



THE CITY OF SAN DIEGO

MEMORANDUM

DATE: October 20, 2014

TO: Matthew DeBeliso, Assistant Engineer, Public Works Department

FROM: Feryal Moshavegh, Associate Civil Engineer, Engineering and Program Management Division via Eric Rubalcava, Senior Civil Engineer, Public Utilities Department *er*

SUBJECT: Water Group Job 778 – Request for Modeling Assessment

In response to your memorandum dated October 10, 2014, we have evaluated the feasibility of abandoning the parallel 6-inch asbestos cement (AC) water main in Hilltop Drive between I-805 & 47th Street and 47th Street between Hilltop Drive & F Street and providing the following information:

Background and Objective

The subject water mains are located within University Heights 390 Hydraulic Grade Line (HGL) pressure zone. The objective of this project was to simulate the proposed pipeline improvements and abandonment in year 2035 demand condition and verify, if it will satisfy the City's design criteria for pressure, flow, velocity and redundancy requirement. This area is located in Encanto Park Community within the Multi family zoning of 3,000 gallons per minutes (gpm) fire flow requirement.

Hydraulic Modeling Scenarios

The following scenario was based on the proposed improvements, maximum day, year 2035 demand condition, and worst case fire with one redundant feed out of services:

Case Scenario: 7:30 am peak hour, 3,000 gpm multi-family fire flow at fire hydrant No.33 on Hilltop Dr & 44th Street and section of existing 12-inch AC main in Hilltop Drive between I-805 freeway & 44th Street out of service (Figure 3).

Findings and Recommendations

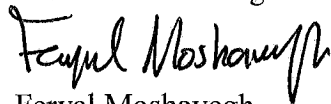
The 6-inch AC water main on Hilltop Drive from I-805 to 47th Street and the 47th Street from Hilltop Drive to F Street can be abandoned and all the services connected to the 12-inch AC main on Hilltop Drive and 8-inch AC main on the 47th Street as outlined in Figure 1 and Table 1. The existing 6-inch AC main at the intersection of the Hilltop Drive & 45th Street need to upsized to 8-inch and connected to the 12-inch main on Hilltop Drive to supply water to the area.

The hydraulic results from the water modeling scenarios are listed on Table 1. The proposed water main sizing will satisfy the current City's Design criteria for fire flow, pressure, velocity and redundancy.

Table 1 – Group Job 778 Proposed Improvements

Figure No	Location	Existing Main size	Proposed Main Size
1	Hilltop Dr from I-805 to 47th St	6" AC	To be Abandoned
		transfer all services	to existing 12" pipe
1	47th St. from Hilltop to F St	6" AC	To be Abandoned
1	44th St from Hilltop Dr to Tremont St	6" AC	8" Pipe
1	Tremont St	6" AC	8" Pipe
1	F St & 44th St	6" AC	8" Pipe
1	Craigie St from west of 45th St. to 47th St	6" AC	8" Pipe
1	45th St from Hilltop Dr to F St	6" AC	8" Pipe

