



# WOOD RODGERS

July 5, 2005

Mr. Denny Peters  
City of Reno Community Development  
450 Sinclair Street  
Reno, NV 89505

**RE: Flood Control Design for South Truckee Meadows Water Treatment Plant**

Dear Mr. Peters:

Wood Rodgers, Inc in association with others has been contracted by the Washoe County Department of Water Resources to develop a design package for the South Truckee Meadows Water Treatment Plant. This letter is being submitted to you in preparation for an application for a Special Use Permit package for this plant.

This letter summarizes the hydrologic and hydraulic approach for flood control design for the proposed facility (treatment site). The treatment site is located on the White's Creek alluvial fan, and is partially within flood hazard zone A as determined by approximate methods by FEMA (FIRM 32031C3186 E, September 30, 1994). The source of potential flooding is branch 4 of White's Creek. This is the southern-most branch of White's Creek and is currently routed underneath Virginia Street in a box culvert that outlets adjacent to the treatment site. Flood flows from the box culvert are carried along the perimeter of the treatment site within NDOT right-of-way in a rectangular concrete channel. Capacity of the channel downstream of Old Virginia Street gradually tapers down, allowing storm runoff to be distributed for irrigation.

Several hydrologic analyses of White's Creek exist that model 100-year flooding for branch 4 in the vicinity of the treatment site. The recent CLOMR submitted for development of the Bayer property (CFA, 2003), immediately upstream of the treatment site on the west side of Virginia Street, outlined the design of a flood control channel for 910 cfs in branch 4. This design flow is based on a more conservative HEC-1 model than past versions, in that it eliminates rainstorm depth area reduction. In order to be consistent with upstream design, Wood Rodgers used the same HEC-1 model as was submitted to FEMA and to the City of Reno for the Bayer CLOMR. The model determined 100-year peak discharge at the treatment site of 899 cfs.

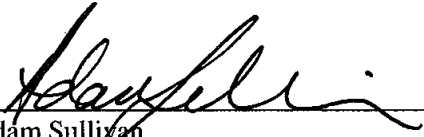
Flood hydraulics were modeled using HEC-RAS, based on the 100-year design flow of 899 cfs. Hydraulic model output is summarized on the attached figure. Much of the treatment site is subject to shallow flooding of less than 1-foot depth. Flood depths are somewhat deeper at the North and Northeast end of the property due to backwater effects from low gradient, dense vegetation, and an irrigation berm bisecting the area.

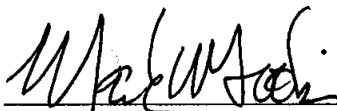
The proposed design will extend the existing rectangular flood control channel along the west and north boundaries of the property, with a design capacity equal to the 100-year flood discharge. Additional flood control will be provided by building structures on pads 1-foot above the existing flood water surface, in accordance with Article XVII of the City of Reno General Development and Design Standards. By including this additional measure of protection, the design meets all requirements for construction within flood hazard zone A. If the City requires that the proposed

reduction in flood hazard be recorded with FEMA, then a LOMR can be submitted following construction of the flood control channel extension.

