

The Peoples Gas Light and Coke Company  
Gas Stored Underground - Gas Utilities

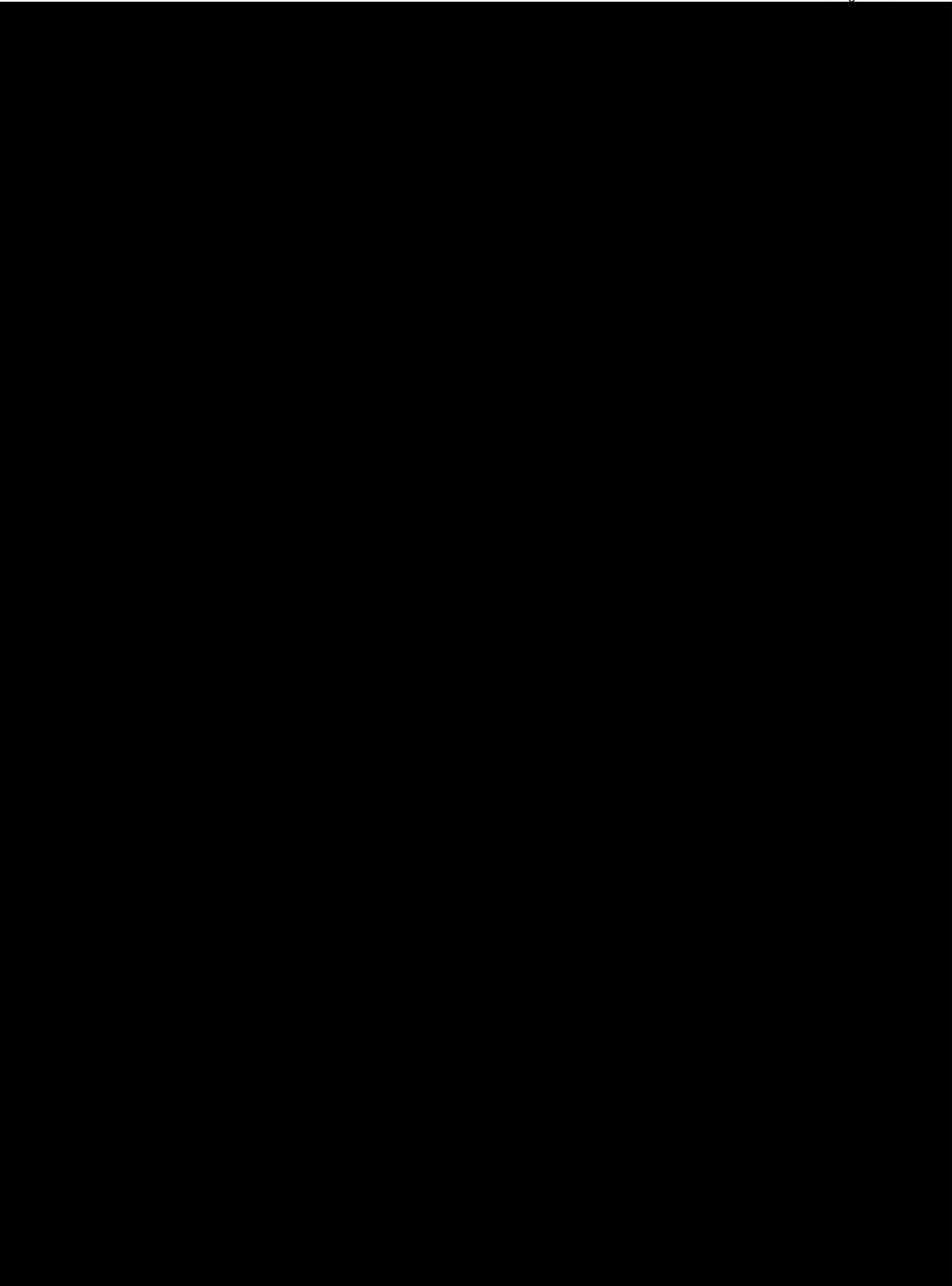
For the Portion of the Facility Owned, Contracted, Leased, etc., during the test year.

