CHAPTER 5

INFRASTRUCTURE AND SERVICES

Infrastructure elements are those features that provide essential services to a community. Water and sewer conveyance systems and utility services systems are examples of physical infrastructure improvements. Other infrastructure elements are not physical improvements, but institutional services such as fire and police services or trash removal. Both types of infrastructure for Shea/Baker Ranch are described below.

5.1 PROJECT HYDROLOGY AND DRAINAGE

Shea/Baker Ranch includes a portion of the Borrego Canyon Wash, a natural alluvial channel with minimal channel improvements. In its existing condition, site surface water consists primarily of precipitation and irrigation water. Most of the water evaporates or migrates into the underlying soil. The existing hydrology of the site is illustrated on Exhibit 5.1, which illustrates five drainage areas. Areas A, D and E, a total area of 75.6 acres with a volume of flow (Q) of 156.4 cubic feet per second (cfs), drain toward Bake Parkway. Area B, 121.3 acres with a Q of 210.5 cfs, drains toward the southwest. A portion of this area is off-site. Area C contains 189.0 acres and the Q for Area C is 308.4 cfs. This area currently flows across the site's surface as sheet flow and drains into Borrego Canyon Wash.

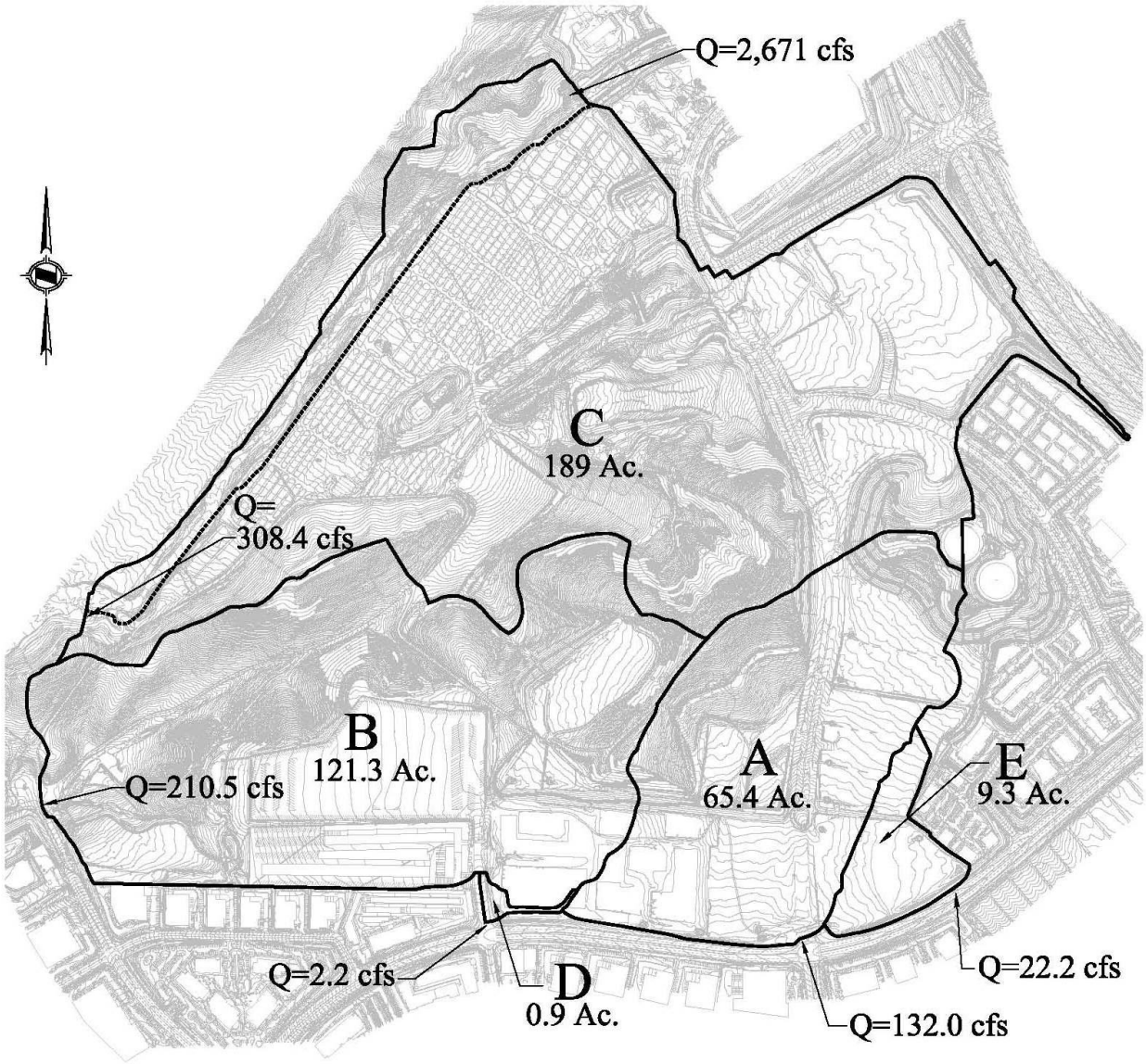

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Exhibit 5.1 – Existing Hydrology

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Exhibit 5.2 illustrates the hydrology for Shea/Baker Ranch when developed. The drainage system has been designed to ensure that runoff volumes after development are the same as or less than the existing condition.

Drainage Area A is 49.2 acres, with a Q of 130.3cfs and connects to the existing drainage system in Bake Parkway.

Drainage Area B is comprised of two sections, one 13.0 acres and one 77.5 acres. These two areas combine to create a Q of 198.5 cfs and drain into the existing storm drain system in Alton Parkway.

Drainage Area C is comprised of 227.2 acres, an increase is size of 38 acres over the existing condition. This drainage area will discharge into the detention basin at the southwestern corner of the site. The Q without the detention basin would be 555.9 cfs. With the basin, the Q is reduced to 308.4 cfs or less, so there is no increase in run-off over the existing condition.

Drainage Area D is 0.6 acres, with a Q of 2.1 cfs. This area connects to the storm drain system in Area B, and discharges into the existing system in Alton Parkway at Commercentre Drive.

Drainage Area E is 6.0 acres and creates a Q of 15.4 cfs. This area drains into the existing storm drain system in Bake Parkway.

