Stop #34
MTCE. + Apr. Bd.
Lisa Reistar

County of FRESNO

Agenda Item

DATE: December 19, 2000

TO: Board of Supervisors

FROM: Richard L. Brogan, Director
Department of Public Works

SUBJECT: Millerton New Town Infrastructure Plan

RECOMMENDED ACTION:

Adopt the Infrastructure Plan for Millerton New Town Area.

The Millerton New Town Infrastructure Plan (Plan) details the requirements for domestic water, wastewater, drainage and reclaimed water use in the Study Area and specifies the backbone system to be installed to serve the planned developments. The Plan also includes implementation procedures to guide developers and County staff as development of the area occurs. The cost of construction of all facilities required by the plan will be borne by the developers and there will be no cost to the General Fund. Water, sewer and drainage facilities will be owned and operated by County Service Area 34 (CSA 34).

FISCAL IMPACT:

The infrastructure for the Millerton New Town Area will be constructed at the developers' cost and there will be no cost to the General Fund. Implementation procedures included in the plan provide for developers to either construct facilities to serve their development or pay fees to acquire capacity in existing facilities. The procedures provide for reimbursement to developers who construct facilities with capacity in excess of that needed for their development. The County will collect the fees and reimburse developers in accordance with the procedures. Developer fees will include payment to the County for the cost of administering the fees. The applicant has deposited funds with the County and is paying the actual cost of the review and approval of the Infrastructure Plan. There is no cost to the General Fund.

DISCUSSION:

An infrastructure plan for the Millerton New Town area was authorized by your Board in 1991 and is a requirement for development within the Millerton Specific Plan. The Millerton New Town Plan Area (Plan Area) covers approximately 2,000 acres planned for 5,074 equivalent residential units. The Plan Area includes the Millerton Specific Plan, Brighton Crest, Table Mountain Rancheria and lands to the north and east of the Specific Plan Area as shown on the attached map. CSA 34 is within the Plan Area.

The Plan has been prepared in a cooperative effort funded by the landowners within the Plan Area. The landowners have deposited money with the County to pay the County's actual cost for assistance in consultant selection and for review and approval of the Plan.

The Millerton Specific Plan requires that the infrastructure plan contain elements regarding domestic water, wastewater, reclaimed water use, drainage and procedures for implementation. The Planning & Resource Management Department staff has reviewed the Plan and determined that it conforms with the Millerton Specific Plan.

The wastewater element requires construction of two tertiary level wastewater treatment plants with a collection system sized to accommodate the proposed development within the Plan Area. The larger of the two plants will replace the existing plant providing wastewater treatment for Brighton Crest. The second and smaller plant will be located north of Millerton Road. Wastewater collection within the individual developments is not a part of the Plan and will be designed to deliver the wastewater to the backbone system detailed in the Plan. Reclaimed water from the wastewater treatment plants will be distributed for irrigation use in the Plan Area through a system of pipes detailed in the Plan.

The domestic water element requires construction of a surface water treatment plant and a distribution system for the treated water. The required facilities include the existing raw water transmission line and pumping facility to deliver water from Millerton Lake. Domestic water distribution within the individual developments is not a part of the Plan and will be designed to distribute the water from the backbone delivery system detailed in the Plan. The surface water treatment plant is planned to be an expansion of the Brighton Crest plant or will be planned to allow expansion to serve Brighton Crest if construction is first performed to provide water for other developments.

The drainage element establishes the standards for drainage design to be applied to the individual developments within the Plan Area. The standards include Fresno County Improvement Standards; the Fresno County Grading Ordinance and specific requirements in the Millerton Specific Plan.

The Implementation Procedures provide for construction of the infrastructure by the developers and that the completed facilities will be owned and operated by CSA 34. A developer must provide a firm water source to supply the needs his development in order to obtain capacity in the system. A developer must either construct some increment of the system to provide capacity or pay fees to purchase excess capacity that may have been constructed by another developer. The procedures provide for reimbursement to developers who construct facilities with excess capacity. The procedures also detail how existing facilities that are part of the Plan are to be valued and the owner reimbursed for excess capacity.

The Implementation Procedures provide for uniform fees for each equivalent residential unit to be paid by the developer. The amount of the fees for each unit will not be determined until there is a valuation of the existing facilities. Payment of the fees will be established through an agreement with developers at the time their projects are approved through filing a final map or conditions of approval for other entitlements. The implementation procedures will be administered by the County and provide for a fee to reimburse the County for the administrative costs.

The Implementation Procedures address reservations of capacity for Brighton Crest; reimbursement for the cost of existing facilities that will be used to provide services to the entire Plan Area; and restrictions on providing capacity for development outside of the Plan Area. These provisions are currently contained in the Use and Allocation Agreement between Makrothumia Corporation and the County. Adoption of the Plan containing the Implementation Procedures cannot replace the Use and Allocation Agreement. There are provisions in the Implementation Procedures that recognize the agreement and also allow Makrothumia the same benefit if the agreement was terminated.

The Millerton Specific Plan does not allow filing of a final map or other development without an adopted infrastructure plan for the Plan Area. There are currently three approved tentative maps within the specific plan boundary and applications are being processed for additional tentative maps. The developers are indicating a desire to move forward with their projects.

Public Works Department staff has reviewed the Infrastructure Plan and determined that the proposed facilities conform with applicable standards and engineering design principles. The CSA 34 staff has reviewed and approved the proposed water and wastewater systems. Adoption of the Infrastructure Plan is recommended.

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Millerton New Town Infrastructure Plan

December, 2000

MILLERTON NEW TOWN PLAN AREA

WASTEWATER TREATMENT SYSTEM SITE AND DISPOSAL AREA

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December, 2000

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I INTRODUCTION

In September, 1997 the "Millerton New Town Area Wastewater Treatment Plant Site and Disposal Area: Investigation, Report and Recommendations" was prepared by Provost & Pritchard Engineering Group, Inc (the PPEG Report) describing the wastewater treatment and disposal requirements for the Millerton New Town Plan Area, and recommending a location for regional treatment facilities to meet these needs. The purpose of our report is to update and supplement the PPEG Report and present a comprehensive wastewater reclamation system for the Millerton New Town Area shown in Figure 1. Since the initial preparation of the PPEG Report, a number of changes have taken place. Table Mountain Rancheria has constructed and is now operating a tertiary level wastewater treatment system on its property north of Millerton Road near Sky Harbor Road. In addition to its Rancheria property, Table Mountain is the largest landowner north of Millerton Road in both the Millerton Specific Plan and Low Density Area. It is expected that the wastewater treatment needs of Table Mountain Rancheria will be met with the use of its own facilities. The Clarksfield Company, Inc. has transferred 250 residential units from north of Millerton Road to the south of Millerton Road, thereby reducing the wastewater treatment needs north of Millerton Road. In addition, a number of applications for development of the properties south of Millerton Road have been filed. This has enabled more detailed planning of the wastewater facilities to serve these areas.

One of the major purposes of this reclamation plan is to provide localized wastewater reclamation facilities which will minimize the use of limited potable water sources for landscape irrigation. By locating wastewater treatment facilities near the potential users of the reclaimed water, the need for an extensive piping system to carry reclaimed water from a centralized facility will be avoided. The proposed plan minimizes the amount of construction necessary to implement the reclamation system and mitigates potential environmental impacts associated with an extensive piping system.

The Millerton New Town Plan Area is made up of three distinct subareas totaling approximately 2,000 acres as described below:

- The Specific Plan Area consisting of 1,260 acres on the north and south sides of Millerton Road. This area has been zoned for approximately 3,500 homes plus commercial uses.
- The Low Density Area consisting of about 800 acres zoned for approximately 800 homes including the Brighton Crest subdivision and an area north of Millerton Road
- The Specific Plan Reserve Area consisting of approximately 160 acres to the south and west of the Specific Plan Area. This area has been modified by recent applications for the transfer of residential density from the Specific Plan Area to the north.

The Millerton Specific Plan, as amended March, 1999, (Plan) provided a set of policies, conditions and standards for the orderly development of the Millerton New Town in the general area along Millerton Road and Winchell Cove Road to the south of Millerton Lake. Section 806-05:2.00 of the plan, the Community Sewer element, presented the requirements for the wastewater collection, treatment and disposal facilities (see Table 1).

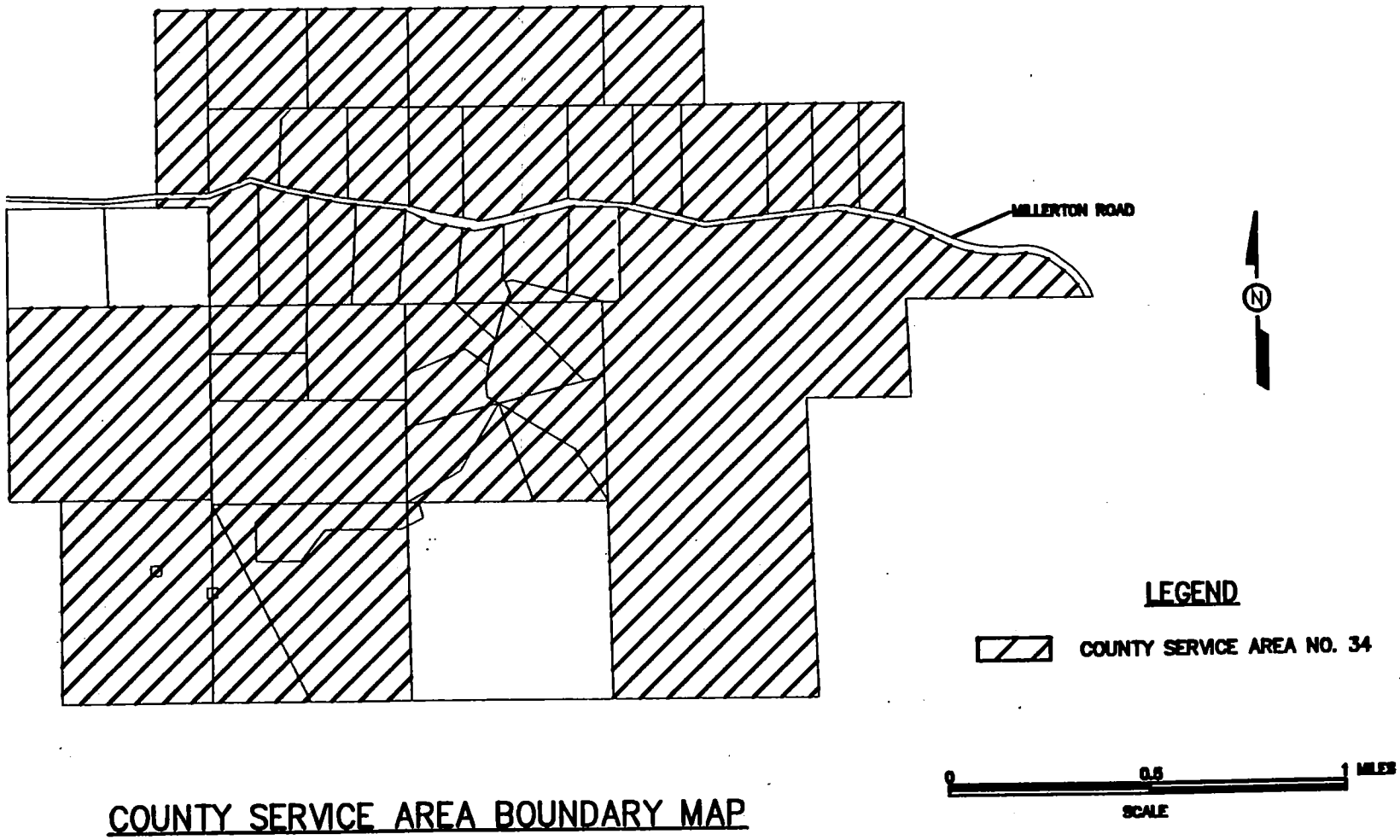
Wastewater treatment and disposal services for this area will be provided by County Service Area No. 34 which was formed on July 22, 1986. The Brighton Crest area has been designated as County Service Area No. 34A. These County Service Area boundaries are shown on Figure 1.

Sources of information used in the preparation of this report include the PPEG Report; the Millerton Specific Plan; California Regional Water Quality Control Board (RWQCB) Order No. 91-068 and 91-070; Geotechnical Engineering Feasibility Investigation performed by Krazan & Associates; and Fresno County Planning Commission and Board of Supervisors resolutions.

In summary, the PPEG Report examined the wastewater treatment and disposal improvements required to meet the future needs of the Millerton New Town Area in accordance with the Plan including: replacement of the Brighton Crest interim treatment plant; upgrading of wastewater treatment to a tertiary level; and development of a plan for expansion of treatment capacity to serve the entire Plan Area. These issues are addressed in the following sections, in addition to further updates to the information contained in the PPEG Report.

II EXISTING AND PROPOSED DEVELOPMENT

The only existing housing development in the Plan Area is Brighton Crest (Tract 4048) which will ultimately include 420 homes and the golf course clubhouse facility. Approved land uses and allocation of residential units within the Plan area are shown of Figures 4 and 5 respectively of the Plan, see Appendix A. Fresno County Board of Supervisors recently approved a sub-unit plan on the southeasterly and southwesterly quadrants of Millerton Road and Marina Drive consisting of 44 acres. A CUP for the first phase of the sub-unit was also approved by the Board of Supervisors. All of these projects will require wastewater collection, treatment, and disposal service from CSA 34. Waste Discharge Requirements and Water Reclamation Requirements were issued by the RWQCB for the Brighton Crest Wastewater Treatment Facility. Revision of these permits will be necessary for the proposed wastewater treatment and reclamation facilities that will serve the entire area.



COUNTY SERVICE AREA BOUNDARY MAP

FIGURE 1

Table 1
Millerton Specific Plan
Community Sewer Element (Section 806-05:2.00)

2.0 COMMUNITY SEWER

All development with in the Specific Plan area will be served by a permanent wastewater treatment plant designed at tertiary or equivalent. Wastewater will be collected in a system of mains using primarily gravity flow. The collection system will generally follow topographical features or roads and may require one or more lift stations. In addition, a separate distribution system will be constructed for the delivery of treated effluent from the wastewater treatment plant for irrigation of landscape areas. The wastewater collection and treatment system will be designed and financed in accordance with the infrastructure plan.

2.01 POLICIES

a. All development within the Specific Plan area shall utilize a community sewer system. Preliminary soil tests and other criteria indicate that the best location for a permanent treatment plant and effluent ponds is in the southern portion of the Plan area, at the site of the existing temporary Brighton Crest treatment plant. The temporary plant will be rebuilt and upgraded to tertiary levels and designed to serve growth within CSA #34 with service in compliance in conformance with an adopted infrastructure plan within the Specific Plan area and Low Density areas located south of Millerton Road. The site will be reconfigured and landscaped.

b. The treatment facility shall be placed in a location that takes into consideration prevailing winds and downwind land uses. By doing so, odor problems will be minimized.

c. The sewage collection and treatment facilities shall be operated and maintained by the County Service Area.

d. Treated effluent may be disposed of in one of several ways. During the winter when the evapotranspiration rate is very low, effluent will flow into ponds for storage, see page, and partial evaporation. During the warmer months, most of the treated effluent shall be used to irrigate the open space, recreation, and setback areas. The effluent may also be used to irrigate pasture or croplands as shown in the Infrastructure Plan.

e. Prior to issuance of building permits, the project proponent shall construct the sewage infrastructure facilities required to serve the development.

2.02 STANDARDS

a. The sewage treatment plant shall be constructed in increments of 100,000 gallons per day capacity (enough for a population of approximately 1,000 or 400 dwelling units) or larger.

b. The plant shall be designed for relocation downstream if the Specific Plan Reserve area develops.

c. Effluent shall be treated to a tertiary level.

d. Minimum setbacks between ponding area and the nearest residential unit(s) shall be determined by appropriate local ans state health agencies.

e. Initial projects may be much smaller than the 100,000 gallons per day increment needed for phased construction of the treatment facility. Interim disposal facilities may be acceptable to serve smaller projects up to a maximum of 300 units, including use of the temporary Brighton Crest treatment plant (if upgraded to a tertiary level of treatment). This will be allowed if it can be demonstrated that the proposed site has acceptable locational criteria for a package sewage treatment plant.

f. If an interim disposal site is approved, provision shall be made to connect the area served to the permanent facility and abandon the interim facility.

III EXISTING WASTEWATER TREATMENT SYSTEMS

County Service Area No. 34A currently operates the existing Brighton Crest wastewater treatment system under Waste Discharge Requirements and Water Reclamation Requirements issued as Order No.91-068 and 91-070 adopted on February 22, 1991. This facility has a permitted capacity of 112,000 gpd although the current flow is approximately 3,000 gpd according to the Operator. Secondary treatment is provided in a recirculating gravel filter and the effluent is evaporated in the 10 acres of ponds adjacent to the facility.

Brighton Crest utilizes a septic tank/effluent pumping (STEP) collection system which removes the solids from the wastewater and conveys the clarified effluent through a small diameter collection pipe to the treatment plant. This requires the use of a septic tank and pumping system located at each house. Since the wastewater is pumped from each house, the collection system can follow a path that varies in elevation rather than rely upon a constant sloping pipe as is required by gravity systems. Use of smaller diameter pipe and shallower trenches can reduce the collection system costs compared to the use of a gravity system in areas with large variations in elevation.

Table Mountain Rancheria operates a tertiary treatment plant on the Rancheria property adjacent to the northeast corner of the Plan Area near the intersection of Sky Harbor Road and Millerton Road. This facility currently serves the Table Mountain Casino area. The effluent is used to irrigate a hillside area to the east of the Casino.

IV PROPOSED WASTEWATER RECLAMATION SYSTEM

The Plan identified a regional treatment plant site generally located in the southwest corner of the Plan Area approximately 2,000 feet southwest of the Brighton Crest treatment plant site. The PPEG Report recommended moving the proposed treatment plant to a site approximately 3,500 feet southwest of the Plan site primarily because of gravity flow considerations, wetlands restrictions, and space limitations. Locating the treatment plant in this area would necessitate the installation of 7,500 feet of wastewater transmission lines from Brighton Crest and the recently proposed housing projects which would be the first developments to utilize this plant. This would be a costly installation due to the rocky terrain that the wastewater transmission line would traverse. In addition, the transmission line would either need to be oversized to accommodate future growth, or continually expanded as additional developments are added upstream. The reclaimed water distribution system would need to traverse these same areas to return the water to the areas where it will be used. Additional pipe trenches will be needed since reclaimed water and untreated wastewater lines cannot share the same trench.

Recent analysis has identified cost savings and environmental benefits that would be realized by constructing two separate plants to serve the northern and southern portions of the Plan

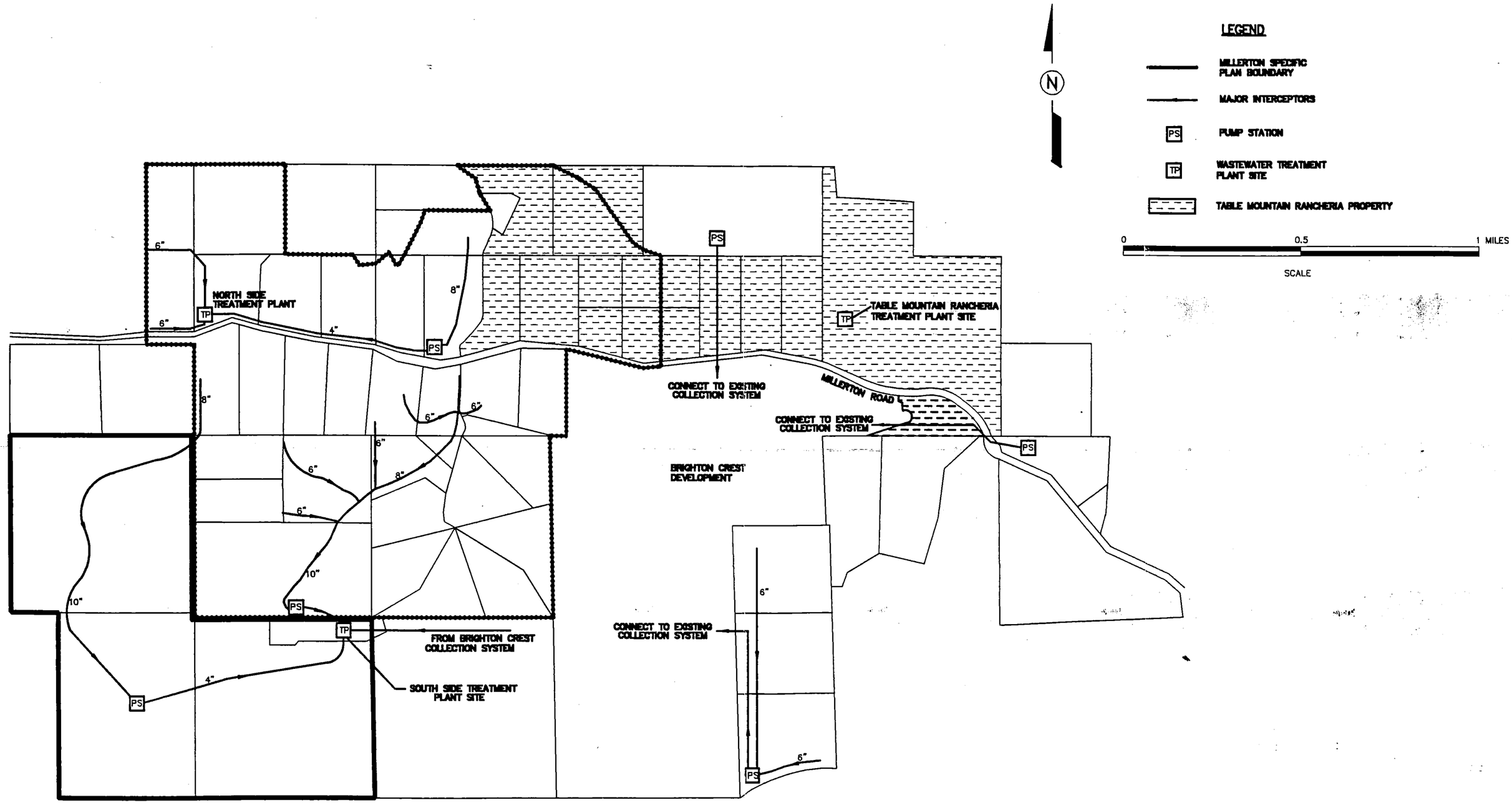
Area. A new tertiary treatment facility, located on the site of the existing Brighton Crest treatment plant, would serve the area generally south of Millerton Road (South Treatment Plant). This site minimizes the costs of site development, effluent storage, wastewater conveyance lines, and reclaimed water pipelines. The existing Brighton Crest development, which is required to tie in the new tertiary treatment system, also benefits from reduced wastewater conveyance costs.

The area north of Millerton Road includes properties owned by private companies and the Table Mountain Rancheria. Since the Table Mountain Rancheria is currently operating a tertiary level treatment plant on the Rancheria property, it has been assumed that the future wastewater treatment needs of the Table Mountain Rancheria properties will be met by this existing plant.

The other properties north of Millerton Road consist of approximately 210 acres located to the west of Winchell Cove Road. The most efficient way to implement a wastewater reclamation system to serve this area is to construct a treatment plant north of Millerton Road (North Treatment Plant). A site has been identified near the western boundary of the Plan Area adjacent to Millerton Road for this treatment plant, however, this location is subject to future investigation based upon the timing of the developments that this plant would serve, it may be necessary or desirable to temporarily connect these "early developments" to an interim treatment facilities. The wastewater collection system will consist of 6" and 8" gravity sewer lines and pump stations where necessary. Easements for these facilities will need to be granted as required to allow the collection system to serve all properties i.e., Harris and others.

The Skyview property north of the Table Mountain Rancheria properties can be served by a force main in a southerly direction to the main line in the Brighton Crest collection system which leads to the South Treatment Plant. The Plan Area properties to the east of Brighton Crest, including the Davis and Benck properties between Auberry Road and Millerton Road, and the Harris property to the east of Table Mountain Rancheria and north of Millerton Road, can also be served by force mains to the Brighton Crest wastewater line to the South Treatment Plant. Easements will need to be granted by the Table Mountain Rancheria for lines through their property.

The general layout of the major interceptors that would serve these areas is shown on Figure 2. Interim piping and treatment arrangements may need to be made to provide wastewater service to individual properties prior to the construction of the treatment plant serving that general area. The wastewater reclamation systems will each consist of a treatment plant, effluent storage reservoir, and sprayfield areas. These facilities are described below and on Table 1.



WASTEWATER COLLECTION SYSTEM LAYOUT

FIGURE 2
PAGE 8

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V WASTEWATER TREATMENT FACILITIES

The Plan requires tertiary treatment for all facilities in the Millerton New Town Plan Area. This is consistent with the requirements of Title 22, Article 4, Section 60313(b) of the California Code of Regulations for unrestricted landscape irrigation which states that "Reclaimed water used for the irrigation of parks, playgrounds, schoolyards, and other areas where the public has similar access or exposure shall be at all times an adequately disinfected, oxidized, coagulated, clarified, filtered wastewater". With the higher quality effluent provided by tertiary treatment, fewer operational restrictions will be placed on the use of the effluent for irrigation of the landscaping throughout the developed areas. Table 2 shows the anticipated effluent quality requirements that will be established by the RWQCB for this level of reclaimed water usage.

Each treatment plant will be designed for continuous, reliable performance with provisions for component malfunction, alarms and power failure. All critical mechanical components in the process will have duplex, redundant or spare part units. The secondary treatment process will be capable of bypass for routine maintenance and repair while maintaining full compliance with effluent discharge specifications. Emergency wastewater storage will be provided at each treatment plant site for use in the event of a major plant malfunction

The South Treatment Plant will be located on the site of the existing Brighton Crest plant. This facility will consist of subsurface concrete tankage with a building that will house the mechanical equipment and the plant control system. The proposed location for the North Treatment Plant is on the west side of the Plan Area. The site of both facilities will be landscaped with plant materials conforming to the intent of the Plan. Table 3 shows the projected capacity and area required for the each wastewater reclamation systems. Reference to "East Side" in Table 3, refers to projects East of CSA 34. "East Side" projects may discharge to either the North or South treatment plant depending on patterns of development. "East Side" and "Other" properties are listed in Table 3 in order that the sum of EDU's will correspond to water allocations.

A standby power generator will be required at each treatment plant for use during interruptions in electrical power supply. The generator will start automatically in the event of a disruption in service. The plant control system will monitor status and performance of the equipment and instrumentation utilized in the treatment processes. An alarm will be initiated and operating personnel will be contacted if a problem is detected by this system.

Plans for wastewater reclamation systems are reviewed by a number of County and State agencies for compliance with current regulations and guidelines governing wastewater treatment and effluent reuse. This plan will be reviewed by the Fresno County Public Works and Development Services Department, Fresno County Department of Health, the California

Regional Water Quality Control Board (RWQCB), and the State Department of Health Services (DOHS) prior to submission to the Fresno County Board of Supervisors.

TABLE 2
PROJECTED EFFLUENT WATER QUALITY REQUIREMENTS

Constituent	Units	Monthly Mean	Daily Maximum
BOD_5	mg/l	10	20
SS	mg/l	10	20
Settleable Solids	ml/l	0.1	0.2

The turbidity of the discharge shall not exceed the following:

Units	Average	95th Percentile	Instantaneous Maximum
NTU	2	5	10

The median number of total coliform organisms shall be less than 2.2 MPN (most probable number) per 100 ml, as determined from the bacteriological results of the last seven days for which analyses have been completed, and the daily maximum number of coliform organisms shall not exceed 23 MPN/100 ml.

The CT value (the product of the chlorine residual, in mg/l, times the modal contact time, in minutes) shall equal or exceed 450. The modal chlorine contact time at peak daily design flow shall equal or exceed 90 minutes.

pH shall be greater than 6.0 and less than 9.0 at all times.

The maximum specific electrical conductance (EC) of the discharge shall not exceed the average EC of the water supply plus 500 umhos/cm.

The dissolved oxygen content in the upper zone (1.0 feet) of wastewater in the holding ponds shall not be less than 1.0 mg/l.

TABLE 3
WASTEWATER RECLAMATION SYSTEM REQUIREMENTS

Treatment Plant	Approximate EDU's for Housing and Commercial	Treatment Plant Capacity (gallons)	Treatment Plant Area (acres)	Effluent Storage Capacity (acre feet)	Effluent Storage Area (acres)	Sprayfield Area (acres)
North Side	1659	414,750	3	66	8	104
South Side	2600	650,000	4	104	13	163
East Side	0	0		0	0	0
Other	815		(Not connected to a wastewater treatment plant)			
TOTAL	5074	1,064,750	7	170	21	266

ASSUMPTIONS

Average wastewater flow per housing unit	250 gallons per day
Number of days of effluent storage required	52 days
Average effluent reservoir depth	8 feet
Annual irrigation rate	4 feet per year
Storage pond evaporation	6 feet per year

VI EFFLUENT STORAGE

Reclaimed water irrigation is greatly reduced during the winter months due to lower evapotranspiration rates, periods of rainfall, and saturated soils which could cause runoff in the irrigation areas. The RWQCB requires reclaimed water to be stored during these periods so that no discharge to surface water occurs from runoff of reclaimed water. The PPEG Report estimated the required capacity for this storage to be equivalent to approximately 52 days of average effluent discharge from the treatment plants. Based upon this calculation, a total of approximately 160 acre-feet of capacity will be required to store the reclaimed water from the entire Plan Area.

The existing Evaporation Pond No. 2 will be used as the initial effluent storage reservoir for the South Treatment Plant. This pond has a capacity of approximately 33 acre-feet which will be sufficient to serve the first 800 homes that are developed. A landscape buffer will be used to shield the view of the reservoir from the surrounding houses.

The additional storage required for future development both north and south of Millerton Road will be provided in golf courses water features and in dedicated effluent storage ponds on the surrounding open space. The clay soils in this area will minimize percolation of the effluent into the groundwater so a plastic liner will not be necessary. Since this water has been treated to a high level and disinfected, fencing of effluent storage ponds should not be required except where required to meet safety regulations.

The following are the standard RWQCB requirements for effluent storage reservoirs:

- The storage reservoirs shall have 2 feet of freeboard above the design capacity.
- Surface runoff should be directed away from the reservoirs to prevent stormwater from adding to the required storage capacity.
- Warning signs should be posted stating that the reservoir contains reclaimed water and should not be entered.
- Valves and water outlets should be tagged to warn the public that the reclaimed water is not for drinking or swimming.
- Measures should be taken to prevent the breeding of insects, and other vectors of health significance, and the creation of odors or algae mats on the effluent storage ponds.

VII RECLAIMED WATER DISTRIBUTION SYSTEM

Once the reclaimed water has been conveyed to the effluent storage reservoir, it must be distributed to sprayfield areas for ultimate disposal. As properties are developed in the Plan Area, a backbone piping system would be constructed on an as-needed basis and progress outwardly from the effluent storage reservoirs to the sprayfield sites.

For the South of Millerton Road Area, the backbone reclaimed water distribution system will initially consist of a pipeline serving the White Fox Creek golf course and a pump station to pressurize the irrigation water lines, irrigation mainlines, and area laterals to cover the proposed 70 to 75 acres of turf. The reclaimed water will flow by gravity from the primary effluent storage reservoir to the golf course irrigation lake. It will then be pumped from the lake into the reclaimed water irrigation piping system for spraying onto the golf course fairways and greens. The approximate 70 acres of White Fox Creek golf course will provide an area to dispose of the effluent from approximately 1,250 homes. The allocation of this sprayfield capacity will be determined by an agreement with the owner of the White Fox Creek golf course. It is proposed that each project in the Plan Area must provide or reach an agreement to provide sufficient spray areas to its effluent requirements.

The existing Brighton Crest golf course can provide additional reclaimed water sprayfield area. This site is located at a higher elevation that the effluent storage reservoir so additional pumping will be required. An evaluation of the requirements of converting the existing raw water irrigation system to reclaimed water will need to be made to determine how much area can be cost-effectively irrigated.

Additional sprayfield areas that can be included in the future include the executive nine-hole golf course, and landscaping associated with the conference center, hotel and commercial area proposed for the corner of Millerton Road and the Marina Drive. This will necessitate a reclaimed water irrigation line from the effluent storage reservoir up Marina Drive to this property. The reclaimed water line would also provide irrigation water for other landscaped or open space areas along this route. The areas north of Millerton Road have not had plans developed in sufficient detail at this time to identify reclaimed water sprayfield areas. As these plans are prepared, attention should be given to designating landscaped areas and open space as potential sprayfield locations.

Reimbursement of property owners providing reclaimed water sprayfield areas must be addressed, just as with other component parts of the wastewater system. The use of these areas for effluent disposal will allow other landowners to utilize more of their property for additional development. A schedule should be developed for reimbursement of property owners who designate their acreage as reclaimed water sprayfield areas. This schedule will

also need to address the cost of reclaimed water piping and pump facilities to reach the designated areas.

The value placed on reclaimed water in other ~~reclaimed water in other~~ reclamation projects in California varies from zero to the approximate cost of the local potable water supply. Since the main purpose of this reclaimed water system is to dispose treated effluent, it is to the benefit of the landowners to dispose of the effluent, we do not see a reason to place a significant value on this reclaimed water. It is proposed that the party willing to receive the effluent would do so at no cost for the effluent itself.

The identification of reclaimed water irrigation sites in the Plan Area is constrained by the presence of numerous wetland areas where the ground is relatively level. Significant effort was expended with regard to design for irrigation of areas adjacent to the designated wetlands in the development of the White Fox Creek golf course. The effort to date on the proposed White Fox Creek golf course spray area, includes certification of wetlands, botanical studies, and consultation with the U.S. Army Corps of Engineers, U.S. Fish and Wildlife Service, California Department of Fish and Game, California Regional Water Quality Control Board, Environmental Protection Agency, among other federal, state and county regulatory agencies. Identification of additional sprayfield areas will also require interface with all these agencies involved in the protection of wetland areas.

VIII RECLAIMED WATER IRRIGATION SYSTEM

The reclaimed water from the North and South Treatment Plants will be used to irrigate landscaped areas and golf courses within the Plan Area. A rate of 4 feet of water per year has been assumed as the amount of reclaimed water that would be applied to the irrigation areas. Both the proposed White Fox Creek Golf Course on the Clarksfield property and the Brighton Crest Golf Course will be designated for reclaimed water use. There is also the potential to use reclaimed water at the proposed commercial area at the southeast corner of Winchell Cove Road and Millerton Road, and other landscape areas. No reclaimed water will be applied to these areas until landowner and regulatory approval is obtained.

A total of 251 acres of irrigated area will be required to utilize the effluent from the South and North Treatment Plants. Given the required open space ratio for the Plan Area, there will be substantial sprayfield area available to meet this need. Additional spray field areas have not been designated at this time since the development plans for these properties have not reach the stage where open space areas have been identified. Agricultural areas adjacent to the Plan Area may also utilize the reclaimed water produced by the treatment plants. Figure 3 shows the potential reclaimed water irrigation areas that have been designated at this time. These areas will be designed to allow for public use of the landscaped areas and the golf course, and to provide adequate protection to wetland areas.

The Federal Emergency Management Agency has designated portions of the proposed reclaimed water spray irrigation area as within the 100-year flood boundary. No irrigation would take place during flood periods and there are no constructed facilities associated with the wastewater treatment and disposal system within this boundary.

Effluent will not be applied to any permanent wetlands areas that would result in a surface water discharge. This would require a separate National Pollutant Discharge Elimination System (NPDES) permit which CSA 34 does not possess at this time nor is it likely they will obtain one. Procedures, restrictions and other requirements for the use of reclaimed water that have been established by the RWQCB and the DOHS are presented below:

1. Warning signs indicating that the reclaimed water is unsafe to drink shall be posted at points of access to the use area.

2. Irrigation shall be controlled to prevent ponding and runoff of reclaimed water.

3. An air-gap separation or reduced pressure principle device shall be provided at all domestic water service connections to reclaimed water use areas. There shall be no connection between the potable water supply and piping containing reclaimed water.

4. Golf course score cards shall note that reclaimed water is used for irrigation.

5. Drinking water facilities shall be protected from direct or windblown reclaimed water spray.

6. The reclaimed water distribution system shall comply with requirements contained in the AWWA publication "Guidelines for Distribution of Nonpotable Water". The required separation of reclaimed water, potable water, and raw wastewater piping shall be maintained.

7. All reclaimed water valves, outlets, quick couplers, and sprinkler heads shall be of a type, or secured in a manner, that only permits operation by authorized personnel.

8. Irrigation supervisors shall be appointed by all entities that will be using reclaimed water. The supervisor will be responsible for installation, operation and maintenance of the reclamation system, prevention of potential hazards, implementing these Rules and Regulations, and coordination with the Fresno County cross-connection control program.

9. The County Service Area and the golf courses shall maintain as-built plans of the use area showing all buildings, domestic and reclaimed water facilities, and the wastewater collection system.

IX CONCLUSIONS AND REQUIREMENTS

1. The Specific Plan calls for tertiary treatment of wastewater for the Plan Area (Section 806-05, 2.02.c). This is consistent with the requirements of Title 22 of the California Code of Regulations for unrestricted irrigation of golf courses and landscaping. The proposed treatment facilities shall comply with these requirements.

2. All wastewater collection and treatment facilities, except for the Table Mountain Rancheria system, shall be owned and operated by County Service Area No. 34.

3. The advantages of utilizing the existing Brighton Crest treatment plant site for the future South Treatment Plant and effluent storage are as follows:

   - The wastewater transmission costs and environmental impacts are minimized and better planning of future piping can be performed.
   - The reclaimed water will be available adjacent to the primary irrigation water users.

- Site development costs will be minimized since the existing site has an access road, power supply, and water already available.
- No wetlands will be impacted by the treatment plant and effluent storage reservoir construction at this site.
- The use of Evaporation Pond No. 2 for effluent storage will significantly reduce initial storage costs.
- The existing temporary treatment plant will be removed and the site reclaimed as provided for in the Specific Plan.

4. Wastewater reclamation shall be encouraged as a means of extending the limited water supply in the Millerton New Town area.

5. A reclaimed wastewater distribution system shall be installed to convey reclaimed wastewater to areas throughout the Plan area.

6. New Waste Discharge Requirements and Water Reclamation Requirements for CSA No. 34 shall be obtained to include the new developments in the Millerton New Town area. A Report Of Waste Discharge application shall be submitted to the RWQCB describing the proposed wastewater reclamation system and identifying the new spray irrigation areas.

7. Each new development shall demonstrate how it will provide treatment capacity, effluent storage capacity, and reclaimed water sprayfield area sufficient to handle the wastewater flow from the development. Tradeoffs of these facilities will be possible between developments. A cost-sharing agreement shall be developed to allocate the costs of wastewater treatment service, effluent storage reservoirs, and reclaimed water sprayfield sites. Developments that provide more than their share of treatment capacity, effluent storage, and reclaimed water sprayfield sites shall be reimbursed by those developments that are in need of these facilities.

8. The areas of proposed development north of Millerton Road shall be served by a treatment plant located in this area. Interim piping arrangements may be necessary to service individual projects prior to the construction of the treatment plant serving that general area.

9. With the availability of capacity in the Table Mountain Rancheria wastewater treatment plant, Table Mountain Rancheria can satisfy all of the wastewater treatment requirements for their properties without the use of County Service Area No. 34 facilities.

10. Easements for the efficient siting of sewer lines, lift stations, and effluent storage areas shall be granted by affected property owners.

11. The areas around wastewater facilities shall be landscaped and designed to blend into the surrounding area in a compatible manner.

Figure 3 4 - Specific Plan (Revised)

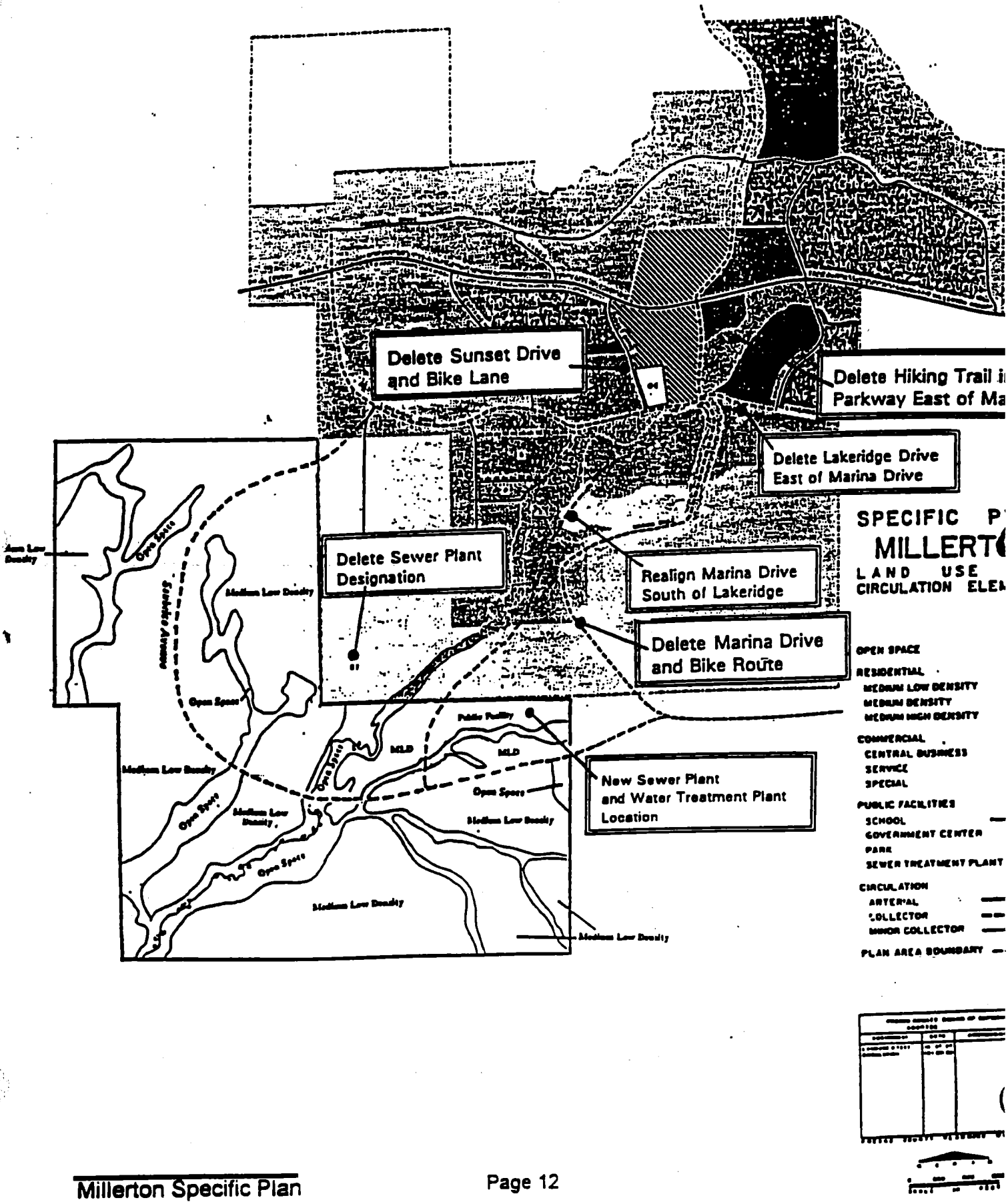
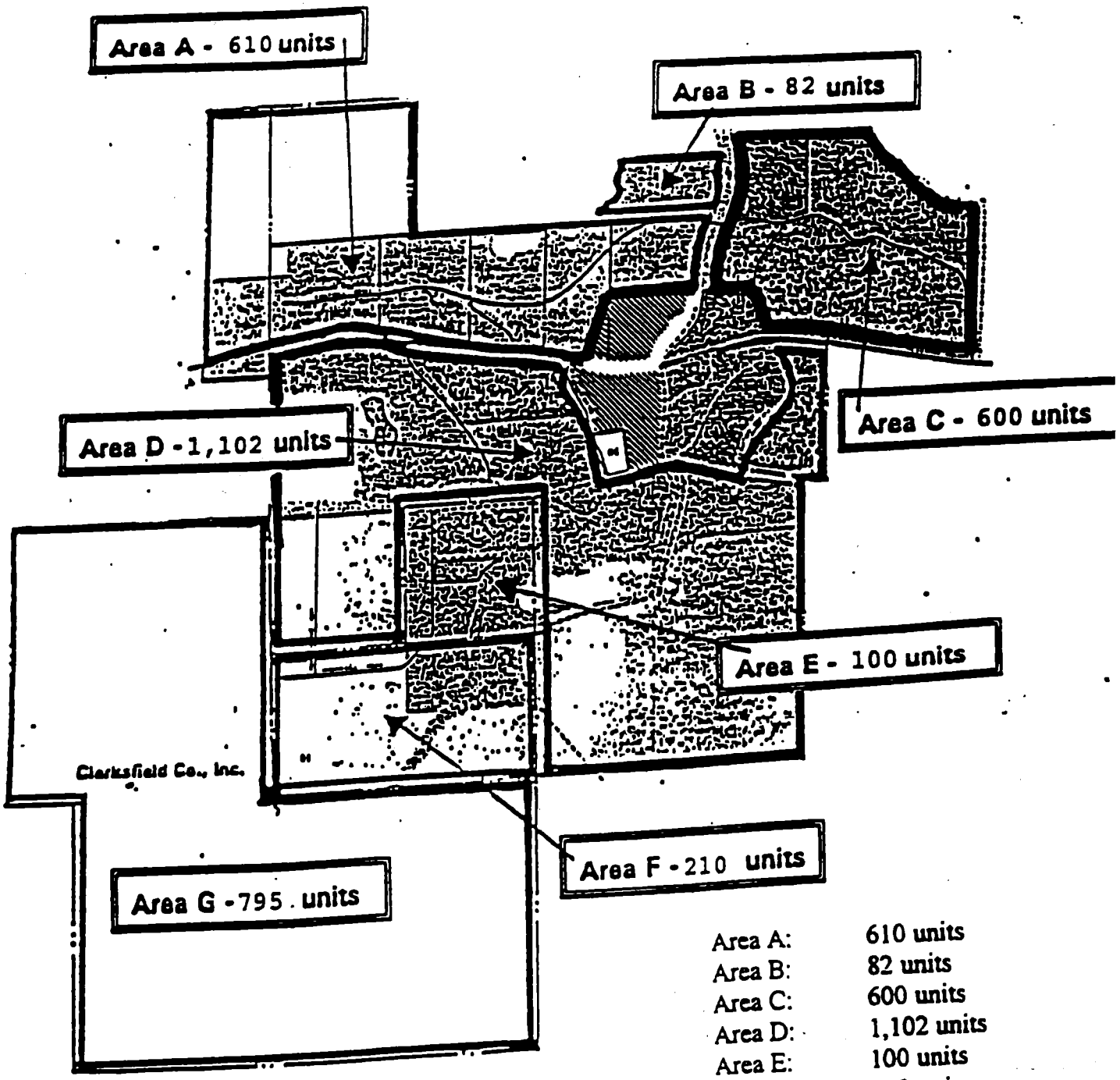


Figure 5 – Residential Development Allocation Areas



Area A:	610 units
Area B:	82 units
Area C:	600 units
Area D:	1,102 units
Area E:	100 units
Area F:	210 units
Area G:	795 units
Total:	3,499 units

APPENDIX A

Infrastructure Plan for the Wastewater Reclamation System For Properties Within and Adjacent to County Service Area No. 34

Preliminary Estimate of Construction Cost, North Side Facilities

Item No.	Description	Est. Quantity	Unit	Unit Cost	Item Total
1.	Wastewater Treanment Plant 0.250 MGD	Job	LS	1,800,000.00	$1,800,000.00
2	Land Costs, plant site,storage and disposal area	69.5	AC	10,500.00	729,750.00
3	Sewage Lift Stations	3	EA	50,000.00	150,000.00
4	4" Diameter Force Main	1600	LF	22.00	35,200.00
5	8" Sewer Main	1680	LF	20.00	33,600.00
6	6" Sewer Main	5525	LF	18.00	99,450.00
7	Standard Manholes	23	EA	1,750.00	40,250.00
		Sub-total Estimated Construction Cost			**$2,888,250.00**
		Contingencies @ 20%			577,650.00
		Total Preliminary Construction Cost			**$3,465,900.00**

APPENDIX B

Infrastructure Plan for the Wastewater Reclamation System For Properties Within and Adjacent to County Service Area No. 34

Preliminary Estimate of Construction Cost, South Side Facilities

Item No.	Description	Est. Quantity	Unit	Unit Cost	Item Total
1.	Wastewater Treanment Plant 0.750 MGD	Job	LS	4,300,000.00	$4,300,000.00
2	Land Costs, plant site,storage and disposal area	207	AC	10,500.00	2,173,500.00
3	Sewage Lift Stations	5	EA	50,000.00	250,000.00
4	4" Diameter Force Main	8500	LF	22.00	187,000.00
5	10" Sewer Main	3675	LF	22.00	80,850.00
6	8" Sewer Main	7030	LF	20.00	140,600.00
7	6" Sewer Main	8850	LF	18.00	159,300.00
8	Standard Manholes	66	EA	1,750.00	115,500.00
9	10" Reclaimed Wastewarer Distribution	9200	LF	20.00	184,000.00
10	Booster Pump Station	1	EA	150,000.00	150,000.00
		Sub-total Estimated Construction Cost			**$7,740,750.00**
		Contingencies @ 20%			1,548,150.00
		Total Preliminary Construction Cost			**$9,288,900.00**

APPENDIX C

AWWA Guidelines for Distribution of Nonpotable Water

Purpose : Provide guidance for planning, design, construction and operation of reclaimed water systems. Emphasis is on minimizing or eliminating possible misuse of reclaimed water. The guidelines assume the reclaimed water is tertiary disinfected.

