Michigan Department of Environmental Quality
Quarterly Other Cleanup Authority Report - Summary of Recent Activities and Response Actions
Gelman Sciences Inc. Site
June 14, 2018

This document provides a brief update of activities conducted from January thru April of 2018 and planned activities for the Gelman site for the remainder of 2018. Links to other historical information about the Gelman site are also provided below.

2018 Residential Well Sampling

The initial residential and business water supply well sampling activities were started and completed in April 2018. Out of 83 water supply wells sampled, none of the water supply wells exceeded the 7.2 parts per billion (ppb) criterion for 1,4-dioxane (Dioxane) in residential drinking water. Dioxane was detected in only two residential wells on the south side of Elizabeth Road at concentrations ranging from 1-2 ppb, well below the 7.2 ppb criterion. Both properties have had previous detections of 1-4 ppb.

In collaboration with the Washtenaw County Public Health (WCPH), the Michigan Department of Environmental Quality (DEQ) initiated sampling of residential and business water supply wells within and around the known Dioxane groundwater contamination plume in the 1990's as part of the monitoring activities to evaluate and abate risk of exposure to contamination above the drinking water criterion. Both the DEQ and the WCPH annually review which water supply wells should be sampled. The wells are sampled by WCPH, usually once per year with specific wells sampled twice per year. In 2018 103 wells were scheduled to be sampled including locations along Christine Drive (last sampled in 2014), Lakeview Drive (last sampled in 2016), and Rose Drive (last sampled in 2016). As stated above WCPH was able to collect samples at 83 locations.

Results (identified by address) for water supply well samples collected since 1998 are posted on the DEQ "Gelman Sciences, Inc. Site of Contamination Information Page" under the "Recent Analytical Data" tab which can be accessed using the link provided below. DEQ is in the process of posting the April 2018 results.

Recent Analytical Data

Additional 2018 Residential Well Sampling

The 2nd event for 2018 well sampling is tentatively scheduled to be completed in August 2018. Sampling will be conducted at wells identified for semi-annual analysis. At the same time the WCPH will attempt to make contact and sample any remaining water supply wells that were not sampled in April 2018.

Monitoring Well Sampling

Gelman currently conducts sampling and analysis of approximately 250 monitoring wells (MWs) throughout the site and vicinity.

The MWs have been installed for the specific purpose of monitoring and evaluating the Dioxane contamination in groundwater. The water from these wells is not used for drinking, irrigation or any other purpose. Specific MWs are sampled on a monthly, quarterly, semi-annual, annual, and biennial basis following DEQ approved monitoring plans for specific areas of the site identified as the Western Area, Eastern Area and the Little Lake Area. DEQ collects samples of selected MWs with Gelman (i.e. "split sampling"), on a quarterly basis, as a check of the quality and accuracy of data submitted by Gelman.

From January 2018 thru April 2018 Gelman sampled a total of 271 MWs as identified below:

- January 67 MWs Sampled
- February 27 MWs Sampled
- March 36 MWs Sampled
- April 47 MWs Sampled

In April 2018 DEQ collected split-samples at eight of the MW locations.

Results of monitoring well samples collected by both Gelman and DEQ are posted on the DEQ "Gelman Sciences, Inc. Site of Contamination Information Page" under the "Recent Analytical Data" tab. Historic data and results since 2003 are also posted.

A 2015 map which depicts the locations of the monitoring wells can also be found on the DEQ Gelman webpage under the Maps heading (See link below).

Monitor Well Location Map

Current Remediation Activities

Current remediation activities are performed by Gelman and involve the operation of groundwater extraction wells located at the former Gelman Plant site and elsewhere in Scio Township and the City of Ann Arbor. From January thru March 2018 Gelman removed contaminated groundwater at an average rate of 480 to 487 gallons per minute from extraction wells.

From January through April 2018 Gelman pumped and treated approximately 82,767,169 gallons of contaminated groundwater from extraction wells across the site as listed below:

	Extraction Wells Operated	Volume of Groundwater Pumped
January	10	21,614,100 gallons
February	12	19,322,322 gallons
March	13	21,746,296 gallons
April	16	20,084,451 gallons

Contaminated groundwater collected from the extraction wells is piped to the Gelman plant and treated using ozone and hydrogen peroxide. The treated groundwater is then discharged to a tributary of Honey Creek under a National Pollutant Discharge Elimination System (NPDES) permit issued by DEQ. The latest NPDES permit was issued on January 26, 2016 and became effective on February 1, 2016. The NPDES permit establishes discharge limits for Dioxane and treatment chemicals and byproducts. The permit's discharge limits for Dioxane are 7 ppb (monthly average) and 22 ppb (daily maximum).

Also, during the January through April 2018 period Gelman completed routine maintenance on selected extraction wells and the treatment system. In addition, piping and valve upgrades were completed and the system chemical storage tanks were replaced. DEQ conducted an onsite inspection during the chemical storage tank replacement activities on April 18, 2018.

Data and information about the remediation activities can be found in monthly NPDES monitoring reports and quarterly progress reports submitted by Gelman. Historic and current information on pumping rates of extraction wells can be found in the "Average Monthly Extraction Flow Rates" table updated and submitted quarterly by Gelman. The reports and table are posted to the DEQ Gelman web page under the "Selected Documents" tab (See link below).

Selected Documents

A 2015 map which depicts the locations of the extraction wells (purge wells) can also be found on the DEQ Gelman webpage under the Maps heading (See Monitor Well Location Map link on Page 2).

Surface Water and Seep Sampling

The DEQ will continue sampling surface waters, including ponds, creeks, and drains in and around the site and vicinity to identify any potential contamination.

Surface water samples were not collected at the Gelman Site during the January thru April 2018 period. DEQ is planning on collecting samples, from the following surface water bodies, in September 2018:

- First Sister Lake
- Second Sister lake
- Third Sister Lake
- Smith Ponds
- Little Lake
- Unnamed Tributary to Honey Creek near the Gelman discharge outfall
- Unnamed Tributary to Honey Creek near Park Rd
- Unnamed Tributary to Honey Creek near Jackson Rd
- Honey Creek near Dexter Rd
- Honey Creek/Huron River Confluence
- Selected Tributaries of Allen Creek

Results of surface water and seep sampling collected by both Gelman and DEQ are posted on the DEQ Gelman web page under the "Recent Analytical Data" tab (See link below).

Recent Analytical

Recent Investigation(s)

No new investigations were conducted during the January through April 2018 period.

Contamination Trends

Appendix A presents data and information on current contamination trends at selected monitoring wells in the Eastern Area, Western Area and Little Lake Area (as identified in the current CJ) of the Gelman Site.

Other Recent Activities

DEQ attended, provided information, and answered questions at five local meetings concerning the Gelman Site from January through April 2018.

These meetings included:

- Coalition for Action on Remediation of Dioxane (CARD) Monthly Meeting, Washtenaw County Western Service Center, January 9, 2018.
- Coalition for Action on Remediation of Dioxane (CARD) Quarterly Technical Meeting, Washtenaw County Western Service Center, February 6, 2018.
- University of Michigan Dealing with Dioxane Teach-Out meeting, Ann Arbor February 20, 2018.

- Part 201 Discussion meeting with Scio Township, Scio Township Office, February 23, 2018.
- Coalition for Action on Remediation of Dioxane (CARD) Monthly Meeting, Washtenaw County Western Service Center, April 3, 2018

Other Recent Response Actions

The DEQ updated the Water Quality Values (WQV) for 1,4-dioxane on March 15, 2018. The new values for surface waters that are protected as a source of drinking water (Human Cancer Value [HCV] - drink) and for surface waters that are not protected as drinking water sources (HCV non-drink) were changed to 3.5 parts per billion (ppb) and 280 ppb, respectively, from 34 ppb and 2800 ppb, respectively.

Under Part 201 [Environmental Remediation], Section 20120e, of the Natural Resources and Environmental Protection Act (1994 PA 451 as amended), the WQV are the generic criteria for contaminated groundwater discharging to surface water, or what is identified as the "groundwater-surface water interface (GSI) criteria. The WQV are explained and discussed on the DEQ "Rule 57 Water Quality Values" web page (See link below).

Water Quality Values

Recent Court Actions

The court ordered confidential negotiations to modify the current Consent Judgement are on-going. The negotiating parties include Gelman, DEQ, the City of Ann Arbor, Washtenaw County, Scio Township, and the Huron River Watershed Council.

Stakeholders Issues

The EPA has identified stakeholder issues of concern to the DEQ Project Manager and has requested the DEQ list and track the issues in quarterly reports. Previous and new issues and requests for information are listed below. DEQ has provided initial answers and discussions where possible and will continue to provide information about the issues in future reports as new data and information is made available and evaluated.

Previous Issues

EPA is evaluating the potential for Per- and Polyfluoroalkyl Substances (PFAS) contamination at sites around the country.

- Evaluate whether PFAS contamination could be associated with releases from the Gelman Facility.

DEQ has requested that Gelman review its records to determine if PFAS was used in the manufacturing processes and provide copies of any such records which indicate use of PFAS. Concurrently DEQ is developing a scope of work to conduct sampling of selected monitoring wells on the Gelman Site property as a next step to evaluate whether PFAS should be identified as a contaminant of concern at the Gelman Site. Data and information will be presented after completion of any sampling activities.

Update – DEQ requested a status of the Gelman historic file review and has been informed that the review is still ongoing but nearly complete. A summary report submittal date has not been identified.

EPA points out that it is important to understand the risks posed by soil and sediment contaminated with Dioxane stemming from the Gelman facility. If there are elevated concentrations in those media, that could be an indication of an ongoing source to groundwater and/or surface water. Data from those areas are also essential for any evaluation of risk due to direct contact and/or ingestion exposure for human or ecological exposures. Discuss the following:

- Soil/sediment sampling results for borings collected at Gelman owned parcels through the present, on the original Gelman parcel (including split parcels) and on any nearby parcels that may have been impacted by Gelman's contamination.

- Discuss the risks those levels of 1,4-dioxane pose to human receptors.

As stated above, Gelman has voluntarily conducted additional sampling of soils and groundwater on and adjacent to the site property. The DEQ is expecting a report summarizing the investigation once Gelman has completed compiling and evaluating the site investigation information and data. This information will be used, as appropriate, to evaluate risk due to direct contact and/or ingestion exposure for human or ecological exposures.

Update – Gelman has not yet submitted the on-property site investigation data and information.

It is important to clearly define the groundwater migration pathways at the facility. Discuss the following:

- How the historical sampling and well log data for wells in the deeper aquifers at the Gelman site including Gelman's own supply wells informs characterization of the plume.

There are numerous reports on file (See Selected Documents on the DEQ Gelman Webpage) detailing the evolution of both Gelman and DEQ conceptual site models (CSMs) for the site. Many monitoring wells, residential

wells and other wells have been used to characterize and monitor the site, which is situated in a complex hydrogeological setting.

There are currently three approved monitoring plans to implement the court-selected remedy within systems (portions of the site) as identified in the most recent Third Amendment to the Consent Judgement (effective March 8, 2011). The systems are currently identified as the "Little Lake Area System", the "Western Area System" (area west of Wagner Road), and the "Eastern Area System" (area east of Wagner Road).

***Update – No new information or discussion**.*

There are concerns that analysis of the plume at 465 Dupont may not adequately characterize the behavior of the plume in the area and whether or not the results are representative of the shallow or deep aquifer. Discuss the following:

- How data were used to analyze the plume at 465 Dupont, with a focus on how well screen levels were used to define the plume in the area

  Again, there are multiple reports on file (See Selected Documents on the DEQ Gelman Webpage) which provide details on the CSM utilized by Gelman to evaluate the groundwater contamination in the Dupont Circle area and adjacent Evergreen area. The reports include the PLS May 2007 Evergreen System Review; the PLS June 2007 Evergreen Work Plan; the PLS August 2007 Dupont Work Plan. DEQ work plan and report review responses in 2008 also provide information on the investigations, data and evaluations.

  DEQ has requested that Gelman provide a summary of the historic investigations and data used to evaluate the groundwater contamination in the area of 465 Dupont. This summary will be provided when received.

  Update – Gelman has not yet submitted the historic investigation summary.

1,4-dioxane contamination in the near surface groundwater can pose a risk through exposure pathways other than the consumption of drinking water. Discuss the following:

- The status of the sampling and characterization of the shallow groundwater and seeps within the prohibition zone.
  - Detail historical sampling activities targeting the near surface groundwater within the prohibition zone and in the Scio Township area.

    Gelman conducted a shallow groundwater investigation, within the prohibition zone and in Scio Township, using a DEQ developed work plan in October 2016. The report presenting the data and information can be

viewed at Shallow Groundwater Investigation. In summary, twenty-seven soil borings were installed in parts of the City of Ann Arbor and Scio Township using Geoprobe drilling and sampling techniques. Groundwater was encountered in 16 of the 27 soil borings and sampled using temporary monitoring wells. Groundwater was not encountered, within a depth of 20 feet below ground level, in the remaining 11 soil borings. Depth to shallow groundwater is important because, following the proposed risk-based assumptions for Dioxane for the volatilization to indoor air pathway, shallow contaminated groundwater has a lower acceptable risk-based screening number than deep contaminated groundwater. The study was designed to focus on this shallow groundwater to address concerns expressed by the community who were afraid that shallow groundwater may be contaminated and pose an unacceptable risk.

Dioxane was detected in shallow groundwater at two boring locations in the investigation area at concentrations ranging from 1.9-3.3 ppb. Both locations are within the Prohibition Zone of the Eastern Area of the Gelman Site in the City of Ann Arbor. The concentrations of Dioxane detected in the shallow groundwater were less than the DEQ Tier 1 vapor intrusion screening level of 29 ppb identified in the emergency rule in place at the time of the investigation, and significantly less than the 1,900 ppb screening level for shallow groundwater identified in the current proposed rules package. The concentrations detected were also below the EPA Regional Screening Level (RSL) of 4.6 ppb. This RSL considers a combined exposure through the ingestion, dermal contact, and inhalation pathways.

Based upon an evaluation of all the data and information collected during the shallow groundwater investigation, including groundwater elevations, concentrations in both deep and shallow groundwater in that area, and proposed and current regulatory criteria and screening levels, the concentrations of Dioxane detected in the shallow groundwater in the investigation area currently do not pose an unacceptable risk for the volatilization to indoor air pathway to residences and buildings. Additional comparisons of concentrations of Dioxane detected in shallow groundwater to EPA RSLs for specific pathway exposures, such as inhalation (Inhalation RSL-11 ppb) and skin contact (Dermal RSL-2,300 ppb), also indicate that Dioxane in shallow groundwater in the investigation areas currently does not pose an unacceptable risk.

***Update – No new information or discussion**.*

- Provide the status of any upcoming sampling of shallow groundwater and/or seeps.

As stated above current data and information indicates that Dioxane in shallow groundwater currently does not pose an unacceptable risk and that further investigations are not immediately warranted at this time. DEQ has stated that evaluation of data and information will be ongoing and that additional investigation activities will be identified and completed as needed to evaluate unacceptable risks.

The DEQ will continue sampling surface waters, including ponds, creeks, and drains in and around the site and vicinity to identify any potential contamination. As stated above, DEQ is planning on collecting samples from the following surface water bodies in September 2018:

- *First Sister Lake*
- *Second Sister lake*
- *Third Sister Lake*
- *Smith Ponds*
- *Little Lake*
- *Unnamed Tributary to Honey Creek near the Gelman discharge outfall*
- *Unnamed Tributary to Honey Creek near Park Rd*
- *Unnamed Tributary to Honey Creek near Jackson Rd*
- *Honey Creek near Dexter Rd*
- *Honey Creek/Huron River Confluence*
- Selected Tributaries of Allen Creek

Update – DEQ surface water sampling will be conducted in September 2018.

- Near surface water potential exposure and associated screening levels.
    - Potential risks posed to construction workers by contaminated seeps and shallow groundwater within the prohibition zone.

      The current and proposed criteria rules do not address exposures of construction workers to contaminated seeps and shallow groundwater. The Groundwater Contact Criteria (GCC) were eliminated from the current criteria rules when they were updated and promulgated in 2013. Prior to 2013 the GCC was 1,700,000 ppb for Dioxane. Also as stated above the EPA RSL for dermal contact with Dioxane is 2,300 ppb. The concentrations of Dioxane currently found in groundwater, including deep groundwater (over 150 feet below ground surface), shallow groundwater, and seeps within the prohibition zone are significantly below the previous GCC and the current EPA RSL for dermal contact indicating that there is not an unacceptable risk.

Update – During follow-up discussions stakeholders identified the State of Virginia's use of a 353 ppb screening value for contaminated groundwater within 15 feet of the ground surface for the exposure scenario of a construction worker in a trench. DEQ discussion with a State of Virginia risk assessor revealed that the 353 ppb screening value was calculated for a cancer risk of 1 in 1,000,000. Part 201 requires DEQ to use a cancer risk of 1 in 100,000 to calculate criteria and screening values. The State of Virginia screening value using a 1 in 100,000 cancer risk is 1,830 ppb. Current groundwater contamination data does not indicate that there is an unacceptable risk for construction workers in a trench.

- Some basements of houses within the prohibition zone periodically flood. Describe any evaluation of the risks posed by the water flooding those basements. Discuss:

  - Sampling done to determine whether that water contains 1,4-dioxane. As that water evaporates, it is important to understand if there is an exposure risk.

  - The appropriate screening levels for infiltrating water.

  As summarized above and discussed in greater detail in the Shallow Groundwater Investigation Report (Appendix A-DEQ Work Plan) the DEQ selected sampling locations in the City and Scio Township where flooded basements were identified by City of Ann Arbor and Scio Township residents in order to sample shallow groundwater in close proximity to the flooded basement locations. Groundwater was encountered at depths of less than 20 feet below ground level at only 16 of the 27 soil boring locations. Dioxane was detected, at only two of the 16 locations sampled, at concentrations well below existing and proposed criteria and screening levels.

  The specific exposure pathway of contaminated groundwater entering a basement and evaporating is not addressed in the current or proposed rules. In the event that such a scenario is identified at the Gelman site, a site-specific evaluation would have to be conducted utilizing data obtained from the infiltrating contaminated groundwater.

  ***Update – No new information or discussion**.*

- The vapor intrusion pathway is one of those considered in the Preliminary Assessment of the Gelman facility release. Michigan's proposed vapor intrusion screening number for 1,4-dioxane is 1,900 ppb. Explain whether this screening level will change when impacted groundwater is in direct contact with a building foundation.

