

California Sea Grant Summer 2018 Update

Wildlife Conservation Board grant activities

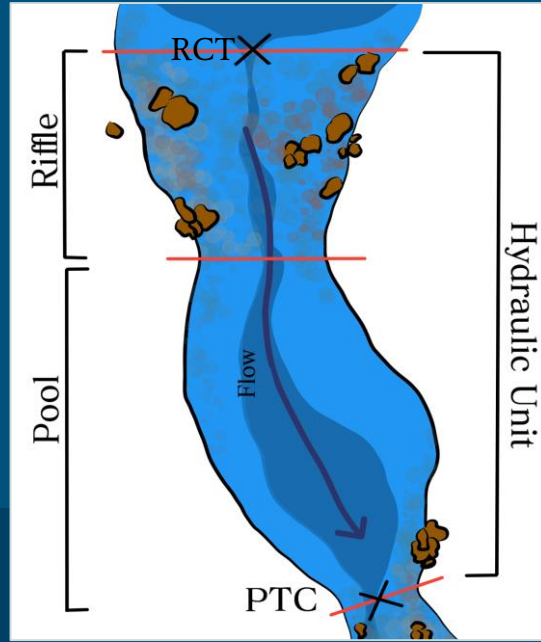


Wetted habitat surveys

“wet/dry” mapping

- ❖ Biweekly sampling during drying season
- ❖ May 7th - November 1st, 2018
 - 13 samples per stream
- ❖ Priority streams
 - Dutch Bill
 - Green Valley
 - Mill
- ❖ Flow releases beginning in August
 - Dutch Bill, 1 release point
 - Green Valley, 2 release points





- ❖ Hike reaches to document surface water conditions
- ❖ Digitize presence/ absence of surface water
- ❖ Measure DO, water temperature, and RCTs at 5-minute intervals
- ❖ Discharge measurements at Trout Unlimited gage sites



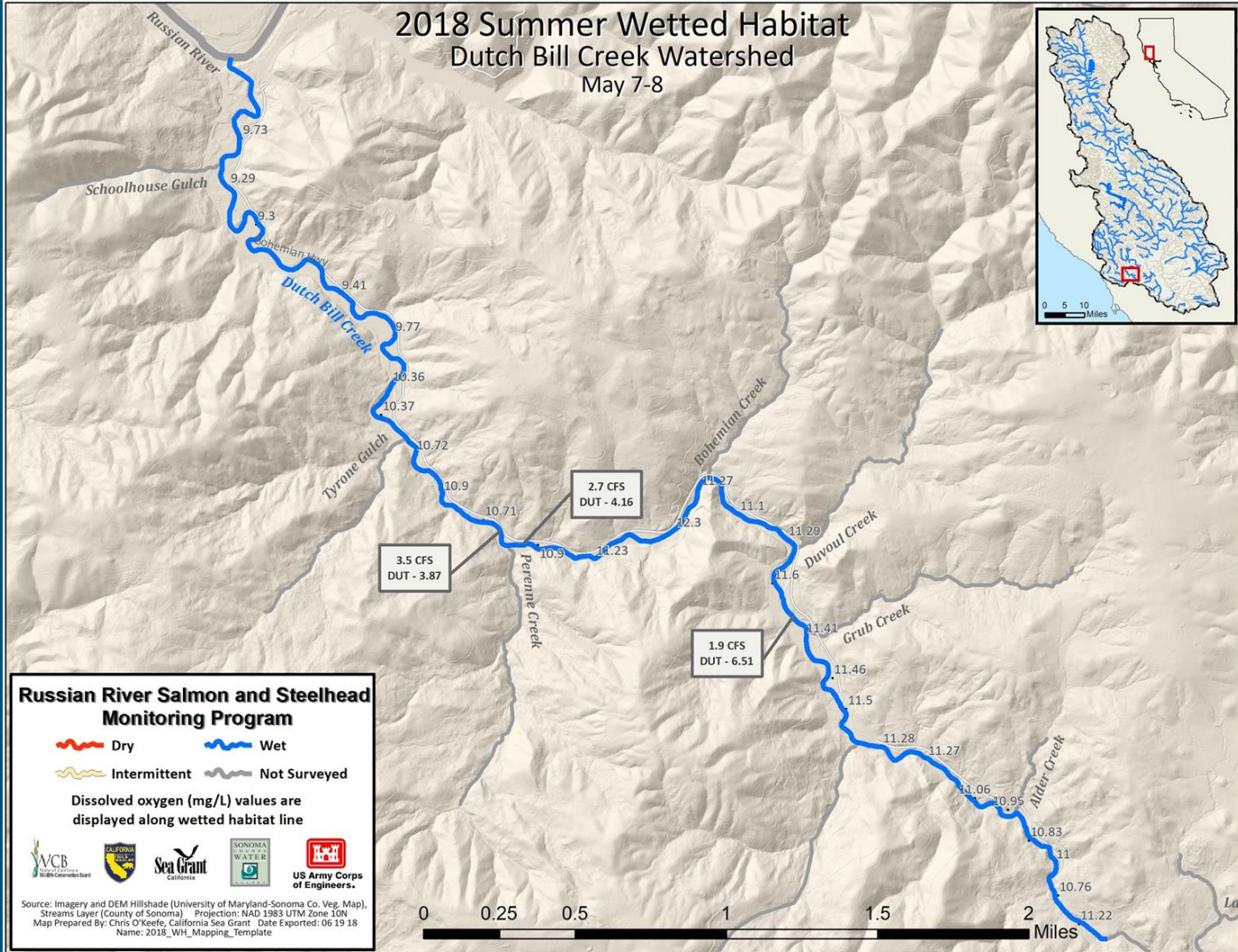
Dutch Bill Creek

8/21/2018, looking upstream towards Tyrone Road, rKm 2.79

1.



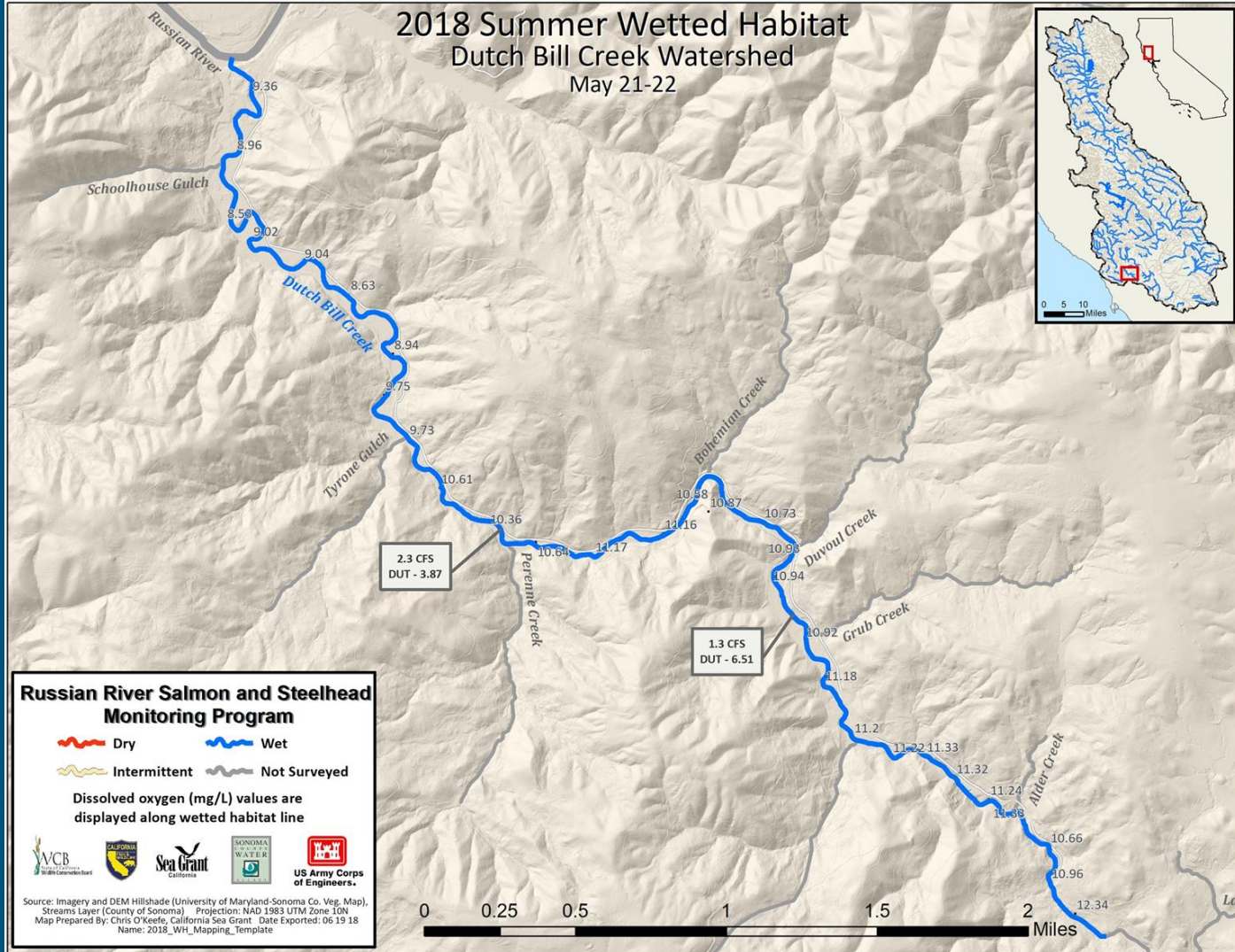
DO range:
9.29-12.30 mg/L



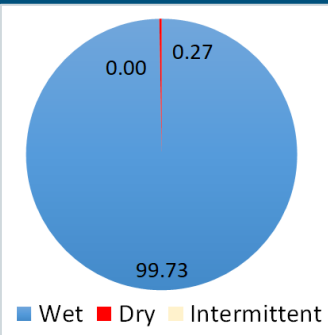
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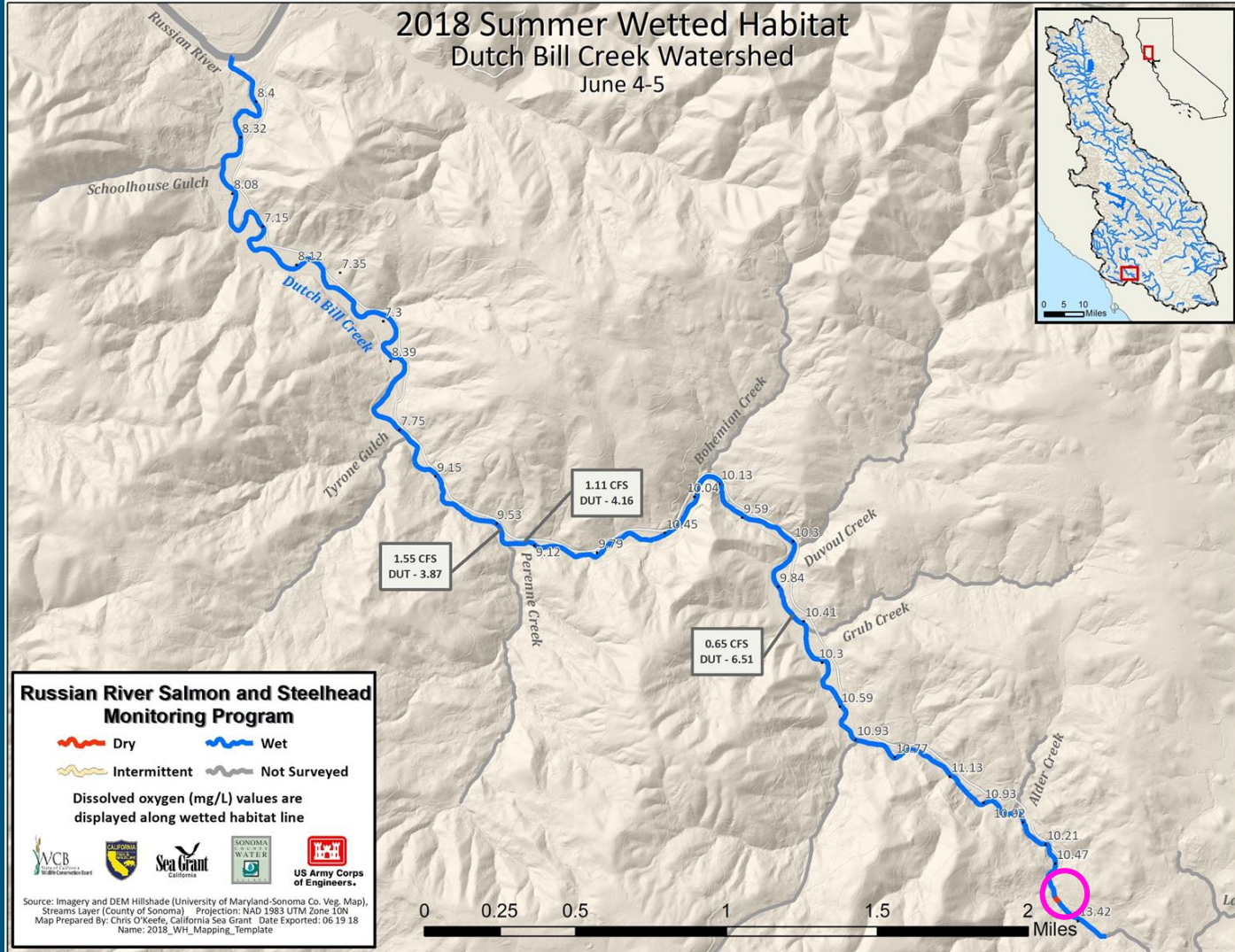
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8.53-12.34 mg/L



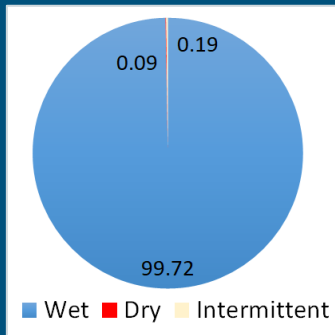
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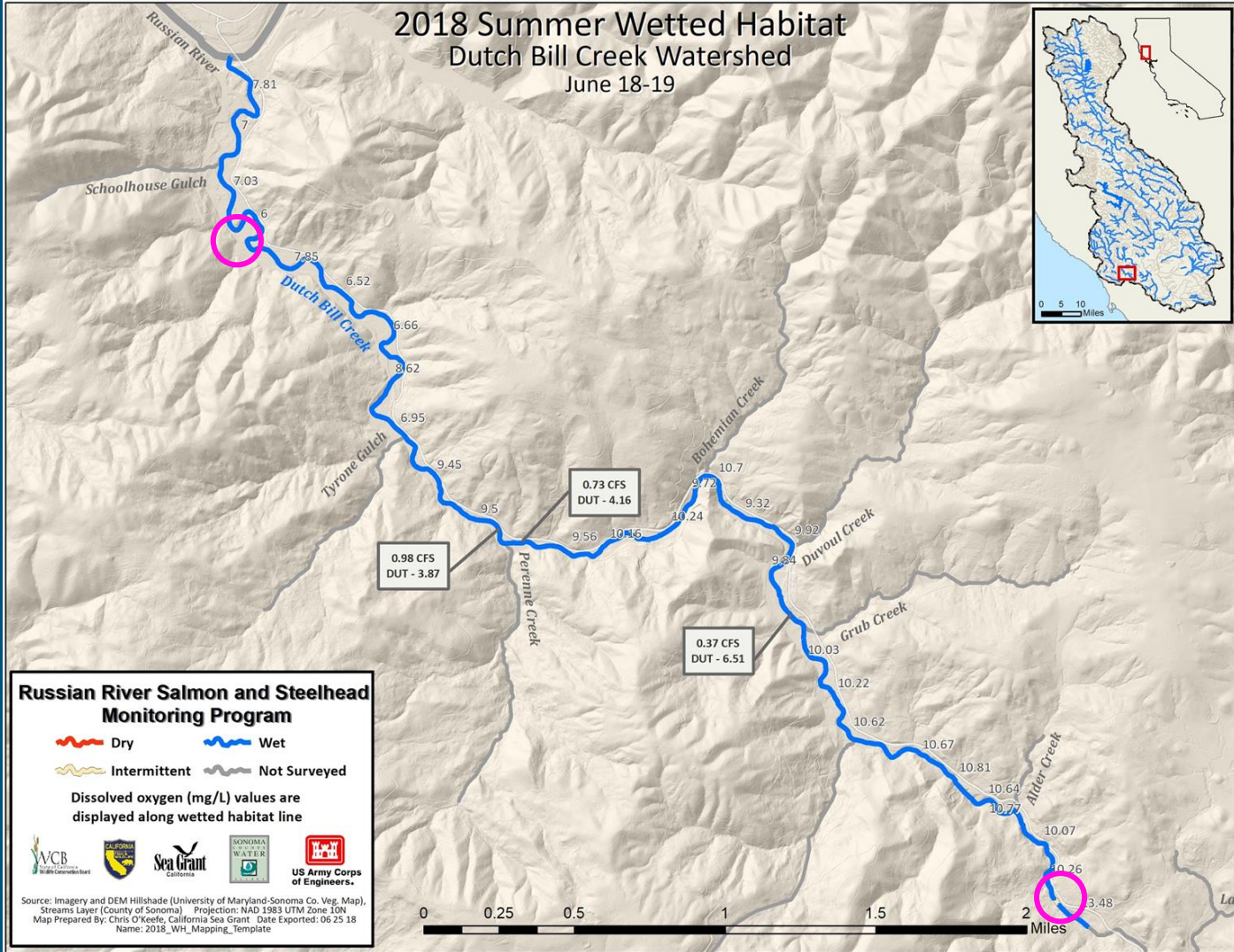
DO range:
7.15-13.42 mg/L



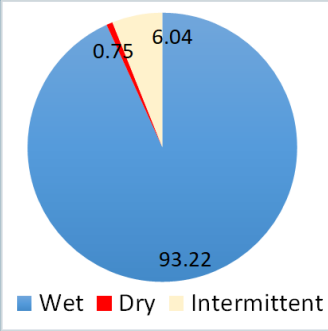
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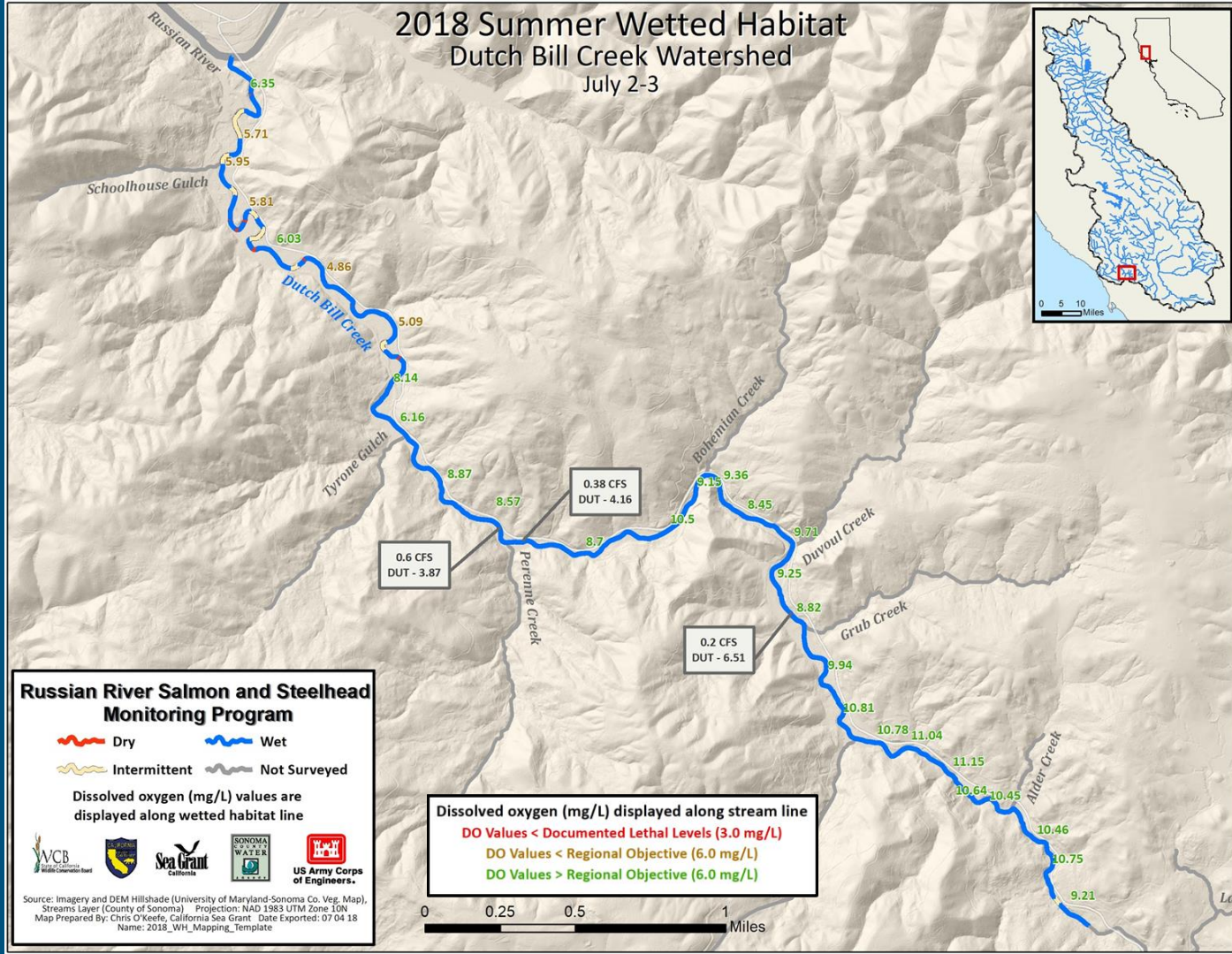
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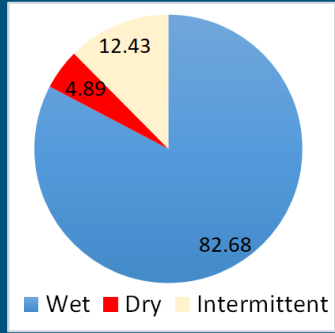
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DO range:
4.86-11.15 mg/L

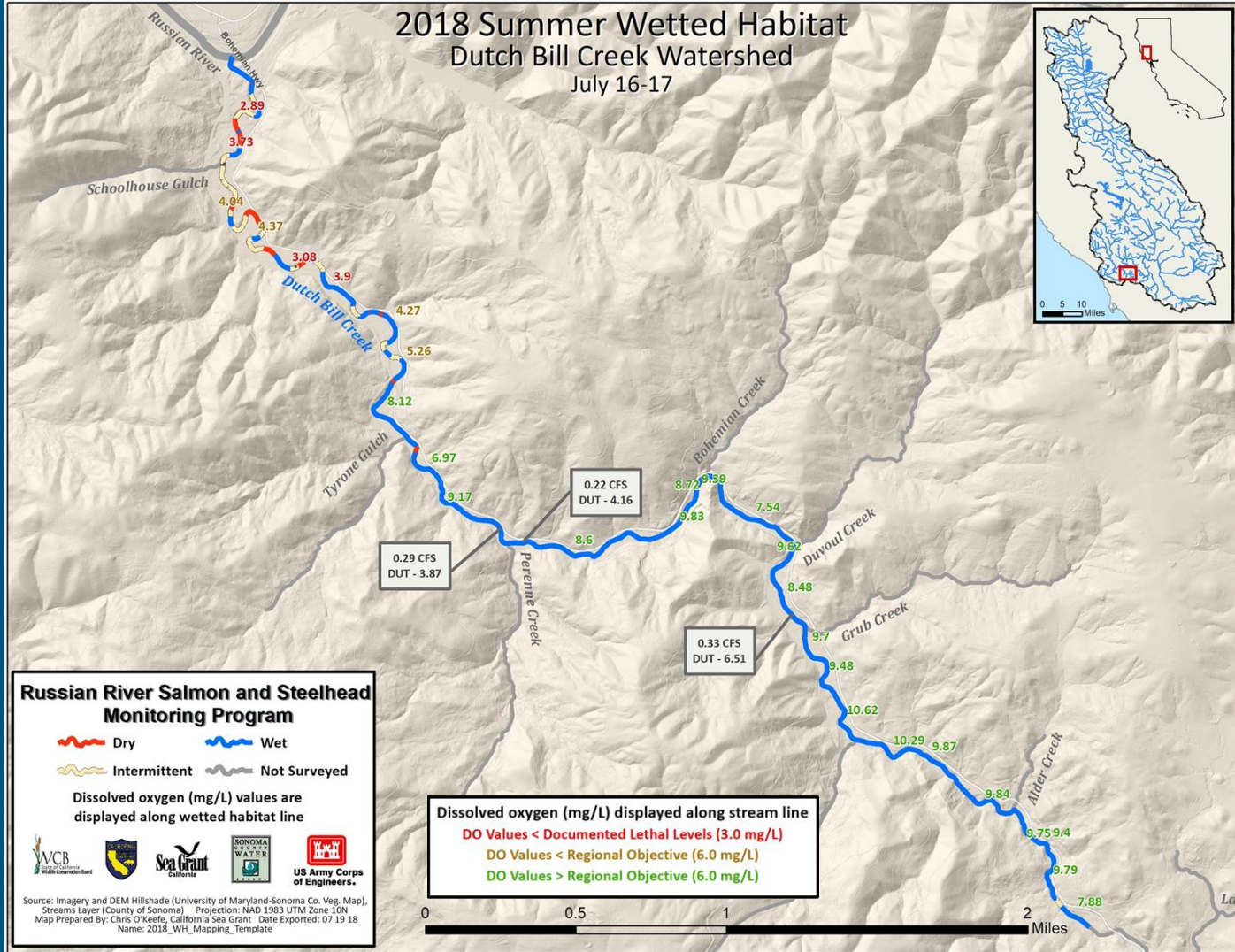


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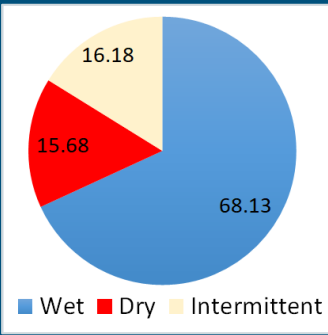


