**McDougall, K., and Miranda Martínez, A.Y., 2014, Evidence for a marine incursion along the lower Colorado River corridor: Geosphere, v. 10, p. 842–869, doi:10.1130/GES00975.1.**

**SUPPLEMENTAL FILE: TAXONOMIC NOTES AND SAMPLE LOCATIONS**

**TAXONOMIC NOTES**

**Benthic foraminifers**

*Ammonia beccarii* (Linne) = *Nautilus beccarii* Linne, 1758, p. 710. = *Ammonia beccarii* (Linne)—Phleger, 1964, p. 379. —Smith, 1964, p. B46. —Javaux and Scott, 2003, p. 10-11, figs. 2.2, 2.3. = *Streblus tepidus* (Cushman)—Bandy, 1961, p. 17, pl. 1, fig. 5a-c.

Comments: There is considerable confusion over the taxonomy of *Ammonia* species. Taxonomy used in this study follows (Pawlowski et al., 1995) and separates *Ammonia* into 3 species*: A. beccarii tepida, A. beccarii beccarii,* and *A. beccarii parkinsoniana*. *Ammonia beccarii tepida,* is characterized by a lobate periphery, little to no secondary calcite, few chambers in the last whorl (6-8 chambers), and an open umbilicus (Pawlowski et al., 1995; Hayward et al., 2003, 2004). *Ammonia beccarii beccarii,* has more chambers in the last whorl (11-12 can have 16), a less lobate periphery and a more or less ornamented test, with beads, grooves, and furrowing along the sutures on the umbilical and spiral sides. *Ammonia beccarii parkinsoniana* is commonly heavily calcareous with raised sutures on the spiral side, 7-11 chambers per adult whorl, smoother periphery, and a prominent umbilical boss (Pawlowski et al., 1995; Walton and Sloan, 1990; Hayward et al., 2004).

Ecology: Laboratory experiments indicate that normal growth in *A. beccarii* ceases at salinities higher than 67 ‰ and temperatures greater than 35° C. Reproduction occurs between temperatures of 17 and 32° C, and salinities of 15 to 40 ‰(Bradshaw, 1957, 1961; Schnitker, 1974; Walton and Sloan, 1990). *Ammonia tepida (=A. beccarii tepida)* is a common species, usually found in brackish environments with a salinity less than 33‰; while *A. beccarii* occurs in marine environments with a salinity greater than 33‰ (Debenay et al., 1998). Test abnormalities are common when there are strong variations in environmental parameters such as temperature or salinity (Arnal, 1955; Resig, 1974; Cann and De Deckker, 1981; Almogi-Labin et al., 1992; Stouff et al., 1999). Abnormalities have been found in both hypo- and hypersaline conditions (Stouff et al, 1999; Debenay et al., 2001; Wennrich et al., 2007).

Along the East Pacific Margin, *Ammonia beccarii* has an upper depth limit in the inner neritic biofacies (Ingle, 1980; 20 m off Central America, Smith, 1964). In the Gulf of California, *Ammonia beccarii* is currently found only in the northern shallow basin (15-20 m, Phleger, 1964; Culver and Buzas, 1986) and dominates lagoonal faunas (37% of the total benthic foraminiferal fauna, Bandy, 1961). *Ammonia beccarii* is common in estuarine environments of San Francisco Bay (Arnal et al., 1980) and Salton Sea (Arnal, 1954, 1958, 1961) on the Pacific west coast as well many estuarine and saline lake environments worldwide (mangrove areas of Bermuda, Florida, Bahamas, Puerto Rico, Sinai, Barbuda, New Zealand, Equator, and Columbia; in brackish waters and open bay with reef patches of Florida, Bahamas, Belize shelf; low-energy protected bays in St. Lucia; and in nearshore areas and lagoons of Bermuda, Trinidad, Venezuela, Puerto Rico Cuba and Panama, and landlocked marine ponds (Javaux and Scott, 2003). In the Salton Sea, *Ammonia beccarii* is most common in the central region where it comprises nearly 75% of the fauna; it is least abundant along the coastal area were less saline waters are present. Arnal (1961) concluded that *A. beccarii* was an extremely poor competitor and thrives only where it lacks competition.

*Bolivina pacifica* Cushman and McCulloch—Walton, 1955, p. 1002, pl. 102, fig. 4. —Bandy, 1961, p. 16, pl. 14. = *Brizalina pacifica*—Lankford and Phleger, 1973, p. 115, pl. 4, fig. 7.

 Ecology**:** Along the Eastern Pacific Margin, *Bolivina pacifica* is found in the upper bathyal biofacies associated with the shallow oxygen minimum zone (Smith, 1964; Ingle, 1980; Ingle and Keller, 1980). In the Gulf of California and off Central America, the upper depth limit of *Bolivina pacifica* is in the inner neritic biofacies where it occurs rarely (36 m, Walton, 1955; 18-37 m Bandy, 1961; 37 m, Smith, 1964). Common abundances occur on the outer neritic and upper bathyal biofacies (Bandy, 1961; Phleger, 1964).

*Bolivina subexcavata* Cushman and Wickenden, 1929, p. 9. Pl. 4, fig. 4a-b.

Ecology: inner shelf, <50 m (Lankford and Phleger, 1973)

*Cibicides fletcheri* Galloway and Wissler, 1927, p. 64, pl. 10, figs. 8-9. —Walton, 1955, p. 1005, pl. 104, figs. 11, 12. —Bandy, 1961, p. 15. —Lankford and Phleger, 1973, p. 117, pl. 6, fig. 11.

Ecology: *Cibicides fletcheri* is a cosmopolitan species (Culver and Buzas, 1986; Buzas and Culver, 1991). Its upper depth limit is in the inner neritic biofacies along the Eastern Pacific Margin (Lankford and Phleger, 1973; Ingle, 1980). In the Gulf of California, abnormal specimens of *Cibicides fletcheri* are recorded from the lagoons whereas normal specimens are recorded in abundance from the inner neritic biofacies (Walton, 1955; Bandy, 1961).

*Cibicides lobatulus* (Walker and Jacob) = *Serpula lobata* Montagu, 1803, p. 515. = *Cibicides lobatulus* (Montagu) —Bandy, 1961, p. 15. = *Lobatula lobatula* (Walker and Jacob)—Patterson, 1987, pl. 4, fig. 1-4.

 Ecology: *Cibicides lobatulus* is a cosmopolitan species (Culver and Buzas, 1986; Buzas and Culver, 1991). Its upper depth limit is in the inner neritic biofacies in the Gulf of California (18-37 m, Bandy, 1961) and along the East Pacific Margin (0-50 m, Ingle, 1980).

*Cymbaloporetta* cf. *C. milletti* (Heron-Allen and Earland) —Lankford and Phleger, 1973, p. 118-119, pl. 6, figs. 7,8.

*Elphidium gunteri* Cole, 1931, p. 34, pl. 4, figs. 9-10. = *Cellanthus gunteri* (Cole)—Lankford and Phleger, 1973, p. 116, pl. 3, fig. 17.

 Ecology: inner shelf (Ingle, 1980)

*Elphidium poeyanum* (d’Orbigny) *= Polystomella poeyana* d’Orbigny, 1839, p. 55, pl. 6, figs. 25-26. = *Elphidium poeyanum* (d’Orbigny) —Bandy, 1961, p. 15, pl. 2, fig. 5.

 Ecology: inner shelf (Bandy, 1961)

*Eponidella palmerae* Bermudez, 1949, p. 261, pl. 18, figs. 40-42.

 Range: late Miocene to Recent

Ecology: According to Bermudez (1949), *E. palmerae* is often found in association with *Ammonia parkinsoniana* and *Elphidium gunteri* and is characteristic of the “Brackish Assemblage” of Israelsky (1949). This assemblage occupies a position intermediate between "bottom-living, open-water, moderately brackish" environment and "bottom-living, open-water, strongly brackish and nearshore marine (inner neritic)" environment.

*Eponidella* sp.

Comments: specimens assigned to this species are probably poorly preserved specimens of *E. palmerae*.

*Haplophragmoides* spp.

Ecology: *Haplophragmoides wilberti* is found in marches and/or mangroves of Bermuda, Trinidad, Brazil, Ecuador, New Zealand, Sunda Shelf and Senegal (Javaux and Scott, 2003).

*Neoconorbina terquemi* (Rzehak) = ?*Rosalina orbicularis* Terquem, 1876, (not d’Orbigny, 1850), p. 166, pl. 9, fig. 4a,b. = *Neoconorbina* sp. cf*. N. terquemi* (Rzehak)—Lankford and Phleger, 1973, p. 123, pl. 4, fig. 23.

Comments: Specimens identified in the Bouse Formation are poorly preserved and the umbilical side is more indented.

*Quinqueloculina* sp.

Ecology: *Quinqueloculina* is a common marine species in the inner neritic biofacies (<50 m) and many species can be found in deeper biofacies (Bandy, 1961; Lankford and Phleger, 1973). In the saline Lake Quran, Egypt, *Q. seminula* has a positive correlation with total organic carbon and salinity and may also be an indicator of high organic matter (Abu-Zied et al. 2007).

*Rosalina columbiensis* (Cushman) = *Discorbis columbiensis* Cushman, 1925, p. 43, pl. 6, fig. 13. = *Rosalina columbiensis* (Cushman)—Lankford and Phleger, 1973, p. 127, pl. 5, figs. 10-12. —Smith, 1964, p. B44, pl. 5, fig. 2a-b.

Comments: Bandy (1961) reports *R. versiformis* as a dominate component of the beach and inner neritic biofacies in the Gulf of California.

Ecology: *Rosalina columbiensis* is a cosmopolitan species (Culver and Buzas, 1986) which is dominant in the inner neritic biofacies (Ingle and Keller, 1980) and in the bank assemblages of the offshore basins of the California continental borderland (Douglas and Heitman, 1979). Off Central America the upper depth limit of *R. columbiensis* is near the inner neritic/outer neritic biofacies boundary (50 m, Smith, 1964; Lankford and Phleger, 1973). *Rosalina globularisis* an epiphytic taxon, and is commonly found attached to sea grasses and phytal remnants (DeLaca and Lipps,1972; Dobson and Haynes, 1973; Langer, 1993).

*Spirillina vivipara* Ehrenberg, 1843, p. 223, 422, pl. 3, fig. 41. —Lankford and Phleger, 1973, p. 128, pl. 6, fig. 3.

*Trochammina* sp.

Comments: Specimens reported by Smith (1960, 1970), Winterer (1975), and Turak (2000) but not seen on slides available.

