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PRELIMINARY ASSESSMENT

EAST STREET

MANUFACTURED GAS PLANT SITE

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September 1986

Executive Summary:

This report is a historic record of events at the Companys formerly owned manufacture gas plant on East Street, Pittsfield and taken from the Company's records and public sources of information such as Registry of Deeds, library and Public Works Department's records and prepared at the request of Company management.

The Company's predecessor operated a gas manufacturing and gas storage plant at this site from 1903 to the advent of natural gas to the New England area in 1953. The gas plant produced coal and oil tars that were either reused in the gas process or sold offsite. Accurate plant records show the end use of tars produced and at the termination of manufacturing coal and oil gas these products had either been used under plant boilers or sold off site. In the production of manufactured gas other residuals were produced such as iron oxide chips, heavy sludges and cinders. Most of these materials were deposited in the area of the river Ox Bow. From manufactured gas production the quantities of these other waste products are estimated in the report.

In the late 1960's the Company decided to move its gas production plant (LP-Air Gas) to Commercial Street, Pittsfield and the remainder of its operations to its present Headquarters Building and put the property up for sale. To prepare the land for sale the Company demolished its gas manufacturing plant and gas storage facilities. In the demolition of these gas manufacturing facilities the majority of the waste sludges and tars remaining in this equipment was hauled off site to the City of Pittsfield's land fill. The location of remaining demolition wastes are shown in the report.

In the mid 1960's General Electric experienced an apparent large release of waste transformer oils containing PCB's which leached southward across the railroad tracks and toward the Housatonic River crossing the Companys plant site. This migration of waste oils apparently occurred in large quantities being driven by ground water flow and the highly porous soils in the area. During the 1960's General Electric extended a storm drain to the river and blocked the west end of the "Ox-Bow" and started to fill in the old river bed with industrial wastes right onto Company land on the other side of the old river bed. Both of the incidents

resulted in the Company site receiving offsite wastes which co-mingled with manufactured gas wastes.

In 1970 and 1973 the Company sold the entire site to General Electric. After General Electric purchased the site it immediately started the installation of ground water enviornmental clean up equipment which eventually the entire plant site was dedicated to and still is to the present day. Interestingly General Electric purchased 4 or 5 more sites on East Street and near the gas plant site for clean up of migrating transformer oils. General Electric's program and clean up effort on the site is apparently directed at ground water treatment. Since General Electric purchased the site they have never requested any information or assistance regarding manufactured gas wastes on the site. The only major communication General Electric had with the Company was in a meeting held in the early part of 1986 to inform the Company that the Massachusetts D.E.Q.E. had requested testing ground water phases at the site for manufactured gas wastes. Several months later General Electric forwarded these test results to the Company with no comments. The test results did indicate the presence of manufactured gas wastes in the ground water phase at the site. In retrospect it seems apparent that General Electric purchased the manufactured gas site and took on the task to clean up the ground water to maintain complete control and limit its liability of migrating waste oils containing PCB's.

The Company management could take the position that the manufactured gas wastes at the site are General Electric's problem. This is not so, as both state and federal regulations make both the present land owner and the original generator or transporter of the waste liable for any release of wastes. The thrust of recent pending federal legislation is to force more of the clean up costs if not all to owners, transporters and original generators.

The bottom line is that Company management must decide either to proceed on a program to control its enviornmental liability as pertains to this site as suggested in the report summary, or take the position of not acting and the possibility of a "release" of hazardous manufactured waste at the site occurring which could expose the Company to heavy fines, jail sentences, legal costs, ligation from present owners and a poor public relations image.

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Preliminary Assessment
East Street Manufactured Gas Plant Site, Pittsfield, MA

1.0 Purpose of Report:

This report was made at the request of Company management to evaluate from historic records and personal knowledge the possible environmental, regulatory and public opinion risks involved in the Company's past operation of previous owned coal gas manufacturing site located on East Street, Pittsfield, Massachusetts.

1.1 Methodology of Assessment:

The method of risk assesment uses procedures recommended in the "Handbook on Manufactured Gas Plant Sites" prepared for Utility Solid Waste Activities Group, Superfund Committee, Washington, D.C. prepared by ERT, Inc. and Koppers Company, Inc. in September 1984. This is the most recent authoritative publication on gas plant waste risks and assesment.

The suggested priority ranking scheme for unexplored gas plant sites with criteria for ranking individual factors from above report was used in determining site risk. A copy of Table 2-1; "Suggested Priority Ranking Scheme for Unexplored Gas Plants Sites", is shown as Exhibit I of this report.

No attempt was made to take any samples or make any physical test on the site. The only viewing of the site was done from either public ways or from the river, both of which are public domain. The General Electric Company did analyse a number of ground water samples at the request of the Mass. DEQE and forwarded the results to the Company. Comment will be made in the addendum to this report on these samples.

1.2 Site Data Aquisition:

The Company has considerable data on this site in its corporate and engineering files. Some of the major sources of data are:

1. Commonwealth of Massachusetts, Department of Public Utilities Annual Report which gives in detail annual volumes of manufactured gas and residuals produced and sold, manufactured gas equipment, holders and purification equipment in use for the years 1885 through 1985.
2. Engineering records, maps and plans.
3. Company's photograph file.
4. City of Pittsfield Department of Public Works plans and files.
5. Aerial photographs of site from 1941 through 1985 from City of Pittsfield D.P.W.; Commonwealth of Massachusetts D.P.W.; and U.S. Department of Agriculture, ASCS Aerial Photography.
6. Berkshire County Middle DistrictRegistry of Deeds.

Unforturnately employees of the Company that would have been familiar with the daily operation of the coal gas manufacturing

plant at this site from 1902 to 1953 are deceased so no personal recollection of operations are obtainable. In the fall of 1954 the writer of this report joined the Company as Staff Engineer and became familiar with the site through various engineering projects conducted at this plant location.

Many of the above records, maps, plans, photographs and personal recollections are included as exhibits in this report.

TABLE 2-1
SUGGESTED PRIORITY RANKING SCHEME
FOR UNEXPLORED GAS PLANT SITES

Category & Factor	Criteria for Ranking Individual Factors		
	Low	Medium	High
SITE CHARACTERISTICS			
Size (when operated)	<5 acres	5-25 acres	>25 acres
Location	rural or sparsely populated	industrial or commercial area	residential or public use area
Current Use/Ownership	owned and used industrially or commercially	not owned and used industrially or commercially	used residentially or publicly, regardless of ownership
Planned Use/Ownership	continued ownership and industrial or commercial use	sale for industrial or commercial use	sale or conversion to residential or public use
WASTE CHARACTERISTICS			
Operating Period	<30 years and post-1900	30-60 years and post-1900	>60 years and/or pre-1900
Visible Surface Wastes (Tars and Spent Oxide)	none or very minor	minor pockets (an acre or so)	extensive (several acres)
Odor Problems	none or minor on-site	distinct on-site	noticeable off-site
Water Pollution	no visible presence	oily or discolored water on-site	oily or discolored drainage off-site
RESOURCE CHARACTERISTICS			
Surface-Water Proximity	>1 mile	<1 mile but not adjacent	adjacent
Surface-Water Use	industrial	recreational	drinking water
Ground-Water Proximity	site directly on low permeability soils or bedrock	site on permeable soils with confining layer above aquifer	direct ground-water connection to major aquifer
Ground-Water Use	no wells in possible impacted areas	industrial or a few private wells	public water supply wells

2.0 Chronological History of Events at Gas Manufacturing Site, East Street (formerly Beaver Street) Pittsfield, Massachusetts.

Item No. & Year	Description
1900	Pittsfield Coal Gas Company purchased land on East Street (Formerly Beaver St.) on North & South sides of East St. from Newell St. West, North P.L. being the south line of Boston & Albany R.R. right-of-way and South P.L. being the North bank of the Housatonic River; being 16.5 acres in all, Purchased from F.C. Peck. (See Exhibit II; Property outlined in Dark Green)
1901	Started building new gas plant on north side of East Street. (See Photographs of plant construction Exhibits III, IV, V, VI.) Some equipment moved from former gas plant on Water Street to new site consisting of: 1 - 5' Water Gas Set 1 - Tar seperator 1 - Ammonia Apparatus 1 - Water Gas Condenser 4 - Purifiers 1 - Oil Tank
1902	Started construction of Gas Holder No. 1 by R.D. Wood Co. 250,000 cu. ft. capacity; 83'-4" Dia x 26'-3" ht. - 2 Lifts. (See Exhibit VI) Buildings Completed.
1903	New Gas Plant in operation with above gas manufacturing equipment from old plant plus above No. 1 Holder and 18 Coal Gas Retorts of 3 benches of 6 each.
1904	(a) Land purchased from W.H. Owens on South Side of East Street. (See Exhibit II; property outlines in Orange) (b) Installed Relief Gas Holder No. 2 by R.D. Wood Co. 250,00 cu.ft. capacity; 79'-3" Dia X 25'-3" Ht. - 2 Lifts.
1905	Land purchased from W.M. Gonther North side of East Street. (See Exhibit II property outlined in yellow)
1906	(a) Installed 2-Gas Purifiers 16'L X 20'W X 5'H, Lime & Iron Sponge. 24-Coal Gas Retorts - 4 Benches of 6 each. (See Exhibit VIII) 1-Tar Well (b) Started Construction on Purifer House.
1907	Completed Purifer House (See Exhibits X and XI)
1908	Construct 1 - Gas Holder No. 3 by Cruse Kamfer Co. 750,000 cu. ft. capacity 107'-6" Dia X 30'-4" H. - 3 Lifts.(See Exhibits X and XI)
1909	Install Water Gas Generator Sets #2 & #3, Lowe System-Improved. (See Exhibit IX)
1910	Install 6 - Coal Gas Retort Benches.
1913	Purchase Land on South side of East St., 1.75 acres from James Graham. (See Exhibit II property outlined in Purple) Note: Company record shows transfer in 1913, Registry Record shows 1918.

Item No. & Year	Description
1914	(a) Transfer of land to E.D. Jones Company on South Side and at the corner of East and Elm Streets (See Exhibit II - Property transfer outlines in Red) Property exchanged with E.D. Jones for grading they performed on parcel on South side of East Street. Also parcel Granted to Company by E.D. Jones Company on South Side of Housatonic River ie vacant land, (See Exhibit II Property outlined in Brown). (b) Install 1 - Tar Filter
1918	Land Exchange with General Electric Company, Part of North side of East Street to G.E. (See Exhibit II, Part shown in crosshatch Red) from G.E. Parcel on South side of East Street to Company (See Exhibit II Parcel in Crosshatch Green)
1919	Fenced North Side of Plant Site.
1920	Erect Oxide Elevator and paved yard with concrete outside Purifier House (See Exhibit XIII)
1921	Install tar extractor.
1924	(a) Construct new Valve and Governor House on South Side of East Street (See Exhibit XIV) (b) Land bought from Marchisio, South Side of East Street. (See Exhibit II, property outlines in Blue) (c) Land conveyed by Company to Ermesto Marchisio on North side of East St. (See Exhibit II parcel crosshatched in Orange)
1925	Install artesion well on North Side at East end of Water Gas Generator House.
1926	(a) Install Lowe Improved System Water Gas generator set, Capacity 2,320,000 cf/day; built by U.G.I. Construction Co. Generator size 5'-3" dia X 9'-10", hydraulic operation, automatic controls. (b) Install 2 - CG Iron Sponge Purifiers, Size 16' X 20' X 6' in Purifier House.
1928	Addition to Gas Generator House.
1929	(a) Revisions to Retort House (converted to office & storage). (b) Retire Coal Gas Retort Benches #1 - # 6. (c) Additions to Water Gas Bldg. (See Exhibit XV)
1930	(a) Install "Semet-Solvey" Water Gas Set, Capacity 2,320,000 cf/day; Generator Size 7'-8" Dia X 10'-0", hydraulic operation, Automatic Control. (b) Install Multi Wash Box on Water Gas Sets. (c) Retire Water Gas Set #3.
1932	Install De Emulsifier.
1938	(a) Change 9'-0" Water Gas Set to Heavy Oil. (b) Erected Gas Scrubber at Works.
1939	(a) Run lines to burn tar in Water Gas Sets. (b) Retire P & A Tar Extractor, Exhauster #4, Condenser, scrubber & steam lines to purifying boxes.

Item No. & Year	Description
1940	(a) Install 2 - C.G. Iron Sponge Purifiers in Purifier House Size 16' X 20' X 6' (b) Install 3 - Oil Gas Purifiers - Iron Sponge Size 25' Dia X 25' (See Exhibit XVI) (South Side of East St.)
1941	(a) Land purchased from General Electric Co. (See Exhibit II; property shown in solid yellow.) (b) Installed 310,000 gal. Steel Gas Oil Tank. (See Exhibit XVII) (c) Retire 2 Purifiers purchased in 1902.
1946	Install 1 - Stacey MFG. Co. 750,000 cu.ft. Gas Holder - 110'-6" Dia X 31'-4" Ht. - 3 Lifts.
1949	(a) Install Semet Solvay Co. 10'-0" Dia. Water Gas Set. (b) Retired Semet Solvay Co. 7'-8" Dia. Water Gas Set.
1951	(a) Install Natural Gas Odorizer at N.G. Gate Station. (b) Install Oil Fogging equipment at East St. Plant Site. (c) Change piping in Valve House and install regulators and relief valves to get ready for N.G. (d) Run 10" H.P. line from N.G. Gate Station to Valve House, East St.
1952	(a) Convert 9' Dia. & 10' Dia. Water Gas Sets to produce High Btu Oil Gas. (b) Start to convert manufactured gas system to natural gas.
1953	(a) Conversion of system to natural gas completed. (b) New management takes over "Pittsfield Coal Gas Company."
1954	(a) Pittsfield Coal Gas Company reorganized under new name of "The Berkshire Gas Company." (b) Installed New Propane Air Plant (South side of East Street) Consisting of: 1 - 30,000 gal W.C.-L.P.G. Storage Tank. 1 - Gas Mfgr. Building. 1 - Railroad Spur from E.D. Jones Track. 1 - R.R. Tank Car Unloading Station. (c) Retire Relief Gas Holder No. 2. (d) Retire 9' & 10" Oil Gas Sets.
1955	(a) Retire 3 - Oil Gas Purifiers (South Side of East St.) (b) Retire Multi Washer Box (North Side of East St.) (c) Install Propane Bottling Plant (South Side of East St.) (d) Retire Various Tar Processing Equipment on South Side.
1956	Install 1 - 30,000 gal. LPG Storage Tank.
1957	(a) Convert Original Gas Generator & Retort House to shops and offices. Retired Purifier House & Constructed Garage to rear of Gas Generator & Retort House. (b) Sold Parcel on North side with oil storage tanks to General Electric Company. (See Exhibit II property crosshatched in light Green)
1967	Install Steel Bracing on North wall of Stores Bldg. North Side of East Street.

Item No. & Year	Description
1968	(a) Install APCO High Pressure - 100# Outlet Pressure L.P. Air Mixer, Control panel, liquid propane vaporizer, air compressor & plant piping. (b) Retire Cutler-Hammer Low Pressure LP-Air Mixing, vaporizer and control panel.
1970	Retire East Street Plant Site North Side parcel - Sold to General Electric Company.
1971	(a) Purchase new Gas Manufacture Plant Site Commercial Street, Pittsfield adjacent to N.G. Gate Station for New LP-Air Plant. (b) Retire 1 - 250,000 cu.ft. Gas Holder No. 1 (W.O. #70-2933R) (c) Retire 2 - 750,000 cu.ft. Gas Holders No. 3 & 4 (W.O. #71-3032R)
1972	(a) Start to relocate LP-Air Plant & LPG Storage from East St. Plant Site to Commercial Street Site. Note: Plant Buildings left in tack.
1973	(a) Retire Holder & Vacant Land parcel on South side of East St. (W.O. #72-3253R) Land sold to General Electric Company. (b) Retire Misc. Holder & Gas Storage Improvements on South Side of East Street. (W.O.#72-3253R) (c) Retire N.G. Stabilization controls, compressor, water cooler, air reciever, L.P.G. R.R. tank car unloading compressor & yard Piping. W.O. #73-3310R.

EXHIBIT III

Excavation for foundation for R.R. Tresle looking West

EXHIBIT IV

Starting walls for Generator and Purifier Buildings looking West at W. Gauther residence

PGE00038448

EXHIBIT V

Looking West R.R. tresle foundation completed in foreground, Walls on Purifier House up ½ story, Gas Retort Bldg. completed to 2nd story.

EXHIBIT VI

Looking North from Southside of East Street - Gas Retort Bldg. and Purifier Bldg. ready for roof.

EXHIBIT VII

Steel base plate for No. 1 Gas Holder being installed.

