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APPLICATION OF INLINE  
DEVELOPMENT LLC FOR A  
RATE/TARIFF CHANGE

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PUBLIC UTILITY COMMISSION  
FILING CLERK  
OF TEXAS

**INLINE DEVELOPMENT LLC'S  
SUPPLEMENTAL APPLICATION INFORMATION, REQUEST TO REMOVE  
ABATEMENT, AND REVISED PROCEDURAL SCHEDULE**

COMES NOW Inline Development LLC ("*Inline*"), by and through its attorneys of record, and files this Supplemental Application Information, Request to Remove Abatement, and Revised Procedural Schedule, and would show the following:

**I. BACKGROUND**

On August 28, 2014, Inline filed an Application for a Water and Sewer Rate/Tariff Change (the "*Application*") with the Public Utility Commission of Texas (the "*Commission*"). Most recently, on December 3, 2015, the Administrative Law Judge ("*ALJ*") issued Order No. 14 in this matter, setting a deadline of February 2, 2016 for Inline to provide additional information for its Application and for Inline and the Commission to jointly request to remove the abatement and provide a revised procedural schedule.

**II. SUPPLEMENTAL APPLICATION INFORMATION**

As previously noted, Inline and Commission Staff have conducted meetings to discuss additional information that Commission Staff needs to complete its review of Inline's Application. Accordingly, Inline has engaged consultants to prepare such additional information. Attached hereto as Attachment A is Inline's trending study, along with other supplemental, supporting materials.

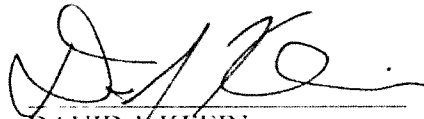
### **III. REQUEST TO REMOVE ABATEMENT AND PROCEDURAL SCHEDULE**

Inline believes that the supplemental materials provided in Attachment A should address the Commission's Staff's requests for additional information. Thus, Inline requests that this Application proceed, unabated, through the Commission's review process. Further, it is Inline's understanding that the Commission will provide the proposed Revised Procedural Schedule through a separate, joint filing.

Respectfully submitted.

**LLOYD GOSSELINK ROCHELLE &  
TOWNSEND, P.C.**

816 Congress Avenue, Suite 1900  
Austin, Texas 78701  
(512) 322-5800  
(512) 472-0532 (Fax)

A handwritten signature in black ink, appearing to read 'D. Klein', is written over a horizontal line.

DAVID J. KLEIN  
State Bar No. 24041257  
dklein@lglawfirm.com

CHRISTIE DICKENSON  
State Bar No. 24037667  
cdickenson@lglawfirm.com

**ATTORNEYS FOR INLINE DEVELOPMENT  
LLC**

**CERTIFICATE OF SERVICE**

I hereby certify that a true and correct copy of the foregoing document was transmitted by fax, hand-delivery and/or regular, first class mail on this 2nd day of February, 2016, to the parties of record.

  
David J. Klein

## ATTACHMENT A

### TRENDING STUDY AND SUPPLEMENTAL SUPPORTING MATERIALS

To: PUC Staff  
From: Inline Development LLC

In our past communications, you have indicated that you need Inline to provide a Trending Study and other additional information to continue processing Inline's rate change application. To this end, Inline provides the following:

1. Trending Study and Supporting Documents. Enclosed behind Exhibit 1 is Inline's Trending Study, performed by GDS Associates, Inc. This Trending Study is based upon sound economic valuation principles, commonly used by experts in the field of water and wastewater utilities, to determine the original cost and current valuation of the Inline system. Additionally, Exhibit 1 contains a summary of the indices used in the Trending Study, as well as an explanation of why such indices were used. There is also a spreadsheet detailing which index was applied to each significant asset.

2. Photographs. To further support the Trending Study, Inline submits the photographs included in Exhibit 2. These pictures provide the additional detail requested by Commission Staff to prove-up the significant (above-ground) assets contained in the Trending Study.

3. Meters. Staff informally raised additional questions regarding the counting and accounting of meters in the Inline System. In response, Inline included the costs of the meters in the net cost of the system because all of the meters were initially installed at each lot- even if there was not a retail customer at that location yet. The development served by Inline is a zero lot-line development, and it is Inline's understanding that installing the meters initially was the most cost efficient solution with minimal disruption to the residents in the neighborhood.

4. Applying the Trending Study to Requested Rate Change Application. Per the Commission's request, the ALJ's prior order directs Inline to consider modifying its Application to take into consideration the net value of the larger assets that were used as a basis for determining the proposed rate increases. This request is a follow-up to the Commission's previous call for a Trending Study to determine the current net value of the assets after their total depreciation.

To this end, a detailed Trending Study, with supplemental comments, is provided in this filing. As noted above, this Trending Study lists the trended value of all major water and sewer service assets, the date the assets were installed, and the index used. Such data was then used to list the current trended values, age and total depreciation of the assets, and the net value of the assets (after depreciation).

Then, Inline used this information to modify all applicable PUC Water and Sewer Tariff Rate Change forms. Those forms are attached hereto as Exhibit 3 and are submitted to supplement the Application. Since most of the assets were installed a long time ago, the depreciated net value of those assets decreased substantially. As you will see in the revised forms in Exhibit 3, when these costs were applied to Inline's annual operating expenses, it provided further support to Inline's decision to apply for the "Alternate Method of Rate Design" as authorized in SECTION X of the application. (Note that Section X of the application has this statement: "After you have performed the calculations in Section IX, you may find that the cost increase per 1,000 gallons is not what you think your customers will approve. If that is the case, then the following will allow you to suggest your own increase...etc.")

Ultimately, the application of the Trending Study to the pending Application reveals that Inline could, and should, increase its rates above what it originally requested in the Application. However, in order to avoid rate shock to its retail customers, Inline has opted to continue seeking Commission approval for the rate increase it originally requested in the Application. Said another way, while Inline modified most Rate/Tariff Change application forms, it has not changed Table X.A. (the water rate per 1,000 gallons or the base rate). This is in compliance with the Section IX suggestions and has the additional benefit of not needing to send additional rate change notices to customers.

**Exhibit 1**

**Trending Study/Summary of Trending Study/Spreadsheet Detailing Trending Study**

Thomas G. Gebhard, Jr., P.E., Ph.D.  
Executive Engineer

Ph: 512 494 0369  
Fax: 512.494.0205  
tom.gebhard@gdsassociates.com

To Whom It May Concern,

This report was prepared to establish the original cost and current value of the systems. Verification of assets, replacement cost valuation and the installation date of assets were provided to GDS Associates by Jerry Ince, P.E. of Ince Engineering, LLC. The replacement cost valuation is not an appraisal, but is reflective of the value of the systems based on recent contractor estimates.


The replacement costs and installed dates provided by Ince Engineering were then used to estimate the original cost of the plant. Indices used to estimate the original value of the system include the Handy-Whitman Cost Trending Index, the Engineering News-Record Building Cost Index History, and the United States Bureau of Reclamation Construction Cost Trends. The organizations compiling these indices gather construction cost information that includes materials, labor, equipment, overhead and profit. That information is summarized into an index number that is a percentage ratio between the cost of an item at any stated time and its cost at a base period. Engineers doing utility asset evaluations often rely upon these types of indices for estimating costs in different time periods for water and sewer utilities, as well as electric and natural gas utilities.

The trended original value of the assets was then used to calculate current net value of the assets. For those assets assigned a service life in Schedule III-3 of the Public Utility Commission's current Class B rate change application, those service lives were used to determine the net value of the assets using straight-line depreciation. Sewer assets were assigned service lives based on Schedule III.B. of the previous Commission application as service lives for sewer assets are not included in the current Class B application. For assets not assigned a service life by the Commission (identified by an asterisk in Column k of the report), the following service lives have been used:

|                      |          |
|----------------------|----------|
| Fire Hydrants        | 50 Years |
| Electrical Equipment | 20 Years |
| Generators           | 20 Years |
| Sewer Pipe           | 50 Years |
| Structures – Metal   | 50 Years |

If you have any questions about this project, please contact me at (512) 494-0369.

Sincerely,



Tomas G. Gebhard, Jr., P.E., Ph.D.  
Texas Registered Engineer No. 39577



212 E HWY 90 A  
Richmond, Texas 77406  
281-232-7075  
jgince@gmail.com

# Ince Engineering, LLC

November 6, 2015

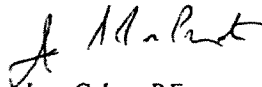
To whom it may concern,

Re: Sugarberry Place and Cottage Gardens Trending Study

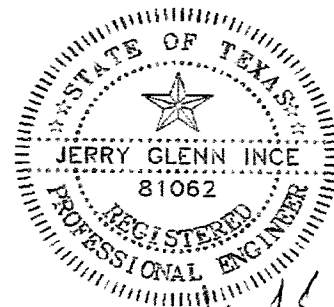
This letter is to acknowledge that Ince Engineering, LLC provided an evaluation of the installed components at the above referenced locations. Ince Engineering field verified the above ground and visible items covered in the report. Below ground feature and items not accessible were taken from the construction drawings. The installation prices were evaluated from recent contractor estimates on similar items. Dates for the installations were obtained from interviews with the developer and system operator.

If you have any questions regarding this project, please contact Jerry G. Ince, P.E. 281-232-7075, fax 281-232-7075.

