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2019 Annual Comprehensive TNX Area Groundwater Monitoring and Remedial Action Effectiveness Interim Report (U)

SEMS NUMBERS: 21, 29

SRNS-RP-2020-00326

Revision 0

June 2020

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Printed in the United States of America
Prepared for
U.S. Department of Energy
And
Savannah River Nuclear Solutions, LLC
Aiken, South Carolina

EXECUTIVE SUMMARY

The *2019 Annual Comprehensive TNX Area Groundwater Monitoring and Remedial Action Effectiveness Interim Report* has been prepared to support the regulatory reporting requirements for the TNX Area Groundwater (TNX) Operable Unit (OU) at the Savannah River Site. The reporting requirements are specified in the *TNX Effectiveness Monitoring Strategy Addendum to the TNX Groundwater Operable Unit Remedial Design Report/Remedial Action Work Plan* (U) (WSRC 1995, Revision 1.5, Attachment 17). In accordance with the Effectiveness Monitoring Strategy, an annual report must be submitted on or before June 30, 2020, to document groundwater conditions and evaluate remedial action effectiveness based on data collected during the second and fourth quarter, calendar year 2019.

Past operation processes within the TNX Area resulted in contamination of the vadose zone and groundwater. All potential sources of groundwater contamination were assessed and remediated as part of the TNX Area OU Record of Decision or the T-Area OU Record of Decision.

Current Remedial Action

Remedial actions are currently implemented to address the chlorinated volatile organic compound contamination in the vadose zone with a soil vapor extraction system which started up in 2002, and edible oil treatment to target the groundwater which started as a treatability study in 2008.

The edible oil treatability study demonstrated the ability to decrease the contaminant mass and areal extent of the trichloroethylene plume in less time and at lower cost than the remedy selected in the TNX Area OU Record of Decision, and still be protective of the groundwater. The effectiveness of edible oil warranted a change in the remedy for TNX groundwater. An Explanation of Significant Difference was issued on June 12, 2013 with the following modifications to the remedy selected in the Record of Decision for the TNX Area OU groundwater component:

- Injection of additional edible oil treatment as needed using the existing well network if a sustained rebound lasting over one (1) year in excess of 75 µg/L of trichloroethylene, tetrachloroethylene, or carbon tetrachloride occurs in any well. If the rebound occurs, then additional edible oil will be determined appropriate by the United States Department of

Energy, South Carolina Department of Health and Environmental Control, and the United States Environmental Protection Agency.

- Permanent removal of the T-1 Air Stripper from service. The T-1 Air Stripper was closed in accordance with a state approved closure plan.

In 2015, although the rebound conditions to trigger additional oil injections had not been exceeded, additional edible oil was injected at ten monitoring wells to prevent future rebound of trichloroethylene concentrations. Emulsified Oil Substrate® was reinjected into the original treatment zone and both neat oil and Emulsified Oil Substrate® were injected outside of the original treatment zone to target monitoring wells with elevated trichloroethylene concentrations.

Results collected since the 2015 edible oil injections indicate that injection fluids were placed into the aquifer successfully. Trichloroethylene concentrations are less than the maximum contamination level in all wells in the treatment area, and reductive conditions are present in the treatment area. During the second quarter 2019, the trichloroethylene concentration exceeding the maximum concentration level was located downgradient of the edible oil treatment area (i.e., TRW 2). During the fourth quarter 2019, trichloroethylene concentrations exceeded the maximum concentration level at TNX 28D, a monitoring well located in the wetlands.

Soil vapor extraction continues to remove mass from the vadose zone near the TNX Burying Ground. Five MicroBlowers™ removed approximately one pound of solvent during 2019.

The remedial actions (i.e., edible oil and soil vapor extraction) continue to provide effective treatment and source reduction of the groundwater at TNX Area OU. Trichloroethylene, tetrachloroethylene, or carbon tetrachloride concentrations did not exceed the rebound conditions to trigger additional oil injections during 2019. Future sampling events will continue to determine the longevity of the edible oil treatment and resulting volatile organic compound concentrations.

Previous Remedial Action

Previous remedial action included a recovery well network and air stripper system, which operated from 1996 to 2007, and one recirculation well. The recirculation well was deemed ineffective and removed from service in 1997.

The recovery well system proved to be effective in capturing and treating chlorinated volatile organic compounds, resulting in depletion of the chlorinated volatile organic compounds in the groundwater near the TNX Burying Ground. To accommodate the edible oil treatability study at the TNX Area OU, the recovery well system was shut down and put in standby mode in December 2007. Reductions in contaminant mass during the edible oil study accelerated the time to reach the maximum contaminant levels and lead to the permanent shut down and removal of the T-1 Air Stripper in 2013.

Groundwater Monitoring

The TNX groundwater monitoring program includes sampling a network of 43 monitoring wells (Figure ES-1) during the second and fourth quarters of each calendar year.

Six parameters (i.e., adjusted gross alpha, 1,4-dioxane, gross alpha, mercury, trichloroethylene, and uranium [total recoverable]) exceeded maximum contaminant levels during 2019. Trichloroethylene mass removal from the TNX Burial Ground source area has created a detached plume (Figure ES-2). The trichloroethylene plume and source has been significantly reduced in the treatment area in response to the injection of edible oil (Figure ES-3). The distribution of uranium (total recoverable), and gross alpha is isolated, with the highest concentrations observed primarily in the vicinity of the TNX Burying Ground (i.e., TBG 3) and in the wetlands downgradient of the Old TNX Seepage Basin (i.e., TCM 5). 1,4-Dioxane was sampled at all monitoring wells during the second and fourth quarter 2019 using two analytical methods (i.e., EPA 8260BSIM and EPA 522). 1,4-Dioxane was detected above the regional screening level for tap water (0.46 µg/L) in two monitoring wells (i.e., TBG 4 and TBG 5) in 2019.

Recommendation

The South Carolina Department of Health and Environmental Control certified analytical method used to determine the 1,4-dioxane concentrations (i.e., EPA 8260BSIM) cannot achieve detection limits less than the regional screening level for drinking water (0.46 µg/L). In 2019, Savannah River Site acquired a laboratory that can achieve the regional screening level using analytical method EPA 522. Both methods, EPA 522 and EPA 8260BSIM, will be used to analyze 1,4-dioxane at all wells and the results will continue to be included in subsequent annual reports.

South Carolina Department of Health and Environmental Control recommended adding a new monitoring well between TNX 28D and the TNX 72 well cluster, based on the recent history of trichloroethylene concentrations exceeding the maximum concentration level at TNX 28D since 2016. The Savannah River Site agreed to evaluate the trichloroethylene concentrations at TNX 28D for three consecutive years (i.e., 2019) and if trichloroethylene concentrations at TNX 28D continued to be elevated above the maximum concentration level, discuss the possibility of installing a new monitoring well with the United States Department of Energy, South Carolina Department of Health and Environmental Control, and the United States Environmental Protection Agency. The TCE concentrations at TNX 28D have fluctuated with changes in water elevation and were less than the maximum concentration level during 4Q2018 and 2Q2019. For this reason, the Savannah River Site would like to extend the period of evaluation at TNX 28D for another three years (i.e., 2022). A meeting to discuss the possible installation of a new monitoring well will be scheduled after the submittal of the 2022 Annual Comprehensive TNX Area Groundwater Monitoring and Remedial Action Effectiveness Interim Report.

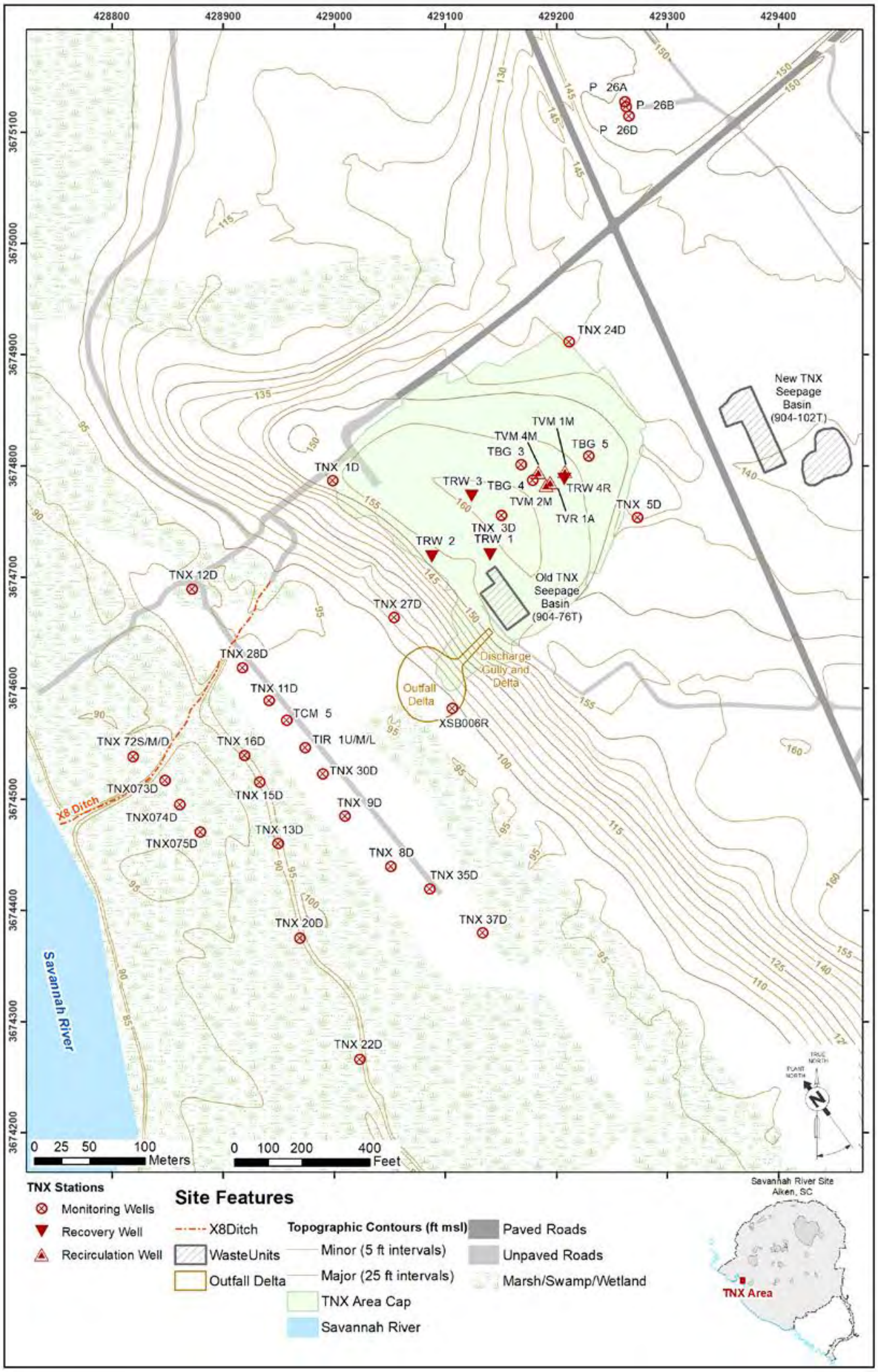

Figure ES-1. TNX Area Well Locations

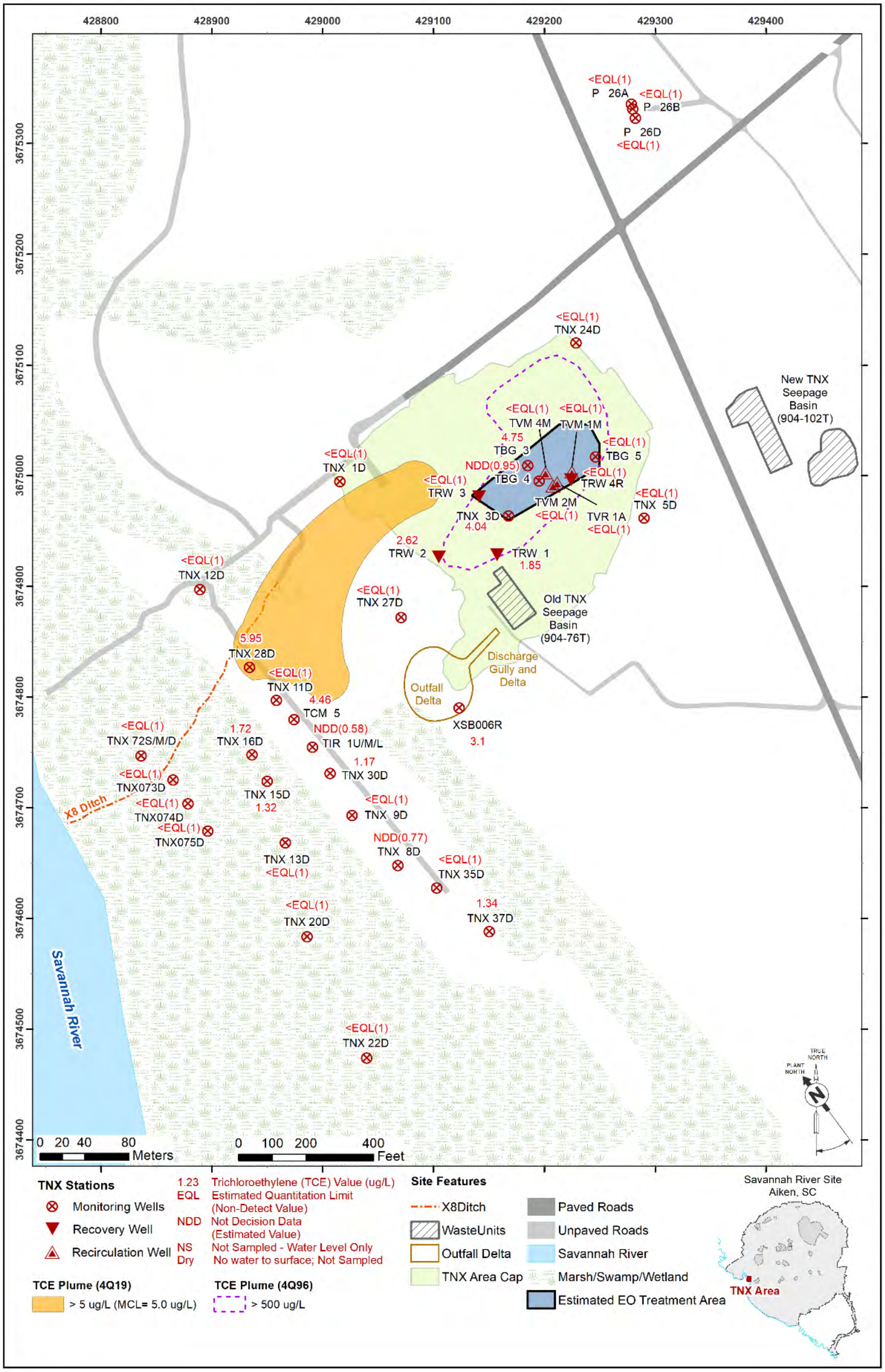

Figure ES-2. TNX Area Trichloroethylene (TCE) Concentration in Groundwater, 4Q2019 with >500 µg/L TCE Plume from 4Q1996 Superimposed

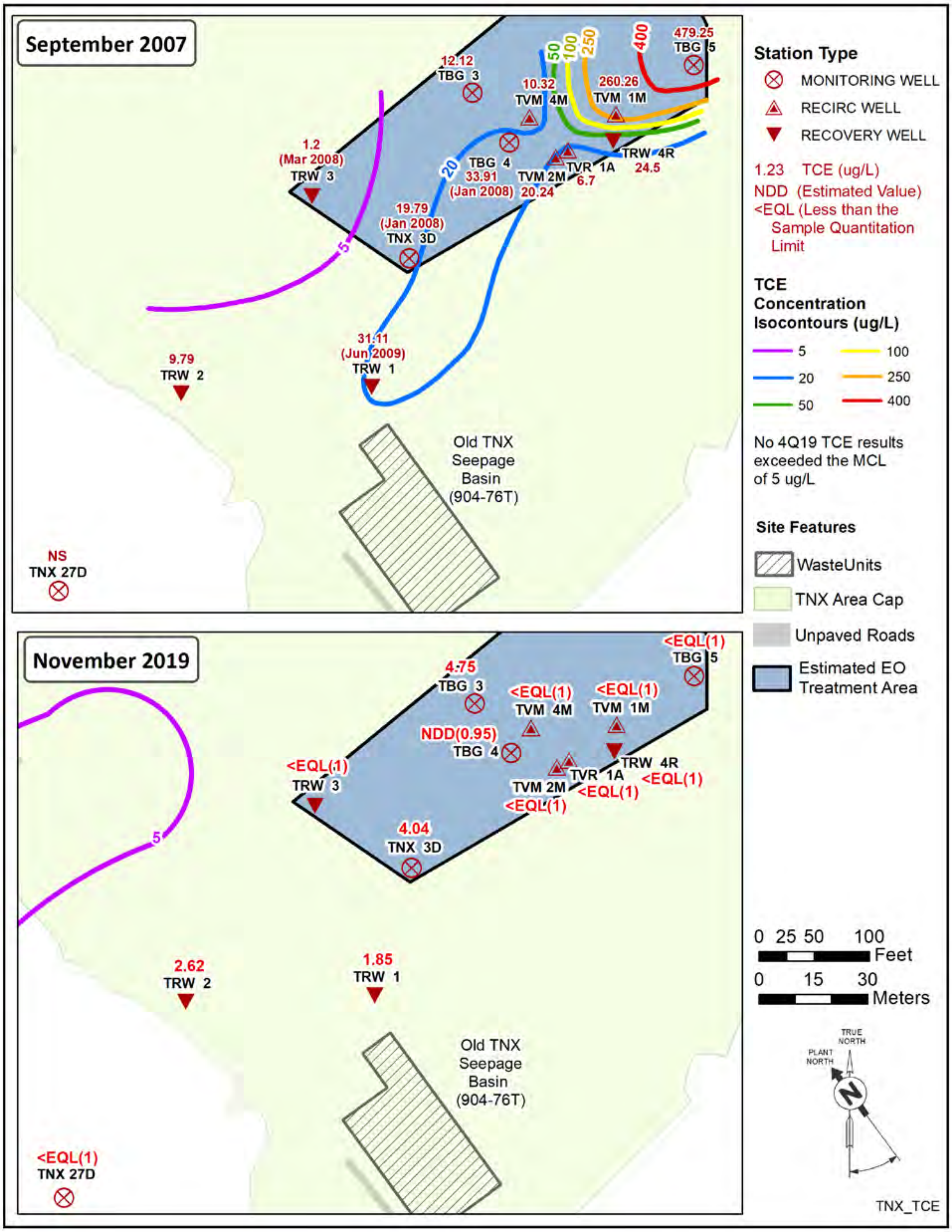

Figure ES-3. Comparison of Trichloroethylene Concentration in the Treatment Zone in 2007 and 2019

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LIST OF ABBREVIATIONS AND ACRONYMS

amsl	above mean sea level
CCl_4	carbon tetrachloride
CERCLA	Comprehensive Environmental Response, Compensation And Liability Act
cfm	cubic feet per minute
cm	centimeter
DG	Discharge Gully
DO	dissolved oxygen
DWPF	Defense Waste Processing Facility
EO	edible oil
EOS®	Emulsified Oil Substrate®
EQL	estimated quantitation limit
ESD	Explanation of Significant Difference
ft	feet
gal	gallon
GAU	Gordon aquifer unit
GCU	Gordon confining unit
gpm	gallons per minute
HGCA	Hybrid Groundwater Corrective Action
in	inch
IROD	Interim Record of Decision
km	kilometer
LAZ	Lower Aquifer Zone
lb	pound
MCL	maximum contaminant level
µg/L	micrograms per liter
m	meter
m^3	cubic meter
mV	millivolt
NTSB	New TNX Seepage Basin
ORP	oxidation reduction potential
OTSB	Old TNX Seepage Basin

LIST OF ABBREVIATIONS AND ACRONYMS *(Continued/End)*

OU	Operable Unit
PCE	tetrachloroethylene
pCi/g	picocuries per gram
pCi/L	picocuries per liter
ppb	parts per billion
Q	quarter
RCRA	Resource Conservation and Recovery Act
ROD	Record of Decision
RSL	regional screening level
SCDHEC	South Carolina Department of Health and Environmental Control
SRNS	Savannah River Nuclear Solutions, LLC
SRS	Savannah River Site
SVE	Soil Vapor Extraction
TAOU	T-Area Operable Unit
TBG	TNX Burying Ground
TCE	trichloroethylene
TNX OD	TNX Outfall Delta
TOC	total organic carbon
USDOE	United States Department of Energy
USEPA	United States Environmental Protection Agency
UTRAU	Upper Three Runs aquifer unit
VC	vinyl chloride
VFA	volatile fatty acid
VOC	volatile organic compound
WSRC	Westinghouse Savannah River Company (prior to 2005)
WSRC	Washington Savannah River Company, LLC (post 2005)

1.0 INTRODUCTION

1.1 Purpose

The 2019 Annual Comprehensive TNX Area Groundwater Monitoring and Remedial Action Effectiveness Interim Report[i] was prepared to support the regulatory reporting requirements for the TNX Area Operable Unit (OU) at the Savannah River Site (SRS), and provide interim results from the edible oil (EO) remedial action deployed in 2015. The reporting requirements are specified in the TNX Effectiveness Monitoring Strategy Addendum to the TNX Groundwater Operable Unit Remedial Design Report/Remedial Action Work Plan (U) (WSRC 1999a). In accordance with the TNX Area Effectiveness Monitoring Strategy, an annual report is required to be submitted on or before June 30th of each year to document groundwater conditions and to evaluate the remedial action effectiveness based on data collected during the second and fourth quarters of the previous calendar year.

1.2 Unit History/Description

The TNX Area is in the southwest portion of the SRS, approximately 0.4 km (0.25 mi) east of the Savannah River (Figure A-1). The TNX Area was a pilot-scale testing and evaluation facility that supported nuclear fuel, target manufacturing chemical process, and the Defense Waste Processing Facility (DWPF). Past operations processes within the TNX Area resulted in contamination of the vadose zone and groundwater. Sources of groundwater contamination included seepage from unlined basins (Old TNX Seepage Basin [OTSB] and New TNX Seepage Basin [NTSB]), leakage from the process sewers, and leachate from other sources at TNX (e.g., temporary storage facility drums and an equipment staging area).

The TNX Area OU consists of four subunits: the TNX Burying Ground (TBG), the OTSB, the NTSB, and the TNX Groundwater beneath the surface units (Figure A-2).

[i] This report was formerly known as the Comprehensive TNX Area Annual Groundwater and Effectiveness Monitoring Strategy Report. The title was modified at a June 10, 2015 scoping meeting between the USDOE, USEPA, and SCDHEC to more accurately represent the contents of the report.

1.2.1 TNX Burying Ground (TBG)

The TBG was created in 1953 to dispose of debris that resulted from the explosion of an experimental separation process (Purex) in the TNX Area earlier that year. The separation process used nitric acid, organic solvents, and an evaporator to concentrate uranium. The debris included conduit, drums, tin, and structural steel contaminated with uranyl nitrate and depleted uranium. Between 1980 and 1984, most of the waste buried at the TBG was excavated and sent to the Radioactive Waste Burial Ground (643-7E). The remaining waste remains beneath the asphalt, building, and transformer pads. An estimated 27 kg (60 lbs) of uranyl nitrate are thought to remain buried at the TBG.

1.2.2 Old TNX Seepage Basin (OTSB)

The OTSB was an unlined excavation designed to contain wastewater until it could seep into the underlying sediments that were believed to act as a natural ion-exchange media. The OTSB received process wastewater between 1956 and 1980 from pilot-scale tests conducted in the TNX Area for the DWPF and the General Separations Area. The waste discharged to the basin included large quantities of mercury, primarily in the form of mercuric nitrate, other heavy metals, sodium compounds, uranium, and other radionuclides. During periods of high flow, the OTSB periodically overflowed downhill into the Savannah River floodplain adjacent to the TNX facility. In 1980, area wastewater was re-routed from the OTSB to the NTSB. During closure of the OTSB in 1981, the remaining liquid was drained to the nearby floodplain. As result of draining the remaining liquid and overflow events, erosion occurred in the hillside forming a Discharge Gully (DG).

1.2.3 New TNX Seepage Basin (NTSB)

The NTSB was an unlined excavation (constructed to replace the OTSB) that operated between 1980 and 1988. While in operation, the basin received waste from pilot-scale chemical processing tests for DWPF and chemical separation. The waste discharged to the basin included simulated, non-radioactive DWPF sludge; simulated, non-radioactive salt supernate; glass frit; other processing chemicals; and laboratory sink wastewater. No hazardous waste was discharged to the basin. During periods of unusually high discharge, the seepage section of the basin overflowed to Outfall X-013A, located on the southeast corner of the NTSB, which in turn discharged to a local surface depression.

1.2.4 TNX Groundwater

Shallow groundwater beneath the TNX Area has been contaminated with chlorinated volatile organic compounds (VOCs), such as trichloroethylene (TCE), tetrachloroethylene (PCE), and carbon tetrachloride (CCl_4). All sources of groundwater contamination were assessed and remediated as part of the TNX Area OU Record of Decision (ROD) (WSRC 2003) or the T-Area OU (TAOU) ROD (WSRC 2005a). Specific remedial actions are listed in Section 1.3 of this document.

The TNX Groundwater consists of the groundwater beneath the TNX Area subunits described above and extending to the Savannah River. Groundwater at TNX is divided into two main aquifer systems, the Lower Aquifer Zone (LAZ) of the Upper Three Runs Aquifer Unit (UTRAU) and the underlying Gordon Aquifer Unit (GAU) system. The LAZ of the UTRA is an unconfined water table aquifer present at the northeastern portion of TNX Area that pinches out as water elevations decline to the southwest. The GAU is a semi-confined aquifer approximately 6 to 12 m (20 to 40 ft) thick. Groundwater flows progressively from deep to shallow aquifers (i.e., upward hydraulic gradient) and to the Savannah River (WSRC 1998).

1.3 Regulatory and Operational History

In November 1994, an Interim ROD (IROD) was approved by the United States Department of Energy (USDOE), United States Environmental Protection Agency (USEPA), and South Carolina Department of Health and Environmental Control (SCDHEC) (WSRC 1994). The IROD required installation of a hybrid groundwater corrective action (HGCA) for the VOC groundwater plume. The HGCA consisted of 1) a pump and treat system (recovery well network and low-profile air stripper) to treat and inhibit further migration of the 500 μg/L TCE plume; and 2) an airlift recirculation well located at the heart of the plume to expedite remediation. Figure A-2 shows the location of the TNX well system for the interim remedial action during startup and initial operations. The recirculation well system was determined to be ineffective at the TNX Area, due to both geological factors and the nature of the contamination. Consequently, an Explanation of Significant Difference (ESD) (WSRC 1997b) to the IROD was issued in accordance with Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) regulations to remove the recirculation well from the HGCA. In 2002, a multi-well soil vapor extraction (SVE) system was added to the interim remedial action as part of a vadose zone source term remedy, via an ESD to the IROD (WSRC 2001).

In 2003, the TNX Area OU ROD was issued and outlined the selected remedy for the vadose zone and groundwater (WSRC 2003). The selected remedy was Extraction in High Chlorinated VOC Areas with Monitoring/Mixing Zone and Institutional Controls. This remedy entailed SVE at high VOC concentration areas and operation of the existing T-1 pump and treat system until monitoring determined that passive remediation (mixing zone) and continued monitoring and institutional controls (i.e., land use controls) would be appropriate.

Between 2004 and 2006, the final remedial and removal action for the TNX Area OU and T-Area OU was completed. In 2005, the *Explanation of Significant Differences to the Record of Decision for the TNX Area Operable Unit* (WSRC 2005c) was issued to address principal threat source material in the soil associated with the Old TNX Seepage Basin/Inactive Process Sewer Line/Discharge Gully subunit and selected sumps and a small area of contamination on the western exterior of Building 678-T. This change to the remedy increased the volume of material to be excavated for offsite disposal. The remedial action for the OTSB and the NTSB subunits is detailed in the *Post-Construction Report (PCR) for the TNX Area Operable Unit (U)* (WRSC 2005b). The remedial action for the T-Area OU, including the TNX Outfall Delta (TNX OD), is detailed in the *Post-Construction Report (PCR) for T Area Operable Unit (TAOU) (U)* (WSRC 2006). The removal action for the TNX OD, Lower DG, and Swamp is detailed in the *Removal Site Evaluation Report/Engineering Evaluation and Cost Analysis for the TNX Outfall Delta,* *Lower Discharge Gully, and Swamp Operable Unit (U)* (WSRC 2004c). A summary of the remedial actions and removal action is provided below.

- Remedial action for the OTSB started in April 2005 and was completed in February 2006. Remedial action included excavation of contaminated soil, confirmation sampling, backfilling the basin and backfilling the DG.

- Remedial action for the NTSB started in August 2004 and was completed in December 2004. Remedial action included drainage of the basin, backfilling the basin, and grouting the process sewer line.

- Removal action to excavate soil from the TNX OD, Lower DG, and Inner Swamp was started in December 2004 and completed in September 2005. This removal action excavated radiologically contaminated soil from three areas within the Inner Swamp.

- Remedial action for the TAOU included a low permeability, geosynthetic cover system (i.e. TAOU cap) and a soil amendment. Construction of the TAOU cap was started in January 2006 and completed in November 2006. The soil amendment included application of apatite to the Inner Swamp and the TNX OD to attenuate the leachability of the radiological contaminants in the soil. The soil amendment application was completed in March 2006.

During 2005, the TNX Area OU was incorporated into an area-based remedial strategy for the TAOU, as documented in the TAOU ROD (WSRC 2005a). The TAOU is an area-based OU that incorporates most of the T-Area footprint and the TNX OD.

After completion of the TAOU cap, the T-1 Air Stripper operated from January to December 2007. In December 2007, the T-1 Air Stripper was placed in standby mode to accommodate a pilot treatability study for the deployment of EO onto the water table surface and into the water table aquifer to reduce VOC concentrations. The SVE system remained operational. The treatability study was initiated in February 2008 and completed in May 2010 (SRNS 2009). Per agreement with USEPA and SCDHEC, the pump and treat system and T-1 Air Stripper were not returned to service during the subsequent groundwater sampling period in order to evaluate the overall effectiveness of the EO injections.

In 2013, the second ESD to the TNX Area OU ROD was approved which modified the groundwater remedy to add EO treatments as needed and remove the air stripper from service (SRNS 2012a). Modifications to the remedy via the ESD did not impact any other components of the selected remedy as described in the TNX Area OU ROD including operations of the passive SVE system, groundwater monitoring, and institutional controls (i.e., land use controls).

Although the rebound conditions to trigger the additional EO injections did not occur, SRS observed TCE increases in some monitoring wells that correlated with an increase in water elevation due to increased precipitation and associated recharge (SRNS 2015a). To prevent future rebound, additional EO treatment was applied to the VOC source area as detailed in the *Second Corrective Measures Implementation/Remedial Action Implementation Plan (CMI/RAIP) for the TNX Area Operable Unit (U)* (SRNS 2015b). The additional EO injections were completed in 2015.

2.0 SITE HYDROGEOLOGY

The Floridan aquifer system is the aquifer system of concern within the TNX Area between Upper Three Runs Creek and the southern boundary of SRS. The Floridan aquifer system is divided into two aquifer units separated by a confining unit. From top to bottom, they are known as the LAZ of the UTRAU, the Gordon confining unit (GCU), and the GAU (Figures A-3, A-4, and A-5). The GAU is separated into an upper and lower aquifer unit. The lower GAU is not depicted on Figures A-4 or Figure A-5. The unsaturated zone within the TNX Area includes fluvial terrace sediments and the sediments of the LAZ of the UTRAU, which lie atop the water bearing units of the Floridan aquifer system.

The LAZ of the UTRAU is barely represented in the hydrostratigraphic section beneath the TNX Area. From east to west, the water table elevation drops from approximately 33 m (108 ft) above mean sea level (amsl) near TNX 24D to less than 26 m (85 ft) amsl in the

TNX Swamp. Beneath the TNX Area, the clayey silt to silty clay beds of the GCU are sporadic, and the confining unit does not represent an effective aquitard. However, clayey silt to silty clay beds that occur in the GAU locally retard vertical groundwater movement within the aquifer. These beds represent a semi-confining zone that divides the upper and lower GAU. The water table aquifer includes the unconfined portion of the LAZ of the UTRA in the northeast and the upper GAU southwest of TNX 24D.

The water table receives recharge from infiltrating precipitation and from the lower GAU through the semi-confining zone of the GAU. The lower GAU is at a higher pressure than the overlying upper GAU. This is evident by looking at average values for water level data collected between first quarter 1995 and fourth quarter 2019 from wells P 26A, P 26B, and P 26D (Appendix D, page D-3). The average hydraulic head measured in the lower GAU at P 26A is 35.4 m (116.2 ft) amsl which is approximately 3.1 m (10.1 ft) greater than the average hydraulic head measured in the upper GAU at P 26B (32.3 m [106.1 ft] amsl). The average hydraulic head measured in the LAZ of the UTRAU at P 26D is 35.1 m (115.2 ft) amsl which is 2.8 m (9.1 ft) more than the average hydraulic head measured in the upper GAU. Water level data collected since the first quarter 1995 from wells P 26A, P 26B, and P 26D indicate that the hydraulic gradient is consistently upward from the lower GAU and downward from the LAZ of the UTRAU (Appendix D, page D-3). The hydraulic conductivity of the water table varies from 6 to 18 m/day (20 to 60 ft/day) (WSRC 1997c), which is consistent with groundwater modeling analyses showing calibrated horizontal hydraulic conductivities in the range of 1.8 to 22.5 m/day (6 to 75 ft/day) (WSRC 2000).

The Savannah River is the major discharge point for the Floridan aquifer system and thus exerts control on the direction and rate of horizontal and vertical groundwater movement. Particle tracking from the groundwater model (WSRC 2000) illustrates westerly flow from TNX source areas to the Savannah River with some water discharging to the X-08 Ditch and wetlands (Figures A-6 and A-7). Particle tracking from the groundwater model was based on potentiometric data from 1990 to 1996 and figures from that model are provided in this report to support the hydrogeologic conceptual model for the TNX OU.

3.0 REMEDIAL ACTION

The groundwater remedy selected in the 2003 TNX Area OU ROD (WSRC 2003) entailed SVE in high VOC concentration areas, operation of the existing T-1 pump and treat system, and continued monitoring and land use controls. In 2013, an ESD to the TNX Area OU ROD was issued which modified the groundwater remedy to permanently remove the T-1 Air Stripper system from service and add EO treatments as needed. Figure A-8 is a schematic of the TNX Area OUs and the current remedial actions.

3.1 Objectives

The overall objectives of the groundwater remedial action are as follows:

- Protect future industrial workers from exposure to contaminated groundwater;
- Return groundwater to beneficial uses;
- Prevent, minimize, or eliminate discharge of contaminated groundwater to surface water that would result in unacceptable risk to human or ecological receptors; and
- Minimize adverse impact to the wetland ecosystem of the TNX Area floodplain.

The EO remedial action has altered the natural state of the aquifer to allow for the reductive dichlorination and biological degradation of the TCE groundwater plume. Beneficial reuse of the groundwater will not be achieved until active remediation of the groundwater is complete.

3.2 Soil Vapor Extraction

Two SVE treatability studies were performed in the vadose zone near the TBG, Phase I in 1997 (WSRC 1997d) and Phase II in 1999 (WSRC 1999b). Phase I and II utilized the recirculation well (i.e., TVR 1A) and associated monitoring wells (i.e., TVM series, 'V' and 'U' horizons). Based on the results from these treatability studies, SVE was shown to be an effective and cost-efficient approach at reducing the mass of VOCs at TNX (i.e., removing vadose zone secondary source VOCs near the plume core) and minimizing future VOC groundwater concentrations in the TNX floodplain.

In October 2001, an ESD to the IROD (WSRC 2001) was approved to add SVE to the HGCA system and to modify the effectiveness monitoring reporting requirements from two semiannual reports to one annual report. In 2002, a portable SVE unit and twelve additional SVE wells (i.e., TVX series) were installed at the TNX Area OU. In 2006, the SVE wells were shut down to accommodate the placement of the TAOU cap. After completion of the TAOU cap, the conventional active SVE unit was replaced with five 24-volt passive (MicroBlower™) SVE systems. The five Microblowers™ are rotated between any of the SVE wells to optimize VOC vapor removal. Location of the current SVE well network is presented in Figure A-9. The SVE wells not equipped with a MicroBlower™ have been equipped with BaroBalls™ which allow for venting of subsurface vapors based on changes in the barometric pressure of the atmosphere.

There are twenty SVE wells associated with the TNX OU SVE well network (Figure A-9). The TVM series have 'V' and 'U' screen horizons in the unsaturated zone and are viable SVE wells. TVM 2L and TVM 4L are no longer used as viable wells but will remain on Table 7-1 because these wells were connected to the MicroBlowers™ between 2010 to 2014.

3.3 Edible Oil Treatment

In December 2007, the T-1 Air Stripper was temporarily placed in standby mode to accommodate an EO treatability study (SRNL 2012). Most of the SVE system remained operational during the treatability study, except three SVE wells (i.e., TVX 3L, TVX 5L and TVX 6L) with screens near the top of the water table that were used to deploy neat (pure) vegetable oil.

The two-phase EO treatability study (February to April 2008) was conducted to determine how effective EO deployment was on treating VOCs and reducing the cost and the time associated with treatment. The EO treatment consisted of 1) deployment of neat (pure) vegetable oil at the top of the water table in the residual source area (vicinity of the smear zone); and 2) deployment of emulsified oil substrate (EOS®) in the core of the groundwater VOC plume (Figure A-8). Table 3-1 lists the construction details of the injection wells as well as the volumes of the neat and emulsified oil injected at each location. Figure A-10 provides the location of the injection wells associated with the 2008 and 2010 injects.

The EO treatments have significantly reduced VOC concentrations in the groundwater (Figures A-27, A-31, and A-38). In 2013, an ESD to the TNX Area OU ROD was approved which modified the remedial action to add EO treatments as needed and remove the pump and treat system from service. A trigger to inject additional EO was defined in the *Second Explanation of Significant Differences (ESD) for the Revision 1 TNX Area Operable Unit Record of Decision (U)* (SRNS 2012a). This document states that additional EO treatment will be applied if a sustained rebound lasting over one (1) year in excess of 75 µg/L (ppb) of TCE, PCE, or CCl_4 in any well if determined appropriate by the USDOE, USEPA, and SCDHEC.

In 2015, a third amendment of EO was applied to a larger area outside of the originally targeted treatment zone. This injection was initiated based on TCE results at TBG 3 and TVM 1M that came close to exceeding the trigger criteria identified in the ESD to the TNX Area OU ROD (i.e., >75 ppb increase sustained for one year). The rebound in TCE concentration at TBG 3 was correlated to an increase in water table elevation (Figure A-25). The elevated water table likely came in contact with residual VOC mass present in the smear zone or capillary fringe. Although the trigger criteria were not exceeded, SRS proceeded with the injections to take advantage of the high-water table and to prevent future rebounds. On April 28, 2015, the SRS met with the USDOE, USEPA and SCDHEC and an agreement was reached to inject neat and emulsified oils at 10 existing monitoring wells during the third quarter 2015. These events are documented in an Underground Injection Control Application (SRNS 2015a) and a CMI/RAIP for the TNX Area OU (SRNS 2015b).

The 2015 injection campaign injected EO inside and outside of the original treatment zone (Figure A-11) at monitoring wells (i.e., TBG 3, TRW 3, and TVM 1M) and SVE wells (i.e., TVX002L, TVX003L, TVX004L, and TVX005L), as well as re-injecting into the original treatment zone (i.e., TBG 4, TBG 5, and TRW 4R). Table 3-1 lists the construction details of the injection wells and the volumes of the neat and/or emulsified oil injected at each location.

3.4 Recovery Well/Air Stripper System

The recovery well system was designed to capture the migration of contaminated groundwater containing >500 µg/L TCE and to remove TCE from the groundwater. The recovery wells were positioned at the downgradient edge of the initial >500 µg/L TCE plume, and groundwater was pumped to the T-1 Air Stripper for removal of VOCs. Recovery wells TRW 1, 2, 3 and 4 were installed to pump contaminated water from the unconfined portion of the UTRA/GAU (WSRC 1997a) (Figure A-4). The recovery well network and T-1 Air Stripper began operation on September 16, 1996. During 2005 the T-1 Air Stripper was temporarily shut down to accommodate the remedial action activities occurring at the TNX Area OU and the T-Area OU. During the shutdown, recovery well TRW 4 was abandoned and replaced by TRW 4R. The T-1 Air Stripper was restarted in January 2007 and operated until December 2007.

The system proved to be effective in capturing and treating VOCs, resulting in depletion of the VOCs in the groundwater near the source area. SRS determined that the recovery well/air stripper system would have to be operated for an extended period of time to manage the secondary source term in the groundwater near the source area (in the capillary fringe of the water table and within the water table). In December 2007, the T-1 Air Stripper and associated recovery wells were placed in stand-by to allow for the deployment of EO in the source area. After a successful EO demonstration, the T-1 Air Stripper was removed as the remedial action as documented in an ESD to the ROD and issued on June 12, 2013. The T-1 Air Stripper was permanently removed from service in 2013.

3.5 Radiologically Contaminated Groundwater

The radiologically contaminated source areas were excavated during previous remedial actions associated with both the TAOU and TNX Area OU. Excavation activities occurred at the TBG, OTSB, and in the wetlands (WSRC 2005b and WSRC 2006). Institutional controls (i.e., land use controls) are the agreed to remedial action for the radionuclide contaminated groundwater for the TNX OU. There are two localized areas where the groundwater monitoring wells exceed the MCLs for the respective radionuclide constituents. The two areas are downgradient of the TBG and in the wetlands downgradient of the OTSB, near the TNX OD. Based on the monitoring data and historical trends, the exceedances are sporadic or one-time occurrences. TCM 5 is the only well with persistent gross alpha and uranium concentrations that exceed the respective MCLs. There are no discernible and consistent groundwater plumes present and therefore no remedial action is recommended at this time. A new well, XSB006R, was installed in April 2019 downgradient of the OTSB and was sampled during 2019 for both radiological and VOC constituents. The initial results from XSB006R are discussed in this annual report and will be included in subsequent annual reports.

Table 3–1. Injection Well Elevations and Injection Volumes

Well ID	Injection Date	Type of Oil	Volume of Oil (gal)	Top Screen Elevation (ft msl)	Bottom Screen Elevation (ft msl)	Ground Elevation (ft msl)	Well Diameter (in)
TBG 3	August 2015	EOS®	550	49.77	69.77	158.67	4
TBG 4	August 2015	EOS®	550	50.66	70.66	159.96	4
TBG 5	August 2015	EOS®	550	42.65	62.65	155.05	4
TRW 3	August 2015	EOS®	1100	49.88	84.78	162.18	6
TRW 4R	August 2015	EOS®	2200	50	80	157.61	6
TVM 1M	August 2015	EOS®	550	71.08	72.08	157.28	2
TVX002L	August 2015	EOS®	550	44.38	64.38	156.64	2
TVX002L	August 2015	Neat Oil	550	44.38	64.38	156.64	2
TVX003L	August 2015	Neat Oil	550	41.8	56.8	154.1	2
TVX004L	August 2015	EOS®	550	43.85	55.85	152.95	2
TVX004L	August 2015	Neat Oil	550	43.85	55.85	152.95	2
TVX005L	July 2015	Neat Oil	550	46.92	56.92	155.16	2
TBG 4	May 2010	EOS®	55	109.30	89.30	159.96	4
TBG 5	Feb 2008	EOS®	960	112.40	92.40	155.05	4
TNX 3D	March 2008	EOS®	1,250	104.90	84.90	162.97	4
TRW 4R	March 2008	EOS®	1,250	107.45	77.45	157.45	6
TVX003 L	April 2008	Neat Oil	300	112.30	97.30	154.1	2
TVX005 L	April 2008	Neat Oil	900	108.24	98.24	155.16	2
TVX006 L	April 2008	Neat Oil	1,500	107.49	92.49	155.18	2

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4.0 MONITORING NETWORK

Figure A-2 shows the T-Area monitoring well network and locations that were in place during the start-up and initial operation of the remedial action system. Monitoring wells were abandoned between 2004 and 2006, due to their location on and outside of the final TAOU cap (WSRC 2005b and WSRC 2006). The TNX Area monitoring well network currently consists of 42 wells (Table 4-1 and Figure A-12). Table 4-2 provides a summary of the sampling analysis plan for the monitoring well network at the TNX Area OU. The monitoring wells associated with the EO remedial action receive additional analysis to monitor the effects of the EO (Table 4-2).

A new monitoring well, XSB006R, was installed on April 22, 2019 downgradient of the OTSB. XSB006R was constructed with two-inch diameter PVC casing and a PVC slotted screen with a screen interval from 2.9 to 5.9 m (9.5 to 19.5 ft) below ground surface (Table 4-1). This well was sampled during 2019 and the results are included in this annual report and will continue to be included in subsequent annual reports.

1,4-Dixoane analysis was initiated at all monitoring wells in the fourth quarter 2013 in response to comments provided by the USEPA and SCDHEC during review of the *Fourth Five-Year Remedy Review Report for the Savannah River Site* (SRNS 2012b).

In the fourth quarter 2015, volatile fatty acids (VFA) were added to the list of constituents monitored for at the EO monitoring well network (Table 4-2) in accordance with the sampling requirements identified in the *Second Corrective Measures Implementation /Remedial Action Implementation Plan (CMI/RAIP) for the TNX Operable Unit (U)* (SRNS 2015b). EO, (i.e., soybean oil), is composed almost entirely of fatty acids (saturated, mono-unsaturated, poly-unsaturated, and oleic). VFAs are a series of acids present in EO and are theorized to be produced as microbes consume the EO or fatty acids. VFAs can be used to indicate the general presence and longevity of EO in the subsurface. The change in VFA composition might be an indicator of microbial de-polymerization of the EO.

The VFA analytical method measures the concentration of up to five individual VFAs. The individual concentrations are presented in Appendix B along with the total VFA, which is the sum of VFA analyzed. Time series graphs of total VFA are presented in Appendix E.

4.1 Sampling Events

The 2019 TNX groundwater sampling program included a 43-monitoring well network to be sampled in the second and fourth quarters of the calendar year (Table 4-1 and Figure A-12). During the 2Q2019, samples from 42 of the 43 wells were collected. During the 4Q2019, samples from 40 of the 43 wells were collected.

4.1.1 Sampling Issues

During the 2Q2019 sampling event, water elevations were collected from TNX 72S, but there was an insufficient amount of water to collect a sample. Provided below is a list of additional sampling issues that occurred during 2Q2019;

- TNX 72D pumped dry during sampling; therefore, not all of the samples were collected due to insufficient water volume and analysis was only completed for organic compounds.
- Total organic carbon at TNX 3D and TVM 1M was inadvertently missed during sampling on May 16, 2019 but was collected during a resampling event on May 28, 2019.
- TBG 4 was sampled three times during 2Q2019 (May 22, June 5, and June 26, 2019) to collect all constituents. On May 22, 2019 TBG 4 pumped dry during sampling and only field parameters were collected. A resampling event on June 5, 2019 at TBG 4 collected all samples, but an incorrect bottle and preservative were used to collect the 1,4-dioxane (method EPA 522) sample. The 1,4-dioxane (method EPA 522) sample at TBG 4 was collected with the correct bottle and preservative on June 26, 2019.

- The 1,4-dioxane (method EPA 522) sample at TNX 24D was inadvertently missed during the May 16, 2019 sampling event but was collected during a resampling event on May 28, 2019.

- The 1,4-dioxane (method EPA 522) results for TBG 3 and TBG 4 were qualified as rejected during 2Q2019 based on failure for the sample results to meet laboratory quality assurance results.

During the 4Q2018 sampling event, 3 out of 43 wells (i.e., TIR 1U, TNX 72D, and TNX 72S) were dry or had an insufficient amount of water to collect a sample.

Table 4–1. TNX Monitoring Well Network

Well Name	Screen Zone	Well Category	Top of Screen Depth (ft bgs)	Bottom of Screen Depth (ft bgs)	Total Well Depth (ft bgs)	Well Diameter (in)	Ground Elevation (ft msl)
P 26A	Semi-confined GAU	Background/EO Monitoring Well	119.8	129.8	132	4	151.8
P 26B	Unconfined UTRAU/GAU	Background/EO Monitoring Well	69.5	80	82.2	4	151.9
P 26D	Unconfined UTRAU/GAU	Background/EO Monitoring Well	29.9	50	52.1	4	151.8
TBG 3	Unconfined UTRAU/GAU	Primary/EO Monitoring Well	49.77	69.77	79.77	4	158.67
TBG 4	Unconfined UTRAU/GAU	Primary/EO Monitoring Well	50.66	70.66	80.66	4	159.96
TBG 5	Unconfined UTRAU/GAU	Primary/EO Monitoring Well	42.65	62.65	77.65	4	155.05
TCM 5	Unconfined UTRAU/GAU	Auxiliary TNX Area Wells	2.25	17.25	20	2	97.11
TIR 1L	Unconfined UTRAU/GAU	Auxiliary TNX Area Wells	32	34.01	40	2	99.72
TIR 1M	Unconfined UTRAU/GAU	Auxiliary TNX Area Wells	13	14.97	22.65	2	99.56
TIR 1U	Unconfined UTRAU/GAU	Auxiliary TNX Area Wells	7.5	9.47	13	2	99.48
TNX 1D	Unconfined UTRAU/GAU	Secondary	54.5	74.5	76.9	4	154.1
TNX 3D	Unconfined UTRAU/GAU	Primary/EO Monitoring Well	58.07	78.07	89.07	4	162.97
TNX 5D	Unconfined UTRAU/GAU	Secondary	38.5	58.5	60.8	4	147
TNX 8D	Unconfined UTRAU/GAU	Primary	4	24	26.3	4	98
TNX 9D	Unconfined UTRAU/GAU	Secondary	4	24	26.3	4	99.4
TNX 11D	Unconfined UTRAU/GAU	Primary	4.5	24.5	26.6	4	97.7
TNX 12D	Unconfined UTRAU/GAU	Secondary	4	24	26.1	4	97.1
TNX 13D	Unconfined UTRAU/GAU	Auxiliary TNX Area Wells	3.5	5.5	6	2	93.4
TNX 15D	Unconfined UTRAU/GAU	Auxiliary TNX Area Wells	4.6	6.6	7.08	2	92.5
TNX 16D	Unconfined UTRAU/GAU	Primary	4.6	6.6	7.08	2	92.7
TNX 20D	Unconfined UTRAU/GAU	Auxiliary TNX Area Wells	3.2	5.2	5.7	2	91.4
TNX 22D	Unconfined UTRAU/GAU	Auxiliary TNX Area Wells	2.7	4.7	5.2	2	90.5
TNX 24D	Unconfined UTRAU/GAU	Secondary	26	40.96	45	2	139.7
TNX 27D	Unconfined UTRAU/GAU	Primary/EO Monitoring Well	7	27	35	2	108.27
TNX 28D	Unconfined UTRAU/GAU	Auxiliary TNX Area Wells	4.8	14.8	15.1	2	97.4
TNX 30D	Unconfined UTRAU/GAU	Auxiliary TNX Area Wells	4.7	14.7	15	2	100.3
TNX 35D	Unconfined UTRAU/GAU	Auxiliary TNX Area Wells	4.9	14.9	15.2	2	97.4
TNX 37D	Unconfined UTRAU/GAU	Auxiliary TNX Area Wells	4.7	14.7	15	2	98.2
TNX 72D	Unconfined UTRAU/GAU	Auxiliary TNX Area Wells	12.3	14.8	15.58	2	92.8
TNX 72M	Unconfined UTRAU/GAU	Auxiliary TNX Area Wells	6.4	8.9	2.57	2	92.8
TNX 72S	Unconfined UTRAU/GAU	Auxiliary TNX Area Wells	3.4	5.9	2.62	2	92.8
TNX073D	Unconfined UTRAU/GAU	Auxiliary TNX Area Wells	12.08	17	18	2	95.4
TNX074D	Unconfined UTRAU/GAU	Auxiliary TNX Area Wells	12.75	17.78	18	2	93.3
TNX075D	Unconfined UTRAU/GAU	Auxiliary TNX Area Wells	12.71	17.7	18	2	92
TRW 1	Unconfined UTRAU/GAU	Recovery/EO Monitoring Well	53.5	78.5	84	6	159.9
TRW 2	Unconfined UTRAU/GAU	Recovery/EO Monitoring Well	40.3	75.3	82.3	6	152.56
TRW 3	Unconfined UTRAU/GAU	Recovery/EO Monitoring Well	49.88	84.78	90.28	6	162.18
TRW 4R	Unconfined UTRAU/GAU	Recovery/EO Monitoring Well	50	80	83	6	156.6
TVM 1M	Unconfined UTRAU/GAU	Auxiliary TNX Area Wells/EO Monitoring Well	71.08	72.08	73.68	2	157.28
TVM 2M	Unconfined UTRAU/GAU	Auxiliary TNX Area Wells/EO Monitoring Well	71.29	72.29	73.79	2	159.39
TVM 4M	Unconfined UTRAU/GAU	Auxiliary TNX Area Wells/EO Monitoring Well	71.75	73.75	76.47	2	158.87
TVR 1A	Unconfined UTRAU/GAU	Auxiliary TNX Area Wells/EO Monitoring Well	15	40	80.6	8	148.2
TVR 1A	Unconfined UTRAU/GAU	Auxiliary TNX Area Wells/EO Monitoring Well	65	75	80.6	8	148.2
XSB006R	Unconfined UTRAU/GAU	Auxiliary TNX Area Wells	9.5	19.5	19.5	2	99.1

Table 4–2. Summary of the Groundwater Sampling and Analyses Plan at TNX (2nd and 4th Quarters)

Requested Analyses	Hydrocarbons	Organic Compounds	Mercury	Nitrate	Nitrate-Nitrite as Nitrogen	Sulfate	Total Organic Carbon	Uranium, Total	Gross Alpha	Nonvolatile Beta	Radium-226 & Radium 228	Total Volatile Fatty Acids	Field Parameters
Background Wells													
P 26A (EO)	2	1	x	x	x	x	x	x	x	x	x	x	3
P 26B (EO)	2	1	x	x	x	x	x	x	x	x	x	x	3
P 26D (EO)	2	1	x	x	x	x	x	x	x	x	x	x	3
Primary Wells													
TBG 3 (EO)	2	1	x	x	x	x	x	x	x	x	x	x	3
TBG 4 (EO)	2	1	x	x	x	x	x	x	x	x	x	x	3
TBG 5 (EO)	2	1	x	x	x	x	x	x	x	x	x	x	3
TNX 3D (EO)	2	1	x	x	x	x	x	x	x	x	x	x	3
TNX 8D		1	x		x			x	x	x	x		3
TNX 11D		1	x		x			x	x	x	x		3
TNX 16D		1	x		x			x	x	x	x		3
TNX 27D (EO)	2	1	x	x	x	x	x	x	x	x	x	x	3
Recovery Wells													
TRW 1 (EO)	2	1	x	x	x	x	x	x	x	x	x	x	3
TRW 2 (EO)	2	1	x	x	x	x	x	x	x	x	x	x	3
TRW 3 (EO)	2	1	x	x	x	x	x	x	x	x	x	x	3
TRW 4R (EO)	2	1	x	x	x	x	x	x	x	x	x	x	3
Secondary Wells													
TNX 1D		1	x		x			x	x	x	x		3
TNX 5D		1	x		x			x	x	x	x		3
TNX 9D		1	x		x			x	x	x	x		3
TNX 12D		1	x		x			x	x	x	x		3
TNX 24D		1	x		x			x	x	x	x		3
Auxiliary Wells													
TCM 5		1	x		x			x	x	x	x		3
TIR 1L		1	x		x			x	x	x	x		3
Auxiliary Wells (continued)													
TIR 1M		1	x		x			x	x	x	x		3
TIR 1U		1	x		x			x	x	x	x		3
TNX 13D		1	x		x			x	x	x	x		3
TNX 15D		1	x		x			x	x	x	x		3
TNX 20D		1	x		x			x	x	x	x		3
TNX 22D		1	x		x			x	x	x	x		3
TNX 28D		1	x		x			x	x	x	x		3
TNX 30D		1	x		x			x	x	x	x		3
TNX 35D		1	x		x			x	x	x	x		3
TNX 37D		1	x		x			x	x	x	x		3
TNX 72D		1	x		x			x	x	x	x		3
TNX 72M		1	x		x			x	x	x	x		3
TNX 72S		1	x		x			x	x	x	x		3
TNX073D		1	x		x			x	x	x	x		3
TNX074D		1	x		x			x	x	x	x		3
TNX075D		1	x		x			x	x	x	x		3
TVM 1M (EO)	2	1		x		x	x					x	3
TVM 2M (EO)	2	1		x		x	x					x	3
TVM 4M (EO)	2	1		x		x	x					x	3
TVR 1A (EO)	2	1		x		x	x					x	3
XSB006R		1	x		x			x	x	x	x		3

NOTES:

1 Organic compounds include; trichloroethylene, cis-1,2-dichloroethylene, vinyl chloride, carbon tetrachloride, tetrachloroethylene, and 1,4-dioxane

2 Hydrocarbons include; methane, ethylene, nitrogen, and carbon dioxide

3 Field parameters include; pH, specific conductivity, dissolved oxygen, oxidation reduction potential, turbidity, total alkalinity, water elevation, and water temperature

x Sample to be obtained

(EO) Edible oil monitoring well network

5.0 FIELD AND ANALYTICAL RESULTS

The following sections summarize the results of the field and analytical data. Field and analytical data are shown in Appendix B, Tables B-1, and B-2. Historic data trends are presented as hydrographs in Appendix D and analytical time series graphs in Appendix E. Table 5-2 summarizes the constituents that exceeded an MCL during 2019. Appendix C includes the Data Review Key.

5.1 Precipitation Measurements

Precipitation measurements are collected at a meteorological station located approximately 4.0 km (2.5 mi) southeast of TNX Area at D Area (Figure A-1). Precipitation data is collected at regular intervals (24-hr period) at the D-Area meteorological station and provided as monthly totals from 1973 to 2019 in Table 5-1. Precipitation in D-Area totaled 113.8 cm (44.8 in) in 2019 which is approximately 3.3 cm (1.3 in) below the historic average.

5.2 Water-Level Measurements

The water table map showing current conditions (Figure A-13) was constructed from water-level measurements collected during the 4Q2019. Appendix D includes the hydrographs showing water elevations for the period of record.

The horizontal groundwater flow in the TNX Area is to the southwest toward the Savannah River Swamp. Horizontal flow rate calculations provide estimates of the transport rate of constituents originating from the TNX Area. Flow rates are estimated using the following equation:

$$Flow\ \left(\frac{ft}{day}\right) = \frac{Hydraulic\ Conductivity\ Kh\ \left(\frac{ft}{day}\right)}{Effective\ Porosity\ (unitless)}\ x\ \frac{dh\ (ft)}{dl\ (ft)}$$

Where the hydraulic conductivity (*Kh*) constant is 10 ft/day, the effective porosity value is 20 percent, the change in head is *dh*, and the horizontal distance along each flow direction arrow is *dl*. Flow path length is calculated to the nearest five feet. Flow rate per day is calculated to two significant figures, then multiplied by 365 and rounded to two significant figures for the flow rate per year. Flow rate estimates vary depending upon the vertical gradient between wells, the size of the area under consideration, the number of data points, and the length and location of the flow path. Because these are inferred or estimated parameters, flow rate estimates should be considered accurate to an order of magnitude only.

In the 4Q2019, horizontal flow rates in the LAZ of the UTRAU and the upper GAU ranged from approximately 137 m per year (453 ft/yr) in the northeast beneath the TAOU cap (Flow path A-A’, Figure A-13) to approximately 18 m per year (61 ft/yr) near the OTSB and in the swamp (Flow path B-B’, Figure A-13). As shown on Figure A-13, the gradient flattens on the southern end of the TAOU cap and into the wetlands. The water elevation at TNX 27D has been steadily increasing since 2018 creating a localized high in the water table. The data indicates that groundwater flow near TNX 27D diverges around this local high toward the wetlands.

5.3 pH

Field pH values measured during 2019 ranged from 3.4 to 6.4 with the average being 5.5 during this sample period. TBG 3 had a pH of 3.4 during 2Q2019 and was the only monitoring well that had a pH less than 5 in the 2Q2019. During the 4Q2019, six monitoring wells (i.e., TBG 3, TIR 1L, TIR 1M, TNX 72D, TVM 4M, and XSB006R) had a pH less than 5 (Figure A-14).

5.4 Analytical Results

Analytical results for 2019 are included on Tables B-1 and B-2. Appendix E includes time series plots for selected constituents and monitoring wells. Interpretations for the analytical results reported in this section are provided in the Evaluation of Field and Analytical Results section (i.e., Section 6.0).

Tetrachloroethylene (PCE). During 2019, PCE was not detected at any of the monitoring wells.

Trichloroethylene (TCE). TCE was detected in 14 wells in 2Q2019. Concentrations of TCE exceeded the MCL (5 µg/L) in one monitoring well. The TCE concentration at TRW 2 was 6.71 µg/L during the 2Q2019. TCE concentrations at TRW 2 have fluctuated above and below the MCL with time. The most recent fluctuation in TCE concentrations started in 4Q2018 when TCE concentrations declined to less than the MCL, TCE concentrations rebounded above the MCL in 2Q2019, and return to being less than the MCL during 4Q2019.

TCE was detected in 15 wells during 4Q2019. Concentrations of TCE exceeded the MCL (5 µg/L) in one monitoring well. The TCE concentration at TNX 28D was 5.95 µg/L during the 4Q2019. TCE concentrations at TNX 28D have been above and below the MCL since 2010.

Cis-1,2-Dichloroethylene (cis-1,2 DCE). Cis-1,2-DCE was detected in eight wells during 2Q2019, and the concentrations did not exceed the MCL (70 µg/L).

During the 4Q2019, cis-1,2-DCE was detected in seven wells. Concentrations did not exceed the MCL (70 µg/L) during the 4Q2019.

Vinyl Chloride (VC). During 2019, VC was not detected at any of the monitoring wells.

Ethylene. Ethylene was detected in three monitoring wells (i.e., TBG 3, TBG 4, and TBG 5) during 2Q2019 and 4Q2019. The detections ranged from 0.26 to 1.4 µg/L.

Carbon Tetrachloride (CCl_4). During 2019, CCl_4 was not detected at any of the monitoring wells.

Gross Alpha. Gross alpha was detected in 13 monitoring wells during 2Q2019. The gross alpha activity exceeded the MCL (15 pCi/L) at four monitoring wells; TBG 3 (18.3 pCi/L), TBG 5 (15.9 pCi/L), TCM 5 (21.6 pCi/L), and TIR 1U (61.9 pCi/L). Gross alpha activity has exceeded the MCL at TBG 3 during 2019 for the first time since EO injections started. The gross alpha exceedance at TBG 5 is the first since 2011. TCM 5 has exceeded the

MCL for gross alpha activity since 2016. The exceedance at TIR 1U appears to be sporadic with the last exceedance occurring in 2014.