EXHIBIT VIII

Coal Gas Retort Benches

EXHIBIT L

Original Water Gas Floor with original
5'-0" Set installed in 1902 plus Lowe
Water Gas Sets #2 & #3 installed 1909

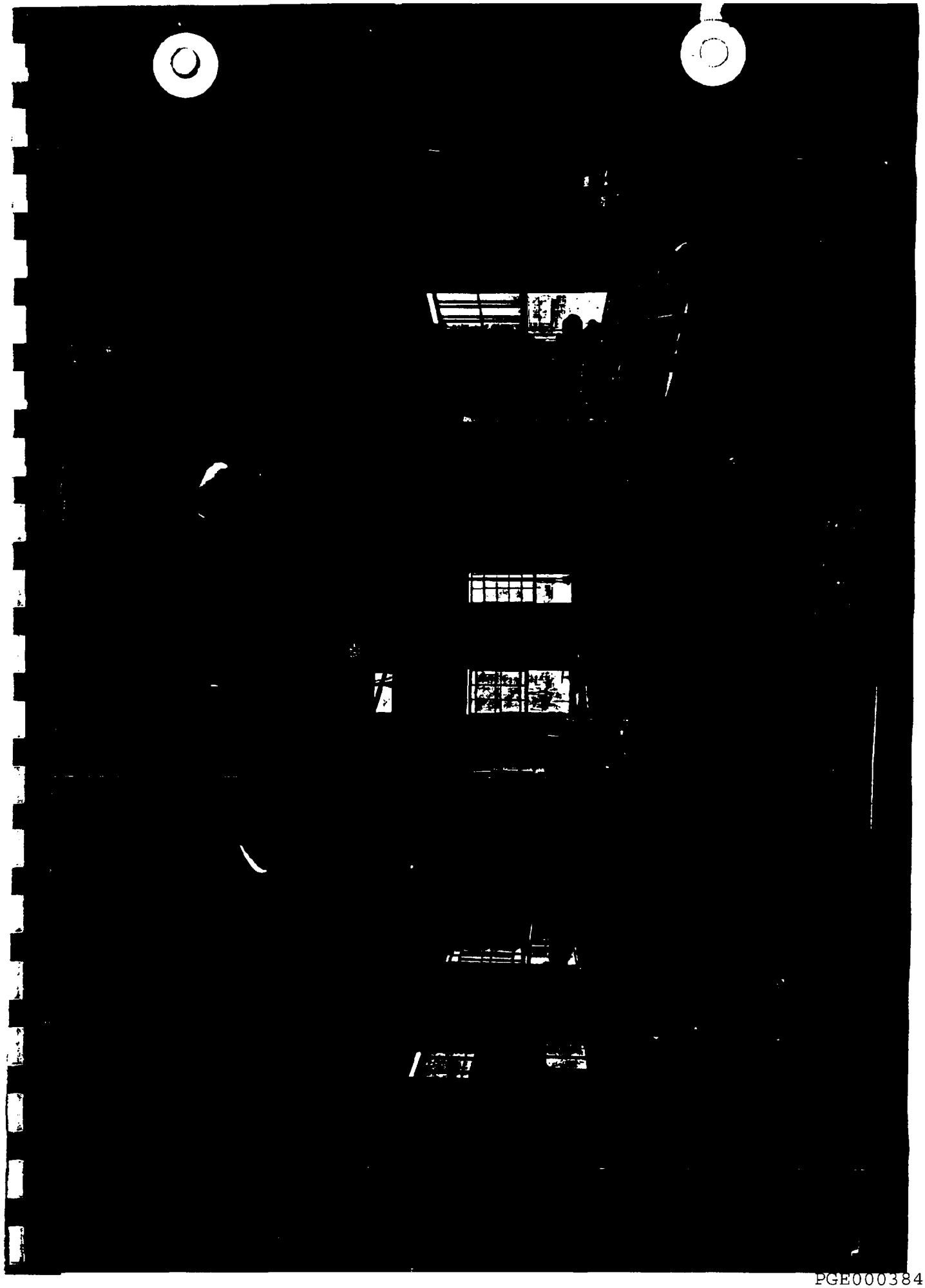

EXHIBIT K

Interior Top Level of Purifier House

PGE0038460

EXHIBIT XI

Interior Bottom of Purifiers with Iron Oxide Wood chips on floor

EXHIBIT XII

Gas Holder No. 3 - 750,000 cu. ft. Middle
Gas Holder No. 1 - 250,000 cu. ft. Right
Gas Holder No. 2 - 250,000 cu. ft. Left
note original Valve House

PGE0038464

EXHIBIT XIII

Elevators to handle oxide chips and coal, paved yard outside Purifier House.

EXHIBIT XIV

New Valve House - Constructed in 1924

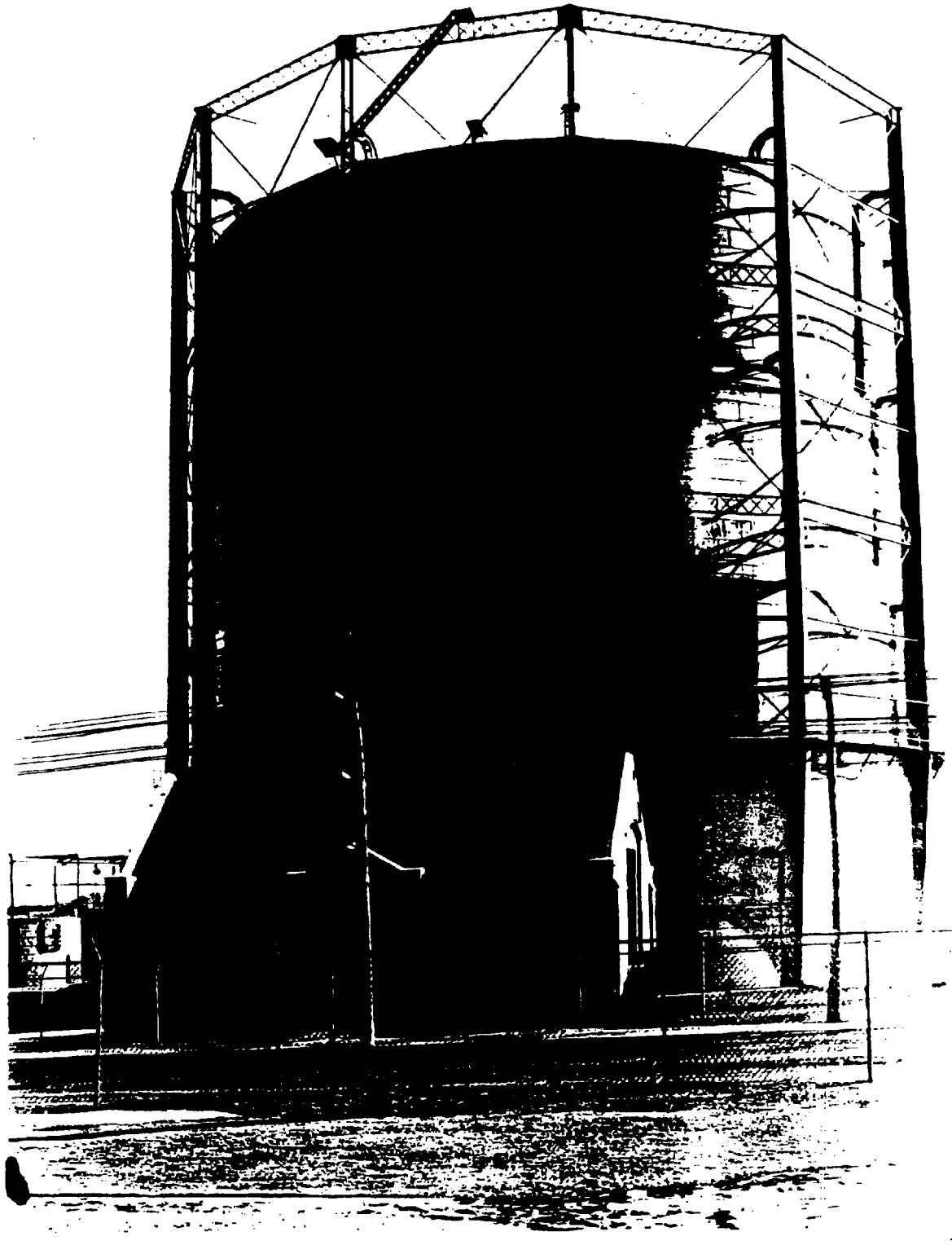

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EXHIBIT IV

New Oil Gas Generator House (Bldg. on right) Compressor Room (Center Bldg.) Old Water Gas House later Boiler Room (Bldg. Left Rear) about post 1929

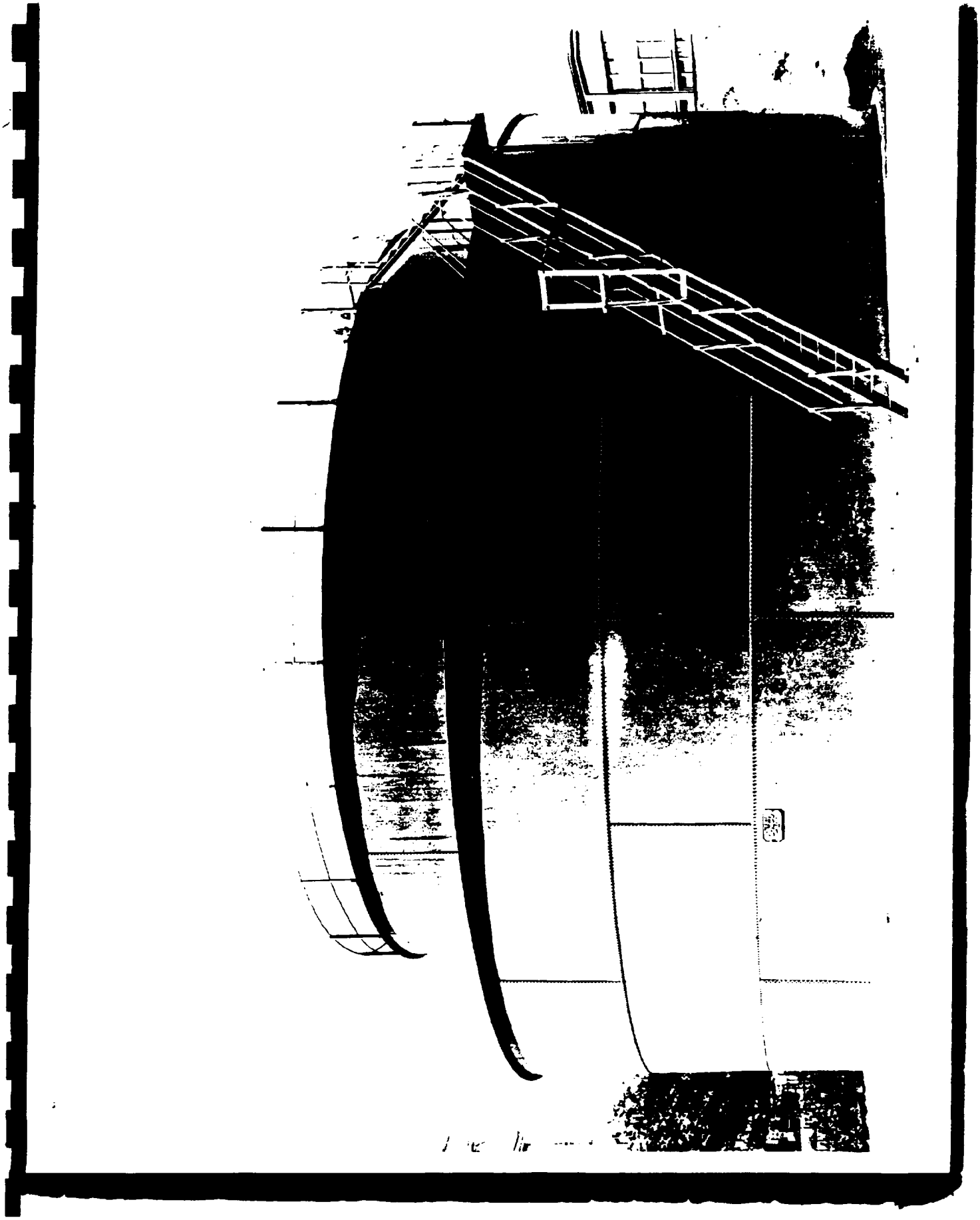
PGE0003847Q

EXHIBIT XVI

Oil Gas Purifiers

EXHIBIT XVII

210,000 Gal. Steel Oil Gas Tank



3.0 Summary of Land Use by Parcels of East Street, Pittsfield, MA. Gas Manufacturing Site.

The East Street gas manufacturing site consisted of a number of aquisitions and land exchanges. The summary will discuss the use before aquisition, Company use and final retirement of each parcel. To assist the reader please refer to Exhibit II which outlines each parcel in color.

3.1 Gas Manufacturing Plant Site: (Parcel outlined in Dark Green, Exhibit II located on North Side of East Street)

Acquired: Warranty Deed from Frederick C. Peck to Company, recorded in the Berkshire Middle District Registry of Deeds dated July 26, 1900; Book 311, Page 35.
Prior Use: Agricultural - Meadow land.
Company Use: Companys coal gas retorts, water gas, oil gas, heavy oil gas generators, water gas purification equipment, gas compressors, boilers, office, shop, laboratory, gas metering and Coal Storage facilities located toward West End of parcel. Two oil storage tanks to East end of Parcel from 1901-1954. Mid 1950's major gas manufacturing equipment removed, Purifer House removed. Buildings used; offices, shops, garage, store room and boiler used to heat buildings and gas holders until retired in 1970.
Retirements: Retired parcel of land not used by Company on East end of parcel to Marchisio in 1924 crosshatched in yellow. Granted General Electric Company easement on West End in 1957(see Oil Storage Site). Retired remainder of parcel to General Electric Company in 1970.
Present Land Use: Office Building and Garage at West End of parcel used as telephone exchange and training area. All other plant equipment and buildings removed. Entire area in grass. General Electric obtained parcel on East end that Company sold to Marchisio. Tore down buildings and made land into a park.

3.2 Gas Holder Property I (Parcel outlined in Dark Green; Exhitit II, located on South Side of East Street)
Acquired: Warranty Deed from Frederick C. Peck to Company, recorded in the Berkshire Middle District Registry of Deeds dated July 26, 1900; Book 311, Page 35.
Prior Use: Agricultural - Meadow Land.
Company Use: The Company's Gas Holders, valve and regulator house, tar processing and gas purification equipment were located on this parcel. Coal for gas manufacturing done on the North side of East Street was stored just behind Gas Holder No. 1. The land south to the original north bank of the river was used for a disposal area for cinders, oxide chip, and other gas manufacturing wastes. After the arrival of natural gas in 1952-53 land south easterly of the gas purifiers was used to construct a Propane Air Gas Plant, liquid petroleum storage tanks, and a bottling house and retired and demolished the gas purifier and coal tar processing equipment in 1955. In 1954 Gas Relief Holder #2 was retired. From 1954 to 1973 the company maintained and operated its gas storage, valve house, Propane Air Plant and L.P. Bottling Plant, and continued to use the southerly portion along the old north bank of the river for Disposal of construction debris from its Street Department operation and disposing of used appliances.

Retirements: The Company transfered an "L" shaped parcel at the corner of East and Newell Streets to E.D. Jones & Sons, Inc. See Exhibit II; parcel outlined in "Red" in 1914. There is no evidence that the Company conducted any manufactured gas operations on this parcel. (Note: General Electric Company acquired this parcel and land to the southwest between the Company's south line and North bank of the relocated Housatonic River in about 1973-74)

In 1972 the Company started the relocation of its Propane facilities to Commercial Street, Pittsfield and in 1973 this parcel, excluding above land retirement was sold to General Electric Company. Gas Holders #1, #2 & #3, Govenor House, Propane Bottling Plants, and pier and concrete LP tank abutments were demolished and leveled. The brick Propane Air Plant building was left standing, but later demolished by the purchaser.

Present Land Use: The present owner, General Electric Company has grassed over the entire parcel after extensive installation of drainage system to capture underground migrating PCB's oils and liquids. There are several buildings and seperator tanks located on the parcel to process enfluent from the drainage system to discharges into the Housatonic River.

3.3 Gas Holder Property II; (Parcels outlined in Orange, Purple, Blue, Solid Yellow, and Crosshatched Light Green; Exhibit II located on South Side of East Street)

Acquired: Warranty Deed from William H. Owen to Company dated February 13, 1904, outlined in Orange on Exhibit II.
Warranty Deed from James Graham to Company dated May 6, 1913; outlined in Purple on Exhibit II.
Warranty Deed from General Electric Company dated August 20, 1918; Crosshatched in Light Green on Exhibit II.
Warranty Deed from Ernesto Marchisio to Company dated April 18, 1924; outlined in Dark Blue on Exbitit II.
Quit claim Deed from General Electric Company dated September 25, 1941 parcel shown as Solid Yellow on Exhibit II.

Prior Use: All above parcels were either used as sites for residential homes or tenaments prior to acquisition.

Company Use: Company used the above parcels to construct Gas Holder #4 in 1945 which remained in service until 1971.

Retirements: Company retired Holder #4 from service in 1971. Holder demolished and site leveled.
Land was sold to General Electric Company in 1973.

Present Land Use: Land leveled and grassed over. Part of land dedicated to General Electric Company's PCB disposal program.