Ecology: Species of *Trochammina* are common in most marine environments. *Trochammina inflata* is one of the most common species of mangroves in Bermuda, Florida, Bahamas, Trinidad, Brazil, Equator, Columbia, New Zealand, Senegal Tobago, Sunda Shelf (Javaux and Scott, 2003). *Trochammina* spp. is found in nearshore waters and lagoons of Venezuela and Trinidad (Javaux and Scott, 2003). *Trochammina macrescens* is found in mangroves and landlocked marine ponds with fringing mangroves in Bermuda, Sunda Shelf, and Trinidad.

*Uvigerina peregrina* Cushman, 1923, p. 166, pl. 42, figs. 7-10. —Walton, 1955, p. 106, pl. 102, figs. 22, 23. —Bandy, 1961, p. 17, pl. 4, fig. 3.

Range: *Uvigerina peregrina* ranges from the late Miocene to the Recent (Finger, 1990).

Ecology: The upper depth limit of *Uvigerina peregrina* is given as in the upper bathyal biofacies (Ingle, 1980). The upper depth limit of this species has, however, been noted at a variety of depths along the East Pacific Margin (Smith, 1964; Ingle and Keller, 1980). In the Gulf of California the upper depth limit of *Uvigerina peregrina* is in the upper bathyal biofacies (152-244 m) and is a dominate species in the assemblages between 244 and 366 m. The highest abundances are reported in the upper middle and lower middle bathyal (1219-2134 m) biofacies (Bandy, 1961).

**Planktic Foraminifers**

*Globorotalia* sp. (juvenile form)

Comments: Specimens present an interiormarginal umbilical-extraumbilical aperture, with different wall texture.

*Neogloboquadrina* sp.

Comments: Specimens poorly preserved, with a reticulate pitting wall texture typical of the genus.

*Streptochilus* cf. *S. subglobigerum* Resig, 1989, p. 52, pl. 2, figs. 1-7. = *Streptochilus globigerum* Resig and Kroopnick, 1983, pl. 1, figs. 13-18.

Comments: Specimensexamined have 5-6 pairs of chambers, separated by straight sutures. Chambers less globose than the younger specimens of *S. globigerus*. Wall texture has pentagonal pattern, reduced to a fine cancellate in the last part of the test. Loop shaped aperture with an internal plate formed by the infolding and downward extension of a margin.

Ecology: Living *Sreptochilus* have been captured principally in surface marinewater (Darling et al., 2009; De Klasz et al., 1989; Smart and Thomas, 2006), but oxygen isotope values suggesting *Streptochilus* can live deep in the upper water column (Resig and Kroopnick, 1983; Hemleben et al., 1989) in temperate to tropical, highly productive waters and in shallow surface waters close to upwelling in coastal regions (Smart and Thomas, 2006).

*Streptochilus latu*s Bronnimann and Resig = *Streptochilus latum* Bronnimann and Resig, 1971, p. 1289, pl. 51, fig. 3.

Comments: Biserial form with smooth and porous wall, present 5 pairs of chambers relatively inflated separated by straight suture. Loop shaped aperture with an internal plate formed by the infolding and downward extension of a margin.

*Tenuitella* cf. *T. iota* (Parker)vars*.* Matoba and Oda, 1982, p. 1018, pl. 5, figs. 19A-20.

Comments: Specimens are similar to the illustrations of Matoba and Oda (1982) in Guaymas Basin (Gulf of California). Specimen has 4½ chambers in the last whorl, arranged in a low trochospire. It is similar to *T. iota* (Parker) in wall texture, but without bulla. Aperture interiormarginal umbilical, with a fine lip.

**SAMPLE LOCATIONS**

Each sample location contains the following information about the sample:

1. USGS\_No: Micropaleontology Laboratory numbering system
2. Field\_No: Sample identification as designated by the field geologist.
3. SubmittedBy: Name of field geologist(s) and the date sample was received by the Micropaleontology Lab.
4. Quadrangle: Indicates the 7.5’ quadrangle (unless indicated) and the state in which the sample is located.
5. Locality: Description related to the geographic or stratigraphic location of a sample.
6. Latitude and Longitude: Latitude and longitude of the sample location enter as decimal degrees. All locations are NAD83. Accuracy of location is approximate. Locations have not been field checked.
7. LithologicUnit: Formal stratigraphic unit name at time of work; some corrections are noted.
8. Paleontologist: Scientist(s) or consultants who analyzed samples
9. **Fossils**: Fossil groups observed in the residues. The following abbreviations are used: F – Foraminifers; D – Diatoms; Fish – fish debris (bones, teeth, scales, and ooliths); Mega – megafossils, micromollusks, and fragments; O – ostracodes; R – radiolarians; and Chara – Charophytes.
10. **Period\_Epoch**: Age of the assemblage
11. **Ecology**: Depositional environment
12. **Comments**: Any commentary related the sample including but not limited to the lithology, elevation, age, and ecology.
13. **Slides and Residues**: Indicates the number of slides and residue vials on file in the Micropaleontology Laboratory, U.S. Geological Survey, Flagstaff, AZ.

