**G:\DMiller Documents\word\WR Pubs-maps\168x62_black.jpg Table 1. K-Ar age compilation for rocks collected in southern California**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Sample**  **No.** | **Mineral** | **Age**  **(Ma)** | **K2O**  **(percent)** | **Arrad**  **(percent)** | **Published or**  **Unpublished** | **Location (lat, long)** | **Quadrangle** | **Rock description** |
| P1-3 | -- | -- | -- | -- | -- | -- | Lakeview 7.5’ | Lakeview Mountains pluton. Mafic segregations in outer margin. Not dated. |
| P2-3 | Biotite | 87.8 | 8.29 | 81 | Unpublished | 117˚ 04” 57”  33˚ 47’ 05” | Cadiz 15’ | Lakeview Mountains pluton. Representative of main tonalite rock type. |
| P3-3 | -- | -- | -- | -- | -- | -- | -- | Mylonite at mouth of Palm Canyon. Not dated. |
| P4-3 | Biotite | 59.9 | 9.58 | 92 | Unpublished | 116˚ 29’ 20”  33˚ 47’ 28” | Cathedral City 7.5’ | Cataclasized granitic rock. 1.5 miles north of Cathedral Canyon Drive on California Highway 111. |
| P5-3 | -- | --- | -- | -- | -- | -- | -- | Sam Sims pluton. Intersection of Pinyon Crest Road and Pines-to-Palms Highway. |
| P6-3 | -- | -- | -- | -- | -- | -- | -- | Sam Sims pluton. 1.0 miles east of Pinyon Flat turnoff. Not dated. |
| P7-3 | Whole rock | 70.2 | 3.83 | 97 | Unpublished | 116˚ 28’ 42”  33˚ 34’ 43” | Toro Peak 7.5’ | Ultramylonite. 1.4 miles west of Pinyon Flat. |
| P8-3 | -- | -- | -- | -- | -- | -- | Toro Peak 7.5’ | Mylonite. 1.4 miles west of Pinyon Flat. Sample for whole-rock age. Not dated. |
| P9-3 | -- | -- | -- | -- | -- | -- | -- | Plutonic rock west of main mylonite on Pines-to-Palms Highway. Not dated. |
| P10-3 | -- | -- | -- | -- | -- | -- | -- | Thomas Sill. East side of the San Jacinto Fault. Not dated. |
| P11-3 | -- | -- | -- | -- | -- | -- | -- | Thomas Sill. West side of the San Jacinto Fault. Not dated. |
| P1-5 | Biotite | 100 | 8.98 | 93 | Published | 117˚ 31’ 34”  33˚ 55’ 53” | Corona North 7.5’ | Biotite-hornblende tonalite-quartz diorite; unnamed pluton. |
| P2-5 | Biotite | 97.3 | 9.17 | 95 | Published | 117˚ 29’ 55”  34˚ 1’ 51” | Fontana 7.5’ | Biotite- hornblende tonalite; unnamed pluton. |
| P3-5 | Biotite | 103 | 9.45 | 95 | Published | 117˚ 24’ 56”  34˚ 1’ 8” | Fontana 7.5’ | Biotite- hornblende tonalite; unnamed pluton. |
| P4-5 | Biotite | 86.7 | 9.53 | 89 | Published | 117˚ 7’ 57”  33˚ 54’ 32” | Sunnymead 7.5’ | Biotite- hornblende granodiorite; unnamed pluton; foliated, part of generic biotite- hornblende granodiorite unit. |
| P5-5R | Biotite | 89.7 | 9.42 | 93 | Published | 117˚ 12’ 25”  33˚ 51’ 58” | Perris 7.5’ | Biotite- hornblende tonalite; unnamed pluton; part of generic biotite- hornblende tonalite unit. |
| P6-5 | Biotite | 85.4 | 9.01 | 89 | Published | 117˚ 2’ 17”  33˚ 47’ 47” | Lakeview 7.5’ | Biotite- hornblende granodiorite; unnamed pluton; part of generic biotite- hornblende granodiorite unit. |
| P7-5 | Biotite | 96.4 | 9.22 | 94 | Published | 117˚ 9’ 38”  33˚ 43’ 15” | Romoland 7.5’ | Biotite- hornblende tonalite; Domenigoni Valley pluton; isotropic texture. |
| P8-5 | Biotite | 95.9 | 9.28 | 94 | Published | 117˚ 12’ 19”  33˚ 40’ 31” | Romoland 7.5’ | Biotite- hornblende tonalite; Domenigoni Valley pluton; isotropic texture. |
| P9-5 | Biotite | 109 | 8.72 | 89 | Published | 117˚ 16’ 59”  33˚ 38’ 53” | Elsinore 7.5’ | Biotite granodiorite; Paloma Valley Ring Complex. |
| **Sample**  **No** | **Mineral** | **Age**  **(Ma)** | **K2O**  **(percent)** | **Arrad**  **(percent)** | **Published or**  **Unpublished** | **Location** | **Quadrangle** | **Rock description** |
| P10-5 | Biotite | 109 | 8.79 | 90 | Published | 117˚ 20’ 55”  33˚ 44’ 22” | Elsinore 7.5’ | Biotite granodiorite; Arroyo del Toro pluton. |
| P11-5 | Biotite | 99.7 | 9.39 | 93 | Published | 117˚ 18’ 37”  33˚ 47’ 0” | Steele Peak 7.5’ | Biotite- hornblende -hypersthene monzogranite; Gavilan Ring Complex. |
| P12-5 | Biotite | 94.7 | 9.44 | 91 | Published | 117˚ 15’ 52”  33˚ 49’ 38” | Steele Peak 7.5’ | Biotite- hornblende tonalite; Val Verde pluton. |
| P13-5 | Biotite | 86.8 | 8.85 | 91 | Published | 117˚ 2’ 34”  33˚ 52’ 12” | Lakeview 7.5’ | Biotite- hornblende tonalite; crudely foliated and somewhat migmatitic appearing; unnamed pluton. |
| P14-5 | Biotite | 87.9 | 9.06 | 93 | Published | 116˚ 58’ 28”  33˚ 49’ 29” | San Jacinto 7.5’ | Biotite- hornblende tonalite; crudely foliated; unnamed pluton. |
| P15-5 | Biotite | 89.8 | 9.25 | 90 | Published | 116˚ 55’ 25”  33˚ 43’ 54” | Hemet 7.5’ | Biotite- hornblende granodiorite; common large sphene crystals; Hemet pluton. |
| P16-5 | Biotite | 91.3 | 9.15 | 93 | Published | 116˚ 58’ 11”  33˚ 40’ 16” | Hemet 7.5’ | Biotite- hornblende granodiorite; interleaved with metasedimentary rocks of Menifee Valley. |
| P17-5 | Biotite | 89.6 | 9.47 | 90 | Published | 117˚ 5’ 47”  33˚ 34’ 35” | Bachelor Mtn 7.5’ | Biotite granodiorite; isotropic texture; unnamed pluton. |
| P18-5 | Biotite | 91.1 | 8.72 | 77 | Published | 117˚ 4’ 58”  33˚ 38’ 23” | Winchester 7.5’ | Biotite- hornblende tonalite; isotropic texture; Domenigoni Valley pluton. |
| P19-5 | Biotite | 92.9 | 9.35 | 94 | Published | 117˚ 22’ 15”  33˚ 54’ 28” | Riverside East 7.5’ | Biotite- hornblende tonalite; crudely foliated; Val Verde pluton. |
| P20-5 | Biotite | 104 | 9.22 | 95 | Published | 117˚ 27’ 27”  33˚ 51’ 4” | Lake Mathews 7.5’ | Biotite monzogranite; isotropic; relatively fine grained; Cajalco pluton. |
| P21-5 | Biotite | 102 | 9.24 | 86 | Published | 117˚ 26’ 44”  33˚ 58’ 57” | Riverside West 7.5’ | Biotite- hornblende tonalite-quartz diorite; unnamed pluton. |
| P22-5 | Biotite | 108 | 8.46 | 93 | Published | 117˚ 30’ 51”  33˚ 50’ 23” | Corona South 7.5’ | Biotite granodiorite; isotropic; unnamed pluton. |
| P23-5 | Biotite | 89.5 | 9.35 | 95 | Published | 117˚ 20’ 38”  34˚ 3’ 50” | San Bernardino South 7.5’ | Biotite- hornblende tonalite; near contact with marble, Slover Mountain; unnamed pluton. |
| P24-5 | Biotite | 82.2 | 8.96 | 82 | Published | 117˚ 13’ 29” 33˚ 59’ 14” | Sunnymead 7.5’ | Biotite granodiorite; crudely foliated; Box Springs Mountains plutonic complex. |
| P25-5 | Biotite | 92.4 | 9.26 | 90 | Published | 117˚ 18’ 15” 33˚ 57’ 22” | Riverside East 7.5’ | Biotite- hornblende tonalite; crudely foliated; unnamed pluton. |
| P26-5 | Biotite | 95.1 | 8.98 | 93 | Published | 117˚ 23’ 17” 33˚ 59’ 4” | Riverside West 7.5’ | Biotite- hornblende -hypersthene-fayalite granite; isotropic; granite of Mount Rubidoux. |
| P27-5 | Biotite | 86.3 | 9.29 | 90 | Published | 116˚ 59’ 8” 33˚ 53’ 58” | Beaumont 7.5’ | Biotite- hornblende tonalite; sphene bearing; tonalite of Lamb Canyon. |
| **Sample**  **No** | **Mineral** | **Age**  **(Ma)** | **K2O**  **(percent)** | **Arrad**  **(percent)** | **Published or**  **Unpublished** | **Location** | **Quadrangle** | **Rock description** |
| P28-5 | Biotite | 86.1 | 9.39 | 95 | Published | 116˚ 54’ 10” 33˚ 53’ 47” | Beaumont 7.5’ | Biotite- hornblende tonalite; sphene bearing; unnamed pluton. |
| P29-5 | Biotite | 81.1 | 9.33 | 92 | Published | 116˚ 51’ 49” 33˚ 54’ 22” | Cabazon 7.5’ | Biotite- hornblende tonalite; sphene bearing; unnamed pluton. |
| P30-5 | Biotite | 85.5 | 9.37 | 93 | Published | 116˚ 49’ 12” 33˚ 51’ 11” | Lake Fulmor 7.5’ | Biotite- hornblende tonalite; sphene bearing; San Jacinto pluton. |
| P31-5 | Biotite | 83.0 | 9.02 | 94 | Published | 116˚ 46’ 46” 33˚ 48’ 5” | Lake Fulmor 7.5’ | Biotite- hornblende tonalite; sphene bearing; San Jacinto pluton. |
| P32-5 | Biotite | 86.3 | 9.59 | 97 | Published | 116˚ 44’ 7” 33˚ 44’ 59” | San Jacinto Peak 7.5’ | Biotite- hornblende tonalite; sphene bearing; San Jacinto pluton. |
| P33-5 | Biotite | 86.9 | 9.59 | 97 | Published | 116˚ 45’ 59” 33˚ 42’ 12” | Blackburn Canyon 7.5’ | Biotite- hornblende tonalite; sphene bearing; San Jacinto pluton. |
| P34-5 | Biotite | 78.6 | 9.57 | 88 | Published | 116˚ 43’ 32” 33˚ 51’ 42” | San Jacinto Peak 7.5’ | Biotite- hornblende tonalite; sphene bearing; San Jacinto pluton. |
| P35-5 | Biotite | 72.8 | 9.26 | 85 | Published | 116˚ 41’ 56” 33˚ 54’ 11” | Whitewater 7.5’ | Biotite- hornblende tonalite; sphene bearing; unnamed pluton. |
| P36-5 | Biotite | 70.7 | 8.69 | 92 | Published | 116˚ 38’ 33” 33˚ 52’ 51” | Whitewater 7.5’ | Biotite- hornblende tonalite; sphene bearing; unnamed pluton. |
| P37-5 | Biotite | 71.2 | 9.09 | 92 | Published | 116˚ 38’ 24” 33˚ 48’ 32” | San Jacinto Peak 7.5’ | Biotite- hornblende tonalite; sphene bearing; San Jacinto pluton. |
| P38-5 | Biotite | 68.0 | 9.29 | 90 | Published | 116˚ 34’ 35” 33˚ 48’ 44” | Palm Springs 7.5’ | Biotite- hornblende tonalite; foliated; unnamed pluton. |
| P39-5 | Biotite | 73.0 | 9.12 | 94 | Published | 116˚ 35’ 31” 33˚ 46’ 8” | Palm Springs 7.5’ | Biotite- hornblende tonalite; foliated; unnamed pluton. |
| P40-5 | Biotite | 88.0 | 9.45 | 96 | Published | 116˚ 48’ 19” 33˚ 45’ 27” | Lake Fulmor 7.5’ | Biotite- hornblende tonalite; sphene bearing; San Jacinto pluton. |
| P41-5 | Biotite | 86.2 | 9.43 | 89 | Published | 116˚ 51’ 39” 33˚ 47’ 56” | Lake Fulmor 7.5’ | Biotite- hornblende tonalite; sphene bearing; San Jacinto pluton. |
| P42-5 | Biotite | 87.7 | 9.57 | 95 | Published | 116˚ 55’ 18” 33˚ 51’ 4” | San Jacinto 7.5’ | Biotite- hornblende tonalite; sphene bearing; San Jacinto pluton. |
| P43-5 | Biotite  Biotite  Biotite | 82.2  80.9  80.0 | 9.40  9.40  9.40 | 92  77  94 | Unpublished | 116˚ 47’ 51” 33˚ 53’ 16” | Cabazon 7.5’ | Not used in this report because of a possible sample mix-up with sample P48-5, although quite certain of identification. Shown on sample locality map. |
| P44-5 | Biotite | 101 | 9.22 | 94 | Published | 117˚ 17’ 49” 33˚ 35’ 58” | Wildomar 7.5’ | Biotite granodiorite; isotropic; unnamed pluton. |
| P45-5 | Biotite | 103 | 9.27 | 90 | Published | 117˚ 16’ 29” 33˚ 32’ 13” | Wildomar 7.5’ | Tonalite of Slaughterhouse Canyon. |
| P46-5 | Biotite  Biotite | 109  107 | 8.85  8.85 | 91  92 | Published | 117˚ 21’ 32” 33˚ 30’ 17” | Wildomar 7.5’ | Biotite granodiorite; isotropic; unnamed pluton. |
| **Sample**  **No** | **Mineral** | **Age**  **(Ma)** | **K2O**  **(percent)** | **Arrad**  **(percent)** | **Published or**  **Unpublished** | **Location** | **Quadrangle** | **Rock description** |
| P47-5 | Biotite  Biotite | 114  115 | 8.97  8.97 | 93  94 | Published | 117˚ 25’ 55” 33˚ 30’ 1” | Sitton Peak 7.5’ | Biotite granodiorite; isotropic; unnamed pluton; Woodson Mountain granodiorite type. |
| P48-5 | Biotite | 128 | 8.11 | 98 | Unpublished | 117˚ 30’ 26” 33˚ 35’ 31” | Cañada Gobernadora 7.5’ | Biotite granodiorite; isotropic; unnamed pluton; Woodson Mountain granodiorite type. Not used in report because of a possible sample mix-up with sample P43-5, although quite certain of identification. |
| P49-5 | Biotite | 114 | 8.07 | 94 | Published | 117˚ 26’ 32” 33˚ 36’ 58” | Sitton Peak 7.5’ | Biotite granodiorite; isotropic; unnamed pluton. |
| P50-5 | Biotite | 109 | 9.06 | 79 | Published | 117˚ 23’ 16” 33˚ 39’ 19” | Alberhill 7.5’ | Biotite granodiorite; isotropic; unnamed pluton. |
| P51-5 | Biotite | 116 | 9.02 | 96 | Published | 117˚ 31’ 9” 33˚ 42’ 54” | Santiago Peak 7.5’ | Biotite granodiorite; isotropic; unnamed pluton; Woodson Mountain granodiorite type. |
| P52-5 | Biotite | 110 | 8.76 | 93 | Published | 117˚ 28’ 19” 33˚ 43’ 16” | Alberhill 7.5’ | Biotite granodiorite; isotropic; unnamed pluton; Woodson Mountain granodiorite type. |
| P1-6 | Biotite | 63.4 | 9.40 | 87 | Published | 116˚ 17’ 52” 33˚ 42’ 54” | La Quinta 7.5’ | Biotite- hornblende tonalite; crudely foliated; sphene bearing; common epidote; allochthonous part of the batholith; unnamed pluton; easternmost site in the northern Peninsular Ranges batholith at Point Happy. |
| P2-6 | Biotite | 65.6 | 9.25 | 91 | Published | 116˚ 22’ 55” 33˚ 40’ 6” | Rancho Mirage 7.5’ | Biotite- hornblende tonalite; crudely foliated; sphene bearing; common epidote; allochthonous part of the batholith; unnamed pluton. |
| P3-6 | Biotite | 61.3 | 9.56 | 90 | Published | 116˚ 28’ 27” 33˚ 43’ 26” | Rancho Mirage 7.5’ |  |
| P4-6 | Biotite | 66.9 | 9.48 | 76 | Published | 116˚ 27’ 12” 33˚ 37’ 41” | Toro Peak 7.5’ | Biotite- hornblende tonalite; foliated; common large euhedral sphene; allochthonous part of the batholith; tonalite of Asbestos Mountain. |
| P5-6 | Biotite | 80.0 | 9.53 | 91 | Published | 116˚ 35’ 15” 33˚ 33’ 49” | Butterfly Peak 7.5’ | Biotite quartz monzonite; foliated; unnamed pluton. |
| P6-6 | Biotite | 84.4 | 9.21 | 92 | Published | 116˚ 37’ 43” 33˚ 33’ 27” | Anza 7.5’ | Biotite- hornblende tonalite; crudely foliated; Coahuila Valley pluton. |
| P7-6 | Biotite | 83.5 | 9.05 | 91 | Published | 116˚ 36’ 52” 33˚ 39’ 42” | Palm View Peak 7.5’ | Biotite- hornblende tonalite; crudely foliated; unnamed pluton. |
| P8-6 | Biotite | 84.8 | 9.21 | 91 | Published | 116˚ 42’ 19” 33˚ 37’ 58” | Idyllwild 7.5’ | Biotite- hornblende tonalite; large euhedral sphene; Thomas Mountain pluton. |
| P9-6 | Biotite | 81.4 | 8.93 | 83 | Published | 116˚ 42’ 25” 33˚ 29’ 16” | Beauty Mtn 7.5’ | Biotite- hornblende tonalite; crudely foliated; Coahuila Valley pluton. |
| P10-6 | Biotite | 84.7 | 9.41 | 90 | Published | 116˚ 49’ 19” 33˚ 34’ 36” | Cahuilla Mtn 7.5’ | Biotite- hornblende tonalite; crudely foliated; Coahuila Valley pluton. |
| **Sample**  **No** | **Mineral** | **Age**  **(Ma)** | **K2O**  **(percent)** | **Arrad**  **(percent)** | **Published or**  **Unpublished** | **Location** | **Quadrangle** | **Rock description** |
| P11-6 | Biotite | 91.5 | 9.31 | 90 | Published | 116˚ 57’ 47” 33˚ 32’ 37” | Sage 7.5’ | Biotite- hornblende tonalite; Tucalota Valley pluton. |
| P12-6 | Biotite | 90.1 | 9.19 | 95 | Published | 116˚ 47’ 48” 33˚ 24’ 48” | Aguanga 7.5’ | Biotite- hornblende tonalite; Coahuila Valley pluton. |
| P13-6 | Biotite | 89.4 | 9.35 | 94 | Published | 116˚ 54’ 38” 33˚ 21’ 5” | Boucher Hill 7.5’ | Biotite- hornblende tonalite; unnamed pluton. |
| P14-6 | Biotite | 88.0 | 8.81 | 82 | Published | 116˚ 55’ 18” 33˚ 28’ 4” | Vail Lake 7.5’ | Biotite- hornblende tonalite; unnamed pluton. |
| P15-6 | Biotite | 94.8 | 8.91 | 92 | Published | 117˚ 5’ 42” 33˚ 24’ 51” | Pechanga 7.5’ | Biotite granodiorite; Woodson Mountain type granodiorite; unnamed pluton. |