Distribution Systems - Criteria are intended to prevent cross connections or inappropriate use.

- Pressure - maintain at least a 10 psi negative differential with potable supply.
- Depth of cover-36 inches minimum.
- Minimum Separation (reclaimed/potable and reclaimed/sanitary sewer).
    - 10 foot horizontal and 1 foot vertical.
    - Sanitary sewer under reclaimed and reclaimed under potable.
    - Crossings should be made perpendicular.
    - No common trenching.
    - Exceptions
      -Horizontal separation of 4 feet with "special pipe" (No push on joints, use "Type K" copper, flanged pipe, protective sleeves.)
      -If a common trench cannot be avoided, reclaimed (or potable) is laid on a 'shelf' of undisturbed or compacted soil at least one foot above the sanitary sewer(or reclaimed).
- Pipe identification
    - Use purple pipe, purple wrap or identification tape.
    - Consider dig in protection (tape) in areas with many utilities.
- Valve covers should be of a shape not interchangeable with potable valves and identified with inscription or color. Vaults should be identified on access doors or inside.
- Title 22 requires an engineering report for distribution. The report should include or reference a set of standard specifications or a design manual for reclaimed distribution.

Above ground facilities

- Pump stations and reservoirs must be identified as reclaimed facilities and public access restricted. Above ground pipes, valves, fittings etc. should be painted purple and have appropriate signage.
- Special attention must be given to hydrants and standpipes. Purveyor must strictly control access and prevent cross connections (fire trucks can use several hydrants simultaneously).

Since we allow many uses for tertiary disinfected reclaimed water, the reclaimed distribution system facilities deserve the same levels of protection provided for potable water.

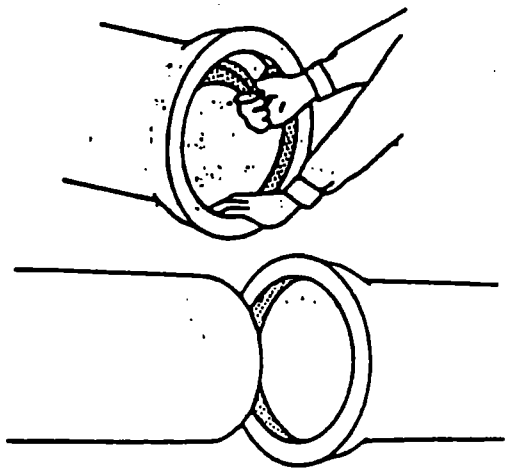
On-site applications

- Service agreements must specify intended uses and inform the user of restrictions on use, prevention of cro connections and allow for termination of service if violations occur.
- An on-site management plan should be a part of the approval process.
- Truck haulers should be controlled by permit from the purveyor.
- Backflow protection at the service meter (may be required at the reclaimed meter as well)
- Hose bibs are not allowed.
- Pipes must be purple or taped (some exceptions may be allowed in industrial applications). Minimum depth of cover and dig in tape requirements should be specified in the standard specifications or user agreements.
- Outdoor applications must be conducted to prevent overspray, runoff and ponding (RWQCB discharge issues) and prevent spraying of public facilities such as drinking fountains, playgrounds, "designated" eating areas.
- Back-up water for fire or irrigation systems may be needed. Air-gap separation, approved swivel ell connection or other approved temporary connection required.
- Some applications (cooling towers, recreational use, food production) have additional restrictions under Tit 22.
- The purveyor is responsible for training for users. Permits are issued to the purveyor.
- Establish a plan check and cross connection test protocol.

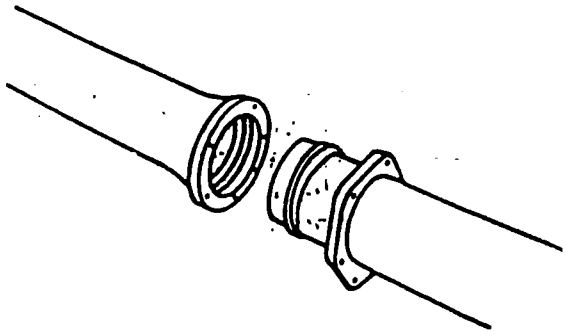
Additional Information

- *Guidelines for Distribution on Nonpotable Water*, California-Nevada Section of the American Waterworks Association. (909)-930-1200. $22.00 members, 24.95 non-members
- *Uniform Plumbing Code*, International Association of Plumbing and Mechanical Officials (IAPMO), 1994 Edition, Appendix J "Reclaimed Water Systems" Includes a cross connection procedure and specifications for signs and valve seals for dual plumbed systems.
- IAPMO Appendix R "Reclaimed Water Systems for Non-Residential Buildings" (not in 1994 UPC)

AWWA C600-93



Push-on-joint assembly



Mechanical-joint assembly

APPENDIX D

Backbone Wastewater Collection System

Design Criteria for Sizing Backbone Wastewater Collection System

From Table 3, average daily unit flow contributions are 250 gpd per unit.

Minimum Velocity	1.5 fps	pipe full or one-half full
Design Velocity	2.0 fps	pipe full or one-half full
Maximum Velocity	10.0 fps	pipe full or one-half full

Table 1
Pipeline Selection Criteria, v = 20 fps, n = 0.012

Pipe Diameter	Slope, ft/ft	Q Full, mgd	Peaking Factor
6"	0.0042	0.254	3.0
8"	0.0028	0.447	2.5
10"	0.0021	0.703	2.0
12"	0.0017	1.028	1.9

Average daily flow contributions to various points on the backbone collection system have been calculated based on the number of units draining to the collection point.

See Figure 1.

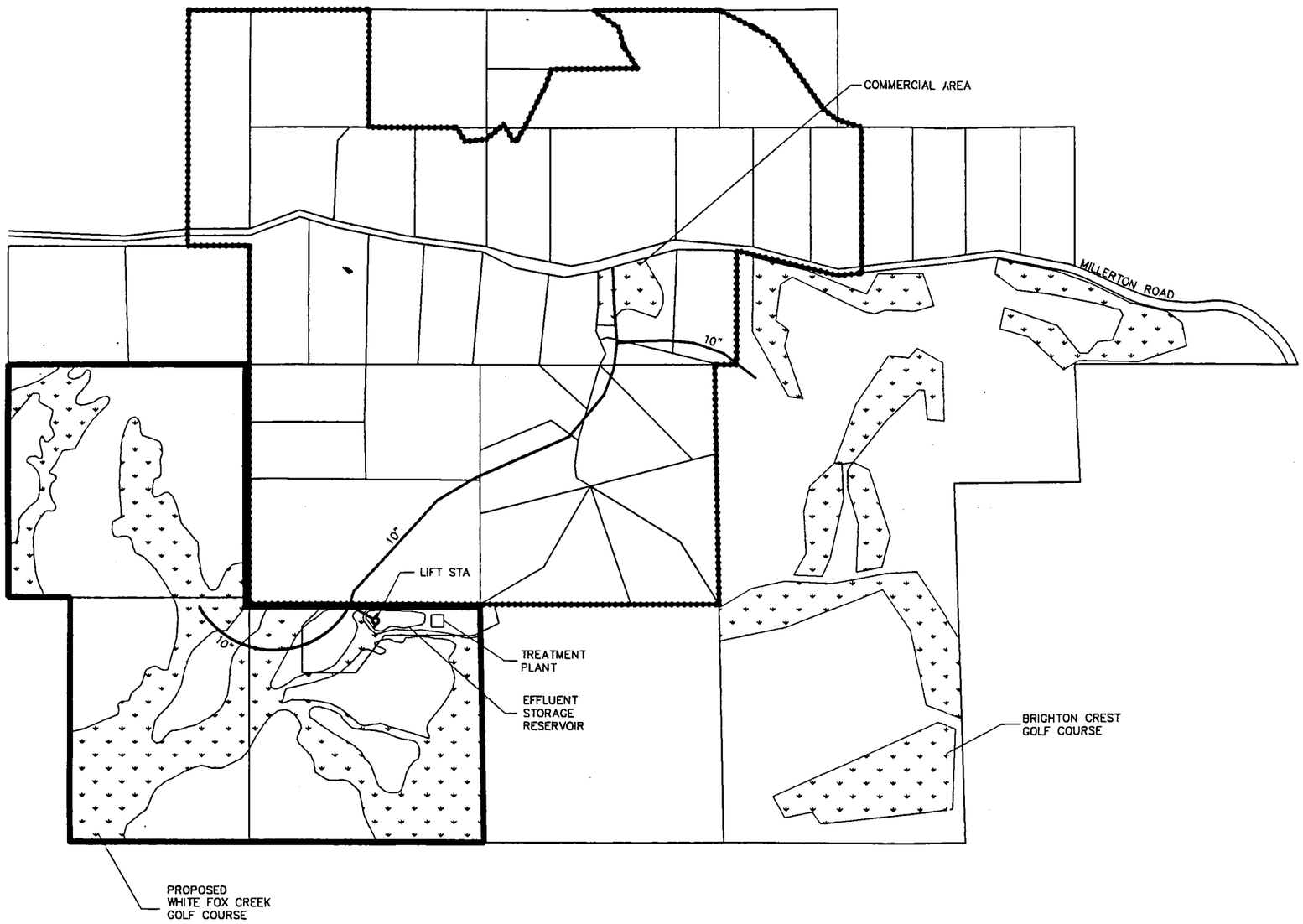
BACKBONE WASTEWATER COLLECTION SYSTEM

MAXIMUM PIPELINE CAPICTY AT DESIGN VELOCITY

Q= 1.486*a^5/3*s^1/2/(n*p^2/3)										
d, inches	d, ft	a, sq ft	n	a^5/3	p, ft	p^.2/3	s, ft/ft	s^1/2	Q, cfs	Q, mgd
6	0.5000	0.1964	0.0120	0.0663	1.5709	1.3515	0.0042	0.0648	0.3937	0.2544
8	0.6667	0.3491	0.0120	0.1730	2.0945	1.6374	0.0028	0.0529	0.6923	0.4474
10	0.8333	0.5454	0.0120	0.3640	2.6181	1.9002	0.0021	0.0458	1.0872	0.7026
12	1.0000	0.7854	0.0120	0.6686	3.1417	2.1459	0.0017	0.0412	1.5907	1.0280

MINIMUM SLOPE FOR DESIGN VELOCITY

s=(v*n/(1.486*r^0.667))^2					
d, inches	v, fps	a/p=r	r^.667	s^0.5	s, ft/ft
6	2	0.1250	0.2498	0.0646	0.0042
8	2	0.1667	0.3027	0.0534	0.0028
10	2	0.2083	0.3512	0.0460	0.0021
12	2	0.2500	0.3950	0.0409	0.0017



LEGEND

- MILLERTON SPECIFIC PLAN BOUNDARY
- POTENTIAL RECLAIMED WATER SPRAY FIELD AREAS
- 10" RECLAIMED WATER DISTRIBUTION PIPELINE & SIZE
- 6 BOOSTER PUMP

0 0.5 1 MILES

SCALE

POTENTIAL RECLAIMED WATER DISTRIBUTION SYSTEM AND SPRAY FIELD AREAS

FIGURE 3
PAGE 16

Drainage

I DRAINAGE

Introduction

The Millerton New Town Specific Plan (Plan) area lies within a small drainage system, a tributary of Dry Creek, with its headwaters near Table Mountain. The seasonal stream running South of Millerton Road is the primary feature on the property. According to the Flood Insurance Rate Maps prepared by the Federal Emergency Management Agency a portion of the Plan area is within the 100 year flood boundary.

The Plan contains guidelines for grading and erosion control. The diverse range of topography within the Plan area requires a broad set of grading and drainage standards for sedimentation and erosion control for development within the Plan area. Stormwater pollution and prevention plans which incorporate best management practices for must be prepared for each individual project.

Recommendations

- Comply to the guidelines for grading and drainage contained in the Plan, specifically 806-04-2.0 Land Resources, 2.03 Standards and 3.00 Flooding and Drainage.
- Comply to the requirements of the Fresno County Grading Ordinance.
- Each development or project must prepare a Storm Water Pollution and Prevention Plan complying to the requirements of the "National Pollution Discharge Elimination System State General Construction Activity Storm Water Permit". Said Plan must be filed with the County of Fresno as well as the State Water Resources Control Board.
- Each development or project must file a Notice of Intent with the State Water Resources Control Board and maintain the permit issued thereunder until the project is complete.
- Natural drainage courses will not be disturbed.
- The volume of stormwater runoff leaving each development or project after improvement will not exceed the volume of runoff prior to improvement.

Water Infrastructure

MILLERTON NEW TOWN PLAN AREA

INFRASTRUCTURE PLAN FOR THE DELIVERY OF FINISHED WATER TO VARIOUS PROPERTIES WITHIN AND ADJACENT TO COUNTY SERVICE AREA NO. 34

Prepared by:
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(559 252-7223

December, 2000

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APPENDIX A - Supplement to Report and Summary of Water Supply Source and Projected Water Uses for General Plan Amendment 455 Properties

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APPENDIX C - Certified Pump Performance Curve

APPENDIX D - Water System Solution

I PURPOSE AND SCOPE

The purpose of this Infrastructure Plan for the Delivery of Finished Water to Various Properties Within and Adjacent to County Service Area 34 (Plan Area) is to comply with Board Resolution No. 98-411, applicable portions of the "Statement of Position of Millertown Area Landowners" signed on June 1, 1998, "Use and Allocation Agreement" relating to the allocation of water to various properties within and adjacent to the Plan Area and the Millerton New Town Specific Plan as amended March, 1999, (Plan) requiring completion of an infrastructure plan.

The scope of this study is limited to the preparation of an infrastructure plan consistent with the goals, policies and mitigation measures set forth in the Plan for approved projects, those lands contained and described in the Plan and for planned future projects, those for which land use entitlements are yet to be sought. The Plan Area boundary is shown in Figure 1E. This study addresses the following:

- The capacity of existing water intake structure and pumps at the surface water source, Millerton Lake.
- The determination of average daily domestic demand, peak day domestic demand and peak day, peak hour domestic demand for the study area based on approved and planned land uses.
- The storage volume of finished water necessary to provide an adequate supply of water to meet domestic, commercial, and fire fighting needs of the study area.
- The pumping, storage, transmission and delivery of a sufficient quantity of finished water to meet the approved and planned land use needs of the various landowners within the Plan Area boundary.
- The preliminary design of a "back bone" transmission pipeline system to deliver finished water to some point on the property boundary of each landowner.

The acquisition of an adequate surface water supply for County Service Area 34 (CSA 34) by way of existing water agreements, existing entitlements from Fresno County, individual arrangements acceptable to Fresno County, and the analysis, design and installation of water distribution mains and appurtenances for each approved and planned project connecting to the "back bone" system will be the responsibility of individual project proponents.

II INTRODUCTION

Water for domestic uses, fire fighting and most landscape irrigation for existing development within the study area is currently supplied by wells. The Brighton Crest Golf Course however is irrigated with untreated (raw) surface water pumped from Millerton Lake, conveyed to earthen reservoirs within the golf course by a 12 inch diameter pipeline approximately 11,000 feet in length and stored until pumped into irrigation pipelines for golf course irrigation. During the peak demand irrigation month, July, it is estimated the golf course requires about 50 acre feet of water to satisfy evapotransportion needs. The golf course is irrigated in about seven hours.

The future water needs of the Plan Area i.e., residential, commercial, fire fighting and irrigation demands, will be satisfied through the use water obtained from Millerton Lake and treated at a regional water treatment plant. As development proceeds within the Plan Area the irrigation needs of open space landscaping, protected wetlands, including a proposed Clarksfield golf course and other landscaped areas where appropriate, will be irrigated with reclaimed wastewater from the regional wastewater treatment plant. Portions of the Brighton Crest Golf Course will also be irrigated with reclaimed wastewater. Raw surface water pumped from Millerton Lake and previously used for golf course irrigation, would then be available for treatment and use by residential and commercial developments.

The County of Fresno has remaining an annual entitlement of about 700 acre feet (ac.ft.) for use by project applicants on a first come first serve basis. After the County entitlement has been completely obligated Mitigation Measure 4.f, Exhibit 5b:Millerton Specific Plan Mitigation Measures and Monitoring Program Matrix, requires each new project "... provides an adequate water supply to CSA 34, with the acquisition costs to be borne by the project proponent." Property owners currently possessing a firm supply of surface water are; The Clarksfield Company, Inc., 700 ac.ft. annually through the Deer Creek and Tule River Authority, Table Mountain Rancheria has an agreement for 200 ac.ft. annually through the Fresno Irrigation District, the Brighton Crest subdivision 800 ac.ft. annually divided as follows: 400 ac.ft. for golf course irrigation, 200 ac.ft. for consumptive use and 200 ac.ft. for standby consumptive use, Donavan Harris, 125 ac.ft. annually from Fresno County's Cross Valley Canal Project. West Cal, Inc. has made application to Fresno County for approximately 90 ac. ft. of the County allotment.

III PLAN AREA CHARACTERISTICS

Existing Conditions

The Plan Area consists of approximately 2,790 acres composed of the Brighton Crest subdivision and golf course, tribal lands of Table Mountain Rancheria, all property within the boundaries of the Millerton New Town Specific Plan as amended March 25, 1999, and various other property adjacent to the Easterly boundary of Brighton Crest. Approximately 1,260 acres of the Plan Area are used for grazing and are undeveloped. Developed areas are limited to Brighton Crest and tribal land East of Sky Harbor Road.

The Brighton Crest subdivision relies on ground water to satisfy domestic needs, fire fighting and home landscape irrigation. Pumped ground water is stored in a 240,000 gallon below ground storage tank prior to distribution. The Brighton Crest Golf Course is irrigated by raw water from Millerton Lake. That portion of the water distribution system necessary to serve the existing developed area of the subdivision has been installed.

Table Mountain Rancheria also uses ground water for domestic and landscape irrigation needs, however reclaimed wastewater is used for fire fighting purposes. Although within the Plan Area boundary, Table Mountain Rancheria and tribal land North of Table Mountain Rancheria is not within the boundary of CSA 34.

The Plan Area Boundary is shown of Figure 1E.

Land Uses

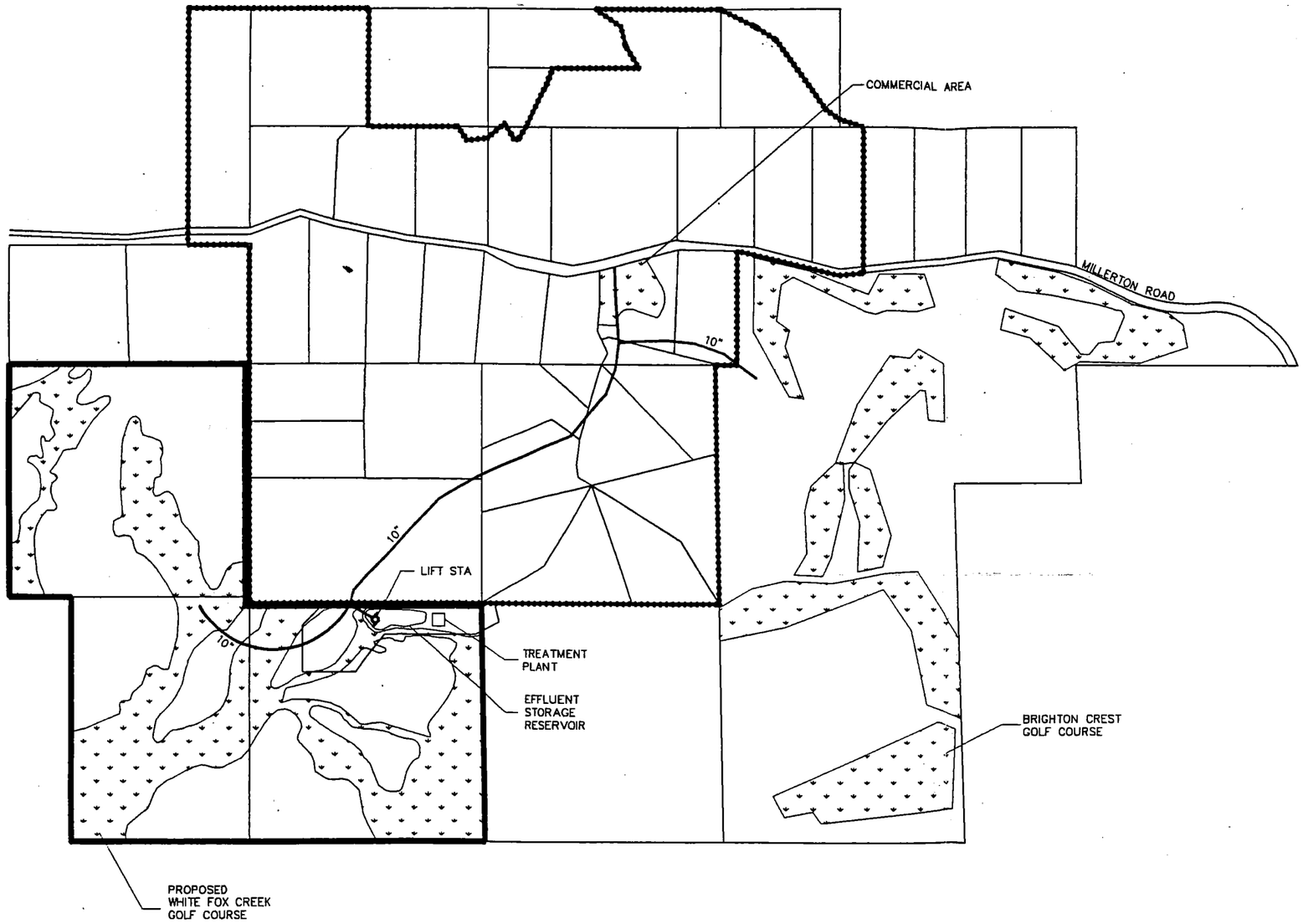
Residential

Land uses as enumerated in the 1260 acre Plan consist of residential, commercial (including government facilities), recreation uses and mobile home/recreation vehicle park. The residential portion of the Plan divides residential uses into three residential density classifications; Medium Low, Medium and Medium High with corresponding zone districts of R-1-B, R-1-C, R-1 and R-2.

The total residential development allocation for the Plan portion of the Plan Area results in approximately 3,500 residential units plus commercial uses on about 1,260 acres, see Figure 5, page 13 of the Plan.

Population densities for each of the residential designations as set forth in the Plan are as follows.

Residential Designation	Persons per Unit
Medium Low	2.8
Medium	2.5
Medium High	2.2



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- 10" RECLAIMED WATER DISTRIBUTION PIPELINE & SIZE
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SCALE

POTENTIAL RECLAIMED WATER DISTRIBUTION SYSTEM AND SPRAY FIELD AREAS

FIGURE 3
PAGE 16

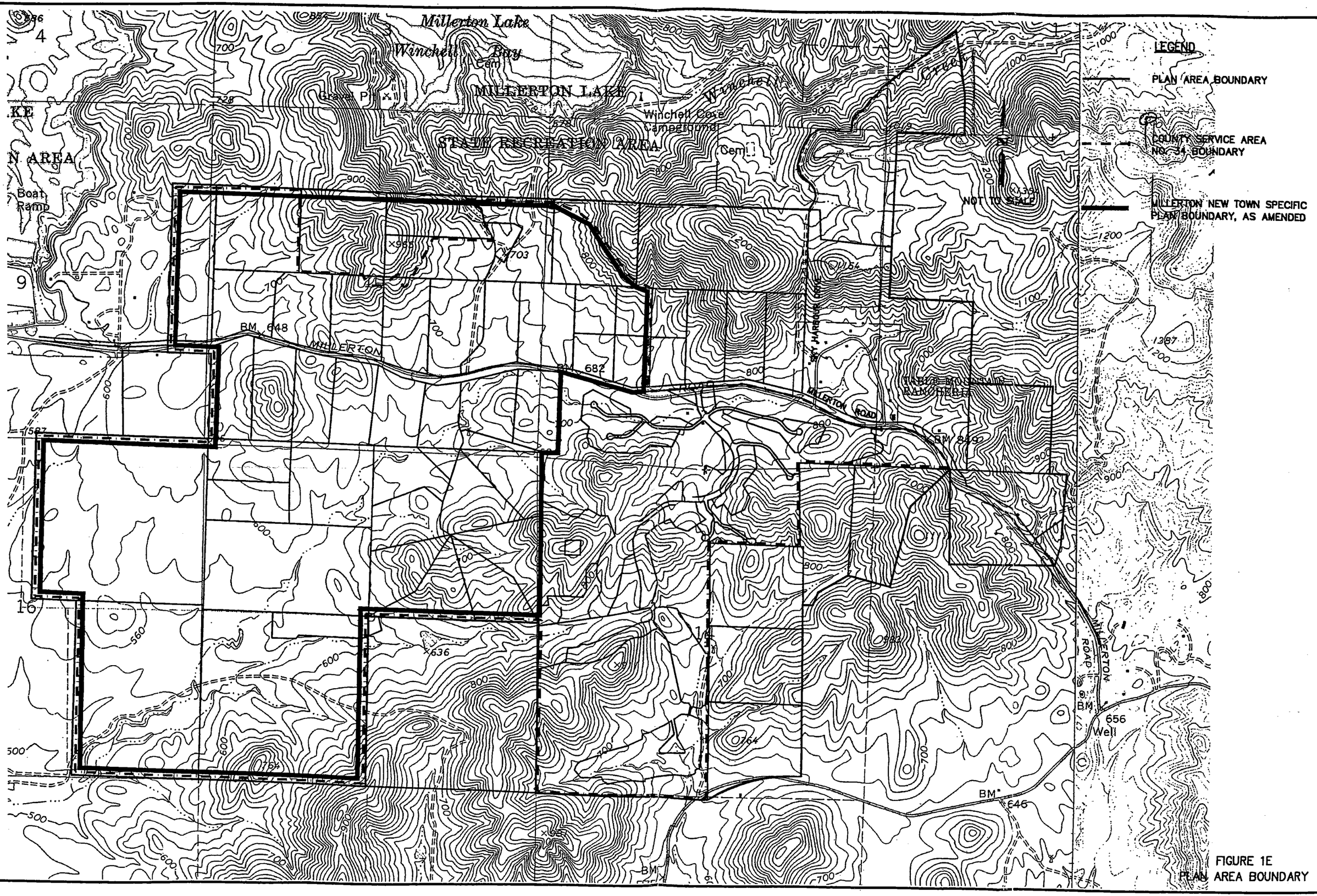


FIGURE 1E
PLAN AREA BOUNDARY

Other property within the Plan Area are Brighton Crest (Tentative Tract No. 4048) 420 single family lots and Donavan Harris 110 medium density lots, approximately 300 acre low density area North of Millerton Road and adjacent to the Plan is zoned for approximately 300 residential units, properties East of Sky Harbor and East of Brighton Crest, about 840 acres result in approximately 1,085 single-family equivalent units.

Commercial Land Use

Eighty-five acres of the Plan area is designated for commercial use and 32.5 acres for mobile home/recreation vehicles. A 66.6 acre commercial core area surrounding the intersection of Millerton Road and Marina Drive is designated for commercial and appropriate government facilities. The commercial center will serve both the Plan area and the foothill community. The commercial core area will include neighborhood /community uses such as grocery, drug, clothing and other retail stores. Service commercial is located at the Northeast quadrant of Millerton Road and Marina Drive to provide services such as repair, rental, sales, storage, general commercial and overnight lodging. Within the commercial core, the Southeast and Southwest quadrants of the intersection of Millerton Road and Marina Drive, the Board of Supervisors has approved the White Fox Creek Sub-Unit plan consisting of 44 acres and a conditional use permit for the first phase development of the sub-unit.

The distribution of the water allotment is shown in Table 1E.

Distribution of Water Allotment

The maximum number of single family residential and single family residential equivalent units, 5,074, used for water allocation purposes to individual landowners has been previously discussed by all landowners within the Plan Area. The potential distribution of these units to individual landowners is listed in Table 1E in the column headed "No. Of Units". The distribution of water allocations in any manner different from the existing approved zoning will require the written agreement of any affected landowner and the approval of Fresno County.

IV DEVELOPMENT OF DESIGN CRITERIA

The Plan, as adopted, includes "Mitigation Measures and a Monitoring Program Matrix" to assure compliance with Plan policy and goals. Of significance to this study are the following requirements:

- The use of reclaimed wastewater for irrigation of golf course, protected wetlands and other designated areas.

- Each residential lot to have two water meters one for the residence water service and one for the landscape irrigation service.

TABLE 1E
DISTRIBUTION OF WATER ALLOTMENT *

DEVELOPER	NO. OF UNITS	USE	POP., PERSON PER UNIT	Qave, gpcpd	Qave. For Area GPD	PK. MO. Qavex120%	PK. WK. Qavex140%	PK. DAY Qavex180%	PK. HR. PK. DAYx200%
MAKROTHUMIA	841	MDR	2.5	178	374,245	449,094	523,943	673,641	1,347,282
(INCLD'S COM.)									
CLARKSFIELD	99	MDR	2.5	178	44,055	52,866	61,677	79,299	158,598
CHRISTENSEN	10	MDR	2.5	178	4,450	5,340	6,230	8,010	16,020
TMR,	555	MDR	2.5	178	246,975	296,370	345,765	444,555	889,110
"	200	HDR	2.2	178	78,320	93,984	109,648	140,976	281,952
" 10 AC. COM.	60	HDR	2.2	178	23,496	28,195	32,894	42,293	84,586
HARRIS	155	LDR	2.8	178	77,252	92,702	108,153	139,054	278,107
BENCK	70	LDR	2.8	178	34,888	41,866	48,843	62,798	125,597
DAVIS	193	LDR	2.8	178	96,191	115,429	134,667	173,144	346,288
T 4048	420	LDR	2.8	178	209,328	251,194	293,059	376,790	753,581
CLARKSFIELD	1162	LDR	2.8	178	579,141	694,969	810,797	1,042,454	2,084,908
(INCLD'S COM.)									
GRANVILLE	200	MDR	2.5	178	89,000	106,800	124,600	160,200	320,400
WESTCAL	1109	MDR	2.5	178	493,505	592,206	690,907	888,309	1,776,618
SUM	5074				2,350,846	2,821,015	3,291,184	4,231,523	8,463,046
Qave., gpm					1,633	1,959	2,286	2,939	5,877

* REQUIRES WRITTEN AGREEMENT OF AFFECTED LANDOWNER AND FRESNO COUNTY

rev. 11/28/00

- A tiered water rate schedule for irrigation services.

- That water conservation practices in accordance with approved conservation plans of Fresno County are followed.

Average Daily Demand

- Residential Land Use Designations

  The Plan document as supplemented during the hearing proceedings by a document entitled "Report and Summary of Water Supply Source and projected Water Uses for General Plan Amendment 455 Properties" (Supplement), dated March 30, 1999, Appendix A, establishes the average daily domestic flowrate as 178 gallons per capita per day (gpcpd) and an average population of 2.5 persons per household. This study incorporates the use of an average daily flowrate of 178 gpcpd, which represents both indoor water use and outdoor use i.e., landscape irrigation and the household population, for the various residential designations, set forth in the Plan.

- Commercial Land Use Designations

  The average daily water demand for unspecified commercial uses has been equated to single family residential equivalent units using a population density of 16 persons per acre and 2.2 persons per unit.

  In terms of single family residential equivalent units, the average daily water demand for the specific commercial uses described in the White Fox Creek Sub-Unit Plan are:

  Commercial
  40,000 square feet commercial at 0.75 gal/sf/day=30,000 gpd
  30,000gpd/(178 gpcpd x 2.8 persons per unit) = 60 single family residential equivalent units.

  Retail
  60,000 square feet of retail at 0.18 gal/sf/day = 12,564 gpd
  12,564gpd/(178 gpcpd x 2.8 persons per unit) = 25 single family residential equivalent units.

  Hotel
  130 room hotel at 200 gpd per room = 26,000gpd
  26,000 gpd/(178 gpcpd x 2.8 persons per unit) = 52 single family residential equivalent units.

Peak Day Demand and Peak Hour Demand

The relationship of peak day demand to the average day demand is widely reflected in literature for municipal water systems as 180 percent of the average daily domestic demand. At some time within the peak day there is a peak hour of water use. A factor of 200 percent of the peak day demand is used for the peak hour within the peak day.

Fire Flowrates

- Residential Land Use designations

  As a group, the Millerton New Town Land Owners (Land Owners) have determined that all one and two family residential structures exceeding 3,600 square feet in floor area will have residential fire sprinkler systems. Consistent with Division III, Fire protection, Appendix III-A, "Fire-Flow Requirements for Buildings", California Fire Code, 1997 edition (Fire Code), the fire flow requirements will be 1,000 gallons per minute (gpm) for a two hour duration. Appendix B contains a copy of the referenced portion of the Fire Code.

- Commercial Land Use Designations

  The minimum fire flow and flow duration for building other that one and two family dwellings are listed in Table A-III-A-1 of the Fire Code. For purposes of this study the minimum fire flow has been based on a floor area requiring a fire flow of 2,750 gpm for a duration of two hours. Since the Plan requires automatic fire sprinkler systems be used for commercial developments exceeding 7,500 square feet and the Fire Code allows a reduction of up to 75 percent of the listed fire flow, but not less than 1,500 gpm, a fire flowrate for commercial areas of 2,000 gpm for a two hour duration has been used in this study.

Water Needs Of The Plan Area

Based on the above criteria, Table 1E lists by land owner the number of units, as discussed by the landowners, land use designation, population, average daily demand, peak month, peak week, peak day and peak hour demands for the Plan Area.

Water System Operating Pressures and Flow Velocities

The Uniform Plumbing Code limits water pressure at the building service to a minimum residual pressure of 15 pounds per square inch (psi), after allowing for friction and other losses, and a maximum static pressure of 80 psi. At locations where the maximum static pressure exceeds 80 psi pressure regulators will be installed. Fire protection requirements require a minimum residual pressure of 20 psi at the specified flowrate. In general, water system operating pressure should be maintained between 60 and 80 psi where topography permits.

Velocity of flow within the pipeline should not exceed about five feet per second (fps), to reduce the magnitude of pressure surges resulting from rapid valve closure and pumps going off line abruptly.

V DESIGN CRITERIA FOR SIZING WATER SYSTEM APPURTENANCES

Existing Raw Water Intake, Pumping and Conveyance Facilities

According to Provost and Pritchard Design Group, a raw water intake system consisting of two submersible pumps and an intake structure presently supplies the Brighton Crest Golf Course with raw water pumped from Millerton Lake. Each of the two existing pumps are capable of discharging 850 gallons per minute at an overall pumping head of 350 feet; shutoff head for the pumps is about 400 feet. Pump performance curves for the pumps are found in the Appendix C of this report. The intake structure was designed and constructed to accommodate a total of four submersible pumps.

The existing pumps discharge to a 12-inch diameter Class 50 ductile iron pipeline. The 12 inch pipeline conveys raw water from Millerton Lake to the Brighton Crest Golf Course, terminating near the Brighton Crest community center. In order to supply raw water to the regional water treatment plant site (primary plant) shown on Figure 4, page 12 of the Plan, a 12 inch pipeline will have to be installed from the intersection of Winchell Cove Road and Millerton Road to the water treatment plant site located approximately 3,300 feet South of Millerton Road. Should site constraints, or environmental considerations restrict the physical expansion of a water treatment plant at this location, a second water treatment plant may be sited North of Millerton Road on the East or West side of Winchell Cove Road. The second water treatment plant would not require extension of the existing raw water conveyance pipeline.

Table 1E indicates the peak day demand for the Plan Area is about 2,940 gpm. The installation of additional pumps having operating characteristics similar to the existing pumps, combined with supplemental storage would satisfy the peak day demand requirements of the Plan Area. This study assumes that two pumps each capable of discharging 850 gpm against a total dynamic head of 350 feet will be installed at the intake structure and that one of the four pumps will be used as a standby unit. Fluctuations in water surface elevations will affect the discharge flowrate of the pumps. The normal elevation of the Millerton Lake is 550 feet (USGS Datum) and the low level elevation used by Provost and Pritchard Design Group for design was 470 feet. According to the Bureau of Reclamation the lowest lake elevation recorded in the past 50 years is 466. At the normal lake elevation, 550 feet, the pumping station can discharge about 2900 gallons per minute at low lake levels, elevation 470 feet, the pumping station can discharge about 2,500 gpm. The velocity of flow in the transmission main is about 8.3 feet per second at the maximum capacity. Pumping at maximum capacity will require the addition of surge control devices on the pipeline. The capacity of the pipeline imposed by pressure constraints is greater than output of the pump station. With the installation of additional pumps at the intake structure and supplemental storage, the existing 12 inch diameter pipeline has the sufficient capacity to supply the peak day demand to the regional water treatment plant site.

Design Flowrate

The design flowrate used to size distribution pumps and transmission pipelines is the peak day one hour demand shown in Table 1E and a concurrent two hour fire flowrate of 2,000 gpm. The location of the fire flow was taken as the commercial area at the intersection of Millerton Road and Marina Drive.

Transmission Pipelines

Transmission pipelines were taken to be PVC pipelines conforming to AWWA C-900, Class 150 and Class 200. Pipe manufactured in accordance with AWWA C-900 has a quick term burst strength of 600 psi and is designed for a working pressure of 200 psi. The "C"factor used for design was 150.

Distribution Pumps

Distribution pumps are located at the water treatment plant and pump treated water into the transmission pipelines to satisfy system demand and to replenish storage tanks. Four distribution pumps are used, any three of which are capable of supplying the design flowrate to transmission pipelines, the forth is a standby unit. Distribution pump characteristics, discharge capacity in gpm and performance range expressed as total dynamic head (TDH), for the primary plant having a capacity of 2,940 gpm are shown in Table 2. (Distribution pump characteristics for a primary plant having a capacity of 850 gpm and second plant having a capacity of 1,890 gpm is provided in the Summary of Input Data portion of the Extended Period Simulation, Table 1E and Table 2E Appendix D.)

TABLE 2
Distribution Pump Characteristics (Primary Plant)

Pump No.	TDH, feet	Q, gpm	TDH, feet	Q, gpm	TDH, feet	Q, gpm
1	330	500	300	600	270	800
2 & 3	320	750	300	1000	270	1250
4	320	400	300	500	285	600

Storage Facilities

Water use varies on an hourly basis through out the day, resulting in a diurnal curve reflecting patterns of water use. Two diurnal patterns, depicted in Figure 2 and Figure 3, have been evaluated for determining storage requirements for the Plan Area. Figure 2, is a diurnal curve modeled after the City of Fresno peak day use pattern. Figure 3, depicts the diurnal use pattern of the City of Clovis. The shape of the City of Clovis curve reflects adherence to water use restrictions imposed by ordinance.

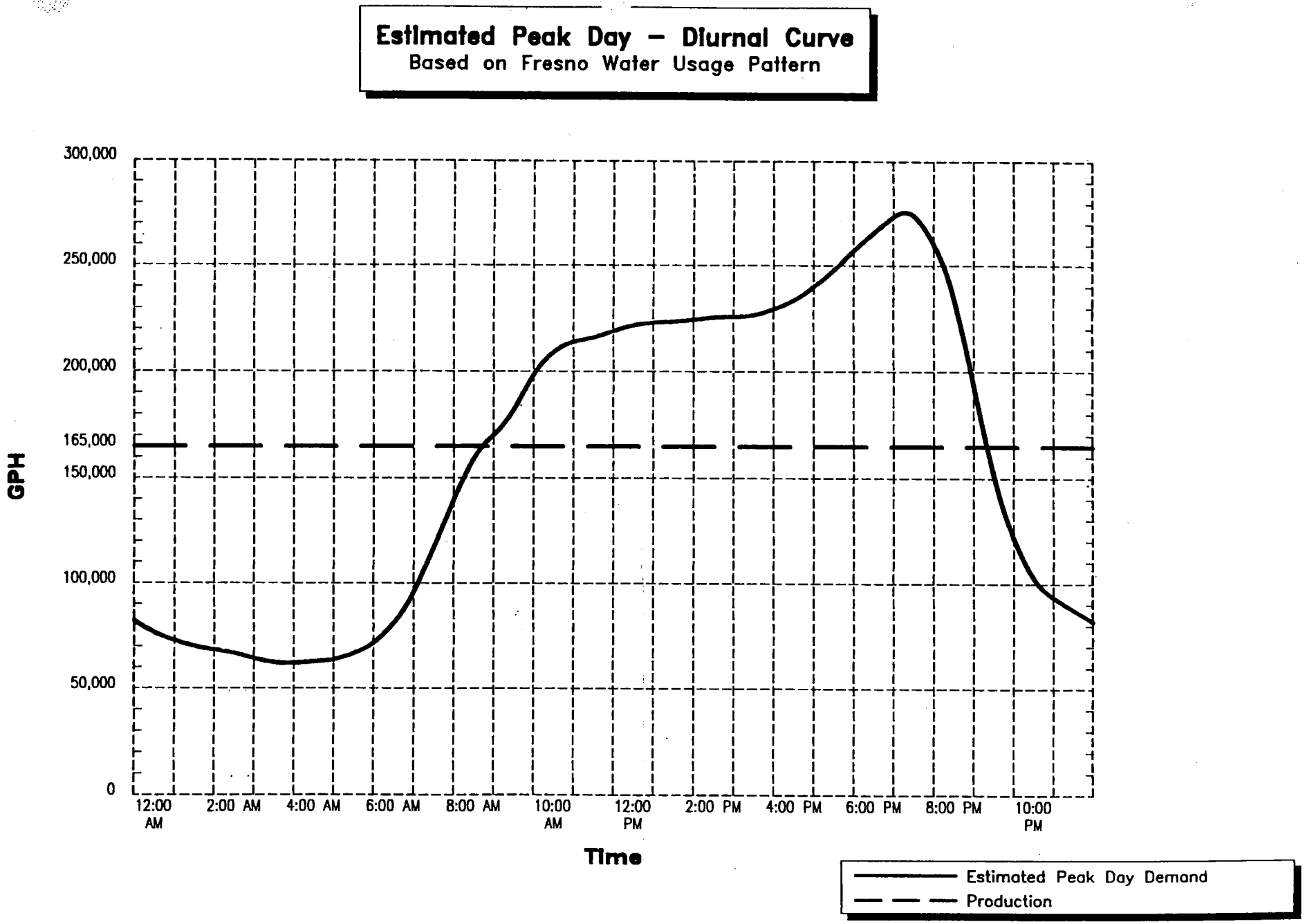

Estimated Peak Day – Diurnal Curve
Based on Fresno Water Usage Pattern
300,000
250,000
200,000
165,000
150,000
100,000
50,000
0
GPH
12:00 AM
2:00 AM
4:00 AM
6:00 AM
8:00 AM
10:00 AM
12:00 PM
2:00 PM
4:00 PM
6:00 PM
8:00 PM
10:00 PM
Time
Estimated Peak Day Demand
Production

Figure 2

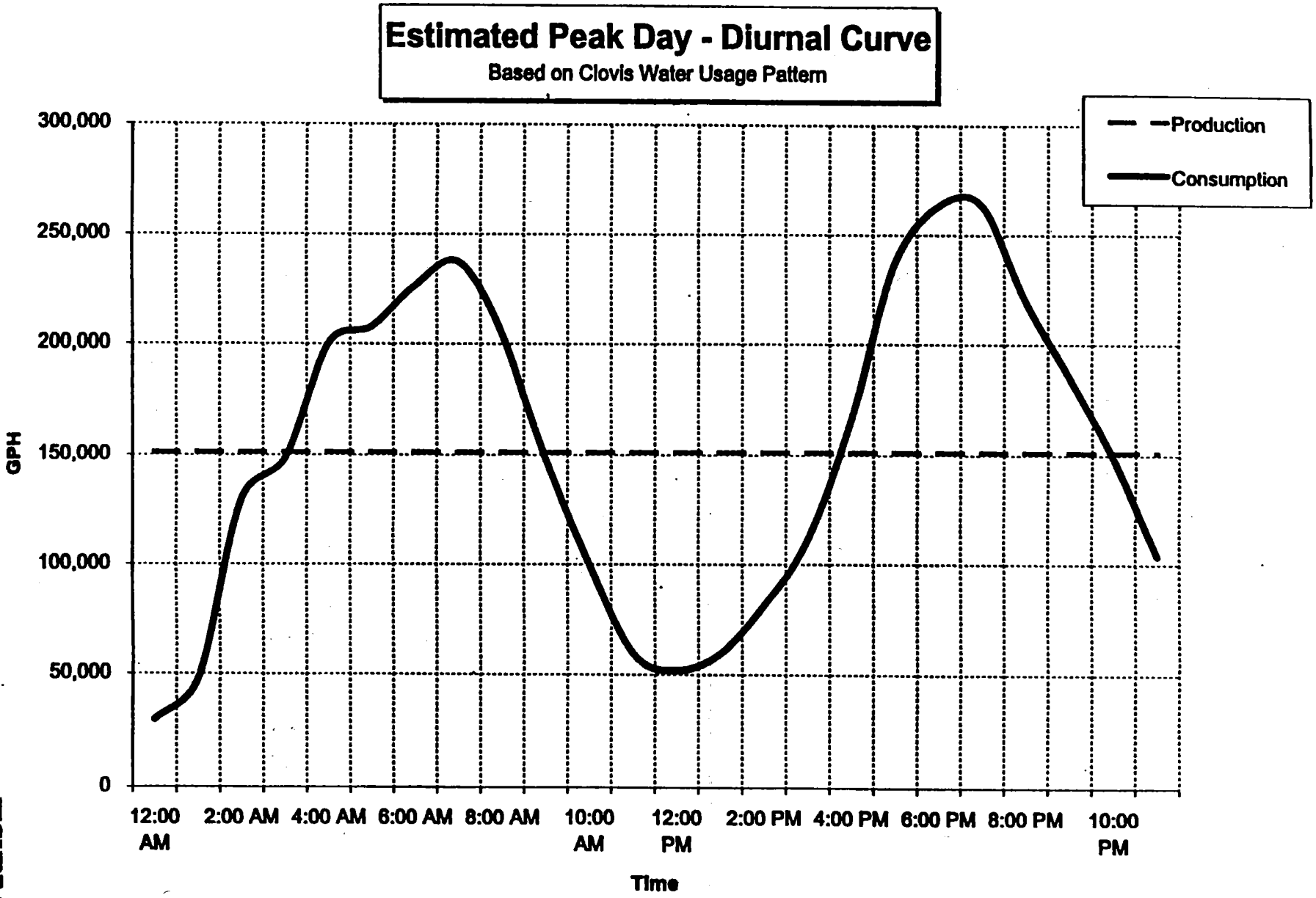

Estimated Peak Day - Diurnal Curve
Based on Clovis Water Usage Pattern
Production
Consumption
GPH
300,000
250,000
200,000
150,000
100,000
50,000
0
12:00 AM
2:00 AM
4:00 AM
6:00 AM
8:00 AM
10:00 AM
12:00 PM
2:00 PM
4:00 PM
6:00 PM
8:00 PM
10:00 PM
Time

FIGURE 3

For purposes of this Plan, Figure 2 will be used to determine storage requirements for the Plan Area. From Figure 2, water storage is that area bounded by the "consumption" curve above the line representing finished water production, and below the line representing finished water consumption. The storage volume encompassed by this boundary is about 790,000 gallons. Peak day supplemental storage in the amount of approximately 562,000 gallons is necessary to satisfy the peak day demand less raw water pump capacity. The total recommended storage is the "consumptive" volume plus supplemental storage plus that storage required for fire fighting (240,000 gallons) or 1,592,000 gallons.

