PG-170686

Revised Pipeline Replacement Program Plan

Cascade Natural Gas Corporation

2017

in accordance with

Policy Statement in Docket No. UG-120715

Required Contents: Checklist and Table of Contents

Policy Statement		Section/Page
The pipe replacement program plan should consist of three parts: (1) a "master" plan for replacing all pipes with an elevated risk of failure;	In support of its pipe replacement program plan, each gas company should demonstrate that the type of pipe to be replaced under its program presents an elevated risk of cracking, leakage, breakage or other failure. The gas company should explain why the particular type(s) of pipe presents an elevated risk, such as the physical qualities of the pipe as manufactured (e.g., low ductile plastic pipe), the condition of the pipe as installed (e.g., poor soil conditions) or as maintained (e.g., no cathodic protection), the age of the pipe, etc. The gas company should also provide detailed analysis and explanation demonstrating why the pipe it seeks to replace is appropriate for replacement, compared to other pipe. To the extent practical, the gas company should quantify and explain the degree to which risk of failure is elevated for such pipe, compared to other pipe.	**Section 1 – Master Plan** Page 3
(2) a two-year plan that specifically identifies the pipe replacement program goals for the upcoming two-year period;	The first pipe replacement program plan shall be filed by June 1, 2013, covering planned pipe replacement through 2015.	**Section 2 – Two-Year Plan** Page 5
(3) if applicable, a plan for identifying the location of pipe that presents elevated risk of failure.	A prudent pipe replacement program should contain a plan for identifying the location of elevated risk pipe; to the extent the gas company does not presently know the location. The plan should include a timetable under which the gas company will know the location of its elevated risk pipe. The Commission will not require a gas company to know the location of all of its elevated risk pipe as a prerequisite for having a pipe replacement program consistent with the policy statement. A pipe replacement program may focus initially on pipe for which the gas company knows the location.	**Section 3 – Identification Plan** Page 6

Introduction

On December 31, 2012, the Washington Utilities and Transportation Commission issued a policy statement in Docket UG-120715 for the accelerated replacement of natural gas pipeline facilities with elevated risk. This policy statement requires each gas company requesting a special pipe replacement cost recovery mechanism (CRM) to file with the Commission a pipe replacement program plan containing the following elements:

1. *A "master" plan for addressing all pipes with an elevated risk of failure*
2. *A two-year plan that specifically identifies the goals for the upcoming two-year period*
3. *A plan for identifying the location of pipe that presents elevated risk of failure*

Section 1 -Master Plan

This Master Plan will serve as the guide that Cascade Natural Gas Corporation (Cascade) will use to determine which pipelines should be addressed as part of the Pipe Replacement Program. This Master Plan will describe the possible risks that can be associated with a pipeline, how the pipelines are analyzed to assess and quantify risks, how the pipelines to be addressed are identified, and how information for identified and new risks is obtained. The Master Plan will also describe the role that Cascade's Distribution Integrity Management Plan (DIMP) plays in the Pipe Replacement Program.

Possible Risks

Cascade operates pipelines that are classified as Pre-CNG piping systems. Pre-CNG pipelines are distribution systems that were constructed to distribute manufactured gas or natural gas. These pipelines were originally installed, owned, operated, and maintained by others prior to 1955. Cascade acquired many of these systems in the late 1950s and throughout the 1960s. The condition of the Pre-CNG pipe is bare steel or coal tar wrapped. This pipe is of concern since it is at least 60 years old and lacked cathodic protection until the early 1970s, leaving the pipe suspect to corrosion risk. The extent of this pipe varies throughout Cascade systems and depends on the history of the system and how it was acquired by Cascade.

	2012	**2016**
Total Footage of Pre-CNG (WA)	1,117,716	882,914
Percentage of Pre-CNG Pipe in System (WA)	4.6%	3.6%

DIMP maps showing the 2013 and 2017 DIMP models runs for Longview and Anacortes pipe replacement projects are shown in Appendix B. Through the Longview and Anacortes pipe replacement projects CNG has replaced approximately 113,000' of Pre-CNG pipe as of the end of 2016.

In addition to the risks inherent with Pre-CNG pipelines, Cascade's pipelines are exposed to risks due to the following factors:

- Corrosion
- Natural Forces
- Excavation Damage
- Other Outside Force Damage
- Material, Weld, or Joint Failure
- Equipment Failure
- Incorrect Operation
- Other – Forces unique to a particular area on the system

Cascade's DIMP Plan describes these risks in greater detail. Cascade's DIMP Plan is on file with the Commission's Pipeline Safety Division.

Analysis and Quantification

As part of Cascade's DIMP Plan, a GIS-based model has been created and is maintained. Information collected as part of DIMP is input into the model, where it is analyzed to find areas of concern and trends. This allows Cascade to quantify the risk associated with each pipeline based on factors that are pertinent to this Pipe Replacement Program. Cascade's DIMP contains a more detailed explanation of this process.

Identification of Pipelines for Replacement

DIMP model results are used to identify the locations of pipelines that should be addressed in the Pipe Replacement Plan.

For pipelines identified by DIMP, samples of the DIMP model outputs for the areas identified in Section 2 of this document are included in Appendix A. Once replacement locations are identified, specific projects within these areas are planned and prioritized based on coordination with district and on-site personnel considered to be Subject Matter Experts (SMEs). This helps ensure the replacement of the higher risk pipelines within the identified areas.

Obtaining New Information

Cascade obtains new information for their DIMP model and Pipe Replacement Plan through the following methods:

1. Observing trending in DIMP – the DIMP model is analyzed on a yearly basis. As part of this analysis trends are identified and the plan and/or model is modified as needed.
2. Company forms that gather information on exposed pipelines – every time a Cascade pipeline is exposed an Integrity Management Dig Report – Form 625 is completed. Additionally, all leaks are documented with a Leak Investigation – Form 293. Information from these forms are inputted into the DIMP model.
3. Continuing Subject Matter Expert (SME) panel meetings – SME panel meetings are held on an appropriate basis, at least once annually. Information from the panel meetings is used to validate the DIMP model and new information is input into the DIMP model.
4. Updating model annually – Cascade's DIMP model is updated annually. Results of the model analysis are used to prioritize pipeline replacement projects.

Cascade's DIMP Plan describe these methods in greater detail.

Section 2 - Two Year Plan

Cascade's two-year plan has been divided into two separate time periods. The time periods and the work that are proposed for each are listed below.

November 1, 2016 – October 31, 2017 – Capital Replacement Projects

PROJECT	DISTRICT	TYPE OF PIPE TO BE REPLACED	REASON FOR MODIFICATION
CRM RPL ANACORTES BARE STEEL PHASE 5	MT. VERNON	BARE STEEL/PRE-CNG PIPE - IDENTIFIED HIGH (RED) RISK IN DIMP	N/A
CRM RPL LONGVIEW BARE STEEL PHASE 6	LONGVIEW	BARE STEEL/PRE-CNG PIPE - IDENTIFIED HIGH (RED) RISK IN DIMP	N/A
CRM VANCE CREEK EXPOSURE REPLACE	ABERDEEN	EXPOSED PIPE (CORROSION) IN ADDITION TO MODERATE (ORANGE) RISK IN DIMP	N/A
CRM CAMP CREEK EXPOSURE REPLACEMENT	ABERDEEN	EXPOSED PIPE (CORROSION) IN ADDITION TO MODERATE (ORANGE) RISK IN DIMP	N/A
CRM/MAOP 3" BURLINGTON HP LINE REPL	MT. VERNON	PRE-CNG PIPE - IDENTIFIED HIGH (RED) RISK IN DIMP	N/A

November 1, 2016 – October 31, 2017 – Capital Replacement Projects (Continued)			
PROJECT	**DISTRICT**	**TYPE OF PIPE TO BE REPLACED**	**REASON FOR MODIFICATION**
~~CRM BELLINGHAM BRIDGE CROSSINGS RMV~~	~~BELLINGHAM~~	~~PRE-CNG PIPE - IDENTIFIED HIGH (RED) & MODERATE (ORANGE) RISK IN DIMP~~	PROJECT NOT COMPLETED IN THE NOVEMBER 1, 2016 - OCTOBER 31, 2017 TIME PERIOD DUE TO PERMITTING AND RIGHT OF WAY DELAYS. PROJECT SCHEDULED TO BE COMPLETED IN THE NOVEMBER 1, 2017 - OCTOBER 31, 2018 TIME PERIOD.
~~CRM KELSO GRADE ST BRIDGE RELOCATE~~	~~LONGVIEW~~	~~EXPOSED PIPE SUSCEPTIBLE TO CORROSION RISK - MODERATE (ORANGE)~~	PROJECT NOT COMPLETED IN THE NOVEMBER 1, 2016 - OCTOBER 31, 2017 TIME PERIOD DUE TO DELAYS OBTAINING ARMY CORP OF ENGINEERS PERMIT TO CROSS COWEEMAN RIVER. PROJECT SCHEDULED TO BE COMPLETED IN THE NOVEMBER 1, 2017 - OCTOBER 31, 2018 TIME PERIOD.
CRM 2 IN STEEL IP BORE BELFAIR PL	KENNEWICK	MODERATE (ORANGE) RISK IN DIMP	N/A
CRM 6" NOB HILL REPLACEMENT	YAKIMA	IDENTIFIED HIGH (RED) RISK IN DIMP	N/A
CRM KENN RR CROSS NEAR KAMIAKIN	KENNEWICK	MODERATE (ORANGE) RISK IN DIMP	N/A
CRM/MAOP RPL; 12" STL HP, KELSO PHASE 1	LONGVIEW	HIGH (RED) RISK IN DIMP	N/A
CRM SHELTON PIPE REPLACEMENT PHASE 1	ABERDEEN	PRE-CNG PIPE - IDENTIFIED HIGH (RED) RISK IN DIMP	N/A
CRM VANCE CREEK REPLACEMENT (#2)	ABERDEEN	EXPOSED PIPE (CORROSION) IN ADDITION TO MODERATE (ORANGE) RISK IN DIMP	N/A
CRM RPL 2" STL MN - BELLINGHAM	BELLINGHAM	IDENTIFIED MODERATE (ORANGE) RISK IN DIMP	N/A

These projects were identified through Cascade's DIMP Plan and are both intermediate pressure (IP) (< 60 psig) and high pressure (HP).

November 1, 2017 – October 31, 2018 – Capital Replacement Projects			
PROJECT	**DISTRICT**	**TYPE OF PIPE TO BE REPLACED**	**REASON FOR MODIFICATION**
ANACORTES BARE STEEL PHASE 5/6	MT. VERNON	BARE STEEL/PRE-CNG PIPE - IDENTIFIED HIGH (RED) RISK IN DIMP	N/A
~~CRM RPL LONGVIEW BARE STEEL PHASE 7~~	~~LONGVIEW~~	~~BARE STEEL/PRE-CNG PIPE - IDENTIFIED HIGH (RED) RISK IN DIMP~~	PROJECT WAS CANCELED FOR THE NOVEMBER 1, 2017 – OCTOBER 31, 2018 TIME PERIOD TO ADDRESS PIPE REPLACEMENT IN KELSO, WA.
12" STL HP REPLACEMENT, KELSO PHASE 2	LONGVIEW	PRE-CNG PIPE - HIGH (RED) RISK IN DIMP	N/A
SHELTON PIPE REPLACEMENT PHASE 2	ABERDEEN	PRE-CNG PIPE - IDENTIFIED HIGH (RED) RISK IN DIMP	N/A
~~CRM YAKIMA PIPE REPLACEMENT PHASE 1~~	~~YAKIMA~~	~~IDENTIFIED HIGH (RED) RISK IN DIMP~~	PROJECT WAS CANCELED FOR THE NOVEMBER 1, 2017 – OCTOBER 31, 2018 TIME PERIOD TO ADDRESS PIPE REPLACEMENT IN KELSO, WA.
KELSO BARE STEEL PHASE 1	LONGVIEW	BARE STEEL/PRE-CNG PIPE - IDENTIFIED HIGH (RED) RISK IN DIMP	KELSO PIPE REPLACEMENT PROJECT WAS ADDED AND REPLACED LONGVIEW AND YAKIMA PIPE REPLACEMENTS WHICH WERE PREVIOUSLY PLANNED FOR THE NOVEMBER 1, 2017 – OCTOBER 31, 2018 TIME PERIOD. ADDING THE KELSO PIPE REPLACEMENT ALLOWS CASCADE TO ADDRESS MORE HIGHER RISK PIPE THAN WOULD HAVE BEEN REPLACED UNDER THE LONGVIEW AND KELSO PIPE REPLACEMENT PROJECTS.

November 1, 2017 – October 31, 2018 – Capital Replacement Projects (Continued)			
PROJECT	**DISTRICT**	**TYPE OF PIPE TO BE REPLACED**	**REASON FOR MODIFICATION**
7" STL IP REPLACEMENT, RICHLAND	RICHLAND	PRE-CNG PIPE - IDENTIFIED HIGH (RED) RISK IN DIMP	N/A
8" STL HP, RETIRE BRIDGE CROSSINGS	BELLINGHAM	PRE-CNG PIPE - IDENTIFIED HIGH (RED) & MODERATE (ORANGE) RISK IN DIMP	PROJECT WAS MOVED FROM NOVEMBER 1, 2016 – OCTOBER 31, 2017 TIME PERIOD DUE TO PERMITTING AND RIGHT OF WAY DELAYS.
2" STL IP GRADE ST BRIDGE REPLACEMENT	LONGVIEW	EXPOSED PIPE SUSCEPTIBLE TO CORROSION RISK - MODERATE (ORANGE)	PROJECT WAS MOVED FROM NOVEMBER 1, 2016 – OCTOBER 31, 2017 TIME PERIOD DUE TO PERMITTING DELAYS.
8" STL HP REPLACEMENT, ANACORTES PH 1	MT. VERNON	FISH PIPE WITH HIGH - MODERATE RISK IN DIMP	PROJECT WAS ADDED TO PLAN TO ADDRESS A PIPELINE INSTALLED BY FISH SERVICE & MANAGEMENT CORPORATION (FISH) IN THE 1950'S. FISH PIPE WAS INSTALLED IN THE 1950'S TO THE EARLY 1960'S AND IS TYPICALLY PIPE WITH HIGH TO MODERATE RISK IN DIMP. THE HIGH TO MODERATE RISK IS ASSOCIATED WITH RISKS ASSOCIATED WITH VINTAGE OF INSTALLATION AND CORROSION. PIPE BEING REPLACED IS A PIPELINE SEGMENT IDENTIFIED IN SETTLEMENT AGREEMENT DOCKET PG-150120.
6"/8" STL HP REPLACEMENT, MOSES LAKE	WENATCHEE	PRE-CNG TRANSMISSION PIPELINE	REPLACEMENT OF PRE-CNG TRANSMISSION PIPELINE. THIS PROJECT WAS ADDED TO ADDRESS A TRANSMISSION PIPELINE WITH A HIGH TO MODERATE RISK DUE TO VINTAGE OF INSTALLATION OF THE PIPELINE AND HIGHER CORROSION RISK FROM YEARS WITHOUT OR INADEQUATE CATHODIC PROTECTION. PIPE BEING REPLACED IS A PIPELINE SEGMENT IDENTIFIED IN SETTLEMENT AGREEMENT DOCKET PG-150120.
2" STL IP COAL CR SLOUGH REPLACEMENT	LONGVIEW	EXPOSED PIPE SUSCEPTIBLE TO HIGHER CORROSION RISK, PIPE IS POORLY COATED AND SUPPORTED	PROJECT WAS IDENTIFIED BY THE LONGVIEW DISTRICT AS A HIGH RISK DURING THE 2018 BUDGETING CYCLE IN JULY 2018. PROJECT WILL REPLACE PIPE WHICH CURRENTLY ATTACHED TO A BRIDGE OVER COAL CREEK SLOUGH.
8" HP RPL, MARCH POINT TRANSMISSION LINE	MT. VERNON	PRE-CODE TRANSMISSION MAIN, HISTORY OF CORROSION	REPLACEMENT OF A TRANSMISSION PIPELINE WITH A HIGHER RISK ASSOCIATED WITH THE VINTAGE OF INSTALLATION OF THE PIPELINE AND A HISTORY OF CORROSION FROM WORK THAT HAS BEEN PERFORMED ON THE PIPELINE AND YEARS WITHOUT OR INADEQUATE CATHODIC PROTECTION. PIPE BEING REPLACED IS A PIPELINE SEGMENT IDENTIFIED IN SETTLEMENT AGREEMENT DOCKET PG-150120.

The projects listed in these tentative schedules are based on the best information available at this time. As more information becomes available and the DIMP models are updated, the prioritization of the projects may change. DIMP output for replacement projects is shown in Appendix A.

Summary of the previous two-year plan from November 1, 2014 – October 31, 2017 is shown in Appendix C.

