

DWR



DEPARTMENT OF WATER RESOURCES
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BUREAU OF RECLAMATION
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Eileen Sobeck
Executive Director
State Water Resources Control Board
1001 I Street
Sacramento, California 95814

Subject: Estimating Methodology for Compliance with Habitat Protection Outflow (X2)
Objective at Port Chicago

Dear Ms. Sobeck:

Table 3 of the State Water Resources Control Board's Water Rights Decision 1641 (D-1641) requires the Department of Water Resources and the United States Bureau of Reclamation (collectively "the Projects") to maintain a specified water quality at specified compliance locations, or a 3-day equivalent net Delta Outflow, to benefit fish and wildlife in the Delta. These specified locations are: (1) Collinsville, (2) Chipps Island, and (3) Port Chicago, which is the western-most location of the three. Until recently, the Port Chicago gage was mounted on a pier at a military base in the western Delta.

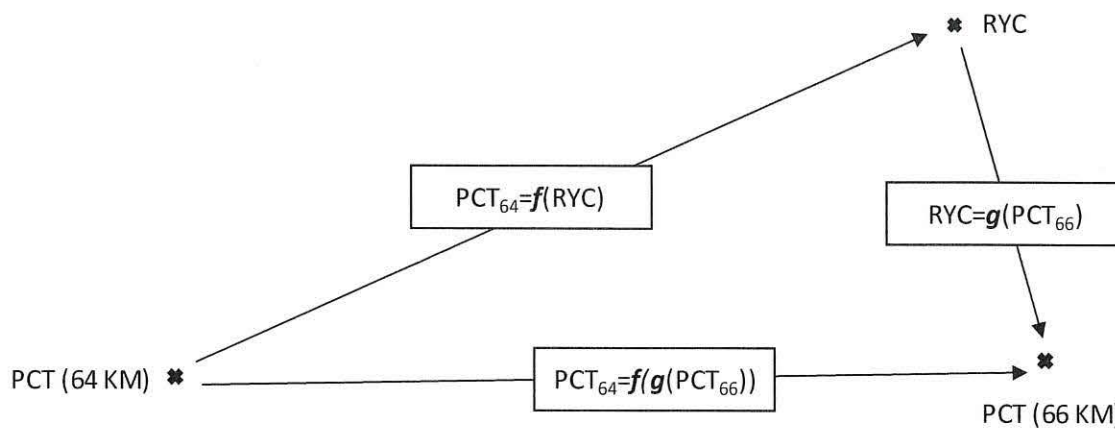
On May 15, 2018, the Port Chicago gage was moved upstream from its previous location because the pier on which it was mounted was dismantled. Prior to the gage's relocation upstream, Port Chicago (i.e., the identified compliance location) was determined to be 64 km upstream of the Golden Gate Bridge. As a result of the relocation, water quality measurements are now from a station 2 km upstream of the compliance location specified in D-1641, effectively 66 km from the Golden Gate Bridge.

To remedy this inconsistency, the Projects have developed an equation to adjust the water quality measurements taken at the new gage location (PCT_{66}) to reflect what the equivalent water quality would be at the old gage location (PCT_{64}). The calculated

value will be used to determine compliance with the D-1641 objective, like what is being done for Chipps Island. Unfortunately, there was not enough overlapping data for the Projects to develop a direct relationship between PCT₆₄ and PCT₆₆. Instead, the Projects developed an indirect relationship between PCT₆₄ and PCT₆₆ using two direct relationships between each of those points and an existing, nearby location, Suisun Bay Cutoff Near Ryer (CDEC Station ID: RYC). Choosing RYC accomplishes the following:

1. Provides an intermediate and independent variable,
2. Provides ample data to complete a reasonable and defensible regression analysis, and
3. Provides a future alternate location for data in the event errors occur at PCT₆₆.

Figure 1 is a graphical representation of the relationship between PCT₆₄ and PCT₆₆.



Based on the Projects’ analysis of current data, the most accurate equation to translate the water quality measurement from PCT₆₆ to PCT₆₄ is:

$$PCT_{64} = 12.6 * (PCT_{66})^{0.749} - 413$$

The Projects are using this equation to estimate the water quality at PCT₆₄. Both PCT₆₄ and PCT₆₆ will be posted in the daily Compliance Standards report on DWR’s website. To access this report, use the “Water Quality Summary” link at the following site:

<https://water.ca.gov/Programs/State-Water-Project/Operations-and-Maintenance/Operations-and-Delta-Status>

The equation performs well for salinity values between 0.17 mS/cm and 20 mS/cm, the typical range of salinity for compliance with the Port Chicago X2 objective. When salinity at PCT₆₆ is less than 0.17 mS/cm, the relationship between PCT₆₄ and PCT₆₆ is

essentially 1:1. Although the performance of the equation degrades for values greater than 20 mS/cm, this condition is unlikely to occur when the Port Chicago X2 compliance objective is in effect. Consequently, the Projects would not calculate a PCT₆₄ value and would show “No Calculation” in the Water Quality Summary.

In summary, the compliance at Port Chicago will be reported as follows:

If Salinity at PCT ₆₆ is...	PCT ₆₄ equals...
< 0.17 mS/cm	PCT ₆₆
0.17 mS/cm ≤ PCT ₆₆ ≤ 20.0 mS/cm	12.6 * (PCT ₆₆) ^{0.749} – 413
> 20.0 mS/cm	No calculation

If you have any questions regarding our revised estimating methodology, please contact Ms. Molly White of DWR at (916) 574-2722 or Ms. Elizabeth Kiteck of Reclamation at (916) 979-2684.

Sincerely,



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