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VULNERABILITY OF AGRICULTURAL COMMODITIES TO WATER SUPPLY CURTAILMENTS

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ABSTRACT: The eastern Snake River region is an important growing area for several key agricultural commodities including malt-barley, sugar beets and potatoes. These crops are highly dependent upon irrigation, which accounts for over 97% of regional water consumption. Both surface and groundwater are used to irrigate croplands. The eastern Snake River basin is mostly arid, receiving less than 8 inches of rain per year across the central plain. Surface flows are highly dependent on winter snowfalls within the headwater regions of Wyoming, and, to a lesser extent, along the southern rim of the Sawtooth range that forms the northern boundary of the river basin. The local hydrology is complex, with extensive movement of water between surface channels and sub-surface aquifers.Using a mass-balance method, RTI evaluated the sufficiency of both groundwater and surface water supplies relative to current water demands within 13 hydrologic units (HUC8s) upstream of American Falls reservoir. The sufficiency of existing storage reservoirs was also evaluated, considering both available storage capacity and storage reliability. Agricultural water consumption data was derived from over 350,000 water rights records. Past and present climate data were obtained by spatially averaging gridded values from the Parameter-elevation Regressions on Independent Slopes Model (PRISM). Vulnerability of surface water supplies within each of the HUCs were ranked into one of 5 categories ranging from “endangered" to "secure”

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