

COTTONWOOD CREEK PEORIA TRIB., PONDS C3 & C4

Memorandum

William P. Ruzzo, PE, LLC
6641 West Hamilton Drive,
Lakewood, Colorado 80227
(303) 985-1091
bill.ruzzo@comcast.net

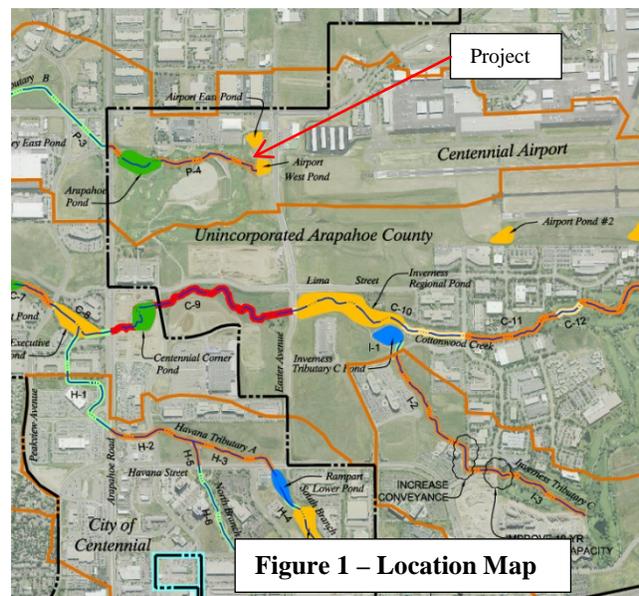
To: Chuck Reid, Manager, CCBWQA
CC: Rick Goncalves, Chairman, TAC
From: William P. Ruzzo, P.E.
Date: December 27, 2013
Re: Cottonwood Creek Tributary B Airport Ponds East and West – Project Summary Report

Presented in this memorandum is a summary of the Cottonwood Creek Tributary B Airport Ponds East and West (*Peoria Tributary B Airport Ponds East and West*, Project, see Figure 1 Location Map).

BACKGROUND AND PURPOSE

A Conceptual Design Report for the Cottonwood Creek watershed was prepared for SEMSWA, Douglas County, and the UDFCD in 2010 (called OSP)¹. An OSP provides a watershed wide plan that addresses drainage, flood control, and storm water quality impacts from urbanization. The Authority provided input to the OSP as a stakeholder by attending progress meetings and commenting on draft documents. The final OSP recommendation included a total of 26 existing, retrofitted, or new regional detention/water quality facilities with 23 of the sites providing excess urban runoff volume² (EURV), including modifications to Tributary B Airport West Dam and Airport East Dam to include EURV (see Figure 1).

In early 2010, the TAC investigated the Airport's storm water management plan (SWMP) with attention towards evaluation of the Airports deicing management program. The airport uses propylene glycol and in the past ethylene glycol as deicing agents which have high biological and chemical oxygen demands (BOD and COD) that reduce oxygen in receiving waters. High total suspended solids (TSS) concentrations have also been



¹ Muller Engineering Company August 18, 2010. *Cottonwood Creek (Downstream of Lincoln Avenue) Outfall Systems Plan Conceptual Design Report*.

² Providing EURV in a water quality pond is believed to provide additional water quality benefits beyond Authority minimum requirements, which is extended detention basin (EDB).

detected in the runoff. The Authority provided comments to the Airport expressing concerns that the SWMP did not adequately address pollutant discharges, specifically glycol COD, BOD, and TSS. The Authority offered to work with the Airport and, as a result, also provided suggestions to the Airport regarding the SWMP, many of which were incorporated into the final Airport SWMP.

PROJECT PARTNERS AND FUNDING

In 2010, the Authority Board adopted the 2011 – 2014, 5-year capital improvement budget (CIP) that included the *Peoria Tributary B Airport Ponds East and West CIP*, based in part on the OSP recommendations and the need to address deicing runoff from the airport. At that time, it was assumed that the Authority would partner with the Airport and SEMSWA to fund the project, which consisted of modification to two existing ponds at a cost \$523,000 with the Authority providing of \$131,000 (25%).

In March 2011, the Authority was requested to provide comments on construction plans being prepared by the Airport’s consultant who was designing improvements to Airport Ponds East and West that included combining the two ponds and providing EURV water quality capture volume. The Airport was modifying the east and west detention ponds per the OSP as a mitigation measure for the FAA directed, safety-related-widening of the nearby runway.

Representatives of the Airport and their consultant attended the October 6, 2011 TAC meeting and reported that the total project cost estimate for the ponds is around \$1,500,000, including design, construction, and permitting. The FAA provided \$1,200,000 and the Airport provided \$134,000 plus the land value. The Authority contribution of \$131,000 constitutes 8.7% of the total project cost.

WATER QUALITY BENEFITS

Construction of the *Peoria Tributary B Airport Ponds East and West* will prevent sediment and nutrients in runoff from Centennial Airport from entering Cottonwood Creek and protect water quality and



beneficial uses of Cherry Creek Reservoir. The project will also help to maintain higher levels of dissolved oxygen in Cottonwood Creek and the Reservoir³ and is also part of a comprehensive watershed approach to manage water quality.

Figure 2 shows the pond outlet which was modified to include a rock filter. Water quality sampling and testing by Arapahoe County has identified the natural presence of rust colored bacteria in the storm drainage system at Easter Avenue which includes runoff from Centennial Airport. Research by the Authority suggested that naturally occurring bacteria can reduce glycol concentrations and that

other airports have incorporated similar treatment for deicing runoff. Authority recommended modifications to the Airport pond incorporates small, angular rock in the swale and at the outlet to simulate a “trickling filter” common in wastewater treatment.

³ Until very recently, the Reservoir was on the 303(d) list for dissolved oxygen, which was a concern to the Authority.