## Appendix 3. Comparison of Temporal Changes in Recovery of Pesticides in Groundwater Matrix Spikes and in Stream-Water Matrix Spikes

This appendix is a series of similar graphs, including boxplots, for each of the pesticides and pesticide degradates discussed in the report. The boxplot explanation from figure 1 in the main text is reproduced below for readers' convenience. The series of graphs begins on the following page.

















**Figure 3-4.** Comparison of temporal changes in the recovery of azinphos–methyl in groundwater matrix spikes and in stream–water matrix spikes. In the bottom graph, boxplots for groundwater matrix spikes are plotted in the first half of the year, and boxplots for stream–water matrix spikes are plotted in the second half of the year. The number of groundwater spikes is shown at the top of the plot and the number of stream–water spikes is shown at the bottom of the plot. Boxplots are explained in figure 1. (Recoveries greater than 200 percent are not shown.)











**Figure 3-7.** Comparison of temporal changes in the recovery of carbaryl in groundwater matrix spikes and in stream-water matrix spikes. In the bottom graph, boxplots for groundwater matrix spikes are plotted in the first half of the year, and boxplots for stream-water matrix spikes are plotted in the second half of the year. The number of groundwater spikes is shown at the top of the plot and the number of stream-water spikes is shown at the bottom of the plot. Boxplots are explained in figure 1. (Recoveries greater than 200 percent are not shown.)



**Figure 3–8.** Comparison of temporal changes in the recovery of carbofuran in groundwater matrix spikes and in stream-water matrix spikes. In the bottom graph, boxplots for groundwater matrix spikes are plotted in the first half of the year, and boxplots for stream-water matrix spikes are plotted in the second half of the year. The number of groundwater spikes is shown at the top of the plot and the number of stream-water spikes is shown at the bottom of the plot. Boxplots are explained in figure 1. (Recoveries greater than 200 percent are not shown.)







**Figure 3–10.** Comparison of temporal changes in the recovery of cyanazine in groundwater matrix spikes and in stream-water matrix spikes. In the bottom graph, boxplots for groundwater matrix spikes are plotted in the first half of the year, and boxplots for stream-water matrix spikes are plotted in the second half of the year. The number of groundwater spikes is shown at the top of the plot and the number of stream-water spikes is shown at the bottom of the plot. Boxplots are explained in figure 1. (Recoveries greater than 200 percent are not shown.)











**Figure 3–13.** Comparison of temporal changes in the recovery of deethylatrazine in groundwater matrix spikes and in stream-water matrix spikes. In the bottom graph, boxplots for groundwater matrix spikes are plotted in the first half of the year, and boxplots for stream-water matrix spikes are plotted in the second half of the year. The number of groundwater spikes is shown at the top of the plot and the number of stream-water spikes is shown at the bottom of the plot. Boxplots are explained in figure 1. (Recoveries greater than 200 percent are not shown.)



**Figure 3–14.** Comparison of temporal changes in the recovery of desulfinylfipronil in groundwater matrix spikes and in stream-water matrix spikes. In the bottom graph, boxplots for groundwater matrix spikes are plotted in the first half of the year, and boxplots for stream-water matrix spikes are plotted in the second half of the year. The number of groundwater spikes is shown at the top of the plot and the number of stream-water spikes is shown at the bottom of the plot. Boxplots are explained in figure 1. (Recoveries greater than 200 percent are not shown.)



**Figure 3–15.** Comparison of temporal changes in the recovery of desulfinylfipronil amide in groundwater matrix spikes and in stream-water matrix spikes. In the bottom graph, boxplots for groundwater matrix spikes are plotted in the first half of the year, and boxplots for stream-water matrix spikes are plotted in the second half of the year. The number of groundwater spikes is shown at the top of the plot and the number of stream-water spikes is shown at the bottom of the plot. Boxplots are explained in figure 1. (Recoveries greater than 200 percent are not shown.)