Sincerely,



Jerry G. Ince, P.E.  
President/Engineer



*JG* 11/11/15  
11-6-15

| System                        | Asset Type           | Asset Description                        | Current Replacement Cost | Date Installed | Asset Age (Yrs.) 12/31/2013 | Trending Index Code | Install Trending Value | Current Date Value | Trended Original Asset Cost | Asset Useful Life | Annual Depreciation Expense | Accumulated Depreciation | Net Value           |
|-------------------------------|----------------------|--|--------------------------|----------------|-----------------------------|---------------------|------------------------|--------------------|-----------------------------|-------------------|-----------------------------|--------------------------|---------------------|
| (a)                           | (b)                  | (c)                                      | (d)                      | (e)            | (f)                         | (g)                 | (h)                    | (i)                | (j)                         | (k)               | (l)                         | (m)                      | (n)                 |
| Sugarberry Place              | Fencing              | 8' Chainlink Fence 1,230 ft              | \$ 30,750                | 6/1/2000       | 13.6                        | ENR                 | 3553                   | 5497               | \$ 19,875                   | 20                | \$ 984                      | \$ 13,998                | \$ 6,378            |
| Sugarberry Place              | Fencing              | Wooden Exterior 2850 ft                  | 68,400                   | 6/1/2000       | 13.6                        | ENR                 | 3553                   | 5497               | 44,211                      | 20                | 2,211                       | 30,024                   | 14,186              |
| Sugarberry Place              | Fencing              | Gate                                     | 750                      | 6/1/2000       | 13.6                        | ENR                 | 3553                   | 5497               | 485                         | 20                | 24                          | 329                      | 156                 |
| Sugarberry Place              | Building             | Wooden Building                          | 12,500                   | 6/1/2000       | 13.6                        | HW-02               | 314                    | 524                | 7,490                       | 15                | 499                         | 6,783                    | 708                 |
| Sugarberry Place              | Wells                | 2 Complete well                          | 210,000                  | 6/1/2000       | 13.6                        | HW-01               | 286                    | 439                | 141,595                     | 50                | 2,832                       | 38,664                   | 103,130             |
| Sugarberry Place              | Pump & Ship          | 2.25 hp booster pumps                    | 35,000                   | 6/1/2000       | 13.6                        | HW-03               | 532                    | 928                | 20,065                      | 10                | -                           | 20,065                   | -                   |
| Sugarberry Place              | Pressure Tanks       | 8,000 gal Pressure Tank                  | 65,000                   | 6/1/2000       | 13.6                        | HW-07               | 270                    | 742                | 23,652                      | 50                | 473                         | 6,425                    | 17,227              |
| Sugarberry Place              | Ground Storage Tanks | 125,000 gal GST                          | 250,000                  | 6/1/2000       | 13.6                        | HW-07               | 270                    | 742                | 90,970                      | 50                | 1,813                       | 24,712                   | 66,258              |
| Sugarberry Place              | Distribution System  | 8" 1260 Pipe 960 ft                      | 50,560                   | 6/1/2000       | 13.6                        | HW-17               | 201                    | 338                | 34,824                      | 50                | 696                         | 9,460                    | 25,364              |
| Sugarberry Place              | Distribution System  | 6" 1260 Pipe 426 ft                      | 25,240                   | 6/1/2000       | 13.6                        | HW-17               | 201                    | 338                | 15,010                      | 50                | 300                         | 4,077                    | 19,932              |
| Sugarberry Place              | Distribution System  | 4" 1260 Pipe 13,472 ft                   | 431,104                  | 6/1/2000       | 13.6                        | HW-17               | 201                    | 338                | 256,367                     | 50                | 5,127                       | 69,642                   | 186,725             |
| Sugarberry Place              | Distribution System  | 2" 1260 Pipe 5,938 ft                    | 117,822                  | 6/1/2000       | 13.6                        | HW-17               | 201                    | 338                | 67,092                      | 50                | 1,342                       | 18,126                   | 48,867              |
| Sugarberry Place              | Fire Hydrants        | 3  | 11,700                   | 6/1/2000       | 13.6                        | HW-21               | 496                    | 816                | 7,112                       | 50                | 142                         | 1,932                    | 5,180               |
| Sugarberry Place              | Meters and Services  | 3/4" Meters and service connections, 402 | 241,700                  | 6/1/2000       | 13.6                        | HW-18               | 275                    | 504                | 131,607                     | 20                | 6,580                       | 89,378                   | 42,230              |
| Sugarberry Place              | Misc                 | Electric Controls - water plant          | 22,000                   | 6/1/2000       | 13.6                        | HW-03               | 532                    | 928                | 12,612                      | 20                | -                           | 8,565                    | 4,047               |
| Sugarberry Place              | Misc                 | Plant Electric co 20HP                   | 27,000                   | 6/1/2000       | 13.6                        | HW-03               | 532                    | 928                | 12,612                      | 20                | -                           | 8,565                    | 4,047               |
| Sugarberry Place              | Misc                 | Diesel Generator                         | 75,000                   | 6/1/2009       | 4.6                         | M-44                | 502                    | 564                | 66,735                      | 20                | 3,338                       | 15,298                   | 51,438              |
| Sugarberry Place              | Misc                 | CID Facilities                           | 1,000                    | 6/1/2000       | 13.6                        | HW-06               | 382                    | 765                | 499                         | 10                | -                           | 499                      | -                   |
| Sugarberry Place              | Distribution System  | Yard Piping                              | 75,000                   | 6/1/2000       | 13.6                        | HW-13               | 314                    | 647                | 36,399                      | 50                | 728                         | 9,888                    | 26,511              |
| Sugarberry Place              | Collection System    | 10" SDR26 Sewer Pipe - 10,708 ft         | 642,360                  | 6/1/2000       | 13.6                        | HW-17               | 201                    | 338                | 381,995                     | 50                | 7,640                       | 103,769                  | 278,726             |
| Sugarberry Place              | Collection System    | 8" SDR26 Sewer Pipe - 1,676 ft           | 92,180                   | 6/1/2000       | 13.6                        | HW-17               | 201                    | 338                | 54,817                      | 50                | 1,096                       | 14,891                   | 39,926              |
| Sugarberry Place              | Collection System    | 6" SDR26 Sewer Pipe - 2,947 ft           | 147,350                  | 6/1/2000       | 13.6                        | HW-17               | 201                    | 338                | 87,625                      | 50                | 1,753                       | 23,803                   | 63,822              |
| Sugarberry Place              | Sewer Service        | 402 service connections                  | 72,000                   | 6/1/2000       | 13.6                        | HW-18               | 275                    | 504                | 38,286                      | 20                | 1,964                       | 26,680                   | 12,606              |
| Sugarberry Place              | Plant Services       | 200,000 gpd                              | 2,000,000                | 6/1/2000       | 13.6                        | ENR                 | 3553                   | 5497               | 1,292,705                   | 50                | 25,854                      | 351,168                  | 941,542             |
| Sugarberry Place              | Building - Metal     | Metal Building no roof                   | 200,000                  | 6/1/2000       | 13.6                        | HW-04               | 314                    | 524                | 124,641                     | 50                | -                           | 33,859                   | 90,782              |
| Sugarberry Place              | Lift Station         | 2 Lift Stations                          | 120,000                  | 6/1/2000       | 13.6                        | HW-13               | 358                    | 647                | 66,399                      | 50                | -                           | 1,328                    | 48,362              |
| Sugarberry Place              | Misc                 | Electrical controls - sewerplant         | 30,000                   | 6/1/2000       | 13.6                        | HW-03               | 532                    | 928                | 17,198                      | 20                | 860                         | 11,680                   | 5,519               |
| Sugarberry Place              | Misc                 | Diesel Generator                         | 60,000                   | 6/1/2009       | 4.6                         | M-44                | 502                    | 564                | 53,404                      | 20                | 2,670                       | 12,238                   | 41,166              |
| Sugarberry Place              | Land                 | Lots for plants - 3                      | 111,400                  | 6/1/2000       | 13.6                        | USBA L51            | 209                    | 618                | 37,674                      | n/a               | -                           | -                        | 37,674              |
| <b>Sugarberry Place Total</b> |                      |  | <b>\$ 5,231,316</b>      |                |                             |                     | <b>209</b>             | <b>618</b>         | <b>\$ 3,144,977</b>         |                   | <b>\$ 74,026</b>            | <b>\$ 971,949</b>        | <b>\$ 2,173,028</b> |

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Attachment A –

Resume of Thomas G. Gebhard, Jr., P.E., Ph. D.



## EDUCATION

B.S. Civil Engineering, University of Texas at Austin, June 1962.

M.S. Environmental Health Engineering, University of Texas at Austin, January 1964.

Ph.D., University of Texas at Austin, June 1968.

## PROFESSIONAL MEMBERSHIP

Texas, No. 39577

## PROFESSIONAL SOCIETIES

American Society of Civil Engineers

American Water Works Association

## CONTINUING EDUCATION

- Short Course in Engineering Systems Analysis at Massachusetts Institute of Technology in June 1969.
- Second International Seminar for Hydrology Professors at Utah State University in Austin 1970.
- EPA Short Course in Water Quality Management at Edison, N.J. Water Quality Laboratory in March 1971.
- NSF Short Course in Flow Through Porous Media with Applications to Ground Water Hydrology at University of Wisconsin, Madison, Wisconsin, July 1971.
- Short Course in Energy Conservation and Management in Manufacturing Facilities at The University of Texas at Austin, June 1977.
- EPA Seminar on Small Wastewater Flows, Dallas, Texas, August 1977.
- EPA Seminar on Pretreatment of Industrial Wastes, Dallas, July 1978.
- EPA Seminar in Troubleshooting at Wastewater Treatment Plants - Process Control, Sludge Handling and Conditioning, Dallas, August 1978.
- ASCE Seminar on Flood Plain and Drainage Analysis, Lubbock, October 1978.
- EPA Seminar on Sludge Treatment and Disposal, Dallas, November 1978.
- Cost of Capital for Regulated Utilities, Public Utilities Reports, Washington, D.C., September 1983.

## PROFESSIONAL SERVICE

### **GDS Associates, Inc.**

Dr. Gebhard joined GDS Associates, Inc. on July 30, 1997 and became a shareholder on January 1, 2001. The following summarizes Dr. Gebhard's significant project work.

- Representation of East Texas Electric Coops as Hydroelectric Power Customers of Southwestern Power Administration at Meetings of (a) Southwestern Power Resources Association on O&M expenditures, (b) Corps of Engineers on Hydropower issues, and (c) joint meetings of Southwestern Power Administration and Corps of Engineers on operations, maintenance and capital replacements.

- 2 Canyon Lake Water Supply Corporation: Provided an independent review of the proposed purchase of this 6,600 connection member owned water system by a major publicly traded investor owned water utility. The review included a general evaluation of the assets and facilities, evaluation of the ownership capabilities, and assessment of the proposed purchase price which included a comparison with purchases of similar systems. The resulting report was submitted to the WSC's directors, and the customers ultimately approved the sale.
- 7 AquaTexas, Inc.: Supervised a project team that prepared a complete update to the Company's Texas capital asset rate base accounts to meet state filing requirements. Prepared responses to financial, accounting and technical questions, and provided support testimony in the regulatory proceedings. The capital asset valuation update included adding over \$50 million dollars of capital additions and a complete asset valuation for 10 purchased systems for which no records were available.
- 3 SJWTX Water, Inc.: Performed an evaluation of four water systems offered for purchase by SJWTX Water, Inc. Inspected systems, reviewed plans, developed inventory, and computed a trended evaluation of net book value.
- 7 Aqua Texas, Inc.: Performed an evaluation of the water and wastewater systems at Cypress Bayou, north of Orange, Texas. Performed field inspection and determined the value of Replacement Cost Depreciated from asset summaries. Also evaluated ratio of market capitalization to book value, comparable sales values, and net present value of future cash flows. The valuation was used in negotiations between Aqua Texas and the City of Orange, Texas.
- 3 Aqua Texas, Inc.: Performed an evaluation of the water and wastewater systems at Crighton Ridge, south of the City of Conroe, Texas. Performed field inspection and determined the value of Comparable Sales, Ratio of Market Capitalization to Book Value, and net present value of future cash flows. The valuation was used in negotiations between Aqua Texas and the City of Conroe, Texas.
- 3 AquaSource Utility, Inc.: Provided a valuation of purchased assets by developing an inventory, using financial records and trending to determine original cost, depreciation, value at acquisition, and replacement cost depreciated in Docket Nos. 2000-1074-UCR, 2000-1075-UCR, 2000-1366-UCR, 2000-1367-UCR, 2000-1368-UCR and 2000-1369-UCR before the Texas Natural Resource Conservation Commission and Dockets Nos. 582-01-0416 and 582-01-1365 before State Office of Administrative Hearings.
- 4 Maverick County Water Control and Improvement District No. 1: Analysis of electrical marketing and value of power produced by deliveries of water by MCWCID, analysis of FERC licensing status, and alternate hydroelectric power generation capabilities.
- 3 American States Utility Services, Inc.: Preparation of proposal for purchase of water and wastewater utility systems of Channel Islands, Kingsley Field, Fresno Air Terminal Air National Guard Stations, and Corpus Christi Naval Stations.
- 7 Southwest Utilities, Inc.: Providing expert witness services and regulatory assistance for an application to change the company's water and sewer rates in Dockets 31791-R and 31792-R before the Texas Natural Resource Conservation Commission.
- 3 H-M-W Water Supply Corporation: Preparation of an Engineering Report for the conversion of a Water Supply Corporation to a Special Utility District and the provision of regulatory services before the Texas Natural Resource Conservation Commission.
- 4 Ables Springs Water Supply Corporation: Provision of regulatory assistance and expert witness services in support of an application to amend the certificated service area before the Texas Natural Resource Conservation Commission.

- Brushy Creek Municipal Utility District: Providing an analysis of water utility rates charged by the City of Round Rock and performing true-up calculations based upon a mutual agreement to use a methodology used by TNRCC in a docket to settle a rate dispute between the parties.
- Utility Center, Inc. of Fort Wayne, Indiana (A subsidiary of AquaSource Utility, Inc.): Computation of Replacement Cost New Less Depreciation (RCNLD) as part of a rate case before the Indiana Utility Regulatory Commission (IURC), Cause No. 41968, requiring a review of plant asset accounts, inspection of assets, evaluation of electronic maps, and trending of original cost data.
- Azurix North America, Inc.: Planning study for support of Request for Waiver of 75/90 Rule of Texas Natural Resource Conservation Commission for Southwest Utilities, Inc.
- B&D Environmental Inc.: Providing support services in valuation of water and wastewater utility assets.
- AquaSource Utility Inc.: Performing a valuation study for water and wastewater utility assets of Central Jefferson County Utility Company of Missouri for litigation support in Cause No. 4:00CV863DDN in the United States District Court, Eastern District of Missouri.
- Acquisition Partners, Inc. (A former subsidiary of AquaSource Inc.): Preparation of Statements of Interest in acquiring utility assets of U.S. military bases, and investigation of opportunities on specific military installations.
- J.W. Lightfoot: Protest of Connection Fee

Dr. Gebhard has been active in providing volunteer services to professional committees. The committees and activities include:

**Electric Power Research Institute: Probable Maximum Flood Guidelines Committee**

EPRI with the cooperation of the Federal Energy Regulatory Commission (FERC) developed a set of guidelines for the determination of the Probable Maximum Flood. The committee provided peer review for the contractor, Bechtel Corporation, and has reviewed the draft document. 1992 - 1994.

**American Society of Civil Engineers: Energy Division - Hydro Power Committee**

***Hydro Power Guidelines: Small-Scale Hydropower Subcommittee***

A comprehensive set of guidelines for planning and designing the civil engineering aspects of hydroelectric facilities was produced in a five-volume set over within a five-year period. Dr. Gebhard chaired the subcommittee that produced the volume on small-scale hydropower. The ASCE publication, *Civil Engineering Guidelines for Planning and Designing Hydroelectric Developments*, won the 1990 ASCE Rickey Medal. 1984-1989.

***Task Committee on Rehabilitation of Hydroelectric Power Plants***

A set of guidelines for the rehabilitation of civil engineering facilities at hydroelectric plants was produced as a companion set to the design guidelines. Dr. Gebhard was a member of the control group that produced the ASCE publication, *Guidelines for Rehabilitation of Civil Works of Hydroelectric Plants*. 1989-1991.

***Task Committee on Lessons Learned from the Design, Construction, and Operation of Hydroelectric Facilities***

This committee effort is to compile information on the powerhouse and the facilities that convey water to, through, and from the powerhouse. The ASCE publication, *Lessons Learned from the Design, Construction, and Operation of Hydroelectric Facilities*, that was produced by the committee, won the 1995 ASCE Rickey Medal. 1991 - 1994.

