Thursday, July 03, 2014
Mr. Jonathan Wolfgram
Chief Engineer
Minnesota Office of Pipeline Safety
444 Cedar St. Suite 147
St. Paul, MN 55101

RE: CenterPoint Energy Minnesota Gas Integrity Request for §190.341 Special Permit

Dear Mr. Wolfgram,

CenterPoint Energy Minnesota Gas (Operator ID 12350) requests a §190.341 special permit to forego scheduled pipeline reassessments required by §192.939 for the coupled low stress intrastate pipeline referred to as the Metro Belt Line in Hennepin County, Minnesota. In lieu of reassessment, CenterPoint Energy is proposing an accelerated replacement plan for all covered transmission line segments. The request for a special permit refers only to the High Consequence Area (HCA) sections along this pipeline.

CenterPoint Energy believes that a waiver of the §192.939 integrity assessment requirements will allow an accelerated replacement program for HCA mileage to be completed by 2020. This will significantly reduce risk and improve safety for our customers and the general public. All replacements are being designed to be distribution class pipelines and will be managed under §192.1003 (DIMP). In addition, Minnesota's abbreviated construction season (April 15 to October 15) makes it infeasible to complete reassessments of the HCA's and accelerate replacement of the Metro Belt Line.

Without the special permit, completing currently planned transmission line replacement projects and mandatory assessments simultaneously - while maintaining adequate gas supply to customers during short construction seasons - will extend the completion of replacement projects an additional 10 years to 2030.

Attached is information and documentation supporting our request for the special permit.

Sincerely,

CenterPoint Energy Minnesota Gas

Talmadge Centers
Division Vice President
System Integrity and Operations Support

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Background

CenterPoint Energy (CNP) Minnesota Gas is Minnesota's largest natural gas distribution company, serving more than 820,000 customers in 260 communities. The largest concentration of customers is in Minneapolis and its surrounding suburbs. The company operates and maintains approximately 13,300 miles of distribution main and 194 miles of transmission main. The company also has storage capacity of 12 million gallons of propane and 12 million gallons of liquid natural gas in its peaking facilities and another seven BCF of natural gas in an underground storage field.

Affected Pipeline

The affected pipeline known as the Metro Belt Line consists of pipe segments that are mainly coupled named MBLN, MBLNW, MBLSW, LYNDALE and MBLC (see attached - Metro Belt Line Segments.pdf). CNP is currently replacing 61 miles of the 74 mile Metro Belt Line. The 61 miles include HCA segments totaling 21.4 miles that are the focus of this special permit request. The locations of the HCA's are shown in the attached maps that also illustrates that the pipeline is primarily under paved roadways.

Summarized tables of the HCA segment pipe attributes are included in this document. Appendix A, a detailed table shows each segment of HCA pipe by beginning and ending station location with the reassessment year. The table also displays the year that it is scheduled to be replaced under the accelerated replacement plan. The approval of the special permit would have a total of 10.8 miles of pipe that would not be replaced prior to the reassessment under the current replacement plan. Included in the 10.8 miles are 8.4 miles due for reassessment in 2014.

Summarized tables of the HCA segment pipe attributes are included in this document. A detailed table shows each segment of HCA pipe by beginning and ending station location.

The Metro Belt Line contains both segments of transmission line, classified by (SMYS), and distribution segments. The replacement plan, which began in 2012, will increase public safety by allowing CNP to operate the pipeline at distribution pressures and manage it through our Distribution Integrity Management Plan (DIMP). The expected completion of the originally proposed replacement plan is 2030 (Appendix G). Also included in the appendices is a map and the special permit approved (Appendix H) showing the proposed accelerated replacement schedule of the entire (transmission/distribution – HCA/non-HCA) Metro Belt Line through 2025.

Leak History

The Metro Belt Line has had 21 leaks in the past 10 years, 12 of which were at Dresser couplings. Attached is a spreadsheet with leak information (LeakData.pdf).

Cathodic Protection

The Metro Belt Line system consists of approximately 74 miles of pipeline which is segmented into thirty-three cathodic protection sections. The designated cathodic protection sections are protected with either galvanic sacrificial anodes or impressed current ground bed systems (Appendix K). Over the past several years we have primarily used the impressed current method to protect the pipeline sections. Since 2010 we have installed 16

additional impressed current deep well ground beds to replace old sacrificial anode systems. Additional ground beds are being designed and scheduled to be installed in 2014. The impressed current ground bed provides greater control over the long run in maintaining the cathodic protection system and allows us to meet criteria for cathodic protection. Ongoing maintenance plans will monitor the effectiveness of the cathodic protection plan and any supplemental cathodic protection installations that are required will be installed in a timely manner to ensure full protection.

Gas Quality

Attached is a spreadsheet containing daily chromatograph data for the last year (GQ Source Daily Values Centerpoint.pdf). The first tab is data from the Portland TBS and the second tab is data from Northgate TBS. This covers 2 major feeds to the beltline (one on the north end and one on the south end). Also attached are the Northern Natural Gas Tariff sheet which refers to gas quality and water content (Gas Quality.pdf) and dew point testing results on CNP's distribution system feed points (Appendix L) which shows the system is getting dry gas.

Unique Circumstances

Completing this Metro Belt Line replacement program, while simultaneously complying with §192.939 integrity assessment requirements, involves considerable coordinating and planning with city, county and state officials as well as the general public. CNP's pressure and flow system analysis shows that it will be difficult to safely and reliably maintain adequate supply during the year if reassessment activities and replacement projects are performed concurrently. If reassessments are required, the replacement timeline will extend to 2030. Minnesota's winter conditions create an abbreviated construction season that spans - April 15 to October 15 - making it infeasible to both complete reassessments of the HCA's and accelerated replacement of the Metro Belt Line (Appendix C).

Pipeline Statistics

The request for a special permit refers only to the HCA sections along the Metro Belt Line pipeline that totals 21.4 miles. The Metro Belt Line operates lower than 30% SMYS with operating pressure of 170 psig and 215 psig. The following table details the pipe specifications, age and mileage within the scope of the special permit request. The pipe included in the special permit contains the following long seam types: Seamless (SMLS), Electric Flash Weld (EFW), Electric Resistance Weld (ERW) and Double Submerged Arc Weld (DSAW). CNP currently does not have supporting paperwork to determine the manufacturer of the pipeline.

Diameter	Wall Thickness	Pipe Grade	Operating Pressure	Materials	Year of Installation	Coating Type	Percent SMYS	Total Miles
20	0.25	Grade B	215	Steel	1950	Coal Tar Enamel	24.6%	0.0199
20	0.25	Grade B	215	Steel	1960	Coal Tar Enamel	24.6%	0.0019
20	0.25	Grade B	215	Steel	1970	Coal Tar Enamel	24.6%	0.1411
24	0.25	Grade B	175	Steel	1940	Coal Tar Enamel	23.3%	0.0009
24	0.25	Grade B	175	Steel	1950	Coal Tar Enamel	23.3%	14.0983
24	0.25	Grade B	215	Steel	1950	Coal Tar Enamel	29.5%	4.9805
24	0.25	Grade B	175	Steel	1950	Cold Tape	23.3%	0.0019
24	0.25	API 5L, Grade X42	215	Steel	1950	FBE	24.6%	0.0004
24	0.25	Grade B	175	Steel	1960	Coal Tar Enamel	23.3%	0.5769
24	0.25	Grade B	215	Steel	1960	Coal Tar Enamel	29.5%	0.4322
24	0.25	API 5L, Grade X42	215	Steel	1970	FBE	24.6%	0.0002
24	0.25	Grade B	175	Steel	1970	Coal Tar Enamel	23.3%	0.1227
24	0.25	Grade B	215	Steel	1970	Coal Tar Enamel	29.5%	0.3373
24	0.25	API 5L, Grade X42	215	Steel	1980	FBE	24.6%	0.1309
24	0.25	Grade B	175	Steel	1980	Coal Tar Enamel	23.3%	0.0790
24	0.25	Grade B	215	Steel	1980	Coal Tar Enamel	29.5%	0.0002
24	0.25	Grade B	215	Steel	1990	FBE	29.5%	0.0008
24	0.25	API 5L, Grade X42	215	Steel	2000	FBE	24.6%	0.4280

Detailed beginning and ending stations for each current HCA segment are contained in Appendix A.

Previous Assessments

2004 MBLSW (North Section) ECDA Assessment Results

The area investigated contained one high consequence area (HCA) totaling 0.8 miles along a continuous length of pipeline right-of-way (ROW). There was a total of 4 direct examination digs completed on this pipeline.

Preliminary results of this step showed a coated pipeline with a number of minor coating holidays and a cathodic protection that is typically meeting the -0.850 V criteria. In the direct examinations, it was found that the indications did in fact show coating loss with no corrosion over 20% metal loss. Most of the coating damage could be attributed to poor surface preparation and application of field applied coatings, installation damage of the original mainline coating, and possible excavation damage.

Based on the findings from the direct examinations, operating pressure, and number of indications examined the remaining half-life calculation is 7.47 years. Remaining life calculation was determined by ASME B31.8s Table B1 Soil Resistivity with 12 mpy corrosion growth rate.

CNP should conduct a full reassessment on the MBLSW Line at the seven year interval in 2011.

2005 MBLNW ECDA Assessment Results

The area investigated contained High Consequence Areas (HCAs) totaling 2.5 miles along a continuous length of pipeline. Preliminary results of this step showed a coated pipeline with few significant coating holidays and a cathodic protection system with areas of inadequate current output throughout this survey. There was a total of 13 direct examination digs completed on this pipeline. 9 digs were scheduled, 2 digs were immediate, and 1 dig was monitored. In the direct examinations, the technician noted that some of the original pipe examined had active corrosion with pitting present in weld seams and dresser couplings. A total of 9 corrosion defects were found on scheduled dig sites that had greater than 20% metal loss. No corrosion defects over 20% metal loss was found on immediate dig sites.

Dig Category	OD (in)	WT (in)	Grade (psi)	MAOP (psi)	Length (in)	Width (in)	Depth (in)	ASME B31G (PSI)	Factor of Safety	Repair
Schedule	24	0.250	35000	175	2.0	0.5	0.080	762.3	4.36	TYPE B SLEEVE
Schedule	24	0.250	35000	175	19.0	78.0	0.110	449.2	2.57	TYPE B SLEEVE
Schedule	24	0.250	35000	175	0.5	0.8	0.050	800.1	4.57	RECOAT
Schedule	24	0.250	35000	175	0.5	0.5	0.060	799.1	4.57	RECOAT

Schedule	24	0.250	35000	175	0.5	0.5	0.050	800.1	4.57	RECOAT
Schedule	24	0.250	35000	175	0.5	0.5	0.070	799.1	4.57	RECOAT
Schedule	24	0.250	35000	175	0.5	0.5	0.070	799.1	4.57	RECOAT
Schedule	24	0.250	35000	175	0.3	0.3	0.050	801.6	4.58	RECOAT
Schedule	24	0.250	35000	175	0.5	0.5	0.050	800.1	4.57	RECOAT

CNP should plan on conducting a full reassessment on MBLNW in 5.44 year interval (2010) based on the remaining life calculations. Remaining life calculation was determined by ASME B31.8s Table B1 Soil Resistivity with 12 mpy corrosion growth rate and the predicted failure pressure calculated using RSTRENG.

2005 MBLSE (South Section) ECDA Assessment Results

The area investigated contained three regions and several high consequence areas (HCA) totaling approximately 4.28 miles over a 10.4 mile length of pipeline. There was a total of 20 direct examination digs completed on this pipeline.

A total of 2 corrosion defects were found on Schedule digs to have greater than 20% metal loss. On immediate dig sites, 6 corrosion defects were found to have greater than 20% metal loss.

Dig Category	OD (in)	WT (in)	Grade (psi)	MAOP (psi)	Length (in)	Width (in)	Depth (in)	ASME B31G Fail (PSI)	Factor of Safety	Repair
Schedule	20	0.250	35000	175	0.3	1.0	0.109	960.6	5.49	TYPE B SLEEVE
Schedule	20	0.250	35000	175	0.3	0.3	0.050	961.7	5.50	RECOAT
Immediate	20	0.250	35000	175	0.1	0.1	0.051	962.3	5.5	RECOAT
Immediate	20	0.250	35000	175	1.8	0.8	0.062	929.2	5.31	RECOAT
Immediate	20	0.250	35000	175	0.9	0.9	0.101	943.0	5.39	RECOAT
Immediate	20	0.250	35000	175	0.8	0.3	0.050	956.3	5.46	RECOAT
Immediate	20	0.250	35000	175	0.5	0.5	0.059	959.0	5.48	RECOAT
Immediate	20	0.250	35000	175	2.5	2.0	0.060	911.6	5.21	RECOAT

The results of this application of External Corrosion Direct Assessment show a coated mainline pipeline with poorly applied field joint coatings. Based on the findings from the direct examinations, operating pressure, and number of indications examined the remaining half-life calculation is 7.67 years. Remaining life calculation was determined by ASME B31.8s Table B1 Soil Resistivity with 12 mpy corrosion growth rate.

CNP will conduct a full reassessment on the MBLSE Line at the 7.67 year (2012) interval.

2005 MBLC ECDA Assessment Results

The area investigated contained three regions and several high consequence areas (HCA) totaling approximately 3.7 miles of pipeline. There was a total of 5 direct examination digs completed on this pipeline. No corrosion defects were found to have greater than 20% ML.

The results of this application of External Corrosion direct Assessment show a well coated mainline pipeline with poorly applied field joint coatings. Minor measurable wall loss was detected and used to calculate the remaining half-life of 15.0 years. Remaining life calculation was determined by ASME B31.8s Table B1 Soil Resistivity with 3 mpy corrosion growth rate.

CNP performed a low stress reassessment on the MBLC line at the seven year interval (2012) and plans a full reassessment at the 14 year interval (2019) based on the remaining life calculations.

2006 MBLSE (North Section) ECDA Assessment Results

The area investigated contained several high consequence areas (HCA) totaling approximately 6.0 miles of pipeline.

Preliminary results of the indirect assessment showed a pipeline with significant coating holidays and a cathodic protection system with inadequate current output throughout most of this survey. A depolarized survey was used in addition to the Close Interval Survey (CIS) in areas of concern as an alternative method for evaluating, assessing, and reclassifying indirect inspection data.

There was a total of 38 direct examination digs completed on this pipeline. The direct examinations showed significant corrosion pitting. A total of 10 corrosion defects were found to have greater than 20% metal loss on Schedule dig sites. On immediate dig sites, 15 corrosion defects were found to have greater than 20% metal loss.

Dig Category	OD (in)	WT (in)	Grade (psi)	MAOP (psi)	Length (in)	Width (in)	Depth (in)	ASME B31G FAIL (PSI)	Factor of Safety	Repair
Schedule	20	0.250	35000	175	0.3	0.3	0.060	961.6	5.50	RECOAT

Schedule	20	0.250	35000	175	0.3	0.3	0.050	961.8	5.50	RECOAT
Schedule	20	0.250	35000	175	0.4	0.4	0.050	960.8	5.49	RECOAT
Schedule	20	0.250	35000	175	0.3	0.3	0.050	961.8	5.50	RECOAT
Schedule	20	0.250	35000	175	0.3	0.3	0.058	961.6	5.50	RECOAT
Schedule	20	0.250	35000	175	3.0	2.0	0.135	800.5	4.57	RECOAT
Schedule	20	0.250	35000	175	1.0	0.8	0.114	933.3	5.33	RECOAT
Schedule	20	0.250	35000	175	0.5	0.5	0.053	959.4	5.48	RECOAT
Schedule	20	0.250	35000	175	1.0	1.0	0.062	949.1	5.42	RECOAT
Schedule	20	0.250	35000	175	0.5	0.5	0.071	958.2	5.48	RECOAT
Immediate	24	0.250	35000	175	1.0	2.5	0.100	784.8	4.48	RECOAT
Immediate	24	0.250	35000	175	12.0	14.0	0.060	609.6	3.48	TYPE B SLEEVE
Immediate	20	0.250	35000	175	1.0	2.0	0.052	951.5	5.44	RECOAT
Immediate	24	0.250	35000	175	7.0	17.0	0.140	581.8	3.32	TYPE B SLEEVE
Immediate	24	0.250	35000	175	2.5	8.0	0.060	764.0	4.37	TYPE B SLEEVE
Immediate	24	0.250	35000	175	3.0	6.0	0.116	700.0	4.00	TYPE B SLEEVE
Immediate	24	0.250	35000	175	0.8	0.8	0.190	773.9	4.42	TYPE B SLEEVE
Immediate	24	0.250	35000	175	6.0	6.0	0.075	699.8	4.00	TYPE B SLEEVE
Immediate	24	0.250	35000	175	1.0	6.0	0.091	786.8	4.50	TYPE B SLEEVE
Immediate	24	0.250	35000	175	0.3	0.3	0.062	801.4	4.58	RECOAT
Immediate	24	0.250	35000	175	0.3	0.3	0.061	801.4	4.58	RECOAT
Immediate	24	0.250	35000	175	0.5	0.5	0.060	799.6	4.57	RECOAT
Immediate	24	0.250	35000	175	0.5	0.5	0.064	799.4	4.57	RECOAT
Immediate	24	0.250	35000	175	0.5	0.8	0.066	799.3	4.57	RECOAT
Immediate	24	0.250	35000	175	0.8	0.8	0.050	797.7	4.56	RECOAT

The "scheduled" indications were used in calculating remaining half-life of 6.33 years. Remaining life calculation was determined by ASME B31.8s Table B1 Soil Resistivity with 12 mpy corrosion growth rate.

CNP will conduct a full reassessment at the 6.33 year interval (2012) based on Section 7.4.1 of ASME B31.8S.

2006 LYNDALE ECDA Assessment Results

Data was collected for the entire length of pipeline with the HCA's totaling approximately 7.0 miles of pipeline. Preliminary results of this showed a coated pipeline with some significant coating holidays. There was a total of 14 direct examination digs completed on this pipeline. The direct examinations showed some general corrosion with some pitting. No corrosion defects were found to have greater than 20% metal loss.

The "scheduled" indications were used in calculating remaining half-life of 14.14 years. Remaining life calculation was determined by ASME B31.8s Table B1 Soil Resistivity with 6 mpy corrosion growth rate.

CNP performed a low stress reassessment at the seven year interval (2013) and plans a full reassessment at the 14 year interval (2020) based on the remaining life calculation.

2006 MBLN ECDA Assessment Results

Data was collected for the entire length of pipeline with the HCA's totaling approximately 2.9 miles of pipeline. Preliminary results of this step showed a coated pipeline with few significant coating holidays and a cathodic protection system with areas of inadequate current output throughout this survey. There was a total of 20 direct examination digs completed on this pipeline. In the direct examinations, the technician noted that some of the original pipe had active corrosion with pitting present in girth weld seams and couplings. A total of 2 corrosion defects were found on immediate sites with greater than 20% ML. No corrosion defects over 20% ML were found on scheduled digs.

Dig Category	OD (in)	WT (in)	Grade (psi)	MAOP (psi)	Length (in)	Width (in)	Depth (in)	ASME B31G FAIL (PSI)	Factor of Safety	Repair
Immediate	24	0.250	35000	175	0.5	0.3	0.057	799.6	4.57	RECOAT
Immediate	24	0.250	35000	175	0.5	0.5	0.055	799.9	4.57	RECOAT

Remaining life calculation by electrical resistance yields a remaining half-life of 14.34 years. Electrical resistance yielded a CGR of 6.316 mpy.

CNP should perform a low stress reassessment on MBLN at the 7 year interval (2011) and a full reassessment at the 10 year interval (2014) based on the revised remaining life and percent of specified minimum yield strength calculations.

2007 MBLNE ECDA Assessment Results

The area investigated contained several high consequence areas (HCA) totaling approximately 3.9 miles of pipeline. The Close Interval Survey (CIS) identified several locations where instant off Pipe-To-Soil (PSP) potentials were below the -0.85 volt Cathodic Protection (CP) criteria. Preliminary results showed a pipeline with significant coating holidays and a CP system with inadequate current output throughout most of this survey.

There was a total of 12 direct examination digs completed on this pipeline. A total of 5 corrosion defects were found to have greater than 20% metal loss. One defect was found on scheduled dig site and 4 defects were found on immediate dig sites.

Dig Category	OD (in)	WT (in)	Grade (psi)	MAOP (psi)	Length (in)	Width (in)	Depth (in)	ASME B31G (PSI)	Factor of Safety	Repair
Schedule	20	0.250	35000	175	0.3	0.3	0.057	961.6	5.50	RECOAT
Immediate	20	0.250	35000	175	1.5	6.0	0.078	927.8	5.30	RECOAT
Immediate	20	0.250	35000	175	0.5	0.5	0.052	959.5	5.48	RECOAT
Immediate	20	0.250	35000	175	0.1	0.1	0.056	962.3	5.50	RECOAT
Immediate	20	0.250	35000	175	0.8	0.8	0.060	954.8	5.46	RECOAT

The “scheduled” indications were used in recalculating remaining life and reassessment intervals resulting in a half-life of 5.32 years. Remaining life calculation used a corrosion growth rate of 6.5 mpy.

CNP should conduct a full reassessment interval at the 5.32 year interval (2012) based on remaining life calculation.

2007 MBLSW ECDA Assessment Results

Data was collected for the entire length of pipeline with the High Consequence Areas (HCA)’s and all 3.99 miles of HCA was assessed.

The Close Interval Survey (CIS) identified one location where instant off Pipe-To-Soil (PSP) potentials were below the -0.85 volt Cathodic Protection (CP) level. Preliminary results of this step showed a pipeline with probable coating holidays and a cathodic protection that is typically meeting the -0.850 V criteria. There was a total of 16 direct examination digs completed on this pipeline. A total of 13 corrosion defects were found to have greater than 20% metal loss on schedule direct examination digs and zero on immediate digs.

Dig Category	OD (in)	WT (in)	Grade (psi)	MAOP (psi)	Length (in)	Width (in)	Depth (in)	ASME B31G (PSI)	Factor of Safety	Repair
Schedule	24	0.250	35000	175	0.3	0.3	0.053	801.54	4.58	TYPE B SLEEVE
Schedule	24	0.250	35000	175	0.3	0.5	0.053	801.54	4.58	TYPE B SLEEVE
Schedule	24	0.250	35000	175	0.5	0.5	0.089	798.04	4.56	TYPE B SLEEVE
Schedule	24	0.250	35000	175	19.5	13.0	0.073	567.88	3.25	RECOAT
Schedule	24	0.250	35000	175	1.0	2.0	0.065	792.01	4.53	TYPE B SLEEVE
Schedule	24	0.250	35000	175	0.3	0.3	0.051	801.56	4.58	TYPE B SLEEVE
Schedule	24	0.250	35000	175	0.5	0.5	0.076	798.78	4.56	TYPE B SLEEVE
Schedule	24	0.250	35000	175	2.0	0.5	0.060	773.72	4.42	TYPE B SLEEVE
Schedule	24	0.250	35000	175	0.8	0.8	0.059	796.80	4.55	RECOAT
Schedule	24	0.250	35000	175	0.8	0.8	0.051	797.62	4.56	RECOAT
Schedule	24	0.250	35000	175	0.5	0.8	0.071	799.05	4.57	RECOAT
Schedule	24	0.250	35000	175	0.8	0.8	0.050	797.72	4.56	RECOAT
Schedule	24	0.250	35000	175	1.3	0.5	0.058	789.05	4.51	RECOAT
Schedule	24	0.250	35000	175	1.0	2.0	0.062	792.6	4.53	TYPE B SLEEVE
Schedule	24	0.250	35000	175	2.0	1.0	0.058	774.8	4.43	TYPE B SLEEVE
Schedule	24	0.250	35000	175	3.0	3.0	0.099	718.2	4.10	TYPE B SLEEVE
Schedule	24	0.250	35000	175	1.0	3.0	0.067	791.6	4.52	TYPE B SLEEVE

Schedule	24	0.250	35000	175	2.0	3.0	0.071	767.9	4.39	TYPE B SLEEVE
Schedule	24	0.250	35000	175	0.3	0.3	0.070	801.3	4.58	TYPE B SLEEVE

The "scheduled" indications were used in calculating remaining half-life of 6.60 years. Remaining life calculation was determined by ASME B31.8s Table B1 Soil Resistivity with 12 mpy corrosion growth rate.

CNP should conduct a full reassessment on the MBLSW Line at the 6.60 year interval (June 2014).

2008 Old Shakopee, Nicollet & Portland ECDA Assessment Results

All HCA's were assessed on each pipeline. Old Shakopee had 0.9 miles of HCA, Nicollet had 1.0 miles of HCA, and Portland had 0.6 miles of HCA.

There was a total of 31 direct examination digs completed on these pipelines. A total of 17 corrosion defects were found to have greater than 20% metal loss on all direct examination digs. Three defects were found on Schedule dig sites, eight defects were found on immediate dig sites and six defects were found on 'Investigative' (non-transmission pipe) that had greater than 20% metal loss.

Dig Category	OD (in)	WT (in)	Grade (psi)	MAOP (psi)	Length (in)	Width (in)	Depth (in)	ASME B31G (PSI)	Factor of Safety	Repair
Schedule	20	0.250	35000	175	0.8	1.0	0.050	956.3	5.46	TYPE B SLEEVE
Schedule	20	0.250	35000	175	5.8	4.0	0.086	816.4	4.67	TYPE B SLEEVE
Schedule	16	0.250	42000	175	3.0	5.0	0.071	1319.7	7.54	RECOAT
Immediate	20	0.250	35000	175	12.0	4.5	0.135	442.8	2.53	TYPE B SLEEVE
Immediate	20	0.250	35000	175	1.0	1.0	0.090	941.2	5.38	TYPE B SLEEVE
Immediate	20	0.250	35000	175	1.0	1.0	0.102	937.5	5.36	TYPE B SLEEVE
Immediate	20	0.250	35000	175	2.0	-	0.108	884.1	5.05	TYPE B SLEEVE

Immediate	18	0.250	35000	175	5.0	2.5	0.069	947.4	5.41	RECOAT
Immediate	24	0.250	35000	175	3.0	2.0	0.115	701.1	4.01	RECOAT
Immediate	24	0.250	35000	175	3.0	2.8	0.087	730.2	4.17	RECOAT
Immediate	24	0.250	35000	175	0.3	0.3	0.068	801.35	4.58	TYPE B SLEEVE
Investigative	16	0.250	42000	175	3.0	3.0	0.075	1311.8	7.50	RECOAT
Investigative	16	0.250	42000	175	2.8	2.5	0.085	1302.8	7.44	RECOAT
Investigative	16	0.250	42000	175	2.0	2.0	0.065	1370.6	7.83	RECOAT
Investigative	16	0.250	42000	175	6.0	0.3	0.055	1298.5	7.42	RECOAT
Investigative	16	0.250	42000	175	10.0	0.3	0.055	1126.1	6.44	RECOAT
Investigative	16	0.250	42000	175	3.0	2.0	0.052	1355.9	7.75	RECOAT

Since the bare pipeline operates at a stress level between 16 and 19% SMYS, the maximum reassessment interval for the bare pipeline will be 20 years. It is reasonable to establish the reassessment intervals at 7 years, since a Low Stress Reassessment in year 7 would have to be followed with a Low Stress Reassessment in year 14 and a full ECDA in year 20. The reassessment interval was based on a corrosion growth rate of 2.0 mpy using Linear Polarization Resistance (LPR) growth rate.

For the coated pipeline, the maximum reassessment interval would be 6 years with a complete ECDA. This remaining life calculation was determined by LPR growth rate of 5.4 mpy for coated pipe

In the case of coated pipe, the next complete reassessment will need to take place in 6 years.

2009 Casing P&M Assessment Results

A Direct Assessment was performed on the MBLSE and LYNDALE pipelines. During the pre-assessment, five casing locations were identified where the carrier pipe passes through a second (outer casing) pipe and electrically shorted. Casings that are electrically shorted to the carrier pipe create a situation where the Indirect Assessment provides inadequate data for the ECDA remaining steps. Shorted casings that are discovered through testing or research are put into a program that is to be assessed by: Removal of the casing, replacement of the carrier pipe within the casing, abandoning the carrier pipe within the casing or In-line inspection.

The Direct Assessment on the shorted casings discovered metallic spacers welded to the pipe that allowed the casing and the carrier pipe to have the concentric origin. All the metallic spacers were found welded to the carrier pipe. These welds had undercuts and arc burns near the welded area. The metallic spacers were found broken off, folded over and pressing inward on the carrier pipe casing a dent from the original construction method. Majority of the defects found were related to the metallic spacers. One corrosion defect was found with a depth up to 21% through wall.

OD (in)	WT (in)	Grade (psi)	MAOP (psi)	Length (in)	Width (in)	Depth (in)	ASME B31G (PSI)	Factor of Safety	Repair
20	0.250	35000	215	2.3	14	0.054	628.8	3.59	RECOAT

All the locations that the shorted casing is removed will allow the ECDA method to apply this section of pipe when the next assessment is due for the pipeline.

2010 Casing P&M Assessment Results

Direct Assessments were performed the MBLSE, MBLNW, MBLC and MBLSW pipelines. During the pre-assessment, eight casing locations were identified where the carrier pipe passes through a second (outer casing) pipe and is electrically shorted. Casings that are electrically shorted to the carrier pipe create a situation where the Indirect Assessment provides inadequate data for the ECDA remaining steps. Shorted casings that are discovered through testing or research are put into a program that is to be assessed by: Removal of the casing, replacement of the carrier pipe within the casing, abandoning the carrier pipe within the casing or In-line inspection.

The Direct Assessment on the shorted casings discovered metallic spacers welded to the pipe that allowed the casing and the carrier pipe to have the concentric origin. All the metallic spacers were found welded to the carrier pipe. These welds had undercuts and arc burns near the welded area. The metallic spacers were found broken off, folded over and pressing inward on the carrier pipe casing a dent from the original construction method. Majority of the defects found were related to the metallic spacers. Three corrosion defects were found with a depth over 20% metal loss.

OD (in)	WT (in)	Grade (psi)	MAOP (psi)	Length (in)	Width (in)	Depth (in)	ASME B31G (PSI)	Factor of Safety	Repair
20	0.250	35000	175	0.3	0.3	0.060	961.6	5.49	RECOAT
20	0.250	35000	175	0.4	0.4	0.050	960.9	5.49	RECOAT

20	0.250	35000	175	1.0	5.0	0.065	948.3	5.42	RECOAT

All the locations that the shorted casing is removed will allow the ECDA method to apply this section of pipe when the next assessment is due for the pipeline.

2010 MBLNW ECDA Reassessment Results

Data was collected for the entire length of pipeline with the High Consequence Areas (HCA)'s and all 4.87 miles of HCA was assessed.

A total of 11 direct examinations were performed. There were a total of four defects with over 20% metal loss. Two defects were on a scheduled dig, one was on an immediate dig and one was on a monitored dig.

Dig Category	OD (in)	WT (in)	Grade (psi)	MAOP (psi)	Length (in)	Width (in)	Depth (in)	ASME B31G (PSI)	Factor of Safety	Repair
Schedule	24	0.250	35000	175	1.0	6.0	0.065	792.0	4.53	RECOAT
Schedule	24	0.250	35000	175	2.0	2.0	0.072	767.0	4.38	RECOAT
Immediate	24	0.250	35000	175	2.0	2.0	0.190	669.7	3.83	TYPE B SLEEVE
Monitor	24	0.250	35000	175	0.6	0.5	0.55	799.1	4.57	RECOAT

The "scheduled" indications were used in calculating the remaining half-life of 12.02 years. Remaining life calculation was determined by ASME B31.8s Table B1 Soil Resistivity with 12 mpy corrosion growth rate.

CNP should plan on conducting a low stress reassessment at the 7 year interval (2017) and a full reassessment at the 10 year interval (2020) based on the remaining life calculations.

2011 MBLNE ECDA Reassessment Results

Data was collected for the entire length of pipeline with the High Consequence Areas (HCA)'s and all 4.1 miles of HCA was assessed.

A total of nine (9) Direct Examinations were performed. The Direct Examination reports indicated the factory Coal Tar Enamel and FBE coating was in good to fair condition. The direct examinations showed two locations with corrosion pitting greater than 20% metal loss.

Dig Category	OD (in)	WT (in)	Grade (psi)	MAOP (psi)	Length (in)	Width (in)	Depth (in)	ASME B31G (PSI)	Factor of Safety	Repair
Schedule	20	0.250	35000	175	13.2	8.0	0.056	746.9	4.27	RECOAT
Immediate	20	0.250	35000	175	24.0	14.0	0.061	727.7	4.16	TYPE B SLEEVE

The "scheduled" indications were used in calculating the remaining half-life of 13.97 years. Remaining life calculation was determined by ASME B31.8s Table B1 Soil Resistivity with 6 mpy corrosion growth rate. The conclusion of this ECDA reassessment that CenterPoint Energy should perform a Low Stress Reassessment on MBLNE at the 7 year interval (2018) and a full reassessment at the 13.97 year interval (2025) based on the remaining life and percent of specified minimum yield strength calculations.

2011 MBLSE (North Section) ECDA Reassessment Results

Data was collected for the entire length of pipeline with the High Consequence Areas (HCA)'s and all 4.0 miles of HCA was assessed.

There was a total of 14 direct examination digs completed on this pipeline. Eight corrosion defects were found on schedule dig sites to have greater than 20% metal loss.

Dig Category	OD (in)	WT (in)	Grade (psi)	MAOP (psi)	Length (in)	Width (in)	Depth (in)	ASME B31G (PSI)	Factor of Safety	Repair
Schedule	20	0.250	35000	175	11.5	63.0	0.079	658.4	3.76	TYPE B SLEEVE
Schedule	20	0.250	35000	175	9.0	63.0	0.050	865.0	4.94	TYPE B SLEEVE
Schedule	20	0.250	35000	175	35.0	63.0	0.064	716.1	4.09	TYPE B SLEEVE
Schedule	20	0.250	35000	175	11.0	48.0	0.063	720.0	4.11	GRIND/RECOAT
Schedule	24	0.250	35000	175	1.5	2.0	0.050	787.2	4.50	TYPE B SLEEVE
Schedule	24	0.250	35000	175	4.5	6.0	0.059	736.1	4.21	RECOAT
Schedule	24	0.250	35000	175	3.0	1.5	0.063	752.6	4.30	RECOAT
Schedule	24	0.250	35000	175	1.0	1.0	0.055	793.8	4.54	RECOAT

The "scheduled" indications were used in calculating the remaining half-life of 4.89 years. Remaining life calculation was determined by ASME B31.8s Table B1 Soil Resistivity with 12 mpy corrosion growth rate.

CNP should perform a full reassessment at the 4.86 year interval (2015) based on the revised remaining life and percent of specified minimum yield strength calculations.

2011 MBLN ECDA Reassessment Results

Data was collected for the entire length of transmission pipeline all 5.6 miles of HCA and Non-HCA was assessed.

A total of four (4) Direct Examinations were performed. The Direct Examination reports indicated the factory Coal Tar Enamel coating was in good to fair condition. The direct examinations showed pitting greater than 20% metal loss at one location driving additional dig selections to meet NACE criteria.

Dig Category	OD (in)	WT (in)	Grade (psi)	MAOP (psi)	Length (in)	Width (in)	Depth (in)	ASME B31G (PSI)	Factor of Safety	Repair
Monitor	24	0.250	35000	175	22.0	75.0	0.054	628.8	3.59	Recoat

The worst indication at a scheduled or monitor dig site was used in calculating the remaining half-life of 11.0 years. Remaining life calculation was determined by ASME B31.8s Table B1 Soil Resistivity with 6 mpy corrosion growth rate.

It is the conclusion of this ECDA reassessment that CNP should perform a Low Stress Reassessment at the 7 year interval (2018) and a full reassessment at the 11.0 year interval (2022) based on the remaining life and percent of specified minimum yield strength calculations.

2011 Casing P&M Assessment Results

External Corrosion Direct Assessments were performed the MBLSW pipeline. During the pre-assessment one casing location was identified where the carrier pipe passes through a second (outer casing) pipe and it is electrically shorted. Casings that are electrically shorted to the carrier pipe create a situation where the Indirect Assessment provides inadequate data for the ECDA remaining steps. Shorted casings that are discovered through testing or research are put into a program that is to be assessed by: Removal of the casing, replacement of the carrier pipe within the casing, abandoning the carrier pipe within the casing or In-line inspection.

The MBLSW1 Direct Assessment on the shorted casings discovered metallic spacers welded to the pipe that allowed the casing and the carrier pipe to have the concentric origin. All the metallic spacers were found welded to the carrier pipe. These welds had undercuts and arc burns near the welded area. The metallic spacers were found broken off, folded over and pressing inward on the carrier pipe casing a dent from the

original construction method. Majority of the defects found were related to the metallic spacers and corrosion was found with a depth up to 14% through wall.

All the locations that the shorted casing is removed will allow the ECDA method to apply this section of pipe when the next assessment is due for the pipeline.

2012 FLC P&M Assessment Results

Under the requirements of CFR 49 Subpart O, 192.917 an operator must identify and evaluate all potential threats to each pipeline segment. During past ECDA direct examinations third party damage had been discovered at foreign line crossings. In compliance with 192.917, CNP conducted an investigation of third party damage to pipeline segments due to foreign line crossings.

This Preventative and Mitigative procedure included a pre-assessment step to determine the most likely sites for examination followed by a direct examination step to investigate the selected sites for third party damage.

In all, twenty sites where selected for examination. The results were that seven of the twenty sites examined found third party damage directly linked to foreign line crossings.

2011 MBLNE Pressure Test Results

The test included 0.27 miles of the existing 24 NPS pipeline at a minimum 8 hour test pressure of 277 psig determined as passing test criteria with no failures. The ASME B31.8S-2004 Schedule Response in Figure 4 equates to 4.39 years using the minimum test pressure as the failure pressure [worst case] for this pipeline that does not exceeding 30% SMYS.

CNP should perform a Full Reassessment at the 4.39 year interval (2015).

2012 Anode P&M Assessment Results

Under the requirements of CFR 49 Subpart O, 192.917 an operator must identify and evaluate all potential threats to each pipeline segment. During past ECDA direct examinations anode installation damage was discovered. In compliance with 192.917 requirement, CNP conducted an investigation of past anode installations. Furthermore, it appears older techniques that used augers for installing anodes may have resulted in auger strikes along the pipeline.

This Preventative and Mitigative procedure included a pre-assessment step to determine the most likely sites for examination followed by a direct examination step to investigate the selected sites for mechanical damage related to anode installations.

In all, twenty four sites where selected for examination. Fourteen were on the Lyndale Line and ten on the MBLC. The results were that 9 of the twenty four sites found mechanical damage directly linked to auger strikes. In addition, the other 15 examinations exposed several coating defects at locations where anodes had been attached to the line with a cad weld.

2012 Casing P&M Assessment Results

External Corrosion Direct Assessments were performed the MBLSW, MBLNE and Lyndale pipelines. During the pre-assessment, seven casing locations were identified where the carrier pipe passes through a second (outer casing) pipe and it is electrically shorted. Casings that are electrically shorted to the carrier pipe create a situation where the Indirect Assessment provides inadequate data for the ECDA remaining steps. Shorted casings that are discovered through testing or research are put into a program that is to be assessed by: Removal of the casing, replacement of the carrier pipe within the casing, abandoning the carrier pipe within the casing or In-line inspection.

The Direct Assessment on the shorted casings discovered metallic spacers welded to the pipe that allowed the casing and the carrier pipe to have the concentric origin. All the metallic spacers were found welded to the carrier pipe. These welds had undercuts and arc burns near the welded area. The metallic spacers were found broken off, folded over and pressing inward on the carrier pipe casing a dent from the original construction method. Majority of the defects found were related to the metallic spacers. One corrosion was found with a depth up to 21% through wall.

OD (in)	WT (in)	Grade (psi)	MAOP (psi)	Length (in)	Width (in)	Depth (in)	ASME B31G (PSI)	Factor of Safety	Repair
24	0.250	35000	170	3.0	1.8	0.053	761.3	4.48	RECOAT

All the locations that the shorted casing is removed will allow the ECDA method to apply this section of pipe when the next assessment is due for the pipeline.

2012 MBLC Low Stress Reassessment (LSR) Results

All segments on the transmission pipeline meet requirements of NACE by operating with a 100 mV polarization or -0.850 V instantaneous off CIS measurement.

2013 LYNDALE Low Stress Reassessment (LSR) Results

Majority of the segments on the transmission pipeline meet the requirements of NACE by operating with a 100 mV polarization or -0.850 V instantaneous off CIS measurement. As part of continuing maintenance, corrective actions are to be taken to the areas that do not meet the requirements.

A summary of risk management on the distribution class pipe in the Metro Belt Line is included in Appendix B.

High Level Threat Review

External Corrosion

In 2004, a baseline threat analysis of this coupled system was conducted. Based on available data, CNP determined that external corrosion was the threat that needed to be assessed on the Metro Belt Line.

Internal Corrosion

CNP has no assessment data or evidence of any observations during the history of the Metro Belt Line indicating that there is a threat of internal corrosion in this dry gas system.

Stress Corrosion Cracking (SCC)

The environmental and stress levels conducive to SCC are not known to be present on the Metro Belt Line. There were no observations or evidence of the threat of SCC during the pipeline's history.

Construction and Manufacturing

Management of risk related to construction and manufacturing threats to pipelines can be accomplished by assessment methods and through preventative and mitigative activities as outlined in ASME B31 8s.

Weather and Other Outside force

CNP Minnesota Gas has threat exposure to earthquakes, flooding, blizzard conditions, tornados, ground frost, lightning, subzero temperatures, heavy rain and soil movement.

Mechanical Damage

CNP Minnesota Gas systems are susceptible to mechanical damage from third parties, previously damaged pipe, vandalism, and terrorism. As noted also in interactive threats and incorrect operation, pipeline contact while augering for sacrificial anode installations is being reviewed.

Equipment

CNP Minnesota Gas systems are susceptible to the threat of equipment failure.