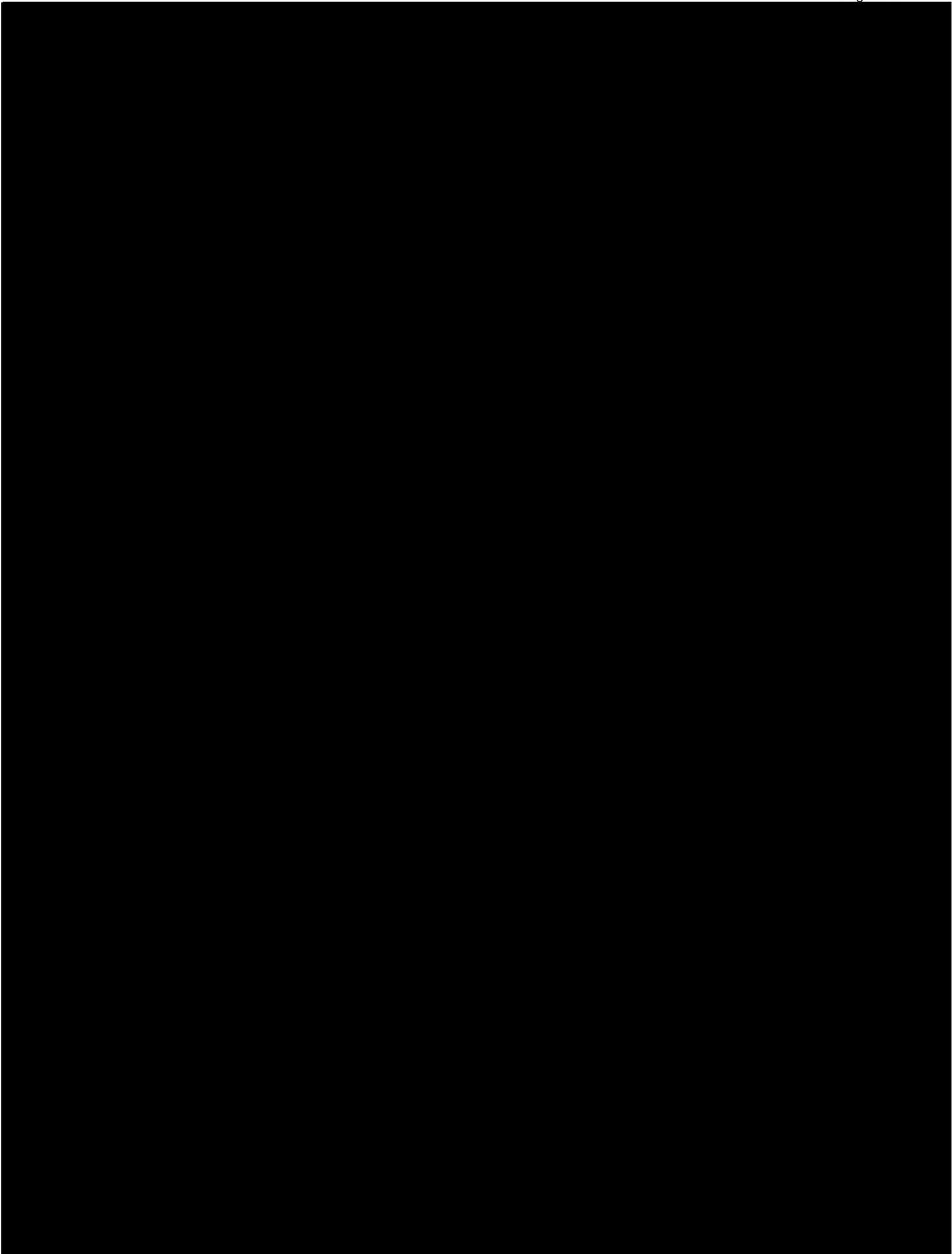
Line No.	Location and Operator of Storage Facility (A)	Maximum Daily Deliverability on a Typical Peak Day (B)	c-1	c-2	c-3
				Expected Daily Delivery On Peak Day (C)	Type of Transportation Used (D)
1 2 3	The Peoples Gas Light and Coke Company: Manlove Field Champaign County, Fisher III	Manlove Field's maximum daily withdrawal quantity is based on periodic reservoir testing.		See response to c-1	Company's Transmission System
4 5 6 7 8	DSS NGPL	Per NGPL tariff Rate Schedule DSS, November 1 through February 15, the Shipper's Withdrawal Quantity is 100% of its Maximum Daily Quantity. Also per NGPL tariff Rate Schedule DSS, a Shipper's firm right to withdraw gas under delivered firm storage service over any consecutive fifteen (15) day period may not exceed that Shipper's average WQ over that period multiplied by ten (10).		See response to c-1	Firm Transportation Embedded in Service/Rate
9 10 11	NSS NGPL	Per NGPL tariff Rate Schedule NSS, a Shipper's Withdrawal Quantity will equal one hundred percent of its Maximum Daily Quantity when its inventory level in its storage account exceeds fifty percent (50%) of its maximum storage volume.		See response to c-1	Additional Firm Transportation is Purchased
12 13 14 15	FSS ANR	Per ANR tariff General Terms and Conditions and Rate Schedule FSS, a Shipper's Withdrawal Quantity will equal one hundred percent of its Maximum Daily Quantity when its inventory level in its storage account exceeds twenty percent (20%) of its maximum storage value.		See response to c-1	Additional Firm Transportation is Purchased
16	c-4. The Peoples Gas Light and Coke Company accounts for its storage inventory levels with one central pool for all storage services.				