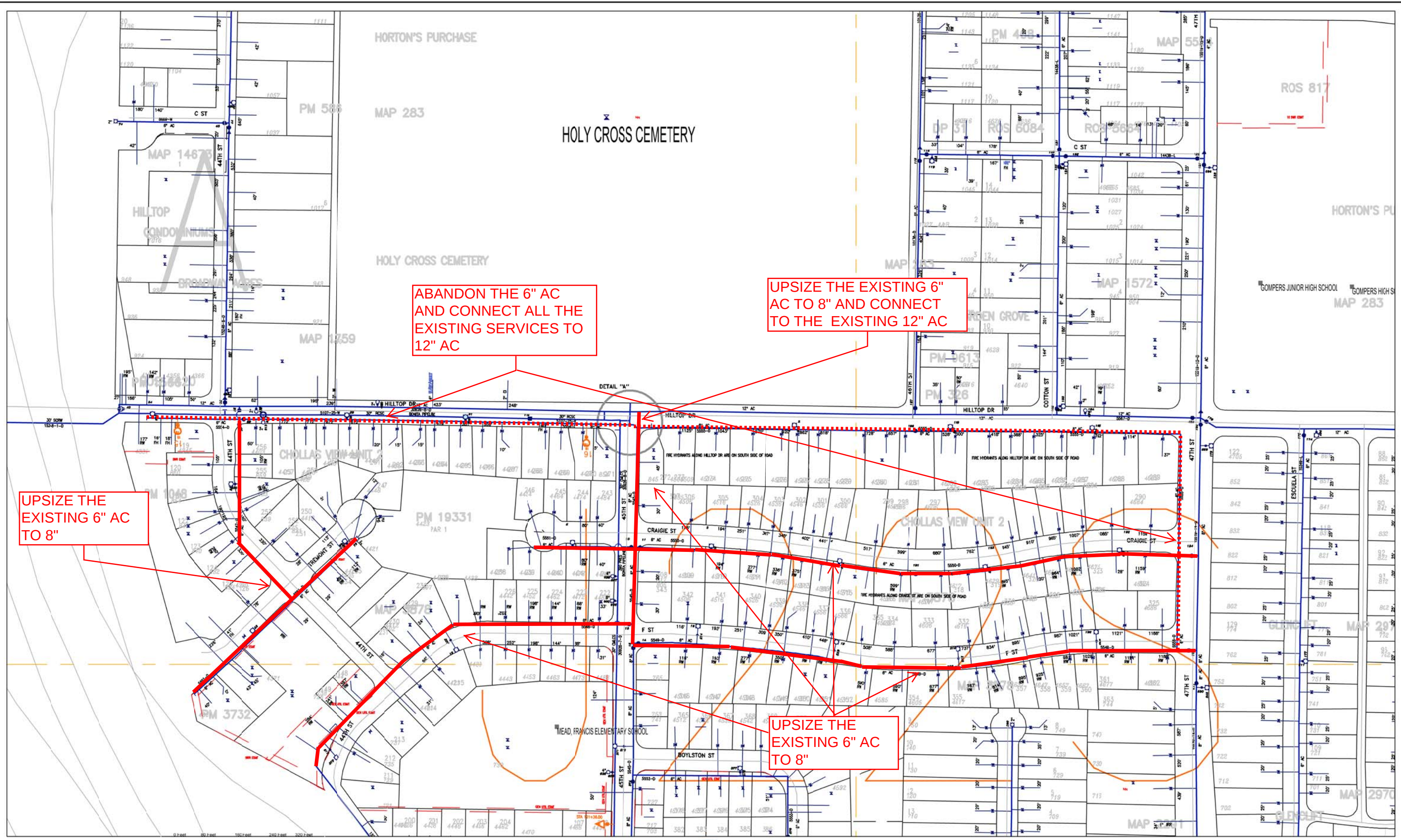
The proposed mains can be shutdown and hi-lined during construction. Please coordinate with Water Operations Division. If you have any questions, feel free to call me at (858) 654-4241, or Assistant Civil Engineer My-Lee Huynh at (858) 292-6359.


Feryal Moshavegh

Mxl/FM

Attachments: 1. Figure 1 – Location Map
3. Figure 2 – Hydraulic Map Existing condition
4. Figure 3 – Hydraulic Map Proposed Case Scenario

cc: Rania Amen, Deputy Director, Public Utilities Department
Darren Greenhalgh, Deputy Director, Public Works Department
Tatyana Fikhman, Water Production Superintendent, Public Utilities Department
Santiago Crespo, Associate Civil Engineer, Public Utilities Department
Regan Owen, Associate Civil Engineer, Public Works Department
My-Lee Huynh, Assistant Civil Engineer, Public Utilities Department