Section 3 - Plan for Identifying the Location of Pipe that Presents Elevated Risk of Failure

Cascade identifies the location of pipe that presents an elevated risk of failure through the DIMP plan and model. DIMP calls for information to be gathered on exposed pipe, leaks to be tracked, and SME knowledge to be incorporated into the plan. DIMP has sufficient flexibility to identify and adjust to trends and new sources of information. Yearly analyses are performed that quantify the risks on each pipeline.

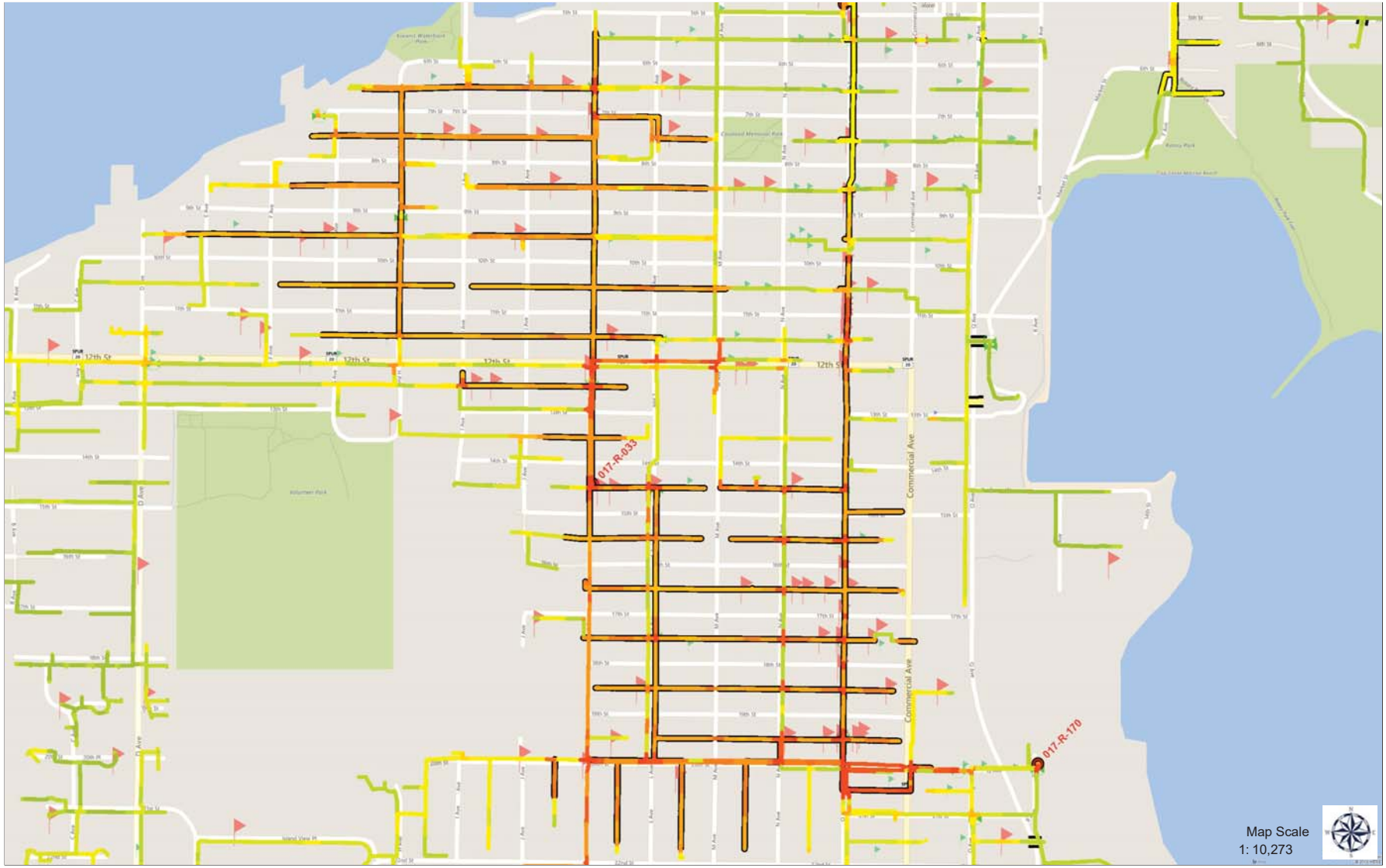
As outlined in Cascade's DIMP, additional or accelerated (A/A) actions are implemented when existing compliance activities and procedures need to be supplemented to address risk identified to the integrity of Cascade's distribution system. A/A actions that may be implemented to mitigate risk are outlined in Cascade's DIMP, as well as the requirements for implementation and documentation.

In instances where unknown pipe properties are encountered (i.e. pipe grade, wall thickness, material type, etc.) Cascade takes actions to obtain unknown properties. These actions include, but are not limited to, removal and sampling, in-situ testing, and pipeline replacement.

APPENDIX A
DIMP MODEL OUTPUT

Areas in red represent highest risk areas.

ANACORTES BARE STEEL PHASE 5/6



Map Legend

Risk Mains 2017
- < -0.83 Std. Dev.
- -0.83 - -0.50 Std. Dev.
- -0.50 - -0.17 Std. Dev.
- -0.17 - 0.17 Std. Dev.
- 0.17 - 0.50 Std. Dev.
- 0.50 - 0.83 Std. Dev.
- 0.83 - 1.2 Std. Dev.
- 1.2 - 1.5 Std. Dev.
- 1.5 - 1.8 Std. Dev.
- 1.8 - 2.2 Std. Dev.
- 2.2 - 2.5 Std. Dev.
- 2.5 - 2.8 Std. Dev.
- > 2.8 Std. Dev.

Risk Mains 2017 PRECNG

Odorizer

Leak Report
- <all other values>
- Above Ground
- Below Ground
- Retired

Regulator Station

Gas Valve
- Closed
- Open
- Unknown

Gas Pipe Casing

Transmission Main

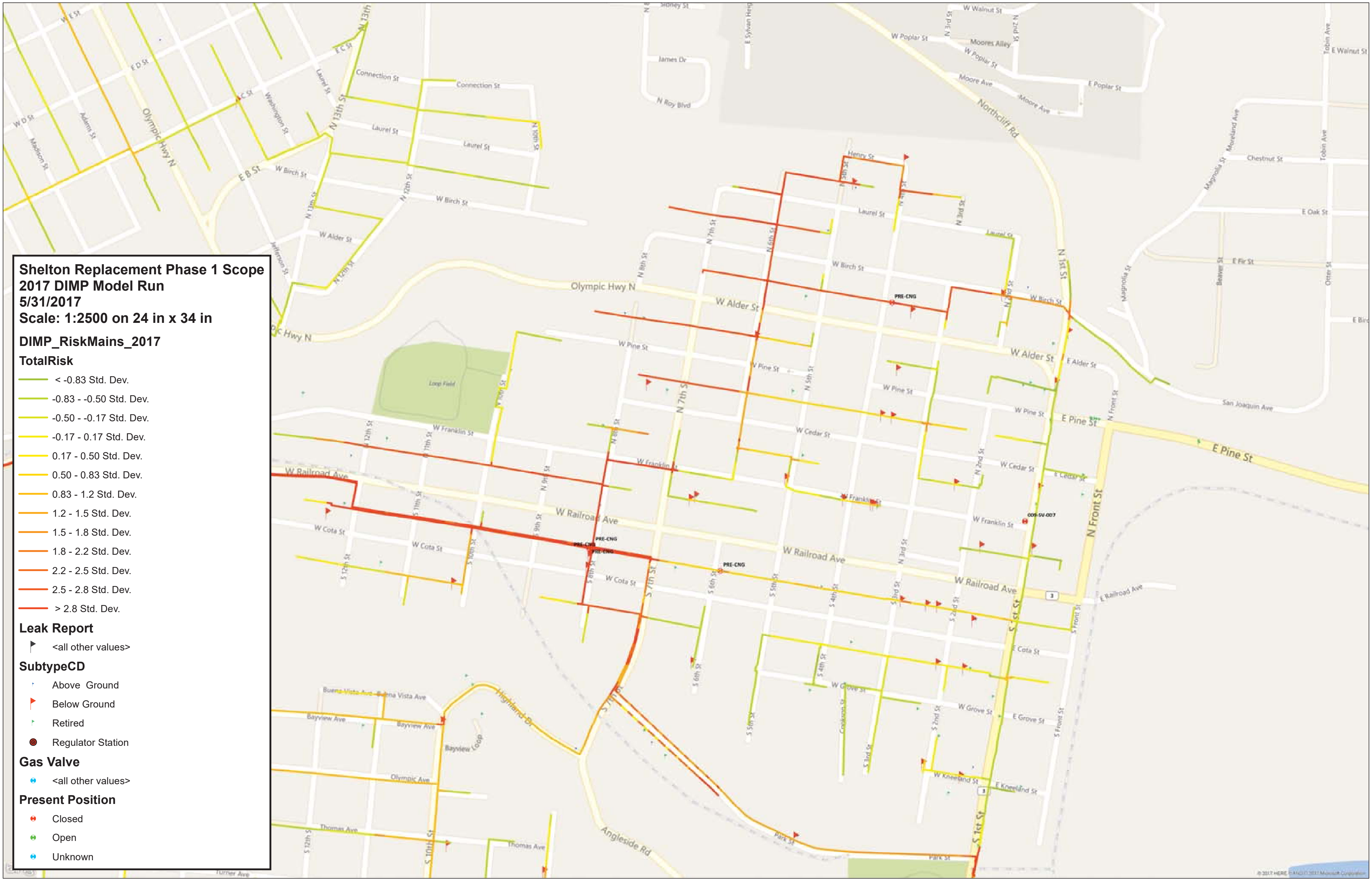
0.3 0 0.16 0.3
Miles

WGS_1984_Web_Mercator_Auxiliary_Sphere

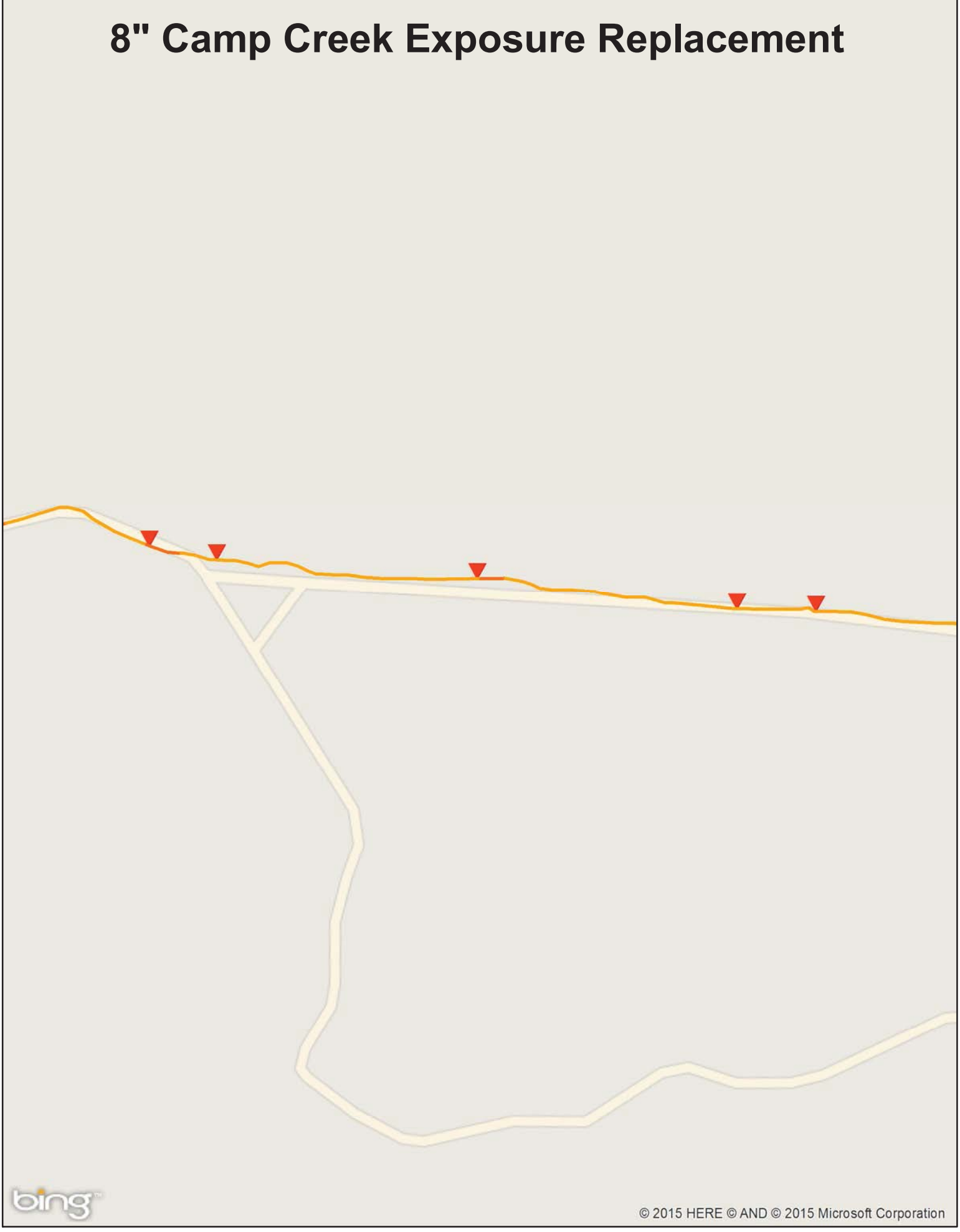
This map is a user generated static output from the GIS Web Viewer mapping website and is for reference only. It is not to be relied upon for construction purposes. It is provided for planning purposes only.

FIELD LOCATES ARE REQUIRED FOR LOCATION OF UTILITY FACILITIES

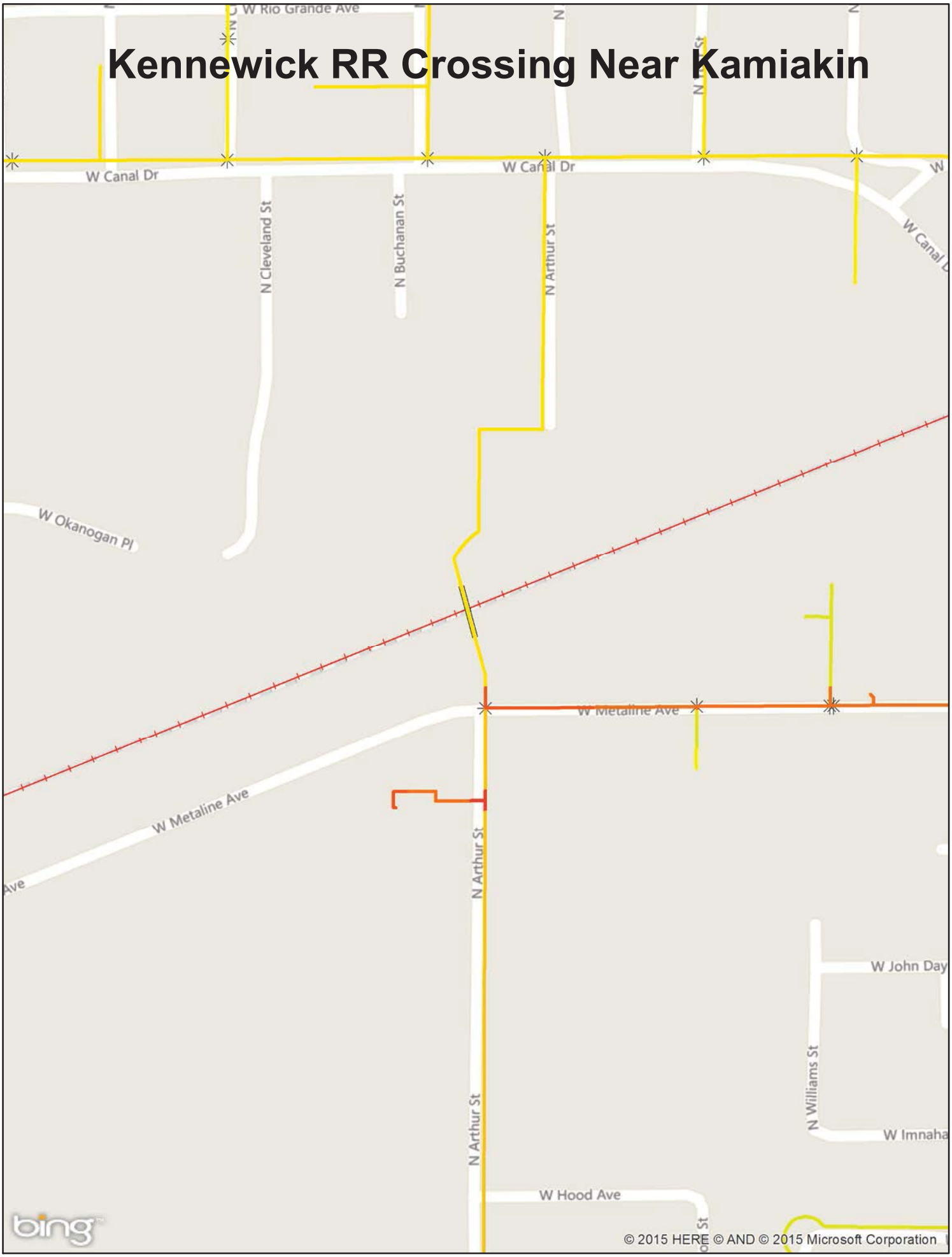
Notes:


Shelton Replacement Phase 1 Scope
2017 DIMP Model Run
5/31/2017
Scale: 1:2500 on 24 in x 34 in
DIMP_RiskMains_2017
TotalRisk
< -0.83 Std. Dev.
-0.83 - -0.50 Std. Dev.
-0.50 - -0.17 Std. Dev.
-0.17 - 0.17 Std. Dev.
0.17 - 0.50 Std. Dev.
0.50 - 0.83 Std. Dev.
0.83 - 1.2 Std. Dev.
1.2 - 1.5 Std. Dev.
1.5 - 1.8 Std. Dev.
1.8 - 2.2 Std. Dev.
2.2 - 2.5 Std. Dev.
2.5 - 2.8 Std. Dev.
> 2.8 Std. Dev.
Leak Report
<all other values>
SubtypeCD
Above Ground
Below Ground
Retired
Regulator Station
Gas Valve
<all other values>
Present Position
Closed
Open
Unknown
Olympic Hwy N
W Alder St
W Railroad Ave
W Pine St
W Franklin St
W Cota St
W Cedar St
W Birch St
Laurel St
Connection St
E Pine St
N Front St
N 1st St
S 1st St
N 7th St
S 7th St
N 13th St
Highland Dr
Angleside Rd
Northcliff Rd
PRE-CNG
Loop Field

