August 12, 2014 1191-01

Mr. Tom Middleton
Washington Department of Ecology (TCP/SWRO)
P.O. Box 47775
Olympia, Washington 98504-7775

Subject: **Work Plan for Off-Site Soil and Groundwater Characterization**
Former Battle Ground Plaza Mini-Mart
805 and 809 West Main Street, Battle Ground, Washington
Ecology Cleanup Site ID: 5509; VCP Project No. SW1359

Dear Mr. Middleton:

INTRODUCTION

At the request of The Estate of Irwin Jessen, PNG Environmental, Inc. (PNG) has prepared a Work Plan for characterization of soil and groundwater quality beneath West Main Street adjacent to the above-referenced site (Figure 1). The Work Plan was prepared in response to the Washington Department of Ecology (Ecology) Opinion (Ecology 2014) indicating further characterization of soil and groundwater quality beneath West Main Street was necessary prior to selection of a remedy for the site. Additionally, the Work Plan will provide Ecology with sufficient information regarding underground utilities beneath West Main Street to evaluate their effect, if any, on possible contaminant migration. The characterization activities are being completed concurrent with additional on-site soil removal planned for the summer of 2014. The work plan for the on-site soil removal was previously submitted to Ecology under separate cover (PNG 2014).

BACKGROUND

Site Activities Post Focused Feasibility Study

RSV ENGINEERING, INC.

Several remedial actions were completed in 2009 that involved underground storage tank (UST) decommissioning by removal and petroleum contaminated soil (PCS) excavation (to the extent practicable), followed by site restoration (RSV 2009). In total, 3,715 tons of PCS was removed and disposed under permit to an off-site landfill.

After UST decommissioning and soil removal in 2009, it was determined that gasoline-range total petroleum hydrocarbons (TPH) remained in site soil above Model Toxics Control Act (MTCA) Method A Soil cleanup levels (CULs) for Unrestricted Land Use. In particular, four general areas with gasoline-range TPH concentrations above cleanup levels could not be accessed for excavation due to structural concerns. These general areas included the north excavation wall (principally in vicinity of the removed 10,000-gallon tank adjacent to West Main Street) and in three areas beneath two site buildings. The bulk of residual petroleum impacted soil appeared to generally coincide with a depth interval of between 4 and 12 feet below ground surface (bgs) with the highest

residual concentrations at approximately 8 feet bgs. The 8 foot depth corresponds generally to low seasonal water tables measured at the site.

Consistent with the preceding observations, confirmation soil testing results along the north wall of the excavation did not detect gasoline-range TPH or BTEX (benzene, toluene, ethylbenzene, and total xylenes) at concentrations exceeding MTCA Method A CULs at a depth of four feet bgs with one exception. Laboratory analysis at location Sample -029 detected benzene at a concentration of 0.035 milligrams per kilogram (mg/kg), slightly above the MTCA cleanup level of 0.03 mg/kg. As illustrated on Figure 2, similarly consistent with the general nature of site sampling results, elevated concentrations of TPH as gasoline and benzene were detected at the eight foot depth interval.

Following the 2009 UST decommissioning and PCS removal, RSV completed ten push probe borings (B-1 through B-10) for the purpose of further characterizing the extent of soil impacts remaining in the four above-referenced areas of residual soil contamination. In particular, as part of these investigations, RSV completed one vertical boring (RSV B-7) northeast of the former excavation, and three angle borings (RSV B-8, RSV B-9, and RSV B-10) beneath the sidewalk adjacent to West Main Street (Figure 2).

The RSV investigation determined the extent of contamination immediately adjacent to Sample -029 and the north excavation wall at a depth of four feet bgs. In addition, the lateral extent of soil contamination at a depth of eight feet bgs was determined at RSV B-7 and RSV B-8 located to the northeast of the residual impacts. Excavation soil sampling from the prior soil removal action had already delineated the extent of soil impact to the west. However, the lateral extent of soil impact above MTCA Method A CULs was not determined to the north or northwest at the eight foot depth interval at RSV B-9 or RSV B-10.

SAGA ENVIRONMENTAL AND ENGINEERING, INC.

In October 2011 and February 2012, Saga Environmental and Engineering, Inc. (SE&E) conducted focused in-situ chemical oxidant (ISCO) injection, under permit with Ecology (UIC Site No. 31506 – now closed). The intent of the ISCO injection was to facilitate further mass reduction of residual soil (and groundwater) impacts at the site. The ISCO application was completed in two separate injection events with the second event including concurrent delivery of a slow-release oxygen release compound (ORC) to promote more long-term reduction of residual petroleum hydrocarbon mass. In total, 4,659 pounds of RegenOx and 1,008 pounds of ORC were applied under permit at the site over an array of 107 injection locations. As part of the injection program, 19 locations were injected on-angle beneath West Main Street.

Following completion of these activities, SE&E sampled both soil and groundwater at the site. In particular, SE&E completed twelve push probe borings (B-13 through B-24) for the purpose of evaluating soil quality. The push probe borings were followed by four groundwater monitoring events from selected monitoring wells of the then active monitoring well network. The results of the soil assessment indicated that the oxidant injections produced positive effects with residual concentrations of benzene in soil generally falling below Method A Cleanup Levels. However, TPH as gasoline remained in both soil and groundwater at concentrations above Method A Cleanup Levels at the site. In addition, soil at a depth of eight feet bgs exceeded the Method A Cleanup Level at SE&E angle boring B-23 located to the north of the former excavation area beneath West Main Street (Figure 2).

PNG ENVIRONMENTAL, INC.

Ten groundwater monitoring events have been completed from various monitoring wells from the established well network since the 2009 tank and PCS removal. The most-recent groundwater monitoring event was conducted by PNG in June 2014 with groundwater samples collected from all site monitoring wells.

Only one volatile organic compound (VOC), benzene at MW-14s (0.37 micrograms per liter [ug/L]), was detected above laboratory method reporting limits (MRLs) during the June 2014 monitoring event. This sample, located in close proximity to the former tank pit, was an order of magnitude below the Model Toxics Control Act (MTCA) Method A cleanup level of 5 ug/L. VOCs were not detected at any other location.

TPH as gasoline was detected in groundwater sampled from three site monitoring wells: MW-2, MW-14s, and MW-14i at concentrations of 982 ug/L, 660 ug/L and 101 ug/L, respectively. While the concentrations of TPH as gasoline in groundwater from MW-14s and MW-14i are below the MTCA Method A cleanup level of 800 ug/L, the concentration detected at MW-2 (982 ug/L) slightly exceeds the Method A cleanup level.

Monitoring wells MW-3, MW-4, and MW-12 are located south of and adjacent to the sidewalk along the southern traffic lane of West Main Street (Figure 2). In the ten groundwater sampling events conducted since the 2009 UST decommissioning and contaminated soil removal, gasoline and BTEX have not been detected above laboratory MRLs at MW-3, MW-4, or MW-12. In addition, groundwater monitoring completed since 2006 has established a south to southeasterly flow direction and confirming these well locations are down-gradient from the north wall area. The last four years of groundwater monitoring results suggest the limited residual soil contamination located beneath the sidewalk adjacent to the southern traffic lane of West Main Street (i.e., north wall area) are not acting as a continued source of groundwater contamination to the site.