3.4 Vacant Land: (Parcel outlined in Brown on Exhibit II) Located on South Side of East Street

Acquired: Warranty Deed from E. D. Jones & Sons, Inc. to Company dated December 24, 1914 in exchange for land granted by the Company to E. D. Jones & Sons Inc at corner of East and Newell Streets, (See parcel outlined in Red; Exhibit II) and for extensive grading by E. D. Jones.

Prior Use: Agricultural - Meadowlands and Swamp.

Company Use: This parcel remained vacant from the time it was acquired to its retirement in 1973.

Retirements: Land was sold to General Electric Company in 1973.

Present Land Use: Land remains almost in its original state except for excavation and grading to relocate the Housatonic River. Present owner, General Electric Company, maintains facilities to dispose of PCB's.

3.5 Oil Storage Parcel: (Outlines in Yellow on Exhitit II) Located on North Side of East Street:
Acquired: Warranty Deed from William Ward Gauthier to Company dated February 13, 1904.

Prior Use: Site of a residential house.

Company Use: This parcel was devoted entirely to the storage of Gas Oil for the Companys gas manufacturing operation from the time it was acquired until its retirement in 1957.

Retirements: A small triangular piece of land was transfered by the Company to General Electric Company by Warranty Deed in 1918 (Crosshatched in Red on Exhibit II). The remaining land shown by Crosshatched Light Green area on Exhibit II including oil storage tanks and remaining oil by the Company to the General Electric Company by Warranty Deed in 1957.

Present Land Use: With exception to some modernization and additions to oil storage facilities as sold to General Electric Company 1957 for storage and handling of transformer oils the property remains the same as when owned by Company.

3.6 By the careful abstracting of all the land parcels comprising the gas manufacturing site and cross referencing with photographs, maps, aerial photographs and other available records it can be determined that the Company's manufacturing of gas took place on the North Side of East Street on the parcel outlined in Dark Green at the westerly end of said parcel with the storage of gas, tar processing, gas purification and the disposal of plant wastes on the South Side of East Street on the parcel outlined in Dark Green on Exhibit II excluding the parcel outlined in Red on the same Exhibit II.

The remainder of this report will focus on the manufacture of gas and tars, the disposal of residual products and the disposal of demolation material on above two parcels.

3.7 Possible Adverse Possession:

In reviewing aerial photographs shown as Exhibits XXII; XXIII; XXIV; XXV; XXVI; XXVII; and XXVIII that were taken from 1941 to 1983 of the East Street, Pittsfield, Mass. area it becomes obvious that the General Electric Company extended their disposal of industrial wastes on lands owned by the Company and E.D. Jones & Sons Inc. at the westerly side of the property refered to as "Vacant Land" parcel located on the South Side of East Street. (See Section 3.4 for description of parcel.)

In 1957 the Company sold its oil storage tanks and the land they were situated on to the General Electric Company to be used by

them for storage of transformer oils. Shortly thereafter General Electric Company also extended a 24" drain which initiated in its Tank Shop area on the North side of the railroad track; running just West of the Service Building; across East Street; thence Southerly to the North bank of the original river bed of the Housatonic River or so called "Ox Bow". (See Exhibit XXa; for accurate location of 24" drain on Plant Plan; and also for location of sewer outlet at Westerly end of "Ox Bow" on Exhibit XVIII.

There was an apparent easement or letter of agreement from the Company to General Electric for this drain but the record of same could not be found. The extension of the sewer line was made from a manhole on the North side of the old river bed Southerly to the North bank of the relocated Housatonic River. In installing this drain across the old river bed and to maintain grade to the river a dam was constructed across the old river bed, the drain line was then laid atop and covered. The drain line crossed the old river bed approximately at the Company's westerly property line adjoining the property then owned by Giovanni & Terrsilla Tagliafero. By the installation of this drain line General Electric no longer depended on using the old river bed for drainage flow to the Housatonic River through the South westerly downstream outlet of the "Ox Bow". In comparing the terrain of this area of the aerial photograph taken in 1956; Exhibit XXV; versus an aerial photograph taken in 1967; Exhibit XXVI; or eleven years later; we can see drastic changes by the filling in of the westerly end of the"Ox Bow"; the construction of a road way, construction of holding pond or seperator on lands formerly owned by E. D. Jones; and the damming up of the remainder of the "Ox Bow" and in effect stopped any further drainage to the Housatonic River via the South westerly outlet of the "Ox Bow" to the Housatonic River. See Exhibit IIa titled "Possible Adverse Possession Plan" for land area effected by possible adverse possession of Company land by General Electric shown in cross hatched "Red".

In a legal sense what happened was that the General Electric had "hostile adverse possession" of Company land. Hostile possession does not imply ill will, but it means that the claimant must demonstrate his intention and belief that he is acting within his rights and that he will defend his actions against the interest of the true owner. What General Electric apparently did was in owning all the land on the West bank of the old river bed simply change the river line by the gradual and imperceptible deposition of wastes and soil as to increase the area of its contiguous land. What happened is really legally mute as General Electric Company took legal possession of the land in 1972-72 when it purchased the parcel from the Company.

The reason for reciting the detail of events documented by aerial photographs is that:

1. Apparently General Electric was originally draining considerable industrial waste and oil into the old river bed and with the extension of the drain did construct a collection and processing installation at the Southerly end of the drain before it entered the relocated Housatonic River.

2. General Electric did fill the old river bed (approximately 15 to 20 feet in depth) with industrial wastes, sand and soil and the Company should not be responsible for these actions. The area of Company land effected was approximately three acres.

3. General Electric did dam up the old river bed (Westerly end of "Ox Bow") and stopped the natural drainage of surface

waters of Company lands into the Housatonic River for approximately ten years previous to the purchase of the land from the Company for whatever good or detrimental effects it might of had on Company land.

If the Company has any further concern regarding this matter it is suggested it thoroughly search its own files to ascertain if a Letter of Agreement or Easement was granted to General Electric and terms of same or have a certified title search made.

EXHIBIT II

Part of Plate 6, Atlas of Berkshire County Massachusetts, prepared by Barnes & Faraham Engineers, 1904

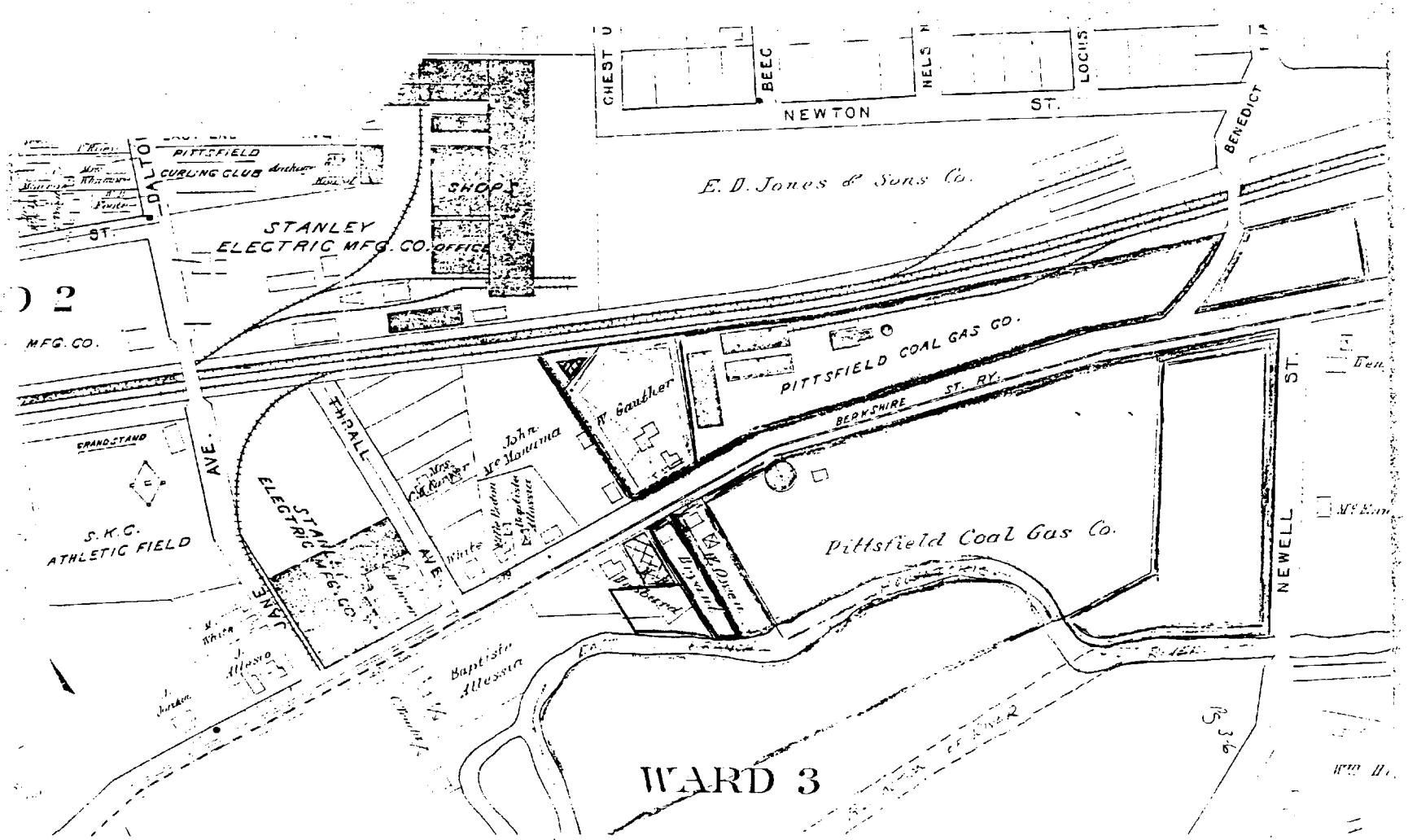
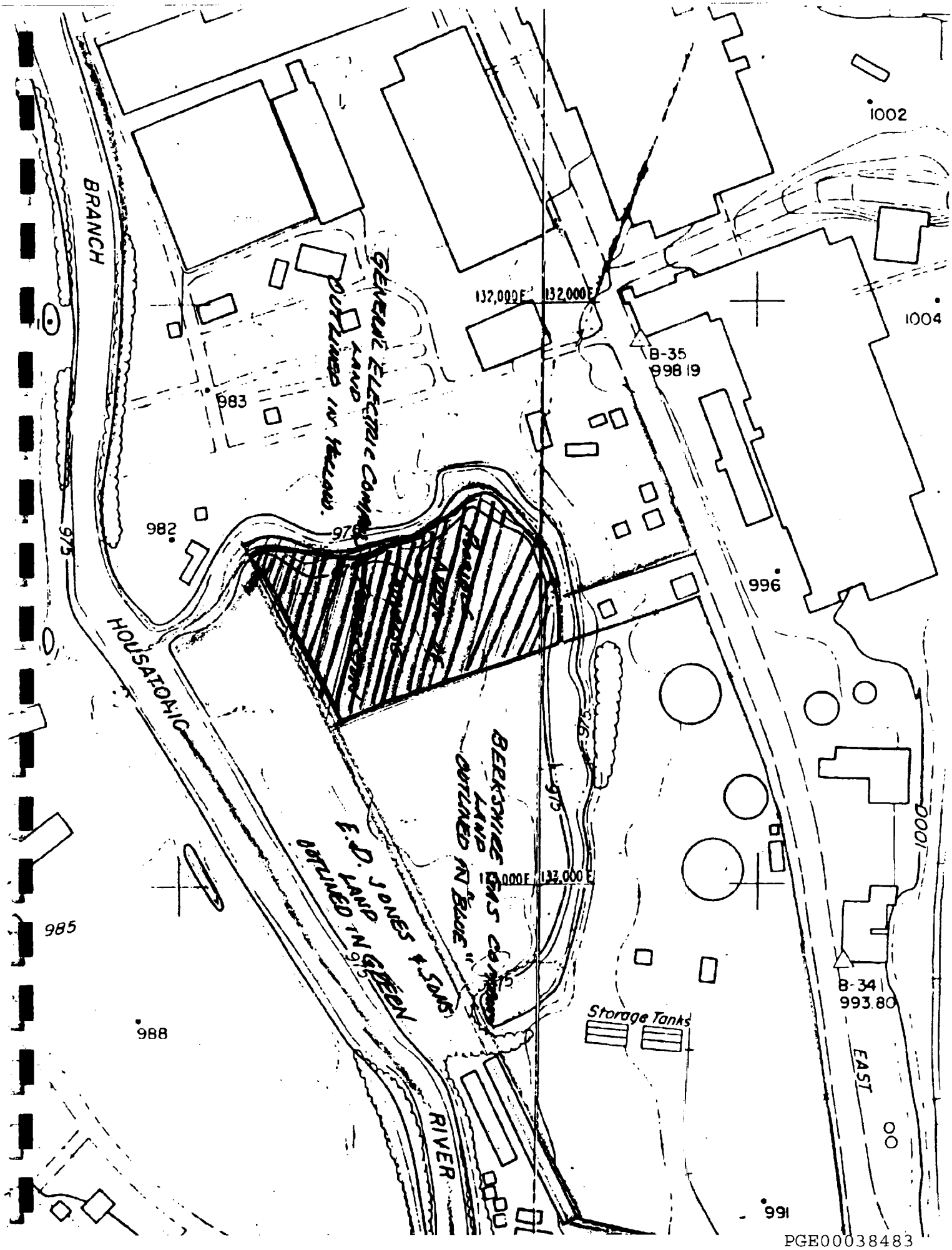


EXHIBIT IIa

Possible Adverse Possession Plan



PGE00038483

4.0 Production of Manufactured Gas and Residuals East Street Plant Site, Pittsfield, Massachusetts

4.1 Gas Production:

The production of manufactured gas and residuals are documented in the Annual Reports made to the Commonwealth of Mass., Department of Public Utilities.

A summary of this data is shown in Exhibit XIX titled Table I; Berkshire Gas Company - Summary of Manufactured Gas & Residuals Produced at East Street Plant Site Pittsfield, Mass."

Gas production commenced on this site in 1902 with the production of coal gas in coal gas retorts (See Exhibit VIII) located in a building labeled Item 3, on Exhibit XX. Production of coal gas from the gas retorts continued until 1923 after which the gas retorts were retired.

Production of water gas commenced on the site in 1904 in a Lowe Water Gas Set (See Exhibit IX) located in a building labeled Item 3 on Exhibit XX. Production of water gas increased steadily to 1924 when it took over the complete production of gas at this site and larger and more efficient water gas sets in a new gas generator house shown as Item 1 on Exhibit XX and in a photograph on Exhibit XV.

In the early 1950's one of the oil gas sets was converted to heavy oil water gas production to obtain a higher Btu content of the gas to prepare for the advent of natural gas and also to act as a peak shaving gas to the natural gas supply. The High Bte Oil Gas sets were operated during the 1953-54 and the 1954-55 winters to provide peak gas to the natural gas system. The upkeep of the High Btu water gas set and auxiliary plant equipment was costly and the High Btu water gas caused severe service problems in the gas system causing the Company to discontinue production of High Btu water gas after the 1954-55 winter and replace the water gas production with a Propane-Air Gas Manufacturing Plant. The new Propane-Air Gas Plant and Propane storage tanks were located on the South side of East Street on the Gas Holder Parcel. (South Easterly of the Gas Purifiers shown as Item 13 on Exhibit XX. The production of propane-air gas and the storage of propane produced no by products or wastes to the atmosphere or onto the land. The production of propane air gas being an environmental clean gas no further manufactured gas production at the site is shown after 1955 on Exhibit XIV after which the water gas sets were retired.

Summary of Gas Production
from
1902 to 1955
at
East Street, Pittsfield, Mass.
Plant Site

Type of Gas	MCF
Coal Gas	1,178,635
Water Gas	15,774,845
Total Gas Production	16,953,480

4.2 Tar Production:

The production and disposal of residual tars at the site are accurately documented from the start of gas and tar production to plant retirement in the afore mentioned Commonwealth of Massachusetts Annual Report to the Department of Public Utilities. In these reports there are spaces to report other residuals such as ammonia, etc.but no other residuals was reported so it is assumed

that these residuals byprocuct production at the site was insignificant. Production of coal tar is reported from 1902, the first year of plant operation until the water gas plant was retired in 1956.

From 1902 to 1932 the production, use, and sales of tar from coal gas and water gas were kept seperately, however in Table I; Exhibit XIX the gallons of tar made, used and show the sum of coal tar and water gas tar is shown for simplification.

On Table I; Exhibit XIX for each year the amount of tar produced in gallons per MCF of gas manufactured is shown. The average production of tar while the plant was in operation was 0.564 gallons of tar for each MCF of gas manufactured. This is a reasonable quantity of tar production. It will be noted that production varied considerable from this average which was due to improvements in tar production equipment, the art of gas production and the economic demand for tar. The demand for tar for chemical, road and roofing materials remained high from the early 1900's until 1930's when demand fell off. From 1937 until plant was retired in 1956 all the tar produced at the site was either burned under the plants boilers or used for the manufacturing of gas in the water gas sets.