Incorrect Operation

CNP Minnesota Gas is susceptible to the threat of incorrect operation. As noted also in interactive threats and mechanical damage, pipeline contact while augering for sacrificial anode installations is being reviewed.

Interactive Threats

CNP Minnesota Gas is susceptible to and monitors for interactive integrity threats. As noted also in mechanical damage and incorrect operation, pipeline contact while augering for sacrificial anode installations is being reviewed.

Limited Technologies to Assess Threats

The current assessment technologies available for threats on a low pressure Dresser coupled pipeline are limited.

ECDA

ECDA assessment has limits as described in NACE RP-0502 and does not assess threats other than external corrosion.

Pressure Testing

Pressure testing as an assessment method for the Metro Belt Line was evaluated by the CNP Minnesota Gas Engineering group and found not to be feasible due to safety, reliability and environmental hazard concerns.

The Metro Belt Line is mainly compression coupled. The majority of couplings do not have weld cover sleeves. Pressure testing over the MAOP increases risk to the compression coupled joints during testing.

In addition, the location of system regulating stations and interconnections require testing of short segments of pipeline. Short section testing extends the time to complete reassessments leading to less time for replacement projects.

In-line Inspections

Generally, in-line inspection tools are a good value for capturing data to evaluate the integrity of a pipeline susceptible to multiple threats. However, the majority of the free swimming in-line inspection tools available are designed for deployment in pipelines operating at relatively high pressures; near 500 psi and at flow rates capable of propelling these tools at speeds of 3 to 5 miles per hour for optimum data capture. The in-line inspection tool options for assessment of pipelines susceptible to multiple threats such as corrosion, construction and manufacturing defects are extremely limited for large diameter, coupled, low pressure and flow pipelines. Low pressure and flow pipelines are typical for transmission systems operated by local distribution companies such as CNP's Metro Belt Line.

In 2013, a vendor introduced one (quantity) 24" robotic inspection tool capable of in-service magnetic flux leakage, geometry, and visual internal inspection of this type of pipeline. It is the only tool commercially available worldwide. Other current in-line inspection options include tether pulled tools that require the pipeline be taken out of service. This requires removal of segments of pipeline to allow launching and receiving of the inspection tools and tethering equipment at frequent intervals. Launching and receiving stations are needed at least every half mile, and more frequently when 45 and 90 degree pipe fittings or diameter restricted main line valves are present. In-line inspection vendors are also currently working to develop magnetic flux leakage tools for low pressure and flow applications. The fleet selection, however, is very limited in diameter and the number of available tools. Additionally, in coupled pipeline systems, such as the Metro Belt Line, accurate inspection coverage of pipelines in the coupled areas is incomplete due to the masking effect that the additional metal contained in the coupling has on inspection technology. Consequently, complete coverage of line pipe and fittings in coupled systems is not currently technically feasible using in-line inspection tools.

Conclusion

Therefore, due to the technical limits of assessment techniques available for the HCA segments of the Metro Belt Line, CNP's analysis indicates the most efficient course of action to address the known threats, and the possibility of interacting integrity threats, is to replace these pipeline segments using modern materials and construction techniques.

Increased Preventive and Mitigative Activities

Appendices D – F illustrate some of the activities CNP has conducted relative to transmission line repair, modification and installation.

Current and Increased Activities

CNP will perform the following maintenance activities on all Metro Belt Line HCA pipe segments to ensure the management of risk during the 7 year blanket waiver period:

- Leak Survey all Metro Belt Line including HCA segments every two weeks not to exceed 18 days.
- Patrol all Metro Belt Line HCA segments every two weeks not to exceed 18 days.
- Read test points 2 times per year not to exceed 7 ½ months.
- Perform valve maintenance on Metro Belt Line HCA segments 2 times per year not to exceed 7 ½ months.
- Repair CP deficiencies or incorporate within replacement plan.
- Utilize High Profile Line Watch Dog Process for excavations near pipelines (Appendix I)
- New casings will be installed with link seal spacers and the entire casing will be pumped full of wax. If old casings are reused with new pipe, link seal spacers will be used with the new pipe and the casings will be pumped full of wax.
- Continue potential mechanical damage inspection excavations in all HCA areas until they are within the 24 month window for replacement.
- Conduct risk ranked inspection of areas with higher probabilities of legacy mechanical damage, including but not limited to:
    - Early generation cased carrier pipe with welded metallic ear spacers;
    - Foreign line crossings;
    - sacrificial anode installation locations;
    - Over 350 excavations and examinations were performed to address potential areas of mechanical damage in HCA.
- Continue ongoing material testing of recovered pipe samples from replacement and public and system improvement projects to verify accuracy of legacy records and monitor for signs of seam or material toughness issues.
- More than 60 metal samples were harvested and tested from the Metro Belt Line Segments. In all removed samples, destructive testing was performed to determine Yield Strength that will validate company records.

- Also testing was performed on the toughness of the pipe body and long seam at different temperatures that CNP operates its pipelines. The Yield Strength and toughness testing follow API 5L's standard that references ASTM A370 for testing. CNP also has Chemical Analysis OES performed on each metal sample to determine the carbon equivalency that also follows API 5L per paragraph 9.2.5. Of all testing performed on CNP's Belt Line, the following is the minimum results of all categories:

Base Metal Yield Strength (psi)	Long Seam Yield Strength (psi)	Base Metal Toughness at 0°F (ft.-lbs.)	Long Seam Toughness at 0°F (ft.-lbs.)	Base Metal Toughness at 30°F (ft.-lbs.)	Long Seam Toughness at 30°F (ft.-lbs.)
35,700	43,800	2	2	2	3

- Pressure Test Requirements: The test pressure for all replacement segments of transmission pipeline will have a pressure test which complies with Part 192.505 and have test parameters that are compliant with Part 192.619. The maximum allowable operating pressure that is being established for all new segments of pipeline is 215 psig. The minimum test pressure for all replacement segments will be 325 psig and will be strength tested for a minimum of eight (8) hours.
- Test Documentation: All test records will be maintained in full compliance with part 192.517 and shall be retained for the useful life of the pipeline.
- Replacement sections of pipe, valves, and other appurtenances will be full opening.
- 100 percent of girth welds will be inspected by NDT.
- Comply with all aspects of CFR 192, excepting the code sections affected by the wavier.
- Perform a Close Interval Survey (CIS) according to NACE SP0207 (SP0207-2007, Performing Close-Interval Potential Surveys and DC Surface Potential Gradient Surveys on Buried or Submerged Metallic Pipelines) on all HCA segments every 24 months. CIS will be discontinued when segments are inside the 24 month window for replacement.
- Beginning 2014, to enhance mitigation and prevention of the geo-hazard threats, CNP is conducting a comparison of Interferometric Synthetic Aperture Radar (InSAR) and evaluating for elevation changes that may indicate settling or sinking. Participate pro-actively in planning for municipal, county and state agency changes to the flow of surface ground water and near surface ground water which may adversely impact pipelines.
- Beginning 2014, in pipeline integrity excavation inspections CNP is performing hardness testing using a procedure and Telerbrineller equipment that is consistent with ASME publication CRTD-Vol. 91, "Applications Guide for Determining the Yield Strength of In-Service Pipe by Hardness Evaluation: (*Applications Guide or Guide*), 2009. Also CNP will begin performing in-situ mass spectrometry chemical analysis in these excavations using Oxford PMI Master Pro. These activities strengthen the verification of company records and monitor for abnormal materials.

Completed Activities

- On May 10, 2011 while conducting anode installation activities near the intersection of Stinson Boulevard and 30th Avenue NE, CNP contractor NPL contacted and damaged a distribution main.

CNP followed up with training to installation crews to ensure they expose the pipeline using vacuum excavation or other methods in a way not to damage the gas line.

- Two incidents on the Belt Line at 60th Street and Nicollet Avenue and 60th Street and Portland Avenue initiated research of the Belt Line and resulted in repairs to the pipeline in locations meeting similar criteria.

  After the 60th and Nicollet incident, CNP began a records search of 20 and 24 inch transmission pipe. Search criteria was defined as original Metro Belt Line and segments of main added to the original Metro Belt Line which were coupled on at least one end with vertical or horizontal offsets. Possible transmission line locations meeting the search criteria were identified and then reviewed against the following criteria (1) repair locations involving pipe segments of less than 50 feet, (2) having vertical offsets and (3) going over large (greater than 8 inch) water or sewer lines. Six locations were determined to meet these criteria.

  After the 60th and Portland incident, it was decided to review the belt line segment research results to see if coupled locations met similar conditions to 60th and Portland. Specifically, modifications that were made to the original installation, whether vertical or horizontal of the piping configuration, were considered in addition to the other evaluation criteria outlined for the initial evaluations. Further evaluation led to nine similar locations being identified. Four additional locations were determined to require weld cover sleeves based on findings that city records were insufficient to determine soil stability.

  After research and review of the identified locations, CNP installed weld cover sleeves or replacement of short sections of pipe.

- Between 2011 and 2012, CenterPoint Pipeline Integrity Department examined 62 valve vaults on the Metro Belt-Line transmission system. Sandblasting and visual inspection was performed on all piping and equipment within the vaults. No defects requiring repair were found. In addition, three vaults were excavated and inspected as a means of verifying the pipe condition within the vault wall. No defects required repair were found.

- In HCA's where there was early generation cased carrier pipe with welded metallic ear spacers, the casing was either removed or the pipe was replaced.

Emergency Response

In the Minneapolis metro area, CNP currently has 288 service personnel available as first responders and 165 construction field personnel available for emergency repairs. Additionally, the Minneapolis, metro DRO (Distribution Regulation and Odorization) group has a callout list for after hours. They are available to be called out 24/7 365 days of the year. The majority of this group also lives in the heart of the metro area so they do not drive long distances. Most of the employees have a take-home truck which also reduces the response time.

The average response time to 33,286 emergency calls in Minnesota in 2013 was 30.9 minutes.

Attached and listed in the appendix, you will find CNP's Emergency Response Procedures as well as their Emergency Response Equipment List (Appendix J).

Metro Belt Line Valves

During an emergency, each valve segment can be shut down by closing two main line valves that are located in valve vaults, roadway cover valve boxes, or above ground. In addition to the main line valves, many segments have two smaller lateral valves that need closing. These smaller lateral valves are usually located in the same area as the main line valve; many are located in the same valve pit. In general, most valve segments can be shut down by closing four valves (two main line valves and two smaller lateral valves).

There are things to consider before shutting down a section of the Belt Line.

- A Gas Flow Interruption Plan (GFIP) should be written before a shut down. The GFIP will instruct the field personnel on which valve to close by referencing the DD number and each valve number.
- Belt Line segments and town border stations that are currently out of service.
- Heating season shut down consequences.
- Peak Shaving capabilities.

Attached are a spreadsheet (Metro Belt Line Valve Sections.pdf) and a map (Metro Belt Line Valve Segments Exhibit.pdf) illustrating details associated with isolating pipelines segments by closing valves.

All Metro Belt Line and lateral emergency valves are operational and maintained. Metro Belt Line valves and a majority of lateral valves are readily accessible in all weather conditions. Some lateral valves are in roadway boxes which may need to be cleared of snow and ice in the winter. Shutting down the larger diameter Metro Belt Line valves alone will significantly reduce the pressure even while a roadway is being cleared.

CenterPoint Energy initiatives to facilitate Emergency Response

Following are initiatives designed to assist CNP to continuously scrutinize and improve their emergency response.

Emergency Response Team: For the past 14 years, CNP was committed to reviewing all work orders that have a document dispatch time greater than ½ hour after a call was received and an onsite time greater than 1 hour. The orders are reviewed by the Emergency Response Team (ERT) consisting of CNP leadership, representatives from Field Operations, Dispatch, HSP, Compliance and Engineering departments. The ERT has made recommendations to Home Service Plus (HSP) as well as Field Operations on improving emergency response time, increased response presence, communications and overall emergency response. The ERT continues to meet but has moved the responsibility of the initial review of work orders with increased response times to the Field Operations leadership for District review. Upon completion of the District review, the analysis by the District is returned to the Emergency Response team for region wide rollout of findings and/or enhancement, as appropriate.

District reviews: District reviews occur after serious incidents or incidents when additional information is needed. The reviews assess all functional areas involved in responding to the situation and identifying potential

opportunities for improvement. For example, CNP recently purchased (2) Hydro-vac trucks and (4) Hydro-vac trailers to assist with soil removal in all seasons.

Emergency Response Equipment Team: The objective of the team is to evaluate equipment requirements for serious incidents and emergency situations by responding personnel. The primary focus is to investigate and make recommendations on equipment necessary to support public safety, ensure employee safety and minimize property damage. Proper equipment is also necessary to control and manage the incident to result in timely repair of company facilities, support investigative efforts and restoration of service to affected customers.

Emergency Material Stock Team: CNP has designated emergency material/parts stock, equipment and tools required for large outage or serious incident response. The inventory of the stock is dedicated only for emergencies and is managed, updated and restocked as necessary by each work area based upon facilities within their geographical area.

SCADA: 15 additional SCADA points were implemented to assist with monitoring and early detection of an incident to enhance emergency response. The SCADA additions to the Gas Control system are an ongoing effort. SCADA points on the Metro Belt Line are shown in the attached map (Metro Belt Line Valve Segments Exhibit.pdf).

Tool Committee: The objective of the team is to review, investigate and make recommendations on purchasing new tools and/ or equipment for field personnel based on performance, new technology and safety. The Tool Committee has made recommendations for new Ergonomic welding equipment, Jack-hammer lift and various other tools to assist with CNP personnel safety, emergency response and efficiency improvements.

Field Resource Management: CNP has multiple strategies in the Gas Operations division to facilitate coverage for addressing emergency response including but not limited to Shift changes. Shifts include: Monday-Friday 7:30am - 4:00pm; Monday–Friday 11:00am-7:00 pm; Tuesday – Friday 1:00 pm – 9:00 pm and Saturday 9:00 am – 5:00 pm; additionally, 10 hour shifts are available during construction season. Scheduled on-call resources for after-hours response in: field services, meter installation, engineering, duty supervisors; and established call out procedures for other areas (support, leak detection, regulation, odorization, instrumentation, gas engineering and technical services).

First Responders are scheduled 24/7, 365 days a year. Additionally, CNP has robust processes and procedures for declaring an emergency and holding employees for emergency/serious incident response.

Ongoing review of incidents and emergency response has allowed CNP the opportunity to make significant improvements in emergency response relative to coverage, equipment and training.

Public Awareness

CNP is using several strategies for public outreach during the Metro Belt Line Replacement Project. The primary strategy is driving customers and the general public to the construction web-site. CNP uses customer notification letters, on-site project signage, community meetings, local news channel videos, business cards with the website address and links to other community websites to encourage people to visit their website. The website contains key safety messages including frequently asked questions that relate to public safety. CNP also

hands out safety brochures at the public meetings associated with each project. The project updates on the website also explain what to do if people smell gas when CNP is blowing down a line. CNP is also planning to use GovDelivery e-mail and text notifications to communicate key safety messages.

Additional Regulatory Oversight

Communications between CNP and MNOPS will be robust during the duration of the special permit. Monthly MNOPS audits of the replacement project will be performed during the construction season. CNP is committed to communicating progress with monthly as well as annual updates. See the following monthly and annual forms.

The annual Metro Belt Line progress report is a summary of the monthly progress reports with additional information such as leak survey results, 3rd party damages, replacement schedule results, mechanical test results, PM activities, material assessments, emergency response capabilities and cathodic protection installed.

The annual or monthly progress reports will be referenced when considering changes or modifications to the construction schedule due to weather, city plans, new information or risk mitigation analysis.

Special Permit (Waiver): Additional Regulatory Oversight Monthly Progress Report

This monthly progress report encompasses a commitment between CNP and MNOPS to participate in periodic reporting of information regarding the Metro Belt Line as it pertains to the waiver and participating in additional field audits.

Location of monthly field audit: _____

MNOPS Inspector(s): _____ _____

Number of leaks on Metro Belt Line _____ during the month of_____, 20____.

Current Continuous Activities (PM activities):

Type	Location
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

Metro Belt Line activities:

Circle One	Feet/ Location	HCA
Removed / Replaced:	_____	Y/N
Removed / Replaced:	_____	Y/N
Removed / Replaced:	_____	Y/N
Removed / Replaced:	_____	Y/N

New material or system data as available: _____

_____

_____

_____

Date: _____ CNP Representative(s): _____

Special Permit (Waiver): Additional Regulatory Oversight Monthly Progress Report

This annual Metro Belt Line progress report is a congolmeration of the Additional Regulatory Oversight Monthly Progress Reports with additional information such as leak survey results, 3rd party damages, replacement schedule results, mechanical test results, PM activities, material assessments, emergency response capabilities and Cathodic Portection installed.

Leaks on Metro Belt Line

# of leaks	# Repaired	# Outstanding	

Leak Survey results

# of Leak Surveys performed	# of leaks found	# of leaks repaired	# of leaks outstanding

3rd Party Damages

# of damages	Location	Repaired	Damage to existing pipeline?
			Y/N
			Y/N
			Y/N

Replacement Schedule

**Insert Replacement Plan, On-target/ Behind Target

Mechanical Test Results

# Tested	# Failed	Root Cause	# Passed

Special Permit (Waiver): Additional Regulatory Oversight Monthly Progress Report

PM Activites

# of PM activities	Completed	Remaining	Any Remedial Actions taken

Material Assessments

# of Material assessed	Failed	Root Cause	Passed

Emergency Response Capabilities

# of Emergency Responders	# of Construction Crews	Equipment	Location (MWC)

Cathodic Protection Installed

# of Anodes	# of Rectifiers	Down Sections	Remedial Actions Taken

Abnormal Operating Conditions

Location	Root Cause	Remedial Action Taken	Date of Remedial Action

I certify that the steps that have been taken over the year are in compliance with the special permit as agreed upon. We continue to make strides to ensure a safe and reliable natural gas system and believe that the special permit is still in the best interest of our communities, our customers and our natural gas system.

Regards,

(Signature)

Cc: Joe Vortherms, John Wiinamaki, Bryan Bruley, Charles Dolezel, Mark Clayton, Dean Headlee, Kyle Woodley, Christe Singleton.

Accelerated Metro Belt Line HCA's Replacement Priorities

The accelerated replacement plan will address all transmission segments located in HCA areas. The replacement pipe, fittings, and equipment will be designed and constructed to be distribution class facilities.

The pipeline will be replaced with consideration given to the following risk based priorities:

1) High Consequence Areas (HCA's)
2) Higher pipeline operating pressure and percent of SMYS
3) Average spacing of Dresser couplings from original construction
4) Maintain system functionality assuring gas service reliability to all CNP customers.

Summary

CNP requests a §190.341 special permit concerning its compliance of the scheduled pipeline reassessment required by §192.939 for the low stress intrastate pipeline named the Metro Belt Line. CNP believes that an accelerated replacement program with the increased maintenance activities will:

- Increase the safety of its workers and the general public;
- Provide increased system reliability;
- Eliminate multiple disruptions to city and county roads through concurrent assessments and preventive and mitigative programs;
- Decrease inconvenience for public traffic and local businesses.

Benefits of Granting Special Permit

Upon receiving relief from the §192.939 integrity assessments, CNP plans to focus on an accelerated replacement of the Metro Belt Line's HCA segments while maintaining pipeline safety through a number of mitigative measures stated above. Replacement acceleration will reduce the time needed for completion from 17 to 7 years (2030 – 2020). Focusing on replacement of these HCA segments allows CNP to lower risk faster while improving system supply reliability. Furthermore, winter in Minnesota creates competition for CNP time and resources to complete road construction projects and reassessments.

Certification

CNP Minnesota Gas certifies that the proposed Metro Belt Line accelerated replacement plan is consistent with pipeline safety.

Special Permit Approval Request

CNP believes that a waiver of the §192.939 integrity assessment requirements will allow an accelerated replacement program for HCA mileage to be completed by 2020. This will significantly reduce risk and improve safety for our customers and the general public. Without the special permit, completing the transmission line replacement projects and mandatory assessments simultaneously - while maintaining adequate gas supply to

customers during short construction seasons - will extend the completion of replacement projects an additional 10 years to 2030.

CNP is seeking this special permit because the company believes the continued investment of significant amounts of time and money assessing pipeline currently scheduled for replacement is not in the best interests of the general public or our customers relative to safety, reliability and cost efficiency. In the short term, threats to the Metro Belt Line can be managed through preventive and mitigative activities. CNP would like the opportunity, however, to reduce the risks associated with the Metro Belt Line HCA segments as quickly as possible.

CNP believes that it can lower risk the most efficiently and effectively on the Metro Belt Line through the proposed accelerated seven year HCA replacement plan. An expedited review of the special permit request is essential to begin the accelerated HCA replacement plan.

Respectfully submitted,

Talmadge R. Centers Jr.
Division Vice President
System Integrity and Operations Support
Office: (713) 207-3668
CenterPoint Energy Resources Corp., DBA CenterPoint Energy Minnesota Gas (OP ID 12350)
1111 Louisiana Street, Houston, TX 77002

Appendices

A - HCA Detail

BSTA	ESTA	LENGTH	SYS NM	HCA	COATING	INSTALL YR	DIAMETER	JOINT	GRADE	MAOP	PIR	REASSESS YR	REPLACE YR
LYNDALE													
11010	15019	4009	LYNDALE 1	NON-HCA	COAL TAR ENAMEL	1952	24	Coupled	35000	215	242.8		2015
15019	19112	4093	LYNDALE 1	HCA	COAL TAR ENAMEL	1952	24	Coupled	35000	215	242.8	2020	2015
19112	19123	11	LYNDALE 1	DIST	HOT TAPE	2006	20	Welded	35000	215	202.3		2015
19123	19201	78	LYNDALE 1	HCA	COAL TAR ENAMEL	1952	20	Coupled	35000	215	202.3	2020	2015
19201	19791	590	LYNDALE 1	HCA	COAL TAR ENAMEL	1952	24	Coupled	35000	215	242.8	2020	2015
19791	20286	495	LYNDALE 1	HCA	COAL TAR ENAMEL	1957	24	Coupled	35000	215	242.8	2020	2015
20286	21862	1576	LYNDALE 1	HCA	COAL TAR ENAMEL	1952	24	Coupled	35000	215	242.8	2020	2015
21862	21927	65	LYNDALE 1	DIST	FBE	2012	20	Welded	52000	215	202.3		2015
21927	21958	31	LYNDALE 1	DIST	FBE	2012	24	Welded	52000	215	242.8		2015
21958	24616	2658	LYNDALE 1	HCA	COAL TAR ENAMEL	1952	24	Coupled	35000	215	242.8	2020	2015
24616	24743	127	LYNDALE 1	HCA	COAL TAR ENAMEL	1952	24	Coupled	35000	215	242.8	2020	2017
24743	24749	6	LYNDALE 1	HCA	COAL TAR ENAMEL	1952	20	Coupled	35000	215	202.3	2020	2017
24749	31577	6828	LYNDALE 1	HCA	COAL TAR ENAMEL	1952	24	Coupled	35000	215	242.8	2020	2017
31577	31699	122	LYNDALE 1	NON-HCA	COAL TAR ENAMEL	1952	24	Coupled	35000	215	242.8		2017
31699	32702	1003	LYNDALE 1	HCA	COAL TAR ENAMEL	1952	24	Coupled	35000	215	242.8	2020	2017
32702	32713	11	LYNDALE 1	HCA	COAL TAR ENAMEL	1952	20	Coupled	35000	215	202.3	2020	2017
32713	33572	859	LYNDALE 1	HCA	COAL TAR ENAMEL	1952	24	Coupled	35000	215	242.8	2020	2017
33572	33790	218	LYNDALE 1	NON-HCA	COAL TAR ENAMEL	1952	24	Coupled	35000	215	242.8		2017
33790	35328	1538	LYNDALE 1	HCA	COAL TAR ENAMEL	1952	24	Coupled	35000	215	242.8	2020	2017
35328	36555	1227	LYNDALE 1	HCA	COAL TAR ENAMEL	1958	24	Coupled	35000	215	242.8	2020	2017
36555	37118	563	LYNDALE 1	HCA	COAL TAR ENAMEL	1952	24	Coupled	35000	215	242.8	2020	2017
37118	37193	75	LYNDALE 1	HCA	FBE	2002	24	Welded	42000	215	242.8	2020	N/A
37193	38195	1002	LYNDALE 1	HCA	FBE	2001	24	Welded	42000	215	242.8	2020	N/A
38195	38386	191	LYNDALE 1	NON-HCA	FBE	2001	24	Welded	42000	215	242.8		N/A
38386	38955	569	LYNDALE 1	DIST	FBE	2001	24	Welded	42000	215	242.8		N/A
38955	40123	1168	LYNDALE 1	HCA	FBE	2001	24	Welded	42000	215	242.8	2020	N/A
40123	40140	17	LYNDALE 1	HCA	FBE	2002	24	Welded	42000	215	242.8	2020	N/A
40140	41459	1319	LYNDALE 1	HCA	COAL TAR ENAMEL	1952	24	Coupled	35000	215	242.8	2020	2016

BSTA	ESTA	LENGTH	SYS NM	HCA	COATING	INSTALL YR	DIAMETER	JOINT	GRADE	MAOP	PIR	REASSESS YR	REPLACE YR
41459	43052	1593	LYNDALE 1	HCA	COAL TAR ENAMEL	1972	24	Welded	35000	215	242.8	2020	2016
43052	43744	692	LYNDALE 1	HCA	FBE	1989	24	Welded	42000	215	242.8	2020	2016
43744	43834	90	LYNDALE 1	HCA	COAL TAR ENAMEL	1972	24	Welded	35000	215	242.8	2020	2016
43834	44190	356	LYNDALE 1	HCA	COAL TAR ENAMEL	1966	24	Coupled	35000	215	242.8	2020	2016
44190	44200	10	LYNDALE 1	HCA	COAL TAR ENAMEL	1966	20	Coupled	35000	215	202.3	2020	2016
44200	46126	1926	LYNDALE 1	HCA	COAL TAR ENAMEL	1966	24	Coupled	35000	215	242.8	2020	2016
46126	46604	478	LYNDALE 1	HCA	COAL TAR ENAMEL	1955	24	Coupled	35000	215	242.8	2020	2016
46604	46616	12	LYNDALE 1	DIST	FBE	1990	24	Welded	42000	215	242.8	2020	2016
46616	48018	1402	LYNDALE 1	HCA	COAL TAR ENAMEL	1955	24	Coupled	35000	215	242.8	2020	2016
48018	48028	10	LYNDALE 1	HCA	COAL TAR ENAMEL	1955	20	Coupled	35000	215	202.3	2020	2016
48028	48219	191	LYNDALE 1	HCA	COAL TAR ENAMEL	1955	24	Coupled	35000	215	242.8	2020	2016
48219	53415	5196	LYNDALE 1	DIST	FBE	2011	24	Welded	65000	215	242.8		2011
53415	54160	745	LYNDALE 1	HCA	COAL TAR ENAMEL	1977	20	Welded	35000	215	202.3	2020	2016
54160	54259	99	LYNDALE 1	HCA	COAL TAR ENAMEL	1977	24	Welded	35000	215	242.8	2020	2016
54259	54540	281	LYNDALE 1	NON-HCA	COAL TAR ENAMEL	1977	20	Welded	35000	215	202.3		2022
54540	55268	728	LYNDALE 1	NON-HCA	COAL TAR ENAMEL	1977	24	Welded	35000	215	242.8		2022
55268	55283	15	LYNDALE 1	NON-HCA	COAL TAR ENAMEL	1978	24	Welded	35000	215	242.8		2022
55283	56158	875	LYNDALE 1	NON-HCA	COAL TAR ENAMEL	1977	24	Welded	35000	215	242.8		2022
56158	56170	12	LYNDALE 1	NON-HCA	COAL TAR ENAMEL	1978	24	Welded	35000	215	242.8		2022
56170	56900	730	LYNDALE 1	NON-HCA	COAL TAR ENAMEL	1977	24	Welded	35000	215	242.8		2022
56900	57723	823	LYNDALE 1	NON-HCA	COAL TAR ENAMEL	1952	24	Coupled	35000	215	242.8		2022
57723	57743	20	LYNDALE 1	NON-HCA	COAL TAR ENAMEL	1952	24	Coupled	35000	215	242.8		2022
57743	57753	10	LYNDALE 1	NON-HCA	COAL TAR ENAMEL	1952	20	Coupled	35000	215	202.3		2022
0	12	12	LYNDALE 2	DIST	HOT TAPE	2006	20	Welded	35000	215	202.3		Abandoned - 2015
12	1362	1350	LYNDALE 2	HCA	COAL TAR ENAMEL	1952	24	Coupled	35000	215	242.8	2020	Abandoned - 2015
1362	1366	4	LYNDALE 2	HCA	FBE	1990	24	Welded	35000	215	242.8	2020	Abandoned - 2015
Total Length (Miles)		**9.1**	**LYNDALE**										
MBLC													
0	3	3	MBLC 1	DIST	COAL TAR ENAMEL	1952	20	Coupled	35000	170	179.9		2018
3	1626	1623	MBLC 1	HCA	COAL TAR ENAMEL	1952	24	Coupled	35000	170	215.9	2019	2018
1626	1694	68	MBLC 1	DIST	FBE	1989	24	Welded	42000	170	215.9		2018
1694	1871	177	MBLC 1	HCA	COAL TAR ENAMEL	1952	24	Coupled	35000	170	215.9	2019	2018

BSTA	ESTA	LENGTH	SYS NM	HCA	COATING	INSTALL YR	DIAMETER	JOINT	GRADE	MAOP	PIR	REASSESS YR	REPLACE YR
1871	3524	1653	MBLC 1	NON-HCA	COAL TAR ENAMEL	1952	24	Coupled	35000	170	215.9		2018
3524	3594	70	MBLC 1	DIST	COAL TAR ENAMEL	1952	20	Coupled	35000	170	179.9		2018
3594	3630	36	MBLC 1	NON-HCA	COAL TAR ENAMEL	1952	24	Coupled	35000	170	215.9		2018
3630	5440	1810	MBLC 1	HCA	COAL TAR ENAMEL	1952	24	Coupled	35000	170	215.9	2019	2018
5440	5877	437	MBLC 1	NON-HCA	COAL TAR ENAMEL	1952	24	Coupled	35000	170	215.9		2018
5877	5888	11	MBLC 1	HCA	COAL TAR ENAMEL	1952	24	Coupled	35000	170	215.9	2019	2018
299	301	2	MBLC 2	DIST	COAL TAR ENAMEL	1952	20	Coupled	35000	170	179.9		2018
301	305	4	MBLC 2	DIST	FBE	2007	20	Welded	42000	170	179.9		2018
1140	1803	663	MBLC 2	HCA	COAL TAR ENAMEL	1952	24	Coupled	35000	170	215.9	2019	2018
1803	2194	391	MBLC 2	NON-HCA	COAL TAR ENAMEL	1952	24	Coupled	35000	170	215.9		2018
2194	2785	591	MBLC 2	HCA	COAL TAR ENAMEL	1952	24	Coupled	35000	170	215.9	2019	2018
2785	3152	367	MBLC 2	DIST	FBE	2000	24	Welded	42000	170	215.9		2018
3152	3324	172	MBLC 2	HCA	COAL TAR ENAMEL	1952	24	Coupled	35000	170	215.9	2019	2018
3324	3908	584	MBLC 2	NON-HCA	COAL TAR ENAMEL	1952	24	Coupled	35000	170	215.9		2018
3908	3919	11	MBLC 2	DIST	COAL TAR ENAMEL	1952	20	Coupled	35000	170	179.9		2018
3919	3961	42	MBLC 2	NON-HCA	COAL TAR ENAMEL	1952	24	Coupled	35000	170	215.9		2018
3961	5262	1301	MBLC 2	HCA	COAL TAR ENAMEL	1952	24	Coupled	35000	170	215.9	2019	2018
5262	8060	2798	MBLC 2	NON-HCA	COAL TAR ENAMEL	1952	24	Coupled	35000	170	215.9		2019
8060	8510	450	MBLC 2	HCA	COAL TAR ENAMEL	1952	24	Coupled	35000	170	215.9	2019	2019
8510	8514	4	MBLC 2	HCA	COAL TAR ENAMEL	1973	24	Welded	35000	170	215.9	2019	2019
8514	8525	11	MBLC 2	DIST	COAL TAR ENAMEL	1973	20	Welded	35000	170	179.9		2019
8525	8527	2	MBLC 2	HCA	COAL TAR ENAMEL	1973	24	Welded	35000	170	215.9	2019	2019
8527	9460	933	MBLC 2	HCA	COAL TAR ENAMEL	1952	24	Coupled	35000	170	215.9	2019	2019
9460	10409	949	MBLC 2	NON-HCA	COAL TAR ENAMEL	1952	24	Coupled	35000	170	215.9		2019
10409	10481	72	MBLC 2	DIST	COAL TAR ENAMEL	1952	20	Coupled	35000	170	179.9		2019
10481	10635	154	MBLC 2	NON-HCA	COAL TAR ENAMEL	1952	24	Coupled	35000	170	215.9		2019
10635	11385	750	MBLC 2	HCA	COAL TAR ENAMEL	1952	24	Coupled	35000	170	215.9	2019	2019
11385	12533	1148	MBLC 2	NON-HCA	COAL TAR ENAMEL	1952	24	Coupled	35000	170	215.9		2019
12533	13725	1192	MBLC 2	HCA	COAL TAR ENAMEL	1952	24	Coupled	35000	170	215.9	2019	2019
13725	13739	14	MBLC 2	DIST	COAL TAR ENAMEL	1952	20	Coupled	35000	170	179.9		2019
13739	15369	1630	MBLC 2	HCA	COAL TAR ENAMEL	1952	24	Coupled	35000	170	215.9	2019	2019
15369	15397	28	MBLC 2	DIST	COAL TAR ENAMEL	1952	20	Coupled	35000	170	179.9		2019
15397	16344	947	MBLC 2	HCA	COAL TAR ENAMEL	1952	24	Coupled	35000	170	215.9	2019	2019
16344	16353	9	MBLC 2	DIST	FBE	2013	24	Welded	65000	170	215.9		2019
16353	18224	1871	MBLC 2	HCA	COAL TAR ENAMEL	1952	24	Coupled	35000	170	215.9	2019	2019

BSTA	ESTA	LENGTH	SYS NM	HCA	COATING	INSTALL YR	DIAMETER	JOINT	GRADE	MAOP	PIR	REASSESS YR	REPLACE YR
18224	18227	3	MBLC 2	DIST	FBE	2000	20	Welded	52000	170	179.9		2019
18227	18866	639	MBLC 2	DIST	FBE	1999	24	Welded	52000	170	215.9		2019
18866	19055	189	MBLC 2	HCA	COAL TAR ENAMEL	1974	24	Welded	35000	170	215.9	2019	2019
19055	19629	574	MBLC 2	HCA	COAL TAR ENAMEL	1952	24	Coupled	35000	170	215.9	2019	2019
19629	19662	33	MBLC 2	DIST	COAL TAR ENAMEL	1952	20	Coupled	35000	170	179.9		2019
19662	19827	165	MBLC 2	HCA	COAL TAR ENAMEL	1952	24	Coupled	35000	170	215.9	2019	2019
19827	20138	311	MBLC 2	NON-HCA	COAL TAR ENAMEL	1952	24	Coupled	35000	170	215.9		2019
20138	21207	1069	MBLC 2	HCA	COAL TAR ENAMEL	1952	24	Coupled	35000	170	215.9	2019	2019
21207	21255	48	MBLC 2	DIST	COAL TAR ENAMEL	1952	20	Coupled	35000	170	179.9		2019
21255	22401	1146	MBLC 2	HCA	COAL TAR ENAMEL	1952	24	Coupled	35000	170	215.9	2019	2019
22401	22830	429	MBLC 2	HCA	COAL TAR ENAMEL	1952	24	Coupled	35000	170	215.9	2019	2019
22830	22869	39	MBLC 2	DIST	COAL TAR ENAMEL	1952	20	Coupled	35000	170	179.9		2019
22869	23190	321	MBLC 2	HCA	COAL TAR ENAMEL	1952	24	Coupled	35000	170	215.9	2019	2019
23190	23208	18	MBLC 2	DIST	COAL TAR ENAMEL	1952	20	Coupled	35000	170	179.9		2019
23208	23212	4	MBLC 2	DIST	FBE	2012	20	Welded	60000	170	179.9		2019
23212	23287	75	MBLC 2	DIST	FBE	2012	20	Welded	52000	170	179.9		2019
0	6	6	MBLC 3	DIST	COAL TAR ENAMEL	1952	12.75	Coupled	35000	170	114.7		2018
0	122	122	MBLC 4	DIST	FBE	2013	20	Welded	60000	170	179.9		2013
0	10	10	MBLC 5	DIST	COLD TAPE	2005	24	Welded	42000	170	215.9		2018
10	13	3	MBLC 5	DIST	FBE	2005	24	Welded	42000	170	215.9		2018
13	16	3	MBLC 5	DIST	FBE	2007	24	Welded	42000	170	215.9		2018
16	115	99	MBLC 5	DIST	FBE	2005	24	Welded	42000	170	215.9		2018
115	120	5	MBLC 5	DIST	FBE	2005	24	Welded	42000	170	215.9		2018
120	229	109	MBLC 5	DIST	FBE	2005	24	Welded	42000	170	215.9		2018
229	895	666	MBLC 5	DIST	FBE	2005	24	Welded	42000	170	215.9		2018
0	391	391	MBLC 6	DIST	FBE	2007	24	Welded	42000	170	215.9		2018
391	393	2	MBLC 6	DIST	FBE	2007	24	Welded	42000	170	215.9		2018
Total Length (Miles)		**5.6**	**MBLC**										
MBLN													
0	1190	1190	MBLN 1	NON-HCA	COAL TAR ENAMEL	1958	24	Coupled	35000	170	215.9		2025
1190	3428	2238	MBLN 1	NON-HCA	COAL TAR ENAMEL	1958	24	Coupled	35000	170	215.9		N/A
3428	3449	21	MBLN 1	DIST	FBE	2010	20	Welded	42000	170	179.9		2025
3449	3451	2	MBLN 1	DIST	FBE	2010	20	Welded	42000	170	179.9		2025
3451	3758	307	MBLN 1	NON-HCA	COAL TAR ENAMEL	1958	24	Coupled	35000	170	215.9		2025

BSTA	ESTA	LENGTH	SYS NM	HCA	COATING	INSTALL YR	DIAMETER	JOINT	GRADE	MAOP	PIR	REASSESS YR	REPLACE YR
3758	3820	62	MBLN 1	DIST	FBE	1990	24	Welded	42000	170	215.9		2025
3820	3979	159	MBLN 1	NON-HCA	COAL TAR ENAMEL	1958	24	Coupled	35000	170	215.9		2025
3979	6999	3020	MBLN 1	HCA	COAL TAR ENAMEL	1958	24	Coupled	35000	170	215.9	2018	2016
6999	7010	11	MBLN 1	DIST	COAL TAR ENAMEL	1958	20	Coupled	35000	170	179.9		2016
7010	12389	5379	MBLN 1	HCA	COAL TAR ENAMEL	1958	24	Coupled	35000	170	215.9	2018	2016
12389	12399	10	MBLN 1	DIST	COAL TAR ENAMEL	1958	20	Coupled	35000	170	179.9		2016
12399	12852	453	MBLN 1	HCA	COAL TAR ENAMEL	1958	24	Coupled	35000	170	215.9	2018	2016
12852	14132	1280	MBLN 1	NON-HCA	COAL TAR ENAMEL	1958	24	Coupled	35000	170	215.9		2015
14132	15094	962	MBLN 1	HCA	COAL TAR ENAMEL	1958	24	Coupled	35000	170	215.9	2018	2016
15094	16368	1274	MBLN 1	NON-HCA	COAL TAR ENAMEL	1958	24	Coupled	35000	170	215.9		2016
16368	16900	532	MBLN 1	HCA	COAL TAR ENAMEL	1958	24	Coupled	35000	170	215.9	2018	2016
16900	16911	11	MBLN 1	DIST	COAL TAR ENAMEL	1958	20	Coupled	35000	170	179.9		2016
16911	19070	2159	MBLN 1	HCA	COAL TAR ENAMEL	1958	24	Coupled	35000	170	215.9	2018	2016
19070	19791	721	MBLN 1	NON-HCA	COAL TAR ENAMEL	1958	24	Coupled	35000	170	215.9		2016
19791	20167	376	MBLN 1	HCA	COAL TAR ENAMEL	1958	24	Coupled	35000	170	215.9	2018	2016
20167	20179	12	MBLN 1	DIST	COAL TAR ENAMEL	1958	20	Coupled	35000	170	179.9		2016
20179	21829	1650	MBLN 1	HCA	COAL TAR ENAMEL	1958	24	Coupled	35000	170	215.9	2018	2016
21829	21967	138	MBLN 1	HCA	COAL TAR ENAMEL	1958	24	Coupled	35000	170	215.9	2018	2017
21967	22106	139	MBLN 1	HCA	COAL TAR ENAMEL	1958	24	Coupled	35000	170	215.9	2018	2016
22106	22219	113	MBLN 1	HCA	COAL TAR ENAMEL	1958	24	Coupled	35000	170	215.9	2018	2017
22219	23917	1698	MBLN 1	NON-HCA	COAL TAR ENAMEL	1958	24	Coupled	35000	170	215.9		2017
23917	24784	867	MBLN 1	HCA	COAL TAR ENAMEL	1958	24	Coupled	35000	170	215.9	2018	2017
24784	24796	12	MBLN 1	DIST	COAL TAR ENAMEL	1958	20	Coupled	35000	170	179.9		2017
24796	24876	80	MBLN 1	HCA	COAL TAR ENAMEL	1958	24	Coupled	35000	170	215.9	2018	2017
24876	25702	826	MBLN 1	NON-HCA	COAL TAR ENAMEL	1958	24	Coupled	35000	170	215.9		2017
25702	27331	1629	MBLN 1	NON-HCA	COAL TAR ENAMEL	1964	24	Coupled	35000	170	215.9		2017
27331	27344	13	MBLN 1	DIST	FBE	2012	24	Welded	65000	170	215.9		2017
27344	27811	467	MBLN 1	DIST	COAL TAR ENAMEL	1964	20	Coupled	35000	170	179.9		2017
27811	28213	402	MBLN 1	NON-HCA	COAL TAR ENAMEL	1964	24	Coupled	35000	170	215.9		2017
28213	29475	1262	MBLN 1	HCA	COAL TAR ENAMEL	1958	24	Coupled	35000	170	215.9	2018	2017
29475	30032	557	MBLN 1	NON-HCA	COAL TAR ENAMEL	1958	24	Coupled	35000	170	215.9		2017
30032	30040	8	MBLN 1	DIST	COAL TAR ENAMEL	1958	20	Coupled	35000	170	179.9		2017
30040	30063	23	MBLN 1	NON-HCA	COAL TAR ENAMEL	1958	24	Coupled	35000	170	215.9		2017
0	40	40	MBLN 2	NON-HCA	COAL TAR ENAMEL	1958	24	Coupled	35000	170	215.9		2025
Total Length (Miles)		**5.7**	**MBLN**										

