Las Virgenes – Triunfo Joint Powers Authority
4232 Las Virgenes Road, Calabasas, CA 91302
818.251.2100

March 10, 2015

Subject: **Request for Proposals –**
Preparation of the Preliminary Design & CEQA Study for the Woodland Hills Country Club Recycled Waterline System Extension

Las Virgenes Municipal Water District (LVMWD) invites your firm to submit a proposal to perform the services outlined in this Request for Proposals, which includes the following:

I. Introduction
II. Scope of Work
III. Minimum Consultant Qualifications
IV. Information to be Submitted
V. Time for Completion, and
VI. Evaluation Criteria

A scope of work is included to assist you in the preparation of your proposal. Failure to submit information in accordance with the requirements in this RFP may be cause for disqualification. A meeting and field tour to discuss the proposed project and to answer questions is scheduled for **April 1, 2015, and will begin at 1:00 p.m.** at District headquarters. This meeting is mandatory in order to submit a proposal. Interviews may be scheduled at the JPA's discretion, subsequent to the review of the proposals by JPA staff.

The consultant's project manager must be a registered professional engineer in the State of California to practice the work being solicited.

Five copies of your proposal must be received at the District headquarters office by 3:00 P.M., **May 6, 2015** for consideration. Please contact me at (818) 251-2142 or via e-mail to eschlageter@lvmwd.com if you have any questions.

Very truly yours,

Eric Schlageter, P.E.
Associate Engineer

REQUEST FOR PROPOSALS
FOR

PREPARATION OF THE PRELIMINARY DESIGN & CEQA STUDY FOR THE WOODLAND HILLS COUNTRY CLUB RECYCLED WATERLINE SYSTEM EXTENSION.

PROPOSALS DUE MAY 6, 2015 at 3:00 p.m.

LAS VIRGENES MUNICIPAL WATER DISTRICT
4232 LAS VIRGENES ROAD
CALABASAS CA 91302
818.251.2100

Document Date:
March 10, 2015

REQUEST FOR PROPOSALS
Las Virgenes Municipal Water District
Preparation of the Preliminary Design & CEQA Study for
The Woodland Hills Country Club Recycled Waterline System Extension.

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I. BACKGROUND INFORMATION

The Joint Powers Authority (JPA) of the Las Virgenes Municipal Water District (LVMWD, District) and Triunfo Sanitation District (TSD) operate and maintain a sewer system and wastewater treatment facilities that serve the Malibu Creek Watershed within Los Angeles and Ventura Counties. The Tapia Water Reclamation Facility (TWRF) provides tertiary treatment and disinfection to the wastewater prior to beneficial reuse for irrigation of golf courses and green belts.

LVMWD's wastewater service area comprises approximately 70 square miles (45,715 acres) in western Los Angeles County, including the Los Angeles/Ventura County boundary to the northwest and the City of Los Angeles to the east. The service area includes the incorporated cities of Agoura Hills, Calabasas, Hidden Hills, and Westlake Village as well as unincorporated portions of Los Angeles County. Adjacent to LVMWD's service area, TSD's wastewater service area comprises approximately 50-square miles (32,000 acres) in eastern Ventura County, including Oak Park, Lake Sherwood, Bell Canyon, and the Westlake Village and North Ranch portions of Thousand Oaks. Together, the two service areas, LVMWD and TSD, comprise the complete service area of the JPA.

The City of Los Angeles Mayoral Executive Directive No. 5, issued October 14, 2014, specifies Los Angeles goals to reduce per capita potable water use, reduce purchase of imported water, and create an integrated water strategy that increases local water supplies and improves water security. Los Angeles Department of Water and Power (LADWP) 2010 Urban Water Management Plan (UWMP) identifies key strategies consistent with these goals. One objective in UWMP is to achieve 59,000 acre-feet per year (AFY) of recycled water use by 2035, by expanding the recycled water system for irrigation, industrial, and commercial uses and through groundwater replenishment with purified recycled water.

There are both short-term and long-term opportunities for the JPA to partner with LADWP in the expansion and reuse of recycled water. Staff has met several times with LADWP staff to discuss these opportunities. The main focus of the discussion has been on short-term opportunities and the potential of long-term opportunities. These partnerships will help in achieving the JPA's goals of maximizing beneficial reuse, offsetting regional imported water, reducing greenhouse gas emissions and reducing discharge.

The first short-term opportunity is the extension of the recycled water system to the Woodland Hills Country Club, generating a demand of 300 AFY. In the long-term, the system could be expanded to include areas such as Warner Center and Pierce College, generating approximately 1,000 acre-feet of annual demand.

Woodland Hills Country Club Extension

The JPA has entered into an agreement with LADWP to potentially serve recycled water to the Woodland Hills area, with Woodland Hills Country Club (WHCC) as the anchor customer. The agreement provides for the completion of preliminary design and environmental review according to the California Environmental Quality Act (CEQA). A second agreement will be developed after adoption of the CEQA document for design and construction of the pipeline. The project consists of a 24,300-foot pipeline extension from LVMWD's eastern service area to the WHCC. The main extension would serve WHCC and other customers along a proposed pipeline route. These customers are currently served potable water by the LADWP. The Country Club is a privately owned 72-acre, 18-hole golf course, and clubhouse situated in the rolling foothills of the Santa Monica Mountains within the City of Los Angeles at 21150 Dumetz Road. The Country Club is approximately 3.6 miles from LVMWD's closest recycled water main.

The JPA is the lead agency for the project and LADWP is a responsible agency.

II. SCOPE OF WORK

This RFP involves three major tasks, which should be considered and discussed in your proposal:

1) Review of available materials from JPA and other sources and research

   - Review available materials and record drawings from the JPA and other utilities as appropriate in relation to various alignment studies.
   - Review available geotechnical information.
   - Review archaeological survey that pertains to cultural resources that may be present within the potential pipe alignment area.
   - Research other factors, which may include, but not limited to, underground utilities and environmental conditions that may have a bearing on the project.

2) Perform base level survey (as-needed), preliminary engineering, alignment and siting studies and other aspects of a preliminary design report for:

   - Installing a 24,300-foot recycled water pipeline extension, with 5,300 feet within the JPA service area and 19,000 feet within the City of Los Angeles to serve the WHCC;
   - Facilities within the JPA service area are to be designed to JPA standards and facilities within the City of Los Angeles are to be designed to LADWP standards. The consultant shall take design standards into account in preparation of their proposals. No additional funds shall be available at a later date should a consultant decide LADWP or JPA design standards require additional efforts.
   - Provide an overall project description, alignment study with proposed alternative route(s), engineering estimate, estimated construction duration, field investigations (surveying, geotechnical, archaeological, traffic, paleontology, right of way, underground utilities, field reconnaissance), and identification of potential construction issues and constraints (permits, utility conflicts, easements, working hours, connection to existing system, mitigation measures implementation).
   - Provide a recommendation on the pipe diameter, or variable pipe diameters, to be used for the recycled water pipeline extension, considering possible expansion to the

Warner Center and Pierce College using existing studies such as the Los Angeles 2012 Recycled Water Master Plan.

- Conduct pipe material analysis and provide cost estimates for the following scenarios:
  a. Pipeline in JPA service area is plastic; pipeline in LADWP service area is ductile iron
  b. Pipeline in both service areas is plastic
  c. Pipeline in JPA service area is CML / CMC steel

3) Perform CEQA reviews:

- Perform CEQA analysis for the proposed project and identify construction impacts.
- Prepare and circulate the CEQA Initial Study on the project.
- Prepare necessary level of CEQA documents as determined by the Initial Study.
- Provide all necessary administrative services related to CEQA such as publishing the various notices
- Assist the JPA and LADWP in identifying and engaging stakeholders in both service areas who need to be contacted.

In addition to the three main tasks above, the Consultant's proposal shall also discuss any supporting tasks that may be involved for this project: These tasks may include, but are not limited to, the following tasks:

- Study of the topography and geology of the project areas.
- Potential impact from utilities conflicts.
- Capital and operational cost impact associated with options and any recommendations.
- Evaluate right-of-way and easement needs for the preferred alignments.
- Research and identify necessary permits with other State and local public agencies that may be affected.
- Identify other entities that may have an interest or stake in the construction of the project, per the preferred alignment/sites.
- Coordinate meetings that may be necessary with the affected agencies.
- Attend project kick-off meeting and regular progress meetings, at least monthly, with both JPA and LADWP staff.
- Attend and/or present findings at JPA board meetings
- Perform site visits as necessary to refine the options of the preferred alignment and siting.
- Evaluate the traffic impacts for the alignment alternatives.
- Prioritize feasible alignment alternatives.
- Recommend most feasible and appropriate alignment, considering costs, environmental and cultural impacts and ease of construction.
- Determine if there is a need for additional environmental consultant support. Recommend scope of additional services needed.
- Provide a schedule of critical path activities, significant milestones, and deliverables at the kickoff meeting. Estimate the time needed to execute critical path tasks.
- Discuss your firm's approach to expedite the alignment study process.
- For the most feasible and recommended option, prepare planning level estimates of costs for:

1. Pre-construction activities:
    a. Survey work
    b. Land, right of way, and/or easement acquisitions
    c. Pipeline design
2. Environmental documentation and/or mitigation work.
3. Construction:
    a. Cost of contract work
    b. Cost of supporting engineering services

JPA staff will perform the following tasks:

1) Review reports and related design materials
2) Manage project based on consultant provided contract documents
3) Pay invoices
4) Attend meetings
5) Coordinate with LADWP
6) Provide necessary available information

III. MINIMUM CONSULTANT QUALIFICATIONS

Consultant shall provide information to verify the following minimum qualifications:

1) Planning, design and construction management experience related to determining feasible alignments of pipeline expansions in a setting similar to the proposed project environment, with a value of at least $1 million.
2) Professional liability insurance in the amount of $1 million.
3) Project manager shall have sufficient experience in the planning, design and construction of similar projects that are proposed here, with a preferable minimum of 5 years experience.
4) Ability to execute the standard Agreement for Professional Services (Attachment 2).
5) Project manager must be a registered Civil Engineer in the State of California.

IV. INFORMATION TO BE SUBMITTED

1) Legal name of firm with address, telephone number and the name of at least one principal.
2) Project understanding and approach, including resource capacity to perform work on several projects simultaneously.
3) A recommended scope of work, which clearly displays an understanding of the project using as a basis the preliminary scope of work outlined above.
4) Names and résumés of individual(s) proposed to perform the services, including copy/copies of registration as a professional engineer.
5) Description of the firm's internal quality control process.
6) Names, qualifications and principals of any sub-consultants to be utilized in providing the service(s).
7) References for 3 recently completed projects of similar size and scope, including contact person and telephone number.
8) Experience designing pipelines in both service areas.
9) Sample of a similar study document prepared by your firm within the last 5 years.
10) Certificate of professional liability insurance.
11) Cost to perform the delineated services and schedule of rates in a separate envelope.

V. TIME FOR COMPLETION

The timetable for this project is:

Request for Proposals Released	March 10, 2015
Meeting and Field Tour (1:00 P.M. LVMWD Headquarters)	April 1, 2015
Proposal Due Date (3:00 pm)	May 6, 2015
Board Acceptance of Successful Proposal	July 6, 2015
Project Completion Date	6-months after Notice to proceed

VI. EVALUATION CRITERIA

Proposals will be evaluated based upon the following:

1) The quality of performance on similar past projects, including those on which the proposed team has worked together.
2) Expertise in the field of water distribution system planning, design and construction.
3) Demonstration of understanding project scope, objectives, and potential solutions.
4) The ability and experience in working with cities and other local entities in the planning, design and construction of potable and/or recycled water systems within these respective jurisdictions.
5) The ability to propose and meet time schedules that emphasize value engineering, operational flexibility and constructability.
6) The ability to complete the work within established budgets.
7) The firm's history and resource capacity to perform the requested service.
8) Cost of proposal in terms of overall value to the JPA.
9) The firm's internal quality control process.
10) The experience and qualifications of assigned personnel.
11) Qualifications and use of sub-consultants.

Specifically, the guidelines to implement the above criteria are described in the following section:

The Evaluation Process for this RFP

The JPA will have a panel to evaluate the proposals. The proposals will be evaluated according to the following parameters, and will be consultant's reference as to how JPA staff will be analyzing received proposals.

Experience

- The quality of performance on similar past projects, including those on which the proposed team has worked together.
- The ability and experience in working with cities and other local entities in the preparation of a CEQA document for a preferred alignment within these respective jurisdictions.
- The ability to propose and meet time schedules that emphasize value engineering and constructability.
- Demonstrating previous experience in working with other public and regulatory agencies.
- The firm's history and resource capacity to perform the requested service.

- The experience and qualifications of assigned personnel.
- Qualifications and use of sub-consultants.

Expertise

- Expertise in the field of the planning, design and alignment of recycled water pipelines and appurtenances.
- Demonstration of understanding project scope, objectives, and potential solutions.
- Demonstration of knowledge of environmental issues.
- The firm's internal quality control process.
- Demonstrated expertise through execution of other non-technical but equally necessary tasks such as:
    - Ability to overcome obstacles that may have been presented by the community.
    - Approach to addressing specific environmental or archeological issues.
    - Understanding of the interrelatedness and timing of the essential project activities.
    - Ability to show successful repeat clients through related experience of similar projects.

Project Development

- The consultant's ability to work within the framework set by local agencies and interest groups.
- The consultant's ability to proactively assist the JPA in meeting scheduling/timing milestones and cost goals.
- The consultant's understanding of the JPA's goal and vision, and their approach through a detailed narrative or schedule.
- The proposed steps or milestones of the proposed solution have been well thought of, logical, feasible, and constructible.
- The proposed project team's commitment and availability to the specific needs of this project.
- The proposal's approach is specific to the goals and requirements of this project, and not generic.

Value Engineering

- The proposal cost reflects the level of work and commitment described.
- The proposal cost addresses the adequate needs of the JPA.
- The cost includes items that, while not essential, are beneficial and preferred, so that the JPA may benefit from them. This is the result of a thorough assessment and analysis.
- The consultant's proposal expedites construction, allows for smooth operation, and reduces maintenance.
- The ability to complete the work within established budgets.
- Cost of proposal in terms of overall value to the JPA.

The JPA may conduct interviews of consultants who have submitted a proposal that it considers closest to the JPA intent and vision. The JPA's decision on which consultant to hire is final.

ATTACHMENT 1:

Woodland Hills Country Club Recycled Water Service Study

ATTACHMENT 2:

Agreement for Cooperative Environmental Review and Term Sheets

ATTACHMENT 3:

Agreement for Professional Services

ATTACHMENT 1:

Woodland Hills Country Club Recycled Water Service Study

LVMWD # 2467.00

2nd DRAFT

Woodland Hills Country Club Recycled Water Service Study

Las Virgenes Municipal Water District

Project Manager John Zhao

AECOM Technical Services, Inc.

Project Manager Dan Ellison, PE

Project Engineer Fernando Baez, EIT

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January 2011

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AECOM

Las Virgenes Municipal Water District
Woodland Hills Country Club
Recycled Water Service Study

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Las Virgenes Municipal Water District
Woodland Hills Country Club
Recycled Water Service Study

Section 1 – Introduction

This study has been prepared for the Las Virgenes Municipal Water District (LVMWD) to assess the feasibility of providing recycled water to the Woodland Hills Country Club (Country Club) and other customers along a proposed pipeline route, particularly the Louisville High School (High School) and Motion Picture and Television Fund Hospital (Hospital).

These customers are currently served potable water by the Los Angeles Department of Water and Power (LADWP). The Country Club is a privately owned 72-acre, 18-hole golf course, and clubhouse situated in the rolling foothills of the Santa Monica Mountains within the City of Los Angeles, at 21150 Dumetz Road. The Country Club is approximately 3.6 miles from LVMWD's closest recycled water main. Its current irrigation demand is estimated at approximately 250 acre-ft per year. Demands for the High School and Hospital have been estimated at 50 and 5 acre-ft per year, respectively.

By serving these demands through its recycled water system, Las Virgenes MWD would decrease the amount of surplus recycled water that is currently discharges from its Tapia Water Recycling Facility.

Conversion of the Country Club to recycled water would assist LADWP in achieving its short-term goal of increasing the use of recycled water in Los Angeles. Greater use of recycled water reduces demands on the potable water system, reducing the amount of water imported from Northern California. LADWP has a long-term goal of groundwater storage of recycled water, which may be a decade in the future.

There would also be a potential cost benefit to both LADWP and customers who receive service, as the cost of recycled water from LVMWD should be appreciably less than the marginal cost of potable water (i.e., Tier II) purchased from Metropolitan Water District and delivered through the LADWP system.

Section 2 - Background

By extending its recycled water system to new customers, LVMWD achieves: (1) greater beneficial use of recycled water, (2) reduced discharges of effluent to Malibu Creek and the Los Angeles River, (3) and minimized costs associated with operating spray fields and other alternative effluent disposal methods.

Recycled water is typically used at schools, parks, golf courses, and other areas where irrigation demands are large enough to offset the capital and administration costs of installing and operating a recycled water system. Virtually all such demands within the LVMWD service area are already served by recycled water. Numerous studies have investigated extensions of the LVMWD Recycled Water System to reach new customers outside its service area. Among the most promising extensions to the system is a pipeline to the Woodland Hills Country Club. Such an extension was first investigated in the 2007 Recycled Water Master Plan and has been the subject of more recent reports and discussions.

2007 Master Plan Analysis

The Recycled Water Master Plan Update 2007 (LVMWD Report No. 2389.01) by Boyle Engineering Corporation (now AECOM), identified various potential customers of recycled water, both inside and outside of Las Virgenes MWD's service area. Among those identified were the Woodland Hills Country Club, Louisville High School, and the Motion Picture Hospital, all in the southwest portion of the San Fernando Valley, just east of Calabasas. The recycled water demands for these potential customers were based on actual water usage as reported in the South Valley Water Recycling Facility Report, a June 2005 study for LADWP by Boyle Engineering. Using the demands from this earlier report and the normal peaking factors for LVMWD's Eastern Recycled Water System, a peak flow rate of 1350 gpm was calculated for these customers. To convey these flows, up to 30,000 feet of water main extensions, ranging from 8 to 12 inches in diameter, were identified. The 2007 Master Plan also indicated that a more detailed analysis was needed, "including an analysis of demands from the golf course, demands from other users along the way, and a survey of elevations prior to design of any extension" to the Country Club.

2010 Technical Memorandum

In April 2010, RMC Water prepared for LADWP a Technical Memorandum entitled *Initial Customer Evaluation – Woodland Hills Country Club* (**Appendix A**) in which the feasibility of receiving recycled water at the Country Club was studied. This technical memorandum concluded that the Country Club site was a very good candidate (rated as an "A") for conversion to recycled water. The RMC memorandum noted that the Country Club already had an existing meter serving an irrigation system that was separated from the potable system that served the club house and provided fire protection. Country Club staff expressed some reservations about the salinity of recycled water from the LVMWD system. In particular, salts can accumulate in the greens, where frequent, shallow irrigation is the normal practice.

According to the RMC memorandum, the desired water service would be 2000 gpm for four hours, at a delivery pressure of 140 psi.

Interagency Meeting

Shortly after the RMC memorandum was written, representatives from LVMWD and LADWP met to discuss the possibility of a joint project to serve the Country Club and other possible customers from the LVMWD's recycled water system. One conclusion of the meeting was that the project appeared to be feasible and was supported in concept by both agencies. A framework for cost sharing was also discussed, including the idea that any required improvements within Los Angeles would be financed and owned by LADWP and any required improvements within the LVMWD service area would be financed and owned by LVMWD. The Country Club, High School, and Hospital would continue as customers of LADWP; LVMWD would simply sell recycled water to LADWP at a negotiated wholesale price. Presumably a meter station would be constructed near the boundary between the two agencies.

Current Study

On July 29, AECOM was authorized by LVMWD to further investigate the feasibility of serving the Woodland Hills Country Club and other sites with recycled water from an extension to LVMWD's Eastern Recycled Water System. This task included additional analysis of system hydraulics and modeling of various alternatives. Because estimated peak demands listed in

the RMC Technical Memorandum were considerably higher than the peak demands used for the 2007 Master Plan, additional pipeline upgrades could be needed. Also, the 2007 Master Plan analysis was predicated on construction of another improvement, the Calabasas City Center Pipeline. Without this pipeline in place, other pipelines or larger pipelines might be required. Among the alternatives to be investigated were using storage at the Country Club to equalize demands, negating the need for new pipeline infrastructure. Other possibilities included: (1) using longer irrigation periods to reduce peak demands on the system and (2) converting only a portion of the Country Club's irrigation to recycled water.

The current study also includes a preliminary investigation of possible pipeline alignment and a more detailed look at anticipated project costs.

Annual RW Demands

Estimated demands for recycled water for the Woodland Hills Country Club were derived from the RMC Memorandum. These demands are less than what has historically been used at the Country Club, reflecting recent decisions to remove turf from the golf course. Demands for the Louisville High School and the Motion Picture and Television Fund Hospital were taken from the South Valley Water Recycling Facilities Report (Reference 3). During the 2007 Master Plan study, an analysis of aerial photographs was used to generally confirm the magnitude of the demands for the High School and Hospital, however more detailed site investigations are needed. The demands for the High School, which is a private girls' school, appear to be overstated, as the aerial photographs do not indicate significant athletic fields or other green spaces.

Along the proposed pipeline routes, a few other potential customers have been noted. Next to the Country Club is Topanga Mountain School, another private school that does not have significant playfields. Near the High School are several large areas of open space, some of which are shown as belonging to Topanga State Park, but these spaces don't appear to be irrigated. Along one part of Mulholland Drive, there are landscaped medians that would be good candidates for recycled water. A church with a large amount of green space is found at Mulholland Drive and Deseret Drive. Other than the Country Club, the most attractive potential

customer is Serrania Avenue Park, a City of Los Angeles park located just east of the Country Club.

Table 2-1 shows estimates recycled water demands for these customers, as taken from the referenced reports and analysis of aerial photos.

Table 2-1. Preliminary Recycled Water Demands

Facility	Approximate Irrigation Area	Yearly Irrigation Demands	Data Source
Woodland Hills Country Club	67 acres	230 acre-ft	RMC[(1)]
Louisville High School	Not Available	51 acre-ft	LADWP[(2)]
Serrania Avenue Park	10 acres	30 acre-ft	Aerial Photo[(3)]
Church at Mulholland Dr. and Deseret	2 acres	6 acre-ft	Aerial Photo[(3)]
Motion Picture and Television Fund Hospital	1.8 acres	5 acre-ft	LADWP[(2)]
Topanga Mountain School	Not Available	~ 1 acre ft	Aerial Photo[(3)]
Mulholland Drive Medians	Not Applicable	5 acre ft	Aerial Photo[(3)]
Alice Stelle School, Freedom Park, & other	8 acres	24 acre ft	Master Plan[(4)]
Total Estimated Demand		~ 325 acre ft[(5)]	

Table Notes
[(1)] Data from "Initial Customer Evaluation – Woodland Hills Country Club", by RMC Water, April 2010 (Ref. 2)
[(2)] Data provided by LADWP and taken from "South Valley Water Recycling Facility Report", by Boyle Engineering Corporation, June 2005 (Ref. 3). The demand for Louisville High School merits a more detailed investigation. Analysis of aerial photos indicates less than half this potential demand.
[(3)] Demands estimated from landscape areas derived by scaling aerial photos.
[(4)] Per the District's "Recycled Water Master Plan Update 2007" (Ref. 1, Appendix A). Demands include Chaparral School and various medians along Mullholland Highway
[(5)] Total is less than the sum. It assumes that Louisville HS is only about half what is shown.

