Second Periodic Review
Palouse Producers Site

335 E. Main St., Palouse, Whitman County
Facility Site ID: 787, Cleanup Site ID: 4973

Toxics Cleanup Program, Eastern Region

Washington Department of Ecology
Spokane, Washington

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Document Information

This document is available on the Department of Ecology's Palouse Producers Site cleanup site page.[1]

Related Information

- Facility Site ID: 787
- Cleanup Site ID: 4973

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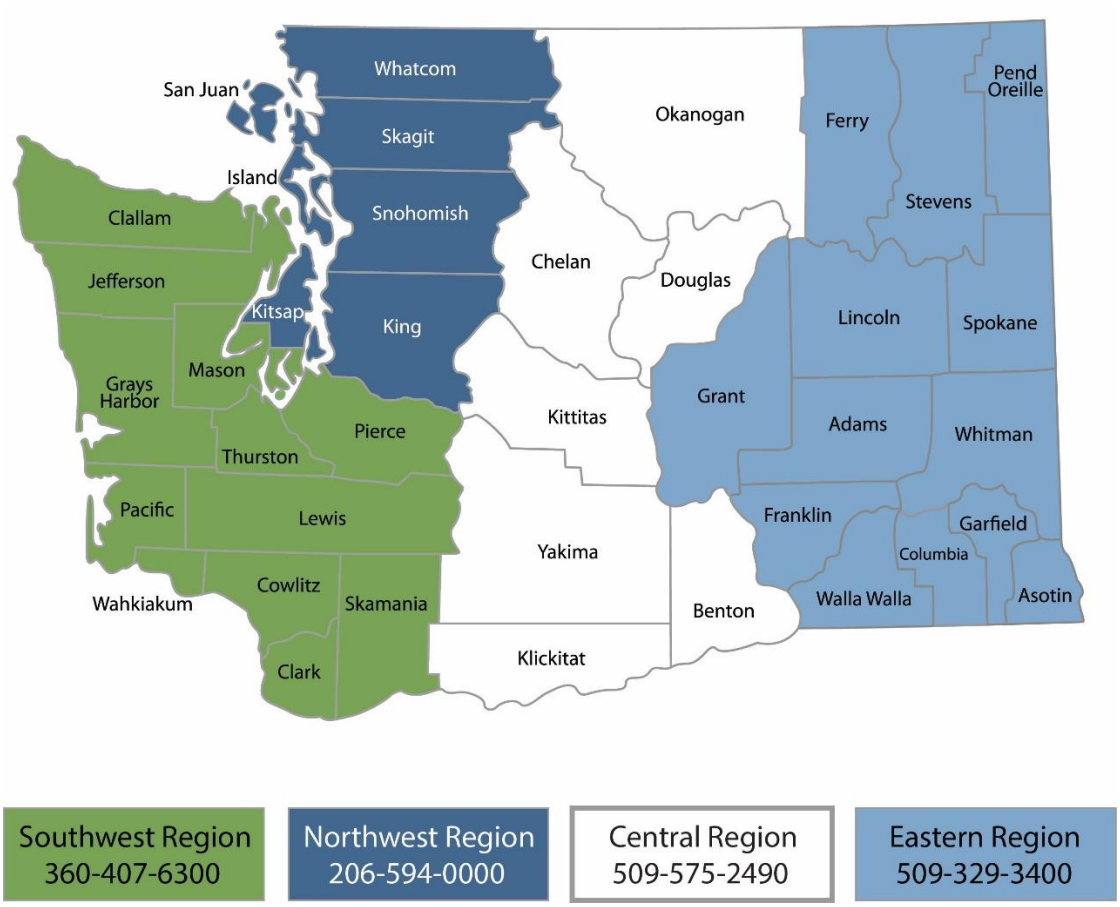
[1] https://apps.ecology.wa.gov/cleanupsearch/site/4973
[2] https://ecology.wa.gov/About-us/Who-we-are/Our-Programs/Toxics-Cleanup

Department of Ecology's Regional Offices

Map of Counties Served



Southwest Region 360-407-6300	Northwest Region 206-594-0000	Central Region 509-575-2490	Eastern Region 509-329-3400

Region	Counties served	Mailing Address	Phone
Southwest	Clallam, Clark, Cowlitz, Grays Harbor, Jefferson, Mason, Lewis, Pacific, Pierce, Skamania, Thurston, Wahkiakum	PO Box 47775 Olympia, WA 98504	360-407-6300
Northwest	Island, King, Kitsap, San Juan, Skagit, Snohomish, Whatcom	PO Box 330316 Shoreline, WA 98133	206-594-0000
Central	Benton, Chelan, Douglas, Kittitas, Klickitat, Okanogan, Yakima	1250 W Alder St Union Gap, WA 98903	509-575-2490
Eastern	Adams, Asotin, Columbia, Ferry, Franklin, Garfield, Grant, Lincoln, Pend Oreille, Spokane, Stevens, Walla Walla, Whitman	4601 N Monroe Spokane, WA 99205	509-329-3400
Headquarters	Across Washington	PO Box 47600 Olympia, WA 98504	360-407-6000

Table of Contents

Introduction **1**

Summary of Site Conditions **1**

Site description and history 1

Site investigations 2

Cleanup actions 3

Cleanup standards 3

Environmental Covenant 4

Periodic Review **5**

Effectiveness of completed cleanup actions 5

New scientific information for individual hazardous substances or mixtures present at the Site 6

New applicable state and federal laws for hazardous substances present at the Site 7

Current and projected Site and resource uses 7

Availability and practicability of more permanent remedies 7

Availability of improved analytical techniques to evaluate compliance with cleanup levels 7

Recommendations **7**

Conclusions **7**

Protectiveness of the remedy 8

Next review 8

References **9**

Appendix A. Figures **10**

Appendix B. Tables **19**

Appendix C. Photo Log **22**

Photo 1: View of the Site looking south 22

Photo 2: View of capped area looking north 22

Photo 3: View of shoreline looking east 23

Photo 4: View of shoreline looking west 24

Photo 5: View of MW1 wellhead 25

Introduction

The Washington Department of Ecology (Ecology) reviewed post-cleanup site conditions and monitoring data to ensure human health and the environment are being protected at the Palouse Producers cleanup site (Site). Site cleanup was implemented under the Model Toxics Control Act (MTCA) regulations, Chapter 173-340 Washington Administrative Code (WAC). This is the second periodic review conducted for this Site. Ecology completed the first periodic review in July 2020.

