BergerABAM

210 East 13th Street, Suite 300, Vancouver, Washington 98660-3231
360/823-6100 • 360/823-6101 Fax • www.abam.com

10 June 2015

Mr. Stephen Posner
Energy Facility Site Evaluation Council
Washington Utilities and Transportation Commission
P.O. Box 43172
Olympia, WA 98504-3172

Subject: Vancouver Energy
EFSEC Application No. 2013-01, Docket No. EF131590
Response to EFSEC Draft EIS Data Request 9

Dear Mr. Posner:

On behalf of Tesoro Savage Petroleum Terminal LLC (the Applicant), BergerABAM is providing a response to the Energy Facility Site Evaluation Council's (EFSEC) Draft EIS Data Request 9, dated 1 June 2015.

Please feel free to contact me at 206/431-2373, or at irina.makarow@abam.com, if you have any questions about this submittal. We look forward to further coordination with you, your staff, and EFSEC's consultants.

Sincerely,

Irina Makarow
Senior Environmental Project Manager

IM:nb
Enclosure
CD-ROM

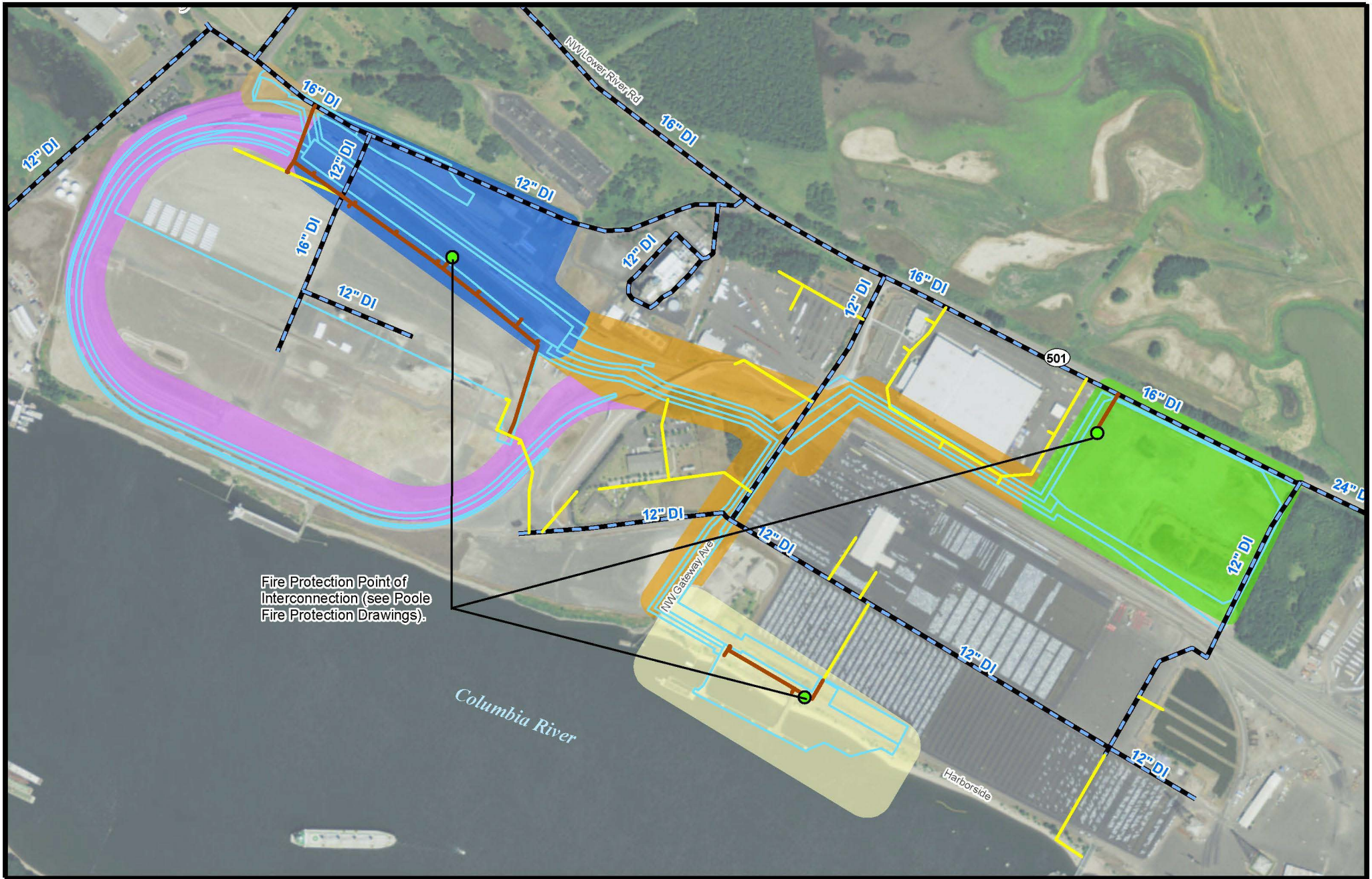
cc: Kelly Flint, Savage Companies
Jay Derr, Van Ness Feldman

Code	Data Request Item	Applicant Response
Fire Safety		
FS-5	Provide map layouts and schematics of the existing water main system with sizes and hydrant locations, showing connection points to the terminal fire protection system as outlined in the Poole Report. Identify which systems are Port of Vancouver and which systems are City of Vancouver, clearly showing boundaries and any interconnecting links.	The Facility is not proposing to use the Port of Vancouver (Port) water system during operation of the facility for any use, be it process water, or fire protection. The design of the Fire Protection System did not rely on the Port's system for fire protection use. The Facility will only rely on City water supply for fire response. Figure 2.2-11 of the PDEIS – City Water Distribution Network illustrated the City water supply system in the vicinity of the Facility area locations. Attachment 1 provides an updated version of this figure, which includes the City's transmission and distribution lines and illustrates the location of water system improvements constructed for the Facility, including a new water transmission line along the south side of the rail unloading area and a section of replaced water distribution line near the marine terminal. The point of connection of the Facility's fire protection system is also indicated. Although the Applicant is aware that there are multiple existing City-managed fire hydrants present in the vicinity of Facility areas/elements, the Applicant does not have maps or figures identifying all such hydrants that could potentially be used to assist in fire response. The location of existing fire hydrants is, therefore, not indicated in the figures included in Attachment 1. EFSEC's fire protection expert should contact the Vancouver Fire Department for this information. In addition, a system map (titled "POV_WS1_Map") of the City's water distribution system is also included in Attachment 1. The map shows all of the City's water system extending from the nearest water source and reservoirs located at Water Station 1. This figure was prepared based on information received from the City. The Port owns and operates a water supply system. The Port's system is not interconnected to the City's system. As noted above, the Facility will not rely on the Port's water system for fire protection, and the Port system was, therefore, ***not*** included in the fire protection system basis of design (refer to the 5 March 2015 supplemental submittal responding to DEIS Data Request 3).
FS-6	Provide any fire flow and pressure test data obtained as part of your design process from the City and the Port.	The Applicant requested fire flow tests from the City, and such tests were completed by the City, in 2013. The Applicant requested tests for three existing hydrant locations, located in Areas 200, 300, and 400 (see Attachment 2, 23 May 2013 e-mail from Dan Shafar [BergerABAM] to Debi Davis (City of Vancouver). With respect to hydrant testing in Area 200, the City provided the Applicant with data from testing that had been conducted in 2011 (see Attachment 2, 24 May 2013 e-mail from Debi Davis to Dan Shafar). With respect to hydrant testing in Areas 300 and 400, the City tested and provided results for

