QUOTIENTS[4] – Ingestion** | **Toxicity Reference Value (mg/kg bw/day)[5]** | **Typical Application** | **Maximum Application** |
|---|---|---|---|
| Large mammalian herbivore/gramivore (acute exposure) | 170 | 1.98E-01 | 7.10E-01 |

[1]Calculated using algorithm developed by Nagy (1987) for herbivores; where food ingestion rate (g dw/day) = 0.577×(BW g)^0.727; converted into kg dw/day.
[2]Assumes grass is 70% water (USEPA 1993; Table 4-2 - lowest value for young grasses).
[3]Residue rates are vegetation-specific (Hoerger and Kenaga 1972).
[4]Risk Quotient = Estimated Dose/Toxicity Reference Value.
[5]Toxicity Reference Value (TRV) - TRVs relate the dose of a compound with a potentially adverse effect. TRVs were selected during a review of the ecotoxicological literature.

**TABLE B-5**

**Potential Risks to Large Herbivorous Mammal (Mule Deer) From Consumption of Contaminated Vegetation (Chronic Exposure Scenario)**

| Parameters/Assumptions | | Value | Units |
|---|---|---|---|
| **Duration of exposure (T)** | | 90 | day |
| **Body weight (BW)** | | 70 | kg |
| **Food ingestion rate (dry weight [dw])** [1] | | 1.9212 | kg dw/day |
| **Food ingestion rate ( wet weight [ww]) (ir)** [2] | | 6.4038 | kg ww/day |
| **Half life on vegetation ($t_{50}$)** | Herbicide specific | 20 | days |
| **Application rates (R)** | Typical | 4 | lb/acre |
| | Maximum | 12 | lb/acre |
| **Residue rate - grass (rr)** [3] | Typical | 92 | mg/kg per lb/acre |
| | Maximum | 110 | mg/kg per lb/acre |
| **Drift (Drift)** | Typical | 1 | unitless |
| | Maximum | 1 | unitless |
| **Decay coefficient (k): ln(2) / $t_{50}$** [4] | Typical | 0.03466 | $days^{-1}$ |
| | Maximum | 0.03466 | $days^{-1}$ |
| **Initial concentration on grass ($C_0$): R × rr × Drift** | Typical | 368 | mg/kg grass |
| | Maximum | 1,320 | mg/kg grass |
| **Concentration on grass at time T: $C_0$ × exp(-k×T)** [5] | Typical | 16.2635 | mg/kg grass |
| | Maximum | 58.3363 | mg/kg grass |
| **Time-weighted average concentration on vegetation (CTWA): $C_0$ × (1-exp(-k×T)) / (k×T)** [5] | Typical | 112.7663 | mg/kg vegetation |
| | Maximum | 404.4880 | mg/kg vegetation |
| **Proportion of diet contaminated (PC)** | Typical | 1 | unitless |
| | Maximum | 1 | unitless |
| **Dose estimates: (CTWA × ir × PC) / BW** | Typical | 1.03E+01 | mg/kg bw/day |
| | Maximum | 3.70E+01 | mg/kg bw/day |

| RISK QUOTIENTS[6] – Ingestion | Toxicity Reference Value (mg/kg bw/day)[7] | Typical Application | Maximum Application |
|---|---|---|---|
| Large mammalian herbivore/gramivore (chronic exposure) | 3 | 3.44E+00 | 1.23E+01 |

[1]Calculated using algorithm developed by Nagy (1987) for herbivores; where food ingestion rate (g dw/day) = 0.577×(BW g)^0.727; converted into kg dw/day.
[2]Assumes grass is 70% water (USEPA 1993; Table 4-2 - lowest value for young grasses).
[3]Residue rates are vegetation-specific (Hoerger and Kenaga 1972).
[4]ln = Natural log function.
[5]exp(-k×T) = e^(-k×T), where e is a constant = 2.7828.
[6]Risk Quotient = Estimated Dose/Toxicity Reference Value.
[7]Toxicity Reference Value (TRV) - TRVs relate the dose of a compound with a potentially adverse effect. TRVs were selected during a review of the ecotoxicological literature.

**TABLE B-6**

**Potential Risks to Carnivorous Mammal (Coyote) From Consumption of Contaminated Small Mammals (Acute Exposure Scenario)**

| Parameters/Assumptions | | Value | Units |
|---|---|---|---|
| **Body weight (BW)** | | 12 | kg |
| **Body weight small mammal (BW_mouse)** | | 0.02 | kg |
| **Surface area small mammal (A)** | | 86.21 | $cm^2$ |
| **Food ingestion rate (dry weight [dw])** [1] | | 0.5297 | kg dw/day |
| **Food ingestion rate ( wet weight [ww]) (ir)** [2] | | 1.6554 | kg ww/day |
| **Duration of exposure (D)** | | 1 | day |
| **Application rates (R)** | Typical | 4 | lb/acre |
| | Maximum | 12 | lb/acre |
| **Amount deposited on small mammal prey** | Typical | 1.9326 | mg |
| **(Amnt_mouse): 0.5 × A × R** [3] | Maximum | 5.7977 | mg |
| **Drift (Drift)** | Typical | 1 | unitless |
| | Maximum | 1 | unitless |
| **Proportion of diet contaminated (PC)** | Typical | 1 | unitless |
| | Maximum | 1 | unitless |
| **Dose estimates: ([(Drift × PC × Amnt_mouse) /** | Typical | 1.33E+01 | mg/kg bw |
| **BW_mouse] × ir) / BW** | Maximum | 4.00E+01 | mg/kg bw |

| **RISK QUOTIENTS[4] - Ingestion** | **Toxicity Reference Value (mg/kg bw)[5]** | **Typical Application** | **Maximum Application** |
|---|---|---|---|
| Large carnivorous mammal (acute exposure) | 143 | 9.32E-02 | 2.80E-01 |

[1]Calculated using algorithm developed by Nagy (1987); where food ingestion rate (g dw/day) = 0.0687×(BW g)^0.822; converted into kg dw/day.
[2]Assumes mammals are 68% water (USEPA 1993).
[3]Surface area (A) and body weight of mouse receptor presented in Table B-1. Surface area calculation for mammals from Stahl (1967; presented in USEPA 1993).
[4]Risk Quotient = Estimated Dose/Toxicity Reference Value.
[5]Toxicity Reference Value (TRV) - TRVs relate the dose of a compound with a potentially adverse effect. TRVs were selected during a review of the ecotoxicological literature.

**TABLE B-7**

**Potential Risks to Carnivorous Mammal (Coyote) From Consumption of Contaminated Small Mammals (Chronic Exposure Scenario)**

| Parameters/Assumptions | | Value | Units |
|---|---|---|---|
| **Duration of exposure (T)** | | 90 | day |
| **Body weight (BW)** | | 12 | kg |
| **Body weight small mammal (BW_mouse)** | | 0.02 | kg |
| **Surface area small mammal (A)** | | 86.21 | $cm^2$ |
| **Food ingestion rate (dry weight [dw])** [1] | | 0.5297 | kg dw/day |
| **Food ingestion rate ( wet weight, [ww]) (ir)** [2] | | 1.6554 | kg ww/day |
| **Application rates (R)** | Typical | 4 | lb/acre |
| | Maximum | 12 | lb/acre |
| **Drift (Drift)** | Typical | 1 | unitless |
| | Maximum | 1 | unitless |
| **Decay coefficient (k): ln(2) / $t_{50}$** [3] | Typical | 0.03466 | $days^{-1}$ |
| | Maximum | 0.03466 | $days^{-1}$ |
| **Initial concentration on mammal ($C_0$): (0.5 × A × R) / BW_mouse** | Typical | 96.6284 | mg/kg mammal |
| | Maximum | 289.8852 | mg/kg mammal |
| **Concentration absorbed in small mammal at time T ($C_{90}$): $C_0$ × exp(-k×T)** [4] | Typical | 6.4966 | mg/kg mammal |
| | Maximum | 19.4899 | mg/kg mammal |
| **Proportion of diet contaminated (PC)** | Typical | 1 | unitless |
| | Maximum | 1 | unitless |
| **Dose estimates: ($C_{90}$ × ir × PC) / BW** | Typical | 8.96E-01 | mg/kg bw/day |
| | Maximum | 2.69E+00 | mg/kg bw/day |

| RISK QUOTIENTS[5] - Ingestion | Toxicity Reference Value (mg/kg bw/day)[6] | Typical Application | Maximum Application |
|---|---|---|---|
| Large mammalian carnivore (chronic exposure) | 5 | 1.79E-01 | 5.38E-01 |

[1]Calculated using algorithm developed by Nagy (1987); where food ingestion rate (g dw/day) = 0.0687×(BW g)^0.822; converted into kg dw/day.
[2]Assumes mammals are 68% water (USEPA 1993).
[3]ln = Natural log function.
[4]exp(-k×T) = e^(-k×T), where e is a constant = 2.7828.
[5]Risk Quotient = Estimated Dose/Toxicity Reference Value.
[6]Toxicity Reference Value (TRV) - TRVs relate the dose of a compound with a potentially adverse effect. TRVs were selected during a review of the ecotoxicological literature.

**TABLE B-8**

**Potential Risks to Insectivorous Bird (American Robin) From Consumption of Contaminated Insects (Acute Exposure Scenario)**

| Parameters/Assumptions | | Value | Units |
|---|---|---|---|
| **Body weight (BW)** | | 0.08 | kg |
| **Food ingestion rate (dry weight [dw])** [1] | | 0.01124177 | kg dw/day |
| **Food ingestion rate ( wet weight [ww]) (ir)** [2] | | 0.03626376 | kg ww/day |
| **Duration of exposure (D)** | | 1 | day |
| **Application rates (R)** | Typical | 4 | lb/acre |
| | Maximum | 12 | lb/acre |
| **Residue rate - insects (rr)** [3] | Typical | 33 | mg/kg per lb/acre |
| | Maximum | 58 | mg/kg per lb/acre |
| **Concentration on insects (C): R × rr** | Typical | 132 | mg/kg insect |
| | Maximum | 696 | mg/kg insect |
| **Drift (Drift)** | Typical | 1 | unitless |
| | Maximum | 1 | unitless |
| **Proportion of diet contaminated (PC)** | Typical | 1 | unitless |
| | Maximum | 1 | unitless |
| **Dose estimates: (Drift × PC × C × ir) / BW** | Typical | 5.98E+01 | mg/kg bw |
| | Maximum | 3.15E+02 | mg/kg bw |

| **RISK QUOTIENTS[4] – Ingestion** | **Toxicity Reference Value (mg/kg bw)[5]** | **Typical Application** | **Maximum Application** |
|---|---|---|---|
| Small insectivorous bird (acute exposure) | 30,195 | 1.98E-03 | 1.04E-02 |

[1]Calculated using algorithm developed by Nagy (1987) for all birds; where food ingestion rate (kg dw/day) = 0.0582×(BW)^0.651.
[2]Assumes insects are 69% water (USEPA 1993; Table 4-1 - value for grasshoppers and crickets).
[3]Residue rates are vegetation-specific (Hoerger and Kenaga 1972).
[4]Risk Quotient = Estimated Dose/Toxicity Reference Value.
[5]Toxicity Reference Value (TRV) - TRVs relate the dose of a compound with a potentially adverse effect. TRVs were selected during a review of the ecotoxicological literature.

**TABLE B-9**

**Potential Risks to Insectivorous Bird (American Robin) From Consumption of Contaminated Insects (Chronic Exposure Scenario)**

| Parameters/Assumptions | | Value | Units |
|---|---|---|---|
| **Duration of exposure (T)** | | 90 | day |
| **Body weight (BW)** | | 0.08 | kg |
| **Food ingestion rate (dry weight [dw])** [1] | | 0.01124 | kg dw/day |
| **Food ingestion rate (wet weight [ww]) (ir)** [2] | | 0.03626 | kg ww/day |
| **Half life on insect ($t_{50}$)** | Herbicide specific | 20 | days |
| **Application rates (R)** | Typical | 4 | lb/acre |
| | Maximum | 12 | lb/acre |
| **Residue rate - insects (rr)** [3] | Typical | 33 | mg/kg per lb/acre |
| | Maximum | 58 | mg/kg per lb/acre |
| **Drift (Drift)** | Typical | 1 | unitless |
| | Maximum | 1 | unitless |
| **Decay coefficient (k): ln(2) / $t_{50}$** [4] | Typical | 0.03466 | $days^{-1}$ |
| | Maximum | 0.03466 | $days^{-1}$ |
| **Initial concentration on insects ($C_0$): R × rr × Drift** | Typical | 132 | mg/kg insect |
| | Maximum | 696 | mg/kg insect |
| **Concentration on insects at time T ($C_{90}$): $C_0$ × exp(-k×T)** [5] | Typical | 5.8336 | mg/kg insect |
| | Maximum | 30.7591 | mg/kg insect |
| **Time-weighted average concentration on insects CTWA):** | Typical | 40.4488 | mg/kg insect |
| **$C_0$ × (1-exp(-k×T)) / (k×T)** [5] | Maximum | 213.2755 | mg/kg insect |
| **Proportion of diet contaminated (PC)** | Typical | 1 | unitless |
| | Maximum | 1 | unitless |
| **Dose estimates (D): (CTWA × ir × PC) / BW** | Typical | 1.83E+01 | mg/kg bw/day |
| | Maximum | 9.67E+01 | mg/kg bw/day |

| **RISK QUOTIENTS[6] - Ingestion** | **Toxicity Reference Value (mg/kg bw/day)[7]** | **Typical Application** | **Maximum Application** |
|---|---|---|---|
| Small insectivorous bird (chronic exposure) | 936 | 1.96E-02 | 1.03E-01 |

[1]Calculated using algorithm developed by Nagy (1987) for all birds; where food ingestion rate (kg dw/day) = 0.0582×(BW)^0.651.
[2]Assumes insects are 69% water (USEPA 1993; Table 4-1 - value for grasshoppers and crickets).
[3]Residue rates are vegetation-specific (Hoerger and Kenaga 1972).
[4]ln = Natural log function.
[5]exp(-k×T) = e^(-k×T), where e is a constant = 2.7828.
[6]Risk Quotient = Estimated Dose/Toxicity Reference Value.
[7]Toxicity Reference Value (TRV) - TRVs relate the dose of a compound with a potentially adverse effect. TRVs were selected during a review of the ecotoxicological literature.

**TABLE B-10**

**Potential Risks to Herbivorous Bird (Canada goose) From Consumption of Contaminated Vegetation (Acute Exposure Scenario)**

| Parameters/Assumptions | | Value | Units |
|---|---|---|---|
| **Body Weight (BW)** | | 3.72 | kg |
| **Food ingestion rate (dry weight [dw])** [1] | | 0.1368 | kg dw/day |
| **Food ingestion rate (wet weight [ww]) (ir)** [2] | | 0.9125 | kg ww/day |
| **Duration of exposure (D)** | | 1 | day |
| **Application rates (R)** | Typical | 4 | lb/acre |
| | Maximum | 12 | lb/acre |
| **Residue rate - vegetation (rr)** [3] | Typical | 35 | mg/kg per lb/acre |
| | Maximum | 125 | mg/kg per lb/acre |
| **Concentration on vegetation (C): R × rr** | Typical | 140 | mg/kg veg |
| | Maximum | 1,500 | mg/kg veg |
| **Drift (Drift)** | Typical | 1 | unitless |
| | Maximum | 1 | unitless |
| **Proportion of diet contaminated (PC)** | Typical | 1 | unitless |
| | Maximum | 1 | unitless |
| **Dose estimates: (Drift × PC × C × ir) / BW** | Typical | 3.43E+01 | mg/kg bw |
| | Maximum | 3.68E+02 | mg/kg bw |

| RISK QUOTIENTS[4] - Ingestion | Toxicity Reference Value (mg/kg bw)[5] | Typical Application | Maximum Application |
|---|---|---|---|
| Large herbivorous bird - acute exposure | 5,000 | 6.87E-03 | 7.36E-02 |

[1]Calculated using algorithm developed by Nagy (1987) for all birds; where food ingestion rate (kg dw/day) = 0.0582×(BW)^0.651.
[2]Assumes vegetation is 85% water (USEPA 1993; Table 4-2 - value for dicotyledons).
[3]Residue rates are vegetation-specific (Hoerger and Kenaga 1972).
[4]Risk Quotient = Estimated Dose/Toxicity Reference Value.
[5]Toxicity Reference Value (TRV) - TRVs relate the dose of a compound with a potentially adverse effect. TRVs were selected during a review of the ecotoxicological literature.

