STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
1250 W Alder St • Union Gap, WA 98903-0009 • (509) 575-2490

April 28, 2020

Michael R. Murray
HDR Engineering
412 East Parkcenter Blvd., Suite 100
Boise, ID 83706

RE: Comments on the Phase 1 Remedial Investigation Report

- **Site Name:** Simplot Soilbuilders Sunnyside
- **Site Address:** 300 South 1st Street, Sunnyside
- **Facility Site No.:** 76742139
- **Cleanup Site No.:** 2558
- **VCP No.:** CE0209
- **Agreed Order:** DE 16446

Dear Michael Murray:

Ecology has received *"Phase 1 Remedial Investigation Report, Simplot Grower Solutions, Sunnyside, WA"* prepared by HDR and dated April 2020. Thank you for submittal of this report, which was prepared under Agreed Order DE 16446. The following are the Department of Ecology's (Ecology) comments on the above-referenced report. Most of these comments pertain to the development of appropriate next steps at the Site toward completion of the Remedial Investigation (RI) phase of cleanup work.

Ecology notes that if Simplot/HDR identifies potential for conducting Interim Actions to address contamination at the Site, Ecology is open to discussion. However, Ecology has identified no basis for simple Interim Actions, such as excavation and offsite disposal of contaminated soil, at this time. The groundwater contamination at the Site is complex, and cleanup may require more than one remedial approach to achieve cleanup goals.

No revision or reissue of the Phase 1 report is requested. For future report submittals, Ecology requests the following, which was also provided in our November 5, 2019 comments on *"Remedial Investigation Work Plan, Sampling and Analysis Plan (SAP), and Quality Assurance Project Plan (QAPP)"* dated October 2019:

> *"In reporting ... sampling results, please ensure that tables are prepared that include both historical and current data (including data collected by others at the site).*
> *Please also prepare maps showing the results of site constituents in groundwater that also show historically collected data from the site. Inclusion of the month and year of sampling on these maps would be appropriate."*

Comment #1 – Contaminants of Concern and Contamination Maps

Although several previous investigations have characterized soil and groundwater contamination at the Site, the extent of groundwater contamination is not well understood. This is because there have apparently been numerous contamination releases at numerous locations. Source locations of these releases have been difficult to identify, and may be distributed over an area. The current investigation focused on groundwater within the Simplot property, with the expectation that the acquired data will better direct subsequent sampling locations for soil and groundwater. In Ecology's opinion, this investigation succeeded in providing characterization data appropriate for suggesting next steps.

With a few exceptions discussed below, Ecology concurs with the identified contaminants of concern at the Site. In order to compare the relative importance of site contaminants of concern, Ecology prepared a matrix table (Table 1, attached), presenting the number of exceedances of the lowest potential cleanup level for the contaminants of potential concern (COPCs). Based on this Matrix table, Ecology prepared contamination in groundwater maps (attached), because the only contamination map presented in the report was nitrate and understanding the spatial distribution of contaminants in groundwater is a critical need at this time. The prepared contamination maps are useful to determine whether or not the extent of contamination has been sufficiently defined, and to assess potential source areas.

Ecology prepared maps for 12 of 16 constituents of concern, the remaining four that are considered to be sufficiently represented by other site COPCs are summarized in Table 2:

Table 2: Unmapped COCs Represented by Other COPCs

Unmapped COPC	Mapped COPCs Representing Unmapped COPC
1,3,5-TMB	1,2,4-TMB
1,1,2,2,PCA	1,2-DCA; 12-DCP; 1,2,3-TCP
1,1,2-TCA	1,2-DCA; 12-DCP
EDB	1,2-DCA; 12-DCP; 1,2,3-TCP

Ecology added and mapped two COPCs not listed in the report, Dinoseb and Sulfate. Dinoseb was detected above the MCL of 7 µg/L in MW-5 in 2011 and in a direct push sample collected by others in 2007. Sulfate only has a secondary MCL, which is not toxicity based. However, exceedances of the secondary MCL are indicative of groundwater quality degradation and may also help in conceptual site model development including understanding the nature of releases across the site.

Comment #2 - Lateral Extent of Groundwater Contamination

Additional groundwater sampling is needed to define the lateral extent of groundwater contamination. Uncertainties in contamination extent are expressed on the contamination maps as question marks. This commonly includes the upgradient extent and downgradient extent.

For contamination exceedances along the western and northern property boundaries, groundwater sampling on adjacent properties (e.g. west side of street right-of-way to west, or north side of railroad right-of-way to north) is warranted to ensure that none of the contamination is migrating onto the Simplot property from adjacent properties.

For some contaminants found both in the northwest corner of the Simplot property and within the eastern part of the property, there is a data gap in between. Similarly, where there is contamination in the north central part of the property, but the western extent of contamination has not been defined, this also presents a data gap. This data gap area is in the vicinity of the two site structures located in the northwest quarter of the property. It is currently uncertain whether groundwater contamination extends under this area.

The downgradient extent of contamination (south and east of the Simplot Property) had been bound to some extent by data from MW-7. Note that MW-6 is more useful for potentiometric surface mapping, and is slightly cross gradient from the areas of contamination. MW-7 is located approximately 400 feet downgradient of the Simplot property, and contamination data is needed in between MW-7 and the Simplot property. Ecology understands that sampling in this area will need access to private properties. Also, please see additional discussion below regarding vertical contamination delineation. Lateral data gaps for mapped site constituents of concern are summarized in Table 3:

Table 3: Extent Data Gaps for Mapped COPCs

Contaminant	West	North	Central*	East	South
Benzene (BEN)		X	X	X	
1,2-DCA		X	X	X	
1,2-DCP		X	X	X	
Naphthalene (NAP)		X	X		
1,2,4-TMB		X	X		
1,2,3-TCP		X	X	X	
Arsenic (As)	X	X	X	X	X
2,4-D			X		
MCPA			X		
Dinoseb			X		
Nitrate (NO3)	X	X	X	X	X
Sulfate (SO4)	X	X	X	X	X

*Central area data gaps can include the northwest quadrant of the property where no sampling has been done, and the vicinity of more localized contamination (e.g. 2,4-D, MCPA, and Dinoseb). The degree to which some of these areas need to have additional extent delineation in part may depend on potential remedial approaches for addressing contaminated groundwater. For example, remedial options appropriate for fuels, nitrates, or arsenic may not be appropriate for chlorinated volatile organic compounds (VOCs) or herbicides. Hence, delineation of central area extent should consider potential cleanup approaches.

Comment #3 – Vertical Extent of Groundwater Contamination

The new (Phase 1 RI) data provide greater understanding regarding the vertical extent of groundwater contamination. Sampling at two depths was conducted along the eastern Simplot property boundary (8 and 16 feet below ground surface [ft bgs]). In most cases, contaminant concentrations in shallower groundwater samples were significantly higher than the deeper sample for a given constituent. The exception to this was at three locations for a few constituents where the deeper sample had higher concentrations than the shallower sample:

- BH-02 for 1,2-DCA and 1,2-DCP
- BH-03 for SO4
- BH-4 for 1,2-DCA

Elevated concentrations of 1,2-DCA were also found in samples collected at 20 ft bgs at location OPVP011 in 2007, higher than the sample collected at 10 ft bgs.

Ecology's conceptual model includes the expectation that dissolved phase contamination tends to slowly migrate to deeper aquifer zones as it migrates downgradient. Hence, within a source area (absent DNAPL), the contamination will be highest in the shallowest aquifer zone. The above-discussed data (where deeper zone concentrations are higher) may be suggestive of a further upgradient source, or potentially, a DNAPL source. Limited deeper sampling within source areas is warranted to confirm the vertical extent of groundwater contamination in these areas and to ensure that no DNAPL is present. Appropriate locations would be in the vicinity of locations with highest concentrations of 1,2-DCA and 1,2-DCP within the 8 ft bgs sample depth.

In addition, further sampling to define the downgradient extent of contamination, vertical profiling data would be appropriate, since 8 ft bgs may not be representative of worst-case conditions in these areas. At locations downgradient of contaminant CUL exceedances in groundwater at the eastern Simplot property boundary, sampling at 8, 12, and 16 ft bgs would be anticipated to appropriately vertically characterize contamination distributions.

At locations upgradient of the Simplot property, although the possibility of deeper contamination cannot be precluded, sampling of groundwater at 8 ft bgs is warranted to determine whether there could be any contribution of contamination from upgradient property(s). This may be particularly relevant for nitrates and sulfate, which have less retardation than other site contaminants, and groundwater contamination can be aerially extensive. Simplot/HDR may choose to also include deeper sampling at upgradient locations if aerially extensive upgradient groundwater contamination is suspected.

Comment #4 – Arsenic in Groundwater

Arsenic exceedances in groundwater were widespread across the Simplot property.

There are two potential sources for elevated arsenic concentrations in groundwater; 1) release of arsenic containing materials, and 2) change in groundwater redox conditions in groundwater resulting in mobilization of naturally occurring arsenic from subsurface lithologies. Note that under either scenario, the arsenic is still a MTCA-regulated contaminant.

Potential alteration of groundwater general water quality conditions at the Site may be suggested by parameters such as nitrates, sulfate, and chloride. Total organic carbon (TOC), dissolved oxygen (DO), and oxidation-reduction potential (ORP) data may further understanding of the potential sources of arsenic in groundwater. If upgradient property(s) have potential redox effects on groundwater, this would be valuable to understand as well. We recommend that next phase of sampling include these biogeochemical indicators at selected locations.

Comment #5 – Soil Contamination Extent

Because contamination sources appear to be widespread and may be distributed (rather than point sources), soil contamination characterization can be challenging at this site. Soil sampling was conducted at the Site in 2009 at B-1 through B-13 at two vadose zone sampling depths.

Contaminant detections in these samples were limited, which is not surprising since the sample locations were apparently random in nature (not targeting locations of known contaminant releases). Ecology requests that these 2009 soil sampling results be compared with the most restrictive cleanup levels in CLARC (typically Method B direct contact cancer, or soil-protective-of-groundwater concentrations). Please identify and flag any CUL exceedances in these soil samples in a table.

Although groundwater contaminant concentrations have been significantly higher than CULs, benzene, 1,2,4-TMB, MCPA, and MCPP were the only organic compounds that had groundwater concentrations in the parts per million (ppm) range during the Phase 1 investigation. These included locations BH-09, BH-10, and BH-11. These ppm range concentrations may be suggestive of a surficial release near these locations. Ecology suggests examination of soils in the areas surrounding BH-09, BH-10, and BH-11 for staining, photoionization detector (PID) readings, and odors, to explore for potential release locations. This could either be done via direct push or drilling soil borings (focusing on the vadose zone) or via test pits. Analysis of contaminant concentrations in soil samples would then be based on field observations.

If any field observations from locations BH-01 through BH-13 were indicative of a potential release, then additional soil sampling may be warranted in the vicinity of these locations. In general, staining, PID readings, and odor observations in vadose zone soil may be the simplest way to find vadose zone contaminant sources.

If unidentified contaminant sources are well distributed and not focused on a few point locations, then finding such sources may require a fairly dense gridded sampling approach.

Ecology is open to discussion on strategies to ensure that if known groundwater contamination is addressed, that continuing sources of groundwater contamination within the vadose zone do not result in continued contamination of groundwater (i.e. soil to groundwater pathway). In addition, the direct contact soil pathway must also be addressed. However, this may require an iterative approach, and a logical first step would be to target the areas with the highest groundwater contaminant concentrations. If there is any information indicative of potential surficial releases, such as operational information or field observations, then such additional locations should also be targeted for soil sampling.

We look forward to reviewing your map with proposed Phase 2 groundwater and soil sampling locations. Such a map should also indicate proposed sampling depths. If not all COPCs are proposed for analysis at all locations, please also include a matrix table indicating what analyses are proposed at what locations.

Ecology notes that although the Phase 2 investigation should target all currently identified data gaps, there is a possibility of the need for a Phase 3 investigation, should additional data gaps be identified during Phase 2. This is particularly the case since vadose zone sources at the Site are challenging to identify.

Please feel free to call me at (509) 454-7835 or email me at frank.winslow@ecy.wa.gov with any questions.

Sincerely yours,

Frank P. Winslow, LHG
Cleanup Site Manager
Toxics Cleanup Program
Central Region Office

Enclosures (2)

cc: Monty Johnson, J.R. Simplot Co.