Code	Data Request Item	Applicant Response
Fire Safety		
		hydrants located at 3703 NW Gateway and 3309 NW Gateway. See the last eight pages of Attachment 2. No fire flow testing was requested by the Applicant from the Port as the Applicant is not relying on the Port water system for fire suppression needs.
FS-7	Provide any hydraulic calculations or studies upstream of hydrant or water main connection points for fire water system. The Poole Basis of Design and Hydraulic Calculations were detailed, but only addressed new design conditions downstream of these connection points.	In support of the Application for Site Certification, the Applicant requested a statement from the City regarding water availability for the Facility. The City confirmed that they have sufficient water rights, storage, and distribution capacity to serve the Facility with a minimum of 3,500 gallons per minute of fire flow and sufficient non-fire flow for the facilities anticipated instantaneous peak of 50 gallons per minute for non-fire protection water use. The letter from the City was provided as Appendix E to the Application for Site Certification Supplement (February 2014), and is included in Attachment 3 to this response.
FS-8	Describe the performance standards followed for all fire flow testing done in support of the hydraulic flow calculations and assumptions.	The City performed the hydrant flow tests and subsequent calculations in accordance with National Fire Protection Agency (NFPA) Standard 291, dated 2002. A statement to that effect is included in the fire flow tests (footnote at bottom of test results) discussed in response to FS-6 above and provided in Attachment 2.
FS-9	Provide any relevant communications or contact information between the Applicant and the Port of Vancouver, City of Vancouver and Vancouver Fire Department pertaining to establishing existing water distribution system conditions, performance, and system jurisdictions.	The Applicant assumes that question FS-9 is in relationship to water distribution system capabilities with respect to fire suppression. Because the Applicant chose not to rely on the Port water system for fire suppression, the Applicant does not have any relevant information exchanges with the Port on this subject. Relevant communications between Vancouver Energy and their representatives with staff from the City of Vancouver and Vancouver Fire Department pertaining to the above questions related to fire protection are provided in Attachments 2 and 3. Prior to submittal of the Application for Site Certification in August 2013, and shortly thereafter, the Applicant engaged with VFD staff on issues related to Facility fire protection and response. City water system capacity in relationship to fire response was specifically addressed and resulted in the VFD preparing the letter provided in Attachment 3. The VFD requested that the Applicant participate in a third-party analysis of Facility fire protection design, and the Applicant agreed to do so. The City of Vancouver ultimately declined participating in such a third-party analysis with the Applicant – that review is now being conducted by EFSEC. Since the early discussions were meant to lead up to conducting a detailed analysis, they did not result in a record of information relevant to the information requests made in DEIS Data Request 9.

Attachments

Attachment 1: Updated PDEIS Figure 2.2-11 and City Water Distribution Network



LEGEND

- Site Boundary
- Water System Improvements
- Transmission Mains
- Distribution Mains

Vancouver Energy Improvement Areas

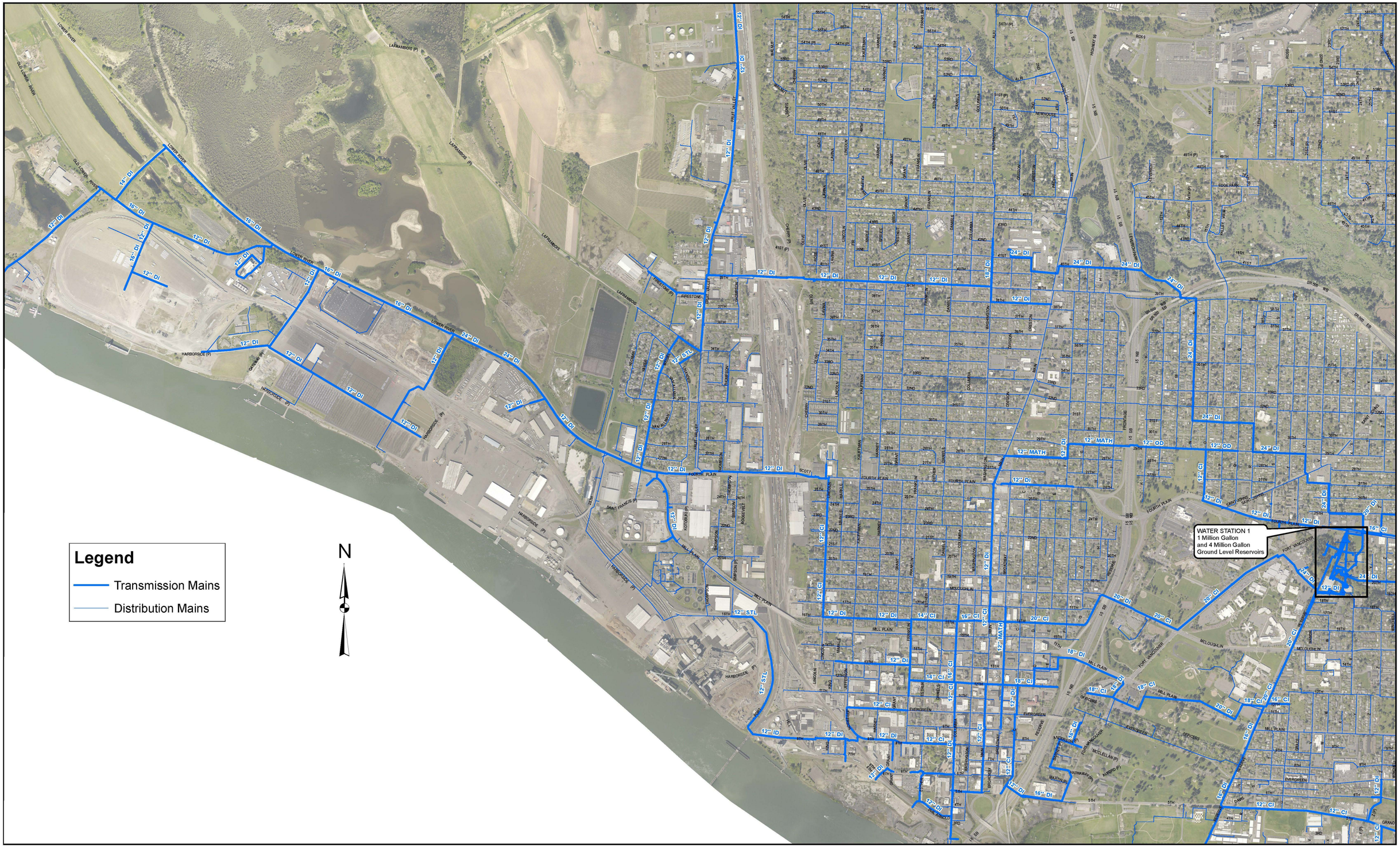
- 200 - Unloading and Office
- 300 - Storage
- 400 - Marine Terminal
- 500 - Transfer Pipelines
- 600 - West Boiler
- Rail Infrastructure

