

# **Water and Sewer Capacity Study Requirements for Development Projects**

## **City of Ventura**

Rev. January 27, 2015

### **Why are studies needed?**

Ventura's water and sewer systems consist of hundreds of miles of pipelines and complex infrastructure, most of which was built at least 50 years ago. Many parts of the original systems were not designed to accommodate the higher density infill projects that are now popular with developers and supported by the City's current General Plan. Medium to high density infill projects are more likely to overtax the water and sewer system that was designed and originally installed for lower density projects. This could lead to sewer spills onto City streets or low pressures and water shortages in the potable water system. Water and sewer studies help to verify whether the systems can accommodate a proposed development, and if not, they help identify needed improvements that would allow a development project to move forward. While the studies do take time and there is an expense involved, they are vital to safeguard the public and to insure that adequate water and sewer services are provided to both existing and new customers in accordance to State Law. The studies also define specific demands from a project and verify whether there is adequate water supply and treatment plant capacities.

The studies may reveal that no upgrades are needed to the system or that parts of the system need to be upgraded in order to accommodate a new development. If the existing system that will serve the development is already at maximum design capacity and cannot safely handle additional demands, upgrades or monies to be used towards upgrades will be required by the Applicant/Developer as a condition of project approval. At a minimum, the Applicant/Developer is required to cover costs associated with accommodating the additional demands on the system. Necessary upgrades may include replacing undersized water or sewer pipes and installing larger pipes. Other upgrades could include adding or upsizing water pumps at pump stations, adding water storage tanks, and other related system improvements. The City may be able to contribute towards these upgrades as part of a Capital Improvement Project, depending on the age/condition of various system components and other factors, but the timing may not be conducive to the proposed development and therefor the Applicant/Developer would be responsible for the improvements.

Depending on the situation, the City may be able to reimburse the Applicant/Developer for a fair portion of costs associated with upgrades as part of a Reimbursement Agreement. This would typically be the case if needed upgrades are already included in the City's Capital Improvement Program. If there is no immediate need or obligation for the City to increase capacity or make upgrades, but they are

needed for a development project to move forward, formation of a Reimbursement District is another possibility. A Reimbursement District allows an Applicant/Developer to recoup a portion of costs for the installation of new infrastructure from future development projects that might benefit from the upgrades.

If a proposed development is located within an area that has already been studied for deficiencies and where standard deficiency fees have been established (i.e. Downtown Area for sewer or Wells/Saticoy CIDS for water and sewer), a study may not be required, depending on whether the proposed development was captured in the original area-wide study. This determination will be made by the Ventura Water General Manager or designee.

Proposed projects that will not be an intensified use of an existing area that will not require additional use of water or produce more sewer than the land currently or historically used may also be exempt from one or both studies as determined by the Ventura Water General Manager or designee.

### **Sewer Mains**

The City is only obligated to replace and upsize sewer pipes if maximum design capacities are being exceeded (pipe is undersized) AND the exceedance is severe enough to warrant inclusion in the Capital Improvement Program (the replacement is a priority from a Health and Safety standpoint). A pipe is considered to exceed design capacity if:

- $d/D$  is more than 67% for pipes 15-inch and smaller in diameter
- $d/D$  is more than 75% for pipes greater than 15-inches in diameter
- $d/D$  is more than 50% for pipes that cross underneath freeways/highways

where  $d$  is the depth of peak wet weather flow and  $D$  is the diameter of the pipe

The Applicant/Developer is required to replace sections of sewer mains that exceed these limits when accounting for their development project's peak wet weather flow rates and any previously conditioned and City approved projects that will also utilize the same sewer mains. The City is NOT responsible for the replacement or costs associated with replacement and upsizing sewer pipes, even if the existing measured  $d/D$  exceeds the above limits, for the sole purpose of accommodating a development project(s). The City also has no regulatory obligations to replace or upsize sewer pipes within any specific time-frame.

The following excerpts from these documents specify the requirement for water and sewer studies:

### **2013 Comprehensive Water Resources Report:**

A current water supply analysis will be completed in order to meet the requirements of the following recommendations from the report.

- All future development projects should be evaluated based on current supply and demand conditions.
- Use the City-specific water usage factors to calculate the water demand of all development projects as the projects proceed through the City process prior to approval of the project.