Under proposed Rule 299.27(3) the 1,900 ppb screening level applies to groundwater that is direct contact with a building foundation or slab. We must wait to see if the proposed rules are promulgated and whether there are specific changes that emerge from this process.

***Update – No new information or discussion**.*

o Michigan has identified the potential risk that the groundwater plume poses to surface water bodies in the vicinity of the 1,4-dioxane plume.

- Provide the status of the evaluation the risks posed by this groundwater to surface water (GSI) pathway.

  The DEQ has monitored the GSI exposure pathway utilizing the GSI criteria generated under the Michigan Water Quality Standards (WQS) promulgated under Part 31 of Act 451. This criterion is currently 2,800 ppb for surface water that is not used as a drinking water source and 34 ppb for surface water in close proximity to a water supply intake.

  The GSI exposure pathway will be evaluated in the future based upon expected changes to the criteria under the proposed rules.

  Update – Although the Water Quality Values (i.e. GSI criteria) for 1,4 dioxane (See "Other Recent Response Actions" section above) were updated the groundwater remedy that is being implemented by Gelman under the current CJ overseen by the DEQ and the Washtenaw Circuit Court does not require Gelman to directly address the GSI, in part because the previous GSI criteria were much higher and were not included in the court-ordered remedy. Because of the ongoing court ordered confidential CJ modification negotiations DEQ cannot speculate on how the changed GSI criteria may affect the Gelman remedy in the future.

- List those surface water bodies, including Barton Pond that could potentially be impacted by the plume.

  Specific surface water bodies that have been sampled and will continue to be sampled are identified above in this report. Current data and information indicates that Barton Pond is not likely to be impacted from groundwater contamination migrating from the Gelman Site. In addition the current CJ requires groundwater sampling of the monitoring well system that is in place. The ongoing sampling of the monitoring well system would detect any

changes to the groundwater contamination well before those changes could impact Barton Pond.

***Update – No new information or discussion**.*

Ecological Exposure

Provide the status of Ecological exposure evaluation. Discuss the following:

- Historic and current soil, sediment and surface water sampling results of the wetlands area near the Gelman facility, with focus on 1,4-dioxane results.

- Near surface water potential exposure and associated screening levels. Evaluation of ecological risks posed by contamination which stems from the Gelman facility. Include a discussion of potential ecological receptors.

  As stated above, Gelman has voluntarily conducted additional sampling of soils and groundwater on and adjacent to the site property. The DEQ is expecting a report summarizing the investigation once Gelman has completed compiling and evaluating the site investigation information and data. This information will be used, as appropriate, to evaluate ecological exposures.

  Update – Gelman has not yet submitted the on-property site investigation data and information.

  In addition, Gelman has identified that three ecological evaluations have been completed historically for the site and vicinity. These evaluations are listed below. DEQ is in the process of acquiring these ecological evaluation documents and will make these available for review when received.

  - *Vegetation in the Marshy Area – In summary Gelman retained a botanist, S.N. Stephenson, to evaluate the flora of the Marshy Area. This assessment was completed in 1988. His findings were reported in a June 16, 1988 memo titled "Description of 1,4-dioxane contaminated property at Gelman Sciences, 600 South Wagner Road, Ann Arbor Michigan".*

  - *Aquatic Life in the Marshy Area, the Sisters Lake Drain and Third Sister Lake – Two studies were completed by Gelman on the biota of the Sisters Lake Drain/Honey Creek system as listed below.*

    - *Wiley, M.J., and J.S. Diana, 1989. An evaluation of the ecological impact of long-term chronic exposure of the biota of Honey Creek to 1,4-dioxane. Report to: Braithwaite Consultants, Ann Arbor, Mi*

- *Wiley, M.J., and J.S. Diana, 1989. Sub lethal effects of tissue uptake of 1,4-dioxane. Report to: Braithwaite Consultants, Inc, Ann Arbor, MI*

Update – DEQ has acquired copies of the historical ecological evaluations conducted by Gelman and is currently in the process of posting the documents to the DEQ Gelman web page.

Finally, Michigan WQV promulgated under Part 31 of Act 451 serve as GSI criteria and are meant to be protective for the most restrictive aquatic or human health receptors. If the GSI criteria decrease as expected DEQ will evaluate whether additional work needs to be done to appraise eco-risk from contaminated groundwater discharging to surface water in the future.

Update – With the change in the WQV (GSI criteria) DEQ will initiate the review of current data and information to evaluate the eco-risk from contaminated groundwater discharging to surface waters.

New Issues

At least one stakeholder has asserted that Gelman was in violation of the current CJ with regard to concentrations of 1,4-dioxane found in MW-103s. Specifically, that concentrations detected in MW-103s, in excess of 85 ppb, trigger the requirement for Gelman to conduct additional investigation activities around MW-103s and submit a contingency plan on how Gelman proposes to address the possible migration of 1,4-dioxane outside the Prohibition Zone (PZ).

DEQ has reviewed the claims from the stakeholders and determined that Gelman was not in violation of the current CJ requirements at MW-103s. A more in-depth discussion of the MW-103s evaluation will be presented in a future progress report.

Appendix A

The following information is presented as an overview of the current contamination trends at selected monitoring wells in the Eastern Area, Western Area and the Little Lake Area of the Gelman Site. Locations of monitoring wells are depicted on the Monitor Well Location Map.

Eastern Area

The attached graphs of monitoring wells 465 Dupont, MW-77, MW-71, and MW-30d present trends in areas of the Prohibition Zone (PZ) with the highest concentrations of groundwater contamination.

Graphs of monitoring wells MW-83s, MW-82s and MW-98d present the trends of groundwater contamination as it migrates within the PZ following the groundwater flow direction from west to east.

The groundwater contamination trends at the southern boundary of the PZ are represented in the graphs for MW-76s&i, MW-103s&d and MW-112s&i.

The PZ northern boundary trends are represented in the graphs for MW-121d and MW-129d. Other northern boundary monitoring wells including MW-120d and MW-135 have been non-detect for 1,4-dioxane.

Western Area

The majority of the of the Compliance Monitoring Wells(CMW), as defined in the current Consent Judgement (CJ), have been non-detect for 1,4-dioxane contamination. The remaining CMWs have concentrations below 85 ppb which is the concentration identified in the current CJ for identification of groundwater contamination expansion in the Western Area.

The graphs for MW-57 (a CMW) and MW-125 present groundwater contamination trends in the southern portion of the Western Area.

The graphs for MW-133s,i&d (CMWs), MW-66(CMW), and MW-35 (CMW) present groundwater contamination trends in the northern portion of the Western Area.

The graphs for MW-138i, MW-141s and MW-141d present groundwater contamination trends in the western portion of the Western Area.

Little Lake Area

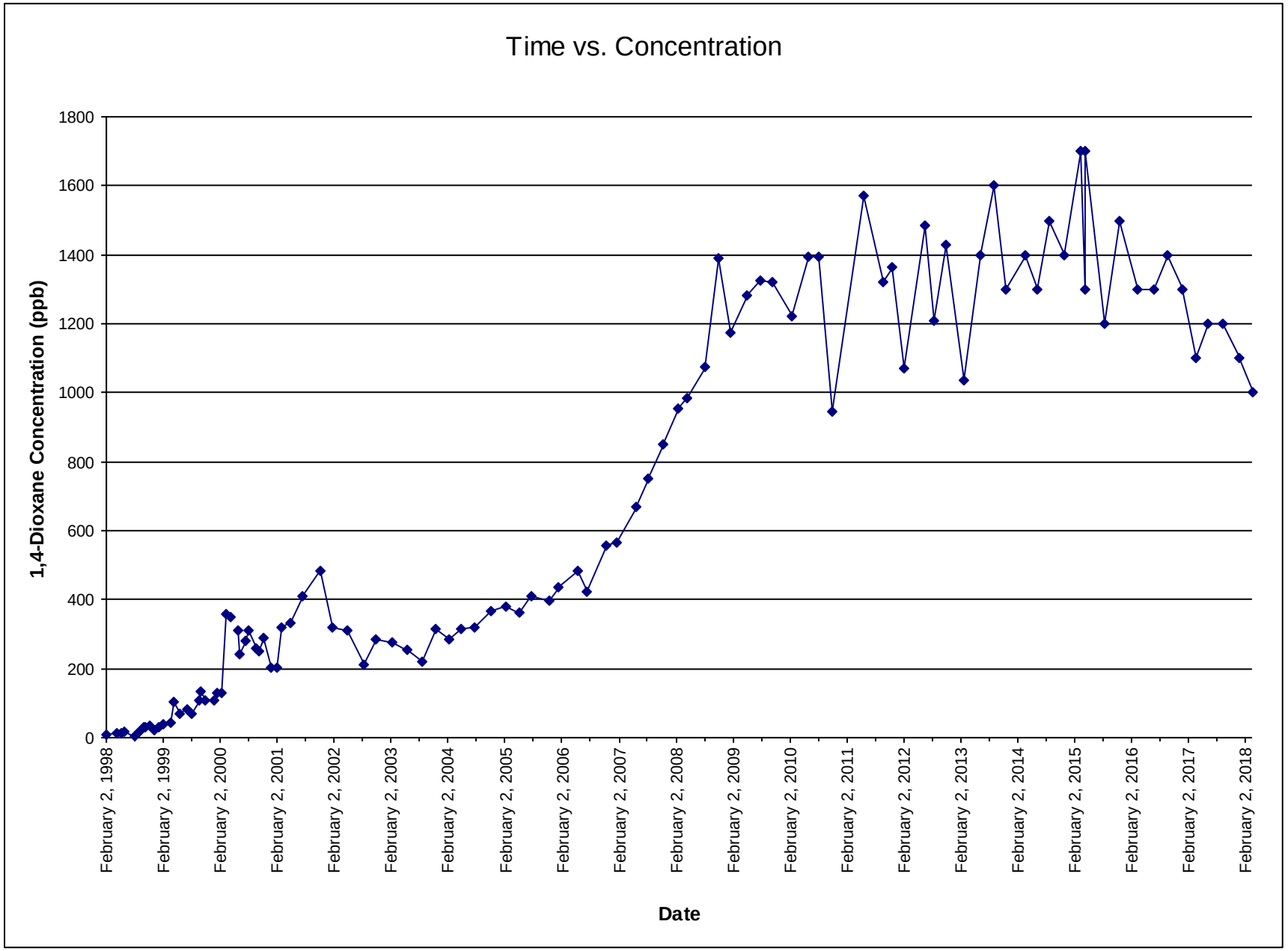
The Little Lake Area is a distinct area within the Western Area as defined in the current CJ. The Little Lake Area also has CMWs that are monitored to identify groundwater expansion in this area.

Graphs for CMWs MW-61s&d, MW-98, 4601-4", and 4601-6" present groundwater contamination trends in the Little lake Area. The graph for the Ann Arbor (A2) Cleaning Supply Well also presents a trend for the Little Lake Area. The A2 Cleaning Supply Well is also an extraction well within the Little Lake Area that is purged/pumped on a quarterly basis.