N

0 400 800 1,200 1,600 Feet

EX-0024-000005-PCE

Transmission Mains from Water Station 1 to POV Property



EX-0024-000006-PCE

Attachment 2: Hydrant Test Results for Areas 200, 300, and 400

From: Shafar, Dan
To: Debi.Davis@cityofvancouver.us
Cc: Huxley, Matt; Adams, Sam (Sam.Adams@abam.com)
Subject: Hydrant Flow Tests
Date: Thursday, May 23, 2013 3:45:00 PM
Attachments: Flow Test Location 1.pdf
Flow Test Location 2.pdf

Debi,

Attached are copies of the water system maps you provided, with the hydrants we are requesting flow tests. We are requesting that three tests be conducted. We have labeled on each drawing which hydrant we are requesting be flowed, and which hydrant to be utilized to test the static/residual pressures. Also indicated is a very rough indication of presumed connection locations for the proposed fire protection system.

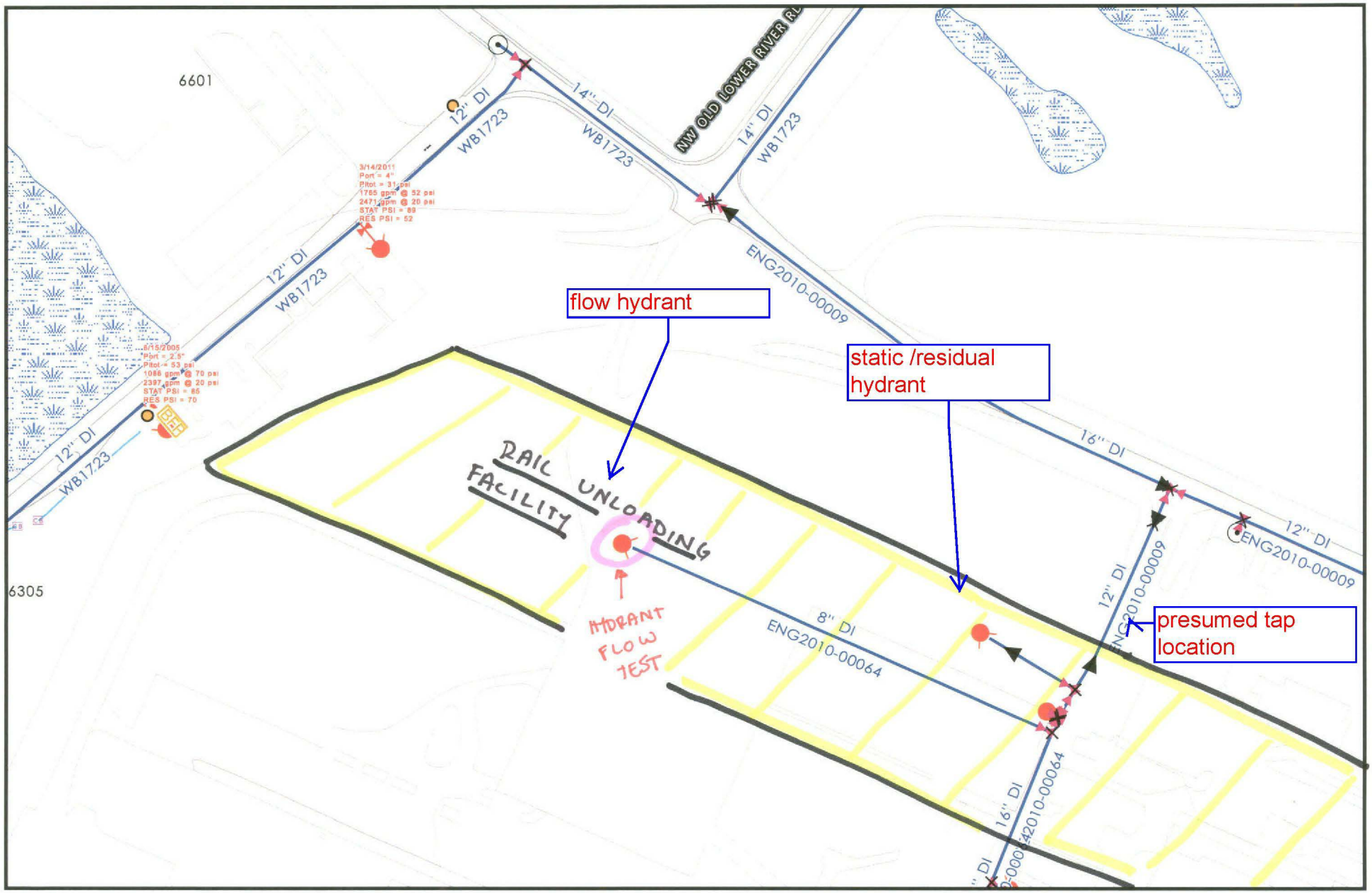
Please confirm that all hydrant testing will be conducted in accordance with NFPA 291.

If at all possible, we are requesting that the flow tests be conducted on Tuesday, May 28, 2013; our client's staff and insurance representatives will be on-site. When you confirm a testing schedule, please let me know so that we can coordinate with our client's scheduled visit.

Regards,

-Dan

Dan Shafar, PE
Senior Engineer 4
Voice 503-872-4084
Fax 503-872-4101
Email dan.shafar@abam.com
BergerABAM
700 Northeast Multnomah Street, Suite 900
Portland, Oregon 97232-4189
http://www.abam.com



Water Utility Map

Northwest corner Port

1 inch = 200 feet

THE UTILITY INFORMATION SHOWN ON THIS MAP DOES NOT INDICATE OR IMPLY AVAILABILITY. CONTACT THE ENGINEERING COUNTER STAFF AT THE CDD PERMITS CENTER AT (360) 487-7804 OR 415 W. 6TH ST. FOR AVAILABILITY OF SERVICE.

THIS INFORMATION IS COMPILED FROM A VARIETY OF SOURCES. THE CITY OF VANCOUVER ASSUMES NO RESPONSIBILITY FOR MAP ACCURACY.

