Mapping a Former Channel of the South Platte River within the Tamarack Ranch Wildlife Area Using Electrical Resistivity

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Abstract.
The Tamarack Recharge Project located along the lower South Platte River in eastern Colorado was initiated to augment in-stream river flow during low flow months in endangered species habitats in Nebraska. Water is pumped from wells in the alluvial aquifer near the river to recharge ponds located upland. The water flows down gradient to recharge the river during the critical time period.

Previous studies identified an ancient buried channel of the South Platte River beneath the recharge ponds. Water chemistry studies indicate that the recharged groundwater flows preferentially along this channel, which influences the timing of the return flow. In order to improve groundwater flow models of the system, the subsurface stratigraphy was mapped using a seven line DC resistivity survey oriented perpendicular to the channel. Preliminary interpretations show the presence of a fluvial sand and gravel layer in the subsurface. Additional data analysis will focus on determining the channel geometry.

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