Few other potential customers are expected along the proposed pipeline route. Generally moderately sized residences are on both sides of the proposed pipeline route, with very few commercial properties. One notable exception is a small agricultural concern just south of the Hospital. Whether this agricultural customer would be willing to use recycled water merits additional investigation.

Section 3 – Existing Recycled Water System

The Joint Powers Authority (JPA) of LVMWD and the Triunfo Sanitation District recycles water at the Tapia Water Reclamation Facility (Tapia). The JPA also owns and operates a complex distribution systems consisting of pipelines, pump stations, tanks and reservoirs, and associated appurtenances to deliver recycled water to users in various areas of Los Angeles and Ventura Counties. Through this system, approximately 60 percent of recycled water produced annually by the JPA is sold for irrigation and other uses.

During peak periods in the summer, demands for recycled water frequently outstrip supply, necessitating the addition of supplemental water from the potable system. During other times of the year, however, surplus recycled water requires disposal. This surplus recycled water can be a particular problem in the late spring or early fall, because Tapia is prohibited from discharging water to Malibu Creek at that time, necessitating disposal through more expensive methods, including the use of spray fields and the pumping of water over a hill to the Los Angeles River Basin.

To serve recycled water to the Woodland Hills Country Club, a 3.6-mile main extension from the Eastern Recycled Water System would be required. Depending on the level of service required, additional upgrades to the existing distribution system may also be required, as discussed later in this report.

Eastern Recycled Water System – Facilities

The Eastern Recycled Water System consists of the Recycled Water Pump Station East (RWPS East), a 14-inch pipeline to Reservoir No. 3 which continues on to Cordillera Tank, increasing in diameter to 18-inches and 24 inches. East of Cordillera Tank, major pipelines consist of 14-inch pipelines, or combinations of 8-inch and 12-inch pipelines, leading up to Discharge Facility 005 (DF 005). DF 005 is a pressure reduction and control facility where water is discharged to a County storm drain. Through this facility, surplus recycled water is disposed to the Los Angeles River. The facility is used frequently in the late Spring and early

Fall, when discharges to Malibu Creek are not allowed. **Plate 1** shows the existing recycled water facilities, in Calabasas and nearby areas.

In 2007, LVMWD upgraded pumps at RWPS-East, installed additional pipelines near DF 005, and upgraded the discharge facility itself. This project's purpose was to increase operational flexibility, including the ability to discharge larger flows to the Los Angeles River Basin. Because of these upgrades, the District has the ability to convey over 4000 gpm to DF 005 which is approximately one mile from the Los Angeles City limits and 4.6 miles from the Country Club.

Supply Capacity

Adding the Country Club, High School and Hospital to the Eastern Recycled Water System, will increase maximum-day demands on the eastern recycled water system from about 2.8 MGD to about 3.7 MGD, a significant increase of over 30 percent. However, with the recent upgrades to RWPS-East, the system has the ability to deliver as much as 6.5 MGD to Cordillera Tank. At Cordillera, an additional 1.1 MGD of potable supplement can be added. Thus, from a supply standpoint, there is ample capacity in the system.

Hydraulic Capacity

With a high-water level of 1529 feet, Cordillera Tank sets the hydraulic gradient for the Eastern Recycled Water System. Because the water service for the Country Club is at an elevation of approximately 960 feet, there is also ample hydraulic head to move water to the Country Club, without additional pumping. But even with ample head, relatively high velocities in the distribution system east of Cordillera Tank are anticipated, simply because the system would be serving more flow than originally anticipated. High velocities can result in significant pressure drops that could negatively impact service to existing customers, particularly those at higher elevations. The hydraulic capacity of the system was analyzed for various scenarios, as discussed in the next section.

Section 4 – Hydraulic Analyses

Design Criteria

The hydraulic analyses applied various criteria, in an effort to find the most economic system for delivering recycled water to the County Club.

Peak Flow Rates. Per the RMC memorandum, the Country Club indicated that their peak flow rate was approximately 2000 gpm for 4 hours at night. A subsequent conversation with the same Country Club representative, Mr. Steve Sinclair, the golf course superintendent indicated that the actual peak flow rate is 1800 gpm during a 4-hour irrigation period at night. It is also noted in the RMC memorandum, that demands have decreased recently and additional reductions in demand were expected, with the removal of about 5 acres of turf. This would result in an overall reduction in demand of approximately 7 percent.

For the hydraulic analysis performed for this study, AECOM looked at the following cases:

Table 4-1. Project Alternatives

Project Alternative	Flow to Country Club	Irrigation Period	Comments
A	400 gpm	4 hours	• Requires 340,000 gallons of on-site storage • Requires on-site pump station modifications
B	1800 gpm	4 hours	• Matches current operations
C	1300 gpm	6 hours	• Assumes irrigation period is extended, or o 120,000 gallons of on-site storage, and o pumping modifications
D	1000 gpm	4 hours	• Requires 200,000 gallons of on-site storage • Requires on-site pump station modifications

On-Site Storage. Several golf courses in the area use on-site ponds to store water and thereby help levelize water delivery rates. These ponds become water features, adding to the attractiveness of the golf course. In some cases, water is delivered during the day (when demands on the recycled water system are minimal) for pumped delivery to the irrigation systems during the night. If a pond is used for storage, the design of the facility would need to be such that mudflats are not created when water levels are low.

Table 4-2 shows the required minimum sizes (surface areas) for ponds necessary for the flow rates indicated above. This table assumes that a 6-inch to 12-inch daily fluctuation in water level would be acceptable. It is recommended that a specialist in pond design be consulted to determine criteria for actual pond design, including water level fluctuation and overall depth.

Table 4-2. Pond Areas Required for Various Storage Volumes

Storage Volume	Area needed for 12-inch fluctuation	Area needed for 6-inch fluctuation
120,000 gallons	0.37 acres	0.75 acres
200,000 gallons	0.61 acres	1.2 acres
340,000 gallons	1.0 acres	2.1 acres

The above storage could be provided in a single pond, or multiple ponds. However, with multiple ponds, operations would be more complex, unless the ponds happened to have identical elevations.

As mentioned earlier, the Country Club expects to remove up to 5 acres of turf for water conservation purposes; some of these areas may be suitable for ponds. Although the evaporation losses from a pond would partially negate the conservation benefit provided by removing turf, a significant cost reduction should be achieved by converting to recycled water, offsetting the cost of the evaporation. The evaporation loss from a pond is believed to be roughly comparable to the evapo-transpiration rate of turf.

On-site storage can also consist of above-ground or buried tanks. When above ground, welded steel or bolted steel tanks are generally the most economical. When below ground, concrete is generally preferred (although steel with internal stiffeners has also been used). The cost for construction of such tanks, including design costs, range from $1.50 per gallon to $2.00 per gallon. Also, tanks should be slightly bigger than the amount of storage required, to allow some flexibility of operation. A minimum buffer of 10 percent is recommended. **Table 4-3** shows the suggested sizes and budgetary costs for tanks for the storage volumes mentioned earlier.

Table 4-3. Tank Sizes and Budgetary Costs

Storage Volume	Tank Size and Dimensions	Approximate Cost
120,000 gallons	135,000 gallons 38 ft diameter x 16 ft high	$270,000
200,000 gallons	220,000 gallons 48 ft diameter x 16 ft high	$440,000
340,000 gallons	375,000 gallons 63 ft diameter x 16 ft high	$750,000

If on-site storage is used, modifications to the existing on-site pumping facility would be required, or a new pumping facility would be needed.

Delivery Pressures. The existing water meter is located at the north end of the Country Club along Dumetz Road which is also near the lowest elevation (Elev. 965) of the Country Club. Elevation differences vary by as much as 140-feet throughout the site. As a result of this grade difference and to meet the pressure requirements of the sprinkler system, the Country Club has a small booster pump station which boosts the pressure to 140 psi for irrigation of the higher and more remote sections of the site.

Per the RMC memorandum, the Country Club desired a minimum delivery pressure of 140 psi, which would allow the Country Club to discontinue the use of an on-site pump station. A subsequent conversation with Mr. Sinclair indicated that residual pressures at the service meter have been recorded between 100 to 110 psi.

For the hydraulic analysis performed for this study, AECOM looked at the following cases for delivery pressure to the pump station:

- 140 psi minimum pressure, per the RMC memorandum; would eliminate the need for on-site pumping
- 100 psi minimum pressure, matching the current pressure; would avoid the need for pump station modifications
- Less than 100 psi; would require pump station modifications.

Pressure at Other Customers

Adding such a large demand, particularly at the extreme limits to the existing system could create significant pressure losses that would negatively impact existing customers, particularly customers at higher elevations. For a recycled water system, delivery pressures can be fairly low, if on-site pumping is used. LVMWD's Recycled Water Master Plan specifies a minimum pressure of 20 psi (vs. 43 psi used in the potable water system). However, a pressure this low could be problematic, if an existing customer is used to a much higher pressure.

For the hydraulic analysis performed for this study, the following criteria were applied for pressures at existing customers, near the point where the main extension would connect to the recycled water system:

- 45 psi minimum
- not more than 30% drop in pressure over what is currently experienced

As discussed later in this section, the analyses focused on one particular customer, described as "Existing Customer J-E-382", located on Park Soldi, at the end of the system. At an elevation of 1153 feet, this customer is relatively high and would be more susceptible to

decreases in the hydraulic gradient. It is not known whether the above criteria would be sufficient in preventing any negative impacts to this customer. Additional investigation may be warranted.

Model Calibration

Prior to modeling the water main extension, the accuracy of the existing model was checked. For the period of August 4 to August 8, 2010 pressure readings and SCADA data were provided by LVMWD for the following locations:

- pressure readings were recorded at Park Capri and Park Granada (RW 89), Park Sorrento and Park Ora (RW 67), and Mulholland Highway and Calabasas High School (RW 53), using pressure recording devices installed at blowoffs and other convenient points of connections
- water elevations at Cordillera Tank
- flows and discharge pressures at RWPS-East

The data provided by the LVMWD SCADA system indicated a 24-hour flow at RWPS-East of 47,972 gallons, approximately 106 percent of the anticipated maximum day demand (MDD). To test the model against this actual data, a scaling factor of 106 percent was then applied to the MDD demands. **Table 4-4** shows the results.

Table 4-4. Model Calibration Test Results

Model Node	Expected Value at Peak Hour	Actual Value at Peak Hour
Cordillera Tank Level	16 feet	14 feet
RW 89 Pressure	192 psi	180 psi
RW 67 Pressure	205 psi	180 psi
RW 53 Pressure	161 psi	120 psi

The above data indicate relatively close agreement between the model and operation of the existing system for two of the three locations. The location where field data and the model data were noted to be considerably different was recorded at the Calabasas High School. The difference observed in the two sets of data at the high school location can be attributed to the likelihood that the model demand pattern does not necessarily match the irrigation pattern at the high school. Further investigation may be necessary. Based on these results, the model was used to analyze the proposed extension to the Country Club.

Analyses of Main Extension to Country Club

Using WaterCAD modeling software and the existing model of the recycled water system, various demand scenarios were analyzed. Along with the estimated demands at the Woodland Hills Country Club, demands for the Motion Picture Hospital and Louisville High School, as identified in the *Recycled Water System Update 2007,* were included in the analyses. Demands for other potential customers have not been included at this time, pending a more detailed investigation of their potentials. However, the addition of these other customers is not expected to significantly alter the conclusions of the analyses.

The analyses showed that a simple pipeline extension from the most eastern portion of the system would be able to deliver a flow rate of at least 400 gpm without experiencing major pressure deficiencies throughout the existing system. This would fulfill the Country Club's water demand requirements, provided that delivery occurred over a 24-hour period. This scenario would require some form of on-site storage and modifications to the existing on-site pumping station. For other scenarios, upgrades to the existing recycled water system will also be required.

With construction of a 1-mile, 12-inch parallel pipeline from DF 005 to the end of the system, coupled with a 3.6 mile long, 14-inch diameter pipeline extension to the Country Club, the Country Club can receive 1800 gpm (their current maximum flow rate) at a pressure that is equal or higher than the current delivery pressure. Other analyses showed that to supply 1800 gpm to the Country Club with a delivery pressure of 140 psi or higher (their desired pressure), a 20-inch pipeline would be required, from DF 005.

Table 4-5 summarizes the results of the hydraulic analyses. Details can be found in **Appendix B.**

Table 4-5. Hydraulic Analysis Results

Project Alternative	Flow to Country Club	Pressure at Country Club	Required Infrastructure
A	400 gpm for 24 hours	>140 psi	• 10-inch main extension • 340,000 gallons of on-site storage • On-site pump station modifications
B1	1800 gpm for 4 hours	>140 psi	• 20-inch main extension • 20-inch parallel pipe
B2	1800 gpm for 4 hours	>100 psi	• 14-inch main extension • 12-inch or 14-inch parallel pipes
C1	1300 gpm for 6 hours	>100 psi	• 12-inch main extension • 12-inch parallel pipe
C2	1300 gpm for 6 hours	>140 psi	• 14-inch main extension • 14-inch parallel pipe
D	1000 gpm for 8 hours	>100 psi	• 12-inch main extension • 12-inch parallel pipe • 200,000 gallons of on-site storage • On-site pump station modifications

A major consideration in the analysis was an existing customer located at a relatively high elevation in the system, labeled as J-E-382 on **Plate 1**. The water pressure at this point was used to compare the effects of the added demands on the recycled water system. Without a parallel main, major pressure drops would be experienced at this location (as well other locations east of DF-005), if flows to the Country Club are 1000 gpm and higher.

Pipeline Alignment Alternatives

The water main extension and parallel mains for Alternative B2 are shown schematically on **Plate 1**. Two alternatives are shown for how the main extension would connect to the District's system. The **Alternative 1** pipeline alignment would be in Park Granada and Park Sorrento,

north of Lake Calabasas, and is the shorter alternative, but requires two private easements.[1] The **Alternative 2** pipeline alignment would be south of Lake Calabasas, in Park Capri, Park Granada, Park Ora, and Valmar Road. Although slightly longer, this alternative is believed to be wholly in public rights of way. A disadvantage of this alternative is that service to the Hospital would be more difficult.

Several other alignment alternatives merit consideration. In particular, a variation of Alternative 2 where the pipeline continues onto Benford Street (instead of Valmar) before reaching Mulholland Drive, may have advantages. It is recommended that final pipeline alignment be determined during a preliminary engineering study which would examine costs, traffic impacts, permitting requirements, and utility congestion.

[1] One easement would be required connecting Park Sorrento to El Cañon Avenue. The other easement would traverse the Hospital, between El Cañon Ave and Mullholland Drive.

Section 5 – Project Costs

This section presents planning-level opinions of probable costs for the alternatives presented in Section 4. These cost opinions are for comparison of alternatives and the determination of general project feasibility. These estimates are based on data for construction of similar facilities in Southern California, with adjustments for inflation, project size and other factors. The estimated costs may not reflect site-specific conditions that are not known at this time.

For these opinions of cost, the cost of pipelines was estimated based on an average cost per foot, which is derived from aggregate project costs, and include trenching, pipe installation, backfill, traffic control, and paving. It also includes a typical amount of bore-and-jack construction and similar methods for crossing major obstructions. Where storage is shown, it has been assumed that an in-ground pond will be constructed with a hypalon liner. A nominal amount has been included for pump station upgrades, where needed, but without more information than is currently known, these amounts could be off by a factor of 100 percent or more.

Table 5-1 provides a summary of the cost estimates that are found in **Appendix C**.

Table 5-1. Summary of Planning-Level Opinions of Cost (millions)

Project Alternative	Construction	Contingency, Engineering & Administrative	Total
A	$4.4	$1.8	$6.4
B1	$8.6	$3.4	$12.4
B2	$5.8	$2.3	$8.1
C1	$5.5	$2.2	$7.7
C2	$6.0	$2.4	$8.4
D	$5.7	$2.3	$8.0

Alternatives C1 and C2 assume modification of the current irrigation schedule at the Country Club, so that peak flows are 1300 gpm or lower. This would require irrigation over a 6-hour period, rather than the 4-hour period that is currently used. Whether such a modification is operationally feasible has not been confirmed with the golf course superintendent. Other options would be to provide for a partial conversion (i.e., continue to use LADWP potable water for a portion of the irrigation) or provide on-site storage. If the storage option is considered, at least 120,000 gallons of usable storage is needed. The cost of providing such storage in the form of an in-ground pond is estimated at less than $100,000.

For Alternative A, a 12-inch main extension has been assumed, rather than the 10-inch main that was indicated in the hydraulic analysis. By providing the larger main, approximately $300,000 of added cost is incurred, but the larger main provides significantly greater capacity and more operational flexibility. At a later date, the 12-inch or 14-inch parallel mains required by the other alternatives can be added, essentially building these other alternatives in two phases.

Section 6 – Site Condition Review

This section is intended to provide a general overview of the pipeline route, identifying salient conditions that may affect costs and feasibility. A more detailed alignment study may be warranted, if the project is determined to be economically feasible.

Plates 2 through 4 provide aerial images of the proposed pipeline extension route. Captioned photographs are found in **Appendix D**.

Generally, the pipeline will be constructed in public rights of way. On the Las Virgenes side of the boundary, work will take place in and will require permits from the City of Calabasas. On the Los Angeles side, work will occur in city streets and will require permits from the Department of Public Works. The pipeline route shown in the plates assumes that an easement will be acquired from the Hospital, in order to cross between El Cañon Avenue to Mulholland Drive. Another easement may be required from a private property owner, to cross from Park Sorrento to El Cañon.

Table 6-1 provides a general overview of the major street conditions, as observed during a brief reconnaissance.

Table 6-1. Observations from Street Reconnaissance

Street	Traffic Conditions	Utilities	Other Comments
Park Sorrento	Light Traffic	Water, Electrical, Storm Drain	Residential street.
El Cañon Ave	Light Traffic	Water, Sewer	Narrow street with many parked cars.
Mulholland Dr	Heavy Traffic	Water, Sewer, Storm Drain, Electrical	Mostly two lane traffic each way along Mulholland Drive.
Topanga Cyn Blvd	Heavy Traffic	Water, Electrical, Storm Drain	Two traffic lane each way.
Dumetz Road	Medium Traffic	Storm Drain, Electrical, Water, Sewer	Residential street.

Section 7 – Conclusions and Recommendations

The following is a summary of the conclusions of this study:

1. The proposed pipeline extension could serve approximately 325 acre-ft of recycled water annually, primarily to customers currently receiving potable water from LADWP. In addition to the Country Club, there are public and private schools, a church, a hospital, and two municipal parks that could be served.
2. Although this added demand represents a 30 percent increase in flows in the Eastern Recycled Water System, recent upgrades to the system provide ample pumping and transmission capacity to Discharge Facility 005.
3. To reach the Woodland Hills Country Club, a 3.6 mile main extension is required. Approximately 1 mile of additional pipeline upgrades may also be needed, depending on the conditions of service.
4. The least expensive alternative is to deliver water to a storage facility at the golf course (such as a pond), from which water would be pumped into the irrigation system. The approximate cost for this alternative is $6.4 million, including engineering, administration, and contingency.
5. A system that provides service to the Country Club that is equivalent to what is currently received (i.e., without on-site storage), would cost approximately $8.1 million, including engineering, administration, and contingency.
6. An overview of the proposed pipeline routes did not reveal any unusually difficult conditions.

The following recommendations derive from this report:

1. Alternative B2 is recommended for consideration, as it provides service to the Country Club that is equivalent to current conditions, at a moderate cost. This alternative involves a 14-inch main extension plus 12-inch and 14-inch parallel pipelines within the existing system.

2. Alternative A should also be considered, provided that the Country Club is receptive to the idea of an on-site storage pond that could also function as a water feature. By constructing the 14-inch main extension while postponing the parallel pipelines, Alternative A allows deferment of $1.6 million in expenditures.
3. A preliminary engineering study should be authorized to further refine the preferred alternative(s) and develop more accurate cost estimates. This will facilitate development of an interagency agreement. As part of the preliminary engineering study, environmental impacts should be explored.
4. Adoption of environmental documentation, in conformance with the California Environmental Quality Act (CEQA), can follow the completion of the preliminary engineering study. For ease of coordination, the preliminary engineering and CEQA document preparation should be authorized concurrently under a single agreement.

References

1. “Recycled Water Master Plan Update 2007,” for Las Virgenes Municipal Water District by Boyle Engineering Corporation (now AECOM), October 2007 (LVMWD Report No. 2389.01).

2. “Initial Customer Evaluation – Woodland Hills Country Club,” for Los Angeles Department of Water and Power by RMC Water, April 16, 2010.

3. “South Valley Water Recycling Facility Report”, for Los Angeles Department of Water and Power, by Boyle Engineering Corporation (now AECOM), June 2005.

4. “Preliminary Design Report – Eastern Recycled Water Pump Station Expansion”, for Las Virgenes Municipal Water District by Boyle Engineering Corporation (now AECOM), March 2006.

5. “Tapia Effluent Alternatives Study”, for Las Virgenes Municipal Water District by Kennedy-Jenks Consultants, with participation by Boyle Engineering Corporation, LVMWD Report No. 2321.02, December 2005.

Appendices

A. Initial Customer Evaluation – Woodland Hills Country Club, RMC

B. WaterCAD Hydraulic Analysis Results

C. Opinions of Probable Cost

D. Photos from Site Reconnaissance

Appendix A

Initial Customer Evaluation – Woodland Hills Country Club, RMC

Technical Memorandum

Title:	**Initial Customer Evaluation – Woodland Hills Country Club**
Version:	DRAFT
Prepared For:	John Hinds, Project Manager, LADWP Doug Walters, Project Manager, BOS Elisa Reynolds, Task 2a Lead, LADWP Bob Sun, Co-Task Lead, LADWP
Prepared by:	Jeannette Lindemann, DDB Engineering
Reviewed by:	Rich Bichette, Valley Service Area Lead, RMC Doug Brown, Task 2 Customer Lead, RMC Scott Lynch, RMC
Date:	April 16, 2010
Reference:	Task Order 2a: Non-Potable Reuse Master Plan Task 2.2: Recycled Water Market Assessment Task 2.2.3: Customer Development

Executive Summary

Woodland Hills Country Club is a private country club with an 18-hole golf course.