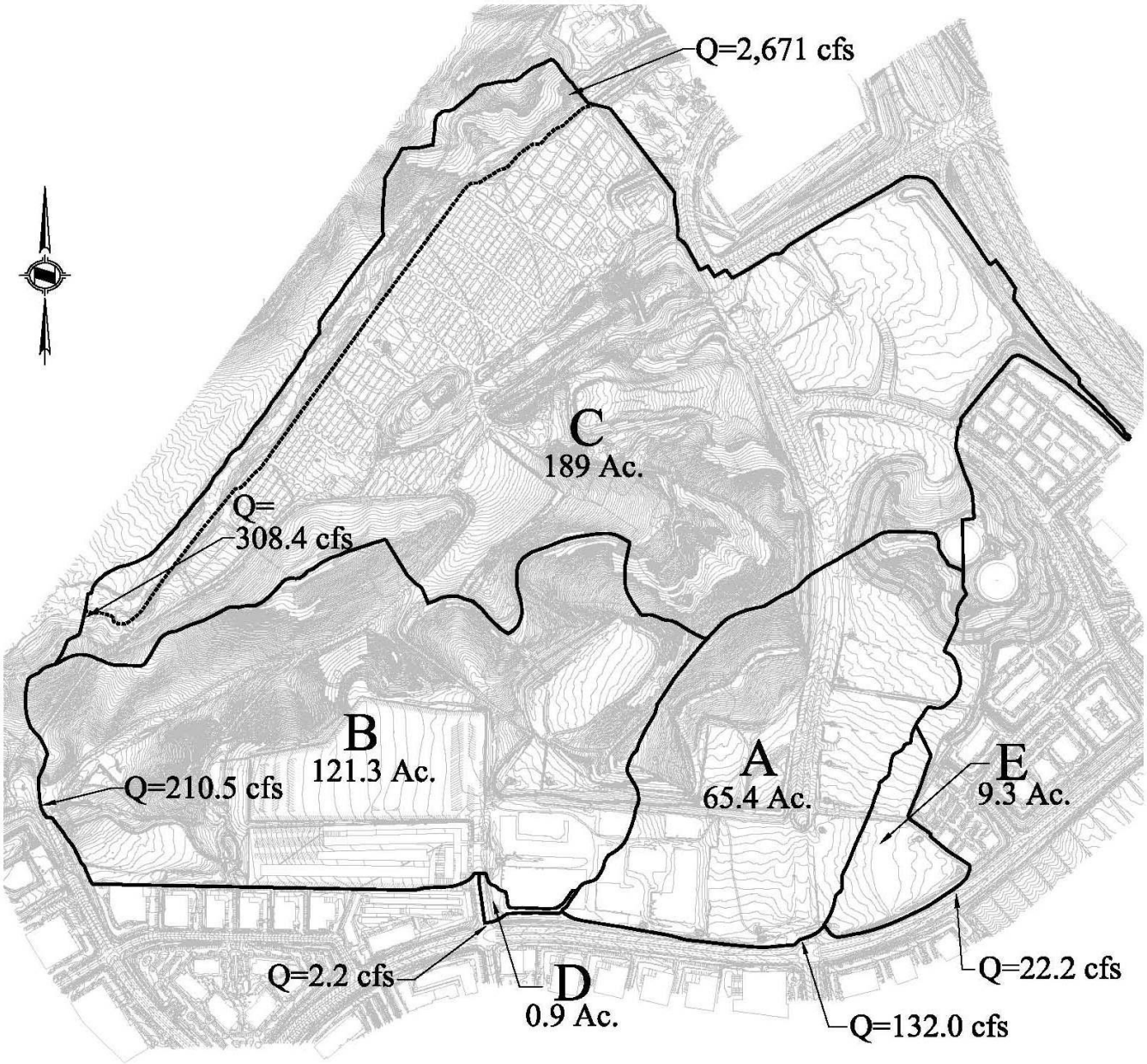

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Exhibit 5.2 – Proposed Hydrology

Exhibit 5.3 illustrates the proposed storm drain system. All storm drains constructed as part of Shea/Baker Ranch will be public facilities. Shea/Baker Ranch will connect to the existing storm drain in Alton Parkway and construct the catch basins needed to serve the project.

A detention basin was constructed as part of the City's Alton Parkway project, and is located in Planning Area 1K. Storm flows from Drainage Area C will flow into this basin where they will be temporarily stored to allow urban pollutants to settle or be absorbed by vegetation planted within the basin. This treated water will then be discharged to Borrego Canyon Wash. This basin was sized to accommodate project requirements for water treatment. A water quality management plan will be prepared for each individual project within Shea/Baker Ranch in order to comply with the City's municipal separate storm sewer system (MS4) permit from the Regional Water Quality Control Board.

Development of Shea/Baker Ranch and Alton Parkway, two separate projects, results in a need for mitigation of impacts to the plant communities that make up the habitat within jurisdictional waters. Pursuant to existing permits and agreements with regulatory agencies (CDFG 1603 Agreement, RWQCB 401 Certification, and ACOE 404 Permit), approximately 2 acres of mitigation plantings will occur on the detention basin slopes. The basin will be offered to the Irvine Ranch Water District for ownership and maintenance. If IRWD does not accept the basin, then it will be owned and maintained by the Homeowners Association.

5.1.1 Borrego Canyon Wash

The Borrego Canyon Wash originates in the foothills above the site and flows in a southwesterly direction until it discharges into the San Diego Creek. The portion of the Wash upstream from the project site is incised and consists of exposed bedrock. Improvements to this portion of the Wash consist of onsite slope stabilization and installation of a low-flow inlet structure slightly north of the site's northern boundary in a portion of the Wash already improved and managed by the Orange County Flood Control District (OCFCD).