BSTA	ESTA	LENGTH	SYS NM	HCA	COATING	INSTALL YR	DIAMETER	JOINT	GRADE	MAOP	PIR	REASSESS YR	REPLACE YR
MBLNE													
0	4477	4477	MBLNE 1	DIST	FBE	2012	24	Welded	52000	170	215.9		2012
4477	5437	960	MBLNE 1	DIST	FBE	2012	24	Welded	65000	170	215.9		2012
5437	7100	1663	MBLNE 1	DIST	FBE	2012	24	Welded	52000	170	215.9		2012
7100	10362	3262	MBLNE 1	DIST	FBE	2012	24	Welded	65000	170	215.9		2012
10362	12532	2170	MBLNE 1	DIST	FBE	2012	24	Welded	52000	170	215.9		2012
12532	12827	295	MBLNE 1	DIST	FBE	2012	24	Welded	65000	170	215.9		2012
12827	13692	865	MBLNE 1	DIST	FBE	2012	24	Welded	52000	170	215.9		2012
13692	13714	22	MBLNE 1	DIST	FBE	2012	20	Welded	42000	170	179.9		2012
13714	14070	356	MBLNE 1	DIST	FBE	2012	20	Welded	52000	170	179.9		2012
14070	21945	7875	MBLNE 1	DIST	COAL TAR ENAMEL	1959	20	Coupled	35000	170	179.9		2022
21945	22001	56	MBLNE 1	DIST	FBE	2012	20	Welded	52000	170	179.9		2022
22001	23217	1216	MBLNE 1	DIST	COAL TAR ENAMEL	1959	20	Coupled	35000	170	179.9		2022
23217	23220	3	MBLNE 1	DIST	COAL TAR ENAMEL	1959	16	Coupled	35000	170	143.9		2022
23220	27899	4679	MBLNE 1	DIST	COAL TAR ENAMEL	1948	16	Coupled	35000	170	143.9		2022
27899	27902	3	MBLNE 1	DIST	COAL TAR ENAMEL	1950	16	Coupled	35000	170	143.9		2022
27902	28999	1097	MBLNE 1	DIST	COAL TAR ENAMEL	1950	20	Coupled	35000	170	179.9		2022
28999	29879	880	MBLNE 1	DIST	BARE	1950	18	Coupled	35000	170	161.9		N/A
29879	32491	2612	MBLNE 1	DIST	COAL TAR ENAMEL	1950	20	Coupled	35000	170	179.9		2014
32491	32508	17	MBLNE 1	DIST	COAL TAR ENAMEL	1950	16	Coupled	35000	170	143.9		2014
32508	32785	277	MBLNE 1	DIST	COAL TAR ENAMEL	1950	20	Coupled	35000	170	179.9		2014
32785	32960	175	MBLNE 1	DIST	FBE	2012	20	Welded	42000	170	179.9		2014
32960	34107	1147	MBLNE 1	DIST	COAL TAR ENAMEL	1950	20	Coupled	35000	170	179.9		2014
34107	34117	10	MBLNE 1	DIST	FBE	2012	20	Welded	52000	170	179.9		2014
0	5	5	MBLNE 2	DIST	COAL TAR ENAMEL	1959	16	Coupled	35000	170	143.9		Abandoned - 2015
5	10	5	MBLNE 2	DIST	COAL TAR ENAMEL	1959	20	Coupled	35000	170	179.9		Abandoned - 2015
10	52	42	MBLNE 2	DIST	COAL TAR ENAMEL	1948	20	Coupled	35000	170	179.9		Abandoned - 2015
0	5	5	MBLNE 3	DIST	COAL TAR ENAMEL	1953	12.75	Coupled	35000	170	114.7		2022
5	18	13	MBLNE 3	DIST	COAL TAR ENAMEL	1972	12.75	Welded	35000	170	114.7		2022
18	35	17	MBLNE 3	DIST	COAL TAR ENAMEL	1953	12.75	Coupled	35000	170	114.7		2022
35	45	10	MBLNE 3	DIST	COAL TAR ENAMEL	1989	12.75	Welded	35000	170	114.7		2022
0	3	3	MBLNE 5	DIST	COAL TAR ENAMEL	1950	16	Coupled	35000	170	143.9		2022
3	37	34	MBLNE 5	DIST	COAL TAR ENAMEL	1948	20	Coupled	35000	170	179.9		2022

BSTA	ESTA	LENGTH	SYS NM	HCA	COATING	INSTALL YR	DIAMETER	JOINT	GRADE	MAOP	PIR	REASSESS YR	REPLACE YR
37	40	3	MBLNE 5	DIST	COAL TAR ENAMEL	1989	20	Welded	35000	170	179.9		2022
40	41	1	MBLNE 5	DIST	COAL TAR ENAMEL	1989	16	Welded	35000	170	143.9		2022
Total Length (Miles)		**6.5**	**MBLNE**										
MBLNW													
0	13	13	MBLNW 1	NON-HCA	COAL TAR ENAMEL	1958	24	Coupled	35000	170	215.9		2017
13	359	346	MBLNW 1	NON-HCA	COAL TAR ENAMEL	1967	24	Coupled	35000	170	215.9		2017
359	632	273	MBLNW 1	NON-HCA	COAL TAR ENAMEL	1958	24	Coupled	35000	170	215.9		2017
632	642	10	MBLNW 1	DIST	COAL TAR ENAMEL	1958	20	Coupled	35000	170	179.9		2017
642	3585	2943	MBLNW 1	NON-HCA	COAL TAR ENAMEL	1958	24	Coupled	35000	170	215.9		2017
3585	4702	1117	MBLNW 1	HCA	COAL TAR ENAMEL	1958	24	Coupled	35000	170	215.9	2017	2017
4702	4714	12	MBLNW 1	DIST	COAL TAR ENAMEL	1958	20	Coupled	35000	170	179.9		2017
4714	4773	59	MBLNW 1	HCA	COAL TAR ENAMEL	1958	24	Coupled	35000	170	215.9	2017	2017
4773	5496	723	MBLNW 1	HCA	COAL TAR ENAMEL	1952	24	Coupled	35000	170	215.9	2017	2017
5496	7252	1756	MBLNW 1	NON-HCA	COAL TAR ENAMEL	1952	24	Coupled	35000	170	215.9		2017
7252	9021	1769	MBLNW 1	HCA	COAL TAR ENAMEL	1952	24	Coupled	35000	170	215.9	2017	2017
9021	11011	1990	MBLNW 1	DIST	FBE	2013	24	Welded	65000	170	215.9		2013
11011	11016	5	MBLNW 1	DIST	FBE	2011	24	Welded	52000	170	215.9		2013
11016	11104	88	MBLNW 1	DIST	FBE	2011	20	Welded	60000	170	179.9		2013
11104	11129	25	MBLNW 1	DIST	FBE	2011	24	Welded	52000	170	215.9		2013
11129	17019	5890	MBLNW 1	DIST	FBE	2013	24	Welded	65000	170	215.9		2013
17019	18706	1687	MBLNW 1	HCA	COAL TAR ENAMEL	1952	24	Coupled	35000	170	215.9	2017	2020
18706	18711	5	MBLNW 1	HCA	COLD TAPE	1959	24	Coupled	35000	170	215.9	2017	2020
18711	18721	10	MBLNW 1	DIST	COLD TAPE	1959	20	Coupled	35000	170	179.9		2020
18721	18726	5	MBLNW 1	HCA	COLD TAPE	1959	24	Coupled	35000	170	215.9	2017	2020
18726	19296	570	MBLNW 1	HCA	COAL TAR ENAMEL	1952	24	Coupled	35000	170	215.9	2017	2020
19296	19380	84	MBLNW 1	NON-HCA	COAL TAR ENAMEL	1952	24	Coupled	35000	170	215.9		2020
19380	20206	826	MBLNW 1	HCA	COAL TAR ENAMEL	1952	24	Coupled	35000	170	215.9	2017	2020
20206	21010	804	MBLNW 1	HCA	COAL TAR ENAMEL	1969	24	Coupled	35000	170	215.9	2017	2020
21010	25205	4195	MBLNW 1	HCA	COAL TAR ENAMEL	1952	24	Coupled	35000	170	215.9	2017	2020
25205	25835	630	MBLNW 1	HCA	COAL TAR ENAMEL	1968	24	Coupled	35000	170	215.9	2017	2020
25835	25995	160	MBLNW 1	HCA	COAL TAR ENAMEL	1952	24	Coupled	35000	170	215.9	2017	2020
25995	26006	11	MBLNW 1	DIST	COAL TAR ENAMEL	1952	20	Coupled	35000	170	179.9		2020
26006	26536	530	MBLNW 1	HCA	COAL TAR ENAMEL	1952	24	Coupled	35000	170	215.9	2017	2020

BSTA	ESTA	LENGTH	SYS NM	HCA	COATING	INSTALL YR	DIAMETER	JOINT	GRADE	MAOP	PIR	REASSESS YR	REPLACE YR
26536	26861	325	MBLNW 1	HCA	COAL TAR ENAMEL	1968	24	Coupled	35000	170	215.9	2017	2020
26861	27183	322	MBLNW 1	HCA	COAL TAR ENAMEL	1952	24	Coupled	35000	170	215.9	2017	2020
27183	27798	615	MBLNW 1	HCA	COAL TAR ENAMEL	1968	24	Coupled	35000	170	215.9	2017	2020
27798	27841	43	MBLNW 1	NON-HCA	COAL TAR ENAMEL	1968	24	Coupled	35000	170	215.9		2020
27841	30049	2208	MBLNW 1	NON-HCA	COAL TAR ENAMEL	1952	24	Coupled	35000	170	215.9		2020
30049	30730	681	MBLNW 1	HCA	COAL TAR ENAMEL	1952	24	Coupled	35000	170	215.9	2017	2020
30730	31287	557	MBLNW 1	NON-HCA	COAL TAR ENAMEL	1952	24	Coupled	35000	170	215.9		2020
31287	31297	10	MBLNW 1	DIST	COAL TAR ENAMEL	1952	20	Coupled	35000	170	179.9		2020
31297	32330	1033	MBLNW 1	NON-HCA	COAL TAR ENAMEL	1952	24	Coupled	35000	170	215.9		2020
32330	32595	265	MBLNW 1	HCA	COAL TAR ENAMEL	1952	24	Coupled	35000	170	215.9	2017	2020
32595	32625	30	MBLNW 1	DIST	FBE	2010	24	Welded	42000	170	215.9		2020
32625	32681	56	MBLNW 1	DIST	FBE	2010	20	Welded	42000	170	179.9		2020
32681	34015	1334	MBLNW 1	HCA	COAL TAR ENAMEL	1952	24	Coupled	35000	170	215.9	2017	2020
34015	34017	2	MBLNW 1	DIST	COAL TAR ENAMEL	1952	20	Coupled	35000	170	179.9		2020
34	1205	1171	MBLNW 2	HCA	COAL TAR ENAMEL	1952	24	Coupled	35000	170	215.9	2017	2017
Total Length (Miles)		**6.7**	**MBLNW**										
MBLSE													
0	5974	5974	MBLSE 1	DIST	COAL TAR ENAMEL	1947	20	Coupled	35000	170	179.9		2024
5974	7909	1935	MBLSE 1	DIST	COAL TAR ENAMEL	1948	20	Coupled	35000	170	179.9		2024
7909	7915	6	MBLSE 1	DIST	COAL TAR ENAMEL	1950	16	Coupled	35000	170	143.9		2024
7915	12756	4841	MBLSE 1	DIST	COAL TAR ENAMEL	1948	20	Coupled	35000	170	179.9		2019
12756	13473	717	MBLSE 1	DIST	COAL TAR ENAMEL	1959	20	Coupled	35000	170	179.9		2019
13473	20599	7126	MBLSE 1	DIST	COAL TAR ENAMEL	1948	20	Coupled	35000	170	179.9		2019
20599	20610	11	MBLSE 1	DIST	COAL TAR ENAMEL	1951	20	Coupled	35000	170	179.9		2019
20610	23165	2555	MBLSE 1	DIST	COAL TAR ENAMEL	1948	20	Coupled	35000	170	179.9		2019
23165	25237	2072	MBLSE 1	DIST	FBE	2011	20	Welded	60000	170	179.9		2011
25237	25284	47	MBLSE 1	DIST	FBE	2011	20	Welded	42000	170	179.9		2011
25284	25324	40	MBLSE 1	DIST	FBE	2000	20	Welded	42000	170	179.9		2000
25324	25532	208	MBLSE 1	DIST	FBE	2011	20	Welded	42000	170	179.9		2011
25532	25601	69	MBLSE 1	DIST	FBE	2008	20	Welded	42000	170	179.9		2008
25601	25707	106	MBLSE 1	DIST	FBE	2011	20	Welded	60000	170	179.9		2011
25707	25838	131	MBLSE 1	DIST	FBE	2008	20	Welded	42000	170	179.9		2008
25838	26511	673	MBLSE 1	DIST	FBE	2011	20	Welded	60000	170	179.9		2011
26511	27826	1315	MBLSE 1	DIST	COAL TAR ENAMEL	1947	20	Coupled	35000	170	179.9		2025

BSTA	ESTA	LENGTH	SYS NM	HCA	COATING	INSTALL YR	DIAMETER	JOINT	GRADE	MAOP	PIR	REASSESS YR	REPLACE YR
27826	27843	17	MBLSE 1	DIST	HOT TAPE	1970	20	Coupled	35000	170	179.9		2025
27843	31091	3248	MBLSE 1	DIST	COAL TAR ENAMEL	1947	20	Coupled	35000	170	179.9		2025
31091	31112	21	MBLSE 1	DIST	HOT TAPE	1970	20	Coupled	35000	170	179.9		2025
31112	31806	694	MBLSE 1	DIST	COAL TAR ENAMEL	1947	20	Coupled	35000	170	179.9		2025
31806	35722	3916	MBLSE 1	DIST	COAL TAR ENAMEL	1946	20	Coupled	35000	170	179.9		2025
35722	35755	33	MBLSE 1	DIST	COAL TAR ENAMEL	1973	20	Welded	35000	170	179.9		2025
35755	37839	2084	MBLSE 1	DIST	COAL TAR ENAMEL	1946	20	Coupled	35000	170	179.9		2025
37839	37871	32	MBLSE 1	DIST	FBE	2004	20	Welded	42000	170	179.9		2025
37871	37957	86	MBLSE 1	DIST	FBE	2003	20	Welded	42000	170	179.9		2025
37957	38040	83	MBLSE 1	DIST	FBE	2004	20	Welded	42000	170	179.9		2025
38040	43002	4962	MBLSE 1	DIST	COAL TAR ENAMEL	1946	20	Coupled	35000	170	179.9		2023
43002	43021	19	MBLSE 1	DIST	COAL TAR ENAMEL	1970	20	Coupled	35000	170	179.9		2023
43021	43674	653	MBLSE 1	DIST	COAL TAR ENAMEL	1946	20	Coupled	35000	170	179.9		2023
43694	43703	9	MBLSE 1	DIST	HOT TAPE	1970	16	Coupled	35000	170	143.9		2023
43703	43708	5	MBLSE 1	DIST	EPX	2009	16	Welded	42000	170	143.9		2023
43708	43715	7	MBLSE 1	DIST	EPX	2009	20	Welded	42000	170	179.9		2023
43715	45637	1922	MBLSE 1	DIST	HOT TAPE	1946	20	Coupled	35000	170	179.9		2023
45637	45638	1	MBLSE 1	DIST	COAL TAR ENAMEL	1988	20	Welded	35000	170	179.9		2023
45638	45641	3	MBLSE 1	DIST	COAL TAR ENAMEL	1988	18	Welded	35000	170	161.9		2023
45641	45642	1	MBLSE 1	DIST	COAL TAR ENAMEL	1988	20	Welded	35000	170	179.9		2023
45642	47601	1959	MBLSE 1	DIST	COAL TAR ENAMEL	1946	20	Coupled	35000	170	179.9		2023
47601	47607	6	MBLSE 1	DIST	COAL TAR ENAMEL	1970	20	Coupled	35000	170	179.9		2023
47607	47889	282	MBLSE 1	DIST	COAL TAR ENAMEL	1946	20	Coupled	35000	170	179.9		2023
47889	47893	4	MBLSE 1	DIST	COAL TAR ENAMEL	1970	20	Coupled	35000	170	179.9		2023
47893	47934	41	MBLSE 1	DIST	COAL TAR ENAMEL	1946	20	Coupled	35000	170	179.9		2023
47934	47938	4	MBLSE 1	DIST	COAL TAR ENAMEL	1970	20	Coupled	35000	170	179.9		2023
47938	49159	1221	MBLSE 1	DIST	COAL TAR ENAMEL	1946	20	Coupled	35000	170	179.9		2023
49170	51085	1915	MBLSE 1	DIST	COAL TAR ENAMEL	1946	20	Coupled	35000	170	179.9		2023
51085	51095	10	MBLSE 1	DIST	COAL TAR ENAMEL	1970	20	Coupled	35000	170	179.9		2023
51095	51749	654	MBLSE 1	DIST	COAL TAR ENAMEL	1946	20	Coupled	35000	170	179.9		2023
51749	51820	71	MBLSE 1	DIST	FBE	2012	20	Welded	52000	170	179.9		2023
51820	51998	178	MBLSE 1	DIST	COAL TAR ENAMEL	1946	20	Coupled	35000	170	179.9		2023
51998	52031	33	MBLSE 1	DIST	FBE	2012	20	Welded	60000	170	179.9		2023
52031	52060	29	MBLSE 1	DIST	FBE	2012	20	Welded	60000	170	179.9		2023

BSTA	ESTA	LENGTH	SYS NM	HCA	COATING	INSTALL YR	DIAMETER	JOINT	GRADE	MAOP	PIR	REASSESS YR	REPLACE YR
52060	54525	2465	MBLSE 1	DIST	COAL TAR ENAMEL	1946	20	Coupled	35000	170	179.9		2023
63286	63294	8	MBLSE 1	DIST	FBE	2011	20	Welded	42000	170	179.9		2015
63853	65657	1804	MBLSE 1	DIST	COAL TAR ENAMEL	1950	20	Coupled	35000	170	179.9		2015
65657	66185	528	MBLSE 1	DIST	FBE	1990	20	Welded	42000	170	179.9		2015
66185	66630	445	MBLSE 1	DIST	COAL TAR ENAMEL	1950	20	Coupled	35000	170	179.9		2015
66630	66739	109	MBLSE 1	DIST	FBE	1990	20	Welded	42000	170	179.9		2015
66739	68488	1749	MBLSE 1	DIST	COAL TAR ENAMEL	1950	20	Coupled	35000	170	179.9		2015
68488	68517	29	MBLSE 1	DIST	FBE	2008	20	Welded	42000	170	179.9		2015
68517	69377	860	MBLSE 1	DIST	COAL TAR ENAMEL	1950	20	Coupled	35000	170	179.9		2015
69377	69381	4	MBLSE 1	DIST	COAL TAR ENAMEL	1990	20	Welded	35000	170	179.9		2015
69381	69384	3	MBLSE 1	DIST	COAL TAR ENAMEL	1989	20	Welded	35000	170	179.9		2015
69384	69394	10	MBLSE 1	DIST	COAL TAR ENAMEL	1950	20	Coupled	35000	170	179.9		2015
69394	69395	1	MBLSE 1	DIST	COAL TAR ENAMEL	1950	16	Coupled	35000	170	143.9		2015
69395	69406	11	MBLSE 1	DIST	COLD TAPE	1992	16	Welded	35000	170	143.9		2015
69406	70706	1300	MBLSE 1	DIST	COAL TAR ENAMEL	1950	20	Coupled	35000	170	179.9		2015
70706	71269	563	MBLSE 1	DIST	FBE	1992	20	Welded	42000	170	179.9		2015
71269	73355	2086	MBLSE 1	DIST	COAL TAR ENAMEL	1950	20	Coupled	35000	170	179.9		2014
73355	73377	22	MBLSE 1	DIST	COAL TAR ENAMEL	1974	20	Welded	35000	170	179.9		2014
73377	75907	2530	MBLSE 1	DIST	COAL TAR ENAMEL	1950	20	Coupled	35000	170	179.9		2014
75907	75917	10	MBLSE 1	DIST	COAL TAR ENAMEL	1950	16	Coupled	35000	170	143.9		2014
75917	78191	2274	MBLSE 1	DIST	COAL TAR ENAMEL	1950	20	Coupled	35000	170	179.9		2014
78191	78224	33	MBLSE 1	DIST	FBE	2012	20	Welded	52000	170	179.9		2014
78224	78236	12	MBLSE 1	DIST	BARE	2012	20	Welded	42000	170	179.9		2014
78236	78295	59	MBLSE 1	DIST	FBE	2012	20	Welded	65000	170	179.9		2014
0	33	33	MBLSE 3	DIST	FBE	2011	16	Welded	42000	170	143.9		2011
33	1598	1565	MBLSE 3	DIST	COAL TAR ENAMEL	1947	16	Coupled	35000	170	143.9		2026
1598	1653	55	MBLSE 3	DIST	FBE	1999	16	Welded	42000	170	143.9		2026
0	54	54	MBLSE 5	DIST	COAL TAR ENAMEL	1947	16	Coupled	35000	170	143.9		2026
0	8	8	MBLSE 7	DIST	COAL TAR ENAMEL	1950	16	Coupled	35000	170	143.9		Abandoned - 2014
0	65	65	MBLSE 9	DIST	COAL TAR ENAMEL	1946	20	Coupled	35000	170	179.9		Abandoned - 2025
65	75	10	MBLSE 9	DIST	COAL TAR ENAMEL	1946	16	Coupled	35000	170	143.9		Abandoned - 2025
0	475	475	MBLSE 13	DIST	FBE	2008	20	Welded	42000	170	179.9		2015
0	24	24	MBLSE 14	DIST	FBE	2009	20	Welded	42000	170	179.9		2023
24	25	1	MBLSE 14	DIST	FBE	2009	16	Welded	42000	170	143.9		2023

BSTA	ESTA	LENGTH	SYS NM	HCA	COATING	INSTALL YR	DIAMETER	JOINT	GRADE	MAOP	PIR	REASSESS YR	REPLACE YR
0	29	29	MBLSE 16	DIST	FBE	2012	20	Welded	52000	170	179.9		2023
0	518	518	MBLSE 17	DIST	FBE	2013	20	Welded	60000	170	179.9		2013
518	575	57	MBLSE 17	DIST	FBE	2012	20	Welded	65000	170	179.9		2013
575	2123	1548	MBLSE 17	DIST	FBE	2013	20	Welded	60000	170	179.9		2013
2123	2697	574	MBLSE 17	DIST	FBE	2012	20	Welded	60000	170	179.9		2013
2697	3165	468	MBLSE 17	DIST	FBE	2013	20	Welded	60000	170	179.9		2013
3165	3250	85	MBLSE 17	DIST	FBE	1994	20	Welded	42000	170	179.9		2013
3250	3328	78	MBLSE 17	DIST	FBE	2013	20	Welded	60000	170	179.9		2013
3328	3587	259	MBLSE 17	DIST	FBE	2001	20	Welded	60000	170	179.9		2013
3587	6477	2890	MBLSE 17	DIST	FBE	2013	20	Welded	60000	170	179.9		2013
6477	6480	3	MBLSE 17	DIST	FBE	2012	20	Welded	65000	170	179.9		2013
6480	6764	284	MBLSE 17	DIST	FBE	2012	20	Welded	52000	170	179.9		2013
6764	6796	32	MBLSE 17	DIST	FBE	2012	20	Welded	65000	170	179.9		2013
6796	6977	181	MBLSE 17	DIST	FBE	2013	20	Welded	60000	170	179.9		2013
6977	7227	250	MBLSE 17	DIST	FBE	2012	20	Welded	60000	170	179.9		2013
7227	7621	394	MBLSE 17	DIST	FBE	1983	20	Welded	60000	170	179.9		2013
7621	7760	139	MBLSE 17	DIST	FBE	2011	20	Welded	60000	170	179.9		2013
7760	7860	100	MBLSE 17	DIST	FBE	2010	20	Welded	65000	170	179.9		2013
7860	8995	1135	MBLSE 17	DIST	FBE	2011	20	Welded	60000	170	179.9		2013
8995	9231	236	MBLSE 17	DIST	FBE	2013	20	Welded	60000	170	179.9		2013
Total Length (Miles)		**15.2**	**MBLSE**										
MBLSW													
0	6	6	MBLSW 1	DIST	COAL TAR ENAMEL	1952	20	Coupled	35000	170	179.9		2022
6	3078	3072	MBLSW 1	NON-HCA	COAL TAR ENAMEL	1952	24	Coupled	35000	170	215.9		2022
3078	3126	48	MBLSW 1	DIST	COAL TAR ENAMEL	1952	20	Coupled	35000	170	179.9		2022
3126	4347	1221	MBLSW 1	NON-HCA	COAL TAR ENAMEL	1952	24	Coupled	35000	170	215.9		2022
4347	4348	1	MBLSW 1	NON-HCA	COAL TAR ENAMEL	1953	24	Coupled	35000	170	215.9		2022
4348	4358	10	MBLSW 1	DIST	COAL TAR ENAMEL	1953	20	Coupled	35000	170	179.9		2022
4358	4626	268	MBLSW 1	NON-HCA	COAL TAR ENAMEL	1952	24	Coupled	35000	170	215.9		2022
4626	5749	1123	MBLSW 1	HCA	COAL TAR ENAMEL	1952	24	Coupled	35000	170	215.9	2014	2016
5749	5776	27	MBLSW 1	HCA	COAL TAR ENAMEL	1961	24	Coupled	35000	170	215.9	2014	2016
5776	6284	508	MBLSW 1	HCA	COAL TAR ENAMEL	1952	24	Coupled	35000	170	215.9	2014	2016
6284	6318	34	MBLSW 1	DIST	FBE	2013	24	Welded	65000	170	215.9		2016
6318	6680	362	MBLSW 1	HCA	COAL TAR ENAMEL	1952	24	Coupled	35000	170	215.9	2014	2016

BSTA	ESTA	LENGTH	SYS NM	HCA	COATING	INSTALL YR	DIAMETER	JOINT	GRADE	MAOP	PIR	REASSESS YR	REPLACE YR
6680	6888	208	MBLSW 1	HCA	COAL TAR ENAMEL	1971	24	Welded	35000	170	215.9	2014	2016
6888	6898	10	MBLSW 1	HCA	COAL TAR ENAMEL	1972	24	Welded	35000	170	215.9	2014	2016
6898	7127	229	MBLSW 1	HCA	COAL TAR ENAMEL	1971	24	Welded	35000	170	215.9	2014	2016
7127	7484	357	MBLSW 1	NON-HCA	COAL TAR ENAMEL	1971	24	Welded	35000	170	215.9		2016
7484	11363	3879	MBLSW 1	NON-HCA	COAL TAR ENAMEL	1952	24	Coupled	35000	170	215.9		2016
11363	11409	46	MBLSW 1	DIST	COAL TAR ENAMEL	1952	20	Coupled	35000	170	179.9		2016
11409	12823	1414	MBLSW 1	HCA	COAL TAR ENAMEL	1952	24	Coupled	35000	170	215.9	2014	2016
12823	12825	2	MBLSW 1	HCA	COAL TAR ENAMEL	1976	24	Welded	35000	170	215.9	2014	2016
12825	12830	5	MBLSW 1	DIST	COAL TAR ENAMEL	1976	16	Welded	35000	170	143.9		2016
12830	12834	4	MBLSW 1	HCA	COAL TAR ENAMEL	1976	24	Welded	35000	170	215.9	2014	2016
12834	13154	320	MBLSW 1	HCA	COAL TAR ENAMEL	1952	24	Coupled	35000	170	215.9	2014	2016
13154	16047	2893	MBLSW 1	NON-HCA	COAL TAR ENAMEL	1952	24	Coupled	35000	170	215.9		2021
16047	16079	32	MBLSW 1	DIST	FBE	2010	20	Welded	42000	170	179.9		2021
16079	16136	57	MBLSW 1	DIST	FBE	2010	24	Welded	60000	170	215.9		2021
16136	20022	3886	MBLSW 1	NON-HCA	COAL TAR ENAMEL	1952	24	Coupled	35000	170	215.9		2021
20022	21036	1014	MBLSW 1	HCA	COAL TAR ENAMEL	1952	24	Coupled	35000	170	215.9	2014	2018
21036	21566	530	MBLSW 1	NON-HCA	COAL TAR ENAMEL	1952	24	Coupled	35000	170	215.9		2018
21566	23722	2156	MBLSW 1	HCA	COAL TAR ENAMEL	1952	24	Coupled	35000	170	215.9	2014	2018
23722	23733	11	MBLSW 1	DIST	COAL TAR ENAMEL	1952	20	Coupled	35000	170	179.9		2018
23733	24597	864	MBLSW 1	HCA	COAL TAR ENAMEL	1952	24	Coupled	35000	170	215.9	2014	2018
24597	24620	23	MBLSW 1	DIST	FBE	2012	24	Welded	65000	170	215.9		2018
24620	24800	180	MBLSW 1	DIST	FBE	2012	20	Welded	42000	170	179.9		2018
24800	24857	57	MBLSW 1	DIST	FBE	2012	24	Welded	65000	170	215.9		2018
24857	27407	2550	MBLSW 1	HCA	COAL TAR ENAMEL	1952	24	Coupled	35000	170	215.9	2014	2018
27407	27478	71	MBLSW 1	DIST	COAL TAR ENAMEL	1952	20	Coupled	35000	170	179.9		2018
27478	27737	259	MBLSW 1	HCA	COAL TAR ENAMEL	1952	24	Coupled	35000	170	215.9	2014	2018
27737	27830	93	MBLSW 1	NON-HCA	COAL TAR ENAMEL	1952	24	Coupled	35000	170	215.9		2018
27830	29624	1794	MBLSW 1	HCA	COAL TAR ENAMEL	1952	24	Coupled	35000	170	215.9	2014	2018
29624	29626	2	MBLSW 1	HCA	COAL TAR ENAMEL	1956	24	Coupled	35000	170	215.9	2014	2018
29626	29638	12	MBLSW 1	DIST	COAL TAR ENAMEL	1956	20	Coupled	35000	170	179.9		2018
29638	29640	2	MBLSW 1	HCA	COAL TAR ENAMEL	1956	24	Coupled	35000	170	215.9	2014	2018
29640	30868	1228	MBLSW 1	HCA	COAL TAR ENAMEL	1952	24	Coupled	35000	170	215.9	2014	2018
30868	31004	136	MBLSW 1	NON-HCA	COAL TAR ENAMEL	1952	24	Coupled	35000	170	215.9		2018
31004	33515	2511	MBLSW 1	HCA	COAL TAR ENAMEL	1952	24	Coupled	35000	170	215.9	2014	2018
33515	33525	10	MBLSW 1	DIST	COAL TAR ENAMEL	1952	20	Coupled	35000	170	179.9		2018

BSTA	ESTA	LENGTH	SYS NM	HCA	COATING	INSTALL YR	DIAMETER	JOINT	GRADE	MAOP	PIR	REASSESS YR	REPLACE YR
33525	35291	1766	MBLSW 1	HCA	COAL TAR ENAMEL	1952	24	Coupled	35000	170	215.9	2014	2020
35291	35441	150	MBLSW 1	DIST	COAL TAR ENAMEL	1952	20	Coupled	35000	170	179.9		2020
35441	35523	82	MBLSW 1	HCA	COAL TAR ENAMEL	1952	24	Coupled	35000	170	215.9	2014	2020
35523	36013	490	MBLSW 1	NON-HCA	COAL TAR ENAMEL	1952	24	Coupled	35000	170	215.9		2020
36013	36227	214	MBLSW 1	NON-HCA	COAL TAR ENAMEL	1981	24	Welded	35000	170	215.9		2020
36227	36281	54	MBLSW 1	NON-HCA	COAL TAR ENAMEL	1952	24	Coupled	35000	170	215.9		2020
36281	36716	435	MBLSW 1	HCA	COAL TAR ENAMEL	1952	24	Coupled	35000	170	215.9	2014	2020
36716	38172	1456	MBLSW 1	HCA	COAL TAR ENAMEL	1952	24	Coupled	35000	170	215.9	2014	2020
38172	38898	726	MBLSW 1	NON-HCA	COAL TAR ENAMEL	1952	24	Coupled	35000	170	215.9		2020
38898	40349	1451	MBLSW 1	HCA	COAL TAR ENAMEL	1952	24	Coupled	35000	170	215.9	2014	2020
40349	40461	112	MBLSW 1	HCA	COAL TAR ENAMEL	1958	24	Coupled	35000	170	215.9	2014	2020
40461	40947	486	MBLSW 1	NON-HCA	COAL TAR ENAMEL	1958	24	Coupled	35000	170	215.9		2020
40947	41172	225	MBLSW 1	NON-HCA	COAL TAR ENAMEL	1952	24	Coupled	35000	170	215.9		2020
41172	41688	516	MBLSW 1	NON-HCA	COAL TAR ENAMEL	1952	24	Coupled	35000	170	215.9		2020
41688	42412	724	MBLSW 1	HCA	COAL TAR ENAMEL	1952	24	Coupled	35000	170	215.9	2014	2020
42412	42534	122	MBLSW 1	DIST	FBE	1989	24	Welded	56000	170	215.9		2020
42534	42542	8	MBLSW 1	DIST	FBE	1989	16	Welded	56000	170	143.9		2020
42542	42627	85	MBLSW 1	DIST	FBE	1989	24	Welded	56000	170	215.9		2020
42627	43308	681	MBLSW 1	DIST	FBE	1989	24	Welded	56000	170	215.9		N/A
43308	43375	67	MBLSW 1	DIST	FBE	1989	24	Welded	56000	170	215.9		2020
43375	43786	411	MBLSW 1	NON-HCA	COAL TAR ENAMEL	1952	24	Coupled	35000	170	215.9		2020
43786	44749	963	MBLSW 1	HCA	COAL TAR ENAMEL	1952	24	Coupled	35000	170	215.9	2014	2020
44749	45501	752	MBLSW 1	NON-HCA	COAL TAR ENAMEL	1952	24	Coupled	35000	170	215.9		2020
45501	45508	7	MBLSW 1	DIST	FBE	2003	24	Welded	42000	170	215.9		2020
45508	47195	1687	MBLSW 1	DIST	FBE	2003	24	Welded	42000	170	215.9		2003
47195	47619	424	MBLSW 1	HCA	COAL TAR ENAMEL	1952	24	Coupled	35000	170	215.9	2014	2015
47619	47749	130	MBLSW 1	DIST	COAL TAR ENAMEL	1952	20	Coupled	35000	170	179.9		2020
47749	48357	608	MBLSW 1	HCA	COAL TAR ENAMEL	1952	24	Coupled	35000	170	215.9	2014	2020
48357	48366	9	MBLSW 1	DIST	COAL TAR ENAMEL	1952	20	Coupled	35000	170	179.9		2020
Total Length (Miles)		**9.2**	**MBLSW**										
NICOLLET													
11352	16995	5643	NICOLLET 1	DIST	COAL TAR ENAMEL	1947	20	Coupled	35000	170	179.9		2014
Total Length (Miles)		**1.1**	**NICOLLET**										

BSTA	ESTA	LENGTH	SYS NM	HCA	COATING	INSTALL YR	DIAMETER	JOINT	GRADE	MAOP	PIR	REASSESS YR	REPLACE YR
OLD SHAKOPEE													
0	10	10	OLD SHAKOPEE 1	DIST	COAL TAR ENAMEL	1947	20	Coupled	35000	170	179.9		Abandoned - 2023
10	13	3	OLD SHAKOPEE 1	DIST	FBE	1989	20	Welded	35000	170	179.9		Abandoned - 2023
13	2622	2609	OLD SHAKOPEE 1	DIST	COAL TAR ENAMEL	1947	20	Coupled	35000	170	179.9		Abandoned - 2023
2622	2626	4	OLD SHAKOPEE 1	DIST	COAL TAR ENAMEL	1947	16	Coupled	35000	170	143.9		Abandoned - 2023
2626	2629	3	OLD SHAKOPEE 1	DIST	COAL TAR ENAMEL	1947	16	Coupled	35000	170	143.9		Abandoned - 2025
2629	2633	4	OLD SHAKOPEE 1	DIST	COAL TAR ENAMEL	1939	16	Coupled	35000	170	143.9		Abandoned - 2025
2633	9632	6999	OLD SHAKOPEE 1	DIST	COAL TAR ENAMEL	1939	16	Coupled	35000	170	143.9		2025
9632	9647	15	OLD SHAKOPEE 1	DIST	FBE	1986	16	Welded	42000	170	143.9		2025
9647	9652	5	OLD SHAKOPEE 1	DIST	FBE	2008	16	Welded	42000	170	143.9		2025
9652	9653	1	OLD SHAKOPEE 1	DIST	FBE	1986	16	Welded	42000	170	143.9		2025
0	22	22	OLD SHAKOPEE 2	DIST	COAL TAR ENAMEL	1947	20	Coupled	35000	170	179.9		Abandoned - 2015
22	675	653	OLD SHAKOPEE 2	HCA	COAL TAR ENAMEL	1952	24	Coupled	35000	170	215.9	2014	Abandoned - 2015
675	720	45	OLD SHAKOPEE 2	HCA	COAL TAR ENAMEL	1963	24	Coupled	35000	170	215.9	2014	Abandoned - 2015
720	1256	536	OLD SHAKOPEE 2	HCA	COAL TAR ENAMEL	1952	24	Coupled	35000	170	215.9	2014	Abandoned - 2015
1256	1265	9	OLD SHAKOPEE 2	DIST	FBE	1990	24	Welded	56000	170	215.9		Abandoned - 2015
0	10	10	OLD SHAKOPEE 4	DIST	COAL TAR ENAMEL	1947	16	Coupled	35000	170	143.9		Abandoned - 2025
0	3682	3682	OLD SHAKOPEE 5	DIST	FBE	2012	16	Welded	42000	170	143.9		2012
Total Length (Miles)		**2.8**	OLD SHAKOPEE										
PORTLAND													
11912	13593	1681	PORTLAND 1	DIST	COAL TAR ENAMEL	1939	16	Coupled	35000	170	143.9		2024
13593	16239	2646	PORTLAND 1	DIST	COAL TAR ENAMEL	1939	16	Coupled	35000	170	143.9		2023
Total Length (Miles)		**0.8**	**PORTLAND**										

B - Metro Belt Line DIMP Summary

The Metro Belt Line contains approximately 35.9 miles of distribution pipe. There are 21.27 miles of pipe within the Metro Belt Line that was downgraded from transmission to distribution class in 2012. This is now managed under Part 192 Subpart P. The downgraded segments are all 20" pipe with the exception of 2 segments of 24" pipe that total 73 feet. This pipe is included in the prioritized plan to replace 24" pipe segments.

The downgraded 20" steel Metro Belt Line segments were installed during the 1950's or earlier and were primarily joined with mechanical couplings. These downgraded segments were identified for replacement when they were part of the transmission line baseline assessments and risk ranking. When the pipe was transferred to distribution class from transmission class, the same replacement plan and O&M activities carried over into the distribution integrity management plan.

The plan remains to replace all mechanically coupled segments of pipeline and to reuse limited segments of welded steel pipe on the Metro Belt Line that were reclassified from transmission to distribution. All existing segments of welded steel main will be pressure tested separately or incorporated into a larger test segment that includes newly replaced pipeline segments. All segments that are replaced will be designed and constructed to be distribution class pipe.

The Distribution Integrity Management Plan was updated to include the identified activities to reduce risk which include the accelerated leak surveys and the replacement plans that are currently underway for the Minneapolis Metro Belt Line. Specifically, CNP has added the programs noted below and activities that address risk on page 8 and 18 of the Minnesota appendix of the Distribution Integrity Management Plan:

- Accelerated Leak Survey – Metro Belt Line Distribution Leak Survey Bi-weekly
- Distribution Belt Line Replacement Program
- Patrols done in conjunction with surveying

C - Construction Seasonal Constraints

Metro Belt Line Operation

CNP's high pressure system in the Metropolitan area is a piping network that delivers gas from Town Border Stations (TBS) to the distribution network via multiple pressure regulating stations. There are seven TBS points (for this discussion, CNP's Northgate & MIPC pipelines are considered a single point due to their close proximity). Throughout the high pressure network, numerous pressure regulating stations reduce the pressure to distribution system levels of 10, 50 or 95 psig. For optimum control of the distribution pressure, the planned inlet pressure needs to be maintained at a level higher than the outlet pressure.

The Metro Belt Line is generally considered to be the figure eight piping system at the center of the network with piping from the TBS' providing supply at various locations; refer to the attached Figure No. 1 — TBS' denoted with a white circle and the piping is color coded by diameter. The Metro Belt Line capacity was designed to reliably serve our firm customer gas usage during the highest customer heating requirements; i.e. the winter months. The Metro Belt Line must be fully intact from October 15 through April 15 to meet anticipated system loads.