During the 4Q2019, gross alpha was detected in nine monitoring wells. The gross alpha activity exceeded the MCL (15 pCi/L) in TCM 5 (29 pCi/L) and TBG 3 (19 pCi/L). TCM 5 has exceeded the MCL for gross alpha activity since 2016. Gross alpha activity has exceeded the MCL at TBG 3 during 2019 for the first time since EO injections started in 2008.

Uranium. During the 2Q2019, total recoverable uranium was detected in ten wells. The uranium concentrations exceeded the MCL (30 µg/L) at TBG 3 (40.1 µg/L) and TCM 5 (32 µg/L). TBG 3 has not exceeded the MCL for uranium since 2000. TCM 5 has a history of exceeding the MCL for uranium.

During the 4Q2019, total recoverable uranium was detected in nine wells. The uranium concentrations exceeded the MCL (30 µg/L) at TCM 5 (56.5 µg/L). TCM 5 has a history of exceeding the MCL for uranium.

Radium-226 and Radium 228. During the 2Q2019, the combined radium (sum of radium-226 and radium-228) was detected in 34 wells. There were no exceedances over the MCL (5 ρCi/L) for combined radium.

During the 4Q2019, combined radium (radium-226 and radium-228) was detected in 33 wells. There were no exceedances over the MCL (5 ρCi/L) for combined radium.

Mercury. During the 2Q2019, mercury was detected in 16 wells. All of the detections were below the MCL (2 µg/L) for mercury.

During the 4Q2019, mercury was detected in 14 wells. Mercury exceeded the MCL (2 µg/L) at XSB006R (2.77 µg/L). This the first exceedance of mercury at this location.

Nitrate-Nitrite as Nitrogen (NO_3/NO_2 as N). During the 2Q2019, NO_3/NO_2 as N was detected in 40 wells and in 41 wells in the 4Q2019, and all the results were below the MCL (10 mg/L).

1,4-Dioxane. During the 2Q2019, 1,4-dioxane was detected at nine wells. The 1,4-dioxane concentration exceeded the regional screening level (RSL) for tap water (0.46 µg/L) at TBG 4 and TBG 5. TBG 4 had a concentration of 8.1 µg/L which was the first time TBG 4 exceeded the RSL. TBG 5 had a maximum concentration of 4.4 µg/L and has a history of exceeding the RSL.

During the 4Q2019, 1,4-dioxane was detected at three wells. The 1,4-dioxane concentration exceeded the RSL for tap water (0.46 µg/L) at TBG 4 (3 µg/L) and TBG 5 (2.01 µg/L). TBG 4 has now exceeded the RSL for two consecutive sampling events and TBG 5 continues to exceed the RSL. Although the sample results were qualified as non-detect at TBG 3, the estimated quantitation limit was greater than the RSL for both analytical methods. The estimated quantitation limits were high because the sample was diluted 100 times by the laboratory.

1,4-Dioxane samples were analyzed using SCDHEC certified method EPA 8260BSIM and noncertified method EPA 522. Method EPA 8260BSIM cannot achieve detection limits less than the RSL for tap water (0.46 µg/L) while method EPA 522 can. Both analytical results are present on Tables B-1 and B-2 while the maximum result is presented on Figure A-24 and the time series graphs (Appendix E).

Edible Oil Parameters. The EO parameters are analyzed near the treatment zone to identify the reductive conditions created after injection of the EO in the groundwater. These parameters include DO, total organic carbon (TOC), oxidation/reduction potential (ORP), sulfate, methane, nitrate, and VFA, and are compared to concentrations measured prior to or during the EO injections (Appendix A, Figures A-32 through A-41). These parameters are also presented in Appendix E on time series graphs. It should be noted that the results for DO, ORP, sulfate, nitrate, and TOC from 2008 to 2014 are not present in the database; therefore, the program used to create the time series graphs could not be used. The graphs for these constituents were created manually. Although the data is presented accurately, the graph formatting looks different than the other time series graphs.

DO decreased at injection wells in the treatment zone after the 2008, 2010, and 2015 EO injections. DO concentrations at TBG 3, TRW 3, and TVM 1M have been variable since the 2015 EO injection with increasing DO concentrations at TBG 3 and TVM 1M.

- The DO concentration at TBG 3 decreased after the 2015 EO injections and averaged 1.8 mg/L from 4Q2015 to 4Q2017. DO concentrations at TBG 3 increased during 2018 and 2019. The 2019 DO concentrations at TBG 3 were 2.63 and 6.22 mg/L in the second and fourth quarters, respectively.

- At TRW 3, the DO concentrations have been variable since the 2015 EO injections, ranging between 4 and 1 mg/L. In 2019, DO concentrations at TRW 3 was 4.12 mg/L in the 2Q2019 and 1.09 mg/L in the 4Q2019.

- At TVM 1M, DO concentrations have fluctuated in a decreasing trend since the 2015 EO injections. DO concentrations increased during 2019 with concentrations of 4.1 and 14.38 mg/L in the 2Q2019 and 4Q2019, respectively. The 4Q2019 DO concentration of 14.38 mg/L is the highest DO concentration ever observed at TVM 1M and will be considered suspect. Background DO measurements are about 6-8 mg/L and the maximum solubility of DO in freshwater is about 8-9 mg/L at a temperature between 20-25 degrees Celsius (68-77 degrees Fahrenheit).

At the original EO injection wells (i.e., TBG 4, TBG 5, TNX 3D and TRW 4R), DO concentrations started to return to background concentrations.

- The general trend of DO concentrations at TBG 4 have been increasing from 1.2 mg/L in the 4Q2015 to approximately 6 mg/L. In 2019, DO concentrations were variable with low concentrations (0.23, 0.52, and 1.19 mg/L) during 2Q2019 and increased to 6.72 mg/L in the 4Q2019.

- The DO concentration at TBG 5 have been gradually increasing since 2014. DO concentrations in 2019 continue to be elevated with concentrations of 5.8 and 6.46 mg/L during the 2Q2019 and 4Q2019, respectively.

- The DO concentration at TNX 3D was 7.8 mg/L in the first quarter 2008 and decreased to less than 1.0 mg/L from 2009 to 2014. After the 2015 EO injections, DO concentrations at TNX 3D have increased with DO concentrations of 4.3 and 16.4 mg/L in 2Q2019 and 4Q2019, respectively. The 4Q2019 DO concentration of 16.4 mg/L is the highest ever experienced at TNX 3D and will be considered suspect. Background DO measurements are about 6-8 mg/L and the maximum solubility of DO in freshwater is about 8-9 mg/L at a temperature between 20-25 degrees Celsius (68-77 degrees Fahrenheit).

- The DO concentration at TRW 4R decreased to less than 1.0 mg/L after the initial EO injection in 2008 and started increasing in 2013. In 2Q2019, DO concentrations continued to be elevated with a concentration of 6.07 mg/L, but then decreased to 1.03 mg/L in the 4Q2019.

The TOC concentrations increased at injection wells immediately after each injection occurred. After the 2015 injections, TOC concentrations increased at the injection wells (i.e., TBG 3, TGB 4, TBG 5, TRW 3, TRW 4R, and TVM 1M) and one monitoring well (i.e., TVR 1A). Since the 2015 injections, TOC concentrations at all of these wells have steadily decreased with time. The general decreasing TOC trends continue to be observed at the EO injection wells in 2019. One exception was observed at TBG 3 with an increase in TOC concentration from 2Q2019 (88,900 µg/L) to 4Q2019 (2.18 million µg/L).

The ORP results have decreased at most of the injection wells after the EO injections. Injection wells TBG 4, TBG 5, and TNX 3D have sustained low ORP results since EO was injected in 2008 and 2010. This trend continued during 2019.

- Since the 2015 injection, the ORP result at TBG 4 decreased until 4Q2016. Since the 4Q2016, ORP results have become stable with results hovering around -100 millivolts (mV). In 2019, ORP results were -130, -97, and -113 mV in the 2Q2019 and -68 mV in the 4Q2018.

- The ORP result at TBG 5 were -94 mV in 2Q2019 and -65 mV in 4Q2019.

- The ORP result at TNX 3D were -61 mV in 2Q2019 and -46 mV during the 4Q2019.

At other wells within the treatment zone, ORP results have been variable with time. The most variability has been observed at TRW 4R. ORP at TBG 3 was decreasing after the 2015 EO injections but rebounded during 2019.

- In 2019, the ORP results at TRW 4R continue to be variable with an ORP result of -116 mV in 2Q2019 and 2 mV in 4Q2019.

- The ORP results at TBG 3 steadily declined from 4Q2015 to 4Q2018. In 2019, ORP results increased to 250 and 169 mV in 2Q2019 and 4Q2019, respectively.

- ORP results have also declined at some monitoring wells (i.e., TVM 2M, TVM 4M, and TVR 1A) after the 2008 injections. Since the 2008 injections, ORP results at the monitoring wells have steadily increased.

ORP results at monitoring wells (i.e., TNX 27D and TRW 4R) located downgradient of the treatment zone have been declining since the 2015 EO injections.

- The ORP results at TNX 27D have declined from 205 mV in 4Q2015 to 67 mV in 4Q2019.

- After the 2015 injections, changes in ORP results were declining in TRW 2 from 263 mV in the 2Q2014 to 25 mV in the 2Q2019.

Sulfate concentrations were variable after the 2008 and 2010 EO injections. After the 2015 EO injections, sulfate concentrations decreased at some of the injection wells (i.e., TBG 3, TBG 5, TRW 4R, and TVM 1M). TRW 4R had the most extreme decline in sulfate concentrations averaging 7.7 mg/L between 2008 and 2014 and decreasing to an average of 0.92 mg/L from 2015 to 2019. The sulfate concentration at TRW 4R was 0.625 mg/L during the 4Q2019. The sulfate concentrations at TBG 3, TBG 5, and TVM 1M declined gradually from 2015 to 2017. TBG 3 had sulfate concentrations increased in 2019 with a concentration of 2.3 mg/L in 4Q2019. Sulfate concentrations at TBG 5 and TVM 1M have remained low through 2019. The sulfate concentration at TBG 5 was 0.686 mg/L and 0.486 mg/L at TVM 1M during the 4Q2019. Sulfate concentrations at TVR 1A have been steadily increasing since 2015.

Methane concentrations at injection and monitoring wells near the treatment zone increased to greater than 1,000 µg/L after the 2008 and 2010 injections. Methane concentrations at TBG 3 and TRW 3 had increased to greater than 1,000 µg/L after the 2015 injections. The methane concentration at TBG 3 was 3,500 µg/L during the 4Q2019, while the methane concentration at TRW 3 was 13,000 µg/L during the 4Q2019. Previous injections wells (i.e., TBG 4, TBG 5, TNX 3D, and TRW 4R) continue to have elevated methane concentrations. The methane concentrations during the 4Q2019 at TBG 4, TBG 5, TNX 3D, and TRW 4R were 9,6000, 7,4000, 13,000, and 13,000 µg/L, respectively. Monitoring wells (i.e., TVM 2M and TVM 4M) inside the treatment zone have experienced decreasing methane concentrations since the 2015 EO injections. Outside of the treatment zone, TRW 2 experienced increased methane concentrations starting in 2014. The methane concentration at TRW 2 has since decreased to 130 µg/L during the 4Q2019.

Nitrate concentrations decreased in the treatment zone at injection wells (i.e., TBG 4, TBG 5, and TNX 3D) after the 2008 and 2010 injections and continue to be low during 2019. After the 2015 injections, nitrate concentrations decreased at injection wells, TBG 3, TRW 3, and TVM 1M. The nitrate concentrations throughout the treatment zone continue to remain low during 2019.

Total Volatile Fatty Acids. The total VFA concentrations were elevated immediately after the 2015 EO injection in the injection wells. Most of the injection wells had total VFA concentrations greater than 100,000 µg/L except for TBG 4 and TBG 5 which had total VFA concentrations of greater than one million µg/L. Since 2015, a decrease in total VFA concentrations has been observed at TBG 3, TBG 5, TRW 3, TRW 4R, and TVM 1M. The total VFA concentrations at TBG 4 have only slightly decreased between 2015 and 2019 with concentrations averaging 3.9 million µg/L. At the monitoring wells (i.e., TRW 1, TRW 2, TVM 2M and TVR 1A), total VFA concentrations have been detected at concentrations less than 100,000 µg/L, but detections have not been consistent with time.

Total VFA concentration was not detected in TVM 2M and TVR 1A during 2019. At TRW 1 and TRW 2, VFA concentrations were 150 and 229 µg/L, respectively.

Table 5–1. Rainfall (inches) at 400-D, 1973 to 2019

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Total
1973	5.19	4.52	6.54	5.03	3.05	7.7	4.3	2.74	4.07	0.87	0.32	3.99	48.32
1974	2.15	6.78	2.28	1.69	4.82	3.31	2.43	6.06	2.92	0	1.9	4.09	38.43
1975	3.42	6.04	6.05	4.38	6.46	4.72	10.91	1.37	7.06	0.74	3.15	4.03	58.33
1976	3.89	1.07	3.52	2.3	10.23	6.95	1.81	1.46	6.41	5.02	3.44	4.7	50.8
1977	3.33	3.25	7.6	1.3	1.23	2.91	1.47	7.1	3.06	4	2.46	4.15	41.86
1978	8.41	1.5	3.12	3.75	3.96	1.77	1.99	5.08	4.96	0.75	3.37	1.72	40.38
1979	3.48	9.49	3.06	4.54	7.45	1.37	5.57	7.14	6.13	0.82	6.38	2.35	57.78
1980	4.23	3.05	11.1	2.45	4.15	4.5	0.97	1.65	7.51	2.05	1.73	2.71	46.1
1981	0.72	3.8	4.16	2.64	3.7	4.96	4.56	6.18	0.06	3.04	0.66	8.86	43.34
1982	4.48	4.89	3.17	4.98	3.64	5.82	3.36	3.12	3.2	3.71	1.68	6.08	48.13
1983	4.09	7.12	5.36	5.43	2.4	3.44	1.63	5.32	2.54	2.42	4.35	4.03	48.13
1984	3.22	5.65	5.3	4.91	5.39	6.07	8.81	1.97	0.73	0.38	1.15	1.34	44.92
1985	2.64	5.71	1.01	1.53	1.79	6.25	8.9	4.15	0.2	5.53	7.16	2.7	47.57
1986	1.14	2.8	3.07	0.48	2.48	5.01	1.66	8.13	0.52	2.52	4.7	3.96	36.47
1987	6.49	6.65	3.85	0.28	1.39	4.69	2.45	1.73	4.64	0.19	2.34	1.27	35.97
1988	3.55	5.3	2.04	6.18	1.56	6.94	1.76	5.04	5.06	2.45	1.81	1.15	42.84
1989	1.78	3.17	4.56	4.72	2.42	5.73	7.39	0.23	5.11	4.57	2.61	2.37	44.66
1990	2.05	3.51	3.19	0.29	1.1	1.22	4.8	5.23	0.44	17.12	1.26	1.67	41.88
1991	7.49	2	7.15	4.9	3.09	2.58	9.11	8.59	1.52	0.53	1.01	3.34	51.31
1992	3.59	4.86	3.27	2.48	2.15	7.55	7.29	6.27	3.58	3.91	6.64	1.95	53.54
1993	7.92	2.55	9.7	1.3	2.24	8.65	1.85	3.06	6.42	0.87	1.84	2.25	48.65
1994	4.71	4.49	6.72	1.29	1.66	7.33	6.08	3.62	2.33	8.98	2.86	4.71	54.78
1995	5.28	6.06	2.47	0.17	2.28	7.24	4.2	6.86	3.95	2.11	2.49	4.47	47.58
1996	2.6	2.05	6.26	1.69	1.6	3.65	4.89	7.93	3.72	1.98	1.5	2.74	40.61
1997	4.14	5.1	1.98	3.42	1.69	6.82	6.54	1.37	5.41	4.74	4.29	7.93	53.43
1998	7.76	6.26	7.86	7.14	4.2	2.86	7.53	2.98	6.33	0.65	0.57	1.89	56.03
1999	6.9	2.26	2.98	2.12	2.59	7.37	6.36	5.46	3.45	2.18	0.65	0.91	43.23
2000	5.11	0.77	4.26	1.62	0.21	5.85	3.86	4.15	9.11	0.06	3.33	1.61	39.94
2001	2.69	3.05	7.28	1.43	3.24	6.54	2.19	3.14	3.31	0.18	1.12	0.57	34.74
2002	2.04	2.23	4	1.59	1.63	3.9	4.41	4.55	3.72	4.57	3.94	3.86	40.44
2003	2.07	5.31	8.07	8.64	6.81	9.18	10.14	3.96	2.63	3.39	1.19	2.26	63.65
2004	2.7	7.11	0.86	1.28	2.79	7.83	2.91	1.96	7.05	0.59	2.74	2.54	40.36
2005	2.35	4.43	6.07	1.26	4.12	9.57	5.19	4.64	2.07	2.95	2.53	6.4	51.58
2006	3.19	2.61	1.35	2.29	2.34	6	5.26	1.59	2.81	1.77	3.76	4.4	37.37
2007	3.18	2.87	1.7	2.48	1.23	5.42	4.97	3.04	0.91	1.47	0.14	9.67	37.08
2008	4	5.89	4.66	2.35	2.42	0.27	6.82	6.86	0.57	4.47	2.93	5.13	46.37
2009	2.03	0.8	4.25	5.86	8.21	1.72	4.47	7.67	5.74	2.89	4.56	9.75	57.95

Table 5–1. Rainfall (inches) at 400-D, 1973 to 2019 (*Continued/Ended*)

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Total
2010	4.9	2.62	2.5	1.71	1.34	7.29	2.39	7.04	2.51	0.48	1.45	1.41	35.64
2011	2.2	4.95	5.67	3.53	1.17	2.81	2.5	2.54	2.38	1.86	2.68	1.91	34.2
2012	1.91	1.59	3.07	1.43	6.96	3	5.27	9.85	1.55	0.54			35.17
2013*			1.75	1.05		5.64	4.99			0.08	1.64	4.64	19.79
2013**	0.68	13.5	4.44	4.09	2.6	7.15	13.29	6.69	0.6	2.45	0.83	4.84	61.16
2014	2.77	5.22	3.15	3.69	4.08	5.2	6.1	3.8	4.46	1.13	3.88	5.17	48.65
2015	3.47	5.09	4.12	7.08	0.35	6.03	4.33	2.81	4.64	4.99	7.25	5.36	55.52
2016	2.8	4.8	3.45	3.51	5.58	6.87	4.06	5	6	4.8	0.26	5.54	52.67
2017	4.5	1.43	1.57	7.23	3.41	6.53	3.26	3.27	6.12	1.27	1.58	4.9	45.07
2018	2.4	1.96	4.04	4.08	8.39	5.25	5.32	1.77	3.45	3.92	7.58	7.24	55.40
2019	4.96	1.09	2.67	4.12	1.78	7.75	1.21	1.93	1.79	4.42	4.39	8.69	44.80
Average	**3.78**	**3.99**	**4.35**	**3.19**	**3.36**	**5.31**	**4.64**	**4.34**	**3.74**	**2.78**	**2.84**	**3.95**	**46.12**
Max	**8.41**	**9.49**	**11.1**	**8.64**	**10.23**	**9.57**	**10.91**	**9.85**	**9.11**	**17.12**	**7.58**	**9.75**	**63.65**
Min	**0.72**	**0.77**	**0.86**	**0.17**	**0.21**	**0.27**	**0.97**	**0.23**	**0.06**	**0**	**0.14**	**0.57**	**34.2**

*Incomplete 2013 precipitation data from the D-Area meteorological station (400-D).
**Precipitation data from the K-Area meteorological station.

Table 5–2. Constituents Exceeding USEPA NPDWS MCLs in T-Area Wells During 2019

Aquifer	Monitoring Category	TAOU Groundwater Monitoring Constituents					
		Trichloroethylene (TCE)	Uranium (total recoverable)	Gross alpha	Adjusted Gross Alpha	1,4-Dioxane*	Mercury
Unconfined UTRAU/GAU	Background						
	Primary					X	
	Secondary						
	Auxiliary	X	X	X	X		X
	Recovery	X					

NOTES:
X = Constituents Exceeding USEPA NPDWS MCLs or RSL*
UTRAU/upper GAU = Upper Three Runs Aquifer Unit/ Gordon Aquifer Unit
USEPA NPDWS MCLs = USEPA National Primary Drinking Water Standards MCLs (USEPA 2001)
*USEPA RSL for drinking water

6.0 EVALUATION OF FIELD AND ANALYTICAL RESULTS

Analytical results and field parameters for the 2Q2019 and 4Q2019 are included in Tables B-1 and B-2. Two dimensional planar and cross section maps displaying 4Q2019 results, for selected constituents, are shown in Figures A-13 through A-24. Figures A-32 through A-41 provide a comparison of pre-EO injection parameters with 4Q2019 results. Hydrographs and time series plots of selected constituents are provided in Appendix D and Appendix E, respectively.

6.1 Potentiometric Surface

The water table was initially drawn down during the operation of the four extraction wells between 1996 and 2007. The termination of extraction in 2007 allowed the water table to rebound. In response to the rebound, the water table elevation increased significantly in TRW 1, TRW 2, TRW 3 and TRW 4R, and to a lesser extent in most of the other wells. The EO injections are thought to have only temporarily affected the water table elevation during injection, and there is no evidence of long-term impacts.

Between 2012 and 2013, above average precipitation totals caused most wells to experience a 2 to 5 ft increase in water elevation. The increased water elevations were sustained at most monitoring wells through the first half of 2017. During the second half of 2017 and 2018, water elevations decreased at most monitoring wells on the TAOU cap. Above average precipitation in 2018 was first observed as an increase in water elevation during the second half of 2018 at monitoring wells located in the wetlands. In the first half of 2019, monitoring wells located on the TAOU cap experienced an increase in water elevation which was likely a delayed response to the above average precipitation in 2018. In 2019, the annual precipitation was 44.8 inches, which is lower than the 40-year average of 46.12 inches. The water elevation at most monitoring wells decreased during the second half of 2019 likely in response to the lower than average precipitation. One exception is TNX 27D where there is a localized high in the potentiometric surface. The changes in water elevation did not have a significant effect on groundwater flow directions with the predominant flow direction continuing to be in the southwest toward the Savannah River.

6.2 pH

Low pH conditions have previously been observed in the groundwater at discrete locations in the TNX Area OU. The low pH conditions beneath the TAOU cap are likely the result of groundwater in contact with nitric acid and the uranyl nitrate that was associated with the TBG. Low pH conditions observed in the wetlands may be a combination of naturally occurring low pH conditions as wells as disposal of acids at the OTSB and TNX OD.

During the 4Q2019, there were six wells with a pH of less than 5 (Figure A-14). TBG 3 had the lowest pH results during 2019 and has had a history of pH fluctuating above and below 5. There appears to be a correlation to increased water elevation and lower pH (< 5) at TBG 3 (Figure A-28). On a similar note, elevated nitrate/nitrite as nitrogen concentrations at TBG 3 also correlate to elevated water elevation (Figure A-29). This could indicate that there is source material (i.e. nitrates) in the capillary fringe near TBG 3 and as the water table rises and contacts source material the pH decreases.

A less than 5 pH plume is depicted between XSB006R and the TIR 1 well cluster. The TIR 1 well cluster has a history of pH being less than 5 at all three screens (i.e., -1U, -1M, and -1L) while XSB006R does not yet have a history of pH. The low pH at XSB006R during the 4Q2019, may be an indication that there is a low pH source associated with either the OTSB or the OD. This relationship will continue to be monitored and reported on in subsequent annual reports.

TNX 72D does not have a history of low pH. The pH of 4.9 in 4Q2019 was the first time pH was measured below 5 at TNX 72D. TNX 72D will continue to be monitored and reported on in subsequent annual reports.

The EO injections added a basic solution to buffer the lower pH of the groundwater to a pH of between 6 to 8 to promote bacterial activity. After the 2008 and 2010 injections, elevated pH (> 6) was observed in three of the injection wells, TBG 4, TBG 5, and TNX 3D. A basic solution was also added during the 2015 EO injections; however, it does not appear to have buffered the aquifer as much as the 2008 and 2010 injections. In 2019, the maximum pH results at TBG 4, TBG 5, TNX 3D were 6.4, 6.3, and 6.1, respectively, which are on the low end of the desired range to promote biological activity.

6.3 VOC Constituents (i.e., PCE, TCE, Cis-1,2-DCE, VC, Ethylene, and CCl_4)

The T-1 Air Stripper and associated recovery wells removed a significant amount of VOC mass from the groundwater at TNX Area OU. Monitoring wells located in the source area (i.e., TBG 3, TBG 4, and TBG 5) as well as the downgradient monitoring wells (i.e., TNX 3D, TNX 11D, and TNX 27D) experienced decreasing TCE and PCE concentrations during operation of the T-1 Air Stripper (i.e., 1996 to 2007). When the T-1 Air Stripper was temporarily shut down (i.e., 2005 to 2007) during the installation of the TAOU cap, TCE and PCE concentrations rebounded revealing a residual source was still present in the source area. The EO treatability study was designed to target the residual source and further reduce VOC mass in the groundwater. Since the 2015 EO injections, the TCE concentrations within the treatment zone have steadily declined. In 2019, all of the injection and monitoring wells within the treatment area had TCE concentrations less than the MCL. TCE concentrations at TRW 2 exceeded the MCL during the 2Q2019 while decreasing to less than the MCL in the 4Q2019.

The removal of TCE mass at the source has had a direct effect on the TCE concentrations observed in the wetland wells. As source TCE concentrations have declined, distal TCE concentrations have concurrently declined (Figure A-27). Figure A-27 provides a comparison of the average fourth quarter TCE concentrations for eight monitoring wells (i.e., TBG 3, TBG 4, TBG 5, TNX 3D, TRW 1, TRW 2, TRW 3, and TRW 4R) located on the TAOU cap in the source plume and seven wells (i.e., TCM 5, TIR 1U, TNX 15D, TNX 16D, TNX 27D, TNX 28D, and TNX 30D) located in the wetlands or distal plume. Since TIR 1U was dry during 4Q2019, the TCE concentration at TIR 1M was used as a replacement. Since 2015, the average TCE concentrations have fluctuated above and below the MCL (5 µg/L) but have been less than the MCL since 2018. In 2019, both averages were less than the MCL (5 µg/L).

The general decreasing TCE concentrations at most monitoring wells on the TAOU cap and in the wetlands is a good indicator that the EO injections have been successful at removing TCE mass from the source area. There are a couple of monitoring wells (i.e., TRW 2 and TNX 28D) in 2019 that exceeded the MCL for TCE. TRW 2 is located on the TAOU cap and has a decreasing TCE trend since 4Q2018. This well is located downgradient of the EO injection wells and the decreasing TCE is likely caused by treated groundwater flowing from the upgradient injection wells. Treated groundwater flowing toward TRW 2 is also evident by the changing EO parameters (i.e., decreasing DO, decreasing ORP, increasing methane, and denitrification). TNX 28D is located in the wetlands and has experienced TCE concentrations that have been above and below the MCL. The recent TCE concentrations at TNX 28D are likely an artifact of changing water elevation between 2018 and 2019. In the 4Q2018 and 2Q2019, above average precipitation and high water level in the Savannah River likely diluted the TCE concentration at TNX 28D. As water elevations returned to normal in 4Q2019, TCE concentrations rebounded at TNX 28D. The TCE plume near TNX 28D likely represents a plume that is detached from the source area located between the TAOU cap and TNX 28D. The detached plume is evident from decreasing TCE trends at upgradient monitoring wells (i.e., TNX 27D, TRW 2, and TRW 3).

Cis-1,2-DCE was observed at the monitoring wells in the source area (i.e., TBG 3, TBG 4, TGB 5, TNX 3D, and TRW 1) prior to the injection of EO. Similar to TCE and PCE, cis-1,2-DCE concentrations decreased as VOC mass was removed by the operation of the recovery wells and T-1 Air Stripper. After the 2008 and 2010 EO injections, cis-1,2-DCE concentrations began to increase at wells near the treatment area indicating TCE degradation is likely occurring. This is evident at TBG 5 where cis-1,2-DCE concentrations have had a general increasing trend since 2008. Cis-1,2-DCE concentrations were just below the MCL at TBG 5 during 2019. After the 2015 EO injections, cis-1,2-DCE concentrations increased at TRW 2, TRW 4R, and TVM 1M indicating the degradation of TCE is likely occurring. In 2019, no monitoring wells exceeded the MCL (i.e., 70 µ/L) for cis-1,2-DCE. In the wetlands, cis-1,2-DCE concentrations have been below the detection limit since the 2015 EO injections and continue to be below detection limits in 2019.

There were no VC concentrations that exceeded the MCL (2 µg/L) during 2019.

Elevated ethylene concentrations were observed immediately after the 2008 and 2010 EO injections at injection wells TBG 4, TBG 5, and TNX 3D. After the 2015 EO injections, ethylene concentrations increased at TBG 3, TBG 4, TBG 5, TRW 3, and TVM 1M. Since the increase in ethylene concentrations in 2015, ethylene concentrations have steadily decreased but remain at detectable concentrations into 2019 at TBG 3, TBG 4, and TBG 5. Ethylene concentrations at TBG 3 increased during 2019. The presence of ethylene indicates the complete degradation of TCE and daughters.

CCl_4 concentrations declined to below the detection limit at TBG 3 since the 2015 EO injections and continue to be less than the detection limit in 2019. It is uncertain what process is causing the decline in CCl_4 concentrations at TBG 3, but it appears the same processes degrading the TCE are also degrading the CCl_4.

6.4 Edible Oil Parameters

The injection of EO into the groundwater during 2008, 2010, and 2015 converted the aerobic aquifer to a reducing environment. The EO parameters monitor for methane, DO, ORP, TOC, sulfate, and nitrate to identify areas that have become anaerobic and potentially where reductive dechlorination is occurring. The reductive environment created in the EO treatment area is illustrated in Figures A-32 through A-37 which compares pre-injection groundwater parameters to post-injection parameters collected during the 4Q2019. Time series trends for these parameters are presented in Appendix E. Evidence of a reductive environment in the treatment area includes:

- DO has decreased in the treatment area.
- TOC is elevated in the treatment area.
- ORP results indicate more reductive conditions in the treatment area.

- Sulfate concentrations indicate a sulfate reduction in the treatment area.
- Methane concentrations increased at injection wells.
- Denitrification (decreasing nitrate concentrations) occurred in the treatment area.

The DO at all the injection wells have decreased after the injection of EO indicating that the aquifer has become anaerobic. As the oxygen in the aquifer is consumed, reductive conditions will become more prevalent and eventually lead to conditions favorable for reductive dechlorination. After the 2015 EO injections, DO concentrations have remained below pre-injection concentrations (i.e., < 6 mg/L) at the injection and monitoring wells. Although DO concentrations are low after the 2015 injections (i.e., 1 mg/L > DO < 4 mg/L), DO concentrations were less than 1 mg/L after the 2008 and 2010 injections. In 2019, DO concentrations continue to increase at injection and monitoring wells within the treatment area (Figure A-32). The increase in DO concentrations could be the result of clean upgradient water migrating under the TAOU cap. This water would have background DO concentrations causing the lower EO induced DO concentrations to increase. Three wells (i.e., TNX 3D, TVM 1M, and TVR 1A) had DO concentrations that were higher than background DO concentrations (i.e., 6-8 mg/L) and are considered to be a suspect measurement. The DO concentrations of 14.38 and 16.4 mg/L at TVN 1M and TNX 3D, respectively, are considered suspect and were not contoured on Figure A-32.

After the EO injections, TOC concentrations increased in the injection wells from approximately 1,000 µg/L to greater than 100,000 µg/L. This is evident at all of the injection wells including 2015 injection wells, TBG 3 and TRW 3. An increase in TOC reflects the introduction of carbon associated with the EO injections. After each of the injections, TOC concentrations spiked and generally began to decline at the injection wells. The decrease in TOC is an indication that some of the carbon introduced into the aquifer has been dispersed into the aquifer or utilized by microbial activity. In 2019, TOC concentrations continue to be elevated at the 2015 injection wells. TBG 3 was the only well that had an increase in TOC during 2019. The increased TOC at TBG 3 might be the result of an elevated water table (2Q2019) coming in contact with neat oil deployed in the deep vadose zone and capillary fringe at upgradient SVE wells (i.e., TVX002L, TVX003L, TVX004L, and TVX005L).

The ORP results are generally lower within the EO treatment zone and provide evidence that the EO has created reductive conditions within the aquifer. ORP results at injection wells (i.e., TBG 4, TBG 5, TNX 3D, TRW 3, TRW 4R, and TVM 1M) have decreased after each injection of EO and remain low during 2019. The ORP results at TBG 3 steadily decreased from 2015 to 2018 but increased sharply during 2019. Other monitoring wells TVM 2M, TVM 4M, and TVR 1A also experienced a decrease in ORP results after EO injections but currently have increasing ORP trends in 2019. The ORP results at TVM 4M have been increasing since 2014 indicating reductive conditions are returning to background conditions at this monitoring well. The increase in ORP results at these monitoring wells and TBG 3 could be the result of clean upgradient water migrating under the TAOU cap. This water would have higher ORP results, indicative of oxygenated water, causing the lower EO induced ORP results to increase. On the contrary, monitoring wells (i.e., TNX 27D and TRW 2) located on the downgradient side of the treatment zone have experienced decreasing ORP results since the 2015 EO injections. This is evidence that reductive conditions created by the EO are migrating downgradient with groundwater flow.

Decreased sulfate, increased methane, and denitrification are further indicators for the presence of a reducing environment and suggest reductive dechlorination could be occurring. In comparison to 2007 sulfate concentrations, 2019 sulfate concentrations have been reduced in the treatment area (Figure A-35). Evidence of sulfate reduction is the most apparent at injections wells (i.e., TBG 5, TRW 4R and TVM 1M) with decreasing sulfate concentrations occurring after the 2015 EO injections. Methane concentrations increased immediately after each injection at the injection wells and are also elevated at some of the monitoring wells. Methane concentrations have remained elevated within the treatment zone through 2019. The exception are two monitoring wells (i.e., TVM 2M and TVM 4M). The presence of methane is an indication that highly reductive conditions are present in the aquifer and that reductive dechlorination of VOCs is likely occurring. Decreasing nitrate concentrations is evidence that reductive conditions have progressed enough to allow dechlorination of VOCs. Denitrification is apparent throughout the treatment zone but is most noticeable at injection wells (i.e., TBG 3, TBG 4, TRW 3, and TVM 1M) and monitoring wells (i.e., TRW 1, and TRW 2).

VFAs indicate the general presence and longevity of EO in the subsurface. EO is composed of long chain fatty acids, and as these fatty acids are consumed, they are broken into short chain fatty acids or VFA. After the 2015 injections, total VFA concentrations were the highest at the injection wells and were not detected in the monitoring wells. Since 2015, the concentration of VFA have decreased sharply at some of the injection wells (i.e., TBG 5, TRW 4R, and TVM 1M) while only decreasing slightly at other injection wells (i.e., TBG 3, TBG 4, and TRW 3). VFA concentrations were also detected in the monitoring wells (i.e., TRW 1, TRW 2, TVM 2M, and TVR 1A) between 2016 and 2017 suggesting that EO has been distributed out into the aquifer. The concentration of VFAs observed at these four monitoring wells have not been sustained after 2017 and were an order of magnitude lower than those concentrations observed at the injection wells.

6.5 Combined Radium, Uranium, Gross Alpha, and Adjusted Gross Alpha

These constituents are being discussed together because uranium, radium-226, and radium-228 contribute along with other alpha emitters to the gross alpha concentration. The adjusted gross alpha concentration is calculated to exclude naturally occurring uranium 234, 235, and 238. A description of the calculations is provided in Appendix C, page C-6. The combined radium activity concentration is the sum of radium-226 and radium-228.

Detections of combined radium and uranium are sparse, do not define a discernible groundwater plume, and are associated with the TBG, OTSB, DG, OD, and naturally occurring uranium in the fluvial sediments of the wetlands. Uranium isotope data collected between 1998 and 2004 was evaluated in the *Addendum to the CERCLA Facility Investigation/Remedial Investigation/Baseline Risk Assessment (RFI/RI/BRA) Report for the TNX Area Operable Unit, Groundwater Radiological Characterization* (WSRC-RP-2001-4180). Figure A-30 graphs the mass of the three uranium isotopes (i.e. uranium-238, -235, and -233/234) with the total uranium mass. In Figure A-30, the percent mass of the uranium isotopes is comparable to naturally occurring uranium (i.e., uranium-238 [99%], uranium-235 [0.7%], and uranium -234 [0.005%]). It has also been observed that a combination of increasing water elevation, oxidizing and reducing environments, and high and low pH influences the solubility of uranium and radium, and ultimately the gross alpha activity, in a particular groundwater sample.

Groundwater in the TNX Area OU monitoring wells exceed the MCLs for the respective radionuclide near the TBG (area under the TAOU cap) and in the wetlands near the OTSB and TNX OD. The area under the TAOU cap has been further altered by the EO injections. In the wetlands, in addition to being sourced by the OTSB, naturally occurring radionuclides are present in the organic rich fluvial sediments which are entrained within the aquifer sediments.

TBG (Area under the TAOU Cap). Uranium has been the recent radiological constituent to exceed the MCL (30 µg/L) under the TAOU cap. In 2019, uranium concentrations exceeded the MCL at TBG 3 during the 2Q2019 and declined to less than the MCL in the 4Q2019 (Appendix E, page E-286 and E-287). Although uranium did not exceed the MCL in the 4Q2019, the uranium concentration was still elevated compared to historical uranium concentrations. The elevated uranium concentrations at TBG 3 are likely related to the lower than normal pH (i.e., 3.4 and 4.2) observed at TBG 3 during 2019 which are some of the lowest pH results at TBG 3 since 2000 (Appendix E, page E-287). The uranium concentration at TBG 4 did not exceed the MCL during 2019. Uranium concentrations at TBG 4 have been slowly decreasing since concentrations peaked in 2014. The previous exceedances at TBG 4 may have been associated with the increased solubility of uranium caused by high pH and a reductive environment (Appendix E, page E-289). The reductive environment and elevated pH conditions (i.e., sodium bicarbonate buffer added during EO injections) at TBG 4 were initiated after the EO injections in 2008 and 2010. After the 2015 injection, pH at TBG 4 decreased to approximately 6 and subsequently uranium concentrations have also decreased. Elevated uranium concentration during low pH conditions (< 5) at TBG 3 and elevated uranium concentrations during high pH conditions (8-10) at TBG 4 are indications of the complex geochemistry that is occurring in the groundwater under the TAOU cap. The complex geochemistry is a result of the previous

EO injections. The relationship between uranium and pH is presented on time series graphs in Appendix E.

Although radium-226 is the potential contaminant of concern, the MCL is measured for the sum of radium-226 (uranium decay series) and radium-228 (thorium decay series) or combined radium. Combined radium has historically exceeded the MCL (5 ρCi/L) at monitoring wells TBG 3 and TBG 4. The exceedances at these monitoring wells appear to be associated with lower pH created from nitric acid releases from the TBG. The solubility of radium increases with decreasing pH. This relationship between radium and pH is presented on time series graphs in Appendix E (Pages E-80 and E-82). Combined radium concentrations at TBG 3 and TBG 4 exceeded the MCL before the 2008 and 2010 EO injections. The pH at TBG 4 increased in 2010 due to the EO injections and the addition of a pH buffer causing combined radium concentrations to decrease to less than the MCL. The pH at TBG 3 was not directly impacted by the EO injections. There were no exceedances for combined radium at TBG 3 and TBG 4 during 2019. The lower than average pH observed at TBG 3 during 2019 did not result in elevated combined radium concentrations.

Gross Alpha exceedances under the TAOU cap directly correspond to the combined radium and uranium exceedances observed at TBG 3 and TBG 4. At TBG 3, gross alpha and combined radium exceedances appear to be directly related until 2019 when gross alpha appears to correlate to uranium concentrations (Appendix E, page E-286). At TBG 4, the gross alpha concentrations appear to correlate with combined radium concentrations before 2010 and correlate to uranium concentrations after 2010 (Appendix E, page E-288). The relationship between combined radium, uranium, and gross alpha is presented on time series graphs in Appendix E.

Wetlands. The OTSB and fluvial sediments are two potential sources of radiological constituents in the wetlands. The exceedances of radiological constituents in the wetlands have been sporadic and there appears to not be a discernible groundwater plume present.

Most of the occurrences of combined radium in the wetland are sporadic or one-time occurrences. The sporadic nature of the combined radium exceedances is likely due to naturally occurring radium in the fluvial sediments beneath the wetlands.

Uranium concentrations are mostly sporadic with one exception (i.e., TCM 5). Uranium concentrations have regularly exceeded the MCL at TCM 5 since 2003 with a couple of concentrations between 2014 and 2016 that were less than the MCL. It is not clear if the uranium observed at TCM 5 is sourced from TNX processes or is naturally occurring. TCM 5 is located downgradient of the OD which received overflow from the OTSB.

Gross alpha exceedances in the wetlands directly correspond to the uranium exceedances observed at TCM 5 (Appendix E, page E-290). Adjusted gross alpha concentrations at TCM 5 suggest uranium is the primary alpha emitter contributing to the gross alpha concentrations. The relationship between uranium and gross alpha at TCM 5 is presented on time series graphs in Appendix E (page E-290). In the 2Q2019, the gross alpha and adjusted gross alpha concentration at TIR 1U exceeded the MCL (15 pCi/L) for gross alpha. Since adjusted gross alpha is a calculated result that subtracts the uranium alpha activity from the total gross alpha result, the elevated adjusted gross alpha result indicates that other alpha emitting radionuclides are responsible for the gross alpha activity observed. Elevated gross alpha exceedances at TIR 1U are not common with gross alpha results exceeding the MCL in 1999 and 2014.

6.6 Mercury and NO_3/NO_2 as N

The graphs for mercury are presented with pH (Appendix E) and convey the relationship that mercury increases as pH decreases. Mercury is graphed for TBG 4 which is the only well that has previously experienced mercury concentrations above the MCL (2 µg/L). Since pH increased after the 2008 and 2010 EO injections, mercury concentrations have been less than the MCL. The new monitoring well XSB006R had a mercury concentration that exceeded the MCL in 4Q2019. Since this is the first mercury exceedance at XSB006R, continued monitoring will help determine if this is a onetime detection or the start of a trend.

The NO_3/NO_2 as N graph is also presented with pH to show the relationship that pH decreases with increases in NO_3/NO_2 as N concentrations. Uranyl nitrate was disposed of at the TBG and as water infiltrated the burial ground nitric acid was produced; therefore, the NO_3/NO_2 as N concentrations are presented for TBG 3, TBG 4, and TBG 5. The concentration of NO_3/NO_2 as N has been less than the MCL at TBG 3, TBG 4, and TBG 5 since EO injections have occurred.

6.7 1,4-Dioxane

1,4-Dioxane sampling was initiated at all monitoring wells in 2013. In 2019, 1,4-dioxane was analyzed for using two methods, EPA 8260BSIM and EPA 522. Method EPA 8260BSIM is certified by the SCDHEC. Method EPA 522 is not certified but is the only method that can achieve detection limits lower than the RSL (0.46 µg/L). TBG 4 and TBG 5 exceeded the RSL for 1,4-dioxane during 2019. TBG 5 has a history of exceeding the RSL, and TBG 4 exceeded the RSL for the first time. The location of these wells near the TBG source area indicates that 1,4-dioxane was likely associated with debris buried at the TBG. Using the low detection, method EPA 522, at all TNX monitoring wells indicates that there is not an extensive 1,4-dioxane plume associated with TNX OU groundwater. The 1,4-dioxane plume is localized to the TBG source area.

7.0 SYSTEM PERFORMANCE

7.1 Soil Vapor Extraction (SVE) Operations

During 2019, the MicroBlowers™ were connected to TVM 1V, TVM 3V, TVM 4U, TVX 4U, and TVX 7U.

Table 7-1 provides details of construction, history, and duration each SVE well has been connected to a MicroBlower™. Vapor concentrations, flow rates, and the estimated time of operation for each SVE well are presented in Table 7-2. The data presented in Table 7-2 was used to determine the contaminant mass removed by each MicroBlower™. The contaminant mass removed at the MicroBlower™ is determined using vapor concentrations and the volume of air (ft^3) that passes through the MicroBlower™. The vapor concentration is multiplied by the volume of air that passes through the MicroBlower™ during a given month. Unit conversions are integrated into these calculations. The product provides the total mass removed from the MicroBlower™ for a given month. The MicroBlowers™ are sampled quarterly, so vapor concentrations and flow rates are assumed to be constant during the quarter. Table 7-3 summarizes the total VOCs removal per month, during 2019.

In 2019, approximately 0.48 kg (1.05 lb) of VOCs (i.e., 0.31 kg [0.69 lb] of TCE, 0.15 kg [0.32 lb] of PCE, and 0.021 kg [0.047 lb] of CCl_4) were removed from the TNX vadose zone.

7.2 Edible Oil Injections

EO treatment was selected as the remedial action for the remaining TCE groundwater plume in 2013. EO amendments were injected into the aquifer during 2008, 2010, and 2015. After the 2008 injections, aquifer conditions within the treatment area were changed to a reductive environment capable of degrading TCE and its daughter products. The 2010 and 2015 injections added additional EO expanding the treatment area or replenishing the original treatment area. TCE concentrations in the treatment area have continued to decrease and are currently less than the MCL (5 µg/L). The reduced TCE concentrations in the source area have also corresponded to decreasing TCE concentrations at most of the wetland wells. Some wetland wells (i.e., TCM 5, TIR 1U, and TNX 28D) have experienced elevated TCE concentrations which may indicate the TCE groundwater plume has been redistributed with the most recent 2015 EO injections. TCE concentrations at TNX 28D might indicate the presence of a TCE plume that is detached from the source located between TWN 28D and TRW 2.

To assess the effectiveness of the EO injections, the change in mass of the TCE groundwater plume was quantified and plotted with time from 2007 to 2019 (Figure A-31). Figure A-31 shows the exponential decline of the estimated VOC mass with time. The estimated annual mass of TCE in the plume is calculated based on the area of the TCE plume during the fourth quarter for a given year, the average concentration of the plume during that year, assuming a plume thickness of 20 ft, and a porosity of 0.3. The following equation was used to calculate the mass of TCE in the plume for each year between 2007 and 2019;

Average TCE Concentration x Plume Volume x Porosity = TCE Mass

Table 7-4 provides all of the values used in the mass calculations. From 2007 to 2019 it is estimated that the mass of TCE in the plume has been reduced by 96%. In the 2019, the mass of TCE rebounded as TNX 28D exceeded the MCL and a TCE plume was depicted on Figure A-15. The 2019 TCE plume is smaller in area and lower in concentration than the 2017 TCE plume indicating that EO injections have successfully removed TCE mass from the source area and the TCE plume is shrinking with time.

Table 7–1. Well Construction and Operation for TNX SVE Wells

STATION ID	Date Installed	Ground Elevation (ft msl)	Total Depth (ft)	Screen Length (ft)	MicroBlower™ Operation (yr)
TVM 1U	10/6/1995	157.7	51.8	10	2011, 2013, 2014, 2015, 2016, 2017
TVM 1V	10/18/1995	157.3	63	2	2009, 2010, 2018, 2019
TVM 2L*	10/17/1995	159.5	91.5	1	2013, 2014
TVM 2U	10/17/1995	159.5	60.7	10	2011, 2015, 2016, 2017
TVM 2V	10/19/1995	159.4	46.8	2	
TVM 3U	10/13/1995	158.9	67.6	10	2009, 2010, 2011, 2012
TVM 3V	10/20/1995	159	46	2	2009, 2010, 2018, 2019
TVM 4L*	11/22/1995	158.9	92.4	2	2010
TVM 4U	11/22/1995	158.9	63.4	10	2009, 2011, 2015, 2016, 2017, 2018, 2019
TVM 4V	11/22/1995	158.9	46.9	1	2011, 2013, 2014, 2015, 2016, 2017
TVX 1L	7/2/2002	153.2	58.4	15	2009, 2012
TVX002 L	6/27/2002	156.6	67.4	20	2011
TVX002 U	6/27/2002	156.5	42.5	10	2013, 2014
TVX003 L	7/3/2002	154.1	59.3	15	2012
TVX004 L	7/8/2002	153	56	12	2010, 2011
TVX004 U	7/8/2002	153.1	42.1	15	2009, 2010, 2018, 2019
TVX005 L	7/9/2002	155.2	57.5	10	2013, 2014
TVX005 U	7/9/2002	155.2	48.4	15	2010, 2011
TVX006 L	7/2/2002	155.2	68.3	15	2011, 2012, 2015, 2016, 2017
TVX006 U	6/27/2002	155.2	58.4	15	
TVX007 L	6/27/2002	159	64.1	15	2009, 2010
TVX007 U	6/27/2002	158.9	44.6	10	2009, 2010, 2012, 2018, 2019

* TVM 2L and TVM 4L are screened in the saturated zone and are no longer used as viable SVE wells.

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Table 7–2. Monthly SVE Well VOC Mass Removal (2019)

TVM-1V	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total	Average
Operating Time (hours)	372	264	372	360	372	360	372	372	360	372	360	372	4308	359
Downtime (hours)	372	408	372	360	372	360	372	372	360	372	360	372	4452	371
Total Solvent Removed (lbs)	0.002	0.002	0.002	0.002	0.002	0.002	0.008	0.008	0.008	0.006	0.006	0.006	0.055	0.005
Average Vapor Flow Rate (scfm)	8	8	8	7.9	7.9	7.9	31.02	31.02	31.02	5.1	5.1	5.1	NA	7.65
Average Concentration Influent (ppmv)	0.037	0.037	0.037	0.036	0.036	0.036	0.035	0.035	0.035	0.322	0.322	0.322	NA	0.108

TVM-3V	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total	Average
Operating Time (hours)	372	336	372	360	372	360	372	372	360	372	360	372	4380	365
Downtime (hours)	372	336	372	360	372	360	372	372	360	372	360	372	4380	365
Total Solvent Removed (lbs)	0.02	0.02	0.02	0.02	0.02	0.02	0.00	0.00	0.00	0.01	0.01	0.01	0.15	0.01
Average Vapor Flow Rate (scfm)	23.7	18.3	18.3	22.1	34.5	34.5	6.48	34.5	34.5	34.5	34.5	34.5	NA	30.45
Average Concentration Influent (ppmv)	0.105	0.105	0.105	0.100	0.100	0.100	0.097	0.097	0.097	0.127	0.127	0.127	NA	0.107

TVM-4U	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total	Average
Operating Time (hours)	372	336	372	360	372	360	372	372	360	372	360	372	4380	365
Downtime (hours)	372	336	372	360	372	360	372	372	360	372	360	372	4380	365
Total Solvent Removed (lbs)	0.04	0.03	0.04	0.05	0.06	0.05	0.08	0.08	0.07	0.04	0.04	0.04	0.62	0.05
Average Vapor Flow Rate (scfm)	12.3	17	17	16.2	25.3	25.3	31.02	15.4	15.4	11.8	15.4	15.4	NA	18.275
Average Concentration Influent (ppmv)	0.374	0.374	0.374	0.428	0.428	0.428	0.315	0.315	0.315	0.809	0.809	0.809	NA	0.481

TVX-4U	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total	Average
Operating Time (hours)	372	336	372	360	312	360	324	372	360	360	360	324	4212	351
Downtime (hours)	372	336	372	360	432	360	420	372	360	384	360	420	4548	379
Total Solvent Removed (lbs)	0.002	0.002	0.002	0.003	0.003	0.003	0.002	0.002	0.002	0.000	0.000	0.000	0.023	0.002
Average Vapor Flow Rate (scfm)	7.69	5.4	5.4	8.5	5.4	5.4	7.69	5.4	5.4	7.1	5.4	5.4	NA	5.4
Average Concentration Influent (ppmv)	0.065	0.065	0.065	0.057	0.057	0.057	0.043	0.043	0.043	ND	ND	ND	NA	0.055

TVX-7U	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total	Average
Operating Time (hours)	360	336	360	300	372	360	372	324	360	372	348	372	4236	353
Downtime (hours)	384	336	384	420	372	360	372	420	360	372	372	372	4524	377
Total Solvent Removed (lbs)	0.02	0.02	0.02	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	0.02	0.20	0.02
Average Vapor Flow Rate (scfm)	14.3	9.5	9.5	15.7	16.1	16.1	11.2	11.7	11.7	11.6	11.7	11.7	NA	12.25
Average Concentration Influent (ppmv)	0.189	0.189	0.189	ND	ND	ND	0.224	0.224	0.224	0.923	0.923	0.923	NA	0.445

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Table 7–3. VOC Mass Removed by SVE (2019)

Month	TCE (lbs)	PCE (lbs)	CC14 (lbs)
January	0.0539	0.0286	0.0000
February	0.0484	0.0264	0.0000
March	0.0539	0.0286	0.0000
April	0.0583	0.0169	0.0000
May	0.0596	0.0174	0.0000
June	0.0583	0.0169	0.0000
July	0.0831	0.0299	0.0000
August	0.0824	0.0281	0.0000
September	0.0807	0.0289	0.0000
October	0.0369	0.0322	0.0160
November	0.0356	0.0307	0.0153
December	0.0369	0.0322	0.0160
Average Monthly Removed in 2019	0.0573	0.0264	0.0039
Totals	0.6881	0.3168	0.0473

Table 7–4. Estimated TCE Plume Mass

Year	Plume Area (ft^2)	Aquifer thickness (ft)	Plume Volume (ft^3)	Average concentrati on of >5ppb TCE Plume (ug/L)	Number of wells used in the average	Porosity	TCE Mass (kg)
2007	441,695	20	8,833,899	71.15	13	0.3	5.34
2008	326,697	20	6,533,949	37.20	9	0.3	2.06
2009	318,857	20	6,377,134	46.75	11	0.3	2.53
2010	292,721	20	5,854,418	14.08	9	0.3	0.70
2011	277,039	20	5,540,789	27.78	8	0.3	1.31
2012	301,433	20	6,028,657	22.15	11	0.3	1.13
2013	226,946	20	4,538,917	34.08	7	0.3	1.31
2014	309,274	20	6,185,472	12.92	9	0.3	0.68
2015	155,508	20	3,110,160	13.20	4	0.3	0.35
2016	141,569	20	2,831,378	12.07	2	0.3	0.29
2017	192,098	20	3,841,962	13.8	3	0.3	0.45
2018	0	20	0	1.47***	13	0.3	0
2019	182,951	20	3,659,011	5.95	1	0.3	0.18

***Fourth quarter data was utilized when determining the plume area and average TCE concentrations.**
****Unit conversions used in the TCE mass calculation: 28.32 L/ft^3; 1x10^9 µg/kg**
*****This average was created using all detect and estimated (J) TCE concentrations, since all TCE results were < 5 µg/L**

8.0 SUMMARY/RECOMMENDATIONS

8.1 Summary

The TNX Area OU monitoring well network is sampled semi-annually and consists of 43 monitoring wells. Constituents exceeding MCLs during 2019 include 1,4-dioxane, gross alpha, adjusted gross alpha, mercury, TCE, and uranium.

Monitoring data indicate that EO injection fluids were placed into the aquifer successfully, TCE concentrations are less than the MCL at all wells in the treatment area, and reductive conditions are present in the EO treatment area. Reduced TCE concentrations were already established at injection wells used during the 2008 and 2010 injections (TBG 4, TBG 5, TNX 3D, and TRW 4R) and continued after the 2015 injections. TCE concentrations were less than the MCL at all the 2015 injection wells (i.e., TBG 3, TRW 3, and TVM 1M). Evidence of reductive conditions is present within the EO treatment area. During 2019, reductive conditions (i.e. DO, ORP, etc.) are trending back towards natural aerobic conditions. There are currently no negative effects of diminishing reductive conditions which is an indication that the results of the EO injections has significantly reduced the TCE plume. TCE concentrations exceeding the MCL are located at monitoring wells (i.e., TNX 28D, and TRW 2) downgradient of the EO treatment area. These two wells exceeded the MCL for TCE during the 4Q2019 and 2Q2019, respectively. The remedial actions (i.e., EO and SVE) continue to provide effective treatment and source reduction of the groundwater at TNX Area OU. Future sampling events will be used to determine the longevity of the EO treatment and resulting TCE concentrations.

There does not appear to be a discernible and consistent groundwater plume with respect to gross alpha, mercury, and uranium at TNX. Gross alpha and uranium detections exceeding the MCL are associated with some monitoring wells near the TBG (i.e., TBG 3) and in the wetland (i.e., TCM 5). Mercury was detected at monitoring well XSB006R and will continue to be monitored to establish a potential trend.

There appears to be a localized 1,4-dioxane plume near TBG 4 and TBG 5 with sporadic detections at the other monitoring wells.

8.2 Recommendations

SRS recommends continued monitoring of the existing well network with the current sampling and analysis schedule (Table 4-2).

Analytical method EPA 522 was added for the low-level detection of 1,4-dioxane at all monitoring wells. This new method was able to achieve detection limits less than the RSL (0.46 µg/L) and will continue to be used in addition to the SCDHEC certified method EPA 8260BSIM. Results using method EPA 522 and method EPA 8260BSIM will be reported in the 2020 annual report and subsequent annual reports.

SCDHEC recommended adding a new monitoring well between TNX 28D and the TNX 72 well cluster, based on the history of TCE concentrations exceeding the MCL (5 µg/L) at TNX 28D since the fourth quarter 2016. This recommendation was provided to SRS as a comment on the 2017 Annual Comprehensive TNX Area Groundwater Monitoring and Remedial Action Effectiveness Interim Report. SRS agreed to evaluate the TCE concentrations at TNX 28D for three consecutive years (i.e., 2019) and if TCE concentrations at TNX 28D continued to be elevated above the MCL, discuss the possibility of installing a new monitoring well with the USDOE, USEPA, and SCDHEC. The TCE concentrations at TNX 28D have fluctuated with changes in water elevation and were less than the MCL during 4Q2018 and 2Q2019. For this reason, the Savannah River Site would like to extend the period of evaluation at TNX 28D for another three years (i.e., 2022). A meeting with the USDOE, USEPA, and SCDHEC to discuss the possible installation of a new monitoring well will be scheduled after the submittal of the 2022 Annual Comprehensive TNX Area Groundwater Monitoring and Remedial Action Effectiveness Interim Report.