Contaminants of Interest and of Concern

Petroleum-related constituents have been detected in soils in the areas described above and are considered Contaminants of Interest (COIs). The COIs that have been detected at the site were BTEX, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, isopropylbenzene, naphthalene, N-propylbenzene, gasoline-range hydrocarbons, and diesel-range hydrocarbons (GeoEngineers 2006).

Based on the preceding, the Focused Feasibility Study (FFS) screened soil analytical testing results of the above-referenced COIs to Washington State MTCA Method A Unrestricted Land Use CULs. Of the above, five COIs were determined in the FFS to exceed Method A Unrestricted Land Use CULs and considered contaminants of concern (COCs): BTEX and gasoline-range hydrocarbons.

Benchmark Soil Cleanup Levels

Remedial activities completed at the site to-date have been conducted with the objective of meeting Washington MTCA (Chapter 173-340 of the Washington Administrative Code [WAC]) Method A Cleanup Levels for unrestricted land use. Under Method A, MTCA provides cleanup levels for 25 common hazardous substances and may be used for cleanup actions that are “routine”, involve a limited number of contaminants, involve a limited number of cleanup methods, use cleanup methods that are reliable and proven capable of achieving cleanup standards, and allow adequate safety for protection of human health and the environment.

The Method A target CULs for site soil are summarized as follows:

- Benzene at 0.03 mg/kg.
- Toluene at 7 mg/kg.
- Ethylbenzene at 6 mg/kg.
- Xylenes at 9 mg/kg.
- Gasoline-Range TPH at 30 mg/kg.

Underground Utility Evaluation

The Ecology Opinion (2014) requested a survey of underground utilities beneath West Main Street adjacent to the former Battle Ground Plaza Mini-Mart property to ensure they are not providing a conduit for migration of contamination from the site. As such, underground utilities present at, and adjacent to the north wall of former site excavation (i.e. beneath the sidewalk and southern traffic lane of West Main Street) are described in detail.

ON-SITE UNDERGROUND UTILITIES

During the 2009 soil removal activities, underground utilities traversing the tank decommissioning and soil excavation area were evaluated for related soil quality. In particular, soil Samples -061 and -062 (Figure 2) were collected from immediately beneath both the water line (2.5 foot depth) and natural gas line (3.0 foot depth) traversing the excavation. Neither TPH as gasoline nor BTEX compounds were detected in either of these soil samples above laboratory method reporting limits (MRLs). In addition, soil samples were collected from the north wall of the excavation at depths of four and eight feet bgs during excavation pit restoration activities. Consistent with results across the site, while elevated concentrations of TPH as gasoline and benzene were detected at the eight foot depth, they were not detected above Method A CULs at a four foot depth with one exception. In particular, benzene was detected at Sample -029 at a concentration of 0.035 mg/kg just above the MTCA Method A reference level of 0.03 mg/kg (Figure 2). Since the grade of the former Battle Ground Plaza Mini Mart site is at least one foot below grade of West Main Street (see photograph) observed petroleum contamination from the site is at a depth greater than five feet below the West Main Street surface.

OFF-SITE UNDERGROUND UTILITIES

PNG obtained diagrams from the City of Battle Ground for utilities beneath West Main Street for the purpose of determining utility locations and depths. This utility information is used to evaluate their potential to serve as contaminant migration pathways from the site (attached). Several underground utilities run parallel to the Mini-Mart site on the south side of West Main Street (adjacent to the north wall area). These utilities include both 6-inch and 12-inch water lines, a 15-inch storm line, and various electrical traffic control utilities (traffic loops and switching cable) (Figure 2). The depths of each of these utilities are described as follows:

12-INCH WATER LINE

The 12-inch diameter water line is in the middle east-bound lane on the south side of West Main Street. The water line is at a depth of less than three feet below street grade (map document attached).

6-INCH WATER LINE

The 6-inch water line is located beneath the sidewalk on the south side of West Main Street. According to the City of Battle Ground, the water line is at a depth of less than three feet below sidewalk (sidewalk is approximately 0.5 foot above street grade) (Smart 2010).

15-INCH STORM LINE

The 15-inch diameter storm line is located in the middle east-bound lane on the south side of West Main Street. The storm sewer flow-line runs east to west at depths from 2.3 to 2.8 feet below street grade (map document attached).

VARIOUS UNDERGROUND TRAFFIC CONTROL SIGNAL WIRES

Traffic control loops are located in each of three eastbound traffic lanes of West Main Street. In addition, traffic signal wires are located beneath the southern lane of, and sidewalk adjacent to, West Main Street. According to the City of Battle Ground, these utilities are present at depths of less than three feet below street surface, and are expected to be at depths of 6 to 18 inches (Hall 2014).

SUMMARY OF UNDERGROUND UTILITIES

Based on the preceding, all underground utilities adjacent to the north wall of the former excavation area are shallower than three feet below West Main Street or sidewalk surface grades. In addition, the natural gas and water line traversing the former excavation area are present at depths of less than three feet below grade of the former Mini-Mart property (four feet below West Main Street grade). As such, all utilities in proximity to the former Mini-Mart property are present at depths above elevations at which soil contamination has been detected in the north wall adjacent to West Main Street, and as such, none are considered to have reasonably served as conduits for residual contaminant migration. It does not appear that a soil quality evaluation within underground utility trenches adjacent to the former Battle Ground Mini Mart site is warranted.

SITE CHARACTERIZATION PLAN

As illustrated on Figure 2, the residual area of soil contamination beneath West Main Street was relatively well delineated by prior RSV and SE&E soil investigations. However, since the extent is not completely defined relative to MTCA Method A CULs for unrestricted land use, further delineation will be completed such that a final remedy may be selected per Ecology's Opinion. PNG's investigation efforts will be completed in a phased approach with subsequent phases of work completed if required by Ecology. The results from this phase of work will be used to develop future scopes of work, if warranted, or justify remedy selection for this area in conjunction with additional soil removal and groundwater monitoring activities already planned for the site.

All activities proposed herein will be completed in accordance to applicable PNG standard operating procedures (SOPs) included as Appendix B to the Soil Removal Work Plan (PNG 2014).

Site Characterization Approach

A track-mounted push probe boring drilling rig will be used for the collection of subsurface soil and temporary well point groundwater samples at selected locations in the southern-

most eastbound lane of West Main Street. Specifically, four borings will be installed at an approximate 20 foot spacing in the southern-most lane of West Main Street and adjacent to the area of residual soil impact that measures an approximate 80 lineal feet (Figure 2). An eight-inch diameter concrete core will be removed from the street surface to facilitate access to the subsurface soils. A super-vac (soil pick) will be utilized to vacuum-excavate a minimum of five feet below street level to ensure underground utilities are not present prior to advancing soil boring equipment. Final locations of soil borings will be determined based on the locations of underground utilities as they are determined in the field.