Eastern Area Wells

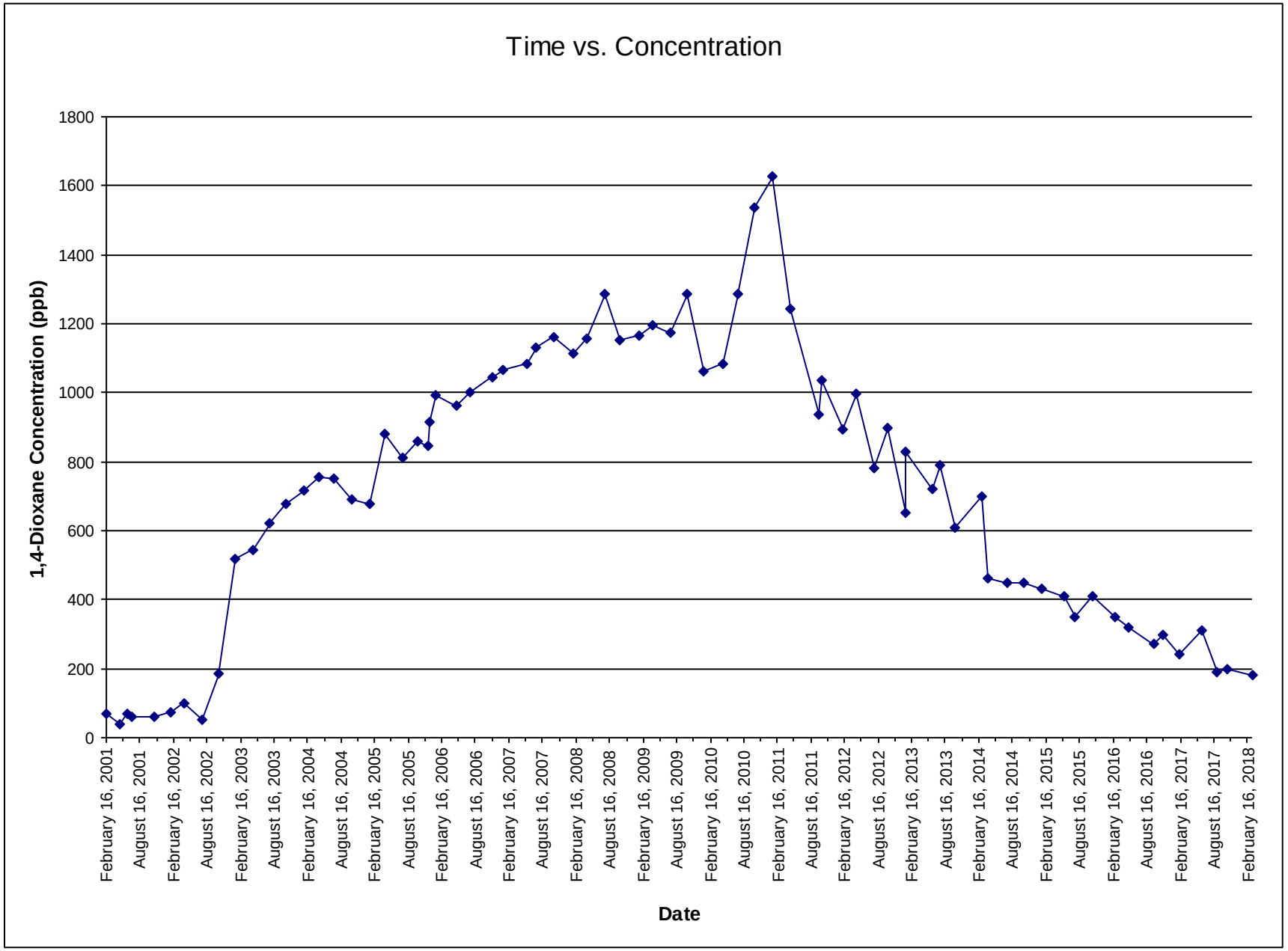
465 Dupont

Aquifer: D2
Type of well: Monitoring Wells
Sampling Interval: Quarterly



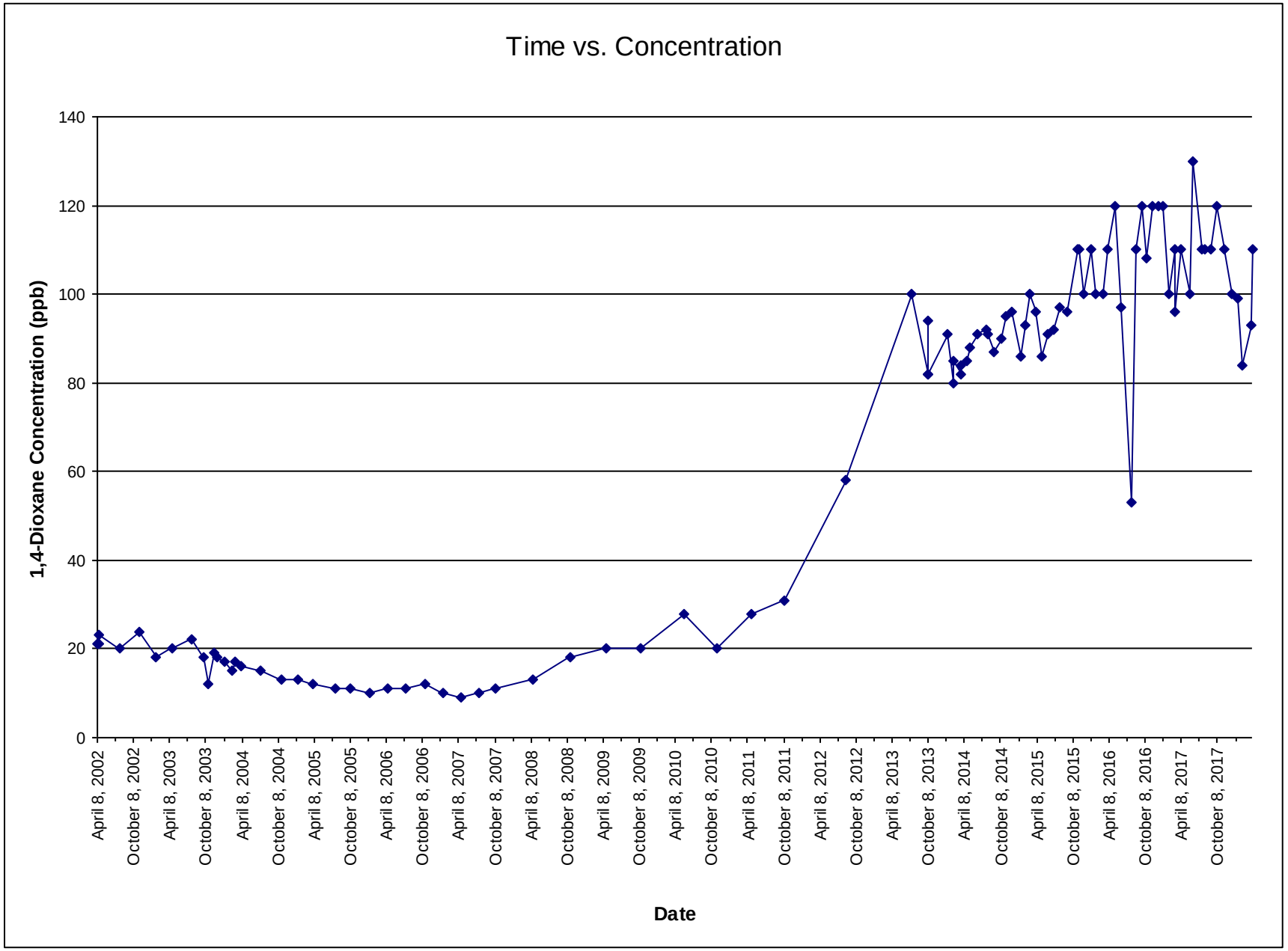
MW-30d

Aquifer: E
Type of well: Monitoring Wells
Sampling Interval: Quarterly



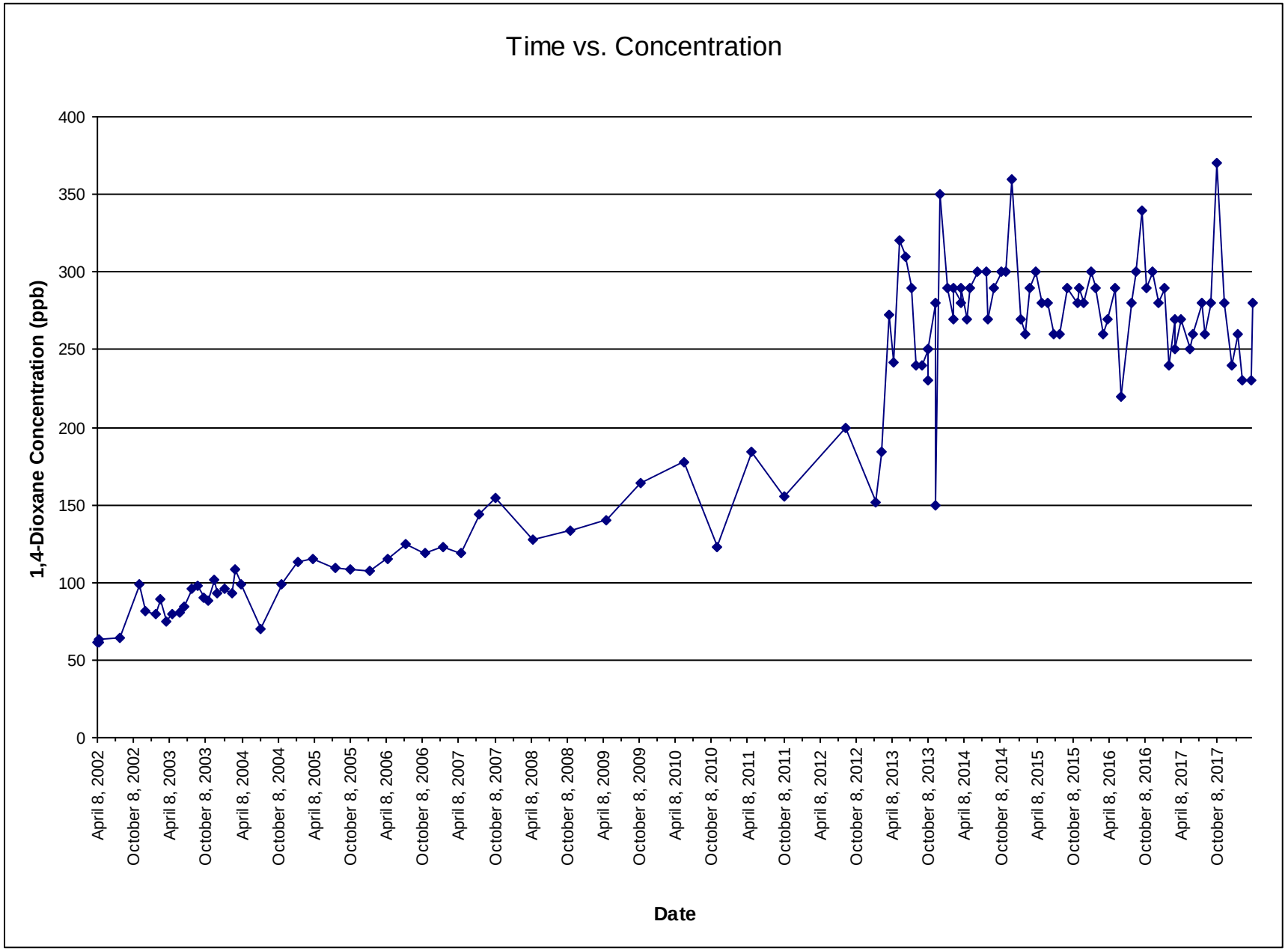
MW-76i

Aquifer: E
Type of well: Monitoring Wells
Sampling Interval: Monthly



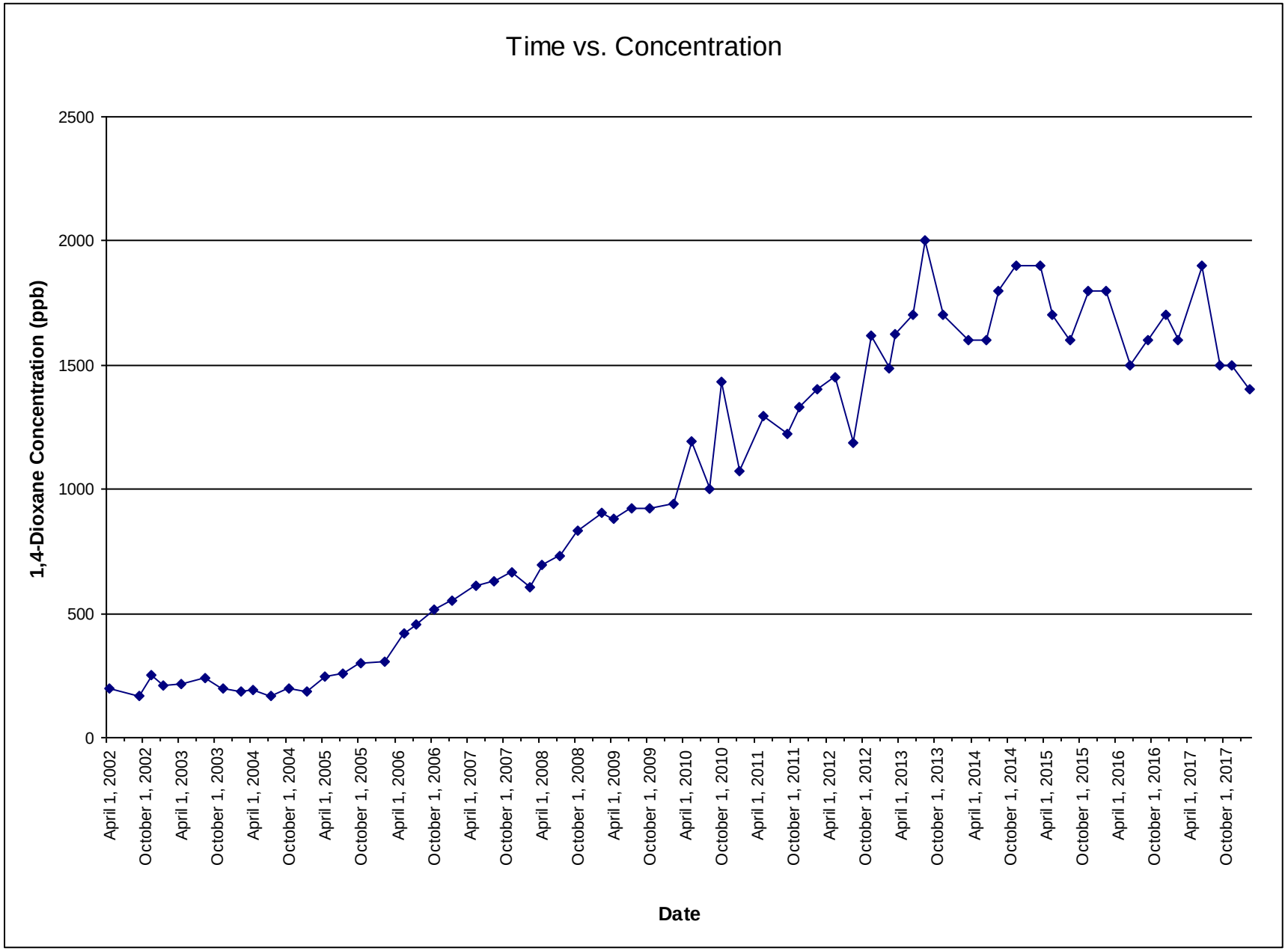
MW-76s

Aquifer: E
Type of well: Monitoring Wells
Sampling Interval: Monthly



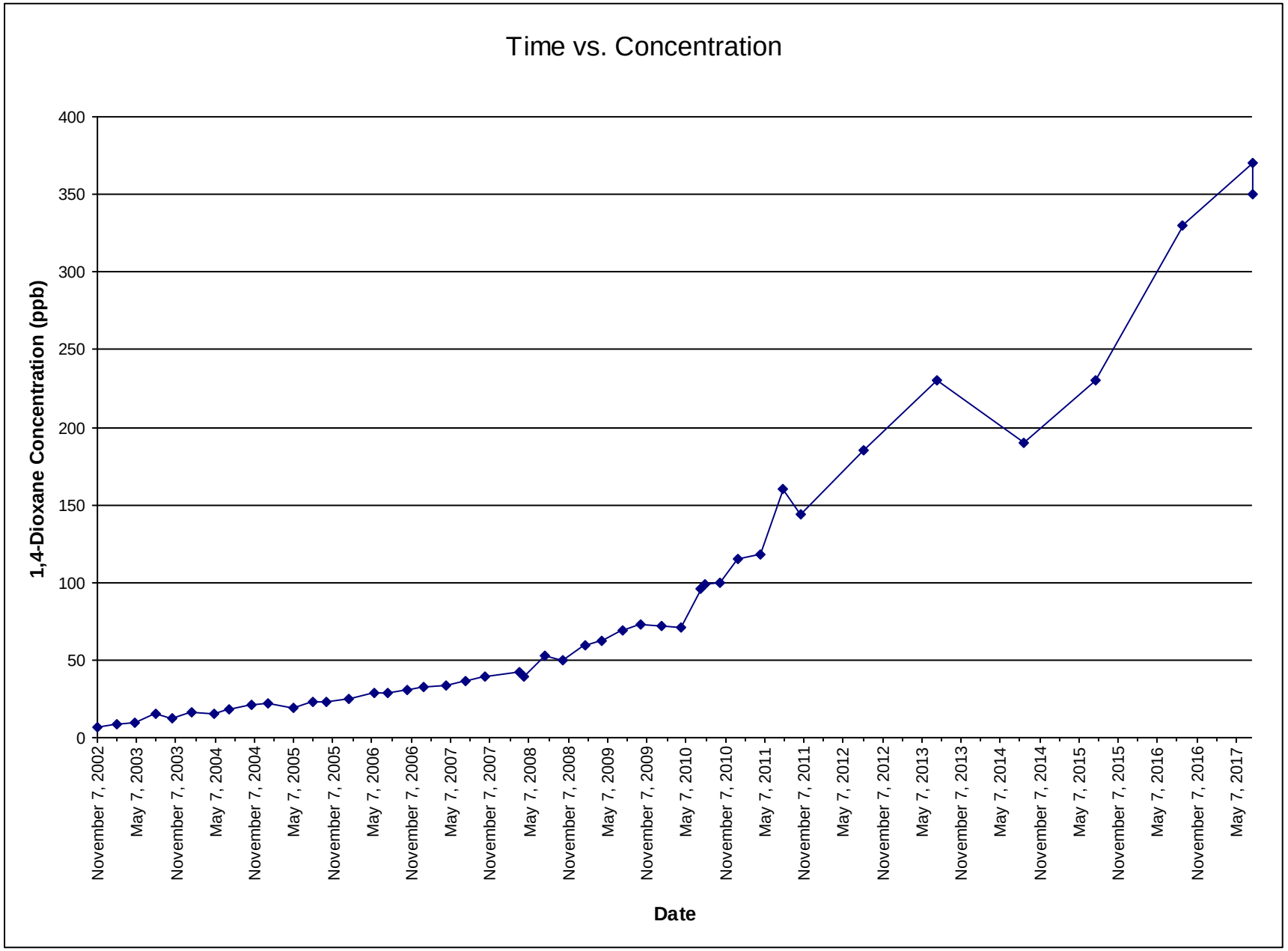
MW-77

Aquifer: D2