TABLE 1 - SUMMARY OF CLEANUP LEVEL EXCEEDANCES FOR CONSTITUENTS OF CONCERN IN GROUNDWATER

Station	Sample Year	Benzene	NAP	124TMB	135TMB	12DCA	12DCP	123TCP	1122PCA	112TCA	EDB	As	NO3	SO4	24D	MCPA	MCPP	Dinoseb
Lowest CUL		0.8 µg/L	160 µg/L	80 µg/L	80 µg/L	0.48 µg/L	1.2 µg/L	0.00038 µg/L	0.22 µg/L	0.77 µg/L	0.02 µg/L	7 µg/L	10 mg/L	250 mg/L	70 µg/L	8 µg/L	NL	7 µg/L
Lowest CUL Source		Method B	Method B	Method B	Method B	Method B	Method B	Method B	Method B	Method B	Method B	WA Bkgrd*	MCL	SMCL**	MCL	Method B	***	MCL
Report CUL		same	same	same	same	same	same	0.0015 µg/L	same	same	0.01 µg/L	0.058 µg/L	same	none	same	same	16 µg/L	NL
Count Exceed Locs		14	4	10	7	13	15	6	1	1	2	23	14	26	3	3	0	2
Count Locs		39	39	39	39	39	39	39	39	39	39	38	38	37	38	38	38	38
Percent Exceeded		36%	10%	26%	18%	33%	38%	15%	3%	3%	5%	61%	37%	70%	8%	8%	0%	5%
BH-01	2020	X				X	X	X				X	X	X				
BH-02	2020	X				X	X					X		X				
BH-03	2020											X		X				
BH-04	2020						X	X				X		X				
BH-05	2020						X	X				X	X	X				
BH-06	2020	X										X		X				
BH-07	2020	X					X					X	X	X				
BH-08	2020	X		X		X	X			X		X	X	X				
BH-09	2020	X	X	X	X	X	X	X				X	X	X	X	X		
BH-10	2020	X	X	X	X	X	X	X	X		X	X	X	X		X		
BH-11	2020	X	X	X	X	X						X			X			
BH-12	2020													X				
BH-13	2020												X	X				
BH-14	2020																	
BH-15	2020															X		
B-01	2009	X	X	X	X	X	X					X		X				
B-02	2009											X		X				
B-03	2009					X	X					X		X				
B-04	2009													X				
B-05	2009													X				
B-06	2009													X				
B-07	2009													X				
B-08	2009											X		X				
B-09	2009	X		X	X										X			
B-10	2009	X		X		X	X				X	NA	NA	NA	NA	NA	NA	NA
B-11	2009			X	X									X				
B-12	2009						X											
B-13	2009	X		X	X	X								X				
MW-1	2020											X	X					
MW-2	2020											X						
MW-3	2020											X		X				
MW-4	2020						X					X	X					
MW-5	2011	X		X		X	X					X	X	NA				X
MW-5R	2020					X		X				X	X	X				
MW-6	2020											X						
MW-7	2020											X						
OPVP-11	2007	X				X	X						X	X				X
OPVP-12	2007												X					
OPVP-13	2007												X	X				

Highlighting indicates difference in lowest CUL between HDR and Ecology.

NA = Not analyzed

Constituent concentrations in groundwater mapped.

Constituent concentrations in groundwater not mapped. Cleanup of other related constituents of concern is anticipated to address these constituents, based on frequency of exceedances, similar chemical properties, and similar treatment methods.

* The WA State Background concentration for arsenic of 7 µg/L supercedes other CULs.

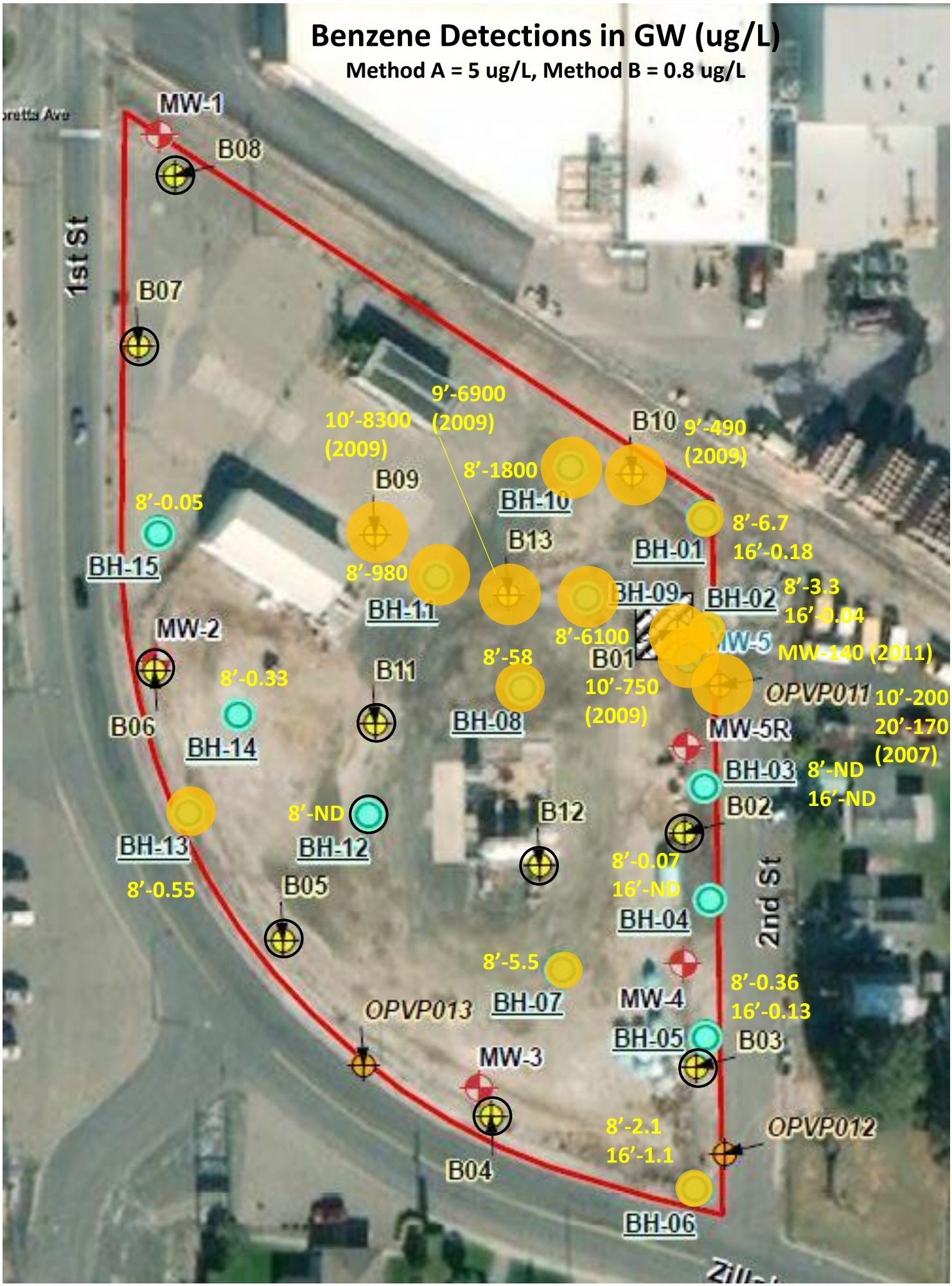
** Secondary MCL for Sulfate of 250 mg/L included since exceedances are expected to be indicative of anthropogenic impacts. Mapping warranted based on frequency of exceedance.

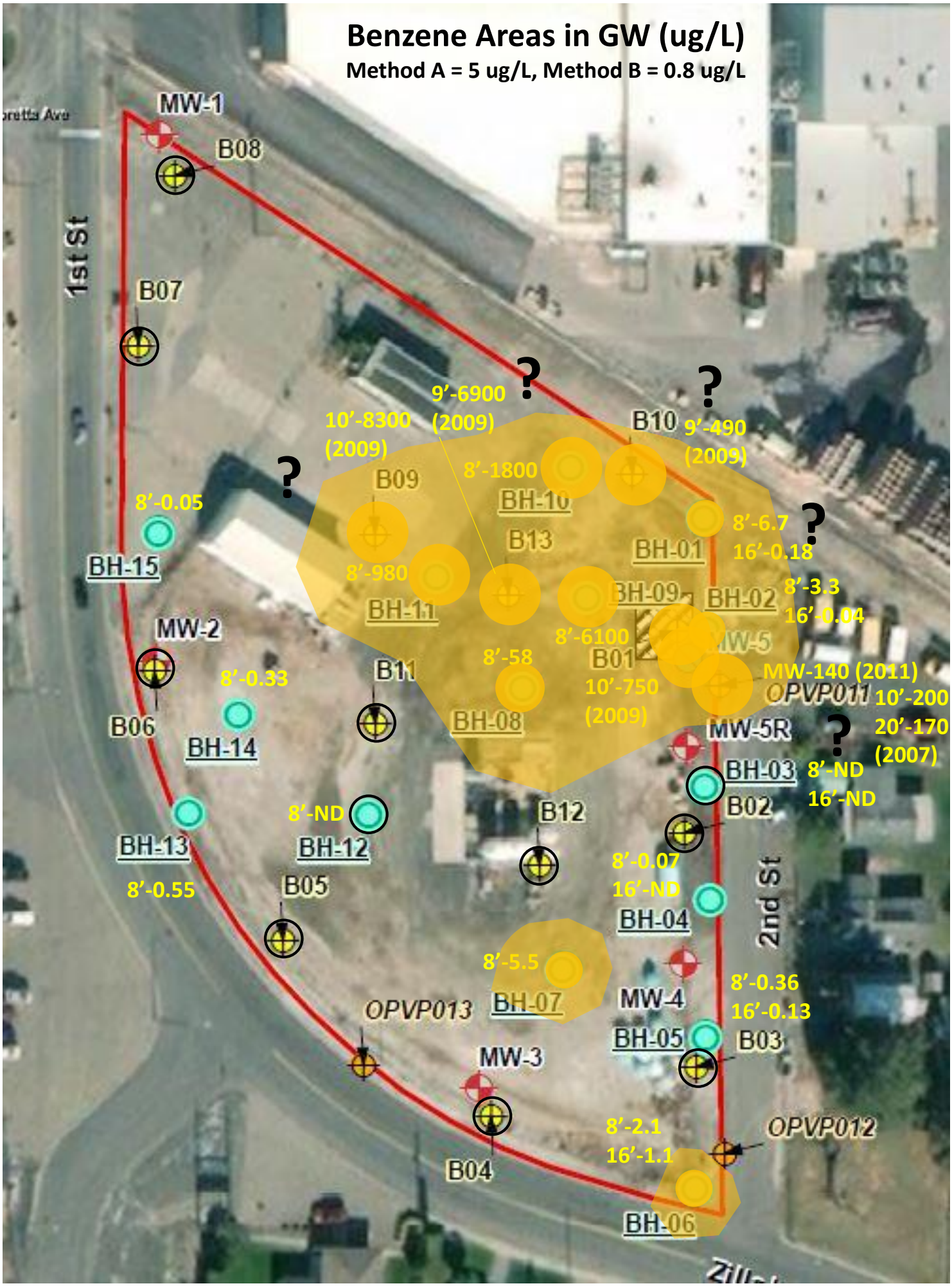
*** Table GW-4 lists a CUL for MCPP; however no CUL found in CLARC or in Table GW6. Elevated concentrations of MCPP were co-located with elevated concentrations of MCPA. Therefore, cleanup of MCPA is anticipated to likely also adress MCPP. Because there is no CUL, MCPP is not considered to be a site consitituent of concern.

Note 1: Detection limits (reporting limits) not reviewed for 2009 and 2007 investigation data. Reporting limits higher than CULs is possible, therefore frequency of exceedance data could be biased slightly low. Cleanup confirmation samples should be analyzed for all contaminants of concern at appropriate reporting limits.

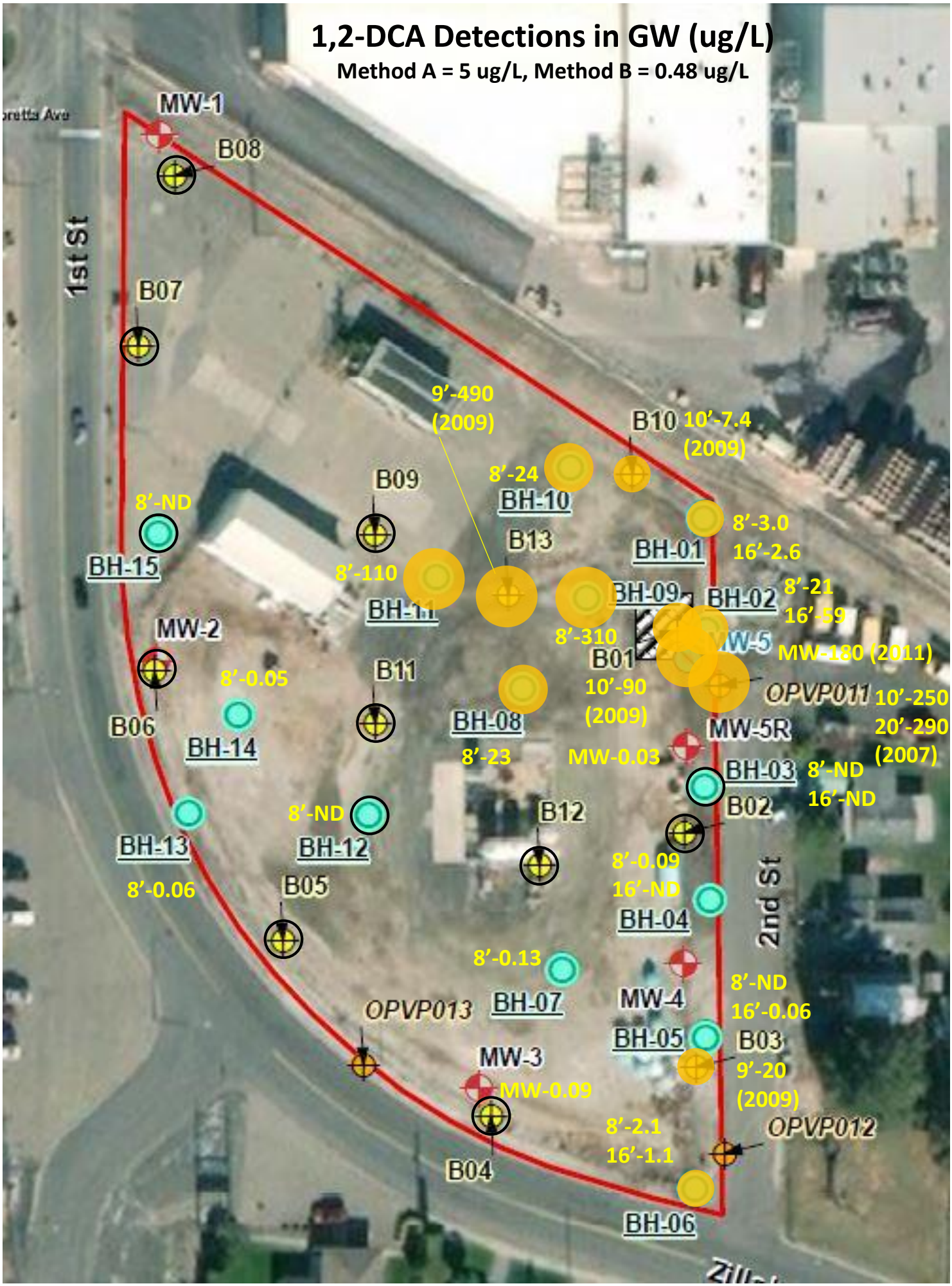
Note 2: Exceedances for monitoring wells generally based on most current monitoring round data. However, previous data may have been considered in some cases (e.g. NO3 in MW-5R and Dinoseb in MW-5). Some exceedances for metals (Cd, Cr, Pb) in monitoring well samples were not repeated in most rounds. These exceedances are considered to likely be associated with sample turbidity due the low repeatability, and lack of mobility of these constituents under neutral pH as observed in monitoring well samples at the Site.