Soil samples will be logged and field screened on a continuous basis by the field geologist. At a minimum, soil samples will be collected at 7, 9, 11, and 13 feet below West Main Street grade (6, 8, 10, and 12 feet below the former Mini-Mart site grade) and from other zones of contamination if observed in the field. Upon reaching final depth at each boring, a temporary well point will be installed and a groundwater sample will be attempted.

All push probe boring locations will be restored to grade in accordance to City of Battle Ground specifications to be determined based on right-of-way (ROW) permitting requirements. These requirements are expected to require completion of drilling at night during times of reduced traffic volume.

If possible, based on underground utility clearance activities, one monitoring well will be installed beneath the sidewalk and adjacent to the area of the historic highest soil impact location for TPH-gasoline (RSV sample no -024, 2,200 mg/kg at eight feet bgs – prior to oxidant injection) and a more-recent relatively high impact location (SE&E B-22 301 mg/kg at eight feet bgs post-oxidant injection) (Figure 2). The monitoring well will be constructed consistent with prior monitoring wells on site (RSV 2009) and include a ten foot pre-pack well consisting of 0.010 slot polyvinyl chloride (PVC) well screen and riser to a total depth of 15 feet bgs. Following installation, the monitoring well will be developed and sampled as part of the overall monitoring well network. In addition, the new monitoring well will be surveyed by a registered land surveyor and tied to the existing well network datum.

The monitoring well will be finished to grade in accordance to City of Battle Ground specifications to be determined based on ROW permitting requirements.

Soil samples will be shipped on ice with chain-of-custody documentation in sealed coolers to Apex Analytical Laboratory (Tigard, Oregon) for analytical testing on a normal turnaround (ten day) basis. Soil samples selected for analysis will be analyzed for gasoline-range TPH by Method NWTPH-G and BETX by U.S. Environmental Protection Agency (EPA) Method 8260b using methanol field preservation (EPA 5035). Groundwater samples will also be analyzed for TPH-G by NW Methods and for BTEX by EPA Method 8260b.

All push probe drilling equipment will be decontaminated prior to, and between, each probed location to prevent cross-contamination. All push probe soil cuttings (approximately 50 gallons) will be containerized in one 55-gallon drum and secured on-site for future disposal. All decontamination water (approximately 50 gallons) will be containerized in one 55-gallon and secured on-site for future disposal. Disposable sampling equipment will be disposed as solid waste.

Technical Memorandum

Following receipt of laboratory analyses, PNG will prepare a technical memorandum summarizing the findings of the investigation activities. The memorandum will include a

discussion of field activities and an evaluation of the results. The memorandum will include attachments consisting of analytical data presented in tabular format, figures depicting relationships between the subject property and West Main Street, soil and groundwater sampling locations, and copies of analytical reports and chain-of-custody documentation.

Schedule

Work will be initiated within three weeks following Ecology approval of this Work Plan and receipt of a ROW permit from the City of Battle Ground. PNG will prepare and submit to Ecology a technical memorandum within six weeks following receipt of final laboratory reports.

PNG appreciates this opportunity to present this proposal. If you have any questions, please call (503) 620-2387.

Sincerely,

PNG ENVIRONMENTAL, INC.

Guy Tanz, L.G.
Senior Geologist

Brad Berggren. P.E., L.G., LHG
Vice-President

cc: Ms. Linda Anderson, Representative for the Estate of Irwin Jessen
Mr. Mark Myers, Williams Kastner

Attachments:

Figure 1 – Site Location
Figure 2 – Proposed Boring Locations
Site Photograph
Underground Utility Documentation

REFERENCES

Ecology. 2014 (July 2). *Opinion on Proposed Cleanup*. Washington Department of Ecology.

GeoEngineers. 2006 (September 8). *Focused Feasibility Study (FFS).* GeoEngineers, Inc.

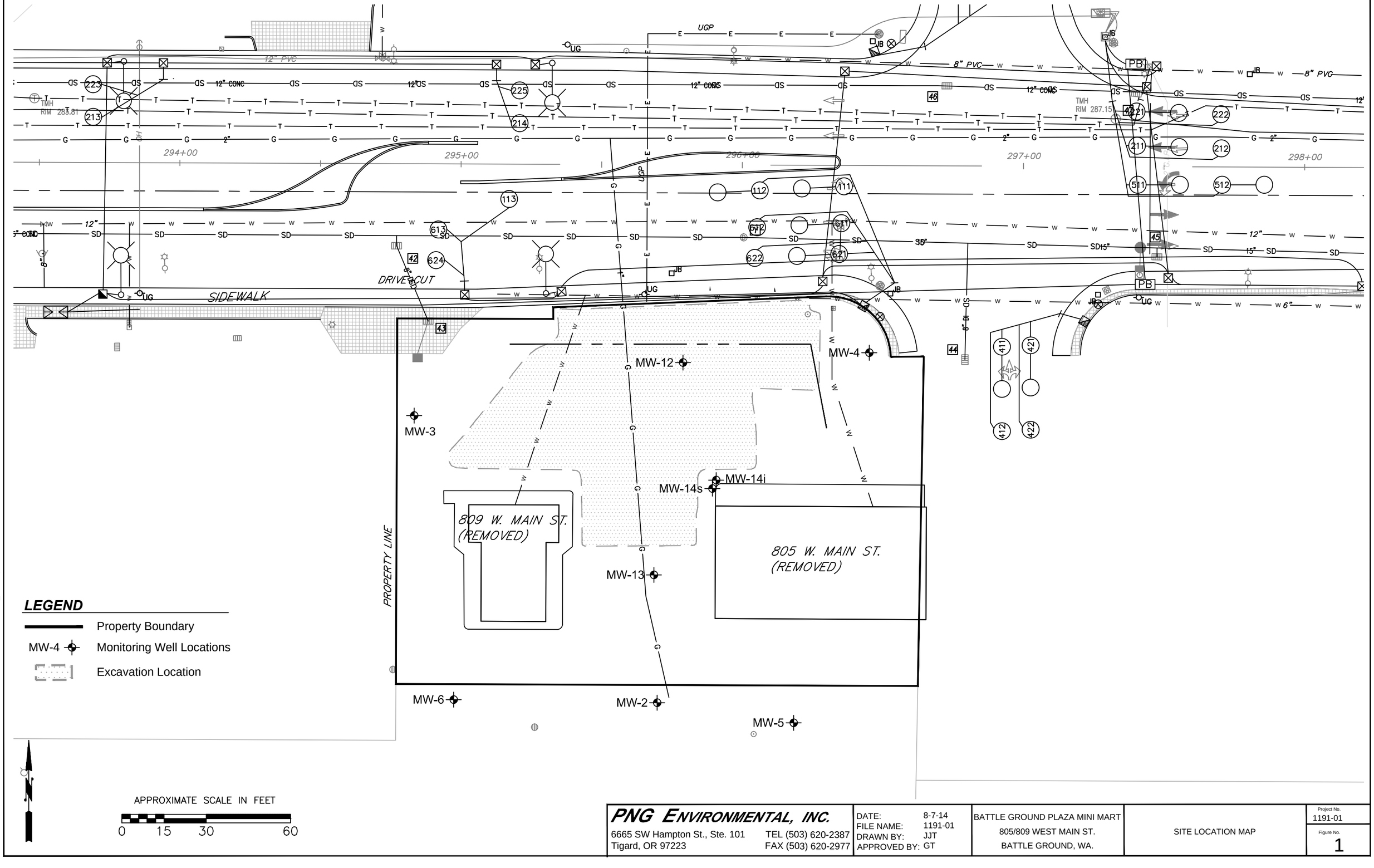
Hall. 2014. Personal Communication between Joan Hall, City of Battleground and Guy Tanz, PNG Environmental, Inc.

