Appendix I. Post-processing of PRZM/EXAMS Outputs to Develop EECs for Rights-of-Way

Rights-of-way are roads, highways, railroads, utilities and pipelines. These areas contain both impervious (i.e. cement, asphalt, metal surfaces) and pervious surfaces. It is assumed that carbaryl will be applied to the pervious surfaces, where weeds are expected to grow. It is also assumed that carbaryl is not applied to impervious surfaces in rights-of way, but that there is a 1% incidental spray onto impervious surfaces in the right-of-way. Further details on how the 1% value was derived and characterization of alternative assumptions are provided in the Barton Springs salamander endangered species risk assessment for atrazine (U.S. EPA, 2006).

In a standard PRZM scenario, it is assumed that an entire 10 ha field is composed only of the identified crop, and that the field has uniform surface properties throughout the field. In a right-of-way, this is not a reasonable assumption, since a right-of-way contains both impervious and pervious surfaces. Since the two surfaces have different properties (especially different curve numbers influencing the runoff from the surfaces) and different masses of applied pesticide, the standard approach for deriving aquatic EECs is revised using the following approach:

a. Aquatic EECs are derived for the pervious portion of the right-of-way, using the maximum use rate of the pesticide on the California Rights-of-way scenario. At this point, it is assumed that 100% of the right-of-way is composed of pervious surface. Specific inputs for this modeling are defined below.
b. Aquatic EECs are derived for the impervious portion of the right-of-way, using the California impervious scenario. At this point, it is assumed that 100% of the right-of-way is composed of impervious surface.
c. The daily aquatic EECs (contained in the PRZM/EXAMS output file with the suffix "TS") are input into a Microsoft® Excel® worksheet for the runs from both scenarios
d. Daily aquatic EECs for the impervious surface are multiplied by 50%. Daily aquatic EECs for the pervious surface are multiplied by 50%. The resulting EECs for impervious and pervious surfaces are added together to get an adjusted EEC for each day of the 30-year simulation period (**Equation 1**).

$$\text{Equation 1:} \quad \text{Revised EEC} = \left(imperviousEEC * 50\%\right) + \left(perviousEEC * 50\%\right)$$

e. Rolling averages for the relevant durations of exposure (21-day, and 60-day averages) are calculated. The 1-in-10 year peak, 21-day and 60-day values are used to define the acute and chronic EECs for the aquatic habitat.

In this approach, it is assumed that a right-of-way is composed of equal parts pervious and impervious surfaces (*i.e.* in step 4, the EECs of both surfaces are multiplied by 50%). This is more likely to be representative of a highway or road right-of-way. It is likely that right-of-way contain different ratios of the two surfaces. In general, incorporation of impervious surfaces into the exposure assessment results in increasing runoff volume in

the watershed, which tends to reduce overall pesticide exposure (when assuming 1% overspray to the impervious surface).