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## Supplemental Material

**Table S1.** Sources for the chronostratigraphic framework in Figure 3

**Table S2.** API numbers for well logs shown in Figure 4.

TABLE S1. SOURCES FOR THE CHRONOSTRATIGRAPHIC FRAMEWORK IN FIGURE 3

Kaiparowits Basin	Elder and Kirkland (1994); Roberts et al. (2005); Jinnah et al. (2009); Lawton and Bradford (2011); Lawton et al. (2014)
Henry Mountains	Peterson et al. (1980); Eaton et al. (1990); Leithold (1994); Jinnah et al. (2009); Zhu et al. (2012); Seymour and Fielding (2013)
Price Area	Fouch et al. (1983); Lawton (1986); Elder and Kirkland (1994)
Western Book Cliffs	Fouch et al. (1983); Lawton (1986); Hampson (2010)
Green River	Fouch et al. (1983); Hettinger and Kirschbaum (2002)
Central Book Cliffs	Fouch et al. (1983); Hettinger and Kirschbaum (2002); Kirschbaum and Hettinger (2004)
Eastern Book Cliffs	Molenaar and Cobban (1991); Franczyk et al. (1990); Patterson et al. (2003); (Schwendeman (2011); Fenn (2014); Laskowski et al. (2013)
Piceance Basin	McGookey et al. (1972); Molenaar and Cobban (1991); Hettinger and Kirschbaum (2002); Patterson et al. (2003); (Schwendeman (2011); Laskowski et al. (2013); Heller and Liu (2016)
Axial Basin	Izett et al. (1971); Merewether and Cobban (1986); Hale and Van De Graaff (1994)
North of Front Range	Izett et al. (1971); Higley and Cox (2007); Merewater et al. (2011)
Denver Basin	McGookey et al. (1972); Higley and Cox (2007); Merewater et al. (2011); Heller and Liu (2016)
San Juan Basin	Molenaar and Baird (1989); Molenaar et al. (2002)
Raton Basin	Molenaar et al. (2002); Merewater et al. (2011); Bush et al. (2016)

TABLE S2. API NUMBERS FOR WELL LOGS SHOWN IN FIGURE 4

No.	Cross Section A-A'	Cross Section B-B'
1	43013305380000	43017301040000
2	43007107530000	43017300660000
3	43015300800000	05067063780000
4	43047375410000	05067079550000
5	43047301430000	05067053340000
6	43047109600000	30039234830000
7	05045063200000	30039080050000
8	05045065100000	05071061230000
9	05045068770000	
10	05045067230000	
11	05059060090000	
12	05001052150000	
13	05001084020000	