| P16-6 | Biotite | 98.4 | 9.31 | 87 | Published | 117˚ 3’ 19” 33˚ 16’ 56” | Pala 7.5’ | Biotite granodiorite; unnamed pluton. |
| P17-6 | Biotite | 105 | 9.19 | 93 | Published | 117˚ 9’ 35” 33˚ 13’ 4” | San Marcos 7.5’ | Biotite- hornblende tonalite; unnamed pluton. |
| P18-6 | -- | -- | -- | -- | -- | -- | -- | Sample discarded |
| P19-6 | Biotite  Biotite | 107  107 | 8.44  8.44 | 91  94 | Published | 117˚ 17’ 35” 33˚ 16’ 3” | Morro Hill 7.5’ | Biotite- hornblende tonalite; unnamed pluton. |
| P25-6 | Biotite | 108 | 8.28 | 89 | Unpublished | 117˚ 5’ 17” 33˚ 3’ 29” | Escondido 7.5’ | Biotite- hornblende tonalite; unnamed pluton. |
| P1-7 | Biotite | 94.2 | Data  lost | Data  lost | Published | 117˚ 10’ 13” 33˚ 37’ 25” | Murrieta 7.5’ | Hornblende -biotite granodiorite. Medium- to fine-grained. Nonfoliate, nonlineate. Color index ~15. |
| P2-7 | Biotite | 104 | 8.78 | 81 | Published | 117˚ 10’ 2” 33˚ 19’ 23” | Bonsall 7.5’ | Granodiorite. Medium- to fine-grained. Foliate. Color index ~10. |
| P3-7 | Biotite | 106 | 8.58 | 90 | Published | 117˚ 16’ 2” 33˚ 15’ 33” | Morro Hill 7.5’ | Hornblende -biotite granodiorite. Medium-grained. Numerous inclusions, some in sample. |
| P1-8 | Biotite  Hbld | 104  102 | ??  0.922 | ??  68 | Unpublished | 117˚ 33’ 3” 33˚ 55’ 9” | Corona North 7.5’ | Hornblende -biotite quartz diorite. Medium-grained, seriate. Slightly lineate. Hornblende much more abundant than biotite. |
| P2-8 | Biotite | 84.2 | 8.61 | 79 | Unpublished | 117˚ 30’ 38” 33˚ 57’ 10” | Corona North 7.5’ | Biotite monzogranite, coarse-grained. Structureless, isotropic or massive. Deeply weathered. This may be a bad age, because of weathering of rock. Not plotted on either map. |
| P3-8 | Biotite  Hbld | 93.6  93.1 | 9.31  1.089 | 88  73 | Unpublished | 117˚ 23’ 3” 34˚ 1’ 11” | Fontana 7.5’ | Hornblende -biotite quartz diorite. Medium-grained, slightly foliate. |
| PA-6 | Biotite | 96.5 | 8.59 | 95 | Published | 117˚ 46’ 16” 34˚ 2’ 37” | San Dimas 7.5’ | Biotite- hornblende tonalite; unnamed pluton. Elephant Hill in Pomona area. |
| LKV Std. | Biotite | 92.4 | 9.27 | 83 | Published | 117˚ 6’ 57” 33˚ 45’ 25” | Lakeview 7.5’ | Lakeview Mountains pluton. |
| Ncl-Mc#1 | Biotite  Hbld | 108  103 | 8.55  0.428 | 88  64 | Published | 117˚ 36’ 46” 33˚ 55’ 53” | Corona North 7.5’ | Biotite- hornblende tonalite; subsurface core sample. |
| **Sample**  **No** | **Mineral** | **Age**  **(Ma)** | **K2O**  **(percent)** | **Arrad**  **(percent)** | **Published or**  **Unpublished** | **Location** | **Quadrangle** | **Rock description** |
| T1-3 | -- | -- | -- | -- | -- | -- | -- | Sample discarded or information lost. |
| T2-3 | -- | -- | -- | -- | -- | -- | -- | Sample discarded or information lost. |
| T3-3 | Biotite | 12.4 | 8.56 | 30 | Unpublished | 117˚ 33’ 59”  34˚ 16’ 1” | Telegraph Peak 7.5’ | Biotite granodiorite. Medium- to coarse-grained. Equigranular, nonporphyritic. Sphene bearing. Part of Oligocene Telegraph Peak pluton Lytle Creek area(?). |
| T4-3 | Biotite  Hbld | 71.0  69.0 | 9.16  1.070 | 93  81 | Published | 117˚ 29’ 44” 34˚ 12’ 13” | Devore 7.5’ | Biotite- hornblende tonalite; unnamed pluton. Above Devore 1 (see unnumbered samples near end of this list). |
| T5-3 | -- | -- | -- | -- | -- | -- | -- | Sample discarded or information lost. |
| T6-3 | -- | -- | -- | -- | -- | -- | -- | Sample discarded or information lost. |
| T7-3 | Biotite | 14.4 | 8.94 | 74 | Published | 117˚ 32’ 0” 34˚ 15’ 18” | Telegraph Peak 7.5’ | Biotite granodiorite. Medium- to coarse-grained. Equigranular, nonporphyritic. Sphene bearing. Part of Oligocene Telegraph Peak pluton. |
| T8-3 | -- | -- | -- | -- | -- | -- | -- | Sample discarded or information lost. |
| T9-3 | Hbld | 56.3 | 1.399 | 81 | Unpublished | Data lost | Data lost | Data lost |
| T10-3 | -- | -- | -- | -- | -- | -- | -- | Sample discarded or information lost. |
| T11-3 | Biotite | 14.9 | 8.78 | 56 | Published | Data lost | Data lost | Biotite granodiorite. Medium- to coarse-grained. Equigranular, nonporphyritic. Sphene bearing. Part of Telegraph Peak pluton. |
| T12-3 | -- | -- | -- | -- | -- | -- | -- | Sample discarded or information lost. |
| T13-3 | Whole rock | 69.5 | 1.763 | 84 | Unpublished | 117˚ 36’ 50” 34˚ 12’ 14” | Cucamonga Peak 7.5’ | Mylonite from “Black Belt” mylonite zone in southern San Gabriel Mts. |
| T14-3 | Whole rock | 69.9 | 2.102 | 86 | Unpublished | 117˚ 37’ 24” 34˚ 11’ 6” | Cucamonga Peak 7.5’ | Mylonite from “Black Belt mylonite zone in southern San Gabriel Mts. |
| T15-3 | -- | -- | -- | -- | -- | -- | -- | Sample discarded or information lost. |
| T16-3 | Hbld | 3.16 | 1.084 | 17 | Unpublished | 117˚ 36’ 2” 34˚ 15’ 36” | Telegraph Peak 7.5’ | Dike cutting Oligocene Telegraph Peak pluton (young age is not a typo). |
| T17-3 | -- | -- | -- | -- | -- | -- | -- | Sample discarded or information lost. |
| T18-3 | Biotite | 19.0 | 8.52 | 81 | Published | 117˚ 36’ 8” 34˚ 15’ 25” | Telegraph Peak 7.5’ | Biotite granodiorite. Medium- to fine-grained. Equigranular, nonporphyritic. Sphene bearing. Chilled border of Telegraph Peak pluton. |
| T19-3 | Biotite  Hbld | 71.4  67.1 | 9.43  1.810 | 94  77 | Published | 117˚ 34’ 58” 34˚ 16’ 19” | Telegraph Peak 7.5’ | Deformed rock from upper plate, just above Vincent Thrust. |
| T20-3 | Biotite | 14.4 | 8.88 | 45 | Published | 117˚ 33’ 5” 34˚ 16’ 16” | Telegraph Peak 7.5’ | Biotite granodiorite. Medium- to coarse-grained. Equigranular, nonporphyritic. Sphene bearing. Part of Telegraph Peak pluton. |
| T21-3 | Biotite | 81.3 | 9.33 | 90 | Published | 117˚ 7’ 38” 34˚ 23’ 26” | Apple Valley South 7.5’ | Biotite monzogranite. Porphyritic. Part of Rattlesnake Pluton. |
| T1-4 | Biotite  Hbld  Hbld | 70.0  66.5  65.4 | 9.11  0.883  0.883 | 85  73  74 | Published | 117˚ 27’ 9” 34˚ 17’ 57” | Cajon 7.5’ | Hornblende -biotite granodiorite; abundant sphene. Subtle to prominent foliation; appears to be primary. Segregations of more leucocratic rock common. Porphyritic locally. Unit mostly deeply weathered, but is relatively unweathered at collection site. |
| **Sample**  **No** | **Mineral** | **Age**  **(Ma)** | **K2O**  **(percent)** | **Arrad**  **(percent)** | **Published or**  **Unpublished** | **Location** | **Quadrangle** | **Rock description** |
| T2-4 | Biotite  Biotite | 70.5  70.7 | 8.05  8.05 | 94  93 | Published | 117˚ 20’ 44” 34˚ 18’ 32” | Silverwood Lake 7.5’ | Hornblende -biotite granodiorite; porphyritic; abundant sphene. Dark gray rock, medium-grained, phenocrysts moderately rounded. Similar to rock at T1-4, but uniformly porphyritic here. |
| T3-4 | Biotite | 69.3 | 8.41 | 92 | Published | 117˚ 16’ 33”  34˚ 18’ 40” | Silverwood Lake 7.5’ | Leucocratic biotite monzogranite. Medium-grained; non-foliate. Slightly porphyritic; phenocrysts less than 3 cm and very sparse. No Hbld. Trace of muscovite, but small and probably secondary. Most of unit is deeply weathered, but sample here, less so. |
| T4-4 | -- | -- | -- | -- | -- | -- | Big Bear City 7.5’ | Garnet-bearing muscovite alaskite. Very fresh, unweathered. Dike-form body intruding monzogranite of Cactus Flat. Not dated. |
| T5-4 | Biotite  Muscovite | 68.5  72.7 | 9.48  ?? | 92  ?? | Published | 116˚ 49’ 43” 34˚ 19’ 52” | Big Bear City 7.5’ | Biotite monzogranite. Medium grained, moderately foliate. Has slightly ragged looking fabric suggesting some cataclasis and grain-size-reduction. No hornblende, sphene, or muscovite seen in hand specimen. Probable monzogranite of Cactus Flat. |
| T6-4 | -- | -- | -- | -- | -- | -- | Moonridge 7.5’ | Baldwin Gneiss. Paragneiss; thoroughly recrystallized. Sample taken from biotite-rich layer. Not dated. |
| T7-4 | -- | -- | -- | -- | -- | -- | -- | Biotite monzogranite. Medium- to fine-grained, essentially non-foliate and non-porphyritic, isotropic and equigranular. Unit is very uniform in appearance, and presumably composition. Not dated. |
| T8-4 | Biotite | 71.6 | 9.62 | 96 | Published | 116˚ 43’ 21” 34˚ 11’ 52” | Onyx Peak 7.5’ | Probably same unit as T-7, but is slightly foliate. Freshest sample of this rock seen. Rock has saccharoidal texture, but some minerals (e.g., biotite) are in clumps. |
| T9-4 | Biotite  Hbld | 72.1  73.6 | 9.07  1.066 | 93  85 | Published | 116˚ 46’ 12” 34˚ 10’ 8” | Moonridge 7.5’ | Hornblende -biotite granodiorite (quartz diorite of Dibblee). Fresh sample. Sphene-bearing, high color index. |
| T10-4 | Biotite  Hbld | 72.2  71.1 | 9.15  0.960 | 96  76 | Published | 116˚ 56’ 37” 34˚ 10’ 0” | Big Bear Lake 7.5’ | Hornblende -biotite granodiorite. Unit typically very weathered, but minerals look very fresh; sample collected is fresh, unweathered. Isotropic and equigranular, non-foliate , medium-grained, non-porphyritic. |
| T11-4 | Biotite  Hbld | 69.7  74.9 | 9.16  1.209 | 85  89 | Published | 117˚ 58’ 40” 34˚ 6’ 46” | Forest Falls 7.5’ | Hornblende -biotite granodiorite. Porphyritic, phenocrysts to 4 cm in length. Rock is highly injected by pegmatite and aplite, and contains abundant inclusions of all sizes. |
| T12-4 | Biotite | 66.1 | 8.62 | 86 | Published | 117˚ 8’ 43” 34˚ 11’ 5” | Harrison Mtn 7.5’ | Biotite monzogranite, may contain some muscovite. Deeply weathered, pink feldspar give rock an overall pink color. Medium-grained, slightly porphyritic, slightly foliate. |
| T13-4 | Biotite | 70.5 | 8.73 | 96 | Published | 117˚ 4’ 29” 34˚ 12’ 57” | Keller Peak 7.5’ | Biotite monzogranite. Medium-grained, uniform over several acres. Similar in appearance to Cactus Flat body, but shows no deformation. Good fresh sample. |
| T14-4 | Biotite  Muscovite | 73.9  72.7 | 9.24  10.64 | 90  89 | Published | 117˚ 1’ 13” 34˚ 14’ 58” | Keller Peak 7.5’ | Biotite monzogranite. Appears to be same granitic unit as T13-4. Sample very fresh here. |
| **Sample**  **No** | **Mineral** | **Age**  **(Ma)** | **K2O**  **(percent)** | **Arrad**  **(percent)** | **Published or**  **Unpublished** | **Location** | **Quadrangle** | **Rock description** |
| T15-4 | Biotite  Biotite  Hbld | 69.6  69.4  73.4 | 9.25  9.25  0.984 | 94  88  87 | Published | 117˚ 7’ 35” 34˚ 12’ 54” | Harrison Mtn 7.5’ | Hornblende -biotite granodiorite. Coarse-grained, non-foliate, non-porphyritic, and equigranular. Notes indicate this rock is fundamentally different than most of the plutonic rocks east of Running Springs |
| T16-4 | Biotite | 69.5 | 8.88 | 90 | Published | 117˚ 9’ 8”  34˚ 15’ 34” | Lake Arrowhead 7.5’ | Biotite- hornblende granodiorite. Similar to T15-4. Mixed with abundant pegmatite and K-spar-rich rocks. Hooks Creek sample. |
| T17-4 | -- | -- | -- | -- | -- | -- | Harrison Mtn 7.5’ | Biotite monzogranite. Porphyritic, fine-grained. (Probably from fine-grained unit on highway west of Rimforest). Not dated. |
| T18-4 | Biotite | 66.6 | 9.50 | 88 | Published | 117˚ 14’ 41” 34˚ 13’ 41” | Harrison Mtn 7.5’ | Hornblende -biotite granodiorite. Fine-grained, fresh rock. |
| T19-4 | Biotite  Muscovite | 68.1  71.2 | 9.10  10.82 | 90  95 | Published | 116˚ 28’ 44” 34˚ 8’ 51” | Yucca Valley North 7.5’ | Two-mica monzogranite. Medium-grained, non-foliate, non-porphyritic, isotropic and equigranular. |
| T20-4 | -- | -- | -- | -- | -- | -- | -- | Biotite monzogranite. Very K-spar-rich. Non-foliate, non-porphyritic, isotropic and equigranular. Not dated. Locality records discarded with sample |
| T21-4 | -- | -- | -- | -- | -- | -- | -- | Hornblende -biotite granodiorite. Very large, well-formed k-feldspar phenocrysts. Groundmass grains may show some milling. Not dated. Locality records discarded with sample |
| T22-4  to  T29-4 | -- | -- | -- | -- | -- | -- | -- | Sample numbers skipped; no samples for these numbers |
| T30-4 | Biotite  Muscovite | 70.7  69.5 | 9.77  10.64 | 92  93 | Published | 116˚ 50’ 24” 34˚ 19’ 23” | Big Bear City 7.5’ | Baldwin Gneiss. Coarse-grained augen gneiss. Very fresh. Contains abundant biotite and about 1 percent muscovite. Fairly mafic. Coarsely foliate. Has fine grained pod- shaped layers of same mineral composition as rest of rock. |
| T31-4 | -- | -- | -- | -- | -- | -- | Fawnskin 7.5’ | Fawnskin monzonite. Suppe-Armstrong 194 Ma hornblende locality. Rock looks unweathered, but hornblende may be chloritized. Biotite in large clots giving rock a pock marked appearance. Not dated |
| T31A-4 | Biotite  Hbld Hbld | 82  126  197 | 9.16  0.644  0.550 | 90  82  55 | Published | 116˚ 59’ 22” 34˚ 18’ 14” | Fawnskin 7.5’ | Same rock as T31-4; collected about 100m northwest of T31-4. Contains some biotite. Possible float; hornblende here also looks chloritized. First (126 Ma) hornblende separate contains 11 percent pyroxene contaminate; second (197 Ma) hornblende separate contains 15 percent pyroxene contaminate. |
| T32-4 | Biotite  Hbld | 71.5  70.5 | 9.42  0.763 | 89  64 | Published | 116˚ 57’ 0” 34˚ 16’ 25” | Fawnskin 7.5’ | Hornblende -biotite monzogranite or granodiorite. Sphene-bearing. Contains small, pink K-feldspar phenocrysts. Hornblende may be chloritized. |
| **Sample**  **No** | **Mineral** | **Age**  **(Ma)** | **K2O**  **(percent)** | **Arrad**  **(percent)** | **Published or**  **Unpublished** | **Location** | **Quadrangle** | **Rock description** |
| T33-4 | Hbld | 65.0 | 1.284 | 87 | Published | 118˚ 10’ 7” 34˚ 16’ 8” | Condor Peak 7.5’ | Mt Lowe Granodiorite. Hornblende is only obvious mafic mineral. |
| T34-4 | Biotite | 65.1 | 9.09 | 93 | Published | 118˚ 7’ 27” 34˚ 15’ 51” | Chilao Flat 7.5’ | Biotite granodiorite. Sphene-bearing. Appears to be no hornblende. Slightly foliate. Probably part of biotite-only Mt Lowe unit. |
| T35-4 | Hbld | 113 | 1.361 | 87 | Published | 117˚ 59’ 55” 34˚ 16’ 54” | Waterman Mtn 7.5’ | Hornblende monzogranite or monzonite. No biotite apparent. Part of Mt Lowe unit. Lineate and foliate. Looks fresh. |
| T36-4 | Biotite | 65.3 | 9.31 | 80 | Published | 117˚ 59’ 4” 34˚ 20’ 33” | Waterman Mtn 7.5’ | Biotite monzogranite. Slightly porphyritic; non-foliate. |
| T37-4 | Biotite | 58.5 | 9.02 | 92 | Published | 117˚ 50’ 59” 34˚ 20’ 51” | Crystal Lake 7.5’ | Biotite monzogranite. Not sure about feldspars; could be granodiorite or even quartz diorite. Foliate. Mixed with fine and coarse grained granitic rocks, pegmatite, and gneiss. |
