



# **Long-term Monitoring of Coho Salmon and Steelhead During Freshwater Life Stages in Coastal Marin County, 2019**

## *Historic Data Tables*

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This report is available in digital format from [San Francisco Bay Area Network website](#) and in the [NPS Data Store](#).

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## Historic Data Table Description

These tabular data provide a summary of historical information collected by the NPS since comprehensive monitoring was initiated within Point Reyes National Seashore (PORE) and Golden Gate National Recreation Area (GOGA). In addition, adult spawner information from two partner organizations, Marin Municipal Water District (MMWD) and Salmon Protection and Watershed Network (SPAWN), are provided for context within the Lagunitas Creek watershed. The tables summarize information collected during winter spawner, spring smolt trapping, and summer juvenile surveys. Spawner survey summaries are provided in Tables 1 through 6 and include data from 1997 through 2019. They provide a summary of total number of coho redds, coho carcasses, survey length, and number of surveys performed per watershed. Tables 7 through 12 summarize information collected during spring outmigrant trapping in Olema Creek starting in 2004 and Redwood Creek starting in 2005. Spring outmigrant tables summarize coho and steelhead length, weight, and K-factor for each survey year along with totals for non-salmonids captured during each trapping season. Tables 13 through 18 summarize information collected during summer index reach monitoring performed in Olema and Redwood Creeks. This information includes a summary of habitat and total catch per index site and creek for 2019. In addition, a summary of total catch per year and index reach from 2004 through 2019 including coho, steelhead (young-of-year [YoY]) and steelhead 1+ is provided for both Olema and Redwood Creeks.

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**Table 1.** Coho spawner survey redd density history for mainstem Lagunitas Creek, San Geronimo Creek, Devil's Gulch, Olema Creek, Redwood Creek, and Pine Gulch including total redds, survey length (km) and redd per km for spawner years 1997-1998 through 2018-2019.

| Years     | Lagunitas Creek |                    |             | San Geronimo Creek <sup>a,b</sup> |                    |             | Devil's Gulch <sup>a</sup> |                    |             | Olema Creek <sup>b</sup> |                    |             | Redwood Creek <sup>b</sup> |                    |             | Pine Gulch  |                    |             |
|-----------|-----------------|--------------------|-------------|-----------------------------------|--------------------|-------------|----------------------------|--------------------|-------------|--------------------------|--------------------|-------------|----------------------------|--------------------|-------------|-------------|--------------------|-------------|
|           | Total redds     | Survey length (km) | Redd per km | Total redds                       | Survey length (km) | Redd per km | Total redds                | Survey length (km) | Redd per km | Total redds              | Survey length (km) | Redd per km | Total redds                | Survey length (km) | Redd per km | Total redds | Survey length (km) | Redd per km |
| 1997-1998 | 80              | 10.7               | 7.5         | 121                               | 7.0                | 15.3        | 52                         | 3.2                | 16.3        | 134                      | 20.8               | 6.4         | 78                         | 9.2                | 8.5         | N/A         | N/A                | N/A         |
| 1998-1999 | 92              | 10.7               | 8.6         | 60                                | 7.0                | 6.6         | 32                         | 3.2                | 10          | 23                       | 17                 | 1.4         | 41                         | 9.2                | 4.5         | N/A         | N/A                | N/A         |
| 1999-2000 | 139             | 10.7               | 13.0        | 61                                | 7.0                | 8.3         | 3                          | 3.2                | 0.9         | 10                       | 12.8               | 0.8         | 5                          | 8.2                | 0.6         | N/A         | N/A                | N/A         |
| 2000-2001 | 119             | 12.8               | 9.3         | 74                                | 7.0                | 8.0         | 11                         | 3.2                | 3.4         | 80                       | 19.3               | 4.1         | 12                         | 9.2                | 1.3         | 0           | 9.5                | 0           |
| 2001-2002 | 79              | 12.8               | 6.2         | 145                               | 7.0                | 14.5        | 59                         | 3.7                | 16.1        | 59                       | 15.4               | 3.8         | 34                         | 9.2                | 3.7         | 2           | 9.5                | 0.2         |
| 2002-2003 | 71              | 12.8               | 5.5         | 61                                | 7.0                | 5.6         | 24                         | 3.7                | 6.6         | 20                       | 17                 | 1.2         | 3                          | 9.2                | 0.3         | 1           | 9.5                | 0.1         |
| 2003-2004 | 124             | 12.8               | 9.7         | 205                               | 7.0                | 19.8        | 48                         | 3.7                | 13.1        | 109                      | 15                 | 7.3         | 42                         | 9.2                | 4.6         | 0           | 9.5                | 0           |
| 2004-2005 | 120             | 12.8               | 9.4         | 268                               | 7.0                | 19.7        | 112                        | 3.7                | 30.6        | 138                      | 20.9               | 6.6         | 90                         | 9.6                | 9.4         | 3           | 9.5                | 0.3         |
| 2005-2006 | 53              | 12.8               | 4.1         | 102                               | 7.0                | 6.9         | 33                         | 3.7                | 8.9         | 9                        | 17                 | 0.5         | 11                         | 9.6                | 1.1         | 1           | 9.5                | 0.1         |
| 2006-2007 | 128             | 12.8               | 10          | 143                               | 7.0                | 16.7        | 55                         | 3.7                | 14.9        | 95                       | 18                 | 5.3         | 24                         | 9.2                | 2.6         | 0           | 9.5                | 0           |

<sup>a</sup> Lagunitas Creek, San Geronimo Creek, and Devil's Gulch coho redd data provided by Marin Municipal Water District.

<sup>b</sup> Includes redds from all surveyed tributaries.

<sup>c</sup> No redds observed during spawner surveys. However, subsequent summer surveys determined at least one coho redd was constructed.

<sup>d</sup> No juveniles were observed the following summer.

<sup>e</sup> Surveys incomplete due to partial federal government shutdown resulting in missed surveys during the peak of the coho spawning run.

<sup>f</sup> Final redd estimate based on kNN analysis (Ricker et al. 2013).

**Table 1 (continued).** Coho spawner survey redd density history for mainstem Lagunitas Creek, San Geronimo Creek, Devil's Gulch, Olema Creek, Redwood Creek, and Pine Gulch including total redds, survey length (km) and redd per km for spawner years 1997-1998 through 2018-2019.

| Years     | Lagunitas Creek <sup>a</sup> |                    |             | San Geronimo Creek <sup>a,b</sup> |                    |             | Devil's Gulch <sup>a</sup> |                    |             | Olema Creek <sup>b</sup> |                    |             | Redwood Creek <sup>b</sup> |                    |             | Pine Gulch     |                    |             |
|-----------|------------------------------|--------------------|-------------|-----------------------------------|--------------------|-------------|----------------------------|--------------------|-------------|--------------------------|--------------------|-------------|----------------------------|--------------------|-------------|----------------|--------------------|-------------|
|           | Total redds                  | Survey length (km) | Redd per km | Total redds                       | Survey length (km) | Redd per km | Total redds                | Survey length (km) | Redd per km | Total redds              | Survey length (km) | Redd per km | Total redds                | Survey length (km) | Redd per km | Total redds    | Survey length (km) | Redd per km |
| 2007-2008 | 87                           | 12.8               | 6.8         | 55                                | 7.0                | 6.6         | 6                          | 3.7                | 1.6         | 33                       | 18                 | 1.8         | 1 <sup>c</sup>             | 9.6                | 0.1         | 2              | 9.5                | 0.2         |
| 2008-2009 | 25                           | 12.8               | 2.0         | 1                                 | 7.0                | 0.1         | 0                          | 3.7                | 0           | 0                        | 18                 | 0           | 2                          | 8.6                | 0.2         | 1 <sup>c</sup> | 9.5                | 0           |
| 2009-2010 | 42                           | 12.8               | 3.3         | 7                                 | 7.0                | 1           | 2                          | 3.7                | 0           | 14                       | 18.3               | 0.8         | 23                         | 9.2                | 2.5         | 0              | 9.5                | 0           |
| 2010-2011 | 32                           | 12.8               | 2.5         | 42                                | 7.0                | 5.7         | 6                          | 3.7                | 0           | 21                       | 18                 | 1.2         | 3                          | 9.6                | 0.3         | 0              | 9.5                | 0           |
| 2011-2012 | 94                           | 12.8               | 7.3         | 22                                | 7.0                | 0.4         | 10                         | 3.7                | 0           | 7                        | 18                 | 0.4         | 4                          | 9.6                | 0.4         | 1 <sup>d</sup> | 9.5                | 0.1         |
| 2012-2013 | 108                          | 12.8               | 8.4         | 63                                | 7.0                | 8.4         | 44                         | 3.7                | 0.5         | 32                       | 18                 | 1.8         | 25                         | 9.6                | 2.6         | 0              | 8.0                | 0           |
| 2013-2014 | 172                          | 12.8               | 13.4        | 10                                | 7.0                | 1.0         | 5                          | 3.7                | 1.4         | 32                       | 18                 | 1.8         | 5                          | 8.6                | 0.6         | 0              | 8.0                | 0           |
| 2014-2015 | 79                           | 12.8               | 6.2         | 37                                | 7.0                | 5.3         | 20                         | 3.7                | 5.4         | 7                        | 18                 | 0.3         | 4                          | 8.6                | 0.5         | 0              | 8.0                | 0           |

<sup>a</sup> Lagunitas Creek, San Geronimo Creek, and Devil's Gulch coho redd data provided by Marin Municipal Water District.

<sup>b</sup> Includes redds from all surveyed tributaries.

<sup>c</sup> No redds observed during spawner surveys. However, subsequent summer surveys determined at least one coho redd was constructed.

<sup>d</sup> No juveniles were observed the following summer.

<sup>e</sup> Surveys incomplete due to partial federal government shutdown resulting in missed surveys during the peak of the coho spawning run.

<sup>f</sup> Final redd estimate based on kNN analysis (Ricker et al. 2013).

**Table 1 (continued).** Coho spawner survey redd density history for mainstem Lagunitas Creek, San Geronimo Creek, Devil's Gulch, Olema Creek, Redwood Creek, and Pine Gulch including total redds, survey length (km) and redd per km for spawner years 1997-1998 through 2018-2019.

| Years     | Lagunitas Creek <sup>a</sup> |                    |             | San Geronimo Creek <sup>a,b</sup> |                    |             | Devil's Gulch <sup>a</sup> |                    |             | Olema Creek <sup>b</sup> |                    |             | Redwood Creek <sup>b</sup> |                    |             | Pine Gulch  |                    |             |
|-----------|------------------------------|--------------------|-------------|-----------------------------------|--------------------|-------------|----------------------------|--------------------|-------------|--------------------------|--------------------|-------------|----------------------------|--------------------|-------------|-------------|--------------------|-------------|
|           | Total redds                  | Survey length (km) | Redd per km | Total redds                       | Survey length (km) | Redd per km | Total redds                | Survey length (km) | Redd per km | Total redds              | Survey length (km) | Redd per km | Total redds                | Survey length (km) | Redd per km | Total redds | Survey length (km) | Redd per km |
| 2015-2016 | 91                           | 12.8               | 6.2         | 96                                | 7.0                | 5.3         | 31                         | 3.7                | 5.4         | 66                       | 18                 | 2.7         | 15                         | 9.9                | 0.6         | 0           | 7.3                | 0           |
| 2016-2017 | 49                           | 12.8               | 3.8         | 78                                | 7.0                | 11.1        | 31                         | 3.7                | 8.4         | 15 <sup>f</sup>          | 18                 | 0.8         | 16 <sup>f</sup>            | 9.9                | 1.6         | 0           | 7.3                | 0           |
| 2017-2018 | 72                           | 12.8               | 5.6         | 19                                | 7.0                | 2.7         | 11                         | 3.7                | 3.0         | 13 <sup>f</sup>          | 18                 | 0.7         | 85 <sup>f</sup>            | 9.9                | 8.6         | 0           | 7.3                | 0           |
| 2018-2019 | 118                          | 12.8               | 9.2         | 119                               | 7.0                | 17          | 60                         | 3.7                | 16.2        | 63 <sup>f</sup>          | 17                 | 3.7         | 61 <sup>e,f</sup>          | 9.9                | 6.2         | 0           | 7.3                | 0           |

<sup>a</sup> Lagunitas Creek, San Geronimo Creek, and Devil's Gulch coho redd data provided by Marin Municipal Water District.

<sup>b</sup> Includes redds from all surveyed tributaries.

<sup>c</sup> No redds observed during spawner surveys. However, subsequent summer surveys determined at least one coho redd was constructed.

<sup>d</sup> No juveniles were observed the following summer.

<sup>e</sup> Surveys incomplete due to partial federal government shutdown resulting in missed surveys during the peak of the coho spawning run.

<sup>f</sup> Final redd estimate based on kNN analysis (Ricker et al. 2013).