EX-0024-000009-PCE

RAIL UNLOADING FACILITY

HARBORSIDE (P)

GATEWAY (P)

HARBORSIDE (P)

BERTH

TANK FARM

HARBORSIDE (P)

HYDRANT FLOW TEST

HYDRANT FLOW TEST

HYDRANT FLOW TEST

static/residual hydrant

presumed tap for feedline

Flow hydrant

flow hydrant

existing risers/ pumps

static/residual hydrant

Water Utility Map

Port Area

Taxlot #:

1 inch = 400 feet

N

W E

S

THE UTILITY INFORMATION SHOWN ON THIS MAP DOES NOT INDICATE OR IMPLY AVAILABILITY. CONTACT THE ENGINEERING COUNTER STAFF AT THE CDD PERMITS CENTER AT (360) 487-7804 OR 415 W. 6TH ST. FOR AVAILABILITY OF SERVICE.

THIS INFORMATION IS COMPILED FROM A VARIETY OF SOURCES. THE CITY OF VANCOUVER ASSUMES NO RESPONSIBILITY FOR MAP ACCURACY.

From: Davis, Debi (City)
To: Shafar, Dan
Subject: RE: Hydrant Flow Tests
Date: Friday, May 24, 2013 6:36:06 AM
Attachments: BHPSITE.xls

Dan,

We have a flow from the hydrant on your first map it was taken 3/14/11. See attached.

Debi Davis
Senior Engineering Tech
Water System Planning & Design
Engineering Services
360-487-7173
debi.davis@cityofvancouver.us

From: Shafar, Dan [mailto:Dan.Shafar@abam.com]
Sent: Thursday, May 23, 2013 3:45 PM
To: Davis, Debi (City)
Cc: Huxley, Matt; Adams, Sam
Subject: Hydrant Flow Tests

Debi,

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Please confirm that all hydrant testing will be conducted in accordance with NFPA 291.

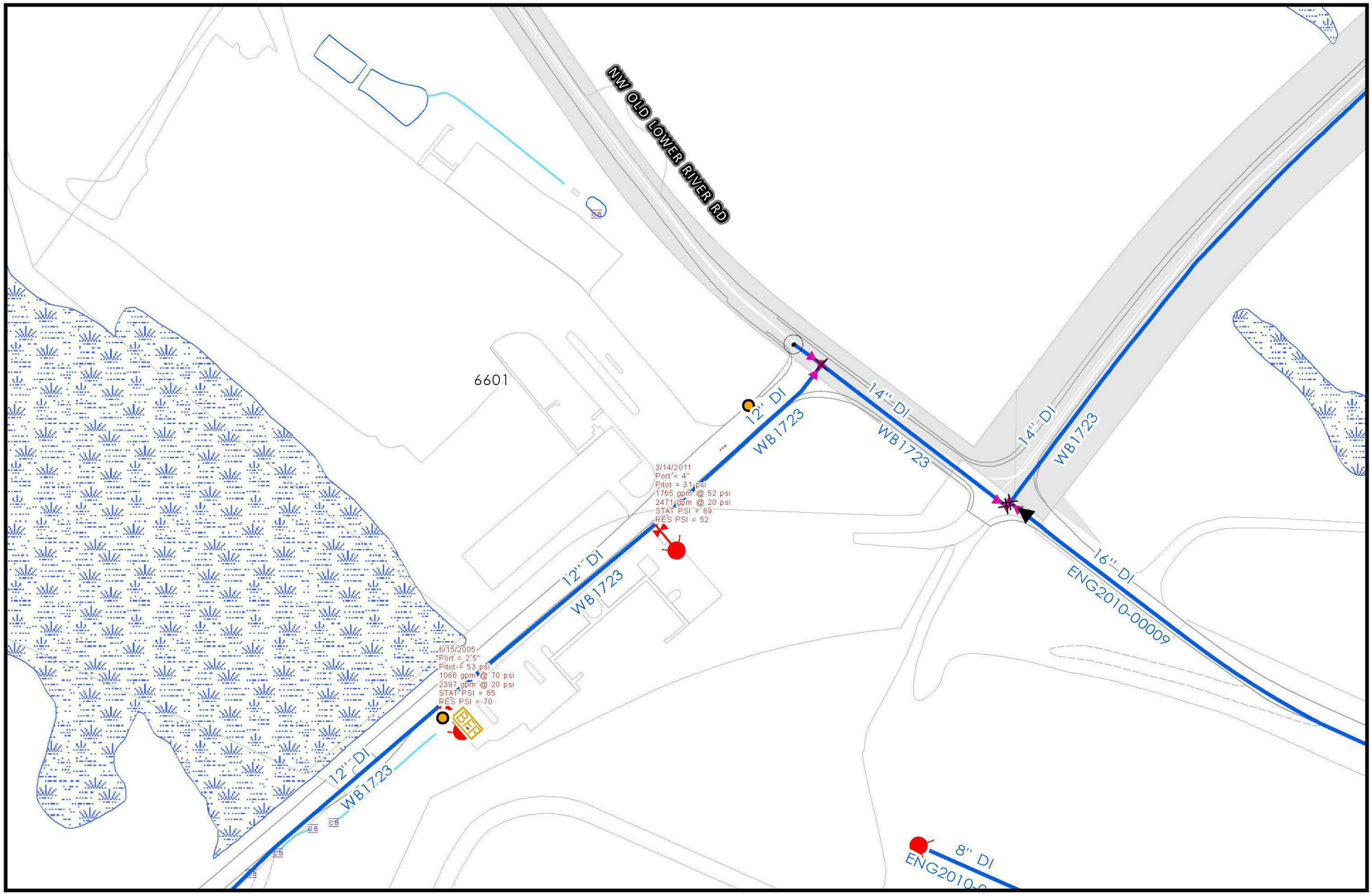
If at all possible, we are requesting that the flow tests be conducted on Tuesday, May 28, 2013; our client's staff and insurance representatives will be on-site. When you confirm a testing schedule, please let me know so that we can coordinate with our client's scheduled visit.

Regards,

-Dan

Dan Shafar, PE
Senior Engineer 4
Voice 503-872-4084
Fax 503-872-4101
Email dan.shafar@abam.com

BergerABAM
700 Northeast Multnomah Street, Suite 900
Portland, Oregon 97232-4189
http://www.abam.com



Water Utility Map

Fire flow Old Lower River Road

Taxlot #:

1 inch = 200 feet

THE UTILITY INFORMATION SHOWN ON THIS MAP DOES NOT INDICATE OR IMPLY AVAILABILITY. CONTACT THE ENGINEERING COUNTER STAFF AT THE CDD PERMITS CENTER AT (360) 487-7804 OR 415 W. 6TH ST. FOR AVAILABILITY OF SERVICE.

THIS INFORMATION IS COMPILED FROM A VARIETY OF SOURCES. THE CITY OF VANCOUVER ASSUMES NO RESPONSIBILITY FOR MAP ACCURACY.