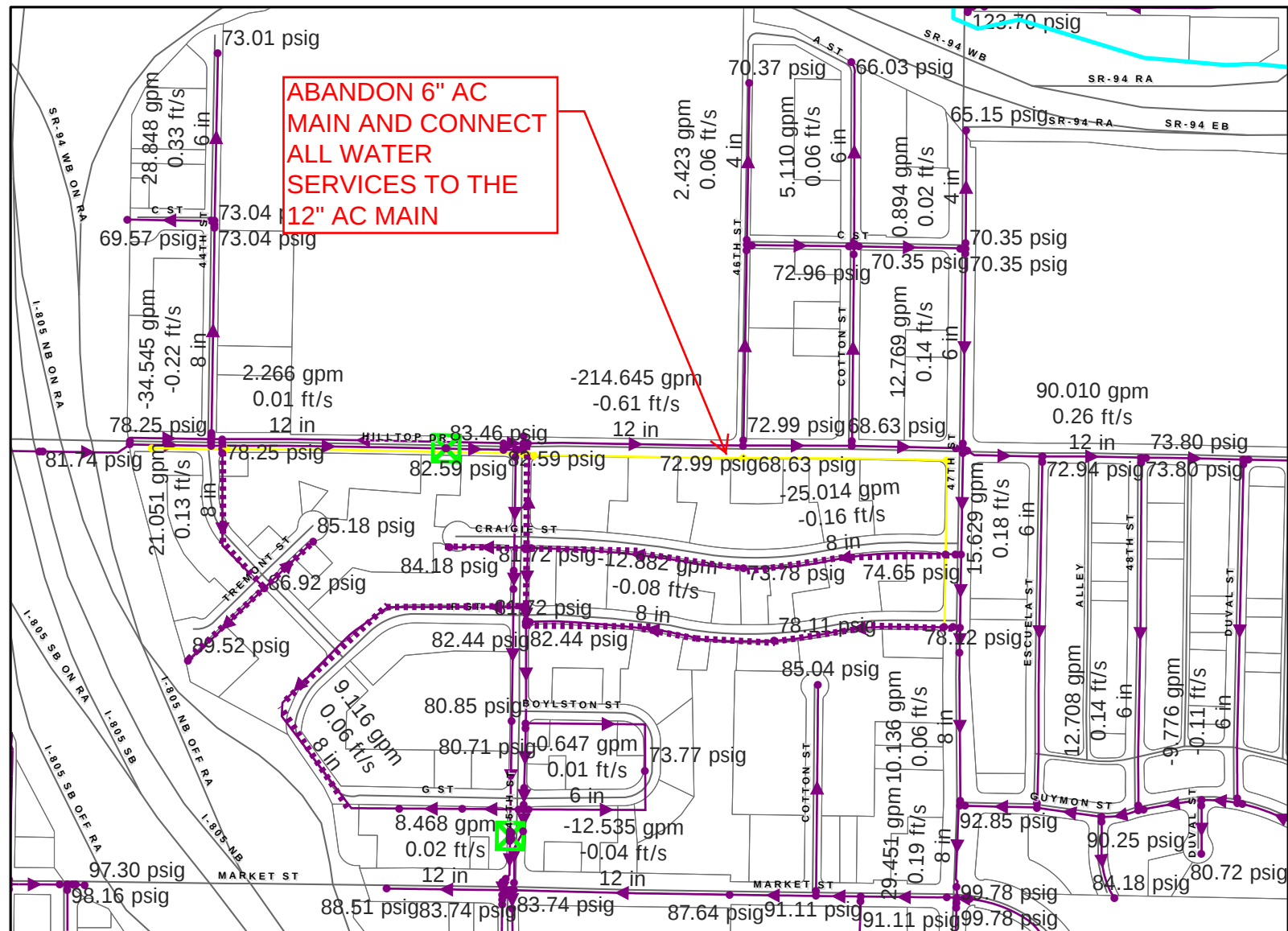
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GROUP JOB 778 AC REPLACEMENT
LOCATION MAP

FIGURE 1



GROUP JOB 778 HYDRAULIC WATER MODELING - EXISTING CONDITION



X,Y (Feet): 6299352.06, 1839561.24

Legend

Facilities Color By

Average Pressure (psig)
 Not Applicable (33)
 < 20.00 (714)
 20.00 - 30.00 (277)
 30.00 - 40.00 (518)
 40.00 - 50.00 (2914)
 > 50.00 (62932)

Nodes Color By

Pressure (psig)
 Not Applicable (18)
 < 20.00 (698)
 20.00 - 30.00 (263)
 30.00 - 40.00 (510)
 40.00 - 50.00 (2658)
 > 50.00 (57281)

Facilities Symbols

Default Pipe
 Default Valve
 Default Check Valve
 Default Tank Fill Valve
 Default Pump
 Default Energy Reporting Pump
 Default Tank/Reservoir
 Default Pressure Regulator
 Default Meter
 Default Subsystem Border



