

REVISITING THE DEPOSITIONAL ENVIRONMENT AND PROVENANCE OF THE WASATCH FORMATION, UINTA BASIN, UTAH

Evan Jones

Colorado School of Mines, Golden, Colorado

evjones@mines.edu

Abstract

The Early Eocene Wasatch Formation in the Uinta Basin, Utah was deposited in an endorheic lacustrine basin with two distinct sources of siliciclastic sediment. The Uinta Mountains are a Laramide age structure that form rugged topography of the northern margin of the Uinta Basin and shed sediments recycled from Cambrian quartz arenites of the Uinta Mountain Group into paleo-lake Uinta. An axial river system occupying the Cordilleran foreland basin and draining the Sevier fold and thrustbelt and basement-cored intraforeland Laramide uplifts supplied feldspatho-lithic sediments to the Uinta basin's southern margin. These two distinct sources of siliciclastic sediment of distinct provenance, and the fluvio-deltaic systems that carried these sediments produced Wasatch deposits with distinct architecture and style.

Study of outcrops along the Uinta Basin's southern margin and subsurface datasets along the basin's northern margin allow detailed analysis of these two distinct fluvio-deltaic systems both lithostratigraphically named Wasatch Formation. The southern fluvial system deposited its medium and fine grained sediments in an integrated fluvial megafan system over 100 km wide, and shed hyperpycnite deposits across the paleo-lake Uinta. The northern fluvial system deposited pebble to medium-grained sediments in a series of ~10 km wide fan delta systems. These two sedimentary systems interfinger in the deepest part of paleo-lake Uinta and the axis of flexural subsidence near the basin's northern margin. This study will distinguish these deposits using provenance analysis and across basin correlations to distinguish the relationship between these genetically distinct Wasatch deposits.