**Table 2.** Coho salmon run timing, average total rainfall by month, total carcasses and redds documented in surveys for spawner years 1997-1998 through 2018-2019 in the Olema Creek watershed.

| Years     | Run timing      | Total monthly rainfall (in) |       |       |       | Olema Creek spawner summary |           |                      |             |
|-----------|-----------------|-----------------------------|-------|-------|-------|-----------------------------|-----------|----------------------|-------------|
|           |                 | Nov                         | Dec   | Jan   | Feb   | Survey length (km)          | # surveys | Total carcass counts | Total redds |
| 1997-1998 | Nov 16 – Jan 8  | 10.31                       | 3.48  | 17.99 | 24.68 | 20.8 <sup>j</sup>           | 8         | 39                   | 134         |
| 1998-1999 | Dec 8 – Jan 30  | 7.48                        | 2.21  | 7.66  | 15.61 | 17.0 <sup>f</sup>           | 6         | 13                   | 23          |
| 1999-2000 | Dec 2 – Feb 1   | 5.20                        | 0.99  | 7.15  | 12.77 | 12.8 <sup>i</sup>           | 2         | 9                    | 10          |
| 2000-2001 | Jan 16 – Feb 8  | 1.54                        | 1.31  | 6.45  | 8.07  | 19.3 <sup>h</sup>           | 4         | 96                   | 80          |
| 2001-2002 | Nov 27 – Jan 11 | 9.81                        | 15.03 | 5.08  | 3.55  | 15.4 <sup>g</sup>           | 4         | 30                   | 59          |
| 2002-2003 | Jan 7 – Jan 21  | 3.30                        | 17.33 | 3.75  | 2.34  | 17.0 <sup>f</sup>           | 4         | 16                   | 20          |

<sup>a</sup> Includes the mainstem of Olema Creek (Reaches 1-6), John West Fork (JWF), Giacomini Gulch (GG), Horse Camp Creek (HCC), Boundary Gulch (BG), and Quarry Gulch (QG).

<sup>b</sup> Includes the mainstem of Olema Creek (Reaches 1-6), JWF, JWF North, GG, HCC, BG, and QG.

<sup>c</sup> Includes the mainstem of Olema Creek (Reaches 2-7), Headwaters Tributary (HT), JWF, GG, HCC, BG, and QG.

<sup>d</sup> Includes the mainstem of Olema Creek (Reaches 1-7), HT, Randall Gulch (RG), JWF North, JWF, GG, HCC, BG, and QG.

<sup>e</sup> Includes the mainstem of Olema Creek (Reaches 2-6), HT, JWF, GG, and HCC.

<sup>f</sup> Includes the mainstem of Olema Creek (Reaches 1-6) and JWF.

<sup>g</sup> Includes the mainstem of Olema Creek (Reaches 2-6), RG, JWF, HCC, BG, and QG.

<sup>h</sup> Includes the mainstem of Olema Creek (Reaches 1-7), JWF, GG, HCC, BG, and QG.

<sup>i</sup> Includes the mainstem of Olema Creek (Reaches 2-5), JWF, GG, HCC, Water Tank Creek, and BG.

<sup>j</sup> Includes the mainstem of Olema Creek (Reaches 1-7), HT, Eucalyptus Gulch, RG, JWF, GG, HCC, BG, and QG.

<sup>k</sup> Includes the mainstem of Olema Creek (Reaches 1-6), JWF, HCC, BG, and QG.

<sup>l</sup> Includes the mainstem of Olema Creek (Reaches 1-6), JWF, HCC, and BG.

<sup>m</sup> Final redd estimate based on Gallagher equation (Gallagher and Gallagher 2005).

<sup>n</sup> Final redd estimate based on kNN analysis (Ricker et al. 2013).

<sup>o</sup> Surveys incomplete due to partial federal government shutdown resulting in missed surveys during the peak of the coho spawning run.

**Table 2 (continued).** Coho salmon run timing, average total rainfall by month, total carcasses and redds documented in surveys for spawner years 1997-1998 through 2018-2019 in the Olema Creek watershed.

| Years     | Run timing      | Total monthly rainfall (in) |       |       |       | Olema Creek spawner summary |           |                      |             |
|-----------|-----------------|-----------------------------|-------|-------|-------|-----------------------------|-----------|----------------------|-------------|
|           |                 | Nov                         | Dec   | Jan   | Feb   | Survey length (km)          | # surveys | Total carcass counts | Total redds |
| 2003-2004 | Dec 17 – Feb 10 | 2.71                        | 12.14 | 5.13  | 7.68  | 15.0 <sup>e</sup>           | 6         | 40                   | 109         |
| 2004-2005 | Dec 15 – Feb 9  | 2.51                        | 10.49 | 6.41  | 4.99  | 20.9 <sup>d</sup>           | 6         | 72                   | 138         |
| 2005-2006 | Dec 6 – Jan 26  | 2.39                        | 16.31 | 7.88  | 4.27  | 17.0 <sup>c</sup>           | 3         | 11                   | 9           |
| 2006-2007 | Dec 18 – Feb 16 | 5.54                        | 7.64  | 1.09  | 9.93  | 18.0 <sup>a</sup>           | 6         | 32                   | 95          |
| 2007-2008 | Dec 5 – Jan 24  | 1.09                        | 6.76  | 14.66 | 4.54  | 18.0 <sup>a</sup>           | 8         | 5                    | 33          |
| 2008-2009 | Dec 27 – Feb 20 | 3.15                        | 3.17  | 1.22  | 11.40 | 18.0 <sup>a</sup>           | 11        | 0                    | 0           |

<sup>a</sup> Includes the mainstem of Olema Creek (Reaches 1-6), John West Fork (JWF), Giacomini Gulch (GG), Horse Camp Creek (HCC), Boundary Gulch (BG), and Quarry Gulch (QG).

<sup>b</sup> Includes the mainstem of Olema Creek (Reaches 1-6), JWF, JWF North, GG, HCC, BG, and QG.

<sup>c</sup> Includes the mainstem of Olema Creek (Reaches 2-7), Headwaters Tributary (HT), JWF, GG, HCC, BG, and QG.

<sup>d</sup> Includes the mainstem of Olema Creek (Reaches 1-7), HT, Randall Gulch (RG), JWF North, JWF, GG, HCC, BG, and QG.

<sup>e</sup> Includes the mainstem of Olema Creek (Reaches 2-6), HT, JWF, GG, and HCC.

<sup>f</sup> Includes the mainstem of Olema Creek (Reaches 1-6) and JWF.

<sup>g</sup> Includes the mainstem of Olema Creek (Reaches 2-6), RG, JWF, HCC, BG, and QG.

<sup>h</sup> Includes the mainstem of Olema Creek (Reaches 1-7), JWF, GG, HCC, BG, and QG.

<sup>i</sup> Includes the mainstem of Olema Creek (Reaches 2-5), JWF, GG, HCC, Water Tank Creek, and BG.

<sup>j</sup> Includes the mainstem of Olema Creek (Reaches 1-7), HT, Eucalyptus Gulch, RG, JWF, GG, HCC, BG, and QG.

<sup>k</sup> Includes the mainstem of Olema Creek (Reaches 1-6), JWF, HCC, BG, and QG.

<sup>l</sup> Includes the mainstem of Olema Creek (Reaches 1-6), JWF, HCC, and BG.

<sup>m</sup> Final redd estimate based on Gallagher equation (Gallagher and Gallagher 2005).

<sup>n</sup> Final redd estimate based on kNN analysis (Ricker et al. 2013).

<sup>o</sup> Surveys incomplete due to partial federal government shutdown resulting in missed surveys during the peak of the coho spawning run.

**Table 2 (continued).** Coho salmon run timing, average total rainfall by month, total carcasses and redds documented in surveys for spawner years 1997-1998 through 2018-2019 in the Olema Creek watershed.

| Years     | Run timing      | Total monthly rainfall (in) |       |       |       | Olema Creek spawner summary |           |                      |                 |
|-----------|-----------------|-----------------------------|-------|-------|-------|-----------------------------|-----------|----------------------|-----------------|
|           |                 | Nov                         | Dec   | Jan   | Feb   | Survey length (km)          | # surveys | Total carcass counts | Total redds     |
| 2009-2010 | Dec 14 – Jan 29 | 1.41                        | 5.15  | 12.51 | 7.23  | 18.3 <sup>b</sup>           | 9         | 6                    | 14              |
| 2010-2011 | Dec 10 – Jan 20 | 5.21                        | 12.28 | 2.09  | 6.97  | 18.0 <sup>a</sup>           | 11        | 13                   | 21              |
| 2011-2012 | Jan 26 – Feb 23 | 5.58                        | 0.63  | 7.00  | 2.29  | 18.0 <sup>a</sup>           | 14        | 12                   | 7 <sup>m</sup>  |
| 2012-2013 | Nov 19 – Jan 30 | 9.20                        | 12.16 | 1.04  | 0.70  | 18.0 <sup>a</sup>           | 15        | 19                   | 32 <sup>m</sup> |
| 2013-2014 | Feb 13 – Mar 5  | 1.21                        | 0.48  | 0.00  | 11.58 | 18.0 <sup>a</sup>           | 28        | 18                   | 32 <sup>m</sup> |
| 2014-2015 | Dec 9 – Jan 6   | 4.92                        | 17.88 | 0.12  | 3.47  | 18.0 <sup>a</sup>           | 16        | 10                   | 7 <sup>m</sup>  |

<sup>a</sup> Includes the mainstem of Olema Creek (Reaches 1-6), John West Fork (JWF), Giacomini Gulch (GG), Horse Camp Creek (HCC), Boundary Gulch (BG), and Quarry Gulch (QG).

<sup>b</sup> Includes the mainstem of Olema Creek (Reaches 1-6), JWF, JWF North, GG, HCC, BG, and QG.

<sup>c</sup> Includes the mainstem of Olema Creek (Reaches 2-7), Headwaters Tributary (HT), JWF, GG, HCC, BG, and QG.

<sup>d</sup> Includes the mainstem of Olema Creek (Reaches 1-7), HT, Randall Gulch (RG), JWF North, JWF, GG, HCC, BG, and QG.

<sup>e</sup> Includes the mainstem of Olema Creek (Reaches 2-6), HT, JWF, GG, and HCC.

<sup>f</sup> Includes the mainstem of Olema Creek (Reaches 1-6) and JWF.

<sup>g</sup> Includes the mainstem of Olema Creek (Reaches 2-6), RG, JWF, HCC, BG, and QG.

<sup>h</sup> Includes the mainstem of Olema Creek (Reaches 1-7), JWF, GG, HCC, BG, and QG.

<sup>i</sup> Includes the mainstem of Olema Creek (Reaches 2-5), JWF, GG, HCC, Water Tank Creek, and BG.

<sup>j</sup> Includes the mainstem of Olema Creek (Reaches 1-7), HT, Eucalyptus Gulch, RG, JWF, GG, HCC, BG, and QG.

<sup>k</sup> Includes the mainstem of Olema Creek (Reaches 1-6), JWF, HCC, BG, and QG.

<sup>l</sup> Includes the mainstem of Olema Creek (Reaches 1-6), JWF, HCC, and BG.

<sup>m</sup> Final redd estimate based on Gallagher equation (Gallagher and Gallagher 2005).

<sup>n</sup> Final redd estimate based on kNN analysis (Ricker et al. 2013).

<sup>o</sup> Surveys incomplete due to partial federal government shutdown resulting in missed surveys during the peak of the coho spawning run.

**Table 2 (continued).** Coho salmon run timing, average total rainfall by month, total carcasses and redds documented in surveys for spawner years 1997-1998 through 2018-2019 in the Olema Creek watershed.

| Years     | Run timing      | Total monthly rainfall (in) |       |       |       | Olema Creek spawner summary |           |                      |                   |
|-----------|-----------------|-----------------------------|-------|-------|-------|-----------------------------|-----------|----------------------|-------------------|
|           |                 | Nov                         | Dec   | Jan   | Feb   | Survey length (km)          | # surveys | Total carcass counts | Total redds       |
| 2015-2016 | Dec 16 – Feb 3  | 2.20                        | 11.17 | 11.22 | 1.40  | 18.0 <sup>a</sup>           | 12        | 32                   | 66 <sup>m</sup>   |
| 2016-2017 | Nov 30 – Jan 16 | 3.76                        | 7.33  | 16.28 | 13.35 | 18.0 <sup>k</sup>           | 9         | 0                    | 15 <sup>n</sup>   |
| 2017-2018 | Jan 11 – Feb 7  | 4.34                        | 0.12  | 8.15  | 1.00  | 18.0 <sup>l</sup>           | 13        | 14                   | 13 <sup>n</sup>   |
| 2018-2019 | Nov 11 – Jan 25 | 5.72                        | 3.33  | 8.70  | 17.41 | 17.0 <sup>f</sup>           | 8         | 8                    | 63 <sup>n,o</sup> |

<sup>a</sup> Includes the mainstem of Olema Creek (Reaches 1-6), John West Fork (JWF), Giacomini Gulch (GG), Horse Camp Creek (HCC), Boundary Gulch (BG), and Quarry Gulch (QG).

<sup>b</sup> Includes the mainstem of Olema Creek (Reaches 1-6), JWF, JWF North, GG, HCC, BG, and QG.

