

May 1, 2008

Carole J. Washburn, Secretary Washington Utilities and Transportation Commission PO Box 47250 Olympia, WA 98504-7250

Attn: Anne F. Soiza, Pipeline Safety Director

# RE: Frederickson Supply Main Pressure Authorization

Dear Ms. Soiza,

Pursuant to WAC 480-93-020, Puget Sound Energy (PSE) requests approval to operate a new supply main at a pressure of 500 psig. This 16-inch pipeline will provide additional gas supply to the Tacoma area ensuring reliability as growth increases.

The proposed pipeline starts at the Frederickson Gate Station (RS#1352) and terminates at a new Limit Station in the vicinity of the existing South Tacoma Town Border Station (RS#2716).

The Frederickson Supply Main is scheduled to be installed as early as June 2008 and will be tested at a minimum of 750 psig. The minimum component rating will be 720 psig (ANSI 300) and the MAOP will be 500 psig. The attached exhibits provide additional information regarding the proposed facilities.

The proposed pipeline exceeds the minimum federal safety regulations in the following design, operation, and maintenance areas:

- Class Location the design and construction specifications meet or exceed the requirements for a Class 4 location. (192.5)
- **Design Factor** PSE's design factor of 0.20 exceeds the 0.40 factor for Class 4 locations. (192.111)
- Valve Spacing An additional valve will be installed keeping spacing much less than 1 mile apart in accordance with PSE's standards. This spacing exceeds the 2-1/2 mile requirement for transmission line valves in Class 4 locations. (192.179). There are no specific valve spacing requirements for high-pressure distribution systems. (192.181)
- Nondestructive Testing PSE's radiographic inspection plan is identical to the Class 3 and Class 4 requirements for transmission lines. Thus PSE's plan far exceed the minimum federal safety regulations which do not require nondestructive testing of pipelines operating below 20% SMYS. (192.241 and 192.243)

- Cover PSE's standards require a minimum cover of 36" over high-pressure distribution mains, this exceeds the minimum federal requirements of 24". (192.327(b)) For the Frederickson Supply main project, the main is proposed to have a minimum cover of 48" wherever possible.
- Leakage Survey In accordance with PSE standards, portions of the proposed 16" main near high occupancy structures (HOS) will be leak surveyed on an annual basis. The remainder will be leak surveyed once every 3 years which exceeds the federal and state requirement of 5 years for mains outside of business districts and places of public assembly. (192.723 and WAC 480-93-188)

PSE is planning on providing notification to the identified property owners in advance of any scheduled open hearing with regard to this request. If you require any additional information, please call me at (425) 462-3974.

Sincerely,

Duane A. Henderson, PE

Director, Operations Services

**Enclosures** 

cc: Er

Eric Markell

Karl Karzmar

Bert Valdman

Mike Hobbs

**Shamish Patel** 

## Exhibit A – General Information

## **Background:**

The South Tacoma Lateral has reached capacity. It is an 8-inch HP main that runs from the South Tacoma Gate Station (RS#1352) to the South Tacoma Town Border Station (TBS) (RS#2716). At high flows, the 8-inch HP main experiences excessive pressure drop at the inlet to the South Tacoma TBS. Williams will be increasing their contract for the South Tacoma GS from 400 psig to 550 psig and from 2,200,000 scfh to 3,200,000 scfh by year 2008-2009. The pressure increase is simply a best effort and cannot be counted on for long term reliable gas service. An attempt to get a contract for 620 psig from the Williams lateral has been declined by Williams. With the increase to 550 psig and 3,200,000 scfh, the system is still under capacity and would not meet demand in the on a peak day. Therefore, a new lateral is needed to provide a firm supply of gas to the South Tacoma area. This project will consist of three parts: 1) the new 16-inch Frederickson HP Lateral which will provide additional gas supply to the South Tacoma area ensuring reliability as growth continues to increase; 2) upgrades to the existing Frederickson Gate Station (DR # 2059) to provide adequate odorization of gas in the proposed Frederickson 16-inch HP Lateral; and 3) the new Clover Creek Limit Station which will reduce the pressure in the pipeline system to 250 psig in order to feed the supply system near the South Tacoma TBS.

#### Scope:

The pressure authorization request is for all of the proposed facilities, from the line of demarcation (between NWP and PSE) at the Frederickson Gate Station, through approximately 26,500 feet of proposed 16-inch HP pipeline to the outlet valve of the proposed Clover Creek Limit Station. The attached map (Exhibit B) illustrates the proposed route and relative location of these facilities.