Type of well: Monitoring Wells
Sampling Interval: Quarterly



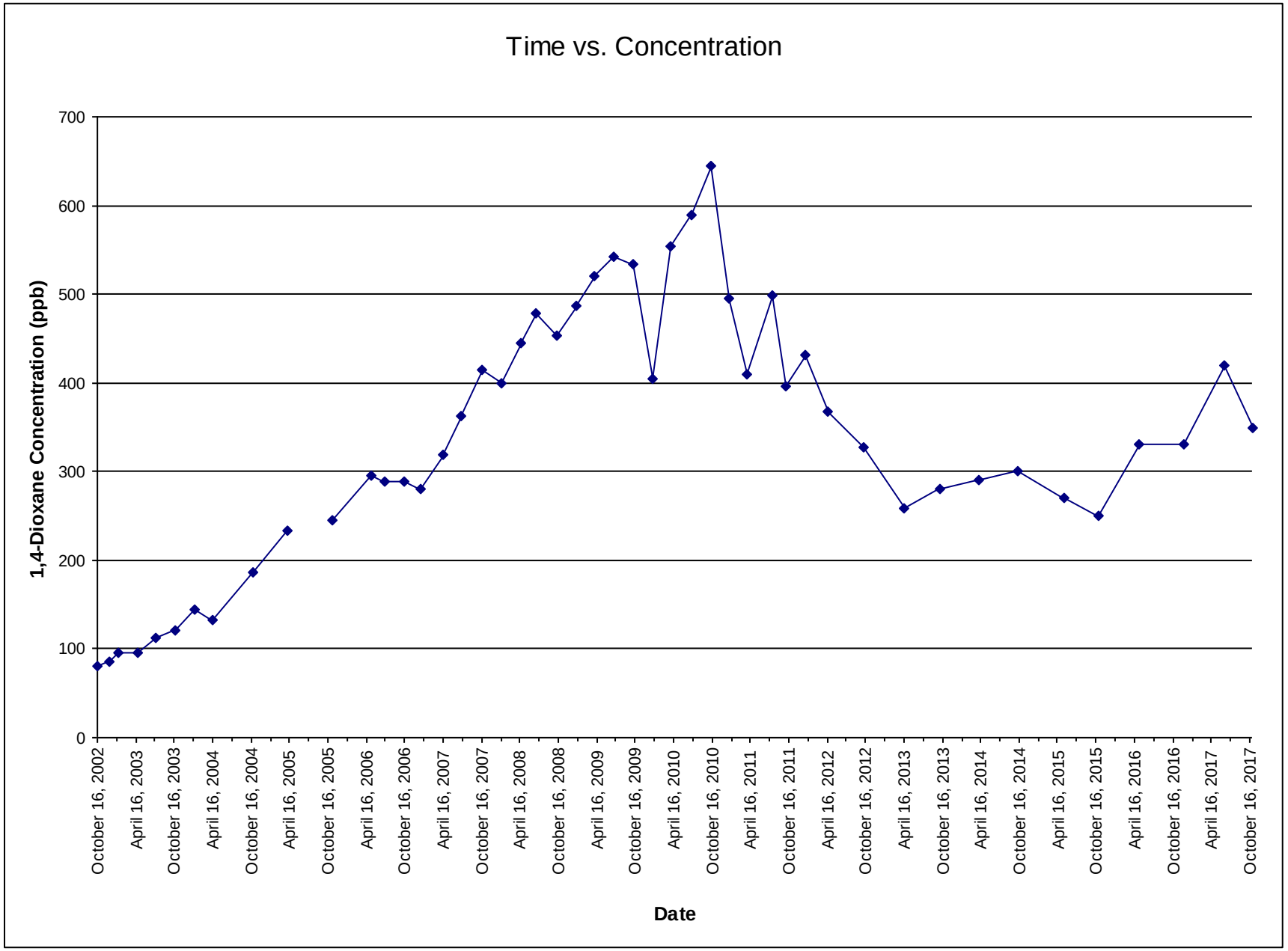
MW-82s

Aquifer: E
Type of well: Monitoring Wells
Sampling Interval: Annual



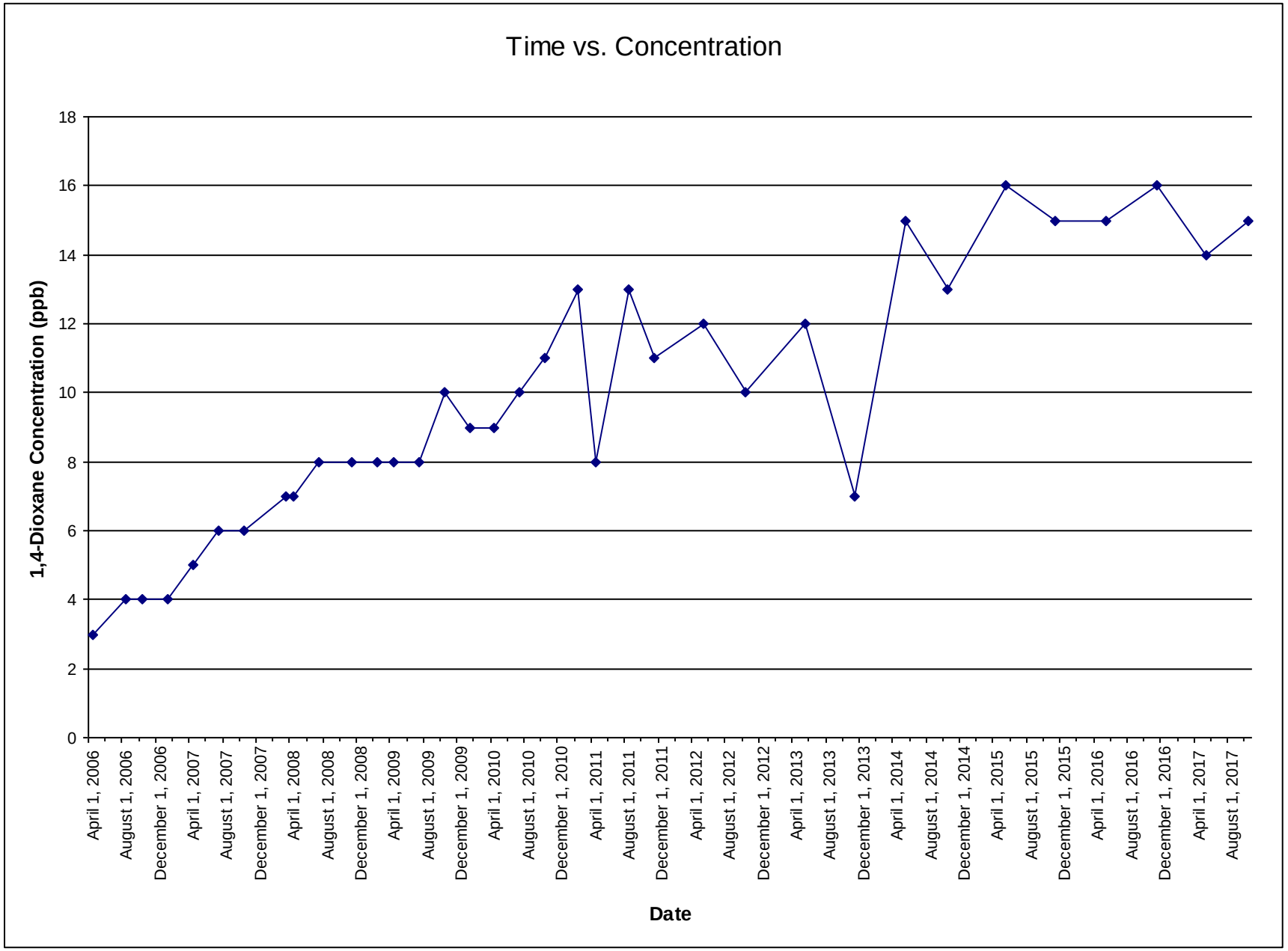
MW-83s

Aquifer: E
Type of well: Monitoring Wells
Sampling Interval: Semi-Annual



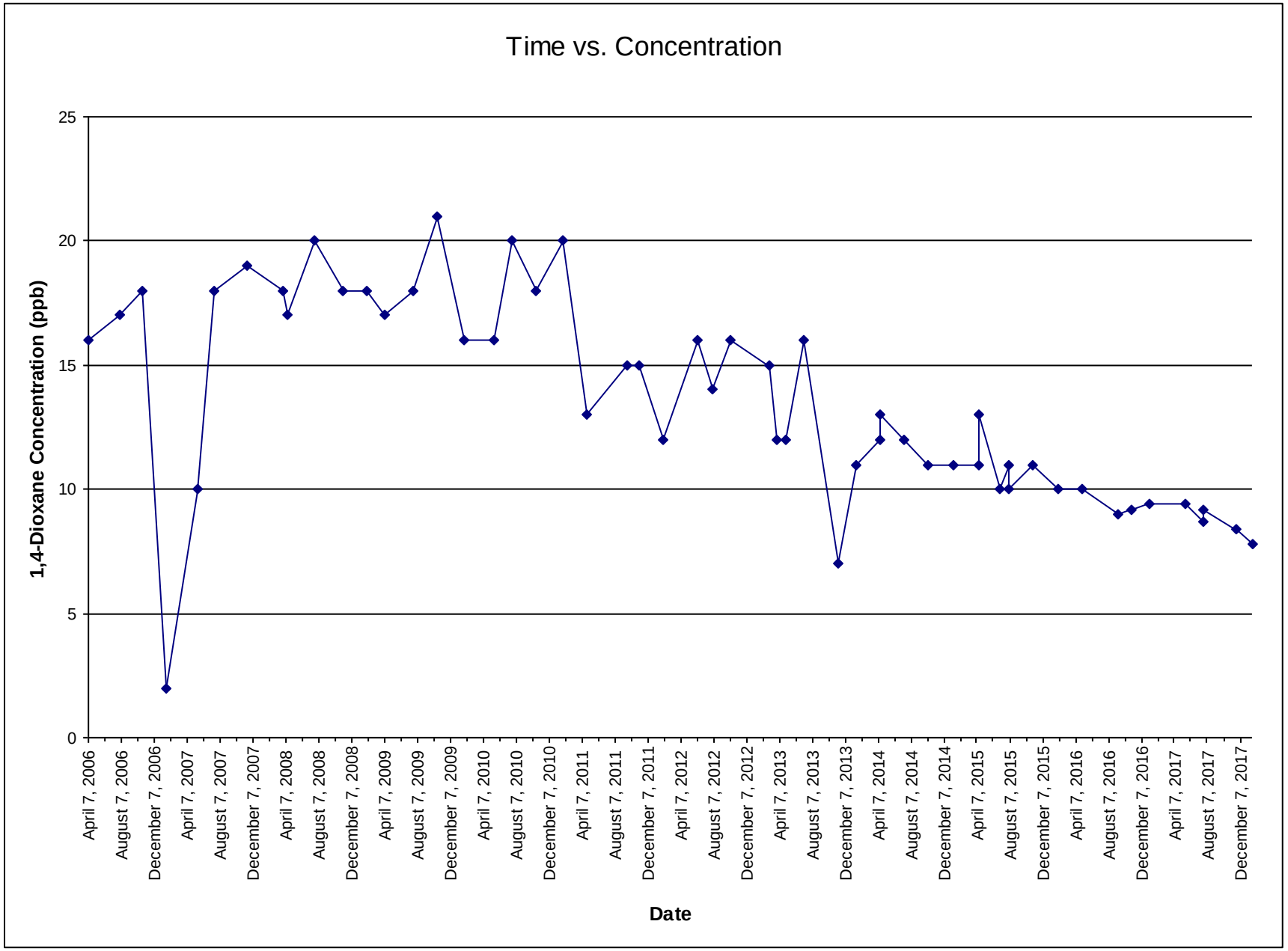
MW-98d

Aquifer: E
Type of well: Monitoring Wells
Sampling Interval: Semi-Annual



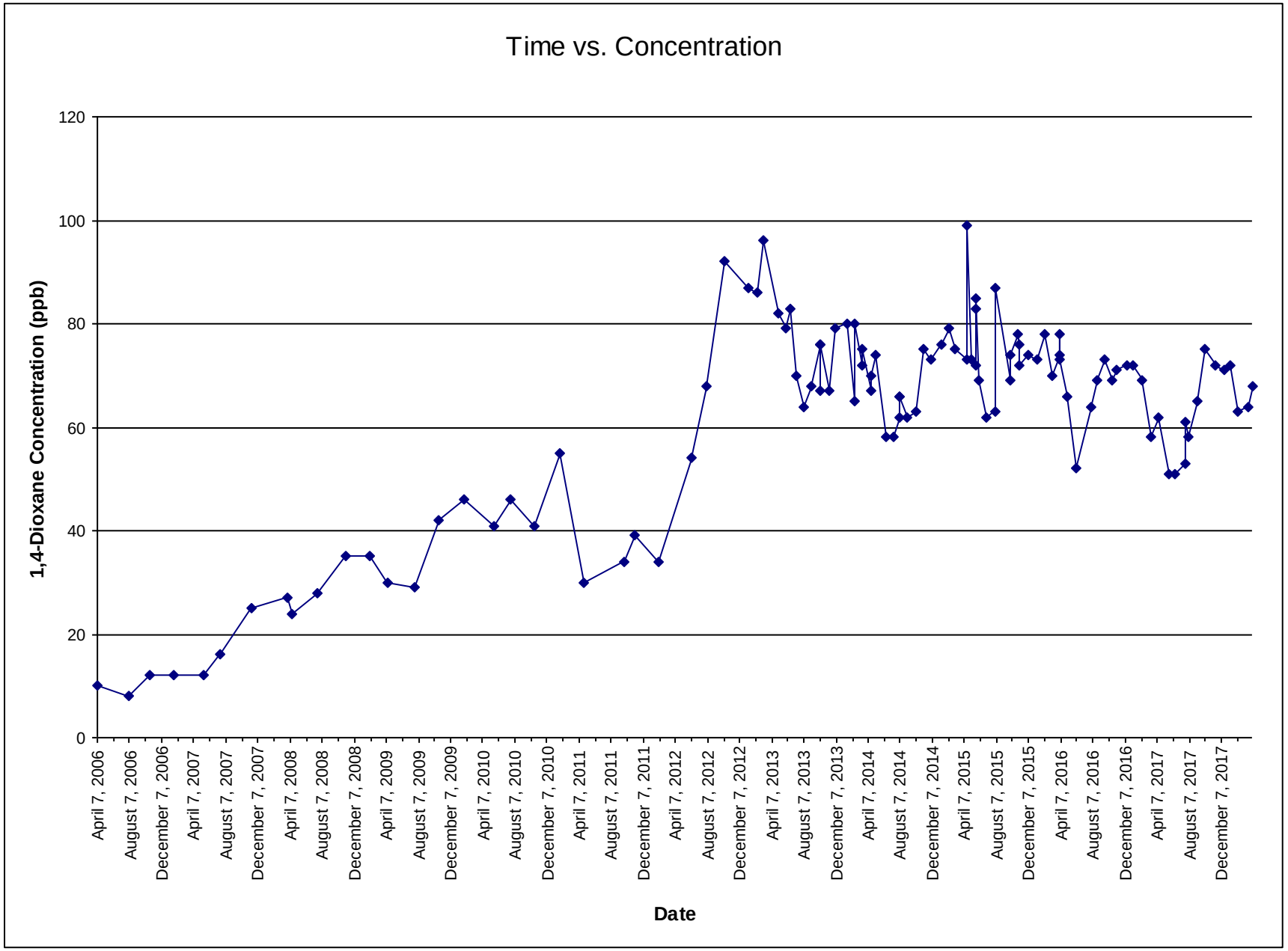
MW-103d

Aquifer: E
Type of well: Monitoring Wells
Sampling Interval: Quarterly



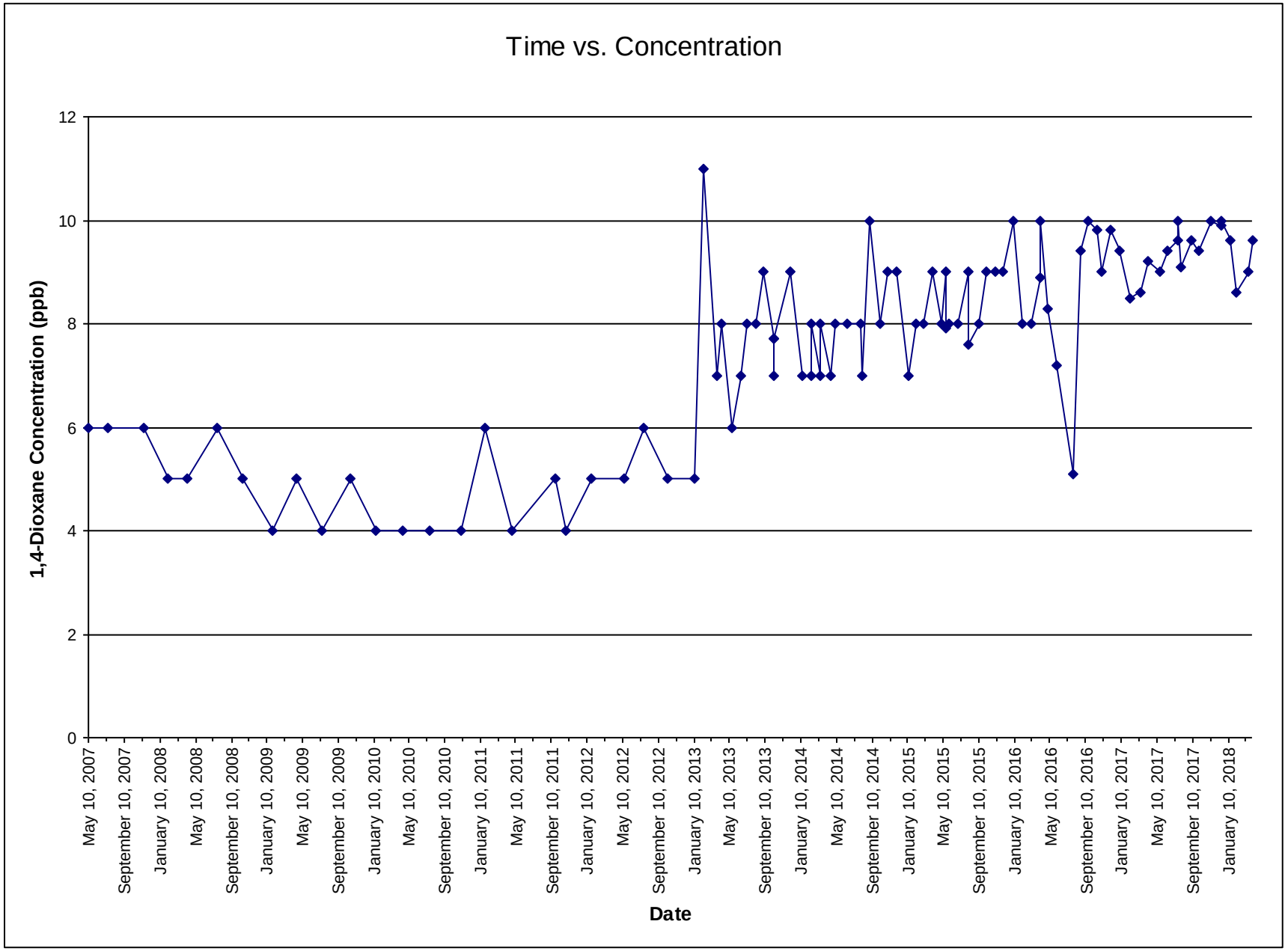
