

## **MULTI-JURISDICTIONAL USE FACILITIES**

### **OPERATION AND MAINTENANCE FLOW SHARE REVIEW STUDY WORK PLAN**

#### **Background**

DC Water charges the suburban jurisdictions annually for operating and maintaining (O&M) the jointly used sewer system facilities, known as Multi-Jurisdictional Use Facilities (MJUF). The current O&M flow share procedure used by DC Water for billing O&M costs contains formulae and methodology from over fifteen years ago that is not well understood by DC Water, WSSC or other suburban jurisdictions. Additionally, in light of the 2011 Capital Cost Allocation Study and the 2012 IMA, there is recognition of a need to update the facilities identified as multi jurisdictional.

Each jurisdiction's flow share is based on the annual average flow discharged to MJUF sewers. Flow from suburban jurisdictions is metered at or near the District's boundaries. Flow from District sewersheds into MJUF sewers is not metered. Currently, District flows are estimated as fixed percentages of associated upstream metered suburban flows. This method of estimating the District Sewershed flows into MJUF sewers is not ideal, since it is completely dependent on suburban flow. District flow should rather be estimated annually, independent of suburban flow.

#### **Work Objectives**

To develop a technically sound and justifiable method to allocate annually MJUF O&M costs among jurisdictions, including the District.

#### **Scope**

1. Verify the Sewershed boundaries within the District and identify locations where these Sewersheds discharge into MJUFs and WSSC system.
2. Quantify annual average flows from District Sewersheds that discharge into MJUFs and WSSC.
3. Develop an improved methodology for determining annual MJUF user O&M flow shares that complies with the IMA and
4. Develop a toolkit (software) that facilitates annual billing along with a standard operating procedure (SOP) to explain how to use the new toolkit.

## Methodology

The methodology to be used is based on the principle that each jurisdiction should pay O&M costs as a proportion of its flow relative to the total flow in any given section of a flow route. Another important proposed change is the way the District's flow is calculated. Currently, the District's flow is calculated in direct proportion to WSSC flow, but the methodology proposed below ensures that the District's flow share becomes independent of WSSC flow. Since the District's flows are not directly metered, these flows have to be derived using measured flows along any given flow route to Blue Plains. As shown in Figure 1 below, flows at the boundary of the District are measured by the suburban jurisdictions and are known. Flows at pump stations are also measured, as well as incoming flow at Blue Plains. Using these known flow quantities, flow contribution from the District can be calculated along each flow route. If " $D_T$ " represents total flow from DC Sewershed and "S" and "P" represent Suburban and Pump station flows respectively, then the total flow from the District between the District boundary and pump stations can be calculated by subtracting suburban flow from measured flow at the pump stations:  $D_T = P - S$ . For District sewersheds that discharge directly to pump stations as shown in Figure 1, those contributions will be deducted from the total pump station flows before using the formula.

Once the District flow contribution has been calculated, it will be normalized over the length of the route up to that point and used to proportion suburban and DC share of costs. While this method is simplistic and does not allow for a node to node cost split, it is a quick and simple way to allocate costs that is favored by the jurisdictions in light of relatively low O & M costs associated with pipes.

There are a few exceptions in the sewer network to the standard routing of suburban flows, discussed above (suburban boundary input point → pump station → Blue Plains). Some flow routes merge or split at a structure upstream of a pumping station. Also there are District sewersheds and suburban jurisdiction flows that discharge unmetered flow into MJUF sewers downstream of pumping stations. In such cases, it is necessary to use a different approach which involves installing temporary flow meters at select locations to estimate flow from the unmetered sewershed and for determining the flow split percentages

at structures. The duration for use of the temporary flow meters will encompass all flow scenarios (wet, dry, high, and low flow periods).

Finally differences in software used and data capture processes have led to inconsistencies between District and Suburban O&M cost calculations. This effort will also propose software and an SOP that will facilitate a transparent and uniform process for analyzing monthly flow data for producing annual flow reports for cost allocation.

### **Deliverables**

1. Draft and Final Report, including cost share table, schematic, text description, and GIS map per flow route.
2. Billing and Reporting Toolkit (MS Access software).
3. Standard Operating Procedure for using the toolkit and data coming from permanent meters.