The City of Palouse completed cleanup actions at the Site in 2012. These actions addressed contaminated soil, but residual soil and groundwater contamination remain at the Site. Groundwater has been monitored since completing the cleanup action, and institutional controls are in place to protect the remedy. For this Site, a periodic review is required because cleanup was done under a consent decree and an institutional control is required (WAC 173-340-420(2)).

When evaluating whether human health and the environment are being protected, Ecology must consider the following factors (WAC 173-340-420(4)):

a) The effectiveness of ongoing or completed cleanup actions, including the effectiveness of engineered controls and institutional controls in limiting exposure to hazardous substances remaining at the site

b) New scientific information for individual hazardous substances or mixtures present at the site

c) New applicable state and federal laws for hazardous substances present at the site

d) Current and projected site and resource uses

e) The availability and practicability of more permanent remedies

f) The availability of improved analytical techniques to evaluate compliance with cleanup levels

We publish a notice of all periodic reviews of Ecology-supervised sites in the *Contaminated Site Register* and provide an opportunity for public comment.

Summary of Site Conditions

Site description and history

The Site is in downtown Palouse (Figure 1). It is about 150 feet long with 200 feet of Main Street frontage. The southern edge of the property is bordered by the Palouse River.

The Site has been used for commercial agricultural support activities for over a century, from a blacksmith/welding shop to a vehicle maintenance and fueling facility. Petroleum products

were stored at the property from 1955 through 1985. Palouse Producers took over operation of the facility from Conoco in 1977. Five aboveground storage tanks and four underground storage tanks were in use. In 1985, all the aboveground storage tanks and three of the underground storage tanks were removed. The final underground tank was removed in 1992. During that time, there were uncontained spills, drips, and leaks from underground tanks and piping.

The lithology across the Site does not vary east to west, but does slope downward to the south, toward the river. Gravelly fill, ranging in thickness from 0.5 to 5 feet, covers most of the Site. Fill materials, including silt, sand, gravel, and debris, are at the surface and described as thickest near the river (up to 10 feet below ground surface [bgs]). Examples include rubber tires, wood, farm machinery and parts, wagon wheels, concrete and asphalt chunks, and organic material. Sand and silt are under the fill and extend about 10 feet bgs near the north end of the Site and up to 17 feet bgs near the river on the south end. Silt has been identified beneath the sandy silt on the north end of the Site but is not on the southern portion of the Site. Beneath all is fairly flat sandy gravel and basalt. The sandy gravel is approximately 2 feet thick and above the basalt. The basalt was also observed at the bottom of the Palouse River.

Groundwater was found in the sand and silty sands at about 6 feet to 12 feet bgs on the Site. The Site topography slopes toward the Palouse River and the presumed groundwater flow direction is to the south, toward the river.

Groundwater seeps have not been found. The river bottom offshore of the Site is basalt. The elevations of basalt beneath the river and the basalt on the Site are similar. Based on groundwater elevations and lithology, shallow groundwater appears to discharge to the Palouse River.

Site investigations

A series of investigations aided in determining the type, amount, extent, and source of the petroleum hydrocarbon contamination. Reports about these investigations are at Ecology's Eastern Regional Office in Spokane.

From 1984 through 1985, several interceptor trenches were installed to the water table to remove floating petroleum products from groundwater. During those installations, about 850 cubic yards of contaminated soil was removed. Additionally, a polymer liner was installed on the riverbank to limit contaminants reaching the river. Both these trenches were removed in 1992.

In 1989, soil samples were collected, and in 1991, soil and groundwater samples were collected from four new monitoring wells, along with sediment samples from the Palouse River. Ecology collected follow-up soil and groundwater samples in 1992 and 1993. In 1999, Ecology completed a full investigation by taking soil and groundwater samples. EPA followed up with more soil, groundwater, and sediment sampling in 2007 using Targeted Brownfield Assessment funding.

In 2011, a remedial investigation/feasibility study (RI/FS) was done using previous data and new soil, surface water, soil vapor, and groundwater sampling. The site was contaminated with petroleum hydrocarbons (gasoline, diesel, and heavy oil), benzene, arsenic, lead, and manganese in soil and groundwater. Excavating contaminated soils to the water table during the driest part of the year was recommended.

Cleanup actions

Site cleanup was completed in 2012. All on-site structures were demolished, and two existing sumps were vacuumed out. All unsaturated contaminated soil was excavated and disposed at an off-site landfill. Work was done at the driest part of the year in late summer to maximize the depth of unsaturated soil that could be removed. X-ray fluorescence helped segregate highly lead-contaminated soil that required pre-treatment with Portland cement prior to disposal. Laboratory confirmation sampling determined the lateral extent of excavation; the vertical extent was limited by reaching groundwater. About 3,000 cubic yards of contaminated soil was excavated. Following completion, three new groundwater monitoring wells were installed for ongoing compliance monitoring. Since saturated soils below the water table could not be removed, contamination was left at the Site. Soil vapor testing showed residual contamination did not produce dangerous vapors. Ecology selected natural attenuation (biotic and abiotic) to address residual contamination in soil and groundwater. Because soils are not very permeable, groundwater moves very slowly through soils; the Feasibility Study estimated a restoration time frame of 20 years.

Figure 2 shows the locations of all remedial actions.

Institutional controls minimize the potential for exposing remaining contamination. An environmental covenant was placed on the property to restrict activities that may negatively impact the cleanup action or expose remaining contamination at depth.

Ecology required all three monitoring wells at the Site to be sampled twice a year (Figure 3). Samples are analyzed for petroleum hydrocarbons, benzene, arsenic, lead, and manganese. In 2017, monitoring was reduced to once a year; in 2020, monitoring was changed to once every five years to coincide with periodic reviews.

Cleanup standards

Cleanup standards include cleanup levels, the location where these cleanup levels must be met (point of compliance), and any other regulatory requirements that apply to the Site. WAC 173-340-704[3] states MTCA Method A may be used to establish cleanup levels at sites that have few hazardous substances, are undergoing a routine cleanup action, and where numerical standards are available for all indicator hazardous substances in the media for which the Method A cleanup level is being used. Method B may be used at any site and is the most

[3] https://app.leg.wa.gov/WAC/default.aspx?cite=173-340-704

common method for setting cleanup levels when sites are contaminated with substances not listed under Method A. Method C cleanup levels may be used to set soil and air cleanup levels at industrial sites.

Ecology decided MTCA Method B cleanup levels were appropriate for contaminants at this Site. The point of compliance is the area where the cleanup levels must be attained. Groundwater points of compliance are established for the entire Site from the top of the saturated zone to the lowest affected portion of the aquifer, which is bedrock at this Site.