**Gebhard Sarma Group, Inc.**

The engineering firm was founded by Dr. Gebhard in March 1977 in Austin, Texas. After June 1984, the firm was known as Gebhard Engineers. The company changed its name from Gebhard Engineers, Inc. to Gebhard Sarma Group, Inc. on March 3, 1992 when principals of Sarma & Associates and Project Design Consultants joined Gebhard Engineers, Inc. The firm provided engineering services in the development and management of water and energy resources, as well as civil engineering services for land development and utility companies. The following summarizes his participation on some projects until he left on July 25, 1997.

- 2 U.S. Department of Energy: Conducted Field Reconnaissance Studies to Evaluate the Development of Hydroelectric Power. Visited, Examined, and Reported on Over 110 Dams in the States of Kansas, Missouri, Iowa, Kentucky, Tennessee, Mississippi, Georgia, South Carolina, Florida, Alabama, and North Carolina and in the Commonwealth of Puerto Rico to Determine Feasibility of Adding Hydroelectric Power Generation Facilities to Existing or Abandoned Sites.
- 3 State of Kansas, Department of Energy: Performed feasibility study for the addition of hydroelectric power to Rocky Ford Dam on the Big Blue River near Manhattan, Kansas. The dam initially had turbines and generators, but they had been removed. A detailed hydrologic analysis was made to determine the a suitable investment strategy to obtain more power during peak summer months. As Rocky Ford Dam established the tailwater elevation for a Corps of Engineers Dam, a detailed dam safety study was conducted and reviewed by the Corps of Engineers. Suitable enhancements to the fishery were designed to accompany the addition of hydroelectric power to the dam.
- 3 American Hydro of Peterborough, New Hampshire: Design and Construction Supervision for 700 KW Hydroelectric Plant, Included Negotiations with Corps of Engineers for Construction and Operation at Corps Owned Dam, Design of Intake Structure, Penstock, Powerhouse, and Tailrace.
- 2 Energy Law Institute of Concord, New Hampshire: On Contract with Metropolitan District Commission (Boston, Mass) to Determine Potential for Developing Hydroelectric Power at Water Supply Dams.
- 2 U.S. Agency for International Development for K&M Engineering Co.: Conducted Field Reconnaissance Studies to Evaluate the Potential for Developing Small Hydroelectric Power Sites. Visited, Examined, and Reported on Four Small Hydroelectric Projects in the Republic of Armenia. Reviewed the Armenia Plan to produce more hydroelectric power. Recommended the Purchase of Hydroelectric Equipment produced in Russia and Armenia.
- 2 U.S. Agency for International Development for K&M Engineering Co.: Visited Republic of India to negotiate the wording of a model power purchase agreement with the Federal Government. The model agreement would enable the state governments to purchase power from independent power producers who have built run-of-the-river hydroelectric plants.
- 3 City of Charleston, Illinois: Consultant for Development of Hydroelectric Power at Breached Water Supply Dam.
- 2 International Boundary and Water Commission, El Paso, Texas: Planning for Proposed Hydroelectric Dam to be combined with a new bridge, border crossing on Rio Grande upstream from Laredo, Texas.
- 2 U.S. Section, International Boundary and Water Commission, El Paso, Texas: Developed hydraulic and hydrologic flow model of Rio Grande below Falcon Dam for use in assessing the availability of water pursuant to an application for a water right at the Texas Natural Resource Conservation Commission.
- 2 U.S. Bureau of Indian Affairs and U.S. Department of Justice: Preparing Surface Water Hydrology Study of 26,000 Square Mile River Basin in New Mexico and Arizona in Support of Indian Water Rights Claims in Arizona and New Mexico.



- U.S. Department of Justice: Supervision of Modifications to SWRRB - Rainfall Runoff Model by U.S. Agricultural Research Service and Texas A&M Research Foundation, Modifications to Add Routing Model for Application in Large Drainage Basins.
- Earthworks, Inc., New Hampshire: Consultant for Design and Construction for Addition of Turbine at Dam.
- International Boundary and Water Commission, El Paso, Texas: Performed an analysis of drought conditions on Rio Grande in vicinity of El Paso.
- City of Austin: Seven Contracts - (a) Performed Hydrologic Studies for Addition of Hydroelectric Power to Longhorn Dam, (b) Performed Analysis of the Addition of Hydroelectric Power to Onion Creek Wastewater Treatment Plant, (c) Design of Storm Sewers in Areas with Excessive Drainage Waters, (d) Design of Wastewater Interceptor Sewer for Slaughter Creek to Bear Creek Segment using a 54 Inch Diameter Tunnel through the Austin Chalk Formation, (e) Analysis of Water Availability and Rights Related to Charges for Water By LCRA, (f) Master Planning for Stormwater Runoff in the Walnut Creek Watershed, and (g) Erosion Controls in Miscellaneous Watersheds.
- City of Cedar Park, Texas: Rate Consultant for Establishing Water and Wastewater Utility Rates in 1987. Provided Advisory Services on Water Rates in 1991. Conducted 1993 Rate Study.
- City of Pasadena, Texas: Consultant for Water Rates in Dispute with City of Houston before Texas Water Commission. Provided Prefiled Expert Witness Testimony in Docket Nos. RC-022 and RC-023. Provided consultation in settlement agreement and negotiation of new contract. This docket was settled before hearing began.
- Kirtland Air Force Base, New Mexico: Water and Wastewater Rate Study for Contract Renewal with the City of Albuquerque, New Mexico. Reviewed the Impact of Ground Water Rights, Recharge from the Rio Grande, and Water Purchases from the City on Base Operations. Both City and Base adopted recommendations for Rates and Operational Modifications.
- Coe Utilities, Inc.: Prepared "Valuation Studies for Facilities of Coe Utilities, Inc." that was used to support a loan from the Texas Water Development Board to H-M-W Water Supply Corporation for the purchase of water and wastewater facilities owned by Coe Utilities, Inc., May 1996.
- Southwest Utilities, Inc., Texas: Prepared Application and Provided Expert Witness Testimony for Rate Increase in Docket No. 4824 before the Public Utility Commission of Texas in 1983. Prepared Application for Rate Increase in TWC Docket No. 7456-R. Prepared Application for Rate Increase in TWC Docket No. 9296-R.
- Military Highway Water Supply Corporation, Relampago, Texas: Analyzed water use and financial data to develop a recommendation for new water and wastewater utility rates. Examined water supply alternatives for colonia located in service area of WSC.
- Greystone Country Estates, Inc., Texas: Provided Expert Witness Testimony in TWC Docket No. 9954-X for establishing extension fee for a developer served by Hill Country Waterworks, Inc. Performed used and useful analysis of transmission system of Hill Country Waterworks, Inc.
- Onion Creek Wastewater Corporation, Texas: Prepared the application for a Certificate of Convenience and Necessity, and developed a rate structure for a newly formed Investor Owned Utility. Changed the rates in a subsequent proceeding.
- North Runnels Water Supply Corporation, Texas: Provided Expert Witness Testimony in TWC Docket No. 8496-W for Review of Water Rates Charged by the City of Winters.
- Staff Water Supply Corporation, Texas: Provided Expert Witness Testimony in TWC Docket No. 9240-M for Review of Water Rates Charged by the City of Carbon.
- Woodcreek Utilities, Inc., Texas: Provided Assistance in Creating Capital Structure and Acquisition Adjustment for Company whose rates were being Arbitrated as condition of sale by Federal Deposit Insurance Corporation in TWC Docket No. 7486-R.

- 1 City of Truth or Consequences, New Mexico: Analyzed Local Groundwater Conditions and Testified at Hearing of New Mexico State Engineers Office for Water Right. Developed Project and Obtained Funding from Three Agencies to Develop a Low Temperature Geothermal Well for Providing Energy for Space Heating of the Senior Citizens Center.
- 2 City of Georgetown and City of Round Rock, Texas: Provided Expert Witness Testimony in TWC Docket No. 8169-M, Dow Chemical Company v. Brazos River Authority, regarding issues on water management, Hydrologic system of Brazos River, dam failures, and other engineering and water management issues affecting water rates.
- 3 West Leonard Water Supply Corporation, Texas: Provided Water Utility Rate Advisory Services in Rate Appeal before the Texas Water Commission.
- 4 Poetry Water Supply Corporation and Lawrence Water Supply Corporation, Texas: Provided Rate Advisory Services in Review of Rates of the City of Terrell in TWC Docket 7331-M.
- 5 Coe Utilities, Inc., Texas: Prepared Application and Provided Expert Witness Testimony for Rate Increase in Docket No. 5757 before the Public Utility Commission of Texas.
- 6 Consultant to Protestants of Rate Increase of H&J Water Company. Provided Expert Witness Testimony in Docket No. 7054-R before the Texas Water Commission.
- 7 Consultant to Utilities for Rates and Capital Improvement Programs for Utilities with Wells. Utilities include Southwest Utilities, Inc., Coe Utilities, Inc., Shoreline Utilities, Inc., and Green Valley Water Supply Corporation.
- 8 Hornsby Bend Water Company: Prepared Application for Certificate of Convenience and Necessity, Wrote Tariff, Prepared Layout of Water and Wastewater Utility, Locating Source of Well Water in Eastern Travis County.
- 9 Cap-View Utility Company: Prepared Application for Certificate of Convenience of Necessity, Wrote Tariff, and Testified on Water Quality Issues at Hearing on Discharge Permit.
- 0 Creedmoor-Maha Water Supply Corporation: Prepared Testimony Against Applicant for Certificate of Convenience and Necessity in Certificated Service of Creedmoor-Maha.
- 1 City of Rollingwood, Texas: Served as Hydrologist for City, Obtained Amendment for Change of 100 Year Flood Plain from Federal Emergency Management Agency, Review Plans for Development in 100 Year Flood Plain and for Detention and Filtration Ponds.
- 2 Southern Rio Grande Council of Governments: Provided Consulting Services to Improve Energy Use Efficiency of Six Municipal Utilities Providing Water, Wastewater, Electric and Natural Gas Service. Included Analysis of Groundwater Conditions for Each Municipal Utility.
- 3 New Mexico Energy Institute: Performed Two Studies Relating to Planning for the Use of Geothermal Waters in Dona Ana County, New Mexico. Coordinated Planning of City, County, and State Governments.
- 4 New Mexico Solar Energy Institute: Performed Feasibility Analysis of Proposed Bioconversion Project to Produce Ethanol from Algae.
- 5 Subcontractor to Walsh Engineering Co: Advised and Assisted in Proposed Conversion of Municipal Water Well to Low Temperature Geothermal Heating Source for Hubbard, Texas.
- 6 Willow Springs Water Supply Corporation: Conducted Examination of Well in Karst Aquifer with High Concentration of Chlorides and Recommended New Source of Water from Adjacent Utilities.

#### **Public Utility Commission of Texas**

##### ***Director of Public Utilities***

From November, 1975 through February, 1977, I was the Chief Administrative Officer of the Public Utility Commission (PUC). The PUC was created on September 1, 1975, and began regulating the rate and services of over 2,000 electric, telephone, water and sewer utilities on September 1, 1976. During my employment, the PUC went from an organization of administrative support personnel to a

functioning regulatory agency composed of accountants, attorneys, economists and engineers. The following summarizes my administrative responsibilities:

- (1) Hiring of Key Personnel
- (2) Hiring Facilities and Equipment
- (3) Establishing Administrative Procedures
- (4) Approving Expenditures
- (5) Contracting Company Officials to Resolve Consumer Complaints
- (6) Coordinating the Drafting of Substantive Rules to Regulate Rates and Services of Public Utilities

**City of Las Cruces, New Mexico**

***Director of Utilities***

From January, 1974 through October, 1975, I directed the planning engineering and operations of the municipal water, wastewater and natural gas systems, and I was Operations Manager for the Rio Grande Natural Gas Association. The following summarizes my administrative experiences:

- (1) Prepared and Administered \$5.3 Million Operations Budget
- (2) Administered Engineering Contracts for over \$3 Million in Capital Improvement
- (3) Supervised 130 Employees
- (4) Developed merit award system which doubled the number of certified operators, laboratory technicians and welders
- (5) Established Engineering Section
- (6) Developed an Accounting and Work Order System based upon Uniform System of Utility Accounting
- (7) Contracted for Engineering Work with Five Consulting Engineering Firms

The following summarizes my experience on the water distribution system:

- (1) Coordinated City Participation in Regional Study of Groundwater Resources by U.S. Geological Survey
- (2) Contracted for Wells in a New Field
- (3) Began Installation of Telemetry Equipment for Remote Monitoring and Operation

The following summarizes my experience on the natural gas distribution system:

- (1) Began Operation of Telemetry Equipment for Remote Monitoring and Operation
- (2) Began Installation of Cathodic Protection
- (3) Established Curtailment Allotments
- (4) Testified on Curtailment Problems before the Federal Power Commission and Committees of the New Mexico Legislature
- (5) Testified at Rate Hearing of the New Mexico Public Service Commission
- (6) Proposed Separation of Service Area Served by Dual Facilities of Two Companies