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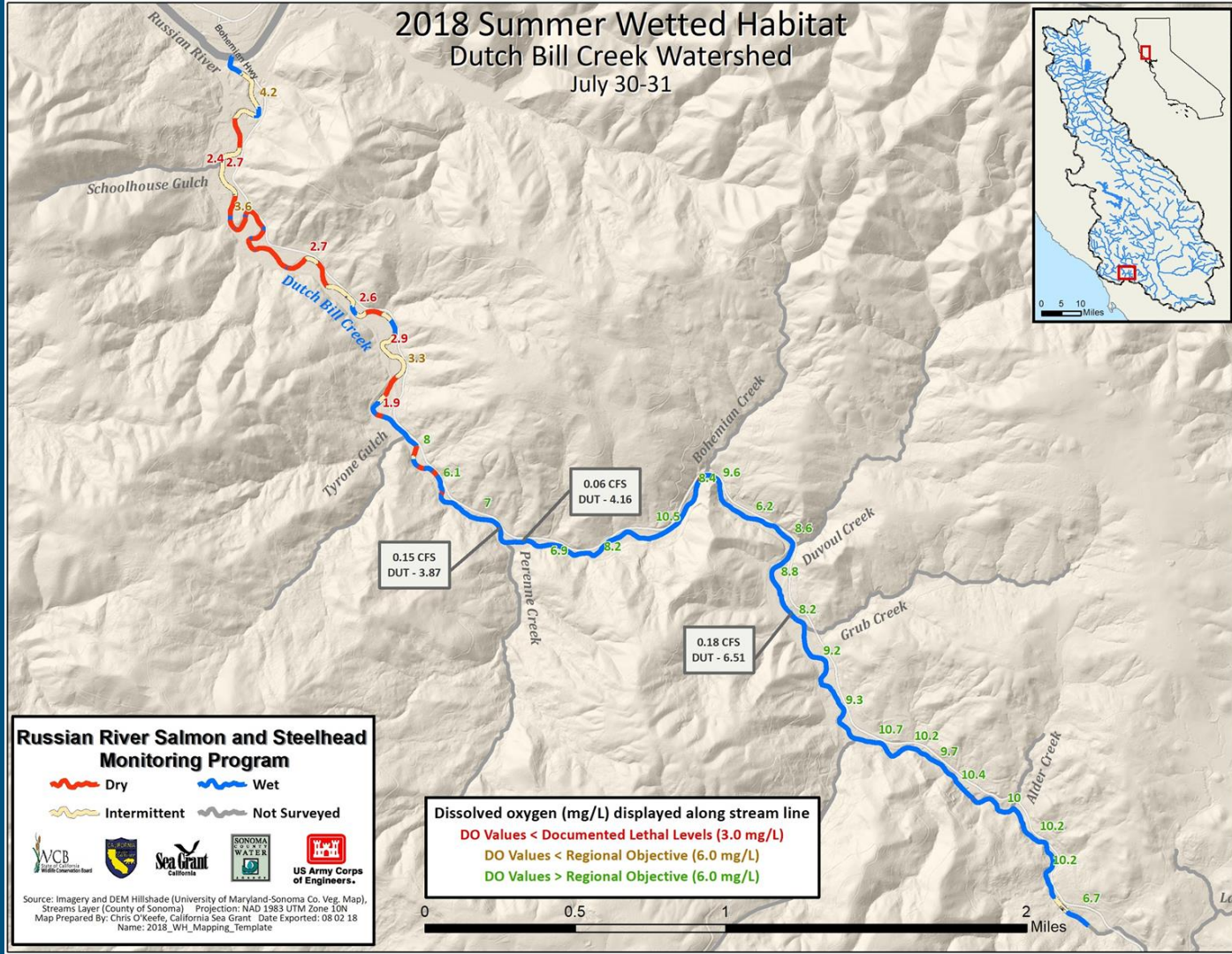
2.89-10.62 mg/L



7.



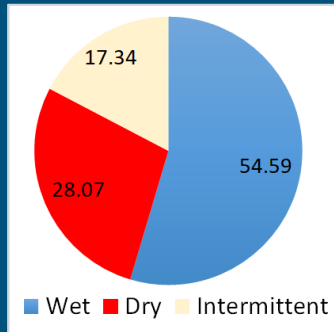
DO range:
1.94-10.70 mg/L



Russian River Salmon and Steelhead Monitoring Program

Source: Imagery and DEM Hillshade (University of Maryland-Sonoma Co. Veg. Map), Streams Layer (County of Sonoma) Projection: NAD 1983 UTM Zone 10N
 Map Prepared By: Chris O'Keefe, California Sea Grant Date Exported: 08 02 18
 Name: 2018_WH_Mapping_Template

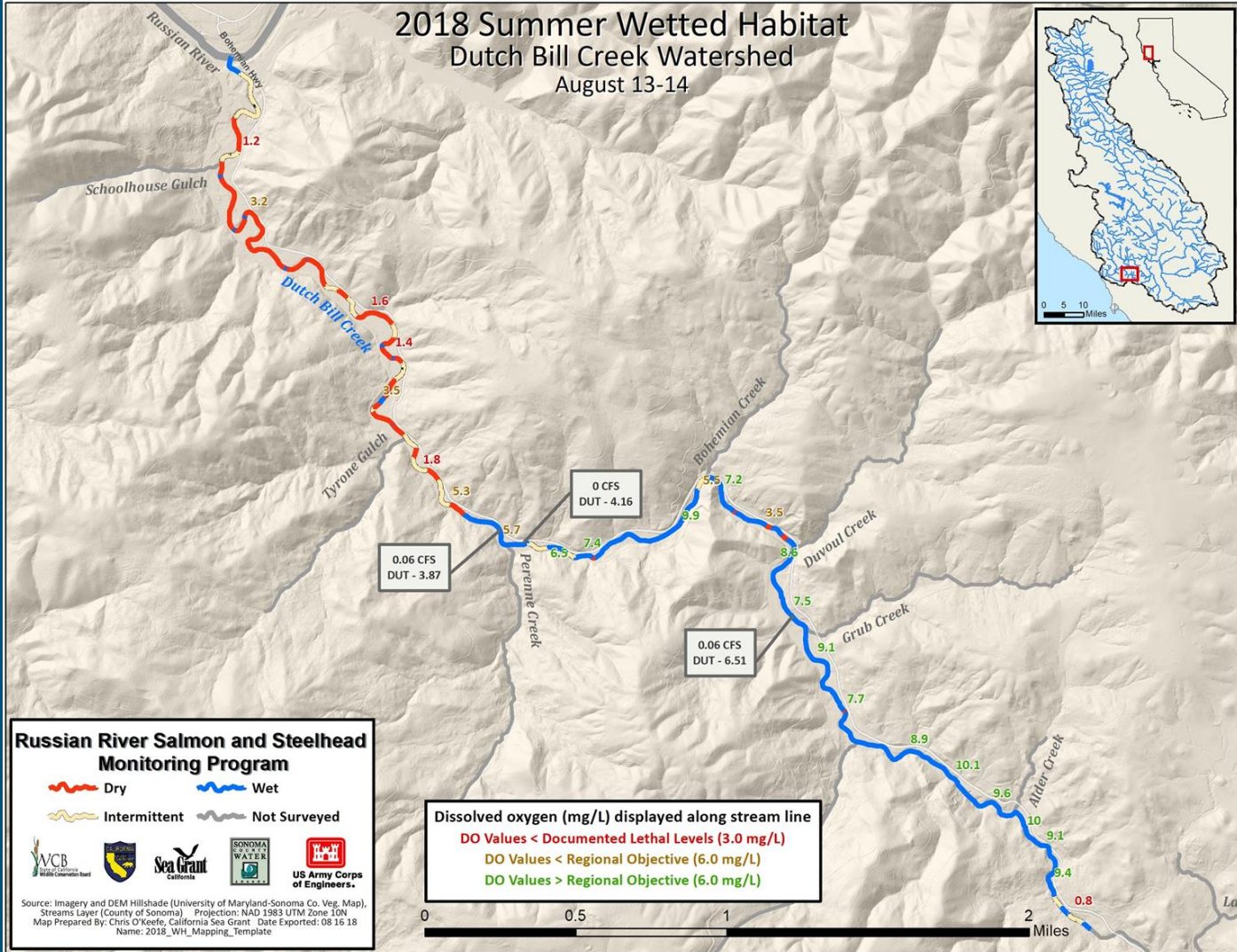
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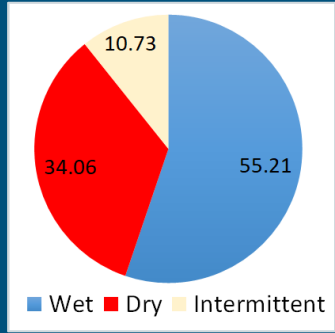
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0.83-10.09 mg/L

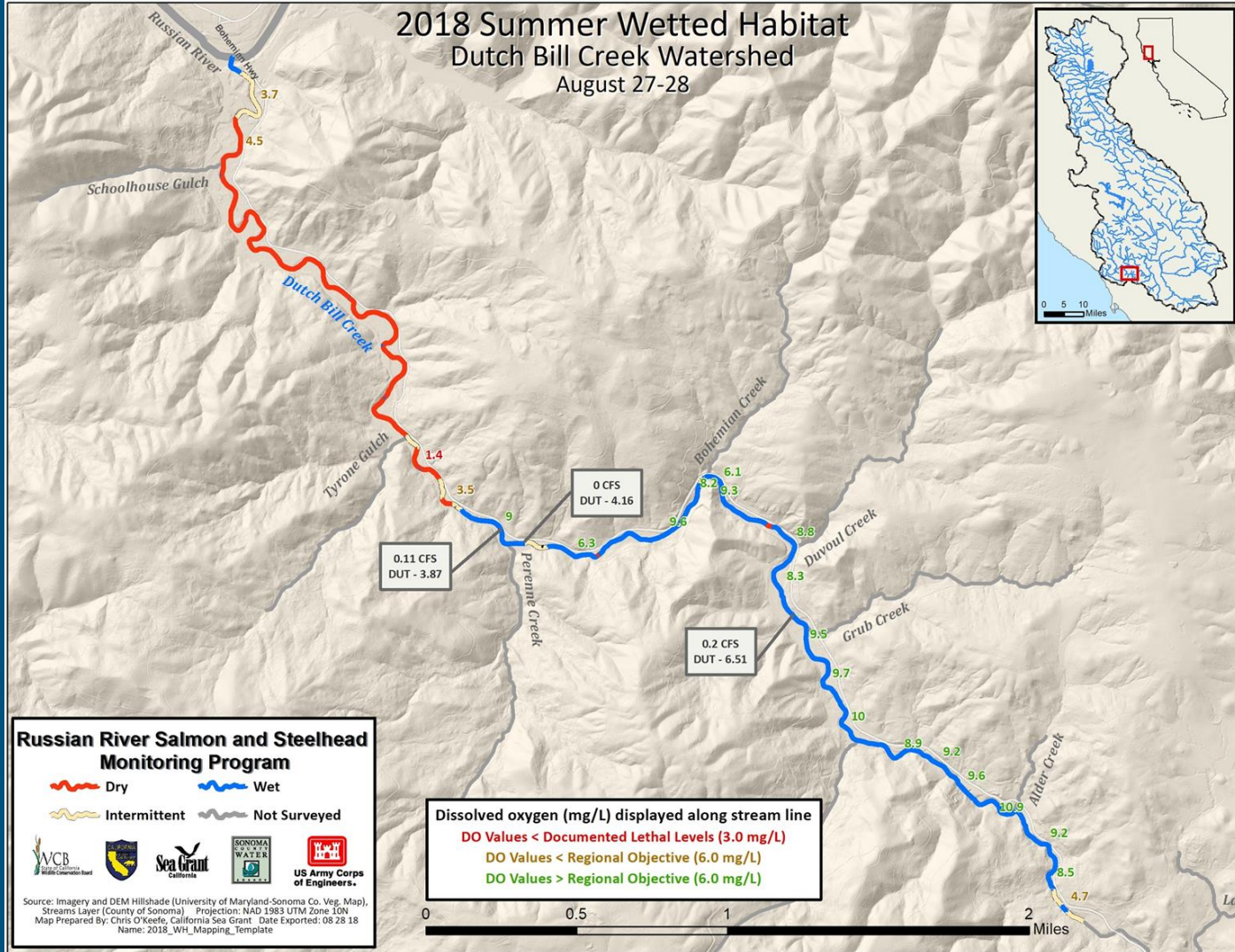
2018 Summer Wetted Habitat Dutch Bill Creek Watershed August 13-14



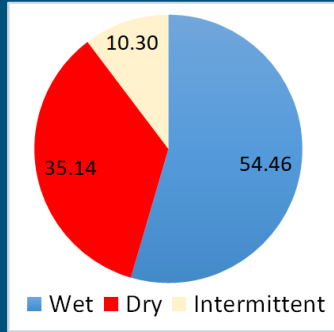
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DO range:
1.39-10.87 mg/L

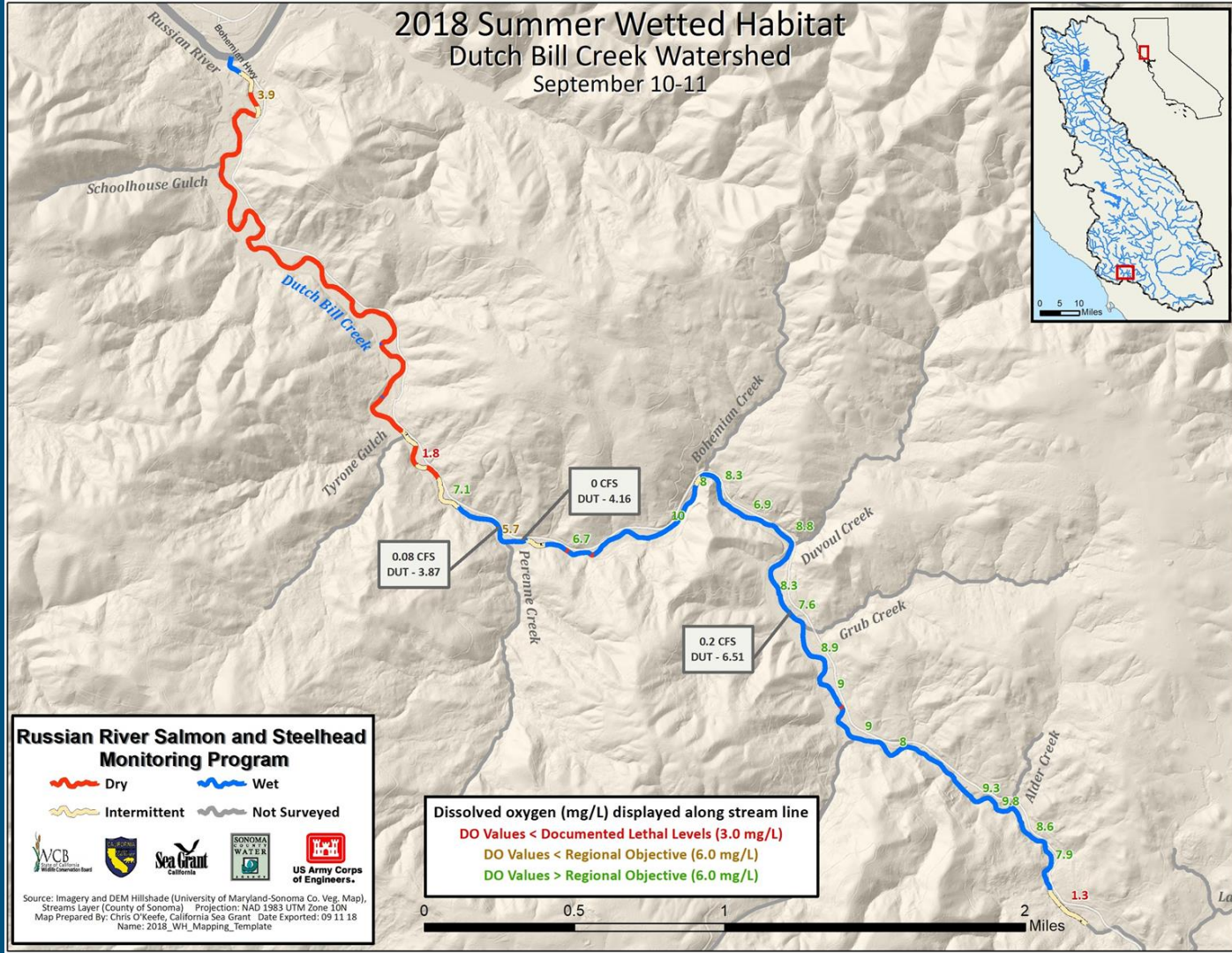


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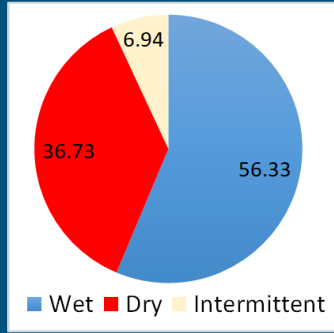


DO range:

1.75-9.96 mg/L

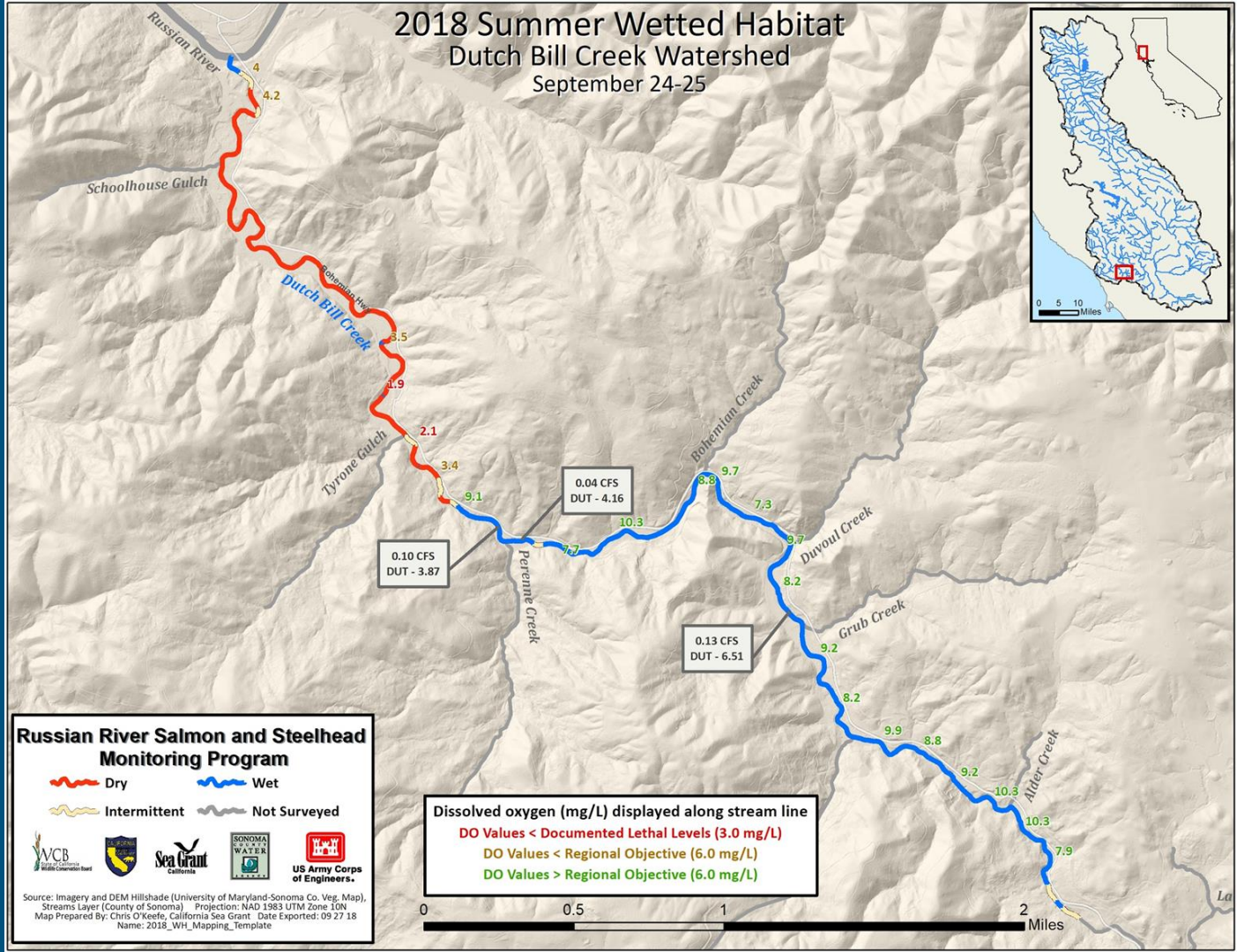


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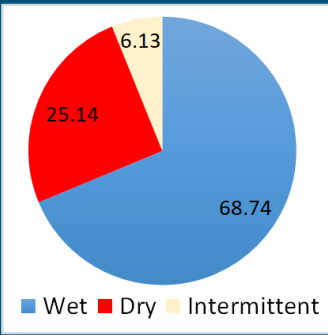


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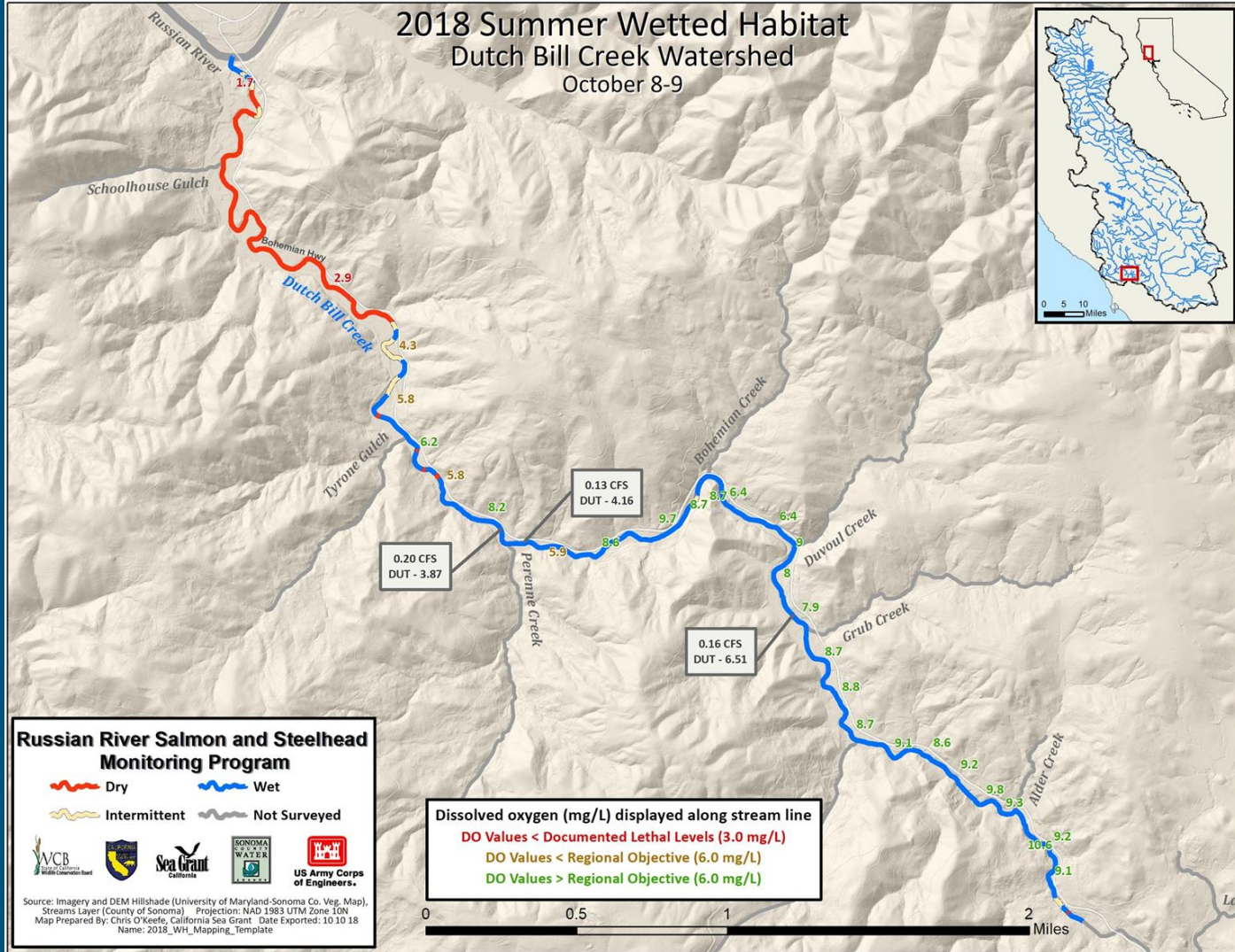
1.90-10.34 mg/L



12.