### **2005 General Plan:**

- **Water System Analysis.** The project Applicant/Developer is required to conduct a water system analysis of the existing water distribution system, pump station, and storage requirement for the proposed development. The analysis will evaluate the proposed point(s) of connection and will determine if there are any system deficiencies or needed system improvements in order for the proposed development to be connected to and served by the City's water system.
- **Sewer System Analysis.** The Project Applicant/Developer is required to conduct a sewer collection system analysis to determine if downstream facilities are adequate to handle the proposed development. The analysis will evaluate the proposed point(s) of connection and determine if there are any system deficiencies or needed improvements in order for the proposed development to be connected to the City's sewer collection system and for the anticipated discharge to be treated at the Ventura Water Reclamation Facility.

The studies need to be completed and deficiencies identified before the conditions for project approval can be finalized. The conditions will specify any upgrades or fair-share costs for upgrades to the water and sewer system that will be the responsibility of the Project Applicant/Developer.

Project Applicant/Developer is responsible for contracting directly with the City's consultants for conducting the studies. The use of other consultants is discouraged because the recommended consultants are familiar with the City's systems and have worked extensively with the computer models that are used to identify system deficiencies.

## **Water Study**

For the Water Study and to obtain a proposal, contact:

RBF Consulting  
Kevin Gustorf, P.E.  
(949) 472-3505

The following outlines the steps for the Water Study:

- Applicant/Developer contracts with RBF
- Map of Pending Projects within water pressure zone of proposed Project (Case Planner provides to RBF upon request, week 1)
- Draft Hydraulic analysis/report completed by RBF (4-8 weeks)
- See Attachment A for a General Scope of Services

## **Wastewater Study**

For the Sewer Study and to obtain a proposal, contact:

Kennedy Jenks Consultants (KJ)  
Jeff Savard, P.E.  
(805) 973-5700

The following outlines the steps for the Sewer Study. There are two parts to the Sewer Study - In-Situ Flow Monitoring and Hydraulic Analysis:

### **In-Situ Flow Monitoring:**

- Applicant/Developer contracts with KJ
- See Attachment B – Potential In-Situ Flow Consultant List....
- See Attachment C – City In-Situ Flow Monitoring Requirements
- Map of Pending Projects within Sewershed of proposed Project (Case Planner provides to KJ upon request, week 1)
- Manhole locations provided by Sanitation (Sanitation, weeks 1 and 2)
- Applicant/Developer contracts with flow study consultant (weeks 1 and 2)
- In-Situ Flow Study completed by Applicant/Developer Consultant (weeks 3 to 5)
- Review of In-Situ Flow Study by Applicant/Developer (week 6 and 7)
- Review of In-Situ Flow Study by City Land Development/KJ (weeks 6 and 7)
- Possible field verification/additional study (weeks 8 to 11)

## **Hydraulic Analysis:**

(In-Situ Flow Study completed prior to Hydraulic Analysis)

- Developer contracts with KJ (weeks 1 and 2)
- KJ to confirm flow estimate and points of connection (weeks 3 to 8)
- In-Situ Flow Study complete and approved provided to KJ (week 8)
- Draft Report of Hydraulic Analysis/Sewer Study completed by KJ (week 9 to 14)
- See Attachment D for a General Scope of Services for Sewer Hydraulic Analysis

Note: timeframes for hydraulic analysis are in parallel with in-situ flow monitoring timeframes.

In summary, the typical **water study** is estimate to take approximately **8 weeks**. The typical **wastewater study** is estimated to take approximately **13 to 16 weeks** depending on the In-Situ Flow Study timeline. Costs and schedule vary depending on a number of factors, including City staff and consultant work-loads.

After final reports are delivered to the City, addressing all City comments, allow an additional 2-3 weeks for City to write development conditions for mitigating water and sewer system impacts. The conditions will be provided by Land Development to the Case Planner.

***The Developer/Applicant must review reports or have their engineer review reports and have any comments addressed prior to submittal to the City for City's review. Failure to do so could result in delays.***

***COMPLETE THE STUDIES EARLY IN THE PROCESS AS SOON AS ALL WATER AND SEWER DEMANDS ARE ESTABLISHED TO HELP INSURE TIMELY CONDITIONING AND APPROVAL OF YOUR PROJECT.***

For specific questions concerning the studies and contact for Land Development Division, please call Shaida Stuffer at 805-677-3930.