**New Mexico State University**

***Department of Civil Engineering***

From September, 1967 through August, 1971, I was an Assistant Professor. From September, 1971 through January, 1975, I was an Associate Professor with tenure. From January, 1975, through December, 1975, I was an Adjunct Associate Professor. The following summarizes my teaching experiences:

- 1) Teaching of Graduate Courses in

- (a) Water Resources Engineering
  - (b) Open Channel Hydraulics
  - (c) Groundwater Hydrology
  - (d) Surface Water Hydrology
  - (e) Introduction to Research (Statistics, Regression Analysis, Dimensional Analysis, Nomography)
- 2) Teaching of Undergraduate Courses in
- (a) Hydraulics
  - (b) Advances Hydraulics
  - (c) Groundwater Hydrology
  - (d) Sanitary Engineering
  - (e) Strength of Materials
  - (f) Statics
  - (g) Introduction to Engineering II (Slide Rule Operations and FORTRAN Programming)
- 3) Advisory Duties
- (a) 20 Undergraduate Students per year
  - (b) 8 EPA Graduate Traineeships per year
  - (c) Directed program of Study for 5 M.S. Students
  - (d) Directed program of Study for 2 Sc. D. Students
  - (e) Participated on 22 Thesis Review Committees

The following summarizes my research experiences:

- 1. Grant on Flood Control Planning in New Mexico
- 2. Grant on Water Utilization of Rio Grande to analyze Economic Impact of Water Use Alternatives
- 3. Supervised Thesis Research in Groundwater Modeling, Recharge Wells, Dispersion Analysis, Water Quality Modeling and Flooding in Detroit
- 4. Management of \$292,777 in Grant Funds from 1969 through 1974

The following summarizes my service activities:

- 1. Delegate to UCOWR from 1970 through 1975; Chairman of Committee on Education and Research in Water Resources Engineering
- 2. Chairman of Technical Advisory Committee of Southern Rio Grande Council of Governments for performing A-95 Reviews
- 3. Member of New Mexico Water Conference Planning Committee
- 4. Member of New Mexico Land Use Conference Planning Committee
- 5. Consultant to Elephant Butte Irrigation District
- 6. New Mexico Delegate to O.W.R.R. Conferences to Establish Research Priorities for Southern Plains and Great Basin Regions
- 7. Director for Developing Curriculum and Writing Grant Proposal for Training Program of Water and Wastewater Utility Operators which was created in the College of Continuing Education

#### **University of Texas, 1966-1967**

##### ***Research Engineer Assistant***

Toledo Bend Dam Model Study. I supervised the construction of the model, conducted the tests and evaluated the data. 1964.

Wind Wave Flume. I designed and built the flume, conducted tests on overtopping of seawalls and evaluated the test data. 1964.

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Thomas G. Gebhard, Jr., P.E., PhD

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- ⌚ Teaching Associate. I taught the undergraduate civil engineering course of Fluid Mechanics. 1966.
- ⌚ Dispersion in Reservoirs, I performed field tests using tracers in Lake Travis. Using numerical analysis techniques, I solved the two dimensional convective dispersion equation explicitly, implicitly and characteristically.

**Dr. Frank D. Masch, 1963**

***Consultant***

Performed the engineering analysis for a water well for the Austin Country Club.

**U.S. Geological Survey, 1960-1963**

***Hydraulic Engineer***

Performed field duties of streamflow measurement and streamflow station maintenance.

### Trending Comments for Inline Utilities

Various groups and agencies compile construction cost indices, in which materials, labor, equipment, overhead, and profit are summarized into an index number that is a percentage ratio between the cost of an item at any stated time and its cost at a base period. These cost indices are sometimes referred to by their functional use -- trending indices. Because these construction indices relate construction costs to the same base period, indices can be used to relate costs from one time period to another time period by their ratio. Thus, known construction costs from an earlier period can be used to estimate construction costs at a later time period or from a later date to an earlier period. Three separate indices for this study for Inline Utilities: (1) Handy-Whitman Index of Water Utility Construction Costs for the South Central Region (Region 4); (2) the ENR (formerly Engineering News Record) Index of Building Cost Trends; and (3) the Bureau of Reclamation Construction Cost Trends.

The Handy-Whitman Index was the primary reference source used for this study because utility regulators and the industry routinely accept it. The Handy-Whitman Index is commonly used in Texas ratemaking dockets. Whitman, Requardt and Associates from Baltimore, Maryland, prepare the Handy-Whitman Index for six different geographical regions of the United States. For wastewater treatment facilities and fencing, the Building Cost Index of ENR is the most suitable alternative when the Handy-Whitman Index is not applicable. The ENR Building Cost Index is preferable to the ENR Construction Cost Index because it has a slightly lower inflation rate. The U.S. Bureau of Reclamation Construction Cost Trends Index is used for land costs and other specialized items not covered by the Handy-Whitman Index and the ENR Building Cost Index.

The three indices exist in tabular form by utility item and dates. The Handy-Whitman Index is through a copyrighted, subscription service available at <https://www.wrallp.com/about-us/handy-whitman-index>. The ENR Building Cost Index is available through [http://www.enr.com/economics/historical\\_indices](http://www.enr.com/economics/historical_indices). The U.S. Bureau of Reclamation Construction Cost Trends Index is located at <http://www.usbr.gov/tsc/techreferences/mands/cct.html>. A list of which index and asset type was used for each class of item is attached to these comments.

To estimate the original cost of an item, one uses the replacement cost of the item for current date, and multiplies that cost by the ratio of the trending index of the installation date to the

trending index of the current date. The resulting value is an appropriate estimate of the original cost of the utility asset:

$$\text{Original Cost} = \frac{\text{Installation Index Value}}{\text{Current Index Value}} \times \text{Replacement Cost}$$

For example, to estimate the original purchase price of 8" plastic pipes with a current replacement cost of \$58,560 and an installation date of 6/1/2000, you must first determine the correct index to use for the item. In this case, the Handy-Whitman Index is appropriate, specifically the line for PVC Mains. The current index value for PVC Mains is 338 and the index value for the installation date is 201. The original cost of \$58,560 is multiplied by the ratio of the two trending values in order to come up with an original cost of \$34,824.

$$\$34,824 = \frac{201}{338} \times \$58,560$$

Similarly for land, if the current cost is estimated to be \$111,400 and the ratio of the applicable USBR trending ratios is 209/618, the estimate of the original purchase price is \$37,674. The estimated original costs determined by the trending study are then depreciated to find the net value of the assets at the end of the Inline Utilities' test year.

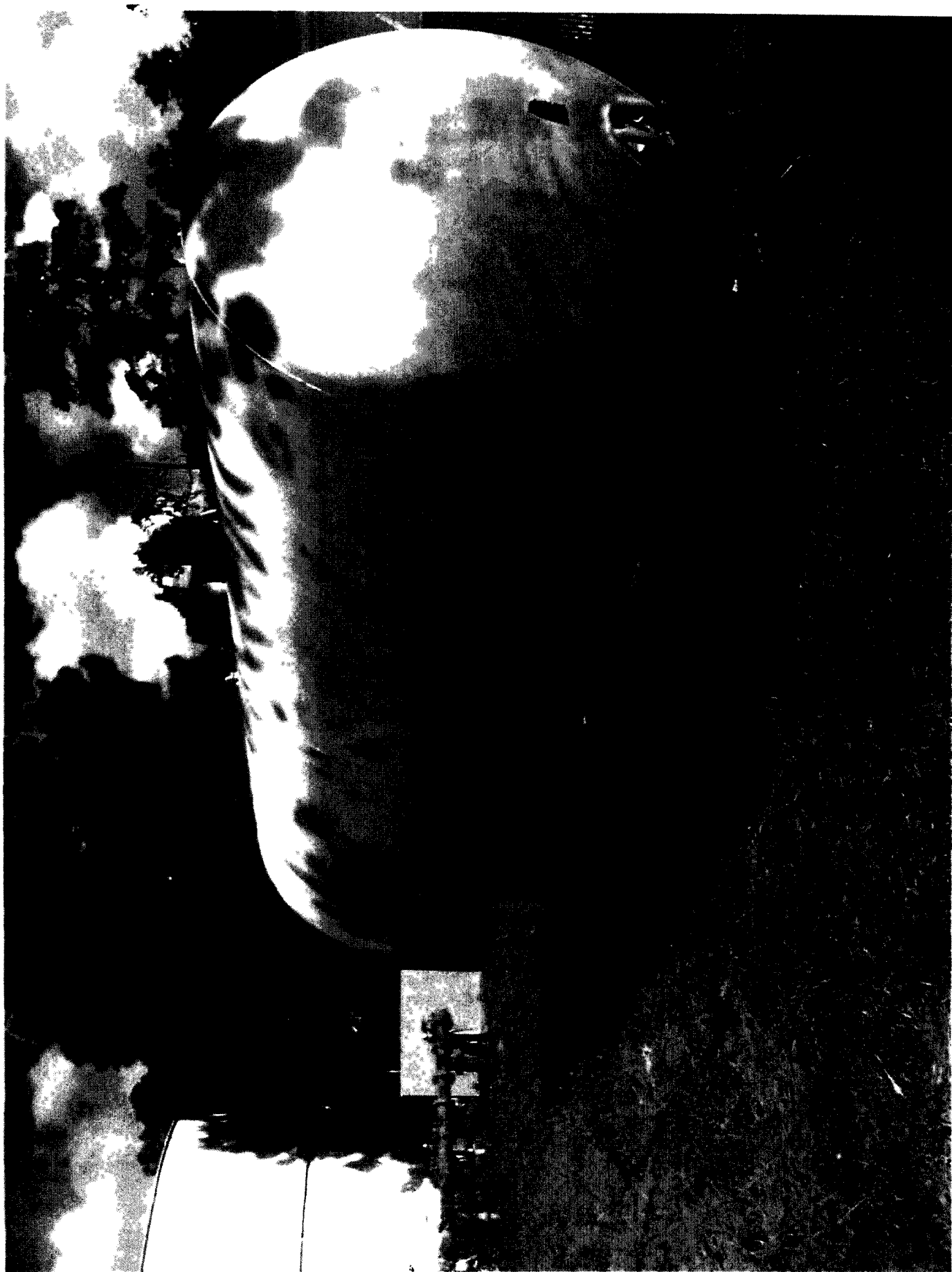
| Asset Type               | Index Used                 | Index Line No. | Index Category Description                |
|--------------------------|----------------------------|----------------|---|
| Fencing                  | Engineering News Report    | N/A            | Building Cost Index History               |
| Building - Wood          | Handy Whitman - Water      | 8              | Pumping Plant Structures and Improvements |
| Building - Metal         | Handy Whitman - Water      | 8              | Pumping Plant Structures and Improvements |
| Wells                    | Handy Whitman - Water      | 2              | Collecting & Impounding Res.              |
| Pump <= 5hp              | Handy Whitman - Water      | 9              | Electric Pumping Equipment                |
| Pump > 5hp               | Handy Whitman - Water      | 9              | Electric Pumping Equipment                |
| Pressure Tanks           | Handy Whitman - Water      | 23             | Steel Reservoirs                          |
| Ground Storage Tanks     | Handy Whitman - Water      | 23             | Steel Reservoirs                          |
| Distribution System      | Handy Whitman - Water      | 38             | PVC Mains                                 |
| Meters and Services      | Handy Whitman - Water      | 39             | Services Installed                        |
| Misc. - Electrical       | Handy Whitman - Water      | 9              | Electric Pumping Equipment                |
| Misc. - Diesel Generator | Handy Whitman - Materials  | 50             | Construction Equipment                    |
| Misc. - Chloranators     | Handy Whitman - Water      | 17             | Small Treatment Plant Equipment           |
| Misc. - Yard Piping      | Handy Whitman - Water      | 34             | Mains - Average all Types                 |
| Collection System        | Handy Whitman - Water      | 34             | Mains - Average all Types                 |
| Sewer Service            | Handy Whitman - Water      | 39             | Services Installed                        |
| Plant - Sewer            | Engineering News Report    | N/A            | Building Cost Index History               |
| Lift Station             | Handy Whitman - Water      | 34             | Mains - Average all Types                 |
| Land                     | U.S. Bureau of Reclamation | LS1            | Land - Texas                              |