It should be noted that in 1950 the Company had an inventory adjustment of 28,684 gallons of tar. This tar was stored in gas oil tanks; Items 14 & 15 on Exhibit XX and was to heavy to be used in plants boilers which were used for building and gas holder heating after water gas manufacturing plant was out of production and later retired. In 1955 the writer of this report inspected these tanks with the now deceased Plant Superintendent, James Kelly, and it was found that the tar had congealed to the consistance of jello and could not be used or moved without heating it. This tar remained in above tanks until the Company sold the property and improvements to General Electric Company 1970. How the purchasers disposed of this tar is not known.

For corporate purposes the Company's inventories, use and disposal of tar was audited each year by Certified Public Accountants. It can be concluded that the production, use and sales of tar have been accurately accounted for and on Table I of Exhibit XIX a summary of production, use and sales of tar the Company ends up with zero tar on the site at the end of 1956 other than for the afore mentioned tar in the oil storage tanks.

Summary of Tar Production
from
1902 to 1955
at
East Street, Pittsfield, Mass.

	Gallons
Tar Made at Site	9,556,710
Tar Used at Site	7,405,107
Tar Sold from Site	2,151,603
Tar Left at Site	- 0 -

4.3 Spent Oxide:

Spent oxide is a waste product that resulted from removing of nitrogen-containing impurities from the manufactured gas by absorbing them on iron oxide. The iron oxide was typically mixed with wood chips, sawdust, corncobs or similar materials in absorber beds (also known as purifiers or oxide boxes). These wastes contained high concentrations of sulfur, cyanide and ammonia compounds, most of which are chemically bound with iron. They have a characteristic blue-grey color which is caused by ferri - and ferro cyanide complexes.

The wood chip absorbent material was initially charged into sealed purifier boxes and the raw gas passed through the box until the absorbent material became loaded with impurities. The raw gas was then switched to another purifier box and the initial box was degassed and the wood chip manually removed from the box and then spread usually over a concrete slab and left to air out the sulfur, cyanide and ammonia compounds it had absorbed from the raw gas. Normally the wood chips could be used from two to three times before they lost their effectiveness to absorb impurities. The number and size of the purifier boxes depended on the amount of gas being manufactured. Usually the boxes were unloaded in colder winter weather (late spring) and the wood chip aired during warmer summer months when the warmer air temperature would speed up the chemical reaction. The rejuvinated chips were then recharged into the boxes late in the fall.

From various records and photographs wood chips soaked in iron oxide were used at the plant site and disposed of on the South side of East Street on the previously described Gas Holder Parcel along the north bank of the so called "OxBow" of the original course of the Housatonic River in an area outlined in Red shown on Exhibit XX; titled: "Location of Manufactured Gas Residuals Disposal Areas - East Street Plant Site, Pittsfield, Mass." This plan was taken from a Commonwealth of Massachusetts, Department of Public Works aerial photograph done in November 19, 1960. The scale is 1" = 200' and the map was prepared utilizing stereophotogram metric methods to meet Massachusetts Geodetic Survey Control standards. The map outlines are accurate within ± 2'-0" per 100 ft, so it can be used to reasonably locate waste sites in the field.

By taking the number and size of purifier boxes shown in use in the Commonwealth of Massachusetts Annual Reports to the Department of Public Utilities and based on a three year replacement of the iron oxide wood chips in the purifiers it is estimated that from 1902 to 1955 that approximately 9000 to 10,000 cubic yards of spent oxide was disposed of on site in the general location shown on above Exhibit XXI. To help visualize this volume it would be equivalent to a box 50 feet wide x 300 feet long x 18 feet deep. This is the approximate volume of spent oxide disposed of shown in Exhibit XXI. It should be noted that because of the looseness of the spent oxide material that the original material may now be compacted in volume by 25 to 50 percent depending on the amount of soil pressure caused by overburden and the natural decay of the material itself. From past observations and familiarity with the site the above estimated volume of spent oxide is reasonable.

4.4 Ash and Cinders:

In the manufacturing of coal gas and water gas the coal used in the gas production cycle and under steam boilers produced volumes of ash and cinders. The amount of these wastes varied as to the type of gas produced and the type of coal used. The Annual Reports

to the DPU seem to indicate that for a good part of the plants operation at this site that anthracite (hard coal) was utilized. This is important in that this type of coal was lower in sulfur and other inerts.

From various technical sources an average yield for coal gas is 13,250 cubic feet per ton of coal and water gas approximately 48,000 cubic feet per ton. (The use of gas oil in water gas operation gave a much higher yield per ton of coal. In the manufacturing of water gas coal was used only in the carborator to produce "blue gas" which was later enriched by cracking of oil in super heater. Coal was also used under boilers for steam production.) From the accurate volumes of coal and water gas produced at the site shown in the Annual DPU Report it is estimated that 417,000 to 420,000 tons of coal was used from 1902 to 1955 for manufacturing gas. Using an average Specific Weight of coal of 52 pounds per cubic foot and an ash and cinder volume of 2% of the original coal volume it is estimated that approximately 12,000 cubic yards of ash and cinder were disposed of on site in an area outlined in Blue on Exhibit XXI. This volume of ash and cinder would represent a volume of a box 300 feet wide X 300 feet long X 3.6 feet deep which is approximately the area shown in Exhibit XXI.

4.5 Other Wastes:

Other residual waste products at this gas manufacturing site were, sludges, tar liquors and ammonia liquor, drip oils, and off-grade coal and coke dust. The location of sludges and disposal of same will be discussed late in a Section discussing the disposal of demolition wastes.

The production of lighter hydro carbon (tar liquors), ammonia liquors and drip oils were carefully controlled at the site by an elaborate system of plant piping shown in Exhibit XX and XXa. All above liquors and oils end up in a sump of the Tar Separator shown in Exhibit XXa or pumped from various drips to the sump. The Tar Separator consisted of a concrete uncovered box approximately 15 feet wide X 35 feet long X 10 feet deep and a system of lateral wooden baffles to decant the heavy tars from the lighter liquors. Most of the lighter oils and liquids then were pumped to the tar processing equipment with the final enfluent from the Tar Separator being clean water which was discharged to a drain at the South end of the separator into the "OxBow" of the Housatonic River.(See Exhibit XVIII for drain location) Most of these liquors and oils were reprocessed with a small percentage leaving the site via the river. All these oils and liquors are lighter than water so they most likely floated to the rivers surface and were carried down stream of the site.

Some minor deposits of off-grade coal and coke dust probably exist in the areas noted by a dashed line and labeled "Coke & Coal Piles" on Exhibit XX. The possibility of small deposits of boiler water treatment compounds may exist around the plants waste heat boiler noted as Item 17 on Exhibit XX.

This accounts for all the residuals that were the by products of the gas manufacturing at this site.

TABLE I

BERKSHIRE GAS COMPANY - SUMMARY OF MANUFACTURED GAS & RESIDUALS PRODUCED AT EAST STREET PLANT SITE, PITTSFIELD, MASS

EXHIBIT XII
SHEET 1 OF 2
(4-5)

	1 CALENDAR YEAR	2 COAL GAS MANF. IN MCF	3 WATER GAS MANF. IN MCF	4 TOTAL GAS MANF. IN MCF	5	6 GALS. TAR ON HAND BEGINNING OF YR.	7 GALS. TAR MADE	8 GALS. TAR USED	9 GALS. TAR SOLD	10 GALS. TAR ON HAND END OF YR.	11	12 TAR PRODUCED PER MCF GAS MANF.	13	14	15	16
1	1902	30119	—	30119		—	22710	35	5665	17000		0.7541				
2	1903	49097	—	49097		17000	65000	—	69000	13000		1.324				
3	1904	62943	13338	76446		19000	57382	—	83832	12550		1.339				
4	1905	45240	19697	64937		22550	51997	—	61997	12550		0.800				
5	1906	51948	19227	71175		12000	70144	4000	64488	13656		0.985				
6	1907	70572	30487	81089		13656	64140	1500	71886	4410		0.782				
7	1908	45101	42786	88587		4500	53360	—	39944	15922		0.614				
8	1909	54490	45441	99931		15922	51315	2500	53796	13591		0.514				
9	1910	58560	46859	117689		13591	57991	9400	45570	12812		0.743				
10	1911	69178	69709	138887		12812	79020	10300	65999	15533		0.570				
11	1912	51539	103930	155469		15533	110293	15300	69991	33787		0.709				
12	1913	62779	118776	181555		33787	135291	52216	69985	41477		0.746				
13	1914	76165	127723	203888		41477	149850	56596	85457	46274		0.692				
14	1915	83297	125574	208871		46274	141539	52396	115276	37486		0.681				
15	1916	74009	148772	222781		37486	150990	57172	99615	31687		0.711				
16	1917	70793	183976	254769		31687	166247	74506	101100	29472		0.653				
17	1918	72781	213806	286587		29472	217919	—	96970	150727		0.767				
18	1919	58555	233311	291866		150727	185652	22800	231187	82652		0.683				
19	1920	47280	246671	293951		82652	192358	12658	185574	66778		0.653				
20	1921	45396	271884	317280		66778	130095	13600	110425	73265		0.410				
21	1922	49876	306826	356702		73265	164380	36687	68758	132184		0.461				
22	1923	18147	372059	390206		132184	130839	94810	58971	109237		0.334				
23	1924	—	383310	383310		109237	77845	51887	53226	81969		0.203				
24	1925	—	375794	375794		81969	125806	73776	39995	129954		0.335				
25	1926	—	414071	414071		129954	122685	138306	2226	111707		0.296				
26	1927	—	406345	406345		111707	125887	19923	2822	210880		0.519				
27	1928	—	411551	411551		210880	256962	260356	31929	56617		0.624				
28	1929	—	449785	449785		56617	258793	198009	40936	250985		0.557				
29	1930	—	449679	449679		250985	178580	177408	685	251672		0.398				
30	1931	—	450723	450723		251672	302943	279535	17310	367770		0.672				
31	1932	—	421520	421520		367770	282820	149838	955	169297		0.671				
32	1933	—	362015	362015		169297	298772	343988	46071	57765		0.769				
33	1934	—	376929	376929		57765	302443	162207	23001	125000		0.802				
34	1935	—	384692	384692		125000	303685	344681	11184	83560		1.769				
35	TOTALS	1126835	7675346	8852181		—	5136194	4932349	2149425	—		—				

TABLE I (CONT)

BERKSHIRE GAS COMPANY - SUMMARY OF MANUFACTURED GAS & RESIDUALS PRODUCER AT EAST STREET PLANT SITE, PITTSFIELD, MASS.

EXHIBIT XIX
SHEET 2 OF 2
(4-6)

CALENDAR YEAR	COAL GAS MANF. IN MCF	WATER GAS MADE IN MCF	TOTAL GAS MANF. MCF		GALS. TAR ON HAND BEGINNING OF YR.	GALS. TAR MADE	GALS. TAR USED	GALS. TAR SOLD	GALS. TAR ON HAND END OF YR.		TAR PRODUCED PER MCF GAS MADE
BALANCE BROUGHT FORWARD	1178635	15774885	16953480		—	5567110	5405107	2151603	—		0.564
1936	—	3990000	3990000		88880	322000	410880	40000	370000		0.707
1937	—	3990933	3990933		370000	2623222	2993222	—	1000000		0.708
1938	—	3992178	3992178		1000000	1992000	2992000	—	1000178		0.504
1939	—	4128221	4128221		1000178	2330050	2670228	—	660000		0.565
1940	—	4466673	4466673		660000	2255673	2915673	—	000000		0.504
1941	—	4332458	4332458		000000	1992000	1992000	—	000000		0.460
1942	—	4511369	4511369		000000	2260000	2260000	—	000000		0.501
1943	—	5237446	5237446		208000	3062000	3270000	—	000000		0.624
1944	—	5231941	5231941		270000	2962000	3232000	—	000000		0.562
1945	—	5554467	5554467		232000	3465000	3697000	—	000000		0.660
1946	—	5638220	5638220		2466000	2806000	5272000	—	194000		0.935
1947	—	5911838	5911838		2420000	3085000	5505000	—	000000		0.932
1948	—	6446605	6446605		2010000	3338000	5348000	—	000000		0.829
1949	—	6355289	6355289		1709000	3597000	5306000	—	000000		0.834
1950	—	6324141	6324141		2624000	3342000	5966000	266000	000000		0.943
1951	—	5719724	5719724		2505000	2000000	4505000	—	000000		0.788
1952	—	3413	3413		000000	3000	3000	—	000000		0.879
1953	—	—	—		000000	—	—	—	000000		—
1954	—	5858	5858		000000	2500	2500	—	000000		0.427
1955	—	8696	8696		000000	4000	4000	—	000000		0.460
1956	—	—	—		000000	—	000000	—	000000		—

NOTE: INVENTORY ADJUSTMENT FOR TAR THAT CANNOT BE USED (SEE EXPLANATION IN REPORT SECTION 4.2)

EXHIBIT KK

Pittsfield Coal Gas Company, Pittsfield Mass. by Eastern Inspection Bureau 111 John St., N.Y.C. dated Sept. 6, 1939 and July 25, 1945.

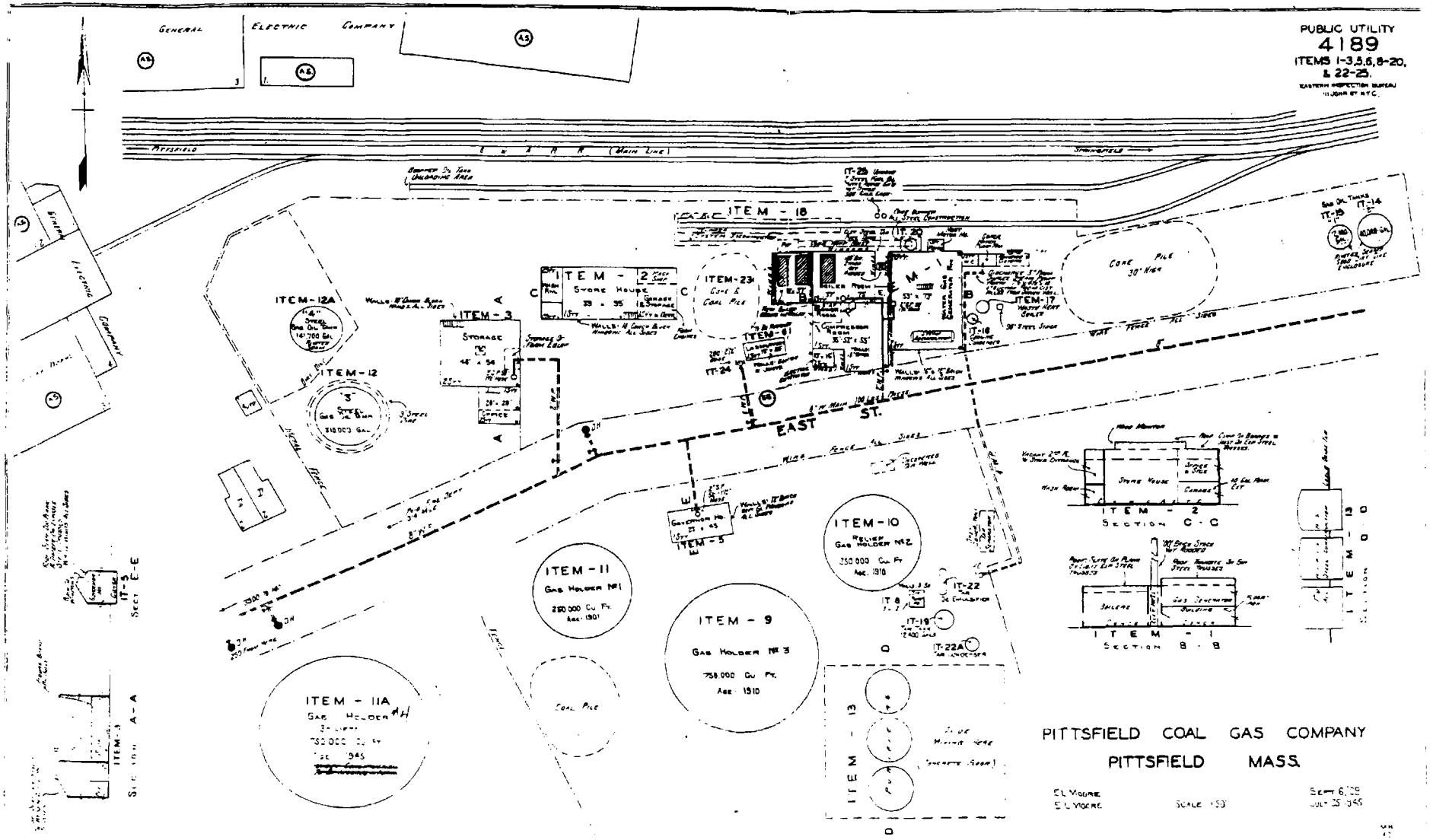


EXHIBIT XXa

Company plan which is same as Exhibit XX except larger scale.

EXHIBIT III

Location of Manufactured Gas Residuals Disposal Areas - East Street Plant Site, Pittsfield, Mass.