# Attachment A

## General Scope of Services for Water Study

### Task 1: Review Existing Data

RBF will review the available planning documents, maps and data for the proposed Project. These documents will include the last three years of water use data for the existing parcel(s) as provided by the City (*If applicable*), as well as the proposed development by the Owner shall include:

- Project Site Plan – plotted to scale with ground elevations shown (*existing and proposed*)
- Number and location of connections to the City of Ventura water distribution system
- Land Use Data (type of occupancy, number of dwelling units, retail/commercial/industrial square footage, fixture count)
- Irrigated Areas
- Fire Flow Requirements
- Plan of private on-site water distribution system (*if applicable*)

### Task 2: Quantity Water Demand

RBF will quantify the water demand for the proposed Project based on the historical water use (billing) data (*if applicable*) and the proposed land use. If the proposed land use for the project has not been finalized, i.e. the dwelling unit count provided is a range or the land use mix has alternatives, then the water demand calculated and utilized in the analysis will be for the condition that results in the largest water demand figure (typically the maximum day demand plus the fire flow). The additional water demand will be peaked based on the appropriate diurnal curve prepared as a part of the Master Plan. The result will include a table that identifies the recent water usage (*if applicable*) and the proposed water usage based on an average day, maximum day and peak hour condition.

### Task 3: Hydraulic Model Evaluation

RBF will use the existing City hydraulic model and create a new scenario which accounts for the proposed development of the Project and any other future proposed planning project (identified by the City Planning Division at the time of the study), within the same pressure zone (i.e. 210 Pressure Zone).

The existing water distribution system will be evaluated under the Maximum Day Demand (MDD) scenario, the Peak Hour Demand (PHD) scenario, and a fire flow condition for the proposed Project. The model will be analyzed to determine if the existing distribution system has the capacity to meet minimum criteria are identified in the City's Water Master Plan. The model analysis will be used to evaluate if system deficiencies occur and identify the required upgrades.

#### Task 4: Prepare Summary Memorandum

RBF Consulting will prepare a memorandum summarizing the demand projections, model update, model analysis, criteria, identify deficiencies and make necessary recommendations.

An electronic copy of the draft memorandum will be delivered to both the City and owner (Applicant/Developer) for review. Allow 2-3 weeks for City to review the draft report and to provide comments. RBF will address all comments and prepare a final memorandum. Two copies of the final memorandum will be submitted to both the City and the owner, along with an electronic version of the memorandum.

#### Task 5: Meetings

RBF Consulting will meet with Applicant/Developer and/or City on an as-needed basis to review and coordinate project parameters, consolidate or clarify comments on the draft report, or to resolve issues that may arise during the study.

Compensation will be on a time and expense reimbursement basis in accordance with the latest Schedule of Charges. The budget will not be exceeded without authorization.

## Attachment B

### **Potential In-Situ Flow Consultant List and Permit Requirements**

A. These are a few companies City has reports from:

1. JR's Environmental Services: (805) 214-1109
2. Downstream: (760) 746-2544
3. Us'3: (619) 546-4281
4. Gold Coast Environmental: (805) 498-3811

Once you hire the company who will be performing the flow study, please have them **contact Wastewater Division at: (808) 677-4118 at least 14 days in advance of start of their monitoring** to schedule a walk thorough of the sites and also for the City crew to clean the pipes. A Wastewater Division staff must be present at the time of installation and removal of the meters. This requirement is for preventing contractors from opening City manhole covers without City staff present.

**B. An Encroachment Permit is required for this operation.** The requirements for an Encroachment Permit are:

1. Encroachment Permit Fee
2. City Business License
3. Traffic Control Plan (Check with Traffic Division, Frank Benavidez (805) 654 7761)
4. Insurance MUST follow the following language **(If you have any questions on the insurance, please contact Rocio Pila at (805) 654-7833 or Alex Juarez-Pina (805) 654-7810):**

- Unconditional primary and not contributory
- Name the City Additionally Insured (\$1 mil.)
- Cover Ongoing Operations
- Cover Completed Operations
- Proof of Workers compensation insurance
- Waiver of subrogation for workers compensation insurance
- Certificate holder:

City of Ventura, Land Development/Encroachment Permits  
501 Poli Street, Ventura, Ca. 93001

## Attachment C

### **City of Ventura, In-Situ Flow Monitoring Data Gathering and Reporting Requirements**

**VENTURA WATER, WASTEWATER DIVISION MUST BE CONTACTED AND MUST BE PRESENT DURING FIELD VERIFICATION. NO WORK IS TO BE STARTED UNTIL VENTURA WATER, WASTEWATER DIVISION HAS BEEN CONTACTED!**

**AN ENCROACHMENT PERMIT IS REQUIRED FOR THIS OPERATION. VISIT CITY HALL, ROOM 117, LAND DEVELOPMENT COUNTER FOR PERMIT REQUIREMENTS AND FEES.**