Multiple Metro Belt Line Segment Outages

Engineering uses SynerGEE network modeling software to simulate the operation of the Metro Belt Line. It is used for volumetric delivery capability estimates, pressure requirements, long range planning and simulation of outages. The figure eight configuration of the Metro Belt Line allows bidirectional flow of gas in many of the segments. This flexibility can be used to plan segment outages. However, when a segment is out of service the maximum deliverability of the Metro Belt Line is significantly reduced.

Gas demand in the warm summer months, i.e. no heating load, is approximately 1/9th the peak winter demand and the Metro Belt Line has significant excess deliverability capacity. However in the spring and autumn months the gas demand varies considerably due to the fact that cold weather is possible. Minneapolis temperatures in May and September require the Metro Belt Line to provide gas for customer heating. Temperatures are frequently below 35°F and were as low as +18°F. Planned outages of the Metro Belt Line must be carefully planned when considering multiple segment outages. Coordination of outages requires a detailed evaluation of how multiple outages interact and impact system capability and ultimately affects our ability to serve customer's gas demand.

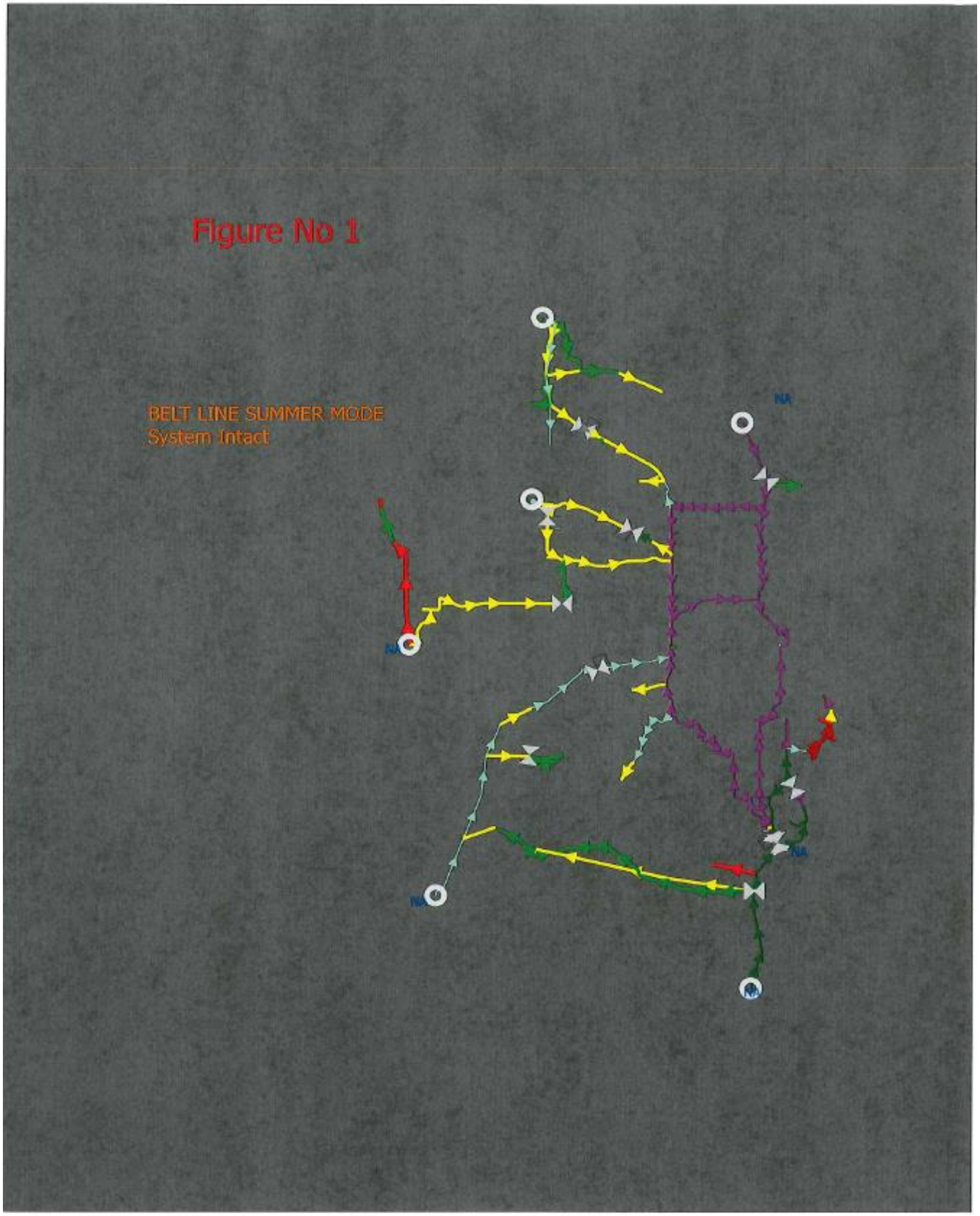
The Metro Belt Line replacement plan calls for replacement of portions of two separate segments in 2014 and into the future. Proposed reassessments of the Metro Belt Line are anticipated to require multiple outages of the Metro Belt Line system that are additive to planned pipeline replacement segments. Scheduling of concurrent outages is not possible due to system flow requirements and therefore requires sequential planning of outages. The process of sequentially planning outages limits the allowable number of weeks for construction of replacement segments of the transmission system and greatly lengthens the timeline for full replacement of the Metro Belt Line system. To illustrate this point refer to the following simulations that evaluates multiple outages of the Metro Belt Line System.

Simulations

The summer mode of the Metro Belt Line is depicted in SynerGEE simulation shown on Figure No 2. The numbers represent approximate pressure at each node. Many of the nodes are locations of pressure regulating stations. Note that with very little customer demand and an intact Metro Belt Line that the pressure losses are minimal.

Figure No 3 represents the Metro Belt Line with three segments taken out of service for replacement/assessment/repair. Figure 3 simulates the situation of simultaneously undergoing two replacement projects and one assessment or repair. The simulation has removed one segment each from MBLN, MBLC and MBLSW. The customer demand was adjusted to a temperature at which the Metro Belt Line pressure would be lower than the distribution system pressure; i.e. the outlet pressure of pressure regulating stations. The system demand in the simulation is essentially the same as that experienced on April 7, 2014 at a temperature of +35° F. The simulation predicts that thousands of customers in Eden Prairie (4.87 psig), Hopkins (32.97 psig), Edina (38.04 psig), Golden Valley (39.61 psig) and Crystal (39.85 psig) would be in jeopardy of gas outages. As stated above, temperatures in May and September are frequently as low, or can be much lower than 35° F. It's for this reason that simultaneous Metro Belt Line outages constrain our ability to plan and construct multiple points throughout the integrated system, even in the non-winter months.

Metro Belt Line Constraints figures 1 – 3



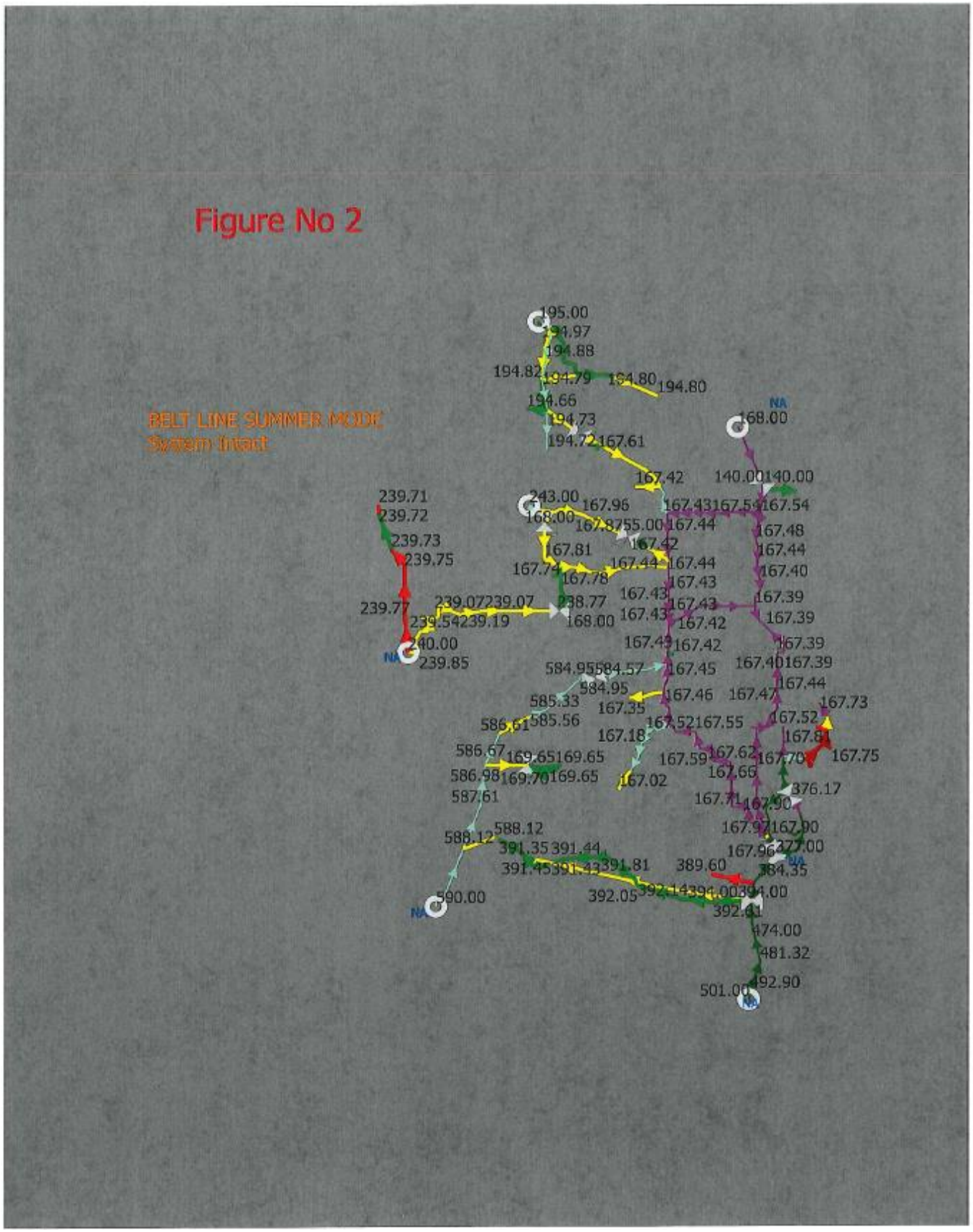


Figure No 2
BELT LINE SUMMER MODE
System Intact

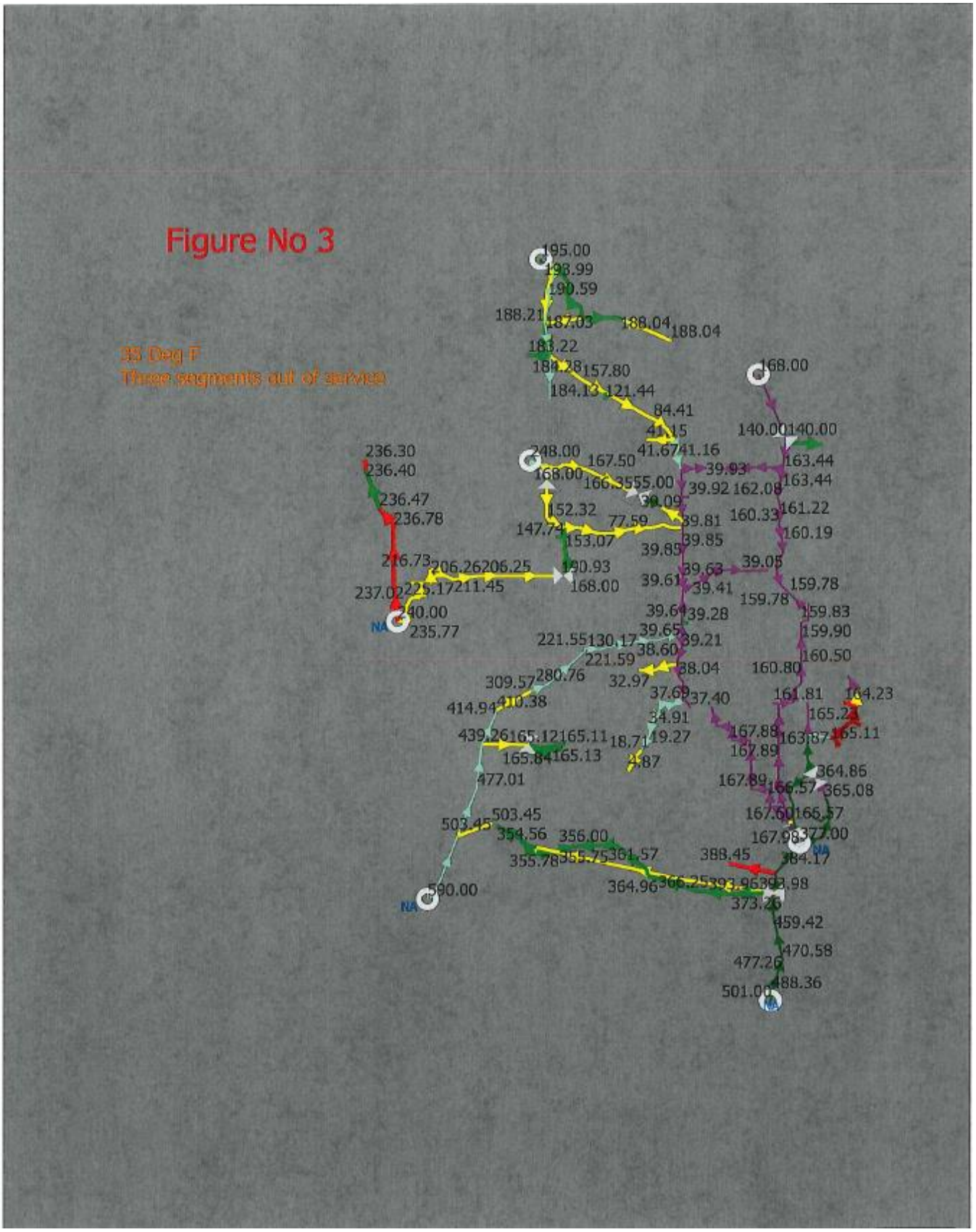


Figure No 3
35 Deg F
Three segments out of service

D - Transmission Line Leaks – From Added Leak Surveys (2011))

The baseline assessment results support the application for this special permit by illustrating a relatively low risk in the excavated and examined areas from the threat of external corrosion.

Records indicate that we turned in 102 leaks during leak survey of the Metro Belt Line (MBL) from March 17, 2011 to present. On the MBL, 4 were on transmission segments, 2 on distribution segments and 95 were on distribution piping in close proximity to the MBL.

	2011	2012	2013	2014	Total
Transmission	2	0	0	2	4
Distribution	40	44	10	4	98
Total Leaks	41	44	10	6	102

MBL Transmission Leaks

2011 – 60th Street & Nicollet Ave. - Coupling

2011 – 60th Street & Portland Avenue – Coupling

2014 – Hwy 62/Edina - Coupling

2014 – Olinger Rd/Edina - Coupling

MBL Distribution Leaks

2012 – Portland Line North of Dakota Station – Corrosion

2013 – Portland Line North of Dakota Station – 2 Leaks Corrosion

E - 2011 Transmission Modifications

WORK ORDER	COMPLETION DATE	LOCATION	DESCRIPTION
57814907 58895210 58908133	8/3/2011	Chicago and 57th St	Weld cover sleeves installed over both couplings.
57814911 59078751 59076738	8/12/2011	14th Ave S and 42nd St E	WCS installed on north coupling. 2 existing straps, installed 6 more straps on south coupling, unable to install WCS.
57814913 59663713 59663742	10/20/2011	14th Ave S and 38th St E	WCS installed on both couplings.
58608402	8/9/2011	2nd St S and 3rd Ave S	Weld cover sleeve installed.

California and 27th Ave Ne and 24th Ave N and 2nd repairs made in 2012

F - 2012 Transmission Modifications

NEW WORK ORDER	COMPLETION DT	CITY	LOCATION	DESCRIPTION
57777348	10/3/2012	Mpls - NWM	24 Ave N and 2	Installation of Remote Control Valve to eliminate miter, RMV scheduled for 2012
61433276	4/17/2012	Mpls - SEM	15 Ave S & 33 St E	Replace both 45 deg ells @ nipples too close to couplings
61541841	4/16/2012	Mpls - SEM	15 Ave S & 29 St E (N & S)	Replace 93'+/- of pipe on N & S sides per PI inspection & eliminate 20" couplings
61308944	4/17/2012	Mpls - SEM	15 Ave S & 29 St E (north)	Replace 90 deg ell @ bad weld
62182737	10/24/2012	Mpls - NEM	27 Ave Ne & California	Install (1) 20" weld cover sleeve over 20" coupling.
62188718	11/2/2012	Mpls - NEM	27 Ave Ne & California	Install (1) 20" weld cover sleeve over 20" coupling.
62183027	3/13/2012	Mpls - SEM	14 Ave S & 37 St E	Install (2) 20" weld cover sleeves over 20" couplings.
62184396	4/17/2012	Mpls - SEM	14 Ave S & 35 St E	Install (2) 20" weld cover sleeves over 20" couplings.
62184612	4/13/2012	Mpls - SEM	14 Ave S & 35 St E	Install an additional (9) 20" weld cover sleeves over 20" couplings
62184820	3/20/2012	Mpls - SEM	15 Ave S & 35 St E (south)	Install (2) 20" weld cover sleeves over 20" couplings.
62184829	4/26/2012	Mpls - SEM	15 Ave S & 35 St E (south)	Install an additional (3) 20" weld cover sleeves over 20" couplings
62184833	4/11/2012	Mpls - SEM	15 Ave S & 35 St E (north)	Install (2) 20" weld cover sleeves over 20" couplings.
62184981can				
61433276	4/26/2012	Mpls - SEM	15 Ave S & 33 St E	Install (2) 20" weld cover sleeves over 20" couplings. Replaced pipe instead
61433276	4/26/2012	Mpls - SEM	15 Ave S & 33 St E	Install (2) 20" weld cover sleeves over 20" couplings. Replaced pipe instead
62184996	4/11/2012	Mpls - SEM	15 Ave S & Lake St E	Install (2) 20" weld cover sleeves over 20" couplings.
62185280	4/16/2012	Mpls - SEM	15 Ave S & Lake St E	Install an additional (2) 20" weld cover sleeves over 20" couplings
62185286	4/3/2012	Mpls - SEM	15 Ave S & 29 St E (south)	Install (2) 20" weld cover sleeves over 20" couplings.
62188280can				
61308944	3/26/2012	Mpls - SEM	15 Ave S & 29 St E (north)	Install (2) 20" weld cover sleeves over 20" couplings.
62188364	5/12/2012	New Hope - NWM	Winnetka & 36 Ave N	Install (4) 24" weld cover sleeves over 24" couplings.
62188500	5/1/2012	New Hope - NWM	Winnetka & 28 Ave N	Install (2) 24" weld cover sleeves over 24" couplings.
62188518	5/9/2012	Golden Valley - NWM	Winnetka & 23 Ave N	Install (2) 24" weld cover sleeves over 24" couplings.
62188702	4/25/2012	Golden Valley - NWM	Winnetka & 23 Ave N	Install (3) 24" weld cover sleeves over 24" couplings.

G - Metro Belt Line Replacement (2014 through 2030 plan options)

CenterPoint Energy Metro Beltline 2014 through 2030 Replacement Plan Options

The following spreadsheet takes into account portions of the Metro Belt Line system being taken out of service for the advancement of in-line pipe inspection and reaction to the results of the inspection. The 5 month construction season (May 1 to October 1) has been reduced by nine (9) weeks to account for these activities. As such the construction footage for each season is reduced to an average of 3.2 miles per season.

Metro Belt Line Background Data

Total Metro Belt Line Mileage: 74 Miles
Initial Metro Beltline Mileage Identified for Replacement: 61 miles
Metro Beltline Replaced in 2011: 2.28 miles
Metro Beltline Replaced in 2012: 4.75 miles
Metro Beltline Replaced or Evaluated in 2013: 3.0 miles
Remaining Metro Beltline for Replacement After 2013: 50.97 miles

20" Metro Belt Line Background Data

Remaining 20" Metro Belt Line for Replacement After 2013: 18.03 miles

24" Metro Belt Line Background Data

Remaining 24" Metro Belt Line for Replacement After 2013: 32.94 miles
Total 24" HCA Metro Belt Line Pipe Footage: 21.40 miles
Total 24" Non HCA Metro Belt Line Pipe Footage: 11.53 miles

Additional Incidental but Associated 16" Metro Belt Line Back Ground Data

16" Metro Belt Line Identified to be Replaced as Part of this Project: 2.23 miles

Anticipated Miles of Pipeline Replacement per Year																	
Year	**2014**	**2015***	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024****	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**
Total Metro Belt Line Miles Replaced by Year (24-inch and 20-inch)	3.22	3.90	2.87	3.50	3.19	3.20	3.28	3.14	3.10	3.25	3.29	3.06	3.27	3.22	2.62	2.10	0.74
Cumalitive Metro Belt Line Miles to be Replaced (24-inch and 20-inch)	3.22	7.12	9.99	13.49	16.68	19.88	23.16	26.30	29.40	32.65	35.94	39.00	42.27	45.49	48.11	50.21	50.95
Remaining Metro Belt Line Miles to be Replaced (24-inch and 20-inch)	47.75	43.85	40.98	37.48	34.29	31.09	27.81	24.67	21.57	18.32	15.03	11.97	8.70	5.48	2.86	0.76	**0**
24" HCA Miles to be Replaced by Year	0.00	1.19	2.87	3.50	1.19	0.00	2.43	2.17	1.93	0.70	0.56	2.32	0.43	0.91	0.52	0.16	0.51
Cumalitive 24" HCA Miles Replaced	0.00	1.19	4.06	7.56	8.75	8.75	11.18	13.35	15.28	15.98	16.54	18.86	19.29	20.20	20.73	20.89	21.40
Remaining 24" HCA to be replaced	21.40	20.21	17.34	13.84	12.65	12.65	10.22	8.05	6.12	5.42	4.86	2.54	2.11	1.20	0.67	0.51	**0**
24" Non-HCA Miles to be Replaced by year	0.00	1.07	0.00	0.00	0.00	0.00	0.85	0.98	1.17	1.09	0.48	0.13	0.69	1.14	2.10	1.60	0.23
Cumalitive 24" Non-HCA Miles Replaced	0.00	1.07	1.07	1.07	1.07	1.07	1.92	2.90	4.07	5.16	5.64	5.77	6.46	7.60	9.70	11.30	11.53
Remaining 24" Non-HCA to be replaced	11.53	10.46	10.46	10.46	10.46	10.46	9.61	8.64	7.47	6.37	5.90	5.76	5.07	3.93	1.83	0.23	**0**
20" Miles to be replaced by year	3.22	1.64	0.00	0.00	2.00	3.20	0.00	0.00	0.00	1.46	2.25	0.61	2.14	1.17	0.00	0.34	
Cumalitive 20" Miles Replaced	3.22	4.86	4.86	4.86	6.86	10.06	10.06	10.06	10.06	11.52	13.77	14.38	16.52	17.69	17.69	18.03	
Remaining 20" to be replaced	14.81	13.17	13.17	13.17	11.17	7.97	7.97	7.97	7.97	6.51	4.26	3.65	1.51	0.34	0.34	**0**	
16" Miles to be Replaced by Year	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.36	0.49	1.38
Cumalitive 16" Miles Replaced	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.36	0.85	2.23
Remaining 16" to be replaced	2.23	2.23	2.23	2.23	2.23	2.23	2.23	2.23	2.23	2.23	2.23	2.23	2.23	2.23	1.87	1.38	**0**

NOTE:

The information presented above and on the related map is based on the best known data at this time. This information will be re-evaluated on a continual basis to determine the specific segments of the Metro Belt Line to be constructed in a given year and their start/stop points. Specific segments along with the starting and ending points can be affected by municipal road project, pipeline integrity evaluations, among other issues and are subject to permit approval.

*In 2015 the *HCA miles to be replaced by year* reflects an additional 0.49 miles of pipe that will be abandoned rather than replaced.

**In 2024 the HCA miles to be replaced by year reflects approximately 1,170 of 24" HCA pipe to be downrated in addition to actual 24" HCA pipe replacement.

H - Metro Belt Line Replacement with Special Permit (accelerated 2014 – 2020, decelerated 2021 – 2025 option)

CenterPoint Energy 24" in HCA Metro Beltline 7 Year Replacement Option and Beyond

Accelerated 2014 Through 2020 Followed by Decelerated 2021 Through 2025 Plan

4/16/2014

Metro Belt Line Background Data

Total Metro Belt Line Mileage: 74 Miles
Initial Metro Beltline Mileage Identified for Replacement: 61 miles
Metro Beltline Replaced in 2011: 2.28 miles
Metro Beltline Replaced in 2012: 4.75 miles
Metro Beltline Replaced in 2013: 3.0 miles
Remaining Metro Beltline for Replacement After 2013: 50.97 miles

24" Metro Belt Line Background Data

Total Metro Belt Line 24" Pipe Mileage: 39.8 miles
24" Metro Belt Line Pipe Previously Replaced Mileage: 6.86 miles
Remaining 24" Metro Belt Line for Replacement After 2013: 32.94 miles
Total 24" HCA Metro Belt Line Pipe Mileage (to be replaced in 7 year option): 21.40 miles
Total 24" Non-HCA Metro Belt Line Pipe to be Replaced During the 7-Year Replacement Option: 7.13 miles
Remaining 24" Metro Beltline Pipe to be Replaced After 2020 Mileage: 4.40 miles

20" Metro Belt Line Background Data

Remaining Metro Beltline for Replacement After 2013: 50.97 miles
Remaining 24" Metro Belt Line for Replacement After 2013: 32.94 miles
Remaining 20" Metro Belt Line for Replacement After 2013: 18.03 miles

Additional Incidental but Associated 16" Metro Belt Line Back Ground Data

16" Metro Belt Line Identified to be Replaced as Part of this Project: 2.23 miles

Anticipated Miles of Pipeline Replacement per Year

Year	2014	2015*	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Total Metro Belt Line Miles Replaced by Year	3.22	5.01	5.75	5.62	5.46	5.46	5.72	3.70	3.70	2.95	2.96	1.42
Cumalitive Metro Belt Line Miles to be Replaced (24-inch and 20-inch)	3.22	8.23	13.98	19.60	25.06	30.52	36.23	39.93	43.63	46.58	49.54	50.96
Remaining Metro Belt Line Miles to be Replaced (24-inch and 20-inch)	47.75	42.74	36.99	31.37	25.91	20.46	14.74	11.04	7.34	4.39	1.43	**0**
24" HCA Miles to be Replaced by Year	0	2.72	5.45	4.47	4.56	1.975	2.225					
Cumalitive 24" HCA Miles Replaced	0	2.72	8.17	12.64	17.2	19.175	21.4					
Remaining 24" HCA to be replaced	21.4	18.68	13.23	8.76	4.2	2.225	**0**					
24" Non-HCA Miles to be Replaced by year	0.00	0.51	0.30	1.15	0.90	0.78	3.49	2.20	2.20			
Cumalitive 24" Non-HCA Miles Replaced	0.00	0.51	0.81	1.96	2.86	3.64	7.13	9.33	11.53			
Remaining 24" Non-HCA to be replaced	11.53	11.02	10.72	9.57	8.67	7.89	4.40	2.20	**0**			
20" Miles to be replaced by year	3.22	1.78	0	0	0	2.7	0	1.50	1.50	2.95	2.96	1.42
Cumalitive 20" Miles Replaced	3.22	5	5	5	5	7.7	7.7	9.2	10.7	13.65	16.61	18.03
Remaining 20" to be replaced.	14.81	13.03	13.03	13.03	13.03	10.33	10.33	8.83	7.33	4.38	1.42	**0**
16" Miles to be Replaced by Year	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.49	0.36	1.38
Cumalitive 16" Miles Replaced	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.49	0.85	2.23
Remaining 16" to be replaced	2.23	2.23	2.23	2.23	2.23	2.23	2.23	2.23	2.23	1.74	1.38	**0**

3. The above schedule assumes no In-Line-Inspection will be performed during this time. In-Line-Inspection may require shut down of Metro Belt Line segments and will greatly impact the replacement mileage per year as well as the number of years to complete the entire Belt Line Replacement.

* In 2015 the HCA miles to be replaced by year reflects an additional 0.49 miles of pipe that will be abandoned rather than replaced

I - High Profile Line Watch Dog Process

CenterPoint Energy Damage Prevention/Risk Management Process Procedure

PROCESS FOR: High Profile Line Watch Dog Process

DEPARTMENT: Internal and External Locators

DATE REVISED: January 2014 REVISED BY: Kris Tande

Note: This process is to be used to initiate the High Profile Watch Dog Process.

Locators Responsibilities:

1. Line Locator receives locate ticket from GSOC.
2. Locator executes ticket. Field verification against maps for High Profile Line.
3. Excavation within 10' either side of High Profile Line. (See Description below)
4. If excavator ***is not*** working within 10' either side of High Profile Line Complete ticket in system.
5. If excavator ***is*** working within 10' either side of High Profile Line. Inform Excavator of CPE requirement to be on site during excavation and document notification.
   - Locate contractor dispatch informs CPE Dispatch/Scheduler/Routers of Watch Dog via email
   - Internal locators contact CPE dispatch via phone
6. Locator completes ticket in system.

CPE Dispatcher Responsibilities:

1. Dispatcher creates watchdog/inspect contractor order including the contractor name and phone number, GSOC ticket number and excavation date and dispatches to appropriate foreign construction crew. .

Foreign Construction Responsibilities:

1. Crew meets and/or calls excavator, verifies location of High Profile Line, excavation site, excavation schedule, and documents conditions of High Profile Line on work order and sets appointment with excavator based on their needs. Performs Watchdog as needed
2. Crew completes order.

High Profile Definition:

- Class 8 or higher pipelines (size of pipe does not matter)
- Shopping Centers
- Schools
- Churches
- Hospitals
- 911 Centers
- **Note: *Transmission Lines follow CPE Transmission Line Watch Dog Process.***

Training Conducted By: _____ Date: _____

Employee Signature: _____ Date: _____

J – Emergency Response Equipment List

Squeezers		Trucks/Vehicles/Trailers		Miscellaneous	
5/8"	72	1 ton Dually	2	Electrofusion Kits	10
5/8” to 3/4”	15	3/4 ton pick up	9	6" Guillotine cutter	6
1/2" to 1-1/8"	47	Drill Truck	4	Generators	19
1-1/4"	13	Dump Truck	1	Vault Entry Tripod	8
Up to 1-1/4”	9	Dumptruck with Hydraulic loader	1	Temporary Reg Skids	2
1-1/4” to 2”	13	F350 Keyhole	2	Detext Units	40
1-1/4” to 2” Long Handled (remote)	5	F750 Vacuum truck	2	Spill Kits	37
2"	8	Freight Liner	30	Temp. odorizer Skids	1
5/8” to 2”	7	Kenworth Semi Boom Truck	1	Pipe stands	1
5/8” to 2”Long Handled (remote)	12	Medium crew (International)	1	Portable Light Fixture	4
up to 2"	15	Mini crew F550	3	Pull behind Air-Compressor	2
up to 2" long handle	27	Small Boom Truck	1	Valve Wrench (2"box end)	13
up to 3"	12	Tapping Truck w/ Boom, Fully equipt'd	3	**Tapping Equipment:**	
1” to 3”	5	Welding Rig	11	Air Operated Saw up to 8”	0
1" to 4"	44	45' Lowboy Trailer, Kenworth Semi Only	1	Completion tools	4
1-1/4” to 4”	6	27' Trailer	4	Drilling Machines 1-1/4” to 2”(60psig)	4
1-1/4” to 4” Gear reduction	3	22" Trailer, Tapping Equipment	1	Mueller ¾” to 4” including 1-1/2” & 2-1/2”	0
3” to 4”	12	Backhoe Trailer	11	Set of 3” Valves	2
Up to 4” Hydraulic (steel)	1	Coil Pipe Trailer	7	Stoppers	6
1-1/4 to 6” Manual	2	Pipe Trailer	1	Sweepers	4
2” to 6” Hydraulic	2	Tubing Trailer	0	Drilling Machines 1-1/4” to 4” (60psig)	1
6"	7	Master Truck	2	Valves	11
5/8" to 4" Iron	17	Meter & Reg Truck	11	***Note: We have tapping & stopping equipment**	
6" & 8" Butt Fusing Machine	1	Pickup	9	**for all diameters except 10" HP**	
8" & 6" (Hydraulic)	3	**Trenchers/Backhoes**		**Portable CNG Units**	
4" Butt Fusion Machine	0	360 Case	8	40' Tube Trailer, 120,000 CFH - Hauled by outside vendor	1
Locators		560 Case	4	Cascade Trailer, 10,000 CFH (#6292 & 6293)	2
Metrotech 810	55	660 Case	2	Cascade Skid, 4,000 CFH	2
Metrotech 850	4	Ditch Witch	1	8- pack Skid, 3,000 CFH	1
Metrotech 8990	2	Front end loader	1	2 Cylinder Skid, 2,500 CFH	2
Sub-site	3	JCB	20	2 Cylinder Skid, 2,000 CFH	1
ML83 (markerball)	6	Backhoe	2	**Shoring Boxes**	
Leak Detection		Ditch Witch Hydro Model FX60/800	3	8' x 8' Boxes , Stackable	2
DPIV's	38	Hydro-Vac truck	2	7' x 7' Boxes	1
DPIR	6			8' x 6' Box	1
RMLD	1			5' x 6' Boxes	2
Vehicle Mount OMD	6			6' x 6' Boxes	3
				4' x 6' Expandable Boxes	4

K - Metro Belt Line Cathodic Protection Data

Following is a spreadsheet of the Metro Belt Line Cathodic Protection sections. The spreadsheet is organized by the thirty-two Cathodic Protection sections which make up the Metro Belt Line. Under each Cathodic Protection section are the associated test points and their readings for 2013. Remarks also include explanations of the types of cathodic protection anticipated corrective actions to be done in 2014 for each SP section. CNP anticipates installing additional impressed current ground beds on some sections, those sections will be identified as additional data is collected. CNP is preparing to perform TP reads on a semi-annual schedule, hoping to start in June and again in November if the special permit is approved. The June start will be adjusted to May, 2015 to get the 6 month separation between reads and fit within the post and pre frost weather conditions. Additionally, CNP will support the Monthly Progress Reports with the additional information of PM activities, number of anode and ground bed installations, down sections and remedial actions taken.

Metro Beltline Cathodic Protection Data							
On CP Sections and Test Points							
CP Section Number	Equipment Number	Technical ID For TP	Date	Reading	Unit	Cathodic Protection System	Comments
13652						Impressed current anode beds	
	14430481	00-0914-13652-001	11/12/2013	-1,310.00	mV		
	14430483	00-0914-13652-002	11/12/2013	-1,169.00	mV		
	14430484	00-0914-13652-003	11/12/2013	-1,130.00	mV		
	14430485	00-0914-13652-004	11/10/2013	-1,220.00	mV		
	13115081	00-0914-13652-005	11/12/2013	-1,240.00	mV		
	14430509	00-0914-13652-006	11/12/2013	-1,248.00	mV		
	14430512	00-0914-13652-007	11/12/2013	-1,261.00	mV		
	14430520	00-0914-13652-008	11/12/2013	-1,280.00	mV		
	14430522	00-0914-13652-009	11/12/2013	-1,150.00	mV		
15676						Sacrificial anodes	
	13715471	27-0142-15676-002	07/15/2013	-1,380.00	mV		
18045						Sacrificial anodes	
	13116845	00-0915-18045-001	10/21/2013	-1,240.00	mV		
	13116846	00-0915-18045-002	10/21/2013	-1,220.00	mV		
	13116847	00-0915-18045-003	10/21/2013	-1,230.00	mV		
	13116848	00-0915-18045-004	10/21/2013	-1,240.00	mV		
	13116849	00-0915-18045-005	10/21/2013	-1,220.00	mV		
	13696485	00-0915-18045-006	10/21/2013	-1,210.00	mV		
	13116850	00-0915-18045-008	10/21/2013	-1,260.00	mV		
19003						Impressed current anode beds	
	13116692	00-0903-19003-027	06/12/2013	-1,070.00	mV		
19004						Impressed current anode beds	
	13782732	00-0903-19004-018	06/12/2013	0.00	mV		Lost TP , order created to replace in 2014
	13782736	00-0903-19004-019	06/12/2013	-1,180.00	mV		
	13782833	00-0903-19004-020	06/12/2013	-1,180.00	mV		
	13782836	00-0903-19004-022	06/12/2013	-1,230.00	mV		
	13782837	00-0903-19004-023	06/12/2013	0.00	mV		Lost TP , order created to replace in 2014
	13782838	00-0903-19004-024	06/12/2013	-1,080.00	mV		
	13782845	00-0903-19004-025	06/12/2013	-1,200.00	mV		
	13782848	00-0903-19004-026	06/12/2013	-870.00	mV		
	13846965	00-0903-19004-027	06/12/2013	-1,070.00	mV		
	13782852	00-0903-19004-028	06/12/2013	-1,100.00	mV		
	13782854	00-0903-19004-029	06/12/2013	-1,180.00	mV		
19005						Sacrificial anodes	
	13782851	00-0903-19005-030	06/12/2013	-1,370.00	mV		
19007						Impressed current anode beds	Review CP section for additional cathodic protection & troubleshoot in 2014
	13784776	00-0904-19007-013	10/30/2013	-1,460.00	mV		
	13784752	00-0904-19007-014	10/30/2013	-1,450.00	mV		
	13116698	00-0904-19007-015	10/30/2013	-1,030.00	mV		
	13784754	00-0904-19007-016	10/30/2013	-1,020.00	mV		
	13116699	00-0904-19007-017	10/30/2013	-1,050.00	mV		
	13784758	00-0904-19007-018	10/30/2013	-1,020.00	mV		
	13785448	00-0904-19007-019	10/30/2013	-800.00	mV		
	13784763	00-0904-19007-020	10/30/2013	-860.00	mV		
	13116700	00-0904-19007-021	10/30/2013	-960.00	mV		

Metro Beltline Cathodic Protection Data							
On CP Sections and Test Points							
CP Section Number	Equipment Number	Technical ID For TP	Date	Reading	Unit	Cathodic Protection System	Comments
19017						Sacrificial anodes	Dual Coat Main, installed in 2008
	13116734	00-0907-19017-003	11/06/2013	-1,450.00	mV		
	13813156	00-0907-19017-009	11/07/2013	-1,320.00	mV		
19018						Sacrificial anodes	
	13813134	00-0907-19018-010	10/27/2013	-1,050.00	mV		
19022						Impressed current anode beds	
	13116765	00-0910-19022-001	10/28/2013	0.00	mV		Lost TP , order created to replace in 2014
	13116766	00-0910-19022-002	10/28/2013	-1,570.00	mV		
	13116767	00-0910-19022-003	10/28/2013	-1,630.00	mV		
	13116768	00-0910-19022-004	10/28/2013	-1,350.00	mV		
	13116769	00-0910-19022-005	10/28/2013	-1,230.00	mV		
	13116770	00-0910-19022-006	10/28/2013	-1,400.00	mV		
	13116771	00-0910-19022-007	10/28/2013	-1,360.00	mV		
	13116772	00-0910-19022-008	10/28/2013	-1,050.00	mV		
	13116773	00-0910-19022-009	10/28/2013	-1,760.00	mV		
	13116774	00-0910-19022-010	10/28/2013	-3,100.00	mV		
	13116775	00-0910-19022-011	10/28/2013	-2,250.00	mV		
	13116776	00-0910-19022-012	10/28/2013	-1,180.00	mV		
	13116777	00-0910-19022-013	11/21/2013	-515.00	mV		Check TP connection, trouble shoot in 2014
	13781382	00-0910-19022-017	10/28/2013	-1,250.00	mV		
	14479446	00-0910-19022-018	11/06/2013	-910.00	mV		
19025						Impressed current anode beds	
	13116779	00-0910-19025-015	10/28/2013	-1,390.00	mV		
	13116780	00-0910-19025-016	12/05/2013	-1,020.00	mV		
19037						Impressed current anode beds	
	13116815	00-0912-19037-000	10/28/2013	-860.00	mV		
	13116816	00-0912-19037-001	10/28/2013	0.00	mV		Lost TP , order created to replace in 2014
	13116817	00-0912-19037-002	10/28/2013	-1,060.00	mV		
	13116818	00-0912-19037-003	10/28/2013	-1,020.00	mV		
	13116819	00-0912-19037-004	10/28/2013	-910.00	mV		
	13116820	00-0912-19037-005	10/28/2013	-1,000.00	mV		
	13116821	00-0912-19037-006	10/28/2013	-960.00	mV		
	13116822	00-0912-19037-007	10/28/2013	-880.00	mV		
	13116823	00-0912-19037-008	10/28/2013	-1,340.00	mV		
19047						Impressed current anode beds	Review CP section for additional cathodic protection & troubleshoot in 2014 , bonded in 2011 & 2012 added additional Rectifier
	13116851	00-0916-19047-001	11/18/2013	-1,112.00	mV		
	13116852	00-0916-19047-002	11/18/2013	-1,056.00	mV		
	13116853	00-0916-19047-003	11/18/2013	-870.00	mV		
	13116854	00-0916-19047-004	10/24/2013	-940.00	mV		
	13116855	00-0916-19047-005	10/24/2013	-780.00	mV		
	13116856	00-0916-19047-006	11/18/2013	-950.00	mV		
	13116857	00-0916-19047-007	11/18/2013	-850.00	mV		
	13116858	00-0916-19047-008	11/18/2013	-730.00	mV		
	14434039	00-0916-19047-009	11/18/2013	-722.00	mV		
	14434042	00-0916-19047-010	11/18/2013	-725.00	mV		
	14434043	00-0916-19047-011	11/18/2013	-755.00	mV		
	14434044	00-0916-19047-012	11/18/2013	-1,011.00	mV		