**Figure 3–18.** Comparison of temporal changes in the recovery of 2,6–diethylaniline in groundwater matrix spikes and in stream–water matrix spikes. In the bottom graph, boxplots for groundwater matrix spikes are plotted in the first half of the year, and boxplots for stream–water matrix spikes are plotted in the second half of the year. The number of groundwater spikes is shown at the top of the plot and the number of stream–water spikes is shown at the bottom of the plot. Boxplots are explained in figure 1. (Recoveries greater than 200 percent are not shown.)

![](_page_19_Figure_0.jpeg)

**Figure 3–19.** Comparison of temporal changes in the recovery of disulfoton in groundwater matrix spikes and in stream-water matrix spikes. In the bottom graph, boxplots for groundwater matrix spikes are plotted in the first half of the year, and boxplots for stream-water matrix spikes are plotted in the second half of the year. The number of groundwater spikes is shown at the top of the plot and the number of stream-water spikes is shown at the bottom of the plot. Boxplots are explained in figure 1. (Recoveries greater than 200 percent are not shown.)

![](_page_20_Figure_0.jpeg)

![](_page_20_Figure_1.jpeg)

![](_page_21_Figure_0.jpeg)

**Figure 3–21.** Comparison of temporal changes in the recovery of ethalfluralin in groundwater matrix spikes and in stream-water matrix spikes. In the bottom graph, boxplots for groundwater matrix spikes are plotted in the first half of the year, and boxplots for stream-water matrix spikes are plotted in the second half of the year. The number of groundwater spikes is shown at the top of the plot and the number of stream-water spikes is shown at the bottom of the plot. Boxplots are explained in figure 1. (Recoveries greater than 200 percent are not shown.)

![](_page_22_Figure_0.jpeg)

**Figure 3–22.** Comparison of temporal changes in the recovery of ethoprophos in groundwater matrix spikes and in stream-water matrix spikes. In the bottom graph, boxplots for groundwater matrix spikes are plotted in the first half of the year, and boxplots for stream-water matrix spikes are plotted in the second half of the year. The number of groundwater spikes is shown at the top of the plot and the number of stream-water spikes is shown at the bottom of the plot. Boxplots are explained in figure 1. (Recoveries greater than 200 percent are not shown.)

![](_page_23_Figure_0.jpeg)

**Figure 3–23.** Comparison of temporal changes in the recovery of fipronil in groundwater matrix spikes and in stream-water matrix spikes. In the bottom graph, boxplots for groundwater matrix spikes are plotted in the first half of the year, and boxplots for stream-water matrix spikes are plotted in the second half of the year. The number of groundwater spikes is shown at the top of the plot and the number of stream-water spikes is shown at the bottom of the plot. Boxplots are explained in figure 1. (Recoveries greater than 200 percent are not shown.)

![](_page_24_Figure_0.jpeg)

**Figure 3–24.** Comparison of temporal changes in the recovery of fipronil sulfide in groundwater matrix spikes and in stream-water matrix spikes. In the bottom graph, boxplots for groundwater matrix spikes are plotted in the first half of the year, and boxplots for stream-water matrix spikes are plotted in the second half of the year. The number of groundwater spikes is shown at the top of the plot and the number of stream-water spikes is shown at the bottom of the plot. Boxplots are explained in figure 1. (Recoveries greater than 200 percent are not shown.)

![](_page_25_Figure_0.jpeg)

**Figure 3–25.** Comparison of temporal changes in the recovery of fipronil sulfone in groundwater matrix spikes and in stream-water matrix spikes. In the bottom graph, boxplots for groundwater matrix spikes are plotted in the first half of the year, and boxplots for stream-water matrix spikes are plotted in the second half of the year. The number of groundwater spikes is shown at the top of the plot and the number of stream-water spikes is shown at the bottom of the plot. Boxplots are explained in figure 1. (Recoveries greater than 200 percent are not shown.)

![](_page_26_Figure_0.jpeg)

**Figure 3–26.** Comparison of temporal changes in the recovery of fonofos in groundwater matrix spikes and in stream-water matrix spikes. In the bottom graph, boxplots for groundwater matrix spikes are plotted in the first half of the year, and boxplots for stream-water matrix spikes are plotted in the second half of the year. The number of groundwater spikes is shown at the top of the plot and the number of stream-water spikes is shown at the bottom of the plot. Boxplots are explained in figure 1. (Recoveries greater than 200 percent are not shown.)