**TABLE B-11**

**Potential Risks to Herbivorous Bird (Canada goose) From Consumption of Contaminated Vegetation (Chronic Exposure Scenario)**

| Parameters/Assumptions | | Value | Units |
|---|---|---|---|
| **Duration of exposure (T)** | | 90 | day |
| **Body weight (BW)** | | 3.72 | kg |
| **Food ingestion rate (dry weight [dw]) [1]** | | 0.1369 | kg dw/day |
| **Food ingestion rate ( wet weight [ww]) (ir) [2]** | | 0.9126 | kg ww/day |
| **Half life on vegetation ($t_{50}$)** | Herbicide specific | 20 | days |
| **Application rates (R)** | Typical | 4 | lb/acre |
| | Maximum | 12 | lb/acre |
| **Residue rate - vegetation (rr) [3]** | Typical | 35 | mg/kg per lb/acre |
| | Maximum | 125 | mg/kg per lb/acre |
| **Drift (Drift)** | Typical | 1 | unitless |
| | Maximum | 1 | unitless |
| **Decay coefficient (k): ln(2) / $t_{50}$ [4]** | Typical | 0.03466 | $days^{-1}$ |
| | Maximum | 0.03466 | $days^{-1}$ |
| **Initial concentration on vegetation ($C_0$): R × rr × Drift** | Typical | 140 | mg/kg veg |
| | Maximum | 1,500 | mg/kg veg |
| **Concentration on vegetation at time T ($C_{90}$):** | Typical | 6.1872 | mg/kg veg |
| **$C_0$ × exp(-k×T) [5]** | Maximum | 66.2913 | mg/kg veg |
| **Time-weighted Average Concentration on vegetation** | Typical | 42.9002 | mg/kg veg |
| **(CTWA): $C_0$ × (1-exp(-k×T))/(k×T) [5]** | Maximum | 459.6454 | mg/kg veg |
| **Proportion of diet contaminated (PC)** | Typical | 1 | unitless |
| | Maximum | 1 | unitless |
| **Dose estimates (D): (CTWA × ir × PC) / BW** | Typical | 1.05E+01 | mg/kg bw/day |
| | Maximum | 1.13E+02 | mg/kg bw/day |

| RISK QUOTIENTS[6] - Ingestion | Toxicity Reference Value (mg/kg bw/day)[7] | Typical Application | Maximum Application |
|---|---|---|---|
| Large herbivorous bird (chronic exposure) | 155 | 6.79E-02 | 7.27E-01 |

[1]Calculated using algorithm developed by Nagy (1987) for all birds; where food ingestion rate (kg dw/day) = 0.0582×(BW)^0.651.
[2]Assumes vegetation is 85% water (USEPA 1993; Table 4-2 - value for dicotyledons).
[3]Residue rates are vegetation-specific (Hoerger and Kenaga 1972).
[4]ln = Natural log function.
[5]exp(-k×T) = e^(-k×T), where e is a constant = 2.7828.
[6]Risk Quotient = Estimated Dose/Toxicity Reference Value.
[7]Toxicity Reference Value (TRV) - TRVs relate the dose of a compound with a potentially adverse effect. TRVs were selected during a review of the ecotoxicological literature.

**TABLE B-12**

**Potential Risks to Aquatic Species From Accidental Spray Drift to Pond**

**OFF-SITE DRIFT - modeled in AgDrift**
**TYPICAL APPLICATION RATE**

| Mode of Application | Application Height or Type | Distance From Receptor (ft) | Pond Concentration (mg/L) | Risk Quotients[1] - Acute | | | Risk Quotients[1] - Chronic | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Fish | Aquatic Invertebrates | Non-Target Aquatic Plants | Fish | Aquatic Invertebrates | Non-Target Aquatic Plants |
| Ground | Low Boom | 25 | 2.73E-03 | 7.58E-05 | 4.20E-05 | 4.01E-01 | 8.27E-03 | 1.24E-04 | 1.19E+00 |
| Ground | Low Boom | 100 | 1.49E-03 | 4.14E-05 | 2.29E-05 | 2.19E-01 | 4.52E-03 | 6.77E-05 | 6.48E-01 |
| Ground | Low Boom | 900 | 2.89E-04 | 8.03E-06 | 4.45E-06 | 4.25E-02 | 8.76E-04 | 1.31E-05 | 1.26E-01 |
| Ground | High Boom | 25 | 4.38E-03 | 1.22E-04 | 6.74E-05 | 6.44E-01 | 1.33E-02 | 1.99E-04 | 1.90E+00 |
| Ground | High Boom | 100 | 2.31E-03 | 6.42E-05 | 3.55E-05 | 3.40E-01 | 7.00E-03 | 1.05E-04 | 1.00E+00 |
| Ground | High Boom | 900 | 3.66E-04 | 1.02E-05 | 5.63E-06 | 5.38E-02 | 1.11E-03 | 1.66E-05 | 1.59E-01 |

**OFF-SITE DRIFT - modeled in AgDrift**
**MAXIMUM APPLICATION RATE**

| Mode of Application | Application Height or Type | Distance From Receptor (ft) | Pond Concentration (mg/L) | Risk Quotients[1] - Acute | | | Risk Quotients[1] - Chronic | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Fish | Aquatic Invertebrates | Non-Target Aquatic Plants | Fish | Aquatic Invertebrates | Non-Target Aquatic Plants |
| Ground | Low Boom | 25 | 8.18E-03 | 2.27E-04 | 1.26E-04 | 1.20E+00 | 2.48E-02 | 3.72E-04 | 3.56E+00 |
| Ground | Low Boom | 100 | 4.49E-03 | 1.25E-04 | 6.91E-05 | 6.60E-01 | 1.36E-02 | 2.04E-04 | 1.95E+00 |
| Ground | Low Boom | 900 | 8.66E-04 | 2.41E-05 | 1.33E-05 | 1.27E-01 | 2.62E-03 | 3.94E-05 | 3.77E-01 |
| Ground | High Boom | 25 | 1.31E-02 | 3.64E-04 | 2.02E-04 | 1.93E+00 | 3.97E-02 | 5.95E-04 | 5.70E+00 |
| Ground | High Boom | 100 | 6.92E-03 | 1.92E-04 | 1.06E-04 | 1.02E+00 | 2.10E-02 | 3.15E-04 | 3.01E+00 |
| Ground | High Boom | 900 | 1.10E-03 | 3.06E-05 | 1.69E-05 | 1.62E-01 | 3.33E-03 | 5.00E-05 | 4.78E-01 |

[1]Risk Quotient = Estimated Dose/Toxicity Reference Value.

**TABLE B-13**

**Potential Risks to Aquatic Species From Accidental Spray Drift to Stream**

**OFF-SITE DRIFT - modeled in AgDrift**
**TYPICALAPPLICATION RATE**

| Mode of Application | Application Height or Type | Distance From Receptor (ft) | Stream Concentration (mg/L) | Risk Quotients[1] - Acute | | | Risk Quotients[1] - Chronic | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Fish | Aquatic Invertebrates | Non-Target Aquatic Plants | Fish | Aquatic Invertebrates | Non-Target Aquatic Plants |
| Ground | Low Boom | 25 | 4.91E-03 | 1.36E-04 | 7.55E-05 | 7.21E-01 | 1.49E-02 | 2.23E-04 | 2.13E+00 |
| Ground | Low Boom | 100 | 1.44E-03 | 3.99E-05 | 2.21E-05 | 2.11E-01 | 4.36E-03 | 6.53E-05 | 6.25E-01 |
| Ground | Low Boom | 900 | 1.49E-04 | 4.13E-06 | 2.29E-06 | 2.19E-02 | 4.51E-04 | 6.76E-06 | 6.47E-02 |
| Ground | High Boom | 25 | 8.19E-03 | 2.28E-04 | 1.26E-04 | 1.21E+00 | 2.48E-02 | 3.72E-04 | 3.56E+00 |
| Ground | High Boom | 100 | 2.33E-03 | 6.46E-05 | 3.58E-05 | 3.42E-01 | 7.05E-03 | 1.06E-04 | 1.01E+00 |
| Ground | High Boom | 900 | 1.96E-04 | 5.44E-06 | 3.02E-06 | 2.88E-02 | 5.94E-04 | 8.91E-06 | 8.52E-02 |

**OFF-SITE DRIFT - modeled in AgDrift**
**MAXIMUM APPLICATION RATE**

| Mode of Application | Application Height or Type | Distance From Receptor (ft) | Stream Concentration (mg/L) | Risk Quotients[1] - Acute | | | Risk Quotients[1] - Chronic | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Fish | Aquatic Invertebrates | Non-Target Aquatic Plants | Fish | Aquatic Invertebrates | Non-Target Aquatic Plants |
| Ground | Low Boom | 25 | 1.47E-02 | 4.09E-04 | 2.26E-04 | 2.16E+00 | 4.46E-02 | 6.69E-04 | 6.40E+00 |
| Ground | Low Boom | 100 | 4.31E-03 | 1.20E-04 | 6.63E-05 | 6.34E-01 | 1.31E-02 | 1.96E-04 | 1.87E+00 |
| Ground | Low Boom | 900 | 4.46E-04 | 1.24E-05 | 6.87E-06 | 6.56E-02 | 1.35E-03 | 2.03E-05 | 1.94E-01 |
| Ground | High Boom | 25 | 2.46E-02 | 6.85E-04 | 3.79E-04 | 3.62E+00 | 7.47E-02 | 1.12E-03 | 1.07E+01 |
| Ground | High Boom | 100 | 6.98E-03 | 1.94E-04 | 1.07E-04 | 1.03E+00 | 2.12E-02 | 3.17E-04 | 3.04E+00 |
| Ground | High Boom | 900 | 5.90E-04 | 1.64E-05 | 9.08E-06 | 8.68E-02 | 1.79E-03 | 2.68E-05 | 2.57E-01 |

[1]Risk Quotient = Estimated Dose/Toxicity Reference Value.

**TABLE B-14**

**Potential Risks to Non-target Terrestrial Plants from Direct Spray and Spray Drift**

| DIRECT SPRAY | Terrestrial Concentration (lb/acre) | Typical Species RQ[1] | Rare, Threatened, and Endangered Species RQ[1] |
|---|---|---|---|
| Typical application rate | 4 | 1.74E+03 | 5.00E+03 |
| Maximum application rate | 12 | 5.22E+03 | 1.50E+04 |

| OFF-SITE DRIFT - modeled in AgDrift TYPICAL APPLICATION RATE | | | | | |
|---|---|---|---|---|---|
| **Mode of Application** | **Application Height or Type** | **Distance From Receptor (ft)** | **Soil Concentration (lb/acre)** | **Typical Species RQ[1]** | **Rare, Threatened, and Endangered Species RQ[1]** |
| Ground | Low Boom | 25 | 5.03E-02 | 2.19E+01 | 6.29E+01 |
| Ground | Low Boom | 100 | 1.77E-02 | 7.70E+00 | 2.21E+01 |
| Ground | Low Boom | 900 | 2.70E-03 | 1.17E+00 | 3.38E+00 |
| Ground | High Boom | 25 | 8.31E-02 | 3.61E+01 | 1.04E+02 |
| Ground | High Boom | 100 | 2.79E-02 | 1.21E+01 | 3.49E+01 |
| Ground | High Boom | 900 | 3.50E-03 | 1.52E+00 | 4.38E+00 |
| **OFF-SITE DRIFT - modeled in AgDrift MAXIMUM APPLICATION RATE** | | | | | |
| **Mode of Application** | **Application Height or Type** | **Distance From Receptor (ft)** | **Soil Concentration (lb/acre)** | **Typical Species RQ[1]** | **Rare, Threatened, and Endangered Species RQ[1]** |
| Ground | Low Boom | 25 | 1.51E-01 | 6.56E+01 | 1.89E+02 |
| Ground | Low Boom | 100 | 5.32E-02 | 2.31E+01 | 6.65E+01 |
| Ground | Low Boom | 900 | 8.20E-03 | 3.57E+00 | 1.03E+01 |
| Ground | High Boom | 25 | 2.49E-01 | 1.08E+02 | 3.12E+02 |
| Ground | High Boom | 100 | 8.38E-02 | 3.64E+01 | 1.05E+02 |
| Ground | High Boom | 900 | 1.05E-02 | 4.57E+00 | 1.31E+01 |

[1]RQ = Risk Quotient = Estimated Dose/Toxicity Reference Value.

**TABLE B-15**

**Potential Risk to Predatory Bird from Consumption of Contaminated Fish From Pond (Pond Impacted by Spray Drift Modeled in AgDrift)**

| Parameters/ Assumptions | Value | Units |
|---|---|---|
| **Body weight (BW)** | 5.15 | kg |
| **[1]Food ingestion rate (dry weight [dw])** | 0.1018 | kg dw/day |
| **[2]Food ingestion rate (wet weight [ww]) (ir)** | 0.4071 | kg ww/day |
| **Bioconcentration factor (BCF)** | 2.8 | L/kg fish |
| **Proportion of diet contaminated (PC)** | 1 | unitless |
| **[3]Toxicity reference value (TRV)** | 155 | mg/kg-bw/day |

| **TYPICAL APPLICATION RATE** | | | | | | |
|---|---|---|---|---|---|---|
| **Mode of Application** | **Application Height or Type** | **Distance From Receptor (ft)** | **Pond Concentration[4] ($C_{pond}$ mg/L)** | **Concentration in fish ($C_{Fish}$): $C_{pond}$ × BCF** | **Dose estimate (D): ($C_{Fish}$ × ir × PC) / BW** | **Risk Quotient[5]** |
| Ground | Low Boom | 25 | 2.73E-03 | 7.64E-03 | 6.04E-04 | 3.90E-06 |
| Ground | Low Boom | 100 | 1.49E-03 | 4.17E-03 | 3.30E-04 | 2.13E-06 |
| Ground | Low Boom | 900 | 2.89E-04 | 8.09E-04 | 6.40E-05 | 4.13E-07 |
| Ground | High Boom | 25 | 4.38E-03 | 1.23E-02 | 9.70E-04 | 6.26E-06 |
| Ground | High Boom | 100 | 2.31E-03 | 6.47E-03 | 5.11E-04 | 3.30E-06 |
| Ground | High Boom | 900 | 3.66E-04 | 1.02E-03 | 8.10E-05 | 5.23E-07 |
| **MAXIMUM APPLICATION RATE** | | | | | | |
| **Mode of Application** | **Application Height or Type** | **Distance From Receptor (ft)** | **Pond Concentration ($C_{pond}$ mg/L)** | **Concentration in fish ($C_{Fish}$): $C_{pond}$ × BCF** | **Dose estimate (D): ($C_{Fish}$ × ir × PC) / BW** | **Risk Quotient[5]** |
| Ground | Low Boom | 25 | 8.18E-03 | 2.29E-02 | 1.81E-03 | 1.17E-05 |
| Ground | Low Boom | 100 | 4.49E-03 | 1.26E-02 | 9.94E-04 | 6.41E-06 |
| Ground | Low Boom | 900 | 8.66E-04 | 2.42E-03 | 1.92E-04 | 1.24E-06 |
| Ground | High Boom | 25 | 1.31E-02 | 3.67E-02 | 2.90E-03 | 1.87E-05 |
| Ground | High Boom | 100 | 6.92E-03 | 1.94E-02 | 1.53E-03 | 9.88E-06 |
| Ground | High Boom | 900 | 1.10E-03 | 3.08E-03 | 2.43E-04 | 1.57E-06 |

[1]Calculated using algorithm developed by Nagy (1987) for all birds; where food ingestion rate (kg dw/day) = 0.0582×(BW)^0.651.
[2]Assumes fish are 75% water (USEPA 1993; Table 4-1 - value for bony fishes).
[3]Toxicity Reference Value (TRV) - TRVs relate the dose of a compound with a potentially adverse effect. TRVs were selected during a review of the ecotoxicological literature.
[4]Pond concentrations in spray drift scenarios were calculated by the AgDRIFT. See associated report methodology document for further details.
[5]Risk Quotient = Estimated Dose/Toxicity Reference Value.