## I. Frederickson HP Lateral

#### **Project Outline:**

The Frederickson HP Lateral will consist of approximately 26,500 feet of new pipeline that includes an existing 2,200 foot main installed in the spring of 2000. Once completed, the pipeline will supply gas from the Frederickson Gate Station to the new Clover Creek Limit Station.

Refer to Exhibit B for a pipeline route overview.

## **Pipeline Route:**

The pipeline route begins at the Frederickson Gate Station located near the intersection of 192<sup>nd</sup> Street East and Canyon Road East. The route exits the Gate Station through an existing driveway and proceeds west along 192<sup>nd</sup> Street East. The route then turns north at 38<sup>th</sup> Avenue East crossing under a railroad and overhead transmission lines. *Note: this is part of the 2,200 feet of existing main that has already been installed.* The route turns west at 176<sup>th</sup> Street East, and then north at 36<sup>th</sup> Avenue East. The route turns west at Military Road East and then turns north on Waller Road East. The route temporarily leaves the right-of-way and crosses under Clover Creek. Near the intersection of Waller Road East and Brookdale Road, the route again

leaves the right-of-way and proceeds up the slope. At the top of the slope, the route crosses under a railroad and continues north re-entering the right-of-way on 30<sup>th</sup> Avenue East where it continues north crossing under two separate branches of the North Fork Clover Creek. The route then turns east on 128<sup>th</sup> Street East where it enters the site of the new Clover Creek Limit Station.

## **Proximity Survey:**

A tax parcel review of the area within 100 feet of the proposed pipeline was conducted. There are no well-defined outside areas that are occupied by 20 or more people, sixty days in any twelve month period. The zoning for the pipeline route is Moderate Density Single-Family (MSF). MSF zone classification covers geographic areas located within urban growth areas but which fall outside of an Employment Center, Urban Center, or Urban District. The primary use of the classification is low and moderate density single- and two-family residential activities and compatible civic uses in areas with a mixed residential pattern. Information on tax parcels and buildings intended for human occupancy within 100 feet of the pipeline route is presented in Exhibit C. This route is classified as a Class 3 Location.

#### MAOP:

The Frederickson HP Lateral will be designed and tested for a Maximum Allowable Operating Pressure ("MAOP") of 500 psig.

## **Pipe and Fitting Specifications:**

The proposed pipeline will be constructed from 16-inch diameter and 0.375" wall thickness API 5L-X56 steel pipe with a fusion bonded epoxy (FBE) coating. The existing main near the intersection of 38<sup>th</sup> Avenue East and 192<sup>nd</sup> Street East was constructed with 16-inch diameter and 0.375" wall thickness API 5L-X56 steel pipe with an extruded polyethylene (X-Tru) coating. The pipe and fitting specifications with the corresponding percentage of specified minimum yield strength at MAOP and normal operating pressure for the supply main are shown in the table below.

Material Specification	% SYMS @ MAOP (500 psig)	% SYMS @ Normal Operating Pressure (400 psig)
16-inch x 0.375" w.t. API 5L X56, FBE	19.05	15.24
16-inch x 0.375" w.t. API 5L X56, X-Tru	19.05	15.24
16-inch x 0.375" w.t. WPHY Y-56 fittings	19.05	15.24

All other pipeline components will have a working pressure rating of at least 500 psig.

#### **Damage Prevention:**

Pipeline markers will be installed and monitored in accordance with PSE Gas Operating Standards 2525.2500 and 2575.1100. PSE is an active member in the local One-Call System and works closely with the local municipalities and permitting agencies prior to any construction starting in the vicinity of its facilities. Additionally, it is PSE standard practice to monitor construction work taking place in the vicinity of its high pressure systems.

#### **Construction Details:**

Although the route is classified as a Class 3 location, all construction shall conform to Class 4 Standards.

<u>Cover</u> - All buried mains will be installed with a minimum of 48" of cover, wherever possible. If 48" of cover cannot be achieved, the main will be installed with a minimum of 36" of cover beneath a protective, red-dyed concrete cap.

<u>Backfill</u> - All shading and bedding material will be free of sharp rocks with a maximum particle size of 1/2" unless an approved rock shield material is utilized. When rock shield material is used, the backfill material shall be free from sharp objects and large clods that could damage the pipe.

<u>Clearance</u> – When practical, 36" of separation will be maintained between the pipeline and other underground facilities. When 36" of separation is not possible, the maximum possible clearance shall be attained. If at least 12" of clearance is not possible, the pipeline will be protected from damage, which may be caused by proximity to the other facility, by a fiberglass shield or other method approved by the Consulting Engineer, Corrosion Control.