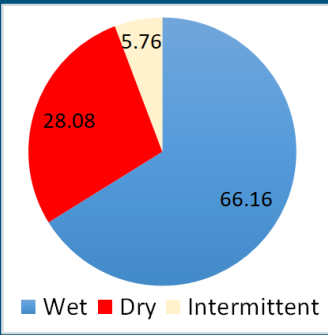
DO range:
1.66-10.56 mg/L



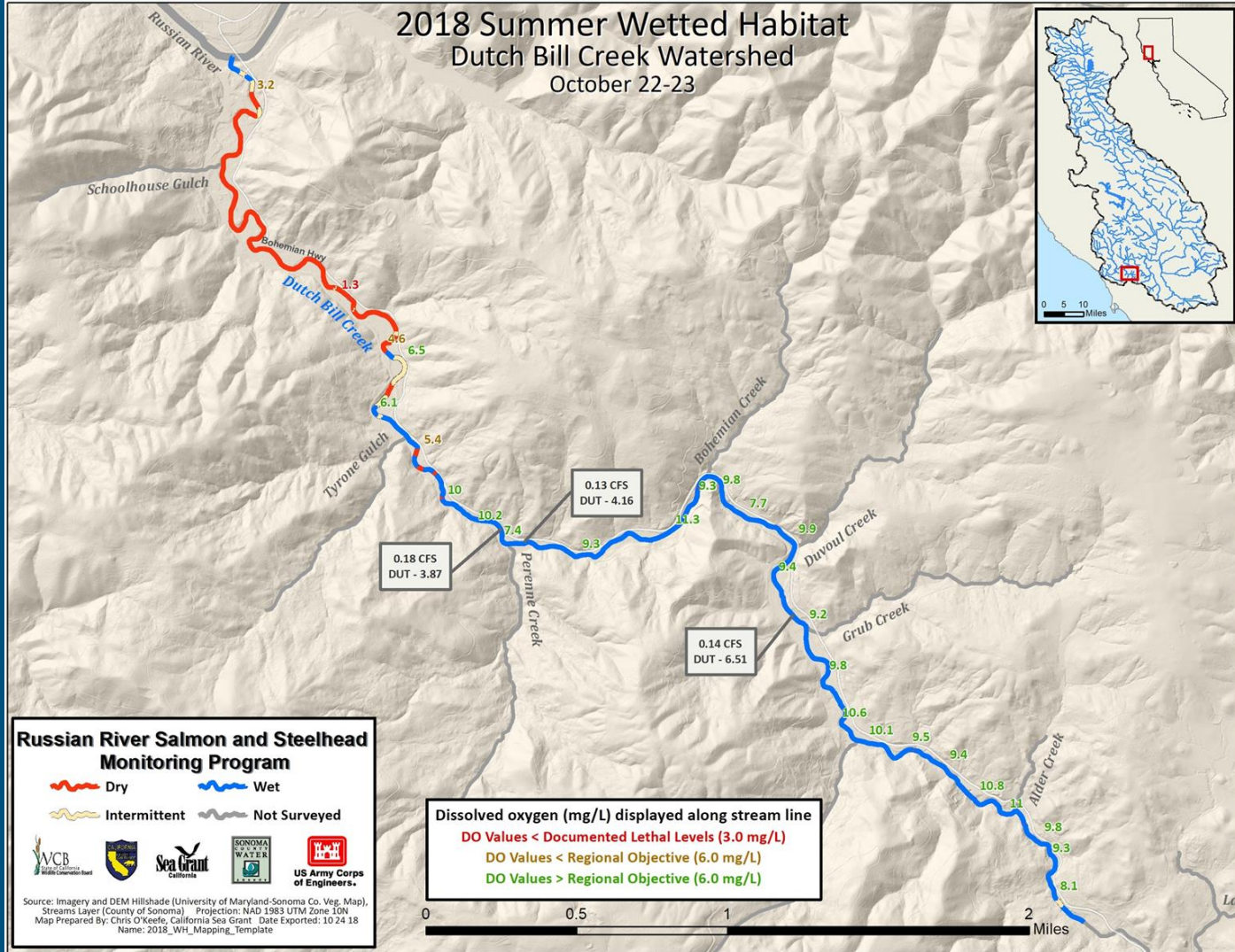
Russian River Salmon and Steelhead Monitoring Program

Source: Imagery and DEM Hillshade (University of Maryland-Sonoma Co. Veg. Map), Streams Layer (County of Sonoma) Projection: NAD 1983 UTM Zone 10N
 Map Prepared By: Chris O'Keefe, California Sea Grant Date Exported: 10 10 18
 Name: 2018_WH_Mapping_Template

13.



DO range:
1.31-11.30 mg/L



Russian River Salmon and Steelhead Monitoring Program

Source: Imagery and DEM Hillshade (University of Maryland-Sonoma Co. Veg. Map), Streams Layer (County of Sonoma) Projection: NAD 1983 UTM Zone 10N
 Map Prepared By: Chris O'Keefe, California Sea Grant Date Exported: 10/24/18
 Name: 2018_WH_Mapping_Template



Green Valley Creek

9/17/2018, looking upstream towards Bones Road, rKm 12.79

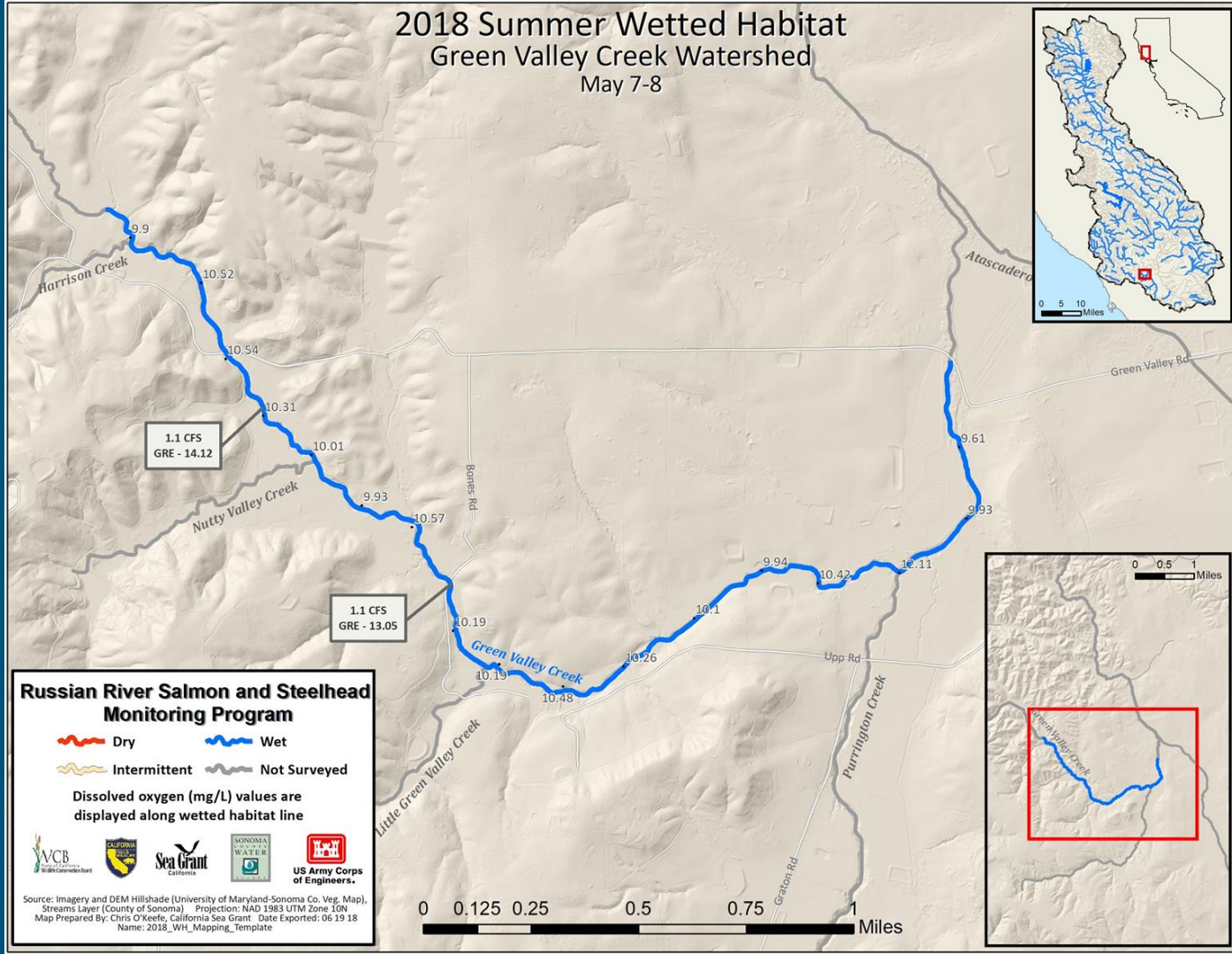
1.



DO range:

9.61-12.11 mg/L

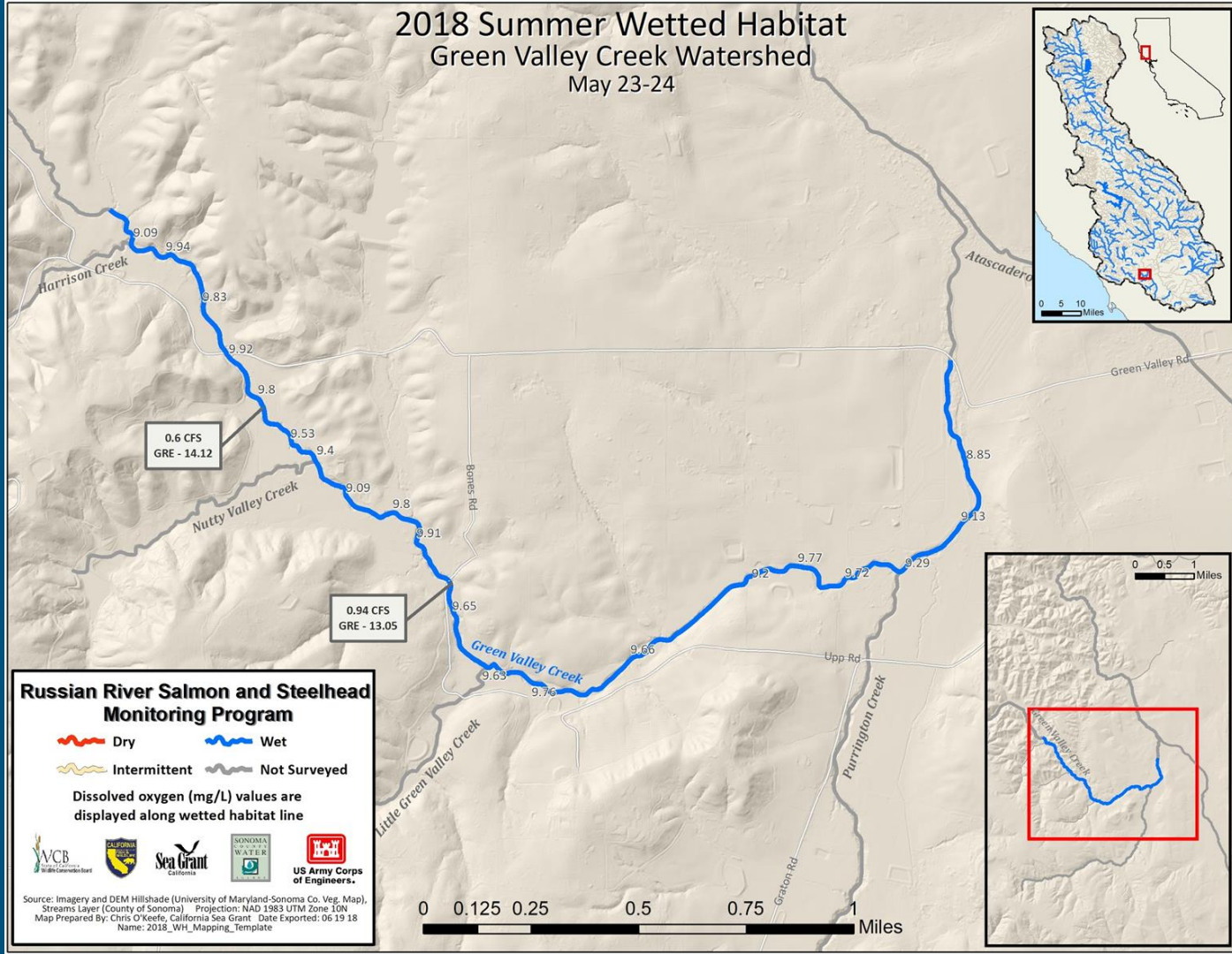
2018 Summer Wetted Habitat Green Valley Creek Watershed May 7-8



2.



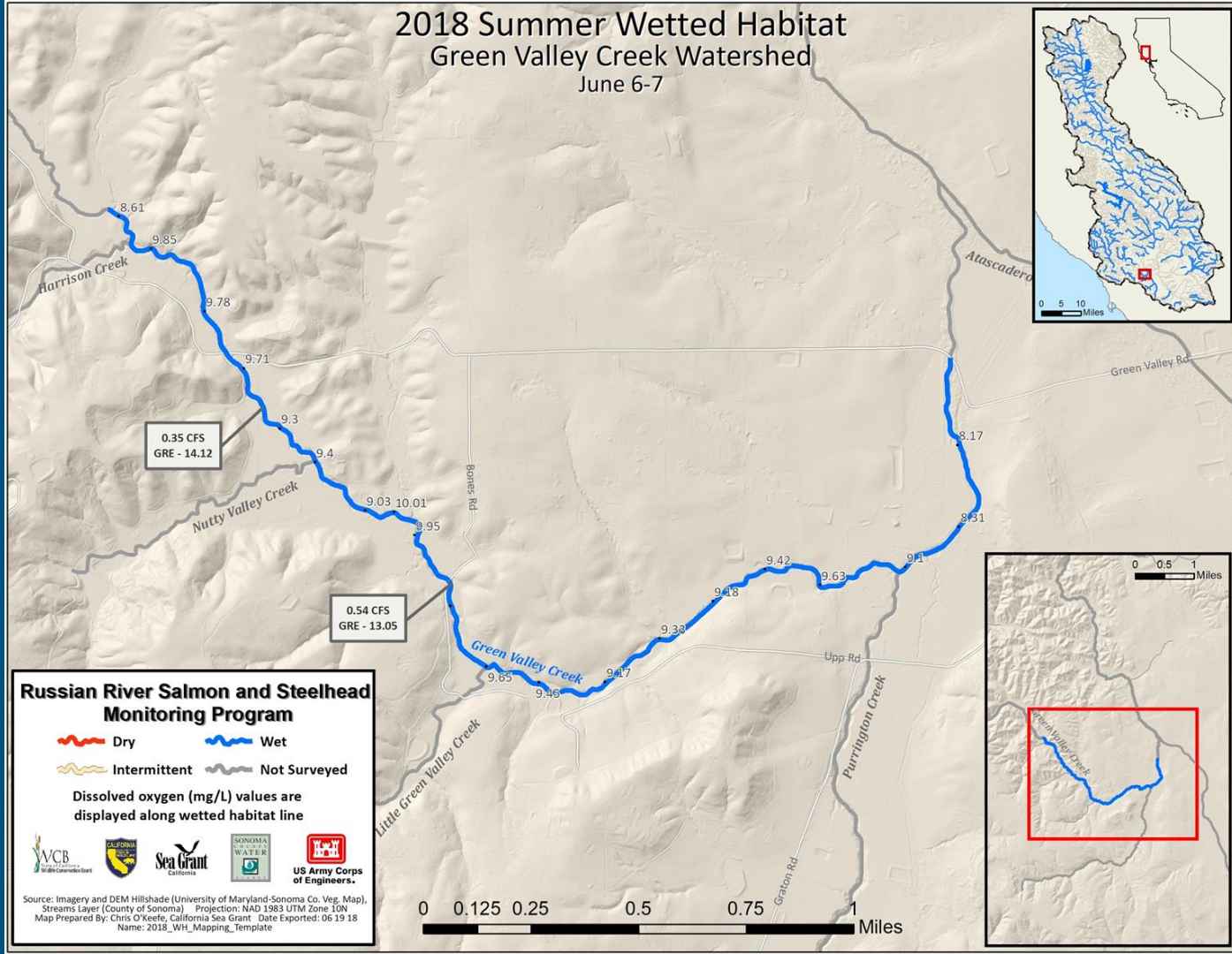
DO range:
8.85-9.94 mg/L



3.



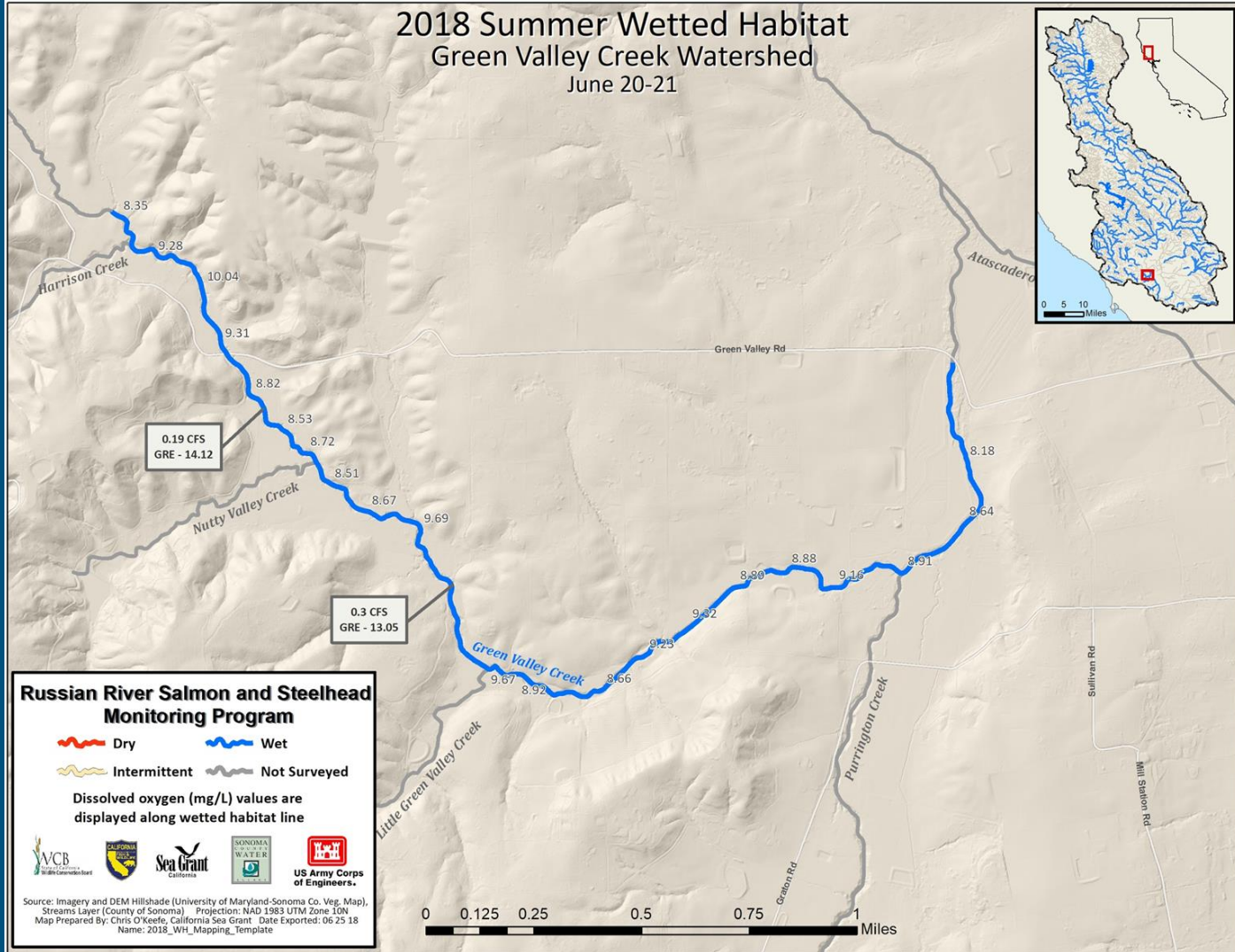
DO range:
8.17-10.01 mg/L



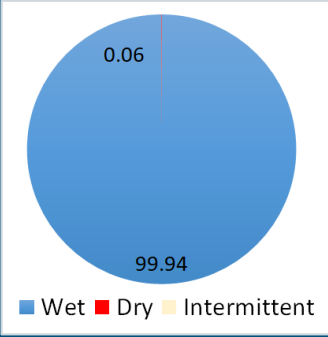
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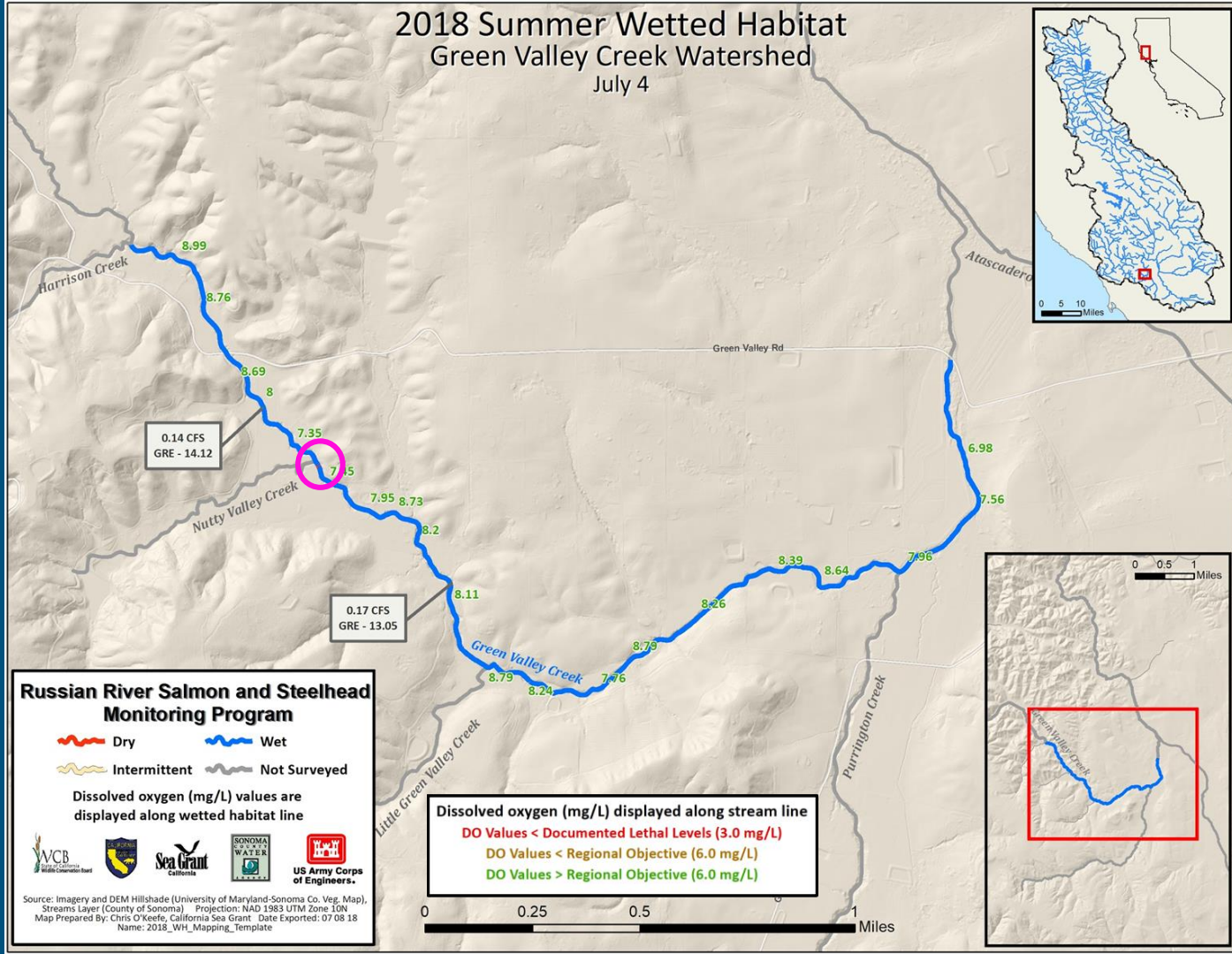
DO range:
8.18-10.04 mg/L