MW-103s

Aquifer: E
Type of well: Monitoring Wells
Sampling Interval: Monthly



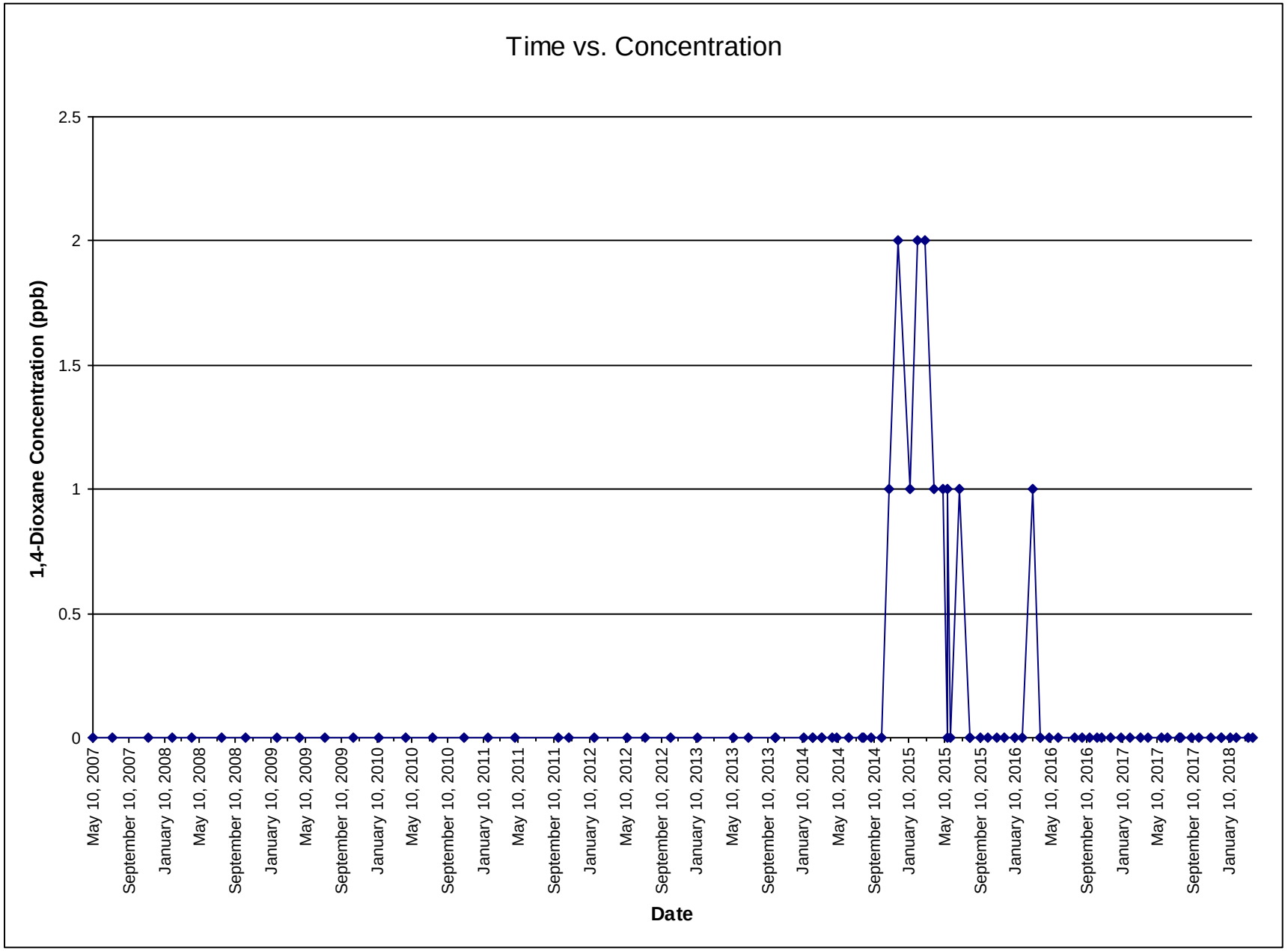
MW-112i

Aquifer: E
Type of well: Monitoring Wells
Sampling Interval: Monthly



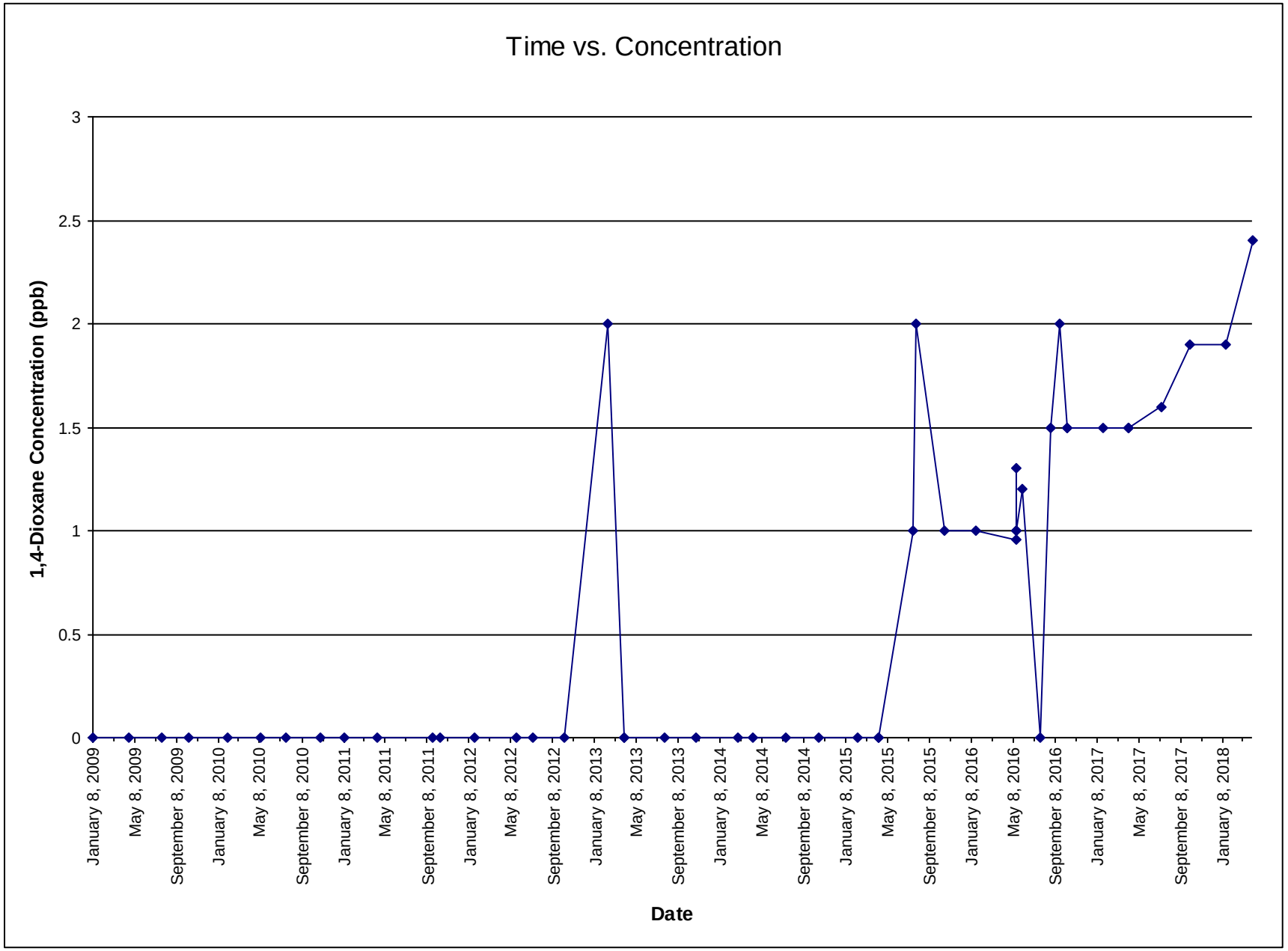
MW-112s

Aquifer: E
Type of well: Monitoring Wells
Sampling Interval: Monthly



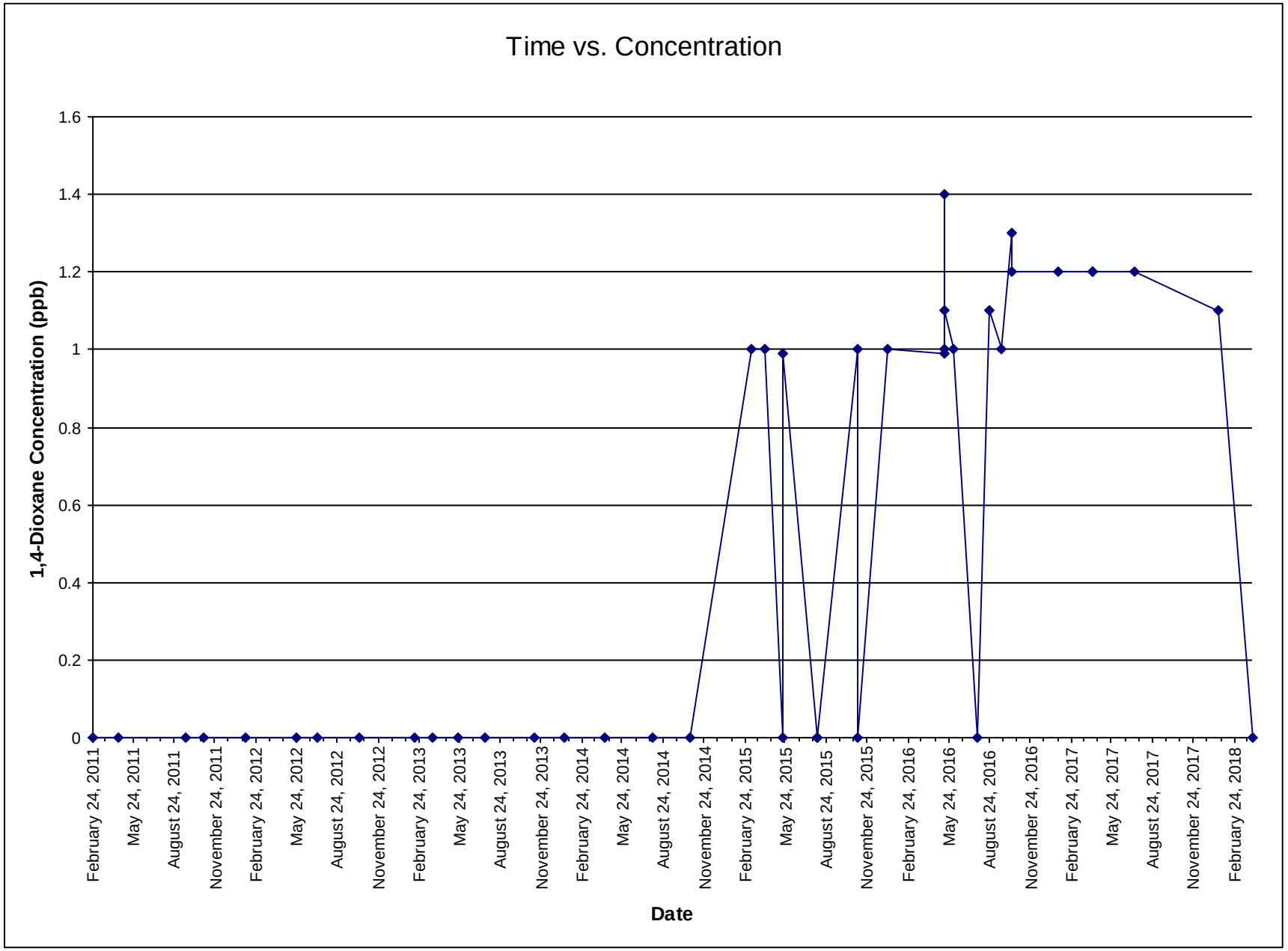
MW-121d

Aquifer: E
Type of well: Monitoring Wells
Sampling Interval: Quarterly



MW-129d

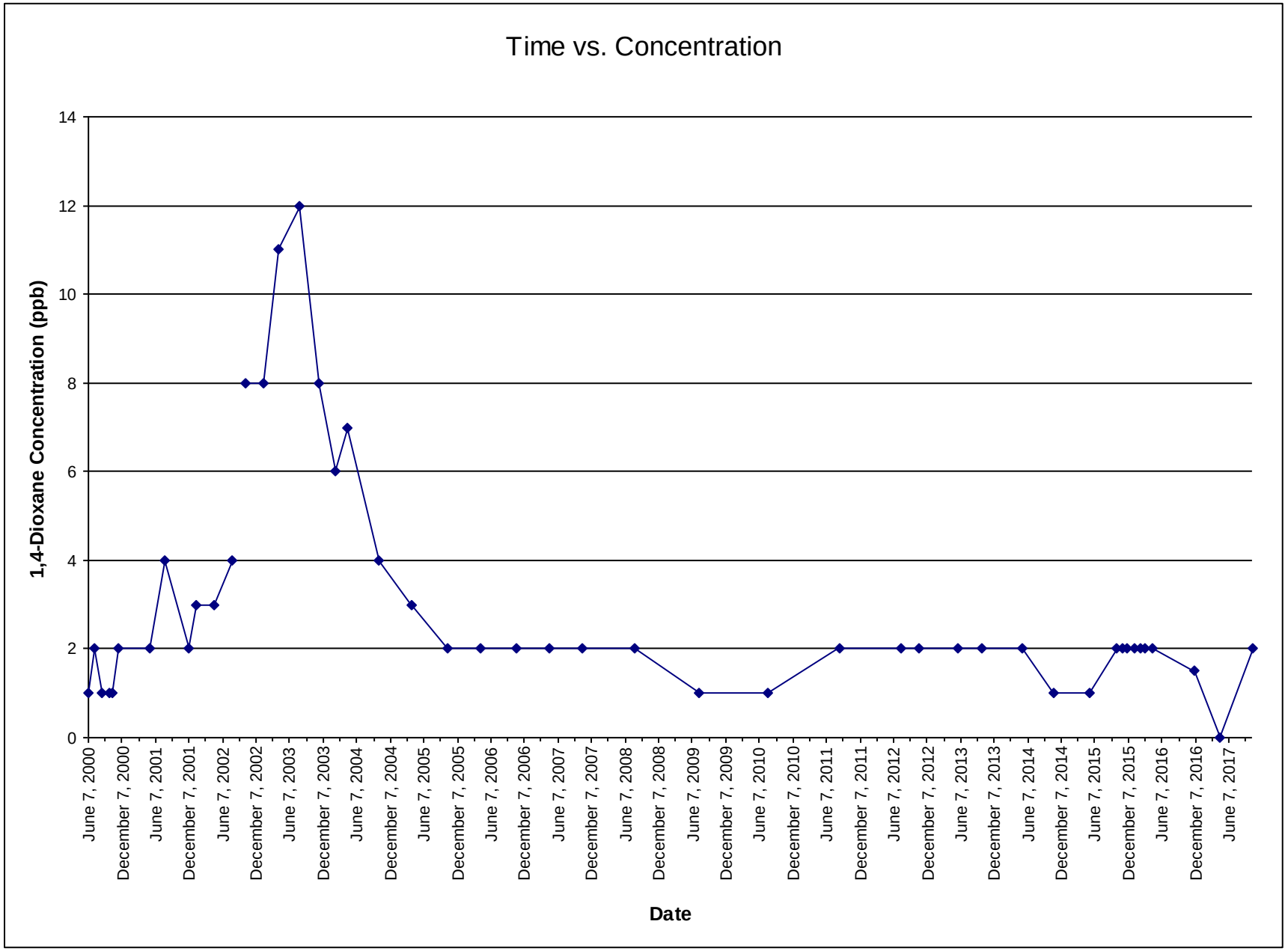
Aquifer: E
Type of well: Monitoring Wells
Sampling Interval: Quarterly