## **Cathodic Protection:**

The corrosion control program will be designed and installed in accordance with the requirements of Section 2600 of the PSE Gas Operating Standards. The following standards are applicable to the supply main:

2600.1000	Cathodic Protection Requirements
2600.1100	Field Coatings for Pipe and Fittings
2600.1200	Test Station Requirements
2600.1300	Designing and Installing Cathodic Protection Systems
2600.1400	Electrical Isolation and Grounding Requirements
2600.1500	Monitoring Cathodic Protection
2600.1700	Monitoring and Remedial Measures for Internal Corrosion
2600.1900	Remedial Measures for Corrosion Control
2600.2000	Galvanic Anode Installation Requirements

# Coating:

As outlined in PSE Gas Operating Standard 2600.1100, Field Coatings for Pipe and Fittings, an external protective coating shall be applied to the pipeline. Any field joints and fittings not supplied with protective coatings will have field-applied coatings. All aboveground piping will be painted in accordance with written specifications. Field-applied coatings will meet the requirements of PSE Gas Operating Standard 2600.1100.

All coating specifications will be included in the notice of proposed construction.

# Testing:

The test medium will be water and the test pressure will be at least 750 psig (1.5 times MAOP). The elevation changes approximately 101 feet over the route of the supply main. Therefore, the test pressure at the lowest elevation will be at least 795 psig to ensure 750 psig is obtained

at the highest point on the pipeline. All testing will be done in accordance with PSE Gas Operating Standard 2525.3300 and in accordance with an approved procedure.

## Welding:

All welding and welding inspection will conform to the following PSE Gas Operating Standards:

2525.2700	Installation Requirements for Steel Pipe and Fittings
2700.1100	Welder Qualification Requirements
2700.1200	Weld Inspection and Repair
2700.1300	Weld Inspector Qualification Requirements
2700.1400	Welder Qualification Test Requirements

In addition, PSE has a comprehensive set of welding procedures that are included in the Gas Field Procedures Manual. All welding to be done on this project will be governed by these procedures. If any new procedures are required for the welding on this project, they will be qualified in accordance with PSE Gas Operating Standards and added to the Gas Field Procedures Manual. The 16-inch supply main welds will be performed using Gas Field Procedure 4900.1330.

A minimum of 90 percent of the welds will be x-rayed.

# **Pressure Monitoring:**

The pressure in this system will be monitored by remote telemetry units (RTUs). The RTUs will poll system pressure every 3 seconds. These pressures will be monitored 24 hours a day in PSE's 24-Hour Operations Center.

# Leakage Surveys:

Leakage surveys will be conducted in accordance with PSE Gas Operating Standard 2625.1100, Leakage Survey Program. This Operating Standard requires leak surveys to be conducted annually for supply mains operating above 250 psig.

## II. Frederickson Gate Station

# **Project Outline:**

The Frederickson Gate Station upgrade will consist of the installation of a new 1,000 gallon YZ odorant injection system, new inlet and outlet valves, new station piping for odorant diffusion, a new inlet and outlet valve for the existing District Regulator (DR), and modification to portions of the existing DR piping and valves to meet SYMS and class requirements so that the DR will be rated to the inlet pressure through the new outlet valve.

## **Proximity Survey:**

A survey of the area within 100 feet of the proposed fence surrounding the GS was conducted. There are no structures intended for human occupancy within 100 feet of the proposed facility fence line. The zoning for the property and surrounding addresses is Employment Center (EC). EC is a concentration of low to high intensity office parks, manufacturing, other industrial development, or a combination of activities. It may also include commercial development as a

part of the center as long as the commercial development is incidental to the employment activities of the center and supports and serves the needs of the workforce.

### MAOP:

The pipeline will be designed and tested for a MAOP of 500 psig.

**Design Specifications:** 

The Gate Station facilities have been designed and will be constructed and operated in accordance with the requirements for Class 4 locations. The piping layout and configuration is typical of station piping on property owned by PSE. All of the piping will be on PSE property and located within a secure fence enclosure.

Pipe and Fitting Specifications:

The pipe and fitting specifications with the corresponding percentage of specified minimum yield strength at MAOP and normal operating pressure for the GS are shown in the table below.