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| **USGS\_No** | **Field\_No** | **SubmittedBy** | **Quadrangle** | **Locality** | **Longitude** | **Latitude** | **LithologicUnit** | **Paleontologist** | **Fossils** | **Period\_Epoch** | **Ecology** | **Comments** | **S** | **R** |
| Mf417 | AMB 5378A | A. M. Bassett, 1959 | Parker, AZ | Highway 72; road cut between Earp, CA and Parker, AZ on CA side of Colorado River; 100 ft. E of road to Parker Dam; lowest bed exposed | -114.301 | 34.165 | Bouse Formation | P.B. Smith |  |  |  | elevation: 390 ft. (118.87 m) | 1 | 0 |
| Mf418 | AMB 5378D | A. M. Bassett, 1959 | Parker, AZ | Highway 72; road cut between Earp, CA and Parker, AZ on CA side of Colorado River; 100 ft. E of road to Parker Dam; lowest bed exposed; 6 ft. stratigraphically higher than Mf417 | -114.301 | 34.165 | Bouse Formation | P.B. Smith |  |  |  | elevation: 390 ft. (118.87 m) | 0 | 0 |
| Mf419 | AA-2 | P.B. Smith, 1969 | Parker, AZ | Highway 72; road cut between Earp, CA and Parker, AZ on CA side of Colorado River; 100 ft. E of road to Parker Dam; unit 2 at section AA | -114.301 | 34.165 | Bouse Formation | P.B. Smith |  |  |  | elevation: 390 ft. (118.87 m); see notebook - Mojave Fossils, p 10-20; see map in Mf book | 0 | 0 |
| Mf420 | A-1 | P.B. Smith, 1969 | Parker, AZ | Highway 72; road cut between Earp, CA and Parker, AZ on CA side of Colorado River; 100 ft. E of road to Parker Dam; unit 1 at section A | -114.301 | 34.165 | Bouse Formation | P.B. Smith |  |  |  | elevation: 390 ft. (118.87 m); see notebook - Mojave Fossils, p 10-20; see map in Mf book | 0 | 0 |
| Mf421 | A-2 | P.B. Smith, 1969 | Parker, AZ | Highway 72; road cut between Earp, CA and Parker, AZ on CA side of Colorado River; 100 ft. E of road to Parker Dam; unit 2 at section A | -114.301 | 34.165 | Bouse Formation | P.B. Smith |  |  |  | elevation: 390 ft. (118.87 m); see notebook - Mojave Fossils, p 10-20; see map in Mf book | 0 | 0 |
| Mf422 | A-3 | P.B. Smith, 1969 | Parker, AZ | Highway 72; road cut between Earp, CA and Parker, AZ on CA side of Colorado River; 100 ft. E of road to Parker Dam; unit 3 at section A | -114.301 | 34.165 | Bouse Formation | P.B. Smith |  |  |  | see notebook - Mojave Fossils, p 10-20; see map in Mf book | 0 | 0 |
| Mf423 | B-3 | P.B. Smith, 1969 | Parker, AZ | Highway 72; road cut between Earp, CA and Parker, AZ on CA side of Colorado River; 100 ft. E of road to Parker Dam; unit 3 at section B | -114.301 | 34.165 | Bouse Formation | P.B. Smith |  |  |  | see notebook - Mojave Fossils, p 10-20; see map in Mf book | 0 | 0 |
| Mf424 | B-4 | P.B. Smith, 1969 | Parker, AZ | Highway 72; road cut between Earp, CA and Parker, AZ on CA side of Colorado River; 100 ft. E of road to Parker Dam; unit 4 at section B | -114.301 | 34.165 | Bouse Formation | P.B. Smith |  |  |  | see notebook - Mojave Fossils, p 10-20; see map in Mf book | 0 | 0 |
| Mf425 | B-5 | P.B. Smith, 1969 | Parker, AZ | Highway 72; road cut between Earp, CA and Parker, AZ on CA side of Colorado River; 100 ft. E of road to Parker Dam; unit 5 at section B | -114.301 | 34.165 | Bouse Formation | P.B. Smith |  |  |  | see notebook - Mojave Fossils, p 10-20; see map in Mf book | 0 | 0 |
| Mf426 | C-3 | P.B. Smith, 1969 | Parker, AZ | Highway 72; road cut between Earp, CA and Parker, AZ on CA side of Colorado River; 100 ft. E of road to Parker Dam; unit 3 at section C | -114.301 | 34.165 | Bouse Formation | P.B. Smith |  |  |  | see notebook - Mojave Fossils, p 10-20; see map in Mf book | 0 | 0 |
| Mf427 | C-6 | P.B. Smith, 1969 | Parker, AZ | Highway 72; road cut between Earp, CA and Parker, AZ on CA side of Colorado River; 100 ft. E of road to Parker Dam; unit 6 at section C | -114.301 | 34.165 | Bouse Formation | P.B. Smith |  |  |  | see notebook - Mojave Fossils, p 10-20; see map in Mf book | 1 | 0 |
| Mf428 | C-5 | P.B. Smith, 1969 | Parker, AZ | Highway 72; road cut between Earp, CA and Parker, AZ on CA side of Colorado River; 100 ft. E of road to Parker Dam; unit 5 at section C | -114.301 | 34.165 | Bouse Formation | P.B. Smith |  |  |  | see notebook - Mojave Fossils, p 10-20; see map in Mf book | 0 | 0 |
| Mf429 | C-7 | P.B. Smith, 1969 | Parker, AZ | Highway 72; road cut between Earp, CA and Parker, AZ on CA side of Colorado River; 100 ft. E of road to Parker Dam; unit 7 at section C | -114.301 | 34.165 | Bouse Formation | P.B. Smith |  |  |  | see notebook - Mojave Fossils, p 10-20; see map in Mf book | 0 | 0 |
| Mf430 | D-6 | P.B. Smith, 1969 | Parker, AZ | Highway 72; road cut between Earp, CA and Parker, AZ on CA side of Colorado River; 100 ft. E of road to Parker Dam; unit 6 at section D | -114.301 | 34.165 | Bouse Formation | P.B. Smith |  |  |  | see notebook - Mojave Fossils, p 10-20; see map in Mf book | 1 | 0 |
| Mf431 | D-7 | P.B. Smith, 1969 | Parker, AZ | Highway 72; road cut between Earp, CA and Parker, AZ on CA side of Colorado River; 100 ft. E of road to Parker Dam; unit 7 at section D | -114.301 | 34.165 | Bouse Formation | P.B. Smith |  |  |  | see notebook - Mojave Fossils, p 10-20; see map in Mf book | 1 | 0 |
| Mf432 | D-8 | P.B. Smith, 1969 | Parker, AZ | Highway 72; road cut between Earp, CA and Parker, AZ on CA side of Colorado River; 100 ft. E of road to Parker Dam; unit 8 at section D | -114.301 | 34.165 | Bouse Formation | P.B. Smith |  |  |  | see notebook - Mojave Fossils, p 10-20; see map in Mf book | 0 | 0 |
| Mf433 | D-9 | P.B. Smith, 1969 | Parker, AZ | Highway 72; road cut between Earp, CA and Parker, AZ on CA side of Colorado River; 100 ft. E of road to Parker Dam; unit 9 at section D | -114.301 | 34.165 | Bouse Formation | P.B. Smith |  |  |  | see notebook - Mojave Fossils, p 10-20; see map in Mf book | 0 | 0 |
| Mf434 | E-6 | P.B. Smith, 1969 | Parker, AZ | Highway 72; road cut between Earp, CA and Parker, AZ on CA side of Colorado River; 100 ft. E of road to Parker Dam; unit 6 at section E | -114.301 | 34.165 | Bouse Formation | P.B. Smith |  |  |  | see notebook - Mojave Fossils, p 10-20; see map in Mf book | 0 | 0 |
| Mf435 | E-7 | P.B. Smith, 1969 | Parker, AZ | Highway 72; road cut between Earp, CA and Parker, AZ on CA side of Colorado River; 100 ft. E of road to Parker Dam; unit 7 at section E | -114.301 | 34.165 | Bouse Formation | P.B. Smith |  |  |  | see notebook - Mojave Fossils, p 10-20; see map in Mf book | 1 | 0 |
| Mf436 | E-8 | P.B. Smith, 1969 | Parker, AZ | Highway 72; road cut between Earp, CA and Parker, AZ on CA side of Colorado River; 100 ft. E of road to Parker Dam; unit 8 at section E | -114.301 | 34.165 | Bouse Formation | P.B. Smith |  |  |  | see notebook - Mojave Fossils, p 10-20; see map in Mf book | 0 | 0 |
| Mf437 | E-9 | P.B. Smith, 1969 | Parker, AZ | Highway 72; road cut between Earp, CA and Parker, AZ on CA side of Colorado River; 100 ft. E of road to Parker Dam; unit 9 at section E | -114.301 | 34.165 | Bouse Formation | P.B. Smith |  |  |  | see notebook - Mojave Fossils, p 10-20; see map in Mf book | 0 | 0 |
| Mf438 | F-10 | P.B. Smith, 1969 | Parker, AZ | Highway 72; road cut between Earp, CA and Parker, AZ on CA side of Colorado River; 100 ft. E of road to Parker Dam; unit 10 at section F | -114.301 | 34.165 | Bouse Formation | P.B. Smith |  |  |  | see notebook - Mojave Fossils, p 10-20; see map in Mf book | 0 | 0 |
| Mf439 | F-6 | P.B. Smith, 1969 | Parker, AZ | Highway 72; road cut between Earp, CA and Parker, AZ on CA side of Colorado River; 100 ft. E of road to Parker Dam; unit 6 at section F | -114.301 | 34.165 | Bouse Formation | P.B. Smith |  |  |  | see notebook - Mojave Fossils, p 10-20; see map in Mf book | 0 | 0 |
| Mf440 | BMG1 | P.B. Smith, 1969 | Big Maria Mountains SE, CA | gravel pit along Colorado River; 4,500 ft. E and 1,250 ft. S of NW corner S12, T5S, R23E; basal unit | -114.524 | 33.761 | Bouse Formation | P.B. Smith | F,O | Pliocene |  | elevation 320 ft. (109.73 m); see figure in MF notebook | 1 | 1 |
| Mf441 | BMG1 | P.B. Smith, 1969 | Big Maria Mountains SE, CA | gravel pit along Colorado River; 4,500 ft. E and 1,250 ft. S of NW corner S12, T5S, R23E; 6" above Mf440 | -114.524 | 33.761 | Bouse Formation | P.B. Smith | F,O | Pliocene |  | elevation320 ft. (109.73 m; see figure in MF notebook | 1 | 1 |
| Mf442 | BMG2 | P.B. Smith, 1969 | Big Maria Mountains SE, CA | gravel pit along Colorado River; 4,500 ft. E and 1,250 ft. S of NW corner S12, T5S, R23E; 4" above Mf441 | -114.524 | 33.761 | Bouse Formation | P.B. Smith | F,O | Pliocene |  | Elevation 320 ft. (109.73 m); see figure in MF notebook | 1 | 1 |