EX-0024-000013-PCE

City of Vancouver
PO Box 1995
Vancouver, WA 98668-1995

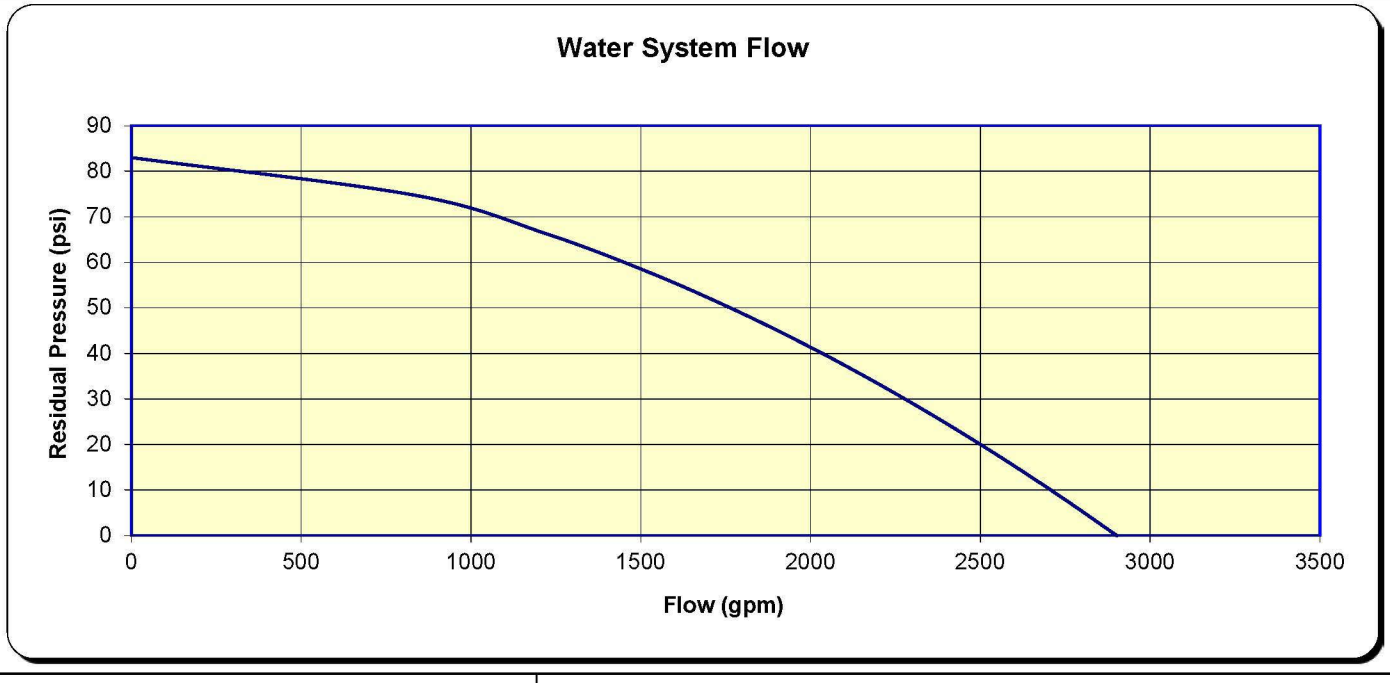
Date: 3/14/11
Water Systems Planning & Design
Ph: 360-696-8223 Fx: 360-696-8460
www.ci.vancouver.wa.us

FIRE HYDRANT FLOW TEST (NFPA 291)

Date: 3/14/2011	Time: 2:30 AM	Initials: GH	Map#:	Zone:	Elevation: ft

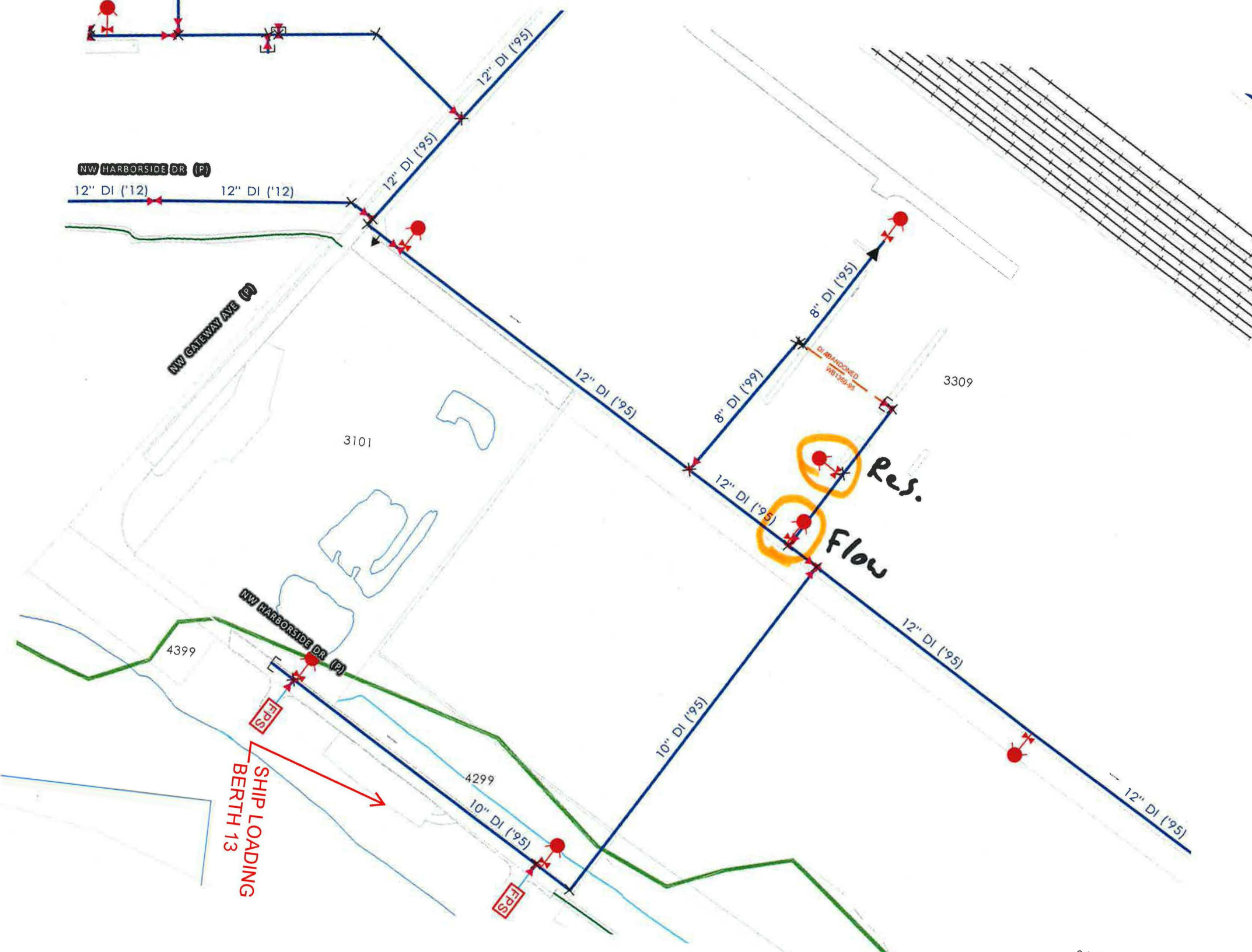
Residual FH ID#:	Keyera entrance gated	Static:	83 psi	Residual:	47 psi
1st Flow FH ID#:	BHP onsite north hydrant	Port:	4 in	Pitot:	34 psi
2nd Flow FH ID#:		Port:	0 in	Pitot:	0 psi