| T38-4 | Biotite  Muscovite | 79.1  85.5 | 9.37  10.31 | 92  92 | Published | 118˚ 1’ 56” 34˚ 22’ 46” | Pacifico Mtn 7.5’ | Muscovite-biotite granodiorite. Color index about 10. Medium grained; porphyritic. Phenocrysts to 6 cm long. Foliate. Part of Mt Lowe unit. |
| T39-4 | -- | -- | -- | -- | -- | -- | Pacifico Mtn 7.5’ | Muscovite-biotite granodiorite. Color index about 10. Medium grained; porphyritic. Foliate. Part of Mt Lowe unit. Not dated |
| T40-4 | -- | -- | -- | -- | -- | -- | Pacifico Mtn 7.5’ | Biotite monzogranite. Not dated. |
| T41-4 | Biotite  Hbld | 59.8  63.1 | 8.87  1.655 | 89  86 | Published | 117˚ 49’ 58” 34˚ 18’ 0” | Crystal Lake 7.5’ | Biotite- hornblende granodiorite. Fine-grained. Color index ~5. Collected from large mafic segregation contained in a relatively leucocratic granitic rock. |
| T42-4 | -- | -- | -- | -- | -- | -- | -- | No record in notes. May have inadvertently skipped this number. |
| T43-4 | Biotite | 79.9 | 9.25 | 93 | Published | 117˚ 5’ 30” 34˚ 21’ 50” | Butler Peak 7.5’ | Biotite monzogranite or granodiorite. Porphyritic. Fresh rock. Northern part of the Rattlesnake pluton. |
| T44-4 | Biotite | 72.4 | 9.40 | 92 | Published | 117˚ 3’ 13” 34˚ 23’ 38” | Butler Peak 7.5’ | Biotite monzogranite or granodiorite. Porphyritic. Moderately weathered rock. Part of the Rattlesnake pluton. |
| T45-4 | Biotite  Hbld | 70.1  72.9 | 8.96  0.927 | 92  48 | Published | 116˚ 41’ 25” 34˚ 20’ 9” | Rattlesnake Canyon 7.5’ | Hornblende -biotite granodiorite. Color index ~25. Shows some mineral segregation into layers. |
| T46-4 | Biotite | 70.8 | 8.78 | 95 | Published | 117˚ 54’ 22” 34˚ 9’ 53” | Azusa 7.5’ | Hornblende -biotite granodiorite or tonalite. Color index ~25. Coarse-grained, foliate, slightly segregated into layers. Cataclasized. |
| T47-4 | Biotite  Hbld | 71.7  73.3 | 8.68  1.259 | 93  65 | Published | 117˚ 59’ 27” 34˚ 10’ 21” | Azusa 7.5’ | Hornblende -biotite granodiorite or tonalite. Color index ~30. Coarse-grained, slightly cataclasized. |
| T48-4 | Biotite | 60.8 | 8.66 | 90 | Published | 118˚ 1’ 9”  34˚ 11’ 35” | Mt. Wilson 7.5’ | Hornblende -biotite granodiorite or tonalite. Color index ~22. Medium-grained, equigranular. |
| T49-4 | Biotite  Hbld | 71.4  70.5 | 8.76  0.695 | 93  53 | Published | 118˚ 10’ 37” 34˚ 11’ 36” | Pasadena 7.5’ | Hornblende -biotite granodiorite or tonalite. |
| **Sample**  **No** | **Mineral** | **Age**  **(Ma)** | **K2O**  **(percent)** | **Arrad**  **(percent)** | **Published or**  **Unpublished** | **Location** | **Quadrangle** | **Rock description** |
| T50-4 | Biotite | 70.3 | 8.69 | 92 | Published | 118˚ 11’ 2” 34˚ 13’ 43” | Pasadena 7.5’ | Hornblende -biotite granodiorite or tonalite. Coarse-grained, equigranular. |
| T51-4 | Biotite | 70.0 | 9.29 | 94 | Published | 116˚ 34’ 40” 34˚ 9’ 51” | Rimrock 7.5’ | Biotite monzogranite, nonporphyritic, nonfoliate. Medium- to fine-grained. |
| T52-4 | Biotite | 69.2 | 9.12 | 84 | Published | 116˚ 39’ 19” 34˚ 10’ 45” | Onyx Peak 7.5’ | Muscovite-biotite monzogranite, nonporphyritic, nonfoliate. Medium- to fine-grained. |
| T53-4 | Biotite | 70.1 | 9.25 | 94 | Published | 117˚ 17’ 16” 34˚ 16’ 6” | Silverwood Lake 7.5’ | Hornblende -biotite granodiorite. Porphyritic. |
| T54-4 | Biotite | 71.1 | 9.08 | 88 | Published | 117˚ 4’ 17” 34˚ 16’ 8” | Butler Peak 7.5’ | Biotite monzogranite, Medium-grained, slightly porphyritic. |
| T55-4 | Biotite | 70.0 | 9.35 | 94 | Published | 116˚ 56’ 57” 34˚ 12’ 0” | Big Bear Lake 7.5’ | Biotite monzogranite, equigranular. Same pluton as sample T54-4. Location in Prof Paper 1152 listed as T. 2 N.; is actually T . 1 N. |
| T56-4 | Biotite | 72.6 | 8.95 | 92 | Published | 116˚ 35’ 54” 34˚ 19’ 24” | Bighorn Canyon 7.5’ | Biotite monzogranite, sparsely porphyritic. Medium-grained. Color index ~10. |
| T57-4 | Biotite | 70.5 | 9.19 | 94 | Published | 116˚ 36’ 15” 34˚ 20’ 55” | Bighorn Canyon 7.5’ | Biotite granodiorite. Medium-grained, equigranular. Has granoblastic looking texture; could be metamorphosed granitic rock. Color index ~15. |
| T58-4 | Biotite | 70.1 | 9.06 | 89 | Published | 116˚ 33’ 22” 34˚ 16’ 2” | Bighorn Canyon 7.5’ | Biotite granodiorite. Fine-grained, equigranular. Color index ~15. Location in Prof Paper 1152 omits Township and Range, which are T. 2 N.; R .4 E. |
| T59-4 | Biotite | 69.7 | 9.15 | 89 | Published | 116˚ 35’ 39” 34˚ 12’ 18” | Rimrock 7.5’ | Hornblende -biotite granodiorite. Medium-grained, slightly foliate. Color index ~15. |
| T60-4 | Biotite | 68.0 | 9.45 | 54 | Published | 116˚ 43’ 28” 34˚ 8’ 57” | Onyx Peak7.5’ | Biotite monzogranite, equigranular. Contains segregations of mafic minerals from partially resorbed inclusions. |
| T61-4 | Biotite | 65.0 | 9.12 | 85 | Published | 116˚ 45’ 42” 34˚ 17’ 12” | Big Bear City 7.5’ | Muscovite-biotite monzogranite, highly lineate. Medium-grained. Color index ~12. |
| T62-4 | Biotite  Hbld | 69.5  71.0 | 8.99  10.62 | 94  89 | Published | 116˚ 42’ 4” 34˚ 15’ 37” | Rattlesnake Canyon 7.5’ | Muscovite-biotite monzogranite, garnet-bearing. Medium- to coarse-grained. Color index ~7. |
| T63-4 | Biotite | 66.2 | 9.87 | 90 | Published | 116˚ 44’ 8” 34˚ 15’ 19” | Rattlesnake Canyon 7.5’ | Baldwin Gneiss. Contains muscovite and biotite. Well-developed lineation and foliation. Medium- to fine-grained. |
| T64-4 | Biotite | 68.4 | 9.20 | 87 | Published | 116˚ 52’ 5” 34˚ 15’ 31” | Big Bear City 7.5’ | Biotite monzogranite, fine-grained, equigranular. Probably part of Stanfield Cutoff body. |
| T65-4 | Biotite | 69.4 | 9.16 | 86 | Published | 117˚ 11’ 59” 34˚ 19’ 25” | Lake Arrowhead 7.5’ | Biotite monzogranite, equigranular. Fine-grained. Color index ~8. |
| T66-4 | Biotite  Hbld | 67.2  73.9 | 9.05  1.222 | 90  78 | Published | 117˚ 8’ 28” 34˚ 10’ 1” | Harrison Mtn 7.5’ | Hornblende -biotite granodiorite. Medium-grained, slightly foliate. Color index ~20. |
| T67-4 | Biotite | 56.6 | 7.76 | 77 | Published | 117˚ 58’ 36” 34˚ 13’ 54” | Azusa 7.5’ | Biotite monzogranite, medium-grained, leucocratic. Slightly foliate. Color index ~4. |
| **Sample**  **No** | **Mineral** | **Age**  **(Ma)** | **K2O**  **(percent)** | **Arrad**  **(percent)** | **Published or**  **Unpublished** | **Location** | **Quadrangle** | **Rock description** |
| T68-4 | Biotite | 64.2 | 8.33 | 88 | Published | 117˚ 54’ 26” 34˚ 14’ 38” | Azusa 7.5’ | Hornblende -biotite bearing granitic gneiss. Medium-grained. Incipient segregation of minerals into layers. Color index ~25. |
| T69-4 | -- | -- | -- | -- | -- | -- | -- | Mt Lowe Granodiorite and hybrid rock; former is garnet- hornblende, latter is biotite-hornblende. Not dated. |
| T70-4 | Biotite  Hbld | 62.3  65.6 | 8.29  1.250 | 87  79 | Published | 117˚ 46’ 31” 34˚ 13’ 38” | Glendora 7.5’ | Hornblende -biotite diorite. Fine-grained, equigranular, but has a subtle lineation overprint. |
| T71-4 | Biotite | 60.0 | 9.18 | 87 | Published | 117˚ 43’ 36” 34˚ 13’ 23” | Mt. Baldy 7.5’ | Hornblende -biotite quartz diorite. Medium- to fine-grained, slightly foliate. Color index ~30. |
| T72-4 | Biotite | 72.8 | 8.25 | 93 | Published | 117˚ 38’ 31” 34˚ 14’ 36” | Mt. Baldy 7.5’ | Hornblende -biotite quartz diorite. Coarse-grained, equigranular. Slightly cataclasized. |
| T73-4 | Biotite | 68.3 | 8.18 | 88 | Published | 117˚ 40’ 28” 34˚ 10’ 48” | Mt. Baldy 7.5’ | Cataclastic hornblende -biotite diorite. Almost a mylonite. Foliate and lineate. Color index ~40. Location in Prof Paper 1152 listed as R. 7 W.; is actually R .8 W. |
| T74-4 | Biotite | 70.5 | 9.14 | 87 | Published | 117˚ 37’ 41” 34˚ 10’ 57” | Mt. Baldy 7.5’ | Cataclastic hornblende -biotite diorite. Coarser grained than T73-4. Foliate and lineate. Color index ~30. |
| T75-4 | Biotite | 74.5 | 9.13 | 93 | Published | 117˚ 33’ 39” 34˚ 12’ 9” | Cucamonga Peak 7.5’ | Hornblende -biotite diorite. Cataclasized. Medium-grained, slightly foliate. Color index ~25. |
| T76-4 | Biotite | 71.0 | 8.92 | 91 | Published | 118˚ 17’ 12” 34˚ 17’ 28” | Sunland 7.5’ | Biotite quartz diorite. Medium- to fine-grained. Granoblastic-looking texture. Color index ~18. |
| T77-4 | Biotite | 68.0 | 8.97 | 93 | Published | 118˚ 12’ 23” 34˚ 17’ 0” | Condor Peak 7.5’ | Hornblende -biotite granodiorite. Medium-grained, equigranular. Color index ~18. |
| T78-4 | Biotite | 64.7 | 9.13 | 92 | Published | 118˚ 3’ 17” 34˚ 13’ 29” | Mt. Wilson 7.5’ | Hornblende -biotite granodiorite. Medium-grained, equigranular. Color index ~20. |
| T79-4 | Biotite | 64.6 | 6.82 | 89 | Published | 118˚ 5’ 28” 34˚ 14’ 37” | Mt. Wilson 7.5’ | Hornblende -biotite diorite. Medium- to fine-grained, poorly developed foliation. Color index 25 to 30. |
| T80-4 | Biotite  Hbld | 66.4  74.8 | 9.03  1.053 | 90  70 | Published | 118˚ 8’ 24” 34˚ 18’ 34” | Condor Peak 7.5’ | Hornblende -biotite granodiorite. Medium- to fine-grained, equigranular. Color index ~20. |
| T81-4 | -- | -- | -- | -- | -- | -- | -- | Sample discarded. |
| T82-4 | Biotite | 66.6 | 9.17 | 84 | Published | 117˚ 58’ 25” 34˚ 25’ 4” | Juniper Hills 7.5’ | Biotite monzogranite. Coarse-grained, foliate. Slightly cataclasized. Color index ~12. |
| T83-4 | Biotite | 64.6 | 9.11 | 83 | Published | 117˚ 58’ 35” 34˚ 23’ 14” | Juniper Hills 7.5’ | Biotite monzogranite. Coarse-grained. Slightly porphyritic. Very leucocratic. Color index ~5. |
| T84-4 | Biotite | 63.0 | 9.19 | 88 | Published | 117˚ 47’ 35” 34˚ 21’ 35” | Crystal Lake 7.5’ | Hornblende -biotite diorite. Fine-grained, equigranular. Color index ~60. |
| T85-4 | Biotite | 71.1 | 9.06 | 91 | Published | 117˚ 26’ 57” 34˚ 14’ 5” | Devore 7.5’ | Hornblende -biotite bearing cataclasite. Coarse-grained, slightly foliate. |
| T86-4 | Biotite | 69.9 | 9.05 | 85 | Published | 117˚ 32’ 39” 34˚ 15’ 4” | Telegraph Peak 7.5’ | Hornblende -biotite bearing cataclasite. Medium-grained, slightly foliate and distinctly lineate. |
| **Sample**  **No** | **Mineral** | **Age**  **(Ma)** | **K2O**  **(percent)** | **Arrad**  **(percent)** | **Published or**  **Unpublished** | **Location** | **Quadrangle** | **Rock description** |
| T87-4 | Hbld | 73.6 | 1.156 | 73 | Published | 116˚ 49’ 48” 34˚ 20’ 1” | Big Bear City 7.5’ | Hornblende -biotite quartz diorite. Medium-grained, equigranular. Color index ~30. |
| T88-4 | -- | -- | -- | -- | -- | -- | -- | Sample discarded |
| T89-4 | Biotite | 71.0 | 9.26 | 92 | Published | 116˚ 54’ 5” 34˚ 22’ 48” | Lucerne Valley 7.5’ | Muscovite-biotite monzogranite. Medium- to fine-grained, but micas are finer grained than quartz and felsic minerals. Color index ~8. |
| T90-4 | Biotite | 87.3 | 9.20 | 92 | Published | 117˚ 3’ 43” 34˚ 34’ 35” | Fairview Valley 7.5’ | Biotite monzogranite. Coarse-grained, equigranular. Very abundant sphene. Color index ~6. |
| T91-4 | Biotite  Hbld | 106  186 | 9.37  0.704 | 92  77 | Published | 117˚ 4’ 51” 34˚ 41’ 1” | Stoddard Well 7.5’ | Hornblende -biotite granodiorite. Medium-grained, equigranular. Color index ~15. |
| T92-4 | Biotite | 75.0 | 8.89 | 79 | Published | 117˚ 3’ 24” 34˚ 39’ 14” | Stoddard Well 7.5’ | Biotite monzogranite. Medium-grained, equigranular. Heterogeneous mix of rocks at sample site. Sample may be a hybrid. |
| T93-4 | Biotite | 77.7 | 9.25 | 78 | Published | 116˚ 57’ 56” 34˚ 40’ 21” | West Ord Mtn. 7.5’ | Biotite monzogranite. Coarse-grained, equigranular. Rock slightly altered, but dated biotite separate showed no signs of alteration. Color index ~5. |
| T94-4 | Hbld | 96.1 | 1.162 | 78 | Published | 116˚ 56’ 38” 34˚ 38’ 11” | West Ord Mtn. 7.5’ | Banded gneiss. Layers range from 1 to 30 mm thick. Hornblende is only mafic mineral. |
| T95-4 | Biotite | 74.0 | 9.14 | 86 | Published | 116˚ 57’ 34” 34˚ 32’ 12” | White Horse Mtn 7.5’ | Hornblende -biotite granodiorite. Fine-grained, slightly foliate. Hornblende has pyroxene cores. Color index ~20. |
| T96-4 | Biotite | 70.8 | 8.64 | 88 | Published | 116˚ 55’ 38” 34˚ 21’ 34” | Fawnskin 7.5’ | Hornblende -biotite granodiorite. Medium-grained, equigranular. Abundant sphene. Color index ~20. |
| T97-4 | Biotite  Hbld | 70.2  72.2 | 99.51  1.089 | 91  64 | Published | 116˚ 52’ 54” 34˚ 27’ 47” | Lucerne Valley 7.5’ | Hornblende -biotite quartz diorite. Medium-grained, lineate. Color index ~12. |
| T98-4 | Biotite | 69.6 | 9.56 | 92 | Published | 117˚ 36’ 27” 34˚ 22’ 28” | Telegraph Peak 7.5’ | Hornblende -biotite granodiorite. Coarse -grained, slightly foliate. Color index ~25. See hornblende age T5-6 recollected at same site |
| T99-4 | Biotite | 70.8 | 9.14 | 90 | Published | 117˚ 40’ 24” 34˚ 24’ 21” | Mescal Creek 7.5’ | Hornblende -biotite quartz diorite. Medium- and fine-grained, bimodal grain size. Nonfoliate. Color index ~45. |
| T100-4 | Biotite | 69.4 | 9.06 | 80 | Published | 117˚ 45’ 2” 34˚ 26’ 6” | Valyermo 7.5’ | Biotite monzogranite. Leucocratic, segregated mineral layers. Fine-grained, nonporphyritic. Color index ~4. |
| T101-4 | Biotite | 71.8 | 9.07 | 92 | Published | 117˚ 45’ 55” 34˚ 25’ 29” | Valyermo 7.5’ | Layered gneiss. Biotite is only mafic mineral; no muscovite. Layers average about 5mm thick. |
| T102-4 | Biotite  Hbld | 73.3  70.6 | 9.11  1.276 | 94  70 | Published | 117˚ 51’ 50” 34˚ 27’ 51” | Valyermo 7.5’ | Hornblende -biotite granodiorite. Slightly foliate. Slightly cataclasized. Color index ~12. |
| T103-4 | Biotite | 73.0 | 9.10 | 89 | Published | 117˚ 39’ 33” 34˚ 10’ 49” | Mt Baldy 7.5’ | Biotite monzogranite. |
| T104-4 | Biotite | 75.3 | 9.22 | 92 | Published | 117˚ 39’ 35” 34˚ 12’ 2” | Mt Baldy 7.5’ | Cataclastic hornblende -biotite quartz diorite. Coarse-grained, faintly layered. Color index ~25. For hornblende age see T3-6; recollected at same site |
| **Sample**  **No** | **Mineral** | **Age**  **(Ma)** | **K2O**  **(percent)** | **Arrad**  **(percent)** | **Published or**  **Unpublished** | **Location** | **Quadrangle** | **Rock description** |
| T105-4 | Biotite  Hbld | 71.8  118 | 8.22  0.288 | 93  43 | Published | 117˚ 48’ 51” 34˚ 10’ 1” | Glendora 7.5’ | Hornblende -biotite diorite or amphibolite. Fine-grained, slightly foliate. Color index ~50. |