Based on the site visit and available information, the site is categorized as an "A" customer (see Section 3 for rating criteria). There is potential for 230 acre-feet per year (AFY) of non-potable water for irrigation of the golf course (see Section 2 for derivation of estimate).

Initial Customer Conversion Assessment Rating	**"A"**
Estimated Potential Non-Potable Demand	**230 AFY**

1. Introduction

1.1 Background

The foundation of the Non-Potable Reuse (NPR) Master Plan (Task 2 of the City of Los Angeles Recycled Water Master Plan) is the customers that will anchor each distribution segment. As a result, the NPR Master Plan development effort includes customer evaluations for the "target" customers, which are made up of customers with non-potable demands comprising roughly 40% of the total non-potable demand.

The target customer evaluation process involved, when appropriate, a site visit to collect information necessary to evaluate the viability of delivering recycled water to those customers. The site visits were conducted to field-verify demands and to gain an overall understanding of the complexity of connecting these larger customers.

This Technical Memorandum (TM) documents the initial evaluation of one of the target customers. The initial evaluation for the other target customers will be documented in separate TMs.

1.2 TM Purpose

The purpose of this TM is to assess the non-potable demand profile of Woodland Hills Country Club and to provide a qualitative assessment of the potable water system conversion requirements. A site visit to Woodland Hills Country Club was conducted on December 21, 2009 with representatives from Woodland Hills Country Club[1], LADWP[2], and the Consultant Team[3]. This TM is based on information attained during the site visit as well as potable water use records.

This TM consists of the following sections:

- **Section 2 - Customer Profile:** This section provides an overview of the customer's existing water use and their potential for non-potable water use.
- **Section 3 - Site Plan and Conversion Assessment:** This section includes a relative customer ranking for ease of conversion along with description of conversion requirements.

2. Customer Profile

Woodland Hills Country Club (Club) is located at 21150 Dumetz Road, Woodland Hills, CA 91634 and is in the Valley service area. The 72-acre Country Club includes an 18-hole golf course and clubhouse. The site is roughly bounded by Canoga Avenue to the west, Dumetz Road to the north, and private homes to east and south. Woodland Hills Country Club is privately owned.

[1] Woodland Hills Country Club contact and Primary Customer Contact: Steve Sinclair, Superintendent, (818) 347-1511.
[2] LADWP attendee: Elisa Reynolds.
[3] Consultant Team: Richard Bichette, RMC. Jeannette Lindemann, DDB.

2.1 Existing Water Use

The site is currently supplied with potable water from LADWP. Potable water uses at the site include: irrigation, restroom facilities, clubhouse facilities, and make-up water for a water feature.

LADWP records indicate there are eight meters serving the site. One meter serves the site for fire protection, six meters serve the site with domestic water for the clubhouse and restrooms and drinking fountains on the course, and one 8-inch meter serves the site for irrigation. The irrigation meter is located along Dumetz Road. Based on water consumption records from 2006 through 2008, the estimated annual demand for irrigation and pond make-up water is 243 AFY and the annual demand for potable water is 1 AFY.

According to the customer contact, Steve Sinclair, the Club has an estimated peak hour summer irrigation demand of 2,000 gallons-per-minute (gpm). Irrigation generally occurs nightly over a 4-hour period throughout the year.

The Club is currently removing two acres of turf to conserve water. The Club is also planning to remove an additional three acres of turf for a total of five acres of turf removed post 2008. Woodland Hills Country Club water use records from LADWP are presented in **Table 1**.

Table 1: Customer Connect Potable Water Use Records

Meter No.	Rate Code	Meter Type [b]	Address	Annual Consumption (HCF) [a] 2006	2007	2008
49051450	31	Domestic	4632 Canoga Ave	1	1	1
89928287	31	Domestic	4822 Canoga Ave	1	1	0
90226465	31	Domestic	4822 Canoga Ave	--	--	1
90124682	31	Domestic	4385 Alhama Dr	112	191	15
07094655	32	Fire Service	21150 Dumetz Rd	0	0	0
96134508	32	Fire Service	21150 Dumetz Rd	--	--	--
46838771	31	Domestic	21200 Dumetz Rd	0	0	0
90056148	31	Irrigation	21200 Dumetz Rd	85,551	118,990	114,197
01360725	31	Domestic	21216 Dumetz Rd	0	0	--
96101190	31	Domestic	21216 Dumetz Rd	--	0	0
90166242	31	Domestic	21460 Gaona St	0	0	0
			Total (HCF)	**85,665**	**119,183**	**114,214**
			Total (AFY)	197	274	262
			2006 to 2008 Average (AFY)		244	
Potable Demand Estimate for Master Planning Purposes (AFY)					**244**	

Notes:
a. Source: LADWP Customer Connect database query.
b. Identified based on water use compared with other meters at the site.

2.2 Potential Non-Potable Water Uses

Recycled water can be used for irrigation of the golf course. All domestic and fire suppression systems shall remain on the existing potable system.

Based on these uses, approximately 243 AFY of 244 AFY historical water use are considered potential for non-potable demand at Los Angeles Country Club. Potential recycled water use is estimated to be 230 AFY. This includes an estimated 7% reduction to account the removal of five acres of turf from the current total of 72 acres being irrigated. The customer potable use records and non-potable demand estimates are summarized in **Table 2.**

Table 2: Water Demand Summary

Type of Use	Existing Potable Demands (AFY) [a]	Non-Potable Demand Estimates		
		Average Annual (AFY)	Peak Day (gpd) [b]	Hours / Days of Operation [c]
Potable (Six meters, no backflows)	1	--	--	--
Irrigation (One 8" meter and backflow)	243	230 [d]	450,000 [e]	Night 4 hours / day 7 days / week
Total Demand for Woodland Hills Country Club	**244**	**230** [d]	**450,000**	--

Notes:

a. 2006 to 2008 average annual demand from LADWP Customer Connect database query. Breakdown of demand by type was estimated based on meter data.
b. A peaking factor of 2.2 for irrigation, 1.3 for commercial, and 1.7 for mixed-use was applied to calculate the Peak Day Demand. This represents a managed system-wide peaking factor and is not customer specific. The peaking factor is applied to the total volume used in the peak day.
c. Based on information provided by the customer contact, Steve Sinclair, Superintendent.
d. Per communications with Steve Sinclair, there will be a 7% reduction to account the removal of five acres of turf.
e. Assumes a seasonal peaking factor of 2.2 for irrigation use. Note: this corresponds closely to the customer's provided peak use of 2,000 gpm for 4 hours or 480,000 gpd.

2.3 Non-Potable Service Conditions

This section discusses customer water quality concerns, service pressure needs, and available onsite storage.

Water Quality Requirements

Recycled water used by Woodland Hills Country Club will need to meet Title 22 tertiary treatment regulations. Club staff is concerned with salinity levels of the recycled water because the course may not have the adequate drainage system to flush the greens. Staff is also concerned with the consistency of water quality and availability and has heard of problems at other golf courses served by the Las Virgenes Municipal Water District's recycled water system. Options for addressing this water quality concern will need to be further investigated with the customer.

Pressure Requirements

The superintendent estimates the minimum pressure to operate the golf course irrigation system is 140 psi[4]. Currently the site has one booster station consisting of four pumps that increase pressure to approximately 140 psi. Club staff would prefer pressure provided be 140 psi to eliminate the need for booster pump usage. Existing pressure provided by LADWP at the point of service connection was not known.

Storage Requirements

The site does not currently have onsite storage and does not plan to construct storage facilities.

3. Site Plan and Conversion Assessment

This section provides a written description of the conversion requirements and a qualitative assessment that provides a relative ranking for each potential customer will be assigned, as follows:

- **A – Easy Conversion**: An "A" customer would be one that is relatively easy to connect to the system and would not have any water quality issues or any stringent pressure or time of use concerns. An example of an "A" user might be a newer park or school site.
- **B – Moderate Conversion**: A "B" customer would be one that is moderately difficult to connect and may have other concerns/issues relative to water quality, pressure, or time of use. An example of a "B" user might be an older golf course.
- **C – Difficult Conversion**: A "C" customer would be one that is perceived to be difficult or unlikely that will ever connect. The difficulty could be related to water quality, pressure, complexity of conversion, an innovative use or some other factor. An example of a "C" user might be a commercial fabric dyer in which there is no proven history of a successful operation.

The site is categorized as an "A" customer based on:

- Because a separate meter provides all irrigation water to the site, conversion to recycled water should be relatively easy. However, potential water quality concerns related to irrigation of the greens will need to be addressed.
- Woodland Hills Country Club is very interested in having recycled water from a cost-savings perspective, as well as an interest in the environmental benefits.

Figure 1 provides a map of the site including approximate location of meters and backflows along with domestic meters and fire department connections.

[4] Source: Steve Sinclair.

Figure 1: Woodland Hills Country Club Site Location and Facilities

Appendix B

WaterCAD Hydraulic Analysis Results

Las Virgenes Municipal Water District
Woodland Hills Country Club Recycled Water Extension
WaterCAD Modeling

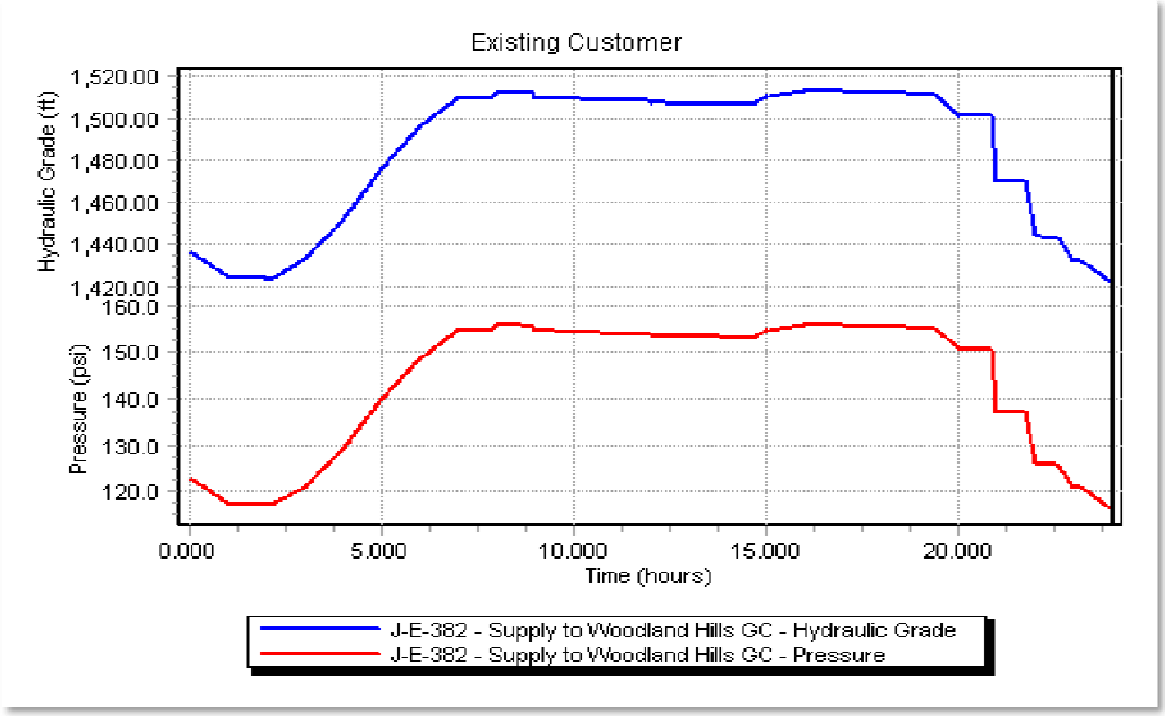
Alternatives

Active Topology	Supply to Woodland Hills GC
Physical	Physical Base 2003
Demand	Supply to Woodland Hills GC
Initial Settings	Initial Settings Base2003
Operational	Operational Base 2003

Existing Eastern Recycled Water System

Scenario	Base - MDD - MDD w/ Morrison Supplement - Base 2003 2003 System MDD - Base 2007 2007 MDD - Supply to Woodland Hills GC

Label	Location	Demand (gpm)
J-E-382	Existing Customer	7.82



	Existing Customer	
Time (hours)	J-E-382 Hydraulic Grade (ft)	J-E-382 Pressure (psi)
0.0	1436.9	122.8
1.0	1425.3	117.8
2.0	1423.9	117.2
2.1	1423.6	117.1

Time (hours)	J-E-382 Hydraulic Grade (ft)	J-E-382 Pressure (psi)
3.0	1432.7	121.0
4.0	1451.4	129.1
5.0	1476.4	139.9
6.0	1495.9	148.4
7.0	1509.9	154.4
7.0	1509.9	154.4
7.9	1509.7	154.3
8.0	1512.6	155.6
8.4	1512.5	155.6
8.7	1512.5	155.5
9.0	1512.5	155.5
9.0	1510.0	154.4
9.5	1509.9	154.4
10.0	1509.3	154.2
10.2	1509.3	154.1
10.7	1509.1	154.1
11.0	1508.6	153.9
11.3	1508.5	153.8
12.0	1508.3	153.7
12.0	1507.9	153.5
12.4	1507.8	153.5
13.0	1507.2	153.3
13.3	1507.2	153.2
13.8	1507.1	153.2
14.0	1506.7	153.0
14.7	1506.6	153.0
15.0	1510.4	154.6
15.1	1510.4	154.6
16.0	1513.4	155.9
17.0	1512.8	155.7
18.0	1512.1	155.4
18.7	1512.1	155.4
19.0	1511.4	155.1
19.2	1511.4	155.1
19.4	1511.4	155.1
20.0	1501.4	150.7
20.0	1501.4	150.7
20.6	1501.2	150.6
20.9	1501.1	150.6
21.0	1470.3	137.3
21.7	1469.7	137.0
22.0	1443.9	125.8
22.2	1443.7	125.8
22.6	1443.4	125.6
22.6	1443.1	125.5
23.0	1432.3	120.9

Time (hours)	J-E-382 Hydraulic Grade (ft)	J-E-382 Pressure (psi)
23.2	1432.1	120.8
23.2	1432.1	120.8
24.0	1421.2	116.1

Las Virgenes Municipal Water District
Woodland Hills Country Club Recycled Water Extension
WaterCAD Modeling

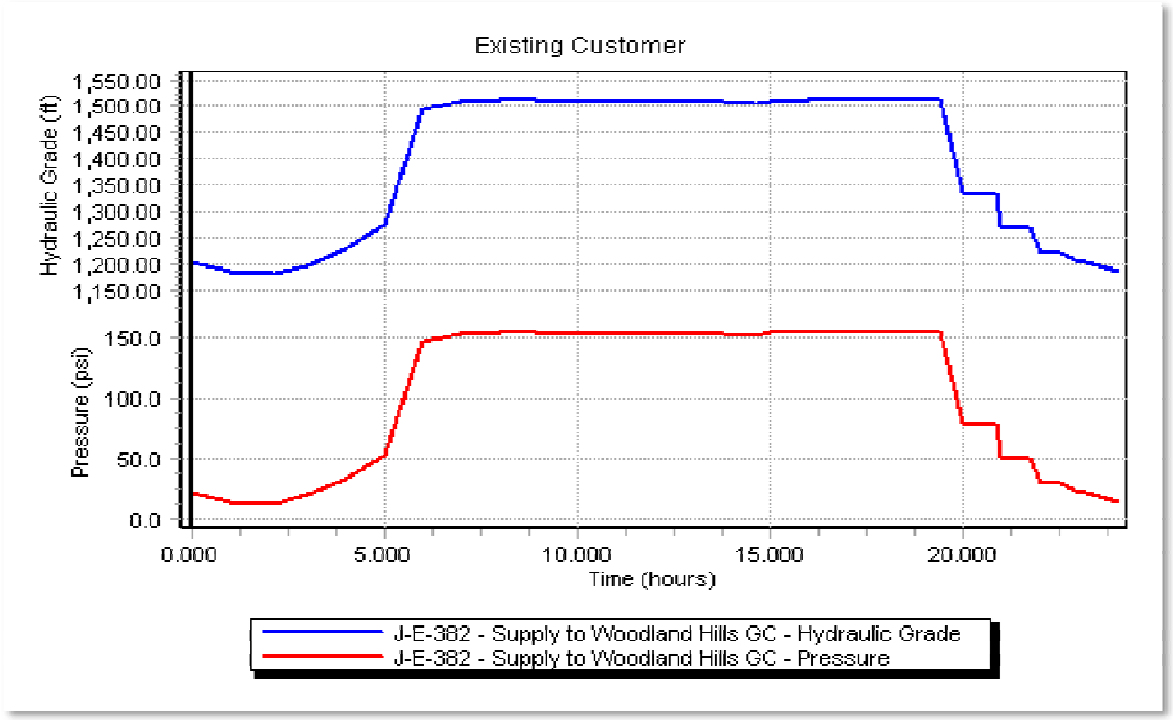
Alternatives

Active Topology	Supply to Woodland Hills GC
Physical	Physical Base 2003
Demand	Supply to Woodland Hills GC
Initial Settings	Initial Settings Base2003
Operational	Operational Base 2003

No Improvements

Scenario	Base - MDD - MDD w/ Morrison Supplement - Base 2003 2003 System MDD - Base 2007 2007 MDD - Supply to Woodland Hills GC

Label	Location	Demand (gpm)	Pattern	Peaking Factor
J-E-382	Existing Customer	7.82	Eastern MDD	Varies
JF-E-1740	Woodland Golf Course	**1000**	**8 hr**	ON/OFF
J-4	Louisville High School	94	8 hr	ON/OFF
J-6	Motion Picture Hospital	10	8 hr	ON/OFF



	J-E-382 Existing Customer

	J-E-382 Existing Customer	
Time (hours)	J-E-382 - Supply to Woodland Hills GC -	J-E-382 - Supply to Woodland Hills GC -
0.0	1,201.60	21
1.0	1,183.59	13.2
2.0	1,181.97	12.5
2.1	1,181.63	12.4
3.0	1,196.78	18.9
4.0	1,228.46	32.6
5.0	1,273.65	52.2
6.0	1,492.86	147
7.0	1,507.67	153.4
7.0	1,507.69	153.5
7.2	1,507.78	153.5
7.9	1,508.14	153.7
8.0	1,511.07	154.9
8.4	1,511.24	155
9.0	1,511.44	155.1
9.0	1,508.94	154
9.5	1,508.97	154
10.0	1,508.56	153.8
10.2	1,508.55	153.8
10.7	1,508.52	153.8
11.0	1,508.08	153.6
11.3	1,508.05	153.6
12.0	1,507.98	153.6
12.0	1,507.55	153.4
12.4	1,507.51	153.4
13.0	1,507.00	153.2
13.3	1,506.97	153.1
13.8	1,506.90	153.1
14.0	1,506.43	152.9
14.7	1,506.34	152.9
15.0	1,510.19	154.5
15.1	1,510.19	154.5
16.0	1,513.15	155.8
17.0	1,512.66	155.6
18.0	1,512.05	155.3
18.7	1,512.03	155.3
19.0	1,511.36	155
19.2	1,511.35	155
19.4	1,511.34	155
20.0	1,333.05	77.9
20.0	1,333.02	77.9
20.6	1,332.50	77.7
20.9	1,332.36	77.6
21.0	1,267.69	49.6

	J-E-382 Existing Customer	
Time (hours)	J-E-382 - Supply to Woodland Hills GC -	J-E-382 - Supply to Woodland Hills GC -
21.7	1,266.54	49.1
21.7	1,266.49	49.1
22.0	1,220.43	29.2
22.2	1,220.12	29
22.6	1,219.60	28.8
23.0	1,201.68	21.1
23.2	1,201.32	20.9
23.2	1,201.31	20.9
24.0	1,183.60	13.2

Las Virgenes Municipal Water District
Woodland Hills Country Club Recycled Water Extension
WaterCAD Modeling

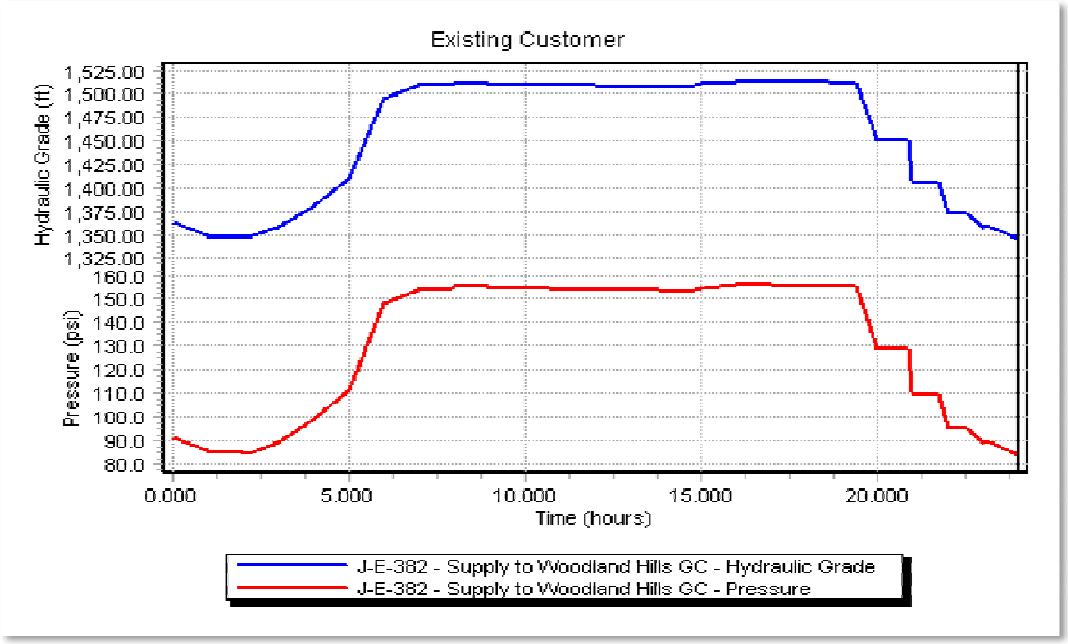
Alternatives

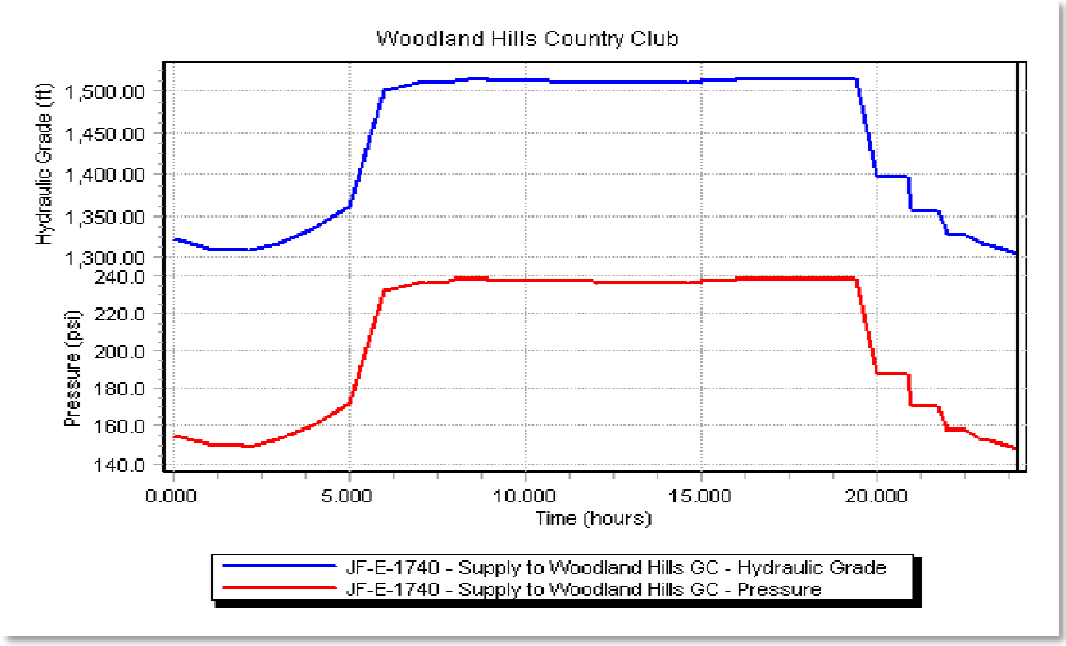
Active Topology	Supply to Woodland Hills GC
Physical	Physical Base 2003
Demand	Supply to Woodland Hills GC
Initial Settings	Initial Settings Base2003
Operational	Operational Base 2003