Ecology selected the indicators for the Site in the Cleanup Action Plan: arsenic, lead, total petroleum hydrocarbons (diesel and gasoline), and benzene for soil; the same chemicals are also indicators in groundwater with the addition of manganese. Table 1 shows the cleanup levels for these indicators.

Environmental Covenant

Ecology decided institutional controls would be required as part of the cleanup action to document the remaining contamination, protect the cleanup action, and protect human health and the environment. On April 16, 2013, institutional controls in the form of an environmental covenant[4] (Covenant) were recorded for the Site.

The Covenant recorded for the Site imposes the following limitations (the Site is referred to as the Property within the Covenant):

1. No groundwater may be taken for domestic use.
2. Any activity on the Property that may result in the release or exposure to the environment of, or create a new exposure pathway to, the contaminated soil that remains on-site at greater than 7 feet below ground surface is prohibited. Some examples of activities that are prohibited at depths greater than 7 feet include: drilling, digging, bulldozing, earthwork or placement of any objects or use of any equipment below this depth.
3. Any activity on the property that may interfere with the integrity of the Remedial Action and continued protection of human health and the environment is prohibited.
4. Any activity on the Property that may result in the release or exposure to the environment of a hazardous substance that remains on the Property as part of the Remedial Action, or create a new exposure pathway, is prohibited without prior written approval from Ecology.
5. The Owner of the property must give thirty day advance written notice to Ecology of the Owner's intent to convey any interest in the Property. No conveyance of title, easement, lease, or other interest in the Property shall be consummated by the Owner

[4] https://apps.ecology.wa.gov/cleanupsearch/document/19782

without adequate and complete provision for continued monitoring, operation, and maintenance of the Remedial Action.

6. The Owner must restrict leases to uses and activities consistent with the Covenant and notify all lessees of the restrictions on the use of the Property.
7. The Owner must notify and obtain approval from Ecology prior to any use of the Property that is inconsistent with the terms of this Covenant. Ecology may approve any inconsistent use only after public notice and comment.
8. The Owner shall allow authorized representatives of Ecology the right to enter the Property at reasonable times for the purpose of evaluating the Remedial Action; to take samples, to inspect remedial actions conducted at the property, to determine compliance with this Covenant, and to inspect records that are related to the Remedial Action.
9. The Owner of the Property reserves the right under WAC 173-340-440 to record an instrument that provides that this Covenant shall no longer limit use of the property or be of any further force or effect. However, such an instrument may be recorded only if Ecology, after public notice and opportunity for comment, concurs.

Periodic Review

Effectiveness of completed cleanup actions

During the Site visit Ecology conducted on April 20, 2026, the remedy appeared to be functioning as intended. Wells remain accessible and in good condition. The site has been developed with two businesses, after Ecology was consulted and involved per the environmental covenant. Building construction was slab on grade, and ground disturbance was shallower than 7 feet. Access to wells has been properly maintained. Areas not covered by buildings are covered with gravel and maintained for thickness and weed prevention. Shoreline areas are maintained with vegetation.

Direct contact

Excavations removed all contaminated soil down to a depth of 7 feet, which prevents any direct contact. The environmental covenant prevents any excavation that would bring potentially contaminated soil to the surface. The environmental covenant (see page 4) remains filed with the deed for the property.

Groundwater cleanup

Ecology evaluates contaminant trends in every periodic review to ensure no significant major changes are occurring and human health and the environment remain protected.

Three wells are present at the Site. MW1 is the upgradient well and shows the levels of contaminants in groundwater entering the Site and is unaffected by Site contamination. MW2 and MW3 are downgradient wells, with MW2 slightly near the edge of the main contamination plume and MW3 directly in the plume. Because saturated soils were left behind, Ecology expects groundwater contamination will continue until natural attenuation has time to lower concentrations.

MW1 has not been above state standards for any contaminant except manganese. Manganese can be naturally occurring and may not be related to the Site, but analysis needed to determine this has not been done.

For wells MW2 and MW3, lead has never been above state standards in all monitoring events, so it has been removed as an analyte. The other metals (arsenic and manganese) have varied in concentration. Arsenic has generally been below state standards, but has been over primarily in MW3. Manganese is above standards in both wellsb.

Petroleum contamination remains the primary contaminant. Gasoline, diesel, and heavy oils were used at the Site, and benzene is a hazardous volatile chemical associated with gasoline. At MW2, all petroleum levels have been low. Gasoline and diesel were near or above state standards in early monitoring events, but have been below since 2013. Diesel and heavy oil have steadily decreased, but have had some higher samples periodically. Most notably, a very high detection of diesel occurred in 2026 in MW3, almost three times the highest amount found before. There are many potential reasons for this, with the most likely being residual contamination slowly moving toward MW3. Benzene had very high detections in early monitoring, but MW2 and MW3 show decreasing concentrations over time. MW2 was only above standards in 2012, and MW3 hasn't been above since 2014. These trends can be seen in figures 4 through 9, and groundwater data is in Table 2.

Institutional controls

Institutional controls in the form of a Covenant were implemented at the Site in 2013. The Covenant remains active and discoverable through the Whitman County Auditor. Ecology found no evidence a new instrument has been recorded that limits the effectiveness or applicability of the Covenant. This Covenant prohibits activities that would release contaminants contained as part of the cleanup action and prohibits any use of the property that is inconsistent with the Covenant, unless approved by Ecology in advance. This Covenant ensures the long-term integrity of the cleanup action will be protected.

New scientific information for individual hazardous substances or mixtures present at the Site

There is no new relevant scientific information for the hazardous substances remaining in soil and groundwater at the Site.

New applicable state and federal laws for hazardous substances present at the Site

There are no new applicable or relevant state or federal laws for hazardous substances remaining at the Site.

Current and projected Site and resource uses

The Site is zoned as high intensity. The Site was sold to a local development group in March 2020. The Site was redeveloped into two businesses, the Palouse Brewery and the TLC Veterinary Clinic. Ecology worked closely with the City of Palouse and the purchasers to ensure the sale and development followed the environmental covenant. The City of Palouse remains responsible for groundwater monitoring at the Site, and the new owners have maintained all groundwater monitoring wells and access to them.

Availability and practicability of more permanent remedies

Additional treatment technologies have been evaluated for similar sites in Eastern Washington with petroleum contamination in groundwater in low permeability soils near surface water. These have included lance injection emplacement, in-situ biological oxidation, and phytoremediation. None have significantly increased degradation of petroleum or benzene faster than natural attenuation. Therefore, given the site similarities, we expect these technologies also would not be effective at this Site.