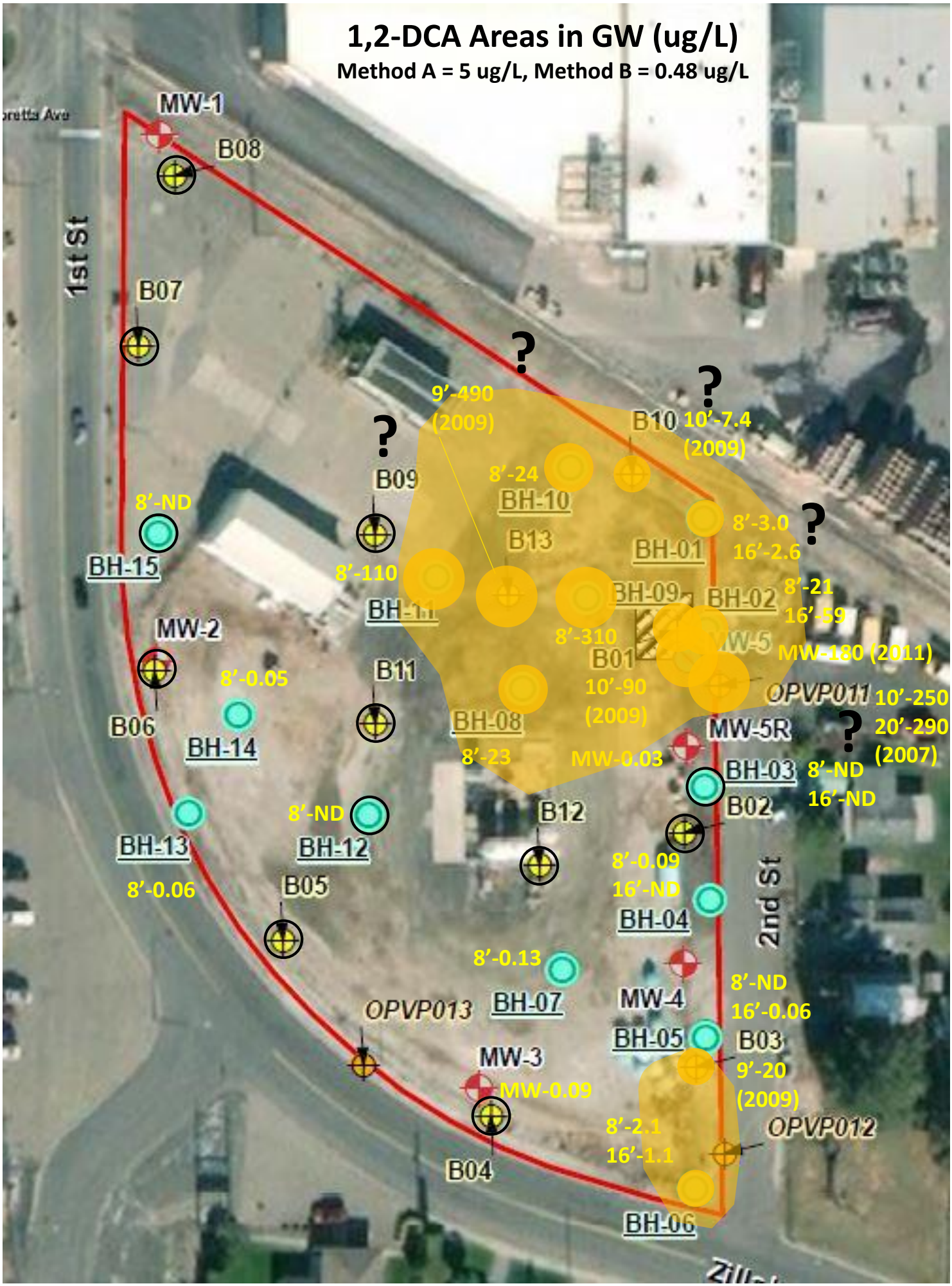
Benzene (BEN)


Benzene Detections in GW (ug/L)
Method A = 5 ug/L, Method B = 0.8 ug/L
MW-1
B08
1st St
B07
9'-6900
(2009)
10'-8300
(2009)
B10
9'-490
(2009)
8'-1800
B09
BH-10
8'-0.05
BH-15
8'-6.7
16'-0.18
B13
BH-01
8'-980
BH-11
BH-09
BH-02
8'-3.3
16'-0.04
MW-2
8'-6100
MW-5
MW-140 (2011)
8'-58
B01
10'-750
(2009)
B11
8'-0.33
OPVP011
10'-200
20'-170
(2007)
B06
BH-14
BH-08
MW-5R
BH-03
8'-ND
16'-ND
B02
8'-ND
BH-12
B12
BH-13
8'-0.55
B05
8'-0.07
16'-ND
BH-04
2nd St
8'-5.5
BH-07
MW-4
8'-0.36
16'-0.13
OPVP013
BH-05
B03
MW-3
8'-2.1
16'-1.1
OPVP012
B04
BH-06

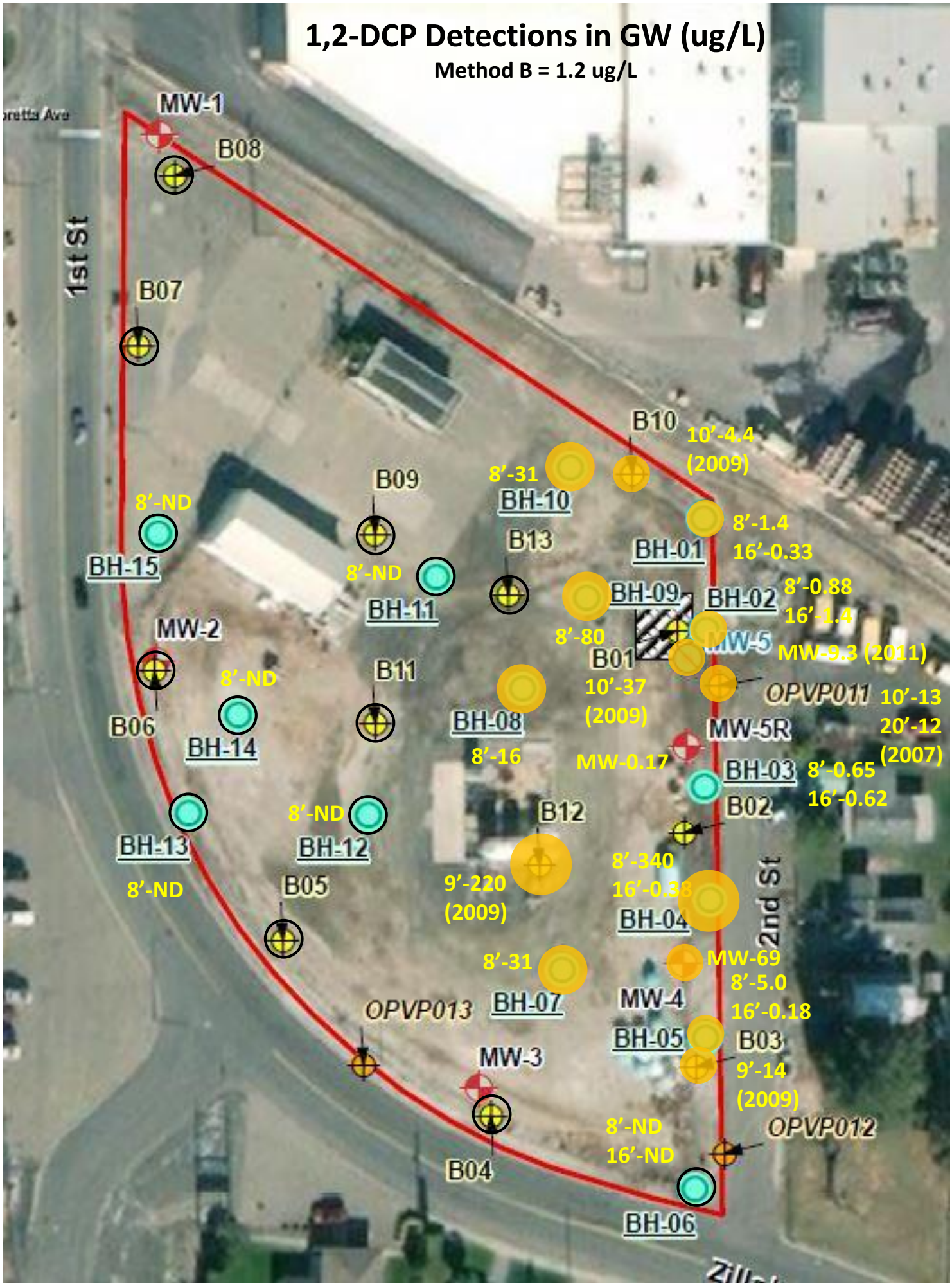

Benzene Areas in GW (ug/L)
Method A = 5 ug/L, Method B = 0.8 ug/L
1st St
2nd St
MW-1
B08
B07
MW-2
B06
BH-14
BH-15
8'-0.05
8'-0.33
BH-13
8'-0.55
B05
B11
BH-12
8'-ND
B12
BH-08
8'-58
B09
BH-10
BH-11
8'-980
B13
8'-1800
9'-6900
(2009)
10'-8300
(2009)
B10
9'-490
(2009)
BH-01
8'-6.7
16'-0.18
BH-09
BH-02
8'-3.3
16'-0.04
8'-6100
B01
10'-750
(2009)
MW-5
MW-140 (2011)
OPVP011
10'-200
20'-170
(2007)
MW-5R
BH-03
8'-ND
16'-ND
B02
8'-0.07
16'-ND
BH-04
8'-5.5
BH-07
OPVP013
MW-4
8'-0.36
16'-0.13
BH-05
B03
MW-3
B04
8'-2.1
16'-1.1
OPVP012
BH-06
?
?
?
?