Material Specification	% SYMS @ MAOP (500 psig)	% SYMS @ Normal Operating Pressure (400 psig)
12-inch x 0.312" w.t. API 5L X52, Bare	19.65	15.72
12-inch x 0.375" w.t. API 5L X52, FBE	19.65	15.72
6-inch x 0.280" w.t. API 5L X42, Bare	14.09	11.72
6-inch x 0.280" w.t. API 5L Grade B, FBE	16.91	13.53
4-inch x 0.237" w.t. API 5L X42, Bare	11.31	9.05
4-inch x 0.237" w.t. API 5L X42, FBE	11.31	9.05
12-inch x 0.375" w.t. WPHY Y-52 fittings	16.35	13.08
6-inch x 0.280" w.t. WPHY Y-52 fittings	11.38	9.11
4-inch x 0.237" w.t. WPHY Y-52 fittings	9.13	7.31

All other Gate Station components will have a working pressure rating of at least 500 psig.

#### **Construction Details:**

All construction shall conform to Class 4 Standards.

Cover - All buried piping will be installed with a minimum of 36" of cover.

<u>Backfill</u> - All shading and bedding material will be free of sharp rocks with a maximum particle size of 1/2" unless an approved rock shield material is utilized. When rock shield material is used, the backfill material shall be free from sharp objects and large clods that could damage the pipe.

<u>Clearance</u> – As practical, 12" of separation will be maintained between the buried piping and other underground facilities. If at least 12" of clearance is not possible, the piping will be protected from damage, which may be caused by proximity to the other facility, by a fiberglass shield or other method approved by the Consulting Engineer, Corrosion Control.

#### **Cathodic Protection:**

The corrosion control program will be designed and installed in accordance with the requirements of Section 2600 of the PSE Gas Operating Standards. The following standards are applicable to the supply main:

2575.2800	Examining Buried Pipelines
2600.1000	Cathodic Protection Requirements
2600.1100	Field Coatings for Pipe and Fittings
2600.1200	Test Station Requirements
2600.1300	Designing and Installing Cathodic Protection Systems
2600.1400	Electrical Isolation and Grounding Requirements
2600.1500	Monitoring Cathodic Protection
2600.1700	Monitoring and Remedial Measures for Internal Corrosion
2600.1900	Remedial Measures for Corrosion Control
2600.2000	Galvanic Anode Installation Requirements

## Coating:

As outlined in PSE Gas Operating Standard 2600.1100, Field Coatings for Pipe and Fittings, an external protective coating shall be applied to the pipeline. Any field joints and fittings not supplied with protective coatings will have a field-applied coating. All aboveground piping will be painted in accordance with written specifications. Field-applied coatings will meet the requirements of PSE Gas Operating Standard 2600.1100.

All coating specifications will be included in the notice of proposed construction.

# **Testing:**

The test medium will be nitrogen and the test pressure will be at least 750 psig (1.5 times MAOP). All testing will be done in accordance with PSE Gas Operating Standard 2525.3300 and in accordance with an approved procedure.

## Welding:

All welding and welding inspection will conform to the following PSE Gas Operating Standards:

2525.2700	Installation Requirements for Steel Pipe and Fittings
2700.1100	Welder Qualification Requirements
2700.1200	Weld Inspection and Repair
2700.1300	Weld Inspector Qualification Requirements
2700.1400	Welder Qualification Test Requirements

In addition, PSE has a comprehensive set of welding procedures that are included in the Gas Field Procedures Manual. All welding to be done on this project will be governed by these procedures. If any new procedures are required for the welding on this project, they will be qualified in accordance with PSE Gas Operating Standards and added to the Gas Field Procedures Manual.

A minimum of ninety percent (90%) of all welds will be X-rayed. One hundred percent (100%) of all welds on six inch (6-inch) pipe or larger will be x-rayed.

## **Operation and Maintenance:**

<u>Damage Prevention:</u> Pipeline facility warning signs will be installed and monitored in accordance with PSE Gas Operating Standards 2525.2500 and 2575.1100. PSE is an active member in the local One-Call System and works closely with the local municipalities and permitting agencies prior to any construction starting in the vicinity of its high pressure regulating stations. The gate station facilities are expected to be at low risk from third party damage since they will be enclosed within a fence.

<u>Leakage Surveys</u>: Leakage surveys will be conducted annually in accordance with PSE Operating Standard 2625.1100 and PSE Gas Field Procedure 4700.1600.

<u>Pressure Monitoring:</u> A remote telemetry unit (RTU) will monitor the pressure in the system. The RTU will poll the system pressures every 3 seconds. The pressure will be monitored 24 hours a day in PSE's 24-Hour Operations Center.