![](_page_27_Figure_0.jpeg)

**Figure 3–27.** Comparison of temporal changes in the recovery of alpha–HCH in groundwater matrix spikes and in stream–water matrix spikes. In the bottom graph, boxplots for groundwater matrix spikes are plotted in the first half of the year, and boxplots for stream–water matrix spikes are plotted in the second half of the year. The number of groundwater spikes is shown at the top of the plot and the number of stream–water spikes is shown at the bottom of the plot. Boxplots are explained in figure 1. (Recoveries greater than 200 percent are not shown.)

![](_page_28_Figure_0.jpeg)

**Figure 3–28.** Comparison of temporal changes in the recovery of gamma–HCH in groundwater matrix spikes and in stream–water matrix spikes. In the bottom graph, boxplots for groundwater matrix spikes are plotted in the first half of the year, and boxplots for stream–water matrix spikes are plotted in the second half of the year. The number of groundwater spikes is shown at the top of the plot and the number of stream–water spikes is shown at the bottom of the plot. Boxplots are explained in figure 1. (Recoveries greater than 200 percent are not shown.)

![](_page_29_Figure_0.jpeg)

**Figure 3–29.** Comparison of temporal changes in the recovery of linuron in groundwater matrix spikes and in stream-water matrix spikes. In the bottom graph, boxplots for groundwater matrix spikes are plotted in the first half of the year, and boxplots for stream-water matrix spikes are plotted in the second half of the year. The number of groundwater spikes is shown at the top of the plot and the number of stream-water spikes is shown at the bottom of the plot. Boxplots are explained in figure 1. (Recoveries greater than 200 percent are not shown.)

![](_page_30_Figure_0.jpeg)

**Figure 3–30.** Comparison of temporal changes in the recovery of malathion in groundwater matrix spikes and in stream-water matrix spikes. In the bottom graph, boxplots for groundwater matrix spikes are plotted in the first half of the year, and boxplots for stream-water matrix spikes are plotted in the second half of the year. The number of groundwater spikes is shown at the top of the plot and the number of stream-water spikes is shown at the bottom of the plot. Boxplots are explained in figure 1. (Recoveries greater than 200 percent are not shown.)

![](_page_31_Figure_0.jpeg)

**Figure 3–31.** Comparison of temporal changes in the recovery of metolachlor in groundwater matrix spikes and in stream-water matrix spikes. In the bottom graph, boxplots for groundwater matrix spikes are plotted in the first half of the year, and boxplots for stream-water matrix spikes are plotted in the second half of the year. The number of groundwater spikes is shown at the top of the plot and the number of stream-water spikes is shown at the bottom of the plot. Boxplots are explained in figure 1. (Recoveries greater than 200 percent are not shown.)

![](_page_32_Figure_0.jpeg)

**Figure 3-32.** Comparison of temporal changes in the recovery of metribuzin in groundwater matrix spikes and in stream-water matrix spikes. In the bottom graph, boxplots for groundwater matrix spikes are plotted in the first half of the year, and boxplots for stream-water matrix spikes are plotted in the second half of the year. The number of groundwater spikes is shown at the top of the plot and the number of stream-water spikes is shown at the bottom of the plot. Boxplots are explained in figure 1. (Recoveries greater than 200 percent are not shown.)

![](_page_33_Figure_0.jpeg)

**Figure 3–33.** Comparison of temporal changes in the recovery of molinate in groundwater matrix spikes and in stream-water matrix spikes. In the bottom graph, boxplots for groundwater matrix spikes are plotted in the first half of the year, and boxplots for stream-water matrix spikes are plotted in the second half of the year. The number of groundwater spikes is shown at the top of the plot and the number of stream-water spikes is shown at the bottom of the plot. Boxplots are explained in figure 1. (Recoveries greater than 200 percent are not shown.)