Metro Beltline Cathodic Protection Data							
On CP Sections and Test Points							
CP Section Number	Equipment Number	Technical ID For TP	Date	Reading	Unit	Cathodic Protection System	Comments
19051						Impressed current anode beds & sacrificial anodes	
	13116917	00-0919-19051-001	10/24/2013	-1,220.00	mV		
	13116918	00-0919-19051-002	10/24/2013	-1,310.00	mV		
	13116919	00-0919-19051-003	10/24/2013	-1,500.00	mV		
	13116920	00-0919-19051-004	10/24/2013	0.00	mV		Lost TP , order created to replace in 2014
	13116922	00-0919-19051-006	10/02/2013	-1,200.00	mV		
	13116923	00-0919-19051-008	10/24/2013	-1,230.00	mV		
19301						Impressed current anode beds met 100 mv depol	Troubleshoot CP section review current requirement in 2014
	13116962	00-0951-19301-001	11/09/2013	-870.00	mV		
	13116963	00-0951-19301-002	11/09/2013	-780.00	mV		
	13592570	00-0951-19301-003	11/09/2013	-870.00	mV		
19309						Impressed current anode beds met 100 mv depol	Review CP section for additional cathodic protection & troubleshoot in 2014 possible rectifier candidate
	13813167	00-0955-19309-009	11/11/2013	-1,100.00	mV		
	13782113	00-0958-19309-001	11/02/2013	-710.00	mV		
	13813864	00-0958-19309-002	11/02/2013	-760.00	mV		
	13116998	00-0958-19309-004	11/02/2013	-700.00	mV		
	13813868	00-0958-19309-005	11/02/2013	-710.00	mV		
	13813870	00-0958-19309-006	11/02/2013	-710.00	mV		
	13813872	00-0958-19309-007	11/02/2013	-830.00	mV		
	13782115	00-0958-19309-009	11/02/2013	-820.00	mV		
	13813874	00-0958-19309-010	11/02/2013	-720.00	mV		
	13117000	00-0958-19309-012	11/02/2013	-730.00	mV		
	13813876	00-0958-19309-013	11/02/2013	-720.00	mV		
	13813878	00-0958-19309-014	11/02/2013	-800.00	mV		
	13813879	00-0958-19309-015	11/02/2013	-920.00	mV		
	13117004	00-0958-19309-016	11/02/2013	-880.00	mV		
	13117001	00-0958-19309-017	11/02/2013	0.00	mV		Lost TP , order created to replace in 2014
	13813880	00-0958-19309-018	11/18/2013	-780.00	mV		
	13813883	00-0958-19309-019	11/18/2013	-1,040.00	mV		
	13813885	00-0958-19309-020	11/02/2013	-930.00	mV		
	13813887	00-0958-19309-021	11/02/2013	-960.00	mV		
	13813890	00-0958-19309-022	11/02/2013	-1,000.00	mV		
	13813894	00-0958-19309-024	11/02/2013	-990.00	mV		
	13117003	00-0958-19309-025	11/18/2013	-990.00	mV		
19310						Impressed current anode beds	Troubleshoot CP section, review current needs, replace lost TP's
	13117030	00-0959-19310-002	12/05/2013	-970.00	mV		
	13117031	00-0959-19310-003	12/05/2013	-1,110.00	mV		
	13821362	00-0959-19310-004	12/05/2013	-1,080.00	mV		
	13821371	00-0959-19310-005	12/05/2013	-900.00	mV		
	13821373	00-0959-19310-006	12/05/2013	-1,150.00	mV		
	13821950	00-0959-19310-007	12/05/2013	-780.00	mV		
	13821955	00-0959-19310-008	12/05/2013	-1,130.00	mV		
	13117007	00-0959-19310-009	12/05/2013	-1,030.00	mV		
	13821959	00-0959-19310-010	12/05/2013	-1,060.00	mV		
	13821396	00-0959-19310-011	12/05/2013	-1,020.00	mV		
	13821930	00-0959-19310-012	12/06/2013	-1,650.00	mV		
	13117028	00-0959-19310-013	12/05/2013	-1,090.00	mV		
	13117006	00-0959-19310-014	12/05/2013	-1,090.00	mV		
	13117011	00-0959-19310-017	12/05/2013	-660.00	mV		Troubleshoot TP area in 2014

Metro Beltline Cathodic Protection Data							
On CP Sections and Test Points							
CP Section Number	Equipment Number	Technical ID For TP	Date	Reading	Unit	Cathodic Protection System	Comments
	13951202	00-0959-19310-024	12/05/2013	-980.00	mV		
	13117013	00-0959-19310-025	12/05/2013	-950.00	mV		
	13951217	00-0959-19310-026	12/05/2013	-870.00	mV		
	13951329	00-0959-19310-027	12/06/2013	-1,010.00	mV		
	13117020	00-0959-19310-028	12/06/2013	0.00	mV		Lost TP , order created to replace in 2014
	13117020	00-0959-19310-028	12/06/2013	0.00	mV		Lost TP , order created to replace in 2014
	13117019	00-0959-19310-029	12/06/2013	0.00	mV		Lost TP , order created to replace in 2014
	13117021	00-0959-19310-030	12/06/2013	-1,140.00	mV		
	13821536	00-0959-19310-031	12/06/2013	0.00	mV		Lost TP , order created to replace in 2014
	14147334	00-0959-19310-035	12/05/2013	-730.00	mV		Check TP area for current requirements in 2014
19312						Impressed current anode beds	
	13605561	00-0961-19312-001	10/24/2013	-1,020.00	mV		
	13117032	00-0961-19312-004	10/24/2013	-1,460.00	mV		
	13116843	00-0961-19312-007	10/24/2013	-1,220.00	mV		
19313						Impressed current anode beds met 100 mv depol	Trouble shoot CP section, review current needs, possible rectifier candidate in 2014, installed 2 rectifier in 2014
	13110088	00-0604-19313-001	10/07/2013	-882.00	mV		
	13110089	00-0604-19313-002	10/07/2013	-847.00	mV		
	13110090	00-0604-19313-003	10/07/2013	-845.00	mV		
	13820726	00-0604-19313-004	10/07/2013	-830.00	mV		
	14526693	00-0604-19313-005	10/07/2013	-881.00	mV		
	14444215	00-0604-19313-009	10/07/2013	-868.00	mV		
	13820755	00-0604-19313-010	10/07/2013	0.00	mV		Lost TP , order created to replace in 2014
	13110093	00-0604-19313-012	10/07/2013	-846.00	mV		
	13820740	00-0604-19313-013	10/07/2013	-704.00	mV		
	13820757	00-0604-19313-014	10/07/2013	-760.00	mV		
	14280376	00-0604-19313-015	10/07/2013	-915.00	mV		
	13110095	00-0604-19313-020	10/07/2013	-940.00	mV		
19320						Impressed current anode beds & sacrificial anodes	
	13117099	00-0967-19320-001	10/23/2013	-1,400.00	mV		
	13117099	00-0967-19320-001	10/30/2013	-1,160.00	mV		
	13117100	00-0967-19320-002	10/30/2013	-1,170.00	mV		
	13117101	00-0967-19320-003	10/30/2013	-1,130.00	mV		
	13117102	00-0967-19320-004	10/30/2013	-1,118.00	mV		
	13117103	00-0967-19320-005	10/30/2013	-1,160.00	mV		
19609						Impressed current anode beds	
	14310002	00-0828-19609-001	09/19/2013	-1,090.00	mV		
	14310005	00-0828-19609-002	09/19/2013	-1,120.00	mV		
	14310008	00-0828-19609-003	09/19/2013	-1,200.00	mV		
	14310018	00-0828-19609-004	09/19/2013	-1,100.00	mV		
	14310019	00-0828-19609-005	09/19/2013	-1,115.00	mV		
	14310021	00-0828-19609-006	09/19/2013	-1,180.00	mV		
	14310022	00-0828-19609-007	09/19/2013	-900.00	mV		
	14310024	00-0828-19609-007	09/19/2013	-1,045.00	mV		
19616						Impressed current anode beds	
	13820774	00-0604-19616-021	10/08/2013	-1,050.00	mV		
	14428472	00-0604-19616-022	10/08/2013	-980.00	mV		
	13821072	00-0604-19616-023	10/08/2013	-1,116.00	mV		
	14331167	00-0604-19616-024	10/13/2013	-1,563.00	mV		
	14331163	00-0604-19616-025	10/13/2013	-1,920.00	mV		
	13820771	00-0604-19616-026	10/08/2013	-1,120.00	mV		

Metro Beltline Cathodic Protection Data							
On CP Sections and Test Points							
CP Section Number	Equipment Number	Technical ID For TP	Date	Reading	Unit	Cathodic Protection System	Comments
	13820771	00-0604-19616-026	10/08/2013	-1,120.00	mV		
	13110097	00-0604-19616-028	10/08/2013	-1,180.00	mV		
	13110098	00-0604-19616-029	10/08/2013	-1,230.00	mV		
	13110099	00-0604-19616-030	10/08/2013	-1,102.00	mV		
	13110101	00-0604-19616-032	10/08/2013	-1,111.00	mV		
	13110102	00-0604-19616-034	10/08/2013	-1,120.00	mV		
	13821089	00-0604-19616-035	10/08/2013	0.00	mV		Lost TP , order created to replace in 2014
	13110103	00-0604-19616-038	10/08/2013	-940.00	mV		
	13821093	00-0604-19616-039	10/08/2013	-949.00	mV		
	13110104	00-0604-19616-042	10/08/2013	-896.00	mV		
	13110105	00-0604-19616-043	10/08/2013	-1,015.00	mV		
	13110106	00-0604-19616-044	10/08/2013	-964.00	mV		
	13821099	00-0604-19616-045	10/08/2013	-941.00	mV		
	14428473	00-0604-19616-046	10/08/2013	-982.00	mV		
	14428473	00-0604-19616-046	10/09/2013	-1,162.00	mV		
	14428474	00-0604-19616-047	10/08/2013	-976.00	mV		
	14428474	00-0604-19616-047	10/09/2013	-1,206.00	mV		
	13110107	00-0604-19616-049	10/08/2013	-940.00	mV		
	13110108	00-0604-19616-052	10/08/2013	-788.00	mV		Trouble shoot TP area in 2014
	13821102	00-0604-19616-053	10/08/2013	-946.00	mV		
	13110110	00-0604-19616-056	10/08/2013	-1,043.00	mV		
	13110051	00-0604-19616-057	10/08/2013	-1,083.00	mV		
	13821104	00-0604-19616-058	10/08/2013	-1,094.00	mV		
	14270152	00-0604-19616-061	10/08/2013	-956.00	mV		
19617						Impressed current anode beds	
	13821124	00-0604-19617-059	10/25/2013	-1,219.00	mV		
19618						Impressed current anode beds	
	13821132	00-0604-19618-065	10/25/2013	-1,137.00	mV		
	13821154	00-0604-19618-066	10/25/2013	-1,060.00	mV		
	14375910	00-0604-19618-067	10/25/2013	-991.00	mV		
	14375906	00-0604-19618-068	10/25/2013	-1,170.00	mV		
19619						Impressed current anode beds	
	13821278	00-0604-19619-070	10/25/2013	-966.00	mV		
	13821280	00-0604-19619-073	10/25/2013	-1,106.00	mV		
	13821281	00-0604-19619-074	10/25/2013	-930.00	mV		
	13821283	00-0604-19619-075	10/25/2013	-1,115.00	mV		
	13821282	00-0604-19619-076	10/25/2013	-1,074.00	mV		
	14338794	00-0604-19619-077	10/17/2013	-1,160.00	mV		
	14338794	00-0604-19619-077	10/25/2013	-994.00	mV		
	13821284	00-0604-19619-078	10/25/2013	-1,190.00	mV		
	13821286	00-0604-19619-079	10/25/2013	-977.00	mV		
	13821290	00-0604-19619-109	10/25/2013	-1,125.00	mV		
19620						Impressed current anode beds	
	13115934	00-0604-19620-105	05/28/2013	-1,450.00	mV		
	13115935	00-0604-19620-106	07/22/2013	-1,420.00	mV		

Metro Beltline Cathodic Protection Data							
On CP Sections and Test Points							
CP Section Number	Equipment Number	Technical ID For TP	Date	Reading	Unit	Cathodic Protection System	Comments
19622						Impressed current anode beds	Trouble shoot CP section in Low readings area in 2014, review current requirements
	13821292	00-0604-19622-088	09/27/2013	-855.00	mV		
	13821293	00-0604-19622-089	09/27/2013	-943.00	mV		
	13821294	00-0604-19622-090	09/27/2013	-860.00	mV		
	13821296	00-0604-19622-092	09/27/2013	-1,140.00	mV		
	14526688	00-0604-19622-094	11/27/2013	-1,480.00	mV		
	13821298	00-0604-19622-095	09/27/2013	-1,050.00	mV		
	14526685	00-0604-19622-096	11/27/2013	-1,480.00	mV		
	13821300	00-0604-19622-097	09/27/2013	-1,040.00	mV		
	13821302	00-0604-19622-099	09/27/2013	-1,003.00	mV		
	13821305	00-0604-19622-102	09/27/2013	-1,040.00	mV		
	14526671	00-0604-19622-103	11/27/2013	-1,479.00	mV		
	14526672	00-0604-19622-104	11/27/2013	0.00	mV		Lost TP , order created to replace in 2014
	13821311	00-0604-19622-107	09/27/2013	-954.00	mV		
	14526675	00-0604-19622-111	11/27/2013	-1,585.00	mV		
	13821313	00-0604-19622-114	10/02/2013	-865.00	mV		
19624						Impressed current anode beds	
	13116778	00-0910-19624-014	10/28/2013	-1,010.00	mV		
19633						Sacrificial anodes	
	14255687	00-0903-19633-032	06/12/2013	-1,370.00	mV		
19640						Impressed current anode beds	
	13116781	00-0910-19640-018	10/28/2013	-990.00	mV		
	14356582	00-0910-19640-020	11/16/2013	-1,070.00	mV		
19641						Sacrificial anodes	
	14468491	00-0903-19641-001	06/12/2013	-1,220.00	mV		
	14468495	00-0903-19641-002	06/12/2013	-1,120.00	mV		

L – Dew Point Tests

LOCATION	TEST DATE	TIME	OUTSIDE TEMP	TEST RESULTS LB/MMCF	TESTER ID.	SITE COMMENTS
Distribution System Feed Points						
Blackdog Line @ Eagan	10/11/2012	10:09 AM	42°F	1	66140	Good Condition
TBS (DD556-028)	3/22/2013	11:58 AM	32°F	1	66140	Good Condition
	5/24/2013	7:46 AM	49°F	1	66140	Good Condition
	8/29/2013	7:57 AM	75°F	1	66140	Good Condition
	11/15/2013	8:42 AM	34°F	1	66140	Good Condition
	2/20/2014	7:50 AM	33°F	1	66140	Good Condition
	6/2/2014	11:36 AM	78°F	1	66140	Good Condition
Burnsville/Cedar Line @ Portland Station	10/11/2012	9:50 AM	42°F	1	66140	Under Construction
TBS (DD507-505)	3/22/2013	11:45 AM	32°F	1	66140	Some restoration required
	5/24/2013	7:30 AM	48°F	1	66140	Good Condition
	8/29/2013	7:39 AM	77°F	1	66140	Good Condition
	11/15/2013	8:26 AM	35°F	1	66140	Active construction, gate open.
	2/20/2014	7:33 AM	34°F	1	66140	Good Condition
	6/2/2014	7:25 AM	70°F	1	66140	Good Condition
Carver Line @ Carver	10/12/2012	5:00 PM	54°F	1	66140	Good Condition
TBS (DD063-991)	1/11/2013	1:30 PM	36°F	1	66140	Good Condition
	5/22/2013	1:41 PM	53°F	1	66140	Good Condition
	8/19/2013	2:53 PM	84°F	1	66140	Good Condition
	11/8/2013	4:43 PM	42°F	1	66140	Good Condition
	2/18/2014	11:31 AM	36°F	1	66140	Good Condition
	5/22/2014	1:07 PM	65°F	1	66140	Good Condition
Hastings 3" Line @ Ninninger TWP TBS	10/11/2012	10:42 AM	44°F	1	66140	Good Condition
(DD423-777)	3/22/2013	1:55 PM	34°F	1	66140	Good Condition
	5/24/2013	8:37 AM	52°F	1	66140	Good Condition
	8/29/2013	8:40 AM	75°F	1	66140	Good Condition
	11/15/2013	9:35 AM	36°F	1	66140	Good Condition
	2/20/2014	9:35 AM	34°F	1	66140	Good Condition
	6/2/2014	9:20 AM	72°F	1	66140	Good Condition
Lakeville Line @ Lakeville	10/8/2012	8:12 AM	42°F	1	66140	Good Condition
TBS (DD267-921)	3/8/2013	3:24 PM	38°F	1	66140	Good Condition
	5/23/2013	3:45 PM	62°F	1	66140	Good Condition
	8/21/2013	7:59 AM	69°F	7	66140	Notified Gas Control
	11/14/2013	9:02 AM	36°F	10	66140	Notified Gas Control and re-tested 11/18 Re-test indicated 3.76
	2/19/2014	11:30 AM	35°F	2	66140	Good Condition
	6/4/2014	7:30 AM	63°F	2	66140	Good Condition
Mankato 6" & 10" Lines @ Mankato	10/8/2012	12:47 PM	59°F	2	66140	Good Condition
TBS (DD333-003)	3/8/2013	1:05 PM	33°F	1	66140	Good Condition
	5/23/2013	1:24 PM	59°F	1	66140	Good Condition
	8/21/2013	11:00 AM	73°F	1	66140	Good Condition
	11/14/2013	12:17 PM	41°F	1	66140	Good Condition
	2/19/2014	2:30 PM	39°F	1	66140	Good Condition
	6/4/2014	10:42 AM	73°F	1	66140	Good Condition
Medford Line @ Medford	10/12/2012	3:47 PM	55°F	1	66140	Good Condition
TBS (No DD)	3/8/2013	11:51 AM	32°F	1	66140	Good Condition
	5/23/2013	8:35 AM	47°F	2	66140	Good Condition
	8/21/2013	9:09 AM	66°F	1	66140	Good Condition
	11/14/2013	10:37 AM	36°F	2	66140	Good Condition
	2/19/2014	1:10 PM	37°F	1	66140	Good Condition
	6/4/2014	9:08 AM	66°F	1	66140	Good Condition

LOCATION	TEST DATE	TIME	OUTSIDE TEMP	TEST RESULTS LB/MMCF	TESTER ID.	SITE COMMENTS
MIPC Line @ Cambridge	10/11/2012	2:34 PM	46°F	1	66140	Good Condition
TBS (DD141-001)	3/26/2013	1:15 PM	35°F	1	66140	Good Condition
	6/10/2013	11:05 AM	66°F	1	66140	Good Condition
	9/12/2013	9:39 AM	63°F	1	66140	Good Condition
	11/15/2013	12:24 PM	47°F	1	66140	Good Condition
	2/20/2014	12:43 PM	36°F	1	66140	Good Condition
	6/2/2014	1:00 PM	78°F	2	66140	Good Condition
Northgate Line @ Northgate	10/11/2012	1:26 PM	48°F	1	66140	Good Condition
TBS (DD560-627)	3/26/2013	11:41 AM	33°F	1	66140	Good Condition
	6/10/2013	10:00 AM	64°F	1	66140	Good Condition
	9/12/2013	8:34 AM	57°F	3	66140	Under Const. Fencing Down
	11/15/2013	10:59 AM	44°F	2	66140	Active const., gate open
	2/20/2014	10:56 AM	36°F	2	66140	Good Condition
	6/2/2014	10:50 AM	76°F	1	66140	Good Condition
Woodbury Line @ Woodbury	10/11/2012	12:06 PM	46°F	1	66140	Good Condition
TBS (DD422-926)	3/22/2013	2:35 PM	35°F	1	66140	Good Condition
	5/24/2013	9:40 AM	55°F	1	66140	Good Condition
	8/29/2013	9:25 AM	75°F	1	66140	Good Condition
	11/15/2013	10:10 AM	38°F	1	66140	Good Condition
	2/20/2014	10:31 AM	36°F	1	66140	Good Condition
	6/2/2014	10:20 AM	74°F	1	66140	Good Condition
LVC Feed Points						
	10/8/2012	9:55 AM	44°F	1	66140	Good Condition
Alcorn Ethanol @ Claremont TBS (No DD)						
Per Energy Sales, customer now owns the line. No further testing required						
Bushmills Ethanol @ Genessee TWP	10/12/2012	10:00 AM	40°F	1	66140	Good Condition
TBS (No DD)	1/11/2013	7:35 AM	33°F	1	66140	Good Condition
	5/22/2013	7:21 AM	47°F	1	66140	Good Condition
	8/19/2013	8:51 AM	67°F	1	66140	Good Condition
	11/8/2013	10:20 AM	34°F	1	66140	Good Condition
	2/18/2014	4:35 PM	39°F	1	66140	Good Condition
	5/22/2014	7:31 AM	50°F	1	66140	Good Condition
Centex Plant @ Mankato TBS - Warren	10/8/2012	1:17 PM	61°F	2	66140	Good Condition
ST. & Malin ST. (DD330-002)						
Per Engineering, this is now a distribution line due to added customers. No further testing required.						
Faribult Energy Park @ Faribult	10/8/2012	9:08 AM	44°F	1	66140	Good Condition
TBS (No DD)	3/8/2013	2:10 PM	36°F	1	66140	Good Condition
	5/23/2013	2:32 PM	61°F	1	66140	Good Condition
	8/21/2013	8:29 AM	67°F	1	66140	Good Condition
	11/14/2013	10:07 AM	36°F	1	66140	Good Condition
	2/19/2014	12:35 PM	36°F	1	66140	Good Condition
	6/4/2014	8:30 AM	66°F	1	66140	Good Condition
Granite Falls Ethanol @ Hawk Creek TWP	10/12/2012	11:15 AM	51°F	1	66140	Good Condition
TBS (No DD)	1/11/2013	8:50 AM	34°F	1	66140	Good Condition
	5/22/2013	8:41 AM	48°F	1	66140	Good Condition
	8/19/2013	10:20 AM	76°F	1	66140	Good Condition
	11/8/2013	11:55 AM	36°F	1	66140	Good Condition
	2/18/2014	3:06 PM	41°F	1	66140	Good Condition
	5/22/2014	9:00 AM	54°F	1	66140	Good Condition

LOCATION	TEST DATE	TIME	OUTSIDE TEMP	TEST RESULTS LB/MMCF	TESTER ID.	SITE COMMENTS
Lamberton Ethanol @ Lamberton TBS (No DD)	10/12/2012	12:30 PM	54°F	1	66140	Good Condition
	1/11/2013	10:00 AM	35°F	1	66140	Good Condition
	5/22/2013	9:55 AM	49°F	1	66140	Good Condition
	8/19/2013	11:06 AM	80°F	1	66140	Good Condition
	11/8/2013	12:46 PM	38°F	1	66140	Good Condition
	2/18/2014	2:37 PM	38°F	1	66140	Good Condition
	5/22/2014	10:25 AM	59°F	1	66140	Good Condition
Northstar Ethanol @ Northstar TBS (DD 338-001)	10/8/2012	2:10 PM	62°F	2	66140	Good Condition
	1/11/2013	11:20 AM	37°F	1	66140	Good Condition
	5/22/2013	11:15 AM	51°F	1	66140	Good Condition
	8/19/2013	12:57 PM	81°F	1	66140	Good Condition
	11/8/2013	2:45 PM	41°F	1	66140	Good Condition
	2/18/2014	1:05 PM	38°F	1	66140	Good Condition
	5/22/2014	11:53 AM	64°F	1	66140	Good Condition
Riverside Xcel Energy Plant @ Andover TBS 148th & Prairie Rd (No DD)	10/11/2012	1:51 PM	46°F	2	66140	Good Condition
	3/26/2013	12:10 PM	34°F	1	66140	Good Condition
	6/10/2013	10:25 AM	64°F	1	66140	Good Condition
	9/12/2013	8:52 AM	59°F	1	66140	Good Condition
	11/15/2013	11:23 AM	46°F	1	66140	Good Condition
	2/20/2014	11:43 AM	36°F	1	66140	Good Condition
	6/2/2014	11:36 AM	78°F	1	66140	Good Condition
US Bio Energy Ethanol @ Alton TWP TBS (No DD)	10/12/2012	2:30 PM	55°F	1	66140	Good Condition
	3/8/2013	1:25 PM	35°F	1	66140	Good Condition
	5/23/2013	1:45 PM	60°F	1	66140	Good Condition
	8/21/2013	9:57 AM	71°F	1	66140	Good Condition
	11/14/2013	11:26 AM	36°F	1	66140	Good Condition
	2/19/2014	2:00 PM	37°F	1	66140	Good Condition
	6/4/2014	10:09 AM	70°F	1	66140	Good Condition

Note: 1) Use manufacturer correction factor when ambient temperature is below 40°F.
2) Dewpoint testing is prohibited when ambient temperature is below 32°F due to testing equipment limitations.
3) Acceptable H2O level is 0 to7 LB/MMCF.

Metro Belt Line Segments.pdf (Attached)

GQ Source Daily Values Centerpoint.pdf (Attached)

Gas Quality.pdf (Attached)

Emergency Response Procedures.pdf (Attached)

Metro Belt Line Valve Sections.pdf (Attached)

Metro Belt Line Valve Segments Exhibit.pdf (Attached)

Leak Data.pdf (Attached)

Maps (Attached)

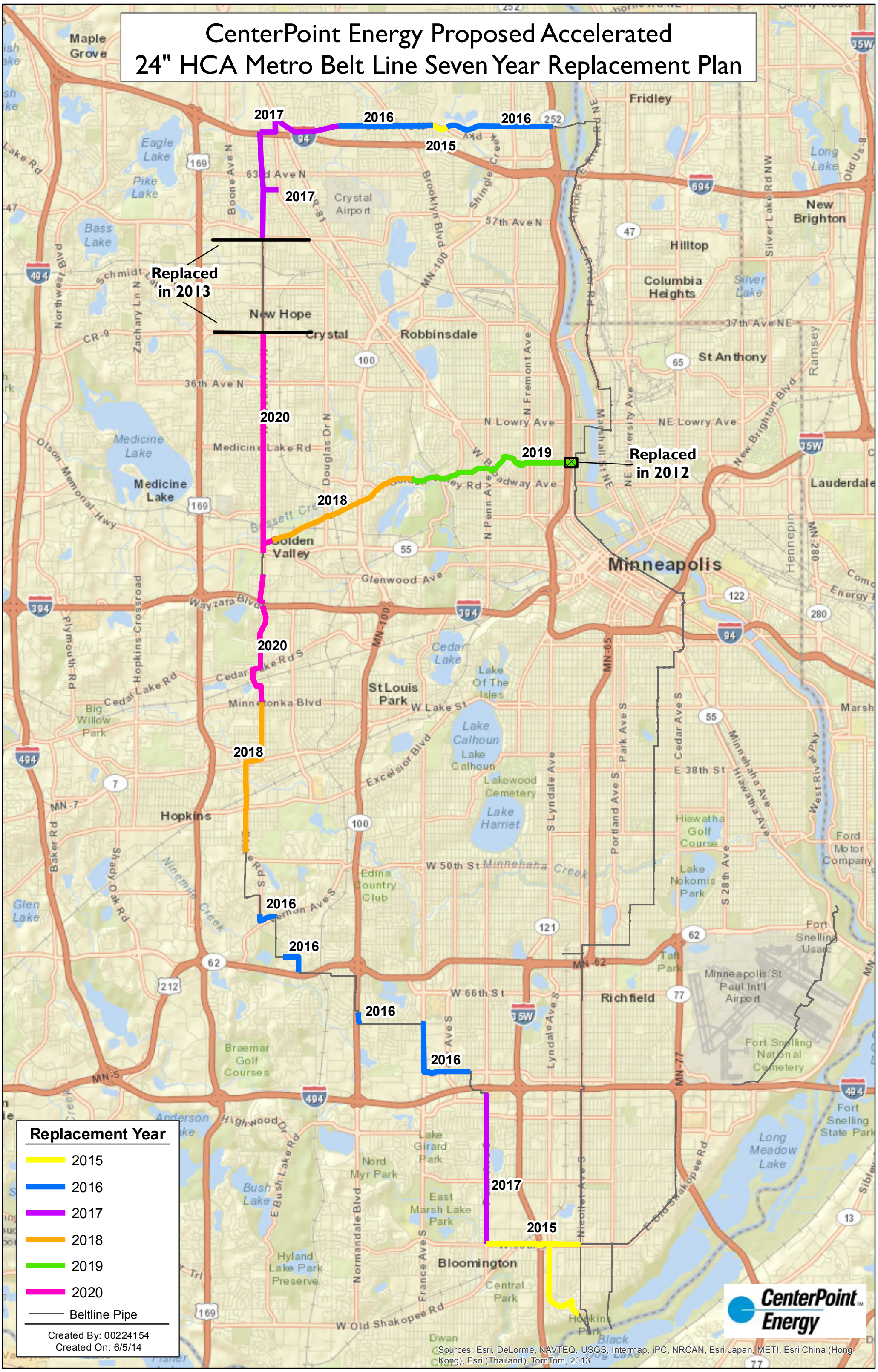
Metro Belt Line replacement to 2030.pdf

Seven Year HCA Replacement Schedule 060514.pdf

Metro Belt Line HCA and Class.pdf

Metro Belt Line HCA accelerated replacement plus remainder 2025.pdf

CenterPoint Energy Proposed Accelerated 24" HCA Metro Belt Line Seven Year Replacement Plan



Emergency Response Procedures: Introduction

CenterPoint Energy has a continuing program to enable customers, the public, and civil authorities to recognize and execute actions necessary to alert our response personnel for the safety and protection of life **first**, then property.

Our Company shall furnish its managers and supervisors who are responsible for emergency action a copy of that portion of the latest edition of the emergency procedures established in this manual as necessary for compliance with those procedures. Our Company shall train the appropriate operating personnel to assure that they are knowledgeable of the emergency procedures and verify that the training is effective. Each Region is responsible for reviewing employee activities to determine whether the procedures were effectively followed in each emergency.

Effective communications depend on having a close liaison with appropriate civil authorities. To ensure the communications are adequate, the manager or designee will obtain information from the local civil authorities on their capability to respond to natural gas emergencies. The local civil authorities should be aware and informed of pertinent Company's emergency plan procedures. Periodic meetings should be held with public officials and civil authorities to update information from both sides.

Local operations should be prepared to issue appropriate press releases whenever an event occurs that has or is likely to involve media coverage.

- Fires and explosions
- Damaged lines and major leaks that result in road closures, evacuations, etc.
- Natural disasters, severe weather, or other events that could threaten or effect the level of service provided

The local operations should be prepared to be able to communicate and inform via press releases and/or other means a large number of customers of events that have or may occur that may affect their service.

- Gas outages
- Major releases of gas, odorant spills or other odors that cause an excessive number of gas odor and/or leak complaints

- Pending natural disasters, severe weather (floods, hurricanes, etc.)

Whenever the media does respond to an incident, only those employees trained and authorized to respond to the media as a designated spokesperson should make prepared statements or answer questions.

If the incident requires reporting to the federal and/or state regulatory agencies, the local Director of Operations or equivalent, or his designated representative, must be notified immediately so that the incident can be promptly reported to these agencies.

Each Region will investigate the cause of accidents and failures in the gas system as required by 49 CFR 192.617 and discussed in Section L-617 of the O&M manual.

Qualifications of Investigating Personnel

Note: Only trained personnel will execute leak investigations:

Leak investigation training will be "on-the-job" and/or "formal" training that will enable the investigator(s) to recognize a hazardous leak situation, and whether or not they require additional assistance to locate and repair or make safe the leaking facility.

Service Personnel

Service personnel will be trained, qualified and equipped to locate and repair or make safe leaks primarily on above-ground facilities or inside buildings. Service Personnel will be trained and qualified to locate, repair or make safe leaks that, at the time of the classification of the leak, can safely be repaired by one person with readily available equipment if no construction/maintenance personnel are readily available

Construction/Maintenance Personnel

Construction and Maintenance personnel will primarily be trained and equipped to locate and repair or make safe leaks on underground facilities. However, where Service personnel are not readily available Construction/Maintenance personnel will be trained and equipped to locate and repair or make safe all types of leaks.

Administrative Responsibilities

Review of Each Day's Leak Complaints

All "leak complaints" received during a regular business day are to be reviewed no later than the close of that day or as required by local regulation to assure that they have been processed appropriately. This review is to be performed by the appropriate dispatching supervisor (or his/her designated representative).

Training of Company Personnel

Managers shall maintain a continuing program to provide training in Leak Investigation Procedures for Company personnel.

Revision History: 04-01-01; 08-15-11 (Rev. 042); 02-17-14 (Rev. 054); 05-01-14 (Rev. 055)

Receiving Emergency Calls, Identifying And Classifying Emergencies

Provision for 24-Hour/7-Day-A-Week Receipt of Calls

Provision will be made for the receipt of "leak calls" on a 24-hour, 7-day-a-week basis within all areas served by the Company. Office personnel who will receive leak calls, maintain record(s) of such calls and perform dispatching duties relating *to* leak calls, shall be trained in all areas of the Leak Investigation Procedure pertaining to receiving, initiating and dispatching leak calls.

All the information needed to determine the degree of hazard of the reported leaks should be solicited from the caller. As a minimum, the following information must be obtained on every call, when possible:

- Name of Caller
- Address of Leak
- Name of customer (if possible), if not *the* caller
- Caller's Phone Number, for possible call-back
- If leak is inside, location
- If leak is outside, location
- Odor, sight and sound indications of leak

Once the degree of hazard has been determined, one of the following entries will be made to set the investigation priority as further described in section 3) below:

- "I" for Priority 1 Immediately Hazardous
- "P" for Priority 1 Potentially Hazardous
- "24" for Priority 1 to be worked within 24 hours.

Investigation Priority

The priority of investigations will be determined by the degree of hazard indicated by information furnished by the caller. Leaks reported by the public will be dispatched promptly as priority 1. Priority 1 leaks are subcategorized as either "Immediately Hazardous" , "Potentially Hazardous" or "24 hour". The Customer Service Representative will recommend the category subject to review by dispatching and supervisory personnel.

Immediately Hazardous and Potentially Hazardous leaks are to be worked promptly!

Immediately Hazardous leaks will require the technician receiving the call to take steps to leave any active job as soon as the work location can be made safe and proceed to the dispatched location.

Potentially Hazardous leaks will allow the technician to complete any active job if it can be done in a reasonably short period of time before proceeding to the dispatched location.

Examples:

- Explosion or fire reported as being caused by leaking gas.
- Any leak reported to be inside a building.
- Line broken or equipment damaged and gas blowing inside, under or alongside a building.
- Strong or moderate odor of gas under or alongside a building.
- Line broken or cut, in street or easement, and gas is blowing.
- Meter installation or regulator station damaged by impact from vehicle or by deterioration and gas blowing.
- Underground leak in street or alley in downtown or shopping center area where odor is strong, or gas is blowing, or bubbling sound indicates an accumulation of gas under extensive paving.

- Underground leak in residential or industrial or scattered commercial areas where odor is strong, blowing, or gurgling sound near a building, indicates gas may be entering the building.
- Report of carbon monoxide poisoning or asphyxiation
- Outages covering a large area
- Natural disasters
- Terrorist activity – bomb threats, sabotage, etc.
- Any other event judged as significant by the operator
- Odor of gas in manholes, conduits or raceways.
- Any leak which caller says is hazardous.
- Any leak where information supplied by caller is insufficient to determine degree of hazard.

All other leaks will be classified as 24 Hour leaks. Service technicians/first responders will route with other work but make certain that the leak is investigated as soon as practical within 24 hours.

Examples:

- Moderate or slight odor in streets or alleys remote from buildings.
- Meter or meter loop leaks that give off moderate or slight odor and are not near a building.
- Dead vegetation or shrubs in or along streets, alleys or easements reported to be caused by leaking gas.

Selection of Investigator

Qualified personnel trained and experienced in leak investigations are the ones who will normally be dispatched to the leak location.

Responding To Leak Or Odor Complaints

Execution of Leak Investigations

Making the area safe

The first priority is to make the area safe. The area is made safe when the incident is brought under control and does not significantly threaten public safety. This does not necessarily mean that the flow of product has been stopped.

Depending on the type and severity of the emergency situation, the employee is to acknowledge arrival to the scene with the appropriate emergency personnel and/or company contact. If there are no other emergency personnel at the site when the employee arrives, the employee should proceed but make themselves available if others do show up.

Civil authorities will be in charge of the scene if they are present. The CNP investigator will need to work closely with civil authorities to exchange information and determine what steps the employee needs to take. The employee should perform a thorough independent investigation unless the information received from the civil authorities is credible and sufficient enough to make taking some of the actions unnecessary. If there is any indication that CNP facilities were involved in the incident leading to a fire, injury or fatality, the employee will notify their supervisor and perform a thorough independent investigation.

Personnel engaged in executing leak calls will place the highest priority on the protection of the customer and the general public from possible hazards. Where warranted by the severity of a leak, investigating personnel will advise a customer or the general public to evacuate a building and/or some specific outside area. Also barricade off a leak area, re-route traffic around the area and take such other precautions as necessary to prevent ignition of gas in the leak area. The services of police and fire officials will be solicited when needed to assist and enforce these precautionary measures.

All Service and Construction personnel, while in the process of locating a hazardous "outside leak", should check all buildings in the vicinity to determine if a hazard exists within the buildings. If a hazard exists, customers should be instructed not to provide any sources of ignition, i.e., not to operate lights or electrical appliances, strike matches, etc. Where hazards exist from gas entering a house or building, the house or building should be evacuated immediately. It is important that the action taken be based on the facts available to the Company

representatives making the investigation or receiving the call from customers. If the first responder investigating the leak needs assistance in determining the severity of the condition, they shall remain on the premises and immediately contact their supervisor for assistance.

When the emergency affects a system that has system pressure or flows monitored or controlled through a SCADA system, the local gas control section should be notified. Examples of emergencies that could affect these systems are damages or failures on:

mains that are critical to the system because of size or location

SCADA equipment or the components of the system monitored or controlled

pressure control equipment

All tests conducted should be witnessed, if possible by civil authorities and the results should be documented.

Investigating the Leak

The information obtained from the caller is usually transmitted to a service person to make an on-site investigation. The first responder will conduct a thorough investigation following all leak calls or whenever gas leakage is suspected, insure no hazardous condition is present. If an indication of gas is found, testing should continue to determine the extent of gas migration by locating the 0% perimeter of the migration area and document appropriately. The service person (or first responder) repairs the leak, if possible, or determines the need for additional personnel. If the service person cannot repair the leak and determines the need for a crew, he/she will investigate and classify the leak according to repair priority "A", "B" or "C". (See Leak Classification Standard). Permanent repairs to be handled by standard Company procedures.

Note: Leaks found in the vicinity of transmission lines

Transmission lines are typically high pressure lines that transport significant volumes of natural gas and therefore any leak must be rigorously evaluated to determine the source of the leak. Transmission lines and distribution lines run parallel to and cross each other throughout the operating systems and pose a challenge to making a determination as to the source of any detected leak.

Whenever a transmission line is in close proximity to a suspected leak, reasonable steps must be taken to pinpoint the leak on the transmission line or eliminate the possibility that the transmission line is the source of the leak.

A transmission line is considered in close proximity if the possibility of gas migrating from the line to the site being investigated cannot be reasonably ruled out.

Leaks Reported Inside Buildings

Once in the building the following should be done.

- Take CGI samples starting at the ceiling.
- Ventilate building and leave access open for quick exit
- When deemed necessary, check CO and O_2 levels

Service personnel will conduct meter shut-in tests or house piping pressure tests or soap tests on appliance connectors or such other tests as may be necessary to determine the source of gas leakage. If the source of gas is found to be in

customer's house piping, equipment, or equipment connections and the leak cannot be repaired by such simple measures as tightening a fitting, a valve core, etc., the customer will be advised to obtain the services of a plumber. If the leak cannot be isolated by actions such as turning off an appliance valve, or if Service personnel cannot gain access to the building, the stopcock upstream of the meter will be locked off and sealed. A blind disc and gasket will be installed in the outlet meter swivel, unless the meter loop is otherwise configured to eliminate any possible source of gas into the building or the meter is removed. Where the source of leakage into a building cannot be located or verified as being downstream of meter, the service person shall so notify appropriate personnel, and remain on the scene pending arrival of Construction and Maintenance personnel. The service person, if equipped with a combustible gas indicator, will conduct a survey including roof vents and the areas adjacent to and under the building to determine the source of gas. He / She will outline the results to the Construction and Maintenance personnel (or will make the necessary repairs as appropriate). Construction and Maintenance personnel (or service person if appropriate) will conduct combustible gas indicator tests in barholes and other openings until the source of leakage is discovered and the leaking facility is repaired, replaced, or otherwise made safe.

Leaks Reported Outside Buildings

Depending upon the information supplied by the caller, an outside leak may be dispatched to trained Service personnel or Construction and Maintenance personnel. The investigator will immediately determine the degree of hazard. If the personnel assigned to investigate the leak are not equipped to establish the source of the leak or to repair or make safe a Priority 1 leak, they will notify their dispatcher or other appropriate personnel and will stand by, pending arrival of additional help. Personnel standing by an immediately or potentially hazardous leak will take those steps necessary to protect the customer and the general public as outlined in 1, above.