| Mf443 | BMG3 | P.B. Smith, 1969 | Big Maria Mountains SE, CA | gravel pit along Colorado River; 4,500 ft. E and 1,250 ft. S of NW corner S12, T5S, R23E; 5.25" above Mf442 | -114.524 | 33.761 | Bouse Formation | P.B. Smith | F,O | Pliocene |  | elevation: 320 ft. (109.73 m); see figure in MF notebook | 1 | 1 |
| Mf444 | BMG4 | P.B. Smith, 1969 | Big Maria Mountains SE, CA | gravel pit along Colorado River; 4,500 ft. E and 1,250 ft. S of NW corner S12, T5S, R23E; 3.25" above Mf443 | -114.524 | 33.761 | Bouse Formation | P.B. Smith | F,O | Pliocene |  | elevation: 320 ft. (109.73 m); see figure in MF notebook | 1 | 2 |
| Mf445 | BMG5 | P.B. Smith, 1969 | Big Maria Mountains SE, CA | gravel pit along Colorado River; 4,500 ft. E and 1,250 ft. S of NW corner S12, T5S, R23E; 1" above Mf444 | -114.524 | 33.761 | Bouse Formation | P.B. Smith | F,O, Mega, Fish, Chara | Pliocene |  | elevation: 320 ft. (109.73 m); see figure in MF notebook | 1 | 1 |
| Mf446 | BMG6 | P.B. Smith, 1969 | Big Maria Mountains SE, CA | gravel pit along Colorado River; 4,500 ft. E and 1,250 ft. S of NW corner S12, T5S, R23E; 13" above Mf445 | -114.524 | 33.761 | Bouse Formation | P.B. Smith | F,O | Pliocene |  | elevation: 320 ft. (109.73 m); see figure in MF notebook | 1 | 1 |
| Mf447 | BMG7 | P.B. Smith, 1969 | Big Maria Mountains SE, CA | gravel pit along Colorado River; 4,500 ft. E and 1,250 ft. S of NW corner S12, T5S, R23E; 3" above Mf446 | -114.524 | 33.761 | Bouse Formation | P.B. Smith | F,O | Pliocene |  | elevation: 320 ft. (109.73 m); see figure in MF notebook | 1 | 1 |
| Mf448 | BMG8 | P.B. Smith, 1969 | Big Maria Mountains SE, CA | gravel pit along Colorado River; 4,500 ft. E and 1,250 ft. S of NW corner S12, T5S, R23E; 3" above Mf447 | -114.524 | 33.761 | Bouse Formation | P.B. Smith | F,O | Pliocene |  | elevation: 320 ft. (109.73 m); see figure in MF notebook | 1 | 1 |
| Mf448A | BMG8A | P.B. Smith, 1969 | Big Maria Mountains SE, CA | gravel pit along Colorado River; 4,500 ft. E and 1,250 ft. S of NW corner S12, T5S, R23E; 3" above Mf447 | -114.524 | 33.761 | Bouse Formation | P.B. Smith | F,O |  |  | elevation: 320 ft. (109.73 m); see figure in MF notebook | 1 | 1 |
| Mf449 | BMG9 | P.B. Smith, 1969 | Big Maria Mountains SE, CA | gravel pit along Colorado River; 4,500 ft. E and 1,250 ft. S of NW corner S12, T5S, R23E; 4" above Mf448 | -114.524 | 33.761 | Bouse Formation | P.B. Smith | F,O | Pliocene |  | elevation: 320 ft. (109.73 m); see figure in MF notebook | 1 | 1 |
| Mf450 | BMG10 | P.B. Smith, 1969 | Big Maria Mountains SE, CA | gravel pit along Colorado River; 4,500 ft. E and 1,250 ft. S of NW corner S12, T5S, R23E; 10" above Mf449 | -114.524 | 33.761 | Bouse Formation | P.B. Smith | F,O | Pliocene |  | elevation: 320 ft. (109.73 m); see figure in MF notebook | 0 | 1 |
| Mf451 | BMG11 | P.B. Smith, 1969 | Big Maria Mountains SE, CA | gravel pit along Colorado River; 4,500 ft. E and 1,250 ft. S of NW corner S12, T5S, R23E; 7" above Mf450 | -114.524 | 33.761 | Bouse Formation | P.B. Smith | F,O | Pliocene |  | elevation: 320 ft. (109.73 m); see figure in MF notebook | 1 | 1 |
| Mf452 | BMG12 | P.B. Smith, 1969 | Big Maria Mountains SE, CA | gravel pit along Colorado River; 4,500 ft. E and 1,250 ft. S of NW corner S12, T5S, R23E; 5" above Mf451 | -114.524 | 33.761 | Bouse Formation | P.B. Smith | F,O | Pliocene |  | elevation: 320 ft. (109.73 m); see figure in MF notebook | 1 | 1 |
| Mf452A | BMG12A | P.B. Smith, 1969 | Big Maria Mountains SE, CA | gravel pit along Colorado River; 4,500 ft. E and 1,250 ft. S of NW corner S12, T5S, R23E; 5" above Mf451 | -114.524 | 33.761 | Bouse Formation | P.B. Smith | F,O |  |  | elevation: 320 ft. (109.73 m); see figure in MF notebook | 1 | 1 |
| Mf453 | BMG13 | P.B. Smith, 1969 | Big Maria Mountains SE, CA | gravel pit along Colorado River; 4,500 ft. E and 1,250 ft. S of NW corner sec. 12, T5S, R23E; 5" above Mf452 | -114.524 | 33.761 | Bouse Formation | P.B. Smith | F, O, Chara |  |  | elevation: 320 ft. (109.73 m); see figure in MF notebook | 1 | 1 |
| Mf454 | BMG14 | P.B. Smith, 1969 | Big Maria Mountains SE, CA | gravel pit along Colorado River; 4,500 ft. E and 1,250 ft. S of NW corner sec. 12, T5S, R23E; 2" above Mf453 | -114.524 | 33.761 | Bouse Formation | P.B. Smith | F,O | Pliocene |  | elevation: 320 ft. (109.73 m); see figure in MF notebook | 1 | 1 |
| Mf455 | BMG15 | P.B. Smith, 1969 | Big Maria Mountains SE, CA | gravel pit along Colorado River; 4,500 ft. E and 1,250 ft. S of NW corner sec. 12, T5S, R23E; 12" above Mf454 | -114.524 | 33.761 | Bouse Formation | P.B. Smith | F,O | Pliocene |  | elevation: 320 ft. (109.73 m); see figure in MF notebook | 1 | 2 |
| Mf456 | BMG16 | P.B. Smith, 1969 | Big Maria Mountains SE, CA | gravel pit along Colorado River; 4,500 ft. E and 1,250 ft. S of NW corner sec. 12, T5S, R23E; 18" above Mf455 | -114.524 | 33.761 | Bouse Formation | P.B. Smith | F,O | Pliocene |  | elevation: 320 ft. (109.73 m); see figure in MF notebook | 1 | 1 |
| Mf483 | Z-33-10-21-1DN | Edward Daneky, 9/25/1960 | Palo Verde Peak, AZ | Arroyo Seco; south of Palos Verdes Mountains; near center of south 1/2 sec. 33, T10S, R21E | -114.763 | 33.259 | Bouse Formation | P.B. Smith | F, O | Barren of foraminifers |  |  | 1 | 0 |
| Mf484 | Z-35-10-21-1-DN | Edward Daneky, 9/25/1960 | Cibola, AZ | Cibola; Arroyo Seco, south of Palo Verde Mountains; slightly south of center of sec. 35, T10S, R21E | -114.731 | 33.265 | Bouse Formation | P.B. Smith | F |  | possible lagoonal or estuarine | fauna similar to late Pliocene or Pleistocene sediments along the Colorado River (Smith, USGS Prof Paper 400-B) | 0 | 0 |
| Mf2751 | MWC-57-74 | Wilford Carr, 5/19/1975 | Moon Mountain NE, AZ | Yuma Co.; Eastern Mojave Desert; NW1/4, sec. 5, T7N, R20W | -114.358 | 33.975 | Bouse Formation | Kristin McDougall | F | Barren |  | clay, silt, and sand; elevation: 420 ft. (152.4 m); Mf2751-2756 represent an upward series through different beds of the Bouse through ~150 ft. thickness | 0 | 0 |
| Mf2752 | MWC-58-74 | Wilford Carr, 5/19/1975 | Moon Mountain NE, AZ | Yuma Co.; Eastern Mojave Desert; NW1/4, sec. 5, T7N, R20W | -114.358 | 33.975 | Bouse Formation | Kristin McDougall | F, O, Mega, Chara | Pliocene |  | clay, silt, and sand; elevation: 420 ft. (152.4 m); Mf2751-2756 represent an upward series through different beds of the Bouse through ~150 ft. thickness | 2 | 1 |
| Mf2753 | MWC-59-74 | Wilford Carr, 5/19/1975 | Moon Mountain NE, AZ | Yuma Co.; Eastern Mojave Desert; NW1/4, sec. 5, T7N, R20W | -114.358 | 33.975 | Bouse Formation | Kristin McDougall | F | Barren |  | clay, silt, and sand; elevation: 420 ft. (152.4 m); Mf2751-2756 represent an upward series through different beds of the Bouse through ~150 ft. thickness | 0 | 1 |
| Mf2754 | MWC-60-74 | Wilford Carr, 5/19/1975 | Moon Mountain NE, AZ | Yuma Co.; Eastern Mojave Desert; NW1/4, sec. 5, T7N, R20W | -114.358 | 33.975 | Bouse Formation | Kristin McDougall | F, O, Mega, Chara | Pliocene |  | clay, silt, and sand; elevation: 420 ft. (152.4 m); Mf2751-2756 represent an upward series through different beds of the Bouse through ~150 ft. thickness | 1 | 1 |
| Mf2755 | MWC-61-74 | Wilford Carr, 5/19/1975 | Moon Mountain NE, AZ | Yuma Co.; Eastern Mojave Desert; NW1/4, sec. 5, T7N, R20W | -114.358 | 33.975 | Bouse Formation | Kristin McDougall | F, O, Mega, Chara | Pliocene |  | clay, silt, and sand; elevation: 420 ft. (152.4 m); Mf2751-2756 represent an upward series through different beds of the Bouse through ~150 ft. thickness | 1 | 1 |
| Mf2756 | MWC-62-74 | Wilford Carr, 5/19/1975 | Moon Mountain NE, AZ | Yuma Co.; Eastern Mojave Desert; NW1/4, sec. 5, T7N, R20W | -114.358 | 33.975 | Bouse Formation | Kristin McDougall | F, O, Mega, Chara | Pliocene |  | clay, silt, and sand; elevation: 420 ft. (152.4 m); Mf2751-2756 represent an upward series through different beds of the Bouse through ~150 ft. thickness | 2 | 2 |
| Mf10501 | 00KM2 marl | Kristin McDougall, 12/20/2000 | Parker, AZ | Sample at Earp Marl, SE of Wyatt Earp House along SE trending Aqueduct road before Colorado River | -114.301 | 34.164 | Bouse Formation | Kristin McDougall | F, O | Barren of foraminifers |  | marl; elevation: 400 ft. (121.92 m ); no report | 0 | 0 |
| Mf10502 | 00KM3 | Kristin McDougall, 12/20/2000 | Parker, AZ | Sample at Earp Marl, SE of Wyatt Earp House along SE trending Aqueduct road before Colorado River | -114.301 | 34.164 | Bouse Formation | Kristin McDougall | F, O | Barren of foraminifers |  | elevation: 400 ft. (121.92 m ); no report | 0 | 0 |