EAST
B-34
993.80
B-35
998.19
Storage Tanks
133,000 E
134,000 E
RIVER
HOUSATONIC
975
996
1000
1001
983
982
988
985
1021

5.0 Disposal of Gas Manufacturing Plant Demolition Wastes, Gas Plant Site, East Street, Pittsfield.

5.1 Tar Sludges and Tar Liquids:

The major manufactured waste to be contended with in the demolition of the gas plant at this site was tar sludges and tar liquids that accumulated in the bottom of gas holders, tar wells, tar seperators, drips and inside plant piping. Tar sludge is a heavy, resinous material which ordinarily accumulated in collection mains, decanter tanks and in other portions of the gas cleaning area. Most sludges could include high levels of solids such as fly ash from coal gas production. Although these sludges contain consituents of environmental concern (primarily possible poly-nuclear aromatic hydrocarbons; PAH) disposed tar sludges are not very mobile in the environment and are relatively stable. In fact the presence of tar sludges could create relatively impervious barriers to perculation of other waste products through the disposal site (See Page 3-33 Handbook on Manufactured Gas Plant Sites).

The following will discuss the occurance of tar sludges and disposal in the demolition of major gas plant equipment at this site.

5.2 Demolition of Relief Holder No. 2:

Relief Holder No 2 (See Item 10 on Exhibit XX) was retired in the early part of 1954 before I came to work for the Company. Apparently tar liquids and sludge were encountered on the bottom of this relief holder in the last four feet from the bottom. It appeared that an oval shaped pond was created in the upstream part of the "Ox Bow" by filling in the old abandoned river bed with spent oxide and cinders and the lighter tar liquids were then drained through the tar seperator and thence by underground drain to above described pond. See area colored in Red on Exhibit XXII titled "Location of Tar Sludge & Tar Liquids Disposal Areas; East Street Plant Site, Pittsfield, Mass." for tar pond location. In 1954 the estimated depth of this pond was from six to eight feet deep. After these liquids were removed from the holder apparently 8 to 12 inches of heavy sludge remained on the bottom. From a photo-graph of this holder (Holder to far left on Exhibit XII) the bottom was depressed approximately 1½ to 2 feet below the surrounding grade and a concrete retaining wall was built around the bottom of the holder. The holder structure was apparently cut down to 6" below the top of the concrete retaining wall and then filled with sand. It is estimated that there was between 700 to 900 cubic yards of tar sludge contained in the concrete retaining wall surrounding the holder bottom. If the retaining wall has not been disturbed this material should be still contained by the concrete and steel holder bottom. See holder located in "Red" on Exhibit XXII. Being of very shallow depth the volatiles should be fairly well dissi-pated. Work order records indicate the holders steel plate and structural iron were sold off the site for salvage. Apparently the timber structure supporting the holder crown inside was hauled off the site as it was not in evidence later in 1954 when I started to work for the Company.

5.3 Demolition of Gas Holder No 1

Gas Holder No. 1 (See Item 11; Exhibit XX) was built in 1901-02 with the original gas manufacturing plant at this site. It was apparently used from 1902 to 1904 as a relief holder until aforementioned Gas Holder No. 2 was constructed in 1904; so could've been exposed to raw gas before it was purified and sent out into

systems. In 1972 it was demolished and approximately 1½ foot of heavy tar fluid and sludge was encountered on the bottom of this holder. To expedite the demolition of this gas holder this heavy tar and sludge was drained to a tar pit directly behind Gas Holder #4 along the Westerly property line as shown in Blue on Exhibit XXII.

From known dimensions of Holder No. 1 it is estimated that from 63,000 to 65,000 gallons of heavy fluid tars were drained from the holder bottom to the tar pit described and outlined in Blue on Exhibit XXII. Approximately six months later the above tar fluids and sludge were removed from the tar pit by using a septic tank sludge pump and transported via trailer tank truck to the Pittsfield Land Fill Area off Hubbard Avenue, Pittsfield and used on land fill roads to hold the dust down. The tar pit bottom was scraped clean and sludge hauled to the land fill. The General Electric Company later filled in this tar pit with sand to the surrounding grade level. The steel holder bottom and all other steel plate and structure iron was sold as salvage off site. The timber supports for the holder crown was cut up and hauled and burned at the Pittsfield Land Fill Area. The concrete holder bottom was covered with six to twelve inches of sand and top soil and seeded.

5.4 Demolition of Gas Storage Holders No. 3 & 4:

Both Gas Storage Holders No. 3 & 4 were demolished in 1972 along with Gas Holder No. 1. Both these holders had always stored gas that had passed through gas pruifiers and neither had any significate tar liquids or sludges in the holder bottoms.

The steel holder bottom, bottom tank and lifts; plus structural steel was dismantled and sold off the site for salvage. The timber supports for the holder crowns were cut up and hauled from the site to Pittsfield Land Fill and burned.

5.5 Demolition of Tar Seperator:

The tar seperator just East of the Demulsifier; Item 22; Exhibit XX; was demolished in 1972. The remaining tar and fluid sludge (about 5'-0" deep) were pumped out by using a septic sludge pump and hauled to the Pittsfield Land Fill and applied to the road to hold dust down. About 2 feet of heavy sludge remained in the tar seperator which was filled with sand and the concrete walls knocked down to six inches below grade. It is estimated that approximately 40 cubic yards of tar sand are still on site. If the bottom and walls of the tar seperator have not been disturbed this tar sand should be confined as all exit drains and pipes were plugged before it was filled with sand to grade. See location of tar seperator in "Red", Exhibit XXII.

5.6 Demolition of Tar Processing Equipment:

The Tar Condenser; Item 22A, Tar De-Emulsifier; Item 22, Tar Pumps and Pump House; Item 8; and Tar Tank; Item 19 shown on Exhibit XX were demolished in 1955. All the tar in the tar tank had been removed and burned under plant boilers. The Tar De-Emulsifier liquids were drained into the tar seperator. Due to the relatively high flow velocities of tar through the process equipment the internal pipes and containers were relatively free of tar and sludges. All the equipment and above ground piping was removed from the site and sold for salvage. Construction materials consisting concrete, concrete block; wood; and roofing materials was disposed of in the Spent oxide area shown on Exhibit XXI.

The uncovered tar well shown just North of Relief Gas Holder No. 1, on Exhibit XX apparently was retired from service after the

tar seperator and tar processing equipment was installed and later cleaned out and used as a steam condensate return pit for holder heating system in 1953-54.

It is very likely that the general area surrounding the above tar processing equipment was saturated by tar spills that occurred when plant was in full operation.

5.7 Demolition of Purifiers:

The demolition of the Oil Gas Purifiers shown in photograph as Exhibit XVI took place in 1955. The iron oxide wood chips were removed and disposed of by hauling this waste to the Pittsfield Land Fill along with the wooden trays that held the wood chips. The outside insulation was removed and disposed of in the spent oxide area previously described. The steel structure was then dismantled and sold off site for salvage. The concrete slab previously used to air the iron oxide was left in place and used to store customers propane tanks.

5.8 Demolition of Valve House:

The Valve House shown in Exhibit XIV was demolished in 1972. The roof was removed and large gas main pipes and equipment were removed and sold off site for salvage. The remaining brick walls were then knocked down and hauled off site to the contractor site for storage of used brick and the remaining void filled with sand to surrounding grade level.

5.9 Underground Plant Piping:

All major manufactured gas plant piping was deactivated in 1972 when the Valve House and Gas Holders No. 1, 3 & 4 were dismantled. All gas pipes of 4 inch diameter and larger were bled of gas and then purged with inert gas (CO_2) and all open ends sealed in accordance with D.O.T. regulation. Most of these pipes were relatively free of tar and sludges.

The Company has an original plan of all major plant piping (Exhibit KKa) on which the points of piping cut offs and sealing is shown in detail. (This plan is in Company vault in iron pipe tube). Whatever tars or sludge that remained should be sealed within these pipes unless they have been disturbed since they were sealed.

5.10 Demolition of Gas Manufacturing Equipment:

The oil gas generators, compressors, and steam accumulation inside the Gas Generator Building, shown as Item 1 on Exhibit KK plus Item 17; Waste Heat Boiler, and Item 16; Cooling Condenser on the same plan were demolished in 1957 to convert the Gas Generator Building to a Company Store Room. The debris from this demolition consisted of steel plate, cast iron, and fire brick from inside the gas generators. The steel plate and tanks, steel stack, waste heat boiler and steam accumalator were sold off site, with the fire brick disposed of on the South side of East Street in the disposal area of Spent Oxide previously described.

5.11 Summary of Demolition Deposits:

At the time of transfer of the Company's manufacture gas plant site to the General Electric Company in 1971-72 the disposition of demolition waste deposits on the site were as follows:

1. Light tar liquors from Relief Holder No 2 in tar pond at Easterly end of the "Ox Bow".

2. Heavy sludges in bottom of Relief Holder No. 2 contained in place by steel holder on concrete retaining wall.

3. Light and heavy tars from holders No. 1, 3, & 4 were taken off site (used to keep dust down at Pittsfield Land Fill) but 6" of heavy material that was not pumpable covered with sand on West Side of Holder Parcel on South side of East Street.

4. Possible heavy sludges in tar separator which was filled in with sand after pumpable liquids removed from site to previous mentioned land fill.

5. Building construction debris deposited in "Tar Pond" just West of Easterly tar pond.

6. Heavy congealed oil in oil storage tanks shown as Items 14 & 15 on Exhibit XX left in place at the request of General Electric Company.

The above waste locations were reviewed verbally in the field between the Company and General Electric Company's operating personnel previous to the transfer of the manufactured gas site from the Company to General Electric Company.

EXHIBIT II.III

Location of Bar Chart Disposal Areas,
East Street Plant Site, Pittsfield, Mass.

PGE00038500

6.0 Topography and Soil Characteristics Manufactured Gas Site, East Street, Pittsfield, MA.

6.1 Original Topography of the Land:

The original topography of the land in the East Street area before manmade developments took place was one of a meandering Housatonic River gently flowing from East to West with a ridge of a hill running parallel with the river on the North side of the present railroad tracks from Junction Bridge West to the East shore of Silver Lake. In the area of the plants land North of East Street the slope of this hill was quite steep with the toe of the slope being where East Street now runs. From the toe of this slope the slope decreases to less than 15% to the North bank of the Housatonic River. On the South Side there was apparently a steep hill running North Westerly starting just North of the present Hibbard School and running across present Newell Street and North Westerly like a thumb into the flood plain of river forcing the river to flow North and around it to form an "Ox Bow". This steep hill is still in evidence on the East side of Newell Street between Pembroke and Radcliff Avenues.

The first manmade improvement probably was a road running from Pittsfield to Dalton, running along the toe of the North slope originally called Dalton Road, then Beaver Street and finally East Street. Next came the railroad which ran on a shelf cut into the North hill side. (Cut is still in evidence).

6.2 E. D. Jones Grading and Land Exchange:

Around 1918 drastic changes were made in the topography by land exchanges between E. D. Jones, Inc, General Electric Company (formerly Stanley Electric) and the Company. E. D. Jones, Inc. apparently had a lumber storage yard and wood kiln on the North Side of the railroad just West of Pecks Bridge, and also land on the South Side of the river including the hill that ran into the "Ox Bow" on the South Side. E. D. Jones vacated the land on the North Side of the railroad tracks to General Electric and in this transfer of land from E. D. Jones, Inc. to General Electric there apparently was an agreement to level the hill on the North Side of the track, and transfer the fill from this area to the sloping meadow on the South Side of East Street to the river. This fill area extended along East Street to the north bank of the river ("Ox Bow") on Company land from Newell Street westerly to Gas Relief Holder No. 2. The E. D. Jones, Inc. relocated its lumber storage and wood kilns on Company land deeded to them at the corner of Newell and East Streets. In turn E. D. Jones, Inc. deeded to the Company an approximately equal area of land on the south side of the river "Ox Bow". See Section 3.4; Vacant Land and Exhibit II parcel outlined in Brown. Apparently in the early 1920's the hill on the south side of the river and protruding into the "Ox Bow was also owned by E. D. Jones, Inc. and was graded down to its present grade and fill used to build an approach to todays present Newell Street Bridge and to fill in low lands (swampy areas) on the rivers south banks.

6.3 Channelization of the Housatonic River:

In the mid 1930's to the early 1940's the City of Pittsfield engaged in a major channelization and widening project of the East Branch of the Housatonic River for flood control. The details of this widening and channelization in the area the manufactured gas

plant site is shown on Exhibit XVIII and titled "City of Pittsfield, Plan of East Branch of Housatonic River for Flood Control " dated October 1933; revised April 28, 1940. In effect this project straightened out the river flow at the so called "Ox Bow" by damming the Easterly end of the "Ox Bow" off and leaving the Westerly end open to the relocated river bed so flow from drain lines could enter the river proper. The river widening and channelization from Newell Street Bridge to Pomeroy Avenue Bridge is shown in excellent detail on Exhibit XXIII; "Aerial Photograph taken in 1941" and also the extensive grading of the new river banks and the "Ox Bow" area in relation to the gas manufacturing plant is shown in Exhibit XXIV; Aerial Photograph of Manufactured Gas Site, East Street, Pittsfield, Mass. taken in 1941. Note the damming of the "Ox Bow" on the Easterly end and "Ox Bow" outlet to the new river channel on the West end of "Ox Bow".

6.4 Filling of "Ox Bow":

In Exhibit XXV which is an aerial photograph taken of the plant area in 1956 the formation of a tar pond on the Easterly end of (up stream end) of the "Ox Bow" is distinctly shown and also the leveling of the North westerly banks and dumping on General Electric property on the Westerly (downstream) end of the "Ox Bow". This aerial photograph also shows the installation of two 30,000 gallon Propane Tanks, Propane Plant and that the Gas Relief Holder #2 and the three gas purifiers had been dismanteled.

In Exhibit XXVI Aerial Photograph taken of the plant area in 1967 an excellent record is made of the site before it was sold. Note the tar pond formed by damming the Easterly end of the "Ox Bow", the filling along the North bank, the dam across the "Ox Bow" by General Electric Company and the almost complete filling in of the river bed in the Westerly end of the "Ox Bow" by General Electric Company. (See Section 3.7, Possible Adverse Possession)

In Exhibit XXVII of an Aerial Photograph of the plant area taken in 1973 we see the final effects of the plant demolition after the Company transferred the land to General Electric Company. Note the "Ox Bow" is completely filled in except for what appears to be a modification of the tar pond on the Easterly end and the small tar pond referred to in the demolition of Gas Holder No. 1. Also note the construction of General PCB Incinerator on the Westerly end of the "Ox Bow" area.

On Exhibit XXVIII an Aerial Photograph taken of the plant area in 1983 shows the Company's previously owned land as it is to this present day with the "Ox Bow" completely filled in except for a collection pond at its Easterly end. Also note the completion of General Electric Company's ground water and run off filteration installations.

6.5 Soil Characteristics of Manufactured Gas Site:

In the discussion of the topography of the gas plant site several hills are mentioned on the North and South side of the river and which later were levelled and used as fill on site. These hills consisted of near commercial grade gravel with little organic matter, and probably was original glacial gravel deposits. In previous Exhibits of photographs of gas plant construction a light gravel spoil is noted in excavations. On Exhibit XXVIX titled "Soil Classification Map - East Street Area - 1973; U.S. Soil Service, U. S. Department of Agriculture" the soil in the plant site area is classified as "2-Excessively Drained and well Drained Sandy and Gravelly Soils on Terraces with Slopes Less Than 15 Percent."

In excavations for Propane Storage Tanks on the South side of East Street a sandy and light gravel soil was encountered under three to four feet of cinder fill. This soil was rather loose and under actual test loading would support 3,000 to 4,000 pounds per square foot before any excessive settlement was noted. By noting various borings and excavations in this area I would estimate that this sandy soil extends to depths from 40 to 60 feet in depth from the original surface before a heavy consolidated clay and silt layer is encountered.

6.6 Water Table and Hydrology of Manufactured Gas Site:

From experience of various construction projects on the site from 1954 to 1968 in excavations from 4 to 10 foot in depth no ground water was ever noted and as previously mentioned a loose dry sandy and gravel soil was encountered. However in the 1960's some unusual events began to occur.

In the early summer of either 1963 or 1964 I received a telephone call from a Mr. Albert Childs who was then Manager of Utilities and Facilities with General Electric Company asking permission on almost an emergency basis if they could install some test wells along the joint railroad siding to the South side property used by the Company and E. E. Jones, Inc. I told Mr. Childs that we could only allow the installation in the summer as we had to move propane rail tank cars down the siding in the fall and winter. General Electric with Company permission installed about twenty 2½" diameter well points, about ten feet apart along side the railroad side track on the North side of East Street on the basis that they could remain until September. After the well points which were about ten feet deep and the pump was installed I could not believe my eyes. They were pumping almost a clear oil (Transformer Oil) out of these wells continuously 24 hours around the clock into tank trucks and rail tank cars all summer. I later learned that this oil was getting into the basements of buildings on both the North and South side of East Street. If I remember correctly the Company granted General Electric Co. the same permission the next summer.