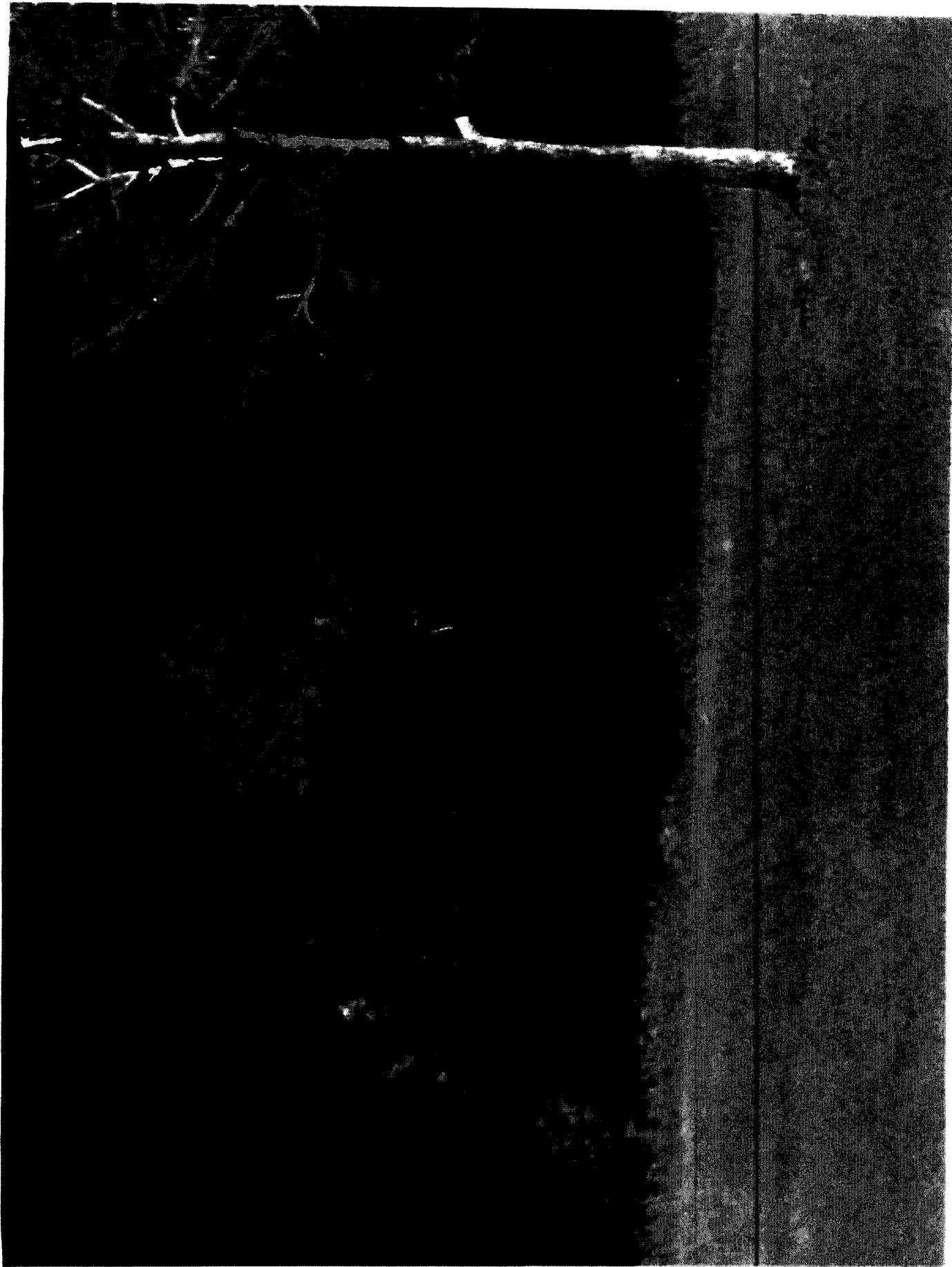


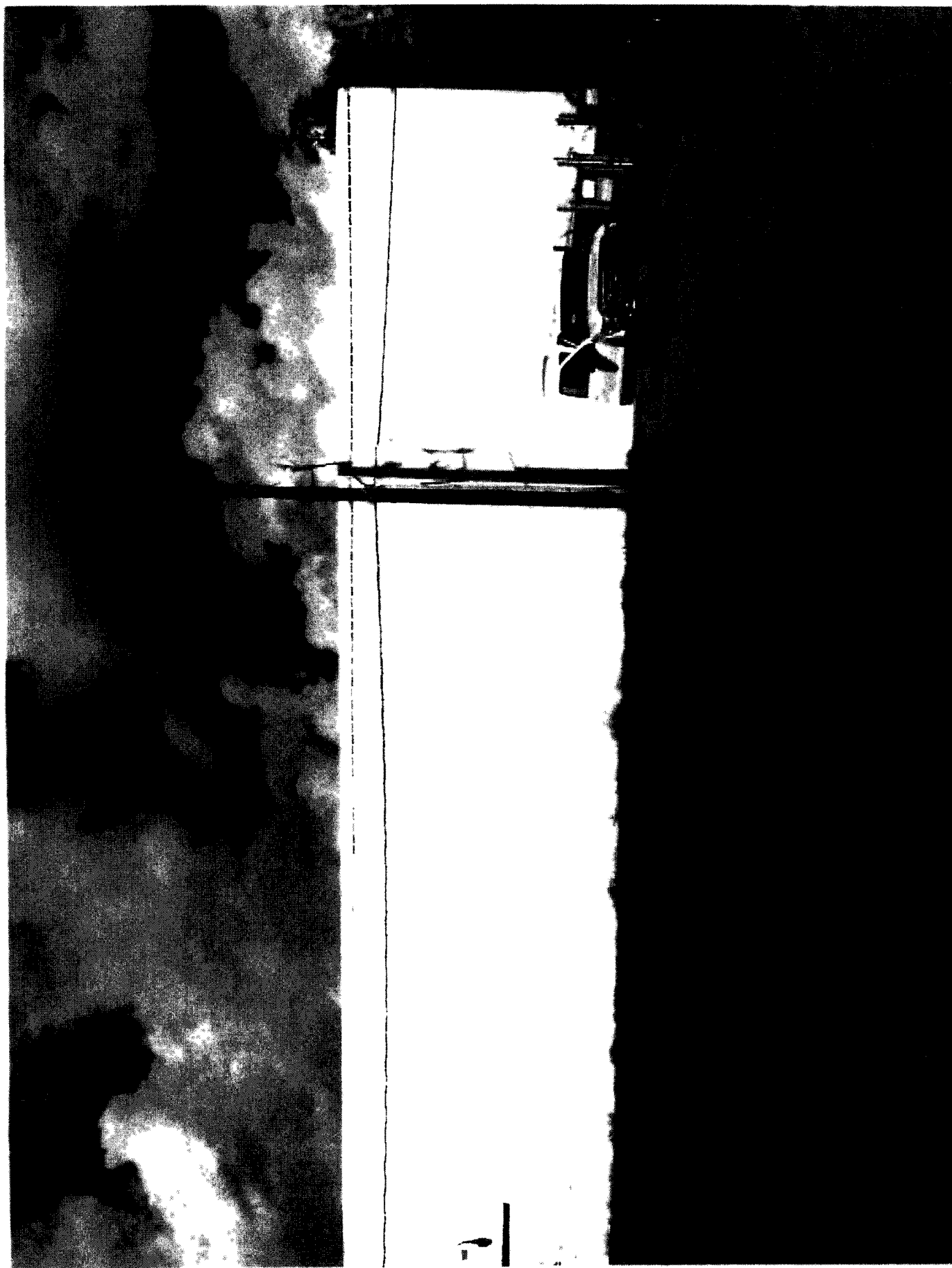
**Exhibit 2**

**Photographs of Inline System**

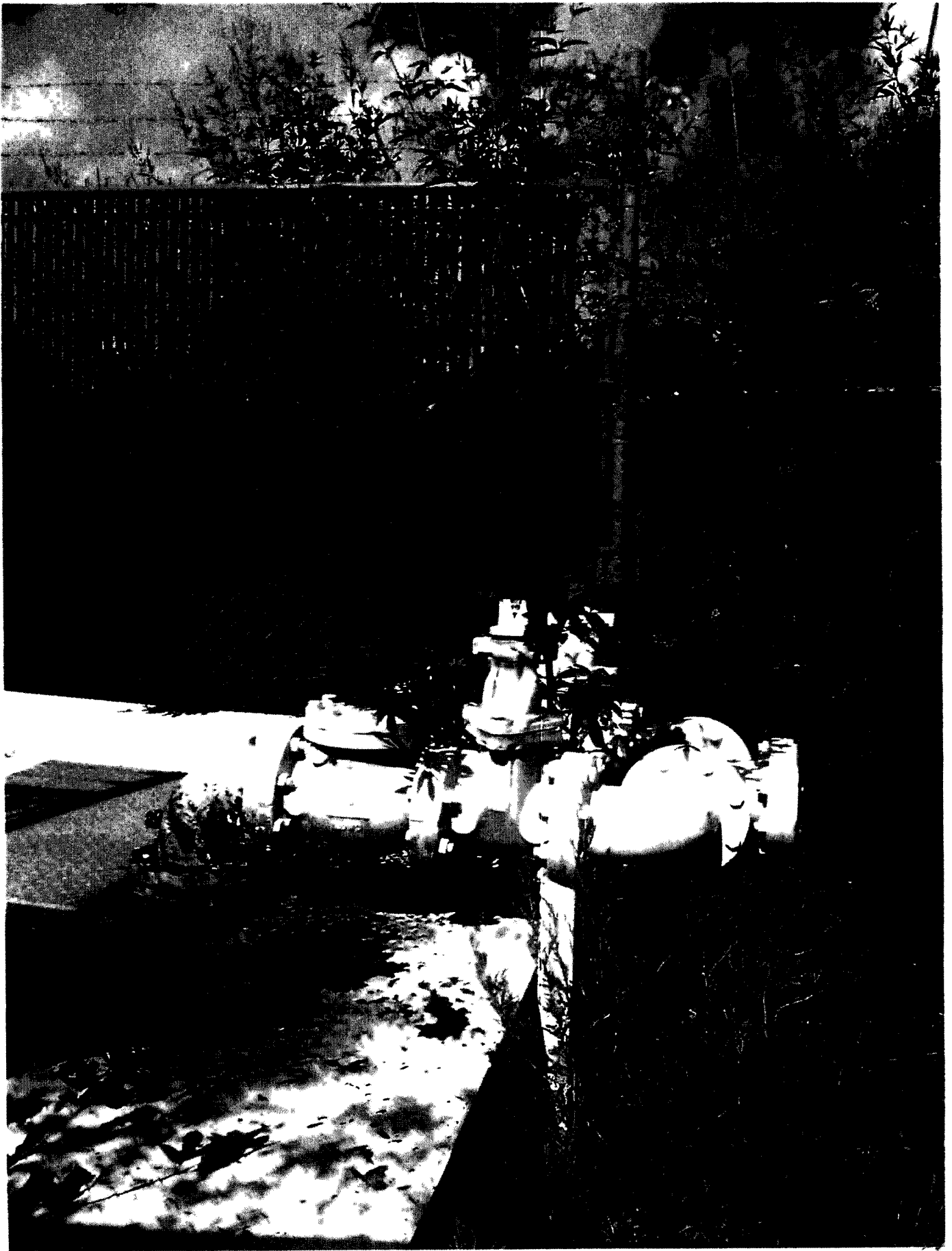








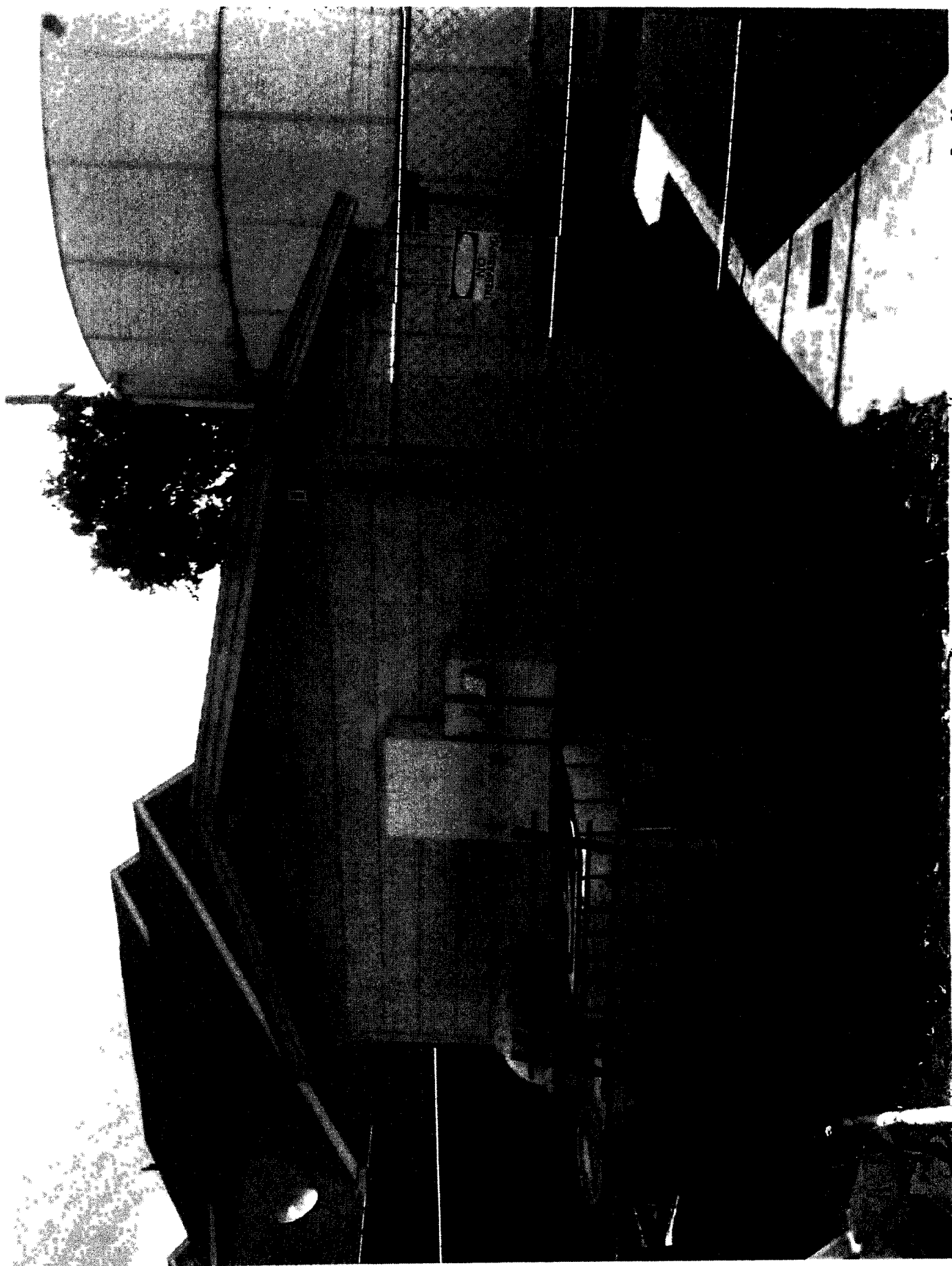




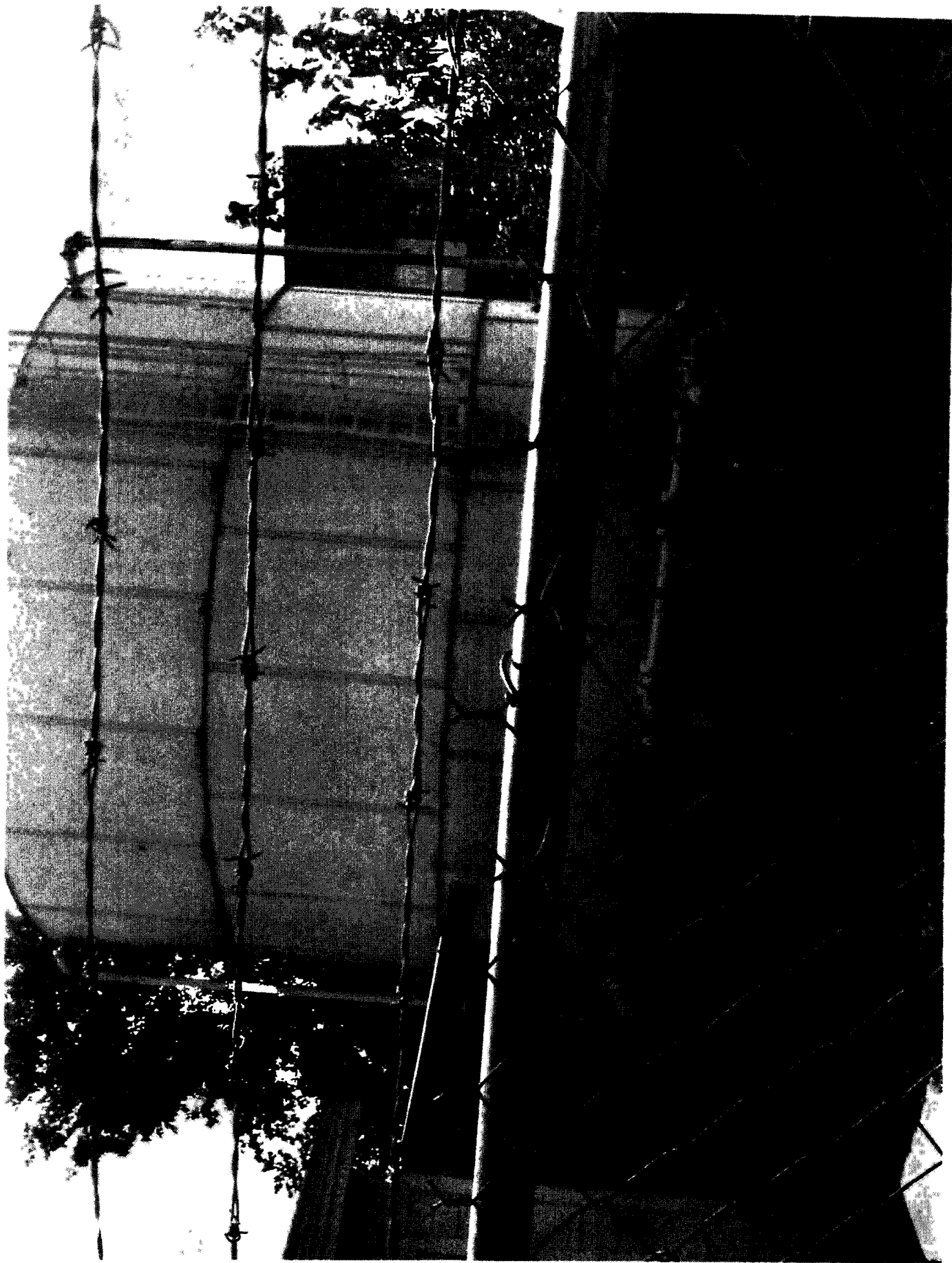


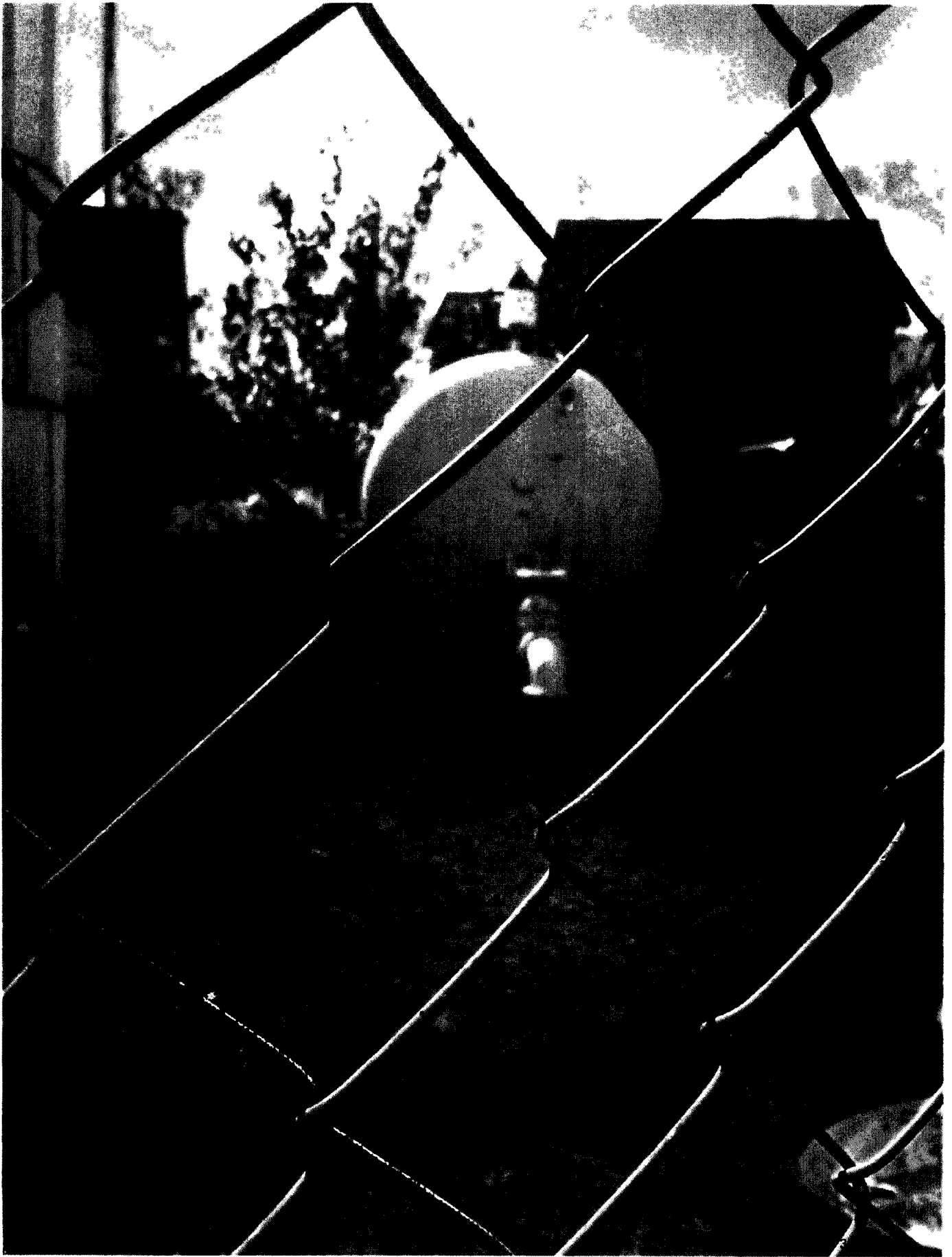


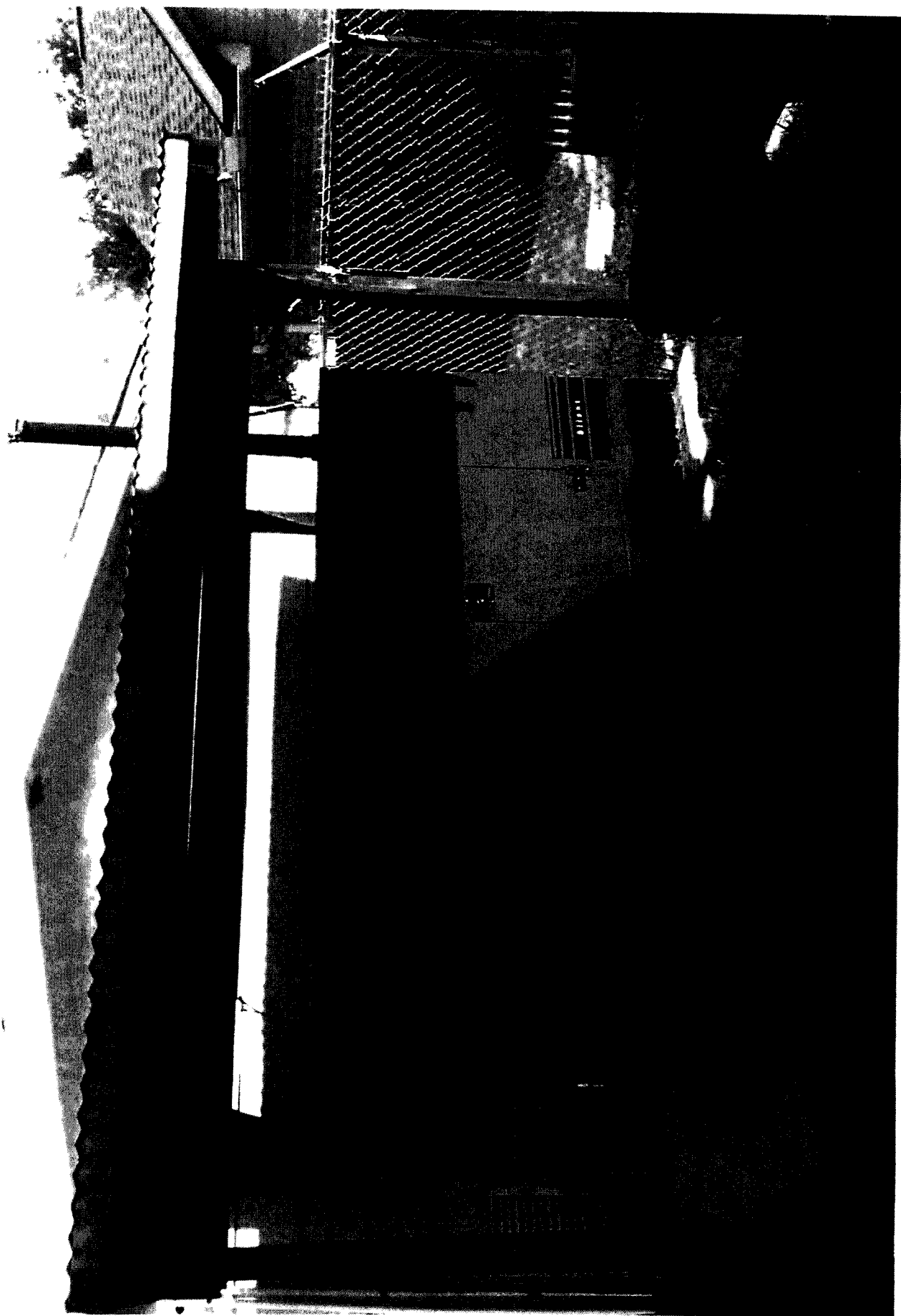


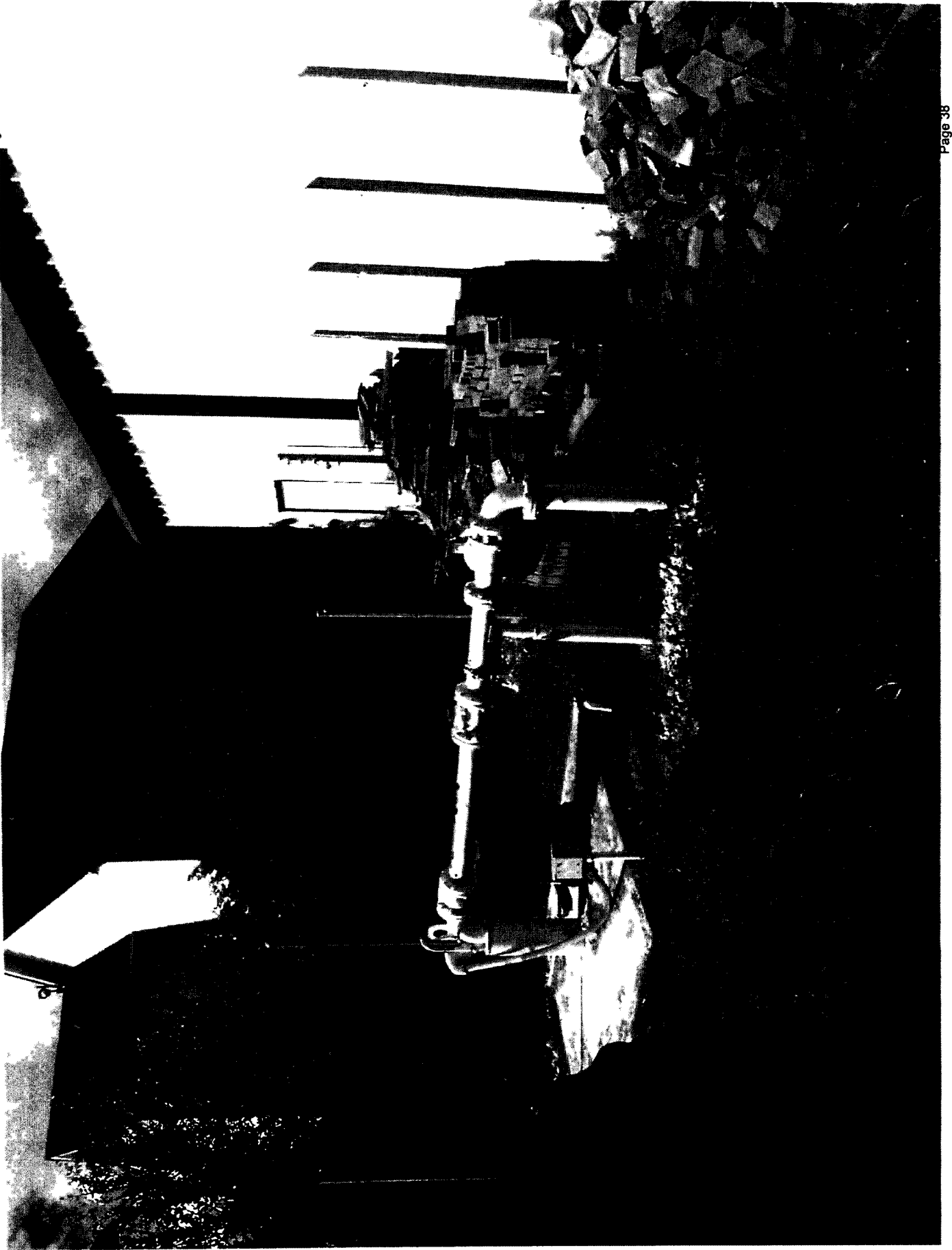












**Exhibit 3**

**Modified PUC Water and Sewer Tariff Rate Change Forms**



## B. ORIGINAL COST & DEPRECIATION SCHEDULE - WATER

Please provide the following inventory of the water utility plant being used to provide water service at the end of the test year. You will be responsible for supporting this information with invoices or other documentation. Round your figures to the nearest dollar. Amounts should be computed as of the end of the "test year."

Table III. B.

| Table III: D.        |   |                      |                            |                                    |                  |              |           |                              |                                      |
|----------------------|---|----------------------|----------------------------|------------------------------------|------------------|--------------|-----------|------------------------------|--------------------------------------|
| the "test year,"     |   | [A]                  | [B]                        | [C]                                | [D]              | Depreciation |           |                              | [G] = [D]-[F]<br>Net Book Value (\$) |
| Item                 |   | Date Of Installation | Service Life (yrs)<br>* ** | Original Cost when installed<br>\$ | Years in Service |              |           | [E] = [D]/[C]<br>Annual (\$) | [F]<br>Accumulated (\$)              |
|                      |   |                      |                            |                                    | YR<br>①          | Mos<br>②     | Days<br>③ |                              |                                      |
|                      | Land  |                      | n/a                        |                                    |                  |              |           |                              |                                      |
|                      | Wells   | 1/1/2004             | 50                         | 303281                             | 15.3             |              |           | 6065.6                       | 92803.9                              |
|                      | Well Pumps                                    |                      |                            |                                    |                  |              |           |                              |                                      |
|                      | 5 hp or less                                  |                      | 5                          |                                    |                  |              |           |                              |                                      |
|                      | Greater than 5 hp                             | 1/1/2004             | 10                         | 20065                              | 14               |              |           | 2006                         | 20065                                |
|                      | Booster Pumps                                 |                      |                            |                                    |                  |              |           |                              |                                      |
|                      | 5 hp or less                                  |                      | 5                          |                                    |                  |              |           |                              |                                      |
|                      | Greater than 5 hp                             | 1/1/2004             | 10                         | 14715                              | 10               |              |           | 1471                         | 14715                                |
|                      | Chlorinators                                  |                      | 10                         |                                    |                  |              |           |                              |                                      |
|                      | Signposts                                     |                      |                            |                                    |                  |              |           |                              |                                      |
|                      | Wood  | 1/1/2001             | 15                         | 53188                              | 13               |              |           | 3546                         | 46098                                |