1,2-Dichloroethane (1,2-DCA)


1,2-DCA Detections in GW (ug/L)
Method A = 5 ug/L, Method B = 0.48 ug/L
1st St
2nd St
MW-1
B08
B07
BH-15
8'-ND
MW-2
B06
BH-14
8'-0.05
BH-13
8'-0.06
B05
BH-12
8'-ND
B09
8'-110
BH-11
9'-490
(2009)
B11
BH-08
8'-23
B12
B13
8'-24
BH-10
B10
10'-7.4
(2009)
BH-09
8'-310
B01
10'-90
(2009)
BH-01
8'-3.0
16'-2.6
BH-02
8'-21
16'-59
MW-5
MW-180 (2011)
OPVP011
10'-250
20'-290
(2007)
MW-5R
MW-0.03
BH-03
8'-ND
16'-ND
B02
8'-0.09
16'-ND
BH-04
MW-4
8'-ND
16'-0.06
BH-05
B03
9'-20
(2009)
OPVP012
8'-2.1
16'-1.1
BH-06
8'-0.13
BH-07
OPVP013
MW-3
MW-0.09
B04

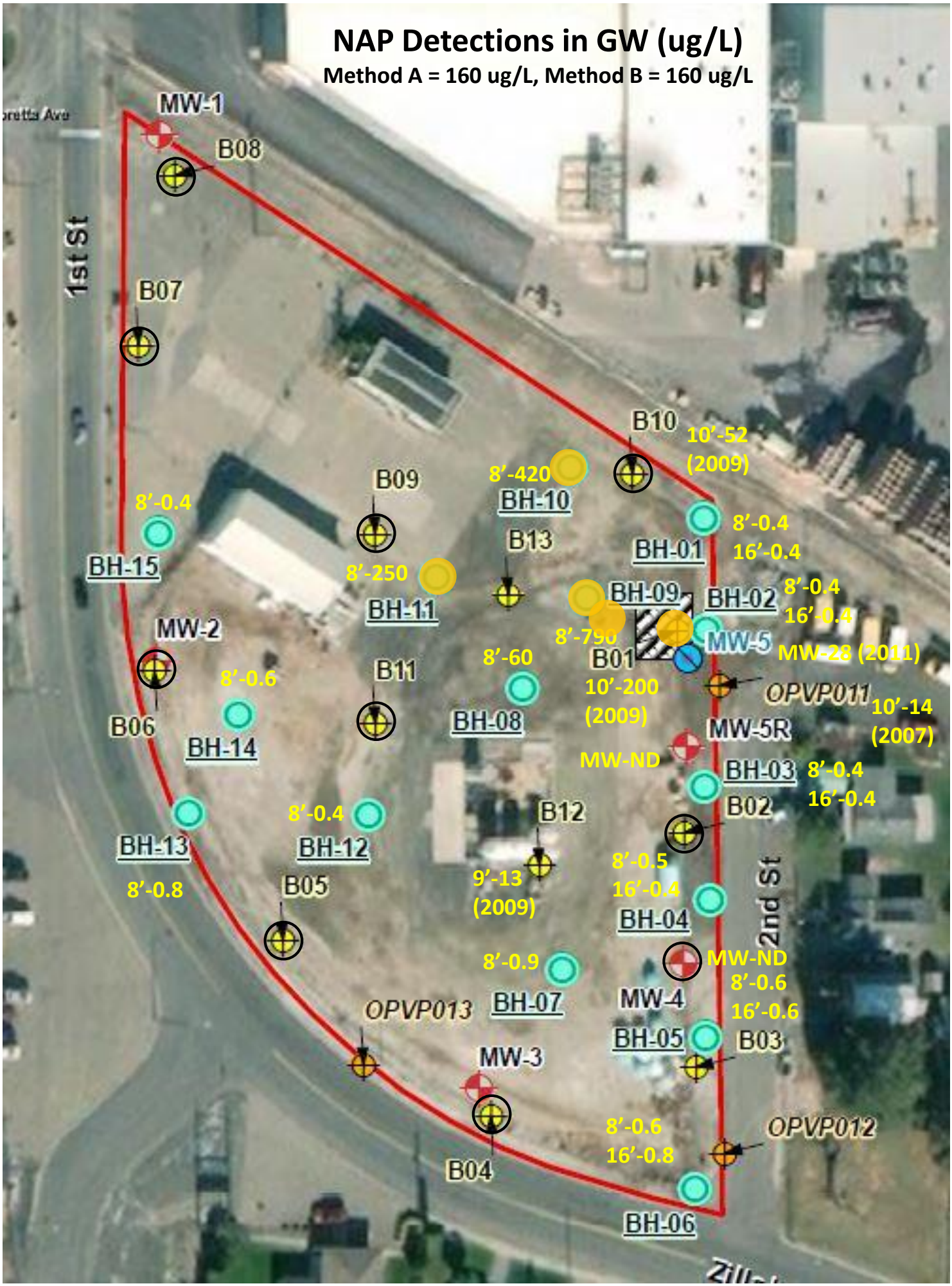

1,2-DCA Areas in GW (ug/L)
Method A = 5 ug/L, Method B = 0.48 ug/L
1st St
2nd St
MW-1
B08
B07
MW-2
B06
BH-15
8'-ND
BH-14
8'-0.05
BH-13
8'-0.06
B05
BH-12
8'-ND
B09
8'-110
B11
BH-11
BH-10
8'-24
9'-490
(2009)
B13
BH-08
8'-23
B12
B10
10'-7.4
(2009)
BH-01
8'-3.0
16'-2.6
BH-09
BH-02
8'-21
16'-59
8'-310
B01
10'-90
(2009)
MW-5
MW-180 (2011)
OPVP011
10'-250
20'-290
(2007)
MW-5R
MW-0.03
BH-03
8'-ND
16'-ND
B02
8'-0.09
16'-ND
BH-04
8'-0.13
BH-07
OPVP013
MW-4
8'-ND
16'-0.06
BH-05
B03
9'-20
(2009)
MW-3
MW-0.09
B04
8'-2.1
16'-1.1
OPVP012
BH-06
?
?
?
?

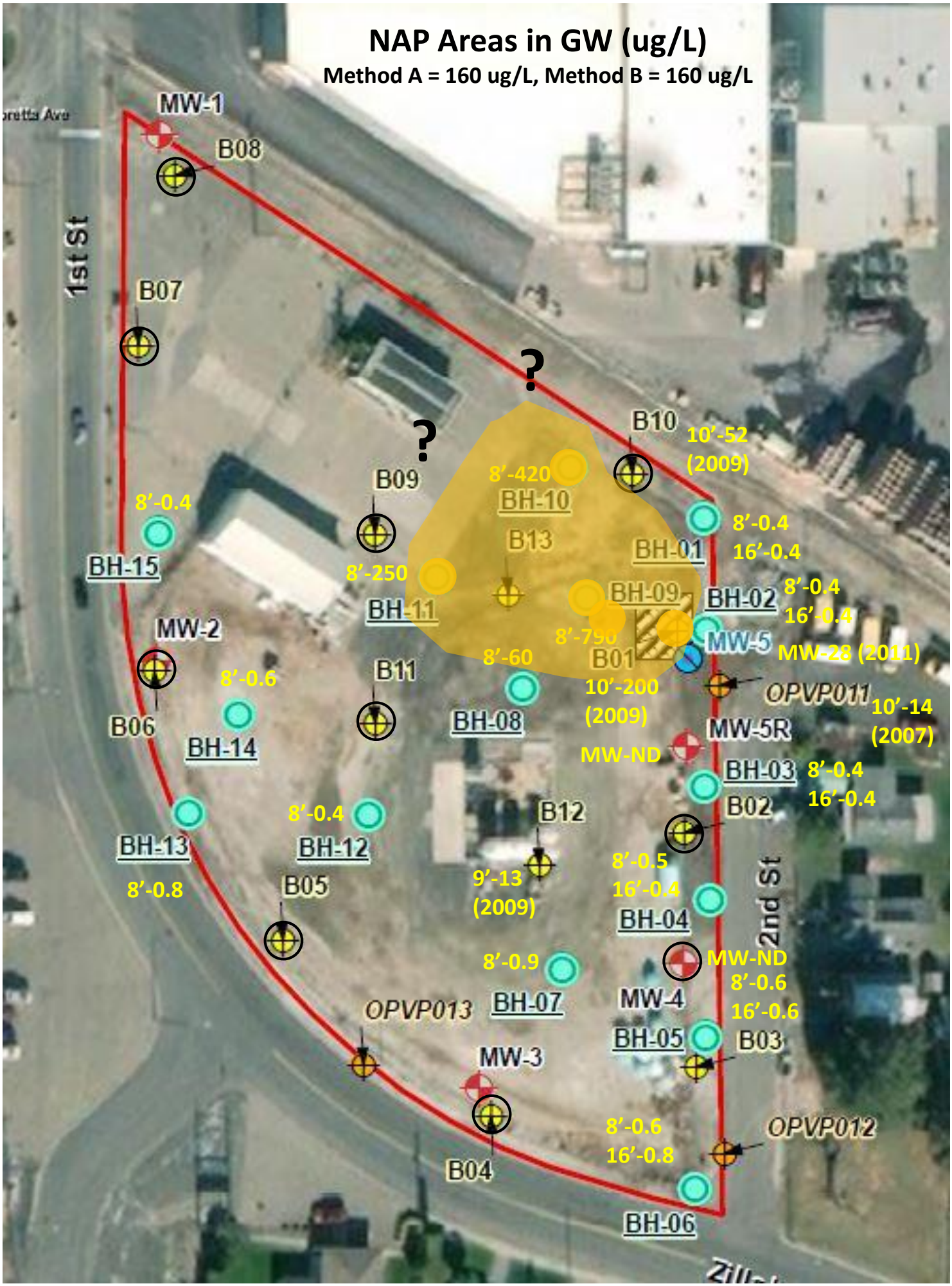
1,2-Dichloropropane (1,2-DCP)


1,2-DCP Detections in GW (ug/L)
Method B = 1.2 ug/L
1st St
2nd St
MW-1
B08
B07
B10
10'-4.4
(2009)
8'-31
BH-10
B09
8'-ND
BH-15
8'-ND
BH-11
B13
BH-01
8'-1.4
16'-0.33
BH-09
BH-02
8'-0.88
16'-1.4
8'-80
MW-5
MW-9.3 (2011)
B01
10'-37
(2009)
OPVP011
10'-13
20'-12
(2007)
MW-2
B06
8'-ND
BH-14
B11
BH-08
8'-16
MW-5R
MW-0.17
BH-03
8'-0.65
16'-0.62
B02
BH-13
8'-ND
8'-ND
BH-12
B12
9'-220
(2009)
8'-340
16'-0.38
BH-04
B05
8'-31
BH-07
MW-69
8'-5.0
16'-0.18
MW-4
OPVP013
BH-05
B03
9'-14
(2009)
MW-3
8'-ND
16'-ND
OPVP012
B04
BH-06

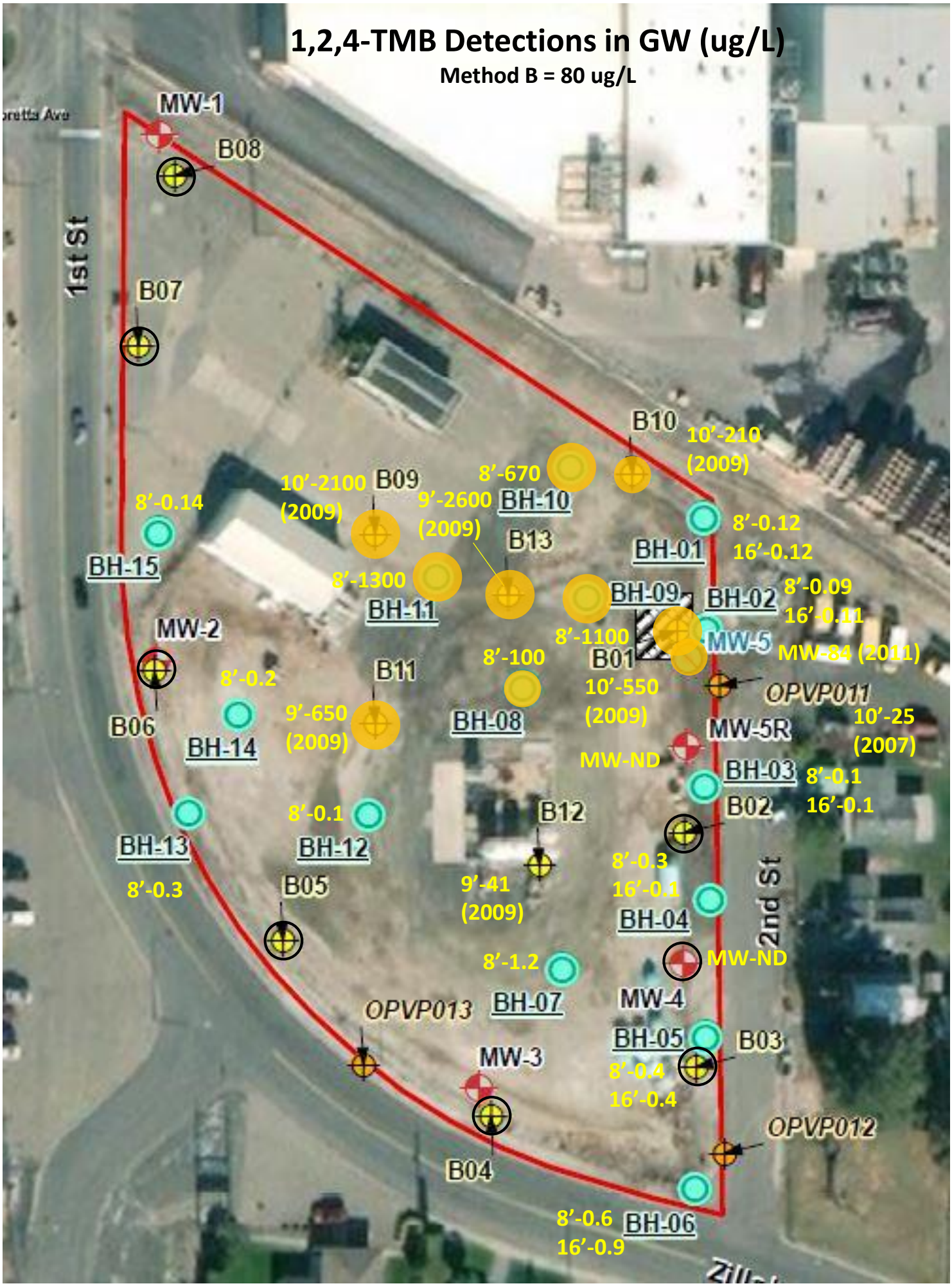

1,2-DCP Areas in GW (ug/L)
Method B = 1.2 ug/L
1st St
2nd St
MW-1
B08
B07
B09
8'-ND
BH-15
8'-ND
BH-11
MW-2
8'-ND
B06
BH-14
B11
BH-13
8'-ND
8'-ND
BH-12
B05
8'-31
BH-10
B13
B10
10'-4.4
(2009)
8'-1.4
16'-0.33
BH-01
BH-09
BH-02
8'-0.88
16'-1.4
8'-80
B01
10'-37
(2009)
MW-5
MW-9.3 (2011)
OPVP011
10'-13
20'-12
(2007)
BH-08
8'-16
MW-5R
MW-0.17
BH-03
8'-0.65
16'-0.62
B02
B12
9'-220
(2009)
8'-340
16'-0.38
BH-04
8'-31
BH-07
MW-69
8'-5.0
16'-0.18
MW-4
BH-05
B03
9'-14
(2009)
OPVP013
MW-3
B04
8'-ND
16'-ND
OPVP012
BH-06
?
?
?
?
?
?