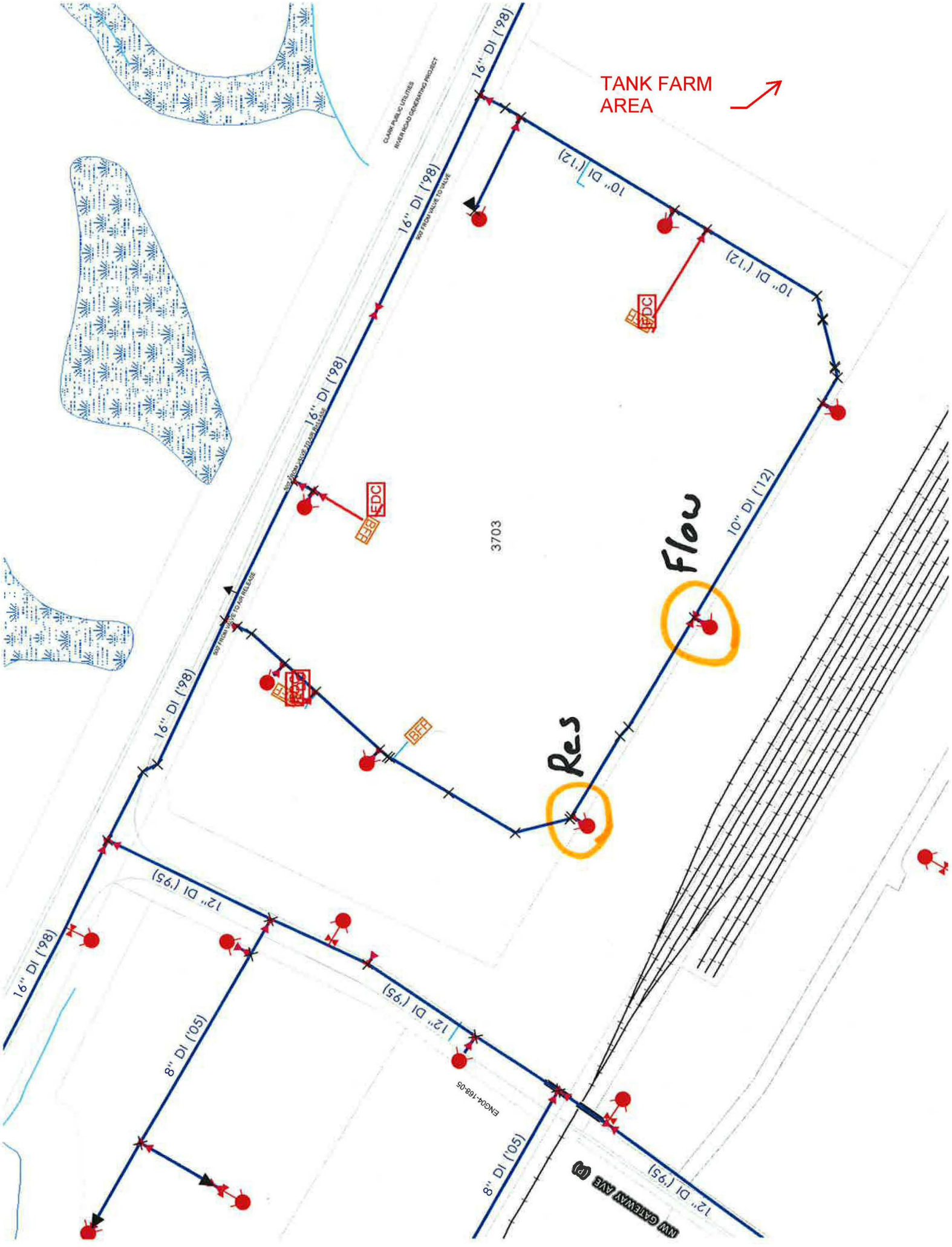
Comments:



RESULTS:	Flow (gpm)		Pressure (psi)
1st Flow	1849	@	47
2nd Flow	0	@	47
Fire Flow*	2501	@	20

*The fire flow calculation and testing is per the 'Recommended Practice for Fire Flow Testing' as documented by the National Fire Protection Agency (NFPA 291, 2002). The calculated fire flow reflects the strength of the water distribution system in the area for which the test was performed. It does not represent flow out of one single fire hydrant.


NW HARBORSIDE DR (P)
12" DI ('12)
12" DI ('12)
12" DI ('95)
12" DI ('95)
NW GATEWAY AVE (P)
12" DI ('95)
8" DI ('99)
8" DI ('95)
DI ABANDONED WB1368-98
3309
3101
Res.
Flow
12" DI ('95)
NW HARBORSIDE DR (P)
4399
FS
FS
SHIP LOADING BERTH 13
4299
10" DI ('95)
10" DI ('95)
12" DI ('95)
12" DI ('95)



EX-0024-000016-PCE

City of Vancouver
PO Box 1995
Vancouver, WA 98668-1995

Date: 5/30/13

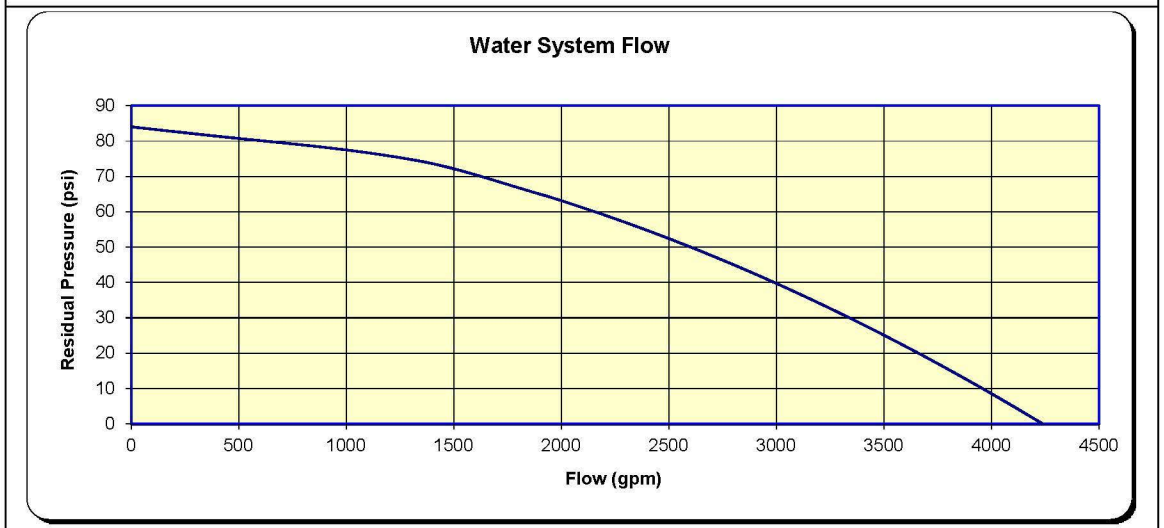
Water Systems Planning & Design
Ph: 360-696-8223 Fx: 360-696-8460
www.ci.vancouver.wa.us