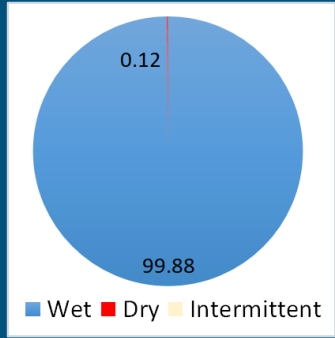
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DO range:
6.98-8.99 mg/L



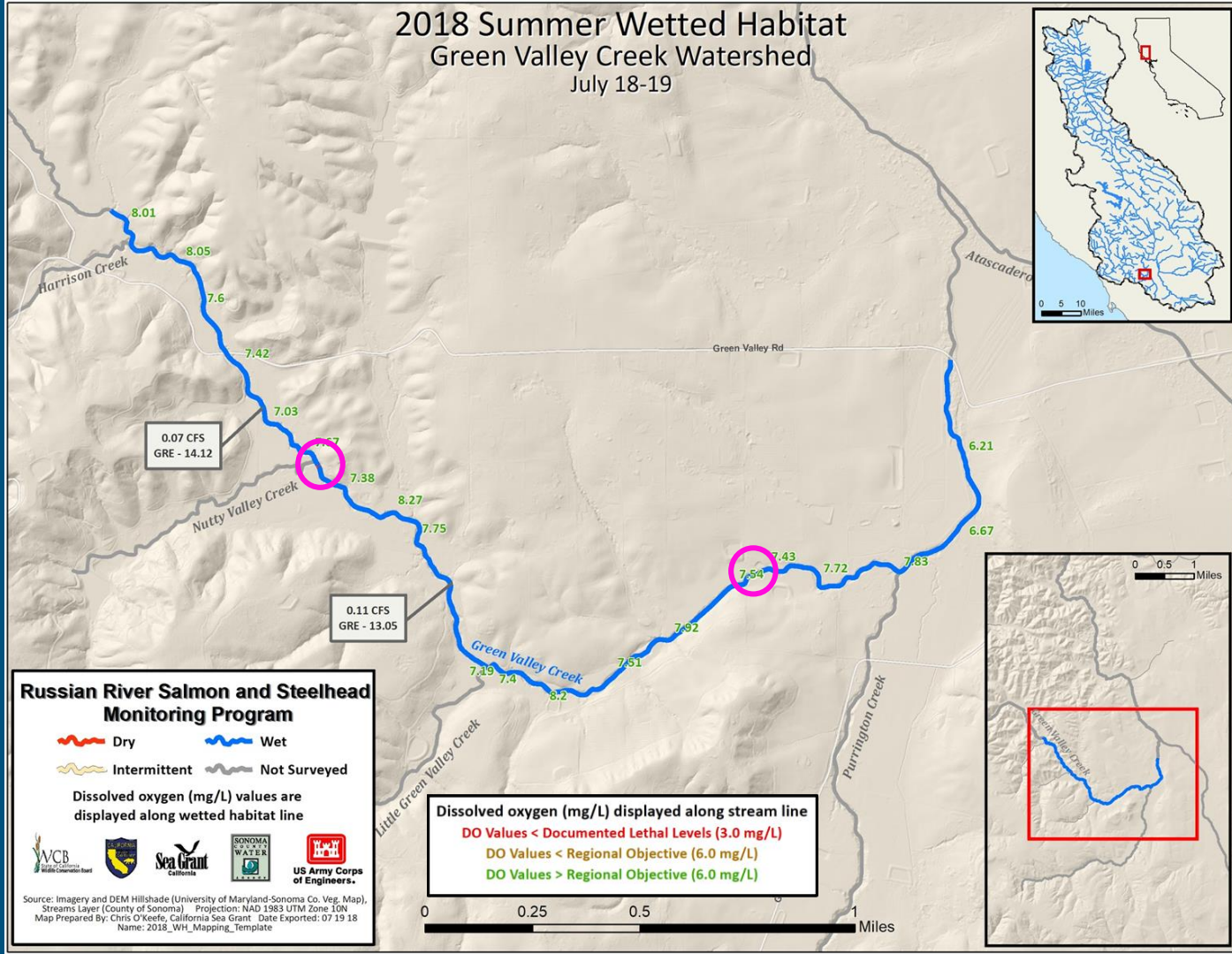
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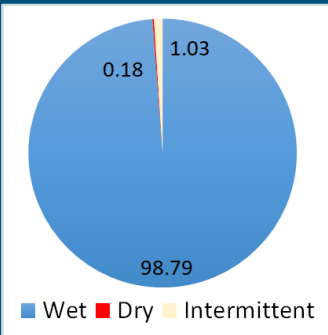
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6.21-8.27 mg/L

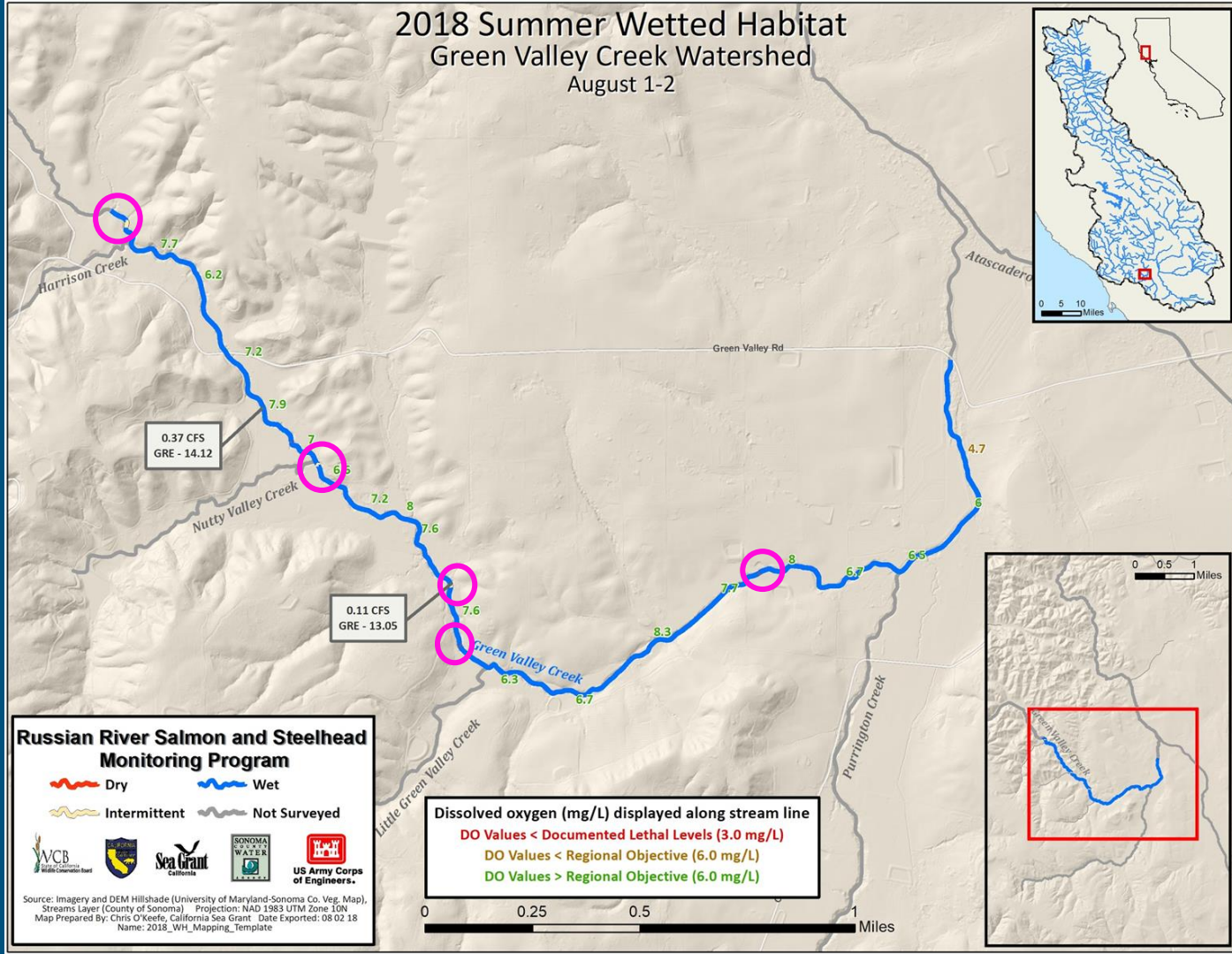
2018 Summer Wetted Habitat Green Valley Creek Watershed July 18-19



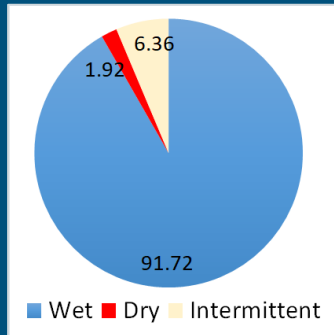
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DO range:
4.69-8.28 mg/L

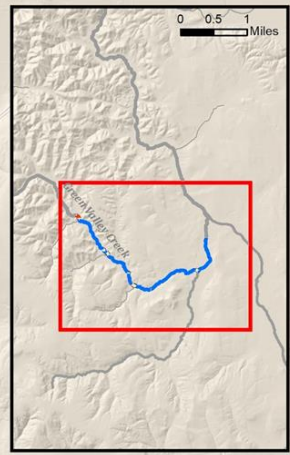
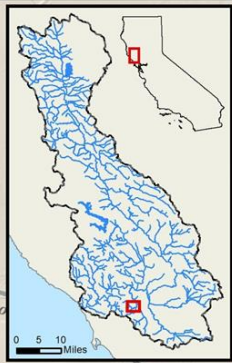
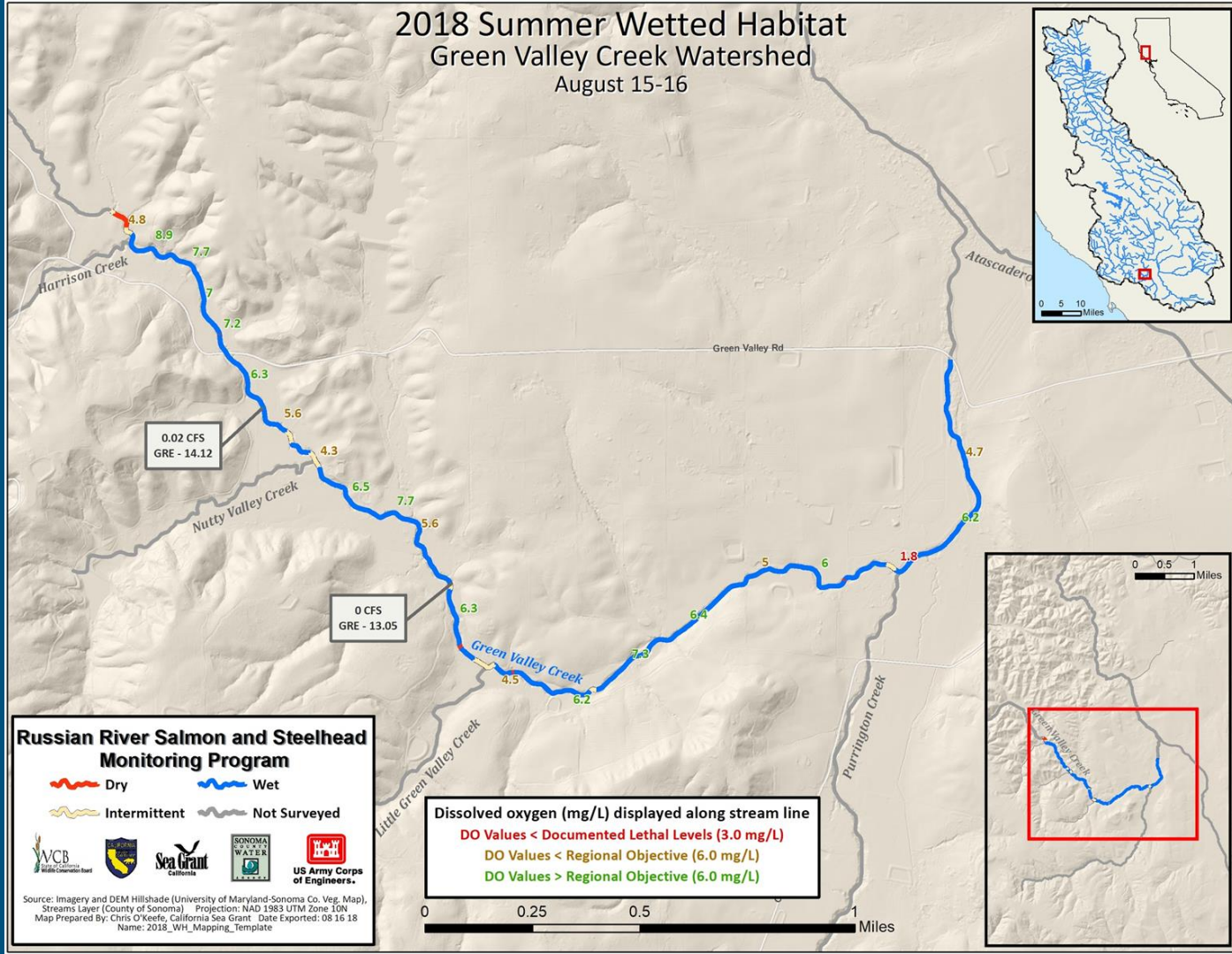


8.



DO range:
1.75-8.88 mg/L

2018 Summer Wetted Habitat Green Valley Creek Watershed August 15-16



Russian River Salmon and Steelhead Monitoring Program

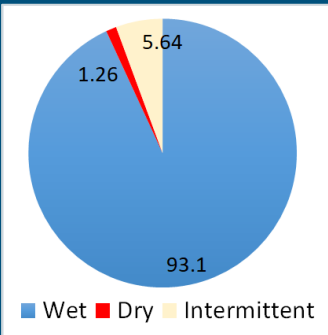
~ Dry ~ Wet
~ Intermittent ~ Not Surveyed

Dissolved oxygen (mg/L) displayed along stream line

● DO Values < Documented Lethal Levels (3.0 mg/L)
● DO Values < Regional Objective (6.0 mg/L)
● DO Values > Regional Objective (6.0 mg/L)

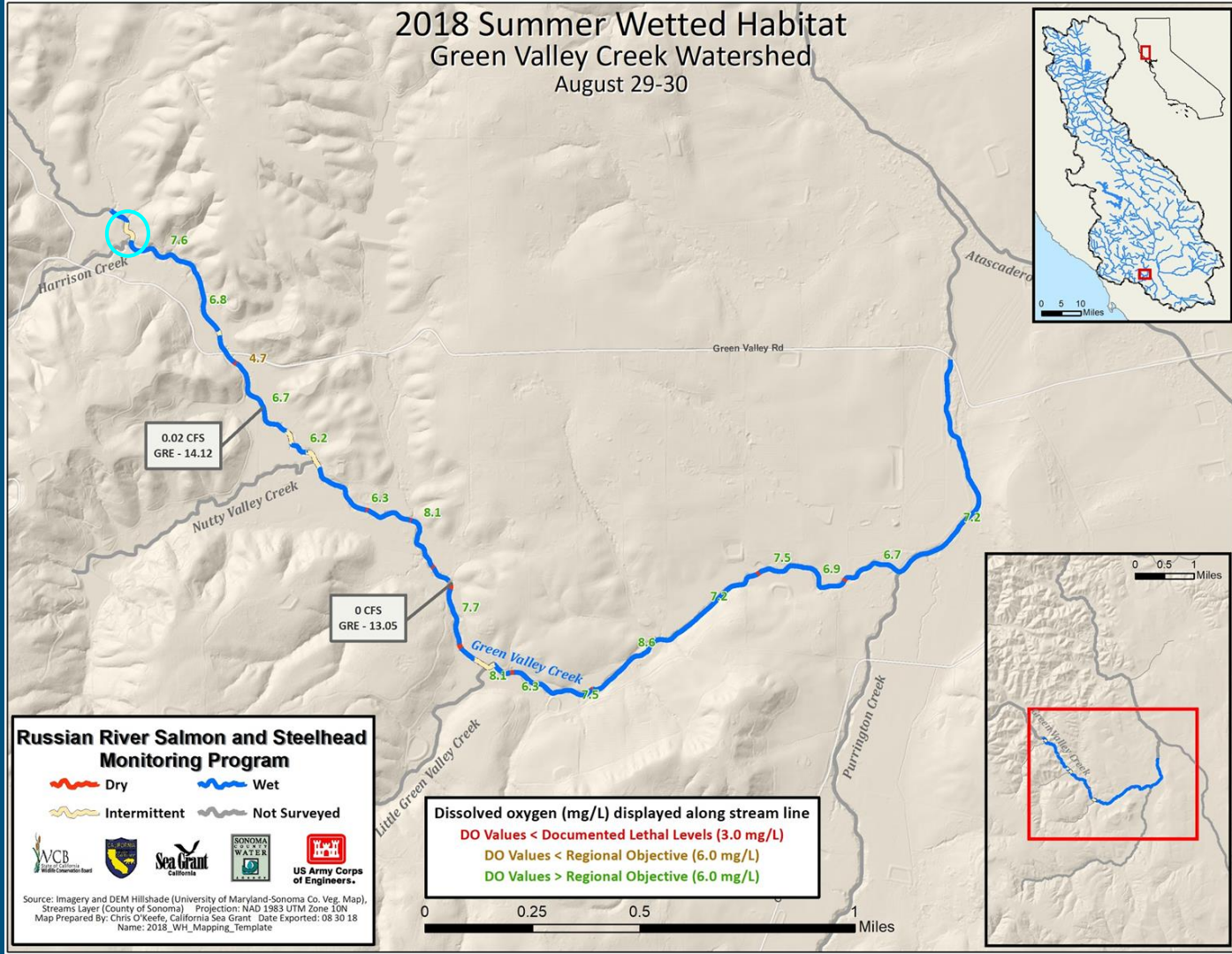
Source: Imagery and DEM Hillshade (University of Maryland-Sonoma Co. Veg. Map), Streams Layer (County of Sonoma) Projection: NAD 1983 UTM Zone 10N
 Map Prepared By: Chris O'Keefe, California Sea Grant Date Exported: 08 16 18
 Name: 2018_WH_Mapping_Template

9.



DO range:
1.22-8.62 mg/L

2018 Summer Wetted Habitat Green Valley Creek Watershed August 29-30



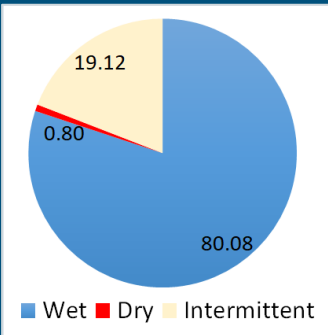
Russian River Salmon and Steelhead Monitoring Program

WCB
Sonoma State University
Sea Grant
Sonoma State University
US Army Corps of Engineers

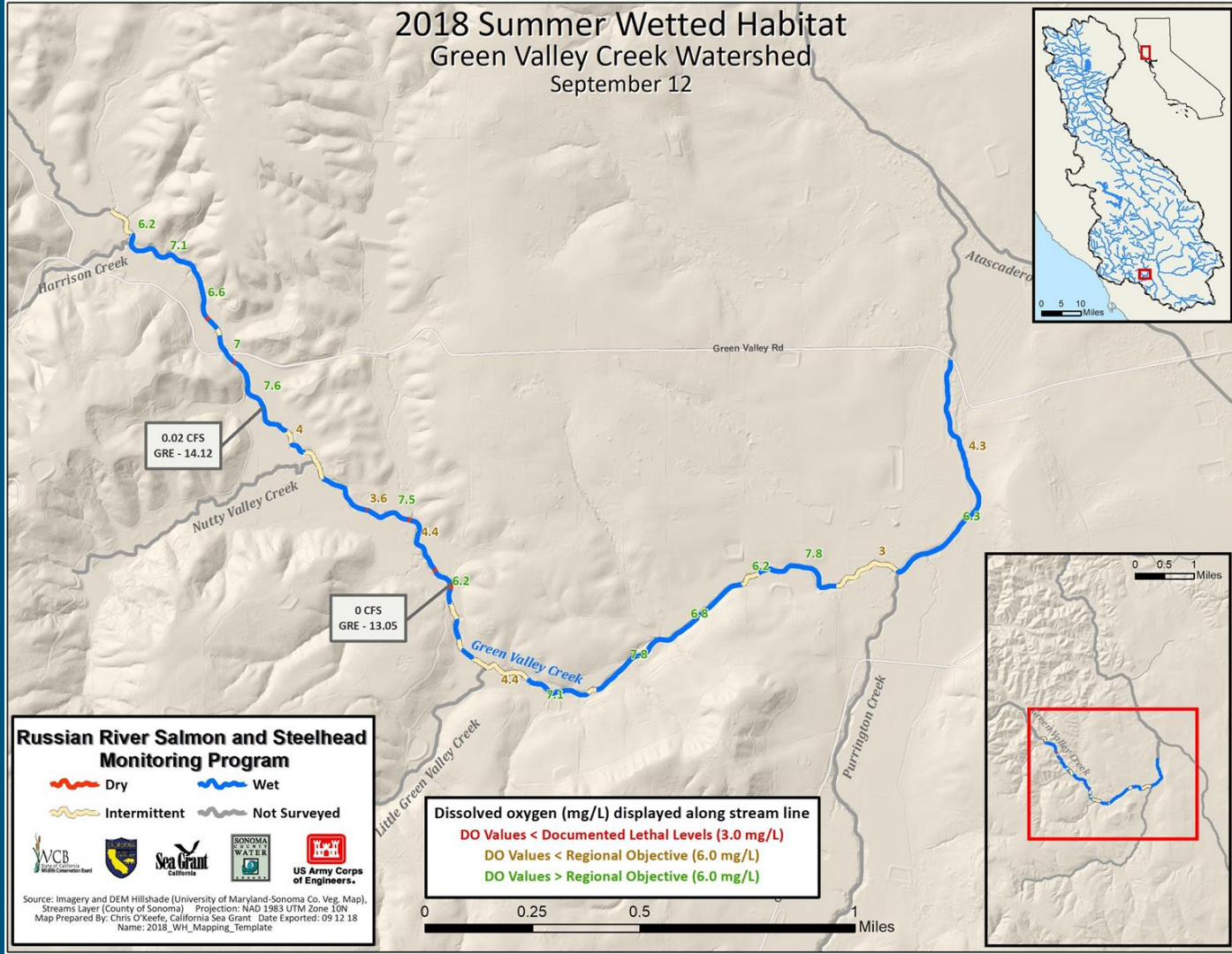
Dissolved oxygen (mg/L) displayed along stream line
 DO Values < Documented Lethal Levels (3.0 mg/L)
 DO Values < Regional Objective (6.0 mg/L)
 DO Values > Regional Objective (6.0 mg/L)

Source: Imagery and DEM Hillshade (University of Maryland-Sonoma Co. Veg. Map), Streams Layer (County of Sonoma) Projection: NAD 1983 UTM Zone 10N
 Map Prepared By: Chris O'Keefe, California Sea Grant Date Exported: 08/30/18
 Name: 2018_WH_Mapping_Template