With 12" Parallel Pipeline

Scenario	Base - MDD - MDD w/ Morrison Supplement - Base 2003 2003 System MDD - Base 2007 2007 MDD - Supply to Woodland Hills GC

Label	Location	Demand (gpm)	Time (hr)	Peaking Factor
JF-E-1740	Woodland Golf Course	**1000**	**8**	N/A
J-4	Louisville High School	94	8	On/Off
J-6	Motion Picture Hospital	10	8	On/Off





	J-E-382 Existing Customer		JF-E-1740 WHCC		J-6 Motion Picture Hosp		J-4 Louisville High	
Time (hours)	Hydraulic Grade (ft)	Pressure (psi)	Hydraulic Grade (ft)	Pressure (psi)	Hydraulic Grade (ft)	Pressure (psi)	Hydraulic Grade (ft)	Pressure (psi)
0.0	1,363.50	91.1	1,322.65	155.2	1,389.33	190.1	1,347.75	134.9
1.0	1,349.84	85.2	1,310.60	150	1,377.30	184.9	1,335.69	129.7
2.0	1,347.97	84.4	1,308.64	149.1	1,375.34	184	1,333.73	128.8
2.1	1,347.63	84.2	1,308.30	149	1,375.00	183.9	1,333.39	128.7
3.0	1,357.97	88.7	1,316.86	152.7	1,383.53	187.6	1,341.95	132.4
4.0	1,379.90	98.2	1,335.43	160.7	1,401.99	195.6	1,360.52	140.4
5.0	1,410.85	111.6	1,362.08	172.2	1,428.33	207	1,387.17	151.9
6.0	1,496.00	148.4	1,499.64	231.7	1,499.11	237.6	1,499.64	200.6
7.0	1,508.81	153.9	1,510.12	236.3	1,509.94	242.3	1,510.12	205.1
7.0	1,508.83	154	1,510.14	236.3	1,509.96	242.3	1,510.14	205.1
7.2	1,508.92	154	1,510.23	236.3	1,510.05	242.3	1,510.23	205.2
7.9	1,509.28	154.1	1,510.59	236.5	1,510.41	242.5	1,510.59	205.3
8.0	1,511.82	155.2	1,512.68	237.4	1,512.56	243.4	1,512.68	206.2
8.4	1,511.99	155.3	1,512.85	237.5	1,512.73	243.5	1,512.85	206.3
9.0	1,512.19	155.4	1,513.05	237.5	1,512.93	243.6	1,513.05	206.4
9.0	1,510.03	154.5	1,511.28	236.8	1,511.10	242.8	1,511.28	205.6
9.5	1,510.06	154.5	1,511.30	236.8	1,511.13	242.8	1,511.30	205.6
10.0	1,509.70	154.3	1,511.01	236.7	1,510.83	242.6	1,511.01	205.5
10.2	1,509.69	154.3	1,511.00	236.7	1,510.82	242.6	1,511.00	205.5
10.7	1,509.66	154.3	1,510.97	236.6	1,510.79	242.6	1,510.97	205.5
11.0	1,509.28	154.1	1,510.66	236.5	1,510.46	242.5	1,510.66	205.4
11.3	1,509.25	154.1	1,510.63	236.5	1,510.44	242.5	1,510.63	205.4
12.0	1,509.19	154.1	1,510.56	236.5	1,510.37	242.4	1,510.56	205.3
12.0	1,508.81	153.9	1,510.26	236.3	1,510.05	242.3	1,510.26	205.2
12.4	1,508.77	153.9	1,510.21	236.3	1,510.01	242.3	1,510.21	205.2
13.0	1,508.32	153.7	1,509.84	236.2	1,509.62	242.1	1,509.84	205
13.3	1,508.28	153.7	1,509.80	236.1	1,509.58	242.1	1,509.80	205
13.8	1,508.22	153.7	1,509.74	236.1	1,509.52	242.1	1,509.74	205
14.0	1,507.81	153.5	1,509.40	236	1,509.17	241.9	1,509.40	204.8
14.7	1,507.72	153.5	1,509.30	235.9	1,509.07	241.9	1,509.30	204.8

	J-E-382 Existing Customer		JF-E-1740 WHCC		J-6 Motion Picture Hosp		J-4 Louisville High	
Time (hours)	Hydraulic Grade (ft)	Pressure (psi)	Hydraulic Grade (ft)	Pressure (psi)	Hydraulic Grade (ft)	Pressure (psi)	Hydraulic Grade (ft)	Pressure (psi)
15.0	1,511.04	154.9	1,512.02	237.1	1,511.88	243.1	1,512.02	205.9
15.1	1,511.04	154.9	1,512.02	237.1	1,511.88	243.1	1,512.02	205.9
16.0	1,513.61	156	1,514.14	238	1,514.07	244	1,514.14	206.9
17.0	1,513.20	155.8	1,513.82	237.9	1,513.73	243.9	1,513.82	206.7
18.0	1,512.67	155.6	1,513.39	237.7	1,513.29	243.7	1,513.39	206.5
18.7	1,512.66	155.6	1,513.37	237.7	1,513.28	243.7	1,513.37	206.5
19.0	1,512.07	155.4	1,512.89	237.5	1,512.77	243.5	1,512.89	206.3
19.2	1,512.06	155.3	1,512.88	237.5	1,512.76	243.5	1,512.88	206.3
19.4	1,512.05	155.3	1,512.87	237.5	1,512.76	243.5	1,512.87	206.3
20.0	1,450.38	128.7	1,397.04	187.4	1,462.53	221.7	1,422.14	167.1
20.0	1,450.35	128.6	1,397.02	187.3	1,462.51	221.7	1,422.11	167.1
20.6	1,449.83	128.4	1,396.49	187.1	1,461.98	221.5	1,421.59	166.8
20.9	1,449.69	128.4	1,396.35	187.1	1,461.84	221.4	1,421.44	166.8
21.0	1,406.25	109.6	1,357.86	170.4	1,424.14	205.1	1,382.95	150.1
21.7	1,405.11	109.1	1,356.71	169.9	1,422.99	204.6	1,381.80	149.6
21.7	1,405.05	109	1,356.65	169.9	1,422.94	204.6	1,381.74	149.6
22.0	1,372.68	95	1,328.49	157.7	1,395.05	192.6	1,353.58	137.4
22.2	1,372.38	94.9	1,328.18	157.6	1,394.74	192.4	1,353.27	137.3
22.6	1,371.85	94.7	1,327.66	157.3	1,394.22	192.2	1,352.75	137
23.0	1,358.91	89.1	1,316.41	152.5	1,383.04	187.4	1,341.50	132.2
23.2	1,358.55	88.9	1,316.05	152.3	1,382.68	187.2	1,341.14	132
23.2	1,358.55	88.9	1,316.04	152.3	1,382.67	187.2	1,341.14	132
24.0	1,345.50	83.3	1,304.66	147.4	1,371.33	182.3	1,329.75	127.1

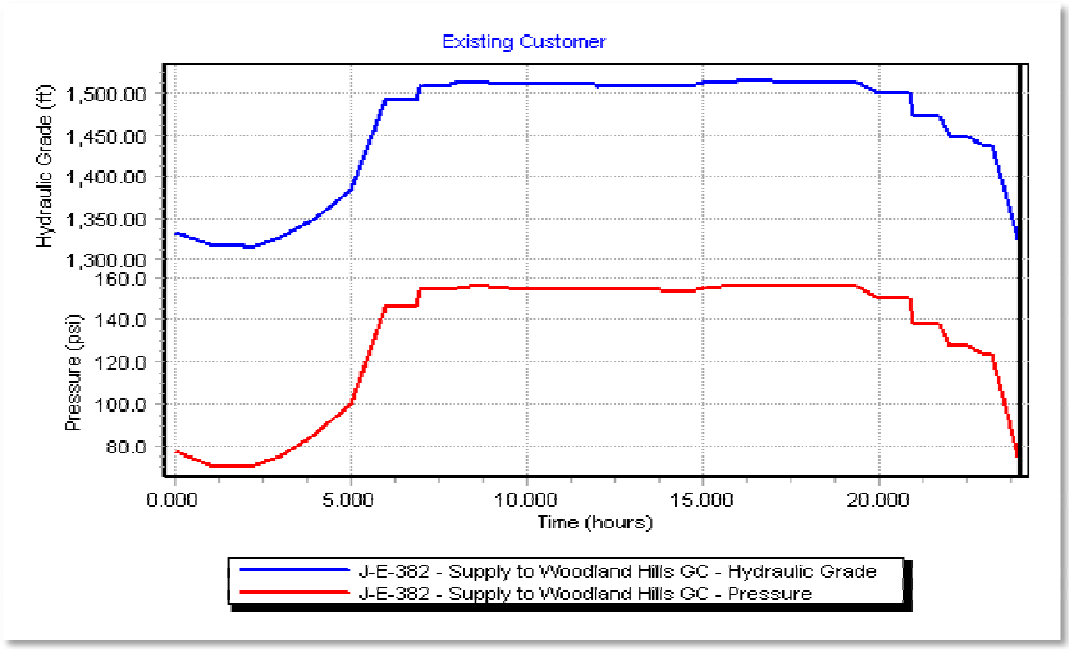
Las Virgenes Municipal Water District
Woodland Hills Country Club Recycled Water Extension
WaterCAD Modeling
With 12" Parallel Pipeline

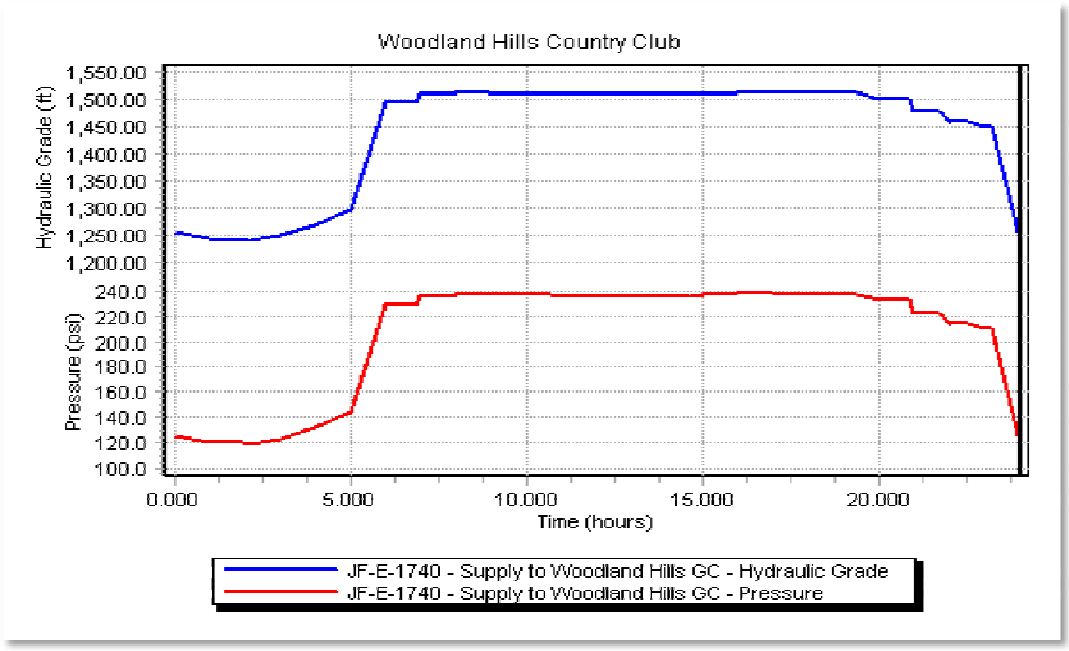
Alternatives

Active Topology	Supply to Woodland Hills GC
Physical	Physical Base 2003
Demand	Supply to Woodland Hills GC
Initial Settings	Initial Settings Base2003
Operational	Operational Base 2003

Scenario	Base - MDD - MDD w/ Morrison Supplement - Base 2003 2003 System MDD - Base 2007 2007 MDD - Supply to Woodland Hills GC

Label	Location	Demand (gpm)	Time (hr)	Peaking Factor
JF-E-1740	Woodland Golf Course	**1300**	**6**	N/A
J-4	Louisville High School	94	8	On/Off
J-6	Motion Picture Hospital	10	8	On/Off





	J-E-382 Existing Customer		JF-E-1740 WHCC		J-6 Motion Picture Hosp		J-4 Louisville High	
Time (hours)	Hydraulic Grade (ft)	Pressure (psi)	Hydraulic Grade (ft)	Pressure (psi)	Hydraulic Grade (ft)	Pressure (psi)	Hydraulic Grade (ft)	Pressure (psi)
0.0	1,332.90	77.8	1,254.13	125.5	1364.67	179.40	1299.92	114.20
1.0	1,318.35	71.5	1,241.18	119.9	1351.82	173.80	1286.97	108.60
2.0	1,316.38	70.7	1,239.12	119	1349.75	173.00	1284.91	107.70
2.1	1,316.01	70.5	1,238.75	118.9	1349.39	172.80	1284.54	107.50
3.0	1,327.05	75.3	1,248.02	122.9	1358.55	176.80	1293.81	111.50
4.0	1,350.57	85.5	1,268.18	131.6	1378.43	185.40	1313.97	120.30
5.0	1,384.04	100	1,297.36	144.2	1407.05	197.70	1343.15	132.90
5.8	1,490.98	146.2	1,493.36	229	1494.6	235.60	1494	198.20
6.0	1,491.34	146.4	1,493.72	229.2	1494.96	235.80	1494.36	198.30
7.0	1,508.32	153.7	1,509.63	236.1	1509.44	242.00	1509.63	204.90
7.0	1,508.34	153.7	1,509.65	236.1	1509.47	242.10	1509.65	204.90
7.9	1,508.95	154	1,510.26	236.3	1510.08	242.30	1510.26	205.20
8.0	1,511.51	155.1	1,512.37	237.3	1512.25	243.30	1512.37	206.10
8.4	1,511.73	155.2	1,512.59	237.3	1512.47	243.40	1512.59	206.20
9.0	1,511.99	155.3	1,512.85	237.5	1512.73	243.50	1512.85	206.30
9.0	1,509.83	154.4	1,511.08	236.7	1510.9	242.70	1511.08	205.50
9.5	1,509.91	154.4	1,511.16	236.7	1510.98	242.70	1511.16	205.60
10.0	1,509.59	154.3	1,510.90	236.6	1510.72	242.60	1510.9	205.50
10.2	1,509.59	154.3	1,510.90	236.6	1510.72	242.60	1510.9	205.50
10.7	1,509.58	154.3	1,510.89	236.6	1510.71	242.60	1510.89	205.50
11.0	1,509.20	154.1	1,510.58	236.5	1510.39	242.50	1510.58	205.30
11.3	1,509.18	154.1	1,510.56	236.5	1510.36	242.40	1510.56	205.30
12.0	1,509.12	154.1	1,510.50	236.4	1510.31	242.40	1510.5	205.30
12.0	1,508.75	153.9	1,510.20	236.3	1509.99	242.30	1510.2	205.20
12.4	1,508.71	153.9	1,510.15	236.3	1509.95	242.30	1510.15	205.10
13.0	1,508.27	153.7	1,509.78	236.1	1509.56	242.10	1509.78	205.00
13.3	1,508.22	153.7	1,509.74	236.1	1509.52	242.10	1509.74	205.00
13.8	1,508.16	153.7	1,509.67	236.1	1509.46	242.10	1509.67	204.90

	J-E-382 Existing Customer		JF-E-1740 WHCC		J-6 Motion Picture Hosp		J-4 Louisville High	
Time (hours)	Hydraulic Grade (ft)	Pressure (psi)	Hydraulic Grade (ft)	Pressure (psi)	Hydraulic Grade (ft)	Pressure (psi)	Hydraulic Grade (ft)	Pressure (psi)
14.0	1,507.75	153.5	1,509.33	235.9	1509.11	241.90	1509.33	204.80
14.7	1,507.65	153.4	1,509.24	235.9	1509.01	241.90	1509.24	204.70
15.0	1,510.98	154.9	1,511.96	237.1	1511.82	243.10	1511.96	205.90
15.1	1,510.98	154.9	1,511.95	237.1	1511.82	243.10	1511.95	205.90
16.0	1,513.56	156	1,514.09	238	1514.01	244.00	1514.09	206.80
17.0	1,513.17	155.8	1,513.79	237.9	1513.7	243.90	1513.79	206.70
18.0	1,512.66	155.6	1,513.37	237.7	1513.27	243.70	1513.37	206.50
18.7	1,512.65	155.6	1,513.36	237.7	1513.27	243.70	1513.36	206.50
19.0	1,512.06	155.3	1,512.88	237.5	1512.76	243.50	1512.88	206.30
19.2	1,512.05	155.3	1,512.87	237.5	1512.76	243.50	1512.87	206.30
19.4	1,512.05	155.3	1,512.86	237.5	1512.75	243.50	1512.86	206.30
20.0	1,500.39	150.3	1,502.44	233	1502.57	239.10	1502.26	201.70
20.0	1,500.38	150.3	1,502.43	233	1502.56	239.10	1502.25	201.70
20.6	1,500.17	150.2	1,502.21	232.9	1502.35	239.00	1502.04	201.60
20.9	1,500.11	150.2	1,502.16	232.8	1502.29	239.00	1501.98	201.60
21.0	1,471.92	138	1,478.96	222.8	1478.43	228.60	1478.79	191.60
21.7	1,471.33	137.7	1,478.37	222.5	1477.84	228.40	1478.2	191.30
22.0	1,448.12	127.7	1,459.40	214.3	1458.28	219.90	1459.22	183.10
22.0	1,447.93	127.6	1,459.21	214.3	1458.1	219.80	1459.04	183.00
22.2	1,447.46	127.4	1,458.74	214.1	1457.63	219.60	1458.57	182.80
22.6	1,447.32	127.3	1,458.60	214	1457.48	219.60	1458.43	182.80
23.0	1,437.66	123.2	1,450.65	210.6	1449.29	216.00	1450.47	179.30
23.2	1,437.42	123.1	1,450.41	210.4	1449.05	215.90	1450.23	179.20
24.0	1,316.78	70.9	1,238.01	118.5	1348.55	172.40	1283.79	107.20

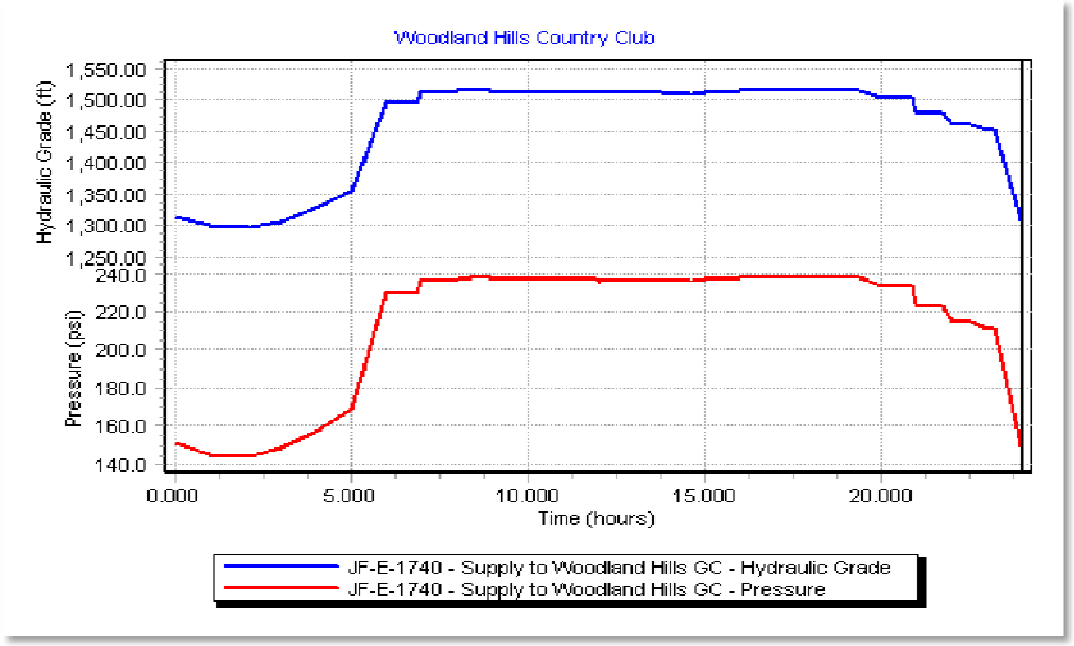
Las Virgenes Municipal Water District
Woodland Hills Country Club Recycled Water Extension
WaterCAD Modeling
With 14" Parallel Pipeline