### **Schedule**

<b>#</b>	<b>Item</b>	<b>Completion Date</b>
1	Draft Concept Report	June 30, 2013
2	Draft software interface design	June 30, 2013
3	Draft Report (includes items 1-2)	August 30, 2013
4	Draft toolkit	August 30, 2013
5	Final toolkit	October 30, 2013
6	Draft Standard Operating Procedure	October, 30, 2013
7	Final Report (includes items 4 and 6)	October 30, 2013
8	Training and Testing	November 30, 2013
9	Implementation commences	December 31, 2013

**Cost**

<b>No.</b>	<b>Item</b>	<b>Cost</b>	
		<b>Shared Cost</b>	<b>DC Only Cost</b>
1	Study and Documentation	\$182,500.00	
2	Study DC flow discharge into MJUF		\$35,000.00
3	Flow Metering in DC		\$128,960.00
4	Developing Billing and Reporting Software	\$41,000.00	
<b>Total</b>		<b>\$223,500.00</b>	<b>\$163,960.00</b>

# Methodology Alternative No.2 (Cost share Calculated per Interceptor)

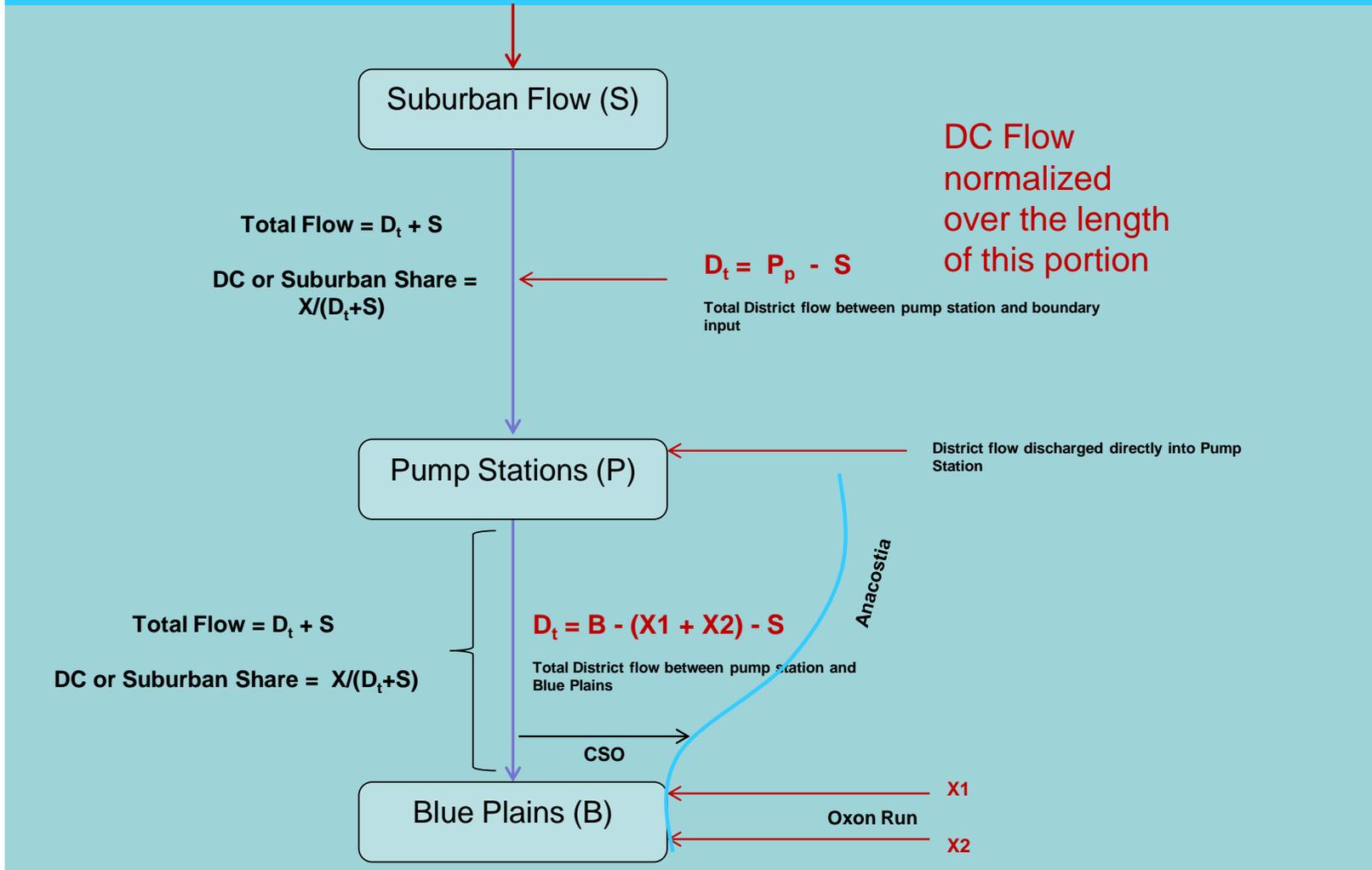


Figure 1: Illustration of proposed Methodology