The portion of the Wash adjacent to the project site is an incised earthen channel with nearly vertical banks. In order to stabilize the Wash, a Bypass Channel will be constructed parallel to the south side of the existing Wash alignment. The Bypass Channel is intended to control erosive flows that have historically caused the Wash to become unstable. The Bypass Channel will be designed as a reinforced concrete box (RCB) and will convey 100-year storm flows from upstream before it outlets back into the downstream reach of the Wash, south of the project site.

In order to construct the Bypass Channel, the existing Borrego Canyon Wash bottom and the existing south bank will be removed, re-contoured, and replanted with riparian vegetation. The work is limited to a portion of the Wash bottom and the slope of the Borrego Canyon Wash along and within the existing nursery operation. This slope presently consists predominantly of non-native ornamental vegetation. The Bypass Channel would connect to an existing County-owned

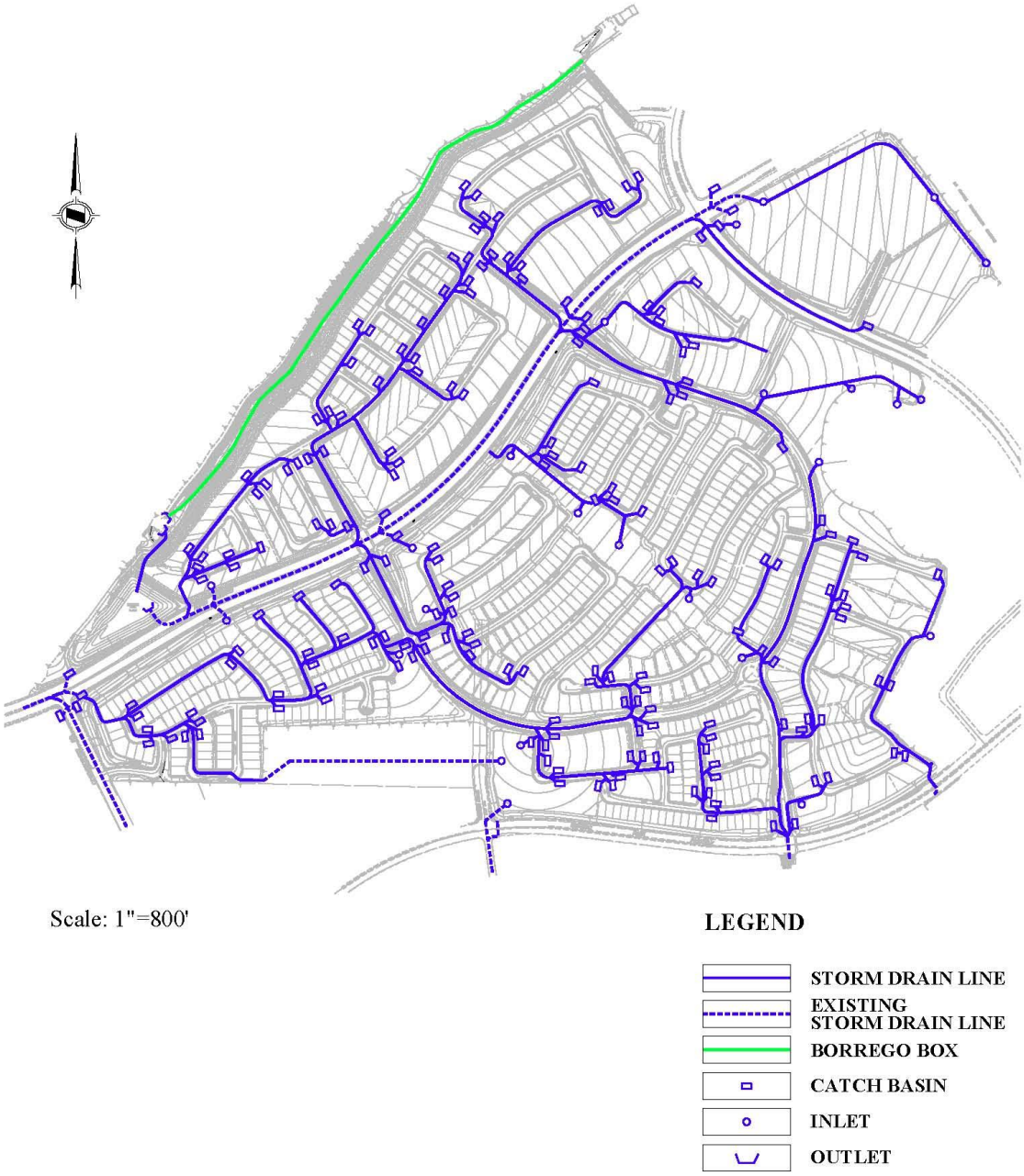

Exhibit 5.3 – Storm Drain System

drop structure upstream, approximately 300 feet north of the Shea/Baker Ranch property, and extend to the southern point where the Borrego Canyon Wash exits the Shea/Baker Ranch property, for a total of approximately 4,200 linear feet. Storm flows greater than approximately 200 cubic feet per second would be diverted into the Bypass Channel. Flows less than approximately 200 cubic feet per second (low flows) would continue to drain into and flow through the Borrego Canyon Wash to support and reestablish habitat. Appendix C contains proposed cross sections for the Shea/Baker Ranch improvements to the Borrego Canyon Wash.