| Mf10503 | 00KM4 lower marl | Kristin McDougall, 12/20/2000 | Parker, AZ | Sample at Earp Marl, SE of Wyatt Earp House along SE trending Aqueduct road before Colorado River | -114.301 | 34.164 | Bouse Formation | Kristin McDougall | F, O | Barren of foraminifers |  | marl; elevation: 400 ft. (121.92 m ); no report | 0 | 0 |
| Mf10504 | 00KM5 | Kristin McDougall, 12/20/2000 | Parker, AZ | Sample at Earp Marl, SE of Wyatt Earp House along SE trending Aqueduct road before Colorado River; ~1 m above south side of road, due south of KM1-4 | -114.301 | 34.163 | Bouse Formation | Kristin McDougall | F, O | Barren of foraminifers |  | elevation: 400 ft. (121.92 m ); no report | 0 | 0 |
| Mf10505 | 00KM6 | Kristin McDougall, 12/20/2000 | Big Maria Mountains SE, CA | S35, T4S, R23E; see back of MF card Mf10505 for a detailed map; sample at Earp Marl, SE of Wyatt Earp House along SE trending Aqueduct road before Colorado River | -114.536 | 33.783 | Bouse Formation | Kristin McDougall | F, O, Mega |  | Shallow water (<20 m) | taken from silty mudstone; elevation: 118.87 m; no report | 2 | 0 |
| Mf10506 | 00KM7 | Kristin McDougall, 12/20/2000 | Big Maria Mountains SE, CA | sec. 35, T4S, R23E; see back of MF card Mf10505 for a detailed map | -114.536 | 33.783 | Bouse Formation | Kristin McDougall | F, O, Mega |  | Shallow water (<20 m) | elevation: 400 ft. (121.92 m ) | 1 | 0 |
| Mf10507 | 00KM8 | Kristin McDougall, 12/20/2000 | Big Maria Mountains SE, CA | sec. 35, T4S, R23E; see back of MF card Mf10505 for a detailed map | -114.534 | 33.781 | Bouse Formation | Kristin McDougall | F, O, Mega |  | Shallow water (<20 m) | elevation: 390 ft. (118.87 m) | 1 | 0 |
| Mf10508 | 00KM9 | Kristin McDougall, 12/20/2000 | Big Maria Mountains SE, CA | sec. 35, T4S, R23E; see back of MF card Mf10505 for a detailed map | -114.534 | 33.781 | Bouse Formation | Kristin McDougall | F. O |  | Shallow water (<20 m) | silty mudstone; elevation: 390 ft. (118.87 m) | 1 | 0 |
| Mf10509 | 00KM10 | Kristin McDougall, 12/20/2000 | Big Maria Mountains SE, CA | sec. 35, T4S, R23E; see back of MF card Mf10505 for a detailed map; gravel quarry of Smith | -114.536 | 33.779 | Bouse Formation | Kristin McDougall | F, O, Mega |  | Shallow water (<20 m) | softer mud unit; 3m above base numerous harder carbonate layers; elevation: 390 ft. (118.87 m) | 1 | 0 |
| Mf10510 | 00KM11 | Kristin McDougall, 12/20/2000 | Big Maria Mountains SE, CA | sec. 35, T4S, R23E; see back of MF card Mf10505 for a detailed map | -114.536 | 33.779 | Bouse Formation | Kristin McDougall | F, O, Mega |  | Shallow water (<20 m) | weathered; elevation: 390 ft. (118.87 m) | 1 | 0 |
| Mf10511 | 00KM12 float | Kristin McDougall, 12/20/2000 | Cibola, AZ | sec. 16, T10S, R23W; see back of MF card Mf10511 for a detailed map | -114.645 | 33.258 | Bouse Formation | Kristin McDougall | F, O, Mega |  | Shallow water (<20 m) | lower Bouse section sand, gravel, and marls - first shale unit in section; very powdery soft marl; elevation: 340 ft. (103.63 m) | 0 | 0 |
| Mf10512 | 00KM13 | Kristin McDougall, 12/20/2000 | Cibola, AZ | sec. 16, T10S, R23W; see back of MF card Mf10511 for a detailed map | -114.645 | 33.258 | Bouse Formation | Kristin McDougall |  |  |  | Field comments: indurated; hard layer in powdery "diatom" like powdery stuff; elevation: 340 ft. (103.63 m) | 0 | 0 |
| Mf10513 | 00KM13 powder | Kristin McDougall, 12/20/2000 | Cibola, AZ | sec. 16, T10S, R23W; see back of MF card Mf10511 for a detailed map | -114.645 | 33.258 | Bouse Formation | Kristin McDougall | F, Mega |  | Shallow water (<20 m) | Field comments: indurated; hard layer in powdery "diatom" like powdery stuff; elevation: 340 ft. (103.63 m) | 1 | 0 |
| Mf10514 | 00KM14A (top) | Kristin McDougall, 12/20/2000 | Cibola, AZ | sec. 16, T10S, R23W; see back of MF card Mf10511 for a detailed map | -114.642 | 33.257 | Bouse Formation | Kristin McDougall | F,O  | Barren of foraminifers |  | Field comments: indurated on slope to barnacle beds; elevation: 380 ft. (115.82 m) | 1 | 0 |
| Mf10515 | 00KM14B (bottom) | Kristin McDougall, 12/20/2000 | Cibola, AZ | sec. 16, T10S, R23W; see back of MF card Mf10511 for a detailed map | -114.642 | 33.257 | Bouse Formation | Kristin McDougall | F,O | Barren of foraminifers |  | Field comments: underneath layers have more sand grains and slight layering as a result; elevation: 380 ft. (115.82 m) | 0 | 0 |
| Mf10516 | 00KM15 | Kristin McDougall, 12/20/2000 | Cibola, AZ | sec. 16, T10S, R23W; see back of MF card Mf10511 for a detailed map | -114.642 | 33.257 | Bouse Formation | Kristin McDougall | F,O  | Barren of foraminifers |  | Float; elevation: 380 ft. (115.82 m) | 0 | 0 |
| Mf10517 | 00KM15A | Kristin McDougall, 12/20/2000 | Cibola, AZ | sec. 16, T10S, R23W; see back of MF card Mf10511 for a detailed map | -114.642 | 33.268 | Bouse Formation | Kristin McDougall | F,O  | Barren of foraminifers |  | Crust; elevation: 380 ft. (115.82 m) | 0 | 0 |
| Mf10518 | 00KM16 | Kristin McDougall, 12/20/2000 | Cibola, AZ | sec. 16, T10S, R23W; see back of MF card Mf10511 for a detailed map | -114.642 | 33.256 | Bouse Formation | Kristin McDougall | F,O  | Barren of foraminifers |  | elevation: 400 ft. (121.92 m ) | 0 | 0 |
| Mf10519 | 00KM17 | Kristin McDougall, 12/20/2000 | Cibola, AZ | sec. 35, T9S, R21E; see back of MF card Mf10519 for a detailed map | -114.732 | 33.260 | Bouse Formation | Kristin McDougall | F, O, Chara, Fish |  | Shallow water (<20 m) | Milpitas Wash silt sample - ostracods visible; considerable "rusty" material - may be very weathered; south side of wash; gypsum veins 2 meters above wash; elevation: 280 ft. (85.34 m) | 1 | 0 |
| Mf10520 | 00KM18A (top) | Kristin McDougall, 12/20/2000 | Cibola, AZ | sec. 35, T9S, R21E; see back of MF card Mf10519 for a detailed map | -114.730 | 33.260 | Bouse Formation | Kristin McDougall | F,O, Chara  | Barren of foraminifers |  | 2 meters above wash - hard indurated; elevation: 280 ft. (85.34 m) | 1 | 0 |
| Mf10521 | 00KM18B (bottom-bag 1) | Kristin McDougall, 12/20/2000 | Cibola, AZ | sec. 35, T9S, R21E; see back of MF card Mf10519 for a detailed map | -114.730 | 33.260 | Bouse Formation | Kristin McDougall | F, O,fish |  |  | 1m above wash, soft material, silty about 5cm below porcelaneous band; elevation: 280 ft. (85.34 m) | 1 | 0 |
| Mf10522 | 00KM18B (bottom-bag 2) | Kristin McDougall, 12/20/2000 | Cibola, AZ | sec. 35, T9S, R21E; see back of MF card Mf10519 for a detailed map | -114.730 | 33.260 | Bouse Formation | Kristin McDougall | F, O |  |  | elevation: 280 ft. (85.34 m) | 1 | 0 |
| Mf10523 | float near KM? | Kristin McDougall, 12/20/2000 |  | unknown where sample came from | unknown | unknown | Bouse Formation | Kristin McDougall | F, Mega shell fragments |  Barren of foraminifers |  | No report | 0 | 0 |
| Mf10524 | 00KM19 | Kristin McDougall, 12/20/2000 | Cibola, AZ | sec. 35, T9S, R21E; see back of Mf card Mf10519 for a detailed map | -114.730 | 33.259 | Bouse Formation | Kristin McDougall | F, O, Mega shell fragments, Chara, Fish |  |  | 1/3 m above wash; elevation: 280 ft. (85.34 m); shell hash in field, primarily pelecypods; shells articulated  | 1 | 0 |
| Mf11674 | HA-2-21-17 | D. G. Metzger, Unknown, but possibly collected around 1965-1967 | Palo Verde Mountains, CA | Imperial County, CA; south side of Palo Verde Mountains, 5 miles north of Milpitas Wash; 4,900 ft. west and 1660 ft. north of SE corner irregular sec. 20, R10S,R21E, | -114.791 | 33.291 | Bouse Formation  | P.B. Smith | D, Mega, Chara | Barren of foraminifers |  | Basal marl; elevation: 520 ft. (158.50 m) | 0 | 0 |
| Mf11675 | HA-2-21-16 | D. G. Metzger, Unknown, but possibly collected around 1965-1967 | Palo Verde Peak, CA | Imperial County CA; south side of Palo Verde Mountains, 5 miles north of Milpitas Wash; 2,800 ft. north of SE corner irregular sec. 20, R10S,R21E | -114.774 | 33.294 | Bouse Formation  | P.B. Smith | Mega, Chara | Barren of foraminifers |  | siliceous white clay; basal marl; elevation: 520 ft. (158.50 m) | 2 | 0 |
| Mf11676 | LCRP 22 | D. G. Metzger, Unknown, but possibly collected around 1965-1967 | Blythe, AZ | NE 1/4, NW 1/4, NW 1/4, sec. 16; sec 16 T2N R22W; elevation of well head 300 ft. (91.44 m); TD 998 ft. (304.19 m) | -114.535 | 33.521 | Bouse Formation from 254 to 811 ft. below land surface | P.B. Smith | F, Mega, Fish |  |  |  | 2 | 0 |
| Mf11677 | LCRP 20 | D. G. Metzger, Unknown, but possibly collected around 1965-1967 | Parker SE, AZ | NE 1/4, NE 1/4, NW 1/4 sec. 29, T8N, R20W; elevation of well head 332 ft. (101.19 m); TD 763 ft. (232.56 m) | -114.350 | 34.013 | Bouse Formation from 130 to 615 ft. below land surface | P.B. Smith | F, O, Fish |  |  |  | 1 | 0 |