# TABLE B-16

## Potential Risks to Aquatic Species From Surface Runoff to Pond

### SURFACE RUNOFF - Modeled in GLEAMS - TYPICAL APPLICATION RATE

| GLEAMS ID | Annual Precipitation (inches) | Application Area (acres) | Hydraulic Slope (ft/ft) | Surface Roughness | USLE[2] Soil Erodibility Factor (ton/ac per EI) | Vegetation Type | Soil Type | Pond Concentrations (mg/L) | | Risk Quotients[1] - Acute | | | Risk Quotients[1] - Chronic | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Acute Exposure Scenarios | Chronic Exposure Scenarios | Fish | Aquatic Inverte-brates | Non-Target Aquatic Plants | Fish | Aquatic Inverte-brates | Non-Target Aquatic Plants |
| G_BASE_SAND_005_POND_TYP | 5 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Sand | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| G_BASE_CLAY_005_POND_TYP | 5 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Clay | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| G_BASE_LOAM_005_POND_TYP | 5 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Loam | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| G_BASE_SAND_010_POND_TYP | 10 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Sand | 6.19E-01 | 4.37E-01 | 1.72E-02 | 9.53E-03 | 9.11E+01 | 1.32E+00 | 1.99E-02 | 1.90E+02 |
| G_BASE_CLAY_010_POND_TYP | 10 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Clay | 5.88E-02 | 8.07E-03 | 1.63E-03 | 9.04E-04 | 8.64E+00 | 2.44E-02 | 3.67E-04 | 3.51E+00 |
| G_BASE_LOAM_010_POND_TYP | 10 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Loam | 4.02E-04 | 1.50E-04 | 1.12E-05 | 6.19E-06 | 5.92E-02 | 4.54E-04 | 6.81E-06 | 6.52E-02 |
| G_BASE_SAND_025_POND_TYP | 25 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Sand | 6.76E-01 | 5.58E-01 | 1.88E-02 | 1.04E-02 | 9.95E+01 | 1.69E+00 | 2.53E-02 | 2.42E+02 |
| G_BASE_CLAY_025_POND_TYP | 25 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Clay | 4.89E-02 | 3.47E-02 | 1.36E-03 | 7.53E-04 | 7.19E+00 | 1.05E-01 | 1.58E-03 | 1.51E+01 |
| G_BASE_LOAM_025_POND_TYP | 25 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Loam | 2.10E-01 | 1.70E-01 | 5.85E-03 | 3.24E-03 | 3.09E+01 | 5.16E-01 | 7.75E-03 | 7.41E+01 |
| G_BASE_SAND_050_POND_TYP | 50 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Sand | 5.08E-01 | 1.67E-01 | 1.41E-02 | 7.82E-03 | 7.47E+01 | 5.07E-01 | 7.61E-03 | 2.42E+02 |
| G_BASE_CLAY_050_POND_TYP | 50 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Clay | 1.66E-01 | 1.02E-01 | 4.60E-03 | 2.55E-03 | 2.44E+01 | 3.08E-01 | 4.62E-03 | 4.42E+01 |
| G_BASE_LOAM_050_POND_TYP | 50 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Loam | 2.18E-01 | 1.89E-01 | 6.04E-03 | 3.35E-03 | 3.20E+01 | 5.74E-01 | 8.61E-03 | 8.24E+01 |
| G_BASE_SAND_100_POND_TYP | 100 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Sand | 5.55E-01 | 9.09E-02 | 1.54E-02 | 8.54E-03 | 8.16E+01 | 2.76E-01 | 4.13E-03 | 3.95E+01 |
| G_BASE_CLAY_100_POND_TYP | 100 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Clay | 3.68E-01 | 9.92E-02 | 1.02E-02 | 5.66E-03 | 5.41E+01 | 3.01E-01 | 4.51E-03 | 4.31E+01 |
| G_BASE_LOAM_100_POND_TYP | 100 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Loam | 1.72E-01 | 1.30E-01 | 4.79E-03 | 2.65E-03 | 2.54E+01 | 3.95E-01 | 5.93E-03 | 5.67E+01 |
| G_BASE_SAND_150_POND_TYP | 150 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Sand | 5.50E-01 | 9.80E-02 | 1.53E-02 | 8.46E-03 | 8.09E+01 | 2.97E-01 | 4.46E-03 | 4.26E+01 |
| G_BASE_CLAY_150_POND_TYP | 150 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Clay | 3.26E-01 | 1.01E-01 | 9.06E-03 | 5.02E-03 | 4.80E+01 | 3.06E-01 | 4.59E-03 | 4.39E+01 |

## TABLE B-16 (Cont.)

## Potential Risks to Aquatic Species From Surface Runoff to Pond

**SURFACE RUNOFF - Modeled in GLEAMS - TYPICAL APPLICATION RATE**

| GLEAMS ID | Annual Precipitation (inches) | Application Area (acres) | Hydraulic Slope (ft/ft) | Surface Roughness | USLE[2] Soil Erodibility Factor (ton/ac per EI) | Vegetation Type | Soil Type | Pond Concentrations (mg/L) | | Risk Quotients[1] - Acute | | | Risk Quotients[1] - Chronic | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Acute Exposure Scenarios | Chronic Exposure Scenarios | Fish | Aquatic Inverte-brates | Non-Target Aquatic Plants | Fish | Aquatic Inverte-brates | Non-Target Aquatic Plants |
| G_BASE_LOAM_150_POND_TYP | 150 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Loam | 1.66E-01 | 8.32E-02 | 4.60E-03 | 2.55E-03 | 2.44E+01 | 2.52E-01 | 3.78E-03 | 3.62E+01 |
| G_BASE_SAND_200_POND_TYP | 200 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Sand | 5.49E-01 | 1.05E-01 | 1.52E-02 | 8.44E-03 | 8.07E+01 | 3.17E-01 | 4.76E-03 | 4.55E+01 |
| G_BASE_CLAY_200_POND_TYP | 200 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Clay | 3.88E-01 | 1.10E-01 | 1.08E-02 | 5.97E-03 | 5.70E+01 | 3.32E-01 | 4.99E-03 | 4.77E+01 |
| G_BASE_LOAM_200_POND_TYP | 200 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Loam | 1.63E-01 | 5.76E-02 | 4.52E-03 | 2.50E-03 | 2.39E+01 | 1.75E-01 | 2.62E-03 | 2.50E+01 |
| G_BASE_SAND_250_POND_TYP | 250 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Sand | 5.49E-01 | 9.64E-02 | 1.53E-02 | 8.45E-03 | 8.08E+01 | 2.92E-01 | 4.38E-03 | 4.19E+01 |
| G_BASE_CLAY_250_POND_TYP | 250 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Clay | 6.17E-01 | 1.20E-01 | 1.71E-02 | 9.50E-03 | 9.08E+01 | 3.65E-01 | 5.48E-03 | 5.24E+01 |
| G_BASE_LOAM_250_POND_TYP | 250 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Loam | 1.60E-01 | 4.67E-02 | 4.44E-03 | 2.46E-03 | 2.35E+01 | 1.42E-01 | 2.12E-03 | 2.03E+01 |
| G_ARV1_050_POND_TYP | 50 | 1 | 0.05 | 0.015 | 0.401 | Weeds (78) | Loam | 1.61E-01 | 1.34E-01 | 4.46E-03 | 2.47E-03 | 2.36E+01 | 4.06E-01 | 6.09E-03 | 5.83E+01 |
| G_ARV2_050_POND_TYP | 50 | 100 | 0.05 | 0.015 | 0.401 | Weeds (78) | Loam | 2.19E-01 | 2.00E-01 | 6.08E-03 | 3.37E-03 | 3.22E+01 | 6.05E-01 | 9.08E-03 | 8.68E+01 |
| G_ARV3_050_POND_TYP | 50 | 1,000 | 0.05 | 0.015 | 0.401 | Weeds (78) | Loam | 2.19E-01 | 2.01E-01 | 6.08E-03 | 3.37E-03 | 3.22E+01 | 6.08E-01 | 9.12E-03 | 8.72E+01 |
| G_ERV1_050_POND_TYP | 50 | 10 | 0.05 | 0.015 | 0.05 | Weeds (78) | Loam | 2.18E-01 | 1.89E-01 | 6.04E-03 | 3.35E-03 | 3.20E+01 | 5.74E-01 | 8.61E-03 | 8.24E+01 |
| G_ERV2_050_POND_TYP | 50 | 10 | 0.05 | 0.015 | 0.2 | Weeds (78) | Loam | 2.18E-01 | 1.89E-01 | 6.04E-03 | 3.35E-03 | 3.20E+01 | 5.74E-01 | 8.61E-03 | 8.24E+01 |
| G_ERV3_050_POND_TYP | 50 | 10 | 0.05 | 0.015 | 0.5 | Weeds (78) | Loam | 2.18E-01 | 1.89E-01 | 6.04E-03 | 3.35E-03 | 3.20E+01 | 5.74E-01 | 8.61E-03 | 8.24E+01 |
| G_RGV1_050_POND_TYP | 50 | 10 | 0.05 | 0.023 | 0.401 | Weeds (78) | Loam | 2.18E-01 | 1.89E-01 | 6.04E-03 | 3.35E-03 | 3.20E+01 | 5.74E-01 | 8.61E-03 | 8.24E+01 |
| G_RGV2_050_POND_TYP | 50 | 10 | 0.05 | 0.046 | 0.401 | Weeds (78) | Loam | 2.18E-01 | 1.89E-01 | 6.04E-03 | 3.35E-03 | 3.20E+01 | 5.74E-01 | 8.61E-03 | 8.24E+01 |
| G_RGV3_050_POND_TYP | 50 | 10 | 0.05 | 0.15 | 0.401 | Weeds (78) | Loam | 2.18E-01 | 1.89E-01 | 6.04E-03 | 3.35E-03 | 3.20E+01 | 5.74E-01 | 8.61E-03 | 8.24E+01 |
| G_SLV1_050_POND_TYP | 50 | 10 | 0.005 | 0.015 | 0.401 | Weeds (78) | Loam | 2.18E-01 | 1.89E-01 | 6.04E-03 | 3.35E-03 | 3.20E+01 | 5.74E-01 | 8.61E-03 | 8.24E+01 |

## TABLE B-16 (Cont.)

## Potential Risks to Aquatic Species From Surface Runoff to Pond

| SURFACE RUNOFF - Modeled in GLEAMS - TYPICAL APPLICATION RATE | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Pond Concentrations (mg/L) | | Risk Quotients[1] - Acute | | | Risk Quotients[1] - Chronic | | |
| GLEAMS ID | Annual Precipitation (inches) | Application Area (acres) | Hydraulic Slope (ft/ft) | Surface Roughness | USLE[2] Soil Erodibility Factor (ton/ac per EI) | Vegetation Type | Soil Type | Acute Exposure Scenarios | Chronic Exposure Scenarios | Fish | Aquatic Inverte-brates | Non-Target Aquatic Plants | Fish | Aquatic Inverte-brates | Non-Target Aquatic Plants |
| G_SLV2_050_POND_TYP | 50 | 10 | 0.01 | 0.015 | 0.401 | Weeds (78) | Loam | 2.18E-01 | 1.89E-01 | 6.04E-03 | 3.35E-03 | 3.20E+01 | 5.74E-01 | 8.61E-03 | 8.24E+01 |
| G_SLV3_050_POND_TYP | 50 | 10 | 0.1 | 0.015 | 0.401 | Weeds (78) | Loam | 2.18E-01 | 1.89E-01 | 6.04E-03 | 3.35E-03 | 3.20E+01 | 5.74E-01 | 8.61E-03 | 8.24E+01 |
| G_STV1_050_POND_TYP | 50 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Silt Loam | 1.65E-01 | 1.37E-01 | 4.59E-03 | 2.54E-03 | 2.43E+01 | 4.15E-01 | 6.23E-03 | 5.96E+01 |
| G_STV2_050_POND_TYP | 50 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Silt | 1.44E-01 | 1.25E-01 | 4.00E-03 | 2.22E-03 | 2.12E+01 | 3.78E-01 | 5.67E-03 | 5.42E+01 |
| G_STV3_050_POND_TYP | 50 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Clay Loam | 1.97E-01 | 1.05E-01 | 5.46E-03 | 3.03E-03 | 2.89E+01 | 3.18E-01 | 4.77E-03 | 4.56E+01 |
| G_VGV1_050_POND_TYP | 50 | 10 | 0.05 | 0.015 | 0.401 | Shrubs (79) | Loam | 2.18E-01 | 1.89E-01 | 6.04E-03 | 3.35E-03 | 3.20E+01 | 5.74E-01 | 8.61E-03 | 8.24E+01 |
| G_VGV2_050_POND_TYP | 50 | 10 | 0.05 | 0.015 | 0.401 | Rye Grass (54) | Loam | 2.18E-01 | 1.89E-01 | 6.04E-03 | 3.35E-03 | 3.20E+01 | 5.74E-01 | 8.61E-03 | 8.24E+01 |
| G_VGV3_050_POND_TYP | 50 | 10 | 0.05 | 0.015 | 0.401 | Conifer + Hardwood (71) | Loam | 2.08E-01 | 1.82E-01 | 5.77E-03 | 3.20E-03 | 3.06E+01 | 5.52E-01 | 8.28E-03 | 7.92E+01 |
| **MAXIMUM APPLICATION RATE** | | | | | | | | | | | | | | | |
| G_BASE_SAND_005_POND_MAX | 5 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Sand | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| G_BASE_CLAY_005_POND_MAX | 5 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Clay | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| G_BASE_LOAM_005_POND_MAX | 5 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Loam | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| G_BASE_SAND_010_POND_MAX | 10 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Sand | 1.86E+00 | 1.31E+00 | 5.16E-02 | 2.86E-02 | 2.73E+02 | 3.97E+00 | 5.96E-02 | 5.70E+02 |
| G_BASE_CLAY_010_POND_MAX | 10 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Clay | 1.76E-01 | 2.42E-02 | 4.90E-03 | 2.71E-03 | 2.59E+01 | 7.33E-02 | 1.10E-03 | 1.05E+01 |
| G_BASE_LOAM_010_POND_MAX | 10 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Loam | 1.21E-03 | 4.50E-04 | 3.35E-05 | 1.86E-05 | 1.78E-01 | 1.36E-03 | 2.04E-05 | 1.96E-01 |
| G_BASE_SAND_025_POND_MAX | 25 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Sand | 2.03E+00 | 1.67E+00 | 5.64E-02 | 3.12E-02 | 2.98E+02 | 5.07E+00 | 7.60E-02 | 7.27E+02 |
| G_BASE_CLAY_025_POND_MAX | 25 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Clay | 1.47E-01 | 1.04E-01 | 4.08E-03 | 2.26E-03 | 2.16E+01 | 3.16E-01 | 4.74E-03 | 4.53E+01 |