## III. Clover Creek Limit Station

## **Project Outline:**

The Clover Creek Limit Station (LS) will consist of installation of a two-stage dual-run working monitor regulation facility. The facility will also include a station bypass and will accommodate for the future installation of a heater if it is deemed necessary after the station has been in operation.

# **Proximity Survey:**

A survey of the area within 100 feet of the proposed fence surrounding the LS was conducted. There are no well-defined areas that are occupied by twenty or more people, sixty days in any twelve month period. The zoning for the property and surrounding addresses is classified as Rural Separator (RSep). RSep zone classification includes rural lands intended as a buffer or separation between urban zone classifications. Information on buildings intended for human occupancy within 100 feet of the proposed fence is presented below.

#	Owner	Address	Estimated Distance from Proposed Fence
1	Marvek, Lloyd T	12801 to 12803 Waller Rd E	36 feet
2	Terrill, Edward	12819 to 12821 Waller Rd E	90 feet

## **Design Specifications:**

The Limit Station facilities have been designed and will be constructed and operated in accordance with the requirements for Class 4 locations. The piping layout and configuration is typical of station piping on property owned by PSE. All of the piping will be on PSE property and located within a secure enclosure.

## MAOP:

The pipeline will be designed and tested for an MAOP of 500 psig.

## **Pipe and Fitting Specifications:**

The pipe and fitting specifications with the corresponding percentage of specified minimum yield strength at MAOP and normal operating pressure for the LS are shown in the table below.

Material Specification	% SYMS @ MAOP (500 psig)	% SYMS @ Normal Operating Pressure (400 psig)
12-inch x 0.312" w.t. API 5L X52, Bare	19.65	15.72
12-inch x 0.312" w.t. API 5L X52, FBE	19.65	15.72
10-inch x 0.365" w.t. API 5L X42, Bare	17.54	14.03
8-inch x 0.322" w.t. API 5L X42, Bare	15.95	12.76
12-inch x 0.375" w.t. WPHY Y-52 fittings	16.35	13.08
10-inch x 0.365" w.t. WPHY Y-52 fittings	14.16	11.33
8-inch x 0.322" w.t. WPHY Y-52 fittings	12.88	10.31
6-inch x 0.280" w.t. WPHY Y-52 fittings	11.38	9.11

All other pipeline components will have a working pressure rating of at least 500 psig.

#### **Construction Details:**

All construction shall conform to Class 4 Standards.

Cover - All buried piping will be installed with a minimum cover of 36".

<u>Backfill</u> - All shading and bedding material will be free of sharp rocks with a maximum particle size of 1/2" unless an approved rock shield material is utilized. When rock shield material is used, the backfill material shall be free from sharp objects and large clods that could damage the pipe.

<u>Clearance</u> – As practical, 12" of separation will be maintained between the piping and other underground facilities. If at least 12" of clearance is not possible, the piping will be protected from damage, which may be caused by proximity to the other facility, by a fiberglass shield or other method approved by the Consulting Engineer, Corrosion Control.

#### **Cathodic Protection:**

The corrosion control program will be designed and installed in accordance with the requirements of Section 2600 of the PSE Gas Operating Standards. The following standards are applicable to the supply main:

2575.2800	Examining Buried Pipelines
2600.1000	Cathodic Protection Requirements
2600.1100	Field Coatings for Pipe and Fittings
2600.1200	Test Station Requirements
2600.1300	Designing and Installing Cathodic Protection Systems
2600.1400	Electrical Isolation and Grounding Requirements
2600.1500	Monitoring Cathodic Protection
2600.1700	Monitoring and Remedial Measures for Internal Corrosion
2600.1900	Remedial Measures for Corrosion Control
2600.2000	Galvanic Anode Installation Requirements

# **Coating:**

As outlined in PSE Gas Operating Standard 2600.1100, Field Coatings for Pipe and Fittings, an external protective coating shall be applied to the pipeline. Any field joints and fittings not supplied with protective coatings will have a field-applied coating. All aboveground piping will be painted in accordance with written specifications. Field-applied coatings will meet the requirements of PSE Gas Operating Standard 2600.1100.

All coating specifications will be included in the notice of proposed construction.

## **Testing:**

The test medium will be nitrogen and the test pressure will be at least 750 psig. All testing will be done in accordance with PSE Gas Operating Standard 2525.3300 and in accordance with an approved procedure.