<sup>c</sup> Includes the mainstem of Olema Creek (Reaches 2-7), Headwaters Tributary (HT), JWF, GG, HCC, BG, and QG.

<sup>d</sup> Includes the mainstem of Olema Creek (Reaches 1-7), HT, Randall Gulch (RG), JWF North, JWF, GG, HCC, BG, and QG.

<sup>e</sup> Includes the mainstem of Olema Creek (Reaches 2-6), HT, JWF, GG, and HCC.

<sup>f</sup> Includes the mainstem of Olema Creek (Reaches 1-6) and JWF.

<sup>g</sup> Includes the mainstem of Olema Creek (Reaches 2-6), RG, JWF, HCC, BG, and QG.

<sup>h</sup> Includes the mainstem of Olema Creek (Reaches 1-7), JWF, GG, HCC, BG, and QG.

<sup>i</sup> Includes the mainstem of Olema Creek (Reaches 2-5), JWF, GG, HCC, Water Tank Creek, and BG.

<sup>j</sup> Includes the mainstem of Olema Creek (Reaches 1-7), HT, Eucalyptus Gulch, RG, JWF, GG, HCC, BG, and QG.

<sup>k</sup> Includes the mainstem of Olema Creek (Reaches 1-6), JWF, HCC, BG, and QG.

<sup>l</sup> Includes the mainstem of Olema Creek (Reaches 1-6), JWF, HCC, and BG.

<sup>m</sup> Final redd count based on Gallagher equation (Gallagher and Gallagher 2005).

<sup>n</sup> Final redd count based on kNN analysis (Ricker et al. 2013).

<sup>o</sup> Surveys incomplete due to partial federal government shutdown resulting in missed surveys during the peak of the coho spawning run.

**Table 3.** Coho salmon spawning survey including number of surveys, survey length, total carcasses, and total redds for Cheda Creek, spawner years 1998-1999 through 2018-2019. N/A = Survey length not defined.

| <b>Years</b>           | <b>Number of surveys</b> | <b>Survey length (km)</b> | <b>Total carcasses</b> | <b>Total redds</b> |
|------------------------|--------------------------|---------------------------|------------------------|--------------------|
| 1998-1999              | 2                        | N/A                       | 0                      | 0                  |
| 1999-2000              | 1                        | N/A                       | 0                      | 0                  |
| 2000-2001 <sup>a</sup> | 2                        | 1.4                       | 0                      | 0                  |
| 2001-2002              | 5                        | 1.2                       | 0                      | 3                  |
| 2002-2003              | 3                        | 1.2                       | 1                      | 1                  |
| 2003-2004              | 3                        | 1.2                       | 0                      | 6                  |
| 2004-2005              | 5                        | 1.3                       | 1                      | 6                  |
| 2005-2006              | 4                        | 1.3                       | 1                      | 2                  |
| 2006-2007              | 3                        | 1.3                       | 1                      | 7                  |
| 2007-2008              | 5                        | 1.3                       | 0                      | 1                  |
| 2008-2009              | 1                        | 1.3                       | 0                      | 0                  |
| 2009-2010              | 3                        | 1.3                       | 0                      | 0                  |
| 2010-2011              | 5                        | 1.3                       | 0                      | 0                  |
| 2011-2012              | 4                        | 1.3                       | 1                      | 4                  |
| 2012-2013              | 5                        | 1.3                       | 2                      | 2                  |
| 2013-2014              | 1                        | 1.3                       | 0                      | 1                  |
| 2014-2015              | 2                        | 1.3                       | 2                      | 4                  |
| 2015-2016              | 4                        | 1.7                       | 5                      | 5                  |
| 2016-2017              | 4                        | 1.7                       | 3                      | 4                  |
| 2017-2018              | 1                        | 1.4                       | 0                      | 2 <sup>b</sup>     |
| 2018-2019              | 3                        | 1.4                       | 1                      | 9 <sup>b</sup>     |

<sup>a</sup> First winter after fish passage project was completed.

<sup>b</sup> Final redd estimate based on kNN analysis (Ricker et al. 2013).

**Table 4.** Coho salmon run timing, average total rainfall by month, total carcasses and redds documented in surveys for spawner years 1997-1998 through 2018-2019 in the Redwood Creek watershed. N/A = Data not available for this time period.

| Years     | Run timing      | Total monthly rainfall (in) |       |       |      | Redwood Creek spawner summary |           |                      |                |
|-----------|-----------------|-----------------------------|-------|-------|------|-------------------------------|-----------|----------------------|----------------|
|           |                 | Nov                         | Dec   | Jan   | Feb  | Survey length (km)            | # surveys | Total carcass counts | Total redds    |
| 1997-1998 | Nov 25 – Jan 23 | N/A                         | N/A   | N/A   | N/A  | 9.2 <sup>a</sup>              | 7         | 24                   | 78             |
| 1998-1999 | Dec 5 – Feb 24  | 3.28                        | 1.49  | 5.27  | 8.47 | 9.2 <sup>a</sup>              | 11        | 10                   | 41             |
| 1999-2000 | Jan 19 – Feb 18 | 2.72                        | 0.59  | 5.95  | 0.00 | 8.2 <sup>b</sup>              | 6         | 1                    | 5              |
| 2000-2001 | Dec 21 – Mar 8  | 0.00                        | 0.00  | 4.39  | 6.07 | 9.2 <sup>a</sup>              | 5         | 11                   | 12             |
| 2001-2002 | Dec 8 – Feb 6   | 0.00                        | 0.00  | 0.83  | 3.56 | 9.2 <sup>a</sup>              | 5         | 50                   | 34             |
| 2002-2003 | Jan 1 – Feb 5   | 2.18                        | 13.04 | 1.23  | 1.83 | 9.2 <sup>a</sup>              | 5         | 3                    | 3              |
| 2003-2004 | Dec 4 – Feb 6   | 2.62                        | 3.45  | 7.21  | 6.38 | 9.2 <sup>a</sup>              | 5         | 25                   | 42             |
| 2004-2005 | Dec 11 – Feb 3  | 0.8                         | 7.59  | 3.66  | 3.09 | 9.6 <sup>c</sup>              | 7         | 63                   | 90             |
| 2005-2006 | Dec 7 – Feb 9   | 2.19                        | 12.57 | 0.00  | 3.48 | 9.6 <sup>c</sup>              | 5         | 5                    | 11             |
| 2006-2007 | Nov 20 – Jan 23 | 2.58                        | 4.27  | 0.63  | 3.63 | 9.2 <sup>a</sup>              | 9         | 6                    | 24             |
| 2007-2008 | N/A             | 1.79                        | 7.84  | 16.23 | 2.23 | 9.6 <sup>c</sup>              | 8         | 0                    | 1 <sup>e</sup> |
| 2008-2009 | Dec 31 – Feb 10 | N/A                         | 3.62  | 1.03  | 8.92 | 8.6 <sup>d</sup>              | 10        | 2                    | 2              |
| 2009-2010 | Dec 14 – Feb 9  | 1.15                        | 4.01  | 9.33  | 3.96 | 9.2 <sup>a</sup>              | 8         | 10                   | 23             |
| 2010-2011 | Dec 2 – Jan 21  | 2.62                        | 10.27 | 1.90  | 5.90 | 9.6 <sup>c</sup>              | 13        | 1                    | 3 <sup>g</sup> |

<sup>a</sup> Includes the mainstem of Redwood Creek, Fern Creek, and Kent Creek.

<sup>b</sup> Includes the mainstem of Redwood Creek and Fern Creek.

<sup>c</sup> Includes the mainstem of Redwood Creek, Fern creek, and the lower Redwood Creek restoration area.

<sup>d</sup> Includes the mainstem of Redwood Creek, Fern Creek, Kent Creek, and the lower Redwood Creek restoration area.

<sup>e</sup> No redds observed during spawner surveys. However, subsequent summer surveys determined at least one coho redd was constructed.

<sup>f</sup> Includes the mainstem of Redwood Creek, Fern Creek, lower Green Gulch, Kent Creek, and the lower Redwood Creek Restoration area.

<sup>g</sup> Final redd estimate based on Gallagher equation (Gallagher and Gallagher 2005).

<sup>h</sup> Final redd estimate based on kNN analysis (Ricker et al. 2013).

<sup>i</sup> Surveys incomplete due to partial federal government shutdown resulting in missed surveys during the peak of the coho spawning run.

**Table 4 (continued).** Coho salmon run timing, average total rainfall by month, total carcasses and redds documented in surveys for spawner years 1997-1998 through 2017-2019 in the Redwood Creek watershed. N/A = Data not available for this time period.

| Years     | Run timing      | Total monthly rainfall (in) |       |       |       | Redwood Creek spawner summary |           |                      |                   |
|-----------|-----------------|-----------------------------|-------|-------|-------|-------------------------------|-----------|----------------------|-------------------|
|           |                 | Nov                         | Dec   | Jan   | Feb   | Survey length (km)            | # surveys | Total carcass counts | Total redds       |
| 2011-2012 | Nov 29 – Feb 8  | 2.31                        | 0.52  | 4.45  | 1.75  | 9.6 <sup>c</sup>              | 14        | 8                    | 4 <sup>g</sup>    |
| 2012-2013 | Nov 6 – Jan 17  | 5.56                        | 8.98  | 0.99  | 0.59  | 9.6 <sup>c</sup>              | 11        | 17                   | 25 <sup>g</sup>   |
| 2013-2014 | Feb 12 – Feb 19 | 3.14                        | 0.61  | 0.38  | 14.27 | 8.6 <sup>d</sup>              | 13        | 1                    | 5 <sup>g</sup>    |
| 2014-2015 | Dec 8 – Jan 7   | 3.67                        | 13.56 | 0.01  | 2.15  | 8.6 <sup>d</sup>              | 11        | 0                    | 4 <sup>g</sup>    |
| 2015-2016 | Dec 26 – Jan 26 | 1.42                        | 6.15  | 8.11  | 1.14  | 9.9 <sup>f</sup>              | 12        | 3                    | 15 <sup>g</sup>   |
| 2016-2017 | Dec 9 – Jan 30  | 3.60                        | 5.61  | 11.34 | 10.06 | 9.9 <sup>f</sup>              | 12        | 2                    | 16 <sup>h</sup>   |
| 2017-2018 | Jan 10 – Feb 6  | 3.47                        | 0.19  | 6.19  | 0.36  | 9.9 <sup>f</sup>              | 14        | 24                   | 85 <sup>h</sup>   |
| 2018-2019 | Nov 27 – Feb 12 | 4.56                        | 2.95  | 6.00  | 12.29 | 9.9 <sup>f</sup>              | 12        | 4                    | 61 <sup>h,i</sup> |

<sup>a</sup> Includes the mainstem of Redwood Creek, Fern Creek, and Kent Creek.

<sup>b</sup> Includes the mainstem of Redwood Creek and Fern Creek.

<sup>c</sup> Includes the mainstem of Redwood Creek, Fern creek, and the lower Redwood Creek restoration area.

<sup>d</sup> Includes the mainstem of Redwood Creek, Fern Creek, Kent Creek, and the lower Redwood Creek restoration area.

<sup>e</sup> No redds observed during spawner surveys. However, subsequent summer surveys determined at least one coho redd was constructed.

<sup>f</sup> Includes the mainstem of Redwood Creek, Fern Creek, lower Green Gulch, Kent Creek, and the lower Redwood Creek Restoration area.

<sup>g</sup> Final redd estimate based on Gallagher equation (Gallagher and Gallagher 2005).

<sup>h</sup> Final redd estimate based on kNN analysis (Ricker et al. 2013).

<sup>i</sup> Surveys incomplete due to partial federal government shutdown resulting in missed surveys during the peak of the coho spawning run.