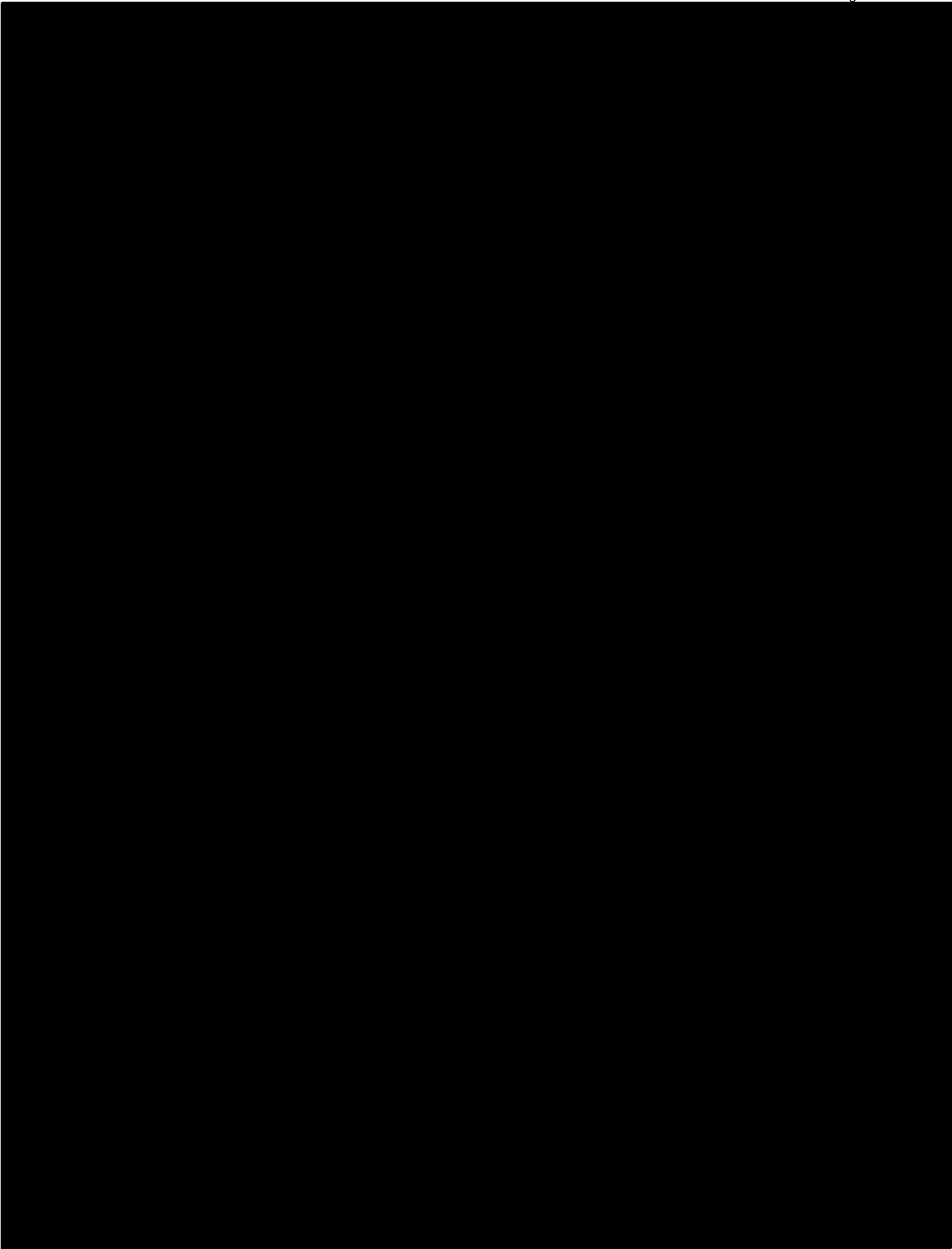
The attached confidential Excel spreadsheet printout is the Summary Report from the Gas Dispatch Model run used to develop the test year supply portfolio. The Gas Dispatch model is run using the “What’s Best” linear programming optimization software, which is commercially available from LINDO Systems, Inc. in Chicago. If needed, the entire Excel file can be viewed in our offices.