| Mf11678 | LCRP 16 | D. G. Metzger, Unknown, but possibly collected around 1965-1967 | Palo Verde, CA | SE 1/4, SE 1/4, NE 1/4, sec. 13, T8S, R21E; elevation of well head 240 ft. (73.15 m); TD 800 ft. (243.84 m) | -114.732 | 33.485 | Bouse 445 - 800' | P.B. Smith | F, O, Mega |  |  |  | 1 | 0 |
| Mf11679 | LCRP 15 | D. G. Metzger, Unknown, but possibly collected around 1965-1967 | Parker, AZ | SE 1/4, SE 1/4, SE 1/4, sec. 5, T9N, R19W; elevation of well head 515 ft. (156.97 m); TD 520 ft. (158.49 m) | -114.251 | 34.144 | Bouse Formation from 199 to 275 ft. below land surface | P.B. Smith | F, O, Mega |  |  |  | 1 | 0 |
| Mf11680 | LCRP 4-48-18 | D. G. Metzger, Unknown, but possibly collected around 1965-1967 | Moon Mountain, AZ | Yuma, AZ; 6 1/4 miles E of CO River, 2400 ft. N and 100 ft. W of SE corner; sec 34, T6N, R21W | -114.417 | 33.817 | interbedded unit | P.B. Smith | F,O, Mega |  |  | elevation: 340-380 ft. (97.54 to 115.82 m) | 1 | 0 |
| Mf11681 | LCRP 3-187-6 | D. G. Metzger, Unknown, but possibly collected around 1965-1967 | Parker SE, AZ | Yuma, AZ; 2 miles S of Bouse Wash, 8 miles E of Colorado River; 1,200 ft. N of SE of sec 23, T8N, R20W | -114.295 | 34.017 | interbedded clay, silt and sand | P.B. Smith | F, O, Mega |  |  |  elevation: 560 ft. (170.69 m) | 1 | 0 |
| Mf11682 | LCRP 1-38-1 | D. G. Metzger, 1966 | Cibola, AZ | Yuma, AZ; W side Trigo Mountains, 4 3/4 miles E of Colorado River, SW of Cibola 2,200 ft. W, 600 ft. N of sec 33, T1S, R23W | -114.636 | 33.291 | Bouse Formation  | P.B. Smith | F, O, Mega |  |  | basal marl; elevation: ~400 ft. (121.92 m); but should use base of cliff at this location = 360 ft. (109.73 m) | 1 | 0 |
| Mf11683 | LCRP 1-38-2 | D. G. Metzger, 1966 | Cibola, AZ | Yuma, AZ; 1,900 ft. N, 1,600 ft. W of LCRP 1-38-1, W side of Trigo Mountains; 3,500 ft. N, 3,800 ft. W of sec 33, T1S, R23W | -114.641 | 33.299 |  | P.B. Smith | F, O |  |  | elevation: ~380 ft. (115.82 m) | 1 | 0 |
| Mf11684 | LCRP 27 | D. G. Metzger, Unknown, but possibly collected around 1965-1967 | Poston, AZ | NE 1/4, NE 1/4, NE 1/4, Sec 31, T7N, R21W; designated type section of Bouse Formation; 767 ft. thick; elevation of well head 312 ft. (95.10 m); TD 961 ft. (292.91 m) | -114.470 | 33.911 | Bouse Formation from 114 to 881 ft. below sea level. | P.B. Smith | F, O, Mega |  |  |  | 48 | 0 |
| Mf11685 | Col. 1-98-1 | D. G. Metzger, 1965 | Picahco NW, AZ | West side of Trigo Mountains, southeast Cibola Valley; 1,900 ft. west and 450 ft. north of SE corner of sec. 17, T2S, R23W | -114.652 | 33.247 |  | P.B. Smith | Mega | Barren of foraminifers |  | Basal marl of estuarine sediments; elevation: 128.02 m | 0 | 0 |
| Mf11686 | Col. 1-99-1 | D. G. Metzger, 1965 | Picahco NW, AZ | Yuma, AZ; W. side of Trigo Mountains, 2 miles E of Colorado River, SW of Cibola; 1,700 ft. W and 450 ft. N of SE corner of sec. 16, T2S, R23W | -114.634 | 33.247 | Bouse Formation  | P.B. Smith | Mega | Barren of foraminifers |  | Basal limestone of estuarine sediments; elevation: 106.68 m | 0 | 0 |
| Mf11687 | LCRP 4 | D. G. Metzger, Unknown, but possibly collected around 1965-1967 | Moon Mountain, AZ | SE 1/4, SE 1/4, SE 1/4 sec. 20, T6N, R21W; TD 585 ft. | -114.452 | 33.841 | Bouse Formation from 130 to 585 ft. below land surface; elevation of wellhead 320 ft. (=97.536 m) | P.B. Smith |  |  |  |  | 0 | 0 |
| Mf11688 | LCRP 5 | D. G. Metzger, Unknown, but possibly collected around 1965-1967 | La Paz Mountain, AZ | NW 1/4, NE 1/4, NW 1/4, sec 36, T4N, R22W; elevation of well head 295 ft. (89.92 m); TD 471 ft.  | -114.488 | 33.650 | Bouse Formation? | P.B. Smith |  |  |  |  | 0 | 0 |
| Mf11689 | LCRP 21 | D. G. Metzger, Unknown, but possibly collected around 1965-1967 | Parker SE, AZ | NE 1/4, NW 1/4, NW 1/4, sec 5, T8N, R19W; elevation of well head 530 ft. (161.54 m); TD 1,000 ft. (304.80 m) | -114.252 | 34.071 | Bouse 153 - 633' | P.B. Smith | F |  |  |  | 0 | 0 |
| Mf11690 | LCRP 1-179-1 | D. G. Metzger, Unknown, but possibly collected around 1965-1967 | Sawtooth Ridge 15', CA | San Bernadino Valley, CA, N of Chemehuevi Mountains, 1 ml W of Colorado River; sec 1, T7N, R23E | -114.530 | 34.727 |  | P.B. Smith |  |  |  | 40 ft. of 6-8 inch beds of buff siltstone and grey and green mudstone; elevation: 600 ft. (182.88 m) | 0 | 0 |
| Mf11690 | LCRP 1-179-1 | D. G. Metzger, Unknown, but possibly collected around 1965-1967 | Whale Mountains, CA | San Bernadino Valley, CA, North of Chemehuevi Mountains, 1 mile west of Colorado River; sec 1, T7N, R23E | 114.530 | 34.727 |  | P.B. Smith | O | Barren of foraminifers |  | elevation: 600 ft. (182.88 m) | 0 | 0 |
| Mf11691 | EU-1-64-21 | D. G. Metzger, 1967 | Cross Roads, AZ | Buckskin Mountains, 5.5 miles east-northeast of Parker 3,300 ft. north of SE corner sec. 34, T10N, R19W | 114.216 | 34.168 | Bouse Formation  | P.B. Smith | Mega | Barren of foraminifers |  | Pink silt, interbedded unit; elevation: 550 ft. (167.64 m) | 0 | 0 |
| Mf11692 | EU-1-64-22 | D. G. Metzger, 1967 | Cross Roads, AZ | Osborne Wash, 1 1/4 miles southwest of Colorado River; 700 ft. north of SE corner sec. 1, T9N, R19 W,  | 114.184 | 34.146 | Bouse Formation  | P.B. Smith |  | Barren |  | lithology same as locality J211; Interbedded unit; elevation: 620 ft. (188.98 m) | 0 | 0 |
| Mf11693 | LCRP 4-48-9 | D. G. Metzger, 1966 | Moon Mountain, AZ | 6 1/2 mi east of Colorado River. 2,900 ft. W., 1,600 ft. N. from SE corner sec. 35, T6N., R21W  | -114.409 | 33.815 |  | P.B. Smith | F,Mega |  |  | interbedded unit; elevation: 760 ft. (231.65 m); more likely 620 ft. (188.98 m) | 0 | 0 |
| Mf11694 | AMS 4968-2 | D. G. Metzger, 1965 | Dome Rock Mountains SW, AZ | West side Dome Rock Mountains; 4.5 miles east of Colorado River, unsurveyed, probably sec. 31, T3N, R21W | 114.467 | 33.558 | Bouse Formation  | P.B. Smith | Mega | Barren of foraminifers |  | elevation: 600 ft. (182.88 m) | 0 | 0 |
| Mf11695 | Bouse ls 6/23/05 | Daniel Malmon, 6/23/2005 | Oatman, AZ | SE of Bullhead City at 1,802 ft. m asl elevation | -114.465 | 35.087 | Bouse Formation | Kristin McDougall |  | Barren |  | limestone; elevation: 1802 ft. (549.25 m) | 0 | 0 |
| Mf12064 | DM-06-331-3 | Daniel Malmon, 3/3/2008 | Moon Mountain NE, CA |  | -114.341 | 33.995 | Bouse Formation | Kristin McDougall |  | Barren |  | Clay; elevation: 522.9 ft. (159.33 m) | 0 | 1 |
| Mf12065 | DM-06-331-4 | Daniel Malmon, 3/3/2008 | Moon Mountain NE, CA |  | -114.342 | 33.995 | Bouse Formation | Kristin McDougall |  | Barren |  | Silt; elevation: 509 ft. (155.23 m) | 0 | 1 |
| Mf12066 | DM-06-331-5 | Daniel Malmon, 3/3/2008 | Moon Mountain NE, CA |  | -114.342 | 33.995 | Bouse Formation | Kristin McDougall |  | Barren |  | Clay; elevation: 487.3 ft. (148.53 m) | 0 | 1 |
| Mf12067 | DM-06-331-6 | Daniel Malmon, 3/3/2008 | Moon Mountain NE, CA |  | -114.342 | 33.995 | Bouse Formation | Kristin McDougall |  | Barren |  | Silt; elevation: 479.3 ft. (146.09 m) | 0 | 1 |
| Mf12068 | DM-06-331-7 | Daniel Malmon, 3/3/2008 | Moon Mountain NE, CA |  | -114.342 | 33.995 | Bouse Formation | Kristin McDougall | F,O | late Tertiary | inner neritic (<50 m) | Clay; elevation: 472.7 ft. (144.08 m) | 1 | 1 |
| Mf12069 | DM-06-331-9 | Daniel Malmon, 3/3/2008 | Moon Mountain NE, CA |  | -114.342 | 33.995 | Bouse Formation | Kristin McDougall | F,O | late Tertiary | inner neritic (<50 m) | Clay; elevation: 457.1 ft. (139.32 m) | 1 | 1 |
| Mf12070 | DM-06-331-11 | Daniel Malmon, 3/3/2008 | Moon Mountain NE, CA |  | -114.342 | 33.995 | Bouse Formation | Kristin McDougall |  | Barren |  | Silt; elevation: 442.7 ft. (134.93 m) | 0 | 2 |
| Mf12071 | DM-06-331-13 | Daniel Malmon, 3/3/2008 | Moon Mountain NE, CA |  | -114.342 | 33.995 | Bouse Formation | Kristin McDougall |  | Barren |  | Silt; elevation: 429.8 ft. (131.00 m) | 0 | 1 |
| Mf12072 | DM-06-331-16 | Daniel Malmon, 3/3/2008 | Moon Mountain NE, CA |  | -114.343 | 33.996 | Bouse Formation | Kristin McDougall |  | Barren |  | Silt; elevation: 414.6 ft. (126.37 m)  | 0 | 1 |
| Mf12073 | DM-06-331-17 | Daniel Malmon, 3/3/2008 | Moon Mountain NE, CA |  | -114.343 | 33.996 | Bouse Formation | Kristin McDougall | O, Mega, Chara | late Tertiary | inner neritic (<50 m) | Silt/Clay; elevation: 403.3 ft. (122.93 m)  | 2 | 2 |
| Mf12074 | DM-06-331-18 | Daniel Malmon, 3/3/2008 | Moon Mountain NE, CA |  | -114.343 | 33.996 | Bouse Formation | Kristin McDougall | O, Mega shell fragments | late Tertiary | inner neritic (<50 m) | Clay; elevation: 392.9 ft. (119.76 m) | 1 | 1 |