The improvements to the Borrego Canyon Wash were evaluated as part of the County of Orange Alton Parkway EIR. However, the timing of the construction of the Borrego improvements is tied to the construction phasing of the Shea/Baker Ranch project. Construction of the Borrego Canyon Wash improvements will occur during Phase 2 of grading, as described in Section 11.3.1.

The low flow channel will be maintained by either a conservancy or the California Department of Fish and Game.

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5.2 WATER SERVICE

Irvine Ranch Water District (IRWD) provides water and sewer service to the community. Both adequate water supply and sewer treatment capacity are available to serve the project. A copy of the will serve letter from IRWD is attached as Appendix D.

There are two different domestic water pressure zones within the project limits. The lower pressure Zone II, a gravity feed system from the reservoirs above the site, serves sites at elevation 750 feet or lower. The higher pressure Zone III, which is pumped to achieve adequate pressure levels, serves sites at elevations greater than 750 feet. Exhibit 5.4 illustrates the water delivery system for each pressure zone, and indicates what improvements exist and those that will be developed with Shea/Baker Ranch. Construction of these improvements help complete IRWD's master planned infrastructure.

The project's water infrastructure plan consists of a dual water system. In addition to the potable water system described above, a second system will be developed to provide reclaimed wastewater for irrigation purposes. All developer installed common area and homeowners association maintained landscaped areas will be irrigated with reclaimed water. There are two reclaimed water zones, B and C. The backbone reclaimed water system is illustrated in Exhibit 5.5. This exhibit also indicates the existing and proposed portions of the reclaimed water system.