2015 Test Rate Case

**Peoples Gas Company**  
Supply Forecast in MDth

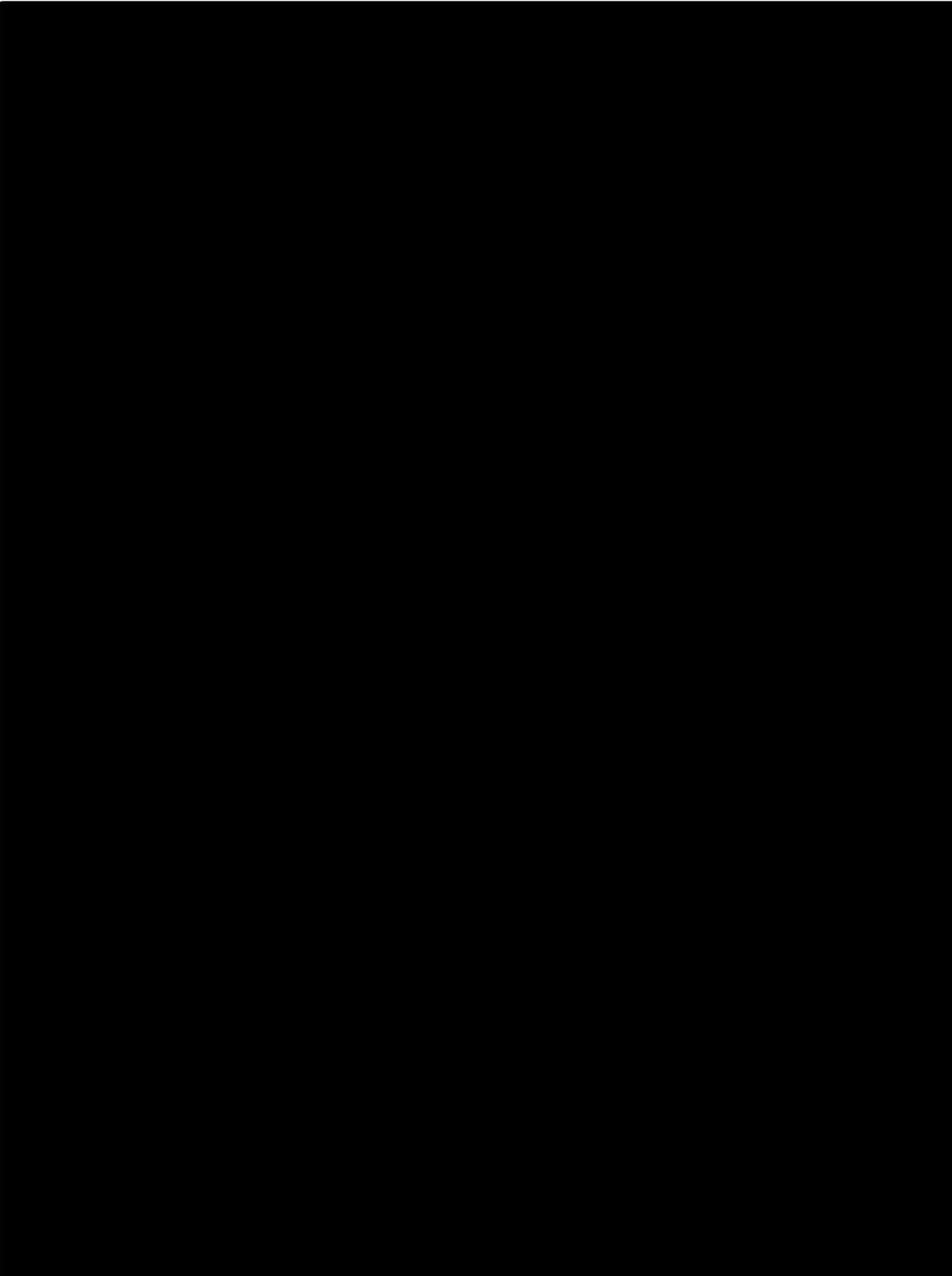


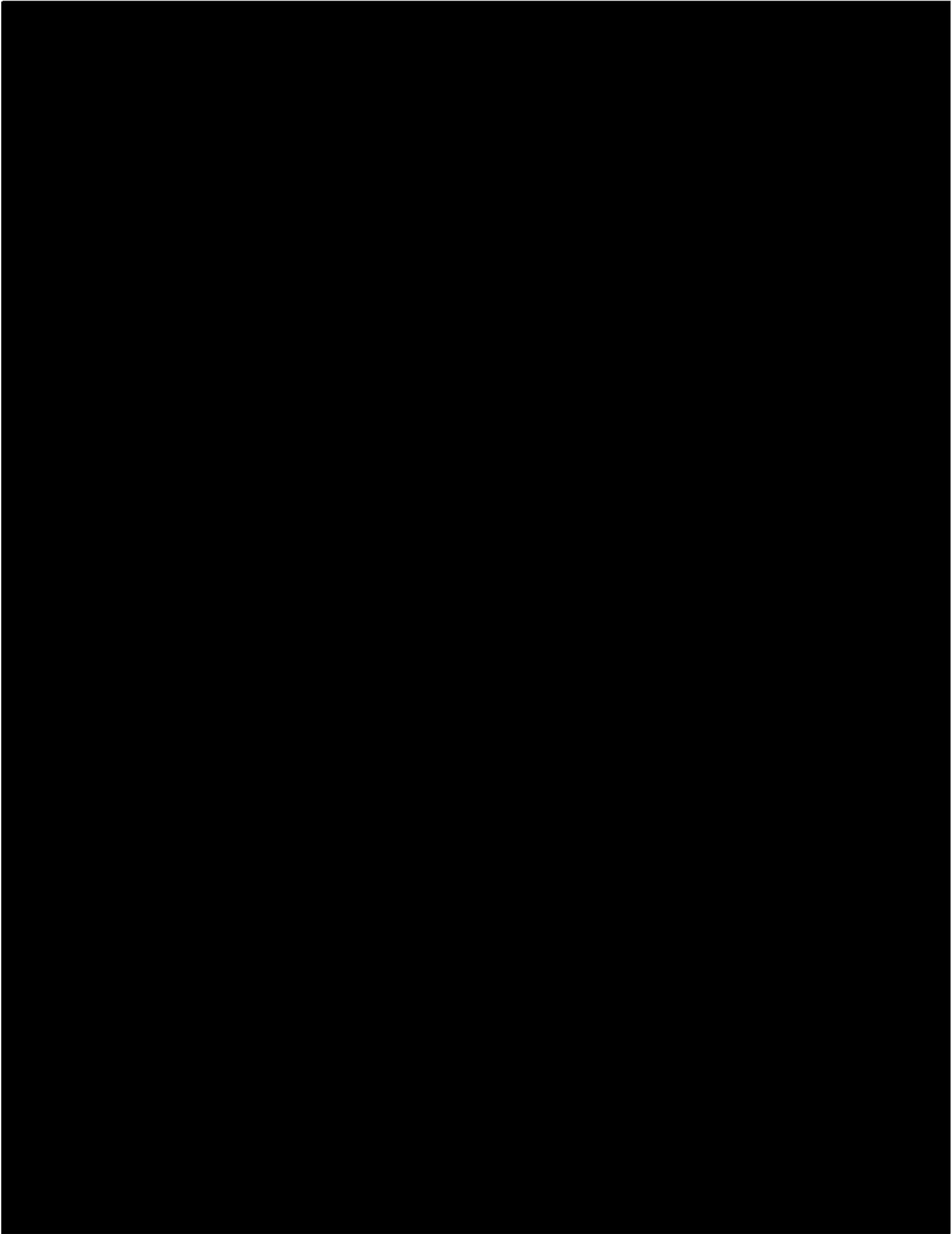




2015 Test Rate Case

**Peoples Gas Company**  
Supply Forecast in MDH





c) (1) The replenishment rate is not expected to change for different levels of inventory.

c) (2) The basis for the replenishment rate is the design criteria for the LNG facility as specified in our operating manual for the facility.

## Derivation of the Replenishment Rate of LNG Expressed in Gallons per Hour:

### Data:

From the LNG Plant Operating Procedures:

Section 2.2:           Liquefaction design rate is 10.5 MMSCF/Hr.  
                  Vaporization design rate is 300 MMSCF/Day.

From the LNG Plant builder's Operation Manual:

Page 13-8:           Conversion factor for SCF per gallon of LNG: **81.9398 SCF/gallon**

### Calculations:

Convert liquefaction design rate to gallons per hour:

$$10.5 \frac{MSCF}{Day} \times \frac{1,000,000 SCF}{1MMSCF} \times \frac{1Day}{24Hr} \times \frac{1Gal}{81.9398SCF} = \mathbf{5339Gal/Hr}$$

Convert vaporization design rate to gallons per hour:

$$300 \frac{MMSCF}{Day} \times \frac{1,000,000 SCF}{1MMSCF} \times \frac{1Day}{24Hr} \times \frac{1Gal}{81.9398SCF} = \mathbf{152,551Gal/Hr}$$

**THE PEOPLES GAS LIGHT & COKE COMPANY  
MAHOMET LNG PLANT**

**OPERATING PROCEDURES**

PEOPLES GAS  
MANLOVE LNG PLANT  
OPERATING PROCEDURES  
SUBJ: PERFORMANCE AND DESCRIPTIONS

PAGE: 3  
REVISE: 06-15-2010  
REVIEWED: 09-10-2012  
FILE: PGLO2

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The plant is designed to receive 600 to 700 PSIG natural gas at a flow rate of 95.3 MMSCFD.