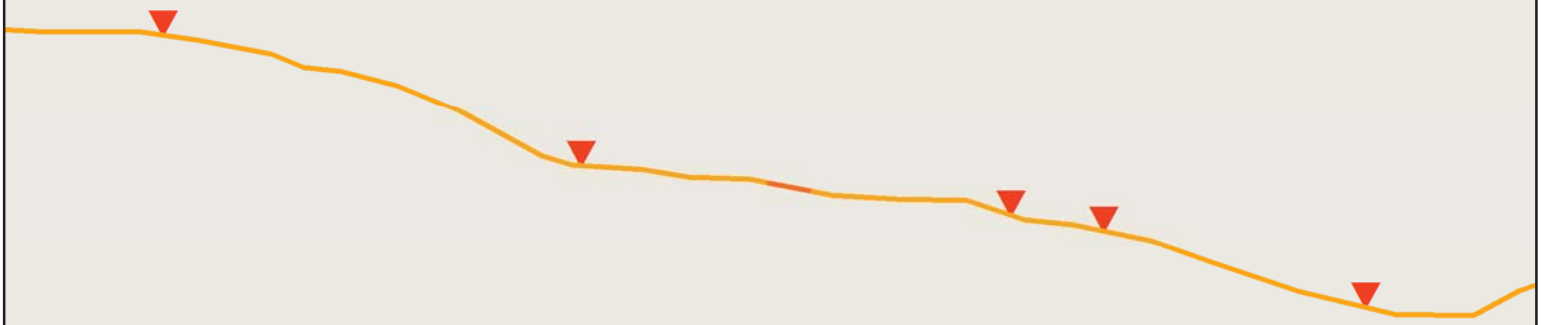
8" Camp Creek Exposure Replacement



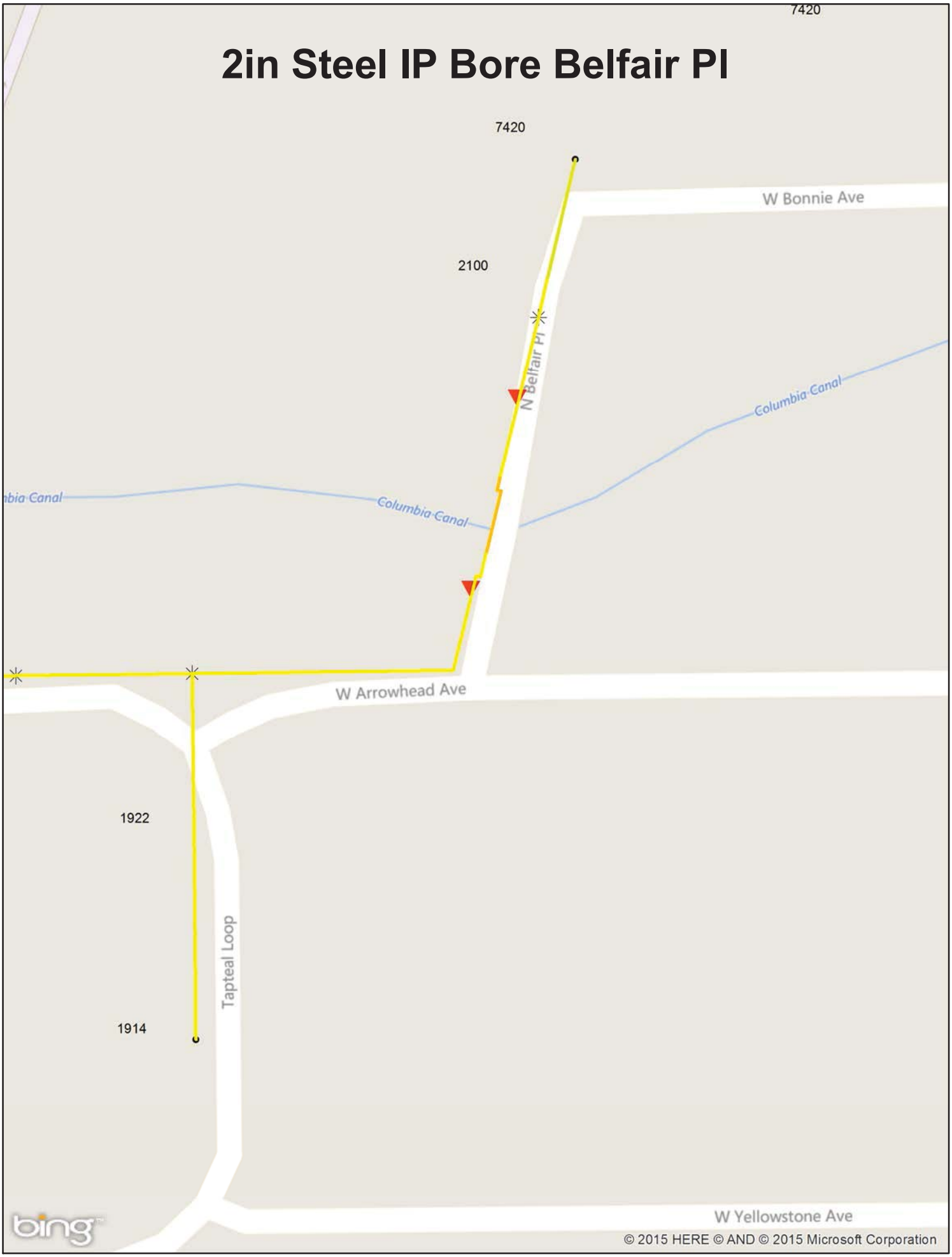
Kennewick RR Crossing Near Kamiakin



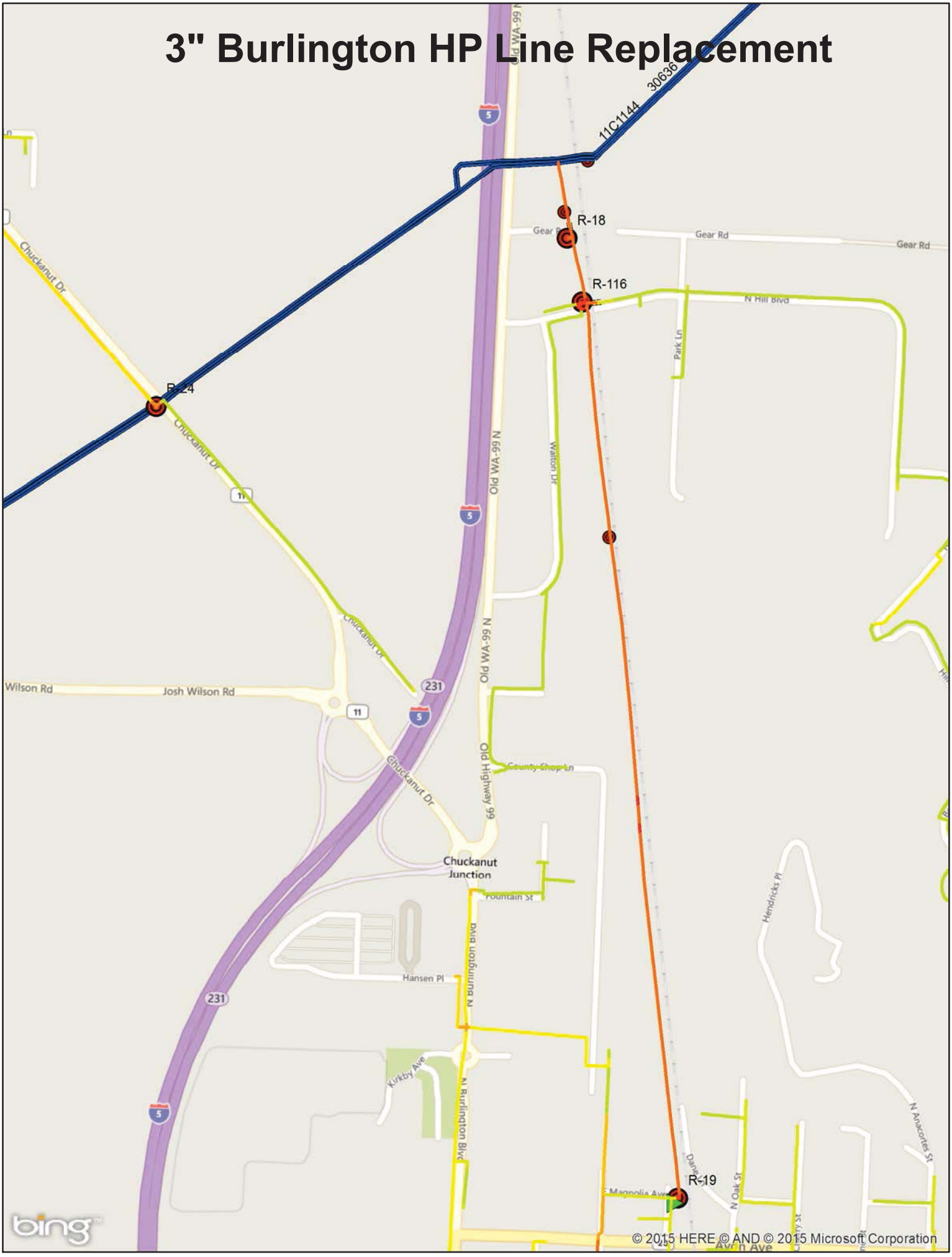
8" Vance Creek Exposure Replacement



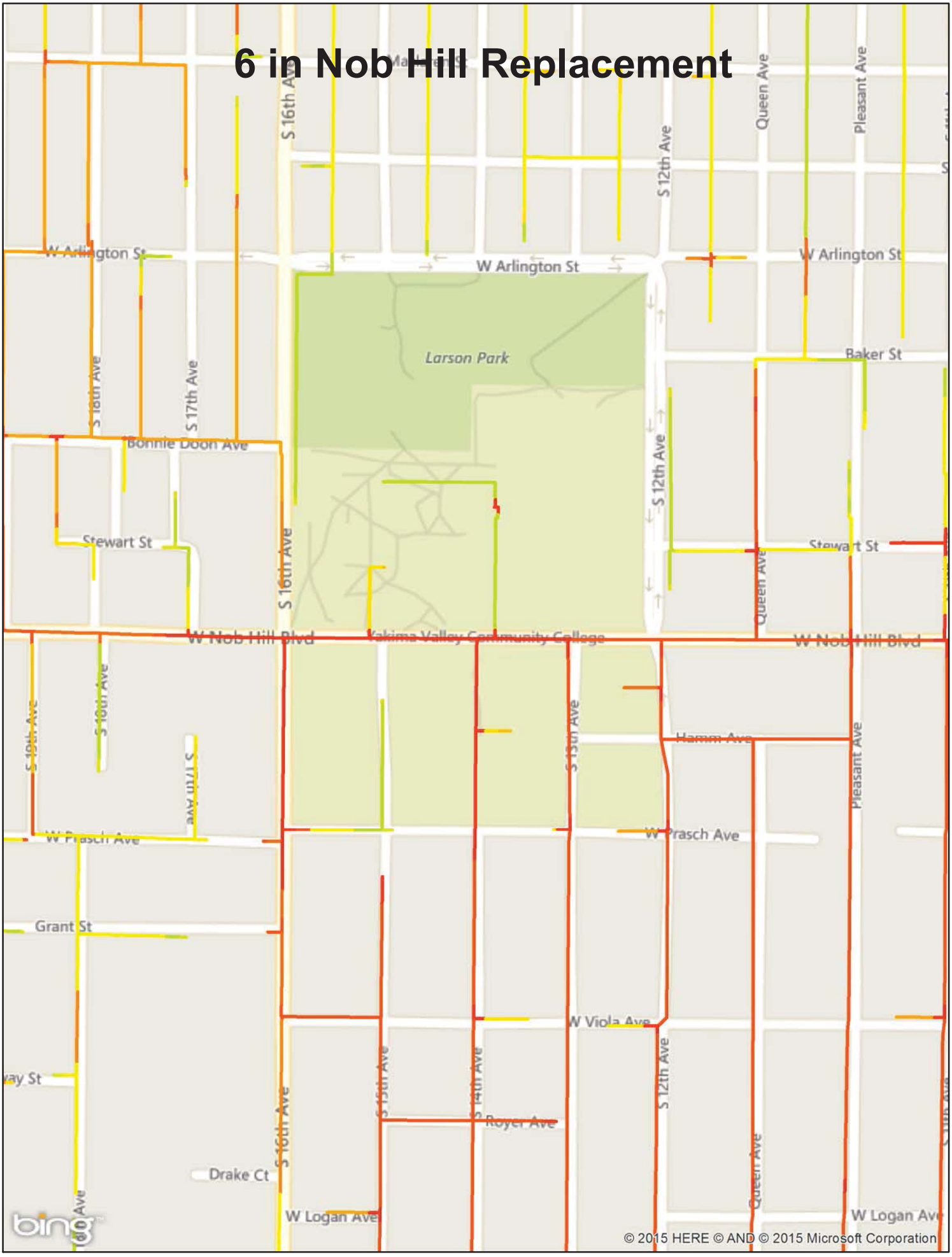
2in Steel IP Bore Belfair Pl



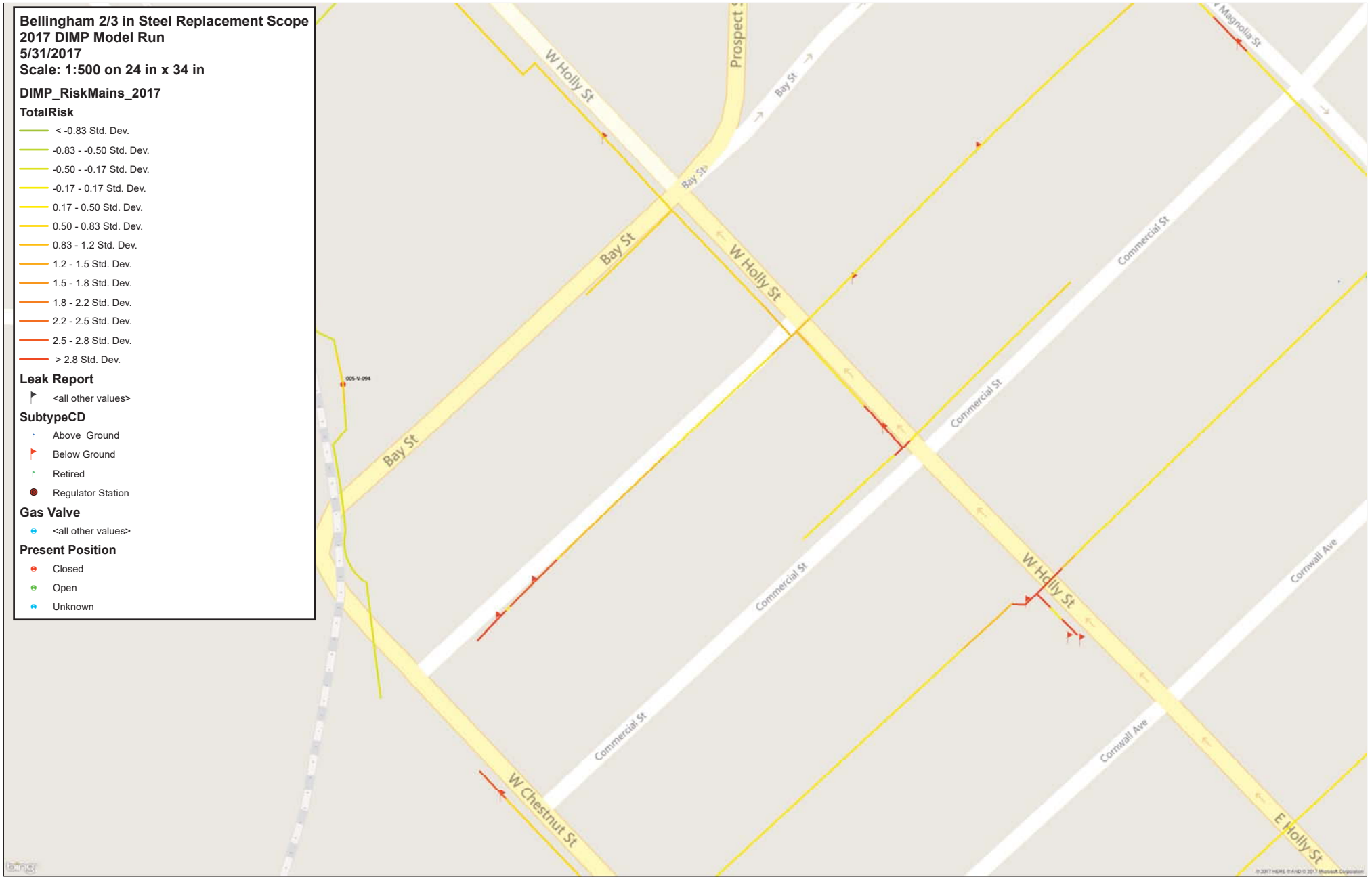
3" Burlington HP Line Replacement



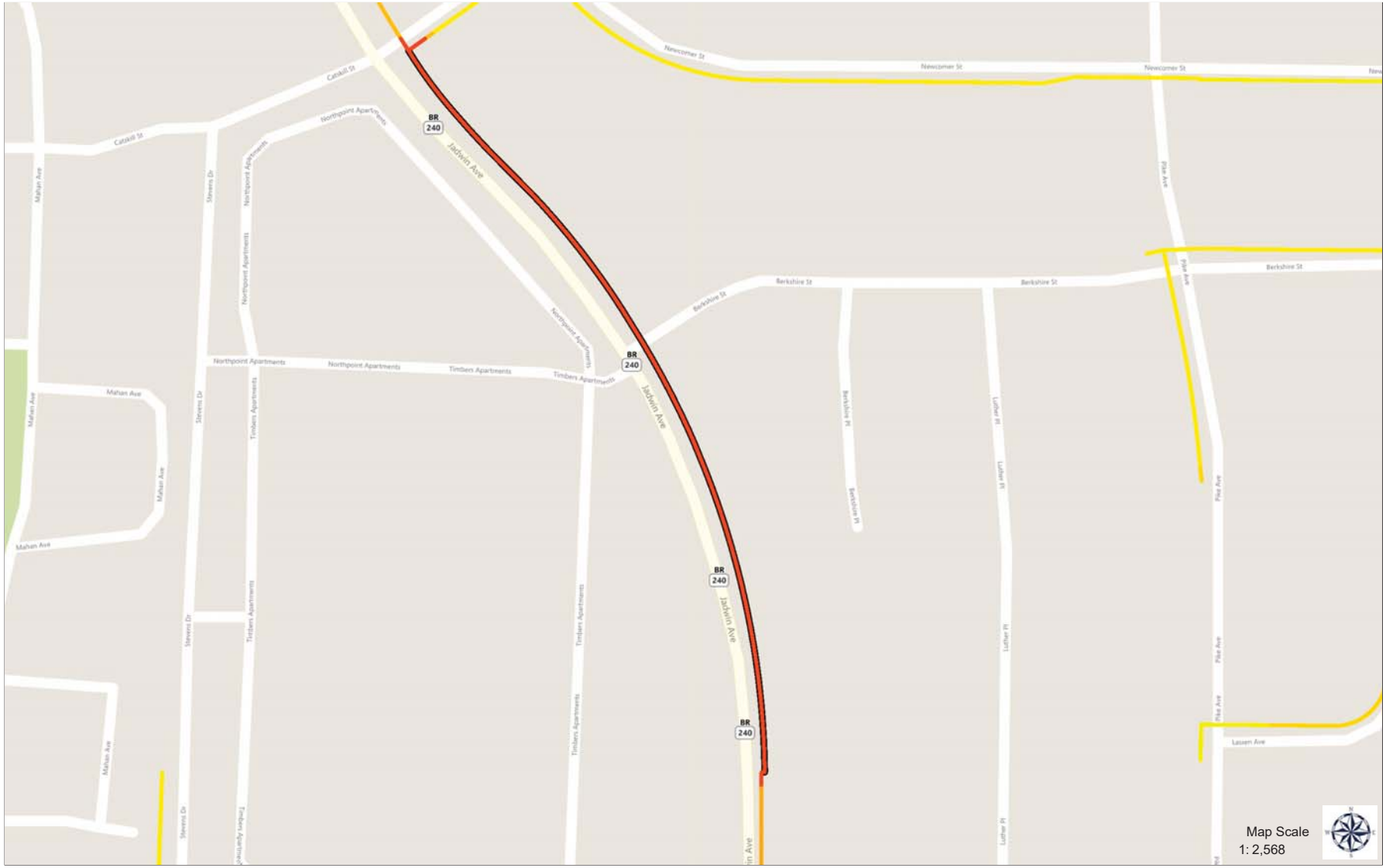
6 in Nob Hill Replacement




Vance Creek Exposure Replacement
2017 DIMP Model Run
5/31/2017
Scale: 1:4000 on 24 in x 34 in
DIMP_RiskMains_2017
TotalRisk
< -0.83 Std. Dev.
-0.83 - -0.50 Std. Dev.
-0.50 - -0.17 Std. Dev.
-0.17 - 0.17 Std. Dev.
0.17 - 0.50 Std. Dev.
0.50 - 0.83 Std. Dev.
0.83 - 1.2 Std. Dev.
1.2 - 1.5 Std. Dev.
1.5 - 1.8 Std. Dev.
1.8 - 2.2 Std. Dev.
2.2 - 2.5 Std. Dev.
2.5 - 2.8 Std. Dev.
> 2.8 Std. Dev.
Leak Report
<all other values>
SubtypeCD
Above Ground
Below Ground
Retired
Regulator Station
Gas Valve
<all other values>
Present Position
Closed
Open
Unknown
Satsop River
Chehalis River


Bellingham 2/3 in Steel Replacement Scope
2017 DIMP Model Run
5/31/2017
Scale: 1:500 on 24 in x 34 in
DIMP_RiskMains_2017
TotalRisk
< -0.83 Std. Dev.
-0.83 - -0.50 Std. Dev.
-0.50 - -0.17 Std. Dev.
-0.17 - 0.17 Std. Dev.
0.17 - 0.50 Std. Dev.
0.50 - 0.83 Std. Dev.
0.83 - 1.2 Std. Dev.
1.2 - 1.5 Std. Dev.
1.5 - 1.8 Std. Dev.
1.8 - 2.2 Std. Dev.
2.2 - 2.5 Std. Dev.
2.5 - 2.8 Std. Dev.
> 2.8 Std. Dev.
Leak Report
<all other values>
SubtypeCD
Above Ground
Below Ground
Retired
Regulator Station
Gas Valve
<all other values>
Present Position
Closed
Open
Unknown
W Holly St
Prospect St
Bay St
Magnolia St
Commercial St
Cornwall Ave
W Chestnut St
E Holly St
005-V-094

7” STL IP REPLACEMENT, RICHLAND



Map Legend

- Risk Mains 2017
  - < -0.83 Std. Dev.
  - -0.83 - -0.50 Std. Dev.
  - -0.50 - -0.17 Std. Dev.
  - -0.17 - 0.17 Std. Dev.
  - 0.17 - 0.50 Std. Dev.
  - 0.50 - 0.83 Std. Dev.
  - 0.83 - 1.2 Std. Dev.
  - 1.2 - 1.5 Std. Dev.
  - 1.5 - 1.8 Std. Dev.
  - 1.8 - 2.2 Std. Dev.
  - 2.2 - 2.5 Std. Dev.
  - 2.5 - 2.8 Std. Dev.
  - > 2.8 Std. Dev.
- Risk Mains 2017 PRECNG
- Odorizer
- Leak Report
  - <all other values>
  - Above Ground
  - Below Ground
  - Retired
- Regulator Station
- Gas Valve
  - Closed
  - Open
  - Unknown
- Gas Pipe Casing
- Transmission Main

0.1 0 0.04 0.1
Miles

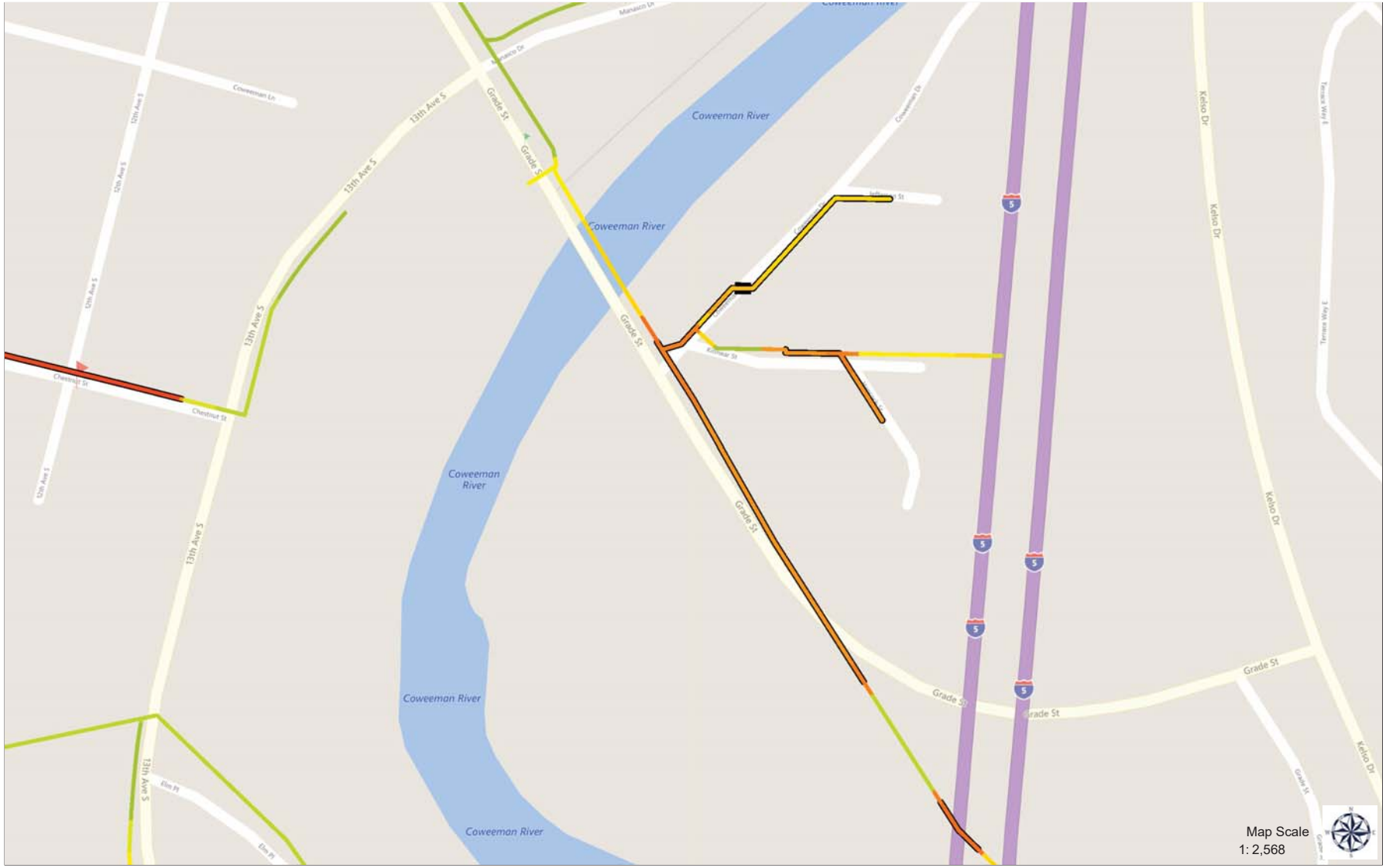
WGS_1984_Web_Mercator_Auxiliary_Sphere

This map is a user generated static output from the GIS Web Viewer mapping website and is for reference only. It is not to be relied upon for construction purposes. It is provided for planning purposes only.

FIELD LOCATES ARE REQUIRED FOR LOCATION OF UTILITY FACILITIES

Notes:

2” STL IP GRADE ST BRIDGE REPLACEMENT



Map Legend

Risk Mains 2017
- < -0.83 Std. Dev.
- -0.83 - -0.50 Std. Dev.
- -0.50 - -0.17 Std. Dev.
- -0.17 - 0.17 Std. Dev.
- 0.17 - 0.50 Std. Dev.
- 0.50 - 0.83 Std. Dev.
- 0.83 - 1.2 Std. Dev.
- 1.2 - 1.5 Std. Dev.
- 1.5 - 1.8 Std. Dev.
- 1.8 - 2.2 Std. Dev.
- 2.2 - 2.5 Std. Dev.
- 2.5 - 2.8 Std. Dev.
- > 2.8 Std. Dev.

Risk Mains 2017 PRECNG

Odorizer

Leak Report
- <all other values>
- Above Ground
- Below Ground
- Retired

Regulator Station

Gas Valve
- Closed
- Open
- Unknown

Gas Pipe Casing

Transmission Main

0.1 0 0.04 0.1
Miles

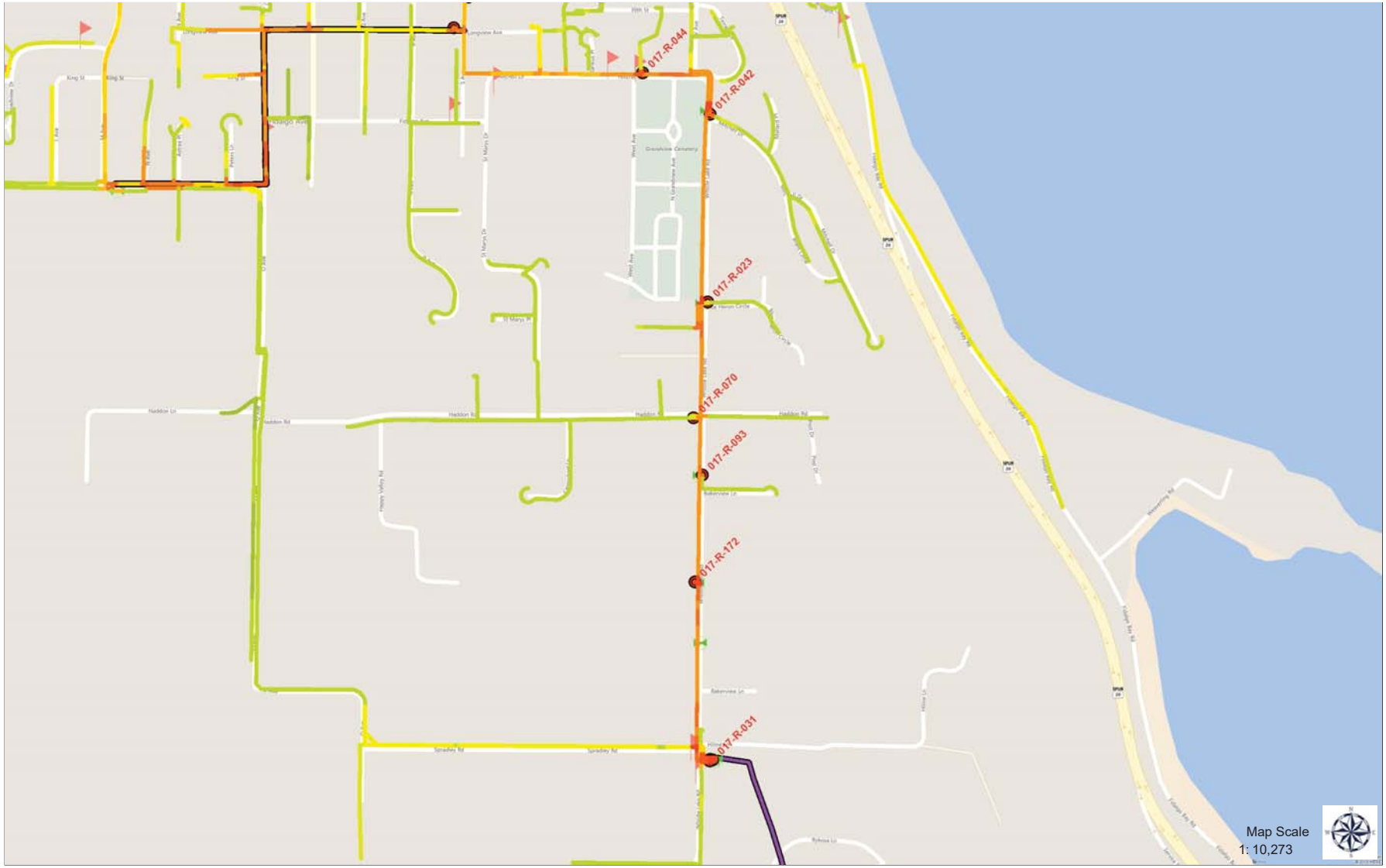
WGS_1984_Web_Mercator_Auxiliary_Sphere

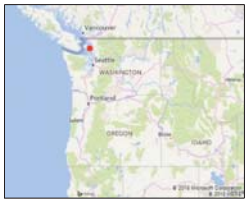
This map is a user generated static output from the GIS Web Viewer mapping website and is for reference only. It is not to be relied upon for construction purposes. It is provided for planning purposes only.