| T106-4 | Hbld  Hbld | 66.7  66.3 | ??  1.490 | ??  75 | Published | 117˚ 38’ 42” 34˚ 17’ 20” | Mt San Antonio 7.5’ | Hornblende -biotite quartz diorite. Medium-grained, foliate. All biotite chloritized. Color index ~25. |
| T1-5 | Biotite | 71.1 | 9.05 | 75 | Published | 118˚ 13’ 51” 34˚ 9’ 50” | Pasadena 7.5’ | Hornblende -biotite quartz diorite. Medium- to fine-grained. Slight cataclastic foliation. Color index ~60. |
| T2-5 | Biotite  Hbld  Hbld | 98.6  105  103 | 8.69  0.893  0.893 | 92  69  72 | Published | 117˚ 48’ 51” 34˚ 10’ 1” | Hollywood 7.5’ | Hornblende -biotite quartz diorite. Medium- to fine-grained. Slight cataclastic foliation. Color index ~60. Second (103 Ma) hornblende extraction done with SiO2 flux |
| T1-6 | Biotite  Biotite  Hbld | 64.9  65.0  147 | 8.23  8.24  0.357 | 92  79  79 | Published | 117˚ 48’ 51” 34˚ 10’ 1” | Glendora 7.5’ | Hornblendite, biotite bearing. Medium-grained, slightly foliate. Color index ~80. Heterogeneous here. Collected within 100m of T105-4. |
| T2-6 | Biotite | 57.8 | 8.93 | 86 | Published | 117˚ 58’ 36” 34˚ 13’ 54” | Azusa 7.5’ | Recollection of T67-4. Biotite monzogranite, medium-grained, leucocratic. Slightly foliate. Color index ~4. |
| T3-6 | Hbld | 74.2 | 1.267 | 68 | Unpublished | 117˚ 39’ 35” 34˚ 12’ 2” | Mt Baldy 7.5’ | Recollection of T104-4. Cataclastic hornblende -biotite quartz diorite. Coarse-grained, faintly layered. Color index ~25. Plotted on sample map as part of T-104 locality. |
| T4-6 | -- | -- | -- | -- | -- | 117˚ 49’ 58” 34˚ 18’ 0” | Crystal Lake 7.5’ | Recollection of T41-4. Biotite- hornblende granodiorite. Fine-grained. Color index ~5. Not dated. |
| T5-6 | Hbld | 62.9 | 1.542 | 72 | Unpublished | 117˚ 36’ 27” 34˚ 22’ 28” | Telegraph Peak 7.5’ | Recollection of T98-4. Hornblende -biotite granodiorite. Coarse -grained, slightly foliate. Color index ~25. |
| T6-6 | Hbld | 13.2 | 0.156 | 21 | Unpublished | 117˚ 18’ 39” 34˚ 9’ 20” | San Bernardino North 7.5’ | Hornblende granodiorite. Even-grained. May contain pyroxene. Contains pegmatitic segregations. Intrudes Pelona Schist. |
| T1-7 | Biotite  Hbld | 100  105 | 8.80  0.857 | 86  68 | Unpublished | 118˚ 21’ 37” 34˚ 6’ 30” | Hollywood 7.5’ | Recollection of T2-5. Hornblende -biotite quartz diorite or granodiorite. Medium- to coarse-grained. Cataclastic foliation. Sphene-bearing. Color index ~25. |
| M1-3 | Hbld | 140 | 1.436 | 81 | Published | 117˚ 4’ 0”  34˚ 27’ 14” | Fifteenmile Valley 7.5’ | Biotite- Hbld monzonite. Medium- to coarse-grained. Abundant sphene. Color index ~15. Granite Mountains; Fifteenmile Point |
| M1-4 | Biotite | 71.5 | 9.50 | 92 | Published | 117˚ 16’ 52” 34˚ 32’ 10” | Victorville 7.5’ | Biotite monzogranite. Leucocratic, fine-grained, nonporphyritic. Uneven distribution of biotite in rock; much occurs as clots. |
| M2-4 | Biotite | 73.8 | 9.51 | 92 | Published | 117˚ 07’ 37” 34˚ 28’ 33” | Apple Valley South 7.5’ | Hornblende -biotite granodiorite. Medium-grained, equigranular. Abundant sphene. |
| M3-4 | Biotite | 68.4 | 9.27 | 89 | Published | 116˚ 47’ 58” 34˚ 27’ 40” | Cougar Buttes 7.5’ | Biotite monzogranite. Leucocratic, medium- to fine-grained, nonporphyritic. Contains trace muscovite. |
| M4-4 | Biotite | 71.5 | 9.74 | 87 | Published | 116˚ 31’ 33” 34˚ 22’ 3” | Big Horn Canyon 7.5’ | Biotite monzogranite. Biotite occurs as very fine grained clusters. Porphyritic. |
| M5-4 | Biotite  Hbld | 68.2  73.1 | 9.26  0.905 | 82  77 | Published | 116˚ 29’ 21” 34˚ 16’ 17” | Landers 7.5’ | Hornblende -biotite granodiorite. Medium-grained, slightly foliate. Equigranular, nonporphyritic. |
| **Sample**  **No** | **Mineral** | **Age**  **(Ma)** | **K2O**  **(percent)** | **Arrad**  **(percent)** | **Published or**  **Unpublished** | **Location** | **Quadrangle** | **Rock description** |
| M6-4 | Biotite | 73.7 | 8.74 | 92 | Published | 117˚ 5’ 14” 34˚ 32’ 42” | Fairview Valley 7.5’ | Biotite monzogranite. Leucocratic. Fine-grained, containing 7mm long phenocrysts of microcline. |
| M7-4 | Biotite | 86.0 | 8.92 | 90 | Published | 117˚ 10’ 55” 34˚ 35’ 45” | Apple Valley North 7.5’ | Hornblende -biotite monzogranite. Medium-grained, sparsely porphyritic. |
| M8-4 | Biotite  Hbld | 83.4  169 | 8.71  0.521 | 88  68 | Published | 117˚ 13’ 38” 34˚ 33’ 13” | Apple Valley North 7.5’ | Hornblende -biotite granodiorite. Medium-grained, nonfoliate. Equigranular, nonporphyritic. Color index ~18. Hbld age is from sample M2-6, which is a recollection of site listed here. |
| M9-4 | Biotite | 72.4 | 8.95 | 94 | Published | 117˚ 19’ 16” 34˚ 34’ 24” | Victorville 7.5’ | Hornblende -biotite granodiorite. Medium-grained, nonfoliate. Equigranular, nonporphyritic. Color index ~10. |
| M10-4 | Biotite | 68.3 | 8.75 | 90 | Published | 116˚ 49’ 29” 34˚ 29’ 42” | Cougar Buttes 7.5’ | Biotite monzogranite. Leucocratic, medium- to fine-grained, nonporphyritic, nonfoliate. Contains subordinate muscovite. |
| M11-4 | Biotite | 68.9 | 9.21 | 91 | Published | 116˚ 44’ 9” 34˚ 26’ 29” | Old Woman Springs 7.5’ | Biotite monzogranite. Leucocratic, medium- to fine-grained, nonporphyritic, nonfoliate. Contains subordinate muscovite. Same pluton as sample M10-4. |
| M12-4 | Biotite  Hbld | 67.6  69.2 | 8.87  1.065 | 89  69 | Published | 116˚ 42’ 50” 34˚ 24’ 4” | Old Woman Springs 7.5’ | Hornblende -biotite monzogranite. Medium-grained, slightly foliate. Color index ~12. |
| M13-4 | Biotite | 70.0 | 9.20 | 89 | Published | 116˚ 54’ 15” 34˚ 33’ 23” | White Horse Mtn 7.5’ | Biotite monzogranite. This is probably a hybrid rock contaminated by metamorphic rocks. |
| M14-4 | Biotite | 72.2 | 8.85 | 80 | Published | 117˚ 13’ 6” 34˚ 31’ 28” | Apple Valley North 7.5’ | Biotite monzogranite. Fine-grained, slightly foliate. May be a hybrid rock. |
| M15-4 | Biotite  Hbld | 69.9  72.4 | 8.82  0.725 | 94  20 | Published | 116˚ 37’ 42” 34˚ 27’ 44” | Old Woman Springs 7.5’ | Hornblende -biotite monzogranite. Medium-grained, slightly porphyritic. Color index ~12. |
| M16-4 | Biotite | 67.7 | 9.05 | 86 | Published | 116˚ 33’ 6” 34˚ 27’ 20” | Melville Lake 7.5’ | Biotite monzogranite. Leucocratic, fine-grained, nonporphyritic. Contains trace muscovite. |
| M17-4 | Biotite | 80.7 | 9.10 | 90 | Published | 116˚ 29’ 11” 34˚ 28’ 16” | Emerson Lake 15’ | Hornblende -biotite monzogranite. Porphyritic; high concentration of phenocrysts. Color index ~15. |
| M18-4 | Biotite | 71.5 | 9.37 | 91 | Published | 116˚ 29’ 8” 34˚ 30’ 37” | Galway Lake 7.5’ | Biotite monzogranite. Pale-gray, nonporphyritic. Has abundant myrmikitic intergowths. Color index ~5. |
| M19-4 | Biotite | 75.0 | 9.35 | 91 | Published | 116˚ 34’ 43” 34˚ 32’ 53” | Iron Ridge 7.5’ | Hornblende -biotite monzogranite. Porphyritic; high concentration of phenocrysts. Color index ~15. Same pluton as M17-4, but here mixed with other granitic rocks. |
| M20-4 | Biotite  Hbld | 78.5  109 | 9.38  0.996 | 94  74 | Published | 116˚ 23’ 46” 34˚ 18’ 55” | Landers 7.5’ | Hornblende -biotite quartz diorite. Collected from small mafic-mineral-rich body within monzogranite pluton. Color index ~25. |
| M21-4 | Biotite | 122 | 8.79 | 96 | Published | 116˚ 17’ 7” 34˚ 13’ 1” | Joshua Tree North 7.5’ | Biotite monzogranite. Slightly porphyritic. Color index ~20. Contains abundant allanite. Rock has subtle greenish cast. |
| M22-4 | Biotite | 94.6 | 9.36 | 96 | Published | 116˚ 18’ 35” 34˚ 9’ 17” | Joshua Tree North 7.5’ | Biotite monzogranite. Essentially nonfoliate, but minor grain-size reduction gives rock a planar fabric too subtle to measure. |
| M23-4 | -- | -- | -- | -- | -- | -- | Joshua Tree North 7.5’ | Sample discarded. |
| **Sample**  **No** | **Mineral** | **Age**  **(Ma)** | **K2O**  **(percent)** | **Arrad**  **(percent)** | **Published or**  **Unpublished** | **Location** | **Quadrangle** | **Rock description** |
| M24-4 | Biotite | 74.0 | 9.38 | 94 | Published | 116˚ 20’ 55” 34˚ 14’ 10” | Joshua Tree North 7.5’ | Gneissic biotite monzonite. Slightly porphyroblastic. Biotite unaltered. Color index ~20. |
| M25-4 | Biotite  Hbld | 71.0  71.5 | 9.36  0.704 | 94  71 | Published | 116˚ 26’ 41” 34˚ 12’ 49” | Yucca Valley North 7.5’ | Hornblende -biotite granodiorite. Medium- to coarse-grained, nonfoliate. Color index ~15. |
| M26-4 | Biotite | 74.7 | 8.42 | 92 | Published | 117˚ 42’ 33” 34˚ 31’ 57” | El Mirage 7.5’ | Hornblende -biotite granodiorite. Medium-grained, foliated. Color index ~30. Dated rock is a septum in a large mass of leucocratic monzogranite and pegmatite. |
| M27-4 | Biotite | 74.3 | 9.49 | 85 | Published | 117˚ 48’ 35” 34˚ 36’ 11” | Lovejoy Buttes7.5’ | Biotite monzogranite. Porphyritic. Medium-grained, but contains quartz grains larger than other groundmass minerals. Color index ~12. |
| M28-4 | Biotite  Hbld | 82.2  84.3 | 9.47  0.635 | 81  70 | Published | 117˚ 37’ 38” 34˚ 37’ 18” | El Mirage 7.5’ | Hornblende -biotite granodiorite or monzogranite. Medium-grained. Color index ~10. Very fresh. Hornblende age is from sample M1-6, which is a recollection of site listed here. |
| M29-4 | Biotite | 83.2 | 8.62 | 91 | Published | 117˚ 30’ 8” 34˚ 40’ 26” | Shadow Mtns 7.5’ | Biotite monzogranite. Leucocratic. Equigranular. Medium- to fine-grained. Color index ~7. |
| M30-4 | Biotite | 74.9 | 9.35 | 92 | Published | 117˚ 45’ 37” 34˚ 37’ 1” | Lovejoy Buttes 7.5’ | Hornblende -biotite monzogranite. Metamorphic-looking; slightly porphyroblastic, medium-grained. Color index ~15. |
| M31-4 | Biotite | 67.2 | 9.27 | 85 | Published | 117˚ 51’ 34” 34˚ 38’ 29” | Hi Vista 7.5’ | Muscovite-biotite monzogranite. Medium-grained. Rock is deeply weathered, but both micas appear to be fresh and unaltered. |
| M32-4 | Biotite | 77.5 | 9.43 | 93 | Published | 117˚ 49’ 15” 34˚ 41’ 55” | Hi Vista 7.5’ | Hornblende -biotite monzogranite. Equigranular. Medium- to coarse-grained. Color index ~15. |
| M33-4 | Biotite  Hbld | 78.3  75.2 | 9.50  0.579 | 79  58 | Published | 117˚ 47’ 26” 34˚ 44’ 4” | Hi Vista 7.5’ | Hornblende -biotite monzogranite. Equigranular. Medium- to coarse-grained. Color index ~15. Probably same pluton as M32-4. |
| M34-4 | Biotite | 76.2 | 9.25 | 88 | Published | 117˚ 41’ 2” 34˚ 42’ 22” | Adobe Mtn. 7.5’ | Biotite monzogranite. Leucocratic. Medium- to fine-grained. Equigranular, except for biotite which is finer grained than other minerals. Color index ~5. |
| M35-4 | Biotite | 74.1 | 8.55 | 72 | Published | 117˚ 35’ 40” 34˚ 42’ 50” | Shadow Mtns 7.5’ | Alaskite, garnet-bearing. Fine-grained. Equigranular. Contains about 1 percent biotite. |
| M36-4 | Biotite | 74.3 | 9.40 | 88 | Published | 116˚ 50’ 8” 34˚ 34’ 16” | Grand View Mine 7.5’ | Hornblende -biotite granodiorite. Medium-grained. Porphyritic. Color index ~20. |
| M37-4 | -- | -- | -- | -- | -- | -- | -- | Sample discarded. |
| M38-4 | Biotite | 149 | 9.34 | 97 | Published | 116˚ 41’ 55” 34˚ 40’ 0” | Camp Rock Mine 7.5’ | Hornblende -biotite monzogranite. Fine-grained. Porphyritic. Medium- to dark-gray feldspar. Color index ~12. |
| M39-4 | Biotite  Hbld | 76.4  73.6 | 8.87  0.568 | 94  59 | Published | 116˚ 38’ 29” 34˚ 35’ 32” | Fry Mts 7.5’ | Hornblende -biotite granodiorite or monzogranite. Sparsely porphyritic. Color index ~15. Very fresh. Hornblende age is from sample M4-6, a recollection of site listed here. |
| M40-4 | Biotite | 80.0 | 9.31 | 93 | Published | 116˚ 42’ 5” 34˚ 32’ 51” | Fry Mts 7.5’ | Hornblende -biotite monzogranite. Medium-grained. Porphyritic. Slightly foliate. Color index ~14. Probably same pluton as M39-4. |
| **Sample**  **No** | **Mineral** | **Age**  **(Ma)** | **K2O**  **(percent)** | **Arrad**  **(percent)** | **Published or**  **Unpublished** | **Location** | **Quadrangle** | **Rock description** |
| M41-4 | Biotite | 74.2 | 9.17 | 87 | Published | 116˚ 34’ 4” 34˚ 35’ 36” | Iron Ridge 7.5’ | Hornblende -biotite monzogranite. Medium-grained. Small, sparse phenocrysts. Color index ~10. |
| M42-4 | Biotite  Hbld | 74.4  131 | 9.22  0.769 | 77  72 | Published | 116˚ 25’ 57” 34˚ 12’ 3” | Yucca Valley North 7.5’ | Hornblende -biotite granodiorite. Medium- to coarse-grained. Equigranular. Color index ~18. |
| M43-4 | Biotite | 72.3 | 9.28 | 93 | Published | 116˚ 28’ 18” 34˚ 13’ 11” | Yucca Valley North 7.5’ | Biotite monzogranite. Medium-grained. Porphyritic, phenocrysts to 2.5 cm in length. Color index ~12. |
| M44-4 | Biotite | 109 | 8.99 | 85 | Published | 116˚ 21’ 22” 34˚ 17’ 33” | Goat Mtn 7.5’ | Hornblende -biotite granodiorite. Medium- to coarse-grained. Equigranular. Color index ~25. Rock composition and texture fairly heterogeneous at sample site. |
| M45-4 | Biotite  Hbld | 162  163 | 8.70  0.635 | 68 | Published | 116˚ 1’ 43” 34˚ 12’ 47” | Twentynine Palms 7.5’ | Hornblende -biotite monzogranite. Medium- to dark- purple-gray feldspar. Porphyritic. Probably same pluton as M14-7. |
| M46-4 | -- | -- | -- | -- | -- | -- | Deadman Lake 7.5’ | Sample discarded. |
| M47-4 | Biotite | 154 | 9.36 | 95 | Published | 116˚ 14’ 26” 34˚ 12’ 37” | Sunfair 7.5’ | Hornblende -biotite monzogranite. Porphyritic. Medium- to dark-gray feldspar. Probably same pluton as M14-7. |
| M1-5 | -- | -- | -- | -- | -- | -- | Rodman Mts 15’ | Sample discarded. |
| M2-5 | Biotite | 96.0 | 9.66 | 82 | Unpublished | -- | Rodman Mts 15’ | Biotite monzogranite, foliated, sparsely porphyritic. Exact location unrecoverable. Not plotted on figure 1. |
| M1-6 | Hbld | 84.3 | 0.635 | 70 | Unpublished | 117˚ 37’ 38” 34˚ 37’ 18” | El Mirage 7.5’ | Recollection of M28-4. Hornblende -biotite granodiorite or monzogranite. Medium-grained. Color index ~10. Very fresh. |
| M2-6 | Hbld | 169 | 0.521 | 68 | Unpublished | 117˚ 13’ 38” 34˚ 33’ 13” | Apple Valley North 7.5’ | Recollection of M8-4. Exact same location. Hornblende -biotite granodiorite. Medium-grained, nonfoliate. Equigranular, nonporphyritic. Color index ~18 |
| M3-6 | Biotite | 76.1 | 9.19 | 88 | Published | 117˚ 12’ 18” 34˚ 41’ 56” | Turtle Valley 7.5’ | Hornblende -biotite granodiorite. Nonporphyritic, equigranular. Medium-grained. Color index 12 to 15. Very fresh. |
| M4-6 | Hbld | 73.6 | 0.568 | 59 | Unpublished | 116˚ 38’ 29” 34˚ 35’ 32” | Fry Mts 7.5’ | Recollection of M39-4. Hornblende -biotite granodiorite or monzogranite. Slightly porphyritic. Color index ~10. Very fresh. |