**Table 5.** Coho salmon spawning survey including number of surveys, survey length, total carcasses, and total redds on the Pine Gulch Creek mainstem for spawner years 2000-2001 through 2018-2019.

| <b>Years</b> | <b>Year class</b> | <b>Number of surveys</b> | <b>Survey length (km)</b> | <b>Total carcasses</b> | <b>Total redds</b> |
|--------------|-------------------|--------------------------|---------------------------|------------------------|--------------------|
| 2000-2001    | 1                 | 3                        | 7.0                       | 0                      | 0                  |
| 2001-2002    | 2                 | 2                        | 9.0                       | 0                      | 2                  |
| 2002-2003    | 3                 | 2                        | 8.0                       | 2                      | 1                  |
| 2003-2004    | 1                 | 6                        | 9.0                       | 0                      | 0                  |
| 2004-2005    | 2                 | 3                        | 10.0                      | 0                      | 3                  |
| 2005-2006    | 3                 | 4                        | 9.5                       | 0                      | 1                  |
| 2006-2007    | 1                 | 4                        | 9.5                       | 0                      | 0                  |
| 2007-2008    | 2                 | 3                        | 9.5                       | 0                      | 2                  |
| 2008-2009    | 3                 | 1                        | 9.5                       | 0                      | 0                  |
| 2009-2010    | 1                 | 1                        | 9.5                       | 0                      | 0                  |
| 2010-2011    | 2                 | 1                        | 9.5                       | 0                      | 0                  |
| 2011-2012    | 3                 | 1                        | 9.5                       | 0                      | 1                  |
| 2012-2013    | 1                 | 2                        | 8.0                       | 0                      | 0                  |
| 2013-2014    | 2                 | 2                        | 8.0                       | 0                      | 0                  |
| 2014-2015    | 3                 | 3                        | 8.0                       | 0                      | 0                  |
| 2015-2016    | 1                 | 3                        | 7.3                       | 0                      | 0                  |
| 2016-2017    | 2                 | 1                        | 7.3                       | 0                      | 0                  |
| 2017-2018    | 3                 | 1                        | 7.0                       | 0                      | 0                  |
| 2018-2019    | 1                 | 2                        | 7.1                       | 0                      | 0                  |

**Table 6.** Mean and median fork length, weight, and K-factor calculated for coho smolts measured and weighed in the Olema Creek smolt trap 2004-2019. Mean and median weights are reported to the nearest 0.1 g. Generally, two sample sizes are presented for each year. The first sample size is the total number of fish measured for fork length, while the second sample size represents those fish which were also weighed. Fish in the second sample size were used for calculating mean K-factor. If only one sample size is shown, all fish measured for fork length were weighed. FL = fork length, SD = standard deviation.

| Year | Life Stage | Sample Size | Mean FL (mm) | Median FL (mm) | Mean FL SD | Mean Weight (g) | Median Weight (g) | Mean Weight SD | Mean K-factor | K-factor SD |
|------|------------|-------------|--------------|----------------|------------|-----------------|-------------------|----------------|---------------|-------------|
| 2004 | Smolt      | 148         | 114          | 113            | 9.7        | 14.9            | 14.4              | 4.03           | 1.00          | 0.07        |
| 2005 | Smolt      | 82, 37      | 116          | 115            | 10.9       | 15.9            | 15.0              | 3.89           | 1.01          | 0.13        |
| 2006 | Smolt      | 294, 204    | 99           | 98             | 9.9        | 10.2            | 9.6               | 3.07           | 1.04          | 0.10        |
| 2007 | Smolt      | 284, 191    | 117          | 115            | 11.3       | 14.7            | 13.6              | 4.73           | 0.91          | 0.07        |
| 2008 | Smolt      | 852, 384    | 111          | 110            | 8.9        | 12.5            | 11.9              | 3.11           | 0.90          | 0.07        |
| 2009 | Smolt      | 1007, 447   | 113          | 113            | 7.8        | 12.9            | 12.5              | 2.79           | 0.88          | 0.06        |
| 2010 | Smolt      | 10          | 136          | 135            | 6.7        | 24.1            | 23.6              | 4.17           | 0.94          | 0.06        |
| 2011 | Smolt      | 329, 320    | 121          | 120            | 10.8       | 16.1            | 15.4              | 4.33           | 0.89          | 0.06        |
| 2012 | Smolt      | 186, 181    | 117          | 116            | 10.7       | 14.6            | 13.8              | 4.41           | 0.89          | 0.06        |
| 2013 | Smolt      | 49, 47      | 120          | 119            | 9.1        | 15.8            | 15.3              | 4.66           | 0.91          | 0.11        |
| 2014 | Smolt      | 698, 655    | 115          | 115            | 9.9        | 13.6            | 13.3              | 3.15           | 0.88          | 0.08        |
| 2015 | Smolt      | 503, 476    | 111          | 110            | 9.6        | 12.3            | 11.7              | 3.31           | 0.88          | 0.06        |
| 2016 | Smolt      | 309, 296    | 118          | 117            | 11.2       | 16.1            | 15.2              | 4.81           | 0.95          | 0.06        |
| 2017 | Smolt      | 582, 547    | 118          | 118            | 9.6        | 15.5            | 15.1              | 3.68           | 0.93          | 0.07        |
| 2018 | Smolt      | 35          | 124          | 125            | 11.3       | 19.6            | 19.6              | 4.98           | 1.02          | 0.08        |
| 2019 | Smolt      | 93, 89      | 125          | 126            | 10.5       | 19.4            | 19.8              | 4.70           | 0.98          | 0.07        |

**Table 7.** Mean and median fork length, weight, and K-factor calculated for steelhead smolts measured and weighed in the Olema Creek smolt trap 2004-2019. Mean and median weights are reported to the nearest 0.1 g. Two sample sizes are presented when the sample size of steelhead measured for length (presented first) differed from the sample size of steelhead both measured and weighed (presented second). FL = fork length, SD = standard deviation.

| Year | Life Stage | Sample Size | Mean FL (mm) | Median FL (mm) | Mean FL SD | Mean Weight (g) | Median Weight (g) | Mean Weight SD | Mean K-factor | K-factor SD |
|------|------------|-------------|--------------|----------------|------------|-----------------|-------------------|----------------|---------------|-------------|
| 2004 | Smolt      | 11          | 177          | 176            | 15.4       | 55.3            | 50.6              | 14.37          | 0.99          | 0.09        |
| 2005 | Smolt      | 6           | 127          | 129            | 32.5       | 22.9            | 22.3              | 15.85          | 0.94          | 0.13        |
| 2006 | Smolt      | 3           | 130          | 133            | 9.5        | 25.0            | 28.6              | 6.39           | 1.13          | 0.09        |
| 2007 | Smolt      | 118, 109    | 169          | 169            | 18.7       | 41.7            | 39.7              | 13.59          | 0.85          | 0.08        |
| 2008 | Smolt      | 46, 34      | 139          | 137            | 27.0       | 27.3            | 24.9              | 13.01          | 0.92          | 0.09        |
| 2009 | Smolt      | 11          | 156          | 155            | 17.4       | 33.6            | 32.6              | 10.43          | 0.86          | 0.05        |
| 2010 | Smolt      | 34, 31      | 174          | 175            | 22.6       | 48.2            | 44.9              | 17.80          | 0.88          | 0.07        |
| 2011 | Smolt      | 16, 14      | 175          | 180            | 17.4       | 43.3            | 44.4              | 12.98          | 0.80          | 0.04        |
| 2012 | Smolt      | 8           | 173          | 174            | 17.6       | 40.0            | 40.2              | 8.70           | 0.77          | 0.11        |
| 2013 | Smolt      | 12          | 177          | 174            | 20.2       | 48.5            | 44.8              | 17.44          | 0.84          | 0.06        |
| 2014 | Smolt      | 11, 8       | 148          | 155            | 21.9       | 32.1            | 34.0              | 10.77          | 0.85          | 0.06        |
| 2015 | Smolt      | 94, 91      | 153          | 148            | 21.2       | 32.7            | 28.3              | 15.50          | 0.86          | 0.07        |
| 2016 | Smolt      | 32, 29      | 161          | 169            | 20.7       | 41.3            | 45.7              | 13.17          | 0.98          | 0.08        |
| 2017 | Smolt      | 7           | 157          | 158            | 27.3       | 37.2            | 37.0              | 14.90          | 0.93          | 0.12        |
| 2018 | Smolt      | 34, 33      | 143          | 143            | 18.2       | 31.9            | 31.1              | 10.75          | 1.04          | 0.09        |
| 2019 | Smolt      | 51, 49      | 136          | 135            | 21.1       | 26.5            | 24.5              | 12.61          | 1.02          | 0.09        |

**Table 8.** Mean and median fork length, weight, and K-factor calculated for coho smolts measured and weighed in the Redwood Creek smolt trap, 2005-2019. Mean and median weights are reported to the nearest 0.1 g. Two sample sizes are presented when the sample size of steelhead measured for length (presented first) differed from the sample size of steelhead both measured and weighed (presented second). FL = fork length, SD = standard deviation.

| Year | Life Stage | Sample Size | Mean FL (mm) | Median FL (mm) | Mean FL SD | Mean Weight (g) | Median Weight (g) | Mean Weight SD | Mean K-factor | K-factor SD |
|------|------------|-------------|--------------|----------------|------------|-----------------|-------------------|----------------|---------------|-------------|
| 2005 | Smolt      | 199, 90     | 101          | 101            | 9.5        | 10.4            | 9.8               | 3.12           | 1.02          | 0.11        |
| 2006 | Smolt      | 747, 412    | 98           | 98             | 8.4        | 9.2             | 9.0               | 2.41           | 0.98          | 0.07        |
| 2007 | Smolt      | 312, 213    | 116          | 115            | 10.5       | 14.2            | 13.6              | 4.08           | 0.90          | 0.07        |
| 2008 | Smolt      | 815, 295    | 110          | 110            | 8.8        | 11.8            | 11.6              | 2.71           | 0.90          | 0.07        |
| 2009 | Smolt      | 170, 83     | 120          | 120            | 11.2       | 15.8            | 15.3              | 4.18           | 0.89          | 0.04        |
| 2010 | Smolt      | 141, 123    | 123          | 122            | 7.6        | 16.0            | 15.6              | 3.08           | 0.86          | 0.05        |
| 2011 | Smolt      | 1,021, 983  | 111          | 110            | 9.6        | 12.4            | 12.0              | 3.12           | 0.89          | 0.06        |
| 2012 | Smolt      | 254, 249    | 116          | 114            | 11.8       | 14.3            | 13.4              | 4.37           | 0.90          | 0.09        |
| 2013 | Smolt      | 268, 247    | 113          | 114            | 10.5       | 13.7            | 13.5              | 3.54           | 0.92          | 0.09        |
| 2014 | Smolt      | 532, 509    | 118          | 119            | 10.9       | 14.5            | 14.4              | 3.54           | 0.86          | 0.07        |
| 2015 | Smolt      | 47, 45      | 127          | 128            | 10.1       | 17.9            | 17.8              | 4.15           | 0.86          | 0.05        |
| 2016 | Smolt      | 300, 257    | 123          | 123            | 10.4       | 17.3            | 16.9              | 4.40           | 0.92          | 0.05        |
| 2017 | Smolt      | 365, 348    | 108          | 108            | 9.7        | 11.7            | 11.4              | 2.97           | 0.91          | 0.07        |
| 2018 | Smolt      | 240, 235    | 101          | 100            | 9.5        | 10.6            | 10.1              | 3.15           | 1.01          | 0.08        |
| 2019 | Smolt      | 649, 631    | 104          | 104            | 9.8        | 11.4            | 11.3              | 3.11           | 1.00          | 0.07        |

**Table 9.** Mean and median fork length, weight, and K-factor calculated for steelhead smolts measured and weighed in the Redwood Creek smolt trap, 2006-2019 (no steelhead smolts caught in 2005). Mean and median weights are reported to the nearest 0.1 g. Two sample sizes are presented when the sample size of steelhead measured for length (presented first) differed from the sample size of steelhead both measured and weighed (presented second). FL = fork length, SD = standard deviation.

| Year | Life Stage | Sample Size | Mean FL (mm) | Median FL (mm) | Mean FL SD | Mean Weight (g) | Median Weight (g) | Mean Weight SD | Mean K-factor | K-factor SD |
|------|------------|-------------|--------------|----------------|------------|-----------------|-------------------|----------------|---------------|-------------|
| 2006 | Smolt      | 11, 10      | 134          | 135            | 14.3       | 22.9            | 22.0              | 5.90           | 0.99          | 0.11        |
| 2007 | Smolt      | 17, 16      | 177          | 176            | 13.4       | 45.5            | 43.6              | 11.25          | 0.80          | 0.04        |
| 2008 | Smolt      | 15, 11      | 159          | 164            | 21.2       | 36.1            | 39.5              | 14.16          | 0.86          | 0.09        |
| 2009 | Smolt      | 30, 26      | 167          | 165            | 17.7       | 39.5            | 37.1              | 12.17          | 0.80          | 0.06        |
| 2010 | Smolt      | 53, 48      | 161          | 161            | 12.1       | 34.7            | 35.4              | 7.06           | 0.83          | 0.06        |
| 2011 | Smolt      | 14, 13      | 159          | 158            | 18.0       | 32.0            | 31.1              | 10.42          | 0.80          | 0.08        |
| 2012 | Smolt      | 71, 67      | 169          | 167            | 18.3       | 39.0            | 36.4              | 12.39          | 0.79          | 0.06        |
| 2013 | Smolt      | 16, 14      | 178          | 178            | 10.4       | 46.3            | 45.2              | 7.99           | 0.82          | 0.04        |
| 2014 | Smolt      | 6           | 167          | 169            | 19.3       | 40.5            | 39.4              | 12.84          | 0.85          | 0.04        |
| 2015 | Smolt      | 76, 74      | 150          | 149            | 17.2       | 28.5            | 27.3              | 9.37           | 0.82          | 0.09        |
| 2016 | Smolt      | 15          | 180          | 179            | 22.7       | 53.0            | 48.5              | 20.76          | 0.87          | 0.05        |
| 2017 | Smolt      | 30, 28      | 141          | 142            | 23.7       | 27.4            | 25.7              | 10.89          | 0.92          | 0.08        |
| 2018 | Smolt      | 54, 51      | 137          | 140            | 19.9       | 25.5            | 26.7              | 9.20           | 0.97          | 0.09        |
| 2019 | Smolt      | 46, 42      | 149          | 156            | 24.1       | 31.3            | 34.2              | 11.50          | 0.93          | 0.07        |