![](_page_34_Figure_0.jpeg)

**Figure 3-34.** Comparison of temporal changes in the recovery of napropamide in groundwater matrix spikes and in stream-water matrix spikes. In the bottom graph, boxplots for groundwater matrix spikes are plotted in the first half of the year, and boxplots for stream-water matrix spikes are plotted in the second half of the year. The number of groundwater spikes is shown at the top of the plot and the number of stream-water spikes is shown at the bottom of the plot. Boxplots are explained in figure 1. (Recoveries greater than 200 percent are not shown.)

![](_page_35_Figure_0.jpeg)

**Figure 3–35.** Comparison of temporal changes in the recovery of parathion in groundwater matrix spikes and in stream-water matrix spikes. In the bottom graph, boxplots for groundwater matrix spikes are plotted in the first half of the year, and boxplots for stream-water matrix spikes are plotted in the second half of the year. The number of groundwater spikes is shown at the top of the plot and the number of stream-water spikes is shown at the bottom of the plot. Boxplots are explained in figure 1. (Recoveries greater than 200 percent are not shown.)

![](_page_36_Figure_0.jpeg)

**Figure 3–36.** Comparison of temporal changes in the recovery of parathion–methyl in groundwater matrix spikes and in stream–water matrix spikes. In the bottom graph, boxplots for groundwater matrix spikes are plotted in the first half of the year, and boxplots for stream–water matrix spikes are plotted in the second half of the year. The number of groundwater spikes is shown at the top of the plot and the number of stream–water spikes is shown at the bottom of the plot. Boxplots are explained in figure 1. (Recoveries greater than 200 percent are not shown.)

![](_page_37_Figure_0.jpeg)

**Figure 3-37.** Comparison of temporal changes in the recovery of pebulate in groundwater matrix spikes and in stream-water matrix spikes. In the bottom graph, boxplots for groundwater matrix spikes are plotted in the first half of the year, and boxplots for stream-water matrix spikes are plotted in the second half of the year. The number of groundwater spikes is shown at the top of the plot and the number of stream-water spikes is shown at the bottom of the plot. Boxplots are explained in figure 1. (Recoveries greater than 200 percent are not shown.)

![](_page_38_Figure_0.jpeg)

**Figure 3–38.** Comparison of temporal changes in the recovery of pendimethalin in groundwater matrix spikes and in stream-water matrix spikes. In the bottom graph, boxplots for groundwater matrix spikes are plotted in the first half of the year, and boxplots for stream-water matrix spikes are plotted in the second half of the year. The number of groundwater spikes is shown at the top of the plot and the number of stream-water spikes is shown at the bottom of the plot. Boxplots are explained in figure 1. (Recoveries greater than 200 percent are not shown.)

![](_page_39_Figure_0.jpeg)

**Figure 3-39.** Comparison of temporal changes in the recovery of cis-permethrin in groundwater matrix spikes and in stream-water matrix spikes. In the bottom graph, boxplots for groundwater matrix spikes are plotted in the first half of the year, and boxplots for stream-water matrix spikes are plotted in the second half of the year. The number of groundwater spikes is shown at the top of the plot and the number of stream-water spikes is shown at the bottom of the plot. Boxplots are explained in figure 1. (Recoveries greater than 200 percent are not shown.)

![](_page_40_Figure_0.jpeg)

![](_page_40_Figure_1.jpeg)

![](_page_41_Figure_0.jpeg)

**Figure 3-41.** Comparison of temporal changes in the recovery of prometon in groundwater matrix spikes and in stream-water matrix spikes. In the bottom graph, boxplots for groundwater matrix spikes are plotted in the first half of the year, and boxplots for stream-water matrix spikes are plotted in the second half of the year. The number of groundwater spikes is shown at the top of the plot and the number of stream-water spikes is shown at the bottom of the plot. Boxplots are explained in figure 1. (Recoveries greater than 200 percent are not shown.)

