

North San Joaquin Water Conservation District  
Water Rights Permit 10477  
Condition 15 – Measurement of Diversion  
June 30, 2015

**A. Points of Diversion – Flow Monitoring Devices**

**B. Schedule for Installation**

1. Comanche Reservoir – Diversion to Storage by East Bay Municipal District (EBMUD). Releases at the request of North San Joaquin Water Conservation District, when water is available, is measured by EBMUD as part of their operational procedures. The amount diverted to storage is determined by EBMUD as discussed below in **“Reporting Diversion to Storage.”**
2. North Pump Station – This pump station is currently inactive due to structural problems with the Distribution System which is scheduled for evaluation; therefore, flow monitoring is not performed at this time. The pump station is equipped with a Rockwell flow meter that records instantaneous rate of flow and cumulative flow in Acre-Feet for manual downloading of the flow data by the District.
3. South Pump Station – This pump station is currently being evaluated for rehabilitation/ replacement by the District and preliminary studies for design have been completed. A schedule for this activity is being developed. The current flowmeter is inoperative and if the existing pump station is brought on line and operated, the meter will be replaced with an Insertion Electromagnetic Flow Sensor and Data Logger, similar to that described for Point of Diversion number 6, Tracy Lake.
4. CalFed Project – This pump station has a McCrometer Propeller Flowmeter that records instantaneous rate of flow and cumulative flow in Acre-Feet for manual downloading of the data by the District.
5. Woodbridge Irrigation District Dam – Instantaneous and cumulative flows at this point of diversion will be measured by the City of Lodi at their surface water treatment plant (WTP) raw water pump station with an ABB WaterMaster Electromagnetic Flowmeter that is maintained in accordance with the City’s maintenance plan for the WTP. Daily flow and cumulative flow data will be reported to the District on a monthly basis during those periods when water is diverted.
6. Tracy Lake Pump Station – This pump station is currently under construction and is scheduled for completion by September 30, 2015. When completed this pump station will have a Seametrics Insertion Electromagnetic Flow Sensor for measuring diverted flows and a data logger for storage and totalizing the flows diverted. Water levels in Tracy Lake and the Mokelumne River will be measured using a pressure sensors. Flow data together with water levels will be sent to the Programmable Logic Controller (PLC) in the Motor Control Center on the Pump Station platform for data storage and transmission via a cellular radio modem. Remote access to real time data from this pump station to include level in the lake, level in the river, diversion flow rate and cumulative total of diversion amount will be available to the District, East Bay Municipal Utility District (EBMUD), and Woodbridge Irrigation District (WID) via a website.

### **C. Inspection and Maintenance of Monitoring Devices**

The appropriate measuring and monitoring devices, at the South Pump Station, CalFed, and Tracy Lake facilities will be inspected weekly by the District, during the period in which diversions are occurring. Annual calibration of the Electromagnetic Flow Sensor will be performed by the equipment manufacturer or authorize representative in those years in which water is available. Propeller Flowmeters will be factory calibrated every five years or when field conditions or observations by the District dictates a more frequent program. During non-diversion times, the monitoring devices will be inspected on a monthly basis, and any maintenance requirements will be either addressed by the District or a factory authorized representative of the manufacturer. For the Woodbridge Irrigation District Dam diversion, as the meter

### **D. Frequency of Data Collection**

Data will be collected from the various Flowmeters on a weekly basis and tabulated in a spread sheet to show rate of flow and cumulative flow to date at the operating diversion points. For the Tracy Lake point of diversion other data collected and tabulated in this spread sheet will include the lake level and cumulative amount of pumping out of the lake for irrigation. This additional date will be used to determine the amount of water diverted to underground storage at Tracy Lake, using a mass balance approach. To estimate the amount diverted to underground storage, the estimated evaporation from the Tracy Lake surface using data from the California Irrigation Management Information System (CIMIS), and the amount pumped out of Tracy Lake for irrigation will be subtracted from the amount diverted into Tracy Lake from the Mokelumne River, with adjustments for the changes in the Lake level to reflect either increases or decreases in Lake storage.

The amount of water diverted during the year together with the maximum rate at each pump station and the amount diverted to underground storage will be summarize in a Table presenting monthly values and annual values. This Table will then be included in the District's Annual Report to the Division of Water Rights.

### **E. Reporting Diversion to Storage**

The amount of water that can be diverted and stored by EBMUD for the District, each year, is determined by EBMUD based on snow measurements and storage in the system after April 1<sup>st</sup>. Under terms of the Agreement between East Bay Municipal Utilities District and the District, the District is required during the first part of February each year to quantify the amount of water that they want EBMUD to store and then release later in the year. Based on this request and the availability of water, EBMUD stores and then releases the water during the irrigation season for use by the District. Before the next irrigation season EBMUD furnishes the District with a tabulation by month and cumulative for the year, of the amount of water diverted by the District. The District, based on its records of data collected, will report the amount of water actually applied to beneficial use.