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APPENDIX A

FIGURES

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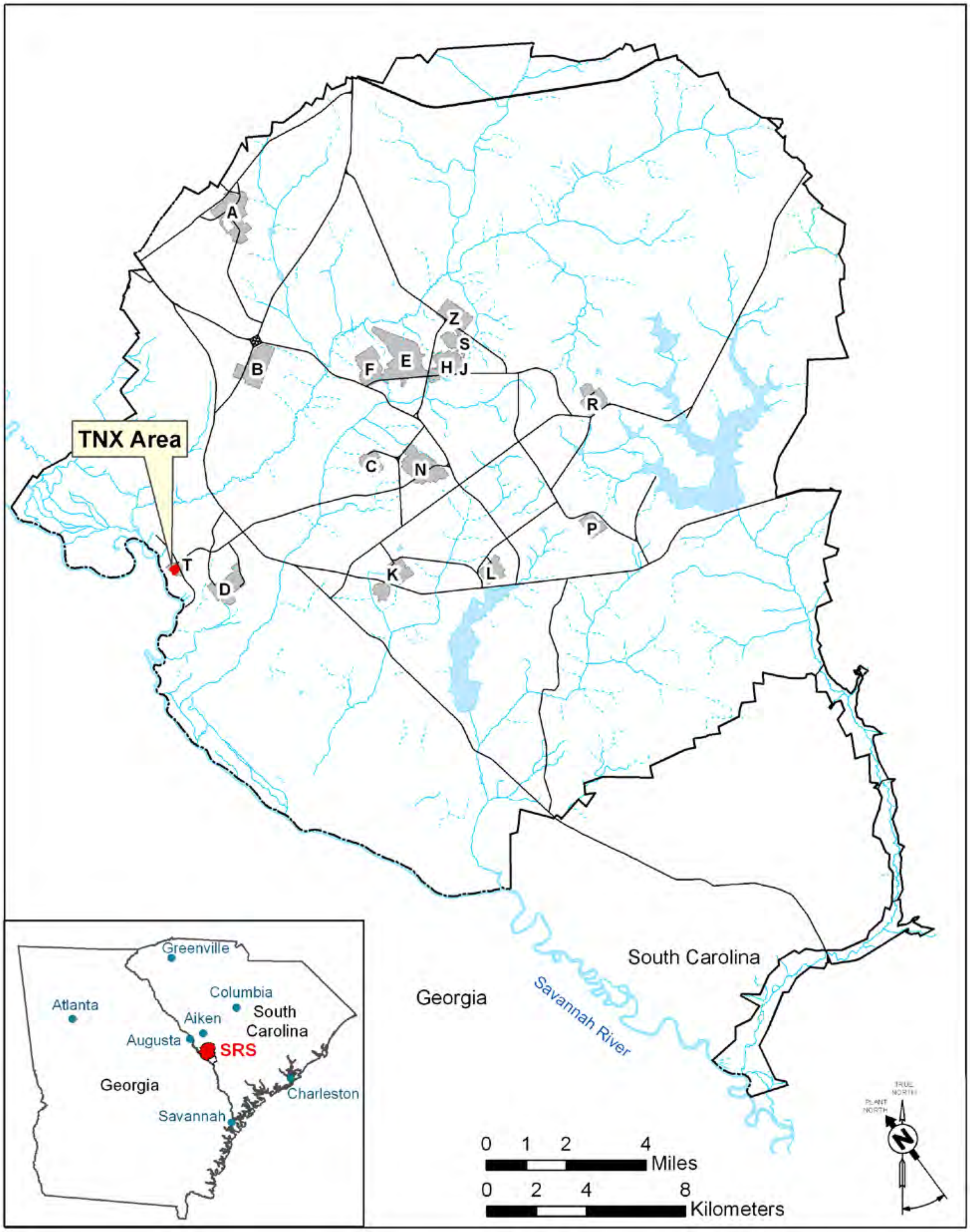

Figure A-1. Location of the TNX Area at the Savannah River

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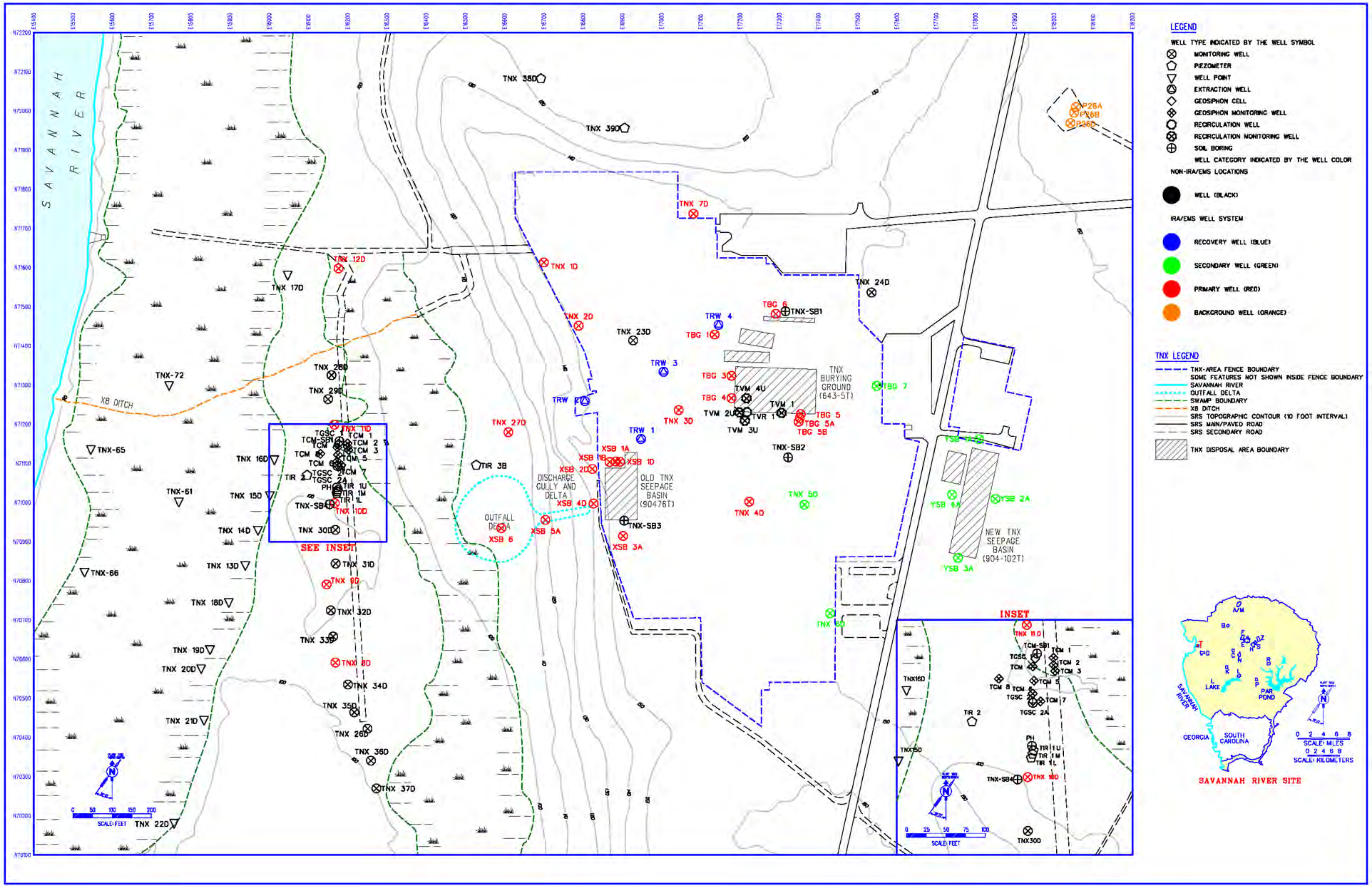

Figure A-2. Location of TNX Area Interim Remedial Action / Effectiveness Monitoring Strategy Well System during Startup and Initial Operations

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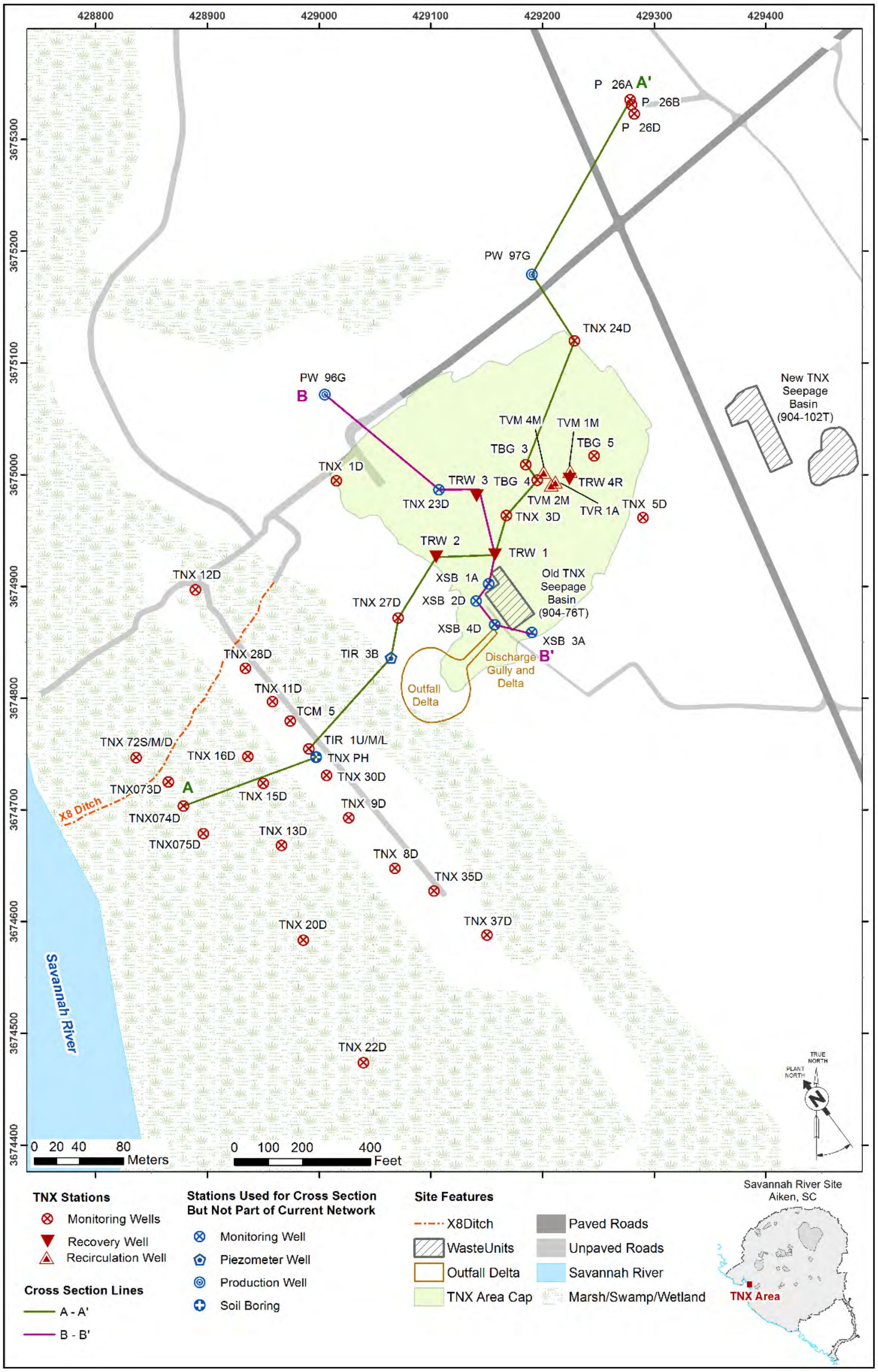

Figure A-3. TNX Area Cross Section Location Plan

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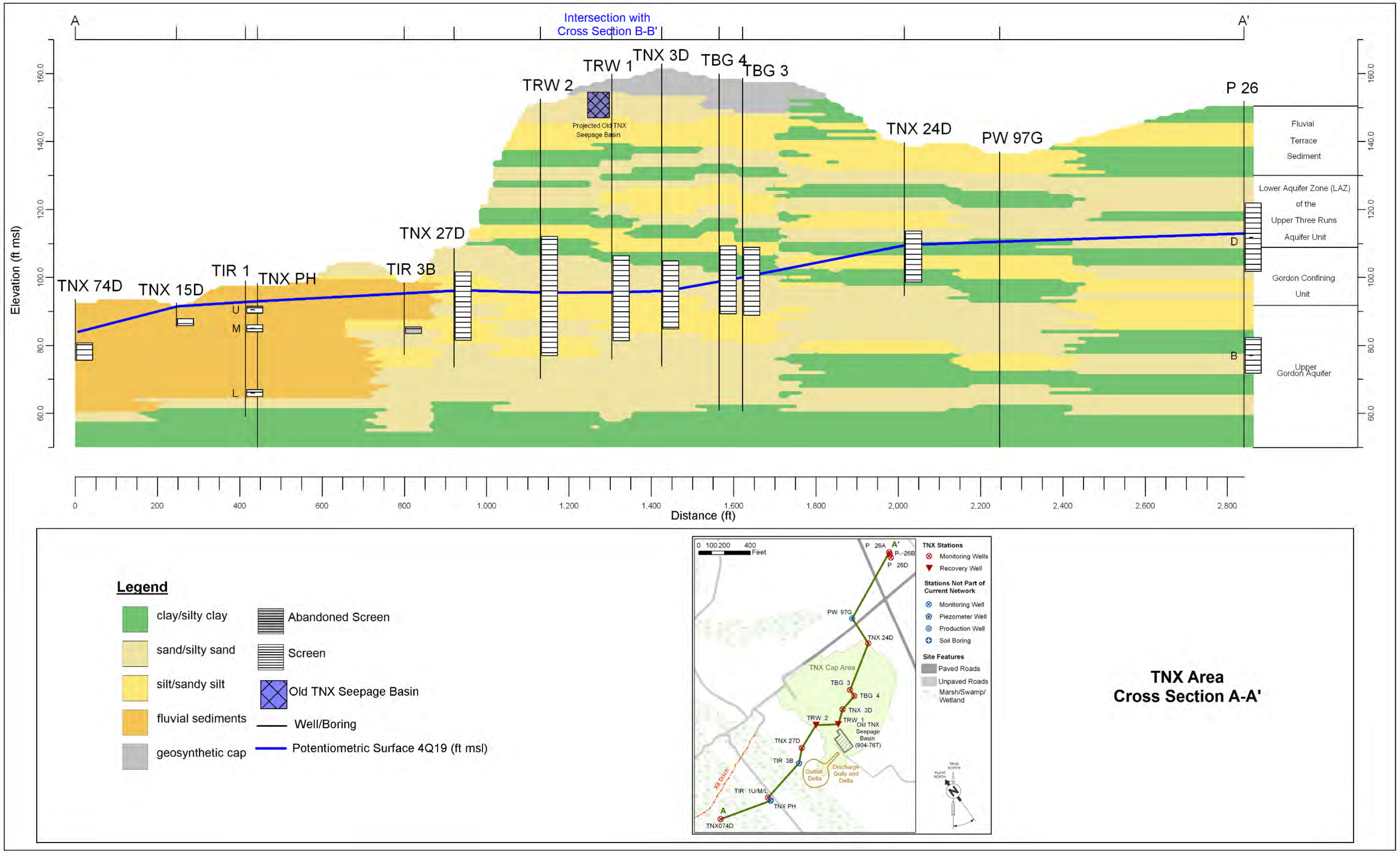

Figure A-4. TNX Area Cross Section A-A'

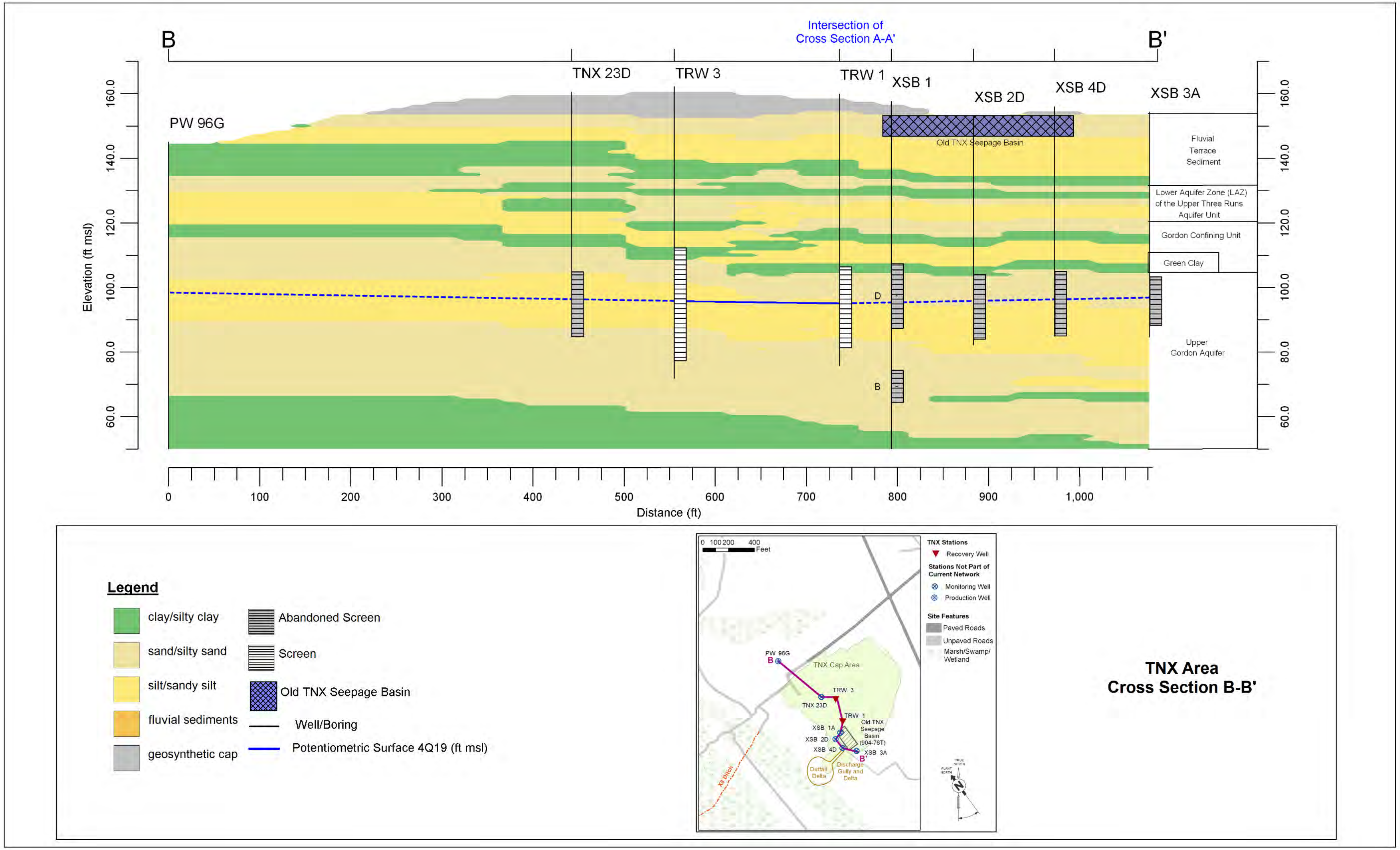

Figure A-5. TNX Area Cross Section B-B'

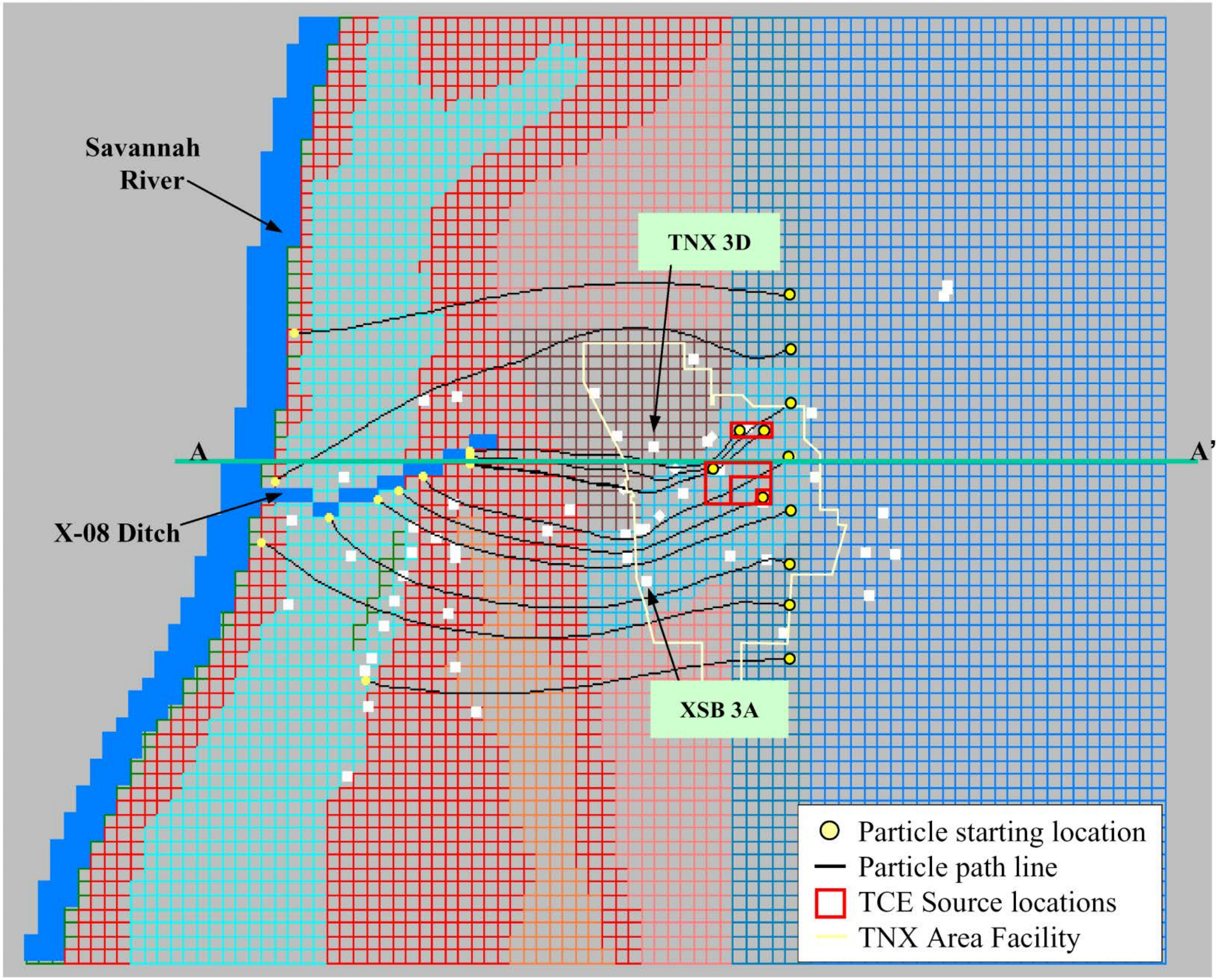

Figure A-6. Plan View of the TNX Area OU Showing Particle Starting Locations and Path Lines Towards the X-008 Ditch and the Savannah River

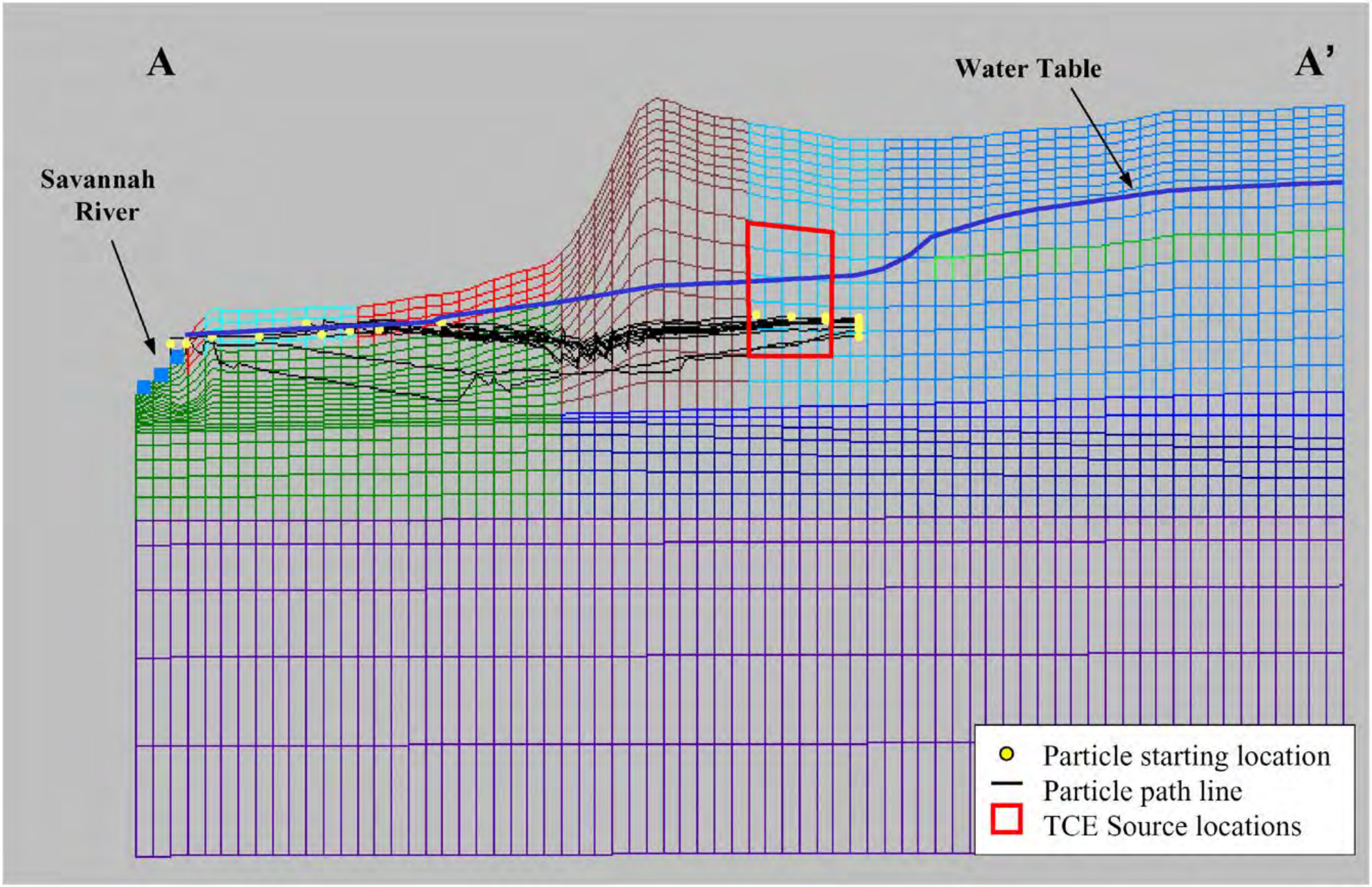

Figure A-7. Cross-sectional View along Section A-A' Showing the Vertical Locations and Particle Path Lines

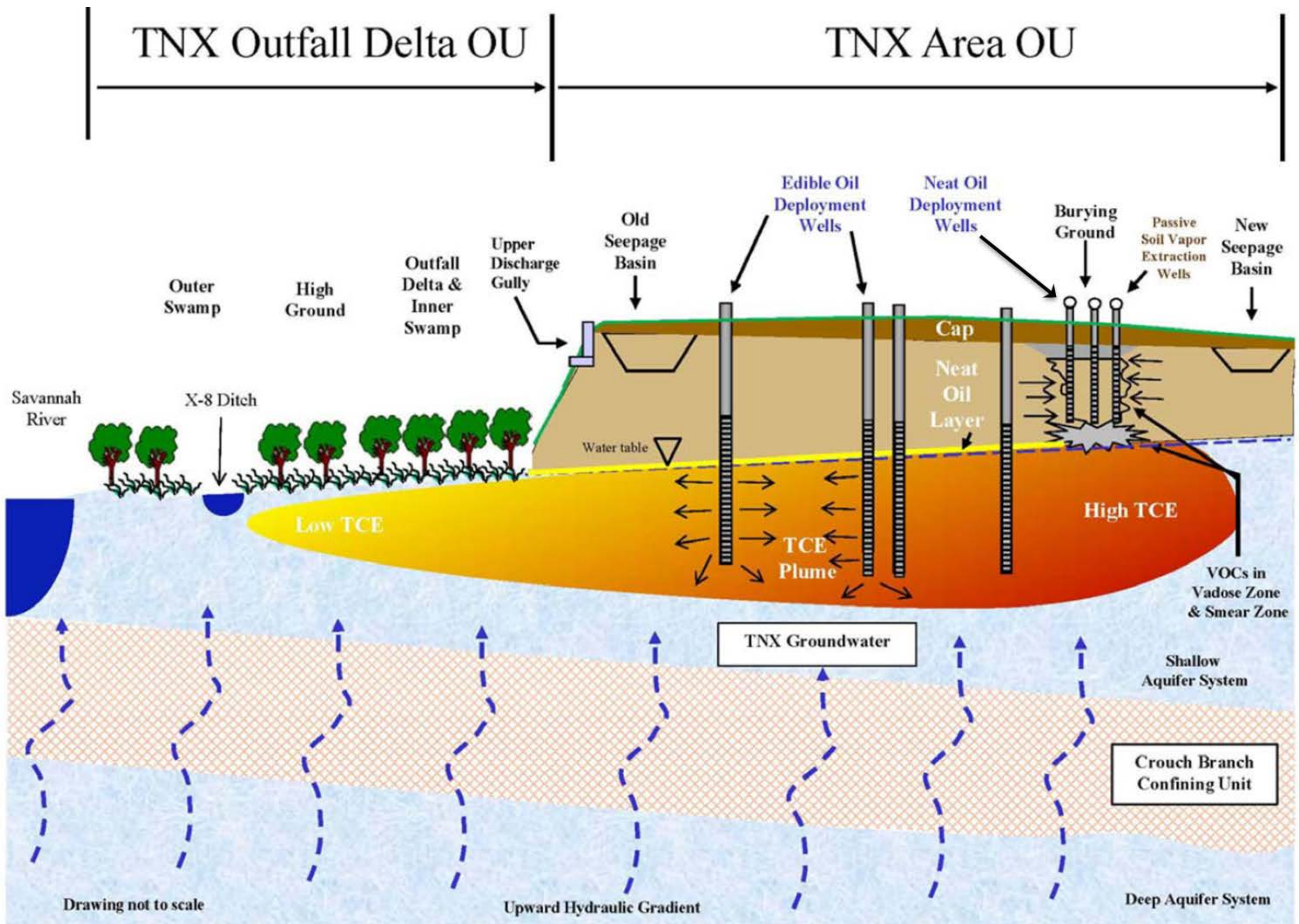

Figure A-8. Schematic Cross Section of TNX Operable Units and Remedial Action

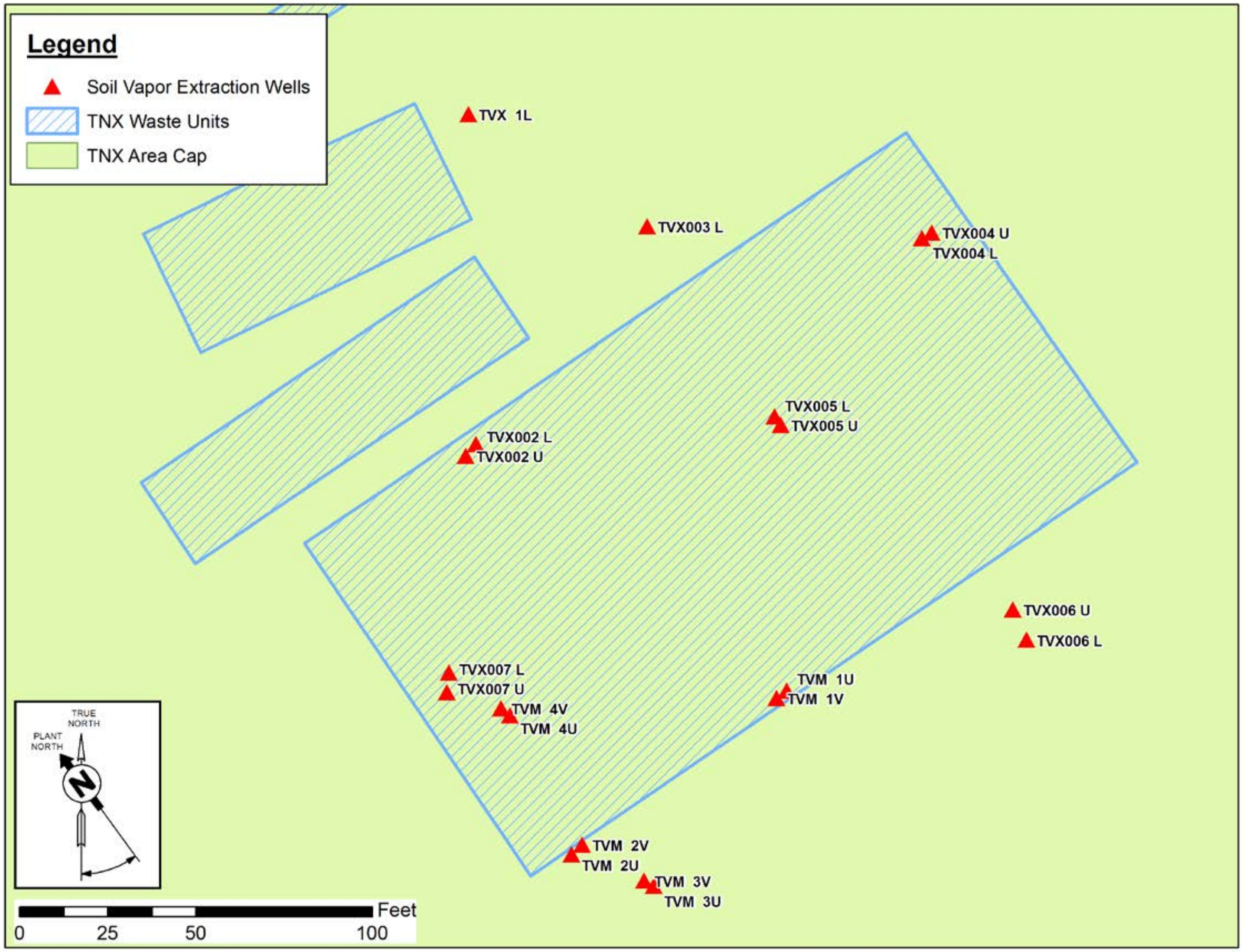

Figure A-9. Location of TNX Area SVE Monitoring Well System

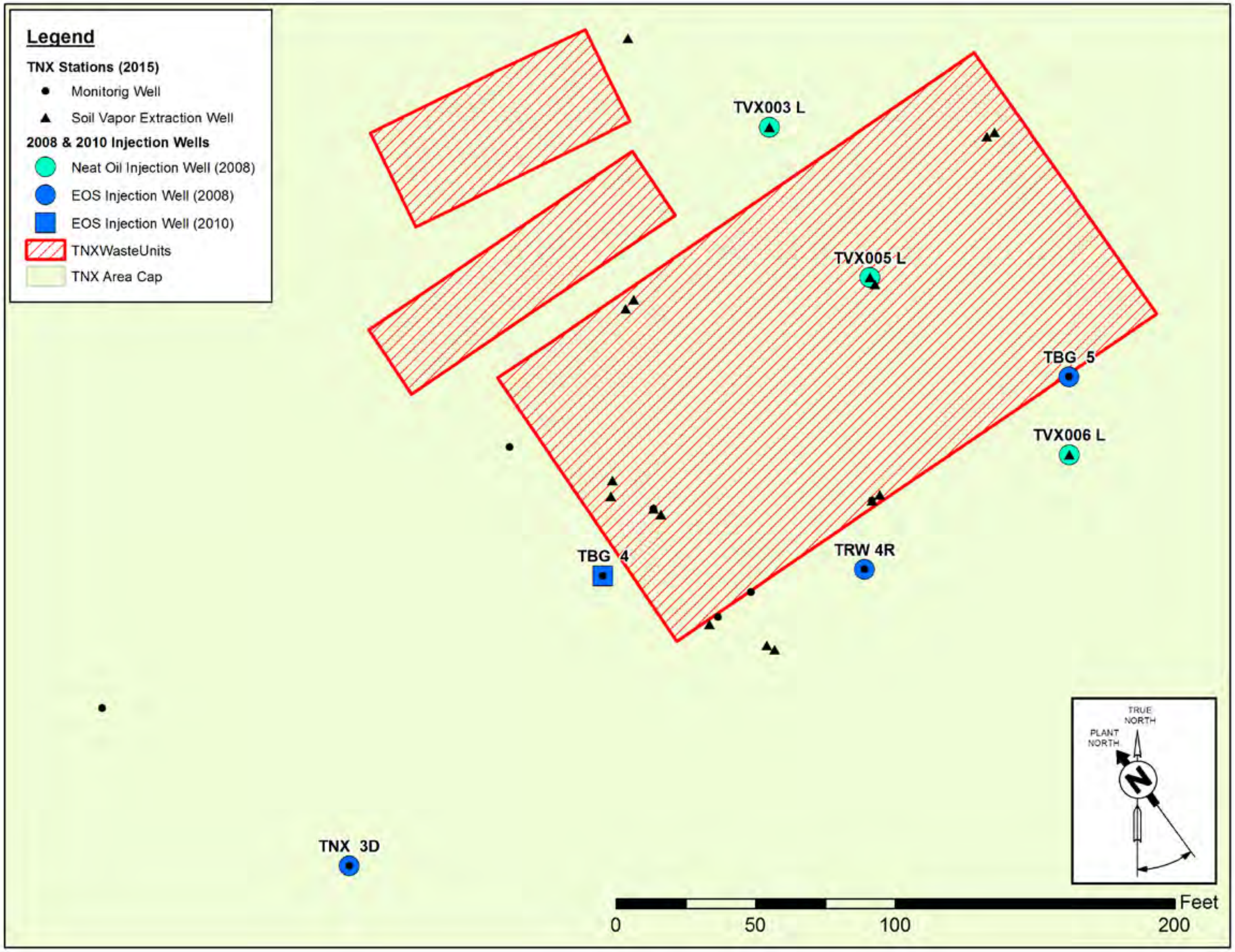

Figure A-10. Location of Edible Oil Injection Wells (2008 and 2010 Injections)

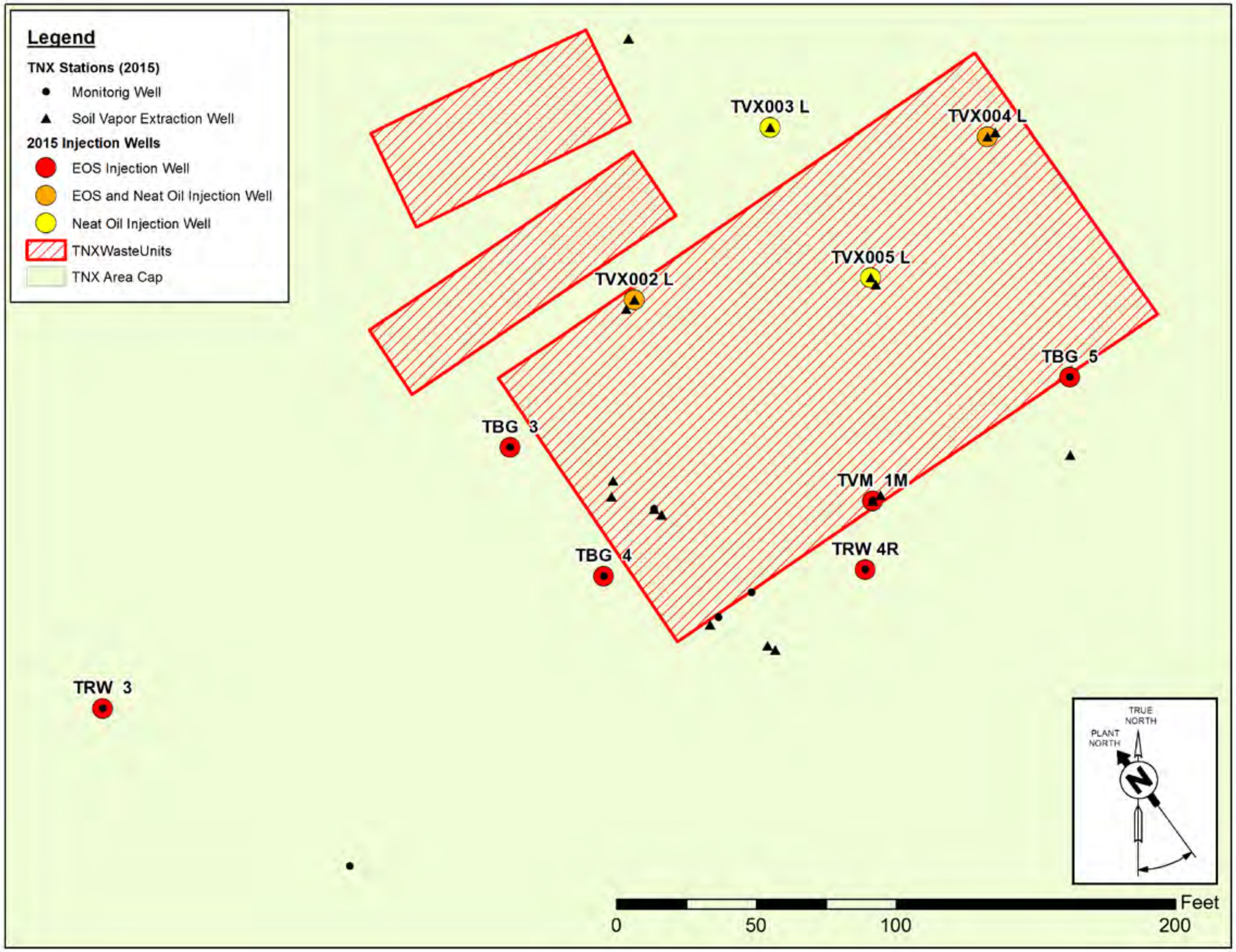

Figure A-11. Location of Edible Oil Injection Wells (2015 Injection)

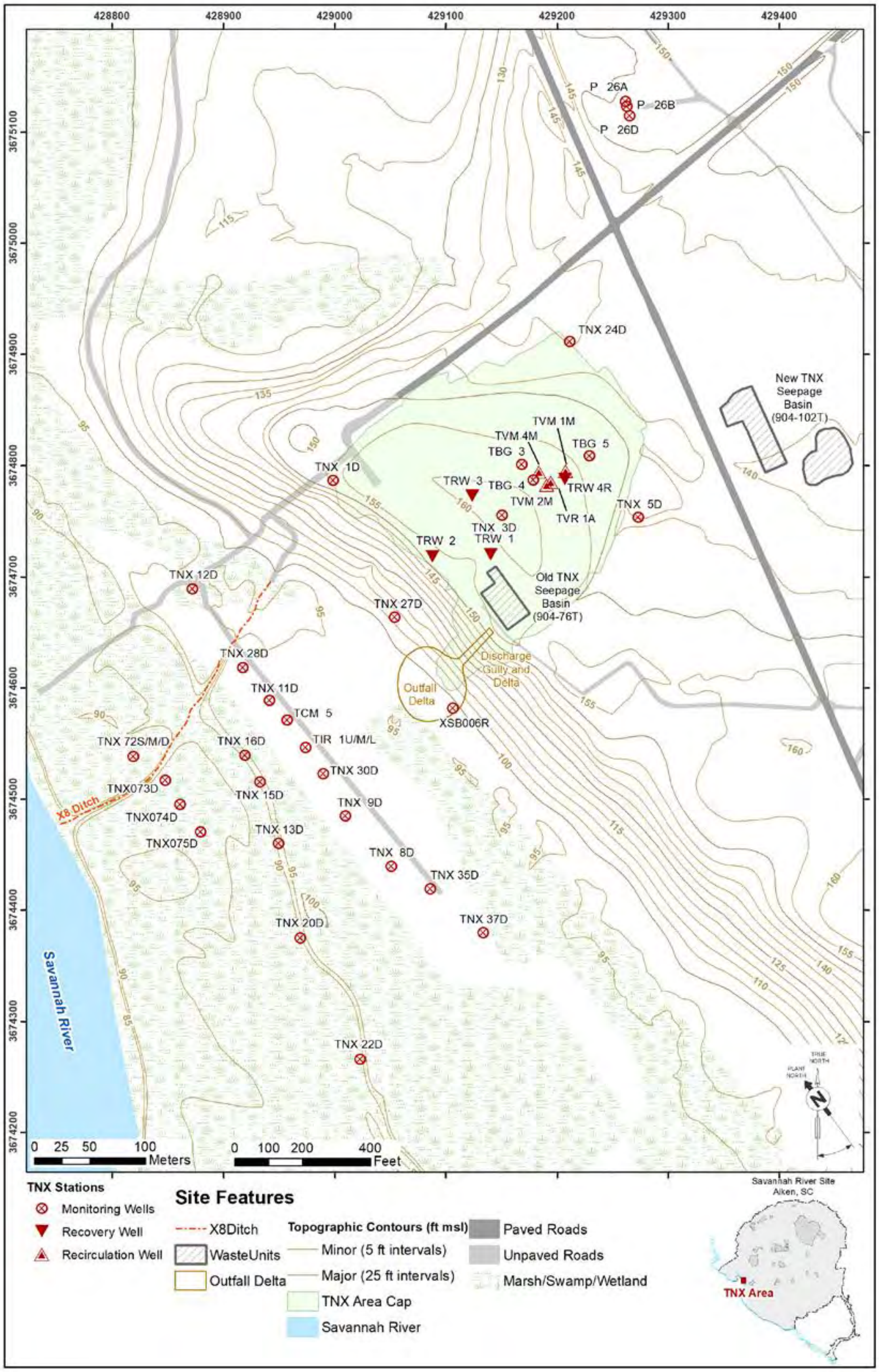

Figure A-12. TNX Area Well Locations

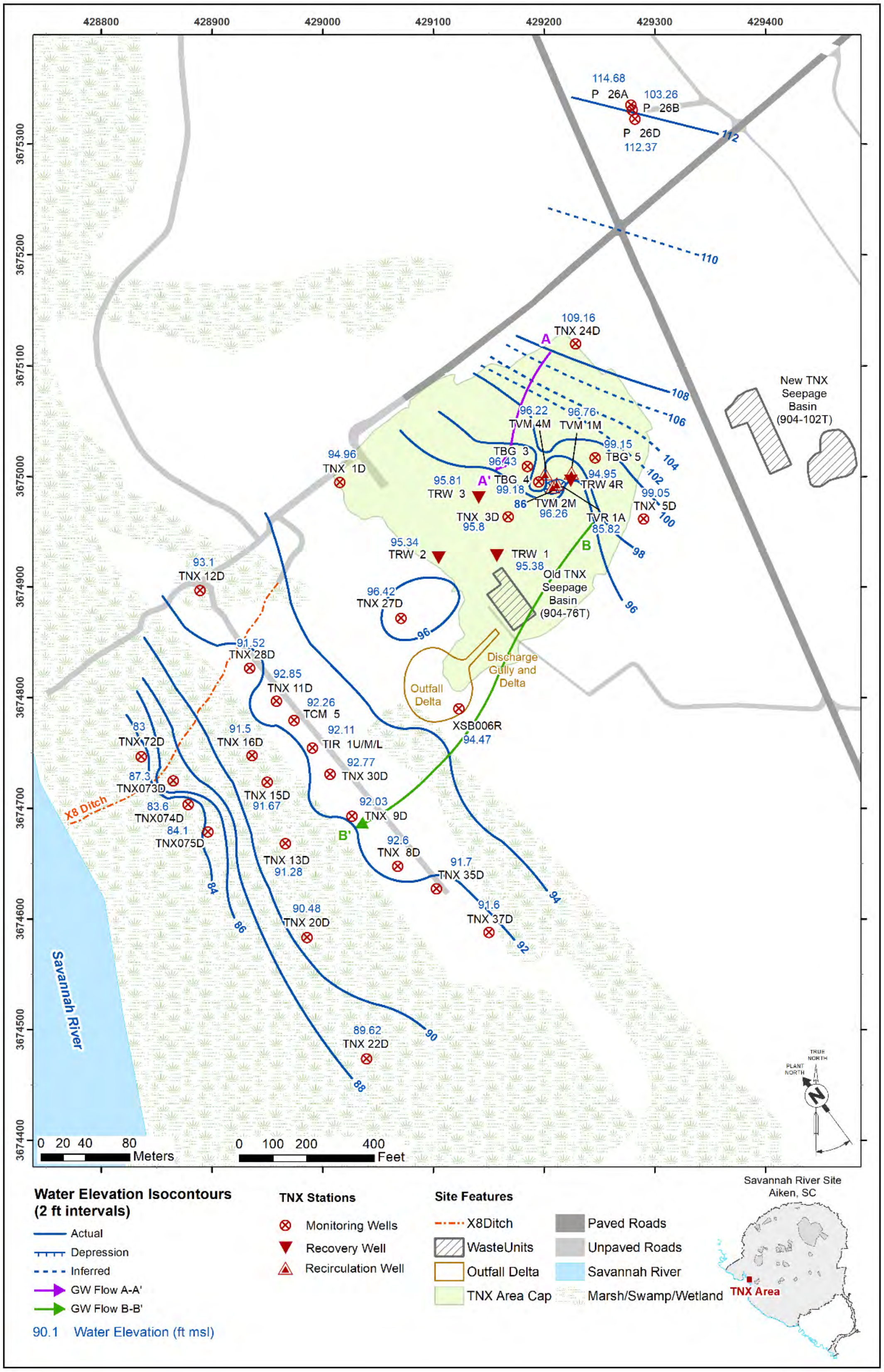

Figure A-13. TNX Area Water Table Elevation 4Q2019

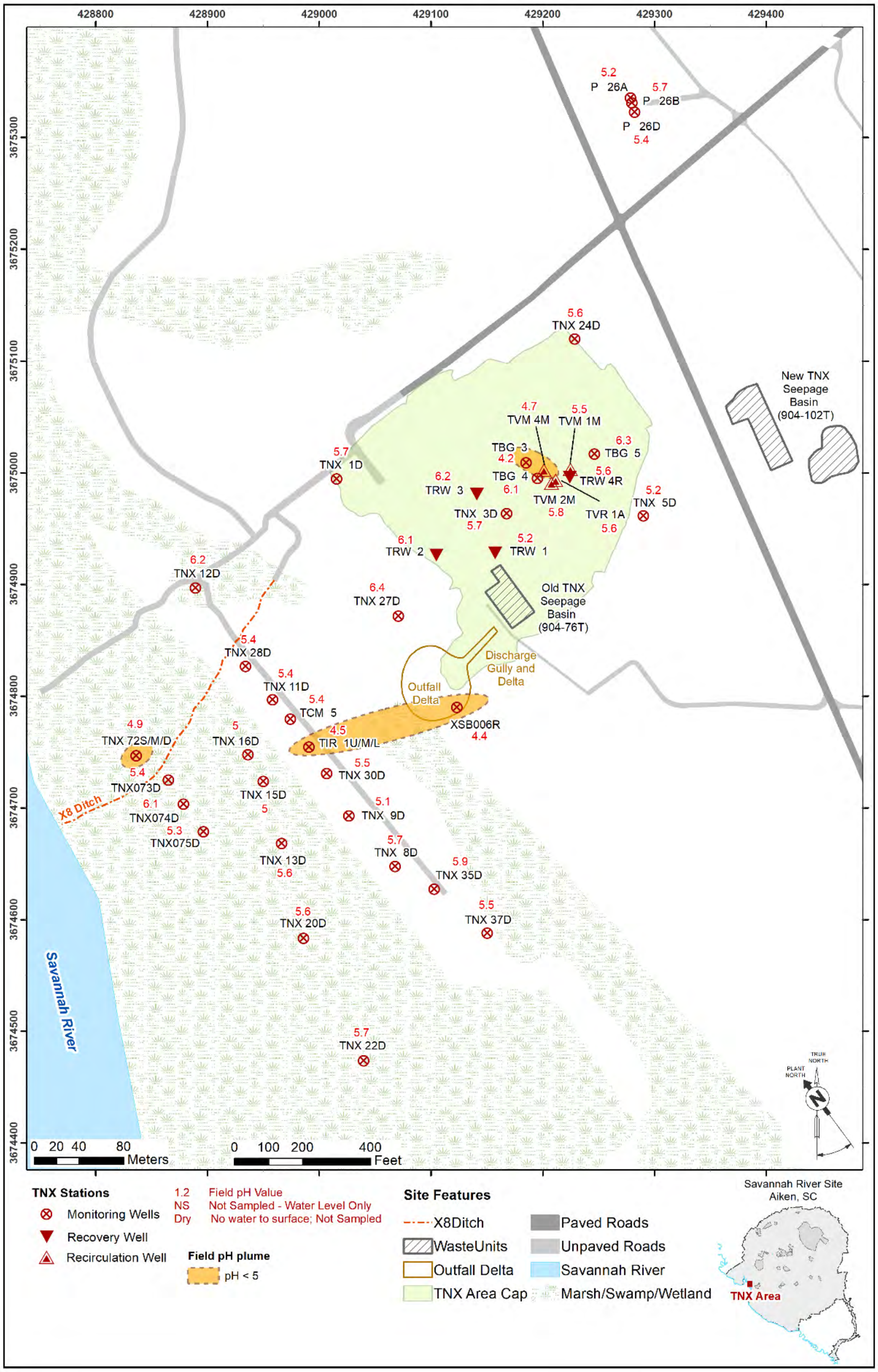

Figure A-14. TNX Area Field pH of Groundwater, 4Q2019

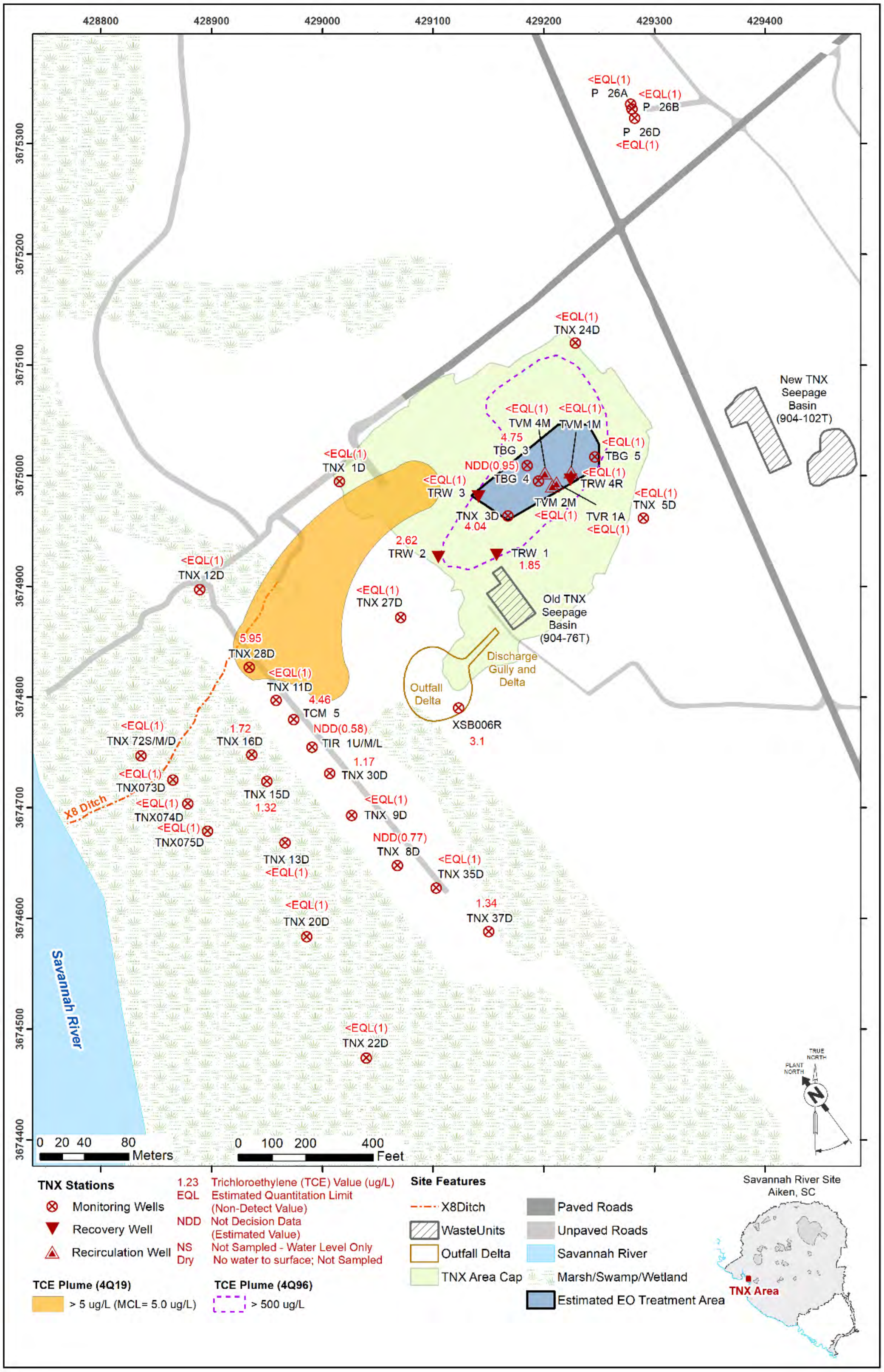

Figure A-15. TNX Area Trichloroethylene (TCE) Concentration in Groundwater, 4Q2019 with >500 µg/L TCE Plume from 4Q1996 Superimposed

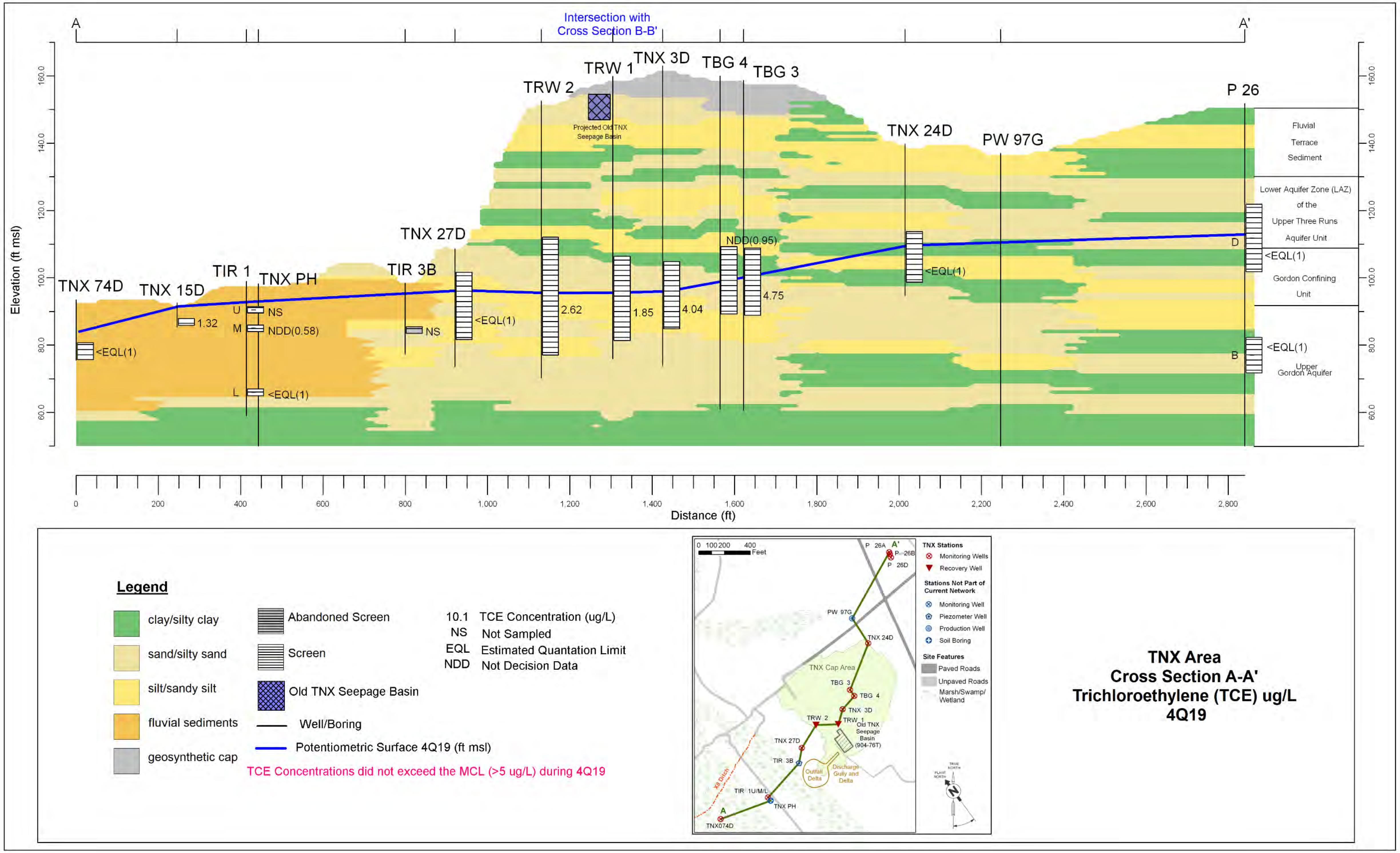

Figure A-16. TNX Area Cross Section A-A' Trichloroethylene (TCE) Concentration in Groundwater, 4Q2019

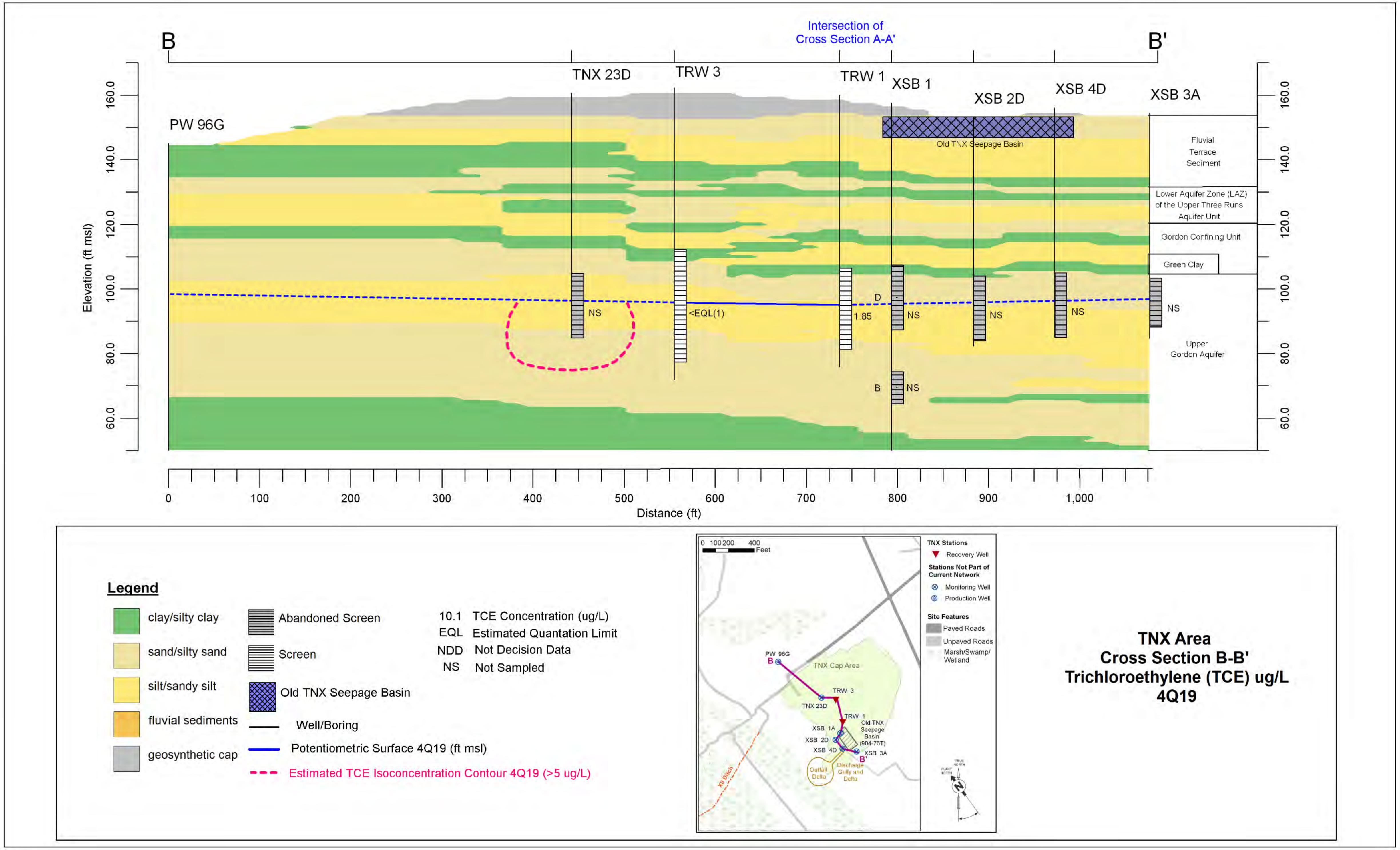

Figure A-17. TNX Area Cross Section B-B' Trichloroethylene (TCE) Concentration in Groundwater, 4Q2019

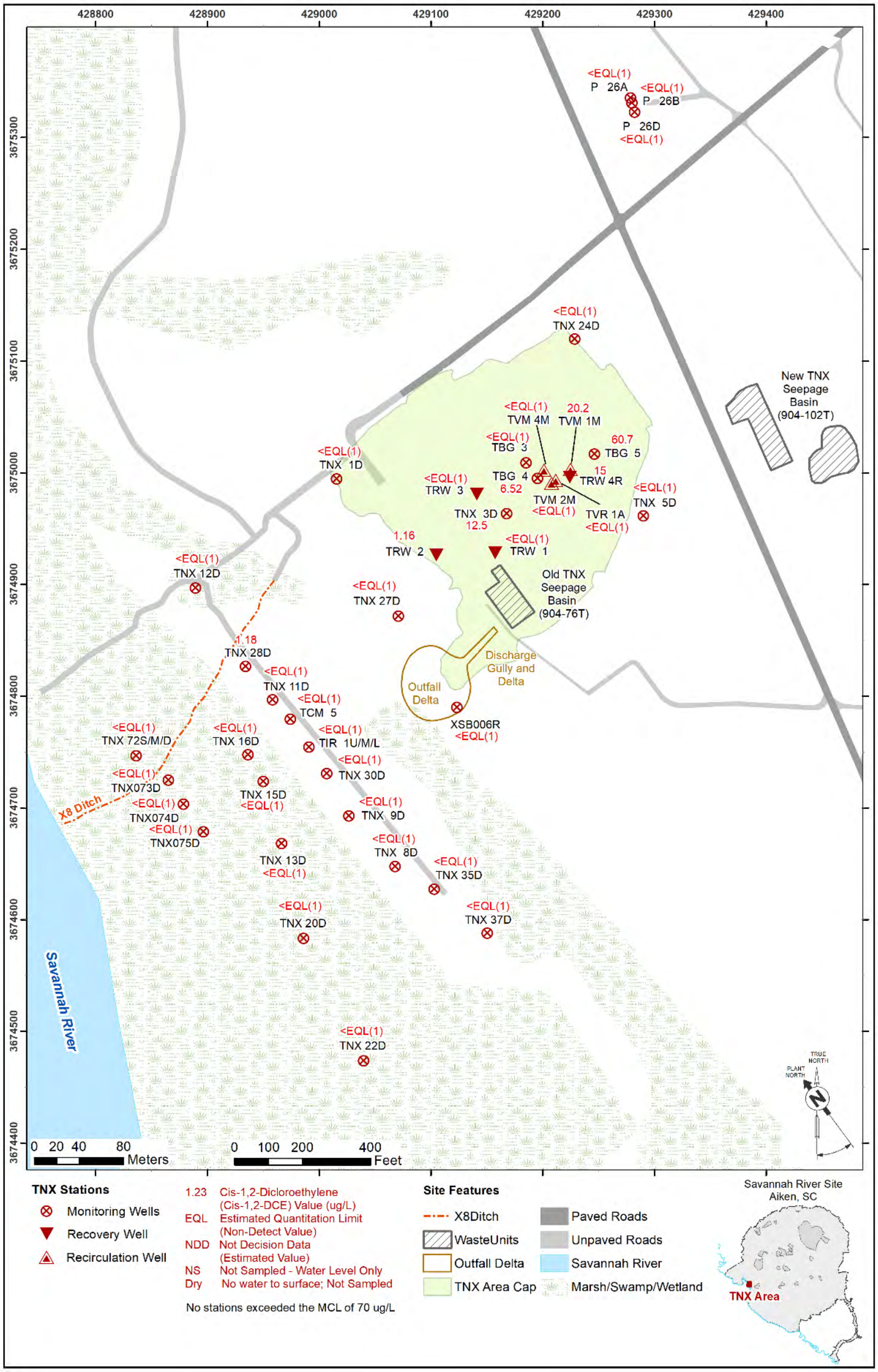

Figure A-18. TNX Area Cis-1,2-Dichloroethylene Concentration in Groundwater, 4Q2019