RSV. 2009 (November 17). Report on Underground Storage Tank Decommissioning and Soil Removal. RSV Engineering, Inc.

PNG. 2014 (April 1). *Soil Removal Work Plan.* PNG Environmental, Inc.

Smart. 2010. *Personal Communication between Chris Smart, City of Battleground and Guy Tanz,* RSV Engineering, Inc.

FIGURES



LEGEND

- Property Boundary
- MW-4 Monitoring Well Locations
- Excavation Location

APPROXIMATE SCALE IN FEET

0 15 30 60

\\10.1.1.10\aproject\Autocad\PNG-AutoCAD\1191-01 BG Plaza Mini Mart\1191-01_BM.dwg 2.17.2014

PNG ENVIRONMENTAL, INC.
6665 SW Hampton St., Ste. 101
Tigard, OR 97223
TEL (503) 620-2387
FAX (503) 620-2977

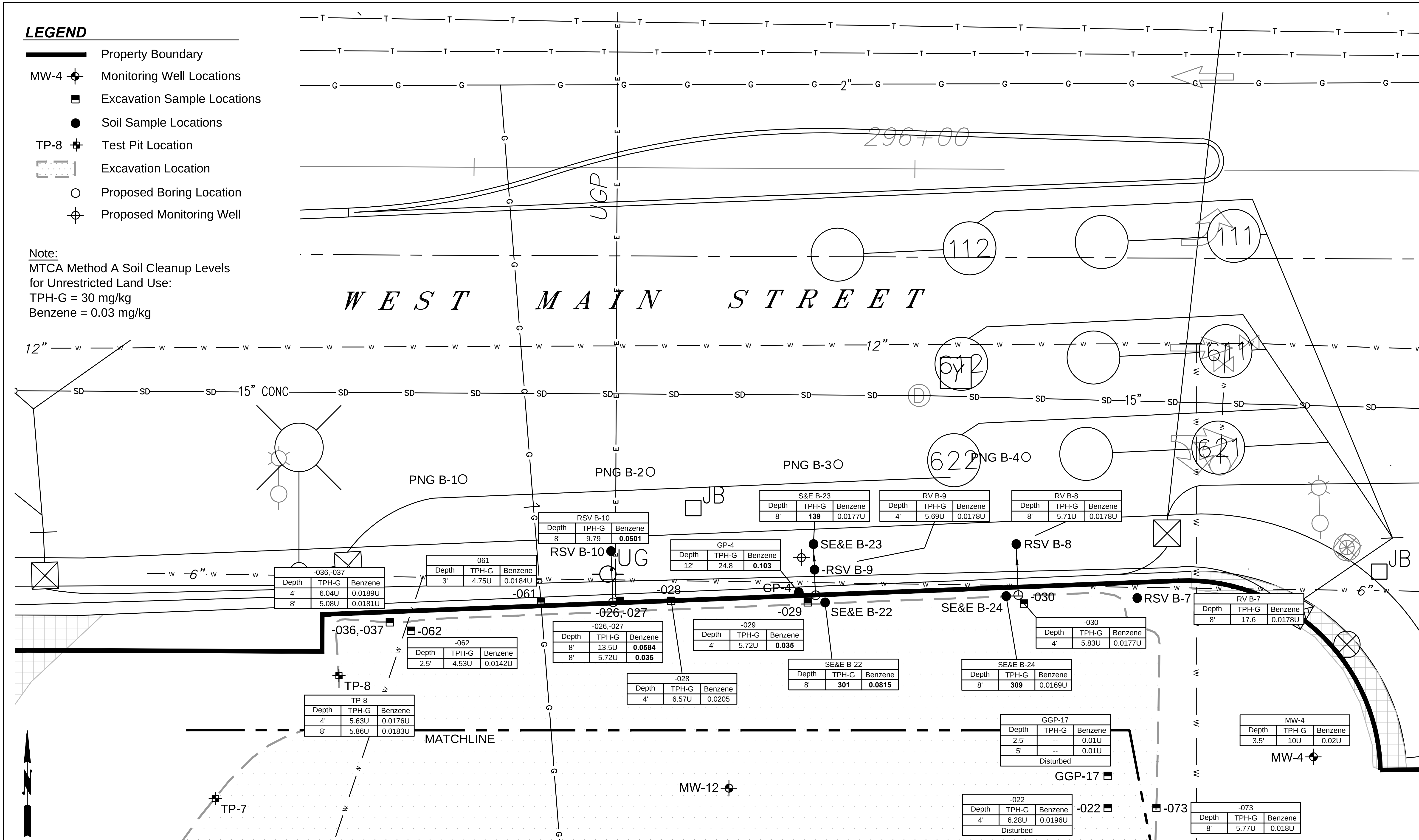
DATE:	8-7-14
FILE NAME:	1191-01
DRAWN BY:	JJT
APPROVED BY:	GT

BATTLE GROUND PLAZA MINI MART
805/809 WEST MAIN ST.
BATTLE GROUND, WA.

SITE LOCATION MAP

Project No. 1191-01

Figure No. 1



S&E B-23

Depth	TPH-G	Benzene
8'	**139**	0.0177U

RV B-9

Depth	TPH-G	Benzene
4'	5.69U	0.0178U

RV B-8

Depth	TPH-G	Benzene
8'	5.71U	0.0178U

RSV B-10

Depth	TPH-G	Benzene
8'	9.79	**0.0501**

GP-4

Depth	TPH-G	Benzene
12'	24.8	**0.103**

-061

Depth	TPH-G	Benzene
3'	4.75U	0.0184U

-036,-037

Depth	TPH-G	Benzene
4'	6.04U	0.0189U
8'	5.08U	0.0181U

-026,-027

Depth	TPH-G	Benzene
8'	13.5U	**0.0584**
8'	5.72U	**0.035**

-029

Depth	TPH-G	Benzene
4'	5.72U	**0.035**

-062

Depth	TPH-G	Benzene
2.5'	4.53U	0.0142U

-028

Depth	TPH-G	Benzene
4'	6.57U	0.0205

S&E B-22

Depth	TPH-G	Benzene
8'	**301**	**0.0815**

SE&E B-24

Depth	TPH-G	Benzene
8'	**309**	0.0169U

-030

Depth	TPH-G	Benzene
4'	5.83U	0.0177U

RV B-7

Depth	TPH-G	Benzene
8'	17.6	0.0178U

TP-8

Depth	TPH-G	Benzene
4'	5.63U	0.0176U
8'	5.86U	0.0183U

GGP-17

Depth	TPH-G	Benzene
2.5'	--	0.01U
5'	--	0.01U
Disturbed		

MW-4

Depth	TPH-G	Benzene
3.5'	10U	0.02U

-022

Depth	TPH-G	Benzene
4'	6.28U	0.0196U
Disturbed		

-073

Depth	TPH-G	Benzene
8'	5.77U	0.018U

PNG ENVIRONMENTAL, INC.
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TEL (503) 620-2387
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DATE: 8-4-14
FILE NAME: 1191-01
DRAWN BY: JJT
APPROVED BY: GT

BATTLE GROUND PLAZA MINI MART
805/809 WEST MAIN ST.
BATTLE GROUND, WA.