## REFERENCES CITED

- Bush, M.A., Horton, B.K., Murphy, M.A., and Stockli, D.F., 2016, Detrital record of initial basement exhumation along the Laramide deformation front, southern Rocky Mountains: *Tectonics*, v. 35, p. 2117–2130, <https://doi.org/10.1002/2016TC004194>.
- Eaton, J.G., Kirkland, J.I., and Kauffman, E.G., 1990, Evidence and dating of Mid-Cretaceous tectonic activity in the San Rafael Swell, Emery County, Utah: *The Mountain Geologist*, v. 27, p. 39–45.
- Elder, W.P., and Kirkland, J.I., 1994, Cretaceous paleogeography of the southern Western Interior region, *in* Peterson, J.A., and Franczyk, K.J. eds., *Mesozoic systems of the Rocky Mountain region, USA: SEPM (Society for Sedimentary Geology), Rocky Mountain Section*, p. 415–440.
- Fenn, C., 2014, Outcrop to Subsurface Reservoir Characterization of the Lower Mesaverde Group, Red Wash Field, Uinta Basin and Douglas Creek Arch, Utah and Colorado [M.S. thesis]: Boulder, University of Colorado Boulder.
- Fouch, T.D., Lawton, T.F., Nichols, D.J., Cashion, W.B., and Cobban, W.A., 1983, Patterns and timing of synorogenic sedimentation in Upper Cretaceous rocks of central and northeast Utah, *in* Reynolds, M.W., and Dolly, E.D. eds., *Mesozoic Paleogeography of the West-Central United States: Second Rocky Mountain Paleogeography Symposium*, SEPM Rocky Mountain Section, p. 305–336.
- Franczyk, K.J., Pitman, J.K., and Nichols, D.J., 1990, Sedimentology, mineralogy, palynology, and depositional history of some uppermost Cretaceous and lowermost Tertiary rocks along the Utah Book and Roan cliffs east of the Green River: U.S. Geological Survey 1787N, 36 p.
- Hale, L.A., and Van De Graaff, F.R., 1994, Cretaceous stratigraphy and facies patterns—northeastern Utah and adjacent areas: Intermountain Association of Petroleum Geologists 13th Annual Field Conference, Guidebook to the Geology and Mineral Resources of the Uinta Basin—Utah’s Hydrocarbon Storehouse, p. 115–138.
- Hampson, G.J., 2010, Sediment dispersal and quantitative stratigraphic architecture across an ancient shelf: *Sedimentology*, v. 57, p. 96–141, <https://doi.org/10.1111/j.1365-3091.2009.01093.x>.
- Heller, P.L., and Liu, L., 2016, Dynamic topography and vertical motion of the U.S. Rocky Mountain region prior to and during the Laramide orogeny: *Geological Society of America Bulletin*, v. 128, p. 973–988, <https://doi.org/10.1130/B31431.1>.
- Hettinger, R.D., and Kirschbaum, M.A., 2002, Stratigraphy of the Upper Cretaceous Mancos Shale (upper part) and Mesaverde Group in the southern part of the Uinta and Piceance basins, Utah and Colorado: U.S. Geological Survey Geologic Investigations Series I-2764, 21 p.
- Higley, D.K., and Cox, D.O., 2007, Oil and gas exploration and development along the front range in the Denver basin of Colorado, Nebraska, and Wyoming: U.S. Geological Survey Digital Data Series DDS-69-P.
- Izett, G.A., Cobban, W.A., and Gill, J.R., 1971, The Pierre Shale near Kremmling, Colorado, and its correlation to the east and the west: U.S. Geological Survey Professional Paper 684-A, 18 p, <https://doi.org/10.3133/pp684A>.
- Jinnah, Z.A., Roberts, E.M., Deino, A.L., Larsen, J.S., Link, P.K., and Fanning, C.M., 2009, New  $^{40}\text{Ar}$ - $^{39}\text{Ar}$  and detrital zircon U-Pb ages for the Upper Cretaceous Wahweap and

- Kaiparowits formations on the Kaiparowits Plateau, Utah: implications for regional correlation, provenance, and biostratigraphy: *Cretaceous Research*, v. 30, p. 287–299, <https://doi.org/10.1016/j.cretres.2008.07.012>.
- Kirschbaum, M.A., and Hettinger, R.D., 2004, Facies analysis and sequence stratigraphic framework of upper Campanian strata (Neslen and Mount Garfield formations, Bluecastle Tongue of the Castlegate sandstone, and Mancos shale), Eastern Book cliffs, Colorado and Utah: U.S. Geological Survey Digital Data Series DDS-69-G, 46 p, <https://doi.org/10.3133/ds69G>.
- Laskowski, A.K., DeCelles, P.G., and Gehrels, G.E., 2013, Detrital zircon geochronology of Cordilleran retroarc foreland basin strata, western North America: *Tectonics*, v. 32, p. 1027–1048, <https://doi.org/10.1002/tect.20065>.
- Lawton, T.F., 1986, Fluvial systems of the Upper Cretaceous Mesaverde Group and Paleocene North Horn Formation, Central Utah: A record of transition from thin-skinned to thick-skinned deformation in the foreland region, *in* Peterson, J.A. ed., *Paleotectonics and Sedimentation in the Rocky Mountain Region*: AAPG Memoir, v. 41, p. 423–442, <https://doi.org/10.1306/M41456C20>.
- Lawton, T.F., and Bradford, B.A., 2011, Correlation and Provenance of Upper Cretaceous (Campanian) Fluvial Strata, Utah, U.S.A., from Zircon U-Pb Geochronology and Petrography: *Journal of Sedimentary Research*, v. 81, p. 495–512, <https://doi.org/10.2110/jsr.2011.45>.
- Lawton, T.F., Schellenbach, W.L., and Nugent, A.E., 2014, Late Cretaceous Fluvial-Megafan and Axial-River Systems In the Southern Cordilleran Foreland Basin: Drip Tank Member of Straight Cliffs Formation and Adjacent Strata, Southern Utah, U.S.A: *Journal of Sedimentary Research*, v. 84, p. 407–434, <https://doi.org/10.2110/jsr.2014.33>.
- Leithold, E.L., 1994, Stratigraphical architecture at the muddy margin of the Cretaceous Western Interior Seaway, southern Utah: *Sedimentology*, v. 41, p. 521–542, <https://doi.org/10.1111/j.1365-3091.1994.tb02009.x>.
- McGookey, D.P., Haun, J.D., Hale, L.A., Goodell, H.G., McCubbin, D.G., Weimer, R.J., and Wulf, G.R., 1972, Cretaceous system, *in* Mallory, W.W. ed., *Geologic Atlas of the Rocky Mountain Region*: Rocky Mountain Association of Geologists, p. 190–228.
- Merewether, E.A., and Cobban, W.A., 1986, Biostratigraphic Units and Tectonism in the Mid-Cretaceous Foreland of Wyoming, Colorado, and Adjoining Areas: Part III. Middle Rocky Mountains, *in* Peterson, J.A. ed., *Paleotectonics and Sedimentation in the Rocky Mountain Region*, United States: AAPG Memoir, v. 41, p. 443–468, <https://doi.org/10.1306/M41456C21>.
- Merewether, E.A., Cobban, W.A., and Obradovich, J.D., 2011, Biostratigraphic data from Upper Cretaceous formations-eastern Wyoming, central Colorado, and northeastern New Mexico: U.S. Geological Survey Scientific Investigations Map, p. 3175, <https://doi.org/10.3133/sim3175>.
- Molenaar, C.M., and Baird, J.K., 1989, North-south stratigraphic cross sections of upper Cretaceous rocks, northern San Juan Basin, southwestern Colorado: U.S. Geological Survey Miscellaneous Field Studies Map 2068.
- Molenaar, C.M., and Cobban, W.A., 1991, Middle Cretaceous stratigraphy on the south and east sides of the Uinta Basin, northeastern Utah and northwestern Colorado: U.S. Geological Survey Bulletin 1787P, 1–34 p.