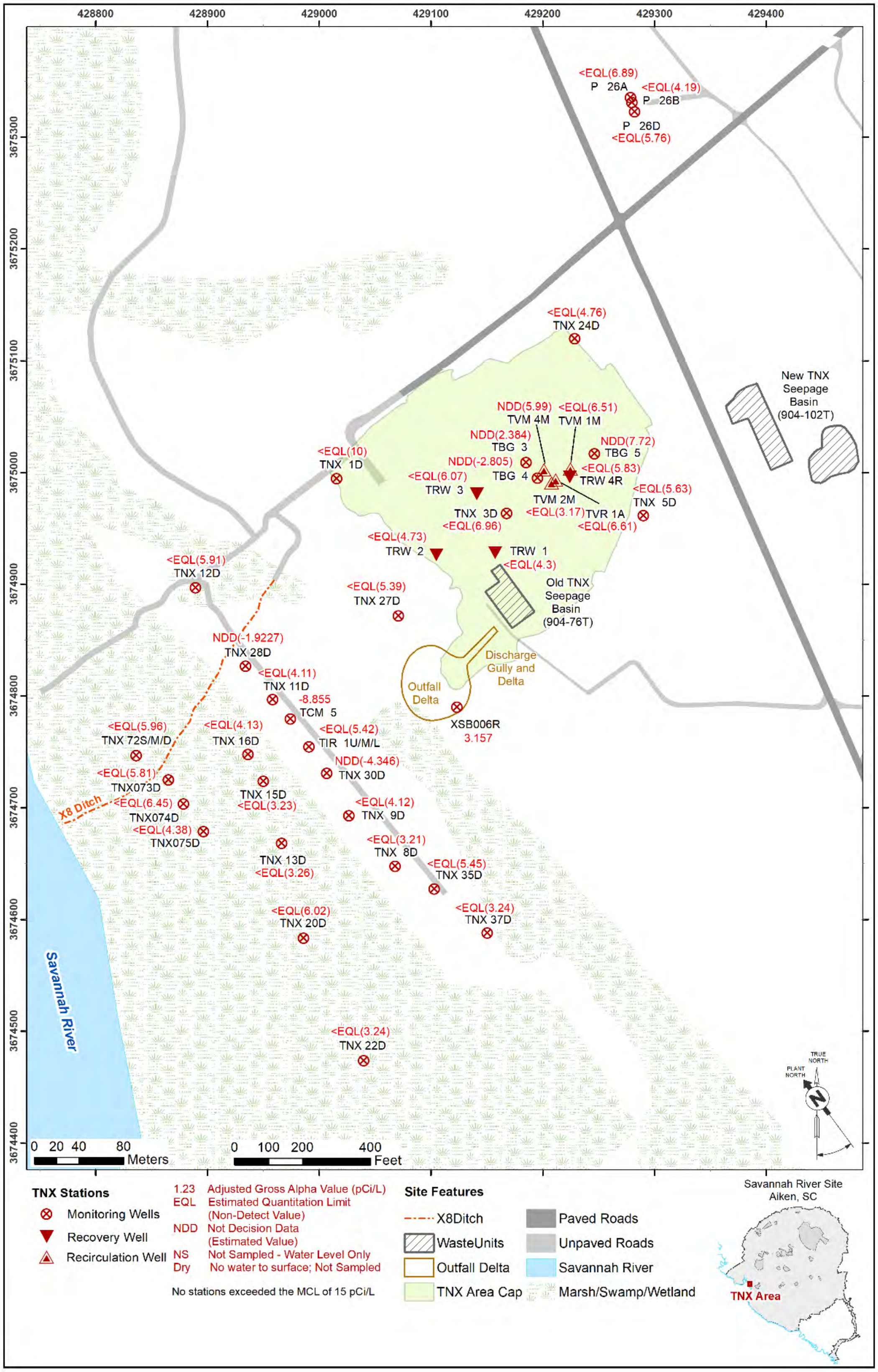

Figure A-19. TNX Area Adjusted Gross Alpha Activity in Groundwater, 4Q2019

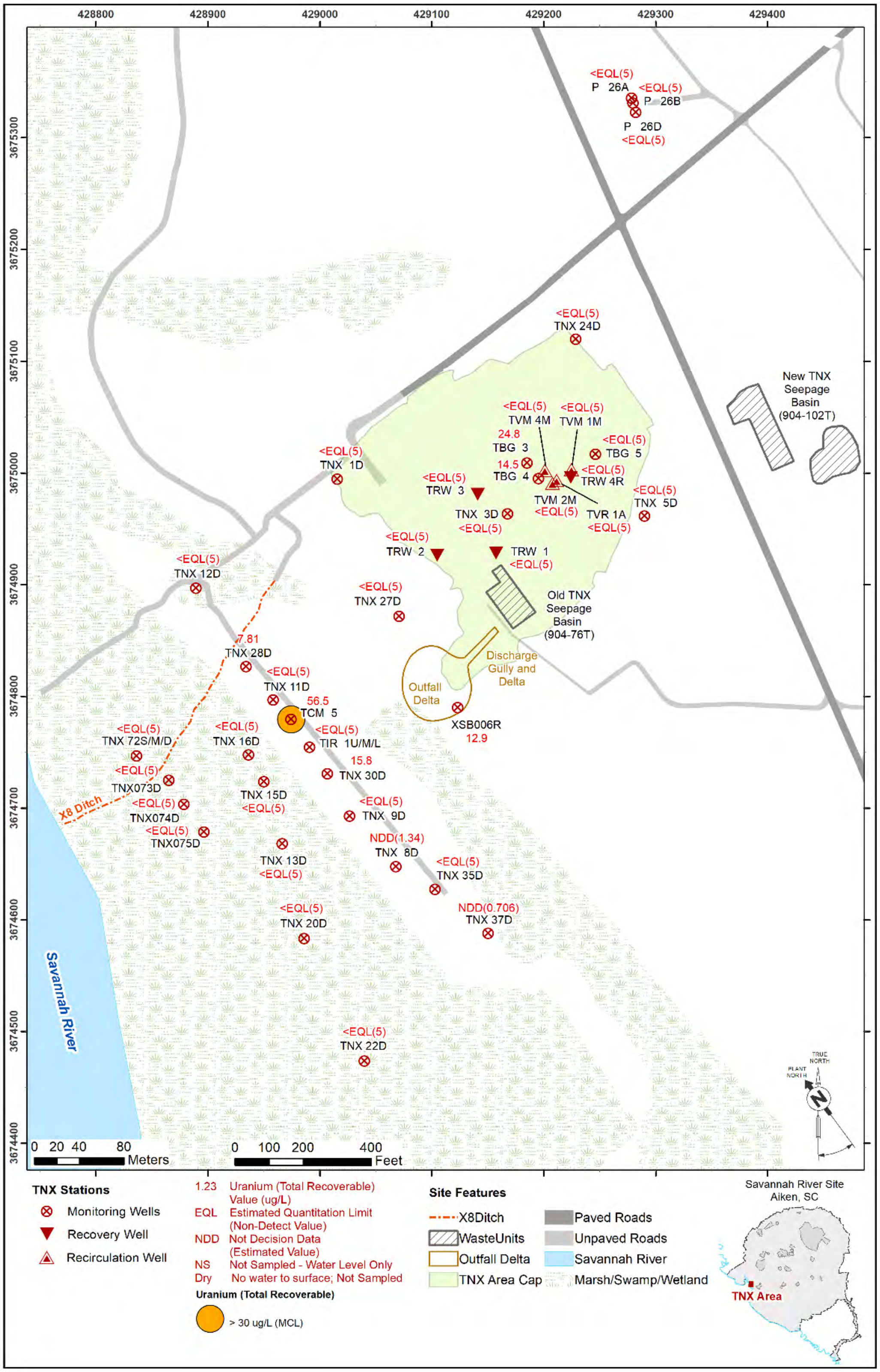

Figure A-20. TNX Area Uranium, Total Recoverable Concentration in Groundwater, 4Q2019

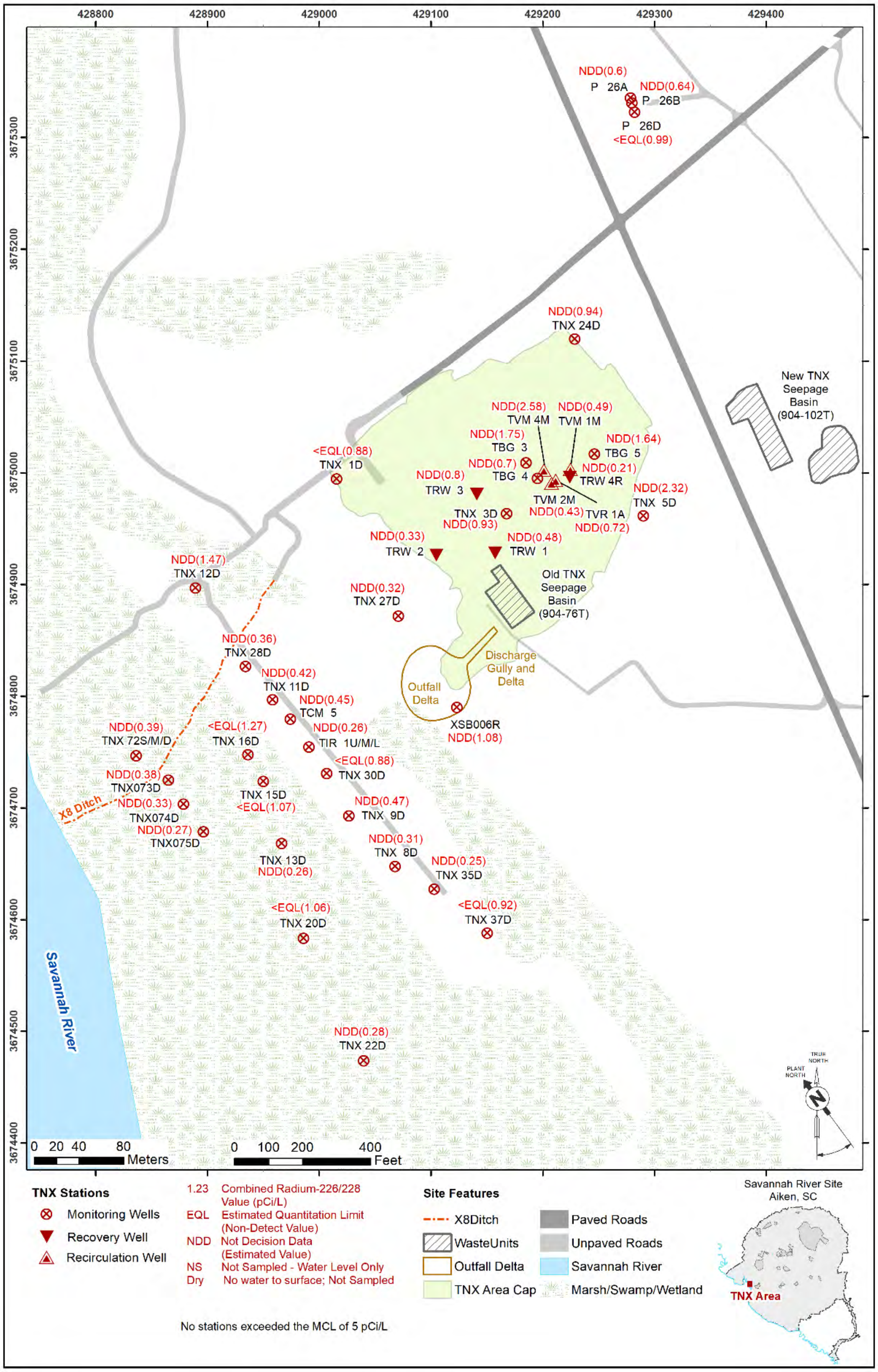

Figure A-21. TNX Area Combined Ra-226/228 Activity in Groundwater, 4Q2019

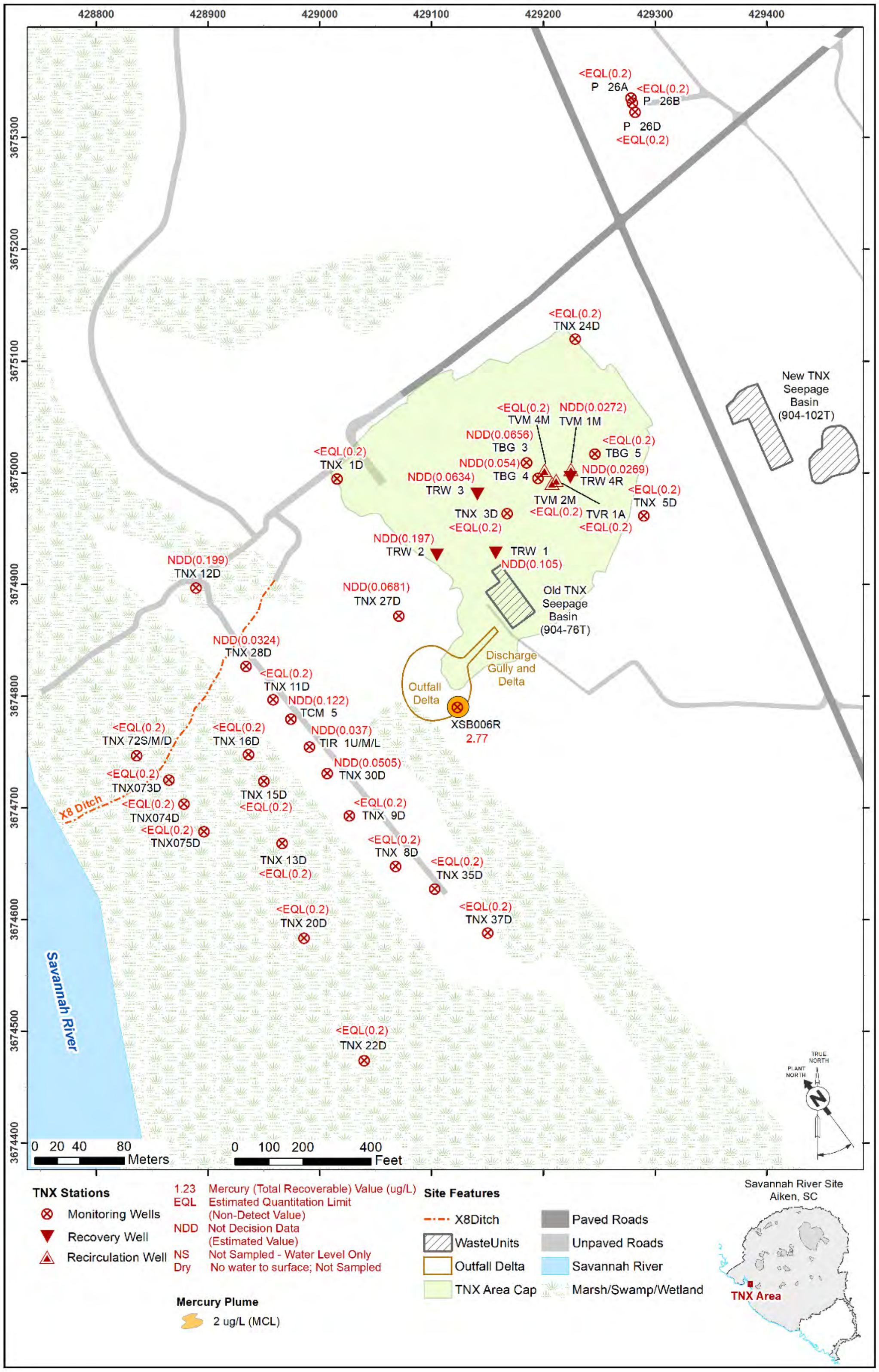

Figure A-22. TNX Area Mercury, Total Recoverable Concentration in Groundwater, 4Q2019

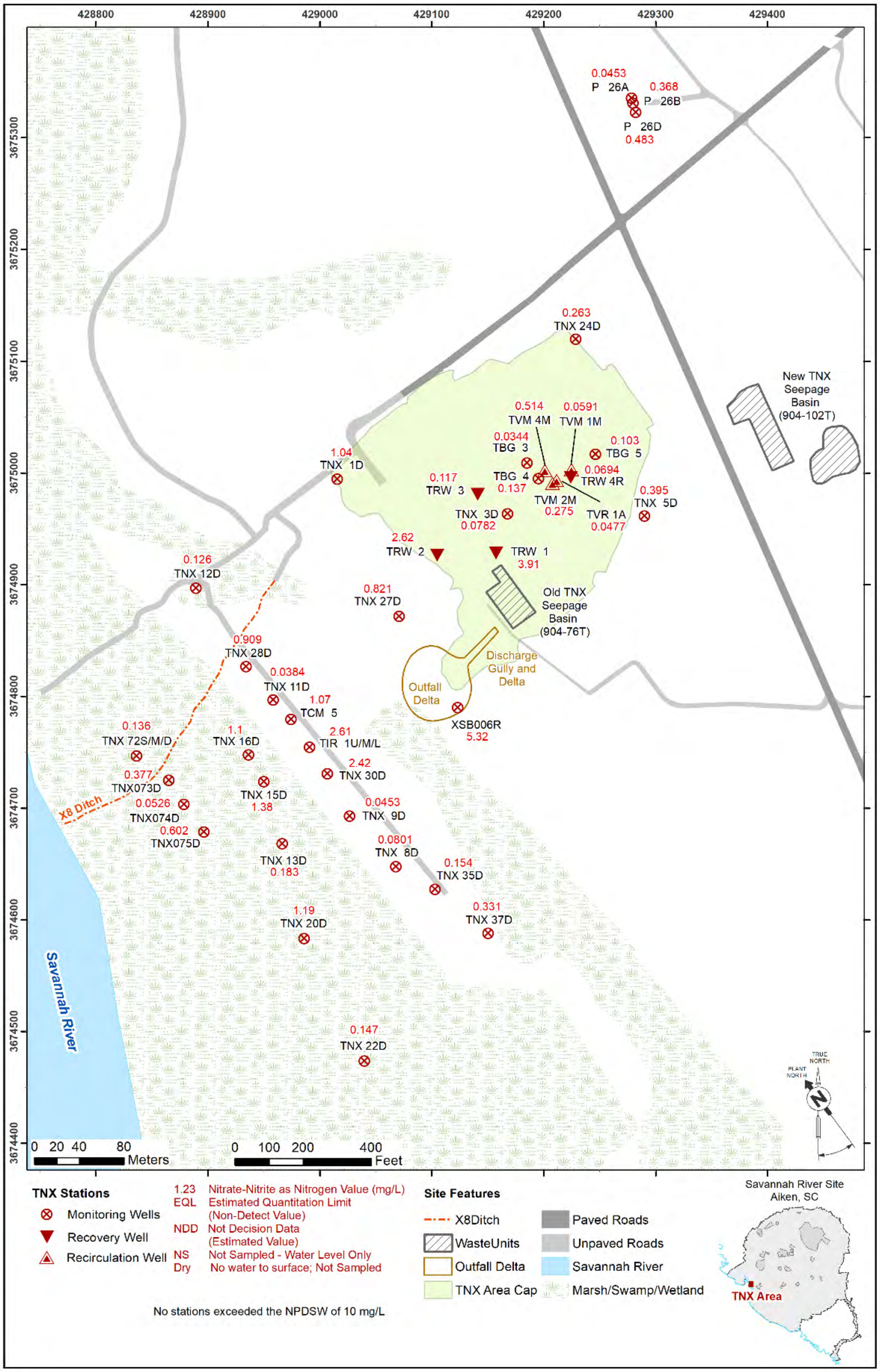

Figure A-23. TNX Area Nitrate-Nitrite as Nitrogen Concentration in Groundwater 4Q2019

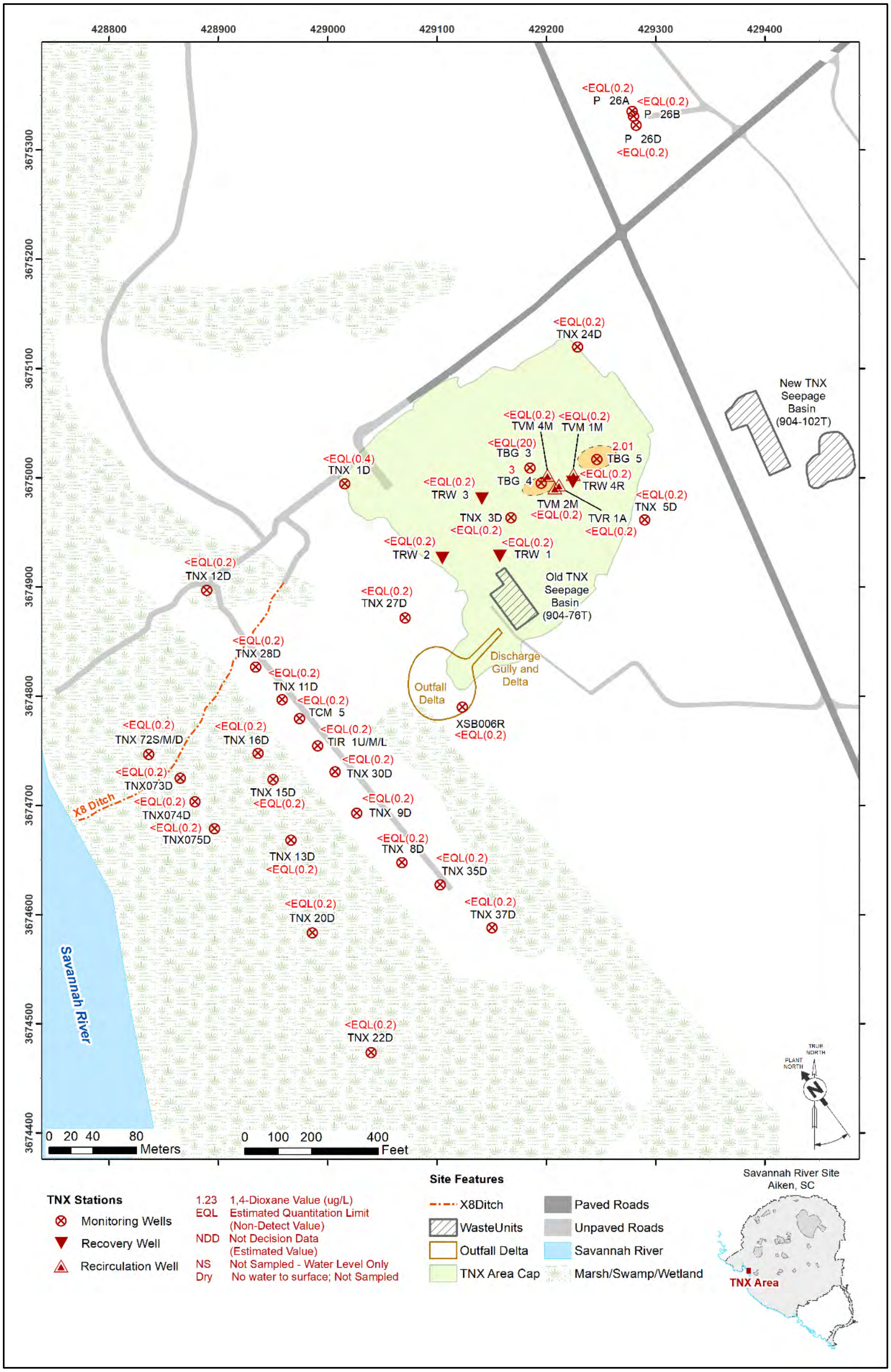

Figure A-24. TNX Area 1,4-Dioxane Concentration in Groundwater, 4Q2019

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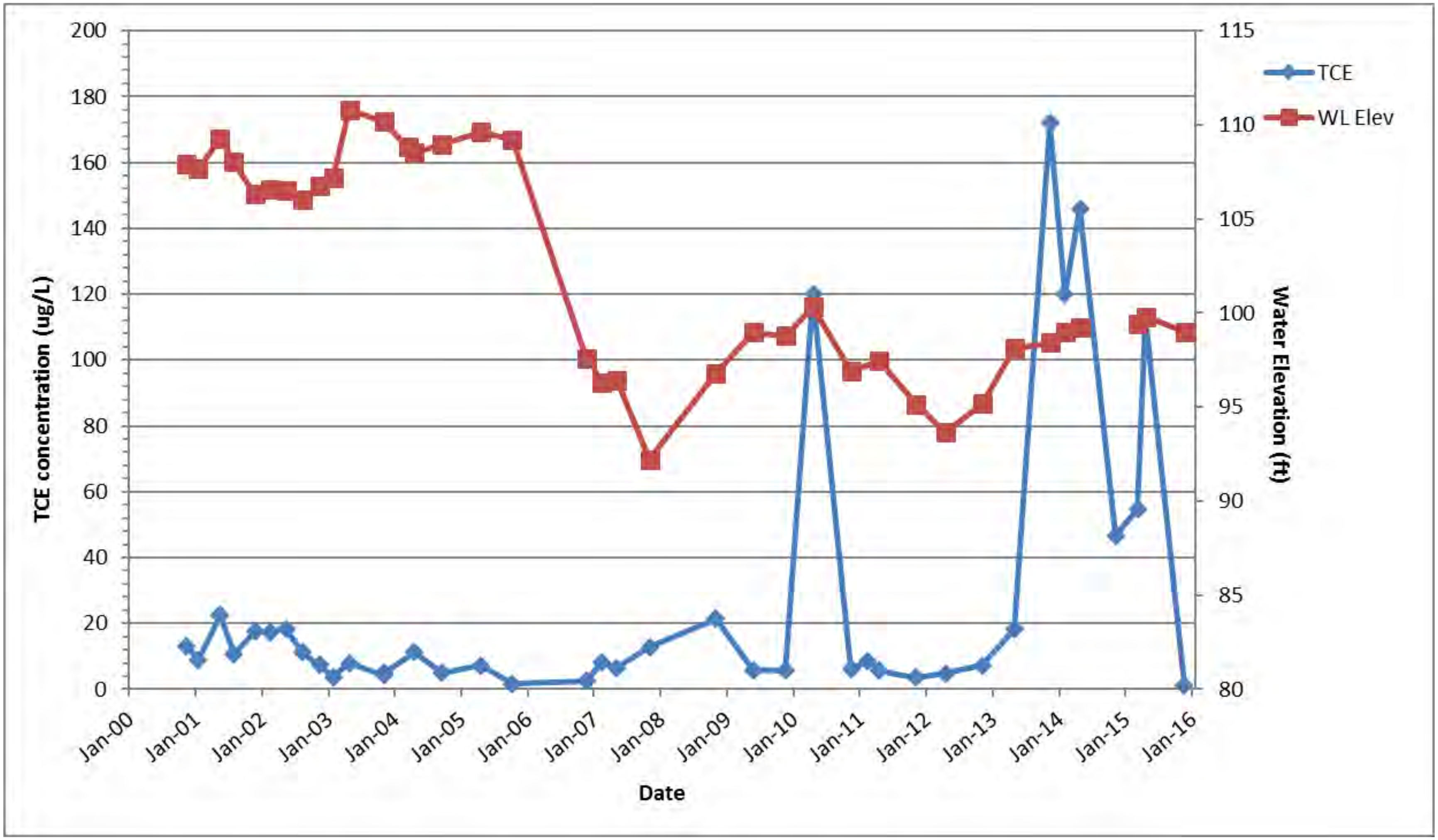

Figure A-25. Comparison of TCE Concentration and Water Elevation at TBG 3

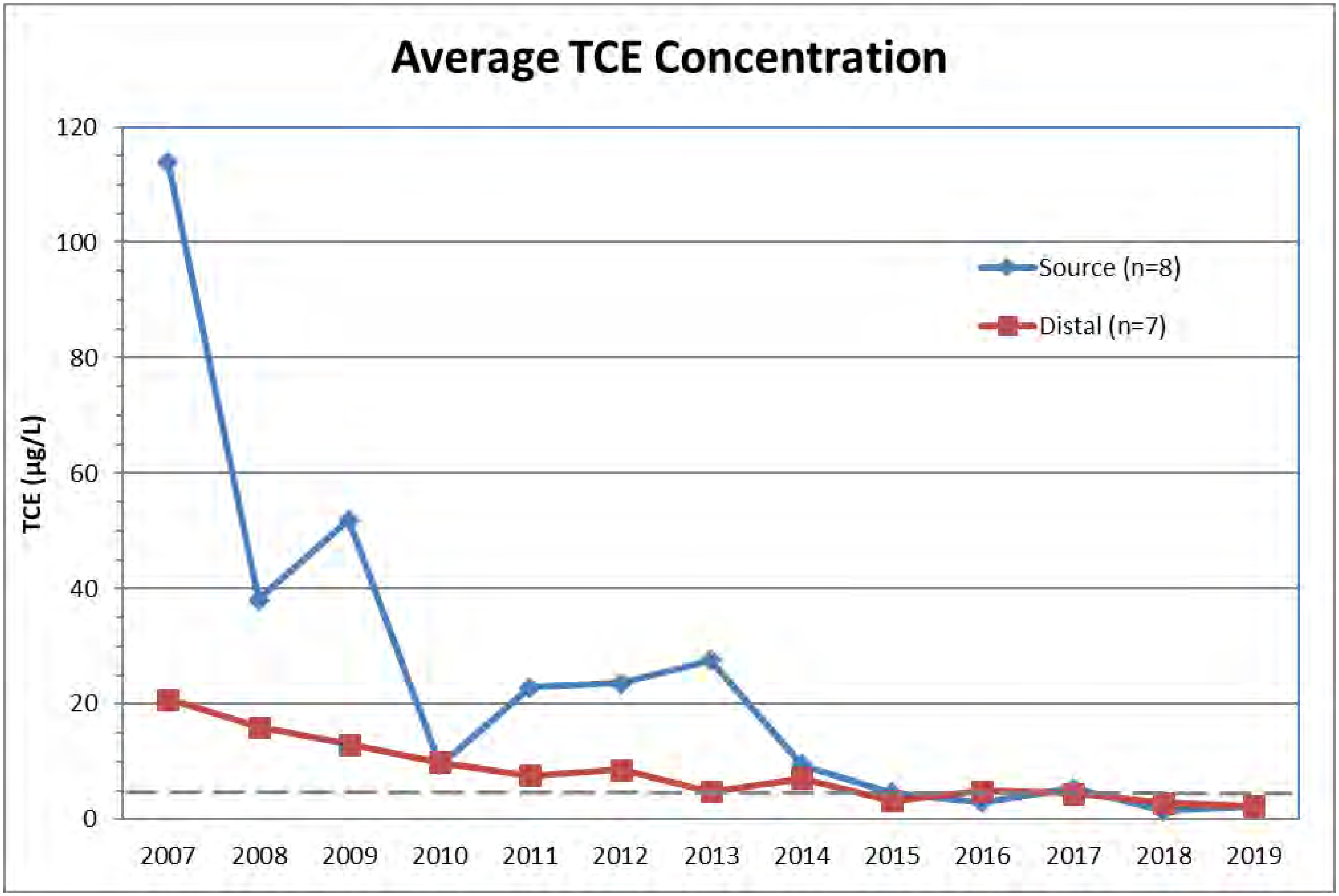

Figure A-27. Average TCE Concentrations of Monitoring Wells in the Treatment Zone and the Distal Plume

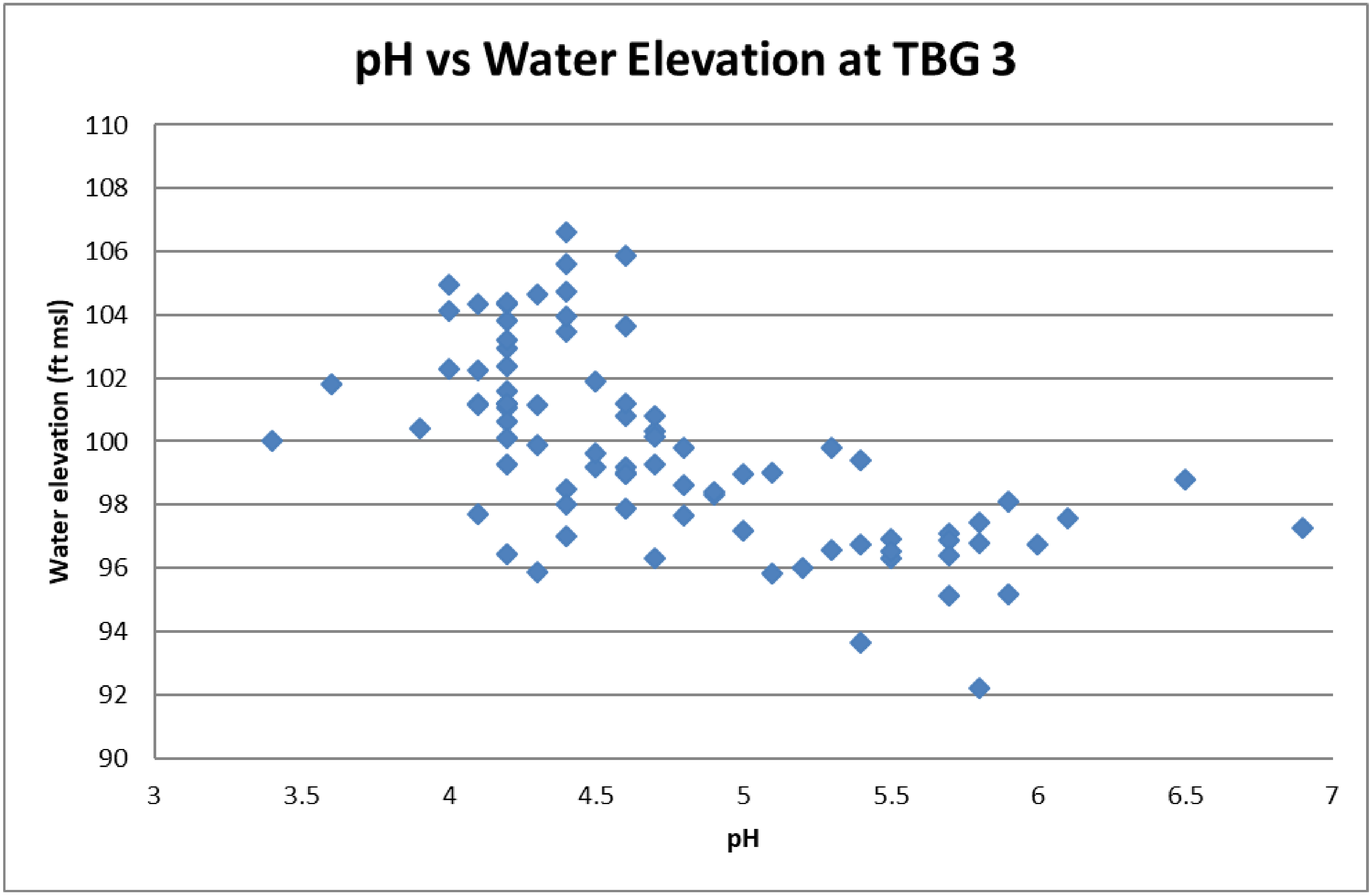

Figure A-28. Graphical Relationship of pH and Water Elevation at TBG 3

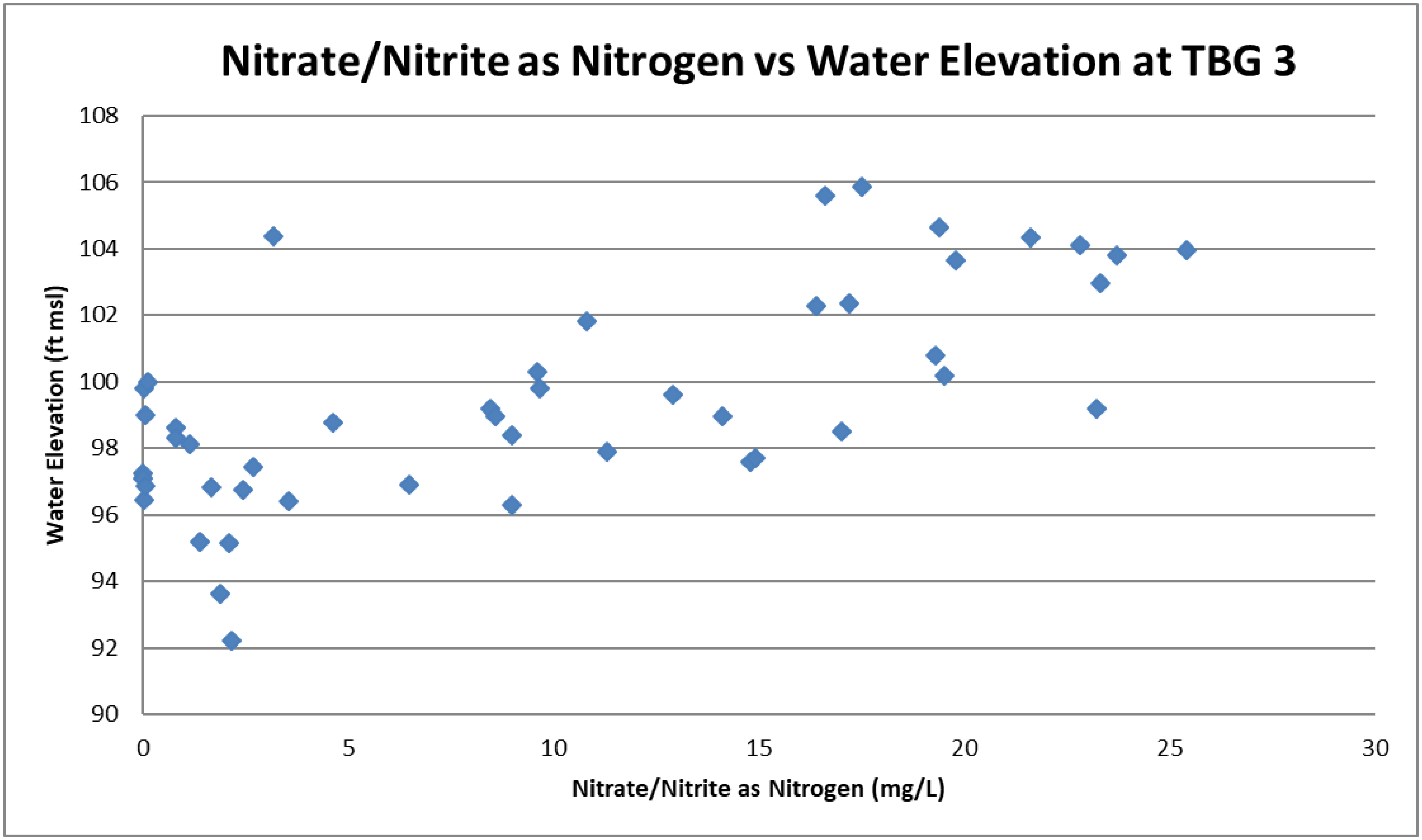

Figure A-29. Graphical Relationship of Nitrate/Nitrite as Nitrogen Concentration and Water Elevation at TBG 3

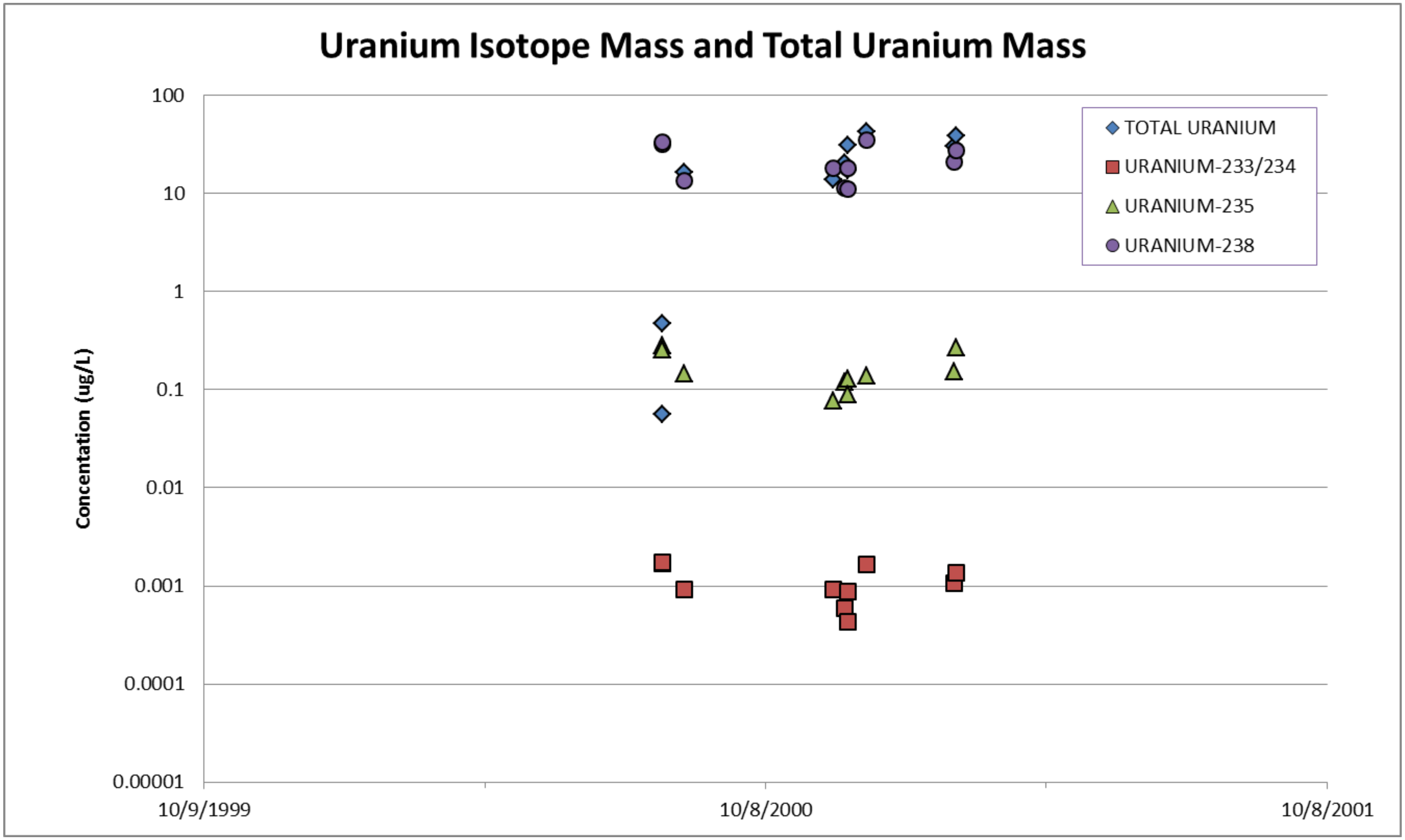

Figure A-30. Uranium Isotope Mass compared to Total Uranium Mass

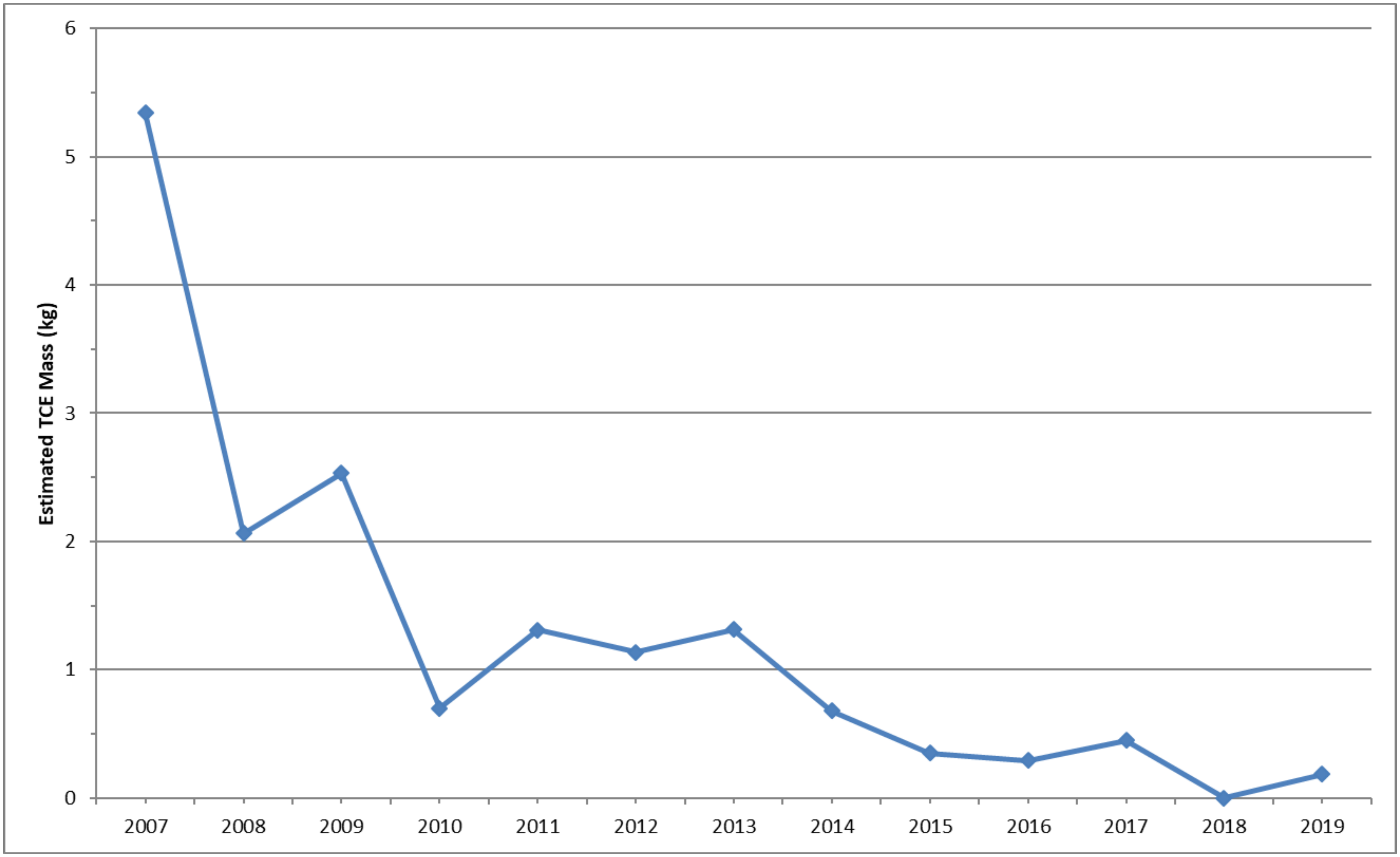

Figure A-31. Estimate of TCE Mass Reduction since Edible Oil Injections

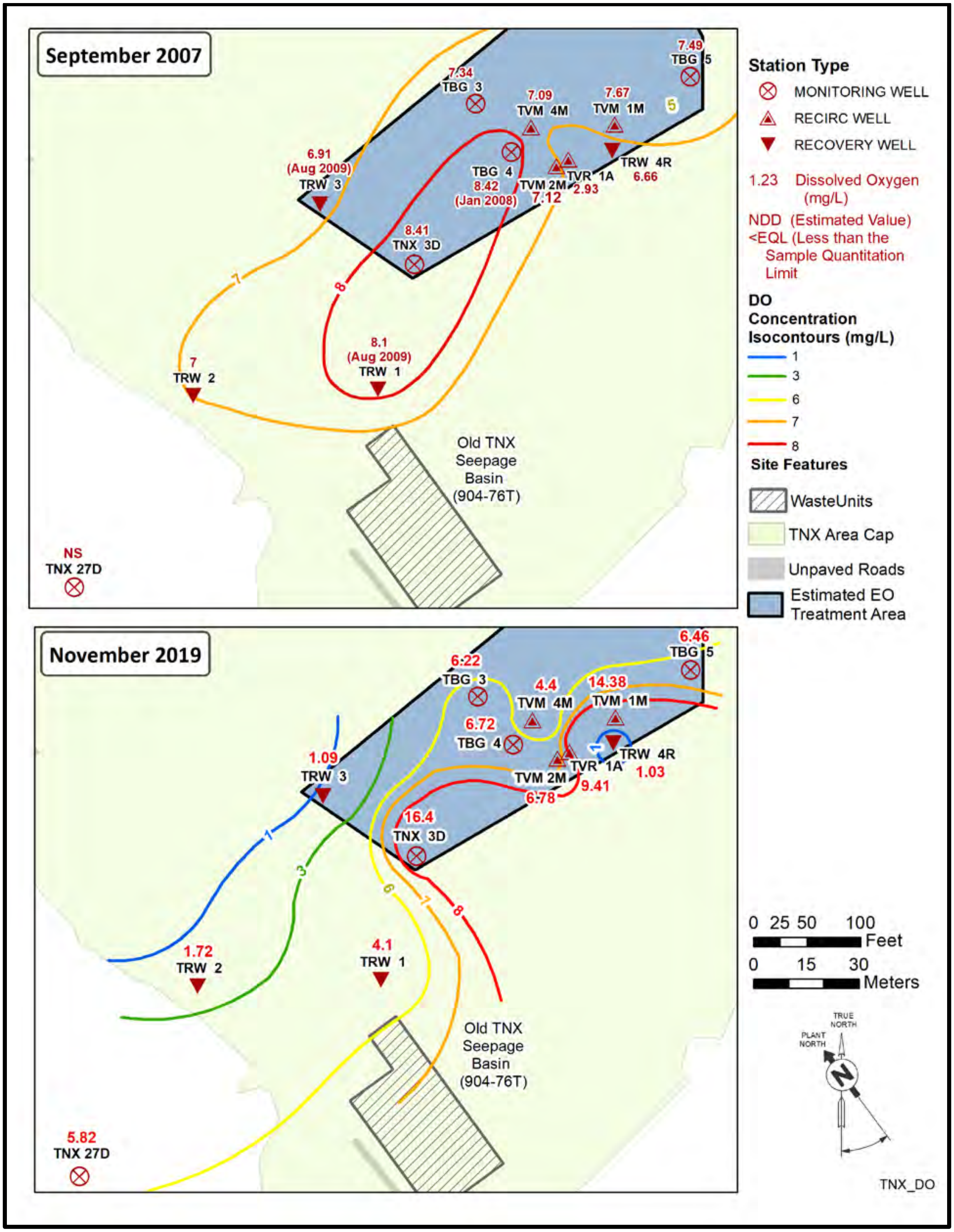

Figure A-32. Comparison of Dissolved Oxygen Concentration in the Treatment Zone in 2007 and 2019

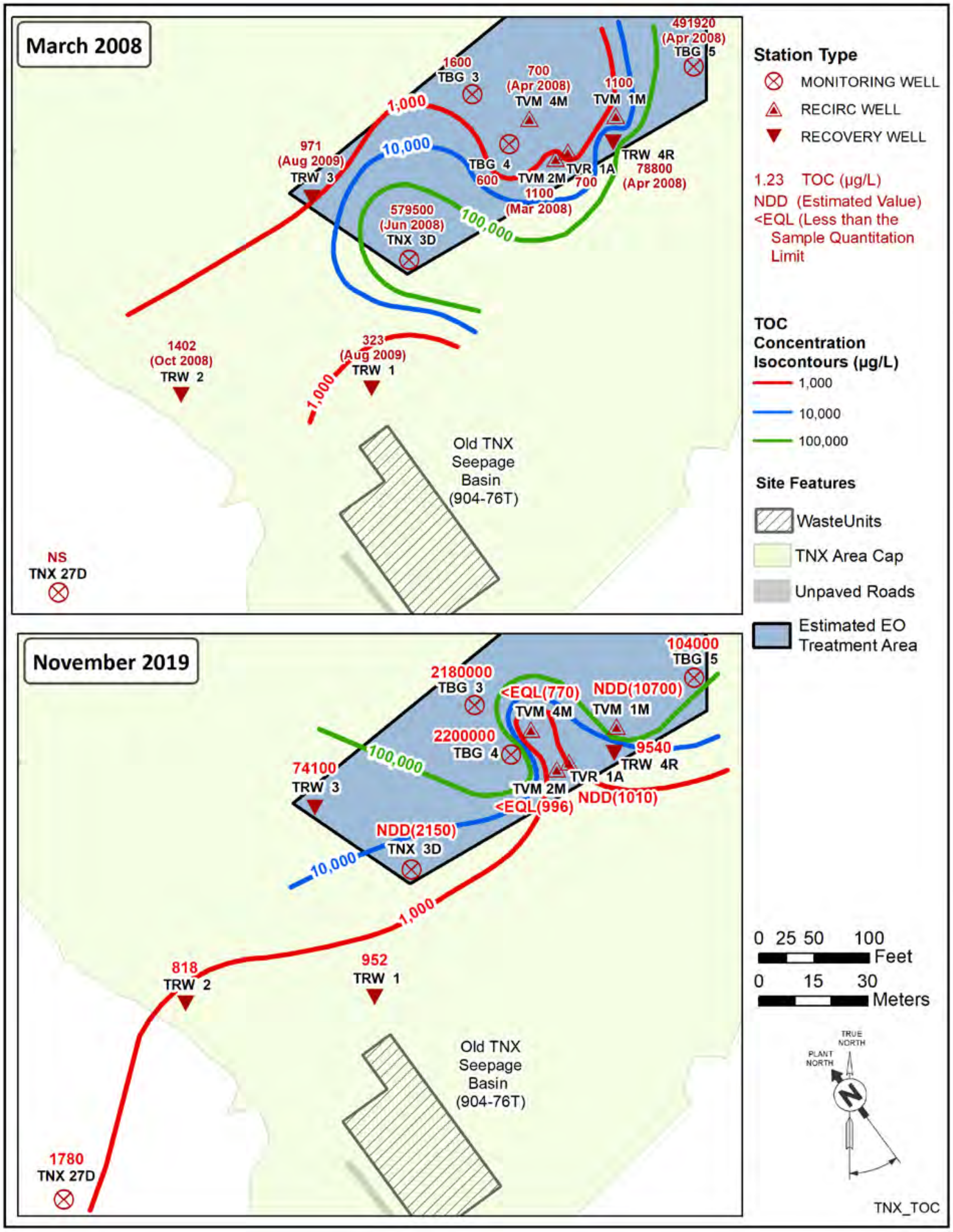

Figure A-33. Comparison of Total Organic Carbon Concentration in the Treatment Zone in 2008 and 2019

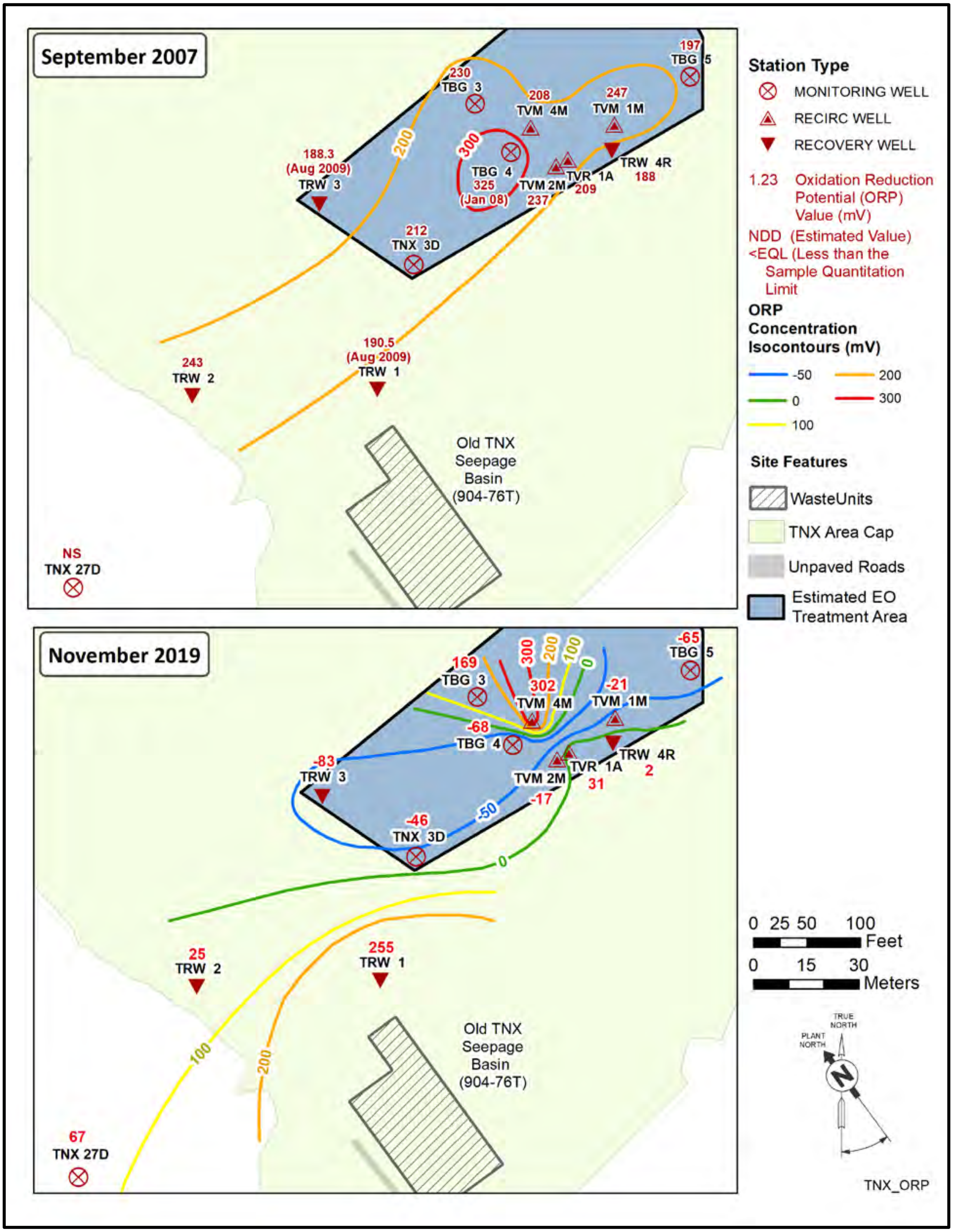

Figure A-34. Comparison of Oxidation Reduction Potential Concentration in the Treatment Zone in 2007 and 2019

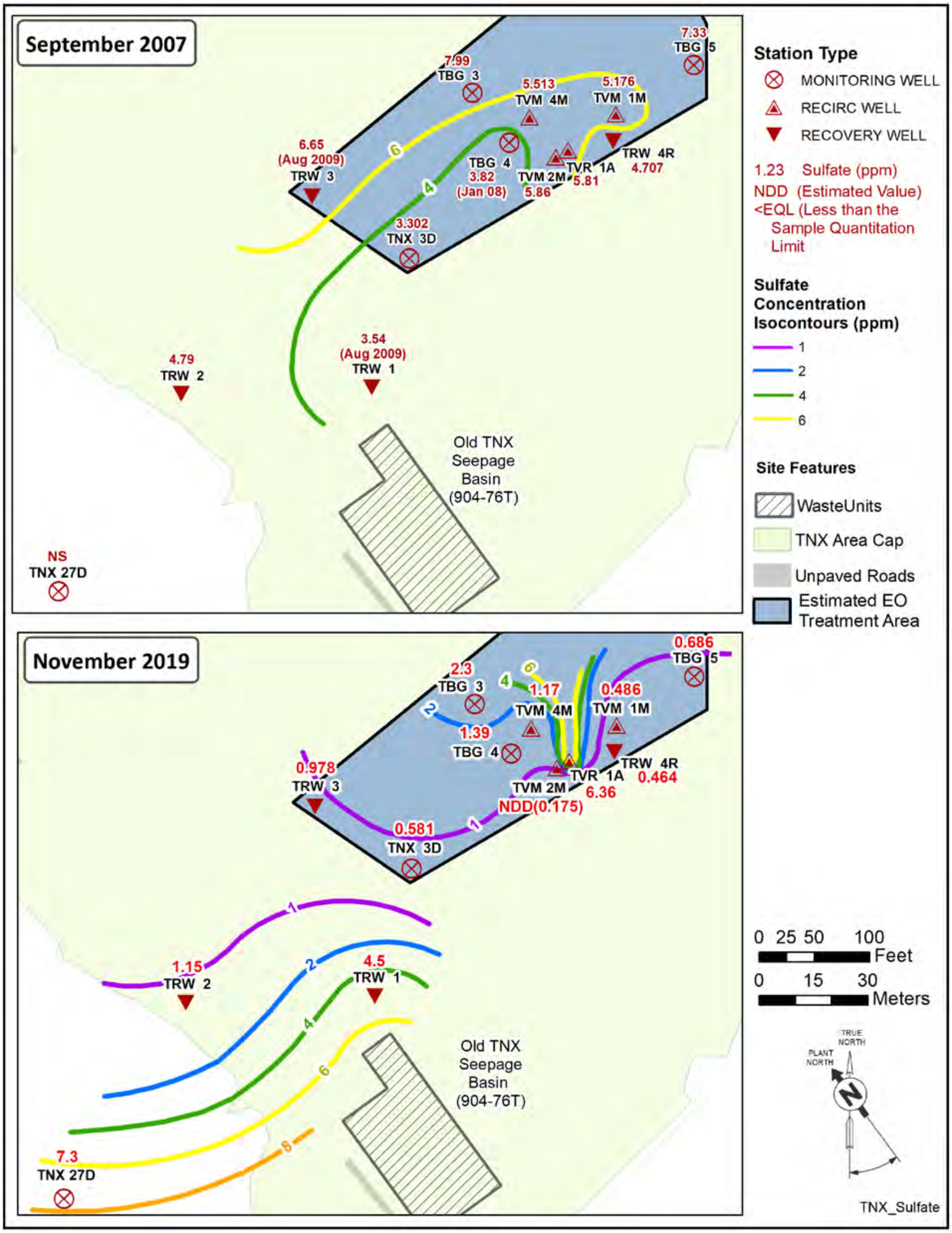

Figure A-35. Comparison of Sulfate Concentration in the Treatment Zone in 2007 and 2019