## TABLE B-16 (Cont.)

## Potential Risks to Aquatic Species From Surface Runoff to Pond

### SURFACE RUNOFF - Modeled in GLEAMS - MAXIMUM APPLICATION RATE

| GLEAMS ID | Annual Precipitation (inches) | Application Area (acres) | Hydraulic Slope (ft/ft) | Surface Roughness | USLE[2] Soil Erodibility Factor (ton/ac per EI) | Vegetation Type | Soil Type | Pond Concentrations (mg/L) | | Risk Quotients[1] - Acute | | | Risk Quotients[1] - Chronic | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Acute Exposure Scenarios | Chronic Exposure Scenarios | Fish | Aquatic Inverte-brates | Non-Target Aquatic Plants | Fish | Aquatic Inverte-brates | Non-Target Aquatic Plants |
| G_BASE_LOAM_025_POND_MAX | 25 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Loam | 6.31E-01 | 5.11E-01 | 1.75E-02 | 9.71E-03 | 9.28E+01 | 1.55E+00 | 2.32E-02 | 2.22E+02 |
| G_BASE_SAND_050_POND_MAX | 50 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Sand | 1.52E+00 | 5.02E-01 | 4.23E-02 | 2.34E-02 | 2.24E+02 | 1.52E+00 | 2.28E-02 | 2.18E+02 |
| G_BASE_CLAY_050_POND_MAX | 50 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Clay | 4.97E-01 | 3.05E-01 | 1.38E-02 | 7.65E-03 | 7.31E+01 | 9.24E-01 | 1.39E-02 | 1.33E+02 |
| G_BASE_LOAM_050_POND_MAX | 50 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Loam | 6.53E-01 | 5.68E-01 | 1.81E-02 | 1.00E-02 | 9.60E+01 | 1.72E+00 | 2.58E-02 | 2.47E+02 |
| G_BASE_SAND_100_POND_MAX | 100 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Sand | 1.66E+00 | 2.73E-01 | 4.62E-02 | 2.56E-02 | 2.45E+02 | 8.27E-01 | 1.24E-02 | 1.19E+02 |
| G_BASE_CLAY_100_POND_MAX | 100 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Clay | 1.10E+00 | 2.98E-01 | 3.06E-02 | 1.70E-02 | 1.62E+02 | 9.02E-01 | 1.35E-02 | 1.29E+02 |
| G_BASE_LOAM_100_POND_MAX | 100 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Loam | 5.17E-01 | 3.91E-01 | 1.44E-02 | 7.96E-03 | 7.61E+01 | 1.19E+00 | 1.78E-02 | 1.70E+02 |
| G_BASE_SAND_150_POND_MAX | 150 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Sand | 1.65E+00 | 2.94E-01 | 4.58E-02 | 2.54E-02 | 2.43E+02 | 8.91E-01 | 1.34E-02 | 1.28E+02 |
| G_BASE_CLAY_150_POND_MAX | 150 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Clay | 9.79E-01 | 3.03E-01 | 2.72E-02 | 1.51E-02 | 1.44E+02 | 9.19E-01 | 1.38E-02 | 1.32E+02 |
| G_BASE_LOAM_150_POND_MAX | 150 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Loam | 4.97E-01 | 2.50E-01 | 1.38E-02 | 7.65E-03 | 7.31E+01 | 7.57E-01 | 1.14E-02 | 1.09E+02 |
| G_BASE_SAND_200_POND_MAX | 200 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Sand | 1.65E+00 | 3.14E-01 | 4.57E-02 | 2.53E-02 | 2.42E+02 | 9.52E-01 | 1.43E-02 | 1.37E+02 |
| G_BASE_CLAY_200_POND_MAX | 200 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Clay | 1.16E+00 | 3.29E-01 | 3.23E-02 | 1.79E-02 | 1.71E+02 | 9.97E-01 | 1.50E-02 | 1.43E+02 |
| G_BASE_LOAM_200_POND_MAX | 200 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Loam | 4.88E-01 | 1.73E-01 | 1.36E-02 | 7.51E-03 | 7.18E+01 | 5.24E-01 | 7.85E-03 | 7.51E+01 |
| G_BASE_SAND_250_POND_MAX | 250 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Sand | 1.65E+00 | 2.89E-01 | 4.58E-02 | 2.53E-02 | 2.42E+02 | 8.76E-01 | 1.31E-02 | 1.26E+02 |
| G_BASE_CLAY_250_POND_MAX | 250 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Clay | 1.85E+00 | 3.61E-01 | 5.14E-02 | 2.85E-02 | 2.72E+02 | 1.10E+00 | 1.64E-02 | 1.57E+02 |
| G_BASE_LOAM_250_POND_MAX | 250 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Loam | 4.80E-01 | 1.40E-01 | 1.33E-02 | 7.38E-03 | 7.06E+01 | 4.25E-01 | 6.37E-03 | 6.09E+01 |
| G_ARV1_050_POND_MAX | 50 | 1 | 0.05 | 0.015 | 0.401 | Weeds (78) | Loam | 4.82E-01 | 4.02E-01 | 1.34E-02 | 7.41E-03 | 7.08E+01 | 1.22E+00 | 1.83E-02 | 1.75E+02 |

## TABLE B-16 (Cont.)

## Potential Risks to Aquatic Species From Surface Runoff to Pond

### SURFACE RUNOFF - Modeled in GLEAMS - MAXIMUM APPLICATION RATE

| GLEAMS ID | Annual Precipitation (inches) | Application Area (acres) | Hydraulic Slope (ft/ft) | Surface Roughness | USLE[2] Soil Erodibility Factor (ton/ac per EI) | Vegetation Type | Soil Type | Pond Concentrations (mg/L) | | Risk Quotients[1] – Acute | | | Risk Quotients[1] - Chronic | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Acute Exposure Scenarios | Chronic Exposure Scenarios | Fish | Aquatic Inverte-brates | Non-Target Aquatic Plants | Fish | Aquatic Inverte-brates | Non-Target Aquatic Plants |
| G_ARV2_050_POND_MAX | 50 | 100 | 0.05 | 0.015 | 0.401 | Weeds (78) | Loam | 6.57E-01 | 5.99E-01 | 1.82E-02 | 1.01E-02 | 9.66E+01 | 1.82E+00 | 2.72E-02 | 2.61E+02 |
| G_ARV3_050_POND_MAX | 50 | 1,000 | 0.05 | 0.015 | 0.401 | Weeds (78) | Loam | 6.57E-01 | 6.02E-01 | 1.82E-02 | 1.01E-02 | 9.66E+01 | 1.82E+00 | 2.73E-02 | 2.62E+02 |
| G_ERV1_050_POND_MAX | 50 | 10 | 0.05 | 0.015 | 0.05 | Weeds (78) | Loam | 6.53E-01 | 5.68E-01 | 1.81E-02 | 1.00E-02 | 9.60E+01 | 1.72E+00 | 2.58E-02 | 2.47E+02 |
| G_ERV2_050_POND_MAX | 50 | 10 | 0.05 | 0.015 | 0.2 | Weeds (78) | Loam | 6.53E-01 | 5.68E-01 | 1.81E-02 | 1.00E-02 | 9.60E+01 | 1.72E+00 | 2.58E-02 | 2.47E+02 |
| G_ERV3_050_POND_MAX | 50 | 10 | 0.05 | 0.015 | 0.5 | Weeds (78) | Loam | 6.53E-01 | 5.68E-01 | 1.81E-02 | 1.00E-02 | 9.60E+01 | 1.72E+00 | 2.58E-02 | 2.47E+02 |
| G_RGV1_050_POND_MAX | 50 | 10 | 0.05 | 0.023 | 0.401 | Weeds (78) | Loam | 6.53E-01 | 5.68E-01 | 1.81E-02 | 1.00E-02 | 9.60E+01 | 1.72E+00 | 2.58E-02 | 2.47E+02 |
| G_RGV2_050_POND_MAX | 50 | 10 | 0.05 | 0.046 | 0.401 | Weeds (78) | Loam | 6.53E-01 | 5.68E-01 | 1.81E-02 | 1.00E-02 | 9.60E+01 | 1.72E+00 | 2.58E-02 | 2.47E+02 |
| G_RGV3_050_POND_MAX | 50 | 10 | 0.05 | 0.15 | 0.401 | Weeds (78) | Loam | 6.53E-01 | 5.68E-01 | 1.81E-02 | 1.00E-02 | 9.60E+01 | 1.72E+00 | 2.58E-02 | 2.47E+02 |
| G_SLV1_050_POND_MAX | 50 | 10 | 0.005 | 0.015 | 0.401 | Weeds (78) | Loam | 6.53E-01 | 5.68E-01 | 1.81E-02 | 1.00E-02 | 9.60E+01 | 1.72E+00 | 2.58E-02 | 2.47E+02 |
| G_SLV2_050_POND_MAX | 50 | 10 | 0.01 | 0.015 | 0.401 | Weeds (78) | Loam | 6.53E-01 | 5.68E-01 | 1.81E-02 | 1.00E-02 | 9.60E+01 | 1.72E+00 | 2.58E-02 | 2.47E+02 |
| G_SLV3_050_POND_MAX | 50 | 10 | 0.1 | 0.015 | 0.401 | Weeds (78) | Loam | 6.53E-01 | 5.68E-01 | 1.81E-02 | 1.00E-02 | 9.60E+01 | 1.72E+00 | 2.58E-02 | 2.47E+02 |
| G_STV1_050_POND_MAX | 50 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Silt Loam | 4.96E-01 | 4.11E-01 | 1.38E-02 | 7.63E-03 | 7.29E+01 | 1.25E+00 | 1.87E-02 | 1.79E+02 |
| G_STV2_050_POND_MAX | 50 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Silt | 4.32E-01 | 3.74E-01 | 1.20E-02 | 6.65E-03 | 6.36E+01 | 1.13E+00 | 1.70E-02 | 1.63E+02 |
| G_STV3_050_POND_MAX | 50 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Clay Loam | 5.90E-01 | 3.15E-01 | 1.64E-02 | 9.08E-03 | 8.68E+01 | 9.54E-01 | 1.43E-02 | 1.37E+02 |
| G_VGV1_050_POND_MAX | 50 | 10 | 0.05 | 0.015 | 0.401 | Shrubs (79) | Loam | 6.53E-01 | 5.68E-01 | 1.81E-02 | 1.00E-02 | 9.60E+01 | 1.72E+00 | 2.58E-02 | 2.47E+02 |
| G_VGV2_050_POND_MAX | 50 | 10 | 0.05 | 0.015 | 0.401 | Rye Grass (54) | Loam | 6.53E-01 | 5.68E-01 | 1.81E-02 | 1.00E-02 | 9.60E+01 | 1.72E+00 | 2.58E-02 | 2.47E+02 |
| G_VGV3_050_POND_MAX | 50 | 10 | 0.05 | 0.015 | 0.401 | Conifer + Hardwood (71) | Loam | 6.24E-01 | 5.46E-01 | 1.73E-02 | 9.59E-03 | 9.17E+01 | 1.66E+00 | 2.48E-02 | 2.38E+02 |

[1]Risk Quotient = Estimated Dose/Toxicity Reference Value.
[2]USLE = Universal Soil Loss Equation, which predicts soil loss as a function of soil erodibility, topography, rainfall/runoff, cover, and support management factors.

## TABLE B-17

## Potential Risks to Aquatic Species from Surface Runoff to Stream

**SURFACE RUNOFF - modeled in GLEAMS**
**TYPICAL APPLICATION RATE**

| GLEAMS ID | Annual Precipitation (inches) | Application Area (acres) | Hydraulic Slope (ft/ft) | Surface Roughness | USLE[2] Soil Erodibility Factor (ton/ac/EI) | Vegetation Type | Soil Type | Stream Concentrations (mg/L) | | Risk Quotients - Acute | | | Risk Quotients - Chronic | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Acute Exposure Scenarios | Chronic Exposure Scenarios | Fish | Aquatic Inverte-brates | Non-Target Aquatic Plants | Fish | Aquatic Inverte-brates | Non-Target Aquatic Plants |
| G_BASE_SAND_005 _STREAM_TYP | 5 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Sand | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| G_BASE_CLAY_005 _STREAM_TYP | 5 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Clay | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| G_BASE_LOAM_005 _STREAM_TYP | 5 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Loam | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| G_BASE_SAND_010 _STREAM_TYP | 10 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Sand | 2.48E-02 | 3.52E-04 | 6.88E-04 | 3.81E-04 | 3.64E+00 | 1.07E-03 | 1.60E-05 | 1.53E-01 |
| G_BASE_CLAY_010 _STREAM_TYP | 10 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Clay | 1.90E-03 | 1.57E-05 | 5.28E-05 | 2.92E-05 | 2.79E-01 | 4.76E-05 | 7.15E-07 | 6.83E-03 |
| G_BASE_LOAM_010 _STREAM_TYP | 10 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Loam | 1.32E-05 | 1.20E-07 | 3.67E-07 | 2.03E-07 | 1.94E-03 | 3.62E-07 | 5.44E-09 | 5.20E-05 |
| G_BASE_SAND_025 _STREAM_TYP | 25 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Sand | 5.71E-02 | 2.02E-03 | 1.59E-03 | 8.79E-04 | 8.40E+00 | 6.12E-03 | 9.18E-05 | 8.78E-01 |
| G_BASE_CLAY_025 _STREAM_TYP | 25 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Clay | 1.09E-03 | 1.29E-04 | 3.02E-05 | 1.68E-05 | 1.60E-01 | 3.91E-04 | 5.87E-06 | 5.61E-02 |
| G_BASE_LOAM_025 _STREAM_TYP | 25 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Loam | 1.54E-02 | 5.65E-04 | 4.28E-04 | 2.37E-04 | 2.26E+00 | 1.71E-03 | 2.57E-05 | 2.46E-01 |
| G_BASE_SAND_050 _STREAM_TYP | 50 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Sand | 6.87E-02 | 2.29E-03 | 1.91E-03 | 1.06E-03 | 1.01E+01 | 6.95E-03 | 1.04E-04 | 9.97E-01 |
| G_BASE_CLAY_050 _STREAM_TYP | 50 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Clay | 2.60E-03 | 7.72E-04 | 7.22E-05 | 4.00E-05 | 3.82E-01 | 2.34E-03 | 3.51E-05 | 3.35E-01 |
| G_BASE_LOAM_050 _STREAM_TYP | 50 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Loam | 2.06E-02 | 1.52E-03 | 5.72E-04 | 3.17E-04 | 3.03E+00 | 4.60E-03 | 6.90E-05 | 6.60E-01 |
| G_BASE_SAND_100 _STREAM_TYP | 100 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Sand | 6.71E-02 | 2.33E-03 | 1.86E-03 | 1.03E-03 | 9.87E+00 | 7.05E-03 | 1.06E-04 | 1.01E+00 |
| G_BASE_CLAY_100 _STREAM_TYP | 100 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Clay | 1.14E-02 | 1.34E-03 | 3.18E-04 | 1.76E-04 | 1.68E+00 | 4.06E-03 | 6.09E-05 | 5.83E-01 |
| G_BASE_LOAM_100 _STREAM_TYP | 100 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Loam | 1.47E-02 | 2.04E-03 | 4.10E-04 | 2.27E-04 | 2.17E+00 | 6.18E-03 | 9.27E-05 | 8.87E-01 |
| G_BASE_SAND_150 _STREAM_TYP | 150 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Sand | 6.49E-02 | 2.36E-03 | 1.80E-03 | 9.98E-04 | 9.54E+00 | 7.16E-03 | 1.07E-04 | 1.03E+00 |
| G_BASE_CLAY_150 _STREAM_TYP | 150 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Clay | 1.68E-02 | 1.54E-03 | 4.67E-04 | 2.58E-04 | 2.47E+00 | 4.68E-03 | 7.02E-05 | 6.71E-01 |