Little Lake Area Wells

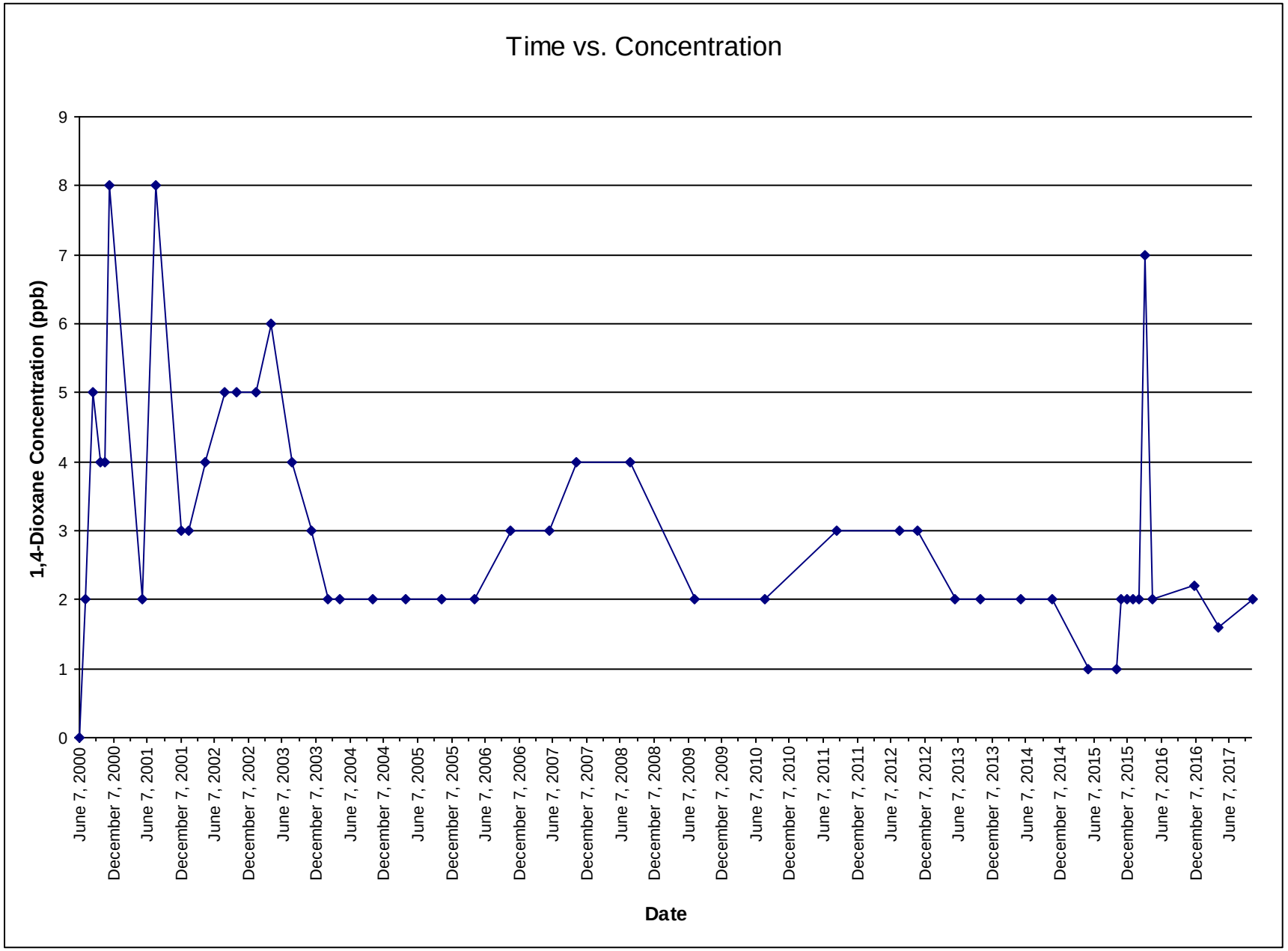
4601 Park 4 inch

Aquifer: D0
Type of well: Residential Wells
Sampling Interval: Semi-Annual



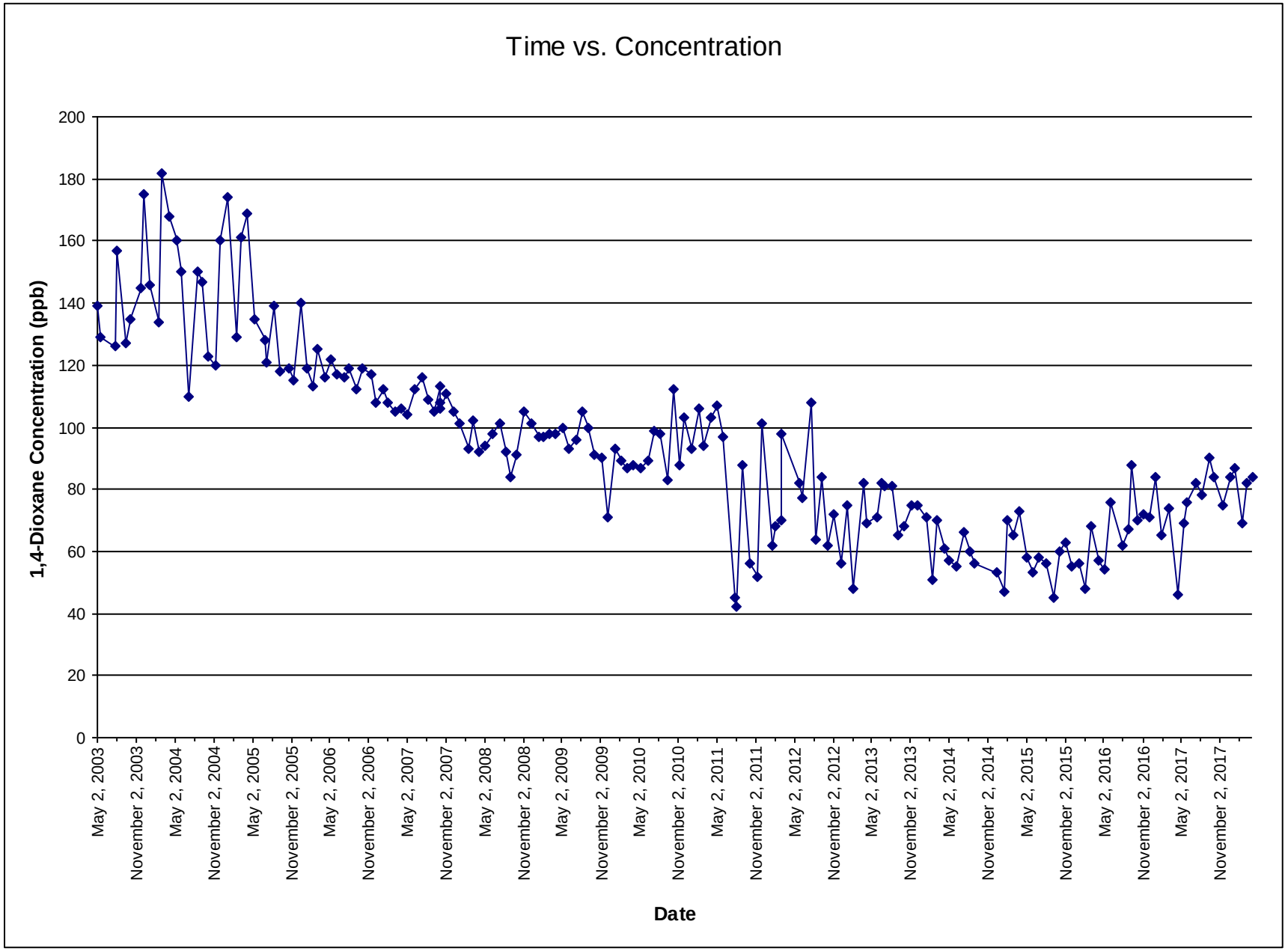
4601 Park 6 inch

Aquifer: D0
Type of well: Residential Wells
Sampling Interval: Semi-Annual



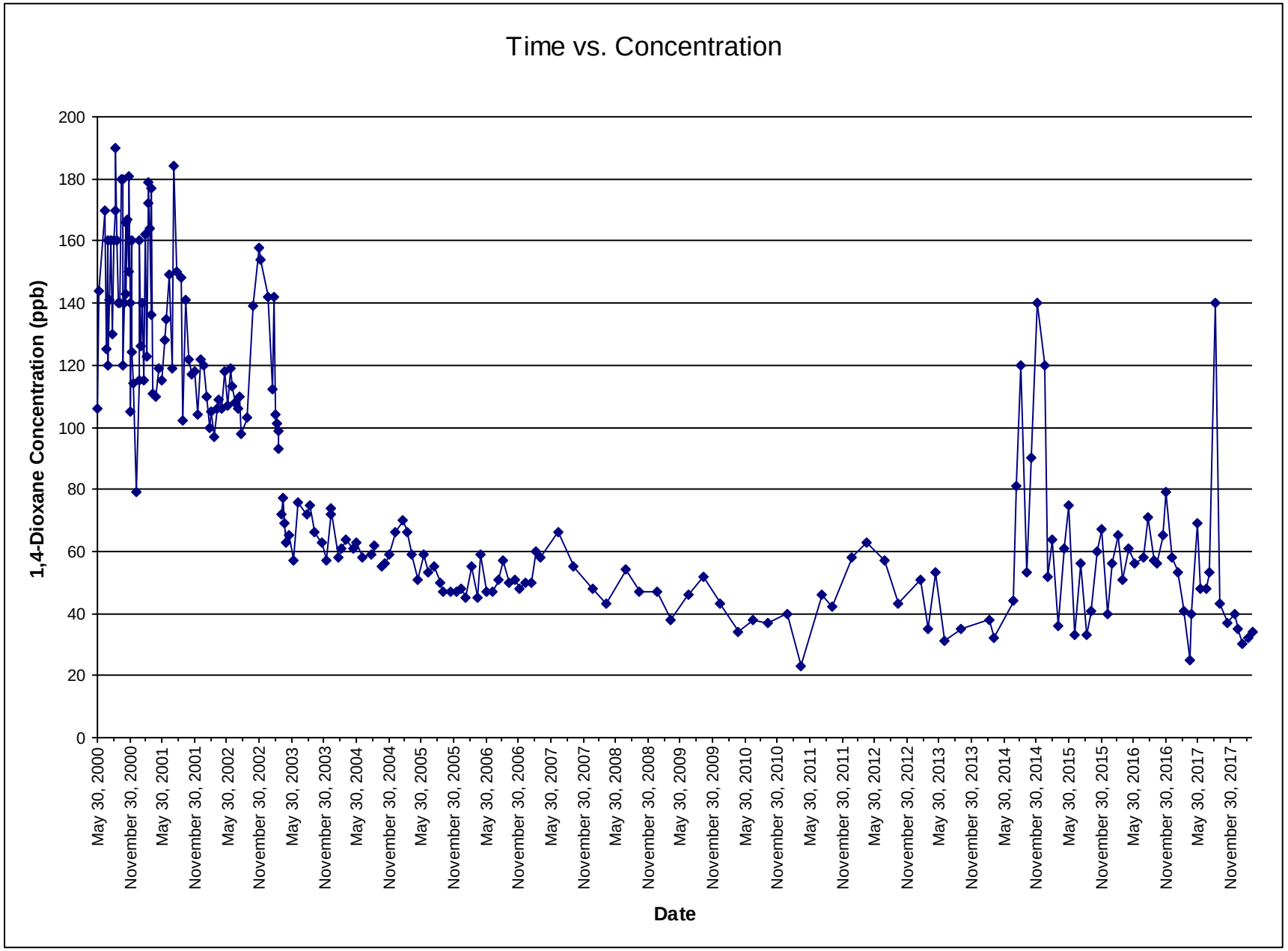
A2 Cleaning Supply

Aquifer: D0
Type of well: Monitoring Wells
Sampling Interval: Monthly



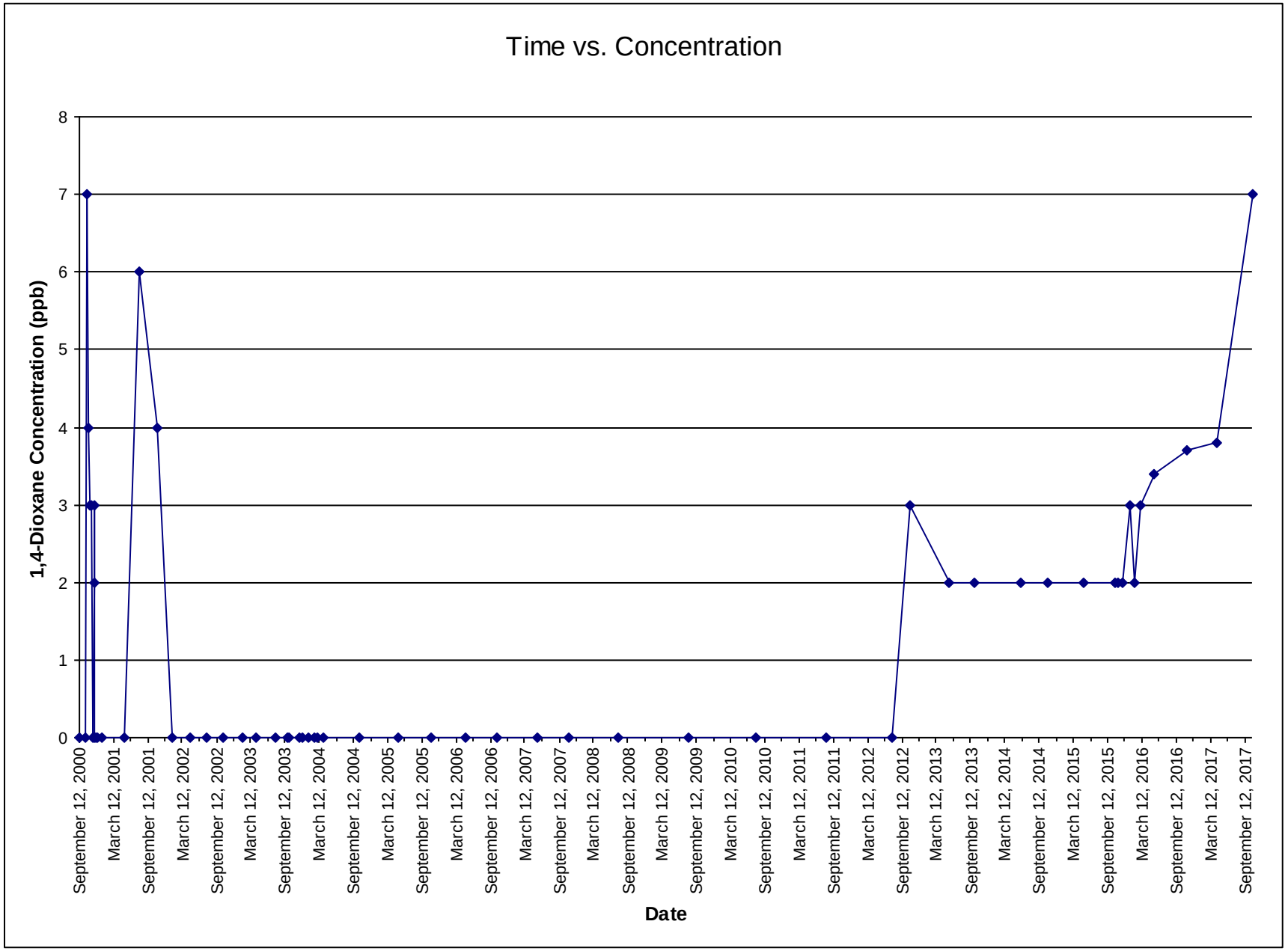
MW-53i

Aquifer: D0
Type of well: Monitoring Wells
Sampling Interval: Quarterly



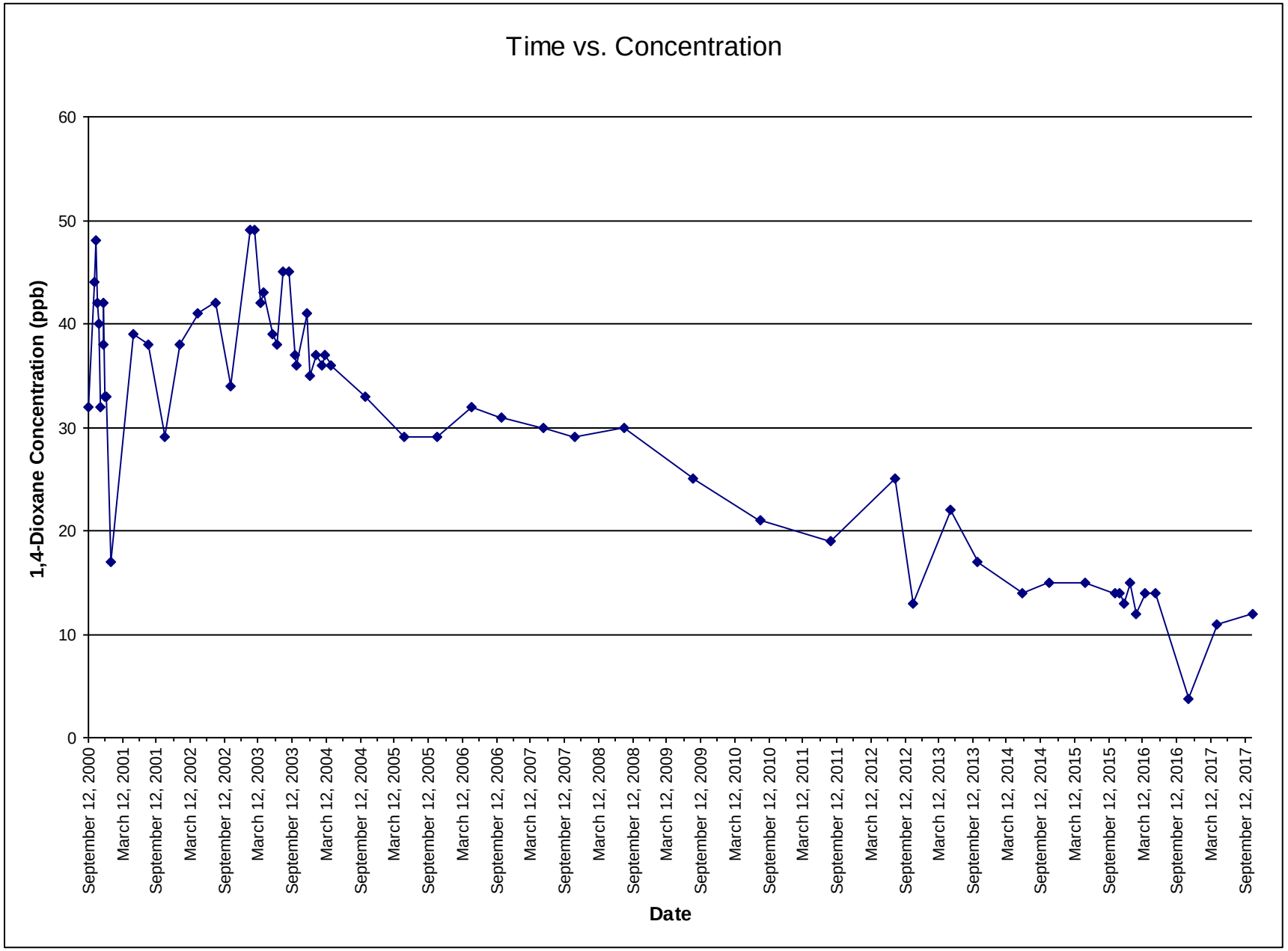
MW-61d

Aquifer: D0
Type of well: Monitoring Wells
Sampling Interval: Semi-Annual



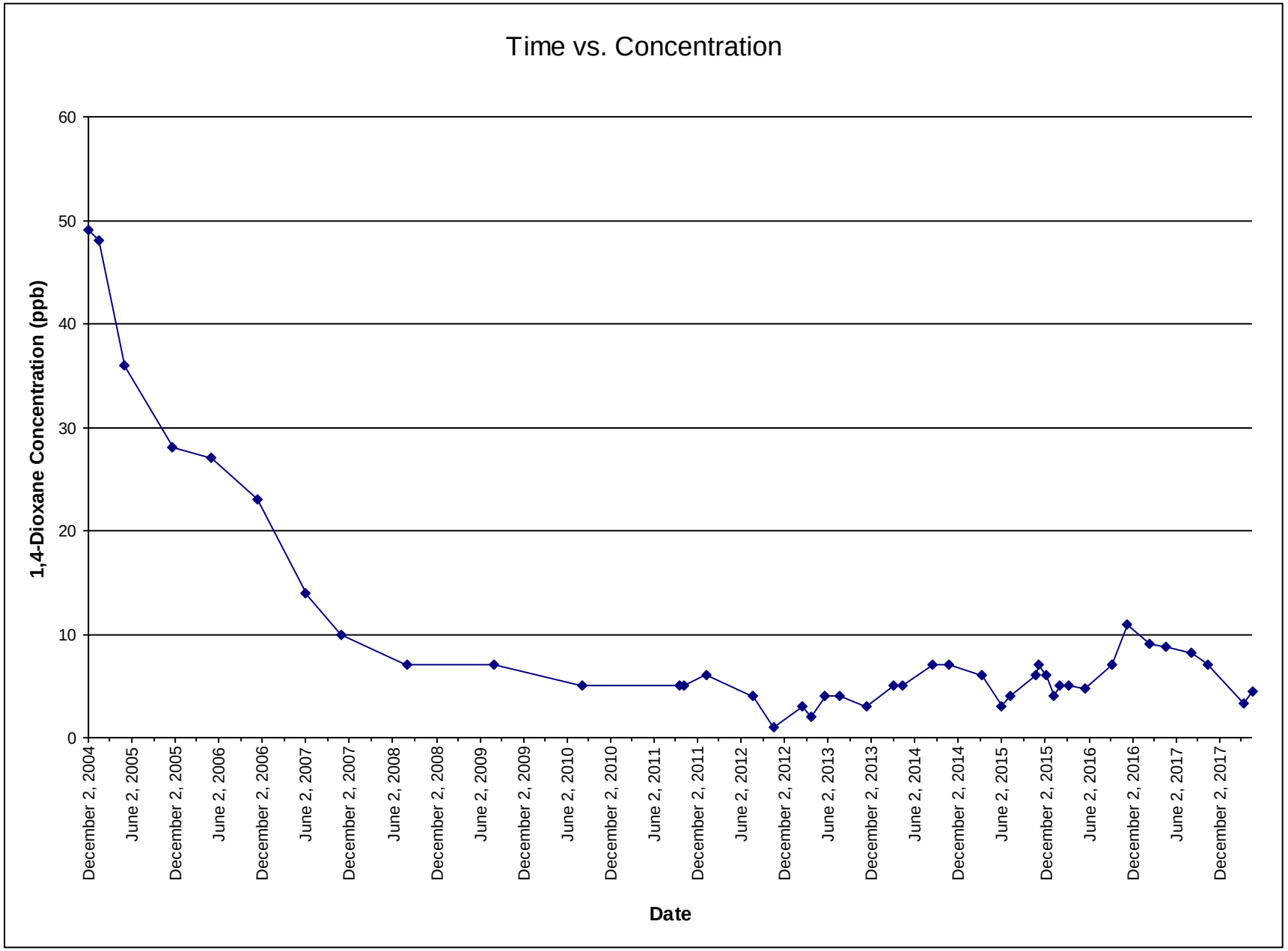
MW-61s

Aquifer: D0
Type of well: Monitoring Wells
Sampling Interval: Semi-Annual



MW-93

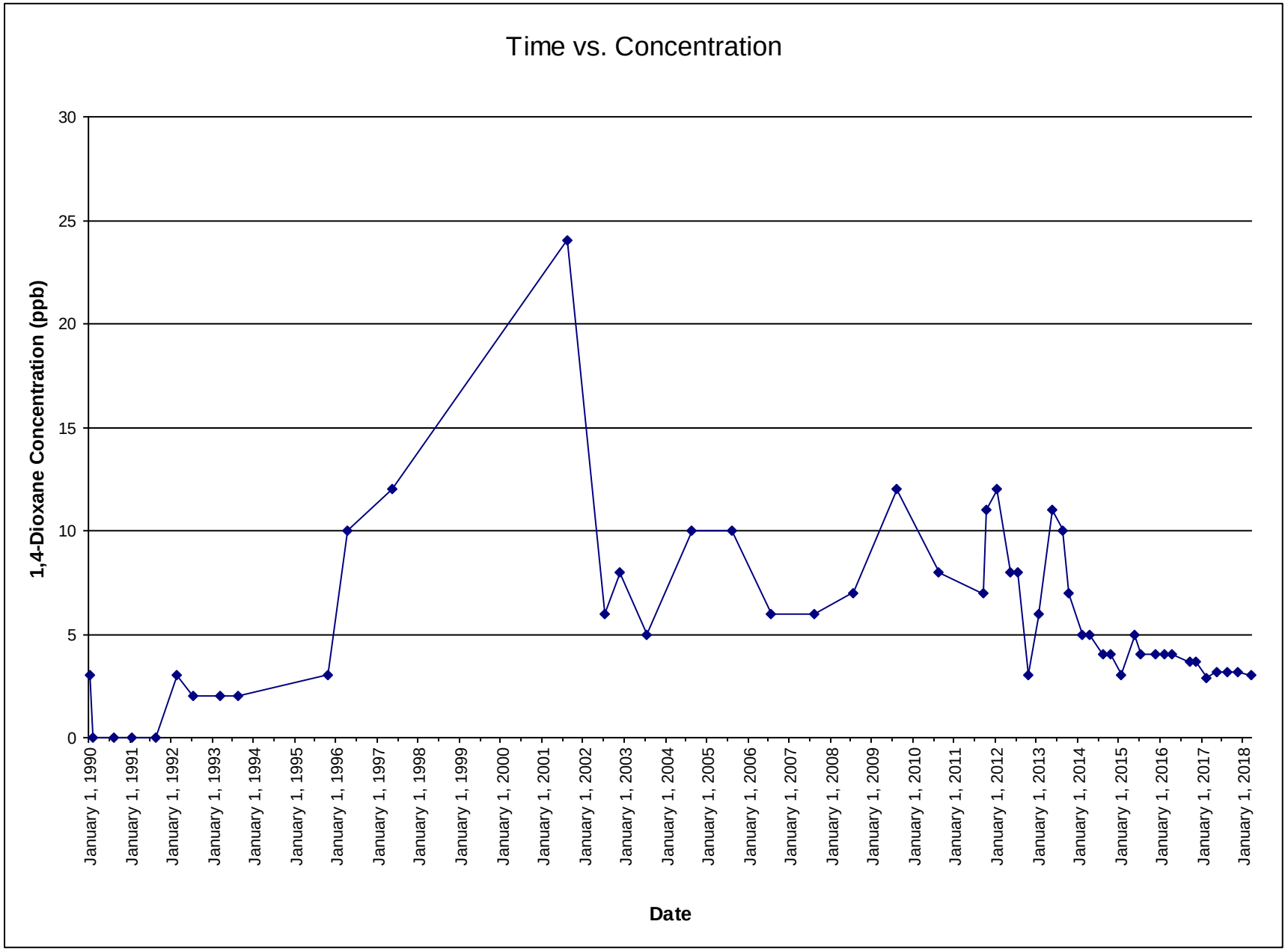
Aquifer: D0
Type of well: Monitoring Wells
Sampling Interval: Quarterly