|                      | Masonry                                       |                      | 30                         |                                    |                  |              |           |                              |                                      |
|                      | Storage Tanks                                 | 1/1/2004             | 50                         | 197272                             | 12               |              |           | 3945                         | 47345                                |
|                      | Pressure Tanks                                | 1/1/2000             | 50                         | 55289                              | 12               |              |           | 1106                         | 13269                                |
|                      | Distribution System (mains and lines)         | 1/1/2004             | 50                         | 359149                             | 12               |              |           | 17957                        | 215489                               |
|                      | Meters and Service (taps not covered by fees) | 1/1/2004             | 20                         | 85496                              | 12               |              |           | 8550                         | 85496                                |
|                      | Office Equipment                              |                      | 10                         |                                    |                  |              |           |                              |                                      |
|                      | Vehicles                                      |                      | 5                          | 0                                  |                  |              |           |                              |                                      |
|                      | Shop Tools                                    |                      | 15                         | 0                                  |                  |              |           |                              |                                      |
|                      | Heavy Equipment (diesel gen.)                 | 1/1/2009             | 10                         | 133550                             | 5                |              |           | 13355                        | 66775                                |
|                      | Fencing                                       | 1/1/2004             | 20                         | 33189                              | 12               |              |           | 1659                         | 19913                                |
| Other: (Please list) |   |                      |                            |                                    |                  |              |           |                              |                                      |
| Total                |   |                      |                            | 2335213                            |                  |              |           | 81317①                       | 881706②                              |
|                      |   |                      |                            |                                    |                  |              |           |                              | 1573589③                             |

\* TCEQ Suggested Service Life \*\* Other Service Life

① Enter this number in Table VI. A., Line [O], Column ① ② If [F] is greater than [D], enter the total for [D] ③ Enter this number in Table IV. E., Line [A]

- Attach additional sheet(s) if necessary -

**E. INVESTED CAPITAL & RETURN - WATER**

**Table IV. E.**

|   |     |             |
|---|-----|-------------|
| Net Book Value - From Table III. B., Box ③  | [A] | \$1,573,589 |
| Working cash allowance -Amount From Table VI. A., Line [L] Column ③, Box ⑦(÷⑧)  | [B] | \$35,015    |
| Materials and supplies  | [C] | \$112,033   |
| Subtotal - Sum of [A] thru [C]  | [D] | \$1,720,637 |
| Developer Contributions - From Table III. C., Box ①   | [E] | \$0         |
| Total invested capital [D] - [E]  | [F] | \$1,720,637 |
| Rate of return - From Table IV. D., Box ⑧   | [G] | 11.0%       |
| Return/Interest - If [F] is greater than -0-, then enter [F] * [G]. If [F] is less than -0-, enter -0-.<br>Enter this amount in Table V., Line [A] and Table VI. A., Line [Q], Column ② | [H] | \$189,270   |

**SECTION V - INCOME TAX CALCULATION - WATER**

Use the following table to determine the amount of income tax that can be included in your revenue requirement.

**Table V.**

|   |     |           |
|---|-----|-----------|
| Return - From Table IV. E., Line [H]                                | [A] | \$189,270 |