| M5-6 | -- | -- | -- | -- | -- | 116˚ 29’ 11” 34˚ 28’ 16” | Emerson Lake 15’ | Recollection of M17-4. Hornblende -biotite monzogranite. Porphyritic, having high concentration of phenocrysts. Color index ~15. Sample discarded. |
| M1-7 | Biotite  Hbld | 69.4  74.8 | 8.86  0.632 | 88  49 | Published | 117˚ 13’ 59” 34˚ 38’ 6” | Turtle Valley 7.5’ | Hornblende -biotite granodiorite; hornblende sparse. Medium-grained. Equigranular. May be same pluton as M3-6. Abundant sphene. |
| M2-7 | Biotite | 99.2 | 8.88 | 82 | Published | 117˚ 9’ 34” 34˚ 39’ 10” | Turtle Valley 7.5’ | Biotite monzogranite. Medium- to coarse-grained, nonporphyritic, nonfoliate, equigranular, isotropic, or massive. Deeply weathered. |
| M3-7 | Biotite  Hbld | 111996 | 9.22  0.459 | 55  71 | Published | 117˚ 8’ 21” 34˚ 37’ 21” | Apple Valley North 7.5’ | Mafic granodiorite or diorite. Contact with metavolcanic rocks about 5 m from sample site. |
| **Sample**  **No** | **Mineral** | **Age**  **(Ma)** | **K2O**  **(percent)** | **Arrad**  **(percent)** | **Published or**  **Unpublished** | **Location** | **Quadrangle** | **Rock description** |
| M4-7 | -- | -- | -- | -- | -- | -- | Stoddard Well 7.5’ | Biotite granodiorite or monzogranite. Mafic minerals very chloritized. Medium- to fine-grained, nonfoliate, equigranular, isotropic, and massive. Sample discarded. |
| M5-7 | Biotite  Hbld | 145  170 | 9.34  0.430 | 94  47 | Published | 116˚ 56’ 21” 34˚ 42’ 49” | West Ord Mtn. 7.5’ | Hornblende -biotite granodiorite or monzogranite. Nonporphyritic, isotropic or massive, equigranular. Sphene-bearing, sparse mafic inclusions Color index ~15. Fresh, but some hornblende may be chloritized. |
| M6-7 | Biotite | 134 | 9.11 | 95 | Published | 116˚ 54’ 41” 34˚ 41’ 10” | West Ord Mtn. 7.5’ | Hornblende (?)-biotite granodiorite or monzogranite. Nonporphyritic, isotropic or massive, equigranular. Similar to M5-7, but slightly weathered. |
| M7-7 | Biotite  Hbld | 99.6  167 | 9.00  0.855 | 39  87 | Published | 116˚ 53’ 17” 34˚ 41’ 32” | West Ord Mtn. 7.5’ | Biotite- hornblende quartz diorite. Nonporphyritic, isotropic or massive, equigranular. Medium-grained. Both mafic minerals very fresh. Hornblende much more abundant than biotite. Color index ~50. |
| M8-7 | -- | -- | -- | -- | -- | -- | Ord Mts. 15’ | Sample discarded. |
| M9-7 | -- | -- | -- | -- | -- | -- | Ord Mts. 15’ | Sample discarded. |
| M10-7 | Biotite  Hbld | 78.0  185 | 9.21  0.898 | 85  87 | Published | 116˚ 50’ 2” 34˚ 38’ 38” | Ord Mtn. 7.5’ | Hornblende -biotite granodiorite. Porphyritic. Very slight foliation. Sphene-bearing. K-feldspar is purple-gray. Latite porphyry dikes nearby. Color index ~20. Pluton characteristics same as M14-7. |
| M11-7 | Biotite | 71.2 | 9.19 | 57 | Published | 116˚ 48’ 56” 34˚ 37’ 23” | Ord Mtn. 7.5’ | Biotite monzogranite. Leucocratic. Feldspar is pink. Nonfoliate. Weathered. Color index ~8. |
| M12-7 | Biotite  Hbld | 126  166 | 9.26  0.649 | 95  62 | Published | 116˚ 20’ 50” 34˚ 18’ 30” | Goat Mtn. 7.5’ | Hornblende -biotite granodiorite. Porphyritic, but has very irregular phenocryst distribution. Sphene-bearing. Potassium feldspar is purple-gray. Color index ~25. Hornblende and biotite about equal amounts. |
| M13-7 | Biotite  Hbld | 116  178 | 9.08  0.564 | 85  63 | Published | 116˚ 24’ 21” 34˚ 25’ 34” | Emerson Lake 7.5’ | Hornblende -biotite granodiorite. Nonporphyritic, but probably part of same plutonic type as M12-7. Sphene-bearing. Potassium feldspar is purple-gray. Color index ~25. |
| M14-7 | Biotite  Hbld | 154  168 | 9.37  0.517 | 86  38 | Published | 116˚ 22’ 53” 34˚ 27’ 33” | Emerson Lake 7.5’ | Hornblende -biotite granodiorite. Porphyritic. Probably part of same plutonic type as M12-7. Sphene-bearing. Potassium feldspar is purple-gray. |
| M15-7 | Biotite | 70.1 | 9.15 | 91 | Published | \*116˚ 34’ 6” 34˚ 1’ 42” | Morongo Valley 7.5’ | Gneiss. Prominently layered, but overall, fairly leucocratic. Sample taken from relatively darker layer containing more biotite. |
| M16-7 | Biotite | 64.8 | 8.57 | 52 | Unpublished | 117˚ 21’ 8” 34˚ 13’ 37” | San Bernardino North 7.5’ | Layered gneiss. Highly folded and contorted, compositionally heterogeneous. Contains hornblende and biotite. |
| M17-7 | Biotite | 66.4 | 8.31 | 87 | Published | 117˚ 11’ 0” 34˚ 9’ 3” | Harrison Mtn. 7.5’ | Layered gneiss. Highly folded and contorted, compositionally heterogeneous. Contains hornblende and biotite. Similar to M16-7. |
| **Sample**  **No** | **Mineral** | **Age**  **(Ma)** | **K2O**  **(percent)** | **Arrad**  **(percent)** | **Published or**  **Unpublished** | **Location** | **Quadrangle** | **Rock description** |
| M18-7 | Biotite | 9.30 | 8.56 | 17 | Unpublished | 117˚ 4’ 3” 34˚ 4’ 29” | Yucaipa 7.5’ | Biotite monzogranite or granodiorite. Small pluton in Crafton Hills area. Relatively leucocratic compared to presumably related Oligocene Telegraph Peak pluton rocks. Heterogeneous texture and composition at sample site. |
| M19-7 | -- | -- | -- | -- | -- | 117˚ 57’ 8” 34˚ 6’ 47” | Forest Falls 7.5’ | Schist layer in gneiss. Color index ~70. Numerous granitic dikes and pods injected into schist nearby. Not dated. |
| M20-7 | Biotite | 74.9 | 9.04 | 74 | Published | 117˚ 7’ 4” 34˚ 36’ 46” | Fairview Valley 7.5’ | Biotite monzogranite. Seriate. Slightly foliate; some grain-size reduction. Biotite grains look disaggregated. |
| M21-7 | -- | -- | -- | -- | -- | -- | Apple Valley North 7.5’ | Hornblende -biotite monzogranite. Contains large quartz grains or grain aggregates. Sphene-bearing. Mafic minerals generally smaller than felsic minerals. Not dated. |
| M22-7 | Biotite  Hbld | 80.4  163 | 9.48  1.061 | 90  60 | Published | 116˚ 44’ 48” 34˚ 33’ 31” | Fry Mountains 7.5’ | Hornblende -biotite granodiorite. Porphyritic. Probably part of same plutonic type as M12-7. Sphene-bearing. Potassium feldspar is purple-gray. Color index ~25. |
| M23-7 | Biotite | 68.4 | 9.25 | 79 | Unpublished | 118˚ 19’ 13” 34˚ 47’ 32” | Little Buttes 7.5’ | Biotite monzogranite. Weathered. Many pegmatites in area. Sample may contain some pegmatitic material. |
| M24-7 | Biotite | 62.7 | 9.17 | 41 | Unpublished | 118˚ 0’ 16” 35˚ 2’ 18” | Mojave 15’ | Biotite monzogranite. Medium- to coarse-grained. Sphene-bearing. Homogeneous. May contain minor hornblende. |
| M25-7 | Biotite  Hbld | 73.1  74.8 | 9.46  1.184 | 85  67 | Unpublished | \*117˚ 52’31” 35˚ 1’29” | California City South 7.5’ | Hornblende -biotite monzogranite. Medium- to coarse-grained. Foliate. Sphene-bearing. Minor epidote surrounding some hornblende. |
| M26-7 | Biotite | 73.7 | 9.59 | 86 | Unpublished | \*117˚ 46’ 2” 35˚ 4’ 5” | Galileo Hill 7.5’ | Biotite monzogranite or granodiorite. Some iron oxide staining, but biotite looks fresh. Feldspar is medium-gray. |
| M27-7 | Biotite | 59.7 | 8.53 | 76 | Unpublished | \*117˚ 38’ 3” 35˚ 1’ 4” | Boron 7.5’ | Hornblende -biotite granodiorite or quartz diorite. Medium- to coarse-grained. Foliate and (or) lineate. Hornblende looks chloritized. |
| M28-7 | Biotite  Muscovite | 70.0  74.6 | 9.34  10.78 | 85  90 | Unpublished | \*117˚ 34’41” 35˚ 4’18” | Saddleback Mtn 7.5’ | Muscovite-biotite monzogranite. Weathered. Medium-grained. Equigranular. Some iron oxide staining, but biotite looks fresh. |
| M29-7 | Biotite | 73.5 | 9.42 | 83 | Unpublished | \*117˚ 40’24” 35˚ 8’ 4” | Boron NW 7.5’ | Biotite monzogranite. Sample is slightly weathered, but most rock at sample site is deeply weathered. Sample may be a hybrid with nearby, relatively unweathered aplite dikes. |
| M30-7 | Biotite  Hbld | 78.9  79.4 | 9.28  10.69 | 85  77 | Unpublished | \*117˚ 39’38” 35˚14’50” | Boron NW 7.5’ | Muscovite-biotite monzogranite. Garnet-bearing. Medium- to coarse-grained. Color index ~5. Muscovite and biotite in about equal amounts. |
| M31-7 | Biotite  Hbld | 79.2  85.5 | 8.80  1.032 | 80  51 | Unpublished | \*117˚ 44’57” 35˚ 2’36” | Boron NW 7.5’ | Hornblende -biotite granodiorite. Medium- to coarse-grained. Color index ~25. Potassium feldspar is purple-gray. |
| M32-7 | Biotite | 72.5 | 9.25 | 74 | Unpublished | \*117˚ 46’ 0”  35˚ 11’ 11” | Galileo Hill 7.5’ | Biotite monzogranite. Leucocratic. Deeply weathered. Medium-grained. Equigranular. Color index ~4. |
| **Sample**  **No** | **Mineral** | **Age**  **(Ma)** | **K2O**  **(percent)** | **Arrad**  **(percent)** | **Published or**  **Unpublished** | **Location** | **Quadrangle** | **Rock description** |
| M33-7 | Biotite | 73.9 | 9.25 | 84 | Unpublished | \*117˚ 50’30” 35˚ 8’ 40” | Galileo Hill 7.5’ | Biotite monzogranite. Leucocratic. Sample relatively fresh, but surrounding rock is deeply weathered. Medium-grained. Equigranular. Color index ~2. |
| M33A-7 | Biotite | 78.1 | 9.16 | 88 | Unpublished | \*117˚ 50’29” 35˚ 9’ 25” | Galileo Hill 7.5’ | Rock description lost. Based on location, may be the same plutonic unit as M34-7 and M34A-7 |
| M34-7 | -- | -- | -- | -- | -- | -- | Castle Butte 15’ | Biotite monzogranite or granodiorite. Garnet-bearing. Medium-grained. Seriate and foliate. Biotite grains look disaggregated. Not dated or information lost. |
| M34A-7 | Biotite | 80.6 | 9.51 | 87 | Unpublished | \*117˚ 49’ 0” 35˚ 13’ 9” | Galileo Hill 7.5’ | Biotite monzogranite. Garnet-bearing. Very coarse-grained. Color index ~4. |
| M35-7 | Biotite | 76.5 | 9.32 | 84 | Unpublished | 117˚ 46’ 58” 35˚ 17’ 27” | Saltdale SE 7.5’ | Hornblende-biotite granodiorite or monzogranite. Medium-grained. Equigranular to sparsely porphyritic; phenocrysts small. Color index ~15. |
| M36-7 | Biotite | 18.8 | 9.07 | 46 | Unpublished | 117˚ 23’ 44” 35˚ 3’ 10” | Fremont Peak 15’ | Biotite monzogranite or granodiorite. Medium-grained. Very sparse phenocrysts. Slightly foliate. Sphene-bearing. |
| M37-7 | Biotite  Biotite  Hbld | 32.4  32.8  79.0 | 9.18  9.18  1.581 | 78  64  56 | Unpublished | 117˚ 22’ 0” 35˚ 8’ 8” | Fremont Peak 15’ | Gneissic granodiorite or quartz diorite. Foliate and slightly lineate. Color index ~25. Dibblee mapped unit as Precambrian. |
| M38-7 | Biotite | 26.1 | 8.90 | 53 | Unpublished | 117˚ 26’ 16” 35˚ 12’ 21” | Fremont Peak 15’ | Gneissic granodiorite or quartz diorite. Foliate and slightly lineate. Color index ~25. Dibblee mapped unit as Precambrian. |
| M39-7 | Biotite  Hbld | 77.5  78.3 | 9.15  1.093 | 69 | Unpublished | 117˚ 18’ 21” 35˚ 14’ 5” | Fremont Peak 15’ | Hornblende -biotite granodiorite or quartz diorite. Seriate. Very subtle, poorly developed foliation. Color index ~25. |
| M40-7 | Biotite  Hbld | 80.0  78.7 | 9.23  0.954 | 89  43 | Unpublished | 117˚ 19’ 10” 35˚ 20’ 41” | Cuddeback Lake 15’ | Biotite- hornblende granodiorite or quartz diorite. Medium-grained. Seriate. Poorly developed lineation. Color index ~25. |
| M41-7 | Biotite | 80.2 | 8.46 | 81 | Unpublished | 117˚ 19’ 10” 35˚ 20’ 41” | Cuddeback Lake 15’ | Biotite monzogranite. Leucocratic. Medium-grained, equigranular to seriate. Weathered, but minerals look unaltered. |
| M42-7 | Biotite  Hbld | 70.0  101 | 8.17  0.871 | 77  60 | Unpublished | 117˚ 3’ 8” 34˚ 46’ 56” | Barstow 15’ | Hornblende-biotite granodiorite or quartz diorite. Medium-grained. Equigranular to weak foliation. Sphene-bearing. Color index ~18. **Note**: FKM, in 1978, noted that this sample could possibly be mixed up with M43-7. Basis for this note not known. Relative to nearby cooling ages, there probably was no mix-up. |
| M43-7 | Biotite | 140 | 8.17 | 78 | Unpublished | \*116˚ 55’ 5” 34˚ 47’ 53” | Daggett 7.5’ | Hornblende -biotite granodiorite or monzogranite. Medium-grained; no directional fabric. Locally porphyritic (rapikivi). Hard, unweathered rock. Color index ~10. |
| M44-7 | Biotite | 71.8 | 8.90 | 78 | Unpublished | \*116˚ 48’37” 34˚ 46’ 31” | Minneola 7.5’ | Hornblende -biotite granodiorite or monzogranite. Medium-grained; no directional fabric. Locally porphyritic (rapikivi). |
| M45-7 | Biotite | 84.3 | 9.09 | 81 | Unpublished | \*116˚ 45’56” 34˚ 59’ 9” | Yermo 7.5’ | Hornblende -biotite granodiorite or monzogranite. Medium-grained; equigranular, isotropic, and massive. Sphene-bearing. Color index ~12. |
| **Sample**  **No** | **Mineral** | **Age**  **(Ma)** | **K2O**  **(percent)** | **Arrad**  **(percent)** | **Published or**  **Unpublished** | **Location** | **Quadrangle** | **Rock description** |
| M46-7 | Biotite | 72.4 | 8.95 | 73 | Unpublished | 117˚ 12’ 11” 34˚ 46’ 24” | Barstow 15’ | Biotite- hornblende granodiorite or monzogranite. Medium-grained, but somewhat seriate. Grain-size reduction; some minerals look disaggregated. Color index ~15. |
| M47-7 | Biotite  Hbld | 19.1  20.6 | 8.75  0.377 | 56  3 | Unpublished | 117˚ 13’ 54” 34˚ 58’ 59” | Barstow 15’ | Hornblende -biotite monzogranite. Medium-grained; equigranular, isotropic, and massive. Color index ~10. |
| M48-7 | Hbld Hbld | 105  304 | 0.166  0.166 | 13  40 | Unpublished | 117˚ 15’ 46” 34˚ 50’ 23” | Hawes 15’ | Pegmatite in pyroxene gabbro. Contains hornblende, but no biotite. On 105 Ma run (late 1977) no notes on mineral separate. On 304 Ma run (early 1980) notes indicate pyroxene cores in hornblende. Both extractions probably from same mineral separate. |
| M49-7 | Biotite | 83.2 | 8.88 | 90 | Unpublished | 117˚ 21’ 9” 34˚ 51’ 38” | Hawes 15’ | Biotite monzogranite. Leucocratic, almost an alaskite. Medium- to fine-grained, equigranular. Color index ~2. |
| M50-7 | Biotite | 69.3 | 9.51 | 84 | Unpublished | 117˚ 53’ 49” 34˚ 57’ 15” | Edwards 7.5’ | Biotite- hornblende (?) monzogranite. Porphyritic. Rock is heterogeneous at sample site. Sphene-bearing. Slightly foliate. Color index ~12. |
| M51-7 | Biotite  Hbld | 69.4  68.0 | 8.83  1.271 | 83  62 | Unpublished | 117˚ 58’ 36” 34˚ 52’ 45” | Edwards 7.5’ | Hornblende -biotite granodiorite. Medium- to coarse-grained. Foliate, possibly lineate. Color index ~20. Hornblende may be slightly altered. |
| M52-7 | Biotite  Hbld | 77.2  75.4 | 8.76  0.590 | 86  61 | Unpublished | 117˚ 51’ 43” 34˚ 46’ 41” | Rogers Lake South 7.5’ | Biotite- hornblende granodiorite or monzogranite. Medium-grained. Slightly porphyritic; small phenocrysts. Color index ~15. Compositionally uniform at sample site. |