→ About 10.5 MMSCFD is liquefied and stored at 0.5 PSIG and -257 F in two storage tanks. Each tank has the equivalent capacity of 1 BCF. The tailgas, 84.8 MMSCFD, the difference between the inlet flow and the amount stored, is returned to the pipeline at 147 PSIG and 114 F.

→ The plant is also designed to vaporize and deliver a maximum of 300 MMSCFD at pressures up to 850 PSIG and a temperature of 60 F.

Using this particular liquefaction system, water and most of the carbon dioxide must be removed from the natural gas before it is to be liquefied. Otherwise as they condense out of the progressively colder gas, freezing and eventual plugging of the heat exchangers would result. The pretreatment system, therefore, prepares inlet natural gas for liquefaction. This involves removing all solid particles greater than 10 microns in diameter, drying of the entire plant feed, and removing most of the CO<sub>2</sub> from the gas liquefaction stream (about 24.1 MMSCFD).

The refrigeration source is an expander-compressor cycle which utilizes the high pressure natural gas at the plant inlet and the low pressure gas at the plant outlet.

The sendout system removes LNG from one or both tanks, pressurizes it in one or all of six aboveground LNG pumps and directs it through any or all three vaporizers where the LNG is vaporized and superheated at the required rate for delivery into the transmission system.

## 2.2.1 GAS PURIFICATION

### A. GENERAL

The inlet gas from the main pipe can vary in pressure, normally between 600 PSIG and 700 PSIG. PCV-1A regulates the plant inlet pressure to a constant 610 PSIG. The gas then flows through separator vessel S-1 where all liquids and solid particles greater than 10 microns in

OPERATION MANUAL

THE PEOPLES GAS, LIGHT AND COKE COMPANY  
MAHOMET, ILLINOIS

CBI CONTRACT 71-2105/6

JULY 1972

TANK OPERATION SUMMARY

13.3 T-1 & T-2 Level Limits

Liquid Level Feet	Liquid Volume Mft <sup>3</sup>	Liquid Volume M Gallons	Eq. Gas Capacity MMSCF	Remarks
1	12.61	94.36	7.73	LAS-T-1 & LAS-T-2 opens on falling liquid level
5	75.40	564.01	46.21	
10	153.89	1,151.07	94.32	
15	232.37	1,738.13	142.42	
20	310.85	2,325.20	190.526	
25	389.34	2,912.26	238.63	
30	467.82	3,499.32	286.73	
35	546.31	4,086.39	334.84	
40	624.79	4,673.45	382.94	Normal Operation
45	703.28	5,260.51	431.045	
50	781.76	5,847.58	479.15	
55	860.24	6,434.64	527.25	
60	938.73	7,021.70	575.356	
65	1017.21	7,608.76	623.46	
70	1095.70	8,195.83	671.56	
75	1174.18	8,782.89	719.67	
80	1252.67	9,369.95	767.77	
85	1331.15	9,957.02	815.876	
90	1409.64	10,544.08	863.98	
95	1488.12	11,131.14	912.08	
100	1566.60	11,718.21	960.19	
103'-8	1624.16	12,148.72	995.46	LAS-T-1 & LAS-T-2 opens on rising liquid level
104'-2	1632.01	12,207.43	1000.27	High liquid level-liquid overflow thru tank over fill indicator

Conversion Factor:

$$(X) \text{ gallons } \left( \frac{1 \text{ ft}}{7.48 \text{ gal}} \right) (27.18 \text{ lb}) \left( \frac{1 \text{ mole}}{16.8 \text{ lb}} \right) (379 \text{ SCF}) = 81.9398 (X) \text{ SCF}$$