**Table 10.** Summary of non-salmonid information for Olema Creek mainstem trap operations, 2004-2019.

| Watershed                 | Year | Trap dates |        | BF <sup>a</sup> | CAN/<br>RSN <sup>a</sup> | CRAY <sup>a</sup> | LAM <sup>a</sup> | PL <sup>a</sup> | RLF <sup>a</sup> | RO <sup>a</sup> | SCU <sup>a</sup> | STK <sup>a</sup> | SUC <sup>a</sup> | WPT <sup>a</sup> | OTH <sup>b</sup> | Totals       |
|---------------------------|------|------------|--------|-----------------|--------------------------|-------------------|------------------|-----------------|------------------|-----------------|------------------|------------------|------------------|------------------|------------------|--------------|
|                           |      | From       | To     |                 |                          |                   |                  |                 |                  |                 |                  |                  |                  |                  |                  |              |
| Olema Creek               | 2004 | 30-Mar     | 28-May | 19              | 0                        | 14                | 15               | 0               | 0                | 274             | 243              | 3,083            | 144              | 0                | 3                | 3,795        |
|                           | 2005 | 27-Mar     | 31-May | 234             | 0                        | 0                 | 33               | 0               | 0                | 1,006           | 117              | 648              | 58               | 1                | 0                | 2,097        |
|                           | 2006 | 18-Apr     | 9-Jun  | 4               | 0                        | 5                 | 5                | 1               | 52               | 420             | 644              | 2,998            | 3                | 5                | 5                | 4,142        |
|                           | 2007 | 18-Mar     | 26-May | 6               | 0                        | 16                | 35               | 0               | 1                | 3,190           | 356              | 1,110            | 140              | 2                | 1                | 4,857        |
|                           | 2008 | 19-Mar     | 30-May | 11              | 1                        | 17                | 2                | 3               | 7                | 158             | 228              | 30               | 2                | 1                | 0                | 460          |
|                           | 2009 | 11-Mar     | 29-May | 1               | 1                        | 12                | 109              | 0               | 77               | 554             | 335              | 782              | 8                | 2                | 5                | 1,886        |
|                           | 2010 | 19-Mar     | 28-May | 1               | 2                        | 3                 | 27               | 0               | 44               | 3,187           | 110              | 1,353            | 7                | 0                | 0                | 4,734        |
|                           | 2011 | 1-Apr      | 3-Jun  | 0               | 0                        | 4                 | 1                | 1               | 1                | 671             | 204              | 451              | 5                | 0                | 2                | 1,340        |
|                           | 2012 | 4-Apr      | 31-May | 0               | 2                        | 13                | 0                | 0               | 57               | 195             | 217              | 234              | 0                | 1                | 0                | 719          |
|                           | 2013 | 14-Mar     | 31-May | 1               | 1                        | 24                | 5                | 0               | 9                | 118             | 399              | 211              | 0                | 0                | 1                | 769          |
|                           | 2014 | 20-Mar     | 5-Jun  | 0               | 3                        | 15                | 0                | 0               | 1                | 189             | 244              | 256              | 0                | 1                | 0                | 709          |
|                           | 2015 | 5-Mar      | 5-Jun  | 2               | 2                        | 4                 | 0                | 0               | 3                | 233             | 241              | 126              | 0                | 1                | 1                | 613          |
|                           | 2016 | 25-Mar     | 26-May | 3               | 1                        | 7                 | 0                | 0               | 293              | 460             | 88               | 523              | 1                | 1                | 6                | 1,383        |
|                           | 2017 | 16-Mar     | 2-Jun  | 2               | 0                        | 10                | 0                | 0               | 7                | 421             | 145              | 704              | 0                | 0                | 3                | 1,292        |
|                           | 2018 | 28-Mar     | 1-Jun  | 2               | 0                        | 28                | 0                | 0               | 0                | 287             | 326              | 61               | 0                | 0                | 0                | 704          |
|                           | 2019 | 2-Apr      | 29-May | 2               | 0                        | 4                 | 0                | 0               | 8                | 163             | 217              | 259              | 0                | 0                | 1                | 654          |
| <b>Historical average</b> |      |            |        | <b>18</b>       | <b>&lt;1</b>             | <b>11</b>         | <b>15</b>        | <b>&lt;1</b>    | <b>35</b>        | <b>720</b>      | <b>257</b>       | <b>802</b>       | <b>23</b>        | <b>&lt;1</b>     | <b>2</b>         | <b>1,885</b> |

<sup>a</sup> Species Code: BF = bullfrog (*Rana catesbeina*, non-native), CAN = California newt (*Taricha torosa*), CRAY = signal crayfish (*Pacifastacus leniusculus*, non-native), LAM = lamprey spp. (*Lampetra* spp.), PL = Pacific lamprey, RLF = California red-legged frog (*Rana draytonii*), RO = California roach (*Hesperoleucus symmetricus*), RSN = rough-skinned newt (*Taricha granulosa*), SCU = sculpin spp., STK = threespine stickleback (*Gasterosteus aculeatus*), SUC = Sacramento sucker (*Catostomus occidentalis*), and WPT = western pond turtle (*Clemmys marmorata*).

<sup>b</sup> OTH = other and includes the following species: bluegill (*Lepomis macrochirus*, non-native), Ensatina salamander (*Ensatina eschscholtzii*), FS = California freshwater shrimp (*Syncaris pacifica*), green sunfish (*Lepomis cyanellus*, non-native), golden shiner (*Notemigonus crysoleucas*, non-native), mosquito fish (*Gambusia affinis*, non-native), Sierran Treefrog (*Pseudacris sierra*), red-eared slider (*Pseudemys scripta elegans*, non-native), spotted salamander (*Ambystoma maculatum*, non-native), and unclassified species.

**Table 11.** Summary of non-salmonid information for Redwood Creek mainstem trap operations, 2005-2019.

| Watershed                 | Year | Trap dates |        | CAN/<br>RSN <sup>a</sup> | CRAY <sup>a</sup> | RLF <sup>a</sup> | SCU <sup>a</sup> | STK <sup>a</sup> | OTH <sup>b</sup> | Totals       |
|---------------------------|------|------------|--------|--------------------------|-------------------|------------------|------------------|------------------|------------------|--------------|
|                           |      | From       | To     |                          |                   |                  |                  |                  |                  |              |
| Redwood<br>Creek          | 2005 | 27-Mar     | 31-May | 11                       | 0                 | 0                | 24               | 5,343            | 0                | 5,378        |
|                           | 2006 | 18-Apr     | 9-Jun  | 10                       | 7                 | 0                | 133              | 117              | 4                | 271          |
|                           | 2007 | 18-Mar     | 26-May | 50                       | 44                | 0                | 93               | 57               | 6                | 250          |
|                           | 2008 | 19-Mar     | 30-May | 62                       | 33                | 0                | 151              | 38               | 0                | 284          |
|                           | 2009 | 11-Mar     | 29-May | 51                       | 9                 | 0                | 220              | 74               | 2                | 356          |
|                           | 2010 | 19-Mar     | 28-May | 24                       | 13                | 0                | 340              | 193              | 1                | 571          |
|                           | 2011 | 1-Apr      | 3-Jun  | 27                       | 6                 | 1                | 397              | 11               | 0                | 442          |
|                           | 2012 | 4-Apr      | 31-May | 268                      | 11                | 0                | 764              | 1,051            | 0                | 2,094        |
|                           | 2013 | 14-Mar     | 31-May | 536                      | 16                | 2                | 1,074            | 2,241            | 1                | 3,870        |
|                           | 2014 | 20-Mar     | 5-Jun  | 307                      | 9                 | 6                | 777              | 184              | 1                | 1,284        |
|                           | 2015 | 5-Mar      | 5-Jun  | 265                      | 10                | 5                | 121              | 276              | 0                | 677          |
|                           | 2016 | 25-Mar     | 26-May | 118                      | 1                 | 1                | 105              | 204              | 1                | 430          |
|                           | 2017 | 16-Mar     | 2-Jun  | 108                      | 5                 | 3                | 30               | 943              | 2 <sup>c</sup>   | 1,091        |
|                           | 2018 | 28-Mar     | 1-Jun  | 125                      | 12                | 3                | 32               | 848              | 3                | 1,023        |
|                           | 2019 | 28-Mar     | 29-May | 73                       | 14                | 5                | 125              | 738              | 2                | 957          |
| <b>Historical average</b> |      |            |        | <b>136</b>               | <b>13</b>         | <b>2</b>         | <b>292</b>       | <b>821</b>       | <b>2</b>         | <b>1,265</b> |

<sup>a</sup> Species Code: CAN = California newt (*Taricha torosa*), CRAY = signal crayfish (*Pacifastacus leniusculus*, non-native), RLF = California red-legged frog (*Rana draytonii*), RSN = rough-skinned newt (*Taricha granulosa*), SCU = sculpin spp., and STK = threespine stickleback (*Gasterosteus aculeatus*).

<sup>b</sup> OTH = other and includes the following species: California giant salamander (*Dicamptodon ensatus*), Ensatina salamander (*Ensatina eschscholtzii*), FS = California freshwater shrimp (*Syncaris pacifica*), Pacific tree frog (*Hyla regilla*), California roach (*Hesperoleucus symmetricus*), striped bass (*Morone saxatilis*), and unclassified species.

<sup>c</sup> Two possible freshwater shrimp captured. No photos for verification. They were most likely juvenile crayfish.

**Table 12.** Mean and median fork length, weight, and K-factor calculated for coho young-of-year (YoY) measured and weighed during basinwide electrofishing surveys in Olema Creek 2010-2019. Mean and median weights are reported to the nearest 0.1 g. Generally, two sample sizes are presented for each year. The first sample size is the total number of fish measured for fork length, while the second sample size represents those fish which were also weighed. Fish in the second sample size were used for calculating mean K-factor. If only one sample size is shown, all fish measured for fork length were weighed. FL = fork length, SD = standard deviation.

| Year | Sample Size | Mean FL (mm) | Median FL (mm) | Mean FL SD | Mean Weight (g) | Median Weight (g) | Mean Weight SD | Mean K-factor | K-factor SD |
|------|-------------|--------------|----------------|------------|-----------------|-------------------|----------------|---------------|-------------|
| 2010 | 54          | 81           | 82             | 5.8        | 5.6             | 5.5               | 1.26           | 1.03          | 0.05        |
| 2011 | 122         | 75           | 75             | 7.8        | 4.3             | 4.2               | 1.37           | 0.99          | 0.07        |
| 2012 | 29          | 71           | 70             | 4.3        | 3.5             | 3.4               | 0.79           | 0.97          | 0.11        |
| 2013 | 271, 267    | 69           | 68             | 6.8        | 3.2             | 3.0               | 1.01           | 0.95          | 0.08        |
| 2014 | 69          | 59           | 56             | 13.4       | 2.3             | 1.7               | 2.31           | 0.99          | 0.06        |
| 2015 | 113, 110    | 71           | 70             | 11.2       | 3.4             | 3.1               | 1.77           | 0.90          | 0.09        |
| 2016 | 374, 369    | 65           | 65             | 7.1        | 2.8             | 2.7               | 0.97           | 0.99          | 0.08        |
| 2017 | 20          | 78           | 78             | 4.3        | 5.2             | 5.2               | 0.97           | 1.10          | 0.07        |
| 2018 | 38          | 72           | 72             | 4.7        | 4.4             | 4.4               | 0.85           | 1.14          | 0.10        |
| 2019 | 212         | 69           | 69             | 6.4        | 3.6             | 3.5               | 0.98           | 1.08          | 0.07        |

**Table 13.** Mean and median fork length, weight, and K-factor calculated for steelhead young-of-year (YoY) measured and weighed during basinwide electrofishing surveys in Olema Creek 2009-2019. Mean and median weights are reported to the nearest 0.1 g. Two sample sizes are presented when the sample size of steelhead measured for length (presented first) differed from the sample size of steelhead both measured and weighed (presented second). FL = fork length, SD = standard deviation.