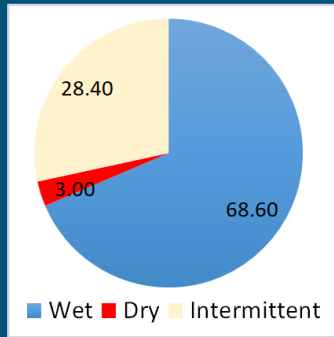
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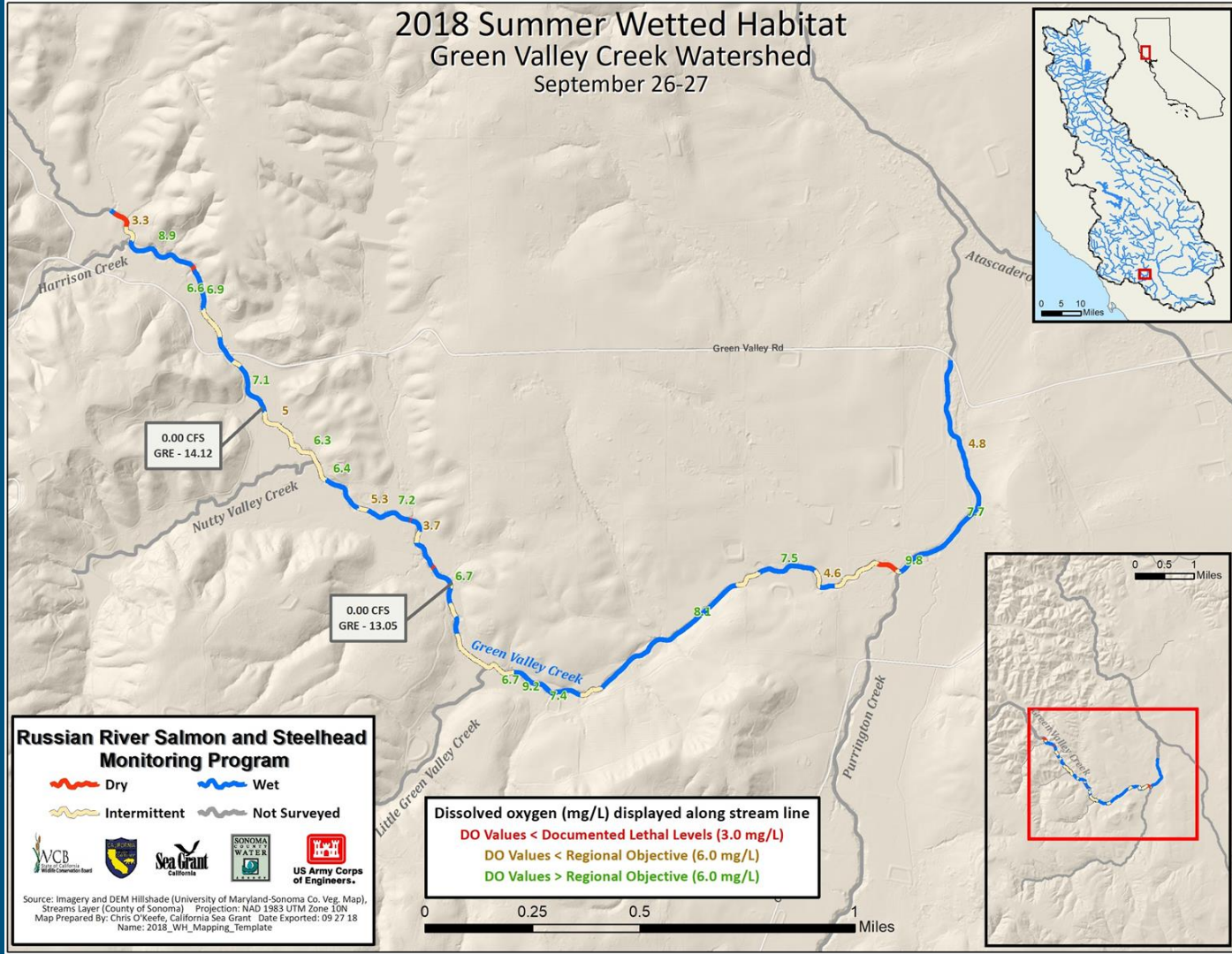
DO range:
3.00-7.82 mg/L



11.



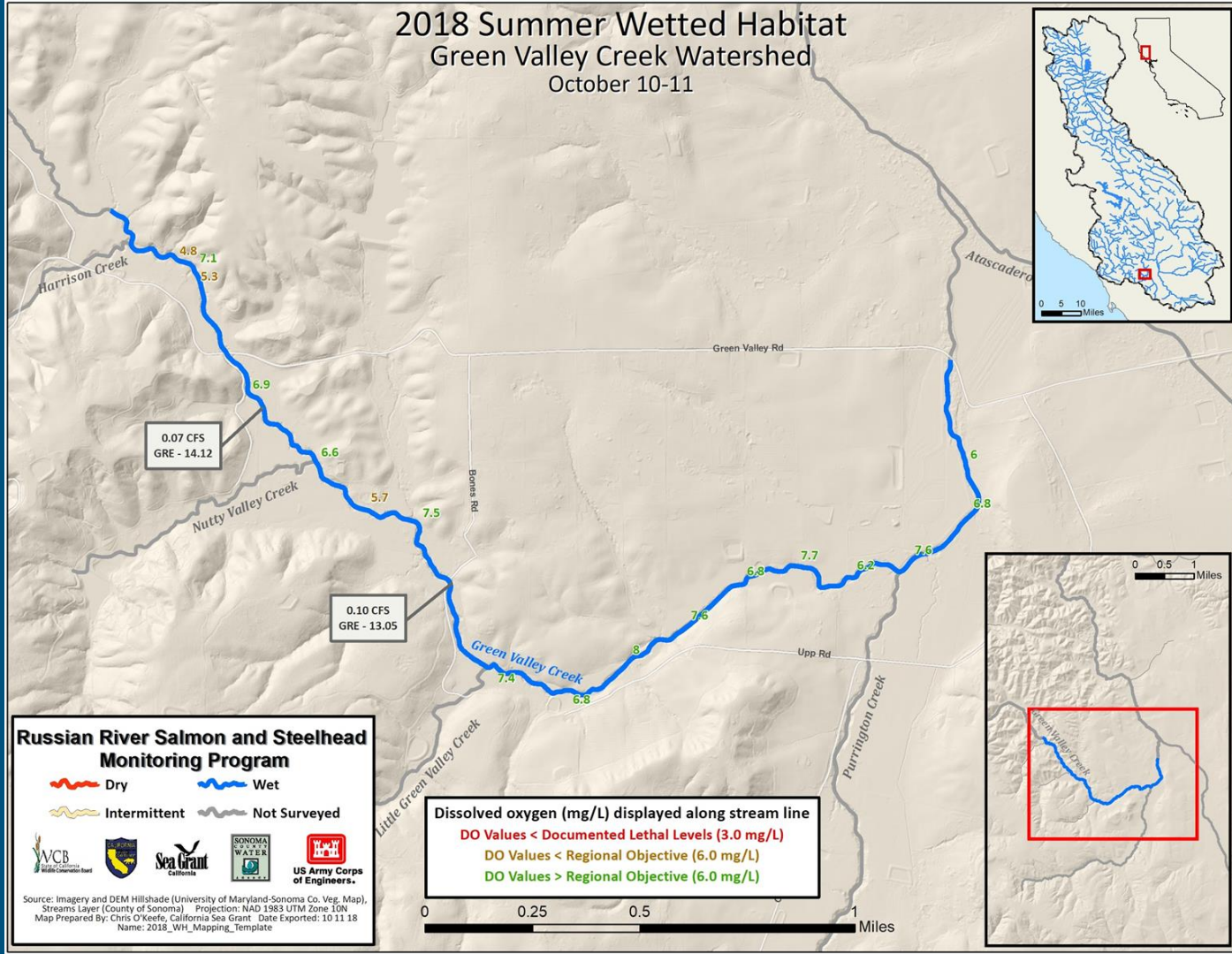
DO range:
3.33-9.79 mg/L



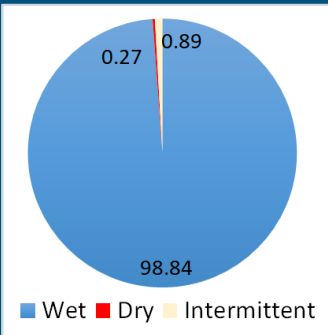
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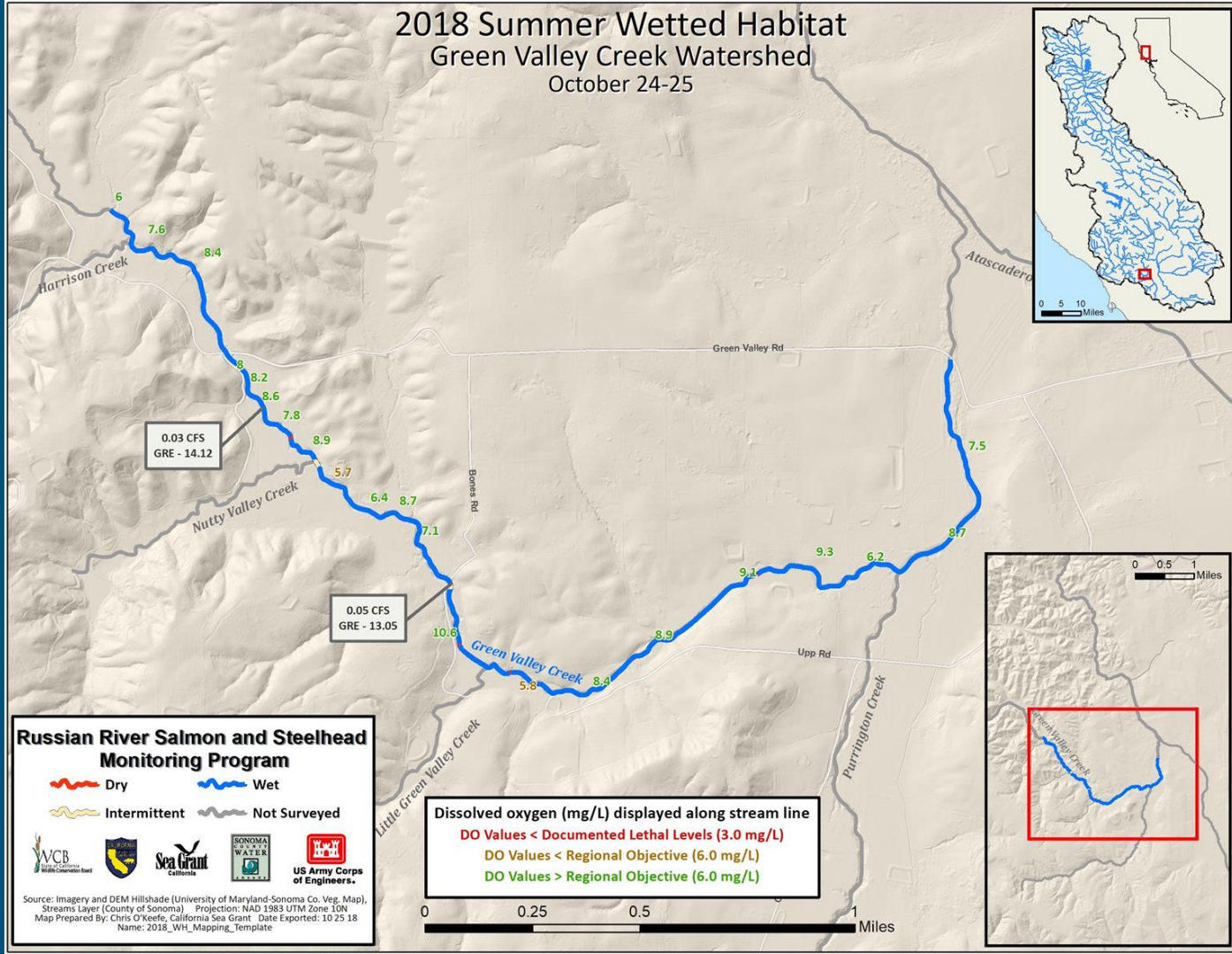
DO range:
4.76-7.47 mg/L



13.



DO range:
5.72-10.61 mg/L

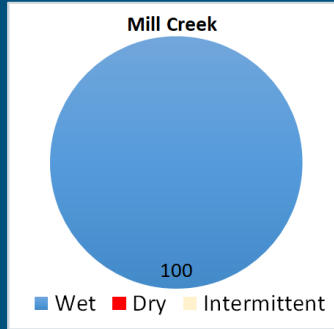




Mill Creek

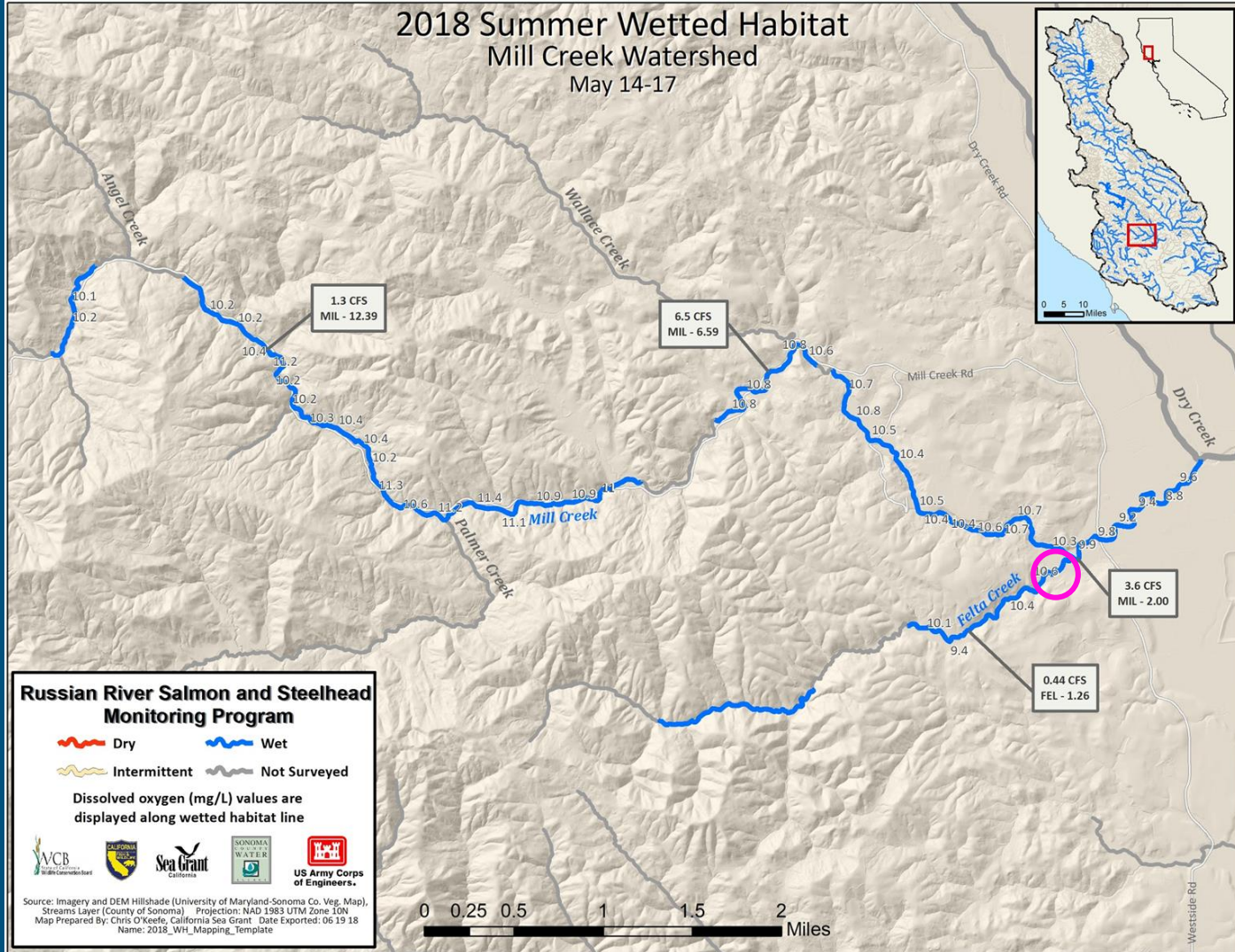
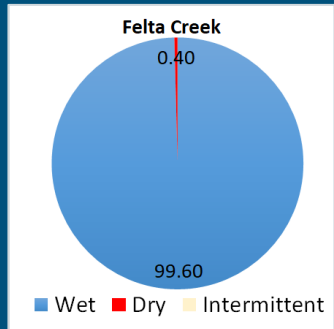
10/18/2018, looking upstream towards Westside Road, rKm 0.57

1.

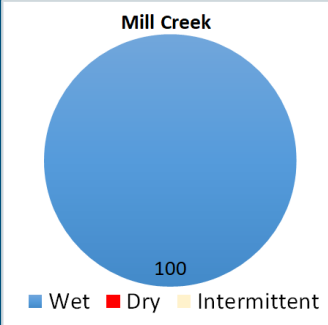


8.76-11.40 mg/L

9.37-10.62 mg/L

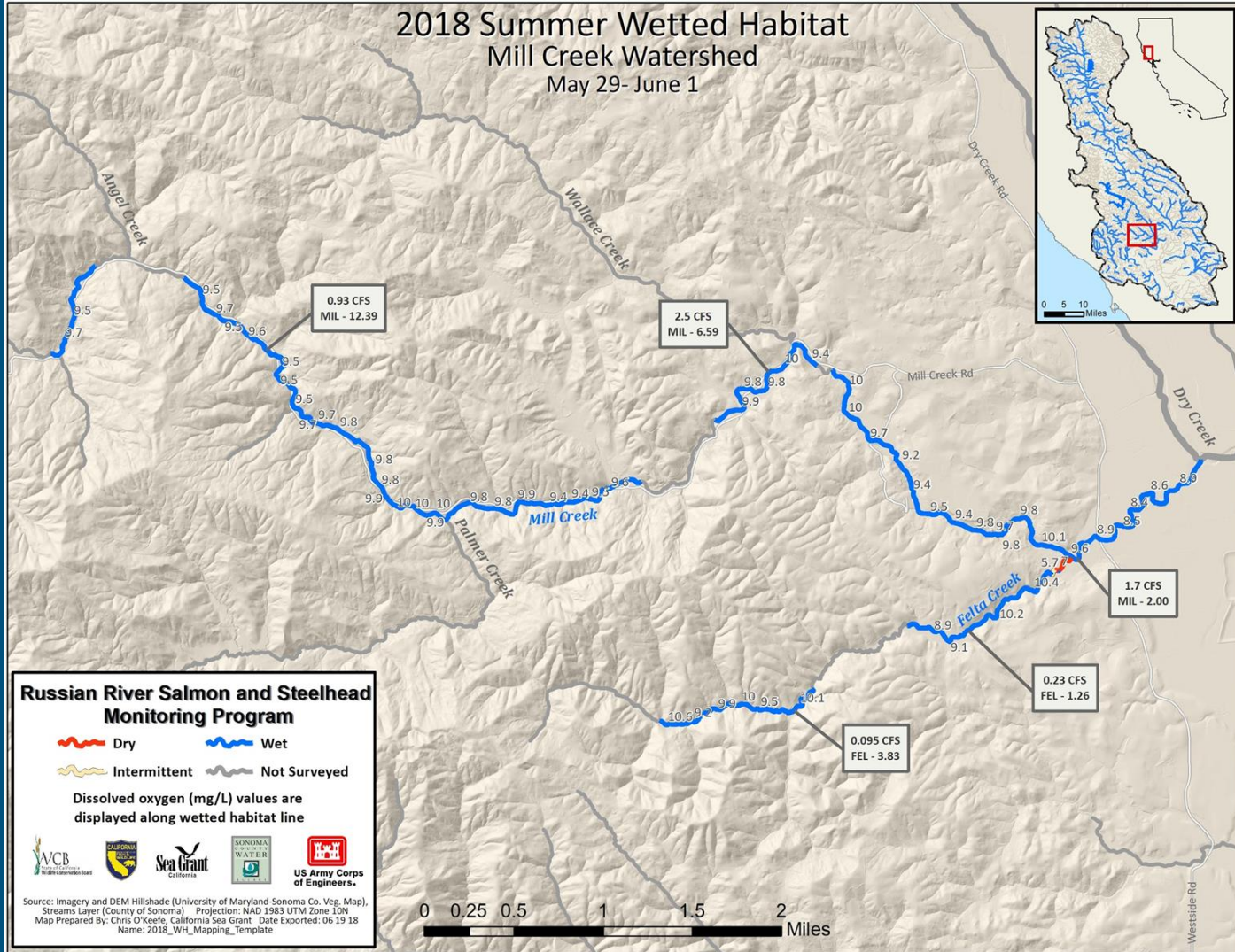
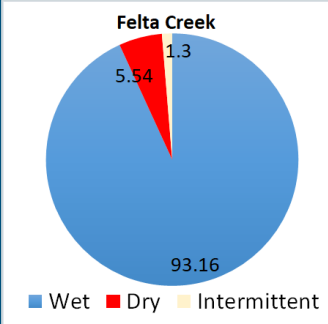


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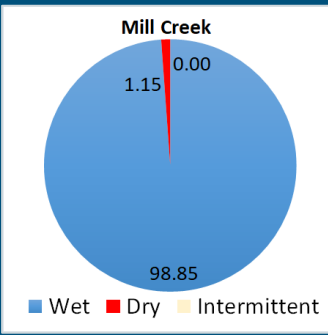


8.37-10.06 mg/L

9.20-10.62 mg/L

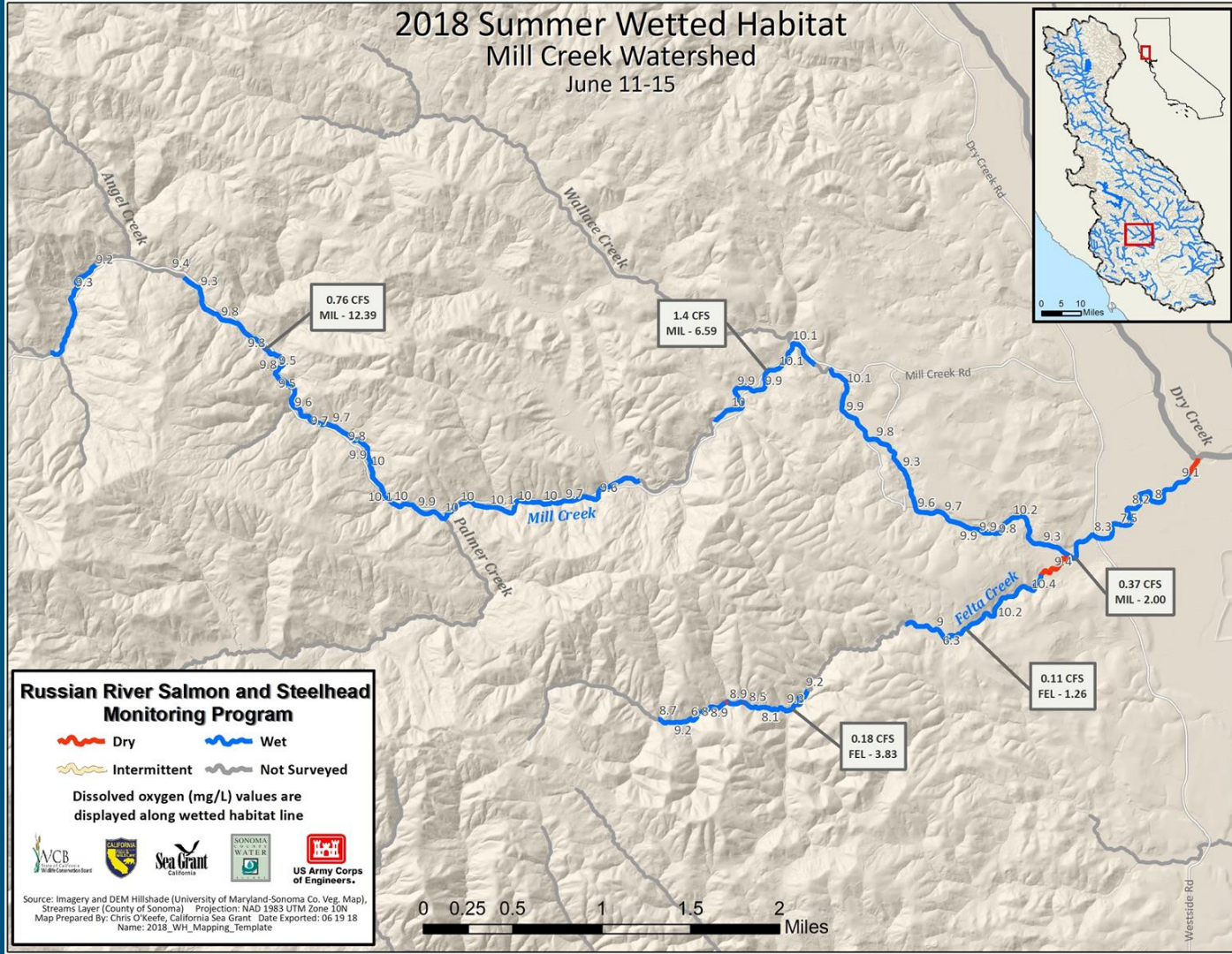
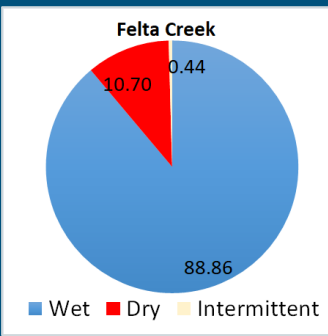