Western Area Wells

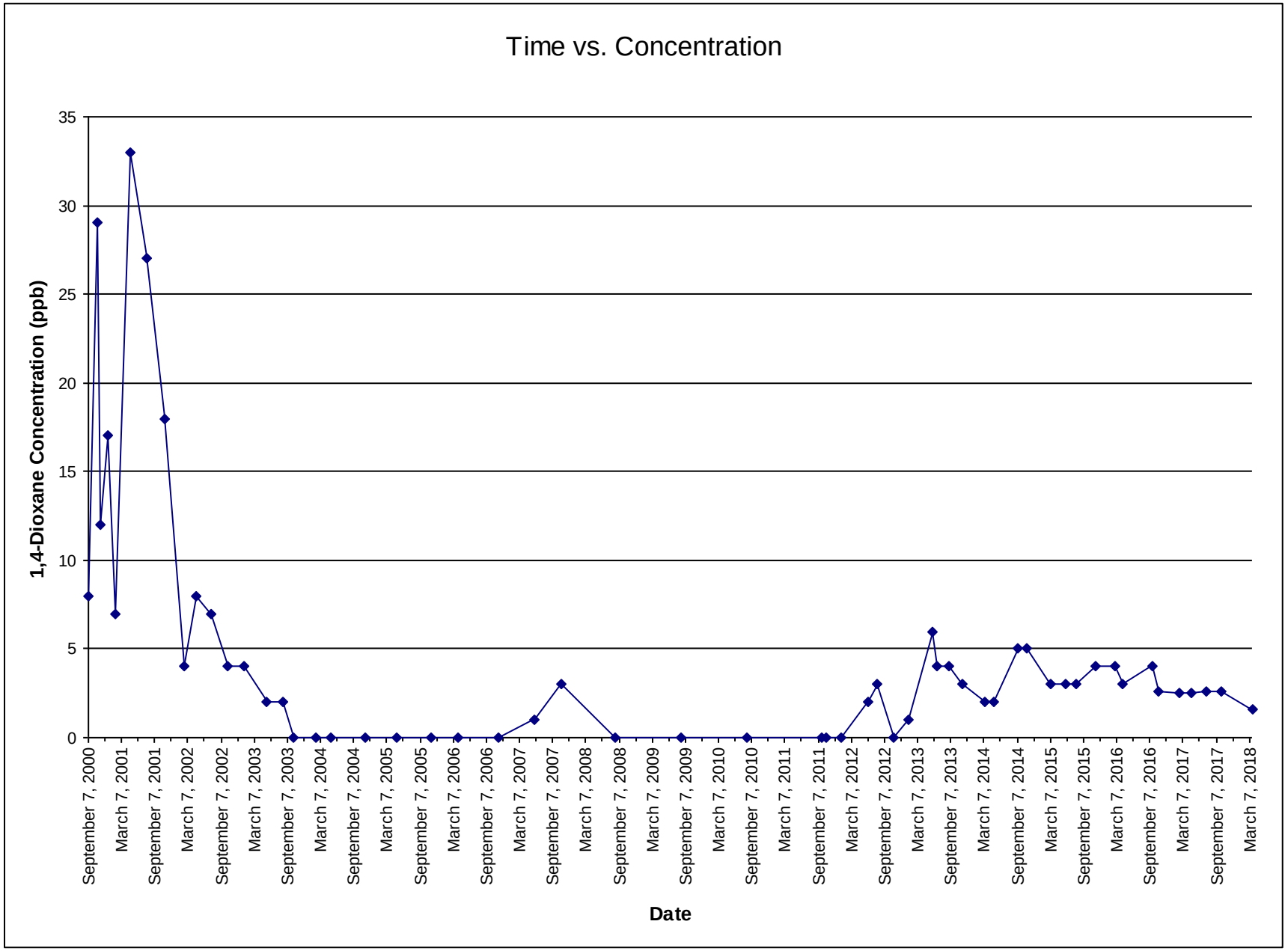
MW-35

Aquifer: C3
Type of well: Monitoring Wells
Sampling Interval: Quarterly



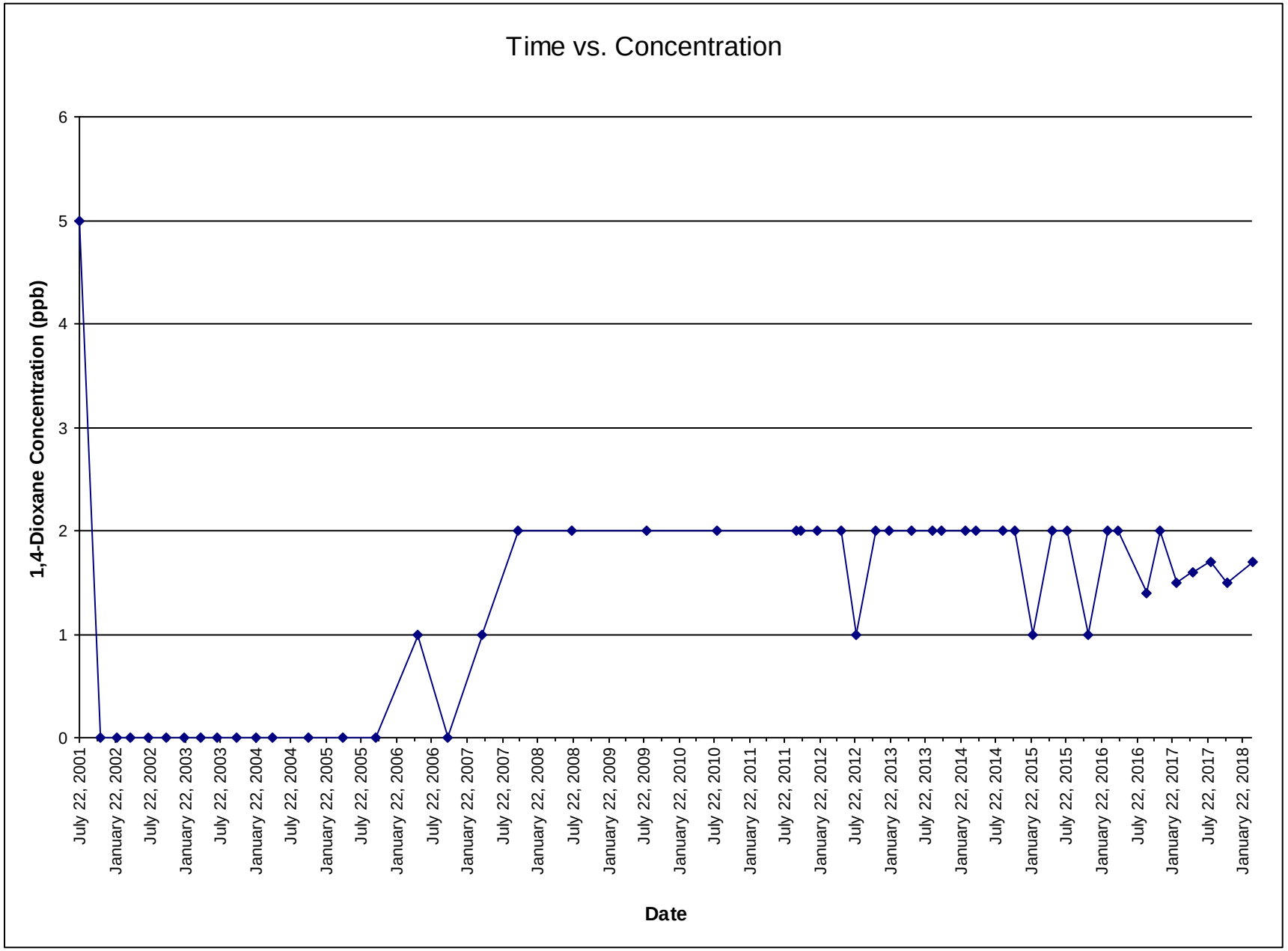
MW-57

Aquifer: SW
Type of well: Monitoring Wells
Sampling Interval: Quarterly



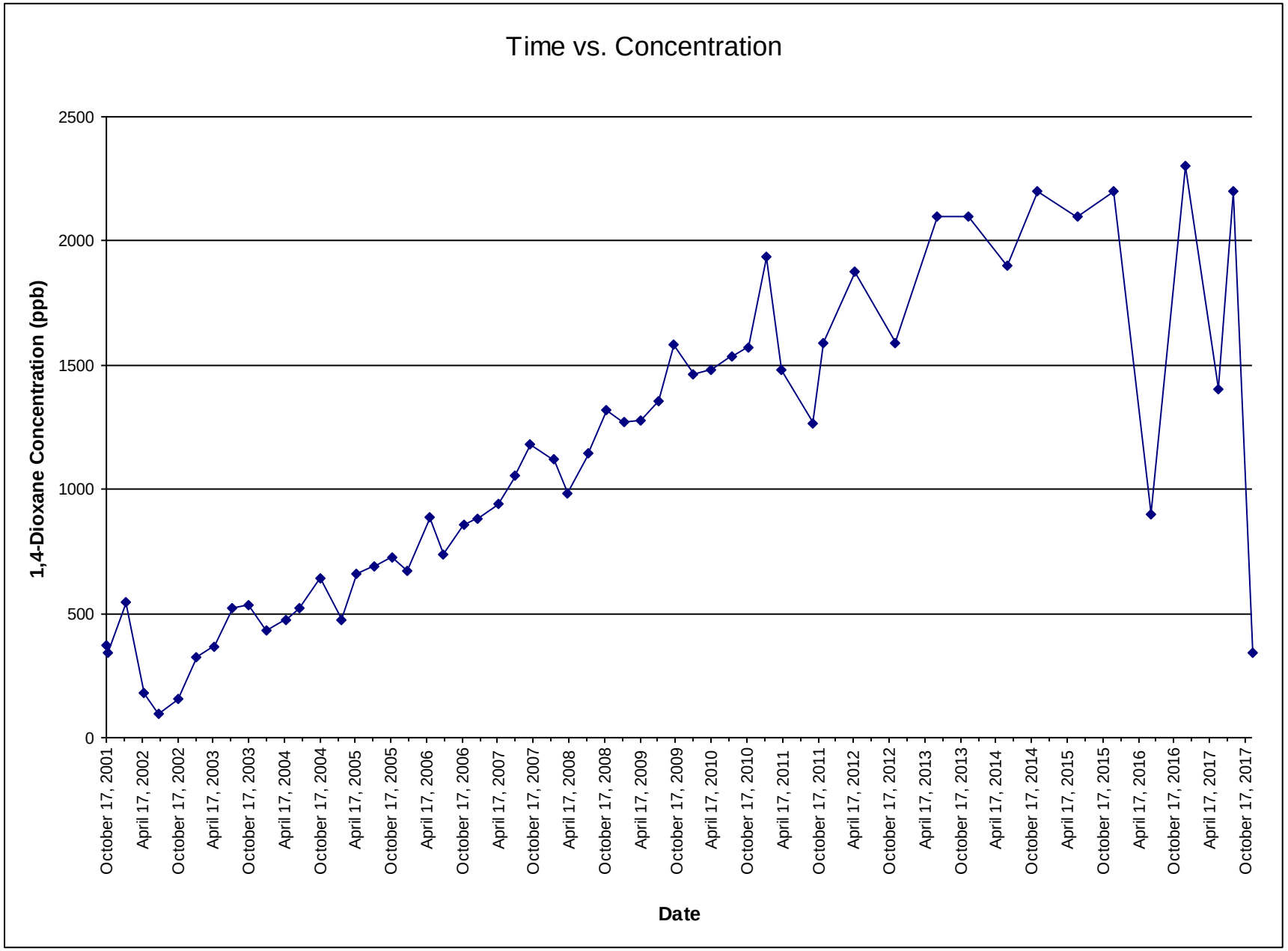
MW-66

Aquifer: E
Type of well: Monitoring Wells
Sampling Interval: Quarterly



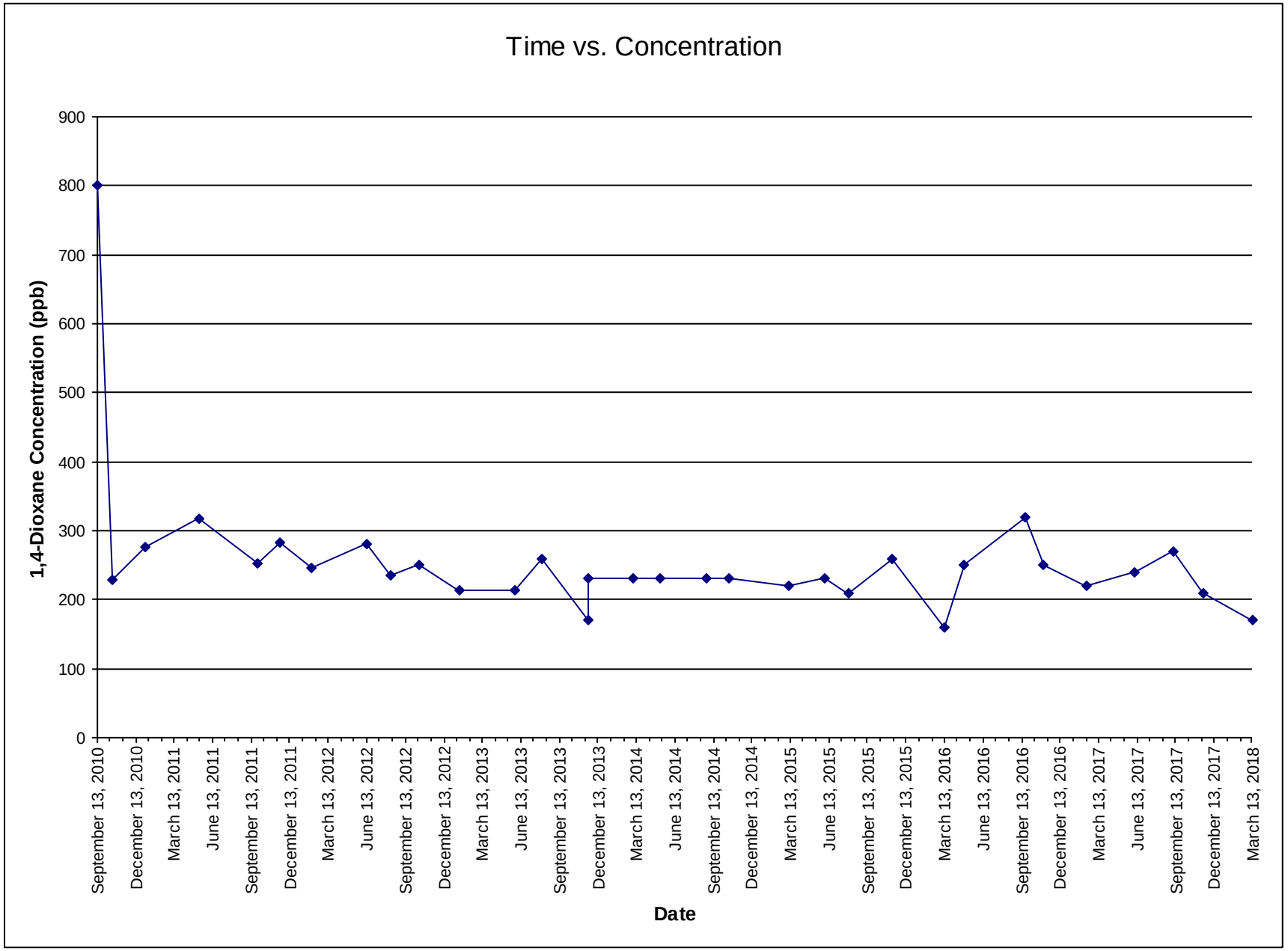
MW-71

Aquifer: E
Type of well: Monitoring Wells
Sampling Interval: Semi-Annual



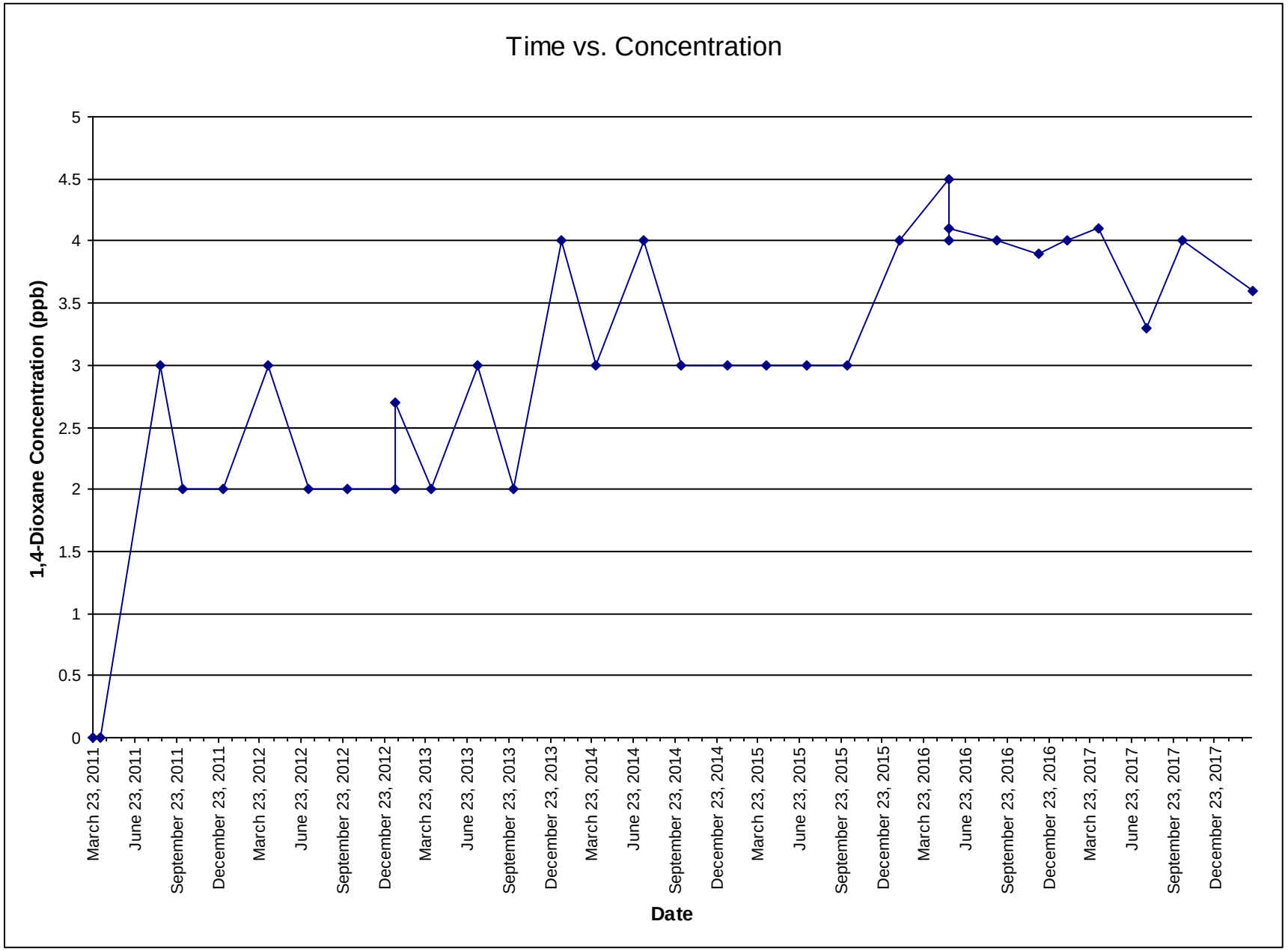
MW-125

Aquifer: C3
Type of well: Monitoring Wells
Sampling Interval: Quarterly