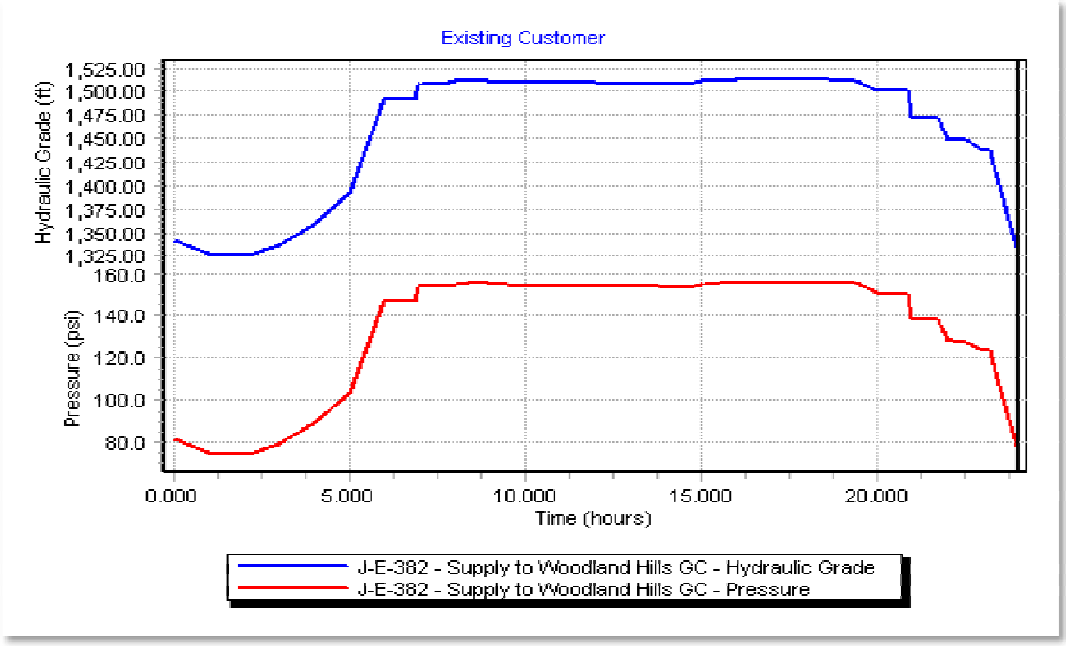
Alternatives

Active Topology	Supply to Woodland Hills GC
Physical	Physical Base 2003
Demand	Supply to Woodland Hills GC
Initial Settings	Initial Settings Base2003
Operational	Operational Base 2003

Scenario	Base - MDD - MDD w/ Morrison Supplement - Base 2003 2003 System MDD - Base 2007 2007 MDD - Supply to Woodland Hills GC

Label	Location	Demand (gpm)	Time (hr)	Peaking Factor
JF-E-1740	Woodland Golf Course	**1300**	**6**	N/A
J-4	Louisville High School	94	8	On/Off
J-6	Motion Picture Hospital	10	8	On/Off





	Existing Customer J-E-382		JF-E-1740 WHCC		Motion Picture Hosp		Motion Picture Hosp	
Time (hours)	Hydraulic Grade (ft)	Pressure (psi)	Hydraulic Grade (ft)	Pressure (psi)	Hydraulic Grade (ft)	Pressure (psi)	Hydraulic Grade (ft)	Pressure (psi)
0.0	1341.7	81.7	1312.5	150.8	1364.7	179.4	1334.0	128.9
1.0	1327.4	75.4	1299.7	145.3	1351.8	173.8	1321.2	123.4
2.0	1325.4	74.6	1297.7	144.4	1349.8	173.0	1319.2	122.5
2.1	1325.0	74.4	1297.3	144.2	1349.4	172.8	1318.8	122.4
3.0	1335.9	79.1	1306.3	148.1	1358.6	176.8	1327.9	126.3
4.0	1358.9	89.1	1326.0	156.6	1378.4	185.4	1347.6	134.8
5.0	1391.7	103.3	1354.5	169.0	1407.1	197.7	1376.0	147.1
5.8	1491.3	146.4	1494.4	229.5	1494.6	235.6	1494.7	198.4
6.0	1491.7	146.5	1494.7	229.6	1495.0	235.8	1495.0	198.6
7.0	1508.4	153.7	1509.7	236.1	1509.4	242.0	1509.7	204.9
7.0	1508.4	153.8	1509.7	236.1	1509.5	242.1	1509.7	204.9
7.9	1509.0	154.0	1510.3	236.4	1510.1	242.3	1510.3	205.2
8.0	1511.5	155.1	1512.4	237.3	1512.3	243.3	1512.4	206.1
8.4	1511.8	155.2	1512.6	237.4	1512.5	243.4	1512.6	206.2
9.0	1512.0	155.3	1512.9	237.5	1512.7	243.5	1512.9	206.3
9.0	1509.9	154.4	1511.1	236.7	1510.9	242.7	1511.1	205.6
9.5	1510.0	154.4	1511.2	236.7	1511.0	242.7	1511.2	205.6
10.0	1509.6	154.3	1511.0	236.6	1510.7	242.6	1511.0	205.5
10.2	1509.6	154.3	1511.0	236.6	1510.7	242.6	1511.0	205.5
10.7	1509.6	154.3	1510.9	236.6	1510.7	242.6	1510.9	205.5
11.0	1509.3	154.1	1510.6	236.5	1510.4	242.5	1510.6	205.3
11.3	1509.2	154.1	1510.6	236.5	1510.4	242.4	1510.6	205.3
12.0	1509.2	154.1	1510.6	236.5	1510.3	242.4	1510.6	205.3
12.0	1508.8	153.9	1510.3	236.3	1510.0	242.3	1510.3	205.2
12.4	1508.8	153.9	1510.2	236.3	1510.0	242.3	1510.2	205.2
13.0	1508.3	153.7	1509.8	236.2	1509.6	242.1	1509.8	205.0
13.3	1508.3	153.7	1509.8	236.1	1509.5	242.1	1509.8	205.0
13.8	1508.2	153.7	1509.7	236.1	1509.5	242.1	1509.7	205.0
14.0	1507.8	153.5	1509.4	236.0	1509.1	241.9	1509.4	204.8

	Existing Customer J-E-382		JF-E-1740 WHCC		Motion Picture Hosp		Motion Picture Hosp	
Time (hours)	Hydraulic Grade (ft)	Pressure (psi)	Hydraulic Grade (ft)	Pressure (psi)	Hydraulic Grade (ft)	Pressure (psi)	Hydraulic Grade (ft)	Pressure (psi)
14.7	1507.7	153.5	1509.3	235.9	1509.0	241.9	1509.3	204.8
15.0	1511.0	154.9	1512.0	237.1	1511.8	243.1	1512.0	205.9
15.1	1511.0	154.9	1512.0	237.1	1511.8	243.1	1512.0	205.9
16.0	1513.6	156.0	1514.1	238.0	1514.0	244.0	1514.1	206.9
17.0	1513.2	155.8	1513.8	237.9	1513.7	243.9	1513.8	206.7
18.0	1512.7	155.6	1513.4	237.7	1513.3	243.7	1513.4	206.5
18.7	1512.7	155.6	1513.4	237.7	1513.3	243.7	1513.4	206.5
19.0	1512.1	155.4	1512.9	237.5	1512.8	243.5	1512.9	206.3
19.2	1512.1	155.4	1512.9	237.5	1512.8	243.5	1512.9	206.3
19.4	1512.1	155.4	1512.9	237.5	1512.8	243.5	1512.9	206.3
20.0	1500.6	150.4	1502.8	233.1	1502.6	239.1	1502.7	201.9
20.0	1500.6	150.4	1502.8	233.1	1502.6	239.1	1502.6	201.9
20.6	1500.4	150.3	1502.6	233.0	1502.4	239.0	1502.4	201.8
20.9	1500.3	150.3	1502.5	233.0	1502.3	239.0	1502.4	201.8
21.0	1472.4	138.2	1479.6	223.1	1478.4	228.6	1479.4	191.8
21.7	1471.8	137.9	1479.0	222.8	1477.8	228.4	1478.8	191.6
22.0	1448.7	128.0	1460.2	214.7	1458.3	219.9	1460.0	183.5
22.0	1448.6	127.9	1460.0	214.6	1458.1	219.8	1459.8	183.4
22.2	1448.1	127.7	1459.6	214.4	1457.6	219.6	1459.4	183.2
22.6	1447.9	127.6	1459.4	214.3	1457.5	219.6	1459.2	183.1
23.0	1438.4	123.5	1451.5	210.9	1449.3	216.0	1451.4	179.7
23.2	1438.1	123.4	1451.3	210.8	1449.1	215.9	1451.1	179.6
24.0	1325.6	74.7	1296.4	143.8	1348.6	172.4	1317.9	121.9

Las Virgenes Municipal Water District
Woodland Hills Country Club Recycled Water Extension
WaterCAD Modeling

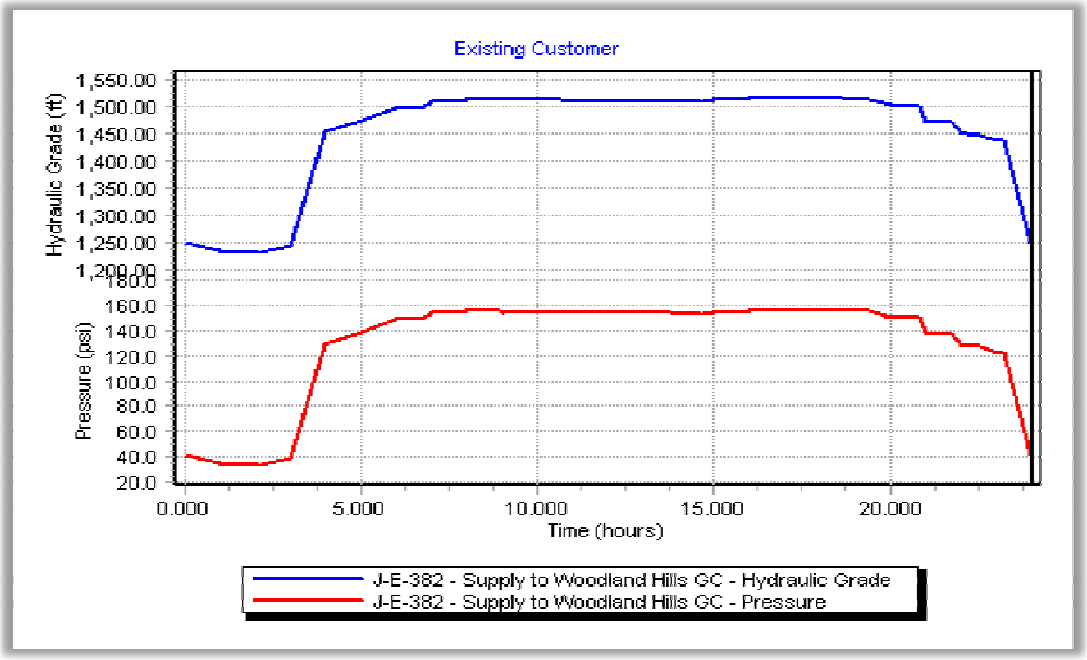
Alternatives

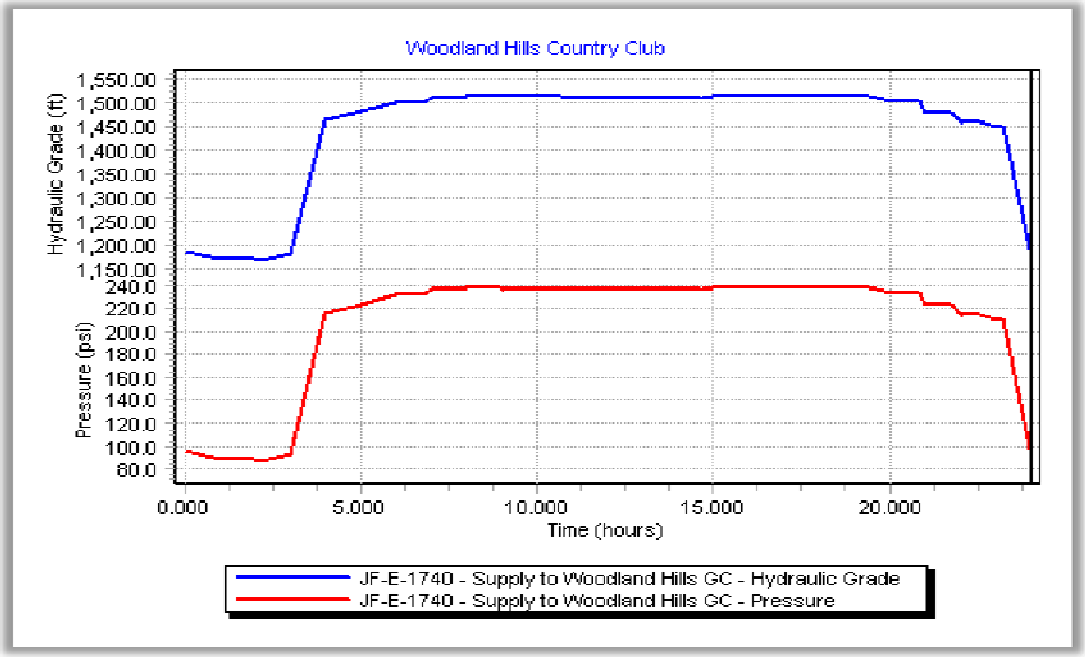
Active Topology	Supply to Woodland Hills GC
Physical	Physical Base 2003
Demand	Supply to Woodland Hills GC
Initial Settings	Initial Settings Base2003
Operational	Operational Base 2003

With 10" Parallel and 14" Extension Pipeline

Scenario	Base - MDD - MDD w/ Morrison Supplement - Base 2003 2003 System MDD - Base 2007 2007 MDD - Supply to Woodland Hills GC

Label	Location	Demand (gpm)	Time (hr)	Peaking Factor
JF-E-1740	Woodland Golf Course	**1800**	**4**	N/A
J-4	Louisville High School	94	8	On/Off
J-6	Motion Picture Hospital	10	8	On/Off





	J-E-382 Existing Customer		JF-E-1740 WHCC		J-6 Motion Picture Hosp		J-4 Louisville High	
Time (hours)	Hydraulic Grade (ft)	Pressure (psi)	Hydraulic Grade (ft)	Pressure (psi)	Hydraulic Grade (ft)	Pressure (psi)	Hydraulic Grade (ft)	Pressure (psi)
0.0	1,249.38	41.7	1,185.14	95.7	1,319.68	159.9	1,224.60	81.6
1.0	1,232.94	34.6	1,170.32	89.3	1,305.50	153.8	1,209.78	75.2
2.0	1,230.82	33.7	1,168.10	88.3	1,303.25	152.8	1,207.56	74.2
2.1	1,230.42	33.5	1,167.71	88.1	1,302.85	152.7	1,207.17	74.1
3.0	1,243.08	39	1,178.57	92.8	1,313.00	157.1	1,218.03	78.8
4.0	1,450.95	128.9	1,462.16	215.5	1,461.99	221.5	1,461.98	184.3
5.0	1,473.44	138.6	1,480.30	223.4	1,480.39	229.5	1,480.12	192.1
6.0	1,495.90	148.4	1,499.54	231.7	1,499.23	237.6	1,499.54	200.6
6.7	1,496.11	148.4	1,499.75	231.8	1,499.44	237.7	1,499.75	200.6
7.0	1,508.75	153.9	1,510.05	236.3	1,509.95	242.3	1,510.05	205.1
7.0	1,508.77	153.9	1,510.07	236.3	1,509.96	242.3	1,510.07	205.1
7.9	1,509.24	154.1	1,510.55	236.5	1,510.44	242.5	1,510.55	205.3
8.0	1,511.79	155.2	1,512.65	237.4	1,512.58	243.4	1,512.65	206.2
8.4	1,511.96	155.3	1,512.81	237.4	1,512.74	243.5	1,512.81	206.3
9.0	1,512.14	155.4	1,513.00	237.5	1,512.93	243.6	1,513.00	206.4
9.0	1,509.97	154.4	1,511.21	236.8	1,511.11	242.8	1,511.21	205.6
9.5	1,509.99	154.5	1,511.24	236.8	1,511.13	242.8	1,511.24	205.6
10.0	1,509.63	154.3	1,510.94	236.6	1,510.83	242.6	1,510.94	205.5
10.2	1,509.62	154.3	1,510.93	236.6	1,510.82	242.6	1,510.93	205.5
10.7	1,509.59	154.3	1,510.90	236.6	1,510.79	242.6	1,510.90	205.5
11.0	1,509.20	154.1	1,510.58	236.5	1,510.46	242.5	1,510.58	205.3
11.3	1,509.17	154.1	1,510.55	236.5	1,510.43	242.5	1,510.55	205.3
12.0	1,509.10	154.1	1,510.48	236.4	1,510.36	242.4	1,510.48	205.3
12.0	1,508.73	153.9	1,510.17	236.3	1,510.05	242.3	1,510.17	205.2
12.4	1,508.68	153.9	1,510.13	236.3	1,510.01	242.3	1,510.13	205.1
13.0	1,508.23	153.7	1,509.75	236.1	1,509.62	242.1	1,509.75	205
13.3	1,508.19	153.7	1,509.70	236.1	1,509.58	242.1	1,509.70	204.9
13.8	1,508.12	153.6	1,509.64	236.1	1,509.51	242.1	1,509.64	204.9
14.0	1,507.71	153.5	1,509.29	235.9	1,509.16	241.9	1,509.29	204.8
14.7	1,507.62	153.4	1,509.20	235.9	1,509.07	241.9	1,509.20	204.7

	J-E-382 Existing Customer		JF-E-1740 WHCC		J-6 Motion Picture Hosp		J-4 Louisville High	
Time (hours)	Hydraulic Grade (ft)	Pressure (psi)	Hydraulic Grade (ft)	Pressure (psi)	Hydraulic Grade (ft)	Pressure (psi)	Hydraulic Grade (ft)	Pressure (psi)
15.0	1,510.96	154.9	1,511.94	237.1	1,511.86	243.1	1,511.94	205.9
15.1	1,510.96	154.9	1,511.94	237.1	1,511.86	243.1	1,511.94	205.9
16.0	1,513.56	156	1,514.08	238	1,514.04	244	1,514.08	206.8
17.0	1,513.17	155.8	1,513.78	237.9	1,513.73	243.9	1,513.78	206.7
18.0	1,512.65	155.6	1,513.36	237.7	1,513.31	243.7	1,513.36	206.5
18.7	1,512.65	155.6	1,513.36	237.7	1,513.30	243.7	1,513.36	206.5
19.0	1,512.05	155.3	1,512.87	237.5	1,512.80	243.5	1,512.87	206.3
19.2	1,512.05	155.3	1,512.86	237.5	1,512.79	243.5	1,512.86	206.3
19.4	1,512.04	155.3	1,512.85	237.5	1,512.79	243.5	1,512.85	206.3
20.0	1,500.10	150.2	1,502.33	232.9	1,502.66	239.1	1,502.15	201.7
20.0	1,500.09	150.2	1,502.32	232.9	1,502.65	239.1	1,502.14	201.7
20.6	1,499.87	150.1	1,502.11	232.8	1,502.43	239	1,501.93	201.6
20.9	1,499.82	150.1	1,502.05	232.8	1,502.37	239	1,501.87	201.6
21.0	1,471.31	137.7	1,478.54	222.6	1,478.62	228.7	1,478.37	191.4
21.7	1,470.72	137.5	1,477.95	222.4	1,478.03	228.5	1,477.78	191.1
22.0	1,447.26	127.3	1,458.74	214	1,458.55	220	1,458.56	182.8
22.2	1,447.07	127.2	1,458.55	214	1,458.36	219.9	1,458.37	182.7
22.4	1,446.60	127	1,458.08	213.8	1,457.88	219.7	1,457.90	182.5
22.6	1,446.46	127	1,457.94	213.7	1,457.75	219.7	1,457.76	182.5
23.0	1,436.71	122.7	1,449.90	210.2	1,449.59	216.1	1,449.72	179
23.2	1,436.47	122.6	1,449.66	210.1	1,449.35	216	1,449.48	178.9
24.0	1,233.15	34.7	1,168.91	88.7	1,303.45	152.9	1,208.37	74.6

Las Virgenes Municipal Water District
Woodland Hills Country Club Recycled Water Extension
WaterCAD Modeling

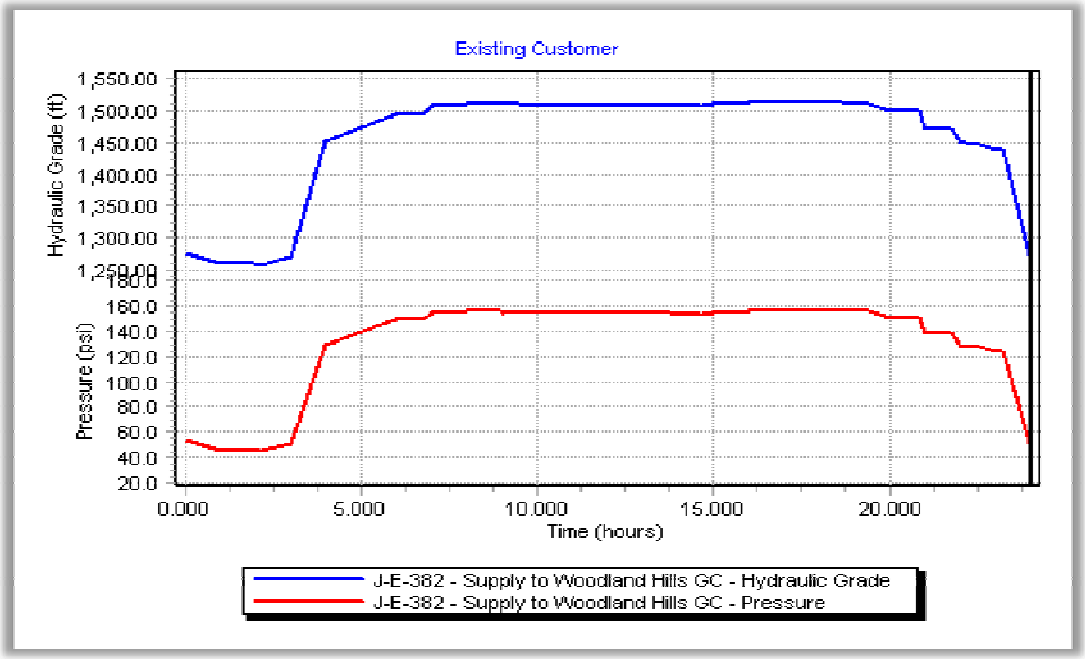
Alternatives

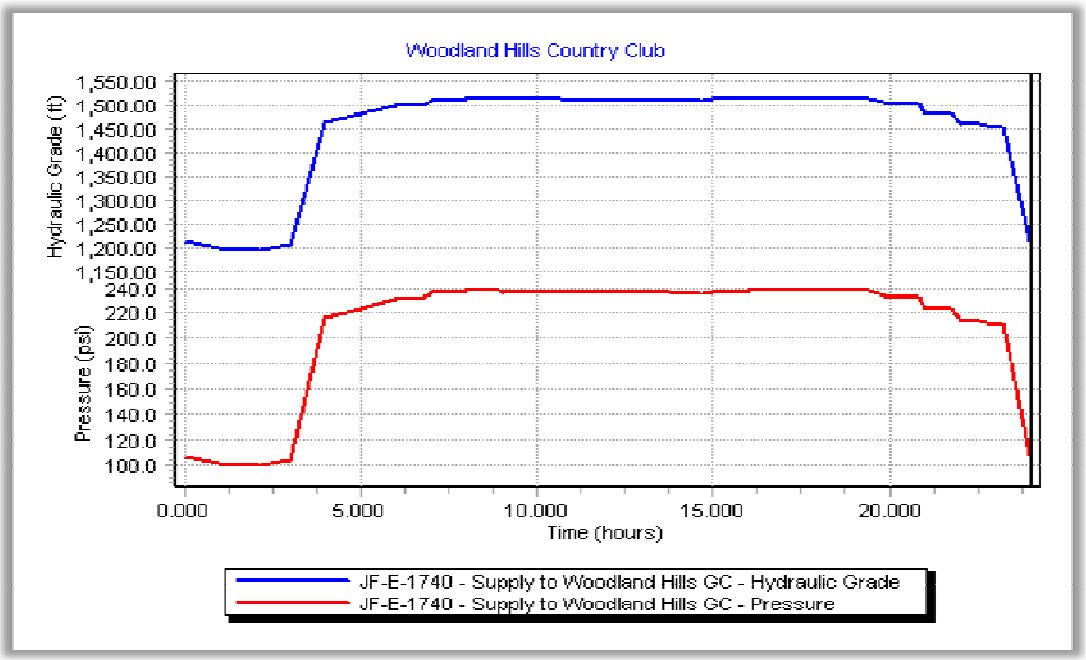
Active Topology	Supply to Woodland Hills GC
Physical	Physical Base 2003
Demand	Supply to Woodland Hills GC
Initial Settings	Initial Settings Base2003
Operational	Operational Base 2003