Diurnal use patterns within the Study Area should be monitored a development progresses in order that water use patterns may be developed that are specific to the area and which reflect actual water uses of the tiered rate structure. Sufficient data should be accumulated prior to buildout that the storage needs of the Study Area may be modified to better fit actual use patterns.

As stated above, storage provides source water for peak day, peak hour domestic demand as well as for fire fighting. Storage requirements for the latter have been taken to be 2,000 gpm for a period of two hours.

Raw Water Conveyance Pipelines for Irrigation Purposes - Brighton Crest Golf Course

If the Brighton Crest Golf course is not irrigated with reclaimed wastewater, in total or in part, the existing raw water conveyance can be used to replenish irrigation water in about seven hours and satisfy peak day domestic demand. The seven hour replenishment period is shown on Figure 4 Estimated Peak Day - Diurnal Curve, to occur from 11:00 PM. to 6:00 AM. Domestic demand during the seven hour replenishment period is about 494,300 gallons or 1,177 gpm. The required irrigation replenishment of 1.64 ac. ft., during the seven hour replenishment period is 1,250 gpm. The combined flowrate, 2,427 gpm, is about 97 percent of raw water pumping and conveyance pipeline capacity at low lake levels.

VI WATER SYSTEM MODELING

Introduction

The back bone water transmission system has been modeled according to the domestic demand set forth in Table 1E (Table 1E Model). Raw water will be supplied to the water treatment plant site via an existing 12 inch diameter ductile iron pipe and a 3,300 linear foot extension of a 12 inch supply pipe in Marina Drive, connected to the existing 12 inch pipeline near the intersection of Winchell Cove Road and Millerton Road and terminating at the water treatment plant site.

Water storage requirements for the Plan Area are satisfied by incorporating one 600,000 gallon (usable) bolted steel storage tank North of Millerton Road, one 260,000 gallon (usable) bolted steel water tank at the site of the existing 240,000 gallon water tank at Brighton Crest, and one 562,000 gallon storage tank shown on Figure 2E. Presumed dimensions of the 600,000 gallon

Estimated Peak Day P.M. Domestic Consumption & Golf Course Irrigation Replenishment

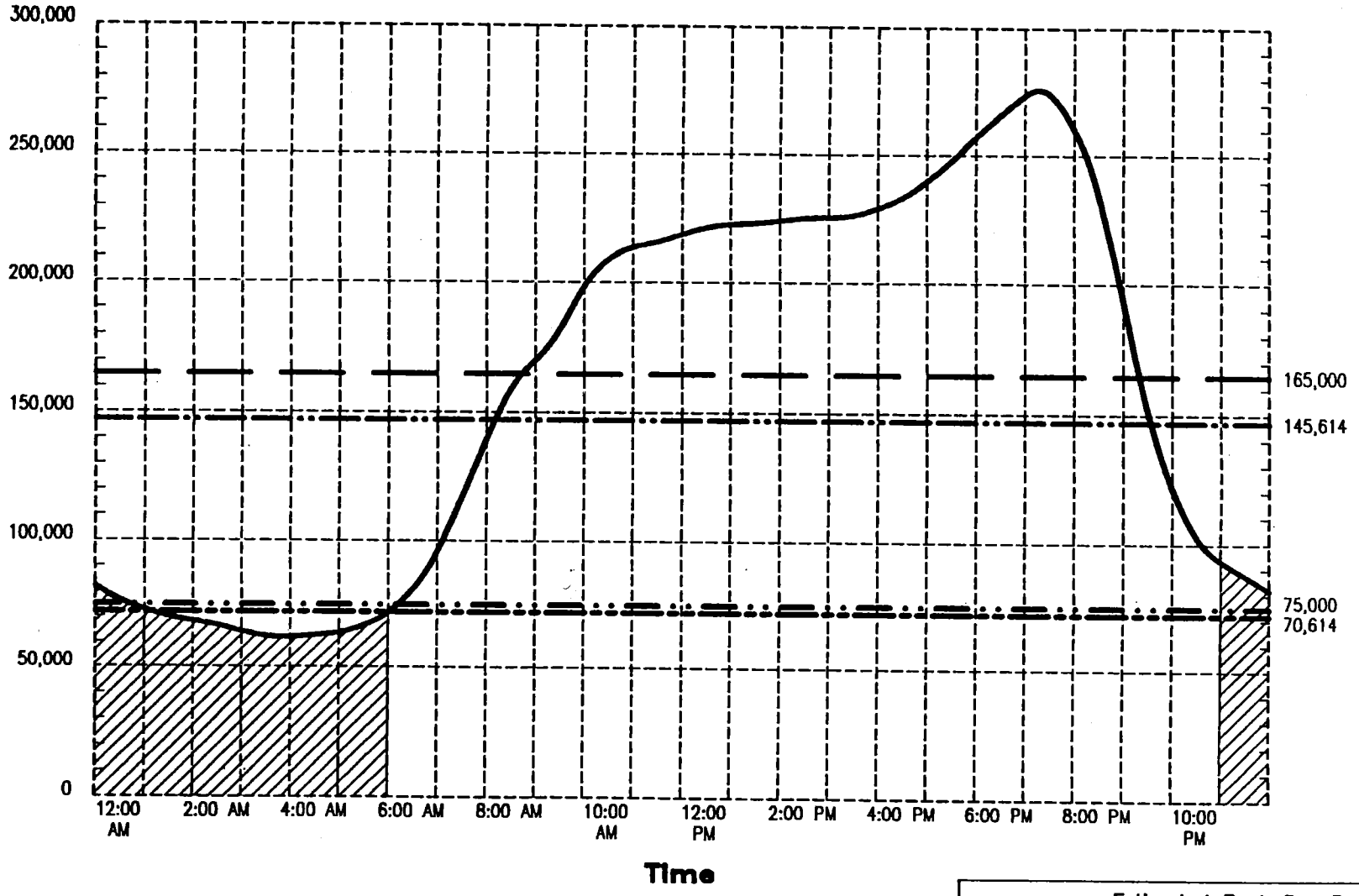


Figure 4

and 562,000 gallon storage tanks are 70 feet in diameter by 32 feet high the base of the tank at elevation 870 and 1100 respectively. Dimensions of the 240,000 gallon storage tank are 50 feet in diameter by 20 feet high the base of the tank is also at elevation 870. The elevation of water in the water storage tanks is used to control the distribution pump operation, Table 3 lists the start and stop elevations used for this purpose.

TABLE 3
Distribution Pump Control Elevations

Pump No.	Pump Start Elevation	Pump Stop Elevation
1	896	898
2 & 3	880	898
4	894	898

Until such time as residential and commercial development progresses to the point the sufficient reclaimed wastewater is available for irrigation the existing 12 inch diameter raw water pipeline to the Brighton Crest Golf Course lakes will continue to deliver raw water to the golf course for irrigation. A control for the raw water delivery system will eventually be needed to monitor the golf course lake level, demand at the water treatment plant and pumps at the intake structure in Millerton Lake. With the exception of the necessary extension of the raw water supply pipeline to the water treatment plant site, all aspects of the raw water delivery system are outside the scope of this study.

Table 1E Model

Figure 2E shows the water transmission pipelines graphically located in major streets, arterial streets or collector streets, water storage tank sites and the extension of raw water supply pipeline to the primary water treatment plant. Pump arrangements for a second plant North of Millerton Road is also shown on Figure 2E.

Simulated Water Transmission System Operation (Primary Plant)

The peak day demand listed in Table 1E was distributed at various points along the transmission pipeline to each property listed. The assigned point of discharge on the transmission pipeline is termed a "node". Hydraulic calculations were performed for an Extended Period Simulation (EPS) to determine water pressure in the transmission pipelines, pressure at all points of future connection to the transmission pipeline (nodes), design discharge rate, velocity of flow in the transmission pipeline, distribution pump performance and cycling and the performance of storage tanks ie., the rate of filling or emptying and storage remaining through the duration of the EPS. EPS was performed for the peak day demand using a period of simulation of eight hours. Within the EPS a fire flow of 2,000 gpm (commercial fire flow) was placed at node 25 at the beginning

of the first hour. At the beginning of the second hour the peak hour use occurred while still maintaining a 2,000 gpm fire flow at node 25. At the beginning of the third hour the domestic demand returned to the peak day demand flowrate and the fire flow at node 25 was reduced to zero. A print out of the solution for this run is entitled Table 1E in Appendix D. An EPS was also run for the primary and second plant configuration Table 2E Appendix D.

A review of Table 1E, Appendix D, solution indicates:

- Node numbers 1, 2, 7 through 10, 13, 22, 23, 24, 26 through 29, 33,35, 40 and 50 through 53 have pressures exceeding 80 psi, Class 200 PVC pipelines will be used between these nodes.

- Flow velocities within the system are slightly greater than five fps.

- Pump running time during the peak day, peak hour demand with fire flow is orderly and logical. Pump running time during less demanding simulations is orderly and without cycling.

- Consumptive, irrigation and fire flows are met with pressures exceeding the minimum. In line booster pumps will be required in Pipe 62 or Pipe 61.

- Approximately 962,000 gallons of water is removed from storage tanks during the eight hour simulation period.

VII CONCLUSIONS AND RECOMMENDATIONS

Conclusions

The existing raw water intake system at Millerton Lake can accommodate the addition of two additional submersible pumps. The existing raw water pipeline from the intake structure to the location where the connection for the required pipeline extension to the primary water treatment plant site, has adequate capacity when combined with storage, to meet the peak day peak hour needs of the Plan Area.

The existing raw water pipeline has sufficient capacity to replenish the Brighton Crest Golf Course irrigation supply lakes during the peak month of irrigation demand and meet the peak day late evening and early morning domestic demand.

Based on land use, population densities, residential and commercial consumptive use and residential irrigation use, fire flow demands and simulation results the preliminary design of the water transmission water storage system shown on Figure 2E for Model 1E is sufficient to meet the goals and policies of the Plan as adopted.

Site constraints or environmental considerations may restrict expansion of the primary plant. A

second plant may be sited North of Millerton Road on the East or West side of Winchell Cove Road. The EPS, Table 2E Appendix D, for this situation indicates no significant change to the backbone pipeline sizes are necessary should a second plant be sited in the area suggested.

Requirements for Proposed Land Development Projects

In order to assure a safe, adequate supply of water consistent with the goals and policies of the Plan and existing agreements, the following requirements shall be appropriately applied to each proposed land development project within the Plan Area, and made a condition of approval for development.

- Each proposed land development project shall acquire its pro-rata share of capacity in the existing intake structure and pumps based on the County approved Use and Allocation Agreement or other County approved arrangement.

- At such time that the water needs of the Plan Area exceed the capacity of the existing raw water pumps, install two new submersible pumps, each capable of discharging 850 gpm against a total dynamic head of 350 feet, at the existing intake structure.

- The first proposed land development project shall provide a source of standby power to energize concurrent use of all existing raw water pumps. The standby power source shall have all features of control and automation commonly found in standby power sources for this application, ie, water supply.

- At such time that the water needs of the Plan Area exceed the capacity of the existing raw water pumps, provide a source of standby power of sufficient capacity to energize three of the four pumps. The standby power source shall have all features of control and automation commonly found in standby power sources for this application ie, water supply.

- At such time as capacity and raw water conveyance facilities approaches capacity due to the development demands, that development project shall implement a schedule for the delivery of raw water to the Brighton Crest Golf Course irrigation lakes during off peak hours of domestic demand.

- Implement, as soon as reasonably possible, the use of reclaimed wastewater to irrigate the Brighton Crest Golf Course.

- In accordance with the County approved Use and Allocation Agreement or other County approved arrangement, each proposed land development project shall acquire its pro-rata portion of the existing raw water pipeline needed to convey raw water from the intake structure to the point of connection for the required raw water pipeline extension to the water treatment plant site.

- At such time that the delivery of raw water to the water treatment plant from existing

facilities at Brighton Crest is less than that required for development, that land development project shall install a 12 inch diameter raw water supply pipeline in the Marina Drive alignment from near the intersection of Winchell Cove Road at Millerton Road to the water treatment plant site.

- The first proposed land development project shall prepare a site plan for the ultimate water pumping plant for the delivery of finished water to the water transmission pipeline system at the water treatment plant site. The first phase pumping plant shall include construction of the ultimate: control building, motor control centers, telemetery, plumbing and yard piping, and all site improvements required by the approved site plan for the facility. Should the design of the ultimate facilities described above, be such that phasing of the ultimate improvement is feasible, only those improvements shown on the approved site plan necessary to meet the water needs of the proposed land development project need be constructed. At minimum, pumps shall be sized for the peak domestic demand of the proposed development.

- Each proposed land development project shall have water storage as required by Fresno County and County Fire.

- Construction of a back bone transmission pipeline system located in planned major streets as conceptually shown in Figure 2E, shall be completed by each proposed land development project as necessary to serve the area proposed for development.

- In those instances where it is necessary to cross property in locations other than future major streets to provide water service to the proposed land development project, easements for this purpose will be granted to CSA 34. If property is required for plant and storage facilities the appraised value as determined by procedures described in the Implementation Procedures will be paid to the landowner.

- At the time deemed necessary by the County, based on the water needs of all land development existing and proposed land development projects, design and install a pump control system that will coordinate the delivery of raw water to the water treatment plant site and the lakes at Brighton Crest Golf Course.

- The location of new development within the Plan Area may necessitate the installation of temporary water mains to serve some areas. Each temporary connection or service extension shall be evaluated on a case-by-case basis.

VIII PRELIMINARY ESTIMATE OF CONSTRUCTION COST

Following is a preliminary estimate of construction cost for the back bone transmission pipeline system based on a single regional plant. Included in the preliminary estimate of construction cost is an estimated cost of acquiring sites for the construction of storage tanks, pipeline easements and ingress/egress rights. The estimate assumes standby power for distribution pumps will be

provided by standby facilities located at the water treatment plant. The estimated cost of acquiring capacity in existing facilities ie., intake structures, pumps, pump controls, existing distribution and raw water supply pipelines is beyond the scope of this study.

Infrastructure Plan for the Delivery of Finished Water to Various Properties Within and Adjacent to County Service Area No. 34

Preliminary Estimate of Construction Cost

Item No.	Description	Est. Quantity	Unit	Unit Cost	Item Total
1	Furnish & Install 600,000 Gal. AWWA Belted Steel Tank and Site Improvements	2	EA.	190,000.00	$380,000.00
2	Furnish & Install 300,000 Gal. AWWA Belted Steel Tank and Site Improvements	Job	L.S.	130,000.00	130,000.00
3	Furnish and Install Transmission Pump Station Complete with all Foundations, Pumps, Valves, Fittings and Pipeline	Job	L.S.	80,000.00	80,000.00
4	Furnish and Install Motor Control Center	Job	L.S.	125,000.00	125,000.00
5	Furnish and Install Booster Pump Station Complete with all Foundations, Pumps, Valves, Fittings and Pipeline, Complete with Meter Control Center, Standby Generator Set and Transfer Switch	Job	L.S.	85,000.00	85,000.00
6	Furnish and Install 24" Steel Pipe with Valves and Fittings	610	L.F.	60.00	36,600.00
7	Furnish and Install 16" PVC C-900 CL200 Pipe with Valves	1,020	L.F.	45.00	45,900.00
8	Furnish and Install 12" Raw Water Supply Pipe	3,300	L.F.	27.00	89,100.00
9	Furnish and Install 12" PVC C-900 CL200 Pipe with Valves	12,500	L.F.	29.00	362,500.00
10	Furnish and Install 12" PVC C-900 CL150 Pipe with Valves	18,390	L.F.	27.00	496,530.00
11	Furnish & Install 8" PVC C-900 CL200 Pipe with Valves	12,360	L.F.	25.00	309,000.00
12	Furnish & Install 8" PVC C-900 CL150 Pipe with Valves	12,550	L.F.	22.00	276,100.00
13	Pressure Reducing Stations	2	EA.	7,000.00	14,000.00

Item No.	Description	Est. Quantity	Unit	Unit Cost	Item Total
14	Combination Air-Vac Valves	8	EA.	1,000.00	8,000.00
15	Bore & Jack 16 " Diameter Steel Casing	790	L.F.	50.00	39,500.00
16	Blasting Excavation	16,500	L.F.	5.00	82,500.00
17	Site Acquistion for 600,000 gal. Water Storage Tank and Access and Booster Pump Station	1.25	Acre	25,000.00	31,250.00
18	Install 850 gpm Submersible Pumps	2	EA.	80,000.00	160,000.00
19	Standby Generator Set and Transfer Switch	1	Job	LS	120,000.00
		Sub-total Estimated Construction Cost			**$2,750,980.00**
		Contingencies @ 20%			550,196.00
		Total Preliminary Construction Cost			**$3,612,426.00**

APPENDIX A

SUPPLEMENT TO

REPORT AND SUMMARY OF WATER SUPPLY SOURCE AND PROJECTED WATER USES FOR GENERAL PLAN AMENDMENT 455 PROPERTIES

MARCH 30, 1999

SUMMARY OF WATER SUPPLY SOURCE AND USES
GPA 455
MARCH 30, 1999

A. A firm water supply source for all of the project water supply requirements for the uses in GPA 455, consisting of a total of 484.5 annual acre feet of firm water, has now been confirmed with the Deer Creek and Tule River Authority (the "Authority"), which replaces the earlier proposed commitment of Berrenda Mesa Water District. This water supply will be made available by the Authority at Millerton Lake for the account of Fresno County for use by The Clarksfield Company, Inc. ("Clarksfield"). The acquisition will be at the expense of Clarksfield.

B. Projected per acre foot water uses in accordance with the Adopted Millerton Specific Plan:

1. Assumptions:

(a) Use 120 gpcd (gallons per capita per day);
(b) Average of 2.5 people per household;
(c) Conservation measures, meters, and other restrictions in accordance with Specific Plan.

2.5 persons per household x 120 gpcd = 300 gpd per household, or 109,500 gallons per household per year, or approximately one-third acre feet per year per residence.

2. Summary: 795 residences x .335 acre feet per year per residence = 266 annual acre feet.

C. Projected per acre foot water use in this summary using somewhat higher numbers:

1. Assumptions:

(a) Use 178 gpcd (gallons per capita per day);
(b) Average 2.5 persons per household;
(c) Conservation measures, meters, and other restrictions in accordance with the Specific Plan and adopted County or CSA rules.

2.5 persons per household x 178 gpcd = 445 gpd per household, or 162,425 gallons per household per year, or approximately one-half acre feet per year per residence. 795 x .5 acre feet per year = approximately 400 annual acre feet.

2.8 persons per household x 178 gpcd = 498 gpd per household, or 181,770 gallons pr household per year, or approximately 5.5 acre feet per year per residence, or 437 annual acre feet.

(a) 40,000 square feet of commercial = .75 gallons per square foot per day, or 30,000 gallons per day total, or approximately 33.5 acre feet per year.

(b) 69,800 square feet of retail = .18 gallons per square foot per day, or 12,564 gallons per day total, or 14 acre feet per year.

2. Inn: 130 rooms at 200 gpd per room = 26,000 gpd, or 9,490,000 gallons per year, or approximately 29 acre feet per year.

3. Nine Hole Par 3 Golf Course: 4.8 acres of which approximately 2.5 acres will be irrigated using approximately 3 feet per acre per year, or approximately 7 ½ acre feet per year.

D. Total:

- 795 residences = 400 annual acre feet.
- Sub-unit Plan Area.
- 40,000 sq. feet commercial: 33.5
- 69,800 sq. feet retail: 14.0
- Inn, 130 rooms: 29.0

Total commercial: 76.5

- 3 Par Golf Course: 8.0

Total residential and commercial: 484.5 annual acre feet

APPENDIX B

Division III
FIRE PROTECTION
APPENDIX III-A

FIRE-FLOW REQUIREMENTS FOR BUILDINGS

(See UFC Section 903.3)

SECTION 1 — SCOPE

The procedure determining fire-flow requirements for buildings or portions of buildings hereafter constructed shall be in accordance with Appendix III-A. Appendix III-A does not apply to structures other than buildings.

SECTION 2 — DEFINITIONS

For the purpose of Appendix III-A, certain terms are defined as follows:

FIRE AREA is the floor area, in square feet, used to determine the required fire flow.

FIRE FLOW is the flow rate of a water supply, measured at 20 psi (137.9 kPa) residual pressure, that is available for firefighting.

SECTION 3 — MODIFICATIONS

3.1 Decreases. Fire-flow requirements may be modified downward by the chief for isolated buildings or a group of buildings in rural areas or small communities where the development of full fire-flow requirements is impractical.

3.2 Increases. Fire flow may be modified upward by the chief where conditions indicate an unusual susceptibility to group fires or conflagrations. An upward modification shall not be more than twice that required for the building under consideration.

SECTION 4 — FIRE AREA

4.1 General. The fire area shall be the total floor area of all floor levels within the exterior walls, and under the horizontal projections of the roof of a building, except as modified in Section 4.

4.2 Area Separation. Portions of buildings which are separated by one or more four-hour area separation walls constructed in accordance with the Building Code, without openings and provided with a 30-inch (762 mm) parapet, are allowed to be considered as separate fire areas.

4.3 Type I and Type II-F.R. Construction. The fire area of buildings constructed of Type I and Type II-F.R. construction shall be the area of the three largest successive floors.

SECTION 5 — FIRE-FLOW REQUIREMENTS FOR BUILDINGS

5.1 One- and Two-Family Dwellings. The minimum fire flow and flow duration requirements for one- and two-family dwellings having a fire area which does not exceed 3,600 square feet (344.5 m^2) shall be 1,000 gallons per minute (3785.4 L/min.). Fire flow and flow duration for dwellings having a fire area in excess of 3,600 square feet (344.5 m^2) shall not be less than that specified in Table A-III-A-1.

EXCEPTION: A reduction in required fire flow of 50 percent, as approved, is allowed when the building is provided with an approved automatic sprinkler system.

5.2 Buildings other than One- and Two-Family Dwellings. The minimum fire flow and flow duration for buildings other than one- and two-family dwellings shall be as specified in Table A-III-A-1.

EXCEPTION: A reduction in required fire flow of up to 75 percent, as approved, is allowed when the building is provided with an approved automatic sprinkler system. The resulting fire flow shall not be less than 1,500 gallons per minute (5677.5 L/min.).

TABLE A-III-A-1—MINIMUM REQUIRED FIRE FLOW AND FLOW DURATION FOR BUILDINGS

FIRE AREA (square feet) × 0.0929 for m²					FIRE FLOW (gallons per minute)[2] × 3.785 for L/min.	FLOW DURATION (hours)
Type I-F.R. II-F.R.[1]	Type II One-HR. III One-HR.[1]	Type IV-H.T. V-One-HR.[1]	Type II-N III-N[1]	Type V-N[1]		
0-22,700	0-12,700	0-8,200	0-5,900	0-3,600	1,500	2
22,701-30,200	12,701-17,000	8,201-10,900	5,901-7,900	3,601-4,800	1,750	
30,201-38,700	17,001-21,800	10,901-12,900	7,901-9,800	4,801-6,200	2,000	
38,701-48,300	21,801-24,200	12,901-17,400	9,801-12,600	6,201-7,700	2,250	
48,301-59,000	24,201-33,200	17,401-21,300	12,601-15,400	7,701-9,400	2,500	
59,001-70,900	33,201-39,700	21,301-25,500	15,401-18,400	9,401-11,300	2,750	
70,901-83,700	39,701-47,100	25,501-30,100	18,401-21,800	11,301-13,400	3,000	3
83,701-97,700	47,101-54,900	30,101-35,200	21,801-25,900	13,401-15,600	3,250	
97,701-112,700	54,901-63,400	35,201-40,600	25,901-29,300	15,601-18,000	3,500	
112,701-128,700	63,401-72,400	40,601-46,400	29,301-33,500	18,001-20,600	3,750	
128,701-145,900	72,401-82,100	46,401-52,500	33,501-37,900	20,601-23,300	4,000	4
145,901-164,200	82,101-92,400	52,501-59,100	37,901-42,700	23,301-26,300	4,250	
164,201-183,400	92,401-103,100	59,101-66,000	42,701-47,700	26,301-29,300	4,500	
183,401-203,700	103,101-114,600	66,001-73,300	47,701-53,000	29,301-32,600	4,750	
203,701-225,200	114,601-126,700	73,301-81,100	53,001-58,600	32,601-36,000	5,000	
225,201-247,700	126,701-139,400	81,101-89,200	58,601-65,400	36,001-39,600	5,250	
247,701-271,200	139,401-152,600	89,201-97,700	65,401-70,600	39,601-43,400	5,500	
271,201-295,900	152,601-166,500	97,701-106,500	70,601-77,000	43,401-47,400	5,750	
295,901-Greater	166,501-Greater	106,501-115,800	77,001-83,700	47,401-51,500	6,000	
"	"	115,801-125,500	83,701-90,600	51,501-55,700	6,250	
"	"	125,501-135,500	90,601-97,900	55,701-60,200	6,500	
"	"	135,501-145,800	97,901-106,800	60,201-64,800	6,750	
"	"	145,801-156,700	106,801-113,200	64,801-69,600	7,000	
"	"	156,701-167,900	113,201-121,300	69,601-74,600	7,250	
"	"	167,901-179,400	121,301-129,600	74,601-79,800	7,500	
"	"	179,401-191,400	129,601-138,300	79,801-85,100	7,750	
"	"	191,401-Greater	138,301-Greater	85,101-Greater	8,000	

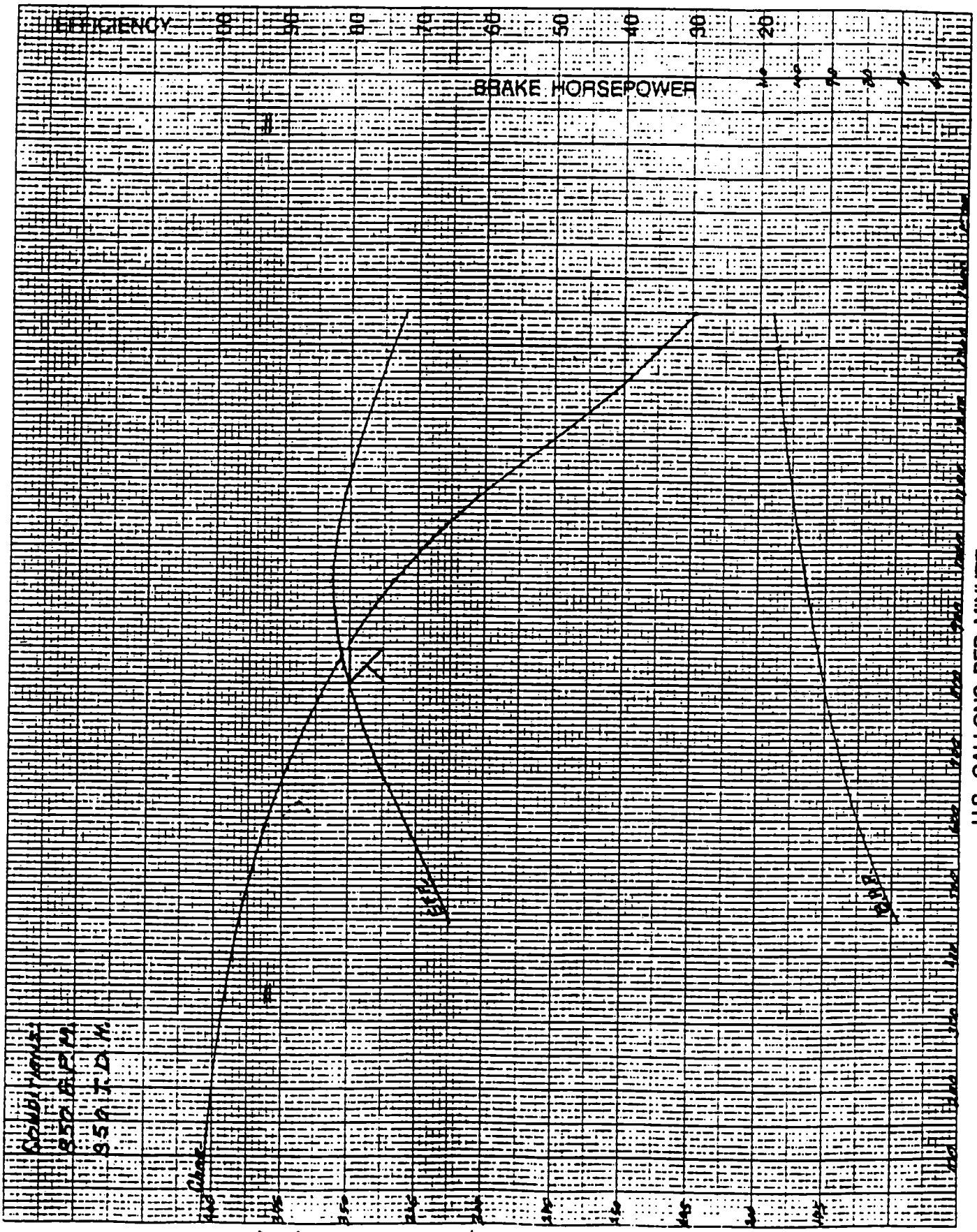
[1]Types of construction are based upon the Building Code.
[2]Measured at 20 psi-(137.9 kPa). See Appendix III-A, Section 2.

APPENDIX C

Fairbanks Morse

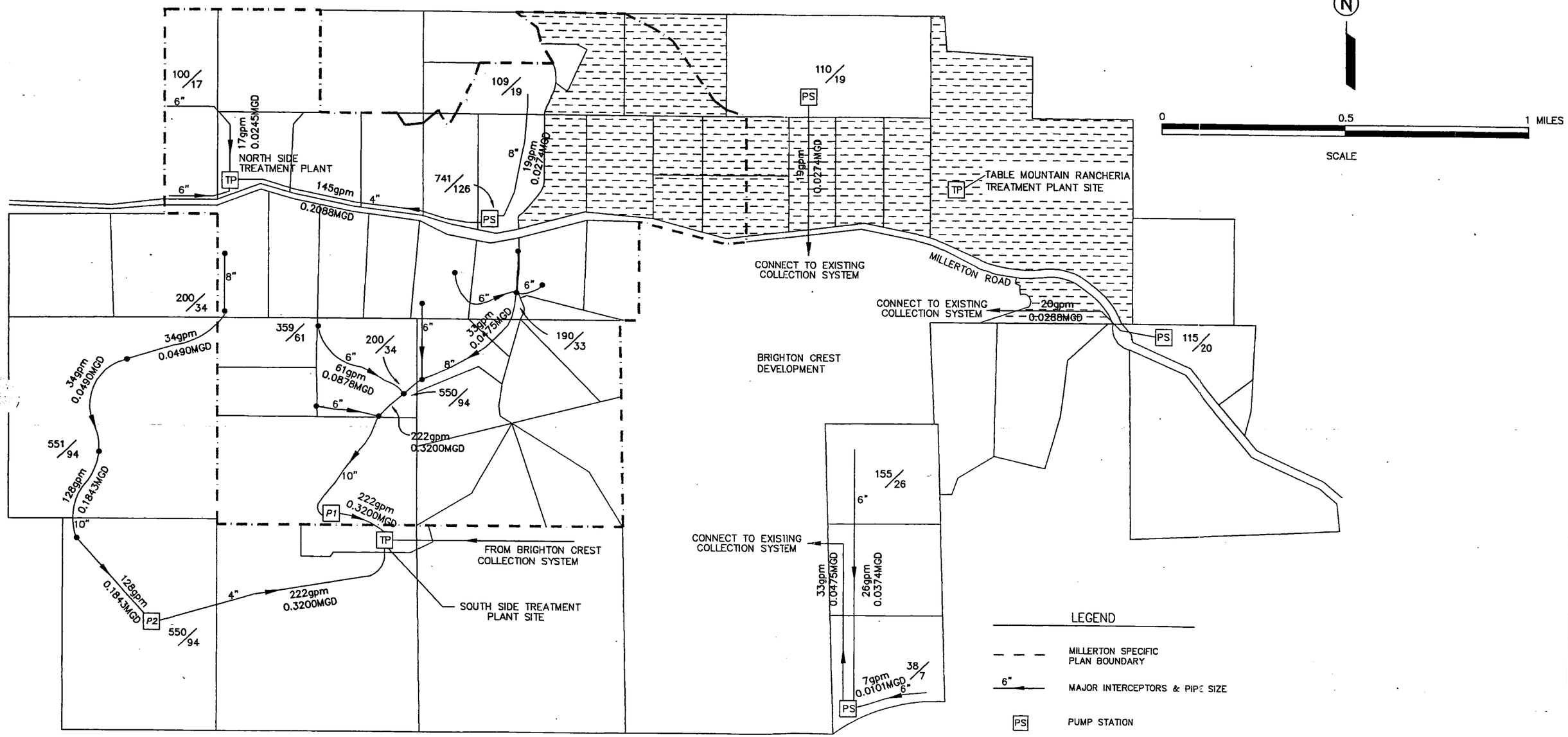
CERTIFIED CURVE

SERIAL NO F3T2-925384-0 NO. STAGES Five SIZE - MODEL 13M - SUBMERSIBLE T-
TEST DATE August 4, 1989 DRIVER 100HP Mitsubishi Elec. Co. IMPELLER TYPE 22
IMPELLER DIA. 5.25
CERTIFIED CORRECT BY Electrical Engr. August 4, 1989 RPM(S) 1750
TEST DEPARTMENT DATE



E-7 (12-88)

APPENDIX D



WASTEWATER COLLECTION SYSTEM LAYOUT

AVERAGE FLOW CONTRIBUTIONS

APPENDIX D

FIGURE 1

G:\99024\SSData2.dwg

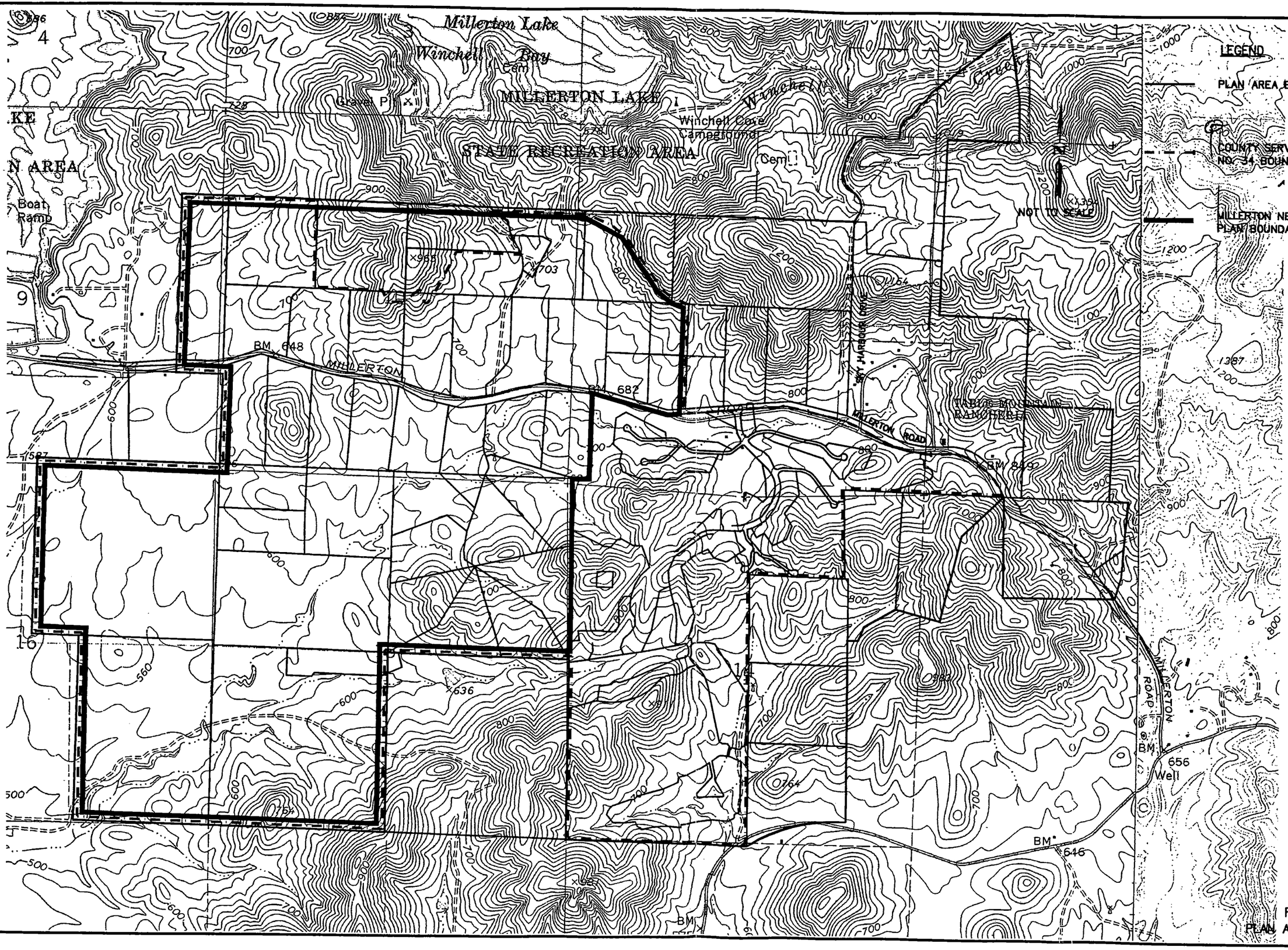


FIGURE 1E
PLAN AREA BOUNDARY

Table 1E

Appendix D

7024
TABLE 1E
APP D

RABE ENGINEERING, INC.
2021 N. Gateway Blvd.
Fresno, CA 93727
(559) 252-7223

MILLERTON NEW TOWN INFRASTRUCTURE STUDY

June 29, 2000

Number of pipes: 61
Number of junction nodes: 48

Flow unit of measure: GPM
File name: MNT

Summary of Input Data

Pipe Data:

Pipe	Node #1	Node #2	Dia (in)	Length (ft)	H-W Coeff	Minor Fact	Pump Type	FGN Grade
1	45	12	12.0	500.0	150.0	1.0	-	-
2	42	31	8.0	1450.0	150.0	1.0	-	-
3	30	16	8.0	500.0	150.0	1.0	-	-
4	30	15	8.0	600.0	150.0	1.0	-	-
5	15	17	12.0	660.0	150.0	1.0	-	-
6	17	19	12.0	1200.0	150.0	1.0	-	-
7	19	20	12.0	1200.0	150.0	1.0	-	-
8	20	21	12.0	600.0	150.0	1.0	-	-
9	21	31	12.0	900.0	150.0	1.0	-	-
10	46	34	8.0	2200.0	150.0	1.0	-	-
11	34	38	10.0	900.0	150.0	1.0	-	-
12	32	33	12.0	1400.0	150.0	1.0	-	-
13	32	52	12.0	1700.0	150.0	1.0	-	-
14	0	3	12.0	1200.0	150.0	1.0	-	725.00
15	3	4	12.0	1200.0	150.0	1.0	-	-
16	4	5	12.0	1200.0	150.0	1.0	-	-
17	5	6	8.0	1200.0	150.0	1.0	-	-
18	0	6	8.0	2100.0	150.0	1.0	-	725.00
19	7	8	8.0	1450.0	150.0	1.0	-	-
20	8	9	8.0	650.0	150.0	1.0	-	-
21	9	10	8.0	1200.0	150.0	1.0	-	-
22	10	12	8.0	1200.0	150.0	1.0	-	-
23	12	14	8.0	1200.0	150.0	1.0	-	-
24	15	14	8.0	1000.0	150.0	1.0	-	-
25	12	13	8.0	840.0	150.0	1.0	-	-
26	13	29	8.0	1500.0	150.0	1.0	-	-
27	7	26	8.0	1140.0	150.0	1.0	-	-
28	26	29	8.0	2400.0	150.0	1.0	-	-
29	24	29	8.0	1200.0	150.0	1.0	-	-
30	24	23	12.0	900.0	150.0	1.0	-	-
31	23	22	8.0	780.0	150.0	1.0	-	-
32	22	18	8.0	480.0	150.0	1.0	-	-
33	18	17	8.0	1320.0	150.0	1.0	-	-
34	15	35	12.0	600.0	150.0	1.0	-	-
35	35	25	12.0	900.0	150.0	1.0	-	-
36	25	24	12.0	1100.0	150.0	1.0	-	-
37	24	27	12.0	1200.0	150.0	1.0	-	-
38	27	28	12.0	1200.0	150.0	1.0	-	-

39	28	1	12.0	2100.0	150.0	1.0	-	-
40	1	2	16.0	1020.0	150.0	1.0	-	-
41	31	36	12.0	1620.0	150.0	1.0	-	-
42	36	37	12.0	20.0	150.0	1.0	-	-
43	38	32	12.0	960.0	150.0	1.0	-	-
44	41	38	24.0	450.0	150.0	1.0	-	-
45	40	1	24.0	100.0	150.0	1.0	-	-
47	39	40	16.0	100.0	150.0	1.0	3	-
48	0	39	24.0	10.0	150.0	1.0	-	594.00
49	0	41	24.0	50.0	150.0	1.0	-	898.00
50	39	40	16.0	100.0	150.0	1.0	2	-
51	39	40	16.0	100.0	150.0	1.0	1	-
52	51	49	12.0	1000.0	150.0	1.0	-	-
54	23	38	12.0	2100.0	150.0	1.0	-	-
55	0	45	12.0	10.0	150.0	1.0	-	898.00
56	46	36	8.0	2150.0	150.0	1.0	-	-
57	31	46	8.0	500.0	150.0	1.0	-	-
58	2	3	0.5	1200.0	150.0	1.0	-	-
61	49	50	12.0	3000.0	150.0	1.0	-	-
62	37	51	12.0	1000.0	150.0	1.0	4	-
63	0	49	12.0	40.0	150.0	1.0	-	1120.00
64	52	53	12.0	2150.0	150.0	1.0	-	-
65	53	2	12.0	2150.0	150.0	1.0	-	-

Pump data:

Pump	Data type	Pump data (flows are in GPM)					
1	3-pt head/flow	330.00	500.0	300.00	600.0	270.00	800.0
2	3-pt head/flow	320.00	750.0	300.00	1000.0	270.00	1250.0
3	3-pt head/flow	320.00	400.0	300.00	500.0	285.00	600.0
4	3-pt head/flow	300.00	200.0	290.00	260.0	270.00	340.0

Junction Node Data:

Node #	Demand (GPM)	Elev (ft)	Connecting Pipes
1	0.00	570.00	39, 40, 45
2	200.01	570.00	40, 58, 65
3	0.00	540.00	14, 15, 58
4	200.01	560.00	15, 16
5	200.01	580.00	16, 17
6	0.00	600.00	17, 18
7	219.99	660.00	19, 27
8	0.00	640.00	19, 20
9	153.02	650.00	20, 21
10	0.00	660.00	21, 22
12	153.02	740.00	1, 22, 23, 25
13	0.00	660.00	25, 26
14	0.00	720.00	23, 24
15	79.00	695.00	4, 5, 24, 34
16	49.02	730.00	3
17	0.00	710.00	5, 6, 33
18	0.00	680.00	32, 33
19	49.02	740.00	6, 7
20	0.00	720.00	7, 8
21	0.00	720.00	8, 9
22	0.00	690.00	31, 32
23	0.00	680.00	30, 31, 54
24	0.00	660.00	29, 30, 36, 37
25	92.02	770.00	35, 36