Availability of improved analytical techniques to evaluate compliance with cleanup levels

Metals are analyzed via EPA Method 200.8, petroleum with NWTPH, and benzene with EPA Method 8260C. No improved analytical techniques are available.

Recommendations

- Increase the frequency of monitoring to biannual (once every two years).

Conclusions

- The cleanup actions completed at the Site remain protective of human health and the environment. The gravel cover and environmental covenant prevent direct contact with contaminated soils and/or groundwater.
- Contaminant trends are as expected, except for diesel in MW3. Increasing the groundwater sampling frequency to once every two years may help determine the cause

for this change and ensure that any increases do not represent a deteriorating condition or a risk to human health and the environment.

- The Covenant for the property is in place and effective in protecting human health and the environment from exposure to hazardous substances.

Protectiveness of the remedy

Based on Ecology's review of the Site data, the remedy is functioning as intended, and is protective of human health and the environment. The requirements of the Covenant are being followed. No additional cleanup actions are required by the property owner at this time. The property owner is responsible for maintaining the gravel cover and well access.

Next review

Ecology will schedule the next review for the Site five years from the date of this periodic review. If additional cleanup actions or institutional controls are required, the next periodic review will be scheduled five years after those activities are completed.

References

Maul Foster & Alongi, 2011, Remedial Investigation and Feasibility Study Report, Former Palouse Producers Property.

Washington Department of Ecology, 2011, Cleanup Action Plan, Palouse Producers Site.

Washington Department of Ecology. 2023. Model Toxics Cleanup Act Regulation Chapter 173-340 WAC.

Washington Department of Ecology. July 2020. Periodic Review.