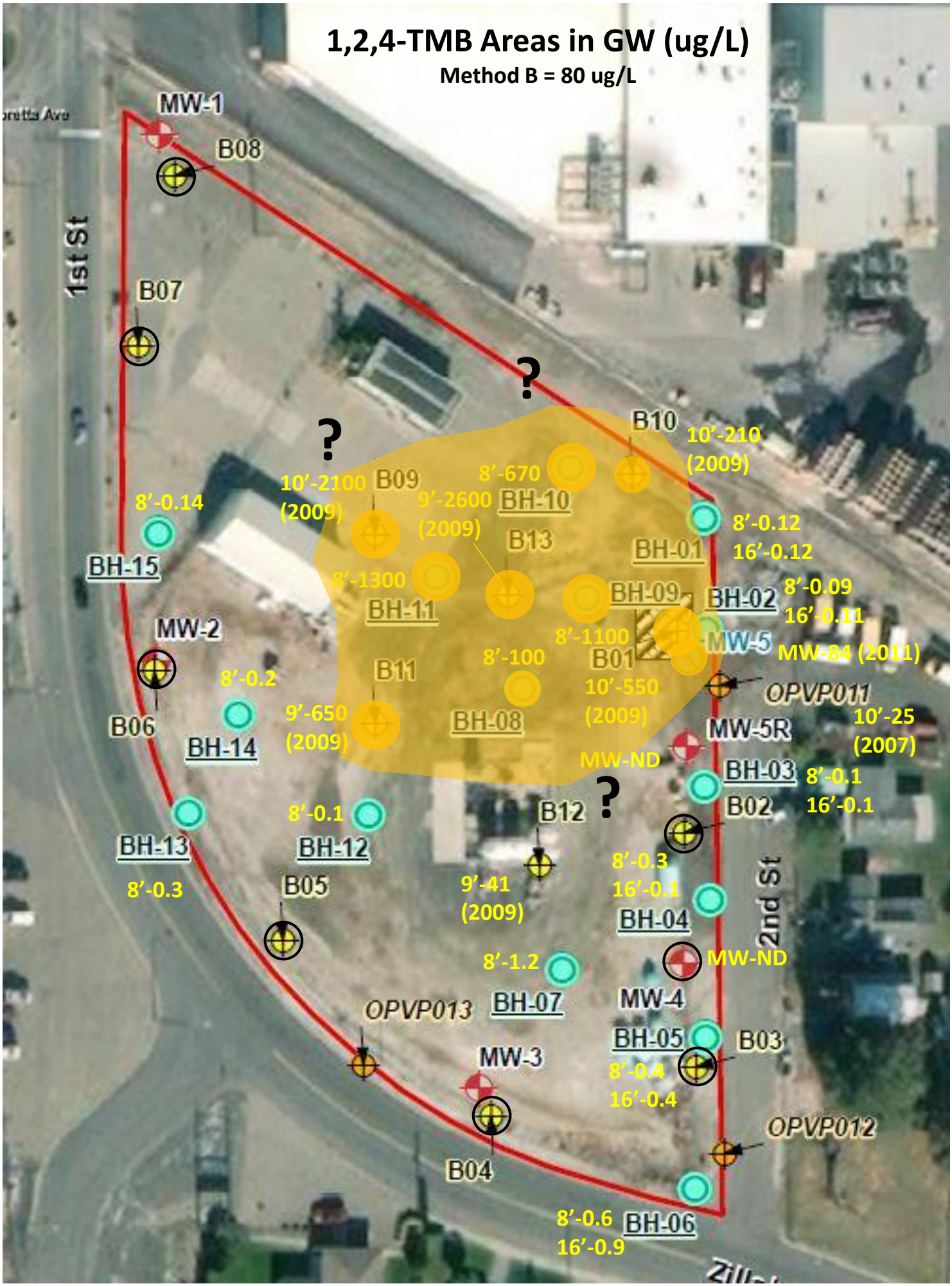
Naphthalene (NAP)


NAP Detections in GW (ug/L)
Method A = 160 ug/L, Method B = 160 ug/L
1st St
2nd St
MW-1
B08
B07
B10
10'-52
(2009)
8'-420
BH-10
B09
8'-0.4
BH-15
B13
BH-01
8'-0.4
16'-0.4
8'-250
BH-11
BH-09
BH-02
8'-0.4
16'-0.4
MW-2
8'-790
MW-5
MW-28 (2011)
8'-60
B01
10'-200
(2009)
B11
8'-0.6
OPVP011
10'-14
(2007)
B06
BH-14
BH-08
MW-5R
MW-ND
BH-03
8'-0.4
16'-0.4
B02
8'-0.4
B12
BH-13
BH-12
8'-0.8
B05
9'-13
(2009)
8'-0.5
16'-0.4
BH-04
8'-0.9
MW-ND
8'-0.6
16'-0.6
BH-07
MW-4
OPVP013
BH-05
B03
MW-3
8'-0.6
16'-0.8
OPVP012
B04
BH-06


NAP Areas in GW (ug/L)
Method A = 160 ug/L, Method B = 160 ug/L
MW-1
B08
1st St
B07
?
?
B10
10'-52
(2009)
8'-420
BH-10
B09
8'-0.4
BH-15
B13
8'-0.4
16'-0.4
BH-01
8'-250
BH-11
BH-09
BH-02
8'-0.4
16'-0.4
MW-2
8'-790
MW-5
MW-28 (2011)
8'-60
B01
10'-200
(2009)
B11
8'-0.6
OPVP011
10'-14
(2007)
B06
BH-14
BH-08
MW-5R
MW-ND
BH-03
8'-0.4
16'-0.4
B02
8'-0.4
B12
BH-13
BH-12
8'-0.8
B05
9'-13
(2009)
8'-0.5
16'-0.4
BH-04
2nd St
8'-0.9
MW-ND
8'-0.6
16'-0.6
BH-07
MW-4
OPVP013
BH-05
B03
MW-3
8'-0.6
16'-0.8
OPVP012
B04
BH-06

1,2,4-Trimethybenzene (1,2,4-TMB)


1,2,4-TMB Detections in GW (ug/L)
Method B = 80 ug/L
1st St
2nd St
MW-1
B08
B07
B10
10'-210
(2009)
8'-670
BH-10
10'-2100
(2009)
B09
9'-2600
(2009)
B13
8'-0.14
BH-15
8'-1300
BH-11
BH-01
8'-0.12
16'-0.12
BH-09
BH-02
8'-0.09
16'-0.11
8'-1100
MW-5
MW-84 (2011)
MW-2
8'-100
B01
10'-550
(2009)
OPVP011
8'-0.2
B11
9'-650
(2009)
BH-08
B06
BH-14
MW-5R
10'-25
(2007)
MW-ND
BH-03
8'-0.1
16'-0.1
B02
8'-0.1
BH-12
B12
BH-13
8'-0.3
B05
9'-41
(2009)
8'-0.3
16'-0.1
BH-04
MW-ND
8'-1.2
BH-07
MW-4
OPVP013
BH-05
B03
MW-3
8'-0.4
16'-0.4
OPVP012
B04
8'-0.6
16'-0.9
BH-06

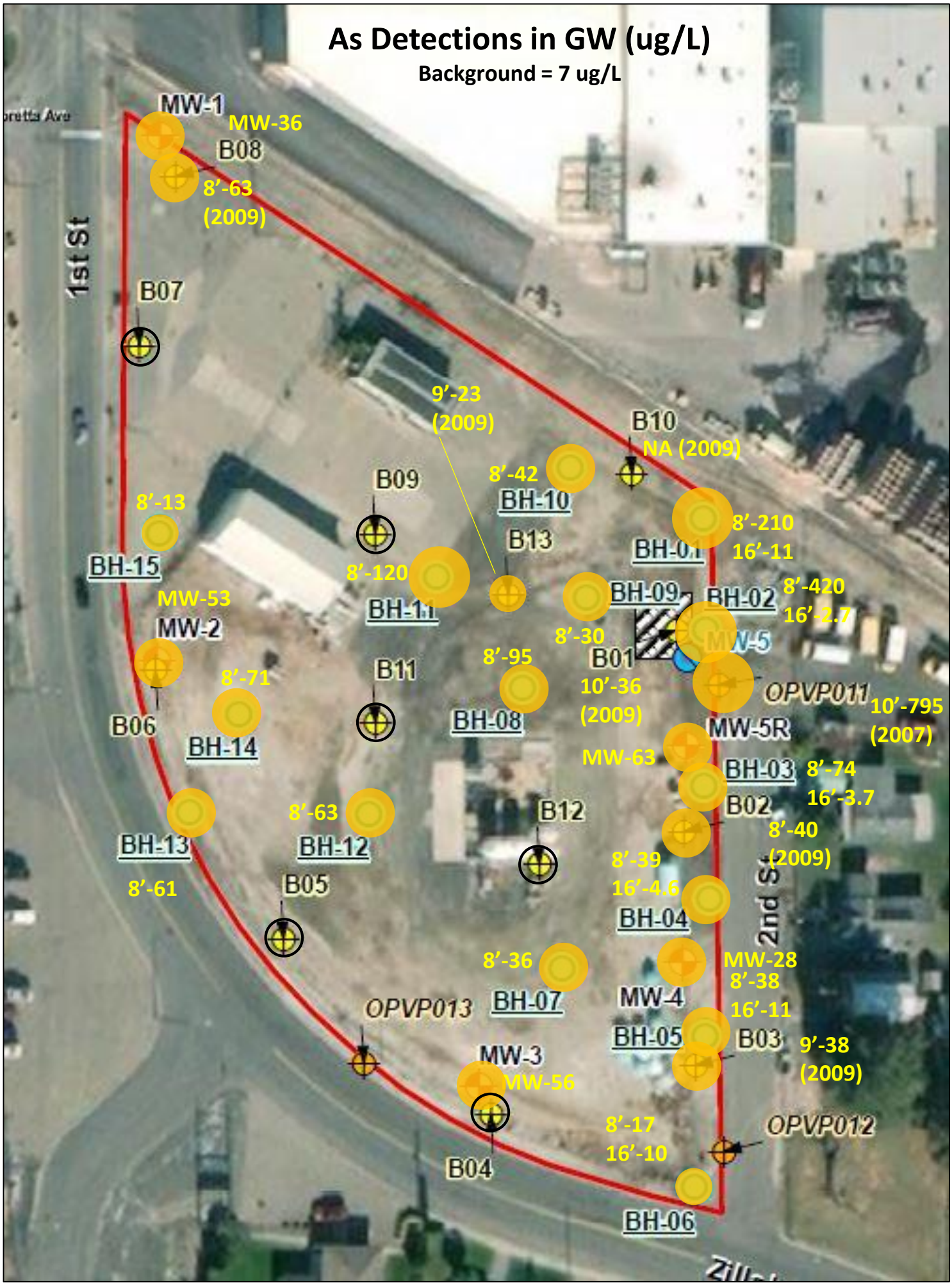

1,2,4-TMB Areas in GW (ug/L)
Method B = 80 ug/L
1st St
2nd St
MW-1
B08
B07
BH-15
8'-0.14
MW-2
B06
8'-0.2
BH-14
BH-13
8'-0.3
B05
8'-0.1
BH-12
B09
10'-2100
(2009)
9'-2600
(2009)
8'-670
BH-10
B10
10'-210
(2009)
B13
8'-1300
BH-11
BH-01
8'-0.12
16'-0.12
BH-09
BH-02
8'-0.09
16'-0.11
8'-1100
MW-5
MW-84 (2011)
8'-100
B01
10'-550
(2009)
OPVP011
B11
9'-650
(2009)
BH-08
MW-5R
10'-25
(2007)
MW-ND
BH-03
8'-0.1
16'-0.1
B02
B12
9'-41
(2009)
8'-0.3
16'-0.1
BH-04
MW-ND
8'-1.2
BH-07
OPVP013
MW-4
BH-05
B03
8'-0.4
16'-0.4
MW-3
B04
OPVP012
8'-0.6
16'-0.9
BH-06
?
?
?