The General Electric Company in the mid 1960's started construction of its new Power Transformer Tank Shop, Building #100, on the North side of railroad tracks with the length of the building running near parallel with the railroad tracks and running from the East end of the building at Pecks Road Bridge westerly to the West line of the Company' oil storage tanks located on the West end of Company's property on the North side of East Street. (See Exhibits XXVI through XXVIX) This new Building #100 is supposedly the largest industrial building in volumn of any industrial building in the U. S. The added weight of this building during its construction and thereafter had a drastic effect on the hydrology of the Company's Manufactured Gas Site.

In either the Spring of 1965 or 1966 the paved yard area of the Company's Garage Service Shops and Store Room began to show signs of breaking up. At one area just inside the gate of East Street on the North Side of East Street the pavement broke up, water and oil oozed up out of the ground and the yard area that had 12 inches or more of gravel base under an oil and grit surface became a sea of muck. The North wall of the Stores building, up against the railroad tracks, showed signs of cracking and ground water seepage. In the Spring of 1967 the North wall of Store Building had crack and moved almost four inches inward in one 30 foot area of wall. The Company installed 12" Steel "H" column bracing to maintain the integrity of the building. On both above

occasions I noted these events to Mr. Childs of the General Electric Company. The Company did not press the matter any further as it already had preliminary discussions of the sale of this land to General Electric.

In the demolition of the plant equipment in 1972-77 on the South side of East Street a number of excavations of 3 to 10 feet deep were made to cut off and seal various gas mains and pipes. Ground water was observed 4 to 6 feet in depth from the surface were ground water had not ever been observed before.

From the above events it seems obvious that General Electric in constructing Building #100 placed considerable pressure on the soil causing the possible rise in ground water and the migration of water and other liquids that may have been present to migrate from General Electric property southerly onto Company's land and eventually to the Housatonic River.

Whether General Electric Company purchased the lands of the Company and that of D. D. Jones, Inc. on the South side of East Street for future plant expansion or to gain immediate control of its problem of migrating transformer oil is not known. I would suspect the latter, evidenced by the installation of large scale pollution control project commenced immediately after they purchased the property.

EXHIBIT XIII

Aerial Photography taken in 1941 of East Street Area - Source City of Pittsfield, D.P.W. - Fairchild Aerial Survey of N.Y.C., N.Y.

EXHIBIT XIV

Aerial Photograph - Manufactur Gas
Site East Street, Pittsfield, Mass.
Taken 1941.
Source - Company Files

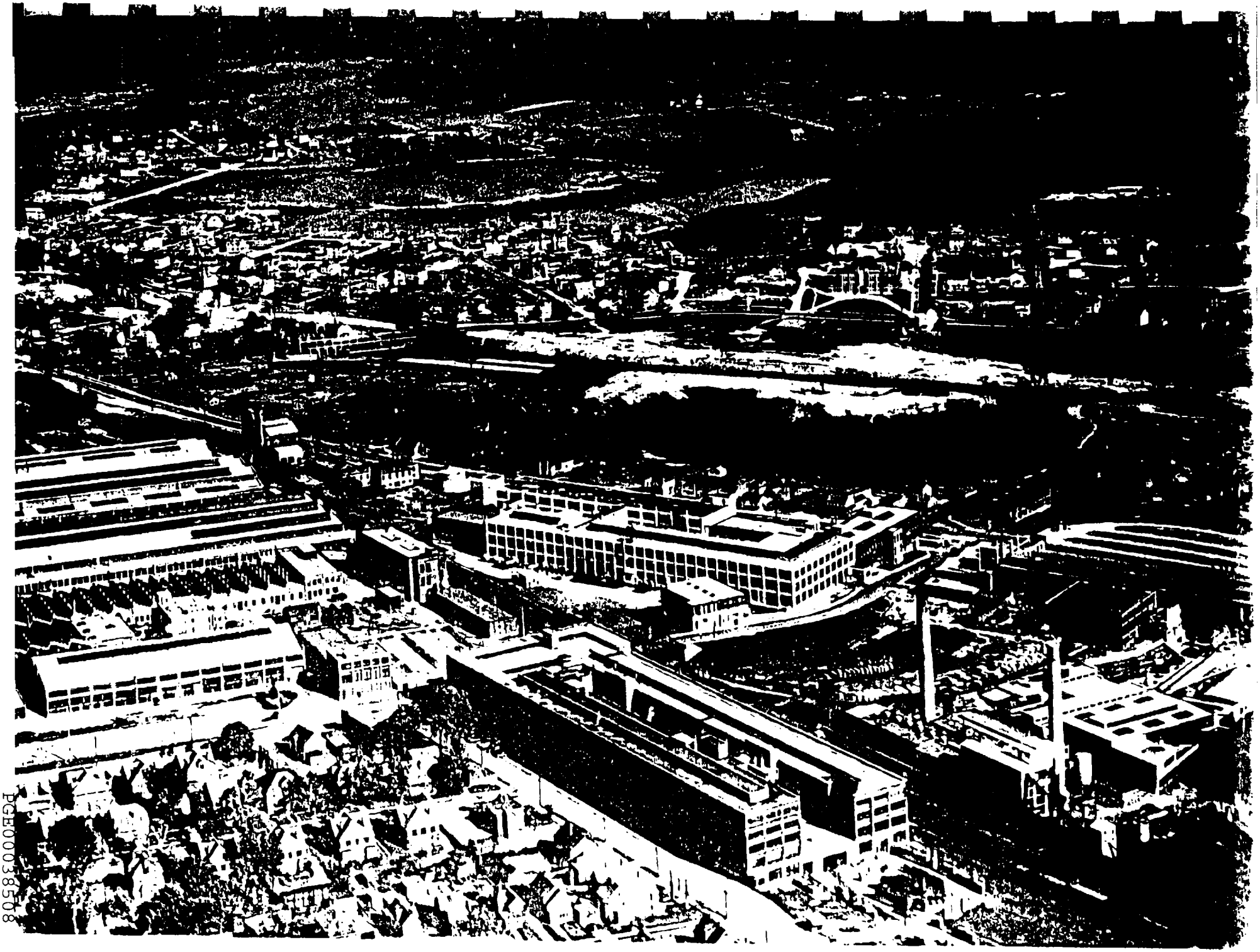


EXHIBIT XLV

Aerial Photograph - taken in 1956 of East Street Area - Source - City of Pittsfield D.P.W. - Colund Aerial Surveys, Inc. Pittsfield, Mass.

[redacted]

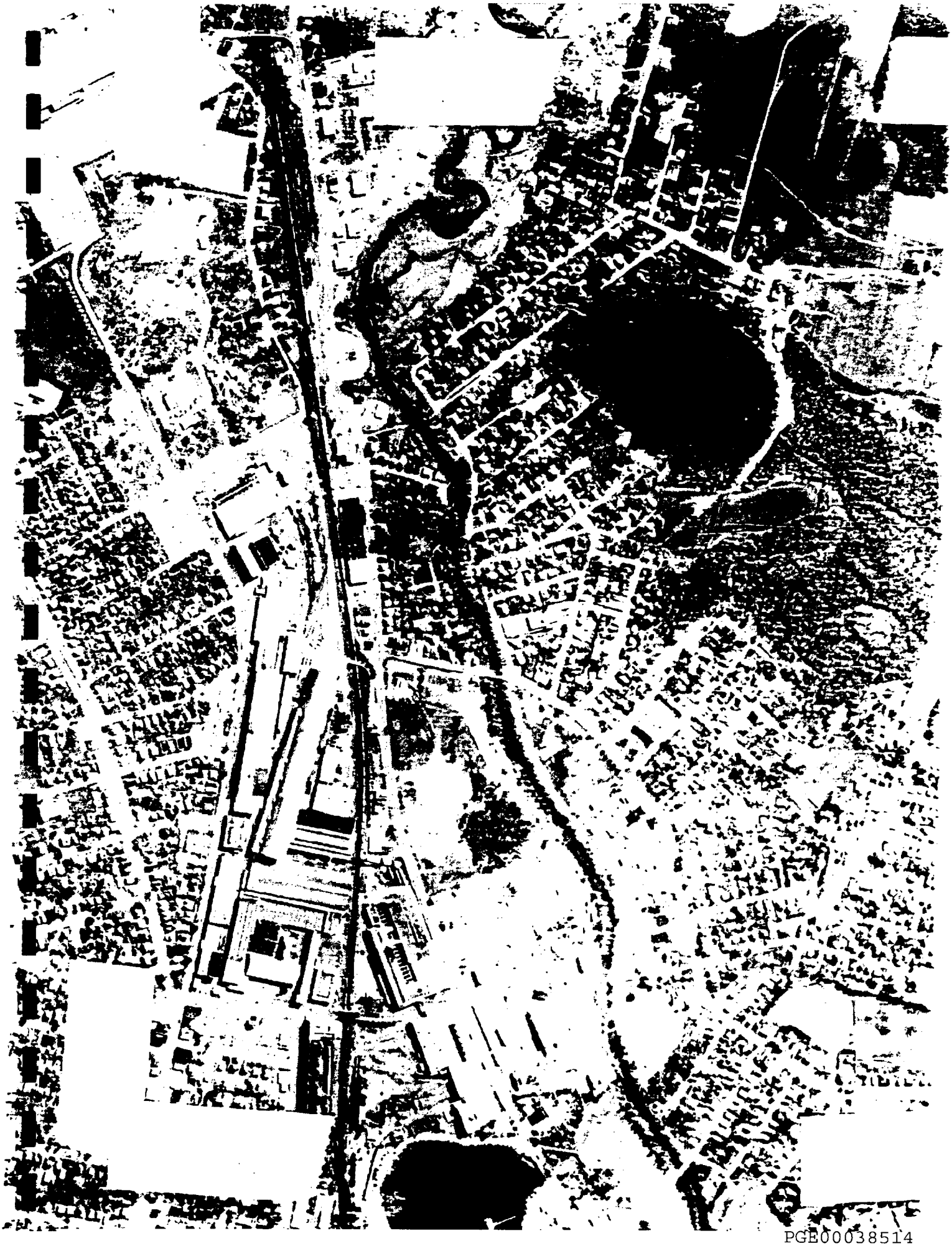
EXHIBIT XXVI

Aerial Photograph taken in 1967 of East Street Area - Source - DEPC #11435-4191 by Col East Inc. Pittsfield, Mass.


1435 - 4309
4-3-6

EXHIBIT XXVII

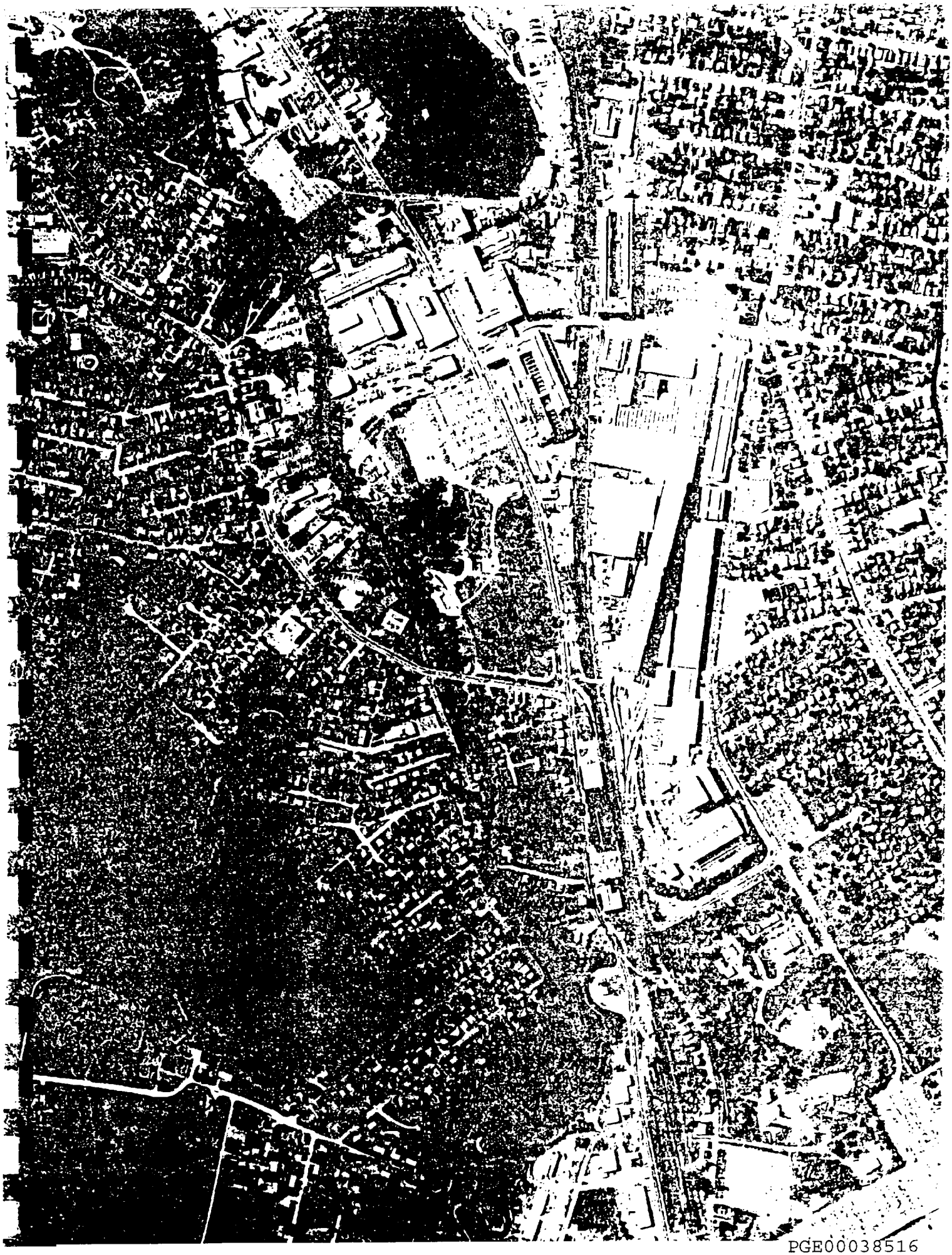
Aerial Photograph taken in 1978 of
East Street Area - Source - ERPC
#2625-5-1049 by Lockwood, Kessler
& Bartolette Inc., Consulting Engineers
Syosset, N. Y. 11791
Scale 1" = 1000 ft.



PGE00038514

EXHIBIT XVIII

Aerial Photograph taken in 1939 of East Street Area. Taken by U.S. Soil Service, U.S. Dept of Agriculture #25009-900-133L
Federal Bldg., Pittsfield, Mass.



PGE00038516

EXHIBIT XXVIX

General Soil Map, Berkshire County (Northern Part) Massachusetts, Map Developed by U.S. Department of Agriculture, Soil Conservation Service May 1972

FGE00385L8

1-EXCESSIVELY DRAINED AND WELL DRAINED SANDY AND GRAVELLY SOILS ON TERRACES WITH SLOPES GREATER THAN 15 PERCENT

2-EXCESSIVELY DRAINED AND WELL DRAINED SANDY AND GRAVELLY SOILS ON TERRACES WITH SLOPES LESS THAN 15 PERCENT

3-WELL DRAINED AND MODERATELY WELL DRAINED SILTY SOILS ON FLOOD PLAINS

4-WELL DRAINED AND MODERATELY WELL DRAINED STONY, ACID SOILS, WITH HARDPANS, ON UPLANDS WITH SLOPES GREATER THAN 15 PERCENT

SOURCE:USGS TOPO QUAD SHEETS

EXHIBIT XVIII

"City of Pittsfield, Plan of East Branch
of Housatonic River for Flood Control
dated October 1933 revised April 28, 1940"

7.0 Gas Manufacturing Site, East Street, Pittsfield, MA. Risk Assessment:

7.1 Ranking Scheme for Unexplored Manufactured Gas Sites:

The ranking of risk of an unexplored site is constrained for the obvious lack of test data and the time and expense associated with acquiring such information. With the recent inspection of the site from the street and river and review of past operations, and information gathered in this report the ranking method suggested is intended to be used qualitatively weighing the various risks at the manufactured gas site versus the same site with no manufacturing of gas taking place. Although the numerical scores are calculated for convenience no hard and fast rules of scoring are important, but rather the scoring techniques reflects the particular concern and priorities as outlined in the "Handbook on Manufactured Gas Plant Sites". The criteria for ranking individual factors for risk used are as follows:

Low Risk	- 1 to 2
Medium Risk	- 3
High Risk	- 4 to 5

7.2 Site Characteristics:

Size: Item No. 1

The composite size of this site is approximately 17 acres. However, after review of the records only about 8 acres were used in the actual manufacturing of coal and water gas, and storage of gas.

Rated Risk - 3

Location: Item No. 2

The site is in an industrial zone and relatively remote from high residential areas.

Rated Risk - 3

Current Use/Ownership: Item No. 3

The gas manufactured site is not owned by the Company and at present the land is used industrially by General Electric Company for control of migrating transformer oils, industrial waste deposit, and incineration of PCB's

Rated Risk - 3

Planned use/Ownership: Item No. 4

The present use is industrial and will probably remain so if General Electric Companys industrial growth increases and economic pressure of available industrial zoned property increases around its plant complex. The General Electric Company seems commited to continue its operations at this plant but the major product output seems to be swinging from heavy equipment (power transformers) to "high-tech" products (Chemicals and Ordinance).