| Year | Sample Size | Mean FL (mm) | Median FL (mm) | Mean FL SD | Mean Weight (g) | Median Weight (g) | Mean Weight SD | Mean K-factor | K-factor SD |
|------|-------------|--------------|----------------|------------|-----------------|-------------------|----------------|---------------|-------------|
| 2009 | 197, 167    | 73           | 73             | 6.8        | 4.1             | 3.7               | 1.16           | 1.02          | 0.10        |
| 2010 | 216, 215    | 79           | 78             | 8.7        | 5.1             | 4.7               | 1.69           | 1.00          | 0.07        |
| 2011 | 210, 204    | 65           | 65             | 8.9        | 2.8             | 2.6               | 1.02           | 0.98          | 0.09        |
| 2012 | 282, 248    | 62           | 61             | 12.2       | 2.6             | 2.2               | 1.38           | 0.99          | 0.11        |
| 2013 | 58, 57      | 76           | 75             | 7.6        | 4.4             | 4.2               | 1.31           | 1.00          | 0.07        |
| 2014 | 277, 273    | 61           | 62             | 10.4       | 2.4             | 2.2               | 1.25           | 0.94          | 0.09        |
| 2015 | 268, 266    | 65           | 65             | 9.1        | 2.8             | 2.6               | 1.23           | 0.94          | 0.10        |
| 2016 | 216, 213    | 70           | 69             | 10.8       | 3.7             | 3.2               | 1.78           | 1.00          | 0.08        |
| 2017 | 325, 321    | 67           | 67             | 11.2       | 3.6             | 3.3               | 1.79           | 1.09          | 0.08        |
| 2018 | 266, 265    | 64           | 63             | 9.7        | 3.0             | 2.6               | 1.47           | 1.08          | 0.09        |
| 2019 | 316, 305    | 66           | 64             | 9.9        | 3.3             | 2.9               | 1.64           | 1.11          | 0.11        |

**Table 14.** Mean and median fork length, weight, and K-factor calculated for steelhead of one year in age or older (1+) measured and weighed during basinwide electrofishing surveys in Olema Creek 2009-2019. Mean and median weights are reported to the nearest 0.1 g. Two sample sizes are presented when the sample size of steelhead measured for length (presented first) differed from the sample size of steelhead both measured and weighed (presented second). FL = fork length, SD = standard deviation.

| Year | Sample Size | Mean FL (mm) | Median FL (mm) | Mean FL SD | Mean Weight (g) | Median Weight (g) | Mean Weight SD | Mean K-factor | K-factor SD |
|------|-------------|--------------|----------------|------------|-----------------|-------------------|----------------|---------------|-------------|
| 2009 | 87, 74      | 125          | 120            | 18.0       | 19.7            | 15.0              | 9.19           | 0.95          | 0.09        |
| 2010 | 42, 40      | 138          | 138            | 23.0       | 26.1            | 22.9              | 12.51          | 0.94          | 0.08        |
| 2011 | 96, 95      | 117          | 117            | 30.8       | 17.5            | 15.0              | 12.29          | 0.96          | 0.08        |
| 2012 | 105, 91     | 117          | 113            | 18.3       | 16.5            | 12.0              | 10.43          | 0.93          | 0.08        |
| 2013 | 40          | 111          | 110            | 14.2       | 12.9            | 11.8              | 5.37           | 0.92          | 0.10        |
| 2014 | 21, 20      | 131          | 130            | 23.4       | 22.4            | 19.0              | 12.59          | 0.90          | 0.07        |
| 2015 | 70          | 122          | 120            | 17.8       | 17.9            | 15.4              | 8.24           | 0.92          | 0.07        |
| 2016 | 29, 28      | 128          | 125            | 22.9       | 23.1            | 19.0              | 13.80          | 0.99          | 0.08        |
| 2017 | 34, 33      | 139          | 131            | 27.9       | 29.2            | 22.5              | 16.69          | 1.04          | 0.09        |
| 2018 | 40, 38      | 128          | 122            | 23.4       | 23.8            | 18.7              | 13.80          | 1.05          | 0.09        |
| 2019 | 46, 43      | 128          | 126            | 22.9       | 21.1            | 18.0              | 10.59          | 1.01          | 0.07        |

**Table 15.** Mean and median fork length, weight, and K-factor calculated for coho young-of-year (YoY) measured and weighed during basinwide electrofishing surveys in Redwood Creek 2010-2019. Mean and median weights are reported to the nearest 0.1 g. Generally, two sample sizes are presented for each year. The first sample size is the total number of fish measured for fork length, while the second sample size represents those fish which were also weighed. Fish in the second sample size were used for calculating mean K-factor. If only one sample size is shown, all fish measured for fork length were weighed. FL = fork length, SD = standard deviation.

| Year | Sample Size | Mean FL (mm) | Median FL (mm) | Mean FL SD | Mean Weight (g) | Median Weight (g) | Mean Weight SD | Mean K-factor | K-factor SD |
|------|-------------|--------------|----------------|------------|-----------------|-------------------|----------------|---------------|-------------|
| 2010 | 130, 129    | 72           | 71             | 7.6        | 3.9             | 3.6               | 1.29           | 1.03          | 0.07        |
| 2011 | 18          | 77           | 76             | 6.5        | 4.9             | 4.6               | 1.37           | 1.05          | 0.07        |
| 2012 | 24          | 73           | 73             | 5.2        | 4.1             | 4.1               | 0.95           | 1.05          | 0.10        |
| 2013 | 123, 117    | 69           | 68             | 9.1        | 3.5             | 3.0               | 1.39           | 1.01          | 0.08        |
| 2014 | 3           | 87           | 88             | 8.0        | 7.0             | 6.6               | 2.37           | 1.03          | 0.08        |
| 2015 | 119, 114    | 77           | 76             | 7.0        | 4.6             | 4.3               | 1.43           | 0.96          | 0.07        |
| 2016 | 107, 106    | 74           | 72             | 12.8       | 4.7             | 3.9               | 3.26           | 1.04          | 0.06        |
| 2017 | 50, 49      | 71           | 72             | 7.7        | 4.2             | 4.2               | 1.30           | 1.15          | 0.07        |
| 2018 | 141, 136    | 67           | 66             | 8.9        | 3.4             | 3.1               | 1.28           | 1.10          | 0.12        |
| 2019 | 86, 85      | 70           | 70             | 6.9        | 4.1             | 4.0               | 1.18           | 1.14          | 0.07        |

**Table 16.** Mean and median fork length, weight, and K-factor calculated for steelhead young-of-year (YoY) measured and weighed during basinwide electrofishing surveys in Redwood Creek 2009-2019. Mean and median weights are reported to the nearest 0.1 g. Two sample sizes are presented when the sample size of steelhead measured for length (presented first) differed from the sample size of steelhead both measured and weighed (presented second). FL = fork length, SD = standard deviation.

| Year | Sample Size | Mean FL (mm) | Median FL (mm) | Mean FL SD | Mean Weight (g) | Median Weight (g) | Mean Weight SD | Mean K-factor | K-factor SD |
|------|-------------|--------------|----------------|------------|-----------------|-------------------|----------------|---------------|-------------|
| 2009 | 55, 53      | 65           | 65             | 9.7        | 2.8             | 2.5               | 1.37           | 0.98          | 0.15        |
| 2010 | 219, 308    | 65           | 64             | 13.5       | 3.2             | 2.5               | 1.97           | 1.00          | 0.09        |
| 2011 | 111         | 67           | 67             | 9.2        | 3.1             | 2.9               | 1.37           | 0.98          | 0.08        |
| 2012 | 230, 222    | 64           | 62             | 14.2       | 3.1             | 2.4               | 2.20           | 1.00          | 0.10        |
| 2013 | 40, 39      | 67           | 64             | 11.8       | 3.3             | 2.7               | 1.68           | 1.01          | 0.15        |
| 2014 | 151, 132    | 65           | 65             | 10.7       | 3.0             | 2.5               | 1.26           | 0.98          | 0.11        |
| 2015 | 13          | 66           | 67             | 9.2        | 2.9             | 3.0               | 1.16           | 0.94          | 0.07        |
| 2016 | 373, 365    | 73           | 74             | 12.4       | 4.5             | 4.1               | 2.26           | 1.04          | 0.09        |
| 2017 | 366, 353    | 68           | 69             | 12.1       | 3.9             | 3.5               | 1.87           | 1.10          | 0.09        |
| 2018 | 102, 98     | 68           | 69             | 9.9        | 3.7             | 3.4               | 1.57           | 1.07          | 0.13        |
| 2019 | 429, 398    | 60           | 59             | 13.5       | 2.9             | 2.3               | 1.74           | 1.08          | 0.09        |

**Table 17.** Mean and median fork length, weight, and K-factor calculated for steelhead of one year in age or older (1+) measured and weighed during basinwide electrofishing surveys in Redwood Creek 2009-2019. Mean and median weights are reported to the nearest 0.1 g. Two sample sizes are presented when the sample size of steelhead measured for length (presented first) differed from the sample size of steelhead both measured and weighed (presented second). FL = fork length, SD = standard deviation.

| Year | Sample Size | Mean FL (mm) | Median FL (mm) | Mean FL SD | Mean Weight (g) | Median Weight (g) | Mean Weight SD | Mean K-factor | K-factor SD |
|------|-------------|--------------|----------------|------------|-----------------|-------------------|----------------|---------------|-------------|
| 2009 | 10          | 120          | 125            | 15.2       | 16.8            | 17.2              | 6.26           | 0.94          | 0.05        |
| 2010 | 79          | 131          | 127            | 22.7       | 23.3            | 19.0              | 13.99          | 0.95          | 0.10        |
| 2011 | 71          | 115          | 115            | 19.3       | 15.9            | 14.4              | 8.37           | 0.96          | 0.07        |
| 2012 | 38          | 127          | 122            | 15.8       | 20.8            | 17.9              | 8.30           | 0.98          | 0.07        |
| 2013 | 38, 36      | 130          | 126            | 28.2       | 21.2            | 17.7              | 12.18          | 0.96          | 0.06        |
| 2014 | 13, 10      | 139          | 127            | 38.1       | 24.5            | 11.3              | 20.37          | 0.92          | 0.10        |
| 2015 | 84          | 126          | 126            | 16.4       | 19.9            | 18.8              | 7.72           | 0.96          | 0.05        |
| 2016 | 10, 7       | 162          | 152            | 44.5       | 29.8            | 19.5              | 14.03          | 1.02          | 0.06        |
| 2017 | 168, 166    | 127          | 125            | 19.4       | 23.7            | 20.6              | 12.65          | 1.07          | 0.07        |
| 2018 | 148, 140    | 115          | 110            | 22.7       | 16.3            | 13.8              | 8.63           | 1.07          | 0.09        |
| 2019 | 88, 81      | 132          | 129            | 24.9       | 24.1            | 21.6              | 11.08          | 1.08          | 0.08        |

**Table 18.** Mean and median fork length, weight, and K-factor calculated for steelhead young-of-year (YoY) measured and weighed during basinwide electrofishing surveys in Pine Gulch Creek 2009-2019. Mean and median weights are reported to the nearest 0.1 g. Two sample sizes are presented when the sample size of steelhead measured for length (presented first) differed from the sample size of steelhead both measured and weighed (presented second). FL = fork length, SD = standard deviation.

| Year | Sample Size | Mean FL (mm) | Median FL (mm) | Mean FL SD | Mean Weight (g) | Median Weight (g) | Mean Weight SD | Mean K-factor | K-factor SD |
|------|-------------|--------------|----------------|------------|-----------------|-------------------|----------------|---------------|-------------|
| 2009 | 64, 62      | 61           | 62             | 8.8        | 2.3             | 2.2               | 0.83           | 0.94          | 0.13        |
| 2010 | 104, 102    | 66           | 65             | 10.4       | 3.2             | 2.9               | 1.44           | 1.04          | 0.14        |
| 2011 | 157, 128    | 63           | 62             | 10.1       | 2.7             | 2.1               | 1.37           | 0.98          | 0.10        |
| 2012 | 106, 89     | 53           | 51             | 12.8       | 2.0             | 1.3               | 1.38           | 0.99          | 0.16        |
| 2013 | 48, 39      | 55           | 54             | 14.6       | 2.3             | 1.5               | 1.47           | 0.97          | 0.07        |
| 2014 | 139, 126    | 52           | 51             | 9.5        | 1.5             | 1.2               | 0.85           | 0.93          | 0.15        |
| 2015 | 92, 86      | 61           | 62             | 9.4        | 2.4             | 2.2               | 1.11           | 0.99          | 0.08        |
| 2016 | 140, 135    | 62           | 62             | 10.8       | 2.7             | 2.4               | 1.31           | 1.01          | 0.13        |
| 2017 | 138, 132    | 62           | 61             | 11.2       | 2.6             | 2.1               | 1.44           | 0.97          | 0.09        |
| 2018 | 38, 37      | 60           | 58             | 8.6        | 2.5             | 2.3               | 1.19           | 1.10          | 0.12        |
| 2019 | 169, 135    | 51           | 49             | 11.8       | 2.0             | 1.3               | 1.18           | 1.09          | 0.11        |

**Table 19.** Mean and median fork length, weight, and K-factor calculated for steelhead of one year in age or older (1+) measured and weighed during basinwide electrofishing surveys in Pine Gulch Creek 2009-2019. Mean and median weights are reported to the nearest 0.1 g. Two sample sizes are presented when the sample size of steelhead measured for length (presented first) differed from the sample size of steelhead both measured and weighed (presented second). FL = fork length, SD = standard deviation.