# Welding:

All welding and weld inspection will conform to the following PSE Gas Operating Standards:

2525.2700	Installation Requirements for Steel Pipe and Fittings
2700.1100	Welder Qualification Requirements
2700.1200	Weld Inspection and Repair
2700.1300	Weld Inspector Qualification Requirements
2700.1400	Welder Qualification Test Requirements

In addition, PSE has a comprehensive set of welding procedures that are included in the Gas Field Procedures Manual. All welding to be done on this project will be governed by these procedures. If any new procedures are required for the welding on this project, they will be qualified in accordance with PSE Gas Operating Standards and added to the Gas Field Procedures Manual.

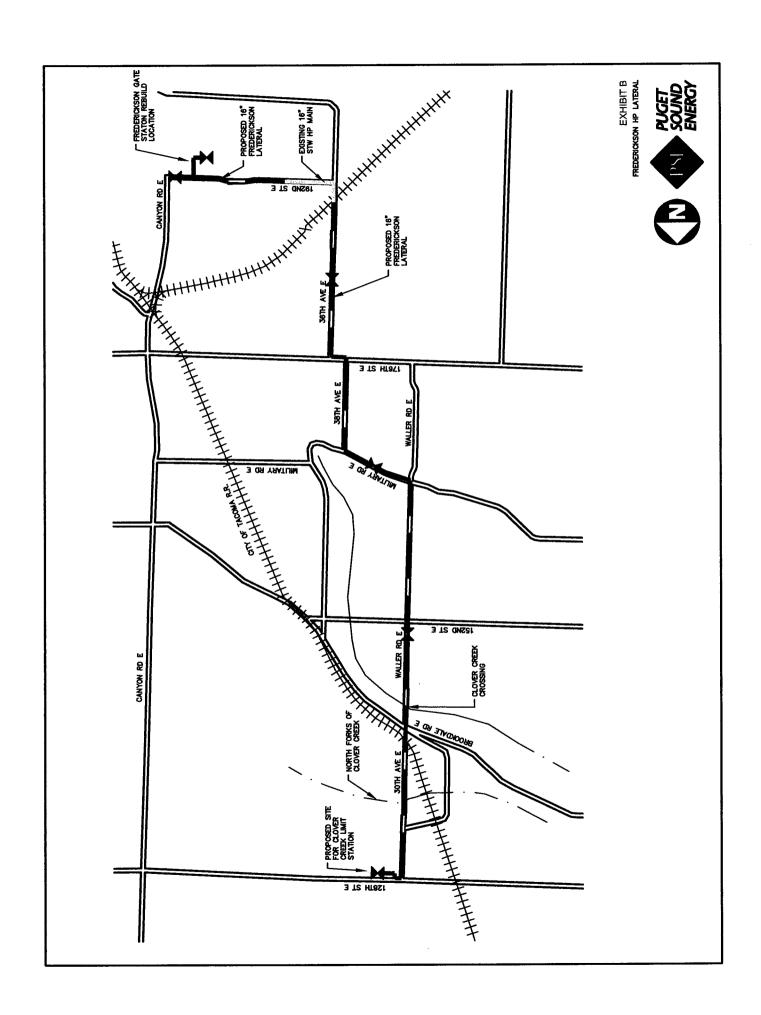
One hundred percent (100%) of the welds will be x-rayed.

## **Operation and Maintenance:**

<u>Damage Prevention:</u> Pipeline facility warning signs will be installed and monitored in accordance with PSE Gas Operating Standards 2525.2500 and 2575.1100. PSE is an active member in the local One-Call System and works closely with the local municipalities and permitting agencies prior to any construction starting in the vicinity of its high pressure regulating stations. The gate station facilities are expected to be at low risk from third party damage since they will be enclosed within a fence.

<u>Leakage Surveys</u>: Leakage surveys will be conducted annually in accordance with PSE Operating Standard 2625.1100 and PSE Gas Field Procedure 4700.1600.

<u>Pressure Monitoring:</u> A remote telemetry unit (RTU) will monitor the pressure in the system. The RTU will poll the system pressures every 3 seconds. The pressure will be monitored 24-hours a day in PSE's 24-Hour Operations Center.