FIRE HYDRANT FLOW TEST (NFPA 291)

Date: 5/30/2013	Time: 1:45 PM	Initials: GH/TT	Map#:	Zone:	Elevation: ft

Residual FH ID#: H73070	3703 NW Gateway near SW cornerof warehouse	**Static:**	84 psi	**Residual:**	63 psi
1st Flow FH ID#: H73071	3703 NW Gateway centered south of the warehouse	**Port:**	4 in	**Pitot:**	40 psi
2nd Flow FH ID#:		**Port:**	0 in	**Pitot:**	0 psi

Comments:

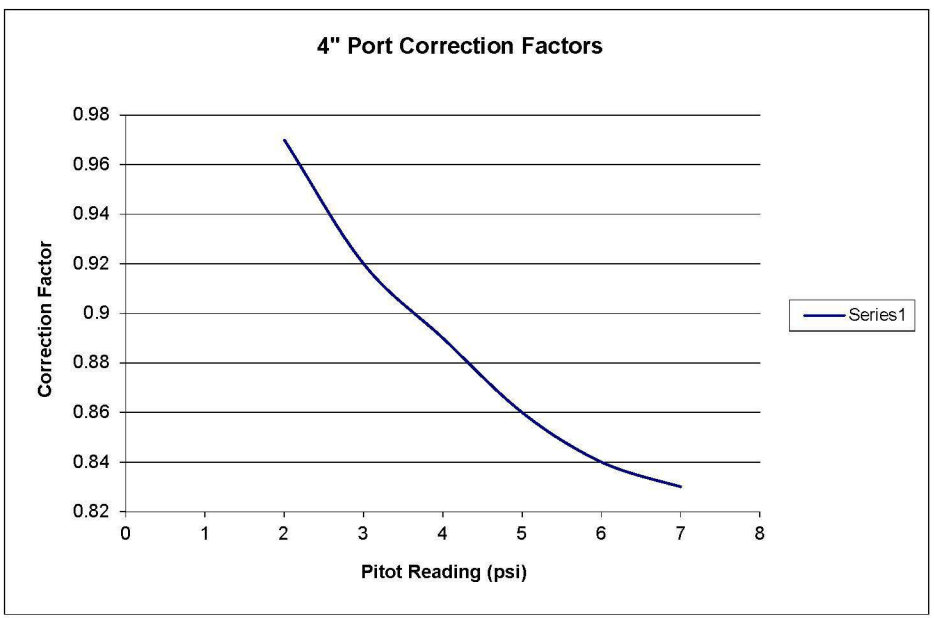


RESULTS:	Flow (gpm)		Pressure (psi)
1st Flow	**2005**	@	**63**
2nd Flow	**0**	@	**63**
Fire Flow*	**3660**	@	**20**

*The fire flow calculation and testing is per the 'Recommended Practice for Fire Flow Testing' as documented by the National Fire Protection Agency (NFPA 291, 2002). The calculated fire flow reflects the strength of the water distribution system in the area for which the test was performed. It does not represent flow out of one single fire hydrant.

1st FH Flow Coefficient =	0.8	Typically 0.8 if diffuser used, 0.9 without diffuser.
2nd FH Flow Coefficient =	0.8	

Is the 1st FH Flow from the 4" port?	YES	Correction Factor =	0.83	The correction factor is a multiplier. The coefficient is multiplied by this correction factor when the 4" port is used instead of the 2.5" port.
Is the 2st FH Flow from the 4" port?	NO	Correction Factor =	1	



4" Port Correction Factors per NFPA 291	
psi	**Correction Factor**
2	0.97
3	0.92
4	0.89
5	0.86
6	0.84
7	0.83

Date:	Time:	Initials:	Map#:	Zone:	Elevation: ft
Residual FH ID#:		Static: psi	Residual: psi		
1st Flow FH ID#:		Port: in	Pitot: psi		
2nd Flow FH ID#:		Port: in	Pitot: psi		
Comments:					

Date:	Time:	Initials:	Map#:	Zone:	Elevation: ft
Residual FH ID#:		Static: psi	Residual: psi		
1st Flow FH ID#:		Port: in	Pitot: psi		
2nd Flow FH ID#:		Port: in	Pitot: psi		
Comments:					

Date:	Time:	Initials:	Map#:	Zone:	Elevation: ft
Residual FH ID#:		Static: psi	Residual: psi		
1st Flow FH ID#:		Port: in	Pitot: psi		
2nd Flow FH ID#:		Port: in	Pitot: psi		
Comments:					

City of Vancouver
PO Box 1995
Vancouver, WA 98668-1995

Date: 5/30/13

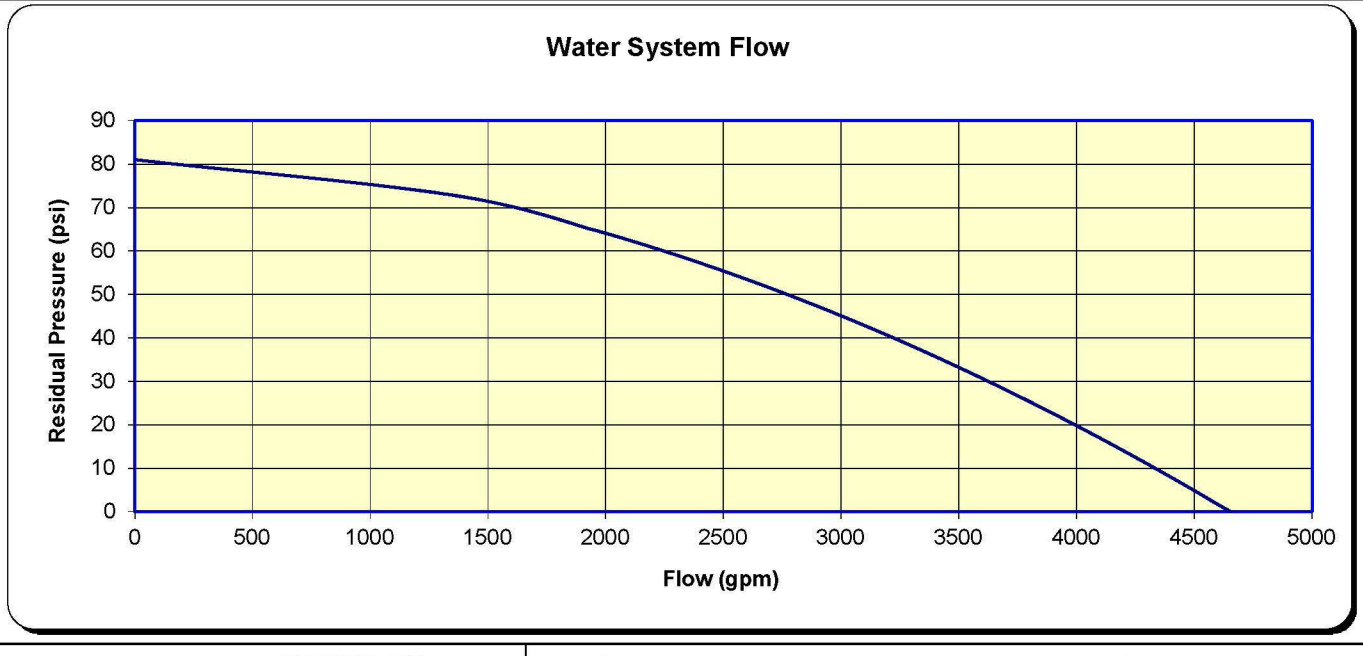
Water Systems Planning & Design
Ph: 360-696-8223 Fx: 360-696-8460
www.ci.vancouver.wa.us