| Mf12075 | DM-06-331-19 | Daniel Malmon, 3/3/2008 | Moon Mountain NE, CA |  | -114.343 | 33.996 | Bouse Formation | Kristin McDougall |  | Barren |  | Clay; elevation: 388.0 ft. (118.26 m) | 0 | 1 |
| Mf12076 | DM-06-331-20 | Daniel Malmon, 3/3/2008 | Moon Mountain NE, CA |  | -114.343 | 33.996 | Bouse Formation | Kristin McDougall |  | Barren |  | Silt; elevation: 384.4 ft. (117.17 m) | 0 | 2 |
| Mf12077 | DM-06-331-21 | Daniel Malmon, 3/3/2008 | Moon Mountain NE, CA |  | -114.343 | 33.995 | Bouse Formation | Kristin McDougall | F | late Tertiary | inner neritic (<50 m) |  elevation: 373.6 ft. (113.87 m) | 1 | 1 |
| Mf12078 | DM-06-328a | Daniel Malmon, 3/3/2008 | Parker, AZ |  | -114.339 | 34.161 | Bouse Formation | Kristin McDougall |  | Barren |  | Mud; elevation: 565.3 ft. (172.3 m) | 0 | 1 |
| Mf12079 | H7Earp-3a | Keith Howard, 22/29/2008 | Parker, AZ | NE side of Earp road cut north of Parker Bridge, elevation 395 ft. | -114.300 | 34.163 | Bouse Formation | Kristin McDougall | F, O, Mega | Barren of foraminifers |  | micaeous sand; elevation: 395 ft. (120.4 m)  | 1 | 2 |
| Mf12080 | H7Earp-3c | Keith Howard, 22/29/2008 | Parker, AZ | NE side of Earp road cut north of Parker Bridge, elevation 395 ft. | -114.300 | 34.163 | Bouse Formation | Kristin McDougall | F, O, Mega | Barren of foraminifers |  | silty sand, molds of high-spired gastropods, possible ostracods and clams; elevation: 395 ft. (120.4 m)  | 1 | 4 |
| Mf12081 | H7CV-2 | Keith Howard, 22/29/2008 | Havasu Lake, CA | Chemehuevi Valley, elevation. 565 ft. | -114.424 | 34.449 | Bouse Formation | Kristin McDougall | F | Barren of foraminifers |  | mudstone; elevation: 565 ft. (172.21 m) | 0 | 1 |
| Mf12082 | H04MM-26 | Keith Howard, 22/29/2008 | Mt. Manchester, CA | NW Mohave Valley, locality described by House et al. (2005) as Manchester Beach | -115.746 | 34.587 | Bouse Formation | Kristin McDougall | F | Barren of foraminifers |  | marl, pebbly beach deposits at Bouse high stand; elevation: 1590 ft. (484.63 m) | 0 | 3 |
| Mf12087 | M08AM-166-12 | David Miller, 12/17/2009 | Amboy, CA | samples from outcrops exposed 3 km north of Amboy; base of section | -115.746 | 34.587 | Bouse Formation associated with the Lawlor Tuff | Kristin McDougall | F,D, O, Mega | Barren of foraminifers |  | elevation: 280 ft. (85.34 m) | 0 | 1 |
| Mf12088 | M08AM-166-45 | David Miller, 12/17/2009 | Amboy, CA | samples from outcrops exposed 3 km north of Amboy | -115.746 | 34.587 | Bouse Formation associated with the Lawlor Tuff | Kristin McDougall | F,D, O, Mega | Barren of foraminifers |  | elevation: 280 ft. (85.34 m) | 0 | 1 |
| Mf12089 | M08AM-166-65 | David Miller, 12/17/2009 | Amboy, CA | samples from outcrops exposed 3 km north of Amboy | -115.746 | 34.587 | Bouse Formation associated with the Lawlor Tuff | Kristin McDougall | F,D, O, Mega | Barren of foraminifers |  | elevation: 280 ft. (85.34 m) | 0 | 1 |
| Mf12090 | M08AM-166-80 | David Miller, 12/17/2009 | Amboy, CA | samples from outcrops exposed 3 km north of Amboy | -115.746 | 34.587 | Bouse Formation associated with the Lawlor Tuff | Kristin McDougall | F,D, O, Mega | Barren of foraminifers |  |  elevation: 280 ft. (85.34 m) | 0 | 1 |
| Mf12091 | M08AM-166-95 | David Miller, 12/17/2009 | Amboy, CA | samples from outcrops exposed 3 km north of Amboy | -115.746 | 34.587 | Bouse Formation associated with the Lawlor Tuff | Kristin McDougall | F,D, O, Mega | Barren of foraminifers |  |  elevation: 280 ft. (85.34 m) | 0 | 1 |
| Mf12092 | M08AM-166-110 | David Miller, 12/17/2009 | Amboy, CA | samples from outcrops exposed 3 km north of Amboy | -115.746 | 34.587 | Bouse Formation associated with the Lawlor Tuff | Kristin McDougall | F,D, O, Mega | Barren of foraminifers |  |  elevation: 280 ft. (85.34 m) | 0 | 1 |
| Mf12093 | M08AM-166-125 | David Miller, 12/17/2009 | Amboy, CA | samples from outcrops exposed 3 km north of Amboy | -115.746 | 34.587 | Bouse Formation associated with the Lawlor Tuff | Kristin McDougall | F,D, O, Mega | Barren of foraminifers |  | elevation: 280 ft. (85.34 m) | 0 | 1 |
| Mf12094 | M08AM-166-135 | David Miller, 12/17/2009 | Amboy, CA | samples from outcrops exposed 3 km north of Amboy | -115.746 | 34.587 | Bouse Formation associated with the Lawlor Tuff | Kristin McDougall | F,D, O, Mega | Barren of foraminifers |  | elevation: 280 ft. (85.34 m) | 0 | 1 |
| Mf12095 | M08AM-166-150 | David Miller, 12/17/2009 | Amboy, CA | samples from outcrops exposed 3 km north of Amboy | -115.746 | 34.587 | Bouse Formation associated with the Lawlor Tuff | Kristin McDougall | F,D, O, Mega | Barren of foraminifers |  | elevation: 280 ft. (85.34 m) | 0 | 1 |
| Mf12096 | M08AM-166-180 | David Miller, 12/17/2009 | Amboy, CA | samples from outcrops exposed 3 km north of Amboy | -115.746 | 34.587 | Bouse Formation associated with the Lawlor Tuff | Kristin McDougall | F,D, O, Mega | Barren of foraminifers |  |  elevation: 280 ft. (85.34 m) | 0 | 1 |
| Mf12097 | M08AM-166-215 | David Miller, 12/17/2009 | Amboy, CA | samples from outcrops exposed 3 km north of Amboy | -115.746 | 34.587 | Bouse Formation associated with the Lawlor Tuff | Kristin McDougall | F,D, O, Mega | Barren of foraminifers |  | elevation: 280 ft. (85.34 m) | 0 | 1 |
| Mf12098 | M08AM-166-245 | David Miller, 12/17/2009 | Amboy, CA | samples from outcrops exposed 3 km north of Amboy | -115.746 | 34.587 | Bouse Formation associated with the Lawlor Tuff | Kristin McDougall | F,D, O, Mega | Barren of foraminifers |  | elevation: 280 ft. (85.34 m) | 0 | 1 |
| Mf12724 | 11301101a | Kyle House, 12/1/2011 | Sprit Mountain NE, AZ |  | -114.544 | 35.371 | Bouse Formation | Kristin McDougall |  | Barren |  | Mud; elevation: 1380 ft. (420.62 m) | 0 | 1 |
| Mf12725 | 11301103b | Kyle House, 12/1/2011 | Sprit Mountain NE, AZ |  | -114.563 | 35.416 | Bouse Formation | Kristin McDougall |  | Barren |  | Mud; elevation: 1360 ft. (414.53 m) | 0 | 1 |
| Mf12857 | 2012-KM-1 | Kristin McDougall, 3/8/2012 | Big Maria Mountains SE, AZ | Sample taken in assumed Big Maria Quarry; elevation 312 ft.; approximately 4.5 m of section exposed.  | 114.524 | 33.761 | Bouse Formation  | Kristin McDougall | F, O | Pliocene or younger | lagoon to inner neritic (<20 m) | mudstone; elevation: 360 ft. (109.73 m) | 1 | 2 |
| Mf12858 | Bouse 12-12 | Kristin McDougall, 3/8/2012 | Big Maria Mountains SE, AZ | Sample taken in assumed Big Maria Quarry; Andy Cohen (U of Arizona) sample; taken at highest elevation on north side of wash. | 114.529 | 33.763 | Bouse Formation  | Kristin McDougall | F, O | Pliocene or younger | lagoon to inner neritic (<20 m) | elevation: 400 ft. (121.92 m) | 2 | 6 |
| Mf12859 | Beard #1 | Kristin McDougall, 3/8/2012 | Big Maria Mountains SE, AZ | Sample taken in assumed Big Maria Quarry; Andy Cohen (U of Arizona) sample; taken at highest elevation on north side of wash. | 114.529 | 33.763 | Bouse Formation  | Kristin McDougall | F, Mega  | Pliocene or younger | lagoon to inner neritic (<20 m) | elevation: 400 ft. (121.92 m) | 2 | 2 |
| Mf12860 | Beard #2 | Kristin McDougall, 3/8/2012 | Big Maria Mountains SE, AZ | Sample taken in assumed Big Maria Quarry; Andy Cohen (U of Arizona) sample; taken at highest elevation on north side of wash. | 114.529 | 33.763 | Bouse Formation  | Kristin McDougall | F, O, Mega  | Pliocene or younger | lagoon to inner neritic (<20 m) | elevation: 400 ft. (121.92 m) | 2 | 2 |
| Mf12861 | 2012-KM-2 | Kristin McDougall, 3/8/2012 | Black Peak, AZ | Osborne Wash, location of Spencer stop 5. | 114.169 | 34.119 | Bouse Formation  | Kristin McDougall |  |  |  |  elevation: 820 ft. (249.97 m); sample did not break down | 0 | 0 |
| Mf12862 | 2012-KM-3 | Kristin McDougall, 3/8/2012 | Parker, AZ | Parker Bridge, mid bridge. | 114.301 | 34.163 | Bouse Formation  | Kristin McDougall | F, Mega  | Pliocene or younger | lagoon to inner neritic (<20 m) | elevation: 400 ft. (121.92 m) | 2 | 2 |
| Mf12863 | 2012-KM-4 | Kristin McDougall, 3/8/2012 | Parker, AZ | Parker Bridge east end. | 114.301 | 34.163 | Bouse Formation  | Kristin McDougall | F, O, Mega  | Pliocene or younger | lagoon to inner neritic (<20 m) | elevation: 400 ft. (121.92 m) | 2 | 2 |
| Mf12864 | 2012-KM-5 | Kristin McDougall, 3/8/2012 | Mt Manchester, CA | Manchester locality of K. House.  | 114.671 | 35.030 | Bouse Formation  | Kristin McDougall | F, O | Pliocene or younger | lagoon to inner neritic (<20 m) | green mudstone; elevation: 590 ft. (179.83 m) | 1 | 3 |
| Mf12889 | kh-10301208a | Kyle House, 11/7/2012 | Needles SW, CA | Collected from borrow pit near Needles (CA) airport.  | -114.626 | 34.752 | Bouse Formation | Kristin McDougall | O | Barren of foraminifers |  | Mud; elevation: 1000 ft. (304.8 m) | 1 | 1 |