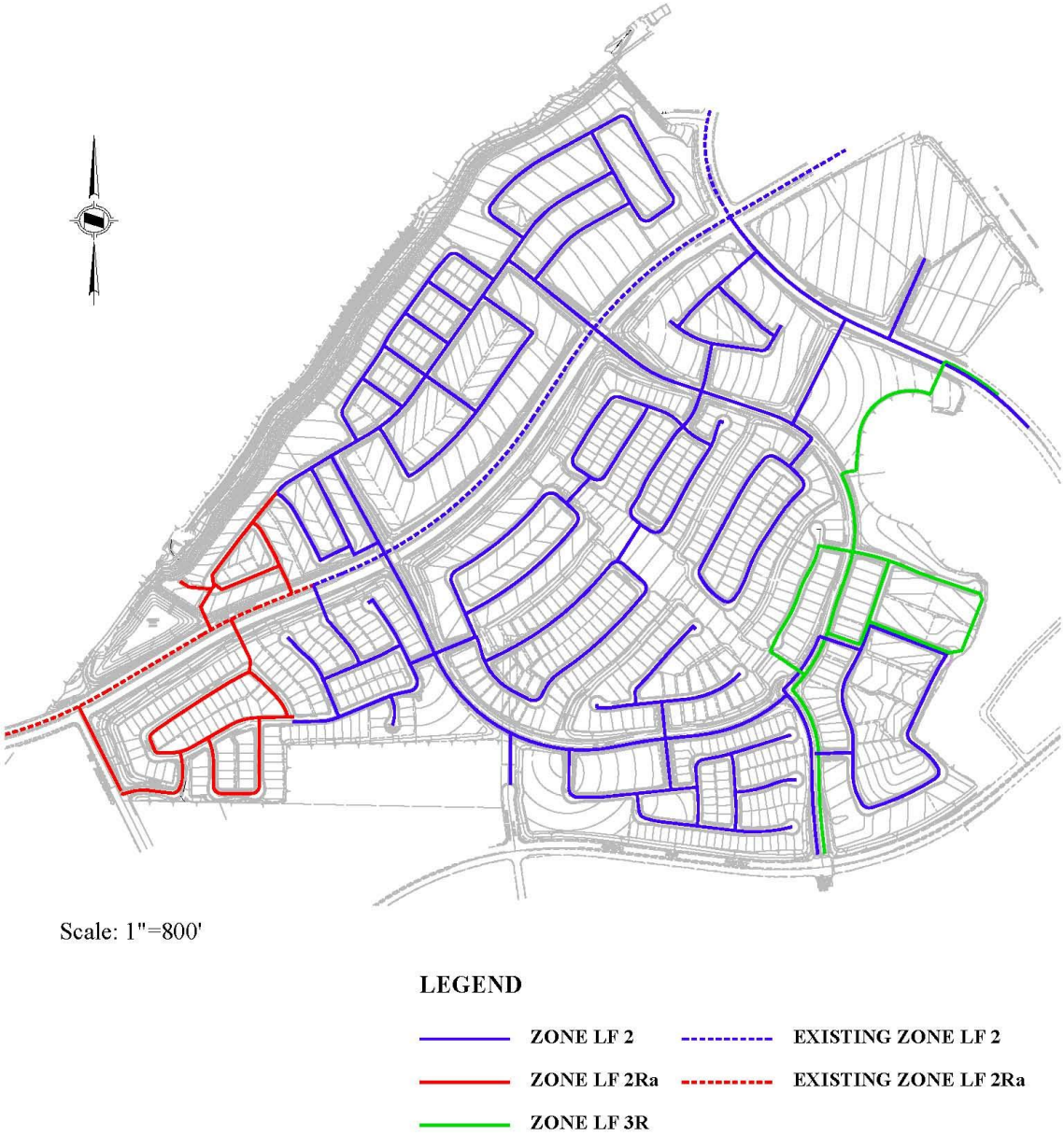

Exhibit 5.4 – Water System

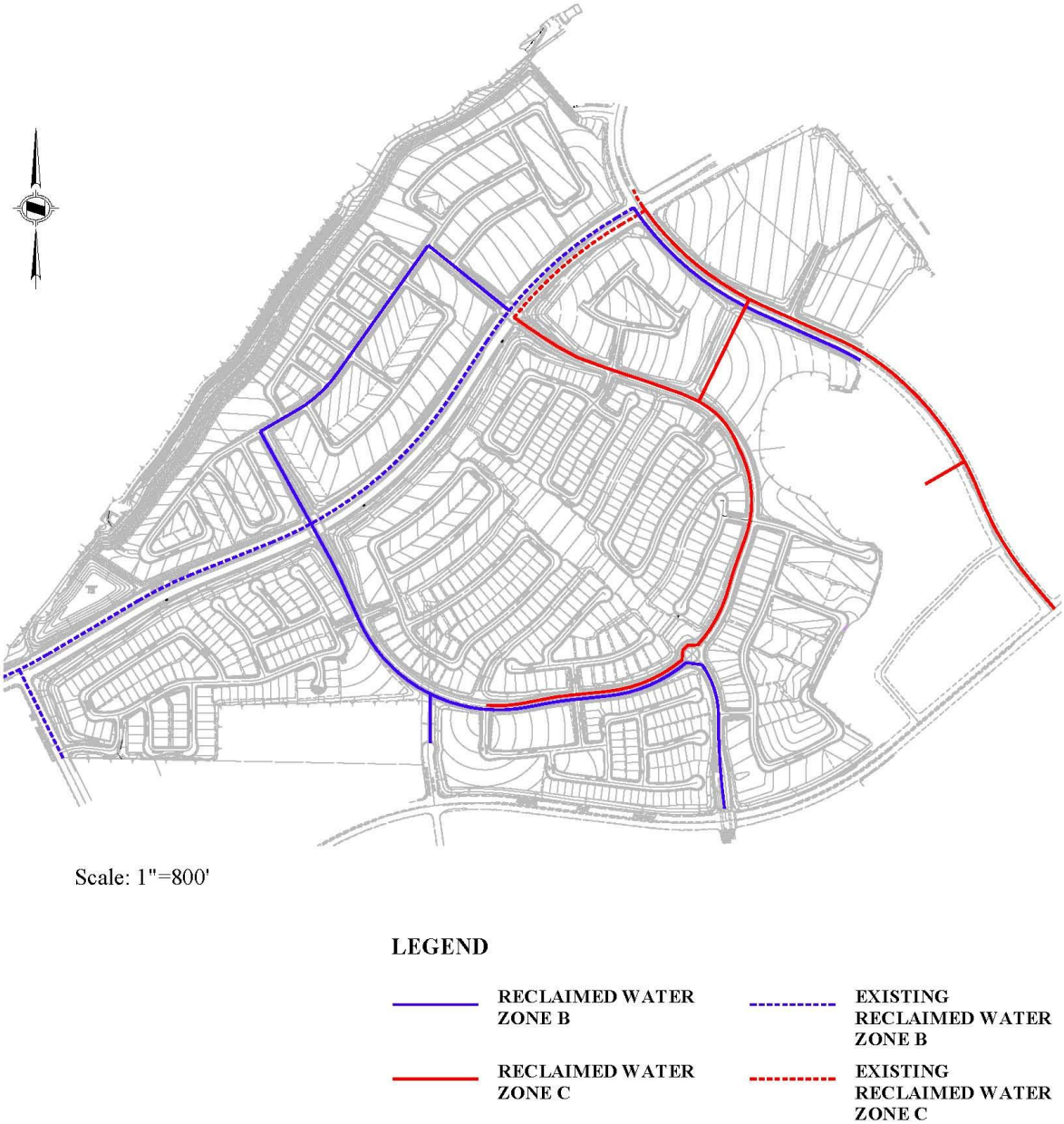

Exhibit 5.5 – Reclaimed Water System

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5.3 SEWER SERVICE

The sanitary sewer system is illustrated on Exhibit 5.6. There is an existing IRWD pump station located northeast of Planning Area 1I along Towne Centre Drive. In the current condition, wastewater from the site and immediately adjacent areas is pumped to connect to a sewer line in Bake Parkway. With the development of Shea/Baker Ranch, new sewer lines will be installed throughout the project site, connecting to the existing system at Alton Parkway at the north end of the project site and Bake Parkway on the east. This will create a gravity flow system that ultimately connects to existing sewer lines at Irvine Boulevard, allowing IRWD to remove the existing pump station at some point in the future. Some existing force main lines will be abandoned in place when the IRWD pump station is removed. Construction of these sewer facilities will help complete IRWD's master planned infrastructure.