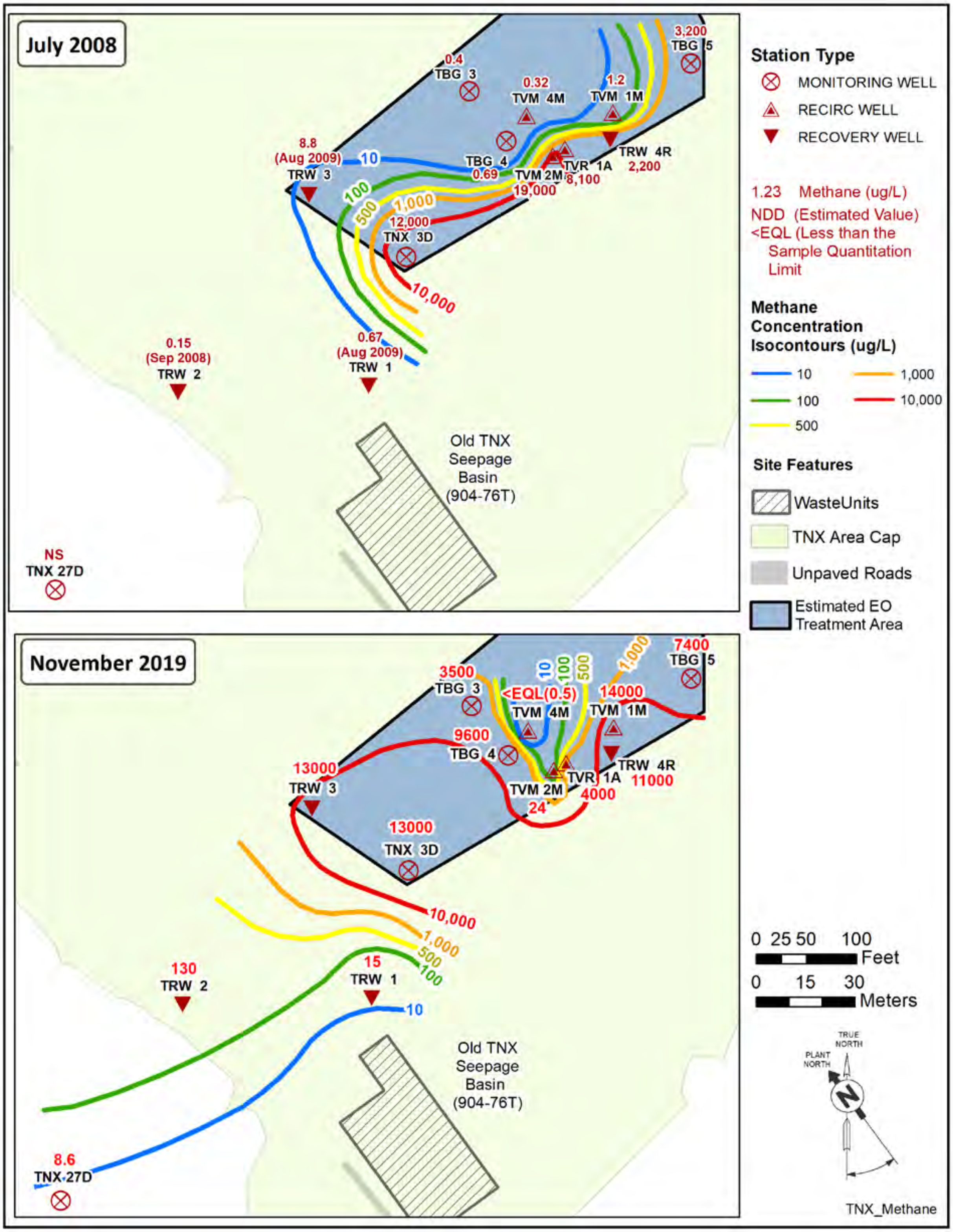

Figure A-36. Comparison of Methane Concentration in the Treatment Zone in 2008 and 2019

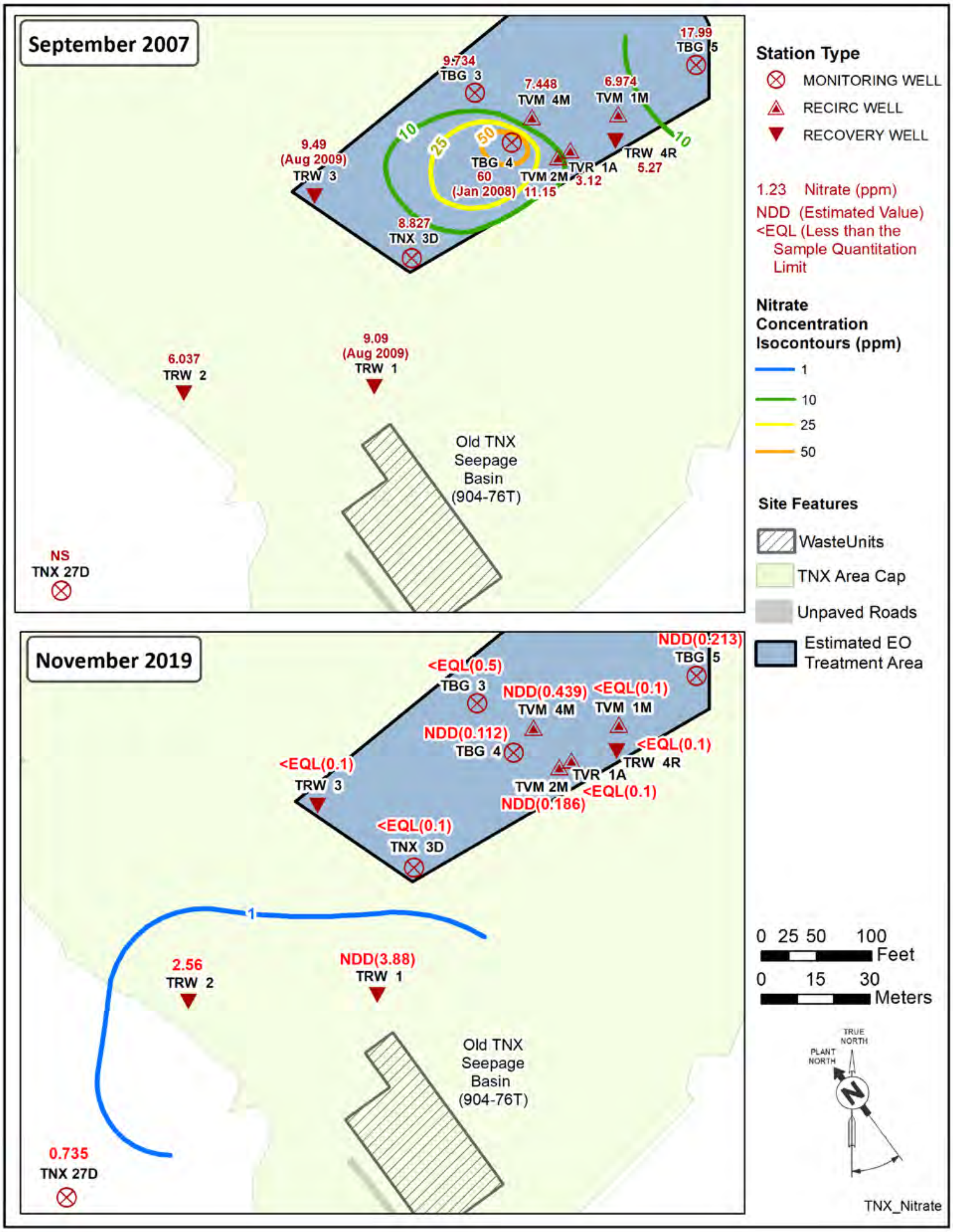

Figure A-37. Comparison of Nitrate Concentration in the Treatment Zone in 2007 and 2019

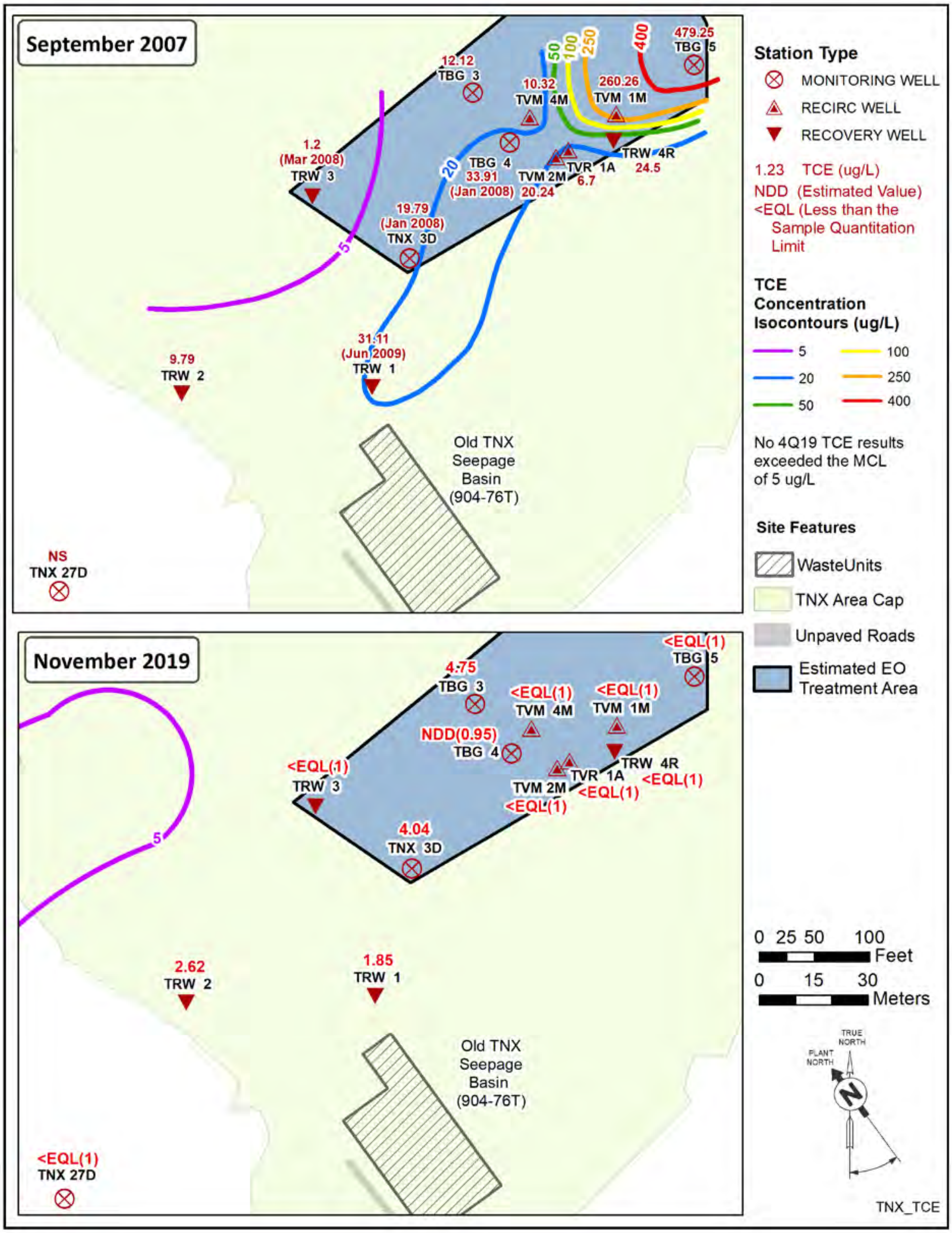

Figure A-38. Comparison of Trichloroethylene Concentration in the Treatment Zone in 2007 and 2019

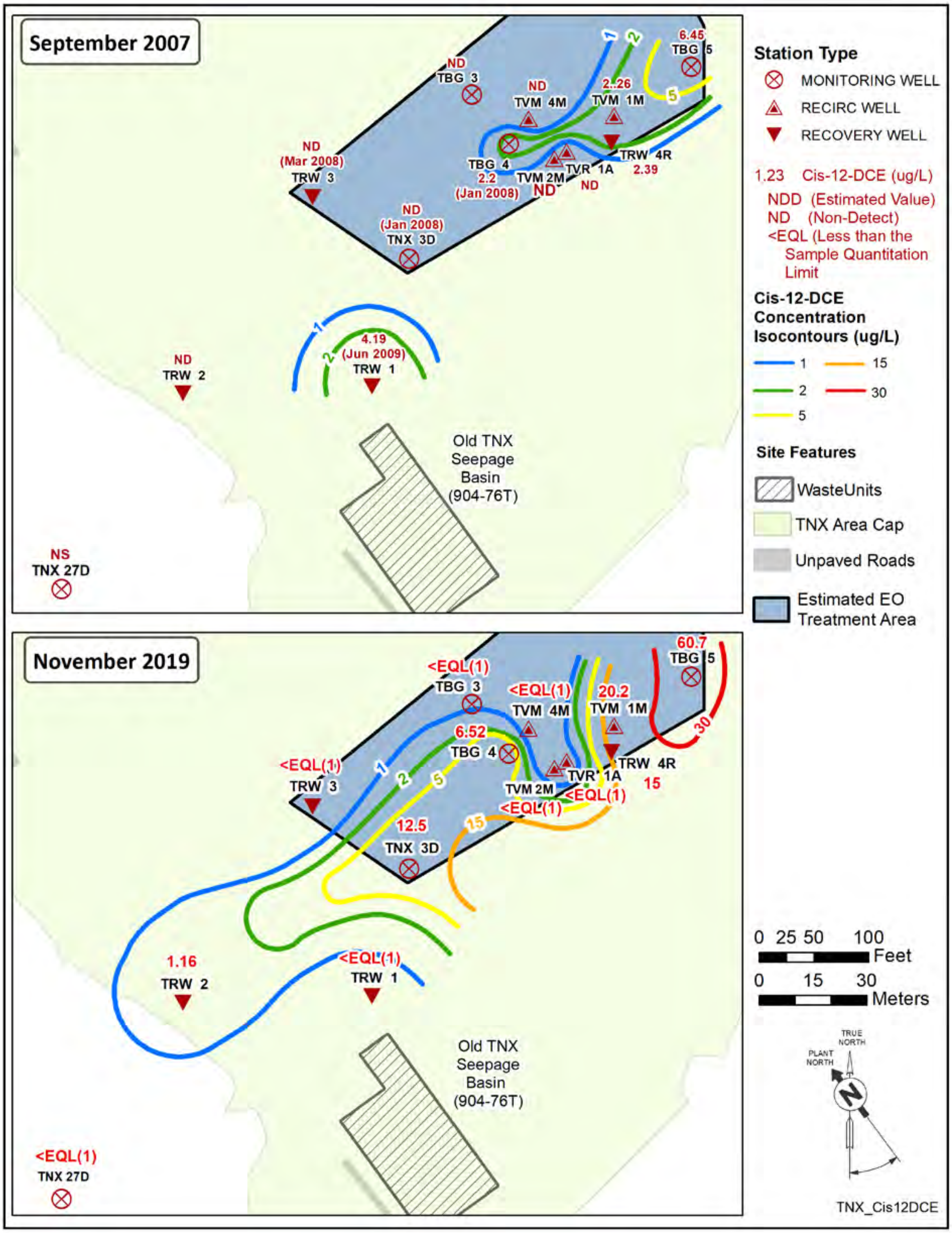

Figure A-39. Comparison of Cis-1,2-Dichloroethylene Concentration in the Treatment Zone in 2007 and 2019

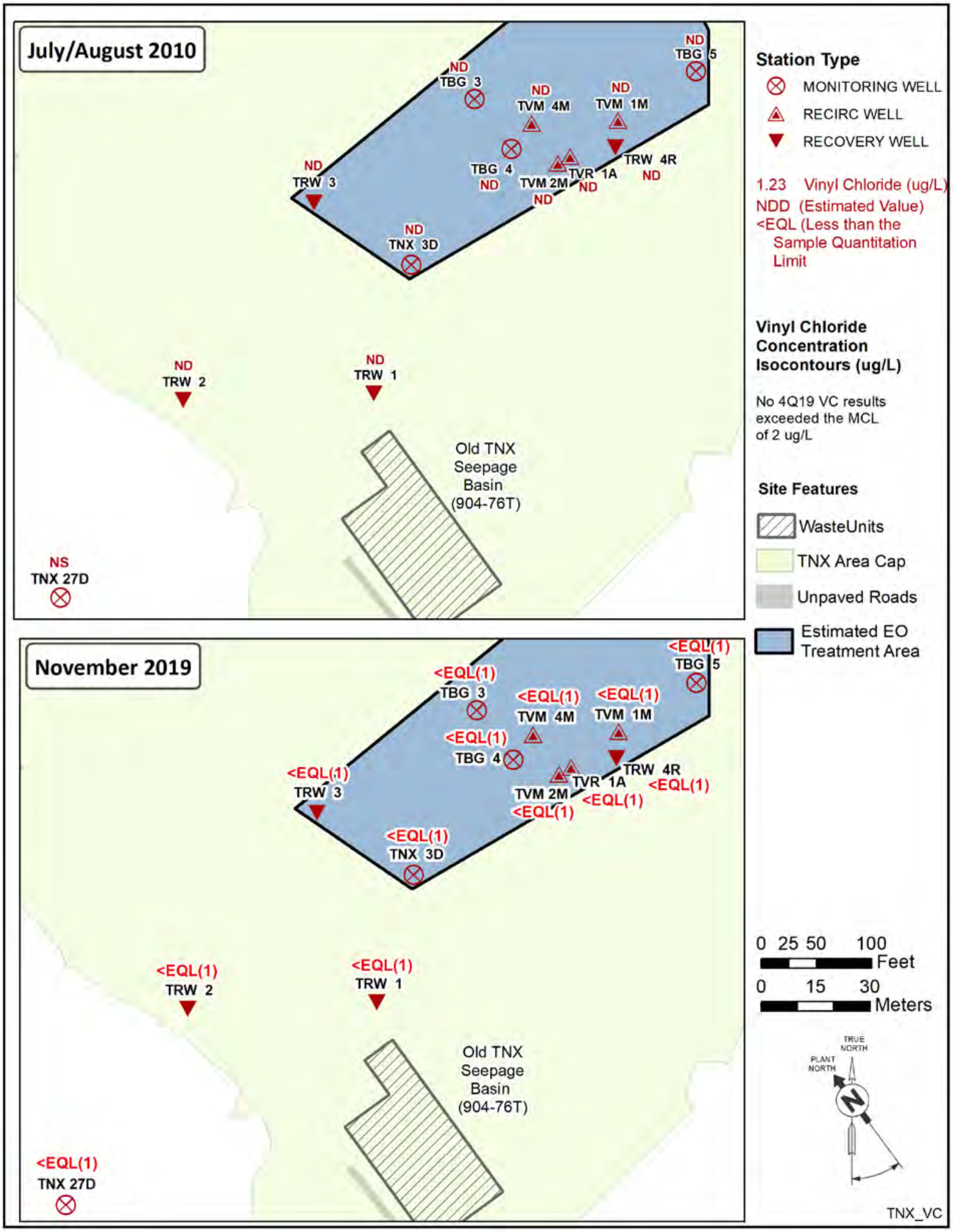

Figure A-40. Comparison of Vinyl Chloride Concentration in the Treatment Zone in 2010 and 2019

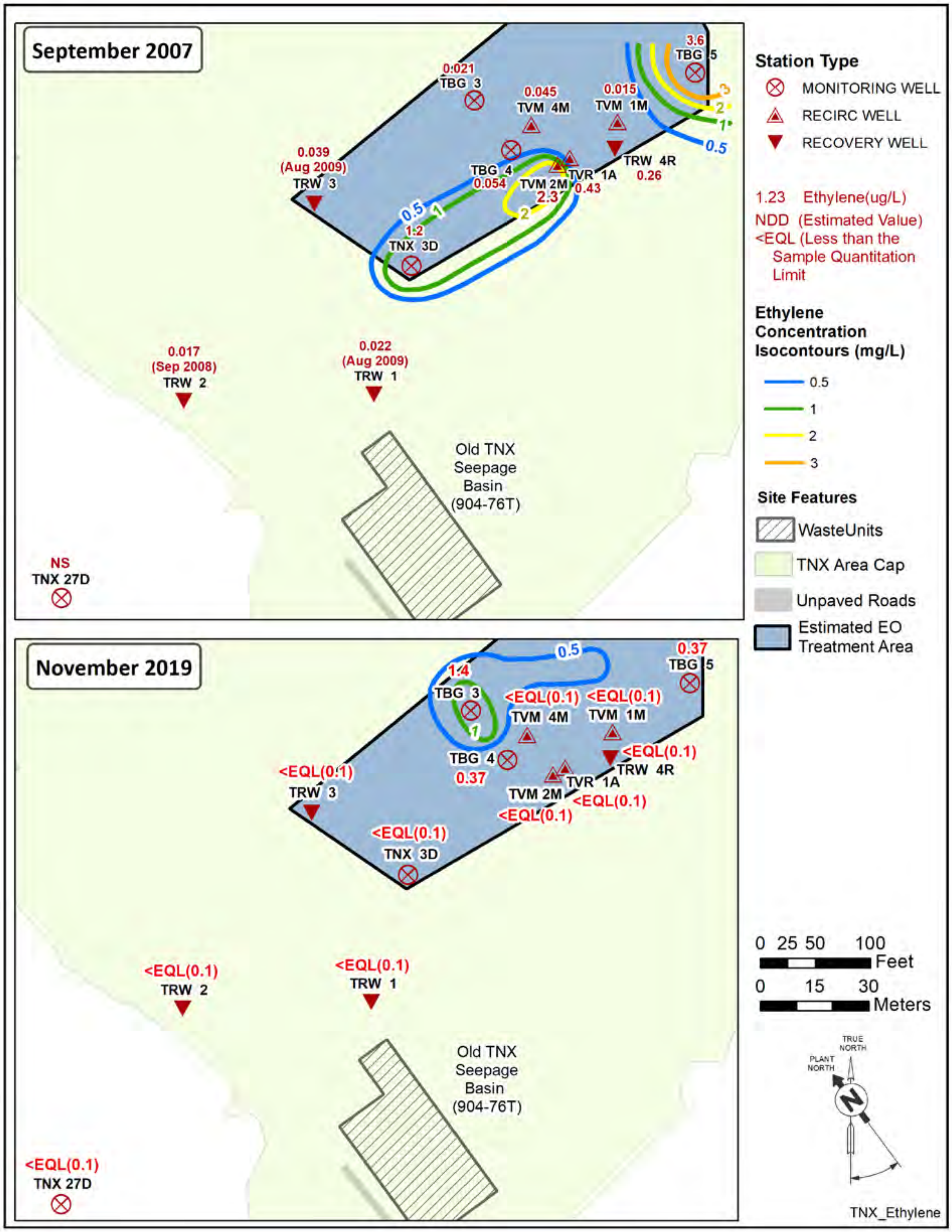

Figure A-41. Comparison of Ethylene Concentration in the Treatment Zone in 2008 and 2019

APPENDIX B

GROUNDWATER MONITORING RESULTS
(MATRIX TABLES)

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Table B-1. Groundwater Monitoring Results for TNX Area Wells, Second Quarter, 2019

Table B-1 2Q 2019 TNX Annual Groundwater and Monitoring Report

N/A — TNX Monitoring Constituents

Field Data

Station	Well Use	Aquifer Zone	Sample Collection Date (day-month-year)	Depth to Water (ft)	Sampling Event Water Elevation (ft)	Water Temperature (degC)	Turbidity (NTU)	Specific Conductance (uS/cm)	Phenolphthalein Alkalinity (as CaCO3) (mg/L)	Total Alkalinity (as CaCO3) (mg/L)	Volume Purged (gal)	pH (pH)	Oxygen (mg/L)	Oxidation/Reduction Potential (mV)	Constituent (NPDWS Unit)	Field Conditions
							15									
P 26A	Background Well	Semi-Confined_GAU	22-May-2019	36.4	118.1	19.6	0.6	40	0	6	127	5.8	4.4	115		No Comments
P 26B	Background Well	Unconfined UTRAU/GAU	22-May-2019	45.2	109.3	19.9	2.1	67	0	15	51	6.1	4.6	156		No Comments
P 26D	Background Well	Unconfined UTRAU/GAU	22-May-2019	38.81	115.69	20.6	1.6	39	0	7	18	5.7	3.78	186		No Comments
TRW 1	Recovery Well	Unconfined UTRAU/GAU	16-May-2019	65.2	97.66	21	0.4	54	0	0	30	5.3	8.45	125		No Comments
TRW 2	Recovery Well	Unconfined UTRAU/GAU	16-May-2019	57.61	97.34	21.3	0.9	99	0	40	58	6.4	9.3	-5		No Comments
TRW 3	Recovery Well	Unconfined UTRAU/GAU	20-May-2019	67.22	97.99	23.6	9.4	775	0	13	62	5.6	4.12	-91		No Comments
TRW 4R	Recovery Well	Unconfined UTRAU/GAU	16-May-2019	59.93	97.52	21.9	25	88	0	9	90	5.4	6.07	-116		No Comments
TCM 5	TNX Auxiliary	Unconfined UTRAU/GAU	15-May-2019	6.2	93.66	17.4	8.3	90	0	8	6	5.2	4.2	278		No Comments
TIR 1L	TNX Auxiliary	Unconfined UTRAU/GAU	15-May-2019	8.2	93.52	17.8	0.5	62	0	6	10	5.2	4.1	280		No Comments
TIR 1M	TNX Auxiliary	Unconfined UTRAU/GAU	15-May-2019	8.3	93.36	17.2	0.4	61	0	0	3	5.1	4.6	287		No Comments
TIR 1U	TNX Auxiliary	Unconfined UTRAU/GAU	13-May-2019	8.3	93.31	17.1	1.3	75	0	6	2	5.3	6.3	285		No Comments
TNX 13D	TNX Auxiliary	Unconfined UTRAU/GAU	22-May-2019	6.56	92.02	19	2.8	79	0	5	2	5.5	2.61	161		No Comments
TNX 15D	TNX Auxiliary	Unconfined UTRAU/GAU	22-May-2019	6.1	92.07	19	1.6	62	0	4	2	5.4	2.96	282		No Comments
TNX 20D	TNX Auxiliary	Unconfined UTRAU/GAU	22-May-2019	5.74	91.48	19	1.2	81	0	14	2	5.6	4.71	127		No Comments
TNX 22D	TNX Auxiliary	Unconfined UTRAU/GAU	22-May-2019	7.29	90.21	18.5	1.9	78	0	12	1	5.5	2.72	94		No Comments
TNX 28D	TNX Auxiliary	Unconfined UTRAU/GAU	22-May-2019	8.13	91.67	21	1.6	46	0	3	3	5.3	1.98	182		No Comments
TNX 30D	TNX Auxiliary	Unconfined UTRAU/GAU	22-May-2019	9.9	93.1	19.9	6.6	63	0	3	3	5.1	2.6	132		No Comments
TNX 35D	TNX Auxiliary	Unconfined UTRAU/GAU	29-May-2019	7.37	92.53	18.7	11.1	132	0	40	3	6.1	4.78	10		No Comments
TNX 37D	TNX Auxiliary	Unconfined UTRAU/GAU	29-May-2019	8.02	92.68	18.4	4.6	66	0	12	3	5.7	4.46	120		No Comments
TNX 72D	TNX Auxiliary	Unconfined UTRAU/GAU	03-Jun-2019	7.4	88.7	25.2	1000	100	0	0	3	6.1	4.58	0		I
TNX 72M	TNX Auxiliary	Unconfined UTRAU/GAU	03-Jun-2019	9.8	86.16	19.8	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	5.5	3.24	-37		No Comments
TNX 72S	TNX Auxiliary	Unconfined UTRAU/GAU	03-Jun-2019	7.6	86.6	NS	NS	NS	NS	NS	0	NS	NS	NS		Dry
TNX073D	TNX Auxiliary	Unconfined UTRAU/GAU	03-Jun-2019	12.9	87.2	20.5	16.8	93	0	8	3	5.5	1.98	76		No Comments
TNX074D	TNX Auxiliary	Unconfined UTRAU/GAU	04-Jun-2019	10.4	88	25.3	1000	158	0	2	5	5.8	4.6	87		No Comments
TNX075D	TNX Auxiliary	Unconfined UTRAU/GAU	03-Jun-2019	11.3	84.7	18.1	17	104	0	6	4	5.3	2.48	238		No Comments
TVM 1M	TNX Auxiliary	Unconfined UTRAU/GAU	16-May-2019	60.5	99.19	22	2.9	235	0	38	5	5.8	4.1	19		No Comments
			28-May-2019	60.7	98.99	22.1	2.8	213	0	35	6	5.8	NS	NS		No Comments
TVM 2M	TNX Auxiliary	Unconfined UTRAU/GAU	16-May-2019	63.2	98.68	21.3	2.9	82	0	55	5	6.1	3.7	48		No Comments
TVM 4M	TNX Auxiliary	Unconfined UTRAU/GAU	16-May-2019	62.7	98.67	21	4.3	37	0	25	5	5.7	4.2	139		No Comments
TVR 1A	TNX Auxiliary	Unconfined UTRAU/GAU	22-May-2019	62.28	87.82	21.7	1.7	64	0	10	103	5.9	1.67	-26		No Comments
XSB008R	TNX Auxiliary	Unconfined UTRAU/GAU	24-Apr-2019	2.71	99.36	19	3.2	63	0	6	3	5.7	4.95	156		No Comments
TBG 3	TNX Primary	Unconfined UTRAU/GAU	22-May-2019	61.3	100.01	22.3	25	781	0	7	34	[illegible]	2.63	250		X
TBG 4	TNX Primary	Unconfined UTRAU/GAU	22-May-2019	61.2	105.38	23	112	4051	0	1554	8	6.3	0.22	-130		X
			05-Jun-2019	61.6	100.98	23.8	30.9	3783	0	230	7	6.4	0.52	-97		X
			26-Jun-2019	61.62	100.95	22.3	70.9	3510	0	822	8	6.5	1.19	-113		X
TBG 5	TNX Primary	Unconfined UTRAU/GAU	22-May-2019	55.78	101.97	22.4	237	1117	0	560	6	6.1	5.8	-94		X
TNX 3D	TNX Primary	Unconfined UTRAU/GAU	16-May-2019	67.52	98.11	22.9	14.6	197	0	87	18	6.1	4.33	-61		No Comments
			28-May-2019	67.8	97.83	21	12.8	233	0	40	18	[illegible]	NS	NS		No Comments
TNX 8D	TNX Primary	Unconfined UTRAU/GAU	15-May-2019	7.44	93.06	19.8	15	104	0	21	35	5.6	5.32	34		No Comments
TNX 11D	TNX Primary	Unconfined UTRAU/GAU	15-May-2019	7.96	92.34	20	34.3	46	0	6	33	5.4	3.96	146		No Comments
TNX 16D	TNX Primary	Unconfined UTRAU/GAU	22-May-2019	8.56	93.34	18.6	0.4	65	0	8	3	5.3	2.83	216		No Comments
TNX 27D	TNX Primary	Unconfined UTRAU/GAU	20-May-2019	14.89	95.71	23.2	14.6	69	0	9	7	5.6	4.78	126		No Comments
TNX 1D	TNX Secondary	Unconfined UTRAU/GAU	20-May-2019	29.9	96.8	22.1	1.1	55	0	4	23	5.1	4.27	209		No Comments
TNX 5D	TNX Secondary	Unconfined UTRAU/GAU	15-May-2019	49.92	99.58	21.7	0.9	74	0	5	17	5.2	4.78	203		No Comments
TNX 9D	TNX Secondary	Unconfined UTRAU/GAU	15-May-2019	8.71	93.19	20.1	0.8	68	0	4	27	5.3	3.24	-24		No Comments
TNX 12D	TNX Secondary	Unconfined UTRAU/GAU	15-May-2019	5.68	93.72	22.8	12.8	68	0	25	40	6.1	3.7	62		No Comments
TNX 24D	TNX Secondary	Unconfined UTRAU/GAU	16-May-2019	33.84	109.42	25.8	0.8	75	0	3	3	5.6	5.32	169		No Comments
			28-May-2019	33.9	109.36	20.2	0.9	74	0	12	4	5.7	NS	NS		No Comments

Fatty Acid / Hydrocarbons

Station	Date	Acetic Acid (ug/L)	Butyric Acid (ug/L)	Lactic Acid (N/A)	Propionic Acid (ug/L)	Pyruvic Acid (N/A)	Total Volatile Fatty Acids	Butane (ug/L)	Carbon Dioxide (ug/L)	Ethane (ug/L)	Ethylene (ug/L)	Isobutane (ug/L)	Methane (ug/L)	Nitrogen (ug/L)	Propane (ug/L)	Propylene (ug/L)
P 26A	22-May-2019	<EQL (100)	<EQL (100)	NS	<EQL (100)	NS	0	<EQL (0.2)	25000	<EQL (0.1)	<EQL (0.1)	<EQL (0.2)	<EQL (0.5)	18000	<EQL (0.1)	<EQL (0.1)
P 26B	22-May-2019	<EQL (100)	<EQL (100)	NS	<EQL (100)	NS	0	<EQL (0.2)	28000	<EQL (0.1)	<EQL (0.1)	<EQL (0.2)	<EQL (0.5)	14000	<EQL (0.1)	<EQL (0.1)
P 26D	22-May-2019	<EQL (100)	<EQL (100)	NS	<EQL (100)	NS	0	<EQL (0.2)	38000	<EQL (0.1)	<EQL (0.1)	<EQL (0.2)	0.57	15000	<EQL (0.1)	<EQL (0.1)
TRW 1	16-May-2019	<EQL (100)	<EQL (100)	NS	<EQL (100)	NS	0	<EQL (0.2)	39000	<EQL (0.1)	<EQL (0.1)	<EQL (0.2)	<EQL (0.5)	13000	<EQL (0.1)	<EQL (0.1)
TRW 2	16-May-2019	<EQL (100)	<EQL (100)	NS	<EQL (100)	NS	0	<EQL (0.2)	29000	<EQL (0.1)	<EQL (0.1)	<EQL (0.2)	300	16000	<EQL (0.1)	<EQL (0.1)
TRW 3	20-May-2019	45000	6000	NS	51000	NS	102000	<EQL (0.2)	240000	<EQL (0.1)	<EQL (0.1)	<EQL (0.2)	14000	3400	<EQL (0.1)	<EQL (0.1)
TRW 4R	16-May-2019	340	<EQL (100)	NS	<EQL (100)	NS	340	<EQL (0.2)	200000	<EQL (0.1)	<EQL (0.1)	<EQL (0.2)	12000	3800	<EQL (0.1)	<EQL (0.1)
TCM 5	15-May-2019	NS	NS	NS	NS	NS		NS	NS	NS	NS	NS	NS	NS	NS	NS
TIR 1L	15-May-2019	NS	NS	NS	NS	NS		NS	NS	NS	NS	NS	NS	NS	NS	NS
TIR 1M	15-May-2019	NS	NS	NS	NS	NS		NS	NS	NS	NS	NS	NS	NS	NS	NS
TIR 1U	13-May-2019	NS	NS	NS	NS	NS		NS	NS	NS	NS	NS	NS	NS	NS	NS
TNX 13D	22-May-2019	NS	NS	NS	NS	NS		NS	NS	NS	NS	NS	NS	NS	NS	NS
TNX 15D	22-May-2019	NS	NS	NS	NS	NS		NS	NS	NS	NS	NS	NS	NS	NS	NS
TNX 20D	22-May-2019	NS	NS	NS	NS	NS		NS	NS	NS	NS	NS	NS	NS	NS	NS
TNX 22D	22-May-2019	NS	NS	NS	NS	NS		NS	NS	NS	NS	NS	NS	NS	NS	NS
TNX 28D	22-May-2019	NS	NS	NS	NS	NS		NS	NS	NS	NS	NS	NS	NS	NS	NS
TNX 30D	22-May-2019	NS	NS	NS	NS	NS		NS	NS	NS	NS	NS	NS	NS	NS	NS
TNX 35D	29-May-2019	NS	NS	NS	NS	NS		NS	NS	NS	NS	NS	NS	NS	NS	NS
TNX 37D	29-May-2019	NS	NS	NS	NS	NS		NS	NS	NS	NS	NS	NS	NS	NS	NS
TNX 72D	03-Jun-2019	NS	NS	NS	NS	NS		NS	NS	NS	NS	NS	NS	NS	NS	NS
TNX 72M	03-Jun-2019	NS	NS	NS	NS	NS		NS	NS	NS	NS	NS	NS	NS	NS	NS
TNX 72S	03-Jun-2019	NS	NS	NS	NS	NS		NS	NS	NS	NS	NS	NS	NS	NS	NS
TNX073D	03-Jun-2019	NS	NS	NS	NS	NS		NS	NS	NS	NS	NS	NS	NS	NS	NS
TNX074D	04-Jun-2019	NS	NS	NS	NS	NS		NS	NS	NS	NS	NS	NS	NS	NS	NS
TNX075D	03-Jun-2019	NS	NS	NS	NS	NS		NS	NS	NS	NS	NS	NS	NS	NS	NS
TVM 1M	16-May-2019	7200	180	NS	350	NS	7730	<EQL (0.2)	170000	<EQL (0.1)	<EQL (0.1)	<EQL (0.2)	12000	4900	<EQL (0.1)	<EQL (0.1)
	28-May-2019	NS	NS	NS	NS	NS		NS	NS	NS	NS	NS	NS	NS	NS	NS
TVM 2M	16-May-2019	<EQL (100)	<EQL (100)	NS	<EQL (100)	NS	0	<EQL (0.2)	31000	<EQL (0.1)	<EQL (0.1)	<EQL (0.2)	180	16000	<EQL (0.1)	<EQL (0.1)
TVM 4M	16-May-2019	<EQL (100)	<EQL (100)	NS	<EQL (100)	NS	0	<EQL (0.2)	26000	<EQL (0.1)	<EQL (0.1)	<EQL (0.2)	1.9	16000	<EQL (0.1)	<EQL (0.1)
TVR 1A	22-May-2019	<EQL (100)	<EQL (100)	NS	<EQL (100)	NS	0	<EQL (0.2)	40000	<EQL (0.1)	<EQL (0.1)	<EQL (0.2)	2700	13000	<EQL (0.1)	<EQL (0.1)
XSB008R	24-Apr-2019	NS	NS	NS	NS	NS		NS	NS	NS	NS	NS	NS	NS	NS	NS
TBG 3	22-May-2019	160000	76000	NS	120000	NS	356000	<EQL (0.2)	210000	0.22	1.4	<EQL (0.2)	2400	11000	0.13	0.18
TBG 4	22-May-2019	NS	NS	NS	NS	NS		NS	NS	NS	NS	NS	NS	NS	NS	NS
	05-Jun-2019	1300000	450000	NS	530000	NS	2280000	<EQL (0.2)	240000	0.19	0.6	<EQL (0.2)	12000	7000	<EQL (0.1)	0.21
	26-Jun-2019	NS	NS	NS	NS	NS		NS	NS	NS	NS	NS	NS	NS	NS	NS
TBG 5	22-May-2019	8600	<EQL (100)	NS	100	NS	8700	<EQL (0.2)	320000	<EQL (0.1)	0.26	<EQL (0.2)	10000	4500	<EQL (0.1)	<EQL (0.1)
TNX 3D	16-May-2019	<EQL (100)	<EQL (100)	NS	<EQL (100)	NS	0	<EQL (0.2)	120000	<EQL (0.1)	<EQL (0.1)	<EQL (0.2)	11000	5900	<EQL (0.1)	<EQL (0.1)
	28-May-2019	NS	NS	NS	NS	NS		NS	NS	NS	NS	NS	NS	NS	NS	NS
TNX 8D	15-May-2019	NS	NS	NS	NS	NS		NS	NS	NS	NS	NS	NS	NS	NS	NS
TNX 11D	15-May-2019	NS	NS	NS	NS	NS		NS	NS	NS	NS	NS	NS	NS	NS	NS
TNX 16D	22-May-2019	NS	NS	NS	NS	NS		NS	NS	NS	NS	NS	NS	NS	NS	NS
TNX 27D	20-May-2019	<EQL (100)	<EQL (100)	NS	<EQL (100)	NS	0	<EQL (0.2)	53000	<EQL (0.1)	<EQL (0.1)	<EQL (0.2)	6.8	16000	<EQL (0.1)	<EQL (0.1)
TNX 1D	20-May-2019	NS	NS	NS	NS	NS		NS	NS	NS	NS	NS	NS	NS	NS	NS
TNX 5D	15-May-2019	NS	NS	NS	NS	NS		NS	NS	NS	NS	NS	NS	NS	NS	NS
TNX 9D	15-May-2019	NS	NS	NS	NS	NS		NS	NS	NS	NS	NS	NS	NS	NS	NS
TNX 12D	15-May-2019	NS	NS	NS	NS	NS		NS	NS	NS	NS	NS	NS	NS	NS	NS
TNX 24D	16-May-2019	NS	NS	NS	NS	NS		NS	NS	NS	NS	NS	NS	NS	NS	NS
	28-May-2019	NS	NS	NS	NS	NS		NS	NS	NS	NS	NS	NS	NS	NS	NS

Inorganics

Station	Date	Converted Uranium Mass (ug/L)	Iron (ug/L)	Mercury (ug/L)	Nitrate (ug/L)	Nitrate-Nitrite as Nitrogen (mg/L)	Sulfate (mg/L)	Total Organic Carbon (ug/L)	Uranium (ug/L)
		30		2		10			30
P 26A	22-May-2019	NS	731	<EQL (0.2)	[84.1]	0.0794	7.08	[422]	<EQL (5)
			730					[416]	<EQL (5)
								[422]	
								[398]	
								[422]	
P 26B	22-May-2019	NS	909	<EQL (0.2)	336	0.427	2.71	1450	<EQL (5)
								1390	
								1440	
								1450	
								1450	
								1430	
P 26D	22-May-2019	NS	153	<EQL (0.2)	398	0.468	1.42	[431]	<EQL (5)
								[416]	
								[427]	
								[386]	
								[421]	
TRW 1	16-May-2019	NS	[29.1]	<EQL (0.2)	1800	0.959	3.7	[793]	<EQL (5)
								[718]	
								[766]	
								[645]	
								[731]	
TRW 2	16-May-2019	NS	5540	0.266	270	0.226	2.81	[942]	<EQL (5)
								[873]	
								[882]	
								[834]	
								[877]	
TRW 3	20-May-2019	NS	283000	[0.105]	357	0.137	0.722	179000	<EQL (5)
								178000	
								178000	
								175000	
								178000	
TRW 4R	16-May-2019	NS	12600	[0.0459]	<EQL (100)	0.0583	0.43	8120	<EQL (5)
								[9360]	
								[8590]	
								[8750]	
								[8510]	
								[8520]	
TCM 5	15-May-2019	NS	2220	[0.0942]	NS	2.93	NS	NS	32
TIR 1L	15-May-2019	NS	266	<EQL (0.2)	NS	0.178	NS	NS	<EQL (5)
			241						<EQL (5)
TIR 1M	15-May-2019	NS	[54.5]	[0.0428]	NS	2.11	NS	NS	[0.628]
TIR 1U	13-May-2019	NS	[illegible]	[illegible]	NS	[illegible]	NS	NS	[illegible]
TNX 13D	22-May-2019	NS	[illegible]	[illegible]	NS	[illegible]	NS	NS	[illegible]
TNX 15D	22-May-2019	NS	[illegible]	[illegible]	NS	[illegible]	NS	NS	[illegible]
TNX 20D	22-May-2019	NS	[illegible]	[illegible]	NS	[illegible]	NS	NS	[illegible]
TNX 22D	22-May-2019	NS	[illegible]	[illegible]	NS	[illegible]	NS	NS	[illegible]
TNX 28D	22-May-2019	NS	[illegible]	[illegible]	NS	[illegible]	NS	NS	[illegible]
TNX 30D	22-May-2019	NS	281	[illegible]	NS	[illegible]	NS	NS	[illegible]
TNX 35D	29-May-2019	NS	[illegible]	[illegible]	NS	[illegible]	NS	NS	[illegible]
TNX 37D	29-May-2019	NS	[illegible]	[illegible]	NS	[illegible]	NS	NS	[illegible]
				[0.0242]					
TNX 72D	03-Jun-2019	NS	NS	NS	NS	NS	NS	NS	NS
TNX 72M	03-Jun-2019	NS	16200	<EQL (0.2)	NS	0.0487	NS	NS	<EQL (5)
TNX 72S	03-Jun-2019	NS	NS	NS	NS	NS	NS	NS	NS
TNX073D	03-Jun-2019	NS	[illegible]	[illegible]	NS	[illegible]	NS	NS	[illegible]
TNX074D	04-Jun-2019	NS	[illegible]	[illegible]	NS	[illegible]	NS	NS	[illegible]
TNX075D	03-Jun-2019	NS	761	<EQL (0.2)	NS	0.0231	NS	NS	<EQL (5)
TVM 1M	16-May-2019	NS	21300	[0.0304]	<EQL (100)	0.0631	[0.336]	NS	[1.05]
	28-May-2019	NS	NS	NS	NS	NS	NS	7170	NS
								6880	
								7020	
								6390	
								6940	
TVM 2M	16-May-2019	NS	16700	<EQL (0.2)	218	0.232	0.806	[702]	<EQL (5)
						0.23		[672]	
								[702]	
								[672]	
								[687]	
TVM 4M	16-May-2019	NS	2070	<EQL (0.2)	584	0.792	1.17	[547]	<EQL (5)
				<EQL (0.2)				[536]	
								[542]	
								[527]	
								[538]	
TVR 1A	22-May-2019	NS	9040	<EQL (0.2)	<EQL (100)	0.0486	6.22	[868]	<EQL (5)
					<EQL (100)		6.09	[819]	
								[852]	
								[758]	
								[824]	
XSB008R	24-Apr-2019	NS	NS	<EQL (0.2)	NS	2	7.1	NS	1.6
						1.95	7.07		
TBG 3	22-May-2019	NS	30900	[0.0638]	<EQL (500)	0.144	3.44	88900	40.1
								81600	
								82600	
								77800	
								81800	
TBG 4	22-May-2019	NS	NS	NS	NS	NS	NS	NS	NS
	05-Jun-2019	NS	103000	[0.104]	[957]	0.106	0.734	32200	22.8
					[956]		0.519	27100	
								28400	
								26800	
								27500	
	26-Jun-2019	NS	NS	NS	NS	NS	NS	NS	NS
TBG 5	22-May-2019	NS	129000	<EQL (0.2)	<EQL (500)	0.085	[1.28]	168000	<EQL (5)
								166000	
								168000	
								161000	
								166000	
TNX 3D	16-May-2019	NS	50700	<EQL (0.2)	<EQL (100)	0.0569	0.727	NS	<EQL (5)
			48000		<EQL (100)		0.675		<EQL (5)
	28-May-2019	NS	NS	NS	NS	NS	NS	2880	NS
								2690	
								2850	
								2570	
								2750	
TNX 8D	15-May-2019	NS	889	<EQL (0.2)	NS	0.359	NS	NS	<EQL (5)
						0.356			
TNX 11D	15-May-2019	NS	3940	<EQL (0.2)	NS	0.0573	NS	NS	<EQL (5)
TNX 16D	22-May-2019	NS	[59.4]	<EQL (0.2)	NS	1.19	NS	NS	<EQL (5)
TNX 27D	20-May-2019	NS	598	[0.0273]	1110	1.13	4.27	1270	<EQL (5)
					1110		4.27	1030	
								1120	
								1140	
								[933]	
								1050	
TNX 1D	20-May-2019	NS	[85.6]	<EQL (0.2)	NS	0.799	NS	NS	<EQL (5)
TNX 5D	15-May-2019	NS	[129]	<EQL (0.2)	NS	0.738	NS	NS	<EQL (5)
TNX 9D	15-May-2019	NS	637	<EQL (0.2)	NS	0.0819	NS	NS	<EQL (5)
TNX 12D	15-May-2019	NS	3300	[0.0488]	NS	0.0658	NS	NS	<EQL (5)
TNX 24D	16-May-2019	NS	[50.8]	<EQL (0.2)	NS	0.443	NS	NS	<EQL (5)
	28-May-2019	NS	NS	NS	NS	NS	NS	NS	NS

Organics / Radionuclides

Station	Date	1,4-Dioxane (ug/L)	Carbon Tetrachloride (ug/L)	Chloroethene (Vinyl Chloride) (ug/L)	cis-1,2-Dichloroethylene (ug/L)	Tetrachloroethylene (PCE) (ug/L)	Trichloroethylene (TCE) (ug/L)	Adjusted Gross Alpha (pCi/L)	Combined Radium (226 and 228) (pCi/L)	Converted Uranium Activity (ug/L)	Gross Alpha (pCi/L)	Nonvolatile Beta (pCi/L)	Radium-226 (pCi/L)	Radium-228 (pCi/L)
		0.46	5	2	70	5	5	15	5		15	50	5	5
P 26A	22-May-2019	<EQL (0.2)	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (5.13)	[0.43]	<EQL (3.35)	<EQL (5.13)	<EQL (9.58)	[0.426]	<EQL (1.2)
		<EQL (3)												
P 26B	22-May-2019	<EQL (0.2)	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (1)	[2.82]	[1.34]	<EQL (3.35)	[2.82]	<EQL (9.62)	[0.751]	[0.589]
		<EQL (3)											[0.703]	<EQL (0.962)
P 26D	22-May-2019	<EQL (0.2)	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (3.62)	[0.28]	<EQL (3.35)	<EQL (3.62)	<EQL (8.6)	[0.276]	<EQL (0.953)
		<EQL (3)												
TRW 1	16-May-2019	<EQL (0.2)	<EQL (1)	<EQL (1)	[0.35]	<EQL (1)	2.92	<EQL (3.69)	[0.24]	<EQL (3.35)	<EQL (3.69)	<EQL (8.23)	[0.239]	<EQL (0.921)
		<EQL (3)									<EQL (3.69)	<EQL (9.24)		
TRW 2	16-May-2019	<EQL (0.2)	<EQL (1)	<EQL (1)	4.5	<EQL (1)	6.71	[2.12]	[0.87]	<EQL (3.35)	[2.12]	<EQL (7.62)	[0.483]	[0.386]
		<EQL (3)											[0.399]	<EQL (0.919)
TRW 3	20-May-2019	[0.256]	<EQL (1)	<EQL (1)	[0.49]	<EQL (1)	<EQL (1)	[6.64]	0.96	<EQL (3.35)	[6.64]	[8.74]	0.961	<EQL (1.21)
		<EQL (3)												
TRW 4R	16-May-2019	<EQL (0.2)	<EQL (1)	<EQL (1)	15.6	<EQL (1)	<EQL (1)	<EQL (4.3)	[0.25]	<EQL (3.35)	<EQL (4.3)	<EQL (8.9)	[0.249]	<EQL (1.1)
		<EQL (3)												
TCM 5	15-May-2019	<EQL (0.2)	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (1)	4.53	0.16	[0.28]	21.44	21.6	25.9	[0.278]	<EQL (0.91)
		<EQL (3)												
TIR 1L	15-May-2019	<EQL (0.2)	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (4.37)	[0.25]	<EQL (3.35)	<EQL (4.37)	<EQL (8.55)	[0.247]	<EQL (0.831)
		<EQL (3)												
TIR 1M	15-May-2019	<EQL (0.2)	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (1)	[0.54]	<EQL (2.55)	[0.2]	[0.42]	<EQL (2.55)	<EQL (8.42)	[0.203]	<EQL (0.909)
		<EQL (3)												
TIR 1U	13-May-2019	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
TNX 13D	22-May-2019	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
TNX 15D	22-May-2019	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
TNX 20D	22-May-2019	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
TNX 22D	22-May-2019	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
TNX 28D	22-May-2019	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
TNX 30D	22-May-2019	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
TNX 35D	29-May-2019	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
TNX 37D	29-May-2019	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
		<EQL (3)												
TNX 72D	03-Jun-2019	<EQL (3)	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (1)	NS	NS	NS	NS	NS	NS	NS
TNX 72M	03-Jun-2019	[0.217]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
TNX 72S	03-Jun-2019	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
TNX073D	03-Jun-2019	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
TNX074D	04-Jun-2019	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
TNX075D	03-Jun-2019	<EQL (0.2)	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (4.28)	<EQL (1.09)	<EQL (3.35)	<EQL (4.28)	[illegible]	<EQL (0.222)	<EQL (1.09)
		<EQL (3)												
TVM 1M	16-May-2019	<EQL (0.2)	<EQL (1)	<EQL (1)	12.4	<EQL (1)	<EQL (1)	[1.9665]	[0.47]	[0.7]	[2.67]	<EQL (9.46)	[0.473]	<EQL (0.906)
		<EQL (3)												
	28-May-2019	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
TVM 2M	16-May-2019	<EQL (0.2)	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (2.54)	[0.19]	<EQL (3.35)	<EQL (2.54)	<EQL (8.21)	[0.19]	<EQL (0.992)
		<EQL (3)												
TVM 4M	16-May-2019	<EQL (0.2)	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (5.43)	[3.35]	<EQL (3.35)	<EQL (5.43)	<EQL (8.73)	2.49	[0.858]
		<EQL (3)												
TVR 1A	22-May-2019	[0.202]	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (4.67)	[0.56]	<EQL (3.35)	<EQL (4.67)	<EQL (7.96)	[0.564]	<EQL (1.03)
		<EQL (3)									<EQL (4.67)	<EQL (8.83)		
XSB008R	24-Apr-2019	<EQL (5)	<EQL (1)	<EQL (2)	<EQL (1)	<EQL (1)	1.4	[1.378]	[0.683]	1.072	[2.45]	[1.549]	[0.683]	<EQL (3.78)
											[2.016]	[1.54]	[0.681]	
TBG 3	22-May-2019	<EQL (3)	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (1)	-8.567	0.54	26.87	18.3	32.5	0.537	<EQL (1.24)
		REJ												
TBG 4	22-May-2019	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	05-Jun-2019	8.1	<EQL (1)	<EQL (1)	5.38	<EQL (1)	1.29	<EQL (21.5)	<EQL (1)	15.28	<EQL (21.5)	37.9	<EQL (0.274)	<EQL (1)
	26-Jun-2019	REJ	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
TBG 5	22-May-2019	4.4	<EQL (1)	<EQL (1)	62.9	<EQL (1)	[0.46]	[15.9]	[2.1]	<EQL (3.35)	[15.9]	[15.6]	1.48	[0.617]
		3.01												
TNX 3D	16-May-2019	<EQL (0.2)	<EQL (1)	<EQL (1)	2.01	<EQL (1)	<EQL (1)	<EQL (5.61)	0.81	<EQL (3.35)	<EQL (5.61)	<EQL (8.69)	0.806	<EQL (0.829)
		<EQL (3)											0.805	<EQL (0.873)
	28-May-2019	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
TNX 8D	15-May-2019	<EQL (0.2)	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (1)	1.69	<EQL (5.83)	[0.15]	<EQL (3.35)	<EQL (5.83)	<EQL (9.99)	[0.154]	<EQL (0.854)
		<EQL (3)												
TNX 11D	15-May-2019	<EQL (0.2)	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (4.79)	[0.74]	<EQL (3.35)	<EQL (4.79)	<EQL (9.19)	[0.187]	[0.556]
		<EQL (3)												
TNX 16D	22-May-2019	<EQL (0.2)	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (1)	3.49	<EQL (2.52)	<EQL (0.91)	<EQL (3.35)	<EQL (2.52)	<EQL (8.31)	<EQL (0.124)	<EQL (0.907)
		<EQL (3)												
TNX 27D	20-May-2019	[0.224]	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (5.33)	[0.1]	<EQL (3.35)	<EQL (5.33)	<EQL (9.81)	[0.1]	<EQL (0.988)
		<EQL (3)												
TNX 1D	20-May-2019	<EQL (0.2)	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (4.18)	[0.22]	<EQL (3.35)	<EQL (4.18)	<EQL (8.91)	[0.225]	<EQL (1.04)
		<EQL (3)											[0.156]	<EQL (1.05)
TNX 5D	15-May-2019	<EQL (0.2)	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (1)	[2.8]	1.11	<EQL (3.35)	[2.8]	<EQL (9.43)	1.11	<EQL (1.03)
		<EQL (3)												
TNX 9D	15-May-2019	<EQL (0.2)	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (6.42)	[1.03]	<EQL (3.35)	<EQL (6.42)	<EQL (8.86)	0.457	[0.573]
		<EQL (3)												
TNX 12D	15-May-2019	<EQL (0.2)	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (1)	[2.11]	0.94	<EQL (3.35)	[2.11]	<EQL (8.77)	0.937	<EQL (0.89)
		<EQL (3)												
TNX 24D	16-May-2019	<EQL (3)	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (1)	[2.14]	[0.24]	<EQL (3.35)	[2.14]	<EQL (9.4)	[0.242]	<EQL (0.812)
	28-May-2019	[0.201]	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS

Explanation

[##]	EPA Functional Guideline Code of 'J' was applied to the result, indicating an estimated quanity.
<EQL(##)	Constituent was below detection. The sample-specific Estimated Quantitation Limit is in parentheses.
(red)	Result exceeds applicable limit.
REJ	Result Rejected.
(white)	Result is less than the applicable limit and without EPA Functional Guidline qualifiers.
NS	Requested to be sampled but was not. See comments as to why not.
Blue Text	Not a required sample analysis.