| Interest Calculation  |     |           |
| Total Invested Capital - From Table IV. E., Line [F]                | [B] | \$147,048 |
| Weighted Cost of Debt Capital - Percentage From Table IV. D., Box ⑥ | [C] | 11.0%     |
| Interest [B]*[C]  | [D] | \$16,175  |
| Taxable Income [A] - [D]  | [E] | \$173,095 |
| Enter Income Tax from Tax Table (Appendix A)                        | [F] | \$56,536  |

① To Table VI. A., Line [P], Column ②

# SECTION IX - RATE DESIGN - WATER

## A. VARIABLE RATE CALCULATIONS

| Table IX. A. |   |
|--------------|---|
| Line         | Instructions  |
| [A]          | \$104,252 From Table VI. A., Line [T], Box ⑩ or Line [U], Box ⑩                           |
| [B]          | 30.084M From Table VII, Line [B]  |
| [C]          | 30,084 Divide Line [B] by 1,000   |
| [D]          | \$3.47 Divide Line [A] by Line [C] Transfer to Table IX. B., Lines [E] through [J], Box ⑥ |

## B. BASE RATE CALCULATIONS

| Table IX. B.  |                      |
|---|----------------------|
| Line  |                      |
| [A]   | \$ 240,959           |
| [B]   | 669                  |
| [C]   | \$ 26.37             |
| Total fixed costs - From Table VI. A., Line [T], Box ⑩ or Line [U], Box ⑩                         |                      |
| Total meter equivalents at end of test year - From Table VII, Line [K], Box ⑤                     |                      |
| Base charge per meter equivalent or for each unmetered connection [A] + [B] and then divide by 12 |                      |
| Base charge per meter size  |                      |
| 5/8" x 3/4" or unmetered  | Multiply [C] by 1    |
| 3/4"  | Multiply [C] by 1.5  |
| 1"  | Multiply [C] by 2.5  |
| 1 1/2"  | Multiply [C] by 5.0  |
| 2"  | Multiply [C] by 8.0  |
| 3"  | Multiply [C] by 15.0 |
| Other:  |                      |

⑥ From Table IX. A., Line [D]

# SECTION X - ALTERNATE METHOD OF RATE DESIGN - WATER

After you have performed the calculations in SECTION IX, you may find that the cost per 1,000 gallons is not what you think your customers will approve. If that is the case, then the following will allow you to calculate a rate structure that still recovers your revenue requirement, but with rates that you think may be more appropriate for your customers.

Table X. A.

| Line  | This is the rate that you think is appropriate Enter in Table X. B., Column ③, Lines [B] through [H] |
|---|--|
| [A] Cost per 1,000 gallons                              | \$ 3.47  |
| [B] Total # of 1,000 Gallons billed                     | 30,084   |
| [C] Total Cost to be recovered through gallonage charge | \$ 104,391   |
| [D] Total Revenue Requirement                           | \$ 315,915   |
| [E] Total to be recovered through base rate             | \$ 211,524   |
| [F] Total number of meter equivalents                   | 669  |
| [G] Base rate per meter equivalent                      | \$ 26.37   |

Table X. B.

| Line  | # of 1000 gallons in base bill | Variable cost per 1,000 gals | Variable cost added to base | Total base bill per meter size |
|---|--------------------------------|------------------------------|-----------------------------|--------------------------------|
| [A] Base charge per meter equivalent or for each unmetered connection From Table X. A, Line [G] | ①                              | ③                            | ④=②*③                       | ⑤=①+④                          |
| [B] 5/8" x 3/4" or unmetered  | 0                              | 3.47                         | 0                           | 26.37                          |
| [C] 3/4"  | 0                              | 3.47                         | 0                           | 39.56                          |
| [D] 1"  | 0                              | 3.47                         | 0                           | 65.93                          |
| [E] 1 1/2"  | 0                              | 3.47                         | 0                           | 131.85                         |
| [F] 2"  | 0                              | 3.47                         | 0                           | 210.96                         |
| [G] 3"  | 0                              | 3.47                         | 0                           | 395.55                         |
| [H] Other:  |                                |                              |                             |                                |

⑥ From Table X. A., Line [A]

# **B. ORIGINAL COST & DEPRECIATION SCHEDULE – SEWER**

Please provide the following inventory of the water utility plant being used to provide water service at the end of the test year (for sewer attach a similar list). You will be responsible for supporting this information with invoices or other documentation. Round your figures to the nearest dollar. Figures should be computed as of the end of the test year.