PROPOSED BORING LOCATIONS

Project No. 1191-01
Figure No. 2

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ATTACHMENTS


Walgreens
1-HR PHOTO

RSV ENGINEERING, INC.
Engineers • Land Surveyors • Environmental Scientists

Daily Field

1 of 1

Project Number: 000805B.10 phase01	**Day:** S M T W 03/10/10
Project Name: BATTLE GROUND	**Weather / Temperature:**
Address: 805 W/ main	
RSV Personnel on-Site: Guy TANZ	**Contractor:** N/A
	Major Equipment: NA
RSV Lead Signature: Guy TANZ	

Daily Notes

1-360-342-5070
360-342-5077

CYRUS SMART CITY of BATTLEGROUND.

RSV Received a phone call from MS. SMART Re. UNDERGROUND UTILITY LOCATE AND MAP provided by city with respect to utilities that may be under the sidewalk adjacent to south side of west main st. MS. SMART verified a water line was beneath the sidewalk and indicated it would not be expected to be greater than 3' below top of sidewalk since the city would require access to service. To be sure, RSV indicated angle borings would remain 5' below sidewalk.

From: "Joan Hall" <joan.hall@cityofbg.org>
Subject: **RE: RE:**
Date: July 16, 2014 8:27:26 AM PDT
To: "Guy Tanz - PNG" <gtanz@pngenv.com>

Guy-

I couldn't find anything on the plans that show how deep these lines run, but the consensus in the office is that you are correct in assuming they are no more than three feet deep, possibly around 18" deep.

Joan

From: Guy Tanz - PNG [mailto:gtanz@pngenv.com]
Sent: Wednesday, July 16, 2014 8:01 AM
To: Joan Hall
Cc: Mark Herceg
Subject: Re: RE:

Thanks Joan. Although we are also concerned about the loops, I was more referring to the electrical switching that shows up on mapsrunning corner to corner to the lights. Would I be correct to assume those are less than three feet as well?

Thanks again - very much.

Guy

Guy Tanz, R.G., L.G.
Senior Hydrogeologist
PNG Environmental, Inc.
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503.620.2387 (office)
503.853.1295 (cell)
503.620.2977 (fax)

On Jul 15, 2014, at 4:26 PM, Joan Hall wrote:

Guy-

I spoke with Mark regarding this question and if you're talking about the signal loops, they should only be about 5 or 6 inches deep at the most. They don't lay the loops out on plan and profiles so I can't give you a definite number, but that is what they normally are.

Hope that helps.

Joan

From: Guy Tanz - PNG [mailto:gtanz@pngenv.com]
Sent: Tuesday, July 15, 2014 1:12 PM
To: Joan Hall
Cc: Mark Herceg
Subject: Re:

Thanks so very much Joan. I have a quick follow-up question. On the south side of West Main Street adjacent to the former Mini-Mart site, there are various traffic control electrical and switching lines. Does the City have any idea in terms of the relative depths of these particular utilities? My sense is they would be pretty shallow such that they could be serviced in the future (i.e. less than three feet). Can the City advise at least in terms of what the worst-case depth for these various traffic control utilities might be?

Thanks,

Guy

Guy Tanz, R.G., L.G.
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503.620.2977 (fax)

On Jul 10, 2014, at 4:27 PM, Joan Hall wrote:

Good afternoon Guy-

Mark Herceg asked me to try to find some more profile information for you. I hope the attached helps.

Let me know if you need anything else.

Joan Hall | Engineering Department | City of Battle Ground
109 SW 1st St., Suite 122 Battle Ground, WA 98604-2816
Office: 360.342-5073 | **Fax:** 360.342.5057 | www.cityofbg.org

Please note that my e-mail address has changed to joan.hall@cityofbg.com. Please update your records accordingly. Thank you.

<W Main St Cover 2003.pdf><W Main St PP13 2003.pdf><W Main St DO8 2003.pdf><W Main St W12 2003.pdf>

XREF LIST
Ltscale: 1
Resolved
CCW34X22
DDHstampWA
PKW

EXISTING CATCH BASIN AND MANHOLE TABLES

Fed. Aid No.
STPUL-0502 (007)

SHEET PP02

EXISTING CATCHBASIN TABLE

1 CURB INLET
LYNCH STYLE
GRATE= 265.29
IE OUT= 263.1 (8"ADS S)
BOTTOM= 261.4

EXISTING MANHOLE TABLE

A SAN MH
RIM= 266.07
IE OUT= 251.7 (12" NE)

SHEET PP03

EXISTING MANHOLE TABLE

B WATER BLOW OFF MH
RIM= 267.54
TOP OF BLOW OFF ASSEMBLY= 265.61
BOTTOM= 263.0

SHEET PP04

EXISTING CATCHBASIN TABLE

2 CATCHBASIN
GRATE= 269.06
IE OUT= 267.4 (12"CSP W)

3 CATCHBASIN
GRATE= 270.94
IE OUT= 269.2 (12"CSP W)

4 CATCHBASIN
GRATE= 271.01
IE IN= 268.8 (12"ADS E)
IE OUT= 268.7 (12"ADS W)
BOTTOM= 267.2

EXISTING MANHOLE TABLE

C SAN MH
RIM= 272.41
IE IN= 267.9 (8"PVC N)
IE OUT= 266.8 (8"PVC E)

D SAN MH
RIM= 265.3
IE IN= 265.6 (8"PVC W)
IE IN= 265.5 (8"PVC E)
IE OUT= 257.6 (8"PVC S)

SHEET PP05

EXISTING CATCHBASIN TABLE

5 CATCHBASIN
GRATE= 273.05
IE OUT= 270.8 (12"CSP W)

6 CATCHBASIN
GRATE= 273.44
IE IN= 271.2 (12"STEEL E)
IE OUT= 271.2 (12"ADS W)
BOTTOM= 269.7

7 CATCHBASIN
GRATE= 274.57
IE IN= 272.1 (12"ADS E)
IE OUT= 272.0 (12"ADS W)
BOTTOM= 270.4

8 CATCHBASIN
GRATE= 275.76
IE IN= 273.4 (12"ADS E)
IE OUT= 273.4 (12"ADS W)
BOTTOM= 271.9

9 NOT USED

EXISTING MANHOLE TABLE

E SAN MH
RIM= 273.55
IE IN= 266.8 (8"PVC N)
IE OUT= 266.5 (8"PVC W)