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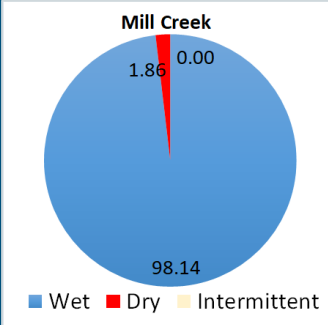


7.47-10.15 mg/L

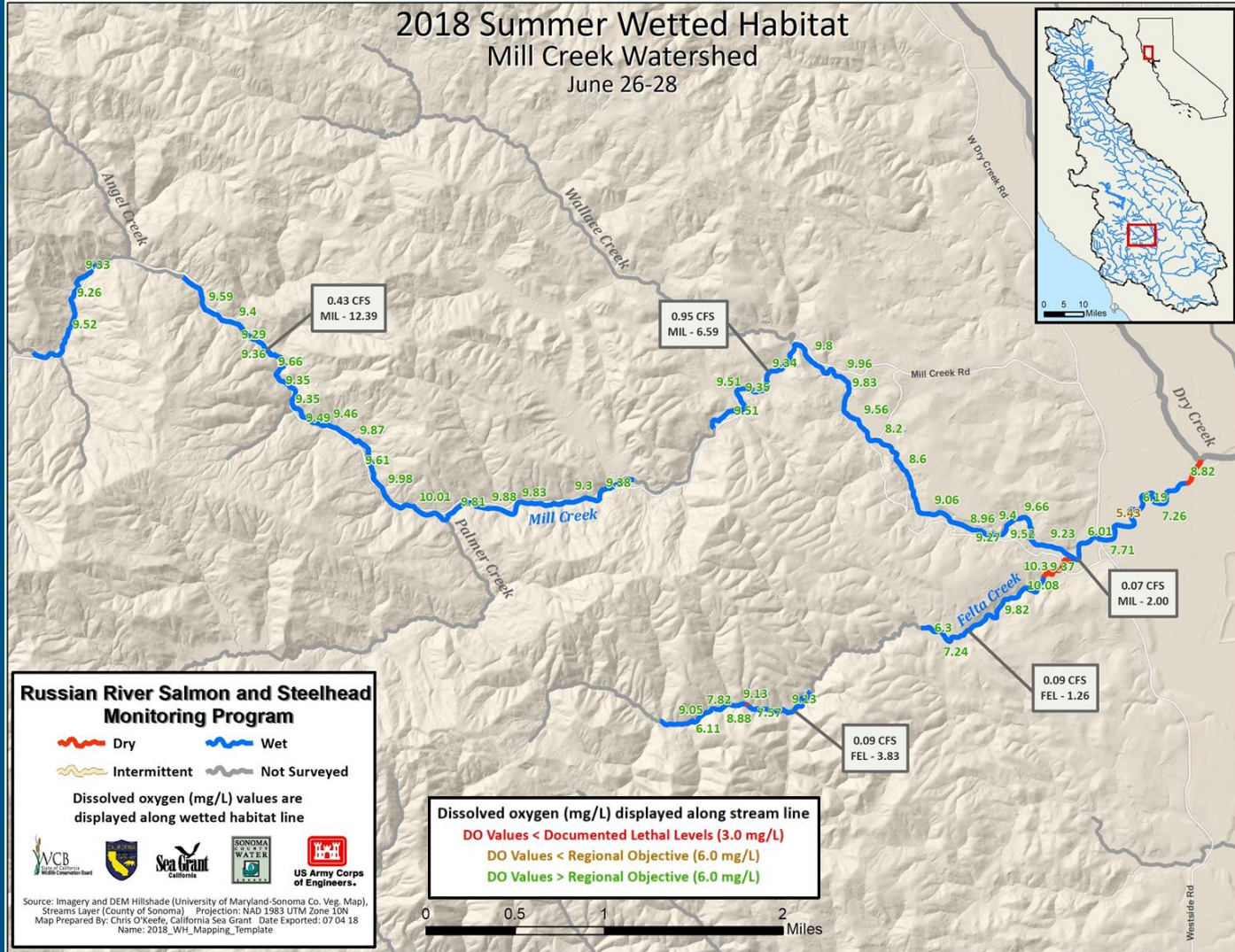
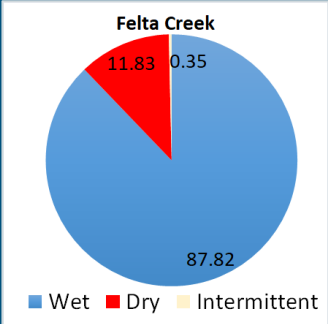
5.70-10.41 mg/L



4.

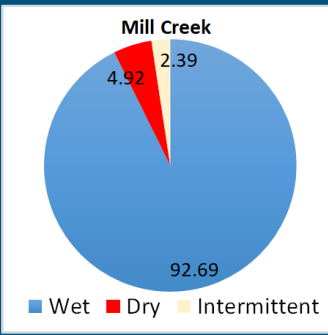


5.43-10.01 mg/L
6.11-10.30 mg/L

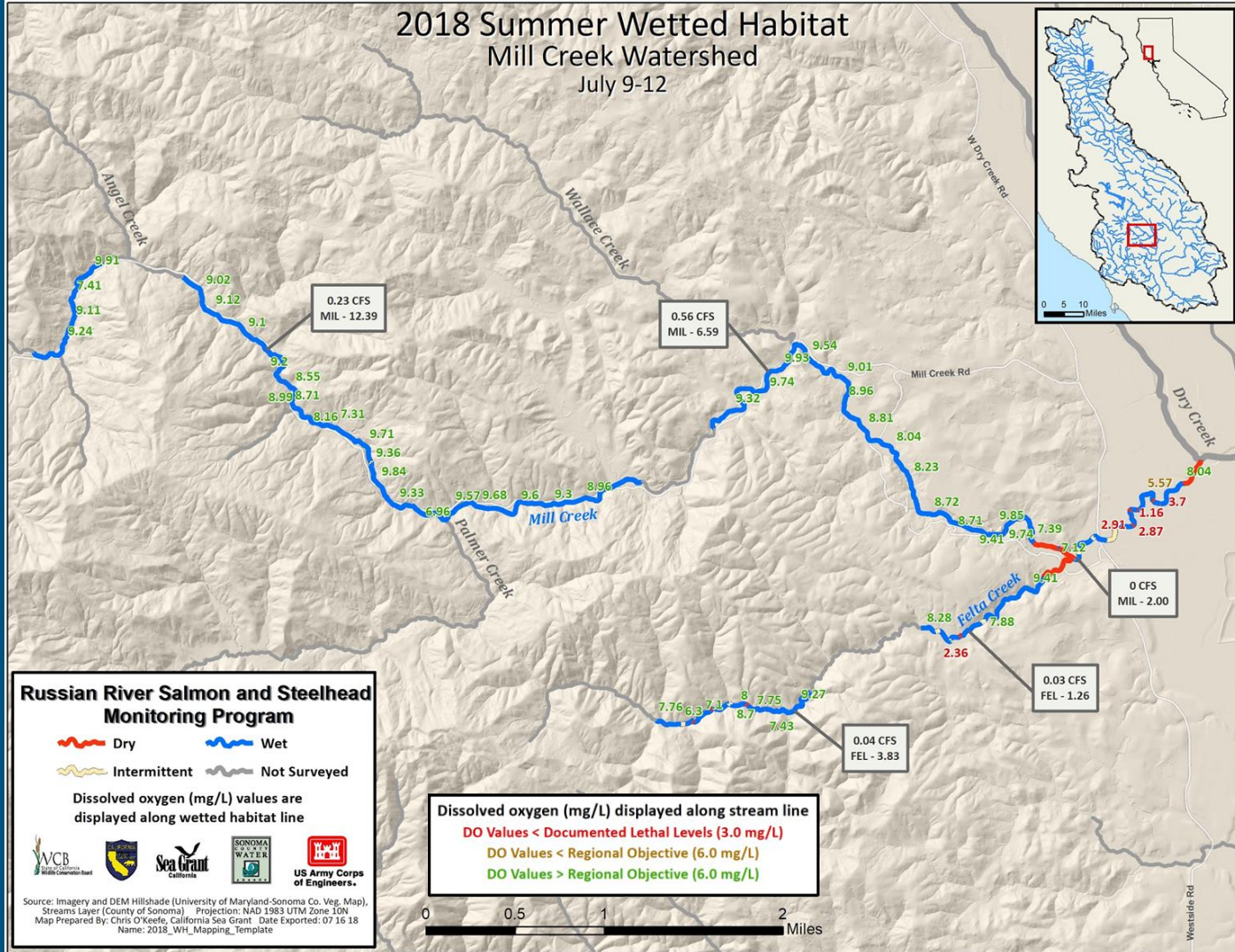
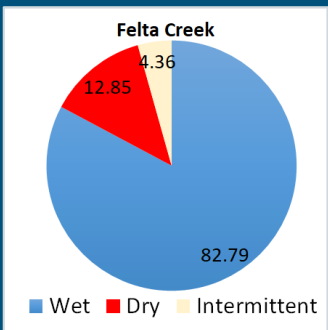


Source: Imagery and DEM Hillshade (University of Maryland-Sonoma Co. Veg. Map), Streams Layer (County of Sonoma) Projection: NAD 1983 UTM Zone 10N
Map Prepared By: Chris O'Keefe, California Sea Grant Date Exported: 07 04 18
Name: 2018_WH_Mapping_Template

5.

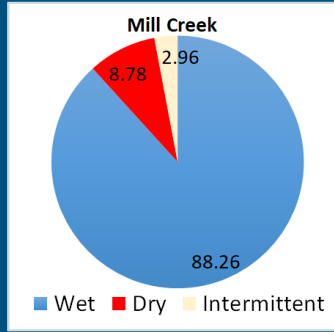


1.16-9.94 mg/L
1.17-9.41 mg/L

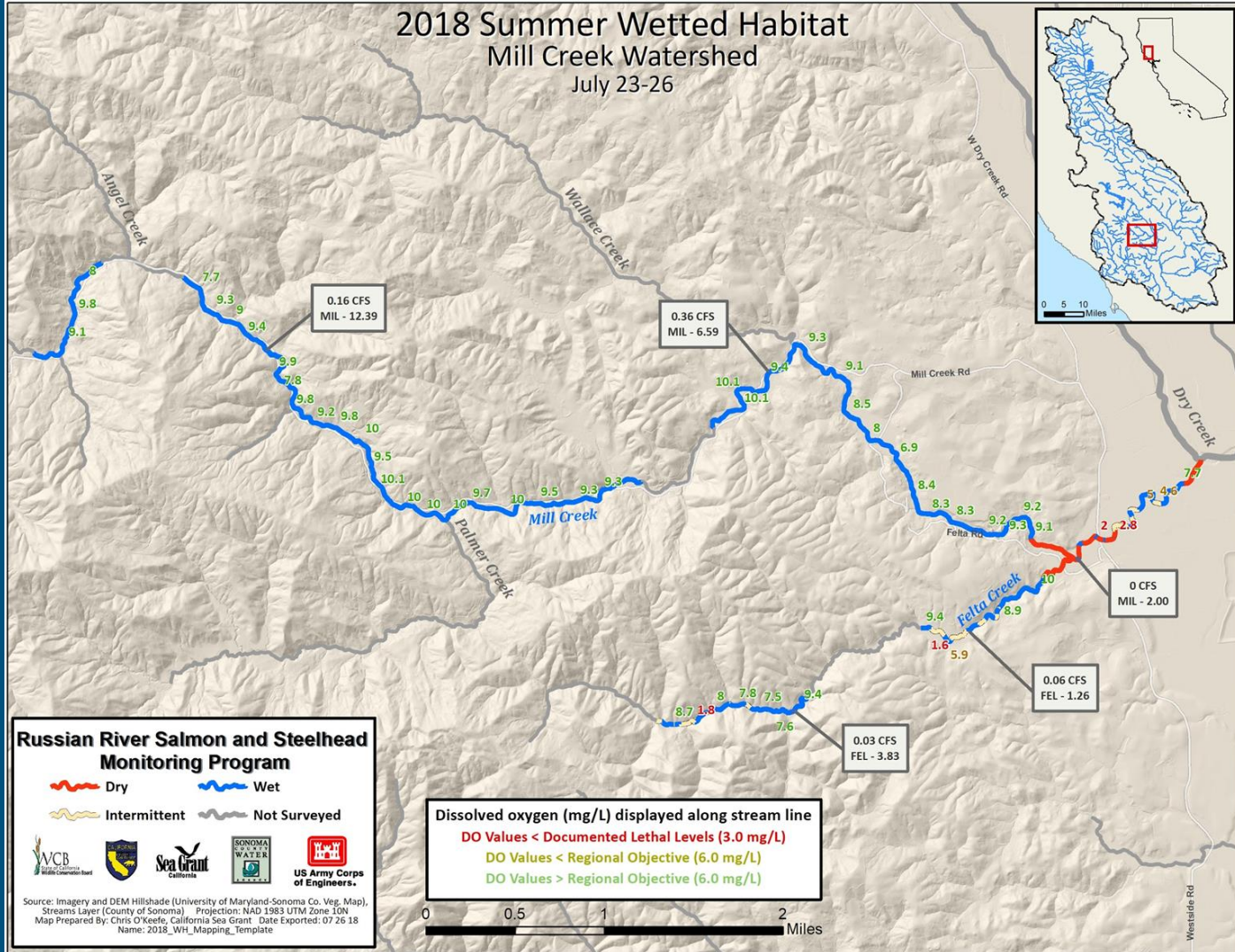
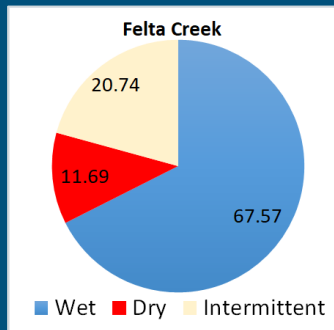


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Map Prepared By: Chris O'Keefe, California Sea Grant Date Exported: 07 16 18
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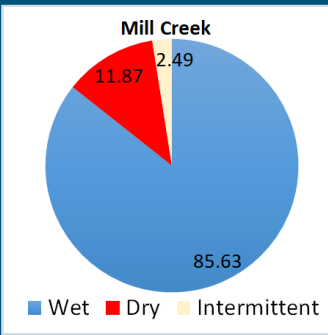
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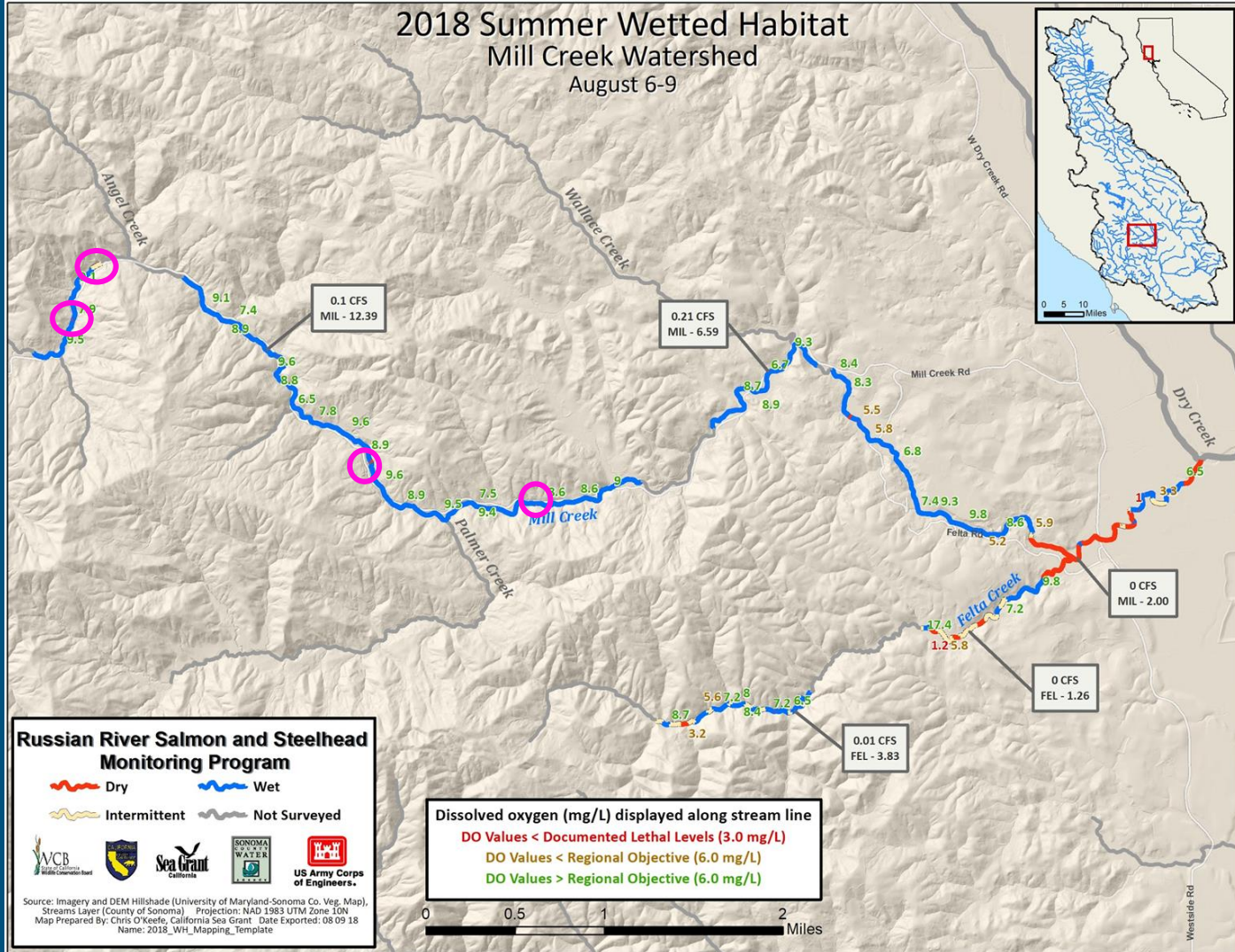
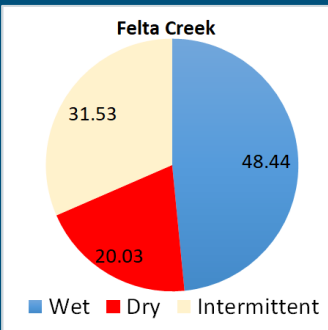
1.97-10.11 mg/L
1.55-10.42 mg/L



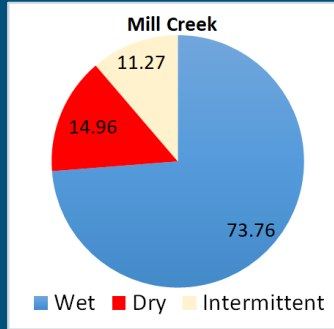
7.



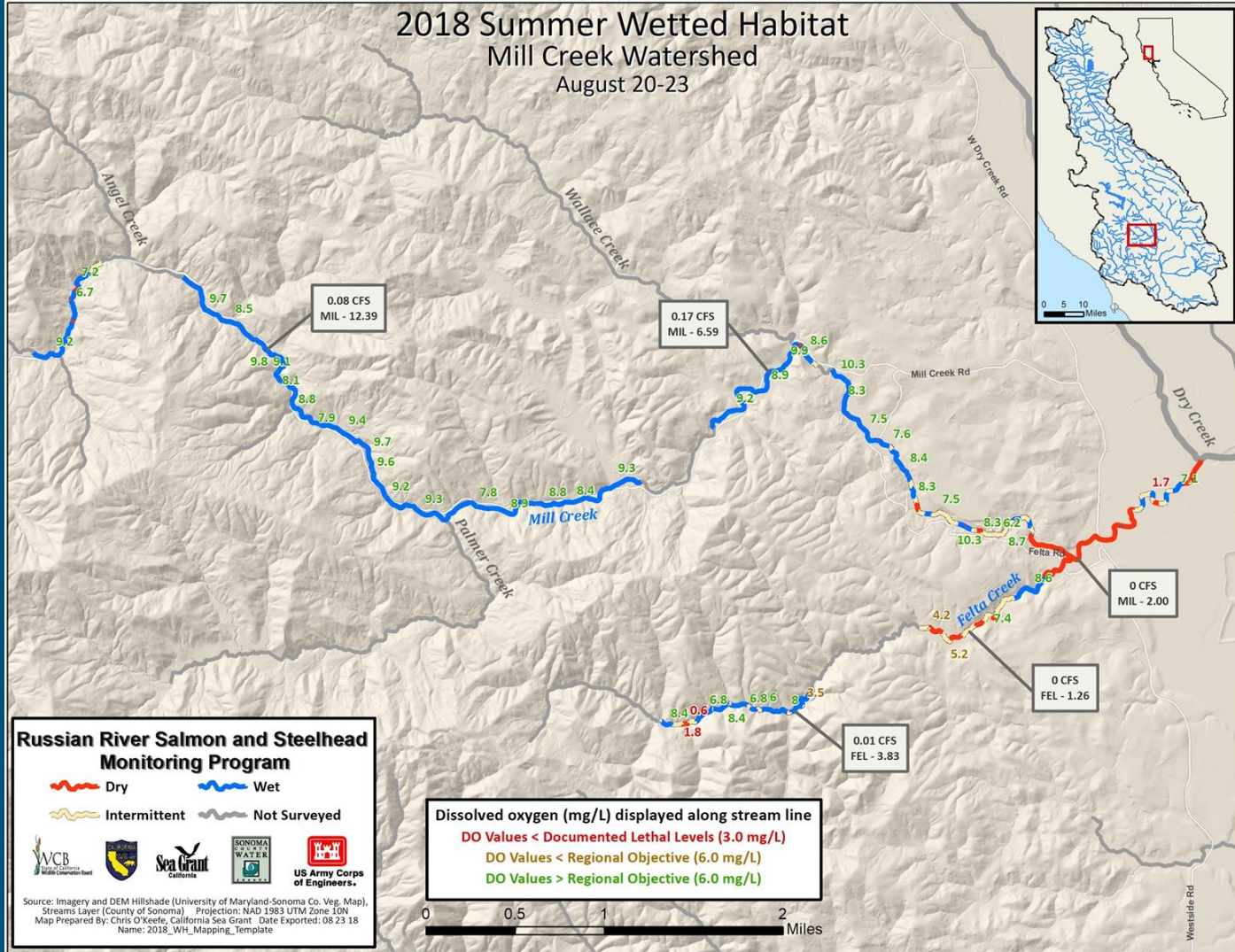
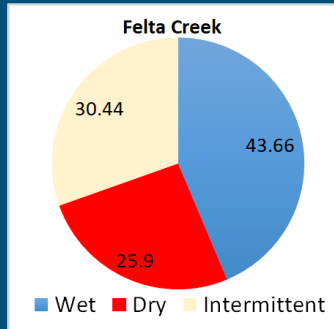
0.96-9.81 mg/L
1.20-9.79 mg/L