| M53-7 | Biotite | 78.6 | 8.81 | 85 | Unpublished | \*117˚ 33’ 1” 34˚ 47’ 50” | Red Buttes 7.5’ | Biotite monzogranite. Leucocratic. Medium-grained, equigranular. Color index ~2. Sampled rock is a dike intruding hornblende -biotite granodiorite that is very deeply weathered. |
| M53A-7 | Biotite  Hbld | 68.9  86.1 | 9.01  0.634 | 91  31 | Unpublished | \*117˚ 33’41” 34˚ 47’ 50” | Red Buttes 7.5’ | Hornblende -biotite granodiorite. Medium- to coarse-grained. Equigranular. Color index ~12. This is the host rock to M53-7. Collected from rounded knocker. Neither mafic mineral is altered. |
| M54-7 | Biotite | 74.9 | 9.40 | 80 | Unpublished | \*117˚ 43’33” 34˚ 48’ 15” | Jackrabbit Hill 7.5’ | Biotite- hornblende monzogranite. Medium-grained. Nonporphyritic, equigranular. Color index ~12. Slightly weathered, but both mafic minerals are unaltered. |
| M55-7 | Biotite | 68.5 | 9.16 | 86 | Unpublished | \*116˚ 23’22” 35˚ 04’ 50” | Dunn 7.5’ | Biotite monzogranite. Porphyritic,; phenocrysts to 3 cm are irregularly distributed. No directional fabric. Color index ~8. Looks like one of the late Cretaceous plutons. |
| M56-7 | Biotite | 64.2 | 8.84 | 69 | Unpublished | \*116˚ 15’ 3” 35˚ 5’ 55” | Cave Mtn 7.5’ | Biotite monzogranite. Leucocratic. Coarse-grained, equigranular. Has abundant sphene. May have trace garnet. Color index ~6. Biotite grains are disaggregated and show some alteration. Need very clean mineral separate. This could be a Precambrian rock. |
| M57-7 | Biotite | 67.4 | 8.85 | 84 | Unpublished | \*116˚ 16’ 3” 35˚ 5’ 43” | Cave Mtn 7.5’ | Biotite monzogranite. Porphyritic,; phenocrysts to 3 cm are irregularly distributed and have a reddish-brown color. Sphene-bearing; quartz may be less than 20 percent. Color index ~20. Could be a Precambrian rock. |
| **Sample**  **No** | **Mineral** | **Age**  **(Ma)** | **K2O**  **(percent)** | **Arrad**  **(percent)** | **Published or**  **Unpublished** | **Location** | **Quadrangle** | **Rock description** |
| M58-7 | Biotite  Hbld | 83.1  139 | 9.34  1.049 | 73  84 | Unpublished | 116˚ 37’ 26” 35˚ 3’ 22” | Alvord Mtn 15’ | Hornblende -biotite granodiorite. Medium-grained. Poorly developed, inconsistently oriented foliation; probably primary. Abundant sphene. Hornblende:biotite~1:1. Color index ~25. |
| M59-7 | Biotite  Hbld | 74.9  95.6 | 9.30  0.987 | 83  59 | Unpublished | 116˚ 48’ 20” 35˚ 7’ 11” | Coyote Lake 7.5’ | Hornblende -biotite granodiorite. Medium-grained. Medium-grained. Poorly developed, inconsistently oriented foliation; probably primary. Moderately well-developed lineation. Very abundant inclusions. Abundant sphene. Hornblende:biotite~1:1. Color index ~18. Probably same pluton as M58-7. |
| M60-7 | Biotite  Hbld | 81.0  128 | 9.52  1.130 | 73  72 | Unpublished | 116˚ 43’ 36” 35˚ 13’ 22” | Langford Well 7.5’ | Hornblende -biotite granodiorite or quartz diorite. Moderately well-developed foliation. Sphene-bearing, some epidote. Uniform at sample site. Color index ~30. |
| M61-7 | Biotite | 69.7 | 9.27 | 89 | Unpublished | 116˚ 36’ 36” 35˚ 19’ 17” | Tiefort Mtn 15’ | Biotite monzogranite. Coarse-grained. Has interstitial look caused by disaggregated biotite. Large quartz and pink K-spar look like clumped mineral aggregates. Rock may be recrystallized. |
| M62-7 | Biotite | 71.4 | 9.44 | 90 | Unpublished | 116˚ 45’ 46” 35˚ 9’ 41” | Paradise Range 7.5’ | Biotite monzogranite. Moderately leucocratic. Medium-grained, equigranular. Color index ~30. Has appearance of Late Cretaceous plutons of Mojave area. |
| M63-7 | Biotite | 75.3 | 8.94 | 85 | Unpublished | 116˚ 58’ 55” 35˚ 3’ 17” | Lane Mtn 15’ | Hornblende -biotite granodiorite or monzogranite. Medium-grained. Equigranular, nonporphyritic. Color index ~12. Biotite:hornblende ~2:1. Some hornblende may be chloritized. |
| M64-7 | Biotite | 77.0 | 9.36 | 91 | Unpublished | \*117˚ 3’ 42” 35˚ 5’ 52” | Mud Hills 7.5’ | Hornblende -biotite granodiorite. Medium- to fine-grained. Equigranular, nonporphyritic. Color index ~15. |
| M65-7 | Hbld | 123 | 0.824 | 56 | Unpublished | \*117˚ 1’ 10” 35˚ 9’ 14” | Superior Lake 7.5’ | Biotite-hornblende granodiorite. Medium- to coarse-grained. Seriate. Hornblende averages 0.5 cm, some to 2 cm. May be partially chloritized. Biotite in very fine-grained clusters. Color index ~10. Biotite: hornblende ~1:10. |
| M66-7 | Biotite | 132 | 9.07 | 91 | Unpublished | 116˚ 20’ 07” 34˚ 49’ 25” | Cady Mtn 15’ | Biotite monzogranite. Medium- to coarse-grained. Seriate; por-phyritic; biotite finer than felsic grains. K-spar phenocrysts to 2.5 cm, sparse, irregularly distributed. Sphene pseudomorphs. Color index ~7. |
| M67-7 | Biotite  Hbld | 126  140 | 8.95  0.979 | 93  78 | Unpublished | 116˚ 13’ 25” 34˚ 53’ 25” | Broadwell Lake 15’ | Hornblende -biotite granitic gneiss. Irregularly intermixed with porphyroblastic biotite granitic gneiss. Color index ~35. |
| M68-7 | Biotite  Hbld | 72.1  152 | 8.96  0.890 | 83  84 | Unpublished | -- | Rodman Mtns 15’ | Hornblende -biotite granodiorite or monzogranite. Mapped as bqm by Dibblee. Slightly foliate here. Contact Robert Powell, USGS, for location. |
| M69-7 | Biotite | 67.7 | 8.56 | 84 | Unpublished | \*116˚ 15’16” 34˚ 4’ 59” | Joshua Tree South 7.5’ | Biotite monzogranite. Medium- to fine-grained. Equigranular, nonporphyritic. Color index ~7. |
| M70-7 | Biotite | 67.3 | 9.43 | 81 | Unpublished | \*116˚ 18’ 6” 34˚ 1’ 38” | Joshua Tree South 7.5’ | Biotite monzogranite. Medium- to fine-grained. K-spar phenocrysts are sparse and irregularly distributed. Biotite occurs as aggregates along subtle to distinct foliation planes. Color index ~10. |
| **Sample**  **No** | **Mineral** | **Age**  **(Ma)** | **K2O**  **(percent)** | **Arrad**  **(percent)** | **Published or**  **Unpublished** | **Location** | **Quadrangle** | **Rock description** |
| M71-7 | Hbld | 77.5 | 1.170 | 43 | Unpublished | 116˚ 8’ 6” 34˚ 5’ 24” | Indian Cove 7.5’ | Hornblende granodiorite. Rock Dibblee mapped as monzonite porphyry. Phenocrysts of K-spar up to 10 cm. Color index ~10. |
| M72-7 | Biotite  Hbld | 93.3  227 | 8.84  0.788 | 84  22 | Unpublished | 116˚ 2’ 7” 34˚ 4’ 21” | Queen Mtn 7.5’ | Biotite- hornblende diorite. Medium- to fine-grained. Nonfoliate and nonlineate. Color index ~35. |
| M73-7 | Biotite | 81.5 | 8.74 | 84 | Unpublished | 116˚ 4’ 16” 34˚ 1’ 25” | Queen Mtn 7.5’ | Biotite- hornblende granodiorite. Medium-grained. Sparsely porphyritic. Color index ~5. Collected near Desert Queen Mine. |
| M74-7 | Biotite  Hbld | 68.9  78.7 | 9.42  1.026 | 86  64 | Unpublished | 116˚ 10’ 16” 33˚ 55’ 39” | Keys View 7.5’ | Hornblende -biotite granodiorite. Medium-grained. Nonporphyritic. Irregular lineation. Color index ~10. |
| M75-7 | -- | -- | -- | -- | -- | -- | Malapai Hill 7.5’ | Sample discarded, sample not dated, or information lost. |
| M76-7 | Biotite | 67.6 | 8.44 | 47 | Unpublished | 115˚ 57’ 54” 33˚ 41’ 3” | Cottonwood Springs 15’ | Biotite monzogranite. Fine-grained. Nonfoliate and nonlineate, isotropic or massive. Sparsely porphyritic. Color index ~12. |
| M77-7 | Biotite | 79.8 | 9.48 | 87 | Unpublished | 115˚ 48’ 37” 33˚ 37’ 56” | Cottonwood Springs 15’ | Biotite monzogranite or granodiorite. Medium-grained. Porphyritic. Nonfoliate and nonlineate, isotropic or massive. Rock is brecciated, and some biotite shows alteration; should be a clean mineral separate though. |
| M78-7 | Biotite | 75.0 | 9.00 | 92 | Unpublished | 115˚ 40’ 16” 33˚ 39’ 43” | Hayfield 15’ | Biotite monzogranite. May have some hornblende. Medium- to coarse-grained. Nonfoliate and nonlineate, isotropic or massive. Porphyritic. Probably same pluton as M77-7. |
| M79-7 | Biotite | 144 | 8.42 | 90 | Unpublished | \*115˚ 26’20” 33˚ 48’ 37” | Victory Pass 7.5’ | Biotite- hornblende granodiorite. Medium-grained. Porphyritic; phenocrysts to 3 cm long. Abundant flattened inclusions define a fabric, but monzogranite at this same site is near-equigranular. Rock is fractured, but minerals look fresh. Color index ~20. |
| M80-7 | Biotite | 145 | 9.34 | 95 | Unpublished | \*115˚ 26’20” 33˚ 48’ 37” | Victory Pass 7.5’ | Biotite monzogranite. Fine-grained. Nonfoliate and nonlineate, isotropic or massive, near-equigranular. Rock is fractured, but minerals look fresh. Color index ~8. |
| M81-7 | Biotite | 107 | 9.46 | 88 | Unpublished | 115˚ 29’ 0” 34˚ 44’ 35” | Chuckwalla Mts 15’ | Biotite monzogranite. Medium-grained. Nonfoliate and nonlineate, isotropic or massive. Similar to White Tank pluton. Very uniform. Color index ~7. |
| M82-7 | Biotite | 72.2 | 8.99 | 90 | Unpublished | 115˚ 48’ 13” 33˚ 41’ 58” | Cottonwood Springs 15’ | Biotite monzogranite. Medium-grained. Nonfoliate and nonlineate, isotropic or massive. Similar to White Tank pluton. Very uniform. Color index ~7. |
| M83-7 | Biotite | 69.1 | 9.03 | 86 | Unpublished | 115˚ 47’ 50” 33˚ 53’ 4” | Porcupine Wash 7.5’ | Hornblende -biotite granodiorite. Medium- to coarse-grained. Sparsely porphyritic. Nonfoliate and nonlineate, isotropic or massive. Color index ~12. May be same pluton as M82-7. |
| M84-7 | Biotite  Hbld | 69.5  67.6 | 9.42  0.717 | 81  59 | Unpublished | 115˚ 45’ 58” 33˚ 47’ 4” | Porcupine Wash 7.5’ | Hornblende -biotite granodiorite. Medium-grained. Nonporphyritic. Nonfoliate and nonlineate, isotropic or massive. Sphene-bearing. Color index ~18. Rock very uniform at sample site. |
| **Sample**  **No** | **Mineral** | **Age**  **(Ma)** | **K2O**  **(percent)** | **Arrad**  **(percent)** | **Published or**  **Unpublished** | **Location** | **Quadrangle** | **Rock description** |
| M85-7 | Biotite  Hbld | 72.2  73.4 | 9.28  0.708 | 90  44 | Unpublished | 115˚ 49’ 15” 33˚ 53’ 4” | Pinto Mtn 7.5’ | Hornblende -biotite granodiorite. Medium-grained. Nonporphyritic. Nonfoliate and nonlineate, isotropic or massive. Sphene-bearing Color index ~18. Rock very uniform at sample site. Probably same pluton as M84-7. |
| M86-7 | Hbld | 57.4 | 1.168 | 60 | Unpublished | \*117˚ 36’ 7” 35˚ 19’ 26” | Red Mtn 7.5’ | Biotite- hornblende granodiorite. Fine- to medium-grained. Nonfoliate and nonlineate, isotropic or massive. Equigranular. Color index ~35. Biotite looks chloritized; contains some epidote. Collected near M87-7. |
| M87-7 | Biotite | 62.8 | 9.26 | 77 | Unpublished | \*117˚ 36’ 0” 35˚ 19’ 20” | Red Mtn 7.5’ | Hornblende -biotite granodiorite. Medium-grained. Nonporphyritic. Nonfoliate and nonlineate, isotropic or massive. Contains epidote. Color index ~10. |
| M88-7 | Biotite | 18.0 | 8.92 | 48 | Unpublished | 117˚ 38’ 26” 35˚ 21’ 16” | Johannesburg 7.5’ | Biotite- hornblende granodiorite. Slightly foliate and lineate. Biotite is reddish-brown. Contains rusty prismatic patches that could be pyroxene or hornblende. |
| M89-7 | Biotite  Hbld | 19.6  18.8 | 9.26  0.888 | 71  16 | Unpublished | 117˚ 38’ 38” 35˚ 21’ 29” | Johannesburg 7.5’ | Biotite- hornblende granodiorite. Slightly foliate and lineate. Biotite is reddish-brown. Same rock as M88-7, but hornblende:biotite ratio is much higher. Contains less rusty patches. |
| M90-7 | Biotite  Hbld | 18.4  18.8 | 8.76  1.005 | 53  32 | Unpublished | 117˚ 39’ 16” 35˚ 21’ 38” | Johannesburg 7.5’ | Biotite- hornblende granodiorite. Slightly foliate and lineate. Biotite is reddish-brown. Same rock as M88-7, but lithologically more like M89-7. This sample collected within a few meters of schist host rock. |
| M91-7 | Biotite | 137 | 9.13 | 94 | Unpublished | 117˚ 34’ 53” 35˚ 32’ 3” | Spangler Hills West 7.5’ | Biotite monzogranite. Minor hornblende; looks chloritized. Fine-grained. Nonfoliate and nonlineate. Color index ~10. Rock uniform at sample site. Hornblende was run, but instrument failure ruined results; did not rerun. |
| M92-7 | Biotite  Hbld | 70.4  68.8 | 9.57  1.272 | 82  72 | Unpublished | 117˚ 42’ 17” 35˚ 17’ 41” | Johannesburg 7.5’ | Hornblende -biotite granodiorite. Medium- to coarse-grained. Foliate and lineate. Sphene-bearing. Both mafic minerals larger than felsic minerals. Color index ~18. |
| M93-7 | Muscovite | 71.5 | 9.08 | 91 | Unpublished | 117˚ 42’ 52” 35˚ 18’ 59” | Johannesburg 7.5’ | Muscovite-quartz-albite schist. Highly foliated. Rand Schist. Collected about 150 meters below thrust fault. |
| M94-7 | -- | -- | -- | -- | -- | -- | Palen Mts 15’ | Sample discarded, sample not dated, or information lost. |
| M95-7 | Biotite  Biotite | 62.5  61.0 | 9.67  9.67 | 80  80 | Unpublished | 114˚ 51’ 44” 33˚ 48’ 56” | Midland 15’ | Biotite granodiorite or monzogranite. Highly foliate and lineate, almost gneissic. Biotite is disaggregated and streaked out. Phenocrysts or porphyroblasts are milled and many have plagioclase rims. Sphene-bearing. |
| M96-7 | Biotite  Hbld | 148  179 | 8.78  0.472 | 83  56 | Published | 116˚ 1’ 23” 34˚ 11’ 33” | Twentynine Palms 7.5’ | Hornblende -biotite granodiorite. Porphyritic. Abundant 3 cm-long lavender-gray phenocrysts. Sphene-bearing. Hornblende age differs from 183 Ma published age due to recalculation of analytical data. |
| **Sample**  **No** | **Mineral** | **Age**  **(Ma)** | **K2O**  **(percent)** | **Arrad**  **(percent)** | **Published or**  **Unpublished** | **Location** | **Quadrangle** | **Rock description** |
| M97-7 | Biotite  Hbld | 154  159 | 8.66  0.516 | 81  73 | Unpublished | 115˚ 54’ 53” 34˚ 11’ 27” | Valley Mtn 15’ | Hornblende -biotite granodiorite. Porphyritic. Abundant 3 cm-long lavender-gray phenocrysts. Sphene-bearing. Same pluton as M96-7. |
| M98-7 | Biotite | 67.7 | 9.02 | 80 | Unpublished | 115˚ 43’ 21” 34˚ 12’ 0” | Dale Lake 15’ | Biotite monzogranite. Porphyritic. Mafic minerals (may include hornblende) are disaggregated, but do not define an oriented fabric. Phenocrysts are grayish-pink to pink. Plagioclase contains small, evenly distributed biotite or magnetite. Nonfoliate and nonlineate. Rock looks like it might be metamorphosed. Color index ~10. |
| M99-7 | Biotite | 65.9 | 9.48 | 91 | Unpublished | 115˚ 43’ 8” 34˚ 15’ 18” | Bristol Lake 15’ | Biotite monzogranite. Porphyritic. Small 1.5 cm-long phenocrysts. Medium-grained. Feldspars are white and pink.. Biotite forms discrete, well developed crystals. Color index ~15. |