## TABLE B-17 (Cont.)

## Potential Risks to Aquatic Species from Surface Runoff to Stream

**SURFACE RUNOFF - modeled in GLEAMS**
**TYPICAL APPLICATION RATE**

| GLEAMS ID | Annual Precipitation (inches) | Application Area (acres) | Hydraulic Slope (ft/ft) | Surface Roughness | USLE[2] Soil Erodibility Factor (ton/ac/EI) | Vegetation Type | Soil Type | Stream Concentrations (mg/L) | | Risk Quotients - Acute | | | Risk Quotients - Chronic | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Acute Exposure Scenarios | Chronic Exposure Scenarios | Fish | Aquatic Inverte-brates | Non-Target Aquatic Plants | Fish | Aquatic Inverte-brates | Non-Target Aquatic Plants |
| G_BASE_LOAM_150_STREAM_TYP | 150 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Loam | 2.11E-02 | 2.11E-03 | 5.85E-04 | 3.24E-04 | 3.10E+00 | 6.40E-03 | 9.60E-05 | 9.18E-01 |
| G_BASE_SAND_200_STREAM_TYP | 200 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Sand | 5.42E-02 | 2.36E-03 | 1.50E-03 | 8.33E-04 | 7.96E+00 | 7.15E-03 | 1.07E-04 | 1.03E+00 |
| G_BASE_CLAY_200_STREAM_TYP | 200 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Clay | 1.75E-02 | 1.66E-03 | 4.86E-04 | 2.69E-04 | 2.57E+00 | 5.03E-03 | 7.55E-05 | 7.22E-01 |
| G_BASE_LOAM_200_STREAM_TYP | 200 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Loam | 2.53E-02 | 2.07E-03 | 7.02E-04 | 3.89E-04 | 3.72E+00 | 6.28E-03 | 9.43E-05 | 9.02E-01 |
| G_BASE_SAND_250_STREAM_TYP | 250 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Sand | 6.10E-02 | 2.34E-03 | 1.70E-03 | 9.39E-04 | 8.98E+00 | 7.09E-03 | 1.06E-04 | 1.02E+00 |
| G_BASE_CLAY_250_STREAM_TYP | 250 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Clay | 1.76E-02 | 1.74E-03 | 4.88E-04 | 2.70E-04 | 2.58E+00 | 5.26E-03 | 7.89E-05 | 7.55E-01 |
| G_BASE_LOAM_250_STREAM_TYP | 250 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Loam | 2.42E-02 | 2.02E-03 | 6.73E-04 | 3.73E-04 | 3.56E+00 | 6.13E-03 | 9.19E-05 | 8.79E-01 |
| G_ARV1_050_STREAM_TYP | 50 | 1 | 0.05 | 0.015 | 0.401 | Weeds (78) | Loam | 2.91E-03 | 1.71E-04 | 8.07E-05 | 4.47E-05 | 4.27E-01 | 5.18E-04 | 7.77E-06 | 7.43E-02 |
| G_ARV2_050_STREAM_TYP | 50 | 100 | 0.05 | 0.015 | 0.401 | Weeds (78) | Loam | 7.34E-02 | 8.88E-03 | 2.04E-03 | 1.13E-03 | 1.08E+01 | 2.69E-02 | 4.04E-04 | 3.86E+00 |
| G_ARV3_050_STREAM_TYP | 50 | 1,000 | 0.05 | 0.015 | 0.401 | Weeds (78) | Loam | 1.70E-01 | 2.39E-02 | 4.72E-03 | 2.62E-03 | 2.50E+01 | 7.24E-02 | 1.09E-03 | 1.04E+01 |
| G_ERV1_050_STREAM_TYP | 50 | 10 | 0.05 | 0.015 | 0.05 | Weeds (78) | Loam | 2.06E-02 | 1.52E-03 | 5.72E-04 | 3.17E-04 | 3.03E+00 | 4.60E-03 | 6.90E-05 | 6.60E-01 |
| G_ERV2_050_STREAM_TYP | 50 | 10 | 0.05 | 0.015 | 0.2 | Weeds (78) | Loam | 2.06E-02 | 1.52E-03 | 5.72E-04 | 3.17E-04 | 3.03E+00 | 4.60E-03 | 6.90E-05 | 6.60E-01 |
| G_ERV3_050_STREAM_TYP | 50 | 10 | 0.05 | 0.015 | 0.5 | Weeds (78) | Loam | 2.06E-02 | 1.52E-03 | 5.72E-04 | 3.17E-04 | 3.03E+00 | 4.60E-03 | 6.90E-05 | 6.60E-01 |
| G_RGV1_050_STREAM_TYP | 50 | 10 | 0.05 | 0.023 | 0.401 | Weeds (78) | Loam | 2.06E-02 | 1.52E-03 | 5.72E-04 | 3.17E-04 | 3.03E+00 | 4.60E-03 | 6.90E-05 | 6.60E-01 |
| G_RGV2_050_STREAM_TYP | 50 | 10 | 0.05 | 0.046 | 0.401 | Weeds (78) | Loam | 2.06E-02 | 1.52E-03 | 5.72E-04 | 3.17E-04 | 3.03E+00 | 4.60E-03 | 6.90E-05 | 6.60E-01 |
| G_RGV3_050_STREAM_TYP | 50 | 10 | 0.05 | 0.15 | 0.401 | Weeds (78) | Loam | 2.06E-02 | 1.52E-03 | 5.72E-04 | 3.17E-04 | 3.03E+00 | 4.60E-03 | 6.90E-05 | 6.60E-01 |
| G_SLV1_050_STREAM_TYP | 50 | 10 | 0.005 | 0.015 | 0.401 | Weeds (78) | Loam | 2.06E-02 | 1.52E-03 | 5.72E-04 | 3.17E-04 | 3.03E+00 | 4.60E-03 | 6.90E-05 | 6.60E-01 |

## TABLE B-17 (Cont.)

## Potential Risks to Aquatic Species from Surface Runoff to Stream

| SURFACE RUNOFF - modeled in GLEAMS | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TYPICAL APPLICATION RATE | | | | | | | | | | | | | | | |
| | | | | | | | | Stream Concentrations (mg/L) | | Risk Quotients - Acute | | | Risk Quotients - Chronic | | |
| GLEAMS ID | Annual Precipitation (inches) | Application Area (acres) | Hydraulic Slope (ft/ft) | Surface Roughness | USLE[2] Soil Erodibility Factor (ton/ac/EI) | Vegetation Type | Soil Type | Acute Exposure Scenarios | Chronic Exposure Scenarios | Fish | Aquatic Inverte-brates | Non-Target Aquatic Plants | Fish | Aquatic Inverte-brates | Non-Target Aquatic Plants |
| G_SLV2_050_STREAM_TYP | 50 | 10 | 0.01 | 0.015 | 0.401 | Weeds (78) | Loam | 2.06E-02 | 1.52E-03 | 5.72E-04 | 3.17E-04 | 3.03E+00 | 4.60E-03 | 6.90E-05 | 6.60E-01 |
| G_SLV3_050_STREAM_TYP | 50 | 10 | 0.1 | 0.015 | 0.401 | Weeds (78) | Loam | 2.06E-02 | 1.52E-03 | 5.72E-04 | 3.17E-04 | 3.03E+00 | 4.60E-03 | 6.90E-05 | 6.60E-01 |
| G_STV1_050_STREAM_TYP | 50 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Silt Loam | 1.12E-02 | 1.04E-03 | 3.11E-04 | 1.72E-04 | 1.65E+00 | 3.15E-03 | 4.72E-05 | 4.52E-01 |
| G_STV2_050_STREAM_TYP | 50 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Silt | 1.10E-02 | 9.70E-04 | 3.04E-04 | 1.68E-04 | 1.61E+00 | 2.94E-03 | 4.41E-05 | 4.22E-01 |
| G_STV3_050_STREAM_TYP | 50 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Clay Loam | 6.50E-03 | 7.52E-04 | 1.81E-04 | 1.00E-04 | 9.56E-01 | 2.28E-03 | 3.42E-05 | 3.27E-01 |
| G_VGV1_050_STREAM_TYP | 50 | 10 | 0.05 | 0.015 | 0.401 | Shrubs (79) | Loam | 2.06E-02 | 1.52E-03 | 5.72E-04 | 3.17E-04 | 3.03E+00 | 4.60E-03 | 6.90E-05 | 6.60E-01 |
| G_VGV2_050_STREAM_TYP | 50 | 10 | 0.05 | 0.015 | 0.401 | Rye Grass (54) | Loam | 2.06E-02 | 1.52E-03 | 5.72E-04 | 3.17E-04 | 3.03E+00 | 4.60E-03 | 6.90E-05 | 6.60E-01 |
| G_VGV3_050_STREAM_TYP | 50 | 10 | 0.05 | 0.015 | 0.401 | Conifer + Hardwood (71) | Loam | 1.94E-02 | 1.66E-03 | 5.39E-04 | 2.99E-04 | 2.85E+00 | 5.02E-03 | 7.53E-05 | 7.20E-01 |
| MAXIMUM APPLICATION RATE | | | | | | | | | | | | | | | |
| G_BASE_SAND_005_STREAM_MAX | 5 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Sand | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| G_BASE_CLAY_005_STREAM_MAX | 5 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Clay | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| G_BASE_LOAM_005_STREAM_MAX | 5 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Loam | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| G_BASE_SAND_010_STREAM_MAX | 10 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Sand | 7.43E-02 | 1.06E-03 | 2.06E-03 | 1.14E-03 | 1.09E+01 | 3.20E-03 | 4.81E-05 | 4.60E-01 |
| G_BASE_CLAY_010_STREAM_MAX | 10 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Clay | 5.70E-03 | 4.72E-05 | 1.58E-04 | 8.77E-05 | 8.38E-01 | 1.43E-04 | 2.14E-06 | 2.05E-02 |
| G_BASE_LOAM_010_STREAM_MAX | 10 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Loam | 3.96E-05 | 3.59E-07 | 1.10E-06 | 6.10E-07 | 5.83E-03 | 1.09E-06 | 1.63E-08 | 1.56E-04 |
| G_BASE_SAND_025_STREAM_MAX | 25 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Sand | 1.71E-01 | 6.06E-03 | 4.76E-03 | 2.64E-03 | 2.52E+01 | 1.84E-02 | 2.76E-04 | 2.64E+00 |
| G_BASE_CLAY_025_STREAM_MAX | 25 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Clay | 3.27E-03 | 3.87E-04 | 9.07E-05 | 5.03E-05 | 4.80E-01 | 1.17E-03 | 1.76E-05 | 1.68E-01 |

## TABLE B-17 (Cont.)

## Potential Risks to Aquatic Species from Surface Runoff to Stream

**SURFACE RUNOFF - modeled in GLEAMS**
**MAXIMUM APPLICATION RATE**

| GLEAMS ID | Annual Precipitation (inches) | Application Area (acres) | Hydraulic Slope (ft/ft) | Surface Roughness | USLE[2] Soil Erodibility Factor (ton/ac/EI) | Vegetation Type | Soil Type | Stream Concentrations (mg/L) | | Risk Quotients - Acute | | | Risk Quotients - Chronic | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Acute Exposure Scenarios | Chronic Exposure Scenarios | Fish | Aquatic Inverte-brates | Non-Target Aquatic Plants | Fish | Aquatic Inverte-brates | Non-Target Aquatic Plants |
| G_BASE_LOAM_025_STREAM_MAX | 25 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Loam | 4.62E-02 | 1.70E-03 | 1.28E-03 | 7.11E-04 | 6.79E+00 | 5.14E-03 | 7.71E-05 | 7.37E-01 |
| G_BASE_SAND_050_STREAM_MAX | 50 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Sand | 2.06E-01 | 6.88E-03 | 5.73E-03 | 3.17E-03 | 3.03E+01 | 2.09E-02 | 3.13E-04 | 2.99E+00 |
| G_BASE_CLAY_050_STREAM_MAX | 50 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Clay | 7.80E-03 | 2.31E-03 | 2.17E-04 | 1.20E-04 | 1.15E+00 | 7.01E-03 | 1.05E-04 | 1.01E+00 |
| G_BASE_LOAM_050_STREAM_MAX | 50 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Loam | 6.18E-02 | 4.56E-03 | 1.72E-03 | 9.50E-04 | 9.08E+00 | 1.38E-02 | 2.07E-04 | 1.98E+00 |
| G_BASE_SAND_100_STREAM_MAX | 100 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Sand | 2.01E-01 | 6.98E-03 | 5.59E-03 | 3.10E-03 | 2.96E+01 | 2.12E-02 | 3.17E-04 | 3.04E+00 |
| G_BASE_CLAY_100_STREAM_MAX | 100 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Clay | 3.43E-02 | 4.02E-03 | 9.54E-04 | 5.28E-04 | 5.05E+00 | 1.22E-02 | 1.83E-04 | 1.75E+00 |
| G_BASE_LOAM_100_STREAM_MAX | 100 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Loam | 4.42E-02 | 6.12E-03 | 1.23E-03 | 6.81E-04 | 6.51E+00 | 1.85E-02 | 2.78E-04 | 2.66E+00 |
| G_BASE_SAND_150_STREAM_MAX | 150 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Sand | 1.95E-01 | 7.08E-03 | 5.41E-03 | 2.99E-03 | 2.86E+01 | 2.15E-02 | 3.22E-04 | 3.08E+00 |
| G_BASE_CLAY_150_STREAM_MAX | 150 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Clay | 5.04E-02 | 4.63E-03 | 1.40E-03 | 7.75E-04 | 7.41E+00 | 1.40E-02 | 2.10E-04 | 2.01E+00 |
| G_BASE_LOAM_150_STREAM_MAX | 150 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Loam | 6.32E-02 | 6.33E-03 | 1.76E-03 | 9.73E-04 | 9.30E+00 | 1.92E-02 | 2.88E-04 | 2.75E+00 |
| G_BASE_SAND_200_STREAM_MAX | 200 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Sand | 1.62E-01 | 7.07E-03 | 4.51E-03 | 2.50E-03 | 2.39E+01 | 2.14E-02 | 3.22E-04 | 3.08E+00 |
| G_BASE_CLAY_200_STREAM_MAX | 200 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Clay | 5.25E-02 | 4.98E-03 | 1.46E-03 | 8.07E-04 | 7.72E+00 | 1.51E-02 | 2.27E-04 | 2.17E+00 |
| G_BASE_LOAM_200_STREAM_MAX | 200 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Loam | 7.58E-02 | 6.22E-03 | 2.11E-03 | 1.17E-03 | 1.12E+01 | 1.89E-02 | 2.83E-04 | 2.70E+00 |
| G_BASE_SAND_250_STREAM_MAX | 250 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Sand | 1.83E-01 | 7.02E-03 | 5.09E-03 | 2.82E-03 | 2.69E+01 | 2.13E-02 | 3.19E-04 | 3.05E+00 |
| G_BASE_CLAY_250_STREAM_MAX | 250 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Clay | 5.27E-02 | 5.21E-03 | 1.46E-03 | 8.11E-04 | 7.75E+00 | 1.58E-02 | 2.37E-04 | 2.26E+00 |
| G_BASE_LOAM_250_STREAM_MAX | 250 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Loam | 7.26E-02 | 6.07E-03 | 2.02E-03 | 1.12E-03 | 1.07E+01 | 1.84E-02 | 2.76E-04 | 2.64E+00 |
| G_ARV1_050_STREAM_MAX | 50 | 1 | 0.05 | 0.015 | 0.401 | Weeds (78) | Loam | 8.72E-03 | 5.13E-04 | 2.42E-04 | 1.34E-04 | 1.28E+00 | 1.55E-03 | 2.33E-05 | 2.23E-01 |