SHEET PP06

EXISTING CATCHBASIN TABLE

10 AREA DRAIN
GRATE= 277.42
IE OUT= 275.62 (6" S)

11 AREA DRAIN
GRATE= 277.63
IE OUT= 275.8 (8"CONC S)

12 CATCHBASIN
GRATE= 278.13
IE IN= 275.8 (12"CONC E)
IE IN= 275.6 (6"CONC N)
IE OUT= 275.6 (12"CONC W)

13 AREA DRAIN
GRATE= 277.74
IE OUT= 276.5 (6"CONC E)
IE OUT= 273.4 (12"ADS W)
BOTTOM= 271.9

14 CATCHBASIN
GRATE= 278.38
IE IN= 275.9 (8"PVC N)
IE OUT= 276.0 (10"CONC S)

EXISTING CATCHBASIN TABLE

15 CATCHBASIN
GRATE= 278.65
IE IN= 276.0 (10"CONC N)
IE IN= 275.9 (12"CONC E)
IE OUT= 275.9 (12"CONC W)

16 CATCHBASIN
GRATE= 279.05
IE OUT= 275.8 (12"CONC S)

17 CATCHBASIN
GRATE= 279.05
IE IN= 276.8 (12"CONC E)
IE OUT= 276.7 (12"CONC S)

18 CATCHBASIN
GRATE= 279.26
IE IN= 276.6 (12"CONC E)
IE OUT= 276.6 (12"CONC W)

19 CATCHBASIN
GRATE= 279.73
IE IN= 277.6 (12"CONC E)
IE OUT= 277.6 (12"CONC W)

20 AREA DRAIN
GRATE= 279.57
IE OUT= 278.0 (6"PVC S)

EXISTING MANHOLE TABLE

F SAN MH
RIM= 278.63
IE IN= 267.6 (8"CONC S)
IE IN= 267.5 (8"PVC N)
IE IN= 267.4 (8"CONC W)
IE OUT= 267.5 (8"CONC E)

G STM MH
RIM= 278.70
IE IN= 275.6 (12"ADS NW)
IE OUT= 275.5 (12"ADS S)

H SAN VAULT
COMBINATION AIR VALVE
RIM= 279.3
TOP OF 4"PVC WATER LINE = 278.7 (E)
VAULT FLOOR= 272.57

I NOT USED

SHEET PP07

EXISTING CATCHBASIN TABLE

21 CATCHBASIN
GRATE= 279.91
IE OUT= 278.3 (6"CONC N)

22 CATCHBASIN
GRATE= 280.05
IE IN= 277.9 (12"CONC E)
IE IN= 277.9 (6" ADS N)
IE OUT= 277.9 (12"CONC W)

23 CATCHBASIN
GRATE= 280.5
IE IN= 278.55 (6" ADS N)
IE IN= 278.53 (10"DIP W)
IE OUT= 278.5 (10"DIP E)

EXISTING MANHOLE TABLE

J SAN MH
RIM= 281.86
IE IN= 266.2 (8"CONC S)
IE IN= 266.2 (8"CONC W)
IE OUT= 266.1 (8"CONC E)

SHEET PP08

EXISTING CATCHBASIN TABLE

24 CATCHBASIN
GRATE= 282.63
IE OUT= 280.5 (8"ADS NE)

25 COMBO
GRATE= 282.97
IE IN= 279.5 (8"ADS S)
IE OUT= 279.5 (12"ADS E)

26 COMBO
GRATE= 283.99
IE OUT= 280.9 (12"ADS W)

27 AREA DRAIN
GRATE= 282.62
ABANDONDED?

28 CATCHBASIN
GRATE= 283.09
IE OUT= 281.7 (8"ADS S)

EXISTING MANHOLE TABLE

K PUMP STATION
RIM= 282.1± (DOMED COVER)
IE IN= 264.06 (8"PVC NW)
IE IN= 263.85 (8"PVC S)
FM OUT= ±279 (8"CONC E)

L STM MH - LOCKED

M STM MH - LOCKED

SHEET PP09

EXISTING MANHOLE TABLE

N SAN MH
RIM= 284.05
IE IN= 281.3 (6"DIP N)
IE IN= 281.1 (6"DIP NW)
IE OUT= 280.9 (8"PVC E)

SHEET PP10

EXISTING MANHOLE TABLE

O SAN MH
RIM= 284.15
IE IN= 279.4 (4"CONC S)
IE IN= 279.3 (6"PVC W)
IE IN= 279.2 (8"CONC N)
IE OUT= 279.2 (8"CONC E)

P SAN MH
RIM= 285.57
IE IN= 279.6 (8"PVC W)
IE IN= 279.6 (8"PVC E)
IE OUT= 279.6 (8"PVC SE)

Q SAN MH
RIM= 283.77
IE IN= 280.2 (8"CONC N)
IE OUT= 280.1 (8"CONC W)

R STM MH
RIM= 285.58
IE IN= 278.1 (18"ADS N)
IE OUT= 278.0 (18" SE)

SHEET PP11

EXISTING CATCHBASIN TABLE

29 CURB INLET
LOCKED
GRATE= 284.07

30 CURB INLET
LOCKED
GRATE= 284.16

31 CATCHBASIN (CBH1)
GRATE= 283.68
IE OUT= 280.35 (12"ADS N)
BOTTOM= 279.18

32 AREA DRAIN (CBI1)
GRATE= 282.49
IE OUT= 280.6 (12"ADS N)

33 CATCHBASIN
GRATE= 282.79
IE OUT= 280.8 (12"ADS S)

EXISTING MANHOLE TABLE

S SAN MH
RIM= 284.65
IE IN= 277.2 (6"CONC E)
IE IN= 276.9 (8"CONC W)
IE OUT= 276.9 (8"CONC S)

T SAN MH
RIM= 284.10
IE IN= 273.02 (6" W)
IE IN= 272.19 (24" N)
IE OUT= 272.39 (24"S)

SHEET PP12

EXISTING CATCHBASIN TABLE

34 CATCHBASIN
GRATE= 282.17
IE OUT= 280.2 (12"ADS SW)

35 CATCHBASIN
GRATE= 282.65
IE OUT= 280.7 (12"ADS NW)

36 CATCHBASIN
GRATE= 283.03
IE IN= 279.9 (12"ADS NE)
IE OUT= 279.7 (12"ADS S)

37 CATCHBASIN
GRATE= 283.54
IE OUT= 280.3 (12"ADS SW)

38 CATCHBASIN
GRATE= 282.71
IE OUT= 281.0 (8"DI N)

39 CATCHBASIN (OUTLET)
GRATE= 283.16
FILLED WITH WATER
IE IN= 278.9± (SE)
IE OUT= 278.8± (N)

40 CATCHBASIN
GRATE= 283.03
IE IN= 279.4 (12"CONC E)
IE OUT= 279.2 (18"CONC NW)

41 CATCHBASIN
GRATE= 283.14
IE IN= 279.8 (10"CONC N)
IE IN= 279.7 (12"CONC E)
IE OUT= 279.6 (12"CONC NW)

EXISTING MANHOLE TABLE

U STM MH
RIM= 282.23
IE IN= 275.7 (18"CMP E)
IE IN= 275.7 (42"CONC N)
IE OUT= 275.7 (42"CONC S)