Gas Leak Detection

Construction and maintenance personnel are usually responsible for locating and repairing underground leakage. Therefore they must: (1) rely on instruments as well as established leak procedures to locate leaks; and (2) recheck the repair work before backfilling the excavation to ensure that the source of the gas leak has been repaired. The following safe work practices will be observed when locating and repairing leaks:

1) Use combustible gas indicators (CGIs) and oxygen monitors (OMs), both inside and outside buildings, as well as underground, to detect the presence of leaking gases, or gaseous and/or oxygen-deficient atmospheres. Refer to **Special Precautions for Gaseous Atmospheres**.

   a) Test all ground openings and/or "suspect-areas" in the vicinity of the reported leak. Use a probing bar to ventilate all "gas-rich" areas found while probing for the source of the leak.

   b) Test over and under all gas mains and service lines in the area.

   c) Investigate all indications of recent excavations in the area as possible damage points from which gas may be leaking.

   d) Check inside adjacent buildings for presence of gas and at sewer vents (roof level) whenever the sewer lines in the street indicate gas is present.

   e) Whenever a leak investigation indicates that a building contains a concentration of gas approaching 1% natural gas in the air, your supervisor or manager shall be notified and evacuation procedures instituted immediately. While inside the building, do not operate any switches. Leave the lights and appliances alone, and turn off the gas service outside the building.

2) Extinguish or eliminate all ignition sources in an open-air area showing a concentration of gas approaching 1% or more natural gas in the air. Some ignition sources include:

   a) Gaslights, flashlights, and other non explosion-proof lighting.

   b) Automobiles, trucks, or tractors -- while running.

   c) Electric machinery or tools.

d) Diesel engines and hot engine parts.

e) Static electricity.

f) Lighted tobacco products.

3) Use only explosion-proof lights in confined spaces while checking for gas leakage.

4) Do not allow smoking in the area of a reported leak.

Fires And Explosions

Note: The Director of Operations will be responsible for all actions required herein. Specific actions may be delegated to others.

Immediately upon knowledge of any fire or explosion in the vicinity of the company's pipeline facilities, if death, personal injury or serious property damage results, the following steps should be taken:

- Advise manager or designee in charge of operations in the area of occurrence. Such person will immediately pass the information on through channels so that prompt notice will reach the Director of Operations and the designated representative of our risk management group.

- The area affected by the incident must be immediately made safe. If this is not possible, the public must be protected by preventing access to the area until the danger from any other hazards are eliminated.

- Conduct the appropriate investigation for the type of incident as described below.

Note: A complete investigation may not be necessary if there is only minor property damage or the cause is clearly not due to the release of natural gas and the natural gas pipeline facilities were not involved or affected. These incidents must still be reported to the Operations Director and the need for a complete investigation should be discussed at that time.

Explosions or Fires on Premises Served by Our Company or Surrounding Area

The manager or designee shall immediately assume charge of the investigation, notify appropriate civil authorities, and insure the following information is collected and documented in order to complete the forms as designated by the Director of Operations.

1. Names and addresses of witnesses.

2. The level of odorization of gas at the site (preferably witnessed by the Fire Marshall, or Fire Chief, or other city official at the scene). The odor intensity test will be performed by qualified personnel; within a practical time frame; at a safe location served from the same distribution system as close to the site as practical.

3. Make and record tests of flowing pressure and lock up pressure on service regulator, if any, serving the premises, and have tests witnessed by Fire Marshall (or Fire Chief, or other city official), if possible. Record the make, size, type, and condition of regulator and size and location of riser.

4. Check house piping by meter shut-in test, when conditions permit, and record amount of gas leakage if any, using meter test hand. If conditions do not permit the making of a house piping check, make notes as to such conditions. Tests preferably should be witnessed by Fire Marshall, or Fire Chief, or other city official.

5. Record make of meter, meter number, meter size, and meter reading. Get record of gas consumption over past twelve months.

6. Show whether meter was locked off or active at time of explosion or fire.

7. Take whatever steps are necessary to assure that our meter and regulator are not tampered with by anyone, pending a determination as to removal of our equipment.

8. Complete and forward appropriate reports. A copy of the approved reports should be forwarded to the Claims Department.

During the time the above preliminary investigation is in progress, a decision will have been reached as to the employment of an outside consulting expert. If an outside consulting expert is employed, the investigator shall work under the general direction of the Director of Operations and/or the Claims Department.

If no outside consulting expert is employed, further investigation will be conducted in conjunction with civil authorities. This investigation will be under the direction of the management designated by the Director of Operations and/or the Claims Department, our local operating forces and our risk management representative. During such investigation the Director of Operations and/or the Claims Department shall be kept closely advised.

During the subsequent investigation referred to above, the following listed information and other pertinent information should be collected for review, with copies forwarded to the Claims Department.:

- Record of service (or other) calls at address involved, and of all complaints, if any, received from address involved during twelve months preceding accident.

- Location and description of our lines in the immediate vicinity, with record of the most recent leakage survey of the facilities, construction or maintenance performed thereon, as well as location of competitive gas lines, if any.
- Determine who owns the property and what insurance company or agent has insurance coverage on property in question.

- Determine whether or not to get statements from witnesses other than Company employees. Get statements from all Company employees who have any knowledge of the occurrence or events prior or subsequent to the occurrence. Contact the Legal Department to determine if they want to have an attorney participate while statements are taken.

- Determine whether or not meter and regulator are to be removed. If decision is made to remove them, secure concurrence of Fire Marshall or other city official and initiate the chain of custody procedures, completing the Chain of Custody form. All items of evidence removed from the scene should be marked with the date and investigator's initials, or marked in some other logical way for future identification.

- Under no circumstances shall the meter and/or regulator be tested, examined, disassembled etc. or given to any person outside our Company without express approval of the Director of Operations.

- Complete photographic evidence of the scene should be made. A record of all photos taken must be prepared.

- Determine and record names and addresses of injured persons and extent of injuries to each. Find out where they were treated and by whom.

- During entire course of investigation, our forces should try to work as closely as possible with civil authorities in their investigation and if possible obtain copies of their reports, or information on where to obtain copies.

- Obtain copies of newspaper reports of the incident.

- Determine, if a gas appliance is involved in the explosion, who sold, installed and serviced such appliance, and dates of sale, installation and services, if practical.

- Lines and manholes in immediate vicinity shall be checked for leakage and location of any leaks found must be recorded. It is essential to determine an appropriate action and to avoid over-reaction which could cause panic or create suspicion even though our facilities may not be involved.

- Check engineering records to ascertain status of facilities within the immediate vicinity at the time of the incident.

- Conduct any other logical investigation needed to determine whether or not explosion was caused by natural gas, and if so, where foreign lines are present, determine who is involved.

Explosions or Fires Not on Customer Premises

The manager or designee shall immediately assume charge of the investigation, notify appropriate civil authorities, and insure the following information is collected and documented in order to complete the forms as designated by the Director of Operations.

1. Names and addresses of witnesses.

2. Location and description of all of our lines in the area.

3. Results of a leakage survey using a Combustible Gas Indicator in all sewer manholes and catch-basins, and any other underground openings in the area. The make, model and serial number of every instrument employed in a gas investigation should be identified.

4. If no gas is found in such survey, investigation shall be suspended pending advice from upper management or arrival of an outside consulting expert in our employ.

5. If gas is found in such survey, the manager or supervisor shall immediately call out a crew and begin search for the source of the gas; at the same time he shall notify the upper management of such findings.

6. Complete the forms and/or reports to document the investigation as designated by the local Region and forward to the local Region Corporate Office. Reporting of such incidents to insurance carriers shall be the responsibility of the Director of Operations. Technical review of such incidents with our risk management group shall be directed to the Director of Operations and/or the Claims Department.

During the time the above preliminary investigation is in progress, a decision will have been reached between our risk management group and the Director of Operations as to the employment of an outside consulting expert. If an outside consulting expert is employed, the investigator shall work under the general direction of the Director of Operations and in close coordination with the local management and the Claims Department.

If no outside consulting expert is employed, further investigation will be conducted under the direction of the local area management in cooperation with

our local operating forces and our risk management representative. During such investigation the Director of Operations shall be kept closely advised.

Subsequent investigation of the physical plant shall be conducted under the supervision of the local area management, in cooperation with any outside consulting expert we employ, our local operating forces, our risk management representative and civil authorities.

A complete record of the investigation shall be maintained by the local office or its designee and shall be developed from the following:

- All information developed as outlined above.
- History of construction and maintenance records of all lines in the area. Determine date and particulars of most recent leakage survey of the facilities.
- Check of engineering records to ascertain any inactive service lines not killed at main in immediate vicinity.
- Determine who owns the property and what insurance company or agent has insurance coverage on property damaged as a result of the occurrence.
- Determine whether or not to get statements from witnesses other than Company employees. Get statements from all Company employees who have knowledge of the occurrence or events prior or subsequent to the occurrence. Contact the Legal Department to determine if they want to have an attorney participate while statements are taken. Obtain copies of newspaper reports of incident.
- Complete photographic evidence of the scene should be made. A record of all photos taken must be prepared.
- Determine names and addresses of fatalities and/or injured persons and extent of injuries to each. Find out where they were treated and by whom.
- During the entire course of investigation, our forces should try to work as closely as possible with civil authorities conducting their investigation. Copies of any reports made should be obtained, or information on how to

obtain such reports. If no outside consulting expert is employed, further investigations will be conducted under the direction of the local area management in cooperation with our local operating forces and our risk management representative. During such investigation the Director of Operations and the Claims Department shall be kept fully advised.

- Any additional logical investigation should be made to determine whether or not explosion involved natural gas, and if so, where competitor lines are present, determine if from our system or from theirs.

Revision History: 08-15-11 (Rev. 042); 11-01-13 (Rev 052)

GENERAL TERMS AND CONDITIONS

44. QUALITY

All gas to be received from Shipper into the Northern pipeline system shall conform to the following specifications:

a) The gas shall be commercially free from objectionable odors, solid matter, dust, gums and gum-forming constituents, or any other substance which might interfere with the merchantability of the gas, or cause injury to or interference with proper operation of the lines, meters, regulators, or other appliances through which it flows.

b) Oxygen - less than or equal to 0.2% by volume.

c) Hydrogen sulfide - less than or equal to 1/4 grain/Ccf.

d) Total Sulphur - less than or equal to 20 grains/Ccf.

e) Carbon Dioxide - less than or equal to 2.0% by volume.

f) Water - less than or equal to 6 pounds/MMcf.

g) Heating Value - greater than or equal to 950 Btu/Cubic Foot.

h) The temperature shall be less than or equal to 120 degrees Fahrenheit.

If any gas received by Northern shall fail at any time to conform to the specifications set forth above, Northern may refuse to accept delivery pending correction by the other party. Northern may, on a basis that is not unduly discriminatory, elect to accept gas which fails to meet specifications.

PROCESSING

A Shipper on Northern's system shall have the option to: 1) receive a credit from Northern for liquid revenues, or 2) enter into a separate processing arrangement with a plant operator, pursuant to the provisions set forth in this Tariff.

Northern shall have the unconditional right to commingle gas received from any Shipper or source for transportation under this Tariff with gas received from other Shippers or sources. Northern's obligation under this Tariff shall be to deliver thermally equivalent volumes, less fuel, from the points of receipt to the points of delivery under the terms and conditions of the applicable Rate Schedules of this Tariff, and each party tendering gas to Northern shall recognize that gas delivered by Northern has been commingled from various sources and will not be the same molecules, or contain the identical constituents, as the gas received by Northern. No party tendering gas to Northern shall have the right to any particular constituent in the gas tendered, including but not limited to, liquids and liquefiable hydrocarbons while such constituents are entrained in the gas stream. However, in the event a Shipper or its designee elects to retain the right to process gas tendered to Northern, a Shipper or its designee which has contracted with any processing plant will be entitled to an agreed-upon share of plant products, revenue or other consideration, as the case may be, attributable to gas processed at a processing plant in accordance with the allocation methodology agreed to under subparagraph (a) or a Shipper or another party which has not contracted with any processing plant will be entitled to a share of the liquids revenues in accordance with the allocation methodology under subparagraph (b). Any Shipper may elect to retain the right or elect to appoint to its designee as the party with the right to process gas tendered to Northern for the removal of liquids and liquefiable hydrocarbons under the options set forth below. For the purposes of this Section, Shipper's designee may be any party designated by Shipper to Northern by written notice, (including but not limited to a working interest owner in a well from which Shipper purchases gas, a marketer, broker, or the operator of a gas processing plant) and such designee need not be a designee under Shipper's Service Agreement for any purpose such as nomination, scheduling, billing or payment.

s Quality Stream by Day 4122 Hugo Elk River/Rice Lake

Measurement Day	Heat Value Dry (BTU)	Carbon Dioxide (CO2)	Nitrogen (N2)	Specific Gravity	Methane (C1)	Ethane (C2)	Propane (C3)	Normal Butane (N C4)	Normal Pentane (N C5)	Iso-Butane (Iso C4)	Iso-Pentane (Iso C5)	Hexane (C6)	Heptane (C7)	Octane (C8)	Nonane (C9)	Cricondentherm (CHDP)
20130501	1029.7552	0.6665	1.0972	0.5869	94.0753	3.9879	0.1632	0.0056	0.0001	0.0041	0.0001	0	0	0	0	-95.4326
20130502	1028.5515	0.6374	1.0686	0.5854	94.343	3.7993	0.1439	0.0043	0.0001	0.0034	0.0001	0	0	0	0	-96.7277
20130503	1028.6688	0.6541	1.0715	0.5858	94.2743	3.8557	0.1373	0.0037	0.0001	0.0031	0.0001	0	0	0	0	-96.5191
20130504	1030.1442	0.7396	1.1306	0.5887	93.8848	3.9993	0.211	0.0164	0.0025	0.0103	0.0029	0.0013	0.0009	0.0004	0.0001	-55.8541
20130505	1027.8838	0.8688	1.2006	0.5901	93.8173	3.7909	0.2662	0.0273	0.0037	0.0173	0.0046	0.0015	0.0011	0.0005	0.0001	-51.8521
20130506	1026.8907	0.8442	1.1453	0.5885	94.0324	3.7314	0.2106	0.0175	0.0022	0.0115	0.0028	0.001	0.0007	0.0003	0	-59.9641
20130507	1029.1163	0.7134	1.165	0.588	94.0021	3.8723	0.2113	0.017	0.0025	0.0109	0.0029	0.0013	0.0009	0.0004	0.0001	-55.6586
20130508	1028.1355	0.6982	1.1538	0.587	94.1328	3.8119	0.1799	0.0107	0.0013	0.0074	0.0017	0.0012	0.0009	0.0004	0	-58.1186
20130509	1028.8206	0.6427	1.1234	0.5862	94.1621	3.9272	0.1368	0.0041	0	0.0032	0.0001	0.0002	0.0001	0.0001	0	-88.4344
20130510	1031.3494	0.721	1.1467	0.5894	93.7359	4.1466	0.2152	0.0151	0.0021	0.0122	0.0029	0.0011	0.0008	0.0003	0	-58.436
20130511	1024.7935	0.7524	1.1541	0.5858	94.5461	3.2732	0.2237	0.022	0.0034	0.0167	0.0044	0.0019	0.0014	0.0006	0.0001	-48.9703
20130512	1028.7856	0.7758	1.2552	0.5898	93.7793	3.8786	0.2553	0.0249	0.0039	0.0182	0.005	0.0019	0.0014	0.0006	0.0001	-48.6485
20130513	1032.9210	0.7421	1.2034	0.5913	93.3953	4.382	0.2295	0.021	0.0033	0.0157	0.0043	0.0016	0.0012	0.0005	0.0001	-51.0009
20130514	1033.6866	0.7329	1.1511	0.5911	93.4822	4.323	0.2549	0.0246	0.0038	0.0186	0.0051	0.0018	0.0013	0.0006	0.0001	-48.661
20130515	1035.4939	0.7894	1.1822	0.5935	93.1289	4.5296	0.293	0.0334	0.0054	0.026	0.007	0.0025	0.0018	0.0008	0.0001	-42.3523
20130516	1034.9242	0.6717	1.1715	0.5911	93.4477	4.3732	0.2731	0.0274	0.0042	0.0215	0.0056	0.0019	0.0014	0.0006	0.0001	-47.8215
20130517	1035.1201	0.7177	1.1782	0.592	93.3548	4.3641	0.3172	0.0308	0.0045	0.0227	0.0058	0.002	0.0015	0.0006	0.0001	-46.6249
20130518	1033.2393	0.7561	1.1704	0.5914	93.4776	4.2563	0.2767	0.0287	0.0043	0.0204	0.0055	0.0019	0.0014	0.0006	0.0001	-47.8724
20130519	1034.5875	0.6602	1.192	0.5909	93.3894	4.4779	0.2392	0.0186	0.0025	0.0138	0.0034	0.0014	0.001	0.0004	0.0001	-53.5771
20130520	1032.7078	0.6363	1.246	0.5899	93.5663	4.2717	0.2356	0.0197	0.0027	0.0151	0.0037	0.0014	0.001	0.0004	0.0001	-53.8869
20130521	1035.6921	0.6787	1.1731	0.5917	93.3179	4.5001	0.2711	0.026	0.0038	0.0203	0.0051	0.0019	0.0014	0.0006	0.0001	-47.8613
20130522	1037.0061	0.6778	1.1912	0.5927	93.1332	4.6422	0.2946	0.0271	0.0038	0.021	0.0052	0.0019	0.0014	0.0006	0.0001	-47.8906
20130523	1034.7407	0.6777	1.181	0.5912	93.3889	4.4488	0.2525	0.0221	0.0033	0.0178	0.0045	0.0016	0.0012	0.0005	0.0001	-51.1835
20130524	1036.0374	0.6727	1.1763	0.5919	93.2372	4.6188	0.2425	0.0223	0.0034	0.0185	0.0048	0.0017	0.0013	0.0005	0.0001	-49.6595
20130525	1033.5122	0.6772	1.1601	0.5902	93.5656	4.319	0.2332	0.0192	0.0027	0.0163	0.0039	0.0014	0.001	0.0004	0.0001	-53.9523
20130526	1038.7794	0.7282	1.1118	0.5938	92.9787	4.8207	0.2975	0.0273	0.0038	0.022	0.0055	0.0021	0.0016	0.0007	0.0001	-45.5239
20130527	1032.1963	0.6588	1.1914	0.5894	93.5772	4.3867	0.1712	0.007	0.0002	0.0055	0.0009	0.0005	0.0004	0.0002	0	-70.6256
20130528	1031.3734	0.678	1.1689	0.5889	93.6775	4.3012	0.1621	0.0065	0.0001	0.0047	0.0002	0.0004	0.0003	0.0001	0	-74.2728
20130529	1031.6033	0.6733	1.1602	0.5889	93.6869	4.2958	0.1722	0.0062	0.0001	0.0044	0.0001	0.0004	0.0003	0.0001	0	-74.5306
20130530	1030.6151	0.6782	1.1278	0.588	93.8744	4.1428	0.1638	0.0069	0.0001	0.0048	0.0003	0.0005	0.0003	0.0001	0	-73.5861
20130531	1030.7043	0.7117	1.1597	0.5889	93.756	4.1599	0.1918	0.0105	0.0006	0.0073	0.0012	0.0006	0.0005	0.0002	0	-68.0247
20130601	1030.4895	0.7213	1.2174	0.5896	93.6625	4.1583	0.2138	0.0132	0.0013	0.0086	0.0019	0.0008	0.0006	0.0002	0	-64.0665
20130602	1033.2477	0.6711	1.2084	0.5904	93.4115	4.4869	0.2037	0.0095	0.0002	0.0065	0.0009	0.0006	0.0005	0.0002	0	-68.2041
20130603	1031.1260	0.6367	1.2011	0.5884	93.7582	4.2034	0.1858	0.0082	0	0.0055	0.0001	0.0005	0.0003	0.0001	0	-73.5272

20130604	1032.5304	0.6585	1.2059	0.5897	93.5228	4.4048	0.1922	0.0084	0.0001	0.006	0.0005	0.0005	0.0004	0.0002	0	-72.4337
20130605	1032.7848	0.6509	1.2157	0.5899	93.4657	4.4749	0.1804	0.0068	0	0.0048	0.0001	0.0004	0.0003	0.0001	0	-74.5673
20130606	1034.0084	0.6348	1.2164	0.5904	93.4329	4.4537	0.2302	0.0151	0.0015	0.0123	0.0021	0.0006	0.0004	0.0002	0	-68.9757
20130607	1036.1981	0.6364	1.2055	0.5917	93.1596	4.746	0.222	0.0142	0.0013	0.0112	0.0023	0.0007	0.0005	0.0002	0	-64.6745
20130608	1036.3611	0.6486	1.1633	0.5915	93.1865	4.7663	0.2088	0.0124	0.001	0.0097	0.0018	0.0008	0.0006	0.0002	0	-64.2386
20130609	1040.6674	0.6518	1.2416	0.5952	92.6295	5.0958	0.3167	0.0287	0.0041	0.0224	0.0056	0.0019	0.0014	0.0006	0.0001	-47.4722
20130610	1043.6964	0.665	1.2407	0.5973	92.3213	5.2991	0.39	0.037	0.0054	0.0294	0.0073	0.0023	0.0017	0.0007	0.0001	-43.0018
20130611	1046.4224	0.697	1.2037	0.5992	91.9655	5.6583	0.4017	0.0345	0.0043	0.0254	0.0057	0.0019	0.0014	0.0006	0.0001	-46.56
20130612	1041.0167	0.663	1.2166	0.5953	92.5555	5.21	0.3154	0.0195	0.0017	0.0139	0.0024	0.001	0.0007	0.0003	0	-59.4569
20130613	1035.2617	0.6106	1.2545	0.5912	93.2377	4.6148	0.266	0.009	0	0.0062	0.0001	0.0005	0.0003	0.0001	0	-72.3037
20130614	1035.0125	0.636	1.2659	0.5916	93.1581	4.6849	0.239	0.0089	0.0001	0.0062	0.0001	0.0004	0.0003	0.0001	0	-74.2706
20130615	1034.1251	0.6373	1.2353	0.5907	93.3234	4.5666	0.2221	0.0083	0.0001	0.0058	0.0002	0.0004	0.0003	0.0001	0	-73.5065
20130616	1031.1978	0.6106	1.3231	0.5893	93.5674	4.2577	0.2248	0.0088	0.0001	0.0063	0.0004	0.0004	0.0003	0.0001	0	-74.5025
20130617	1030.6328	0.606	1.3355	0.589	93.6001	4.2359	0.209	0.0076	0.0001	0.0053	0.0001	0.0002	0.0001	0.0001	0	-86.5836
20130618	1031.2487	0.6093	1.3107	0.5892	93.5847	4.2591	0.2223	0.0077	0.0001	0.0054	0.0001	0.0003	0.0002	0.0001	0	-77.6869
20130619	1034.3218	0.6383	1.2599	0.5911	93.262	4.5791	0.2442	0.0093	0.0001	0.0061	0.0001	0.0004	0.0003	0.0001	0	-75.1527
20130620	1035.9059	0.6689	1.2156	0.5921	93.0801	4.7795	0.2418	0.0082	0.0001	0.0054	0.0001	0.0002	0.0002	0.0001	0	-82.5757
20130621	1037.3513	0.6628	1.2279	0.5931	92.9824	4.7949	0.2952	0.0171	0.0018	0.013	0.0025	0.0011	0.0008	0.0003	0	-57.9153
20130622	1044.8024	0.6783	1.163	0.5974	92.4369	5.1563	0.4678	0.0419	0.0062	0.034	0.0087	0.0033	0.0024	0.001	0.0001	-36.3227
20130623	1043.7339	0.7282	1.1045	0.5969	92.5825	5.0322	0.4568	0.041	0.006	0.0333	0.0086	0.0034	0.0024	0.001	0.0001	-35.8644
20130624	1040.5250	0.7214	1.1162	0.5949	92.8529	4.8559	0.3878	0.0286	0.004	0.0226	0.0056	0.0024	0.0018	0.0008	0.0001	-42.9157
20130625	1043.4844	0.7193	1.0804	0.5964	92.6359	5.054	0.4262	0.0361	0.0055	0.0286	0.0075	0.0031	0.0022	0.001	0.0001	-37.8383
20130626	1043.1530	0.6473	1.2252	0.5965	92.5827	4.9778	0.4684	0.0437	0.0066	0.0325	0.0087	0.0034	0.0025	0.0011	0.0001	-35.6405
20130627	1038.9958	0.6603	1.1875	0.5937	93.1428	4.4792	0.4331	0.0426	0.0064	0.0326	0.0086	0.0032	0.0024	0.001	0.0001	-36.8292
20130628	1042.1482	0.6737	1.198	0.596	92.7612	4.7706	0.4848	0.0489	0.0075	0.0375	0.01	0.0038	0.0027	0.0012	0.0002	-33.4076
20130629	1030.2660	0.669	1.237	0.5888	93.8464	3.9427	0.2665	0.0179	0.0022	0.0127	0.0029	0.0013	0.0009	0.0004	0.0001	-55.9387
20130630	1029.0530	0.6596	1.4594	0.5902	93.5111	4.0575	0.278	0.0176	0.0021	0.0101	0.0024	0.001	0.0007	0.0003	0	-59.3671
20130701	1030.8175	0.6199	1.2506	0.5885	93.7729	4.1084	0.2302	0.0098	0.0005	0.0059	0.0007	0.0005	0.0004	0.0002	0	-71.6436
20130702	1030.8268	0.5971	1.2252	0.5879	93.8889	4.0302	0.2451	0.0075	0.0001	0.005	0.0001	0.0004	0.0003	0.0001	0	-74.6347
20130703	1033.1624	0.6207	1.1896	0.5893	93.645	4.2596	0.2664	0.0097	0.0005	0.0066	0.0006	0.0006	0.0004	0.0002	0	-69.2103
20130704	1032.2739	0.6176	1.1592	0.5884	93.8173	4.1372	0.2538	0.0085	0.0001	0.0054	0.0001	0.0004	0.0003	0.0001	0	-74.3183
20130705	1032.6788	0.6184	1.1714	0.5888	93.7632	4.1496	0.2819	0.0087	0.0001	0.0055	0.0001	0.0005	0.0004	0.0002	0	-71.5547
20130706	1032.2233	0.632	1.1572	0.5886	93.8048	4.128	0.2627	0.0086	0.0001	0.0055	0.0001	0.0005	0.0004	0.0002	0	-71.9294
20130707	1031.9602	0.6272	1.171	0.5885	93.8158	4.1111	0.2593	0.0089	0.0001	0.0057	0.0001	0.0005	0.0003	0.0001	0	-72.938
20130708	1033.0106	0.6248	1.1777	0.5892	93.6844	4.2238	0.2722	0.0098	0.0001	0.0061	0.0001	0.0005	0.0004	0.0002	0	-71.7236
20130709	1034.7787	0.641	1.188	0.5907	93.3996	4.4722	0.2846	0.0082	0.0001	0.0052	0.0001	0.0005	0.0003	0.0001	0	-72.1754
20130710	1032.0106	0.6521	1.0784	0.5879	93.9382	4.0822	0.236	0.0073	0.0001	0.0049	0.0001	0.0004	0.0003	0.0001	0	-76.4991
20130711	1034.5796	0.695	1.1703	0.5912	93.3562	4.473	0.2844	0.0108	0.0006	0.0075	0.0008	0.0006	0.0005	0.0002	0	-67.5492
20130712	1030.9972	0.758	1.1375	0.5896	93.7359	4.0825	0.2647	0.0104	0.0008	0.0074	0.0011	0.0008	0.0006	0.0003	0	-63.9397
20130713	1031.8622	0.6327	1.1323	0.5881	93.8674	4.127	0.229	0.006	0.0001	0.0044	0.0002	0.0004	0.0003	0.0001	0	-73.9351

20130714	1033.9158	0.701	1.1197	0.5904	93.4856	4.4387	0.2432	0.0064	0.0001	0.0043	0.0001	0.0004	0.0003	0.0001	0	-74.2694
20130715	1030.6873	0.6746	1.142	0.5881	93.9098	4.0239	0.2382	0.0062	0.0001	0.0044	0.0001	0.0004	0.0003	0.0001	0	-76.2197
20130716	1032.4860	0.6715	1.0961	0.5887	93.7928	4.1868	0.2411	0.0064	0.0001	0.0044	0.0001	0.0004	0.0003	0.0001	0	-74.7745
20130717	1033.6141	0.6811	1.1039	0.5897	93.6216	4.3271	0.2521	0.0077	0.0001	0.0051	0.0002	0.0005	0.0004	0.0002	0	-71.6499
20130718	1031.6959	0.6846	1.13	0.5888	93.7951	4.1341	0.2404	0.0083	0.0004	0.0055	0.0005	0.0005	0.0004	0.0002	0	-70.9234
20130719	1030.8434	0.7493	1.2566	0.5907	93.5444	4.1303	0.2881	0.0157	0.0018	0.0097	0.0021	0.001	0.0007	0.0003	0	-59.5941
20130720	1031.4780	0.7706	1.4774	0.5938	93.0005	4.352	0.3504	0.0249	0.0032	0.0145	0.0035	0.0015	0.0011	0.0005	0.0001	-52.5023
20130721	1031.5657	0.7391	1.2826	0.5912	93.4403	4.198	0.3042	0.0177	0.0023	0.0107	0.0026	0.0012	0.0009	0.0004	0.0001	-56.2813
20130722	1033.4408	0.7144	1.1934	0.5911	93.461	4.2817	0.3209	0.0141	0.0017	0.0088	0.0019	0.0011	0.0008	0.0003	0	-58.8748
20130723	1033.1326	0.6686	1.1005	0.5892	93.7322	4.2166	0.2717	0.0056	0	0.0039	0	0.0004	0.0003	0.0001	0	-76.0053
20130724	1033.1083	0.6777	1.0974	0.5893	93.7111	4.2443	0.2573	0.0068	0	0.0044	0	0.0004	0.0003	0.0001	0	-73.5642
20130725	1033.5586	0.6907	1.0695	0.5895	93.6658	4.3245	0.2386	0.006	0	0.0039	0	0.0004	0.0003	0.0001	0	-75.6241
20130726	1034.0850	0.6852	1.087	0.5899	93.5714	4.4066	0.2372	0.0073	0.0001	0.0047	0.0001	0.0003	0.0002	0.0001	0	-79.8551
20130727	1034.2894	0.6825	1.0867	0.59	93.5612	4.4099	0.247	0.0073	0.0001	0.0047	0.0001	0.0003	0.0002	0.0001	0	-80.1891
20130728	1034.8119	0.6783	1.0981	0.5904	93.4944	4.4511	0.2656	0.0071	0.0001	0.0047	0.0001	0.0003	0.0002	0.0001	0	-78.776
20130729	1034.6166	0.6637	1.0957	0.59	93.5463	4.4276	0.2555	0.0063	0.0001	0.0043	0.0001	0.0002	0.0002	0.0001	0	-82.4523
20130730	1034.1646	0.6766	1.1093	0.59	93.5379	4.4154	0.2496	0.0062	0.0001	0.0045	0.0001	0.0002	0.0001	0.0001	0	-84.8973
20130731	1035.3009	0.7094	1.1182	0.5914	93.2992	4.6053	0.2573	0.0059	0.0001	0.0042	0.0001	0.0001	0.0001	0	0	-88.0182
20130801	1036.7014	0.7211	1.109	0.5924	93.1376	4.7408	0.2788	0.0067	0.0001	0.0049	0.0003	0.0003	0.0003	0.0001	0	-76.5212
20130802	1035.0575	0.6961	1.1348	0.5912	93.3322	4.5605	0.2662	0.0055	0.0001	0.0039	0.0001	0.0003	0.0002	0.0001	0	-78.4083
20130803	1034.0490	0.6861	1.1065	0.5901	93.5343	4.4133	0.2501	0.0055	0.0001	0.0039	0.0001	0.0001	0.0001	0	0	-92.0949
20130804	1032.6302	0.6574	1.142	0.5891	93.7112	4.2233	0.255	0.006	0.0001	0.0043	0.0001	0.0003	0.0002	0.0001	0	-80.3137
20130805	1033.3202	0.6846	1.1928	0.5905	93.456	4.3875	0.265	0.008	0.0001	0.0057	0.0001	0.0002	0.0001	0.0001	0	-85.5118
20130806	1032.5305	0.6729	1.1609	0.5895	93.652	4.2415	0.2601	0.0074	0.0001	0.0051	0.0001	0.0001	0	0	0	-92.6955
20130807	1034.2056	0.7032	1.117	0.5906	93.4675	4.4356	0.2664	0.006	0.0001	0.0042	0.0001	0.0001	0.0001	0	0	-91.6368
20130808	1033.8818	0.6881	1.1406	0.5904	93.4855	4.4132	0.2623	0.0061	0.0001	0.0041	0.0001	0.0001	0	0	0	-91.8993
20130809	1036.2280	0.6682	1.1505	0.5916	93.2452	4.6237	0.2997	0.0071	0.0001	0.0048	0.0001	0.0003	0.0002	0.0001	0	-78.4329
20130810	1033.3159	0.6654	1.1357	0.5896	93.5787	4.392	0.2188	0.0054	0.0001	0.0039	0.0001	0.0001	0	0	0	-92.7727
20130811	1033.6166	0.6652	1.1204	0.5896	93.5642	4.433	0.2081	0.0052	0.0001	0.0038	0.0001	0	0	0	0	-92.7699
20130812	1034.6208	0.6397	1.1567	0.5902	93.4323	4.5325	0.2269	0.0069	0.0001	0.0046	0.0001	0.0001	0.0001	0	0	-90.8579
20130813	1035.5271	0.6501	1.1739	0.5912	93.2665	4.6552	0.2421	0.0069	0.0001	0.0047	0.0001	0.0002	0.0002	0.0001	0	-82.3297
20130814	1033.3425	0.653	1.1537	0.5896	93.6036	4.323	0.2544	0.007	0.0001	0.0046	0.0001	0.0003	0.0002	0.0001	0	-80.6705
20130815	1035.0273	0.6777	1.182	0.5914	93.2513	4.6337	0.2416	0.008	0.0001	0.0049	0.0001	0.0003	0.0002	0.0001	0	-77.7964
20130816	1033.8857	0.7109	1.1287	0.5906	93.4332	4.4838	0.2309	0.0074	0.0001	0.0048	0.0001	0.0001	0.0001	0	0	-91.8674
20130817	1032.6310	0.6763	1.1016	0.589	93.731	4.2554	0.2245	0.0064	0.0001	0.0044	0.0001	0.0001	0.0001	0	0	-89.1939
20130818	1033.0483	0.6854	1.115	0.5895	93.6539	4.2818	0.2524	0.0064	0.0001	0.0043	0.0001	0.0004	0.0003	0.0001	0	-76.5978
20130819	1032.8424	0.6867	1.1522	0.5898	93.6048	4.2794	0.264	0.0073	0.0001	0.0049	0.0001	0.0003	0.0002	0.0001	0	-79.51
20130820	1034.0128	0.6502	1.257	0.5911	93.3483	4.4153	0.3126	0.0094	0.0001	0.0063	0.0001	0.0003	0.0002	0.0001	0	-77.2758
20130821	1030.6300	0.6433	1.2421	0.589	93.3731	4.2867	0.2662	0.0067	0.0002	0.0047	0.0002	0.0004	0	0		-85.5332
20130822	1031.5675	0.6586	1.1792	0.5892	93.3827	4.2858	0.2964	0.0078	0.0004	0.0052	0.0004	0.0008	0	0		-75.6989

20130823	1031.4232	0.6704	1.1502	0.5889	93.4039	4.3305	0.2542	0.0069	0.0001	0.0046	0.0001	0.0005	0	0		-81.0194
20130824	1032.2582	0.6666	1.207	0.59	93.1725	4.5023	0.254	0.0085	0.0004	0.0056	0.0004	0.0009	0	0		-74.0079
20130825	1030.4648	0.6293	1.2339	0.5886	93.4278	4.2524	0.254	0.0092	0.0005	0.0066	0.0006	0.0009	0	0		-74.0791
20130826	1028.5531	0.6453	1.3111	0.5884	93.4215	4.1634	0.2431	0.0096	0.0007	0.0062	0.0009	0.001	0	0		-72.4021
20130827	1027.4216	0.6017	1.3417	0.5874	93.5866	3.9909	0.2588	0.0075	0.0003	0.0051	0.0004	0.0012	0	0		-70.0839
20130828	1031.0707	0.6581	1.2529	0.5896	93.3267	4.2288	0.3154	0.0141	0.0018	0.0109	0.0022	0.0025	0	0		-56.4576
20130829	1031.0197	0.6613	1.2452	0.5896	93.3201	4.2039	0.3488	0.0105	0.0009	0.0067	0.0009	0.0016	0	0		-63.8093
20130830	1028.9431	0.6617	1.2472	0.5882	93.6217	3.9903	0.2992	0.0087	0.0007	0.0067	0.0009	0.0016	0	0		-65.0424
20130831	1029.2286	0.691	1.2317	0.5887	93.5219	4.0702	0.2932	0.0096	0.0009	0.0065	0.001	0.0014	0	0		-66.897
20130901	1030.4368	0.6824	1.2453	0.5896	93.3052	4.2246	0.3242	0.008	0.0004	0.0054	0.0005	0.0013	0	0		-67.3701
20130902	1029.5590	0.696	1.2345	0.5891	93.4326	4.1503	0.2852	0.0092	0.0009	0.0069	0.0011	0.0015	0	0		-65.1557
20130903	1029.8112	0.6691	1.2619	0.5891	93.4371	4.0949	0.3344	0.0096	0.0004	0.0066	0.0006	0.0012	0	0		-69.0578
20130904	1033.1591	0.706	1.2356	0.5915	93.0627	4.396	0.379	0.0162	0.0021	0.0127	0.0027	0.0027	0	0		-54.6539
20130905	1030.6849	0.6775	1.2171	0.5893	93.3802	4.2068	0.3121	0.0089	0.0006	0.0067	0.0009	0.0016	0	0		-64.7399
20130906	1032.0685	0.6801	1.2419	0.5902	93.5669	4.1834	0.3122	0.0087	0.0002	0.0053	0.0002	0.0006	0.0004	0.0002	0	-68.8355
20130907	1032.2836	0.6785	1.2489	0.5904	93.566	4.1465	0.3382	0.0108	0.0007	0.0077	0.0009	0.0008	0.0006	0.0003	0	-63.4998
20130908	1035.1045	0.714	1.1899	0.5921	93.2957	4.4264	0.3315	0.0187	0.0024	0.0146	0.0034	0.0017	0.0012	0.0005	0.0001	-50.5897
20130909	1034.6119	0.7168	1.2008	0.5919	93.2832	4.4604	0.3046	0.0149	0.002	0.0119	0.0027	0.0014	0.001	0.0004	0.0001	-54.4105
20130910	1038.1448	0.7562	1.1498	0.5943	92.9645	4.7036	0.3696	0.0242	0.0035	0.0194	0.0048	0.0021	0.0015	0.0007	0.0001	-45.899
20130911	1038.7267	0.7362	1.1956	0.5948	92.839	4.7966	0.3726	0.0262	0.0037	0.0207	0.005	0.0021	0.0015	0.0007	0.0001	-45.7019
20130912	1035.2877	0.7469	1.2532	0.5934	93.0793	4.5235	0.3478	0.0223	0.003	0.0165	0.004	0.0017	0.0012	0.0005	0.0001	-49.8369
20130913	1033.5939	0.7601	1.3724	0.5938	92.9952	4.4768	0.3432	0.0237	0.0034	0.017	0.0043	0.0019	0.0014	0.0006	0.0001	-48.0374
20130914	1035.1459	0.7529	1.2611	0.5935	93.0715	4.5197	0.3398	0.0244	0.0037	0.0182	0.0047	0.002	0.0014	0.0006	0.0001	-47.1701
20130915	1036.1797	0.689	1.1929	0.5924	93.1997	4.5577	0.3135	0.0208	0.003	0.0161	0.004	0.0016	0.0012	0.0005	0.0001	-50.8408
20130916	1037.3792	0.6945	1.2526	0.5939	92.8726	4.8162	0.3338	0.0143	0.0016	0.01	0.0021	0.0011	0.0008	0.0003	0	-57.8176
20130917	1035.5314	0.6834	1.3345	0.5934	92.9537	4.6643	0.3297	0.0163	0.0018	0.0115	0.0024	0.0011	0.0008	0.0004	0	-57.214
20130918	1034.2527	0.6472	1.3601	0.5923	93.0973	4.5742	0.2907	0.0144	0.0016	0.0102	0.0021	0.001	0.0008	0.0003	0	-59.0811
20130919	1033.6528	0.6992	1.2444	0.5915	93.3237	4.4132	0.2879	0.0152	0.0017	0.0105	0.0022	0.001	0.0007	0.0003	0	-59.8365
20130920	1029.9181	0.6978	1.2563	0.5892	93.768	3.9733	0.2751	0.0139	0.0015	0.0099	0.0021	0.001	0.0007	0.0003	0	-60.518
20130921	1032.0573	0.6902	1.3016	0.591	93.4913	4.1417	0.3309	0.0202	0.0026	0.0147	0.0034	0.0016	0.0012	0.0005	0.0001	-51.3797
20130922	1031.8654	0.6967	1.2506	0.5904	93.5463	4.1861	0.2901	0.0138	0.0015	0.0106	0.0022	0.001	0.0007	0.0003	0	-60.0063
20130923	1034.0588	0.6828	1.3016	0.5921	93.2116	4.4689	0.2872	0.0216	0.0029	0.0165	0.0039	0.0014	0.001	0.0004	0.0001	-53.418
20130924	1038.4550	0.7121	1.2893	0.5953	92.7179	4.8576	0.3517	0.0309	0.0046	0.0247	0.0062	0.0024	0.0017	0.0007	0.0001	-43.1003
20130925	1035.1763	0.7046	1.2886	0.593	93.016	4.6687	0.2882	0.0155	0.0017	0.0115	0.0025	0.0013	0.0009	0.0004	0.0001	-55.5394
20130926	1033.2300	0.6849	1.2645	0.5915	92.9596	4.5817	0.2948	0.016	0.0021	0.0117	0.0026	0.0027	0	0		-55.1446
20130927	1030.4500	0.6777	1.2592	0.5896	93.2635	4.3604	0.2337	0.0113	0.0014	0.0084	0.0017	0.0017	0	0		-63.486
20130928	1030.1443	0.6849	1.2547	0.5895	93.2845	4.3251	0.2342	0.0126	0.0016	0.0092	0.002	0.0018	0	0		-62.8516
20130929	1026.9054	0.646	1.2482	0.5867	93.8007	3.8784	0.2143	0.0119	0.0017	0.0093	0.0021	0.0018	0	0		-62.6121
20130930	1026.8304	0.6792	1.2422	0.5872	93.7394	3.8832	0.2381	0.0116	0.0011	0.0078	0.0013	0.0013	0	0		-68.5813
20131001	1023.9650	0.6669	1.3276	0.586	94.0139	3.5529	0.2374	0.0146	0.0017	0.0102	0.002	0.0018	0	0		-62.7371