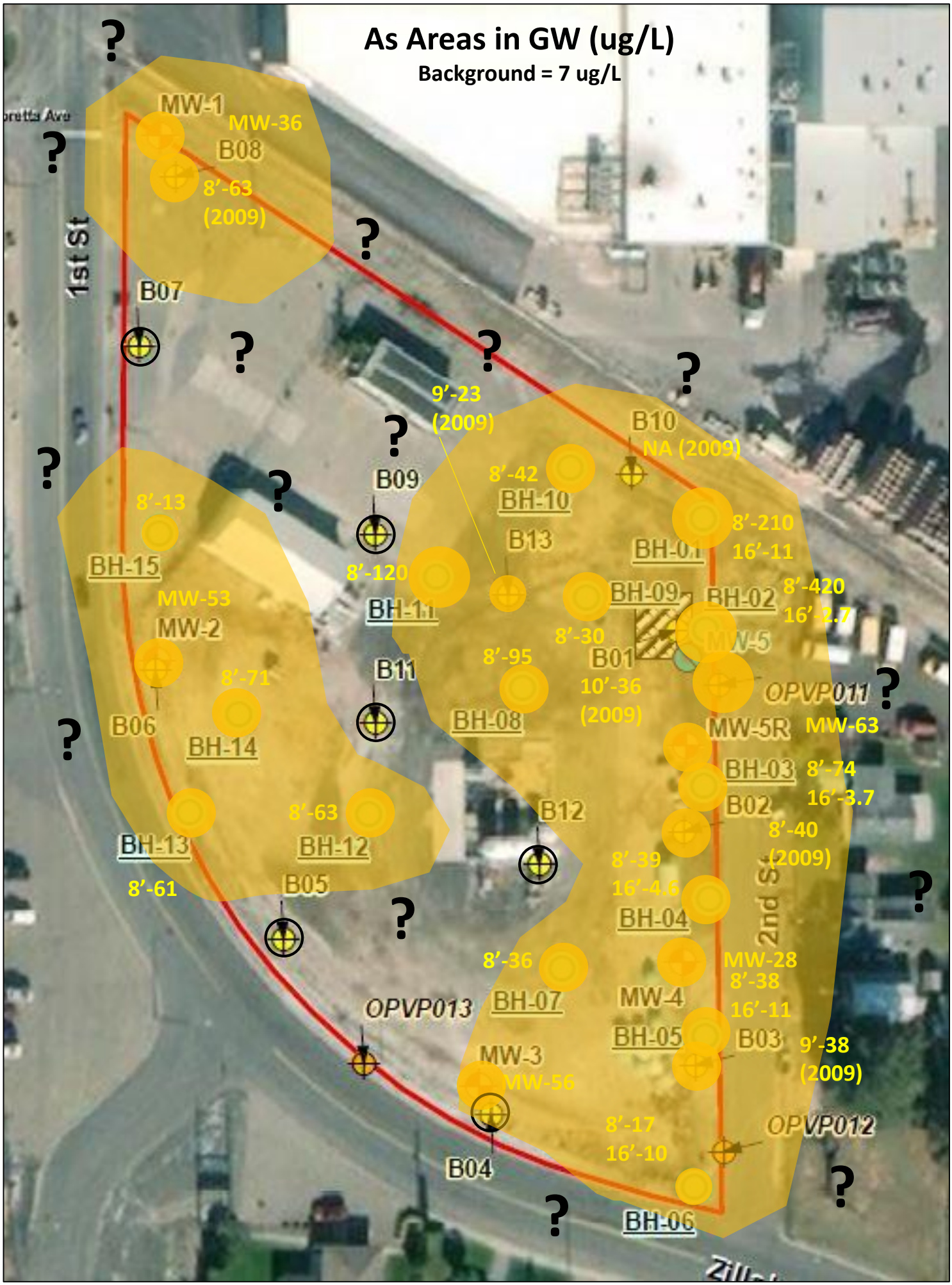
1,2,3-Tichloropropane (1,2,3-TCP)


1,2,3-TCP Detections in GW (ug/L)
Method B = 0.00038 ug/L
1st St
2nd St
MW-1
B08
B07
B10
8'-11
BH-10
B09
8'-ND
BH-15
8'-ND
BH-11
B13
BH-01
8'-0.44
16'-0.09
BH-09
8'-11
BH-02
8'-ND
16'-ND
MW-5
B01
MW-2
8'-ND
BH-14
B06
B11
8'-ND
BH-08
OPVP011
MW-5R
MW-0.27
BH-03
8'-ND
16'-ND
B02
8'-ND
BH-12
B12
BH-13
8'-ND
B05
8'-1.1
16'-ND
BH-04
8'-ND
BH-07
OPVP013
MW-4
8'-0.2
16'-0.07
BH-05
B03
MW-3
B04
8'-ND
16'-ND
OPVP012
BH-06


1,2,3-TCP Areas in GW (ug/L)
Method B = 0.00038 ug/L
1st St
2nd St
MW-1
B08
B07
B10
B09
8'-ND
BH-15
8'-11
BH-10
8'-0.44
16'-0.09
B13
BH-01
8'-ND
BH-11
BH-09
BH-02
8'-ND
16'-ND
MW-2
8'-11
B01
MW-5
OPVP011
8'-ND
B11
8'-ND
B06
BH-14
BH-08
MW-5R
MW-0.27
BH-03
8'-ND
16'-ND
B02
8'-ND
BH-12
B12
BH-13
8'-ND
8'-1.1
16'-ND
BH-04
B05
8'-ND
BH-07
OPVP013
MW-4
8'-0.2
16'-0.07
BH-05
B03
MW-3
8'-ND
16'-ND
OPVP012
B04
BH-06

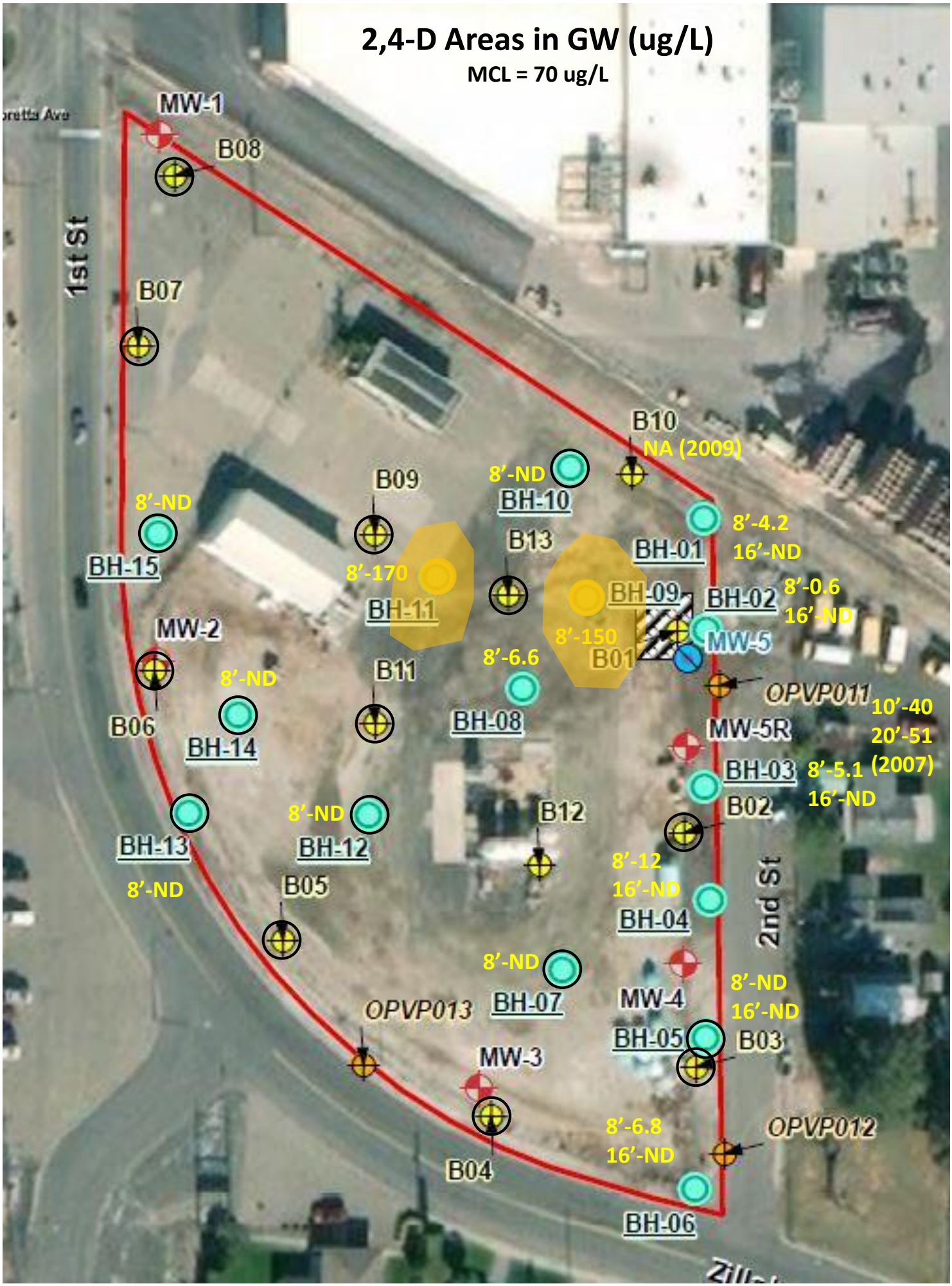
Arsenic (As)


As Detections in GW (ug/L)
Background = 7 ug/L
MW-1
MW-36
B08
8'-63
(2009)
1st St
B07
9'-23
(2009)
B10
NA (2009)
B09
8'-42
BH-10
8'-13
BH-15
B13
8'-210
16'-11
8'-120
BH-09
BH-02
8'-420
16'-2.7
MW-53
MW-2
8'-30
B01
8'-95
10'-36
(2009)
OPVP011
10'-795
(2007)
8'-71
B11
BH-08
MW-5R
B06
BH-14
MW-63
BH-03
8'-74
16'-3.7
B02
8'-40
(2009)
8'-63
B12
BH-13
BH-12
8'-61
8'-39
16'-4.6
B05
BH-04
2nd St
8'-36
MW-28
8'-38
16'-11
BH-07
MW-4
OPVP013
BH-05
B03
9'-38
(2009)
MW-3
MW-56
8'-17
16'-10
OPVP012
B04
BH-06

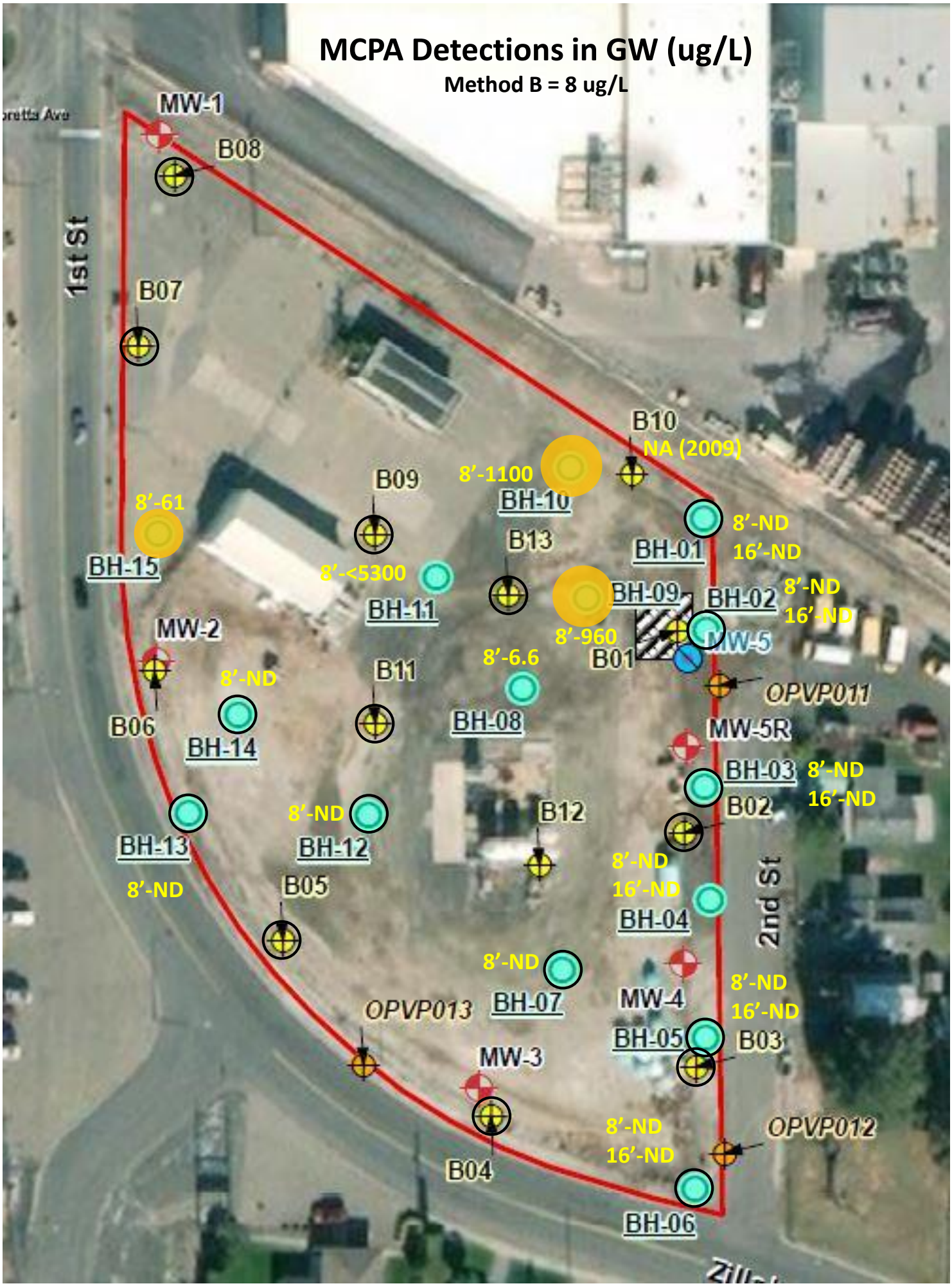

As Areas in GW (ug/L)
Background = 7 ug/L
1st St
2nd St
MW-1
MW-36
B08
8'-63
(2009)
B07
9'-23
(2009)
B10
NA (2009)
8'-42
BH-10
8'-210
16'-11
B13
BH-01
8'-13
BH-15
B09
8'-120
BH-11
BH-09
BH-02
8'-420
16'-2.7
MW-53
MW-2
8'-30
MW-5
8'-95
B01
10'-36
(2009)
B11
8'-71
B06
BH-14
BH-08
OPVP011
MW-5R
MW-63
BH-03
8'-74
16'-3.7
B02
8'-40
(2009)
8'-63
B12
BH-13
BH-12
8'-61
8'-39
16'-4.6
B05
BH-04
8'-36
MW-28
8'-38
16'-11
BH-07
MW-4
OPVP013
BH-05
B03
9'-38
(2009)
MW-3
MW-56
8'-17
16'-10
OPVP012
B04
BH-06