26	82.99	640.00	27,	28		
27	165.00	660.00	37,	38		
28	56.02	620.00	38,	39		
29	143.01	630.00	26,	28,	29	
30	6.01	720.00	3,	4		
31	86.99	740.00	2,	9,	41,	57
32	57.99	740.00	12,	13,	43	
33	142.02	700.00	12			
34	0.00	800.00	10,	11		
35	153.02	690.00	34,	35		
36	309.00	740.00	41,	42,	56	
37	108.00	800.00	42,	62		
38	0.00	830.00	11,	43,	44,	54
39	0.00	580.00	47,	48,	50,	51
40	0.00	580.00	45,	47,	50,	51
41	0.00	870.00	44,	49		
42	32.00	740.00	2			
45	0.00	870.00	1,	55		
46	0.00	740.00	10,	56,	57	
49	0.00	1100.00	52,	61,	63	
50	60.01	800.00	61			
51	273.00	860.00	52,	62		
52	57.99	680.00	13,	64		
53	58.98	650.00	64,	65		

There are PRV's in these lines: 14 18

An extended period simulation is specified - Simulation period: 8.00 hrs
Time increment: 1.000 hrs

data (elevations in feet):

Pipe	Max elev	Min elev	Diameter (ft)	Initial elev	Ext inflow (GPM)
49	898.0	874.0	70.0	898.0	0.0
55	898.0	874.0	70.0	898.0	0.0
63	1120.0	1104.0	40.0	1120.0	0.0

Pressure switch data:

Pipe	Node	Switch Grades (ft)	
47	41	898.0	885.0
50	41	898.0	880.0
51	41	898.0	883.0
62	49	1116.0	1104.0
42	37	865.0	890.0

Simulation Results - EPS Time: 0 hrs 0.0 min

Number of trials: 16
Convergence : 0.0002

Pipe	Nodes (Q--->)	Dia (in)	Length (ft)	Flow (GPM)	Vel (fps)	Losses (ft) Head	Minor	Pump Head	Hd Loss /1000 ft

1	45	12	12.0	500.0	814.20	2.31	0.66	0.08	-	1.50
2	31	42	8.0	1450.0	32.00	0.20	0.03	0.00	-	0.02
3	30	16	8.0	500.0	49.02	0.31	0.03	0.00	-	0.06
4	15	30	8.0	600.0	55.03	0.35	0.04	0.00	-	0.07
5	15	17	12.0	660.0	382.92	1.09	0.22	0.02	-	0.36
6	17	19	12.0	1200.0	574.66	1.63	0.84	0.04	-	0.73
7	19	20	12.0	1200.0	525.65	1.49	0.71	0.03	-	0.62
8	20	21	12.0	600.0	525.65	1.49	0.35	0.03	-	0.65
9	21	31	12.0	900.0	525.65	1.49	0.53	0.03	-	0.63
10	34	46	8.0	2200.0	343.34	2.19	4.26	0.07	-	1.97
11	38	34	10.0	900.0	343.34	1.40	0.59	0.03	-	0.69
12	32	33	12.0	1400.0	142.02	0.40	0.07	0.00	-	0.05
13	52	32	12.0	1700.0	426.64	1.21	0.68	0.02	-	0.42
14	0	3	12.0	1200.0	304.34	0.86	0.26	0.01	-	0.22
15	3	4	12.0	1200.0	306.84	0.87	0.26	0.01	-	0.23
16	4	5	12.0	1200.0	106.83	0.30	0.04	0.00	-	0.03
17	6	5	8.0	1200.0	93.18	0.59	0.21	0.01	-	0.18
18	0	6	8.0	2100.0	93.18	0.59	0.36	0.01	-	0.18
19	8	7	8.0	1450.0	144.23	0.92	0.56	0.01	-	0.40
20	9	8	8.0	650.0	144.23	0.92	0.25	0.01	-	0.41
21	10	9	8.0	1200.0	297.25	1.90	1.78	0.06	-	1.53
22	12	10	8.0	1200.0	297.25	1.90	1.78	0.06	-	1.53
23	12	14	8.0	1200.0	195.59	1.25	0.82	0.02	-	0.70
24	14	15	8.0	1000.0	195.59	1.25	0.68	0.02	-	0.71
25	12	13	8.0	840.0	168.35	1.07	0.43	0.02	-	0.54
26	13	29	8.0	1500.0	168.35	1.07	0.78	0.02	-	0.53
27	26	7	8.0	1140.0	168.74	1.08	0.59	0.02	-	0.54
28	29	26	8.0	2400.0	251.73	1.61	2.61	0.04	-	1.11
29	24	29	8.0	1200.0	226.38	1.44	1.07	0.03	-	0.92
30	23	24	12.0	900.0	229.68	0.65	0.11	0.01	-	0.13
31	23	22	8.0	780.0	191.74	1.22	0.51	0.02	-	0.69
32	22	18	8.0	480.0	191.74	1.22	0.32	0.02	-	0.71
33	18	17	8.0	1320.0	191.74	1.22	0.87	0.02	-	0.68
34	35	15	12.0	600.0	321.37	0.91	0.14	0.01	-	0.26
35	25	35	12.0	900.0	474.38	1.35	0.44	0.03	-	0.52
36	24	25	12.0	1100.0	566.40	1.61	0.75	0.04	-	0.72
37	27	24	12.0	1200.0	563.11	1.60	0.81	0.04	-	0.70
38	28	27	12.0	1200.0	728.11	2.07	1.30	0.07	-	1.14
39	1	28	12.0	2100.0	784.12	2.22	2.60	0.08	-	1.28
40	1	2	16.0	1020.0	1048.82	1.67	0.53	0.04	-	0.57
41	31	36	12.0	1620.0	563.22	1.60	1.09	0.04	-	0.70
42	36	37	12.0	20.0	441.00	1.25	0.01	0.02	-	1.64
43	32	38	12.0	960.0	226.63	0.64	0.12	0.01	-	0.13
44	41	38	24.0	450.0	538.13	0.38	0.01	0.00	-	0.03
45	40	1	24.0	100.0	1832.94	1.30	0.02	0.03	-	0.47
47	39	40	16.0	100.0	423.36	0.68	0.01	0.01	308.00	0.17
48	0	39	24.0	10.0	1832.94	1.30	0.00	0.03	-	2.83
49	0	41	24.0	50.0	538.13	0.38	0.00	0.00	-	0.07
50	39	40	16.0	100.0	882.12	1.41	0.04	0.03	308.05	0.69
51	39	40	16.0	100.0	527.46	0.84	0.01	0.01	308.01	0.26
52	51	49	12.0	1000.0	60.01	0.17	0.01	0.00	-	0.01
54	38	23	12.0	2100.0	421.42	1.20	0.82	0.02	-	0.40
55	0	45	12.0	10.0	814.20	2.31	0.01	0.08	-	9.61
56	46	36	8.0	2150.0	186.78	1.19	1.35	0.02	-	0.64
57	46	31	8.0	500.0	156.56	1.00	0.23	0.02	-	0.48
58	2	3	0.5	1200.0	2.50	4.09	186.71	0.26	-	155.81
61	49	50	12.0	3000.0	60.01	0.17	0.03	0.00	-	0.01
62	37	51	12.0	1000.0	333.01	0.94	0.25	0.01	272.45	0.27
--- Line 63 is shut off ---										
64	53	52	12.0	2150.0	484.64	1.37	1.09	0.03	-	0.52
65	2	53	12.0	2150.0	543.62	1.54	1.35	0.04	-	0.65

Node #	Elev (ft)	Demand (GPM)	Press (psi)	Head (ft)	Hydr Grade (ft)
1	570.00	0.00	148.32	342.28	912.28
2	570.00	200.01	148.07	341.70	911.70
3	540.00	0.00	80.05	184.73	724.73
4	560.00	200.01	71.26	164.46	724.46
5	580.00	200.01	62.58	144.42	724.42
6	600.00	0.00	54.01	124.63	724.63
7	660.00	219.99	100.81	232.65	892.65
8	640.00	0.00	109.73	253.22	893.22
9	650.00	153.02	105.51	243.49	893.49
10	660.00	0.00	101.97	235.32	895.32
12	740.00	153.02	68.10	157.16	897.16
13	660.00	0.00	102.57	236.70	896.70
14	720.00	0.00	76.40	176.31	896.31
15	695.00	79.00	86.93	200.61	895.61
16	730.00	49.02	71.73	165.54	895.54
17	710.00	0.00	80.33	185.37	895.37
18	680.00	0.00	93.71	216.26	896.26
19	740.00	49.02	66.95	154.49	894.49
20	720.00	0.00	75.29	173.75	893.75
21	720.00	0.00	75.12	173.36	893.36
22	690.00	0.00	89.53	206.60	896.60
23	680.00	0.00	94.09	217.14	897.14
24	660.00	0.00	102.71	237.02	897.02
25	770.00	92.02	54.70	126.23	896.23
26	640.00	82.99	109.74	253.26	893.26
27	660.00	165.00	107.57	248.24	908.24
28	620.00	56.02	125.49	289.60	909.60
29	630.00	143.01	115.23	265.91	895.91
30	720.00	6.01	76.08	175.57	895.57
31	740.00	86.99	66.21	152.79	892.79
32	740.00	57.99	68.51	158.11	898.11
33	700.00	142.02	85.81	198.03	898.03
34	800.00	0.00	42.19	97.37	897.37
35	690.00	153.02	89.16	205.76	895.76
36	740.00	309.00	70.22	162.04	902.04
37	800.00	108.00	44.20	102.01	902.01
38	830.00	0.00	29.46	67.98	897.98
39	580.00	0.00	6.05	13.97	593.97
40	580.00	0.00	139.51	321.95	901.95
41	870.00	0.00	12.13	28.00	898.00
42	740.00	32.00	66.19	152.76	892.76
45	870.00	0.00	12.09	27.90	897.90
46	740.00	0.00	66.31	153.03	893.03
49	1100.00	0.00	32.14	74.17	1174.17
50	800.00	60.01	162.13	374.14	1174.14
51	860.00	273.00	136.15	314.19	1174.19
52	680.00	57.99	99.32	229.19	909.19
53	650.00	58.98	112.80	260.31	910.31

Summary of inflows (+) and outflows (-):

Pipe #	Flow (GPM)
48	1832.94+
49	538.13+
55	814.20+

Net system demand: 3187 GPM

Maximum-Minimum Summary:

Pipe #	Vel (fps)	Pipe #	HL/1000 ft	Node #	Press (psi)
58	4.09	58	155.59	50	162.13
1	2.31	10	1.94	1	148.32
55	2.31	21	1.48	2	148.07
61	0.17	61	0.01	41	12.13
52	0.17	52	0.01	45	12.09
63	0.00	63	0.00	39	6.05

NOTE: 'HL/1000 ft' does NOT include Minor Losses; and Pipes with zero flow are not included under Minimum 'Vel (fps)'.

Switch occurs for pipe 62 at 0 hrs 0 min - next switch grade = 1104

Tank status report:

Pipe #	Pipe Flow (GPM)	Ext Flow (GPM)	Elev (ft)	Depth (ft)	Volume (gal)	Proj Elev (ft)
49	-538.1	0.0	898.0	24.0	690,922	896.9
55	-814.2	0.0	898.0	24.0	690,922	896.3
63	-0.0	0.0	1120.0	16.0	150,405	1120.0

********** System Data Change **********

Junction node changes:

Node #	New Demand (GPM)
25	1095.00

Global demand factor = 2

Simulation Results - EPS Time: 1 hrs 0.0 min

Number of trials: 10
Convergence : 0.0001

Pipe	Nodes (Q--->)		Dia (in)	Length (ft)	Flow (GPM)	Vel (fps)	Losses (ft) Head	Losses (ft) Minor	Pump Head	Hd Loss /1000 ft
1	45	12	12.0	500.0	2202.58	6.25	4.20	0.61	-	9.61
2	31	42	8.0	1450.0	64.01	0.41	0.13	0.00	-	0.09
3	30	16	8.0	500.0	98.03	0.63	0.09	0.01	-	0.20
4	15	30	8.0	600.0	110.06	0.70	0.14	0.01	-	0.25
5	17	15	12.0	660.0	90.78	0.26	0.02	0.00	-	0.02
6	17	19	12.0	1200.0	406.19	1.15	0.44	0.02	-	0.38
7	19	20	12.0	1200.0	308.16	0.87	0.26	0.01	-	0.23
8	20	21	12.0	600.0	308.16	0.87	0.13	0.01	-	0.24
9	21	31	12.0	900.0	308.16	0.87	0.20	0.01	-	0.23
10	34	46	8.0	2200.0	763.81	4.87	18.72	0.37	-	8.68
11	38	34	10.0	900.0	763.81	3.12	2.58	0.15	-	3.04
12	32	33	12.0	1400.0	284.04	0.81	0.26	0.01	-	0.20
13	32	52	12.0	1700.0	457.55	1.30	0.78	0.03	-	0.47
14	0	3	12.0	1200.0	610.83	1.73	0.94	0.05	-	0.82
15	3	4	12.0	1200.0	613.22	1.74	0.94	0.05	-	0.83

16	4	5	12.0	1200.0	213.20	0.60	0.13	0.01	-	0.12
17	6	5	8.0	1200.0	186.83	1.19	0.75	0.02	-	0.65
18	0	6	8.0	2100.0	186.83	1.19	1.32	0.02	-	0.64
19	8	7	8.0	1450.0	344.28	2.20	2.82	0.07	-	2.00
20	9	8	8.0	650.0	344.28	2.20	1.26	0.07	-	2.06
21	10	9	8.0	1200.0	650.31	4.15	7.58	0.27	-	6.54
22	12	10	8.0	1200.0	650.31	4.15	7.58	0.27	-	6.54
23	12	14	8.0	1200.0	712.83	4.55	8.98	0.32	-	7.76
24	14	15	8.0	1000.0	712.83	4.55	7.49	0.32	-	7.81
25	12	13	8.0	840.0	533.41	3.40	3.68	0.18	-	4.59
26	13	29	8.0	1500.0	533.41	3.40	6.56	0.18	-	4.50
27	26	7	8.0	1140.0	282.40	1.80	1.54	0.05	-	1.39
28	29	26	8.0	2400.0	448.39	2.86	7.62	0.13	-	3.23
29	24	29	8.0	1200.0	201.00	1.28	0.86	0.03	-	0.74
30	23	24	12.0	900.0	1283.98	3.64	2.78	0.21	-	3.32
31	23	22	8.0	780.0	496.97	3.17	2.99	0.16	-	4.04
32	22	18	8.0	480.0	496.97	3.17	1.84	0.16	-	4.16
33	18	17	8.0	1320.0	496.97	3.17	5.07	0.16	-	3.96
34	15	35	12.0	600.0	535.55	1.52	0.37	0.04	-	0.67
35	35	25	12.0	900.0	229.52	0.65	0.11	0.01	-	0.13
36	24	25	12.0	1100.0	1960.48	5.56	7.45	0.48	-	7.20
37	27	24	12.0	1200.0	877.50	2.49	1.83	0.10	-	1.61
38	28	27	12.0	1200.0	1207.50	3.43	3.31	0.18	-	2.91
39	1	28	12.0	2100.0	1319.54	3.74	6.83	0.22	-	3.35
40	1	2	16.0	1020.0	788.62	1.26	0.31	0.02	-	0.33
41	31	36	12.0	1620.0	548.54	1.56	1.04	0.04	-	0.66
42	36	37	12.0	20.0	215.99	0.61	0.00	0.01	-	0.41
43	38	32	12.0	960.0	857.58	2.43	1.41	0.09	-	1.56
44	41	38	24.0	450.0	3402.34	2.41	0.29	0.09	-	0.84
45	40	1	24.0	100.0	2108.16	1.50	0.03	0.03	-	0.61
47	39	40	16.0	100.0	502.56	0.80	0.01	0.01	299.68	0.23
48	0	39	24.0	10.0	2108.16	1.50	0.00	0.03	-	3.73
49	0	41	24.0	50.0	3402.34	2.41	0.03	0.09	-	2.45
50	39	40	16.0	100.0	1003.05	1.60	0.05	0.04	299.75	0.88
51	39	40	16.0	100.0	602.54	0.96	0.02	0.01	299.69	0.33
52	49	51	12.0	1000.0	545.99	1.55	0.63	0.04	-	0.67
54	38	23	12.0	2100.0	1780.95	5.05	11.90	0.40	-	5.85
55	0	45	12.0	10.0	2202.58	6.25	0.08	0.61	-	69.00
56	46	36	8.0	2150.0	285.45	1.82	2.96	0.05	-	1.40
57	46	31	8.0	500.0	478.36	3.05	1.79	0.14	-	3.87
58	2	3	0.5	1200.0	2.39	3.90	171.46	0.24	-	143.08
61	49	50	12.0	3000.0	120.03	0.34	0.12	0.00	-	0.04
--- Line 62 is shut off ---										
63	0	49	12.0	40.0	666.02	1.89	0.04	0.06	-	2.30
64	52	53	12.0	2150.0	341.57	0.97	0.57	0.01	-	0.27
65	53	2	12.0	2150.0	223.61	0.63	0.26	0.01	-	0.12

Node #	Elev (ft)	Demand (GPM)	Press (psi)	Head (ft)	Hydr Grade (ft)
1	570.00	0.00	141.29	326.06	896.06
2	570.00	400.02	141.14	325.72	895.72
3	540.00	0.00	79.74	184.02	724.02
4	560.00	400.02	70.64	163.03	723.03
5	580.00	400.02	61.92	142.89	722.89
6	600.00	0.00	53.59	123.66	723.66
7	660.00	439.97	91.38	210.88	870.88
8	640.00	0.00	101.30	233.77	873.77
9	650.00	306.03	97.55	225.11	875.11
10	660.00	0.00	96.62	222.96	882.96
12	740.00	306.03	65.35	150.81	890.81
13	660.00	0.00	98.35	226.95	886.95

14	720.00	0.00	69.98	161.50	881.50
15	695.00	158.00	77.43	178.69	873.69
16	730.00	98.03	62.16	143.44	873.44
17	710.00	0.00	70.94	163.71	873.71
18	680.00	0.00	86.20	198.93	878.93
19	740.00	98.03	57.74	133.25	873.25
20	720.00	0.00	66.29	152.97	872.97
21	720.00	0.00	66.23	152.83	872.83
22	690.00	0.00	82.74	190.93	880.93
23	680.00	0.00	88.44	204.08	884.08
24	660.00	0.00	95.81	221.09	881.09
25	770.00	2190.00	44.71	103.17	873.17
26	640.00	165.99	100.73	232.47	872.47
27	660.00	330.00	97.72	225.52	885.52
28	620.00	112.04	116.57	269.01	889.01
29	630.00	286.01	108.42	250.21	880.21
30	720.00	12.03	66.54	153.54	873.54
31	740.00	173.98	57.47	132.62	872.62
32	740.00	115.99	67.11	154.88	894.88
33	700.00	284.04	84.33	194.60	894.60
34	800.00	0.00	40.58	93.64	893.64
35	690.00	306.03	79.43	183.29	873.29
36	740.00	617.99	57.00	131.55	871.55
37	800.00	215.99	31.00	71.54	871.54
38	830.00	0.00	28.76	66.38	896.38
39	580.00	0.00	6.05	13.96	593.96
40	580.00	0.00	135.90	313.62	893.62
41	870.00	0.00	11.59	26.76	896.76
42	740.00	64.01	57.41	132.49	872.49
45	870.00	0.00	11.10	25.61	895.61
46	740.00	0.00	58.31	134.55	874.55
49	1100.00	0.00	8.63	19.91	1119.91
50	800.00	120.03	138.58	319.79	1119.79
51	860.00	545.99	112.34	259.24	1119.24
52	680.00	115.99	93.85	216.57	896.57
53	650.00	117.96	106.59	245.98	895.98

Summary of inflows (+) and outflows (-):

Pipe #	Flow (GPM)
48	2108.15+
49	3402.33+
55	2202.57+
63	666.01+

Net system demand: 8380.23 GPM

Maximum-Minimum Summary:

Pipe #	Vel (fps)	Pipe #	HL/1000 ft	Node #	Press (psi)
1	6.25	58	142.89	1	141.29
55	6.25	10	8.51	2	141.14
36	5.56	1	8.40	50	138.58
2	0.41	2	0.09	45	11.10
61	0.34	61	0.04	49	8.63
5	0.26	5	0.02	39	6.05

NOTE: 'HL/1000 ft' does NOT include Minor Losses; and Pipes with zero flow are not included under Minimum 'Vel (fps)'.

Tank status report:

Pipe #	Pipe Flow (GPM)	Ext Flow (GPM)	Elev (ft)	Depth (ft)	Volume (gal)	Proj Elev (ft)
49	-3402.3	0.0	896.9	22.9	658,636	889.8
	-2202.6	0.0	896.3	22.3	642,073	891.7
	-666.0	0.0	1120.0	16.0	150,405	1115.7

********** System Data Change **********

Junction node changes:

Node #	New Demand (GPM)
25	2095.00

Global demand factor = 1

Simulation Results - EPS Time: 2 hrs 0.0 min

Number of trials: 10
Convergence : 0.0004

Pipe	Nodes (Q--->)		Dia (in)	Length (ft)	Flow (GPM)	Vel (fps)	Losses (ft) Head	Losses (ft) Minor	Pump Head	Hd Loss /1000 ft
1	45	12	12.0	500.0	1409.92	4.00	1.84	0.25	-	4.17
2	31	42	8.0	1450.0	32.00	0.20	0.03	0.00	-	0.02
3	30	16	8.0	500.0	49.02	0.31	0.03	0.00	-	0.06
4	15	30	8.0	600.0	55.03	0.35	0.04	0.00	-	0.07
5	17	15	12.0	660.0	243.37	0.69	0.09	0.01	-	0.15
6	17	19	12.0	1200.0	104.77	0.30	0.04	0.00	-	0.03
7	19	20	12.0	1200.0	55.76	0.16	0.01	0.00	-	0.01
8	20	21	12.0	600.0	55.76	0.16	0.01	0.00	-	0.01
9	21	31	12.0	900.0	55.76	0.16	0.01	0.00	-	0.01
10	34	46	8.0	2200.0	480.22	3.06	7.93	0.15	-	3.67
11	38	34	10.0	900.0	480.22	1.96	1.09	0.06	-	1.28
12	32	33	12.0	1400.0	142.02	0.40	0.07	0.00	-	0.05
13	52	32	12.0	1700.0	408.64	1.16	0.63	0.02	-	0.38
14	0	3	12.0	1200.0	304.18	0.86	0.26	0.01	-	0.22
15	3	4	12.0	1200.0	306.86	0.87	0.26	0.01	-	0.23
16	4	5	12.0	1200.0	106.85	0.30	0.04	0.00	-	0.03
17	6	5	8.0	1200.0	93.16	0.59	0.21	0.01	-	0.18
18	0	6	8.0	2100.0	93.16	0.59	0.36	0.01	-	0.18
19	8	7	8.0	1450.0	210.35	1.34	1.13	0.03	-	0.80
20	9	8	8.0	650.0	210.35	1.34	0.51	0.03	-	0.82
21	10	9	8.0	1200.0	363.37	2.32	2.58	0.08	-	2.22
22	12	10	8.0	1200.0	363.37	2.32	2.58	0.08	-	2.22
23	12	14	8.0	1200.0	527.27	3.37	5.14	0.18	-	4.43
24	14	15	8.0	1000.0	527.27	3.37	4.28	0.18	-	4.46
25	12	13	8.0	840.0	366.27	2.34	1.83	0.08	-	2.28
26	13	29	8.0	1500.0	366.27	2.34	3.27	0.08	-	2.24
27	26	7	8.0	1140.0	102.46	0.65	0.23	0.01	-	0.21
28	29	26	8.0	2400.0	185.45	1.18	1.48	0.02	-	0.63
29	29	24	8.0	1200.0	37.81	0.24	0.04	0.00	-	0.03
30	23	24	12.0	900.0	710.82	2.02	0.93	0.06	-	1.10
31	23	22	8.0	780.0	348.15	2.22	1.55	0.08	-	2.08
32	22	18	8.0	480.0	348.15	2.22	0.95	0.08	-	2.15
33	18	17	8.0	1320.0	348.15	2.22	2.62	0.08	-	2.04

34	15	35	12.0	600.0	636.61	1.81	0.51	0.05	-	0.93
35	35	25	12.0	900.0	483.59	1.37	0.46	0.03	-	0.54
36	24	25	12.0	1100.0	1611.41	4.57	5.18	0.32	-	5.00
37	27	24	12.0	1200.0	862.78	2.45	1.78	0.09	-	1.56
38	28	27	12.0	1200.0	1027.78	2.92	2.46	0.13	-	2.16
39	1	28	12.0	2100.0	1083.80	3.07	4.74	0.15	-	2.33
40	1	2	16.0	1020.0	1029.66	1.64	0.52	0.04	-	0.55
41	31	36	12.0	1620.0	249.21	0.71	0.24	0.01	-	0.15
42	36	37	12.0	20.0	108.00	0.31	0.00	0.00	-	0.07
43	32	38	12.0	960.0	208.63	0.59	0.10	0.01	-	0.11
44	41	38	24.0	450.0	1330.55	0.94	0.05	0.01	-	0.14
45	40	1	24.0	100.0	2113.46	1.50	0.03	0.03	-	0.61
47	39	40	16.0	100.0	504.07	0.80	0.01	0.01	299.50	0.24
48	0	39	24.0	10.0	2113.46	1.50	0.00	0.03	-	3.75
49	0	41	24.0	50.0	1330.55	0.94	0.01	0.01	-	0.39
50	39	40	16.0	100.0	1005.30	1.60	0.05	0.04	299.56	0.88
51	39	40	16.0	100.0	604.08	0.96	0.02	0.01	299.51	0.33
52	49	51	12.0	1000.0	273.00	0.77	0.18	0.01	-	0.19
54	38	23	12.0	2100.0	1058.96	3.00	4.54	0.14	-	2.23
55	0	45	12.0	10.0	1409.92	4.00	0.04	0.25	-	28.51
56	46	36	8.0	2150.0	167.78	1.07	1.10	0.02	-	0.52
57	46	31	8.0	500.0	312.44	1.99	0.81	0.06	-	1.75
58	2	3	0.5	1200.0	2.68	4.39	212.88	0.30	-	177.65
61	49	50	12.0	3000.0	60.01	0.17	0.03	0.00	-	0.01
--- Line 62 is shut off ---										
63	0	49	12.0	40.0	333.01	0.94	0.01	0.01	-	0.60
64	53	52	12.0	2150.0	466.64	1.32	1.02	0.03	-	0.49
65	2	53	12.0	2150.0	525.62	1.49	1.27	0.03	-	0.61

e #	Elev (ft)	Demand (GPM)	Press (psi)	Head (ft)	Hydr Grade (ft)
1	570.00	0.00	159.67	368.46	938.46
2	570.00	200.01	159.43	367.91	937.91
3	540.00	0.00	80.05	184.73	724.73
4	560.00	200.01	71.26	164.46	724.46
5	580.00	200.01	62.58	144.42	724.42
6	600.00	0.00	54.01	124.63	724.63
7	660.00	219.99	96.34	222.32	882.32
8	640.00	0.00	105.51	243.48	883.48
9	650.00	153.02	101.41	234.02	884.02
10	660.00	0.00	98.23	226.68	886.68
12	740.00	153.02	64.71	149.34	889.34
13	660.00	0.00	98.55	227.42	887.42
14	720.00	0.00	71.08	164.03	884.03
15	695.00	79.00	79.98	184.57	879.57
16	730.00	49.02	64.78	149.50	879.50
17	710.00	0.00	73.52	169.67	879.67
18	680.00	0.00	87.69	202.37	882.37
19	740.00	49.02	60.51	139.63	879.63
20	720.00	0.00	69.17	159.62	879.62
21	720.00	0.00	69.17	159.61	879.61
22	690.00	0.00	83.80	193.40	883.40
23	680.00	0.00	88.84	205.02	885.02
24	660.00	0.00	97.08	224.03	884.03
25	770.00	2095.00	47.03	108.52	878.52
26	640.00	82.99	105.11	242.56	882.56
27	660.00	165.00	117.43	270.99	930.99
28	620.00	56.02	135.88	313.58	933.58
29	630.00	143.01	110.10	254.07	884.07
30	720.00	6.01	69.13	159.53	879.53
31	740.00	86.99	60.49	139.60	879.60

32	740.00	57.99	64.92	149.81	889.81
33	700.00	142.02	82.22	189.74	889.74
34	800.00	0.00	38.37	88.55	888.55
35	690.00	153.02	81.90	189.01	879.01
36	740.00	309.00	60.39	139.36	879.36
37	800.00	108.00	34.39	79.35	879.35
38	830.00	0.00	25.87	59.70	889.70
39	580.00	0.00	6.05	13.96	593.96
40	580.00	0.00	135.82	313.43	893.43
41	870.00	0.00	8.57	19.77	889.77
42	740.00	32.00	60.48	139.57	879.57
45	870.00	0.00	9.29	21.43	891.43
46	740.00	0.00	60.87	140.48	880.48
49	1100.00	0.00	6.81	15.73	1115.73
50	800.00	60.01	136.80	315.69	1115.69
51	860.00	273.00	110.73	255.54	1115.54
52	680.00	57.99	110.74	255.55	935.55
53	650.00	58.98	124.19	286.60	936.60

Summary of inflows (+) and outflows (-):

Pipe #	Flow (GPM)
48	2113.45+
49	1330.55+
55	1409.92+
63	333.00+

Net system demand: 5190.11 GPM

Maximum-Minimum Summary:

e #	Vel (fps)	Pipe #	HL/1000 ft	Node #	Press (psi)
36	4.57	58	177.40	1	159.67
58	4.39	36	4.71	2	159.43
1	4.00	23	4.28	50	136.80
9	0.16	9	0.01	41	8.57
8	0.16	8	0.01	49	6.81
7	0.16	7	0.01	39	6.05

NOTE: 'HL/1000 ft' does NOT include Minor Losses; and Pipes with zero flow are not included under Minimum 'Vel (fps)'.

Tank status report:

Pipe #	Pipe Flow (GPM)	Ext Flow (GPM)	Elev (ft)	Depth (ft)	Volume (gal)	Proj Elev (ft)
49	-1330.6	0.0	889.8	15.8	454,509	887.0
55	-1409.9	0.0	891.7	17.7	509,927	888.8
63	-333.0	0.0	1115.7	11.7	110,446	1113.6

********** System Data Change **********

Junction node changes:

Node #	New Demand (GPM)
25	92.00

Global demand factor = 1

Simulation Results - EPS Time: 3 hrs 0.0 min

Number of trials: 14
Convergence : 0.0004

Pipe	Nodes (Q--->)		Dia (in)	Length (ft)	Flow (GPM)	Vel (fps)	Losses (ft) Head	Minor	Pump Head	Hd Loss /1000 ft
1	45	12	12.0	500.0	854.61	2.42	0.73	0.09	-	1.64
2	31	42	8.0	1450.0	32.00	0.20	0.03	0.00	-	0.02
3	30	16	8.0	500.0	49.02	0.31	0.03	0.00	-	0.06
4	15	30	8.0	600.0	55.03	0.35	0.04	0.00	-	0.07
5	15	17	12.0	660.0	249.13	0.71	0.10	0.01	-	0.16
6	17	19	12.0	1200.0	379.46	1.08	0.39	0.02	-	0.34
7	19	20	12.0	1200.0	330.45	0.94	0.30	0.01	-	0.26
8	20	21	12.0	600.0	330.45	0.94	0.15	0.01	-	0.27
9	21	31	12.0	900.0	330.45	0.94	0.23	0.01	-	0.27
10	34	46	8.0	2200.0	205.54	1.31	1.65	0.03	-	0.76
11	38	34	10.0	900.0	205.54	0.84	0.23	0.01	-	0.26
12	32	33	12.0	1400.0	142.02	0.40	0.07	0.00	-	0.05
13	52	32	12.0	1700.0	582.72	1.65	1.22	0.04	-	0.74
14	0	3	12.0	1200.0	304.43	0.86	0.26	0.01	-	0.22
15	3	4	12.0	1200.0	306.83	0.87	0.26	0.01	-	0.23
16	4	5	12.0	1200.0	106.82	0.30	0.04	0.00	-	0.03
17	6	5	8.0	1200.0	93.19	0.59	0.21	0.01	-	0.18
18	0	6	8.0	2100.0	93.19	0.59	0.36	0.01	-	0.18
19	8	7	8.0	1450.0	151.43	0.97	0.62	0.01	-	0.43
20	9	8	8.0	650.0	151.43	0.97	0.28	0.01	-	0.45
21	10	9	8.0	1200.0	304.45	1.94	1.86	0.06	-	1.60
22	12	10	8.0	1200.0	304.45	1.94	1.86	0.06	-	1.60
23	12	14	8.0	1200.0	200.39	1.28	0.86	0.03	-	0.74
24	14	15	8.0	1000.0	200.39	1.28	0.71	0.03	-	0.74
25	12	13	8.0	840.0	196.75	1.26	0.58	0.02	-	0.72
26	13	29	8.0	1500.0	196.75	1.26	1.04	0.02	-	0.71
27	26	7	8.0	1140.0	162.11	1.03	0.55	0.02	-	0.50
28	29	26	8.0	2400.0	245.11	1.56	2.49	0.04	-	1.05
29	24	29	8.0	1200.0	191.36	1.22	0.79	0.02	-	0.67
30	24	23	12.0	900.0	60.99	0.17	0.01	0.00	-	0.01
31	23	22	8.0	780.0	130.34	0.83	0.25	0.01	-	0.34
32	22	18	8.0	480.0	130.34	0.83	0.15	0.01	-	0.34
33	18	17	8.0	1320.0	130.34	0.83	0.42	0.01	-	0.33
34	35	15	12.0	600.0	182.77	0.52	0.05	0.00	-	0.09
35	25	35	12.0	900.0	335.78	0.95	0.23	0.01	-	0.27
36	24	25	12.0	1100.0	427.78	1.21	0.44	0.02	-	0.42
37	27	24	12.0	1200.0	680.14	1.93	1.14	0.06	-	1.00
38	28	27	12.0	1200.0	845.14	2.40	1.71	0.09	-	1.50
39	1	28	12.0	2100.0	901.16	2.56	3.37	0.10	-	1.65
40	1	2	16.0	1020.0	1209.67	1.93	0.70	0.06	-	0.74
41	31	36	12.0	1620.0	311.05	0.88	0.36	0.01	-	0.23
42	36	37	12.0	20.0	108.00	0.31	0.00	0.00	-	0.07
43	32	38	12.0	960.0	382.70	1.09	0.32	0.02	-	0.35
44	38	41	24.0	450.0	107.82	0.08	0.00	0.00	-	0.00
45	40	1	24.0	100.0	2110.83	1.50	0.03	0.03	-	0.61
47	39	40	16.0	100.0	503.32	0.80	0.01	0.01	299.59	0.23
48	0	39	24.0	10.0	2110.83	1.50	0.00	0.03	-	3.74
49	41	0	24.0	50.0	107.82	0.08	0.00	0.00	-	0.00
50	39	40	16.0	100.0	1004.19	1.60	0.05	0.04	299.65	0.88
51	39	40	16.0	100.0	603.32	0.96	0.02	0.01	299.60	0.33
52	49	51	12.0	1000.0	273.00	0.77	0.18	0.01	-	0.19

54	38	23	12.0	2100.0	69.35	0.20	0.03	0.00	-	0.01
55	0	45	12.0	10.0	854.61	2.42	0.01	0.09	-	10.58
56	46	36	8.0	2150.0	105.95	0.68	0.47	0.01	-	0.22
57	46	31	8.0	500.0	99.59	0.64	0.10	0.01	-	0.21
58	2	3	0.5	1200.0	2.40	3.92	173.21	0.24	-	144.54
61	49	50	12.0	3000.0	60.01	0.17	0.03	0.00	-	0.01
Line 62 is shut off ---										
63	0	49	12.0	40.0	333.01	0.94	0.01	0.01	-	0.60
64	53	52	12.0	2150.0	640.71	1.82	1.83	0.05	-	0.88
65	2	53	12.0	2150.0	699.69	1.98	2.16	0.06	-	1.03

Node #	Elev (ft)	Demand (GPM)	Press (psi)	Head (ft)	Hydr Grade (ft)
1	570.00	0.00	142.54	328.93	898.93
2	570.00	200.01	142.21	328.18	898.18
3	540.00	0.00	80.05	184.73	724.73
4	560.00	200.01	71.26	164.46	724.46
5	580.00	200.01	62.58	144.42	724.42
6	600.00	0.00	54.01	124.63	724.63
7	660.00	219.99	96.67	223.09	883.09
8	640.00	0.00	105.61	243.72	883.72
9	650.00	153.02	101.41	234.02	884.02
10	660.00	0.00	97.90	225.93	885.93
12	740.00	153.02	64.07	147.85	887.85
13	660.00	0.00	98.47	227.25	887.25
14	720.00	0.00	72.35	166.97	886.97
15	695.00	79.00	82.87	191.23	886.23
16	730.00	49.02	67.67	156.16	886.16
17	710.00	0.00	76.32	176.12	886.12
18	680.00	0.00	89.51	206.56	886.56
19	740.00	49.02	63.14	145.72	885.72
20	720.00	0.00	71.67	165.40	885.40
21	720.00	0.00	71.60	165.24	885.24
22	690.00	0.00	85.25	196.72	886.72
23	680.00	0.00	89.69	206.99	886.99
24	660.00	0.00	98.36	227.00	887.00
25	770.00	92.00	50.50	116.53	886.53
26	640.00	82.99	105.59	243.66	883.66
27	660.00	165.00	101.25	233.66	893.66
28	620.00	56.02	119.36	275.46	895.46
29	630.00	143.01	111.01	256.19	886.19
30	720.00	6.01	72.01	166.19	886.19
31	740.00	86.99	62.83	145.00	885.00
32	740.00	57.99	63.85	147.35	887.35
33	700.00	142.02	81.15	187.27	887.27
34	800.00	0.00	37.60	86.78	886.78
35	690.00	153.02	85.06	196.28	886.28
36	740.00	309.00	62.67	144.63	884.63
37	800.00	108.00	36.67	84.62	884.62
38	830.00	0.00	24.71	57.02	887.02
39	580.00	0.00	6.05	13.96	593.96
40	580.00	0.00	135.86	313.53	893.53
41	870.00	0.00	7.37	17.02	887.02
42	740.00	32.00	62.82	144.97	884.97
45	870.00	0.00	8.09	18.67	888.67
46	740.00	0.00	62.88	145.10	885.10
49	1100.00	0.00	5.89	13.60	1113.60
50	800.00	60.01	135.88	313.57	1113.57
51	860.00	273.00	109.81	253.41	1113.41
52	680.00	57.99	92.76	214.07	894.07
53	650.00	58.98	106.58	245.96	895.96

Summary of inflows (+) and outflows (-):

Pipe #	Flow (GPM)
48	2110.82+
49	107.83-
55	854.61+
63	333.00+

Net system demand: 3187.11 GPM

Maximum-Minimum Summary:

Pipe #	Vel (fps)	Pipe #	HL/1000 ft	Node #	Press (psi)
58	3.92	58	144.34	1	142.54
39	2.56	39	1.60	2	142.21
1	2.42	21	1.55	50	135.88
61	0.17	61	0.01	41	7.37
49	0.08	49	0.00	39	6.05
44	0.08	44	0.00	49	5.89

NOTE: 'HL/1000 ft' does NOT include Minor Losses; and Pipes with zero flow are not included under Minimum 'Vel (fps)'.

Tank status report:

Pipe #	Pipe Flow (GPM)	Ext Flow (GPM)	Elev (ft)	Depth (ft)	Volume (gal)	Proj Elev (ft)
	107.8	0.0	887.0	13.0	374,681	887.2
55	-854.6	0.0	888.8	14.8	425,337	887.0
63	-333.0	0.0	1113.6	9.6	90,467	1111.5

Simulation Results - EPS Time: 4 hrs 0.0 min

Number of trials: 14
Convergence : 0.0004

Pipe	Nodes (Q--->)		Dia (in)	Length (ft)	Flow (GPM)	Vel (fps)	Losses (ft) Head	Losses (ft) Minor	Pump Head	Hd Loss /1000 ft
1	45	12	12.0	500.0	682.09	1.93	0.48	0.06	-	1.07
2	31	42	8.0	1450.0	32.00	0.20	0.03	0.00	-	0.02
3	30	16	8.0	500.0	49.02	0.31	0.03	0.00	-	0.06
4	15	30	8.0	600.0	55.03	0.35	0.04	0.00	-	0.07
5	15	17	12.0	660.0	210.59	0.60	0.07	0.01	-	0.12
6	17	19	12.0	1200.0	360.79	1.02	0.35	0.02	-	0.31
7	19	20	12.0	1200.0	311.78	0.88	0.27	0.01	-	0.23
8	20	21	12.0	600.0	311.78	0.88	0.13	0.01	-	0.24
9	21	31	12.0	900.0	311.78	0.88	0.20	0.01	-	0.24
10	34	46	8.0	2200.0	224.21	1.43	1.93	0.03	-	0.89
11	38	34	10.0	900.0	224.21	0.92	0.27	0.01	-	0.31
12	32	33	12.0	1400.0	142.02	0.40	0.07	0.00	-	0.05
13	52	32	12.0	1700.0	574.69	1.63	1.19	0.04	-	0.72
14	0	3	12.0	1200.0	304.43	0.86	0.26	0.01	-	0.22
15	3	4	12.0	1200.0	306.83	0.87	0.26	0.01	-	0.23
16	4	5	12.0	1200.0	106.82	0.30	0.04	0.00	-	0.03
17	6	5	8.0	1200.0	93.19	0.59	0.21	0.01	-	0.18

18	0	6	8.0	2100.0	93.19	0.59	0.36	0.01	-	0.18
19	8	7	8.0	1450.0	138.14	0.88	0.52	0.01	-	0.37
20	9	8	8.0	650.0	138.14	0.88	0.23	0.01	-	0.38
21	10	9	8.0	1200.0	291.16	1.86	1.71	0.05	-	1.47
22	12	10	8.0	1200.0	291.16	1.86	1.71	0.05	-	1.47
23	12	14	8.0	1200.0	99.41	0.63	0.23	0.01	-	0.20
24	14	15	8.0	1000.0	99.41	0.63	0.19	0.01	-	0.20
25	12	13	8.0	840.0	138.51	0.88	0.30	0.01	-	0.37
26	13	29	8.0	1500.0	138.51	0.88	0.54	0.01	-	0.37
27	26	7	8.0	1140.0	175.33	1.12	0.64	0.02	-	0.57
28	29	26	8.0	2400.0	258.33	1.65	2.74	0.04	-	1.16
29	24	29	8.0	1200.0	262.82	1.68	1.42	0.04	-	1.22
30	23	24	12.0	900.0	66.44	0.19	0.01	0.00	-	0.01
31	23	22	8.0	780.0	150.21	0.96	0.33	0.01	-	0.44
32	22	18	8.0	480.0	150.21	0.96	0.20	0.01	-	0.45
33	18	17	8.0	1320.0	150.21	0.96	0.55	0.01	-	0.43
34	35	15	12.0	600.0	245.21	0.70	0.09	0.01	-	0.16
35	25	35	12.0	900.0	398.22	1.13	0.32	0.02	-	0.38
36	24	25	12.0	1100.0	490.22	1.39	0.57	0.03	-	0.55
37	27	24	12.0	1200.0	686.60	1.95	1.16	0.06	-	1.02
38	28	27	12.0	1200.0	851.60	2.42	1.73	0.09	-	1.52
39	1	28	12.0	2100.0	907.62	2.57	3.41	0.10	-	1.67
40	1	2	16.0	1020.0	1201.00	1.92	0.69	0.06	-	0.73
41	31	36	12.0	1620.0	308.01	0.87	0.36	0.01	-	0.23
42	36	37	12.0	20.0	108.00	0.31	0.00	0.00	-	0.07
43	32	38	12.0	960.0	374.68	1.06	0.30	0.02	-	0.33
44	41	38	24.0	450.0	66.18	0.05	0.00	0.00	-	0.00
45	40	1	24.0	100.0	2108.62	1.50	0.03	0.03	-	0.61
47	39	40	16.0	100.0	502.70	0.80	0.01	0.01	299.67	0.23
48	0	39	24.0	10.0	2108.62	1.50	0.00	0.03	-	3.74
49	0	41	24.0	50.0	66.18	0.05	0.00	0.00	-	0.00
50	39	40	16.0	100.0	1003.25	1.60	0.05	0.04	299.73	0.88
51	39	40	16.0	100.0	602.68	0.96	0.02	0.01	299.68	0.33
52	49	51	12.0	1000.0	273.00	0.77	0.18	0.01	-	0.19
54	38	23	12.0	2100.0	216.65	0.61	0.24	0.01	-	0.12
55	0	45	12.0	10.0	682.09	1.93	0.01	0.06	-	6.77
56	46	36	8.0	2150.0	108.98	0.70	0.50	0.01	-	0.23
57	46	31	8.0	500.0	115.23	0.74	0.13	0.01	-	0.27
58	2	3	0.5	1200.0	2.40	3.93	173.46	0.24	-	144.75
61	49	50	12.0	3000.0	60.01	0.17	0.03	0.00	-	0.01
--- Line 62 is shut off ---										
63	0	49	12.0	40.0	333.01	0.94	0.01	0.01	-	0.60
64	53	52	12.0	2150.0	632.68	1.79	1.79	0.05	-	0.86
65	2	53	12.0	2150.0	691.66	1.96	2.11	0.06	-	1.01

Node #	Elev (ft)	Demand (GPM)	Press (psi)	Head (ft)	Hydr Grade (ft)
1	570.00	0.00	142.64	329.18	899.18
2	570.00	200.01	142.32	328.43	898.43
3	540.00	0.00	80.05	184.73	724.73
4	560.00	200.01	71.26	164.46	724.46
5	580.00	200.01	62.58	144.42	724.42
6	600.00	0.00	54.01	124.63	724.63
7	660.00	219.99	96.24	222.08	882.08
8	640.00	0.00	105.13	242.61	882.61
9	650.00	153.02	100.91	232.86	882.86
10	660.00	0.00	97.34	224.62	884.62
12	740.00	153.02	63.43	146.39	886.39
13	660.00	0.00	97.97	226.07	886.07
14	720.00	0.00	72.00	166.15	886.15
15	695.00	79.00	82.74	190.95	885.95

16	730.00	49.02	67.55	155.88	885.88
17	710.00	0.00	76.21	175.87	885.87
18	680.00	0.00	89.46	206.44	886.44
19	740.00	49.02	63.05	145.50	885.50
20	720.00	0.00	71.59	165.22	885.22
21	720.00	0.00	71.53	165.07	885.07
22	690.00	0.00	85.22	196.65	886.65
23	680.00	0.00	89.70	206.99	886.99
24	660.00	0.00	98.36	226.98	886.98
25	770.00	92.00	50.43	116.38	886.38
26	640.00	82.99	105.19	242.74	882.74
27	660.00	165.00	101.33	233.83	893.83
28	620.00	56.02	119.45	275.66	895.66
29	630.00	143.01	110.73	255.52	885.52
30	720.00	6.01	71.89	165.91	885.91
31	740.00	86.99	62.77	144.86	884.86
32	740.00	57.99	63.94	147.56	887.56
33	700.00	142.02	81.24	187.48	887.48
34	800.00	0.00	37.68	86.96	886.96
35	690.00	153.02	84.95	196.04	886.04
36	740.00	309.00	62.61	144.49	884.49
37	800.00	108.00	36.61	84.49	884.49
38	830.00	0.00	24.80	57.24	887.24
39	580.00	0.00	6.05	13.96	593.96
40	580.00	0.00	135.90	313.61	893.61
41	870.00	0.00	7.47	17.24	887.24
42	740.00	32.00	62.76	144.82	884.82
45	870.00	0.00	7.33	16.93	886.93
46	740.00	0.00	62.83	144.99	884.99
49	1100.00	0.00	4.97	11.47	1111.47
50	800.00	60.01	134.96	311.44	1111.44
[illegible]	860.00	273.00	108.89	251.29	1111.29
52	680.00	57.99	92.91	214.42	894.42
53	650.00	58.98	106.71	246.26	896.26

Summary of inflows (+) and outflows (-):

Pipe #	Flow (GPM)
48	2108.62+
49	66.17+
55	682.09+
63	333.00+

Net system demand: 3187.11 GPM

Maximum-Minimum Summary:

Pipe #	Vel (fps)	Pipe #	HL/1000 ft	Node #	Press (psi)
58	3.93	58	144.55	1	142.64
39	2.57	39	1.63	2	142.32
38	2.42	38	1.44	40	135.90
61	0.17	61	0.01	45	7.33
49	0.05	49	0.00	39	6.05
44	0.05	44	0.00	49	4.97

: 'HL/1000 ft' does NOT include Minor Losses; and Pipes with zero flow are not included under Minimum 'Vel (fps)'.