| Year | Sample Size | Mean FL (mm) | Median FL (mm) | Mean FL SD | Mean Weight (g) | Median Weight (g) | Mean Weight SD | Mean K-factor | K-factor SD |
|------|-------------|--------------|----------------|------------|-----------------|-------------------|----------------|---------------|-------------|
| 2009 | 62, 57      | 129          | 124            | 32.1       | 22.2            | 17.4              | 14.65          | 0.99          | 0.09        |
| 2010 | 50          | 136          | 132            | 28.4       | 26.7            | 21.6              | 18.50          | 0.96          | 0.08        |
| 2011 | 59, 47      | 128          | 123            | 25.8       | 23.0            | 16.1              | 16.87          | 0.97          | 0.09        |
| 2012 | 76, 75      | 122          | 115            | 29.8       | 20.5            | 13.9              | 17.01          | 0.97          | 0.10        |
| 2013 | 31          | 117          | 112            | 21.1       | 17.0            | 13.4              | 13.84          | 0.95          | 0.15        |
| 2014 | 57, 56      | 124          | 115            | 28.1       | 21.3            | 14.0              | 17.87          | 0.97          | 0.07        |
| 2015 | 42          | 123          | 117            | 25.8       | 20.1            | 15.1              | 13.71          | 0.96          | 0.11        |
| 2016 | 27, 26      | 111          | 107            | 17.9       | 15.0            | 12.0              | 8.31           | 1.03          | 0.09        |
| 2017 | 35          | 130          | 128            | 22.2       | 23.7            | 20.2              | 13.69          | 0.98          | 0.07        |
| 2018 | 46, 41      | 120          | 112            | 27.3       | 17.0            | 14.8              | 7.28           | 1.13          | 0.10        |
| 2019 | 35, 33      | 136          | 133            | 25.1       | 27.8            | 23.8              | 14.70          | 1.06          | 0.05        |

**Table 20.** Summary of index reach habitat composition; shows extent of area sampled and variation between reaches; Olema Creek, summer 2019. NS = not sampled.

| Index reach | Habitat type | # of units | Length      |            | Surface area              |            |
|-------------|--------------|------------|-------------|------------|---------------------------|------------|
|             |              |            | sampled (m) | % of total | Sampled (m <sup>2</sup> ) | % of total |
| 1           | NS           | NS         | NS          | NS         | NS                        | NS         |
| 2           | Pool         | 3          | 62.7        | 83.27      | 293.48                    | 86.61      |
|             | Riffle       | 0          | 0           | 0          | 0                         | 0          |
|             | Flatwater    | 1          | 12.6        | 16.73      | 45.36                     | 13.39      |
|             | TOTAL        | 4          | 75.3        | –          | 338.84                    | –          |
| 3           | Pool         | 2          | 63.1        | 61.38      | 254.33                    | 69.62      |
|             | Riffle       | 3          | 31.0        | 30.16      | 73.58                     | 20.14      |
|             | Flatwater    | 1          | 8.7         | 8.46       | 37.41                     | 10.24      |
|             | TOTAL        | 6          | 102.8       | –          | 365.32                    | –          |
| 4           | NS           | NS         | NS          | NS         | NS                        | NS         |
| 5           | Pool         | 3          | 48.7        | 80.10      | 216.76                    | 87.73      |
|             | Riffle       | 2          | 12.1        | 19.90      | 30.31                     | 12.27      |
|             | Flatwater    | 0          | 0           | 0          | 0                         | 0          |
|             | TOTAL        | 5          | 60.8        | –          | 247.07                    | –          |
| 6           | NS           | NS         | NS          | NS         | NS                        | NS         |
| 7           | Pool         | 2          | 32.0        | 45.71      | 159.70                    | 50.15      |
|             | Riffle       | 1          | 7.8         | 11.14      | 11.70                     | 3.67       |
|             | Flatwater    | 2          | 30.2        | 43.14      | 147.02                    | 46.17      |
|             | TOTAL        | 5          | 70.0        | –          | 318.42                    | –          |
| 8           | NS           | NS         | NS          | NS         | NS                        | NS         |
| Total       | Pool         | 10         | 206.5       | 66.85      | 924.27                    | 72.80      |
|             | Riffle       | 6          | 50.9        | 16.48      | 115.59                    | 9.10       |
|             | Flatwater    | 4          | 51.5        | 16.67      | 229.79                    | 18.10      |
|             | TOTAL        | 20         | 308.9       | –          | 1,269.65                  | –          |

**Table 21.** Summary of total salmonid catch by species within Olema Creek mainstem index reach sample locations, 2004-2019. Shows variation between years and distribution within watershed. CO = coho salmon, SH = steelhead, YoY = young-of-year, 1+ = one year or older, NS = not sampled.

| Year | Species | Index reach |     |     |     |     |     |     |     | Total |
|------|---------|-------------|-----|-----|-----|-----|-----|-----|-----|-------|
|      |         | 1           | 2   | 3   | 4   | 5   | 6   | 7   | 8   | –     |
| 2004 | CO      | NS          | 186 | 352 | NS  | 295 | 239 | 175 | 164 | 1,411 |
|      | SH YoY  | NS          | 147 | 231 | NS  | 182 | 44  | 20  | 39  | 663   |
|      | SH 1+   | NS          | 6   | 10  | NS  | 26  | 24  | 10  | 8   | 84    |
| 2005 | CO      | NS          | 206 | 255 | NS  | 269 | 361 | 191 | 186 | 1,468 |
|      | SH YoY  | NS          | 72  | 97  | NS  | 180 | 67  | 38  | 44  | 498   |
|      | SH 1+   | NS          | 10  | 5   | NS  | 13  | 15  | 7   | 7   | 57    |
| 2006 | CO      | NS          | 92  | 36  | 0   | 4   | 2   | 9   | 18  | 161   |
|      | SH YoY  | NS          | 55  | 77  | 93  | 80  | 65  | 37  | 43  | 450   |
|      | SH 1+   | NS          | 37  | 67  | 24  | 54  | 32  | 6   | 20  | 240   |
| 2007 | CO      | NS          | 123 | 170 | 233 | 332 | 217 | 156 | 160 | 1,391 |
|      | SH YoY  | NS          | 112 | 135 | 241 | 120 | 51  | 10  | 36  | 705   |
|      | SH 1+   | NS          | 9   | 22  | 16  | 19  | 15  | 3   | 8   | 92    |
| 2008 | CO      | NS          | 3   | 42  | 12  | 22  | 9   | 7   | 0   | 95    |
|      | SH YoY  | NS          | 113 | 145 | 181 | 103 | 40  | 23  | 2   | 607   |
|      | SH 1+   | NS          | 3   | 9   | 13  | 6   | 4   | 1   | 1   | 37    |
| 2009 | CO      | NS          | 0   | 0   | NS  | 0   | 0   | 0   | NS  | 0     |
|      | SH YoY  | NS          | 11  | 16  | NS  | 48  | 21  | 25  | NS  | 121   |
|      | SH 1+   | NS          | 12  | 19  | NS  | 6   | 6   | 5   | NS  | 48    |
| 2010 | CO      | NS          | 28  | 9   | NS  | 8   | 10  | 41  | NS  | 96    |
|      | SH YoY  | NS          | 91  | 42  | NS  | 69  | 61  | 61  | NS  | 324   |
|      | SH 1+   | NS          | 45  | 16  | NS  | 4   | 11  | 11  | NS  | 87    |
| 2011 | CO      | NS          | 31  | 19  | NS  | 28  | 29  | 94  | NS  | 201   |
|      | SH YoY  | NS          | 40  | 90  | NS  | 101 | 75  | 30  | NS  | 336   |
|      | SH 1+   | NS          | 34  | 28  | NS  | 27  | 13  | 9   | NS  | 111   |
| 2012 | CO      | NS          | 1   | 0   | NS  | 1   | 0   | 0   | NS  | 2     |
|      | SH YoY  | NS          | 84  | 194 | NS  | 39  | 27  | 39  | NS  | 383   |
|      | SH 1+   | NS          | 12  | 15  | NS  | 5   | 9   | 15  | NS  | 56    |
| 2013 | CO      | NS          | 20  | 91  | NS  | 82  | 120 | 147 | NS  | 460   |
|      | SH YoY  | NS          | 5   | 16  | NS  | 75  | 4   | 1   | NS  | 101   |
|      | SH 1+   | NS          | 9   | 18  | NS  | 27  | 10  | 4   | NS  | 68    |
| 2014 | CO      | NS          | 3   | 4   | NS  | 19  | 21  | 17  | NS  | 64    |
|      | SH YoY  | NS          | 98  | 213 | NS  | 346 | 39  | 18  | NS  | 714   |
|      | SH 1+   | NS          | 6   | 4   | NS  | 3   | 5   | 0   | NS  | 18    |

**Table 21 (continued).** Summary of total salmonid catch by species within Olema Creek mainstem index reach sample locations, 2004-2019. Shows variation between years and distribution within watershed. CO = coho salmon, SH = steelhead, YoY = young-of-year, 1+ = one year or older, NS = not sampled.

| Year | Species | Index reach |     |     |    |     |    |    |    | Total |
|------|---------|-------------|-----|-----|----|-----|----|----|----|-------|
|      |         | 1           | 2   | 3   | 4  | 5   | 6  | 7  | 8  | –     |
| 2015 | CO      | NS          | 0   | 64  | NS | 0   | 80 | 1  | NS | 145   |
|      | SH YoY  | NS          | 21  | 74  | NS | 231 | 35 | 22 | NS | 383   |
|      | SH 1+   | NS          | 11  | 27  | NS | 6   | 9  | 9  | NS | 62    |
| 2016 | CO      | NS          | 119 | 131 | NS | 98  | 83 | 80 | NS | 511   |
|      | SH YoY  | NS          | 56  | 68  | NS | 73  | 19 | 2  | NS | 218   |
|      | SH 1+   | NS          | 8   | 9   | NS | 7   | 4  | 2  | NS | 30    |
| 2017 | CO      | NS          | 2   | 7   | NS | 2   | 0  | 9  | NS | 20    |
|      | SH YoY  | NS          | 87  | 167 | NS | 238 | 73 | 60 | NS | 625   |
|      | SH 1+   | NS          | 5   | 8   | NS | 16  | 3  | 3  | NS | 35    |
| 2018 | CO      | NS          | 17  | 12  | NS | 7   | 20 | 6  | NS | 62    |
|      | SH YoY  | NS          | 52  | 114 | NS | 105 | 54 | 65 | NS | 390   |
|      | SH 1+   | NS          | 6   | 7   | NS | 10  | 5  | 7  | NS | 35    |
| 2019 | CO      | NS          | 42  | 110 | NS | 23  | NS | 43 | NS | 218   |
|      | SH YoY  | NS          | 52  | 123 | NS | 178 | NS | 48 | NS | 401   |
|      | SH 1+   | NS          | 13  | 25  | NS | 7   | NS | 4  | NS | 49    |

**Table 22.** Summary of total salmonid catch and density estimates for each species by index reach on Olema Creek, summer 2019; illustrates variation between reaches and provides a general idea of distribution within watershed. CO = coho salmon, SH = steelhead, YoY = young-of-year, 1+ = one year or older, NS = not sampled.

| Index reach | Species | Total catch<br># of fish | Density |                     |
|-------------|---------|--------------------------|---------|---------------------|
|             |         |                          | Fish/m  | Fish/m <sup>2</sup> |
| 1           | NS      | NS                       | NS      | NS                  |
| 2           | CO      | 42                       | 0.56    | 0.12                |
|             | SH YoY  | 52                       | 0.69    | 0.15                |
|             | SH 1+   | 13                       | 0.17    | 0.04                |
| 3           | CO      | 110                      | 1.07    | 0.30                |
|             | SH YoY  | 123                      | 1.20    | 0.34                |
|             | SH 1+   | 25                       | 0.24    | 0.07                |
| 4           | NS      | NS                       | NS      | NS                  |
| 5           | CO      | 23                       | 0.38    | 0.09                |
|             | SH YoY  | 178                      | 2.93    | 0.72                |
|             | SH 1+   | 7                        | 0.12    | 0.03                |
| 6           | NS      | NS                       | NS      | NS                  |
| 7           | CO      | 43                       | 0.61    | 0.14                |
|             | SH YoY  | 48                       | 0.69    | 0.15                |
|             | SH 1+   | 4                        | 0.06    | 0.01                |
| 8           | NS      | NS                       | NS      | NS                  |

**Table 23.** Summary of index reach habitat composition; shows extent of area sampled and variation between reaches; Redwood Creek, summer 2019. NS = not sampled.