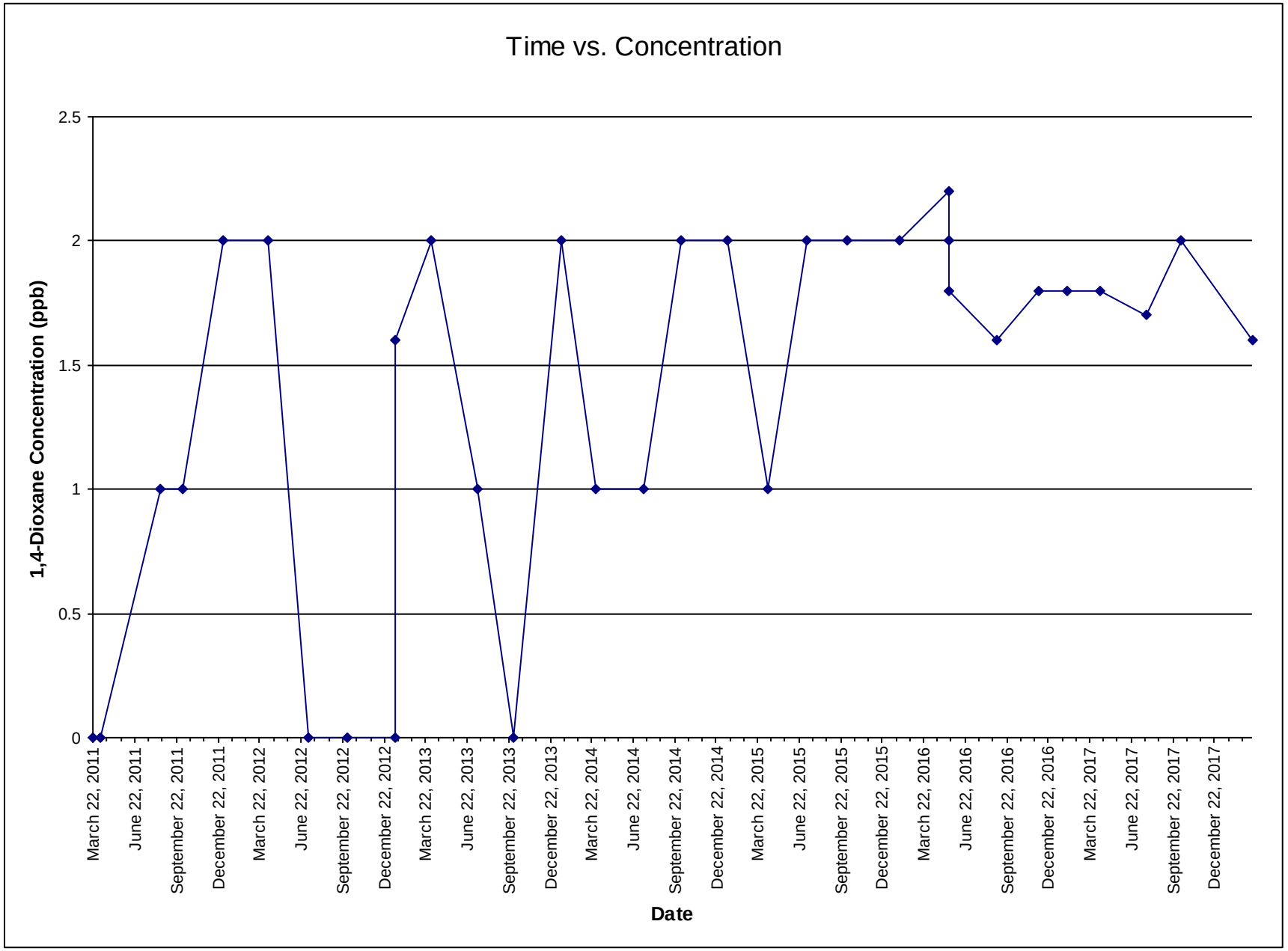
MW-133d

Aquifer: E
Type of well: Monitoring Wells
Sampling Interval: Quarterly



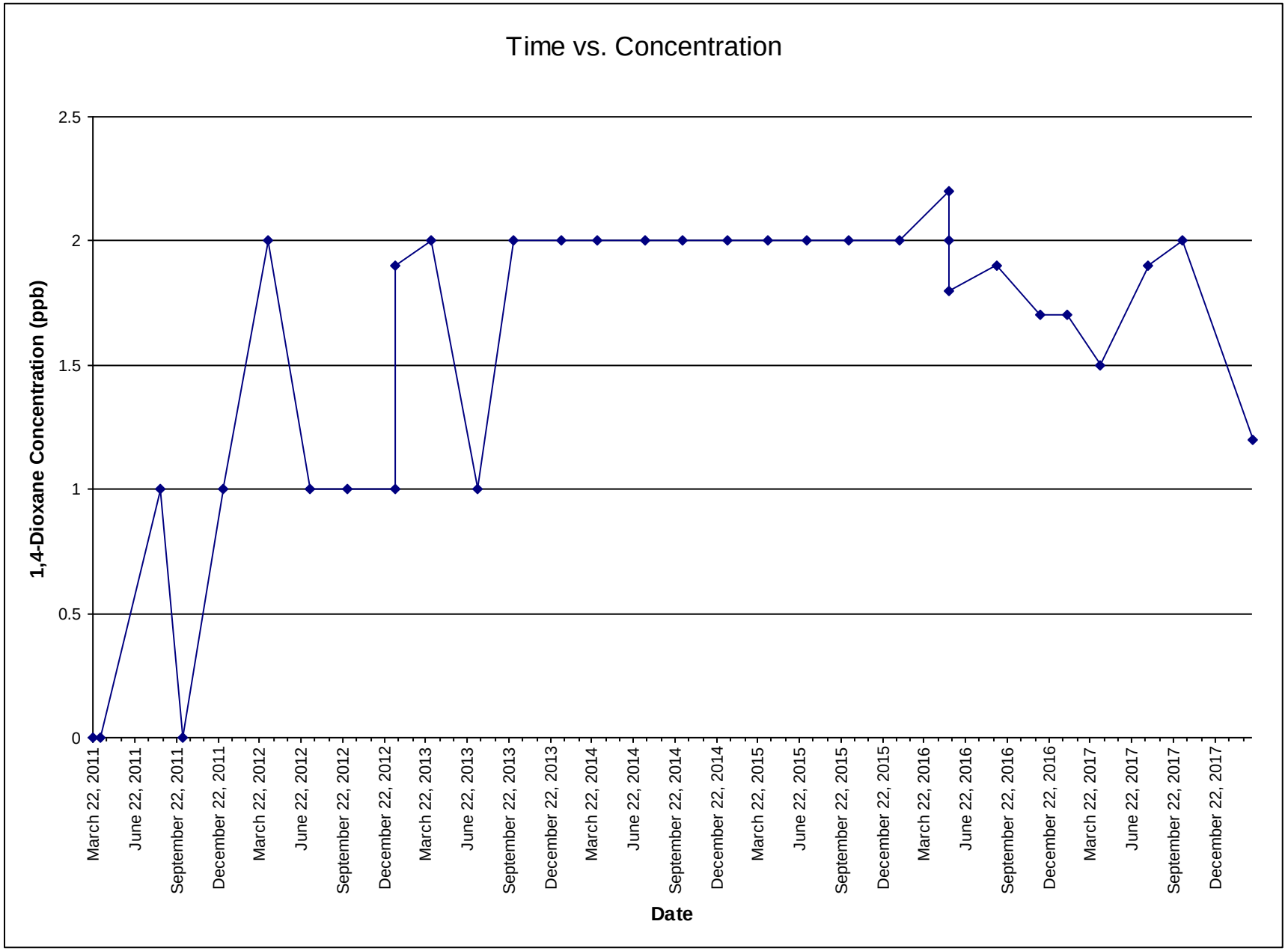
MW-133i

Aquifer: D2
Type of well: Monitoring Wells
Sampling Interval: Quarterly



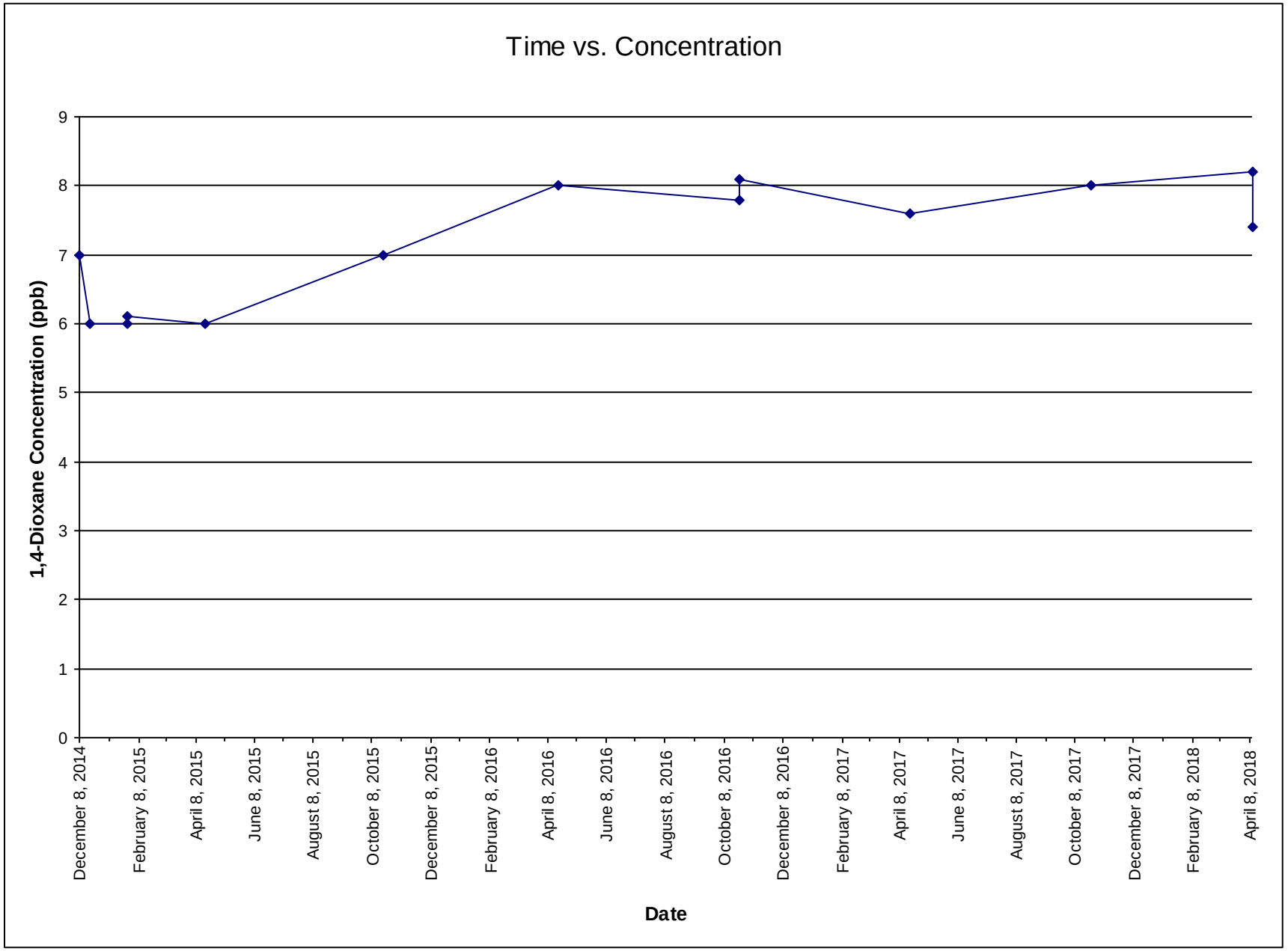
MW-133s

Aquifer: D2
Type of well: Monitoring Wells
Sampling Interval: Quarterly



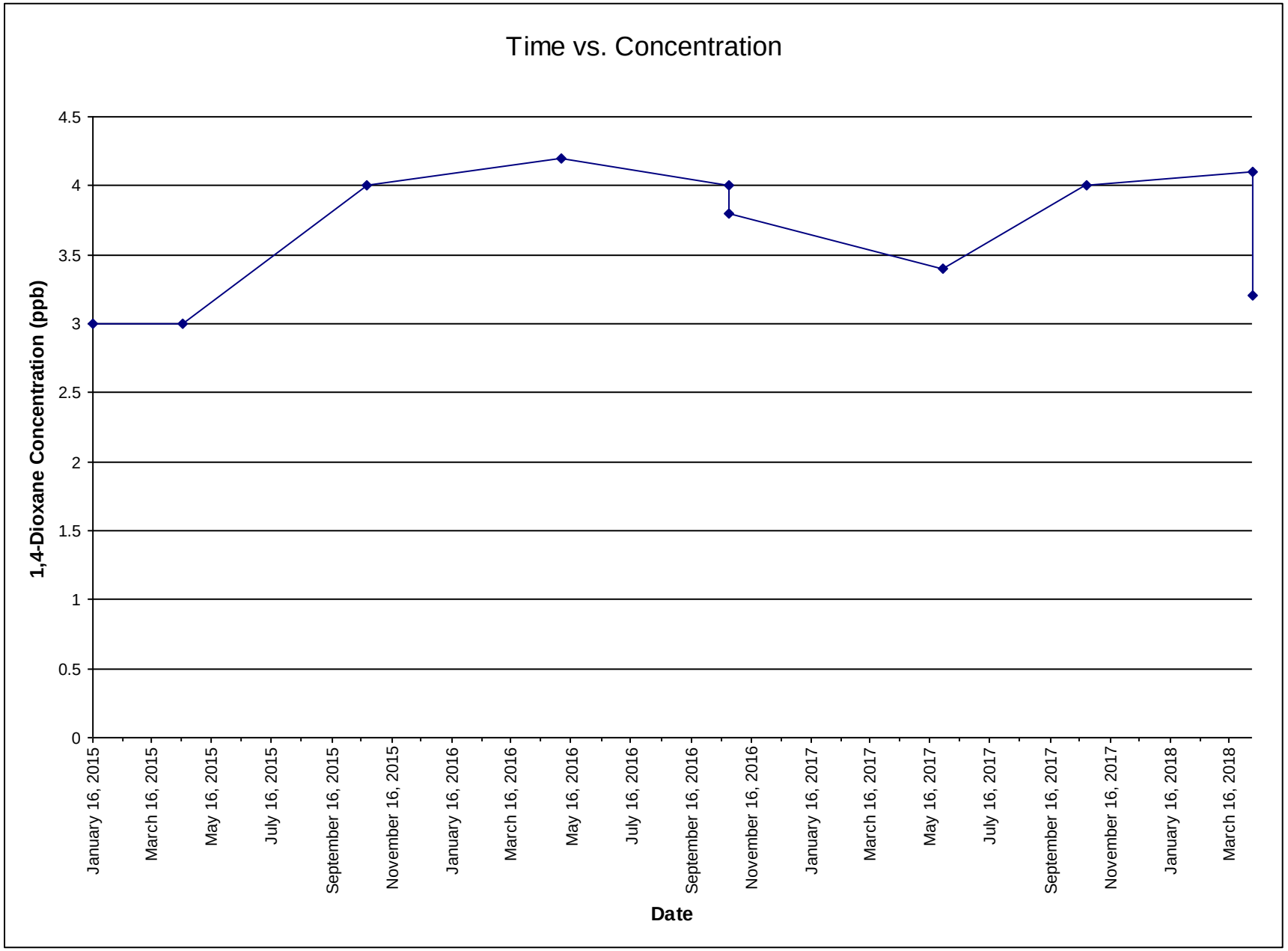
MW-138i

Aquifer: D0
Type of well: Monitoring Wells
Sampling Interval: Semi-Annual



MW-141d

Aquifer: E
Type of well: Monitoring Wells
Sampling Interval: Semi-Annual



MW-141s

Aquifer: D0
Type of well: Monitoring Wells
Sampling Interval: Semi-Annual