FIELD LOCATES ARE REQUIRED FOR LOCATION OF UTILITY FACILITIES

Notes:

8" STL HP REPLACEMENT, ANACORTES PH 1





Map Legend

Risk Mains 2017
- < -0.83 Std. Dev.
- -0.83 - -0.50 Std. Dev.
- -0.50 - -0.17 Std. Dev.
- -0.17 - 0.17 Std. Dev.
- 0.17 - 0.50 Std. Dev.
- 0.50 - 0.83 Std. Dev.
- 0.83 - 1.2 Std. Dev.
- 1.2 - 1.5 Std. Dev.
- 1.5 - 1.8 Std. Dev.
- 1.8 - 2.2 Std. Dev.
- 2.2 - 2.5 Std. Dev.
- 2.5 - 2.8 Std. Dev.
- > 2.8 Std. Dev.

Risk Mains 2017 PRECNG

Odorizer

Leak Report
- <all other values>
- Above Ground
- Below Ground
- Retired

Regulator Station

Gas Valve
- Closed
- Open
- Unknown

Gas Pipe Casing

Transmission Main

0.3 0 0.16 0.3
Miles

WGS_1984_Web_Mercator_Auxiliary_Sphere

This map is a user generated static output from the GIS Web Viewer mapping website and is for reference only. It is not to be relied upon for construction purposes. It is provided for planning purposes only.

FIELD LOCATES ARE REQUIRED FOR LOCATION OF UTILITY FACILITIES

Notes:

8” STL HP, RETIRE BRIDGE CROSSINGS

Map Legend

Risk Mains 2017
- < -0.83 Std. Dev.
- -0.83 - -0.50 Std. Dev.
- -0.50 - -0.17 Std. Dev.
- -0.17 - 0.17 Std. Dev.
- 0.17 - 0.50 Std. Dev.
- 0.50 - 0.83 Std. Dev.
- 0.83 - 1.2 Std. Dev.
- 1.2 - 1.5 Std. Dev.
- 1.5 - 1.8 Std. Dev.
- 1.8 - 2.2 Std. Dev.
- 2.2 - 2.5 Std. Dev.
- 2.5 - 2.8 Std. Dev.
- > 2.8 Std. Dev.

Risk Mains 2017 PRECNG
Odorizer
Leak Report
- <all other values>
- Above Ground
- Below Ground
- Retired

Regulator Station
Gas Valve
- Closed
- Open
- Unknown

Gas Pipe Casing
Transmission Main

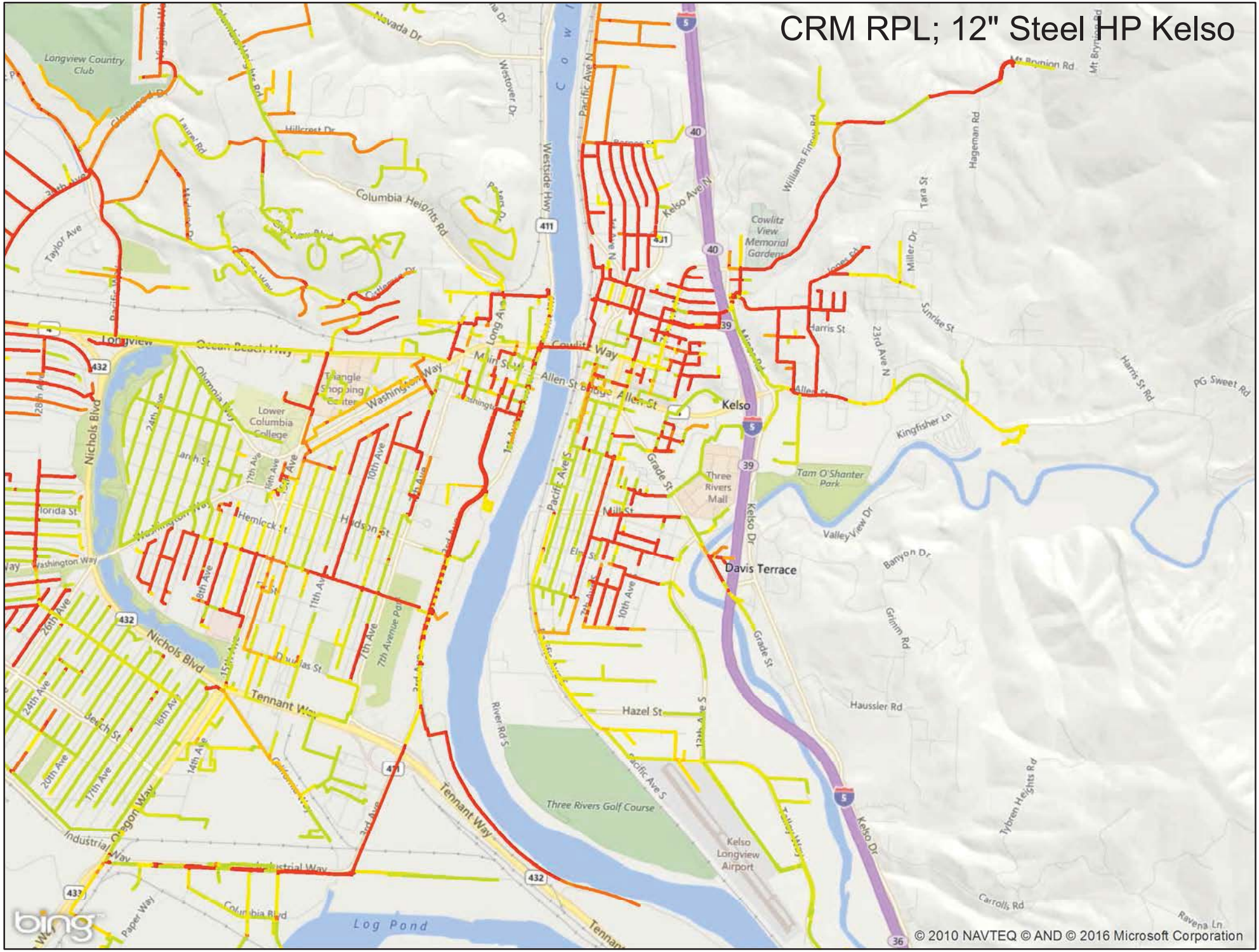
0.3 0 0.16 0.3
Miles

WGS_1984_Web_Mercator_Auxiliary_Sphere

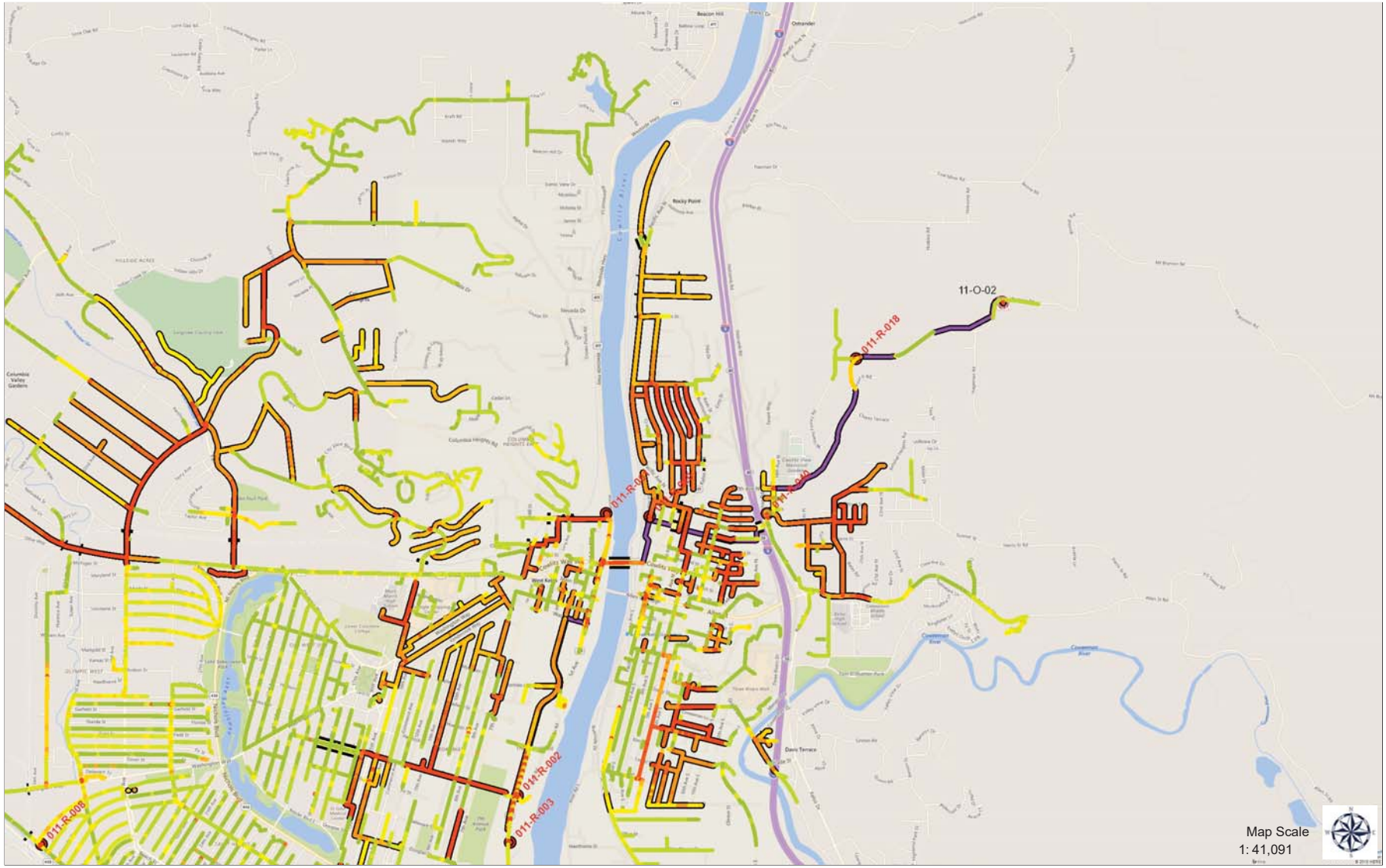
This map is a user generated static output from the GIS Web Viewer mapping website and is for reference only. It is not to be relied upon for construction purposes. It is provided for planning purposes only.

FIELD LOCATES ARE REQUIRED FOR LOCATION OF UTILITY FACILITIES

Notes:


CRM RPL; 12" Steel HP Kelso
Longview Country Club
Nevada Dr
Westover Dr
Columbia Heights Rd
Hillcrest Dr
Laurel Rd
Taylor Ave
Pacific Ave
Westside Hwy
Kelso Ave N
Williams Fineer Rd
Hageman Rd
Mt Brynion Rd
Cowlitz View Memorial Gardens
Tara St
Miller Dr
Sunrise St
Harris St
23rd Ave N
Harris St Rd
PG Sweet Rd
Kingfisher Ln
Tam O'Shanter Park
Valley View Dr
Banyon Dr
Grimm Rd
Haussler Rd
Tybren Heights Rd
Carrolls Rd
Ravena Ln
Longview
Ocean Beach Hwy
Cowlitz Way
Allen St bridge
Allen St
Kelso
Main St
Long Ave
Washington Way
Triangle Shopping Center
Lower Columbia College
Nichols Blvd
Olympia Way
Florida St
Hemlock St
Hudson St
Douglas St
Tennant Way
Beech St
Oregon Way
Industrial Way
Columbia Blvd
Paper Way
Log Pond
Three Rivers Mall
Grade St
Kelso Dr
Davis Terrace
Mill St
Elm St
Hazel St
River Rd S
Three Rivers Golf Course
Kelso Longview Airport
Pacific Ave S
12th Ave S
7th Avenue Park
bing
© 2010 NAVTEQ © AND © 2016 Microsoft Corporation

KELSO BARE STEEL PHASE 1



Map Legend

Risk Mains 2017
- < -0.83 Std. Dev.
- -0.83 - -0.50 Std. Dev.
- -0.50 - -0.17 Std. Dev.
- -0.17 - 0.17 Std. Dev.
- 0.17 - 0.50 Std. Dev.
- 0.50 - 0.83 Std. Dev.
- 0.83 - 1.2 Std. Dev.
- 1.2 - 1.5 Std. Dev.
- 1.5 - 1.8 Std. Dev.
- 1.8 - 2.2 Std. Dev.
- 2.2 - 2.5 Std. Dev.
- 2.5 - 2.8 Std. Dev.
- > 2.8 Std. Dev.

Risk Mains 2017 PRECNG
Odorizer
Regulator Station
Gas Pipe Casing
Transmission Main

1.3 0 0.65 1.3
Miles

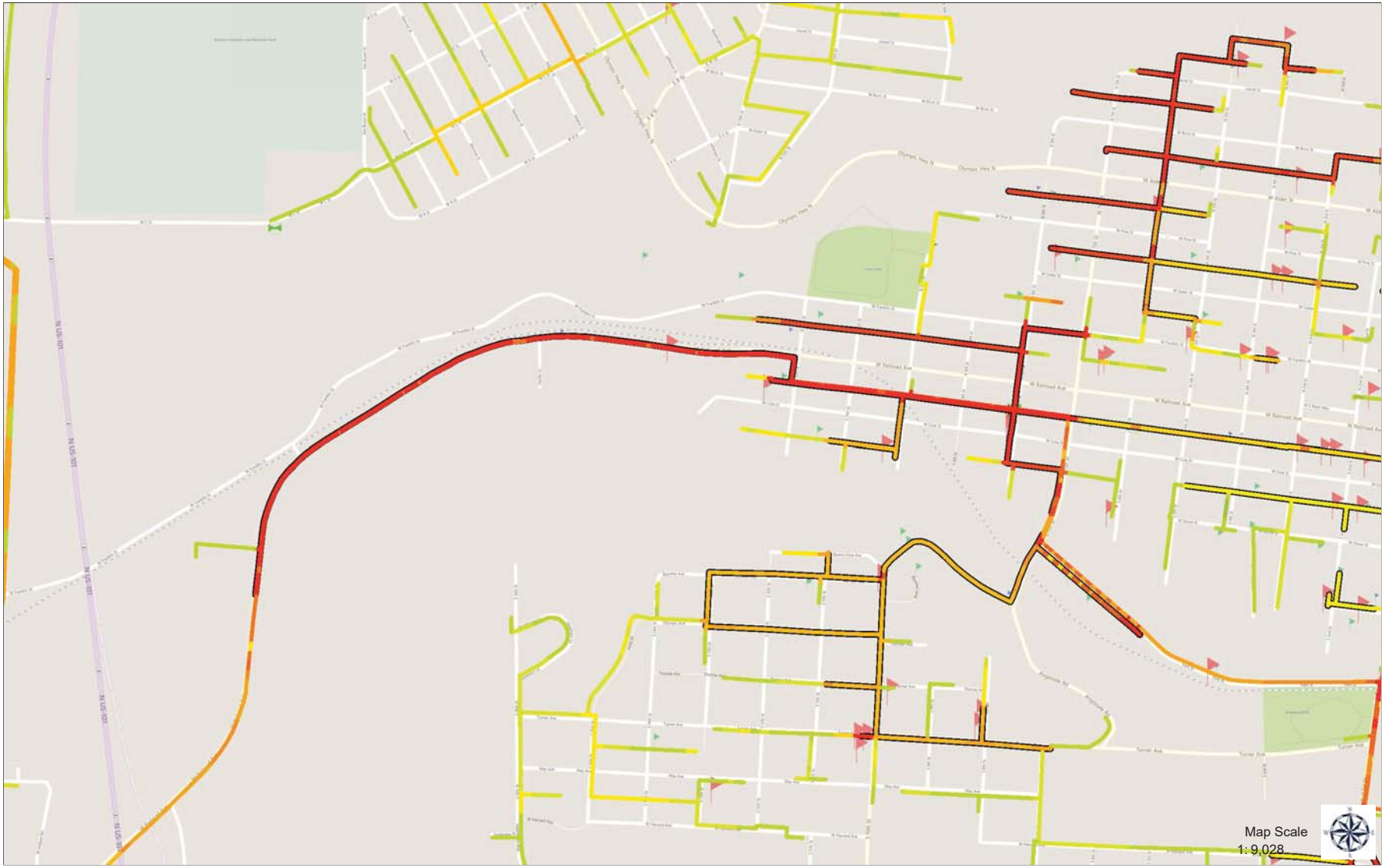
WGS_1984_Web_Mercator_Auxiliary_Sphere

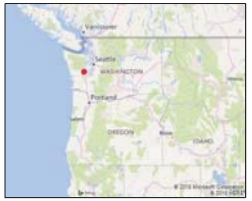
This map is a user generated static output from the GIS Web Viewer mapping website and is for reference only. It is not to be relied upon for construction purposes. It is provided for planning purposes only.