**Table III. B.**

| Table III. B.                                 |                      |                    |    |                                   |                  |       |        |                      |                     |
|---|----------------------|--------------------|----|-----------------------------------|------------------|-------|--------|----------------------|---------------------|
| [A]   | [B]                  | [C]                |    | [D]                               | Depreciation     |       |        | [G] = [D] - [F]      |                     |
| Item  | Date of Installation | Service Life (yrs) |    | Original Cost when installed (\$) | Years in Service |       |        | [F] Accumulated (\$) | Net Book Value (\$) |
|   |                      | *                  | ** |                                   | Yrs ①            | Mos ② | Days ③ |                      |                     |
| Land  |                      | n/a                |    |                                   |                  |       |        |                      |                     |
| Collection Sewers                             |                      |                    |    |                                   |                  |       |        |                      |                     |
| Gravity                                       | 1/1/2002             | 50                 |    | 1099681                           | 12               |       | 21994  | 26923                | 835757              |
| Force   | 1/1/2002             | 50                 |    | 77898                             | 12               |       | 1558   | 18695                | 59202               |
| Pumping Equipment                             |                      | 5                  |    | 0                                 |                  |       |        |                      |                     |
| Treatment & Disposal Equipment                | 1/1/2002             | 25                 |    | 1331991                           | 12               |       | 53279  | 639356               | 692635              |
| Structures                                    |                      |                    |    |                                   |                  |       |        |                      |                     |
| Wood  |                      | 15                 |    | 0                                 |                  |       |        |                      |                     |
| Masonry                                       |                      | 30                 |    | 0                                 |                  |       |        |                      |                     |
| Plant Sewers                                  | 1/1/2002             | 50                 |    | 324006                            |                  |       | 6480   | 71281                | 252725              |
| Outfall sewer lines                           |                      | 50                 |    | 0                                 |                  |       |        |                      |                     |
| Laboratory Equipment                          |                      | 10                 |    | 0                                 |                  |       |        |                      |                     |
| Meters and Service (taps not covered by fees) | 1/1/2002             | 20                 |    | 277482                            | 10               |       | 13874  | 138741               | 138741              |
| Office Equipment                              | 1/1/2002             | 10                 |    | 27687                             | 12               |       | 2769   | 27687                | 0                   |
| Vehicles                                      |                      | 5                  |    |                                   |                  |       |        |                      |                     |
| Shop Tools                                    |                      | 15                 |    |                                   |                  |       |        |                      |                     |
| Heavy Equipment (Diesel Gen.)                 | 1/1/2002             | 10                 |    | 120159                            | 12               |       | 120159 | 120159               | 0                   |
| Fencing                                       |                      | 20                 |    |                                   |                  |       |        |                      |                     |
| Other: (Please list)                          |                      |                    |    |                                   |                  |       |        |                      |                     |
| Lift Stations                                 | 1/1/2002             |                    | 50 | 66399                             | 14               |       | 1328   | 18592                | 47807               |
| Total   |                      |                    |    | 3325303                           |                  |       | 221441 | 1279842              | 2026867             |

\* Commission Suggested Service Life \*\* Other Service Life

① Enter this number in Table VI. A., Line [O], Column ①, ② if [F] is greater than [D], enter the total for [D], ③ Enter this number in Table IV.E., Line [A]  
-Attach additional sheet(s) if necessary-

**C. DEVELOPER CONTRIBUTIONS - SEWER**

If any of the Items listed in the Depreciation Schedule were contributed by a developer, please list those

| Item  | Date of installation or Contribution | Total Cost | Amount of Developer Contribution | Net Book Value (from Table III.B.) |
|-------|--------------------------------------|------------|----------------------------------|------------------------------------|
|       |                                      |            |                                  |                                    |
|       |                                      |            |                                  |                                    |
|       |                                      |            |                                  |                                    |
|       |                                      |            |                                  |                                    |
|       |                                      |            |                                  |                                    |
| Total |                                      |            |                                  | ①                                  |

items and the associated cost below.

**Table III. C.**

**A. EQUITY**

How much equity or total capital does the company have in the utility? \$1,086,889

Enter also in **Table IV. D., Box ③** below

① this

**3. RATE OF RETURN**

What rate of return (profit) on investment in plant (equity) is expected? 11.0%

Enter also in **Table IV. D., Box ④** below

amount

in

**NOTE: You may choose**

- an average equity return established by the staff each year and included with the Annual Report Instructions **OR**
- an interest rate that you think is fair that is less than the rate established by the staff **OR**
- to use the **Rate of Return Worksheet** which is attached to the **Instructions**. ☒

**C. BANKRUPTCY**

Has the utility or utility owner filed bankruptcy within the last seven years? \_\_\_\_ Yes   x   No

If YES, explain status of applicant at this time.

# **D. DEBT & EQUITY - SEWER**

List the following information concerning debt and equity of the utility and attach copies of notes payable:

Round all percentages to two (2) decimal places.

**Table IV. D. SEWER**

| [A]<br>Name of<br>Bank/Lender | [B]<br>Date of Issue | [C]<br>Date of<br>Maturity | [D]<br>Original Amount of<br>Loan | [E]<br>Outstanding or<br>Unpaid Balance-<br>End of Test Year | [F]<br>Interest<br>Rate | [G]<br>Weighted Average<br>[E] ⑤*[F] |
|-------------------------------|----------------------|----------------------------|-----------------------------------|--|-------------------------|--------------------------------------|
| Part 1 - Debt                 |                      |                            |                                   |  |                         |                                      |
|                               |                      |                            | \$                                | \$   | %                       | %                                    |
|                               |                      |                            | \$                                | \$   | %                       | %                                    |
| SEWER PORTION 60%             |                      |                            | \$                                | \$1,086,892  | 9.5%                    | 9.5%                                 |
|                               |                      |                            | \$                                | \$   | %                       | %                                    |
|                               |                      |                            | \$                                | \$   | %                       | %                                    |
|                               |                      | Total                      | \$ ①                              | \$ ②   |                         | 9.5%⑥                                |
| Part 2 - Investment/Equity    |                      |                            |                                   |  |                         |                                      |
|                               |                      |                            | \$100%                            |  | 11.0%④                  | 119,558%⑦                            |
|                               |                      | Total Debt & Equity        | \$1,086,892                       | ⑤  |                         |                                      |
|                               |                      |                            |                                   |  | Rate of Return          | %⑧                                   |

- ① Total amount of original loans
- ② Total amount of the outstanding balance on the loans
- ③ Equity in the utility - From Section IV. A.
- ④ Return on Equity - From Section IV. B.
- ⑤ Total of ②+③
- ⑥ Total weighted average of debt - To Table V, Line [C]
- ⑦ Weighted average of Investment/Equity ③÷⑤\*④
- ⑧ Sum of ⑥ + ⑦ - To Table IV. E., Line [G]

# E. INVESTED CAPITAL & RETURN - SEWER

Table IV. E.

|  |     |           |
|--|-----|-----------|
| Net Book Value - From Table III. B., Box ③   | [A] | \$2026867 |
| Working cash allowance - (Amount From Table VI. A., Line [L] Column ③), Box ⑦(+ 8)   | [B] | \$39210   |
| Materials and supplies   | [C] | \$60419   |
| Subtotal - Sum of [A] thru [C]   | [D] | \$2125496 |
| Developer Contributions - From Table III. C., Box ①  | [E] | \$0       |
| Total invested capital [D] - [E]   | [F] | \$2125496 |
| Rate of return - From Table IV. D., Box ⑥  | [G] | 11.10%    |
| Return/Interest - If [F] is greater than -0-, then enter [F] * [G]. If [F] is less than -0-, enter -0-. Enter this amount in Table V., Line [A] and Table VI. A., Line [Q], Column ② | [H] | \$233804  |

## SECTION V - INCOME TAX CALCULATION - SEWER

Use the following table to determine the amount of income tax that can be included in your revenue requirement.

Table V.

|   |     |           |
|---|-----|-----------|
| Return - From Table IV. E., Line [H]                                | [A] | \$233804  |
| Interest Calculation  |     |           |
| Total Invested Capital - From Table IV. E., Line [F]                | [B] | \$2125496 |
| Weighted Cost of Debt Capital - Percentage From Table IV. D., Box ⑥ | [C] | 9.5%      |
| Interest [B] * [C]  | [D] | \$201922  |
| Taxable Income [A] - [D]  | [E] | \$31882   |
| Enter Income Tax from Tax Table (Appendix A)                        | [F] | \$5647    |

① To Table VI. A., Line [P], Column ②



# SECTION VI - UTILITY INCOME & EXPENSE INFORMATION - SEWER

## A. REVENUE REQUIREMENT

Please provide the following information regarding the cost to the utility of providing sewer utility service over your selected twelve month "test year." @  
**Note 1** - Instead of using the percentages listed, you may take the Total Cost and multiply it by 67% to determine the fixed portion and 33% for the variable portion.

TABLE VI. A.

| Test Year | Line  | 12 Month "test year" per books | Known and Measurable Changes | Revenue Requirement for next yr | % of (3) that is fixed (Note 1) | Fixed Expenses (Note 1) | Variable Expenses (Note 1) |
|-----------|---|--------------------------------|------------------------------|---------------------------------|---------------------------------|-------------------------|----------------------------|
|           |   | (1)                            | (2)                          | (3) = (1) + (2)                 | (4)                             | (5) = (3) * (4) / 100   | (6) = (3) - (5)            |
|           | Salaries and Wages  | [A] 20400                      |                              | 20400                           | 50                              |                         |                            |
|           | Contract Labor  | [B] 82225                      |                              | 82225                           | 90                              |                         |                            |
|           | Purchased Water   | [C] 0                          |                              | 0                               | 0                               |                         |                            |
|           | Chemicals for Treatment   | [D] 11161                      |                              | 11161                           | 0                               |                         |                            |
|           | Utilities (Electricity)   | [E] 21620                      |                              | 21620                           | 0                               |                         |                            |
|           | Repairs/Maintenance/Supplies                                    | [F] 60419                      |                              | 60419                           | 50                              |                         |                            |
|           | Office Expenses   | [G] 22130                      |                              | 22130                           | 50                              |                         |                            |
|           | Accounting & Legal Fees   | [H] 28108                      |                              | 28108                           | 100                             |                         |                            |
|           | Insurance   | [I] 3827                       |                              | 3827                            | 100                             |                         |                            |
|           | Rate Case Expense   | [J] 3738                       |                              | 3738                            | 100                             |                         |                            |
|           | Miscellaneous   | [K] 106053                     |                              | 106053                          | 50                              |                         |                            |
|           | Subtotal-Sum of Line [A] thru Line [K]                          | [L] 305681                     |                              | 359681                          |                                 |                         |                            |
|           | Payroll Taxes   | [M] 8096                       |                              | 8096                            | 50                              |                         |                            |
|           | Property and Other Taxes  | [N]                            |                              |                                 | 100                             |                         |                            |
|           | Annual Depreciation and Amortization-From Table III. B. Box (1) | [O] 145734                     |                              |                                 | 100                             |                         |                            |
|           | Income Taxes-From Table V, Line [F]                             | [P]                            |                              | 5647                            | 100                             |                         |                            |
|           | Return -From Table IV.E., Line[H]                               | [Q]                            |                              | 2338604                         | 100                             |                         |                            |
|           | Subtotal-Sum of Line [L] thru Line [Q]                          | [R] 459511                     |                              | 607228                          |                                 |                         |                            |
|           | Other Revenues  | [S]                            |                              |                                 | 100                             |                         |                            |
|           | Total Cost=Line [R] - Line [S]                                  | [T] 459511                     |                              | 607228                          | (4)                             | 406842(5)               | 200385(6)                  |
|           | Alternative Allocation between Fixed and Variable [Note1]       | [U]                            |                              |                                 | (6)                             | 406842(5)               | 200385(6)                  |

② Divide this amount by 8 and enter the result in Table IV. E., Line [B], ③ To Table X. A., Line [D] ④ To Table IX. B., Line [A] ⑤ To Table IX. A., Line [A]

## A REVENUE REQUIREMENT

### TABLE VI. A.

Divide this amount by 8 and enter the result in Table IV. E., Line [B], To Table X. A., Line [D] To Table IX. B., Line [A] To Table IX. A., Line [A]