| M100-7 | Biotite  Hbld | 70.1  88.8 | 8.08  0.839 | 91  61 | Unpublished | 115˚ 44’ 54” 34˚ 25’ 52” | Bristol Lake 15’ | Biotite- hornblende diorite or gabbro. Medium-grained. Biotite may be slightly chloritized, but should be able to get clean mineral separate. Slightly lineate and foliate. Color index ~50. |
| M101-7 | Biotite | 137 | 9.44 | 90 | Unpublished | 115˚ 39’ 59” 34˚ 33’ 39” | Cadiz 15’ | Biotite monzogranite. Very coarse-grained. Irregularly porphyritic. Nonfoliate and nonlineate, isotropic or massive. Biotite appears disaggregated, but is in clumps. |
| M102-7 | -- | -- | -- | -- | -- | -- | Cadiz 15’ | Sample discarded, sample not dated, or information lost. |
| M102A-7 | Biotite  Hbld | 158  160 | 7.74  0.630 | 93  76 | Unpublished | 115˚ 33’ 0” 34˚ 36’ 32” | Cadiz 15’ | Hornblende -biotite granodiorite. Medium-grained. Nonporphyritic. Nonfoliate and nonlineate, isotropic or massive. Sphene-bearing. Feldspars are gray and pinkish-gray. Color index ~18. |
| M103-7 | Biotite | 77.0 | 9.25 | 88 | Unpublished | 118˚ 35’ 2” 34˚ 43’ 30” | Burnt Peak 15’ | Biotite- hornblende granodiorite or monzogranite. Medium-grained. Nonporphyritic. Nonfoliate and nonlineate, isotropic or massive. Sphene-bearing. Pink potassium feldspar. Hbld:biotite~2:1. Color index ~15. |
| M104-7 | Biotite | 68.8 | 9.13 | 90 | Unpublished | 118˚ 23’ 34” 34˚ 40’ 43” | Bouquet Reservoir 7.5’ | Hornblende -biotite granodiorite. Medium-grained. Sparsely porphyritic. Poorly developed foliation. Sphene-bearing. Pink potassium feldspar. Color index ~18. Hornblende:biotite~1:2. |
| M105-7 | Biotite | 74.8 | 8.83 | 89 | Unpublished | 118˚ 26’ 10” 34˚ 43’ 2” | Bouquet Reservoir 7.5’ | Biotite monzogranite. Medium-grained. Irregularly porphyritic. Nonfoliate and nonlineate, isotropic or massive. Very homogeneous. Color index ~13. |
| M106-7 | -- | -- | -- | -- | -- | -- | Cuddy Valley 7.5’ | Sample discarded, sample not dated. |
| M107-7 | Biotite | 79.6 | 8.71 | 90 | Unpublished | 118˚ 58’ 28” 34˚ 49’ 20” | Frazier Mtn 7.5’ | Hornblende -biotite granodiorite. Medium-grained. Nonporphyritic, equigranular. Foliate. Sphene-bearing (very pale). Hbld may be chloritized. Hornblende:biotite~1:3. Color index ~15. |
| M108-7 | Biotite  Hbld | 230  239 | 8.21  0.446 | 92  75 | Published | 117˚ 55’ 16” 35˚ 23’ 39” | Saltdale NW 7.5’ | Hornblende -biotite granodiorite. Foliate. El Paso Mts. Triassic sample for Brett Cox. Sample labeled E59-3 in MI-2389. |
| **Sample**  **No** | **Mineral** | **Age**  **(Ma)** | **K2O**  **(percent)** | **Arrad**  **(percent)** | **Published or**  **Unpublished** | **Location** | **Quadrangle** | **Rock description** |
| M1-8 | Biotite  Hbld | 18.6  17.5 | 8.82  0.380 | 63  18 | Unpublished | 117˚ 14’ 0” 34˚ 59’ 8” | Barstow 15’ | Hornblende -biotite monzogranite. Medium-grained. Nonporphyritic. Color index ~15. This a recollection of approximate M47-7 locality to confirm an apparent Tertiary age. |
| M2-8 | Biotite  Hbld | 69.1  71.2 | 9.31  1.353 | 85  74 | Unpublished | 117˚ 15’ 24” 35˚ 13’ 15” | Boron 15’ | Hornblende -biotite monzogranite or granodiorite. Coarse-grained. Sphene-bearing. Slightly foliate. Nonporphyritic, isotropic or massive. Color index ~15. |
| M3-8 | -- | -- | -- | -- | -- | -- | Fremont Peak 15’ | Sample discarded, sample not dated, or information lost. |
| M4-8 | -- | -- | -- | -- | -- | 117˚ 13’ 59” 34˚ 39’ 10” | Turtle Valley 7.5’ | Recollect of M1-7 for chemical analysis. |
| M5-8 | Hbld | 291 | 0.589 | 83 | Unpublished | 115˚ 48’ 7” 34˚ 4’ 40” | Valley Mtn 15’ | Biotite- hornblende granodiorite. Porphyritic. Nonfoliate and nonlineate, isotropic or massive. Sphene-bearing. Phenocrysts up to 4 cm long are pinkish-gray. Color index ~20. Probably a bad age; problem with connection between computer and spectrometer. This is probably a Jurassic rock. Not plotted on either map. |
| M6-8 | -- | -- | -- | -- | -- | -- | Valley Mtn 15’ | Sample discarded, sample not dated, or information lost. |
| M7-8 | Biotite | 146 | 8.69 | 93 | Unpublished | 115˚ 42’ 21” 34˚ 0’ 10” | Dale Lake 15’ | Biotite- hornblende granodiorite. Nonporphyritic, isotropic or massive. Medium-grained. Mafic minerals define an irregular foliation. Minor chloritization. Sphene-bearing. Color index ~25. |
| M8-8 | Biotite | 67.6 | 9.25 | 88 | Unpublished | 115˚ 34’ 3” 34˚ 4’ 31” | Dale Lake 15’ | Biotite- hornblende granodiorite or diorite. Slightly porphyritic. Small phenocrysts. Medium-grained. Subtle foliation. Sphene-bearing. Color index ~20. |
| M9-8 | Biotite | 65.1 | 9.00 | 85 | Unpublished | 115˚ 31’ 34” 34˚ 6’ 48” | Dale Lake 15’ | Biotite monzogranite or granodiorite. Porphyritic. Phenocrysts up to 3 cm long. Medium-grained. Foliation defined by biotite. Color index ~5. |
| M10-8 | -- | -- | -- | -- | -- | -- | Cadiz Valley 15’ | Sample discarded, sample not dated, or information lost. |
| M11-8 | Hbld | 70.3 | 0.878 | 64 | Unpublished | 115˚ 23’ 21” 34˚ 22’ 48” | Cadiz Lake 15’ | Hornblende granodiorite or diorite. Nonporphyritic. Medium-grained. Nonfoliate and nonlineate, isotropic or massive. Color index ~30. |
| M12-8 | Hbld | 83.9 | 0.752 | 62 | Unpublished | 118˚ 21’ 47” 35˚ 4’ 49” | Monolith 7.5’ | Hornblende diorite. Nonporphyritic. Medium- to fine-grained. Nonfoliate and nonlineate, isotropic or massive. Color index ~35. |
| M13-8 | Biotite | 78.6 | 8.08 | 92 | Unpublished | 118˚ 13’ 45” 35˚ 8’ 39” | Mojave 15’ | Biotite monzogranite. Medium-grained. Nonporphyritic. Equigranular . Nonfoliate and nonlineate, isotropic or massive. Color index ~3. |
| M14-8 | Biotite | 76.0 | 7.11 | 82 | Unpublished | 118˚ 6’ 16” 35˚ 13’ 58” | Mojave 15’ | Biotite monzogranite. May contain some hornblende. Medium-grained. Porphyritic. Phenocrysts up to 3 cm long. Nonfoliate and nonlineate, isotropic or massive. Color index ~10. |
| **Sample**  **No** | **Mineral** | **Age**  **(Ma)** | **K2O**  **(percent)** | **Arrad**  **(percent)** | **Published or**  **Unpublished** | **Location** | **Quadrangle** | **Rock description** |
| M15-8 | Biotite | 73.6 | 9.38 | 81 | Unpublished | -- | Rodman Mts 15’ | Biotite monzogranite. May contain some hornblende. Mafic mineral(s) are in fine-grained clots. Medium-grained. Porphyritic. Phenocrysts 1 to 2 cm long. Nonfoliate and nonlineate. Color index ~5. Contact Robert Powell, USGS, for location. |
| M16-8 | Biotite  Muscovite | 62.7  66.5 | 8.98  10.51 | 82  50 | Unpublished | 115˚ 10’ 33” 34˚ 35’ 54” | Essex 15’ | Muscovite-biotite monzogranite. Medium-grained. Contains very sparse, irregularly distributed phenocrysts 1 to 2 cm long. Aligned biotite defines poorly developed foliation. Color index ~5. |
| M17-8 | Biotite  Muscovite | 68.4  66.1 | 8.86  10.56 | 84  89 | Unpublished | 115˚ 07’ 41” 34˚ 31’ 45” | Essex 15’ | Muscovite-biotite monzogranite. Medium-grained. Contains very sparse, irregularly distributed phenocrysts 1 to 2 cm long. Nonfoliate and nonlineate, isotropic or massive. Probably same pluton as M16-8. Color index ~5. |
| M18-8 | Biotite  Muscovite | 70.2  60.6 | 8.33  10.36 | 86  91 | Unpublished | 115˚ 6’ 23” 34˚ 43’ 7” | Essex 15’ | Muscovite-biotite monzogranite. Medium-grained. Contains very sparse, irregularly distributed phenocrysts 1 to 2 cm long. Nonfoliate and nonlineate, isotropic or massive. Probably same pluton as M16-8. Color index ~5. |
| M19-8 | Biotite | 66.1 | 9.51 | 86 | Unpublished | 115˚ 13’ 10” 34˚ 29’ 6” | Milligan 15’ | Hornblende -biotite granodiorite. Very little hornblende. Medium-grained. Sparsely porphyritic. Some phenocrysts up to 3 cm long. Foliate. Color index ~20. |
| M20-8 | Biotite  Muscovite | 67.5  71.0 | 8.71  10.60 | 85  71 | Unpublished | -- | ?? probably Essex 15’ quad | No M20-8 listed in field notes; location unknown, but probably same body as M16-8 to M18-8. |
| M21-8 | Biotite  Muscovite | 65.5  70.7 | 8.21  10.44 | 82  90 | Unpublished | -- | ?? probably Essex 15’ quad | No M21-8 listed in field notes; location unknown, but probably same body as M16-8 to M18-8. |
| M22A-8 | Biotite | 67.8 | 8.54 | 84 | Unpublished | -- | ?? probably Essex 15’ quad | No M22A-8 listed in field notes; location unknown, but probably same body as M16-8 to M18-8. |
| M1-9 | Hbld | 224 | 1.009 | 88 | Unpublished | 117˚ 51’ 4” 35˚ 25’ 13” | Garlock 7.5’ | Gneissic quartz monzonite of Christensen. Contains abundant epidote. Color index ~15. Collected 1000 feet from contact with Christensen’s quartz and microcline bearing diorite. El Paso Mts. Triassic sample. |
| M2-9 | Biotite  Hbld | 157  238 | 8.96  0.902 | 93  76 | Unpublished | 117˚ 51’ 59” 35˚ 24’ 37” | Garlock 7.5’ | Christensen’s quartz and microcline bearing diorite. Contains biotite. Some hornblende streaked with epidote. Color index ~25. El Paso Mts. Triassic sample. |
| M3-9 | -- | -- | -- | -- | -- | -- | Saltdale NW 7.5’ | Sample discarded, sample not dated, or information lost. |
| M4-9 | Biotite  Hbld | 146  229 | 9..06  0.605 | 91  73 | Unpublished | 117˚ 53’ 55” 35˚ 25’ 39” | Saltdale NW 7.5’ | Christensen’s adamellite. Contains biotite. Some hornblende streaked with epidote. Color index ~15. El Paso Mts. Triassic sample. |
| **Sample**  **No** | **Mineral** | **Age**  **(Ma)** | **K2O**  **(percent)** | **Arrad**  **(percent)** | **Published or**  **Unpublished** | **Location** | **Quadrangle** | **Rock description** |
| M5-9 | Hbld  Hbld  (40Ar/39Ar) | 246  255 | 0.930 | 89 | Unpublished | 117˚ 50’ 55” 35˚ 26’ 0” | Garlock 7.5’ | Gneissic quartz monzonite of Christensen. Contains abundant epidote. Color index ~15. Same unit as M1-9. Collected east of M1-9. El Paso Mts. Triassic sample. |
| TS-P-1 | Whole rock | 7.15 | 1.01 | 33 | Unpublished | 116˚ 28’ 28” 34˚ 12’ 56” | Yucca Valley North 7.5’ | Pioneertown basalt. |
| TS-OW-1 | Whole rock | 4.86 | 2.18 | 26 | Unpublished | 116˚ 43’ 12” 34˚ 24’ 08” | Old Woman Springs 7.5’ | Old Woman Springs basalt. |
| TS-SB-1 | Whole rock | 7.95 | 0. 401 | 32 | Unpublished | 116˚ 39’ 02” 33˚ 59’ 43” | White Water 7.5’ | Cabazon ES basalt. |
| TS-B-1 | Whole rock | 6.70 | 1.02 | 43 | Unpublished | -- | -- | Locality information lost. Collected from limited exposures of basalt in Santa Ana Canyon, San Bernardino Mountains. |
| 8M104 | Whole rock | 7.30 | 0.941 | 63 | Unpublished | 116˚ 48’ 1” 34˚ 10’ 42” | Moonridge 7.5’ | Santa Ana Canyon (due south of Sugarloaf Mtn.) basalt; middle flow of 3 flows. |
| 8M115 | Whole rock | 8.26 | 0.978 | 64 | Unpublished | 116˚ 43’ 03” 34˚ 10’ 25” | Onyx Peak 7.5’ | QTb of Dibblee as mapped on Morongo Valley 15’. |
| 8M116 | Whole rock | 6.88 | 0.448 | 36 | Unpublished | -- | Cabazon 7.5’ | Cabazon area basalt. Contact Jonathan Matti, USGS, for exact location. |
| 8M117 | Whole rock | 7.8 | 0.226 | 17 | Unpublished | -- | Cabazon 7.5’ | Cabazon area basalt. Considered an unreliable age due to instrument problems Same unit as 8M116, which is considered a better K-Ar age. Contact Jonathan Matti, USGS, for exact location. |
| 8M118 | Whole rock | 7.68 | 0.362 | 30 | Unpublished | -- | Cabazon 7.5’ | Basalt at base of Painted Hills Fm. Probable Lion Canyon area. HF and HNO3 treated. Contact Jonathan Matti, USGS, for exact location. |
| DG-1a | Whole rock | 6.04 | 1.127 | 60 | Unpublished | -- | Desert Hot Springs 7.5’ | Imperial Fm or Painted Hills Fm. basalt. Contact Jonathan Matti, USGS, for exact location. |
| DG-1b | Whole rock | 5.94 | 1.091 | 66 | Unpublished | -- | Desert Hot Springs 7.5’ | Imperial Fm or Painted Hills Fm. basalt. Contact Jonathan Matti, USGS, for exact location. |
| CF-2 | Whole rock | 14.7 | 1.355 | 56 | Unpublished | -- | Whitewater 7.5’ | Basalt flow in Coachella Fanglomerate. Contact Jonathan Matti, USGS, for exact location. |
| CF-3a | Plagioclase | 15.7 | 0.812 | 84 | Unpublished | -- | Whitewater 7.5’ | Contact Jonathan Matti, USGS, for exact location. Approximate location 116˚ 38.5’ — 34˚ 59’ |
| CF-3b | -- | -- | -- | -- | -- | -- | Whitewater 7.5’ | Instrument problems; no age. See JD-19-5 below |
| 7M002 | Whole rock | 7.77 | 0.997 | 29 | Unpublished | 116˚ 27’ 33” 34˚ 10’ 47” | Yucca Valley North 7.5’ | QTb of Dibblee on Joshua Tree 15’. |
| 7M041 | Whole rock | 6.86 | 1.186 | 19 | Unpublished | 116˚ 27’ 30” 34˚ 10’ 43” | Yucca Valley North 7.5’ | QTb of Dibblee on Joshua Tree 15’. Sample collected above sample 7M002; highest flow sampled in this area. |
| **Sample**  **No** | **Mineral** | **Age**  **(Ma)** | **K2O**  **(percent)** | **Arrad**  **(percent)** | **Published or**  **Unpublished** | **Location** | **Quadrangle** | **Rock description** |
| JD-19-5 | Whole rock | 12.0 | 0.230 | 36 | Unpublished | -- | Whitewater 7.5’ | This is a resample of CF-3b. Contact Jonathan Matti, USGS, for exact location. Approximate location 116˚ 38.5’ — 34˚ 59’ |
| V1-8 | -- | -- | -- | -- | -- | -- | Devore 7.5’ | Gabbro from SE side of I-15. Very weathered, mafic minerals look chloritized. Not suitable for dating. |
| V2-8 | Plagioclase | 19.3 | 0.735 | 54 | Unpublished | 116˚ 18’ 40” 34˚ 43’ 32” | Lavic Lake 7.5’ | Basalt, black, aphanitic, vesicular. Contains some plagioclase phenocrysts. |
| V3-8 | Whole rock | 5.25 | 0.873 | 14 | Unpublished | 115˚ 4’ 3” 34˚ 42’ 3” | Ludlow 7.5’ | Basalt, fine-grained to aphanitic, highly vesicular in places. Contains abundant olivine phenocrysts. Collected from dike. Basalt of Ash Hill. |
| V4-8 | Whole rock | 12.7 | 0.975 | 54 | Unpublished | 117˚ 16’ 52” 34˚ 32’ 10” | Malapai Hill 7.5’ | Basalt, massive, aphanitic. Contains abundant olivine phenocrysts. Intrusive Basalt of Malapai Hill. |
| V5-8 | Whole rock | 6.94 | 1.652 | 49 | Unpublished | 117˚ 0’ 4” 33˚ 30’ 9” | Bachelor Mtn 7.5’ | Basalt, black, massive, fine-grained. Contains olivine and some plagioclase phenocrysts. Basalt of Vail Mtn. |
| V6-8 | -- | -- | -- | -- | -- | -- | Mt Wilson 7.5’ | Dark gray dike rock. Fine-grained, weathered. Not suitable for dating. |
| V7-8 | Hbld  Hbld | 96.9  107 | 0.662  0.662 | 47  79 | Unpublished | -- | Tustin 7.5’ | Collected as a Td dike. Initial Tertiary call apparently is wrong. Location information was lost. |
| V8-8 | -- | -- | -- | -- | -- | -- | Lane Mtn 15’ | Sample discarded, sample not dated, or information lost. |
| V9-8 | -- | -- | -- | -- | -- | -- | Lane Mtn 15’ | Sample discarded, sample not dated, or information lost. |