Tank status report:

Pipe	Pipe Flow	Ext Flow	Elev	Depth	Volume	Proj Elev

#	(GPM)	(GPM)	(ft)	(ft)	(gal)	(ft)
49	-66.2	0.0	887.2	13.2	381,150	887.1
55	-682.1	0.0	887.0	13.0	374,064	885.6
63	-333.0	0.0	1111.5	7.5	70,488	1109.4

Simulation Results - EPS Time: 5 hrs 0.0 min

Number of trials: 14
Convergence : 0.0003

Pipe	Nodes (Q--->)		Dia (in)	Length (ft)	Flow (GPM)	Vel (fps)	Losses (ft) Head	Minor	Pump Head	Hd Loss /1000 ft
1	45	12	12.0	500.0	538.78	1.53	0.31	0.04	-	0.69
2	31	42	8.0	1450.0	32.00	0.20	0.03	0.00	-	0.02
3	30	16	8.0	500.0	49.02	0.31	0.03	0.00	-	0.06
4	15	30	8.0	600.0	55.03	0.35	0.04	0.00	-	0.07
5	15	17	12.0	660.0	166.81	0.47	0.05	0.00	-	0.08
6	17	19	12.0	1200.0	338.69	0.96	0.31	0.01	-	0.27
7	19	20	12.0	1200.0	289.68	0.82	0.24	0.01	-	0.20
8	20	21	12.0	600.0	289.68	0.82	0.12	0.01	-	0.21
9	21	31	12.0	900.0	289.68	0.82	0.18	0.01	-	0.21
10	34	46	8.0	2200.0	246.30	1.57	2.30	0.04	-	1.06
11	38	34	10.0	900.0	246.30	1.01	0.32	0.02	-	0.37
12	32	33	12.0	1400.0	142.02	0.40	0.07	0.00	-	0.05
13	52	32	12.0	1700.0	568.00	1.61	1.16	0.04	-	0.71
14	0	3	12.0	1200.0	304.44	0.86	0.26	0.01	-	0.22
15	3	4	12.0	1200.0	306.83	0.87	0.26	0.01	-	0.23
16	4	5	12.0	1200.0	106.82	0.30	0.04	0.00	-	0.03
17	6	5	8.0	1200.0	93.19	0.59	0.21	0.01	-	0.18
18	0	6	8.0	2100.0	93.19	0.59	0.36	0.01	-	0.18
19	8	7	8.0	1450.0	132.56	0.85	0.48	0.01	-	0.34
20	9	8	8.0	650.0	132.56	0.85	0.22	0.01	-	0.35
21	10	9	8.0	1200.0	285.57	1.82	1.65	0.05	-	1.42
22	12	10	8.0	1200.0	285.57	1.82	1.65	0.05	-	1.42
23	14	12	8.0	1200.0	6.31	0.04	0.00	0.00	-	0.00
24	15	14	8.0	1000.0	6.31	0.04	0.00	0.00	-	0.00
25	12	13	8.0	840.0	106.50	0.68	0.19	0.01	-	0.23
26	13	29	8.0	1500.0	106.50	0.68	0.33	0.01	-	0.23
27	26	7	8.0	1140.0	180.95	1.15	0.67	0.02	-	0.61
28	29	26	8.0	2400.0	263.94	1.68	2.85	0.04	-	1.21
29	24	29	8.0	1200.0	300.45	1.92	1.81	0.06	-	1.56
30	23	24	12.0	900.0	152.33	0.43	0.05	0.00	-	0.06
31	23	22	8.0	780.0	171.89	1.10	0.42	0.02	-	0.56
32	22	18	8.0	480.0	171.89	1.10	0.26	0.02	-	0.58
33	18	17	8.0	1320.0	171.89	1.10	0.71	0.02	-	0.55
34	35	15	12.0	600.0	307.15	0.87	0.13	0.01	-	0.24
35	25	35	12.0	900.0	460.17	1.31	0.42	0.03	-	0.49
36	24	25	12.0	1100.0	552.17	1.57	0.71	0.04	-	0.68
37	27	24	12.0	1200.0	700.28	1.99	1.21	0.06	-	1.06
38	28	27	12.0	1200.0	865.28	2.45	1.79	0.09	-	1.57
39	1	28	12.0	2100.0	921.30	2.61	3.51	0.11	-	1.72
40	1	2	16.0	1020.0	1194.61	1.91	0.68	0.06	-	0.72
41	31	36	12.0	1620.0	304.10	0.86	0.35	0.01	-	0.22
42	36	37	12.0	20.0	108.00	0.31	0.00	0.00	-	0.07
43	32	38	12.0	960.0	367.99	1.04	0.29	0.02	-	0.32
44	41	38	24.0	450.0	202.54	0.14	0.00	0.00	-	0.00
45	40	1	24.0	100.0	2115.91	1.50	0.03	0.03	-	0.62
47	39	40	16.0	100.0	504.77	0.81	0.01	0.01	299.41	0.24

48	0	39	24.0	10.0	2115.91	1.50	0.00	0.03	-	3.76
49	0	41	24.0	50.0	202.54	0.14	0.00	0.00	-	0.00
50	39	40	16.0	100.0	1006.35	1.61	0.05	0.04	299.47	0.89
51	39	40	16.0	100.0	604.80	0.97	0.02	0.01	299.42	0.33
52	49	51	12.0	1000.0	273.00	0.77	0.18	0.01	-	0.19
54	38	23	12.0	2100.0	324.22	0.92	0.51	0.01	-	0.25
55	0	45	12.0	10.0	538.78	1.53	0.01	0.04	-	4.25
56	46	36	8.0	2150.0	112.90	0.72	0.53	0.01	-	0.25
57	46	31	8.0	500.0	133.41	0.85	0.17	0.01	-	0.36
58	2	3	0.5	1200.0	2.40	3.92	172.59	0.24	-	144.02
61	49	50	12.0	3000.0	60.01	0.17	0.03	0.00	-	0.01
--- Line 62 is shut off ---										
63	0	49	12.0	40.0	333.01	0.94	0.01	0.01	-	0.60
64	53	52	12.0	2150.0	625.99	1.78	1.76	0.05	-	0.84
65	2	53	12.0	2150.0	684.97	1.94	2.08	0.06	-	0.99

Node #	Elev (ft)	Demand (GPM)	Press (psi)	Head (ft)	Hydr Grade (ft)
1	570.00	0.00	142.26	328.29	898.29
2	570.00	200.01	141.94	327.55	897.55
3	540.00	0.00	80.05	184.73	724.73
4	560.00	200.01	71.26	164.46	724.46
5	580.00	200.01	62.58	144.42	724.42
6	600.00	0.00	54.01	124.63	724.63
7	660.00	219.99	95.79	221.06	881.06
8	640.00	0.00	104.67	241.55	881.55
9	650.00	153.02	100.44	231.78	881.78
10	660.00	0.00	96.84	223.48	883.48
12	740.00	153.02	62.91	145.18	885.18
13	660.00	0.00	97.50	224.99	884.99
14	720.00	0.00	71.58	165.19	885.19
15	695.00	79.00	82.41	190.19	885.19
16	730.00	49.02	67.22	155.12	885.12
17	710.00	0.00	75.89	175.14	885.14
18	680.00	0.00	89.21	205.86	885.86
19	740.00	49.02	62.75	144.81	884.81
20	720.00	0.00	71.31	164.56	884.56
21	720.00	0.00	71.25	164.43	884.43
22	690.00	0.00	84.99	196.14	886.14
23	680.00	0.00	89.52	206.58	886.58
24	660.00	0.00	98.16	226.52	886.52
25	770.00	92.00	50.17	115.77	885.77
26	640.00	82.99	104.76	241.75	881.75
27	660.00	165.00	100.88	232.80	892.80
28	620.00	56.02	119.03	274.67	894.67
29	630.00	143.01	110.35	254.65	884.65
30	720.00	6.01	71.56	165.15	885.15
31	740.00	86.99	62.51	144.25	884.25
32	740.00	57.99	63.88	147.41	887.41
33	700.00	142.02	81.18	187.33	887.33
34	800.00	0.00	37.60	86.77	886.77
35	690.00	153.02	84.64	195.33	885.33
36	740.00	309.00	62.35	143.89	883.89
37	800.00	108.00	36.35	83.89	883.89
38	830.00	0.00	24.74	57.10	887.10
39	580.00	0.00	6.05	13.96	593.96
40	580.00	0.00	135.78	313.35	893.35
41	870.00	0.00	7.41	17.10	887.10
42	740.00	32.00	62.49	144.21	884.21
45	870.00	0.00	6.73	15.53	885.53
46	740.00	0.00	62.58	144.43	884.43

49	1100.00	0.00	4.05	9.35	1109.35
50	800.00	60.01	134.04	309.32	1109.32
51	860.00	273.00	107.97	249.16	1109.16
52	680.00	57.99	92.57	213.62	893.62
53	650.00	58.98	106.35	245.42	895.42

Summary of inflows (+) and outflows (-):

Pipe #	Flow (GPM)
48	2115.91+
49	202.53+
55	538.78+
63	333.00+

Net system demand: 3187.11 GPM

Maximum-Minimum Summary:

Pipe #	Vel (fps)	Pipe #	HL/1000 ft	Node #	Press (psi)
58	3.92	58	143.82	1	142.26
39	2.61	39	1.67	2	141.94
38	2.45	29	1.51	40	135.78
44	0.14	49	0.00	45	6.73
24	0.04	23	0.00	39	6.05
23	0.04	24	0.00	49	4.05

NOTE: 'HL/1000 ft' does NOT include Minor Losses; and Pipes with zero flow are not included under Minimum 'Vel (fps)'.

k status report:

Pipe #	Pipe Flow (GPM)	Ext Flow (GPM)	Elev (ft)	Depth (ft)	Volume (gal)	Proj Elev (ft)
49	-202.5	0.0	887.1	13.1	377,180	886.7
55	-538.8	0.0	885.6	11.6	333,141	884.4
63	-333.0	0.0	1109.4	5.4	50,509	1107.2

Simulation Results - EPS Time: 6 hrs 0.0 min

Number of trials: 14
Convergence : 0.0003

Pipe	Nodes (Q--->)		Dia (in)	Length (ft)	Flow (GPM)	Vel (fps)	Losses (ft) Head	Losses (ft) Minor	Pump Head	Hd Loss /1000 ft
1	45	12	12.0	500.0	458.19	1.30	0.23	0.03	-	0.51
2	31	42	8.0	1450.0	32.00	0.20	0.03	0.00	-	0.02
3	30	16	8.0	500.0	49.02	0.31	0.03	0.00	-	0.06
4	15	30	8.0	600.0	55.03	0.35	0.04	0.00	-	0.07
5	15	17	12.0	660.0	140.79	0.40	0.03	0.00	-	0.06
6	17	19	12.0	1200.0	325.28	0.92	0.29	0.01	-	0.25
7	19	20	12.0	1200.0	276.26	0.78	0.22	0.01	-	0.19
8	20	21	12.0	600.0	276.26	0.78	0.11	0.01	-	0.20
9	21	31	12.0	900.0	276.26	0.78	0.16	0.01	-	0.19
10	34	46	8.0	2200.0	259.72	1.66	2.54	0.04	-	1.17
11	38	34	10.0	900.0	259.72	1.06	0.35	0.02	-	0.41
12	32	33	12.0	1400.0	142.02	0.40	0.07	0.00	-	0.05

13	52	32	12.0	1700.0	567.22	1.61	1.16	0.04	-	0.70
14	0	3	12.0	1200.0	304.44	0.86	0.26	0.01	-	0.22
15	3	4	12.0	1200.0	306.83	0.87	0.26	0.01	-	0.23
16	4	5	12.0	1200.0	106.82	0.30	0.04	0.00	-	0.03
17	6	5	8.0	1200.0	93.19	0.59	0.21	0.01	-	0.18
18	0	6	8.0	2100.0	93.19	0.59	0.36	0.01	-	0.18
19	8	7	8.0	1450.0	130.01	0.83	0.46	0.01	-	0.33
20	9	8	8.0	650.0	130.01	0.83	0.21	0.01	-	0.34
21	10	9	8.0	1200.0	283.03	1.81	1.62	0.05	-	1.40
22	12	10	8.0	1200.0	283.03	1.81	1.62	0.05	-	1.40
23	14	12	8.0	1200.0	66.72	0.43	0.11	0.00	-	0.10
24	15	14	8.0	1000.0	66.72	0.43	0.09	0.00	-	0.10
25	12	13	8.0	840.0	88.87	0.57	0.13	0.00	-	0.16
26	13	29	8.0	1500.0	88.87	0.57	0.24	0.00	-	0.16
27	26	7	8.0	1140.0	183.50	1.17	0.69	0.02	-	0.63
28	29	26	8.0	2400.0	266.49	1.70	2.91	0.04	-	1.23
29	24	29	8.0	1200.0	320.63	2.05	2.05	0.07	-	1.76
30	23	24	12.0	900.0	193.97	0.55	0.08	0.00	-	0.10
31	23	22	8.0	780.0	184.49	1.18	0.48	0.02	-	0.64
32	22	18	8.0	480.0	184.49	1.18	0.29	0.02	-	0.66
33	18	17	8.0	1320.0	184.49	1.18	0.81	0.02	-	0.63
34	35	15	12.0	600.0	341.55	0.97	0.16	0.01	-	0.29
35	25	35	12.0	900.0	494.56	1.40	0.48	0.03	-	0.56
36	24	25	12.0	1100.0	586.56	1.66	0.80	0.04	-	0.76
37	27	24	12.0	1200.0	713.22	2.02	1.25	0.06	-	1.09
38	28	27	12.0	1200.0	878.22	2.49	1.84	0.10	-	1.61
39	1	28	12.0	2100.0	934.24	2.65	3.60	0.11	-	1.77
40	1	2	16.0	1020.0	1193.86	1.90	0.68	0.06	-	0.72
41	31	36	12.0	1620.0	301.56	0.86	0.34	0.01	-	0.22
42	36	37	12.0	20.0	108.00	0.31	0.00	0.00	-	0.07
43	32	38	12.0	960.0	367.21	1.04	0.29	0.02	-	0.32
44	41	38	24.0	450.0	270.97	0.19	0.00	0.00	-	0.01
45	40	1	24.0	100.0	2128.10	1.51	0.03	0.04	-	0.62
47	39	40	16.0	100.0	508.23	0.81	0.01	0.01	298.97	0.24
48	0	39	24.0	10.0	2128.10	1.51	0.00	0.04	-	3.81
49	0	41	24.0	50.0	270.97	0.19	0.00	0.00	-	0.00
50	39	40	16.0	100.0	1011.51	1.61	0.05	0.04	299.04	0.89
51	39	40	16.0	100.0	608.37	0.97	0.02	0.01	298.98	0.34
52	49	51	12.0	1000.0	273.00	0.77	0.18	0.01	-	0.19
54	38	23	12.0	2100.0	378.46	1.07	0.68	0.02	-	0.33
55	0	45	12.0	10.0	458.19	1.30	0.00	0.03	-	3.08
56	46	36	8.0	2150.0	115.43	0.74	0.55	0.01	-	0.26
57	46	31	8.0	500.0	144.29	0.92	0.19	0.01	-	0.41
58	2	3	0.5	1200.0	2.39	3.91	172.12	0.24	-	143.63
61	49	50	12.0	3000.0	60.01	0.17	0.03	0.00	-	0.01
--- Line 62 is shut off ---										
63	0	49	12.0	40.0	333.01	0.94	0.01	0.01	-	0.60
64	53	52	12.0	2150.0	625.21	1.77	1.75	0.05	-	0.84
65	2	53	12.0	2150.0	684.19	1.94	2.07	0.06	-	0.99

Node #	Elev (ft)	Demand (GPM)	Press (psi)	Head (ft)	Hydr Grade (ft)
1	570.00	0.00	142.06	327.83	897.83
2	570.00	200.01	141.74	327.09	897.09
3	540.00	0.00	80.05	184.73	724.73
4	560.00	200.01	71.26	164.46	724.46
5	580.00	200.01	62.58	144.42	724.42
6	600.00	0.00	54.01	124.63	724.63
7	660.00	219.99	95.38	220.12	880.12
8	640.00	0.00	104.26	240.59	880.59
9	650.00	153.02	100.02	230.81	880.81

10	660.00	0.00	96.41	222.49	882.49
12	740.00	153.02	62.47	144.16	884.16
13	660.00	0.00	97.08	224.02	884.02
14	720.00	0.00	71.19	164.28	884.28
15	695.00	79.00	82.06	189.37	884.37
16	730.00	49.02	66.87	154.30	884.30
17	710.00	0.00	75.55	174.34	884.34
18	680.00	0.00	88.91	205.17	885.17
19	740.00	49.02	62.41	144.03	884.03
20	720.00	0.00	70.98	163.81	883.81
21	720.00	0.00	70.93	163.69	883.69
22	690.00	0.00	84.71	195.48	885.48
23	680.00	0.00	89.26	205.98	885.98
24	660.00	0.00	97.89	225.89	885.89
25	770.00	92.00	49.86	115.05	885.05
26	640.00	82.99	104.36	240.83	880.83
27	660.00	165.00	100.61	232.18	892.18
28	620.00	56.02	118.78	274.11	894.11
29	630.00	143.01	109.97	253.78	883.78
30	720.00	6.01	71.21	164.33	884.33
31	740.00	86.99	62.19	143.52	883.52
32	740.00	57.99	63.69	146.98	886.98
33	700.00	142.02	80.99	186.91	886.91
34	800.00	0.00	37.40	86.31	886.31
35	690.00	153.02	84.30	194.55	884.55
36	740.00	309.00	62.04	143.16	883.16
37	800.00	108.00	36.04	83.16	883.16
38	830.00	0.00	24.56	56.68	886.68
39	580.00	0.00	6.05	13.96	593.96
40	580.00	0.00	135.59	312.91	892.91
41	870.00	0.00	7.23	16.68	886.68
42	740.00	32.00	62.18	143.48	883.48
45	870.00	0.00	6.25	14.42	884.42
46	740.00	0.00	62.28	143.73	883.73
49	1100.00	0.00	3.13	7.22	1107.22
50	800.00	60.01	133.12	307.19	1107.19
51	860.00	273.00	107.05	247.04	1107.04
52	680.00	57.99	92.37	213.16	893.16
53	650.00	58.98	106.15	244.96	894.96

Summary of inflows (+) and outflows (-):

Pipe #	Flow (GPM)
48	2128.09+
49	270.97+
55	458.19+
63	333.00+

Net system demand: 3187.11 GPM

Maximum-Minimum Summary:

Pipe #	Vel (fps)	Pipe #	HL/1000 ft	Node #	Press (psi)
58	3.91	58	143.44	1	142.06
39	2.65	39	1.72	2	141.74
8	2.49	29	1.70	40	135.59
49	0.19	61	0.01	45	6.25
44	0.19	44	0.01	39	6.05
61	0.17	49	0.01	49	3.13

NOTE: 'HL/1000 ft' does NOT include Minor Losses; and Pipes with zero flow are not included under Minimum 'Vel (fps)'.

Tank status report:

Pipe	Pipe Flow (GPM)	Ext Flow (GPM)	Elev (ft)	Depth (ft)	Volume (gal)	Proj Elev (ft)
49	-271.0	0.0	886.7	12.7	365,029	886.1
55	-458.2	0.0	884.4	10.4	300,817	883.5
63	-333.0	0.0	1107.2	3.2	30,529	1105.1

Simulation Results - EPS Time: 7 hrs 0.0 min

Number of trials: 14
Convergence : 0.0003

Pipe	Nodes (Q--->)		Dia (in)	Length (ft)	Flow (GPM)	Vel (fps)	Losses (ft) Head	Minor	Pump Head	Hd Loss /1000 ft
1	45	12	12.0	500.0	419.57	1.19	0.19	0.02	-	0.43
2	31	42	8.0	1450.0	32.00	0.20	0.03	0.00	-	0.02
3	30	16	8.0	500.0	49.02	0.31	0.03	0.00	-	0.06
4	15	30	8.0	600.0	55.03	0.35	0.04	0.00	-	0.07
5	15	17	12.0	660.0	129.60	0.37	0.03	0.00	-	0.05
6	17	19	12.0	1200.0	319.42	0.91	0.28	0.01	-	0.25
7	19	20	12.0	1200.0	270.40	0.77	0.21	0.01	-	0.18
8	20	21	12.0	600.0	270.40	0.77	0.10	0.01	-	0.19
9	21	31	12.0	900.0	270.40	0.77	0.16	0.01	-	0.18
10	34	46	8.0	2200.0	265.58	1.70	2.65	0.04	-	1.22
11	38	34	10.0	900.0	265.58	1.08	0.37	0.02	-	0.43
12	32	33	12.0	1400.0	142.02	0.40	0.07	0.00	-	0.05
13	52	32	12.0	1700.0	570.63	1.62	1.17	0.04	-	0.71
14	0	3	12.0	1200.0	304.44	0.86	0.26	0.01	-	0.22
15	3	4	12.0	1200.0	306.83	0.87	0.26	0.01	-	0.23
16	4	5	12.0	1200.0	106.82	0.30	0.04	0.00	-	0.03
17	6	5	8.0	1200.0	93.19	0.59	0.21	0.01	-	0.18
18	0	6	8.0	2100.0	93.19	0.59	0.36	0.01	-	0.18
19	8	7	8.0	1450.0	128.55	0.82	0.45	0.01	-	0.32
20	9	8	8.0	650.0	128.55	0.82	0.20	0.01	-	0.33
21	10	9	8.0	1200.0	281.56	1.80	1.61	0.05	-	1.38
22	12	10	8.0	1200.0	281.56	1.80	1.61	0.05	-	1.38
23	14	12	8.0	1200.0	92.15	0.59	0.20	0.01	-	0.17
24	15	14	8.0	1000.0	92.15	0.59	0.17	0.01	-	0.17
25	12	13	8.0	840.0	77.14	0.49	0.10	0.00	-	0.13
26	13	29	8.0	1500.0	77.14	0.49	0.18	0.00	-	0.12
27	26	7	8.0	1140.0	184.98	1.18	0.70	0.02	-	0.63
28	29	26	8.0	2400.0	267.98	1.71	2.94	0.05	-	1.24
29	24	29	8.0	1200.0	333.84	2.13	2.20	0.07	-	1.90
30	23	24	12.0	900.0	211.11	0.60	0.10	0.01	-	0.12
31	23	22	8.0	780.0	189.82	1.21	0.50	0.02	-	0.67
32	22	18	8.0	480.0	189.82	1.21	0.31	0.02	-	0.69
33	18	17	8.0	1320.0	189.82	1.21	0.85	0.02	-	0.66
34	35	15	12.0	600.0	355.78	1.01	0.17	0.02	-	0.31
35	25	35	12.0	900.0	508.80	1.44	0.50	0.03	-	0.59
36	24	25	12.0	1100.0	600.80	1.70	0.83	0.05	-	0.80
37	27	24	12.0	1200.0	723.53	2.05	1.28	0.07	-	1.12
38	28	27	12.0	1200.0	888.53	2.52	1.88	0.10	-	1.65
39	1	28	12.0	2100.0	944.55	2.68	3.68	0.11	-	1.80
40	1	2	16.0	1020.0	1197.40	1.91	0.68	0.06	-	0.72
41	31	36	12.0	1620.0	300.42	0.85	0.34	0.01	-	0.22

42	36	37	12.0	20.0	108.00	0.31	0.00	0.00	-	0.07
43	32	38	12.0	960.0	370.61	1.05	0.30	0.02	-	0.33
44	41	38	24.0	450.0	295.89	0.21	0.00	0.00	-	0.01
45	40	1	24.0	100.0	2141.95	1.52	0.03	0.04	-	0.63
47	39	40	16.0	100.0	512.16	0.82	0.01	0.01	298.47	0.24
48	0	39	24.0	10.0	2141.95	1.52	0.00	0.04	-	3.86
49	0	41	24.0	50.0	295.89	0.21	0.00	0.00	-	0.00
50	39	40	16.0	100.0	1017.36	1.62	0.05	0.04	298.54	0.90
51	39	40	16.0	100.0	612.44	0.98	0.02	0.01	298.48	0.34
52	49	51	12.0	1000.0	273.00	0.77	0.18	0.01	-	0.19
54	38	23	12.0	2100.0	400.93	1.14	0.75	0.02	-	0.37
55	0	45	12.0	10.0	419.57	1.19	0.00	0.02	-	2.59
56	46	36	8.0	2150.0	116.57	0.74	0.56	0.01	-	0.27
57	46	31	8.0	500.0	149.01	0.95	0.21	0.01	-	0.44
58	2	3	0.5	1200.0	2.39	3.91	171.69	0.24	-	143.28
61	49	50	12.0	3000.0	60.01	0.17	0.03	0.00	-	0.01
--- Line 62 is shut off ---										
63	0	49	12.0	40.0	333.01	0.94	0.01	0.01	-	0.60
64	53	52	12.0	2150.0	628.62	1.78	1.77	0.05	-	0.85
65	2	53	12.0	2150.0	687.60	1.95	2.09	0.06	-	1.00

Node #	Elev (ft)	Demand (GPM)	Press (psi)	Head (ft)	Hydr Grade (ft)
1	570.00	0.00	141.87	327.40	897.40
2	570.00	200.01	141.55	326.66	896.66
3	540.00	0.00	80.05	184.73	724.73
4	560.00	200.01	71.26	164.46	724.46
5	580.00	200.01	62.58	144.42	724.42
6	600.00	0.00	54.01	124.63	724.63
7	660.00	219.99	95.01	219.25	879.25
8	640.00	0.00	103.88	239.72	879.72
9	650.00	153.02	99.64	229.93	879.93
10	660.00	0.00	96.02	221.59	881.59
12	740.00	153.02	62.08	143.25	883.25
13	660.00	0.00	96.70	223.15	883.15
14	720.00	0.00	70.83	163.46	883.46
15	695.00	79.00	81.74	188.64	883.64
16	730.00	49.02	66.55	153.57	883.57
17	710.00	0.00	75.23	173.60	883.60
18	680.00	0.00	88.61	204.48	884.48
19	740.00	49.02	62.10	143.31	883.31
20	720.00	0.00	70.67	163.09	883.09
21	720.00	0.00	70.62	162.98	882.98
22	690.00	0.00	84.42	194.81	884.81
23	680.00	0.00	88.98	205.34	885.34
24	660.00	0.00	97.60	225.23	885.23
25	770.00	92.00	49.55	114.36	884.36
26	640.00	82.99	103.99	239.98	879.98
27	660.00	165.00	100.38	231.64	891.64
28	620.00	56.02	118.57	273.61	893.61
29	630.00	143.01	109.62	252.96	882.96
30	720.00	6.01	70.89	163.59	883.59
31	740.00	86.99	61.89	142.82	882.82
32	740.00	57.99	63.45	146.42	886.42
33	700.00	142.02	80.75	186.35	886.35
34	800.00	0.00	37.15	85.73	885.73
35	690.00	153.02	83.99	193.82	883.82
36	740.00	309.00	61.73	142.46	882.46
37	800.00	108.00	35.73	82.46	882.46
38	830.00	0.00	24.31	56.11	886.11
39	580.00	0.00	6.05	13.96	593.96

40	580.00	0.00	135.38	312.41	892.41
41	870.00	0.00	6.98	16.11	886.11
42	740.00	32.00	61.87	142.78	882.78
45	870.00	0.00	5.84	13.47	883.47
46	740.00	0.00	61.98	143.04	883.04
9	1100.00	0.00	2.21	5.10	1105.10
0	800.00	60.01	132.19	305.07	1105.07
51	860.00	273.00	106.13	244.91	1104.91
52	680.00	57.99	92.17	212.69	892.69
53	650.00	58.98	105.95	244.51	894.51

Summary of inflows (+) and outflows (-):

Pipe #	Flow (GPM)
48	2141.95+
49	295.89+
55	419.56+
63	333.00+

Net system demand: 3187.11 GPM

Maximum-Minimum Summary:

Pipe #	Vel (fps)	Pipe #	HL/1000 ft	Node #	Press (psi)
58	3.91	58	143.08	1	141.87
39	2.68	29	1.84	2	141.55
38	2.52	39	1.75	40	135.38
44	0.21	61	0.01	39	6.05
2	0.20	49	0.01	45	5.84
1	0.17	44	0.01	49	2.21

NOTE: 'HL/1000 ft' does NOT include Minor Losses; and Pipes with zero flow are not included under Minimum 'Vel (fps)'.

Tank status report:

Pipe #	Pipe Flow (GPM)	Ext Flow (GPM)	Elev (ft)	Depth (ft)	Volume (gal)	Proj Elev (ft)
49	-295.9	0.0	886.1	12.1	348,771	885.8
55	-419.6	0.0	883.5	9.5	273,327	883.0
63	-333.0	0.0	1105.1	1.1	10,550	1104.0

Simulation Results - EPS Time: 7 hrs 31.6 min

Number of trials: 10
Convergence : 0.0003

Pipe	Nodes (Q--->)		Dia (in)	Length (ft)	Flow (GPM)	Vel (fps)	Losses (ft) Head	Minor	Pump Head	Hd Loss /1000 ft
1	45	12	12.0	500.0	604.70	1.72	0.38	0.05	-	0.86
2	31	42	8.0	1450.0	32.00	0.20	0.03	0.00	-	0.02
3	30	16	8.0	500.0	49.02	0.31	0.03	0.00	-	0.06
4	15	30	8.0	600.0	55.03	0.35	0.04	0.00	-	0.07
5	15	17	12.0	660.0	403.17	1.14	0.24	0.02	-	0.39
6	17	19	12.0	1200.0	639.66	1.81	1.02	0.05	-	0.89

7	19	20	12.0	1200.0	590.65	1.68	0.88	0.04	-	0.77
8	20	21	12.0	600.0	590.65	1.68	0.44	0.04	-	0.81
9	21	31	12.0	900.0	590.65	1.68	0.66	0.04	-	0.78
10	34	46	8.0	2200.0	403.33	2.57	5.74	0.10	-	2.65
11	38	34	10.0	900.0	403.33	1.65	0.79	0.04	-	0.93
2	32	33	12.0	1400.0	142.02	0.40	0.07	0.00	-	0.05
3	52	32	12.0	1700.0	563.60	1.60	1.14	0.04	-	0.70
14	0	3	12.0	1200.0	304.47	0.86	0.26	0.01	-	0.22
15	3	4	12.0	1200.0	306.83	0.87	0.26	0.01	-	0.23
16	4	5	12.0	1200.0	106.82	0.30	0.04	0.00	-	0.03
17	6	5	8.0	1200.0	93.20	0.59	0.21	0.01	-	0.18
18	0	6	8.0	2100.0	93.20	0.59	0.36	0.01	-	0.18
19	8	7	8.0	1450.0	129.05	0.82	0.46	0.01	-	0.32
20	9	8	8.0	650.0	129.05	0.82	0.21	0.01	-	0.33
21	10	9	8.0	1200.0	282.07	1.80	1.61	0.05	-	1.39
22	12	10	8.0	1200.0	282.07	1.80	1.61	0.05	-	1.39
23	12	14	8.0	1200.0	86.12	0.55	0.18	0.00	-	0.15
24	14	15	8.0	1000.0	86.12	0.55	0.15	0.00	-	0.15
25	12	13	8.0	840.0	83.49	0.53	0.12	0.00	-	0.15
26	13	29	8.0	1500.0	83.49	0.53	0.21	0.00	-	0.14
27	26	7	8.0	1140.0	183.90	1.17	0.69	0.02	-	0.63
28	29	26	8.0	2400.0	266.89	1.70	2.91	0.05	-	1.23
29	24	29	8.0	1200.0	326.41	2.08	2.11	0.07	-	1.82
30	23	24	12.0	900.0	274.43	0.78	0.16	0.01	-	0.19
31	23	22	8.0	780.0	236.49	1.51	0.76	0.04	-	1.02
32	22	18	8.0	480.0	236.49	1.51	0.47	0.04	-	1.04
33	18	17	8.0	1320.0	236.49	1.51	1.28	0.04	-	1.00
34	35	15	12.0	600.0	451.08	1.28	0.27	0.03	-	0.49
35	25	35	12.0	900.0	604.10	1.71	0.69	0.05	-	0.82
36	24	25	12.0	1100.0	696.10	1.97	1.09	0.06	-	1.05
37	27	24	12.0	1200.0	748.07	2.12	1.36	0.07	-	1.19
3	28	27	12.0	1200.0	913.07	2.59	1.97	0.10	-	1.73
9	1	28	12.0	2100.0	969.09	2.75	3.85	0.12	-	1.89
40	1	2	16.0	1020.0	1185.48	1.89	0.67	0.06	-	0.71
41	31	36	12.0	1620.0	656.64	1.86	1.45	0.05	-	0.93
42	36	37	12.0	20.0	565.99	1.61	0.01	0.04	-	2.68
43	32	38	12.0	960.0	363.58	1.03	0.29	0.02	-	0.32
44	41	38	24.0	450.0	550.67	0.39	0.01	0.00	-	0.03
45	40	1	24.0	100.0	2154.57	1.53	0.03	0.04	-	0.64
47	39	40	16.0	100.0	515.73	0.82	0.01	0.01	298.01	0.25
48	0	39	24.0	10.0	2154.57	1.53	0.00	0.04	-	3.90
49	0	41	24.0	50.0	550.67	0.39	0.00	0.00	-	0.07
50	39	40	16.0	100.0	1022.67	1.63	0.05	0.04	298.07	0.91
51	39	40	16.0	100.0	616.17	0.98	0.02	0.02	298.01	0.35
52	51	49	12.0	1000.0	185.00	0.52	0.09	0.00	-	0.09
54	38	23	12.0	2100.0	510.92	1.45	1.18	0.03	-	0.58
55	0	45	12.0	10.0	604.70	1.72	0.01	0.05	-	5.33
56	46	36	8.0	2150.0	218.35	1.39	1.80	0.03	-	0.85
57	46	31	8.0	500.0	184.99	1.18	0.31	0.02	-	0.66
58	2	3	0.5	1200.0	2.36	3.85	167.33	0.23	-	139.64
61	49	50	12.0	3000.0	60.01	0.17	0.03	0.00	-	0.01
--- The pump in line 62 is out of range ---										
62	37	51	12.0	1000.0	457.99	1.30	0.46	0.03	227.36	0.48
63	49	0	12.0	40.0	124.98	0.35	0.00	0.00	-	0.09
64	53	52	12.0	2150.0	621.59	1.76	1.73	0.05	-	0.83
65	2	53	12.0	2150.0	680.57	1.93	2.05	0.06	-	0.98

Node #	Elev (ft)	Demand (GPM)	Press (psi)	Head (ft)	Hydr Grade (ft)
1	570.00	0.00	139.97	323.02	893.02
2	570.00	200.01	139.66	322.29	892.29

3	540.00	0.00	80.05	184.73	724.73
4	560.00	200.01	71.26	164.46	724.46
5	580.00	200.01	62.58	144.42	724.42
6	600.00	0.00	54.01	124.63	724.63
7	660.00	219.99	94.70	218.54	878.54
8	640.00	0.00	103.57	239.01	879.01
9	650.00	153.02	99.33	229.22	879.22
10	660.00	0.00	95.72	220.89	880.89
12	740.00	153.02	61.77	142.55	882.55
13	660.00	0.00	96.39	222.43	882.43
14	720.00	0.00	70.36	162.37	882.37
15	695.00	79.00	81.13	187.21	882.21
16	730.00	49.02	65.93	152.14	882.14
17	710.00	0.00	74.51	171.95	881.95
18	680.00	0.00	88.08	203.27	883.27
19	740.00	49.02	61.05	140.88	880.88
20	720.00	0.00	69.32	159.96	879.96
21	720.00	0.00	69.11	159.48	879.48
22	690.00	0.00	83.97	193.77	883.77
23	680.00	0.00	88.64	204.56	884.56
24	660.00	0.00	97.24	224.39	884.39
25	770.00	92.00	49.07	113.24	883.24
26	640.00	82.99	103.68	239.25	879.25
27	660.00	165.00	98.35	226.97	886.97
28	620.00	56.02	116.59	269.05	889.05
29	630.00	143.01	109.29	252.21	882.21
30	720.00	6.01	70.27	162.17	882.17
31	740.00	86.99	60.13	138.77	878.77
32	740.00	57.99	63.30	146.08	886.08
33	700.00	142.02	80.60	186.00	886.00
34	800.00	0.00	36.81	84.94	884.94
[illegible]	690.00	153.02	83.42	192.51	882.51
[illegible]	740.00	309.00	59.48	137.27	877.27
37	800.00	108.00	33.46	77.22	877.22
38	830.00	0.00	24.17	55.77	885.77
39	580.00	0.00	6.05	13.96	593.96
40	580.00	0.00	135.17	311.94	891.94
41	870.00	0.00	6.84	15.79	885.79
42	740.00	32.00	60.12	138.74	878.74
45	870.00	0.00	5.62	12.98	882.98
46	740.00	0.00	60.28	139.10	879.10
49	1100.00	0.00	1.74	4.01	1104.01
50	800.00	60.01	131.72	303.97	1103.97
51	860.00	273.00	105.77	244.10	1104.10
52	680.00	57.99	90.31	208.40	888.40
53	650.00	58.98	104.08	240.19	890.19

Summary of inflows (+) and outflows (-):

Pipe #	Flow (GPM)
48	2154.56+
49	550.66+
55	604.69+
63	124.99-

Net system demand: 3187.11 GPM

[illegible]um-Minimum Summary:

Pipe #	Vel (fps)	Pipe #	HL/1000 ft	Node #	Press (psi)
58	3.85	58	139.45	1	139.97
39	2.75	10	2.61	2	139.66

38	2.59	39	1.84	40	135.17
16	0.30	49	0.02	39	6.05
2	0.20	44	0.02	45	5.62
61	0.17	61	0.01	49	1.74

E: 'HL/1000 ft' does NOT include Minor Losses; and Pipes with zero flow are not included under Minimum 'Vel (fps)'.

Switch occurs for pipe 62 at 7 hrs 31.6 min - next switch grade = 1116

Tank status report:

Pipe #	Pipe Flow (GPM)	Ext Flow (GPM)	Elev (ft)	Depth (ft)	Volume (gal)	Proj Elev (ft)
49	-550.7	0.0	885.8	11.8	339,425	885.2
55	-604.7	0.0	883.0	9.0	260,073	882.4
63	125.0	0.0	1104.0	0.0	31	1104.4

Simulation Results - EPS Time: 8 hrs 0.0 min

Number of trials: 10
Convergence : 0.0003

Pipe	Nodes (Q--->)		Dia (in)	Length (ft)	Flow (GPM)	Vel (fps)	Losses (ft) Head	Losses (ft) Minor	Pump Head	Hd Loss /1000 ft
1	45	12	12.0	500.0	597.25	1.69	0.37	0.04	-	0.84
2	31	42	8.0	1450.0	32.00	0.20	0.03	0.00	-	0.02
3	30	16	8.0	500.0	49.02	0.31	0.03	0.00	-	0.06
4	15	30	8.0	600.0	55.03	0.35	0.04	0.00	-	0.07
5	15	17	12.0	660.0	400.67	1.14	0.24	0.02	-	0.39
6	17	19	12.0	1200.0	637.66	1.81	1.01	0.05	-	0.89
7	19	20	12.0	1200.0	588.64	1.67	0.87	0.04	-	0.77
8	20	21	12.0	600.0	588.64	1.67	0.44	0.04	-	0.80
9	21	31	12.0	900.0	588.64	1.67	0.66	0.04	-	0.78
10	34	46	8.0	2200.0	402.87	2.57	5.73	0.10	-	2.65
11	38	34	10.0	900.0	402.87	1.65	0.79	0.04	-	0.92
12	32	33	12.0	1400.0	142.02	0.40	0.07	0.00	-	0.05
13	52	32	12.0	1700.0	569.59	1.62	1.17	0.04	-	0.71
14	0	3	12.0	1200.0	304.36	0.86	0.26	0.01	-	0.22
15	3	4	12.0	1200.0	306.84	0.87	0.26	0.01	-	0.23
16	4	5	12.0	1200.0	106.83	0.30	0.04	0.00	-	0.03
17	6	5	8.0	1200.0	93.18	0.59	0.21	0.01	-	0.18
18	0	6	8.0	2100.0	93.18	0.59	0.36	0.01	-	0.18
19	8	7	8.0	1450.0	128.72	0.82	0.46	0.01	-	0.32
20	9	8	8.0	650.0	128.72	0.82	0.20	0.01	-	0.33
21	10	9	8.0	1200.0	281.73	1.80	1.61	0.05	-	1.38
22	12	10	8.0	1200.0	281.73	1.80	1.61	0.05	-	1.38
23	12	14	8.0	1200.0	81.33	0.52	0.16	0.00	-	0.14
24	14	15	8.0	1000.0	81.33	0.52	0.13	0.00	-	0.14
25	12	13	8.0	840.0	81.17	0.52	0.11	0.00	-	0.14
26	13	29	8.0	1500.0	81.17	0.52	0.20	0.00	-	0.14
27	26	7	8.0	1140.0	184.13	1.18	0.70	0.02	-	0.63
28	29	26	8.0	2400.0	267.13	1.70	2.92	0.05	-	1.23
29	24	29	8.0	1200.0	328.96	2.10	2.15	0.07	-	1.84
30	23	24	12.0	900.0	272.87	0.77	0.16	0.01	-	0.19
31	23	22	8.0	780.0	236.99	1.51	0.76	0.04	-	1.02
32	22	18	8.0	480.0	236.99	1.51	0.47	0.04	-	1.05

33	18	17	8.0	1320.0	236.99	1.51	1.29	0.04	-	1.00
34	35	15	12.0	600.0	453.37	1.29	0.27	0.03	-	0.49
35	25	35	12.0	900.0	606.38	1.72	0.69	0.05	-	0.82
36	24	25	12.0	1100.0	698.38	1.98	1.10	0.06	-	1.06
37	27	24	12.0	1200.0	754.48	2.14	1.39	0.07	-	1.21
38	28	27	12.0	1200.0	919.48	2.61	2.00	0.11	-	1.75
39	1	28	12.0	2100.0	975.50	2.77	3.90	0.12	-	1.91
40	1	2	16.0	1020.0	1190.76	1.90	0.68	0.06	-	0.72
41	31	36	12.0	1620.0	654.69	1.86	1.44	0.05	-	0.92
42	36	37	12.0	20.0	563.52	1.60	0.01	0.04	-	2.66
43	32	38	12.0	960.0	369.58	1.05	0.30	0.02	-	0.33
44	41	38	24.0	450.0	543.14	0.39	0.01	0.00	-	0.03
45	40	1	24.0	100.0	2166.26	1.54	0.03	0.04	-	0.64
47	39	40	16.0	100.0	519.04	0.83	0.01	0.01	297.57	0.25
48	0	39	24.0	10.0	2166.26	1.54	0.00	0.04	-	3.94
49	0	41	24.0	50.0	543.14	0.39	0.00	0.00	-	0.07
50	39	40	16.0	100.0	1027.58	1.64	0.05	0.04	297.64	0.92
51	39	40	16.0	100.0	619.64	0.99	0.02	0.02	297.58	0.35
52	51	49	12.0	1000.0	182.53	0.52	0.08	0.00	-	0.09
54	38	23	12.0	2100.0	509.85	1.45	1.17	0.03	-	0.57
55	0	45	12.0	10.0	597.25	1.69	0.01	0.04	-	5.21
56	46	36	8.0	2150.0	217.83	1.39	1.79	0.03	-	0.85
57	46	31	8.0	500.0	185.04	1.18	0.31	0.02	-	0.66
58	2	3	0.5	1200.0	2.48	4.05	183.79	0.25	-	153.37
61	49	50	12.0	3000.0	60.01	0.17	0.03	0.00	-	0.01
--- The pump in line 62 is out of range ---										
62	37	51	12.0	1000.0	455.53	1.29	0.45	0.03	228.25	0.48
63	49	0	12.0	40.0	122.52	0.35	0.00	0.00	-	0.09
64	53	52	12.0	2150.0	627.58	1.78	1.77	0.05	-	0.84
65	2	53	12.0	2150.0	686.56	1.95	2.08	0.06	-	1.00

Node #	Elev (ft)	Demand (GPM)	Press (psi)	Head (ft)	Hydr Grade (ft)
1	570.00	0.00	147.12	339.51	909.51
2	570.00	200.01	146.80	338.78	908.78
3	540.00	0.00	80.05	184.73	724.73
4	560.00	200.01	71.26	164.46	724.46
5	580.00	200.01	62.58	144.42	724.42
6	600.00	0.00	54.01	124.63	724.63
7	660.00	219.99	94.45	217.96	877.96
8	640.00	0.00	103.32	238.43	878.43
9	650.00	153.02	99.08	228.65	878.65
10	660.00	0.00	95.47	220.31	880.31
12	740.00	153.02	61.52	141.97	881.97
13	660.00	0.00	96.13	221.85	881.85
14	720.00	0.00	70.11	161.80	881.80
15	695.00	79.00	80.89	186.66	881.66
16	730.00	49.02	65.69	151.59	881.59
17	710.00	0.00	74.28	171.41	881.41
18	680.00	0.00	87.85	202.73	882.73
19	740.00	49.02	60.81	140.34	880.34
20	720.00	0.00	69.08	159.42	879.42
21	720.00	0.00	68.87	158.94	878.94
22	690.00	0.00	83.73	193.23	883.23
23	680.00	0.00	88.41	204.03	884.03
24	660.00	0.00	97.00	223.86	883.86
25	770.00	92.00	48.84	112.70	882.70
26	640.00	82.99	103.43	238.68	878.68
27	660.00	165.00	105.47	243.38	903.38
28	620.00	56.02	123.71	285.49	905.49
29	630.00	143.01	109.05	251.64	881.64

30	720.00	6.01	70.04	161.62	881.62
31	740.00	86.99	59.90	138.24	878.24
32	740.00	57.99	63.07	145.54	885.54
33	700.00	142.02	80.37	185.47	885.47
34	800.00	0.00	36.57	84.40	884.40
35	690.00	153.02	83.18	191.96	881.96
36	740.00	309.00	59.26	136.75	876.75
37	800.00	108.00	33.24	76.70	876.70
38	830.00	0.00	23.93	55.23	885.23
39	580.00	0.00	6.05	13.96	593.96
40	580.00	0.00	134.98	311.50	891.50
41	870.00	0.00	6.61	15.24	885.24
42	740.00	32.00	59.89	138.21	878.21
45	870.00	0.00	5.37	12.39	882.39
46	740.00	0.00	60.05	138.57	878.57
49	1100.00	0.00	1.90	4.38	1104.38
50	800.00	60.01	131.89	304.35	1104.35
51	860.00	273.00	105.94	244.47	1104.47
52	680.00	57.99	97.42	224.82	904.82
53	650.00	58.98	111.21	256.63	906.63

Summary of inflows (+) and outflows (-):

Net system demand: 3187.11 GPM

Pipe #	Flow (GPM)
48	2166.26+
49	543.14+
55	597.25+
63	122.52-

mum-Minimum Summary:

Pipe #	Vel (fps)	Pipe #	HL/1000 ft	Node #	Press (psi)
58	4.05	58	153.16	1	147.12
39	2.77	10	2.60	2	146.80
38	2.61	39	1.86	40	134.98
16	0.30	49	0.02	39	6.05
2	0.20	44	0.02	45	5.37
61	0.17	61	0.01	49	1.90

NOTE: 'HL/1000 ft' does NOT include Minor Losses; and Pipes with zero flow are not included under Minimum 'Vel (fps)'.