With the recently passed Chapter 21e Commonwealth of Mass. Regulations basically holds the grantor in a land sale responsible for toxic waste for an indefinite time. It is doubtful if General Electric would ever sell the plant site with the present known environmental problems associated with this parcel.(ie migration of PCB's)

Rated Risk - 2

Plant Operating Period: Item No. 5

Manufacturing of coal and water gas at the site was post 1900 when the state of the art of removing and utilizing tar re-

siduals was developed to a high degree and economic factors pressed the operators of manufactured gas to remove tars and either reuse them as plant fuel stock or sell the product off-site. The plant was in actual operation and full production from approximately 1902 to 1952 or a period of 50 years operation.

Rated Risk - 3

Visible Surface Wastes: Item No. 6

Inspection of the latest aerial photograph taken of the plant site in 1983 revealed one small collection pond in the near vicinity of the tar pond shown in previous aerials near the Easterly end of the "Ox Bow". Whether this pond contains tar or is used as a collector for extensive drains for transformer oils before they enter the separator is not known. There is no visible surface exposure of "Spent Oxide" on the present site.

Rated Risk - 2

Odor Problems: Item No. 7

In a field inspection of the river via a canoe there was a distinct coal tar or spent oxide odor in the vicinity of the upstream discharge from General Electric Company's separator near the pond mentioned in Item No. 6. The odor seemed to diminish downstream. Whether the odor was coming from the pond, seperator, or the separator discharge water, or all three could not be determined.

Rated Risk - 3

Water Pollution: Item No. 8

In the field inspection of the site via canoe trip down the river, small patches of a greenish oily coal tar type of sheen was noted on the river directly down stream of the upstream separator (nearest Newell Street) discharge to the river and decreased downstream. Also in the field inspection an oily and discolored soil was noted downstream on the North bank of the river about 300-400 feet downstream of separator discharge from the waters edge vertically up the bank approximately one foot above the water level. This oily discolored soil had a distinct "coal tar" odor but it could not be determined if it was seepage from the site or being deposited on the North bank by the discharge from the separator.

Rated Risk - 5

Surface Water Proximaty: Item No. 9

The Southerly boundary of the gas manufacturing site is adjacent to the North bank of the East Branch of the Housatonic River for its entire length.

Rated Risk - 5

Surface Water Use: Item No. 10

Upstream of the site the river water is used primarily for industrial cooling and downstream of the site there is no known use for industrial, recreational or drinking water to the Holmes Road Bridge, Pittsfield. Below the Holmes Road Bridge is Canoe Meadows a recreational area and from this point South to the ponds in Lenoxdale and below the City of Pittsfield's Waste Water Treatment the river is used for recreational purposes (canoeing). South of the dam in Lenoxdale which creates the above ponds the water is again used for industrial cooling. There is no known use of this river water for drinking from the plant site downstream to the Massachusetts - Connecticut state line.

Rated Risk - 1

Ground Water Proximity: Item No. 11

As discussed in Section 6 of this report site topography and soil characteristics of the site has a loose gravel and sand highly permeable soil of approximately 40 to 60 feet in depth overlaying a layer of low permeable clay and silt soils. One could anticipate that the lighter coal tars and waste liquids would tend to migrate toward the river and that the heavier tars and sludges being very immobile in the soil would tend to slowly sink vertically to a point slightly below the ground water line and to remain in place. This hypothesis would require further field testing.

Rate Risk - 3

Ground-Water Use: Item No. 12

There are no wells used for drinking water known in the possible impacted area. (Note: There is one known well on the South side of river near the Elm Street Bridge that is used as a water supply for a car wash.)

Rated Risk - 1

7.3 Summary of Risk Ranking:

The following is a summary by characteristics ranking as compared to the maximum possible ranking in percent of maximum.

	Ranking as Percent of Maximum			
Factor	Low	Medium	High	Total
Site Characteristics	25%	75%	-0-%	55%
Waste Characteristics	25"	50"	25"	65"
Resource Characteristics	25"	25"	25"	50"
Total Characteristics	25%	50%	16.7%	56.6%

The risks from the site location, size, ownership and present and possible future use are moderate as the site is completely fenced in and has no public access. The only persons exposed to site at present are the operators of the pollution control installations (estimated to be 4 to 6 people). Rank the total Site Characteristics at 57% of maximum ranking is conservative. If industrial building were constructed on the site some precautions such as venting of basements and slabs would be required. Pilings and extra foundations construction would be required in cinder and spent oxide fill areas.

The risks from Waste Characteristics is rated 65% of maximum ranking. The major increase of risks in this catagory is due entirely to the evidence of possible coal tar oil sheen atop the river water at the discharge of the first separator downstream of the Newell Street Bridge. It would appear that this separator is not removing all oily materials flowing into it. The risks from odors could probably be reduced considerably if not eliminated by treating the soil with field lime.

The risks from Resource Characteristics is ranked 50% of maximum ranking. The emphasis on the site being near proximity of the river may be over ranked. Since General Electric Company purchased this plant site it is estimated they have spent 4-5 million dollars in constructing drain lines, collectors, pumps, separators and outfalls to the river in an attempt to prevent PCB laden liquids from migrating to the river. It is quite possible that these efforts to stop the migration of PCB's in the ground water to the river has reduced or stopped the migration of manufactured gas wastes. This could reduce the total risks at the site below its present 56.6% total of maximum ranking.

Exhibit XXX

Table II
Ranking of Risks
Gas Manufacturing Site
East Street, Pittsfield, Mass.

Item No.	Factor	Ranking Individual Factors Low 1-2	Medium 3	High 4-5	Total
	Site Characteristics				
1.	Size	-	3	-	3
2.	Location	-	3	-	3
3.	Current Use/Ownership	-	3	-	3
4.	Planned Use/Ownership	2	-	-	2
	Sub Total of Site Characteristics	2	9	-0-	11
	Maximum Ranking	8	12	20	20
	Waste Characteristics				
5.	Plant Operating Period	-	3	-	3
6.	Visible Surface Waste	2	-	-	2
7.	Odor Problems	-	3	-	3
8.	Water Pollution	-	-	5	5
	Sub Total of Waste Characteristics	2	6	5	13
	Maximum Ranking	8	12	20	20
	Resource Characteristics				
9.	Surface Water Proximity	-	-	5	5
10.	Surface Water Use	1	-	-	1
11.	Ground Water Proximity	-	3	-	3
12.	Ground Water Use	1	-	-	1
	Sub Total of Resource Characteristics	2	3	5	10
	Maximum Ranking	8	12	20	20
	Total Characteristics Ranking	6	18	10	34
	Total Maximum Ranking	24	36	60	60

7.4 Regulatory Risks:

"Legal obligations associated with this site and possible remedy of former gas plant sites are governed primarily by the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA or Superfund) and the Resource Conservation and Recovery Act of 1976 (RCRA) under federal law and by similar state hazardous waste statutes. The federal Superfund law imposes strict liability for inactive waste generators. If the U.S. EPA determines that a site warrants federal attention under Superfund, the Agency may order a responsible party to clean up the site or may act on its own if the responsible party does not respond. The implementing regulations, however, as embodied in the National Contingency Plan (NCP), do not give explicit guidance on the extent of clean-up required at inactive waste sites. The operative guidance is simply that remedial action should be "Cost-Effective". EPA itself may not undertake long-term remedial action at a site unless it is listed as a priority Superfund site according to procedure specified in the NCP, which put the responsibility on the states to propose sites for listing. Wastes in place at former gas plant sites are not covered directly by the federal hazardous waste rules under RCRA which govern the current management of hazardous wastes since they were generated prior to enactment of RCRA. However, if wastes are moved off site as part of a remedial action, RCRA rules for transportation, storage, treatment and disposal of solid and hazardous wastes might apply. It is likely that wastes at some former gas plant sites would be classified as hazardous under RCRA or state regulations." (Note: Quoted from "Handbook on Manufactured Gas Plant Sites")

The CERCLA Act of 1980 (Superfund) gave present and past generators of hazardous wastes 180 days to report locations of known hazardous wastes sites. The Company elected not to report this site as wastes in place as former gas plant sites were not covered directly by the federal hazardous rules under RCRA which govern the current management of hazardous wastes since they were generated prior to enactment of RCRA. General Electric was fully aware of the various manufactured gas residuals at the site and soon after they purchased the site in 1972 they proceeded with major enviornmental control projects on the site to apparently clean up industrial wastes, including their waste oils which had migrated onto the site. After the purchase of the site by General Electric the Company was never contacted regarding the manufactured gas residuals at the site so the Company assumed they were acting to clean up intermingled waste at the site including the manufactured gas residuals. The only contact General Electric has made with the Company regarding manufactured gas wastes at the site was in early 1986 when they verbally advised the Company that the Massachusetts D.E.Q.E. requested that they test ground water samples for manufactured gas wastes. General Electric later forwarded the results of the test in April of 1986 to the Company which is included in the Addendum of this report. The tests did show that coal tar and manufactured gas waste residuals exist in the ground water phase at the site.

The risk to the Company at the present time is if a release* of hazardous waste from manufactured gas wastes occured at the site. As stated above the federal Superfund law imposes strict liability for inactive waste sites on the current site owners and on past owners and waste generators. Reporting obligations under CERCLA, Section 103(a) requires each person "in charge" of an onshore facility to report to the National Response Center any "release of a hazardous substance" if such release is equal to or greater than reportable quantity established for that hazardous substance. Reporting re-

quirements are enforced by criminal sanctions including substantial fines and imprisonment.
*Note: Definition of "release" is extremely broad and defined as "any spilling, leaking, pumping, emitting, emptying, discharging, injecting, escaping, leaching, dumping, or disposing into the environment".

Potential liability for private parties under CERCLA 107 imposes liability for response on the owner or operator of a site or the owner/operator of the site at the time of disposal. Courts have established that liability is strict, joint and several. Statuary defenses are extremely limited (see, CERCLA p.107(b)). There is no ceiling on response costs for clean up, but there is a $50 million ceiling on natural resource damages. CERCLA p.107(c)(2),(3). Liability can be imposed by the federal or state government, or by other potentially responsible parties who undertake clean-up actions and then seek contribution from other parties to share their cost, CERCLA p.107(a)(4). Liability under Section 107 cannot be transferred or conveyed away, but statute does not prohibit agreements between parties to insure, hold harmless, or indemnify each other from this liability. CERCLA p.107(e)(1).

7.5 Potential Wastes Risks:

This study does confirm that there are tar residues and sludges, spent oxide and ash materials on the site.

7.6 Tars and Sludge (PAH):

Gas plant tars and sludges comprise primarily of polynuclear aromatic hydrocarbons (PAH), with minor amounts of phenolic and light aromatic compounds. PAH are found throughout the environment, primarily as a result of natural and man-made combustion processes. They exhibit low volatility, low aqueous solubility, a strong tendency to absorb on soils and sediments, and moderately biodegradable. The potential impact of most concern with PAH is that some of the hundreds of different PAH compounds are known animal carcinogens and suspected human carcinogens. The EPA criterion for carcinogenic PAH as a class is 28 parts per trillion, at 10^{-5} excess lifetime cancer risk level, versus criteria in the range of 10's parts per billion for various individual non-carcinogenic PAH.

Phenolics are highly soluble and biodegradable, with low volatility and absorption tendencies. They are highly mobile in the ground and are likely to be biodegraded in areated soils. The primary potential health hazards associated with phenolics is acute poisoning. Based on water quality standards 1 part per million is widely applied criteria for phenolics based on preventing objectionable odors in water supplies or tainting of fish flesh which can occur at much lower concentrations than those required to produce toxic effects in the low parts per thousand range. There is the possibility of some phenolic waste on site in the Westerly end of "Ox Bow" from General Electric Company's Phenolic Resin operations.

Light aromatics (Benzene, Toluene, Xylenes, etc) are moderately soluable and biodegradable, highly volatile and only slightly absorbed on soils and sediments. Their fate in soils and surface waters is largely determined by volatilization and perhaps biodegradation. They are persistent and mobile in ground water. Their primary potential health hazard is by acute exposures. Benzene is known to increase the risk of developing leukemia on chronic exposure. The U.S. EPA ambient water quality criteria for light aromatics are generally above one part per thousand except for benzene which has a 10^{-5} risk level of 6.6 parts per billion. Many of these

light aromatics were used for industrial cleaning of parts and in paints and could be present from the discharge of drain from General Electric Company's manufacturing plant. Most of the light aromatics from the gas manufacturing operation have probably left the site via the tar separator discharge or volatilized. Refer to Exhibit XXII for possible location of these deposits on the site.

7.7 Spent Oxide:

Spent oxide is the primary source of inorganic nitrogen and inorganic sulfur compounds in gas plant wastes.

Inorganic nitrogen are ammonia and cyanide coumpounds. These compounds in spent oxide wastes are relatively stable under normal envioronmental conditions, however they may leach under highly acidic conditions. Simple cyanide compounds are readily biotransformed to ammonia in soil. Ammonia, in turn is transformed by nutrifying bacteria in aerated soils to nitrite and then to nitrate. Nitrate is a common ground water contaminant from a variety of sources and is highly mobile in ground water. The primary human health concern with inorganic nitrogen species are acute exposures to ammonia, hydrogen cyanide and compounds that readily liberate free cyanide. All exhibit relatively high acute toxicity but only moderate chronic toxcity.

Inorganic sulfur in gas plant waste of "Spent Oxide" are elemental sulfur, sulfide, and sulfate compounds. These compounds are relatively stable in spent oxide under normal environmental conditions. They may leach into ground water and under highly acidic conditions liberate hydrogen sulfide which is an acutely toxic gas. Sulfur species are mobile in ground water. Sulfate occurs naturally in surface and ground waters at levels as high as several 1,000 mg/l. For location of spent oxide deposits at the site refer to Exhibit XXI.

7.8 Ash Materials:

With coal being used at the manufactured gas plant site a wide variety of trace metals may be present at coal storage and ash disposal areas. The metals that are more likely to be present at higher concentrations include arsenic, chromium, copper, iron, lead, nickel and zinc. These metals are nonvolatile and their environmental fate depends largely on soil/water interactions. In general they will tend to bind to soil and move more slowly than the ground water. The health and environmental effects of trace metals are variable. Water quality standards and criteria are commonly applied and are typically in the range of 50 parts per billion. For the location of coal storage areas refer to Exhibit XX and ash disposal areas to Exhibit XXI.

7.9 Public Opinion:

The manufacturing gas plant site on East Street and the general vicinity was in the news from the early 1970's to the early 1980's pertaining directly with General Electric Company's effort to clean up the area and the Housatonic River of PCB's. Lately the news items regarding the PCB problem has shifted from the site downstream to the Woods Pond area in Lenox where apparently large pockets of PCB's deposited in the slow flowing part of the Housatonic River have been found and the DEQE and General Electric have produced various schemes for disposal. It should also be noted that a sizable group of citizens in the Lakewood area have had numerous meetings and some local political support for claims that the incidents of cancer have been unusually high and point out that the

cause is the PCB laden soils in the area. The gas manufacturing site is downstream of the Lakewood area and there could be no legitimate claims of migration from the site to the Lakewood area, however, the Company should be aware that these public sentiments exist.

8.0 Other Industrial Wastes at Site:

The study of this gas manufacturing site would not be complete without mentioning the depositing of other industrial waste on the site, the migration of transformer oils, and the drastic change in ground water level in the late 1960's all of which have previously been mentioned in this report.

8.1 Other Industrial Wastes:

From Company records it shows that General Electric Company maintained a 24" drain line running from its manufacturing plant area on the North side of the railroad tracks, and then running Southerly under the railroad tracks and on the West side of the Company's original coal gas retort house, (now G.E. telephone exchange) across East Street and through the Gas Storage parcel to the original North bank of the Housatonic River.(See Exhibit XX for drain location and Exhibit XVII for drain outlet location.) The outfall of this drain was original to the Westerly end of the river "Ox Bow". In the late 1930's the City of Pittsfield channelized the river and dammed the upstream (Easterly) end of the "Ox Bow" leaving the above drains and other drain outflows to flow out of the Westerly end of the "Ox Bow". In 1954-55 right after two hurricanes in the area I viewed on several occasions the outflow of this drain at full flow and it appeared to be carrying both oily plant waste water and surface water from General Electric Company's manufacturing plant area. This drain water could have carried various industrial wastes and deposited these on the bottom and banks of the "Ox Bow" and downstream to the new river bed.

As outlined in Section 3.7; Possible Adverse Possession the General Electric Company extended this 24" drain Southerly to the new relocated river bed in approximately 1957-58 and later constructed a separator and pool in an apparent effort to remove industrial oils and other wastes from the drain influent.