With 12" Parallel and 14" Extension Pipeline

Scenario	Base - MDD - MDD w/ Morrison Supplement - Base 2003 2003 System MDD - Base 2007 2007 MDD - Supply to Woodland Hills GC

Label	Location	Demand (gpm)	Time (hr)	Peaking Factor
JF-E-1740	Woodland Golf Course	**1800**	**4**	N/A
J-4	Louisville High School	94	8	On/Off
J-6	Motion Picture Hospital	10	8	On/Off





	J-E-382 Existing Customer		JF-E-1740 WHCC		J-6 Motion Picture Hosp		J-4 Louisville High	
Time (hours)	Hydraulic Grade (ft)	Pressure (psi)	Hydraulic Grade (ft)	Pressure (psi)	Hydraulic Grade (ft)	Pressure (psi)	Hydraulic Grade (ft)	Pressure (psi)
0.0	1,276.18	53.3	1,211.97	107.3	1,319.69	159.9	1,251.43	93.2
1.0	1,260.20	46.4	1,197.60	101.1	1,305.52	153.8	1,237.06	87
2.0	1,258.05	45.4	1,195.36	100.1	1,303.27	152.8	1,234.82	86
2.1	1,257.65	45.3	1,194.97	99.9	1,302.87	152.7	1,234.43	85.8
3.0	1,269.80	50.5	1,205.32	104.4	1,313.02	157.1	1,244.78	90.3
4.0	1,452.09	129.4	1,463.30	216	1,461.99	221.5	1,463.13	184.8
5.0	1,474.23	139	1,481.09	223.7	1,480.40	229.5	1,480.92	192.5
6.0	1,496.13	148.5	1,499.77	231.8	1,499.23	237.6	1,499.77	200.7
6.7	1,496.34	148.5	1,499.98	231.9	1,499.44	237.7	1,499.98	200.7
7.0	1,508.83	153.9	1,510.14	236.3	1,509.95	242.3	1,510.14	205.1
7.0	1,508.85	154	1,510.16	236.3	1,509.96	242.3	1,510.16	205.1
7.9	1,509.32	154.2	1,510.63	236.5	1,510.44	242.5	1,510.63	205.3
8.0	1,511.85	155.3	1,512.71	237.4	1,512.58	243.4	1,512.71	206.2
8.4	1,512.01	155.3	1,512.87	237.5	1,512.74	243.5	1,512.87	206.3
9.0	1,512.20	155.4	1,513.05	237.5	1,512.93	243.6	1,513.05	206.4
9.0	1,510.04	154.5	1,511.29	236.8	1,511.11	242.8	1,511.29	205.6
9.5	1,510.07	154.5	1,511.32	236.8	1,511.13	242.8	1,511.32	205.6
10.0	1,509.71	154.3	1,511.02	236.7	1,510.83	242.6	1,511.02	205.5
10.2	1,509.70	154.3	1,511.01	236.7	1,510.82	242.6	1,511.01	205.5
10.7	1,509.67	154.3	1,510.98	236.7	1,510.79	242.6	1,510.98	205.5
11.0	1,509.29	154.1	1,510.66	236.5	1,510.46	242.5	1,510.66	205.4
11.3	1,509.26	154.1	1,510.64	236.5	1,510.43	242.5	1,510.64	205.4
12.0	1,509.19	154.1	1,510.57	236.5	1,510.36	242.4	1,510.57	205.3
12.0	1,508.82	153.9	1,510.26	236.3	1,510.05	242.3	1,510.26	205.2
12.4	1,508.77	153.9	1,510.22	236.3	1,510.01	242.3	1,510.22	205.2
13.0	1,508.33	153.7	1,509.84	236.2	1,509.62	242.1	1,509.84	205
13.3	1,508.28	153.7	1,509.80	236.1	1,509.58	242.1	1,509.80	205
13.8	1,508.22	153.7	1,509.73	236.1	1,509.51	242.1	1,509.73	205
14.0	1,507.81	153.5	1,509.39	236	1,509.16	241.9	1,509.39	204.8
14.7	1,507.71	153.5	1,509.30	235.9	1,509.07	241.9	1,509.30	204.8

	J-E-382 Existing Customer		JF-E-1740 WHCC		J-6 Motion Picture Hosp		J-4 Louisville High	
Time (hours)	Hydraulic Grade (ft)	Pressure (psi)	Hydraulic Grade (ft)	Pressure (psi)	Hydraulic Grade (ft)	Pressure (psi)	Hydraulic Grade (ft)	Pressure (psi)
15.0	1,511.02	154.9	1,512.00	237.1	1,511.86	243.1	1,512.00	205.9
15.1	1,511.02	154.9	1,512.00	237.1	1,511.86	243.1	1,512.00	205.9
16.0	1,513.59	156	1,514.12	238	1,514.04	244	1,514.12	206.9
17.0	1,513.21	155.8	1,513.82	237.9	1,513.73	243.9	1,513.82	206.7
18.0	1,512.70	155.6	1,513.41	237.7	1,513.31	243.7	1,513.41	206.6
18.7	1,512.69	155.6	1,513.40	237.7	1,513.30	243.7	1,513.40	206.5
19.0	1,512.10	155.4	1,512.92	237.5	1,512.80	243.5	1,512.92	206.3
19.2	1,512.10	155.4	1,512.91	237.5	1,512.79	243.5	1,512.91	206.3
19.4	1,512.09	155.4	1,512.90	237.5	1,512.79	243.5	1,512.90	206.3
20.0	1,500.49	150.3	1,502.72	233.1	1,502.66	239.1	1,502.55	201.9
20.0	1,500.48	150.3	1,502.71	233.1	1,502.65	239.1	1,502.53	201.8
20.6	1,500.26	150.2	1,502.50	233	1,502.43	239	1,502.32	201.8
20.9	1,500.21	150.2	1,502.44	233	1,502.38	239	1,502.26	201.7
21.0	1,472.13	138.1	1,479.37	223	1,478.62	228.7	1,479.19	191.7
21.7	1,471.54	137.8	1,478.78	222.7	1,478.03	228.5	1,478.60	191.5
22.0	1,448.42	127.8	1,459.90	214.6	1,458.55	220	1,459.72	183.3
22.2	1,448.23	127.7	1,459.71	214.5	1,458.36	219.9	1,459.54	183.2
22.4	1,447.76	127.5	1,459.24	214.3	1,457.89	219.7	1,459.06	183
22.6	1,447.62	127.5	1,459.11	214.2	1,457.75	219.7	1,458.93	183
23.0	1,438.00	123.3	1,451.19	210.8	1,449.59	216.2	1,451.01	179.6
23.2	1,437.76	123.2	1,450.95	210.7	1,449.35	216	1,450.77	179.5
24.0	1,259.94	46.3	1,195.73	100.3	1,303.46	152.9	1,235.19	86.2

Las Virgenes Municipal Water District
Woodland Hills Country Club Recycled Water Extension
WaterCAD Modeling

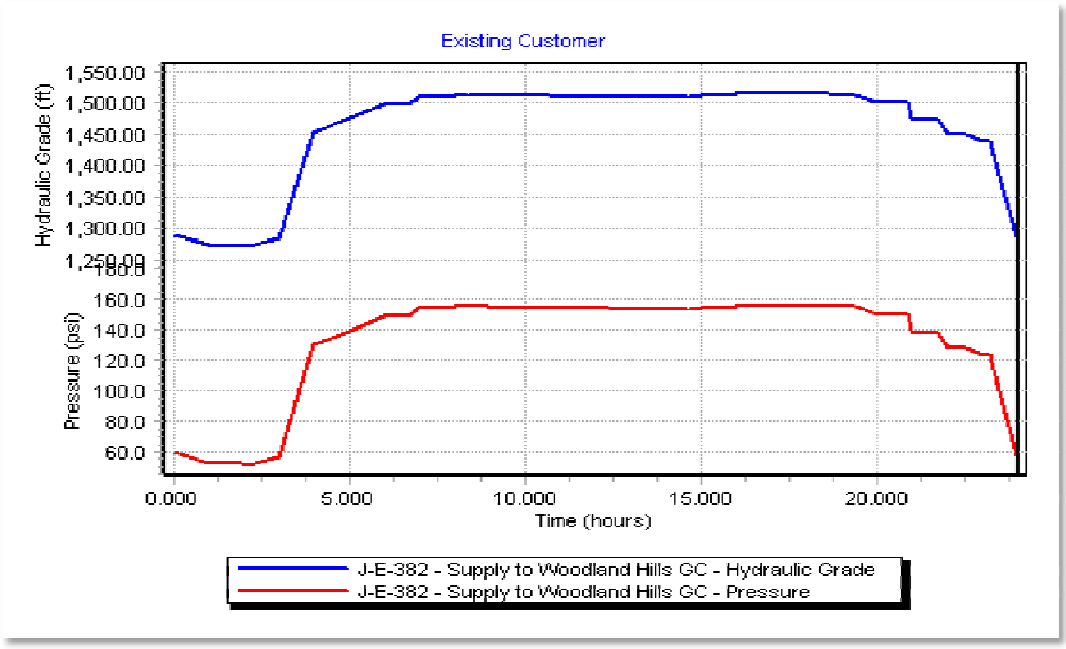
Alternatives

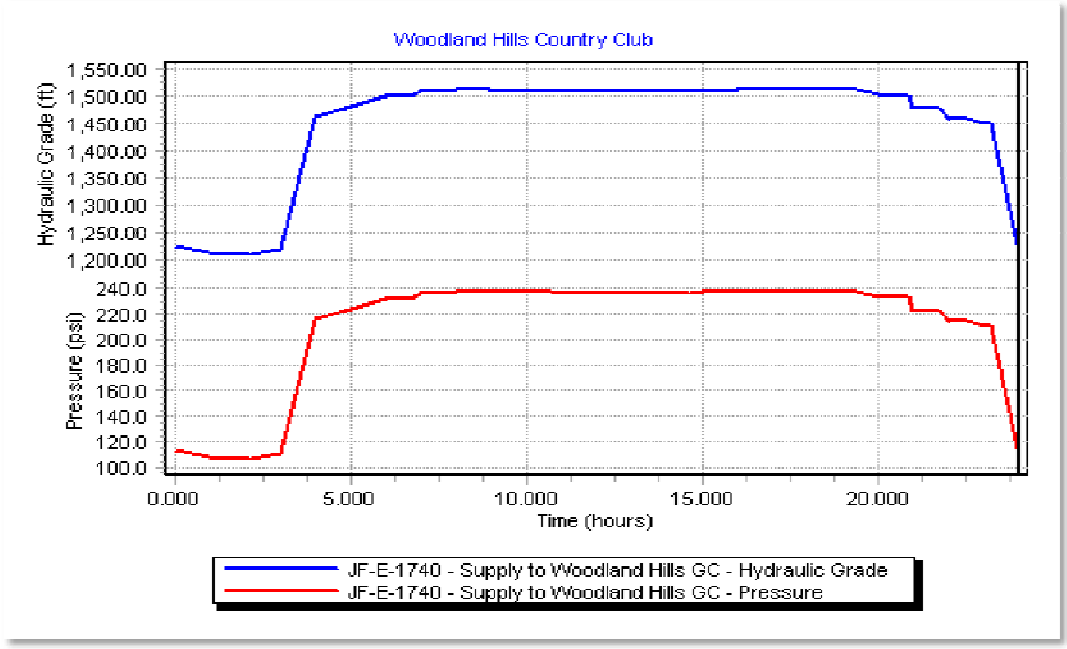
Active Topology	Supply to Woodland Hills GC
Physical	Physical Base 2003
Demand	Supply to Woodland Hills GC
Initial Settings	Initial Settings Base2003
Operational	Operational Base 2003

With 14" Parallel Pipeline

Scenario	Base - MDD - MDD w/ Morrison Supplement - Base 2003 2003 System MDD - Base 2007 2007 MDD - Supply to Woodland Hills GC

Label	Location	Demand (gpm)	Time (hr)	Peaking Factor
JF-E-1740	Woodland Golf Course	**1800**	**4**	N/A
J-4	Louisville High School	94	8	On/Off
J-6	Motion Picture Hospital	10	8	On/Off





	J-E-382 Existing Customer		JF-E-1740 WHCC		J-6 Motion Picture Hosp		J-4 Louisville High	
Time (hours)	Hydraulic Grade (ft)	Pressure (psi)	Hydraulic Grade (ft)	Pressure (psi)	Hydraulic Grade (ft)	Pressure (psi)	Hydraulic Grade (ft)	Pressure (psi)
0.0	1,289.43	59	1,225.07	113	1,287.08	145.8	1,248.71	92
1.0	1,273.64	52.2	1,210.89	106.8	1,269.40	138.2	1,230.33	84.1
2.0	1,271.48	51.3	1,208.64	105.8	1,267.17	137.2	1,228.15	83.1
2.1	1,271.09	51.1	1,208.24	105.7	1,266.75	137	1,227.73	83
3.0	1,283.01	56.2	1,218.39	110.1	1,280.46	143	1,242.21	89.2
4.0	1,452.40	129.5	1,463.60	216.2	1,447.00	215	1,446.69	177.7
5.0	1,474.45	139.1	1,481.29	223.8	1,472.16	225.9	1,471.97	188.6
6.0	1,496.13	148.5	1,499.77	231.8	1,492.43	234.7	1,492.32	197.4
6.7	1,496.34	148.5	1,499.98	231.9	1,492.56	234.7	1,492.46	197.5
7.0	1,508.81	153.9	1,510.12	236.3	1,507.16	241.1	1,507.11	203.8
7.0	1,508.83	153.9	1,510.14	236.3	1,507.18	241.1	1,507.13	203.8
7.9	1,509.30	154.2	1,510.61	236.5	1,507.68	241.3	1,507.64	204.1
8.0	1,511.83	155.2	1,512.69	237.4	1,510.63	242.6	1,510.60	205.3
8.4	1,511.99	155.3	1,512.85	237.5	1,510.82	242.6	1,510.79	205.4
9.0	1,512.18	155.4	1,513.04	237.5	1,511.04	242.7	1,511.01	205.5
9.0	1,510.03	154.5	1,511.28	236.8	1,508.53	241.7	1,508.49	204.4
9.5	1,510.05	154.5	1,511.30	236.8	1,508.58	241.7	1,508.54	204.4
10.0	1,509.70	154.3	1,511.01	236.7	1,508.19	241.5	1,508.14	204.3
10.2	1,509.69	154.3	1,511.00	236.7	1,508.18	241.5	1,508.14	204.3
10.7	1,509.66	154.3	1,510.97	236.6	1,508.16	241.5	1,508.11	204.3
11.0	1,509.27	154.1	1,510.65	236.5	1,507.72	241.3	1,507.67	204.1
11.3	1,509.25	154.1	1,510.62	236.5	1,507.69	241.3	1,507.65	204.1
12.0	1,509.18	154.1	1,510.55	236.5	1,507.62	241.3	1,507.58	204
12.0	1,508.81	153.9	1,510.25	236.3	1,507.19	241.1	1,507.15	203.8
12.4	1,508.76	153.9	1,510.21	236.3	1,507.14	241.1	1,507.10	203.8
13.0	1,508.32	153.7	1,509.83	236.2	1,506.63	240.8	1,506.58	203.6
13.3	1,508.27	153.7	1,509.79	236.1	1,506.58	240.8	1,506.53	203.6
13.8	1,508.21	153.7	1,509.72	236.1	1,506.51	240.8	1,506.46	203.5
14.0	1,507.80	153.5	1,509.38	236	1,506.03	240.6	1,505.98	203.3
14.7	1,507.70	153.5	1,509.29	235.9	1,505.93	240.5	1,505.88	203.3

	J-E-382 Existing Customer		JF-E-1740 WHCC		J-6 Motion Picture Hosp		J-4 Louisville High	
Time (hours)	Hydraulic Grade (ft)	Pressure (psi)	Hydraulic Grade (ft)	Pressure (psi)	Hydraulic Grade (ft)	Pressure (psi)	Hydraulic Grade (ft)	Pressure (psi)
15.0	1,511.01	154.9	1,511.98	237.1	1,509.79	242.2	1,509.76	205
15.1	1,511.01	154.9	1,511.98	237.1	1,509.79	242.2	1,509.76	205
16.0	1,513.57	156	1,514.10	238	1,512.79	243.5	1,512.77	206.3
17.0	1,513.19	155.8	1,513.81	237.9	1,512.35	243.3	1,512.33	206.1
18.0	1,512.68	155.6	1,513.39	237.7	1,511.77	243.1	1,511.75	205.8
18.7	1,512.68	155.6	1,513.39	237.7	1,511.77	243.1	1,511.75	205.8
19.0	1,512.09	155.4	1,512.90	237.5	1,511.09	242.8	1,511.06	205.5
19.2	1,512.08	155.4	1,512.90	237.5	1,511.08	242.8	1,511.05	205.5
19.4	1,512.07	155.4	1,512.89	237.5	1,511.08	242.8	1,511.05	205.5
20.0	1,500.60	150.4	1,502.83	233.1	1,501.00	238.4	1,500.92	201.1
20.0	1,500.59	150.4	1,502.82	233.1	1,500.98	238.4	1,500.91	201.1
20.6	1,500.37	150.3	1,502.60	233	1,500.79	238.3	1,500.71	201.1
20.9	1,500.32	150.3	1,502.54	233	1,500.73	238.3	1,500.66	201
21.0	1,472.36	138.2	1,479.59	223.1	1,470.02	225	1,469.81	187.7
21.7	1,471.77	137.9	1,479.00	222.8	1,469.38	224.7	1,469.18	187.4
22.0	1,448.74	128	1,460.21	214.7	1,443.63	213.6	1,443.31	176.2
22.2	1,448.55	127.9	1,460.02	214.6	1,443.42	213.5	1,443.11	176.1
22.4	1,448.08	127.7	1,459.55	214.4	1,443.10	213.3	1,442.79	176
22.6	1,447.94	127.6	1,459.41	214.3	1,442.68	213.2	1,442.36	175.8
23.0	1,438.35	123.5	1,451.53	210.9	1,431.91	208.5	1,431.55	171.1
23.2	1,438.11	123.4	1,451.29	210.8	1,431.64	208.4	1,431.29	171
24.0	1,273.19	52	1,208.83	105.9	1,270.31	138.6	1,231.94	84.8

Las Virgenes Municipal Water District
Woodland Hills Country Club Recycled Water Extension
WaterCAD Modeling

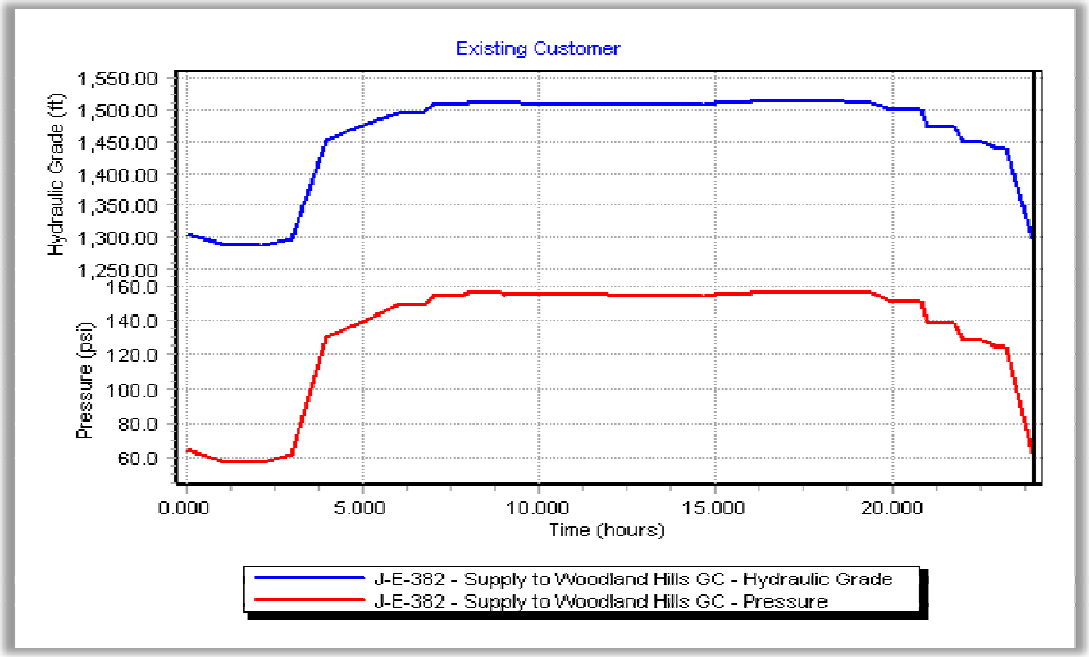
Alternatives

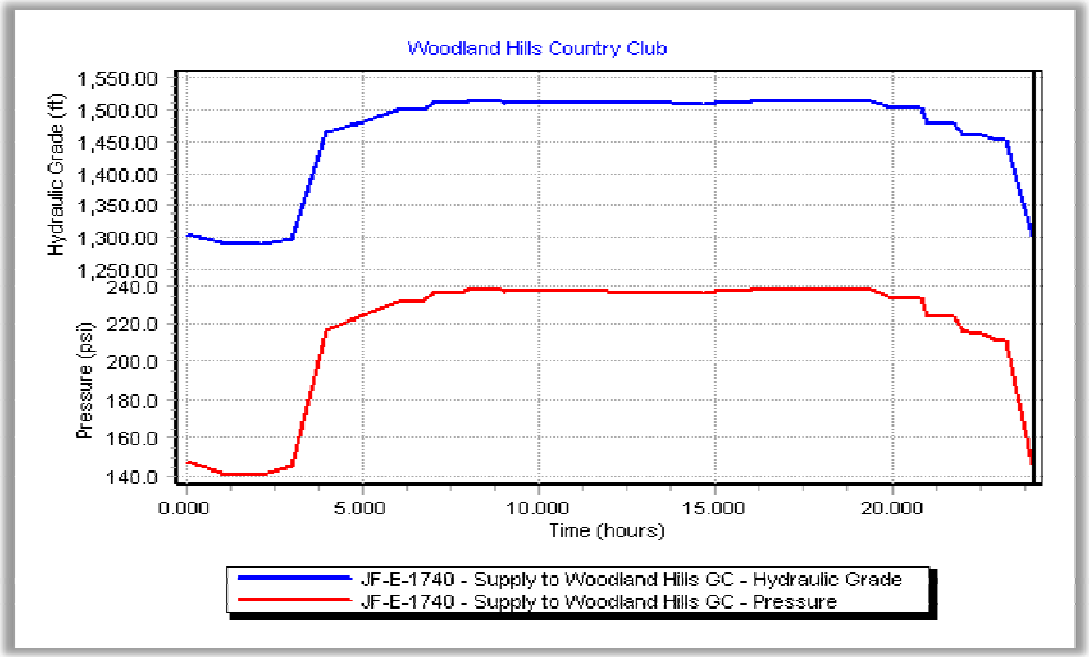
Active Topology	Supply to Woodland Hills GC
Physical	Physical Base 2003
Demand	Supply to Woodland Hills GC
Initial Settings	Initial Settings Base2003
Operational	Operational Base 2003

