
Basalt Mapping Introduction

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The Columbia Basin Groundwater Management Area (GWMA) currently encompasses approximately 8,300 square miles in south-central Washington. When first designated in February 1998 in response to concerns about elevated nitrate-N concentrations in groundwater providing both potable water and irrigation water resources, the GWMA included all of Franklin, Grant, and Adams Counties. In 2005 Lincoln County was added to the GWMA, and the GWMA charter was expanded to include all groundwater quality issues in the four county GWMA. GWMA location map. (map prepared by FCD) Scientific, mitigation, planning, and outreach activities dealing with groundwater quality within the GWMA largely are guided by the GWMA Plan. The GWMA Plan, released in December 2001, describes basic groundwater conditions in the GWMA region and proposed actions designed to gain a better understanding of and reduce nitrate-N concentrations in groundwater. Groundwater conditions described in the GWMA Plan were based on a review of a large bibliography of geologic and hydrogeologic information and the results of groundwater quality sampling conducted in the autumn of 1998 and 2000 for approximately 570 wells located within the GWMA. This sampling, and subsequent biannual autumn sampling conducted in 2002, 2004, and 2006 has been done in an effort to begin monitoring long-term nitrate-N concentration trends in groundwater in the GWMA and to define a baseline that can be used to evaluate the effectiveness of nitrate-N management activities. Specific source aquifers contributing groundwater to each sampled well were not identified when sampling began. Based on conclusions presented in the GWMA plan and Washington Department of Ecology (Ecology) review comments on the GWMA plan, GWMA stakeholders decided that there was a need to identify source aquifers contributing groundwater to GWMA sampling wells. To do this, the hydrostratigraphy of each sampling well must be defined. The GWMA Hydrostratigraphic Mapping Project was started in an effort to define sampling well and GWMA-wide hydrostratigraphy. This project consists of several parts, including mapping the geologic framework of the aquifer system underlying the GWMA, determining hydrologic properties of the units comprising this aquifer system, and identifying recharge areas and groundwater flow paths through the aquifer system. This report focuses on addressing the first part of the Hydrostratigraphic Mapping Project, defining the geologic framework for the aquifer system underlying the GWMA. The work presented herein is a revision to initial geologic framework mapping efforts reported in 2004. This revision begins to extend GWMA geologic framework mapping into Lincoln County, needed with the addition of Lincoln County to the GWMA. This revision also updates the earlier 2004 map set using a mapping methodology that better portrays the interpreted extent of tops of mapped units in the subsurface. This report was prepared for the Columbia Basin GWMA in a cooperative effort between FCD and a hydrogeologic consultant team with Kennedy/Jenks Consultants, Inc. (prior to July 2006) and Groundwater Solutions, Inc. (after July 2006). The consultant team worked under a contract with the FCD. Dr. Kevin Lindsey, LHG, was the consultant team project manager. Mr. Terry Tolan, LHG, was the consultant team lead project hydrogeologist. Mr. Tolan was assisted by Ms. Victoria Johnson, LG, Mr. Jon Travis, and Mr. Newell Campbell, LHG. Mr. Mark Nielson, FCD Manager, lead FCD's efforts, which focused on the GIS production of the stratigraphic maps for this report. Ms. Susan Loper and Ms. Pat Daly of FCD provided the majority of the GIS mapping support.