

## **3 Existing Utilities**

### **3.1 Water System**

#### **3.1.1 Fire Protection Water Services**

##### **3.1.1.1 Fire Hydrant Tests**

BKF obtained fire hydrant flow test data from Central County Fire Department. The fire hydrant tests provide water pressure data under static and high-flow conditions. Fire hydrant tests were performed by the Central County Fire Department May 5, May 9 and May 15, 2005 at Hillsborough School District campuses. The results of the hydrant tests are presented in Tables A1, B1, C1, and D1.

##### **3.1.1.2 Existing Site System Configurations**

At each campus, fire services are provided by on campus hydrants in dead-end runs or off campus hydrants connected to city distribution lines. On site fire services are not looped internally.

##### **3.1.1.3 Existing Site System Fire Flows**

Fire flow test results for existing hydrants at each school site are presented in Appendix E. The minimum acceptable flow is 1,500 gallons per minute (GPM) with a residual pressure of 20 pounds per square inch (psi) for the existing campus or proposed buildings with fire sprinklers. Existing buildings are within the service limits of existing public and private hydrants. A summary of Fire Flows are presented in the Appendix for each school site.

##### **3.1.1.4 Existing Site System Deficiencies**

There are no known fire protection water service deficiencies at any of the four HCSD campuses.

#### **3.1.2 Domestic Water Service**

##### **3.1.2.1 New Building Services**

Where new building footprints conflict with known existing domestic service lines, rerouting is presented in the Figures.

##### **3.1.2.2 Existing Site System Configurations**

Tables 6.1.1 and 6.1.2 in the Appendix for each school site contain lengths, ages, and types of existing domestic water lines.

##### **3.1.2.3 Existing Site System Deficiencies**

Head loss from the public connection at the street, through the meter, to the point where the service enters an existing building has not been evaluated. BKF has been notified that there is a brown water problem on each campus of the HCSD.

Random observations of hose bibs and drinking fountains showed no signs of any brown water problems.

Known deficiencies with sizing or aging pipe materials as provided to BKF by the HCSD maintenance staff are presented below. A limited condition assessment was performed and is presented in Tables 6.1.1 and 6.1.2 in the Appendix for each school site, along with an estimate the probable remaining service life. Pressures and flows beyond the existing water meters or pressure reducing valves are yet to be determined.

#### **3.1.2.3.1 Crocker School**

Sizes and locations of proposed connections are presented in Figures A3.1 and A3.2. No water system deficiencies are known at this time.

#### **3.1.2.3.2 North School**

Sizes and locations of proposed connections are presented in Figures B3.1 and B3.2. No water system deficiencies are known at this time.

#### **3.1.2.3.3 South School**

Sizes and locations of proposed connections are presented in Figure C3.1. No water system deficiencies are known at this time.

#### **3.1.2.3.4 West School**

Sizes and locations of proposed connections are presented in Figure D3.1. No water system deficiencies are known at this time.

### **3.2 Sanitary Sewer System**

#### **3.2.1 Existing Off-Site System Deficiencies**

The Town of Hillsborough Sanitary Sewer system was surveyed by CH2MHill in August 1991 to evaluate infiltration and inflow (I/I) conditions. The I/I study identified recommended improvements to the Town's sanitary sewer system to reduce inflow and infiltration amounts. Improvements were recommended to the main lines immediately downstream of the South and West school sites. The El Cerrito Avenue and Hayne Road lines were identified as priority improvements. No improvements were noted in the vicinity of Crocker or North schools.

#### **3.2.2 Existing Site System Configurations**

Table 6.2 in the Appendix for each school site shows lengths, ages and types of existing sanitary sewer lines at the four school sites.

#### **3.2.3 Existing On-Site System Deficiencies**

##### **3.2.3.1 Crocker School**

Sizes and locations of proposed connections are presented in Figure A4.1. There are no known on-site sanitary sewer deficiencies.

### **3.2.3.2 North School**

Sizes and locations of proposed connections are presented in Figure B4.1. There are no known on-site sanitary sewer deficiencies.

### **3.2.3.3 South School**

Sizes and locations of proposed connections are presented in Figure C4.1. There are no known on-site sanitary sewer deficiencies.

### **3.2.3.4 West School**

Sizes and locations of proposed connections are presented in Figure D4.1. The sanitary sewer system lift station that serves the eastern portion of the campus is deficient. Station controls, pumps, and housing are outdated and in need of repairs. The eastern portion of campus is without sewer service during power interruptions.