FIELD LOCATES ARE REQUIRED FOR LOCATION OF UTILITY FACILITIES

Notes:

SHELTON PIPE REPLACEMENT PHASE 2





Map Legend

- Risk Mains 2017
  - < -0.83 Std. Dev.
  - -0.83 - -0.50 Std. Dev.
  - -0.50 - -0.17 Std. Dev.
  - -0.17 - 0.17 Std. Dev.
  - 0.17 - 0.50 Std. Dev.
  - 0.50 - 0.83 Std. Dev.
  - 0.83 - 1.2 Std. Dev.
  - 1.2 - 1.5 Std. Dev.
  - 1.5 - 1.8 Std. Dev.
  - 1.8 - 2.2 Std. Dev.
  - 2.2 - 2.5 Std. Dev.
  - 2.5 - 2.8 Std. Dev.
  - > 2.8 Std. Dev.
- Risk Mains 2017 PRECNG
- Odorizer
- Leak Report
  - <all other values>
  - Above Ground
  - Below Ground
  - Retired
- Regulator Station
- Gas Valve
  - Closed
  - Open
  - Unknown
- Gas Pipe Casing
- Transmission Main

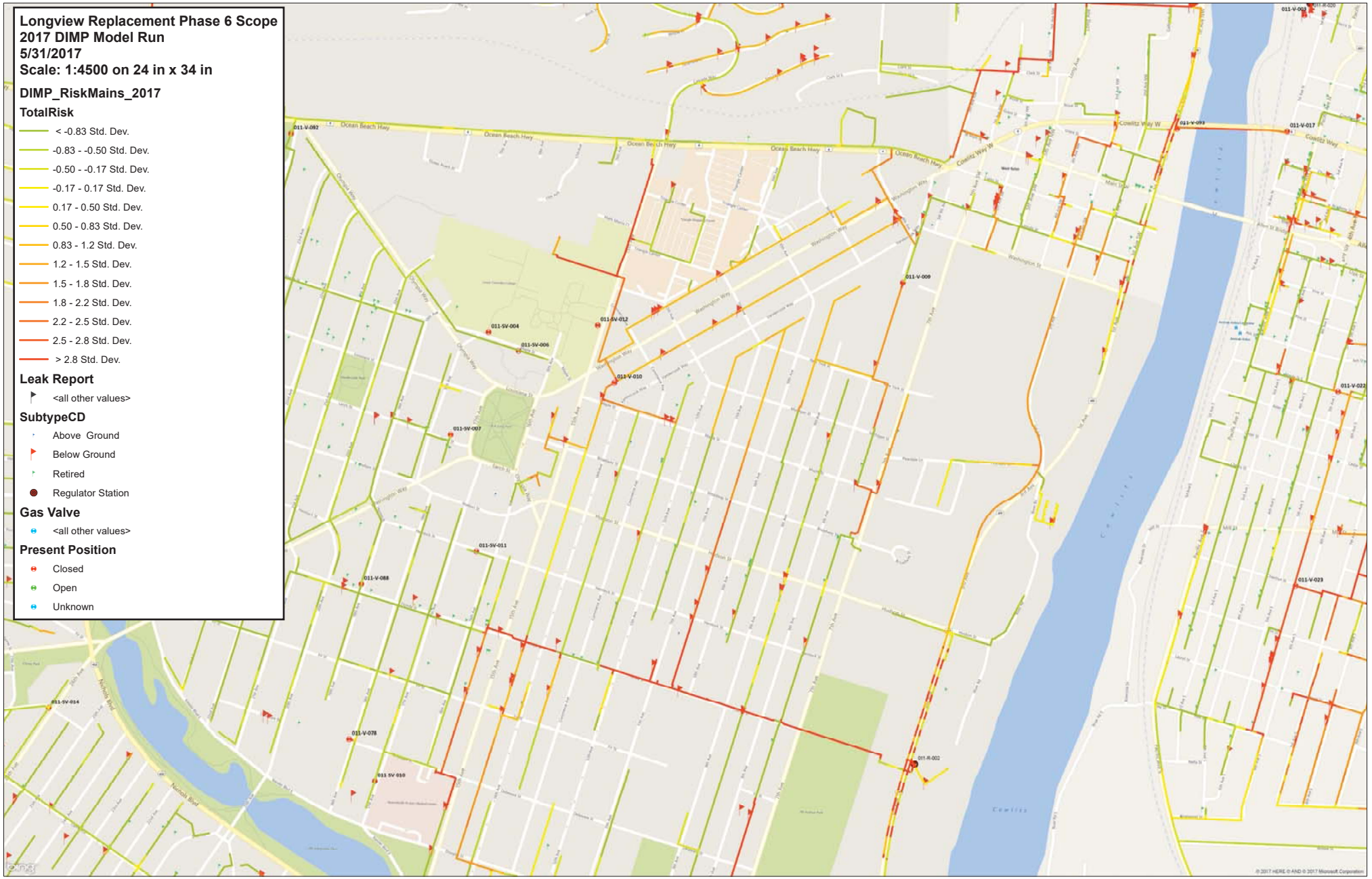
0.3 0 0.14 0.3
Miles

WGS_1984_Web_Mercator_Auxiliary_Sphere

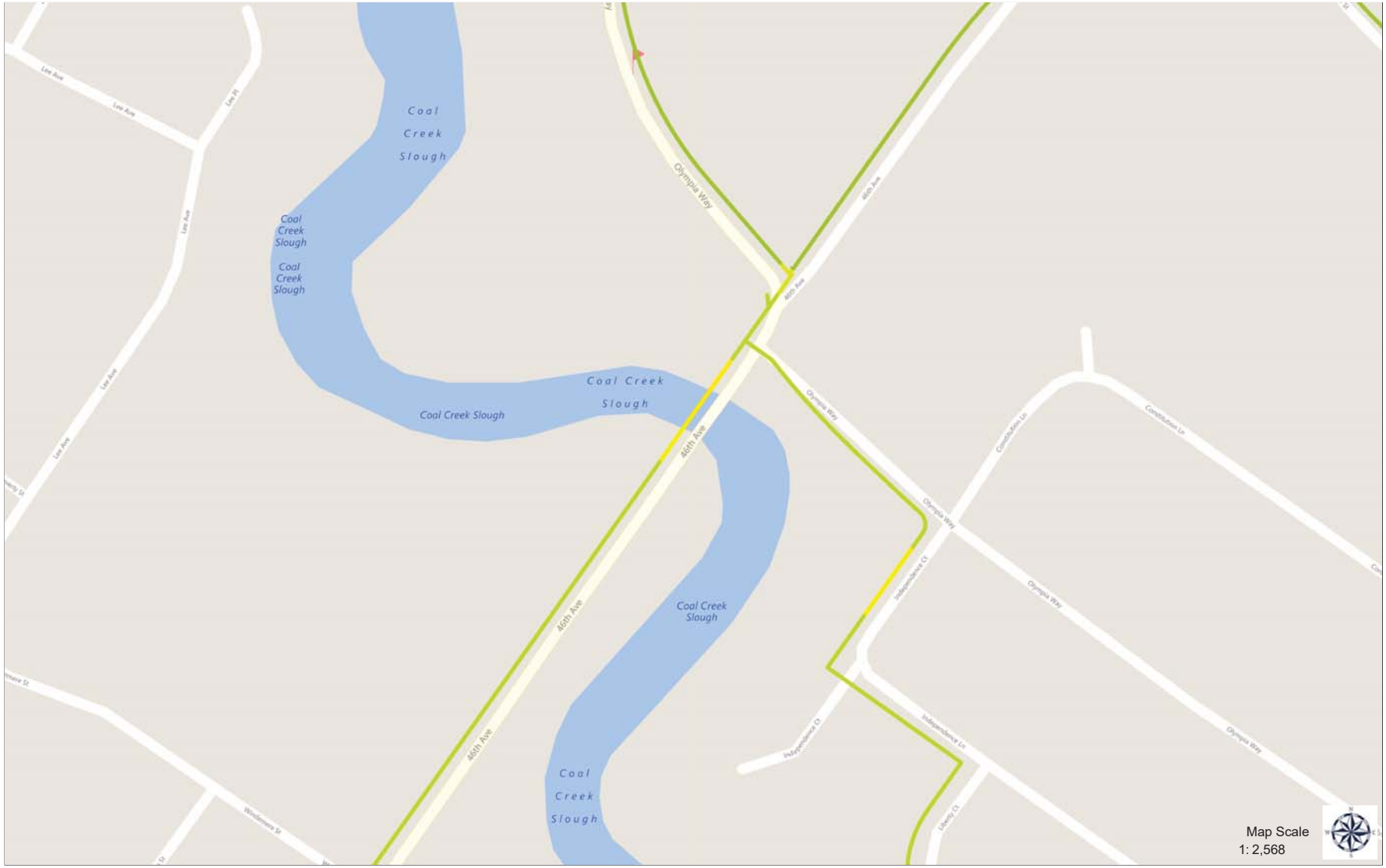
This map is a user generated static output from the GIS Web Viewer mapping website and is for reference only. It is not to be relied upon for construction purposes. It is provided for planning purposes only.

FIELD LOCATES ARE REQUIRED FOR LOCATION OF UTILITY FACILITIES

Notes:


Longview Replacement Phase 6 Scope
2017 DIMP Model Run
5/31/2017
Scale: 1:4500 on 24 in x 34 in
DIMP_RiskMains_2017
TotalRisk
< -0.83 Std. Dev.
-0.83 - -0.50 Std. Dev.
-0.50 - -0.17 Std. Dev.
-0.17 - 0.17 Std. Dev.
0.17 - 0.50 Std. Dev.
0.50 - 0.83 Std. Dev.
0.83 - 1.2 Std. Dev.
1.2 - 1.5 Std. Dev.
1.5 - 1.8 Std. Dev.
1.8 - 2.2 Std. Dev.
2.2 - 2.5 Std. Dev.
2.5 - 2.8 Std. Dev.
> 2.8 Std. Dev.
Leak Report
<all other values>
SubtypeCD
Above Ground
Below Ground
Retired
Regulator Station
Gas Valve
<all other values>
Present Position
Closed
Open
Unknown
Ocean Beach Hwy
Cowlitz Way W
Washington Way
Nichols Blvd
011-V-092
011-V-093
011-V-017
011-V-009
011-SV-004
011-SV-006
011-SV-012
011-V-010
011-SV-007
011-SV-011
011-V-088
011-SV-014
011-V-078
011 SV 010
011-V-022
011-V-023
001-R-002
Cowlitz

2" STL IP COAL CR SLOUGH REPLACEMENT



Map Legend

Risk Mains 2017
- < -0.83 Std. Dev.
- -0.83 - -0.50 Std. Dev.
- -0.50 - -0.17 Std. Dev.
- -0.17 - 0.17 Std. Dev.
- 0.17 - 0.50 Std. Dev.
- 0.50 - 0.83 Std. Dev.
- 0.83 - 1.2 Std. Dev.
- 1.2 - 1.5 Std. Dev.
- 1.5 - 1.8 Std. Dev.
- 1.8 - 2.2 Std. Dev.
- 2.2 - 2.5 Std. Dev.
- 2.5 - 2.8 Std. Dev.
- > 2.8 Std. Dev.

