Abbreviated Citation	EPA GCRP Utah (2010)
Full Citation	EPA GCRP State Biomonitoring Data Climate Change Pilot Project 2010: Freshwater Biological Traits Table for Utah
Description	This data set was compiled for the EPA GCRP State Biomonitoring Data Climate Change Pilot Project (2010). It was used in long-term trend analyses on the Utah biomonitoring database. The focus of these analyses was to look for biological responses to changes in temperature and hydrology. When compiling this data set, a comprehensive effort was made to gather traits data for North American macroinvertebrate taxa found in lotic systems. Requirements were that the data be published or otherwise well-documented by trustworthy sources, accessible, appropriate for the regions being studied, in a standardized format that could be analyzed or easily converted to a format that could be analyzed, and ecologically relevant to the gradients being considered. Data from multiple sources were incorporated into the data set (main sources include the USGS traits database (2006) and the Poff et al. trait matrix (2006)). To maintain consistency across sources, data integration rules were developed (for more details, reference the UT Data Integration Rules document). To identify gaps in traits data within the data set, we performed a 'traits gap analysis.' Results are summarized in the UT Traits Gap Analysis document. The intent is for this to be a 'living' data set; people using this data set are encouraged to fill in or update information as it becomes available, and to customize it as necessary so that the information is more accurate for taxa occurring in your region.
Customization	Where possible, data were customized to be state/region specific. In this data set, the taxa list was generated from the Utah biomonitoring database. An operational taxonomic unit (OTU) appropriate for the Utah long-term data set was developed (mostly genus-level). Thermal optima and tolerance values were generated for 133 taxa using Utah biomonitoring data. Thermal rankings were calculated using a 1-7 scoring scheme based on the following percentiles: 0, 0.1, 0.25, 0.4, 0.6, 0.75, 0.9, 1, so that data could be better compared across datasets. State-specific lists of cold and warm water 'indicator' taxa were developed using these thermal optima and tolerance values, and were refined based on: weighted average results from other states in the same region; literature (i.e., Poff et al. 2006, USGS (2006)); case studies (assessment of taxa lists at sites with the hottest and coldest water temperatures); and input from regional advisory groups. These lists should be regarded as 'works in progress' and should be further refined as more data become available. For more information, reference the UT Cold and Warm Water Taxa document and/or contact Jen Stamp (Tetra Tech).
Tolerance Calculations	**Temperature** weighted average calculations were based on a subset of the Utah biomonitoring data comprised of 572 fall samples. Calculations were based on instantaneous water temperature measurements and occurrences of organisms using the guidelines described by Yuan (2006). For more information contact Lei Zheng (Lei.Zheng@tetratech.com).
Published	no

Highest Level of Taxonomic Resolution	genus
Point of Contact	Jen Stamp (Jen.Stamp@tetratech.com)
Data Integration Notes	When initially compiling data into the Utah traits table, original data sometimes had to be modified (see UT Data Integration Rules document). When the Utah traits table was incorporated into the Freshwater Biological Traits database, the data did not have to be further modified.