In extending the above drain to the new river bed General Electric installed a second dam across the "Ox Bow" to lay the sewer to grade and commenced to fill in the "Ox Bow" from this dam to the Westerly "Ox Bow" outlet. It used the "Ox Bow" as a depository for its manufacturing plant operations until the late 1960's. Of particular concern would be wastes from General Electric Company's Phenolic Resin Plant directly across East Street and its Chemical Operations on Plastic Avenue. In the addition to concern of possible deposits of toxic industrial wastes in the Westerly end of the "Ox Bow" the damming of the lower (Westerly) end of the "Ox Bow" prevented any surface or drain water into the Easterly end of the "Ox Bow" from flowing into the river proper. The water level did eventually rise several feet during periods of heavy rain fall. This increase in depth of water in the "Ox Bow" undoubtedly raised the ground water level, which in turn could have increased the flow of ground water from the dammed "Ox Bow" area to the Northerly bank of the relocated river bed to the South.

8.2 Migration of Transformer Oils:

The "Power Transformer" operation of the General Electric apparently did a thriving business of rebuilding and reconditioning transformers on their plant site just North of the gas manufacturing site and on the North side of the railroad tracks. In the rebuilding or reconditioning of the power transformers apparently the oil was drained from these transformers and stored in

large underground oil storage tanks. Apparently these storage tanks corroded causing leakage of oil into the ground upgradient to the Company's gas manufacturing site. With the amount of waste transformer oils witnessed recovered from the shallow wells along the rail spur track area in the 1960's and previously detailed in Section 6.6 the losses of transformer oil had to be considerable, I would estimate in the hundreds of thousands of gallons. How such a loss went unnoticed by General Electric Company has always been inconcievable to me. In any event the Company's gas manufacturing site was now in an underground flume of migrating transformer oil to the down hill gradient of the North bank of the East Branch of the Housatonic River.

8.3 Change in Ground Water Levels:

As previously covered in Section 6.6; Water Table and Hydrology of Manufactured Gas Site there seems to be no question that in General Electric's construction Building #100 it put enormous pressure on the loose sand and gravel soils of the area and did alter and increase underground water flow more rapidly toward the North bank of the the East Branch of the Housatonic River.

Interestingly there may have been two related interactions occuring in the vicinity of the gas manufacturing gas plant site. The first could be the possible increase in ground water flow Southerly to the river, due to pressure on the soil caused by the construction of General Electric Company's Building #100, and the other the relieving of the soil pressure on the Gas Holder Parcel on the South side of East Street caused by the Company's demolition of the four gas holders. The bottoms of these gas holders were filled with water to act as a gas seal for the upper lifts. The depth of this water varied from 25 to 31 feet deep with the water pressure on the bottom of the holder varying from 0.78 to 0.97 tons per square foot. The total weight of the water and the weight of the holder structures is estimated at 36,725 tons. With this decrease in soil pressure at the holder location and the increase of pressure on the soil caused by the construction of Building #100 the flow of under ground water, and the change in the level of the ground water in the vicinity of the gas holders may have increased the Southerly flow of ground water and the migration of transformer oils. Regardless of what the cause there was a marked rising of the ground water at the gas manufacturing plant site both on the North side and on the South side of East Street in the vicinity of the gas holders in the late 1960's and early 1970's.

9.0 Summary:

The Company's former manufactured gas plant site on East Street, Pittsfield was made up of some nine parcels and the land was encumbered by various easements for sewer, water, telephone and storm drains. Three major land owners namely the Company, General Electric and E.D. Jones & Sons, Inc. have or may have used the site for a depository of industrial wastes. (Chapter 2 & 3)

From the review of past manufacturing gas production at the site the amount of various gas plant wastes generated was estimated and by use of aerial photography the areas of disposal can be generally defined. The disposal of gas manufacturing plant demolition materials and wastes can be reasonably located on site with the majority of this material going to the City of Pittsfield's land fill. (Chapters 4 & 5)

The topography and soil characteristics of the site are such as to be conducive to ground water flow toward the Housatonic River. A major topographic change on the site took place in the later 1930's when the Housatonic River was channelized and bypassed the river's "Ox Bow" on the site. Unfortunately the river bed of the "Ox Bow" became a depository for manufactured gas wastes and other industrial wastes from General Electric's operations. (Chapter 3 & 6)

In assigning the "Risk Ranking" of the site from the data in this preliminary report the site is rated as a "Medium Risk". Two major factors could increase the ranking of the site into a "High Risk" ranking, namely the release of hazardous manufactured gas plant residuals on the site, and the other the exposure to stricter regulations governing the quality of ground water.

At the present the major risk to the Company would be the "release" of manufactured gas plant residuals in such an amount as to be classified as hazardous. Such a release could be caused by leaching, malfunction of General Electric's enviornmental equipment on site or by improper excavation of manufactured gas plant wastes.

The other hazardous waste, namely PCB laden transformer oils have migrated onto the site, and other industrial wastes dumped on the site in the westerly part of the river's "Ox Bow" by General Electrics operations adjacent to the site. Apparently the leaching of industrial waste oils are still a problem at the site as it was reported late in the summer of 1986 that General Electric has 40 or more underground storage tanks just north of the gas plant site that are filled with heavy oils and sludge that the Pittsfield Fire Department is investigating to determine if the materials should be removed from the site or remedial action taken.

Since General Electric purchase of the site in 1972 to the present time it has carried on an aggresive program of enviornmental control of the migrating industrial waste oils commingled with the manufactured gas residuals at the gas plant site. In an effort to limit their liability General Electric has also purchased several other parcels in the vicinity of the gas plant site and conducted clean-up operations for migrating waste oils at these locations.

It is possible by laboratory tests to footprint the various types of waste intermingled at the site. To physically attempt to seperate these wastes at the site is near impossible and certainly not economically practical. Since General Electric has owned the site it appears they have directed their enviornmental clean-up efforts at the site to the total ground water condition. Since General Electrics purchase the site they have not requested information or assistance from the Company regarding manufactured gas plant wastes other than to verbally notify the Company in early 1986 that the Massachusetts DEQE requested that they conduct tests on the ground water phase at the site for manufactured gas wastes. The re-

sults of these tests were later forwarded to the Company by General Electric with no comment.

Indeed one must ask what amount of liability from the migrating waste oils onto the site would General Electric incurred if the Company still owned the site. The bottom line however is that present regulations places the liability on the present owner of the site and past generators of the waste.

Recommendations:

The Company's objective of any action at this site should be to limit its liability to minimize possible fines, legal fees, or remedial action costs taken by regulators or owner of the site. The following is a suggested course of action:

1. Company's and General Electric's operating personnel should have an informal meeting regarding the site. The Company should discuss the possibility of an agreement that would allow the Company to tresspass on the site to conduct limited testing to determine if there is a "hazardous release" of manufactured gas plant wastes. The proposed agreement should also restrict the liability of both the Company and General Electric to no more or less than what it is at the present time. Both parties should also consider an agreement to insure, hold harmless, or idemnify each other from any liability regarding hazardous wastes at the site as allowed under CERCLA & 107(e)(1). The Company should discuss the above matter with its enviornmental legal council before such a meeting.
2. Assuming both parties come to an agreement as outlined above the Company should conduct a minimum of tests to determine if there is a "release" of hazardous manufactured gas wastes into the enviornment in reportable quantities or if there is a "threat" of such release.
3. If there is a "release" it should be determined if it is wholly within the site boundaries or is it releasing onto adjacent property or the river.
4. If a release is occuring the true environmental implications should be determined, i.e. what would be the ranking E.P.A. would give the site under their Hazard Ranking System?
5. If there is adverse environmental effects from the release the effects should be analyzed to determine if a "removal" action or a "remedial action" is required and how the release would be handled under the National Contingency Plan.
6. If "remedial action" is required the possibility of utilizing General Electric's enviornmental controls that are presently in place should be investigated.
7. If the Company decides to take its own action it should be consistent with the National Contingency Plan.

   A plan for notification to governmental authorities should be made.
8. If any action is to be taken such action should be reviewed as to requirements of applicable state and local laws.

The above proposed plan or any otherreasonable plan to control the liability of the site must be weighed by Company management versus doing nothing and waiting to see if any "action" will occur. The later has historically proven by numerous legal cases to be a rather disasterous route. The Company management should also temper its decision by being aware that the present pending envioronmental legislation in Congress, "Superfund II" directs its thrust toward owners industry generators being forced to do the clean-up rather than the government. The President has threatened to veto "Super fund II", but at the present time the Congress has enough votes to

supposedly override the President's veto. Regardless of pending federal regulations the trend of states legislation and present regulations is to apply higher ground water standards to protect drinking water supplies.

ADDENDUM

Memo to: R. S. Cave
From: W. E. Hertel
Date: June 27, 1986

This is a report of an inspection of the East Branch of the Housatonic River in the vicinity of the manufactured gas plant site on East Street, Pittsfield, MA, which was formerly owned by the Company. This inspection was made by Messrs. R. Allesio, R. Cave and W. Hertel on above site.

The river inspection was made by canoe and entry to the river was made just downstream of the foot bridge over the river on Parkside Avenue at about 10:30 a.m., June 27, 1986. The sky was clear and sunny, temperature in the low 80°F, humidity was quite high (75-80% Range), and winds calm.

The river water upstream of the Newell Street Bridge was clear and the bottom could be easily seen. The average depth of the water was approximately 1½ foot in depth and the flow was about normal. Grass growth on the river bottom and fish were observed. The river banks from the point of entry downstream to a point about 500 to 600 feet West of the Newell Street Bridge were relatively clean and no sign of staining or deposits existed.

Between 500 to 600 feet downstream of the Newell Street Bridge we approached a concrete outfall on the North Bank at which point a black stain was noted on the north river bank. In taking scoops of river bank soils in this area with a canoe paddle a slight coal-tar odor was noted. From this inspection it could not be determined if this staining on the north bank which ran about six inches above the river water level was from seepage or a deposit from the outfall. A slight coal-tar odor was noted as we approached the concrete outfall. It was apparent that the outfall came from an oil/water separator just behind a chain link fence on the north bank and located at the easterly end of the gas plant site.

We landed the canoe on the north river bank just upstream of the outfall, disembarked and proceeded to climb up the river bank (15 to 18 ft. high) to more closely observe the separator which apparently is taking ground water from the north and east parts of the former gas plant site. R. Cave spoke to the operator on the other side of the fence and conversation was limited to identifying ourselves as from the Gas Company. While this discussion was going on I crawled down to the outflow and took a couple sniffs of the water being discharged. I could not detect a coal tar-odor. A slight coal-tar odor was still noted in the air and seemed to be coming from the site in the area around the separator.

We boarded the canoe again and proceeded downstream and detected several small spots of 2 to 3 feet in diameter of blue-greenish oily sheen atop the water just downstream of the outfall. An exposed flat area in the river of about 20 feet in diameter of heavy sand and gravel stained a rust color was noted on the north side of the river just downstream of the above mentioned separator outfall. Grass and

fish were observed in the river water. Staining on the north bank and a slight coal tar odor was still noted on the north bank but became less noticeable and then disappeared about 300 feet downstream of the separator outfall.

About 1200 feet downstream of the Newell Street Bridge we came to a second outfall on the north river bank just behind the General Electric Company's Fluid Waste Incinerator. There was a good flow of discharge on this outfall(about 6" high in weir). Again we landed the canoe on the north river bank to check the outfall. In sniffing the outfall no coal-tar odor was noted but an oily odor could be detected similar to auto transmission oil. The discharge of this outfall was from an oil/water separator similar to the one upstream. We again boarded the canoe and noted directly downstream of this outfall a heavy layer of a clear oil atop the water. In rubbing this oil atop the water between ones fingers it felt like glycerine (soft to the touch). Again a patch of gravel stained rust color was noted on the river just downstream of this outfall. Continuing downstream some soil on the north bank was again taken with a paddle and no staining or odor was noted. A heavy layer of clear oil film covered a good portion of the river just down stream of the outfall. Grass growth on the river bottom and fish were observed.

Continuing downstream a 5" or 6" aluminum pipe was noted running atop the chain link fence on the north side of river (G.E. property). Attached to this pipe was some type of relief device every 50 to 60 ft. which would momentarily leave off a jet of steam over the river. We assumed that this was some kind of controlled release. We continued downstream and disembarked on the easterly bank of the river at the Lyman Street Bridge noting that the river still had a clear oily film atop the water. The time was approximately 12:15 p.m.

MEETING NOTES - March 1, 1986

PRESENT:

R. Desgroseilliers	- General Electric
K. Sewell	- General Electric
R. Cave	- Berkshire Gas
M. Marrone	- Berkshire Gas

The D.E.Q.E. has requested General Electric to test the water in the area of the previously installed gas plant facilities on East Street in Pittsfield. General Electric has taken water samples from the outlet of their oil skimming facilities at two locations and sent the samples to the test site in Knoxville, Tennessee. The results will be back in two weeks, and General Electric will inform us of the findings.

The D.E.Q.E. initiated this request and is concerned about the possibility of cyanide.

(III)

Date 4/2/86

O: Mr. Robert Cave
Berkshire Gas Company
115 Cheshire Road
Pittsfield, MA 01201

ear Bob,

Here are the test results from the former Berkshire Gas Property roundwater phase.

eaa
ttachment

om: Ron Desgroseilliers

	WATER RECOVERY UNITS		
	4S	64R	64X
	50	120	61
	50	1,500	970
	12	ND	ND
	15	ND	<10
	30	ND	ND
	13	12	ND
	97	27	29
	56	ND	ND
	:10	ND	ND
	68	<10	<10
	100	ND	ND
	21	<10	ND
B. Base Neutral Organics (ppb)			
Acenaphthene	200	<10	<10
Acenaphthylene	< 200	ND	ND
Antracene	470	ND	ND
Benzyl Butyl Phthalate	< 200	<10	ND
Bis (2-Ethylhexyl) Phthalate	< 200	12	ND
Chrysene	< 200	ND	ND
Fluorene	200	<10	<10
Naphthalene	1,100	100	83
1, 2, 4 - Trichlorobenzene	2,600	77	ND
1, 4 - Dichlorobenzene	ND	87	72
Phenanthrene	ND	ND	<10

3/20/86

PRIORITY POLLUTANT ANALYSIS - GROUND-WATER RECOVERY UNITS

A. Volatile Organics (ppb)	64S	64R	64X
Benzene	250	120	61
Chlorobenzene	550	1,500	970
Chloroform	12	ND	ND
1, 1 - Dichloroethane	15	ND	< 10
1, 2 - Dichloroethane	30	ND	ND
Trans - 1, 2 - Dichloreothene	13	12	ND
Ethyl Benzene	97	27	29
Methylene Chloride	56	ND	ND
Tetrachloroethene	<10	ND	ND
Toluene	68	<10	< 10
1, 1, 1 - Trichloroethane	100	ND	ND
Trichloroethene	21	<10	ND
B. Base Neutral Organics (ppb)			
Acenaphthene	200	<10	< 10
Acenaphthylene	< 200	ND	ND
Antracene	470	ND	ND
Benzyl Butyl Phthalate	< 200	<10	ND
Bis (2-Ethylhexyl) Phthalate	< 200	12	ND
Chrysene	< 200	ND	ND
Fluorene	200	<10	<10
Naphthalene	1,100	100	83
1, 2, 4 - Trichlorobenzene	2,600	77	ND
1, 4 - Dichlorobenzene	ND	87	72
Phenanthrene	ND	ND	< 10

C. Acid Extractable Organics (ppb)	64S	64R	64X
2 - chlorophenol	ND	<10	ND
D. Pesticide and PCBs (ppb)			
PCB - 1242	4.7	ND	ND
PCB - 1254	<20*	<2*	ND
PCB - 1221	<70*	ND	ND
PCB - 1232	<5*	ND	ND
PCB - 1248	<5*	ND	ND
PCB - 1260	90	90	21
PCB - 1016	<5*	ND	ND
Toxaphene	<70*	<3*	ND
Chlordane	<8*	ND	ND
4, 4' - DDT	<10*	<20*	<3*
E. Metals (ppb)			
Antimony	240	<1	<2*
Arsenic	510	5	11
Beryllium	40	<2	<2
Cadmium	160	<1	<1
Chromium	860	<10	<10
Copper	11,000	7	35
Lead	3,300	<10	<10
Mercury	<1	<1	<1
Nickel	290	<10	<10
Selenium	<60*	<1	<1

E. Metals (ppb) (continued)	64S	64R	64X
Silver	70	< 2	< 2
Thallium	< 300	< 20	<20
✓ Zinc	8,700	16	< 1
✓ Cyanide	710	150	120
✓ Phenols	170	40	40

Notes:

1. Priority Pollutants not listed above were reported by IT Analytical as "ND".
2. "ND" = Not Detected (for PCB scan, ND is less than 1.0 ppb).
3. " <10" = Detected but at a level less than the quantification limit.
4. * = Higher detection limit due to interference with higher concentration of PCB aroclors (or other sample matrix).
5. Sampling locations were as follows:

   64S: from ground-water depression pump discharge.
   64R: from ground-water depression pump discharge
   64X: from overflow chamber of Valley Forge oil water separator.

6. Sampling Dates were as follows:

   64S - 2/20/86
   64R - 2/12/86
   64X - 2/12/86