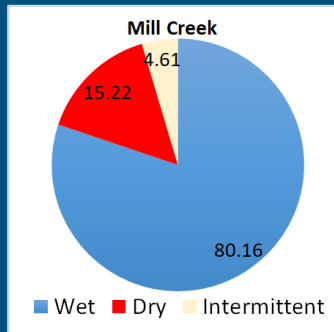
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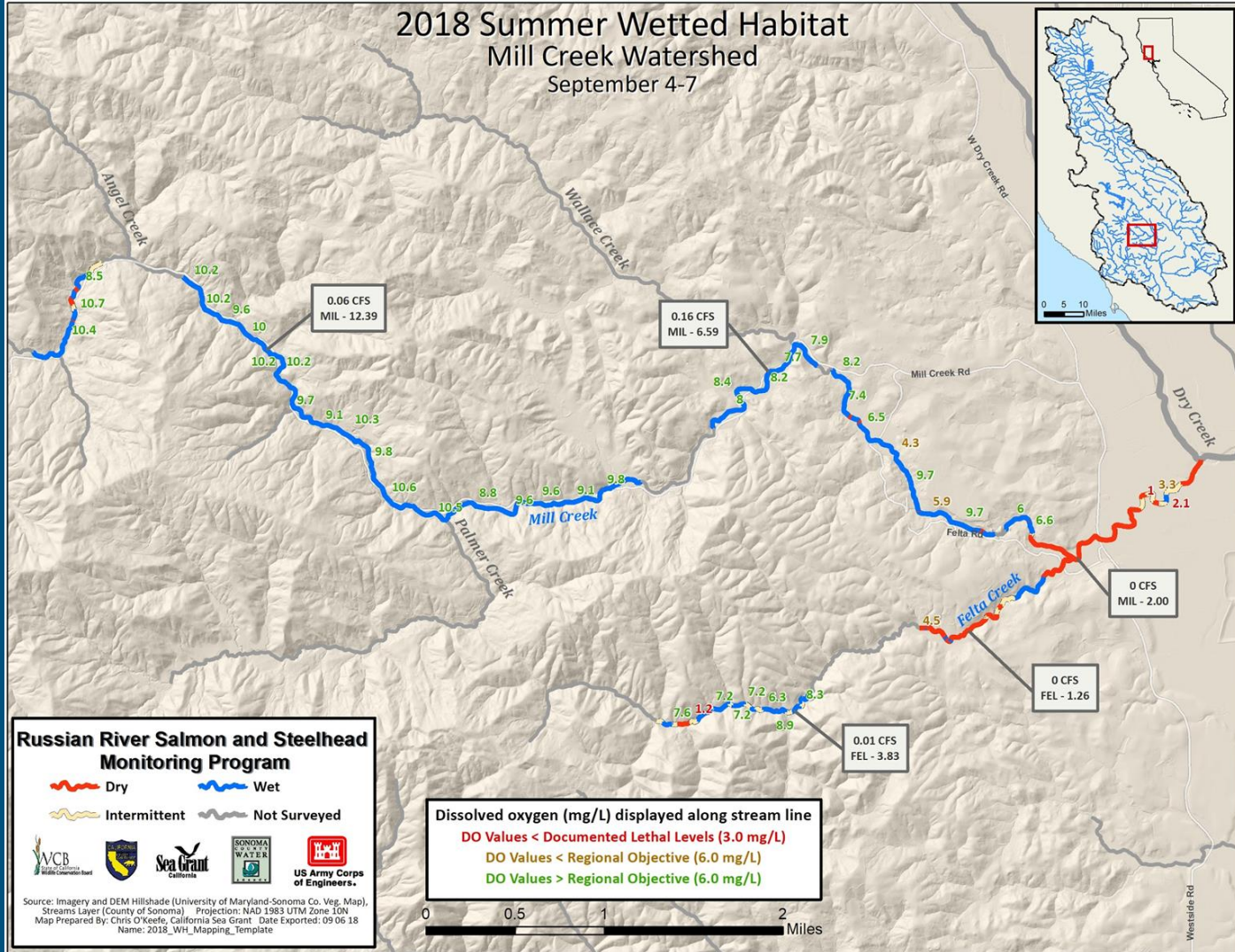
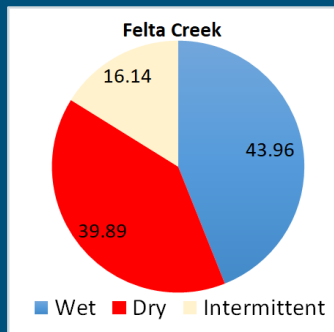
1.73-10.25 mg/L
0.60-9.33 mg/L



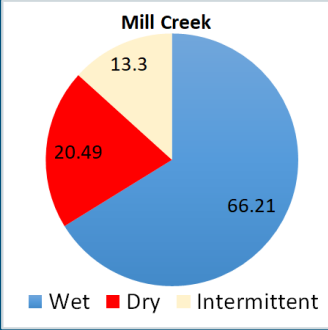
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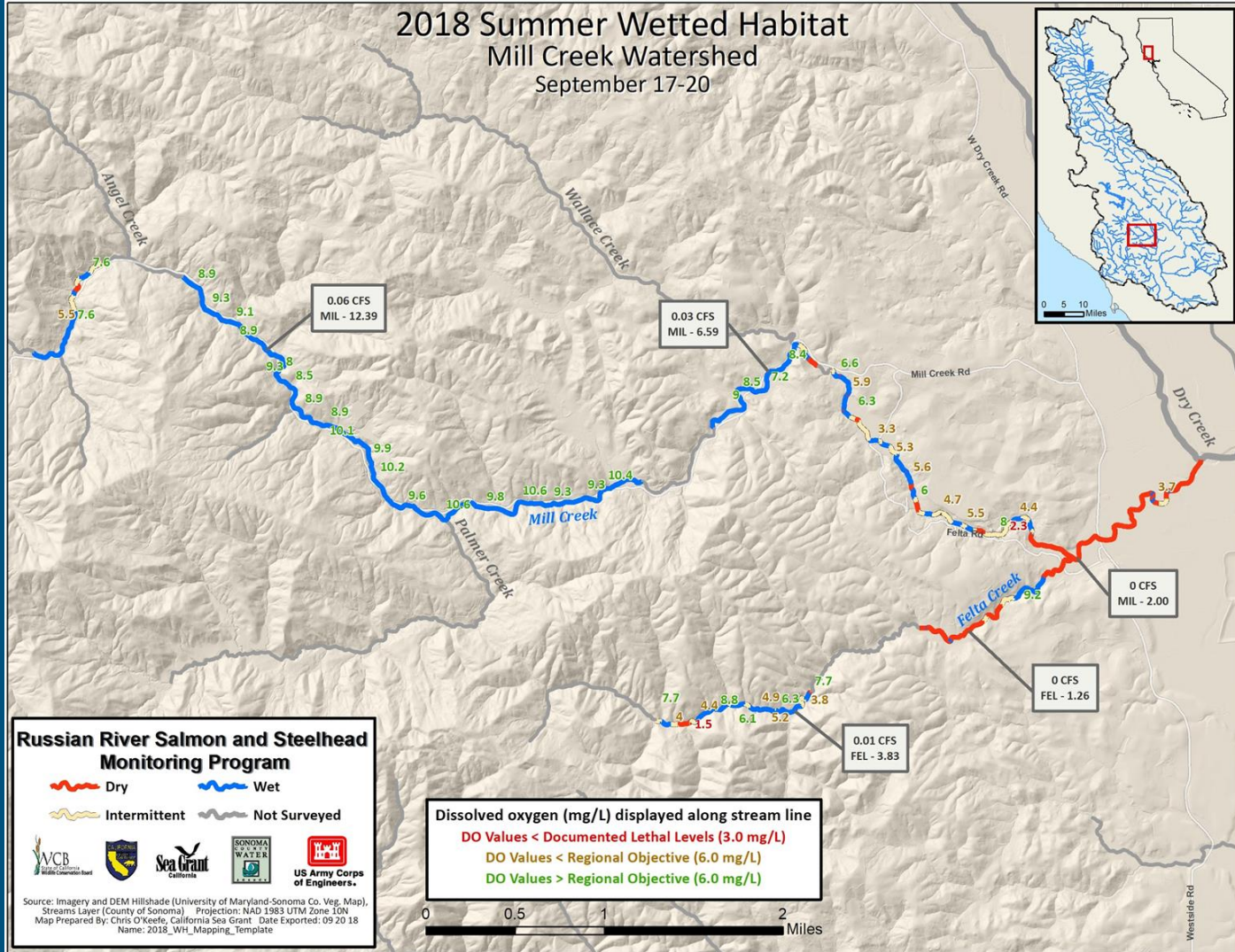
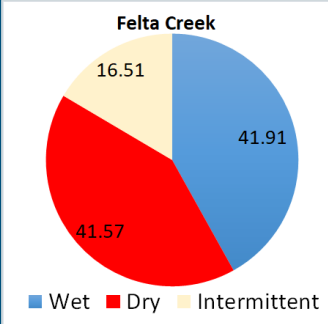
1.01-10.73 mg/L
1.22-9.49 mg/L



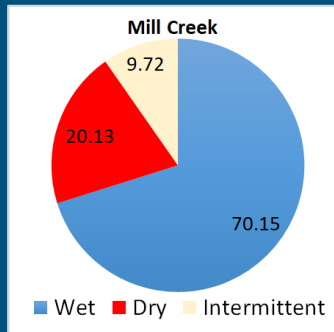
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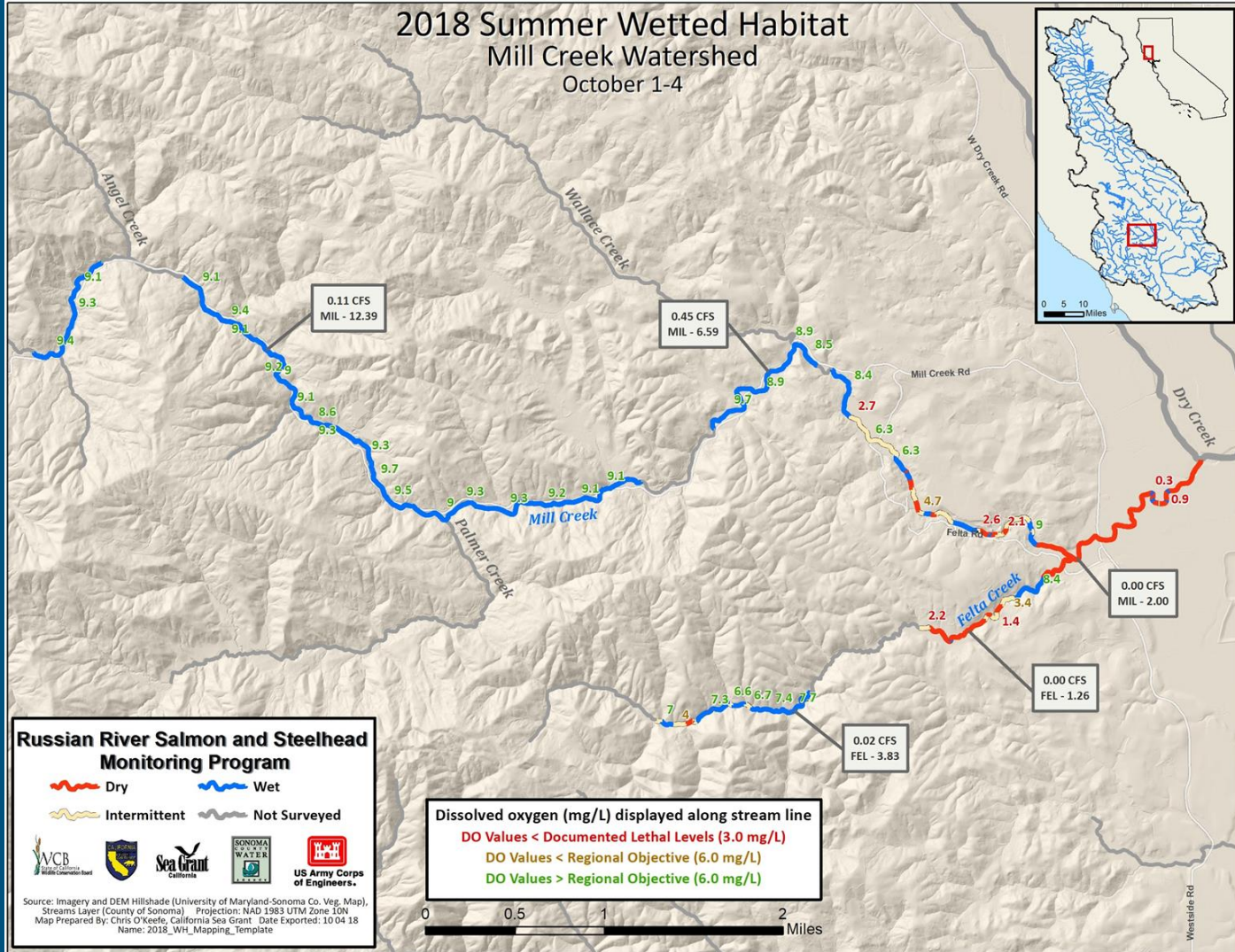
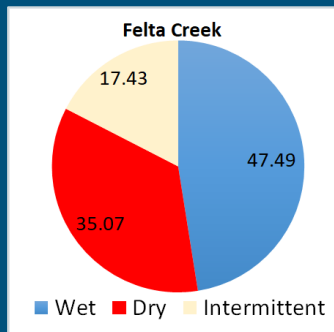
2.30-10.64 mg/L
1.52-9.15 mg/L



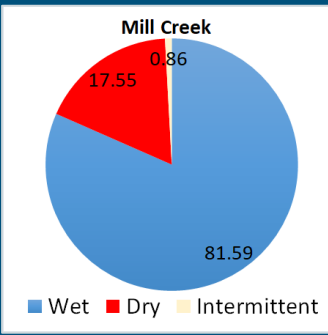
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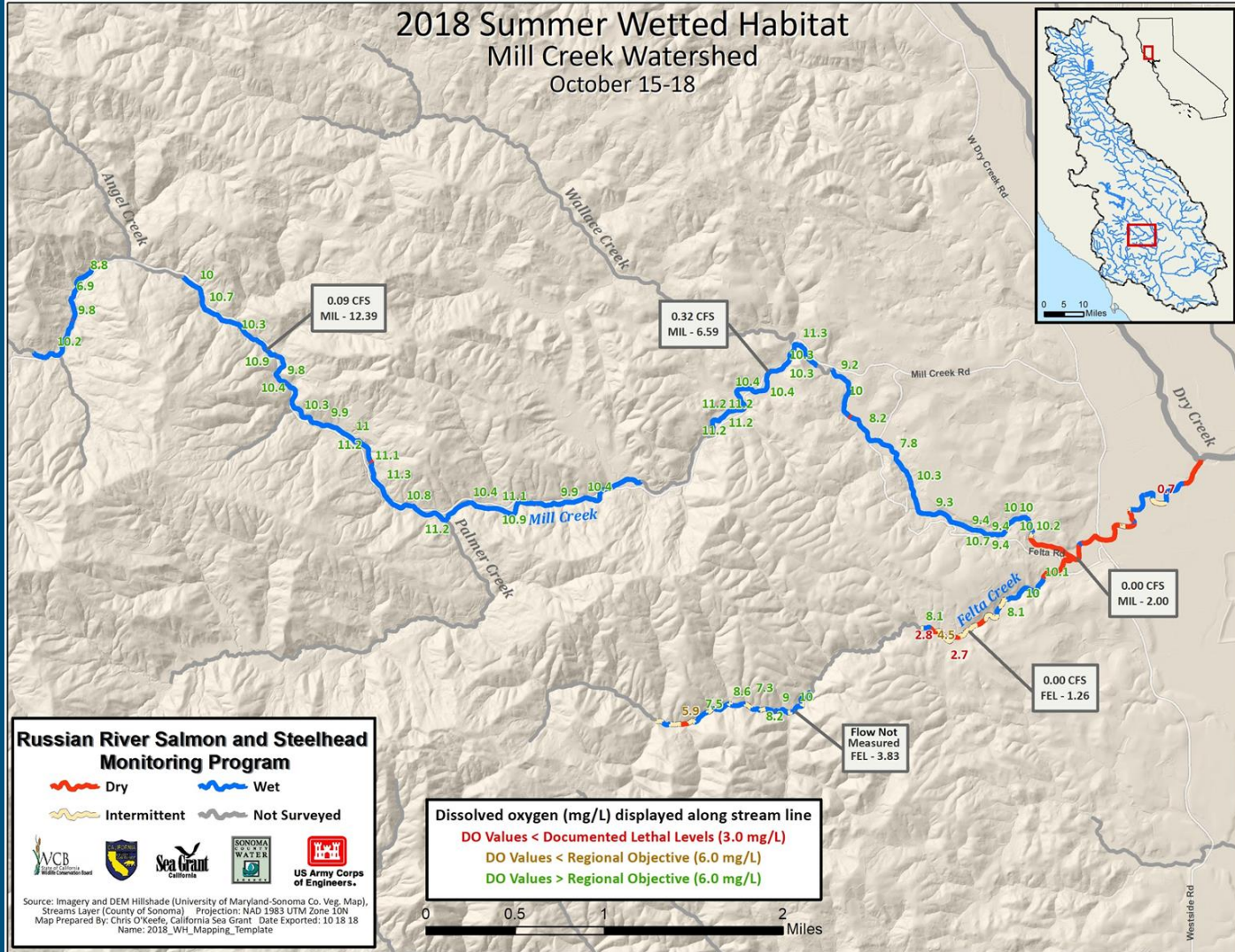
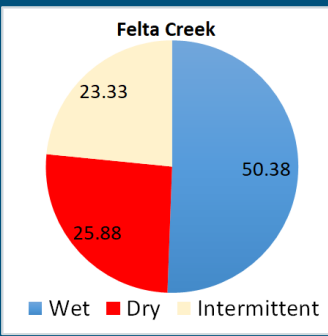
0.26-9.74 mg/L
1.40-8.42 mg/L



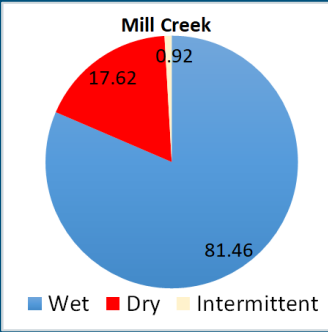
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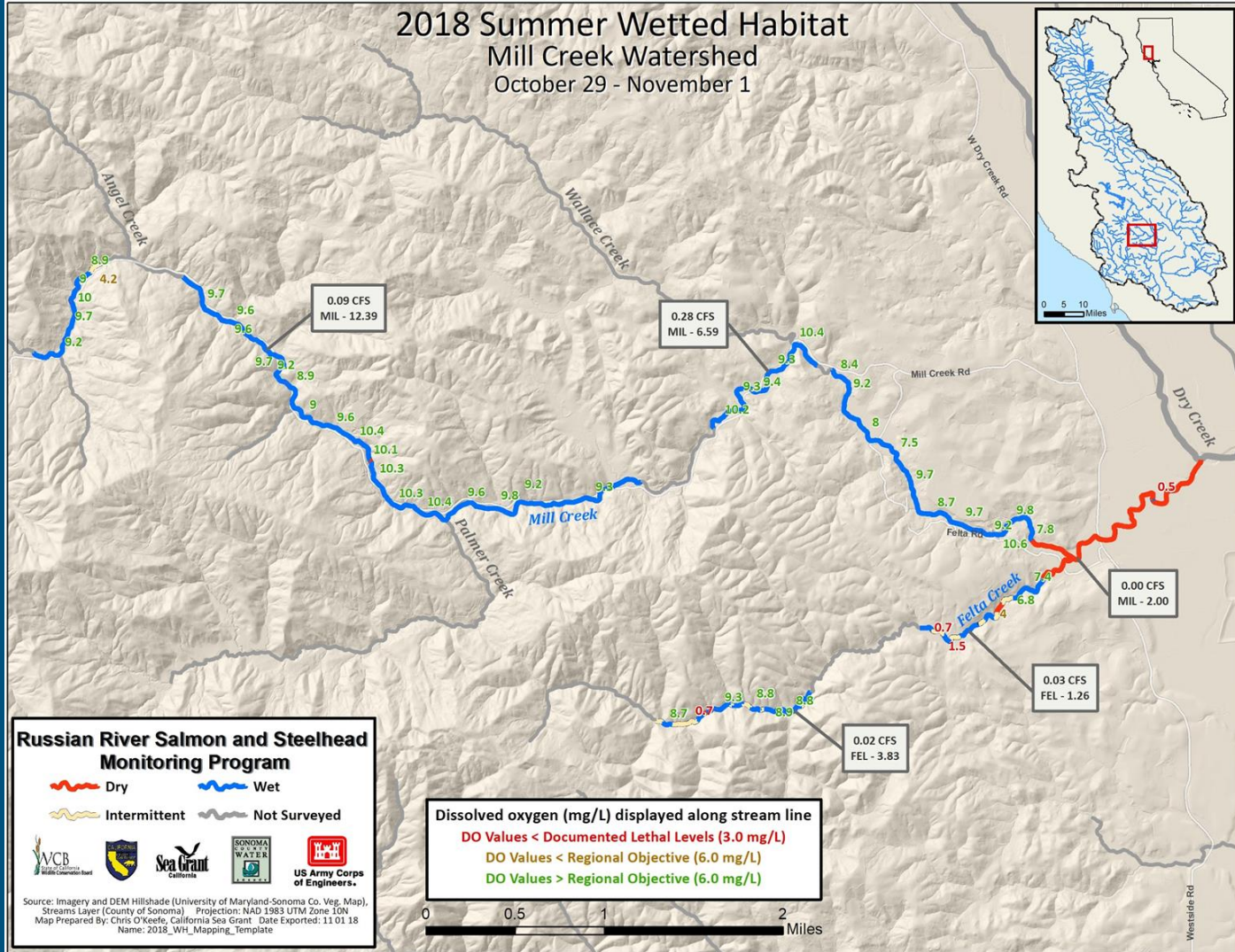
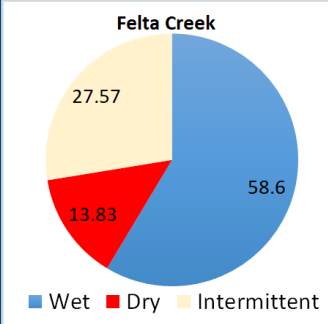
0.73-11.32 mg/L
2.67-10.13 mg/L



13.