Tank status report:

Pipe #	Pipe Flow (GPM)	Ext Flow (GPM)	Elev (ft)	Depth (ft)	Volume (gal)	Proj Elev (ft)
49	-543.1	0.0	885.2	11.2	323,781	884.1
55	-597.3	0.0	882.4	8.4	242,895	881.2
63	122.5	0.0	1104.4	0.4	3,582	1105.2

Table 2E

Appendix D

99024C
TABLE 2E
App. D

RABE ENGINEERING, INC.
2021 N. Gateway Blvd.
Fresno, CA 93727
(559) 252-7223

MILLERTON NEW TOWN INFRASTRUCTURE STUDY

June 28, 2000

Number of pipes: 67
Number of junction nodes: 51

Flow unit of measure: GPM
File name: MNT

Summary of Input Data

Pipe Data:

Pipe	Node #1	Node #2	Dia (in)	Length (ft)	H-W Coeff	Minor Fact	Pump Type	FGN Grade
1	45	12	12.0	500.0	150.0	1.0	-	-
2	42	31	8.0	1450.0	150.0	1.0	-	-
3	30	16	8.0	500.0	150.0	1.0	-	-
4	54	15	12.0	50.0	150.0	1.0	-	-
5	15	17	12.0	660.0	150.0	1.0	-	-
6	17	19	12.0	1200.0	150.0	1.0	-	-
7	19	20	12.0	1200.0	150.0	1.0	-	-
8	20	21	12.0	600.0	150.0	1.0	-	-
9	21	31	12.0	900.0	150.0	1.0	-	-
10	46	34	8.0	2200.0	150.0	1.0	-	-
11	34	38	10.0	900.0	150.0	1.0	-	-
12	32	33	12.0	1400.0	150.0	1.0	-	-
13	32	52	12.0	1700.0	150.0	1.0	-	-
14	0	3	12.0	1200.0	150.0	1.0	-	725.00
15	3	4	12.0	1200.0	150.0	1.0	-	-
16	4	5	12.0	1200.0	150.0	1.0	-	-
17	5	6	8.0	1200.0	150.0	1.0	-	-
18	0	6	8.0	2100.0	150.0	1.0	-	725.00
19	7	8	8.0	1450.0	150.0	1.0	-	-
20	8	9	8.0	650.0	150.0	1.0	-	-
21	9	10	8.0	1200.0	150.0	1.0	-	-
22	10	12	8.0	1200.0	150.0	1.0	-	-
23	12	14	8.0	1200.0	150.0	1.0	-	-
24	15	14	8.0	1000.0	150.0	1.0	-	-
25	12	13	8.0	840.0	150.0	1.0	-	-
26	13	29	8.0	1500.0	150.0	1.0	-	-
27	7	26	8.0	1140.0	150.0	1.0	-	-
28	26	29	8.0	2400.0	150.0	1.0	-	-
29	24	29	8.0	1200.0	150.0	1.0	-	-
30	24	23	12.0	900.0	150.0	1.0	-	-
31	23	22	8.0	780.0	150.0	1.0	-	-
32	22	18	8.0	480.0	150.0	1.0	-	-
33	18	17	8.0	1320.0	150.0	1.0	-	-
34	15	35	12.0	600.0	150.0	1.0	-	-
35	35	25	12.0	900.0	150.0	1.0	-	-
36	25	24	12.0	1100.0	150.0	1.0	-	-
37	24	27	12.0	1200.0	150.0	1.0	-	-
38	27	28	12.0	1200.0	150.0	1.0	-	-

39	28	1	12.0	2100.0	150.0	1.0	-	-
40	1	2	16.0	1020.0	150.0	1.0	-	-
41	31	36	12.0	1620.0	150.0	1.0	-	-
42	36	37	12.0	20.0	150.0	1.0	-	-
43	38	32	12.0	960.0	150.0	1.0	-	-
	41	38	24.0	450.0	150.0	1.0	-	-
	40	1	24.0	100.0	150.0	1.0	-	-
47	39	40	16.0	100.0	150.0	1.0	3	-
48	0	39	24.0	10.0	150.0	1.0	-	594.00
49	0	41	24.0	50.0	150.0	1.0	-	898.00
50	39	40	16.0	100.0	150.0	1.0	2	-
51	39	40	16.0	100.0	150.0	1.0	1	-
52	51	49	12.0	1000.0	150.0	1.0	-	-
54	23	38	12.0	2100.0	150.0	1.0	-	-
55	0	45	12.0	10.0	150.0	1.0	-	898.00
56	46	36	8.0	2150.0	150.0	1.0	-	-
57	31	46	8.0	500.0	150.0	1.0	-	-
58	2	3	0.5	1200.0	150.0	1.0	-	-
61	49	50	12.0	3000.0	150.0	1.0	-	-
62	37	51	12.0	1000.0	150.0	1.0	4	-
63	0	49	12.0	40.0	150.0	1.0	-	1120.00
64	52	53	12.0	2150.0	150.0	1.0	-	-
65	53	2	12.0	2150.0	150.0	1.0	-	-
66	54	30	8.0	550.0	150.0	1.0	-	-
67	55	54	12.0	100.0	150.0	1.0	-	-
68	56	55	12.0	50.0	150.0	1.0	5	-
69	56	55	12.0	50.0	150.0	1.0	6	-
70	56	55	12.0	50.0	150.0	1.0	7	-
71	0	56	16.0	50.0	150.0	1.0	-	720.00

p data:

Pump	Data type	Pump data (flows are in GPM)					
1	3-pt head/flow	330.00	188.0	300.00	225.0	270.00	300.0
2	3-pt head/flow	320.00	240.0	300.00	320.0	270.00	400.0
3	3-pt head/flow	320.00	128.0	300.00	160.0	280.00	200.0
4	3-pt head/flow	310.00	335.0	290.00	507.0	270.00	587.0
5	3-pt head/flow	200.00	825.0	185.00	920.0	152.00	945.0
6	3-pt head/flow	237.00	354.0	210.00	395.0	152.00	425.0
7	3-pt head/flow	210.00	385.0	185.00	447.0	150.00	487.0

Junction Node Data:

Node #	Demand (GPM)	Elev (ft)	Connecting Pipes
1	0.00	570.00	39, 40, 45
2	200.01	570.00	40, 58, 65
3	0.00	540.00	14, 15, 58
4	200.01	560.00	15, 16
5	200.01	580.00	16, 17
6	0.00	600.00	17, 18
7	219.99	660.00	19, 27
8	0.00	640.00	19, 20
9	153.02	650.00	20, 21
10	0.00	660.00	21, 22
12	153.02	740.00	1, 22, 23, 25
13	0.00	660.00	25, 26
14	0.00	720.00	23, 24
15	79.00	695.00	4, 5, 24, 34
16	49.02	730.00	3

17	0.00	710.00	5,	6,	33	
18	0.00	680.00	32,	33		
19	49.02	740.00	6,	7		
20	0.00	720.00	7,	8		
21	0.00	720.00	8,	9		
22	0.00	690.00	31,	32		
23	0.00	680.00	30,	31,	54	
24	0.00	660.00	29,	30,	36,	37
25	92.02	770.00	35,	36		
26	82.99	640.00	27,	28		
27	165.00	660.00	37,	38		
28	0.00	620.00	38,	39		
29	143.01	630.00	26,	28,	29	
30	6.01	720.00	3,	66		
31	452.00	740.00	2,	9,	41,	57
32	57.99	740.00	12,	13,	43	
33	142.02	700.00	12			
34	0.00	800.00	10,	11		
35	153.02	690.00	34,	35		
36	309.00	740.00	41,	42,	56	
37	108.00	800.00	42,	62		
38	0.00	830.00	11,	43,	44,	54
39	0.00	580.00	47,	48,	50,	51
40	0.00	580.00	45,	47,	50,	51
41	0.00	870.00	44,	49		
42	32.00	740.00	2			
45	0.00	870.00	1,	55		
46	0.00	740.00	10,	56,	57	
49	0.00	1100.00	52,	61,	63	
50	60.01	800.00	61			
51	273.00	860.00	52,	62		
52	57.99	680.00	13,	64		
53	58.98	650.00	64,	65		
54	0.00	700.00	4,	66,	67	
55	0.00	700.00	67,	68,	69,	70
56	0.00	700.00	68,	69,	70,	71

There are PRV's in these lines: 14 18

An extended period simulation is specified - Simulation period: 8.00 hrs
Time increment: 1.000 hrs

Tank data (elevations in feet):

Pipe	Max elev	Min elev	Diameter (ft)	Initial elev	Ext inflow (GPM)
49	898.0	874.0	70.0	898.0	0.0
55	898.0	874.0	70.0	898.0	0.0
63	1120.0	1104.0	70.0	1120.0	0.0

Pressure switch data:

Pipe	Node	Switch Grades (ft)	
47	41	898.0	885.0
50	41	898.0	880.0
51	41	898.0	883.0
62	49	1116.0	1104.0
42	37	855.0	890.0

Simulation Results - EPS Time: 0 hrs 0.0 min

Number of trials: 22
Convergence : 0.0001

Pipe	Nodes (Q--->)		Dia (in)	Length (ft)	Flow (GPM)	Vel (fps)	Losses (ft) Head	Minor	Pump Head	Hd Loss /1000 ft
1	45	12	12.0	500.0	418.17	1.19	0.19	0.02	-	0.43
2	31	42	8.0	1450.0	32.00	0.20	0.03	0.00	-	0.02
3	30	16	8.0	500.0	49.02	0.31	0.03	0.00	-	0.06
4	54	15	12.0	50.0	1737.23	4.93	0.27	0.38	-	12.95
5	15	17	12.0	660.0	896.59	2.54	1.05	0.10	-	1.74
6	17	19	12.0	1200.0	904.78	2.57	1.94	0.10	-	1.70
7	19	20	12.0	1200.0	855.77	2.43	1.75	0.09	-	1.53
8	20	21	12.0	600.0	855.77	2.43	0.87	0.09	-	1.61
9	21	31	12.0	900.0	855.77	2.43	1.31	0.09	-	1.56
10	34	46	8.0	2200.0	378.24	2.41	5.09	0.09	-	2.36
11	38	34	10.0	900.0	378.24	1.54	0.70	0.04	-	0.82
12	32	33	12.0	1400.0	142.02	0.40	0.07	0.00	-	0.05
13	32	52	12.0	1700.0	49.24	0.14	0.01	0.00	-	0.01
14	0	3	12.0	1200.0	304.43	0.86	0.26	0.01	-	0.22
15	3	4	12.0	1200.0	306.83	0.87	0.26	0.01	-	0.23
16	4	5	12.0	1200.0	106.82	0.30	0.04	0.00	-	0.03
17	6	5	8.0	1200.0	93.19	0.59	0.21	0.01	-	0.18
18	0	6	8.0	2100.0	93.19	0.59	0.36	0.01	-	0.18
19	8	7	8.0	1450.0	141.10	0.90	0.54	0.01	-	0.38
20	9	8	8.0	650.0	141.10	0.90	0.24	0.01	-	0.39
21	10	9	8.0	1200.0	294.12	1.88	1.74	0.05	-	1.50
22	12	10	8.0	1200.0	294.12	1.88	1.74	0.05	-	1.50
23	14	12	8.0	1200.0	182.70	1.17	0.72	0.02	-	0.62
24	15	14	8.0	1000.0	182.70	1.17	0.60	0.02	-	0.62
25	12	13	8.0	840.0	153.74	0.98	0.37	0.01	-	0.45
26	13	29	8.0	1500.0	153.74	0.98	0.66	0.01	-	0.45
27	26	7	8.0	1140.0	172.07	1.10	0.61	0.02	-	0.55
28	29	26	8.0	2400.0	255.07	1.63	2.68	0.04	-	1.13
29	24	29	8.0	1200.0	244.34	1.56	1.24	0.04	-	1.06
30	24	23	12.0	900.0	13.47	0.04	0.00	0.00	-	0.00
31	23	22	8.0	780.0	8.19	0.05	0.00	0.00	-	0.00
32	22	18	8.0	480.0	8.19	0.05	0.00	0.00	-	0.00
33	18	17	8.0	1320.0	8.19	0.05	0.00	0.00	-	0.00
34	15	35	12.0	600.0	578.94	1.64	0.42	0.04	-	0.78
35	35	25	12.0	900.0	425.93	1.21	0.36	0.02	-	0.43
36	25	24	12.0	1100.0	333.91	0.95	0.28	0.01	-	0.27
37	24	27	12.0	1200.0	76.11	0.22	0.02	0.00	-	0.02
38	28	27	12.0	1200.0	88.90	0.25	0.03	0.00	-	0.02
39	1	28	12.0	2100.0	88.90	0.25	0.05	0.00	-	0.02
40	1	2	16.0	1020.0	574.55	0.92	0.18	0.01	-	0.18
41	31	36	12.0	1620.0	557.96	1.58	1.07	0.04	-	0.68
42	36	37	12.0	20.0	441.00	1.25	0.01	0.02	-	1.64
43	38	32	12.0	960.0	249.25	0.71	0.14	0.01	-	0.16
44	41	38	24.0	450.0	622.22	0.44	0.01	0.00	-	0.03
45	40	1	24.0	100.0	663.45	0.47	0.00	0.00	-	0.07
47	39	40	16.0	100.0	148.77	0.24	0.00	0.00	304.05	0.01
48	0	39	24.0	10.0	663.45	0.47	0.00	0.00	-	0.34
49	0	41	24.0	50.0	622.22	0.44	0.00	0.00	-	0.09
50	39	40	16.0	100.0	302.82	0.48	0.01	0.00	304.05	0.09
51	39	40	16.0	100.0	211.86	0.34	0.00	0.00	304.05	0.04

52	51	49	12.0	1000.0	60.01	0.17	0.01	0.00	-	0.01
54	23	38	12.0	2100.0	5.28	0.01	0.00	0.00	-	0.00
55	0	45	12.0	10.0	418.17	1.19	0.00	0.02	-	2.57
56	46	36	8.0	2150.0	192.05	1.23	1.42	0.02	-	0.67
57	46	31	8.0	500.0	186.19	1.19	0.31	0.02	-	0.67
58	2	3	0.5	1200.0	2.40	3.92	172.93	0.24	-	144.31
61	49	50	12.0	3000.0	60.01	0.17	0.03	0.00	-	0.01
--- The pump in line 62 is out of range ---										
62	37	51	12.0	1000.0	333.01	0.94	0.25	0.01	307.26	0.27
--- Line 63 is shut off ---										
64	53	52	12.0	2150.0	8.75	0.02	0.00	0.00	-	0.00
65	2	53	12.0	2150.0	67.73	0.19	0.03	0.00	-	0.01
66	54	30	8.0	550.0	55.03	0.35	0.04	0.00	-	0.07
67	55	54	12.0	100.0	1792.26	5.08	0.57	0.40	-	9.75
68	56	55	12.0	50.0	924.87	2.62	0.08	0.11	181.14	3.82
69	56	55	12.0	50.0	413.84	1.17	0.02	0.02	180.98	0.81
70	56	55	12.0	50.0	453.55	1.29	0.02	0.03	180.99	0.96
71	0	56	16.0	50.0	1792.26	2.86	0.07	0.13	-	3.95

Node #	Elev (ft)	Demand (GPM)	Press (psi)	Head (ft)	Hydr Grade (ft)
1	570.00	0.00	142.17	328.09	898.09
2	570.00	200.01	142.09	327.90	897.90
3	540.00	0.00	80.05	184.73	724.73
4	560.00	200.01	71.26	164.46	724.46
5	580.00	200.01	62.58	144.42	724.42
6	600.00	0.00	54.01	124.63	724.63
7	660.00	219.99	101.12	233.35	893.35
8	640.00	0.00	110.03	253.91	893.91
9	650.00	153.02	105.80	244.16	894.16
10	660.00	0.00	102.25	235.96	895.96
12	740.00	153.02	68.36	157.76	897.76
13	660.00	0.00	102.86	237.38	897.38
14	720.00	0.00	77.35	178.50	898.50
15	695.00	79.00	88.45	204.12	899.12
16	730.00	49.02	73.54	169.71	899.71
17	710.00	0.00	81.46	187.98	897.98
18	680.00	0.00	94.46	217.98	897.98
19	740.00	49.02	67.57	155.93	895.93
20	720.00	0.00	75.44	174.09	894.09
21	720.00	0.00	75.02	173.13	893.13
22	690.00	0.00	90.12	207.98	897.98
23	680.00	0.00	94.46	217.98	897.98
24	660.00	0.00	103.12	237.98	897.98
25	770.00	92.02	55.59	128.28	898.28
26	640.00	82.99	110.06	253.99	893.99
27	660.00	165.00	103.14	238.02	898.02
28	620.00	0.00	120.49	278.04	898.04
29	630.00	143.01	115.57	266.71	896.71
30	720.00	6.01	77.88	179.73	899.73
31	740.00	452.00	65.75	151.72	891.72
32	740.00	57.99	68.39	157.83	897.83
33	700.00	142.02	85.69	197.75	897.75
34	800.00	0.00	42.14	97.24	897.24
35	690.00	153.02	90.42	208.66	898.66
36	740.00	309.00	65.29	150.67	890.67
37	800.00	108.00	39.28	90.64	890.64
38	830.00	0.00	29.46	67.98	897.98
39	580.00	0.00	6.07	14.00	594.00
40	580.00	0.00	137.82	318.04	898.04
41	870.00	0.00	12.13	28.00	898.00

42	740.00	32.00	65.73	151.69	891.69
45	870.00	0.00	12.12	27.97	897.97
46	740.00	0.00	65.89	152.06	892.06
49	1100.00	0.00	42.30	97.62	1197.62
50	800.00	60.01	172.29	397.59	1197.59
51	860.00	273.00	146.31	337.63	1197.63
52	680.00	57.99	94.41	217.87	897.87
53	650.00	58.98	107.41	247.87	897.87
54	700.00	0.00	86.57	199.77	899.77
55	700.00	0.00	86.99	200.75	900.75
56	700.00	0.00	8.58	19.80	719.80

Summary of inflows (+) and outflows (-):

Pipe #	Flow (GPM)
48	663.44+
49	622.21+
55	418.16+
71	1792.26+

Net system demand: 3496 GPM

Maximum-Minimum Summary:

Pipe #	Vel (fps)	Pipe #	HL/1000 ft	Node #	Press (psi)
67	5.08	58	144.11	50	172.29
4	4.93	67	5.73	51	146.31
58	3.92	4	5.41	1	142.17
64	0.02	63	0.00	45	12.12
54	0.01	54	0.00	56	8.58
63	0.00	30	0.00	39	6.07

NOTE: 'HL/1000 ft' does NOT include Minor Losses; and Pipes with zero flow are not included under Minimum 'Vel (fps)'.

Switch occurs for pipe 62 at 0 hrs 0 min - next switch grade = 1104

Tank status report:

Pipe #	Pipe Flow (GPM)	Ext Flow (GPM)	Elev (ft)	Depth (ft)	Volume (gal)	Proj Elev (ft)
49	-622.2	0.0	898.0	24.0	690,922	896.7
55	-418.2	0.0	898.0	24.0	690,922	897.1
63	0.0	0.0	1120.0	16.0	460,615	1120.0

********** System Data Change **********

Junction node changes:

Node #	New Demand (GPM)
25	1095.00

Global demand factor = 2

Simulation Results - EPS Time: 1 hrs 0.0 min

Number of trials: 10
Convergence : 0.0001

e	Nodes (Q--->)		Dia (in)	Length (ft)	Flow (GPM)	Vel (fps)	Losses (ft) Head	Minor	Pump Head	Hd Loss /1000 ft
1	45	12	12.0	500.0	2009.66	5.70	3.54	0.50	-	8.10
2	31	42	8.0	1450.0	64.01	0.41	0.13	0.00	-	0.09
3	30	16	8.0	500.0	98.03	0.63	0.09	0.01	-	0.20
4	54	15	12.0	50.0	1722.27	4.89	0.27	0.37	-	12.74
5	15	17	12.0	660.0	844.04	2.39	0.94	0.09	-	1.56
6	17	19	12.0	1200.0	1141.77	3.24	2.98	0.16	-	2.62
7	19	20	12.0	1200.0	1043.74	2.96	2.53	0.14	-	2.22
8	20	21	12.0	600.0	1043.74	2.96	1.26	0.14	-	2.33
9	21	31	12.0	900.0	1043.74	2.96	1.90	0.14	-	2.26
10	34	46	8.0	2200.0	758.25	4.84	18.47	0.36	-	8.56
11	38	34	10.0	900.0	758.25	3.10	2.55	0.15	-	3.00
12	32	33	12.0	1400.0	284.04	0.81	0.26	0.01	-	0.20
13	32	52	12.0	1700.0	933.76	2.65	2.91	0.11	-	1.78
14	0	3	12.0	1200.0	610.87	1.73	0.94	0.05	-	0.82
15	3	4	12.0	1200.0	613.21	1.74	0.94	0.05	-	0.83
16	4	5	12.0	1200.0	213.19	0.60	0.13	0.01	-	0.12
17	6	5	8.0	1200.0	186.83	1.19	0.75	0.02	-	0.65
18	0	6	8.0	2100.0	186.83	1.19	1.32	0.02	-	0.64
19	8	7	8.0	1450.0	343.96	2.20	2.82	0.07	-	1.99
20	9	8	8.0	650.0	343.96	2.20	1.26	0.07	-	2.06
21	10	9	8.0	1200.0	650.00	4.15	7.57	0.27	-	6.53
22	12	10	8.0	1200.0	650.00	4.15	7.57	0.27	-	6.53
23	12	14	8.0	1200.0	520.81	3.32	5.02	0.17	-	4.33
1	14	15	8.0	1000.0	520.81	3.32	4.19	0.17	-	4.36
25	12	13	8.0	840.0	532.83	3.40	3.67	0.18	-	4.58
26	13	29	8.0	1500.0	532.83	3.40	6.55	0.18	-	4.49
27	26	7	8.0	1140.0	282.41	1.80	1.54	0.05	-	1.39
28	29	26	8.0	2400.0	448.40	2.86	7.62	0.13	-	3.23
29	24	29	8.0	1200.0	201.59	1.29	0.87	0.03	-	0.74
30	23	24	12.0	900.0	1311.70	3.72	2.89	0.21	-	3.45
31	23	22	8.0	780.0	297.73	1.90	1.16	0.06	-	1.56
32	22	18	8.0	480.0	297.73	1.90	0.71	0.06	-	1.60
33	18	17	8.0	1320.0	297.73	1.90	1.96	0.06	-	1.53
34	15	35	12.0	600.0	1241.04	3.52	1.74	0.19	-	3.22
35	35	25	12.0	900.0	935.01	2.65	1.55	0.11	-	1.84
36	24	25	12.0	1100.0	1254.99	3.56	3.26	0.20	-	3.14
37	27	24	12.0	1200.0	144.88	0.41	0.07	0.00	-	0.06
38	28	27	12.0	1200.0	474.88	1.35	0.59	0.03	-	0.51
39	1	28	12.0	2100.0	474.88	1.35	1.03	0.03	-	0.50
40	1	2	16.0	1020.0	309.81	0.49	0.06	0.00	-	0.06
41	31	36	12.0	1620.0	549.90	1.56	1.04	0.04	-	0.67
42	36	37	12.0	20.0	215.99	0.61	0.00	0.01	-	0.41
43	38	32	12.0	960.0	1333.79	3.78	3.18	0.22	-	3.55
44	41	38	24.0	450.0	3701.47	2.62	0.34	0.11	-	0.99
45	40	1	24.0	100.0	784.70	0.56	0.00	0.00	-	0.09
47	39	40	16.0	100.0	181.17	0.29	0.00	0.00	290.58	0.03
48	0	39	24.0	10.0	784.70	0.56	0.00	0.00	-	0.48
49	0	41	24.0	50.0	3701.47	2.62	0.04	0.11	-	2.89
)	39	40	16.0	100.0	351.52	0.56	0.01	0.00	290.59	0.12
1	39	40	16.0	100.0	252.00	0.40	0.00	0.00	290.58	0.06
52	49	51	12.0	1000.0	545.99	1.55	0.63	0.04	-	0.67
54	38	23	12.0	2100.0	1609.43	4.57	9.86	0.32	-	4.85
55	0	45	12.0	10.0	2009.66	5.70	0.07	0.50	-	57.54
56	46	36	8.0	2150.0	284.08	1.81	2.93	0.05	-	1.39
57	46	31	8.0	500.0	474.17	3.03	1.76	0.14	-	3.80

58	2	3	0.5	1200.0	2.34	3.83	165.24	0.23	-	137.89
61	49	50	12.0	3000.0	120.03	0.34	0.12	0.00	-	0.04
--- Line 62 is shut off ---										
63	0	49	12.0	40.0	666.02	1.89	0.04	0.06	-	2.30
64	52	53	12.0	2150.0	817.78	2.32	2.88	0.08	-	1.38
65	53	2	12.0	2150.0	699.82	1.99	2.16	0.06	-	1.03
66	54	30	8.0	550.0	110.06	0.70	0.13	0.01	-	0.25
67	55	54	12.0	100.0	1832.33	5.20	0.60	0.42	-	10.17
68	56	55	12.0	50.0	938.14	2.66	0.09	0.11	165.01	3.93
69	56	55	12.0	50.0	420.58	1.19	0.02	0.02	164.85	0.83
70	56	55	12.0	50.0	473.62	1.34	0.02	0.03	164.86	1.05
71	0	56	16.0	50.0	1832.33	2.92	0.07	0.13	-	4.13

Node #	Elev (ft)	Demand (GPM)	Press (psi)	Head (ft)	Hydr Grade (ft)
1	570.00	0.00	138.47	319.54	889.54
2	570.00	400.02	138.44	319.48	889.48
3	540.00	0.00	79.74	184.02	724.02
4	560.00	400.02	70.64	163.03	723.03
5	580.00	400.02	61.92	142.89	722.89
6	600.00	0.00	53.59	123.66	723.66
7	660.00	439.97	92.12	212.60	872.60
8	640.00	0.00	102.04	235.49	875.49
9	650.00	306.03	98.29	226.82	876.82
10	660.00	0.00	97.35	224.66	884.66
12	740.00	306.03	66.09	152.51	892.51
13	660.00	0.00	99.08	228.66	888.66
14	720.00	0.00	72.50	167.31	887.31
15	695.00	158.00	81.45	187.95	882.95
16	730.00	98.03	66.45	153.35	883.35
17	710.00	0.00	74.50	171.92	881.92
18	680.00	0.00	88.37	203.94	883.94
19	740.00	98.03	60.14	138.78	878.78
20	720.00	0.00	67.65	156.11	876.11
21	720.00	0.00	67.04	154.71	874.71
22	690.00	0.00	84.37	194.71	884.71
23	680.00	0.00	89.23	205.93	885.93
24	660.00	0.00	96.55	222.82	882.82
25	770.00	2190.00	47.39	109.36	879.36
26	640.00	165.99	101.48	234.18	874.18
27	660.00	330.00	98.74	227.87	887.87
28	620.00	0.00	116.34	268.49	888.49
29	630.00	286.01	109.17	251.93	881.93
30	720.00	12.03	70.83	163.45	883.45
31	740.00	904.00	57.50	132.68	872.68
32	740.00	115.99	66.17	152.71	892.71
33	700.00	284.04	83.39	192.43	892.43
34	800.00	0.00	40.48	93.42	893.42
35	690.00	306.03	82.77	191.02	881.02
36	740.00	617.99	57.03	131.60	871.60
37	800.00	215.99	31.02	71.60	871.60
38	830.00	0.00	28.65	66.11	896.11
39	580.00	0.00	6.06	13.99	593.99
40	580.00	0.00	131.98	304.57	884.57
41	870.00	0.00	11.51	26.56	896.56
42	740.00	64.01	57.44	132.55	872.55
45	870.00	0.00	11.51	26.55	896.55
46	740.00	0.00	58.32	134.58	874.58
49	1100.00	0.00	8.63	19.91	1119.91
50	800.00	120.03	138.58	319.79	1119.79
51	860.00	545.99	112.34	259.24	1119.24

52	680.00	115.99	93.02	214.67	894.67
53	650.00	117.96	104.74	241.70	891.70
54	700.00	0.00	79.55	183.59	883.59
55	700.00	0.00	80.00	184.60	884.60
56	700.00	0.00	8.58	19.79	719.79

Summary of inflows (+) and outflows (-):

Pipe #	Flow (GPM)
48	784.69+
49	3701.46+
55	2009.66+
63	666.01+
71	1832.33+

Net system demand: 8998.22 GPM

Maximum-Minimum Summary:

Pipe #	Vel (fps)	Pipe #	HL/1000 ft	Node #	Press (psi)
1	5.70	58	137.70	50	138.58
55	5.70	10	8.39	1	138.47
67	5.20	1	7.09	2	138.44
51	0.40	61	0.04	49	8.63
61	0.34	51	0.04	56	8.58
47	0.29	47	0.02	39	6.06

NOTE: 'HL/1000 ft' does NOT include Minor Losses; and Pipes with zero flow are not included under Minimum 'Vel (fps)'.

Tank status report:

Pipe #	Pipe Flow (GPM)	Ext Flow (GPM)	Elev (ft)	Depth (ft)	Volume (gal)	Proj Elev (ft)
49	-3701.5	0.0	896.7	22.7	653,591	889.0
55	-2009.7	0.0	897.1	23.1	665,833	892.9
63	-666.0	0.0	1120.0	16.0	460,615	1118.6

********** System Data Change **********

Junction node changes:

Node #	New Demand (GPM)
25	2095.00

Global demand factor = 1

Simulation Results - EPS Time: 2 hrs 0.0 min

Number of trials: 9
Convergence : 0.0002

Pipe	Nodes (Q--->)	Dia (in)	Length (ft)	Flow (GPM)	Vel (fps)	Losses (ft) Head	Losses (ft) Minor	Pump Head	Hd Loss /1000 ft

1	45	12	12.0	500.0	1158.72	3.29	1.28	0.17	-	2.89
2	31	42	8.0	1450.0	32.00	0.20	0.03	0.00	-	0.02
3	30	16	8.0	500.0	49.02	0.31	0.03	0.00	-	0.06
4	54	15	12.0	50.0	1766.04	5.01	0.28	0.39	-	13.37
5	15	17	12.0	660.0	711.23	2.02	0.68	0.06	-	1.13
6	17	19	12.0	1200.0	634.45	1.80	1.01	0.05	-	0.88
7	19	20	12.0	1200.0	585.43	1.66	0.87	0.04	-	0.76
8	20	21	12.0	600.0	585.43	1.66	0.43	0.04	-	0.79
9	21	31	12.0	900.0	585.43	1.66	0.65	0.04	-	0.77
10	34	46	8.0	2200.0	315.56	2.01	3.64	0.06	-	1.68
11	38	34	10.0	900.0	315.56	1.29	0.50	0.03	-	0.59
12	32	33	12.0	1400.0	142.02	0.40	0.07	0.00	-	0.05
13	32	52	12.0	1700.0	283.97	0.81	0.32	0.01	-	0.19
14	0	3	12.0	1200.0	304.39	0.86	0.26	0.01	-	0.22
15	3	4	12.0	1200.0	306.84	0.87	0.26	0.01	-	0.23
16	4	5	12.0	1200.0	106.83	0.30	0.04	0.00	-	0.03
17	6	5	8.0	1200.0	93.19	0.59	0.21	0.01	-	0.18
18	0	6	8.0	2100.0	93.19	0.59	0.36	0.01	-	0.18
19	8	7	8.0	1450.0	207.95	1.33	1.11	0.03	-	0.78
20	9	8	8.0	650.0	207.95	1.33	0.50	0.03	-	0.81
21	10	9	8.0	1200.0	360.97	2.30	2.55	0.08	-	2.19
22	12	10	8.0	1200.0	360.97	2.30	2.55	0.08	-	2.19
23	12	14	8.0	1200.0	284.26	1.81	1.64	0.05	-	1.41
24	14	15	8.0	1000.0	284.26	1.81	1.36	0.05	-	1.42
25	12	13	8.0	840.0	360.48	2.30	1.78	0.08	-	2.22
26	13	29	8.0	1500.0	360.48	2.30	3.18	0.08	-	2.17
27	26	7	8.0	1140.0	105.16	0.67	0.25	0.01	-	0.22
28	29	26	8.0	2400.0	188.16	1.20	1.52	0.02	-	0.64
29	29	24	8.0	1200.0	29.31	0.19	0.02	0.00	-	0.02
30	23	24	12.0	900.0	702.74	1.99	0.91	0.06	-	1.08
31	22	23	8.0	780.0	76.78	0.49	0.09	0.00	-	0.13
32	18	22	8.0	480.0	76.78	0.49	0.06	0.00	-	0.13
33	17	18	8.0	1320.0	76.78	0.49	0.16	0.00	-	0.12
34	15	35	12.0	600.0	1260.07	3.57	1.79	0.20	-	3.32
35	35	25	12.0	900.0	1107.05	3.14	2.11	0.15	-	2.52
36	24	25	12.0	1100.0	987.95	2.80	2.09	0.12	-	2.01
37	27	24	12.0	1200.0	255.89	0.73	0.19	0.01	-	0.16
38	28	27	12.0	1200.0	420.90	1.19	0.47	0.02	-	0.41
39	1	28	12.0	2100.0	420.90	1.19	0.82	0.02	-	0.40
40	1	2	16.0	1020.0	339.37	0.54	0.07	0.00	-	0.07
41	31	36	12.0	1620.0	289.96	0.82	0.32	0.01	-	0.20
42	36	37	12.0	20.0	108.00	0.31	0.00	0.00	-	0.07
43	38	32	12.0	960.0	483.98	1.37	0.49	0.03	-	0.54
44	41	38	24.0	450.0	1425.50	1.01	0.06	0.02	-	0.16
45	40	1	24.0	100.0	760.26	0.54	0.00	0.00	-	0.09
47	39	40	16.0	100.0	174.74	0.28	0.00	0.00	293.70	0.03
48	0	39	24.0	10.0	760.26	0.54	0.00	0.00	-	0.45
49	0	41	24.0	50.0	1425.50	1.01	0.01	0.02	-	0.45
50	39	40	16.0	100.0	342.03	0.55	0.01	0.00	293.71	0.11
51	39	40	16.0	100.0	243.50	0.39	0.00	0.00	293.71	0.06
52	49	51	12.0	1000.0	273.00	0.77	0.18	0.01	-	0.19
54	38	23	12.0	2100.0	625.96	1.78	1.72	0.05	-	0.84
55	0	45	12.0	10.0	1158.72	3.29	0.03	0.17	-	19.33
56	46	36	8.0	2150.0	127.03	0.81	0.66	0.01	-	0.31
57	46	31	8.0	500.0	188.53	1.20	0.32	0.02	-	0.68
58	2	3	0.5	1200.0	2.45	4.00	179.48	0.25	-	149.77
61	49	50	12.0	3000.0	60.01	0.17	0.03	0.00	-	0.01
--- Line 62 is shut off ---										
63	0	49	12.0	40.0	333.01	0.94	0.01	0.01	-	0.60
64	52	53	12.0	2150.0	225.97	0.64	0.27	0.01	-	0.13
65	53	2	12.0	2150.0	166.99	0.47	0.15	0.00	-	0.07
66	54	30	8.0	550.0	55.03	0.35	0.04	0.00	-	0.07
67	55	54	12.0	100.0	1821.07	5.17	0.59	0.41	-	10.05

68	56	55	12.0	50.0	934.62	2.65	0.09	0.11	170.27	3.90
69	56	55	12.0	50.0	418.55	1.19	0.02	0.02	170.12	0.83
70	56	55	12.0	50.0	467.90	1.33	0.02	0.03	170.13	1.02
71	0	56	16.0	50.0	1821.07	2.91	0.07	0.13	-	4.08

Node #	Elev (ft)	Demand (GPM)	Press (psi)	Head (ft)	Hydr Grade (ft)
1	570.00	0.00	144.96	334.53	904.53
2	570.00	200.01	144.93	334.46	904.46
3	540.00	0.00	80.05	184.73	724.73
4	560.00	200.01	71.26	164.46	724.46
5	580.00	200.01	62.58	144.42	724.42
6	600.00	0.00	54.01	124.63	724.63
7	660.00	219.99	97.23	224.38	884.38
8	640.00	0.00	106.39	245.52	885.52
9	650.00	153.02	102.28	236.04	886.04
10	660.00	0.00	99.09	228.67	888.67
12	740.00	153.02	65.56	151.30	891.30
13	660.00	0.00	99.42	229.44	889.44
14	720.00	0.00	73.50	169.61	889.61
15	695.00	79.00	83.72	193.20	888.20
16	730.00	49.02	68.81	158.80	888.80
17	710.00	0.00	76.90	177.45	887.45
18	680.00	0.00	89.82	207.29	887.29
19	740.00	49.02	63.44	146.40	886.40
20	720.00	0.00	71.71	165.49	885.49
21	720.00	0.00	71.50	165.01	885.01
22	690.00	0.00	85.46	197.23	887.23
23	680.00	0.00	89.76	207.13	887.13
24	660.00	0.00	98.00	226.16	886.16
25	770.00	2095.00	49.37	113.94	883.94
26	640.00	82.99	106.01	244.63	884.63
27	660.00	165.00	105.38	243.19	903.19
28	620.00	0.00	122.93	283.68	903.68
29	630.00	143.01	111.01	256.18	886.18
30	720.00	6.01	73.16	168.83	888.83
31	740.00	452.00	62.54	144.32	884.32
32	740.00	57.99	64.30	148.38	888.38
33	700.00	142.02	81.60	188.30	888.30
34	800.00	0.00	38.29	88.37	888.37
35	690.00	153.02	85.02	196.21	886.21
36	740.00	309.00	62.40	143.99	883.99
37	800.00	108.00	36.39	83.99	883.99
38	830.00	0.00	25.52	58.89	888.89
39	580.00	0.00	6.06	14.00	594.00
40	580.00	0.00	133.33	307.70	887.70
41	870.00	0.00	8.22	18.97	888.97
42	740.00	32.00	62.52	144.28	884.28
45	870.00	0.00	9.86	22.75	892.75
46	740.00	0.00	62.69	144.66	884.66
49	1100.00	0.00	8.05	18.59	1118.59
50	800.00	60.01	138.04	318.56	1118.56
51	860.00	273.00	111.97	258.40	1118.40
52	680.00	57.99	97.45	224.89	904.89
53	650.00	58.98	110.33	254.61	904.61
54	700.00	0.00	81.84	188.87	888.87
55	700.00	0.00	82.28	189.87	889.87
56	700.00	0.00	8.58	19.80	719.80

Summary of inflows (+) and outflows (-):

Pipe #	Flow (GPM)
48	760.26+
49	1425.49+
55	1158.71+
63	333.00+
71	1821.07+

Net system demand: 5499.11 GPM

Maximum-Minimum Summary:

Pipe #	Vel (fps)	Pipe #	HL/1000 ft	Node #	Press (psi)
67	5.17	58	149.57	1	144.96
4	5.01	67	5.90	2	144.93
58	4.00	4	5.58	50	138.04
2	0.20	29	0.02	41	8.22
29	0.19	47	0.02	49	8.05
61	0.17	61	0.01	39	6.06

NOTE: 'HL/1000 ft' does NOT include Minor Losses; and Pipes with zero flow are not included under Minimum 'Vel (fps)'.