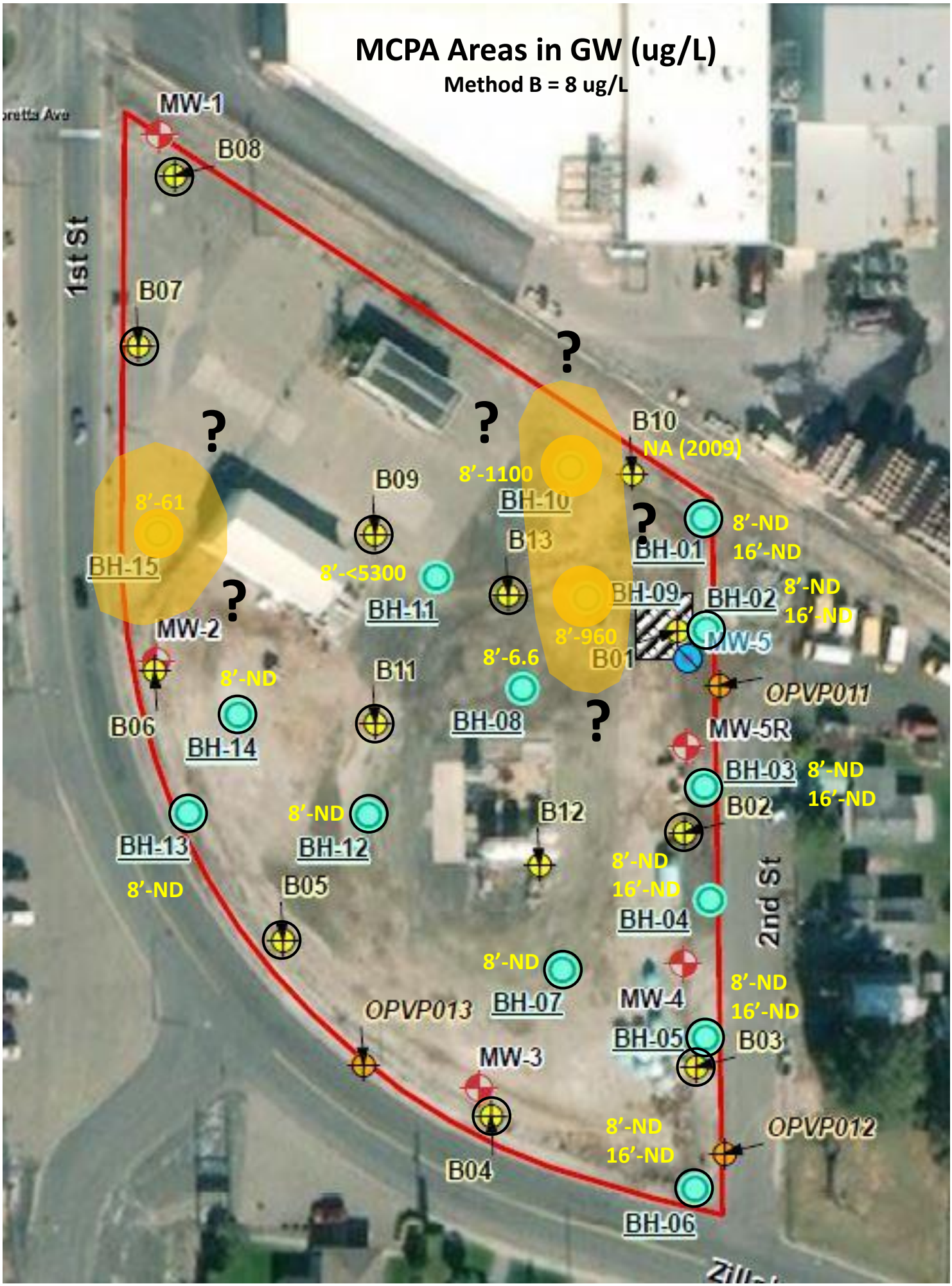
2,4-D


2,4-D Detections in GW (ug/L)
MCL = 70 ug/L
1st St
2nd St
MW-1
B08
B07
B10
NA (2009)
8'-ND
BH-10
B09
8'-ND
BH-15
B13
8'-4.2
16'-ND
BH-01
8'-170
BH-11
BH-09
BH-02
8'-0.6
16'-ND
8'-150
B01
MW-5
MW-2
8'-6.6
B11
8'-ND
OPVP011
10'-40
20'-51
(2007)
B06
BH-08
MW-5R
BH-14
BH-03
8'-5.1
16'-ND
B02
8'-ND
B12
BH-13
BH-12
8'-12
16'-ND
8'-ND
B05
BH-04
8'-ND
8'-ND
16'-ND
MW-4
OPVP013
BH-07
BH-05
B03
MW-3
8'-6.8
16'-ND
OPVP012
B04
BH-06


2,4-D Areas in GW (ug/L)
MCL = 70 ug/L
1st St
2nd St
MW-1
B08
B07
B10
NA (2009)
B09
8'-ND
BH-10
8'-ND
BH-15
B13
8'-4.2
16'-ND
BH-01
8'-170
BH-11
BH-09
BH-02
8'-0.6
16'-ND
8'-150
B01
MW-5
MW-2
8'-6.6
B11
OPVP011
10'-40
20'-51
(2007)
8'-ND
BH-08
MW-5R
B06
BH-14
BH-03
8'-5.1
16'-ND
B02
BH-13
8'-ND
B12
8'-ND
BH-12
8'-12
16'-ND
8'-ND
B05
BH-04
8'-ND
BH-07
MW-4
8'-ND
16'-ND
OPVP013
BH-05
B03
MW-3
8'-6.8
16'-ND
OPVP012
B04
BH-06

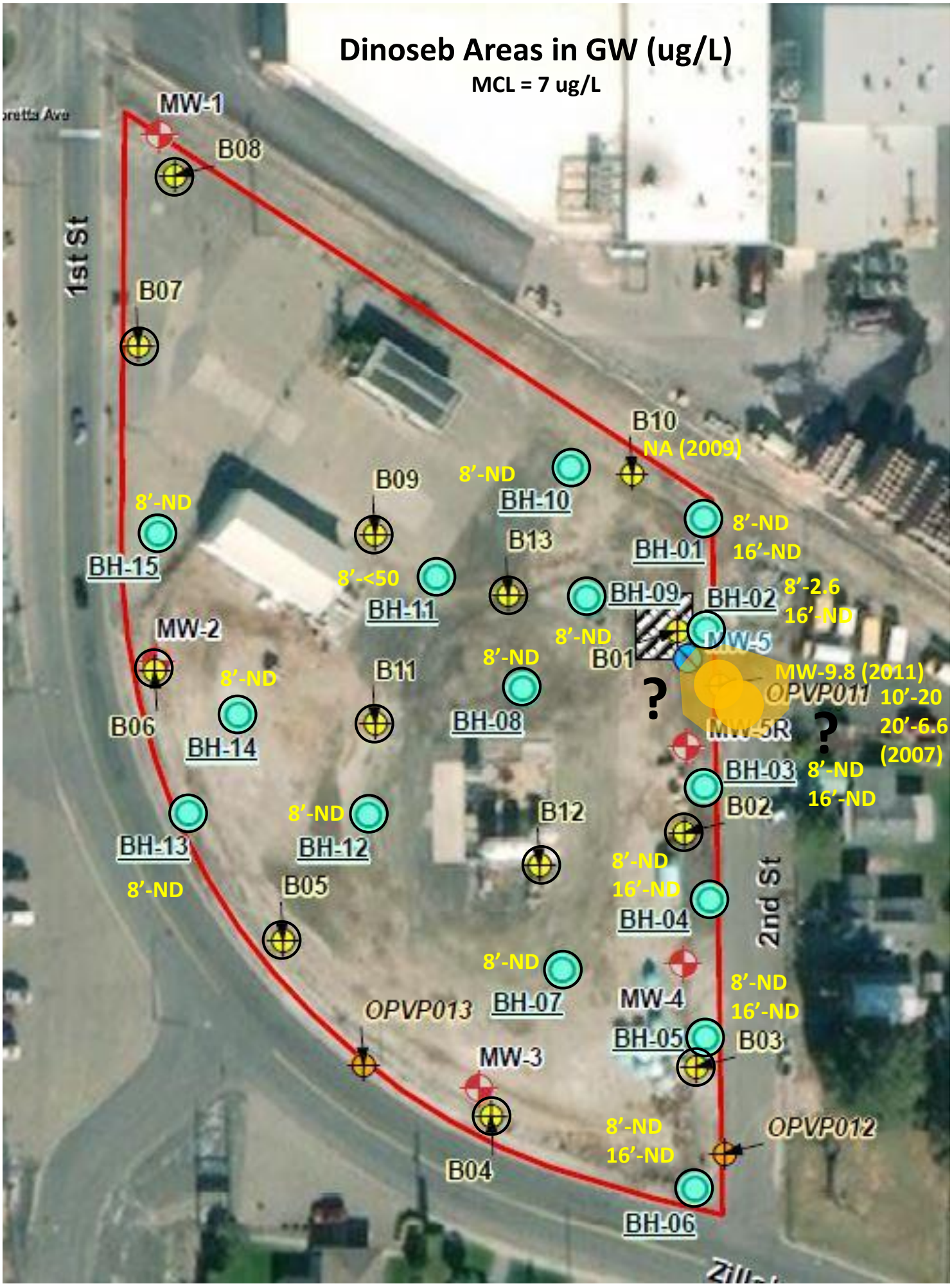
MCPA


MCPA Detections in GW (ug/L)
Method B = 8 ug/L
1st St
2nd St
MW-1
B08
B07
B10
NA (2009)
8'-1100
BH-10
B09
8'-61
BH-15
8'-ND
16'-ND
BH-01
B13
8'-<5300
BH-11
BH-09
BH-02
8'-ND
16'-ND
8'-960
B01
MW-5
MW-2
8'-6.6
OPVP011
8'-ND
B11
B06
BH-14
BH-08
MW-5R
BH-03
8'-ND
16'-ND
B02
B12
8'-ND
BH-13
8'-ND
BH-12
8'-ND
16'-ND
BH-04
B05
8'-ND
BH-07
OPVP013
MW-4
8'-ND
16'-ND
BH-05
B03
MW-3
8'-ND
16'-ND
OPVP012
B04
BH-06