With 20" Parallel/Extension Pipeline

Scenario	Base - MDD - MDD w/ Morrison Supplement - Base 2003 2003 System MDD - Base 2007 2007 MDD - Supply to Woodland Hills GC

Label	Location	Demand (gpm)	Time (hr)	Peaking Factor
JF-E-1740	Woodland Golf Course	**1800**	**4**	N/A
J-4	Louisville High School	94	8	On/Off
J-6	Motion Picture Hospital	10	8	On/Off





	J-E-382 Existing Customer		JF-E-1740 WHCC		J-6 Motion Picture Hosp		J-4 Louisville High	
Time (hours)	Hydraulic Grade (ft)	Pressure (psi)	Hydraulic Grade (ft)	Pressure (psi)	Hydraulic Grade (ft)	Pressure (psi)	Hydraulic Grade (ft)	Pressure (psi)
0.0	1,303.73	65.20	1,304.81	147.50	1,319.70	160	1,311.61	119.2
1.0	1,288.22	58.50	1,290.92	141.40	1,305.53	153.8	1,297.72	113.2
2.0	1,286.05	57.60	1,288.65	140.50	1,303.28	152.8	1,295.45	112.3
2.1	1,285.65	57.40	1,288.26	140.30	1,302.88	152.7	1,295.06	112.1
3.0	1,297.27	62.40	1,298.09	144.50	1,313.03	157.1	1,304.89	116.3
4.0	1,453.27	129.90	1,464.61	216.60	1,461.99	221.5	1,464.42	185.4
5.0	1,475.05	139.30	1,482.04	224.10	1,480.40	229.5	1,481.85	192.9
6.0	1,496.36	148.60	1,500.01	231.90	1,499.23	237.6	1,500.01	200.8
6.7	1,496.57	148.60	1,500.22	232.00	1,499.44	237.7	1,500.22	200.8
7.0	1,508.91	154.00	1,510.22	236.30	1,509.95	242.3	1,510.22	205.2
7.0	1,508.93	154.00	1,510.24	236.30	1,509.96	242.3	1,510.24	205.2
7.9	1,509.40	154.20	1,510.71	236.50	1,510.44	242.5	1,510.71	205.4
8.0	1,511.90	155.30	1,512.76	237.40	1,512.58	243.4	1,512.76	206.3
8.4	1,512.06	155.40	1,512.92	237.50	1,512.74	243.5	1,512.92	206.3
9.0	1,512.25	155.40	1,513.11	237.60	1,512.93	243.6	1,513.11	206.4
9.0	1,510.12	154.50	1,511.37	236.80	1,511.11	242.8	1,511.37	205.7
9.5	1,510.15	154.50	1,511.40	236.80	1,511.13	242.8	1,511.40	205.7
10.0	1,509.80	154.40	1,511.11	236.70	1,510.83	242.6	1,511.11	205.6
10.2	1,509.79	154.40	1,511.10	236.70	1,510.82	242.6	1,511.10	205.6
10.7	1,509.75	154.30	1,511.07	236.70	1,510.79	242.6	1,511.07	205.5
11.0	1,509.37	154.20	1,510.75	236.60	1,510.46	242.5	1,510.75	205.4
11.3	1,509.35	154.20	1,510.73	236.50	1,510.43	242.5	1,510.73	205.4
12.0	1,509.28	154.10	1,510.65	236.50	1,510.36	242.4	1,510.65	205.4
12.0	1,508.91	154.00	1,510.36	236.40	1,510.05	242.3	1,510.36	205.2
12.4	1,508.87	154.00	1,510.31	236.40	1,510.01	242.3	1,510.31	205.2
13.0	1,508.42	153.80	1,509.94	236.20	1,509.62	242.1	1,509.94	205.1
13.3	1,508.38	153.80	1,509.90	236.20	1,509.58	242.1	1,509.90	205
13.8	1,508.32	153.70	1,509.83	236.20	1,509.51	242.1	1,509.83	205
14.0	1,507.91	153.60	1,509.50	236.00	1,509.16	241.9	1,509.50	204.9
14.7	1,507.82	153.50	1,509.40	236.00	1,509.07	241.9	1,509.40	204.8

	J-E-382 Existing Customer		JF-E-1740 WHCC		J-6 Motion Picture Hosp		J-4 Louisville High	
Time (hours)	Hydraulic Grade (ft)	Pressure (psi)	Hydraulic Grade (ft)	Pressure (psi)	Hydraulic Grade (ft)	Pressure (psi)	Hydraulic Grade (ft)	Pressure (psi)
15.0	1,511.09	154.90	1,512.06	237.10	1,511.86	243.1	1,512.06	206
15.1	1,511.09	154.90	1,512.06	237.10	1,511.86	243.1	1,512.06	206
16.0	1,513.62	156.00	1,514.15	238.00	1,514.04	244	1,514.15	206.9
17.0	1,513.25	155.90	1,513.86	237.90	1,513.73	243.9	1,513.86	206.7
18.0	1,512.74	155.60	1,513.45	237.70	1,513.31	243.7	1,513.45	206.6
18.7	1,512.74	155.60	1,513.45	237.70	1,513.30	243.7	1,513.45	206.6
19.0	1,512.16	155.40	1,512.97	237.50	1,512.80	243.5	1,512.97	206.4
19.2	1,512.15	155.40	1,512.96	237.50	1,512.79	243.5	1,512.96	206.4
19.4	1,512.14	155.40	1,512.96	237.50	1,512.79	243.5	1,512.96	206.4
20.0	1,500.89	150.50	1,503.25	233.30	1,502.66	239.1	1,503.06	202.1
20.0	1,500.88	150.50	1,503.24	233.30	1,502.65	239.1	1,503.05	202.1
20.6	1,500.66	150.40	1,503.02	233.20	1,502.43	239	1,502.84	202
20.9	1,500.61	150.40	1,502.97	233.20	1,502.38	239	1,502.78	202
21.0	1,472.98	138.40	1,480.35	223.40	1,478.62	228.7	1,480.16	192.2
21.7	1,472.39	138.20	1,479.76	223.10	1,478.03	228.5	1,479.57	191.9
22.0	1,449.62	128.30	1,461.23	215.10	1,458.55	220	1,461.04	183.9
22.2	1,449.43	128.30	1,461.05	215.00	1,458.36	219.9	1,460.86	183.8
22.4	1,448.95	128.00	1,460.57	214.80	1,457.89	219.7	1,460.38	183.6
22.6	1,448.82	128.00	1,460.44	214.80	1,457.75	219.7	1,460.25	183.6
23.0	1,439.33	123.90	1,452.66	211.40	1,449.60	216.2	1,452.47	180.2
23.2	1,439.09	123.80	1,452.42	211.30	1,449.36	216	1,452.23	180.1
24.0	1,287.50	58.20	1,288.57	140.40	1,303.47	152.9	1,295.38	112.2

Las Virgenes Municipal Water District
Woodland Hills Country Club Recycled Water Extension
WaterCAD Modeling

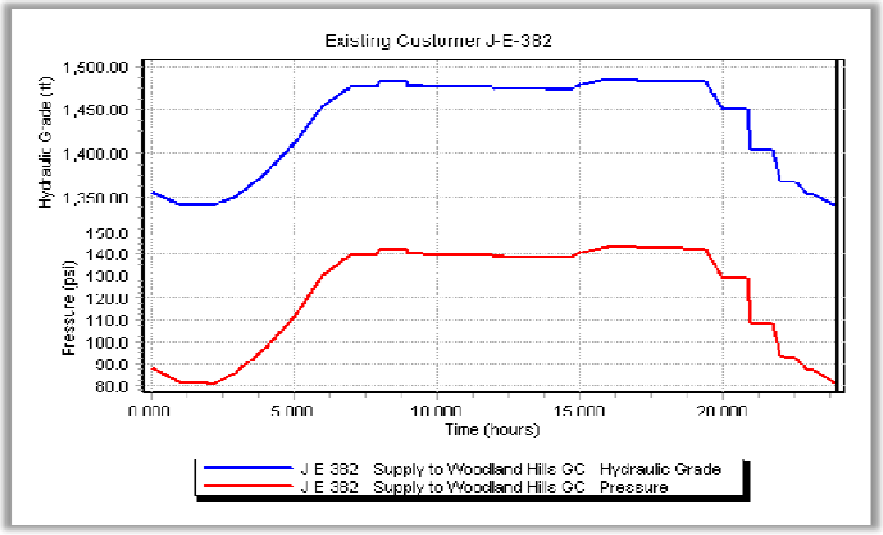
Alternatives

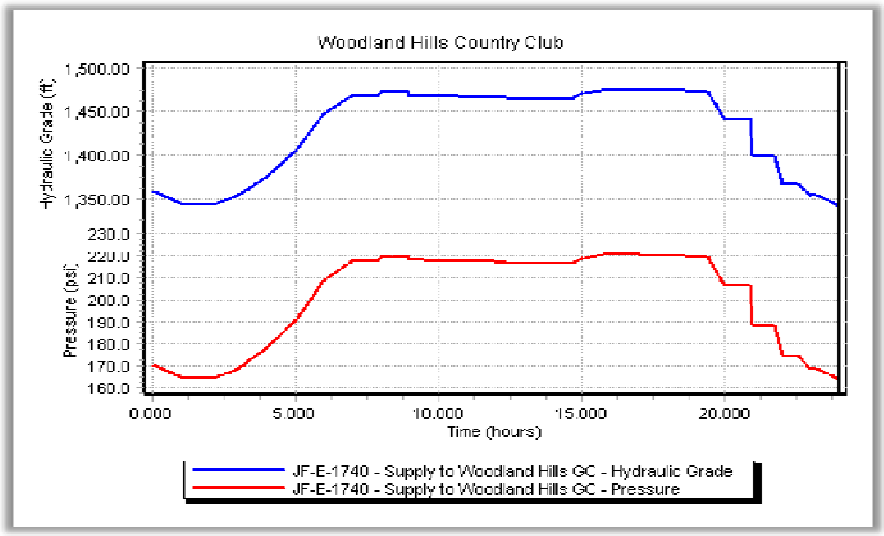
Active Topology	Supply to Woodland Hills GC
Physical	Physical Base 2003
Demand	Supply to Woodland Hills
Initial Settings	Initial Settings Base2003
Operational	Operational Base 2003

With 12" Extension

Scenario	Base - MDD - MDD w/ Morrison Supplement - Base 2003 2003 System MDD - Base 2007 2007 MDD - Supply to Woodland Hills GC

Label	Location	Demand (gpm)	Time (hr)	Peaking Factor
JF-E-1740	Woodland Golf Course	**400**	**24**	On/Off
J-4	Louisville High School	94	8	On/Off
J-6	Motion Picture Hospital	10	8	On/Off





	J-E-382 Existing		JF-E-1740 WHCC		J-6 Motion Picture		J-4 Louisville High		P-E-363 8"	
Time (hours)	Hydraulic Grade (ft)	Pressure (psi)	Hydraulic Grade (ft)	Pressure (psi)	Hydraulic Grade (ft)	Pressure (psi)	Hydraulic Grade (ft)	Pressure (psi)	Flow (gpm)	Velocity (ft/s)
0.0	1,355.63	87.7	1,358.31	170.6	1,432.40	208.7	1,363.31	141.6	813.88	5.19
1.0	1,341.07	81.4	1,345.35	165	1,422.05	204.2	1,350.35	136	831.97	5.31
2.0	1,339.57	80.7	1,343.75	164.3	1,420.31	203.5	1,348.76	135.3	830.96	5.3
2.1	1,339.27	80.6	1,343.45	164.2	1,420.01	203.4	1,348.46	135.2	830.96	5.3
3.0	1,351.18	85.7	1,353.59	168.6	1,427.25	206.5	1,358.60	139.6	810.87	5.18
4.0	1,375.89	96.4	1,374.94	177.8	1,442.79	213.2	1,379.94	148.8	769.37	4.91
5.0	1,410.25	111.3	1,404.97	190.8	1,464.47	222.6	1,409.97	161.8	706.47	4.51
6.0	1,453.68	130.1	1,447.34	209.1	1,487.04	232.4	1,452.52	180.2	549.56	3.51
7.0	1,475.86	139.7	1,467.20	217.7	1,500.58	238.2	1,472.38	188.8	486.66	3.11
7.0	1,475.86	139.7	1,467.21	217.7	1,500.59	238.2	1,472.39	188.8	486.66	3.11
7.8	1,476.00	139.7	1,467.35	217.8	1,500.73	238.3	1,472.53	188.9	486.66	3.11
7.9	1,476.01	139.7	1,467.35	217.8	1,500.73	238.3	1,472.53	188.9	486.66	3.11
8.0	1,481.31	142	1,472.21	219.9	1,503.95	239.7	1,477.39	191	469.28	3
8.4	1,481.38	142.1	1,472.28	219.9	1,504.01	239.7	1,477.46	191	469.28	3
9.0	1,481.45	142.1	1,472.35	219.9	1,504.08	239.7	1,477.53	191	469.28	3
9.0	1,476.84	140.1	1,468.12	218.1	1,501.29	238.5	1,473.30	189.2	484.48	3.09
9.5	1,476.80	140.1	1,468.08	218.1	1,501.26	238.5	1,473.26	189.2	484.48	3.09
10.0	1,476.04	139.8	1,467.38	217.8	1,500.78	238.3	1,472.56	188.9	486.76	3.11
10.2	1,476.02	139.8	1,467.36	217.8	1,500.76	238.3	1,472.55	188.9	486.76	3.11
10.7	1,475.96	139.7	1,467.31	217.8	1,500.70	238.3	1,472.49	188.8	486.76	3.11
11.0	1,475.20	139.4	1,466.61	217.5	1,500.22	238.1	1,471.79	188.5	489.04	3.12
11.3	1,475.16	139.4	1,466.57	217.4	1,500.18	238	1,471.75	188.5	489.04	3.12
12.0	1,475.07	139.3	1,466.48	217.4	1,500.09	238	1,471.66	188.5	489.04	3.12
12.0	1,474.32	139	1,465.80	217.1	1,499.63	237.8	1,470.98	188.2	491.32	3.14
12.4	1,474.26	139	1,465.74	217.1	1,499.57	237.8	1,470.92	188.2	491.32	3.14
13.0	1,473.43	138.6	1,464.97	216.7	1,499.02	237.5	1,470.15	187.8	493.60	3.15
13.3	1,473.37	138.6	1,464.92	216.7	1,498.97	237.5	1,470.10	187.8	493.59	3.15
13.8	1,473.30	138.6	1,464.84	216.7	1,498.89	237.5	1,470.02	187.8	493.60	3.15
14.0	1,472.51	138.2	1,464.12	216.4	1,498.39	237.3	1,469.30	187.5	495.87	3.17
14.7	1,472.38	138.2	1,464.00	216.3	1,498.27	237.2	1,469.18	187.4	495.87	3.17
15.0	1,479.22	141.1	1,470.23	219	1,502.42	239	1,475.41	190.1	474.10	3.03
15.1	1,479.22	141.1	1,470.23	219	1,502.42	239	1,475.41	190.1	474.10	3.03
16.0	1,485.02	143.6	1,475.59	221.3	1,505.86	240.5	1,480.77	192.4	453.50	2.89
17.0	1,483.79	143.1	1,474.45	220.8	1,505.15	240.2	1,479.63	191.9	458.13	2.92
18.0	1,482.49	142.6	1,473.24	220.3	1,504.37	239.8	1,478.42	191.4	462.75	2.95
18.7	1,482.46	142.5	1,473.21	220.3	1,504.34	239.8	1,478.40	191.4	462.75	2.95
19.0	1,481.12	142	1,471.98	219.8	1,503.54	239.5	1,477.16	190.9	467.37	2.98
19.2	1,481.11	142	1,471.97	219.8	1,503.52	239.5	1,477.15	190.9	467.37	2.98
19.4	1,481.11	142	1,471.96	219.8	1,503.52	239.5	1,477.14	190.9	467.37	2.98
20.0	1,450.79	128.8	1,440.92	206.3	1,489.04	233.2	1,445.92	177.4	613.32	3.91
20.0	1,450.77	128.8	1,440.91	206.3	1,489.03	233.2	1,445.91	177.3	613.32	3.91
20.6	1,450.55	128.7	1,440.68	206.2	1,488.81	233.1	1,445.69	177.3	613.32	3.91
20.9	1,450.49	128.7	1,440.62	206.2	1,488.75	233.1	1,445.62	177.2	613.32	3.91
21.0	1,403.80	108.5	1,398.89	188.2	1,459.18	220.3	1,403.90	159.2	712.60	4.55
21.5	1,403.18	108.2	1,398.28	187.9	1,458.57	220	1,403.28	158.9	712.60	4.55
21.7	1,402.94	108.1	1,398.03	187.8	1,458.32	219.9	1,403.04	158.8	712.60	4.55
22.0	1,367.64	92.9	1,366.95	174.3	1,435.29	210	1,371.96	145.4	772.88	4.93
22.2	1,367.39	92.8	1,366.70	174.2	1,435.04	209.9	1,371.71	145.2	772.89	4.93
22.6	1,366.98	92.6	1,366.29	174.1	1,434.63	209.7	1,371.29	145.1	772.88	4.93
23.0	1,352.95	86.5	1,353.96	168.7	1,425.26	205.6	1,358.97	139.7	794.19	5.07
23.2	1,352.68	86.4	1,353.68	168.6	1,424.98	205.5	1,358.69	139.6	794.19	5.07
24.0	1,338.67	80.3	1,341.35	163.3	1,415.44	201.4	1,346.35	134.3	813.88	5.19

Appendix C

Opinions of Probable Cost

Planning-Level Opinions of Cost

Item	Description	Quantity	Units	Unit Cost	Extension	Comments
Alternative A (24-hour delivery)						
1	12-inch main extension	19,000	ft	$ 225	$ 4,275,000	Larger than minimum sized main
2	On-site Storage	340,000	gallons	$ 0.40	$ 136,000	In-ground pond w/liner
3	Pump Station Modifications	1	LS	$ 150,000	$ 150,000	
4	Contingency	20%			$ 912,200	
5	Engineering, Planning, Admin	20%			$ 912,200	
					$ 6,390,000	
Alternative B1 (4-hour delivery @ 140 psi)						
1	20-inch main extension	24,500	ft	$ 350	$ 8,575,000	
2	Contingency	20%			$ 1,715,000	
3	Engineering, Planning, Admin	20%			$ 1,715,000	
					$ 12,010,000	
Alternative B2 (4-hr delivery @ 100 psi)						
1	14-inch main extension	19,000	ft	$ 240	$ 4,560,000	
2	12-inch parallel main	5,300	ft	$ 225	$ 1,192,500	
3	Contingency	20%			$ 1,150,500	
4	Engineering, Planning, Admin	20%			$ 1,150,500	
					$ 8,050,000	

Item	Description	Quantity	Units	Unit Cost	Extension	Comments
Alternative C1 (6-hour delivery @ 100 psi)						
1	12-inch main extension	19,000	ft	$ 225	$ 4,275,000	
2	12-inch parallel main	5,300	ft	$ 225	$ 1,192,500	
3	Contingency	20%			$ 1,093,500	
4	Engineering, Planning, Admin	20%			$ 1,093,500	
					$ 7,650,000	
Alternative C2 (6-hour delivery @ 140 psi)						
1	14-inch main extension	19,000	ft	$ 240	$ 4,560,000	
2	14-inch parallel main	5,300	ft	$ 240	$ 1,272,000	
4	Pump Station Modifications	1	LS	$ 150,000	$ 150,000	
5	Contingency	20%			$ 1,196,400	
6	Engineering, Planning, Admin	20%			$ 1,196,400	
					$ 8,370,000	
Alternative D (8-hour delivery @ 100 psi)						
1	12-inch main extenstion	19,000	ft	$ 225	$ 4,275,000	
2	12-inch parallel main	5,300	ft	$ 225	$ 1,192,500	
3	On-Site Storage	200,000	gallons	$ 0.50	$ 100,000	In-ground pond w/liner
4	Pump Station Modifications	1	LS	$ 150,000	$ 150,000	
5	Contingency	20%			$ 1,143,500	
6	Engineering, Planning, Admin	20%			$ 1,143,500	
					$ 8,000,000	

Appendix D

Photographs from Site Reconnaissance

Looking SE on Park Capri

Utilities on Park Capri

On Park Capri

Existing Valve Can on Park Capri

On Park Capri Approaching Park Sienna. Divided Road. Single Lane Each Way.

Intersection of Park Capri and Park Sienna

Median on Park Sienna

Looking East on Park Sienna

Looking East on Park Sienna

Park Along Park Sienna

Looking West on Park Granada Near Park Capri

LVMWD RW Valve on Park Capri

Utilities on Park Capri

At Louisville H.S. and Mullholand Drive

Louisville H.S.

At Louisville H.S. Looking East on Mulholland Drive

Utilities at Louisville H.S.

Utilities at Louisville H.S.