Table B-2. Groundwater Monitoring Results for TNX Area Wells, Fourth Quarter, 2018

Table B-2 4Q 2019 TNX Annual Groundwater and Monitoring Report

Field Data; N/A; TNX Monitoring Constituents – Fatty Acid

Station	Well Use	Aquifer Zone	Sample Collection Date	Depth to Water	Sampling Event Water Elevation	Water Temperature	Turbidity	Specific Conductance	Phenolphthalein Alkalinity (as CaCO3)	Total Alkalinity (as CaCO3)	Volume Purged	pH	Oxygen	Oxidation/Reduction Potential	Field Conditions	Acetic Acid	Butyric Acid	Lactic Acid	Propionic Acid	Pyruvic Acid	Total Volatile Fatty Acids
Constituent / NPDWS Unit			day-month-year	ft	ft	degC	NTU	uS/cm	mg/L	mg/L	gal	pH	mg/L	mV		ug/L	ug/L	N/A	ug/L	N/A	
							15														
P 26A	Background Well	Semi-Confined_GAU	12-Nov-2019	39.82	114.68	19.8	0.4	39	0	6	123	5.2	6.41	157	No Comments	<EQL (100)	<EQL (100)	NS	<EQL (100)	NS	0
P 26B	Background Well	Unconfined UTRAU/GAU	12-Nov-2019	51.24	103.26	20.7	1.8	69	0	15	43	5.7	9.63	151	No Comments	<EQL (100)	<EQL (100)	NS	<EQL (100)	NS	0
P 26D	Background Well	Unconfined UTRAU/GAU	12-Nov-2019	42.13	112.37	21.1	0.4	44	0	11	15	5.4	6.86	181	No Comments	<EQL (100)	<EQL (100)	NS	<EQL (100)	NS	0
TRW 1	Recovery Well	Unconfined UTRAU/GAU	11-Nov-2019	67.48	95.38	21.7	0.2	72	0	5	26	5.2	4.1	255	No Comments	150	<EQL (100)	NS	<EQL (100)	NS	150
TRW 2	Recovery Well	Unconfined UTRAU/GAU	20-Nov-2019	59.61	95.34	21	0.2	101	0	10	54	6.1	1.72	25	No Comments	160	[26]	NS	[43]	NS	229
TRW 3	Recovery Well	Unconfined UTRAU/GAU	20-Nov-2019	69.4	95.81	21.9	47.1	539	0	272	52	6.2	1.09	-83	X	96000	12000	NS	5600	NS	113600
TRW 4R	Recovery Well	Unconfined UTRAU/GAU	20-Nov-2019	62.5	94.95	21.5	30.8	86	0	30	52	5.6	1.03	2	X	1300	130	NS	140	NS	1570
TCM 5	TNX Auxiliary	Unconfined UTRAU/GAU	12-Nov-2019	7.6	92.26	19.7	19.8	130	0	20	5	5.4	3.02	192	No Comments	NS	NS	NS	NS	NS	
TIR 1L	TNX Auxiliary	Unconfined UTRAU/GAU	12-Nov-2019	10.2	91.52	18.8	0.3	64	0	1	9	4.5	2.94	262	No Comments	NS	NS	NS	NS	NS	
TIR 1M	TNX Auxiliary	Unconfined UTRAU/GAU	12-Nov-2019	9.64	92.02	19.3	0.6	55	0	0	3	4.7	4.36	268	No Comments	NS	NS	NS	NS	NS	
TIR 1U	TNX Auxiliary	Unconfined UTRAU/GAU	12-Nov-2019	9.5	92.11	NS	NS	NS	NS	NS	0	NS	NS	NS	Dry	NS	NS	NS	NS	NS	
TNX 13D	TNX Auxiliary	Unconfined UTRAU/GAU	20-Nov-2019	7.3	91.28	16	9	76	0	9	2	5.6	4.17	184	No Comments	NS	NS	NS	NS	NS	
TNX 15D	TNX Auxiliary	Unconfined UTRAU/GAU	20-Nov-2019	7.3	91.67	17	1.3	74	0	0	2	5	3.08	295	No Comments	NS	NS	NS	NS	NS	
TNX 20D	TNX Auxiliary	Unconfined UTRAU/GAU	20-Nov-2019	6.74	90.48	14	5.6	78	0	7	1	5.6	3.82	132	No Comments	NS	NS	NS	NS	NS	
TNX 22D	TNX Auxiliary	Unconfined UTRAU/GAU	20-Nov-2019	7.88	89.62	13	12.4	80	0	10	2	5.7	3.94	81	No Comments	NS	NS	NS	NS	NS	
TNX 28D	TNX Auxiliary	Unconfined UTRAU/GAU	20-Nov-2019	8.28	91.52	17.5	2.6	53	0	6	4	5.4	4.18	199	No Comments	NS	NS	NS	NS	NS	
TNX 30D	TNX Auxiliary	Unconfined UTRAU/GAU	20-Nov-2019	10.23	92.77	18.5	16.4	69	0	7	4	5.5	14.88	257	No Comments	NS	NS	NS	NS	NS	
TNX 35D	TNX Auxiliary	Unconfined UTRAU/GAU	20-Nov-2019	8.2	91.7	19.5	19.5	91	0	25	4	5.9	7.04	113	No Comments	NS	NS	NS	NS	NS	
TNX 37D	TNX Auxiliary	Unconfined UTRAU/GAU	20-Nov-2019	9.1	91.6	19.1	8.5	68	0	10	3	5.5	11.77	231	No Comments	NS	NS	NS	NS	NS	
TNX 72D	TNX Auxiliary	Unconfined UTRAU/GAU	19-Nov-2019	13.1	83	10.4	1000	263	NS	NS	1	4.9	6.58	58	I	NS	NS	NS	NS	NS	
TNX 72M	TNX Auxiliary	Unconfined UTRAU/GAU	18-Nov-2019	10.3	85.66	13	13.8	86	NS	NS	1	5	5.05	144	No Comments	NS	NS	NS	NS	NS	
TNX 72S	TNX Auxiliary	Unconfined UTRAU/GAU	18-Nov-2019	7.8	88.2	NS	NS	NS	NS	NS	0	NS	NS	NS	D	NS	NS	NS	NS	NS	
TNX073D	TNX Auxiliary	Unconfined UTRAU/GAU	18-Nov-2019	12.8	87.3	18.9	17.9	99	NS	NS	3	5.4	3.33	188	No Comments	NS	NS	NS	NS	NS	
TNX074D	TNX Auxiliary	Unconfined UTRAU/GAU	19-Nov-2019	14.8	93.6	13.4	[illegible]	299	NS	NS	2	6.1	4.4	40	No Comments	NS	NS	NS	NS	NS	
TNX075D	TNX Auxiliary	Unconfined UTRAU/GAU	18-Nov-2019	12.9	84.1	18.7	19.3	116	NS	NS	4	5.5	3.13	174	No Comments	NS	NS	NS	NS	NS	
TVM 1M	TNX Auxiliary	Unconfined UTRAU/GAU	11-Nov-2019	62.91	96.76	22.6	7.8	194	0	18	5	5.5	14.38	-21	No Comments	480	<EQL (100)	NS	<EQL (100)	NS	480
TVM 2M	TNX Auxiliary	Unconfined UTRAU/GAU	11-Nov-2019	65.62	96.26	22	1.3	74	0	30	4	5.8	6.79	-17	No Comments	<EQL (100)	<EQL (100)	NS	<EQL (100)	NS	0
TVM 4M	TNX Auxiliary	Unconfined UTRAU/GAU	11-Nov-2019	65.15	96.22	23.1	1	29	0	2	5	4.7	4.4	302	No Comments	<EQL (100)	<EQL (100)	NS	<EQL (100)	NS	0
TVR 1A	TNX Auxiliary	Unconfined UTRAU/GAU	12-Nov-2019	64.28	85.82	21.2	3.2	79	0	30	95	5.6	9.41	31	No Comments	<EQL (100)	<EQL (100)	NS	<EQL (100)	NS	0
XSB006R	TNX Auxiliary	Unconfined UTRAU/GAU	05-Aug-2019	7.8	94.27	20.4	0.9	58	0	4	6	5.2	3.25	274	No Comments	NS	NS	NS	NS	NS	
			20-Nov-2019	7.6	94.27	18	0.6	92	0	0	6	4.4	7.79	325	No Comments	NS	NS	NS	NS	NS	
TBG 3	TNX Primary	Unconfined UTRAU/GAU	12-Nov-2019	64.88	96.43	17.3	32.4	605	0	0	4	4.2	6.22	169	X	80000	23000	NS	50000	NS	153000
TBG 4	TNX Primary	Unconfined UTRAU/GAU	12-Nov-2019	63.4	99.18	18.1	101	2241	0	76	6	6.1	6.72	-68	X	650000	280000	NS	420000	NS	1350000
TBG 5	TNX Primary	Unconfined UTRAU/GAU	12-Nov-2019	58.6	99.15	17.8	71.3	856	0	38	4	6.3	6.46	-65	X	1000	<EQL (100)	NS	<EQL (100)	NS	1000
TNX 3D	TNX Primary	Unconfined UTRAU/GAU	11-Nov-2019	69.83	95.8	23.1	2.1	204	0	95	15	5.7	16.4	-46	No Comments	<EQL (100)	<EQL (100)	NS	<EQL (100)	NS	0
TNX 8D	TNX Primary	Unconfined UTRAU/GAU	18-Nov-2019	7.9	92.6	18.3	3.1	82	0	15	26	5.7	4.4	141	No Comments	NS	NS	NS	NS	NS	
TNX 11D	TNX Primary	Unconfined UTRAU/GAU	18-Nov-2019	7.45	92.85	21	5.7	50	0	5	27	5.4	2.13	88	No Comments	NS	NS	NS	NS	NS	
TNX 16D	TNX Primary	Unconfined UTRAU/GAU	20-Nov-2019	8.4	91.5	17.5	0.9	63	0	0	2	5	3.65	220	No Comments	NS	NS	NS	NS	NS	
TNX 27D	TNX Primary	Unconfined UTRAU/GAU	20-Nov-2019	14.18	96.42	24.3	51.3	77	0	8	4	6.4	5.82	67	X	180	[18]	NS	[47]	NS	180
TNX 1D	TNX Secondary	Unconfined UTRAU/GAU	18-Nov-2019	61.74	94.96	20	1.2	58	0	4	21	5.7	3.87	210	No Comments	NS	NS	NS	NS	NS	
TNX 5D	TNX Secondary	Unconfined UTRAU/GAU	18-Nov-2019	50.45	99.05	21.4	0.4	85	0	0	17	5.2	2.6	170	No Comments	NS	NS	NS	NS	NS	
TNX 9D	TNX Secondary	Unconfined UTRAU/GAU	18-Nov-2019	9.87	92.03	19.8	1.1	61	0	0	25	5.1	2.94	117	No Comments	NS	NS	NS	NS	NS	
TNX 12D	TNX Secondary	Unconfined UTRAU/GAU	18-Nov-2019	6.3	93.1	20.1	8.2	73	0	28	35	6.2	4.9	95	No Comments	NS	NS	NS	NS	NS	
TNX 24D	TNX Secondary	Unconfined UTRAU/GAU	18-Nov-2019	34.1	109.16	20.3	1.1	74	0	10	4	5.6	4.7	188	No Comments	NS	NS	NS	NS	NS	

TNX Monitoring Constituents – Hydrocarbon; Inorganics

Station	Butane	Carbon Dioxide	Ethane	Ethylene	Isobutane	Methane	Nitrogen	Propane	Propylene	Converted Uranium Mass	Iron	Mercury	Nitrate	Nitrate-Nitrite as Nitrogen	Sulfate	Total Organic Carbon	Uranium
Unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	mg/L	ug/L	ug/L	ug/L	mg/L	mg/L	ug/L	ug/L
NPDWS										30		2		10			30
P 26A	<EQL (0.2)	30000	<EQL (0.1)	<EQL (0.1)	<EQL (0.2)	<EQL (0.5)	16000	<EQL (0.1)	<EQL (0.1)	NS	880	<EQL (0.2)	<EQL (100)	0.0453	7.49	[1410]	<EQL (5)
																[1410]	
																[1410]	
																[1400]	
																[1410]	
P 26B	<EQL (0.2)	38000	<EQL (0.1)	<EQL (0.1)	<EQL (0.2)	<EQL (0.5)	16000	<EQL (0.1)	<EQL (0.1)	NS	136	<EQL (0.2)	331	0.368	2.41	<EQL (1000)	<EQL (5)
											125	<EQL (0.2)	329		2.39	<EQL (1000)	<EQL (5)
																<EQL (1000)	
																<EQL (1000)	
																<EQL (1000)	
																<EQL (1000)	
P 26D	<EQL (0.2)	45000	<EQL (0.1)	<EQL (0.1)	<EQL (0.2)	<EQL (0.5)	14000	<EQL (0.1)	<EQL (0.1)	NS	180	<EQL (0.2)	436	0.483	1.35	<EQL (1000)	<EQL (5)
																<EQL (1000)	
																<EQL (1000)	
																<EQL (1000)	
																<EQL (1000)	
																<EQL (1000)	
TRW 1	<EQL (0.2)	41000	<EQL (0.1)	<EQL (0.1)	<EQL (0.2)	15	14000	<EQL (0.1)	<EQL (0.1)	NS	[33.6]	[0.105]	[3880]	3.91	4.5	<EQL (1000)	<EQL (5)
																<EQL (1000)	
																<EQL (1000)	
																<EQL (1000)	
																<EQL (1000)	
																<EQL (1000)	
TRW 2	<EQL (0.2)	35000	<EQL (0.1)	<EQL (0.1)	<EQL (0.2)	130	16000	<EQL (0.1)	<EQL (0.1)	NS	4130	[0.197]	2560	2.62	1.15	[818]	<EQL (5)
																[726]	
																[752]	
																[721]	
																[743]	
TRW 3	<EQL (0.2)	260000	<EQL (0.1)	<EQL (0.1)	<EQL (0.2)	13000	3000	<EQL (0.1)	<EQL (0.1)	NS	188000	[0.0634]	<EQL (100)	0.117	0.978	74100	<EQL (5)
														0.116		73300	
																73800	
																71800	
																73700	
TRW 4R	<EQL (0.2)	210000	<EQL (0.1)	<EQL (0.1)	<EQL (0.2)	11000	3200	<EQL (0.1)	<EQL (0.1)	NS	9470	[0.0269]	<EQL (100)	0.0694	0.464	8660	<EQL (5)
																8010	
																8170	
																7970	
																8040	
TCM 5	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	806	[0.122]	NS	1.07	NS	NS	56.5
TIR 1L	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	[45.3]	<EQL (0.2)	NS	0.22	NS	NS	<EQL (5)
														0.22			
TIR 1M	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	[24.4]	[0.037]	NS	2.61	NS	NS	<EQL (5)
TIR 1U	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
TNX 13D	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	1770	<EQL (0.2)	NS	0.183	NS	NS	<EQL (5)
												<EQL (0.2)					
TNX 15D	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	[25.7]	<EQL (0.2)	NS	1.38	NS	NS	<EQL (5)
TNX 20D	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	201	<EQL (0.2)	NS	1.19	NS	NS	<EQL (5)
TNX 22D	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	1680	<EQL (0.2)	NS	0.147	NS	NS	<EQL (5)
TNX 28D	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	793	[0.0324]	NS	0.909	NS	NS	7.81
TNX 30D	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	464	[0.0505]	NS	2.42	NS	NS	15.8
TNX 35D	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	1560	<EQL (0.2)	NS	0.154	NS	NS	<EQL (5)
											1560						<EQL (5)
TNX 37D	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	544	<EQL (0.2)	NS	0.331	NS	NS	[0.706]
TNX 72D	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
TNX 72M	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	3510	<EQL (0.2)	NS	0.136	NS	NS	<EQL (5)
TNX 72S	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
TNX073D	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	3080	<EQL (0.2)	NS	0.377	NS	NS	<EQL (5)
TNX074D	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	1970	<EQL (0.2)	NS	0.0526	NS	NS	<EQL (5)
														0.0510			
TNX075D	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	1390	<EQL (0.2)	NS	0.665	NS	NS	<EQL (5)
TVM 1M	<EQL (0.2)	16000	<EQL (0.1)	<EQL (0.1)	<EQL (0.2)	14000	3900	<EQL (0.1)	<EQL (0.1)	NS	39800	[0.0272]	<EQL (100)	0.0591	0.486	[10700]	<EQL (5)
																[illegible]	
																[illegible]	
																[illegible]	
																[illegible]	
TVM 2M	<EQL (0.2)	34000	<EQL (0.1)	<EQL (0.1)	<EQL (0.2)	24	16000	<EQL (0.1)	<EQL (0.1)	NS	15200	<EQL (0.2)	[186]	0.275	[0.175]	<EQL (1000)	<EQL (5)
																<EQL (1000)	
																<EQL (1000)	
																<EQL (1000)	
																<EQL (1000)	
TVM 4M	<EQL (0.2)	36000	<EQL (0.1)	<EQL (0.1)	<EQL (0.2)	<EQL (0.5)	14000	<EQL (0.1)	<EQL (0.1)	NS	117	<EQL (0.2)	[435]	0.514	1.17	<EQL (1000)	<EQL (5)
																<EQL (1000)	
																<EQL (1000)	
																<EQL (1000)	
																<EQL (1000)	
TVR 1A	<EQL (0.2)	49000	<EQL (0.1)	<EQL (0.1)	<EQL (0.2)	4000	14000	<EQL (0.1)	<EQL (0.1)	NS	11300	<EQL (0.2)	<EQL (100)	0.0477	6.36	[1010]	<EQL (5)
																<EQL (1000)	
																<EQL (1000)	
																<EQL (1000)	
																<EQL (1000)	
XSB006R (05-Aug-2019)	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	[47.4]	<EQL (0.2)	NS	1.89	NS	NS	<EQL (5)
											[36.9]						<EQL (5)
XSB006R (20-Nov-2019)	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	[23.7]	2.77	NS	5.32	NS	NS	12.9
TBG 3	<EQL (0.2)	220000	<EQL (0.1)	1.4	<EQL (0.2)	3500	11000	<EQL (0.1)	0.2	NS	48100	[0.0656]	<EQL (500)	0.0344	2.3	2180000	24.8
											47400					2140000	24.4
																2170000	
																2170000	
																2170000	
																2170000	
TBG 4	<EQL (0.2)	230000	<EQL (0.1)	0.37	<EQL (0.2)	9600	8300	<EQL (0.1)	0.14	NS	92400	[0.054]	[112]	0.137	1.39	2200000	14.5
																2150000	
																2180000	
																2200000	
																2150000	
																2180000	
TBG 5	<EQL (0.2)	330000	<EQL (0.1)	0.37	<EQL (0.2)	7400	7900	<EQL (0.1)	<EQL (0.1)	NS	102000	<EQL (0.2)	[213]	0.103	0.686	104000	<EQL (5)
																103000	
																104000	
																102000	
																104000	
TNX 3D	<EQL (0.2)	140000	<EQL (0.1)	<EQL (0.1)	<EQL (0.2)	13000	4200	<EQL (0.1)	<EQL (0.1)	NS	41300	<EQL (0.2)	<EQL (100)	0.0782	0.581	[2150]	<EQL (5)
													<EQL (100)		0.545	[2110]	
																[2150]	
																[2000]	
																[2120]	
TNX 8D	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	16000	<EQL (0.2)	NS	0.0801	NS	NS	[1.34]
												<EQL (0.2)					
TNX 11D	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	809	<EQL (0.2)	NS	0.0384	NS	NS	<EQL (5)
TNX 16D	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	113	<EQL (0.2)	NS	1.1	NS	NS	<EQL (5)
TNX 27D	<EQL (0.2)	21000	<EQL (0.1)	<EQL (0.1)	<EQL (0.2)	8.6	15000	<EQL (0.1)	<EQL (0.1)	NS	2590	[0.0681]	735	0.821	7.3	1780	<EQL (5)
																1650	
																1700	
																1630	
																1690	
TNX 1D	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	102	<EQL (0.2)	NS	1.04	NS	NS	<EQL (5)
TNX 5D	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	122	<EQL (0.2)	NS	0.395	NS	NS	<EQL (5)
TNX 9D	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	623	<EQL (0.2)	NS	0.0453	NS	NS	<EQL (5)
TNX 12D	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	8690	[0.199]	NS	0.126	NS	NS	<EQL (5)
TNX 24D	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	457	<EQL (0.2)	NS	0.263	NS	NS	<EQL (5)

TNX Monitoring Constituents – Organics; Radionuclides

Station	1,4-Dioxane	Carbon Tetrachloride	Chloroethene (Vinyl Chloride)	cis-1,2-Dichloroethylene	Tetrachloroethylene (PCE)	Trichloroethylene (TCE)	Adjusted Gross Alpha	Combined Radium (226 and 228)	Converted Uranium Activity	Gross Alpha	Nonvolatile Beta	Radium-226	Radium-228
Unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	pCi/L	pCi/L	ug/L	pCi/L	pCi/L	pCi/L	pCi/L
NPDWS	0.46	5	2	70	5	5	15	5		15	50	5	5
P 26A	<EQL (0.2)	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (6.89)	[0.6]	<EQL (3.35)	<EQL (6.89)	<EQL (9.27)	[0.597]	<EQL (1.16)
	<EQL (3)												
P 26B	<EQL (0.2)	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (4.19)	[0.64]	<EQL (3.35)	<EQL (4.19)	<EQL (7.8)	[0.643]	<EQL (0.961)
	<EQL (3)									<EQL (5.35)	<EQL (8.19)	[0.567]	<EQL (0.965)
	<EQL (3)												
P 26D	<EQL (0.2)	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (5.76)	<EQL (0.99)	<EQL (3.35)	<EQL (5.76)	[4.25]	<EQL (0.265)	<EQL (0.986)
	<EQL (3)												
TRW 1	<EQL (0.2)	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (1)	1.85	<EQL (4.3)	[0.48]	<EQL (3.35)	<EQL (4.3)	<EQL (8.5)	[0.481]	<EQL (0.868)
	<EQL (3)												
TRW 2	<EQL (0.2)	<EQL (1)	<EQL (1)	1.16	<EQL (1)	2.62	<EQL (4.73)	[0.33]	<EQL (3.35)	<EQL (4.73)	[4.27]	[0.33]	<EQL (0.938)
	<EQL (3)												
TRW 3	<EQL (0.2)	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (6.07)	[0.8]	<EQL (3.35)	<EQL (6.07)	[3.97]	[0.796]	<EQL (1.05)
	<EQL (3)												
TRW 4R	<EQL (0.2)	<EQL (1)	<EQL (1)	15	<EQL (1)	<EQL (1)	<EQL (5.83)	[0.21]	<EQL (3.35)	<EQL (5.83)	<EQL (8.43)	[0.206]	<EQL (0.843)
	<EQL (3)												
TCM 5	<EQL (0.2)	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (1)	4.46	-8.855	[0.45]	37.86	29	17.5	[0.454]	<EQL (0.963)
	<EQL (3)												
TIR 1L	<EQL (0.2)	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (5.42)	<EQL (1.26)	<EQL (3.35)	<EQL (5.42)	<EQL (7.81)	<EQL (0.165)	<EQL (1.26)
	<EQL (3)												
TIR 1M	<EQL (0.2)	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (1)	[0.58]	<EQL (4.9)	[0.26]	<EQL (3.35)	<EQL (4.9)	<EQL (8.01)	[0.264]	<EQL (1.03)
	<EQL (3)												
TIR 1U	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
TNX 13D	<EQL (0.2)	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (3.26)	[0.26]	<EQL (3.35)	<EQL (3.26)	<EQL (9.37)	[0.259]	<EQL (1.06)
	<EQL (3)											<EQL (0.242)	<EQL (1.02)
	<EQL (3)												
TNX 15D	<EQL (0.2)	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (1)	1.32	<EQL (3.23)	<EQL (1.07)	<EQL (3.35)	<EQL (3.23)	<EQL (9.75)	<EQL (0.222)	<EQL (1.07)
	<EQL (3)												
TNX 20D	<EQL (0.2)	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (6.02)	<EQL (1.06)	<EQL (3.35)	<EQL (6.02)	<EQL (8.63)	<EQL (0.248)	<EQL (1.06)
	<EQL (3)												
TNX 22D	<EQL (0.2)	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (3.24)	[0.28]	<EQL (3.35)	<EQL (3.24)	[5.02]	[0.282]	<EQL (1.08)
	<EQL (3)												
TNX 28D	<EQL (0.2)	<EQL (1)	<EQL (1)	1.18	<EQL (1)	5.95	[-1.9227]	[0.36]	5.23	[3.31]	<EQL (8.96)	[0.362]	<EQL (0.926)
	<EQL (3)											[0.357]	<EQL (0.914)
TNX 30D	<EQL (0.2)	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (1)	1.17	[-4.346]	<EQL (0.88)	10.59	[6.24]	[5.16]	<EQL (0.157)	<EQL (0.875)
	<EQL (3)												
TNX 35D	<EQL (0.2)	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (5.45)	[0.25]	<EQL (3.35)	<EQL (5.45)	[7.12]	[0.254]	<EQL (1.13)
	<EQL (3)												
TNX 37D	<EQL (0.2)	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (1)	1.34	<EQL (3.24)	<EQL (0.92)	<EQL (3.35)	<EQL (3.24)	<EQL (9.03)	<EQL (0.156)	<EQL (0.92)
	<EQL (3)												
TNX 72D	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
TNX 72M	<EQL (0.2)	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (5.96)	[0.39]	<EQL (3.35)	<EQL (5.96)	<EQL (8.9)	[0.386]	<EQL (1.06)
	<EQL (3)												
TNX 72S	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
TNX073D	<EQL (0.2)	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (5.81)	[0.38]	<EQL (3.35)	<EQL (5.81)	<EQL (9.83)	[0.385]	<EQL (0.928)
	<EQL (3)												
TNX074D	<EQL (0.2)	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (6.45)	[0.59]	<EQL (3.35)	<EQL (6.45)	<EQL (8.21)	[0.334]	<EQL (0.905)
	<EQL (3)												
TNX075D	<EQL (0.2)	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (4.38)	[0.27]	<EQL (3.35)	<EQL (4.38)	<EQL (9.5)	[0.266]	<EQL (1.03)
	<EQL (3)												
TVM 1M	<EQL (0.2)	<EQL (1)	<EQL (1)	20.7	<EQL (1)	<EQL (1)	<EQL (6.51)	[0.49]	<EQL (3.35)	<EQL (6.51)	<EQL (8.76)	[0.49]	<EQL (1)
	<EQL (3)												
TVM 2M	<EQL (0.2)	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (3.17)	[0.43]	<EQL (3.35)	<EQL (3.17)	<EQL (8.46)	[0.433]	<EQL (0.959)
	<EQL (3)											[0.339]	<EQL (1.08)
TVM 4M	<EQL (0.2)	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (1)	[3.89]	[1.58]	<EQL (3.35)	[3.89]	<EQL (9.42)	1.98	[0.602]
	<EQL (3)												
TVR 1A	<EQL (0.2)	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (6.61)	[0.72]	<EQL (3.35)	<EQL (6.61)	<EQL (9.26)	[0.718]	<EQL (1.04)
	<EQL (3)												
XSB006R (05-Aug-2019)	[0.183]	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (1)	1.15	<EQL (1.73)	[1.006]	<EQL (5)	<EQL (6.17)	<EQL (9.79)	0.481	[0.525]
	<EQL (3)												
XSB006R (20-Nov-2019)	<EQL (0.2)	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (1)	3.1	3.157	[1.08]	8.643	11.8	[6.06]	[1.08]	<EQL (1.05)
	<EQL (3)									[7.07]	[4.85]		
TBG 3	<EQL (20)	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (1)	4.75	[2.384]	[1.75]	16.62	[19]	31.9	[1.75]	<EQL (0.854)
	<EQL (300)												
TBG 4	3	<EQL (1)	<EQL (1)	6.52	<EQL (1)	[0.95]	[-2.805]	[0.7]	9.72	[6.91]	[15.5]	[0.699]	<EQL (1.34)
	[1.59]												
TBG 5	2.01	<EQL (1)	<EQL (1)	60.7	<EQL (1)	<EQL (1)	[7.72]	[1.64]	<EQL (3.35)	[7.72]	[11.1]	[1.15]	[0.489]
	<EQL (3)												
TNX 3D	<EQL (0.2)	<EQL (1)	<EQL (1)	12.5	<EQL (1)	4.04	<EQL (6.96)	[0.93]	<EQL (3.35)	<EQL (6.96)	<EQL (8.6)	[0.928]	<EQL (1.02)
	<EQL (3)												
TNX 8D	<EQL (0.2)	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (1)	[0.77]	<EQL (3.21)	[0.31]	[0.9]	<EQL (3.21)	<EQL (9.59)	[0.311]	<EQL (0.858)
	<EQL (3)												
TNX 11D	<EQL (0.2)	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (4.11)	[0.42]	<EQL (3.35)	<EQL (4.11)	[5.7]	[0.424]	<EQL (1.04)
	<EQL (3)												
TNX 16D	<EQL (0.2)	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (1)	1.72	<EQL (4.13)	<EQL (1.27)	<EQL (3.35)	<EQL (4.13)	<EQL (8.94)	<EQL (0.189)	<EQL (1.27)
	<EQL (3)												
TNX 27D	<EQL (0.2)	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (5.39)	[0.32]	<EQL (3.35)	<EQL (5.39)	[4.28]	[0.317]	<EQL (1.12)
	<EQL (3)												
TNX 1D	<EQL (0.4)	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (10)	<EQL (0.88)	<EQL (3.35)	<EQL (10)	<EQL (23.1)	<EQL (0.193)	<EQL (0.878)
	<EQL (3)									<EQL (10.8)	<EQL (23.3)		<EQL (0.798)
TNX 5D	<EQL (0.2)	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (5.63)	[2.32]	<EQL (3.35)	<EQL (5.63)	<EQL (9.24)	[1.85]	[0.471]
	<EQL (3)												
TNX 9D	<EQL (0.2)	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (4.12)	[0.47]	<EQL (3.35)	<EQL (4.12)	<EQL (9.44)	[0.474]	<EQL (1.04)
	<EQL (3)											[0.391]	<EQL (1.05)
TNX 12D	<EQL (0.2)	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (5.91)	[1.47]	<EQL (3.35)	<EQL (5.91)	<EQL (9.87)	[1.47]	<EQL (1.17)
	<EQL (3)												
TNX 24D	<EQL (0.2)	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (1)	<EQL (4.76)	[0.94]	<EQL (3.35)	<EQL (4.76)	<EQL (8.59)	[0.941]	<EQL (0.962)
	<EQL (3)												

Explanation

[##]	EPA Functional Guideline Code of 'J' was applied to the result, indicating an estimated quanity.
<EQL(##)	Constituent was below detection. The sample-specific Estimated Quantitation Limit is in parentheses.
(red)	Result exceeds applicable limit.
REJ	Result Rejected.
(blank)	Result is less than the applicable limit and without EPA Functional Guidline qualifiers.
NS	Requested to be sampled but was not. See comments as to why not.
Blue Text	Not a required sample analysis.

APPENDIX C

DATA REVIEW KEY

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Key to Reading the Tables

The following abbreviations may appear in the data tables:

Constituents

CCl_4	Carbon Tetrachloride
VC	Chloroethane (Vinyl Chloride)
cis-1,2-DCE	Cis-1,2-Dichloroethylene
NO_3/NO_2 as N	Nitrate-nitrite as Nitrogen
PCE	Tetrachloroethylene
TCE	Trichloroethylene

Contract Laboratories Available

EBL	Environmental Bioassay Lab
GEL	General Engineering Lab
LVL	Lionville Laboratory
STL	Severn Trent Lab

Nomenclature

AZ		Aquifer Zone
UTRA	UTRA	Upper Three Runs Aquifer Unit
GAU	GAU	Gordon Aquifer Unit
UNKNOWN	UNK	Unknown

Field Conditions

A	Pump is surging excessively; aerated
B	blank sample was collected
C	well is continuously pumping
D	well is dry-no sample or field data collected
E	equipment blank was collected
I	well went dry during sampling; field data collected but insufficient water to collect all samples
L	well went dry before sampling began; only depth to water can be determined
N	well was not stabilized before sampling began
P	inaccessibility or mechanical failure prevented sample collection and field analysis of the water
S	no water in standpipe; for water level events only
T	samples were collected, but some samples were not sent to the laboratory due to high turbidity
W	unable to sample well because of stabilization or sampling equipment failure; water-level measurements were obtained
X	well went dry during purging; samples collected after well recovered measurements obtained
0	OK
1	Pump Dry
2	Sampled after recovery
3	Gallons purged through sample port
4	DI water taken from 772-7B
5	High turbidity
6	Flow meter leaking
7	Pump failure
8	Flow meter not operating
9	# gallons added
10	Well is inaccessible, well cannot be Sampled
11	Well abandoned
12	No water to surface
13	Field measurements only
14	Not all samples were collected
15	Equipment failure
16	No water in standpipe
17	Bailed well
18	Water level tape not long enough
19	Well not sampled, maintenance required
20	Well sampled, maintenance required

Field Conditions (continued)

21	Measurement Exceeded Criteria

Units

Deg C	degrees Celsius
Deg N	Degrees North
Deg W	Degrees West
E	East
ft	feet
mg/L	milligrams per liter
mV	millivolts
msl	mean sea level
N	North
nM	nanomoles
NTU	nephelometric turbidity unit
pCi/L	picoCuries per liter
pCi/mL	picoCuries per milliliter
pH	pH unit
μg/L	micrograms per liter
μS/cm	microSiemens per centimeter

Other

CLP	USEPA Functional Guideline Codes
E	exponential notation (e.g., 1.1E–09 = 1.1 x 10^{-9} = 0.0000000011)
STORET	USEPA STORET result qualifiers
Filt.	Data results after application of the Data Usability filter
MCL	Maximum Contaminant Level
NDD	"not decision data"
PDWS	primary drinking water standard
USEPA NPDWS	USEPA National Primary Drinking Water Standard
<EQL	less than the sample-specific estimated quantitation limit

Results Below Detection

For radiological analyses, the analytical result field contains the result recorded on the analytical instrument and reported by the laboratory, even if it is negative. For non-radiological analyses, if the analyte is not detected, the sample-specific estimated quantitation limit (EQL) is entered into the result field and is reported with a less than [<] sign. The EQL is defined as the lowest concentration that can be achieved reliably within specified limits of precision and accuracy during routine laboratory operating conditions. The sample-specific EQL is modified for sample concentration or dilution or unusual aliquot size that affects analytical sensitivity.

Calculated Result

The data tables (matrix tables) may include some calculated values of parameters to allow comparison of the sample concentration with the Maximum Contaminant Level (MCL) of the USEPA National Primary Drinking Water Standards. The calculated results have a "C" as the USEPA STORET code, listed in the "EPA" column. If any of the results used in the calculation were assigned a "J" qualifier, the calculated result was also assigned a "J" qualifier. Results for radium 226, radium 228, and uranium (total recoverable) that were <EQL, were treated as "zero" in the calculations.

- Radium-226 and radium-228 are counted as two contaminants, even though their standard is combined. The calculated result for "Radium 226 and Radium 228 (Combined)" is obtained by adding the result for radium 226 to the result for radium 228. If both results were below detection, the greater of the two values was used to represent the "<EQL" result for Radium 226 and Radium 228 (Combined)".

- The MCL for gross alpha particles radioactivity (15 pCi/L) applies to the calculated or "adjusted" gross alpha radioactivity. The "adjusted" gross alpha is defined as the gross alpha particle activity, excluding radon and naturally occurring uranium 234, 235, and 238. The result for "adjusted" gross alpha can also be determined by converting uranium (total recoverable) results from ug/L to pCi/L, using the conversion factor of 0.67 pCi/µg, and then subtracting the uranium activity from the unadjusted gross alpha activity. In some cases, uranium (total recoverable) was detected by the chemical method of analysis, but the gross alpha measurement of radioactivity was below detection. In these cases, since no calculation could be performed, the results for adjusted gross alpha was shown as less than the method detected limit.

- The Radionuclides Rule uses a "sum-of-the-fractions" method to determine whether a sample is in compliance with the MCL for beta particles and photon radioactivity. While the MCL is in "millirems", contaminants are analyzed in "pCi/L". Therefore, to determine compliance, each beta and photon emitter must be concerted from pCi/L to millirems using the conversion factors listed in the MCL column of the data tables (Matrix Tables). The average annual concentration of beta particle and photon radioactivity from man-made radionuclides in drinking water must not produce an annual dose equivalent to the total body or any internal organ greater than 4 millirem/yr (mrem/yr). For each emitter detected in a sample, the result was divided by the value in the MCL column of the data tables (Matrix Tables). This provided a fraction of how much the particular beta or photon emitter is providing towards the maximum of 4 mrem/yr for all of the beta photon emitters. Each fraction was then converted to a dose equivalent of 4 mrem/yr by multiplying the fraction by 4. The results for each emitter were then summed, and the calculated result shown as "beta and photon emitters' for comparison to the MCL of 4 mrem/yr.

Uncertainty and Data Usability

In April 1998, the South Carolina Department of Health and Environmental Control (SCDHEC) accepted guidance proposed by Savannah River Site (SRS) to apply a method for minimizing uncertainty in compliance decisions potentially affecting long-term monitoring or remediation (letter, Taylor to Cook; April 21, 1998). The method is applied by processing or “filtering” the data, using the United States Environmental Protection Agency (USEPA) Functional Guideline Codes (USEPA 1994; USEPA 1999) applied by the laboratories to qualify the analytical results. By removing all data with a result qualifier of “L”, “R”, “U”, and “J” from consideration, groundwater data users can ensure that only quantified numerical results are applied to the decision process. The output of the filtering process populates the “Filt” column as follows:

1) "Null" or “blank” – Data not remarked. The analytical result is acceptable for use as reported, and the result is not greater than an associated concentration limit for the analyte.
   Rationale: The best result would be one without qualifiers, so the preferred choice would be the maximum result that did not have any qualifiers.
2) "J", “L”, “N”, “NJ”, or “JL” – “J” identifies that the analyte was positively identified; the associated numerical value is an estimated concentration of the analyte in the sample. "L" Indicates the sample result is off scale high. "JL" Indicates an estimated quantity of a sample that is off scale high. “N” is used for all TIC (tentatively identified compounds) and indicates the presence of an analyte for which there is presumptive evidence to make a tentative identification. “NJ” means the presence of an analyte that has been tentatively identified and the associated numerical value represents its approximate concentration.
   Rationale: an estimate can still provide useful information. Although there may be a range of uncertainty around the actual value, the value itself may still grossly exceed a regulatory standard. However, a estimated value is less certain than an unqualified result. Therefore, this would be labeled as "NDD" (not decision data).
3) “U” - material analyzed for, but not detected. The analyte concentration is less than the sample specific Estimated Quantitation Limit and labeled “<EQL”.

   Rationale: a result above the detection limit would be chosen before a result below detection so that the process is not biased toward false negatives.
4) “UJ” - result is not above the reported sample quantitation limit, but the reported quantitation limit itself is approximate, and may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.

   Rationale: the additional qualifiers make this result less reliable for use than the "U" without qualifiers. These results would be labeled “<EQL”.
5) “Rejected” – The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

   Rationale: the only value in providing this result in the report is to indicate that the lab attempted to analyze the sample. If there are any other results available, the result with the “R” qualifier should not be reported. If it is reported, it is definitely “NDD” (not decision data).

Holding Times

Standard analytical methods include a limit, called holding time, on the maximum elapsed time between sample collection and extraction or analysis by the laboratory. In the data tables (matrix tables), the result qualifier Q in the "EPA" column indicates that holding time was exceeded. Analyses performed beyond holding times may not yield valid results.

SCDHEC allows only 15 minutes elapse between sampling and analysis for pH. Thus, only field pH measurements can meet the holding time criterion; laboratory pH analyses always will exceed it.

The laboratory procedure used for the determination of specific conductance allows one day to elapse between sampling and analysis. Thus, laboratory specific conductance measurements may exceed the holding time criterion.

Data Qualification

The contract laboratories submit sample- or batch-specific quality assurance/quality control information either at the same time as analytical results or in a quarterly summary. Properly defined and used, data qualifiers can be a key component in assessing data usability. The USEPA Functional Guideline Codes (USEPA 1994; EPA 1999) used by the analytical laboratories are shown in the CLP result qualifier column are defined below. These modifiers appear in the data tables (matrix tables) under the associated with the "Qual code" in the drop down comment box of the result cell in the data tables (matrix tables). US EPA STORET codes appear in the data tables (matrix tables) associated with the "EPA code" in the drop down comment box of the result cell in the Matrix tables. USEPA STORET codes are defined below.

Concentrations that exceeded the USEPA NPDWS and are not "estimated quantities" (i.e. do not have a USEPA Functional Guideline Code of "J") are identified in the tables by a red background. Results shown in a lavender background are estimated quantities. Blue font indicates that a particular analysis is not required for a given well for the sampling event presented. An "NS" with a yellow background identifies analyses that were required but could not be completed. Results that were rejected by the laboratory are listed in the data tables (matrix tables) as "REJ", with a pink background.

"CLP" Qualifiers - USEPA Functional Guidelines Codes (USEPA 1994 and USEPA 1999)

(Blank)	Data not remarked. The analytical result is acceptable for use as reported.
J	The analyte was positively identified; the associated numerical value is an estimated concentration of the analyte in the sample.
R	The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence of absence of the analyte cannot be verified. Assignment of *R* requires approval by the appropriate WSRC data validation coordinator.
U	Material analyzed for but not detected. Analytical result reported is less than the sample quantitation limit.
U J	The analyte was not detected above the reported sample quantitation limit. The reported quantitation limit is approximate, and may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.

Note: These are only some of the qualifiers present in the database. All modifiers associated with the data are published in the official repository of the data.

"EPA" Qualifiers – USEPA STORET Codes

(Blank)	Data not remarked
C	The result is calculated.
I	The result is less than the ssEQL, but equal to or greater than the MDL. Always reported with an associated EPA functional Guideline Code qualifier of *J*.
K	The actual concentration is known to be less than the reported result.
L	The actual concentration is known to be less than the reported result.
N	There is presumptive evidence of the presence of an analyte.
O	Sample received by laboratory, but the analysis was lost or not performed.
Q	Sample was held beyond normal holding time prior to analysis.
V	The analyte was detected in both the method blank and the sample.
Y	The result is from an unpreserved or incorrectly preserved sample; the data may not be accurate.

Note: These are only some of the qualifiers present in the database. All modifiers associated with the data are published in the official repository of the data.

In addition, to the USEPA STORET codes, SRS applies qualifier codes to provide additional information. The SRS codes, also associated with the "EPA code" in the Matrix Tables are defined below.

"SRS" Qualifiers

1 Compound identification criteria were not met.

2 Laboratory control sample (LCS) or blank spike (BS) criteria were not met.

3 Inductively coupled plasma (ICP) serial dilution criteria were not met.

4 Matrix interference is present.

5 Matrix spike concentration was < 0.25× the sample concentration, and the percent recovery cannot be determined.

6 The analyte was detected in both the sample and associated field blank.

7 The analyte was detected in both the sample and associated rinsate.

8 The analyte was detected in both the sample and associated trip blank.

9 The field duplicate RPD was not within control limits.

10 Internal standard (IS) criteria were not met when the IS was used for quantitation.

11 Matrix spike recovery was not within the control limits.

12 A tentatively identified compound is a suspected aldol-condensation product.

13 Initial or continuing calibration criteria were not met.

14 Surrogate or tracer spike recovery is out of specification.

15 Graphite furnace atomic absorption QC: a. Duplicate injection criteria were not met; b. Post-digestion spike recovery was not within control limits and the sample absorbance is > 50% of the post-digestion spike absorbance.

16 The sample was analyzed by the method of standard additions.

17 Graphite furnace atomic absorption QC: the post-digestion spike recovery is not within control limits and the sample absorbance is < 50% of the post-digestion spike absorbance.

18 The laboratory duplicate relative percent difference (RPD) or matrix spike/matrix spike duplicate (MS/MSD) (RPD) was not within control limits.

Note: These are only some of the qualifiers present in the database. All modifiers associated with the data are published in the official repository of the data, the Environmental Restoration Data Management System database.

REFERENCES

SCDHEC, 1998. *RE: Groundwater Data Reporting Change at SRS*, Letter, G. K. Taylor (SCDHEC) to J. W. Cook (EPD/WSRC); April 21, 1998

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USEPA, 2000. EPA (U.S. Environmental Protection Agency, Office of Water), 2000. Federal Register, Vol. 56, No 236, Thursday, December 7, 2000, Rules and Regulations, 40 CFR Parts 9, 141, and 142; National Primary Drinking Water Regulations; Radionuclides; Final Rule

USEPA, 2002. EPA (U.S. Environmental Protection Agency, Office of Water), 2002. Implementation Guidance for Radionuclides; Appendix I, (beta and photon emitter conversion tables); EPA 816-F-00-002, March 2002. http://www.epa.gov/safewater

USEPA, 2003. EPA (U.S. Environmental Protection Agency, Office of Water), 2003. Alphabetical version in .pdf format of the EPA National Primary Drinking Water Stnars; EPA 816-F-03-016, June 2003. (For copies of the complete regulations regarding these contaminants, follow the links to the National Primary Drinking Water Regulations. http://www.epa.gov/safewater/consumer/pdf/mcl..pdf)

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APPENDIX D

HYDROGRAPHS

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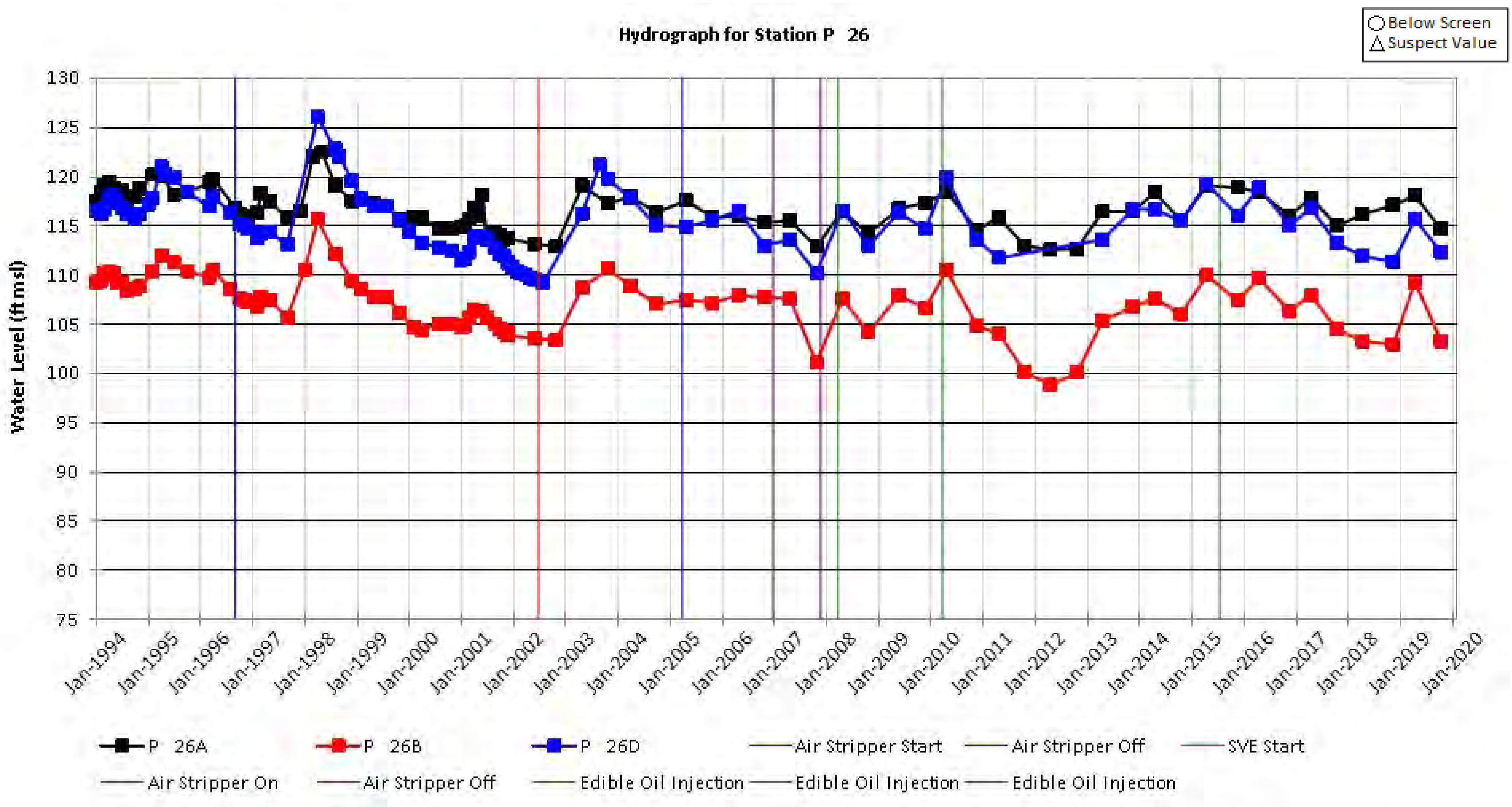
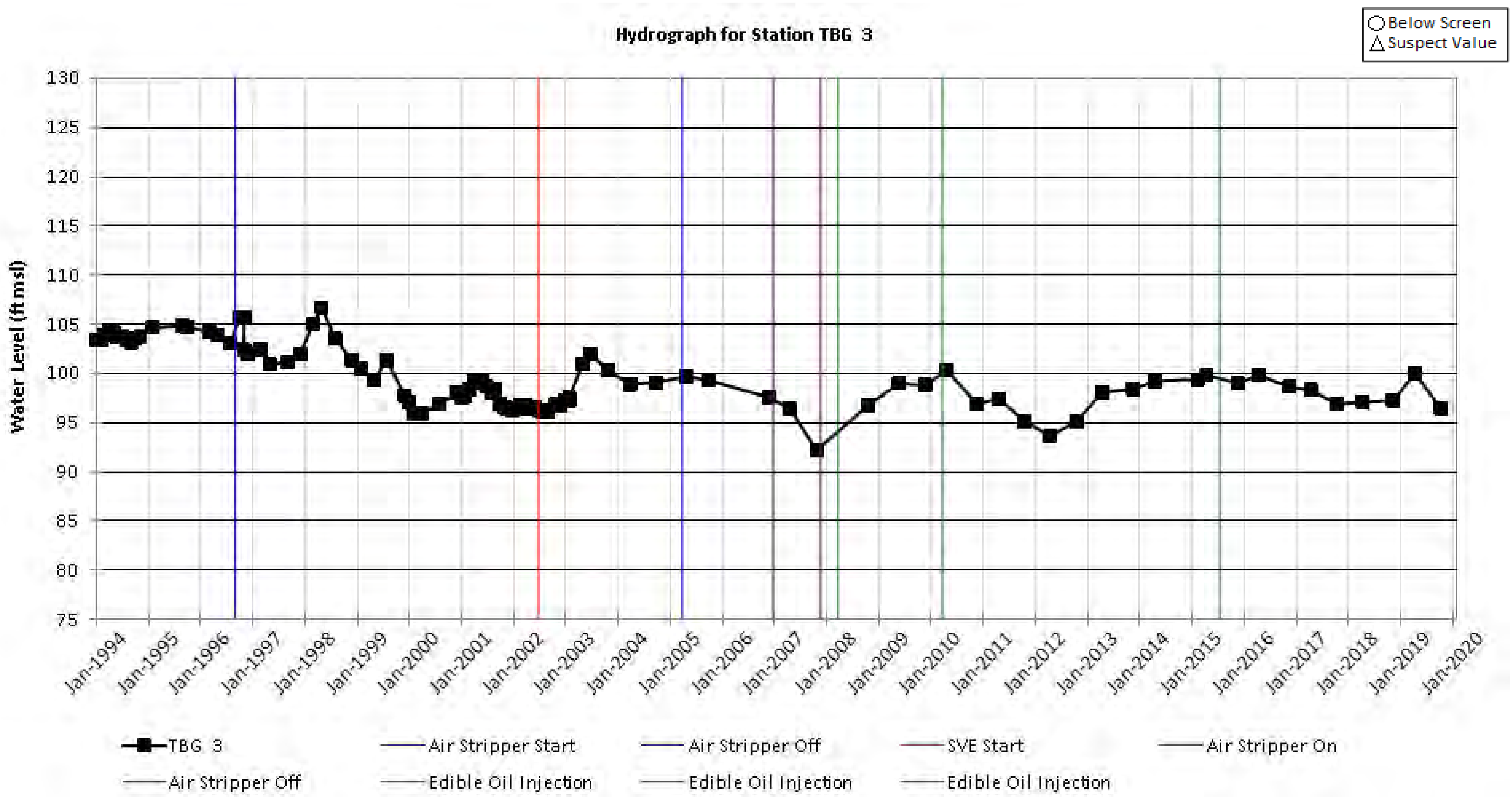
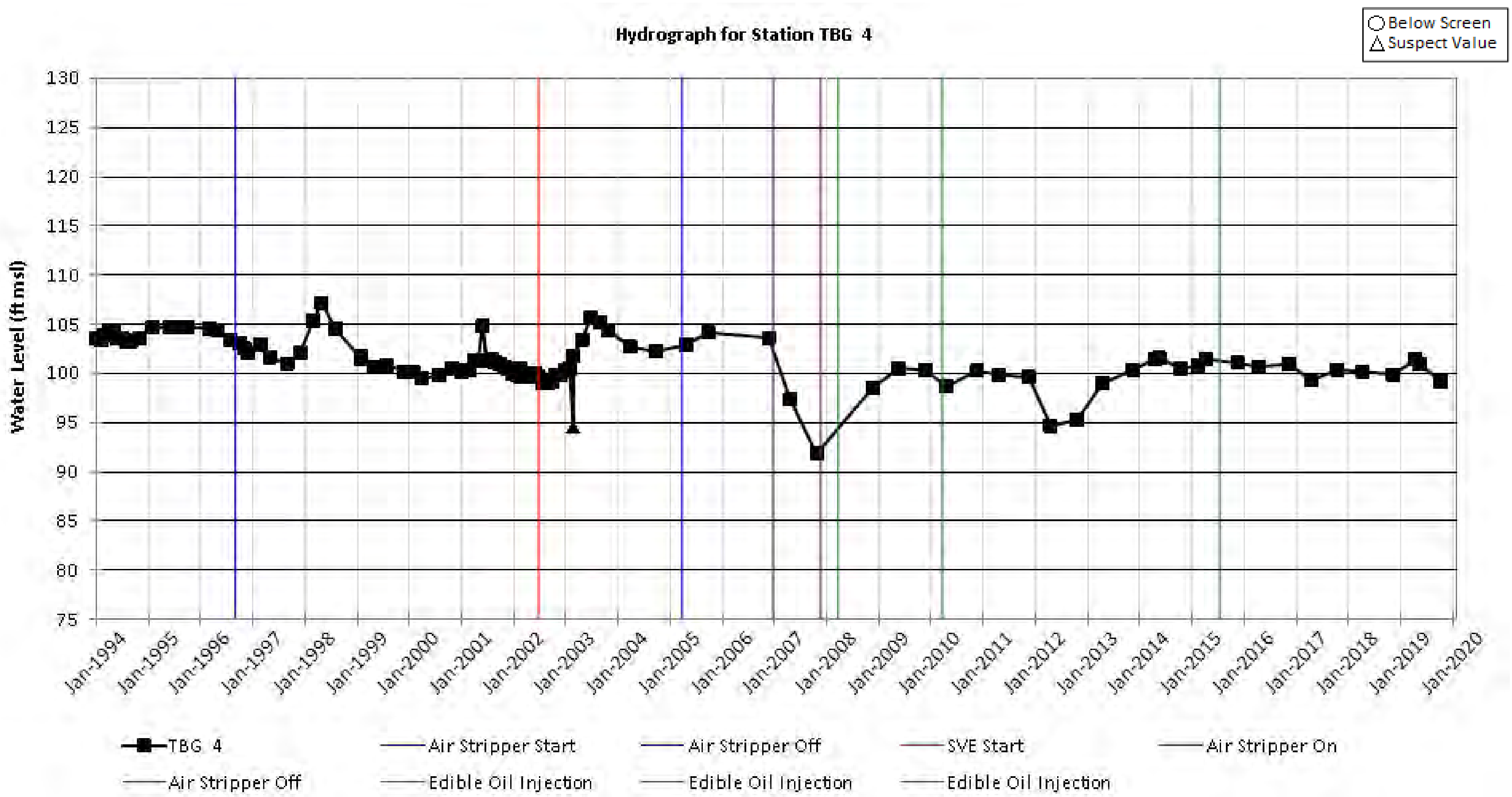
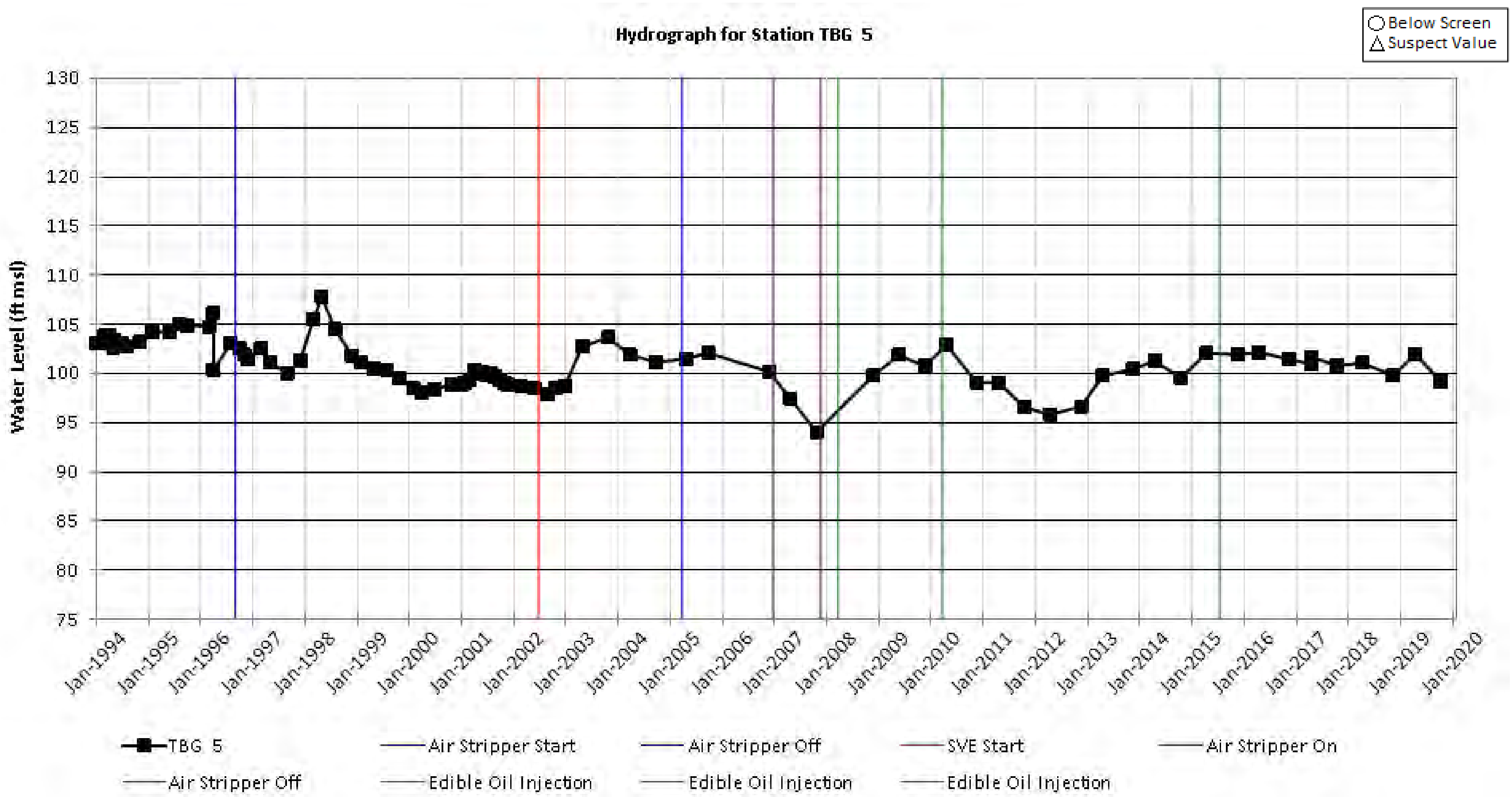

Hydrograph for Station P 26
Below Screen
Suspect Value
Water Level (ft msl)
130
125
120
115
110
105
100
95
90
85
80
75
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
P 26A
P 26B
P 26D
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection


Hydrograph for Station TBG 3
Below Screen
Suspect Value
Water Level (ft msl)
130
125
120
115
110
105
100
95
90
85
80
75
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TBG 3
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection


Hydrograph for Station TBG 4
Below Screen
Suspect Value
Water Level (ft msl)
130
125
120
115
110
105
100
95
90
85
80
75
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TBG 4
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection


Hydrograph for Station TBG 5
Below Screen
Suspect Value
Water Level (ft msl)
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TBG 5
Air Stripper Start
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SVE Start
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Air Stripper Off
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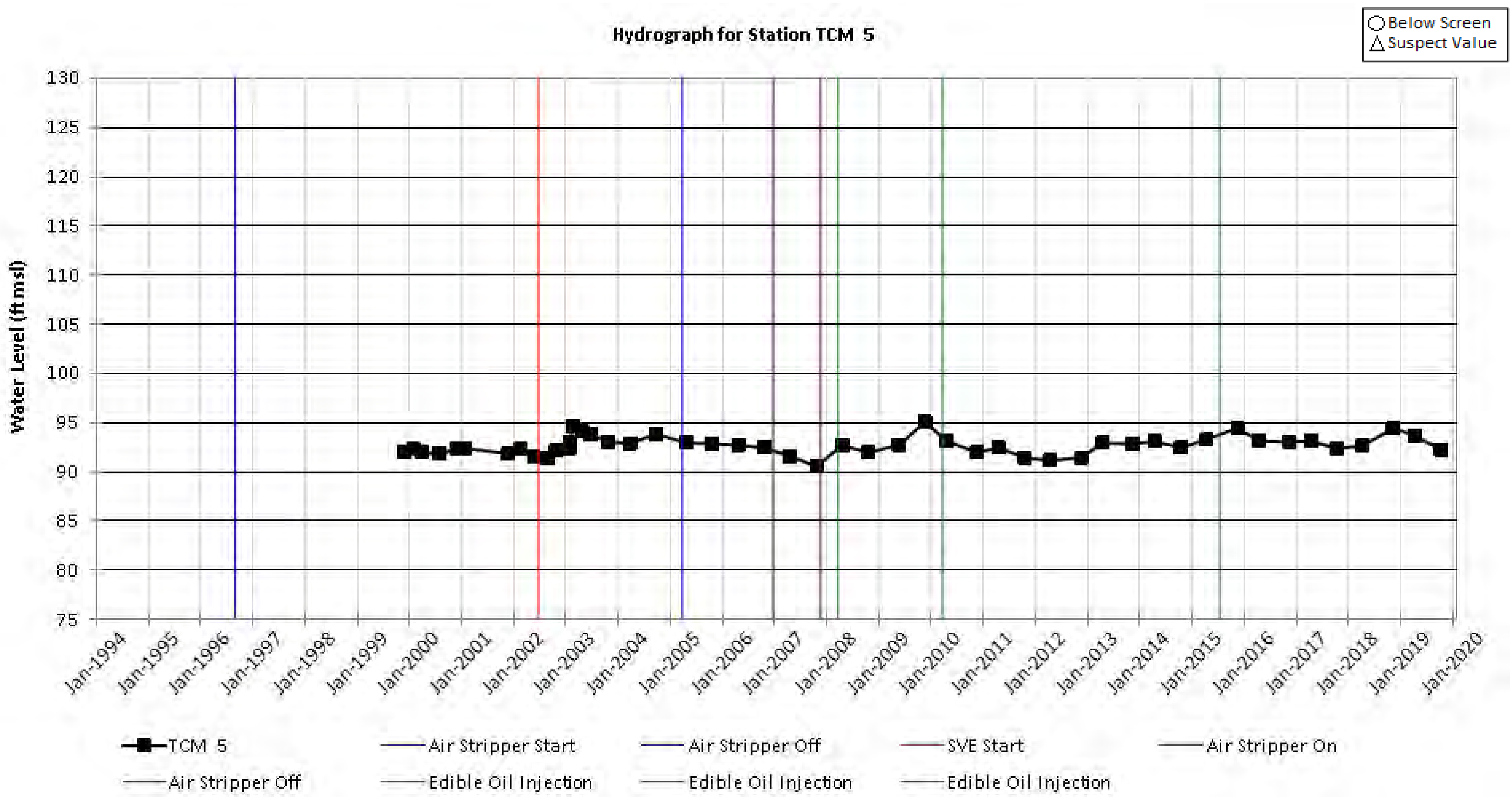
Edible Oil Injection
Edible Oil Injection


Hydrograph for Station TCM 5
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TCM 5
Air Stripper Start
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SVE Start
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Air Stripper Off
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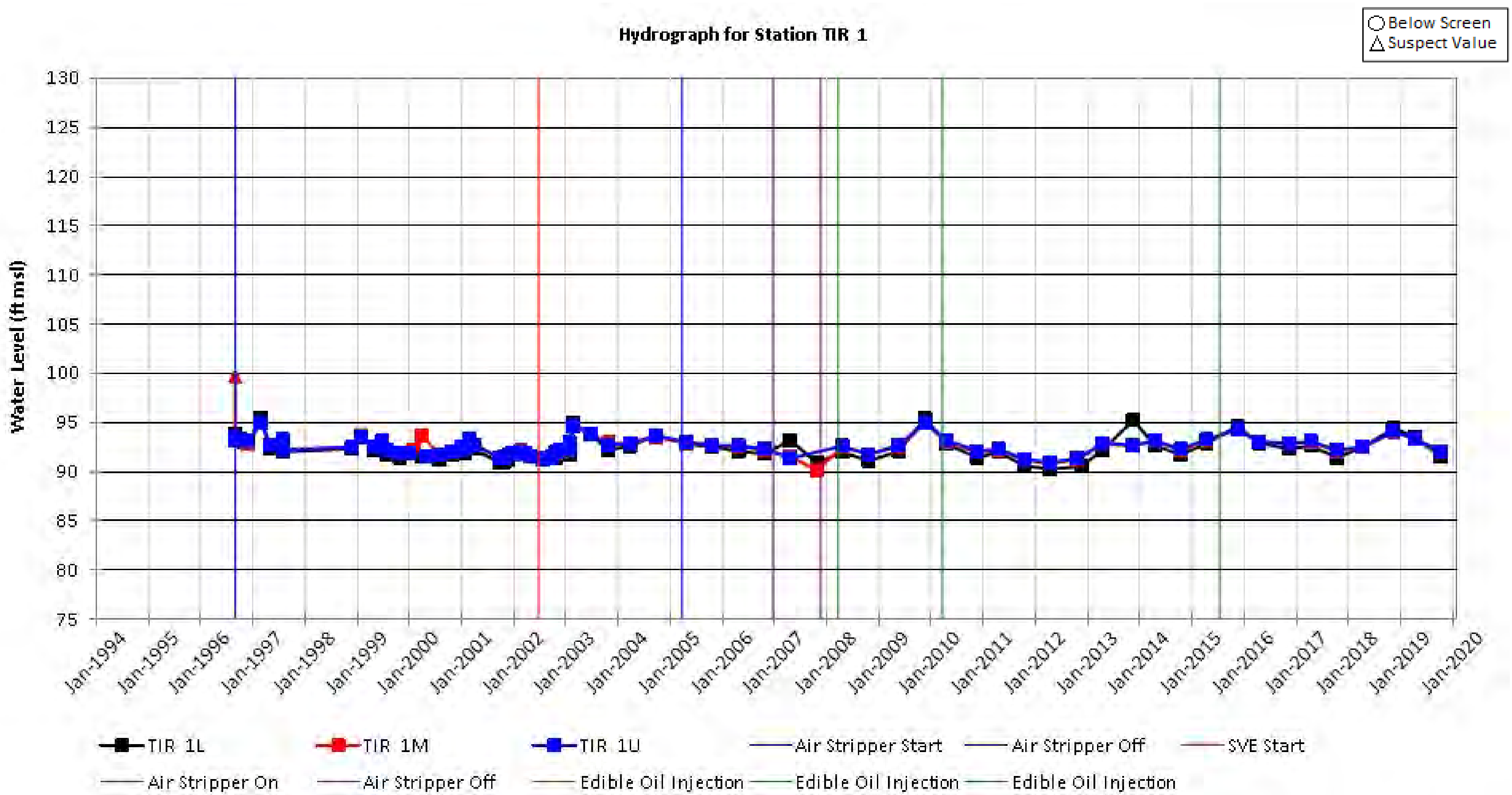
Edible Oil Injection
Edible Oil Injection