Risk Mains 2017 PRECNG

Odorizer

Leak Report
- <all other values>
- Above Ground
- Below Ground
- Retired

Regulator Station

Gas Valve
- Closed
- Open
- Unknown

Gas Pipe Casing

Transmission Main

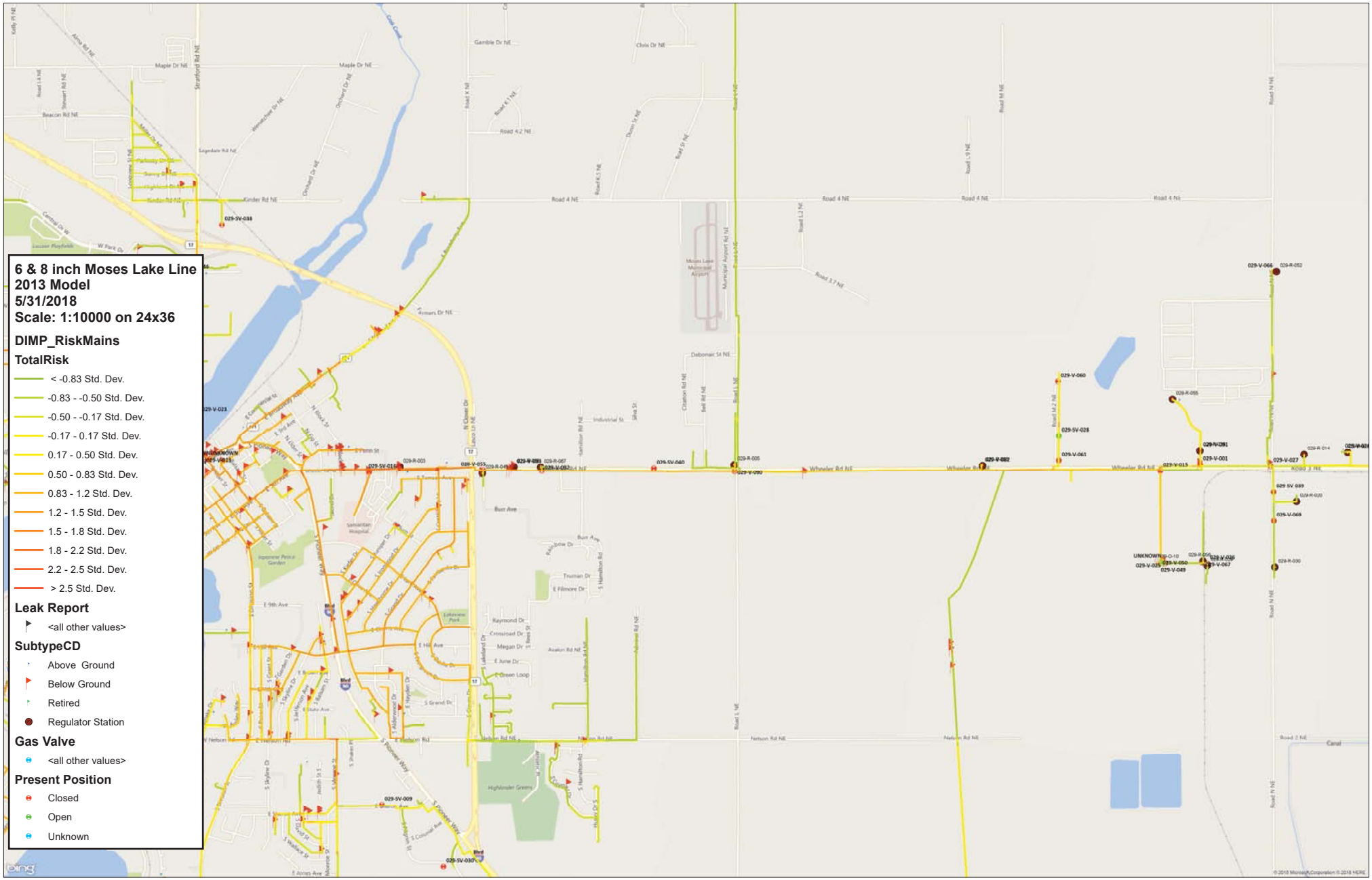
0.1 0 0.04 0.1
Miles

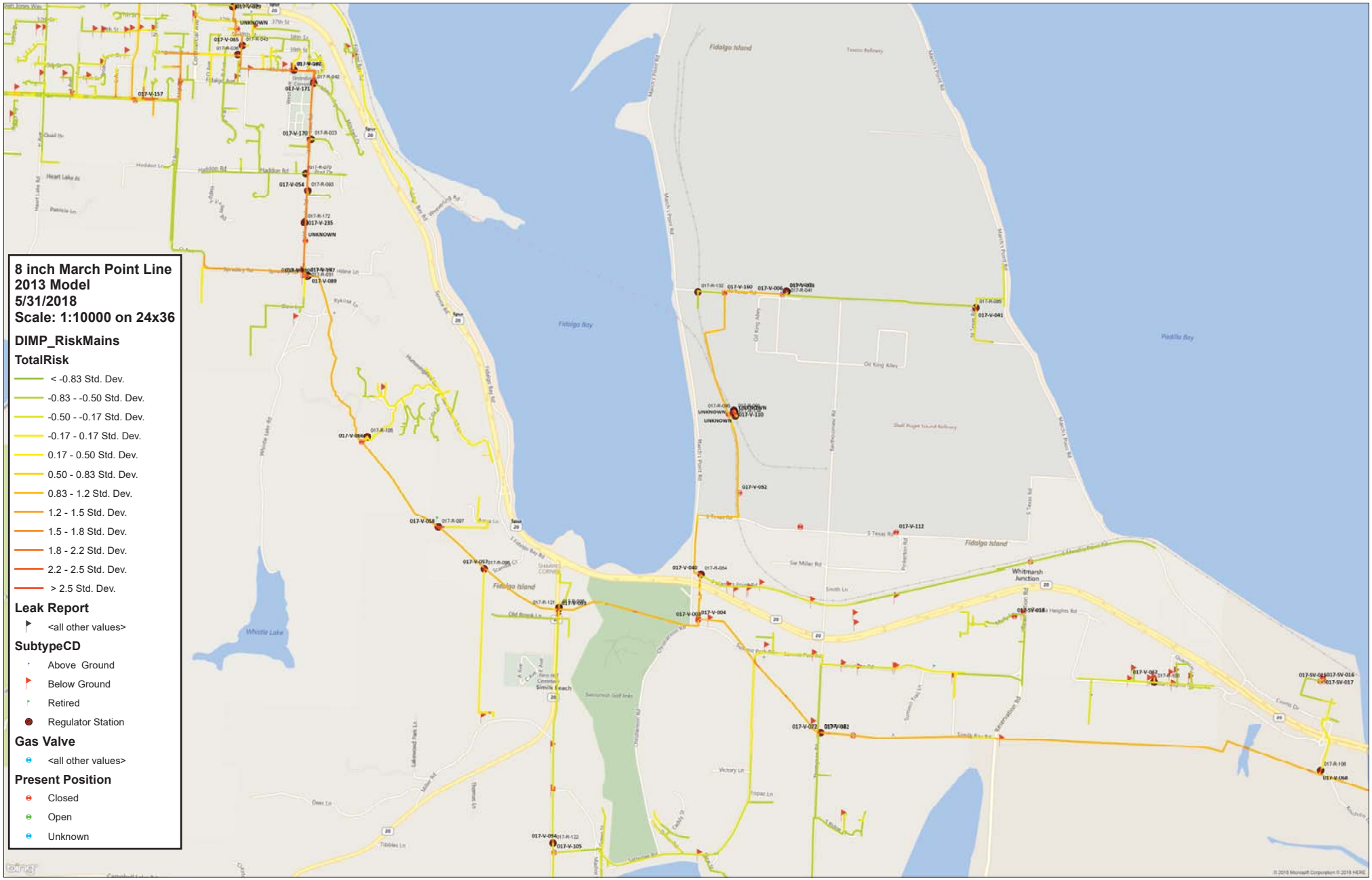
WGS_1984_Web_Mercator_Auxiliary_Sphere

This map is a user generated static output from the GIS Web Viewer mapping website and is for reference only. It is not to be relied upon for construction purposes. It is provided for planning purposes only.

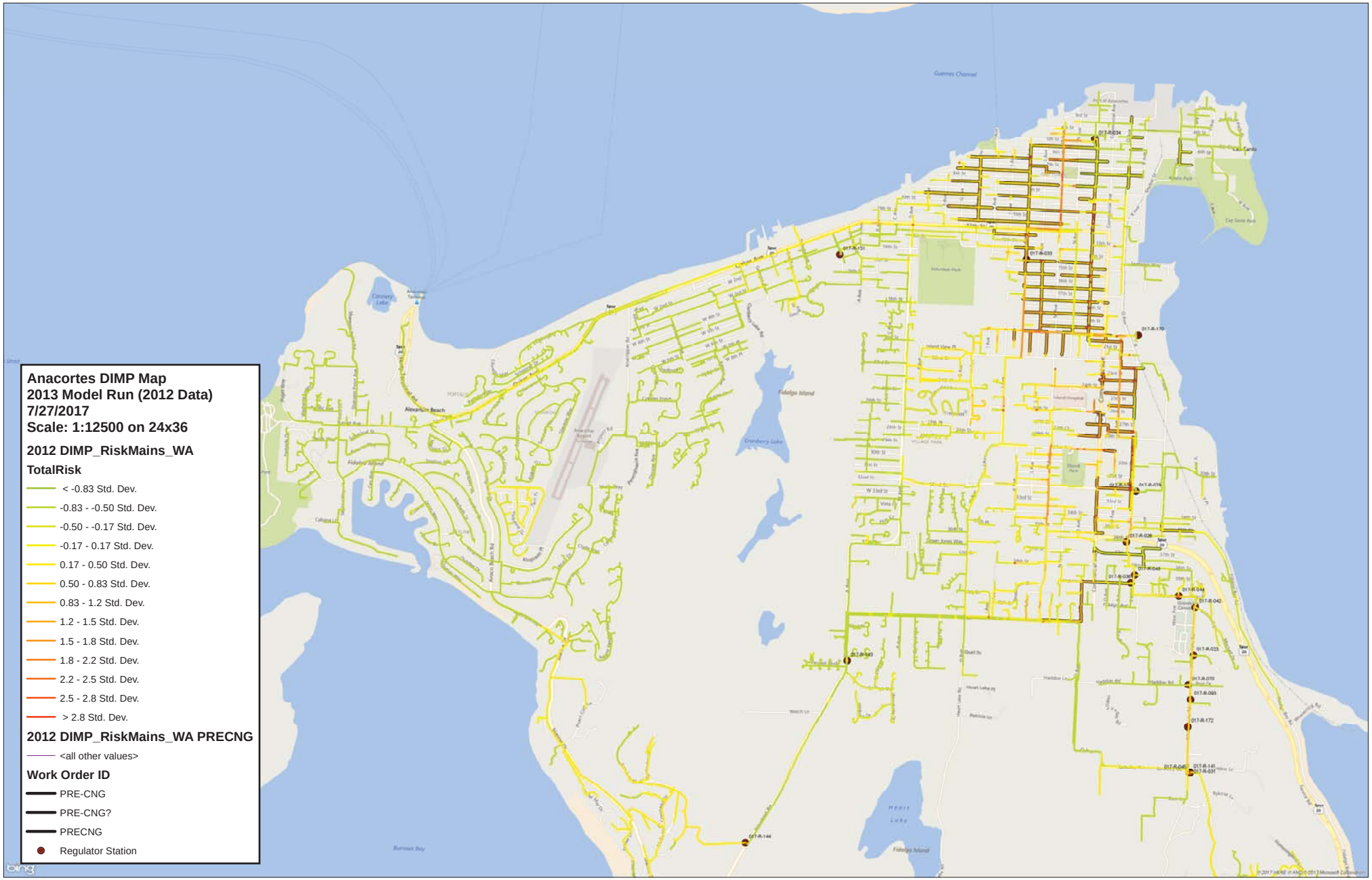
FIELD LOCATES ARE REQUIRED FOR LOCATION OF UTILITY FACILITIES

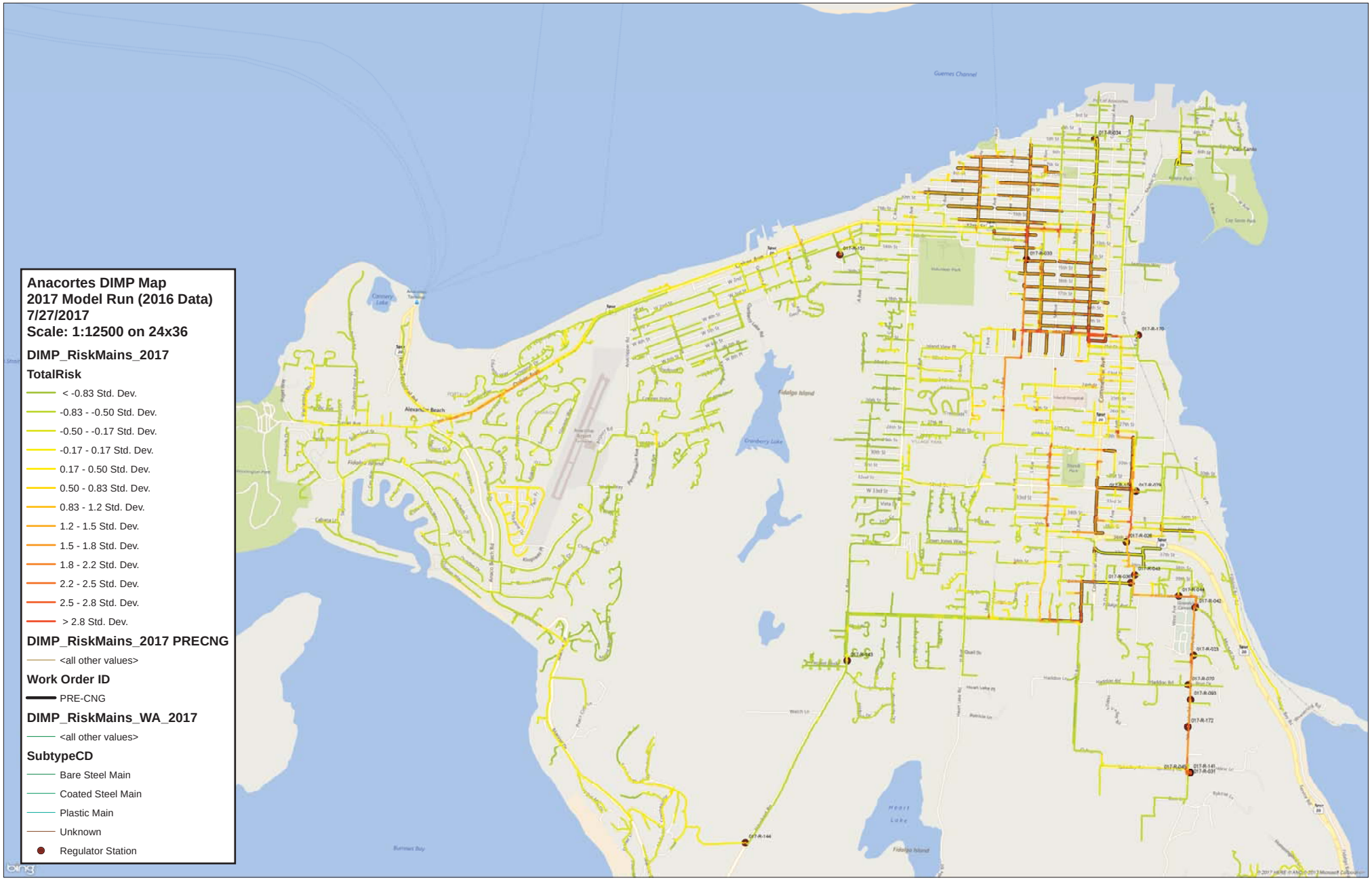
Notes:

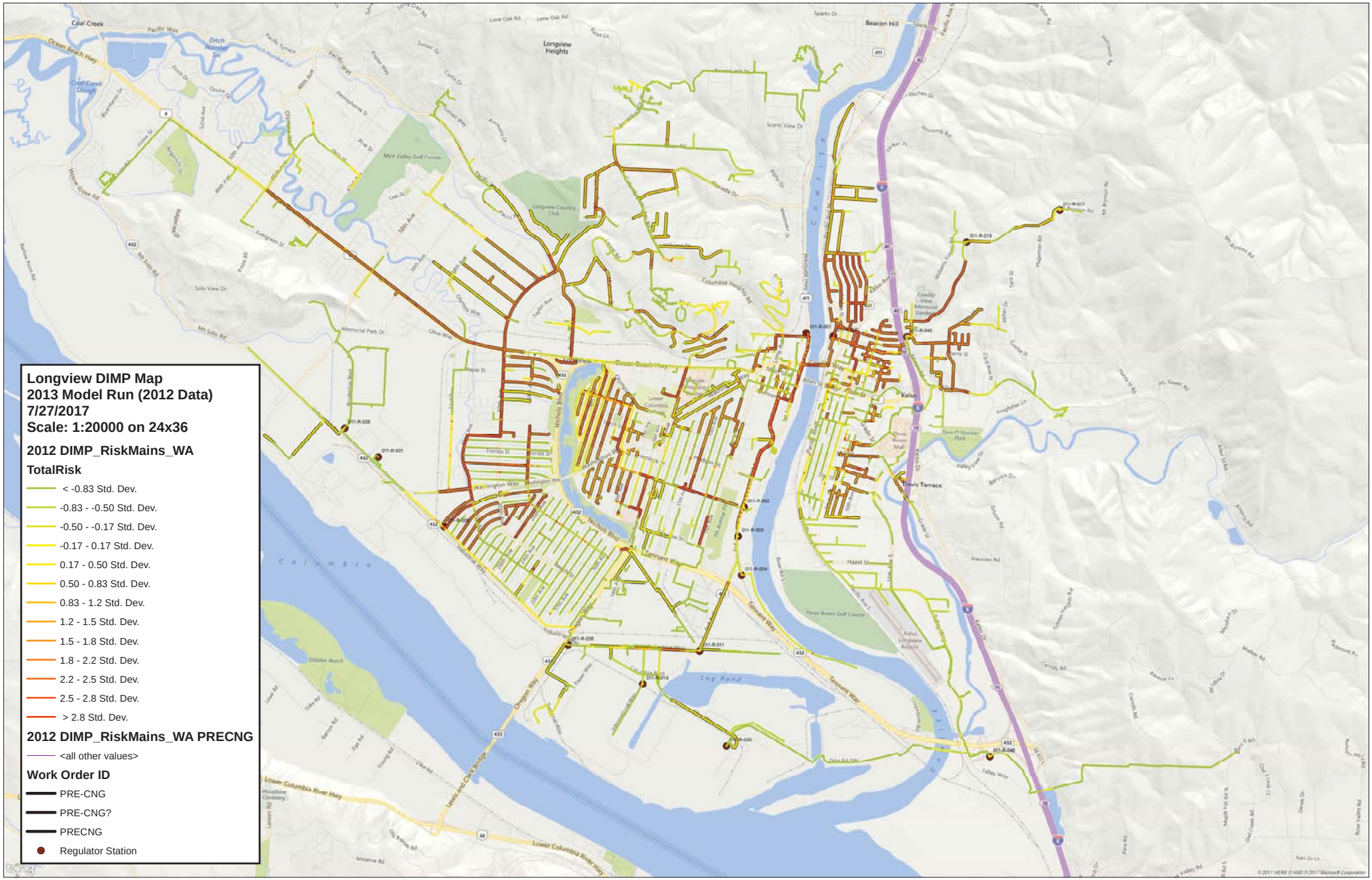

6 & 8 inch Moses Lake Line
2013 Model
5/31/2018
Scale: 1:10000 on 24x36
DIMP_RiskMains
TotalRisk
< -0.83 Std. Dev.
-0.83 - -0.50 Std. Dev.
-0.50 - -0.17 Std. Dev.
-0.17 - 0.17 Std. Dev.
0.17 - 0.50 Std. Dev.
0.50 - 0.83 Std. Dev.
0.83 - 1.2 Std. Dev.
1.2 - 1.5 Std. Dev.
1.5 - 1.8 Std. Dev.
1.8 - 2.2 Std. Dev.
2.2 - 2.5 Std. Dev.
> 2.5 Std. Dev.
Leak Report
<all other values>
SubtypeCD
Above Ground
Below Ground
Retired
Regulator Station
Gas Valve
<all other values>
Present Position
Closed
Open
Unknown