# Exhibit C- Structures in Proximity of Pipeline

STATION	DIRECTION	DISTANCE	ADDRESS/PARCEL NO.	LAND USE
26+62	Left	71.23	3722 189th St E / 0319358056	Mobile Home
61+55	Left	71.85	18822 38th Ave E / 0319358024	Residental
9/+99	Left	77.20	3708 187th St E / 3886700090	Residental
22+89	Left	99'58	3707 187th St E / 3886700010	Mobile Home
71+65	Left	80'99	3724 185th St E / 5003190460	Residental
72+17	Right	88.83	18523 38th Ave E / 0319363014	Residental
73+41	Right	81.23	18503 38th Ave E / 0319367004	Residental
73+47	Left	52,84	3723 185th St E / 5003190010	Residental
74+95	Right	98'8/	18415 38th Ave E / 0319367003	Residental
75+12	Left	88'62	3715 185th St E / 5000200010	Residental
90+8/	Right	64.54	18313 38th Ave E / 0319366038	Mobile Home
90+6/	Right	64.41	18311 38th Ave E / 0319366b37	Mobile Home
69+08	Right	69.94	18215 38th Ave E / 0319362007	Residental
82+69	Right	96'5/	18203 38th Ave E / 0319362008	Residental
84+96	Right	62.89	18105 38th Ave E / 0319362014	Residental
89+41	Right	85.85	3810 180th St E / 0319366003	Residental
96+68	Left	43.47	3728 180th St E/ 5002750710, 5002750010	Residental
91+16	Right	73.16	17915 38th Ave E / 2490000010	Residental/Garage
91+73	Left	40.43	3729 180th St E / 5002750710	Residental
92+43	Right	91.10	17907 38th Ave E / 2490000020	Residental
93+59	Left	52.13	17912 38th Ave E / 5002750300	Residental
93+70	Right	08'96	17823 38th Ave E / 2490000030	Residental
96+01	Right	69.42	17807 38th Ave E / 249000050	Residental
62+96	Left	77.20	3724 178th St E / 5002750450	Residental
88+96	Left	39.82	3726 178th St E / 5002750440	Residental
97+32	Left	48.06	3727 178th St E / 5002750430	Residental / Shed
97+92	Left	68.74	3723 178th St E / 5002750420	Residental
98+26	Right	74.78	3802 177th St E / 2490000070	Residental
80+66	Left	41.49	3728 177th St E / 5002750310	Residental

STATION	DIRECTION	DISTANCE	ADDRESS/PARCEL NO.	LAND USE
100+80	Left	41,35	77779 38th Ave E / 5002750710	Residental
101+78	Left	71.44	3717 177th St E / 5002750660	Residental
102+07	Right	70.56	17623 38th Ave E / 2490000150	Residental
106+88	Left	77.43	17602 38th Ave E / 0319351035	Residental
108+20	Left	81.04	3604 176th St E / 0319351036	Residental
110+19	Right	33.96	3603 176th St E / 0319264047	Residental
114+91	Right	92.44	17407 36th Ave E / 0319264092	Residental
115+64	Right	86.90	17321 36th Ave E / 0319264090	Residental
117+92	Left	46.80	3522 173rd St Ct E / 5003510150	Residental
119+32	Left	45.78	3521 173rd St Ct E / 5003510010	Residental
121+02	Right	72.13	17211 36th Ave E / 0319264080	Residental
121+51	Left	95.35	17210 36th Ave E / 0319268008	Residental
122+94	Right	55.65	17121 36th Ave E / 0319268013	Residental
124+95	Left	69'2/	3520 170th St Ct E / 0319268036	Residental
125+75	Right	55.71	17103 36th Ave E / 0319268010	Residental
126+74	Left	37.16	3521 170th St Ct E / 0319268048	Residental
127+80	Left	94.70	3519 170th St Ct E / 0319268047	Residental
129+10	Left	52.20	٦	Residental
129+53	Right	41.58	16915 36th Ave E / 0319268005	Residental
130+89	Left	50.13	7	Residental
130+99	Right	96.25	$\sim$	Residental
132+81	Left	95.04		Residental
134+42	Left	63,50	1	Residental
135+22	Left	67.50	16716 36th Ave E / 0319264024	Residental
137+41	Left	47.55	3520 Military Rd E / 0319261028	Residental
140+48	Right	83,95	3417 Old Military rd E / 0319265010	Residental
144+73	Left	53.23	16606 33rd Ave Ct E / 5000180070	Residental
147+29	Left	57,41	16606 33rd Ave Ct E / 5000180010	Residental
150+57	Left	37.00	16518-16520 32nd Ave E / 0319265035	Residental
151+96	Left	60,48	3128 Military Rd E / 0319265034	Residental
155+91	Right	85.50	3109 Military Rd E / 0319265032	Residental
164+69	Right	59.98	3002 163rd St E / 9900200190	Residental
166+56	Left	73.33	2916 163rd St E / 0319266037	Residental
167+14	Right	54.67	7777	Residental
168+22	Left	88.65	2922 162nd St Ct E / 5002960010	Residental
168+36	Right	47.81	3001 163rd St E / 9900200010	Residental