20131002	1025.5299	0.6723	1.2807	0.5865	94.1179	3.525	0.2627	0.0194	0.0024	0.0137	0.0029	0.0023	0	0	-58.1542
20131003	1023.2150	0.6676	1.3109	0.5854	94.1458	3.3916	0.2591	0.018	0.0021	0.0124	0.0026	0.0021	0	0	-60.2867
20131004	1022.8514	0.7066	1.3717	0.5864	94.1181	3.3166	0.29	0.0238	0.0033	0.0162	0.0039	0.0032	0	0	-52.4605
20131005	1022.7801	0.8698	1.4167	0.5894	93.9013	3.3107	0.3412	0.0369	0.0056	0.0233	0.0064	0.0047	0	0	-44.6496
20131006	1022.4837	0.9334	1.5698	0.5918	93.4579	3.5292	0.3591	0.035	0.0052	0.0218	0.006	0.0047	0	0	-44.2637
20131007	1027.2264	0.8668	1.5964	0.5942	92.7667	4.1086	0.4138	0.0362	0.0049	0.0222	0.0058	0.0049	0	0	-43.1817
20131008	1047.2286	0.9358	2.2624	0.6156	87.9884	7.6006	0.6748	0.0342	0.0028	0.0201	0.0032	0.0042	0	0	-43.923
20131009	1057.0792	0.7861	1.7138	0.6133	88.8502	7.6143	0.6662	0.0446	0.0053	0.032	0.0069	0.0059	0	0	-37.4428
20131010	1040.7148	0.7066	1.2413	0.5964	92.2128	5.1903	0.4268	0.027	0.0037	0.02	0.0047	0.0042	0	0	-46.2333
20131011	1041.2701	0.7218	1.2468	0.5971	92.1274	5.2259	0.4526	0.0285	0.0039	0.0215	0.005	0.0045	0	0	-44.7435
20131012	1035.3695	0.651	1.2937	0.5927	92.7859	4.7015	0.3655	0.0158	0.0018	0.0114	0.0022	0.0029	0	0	-53.5251
20131013	1040.2552	0.6869	1.2204	0.5956	92.2675	5.2381	0.3698	0.021	0.003	0.0158	0.0037	0.0039	0	0	-47.9276
20131014	1039.4120	0.6336	1.2627	0.5946	92.3806	5.1433	0.369	0.0182	0.0022	0.0129	0.0026	0.0035	0	0	-50.0714
20131015	1040.2000	0.634	1.27	0.5952	92.273	5.208	0.39	0.021	0.003	0.014	0.003	0.004			-47.456
20131016	1037.2092	0.6408	1.2694	0.5934	92.6558	4.8296	0.3827	0.0213	0.0028	0.0153	0.0034	0.0038	0	0	-48.543
20131017	1033.4807	0.6401	1.3011	0.5913	93.0675	4.4276	0.3792	0.0144	0.0012	0.009	0.0014	0.0023	0	0	-58.0901
20131018	1036.0321	0.6345	1.2694	0.5925	92.7967	4.7446	0.3667	0.0136	0.0013	0.0086	0.0014	0.0023	0	0	-57.6892
20131019	1033.7036	0.6485	1.2644	0.5912	93.0442	4.5287	0.3231	0.0149	0.0016	0.0098	0.0017	0.0025	0	0	-56.692
20131020	1036.0638	0.6894	1.2254	0.593	92.732	4.7778	0.3463	0.0212	0.0026	0.0143	0.0031	0.0034	0	0	-50.4632
20131021	1039.6215	0.7014	1.2256	0.5954	92.3173	5.1758	0.369	0.0222	0.0029	0.0146	0.0034	0.0039	0	0	-47.7425
20131022	1039.5212	0.6978	1.2603	0.5957	92.2665	5.2147	0.3661	0.0201	0.0024	0.0128	0.0028	0.0034	0	0	-50.6714
20131023	1037.5389	0.7202	1.4308	0.5966	92.1427	5.0972	0.4002	0.027	0.0036	0.0167	0.004	0.0044	0	0	-45.5698
20131024	1041.6489	0.6932	1.3242	0.5976	91.8533	5.5374	0.3889	0.0199	0.0022	0.0132	0.0026	0.0032	0	0	-51.2323
20131025	1038.9930	0.6867	1.2524	0.5951	92.2531	5.3045	0.3082	0.013	0.0013	0.0085	0.0014	0.0023	0	0	-57.6187
20131026	1035.2058	0.696	1.2849	0.5932	92.6605	4.8801	0.2931	0.0139	0.0013	0.0084	0.0014	0.0024	0	0	-57.5511
20131027	1034.7477	0.6291	1.2826	0.5918	92.8439	4.7703	0.2814	0.0141	0.001	0.0082	0.0012	0.0015	0	0	-65.4876
20131028	1034.2347	0.6068	1.3061	0.5914	92.8651	4.7386	0.2712	0.0153	0.0013	0.0089	0.0014	0.0018	0	0	-62.4171
20131029	1036.0000	0.6163	1.2621	0.5922	92.7321	4.8857	0.2922	0.0138	0.0012	0.0089	0.0014	0.0019	0	0	-60.8706
20131030	1037.2267	0.5803	1.3309	0.5931	92.5587	5.0022	0.3277	0.0149	0.0011	0.0088	0.0013	0.0017	0	0	-62.9429
20131031	1036.7502	0.596	1.2613	0.5923	92.7242	4.8974	0.3068	0.0191	0.0018	0.0101	0.0019	0.0019	0	0	-60.6371
20131101	1033.1312	0.5678	1.299	0.59	93.0834	4.5936	0.25	0.012	0.001	0.0071	0.0012	0.0016	0	0	-64.5823
20131102	1043.6583	0.678	1.1792	0.5972	91.8264	5.8063	0.2964	0.0204	0.0019	0.0109	0.002	0.0018	0	0	-60.7928
20131103	1036.6843	0.6528	1.1973	0.5925	92.6982	4.9596	0.272	0.0188	0.0017	0.0103	0.0018	0.0016	0	0	-63.7664
20131104	1036.4734	0.6516	1.2466	0.5929	92.5872	4.9891	0.2847	0.02	0.0019	0.0105	0.0019	0.0017	0	0	-62.3394
20131105	1038.3964	0.6974	1.2819	0.5953	92.1882	5.2533	0.3227	0.0227	0.0029	0.0133	0.003	0.0024	0	0	-56.0962
20131106	1040.2504	0.7151	1.2903	0.5968	91.952	5.3913	0.378	0.0267	0.0032	0.018	0.0039	0.0035	0	0	-49.4153
20131107	1041.8239	0.7477	1.3011	0.5985	91.5799	5.7508	0.3567	0.0199	0.0021	0.0131	0.0025	0.0028	0	0	-53.792
20131108	1044.9254	0.7555	1.2632	0.6002	91.417	5.8697	0.4352	0.0274	0.0034	0.02	0.0042	0.0038	0	0	-47.6198
20131109	1045.4634	0.7193	1.2582	0.5998	91.4762	5.9383	0.3891	0.0265	0.0031	0.0184	0.0039	0.0036	0	0	-48.7378
20131110	1039.0929	0.6936	1.2478	0.5952	92.3237	5.204	0.339	0.0192	0.0019	0.0127	0.0023	0.0022	0	0	-58.2269

20131111	1041.7103	0.683	1.2383	0.5966	92.1152	5.3263	0.4159	0.0263	0.0031	0.0185	0.0038	0.0036	0	0		-49.0715
20131112	1047.9393	0.6524	1.3454	0.6013	91.2317	5.9798	0.5093	0.0405	0.0052	0.0313	0.0068	0.0054	0	0		-40.2165
20131113	1036.3925	0.68	1.3163	0.594	92.4374	5.0608	0.3007	0.014	0.0014	0.0091	0.0016	0.0023	0	0		-57.8755
20131114	1037.8345	0.7343	1.2758	0.5954	92.1944	5.3093	0.2815	0.0137	0.0012	0.0093	0.0015	0.0019	0	0		-61.1736
20131115	1038.6698	0.7021	1.342	0.5958	92.5337	5.0329	0.3381	0.0244	0.0032	0.0151	0.0037	0.0023	0.0017	0.0007	0.0001	-44.4169
20131116	1035.5321	0.6842	1.3147	0.5932	93.0192	4.6079	0.3322	0.0204	0.0022	0.0125	0.0027	0.0019	0.0014	0.0006	0.0001	-47.8564
20131117	1036.3138	0.6524	1.3076	0.5931	93.0132	4.6432	0.344	0.0194	0.0019	0.0122	0.0024	0.0017	0.0012	0.0005	0.0001	-50.1435
20131118	1039.7491	0.6464	1.3	0.5951	92.5748	5.1078	0.3387	0.0165	0.0012	0.0101	0.0018	0.0014	0.001	0.0004	0.0001	-54.1851
20131119	1039.4337	0.6769	1.3075	0.5955	92.505	5.1581	0.3235	0.0152	0.001	0.0089	0.0014	0.0012	0.0009	0.0004	0.0001	-56.3609
20131120	1035.6108	0.7451	1.4571	0.5958	92.563	4.8379	0.3516	0.0229	0.0027	0.0128	0.003	0.0018	0.0013	0.0006	0.0001	-48.3955
20131121	1034.6083	0.8243	1.2963	0.5947	92.8438	4.6745	0.3174	0.0226	0.0027	0.013	0.003	0.0012	0.0009	0.0004	0	-56.2633
20131122	1039.1980	0.8213	1.3543	0.5982	92.2412	5.1269	0.3887	0.0342	0.0043	0.0206	0.0051	0.0017	0.0012	0.0005	0.0001	-49.0362
20131123	1034.5818	0.7531	1.3218	0.5938	92.9551	4.6085	0.3166	0.0225	0.0028	0.0138	0.0032	0.0013	0.0009	0.0004	0.0001	-55.1686
20131124	1034.2091	0.7993	1.2376	0.5934	93.0711	4.5499	0.2985	0.0218	0.0027	0.0137	0.0032	0.0011	0.0008	0.0003	0	-57.4999
20131125	1035.2394	0.7489	1.3685	0.5946	92.8243	4.6596	0.3419	0.0283	0.0037	0.0165	0.0043	0.002	0.0014	0.0006	0.0001	-47.1885
20131126	1034.1937	0.7034	1.4285	0.5939	92.8893	4.6007	0.3327	0.0228	0.0026	0.0142	0.0031	0.0013	0.0009	0.0004	0.0001	-55.1135
20131127	1032.5044	0.6901	1.4489	0.5928	93.0521	4.4604	0.3119	0.0187	0.0018	0.0119	0.0023	0.001	0.0007	0.0003	0	-60.1413
20131128	1034.1877	0.712	1.4061	0.5938	92.866	4.674	0.3118	0.0157	0.0011	0.0101	0.0016	0.0007	0.0005	0.0002	0	-64.4656
20131129	1034.6608	0.7216	1.2925	0.593	93.0692	4.5598	0.3201	0.0189	0.0019	0.0117	0.0024	0.0008	0.0006	0.0003	0	-62.7098
20131130	1036.0476	0.7931	1.2961	0.5951	92.7218	4.8243	0.3282	0.019	0.0019	0.0117	0.0023	0.0008	0.0006	0.0002	0	-63.1904
20131201	1036.1541	0.7739	1.2985	0.5949	92.7215	4.8593	0.3158	0.0159	0.0013	0.0105	0.0019	0.0006	0.0004	0.0002	0	-68.3472
20131202	1035.9847	0.7144	1.3501	0.5944	92.7659	4.8153	0.3253	0.0153	0.001	0.0104	0.0016	0.0003	0.0002	0.0001	0	-75.5456
20131203	1036.6506	0.7387	1.3815	0.5955	92.5737	4.929	0.3467	0.0163	0.0011	0.0106	0.0017	0.0003	0.0002	0.0001	0	-75.1917
20131204	1029.0620	0.7631	1.3355	0.5906	93.5579	4.0246	0.2867	0.017	0.0015	0.0108	0.002	0.0004	0.0003	0.0001	0	-73.0899
20131205	1031.6230	0.7216	1.3229	0.5914	93.4079	4.1882	0.3132	0.0228	0.0026	0.0158	0.0034	0.0008	0.0006	0.0003	0	-62.5088
20131206	1033.4596	0.7281	1.3461	0.5929	93.1572	4.3789	0.3237	0.0303	0.0042	0.0221	0.0056	0.0018	0.0013	0.0006	0.0001	-48.8655
20131207	1030.4569	0.6969	1.2747	0.5898	93.5962	4.1866	0.2172	0.0143	0.0014	0.0093	0.002	0.0006	0.0005	0.0002	0	-67.6816
20131208	1028.6855	0.6441	1.2566	0.5876	94.0468	3.7755	0.2345	0.0184	0.0029	0.0128	0.0039	0.0021	0.0015	0.0006	0.0001	-47.2362
20131209	1028.7679	0.5863	1.1257	0.5853	94.441	3.5945	0.2153	0.0153	0.0023	0.0129	0.0035	0.0015	0.0011	0.0005	0.0001	-53.521
20131210	1028.9719	0.5837	1.1454	0.5856	94.4888	3.4507	0.2673	0.0264	0.0044	0.0218	0.0063	0.0025	0.0018	0.0008	0.0001	-42.9987
20131211	1030.0989	0.6607	1.4045	0.5903	93.7161	3.7822	0.3376	0.0414	0.0074	0.0307	0.0095	0.0048	0.0035	0.0015	0.0002	-29.4845
20131212	1026.9105	0.6401	1.3685	0.5879	93.8343	3.6339	0.3022	0.0337	0.0056	0.0263	0.0071	0.0052	0	0		-42.8357
20131213	1030.5802	0.6682	1.3659	0.5904	93.6585	3.9205	0.3045	0.0339	0.0062	0.0245	0.0077	0.0049	0.0035	0.0015	0.0002	-29.5026
20131214	1035.6740	0.6825	1.3329	0.5935	93.1558	4.3526	0.3671	0.0467	0.008	0.0343	0.01	0.0048	0.0035	0.0015	0.0002	-28.8203
20131215	1038.6813	0.6783	1.4141	0.5962	92.6781	4.6836	0.4216	0.053	0.0094	0.0377	0.0114	0.0062	0.0045	0.0019	0.0003	-23.3609
20131216	1033.6782	0.6974	1.4168	0.5933	93.2107	4.1727	0.3941	0.0473	0.0079	0.0333	0.0097	0.0048	0.0035	0.0015	0.0002	-28.8759
20131217	1031.5544	0.7264	1.4818	0.5932	93.2981	3.9744	0.405	0.0491	0.0088	0.034	0.0104	0.0058	0.0042	0.0018	0.0002	-25.0039
20131218	1035.2605	0.7288	1.4306	0.595	92.9056	4.4243	0.4061	0.0453	0.0079	0.0315	0.0094	0.0051	0.0037	0.0016	0.0002	-27.7489
20131219	1036.2332	0.702	1.4703	0.5956	92.7873	4.4945	0.4361	0.0481	0.0081	0.0338	0.0098	0.0048	0.0035	0.0015	0.0002	-28.8277
20131220	1035.5226	0.7017	1.4518	0.595	92.8779	4.465	0.3969	0.0463	0.0077	0.0333	0.0096	0.0047	0.0034	0.0015	0.0002	-29.4834

20131221	1034.9114	0.739	1.5189	0.5959	92.7118	4.5303	0.3949	0.0458	0.0079	0.0314	0.0094	0.0051	0.0037	0.0016	0.0002	-27.8542
20131222	1035.2306	0.7075	1.5017	0.5954	92.7517	4.5645	0.3731	0.044	0.0076	0.0312	0.0094	0.0045	0.0033	0.0014	0.0002	-30.469
20131223	1035.8124	0.6865	1.3389	0.5937	93.0757	4.4428	0.36	0.0414	0.0069	0.0307	0.009	0.0039	0.0028	0.0012	0.0002	-33.4467
20131224	1032.7957	0.6357	1.3294	0.5909	93.5372	4.0933	0.3218	0.0361	0.0058	0.027	0.0076	0.0029	0.0021	0.0009	0.0001	-39.3114
20131225	1031.7936	0.802	1.4691	0.5944	93.0978	4.1272	0.3916	0.0494	0.0083	0.035	0.0102	0.0046	0.0034	0.0014	0.0002	-29.7621
20131226	1037.2930	0.7295	1.3181	0.5951	92.9574	4.4478	0.423	0.0539	0.009	0.0401	0.0115	0.0047	0.0034	0.0015	0.0002	-28.8755
20131227	1040.8159	0.6817	1.2627	0.596	92.7496	4.7492	0.4291	0.0549	0.009	0.0426	0.012	0.0044	0.0032	0.0014	0.0002	-30.0158
20131228	1041.5012	0.6973	1.3763	0.5979	92.3926	4.9414	0.4662	0.0559	0.009	0.0409	0.0115	0.0043	0.0031	0.0013	0.0002	-30.3614
20131229	1033.3800	0.7249	1.3012	0.5924	93.3807	4.1387	0.3634	0.0413	0.0064	0.0284	0.0079	0.0034	0.0025	0.0011	0.0001	-36.1894
20131230	1034.6025	0.7049	1.2518	0.5923	93.3518	4.2453	0.3687	0.0355	0.005	0.026	0.0067	0.0021	0.0015	0.0007	0.0001	-45.5321
20131231	1030.7854	0.7206	1.2915	0.5905	93.5893	4.0606	0.2804	0.0267	0.0038	0.0186	0.0049	0.0017	0.0012	0.0005	0.0001	-50.0229
20140101	1030.2797	0.7017	1.3168	0.5902	93.6378	4.0162	0.2679	0.0261	0.0042	0.0183	0.0054	0.0027	0.002	0.0008	0.0001	-41.7925
20140102	1033.2545	0.6368	1.3985	0.5919	93.243	4.3594	0.3028	0.0264	0.0042	0.0188	0.0053	0.0023	0.0017	0.0007	0.0001	-44.3118
20140103	1035.4626	0.6665	1.4449	0.5943	92.9077	4.5282	0.3644	0.0387	0.0065	0.0274	0.008	0.0037	0.0027	0.0012	0.0002	-34.5227
20140104	1034.4922	0.6961	1.4066	0.5937	93.0517	4.3994	0.3576	0.0384	0.0067	0.0265	0.0079	0.0043	0.0032	0.0014	0.0002	-31.5045
20140105	1033.4226	0.6371	1.3301	0.5913	93.4322	4.2054	0.3207	0.0323	0.0053	0.0237	0.0068	0.003	0.0022	0.0009	0.0001	-39.1192
20140106	1033.6320	0.7116	1.243	0.5917	93.4944	4.1235	0.3358	0.038	0.0066	0.0289	0.0089	0.0045	0.0033	0.0014	0.0002	-30.719
20140107	1030.5480	0.7614	1.2006	0.5901	93.9267	3.6576	0.3466	0.0448	0.0079	0.0329	0.0103	0.0053	0.0039	0.0017	0.0002	-27.0826
20140108	1035.0804	0.7014	1.1096	0.5911	93.7824	3.8928	0.3831	0.052	0.0096	0.0413	0.0134	0.007	0.0051	0.0022	0.0003	-20.9814
20140109	1036.2308	0.7133	1.1477	0.5924	93.5848	3.9871	0.4226	0.0582	0.0104	0.0463	0.0147	0.0071	0.0052	0.0022	0.0003	-20.2712
20140110	1042.7188	0.7239	1.1728	0.597	93.0253	4.2422	0.6142	0.0906	0.0163	0.0712	0.0219	0.0104	0.0076	0.0032	0.0004	-10.4147
20140111	1050.5896	0.6998	1.249	0.6024	92.2753	4.6384	0.835	0.126	0.0218	0.1004	0.0291	0.0121	0.0088	0.0038	0.0005	-5.4394
20140112	1053.2205	0.6831	1.3358	0.6048	91.9387	4.779	0.9254	0.1414	0.0242	0.1129	0.0326	0.0129	0.0094	0.004	0.0005	-3.2573
20140113	1053.3097	0.7234	1.2587	0.6047	91.9554	4.8321	0.9102	0.1344	0.0226	0.1073	0.0305	0.0122	0.0089	0.0038	0.0005	-4.8341
20140114	1055.9978	0.7697	1.2078	0.6066	91.6596	5.0924	0.9464	0.136	0.0226	0.1095	0.0307	0.0121	0.0088	0.0038	0.0005	-4.7712
20140115	1050.7903	0.7965	1.2269	0.6039	92.0332	4.8146	0.8471	0.1197	0.0195	0.095	0.0264	0.0102	0.0074	0.0032	0.0004	-9.4382
20140116	1050.4824	0.7205	1.2876	0.6031	92.094	4.7833	0.8344	0.1185	0.0196	0.0943	0.0265	0.0103	0.0075	0.0032	0.0004	-9.2797
20140117	1037.7996	0.7778	1.2404	0.5954	93.0062	4.3893	0.4547	0.0569	0.0093	0.0434	0.0122	0.0047	0.0034	0.0015	0.0002	-28.6533
20140118	1032.7106	0.7297	1.4344	0.5934	93.1331	4.2514	0.3682	0.0376	0.006	0.026	0.0074	0.003	0.0022	0.0009	0.0001	-38.6777
20140119	1036.1624	0.6995	1.4508	0.5953	92.7835	4.5642	0.4073	0.0417	0.007	0.0291	0.0085	0.004	0.0029	0.0013	0.0002	-32.6338
20140120	1033.4420	0.6386	1.2953	0.591	93.5182	4.1523	0.318	0.0308	0.0053	0.0246	0.0078	0.0044	0.0032	0.0014	0.0002	-31.7832
20140121	1033.2307	0.6439	1.3764	0.5918	93.3856	4.1668	0.3408	0.036	0.0063	0.027	0.0084	0.0042	0.003	0.0013	0.0002	-32.4096
20140122	1034.0612	0.7647	1.3685	0.5942	93.0354	4.388	0.3559	0.0371	0.0067	0.0258	0.0083	0.0046	0.0034	0.0014	0.0002	-30.1906
20140123	1037.7539	0.6079	1.0628	0.5907	93.5767	4.3456	0.3295	0.0304	0.0053	0.026	0.0081	0.0037	0.0027	0.0012	0.0002	-34.9708
20140124	1035.1082	0.737	1.2671	0.5933	93.2293	4.3109	0.3556	0.0409	0.0072	0.0306	0.0101	0.0054	0.0039	0.0017	0.0002	-26.9735
20140125	1038.8727	0.6108	1.0131	0.591	93.6222	4.3005	0.354	0.0371	0.0069	0.0323	0.0108	0.0059	0.0043	0.0018	0.0002	-25.0452
20140126	1041.8018	0.6011	1.2358	0.595	92.8292	4.7997	0.4228	0.047	0.008	0.0367	0.0106	0.0043	0.0031	0.0013	0.0002	-30.918
20140127	1042.4302	0.7001	1.5015	0.5999	92.0252	5.1484	0.4881	0.0594	0.0102	0.0429	0.0127	0.0056	0.0041	0.0017	0.0002	-24.9712
20140128	1042.3053	0.7075	1.3639	0.5984	92.274	5.0845	0.4455	0.0534	0.0092	0.0397	0.0117	0.0051	0.0037	0.0016	0.0002	-27.0257
20140129	1041.2993	0.7186	1.2324	0.5966	92.7009	4.7715	0.4473	0.0533	0.0092	0.0419	0.0127	0.0058	0.0043	0.0018	0.0002	-24.3046

20140130	1039.1672	0.727	1.1951	0.595	92.8152	4.8365	0.352	0.0328	0.005	0.0251	0.0066	0.0022	0.0016	0.0007	0.0001	-44.414
20140131	1039.5757	0.7194	1.3989	0.5973	92.4813	4.855	0.4295	0.0508	0.0083	0.0376	0.0107	0.0041	0.003	0.0013	0.0002	-31.4826
20140201	1043.7440	0.7346	1.4131	0.6003	92.0573	5.1205	0.5161	0.0682	0.0118	0.0501	0.015	0.0064	0.0046	0.002	0.0003	-21.7519
20140202	1037.6270	0.6821	1.348	0.5949	92.9333	4.518	0.3985	0.0481	0.009	0.0364	0.0123	0.0068	0.005	0.0021	0.0003	-21.2974
20140203	1040.4075	0.7151	1.3557	0.5973	92.4857	4.9014	0.4239	0.0508	0.0088	0.0379	0.0111	0.0046	0.0034	0.0015	0.0002	-29.1633
20140204	1035.7164	0.7453	1.3654	0.5949	92.8347	4.6329	0.3421	0.0355	0.006	0.024	0.0071	0.0034	0.0025	0.0011	0.0001	-36.5337
20140205	1034.0865	0.7403	1.3431	0.5935	93.102	4.3946	0.3435	0.0343	0.0054	0.0241	0.0068	0.0028	0.0021	0.0009	0.0001	-40.0339
20140206	1038.8217	0.7642	1.3188	0.5967	92.5616	4.8904	0.3683	0.0418	0.0072	0.0299	0.0091	0.0042	0.0031	0.0013	0.0002	-31.6947
20140207	1034.3976	0.7237	1.1611	0.5915	93.5239	4.2	0.3028	0.0339	0.0065	0.0272	0.0096	0.0054	0.0039	0.0017	0.0002	-27.1167
20140208	1034.5565	0.7653	1.2113	0.5928	93.1823	4.5038	0.2803	0.0255	0.004	0.0181	0.005	0.0021	0.0015	0.0007	0.0001	-46.006
20140209	1027.9131	0.6983	1.1517	0.5869	94.3619	3.4775	0.2348	0.0251	0.0057	0.0218	0.0098	0.0064	0.0047	0.002	0.0003	-24.0626
20140210	1031.3815	0.7226	1.2205	0.5902	93.6474	4.0965	0.258	0.0234	0.0037	0.0183	0.0053	0.0021	0.0015	0.0007	0.0001	-46.5234
20140211	1034.3325	0.7274	1.2859	0.5928	93.1858	4.4219	0.307	0.0313	0.005	0.0238	0.0066	0.0025	0.0018	0.0008	0.0001	-42.3786
20140212	1038.4740	0.7516	1.283	0.5959	92.7485	4.7344	0.3763	0.045	0.0079	0.0341	0.0101	0.0044	0.0032	0.0014	0.0002	-30.6171
20140213	1045.8660	0.7342	1.2084	0.5995	92.184	5.251	0.4803	0.0592	0.0104	0.047	0.0138	0.0056	0.0041	0.0018	0.0002	-24.7043
20140214	1050.1927	0.7426	1.1201	0.6015	91.8881	5.5651	0.5263	0.0657	0.0116	0.0522	0.0155	0.0062	0.0045	0.0019	0.0003	-22.2311
20140215	1041.0880	0.7899	1.3413	0.5988	92.3084	4.983	0.4493	0.0547	0.0098	0.0397	0.0121	0.0057	0.0042	0.0018	0.0002	-24.6985
20140216	1037.9556	0.7812	1.3461	0.5967	92.535	4.8919	0.362	0.0366	0.0063	0.0255	0.0076	0.0037	0.0027	0.0012	0.0002	-34.3445
20140217	1035.5702	0.7547	1.3666	0.5949	92.798	4.6871	0.3186	0.0328	0.0058	0.0219	0.0068	0.0037	0.0027	0.0011	0.0002	-34.9642
20140218	1034.9341	0.7691	1.3945	0.595	92.7339	4.7396	0.3011	0.0277	0.0048	0.0178	0.0054	0.003	0.0022	0.0009	0.0001	-39.1925
20140219	1034.9536	0.7628	1.369	0.5947	92.7835	4.7378	0.2891	0.0262	0.0044	0.0165	0.005	0.0027	0.002	0.0009	0.0001	-41.1199
20140220	1039.5303	0.7574	1.3309	0.5971	92.3501	5.1637	0.3293	0.0306	0.0048	0.0216	0.0061	0.0026	0.0019	0.0008	0.0001	-41.2649
20140221	1039.5491	0.7798	1.2925	0.5971	92.4181	5.0884	0.345	0.0343	0.0055	0.0238	0.0067	0.0029	0.0021	0.0009	0.0001	-39.298
20140222	1035.3610	0.7619	1.3231	0.5944	92.8772	4.6588	0.3137	0.0305	0.0046	0.0198	0.0055	0.0024	0.0017	0.0007	0.0001	-43.6292
20140223	1037.5750	0.7997	1.2616	0.5958	92.7204	4.7869	0.347	0.0386	0.006	0.0263	0.0076	0.0029	0.0021	0.0009	0.0001	-39.1967
20140224	1042.7336	0.7985	1.3003	0.5995	92.1157	5.2398	0.4302	0.0507	0.0084	0.0372	0.0108	0.0041	0.003	0.0013	0.0002	-31.478
20140225	1044.0792	0.7688	1.3446	0.6004	92.0092	5.2595	0.4784	0.0605	0.0102	0.0453	0.0131	0.005	0.0036	0.0016	0.0002	-27.0996
20140226	1047.6526	0.8126	1.2078	0.6019	91.8265	5.4881	0.5114	0.0663	0.0113	0.0496	0.0145	0.0057	0.0042	0.0018	0.0002	-23.8836
20140227	1043.7256	0.8053	1.2829	0.6001	92.1347	5.1495	0.4807	0.0631	0.0109	0.0474	0.014	0.0055	0.004	0.0017	0.0002	-25.0345
20140228	1046.5298	0.732	1.151	0.5993	92.245	5.2406	0.4886	0.06	0.0105	0.0471	0.014	0.0054	0.0039	0.0017	0.0002	-25.4559
20140301	1047.0663	0.7357	1.201	0.6002	92.1223	5.2546	0.5307	0.0655	0.0116	0.0508	0.0152	0.006	0.0044	0.0019	0.0003	-22.8194
20140302	1048.1179	0.7544	1.2408	0.6016	91.8905	5.398	0.5521	0.0696	0.0124	0.0529	0.016	0.0064	0.0047	0.002	0.0003	-21.3913
20140303	1045.8556	0.8367	1.2789	0.6019	91.856	5.3582	0.51	0.0685	0.0122	0.0508	0.0154	0.0064	0.0047	0.002	0.0003	-21.5288
20140304	1043.9237	0.8368	1.2515	0.6004	92.0963	5.1988	0.4724	0.0616	0.0108	0.0464	0.0139	0.0056	0.0041	0.0018	0.0002	-24.5697
20140305	1045.9918	0.8292	1.2459	0.6015	91.9367	5.3119	0.5153	0.0684	0.0119	0.0527	0.0154	0.0061	0.0044	0.0019	0.0003	-22.6885
20140306	1042.4661	0.8116	1.3423	0.6	92.1499	5.0678	0.4811	0.0632	0.0112	0.0464	0.014	0.006	0.0044	0.0019	0.0002	-23.2607
20140307	1041.3862	0.8009	1.4191	0.6	92.1392	5.0117	0.4826	0.0631	0.0115	0.0449	0.014	0.0063	0.0046	0.002	0.0003	-22.0754
20140308	1042.6251	0.7992	1.3069	0.5995	92.1163	5.2295	0.4315	0.0511	0.0085	0.0374	0.0109	0.0042	0.0031	0.0013	0.0002	-30.2374
20140309	1040.2133	0.8149	1.4592	0.5999	92.1308	4.9938	0.4618	0.06	0.0111	0.0419	0.0133	0.0064	0.0046	0.002	0.0003	-22.2126
20140310	1041.9578	0.8328	1.4043	0.6007	91.9191	5.2861	0.4365	0.0523	0.0093	0.0376	0.0114	0.0051	0.0037	0.0016	0.0002	-27.2017

20140311	1045.5408	0.8404	1.4163	0.6032	91.4924	5.6221	0.4942	0.0583	0.01	0.0431	0.0127	0.0051	0.0037	0.0016	0.0002	-26.4259
20140312	1049.6385	0.8596	1.4118	0.6061	90.9949	6.0415	0.5487	0.0625	0.0101	0.0477	0.0133	0.0048	0.0035	0.0015	0.0002	-27.4402
20140313	1045.3792	0.8304	1.3205	0.6019	91.76	5.4588	0.4936	0.0602	0.0098	0.0445	0.0127	0.0046	0.0034	0.0014	0.0002	-28.5735
20140314	1046.5343	0.7884	1.3136	0.6019	91.7021	5.5829	0.4799	0.0579	0.0096	0.0435	0.0125	0.0047	0.0034	0.0015	0.0002	-28.4505
20140315	1045.4791	0.8283	1.4161	0.603	91.4803	5.6781	0.4737	0.0541	0.0089	0.0403	0.0116	0.0042	0.0031	0.0013	0.0002	-30.5424
20140316	1040.5996	0.8182	1.3777	0.5993	92.1617	5.1017	0.426	0.0502	0.0084	0.0369	0.0108	0.004	0.0029	0.0013	0.0002	-31.8434
20140317	1042.8162	0.7625	1.3618	0.5996	92.0546	5.2634	0.4446	0.0496	0.0082	0.0362	0.0105	0.0041	0.003	0.0013	0.0002	-31.3121
20140318	1039.4192	0.7717	1.4662	0.5987	92.2266	4.9821	0.4416	0.0494	0.0081	0.0355	0.0105	0.0041	0.003	0.0013	0.0002	-31.868
20140319	1040.1964	0.7667	1.4872	0.5994	92.0842	5.1086	0.444	0.0483	0.0078	0.0351	0.0101	0.0038	0.0028	0.0012	0.0002	-32.9016
20140320	1041.0062	0.7801	1.5306	0.6006	91.9103	5.1804	0.4748	0.055	0.0091	0.0393	0.0114	0.0044	0.0032	0.0014	0.0002	-30.0726
20140321	1040.8644	0.7793	1.4468	0.5996	92.1064	5.0856	0.4619	0.0527	0.0088	0.0378	0.0111	0.0046	0.0034	0.0014	0.0002	-29.0367
20140322	1043.5162	0.8008	1.4051	0.6012	91.8199	5.3804	0.4735	0.0526	0.0088	0.0383	0.011	0.0046	0.0034	0.0014	0.0002	-29.0079
20140323	1042.7142	0.7944	1.4162	0.6007	91.9561	5.2113	0.4905	0.0573	0.0097	0.0416	0.0123	0.0051	0.0037	0.0016	0.0002	-26.7826
20140324	1040.7189	0.7649	1.5195	0.6	92.0349	5.0738	0.4743	0.0575	0.0103	0.0405	0.0126	0.0057	0.0041	0.0018	0.0002	-24.6276
20140325	1040.5400	0.7905	1.503	0.6001	92.0421	5.0511	0.4801	0.0582	0.0101	0.0411	0.0127	0.0053	0.0039	0.0017	0.0002	-25.8222
20140326	1038.1445	0.8164	1.5135	0.5991	92.2024	4.9086	0.4378	0.053	0.0095	0.0362	0.0114	0.0054	0.0039	0.0017	0.0002	-26.1256
20140327	1039.8123	0.8047	1.4911	0.5998	92.0805	5.0498	0.4516	0.0533	0.0095	0.0369	0.0114	0.0054	0.0039	0.0017	0.0002	-26.0452
20140328	1041.4132	0.8072	1.4666	0.6006	91.9108	5.2472	0.4503	0.0512	0.0091	0.0361	0.0109	0.0051	0.0037	0.0016	0.0002	-27.1265
20140329	1039.9800	0.7948	1.4876	0.5997	92.0902	5.0565	0.4479	0.0526	0.0097	0.0371	0.0116	0.0058	0.0042	0.0018	0.0002	-24.3479
20140330	1042.2013	0.7634	1.4813	0.6005	91.9029	5.2742	0.4514	0.0543	0.0102	0.037	0.012	0.0064	0.0047	0.002	0.0003	-22.2359
20140331	1047.9313	0.8027	1.5028	0.605	91.1156	5.9038	0.5384	0.0594	0.0101	0.0436	0.0126	0.0053	0.0039	0.0017	0.0002	-25.5049
20140401	1047.3024	0.8336	1.4034	0.6041	91.2503	5.9087	0.4905	0.0499	0.0077	0.0385	0.0103	0.0034	0.0025	0.0011	0.0001	-34.4848
20140402	1046.4474	0.848	1.4415	0.6042	91.2219	5.9004	0.4776	0.0485	0.0076	0.0366	0.0099	0.0037	0.0027	0.0012	0.0002	-33.1345
20140403	1045.2825	0.8562	1.4289	0.6034	91.4479	5.6377	0.5007	0.0578	0.009	0.0413	0.0116	0.0043	0.0031	0.0013	0.0002	-30.0709
20140404	1043.4181	0.8294	1.4234	0.6017	91.7387	5.3989	0.4874	0.0549	0.0086	0.0389	0.011	0.0042	0.0031	0.0013	0.0002	-30.7295
20140405	1041.2753	0.8407	1.5332	0.6017	91.731	5.2872	0.4883	0.0551	0.0085	0.0369	0.0107	0.004	0.0029	0.0013	0.0002	-31.6684
20140406	1047.6078	0.8629	1.4592	0.6053	91.0461	5.9961	0.5224	0.0522	0.0077	0.0357	0.0096	0.0039	0.0029	0.0012	0.0002	-31.8862
20140407	1037.1519	0.8383	1.5386	0.5991	92.1616	4.9319	0.4304	0.0469	0.0074	0.0281	0.0085	0.0041	0.003	0.0013	0.0002	-31.9642
20140408	1038.6119	0.8327	1.4607	0.5991	92.0989	5.1244	0.3991	0.0398	0.0061	0.0242	0.0071	0.0034	0.0025	0.0011	0.0001	-36.0353
20140409	1043.1844	0.8728	1.4005	0.602	91.5533	5.6705	0.4269	0.0365	0.0048	0.024	0.006	0.0023	0.0017	0.0007	0.0001	-43.3102
20140410	1044.9193	0.8831	1.433	0.6037	91.3796	5.6872	0.5117	0.0507	0.0071	0.032	0.0085	0.0034	0.0025	0.0011	0.0001	-34.7406
20140411	1044.6489	0.881	1.3828	0.6029	91.4215	5.7841	0.4475	0.0399	0.0054	0.026	0.0067	0.0025	0.0018	0.0008	0.0001	-41.215
20140412	1038.0961	0.8256	1.3834	0.5979	92.2926	5.0561	0.3757	0.0335	0.0042	0.0198	0.0052	0.0018	0.0013	0.0006	0.0001	-47.5563
20140413	1042.6625	0.8456	1.3372	0.6006	91.8026	5.5249	0.4231	0.0344	0.0037	0.021	0.0046	0.0014	0.001	0.0004	0.0001	-51.9162
20140414	1050.0386	0.8863	1.3612	0.6062	90.8072	6.3662	0.4921	0.044	0.0054	0.0266	0.0063	0.0023	0.0016	0.0007	0.0001	-42.6203
20140415	1054.0325	0.8951	1.4362	0.6097	90.061	7.0448	0.4877	0.0382	0.0043	0.0237	0.0053	0.0018	0.0013	0.0006	0.0001	-46.7501
20140416	1051.0001	0.8934	1.4257	0.6076	90.4377	6.7231	0.4482	0.0364	0.0043	0.0226	0.0053	0.0016	0.0011	0.0005	0.0001	-49.1648
20140417	1043.7152	0.8144	1.5079	0.6026	91.3334	5.863	0.4164	0.0317	0.0042	0.0202	0.0052	0.0017	0.0012	0.0005	0.0001	-48.8063
20140418	1039.0798	0.803	1.6458	0.6009	91.6276	5.4586	0.4016	0.0319	0.0044	0.018	0.0047	0.0021	0.0016	0.0007	0.0001	-44.9203
20140419	1038.1837	0.7893	1.4993	0.5986	92.1272	5.12	0.3941	0.0342	0.0052	0.0195	0.0055	0.0027	0.002	0.0009	0.0001	-40.3318