Tank status report:

Pipe #	Pipe Flow (GPM)	Ext Flow (GPM)	Elev (ft)	Depth (ft)	Volume (gal)	Proj Elev (ft)
49	-1425.5	0.0	889.0	15.0	431,518	886.0
55	-1158.7	0.0	892.9	18.9	545,262	890.5
	-333.0	0.0	1118.6	14.6	420,656	1117.9

********** System Data Change **********

Junction node changes:

Node #	New Demand (GPM)
25	92.00

Global demand factor = 1

Simulation Results - EPS Time: 3 hrs 0.0 min

Number of trials: 10
Convergence : 0.0003

Pipe	Nodes (Q--->)		Dia (in)	Length (ft)	Flow (GPM)	Vel (fps)	Losses (ft) Head	Losses (ft) Minor	Pump Head	Hd Loss /1000 ft
1	45	12	12.0	500.0	782.83	2.22	0.62	0.08	-	1.39
2	31	42	8.0	1450.0	32.00	0.20	0.03	0.00	-	0.02
3	30	16	8.0	500.0	49.02	0.31	0.03	0.00	-	0.06
4	54	15	12.0	50.0	1762.71	5.00	0.28	0.39	-	13.32
5	15	17	12.0	660.0	921.66	2.61	1.10	0.11	-	1.83
6	17	19	12.0	1200.0	749.42	2.13	1.37	0.07	-	1.20
7	19	20	12.0	1200.0	700.40	1.99	1.21	0.06	-	1.06
8	20	21	12.0	600.0	700.40	1.99	0.60	0.06	-	1.11

9	21	31	12.0	900.0	700.40	1.99	0.91	0.06	-	1.07
10	34	46	8.0	2200.0	200.59	1.28	1.57	0.03	-	0.73
11	38	34	10.0	900.0	200.59	0.82	0.22	0.01	-	0.25
12	32	33	12.0	1400.0	142.02	0.40	0.07	0.00	-	0.05
13	52	32	12.0	1700.0	153.25	0.43	0.10	0.00	-	0.06
14	0	3	12.0	1200.0	304.43	0.86	0.26	0.01	-	0.22
15	3	4	12.0	1200.0	306.83	0.87	0.26	0.01	-	0.23
16	4	5	12.0	1200.0	106.82	0.30	0.04	0.00	-	0.03
17	6	5	8.0	1200.0	93.19	0.59	0.21	0.01	-	0.18
18	0	6	8.0	2100.0	93.19	0.59	0.36	0.01	-	0.18
19	8	7	8.0	1450.0	170.68	1.09	0.77	0.02	-	0.54
20	9	8	8.0	650.0	170.68	1.09	0.34	0.02	-	0.56
21	10	9	8.0	1200.0	323.70	2.07	2.08	0.07	-	1.79
22	12	10	8.0	1200.0	323.70	2.07	2.08	0.07	-	1.79
23	12	14	8.0	1200.0	43.44	0.28	0.05	0.00	-	0.04
24	14	15	8.0	1000.0	43.44	0.28	0.04	0.00	-	0.04
25	12	13	8.0	840.0	262.67	1.68	0.99	0.04	-	1.23
26	13	29	8.0	1500.0	262.67	1.68	1.77	0.04	-	1.21
27	26	7	8.0	1140.0	142.19	0.91	0.43	0.01	-	0.39
28	29	26	8.0	2400.0	225.19	1.44	2.13	0.03	-	0.90
29	24	29	8.0	1200.0	105.52	0.67	0.26	0.01	-	0.22
30	24	23	12.0	900.0	280.65	0.80	0.17	0.01	-	0.20
31	22	23	8.0	780.0	172.25	1.10	0.42	0.02	-	0.56
32	18	22	8.0	480.0	172.25	1.10	0.26	0.02	-	0.58
33	17	18	8.0	1320.0	172.25	1.10	0.71	0.02	-	0.55
34	15	35	12.0	600.0	805.48	2.28	0.78	0.08	-	1.44
35	35	25	12.0	900.0	652.47	1.85	0.79	0.05	-	0.94
36	25	24	12.0	1100.0	560.47	1.59	0.73	0.04	-	0.70
37	24	27	12.0	1200.0	174.29	0.49	0.09	0.00	-	0.08
38	27	28	12.0	1200.0	9.29	0.03	0.00	0.00	-	0.00
39	28	1	12.0	2100.0	9.29	0.03	0.00	0.00	-	0.00
40	1	2	16.0	1020.0	774.54	1.24	0.30	0.02	-	0.32
41	31	36	12.0	1620.0	311.80	0.88	0.36	0.01	-	0.23
42	36	37	12.0	20.0	108.00	0.31	0.00	0.00	-	0.07
43	38	32	12.0	960.0	46.76	0.13	0.01	0.00	-	0.01
44	38	41	24.0	450.0	205.54	0.15	0.00	0.00	-	0.00
45	40	1	24.0	100.0	765.24	0.54	0.00	0.00	-	0.09
47	39	40	16.0	100.0	176.05	0.28	0.00	0.00	293.09	0.03
48	0	39	24.0	10.0	765.24	0.54	0.00	0.00	-	0.46
49	41	0	24.0	50.0	205.54	0.15	0.00	0.00	-	0.00
50	39	40	16.0	100.0	343.97	0.55	0.01	0.00	293.09	0.11
51	39	40	16.0	100.0	245.22	0.39	0.00	0.00	293.09	0.06
52	49	51	12.0	1000.0	273.00	0.77	0.18	0.01	-	0.19
54	23	38	12.0	2100.0	452.90	1.28	0.94	0.03	-	0.46
55	0	45	12.0	10.0	782.83	2.22	0.01	0.08	-	8.89
56	46	36	8.0	2150.0	105.19	0.67	0.47	0.01	-	0.22
57	46	31	8.0	500.0	95.40	0.61	0.09	0.01	-	0.19
58	2	3	0.5	1200.0	2.40	3.93	173.29	0.24	-	144.61
61	49	50	12.0	3000.0	60.01	0.17	0.03	0.00	-	0.01
--- Line 62 is shut off ---										
63	0	49	12.0	40.0	333.01	0.94	0.01	0.01	-	0.60
64	53	52	12.0	2150.0	211.24	0.60	0.23	0.01	-	0.11
65	2	53	12.0	2150.0	270.22	0.77	0.37	0.01	-	0.18
66	54	30	8.0	550.0	55.03	0.35	0.04	0.00	-	0.07
67	55	54	12.0	100.0	1817.74	5.16	0.59	0.41	-	10.01
68	56	55	12.0	50.0	933.55	2.65	0.09	0.11	171.71	3.89
69	56	55	12.0	50.0	417.96	1.19	0.02	0.02	171.56	0.82
70	56	55	12.0	50.0	466.22	1.32	0.02	0.03	171.57	1.02
71	0	56	16.0	50.0	1817.74	2.90	0.07	0.13	-	4.06

Node #	Elev (ft)	Demand (GPM)	Press (psi)	Head (ft)	Hydr Grade (ft)

1	570.00	0.00	142.39	328.59	898.59
2	570.00	200.01	142.25	328.26	898.26
3	540.00	0.00	80.05	184.73	724.73
4	560.00	200.01	71.26	164.46	724.46
5	580.00	200.01	62.58	144.42	724.42
6	600.00	0.00	54.01	124.63	724.63
7	660.00	219.99	97.19	224.29	884.29
8	640.00	0.00	106.20	245.08	885.08
9	650.00	153.02	102.03	235.44	885.44
10	660.00	0.00	98.62	227.59	887.59
12	740.00	153.02	64.89	149.74	889.74
13	660.00	0.00	99.11	228.71	888.71
14	720.00	0.00	73.53	169.69	889.69
15	695.00	79.00	84.35	194.65	889.65
16	730.00	49.02	69.44	160.25	890.25
17	710.00	0.00	77.32	178.44	888.44
18	680.00	0.00	90.01	207.71	887.71
19	740.00	49.02	63.70	147.00	887.00
20	720.00	0.00	71.82	165.73	885.73
21	720.00	0.00	71.53	165.06	885.06
22	690.00	0.00	85.55	197.43	887.43
23	680.00	0.00	89.69	206.99	886.99
24	660.00	0.00	98.44	227.17	887.17
25	770.00	92.00	51.11	117.94	887.94
26	640.00	82.99	106.05	244.74	884.74
27	660.00	165.00	103.39	238.59	898.59
28	620.00	0.00	120.72	278.59	898.59
29	630.00	143.01	111.32	256.90	886.90
30	720.00	6.01	73.79	170.28	890.28
31	740.00	452.00	62.44	144.10	884.10
[illegible]	740.00	57.99	63.27	146.01	886.01
[illegible]	700.00	142.02	80.57	185.94	885.94
34	800.00	0.00	37.18	85.79	885.79
35	690.00	153.02	86.14	198.78	888.78
36	740.00	309.00	62.28	143.72	883.72
37	800.00	108.00	36.28	83.72	883.72
38	830.00	0.00	24.28	56.02	886.02
39	580.00	0.00	6.06	14.00	594.00
40	580.00	0.00	133.07	307.08	887.08
41	870.00	0.00	6.94	16.02	886.02
42	740.00	32.00	62.43	144.06	884.06
45	870.00	0.00	8.86	20.44	890.44
46	740.00	0.00	62.48	144.19	884.19
49	1100.00	0.00	7.75	17.89	1117.89
50	800.00	60.01	137.74	317.86	1117.86
51	860.00	273.00	111.67	257.71	1117.71
52	680.00	57.99	94.31	217.64	897.64
53	650.00	58.98	107.41	247.88	897.88
54	700.00	0.00	82.47	190.31	890.31
55	700.00	0.00	82.90	191.31	891.31
56	700.00	0.00	8.58	19.80	719.80

Summary of inflows (+) and outflows (-):

Pipe #	Flow (GPM)
48	765.24+
49	205.54-
55	782.82+
63	333.00+
71	1817.73+

Net system demand: 3496.11 GPM

Maximum-Minimum Summary:

Pipe #	Vel (fps)	Pipe #	HL/1000 ft	Node #	Press (psi)
57	5.16	58	144.41	1	142.39
4	5.00	67	5.88	2	142.25
58	3.93	4	5.56	50	137.74
43	0.13	49	0.00	49	7.75
39	0.03	39	0.00	41	6.94
38	0.03	38	0.00	39	6.06

NOTE: 'HL/1000 ft' does NOT include Minor Losses; and Pipes with zero flow are not included under Minimum 'Vel (fps)'.

Tank status report:

Pipe #	Pipe Flow (GPM)	Ext Flow (GPM)	Elev (ft)	Depth (ft)	Volume (gal)	Proj Elev (ft)
49	205.5	0.0	886.0	12.0	345,994	886.4
55	-782.8	0.0	890.5	16.5	475,743	888.9
63	-333.0	0.0	1117.9	13.9	400,677	1117.2

Simulation Results - EPS Time: 4 hrs 0.0 min

Number of trials: 10
Convergence : 0.0004

Pipe	Nodes (Q--->)		Dia (in)	Length (ft)	Flow (GPM)	Vel (fps)	Losses (ft) Head	Losses (ft) Minor	Pump Head	Hd Loss /1000 ft
1	45	12	12.0	500.0	568.93	1.61	0.34	0.04	-	0.77
2	31	42	8.0	1450.0	32.00	0.20	0.03	0.00	-	0.02
3	30	16	8.0	500.0	49.02	0.31	0.03	0.00	-	0.06
4	54	15	12.0	50.0	1764.21	5.00	0.28	0.39	-	13.34
5	15	17	12.0	660.0	856.52	2.43	0.96	0.09	-	1.60
6	17	19	12.0	1200.0	719.59	2.04	1.27	0.06	-	1.11
7	19	20	12.0	1200.0	670.58	1.90	1.11	0.06	-	0.97
8	20	21	12.0	600.0	670.58	1.90	0.56	0.06	-	1.02
9	21	31	12.0	900.0	670.58	1.90	0.84	0.06	-	0.99
10	34	46	8.0	2200.0	230.42	1.47	2.03	0.03	-	0.94
11	38	34	10.0	900.0	230.42	0.94	0.28	0.01	-	0.33
12	32	33	12.0	1400.0	142.02	0.40	0.07	0.00	-	0.05
13	52	32	12.0	1700.0	88.71	0.25	0.04	0.00	-	0.02
14	0	3	12.0	1200.0	304.41	0.86	0.26	0.01	-	0.22
15	3	4	12.0	1200.0	306.84	0.87	0.26	0.01	-	0.23
16	4	5	12.0	1200.0	106.82	0.30	0.04	0.00	-	0.03
17	6	5	8.0	1200.0	93.19	0.59	0.21	0.01	-	0.18
18	0	6	8.0	2100.0	93.19	0.59	0.36	0.01	-	0.18
19	8	7	8.0	1450.0	156.58	1.00	0.66	0.02	-	0.46
20	9	8	8.0	650.0	156.58	1.00	0.29	0.02	-	0.48
21	10	9	8.0	1200.0	309.59	1.98	1.92	0.06	-	1.65
22	12	10	8.0	1200.0	309.59	1.98	1.92	0.06	-	1.65
23	14	12	8.0	1200.0	110.43	0.70	0.28	0.01	-	0.24
24	15	14	8.0	1000.0	110.43	0.70	0.24	0.01	-	0.24
25	12	13	8.0	840.0	216.75	1.38	0.69	0.03	-	0.86
26	13	29	8.0	1500.0	216.75	1.38	1.24	0.03	-	0.85
27	26	7	8.0	1140.0	156.29	1.00	0.51	0.02	-	0.46

28	29	26	8.0	2400.0	239.28	1.53	2.38	0.04	-	1.01
29	24	29	8.0	1200.0	165.54	1.06	0.60	0.02	-	0.52
30	24	23	12.0	900.0	197.92	0.56	0.09	0.00	-	0.10
31	22	23	8.0	780.0	136.93	0.87	0.28	0.01	-	0.37
32	18	22	8.0	480.0	136.93	0.87	0.17	0.01	-	0.38
33	17	18	8.0	1320.0	136.93	0.87	0.47	0.01	-	0.36
4	15	35	12.0	600.0	718.26	2.04	0.63	0.06	-	1.16
35	35	25	12.0	900.0	565.25	1.60	0.61	0.04	-	0.72
36	25	24	12.0	1100.0	473.25	1.34	0.54	0.03	-	0.51
37	24	27	12.0	1200.0	109.78	0.31	0.04	0.00	-	0.03
38	28	27	12.0	1200.0	55.22	0.16	0.01	0.00	-	0.01
39	1	28	12.0	2100.0	55.22	0.16	0.02	0.00	-	0.01
40	1	2	16.0	1020.0	709.92	1.13	0.26	0.02	-	0.27
41	31	36	12.0	1620.0	306.95	0.87	0.35	0.01	-	0.23
42	36	37	12.0	20.0	108.00	0.31	0.00	0.00	-	0.07
43	38	32	12.0	960.0	111.30	0.32	0.03	0.00	-	0.03
44	41	38	24.0	450.0	6.88	0.00	0.00	0.00	-	0.00
45	40	1	24.0	100.0	765.14	0.54	0.00	0.00	-	0.09
47	39	40	16.0	100.0	176.02	0.28	0.00	0.00	293.10	0.03
48	0	39	24.0	10.0	765.14	0.54	0.00	0.00	-	0.46
49	0	41	24.0	50.0	6.88	0.00	0.00	0.00	-	0.00
50	39	40	16.0	100.0	343.93	0.55	0.01	0.00	293.11	0.11
51	39	40	16.0	100.0	245.18	0.39	0.00	0.00	293.10	0.06
52	49	51	12.0	1000.0	273.00	0.77	0.18	0.01	-	0.19
54	23	38	12.0	2100.0	334.85	0.95	0.54	0.01	-	0.26
55	0	45	12.0	10.0	568.93	1.61	0.01	0.04	-	4.73
56	46	36	8.0	2150.0	110.04	0.70	0.51	0.01	-	0.24
57	46	31	8.0	500.0	120.37	0.77	0.14	0.01	-	0.30
58	2	3	0.5	1200.0	2.42	3.96	176.20	0.24	-	147.04
61	49	50	12.0	3000.0	60.01	0.17	0.03	0.00	-	0.01
--- Line 62 is shut off ---										
[illegible]	0	49	12.0	40.0	333.01	0.94	0.01	0.01	-	0.60
[illegible]	53	52	12.0	2150.0	146.70	0.42	0.12	0.00	-	0.06
65	2	53	12.0	2150.0	205.68	0.58	0.22	0.01	-	0.11
66	54	30	8.0	550.0	55.03	0.35	0.04	0.00	-	0.07
67	55	54	12.0	100.0	1819.24	5.16	0.59	0.41	-	10.03
68	56	55	12.0	50.0	934.04	2.65	0.09	0.11	171.07	3.89
69	56	55	12.0	50.0	418.23	1.19	0.02	0.02	170.92	0.82
70	56	55	12.0	50.0	466.98	1.32	0.02	0.03	170.92	1.02
71	0	56	16.0	50.0	1819.24	2.90	0.07	0.13	-	4.07

Node #	Elev (ft)	Demand (GPM)	Press (psi)	Head (ft)	Hydr Grade (ft)
1	570.00	0.00	143.63	331.45	901.45
2	570.00	200.01	143.51	331.17	901.17
3	540.00	0.00	80.05	184.73	724.73
4	560.00	200.01	71.26	164.46	724.46
5	580.00	200.01	62.58	144.42	724.42
6	600.00	0.00	54.01	124.63	724.63
7	660.00	219.99	96.86	223.53	883.53
8	640.00	0.00	105.82	244.20	884.20
9	650.00	153.02	101.62	234.51	884.51
10	660.00	0.00	98.14	226.49	886.49
12	740.00	153.02	64.33	148.46	888.46
[illegible]	660.00	0.00	98.69	227.74	887.74
[illegible]	720.00	0.00	73.13	168.76	888.76
15	695.00	79.00	84.07	194.00	889.00
16	730.00	49.02	69.16	159.60	889.60
17	710.00	0.00	77.11	177.94	887.94
18	680.00	0.00	89.90	207.47	887.47
19	740.00	49.02	63.53	146.61	886.61

20	720.00	0.00	71.69	165.44	885.44
21	720.00	0.00	71.43	164.83	884.83
22	690.00	0.00	85.49	197.29	887.29
23	680.00	0.00	89.70	207.00	887.00
24	660.00	0.00	98.41	227.09	887.09
25	770.00	92.00	50.98	117.65	887.65
26	640.00	82.99	105.76	244.06	884.06
27	660.00	165.00	104.62	241.42	901.42
28	620.00	0.00	121.95	281.43	901.43
29	630.00	143.01	111.14	256.47	886.47
30	720.00	6.01	73.51	169.63	889.63
31	740.00	452.00	62.37	143.94	883.94
32	740.00	57.99	63.45	146.41	886.41
33	700.00	142.02	80.75	186.34	886.34
34	800.00	0.00	37.33	86.15	886.15
35	690.00	153.02	85.93	198.30	888.30
36	740.00	309.00	62.21	143.57	883.57
37	800.00	108.00	36.21	83.57	883.57
38	830.00	0.00	24.46	56.45	886.45
39	580.00	0.00	6.06	14.00	594.00
40	580.00	0.00	133.07	307.09	887.09
41	870.00	0.00	7.13	16.45	886.45
42	740.00	32.00	62.36	143.90	883.90
45	870.00	0.00	8.17	18.85	888.85
46	740.00	0.00	62.44	144.08	884.08
49	1100.00	0.00	7.45	17.20	1117.20
50	800.00	60.01	137.44	317.17	1117.17
51	860.00	273.00	111.37	257.01	1117.01
52	680.00	57.99	95.69	220.82	900.82
53	650.00	58.98	108.74	250.94	900.94
54	700.00	0.00	82.19	189.67	889.67
55	700.00	0.00	82.62	190.67	890.67
56	700.00	0.00	8.58	19.80	719.80

Summary of inflows (+) and outflows (-):

Pipe #	Flow (GPM)
48	765.13+
49	6.87+
55	568.92+
63	333.00+
71	1819.23+

Net system demand: 3496.11 GPM

Maximum-Minimum Summary:

Pipe #	Vel (fps)	Pipe #	HL/1000 ft	Node #	Press (psi)
67	5.16	58	146.83	1	143.63
4	5.00	67	5.89	2	143.51
58	3.96	4	5.57	50	137.44
38	0.16	38	0.01	49	7.45
49	0.00	49	0.00	41	7.13
44	0.00	44	0.00	39	6.06

Note: 'HL/1000 ft' does NOT include Minor Losses; and Pipes with zero flow are not included under Minimum 'Vel (fps)'.

Tank status report:

Pipe	Pipe Flow	Ext Flow	Elev	Depth	Volume	Proj Elev

#	(GPM)	(GPM)	(ft)	(ft)	(gal)	(ft)
49	-6.9	0.0	886.4	12.4	358,325	886.4
55	-568.9	0.0	888.9	14.9	428,777	887.7
63	-333.0	0.0	1117.2	13.2	380,698	1116.5

Simulation Results - EPS Time: 5 hrs 0.0 min

Number of trials: 10
Convergence : 0.0004

Pipe	Nodes (Q--->)		Dia (in)	Length (ft)	Flow (GPM)	Vel (fps)	Losses (ft) Head	Minor	Pump Head	Hd Loss /1000 ft
1	45	12	12.0	500.0	469.30	1.33	0.24	0.03	-	0.53
2	31	42	8.0	1450.0	32.00	0.20	0.03	0.00	-	0.02
3	30	16	8.0	500.0	49.02	0.31	0.03	0.00	-	0.06
4	54	15	12.0	50.0	1765.16	5.01	0.28	0.39	-	13.36
5	15	17	12.0	660.0	831.68	2.36	0.91	0.09	-	1.51
6	17	19	12.0	1200.0	708.96	2.01	1.23	0.06	-	1.08
7	19	20	12.0	1200.0	659.95	1.87	1.08	0.05	-	0.95
8	20	21	12.0	600.0	659.95	1.87	0.54	0.05	-	0.99
9	21	31	12.0	900.0	659.95	1.87	0.81	0.05	-	0.96
10	34	46	8.0	2200.0	241.05	1.54	2.21	0.04	-	1.02
11	38	34	10.0	900.0	241.05	0.98	0.31	0.02	-	0.36
12	32	33	12.0	1400.0	142.02	0.40	0.07	0.00	-	0.05
13	52	32	12.0	1700.0	61.17	0.17	0.02	0.00	-	0.01
14	0	3	12.0	1200.0	304.41	0.86	0.26	0.01	-	0.22
15	3	4	12.0	1200.0	306.84	0.87	0.26	0.01	-	0.23
16	4	5	12.0	1200.0	106.82	0.30	0.04	0.00	-	0.03
17	6	5	8.0	1200.0	93.19	0.59	0.21	0.01	-	0.18
18	0	6	8.0	2100.0	93.19	0.59	0.36	0.01	-	0.18
19	8	7	8.0	1450.0	147.93	0.94	0.59	0.01	-	0.42
20	9	8	8.0	650.0	147.93	0.94	0.26	0.01	-	0.43
21	10	9	8.0	1200.0	300.95	1.92	1.82	0.06	-	1.56
22	12	10	8.0	1200.0	300.95	1.92	1.82	0.06	-	1.56
23	14	12	8.0	1200.0	168.75	1.08	0.62	0.02	-	0.53
24	15	14	8.0	1000.0	168.75	1.08	0.52	0.02	-	0.54
25	12	13	8.0	840.0	184.09	1.17	0.51	0.02	-	0.64
26	13	29	8.0	1500.0	184.09	1.17	0.92	0.02	-	0.62
27	26	7	8.0	1140.0	164.93	1.05	0.57	0.02	-	0.51
28	29	26	8.0	2400.0	247.93	1.58	2.54	0.04	-	1.08
29	24	29	8.0	1200.0	206.84	1.32	0.91	0.03	-	0.78
30	24	23	12.0	900.0	152.92	0.43	0.05	0.00	-	0.06
31	22	23	8.0	780.0	122.72	0.78	0.22	0.01	-	0.30
32	18	22	8.0	480.0	122.72	0.78	0.14	0.01	-	0.31
33	17	18	8.0	1320.0	122.72	0.78	0.38	0.01	-	0.30
34	15	35	12.0	600.0	685.73	1.95	0.58	0.06	-	1.07
35	35	25	12.0	900.0	532.71	1.51	0.55	0.04	-	0.65
36	25	24	12.0	1100.0	440.71	1.25	0.47	0.02	-	0.45
37	24	27	12.0	1200.0	80.94	0.23	0.02	0.00	-	0.02
38	28	27	12.0	1200.0	84.06	0.24	0.02	0.00	-	0.02
39	1	28	12.0	2100.0	84.06	0.24	0.04	0.00	-	0.02
40	1	2	16.0	1020.0	682.38	1.09	0.24	0.02	-	0.25
41	31	36	12.0	1620.0	305.06	0.87	0.35	0.01	-	0.22
42	36	37	12.0	20.0	108.00	0.31	0.00	0.00	-	0.07
43	38	32	12.0	960.0	138.84	0.39	0.05	0.00	-	0.05
44	41	38	24.0	450.0	104.25	0.07	0.00	0.00	-	0.00
45	40	1	24.0	100.0	766.44	0.54	0.00	0.00	-	0.09
47	39	40	16.0	100.0	176.37	0.28	0.00	0.00	292.93	0.03

48	0	39	24.0	10.0	766.44	0.54	0.00	0.00	-	0.46
49	0	41	24.0	50.0	104.25	0.07	0.00	0.00	-	0.00
50	39	40	16.0	100.0	344.44	0.55	0.01	0.00	292.94	0.11
51	39	40	16.0	100.0	245.63	0.39	0.00	0.00	292.94	0.06
52	49	51	12.0	1000.0	273.00	0.77	0.18	0.01	-	0.19
54	23	38	12.0	2100.0	275.64	0.78	0.38	0.01	-	0.18
55	0	45	12.0	10.0	469.30	1.33	0.00	0.03	-	3.23
56	46	36	8.0	2150.0	111.93	0.71	0.52	0.01	-	0.25
57	46	31	8.0	500.0	129.12	0.82	0.16	0.01	-	0.34
58	2	3	0.5	1200.0	2.42	3.96	176.11	0.24	-	146.96
61	49	50	12.0	3000.0	60.01	0.17	0.03	0.00	-	0.01
--- Line 62 is shut off ---										
63	0	49	12.0	40.0	333.01	0.94	0.01	0.01	-	0.60
64	53	52	12.0	2150.0	119.17	0.34	0.08	0.00	-	0.04
65	2	53	12.0	2150.0	178.15	0.51	0.17	0.00	-	0.08
66	54	30	8.0	550.0	55.03	0.35	0.04	0.00	-	0.07
67	55	54	12.0	100.0	1820.19	5.16	0.59	0.41	-	10.04
68	56	55	12.0	50.0	934.34	2.65	0.09	0.11	170.66	3.90
69	56	55	12.0	50.0	418.39	1.19	0.02	0.02	170.50	0.82
70	56	55	12.0	50.0	467.46	1.33	0.02	0.03	170.51	1.02
71	0	56	16.0	50.0	1820.19	2.90	0.07	0.13	-	4.07

Node #	Elev (ft)	Demand (GPM)	Press (psi)	Head (ft)	Hydr Grade (ft)
1	570.00	0.00	143.58	331.34	901.34
2	570.00	200.01	143.47	331.08	901.08
3	540.00	0.00	80.05	184.73	724.73
4	560.00	200.01	71.26	164.46	724.46
5	580.00	200.01	62.58	144.42	724.42
6	600.00	0.00	54.01	124.63	724.63
7	660.00	219.99	96.53	222.77	882.77
8	640.00	0.00	105.46	243.38	883.38
9	650.00	153.02	101.25	233.66	883.66
10	660.00	0.00	97.73	225.53	885.53
12	740.00	153.02	63.88	147.41	887.41
13	660.00	0.00	98.31	226.88	886.88
14	720.00	0.00	72.82	168.05	888.05
15	695.00	79.00	83.89	193.59	888.59
16	730.00	49.02	68.98	159.19	889.19
17	710.00	0.00	76.95	177.59	887.59
18	680.00	0.00	89.79	207.20	887.20
19	740.00	49.02	63.39	146.29	886.29
20	720.00	0.00	71.57	165.16	885.16
21	720.00	0.00	71.31	164.56	884.56
22	690.00	0.00	85.39	197.05	887.05
23	680.00	0.00	89.62	206.82	886.82
24	660.00	0.00	98.31	226.87	886.87
25	770.00	92.00	50.86	117.37	887.37
26	640.00	82.99	105.45	243.36	883.36
27	660.00	165.00	104.55	241.28	901.28
28	620.00	0.00	121.90	281.30	901.30
29	630.00	143.01	110.91	255.94	885.94
30	720.00	6.01	73.33	169.22	889.22
31	740.00	452.00	62.27	143.69	883.69
32	740.00	57.99	63.43	146.38	886.38
33	700.00	142.02	80.73	186.31	886.31
34	800.00	0.00	37.31	86.11	886.11
35	690.00	153.02	85.78	197.95	887.95
36	740.00	309.00	62.11	143.33	883.33
37	800.00	108.00	36.11	83.33	883.33
38	830.00	0.00	24.45	56.43	886.43

39	580.00	0.00	6.06	14.00	594.00
40	580.00	0.00	133.00	306.93	886.93
41	870.00	0.00	7.12	16.43	886.43
42	740.00	32.00	62.25	143.66	883.66
45	870.00	0.00	7.66	17.68	887.68
46	740.00	0.00	62.34	143.86	883.86
49	1100.00	0.00	7.15	16.51	1116.51
50	800.00	60.01	137.14	316.47	1116.47
51	860.00	273.00	111.07	256.32	1116.32
52	680.00	57.99	95.69	220.83	900.83
53	650.00	58.98	108.73	250.91	900.91
54	700.00	0.00	82.01	189.26	889.26
55	700.00	0.00	82.45	190.26	890.26
56	700.00	0.00	8.58	19.80	719.80

Summary of inflows (+) and outflows (-):

Pipe #	Flow (GPM)
48	766.43+
49	104.24+
55	469.30+
63	333.00+
71	1820.18+

Net system demand: 3496.11 GPM

Maximum-Minimum Summary:

Pipe #	Vel (fps)	Pipe #	HL/1000 ft	Node #	Press (psi)
67	5.16	58	146.76	1	143.58
4	5.01	67	5.90	2	143.47
58	3.96	4	5.57	50	137.14
61	0.17	61	0.01	49	7.15
49	0.07	49	0.00	41	7.12
44	0.07	44	0.00	39	6.06

NOTE: 'HL/1000 ft' does NOT include Minor Losses; and Pipes with zero flow are not included under Minimum 'Vel (fps)'.

Tank status report:

Pipe #	Pipe Flow (GPM)	Ext Flow (GPM)	Elev (ft)	Depth (ft)	Volume (gal)	Proj Elev (ft)
49	-104.2	0.0	886.4	12.4	357,913	886.2
55	-469.3	0.0	887.7	13.7	394,643	886.7
63	-333.0	0.0	1116.5	12.5	360,719	1115.8

Simulation Results - EPS Time: 6 hrs 0.0 min

Number of trials: 10
Accuracy : 0.0004

Pipe	Nodes (Q--->)		Dia (in)	Length (ft)	Flow (GPM)	Vel (fps)	Losses (ft) Head	Losses (ft) Minor	Pump Head	Hd Loss /1000 ft
1	45	12	12.0	500.0	407.19	1.16	0.18	0.02	-	0.41
2	31	42	8.0	1450.0	32.00	0.20	0.03	0.00	-	0.02

3	30	16	8.0	500.0	49.02	0.31	0.03	0.00	-	0.06
4	54	15	12.0	50.0	1766.15	5.01	0.28	0.39	-	13.37
5	15	17	12.0	660.0	817.65	2.32	0.88	0.08	-	1.47
6	17	19	12.0	1200.0	703.25	1.99	1.22	0.06	-	1.07
7	19	20	12.0	1200.0	654.23	1.86	1.06	0.05	-	0.93
8	20	21	12.0	600.0	654.23	1.86	0.53	0.05	-	0.98
9	21	31	12.0	900.0	654.23	1.86	0.80	0.05	-	0.95
10	34	46	8.0	2200.0	246.77	1.57	2.31	0.04	-	1.07
11	38	34	10.0	900.0	246.77	1.01	0.32	0.02	-	0.37
12	32	33	12.0	1400.0	142.02	0.40	0.07	0.00	-	0.05
13	52	32	12.0	1700.0	45.99	0.13	0.01	0.00	-	0.01
14	0	3	12.0	1200.0	304.41	0.86	0.26	0.01	-	0.22
15	3	4	12.0	1200.0	306.84	0.87	0.26	0.01	-	0.23
16	4	5	12.0	1200.0	106.82	0.30	0.04	0.00	-	0.03
17	6	5	8.0	1200.0	93.19	0.59	0.21	0.01	-	0.18
18	0	6	8.0	2100.0	93.19	0.59	0.36	0.01	-	0.18
19	8	7	8.0	1450.0	142.52	0.91	0.55	0.01	-	0.39
20	9	8	8.0	650.0	142.52	0.91	0.25	0.01	-	0.40
21	10	9	8.0	1200.0	295.54	1.89	1.76	0.06	-	1.51
22	12	10	8.0	1200.0	295.54	1.89	1.76	0.06	-	1.51
23	14	12	8.0	1200.0	202.30	1.29	0.87	0.03	-	0.75
24	15	14	8.0	1000.0	202.30	1.29	0.73	0.03	-	0.75
25	12	13	8.0	840.0	160.94	1.03	0.40	0.02	-	0.50
26	13	29	8.0	1500.0	160.94	1.03	0.71	0.02	-	0.49
27	26	7	8.0	1140.0	170.34	1.09	0.60	0.02	-	0.54
28	29	26	8.0	2400.0	253.34	1.62	2.65	0.04	-	1.12
29	24	29	8.0	1200.0	235.40	1.50	1.15	0.04	-	0.99
30	24	23	12.0	900.0	123.34	0.35	0.04	0.00	-	0.04
31	22	23	8.0	780.0	114.40	0.73	0.20	0.01	-	0.26
32	18	22	8.0	480.0	114.40	0.73	0.12	0.01	-	0.27
33	17	18	8.0	1320.0	114.40	0.73	0.33	0.01	-	0.26
34	15	35	12.0	600.0	667.20	1.89	0.55	0.06	-	1.01
35	35	25	12.0	900.0	514.18	1.46	0.51	0.03	-	0.60
36	25	24	12.0	1100.0	422.18	1.20	0.43	0.02	-	0.41
37	24	27	12.0	1200.0	63.44	0.18	0.01	0.00	-	0.01
38	28	27	12.0	1200.0	101.56	0.29	0.03	0.00	-	0.03
39	1	28	12.0	2100.0	101.56	0.29	0.06	0.00	-	0.03
40	1	2	16.0	1020.0	667.20	1.06	0.23	0.02	-	0.24
41	31	36	12.0	1620.0	304.01	0.86	0.35	0.01	-	0.22
42	36	37	12.0	20.0	108.00	0.31	0.00	0.00	-	0.07
43	38	32	12.0	960.0	154.02	0.44	0.06	0.00	-	0.06
44	41	38	24.0	450.0	163.05	0.12	0.00	0.00	-	0.00
45	40	1	24.0	100.0	768.76	0.55	0.00	0.00	-	0.09
47	39	40	16.0	100.0	176.98	0.28	0.00	0.00	292.64	0.03
48	0	39	24.0	10.0	768.76	0.55	0.00	0.00	-	0.46
49	0	41	24.0	50.0	163.05	0.12	0.00	0.00	-	0.00
50	39	40	16.0	100.0	345.34	0.55	0.01	0.00	292.65	0.11
51	39	40	16.0	100.0	246.44	0.39	0.00	0.00	292.65	0.06
52	49	51	12.0	1000.0	273.00	0.77	0.18	0.01	-	0.19
54	23	38	12.0	2100.0	237.74	0.67	0.29	0.01	-	0.14
55	0	45	12.0	10.0	407.19	1.16	0.00	0.02	-	2.44
56	46	36	8.0	2150.0	112.98	0.72	0.53	0.01	-	0.25
57	46	31	8.0	500.0	133.79	0.85	0.17	0.01	-	0.36
58	2	3	0.5	1200.0	2.42	3.96	175.80	0.24	-	146.70
61	49	50	12.0	3000.0	60.01	0.17	0.03	0.00	-	0.01
--- Line 62 is shut off ---										
0	0	49	12.0	40.0	333.01	0.94	0.01	0.01	-	0.60
64	53	52	12.0	2150.0	103.98	0.29	0.06	0.00	-	0.03
65	2	53	12.0	2150.0	162.96	0.46	0.15	0.00	-	0.07
66	54	30	8.0	550.0	55.03	0.35	0.04	0.00	-	0.07
67	55	54	12.0	100.0	1821.18	5.17	0.59	0.41	-	10.05
68	56	55	12.0	50.0	934.66	2.65	0.09	0.11	170.22	3.90
69	56	55	12.0	50.0	418.57	1.19	0.02	0.02	170.07	0.83

70	56	55	12.0	50.0	467.96	1.33	0.02	0.03	170.08	1.02
71	0	56	16.0	50.0	1821.18	2.91	0.07	0.13	-	4.08

de #	Elev (ft)	Demand (GPM)	Press (psi)	Head (ft)	Hydr Grade (ft)
1	570.00	0.00	143.44	331.02	901.02
2	570.00	200.01	143.33	330.77	900.77
3	540.00	0.00	80.05	184.73	724.73
4	560.00	200.01	71.26	164.46	724.46
5	580.00	200.01	62.58	144.42	724.42
6	600.00	0.00	54.01	124.63	724.63
7	660.00	219.99	96.22	222.05	882.05
8	640.00	0.00	105.13	242.61	882.61
9	650.00	153.02	100.91	232.87	882.87
10	660.00	0.00	97.36	224.69	884.69
12	740.00	153.02	63.48	146.50	886.50
13	660.00	0.00	97.97	226.09	886.09
14	720.00	0.00	72.54	167.40	887.40
15	695.00	79.00	83.70	193.15	888.15
16	730.00	49.02	68.79	158.75	888.75
17	710.00	0.00	76.78	177.18	887.18
18	680.00	0.00	89.63	206.84	886.84
19	740.00	49.02	63.23	145.91	885.91
20	720.00	0.00	71.41	164.79	884.79
21	720.00	0.00	71.15	164.20	884.20
22	690.00	0.00	85.24	196.71	886.71
23	680.00	0.00	89.49	206.51	886.51
24	660.00	0.00	98.17	226.54	886.54
25	770.00	92.00	50.70	117.00	887.00
26	640.00	82.99	105.16	242.67	882.67
27	660.00	165.00	104.40	240.92	900.92
28	620.00	0.00	121.75	280.96	900.96
29	630.00	143.01	110.65	255.36	885.36
30	720.00	6.01	73.14	168.78	888.78
31	740.00	452.00	62.12	143.35	883.35
32	740.00	57.99	63.33	146.15	886.15
33	700.00	142.02	80.63	186.08	886.08
34	800.00	0.00	37.21	85.88	885.88
35	690.00	153.02	85.60	197.54	887.54
36	740.00	309.00	61.96	142.99	882.99
37	800.00	108.00	35.96	82.99	882.99
38	830.00	0.00	24.36	56.21	886.21
39	580.00	0.00	6.06	13.99	593.99
40	580.00	0.00	132.87	306.63	886.63
41	870.00	0.00	7.03	16.21	886.21
42	740.00	32.00	62.10	143.32	883.32
45	870.00	0.00	7.24	16.71	886.71
46	740.00	0.00	62.20	143.53	883.53
49	1100.00	0.00	6.85	15.81	1115.81
50	800.00	60.01	136.84	315.78	1115.78
51	860.00	273.00	110.77	255.63	1115.63
52	680.00	57.99	95.57	220.56	900.56
53	650.00	58.98	108.60	250.62	900.62
54	700.00	0.00	81.82	188.82	888.82
55	700.00	0.00	82.26	189.82	889.82
56	700.00	0.00	8.58	19.80	719.80

Summary of inflows (+) and outflows (-):

Pipe #	Flow (GPM)

	48	768.75+
	49	163.04+
Net system demand: 3496.11 GPM	55	407.19+
	63	333.00+
	71	1821.17+

Maximum-Minimum Summary:

Pipe #	Vel (fps)	Pipe #	HL/1000 ft	Node #	Press (psi)
67	5.17	58	146.50	1	143.44
4	5.01	67	5.90	2	143.33
58	3.96	4	5.58	50	136.84
13	0.13	13	0.01	41	7.03
49	0.12	44	0.00	49	6.85
44	0.12	49	0.00	39	6.06

NOTE: 'HL/1000 ft' does NOT include Minor Losses; and Pipes with zero flow are not included under Minimum 'Vel (fps)'.

Tank status report:

Pipe #	Pipe Flow (GPM)	Ext Flow (GPM)	Elev (ft)	Depth (ft)	Volume (gal)	Proj Elev (ft)
49	-163.0	0.0	886.2	12.2	351,658	885.9
55	-407.2	0.0	886.7	12.7	366,487	885.9
63	-333.0	0.0	1115.8	11.8	340,739	1115.1

Simulation Results - EPS Time: 7 hrs 0.0 min

Number of trials: 10
Convergence : 0.0004

Pipe	Nodes (Q--->)		Dia (in)	Length (ft)	Flow (GPM)	Vel (fps)	Losses (ft) Head	Losses (ft) Minor	Pump Head	Hd Loss /1000 ft
1	45	12	12.0	500.0	366.05	1.04	0.15	0.02	-	0.34
2	31	42	8.0	1450.0	32.00	0.20	0.03	0.00	-	0.02
3	30	16	8.0	500.0	49.02	0.31	0.03	0.00	-	0.06
4	54	15	12.0	50.0	1767.21	5.01	0.28	0.39	-	13.39
5	15	17	12.0	660.0	809.02	2.29	0.87	0.08	-	1.44
6	17	19	12.0	1200.0	699.87	1.99	1.21	0.06	-	1.06
7	19	20	12.0	1200.0	650.85	1.85	1.05	0.05	-	0.92
8	20	21	12.0	600.0	650.85	1.85	0.53	0.05	-	0.97
9	21	31	12.0	900.0	650.85	1.85	0.79	0.05	-	0.94
10	34	46	8.0	2200.0	250.15	1.60	2.37	0.04	-	1.09
11	38	34	10.0	900.0	250.15	1.02	0.33	0.02	-	0.38
12	32	33	12.0	1400.0	142.02	0.40	0.07	0.00	-	0.05
13	52	32	12.0	1700.0	37.41	0.11	0.01	0.00	-	0.00
14	0	3	12.0	1200.0	304.42	0.86	0.26	0.01	-	0.22
15	3	4	12.0	1200.0	306.83	0.87	0.26	0.01	-	0.23
16	4	5	12.0	1200.0	106.82	0.30	0.04	0.00	-	0.03
17	6	5	8.0	1200.0	93.19	0.59	0.21	0.01	-	0.18
18	0	6	8.0	2100.0	93.19	0.59	0.36	0.01	-	0.18
19	8	7	8.0	1450.0	139.05	0.89	0.53	0.01	-	0.37
20	9	8	8.0	650.0	139.05	0.89	0.24	0.01	-	0.38
21	10	9	8.0	1200.0	292.07	1.86	1.72	0.05	-	1.48

22	12	10	8.0	1200.0	292.07	1.86	1.72	0.05	-	1.48
23	14	12	8.0	1200.0	223.54	1.43	1.05	0.03	-	0.90
24	15	14	8.0	1000.0	223.54	1.43	0.87	0.03	-	0.91
25	12	13	8.0	840.0	144.51	0.92	0.33	0.01	-	0.41
26	13	29	8.0	1500.0	144.51	0.92	0.58	0.01	-	0.40
27	26	7	8.0	1140.0	173.81	1.11	0.63	0.02	-	0.57
28	29	26	8.0	2400.0	256.80	1.64	2.71	0.04	-	1.15
29	24	29	8.0	1200.0	255.30	1.63	1.34	0.04	-	1.15
30	24	23	12.0	900.0	103.46	0.29	0.03	0.00	-	0.03
31	22	23	8.0	780.0	109.15	0.70	0.18	0.01	-	0.24
32	18	22	8.0	480.0	109.15	0.70	0.11	0.01	-	0.25
33	17	18	8.0	1320.0	109.15	0.70	0.31	0.01	-	0.24
34	15	35	12.0	600.0	655.65	1.86	0.53	0.05	-	0.98
35	35	25	12.0	900.0	502.63	1.43	0.49	0.03	-	0.58
36	25	24	12.0	1100.0	410.63	1.16	0.41	0.02	-	0.39
37	24	27	12.0	1200.0	51.87	0.15	0.01	0.00	-	0.01
38	28	27	12.0	1200.0	113.13	0.32	0.04	0.00	-	0.04
39	1	28	12.0	2100.0	113.13	0.32	0.07	0.00	-	0.04
40	1	2	16.0	1020.0	658.62	1.05	0.23	0.02	-	0.24
41	31	36	12.0	1620.0	303.38	0.86	0.35	0.01	-	0.22
42	36	37	12.0	20.0	108.00	0.31	0.00	0.00	-	0.07
43	38	32	12.0	960.0	162.60	0.46	0.06	0.00	-	0.07
44	41	38	24.0	450.0	200.14	0.14	0.00	0.00	-	0.00
45	40	1	24.0	100.0	771.74	0.55	0.00	0.00	-	0.09
47	39	40	16.0	100.0	177.77	0.28	0.00	0.00	292.26	0.03
48	0	39	24.0	10.0	771.74	0.55	0.00	0.00	-	0.47
49	0	41	24.0	50.0	200.14	0.14	0.00	0.00	-	0.00
50	39	40	16.0	100.0	346.51	0.55	0.01	0.00	292.27	0.11
51	39	40	16.0	100.0	247.47	0.39	0.00	0.00	292.27	0.06
52	49	51	12.0	1000.0	273.00	0.77	0.18	0.01	-	0.19
54	23	38	12.0	2100.0	212.60	0.60	0.23	0.01	-	0.11
55	0	45	12.0	10.0	366.05	1.04	0.00	0.02	-	1.98
56	46	36	8.0	2150.0	113.61	0.73	0.54	0.01	-	0.25
57	46	31	8.0	500.0	136.54	0.87	0.18	0.01	-	0.37
58	2	3	0.5	1200.0	2.42	3.95	175.32	0.24	-	146.30
61	49	50	12.0	3000.0	60.01	0.17	0.03	0.00	-	0.01
--- Line 62 is shut off ---										
63	0	49	12.0	40.0	333.01	0.94	0.01	0.01	-	0.60
64	53	52	12.0	2150.0	95.41	0.27	0.05	0.00	-	0.03
65	2	53	12.0	2150.0	154.39	0.44	0.13	0.00	-	0.06
66	54	30	8.0	550.0	55.03	0.35	0.04	0.00	-	0.07
67	55	54	12.0	100.0	1822.24	5.17	0.59	0.41	-	10.06
68	56	55	12.0	50.0	934.99	2.65	0.09	0.11	169.75	3.90
69	56	55	12.0	50.0	418.75	1.19	0.02	0.02	169.60	0.83
70	56	55	12.0	50.0	468.49	1.33	0.02	0.03	169.61	1.03
71	0	56	16.0	50.0	1822.24	2.91	0.07	0.13	-	4.08

Node #	Elev (ft)	Demand (GPM)	Press (psi)	Head (ft)	Hydr Grade (ft)
1	570.00	0.00	143.23	330.54	900.54
2	570.00	200.01	143.13	330.30	900.30
3	540.00	0.00	80.05	184.73	724.73
4	560.00	200.01	71.26	164.46	724.46
5	580.00	200.01	62.58	144.42	724.42
6	600.00	0.00	54.01	124.63	724.63
7	660.00	219.99	95.92	221.36	881.36
8	640.00	0.00	104.82	241.90	881.90
9	650.00	153.02	100.60	232.14	882.14
10	660.00	0.00	97.03	223.92	883.92
12	740.00	153.02	63.13	145.69	885.69
13	660.00	0.00	97.65	225.35	885.35

14	720.00	0.00	72.27	166.77	886.77
15	695.00	79.00	83.49	192.68	887.68
16	730.00	49.02	68.59	158.28	888.28
17	710.00	0.00	76.58	176.73	886.73
18	680.00	0.00	89.45	206.42	886.42
19	740.00	49.02	63.03	145.46	885.46
20	720.00	0.00	71.22	164.36	884.36
21	720.00	0.00	70.97	163.78	883.78
22	690.00	0.00	85.06	196.30	886.30
23	680.00	0.00	89.31	206.11	886.11
24	660.00	0.00	97.99	226.14	886.14
25	770.00	92.00	50.51	116.57	886.57
26	640.00	82.99	104.87	242.00	882.00
27	660.00	165.00	104.18	240.42	900.42
28	620.00	0.00	121.53	280.46	900.46
29	630.00	143.01	110.39	254.76	884.76
30	720.00	6.01	72.94	168.31	888.31
31	740.00	452.00	61.94	142.93	882.93
32	740.00	57.99	63.18	145.81	885.81
33	700.00	142.02	80.48	185.73	885.73
34	800.00	0.00	37.06	85.53	885.53
35	690.00	153.02	85.41	197.09	887.09
36	740.00	309.00	61.78	142.58	882.58
37	800.00	108.00	35.78	82.58	882.58
38	830.00	0.00	24.21	55.87	885.87
39	580.00	0.00	6.06	13.99	593.99
40	580.00	0.00	132.71	306.25	886.25
41	870.00	0.00	6.88	15.87	885.87
42	740.00	32.00	61.92	142.90	882.90
45	870.00	0.00	6.87	15.86	885.86
46	740.00	0.00	62.02	143.12	883.12
9	1100.00	0.00	6.55	15.12	1115.12
50	800.00	60.01	136.54	315.09	1115.09
51	860.00	273.00	110.47	254.93	1114.93
52	680.00	57.99	95.38	220.11	900.11
53	650.00	58.98	108.40	250.16	900.16
54	700.00	0.00	81.62	188.35	888.35
55	700.00	0.00	82.05	189.36	889.36
56	700.00	0.00	8.58	19.80	719.80

Summary of inflows (+) and outflows (-):

Net system demand: 3496.11 GPM

Pipe #	Flow (GPM)
48	771.74+
49	200.13+
55	366.05+
63	333.00+
71	1822.23+

Maximum-Minimum Summary:

Pipe #	Vel (fps)	Pipe #	HL/1000 ft	Node #	Press (psi)
67	5.17	58	146.10	1	143.23
4	5.01	67	5.91	2	143.13
58	3.95	4	5.58	50	136.54
49	0.14	13	0.00	45	6.87
44	0.14	49	0.00	49	6.55
13	0.11	44	0.00	39	6.06

NOTE: 'HL/1000 ft' does NOT include Minor Losses; and Pipes with

zero flow are not included under Minimum 'Vel (fps)'.