| V10-8 | -- | -- | -- | -- | -- | -- | Lane Mtn 15’ | Sample discarded, sample not dated, or information lost. |
| V11-8 | Hbld | 18.1 | 0.477 | 27 | Published | 116˚ 53’ 16” 35˚ 1’ 48” | Lane Mtn 7.5’ | Hornblende -biotite andesite from Jackhammer Fm. Rock shows alteration. |
| V12-8 | Plagioclase | 18.1 | 0.597 | 72 | Published | 116˚ 53’ 11” 35˚ 1’ 53” | Lane Mtn 7.5’ | Biotite andesite unconformably overlying Jackhammer Fm. Unaltered sample. |
| V13-8 | Whole rock | 21.5 | 2.672 | 52 | Unpublished | -- | Minneola 7.5’ | Basalt (Tbh of Dibblee); very fine-grained. Looks more like an andesite. Appears to have some biotite. Has red surface alteration. Location information was lost. |
| V14-8 | -- | -- | -- | -- | -- | -- | Newberry Springs 15’ | Biotite andesite (Ta of Dibblee). Rock shows alteration. Not suitable for dating. |
| V15-8 | Whole rock | 15.8 | 1.181 | 14 | Unpublished | 116˚ 34’ 1” 35˚ 4’ 14” | Alvord Mtn 15’ | Basalt, fine-grained, black, weathers red to brown on surface. Alvord Peak basalt of Beyers (1960). |
| V16-8 | Whole rock  Whole rock | 10.0  9.87 | 1.022  1.022 | 23  27 | Unpublished | 116˚ 34’ 11” 35˚ 4’ 5” | Alvord Mtn 15’ | Olivine basalt. Flow rock. Some alteration, but olivine looks fresh. Spanish Canyon Fm. of Beyers (1960). |
| **Sample**  **No** | **Mineral** | **Age**  **(Ma)** | **K2O**  **(percent)** | **Arrad**  **(percent)** | **Published or**  **Unpublished** | **Location** | **Quadrangle** | **Rock description** |
| V1-9 | Whole rock | 20.8 | ?? | ?? | Unpublished | -- | -- | Red Buttes quartz basalt of Dibblee. Location information and spectrometer chart was lost. |
| V2-9 | -- | -- | -- | -- | -- | -- | Saltdale NW 7.5’ | Basalt from lower part of Ricardo Fm. Sample discarded, sample not dated, or information lost. |
| V3-9 | -- | -- | -- | -- | -- | -- | Saltdale NW 7.5’ | Jackhammer Fm. Sample discarded, sample not dated. K20 content too low. |
| V4-9 | -- | -- | -- | -- | -- | -- | Cabazon 7.5’ | For chemistry only, not dated. Basalt of Painted Hills Fm. |
| V5-9 | -- | -- | -- | -- | -- | -- | Cabazon 7.5’ | For chemistry only. Basalt at base of Painted Hills Fm. Same sample as 8M118 |
| Devore 1 | Whole rock  Whole rock  Hbld | 64.9  63.9  71.6 | 2.18  2.18  1.085 | 92  92  75 | Unpublished | 117˚ 28’ 16” 34˚ 11’ 44” | Devore 7.5’ | Mylonite. |
| S22-92-3 | Biotite | 77.2 | 8.99 | 90 | Unpublished | 116˚ 24’ 39” 33˚ 13’ 41” | Tubb Canyon 7.5’ | Montezuma-Borrego Highway, mylonitic tonalite or granodiorite. |
| S22-87-3 | Biotite | 81.3 | 9.07 | 89 | Unpublished | 116˚ 26’ 32” 33˚ 12’ 39” | Tubb Canyon 7.5’ | Montezuma-Borrego Highway, mylonite. |
| S22-84-3 | Biotite  Hbld | 84.5  82.8 | 8.99  1.113 | 86  83 | Unpublished | 116˚ 29’ 41” 33˚ 12’ 38” | Tubb Canyon 7.5’ | Montezuma-Borrego Highway, mylonite. |
| WT-2 | Biotite  Hbld | 87.8  93.4 | 9.63  0.947 | 89  78 | Unpublished | 118˚ 17’ 16” 34˚ 9’ 11” | Burbank 7.5’ | Hornblende -biotite granodiorite. Medium-grained. Sphene-bearing. Color index ~15. |
| TA-6 | Biotite | 59.1 | 8.92 | 94 | Unpublished | 116˚ 47’ 37” 34˚ 2’ 11” | San Gorgonio Mtn. 7.5’ | Hornblende -biotite granodiorite or quartz diorite. Equigranular. Medium-grained. |
| TC-6 | Biotite | 90.4 | 9.01 | 18 | Unpublished | 116˚ 45’ 38” 34˚ 4’ 33” | San Gorgonio Mtn. 7.5’ | Hornblende -biotite granodiorite. |
| 416 | Hbld | 65.3 | 1.312 | 70 | Unpublished | 117˚ 19’ 54” 34˚ 14’ 56” | San Bernardino North 7.5’ | Biotite- hornblende quartz monzonite. Sphene-bearing. Medium-grained, nonporphyritic. Color index ~20. This rock may be one of the Triassic plutons. |
| SR-24 | Biotite | 13.4 | 8.13 | 50 | Unpublished | -- | -- | No SR-24 in field notes; location unknown. May be service work for unknown worker. |
| DMG | Biotite  Hbld | 70.5  73.8 | 8.69  0.874 | 62  51 | Unpublished | -- | -- | No DMG in field notes; location unknown. May be service work for unknown worker. |
| RH20011772 | Hbld | 74.1 | 0.393 | 56 | Unpublished | -- | -- | No RH20011772 in field notes; location unknown. May be service work for unknown worker. Spectrometer run on 1/12/78 |
| DES7013 | Sanidine | 17.9 | ?? | ?? | Published | 116˚ 18’ 2” 34˚ 58’ 28” | Hidden Valley E 7.5’ | Peach Spring Tuff. Collected by S. Miller; Dated by Savage and Curtiss. Miller (1980). |
| **Sample**  **No** | **Mineral** | **Age**  **(Ma)** | **K2O**  **(percent)** | **Arrad**  **(percent)** | **Published or**  **Unpublished** | **Location** | **Quadrangle** | **Rock description** |
| DES7014 | Plagioclase | 22.9 | ?? | ?? | Published | 116˚ 18’ 50” 34˚ 59’ 04” | Hidden Valley E 7.5’ | Airfall tuff. Collected by S. Miller; Dated by Savage and Curtiss. Miller (1980). |
| CMG1-34 | Biotite  Biotite | 22.6  22.5 | 8.51  8.47 | 70  69 | Unpublished | -- | Mt. Barrow 7.5’ | Chocolate Mts. sample dated for Bruce Crowe. Biotite granodiorite. Mt Barrow pluton. Exact locality unrecoverable. |
| CMG1-35 | Biotite | 22.8 | 7.95 | 60 | Unpublished | -- | Mt. Barrow 7.5’ | Chocolate Mts. sample dated for Bruce Crowe. Biotite granodiorite. Mt Barrow pluton. Exact locality unrecoverable. |
| CMG1-36 | Biotite | 23.6 | 8.79 | 78 | Unpublished | -- | Mt. Barrow 7.5’ | Chocolate Mts. sample dated for Bruce Crowe. Biotite granodiorite. Mt Barrow pluton. Exact locality unrecoverable. |
| CMG1-68 | Biotite | 24.5 | 8.47 | 88 | Unpublished | -- | Mt. Barrow 7.5’ | Chocolate Mts. sample dated for Bruce Crowe. Biotite granodiorite. Mt Barrow pluton. Exact locality unrecoverable. |
| BH82BR-28 | Plagioclase | 16.2 | 0.55 | 12 | Published | 115˚ 51’ 52” 34˚ 43’ 37” | East of Siberia 7.5’ | Flow-banded rhyodacite. Dark-gray, porphyritic rock containing plagioclase and hornblende. |
| BH82BR-39 | Sanidine | 16.7 | 9.16 | 68 | Published | 115˚ 57’ 39” 34˚ 44’ 55” | Siberia 7.5’ | Peach Spring Tuff(?). Pink, pumice-rich welded tuff containing sanidine and biotite. |
| BH82NY-99B | Biotite | 69.0 | 9.58 | 77 | Published | 115˚ 19’ 33” 35˚ 15’ 32” | Ivanpah 7.5’ | Mid Hills Adamellite. Porphyritic biotite monzogranite containing sparse K-feldspar phenocrysts. |
| BH82SP-58 | Biotite | 74.5 | 8.72 | 64 | Published | 115˚ 36’ 03” 34˚ 50’ 30” | Van Winkle Springs 7.5’ | Arrowweed granite. Fine-grained biotite monzogranite. |
| M80BR-79 | Biotite | 114 | 8.60 | 81 | Published | 115˚ 46’ 58” 34˚ 40’ 04” | East of Siberia 7.5’ | Fine-grained granite. Leucocratic biotite monzogranite. |
| M80BR-85 | Biotite  Sanidine | 20.1  19.6 | 8.66  9.10 | 74  57 | Published | 115˚ 44’ 50” 34˚ 35’ 29” | Amboy 7.5’ | Peach Spring Tuff. Red rhyolite tuff, welded, bearing sanidine, biotite, and quartz. |
| M81BR-41 | Sanidine | 18.0 | 3.50 | 82 | Published | 115˚ 49’ 59” 34˚ 45’ 38” | Budweiser Wash 7.5’ | Peach Spring Tuff. Light-gray rhyolite tuff, unwelded, bearing sanidine, biotite, and plagioclase. Dated mineral separate probably contained quartz. |
| M81LH-14 | Biotite | 130 | 9.34 | 82 | Published | 115˚ 49’ 45” 34˚ 37’ 26” | Amboy Crater 7.5’ | Porphyritic granite. Porphyritic biotite quartz syenite to syenogranite; K-feldspar phenocrysts are purple. |
| M81LH-16 | Biotite | 116 | 8.47 | 89 | Published | 115˚ 49’ 46” 34˚ 38’ 03” | East of Siberia 7.5’ | Felsic dike. Fine-grained, light gray biotite quartz syenite containing rare phenocrysts of pink-rimmed light gray K-feldspar. |
| M81LH-58 | Whole rock | 22.1 | 1.58 | 58 | Published | 115˚ 56’ 36” 34˚ 40’ 27” | Siberia 7.5’ | Black Ridge basalt. Olivine basalt having a plagioclase lath matrix. |
| M82BR-03 | Biotite | 74.3 | 7.80 | 73 | Published | 115˚ 50’ 30” 34˚ 41’ 45” | East of Siberia 7.5’ | Gray granite. Pale-gray, medium-grained, subequigranular hornblende -biotite monzogranite containing pink K-feldspar. |
| M82BR-103 | Whole rock | 17.0 | 1.60 | 40 | Published | 115˚ 48’ 30” 34˚ 41’ 19” | East of Siberia 7.5’ | Dacite. Gray dacite lava flow, possibly altered. Feldspar phenocrysts. |
| M82BR-21 | Whole rock | 17.4 | 2.20 | 54 | Published | 115˚ 54’ 06” 34˚ 42’ 58” | Siberia 7.5’ | Basalt. Black olivine basalt containing iddingsite alteration. |
| **Sample**  **No** | **Mineral** | **Age**  **(Ma)** | **K2O**  **(percent)** | **Arrad**  **(percent)** | **Published or**  **Unpublished** | **Location** | **Quadrangle** | **Rock description** |
| M82BR-27 | Biotite | 22.4 | 8.38 | 72 | Published | 115˚ 55’ 34” 34˚ 39’ 31” | Siberia 7.5’ | Dacite. Medium gray feldspar-quartz- hornblende -biotite dacite lava flow. |
| M82CO-138 | Biotite | 146 | 7.50 | 76 | Published | 115˚ 24’ 17” 34˚ 56’ 37” | Colton Wells 7.5’ | Dacite dike. Independence dike(?). Plagioclase- hornblende -biotite dacite. |
| M82SP-75 | Biotite | 157 | 8.15 | 82 | Published | 115˚ 33’ 56” 34˚ 55’ 24” | Fountain Peak 7.5’ | Goldstone quartz monzonite. Gray, medium- to coarse-grained biotite quartz syenite. Biotite clots to 10 mm diameter. |
| M83WH-130 | Sanidine | 16.8 | 6.75 | 51 | Published | 115˚ 25’ 00” 35˚ 01’ 24” | Columbia Mtn 7.5’ | Wild Horse Mesa Tuff. Upper unit. Pink, moderately welded tuff containing blue sanidine and biotite. |
| M84LH-106 | Biotite | 22.1 | 8.38 | 68 | Published | 115˚ 57’ 35” 34˚ 38’ 38” | Siberia 7.5’ | Dacite. Polka-dot texture, flow-banded dacite in a volcanic breccia. Contains biotite and possible hornblende. |
| M84MH-51 | Hbld  Sanidine | 30.2  20.5 | 0.96  9.36 | 24  83 | Published | 115˚ 22’ 07” 35˚ 10’ 20” | Pinto Valley 7.5’ | Peach Spring Tuff. Buff colored, columnar jointed welded tuff containing abundant blue sanidine plus quartz, hornblende, biotite, and plagioclase. |
| M84MH-59 | Sericite | 69.0 | 9.64 | 85 | Published | 115˚ 27’ 09” 35˚ 04’ 29” | Columbia Mtn 7.5’ | Sericitized dike. K-feldspar-plagioclase in gray-brown matrix that is 30% sericite. |
| M84MH-95 | Biotite Sanidine | 18.8  20.0 | 8.95  8.80 | 51  76 | Published | 115˚ 25’ 39” 35˚ 03’ 19” | Columbia Mtn 7.5’ | Peach Spring Tuff. Sanidine-biotite- hornblende -plagioclase-quartz rhyolite, moderately welded. |
| M84NP-121 | Sericite | 82.2 | 10.65 | 90 | Published | 115˚ 30’ 05” 35˚ 02’ 59” | Hayden 7.5’ | Sericitized dike. Quartz-eye porphyry dike. Feldspar-sericite, quartz. |
| M85MH-44 | Hbld | 78.4 | 0.86 | 75 | Published | 115˚ 27’ 10” 35˚ 05’ 25” | Columbia Mtn 7.5’ | Dacite dike. |
| M85NY-14 | Biotite Sanidine | 15.8  14.2 | 8.80  11.05 | 48  12 | Published | 115˚ 16’ 52” 35˚ 19’ 18” | Ivanpah 7.5’ | Rhyolite dike. Gray to pinkish-gray rhyolite dike in Mid Hills adamellite pluton; bears sanidine, hornblende, biotite in a matrix that has vugs and flattened fiamme. |
| M86NY-12 | Sanidine | 120 | 5.76 | 71 | Published | 115˚ 06’ 37” 35˚ 27’ 19” | Hopps Well 7.5’ | Rhyolite tuff. White tuffaceous sandstone, biotite-bearing. Mineral separate probably contained quartz. |
| M88NY-40 | Biotite Plagioclase | 18.8  15.6 | 8.1  1.36 | 52  79 | Published | 115˚ 05’ 12” 35˚ 27’ 56” | Hopps Well 7.5’ | Andesite. Gray dacite or andesite lahar containing biotite, feldspar, and possible hornblende. |
| M89NY-10 | Biotite | 94.4 | 8.74 | 87 | Published | 115˚ 10’ 43” 35˚ 28’ 47” | Crescent Peak 7.5’ | Hypabyssal biotite monzogranite. Medium-gray, coarsely porphyritic, quartz and K-feldspar phenocrysts. |
| M90NY-16 | Plagioclase | 17.6 | 1.66 | 70 | Published | 115˚ 11’ 10” 35˚ 26’ 31” | Crescent Peak 7.5’ | Andesite or dacite flow-breccia containing hornblende, biotite, and quartz. |
| M91NY-33 | Muscovite | 1981 | 10.43 | 99 | Published | 115˚ 07’ 47” 35˚ 29’ 18” | Hopps Well 7.5’ | White pegmatite dike containing quartz, feldspar, and muscovite. Intrudes granulite gneisses. |
| M91NY-57 | Muscovite | 100 | 10.55 | 92 | Published | 115˚ 07’ 40” 35˚ 28’ 20” | Hopps Well 7.5’ | Intrusion breccia. Sericitized leucocratic gneiss, silicified in places. |
| **Sample**  **No** | **Mineral** | **Age**  **(Ma)** | **K2O**  **(percent)** | **Arrad**  **(percent)** | **Published or**  **Unpublished** | **Location** | **Quadrangle** | **Rock description** |
| P81LH-47 | Biotite | 73.0 | 7.75 | 84 | Published | 115˚ 50’ 51” 34˚ 39’ 35” | East of Siberia 7.5’ | Leucogranite. Light-colored biotite granite. |
| MARB-522-26 | Biotite | 20.2 | 8.56 | 65 | Published | 115˚ 38’ 46” 34˚ 40’ 40” | Brown Buttes 7.5’ | Dacite |
| MARB-522-19C | Sanidine | 15.9 | 8.65 | 52 | Published | 115˚ 38’ 22” 34˚ 41’ 28” | Brown Buttes 7.5’ | Peach Spring Tuff. |
| MH-4 | Biotite Hbld | 95.2  168 | 7.82  0.855 | 49  76 | Published | 115˚ 18’ 58” 35˚ 10’ 02” | Pinto Valley 7.5’ | Rock Spring Monzodiorite. Dark gray hornblende -biotite quartz monzodiorite, inclusion rich. (Beckerman et al., 1982) |
| MH-7 | Hbld | 57.9 | 1.515 | 78 | Published | 115˚ 20’ 32” 35˚ 09’ 13” | Pinto Valley 7.5’ | Rock Spring Monzodiorite. Dark gray hornblende -biotite quartz monzodiorite, inclusion rich. (Beckerman et al., 1982) |
| MH-172 | Biotite Hbld | 53.9  87.6 | 5.94  1.325 | 58  62 | Published | 115˚ 21’ 34” 35˚ 07’ 44” | Pinto Valley 7.5’ | Rock Spring Monzodiorite. Dark gray hornblende -biotite quartz monzodiorite, inclusion rich. (Beckerman et al., 1982) |
| MH-100 | Hbld | 107 | 0.665 | 72 | Published | 115˚ 20’ 32” 35˚ 09’ 13” | Columbia Mountain 7.5’ | Black Canyon Gabbro. Dark brown hornblende -pyroxene-plagioclase gabbro containing prismatic hornblende needles. (Beckerman et al., 1982) |
| MH-9 | Biotite Hbld | 88.7  104 | 6.78  3.00 | 50  30 | Published | 115˚ 24’ 12” 35˚ 08’ 22” | Mid Hills 7.5’ | Mid Hills Adamellite. Coarse grained biotite monzogranite. Light gray containing abundant sphene, rare hornblende (Beckerman et al., 1982) |
| MH-27 | Biotite | 83.5 | 6.64 | 58 | Published | 115˚ 26’ 58” 35˚ 07’ 32” | Mid Hills 7.5’ | Mid Hills Adamellite. Coarse grained biotite monzogranite. Light gray containing abundant sphene, rare hornblende (Beckerman et al., 1982) |
| MH-75 | Biotite | 73.4 | 2.50 | 71 | Published | 115˚ 21’ 27” 35˚ 13’ 48” | Pinto Valley 7.5’ | Mid Hills Adamellite. Coarse grained biotite monzogranite. Light gray containing abundant sphene, rare hornblende. Low K2O suggests very impure sample. (Beckerman et al., 1982) |
| I-6d | Biotite | 79.9 | 7.41 | 61 | Published | 115˚ 17’ 10” 35˚ 16’ 18” | Ivanpah 7.5’ | Mid Hills Adamellite. Coarse grained biotite monzogranite. Light gray containing abundant sphene, rare hornblende (Beckerman et al., 1982) |