## TABLE B-17 (Cont.)

## Potential Risks to Aquatic Species from Surface Runoff to Stream

**SURFACE RUNOFF - modeled in GLEAMS**
**MAXIMUM APPLICATION RATE**

| GLEAMS ID | Annual Precipitation (inches) | Application Area (acres) | Hydraulic Slope (ft/ft) | Surface Roughness | USLE[2] Soil Erodibility Factor (ton/ac/EI) | Vegetation Type | Soil Type | Stream Concentrations (mg/L) | | Risk Quotients - Acute | | | Risk Quotients - Chronic | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Acute Exposure Scenarios | Chronic Exposure Scenarios | Fish | Aquatic Inverte-brates | Non-Target Aquatic Plants | Fish | Aquatic Inverte-brates | Non-Target Aquatic Plants |
| G_ARV2_050_ STREAM_MAX | 50 | 100 | 0.05 | 0.015 | 0.401 | Weeds (78) | Loam | 2.20E-01 | 2.67E-02 | 6.12E-03 | 3.39E-03 | 3.24E+01 | 8.08E-02 | 1.21E-03 | 1.16E+01 |
| G_ARV3_050_ STREAM_MAX | 50 | 1,000 | 0.05 | 0.015 | 0.401 | Weeds (78) | Loam | 5.10E-01 | 7.17E-02 | 1.42E-02 | 7.85E-03 | 7.50E+01 | 2.17E-01 | 3.26E-03 | 3.12E+01 |
| G_ERV1_050_ STREAM_MAX | 50 | 10 | 0.05 | 0.015 | 0.05 | Weeds (78) | Loam | 6.18E-02 | 4.56E-03 | 1.72E-03 | 9.50E-04 | 9.08E+00 | 1.38E-02 | 2.07E-04 | 1.98E+00 |
| G_ERV2_050_ STREAM_MAX | 50 | 10 | 0.05 | 0.015 | 0.2 | Weeds (78) | Loam | 6.18E-02 | 4.56E-03 | 1.72E-03 | 9.50E-04 | 9.08E+00 | 1.38E-02 | 2.07E-04 | 1.98E+00 |
| G_ERV3_050_ STREAM_MAX | 50 | 10 | 0.05 | 0.015 | 0.5 | Weeds (78) | Loam | 6.18E-02 | 4.56E-03 | 1.72E-03 | 9.50E-04 | 9.08E+00 | 1.38E-02 | 2.07E-04 | 1.98E+00 |
| G_RGV1_050_ STREAM_MAX | 50 | 10 | 0.05 | 0.023 | 0.401 | Weeds (78) | Loam | 6.18E-02 | 4.56E-03 | 1.72E-03 | 9.50E-04 | 9.08E+00 | 1.38E-02 | 2.07E-04 | 1.98E+00 |
| G_RGV2_050_ STREAM_MAX | 50 | 10 | 0.05 | 0.046 | 0.401 | Weeds (78) | Loam | 6.18E-02 | 4.56E-03 | 1.72E-03 | 9.50E-04 | 9.08E+00 | 1.38E-02 | 2.07E-04 | 1.98E+00 |
| G_RGV3_050_ STREAM_MAX | 50 | 10 | 0.05 | 0.15 | 0.401 | Weeds (78) | Loam | 6.18E-02 | 4.56E-03 | 1.72E-03 | 9.50E-04 | 9.08E+00 | 1.38E-02 | 2.07E-04 | 1.98E+00 |
| G_SLV1_050_ STREAM_MAX | 50 | 10 | 0.005 | 0.015 | 0.401 | Weeds (78) | Loam | 6.18E-02 | 4.56E-03 | 1.72E-03 | 9.50E-04 | 9.08E+00 | 1.38E-02 | 2.07E-04 | 1.98E+00 |
| G_SLV2_050_ STREAM_MAX | 50 | 10 | 0.01 | 0.015 | 0.401 | Weeds (78) | Loam | 6.18E-02 | 4.56E-03 | 1.72E-03 | 9.50E-04 | 9.08E+00 | 1.38E-02 | 2.07E-04 | 1.98E+00 |
| G_SLV3_050_ STREAM_MAX | 50 | 10 | 0.1 | 0.015 | 0.401 | Weeds (78) | Loam | 6.18E-02 | 4.56E-03 | 1.72E-03 | 9.50E-04 | 9.08E+00 | 1.38E-02 | 2.07E-04 | 1.98E+00 |
| G_STV1_050_ STREAM_MAX | 50 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Silt Loam | 3.36E-02 | 3.12E-03 | 9.34E-04 | 5.17E-04 | 4.94E+00 | 9.45E-03 | 1.42E-04 | 1.36E+00 |
| G_STV2_050_ STREAM_MAX | 50 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Silt | 3.29E-02 | 2.91E-03 | 9.13E-04 | 5.05E-04 | 4.83E+00 | 8.82E-03 | 1.32E-04 | 1.27E+00 |
| G_STV3_050_ STREAM_MAX | 50 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Clay Loam | 1.95E-02 | 2.25E-03 | 5.42E-04 | 3.00E-04 | 2.87E+00 | 6.83E-03 | 1.02E-04 | 9.80E-01 |
| G_VGV1_050_ STREAM_MAX | 50 | 10 | 0.05 | 0.015 | 0.401 | Shrubs (79) | Loam | 6.18E-02 | 4.56E-03 | 1.72E-03 | 9.50E-04 | 9.08E+00 | 1.38E-02 | 2.07E-04 | 1.98E+00 |
| G_VGV2_050_ STREAM_MAX | 50 | 10 | 0.05 | 0.015 | 0.401 | Rye Grass (54) | Loam | 6.18E-02 | 4.56E-03 | 1.72E-03 | 9.50E-04 | 9.08E+00 | 1.38E-02 | 2.07E-04 | 1.98E+00 |
| G_VGV3_050_ STREAM_MAX | 50 | 10 | 0.05 | 0.015 | 0.401 | Conifer + Hardwood (71) | Loam | 5.82E-02 | 4.97E-03 | 1.62E-03 | 8.96E-04 | 8.56E+00 | 1.51E-02 | 2.26E-04 | 2.16E+00 |

[1]RQ = Risk Quotient = Estimated Dose/Toxicity Reference Value.
[2]USLE = Universal Soil Loss Equation, which predicts soil loss as a function of soil erodibility, topography, rainfall/runoff, cover, and support management factors.

## TABLE B-18

## Potential Risks to Non-Target Terrestrial Plants From Surface Runoff

| SURFACE RUNOFF - modeled in GLEAMS TYPICAL APPLICATION RATE | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| GLEAMS ID | Annual Precipitation (inches) | Application Area (acres) | Hydraulic Slope (ft/ft) | Surface Roughness | USLE[1] Soil Erodibility Factor (ton/ ac per EI) | Vegetation Type | Soil Type | Terrestrial Concentration (lb/acre) | Typical Species RQ[2] | Rare, Threatened, and Endangered Species RQ[2] |
| G_BASE_SAND_005_TERR_TYP | 5 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Sand | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| G_BASE_CLAY_005_TERR_TYP | 5 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Clay | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| G_BASE_LOAM_005_TERR_TYP | 5 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Loam | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| G_BASE_SAND_010_TERR_TYP | 10 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Sand | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| G_BASE_CLAY_010_TERR_TYP | 10 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Clay | 1.92E-03 | 1.02E-02 | 1.64E-01 |
| G_BASE_LOAM_010_TERR_TYP | 10 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Loam | 1.01E-05 | 5.38E-05 | 8.65E-04 |
| G_BASE_SAND_025_TERR_TYP | 25 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Sand | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| G_BASE_CLAY_025_TERR_TYP | 25 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Clay | 1.08E-03 | 5.75E-03 | 9.24E-02 |
| G_BASE_LOAM_025_TERR_TYP | 25 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Loam | 1.85E-05 | 9.83E-05 | 1.58E-03 |
| G_BASE_SAND_050_TERR_TYP | 50 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Sand | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| G_BASE_CLAY_050_TERR_TYP | 50 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Clay | 1.89E-03 | 1.00E-02 | 1.61E-01 |
| G_BASE_LOAM_050_TERR_TYP | 50 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Loam | 7.46E-05 | 3.97E-04 | 6.37E-03 |
| G_BASE_SAND_100_TERR_TYP | 100 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Sand | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| G_BASE_CLAY_100_TERR_TYP | 100 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Clay | 1.16E-02 | 6.15E-02 | 9.89E-01 |
| G_BASE_LOAM_100_TERR_TYP | 100 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Loam | 1.09E-04 | 5.80E-04 | 9.32E-03 |
| G_BASE_SAND_150_TERR_TYP | 150 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Sand | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| G_BASE_CLAY_150_TERR_TYP | 150 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Clay | 1.79E-02 | 9.53E-02 | 1.53E+00 |
| G_BASE_LOAM_150_TERR_TYP | 150 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Loam | 2.98E-04 | 1.59E-03 | 2.55E-02 |
| G_BASE_SAND_200_TERR_TYP | 200 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Sand | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| G_BASE_CLAY_200_TERR_TYP | 200 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Clay | 1.99E-02 | 1.06E-01 | 1.70E+00 |
| G_BASE_LOAM_200_TERR_TYP | 200 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Loam | 2.66E-04 | 1.41E-03 | 2.27E-02 |
| G_BASE_SAND_250_TERR_TYP | 250 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Sand | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| G_BASE_CLAY_250_TERR_TYP | 250 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Clay | 2.09E-02 | 1.11E-01 | 1.78E+00 |

## TABLE B-18 (Cont.)

## Potential Risks to Non-Target Terrestrial Plants From Surface Runoff

| SURFACE RUNOFF - modeled in GLEAMS TYPICAL APPLICATION RATE | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **GLEAMS ID** | **Annual Precipitation (inches)** | **Application Area (acres)** | **Hydraulic Slope (ft/ft)** | **Surface Roughness** | **USLE[1] Soil Erodibility Factor (ton/ac per EI)** | **Vegetation Type** | **Soil Type** | **Terrestrial Concentration (lb/acre)** | **Typical Species RQ[2]** | **Rare, Threatened, and Endangered Species RQ[2]** |
| G_BASE_LOAM_250_TERR_TYP | 250 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Loam | 2.00E-04 | 1.06E-03 | 1.71E-02 |
| G_ARV1_050_TERR_TYP | 50 | 1 | 0.05 | 0.015 | 0.401 | Weeds (78) | Loam | 7.36E-05 | 3.91E-04 | 6.29E-03 |
| G_ARV2_050_TERR_TYP | 50 | 100 | 0.05 | 0.015 | 0.401 | Weeds (78) | Loam | 7.36E-05 | 3.92E-04 | 6.29E-03 |
| G_ARV3_050_TERR_TYP | 50 | 1,000 | 0.05 | 0.015 | 0.401 | Weeds (78) | Loam | 7.35E-05 | 3.91E-04 | 6.28E-03 |
| G_ERV1_050_TERR_TYP | 50 | 10 | 0.05 | 0.015 | 0.05 | Weeds (78) | Loam | 7.34E-05 | 3.90E-04 | 6.27E-03 |
| G_ERV2_050_TERR_TYP | 50 | 10 | 0.05 | 0.015 | 0.2 | Weeds (78) | Loam | 7.37E-05 | 3.92E-04 | 6.30E-03 |
| G_ERV3_050_TERR_TYP | 50 | 10 | 0.05 | 0.015 | 0.5 | Weeds (78) | Loam | 7.44E-05 | 3.96E-04 | 6.36E-03 |
| G_RGV1_050_TERR_TYP | 50 | 10 | 0.05 | 0.023 | 0.401 | Weeds (78) | Loam | 7.36E-05 | 3.92E-04 | 6.29E-03 |
| G_RGV2_050_TERR_TYP | 50 | 10 | 0.05 | 0.046 | 0.401 | Weeds (78) | Loam | 7.36E-05 | 3.92E-04 | 6.29E-03 |
| G_RGV3_050_TERR_TYP | 50 | 10 | 0.05 | 0.15 | 0.401 | Weeds (78) | Loam | 7.34E-05 | 3.90E-04 | 6.27E-03 |
| G_SLV1_050_TERR_TYP | 50 | 10 | 0.005 | 0.015 | 0.401 | Weeds (78) | Loam | 7.34E-05 | 3.90E-04 | 6.27E-03 |
| G_SLV2_050_TERR_TYP | 50 | 10 | 0.01 | 0.015 | 0.401 | Weeds (78) | Loam | 7.34E-05 | 3.90E-04 | 6.27E-03 |
| G_SLV3_050_TERR_TYP | 50 | 10 | 0.1 | 0.015 | 0.401 | Weeds (78) | Loam | 7.42E-05 | 3.95E-04 | 6.34E-03 |
| G_STV1_050_TERR_TYP | 50 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Silt Loam | 6.46E-04 | 3.44E-03 | 5.52E-02 |
| G_STV2_050_TERR_TYP | 50 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Silt | 4.29E-04 | 2.28E-03 | 3.67E-02 |
| G_STV3_050_TERR_TYP | 50 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Clay Loam | 3.19E-03 | 1.70E-02 | 2.73E-01 |
| G_VGV1_050_TERR_TYP | 50 | 10 | 0.05 | 0.015 | 0.401 | Shrubs (79) | Loam | 7.36E-05 | 3.92E-04 | 6.29E-03 |
| G_VGV2_050_TERR_TYP | 50 | 10 | 0.05 | 0.015 | 0.401 | Rye Grass (54) | Loam | 7.36E-05 | 3.92E-04 | 6.29E-03 |
| G_VGV3_050_TERR_TYP | 50 | 10 | 0.05 | 0.015 | 0.401 | Conifer + Hardwood (71) | Loam | 2.04E-05 | 1.09E-04 | 1.75E-03 |
| **MAXIMUM APPLICATION RATE** | | | | | | | | | | |
| G_BASE_SAND_005_TERR_max | 5 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Sand | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| G_BASE_CLAY_005_TERR_max | 5 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Clay | 0.00E+00 | 0.00E+00 | 0.00E+00 |

## TABLE B-18 (Cont.)

## Potential Risks to Non-Target Terrestrial Plants From Surface Runoff

| SURFACE RUNOFF - modeled in GLEAMS MAXIMUM APPLICATION RATE | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| GLEAMS ID | Annual Precipitation (inches) | Application Area (acres) | Hydraulic Slope (ft/ft) | Surface Roughness | USLE[1] Soil Erodibility Factor (ton/ac per EI) | Vegetation Type | Soil Type | Terrestrial Concentration (lb/acre) | Typical Species RQ[2] | Rare, Threatened, and Endangered Species RQ[2] |
| G_BASE_LOAM_005_TERR_max | 5 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Loam | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| G_BASE_SAND_010_TERR_max | 10 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Sand | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| G_BASE_CLAY_010_TERR_max | 10 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Clay | 5.76E-03 | 3.06E-02 | 4.92E-01 |
| G_BASE_LOAM_010_TERR_max | 10 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Loam | 3.04E-05 | 1.61E-04 | 2.59E-03 |
| G_BASE_SAND_025_TERR_max | 25 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Sand | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| G_BASE_CLAY_025_TERR_max | 25 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Clay | 3.24E-03 | 1.73E-02 | 2.77E-01 |
| G_BASE_LOAM_025_TERR_max | 25 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Loam | 5.55E-05 | 2.95E-04 | 4.74E-03 |
| G_BASE_SAND_050_TERR_max | 50 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Sand | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| G_BASE_CLAY_050_TERR_max | 50 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Clay | 5.66E-03 | 3.01E-02 | 4.84E-01 |
| G_BASE_LOAM_050_TERR_max | 50 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Loam | 2.24E-04 | 1.19E-03 | 1.91E-02 |
| G_BASE_SAND_100_TERR_max | 100 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Sand | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| G_BASE_CLAY_100_TERR_max | 100 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Clay | 3.47E-02 | 1.85E-01 | 2.97E+00 |
| G_BASE_LOAM_100_TERR_max | 100 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Loam | 3.27E-04 | 1.74E-03 | 2.80E-02 |
| G_BASE_SAND_150_TERR_max | 150 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Sand | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| G_BASE_CLAY_150_TERR_max | 150 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Clay | 5.37E-02 | 2.86E-01 | 4.59E+00 |
| G_BASE_LOAM_150_TERR_max | 150 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Loam | 8.94E-04 | 4.76E-03 | 7.64E-02 |
| G_BASE_SAND_200_TERR_max | 200 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Sand | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| G_BASE_CLAY_200_TERR_max | 200 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Clay | 5.97E-02 | 3.18E-01 | 5.10E+00 |
| G_BASE_LOAM_200_TERR_max | 200 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Loam | 7.97E-04 | 4.24E-03 | 6.81E-02 |
| G_BASE_SAND_250_TERR_max | 250 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Sand | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| G_BASE_CLAY_250_TERR_max | 250 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Clay | 6.26E-02 | 3.33E-01 | 5.35E+00 |
| G_BASE_LOAM_250_TERR_max | 250 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Loam | 6.00E-04 | 3.19E-03 | 5.13E-02 |
| G_ARV1_050_TERR_max | 50 | 1 | 0.05 | 0.015 | 0.401 | Weeds (78) | Loam | 2.21E-04 | 1.17E-03 | 1.89E-02 |