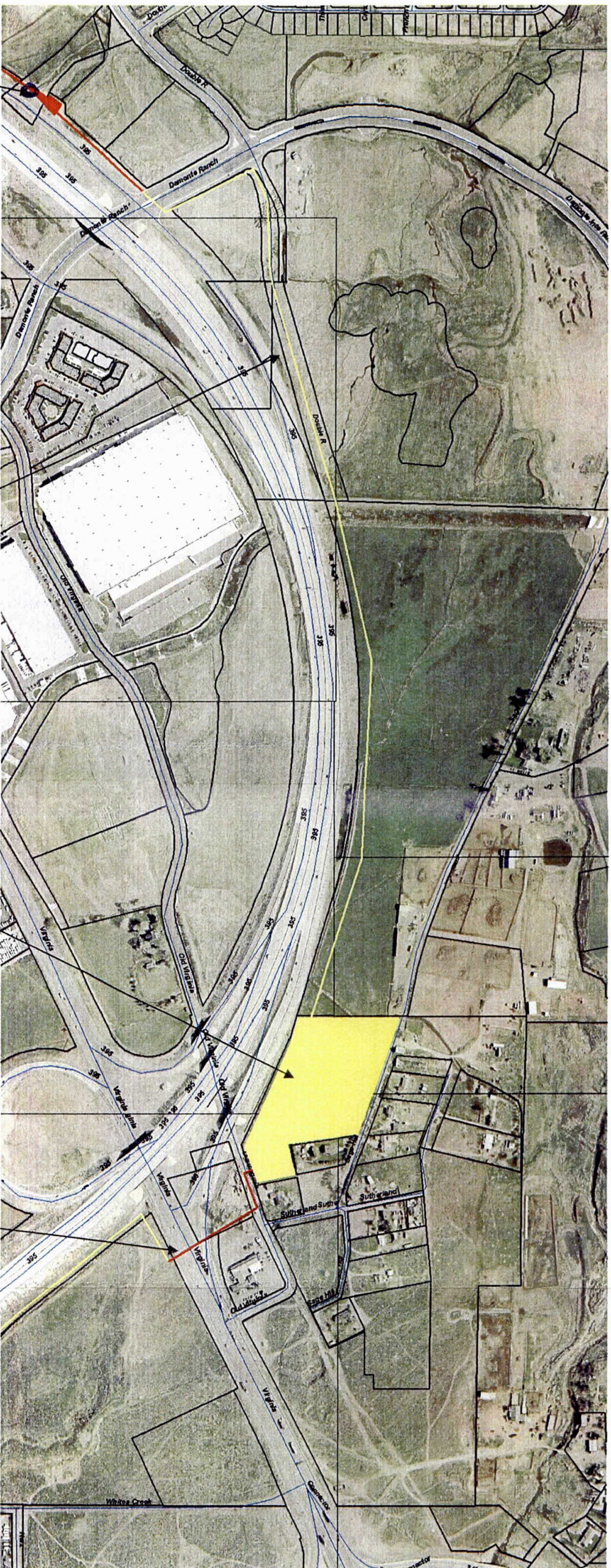
Wood Rodgers requests that the City of Reno review our hydrologic and hydraulic methodology, and provide approval to be included within the pending special use permit package for this project. Please feel free to contact Mark Casey at (775) 823-9443 or Adam Sullivan at (775) 823-5230 with any questions.

Sincerely,  
WOOD RODGERS, INC.

  
\_\_\_\_\_  
Adam Sullivan  
Hydrologist

*for*  MARK CASEY  
\_\_\_\_\_  
Mark Casey, P.E.  
Associate

Cc: Steve Walker, Walker & Associates  
Ken Wilkins, Carollo Engineers  
Tom Kelly, Washoe County Department of Water Resources



Proposed Diversion and Pump Station Location

Proposed Pressure Pipeline

Proposed Water Treatment Plant

Proposed Pipeline

**Proposed South Truckee Meadows Water Treatment Plant Facility Location**



DATE: \_\_\_\_\_

**WOOD ROGERS**

PROJECT NO.  
8079.001

SHEET 1 OF 1

**SOUTH TRUCKEE MEADOWS WATER TREATMENT PLANT**  
**EXISTING 100-YEAR FLOOD WATER SURFACE ELEVATIONS**  
**DISPLAYED WITH PROPOSED CIVIL DESIGN**  
**Q<sub>100</sub> = 899 cfs**

  
**WOOD ROGERS**  
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DATE: July 2005  
 SCALE: H:1:1200 V:1:1200  
 DRAWN BY: \_\_\_\_\_  
 DESIGNED BY: \_\_\_\_\_  
 CHECKED BY: \_\_\_\_\_

NO.	DESCRIPTION	ENGR INIT	BY	DATE