**TWO (2) WEEKS PRIOR TO INSTALLATION OF FLOW METER, VENTURA WATER, WASTEWATER DIVISION SHALL BE CONTACTED AT (805) 677-4118 FOR COORDINATION AND FOR CITY FORCES TO CLEAN THE SEWER PIPES.**

**PRIOR TO INSTALLATION OF FLOW METER, THE PIPE SIZES ARE TO BE FIELD VERIFIED BY THE TESTING COMPANY.**

The Report:

1. Data shall be for 14 to 21 **continuous** days without interruption of data. If data is interrupted then an additional 14 to 21 **continuous** days is required until 14 to 21 **continuous** days of data is gathered.
2. Data at fifteen-minute intervals.
3. Submitted by (company name, contact person, address, phone number, e-mail address)
4. Project name
5. Date (start date, finish date)
6. Installation information (pipe size, pipe material, condition of trough, evidence of surcharge, hydraulic conditions)
7. Address of flow meter monitoring
8. Flow meter information (type, sample rate, calibration history)
9. Map showing location of flow meter manhole(s)
10. Diagram of manhole trough and location of flow meter in trough (identify north in diagram)
11. Copy of Confined Space Entry Permit if manhole entry is required at any time. Proof of certification for Confined Space Entry Permit is required prior to start of the work.
12. Summary table sheet of the flow monitoring results for the multiple location sites.
13. Charts showing Depth of flow, Flow velocity, Flow rate.

14. Site summary sheets showing:

- a. Location
- b. Diameter
- c. Period (start date, end date)
- d. Depth of flow inches (Average, Maximum, Minimum, Max d/D %) with data graph.
- e. Flow velocity Feet per second (Average, Maximum, Minimum) with data graph.
- f. Flow rate million gallons per day (Average, Maximum, Minimum, Peak factor) with data graph.

**The flow monitoring study shall be reviewed by a licensed civil engineer and a summary of findings with supporting data are to be included with the submittal.**

**Three original color copies of the report, in 3-ring binders or spiral notebook, along with an electronic copy of the report shall be delivered to the City of Ventura, Land Development Division for their review and comments/acceptance.**

## **Attachment D**

### **General Scope of Service for Sewer Hydraulic Analysis**

The scope of services to be provided by Kennedy/Jenks is divided into the following tasks. The scope assumes that the new or updated flow estimate for the planned development or project will be provided to Kennedy/Jenks by others as an average day flow. The scope assumes that the In-Situ flow test results will be provided to Kennedy/Jenks by others after approval by the City. The scope also assumes that the City's pending project list and map within the sewershed will be provided to Kennedy/Jenks by others.

#### **Task 1: Hydraulic Model Evaluation**

As part of the Master Plan, a computer model was created for the purpose of simulating wastewater system performance and identifying deficiencies under various flow scenarios. The flow scenarios used in the Master Plan are existing, near-term, and ultimate. Consistent with the Master Plan, this computer model and these scenarios will be utilized to evaluate the impacts of the planned development or project on the City's wastewater collection system.

The flow estimate for the planned development will be updated and modeled for both the near term and ultimate scenarios. The new flow estimate will also be added to the existing scenario. The computer model will also be recalibrated based on the In-Situ flow test results.

#### **Task 2: Documentation**

The modeling results will be presented in a short letter report describing the existing Wastewater infrastructure, updated flow estimate, hydraulic model analysis, Evaluation criteria, and findings. An electronic copy of the draft report will be delivered to both the City and owner (Applicant/Developer) for review. Allow 2-3 weeks for City to review the draft report and to provide comments. KJ will address all comments and prepare a final report. Two copies of the final report will be submitted to both the City and the owner, along with an electronic version of the memorandum.

#### **Task 3: Project Management**

Kennedy/Jenks will provide overall project management, which includes super-vision of the project engineers, planning and monitoring of contract budget and schedule, and coordination with the City. Kennedy/Jenks will also provide quality assurance/quality control to ensure that the work products meet the City's standards.

#### Task 4: Meetings

KJ Consulting will meet with Applicant/Developer and/or City on as as-needs basis to review and coordinate project parameters, consolidate or clarify comments on the draft report, or to resolve issues that may arise during the study.

#### **Project Deliverables and Schedule:**

The Letter Report will be submitted within 8 weeks following receipt of a written notice-to-proceed and all of the necessary information related to the planned development or project.

#### **Budget:**

Compensation will be on a time and expense reimbursement basis in accordance with the latest Schedule of Charges. The budget will not be exceeded without authorization.