Tank status report:

Pipe	Pipe Flow (GPM)	Ext Flow (GPM)	Elev (ft)	Depth (ft)	Volume (gal)	Proj Elev (ft)
49	-200.1	0.0	885.9	11.9	341,876	885.5
55	-366.1	0.0	885.9	11.9	342,057	885.1
63	-333.0	0.0	1115.1	11.1	320,760	1114.4

Simulation Results - EPS Time: 8 hrs 0.0 min

Number of trials: 10
Convergence : 0.0004

Pipe	Nodes (Q--->)		Dia (in)	Length (ft)	Flow (GPM)	Vel (fps)	Losses (ft) Head	Minor	Pump Head	Hd Loss /1000 ft
1	45	12	12.0	500.0	338.04	0.96	0.13	0.01	-	0.29
2	31	42	8.0	1450.0	32.00	0.20	0.03	0.00	-	0.02
3	30	16	8.0	500.0	49.02	0.31	0.03	0.00	-	0.06
4	54	15	12.0	50.0	1768.31	5.02	0.28	0.39	-	13.40
5	15	17	12.0	660.0	803.53	2.28	0.86	0.08	-	1.42
6	17	19	12.0	1200.0	697.79	1.98	1.20	0.06	-	1.05
7	19	20	12.0	1200.0	648.77	1.84	1.05	0.05	-	0.92
8	20	21	12.0	600.0	648.77	1.84	0.52	0.05	-	0.96
9	21	31	12.0	900.0	648.77	1.84	0.79	0.05	-	0.93
10	34	46	8.0	2200.0	252.23	1.61	2.41	0.04	-	1.11
11	38	34	10.0	900.0	252.23	1.03	0.33	0.02	-	0.39
12	32	33	12.0	1400.0	142.02	0.40	0.07	0.00	-	0.05
13	52	32	12.0	1700.0	32.72	0.09	0.01	0.00	-	0.00
14	0	3	12.0	1200.0	304.42	0.86	0.26	0.01	-	0.22
15	3	4	12.0	1200.0	306.83	0.87	0.26	0.01	-	0.23
16	4	5	12.0	1200.0	106.82	0.30	0.04	0.00	-	0.03
17	6	5	8.0	1200.0	93.19	0.59	0.21	0.01	-	0.18
18	0	6	8.0	2100.0	93.19	0.59	0.36	0.01	-	0.18
19	8	7	8.0	1450.0	136.78	0.87	0.51	0.01	-	0.36
20	9	8	8.0	650.0	136.78	0.87	0.23	0.01	-	0.37
21	10	9	8.0	1200.0	289.80	1.85	1.70	0.05	-	1.46
22	12	10	8.0	1200.0	289.80	1.85	1.70	0.05	-	1.46
23	14	12	8.0	1200.0	237.60	1.52	1.17	0.04	-	1.01
24	15	14	8.0	1000.0	237.60	1.52	0.98	0.04	-	1.01
25	12	13	8.0	840.0	132.83	0.85	0.28	0.01	-	0.35
26	13	29	8.0	1500.0	132.83	0.85	0.50	0.01	-	0.34
27	26	7	8.0	1140.0	176.08	1.12	0.64	0.02	-	0.58
28	29	26	8.0	2400.0	259.08	1.65	2.76	0.04	-	1.17
29	24	29	8.0	1200.0	269.25	1.72	1.48	0.05	-	1.27
30	24	23	12.0	900.0	90.15	0.26	0.02	0.00	-	0.02
31	22	23	8.0	780.0	105.74	0.67	0.17	0.01	-	0.23
32	18	22	8.0	480.0	105.74	0.67	0.10	0.01	-	0.23
33	17	18	8.0	1320.0	105.74	0.67	0.29	0.01	-	0.22
34	15	35	12.0	600.0	648.18	1.84	0.52	0.05	-	0.96
35	35	25	12.0	900.0	495.17	1.40	0.48	0.03	-	0.56
36	25	24	12.0	1100.0	403.17	1.14	0.40	0.02	-	0.38
37	24	27	12.0	1200.0	43.76	0.12	0.01	0.00	-	0.01
38	28	27	12.0	1200.0	121.24	0.34	0.05	0.00	-	0.04
39	1	28	12.0	2100.0	121.24	0.34	0.08	0.00	-	0.04
40	1	2	16.0	1020.0	653.92	1.04	0.22	0.02	-	0.23

41	31	36	12.0	1620.0	302.99	0.86	0.35	0.01	-	0.22
42	36	37	12.0	20.0	108.00	0.31	0.00	0.00	-	0.07
43	38	32	12.0	960.0	167.29	0.47	0.07	0.00	-	0.07
44	41	38	24.0	450.0	223.62	0.16	0.00	0.00	-	0.00
45	40	1	24.0	100.0	775.16	0.55	0.00	0.00	-	0.09
47	39	40	16.0	100.0	178.67	0.29	0.00	0.00	291.82	0.03
8	0	39	24.0	10.0	775.16	0.55	0.00	0.00	-	0.47
49	0	41	24.0	50.0	223.62	0.16	0.00	0.00	-	0.00
50	39	40	16.0	100.0	347.83	0.55	0.01	0.00	291.83	0.12
51	39	40	16.0	100.0	248.66	0.40	0.00	0.00	291.83	0.06
52	49	51	12.0	1000.0	273.00	0.77	0.18	0.01	-	0.19
54	23	38	12.0	2100.0	195.90	0.56	0.20	0.00	-	0.10
55	0	45	12.0	10.0	338.04	0.96	0.00	0.01	-	1.69
56	46	36	8.0	2150.0	114.00	0.73	0.54	0.01	-	0.26
57	46	31	8.0	500.0	138.23	0.88	0.18	0.01	-	0.38
58	2	3	0.5	1200.0	2.41	3.94	174.74	0.24	-	145.82
61	49	50	12.0	3000.0	60.01	0.17	0.03	0.00	-	0.01
--- Line 62 is shut off ---										
63	0	49	12.0	40.0	333.01	0.94	0.01	0.01	-	0.60
64	53	52	12.0	2150.0	90.71	0.26	0.05	0.00	-	0.02
65	2	53	12.0	2150.0	149.69	0.42	0.12	0.00	-	0.06
66	54	30	8.0	550.0	55.03	0.35	0.04	0.00	-	0.07
67	55	54	12.0	100.0	1823.34	5.17	0.59	0.42	-	10.07
68	56	55	12.0	50.0	935.34	2.65	0.09	0.11	169.26	3.90
69	56	55	12.0	50.0	418.95	1.19	0.02	0.02	169.10	0.83
70	56	55	12.0	50.0	469.05	1.33	0.02	0.03	169.11	1.03
71	0	56	16.0	50.0	1823.34	2.91	0.07	0.13	-	4.09

Node #	Elev (ft)	Demand (GPM)	Press (psi)	Head (ft)	Hydr Grade (ft)
1	570.00	0.00	142.98	329.95	899.95
2	570.00	200.01	142.88	329.71	899.71
3	540.00	0.00	80.05	184.73	724.73
4	560.00	200.01	71.26	164.46	724.46
5	580.00	200.01	62.58	144.42	724.42
6	600.00	0.00	54.01	124.63	724.63
7	660.00	219.99	95.63	220.69	880.69
8	640.00	0.00	104.53	241.22	881.22
9	650.00	153.02	100.30	231.46	881.46
10	660.00	0.00	96.72	223.21	883.21
12	740.00	153.02	62.81	144.96	884.96
13	660.00	0.00	97.35	224.67	884.67
14	720.00	0.00	72.01	166.17	886.17
15	695.00	79.00	83.28	192.18	887.18
16	730.00	49.02	68.37	157.79	887.79
17	710.00	0.00	76.37	176.24	886.24
18	680.00	0.00	89.24	205.95	885.95
19	740.00	49.02	62.83	144.99	884.99
20	720.00	0.00	71.02	163.88	883.88
21	720.00	0.00	70.77	163.31	883.31
22	690.00	0.00	84.86	195.84	885.84
23	680.00	0.00	89.12	205.66	885.66
24	660.00	0.00	97.79	225.68	885.68
25	770.00	92.00	50.31	116.10	886.10
[illegible]	640.00	82.99	104.59	241.36	881.36
[illegible]	660.00	165.00	103.92	239.82	899.82
28	620.00	0.00	121.28	279.87	899.87
29	630.00	143.01	110.13	254.15	884.15
30	720.00	6.01	72.72	167.81	887.81
31	740.00	452.00	61.74	142.47	882.47
32	740.00	57.99	63.00	145.38	885.38

33	700.00	142.02	80.30	185.31	885.31
34	800.00	0.00	36.88	85.11	885.11
35	690.00	153.02	85.20	196.61	886.61
36	740.00	309.00	61.58	142.11	882.11
37	800.00	108.00	35.58	82.11	882.11
38	830.00	0.00	24.03	55.46	885.46
39	580.00	0.00	6.06	13.99	593.99
40	580.00	0.00	132.52	305.82	885.82
41	870.00	0.00	6.70	15.46	885.46
42	740.00	32.00	61.72	142.43	882.43
45	870.00	0.00	6.54	15.10	885.10
46	740.00	0.00	61.82	142.66	882.66
49	1100.00	0.00	6.25	14.42	1114.42
50	800.00	60.01	136.24	314.39	1114.39
51	860.00	273.00	110.17	254.24	1114.24
52	680.00	57.99	95.13	219.54	899.54
53	650.00	58.98	108.15	249.59	899.59
54	700.00	0.00	81.40	187.85	887.85
55	700.00	0.00	81.84	188.86	888.86
56	700.00	0.00	8.58	19.80	719.80

Summary of inflows (+) and outflows (-):

Pipe #	Flow (GPM)
48	775.16+
49	223.62+
55	338.04+
63	333.00+
71	1823.34+

Net system demand: 3496.11 GPM

Maximum-Minimum Summary:

Pipe #	Vel (fps)	Pipe #	HL/1000 ft	Node #	Press (psi)
67	5.17	58	145.62	1	142.98
4	5.02	67	5.92	2	142.88
58	3.94	4	5.59	50	136.24
44	0.16	49	0.00	45	6.54
37	0.12	44	0.00	49	6.25
13	0.09	13	0.00	39	6.06

NOTE: 'HL/1000 ft' does NOT include Minor Losses; and Pipes with zero flow are not included under Minimum 'Vel (fps)'.

Tank status report:

Pipe #	Pipe Flow (GPM)	Ext Flow (GPM)	Elev (ft)	Depth (ft)	Volume (gal)	Proj Elev (ft)
49	-223.6	0.0	885.5	11.5	329,869	885.0
55	-338.0	0.0	885.1	11.1	320,095	884.4
63	-333.0	0.0	1114.4	10.4	300,781	1113.8

MILLERTON NEW TOWN AREA

IMPLEMENTATION PROCEDURES

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I. Purpose and Scope

The purpose of these Implementation Procedures ("Procedures") is to establish the requirements and responsibilities for landowners within the Millerton New Town Infrastructure Plan Study Area ("Plan Area") who utilize the facilities shown in the Infrastructure Plan ("Plan"). The Procedures are intended to guide the County of Fresno in the administration of the Plan as they review and approve projects of owners of land within the Plan Area ("Landowners") constructing facilities or using facilities previously provided by others. The Landowners desire to share in the use of facilities required by the Plan and shall pay their proportionate share of the costs in the manner described in these Implementation Procedures.

II Plan Area

The boundaries of the Plan Area are delineated on the map shown as Figure 1 of exhibit 1E of the Plan. All properties therein which receive services or in any way use facilities provided for the Plan Area shall be required to comply with the Plan and these Procedures.

A. Land Use and Zoning within Plan Area

Nothing in the Plan or these Procedures is intended to change existing land use entitlements or zoning on parcels within the Plan Area. Uses which are presently allowed or that are subsequently approved by the County shall comply with all applicable land use policies and ordinances.

General Plan Policies and Ordinances, which provide for the use of individually, owned facilities (i.e. Individual water facilities or septic tanks on larger parcels, private road standards, drainage improvements, etc.) shall not be affected by provisions of the Plan or these Procedures.

III. Residential Equivalent Units

The properties within the Plan area are currently planned for a total of Five Thousand and Seventy Four equivalent residential units as set forth in the map attached hereto as Exhibit I.

The Use and Allocation agreement, as amended on June 9, 1998 provides that allocation of Capacities are reserved for Tract 4048 until December 20, 2003. Upon adoption of the Implementation procedures by Fresno County, the capacity for Four Hundred Twenty (420) residential units, the 18-hole golf course on tract 4048 and related golf course facilities at Tract 4048 are reserved to Tentative Tract map 4048 until five (5) years after the effective date of these Procedures. In the event a new or extended Tentative Tract Map is obtained for Tract 4048 within such Five (5) year period, the capacity that was reserved for Tract 4048 shall be available for the length of the extension or the life of the new map. All remaining

capacities within the Plan Area over and above the reservation for Tract 4048 described herein will be reserved for other Landowners as described herein.

Any transfer of rights to use capacity from one property to another requires the consent of Fresno County and the affected Landowner currently holding the property. Any such transfer shall include the requirement that the property receiving the capacity assumes all conditions and environmental mitigation requirements currently applicable to the residential- equivalent units before the transfer.
In the event residential-equivalent capacity is transferred pursuant to the above, a determination shall be made of the current and future impacts of said existing or future uses; and the impact from the development serviced by such capacity must be mitigated; e.g,. road impact fees for a residential unit equivalent are transferred to a commercial use. Road impact fees would be payable and, if the commercial use constitutes more of an impact, the fees would be based on the higher impact of the commercial use, as determined by the County.

IV. Facilities Ownership and Operation.
County Service Area 34 (CSA34) was established in 1987 for the purpose of providing sewer and water services to properties within the boundaries of CSA 34.

A. CSA Facilities Certain water delivery and sewer treatment facilities within CSA 34 have been constructed by Millerton New Town Development Company (DEVCO), consisting of (1) the Millerton Lake intake structure, including pumps and other related equipment; (2) raw water mainline; (3) water conveyance, storage, and distribution system; (4) Wastewater treatment and collection facilities, including effluent disposal easements; and (5) groundwater extraction well and related facilities. A surface water treatment plant facility shall be constructed by Makrothumia Corporation as shown in the Plan so that it may be expanded as a regional facility in and for the benefit of properties within the Plan Area. Additional facilities as proposed in the Plan are contemplated to serve all properties in the plan area. When any of the additional facilities are constructed in more than one increment, each increment shall be built to accommodate the subsequent increments. Collectively, these facilities are hereinafter called the "CSA Facilities".
All existing facilities constructed by DEVCO as well as additional facilities proposed in the Plan, including water treatment facilities, will be owned and operated by the County of Fresno and shall be used for Plan Area properties within CSA 34 or Rancheria Lands outside CSA 34 but within the Plan Area.

C. Ownership All the facilities referred to herein shall be completed in accordance with County of Fresno standards and requirements and upon their completion shall be turned over to the County of Fresno for operation and ownership except

as follows: Lands for which easements are granted to permit effluent disposal or other CSA 34 owned facilities shall remain the property of the owner granting the easement.

D. Shared Use and Cost The Landowners shall pay their proportionate share of the cost of the CSA facilities, in the manner provided in these procedures, except where development using individual water and sewer facilities as permitted in Paragraph II A of these Procedures are permitted.

E. Non-Covered Facilities To the extent that facilities exist or are created to serve only one project, they shall not be subject to reimbursement as discussed herein.

F. Appraisal of Land Area Land area for the above facilities, excluding all easements granted for effluent disposal or other CSA facilities shall be appraised for the purpose of determining it's contribution to CSA 34 as follows: The County, on behalf of the affected Landowners, shall approve a duly qualified appraiser whose responsibility shall be to determine the value of the property to be contributed to CSA 34. If either the contributing owner or any affected Landowner disagrees with the value determined by the County approved appraiser, they may appoint a duly qualified appraiser to perform a separate appraisal of the property; said appraisal to be submitted to the County within 60 days. If the appraisals disagree upon the value of the property, all appraisals shall be submitted to the County Board of Supervisors, who shall review the submittals and reach a determination as to the value of the property. The decision of the Board shall be binding and conclusive on all parties as to the value of the property(s) being contributed. The cost of the appraisal for the County approved Appraiser shall be paid for by the Landowner whose project triggers the need for the appraisal. A landowner who pays the cost of the appraisal shall be entitled to reimbursement for any portion of the cost above their proportional share as specified in these Procedures. For other appraisals, each party shall bear their own cost of appraisal, except that the cost of appraisals jointly engaged shall be borne in proportion to the number of units of capacity sought by such parties in the applicable facility. The Landowners and the County may also reach mutual agreement on land values without an appraisal.

The value of property for sewer treatment plant site acquisitions will be appraised as residential property similar to the adjacent properties zoned for residential development and not the limited Agricultural (AL) zoning required by the County of Fresno for a sewer treatment plant. The appraisal shall be completed in accordance with established eminent domain procedures.

Granting of easements for reclaimed effluent disposal areas shall be subject to the provisions of Paragraph XIV of these Procedures.

Easements for underground pipelines, those on golf courses or other irrigated open space, or unused open space areas shall not be appraised and paid for as specified above. The value of an easement and the benefit received from the use of the treated effluent for irrigation is considered as being equivalent and these easements will be granted at no cost.

V. Water Supply

Landowners who participate in the Plan and utilize the available capacity in the facilities proposed therein shall have full and sole responsibility for the acquisition of surface water supplies to serve their respective properties. Landowners with existing water supply agreements or entitlements from the County or outside sources shall show that the acquisition is consistent with and subject to applicable Federal, State, and County laws and regulations before a project may be approved.

Landowner projects without a firm water supply acceptable to the County shall not have final maps approved until a reliable source is obtained.

VI. CSA 34 Facilities Requirements and Conditions

Projects which use or connect to existing or planned CSA facilities as shown in the Plan or discussed in these Procedures shall be subject the provisions in this section as described below:

A. Determination of Capacities The capacities of the CSA 34 Facilities shall be determined using the Design Criteria established in the Plan and approved by the County.

B. Completion of Facilities The County shall require that the facilities shown in the Plan that are needed to serve a particular project are completed, or performance security acceptable the County is provided, prior to final approval of the project.

C. Project Approval A "project" includes the development of any portion of the Plan area for residential or commercial where such development will connect to any part of the CSA 34 Facilities. Depending upon the context in which it is used, final approval of a project shall mean approval of:

1. Final subdivision tract map, where the Subdivision Map Act requires a tentative tract map.
2. Parcel Map, if the Subdivision Map Act does not require a tract map.

3.Parcel map waiver, lot line adjustment, or similar division of land either required by or authorized by the Subdivision Map Act.
4.Use permit or site plan approval
5.Director's determination or other administrative approval by the County.
6.Issuance of a building permit.
7.Construction of improvements
8.An exemption for facilities that are used exclusively for agricultural purposes.
9. Use of CSA 34 facilities to provide Domestic water, sewer and irrigation services for existing uses allowed by current zoning on properties within the Plan Area is permitted, provided the requirements and fees specified herein are complied with.

VII. Allocation of CSA 34 Capacity to Projects Within the Plan Area

Consistent with the Plan, the County shall allocate capacity in the CSA 34 Facilities for each project as follows:

A. Location of Projects

1.Within CSA 34: On land within the Plan Area that is presently, within or is annexed to CSA 34 as a part of the land use entitlement process.

2.Rancheria Lands: On lands described in the Plan Area that are outside CSA 34 and within the Table Mountain Rancheria, on the condition that, if not annexed to CSA 34, the Rancheria Lands shall be the object of a service agreement between CSA 34 and Table Mountain Rancheria for those CSA 34 Facilities in which Table Mountain has requested to use capacity. Such service agreement shall contain provisions that impact fees established by the County or other affected agencies for water, sewer, drainage, roads, fire, school, etc. facilities shall be applicable to Rancheria Lands in the same manner as imposed upon other properties within CSA 34 or proposed to be annexed thereto.
No CSA owned facilities shall be constructed on Rancheria Lands and any non- CSA facilities constructed on Rancheria Lands that are connected to or otherwise use CSA owned facilities shall comply with all of the requirements described in the Plan and these Procedures.

3.Brighton Crest Golf Course: The Brighton Crest Golf Course will be irrigated using the existing raw water pumping and conveyance facilities to replace irrigation water in the existing storage ponds as needed to meet the golf course demand.

On the peak domestic day, a seven (7) hour replacement period is shown to occur from 11:00 pm to 6:00 am. During this period both domestic demand and golf course irrigation demand can be met when the lake is at it's lowest level. Pumping for recharge of the ponds shall be limited to the volume necessary to provide adequate water for the golf course and shall occur between these hours. Adequate water shall take into consideration the use of reclaimed wastewater as it becomes available and is required to be used for irrigation, pumping will be reduced accordingly.

B. Amount of Capacity: The capacity reserved by the County for the above projects shall be determined by the County at the time of project approval, using the criteria established in the approved Plan and these Procedures, and except as otherwise provided therein shall be based upon the planning and zoning for the project area at the time of project approval, and the number of units that are indicated in the Plan. Projects which use water capacity in excess of the criteria established in the Plan shall have their total number of units proportionately reduced to account for the excess use. Additionally, the policies and standards as discussed in sections 6.01 and 6.03 of the Millerton Specific Plan approved on March 12, 1999 shall apply to all properties within the Infrastructure Plan study Area. As stated in Section 6.03 j of the Specific Plan, the County shall prepare the tiered rate schedule as well as other recommendations and enforcement methods to limit the over use of water prior to placement of the water treatment facilities into operation.

C. Permanent Allocation of Capacity A permanent allocation of capacity shall be made to a project within the Plan Area upon the execution of an agreement with the County to pay, and the payment of appropriate fees as specified in Paragraph IX, Subparagraph H 2 of these Procedures, provided that excess capacity is available in existing facilities. Otherwise, permanent allocation will require requesting Landowner(s) to fund and construct the next increment of expansion called for in the approved Plan, with credit being given for the amount of fees that would have been paid if sufficient capacity had been available. When Landowners are required to fund and construct facilities that exceed their pro-rata share of the cost, then they will be entitled to reimbursement as specified in Paragraph IX, Subparagraph E of these Procedures. The Landowner shall execute an agreement with the County to provide for such construction and reimbursement.

D. Plan Area Capacity The capacity for the Plan area may be transferred between properties with the consent of affected Landowners and County approval. The

overall capacity requirement shall not increase above that shown for the total number of units in Exhibit I, unless approved by the County.

E. Creation or Restriction of Entitlement Nothing in this Paragraph VIII shall be construed as creating, granting, approving, vesting, transferring or restricting any development right or entitlement.

F. Projects Outside Plan Area The County shall not reserve capacity in the CSA 34 Facilities identified in this Plan for any project outside of the Plan Area until after December 31,2020, unless requested to do so by a Landowner who is willing to transfer a portion of his units shown in Exhibit I to such property. Prior to the transfer of units to property outside the Plan area, Landowners in the Plan Area shall be noticed of the proposed transfer and given the right of first refusal to acquire the units for use on property within the Plan Area.
For any such property outside of the Plan Area, the owner of such property shall be entirely responsible for any Plan revisions or extension of facilities to serve the property.

VIII. Covered Facilities

The CSA 34 Facilities included in this Plan, either as existing facilities previously constructed by DEVCO or new facilities, which are subject to the provisions of this plan as shared facilities are as follows:

A. The Millerton Lake intake structure, including existing and proposed pumps.
B. Existing and proposed raw water lines.
C. Water conveyance, storage and distribution lines.
D. Permanent wastewater treatment facilities, including storage ponds.
E. Groundwater Extraction well and related facilities (now providing domestic Water supply for Brighton Crest and to be retained for emergency use).
F. Surface water treatment facilities.
G. Wastewater facilities for reclaimed effluent disposal that are constructed for shared use.
H. Land area required for the development of shared use facilities.

IX. Facility fees

Facility fees will be established to adequately recover the costs for providing the facilities shown in this Plan, together with the necessary administrative costs to maintain records showing the available capacity and to provide an accounting of the fees deposited and disbursements made by the County.

A. Individual Fees The following fees shall be established by the County:

1. Intake and transmission facility fee.
2. Groundwater extraction facility.
3. Water treatment facility fee.
4. Water distribution and storage fee.
5. Wastewater treatment fee.
6. Wastewater collection fee.
7. Reclaimed effluent disposal fee

The County reserves the right to impose additional fees as allowed by law.

In addition to the fees shown above, impact fees for roads, fire, schools or other public facilities may be levied by the agency(s) responsible for providing these services. In which case, the Landowners understand that payment of these fees is required prior to obtaining service from the CSA 34 Facilities or at such time is acceptable to the agency(s) involved.

B. Calculation of fees Except as otherwise provided in this Plan, the fee per unit established for each of the CSA 34 Facilities will be calculated by dividing the total cost of the CSA 34 facilities called for in the Plan by the total number of units in the Plan Area that will benefit from said facilities. Total cost for the CSA 34 Facilities will be determined by the County pursuant to Subparagraph F below for facilities that have been constructed or installed prior to the adoption of these Procedures, and by using the estimated costs provided in this Plan for those for those improvements not constructed or installed prior to the adoption of these Procedures.

C. Annual Adjustment The County shall adjust the fees in January of each year, based on the Engineering News Record, Twenty Cities construction cost index.

D. Handling of Fees Monies for the facilities fee described herein shall be collected by the County and deposited in separate accounts as required by law.

Accrued interest will be used to partially offset increases in the cost of providing facilities as build-out occurs.

E. Reimbursement for Oversized Facilities If an allocation of excess capacity in any of the newly constructed CSA 34 Facilities is made to a project other than a project owned by the party who constructed the facilities, then the County shall collect from the beneficiary of such allocation the fees determined pursuant to this Paragraph IX times an accelerated payback factor of 1.20 for the first five years and 1.3 thereafter. Individual facility fees and funds derived from the accelerated payback factor shall be used to reimburse Landowners who have funded facilities in excess of their pro-rata share. (Fees paid as reimbursement for oversized facilities constructed by DEVCO shall be paid to Makrothumia, as the successor in interest to DEVCO, provided they have fulfilled their obligations for the construction of the water treatment plant required for Tentative Tract No.4048; otherwise the fees will be applied to the cost of the plant being constructed by others. The amount of any fees collected in excess of their responsibility for the Tract 4048 plant shall be paid directly to them.)
After repayment of the total reimbursement to the Landowner(s) who constructed the oversized facilities has been made, any other Landowner who has paid the accelerated payback fee for capacity shall be entitled to reimbursement for the accelerated fee in the same manner as the Landowner who provided the excess capacity.

F. Determination of Reasonable Cost of Construction for CSA 34 Facilities
Within sixty (60) days after completion of a CSA 34 facility by a Landowner (and as to any existing facilities, within 60 days after approval of this Infrastructure Plan by the County), the Landowner who constructed the facility (and the case of facilities constructed by DEVCO, Makrothumia) shall provide to the County a summary of the cost of all portions of the CSA 34 facilities that are to be a part of the Infrastructure Plan Facilities. The Landowner shall be reimbursed the "reasonable and necessary cost" of such facilities, to the extent that the capacity thereof exceeds that used by the Landowner's Project(s) within the plan study area. The "reasonable and necessary cost", which shall be approved by the County, includes but is not limited to, design costs, construction costs, inspection and testing costs, permit fees, land acquisition costs; and overhead costs of five (5) percent, but shall not include markup for profit, for interest, or for carrying costs associated with completing the work in a manner acceptable to the County.

G. Delivery to County All CSA 34 Facilities within the Plan Area described in this Plan shall be turned over to the County for ownership, maintenance, and operation upon completion.

H. Time for Payment of Fees If a Landowner wishes to receive a permanent allocation of capacity in CSA 34 Facilities, then the Landowner must either participate in the cost of construction directly or pay a fee to the County in the manner described herein and at the times shown below.

1. Existing Facilities Each Landowner within the Plan Area is entitled to a capacity reservation in the existing facilities constructed by DEVCO for the number of units shown in Exhibit I, subject to the requirements of paragraph III of these Procedures.
Prior to the actual use of the capacity in the existing facilities landowners shall be required to pay a proportionate share of the cost for construction as determined in these Procedures.

2. New Facilities constructed by Landowners: It is the intent of the Plan and these procedures to provide water, sewer, and other facilities in a manner which maximizes the opportunity for all Landowners to participate in the use of the facilities at an economical cost and without experiencing unusually long delays caused by excessive reservation of capacity in facilities by those owners providing the capacity.
With this in mind, water or sewer facilities which are initially built or subsequently expanded to provide capacity for units as shown in the Plan shall be limited to the size which provides capacity for all the Landowners wishing to acquire capacity in a new or expanded treatment facility and who are willing to participate in a proportionate share of the cost. In addition, a pool of units consisting of 5 percent of the units being constructed in any new or plant expansion shall be provided for small projects not participating in the construction, but that may require capacity at a later date. The number of units for a new or expansion increment shall be the total number of units of those wishing to participate who have an approved Tentative map, Commercial Project Site Plan or Conditional Use Permit or a map or similar Commercial Project Documentation accepted by the County as being complete for processing.
A Landowner may receive a permanent allocation of capacity when new facilities, which become part of CSA 34 Facilities, are constructed, provided he participates financially in construction of the facilities. Should a Landowner not participate in the construction of the facilities, he may

obtain any unreserved capacity provided he pays the fees established herein. If a facility is over subscribed financially, the party or parties who build the facility shall have capacity for their units on a pro-rata basis based upon their financial contribution. If a facility is under subscribed financially, the party or parties who build the facility shall, at their option, reserve any extra capacity for their future approved units based on their pro-rata contribution to the facility except as follows: The pool of units for small projects as discussed above shall remain available for those owners which are unable to initially participate in the cost of construction. Reservation of any part of the units shall require the approval of a Tentative Map and payment of a proportionate share of the construction cost when the capacity is allocated. The pool capacity shall remain available until such time as Landowner(s) who constructed the facilities have recorded Tract Maps that have used up their other capacity. At such time the unused pool capacity shall also be available for their use. Reservation of capacity for units with an approved Tentative Tract Map or similar documentation for a Commercial Project shall be for the life of the map. Reservation for units without the life of the map shall expire one year after the completion of the facility construction unless the Landowner has submitted an additional Tentative Tract map or similar documentation for a Commercial Project.

Prior to the construction of a new facility all Landowners in the Area shall be given notice and an opportunity to obtain an allocation of capacity by participating in the cost of construction.
Landowners with a reservation of units resulting from either a Tentative Tract Map or participation in the construction of the as specified above shall be responsible for a proportionate share of the operation and maintenance costs for the facility based upon the number of units reserved as determined by the County.

Landowners who request an allocation of capacity by participating in the cost of construction of a new or expanded facility shall upon the request of the Landowners involved in the new or expanded facility, place on deposit their share of the total estimated cost prior to advertisement for bids on the project or earlier if funds are required for engineering design. Each participating Landowner's share of the cost shall be placed in an escrow account acceptable to all participants. Upon the receipt of bids and prior to award of the Contract, the proportional share for each participant will be determined and any additional funds required shall be paid within 10

days. Similiarly, if the responsible low bid is lower than the estimated payments made, surplus funds will be returned to the participants. Landowners who decide not to participate in the construction of a facility after the receipt of bids shall be responsible for the costs associated with any redesign and/or other costs required for modifying the project and re-advertising for new bids. In such cases the Escrow Holder shall have the right to withhold these costs from deposits made and, if deposits are not adequate, to bill the Landowner for any remaining costs. Any funds withheld because of redesign or other costs associated with a Landowner's decision to withdraw from the project shall be proportionately distributed to the remaining participants.

X. Right to Reimbursement

The right of Landowners to be reimbursed is limited to money collected by the County from other Landowners pursuant to this Plan. The County Assumes no liability or obligation, and this Plan does not establish any liability or obligation to reimburse Landowners from any other sources or Funds.

XI. Effective Date

This Plan shall become effective upon approval by the Fresno County Board of Supervisors, and shall remain in full force and effect until December 31, 2020, unless extended. Thereafter, the reservation of capacity in the in the CSA 34 Facilities available to serve the Plan Area shall end, and the County may make any unallocated capacity available to serve property both inside and outside of the Plan Area. However, as a condition of using such remaining unused capacity, the County shall require reimbursement to the Landowner(s) responsible for construction of the facilities that provide the remaining unused capacity, in a manner consistent with the reimbursement provisions of this Plan.

XII. Easements and Operations

A. Granting of Easements Easements, other than for effluent disposal sites, water treatment facilities, and sewer treatment facilities on Landowners' property; including Tract 4048; that are necessary to permit construction, operation and maintenance of the CSA 34 facilities for the Plan Area, or to provide access or service to properties within or adjacent to the plan study area, shall be shown in the approved Plan. Easement Deeds and exhibits conveying the right to build, operate and maintain CSA 34 Facilities within the designated areas, and for access thereto shall be executed by the affected property owners in conjunction with the approval of this Plan and delivered to the County. When the exact location of these easements are indeterminable at the time of execution, a general description of the easement location shall be included in the documents with a provisions for a precise

description when the final location is determined. Refusal of landowners to grant the easements as required shall be construed as failure to fulfill the requirements of the Plan, and; therefore, they shall not receive water or sewer service from the CSA 34 Facilities.
Provided that the delivery and use of treated effluent is at no cost to the recipient, other than the effluent disposal fee paid by all landowners, Easements for the disposal of sewer effluent shall be granted, without compensation; when required by the County prior to the recordation of a final Tract Map or other similar approvals for site plans or other entitlements granted by the County.

B. Operation By CSA 34 Upon acceptance of an easement deed and completion of construction of the contemplated portions of the CSA 34 Facilities envisioned therein, CSA 34 shall operate and maintain such facilities.

C. Easements to be Granted for Existing Portions of Facilities Consistent with the foregoing, and to the extent that that the County does not already hold the necessary easements, all landowners will deliver to the County easement deeds for the existing portions of the CSA 34 Facilities that are located in the Plan Area, including for access and from those facilities in a form that will not frustrate the purposes of this Plan. The deeds are subject to only acceptance by the County in accordance with the policies and practices of the county for such acceptance.

XIII. Drainage Facilities

Drainage Facilities required for individual projects shall be the responsibility of the owner and developer of such project and will be required to comply with the various requirements of the jurisdictional agencies as set forth in the drainage section of this Plan.

XIV. Reclaimed Effluent Disposal

A backbone system for reclaimed effluent disposal sufficient only to serve the area south of Millerton Road is shown on Figure 3 of the "Wastewater Treatment and Disposal" section of this Infrastructure Plan. The effluent will be disposed of on golf courses, landscaped irrigated areas and on unused open space provided by individual projects.
A similar system will be required for the area North of Millerton Road; however, specific project development plans have not progressed to a level adequate to support the layout of a system. A supplemental report will need to be prepared later for this area when more details are known. Reclaimed effluent disposal from the East Side Area may be included in the area North of Millerton Road or it may be disposed of in the facilities constructed South of Millerton Road, provided the sewage treatment facilities south of the road are expandable to first accommodate all of the units south of the road and then those from the north side or east side proposing to be included. In which case, winter storage ponds will require expansion

with disposal on the spray fields as shown on Figure 3.Land required for the expansion will require the consent of the owner and, if granted, acquisition shall follow the procedures herein for appraisal and purchase.

A. Reclaimed Effluent Disposal Fee Fees will be established for the Reclaimed Effluent Disposal facilities that are to be shared by all Landowners in the Plan Area, including the North and East areas shown on figure 2 of the Wastewater Treatment and disposal plan to be connected to the South Plant. The provisions of Paragraph IX, Subparagraphs A through H, and other applicable sections of this Plan shall be used to determine the fees.

B. Easements for Reclaimed Effluent Disposal When individual projects are submitted for approval, the design shall include sufficient area within such projects which in the opinion of the County, would be adequate to dispose of the reclaimed effluent generated by the number of units proposed. Suitable areas for disposal should be delineated on the project maps with easements required to permit future disposal, if needed. Provision of easement area as discussed above does not infer that actual disposal of project effluent must occur on the easements when adequate disposal area is available on other previously acquired areas. The County shall determine the location of disposal areas and when granting of the easements for the benefit of projects located in the Plan Area would occur, if needed. Landowners granting easements as required herein shall not be entitled to compensation for the easement provided the delivery and use of such effluent by the recipient landowner is at no cost, other than the Effluent disposal fee paid by all landowners; during the term of the easement. As an alternative to providing effluent disposal area within their projects, Landowners may also enter into individual agreements with other Landowners to dispose of effluent on their property, with the approval of the County. Other than the area required by the County to dispose of effluent on the project proponent's own land for their project, no Landowner's property may be used for the disposal of effluent without their consent.

C. Cost of Facilities Other Than Disposal Easements The cost of effluent disposal facilities for the benefit of all projects within the Plan Area shall be paid proportionately by all Landowners through the imposition of fees discussed above in Subparagraph A. The cost of on-site facilities required for individual projects that connect to the shared facilities and provide service or benefit to the connected project shall be the responsibility of that project. CSA 34 will assume the total cost for operation and maintenance of these facilities

and the owner of the easement property will share no responsibility or liability, other than the pro-rata share paid by all the benefiting parties.

D. Potential Increased Units With Reclaimed Effluent Disposal The discharge of reclaimed effluent onto irrigated landscaping, golf courses and unused open space has the potential for reducing the amount of surface water that would, otherwise, be required for irrigation. This occurrence would likely free up capacity for a larger number of units that could be built without additional facilities or acquisition of increased surface water supply; provided county approval was obtained. Any increase in the capacity for additional units allowed will be reserved for the participating Landowners in proportion to the effluent discharged.

XV. Sewage Treatment Plant South of Millerton Road

The wastewater plant located South of Millerton Road is not planned to be a regional plant to accommodate units from both North and South of Millerton Road. As specified in the Millerton New Town Specific Plan and accompanying addendum to the environmental documents, the Sewage Treatment Plant and related facilities proposed for the South side of Millerton Road, on the site of the existing Brighton Crest facility, have been planned to accommodate a maximum of 2600 residential- equivalent units located South of Millerton Road. These Procedures and the Plan does, however, provide for 110 residential equivalent units located North of Millerton Road to be accommodated in the plant south of Millerton Road. The units would be for the 80 acre Sky View project (APN's 300-290-43 & 45) and other Parcels totaling approximately 57 acres and shown on the County Assessors records as APN's 300-380-10 & 11 and 300-032-32. This 110 units plus a maximum of 2490 equivalent residential units planned for South of Millerton Road, both as specified in the Wastewater Treatment System Study, constitutes the maximum 2600 residential- equivalent unit capacity of the South plant referred to above.

Capacity in the proposed treatment plant shall be provided and acquired in accordance with the provisions in Paragraph IX H 2 of these Procedures.

Additionally, 308 residential equivalent units requiring zoning approval (Also shown in Exhibit I) may be connected to this plant, however, it is understood that capacity allocation for the 308 units is contingent upon receiving County Zoning Approval as well as the acquisition of the capacity from one or more of the Landowners having rights to the 2600 equivalent residential units South of Millerton Road as discussed above.

The treatment plant constructed South of Millerton Road shall not have a capacity of more than 2600 residential equivalent units. No other units within the Plan Study Area may be serviced by the facility South of Millerton Road without the Consent of the landowners owning property containing the plant facilities on the date of the conveyance to CSA 34.

Additionally, amendment of the Millerton Specific Plan, if required, or other County ordinances shall be completed before an increase in units would be considered.
If the Landowner with the approved 110 residential equivalent units elects to connect to the treatment plant shown in the Wastewater Treatment System Study on the North side of Millerton Road, then the South Treatment Plant shall not exceed the capacity for 2600 residential equivalent units.
Figure 2 of the Wastewater System Collection layout shows the general location where the 110 and 308 residential equivalent units connect to the existing Brighton Crest System collection system that will provide the means of conveyance to the plant proposed South of Millerton road. Disposal of the effluent from these units through the existing facilities will be the means of conveyance to the treatment plant, unless it is shown to the County's satisfaction that it is impractical to do so. In which case, the Landowner or party requesting service shall propose changes or modifications to the Plan and these Procedures to avoid negative impacts or increased costs to other participants and to obtain the necessary approvals of Fresno County and any other required agencies. The Landowner requesting the change or modification will bear the responsibility and cost for providing the information required by the County to properly evaluate requests for providing service other than as originally shown in the approved plan.

Documents evidencing the sale or transfer of land for the treatment plant South of Millerton Road shall, on the request of the selling owner or transferring party, include a covenant describing specific conditions for development of the site and shall include a specific limitation on the plant's size to no more than 2600 residential equivalent units unless agreed to by the selling or transferring party. Such conditions and limitations shall also include conditions regarding the site landscaping, fencing, site maintenance, lighting glare, odors or other potential uses, which could result in adverse off-site impacts to adjacent properties.

XVI. Existing Use and Allocation Agreement

The County and the predecessor of Makrothumia Corporation previously entered into an Agreement entitled " Use and Allocation of Capacities and Reimbursement Agreement " dated January 29, 1991 (Use and Allocation Agreement), which Use and Allocation Agreement was modified by the County and Makrothumia on June, 9, 1998, by extension of its effective date to December 20, 2003.
Those certain provisions contained in the Use and Allocation Agreement pertaining to the reservation and allocation of capacity in facilities and reimbursement for capacity for said facilities shall remain in effect and supercede the Infrastructure Plan Provisions regarding the use and allocation of capacities and reimbursement after the adoption of the Infrastructure Plan until the expiration or earlier termination of the Use and Allocation Agreement. Upon

adoption of the Plan, the County shall take reasonable steps to obtain the termination of the Use and Allocation Agreement. When the Use and Allocation Agreement is terminated the Infrastructure Plan provisions shall be in effect regarding the use and allocation of capacities and reimbursement.

XVII. Amendment

This Plan may be amended from time to time upon approval by the County. The requesting Landowners shall pay for amendments requested by the Landowners. Notice of Proposed amendments to the Plan or these Procedures shall be submitted to all Landowners in the Plan Area with land remaining for development for their review.

Rev. No. 13 12/11/00

RESIDENTIAL UNITS AND COMMERCIAL USES NORTH AND SOUTH OF MILLERTON ROAD

A. Summary of approved 4,766 Residential-Equivalent Units (parcel identification numbers relate to attached Infrastructure Plan properties map:

1. Parcels 1, 2, 3, 4, 5, 6, 7, and 8: Makrothumia Corporation - 841 residential units, includes approximately 10 acres commercial in Parcel 8.

2. Parcels 9 and 10: The Clarksfield Company, Inc. - 99 units.

3. Parcel 12: Norm Christensen - 10 units.

4. Parcels 11, 13 (Portion of Commercial), 14, 15, 16, 17, 18, 19, 20, and 21: Table Mountain Rancheria - 815 units.

5. Parcel 23: Table Mountain Rancheria - 0 units (included in 815 units described in No. 4 above).

6. Parcels 22, 24, and 25: Donavon Harris - 110 units.

7. Parcel 26: Ernest Benck - 0 units.

8. Parcels 52, 53, 54, 55, and 56: Craig Davis - 0 units.

9. Parcels 27 and 28: Makrothumia Corporation - Brighton Crest, 420.

10. Parcels 29, 30, 31, 32, and Includes Approximate 44 Acres Commercial Sub-Unit Area on Portions of Parcels 40 and 41: The Clarksfield Company, Inc. - 1,162 units.

11. Parcel 47: Granville Homes - 200 units.

12. Parcels 33, 34, 35, 36, 37, 38, 39, 42, 43, 44, 45, 46, 48, 49, 50, and 51: Westcal Incorporated - 1,109 units.

B. Additional 308 planned units in the Infrastructure Plan area:

1. Parcels 24 and 25 = 45 units;
2. Parcel 26 = 70 units; and
3. Parcels 52, 53, 54, 55, and 56 = 193 units.

C. Total planned units---------- 5,074
Total current approved units---------- 4,766
Total future additional units---------- 308

Attachment

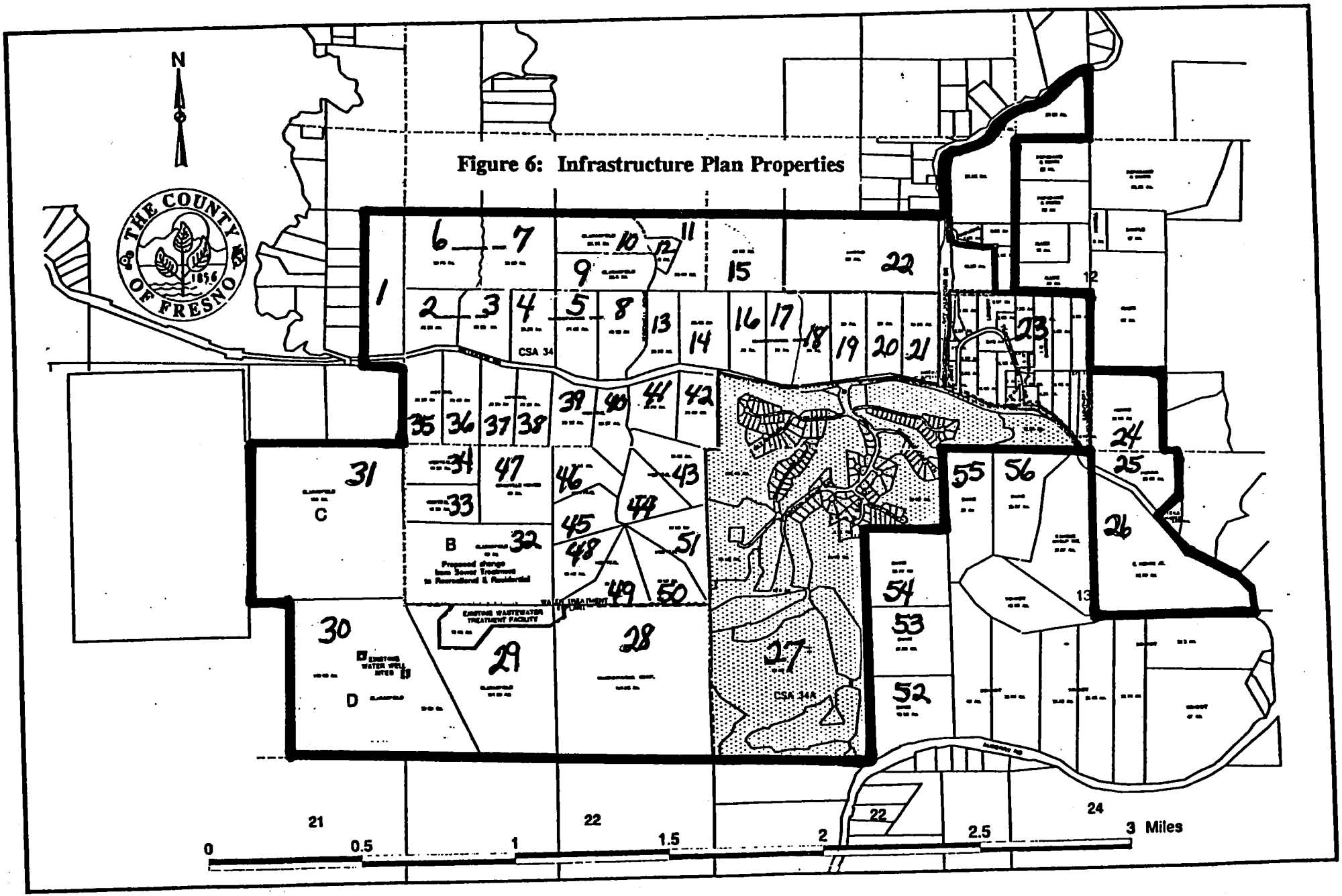

Figure 6: Infrastructure Plan Properties