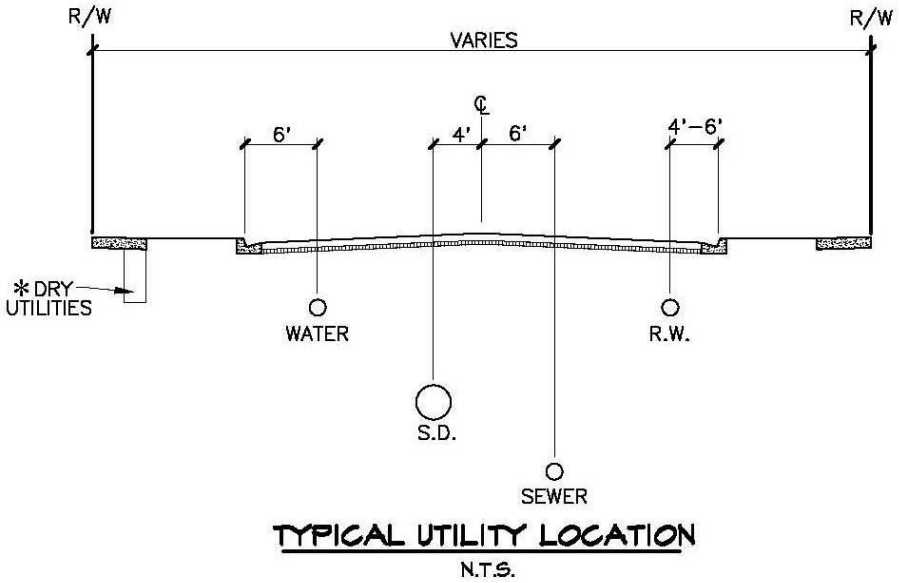
5.4 UTILITY SERVICES

The Southern California Gas Company (SCG) and Southern California Edison (SCE) provide utility services for Shea/Baker Ranch according to service application agreements with the developer. Cable television service is provided through the City of Lake Forest franchisee, Cox Cable. Both Cox Communications and AT&T provide telephone service in the area. Proposed utility backbone facilities and service lines will be underground, except for switching cabinets, transformers, and similar standard structures. The developer will coordinate with these utility companies to determine the most appropriate location for above ground facilities and will provide this information to the City. Exhibit 5.7 illustrates the conceptual location of utilities in and under the streets in Shea/Baker Ranch.

5.5 SOLID WASTE

Regular trash pickup is provided by the City of Lake Forest through contracted services. Household waste recycling services are also provided through the City in order to comply with state-mandated solid waste reduction goals. Orange County Fire Authority (OCFA) provides and manages hazardous waste collection facilities at several locations throughout the County. The closest drop-off location to Shea/Baker Ranch is in the City of Irvine.

Exhibit 5.6 – Sewer Plan



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* DRY UTILITY LOCATION SHOWN IS A TYPICAL LOCATION, ACTUAL PLACEMENT OF DRY UTILITIES MAY BE ON ONE OR BOTH SIDES OF STREET AS DETERMINED BY UTILITY PROVIDERS AND CITY.

Exhibit 5.7 – Typical Utility Locations

5.6 EMERGENCY SERVICES

The County of Orange Sheriff Department provides police services for Shea/Baker Ranch under contract to the City of Lake Forest.

The City of Lake Forest contracts with Orange County Fire Authority (OCFA) for fire protection service. OCFA fire stations that can serve the property exist in the City of Lake Forest off of Portola Parkway at Pauling, approximately 1.25 miles away, and in the City of Irvine on Parker, just south of Irvine Boulevard between Bake and Alton parkways, approximately 2 miles away.

There are three hospitals within service range of Shea/Baker Ranch; Saddleback Community Hospital in Laguna Hills, Mission Community Hospital in Mission Viejo and South Coast Community Hospital in south Laguna Beach.

5.7 INFRASTRUCTURE DEVELOPMENT STANDARDS

1. Storm drain, water and sewer facilities shall be designed in accordance with Orange County Flood Control, Irvine Ranch Water District and City of Lake Forest requirements.

2. Project drainage facilities other than the Borrego Canyon Wash, “V” ditches on privately owned slopes, and the detention basin in PA 1K will be maintained by the City of Lake Forest. These facilities include catch basins and underground pipes.

3. Inlets will be protected to keep storm drain pipes from becoming clogged and for security.

4. All utility lines and pipes shall be placed underground. Utility junction boxes, transformers, etc. will be placed above ground and shall be screened to the extent possible.