## TABLE B-18 (Cont.)

## Potential Risks to Non-Target Terrestrial Plants From Surface Runoff

**SURFACE RUNOFF - modeled in GLEAMS**
**MAXIMUM APPLICATION RATE**

| GLEAMS ID | Annual Precipitation (inches) | Application Area (acres) | Hydraulic Slope (ft/ft) | Surface Roughness | USLE[1] Soil Erodibility Factor (ton/ac per EI) | Vegetation Type | Soil Type | Terrestrial Concentration (lb/acre) | Typical Species RQ[2] | Rare, Threatened, and Endangered Species RQ[2] |
|---|---|---|---|---|---|---|---|---|---|---|
| G_ARV2_050_TERR_max | 50 | 100 | 0.05 | 0.015 | 0.401 | Weeds (78) | Loam | 2.21E-04 | 1.17E-03 | 1.89E-02 |
| G_ARV3_050_TERR_max | 50 | 1,000 | 0.05 | 0.015 | 0.401 | Weeds (78) | Loam | 2.21E-04 | 1.17E-03 | 1.89E-02 |
| G_ERV1_050_TERR_max | 50 | 10 | 0.05 | 0.015 | 0.05 | Weeds (78) | Loam | 2.20E-04 | 1.17E-03 | 1.88E-02 |
| G_ERV2_050_TERR_max | 50 | 10 | 0.05 | 0.015 | 0.2 | Weeds (78) | Loam | 2.21E-04 | 1.18E-03 | 1.89E-02 |
| G_ERV3_050_TERR_max | 50 | 10 | 0.05 | 0.015 | 0.5 | Weeds (78) | Loam | 2.23E-04 | 1.19E-03 | 1.91E-02 |
| G_RGV1_050_TERR_max | 50 | 10 | 0.05 | 0.023 | 0.401 | Weeds (78) | Loam | 2.21E-04 | 1.17E-03 | 1.89E-02 |
| G_RGV2_050_TERR_max | 50 | 10 | 0.05 | 0.046 | 0.401 | Weeds (78) | Loam | 2.21E-04 | 1.17E-03 | 1.89E-02 |
| G_RGV3_050_TERR_max | 50 | 10 | 0.05 | 0.15 | 0.401 | Weeds (78) | Loam | 2.20E-04 | 1.17E-03 | 1.88E-02 |
| G_SLV1_050_TERR_max | 50 | 10 | 0.005 | 0.015 | 0.401 | Weeds (78) | Loam | 2.20E-04 | 1.17E-03 | 1.88E-02 |
| G_SLV2_050_TERR_max | 50 | 10 | 0.01 | 0.015 | 0.401 | Weeds (78) | Loam | 2.20E-04 | 1.17E-03 | 1.88E-02 |
| G_SLV3_050_TERR_max | 50 | 10 | 0.1 | 0.015 | 0.401 | Weeds (78) | Loam | 2.23E-04 | 1.18E-03 | 1.90E-02 |
| G_STV1_050_TERR_max | 50 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Silt Loam | 1.94E-03 | 1.03E-02 | 1.66E-01 |
| G_STV2_050_TERR_max | 50 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Silt | 1.29E-03 | 6.85E-03 | 1.10E-01 |
| G_STV3_050_TERR_max | 50 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Clay Loam | 9.58E-03 | 5.09E-02 | 8.19E-01 |
| G_VGV1_050_TERR_max | 50 | 10 | 0.05 | 0.015 | 0.401 | Shrubs (79) | Loam | 2.21E-04 | 1.17E-03 | 1.89E-02 |
| G_VGV2_050_TERR_max | 50 | 10 | 0.05 | 0.015 | 0.401 | Rye Grass (54) | Loam | 2.21E-04 | 1.17E-03 | 1.89E-02 |
| G_VGV3_050_TERR_max | 50 | 10 | 0.05 | 0.015 | 0.401 | Conifer + Hardwood (71) | Loam | 6.12E-05 | 3.26E-04 | 5.24E-03 |

[1]USLE = Universal Soil Loss Equation, which predicts soil loss as a function of soil erodibility, topography, rainfall/runoff, cover, and support management factors.
[2]RQ = Risk Quotient = Estimated Dose/Toxicity Reference Value.

## TABLE B-19

### Potential Risk to Predatory Bird From Long-Term Consumption of Contaminated Fish From Pond (Pond Impacted by Surface Runoff Modeled in GLEAMS)

| Parameters/ Assumptions | Value | Units |
|---|---|---|
| **Body weight (BW)** | 5.15 | kg |
| **[1]Food ingestion rate (dry weight [dw])** | 0.1018 | kg dw/day |
| **[2]Food ingestion rate (wet weight [ww]) (ir)** | 0.4071 | kg ww/day |
| **Bioconcentration factor (BCF)** | 2.8 | L/kg fish |
| **Proportion of diet contaminated (PC)** | 1 | unitless |
| **[3]Toxicity reference value (TRV)** | 155 | mg/kg-bw/day |

| TYPICAL APPLICATION RATE | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **GLEAMS ID** | **Annual Precipitation (inches)** | **Application Area (acres)** | **Hydraulic Slope (ft/ft)** | **Surface Roughness** | **USLE[4] Soil Erodibility Factor (ton/ ac per EI)** | **Vegetation Type** | **Soil Type** | **Pond Concentration ($C_{pond}$ mg/L)** | **Concentrations in fish ($C_{Fish}$): $C_{pond}$ × BCF** | **Dose estimates (D): ($C_{Fish}$ × ir × PC) / BW** | **Risk Quotient[5]** |
| G_BASE_SAND_005_ POND_TYP | 5 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Sand | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| G_BASE_CLAY_005_ POND_TYP | 5 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Clay | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| G_BASE_LOAM_005 _POND_TYP | 5 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Loam | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| G_BASE_SAND_010_ POND_TYP | 10 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Sand | 4.37E-01 | 1.22E+00 | 9.67E-02 | 6.24E-04 |
| G_BASE_CLAY_010_ POND_TYP | 10 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Clay | 8.07E-03 | 2.26E-02 | 1.79E-03 | 1.15E-05 |
| G_BASE_LOAM_010 _POND_TYP | 10 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Loam | 1.50E-04 | 4.20E-04 | 3.32E-05 | 2.14E-07 |
| G_BASE_SAND_025_ POND_TYP | 25 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Sand | 5.58E-01 | 1.56E+00 | 1.23E-01 | 7.96E-04 |
| G_BASE_CLAY_025_ POND_TYP | 25 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Clay | 3.47E-02 | 9.72E-02 | 7.69E-03 | 4.96E-05 |

## TABLE B-19 (Cont.)

## Potential Risk to Predatory Bird From Long-Term Consumption of Contaminated Fish From Pond (Pond Impacted by Surface Runoff Modeled in GLEAMS)

| TYPICAL APPLICATION RATE | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **GLEAMS ID** | **Annual Precipitation (inches)** | **Application Area (acres)** | **Hydraulic Slope (ft/ft)** | **Surface Roughness** | **USLE[4] Soil Erodibility Factor (ton/ ac per EI)** | **Vegetation Type** | **Soil Type** | **Pond Concentration ($C_{pond}$ mg/L)** | **Concentrations in fish ($C_{Fish}$): $C_{pond}$ × BCF** | **Dose estimates (D): ($C_{Fish}$ × ir × PC) / BW** | **Risk Quotient[5]** |
| G_BASE_LOAM_025 _POND_TYP | 25 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Loam | 1.70E-01 | 4.77E-01 | 3.77E-02 | 2.43E-04 |
| G_BASE_SAND_050_ POND_TYP | 50 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Sand | 1.67E-01 | 4.69E-01 | 3.70E-02 | 2.39E-04 |
| G_BASE_CLAY_050_ POND_TYP | 50 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Clay | 1.02E-01 | 2.85E-01 | 2.25E-02 | 1.45E-04 |
| G_BASE_LOAM_050 _POND_TYP | 50 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Loam | 1.89E-01 | 5.30E-01 | 4.19E-02 | 2.71E-04 |
| G_BASE_SAND_100_ POND_TYP | 100 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Sand | 9.09E-02 | 2.55E-01 | 2.01E-02 | 1.30E-04 |
| G_BASE_CLAY_100_ POND_TYP | 100 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Clay | 9.92E-02 | 2.78E-01 | 2.20E-02 | 1.42E-04 |
| G_BASE_LOAM_100 _POND_TYP | 100 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Loam | 1.30E-01 | 3.65E-01 | 2.89E-02 | 1.86E-04 |
| G_BASE_SAND_150_ POND_TYP | 150 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Sand | 9.80E-02 | 2.75E-01 | 2.17E-02 | 1.40E-04 |
| G_BASE_CLAY_150_ POND_TYP | 150 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Clay | 1.01E-01 | 2.83E-01 | 2.24E-02 | 1.44E-04 |
| G_BASE_LOAM_150 _POND_TYP | 150 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Loam | 8.32E-02 | 2.33E-01 | 1.84E-02 | 1.19E-04 |
| G_BASE_SAND_200_ POND_TYP | 200 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Sand | 1.05E-01 | 2.93E-01 | 2.32E-02 | 1.49E-04 |
| G_BASE_CLAY_200_ POND_TYP | 200 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Clay | 1.10E-01 | 3.07E-01 | 2.43E-02 | 1.57E-04 |
| G_BASE_LOAM_200 _POND_TYP | 200 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Loam | 5.76E-02 | 1.61E-01 | 1.28E-02 | 8.23E-05 |
| G_BASE_SAND_250_ POND_TYP | 250 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Sand | 9.64E-02 | 2.70E-01 | 2.13E-02 | 1.38E-04 |
| G_BASE_CLAY_250_ POND_TYP | 250 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Clay | 1.20E-01 | 3.37E-01 | 2.67E-02 | 1.72E-04 |
| G_BASE_LOAM_250 _POND_TYP | 250 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Loam | 4.67E-02 | 1.31E-01 | 1.03E-02 | 6.67E-05 |

## TABLE B-19 (Cont.)

## Potential Risk to Predatory Bird From Long-Term Consumption of Contaminated Fish From Pond (Pond Impacted by Surface Runoff Modeled in GLEAMS)

| TYPICAL APPLICATION RATE | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **GLEAMS ID** | **Annual Precipitation (inches)** | **Application Area (acres)** | **Hydraulic Slope (ft/ft)** | **Surface Roughness** | **USLE[4] Soil Erodibility Factor (ton/ ac per EI)** | **Vegetation Type** | **Soil Type** | **Pond Concentration ($C_{pond}$ mg/L)** | **Concentrations in fish ($C_{Fish}$): $C_{pond}$ × BCF** | **Dose estimates (D): ($C_{Fish}$ × ir × PC) / BW** | **Risk Quotient[5]** |
| G_ARV1_050_POND_TYP | 50 | 1 | 0.05 | 0.015 | 0.401 | Weeds (78) | Loam | 1.34E-01 | 3.75E-01 | 2.97E-02 | 1.91E-04 |
| G_ARV2_050_POND_TYP | 50 | 100 | 0.05 | 0.015 | 0.401 | Weeds (78) | Loam | 2.00E-01 | 5.59E-01 | 4.42E-02 | 2.85E-04 |
| G_ARV3_050_POND_TYP | 50 | 1,000 | 0.05 | 0.015 | 0.401 | Weeds (78) | Loam | 2.01E-01 | 5.62E-01 | 4.44E-02 | 2.86E-04 |
| G_ERV1_050_POND_TYP | 50 | 10 | 0.05 | 0.015 | 0.05 | Weeds (78) | Loam | 1.89E-01 | 5.30E-01 | 4.19E-02 | 2.71E-04 |
| G_ERV2_050_POND_TYP | 50 | 10 | 0.05 | 0.015 | 0.2 | Weeds (78) | Loam | 1.89E-01 | 5.30E-01 | 4.19E-02 | 2.71E-04 |
| G_ERV3_050_POND_TYP | 50 | 10 | 0.05 | 0.015 | 0.5 | Weeds (78) | Loam | 1.89E-01 | 5.30E-01 | 4.19E-02 | 2.71E-04 |
| G_RGV1_050_POND_TYP | 50 | 10 | 0.05 | 0.023 | 0.401 | Weeds (78) | Loam | 1.89E-01 | 5.30E-01 | 4.19E-02 | 2.71E-04 |
| G_RGV2_050_POND_TYP | 50 | 10 | 0.05 | 0.046 | 0.401 | Weeds (78) | Loam | 1.89E-01 | 5.30E-01 | 4.19E-02 | 2.71E-04 |
| G_RGV3_050_POND_TYP | 50 | 10 | 0.05 | 0.15 | 0.401 | Weeds (78) | Loam | 1.89E-01 | 5.30E-01 | 4.19E-02 | 2.71E-04 |
| G_SLV1_050_POND_TYP | 50 | 10 | 0.005 | 0.015 | 0.401 | Weeds (78) | Loam | 1.89E-01 | 5.30E-01 | 4.19E-02 | 2.71E-04 |
| G_SLV2_050_POND_TYP | 50 | 10 | 0.01 | 0.015 | 0.401 | Weeds (78) | Loam | 1.89E-01 | 5.30E-01 | 4.19E-02 | 2.71E-04 |
| G_SLV3_050_POND_TYP | 50 | 10 | 0.1 | 0.015 | 0.401 | Weeds (78) | Loam | 1.89E-01 | 5.30E-01 | 4.19E-02 | 2.71E-04 |
| G_STV1_050_POND_TYP | 50 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Silt Loam | 1.37E-01 | 3.84E-01 | 3.03E-02 | 1.96E-04 |
| G_STV2_050_POND_TYP | 50 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Silt | 1.25E-01 | 3.49E-01 | 2.76E-02 | 1.78E-04 |
| G_STV3_050_POND_TYP | 50 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Clay Loam | 1.05E-01 | 2.94E-01 | 2.32E-02 | 1.50E-04 |
| G_VGV1_050_POND_TYP | 50 | 10 | 0.05 | 0.015 | 0.401 | Shrubs (79) | Loam | 1.89E-01 | 5.30E-01 | 4.19E-02 | 2.71E-04 |

## TABLE B-19 (Cont.)

## Potential Risk to Predatory Bird From Long-Term Consumption of Contaminated Fish From Pond (Pond Impacted by Surface Runoff Modeled in GLEAMS)

| GLEAMS ID | Annual Precipitation (inches) | Application Area (acres) | Hydraulic Slope (ft/ft) | Surface Roughness | USLE[4] Soil Erodibility Factor (ton/ac per EI) | Vegetation Type | Soil Type | Pond Concentration ($C_{pond}$ mg/L) | Concentrations in fish ($C_{Fish}$): $C_{pond}$ × BCF | Dose estimates (D): ($C_{Fish}$ × ir × PC) / BW | Risk Quotient[5] |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **TYPICAL APPLICATION RATE** | | | | | | | | | | | |
| G_VGV2_050_POND_TYP | 50 | 10 | 0.05 | 0.015 | 0.401 | Rye Grass (54) | Loam | 1.89E-01 | 5.30E-01 | 4.19E-02 | 2.71E-04 |
| G_VGV3_050_POND_TYP | 50 | 10 | 0.05 | 0.015 | 0.401 | Conifer + Hardwood (71) | Loam | 1.82E-01 | 5.10E-01 | 4.03E-02 | 2.60E-04 |
| **MAXIMUM APPLICATION RATE** | | | | | | | | | | | |
| G_BASE_SAND_005_POND_max | 5 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Sand | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| G_BASE_CLAY_005_POND_max | 5 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Clay | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| G_BASE_LOAM_005_POND_max | 5 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Loam | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| G_BASE_CLAY_010_POND_max | 10 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Clay | 2.42E-02 | 6.78E-02 | 5.36E-03 | 3.46E-05 |
| G_BASE_LOAM_010_POND_max | 10 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Loam | 4.50E-04 | 1.26E-03 | 9.96E-05 | 6.42E-07 |
| G_BASE_SAND_025_POND_max | 25 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Sand | 1.67E+00 | 4.68E+00 | 3.70E-01 | 2.39E-03 |
| G_BASE_CLAY_025_POND_max | 25 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Clay | 1.04E-01 | 2.92E-01 | 2.31E-02 | 1.49E-04 |
| G_BASE_LOAM_025_POND_max | 25 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Loam | 5.11E-01 | 1.43E+00 | 1.13E-01 | 7.30E-04 |
| G_BASE_SAND_050_POND_max | 50 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Sand | 5.02E-01 | 1.41E+00 | 1.11E-01 | 7.17E-04 |
| G_BASE_CLAY_050_POND_max | 50 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Clay | 3.05E-01 | 8.54E-01 | 6.75E-02 | 4.36E-04 |
| G_BASE_LOAM_050_POND_max | 50 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Loam | 5.68E-01 | 1.59E+00 | 1.26E-01 | 8.12E-04 |
| G_BASE_SAND_100_POND_max | 100 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Sand | 2.73E-01 | 7.64E-01 | 6.04E-02 | 3.90E-04 |
| G_BASE_CLAY_100_POND_max | 100 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Clay | 2.98E-01 | 8.34E-01 | 6.59E-02 | 4.25E-04 |