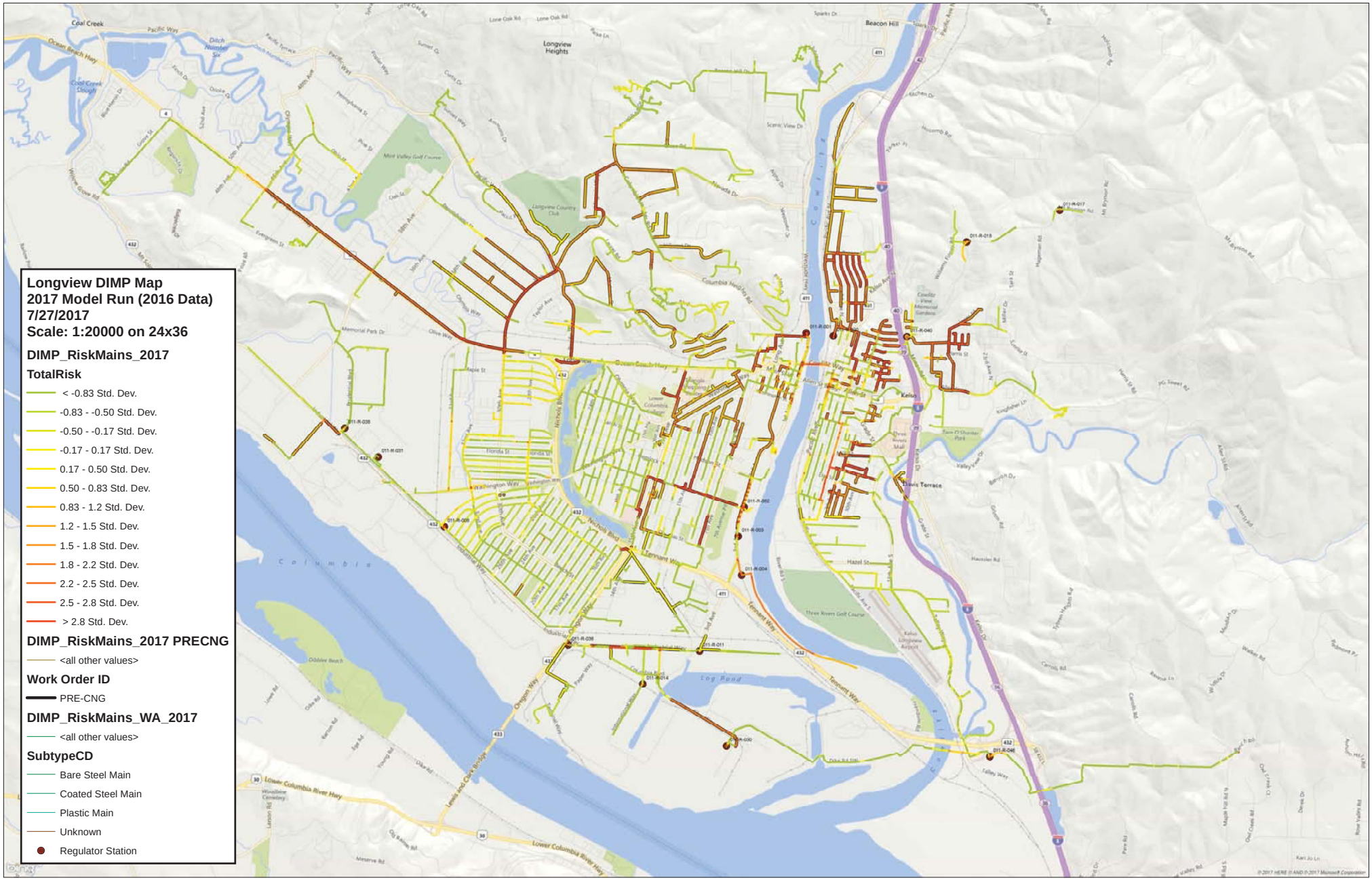

8 inch March Point Line
2013 Model
5/31/2018
Scale: 1:10000 on 24x36
DIMP_RiskMains
TotalRisk
< -0.83 Std. Dev.
-0.83 - -0.50 Std. Dev.
-0.50 - -0.17 Std. Dev.
-0.17 - 0.17 Std. Dev.
0.17 - 0.50 Std. Dev.
0.50 - 0.83 Std. Dev.
0.83 - 1.2 Std. Dev.
1.2 - 1.5 Std. Dev.
1.5 - 1.8 Std. Dev.
1.8 - 2.2 Std. Dev.
2.2 - 2.5 Std. Dev.
> 2.5 Std. Dev.
Leak Report
<all other values>
SubtypeCD
Above Ground
Below Ground
Retired
Regulator Station
Gas Valve
<all other values>
Present Position
Closed
Open
Unknown
Fidalgo Island
Fidalgo Bay
Padilla Bay
Whitmarsh Junction
Whistle Lake

APPENDIX B
ANACORTES & LONGVIEW DIMP MODEL OUTPUT


Anacortes DIMP Map
2013 Model Run (2012 Data)
7/27/2017
Scale: 1:12500 on 24x36
2012 DIMP_RiskMains_WA
TotalRisk
< -0.83 Std. Dev.
-0.83 - -0.50 Std. Dev.
-0.50 - -0.17 Std. Dev.
-0.17 - 0.17 Std. Dev.
0.17 - 0.50 Std. Dev.
0.50 - 0.83 Std. Dev.
0.83 - 1.2 Std. Dev.
1.2 - 1.5 Std. Dev.
1.5 - 1.8 Std. Dev.
1.8 - 2.2 Std. Dev.
2.2 - 2.5 Std. Dev.
2.5 - 2.8 Std. Dev.
> 2.8 Std. Dev.
2012 DIMP_RiskMains_WA PRECNG
<all other values>
Work Order ID
PRE-CNG
PRE-CNG?
PRECNG
Regulator Station


Anacortes DIMP Map
2017 Model Run (2016 Data)
7/27/2017
Scale: 1:12500 on 24x36
DIMP_RiskMains_2017
TotalRisk
< -0.83 Std. Dev.
-0.83 - -0.50 Std. Dev.
-0.50 - -0.17 Std. Dev.
-0.17 - 0.17 Std. Dev.
0.17 - 0.50 Std. Dev.
0.50 - 0.83 Std. Dev.
0.83 - 1.2 Std. Dev.
1.2 - 1.5 Std. Dev.
1.5 - 1.8 Std. Dev.
1.8 - 2.2 Std. Dev.
2.2 - 2.5 Std. Dev.
2.5 - 2.8 Std. Dev.
> 2.8 Std. Dev.
DIMP_RiskMains_2017 PRECNG
<all other values>
Work Order ID
PRE-CNG
DIMP_RiskMains_WA_2017
<all other values>
SubtypeCD
Bare Steel Main
Coated Steel Main
Plastic Main
Unknown
Regulator Station


Longview DIMP Map
2013 Model Run (2012 Data)
7/27/2017
Scale: 1:20000 on 24x36
2012 DIMP_RiskMains_WA
TotalRisk
< -0.83 Std. Dev.
-0.83 - -0.50 Std. Dev.
-0.50 - -0.17 Std. Dev.
-0.17 - 0.17 Std. Dev.
0.17 - 0.50 Std. Dev.
0.50 - 0.83 Std. Dev.
0.83 - 1.2 Std. Dev.
1.2 - 1.5 Std. Dev.
1.5 - 1.8 Std. Dev.
1.8 - 2.2 Std. Dev.
2.2 - 2.5 Std. Dev.
2.5 - 2.8 Std. Dev.
> 2.8 Std. Dev.
2012 DIMP_RiskMains_WA PRECNG
<all other values>
Work Order ID
PRE-CNG
PRE-CNG?
PRECNG
Regulator Station


Longview DIMP Map
2017 Model Run (2016 Data)
7/27/2017
Scale: 1:20000 on 24x36
DIMP_RiskMains_2017
TotalRisk
< -0.83 Std. Dev.
-0.83 - -0.50 Std. Dev.
-0.50 - -0.17 Std. Dev.
-0.17 - 0.17 Std. Dev.
0.17 - 0.50 Std. Dev.
0.50 - 0.83 Std. Dev.
0.83 - 1.2 Std. Dev.
1.2 - 1.5 Std. Dev.
1.5 - 1.8 Std. Dev.
1.8 - 2.2 Std. Dev.
2.2 - 2.5 Std. Dev.
2.5 - 2.8 Std. Dev.
> 2.8 Std. Dev.
DIMP_RiskMains_2017 PRECNG
<all other values>
Work Order ID
PRE-CNG
DIMP_RiskMains_WA_2017
<all other values>
SubtypeCD
Bare Steel Main
Coated Steel Main
Plastic Main
Unknown
Regulator Station

APPENDIX C
PREVIOUS TWO-YEAR PLAN SUMMARY

NOVEMBER 1, 2014 – OCTOBER 31, 2015

CRM ELIGIBLE	PROJECT	DISTRICT	PROJECT DESCRIPTION	IN-SERVICE DATE(S)		REPLACED FOOTAGE	NEW FOOTAGE		REPLACED FOOTAGE	NEW FOOTAGE
YES	CRM RPL ANACORTES BARE STEEL	MT. VERNON	BARE STEEL/PRE-CNG PIPE - IDENTIFIED HIGH (RED) RISK IN DIMP	10/19/2015, 10/20/2015, 9/30/2015	2/4/6" STL	≈ 7,200'	2,314'	2/4" PE	0'	4,874'
YES	CRM RPL LONGVIEW BARE STEEL	LONGVIEW	BARE STEEL/PRE-CNG PIPE - IDENTIFIED HIGH (RED) RISK IN DIMP	10/12/2015, 8/5/2015	2" STL	≈ 12,960'	0'	2" PE	0'	12,959'
YES	CRM DAKOTA CREEK BRIDGE RELOCATE	BELLINGHAM	EXPOSED PIPE SUSCEPTIBLE TO CORROSION RISK - MODERATE (ORANGE)	218481	4" STL	1,567'	1,605'	--	--	--
YES	CRM SUNNYSIDE 2" IP MAIN RPL	YAKIMA	PROJECT WILL REPLACE HOUSE PIPING SERVING MULTIPLE BUILDINGS	Carried over to November 1, 2015 – October 31, 2016 due to timing and coordination with customers.						
YES	CRM KELSO MILL STREET REPLACEMENT	LONGVIEW	BARE STEEL/PRE-CNG PIPE - IDENTIFIED HIGH (RED) RISK IN DIMP	Carried over to November 1, 2015 – October 31, 2016 due to timing and permitting delays.						
YES	CRM BREMERTON HWY 3 CASING REMOVAL	BREMERTON	PIPE IN CASING – MODERATE (ORANGE) RISK IN DIMP	9/9/2015	8" STL	407'	238'	--	--	--
YES	CRM COLLEGE PLACE CARS PROJECT	WALLA WALLA	MODERATE (ORANGE) RISK IN DIMP	9/25/2015	2/4" STL	≈ 7,700'	7,694'	2" PE	0'	88'
YES	CRM RP; 4" HP MAIN, LA CONNER	MT. VERNON	EXPOSED PIPE (CORROSION) IN ADDITION TO MODERATE (ORANGE) RISK IN DIMP	2/6/2015	4" STL	316'	327'	--	--	--
YES	CRM 8" BELLINGHAM LINE #1	BELLINGHAM	PRE-CNG PIPE – IDENTIFIED MODERATE (ORANGE) RISK IN DIMP	1/21/2015	8" STL	8'	8'	--	--	--
YES	CRM 8" STL BORE, BURLINGTON	MT. VERNON	PRE-CNG PIPE – IDENTIFIED HIGH (RED) RISK IN DIMP	12/18/2014	8" STL	926'	928'	--	--	--

NOVEMBER 1, 2015 – OCTOBER 31, 2016

CRM ELIGIBLE	PROJECT	DISTRICT	PROJECT DESCRIPTION	IN-SERVICE DATE(S)		REPLACED FOOTAGE	NEW FOOTAGE		REPLACED FOOTAGE	NEW FOOTAGE
YES	CRM RPL ANACORTES BARE STEEL	MT. VERNON	BARE STEEL/PRE-CNG PIPE - IDENTIFIED HIGH (RED) RISK IN DIMP	12/16/2015, 12/22/2015, 1/11/2016	2” STL	≈ 8,000’	0’	2” PE	0’	8,099’
YES	CRM RPL LONGVIEW BARE STEEL	LONGVIEW	BARE STEEL/PRE-CNG PIPE - IDENTIFIED HIGH (RED) RISK IN DIMP	1/26/2016, 6/6/2016, 9/14/2016, 9/30/2016, 10/22/2016	2/4/8” STL	≈ 44,600’	11,133’	2/6/8” PE	0’	33,508’
YES	CRM VANCE CREEK EXPOSURE REPLACE	ABERDEEN	EXPOSED PIPE (CORROSION) IN ADDITION TO MODERATE (ORANGE) RISK IN DIMP	Carried over to November 1, 2016 – October 31, 2017 plan due to timing and permitting delays.						
YES	CRM CAMP CREEK EXPOSURE REPLACEMENT	ABERDEEN	EXPOSED PIPE (CORROSION) IN ADDITION TO MODERATE (ORANGE) RISK IN DIMP	Carried over to November 1, 2016 – October 31, 2017 plan due to timing and permitting delays.						
YES	CRM 3" BURLINGTON HP LINE REPL	MT. VERNON	PRE-CNG PIPE - IDENTIFIED HIGH (RED) RISK IN DIMP	Carried over to November 1, 2016 – October 31, 2017 plan due to timing and permitting delays.						
YES	CRM WENATCHEE RIV RR BRIDGE RPL	WENATCHEE	PRE-CNG PIPE - IDENTIFIED HIGH (RED) RISK IN DIMP	12/8/2015	6” STL	1,447’	1,413’	--	--	--
YES	CRM 4" GRANDVIEW HP LINE #3 RPL	YAKIMA	PRE-CNG PIPE - IDENTIFIED HIGH (RED) RISK IN DIMP	11/20/2015	4” STL	4,736’	4,759’	--	--	--
YES	CRM BELLINGHAM BRIDGE CROSSINGS RMV	BELLINGHAM	PRE-CNG PIPE - IDENTIFIED HIGH (RED) & MODERATE (ORANGE) RISK IN DIMP	Carried over to November 1, 2016 – October 31, 2017 plan.						
YES	CRM KELSO GRADE ST BRIDGE RELOCATE	LONGVIEW	EXPOSED PIPE SUSCEPTIBLE TO CORROSION RISK - MODERATE (ORANGE)	Carried over to November 1, 2016 – October 31, 2017 plan.						
YES	CRM COLLEGE PLACE CARS PROJECT	WALLA WALLA	MODERATE (ORANGE) RISK IN DIMP	6/1/2016	2/4” STL	≈ 3,700’	3,784’	--	--	--
YES	CRM 2 IN STEEL IP BORE BELFAIR PL	KENNEWICK	MODERATE (ORANGE) RISK IN DIMP	Carried over to November 1, 2016 – October 31, 2017 plan due to restrictions from irrigation district on when replacement could occur.						
YES	CRM 6" NOB HILL REPLACEMENT	YAKIMA	IDENTIFIED HIGH (RED) RISK IN DIMP	Carried over to November 1, 2016 – October 31, 2017 plan due to timing.						
YES	CRM KENNEWICK RR CROSS NEAR KAMIAKIN	KENNEWICK	MODERATE (ORANGE) RISK IN DIMP	Carried over to November 1, 2016 – October 31, 2017 plan due to timing.						
YES	CRM SHELTON 4" IP BRIDGE REPLACE	ABERDEEN	EXPOSED PIPE (CORROSION) IN ADDITION TO MODERATE (ORANGE) RISK IN DIMP	3/17/2016	4” STL	163’	285’	--	--	--
YES	CRM SUNNYSIDE 2" IP MAIN RPL	YAKIMA	PROJECT WILL REPLACE HOUSE PIPING SERVING MULTIPLE BUILDINGS	3/4/2016	2” STL	7’	774’	--	--	--
YES	CRM KELSO MILL STREET REPLACEMENT	LONGVIEW	BARE STEEL/PRE-CNG PIPE - IDENTIFIED HIGH (RED) RISK IN DIMP	12/30/2015	2” STL	533’	557’	--	--	--
YES	CRM REL ZILLAH @ MEYERS BRIDGE RD	YAKIMA	HIGH (RED) RISK IN DIMP	7/8/2016	6” STL	≈ 1800’	1839’	--	--	--
YES	CRM 4"HP SHORTED CASING - 1ST & PARK	ABERDEEN	HIGH (RED) RISK IN DIMP	3/11/2016	4” STL	36’	47’	--	--	--

PROJECT CARRIED OVER FROM PREVIOUS YEAR
PROJECT ADDED TO PIPE REPLACEMENT PLAN