| Mf12890 | kh-10311219 | Kyle House, 11/7/2012 | Needles SW, CA |  | -114.677 | 34.773 | Bouse Formation | Kristin McDougall | O | Barren of foraminifers |  | Mud; possible but unlikely tephra at base | 0 | 1 |
| Mf12891 | kh-11021205 | Kyle House, 11/7/2012 | Needles SW, CA |  | -114.728 | 34.961 | Bouse Formation | Kristin McDougall | O | Barren of foraminifers |  | Mud; In rhythmic section | 0 | 1 |
| Mf12892 | 2071304-05 | Kyle House, 3/15/2013 | Castle Rock, AZ-CA |  | -114.431 | 34.504 | Bouse Formation | Kristin McDougall | O | Barren of foraminifers |  | Bouse mud, delta?; elevation: 640 ft. (195.72 m) | 1 | 1 |
| Mf 12893 | 2091309a | Kyle House, 3/15/2013 | Spirit Mountain NW, NV |  | -114.676 | 35.415 | Bullhead | Kristin McDougall |  | Barren |  | River mud; elevation: 231.65 m | 0 | 3 |
| Mf12894 | 2091309b | Kyle House, 3/15/2013 | Spirit Mountain NW, NV |  | -114.676 | 35.415 | Bullhead | Kristin McDougall |  | Barren |  | red river mud; elevation: 231.65 m | 0 | 3 |
| Mf12895 | 2071302 | Kyle House, 3/15/2013 | Castle Rock, AZ-CA |  | -114.424 | 34.507 | Bouse Formation | Kristin McDougall |  | Barren |  | suicide mud; elevation: 182.88 m | 0 | 1 |
| Mf12896 | 2071310 | Kyle House, 3/15/2013 | Castle Rock, AZ-CA |  | -114.458 | 34.497 | Bouse Formation | Kristin McDougall | O | Barren of foraminifers |  | suicide mud; elevation: 243.84 m | 1 | 1 |
| Mf12897 | 4071310 | Kyle House, 4/17/2013 | Havasu Lake, CA |  | -114.448 | 34.404 | Bouse Formation | Kristin McDougall | O | Barren of foraminifers |  | suicide mud; elevation: 304. 8 m | 1 | 1 |
| Mf12898 | 4041303-2 | Kyle House, 4/17/2013 | Bouse, AZ |  | -114.035 | 33.938 | Bouse? Formation | Kristin McDougall | F, O, Mega | Miocene or younger | shallow (<20 m); marine to brackish water | suicide mud; elevation: 960 ft. (292.61 m) | 1 | 1 |
| Mf12899 | 4031303-3 | Kyle House, 4/17/2013 | Bouse, AZ |  | -114.035 | 33.938 | Bouse? Formation | Kristin McDougall | F, O, Mega | Miocene or younger | shallow (<20 m); marine to brackish water | same sequence as 4031303-2; elevation: 960 ft. (292.61 m) | 2 | 2 |
| Mf12900 | 4041303-3 | Kyle House, 4/17/2013 | Bobs Well, AZ |  | -114.117 | 34.012 | Bouse Formation | Kristin McDougall |  | Barren |  | mud; elevation: 860 ft. (262.13 m) | 0 | 2 |
| Mf12901 | 4061311 | Kyle House, 4/17/2013 | Moon Mountain NE, AZ |  | -114.355 | 33.955 | Bouse Formation | Kristin McDougall | F, O, Mega | Miocene or younger | shallow (<20 m); marine to brackish water | mud below limestone; elevation: 500 ft. (152.4 m) | 4 | 4 |
| Mf12902 | 4061312-B | Kyle House, 4/17/2013 | Moon Mountain NE, AZ |  | -114.355 | 33.955 | Bouse Formation | Kristin McDougall | F, O, Mega | Miocene or younger | shallow (<20 m); marine to brackish water | below limestone; elevation: 146.31 m | 1 | 1 |
| Mf12903 | 4061312-C | Kyle House, 4/17/2013 | Moon Mountain NE, AZ |  | -114.355 | 33.955 | Bouse Formation | Kristin McDougall | F, O, Mega, Chara | Miocene or younger | shallow (<20 m); marine to brackish water | below limestone; elevation: 152.4 m | 2 | 2 |
| Mf12904 | 4091302 | Kyle House, 4/17/2013 | Castle Rock, AZ-CA |  | -114.377 | 34.533 | Chemehuevi? Formation | Kristin McDougall |  | Barren |  | Bouse or Chemehuevi?; elevation: 143.26 m | 0 | 1 |
| Mf12905 | 4081304 | Kyle House, 4/17/2013 | Havasu Lake, CA |  | -114.450 | 34.420 | Bouse Formation | Kristin McDougall |  | Barren |  | suicide mud; elevation: 280.42 m | 0 | 1 |
| Mf12906 | 4081303 | Kyle House, 4/17/2013 | Havasu Lake, CA |  | -114.447 | 34.417 | Bouse Formation | Kristin McDougall | O | Barren of foraminifers |  | mud; elevation: 280.16 m | 1 | 1 |
| Mf12907 | 4061309 | Kyle House, 4/17/2013 | Moon Mountain NE, AZ |  | -114.354 | 33.955 | Bouse Formation | Kristin McDougall |  | Barren |  | mud; elevation: 179.83 m | 1 | 1 |
| Mf12908 | H13CV-8 | Keith Howard, 4/23/2013 | Havasu Lake, CA | Lower Chemehuevi Valley / North Flank Whipple Mts. | -114.437 | 34.409 | Bouse Formation | Kristin McDougall |  | Barren |  | Claystone; elevation: 301.75 m | 0 | 1 |
| Mf12909 | H13CV-8a | Keith Howard, 4/23/2013 | Havasu Lake, CA | Lower Chemehuevi Valley / North Flank Whipple Mts. | -114.437 | 34.409 | Bouse Formation | Kristin McDougall |  | Barren |  | Claystone; elevation: 301.75 m | 0 | 1 |
| Mf12910 | 4271306 | Kyle House, 5/14/2013 | Havasu Lake, CA | associated with extensive exposures in key area | -114.436 | 34.435 | Bouse Formation | Kristin McDougall | O | Barren of foraminifers |  | light gray suicide mud; ~3 m above marl | 1 | 1 |
| Mf12912 | 04241307-A | Kyle House, 5/14/2013 | Cibola, AZ | Patsy Smith's section in south bluff of Hart Mine Wash | -114.636 | 33.291 | Bouse Formation | Kristin McDougall | F, D (pyrite) | late Miocene to early Pliocene | inner neritic (<50 m) | Light olive gray suicide mud; elevation: 112.8 m | 1 | 1 |
| Mf12913 | 04241307-B | Kyle House, 5/14/2013 | Cibola, AZ | Patsy Smith's section in south bluff of Hart Mine Wash; looks blue in hot sun. | -114.636 | 33.291 | Bouse Formation | Kristin McDougall | F, O, fish | late Miocene to early Pliocene | inner neritic (<50 m) | light gray suicide mud; elevation: 114 m | 1 | 1 |
| Mf12914 | 04241307-C | Kyle House, 5/14/2013 | Cibola, AZ | Patsy Smith's section in south bluff of Hart Mine Wash | -114.636 | 33.291 | Bouse Formation | Kristin McDougall | F | late Miocene to Recent | inner neritic (<50 m) | light gray silty clay; elevation: 114 m | 1 | 1 |
| Mf12915 | 04241307-D | Kyle House, 5/14/2013 | Cibola, AZ | Patsy Smith's section in south bluff of Hart Mine Wash | -114.636 | 33.291 | Bouse Formation | Kristin McDougall | F | late Miocene to Recent | inner neritic (<50 m) | Light gray suicide mud; elevation: 115.4 m | 1 | 1 |
| Mf12916 | 04241307-E | Kyle House, 5/14/2013 | Cibola, AZ | Patsy Smith's section in south bluff of Hart Mine Wash | -114.636 | 33.291 | Bouse Formation | Kristin McDougall | F | late Miocene to Recent | inner neritic (<50 m) | pinkish white silty mud; elevation: 118.2 m | 1 | 1 |
| Mf12917 | 04241307-F | Kyle House, 5/14/2013 | Cibola, AZ | Patsy Smith's section in south bluff of Hart Mine Wash | -114.636 | 33.291 | Bouse Formation | Kristin McDougall | F, O | late Miocene to Recent | inner neritic (<50 m) | pinkish gray suicide mud; elevation: 121.2 m | 1 | 1 |
| Mf12918 | 04241307-G1 | Kyle House, 5/14/2013 | Cibola, AZ | Patsy Smith's section in south bluff of Hart Mine Wash | -114.636 | 33.291 | Bouse Formation | Kristin McDougall | F, O | late Miocene to Recent | inner neritic (<50 m) | pinkish gray suicide mud; elevation: 123 m | 1 | 1 |
| Mf12919 | 04241307-G2 | Kyle House, 5/14/2013 | Cibola, AZ | Patsy Smith's section in south bluff of Hart Mine Wash | -114.636 | 33.291 | Bouse Formation | Kristin McDougall | F, O | late Miocene to early Pliocene | inner neritic (<50 m) | light reddish brown suicide mud; elevation: 123.7 m  | 1 | 1 |
| Mf12920 | 04241307-H | Kyle House, 5/14/2013 | Cibola, AZ | Patsy Smith's section in south bluff of Hart Mine Wash | -114.636 | 33.291 | Bouse Formation | Kristin McDougall | F | late Miocene to Recent | inner neritic (<50 m) | reddish brown fissile mud; elevation: 126 m | 1 | 1 |
| Mf12921 | 4241306 | Kyle House, 5/14/2013 | Cibola, AZ | Patsy Smith's section in north bluff of Hart Mine Wash | -114.641 | 33.295 | Bouse Formation | Kristin McDougall | Chara, O | Barren of foraminifers |  | light gray suicide mud; ~3 m above marl; elevation: >126 m | 1 | 1 |
| Mf12925 | 04241307-1 | Kyle House, 5/14/2013 | Cibola, AZ | Patsy Smith's section in south bluff of Hart Mine Wash; macrofossils present | -114.636 | 33.291 | Bouse Formation | Kristin McDougall | F, D (pyrite),O | late Miocene to early Pliocene | inner neritic (<50 m) | white marl, small sample; elevation: 112.4 m | 1 | 1 |
| Mf12935 | 09201303-A | Kyle House, 9/1/2013 | Cibola, AZ | Patsy Smith's section in south bluff of Hart Mine Wash | -114.636 | 33.291 | Bouse Formation  | Kristin McDougall | F, O | late Miocene to early Pliocene | inner neritic (<50 m) | White to pale yellow limestone / calcareous silty sandstone; base of section at site; not base of Bouse | 1 | 1 |
| Mf12936 | 09201303-B | Kyle House, 9/1/2013 | Cibola, AZ | Patsy Smith's section in south bluff of Hart Mine Wash | -114.636 | 33.291 | Bouse Formation  | Kristin McDougall | F, O | late Miocene to early Pliocene | inner neritic (<50 m) | Pale yellow to light olive brown suicide mud; color varies with layering; varve-like; suspect some layers are limey | 1 | 1 |