20140420	1036.8309	0.8064	1.359	0.5965	92.5469	4.8524	0.3735	0.0301	0.004	0.0189	0.0046	0.0019	0.0014	0.0006	0.0001	-47.055
20140421	1042.2404	0.8388	1.3816	0.6007	91.8104	5.4432	0.4561	0.0336	0.0039	0.0239	0.0051	0.0016	0.0012	0.0005	0.0001	-49.5594
20140422	1052.5807	0.8543	1.5549	0.6094	90.0919	6.902	0.5291	0.0336	0.0035	0.023	0.0046	0.0015	0.0011	0.0005	0.0001	-49.473
20140423	1045.9430	0.8515	1.4794	0.6043	91.1233	5.9832	0.4832	0.0388	0.0049	0.0248	0.0059	0.0024	0.0018	0.0008	0.0001	-41.7304
20140424	1050.0685	0.854	1.5175	0.6074	90.5078	6.5331	0.5112	0.0394	0.0041	0.0243	0.0049	0.0018	0.0013	0.0006	0.0001	-46.7542
20140425	1041.0468	0.9086	1.4377	0.6017	91.7396	5.3437	0.4824	0.0457	0.0053	0.0266	0.0062	0.002	0.0014	0.0006	0.0001	-45.3843
20140426	1042.6586	0.8834	1.4615	0.6025	91.5444	5.5392	0.4778	0.0478	0.0061	0.0273	0.0069	0.0027	0.0019	0.0008	0.0001	-39.8394
20140427	1039.7029	0.842	1.6415	0.6019	91.5659	5.3925	0.483	0.0395	0.0043	0.0231	0.0052	0.0015	0.0011	0.0005	0.0001	-50.6108
20140428	1038.0448	0.8487	1.5234	0.5997	91.9622	5.1704	0.4326	0.0337	0.0033	0.0196	0.0039	0.001	0.0007	0.0003	0	-57.7392
20140429	1041.5599	0.8978	1.4395	0.6018	91.623	5.526	0.4387	0.0389	0.0047	0.0223	0.0054	0.0018	0.0013	0.0006	0.0001	-47.4815
20140430	1045.0728	0.9323	1.368	0.6039	91.3568	5.7485	0.4992	0.0488	0.0062	0.0279	0.007	0.0025	0.0018	0.0008	0.0001	-40.8674
20140501	1045.8948	0.9174	1.4465	0.605	91.1588	5.8411	0.5315	0.0517	0.0067	0.0313	0.0078	0.0035	0.0025	0.0011	0.0001	-34.5971
20140502	1052.7390	0.9102	1.5226	0.6101	90.6385	5.8839	0.8361	0.0958	0.0136	0.0693	0.0179	0.0058	0.0042	0.0018	0.0002	-21.7796
20140503	1054.2882	0.9249	1.4572	0.6106	90.7601	5.6604	0.947	0.1124	0.0167	0.084	0.0222	0.0072	0.0053	0.0023	0.0003	-16.4357
20140504	1042.8832	0.9053	1.4019	0.6024	91.7078	5.3279	0.5483	0.051	0.0073	0.0346	0.009	0.0033	0.0024	0.001	0.0001	-35.7042
20140505	1044.4283	0.8875	1.4124	0.6032	91.4418	5.6645	0.5003	0.0454	0.0063	0.0285	0.0074	0.0028	0.002	0.0009	0.0001	-38.8362
20140506	1049.2183	0.871	1.2902	0.6047	91.1471	6.0885	0.5094	0.0456	0.0059	0.0301	0.0073	0.0024	0.0017	0.0007	0.0001	-41.7156
20140507	1049.8217	0.8993	1.323	0.6059	91.0578	6.0243	0.5714	0.0561	0.008	0.0424	0.0106	0.0034	0.0025	0.0011	0.0001	-34.1238
20140508	1055.0419	0.9712	1.3427	0.6106	90.5483	6.1452	0.7952	0.0887	0.0124	0.0685	0.0172	0.0052	0.0038	0.0016	0.0002	-24.2863
20140509	1059.0195	1.0096	1.3045	0.6134	90.3138	6.1693	0.9459	0.1132	0.0164	0.0899	0.0228	0.007	0.0051	0.0022	0.0003	-16.8129
20140510	1050.5537	0.9619	1.2136	0.6062	90.8908	6.3605	0.4927	0.039	0.0044	0.0278	0.0059	0.0016	0.0011	0.0005	0.0001	-49.056
20140511	1051.3783	0.9098	1.2408	0.6062	90.8282	6.4572	0.4866	0.0375	0.0043	0.0268	0.0058	0.0014	0.001	0.0004	0.0001	-50.3591
20140512	1049.7467	0.9101	1.3018	0.6058	90.8936	6.3394	0.4743	0.0394	0.0045	0.028	0.006	0.0014	0.001	0.0004	0.0001	-50.4609
20140513	1052.3308	0.9051	1.2839	0.6071	90.6537	6.558	0.5172	0.0409	0.0043	0.0283	0.0058	0.0013	0.001	0.0004	0.0001	-51.3611
20140514	1052.7339	0.881	1.2451	0.6066	90.7419	6.5491	0.4947	0.0419	0.0051	0.0306	0.0068	0.0019	0.0014	0.0006	0.0001	-45.5832
20140515	1051.6586	0.9001	1.2705	0.6065	90.9045	6.2527	0.556	0.0543	0.0074	0.0384	0.0095	0.0031	0.0023	0.001	0.0001	-35.8624
20140516	1044.4247	0.9249	1.2868	0.6025	91.5836	5.6648	0.4522	0.0418	0.0052	0.0294	0.007	0.0021	0.0015	0.0007	0.0001	-44.3571
20140517	1044.4247	0.9249	1.2868	0.6025	91.5836	5.6648	0.4522	0.0418	0.0052	0.0294	0.007	0.0021	0.0015	0.0007	0.0001	-44.3571
20140518	1044.4247	0.9249	1.2868	0.6025	91.5836	5.6648	0.4522	0.0418	0.0052	0.0294	0.007	0.0021	0.0015	0.0007	0.0001	-44.3571
20140519	1044.4247	0.9249	1.2868	0.6025	91.5836	5.6648	0.4522	0.0418	0.0052	0.0294	0.007	0.0021	0.0015	0.0007	0.0001	-44.3571
20140520	1044.4247	0.9249	1.2868	0.6025	91.5836	5.6648	0.4522	0.0418	0.0052	0.0294	0.007	0.0021	0.0015	0.0007	0.0001	-44.3571
20140521	1044.4247	0.9249	1.2868	0.6025	91.5836	5.6648	0.4522	0.0418	0.0052	0.0294	0.007	0.0021	0.0015	0.0007	0.0001	-44.3571
20140522	1044.4247	0.9249	1.2868	0.6025	91.5836	5.6648	0.4522	0.0418	0.0052	0.0294	0.007	0.0021	0.0015	0.0007	0.0001	-44.3571
20140523	1044.4247	0.9249	1.2868	0.6025	91.5836	5.6648	0.4522	0.0418	0.0052	0.0294	0.007	0.0021	0.0015	0.0007	0.0001	-44.3571
20140524	1044.4247	0.9249	1.2868	0.6025	91.5836	5.6648	0.4522	0.0418	0.0052	0.0294	0.007	0.0021	0.0015	0.0007	0.0001	-44.3571
20140525	1044.4247	0.9249	1.2868	0.6025	91.5836	5.6648	0.4522	0.0418	0.0052	0.0294	0.007	0.0021	0.0015	0.0007	0.0001	-44.3571
20140526	1044.4247	0.9249	1.2868	0.6025	91.5836	5.6648	0.4522	0.0418	0.0052	0.0294	0.007	0.0021	0.0015	0.0007	0.0001	-44.3571
20140527	1044.4247	0.9249	1.2868	0.6025	91.5836	5.6648	0.4522	0.0418	0.0052	0.0294	0.007	0.0021	0.0015	0.0007	0.0001	-44.3571
20140528	1044.4247	0.9249	1.2868	0.6025	91.5836	5.6648	0.4522	0.0418	0.0052	0.0294	0.007	0.0021	0.0015	0.0007	0.0001	-44.3571
20140529	1044.4247	0.9249	1.2868	0.6025	91.5836	5.6648	0.4522	0.0418	0.0052	0.0294	0.007	0.0021	0.0015	0.0007	0.0001	-44.3571

20140530	1044.4247	0.9249	1.2868	0.6025	91.5836	5.6648	0.4522	0.0418	0.0052	0.0294	0.007	0.0021	0.0015	0.0007	0.0001	-44.3571
20140531	1044.4247	0.9249	1.2868	0.6025	91.5836	5.6648	0.4522	0.0418	0.0052	0.0294	0.007	0.0021	0.0015	0.0007	0.0001	-44.3571

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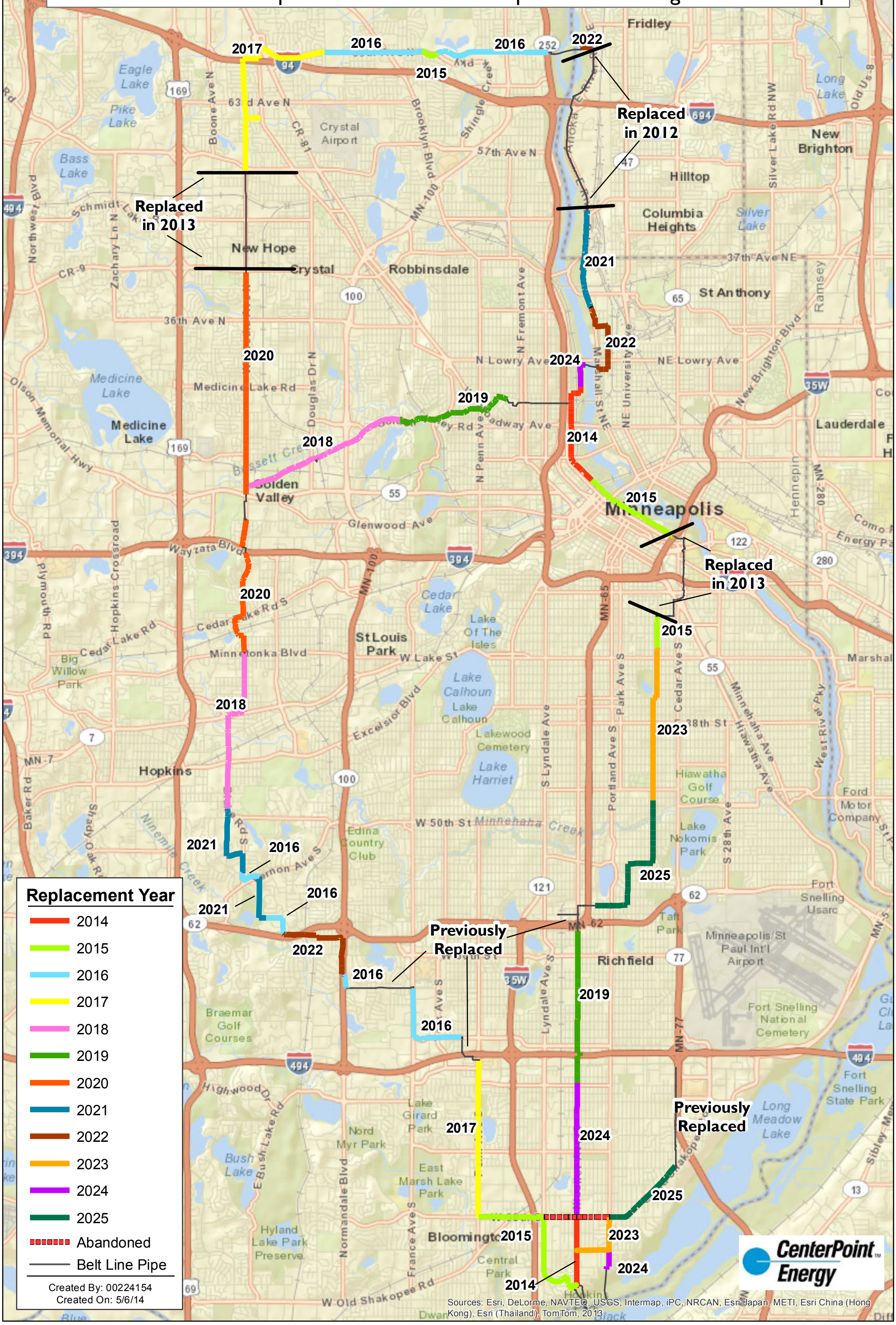
Leak Data

Source: ASME B31.8S-2004: Managing System Integrity of Gas Pipelines, Table 4, Page 22.

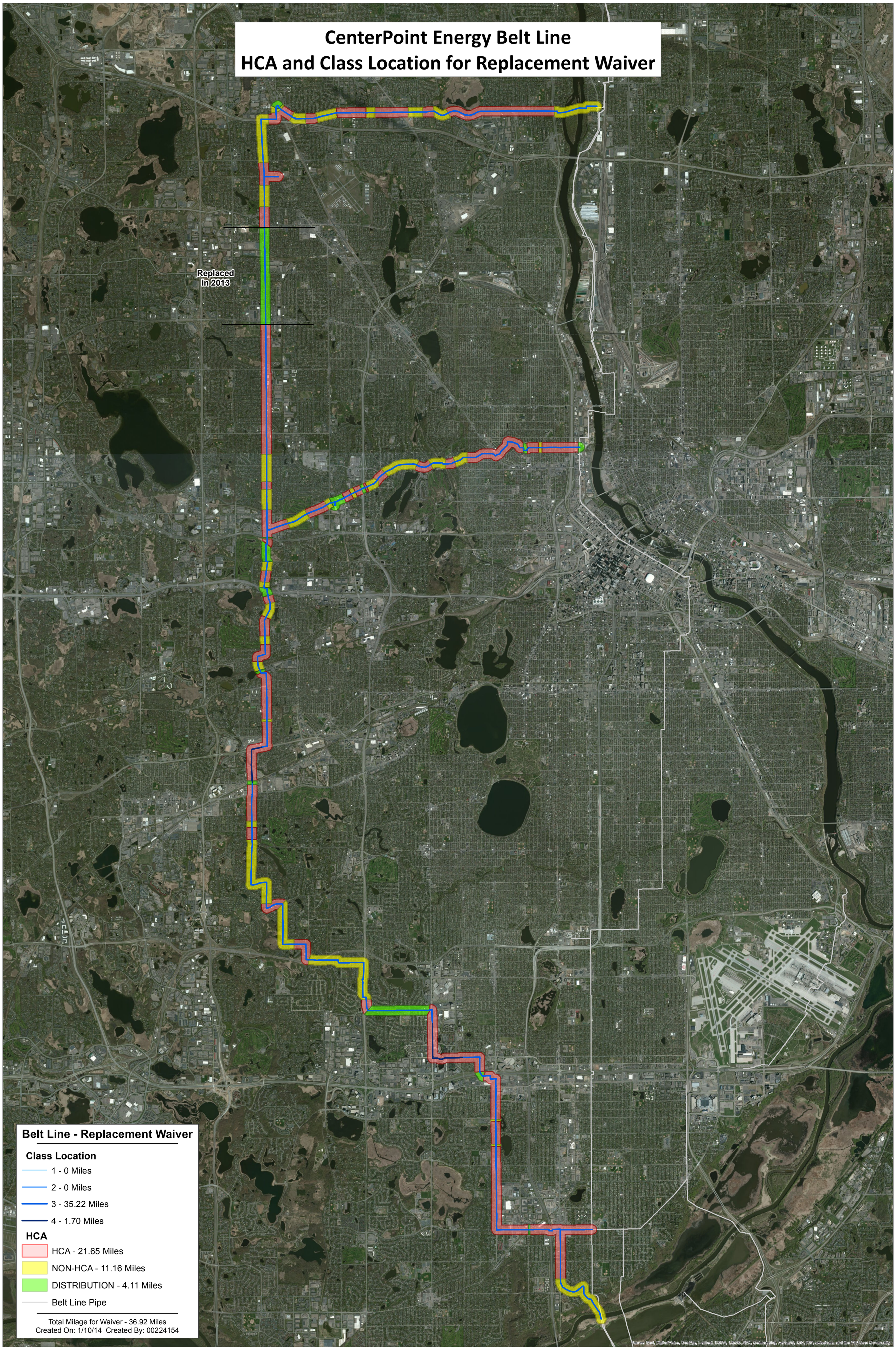
							Third Party Damage			Corrosion Related		Equipment				Incorrect Operation	Weather Related			Manufacture		Construction				O-force	Environ-ment
Leak_ID	LINEID	STA.	YEAR	Latitude	Longitude	HCA at time of Leak	TPD(IF)	PDP	Vand	Ext	Int	Gask/ Oring	Strip/ BP	Cont/ Rel	Seal/ Pack	IO	CW	L	HR/F	Pipe Seam	Pipe	Gweld	Fab Weld	Coup	WB/B	EM	SCC
PI.LEAK.050	LYNDALE 1	19116	2006	44.82625	-93.288484	HCA						X															
PI.LEAK.053	MBLC 1	5888	2007	44.99178	-93.358436	HCA																		X			
PI.LEAK.062	MBLC 2	296	2006	44.99180	-93.358390	HCA						X															
PI.LEAK.064	MBLN 1	3820	2006	45.08009	-93.288799	HCA																		X			
PI.LEAK.065	MBLN 1	4026	2007	45.08008	-93.288705	HCA																		X			
PI.LEAK.072	MBLNE 1	23064	2009	45.02122	-93.272814	NON-HCA																		X			
PI.LEAK.084	MBLNW 1	3340	2008	45.07084	-93.380795	NON-HCA																		X			
PI.LEAK.085	MBLSE 1	57706	2007	44.96102	-93.246481	HCA									X												
PI.LEAK.110	MBLSE 1	56984	2006	44.95912	-93.248592	HCA														X							
PI.LEAK.111	MBLSE 1	25488	2011	44.89422	-93.277802	HCA																		X		X	
PI.LEAK.112	MBLSE 1	27832	2011	44.89424	-93.267844	HCA																		X			
PI.LEAK.113	MBLSE 1	27845	2011	44.89428	-93.267784	HCA																		X			
PI.LEAK.114	MBLSE 1	57708	2011	44.96108	-93.246540	HCA									X												
PI.LEAK.115	MBLSE 1	35736	2012	44.90707	-93.254975	DIST									X												
PI.LEAK.116	MBLSE 1	55144	2012	44.95734	-93.251168	DIST	X																				
PI.LEAK.117	MBLSE 10	38	2005	44.95731	-93.253696	DIST							X														
PI.LEAK.119	MBLSW 1	2101	2008	44.88752	-93.358635	NON-HCA																		X			
PI.LEAK.134	OLD SHAKOPEE 1	25	2008	44.82623	-93.278452	HCA									X									X			
PI.LEAK.162	MBLSW 1	3368	2014	44.88799	-93.3630281	NON-HCA																		X			
PI.LEAK.163	MBLSW 1	7671	2014	44.89156	-93.3747591	NON-HCA																		X			
PI.LEAK.164	OLD SHAKOPEE 1	9653	2008	44.83750	-93.247873	HCA						X															

CenterPoint Energy - Proposed Belt Line Replacement Plan

Includes Accelerated Replacement of 24" HCA Pipe and Remaining 20" and 24" Pipe



CenterPoint Energy Belt Line
HCA and Class Location for Replacement Waiver



Proposed Belt Line Replacement Plan

The information presented is based on the best known data at this time. This information will be re-evaluated on a continual basis to determine the specific segments of the Metro Belt Line to be constructed in a given year and their start/stop points.
This map is subject to change.

Proposed Replacement Plan (2014-2030)

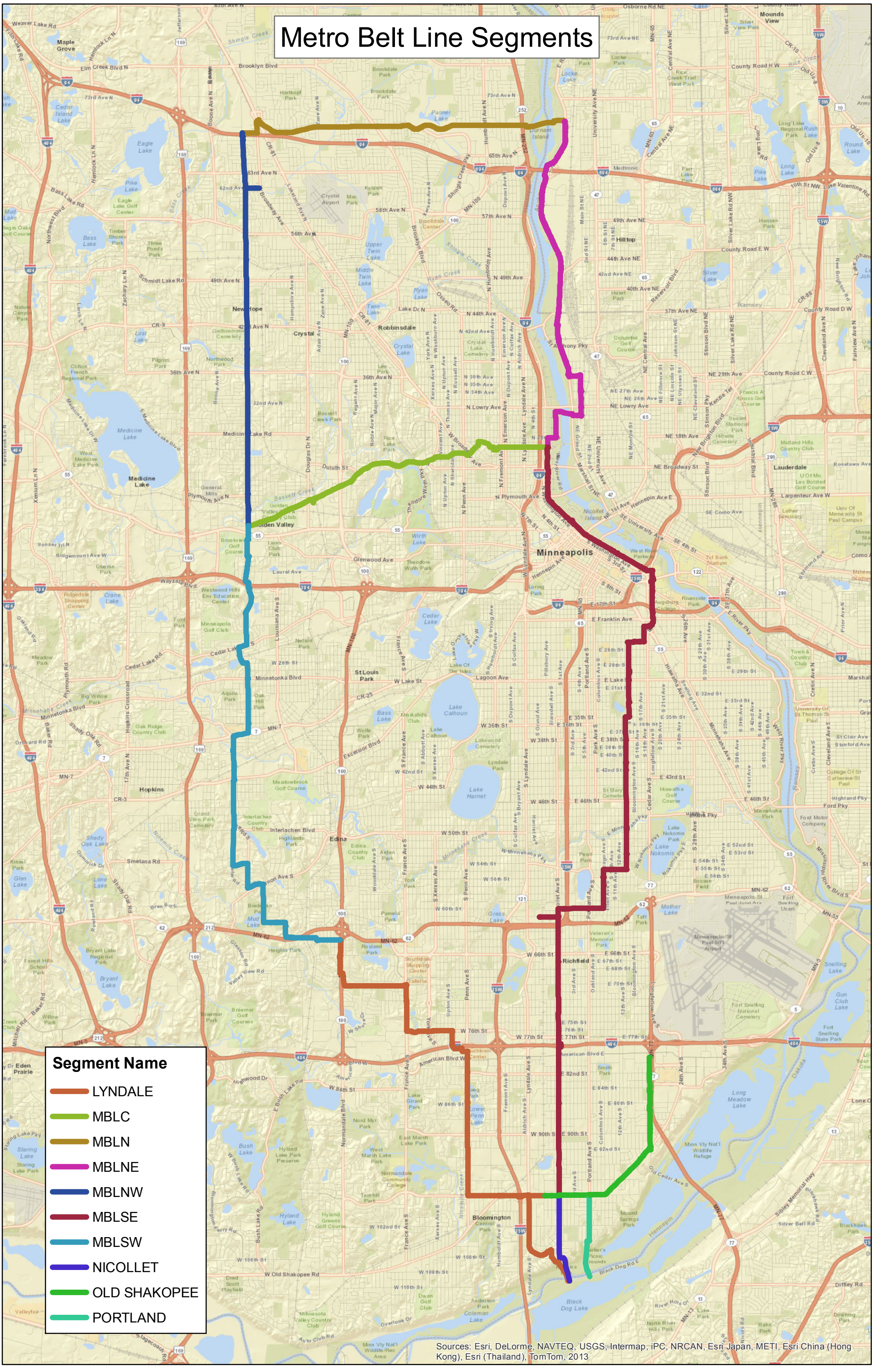
- Previously Replaced
- 2014
- 2015
- 2016
- 2017
- 2018
- 2019
- 2020
- 2021
- 2022
- 2023
- 2024
- 2025
- 2026
- 2027
- 2028
- 2029
- 2030

Date: 1/21/2014 User Name: 00924629

CenterPoint® Energy

Sources: Esri, DeLorme, NAVTEQ, USGS, Intermap, iPC, NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), TomTom, 2013

Metro Belt Line Segments



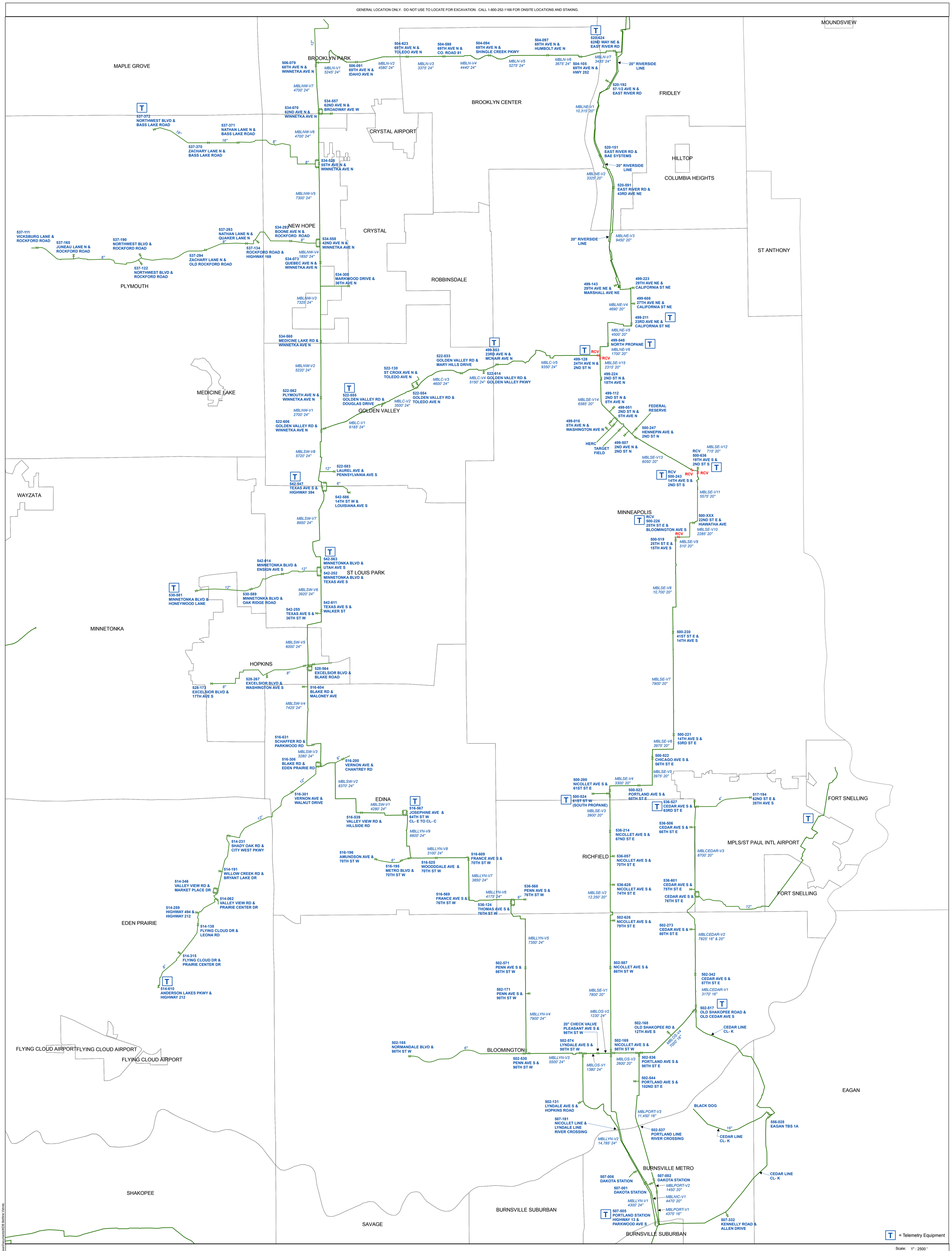
Metro Belt Line Valve Locations and Valve Segments

			From DD						To DD						
Segment Name	Length	Pipe Size	DD Number	Main Line Valve	Access	Lateral Valve	Access	Reg Station	DD Number	Main Line Valve	Access	Lateral Valve	Access	Reg Station	Comments
MBLC-V1	6185	24	522-606	20" Plug	Valve Pit	No	N/A	No	522-555	20" Plug	Valve Pit	No	N/A	No	
MBLC-V2	3500	24	522-555	20" Plug	Valve Pit	No	N/A	No	522-554	20" Plug	Valve Pit	6" Plug	Valve Pit	CL-C to CL-2	
MBLC-V3	4600	24	522-554	20" Plug	Valve Pit	6" Plug	Valve Pit	CL-C to CL-2	522-033	20" Plug	Valve Pit	3" Gate	R/W	CL-C to CL-6	
MBLC-V4	5150	24	522-033	20" Plug	Valve Pit	3" Gate	R/W	CL-C to CL-6	499-553	20" Plug	Valve Pit	8" Gate	Valve Pit	CL-C to CL-2	DD522-614 CL-C to CL-2 on this segment
MBLC-V5	9350	24	499-553	20" Plug	Valve Pit	8" Gate	Valve Pit	CL-C to CL-2	499-128	20" RCV	Valve Pit	3" Gate	R/W	CL-C to CL-8	
MBLLyn-V1	4300	24	507-532	24" Plug	Above Ground	No	N/A	No	507-001	20" Plug	Valve Pit	No	N/A	No	
MBLLyn-V2	14,785	24	507-001	20" Plug	Valve Pit	No	N/A	No	502-574	20" Plug	Valve Pit	4" Ball	Valve Pit	CL-E to CL-2	DD502-131 & 507-006 on this segment
MBLLyn-V3	5500	24	502-574	20" Plug	Valve Pit	4" Ball	Valve Pit	CL-E to CL-2	502-530	20" Plug	Valve Pit	4" Plug	Valve Pit	CL-E to CL-6	
MBLLyn-V4	7900	24	502-530	20" Plug	Valve Pit	4" Plug	Valve Pit	CL-E to CL-6	502-571	20" Plug	Valve Pit	4" Plug	Valve Pit	CL-E to CL-2	DD502-171 CL-E to CL-6 on this segment
MBLLyn-V5	7350	24	502-571	20" Plug	Valve Pit	4" Plug	Valve Pit	CL-E to CL-2	536-124	24" Ball	Valve Pit	6" Ball	Valve Pit	CL-E to CL-2	
MBLLyn-V6	4175	24	536-124	24" Ball	Valve Pit	6" Ball	Valve Pit	CL-E to CL-2	516-569	20" Plug	Valve Pit	6" Gate	R/W	CL-E to CL-6	
MBLLyn-V7	3850	24	516-569	20" Plug	Valve Pit	6" Gate	R/W	CL-E to CL-6	516-609	20" Plug	Valve Pit	4" Plug	Valve Pit	CL-E to CL-2	
MBLLyn-V8	3100	24	516-609	20" Plug	Valve Pit	4" Plug	Valve Pit	CL-E to CL-2	516-525	24" Ball	Valve Pit	4" Ball	Valve Pit	CL-E to CL-2	
MBLLyn-V9	6600	24	516-525	24" Ball	Valve Pit	4" Ball	Valve Pit	CL-E to CL-2	516-567	20" Plug	Valve Pit	4" Plug	Valve Pit	CL-E to CL-2	DD516-010 & 516-195 on this segment
MBLSW-V1	4280	24	516-567	20" Plug	Valve Pit	4" Plug	Valve Pit	CL-E to CL-2	516-539	20" Plug	Valve Pit	4" Plug	Valve Pit	CL-C to CL-6 & 2	
MBLSW-V2	8370	24	516-539	20" Plug	Valve Pit	4" Plug	Valve Pit	CL-C to CL-6 & 2	516-306	16" Gate	R/W	6" Gate	R/W	No	DD516-200 CL-C to CL-2 on this segment
MBLSW-V3	3280	24	516-306	16" Gate	R/W	12" Gate	R/W	No	516-631	20" Plug	Valve Pit	4" Ball	Valve Pit	CL-C to CL-6 & 2	
MBLSW-V4	7425	24	516-631	20" Plug	Valve Pit	4" Ball	Valve Pit	CL-C to CL-6 & 2	528-564	20" Plug	Valve Pit	6" Plug	Valve Pit	CL-C to CL-2	DD516-604 CL-C to CL-2 on this segment
MBLSW-V5	6000	24	528-564	20" Plug	Valve Pit	6" Plug	Valve Pit	CL-C to CL-2	542-611	20" Plug	Valve Pit	6" Plug	Valve Pit	CL-C to CL-8	DD542-255 CL-C to CL-2 on this segment
MBLSW-V6	3920	24	542-611	20" Plug	Valve Pit	6" Plug	Valve Pit	CL-C to CL-8	542-252	20" Plug	Valve Pit	8" Plug	Valve Pit	No	
MBLSW-V7	8950	24	542-252	20" Plug	Valve Pit	8" Plug	Valve Pit	No	542-547	16" Gate	R/W	12" Gate	R/W	CL-C to CL-8	DD542-586 CL-C to CL-2 on this segment
MBLSW-V8	5720	24	542-547	16" Gate	R/W	12" Gate	R/W	CL-C to CL-8	522-606	20" Plug	Valve Pit	No	N/A	No	DD522-583 CL-C to CL-2 on this segment
MBLNW-V1	2700	24	522-606	20" Plug	Valve Pit	20" Plug	Valve Pit	No	522-562	20" Plug	Valve Pit	4" Plug	Valve Pit	CL-C to CL-6 & 2	
MBLNW-V2	5220	24	522-562	20" Plug	Valve Pit	4" Plug	Valve Pit	CL-C to CL-6 & 2	534-560	20" Plug	Valve Pit	4" Plug	Valve Pit	CL-C to CL-6	
MBLNW-V3	7325	24	534-560	20" Plug	Valve Pit	4" Plug	Valve Pit	CL-C to CL-6	534-073	20" Plug	Valve Pit	No	N/A	No	DD534-300 & 534-360 on this segment
MBLNW-V4	1850	24	534-073	20" Plug	Valve Pit	No	N/A	No	534-558	24" Ball	Valve Pit	8" Ball	Valve Pit	CL-C to CL-6 & 2	
MBLNW-V5	7300	24	534-558	24" Ball	Valve Pit	8" Ball	Valve Pit	CL-C to CL-6 & 2	534-528	24" Ball	Valve Pit	12" Ball	Valve Pit	CL-C to CL-2	
MBLNW-V6	4700	24	534-528	24" Ball	Valve Pit	12" Ball	Valve Pit	CL-C to CL-2	534-070	20" Plug	Valve Pit	4" Plug	Valve Pit	No	DD534-557 CL-C to CL-2 on this segment
MBLNW-V7	4710	24	534-070	20" Plug	Valve Pit	4" Plug	Valve Pit	No	506-079	20" Plug	Valve Pit	4" Plug	Valve Pit	CL-C to CL-6	12" Plug is another lateral valve
MBLN-V1	5245	24	506-079	20" Plug	Valve Pit	4" Plug	Valve Pit	CL-C to CL-6	506-091	20" Plug	Valve Pit	4" Plug	Valve Pit	No	
MBLN-V2	4580	24	506-091	20" Plug	Valve Pit	4" Plug	Valve Pit	No	504-623	20" Plug	Valve Pit	4" Plug	Valve Pit	CL-C to CL-6	
MBLN-V3	3375	24	504-623	20" Plug	Valve Pit	4" Plug	Valve Pit	CL-C to CL-6	504-598	20" Plug	Valve Pit	6" Plug	Valve Pit	CL-C to CL-6 & 2	
MBLN-V4	4440	24	504-598	20" Plug	Valve Pit	6" Plug	Valve Pit	CL-C to CL-6 & 2	504-094	20" Plug	Valve Pit	4" Plug	Valve Pit	No	
MBLN-V5	5275	24	504-094	20" Plug	Valve Pit	4" Plug	Valve Pit	No	504-097	20" Plug	Valve Pit	6" Plug	Valve Pit	CL-C to CL-6	
MBLN-V6	3675	24	504-097	20" Plug	Valve Pit	6" Plug	Valve Pit	CL-C to CL-6	504-105	20" Plug	Valve Pit	4" Ball	Valve Pit	CL-C to CL-6	
MBLN-V7	3435	24	504-105	20" Plug	Valve Pit	4" Ball	Valve Pit	CL-C to CL-6	520-624	20" Plug	Valve Pit	4" Ball	Valve Pit	CL-C to CL-6	Mississippi River Crossing
MBLNE-V1	10,315	24	520-624	16" Ball	Above Ground	8" Ball	Above Ground	No	520-151	24" Ball	Valve Pit	6" Ball	Valve Pit	CL-C to CL-8	DD520-192 CL-C to CL-6 on this segment
MBLNE-V2	3325	24	520-151	24" Ball	Valve Pit	6" Ball	Valve Pit	CL-C to CL-8	520-591	20" Ball	Valve Pit	6" Ball	Valve Pit	CL-C to CL-8	
MBLNE-V3	9450	20	520-591	20" Ball	Valve Pit	6" Ball	Valve Pit	CL-C to CL-8	499-143	20" Plug	Valve Pit	No	N/A	No	
MBLNE-V4	4690	20	499-143	16" Plug	Valve Pit	No	N/A	No	499-211	16" Plug	Valve Pit	16" Plug	Valve Pit	CL-C to CL-8	DD499-223 & 499-608 on this segment
MBLNE-V5	4500	20	499-211	16" Plug	Valve Pit	12" Wafer	R/W	CL-C to CL-8	499-548	16" Plug	Valve Pit	No	Valve Pit	CL-C to CL-2	Mississippi River Crossing
MBLNE-V6	1700	20	499-548	16" Plug	Valve Pit	No	Valve Pit	CL-C to CL-2	499-128	20" Ball RCV	Valve Pit	20" Plug RCV	Valve Pit	CL-C to CL-8	
MBLSE-V1	7800	20	502-169	20" Plug	Valve Pit	No	N/A	No	502-587	16" Plug	Valve Pit	4" Plug	Valve Pit	CL-C to CL-2	
MBLSE-V2	12,250	20	502-587	16" Plug	Valve Pit	4" Plug	Valve Pit	CL-C to CL-2	536-214	20" Plug	Valve Pit	No	N/A	No	DD502-587, 502-626, 536-628 on this segment
MBLSE-V3	3900	20	536-214	20" Plug	Valve Pit	No	N/A	No	500-280	20" Ball	Valve Pit	No	N/A	No	South Propane Station
MBLSE-V4	3335	20	500-280	20" Ball	Valve Pit	No	N/A	No	500-523	20" Plug	Valve Pit	No	N/A	No	
MBLSE-V5	3975	20	500-523	20" Plug	Valve Pit	No	N/A	No	500-522	20" Plug	Valve Pit	8" Gate	R/W	CL-C to CL-2	
MBLSE-V6	3975	20	500-522	20" Plug	Valve Pit	8" Gate	R/W	CL-C to CL-2	500-221	20" Plug	Valve Pit	No	N/A	CL-C to 8 Separation Valves	
MBLSE-V7	7900	20	500-221	20" Plug	Valve Pit	No	N/A	CL-C to 8 Separation Valves	500-230	16" Plug	Valve Pit	3" Plug	Valve Pit	CL-C to CL-8	
MBLSE-V8	10,700	20	500-230	16" Plug	Valve Pit	3" Plug	Valve Pit	CL-C to CL-8	500-519	20" Ball	Valve Pit	12" Ball	Valve Pit	CL-C to CL-2	
MBLSE-V9	510	20	500-519	20" Ball	Valve Pit	12" Ball	Valve Pit	CL-C to CL-2	500-226	20" Ball RCV	Valve Pit	No	N/A	No	
MBLSE-V10	2285	20	500-226	20" Ball RCV	Valve Pit	No	N/A	No	500-XXX	20" Ball	Valve Pit	8" Ball	Valve Pit	No	
MBLSE-V11	5575	20	500-XXX	20" Ball	Valve Pit	8" Ball	Valve Pit	No	500-636	20" Ball RCV	Valve Pit	No	N/A	CL-C to CL-8	
MBLSE-V12	715	20	500-636	20" Ball	Valve Pit	12" Gate	R/W	CL-C to CL-8	500-243	20" Ball RCV	Above Ground	No	N/A	No	
MBLSE-V13	6050	20	500-243	20" Ball RCV	Above Ground	No	N/A	No	500-247	16" Gate	R/W	8" Gate	R/W	CL-C to CL-5	
MBLSE-V14	6585	20	500-247	16" Gate	R/W	8" Gate	R/W	CL-C to CL-5	499-224	16" Plug	Valve Pit	No	N/A	No	DD499-507, 499-016, 499-051 on this segment
MBLSE-V15	2315	20	499-224	16" Plug	Valve Pit	No	N/A	No	499-128	20" Ball RCV	Valve Pit	No	N/A	No	
MBLOS-V1	1380	24	502-574	20" Plug	Valve Pit	4" Ball	Valve Pit	CL-E to CL-2	N/A	Check Valve	Buried	No	N/A	No	Gas flows east to west through check

			From DD						To DD						
Segment Name	**Length**	**Pipe Size**	**DD Number**	**Main Line Valve**	**Access**	**Lateral Valve**	**Access**	**Reg Station**	**DD Number**	**Main Line Valve**	**Access**	**Lateral Valve**	**Access**	**Reg Station**	**Comments**
MBLOS-V2	1230	24	N/A	Check Valve	Buried	No	N/A	No	502-169	20" Plug	Valve Pit	20" Plug	Valve Pit	No	Gas flows east to west through check
MBLOS-V3	2600	20	502-169	20" Plug	Valve Pit	No	N/A	No	502-536	16" Plug	Valve Pit	No	N/A	No	
MBLOS-V4	7000	16	502-536	16" Plug	Valve Pit	No	N/A	No	502-517	16" Ball	Valve Pit	No	N/A	No	DD502-168 CL-C to CL-2 on this segment
MBLNic-V1	4470	20	507-516	20" Ball	Above Ground	No	N/A	No	507-001	20" Ball	Above Ground	20" Ball	Above Ground	No	
MBLNic-V2	12,500	20	507-001	20" Ball	Above Ground	No	N/A	No	502-169	20" Plug	Valve Pit	No	N/A	No	DD507-006 CL-C to CL-6 on this segment
MBLPort-V1	4375	16	507-509	16" Ball	Above Ground	No	N/A	No	507-002	16" Ball	Above Ground	No	N/A	CL-K to CL-C	16" CL-K Portland Line
MBLPort-V2	1450	20	507-002	16" Ball	Above Ground	No	N/A	CL-K to CL-C	507-002	16" Ball	Above Ground	20" Ball	Above Ground	No	Dakota Station Property
MBLPort-V3	11,450	16	507-002	16" Ball	Above Ground	No	N/A	No	502-536	16" Plug	Valve Pit	No	N/A	No	DD502-544 CL-C to CL-6 on this segment
MBLCedar-V1	3170	16	502-517	16" Ball	Valve Pit	No	N/A	No	502-342	16" Ball	Valve Pit	4" Ball	Valve Pit	CL-C to CL-6	
MBLCedar-V2	7825	16 & 20	502-342	16" Ball	Valve Pit	4" Ball	Valve Pit	CL-C to CL-6	N/A	16" Gate	R/W	12 Gate	R/W	No	DD502-273 CL-C to CL-6 on this segment
MBLCedar-V3	8700	20	N/A	16" Gate	R/W	12"	Gate	No	536-527	12" Ball	Above Ground	4" Gate	R/W	CL-C to CL-8	DD536-601, 536-506, 517-194 on this segment

Valve Segment Lengths are Approximate

GENERAL LOCATION ONLY. DO NOT USE TO LOCATE FOR EXCAVATION. CALL 1-800-252-1166 FOR ONSITE LOCATIONS AND STAKING.



Plotted by: i220281

Plot Date: 5/27/2014

METRO BELT LINE

VALVE LOCATIONS AND SEGMENTS

Scale: 1" : 2500 '

CenterPoint Energy

North

Designer: Express/Documents/KDB Beltline Valves