## **3.3 Storm Drain System and Best Management Practices**

### **3.3.1 Existing Site System Configurations and Deficiencies**

#### **3.3.1.1 Crocker School**

The results for the StormCAD analysis for the Crocker Campus are presented in Tables 5.1.1-5.1.2 existing system and 5.2.1-5.2.2 for the proposed system. Existing Storm Drain line connections on the Crocker Campus are presented in Figures A5.1 and A5.2. The existing Storm Drain system at Crocker has no pipes that will overtop during the 100-year event. HCSD maintenance staff reported storm drain problems in the vicinity of the gym. Two drain inlets that convey flows from the southwest side of the gym have failed to adequately convey runoff. These system deficiencies have resulted in water damage to the gym floor on more than one occasion.

#### **3.3.1.2 North School**

Existing Storm Drain line connections on the North School are presented in Figures B5.1 and B5.2. HCSD maintenance staff reported no under capacities in the existing Storm Drain system at North.

#### **3.3.1.3 South School**

Existing Storm Drain line connections on the South School are presented in Figure C5.1. HCSD maintenance staff reported only one drain inlet problem in the existing Storm Drain system at South. A drain inlet at the base of a large redwood tree bordering the Stonehedge Road and El Cerrito Avenue corner has restricted the capacity of the storm drainage system in this area. During heavy storm events, the parking lot in this area floods. Flooding recedes slowly as runoff is conveyed through the restricted drain inlet.

#### **3.3.1.4 West School**

Existing Storm Drain line connections on the West School are presented in Figure D5.1. HCSD maintenance staff reported no under capacities in the existing Storm Drain system at West.

### **3.4 Gas System**

#### **3.4.1 Existing Site System Configurations and Deficiencies**

The only known deficiency identified by the HCSD staff was at the Crocker Gym, where water accumulation is reported in the gas lines. The proposed remedy to this deficiency is currently under study by BKF.

##### **3.4.1.1 Crocker School**

Existing Gas line connections on the Crocker campus are presented in Figure A6.1.

##### **3.4.1.2 North School**

Existing Gas line connections at North School are presented in Figure B6.1.

##### **3.4.1.3 South School**

Existing Gas line connections at South School are presented in Figure C6.1.

##### **3.4.1.4 West School**

Existing Gas line connections at West School are presented in Figure D6.1.

### **3.5 Power and Communications**

#### **3.5.1 Existing Site System Configurations and Deficiencies**

There are no known deficiencies with the power and communications as reported by the HCSD maintenance staff.

##### **3.5.1.1 Crocker School**

Existing Electrical line connections on the Crocker campus are presented in Figures A7.1 to A7.3.

##### **3.5.1.2 North School**

Existing Electrical line connections at North School are presented in Figure B7.1 and B7.2.

##### **3.5.1.3 South School**

Existing Electrical line connections at South School are presented in Figure C7.1 and C7.2.

### **3.5.1.4 West School**

Existing Electrical line connections at West School are presented in Figure D7.1 and D7.2.

## **4 Proposed Utilities**

### **4.1 Water System**

#### **4.1.1.1 Fire Protection Water**

##### **4.1.1.1.1 New Building Services**

New buildings will require a fire hydrant within 400-feet of the building (150-foot radius for the fire hydrant plus 250-foot radius for the fire engine). All new buildings will require fire sprinklers, and new connections for the sprinkler systems. Sprinklers will connect to existing or proposed fire main lines. Figures E1, E2, and E3 present fire coverage diagrams for each campus; they also show existing and proposed hydrant layouts. The Central County Fire Department fire flow requirement for HCSD campus improvements is a flow of 1,500 gallons per minute (GPM) with a residual pressure of 20 pounds per square inch (psi) from the service hydrant.

##### **4.1.1.1.1.1 Crocker School**

Four buildings and one trash enclosure are proposed for the Crocker Campus. Two future buildings are also identified on the Campus Master Plan. The proposed buildings will require installation of two new fire hydrants, one to the north of the existing gymnasium, and one to the west of the proposed CPAE. The gymnasium hydrant will allow coverage of two buildings on the Crocker campus. The hydrant west of the CPAE will provide protection for the CPAE, Art extension of the Multi-purpose building, and coverage for future buildings in the area. The proposed buildings will need to be provided with fire sprinkler connections from the main fire lines through the campus. The proposed fire service line locations are presented in Figure A3.1.

The proposed fire main line is approximately 100 feet from existing mains and places a hydrant to the west of the CPAE building. The proposed hydrant north of the gymnasium will require approximately 220 feet of new main line. The lengths, ages and types of existing fire lines shown in Figure A3.1 are presented in Table 6.1.1.

The first hydrant proposed near the CPAE building should provide a fire flow of 2400 GPM at a residual pressure of 20 psi based on fire flow analysis of the existing hydrant at the flag pole on Crocker Campus. The hydrants on the residential roadway behind the Crocker campus should be flow tested. If this system provides sufficient flow, then the proposed