Appendix A. Figures

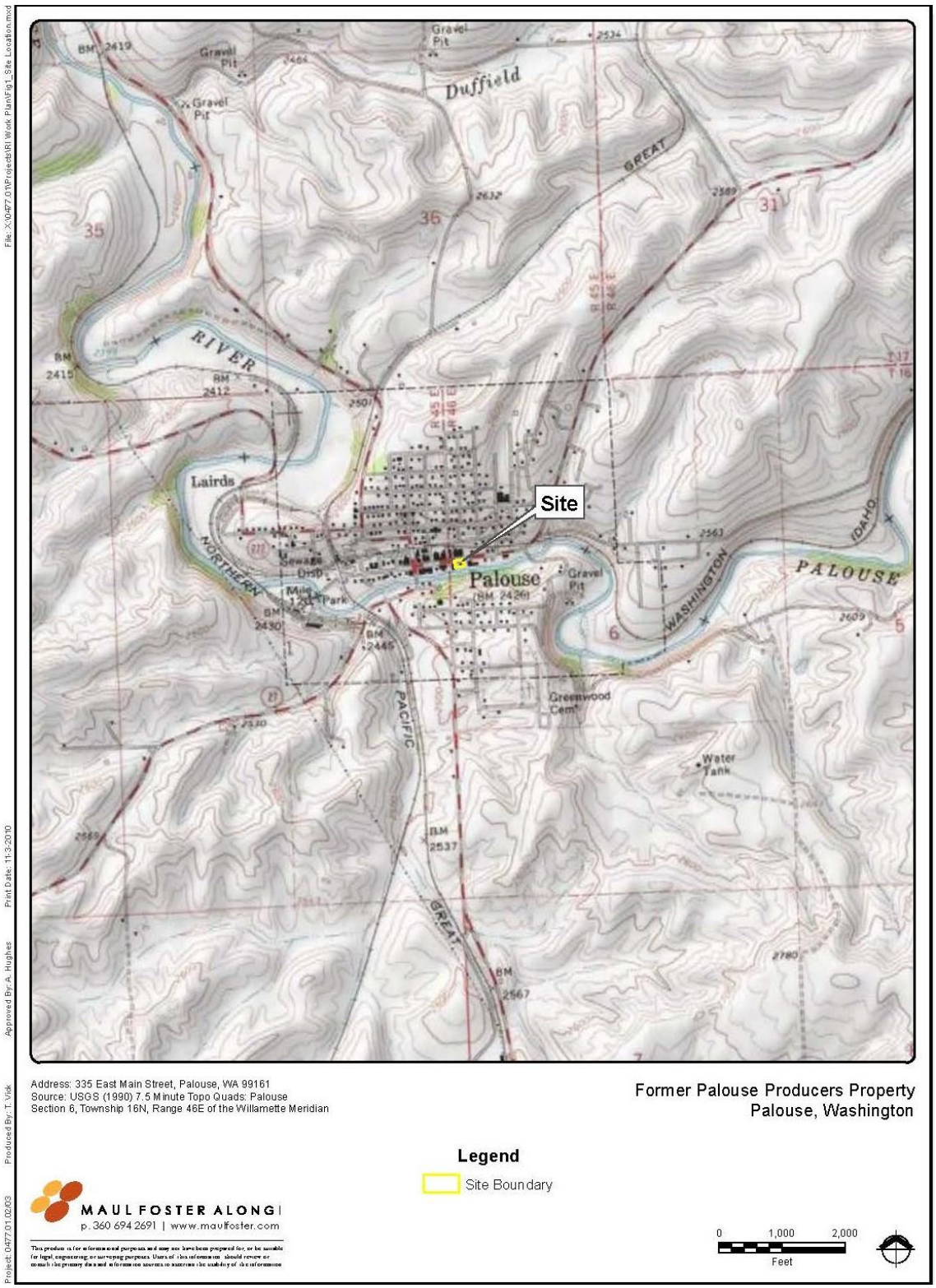


Figure 1. Site location

Figure 2. Remedial actions

Figure 3. Well locations

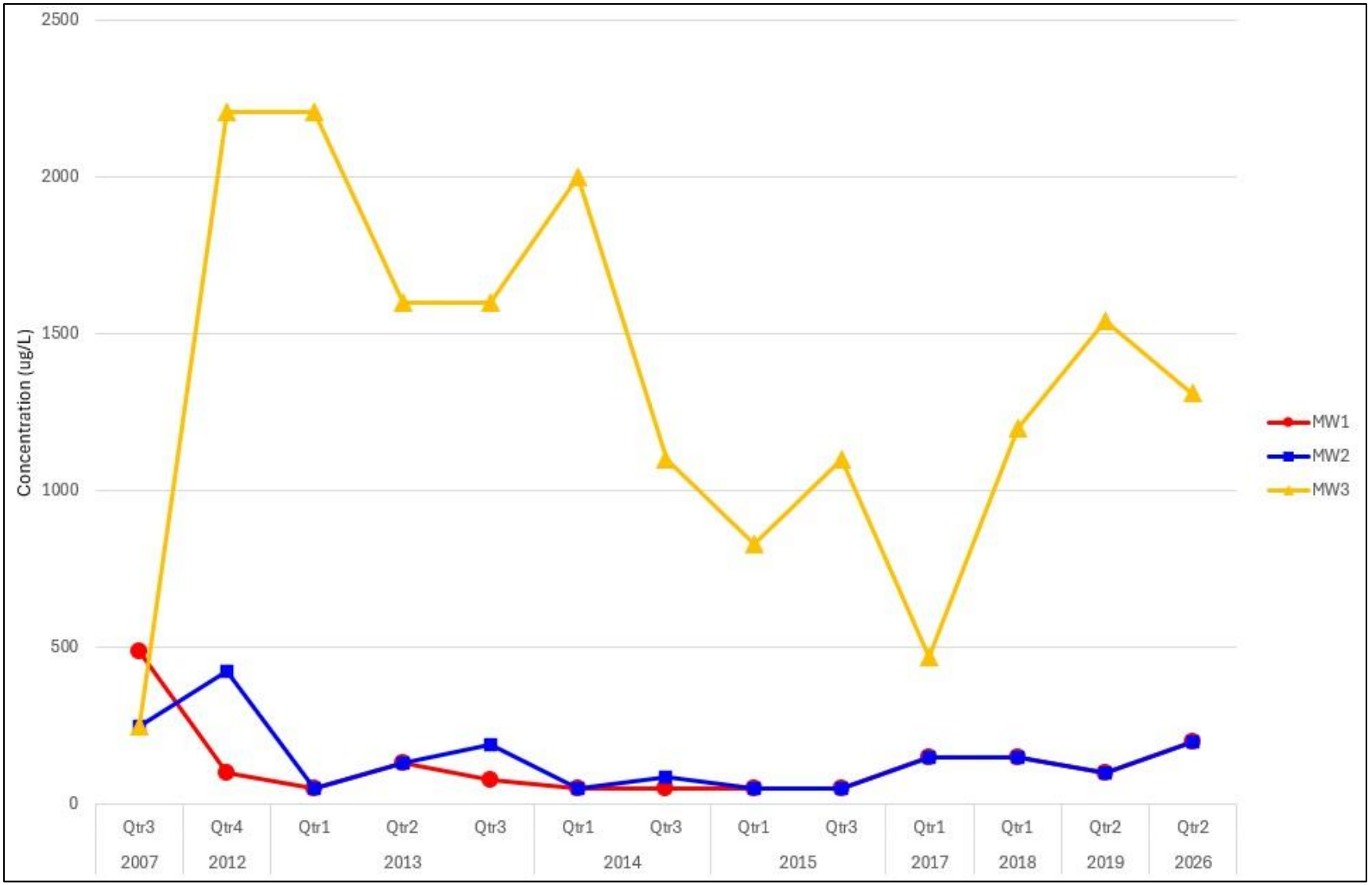


Figure 4. Total petroleum hydrocarbons – gasoline

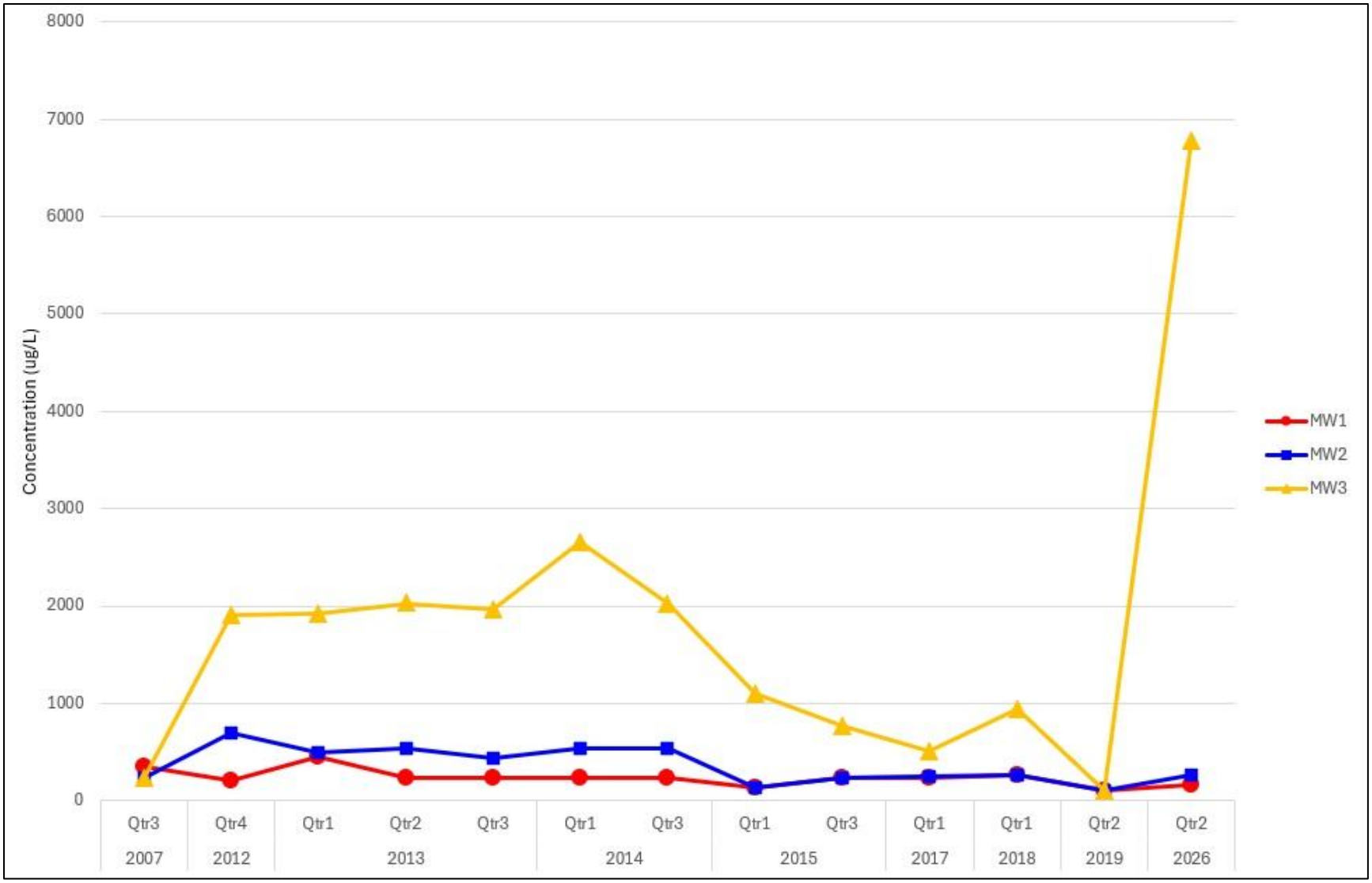


Figure 5. Total petroleum hydrocarbons – diesel

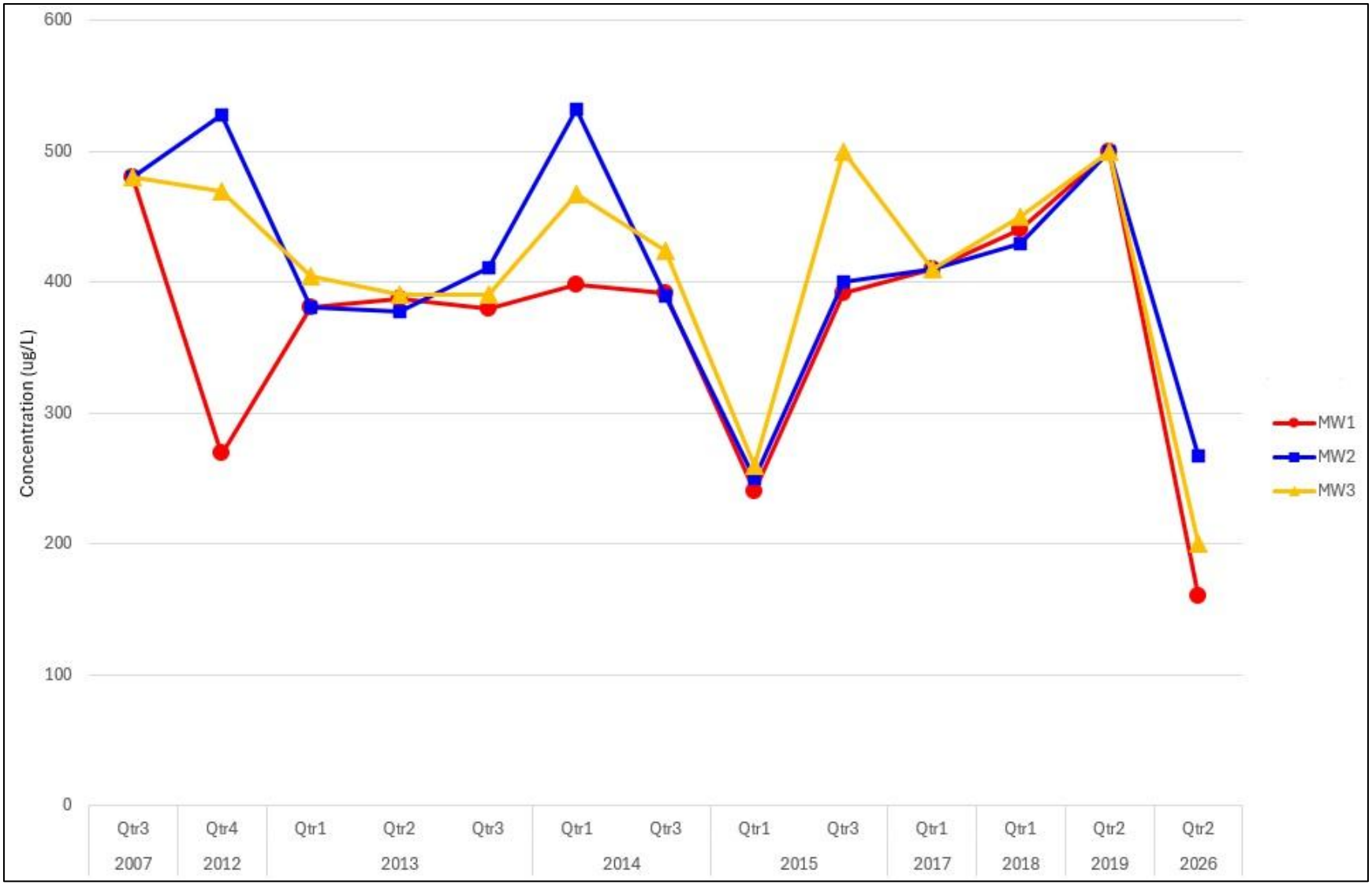


Figure 6. Total petroleum hydrocarbons – oil

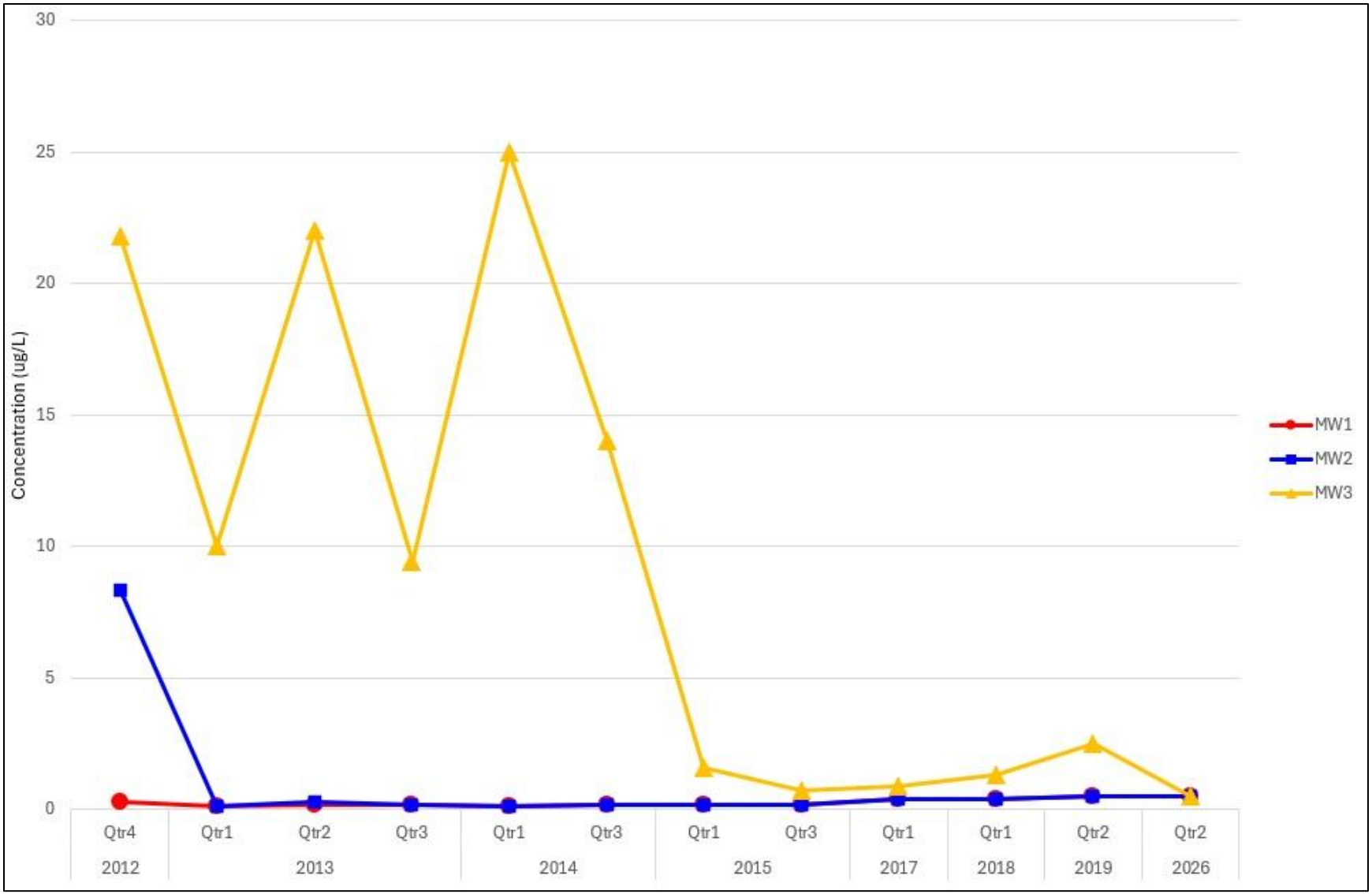


Figure 7. Benzene

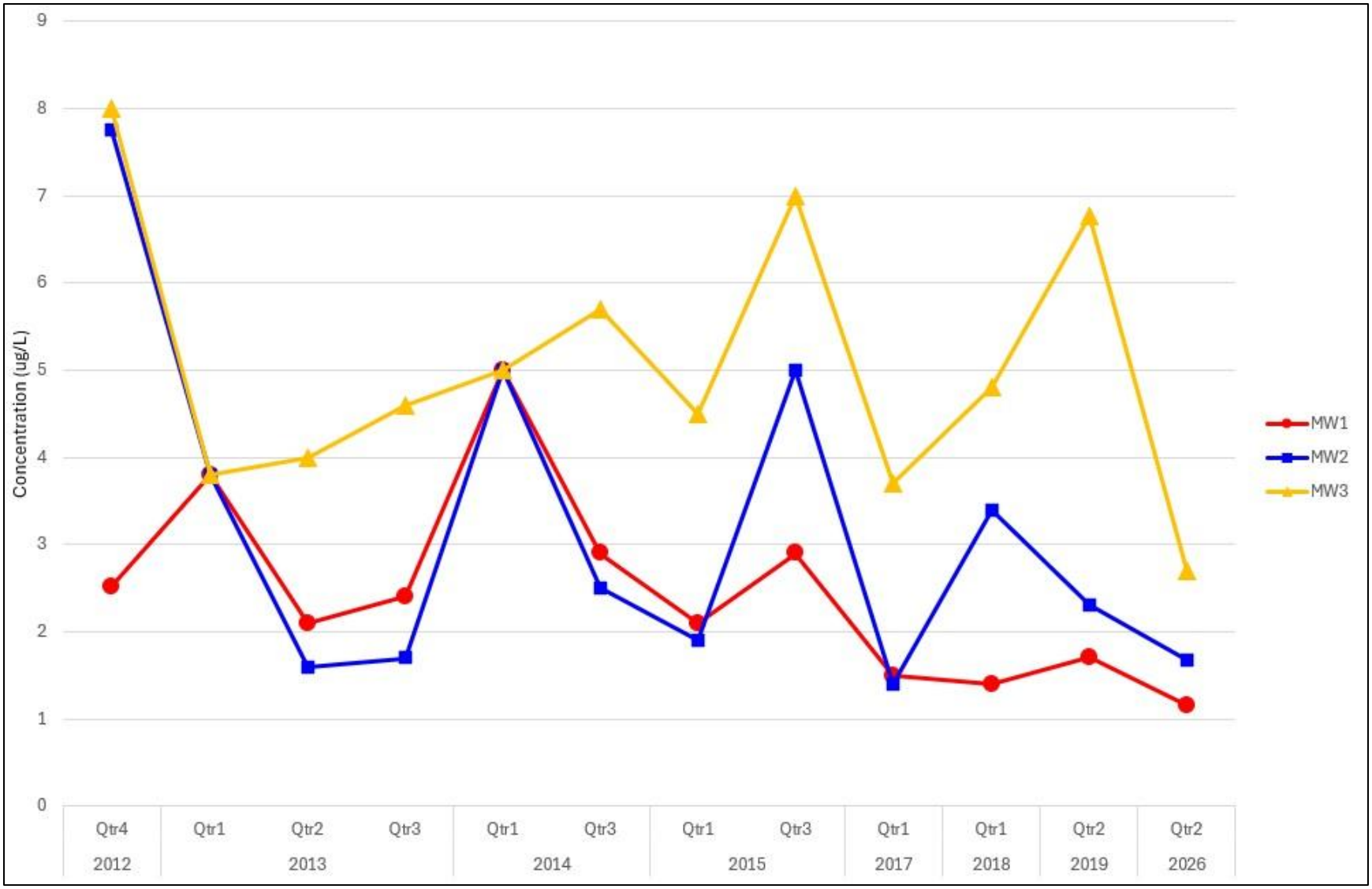


Figure 8. Total arsenic

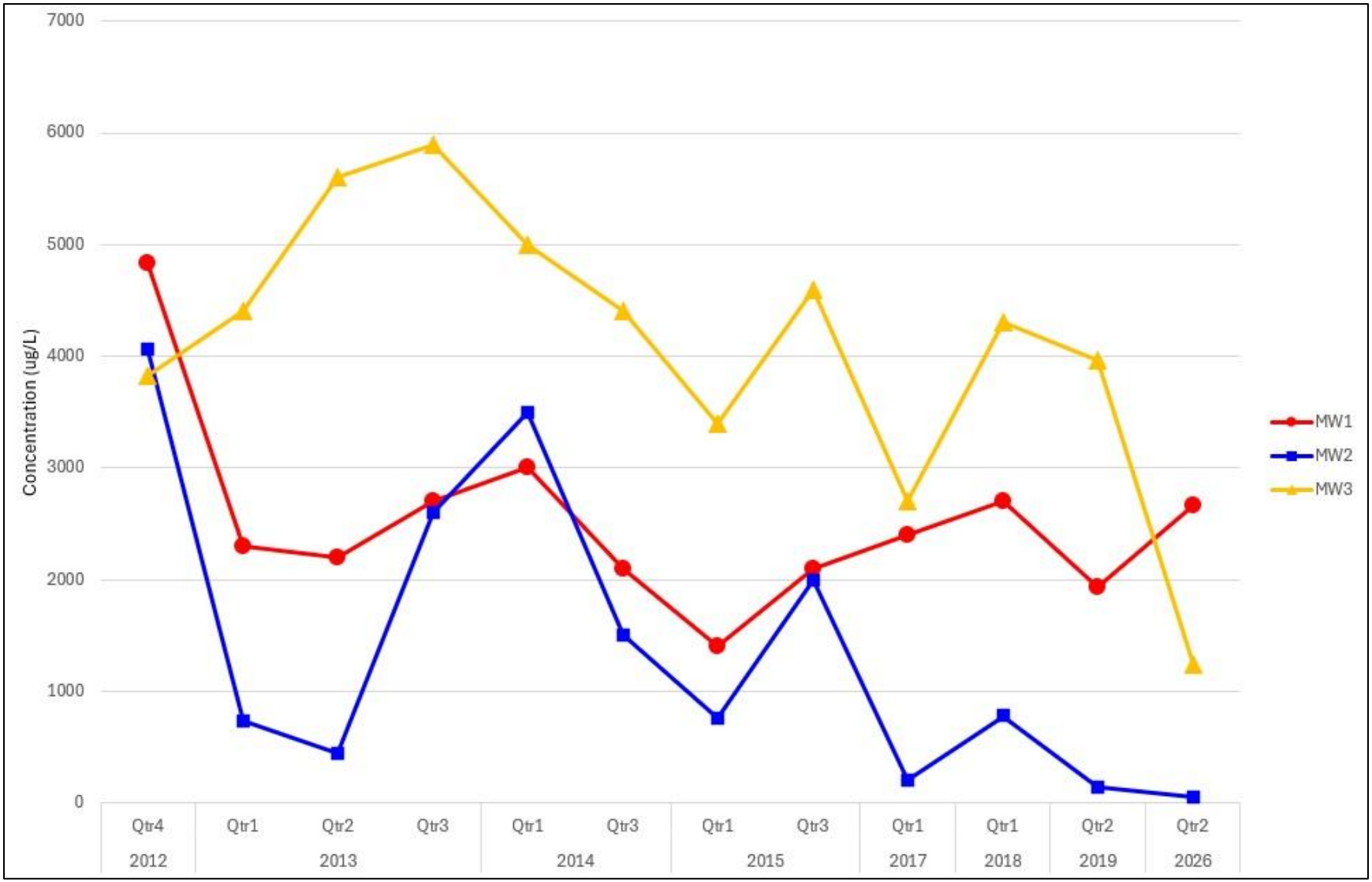


Figure 9. Total manganese

Appendix B. Tables

Table 1. Groundwater cleanup levels

Contaminant	Method A Cleanup Level
Arsenic	5 ppb