0 130 260 520 780 1,040 Feet



Scale: 1 = 5,548

Simulation Data:
 State: Solved
 Date: 10/13/2014
 Time: 7.50000

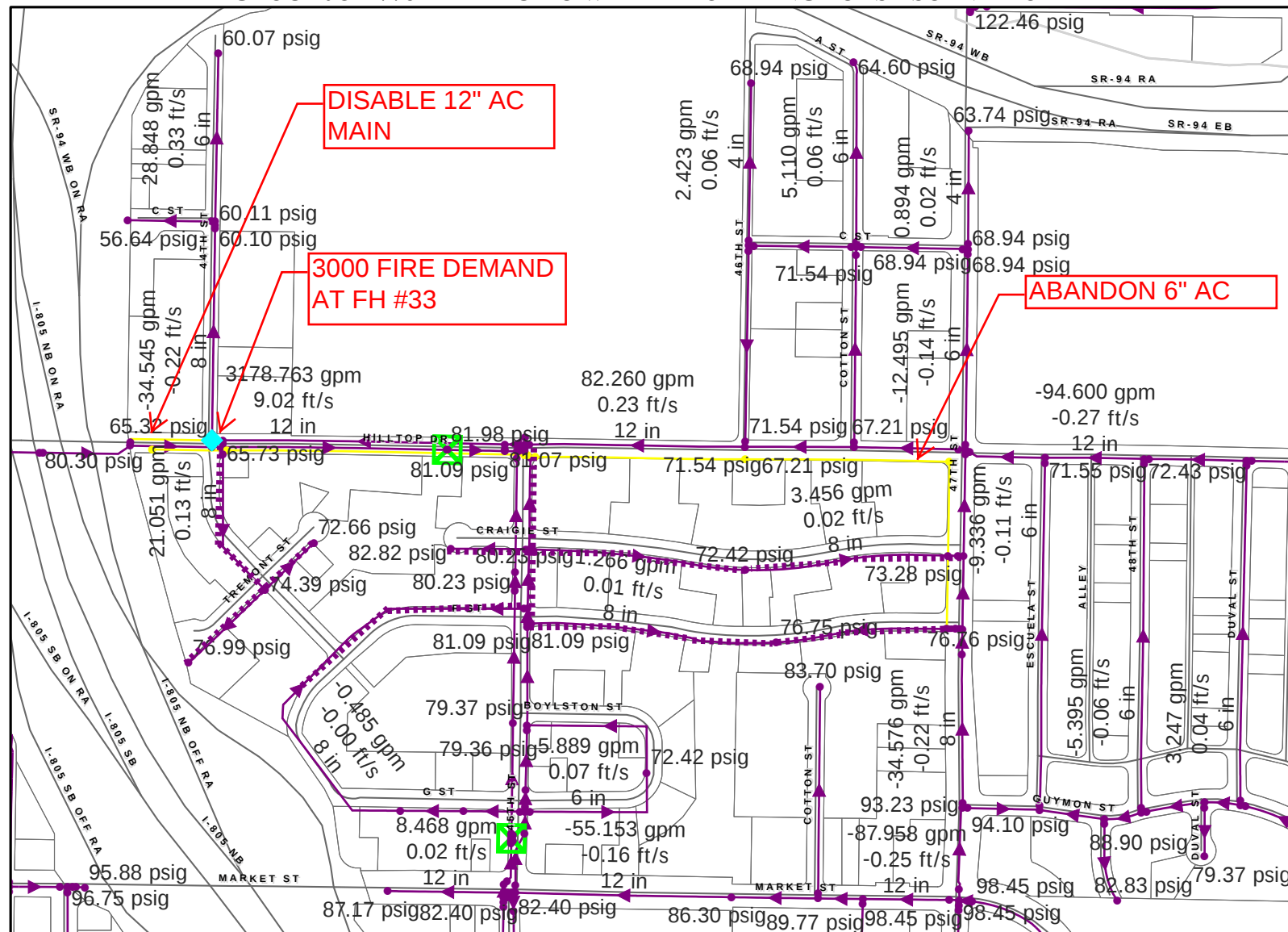
FIGURE 2

Model Name: 2013_Cal_24hr_Alvarado

Model Coordinate System: NAD 1983 StatePlane California VI FIPS 0406 Feet

SynerGEE Water 4.7.0 (04 Jun 2013)

GROUP JOB 778 HYDRAULIC WATER MODELING - CASE SCENARIO



X,Y (Feet): 6299352.06, 1839561.24

Legend

Facilities Color By

Average Pressure (psig)
 Not Applicable (34)
 < 20.00 (724)
 20.00 - 30.00 (289)
 30.00 - 40.00 (733)
 40.00 - 50.00 (2902)
 > 50.00 (62706)

Nodes Color By

Pressure (psig)
 Not Applicable (18)
 < 20.00 (706)
 20.00 - 30.00 (277)
 30.00 - 40.00 (692)
 40.00 - 50.00 (2661)
 > 50.00 (57074)

Facilities Symbols

Default Pipe
 Default Valve
 Default Check Valve
 Default Tank Fill Valve
 Default Pump
 Default Energy Reporting Pump
 Default Tank/Reservoir
 Default Pressure Regulator
 Default Meter
 Default Subsystem Border



0 130 260 520 780 1,040 Feet



Scale: 1 = 5,548

Simulation Data:
 State: Solved
 Date: 10/13/2014
 Time: 7.50000

FIGURE 3

Model Name: 2013_Cal_24hr_Alvarado

Model Coordinate System: NAD 1983 StatePlane California VI FIPS 0406 Feet

SynerGEE Water 4.7.0 (04 Jun 2013)