Looking East on Park Ora

Looking North on Park Ora

Northbound on Mulholland Drive

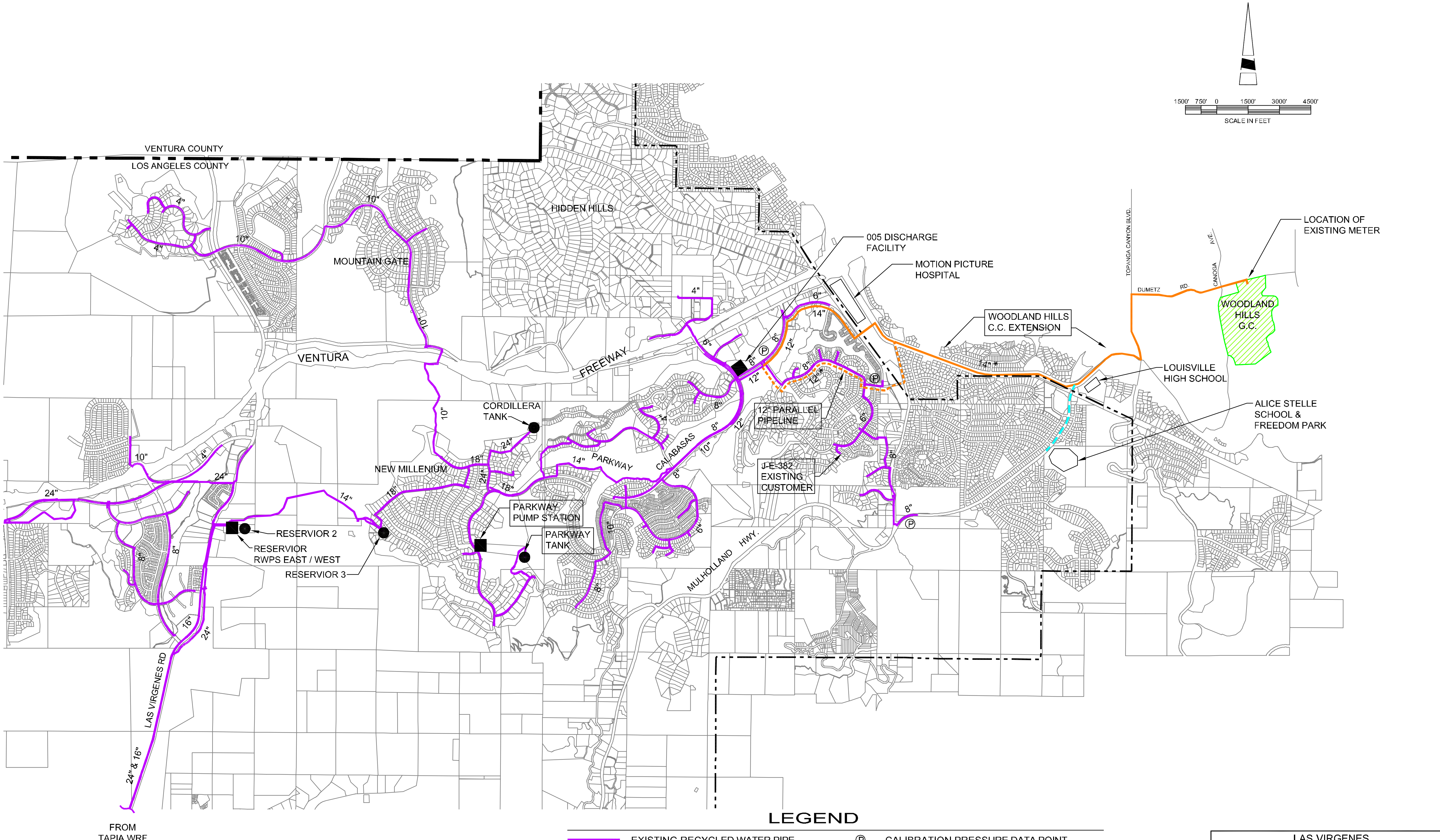
Eastbound on Mulholland Drive

Eastbound On Mulholland Drive

Northbound on Topanga Canyon Blvd.

Eastbound on Dumetz Road

Plates



LEGEND

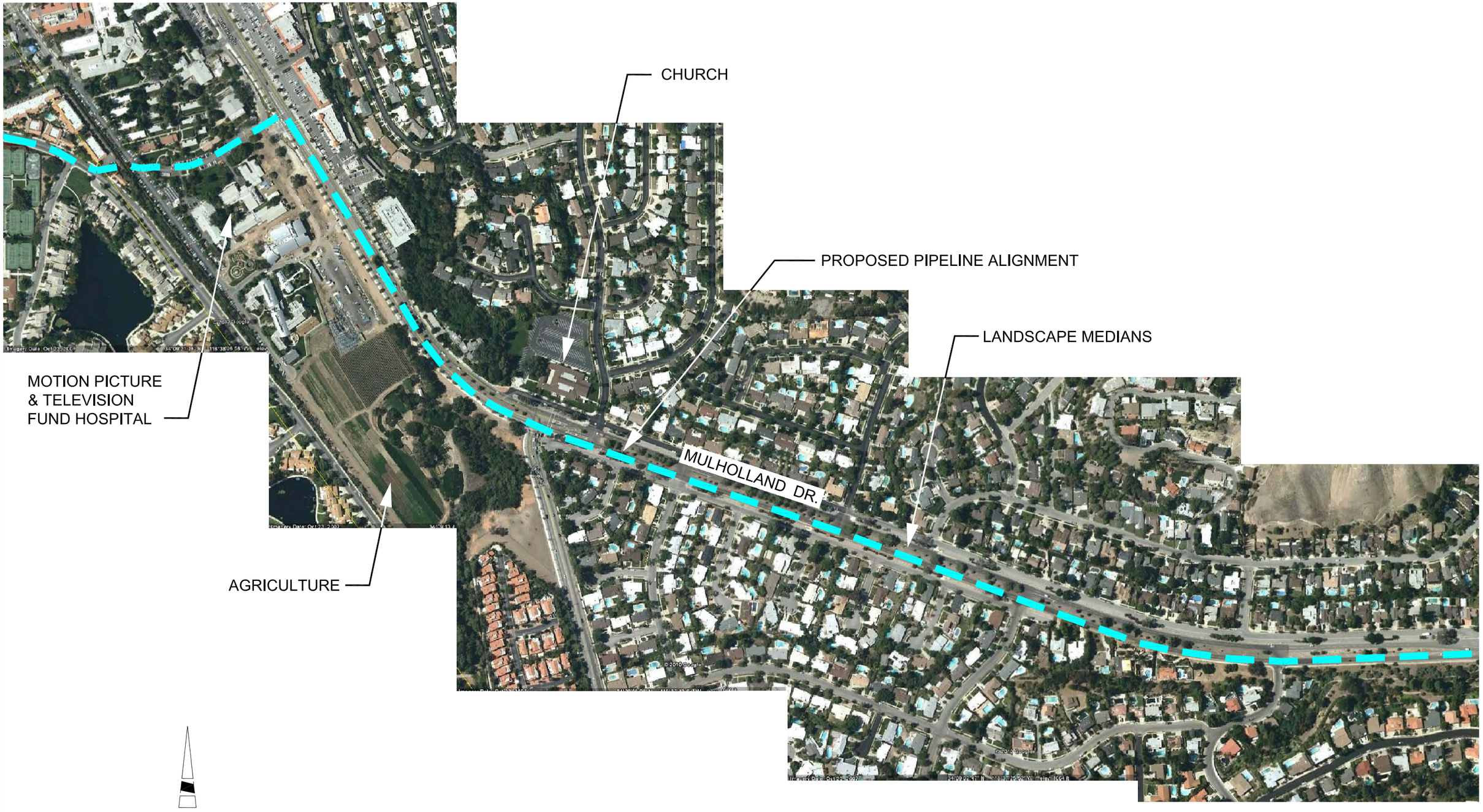
EXISTING RECYCLED WATER PIPE	Ⓟ CALIBRATION PRESSURE DATA POINT
PROPOSED EXTENSIONS ALT. 1	* SIZE OF PIPLINE DEPENDENT ON ALTERNATIVE
PROPOSED EXTENSIONS ALT. 2	TANK OR RESERVOIR
FUTURE EXTENSION (NOT STUDIED)	PUMP STATION

LAS VIRGENES
MUNICIPAL WATER DISTRICT

WOODLAND HILLS
RECYCLED WATER STUDY

60161369 | JAN. 2011 | PLATE 1

AECOM



200' 100' 0 200' 400' 600'

SCALE IN FEET

AECOM

LAS VIRGENES MUNICIPAL WATER DISTRICT	
WOODLAND HILLS RECYCLED WATER STUDY	
60161369 NOV. 2010	PLATE 2

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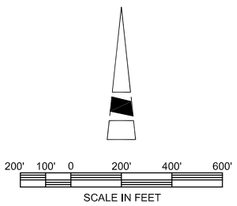

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WOODLAND HILLS RECYCLED WATER STUDY	
60161369	NOV. 2010 PLATE 3

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Aerial of pipeline route_Page_1.jpg
Aerial of pipeline route_Page_2.jpg

TOPANGA
MTN. SCHOOL

PROPOSED
PIPELINE
ALIGNMENT

DUMETZ RD.

SERRANIA AVE.

SERRANIA
AVENUE
ELEMENTARY
SCHOOL

PACIFIC LODGE
CHAPEL

WOODLAND HILLS
COUNTRY CLUB

SERRANIA AVENUE PARK

200' 100' 0 200' 400' 600'

SCALE IN FEET

AECOM

LAS VIRGENES MUNICIPAL WATER DISTRICT	
WOODLAND HILLS RECYCLED WATER STUDY	
60161369	NOV. 2010 PLATE 4

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Aerial of pipeline route_Page_2.jpg
SCAN1519_000.tif
Serrania Ave Park.jpg
Woodland Hills.jpg

ATTACHMENT 2:

Agreement for Cooperative Environmental Review and Term Sheets

Terms Sheet: Recycled Water Wholesale Purchase Agreement

1. Agreement
    a. The intent of this agreement is for the wholesale sale of Recycled Water to LADWP from the JPA.
2. Pricing
    a. Mutually agreed price per acre-foot or fraction thereof. Price per acre-foot will be equal to the cost of wholesale recycled water plus a potable supplement component (currently estimated at $670 per acre-foot.)
3. Capital Cost
    a. LADWP will reimburse the JPA for the capital expenditure within the JPA service area
4. Escalation
    a. Annual price escalation based on Bureau of Labor Statistics, Consumer Price Index for All Urban Consumers (CPI-U); Los Angeles, Riverside, Orange Counties
5. Supplemental Supply
    a. JPA will provide supplemental supply during normal operating conditions
6. Planned or unplanned disruption
    a. During planned or unplanned disruption the JPA shall make every effort to resume recycled water delivery as soon as possible and shall keep LADWP informed as to the status of the event.
7. Water quality
    a. Water quality shall comply with JPA's RWQCB Water Reclamation Requirements and Title 22 at the point of regulatory compliance
    b. Water quality reports required by the RWQCB and/or SWRCB shall be made available to LADWP
    c. LADWP, the JPA and WHCC shall form an operating committee that meets periodically to review and operations and address any issues
8. Payments
    a. JPA shall invoice every 30 days and LADWP shall make payment within 45 days
9. Metering
    a. Wholesale sales shall be measured by a JPA meter at the service area boundary
10. LRP Funding
    a. LADWP shall apply for LRP funding
    b. LADWP shall receive all LRP funds
11. Ownership
    a. JPA shall own, operate and maintain facilities in their service area
    b. LADWP shall own, operate and maintain facilities in their service area
12. Termination
    a. Each party shall have the right to terminate the agreement with 180 day notice unless a shorter notice is mutually agreed
13. Term
    a. 30 years

   b. Provide a mutually agreed renewal option for the same term as the original term
14. Point of Use Regulatory Compliance
   a. LADWP shall assure their retail customers comply with all necessary regulatory requirements for the use of recycled water
15. Minimum Pressure
   a. A minimum pressure of 100 psi shall be provided at the JPA/LADWP boundary
16. Each agency to indemnify each other, insure each other, pay their own attorney fees

Terms Sheet: Design & Construction Agreement

1. Agreement
    a. The intent of this agreement is to define responsibilities for the preliminary design, CEQA, design and construction of the facilities necessary to convey wholesale recycled water to the WHCC in LADWP's service area from the JPA
2. Preliminary Design
    a. The JPA will be responsible to complete necessary preliminary design for the facilities to convey wholesale recycled water to WHCC from the JPA
    b. Facilities within the JPA service area shall be designed to JPA standards and facilities within the LADPW service area shall be designed to LADWP standards
3. CEQA
    a. The JPA shall be the lead agency for the project with LADWP being a responsible agency
4. Design
    a. The JPA will be responsible to complete design for the facilities to convey wholesale recycled water to WHCC from the JPA
    b. Facilities within the JPA service area shall be designed to JPA standards and facilities within the LADWP service area shall be designed to LADWP standards
5. Construction
    a. The JPA shall be responsible to bid and hire a contractor to construct the project.
    b. The JPA shall be responsible to construct any metering and backflow protection facilities for JPA retail customers
    c. LADPW shall be responsible to construct any metering and backflow protection facilities for LADWP retail customers
6. Permits and Rights of Way
    a. The JPA shall obtain all necessary encroachment permits and right of way within their service area
    b. LADPW shall obtain all necessary encroachment permits and right of way within their service area
    c. The construction contractor shall obtain traffic control permits and develop traffic control plans assisted as necessary by the JPA and LADWP
7. Cost Share
    a. Preliminary design and CEQA costs shall be shared between the JPA and LADWP on prorated basis based on the ratio of pipe length in each service area to the total pipe length. The JPA costs shall be reimbursed by LADWP.
    b. JPA shall pay for the cost of design for facilities within their service area reimbursed by LADWP
    c. LADWP shall pay for the cost of design for facilities within their service area
    d. JPA shall pay for the cost of construction including services during construction and any necessary mitigation measures within their service area reimbursed by LADWP
    e. LADWP shall pay for the cost of construction including services during construction and any necessary mitigation measures within their service area

f. JPA shall pay any fees associated with permits with in their service area reimbursed by LADWP
g. LADWP shall pay for any fees associated with permits with in their service area
h. Common permits, such as the RWQCB SSWP permit shall be paid for on the same basis as preliminary design and CEQA cost
i. LADWP shall pay an administrative cost to the JPA of 10% of their share of project

8. Payment
    a. The JPA shall bill LADWP every 30 days with payment due in 45 days
9. Use of consultants
    a. The JPA reserves the right to use consultants of their choice in preforming the preliminary design, CEQA, design and construction management.
    b. Both parties need to agree to award preliminary design, CEQA, design and construction management contracts if the parties do not agree then
        i. The project can be rebid if mutually agreed
        ii. The agreements become void and all outstanding costs are to be paid
10. Award of Construction Contract
    a. Both parties need to agree to award the construction contract if the parties do not agree then
        i. The project can be rebid if mutually agreed
        ii. The agreements become void and all outstanding costs are to be paid
11. Each agency shall indemnify each other, insure each other, pay their own attorney fees
12. LADWP may elect to perform the design of their facilities. In case LADWP and the JPA shall coordinate the design effort to assure a complete, integrated bid and construction package.

ATTACHMENT 3:

Agreement for Professional Services

AGREEMENT FOR PROFESSIONAL SERVICES
CONSULTANT

As of ***DATE*** Las Virgenes Municipal Water District, hereinafter "DISTRICT", and **CONSULTANT,** hereinafter "CONSULTANT", agree as follows:

SECTION 1. PURPOSES
DISTRICT proposes to engage CONSULTANT to perform **consulting services** for the DISTRICT. The professional services were solicited pursuant to Section 2-5.508 of the Administrative Code.

SECTION 2. SCOPE OF SERVICES
CONSULTANT shall provide the following services: **as outlined in Exhibit "A".**

SECTION 3. COMPENSATION

(a) Compensation shall be made on a time and material basis for a total cost, including expense reimbursement, not to exceed **$0,000.00** and shall include all reimbursement for CONSULTANT'S expenses necessary for completion of all work as defined in Section 2 (above). The consultant shall work at the rate described on the Fee Schedule attached as **Exhibit B**. No additional compensation or expense reimbursement shall be paid by DISTRICT without expressed written consent by DISTRICT prior to the performance of work or the accrual of the expense.

(b) CONSULTANT shall submit monthly billings stating services performed and the amount due for services rendered. Monthly billings shall include position, hourly rate, hours worked, summary of hours in the reporting period and the total hours spent to date, a summary of costs charged to the task in the reporting period and the total costs accrued to date, expenses, other direct costs, and total billing to date. The CONSULTANT shall submit with each reporting period's invoice a progress report containing a brief summary of all activities accomplished on each active task. The report shall describe the progress toward the completion of each task and shall include:

1. A summary of work accomplished during the current reporting period.
2. A summary of work scheduled for the next period.
3. A summary of key issues and cost impacts.
4. An estimate on what percentage of the work has been completed.

The bill shall be paid if the DISTRICT determines the billing reflects work satisfactorily performed. Payment shall be made through the DISTRICT'S normal disbursement procedure.

SECTION 4. TIME FOR PERFORMANCE

Performance under this contract shall commence upon notification of the CONSULTANT by the DISTRICT. The CONSULTANT shall complete the work on or before ***DATE*****.**

SECTION 5. INDEPENDENT CONTRACTOR

CONSULTANT is an independent contractor and not an employee of the DISTRICT. CONSULTANT shall be responsible for payment of Income Taxes, Social Security Taxes, State Disability Insurance, Unemployment Compensation, and other payroll deductions in connection with the services to be performed.

SECTION 6. INDEMNIFICATION:

CONSULTANT shall indemnify, defend, and hold harmless DISTRICT and LADWP, its officers, agents, and employees, from and against any and all costs, liabilities, or damages, including attorney fees, arising out of any acts, errors or omissions, including negligent acts or omissions, by CONSULTANT, its officers, agents, or employees arising during the performance of this AGREEMENT.

SECTION 7. INSURANCE:

CONSULTANT shall obtain and maintain during the term of this AGREEMENT the following insurance coverage:

(a) Comprehensive general liability in the amount of five million dollars ($5,000,000) per occurrence and five million dollars ($5,000,000) aggregate. A Special Insurance Endorsement naming DISTRICT and Los Angeles Department of Water and Power (LADWP), its elected, appointed boards, officers, agents, and employees as additional insured shall be provided on a form approved by DISTRICT Counsel and LADWP.

(b) Automobile liability in the amount of one million dollars ($1,000,000) combined single limits per claim and aggregate for owned, hired, and non-owned vehicles.

(c) Professional liability (errors and omissions) in the amount of one million dollars ($1,000,000) shall be provided to DISTRICT and on a claims-made basis.

(d) CONSULTANT shall obtain and maintain, during the termof this AGREEMENT, statutory Worker's Compensation Insurance and employer's liabilityin the amount of one million dollars ($1,000,000) per occurence. CONSULTANT shall provide a waiver of subrogation in favor of DISTRICT and LADWP.

CONSULTANT shall provide evidence of insurance as required herein, subject to approval by DISTRICT and LADWP. Said insurance shall not limit or qualify the liabilities of CONSULTANT arising from the performance or non-performance under this AGREEMENT. CONSULTANT shall provide named additional insured status for automobile and general liability insurance. A notice of cancellation shall be provided to DISTRICT and LADWP on all lines of insurance required herein.

SECTION 8. TERMINATION OF AGREEMENT:

Either party may terminate this AGREEMENT by giving the other party thirty (30) days written notice. CONSULTANT should be paid for services rendered to date of termination if the work is otherwise satisfactory to DISTRICT.

SECTION 9. COMPLIANCE WITH LAWS:

The parties shall be bound by applicable federal, state, and local laws, ordinances, regulations, and directives as they pertain to the performance of this AGREEMENT.

SECTION 10. EQUAL OPPORTUNITY EMPLOYER:

(a) CONSULTANT will not discriminate against any employee or applicant for employment because of race, color, religion, creed, national origin, ancestry, physical handicap, medical condition, age, marital status, or sex. CONSULTANT shall ensure applicants are employed, and employees will be treated during employment without regard to their race, color, religion, creed, national origin, ancestry, physical handicap, medical condition, age, marital status, or sex. Such actions shall include, but not be limited to the following: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination, rates of pay or other forms of compensation; and selection for training.

CONSULTANT shall post in conspicuous places, available to employees and applicants for employment, notices to be provided setting forth the provisions of this non-discrimination clause.

(b) In all solicitations or advertisements for employees, CONSULTANT will state qualified applicants will receive consideration for employment without regard to race, color, religion, creed, national origin, ancestry, physical handicap, medical condition, age, marital status, or sex.

SECTION 11. OWNERSHIP OF DOCUMENTS, DATA AND RIGHTS

(a) All documents, drawings, reports, and other products, whether completed or not, and computations, databases, computer models and background material prepared or acquired by CONSULTANT in connection with the AGREEMENT shall become the property of DISTRICT upon payment by DISTRICT. CONSULTANT shall not retain rights to any patentable concepts or copyrightable materials arising from services performed under this AGREEMENT, without written agreement of DISTRICT. Notwithstanding any other section of this AGREEMENT, all of the CONSULTANT'S pre-existing computer programs, software, information or materials developed by CONSULTANT outside of this AGREEMENT shall remain the exclusive property of the CONSULTANT.

(b) Documents, including drawings and specifications, prepared by CONSULTANT are not intended or represented to be suitable for reuse by DISTRICT or others. Use of completed documents by the DISTRICT or others for extensions to this project or for other projects or any use of uncompleted documents without specific written authorization from CONSULTANT will be at DISTRICT's sole risk and without liability.

SECTION 12. ASSIGNMENT AND SUBCONTRACTING

CONSULTANT shall not assign or subcontract any portion of the services without express written approval of DISTRICT.

SECTION 13. MISCELLANEOUS

(a) Any opinion of the construction cost prepared by CONSULTANT represents judgment as a design professional and is supplied for the general guidance of

DISTRICT. CONSULTANT does not guarantee the accuracy of such opinions as compared to contractor bids or actual cost to DISTRICT.

(b) CONSULTANT will use the care and skill ordinarily exercised under similar conditions in similar localities. No other warranties, express or implied, are made or intended.

(c) CONSULTANT shall not be responsible for identification, handling, containment, abatement, or in any other respect, for any asbestos or hazardous material if such is present in connection with the project. If DISTRICT becomes aware of the presence of asbestos or hazardous material at the job site, DISTRICT shall be responsible for complying with applicable federal and state rules and regulations, and shall immediately notify CONSULTANT, who shall then be entitled to cease services that may be affected by such presence, without liability to CONSULTANT arising therefrom.

(d) Should litigation be necessary to enforce any term or provision of this AGREEMENT, or to collect any portion of the amount payable under this AGREEMENT, then all litigation and collection expenses, witness fees and court costs, and attorneys' fees shall be paid to the prevailing party.

By: _____
General Manager
Las Virgenes Municipal Water District

By: _____
Consultant

Date: _____

Date: _____

ATTEST:

By: _____
Secretary

APPROVED AS TO FORM:

By: _____

Wayne K. Lemieux
District Counsel