Manganese	2200 ppb
TPH-diesel	500 ppb
TPH-gasoline	500 ppb
Benzene	0.8 ppb

ppb = parts per billion
TPH = total petroleum hydrocarbons

Table 2. Soil cleanup levels

Contaminant	Method A Cleanup Level
Arsenic	9 ppm
Lead	118 ppm
TPH-diesel	172 ppm
TPH-gasoline	172 ppm
Benzene	0.005 ppm

ppm = parts per million
TPH = total petroleum hydrocarbons

Table 3. Groundwater sampling results (in micrograms per liter)

Well	Date	As Total	Mn Total	TPH-D	TPH-G	TPH-O	benzene
MW1	8/15/2007	NS	NS	350	490	480	NS
	11/6/2012	2.52	4830	206	100	269	0.3
	2/8/2013	3.8	2300	458	50	381	0.15
	5/16/2013	2.1	2200	242	130	387	0.2
	8/1/2013	2.4	2700	238	80	380	0.2
	2/13/2014	5	3000	239	50	398	0.15
	8/13/2014	2.9	2100	235	50	392	0.2
	2/11/2015	2.1	1400	140	50	240	0.2
	8/13/2015	2.9	2100	235	50	392	0.2
	2/22/2017	1.5	2400	240	150	410	0.4
	3/2/2018	1.4	2700	260	150	440	0.4
	6/28/2019	1.71	1930	100	100	500	0.5
	4/20/2026	1.16	2660	160	200	160	0.5
MW2	8/15/2007	NS	NS	240	250	480	NS
	11/6/2012	7.75	4060	697	427	528	8.33
	2/8/2013	3.8	740	493	50	381	0.15
	5/16/2013	1.6	440	535	130	378	0.3
	8/1/2013	1.7	2600	433	190	411	0.2
	2/13/2014	5	3500	532	50	532	0.15
	8/13/2014	2.5	1500	538	85	390	0.2
	2/11/2015	1.9	760	130	50	250	0.2
	8/13/2015	5	2000	240	50	400	0.2
	2/22/2017	1.4	200	250	150	410	0.4
	3/2/2018	3.4	780	260	150	430	0.4
	6/28/2019	2.31	145	100	100	500	0.5
	4/20/2026	1.67	60.1	267	200	267	0.5

Well	Date	As Total	Mn Total	TPH-D	TPH-G	TPH-O	benzene
MW3	8/15/2007	NS	NS	240	250	480	NS
	11/6/2012	8	3820	1910	2210	470	21.8
	2/8/2013	3.8	4400	1920	2210	405	10
	5/16/2013	4	5600	2030	1600	391	22
	8/1/2013	4.6	5900	1960	1600	391	9.4
	2/13/2014	5	5000	2660	2000	467	25
	8/13/2014	5.7	4400	2020	1100	424	14
	2/11/2015	4.5	3400	1100	830	260	1.6
	8/13/2015	7	4600	770	1100	500	0.74
	2/22/2017	3.7	2700	510	470	410	0.9
	3/2/2018	4.8	4300	940	1200	450	1.3
	6/28/2019	6.77	3960	100	1540	500	2.5
	4/20/2026	2.7	1240	6780	1310	200	0.5

NS = not sampled

Appendix C. Photo Log

Photo 1: View of the Site looking south

Photo 2: View of capped area looking north

Photo 3: View of shoreline looking east

Photo 4: View of shoreline looking west

Photo 5: View of MW1 wellhead