FIRE HYDRANT FLOW TEST (NFPA 291)

Date: 5/30/2013	Time: 1:15 PM	Initials: GH/TT	Map#:	Zone:	Elevation: ft

Residual FH ID#: H18548	3309 NW Gateway near the warehouse	Static:	81 psi	Residual:	62 psi
1st Flow FH ID#: H18556	3309 NW Gateway south of the residual hydrant	Port:	4 in	Pitot:	45 psi
2nd Flow FH ID#:		Port:	0 in	Pitot:	0 psi

Comments:

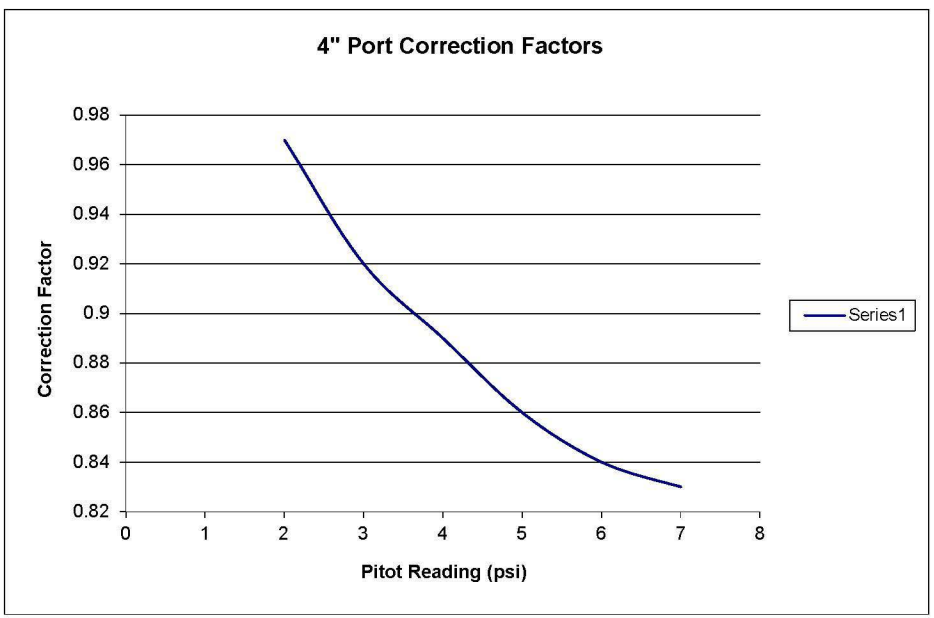


RESULTS:	Flow (gpm)		Pressure (psi)
1st Flow	2127	@	62
2nd Flow	0	@	62
Fire Flow*	3992	@	20

*The fire flow calculation and testing is per the 'Recommended Practice for Fire Flow Testing' as documented by the National Fire Protection Agency (NFPA 291, 2002). The calculated fire flow reflects the strength of the water distribution system in the area for which the test was performed. It does not represent flow out of one single fire hydrant.

1st FH Flow Coefficient =	0.8	Typically 0.8 if diffuser used, 0.9 without diffuser.
2nd FH Flow Coefficient =	0.8	

Is the 1st FH Flow from the 4" port?	YES	Correction Factor =	0.83	The correction factor is a multiplier. The coefficient is multiplied by this correction factor when the 4" port is used instead of the 2.5" port.
Is the 2st FH Flow from the 4" port?	NO	Correction Factor =	1	



4" Port Correction Factors per NFPA 291	
psi	**Correction Factor**
2	0.97
3	0.92
4	0.89
5	0.86
6	0.84
7	0.83

Date:	Time:	Initials:	Map#:	Zone:	Elevation: ft
Residual FH ID#:		Static: psi		Residual: psi	
1st Flow FH ID#:		Port: in		Pitot: psi	
2nd Flow FH ID#:		Port: in		Pitot: psi	
Comments:					

Date:	Time:	Initials:	Map#:	Zone:	Elevation: ft
Residual FH ID#:		Static: psi		Residual: psi	
1st Flow FH ID#:		Port: in		Pitot: psi	
2nd Flow FH ID#:		Port: in		Pitot: psi	
Comments:					

Date:	Time:	Initials:	Map#:	Zone:	Elevation: ft
Residual FH ID#:		Static: psi		Residual: psi	
1st Flow FH ID#:		Port: in		Pitot: psi	
2nd Flow FH ID#:		Port: in		Pitot: psi	
Comments:					

Attachment 3: Application for Site Certification Supplement, Appendix E (January 2014)

City of Vancouver • P.O. Box 1995 • Vancouver, WA 98668-1995
www.cityofvancouver.us

August 13, 2013

Sam Adams, P.E.
BergerABAM
1111 Main Street, Suite 300
Vancouver, WA 98669-2958

Subject: Tesoro Savage Petroleum Terminal Water Availability

Mr. Adams,

The City of Vancouver Water Department acknowledges the request to serve the Tesoro Savage Petroleum Terminal project with water. The estimated instantaneous maximum water use of 30 gpm of boiler blow down process water, 5 gpm pressure washing for equipment cleaning, and 15 gpm for peak domestic usage in restrooms and general office/kitchen use for a total instantaneous of approximately 50 gpm is available for the project from the city water system. In addition, it is estimated that at least 3500 gpm of water for fire flow purposes is currently available from hydrants in the proposed project area.

The city currently has sufficient water rights, storage and distribution capacity to serve the various sites with the requested flow, contingent on the extension of water utilities to the site as spelled out in the pre-application comments.

For additional information regarding the project, please contact me at (360) 487-7169.

Sincerely,

Tyler Clary
Water Engineering Program Manager
City of Vancouver

cc: Tracy Tuntland
Debi Davis
Jon Wagner