- Molenaar, C.M., Cobban, W.A., Merewether, E.A., Pillmore, C.L., Wolfe, D.G., and Holbrook, J.M., 2002, Regional stratigraphic cross sections of Cretaceous rocks from east-central Arizona to the Oklahoma Panhandle: U.S. Geological Survey Miscellaneous Field Studies Map 2382.
- Patterson, P., Kronmueller, K., and Davies, T., 2003, Sequence stratigraphy of the Mesaverde group and Ohio Creek conglomerate, northern Piceance basin, Colorado, *in* Peterson, K.M., Olson, T.M., Anderson, D.S. eds., Piceance Basin 2003 Guidebook: Denver, Rocky Mountain Association of Geologists, p. 115–128.
- Peterson, F., Ryder, R.T., and Law, B.E., 1980, Stratigraphy, sedimentology, and regional relationships of the Cretaceous System in the Henry Mountains region, Utah: Utah Geological Association Publication, p. 151–170.
- Roberts, E.M., Deino, A.L., and Chan, M.A., 2005,  $^{40}\text{Ar}/^{39}\text{Ar}$  age of the Kaiparowits Formation, southern Utah, and correlation of contemporaneous Campanian strata and vertebrate faunas along the margin of the Western Interior Basin: *Cretaceous Research*, v. 26, p. 307–318, <https://doi.org/10.1016/j.cretres.2005.01.002>.
- Schwendeman, K.M., 2011, Sequence Stratigraphy of the Upper Cretaceous, Castlegate Condensed Section through Iles Formation, Piceance Basin, Northwestern Colorado [M.S. thesis]: Boulder, University of Colorado Boulder.
- Seymour, D.L., and Fielding, C.R., 2013, High Resolution Correlation of the Upper Cretaceous Stratigraphy Between the Book Cliffs and the Western Henry Mountains Syncline, Utah, U.S.A.: *Journal of Sedimentary Research*, v. 83, p. 475–494, <https://doi.org/10.2110/jsr.2013.37>.
- Zhu, Y., Bhattacharya, J.P., Li, W., Lapen, T.J., Jicha, B.R., and Singer, B.S., 2012, Milankovitch-Scale Sequence Stratigraphy and Stepped Forced Regressions of the Turonian Ferron Notom Deltaic Complex, South-Central Utah, U.S.A: *Journal of Sedimentary Research*, v. 82, p. 723–746, <https://doi.org/10.2110/jsr.2012.63>.