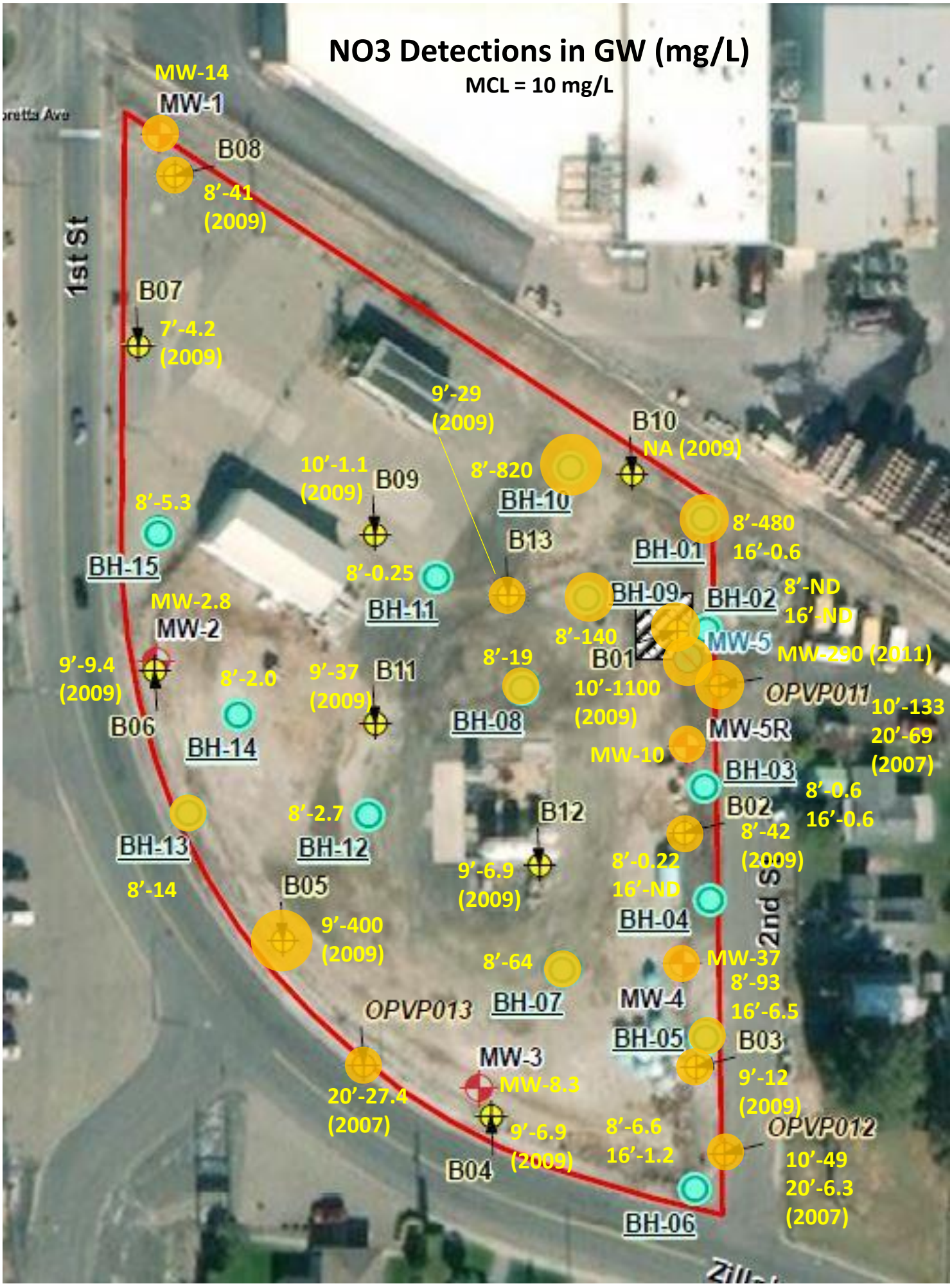

MCPA Areas in GW (ug/L)
Method B = 8 ug/L
1st St
2nd St
MW-1
B08
B07
B10
NA (2009)
B09
8'-1100
BH-10
8'-61
BH-15
8'-<5300
BH-11
B13
BH-01
8'-ND
16'-ND
BH-09
BH-02
8'-ND
16'-ND
8'-960
B01
MW-5
MW-2
8'-6.6
B11
OPVP011
8'-ND
BH-14
B06
BH-08
MW-5R
BH-03
8'-ND
16'-ND
B02
B12
BH-13
8'-ND
BH-12
8'-ND
8'-ND
16'-ND
BH-04
B05
8'-ND
BH-07
OPVP013
MW-4
8'-ND
16'-ND
BH-05
B03
MW-3
8'-ND
16'-ND
OPVP012
B04
BH-06

Dinoseb


Dinoseb Detections in GW (ug/L)
MCL = 7 ug/L
MW-1
B08
1st St
B07
B10
NA (2009)
8'-ND
BH-10
B09
8'-ND
BH-15
B13
8'-ND
16'-ND
BH-01
8'-<50
BH-11
BH-09
BH-02
8'-2.6
16'-ND
MW-2
8'-ND
B01
MW-5
8'-ND
B11
MW-9.8 (2011)
OPVP011
10'-20
20'-6.6
(2007)
8'-ND
B06
BH-14
BH-08
MW-5R
BH-03
8'-ND
16'-ND
B02
8'-ND
BH-13
BH-12
B12
8'-ND
16'-ND
BH-04
8'-ND
B05
2nd St
8'-ND
BH-07
MW-4
8'-ND
16'-ND
OPVP013
BH-05
B03
MW-3
8'-ND
16'-ND
OPVP012
B04
BH-06

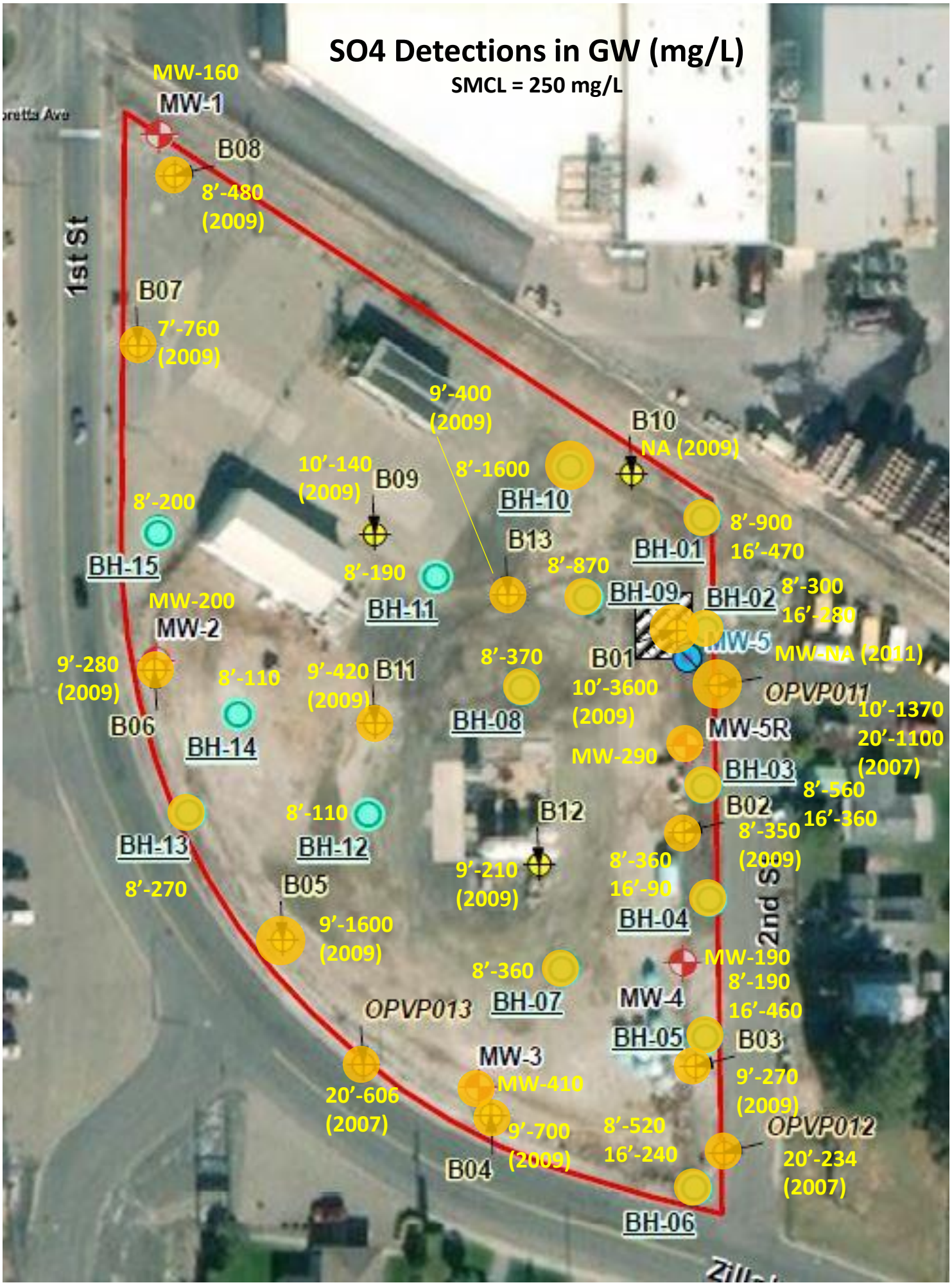

Dinoseb Areas in GW (ug/L)
MCL = 7 ug/L
1st St
2nd St
MW-1
B08
B07
B10
NA (2009)
8'-ND
BH-10
B09
8'-ND
BH-15
BH-01
8'-ND
16'-ND
B13
8'-<50
BH-11
BH-09
BH-02
8'-2.6
16'-ND
MW-2
8'-ND
B01
MW-5
8'-ND
B11
MW-9.8 (2011)
OPVP011
10'-20
20'-6.6
(2007)
B06
8'-ND
BH-14
BH-08
MW-5R
BH-03
8'-ND
16'-ND
B02
BH-13
8'-ND
8'-ND
BH-12
B12
8'-ND
16'-ND
B05
BH-04
8'-ND
BH-07
OPVP013
MW-4
8'-ND
16'-ND
BH-05
B03
MW-3
8'-ND
16'-ND
OPVP012
B04
BH-06

Nitrate (NO3)


NO3 Detections in GW (mg/L)
MCL = 10 mg/L
1st St
2nd St
MW-14
MW-1
B08
8'-41
(2009)
B07
7'-4.2
(2009)
8'-5.3
BH-15
MW-2.8
MW-2
9'-9.4
(2009)
B06
8'-2.0
BH-14
BH-13
8'-14
8'-2.7
BH-12
B05
9'-400
(2009)
10'-1.1
(2009)
B09
9'-29
(2009)
8'-820
BH-10
B10
NA (2009)
8'-0.25
BH-11
B13
9'-37
(2009)
B11
8'-19
BH-08
9'-6.9
(2009)
B12
8'-64
BH-07
OPVP013
20'-27.4
(2007)
MW-3
MW-8.3
9'-6.9
(2009)
B04
8'-480
16'-0.6
BH-01
BH-09
8'-140
B01
10'-1100
(2009)
BH-02
8'-ND
16'-ND
MW-5
MW-290 (2011)
OPVP011
10'-133
20'-69
(2007)
MW-5R
MW-10
BH-03
8'-0.6
16'-0.6
B02
8'-42
(2009)
8'-0.22
16'-ND
BH-04
MW-37
8'-93
16'-6.5
MW-4
BH-05
B03
9'-12
(2009)
8'-6.6
16'-1.2
OPVP012
10'-49
20'-6.3
(2007)
BH-06


NO3 Areas in GW (mg/L)
MCL = 10 mg/L
1st St
2nd St
MW-14
MW-1
B08
8'-41
(2009)
B07
7'-4.2
(2009)
8'-5.3
BH-15
MW-2.8
MW-2
9'-9.4
(2009)
B06
8'-2.0
BH-14
BH-13
8'-14
8'-2.7
BH-12
B05
9'-400
(2009)
OPVP013
20'-27.4
(2007)
MW-3
MW-8.3
9'-6.9
(2009)
B04
BH-06
8'-6.6
16'-1.2
OPVP012
10'-49
20'-6.3
(2007)
BH-03
8'-0.6
16'-0.6
B02
8'-42
(2009)
MW-5R
MW-10
OPVP011
10'-133
20'-69
(2007)
MW-290 (2011)
MW-5
8'-ND
16'-ND
BH-02
BH-01
8'-480
16'-0.6
B10
NA (2009)
BH-10
8'-820
9'-29
(2009)
B13
BH-09
8'-140
B01
10'-1100
(2009)
8'-19
BH-08
B12
9'-6.9
(2009)
8'-0.22
16'-ND
BH-04
MW-37
8'-93
16'-6.5
B03
9'-12
(2009)
BH-05
MW-4
8'-64
BH-07
10'-1.1
(2009)
B09
8'-0.25
BH-11
B11
9'-37
(2009)

Sulfate (SO4)


SO4 Detections in GW (mg/L)
SMCL = 250 mg/L
MW-160
MW-1
B08
8'-480
(2009)
1st St
B07
7'-760
(2009)
9'-400
(2009)
B10
NA (2009)
10'-140
(2009)
B09
8'-1600
BH-10
8'-200
BH-15
8'-900
16'-470
BH-01
B13
8'-870
8'-190
BH-11
BH-09
BH-02
8'-300
16'-280
MW-200
MW-2
MW-5
MW-NA (2011)
9'-280
(2009)
8'-110
9'-420
(2009)
B11
8'-370
B01
10'-3600
(2009)
OPVP011
10'-1370
20'-1100
(2007)
B06
BH-14
BH-08
MW-5R
MW-290
BH-03
8'-560
16'-360
B02
8'-350
(2009)
8'-110
B12
BH-13
BH-12
8'-270
9'-210
(2009)
8'-360
16'-90
B05
9'-1600
(2009)
BH-04
2nd St
MW-190
8'-190
16'-460
8'-360
BH-07
MW-4
OPVP013
BH-05
B03
9'-270
(2009)
MW-3
MW-410
20'-606
(2007)
9'-700
(2009)
8'-520
16'-240
OPVP012
20'-234
(2007)
B04
BH-06


SO4 Areas in GW (mg/L)
SMCL = 250 mg/L
MW-160
MW-1
B08
8'-480
(2009)
1st St
B07
7'-760
(2009)
?
?
?
?
9'-400
(2009)
B10
NA (2009)
10'-140
(2009)
B09
8'-1600
BH-10
8'-200
BH-15
8'-190
BH-11
B13
8'-870
BH-01
8'-900
16'-470
BH-09
BH-02
8'-300
16'-280
MW-200
MW-2
MW-5
MW-NA (2011)
9'-280
(2009)
8'-110
9'-420
(2009)
B11
8'-370
B01
10'-3600
(2009)
OPVP011
10'-1370
20'-1100
(2007)
B06
BH-14
BH-08
MW-5R
MW-290
BH-03
8'-560
16'-360
B02
8'-350
(2009)
8'-110
BH-12
B12
BH-13
8'-270
9'-210
(2009)
8'-360
16'-90
B05
9'-1600
(2009)
BH-04
2nd St
MW-190
8'-190
16'-460
8'-360
BH-07
MW-4
OPVP013
BH-05
B03
9'-270
(2009)
MW-3
MW-410
20'-606
(2007)
9'-700
(2009)
8'-520
16'-240
OPVP012
20'-234
(2007)
B04
BH-06