![](_page_42_Figure_0.jpeg)

![](_page_42_Figure_1.jpeg)

![](_page_43_Figure_0.jpeg)

**Figure 3-43.** Comparison of temporal changes in the recovery of propanil in groundwater matrix spikes and in stream-water matrix spikes. In the bottom graph, boxplots for groundwater matrix spikes are plotted in the first half of the year, and boxplots for stream-water matrix spikes are plotted in the second half of the year. The number of groundwater spikes is shown at the top of the plot and the number of stream-water spikes is shown at the bottom of the plot. Boxplots are explained in figure 1. (Recoveries greater than 200 percent are not shown.)

![](_page_44_Figure_0.jpeg)

**Figure 3-44.** Comparison of temporal changes in the recovery of propargite in groundwater matrix spikes and in stream-water matrix spikes. In the bottom graph, boxplots for groundwater matrix spikes are plotted in the first half of the year, and boxplots for stream-water matrix spikes are plotted in the second half of the year. The number of groundwater spikes is shown at the top of the plot and the number of stream-water spikes is shown at the bottom of the plot. Boxplots are explained in figure 1. (Recoveries greater than 200 percent are not shown.)

![](_page_45_Figure_0.jpeg)

**Figure 3–45.** Comparison of temporal changes in the recovery of propyzamide in groundwater matrix spikes and in stream-water matrix spikes. In the bottom graph, boxplots for groundwater matrix spikes are plotted in the first half of the year, and boxplots for stream-water matrix spikes are plotted in the second half of the year. The number of groundwater spikes is shown at the top of the plot and the number of stream-water spikes is shown at the bottom of the plot. Boxplots are explained in figure 1. (Recoveries greater than 200 percent are not shown.)

![](_page_46_Figure_0.jpeg)

**Figure 3-46.** Comparison of temporal changes in the recovery of simazine in groundwater matrix spikes and in stream-water matrix spikes. In the bottom graph, boxplots for groundwater matrix spikes are plotted in the first half of the year, and boxplots for stream-water matrix spikes are plotted in the second half of the year. The number of groundwater spikes is shown at the top of the plot and the number of stream-water spikes is shown at the bottom of the plot. Boxplots are explained in figure 1. (Recoveries greater than 200 percent are not shown.)

![](_page_47_Figure_0.jpeg)

**Figure 3-47.** Comparison of temporal changes in the recovery of tebuthiuron in groundwater matrix spikes and in stream-water matrix spikes. In the bottom graph, boxplots for groundwater matrix spikes are plotted in the first half of the year, and boxplots for stream-water matrix spikes are plotted in the second half of the year. The number of groundwater spikes is shown at the top of the plot and the number of stream-water spikes is shown at the bottom of the plot. Boxplots are explained in figure 1. (Recoveries greater than 200 percent are not shown.)

![](_page_48_Figure_0.jpeg)

![](_page_48_Figure_1.jpeg)

![](_page_49_Figure_0.jpeg)

![](_page_49_Figure_1.jpeg)

![](_page_50_Figure_0.jpeg)

**Figure 3–50.** Comparison of temporal changes in the recovery of thiobencarb in groundwater matrix spikes and in stream-water matrix spikes. In the bottom graph, boxplots for groundwater matrix spikes are plotted in the first half of the year, and boxplots for stream-water matrix spikes are plotted in the second half of the year. The number of groundwater spikes is shown at the top of the plot and the number of stream-water spikes is shown at the bottom of the plot. Boxplots are explained in figure 1. (Recoveries greater than 200 percent are not shown.)

![](_page_51_Figure_0.jpeg)

**Figure 3–51.** Comparison of temporal changes in the recovery of triallate in groundwater matrix spikes and in stream-water matrix spikes. In the bottom graph, boxplots for groundwater matrix spikes are plotted in the first half of the year, and boxplots for stream-water matrix spikes are plotted in the second half of the year. The number of groundwater spikes is shown at the top of the plot and the number of stream-water spikes is shown at the bottom of the plot. Boxplots are explained in figure 1. (Recoveries greater than 200 percent are not shown.)

![](_page_52_Figure_0.jpeg)

![](_page_52_Figure_1.jpeg)