0.46-10.59 mg/L
0.65-9.30 mg/L



Russian River Salmon and Steelhead Monitoring Program

Source: Imagery and DEM Hillshade (University of Maryland-Sonoma Co. Veg. Map), Streams Layer (County of Sonoma) Projection: NAD 1983 UTM Zone 10N
 Map Prepared By: Chris O'Keefe, California Sea Grant Date Exported: 11 01 18
 Name: 2018_WH_Mapping_Template

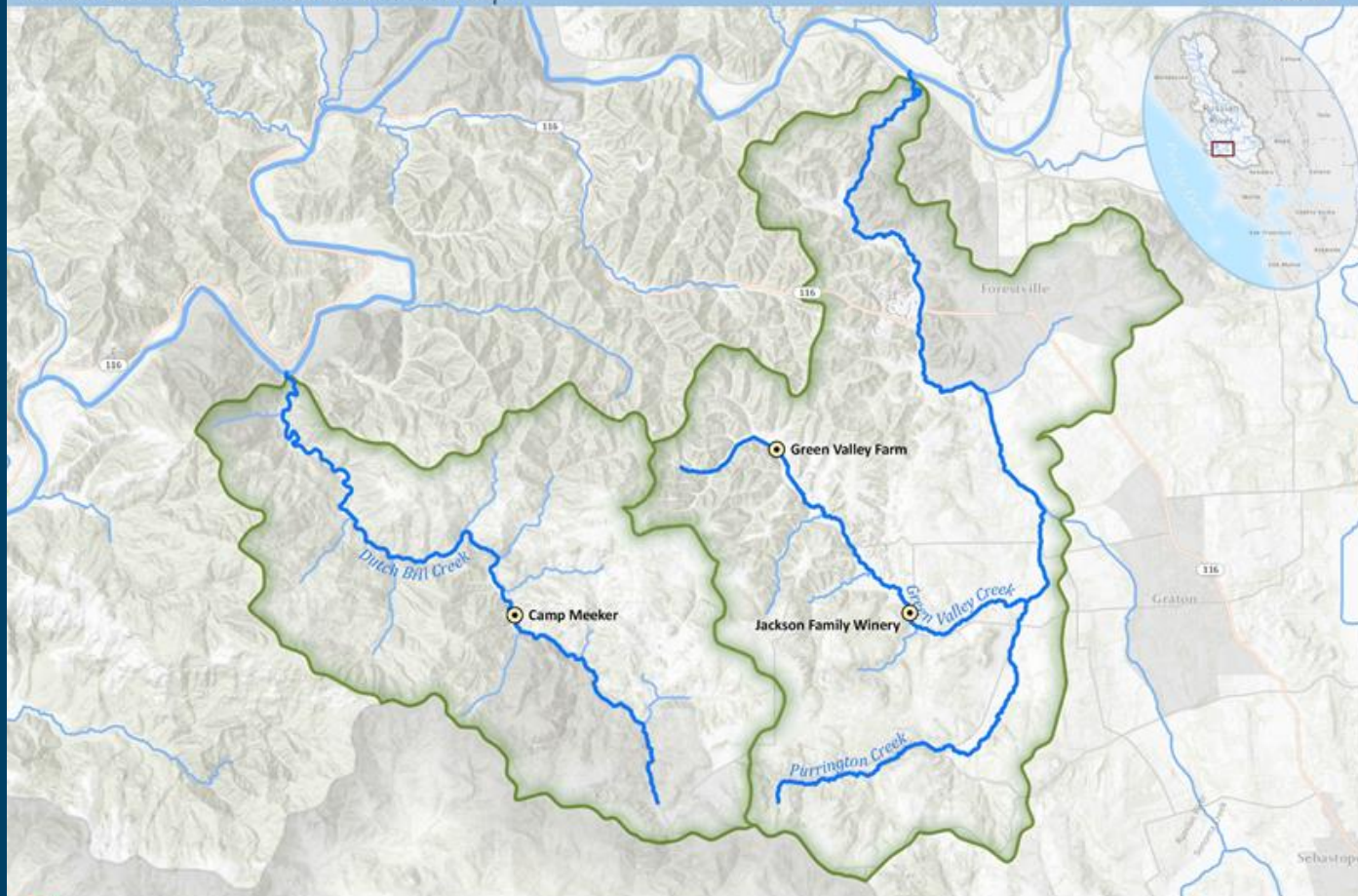


Flow releases

Dutch Bill and Green Valley Creeks

Summer Flow Release Sites

Russian River Coho Water Resources Partnership



Software: ArcMap Pro 2.2.3 Projection: WGS 1984 Web Mercator
Source: Streams, Roads and Vegetation (Sonoma Veg Map), Multidimensional Ichthofide (EVR)
Map Prepared By: Andrew Bartolone, California Sea Grant, Santa Rosa, CA
<https://seagrant.ucd.edu/project/cohco-salmon-monitoring>

Dutch Bill Creek

- ❖ Camp Meeker Recreation & Parks District
 - Alliance Redwood site
 - Rkm 6.97
 - Began releases on 8/29/2018
 - 0.09 cfs/ 39.33 gpm
 - Ended 11/30

- ❖ Rated and very closely monitored



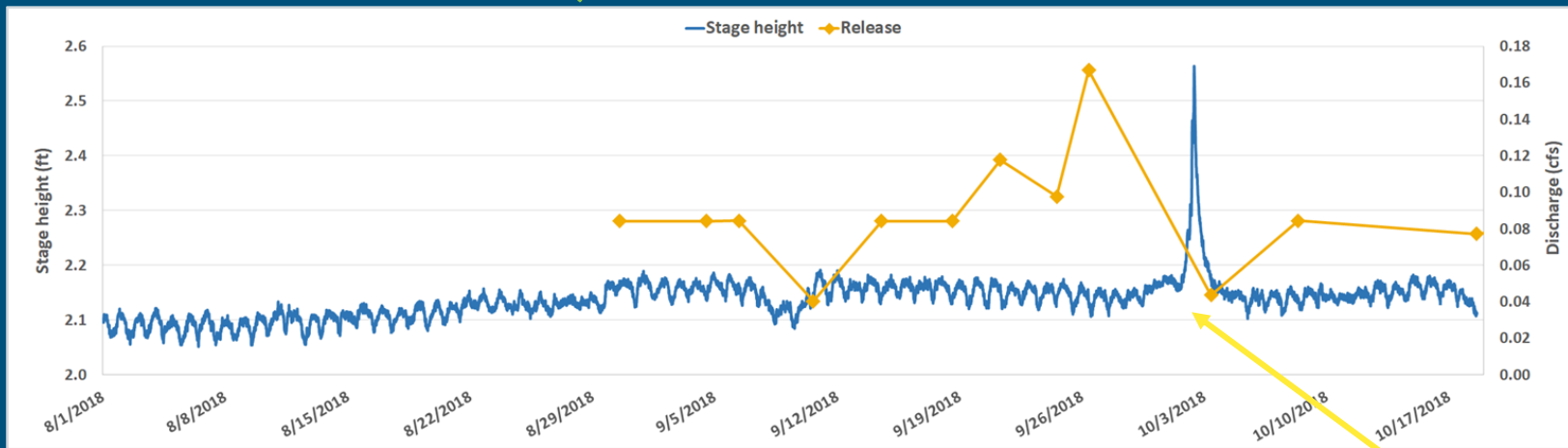


Alliance Redwood

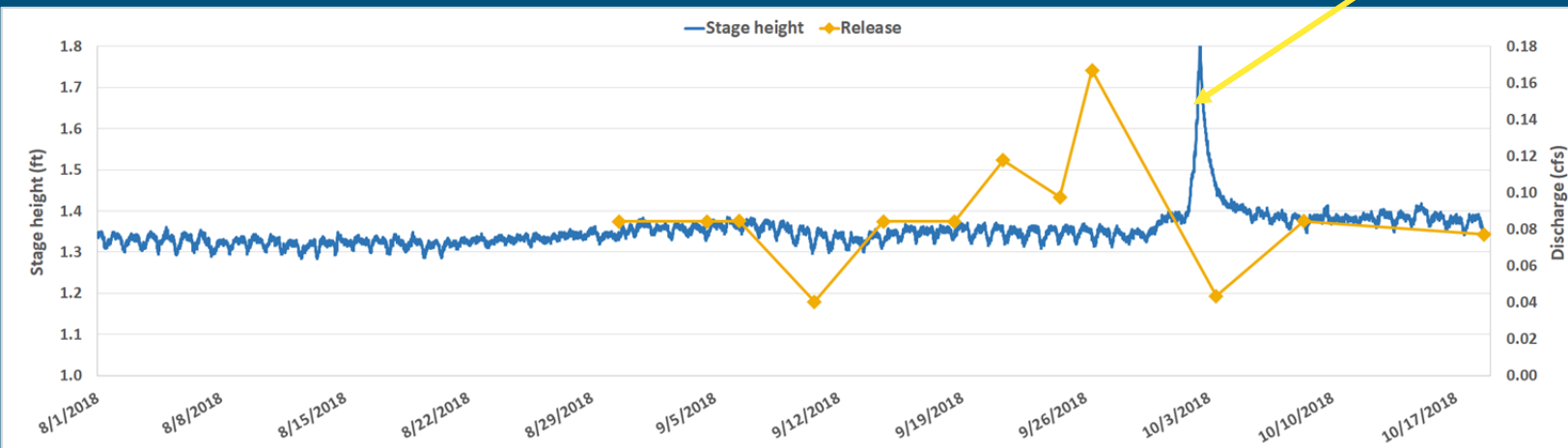
Camp Meeker Recreation & Parks District



Below, 0.5 Km: RR-DUT-007.10

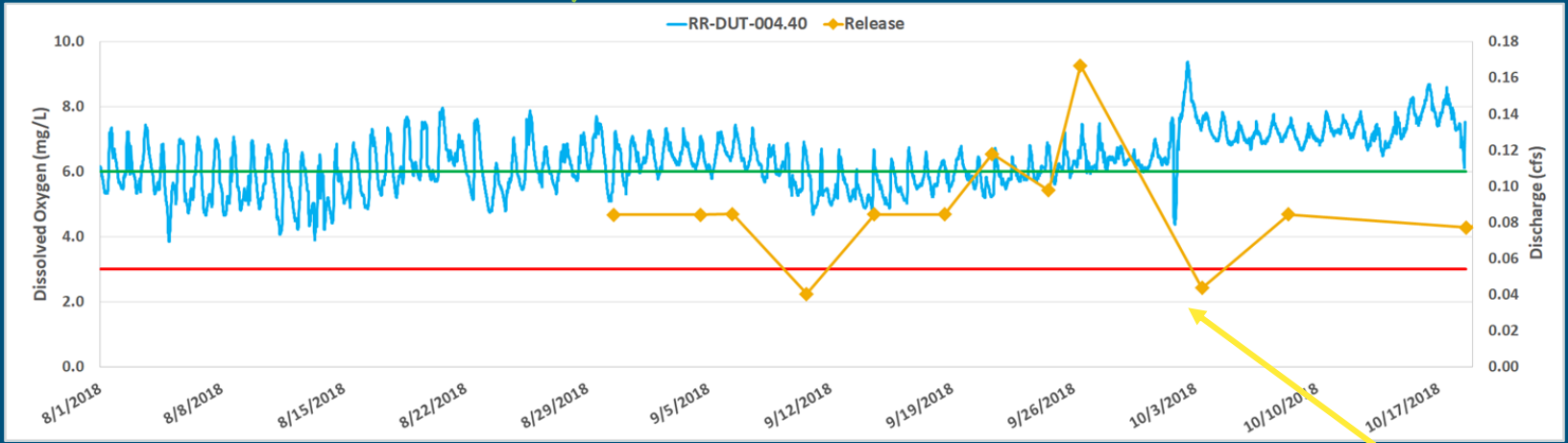


Below, ~3 Km: RR-DUT-004.40

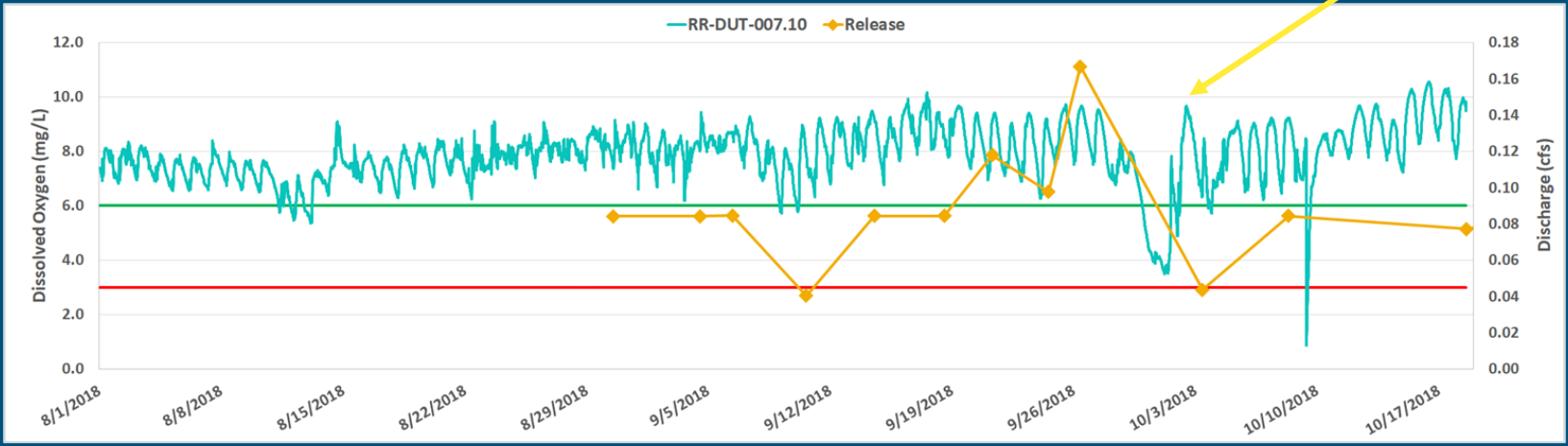


Rain

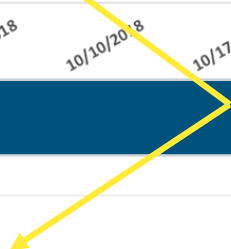
Below, 0.5 Km: RR-DUT-007.10



Below, ~3 Km: RR-DUT-004.40



Rain



Release success

- ❖ Improved surface flow connectivity as far as ~3 Km downstream of release point
 - Measurable increases in discharge at monitoring sites
- ❖ Improved dissolved oxygen as far as ~3 Km downstream
- ❖ Changes in dissolved oxygen concentration followed release amounts
- ❖ Slowed or halted loss of volume and depth at downstream study sites



Green Valley Creek

- ❖ Jackson Family Winery pond
 - Bones Road, rKm 12.37
 - Began release on 8/20/2018
 - 0.1 cfs/ 44 gpm
 - Halted soon after start

- ❖ Green Valley Farm pond
 - Approximate rKm 15.70
 - Began release on 8/29/2018
 - 0.02 cfs/ 10 gpm

- ❖ Neither extensively gaged



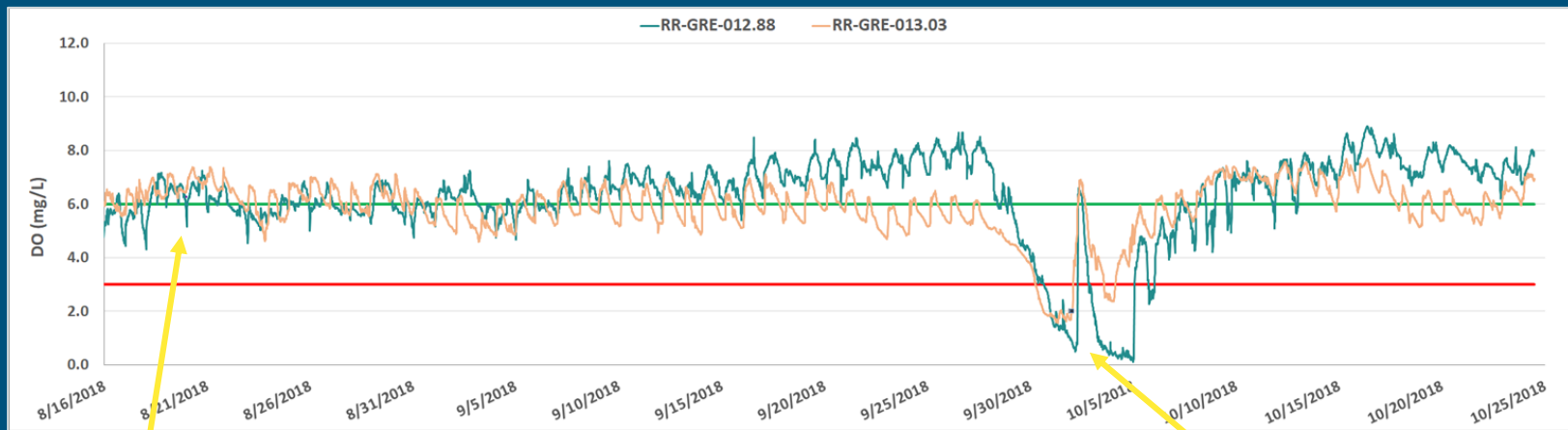


Jackson Family Winery Pond

Release at Bones Road, lower Green Valley Creek

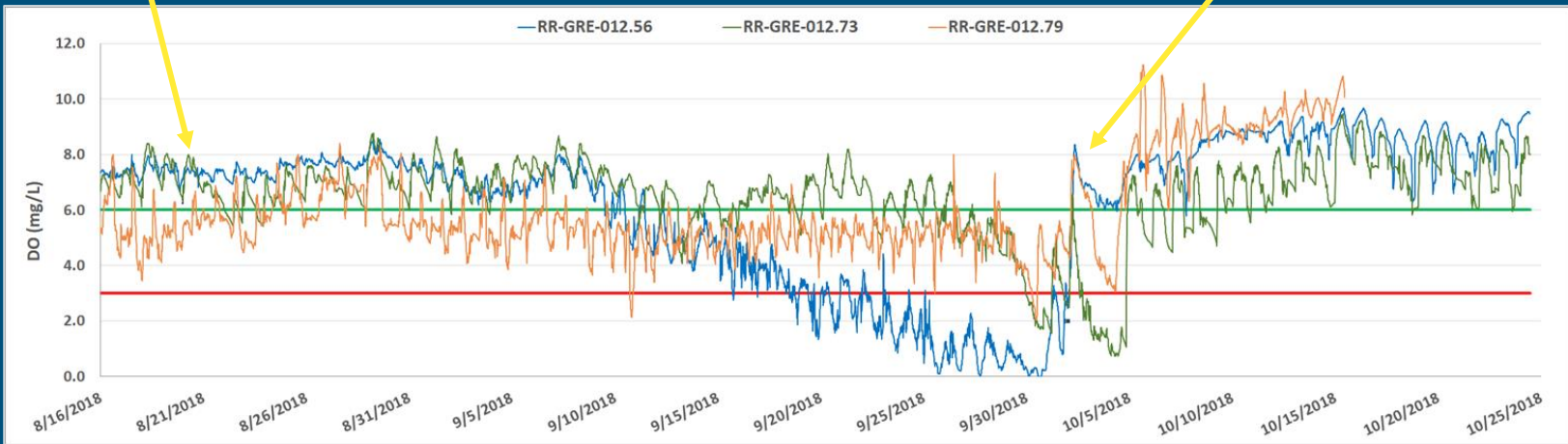


Above



Release date

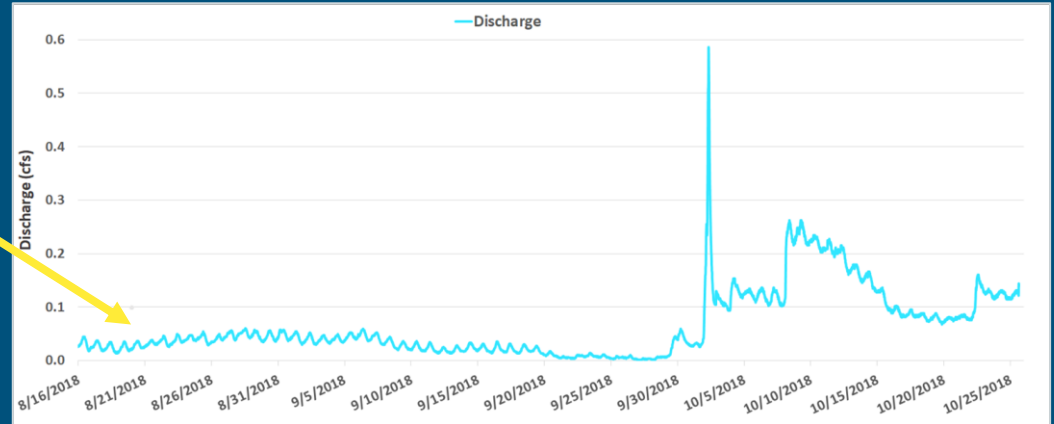
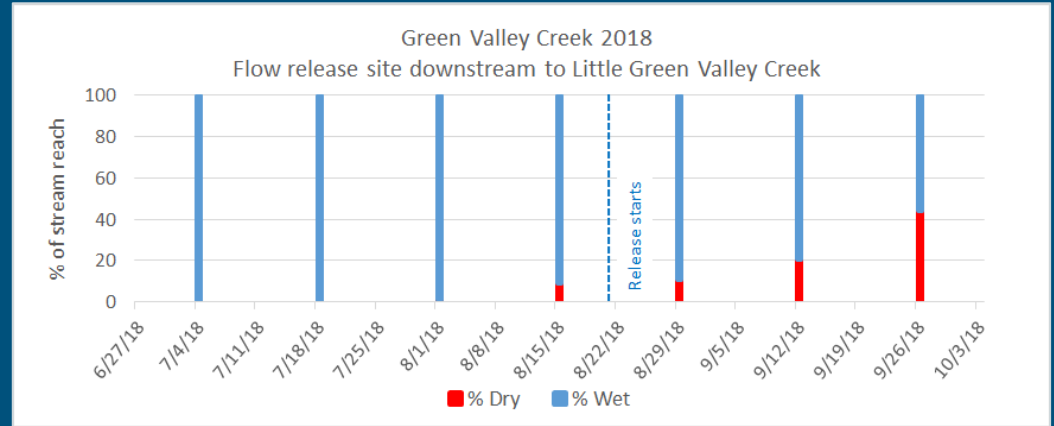
Below



Rain

Release success

- ❖ Field crews reported minimal water entering the creek
- ❖ Timing was good, likely would have been successful in reconnecting surface flow and maintaining oxygenation



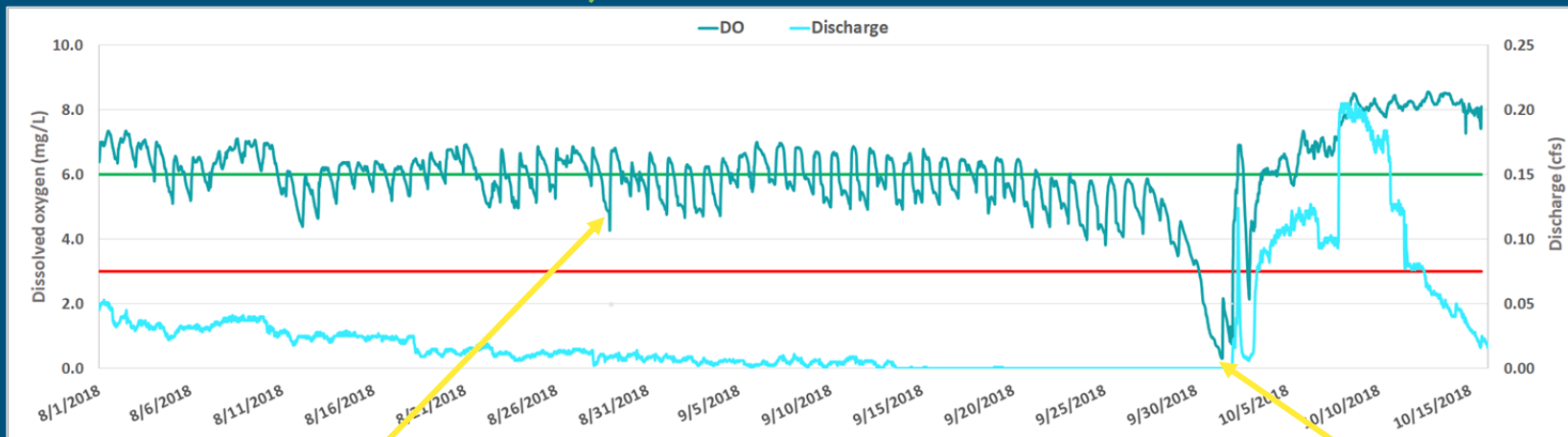


Green Valley Farm

Upper Green Valley Creek



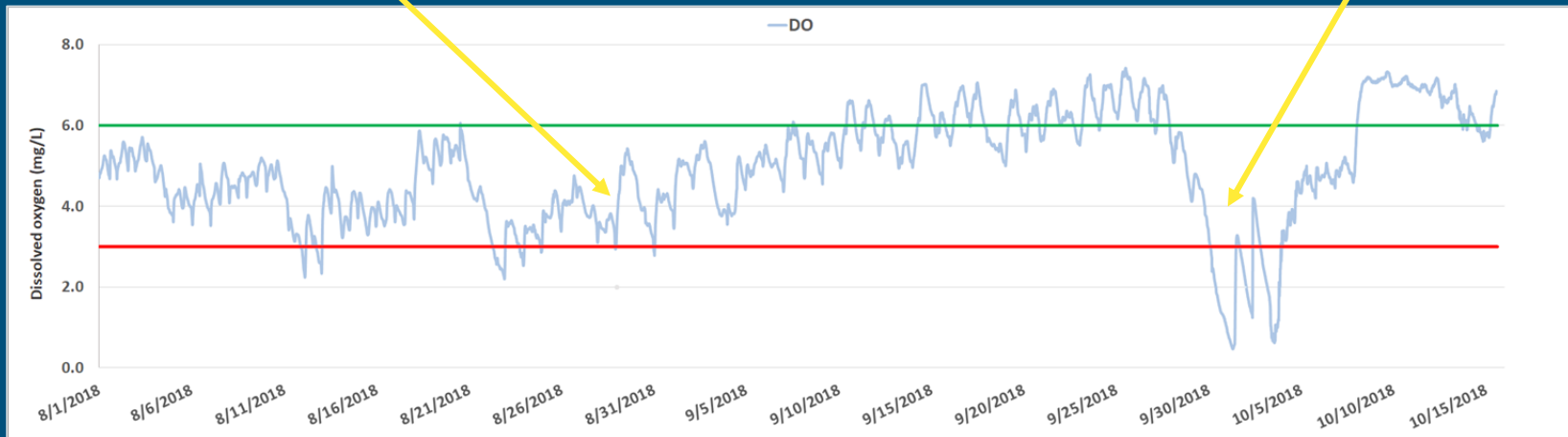
Below, 830m : RR-GRE-014.12



Release date

Below, 850m : RR-GRE-013.91

Rain



Release success

- ❖ Rewet section above impoundment, but began to dry again shortly after
- ❖ Large sections of creek between Harrison and Nutty Valley Creeks continued to dry
- ❖ No clear signs that water reached the flow or oxygen logging sites
- ❖ Technical difficulties and impoundment seemed to keep this from being successful



Moving forward

- ❖ Complete final year of intensive monitoring on Dutch Bill, Green Valley, and Mill Creeks in 2019
- ❖ Relate wetted habitat data to fish distribution data collected through Coastal Monitoring Program
- ❖ UCB to develop predictive model for surface water recession
- ❖ Continue to share maps with partners throughout season

Thank you!