**TABLE B-19 (Cont.)**

**Potential Risk to Predatory Bird From Long-Term Consumption of Contaminated Fish From Pond (Pond Impacted by Surface Runoff Modeled in GLEAMS)**

| MAXIMUM APPLICATION RATE | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **GLEAMS ID** | **Annual Precipitation (inches)** | **Application Area (acres)** | **Hydraulic Slope (ft/ft)** | **Surface Roughness** | **USLE[4] Soil Erodibility Factor (ton/ac per EI)** | **Vegetation Type** | **Soil Type** | **Pond Concentration ($C_{pond}$ mg/L)** | **Concentrations in fish ($C_{Fish}$): $C_{pond}$ × BCF** | **Dose estimates (D): ($C_{Fish}$ × ir × PC) / BW** | **Risk Quotient[5]** |
| G_BASE_LOAM_100_POND_max | 100 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Loam | 3.91E-01 | 1.10E+00 | 8.66E-02 | 5.59E-04 |
| G_BASE_SAND_150_POND_max | 150 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Sand | 2.94E-01 | 8.24E-01 | 6.51E-02 | 4.20E-04 |
| G_BASE_CLAY_150_POND_max | 150 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Clay | 3.03E-01 | 8.49E-01 | 6.71E-02 | 4.33E-04 |
| G_BASE_LOAM_150_POND_max | 150 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Loam | 2.50E-01 | 6.99E-01 | 5.53E-02 | 3.57E-04 |
| G_BASE_SAND_200_POND_max | 200 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Sand | 3.14E-01 | 8.79E-01 | 6.95E-02 | 4.48E-04 |
| G_BASE_CLAY_200_POND_max | 200 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Clay | 3.29E-01 | 9.22E-01 | 7.29E-02 | 4.70E-04 |
| G_BASE_LOAM_200_POND_max | 200 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Loam | 1.73E-01 | 4.84E-01 | 3.83E-02 | 2.47E-04 |
| G_BASE_SAND_250_POND_max | 250 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Sand | 2.89E-01 | 8.10E-01 | 6.40E-02 | 4.13E-04 |
| G_BASE_CLAY_250_POND_max | 250 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Clay | 3.61E-01 | 1.01E+00 | 8.00E-02 | 5.16E-04 |
| G_BASE_LOAM_250_POND_max | 250 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Loam | 1.40E-01 | 3.92E-01 | 3.10E-02 | 2.00E-04 |
| G_ARV1_050_POND_max | 50 | 1 | 0.05 | 0.015 | 0.401 | Weeds (78) | Loam | 4.02E-01 | 1.13E+00 | 8.90E-02 | 5.74E-04 |
| G_ARV2_050_POND_max | 50 | 100 | 0.05 | 0.015 | 0.401 | Weeds (78) | Loam | 5.99E-01 | 1.68E+00 | 1.33E-01 | 8.56E-04 |
| G_ARV3_050_POND_max | 50 | 1,000 | 0.05 | 0.015 | 0.401 | Weeds (78) | Loam | 6.02E-01 | 1.68E+00 | 1.33E-01 | 8.59E-04 |
| G_ERV1_050_POND_max | 50 | 10 | 0.05 | 0.015 | 0.05 | Weeds (78) | Loam | 5.68E-01 | 1.59E+00 | 1.26E-01 | 8.12E-04 |
| G_ERV2_050_POND_max | 50 | 10 | 0.05 | 0.015 | 0.2 | Weeds (78) | Loam | 5.68E-01 | 1.59E+00 | 1.26E-01 | 8.12E-04 |
| G_ERV3_050_POND_max | 50 | 10 | 0.05 | 0.015 | 0.5 | Weeds (78) | Loam | 5.68E-01 | 1.59E+00 | 1.26E-01 | 8.12E-04 |

## TABLE B-19 (Cont.)

## Potential Risk to Predatory Bird From Long-Term Consumption of Contaminated Fish From Pond (Pond Impacted by Surface Runoff Modeled in GLEAMS)

| MAXIMUM APPLICATION RATE | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **GLEAMS ID** | **Annual Precipitation (inches)** | **Application Area (acres)** | **Hydraulic Slope (ft/ft)** | **Surface Roughness** | **USLE[4] Soil Erodibility Factor (ton/ac per EI)** | **Vegetation Type** | **Soil Type** | **Pond Concentration ($C_{pond}$ mg/L)** | **Concentrations in fish ($C_{Fish}$): $C_{pond}$ × BCF** | **Dose estimates (D): ($C_{Fish}$ × ir × PC) / BW** | **Risk Quotient[5]** |
| G_RGV1_050_POND_max | 50 | 10 | 0.05 | 0.023 | 0.401 | Weeds (78) | Loam | 5.68E-01 | 1.59E+00 | 1.26E-01 | 8.12E-04 |
| G_RGV2_050_POND_max | 50 | 10 | 0.05 | 0.046 | 0.401 | Weeds (78) | Loam | 5.68E-01 | 1.59E+00 | 1.26E-01 | 8.12E-04 |
| G_RGV3_050_POND_max | 50 | 10 | 0.05 | 0.15 | 0.401 | Weeds (78) | Loam | 5.68E-01 | 1.59E+00 | 1.26E-01 | 8.12E-04 |
| G_SLV1_050_POND_max | 50 | 10 | 0.005 | 0.015 | 0.401 | Weeds (78) | Loam | 5.68E-01 | 1.59E+00 | 1.26E-01 | 8.12E-04 |
| G_SLV2_050_POND_max | 50 | 10 | 0.01 | 0.015 | 0.401 | Weeds (78) | Loam | 5.68E-01 | 1.59E+00 | 1.26E-01 | 8.12E-04 |
| G_SLV3_050_POND_max | 50 | 10 | 0.1 | 0.015 | 0.401 | Weeds (78) | Loam | 5.68E-01 | 1.59E+00 | 1.26E-01 | 8.12E-04 |
| G_STV1_050_POND_max | 50 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Silt Loam | 4.11E-01 | 1.15E+00 | 9.10E-02 | 5.87E-04 |
| G_STV2_050_POND_max | 50 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Silt | 3.74E-01 | 1.05E+00 | 8.28E-02 | 5.34E-04 |
| G_STV3_050_POND_max | 50 | 10 | 0.05 | 0.015 | 0.401 | Weeds (78) | Clay Loam | 3.15E-01 | 8.81E-01 | 6.97E-02 | 4.50E-04 |
| G_VGV1_050_POND_max | 50 | 10 | 0.05 | 0.015 | 0.401 | Shrubs (79) | Loam | 5.68E-01 | 1.59E+00 | 1.26E-01 | 8.12E-04 |
| G_VGV2_050_POND_max | 50 | 10 | 0.05 | 0.015 | 0.401 | Rye Grass (54) | Loam | 5.68E-01 | 1.59E+00 | 1.26E-01 | 8.12E-04 |
| G_VGV3_050_POND_max | 50 | 10 | 0.05 | 0.015 | 0.401 | Conifer + Hardwood (71) | Loam | 5.46E-01 | 1.53E+00 | 1.21E-01 | 7.80E-04 |

[1]Calculated using algorithm developed by Nagy (1987) for all birds; where food ingestion rate (kg dw/day) = 0.0582×(BW)^0.651.
[2]Assumes fish are 75% water (USEPA 1993; Table 4-1 - value for bony fishes).
[3]Toxicity Reference Value (TRV) - TRVs relate the dose of a compound with a potentially adverse effect. TRVs were selected during a review of the ecotoxicological literature.
[4]USLE = Universal Soil Loss Equation, which predicts soil loss as a function of soil erodibility, topography, rainfall/runoff, cover, and support management factors.
[5]Risk Quotient = Estimated Dose/Toxicity Reference Value.

## TABLE B-20

### Potential Risks to Non-Target Terrestrial Plants From Herbicide in Dust Deposited From Wind Erosion

| WIND EROSION - modeled in CALPUFF TYPICAL APPLICATION RATE | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | | | Typical Species | | Rare, Threatened, and Endangered Species | |
| Cal Puff Scenario ID | Watershed Location | Distance from Receptor (km) | Terrestrial Concentration (lb/acre) | TRV[1] | RQ[2] | TRV[1] | RQ[2] |
| dust_MT_0.5_typ | MT | 0.5 | 2.15E-05 | 0.0023 | 9.35E-03 | 8.00E-04 | 2.69E-02 |
| dust_MT_5_typ | MT | 5 | 1.22E-05 | 0.0023 | 5.30E-03 | 8.00E-04 | 1.52E-02 |
| dust_MT_50_typ | MT | 50 | 1.46E-09 | 0.0023 | 6.34E-07 | 8.00E-04 | 1.82E-06 |
| dust_OR_0.5_typ | OR | 0.5 | 1.23E-05 | 0.0023 | 5.35E-03 | 8.00E-04 | 1.54E-02 |
| dust_OR_5_typ | OR | 5 | 4.69E-06 | 0.0023 | 2.04E-03 | 8.00E-04 | 5.87E-03 |
| dust_OR_50_typ | OR | 50 | 1.65E-09 | 0.0023 | 7.18E-07 | 8.00E-04 | 2.07E-06 |
| dust_WY_0.5_typ | WY | 0.5 | 2.43E-06 | 0.0023 | 1.06E-03 | 8.00E-04 | 3.04E-03 |
| dust_WY_5_typ | WY | 5 | 1.68E-06 | 0.0023 | 7.30E-04 | 8.00E-04 | 2.10E-03 |
| dust_WY_50_typ | WY | 50 | 4.13E-10 | 0.0023 | 1.79E-07 | 8.00E-04 | 5.16E-07 |
| **MAXIMUM APPLICATION RATE** | | | | | | | |
| dust_MT_0.5_max | MT | 0.5 | 6.45E-05 | 0.0023 | 2.80E-02 | 8.00E-04 | 8.06E-02 |
| dust_MT_5_max | MT | 5 | 3.65E-05 | 0.0023 | 1.59E-02 | 8.00E-04 | 4.57E-02 |
| dust_MT_50_max | MT | 50 | 4.93E-09 | 0.0023 | 2.14E-06 | 8.00E-04 | 6.16E-06 |
| dust_OR_0.5_max | OR | 0.5 | 3.69E-05 | 0.0023 | 1.61E-02 | 8.00E-04 | 4.62E-02 |
| dust_OR_5_max | OR | 5 | 1.41E-05 | 0.0023 | 6.12E-03 | 8.00E-04 | 1.76E-02 |
| dust_OR_50_max | OR | 50 | 4.96E-09 | 0.0023 | 2.16E-06 | 8.00E-04 | 6.20E-06 |
| dust_WY_0.5_max | WY | 0.5 | 7.30E-06 | 0.0023 | 3.17E-03 | 8.00E-04 | 9.12E-03 |
| dust_WY_5_max | WY | 5 | 5.03E-06 | 0.0023 | 2.19E-03 | 8.00E-04 | 6.29E-03 |
| dust_WY_50_max | WY | 50 | 1.24E-09 | 0.0023 | 5.38E-07 | 8.00E-04 | 1.55E-06 |

[1]Toxicity Reference Value (TRV) - TRVs relate the dose of a compound with a potentially adverse effect. TRVs were selected during a review of the ecotoxicological literature.
[2]Risk Quotient = Estimated Dose/Toxicity Reference Value.

**TABLE B-21**

**Potential Risks to Aquatic Species From Accidental Spill to Pond (Acute Exposure)**

| Parameters/Assumptions | | Value | Units |
|---|---|---|---|
| **Volume of pond (Vp)** | | 1,011,715 | L |
| **Volume of spill (Vspill)** | | | |
| | Truck ($Vspill_t$) | 757 | L |
| **Herbicide concentration in mixture (Cm)** [1] | | | |
| | Truck mixture ($Cm_t$) | 57,522.90 | mg/L |

| Scenario | Concentrations in water (Cw): Cm × Vspill / Vp | Units | Risk Quotients[2] | | |
|---|---|---|---|---|---|
| | | | Fish | Aquatic Invertebrates | Non-Target Aquatic Plants |
| Truck spill into pond | 43.04 | mg/L | 1.20 E-00 | 6.62E-01 | 6.33E+03 |

[1]Based on herbicide mixed for the maximum application rate, where truck spray rate is 25 gallons per acre.
Cm = [application rate x (1/spray rate)] converted from lb/gallon to mg/L.
[2]Risk Quotient = Estimated Dose/Toxicity Reference Value.

**TABLE B-22**

**Potential Risks to Aquatic Species From Accidental Direct Spray of Pond and Stream (Acute Exposure)**

| Parameters/Assumptions | Rate | Value | Units |
|---|---|---|---|
| **Pond** | | | |
| **Application rates (R)** | Typical | 4 | lb/acre |
| | Maximum | 12 | lb/acre |
| **Area of pond (Area)** | | 0.25 | acre |
| **Volume of pond (Vol)** | | 1,011,715 | L |
| **Mass sprayed on pond (R x Area)** | Typical | 453,592 | mg |
| | Maximum | 1,360,776 | mg |
| **Concentration in pond water (Mass/Volume)** | Typical | 0.4483 | mg/L |
| | Maximum | 1.3450 | mg/L |
| **Stream** | | | |
| **Width of stream** | | 2 | m |
| **Length of stream impacted by direct spray** | | 636.15 | m |
| **Area of stream impacted by spray (Area)** | | 1,272.3 | m2 |
| **Depth of stream** | | 0.2 | m |
| **Instantaneous volume of stream impacted by direct spray (Vol)** | | 254,460 | L |
| **Mass sprayed on stream (R x Area)** | Typical | 1.258 | lb |
| | Maximum | 3.773 | lb |
| **Mass sprayed on stream - converted to mg** | Typical | 570,428.239 | mg |
| | Maximum | 1,711,284.717 | mg |
| **Concentration in stream water (Mass/Vol)** | Typical | 2.2417 | mg/L |
| | Maximum | 6.7252 | mg/L |

| Scenario | Application Rate | Concentration in water (mg/L) | Risk Quotients[1] | | |
|---|---|---|---|---|---|
| | | | Fish | Aquatic Invertebrates | Non-Target Aquatic Plants |
| **Acute** | | | | | |
| Direct spray to pond | Typical application | 4.48E-01 | 1.25E-02 | 6.90E-03 | 6.59E+01 |
| | Maximum application | 1.35E+00 | 3.74E-02 | 2.07E-02 | 1.98E+02 |
| Direct spray to stream | Typical application | 2.24E+00 | 6.23E-02 | 3.45E-02 | 3.30E+02 |
| | Maximum application | 6.73E+00 | 1.87E-01 | 1.03E-01 | 9.89E+02 |
| **Chronic** | | | | | |
| Direct spray to pond | Typical application | 4.48E-01 | 1.36E+00 | 2.04E-02 | 1.95E+02 |
| | Maximum application | 1.35E+00 | 4.08E+00 | 6.11E-02 | 5.85E+02 |
| Direct spray to stream | Typical application | 2.24E+00 | 6.79E+00 | 1.02E-01 | 9.75E+02 |
| | Maximum application | 6.73E+00 | 2.04E+01 | 3.06E-01 | 2.92E+03 |

[1]Risk Quotient = Estimated Dose/Toxicity Reference Value.

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