V STM MH
RIM= 283.32
IE IN= 278.9 (12"CONC S)
IE IN= 278.9 (18"CONC NE)
IE OUT= 278.8 (18"CMP W)

W STM MH (MHL3)
RIM= 283.92
IE IN= 279.2 (15"CONC E)
IE OUT= 279.1 (18"CMP SW)

X SAN MH
RIM= 284.00
IE IN= 274.5 (8"CONC E)
IE IN= 274.4 (10"CONC N)
IE IN= 274.4 (10"CONC NE)
IE OUT= 274.3 (10"CONC S)

SHEET PP13

EXISTING CATCHBASIN TABLE

42 CATCHBASIN
GRATE= 284.97
IE IN= 282.2 (8"DI SW)
IE OUT= 282.1 (8"DI N)

43 CATCHBASIN
GRATE= 283.44
IE OUT= 282.2 (8"DI NW)

44 CATCHBASIN (CBL6)
GRATE= 285.86
IE OUT= 283.8 (8"DI N)

45 CATCHBASIN
GRATE= 287.21
IE OUT= 284.9 (8"DI N)

46 CATCHBASIN
GRATE= 286.25
IE IN= 283.4 (12"CONC E)
IE OUT= 283.3 (12"CONC W)

47 CATCHBASIN (CBK3)
GRATE= 287.09
IE IN= 283.6 (12"CONC E)
IE OUT= 283.7 (12"CONC W)

48 CATCHBASIN (CBK4)
GRATE= 288.89
IE IN= 284.9 (8"PVC N)
IE IN= 284.8 (12"CONC E)
IE OUT= 284.5 (12"CONC W)

EXISTING MANHOLE TABLE

Y STM MH (MHL4)
RIM= 286.04
IE IN= 281.2 (15"CONC E)
IE OUT= 281.1 (15"CONC W)

Z STM MH (MHL6)
RIM= 288.40
IE IN= 283.2 (8"ADS S)
IE IN= 282.6 (15"CONC E)
IE OUT= 282.5 (15"CONC W)

SHEET PP21

EXISTING CATCHBASIN TABLE

SEE SHEET PP12 TABLE

EXISTING MANHOLE TABLE

SEE SHEET PP12 TABLE

SHEET PP22

EXISTING CATCHBASIN TABLE

SEE SHEET PP12 TABLE

EXISTING MANHOLE TABLE

SEE SHEET PP12 TABLE

DESIGNED PKW
DRAWN DKH
HOR. N/A
VERT. N/A
DATE 3/21/2003
DWG: D08
SHEET 25 OF 139

CALL 48 HOURS BEFORE YOU DIG
1-800-553-4344
"It's the Law"
CLARK COUNTY UNDERGROUND UTILITIES COORDINATING COUNCIL

CITY OF BATTLE GROUND
WEST MAIN STREET (SR 502)

EXISTING CATCH BASINS & MANHOLE TABLES

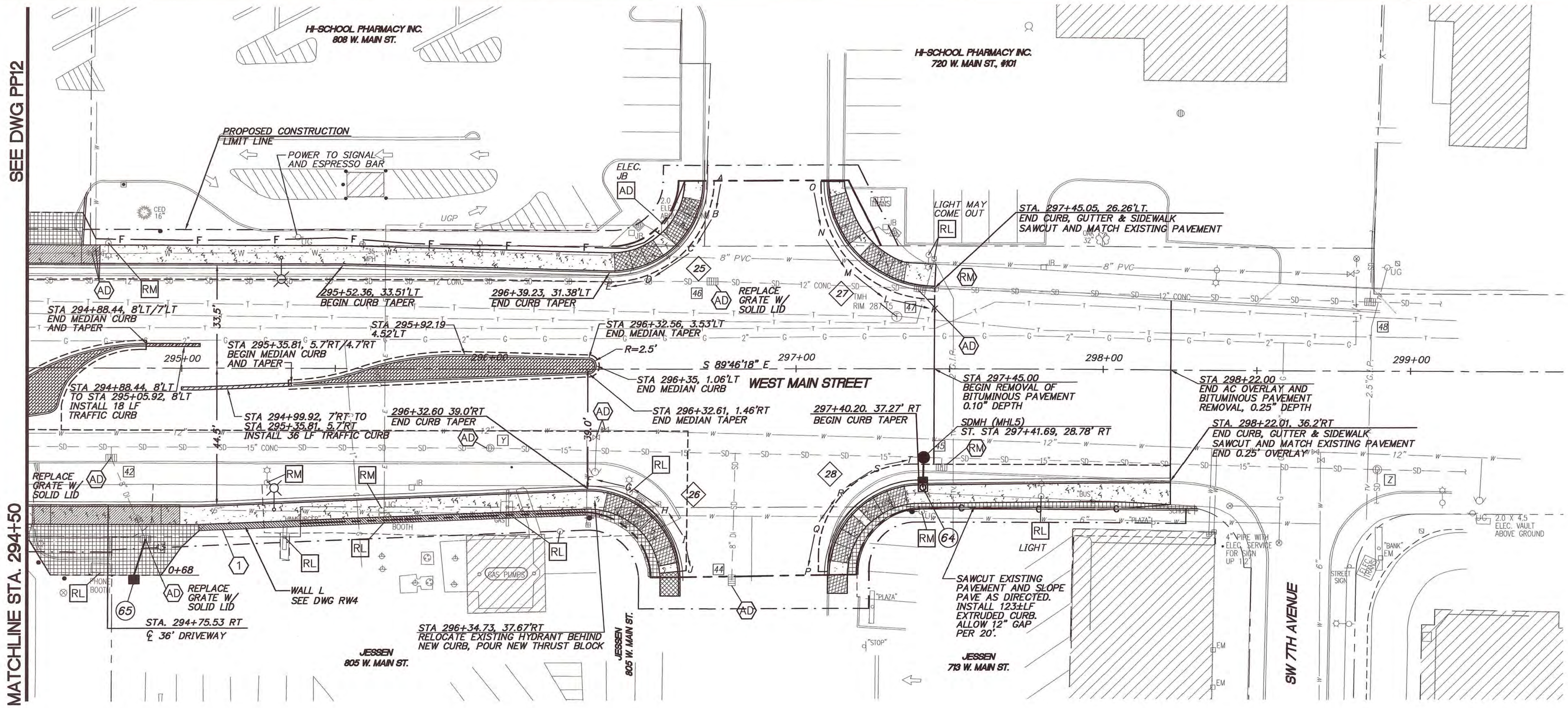
DANIEL W. EDEMANN
STATE OF WASHINGTON
22440
REGISTERED PROFESSIONAL ENGINEER
EXPIRES: JUNE 30, 2003