STATION	DIRECTION	DISTANCE	ADDRESS/PARCEL NO.	LAND USE
171+17	Right	87.04	3002 161st St E / 3582000170	Residental
173+82	Right	97.46	3001 161st St E / 3582000010	Residental
179+61	Left	75.91	15916 Waller Rd E / 0319237007	Residental
180+48	Left	77.26	2910 158th St E / 0319237003	Mobile Home
180+98	Right	49.35	3006 159th St Ct E / 5001480180	Residental
183+81	Right	62.64	15717 Waller Rd E / 0319234030	Residental
187+12	Right	73.72	15615 Waller Rd E / 0319234040	Residental
189+06	Left	67.12	15606 Waller Rd E / 0319233031	Residental
190+92	Left	66.78	15513 29th Ave Ct E / 6220800020	Residental
192+01	Left	85.24	15511 29th Ave Ct E / 6220800010	Residental
193+73	Left	62.74	2909 155th St E / 6220800220	Residental
197+15	Left	86.65	2914 153rd St Ct E / 031923304	Residental
209+58	Right	95.73	15004 Waller Rd E / 0319235009	Residental
210+43	Left	62.57	2922 149th St Ct E / 6721000010	Residental
211+95	Left	85.74	14915 29th Ave Ct E / 6721000330	Residental
212+21	Left	94.80	14905 29th Ave Ct E / 6721000320	Residental
212+97	Left	99.14	14825 29TH Ave Ct E / 6721000310	Residental
214+24	Left	86.50	14817 29th Ave Ct E / 6721000300	Residental
214+49	Left	81.63	14811 29th Ave Ct E / 6721000290	Residental
214+98	Right	94.93	14819 Waller Rd E / 0319231052	Residental
217+13	Left	53.26	2922 147th St E / 8002020420	Residental
218+76	Left	78.03	14627 29th Ave Ct E / 8002020430	Residental
219+52	Left	68.26	14623 29th Ave Ct E / 8002020440	Residental
220+33	Left	84.63	14619 29th Ave Ct E / 8002020450	Residental
221+17	Left	71.54	14615 29th Ave Ct E / 8002020460	Residental
221+91	Left	75.48	14611 29th Ave Ct E / 8002020470	Residental
222+27	Left	62.55	14607 29th Ave Ct E / 8002020480	Residental
223+39	Left	87.92	14603 29th Ave Ct E / 8002020490	Residental
224+79	Left	55.89	2922 145th St E / 8002020600	Residental
226+73	Left	63.08	2921 145th St E / 8002020010	Residental
228+03	Left	98.45	14404 Waller Rd E / 0319236002	Residental
228+43	Right	64.10	14401 Waller Rd E / 0319231029	Residental
228+82	Left	61.90	14324 Waller Rd E / 0319236001	Residental / Mobile Home
233+91	Right	57.24	3016 Brookdale Rd E / 0319144030	Residental / Shed
235+10	Left	78.07	2918 Brookdale Rd E / 0319147014	Residental
240+89	Right	74.09	14003 30TH Ave E / 0319144046	Residental

STATION	DIRECTION	DISTANCE	ADDRESS/PARCEL NO.	LAND USE
	Left	83.96	13822 30th Ave E / 0319143048	Residental
	Left	99.80	13706 30th Ave E / 0319147029	Residental
	Right	95.56	13515 30th Ave E / 0319141704	Residental
	Right	95.13	13219 Waller Rd E / 0319141012	Residental
267+22	Right	92.08	13211 Waller Rd E / 0319145005	Residental
	Left	89.78	13208 Waller Rd E / 0319142067	Residental
268+79	Left	77.89	13204 Waller Rd E / 0319142041	Residental
270+15	Left	92.35	13120 Waller Rd E / 0319142024	Residental
270+75	Right	93.92	13111 Waller Rd E / 0319141058	Residental
273+27	Left	91.83	13020 Waller Rd E / 0319142020	Residental
275+95	Right	84.68	12919 Waller Rd E / 0319141036	Residental
277+81	Right	69.97	12907 Waller Rd E / 0319141054	Residental
278+21	Left	75.45	12910 Waller Rd E / 0319142030	Residental
279+48	Right	60.31	12819 to 12821 Waller Rd E / 0319145001	Residental
280+90	Right	38.79	12801 to 12803 Waller Rd E / 0319141029	Residental
283+36	Left	74.87	12719 Waller Rd E / 0319114004	Residental