| Index reach | Habitat type | # of units | Length      |            | Surface area              |            |
|-------------|--------------|------------|-------------|------------|---------------------------|------------|
|             |              |            | sampled (m) | % of total | sampled (m <sup>2</sup> ) | % of total |
| 1           | Pool         | 4          | 46.7        | 45.78      | 160.31                    | 44.60      |
|             | Riffle       | 3          | 51.8        | 50.78      | 187.58                    | 52.19      |
|             | Flatwater    | 1          | 3.5         | 3.43       | 11.55                     | 3.21       |
|             | TOTAL        | 8          | 102.0       | –          | 359.44                    | –          |
| 2           | Pool         | 2          | 46.8        | 38.55      | 316.68                    | 46.64      |
|             | Riffle       | 3          | 49.1        | 40.44      | 250.31                    | 36.87      |
|             | Flatwater    | 2          | 25.5        | 21.00      | 111.98                    | 16.49      |
|             | TOTAL        | 7          | 121.4       | –          | 678.97                    | –          |
| 3           | Pool         | 4          | 69.2        | 84.91      | 329.51                    | 91.24      |
|             | Riffle       | 2          | 12.3        | 15.09      | 31.65                     | 8.76       |
|             | Flatwater    | 0          | 0           | 0          | 0                         | 0          |
|             | TOTAL        | 6          | 81.5        | –          | 361.16                    | –          |
| 4           | Pool         | 4          | 65.1        | 71.78      | 247.11                    | 82.84      |
|             | Riffle       | 2          | 16.0        | 17.64      | 23.36                     | 7.83       |
|             | Flatwater    | 1          | 9.6         | 10.58      | 27.84                     | 9.33       |
|             | TOTAL        | 7          | 90.7        | –          | 298.31                    | –          |
| 5           | Pool         | 3          | 81.7        | 79.09      | 377.24                    | 79.35      |
|             | Riffle       | 2          | 21.6        | 20.91      | 98.18                     | 20.65      |
|             | Flatwater    | 0          | 0           | 0          | 0                         | 0          |
|             | TOTAL        | 5          | 103.3       | –          | 475.42                    | –          |
| 6           | Pool         | 4          | 85.0        | 90.81      | 360.96                    | 89.34      |
|             | Riffle       | 2          | 8.6         | 9.19       | 43.08                     | 10.66      |
|             | Flatwater    | 0          | 0           | 0          | 0                         | 0          |
|             | TOTAL        | 6          | 93.6        | –          | 404.04                    | –          |
| 7           | NS           | NS         | NS          | NS         | NS                        | NS         |
| Total       | Pool         | 21         | 394.5       | 66.58      | 1,791.81                  | 69.52      |
|             | Riffle       | 14         | 159.4       | 26.90      | 634.16                    | 24.61      |
|             | Flatwater    | 4          | 38.6        | 6.51       | 151.37                    | 5.87       |
|             | TOTAL        | 39         | 592.5       | –          | 2,577.34                  | –          |

**Table 24.** Summary of total salmonid catch (not including Dr. Smith information) by species for Redwood Creek mainstem index reach sample locations, 2004-2019. CO = coho salmon, SH = steelhead, YoY = young-of-year, 1+ = one year or older, NS = not sampled.

| Year | Species | Index Reach |     |     |     |     |     |     | Total |
|------|---------|-------------|-----|-----|-----|-----|-----|-----|-------|
|      |         | 1           | 2   | 3   | 4   | 5   | 6   | 7   | –     |
| 2004 | CO      | NS          | 42  | 95  | 74  | 158 | 71  | NS  | 440   |
|      | SH YoY  | NS          | 6   | 22  | 19  | 24  | 4   | NS  | 75    |
|      | SH 1+   | NS          | 19  | 8   | 17  | 15  | 13  | NS  | 72    |
| 2005 | CO      | 23          | 59  | 77  | 93  | 164 | 236 | 339 | 991   |
|      | SH YoY  | 44          | 38  | 41  | 70  | 77  | 178 | 82  | 530   |
|      | SH 1+   | 5           | 12  | 12  | 10  | 14  | 9   | 4   | 66    |
| 2006 | CO      | 6           | 21  | 21  | 38  | 3   | 9   | 0   | 98    |
|      | SH YoY  | 36          | 77  | 26  | 20  | 5   | 17  | 4   | 185   |
|      | SH 1+   | 2           | 23  | 21  | 20  | 11  | 20  | 1   | 98    |
| 2007 | CO      | 54          | 138 | 215 | 120 | 146 | 89  | 8   | 770   |
|      | SH YoY  | 90          | 161 | 305 | 170 | 212 | 392 | 144 | 1,474 |
|      | SH 1+   | 8           | 43  | 10  | 11  | 7   | 11  | 7   | 97    |
| 2008 | CO      | 0           | 2   | 6   | 0   | 23  | 3   | NS  | 34    |
|      | SH YoY  | 84          | 79  | 103 | 120 | 101 | 79  | NS  | 566   |
|      | SH 1+   | 10          | 19  | 23  | 20  | 21  | 12  | NS  | 105   |
| 2009 | CO      | 0           | 5   | 2   | 27  | 5   | 0   | 0   | 39    |
|      | SH YoY  | 104         | 87  | 85  | 55  | 27  | 21  | 25  | 404   |
|      | SH 1+   | 14          | 7   | 20  | 40  | 15  | 2   | 3   | 101   |
| 2010 | CO      | 0           | 19  | 53  | 34  | 69  | 49  | NS  | 224   |
|      | SH YoY  | 63          | 125 | 92  | 93  | 102 | 51  | NS  | 526   |
|      | SH 1+   | 14          | 45  | 38  | 26  | 29  | 33  | NS  | 185   |
| 2011 | CO      | 0           | 14  | 6   | 2   | 2   | 0   | NS  | 24    |
|      | SH YoY  | 79          | 71  | 20  | 38  | 39  | 15  | NS  | 262   |
|      | SH 1+   | 13          | 55  | 24  | 33  | 29  | 25  | NS  | 179   |
| 2012 | CO      | 13          | 11  | 16  | 8   | 1   | 2   | NS  | 51    |
|      | SH YoY  | 85          | 79  | 32  | 84  | 64  | 22  | NS  | 366   |
|      | SH 1+   | 5           | 16  | 7   | 17  | 13  | 7   | NS  | 65    |
| 2013 | CO      | 38          | 86  | 26  | 21  | 25  | 5   | NS  | 201   |
|      | SH YoY  | 3           | 6   | 13  | 2   | 2   | 0   | NS  | 26    |
|      | SH 1+   | 4           | 9   | 6   | 15  | 9   | 6   | NS  | 49    |
| 2014 | CO      | 0           | 1   | 2   | 1   | 3   | 3   | NS  | 10    |
|      | SH YoY  | 58          | 78  | 91  | 112 | 148 | 72  | NS  | 559   |
|      | SH 1+   | 1           | 4   | 8   | 3   | 4   | 0   | NS  | 20    |

**Table 24 (continued).** Summary of total salmonid catch (not including Dr. Smith information) by species for Redwood Creek mainstem index reach sample locations, 2004-2019. CO = coho salmon, SH = steelhead, YoY = young-of-year, 1+ = one year or older, NS = not sampled.

| Year | Species | Index Reach |     |     |     |     |     |    | Total |
|------|---------|-------------|-----|-----|-----|-----|-----|----|-------|
|      |         | 1           | 2   | 3   | 4   | 5   | 6   | 7  | –     |
| 2015 | CO      | 0           | 4   | 1   | 28  | 11  | 29  | NS | 73    |
|      | SH YoY  | 0           | 1   | 0   | 5   | 0   | 3   | NS | 9     |
|      | SH 1+   | 4           | 36  | 19  | 62  | 20  | 13  | NS | 154   |
| 2016 | CO      | 7           | 73  | 34  | 30  | 10  | 13  | NS | 167   |
|      | SH YoY  | 30          | 126 | 68  | 118 | 120 | 109 | NS | 571   |
|      | SH 1+   | 1           | 14  | 3   | 2   | 13  | 23  | NS | 56    |
| 2017 | CO      | 15          | 20  | 2   | 5   | 16  | 3   | NS | 61    |
|      | SH YoY  | 140         | 272 | 93  | 95  | 138 | 59  | NS | 797   |
|      | SH 1+   | 9           | 67  | 68  | 113 | 88  | 49  | NS | 394   |
| 2018 | CO      | 0           | 22  | 15  | 14  | 72  | 54  | NS | 177   |
|      | SH YoY  | 20          | 57  | 25  | 26  | 36  | 6   | NS | 170   |
|      | SH 1+   | 9           | 34  | 46  | 77  | 43  | 49  | NS | 258   |
| 2019 | CO      | 2           | 27  | 22  | 24  | 30  | 16  | NS | 121   |
|      | SH YoY  | 163         | 282 | 117 | 187 | 409 | 181 | NS | 1,339 |
|      | SH 1+   | 12          | 41  | 38  | 52  | 14  | 12  | NS | 169   |

**Table 25.** Summary of total salmonid catch and density estimates for each species by index reach on Redwood Creek, summer 2019; illustrates variation between reaches and provides a general idea of distribution within watershed. CO = coho salmon, SH = steelhead, YoY = young-of-year, 1+ = one year or older, NS = not sampled.

| Index reach | Species | Total catch<br># of fish | Density |                     |
|-------------|---------|--------------------------|---------|---------------------|
|             |         |                          | Fish/m  | Fish/m <sup>2</sup> |
| 1           | CO      | 2                        | 0.02    | 0.01                |
|             | SH YoY  | 163                      | 1.60    | 0.45                |
|             | SH 1+   | 12                       | 0.12    | 0.03                |
| 2           | CO      | 27                       | 0.22    | 0.04                |
|             | SH YoY  | 282                      | 2.32    | 0.42                |
|             | SH 1+   | 41                       | 0.34    | 0.06                |
| 3           | CO      | 22                       | 0.27    | 0.06                |
|             | SH YoY  | 117                      | 1.44    | 0.32                |
|             | SH 1+   | 38                       | 0.47    | 0.11                |
| 4           | CO      | 24                       | 0.26    | 0.08                |
|             | SH YoY  | 187                      | 2.06    | 0.63                |
|             | SH 1+   | 52                       | 0.57    | 0.17                |
| 5           | CO      | 30                       | 0.29    | 0.06                |
|             | SH YoY  | 409                      | 3.96    | 0.86                |
|             | SH 1+   | 14                       | 0.14    | 0.03                |
| 6           | CO      | 16                       | 0.17    | 0.04                |
|             | SH YoY  | 181                      | 1.93    | 0.45                |
|             | SH 1+   | 12                       | 0.13    | 0.03                |
| 7           | NS      | NS                       | NS      | NS                  |

**Table 26.** List of Julian weeks and their calendar equivalents in a non-leap year.

| <b>Julian Week Number</b> | <b>Inclusive Dates</b> |
|---------------------------|------------------------|
| 1                         | Jan 01 - Jan 07        |
| 2                         | Jan 08 - Jan 14        |
| 3                         | Jan 15 - Jan 21        |
| 4                         | Jan 22 - Jan 28        |
| 5                         | Jan 29 - Feb 04        |
| 6                         | Feb 05 - Feb 11        |
| 7                         | Feb 12 - Feb 18        |
| 8                         | Feb 19 - Feb 25        |
| 9                         | Feb 26 - Mar 04        |
| 10                        | Mar 05 - Mar 11        |
| 11                        | Mar 12 - Mar 18        |
| 12                        | Mar 19 - Mar 25        |
| 13                        | Mar 26 - Apr 01        |
| 14                        | Apr 02 - Apr 08        |
| 15                        | Apr 09 - Apr 15        |
| 16                        | Apr 16 - Apr 22        |
| 17                        | Apr 23 - Apr 29        |
| 18                        | Apr 30 - May 06        |
| 19                        | May 07 - May 13        |
| 20                        | May 14 - May 20        |
| 21                        | May 21 - May 27        |
| 22                        | May 28 - Jun 03        |
| 23                        | Jun 04 - Jun 10        |
| 24                        | Jun 11 - Jun 17        |
| 25                        | Jun 18 - Jun 24        |
| 26                        | Jun 25 - Jul 01        |
| 27                        | Jul 02 - Jul 08        |
| 28                        | Jul 09 - Jul15         |
| 29                        | Jul 16 - Jul 22        |
| 30                        | Jul 23 - Jul 29        |
| 31                        | Jul 30 - Aug 05        |
| 32                        | Aug 06 - Aug 12        |
| 33                        | Aug 13 - Aug 19        |
| 34                        | Aug 20 - Aug 26        |
| 35                        | Aug 27 - Sep 02        |

**Table 26 (continued).** List of Julian weeks and their calendar equivalents in a non-leap year.

| <b>Julian Week Number</b> | <b>Inclusive Dates</b> |
|---------------------------|------------------------|
| 36                        | Sep 03 - Sep 09        |
| 37                        | Sep 10 - Sep 16        |
| 38                        | Sep 17 - Sep 23        |
| 39                        | Sep 24 - Sep 30        |
| 40                        | Oct 01 - Oct 07        |
| 41                        | Oct 08 - Oct 14        |
| 42                        | Oct 15 - Oct 21        |
| 43                        | Oct 22 - Oct 28        |
| 44                        | Oct 29 - Nov 04        |
| 45                        | Nov 05 - Nov 11        |
| 46                        | Nov 12 - Nov 18        |
| 47                        | Nov 19 - Nov 25        |
| 48                        | Nov 26 - Dec 02        |
| 49                        | Dec 03 - Dec 09        |
| 50                        | Dec 10 - Dec 16        |
| 51                        | Dec 17 - Dec 23        |
| 52                        | Dec 24 - Dec 31        |

**National Park Service**  
**U.S. Department of the Interior**



**San Francisco Bay Area Network**

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