105 W. Evergreen Blvd., Suite 300
Vancouver, WA 98660-3128
Phone: (360) 737-8610
FAX: (360) 737-9541
otak Incorporated

THE CITY OF BATTLE GROUND

V: BRADS 12/19/02 1:23pm ---> R:\DWG\C574D015.DWG

XREF LIST
Ltscole: 1
Resolved
C574X093
C574X095
C574X500
C574X501
C574X510
C574X515
Ccw34X22
DDHstompWA
PKW
S574B104
S574B105
S574B106
S574B107
S574E160
xlight



SCALE IN FEET

20 0 20 40

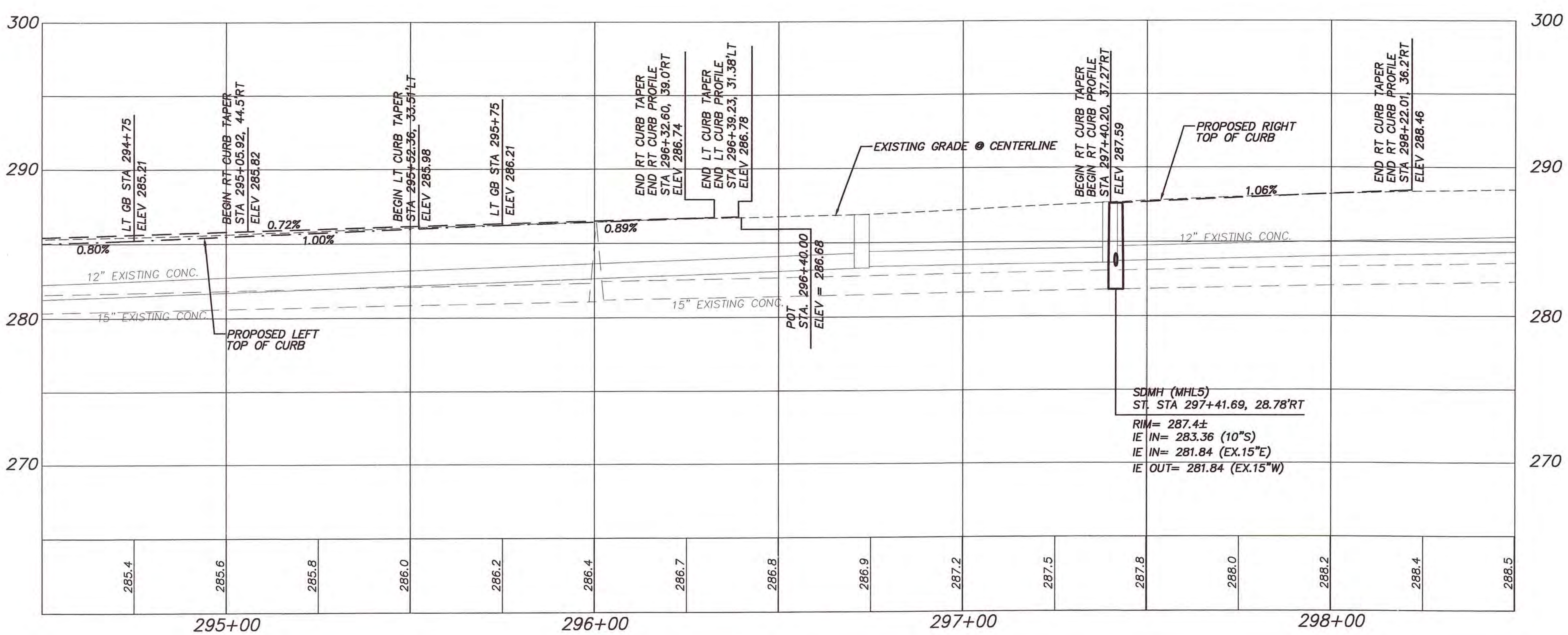
INLET TABLE

(64) COMBINATION CURB INLET (CBL7)
ST. STA. 297+41.51, 37.27'RT
T.C. ELEV= 287.59
I.E. (OUT)= 283.55
10 LF 10" STM PIPE
S= 0.0190 FT/FT

(65) CATCH BASIN TYPE 1
ST. STA. 294+85, 69'± RT
RIM ELEV= 283.8±
(FIELD VERIFY)
I.E. (OUT)= 282.42
12 LF 8" STM PIPE
S= 0.0100 FT/FT

CONSTRUCTION NOTES

(1) CONTRACTOR TO SAWCUT PAVED PARKING AREAS AND REPAIR AS DIRECTED.



CURB RETURN TABLE

CURVE	STATION/OFFSET	SYMBOL △/4	T.O.C. ELEV.
(25) △ = 91°39'19" R = 30.00' L = 47.99'	BCR 296+69.96, 61.50'LT ECR 296+39.23, 31.38'LT	A B C D E	287.88 287.37 287.04 286.89 286.78
(26) △ = 84°06'28" R = 30.00' L = 44.04'	BCR 296+32.60, 39.00'RT ECR 296+62.44, 65.92'RT	F G H I J	286.74 286.82 286.90 286.97 286.94
(27) △ = 86°52'28" R = 35.00' L = 53.07'	BCR 297+43.04, 26.36'LT ECR 297+09.79, 61.16'LT	K L M N O	287.77 287.83 288.09 288.28 288.50
(28) △ = 89°14'50" R = 30.00' L = 46.73'	BCR 297+10.60, 67.27'RT ECR 297+40.20, 37.27'RT	P Q R S T	287.75 287.82 287.76 287.79 287.59

OBJECT TO BE:

REMOVED	= RM
RELOCATED	= RL
ABANDONED	= AB
REPLACED & RELOCATED	= RP
RELOCATED & ADJUSTED TO GRADE	= RA
ADJUSTED TO GRADE	= AD
TRIMMED	= T

BY: ⬡ CONTRACTOR ◯ CITY FORCES ☐ OTHERS

DESIGNED PKW
DRAWN DKH
HOR. 1"=20'
VERT. 1"=5'
DATE 3/21/2003
DWG: PP13
SHEET 41 OF 139

CALL 48 HOURS BEFORE YOU DIG 1-800-553-4344 "It's the Law" CLARK COUNTY UTILITIES COORDINATING COUNCIL

CITY OF BATTLE GROUND
WEST MAIN STREET (SR 502)

PLAN & PROFILE
STA. 294+50 TO END

KEVIN ALLEN WIEDEMANN, STATE OF WASHINGTON, REGISTERED PROFESSIONAL ENGINEER 22440, EXPIRES AUG. 31, 2003

otak Incorporated
100 W. Evergreen Blvd. Suite 300 Vancouver, WA 98660-3123 Phone: (360) 737-9613 FAX: (360) 737-9651

THE CITY OF BATTLE GROUND

V: SHERYL 12/20/02 7:58am --> H:\PROJECT\9500\9574\DWG\C574C062.DWG