Hydrograph for Station TIR 1
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TIR 1L
TIR 1M
TIR 1U
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
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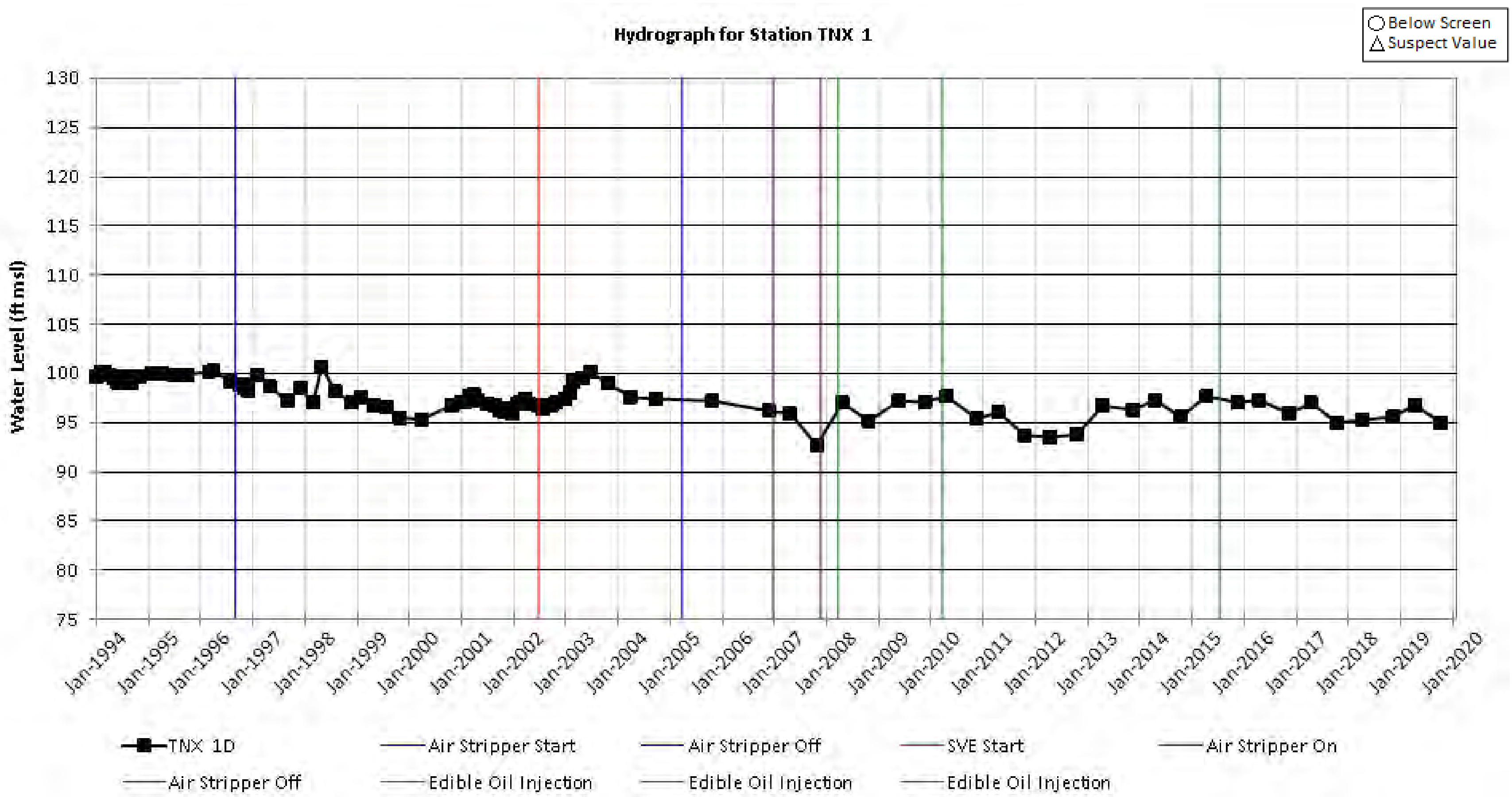
Edible Oil Injection
Edible Oil Injection


Hydrograph for Station TNX 1
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Suspect Value
Water Level (ft msl)
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TNX 1D
Air Stripper Start
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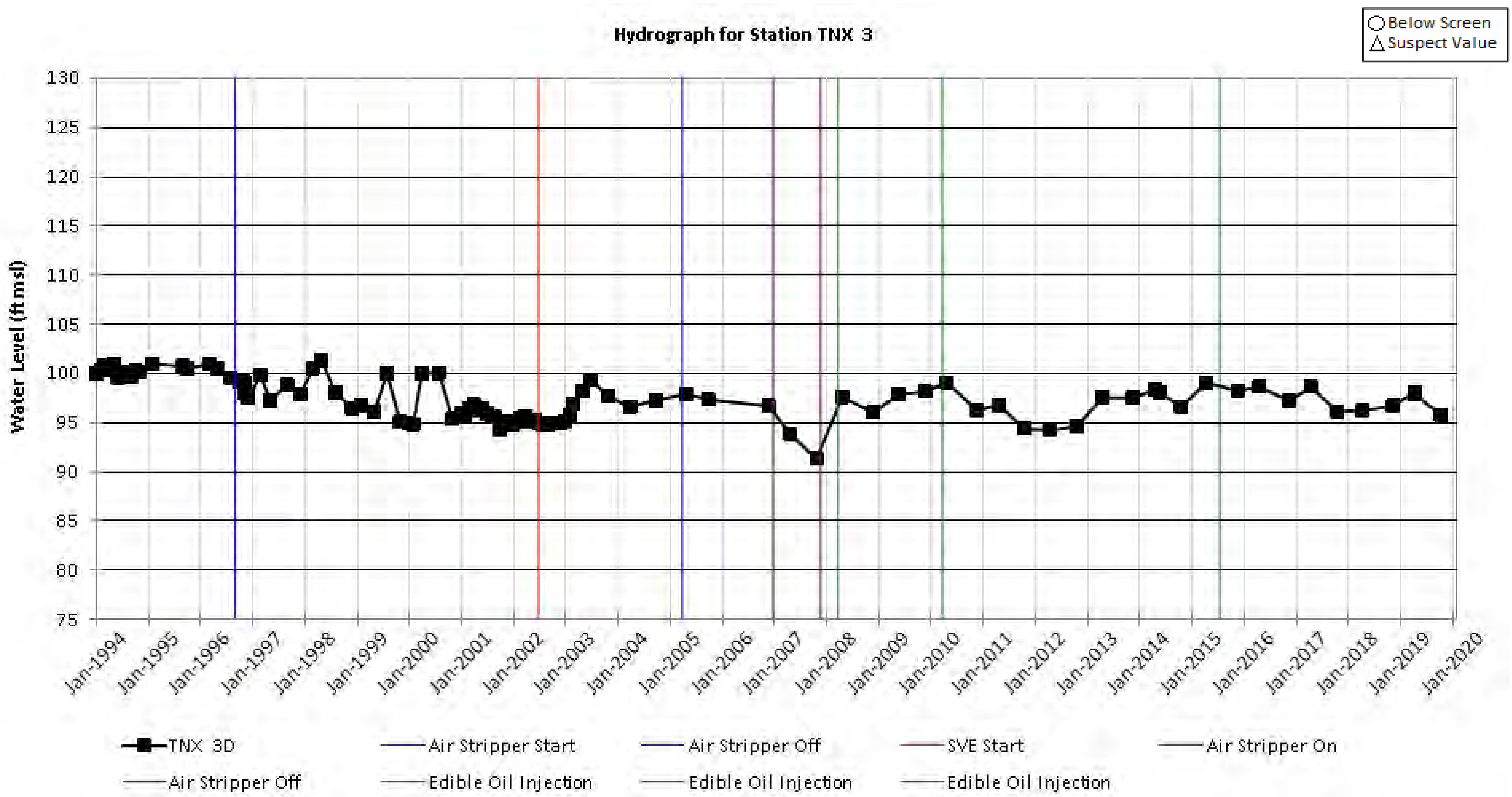
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection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TNX 3D
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SVE Start
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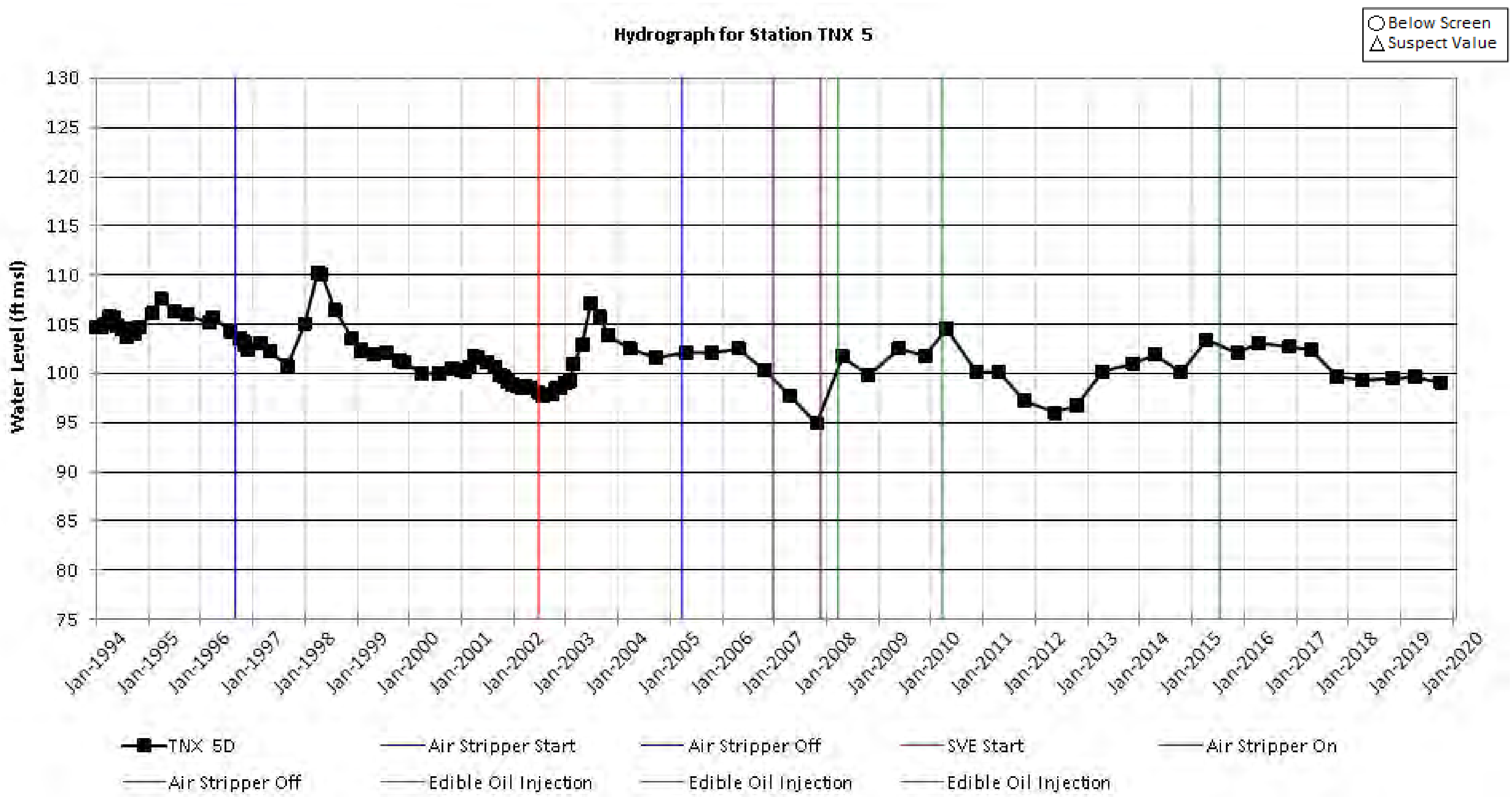
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection


Hydrograph for Station TNX 5
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TNX 5D
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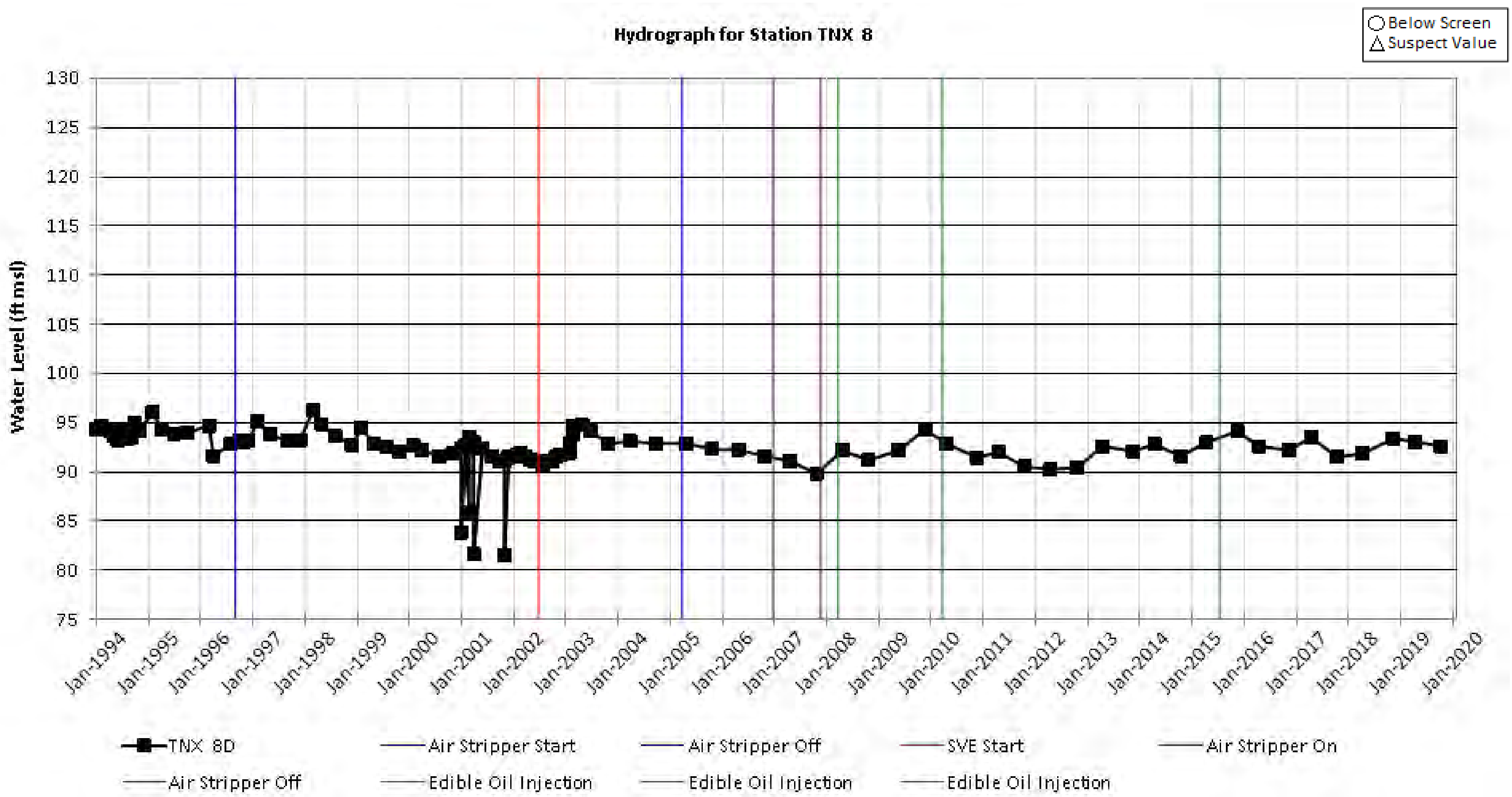
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection


Hydrograph for Station TNX 8
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Suspect Value
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TNX 8D
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SVE Start
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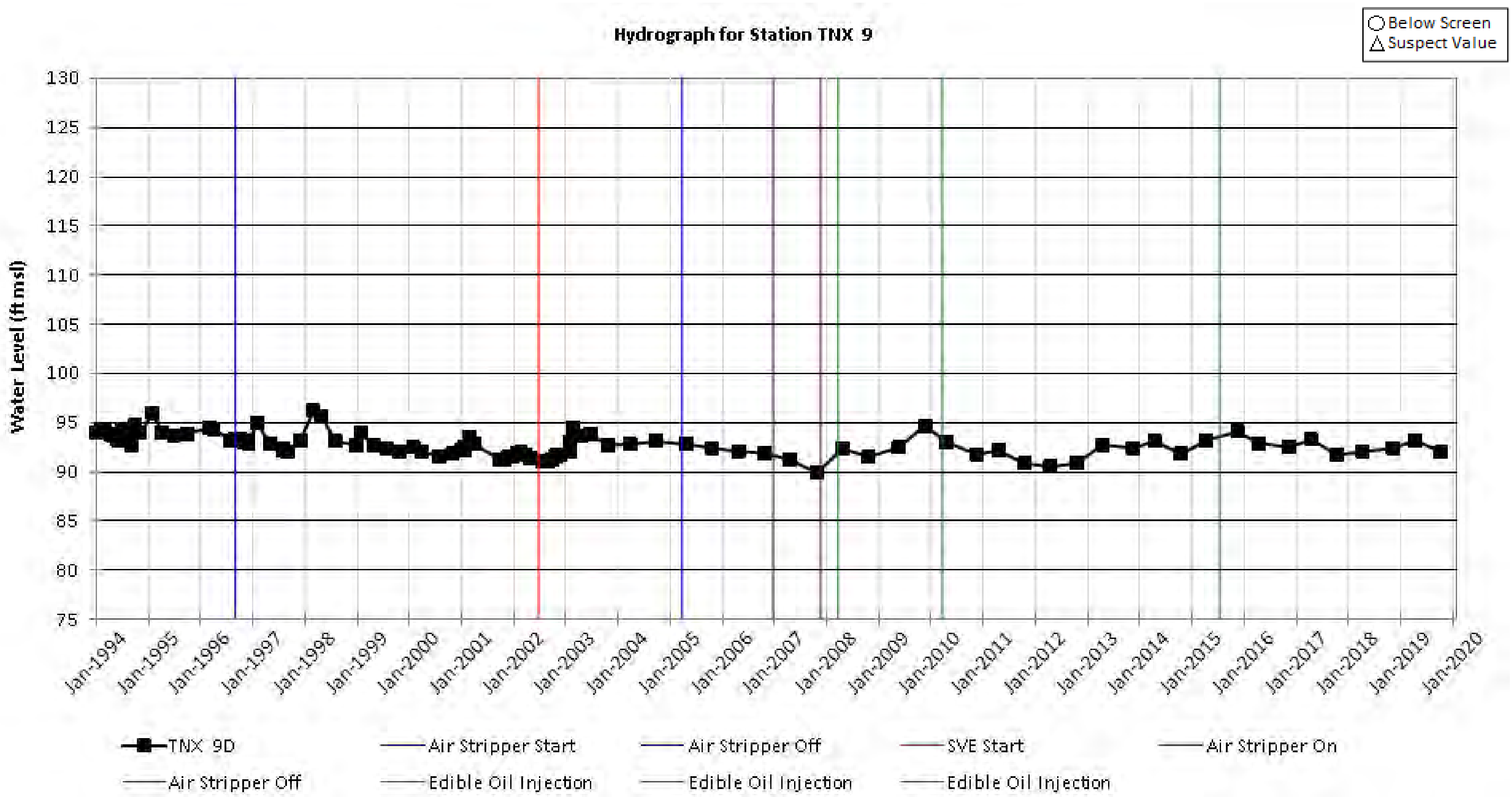
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection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Suspect Value
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TNX 9D
Air Stripper Start
Air Stripper Off
SVE Start
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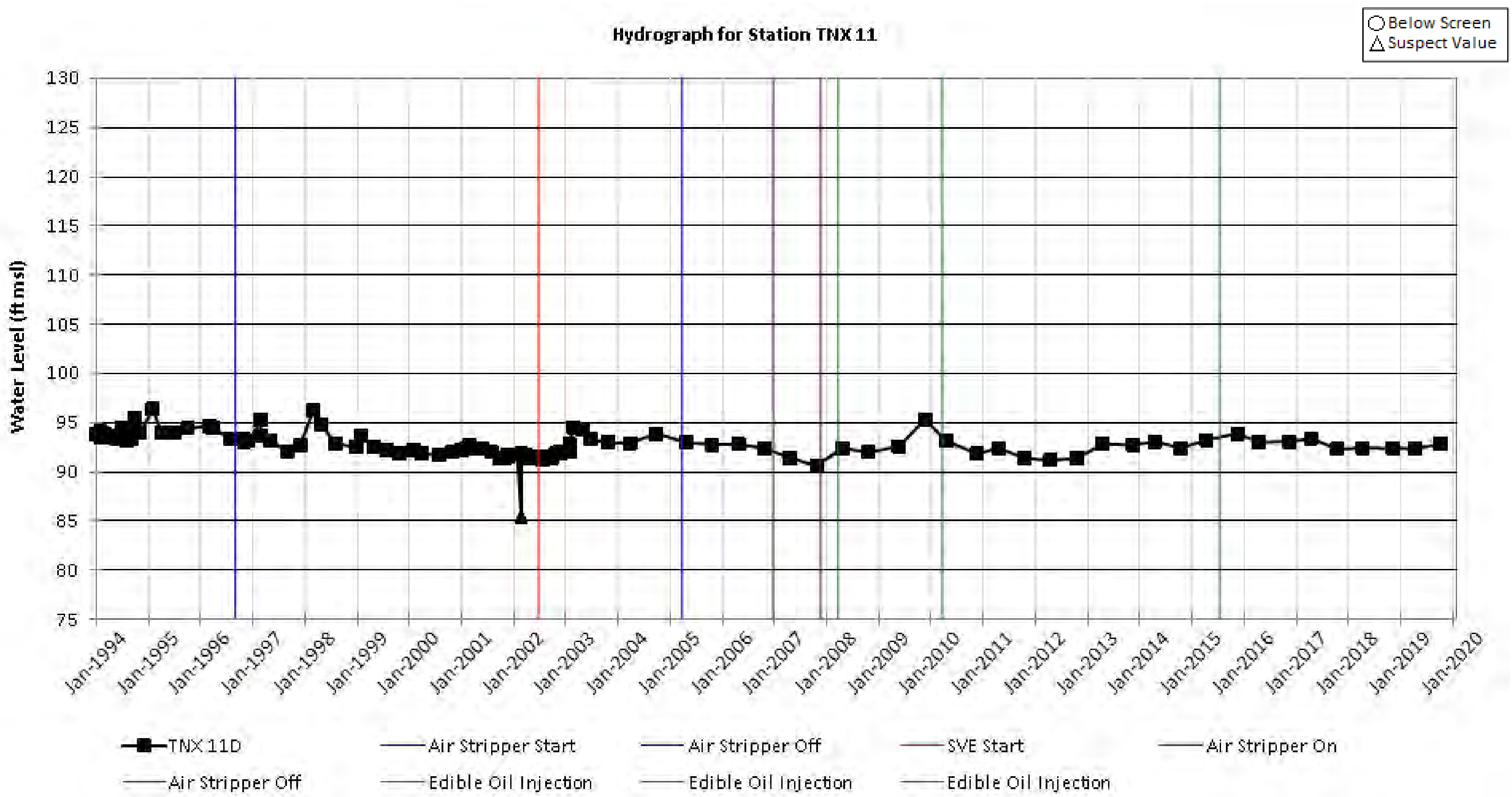
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection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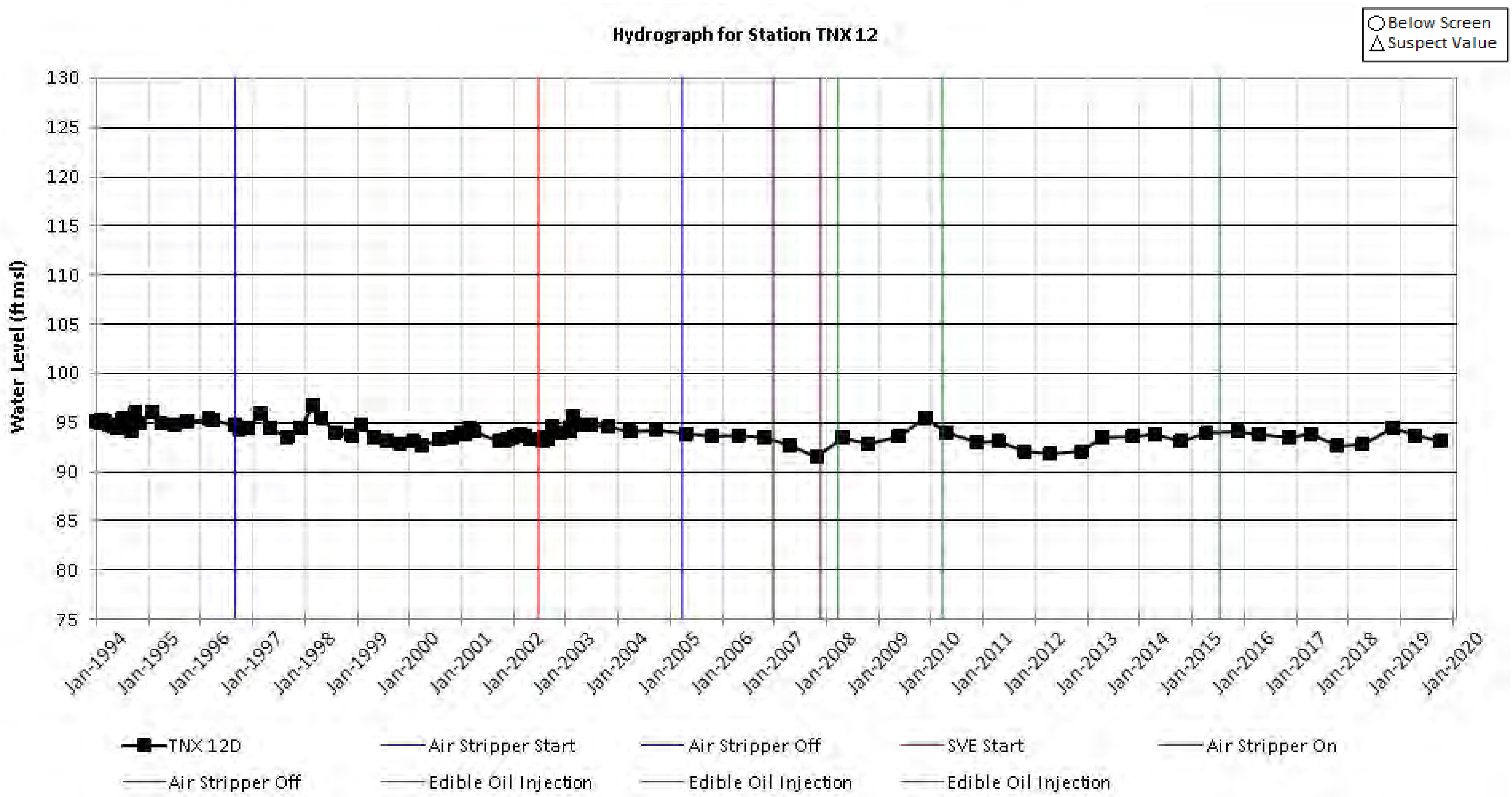
TNX 11D
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection


Hydrograph for Station TNX 12
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Water Level (ft msl)
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TNX 12D
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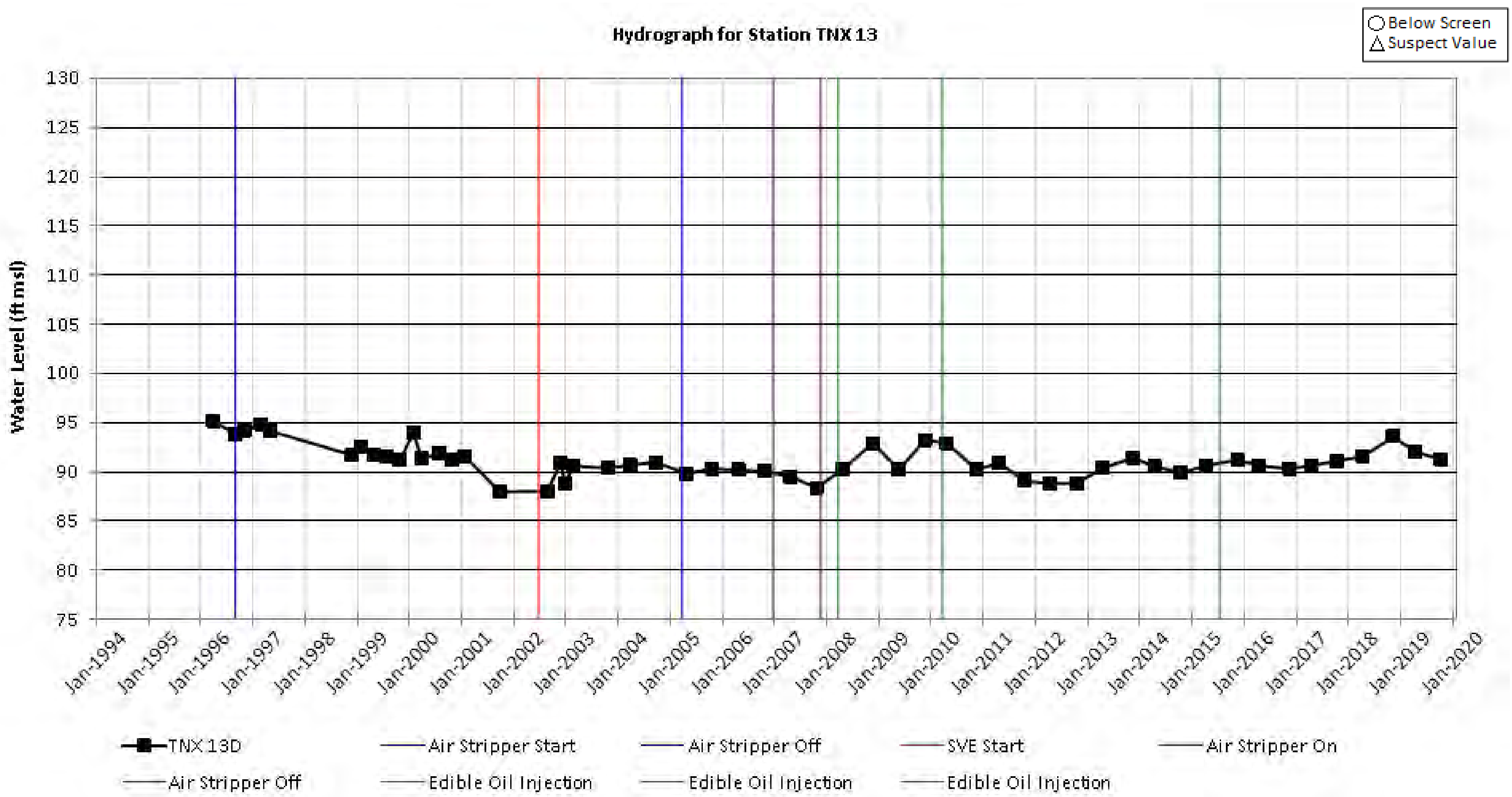
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection


Hydrograph for Station TNX 13
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Suspect Value
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TNX 13D
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SVE Start
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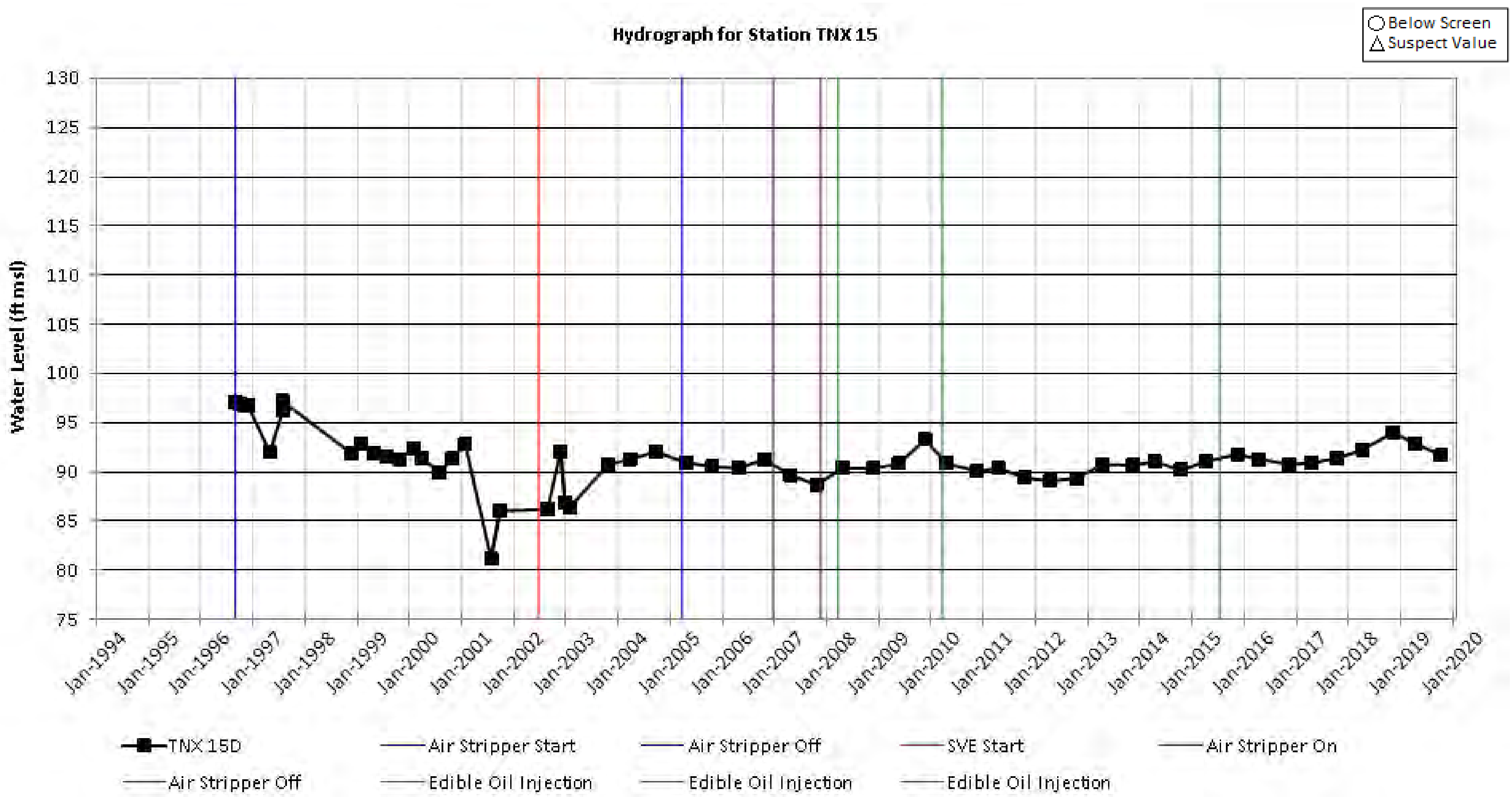
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection


Hydrograph for Station TNX 15
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TNX 15D
Air Stripper Start
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SVE Start
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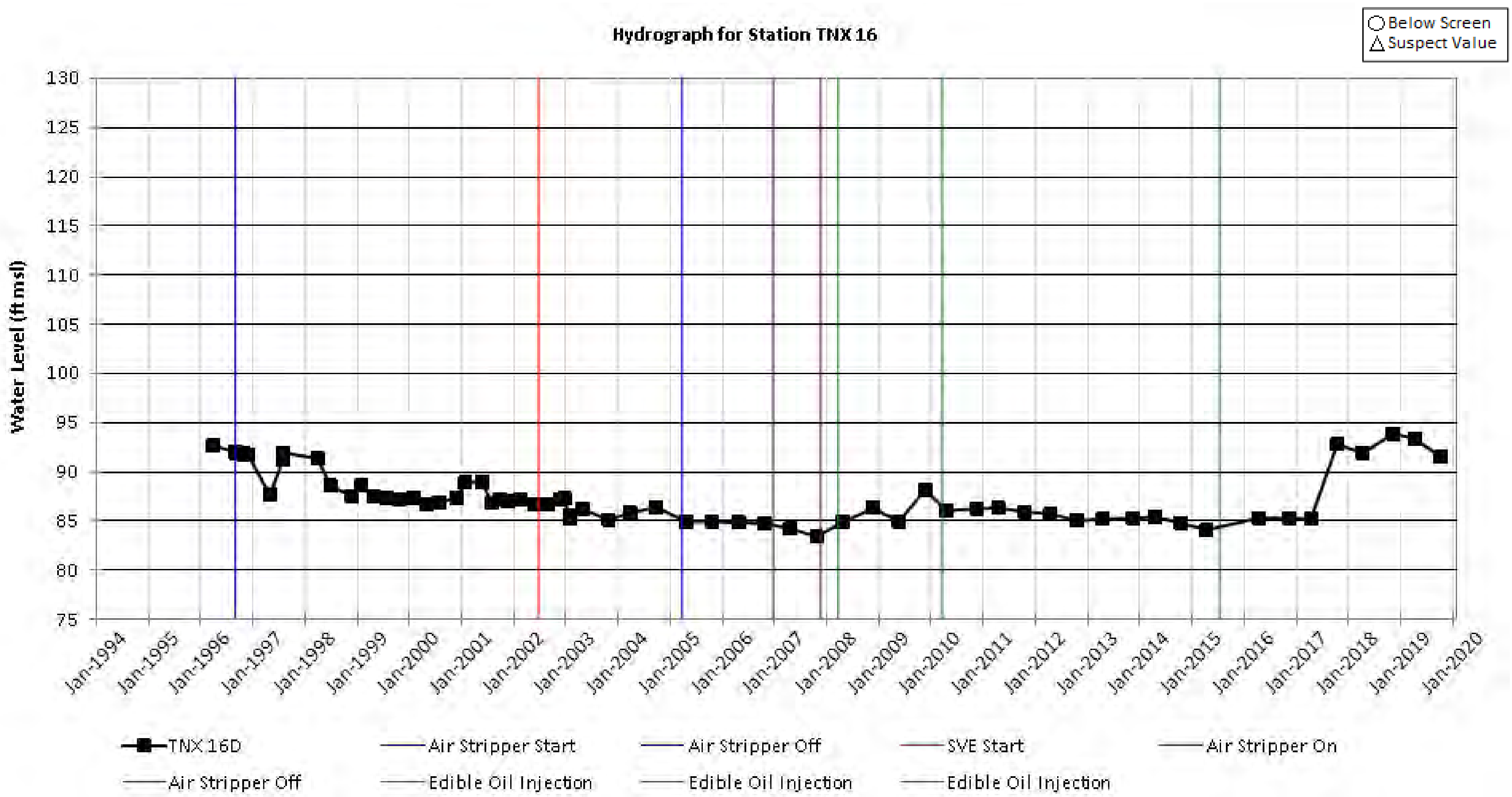
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection


Hydrograph for Station TNX 16
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Water Level (ft msl)
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TNX 16D
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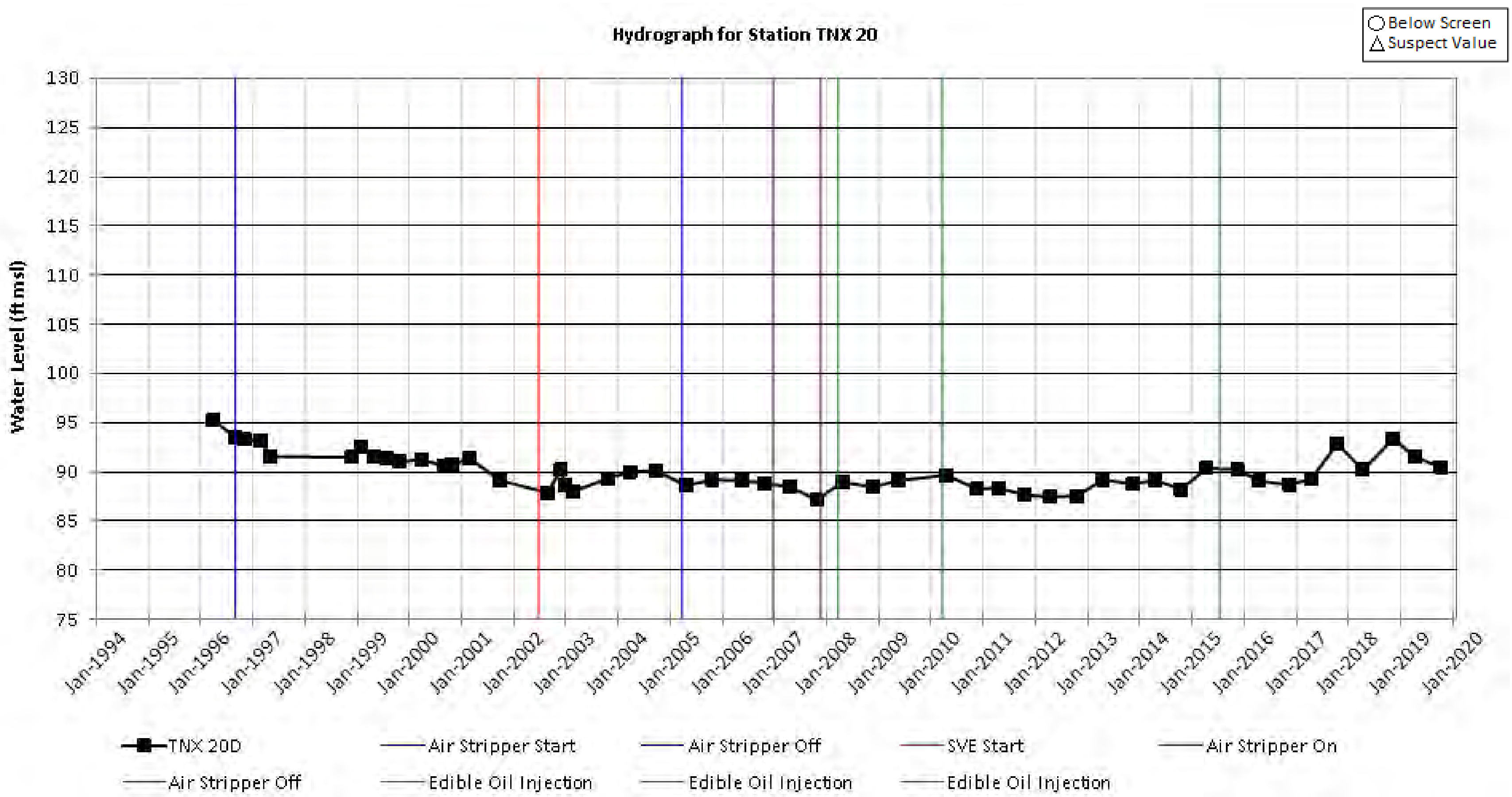
Edible Oil Injection
Edible Oil Injection


Hydrograph for Station TNX 20
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Suspect Value
Water Level (ft msl)
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TNX 20D
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SVE Start
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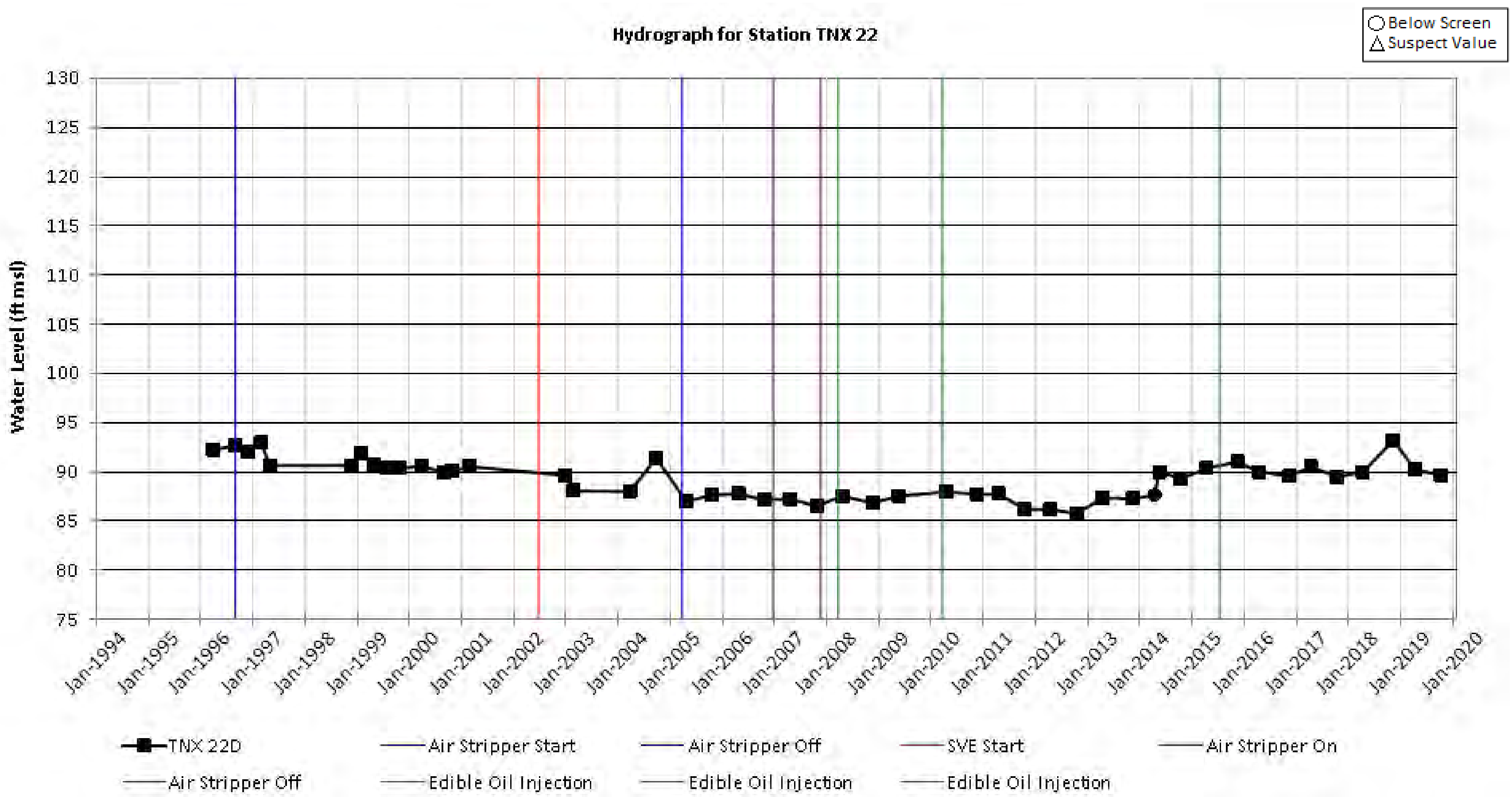
Edible Oil Injection


Hydrograph for Station TNX 22
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Water Level (ft msl)
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TNX 22D
Air Stripper Start
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SVE Start
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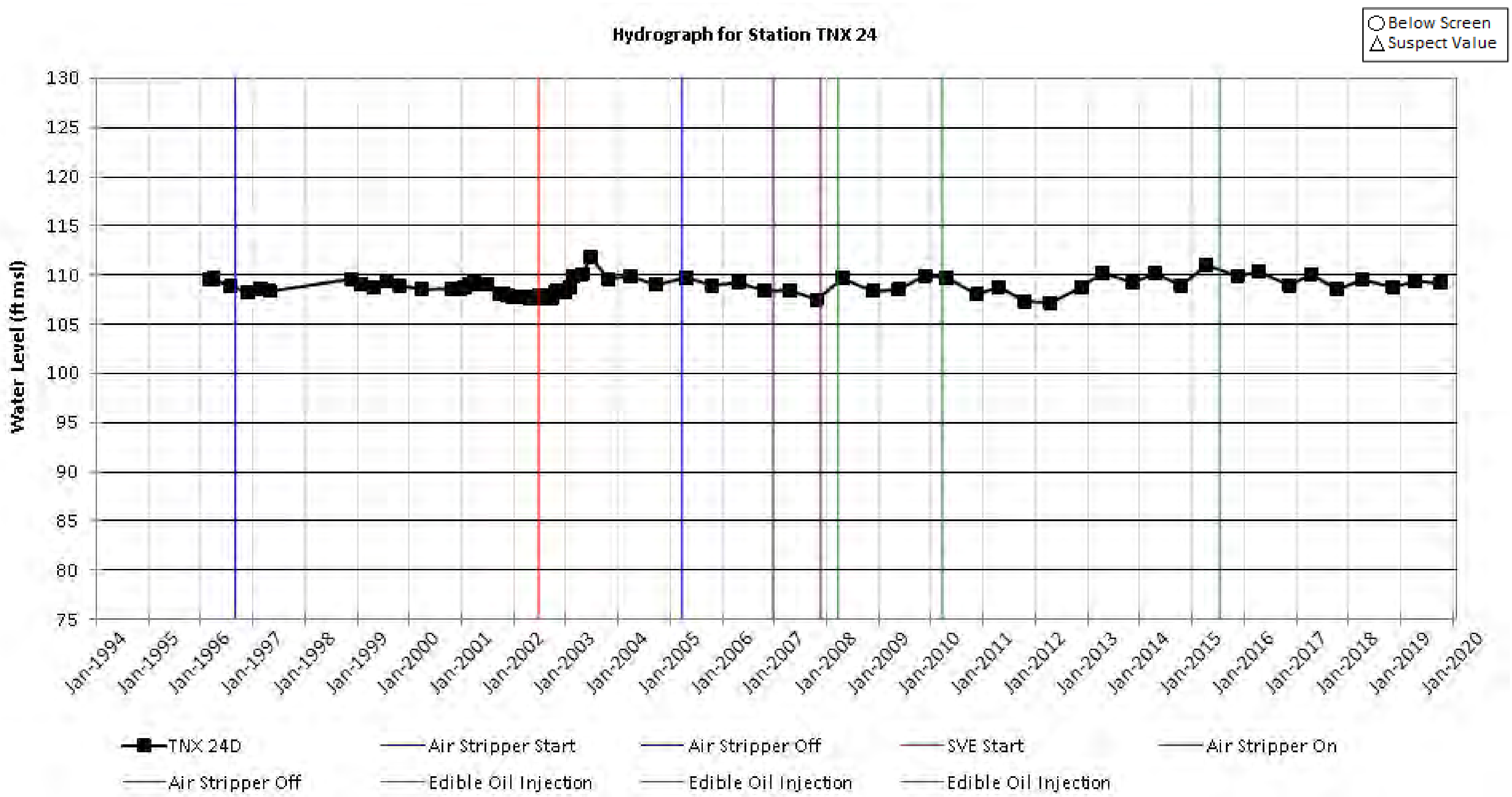
Edible Oil Injection
Edible Oil Injection


Hydrograph for Station TNX 24
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Water Level (ft msl)
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TNX 24D
Air Stripper Start
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SVE Start
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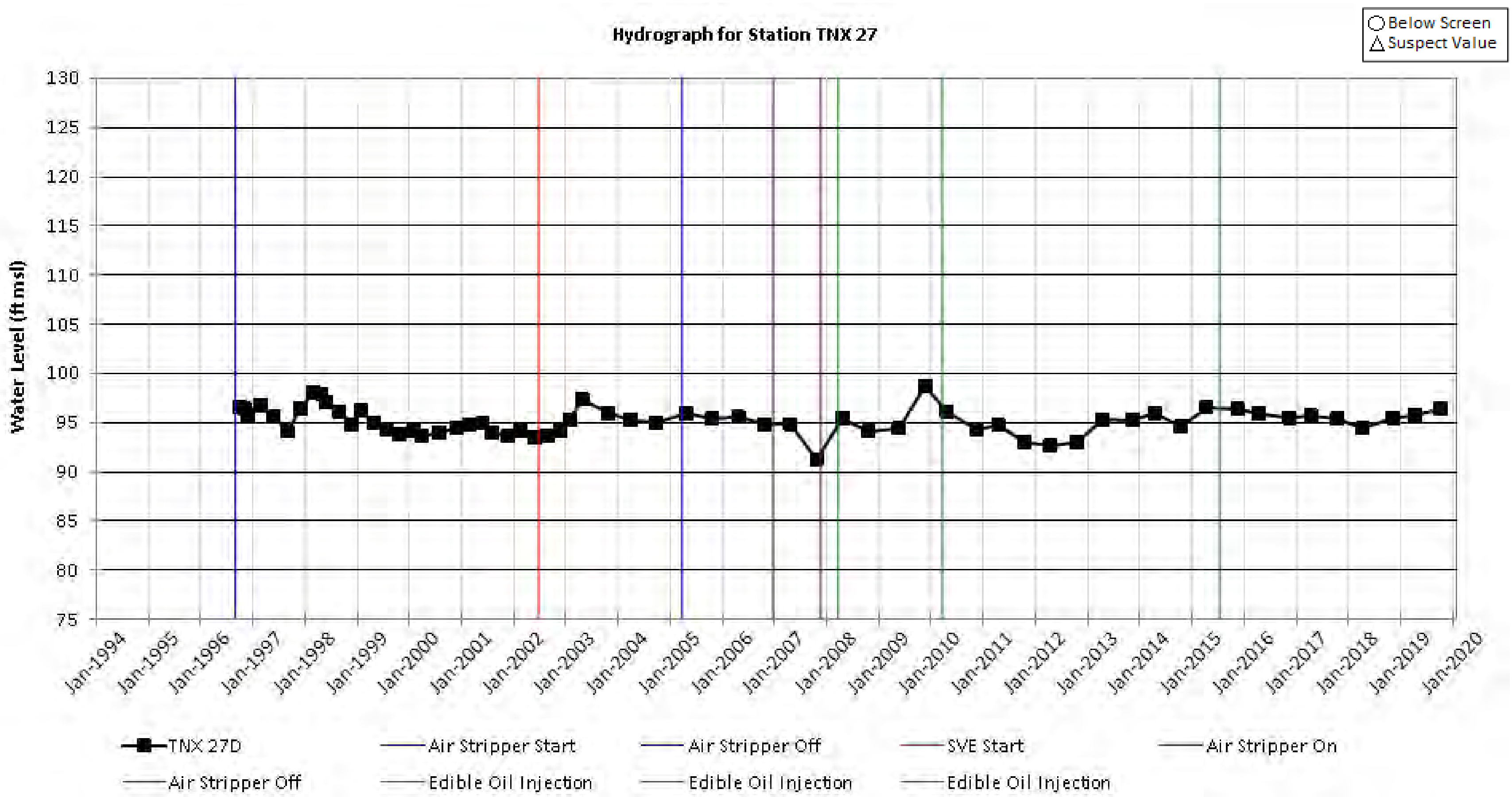
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection


Hydrograph for Station TNX 27
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Suspect Value
Water Level (ft msl)
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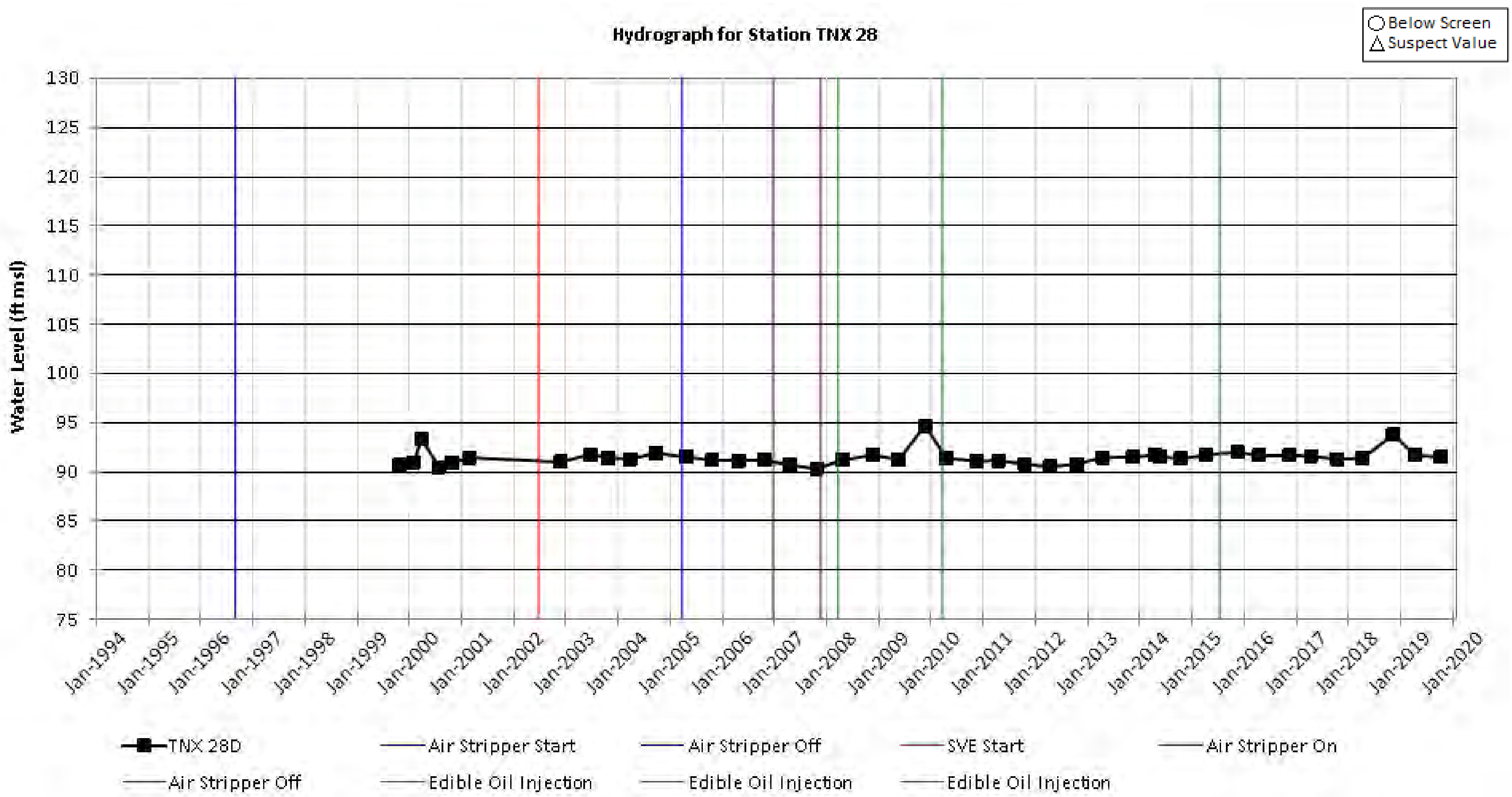
TNX 27D
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection


Hydrograph for Station TNX 28
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Water Level (ft msl)
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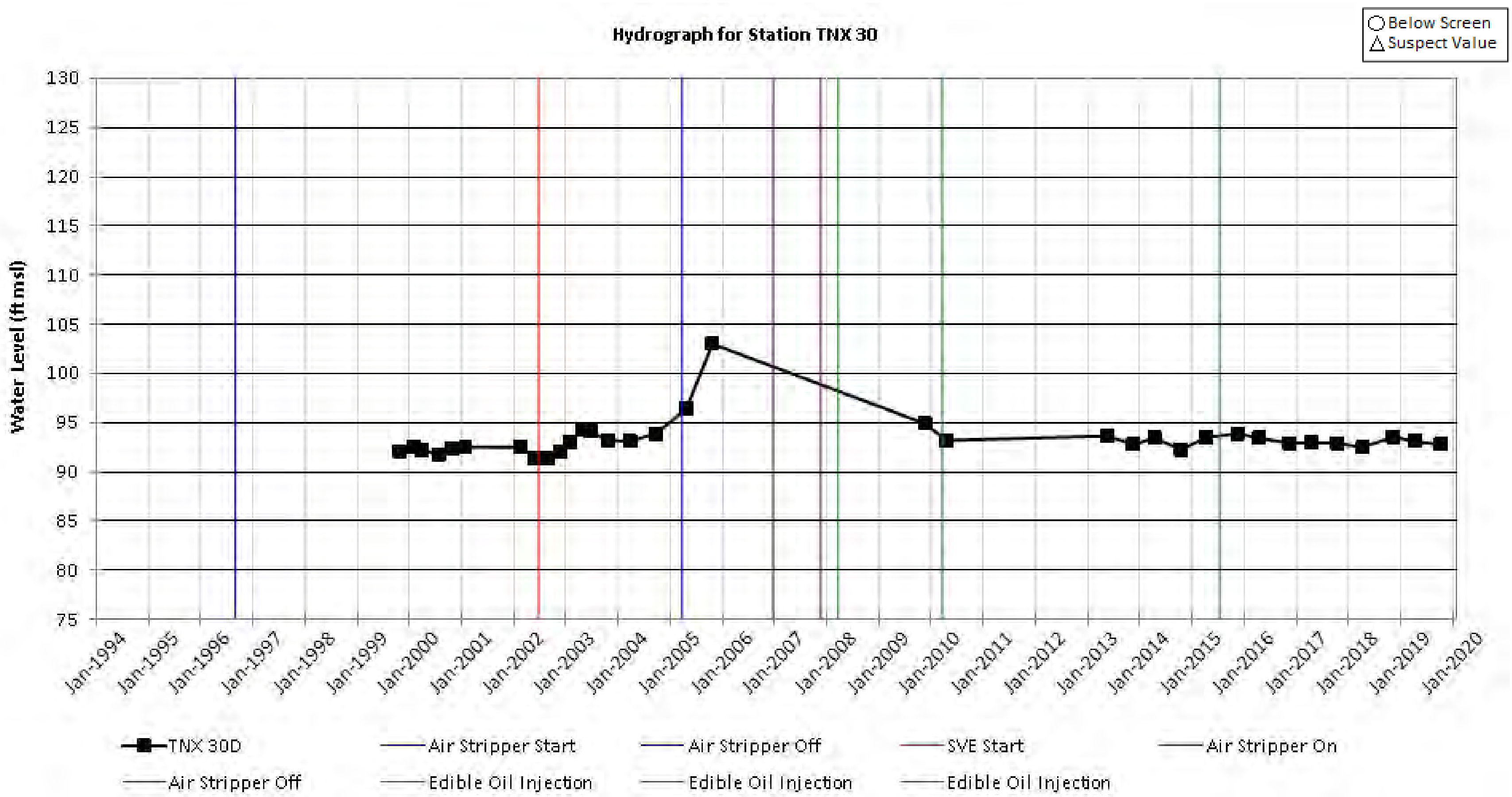
TNX 28D
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection


Hydrograph for Station TNX 30
○ Below Screen
△ Suspect Value
Water Level (ft msl)
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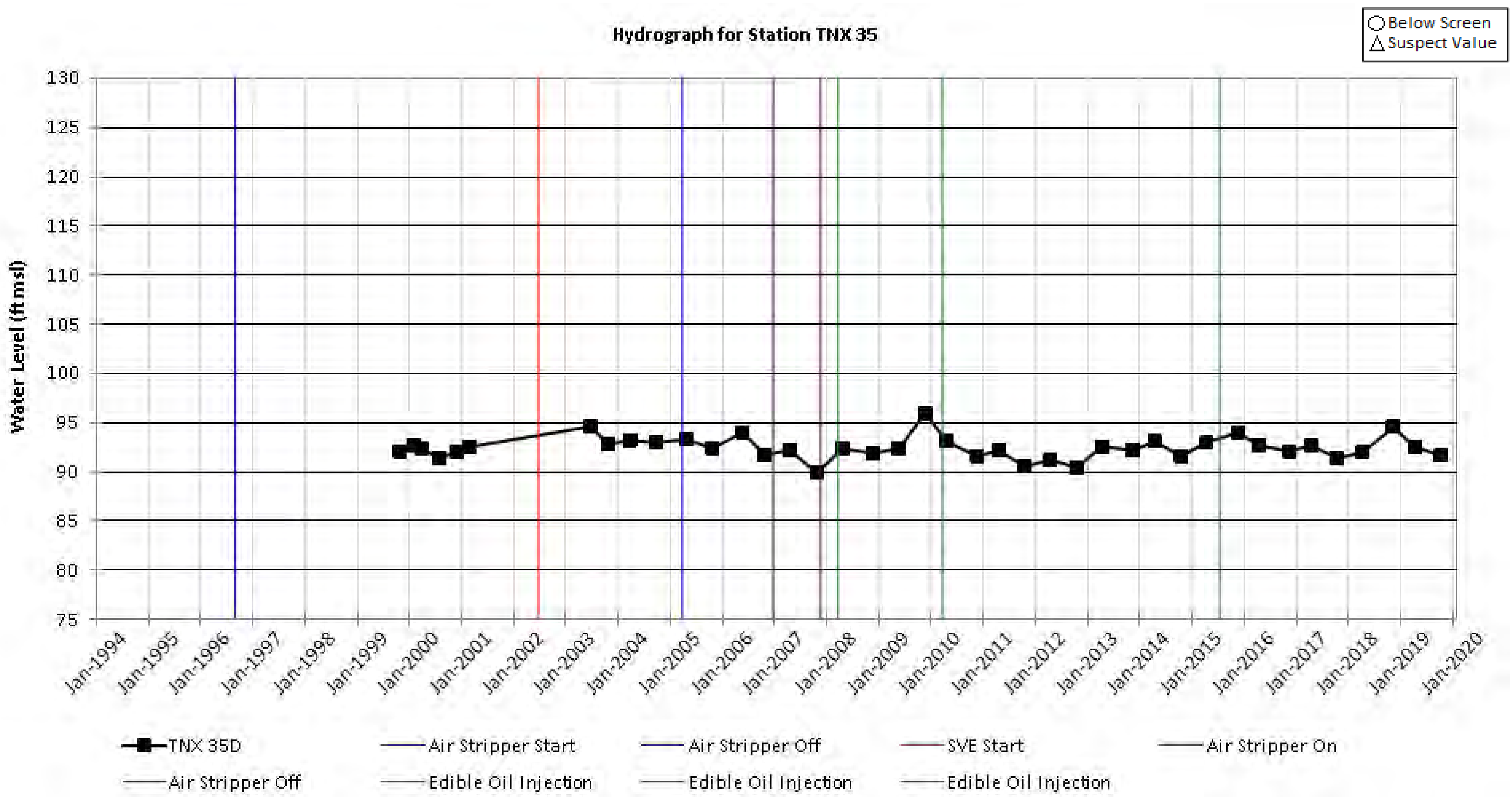
TNX 30D
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection


Hydrograph for Station TNX 35
Below Screen
Suspect Value
Water Level (ft msl)
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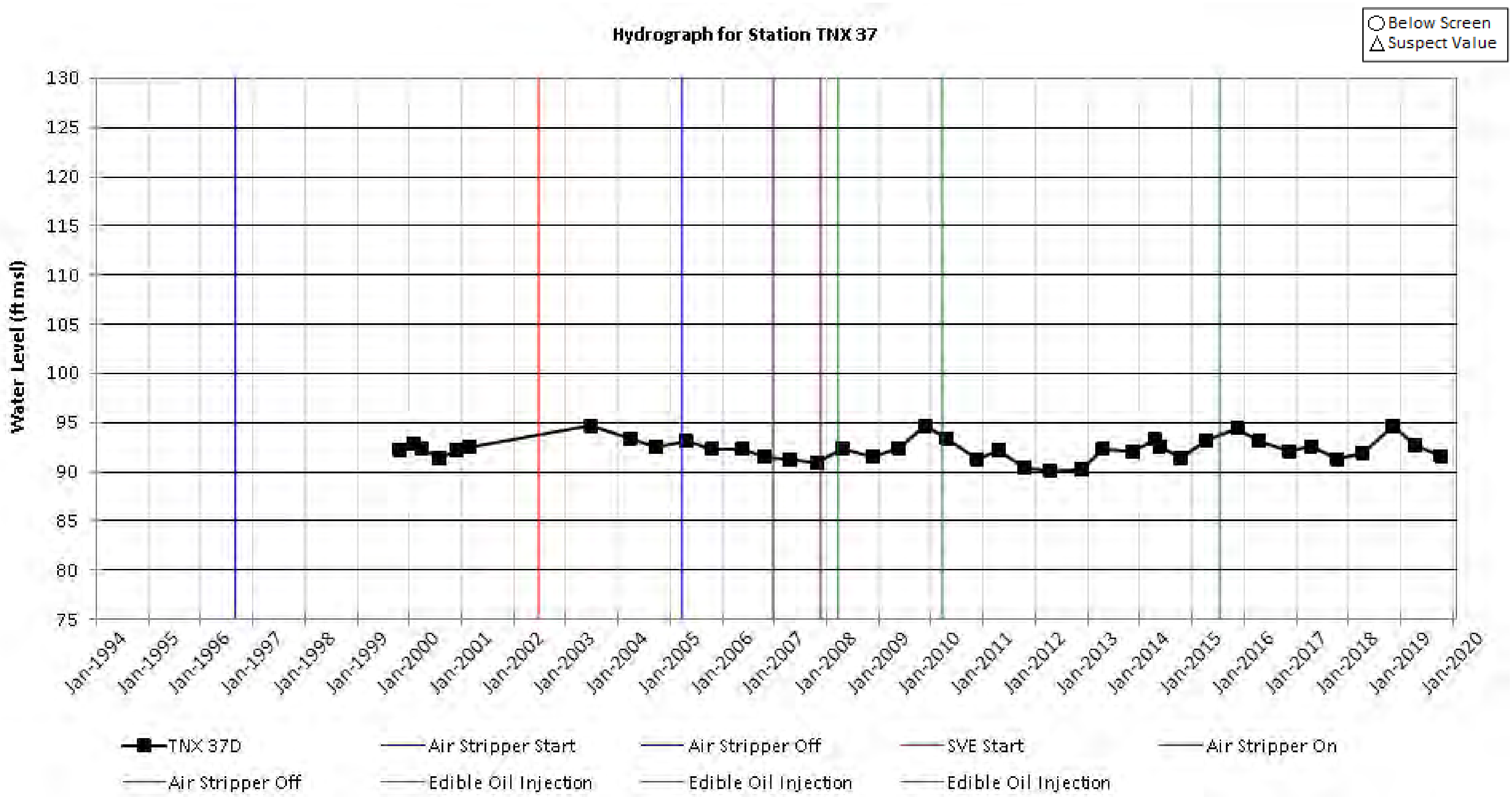
TNX 35D
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection


Hydrograph for Station TNX 37
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Suspect Value
Water Level (ft msl)
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TNX 37D
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
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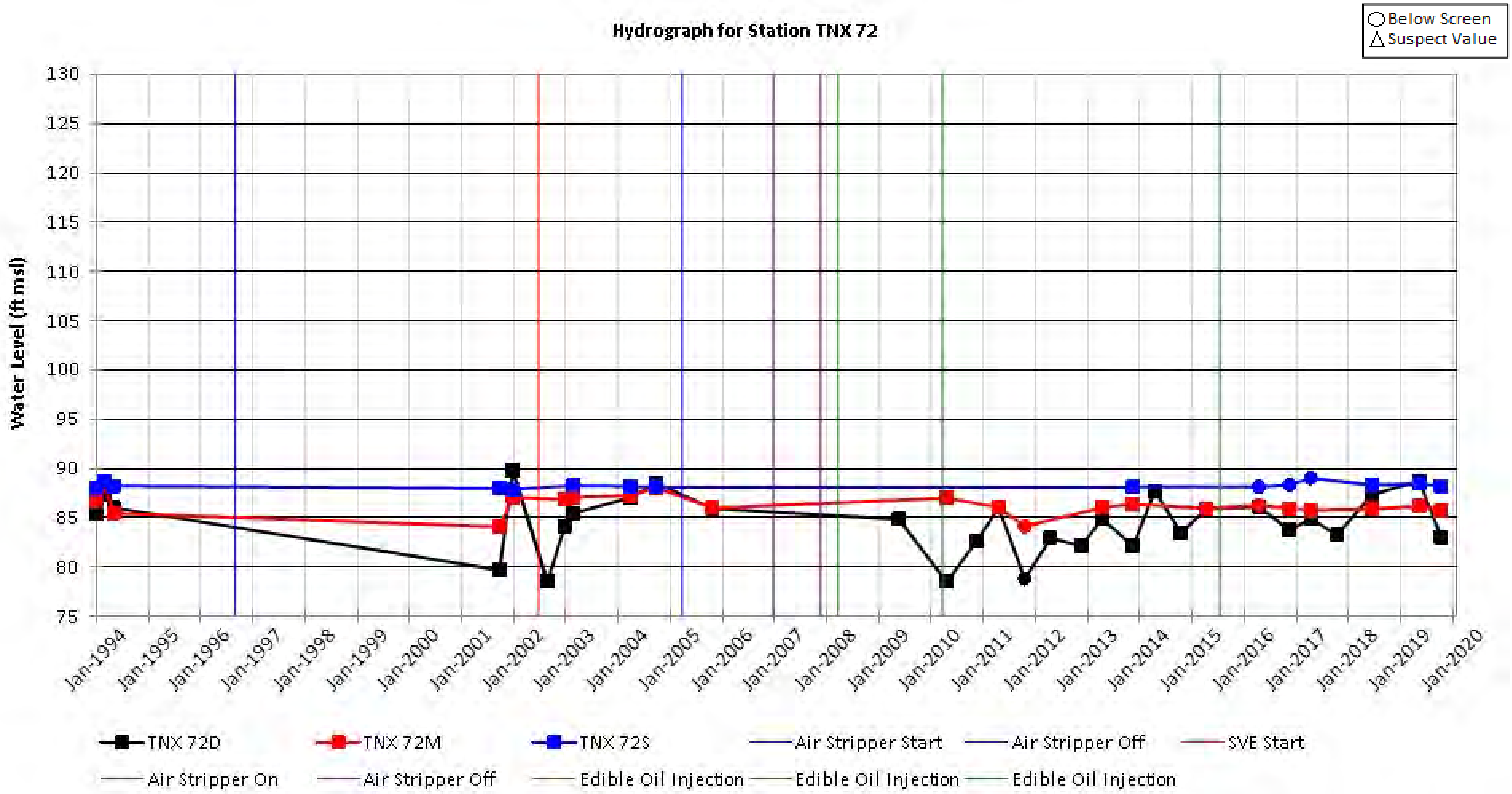
Edible Oil Injection
Edible Oil Injection


Hydrograph for Station TNX 72
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Suspect Value
Water Level (ft msl)
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TNX 72D
TNX 72M
TNX 72S
Air Stripper Start
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SVE Start
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Air Stripper Off
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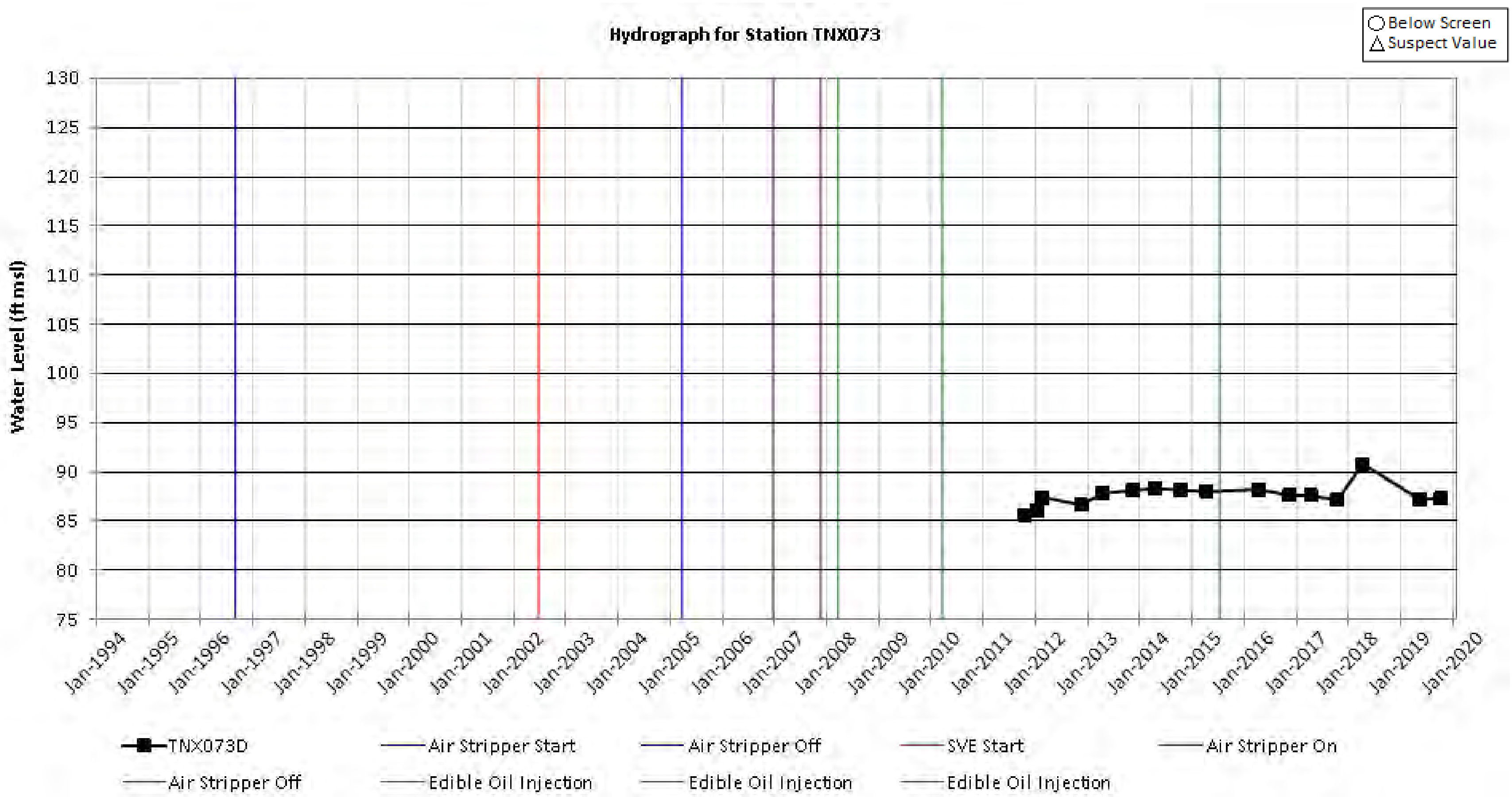
Edible Oil Injection
Edible Oil Injection


Hydrograph for Station TNX073
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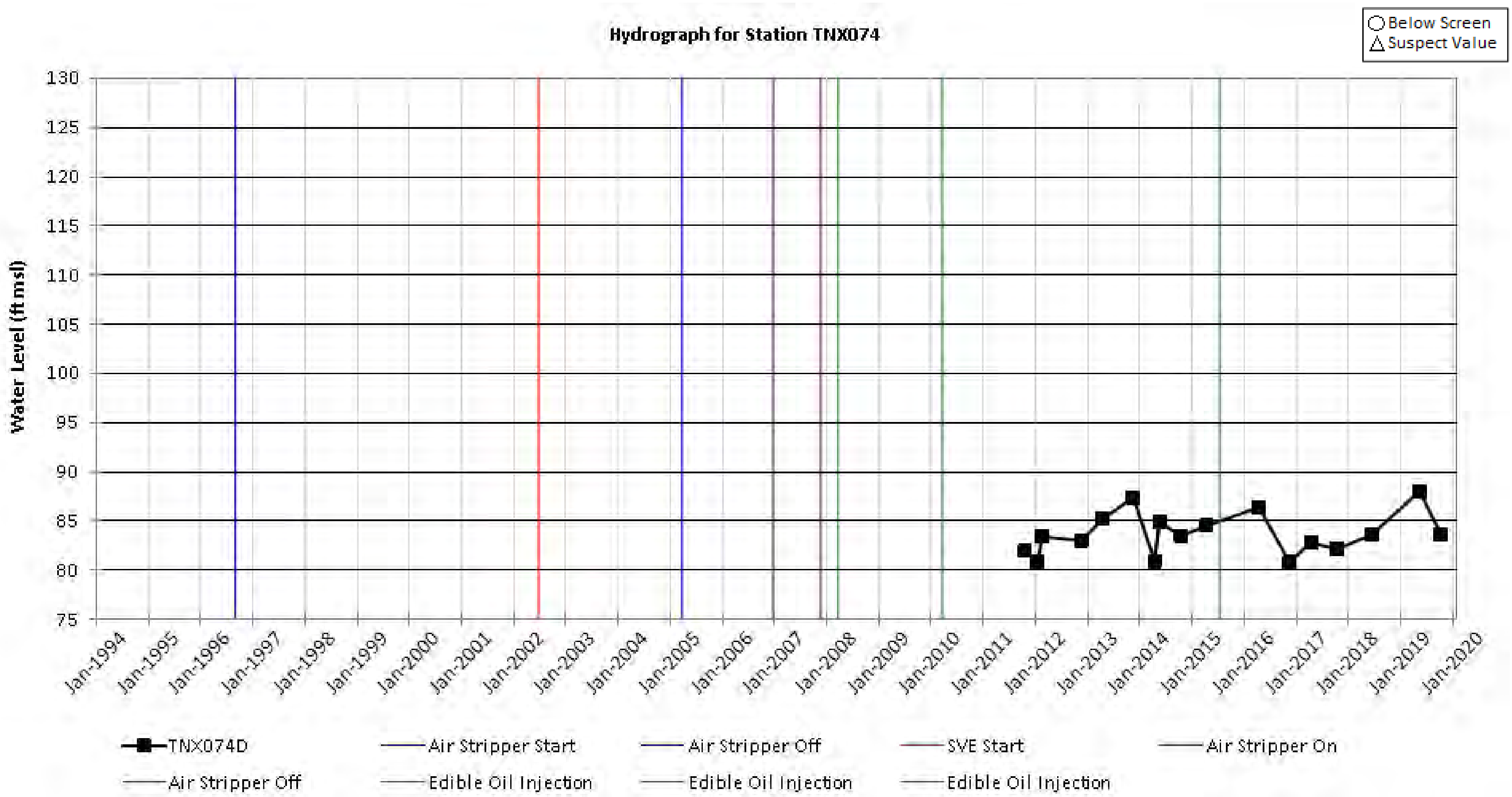
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TNX073D
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection


Hydrograph for Station TNX074
Below Screen
Suspect Value
Water Level (ft msl)
130
125
120
115
110
105
100
95
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85
80
75
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
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Jan-2003
Jan-2004
Jan-2005
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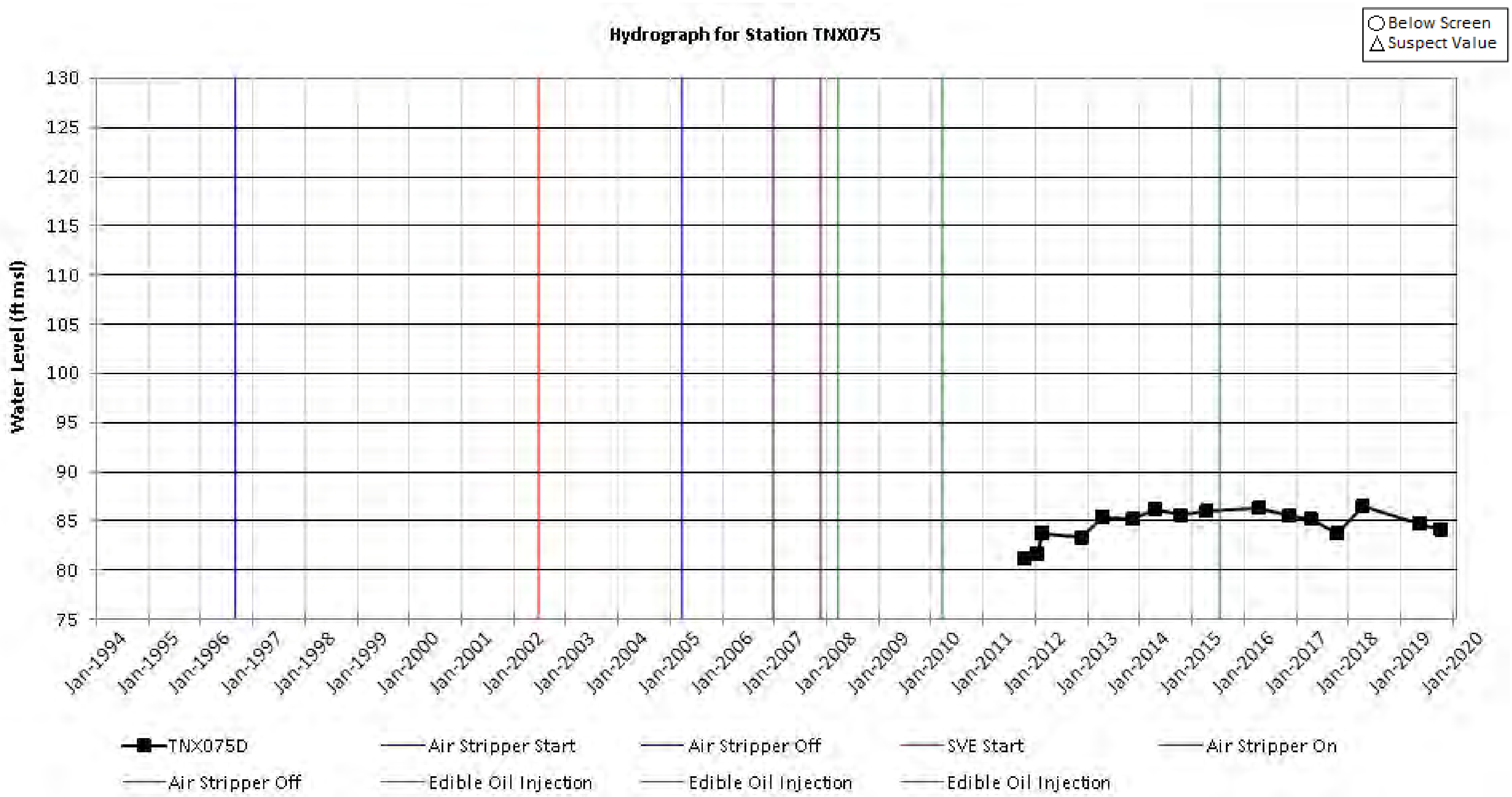
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TNX074D
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection


Hydrograph for Station TNX075
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Suspect Value
Water Level (ft msl)
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115
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75
Jan-1994
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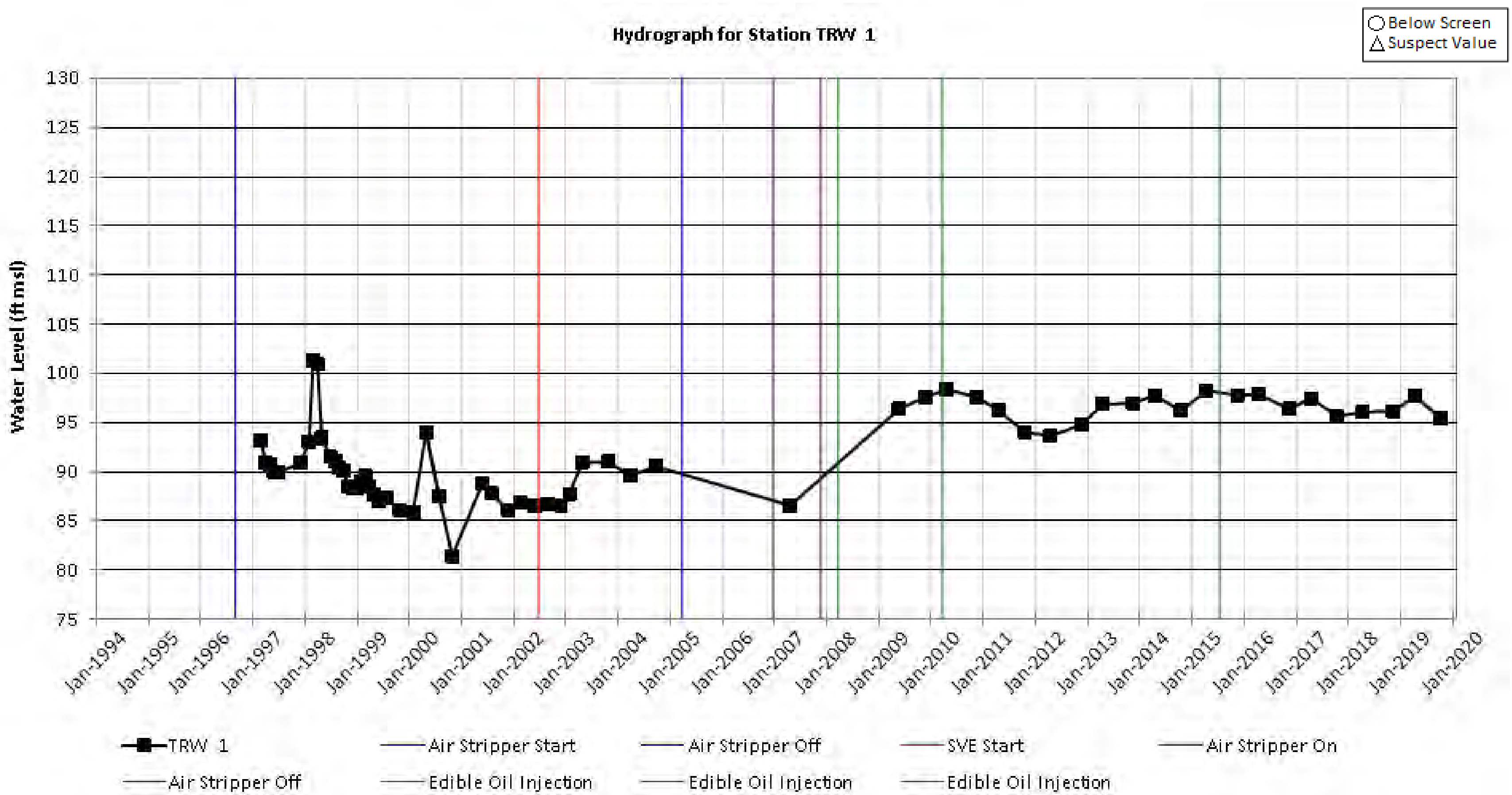
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TNX075D
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection


Hydrograph for Station TRW 1
Below Screen
Suspect Value
Water Level (ft msl)
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125
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115
110
105
100
95
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85
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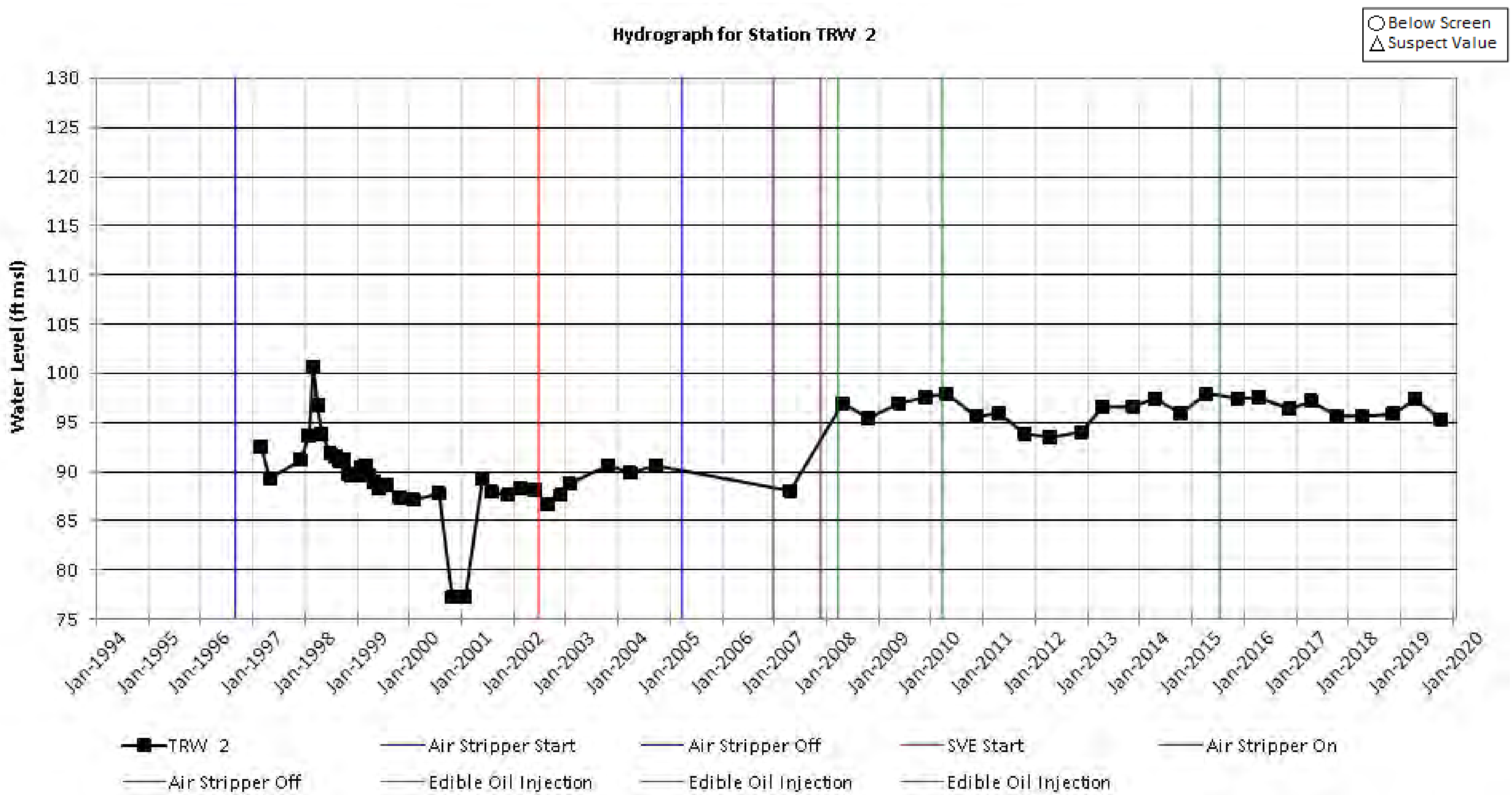
75
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TRW 1
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection


Hydrograph for Station TRW 2
Below Screen
Suspect Value
Water Level (ft msl)
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125
120
115
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105
100
95
90
85
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75
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
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Jan-2012
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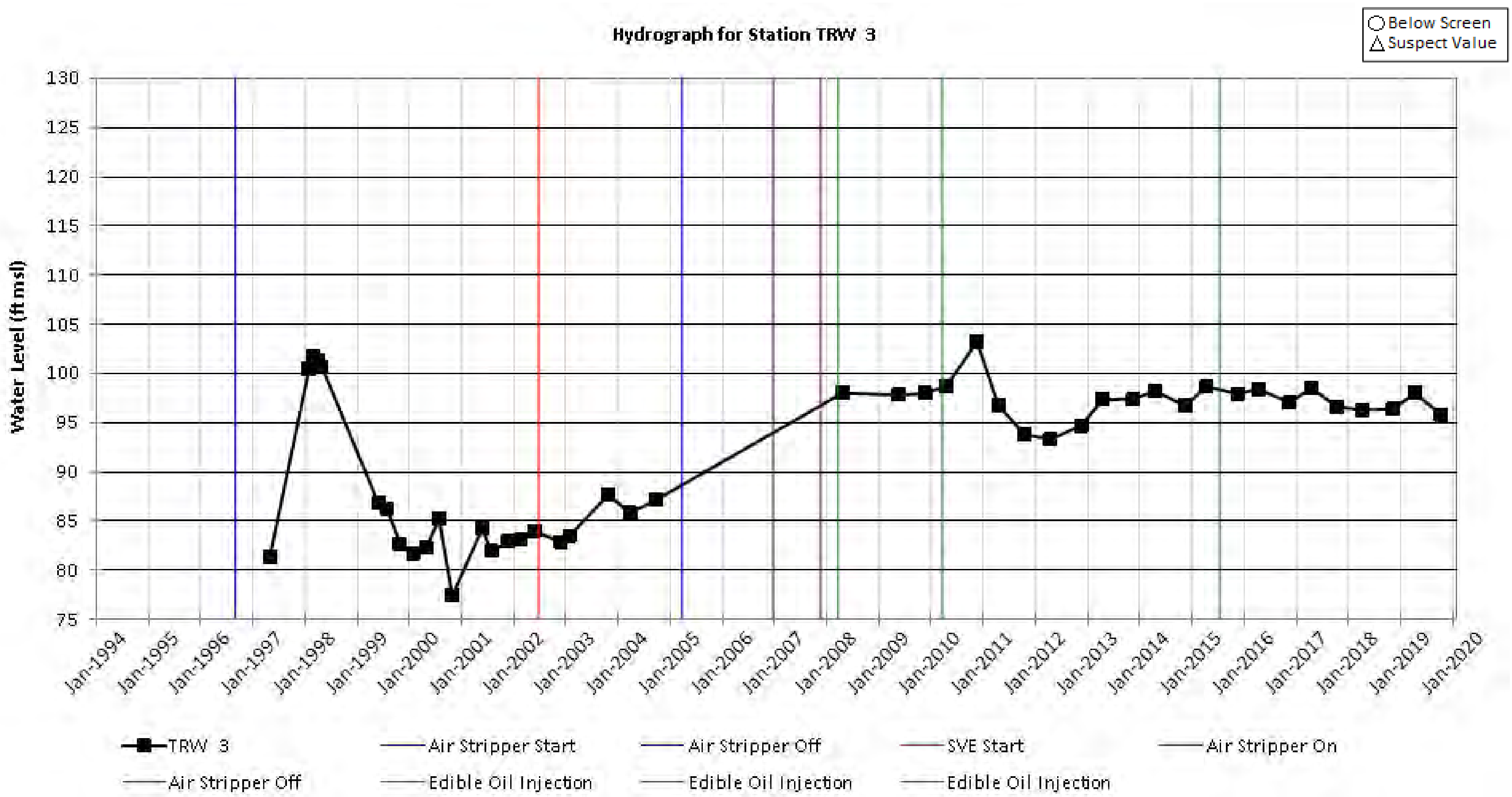
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TRW 2
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection


Hydrograph for Station TRW 3
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Suspect Value
Water Level (ft msl)
130
125
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115
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105
100
95
90
85
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Jan-1994
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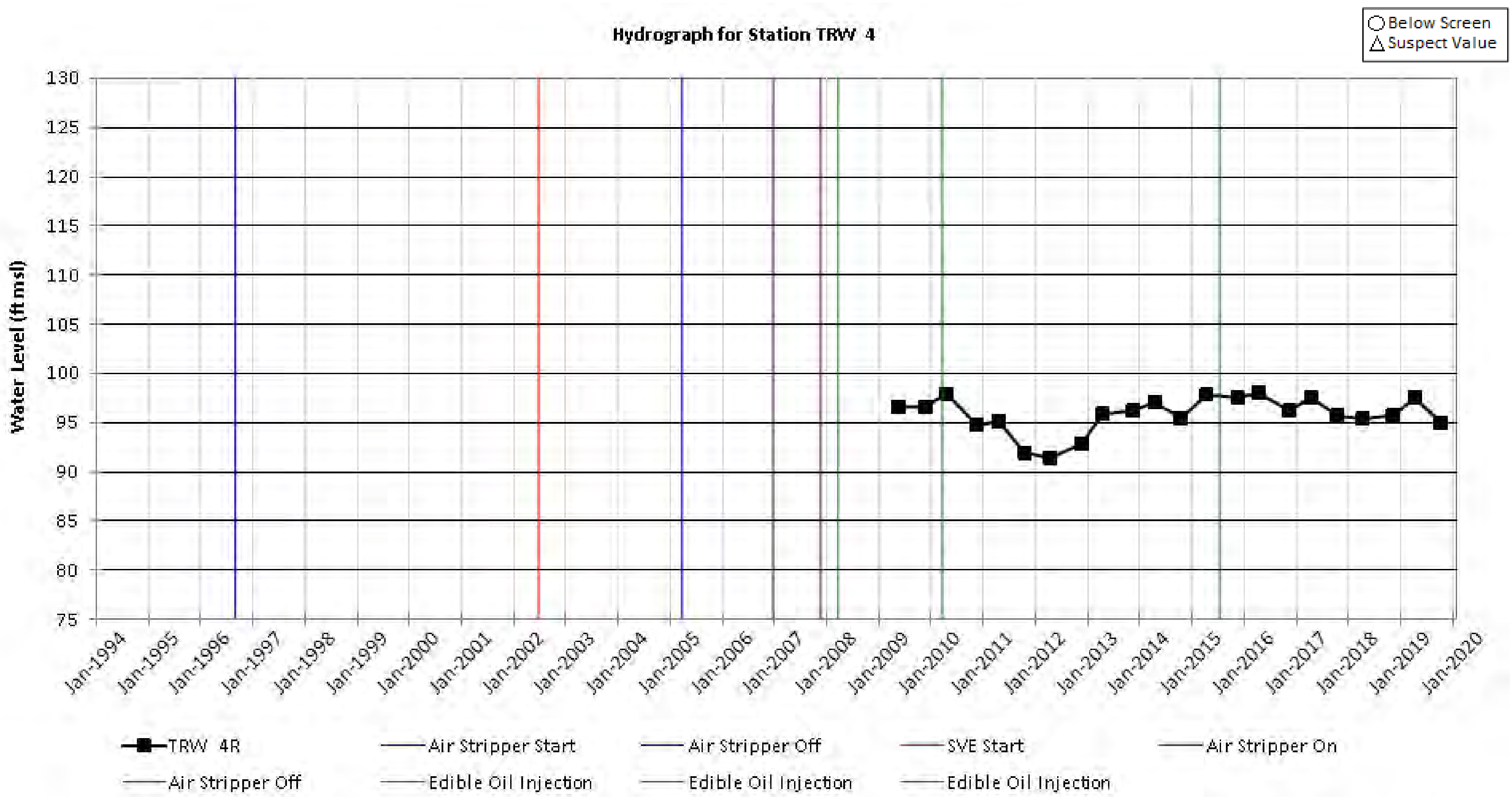
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TRW 3
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection


Hydrograph for Station TRW 4
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Suspect Value
Water Level (ft msl)
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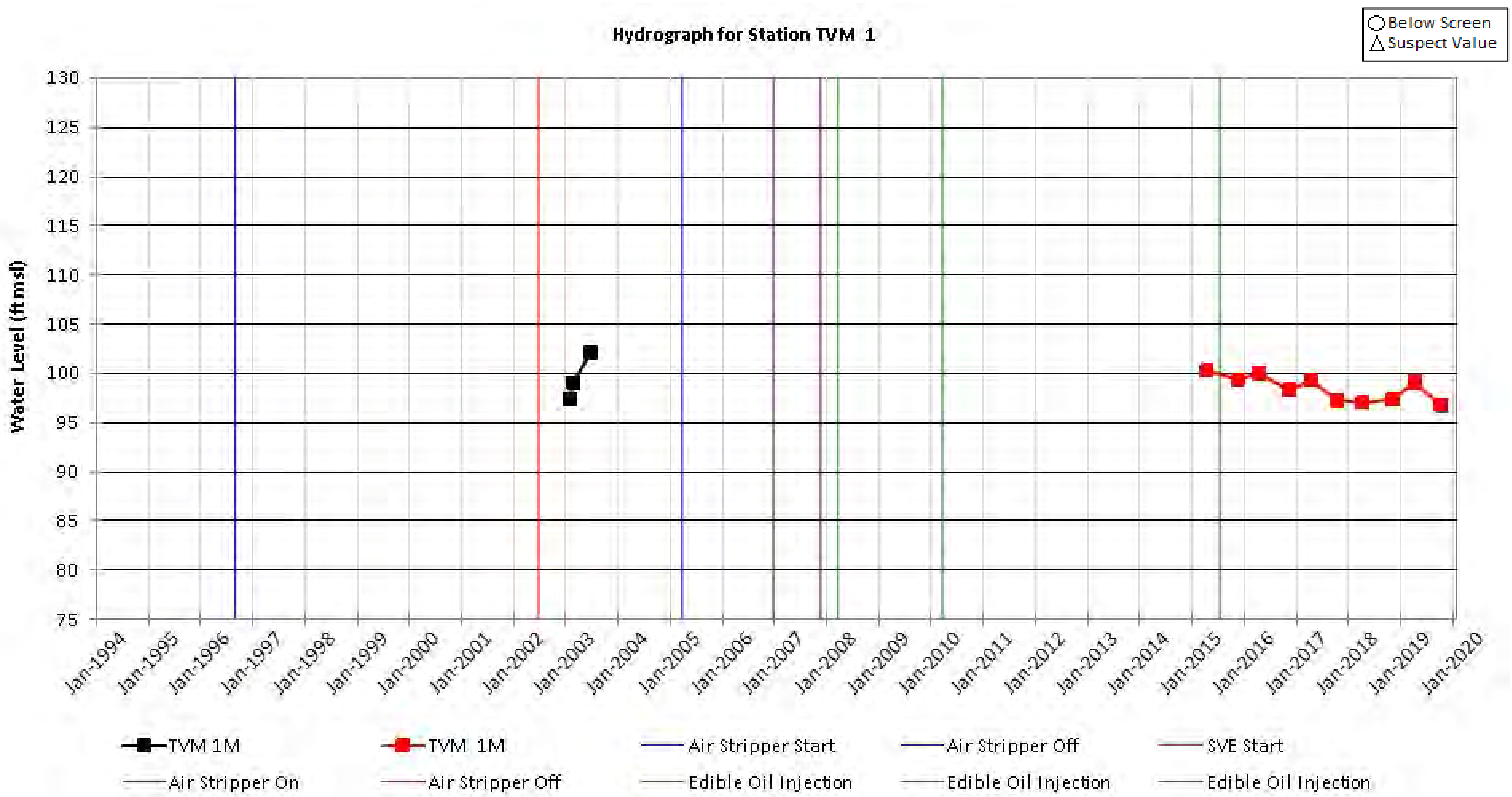
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TRW 4R
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection


Hydrograph for Station TVM 1
Below Screen
Suspect Value
Water Level (ft msl)
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125
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115
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105
100
95
90
85
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75
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
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Jan-2002
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Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
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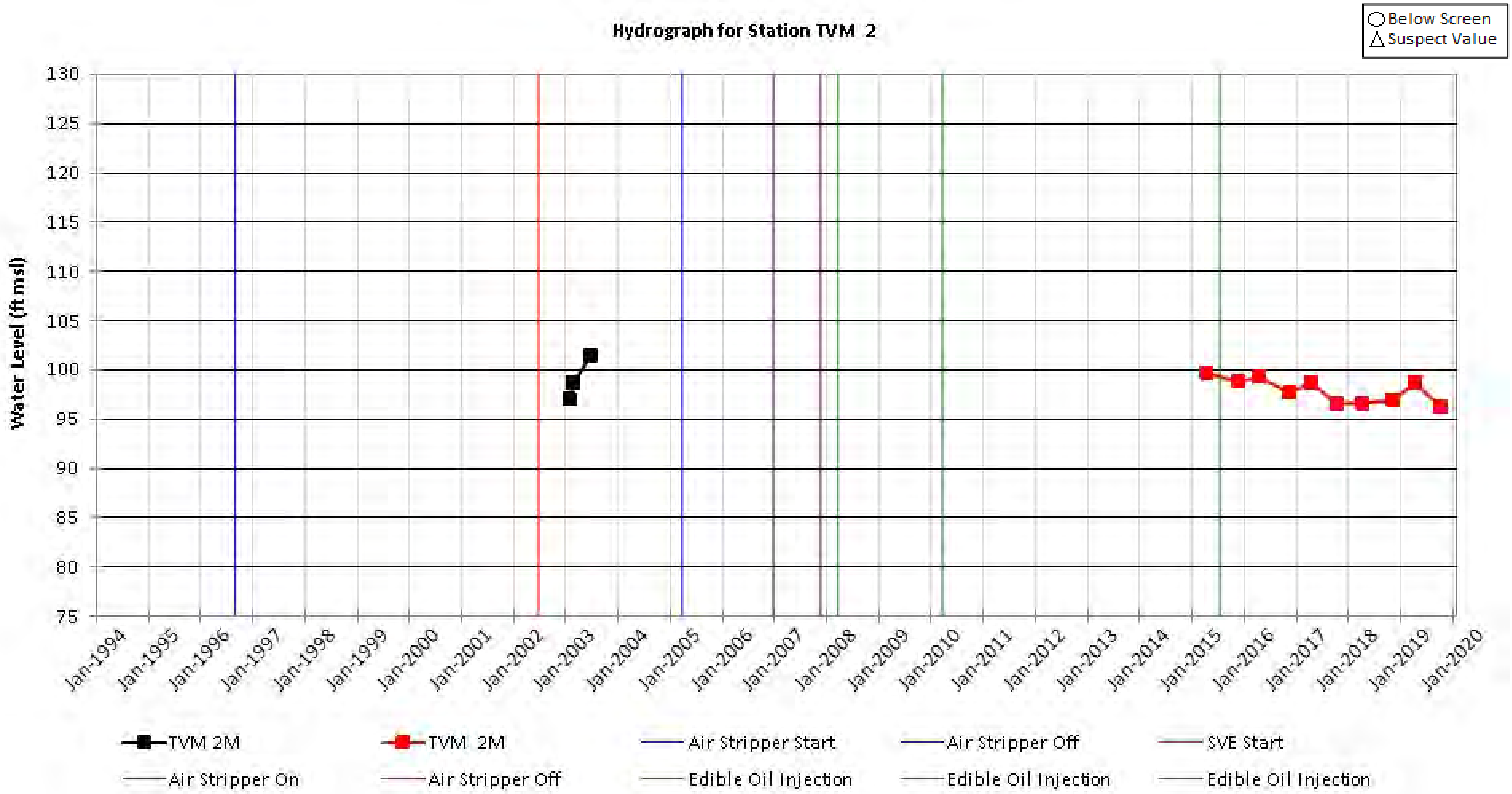
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TVM 1M
TVM 1M
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection


Hydrograph for Station TVM 2
Below Screen
Suspect Value
Water Level (ft msl)
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125
120
115
110
105
100
95
90
85
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75
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
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Jan-2017
Jan-2018
Jan-2019
Jan-2020
TVM 2M
TVM 2M
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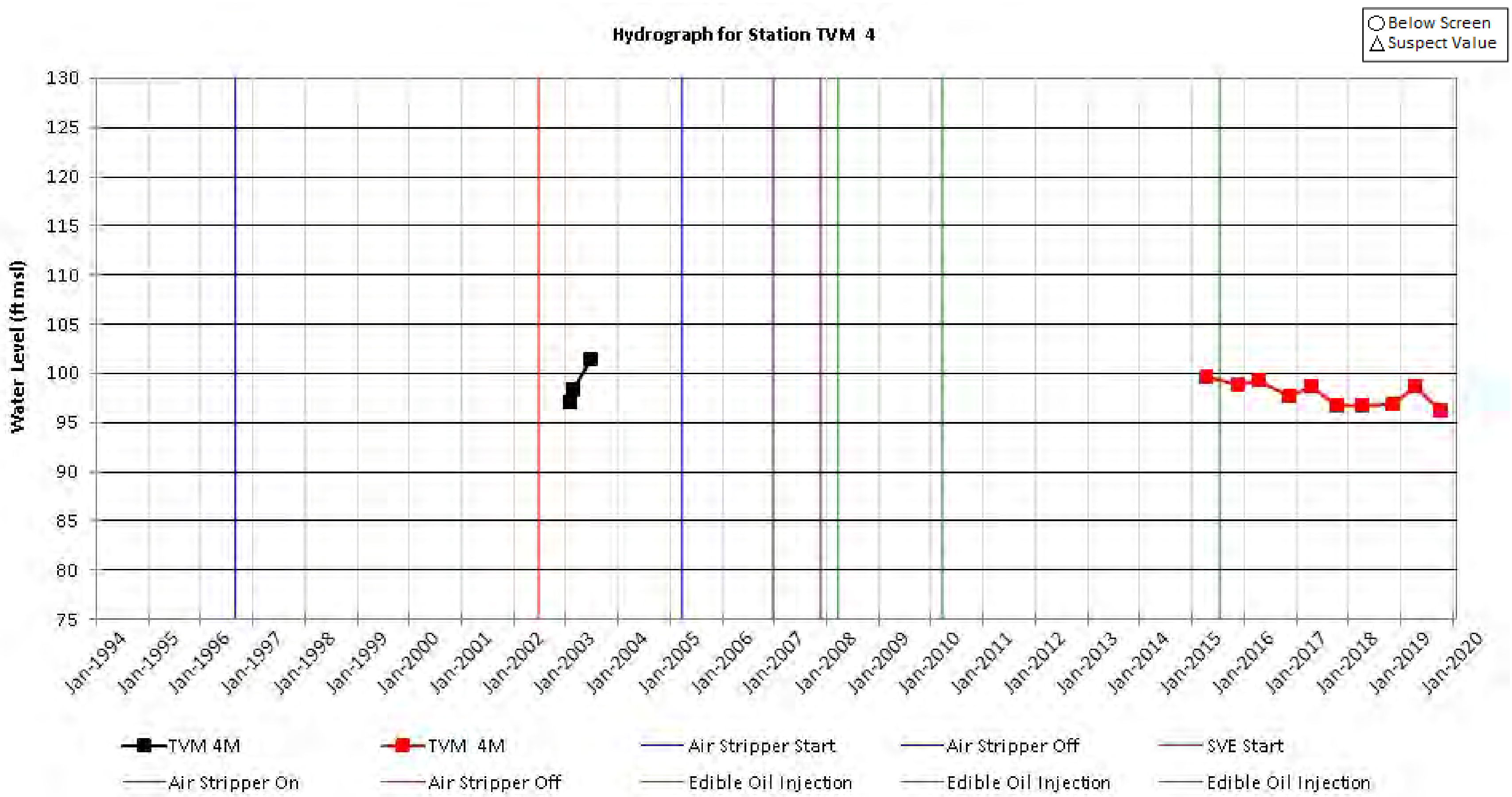
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection


Hydrograph for Station TVM 4
Below Screen
Suspect Value
Water Level (ft msl)
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125
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105
100
95
90
85
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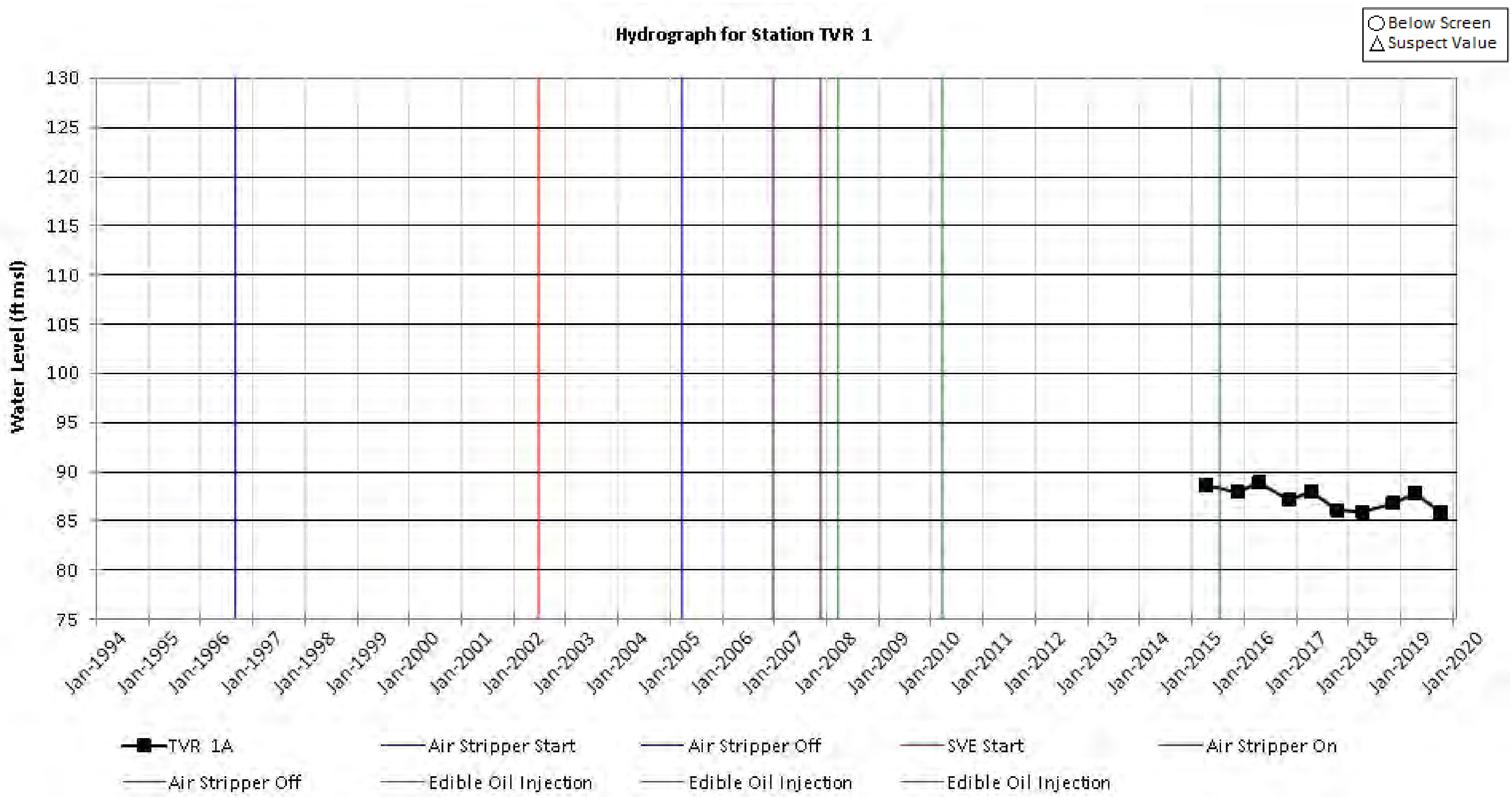
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TVM 4M
TVM 4M
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection


Hydrograph for Station TVR 1
Below Screen
Suspect Value
Water Level (ft msl)
130
125
120
115
110
105
100
95
90
85
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75
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
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Jan-2001
Jan-2002
Jan-2003
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Jan-2005
Jan-2006
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Jan-2008
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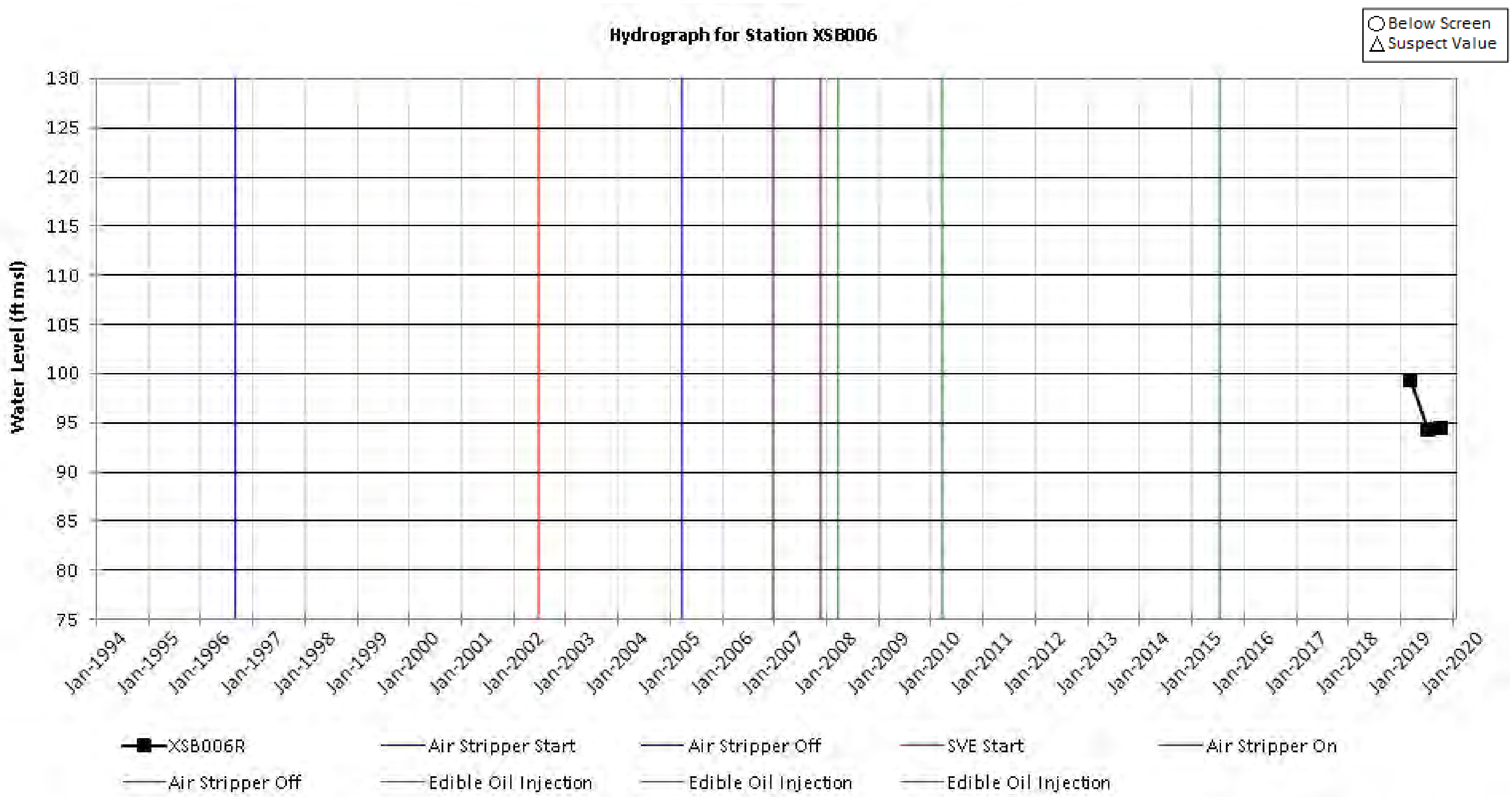
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TVR 1A
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection


Hydrograph for Station XSB006
Below Screen
Suspect Value
Water Level (ft msl)
130
125
120
115
110
105
100
95
90
85
80
75
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
XSB006R
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection

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APPENDIX E

TIME SERIES PLOTS

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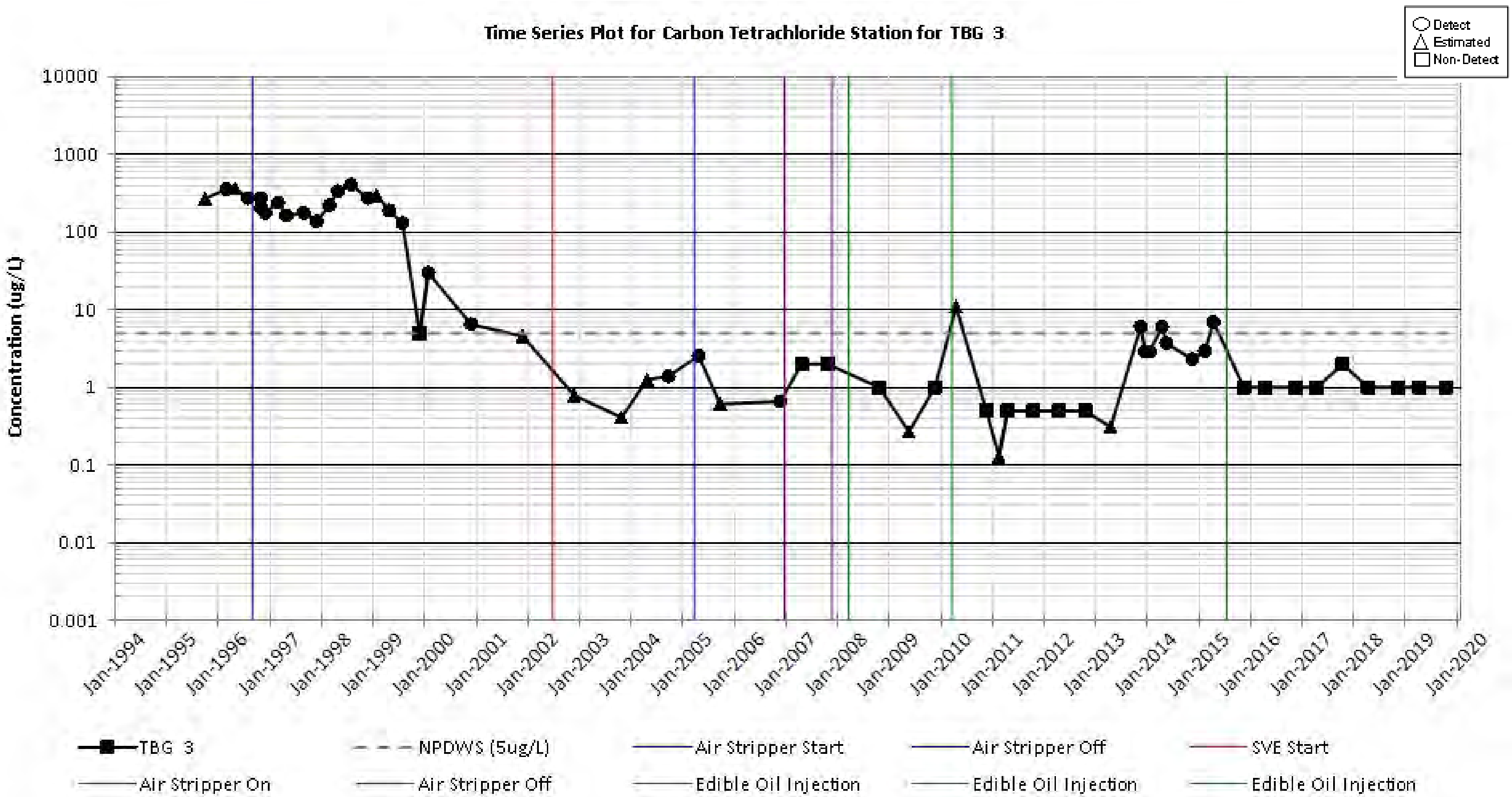
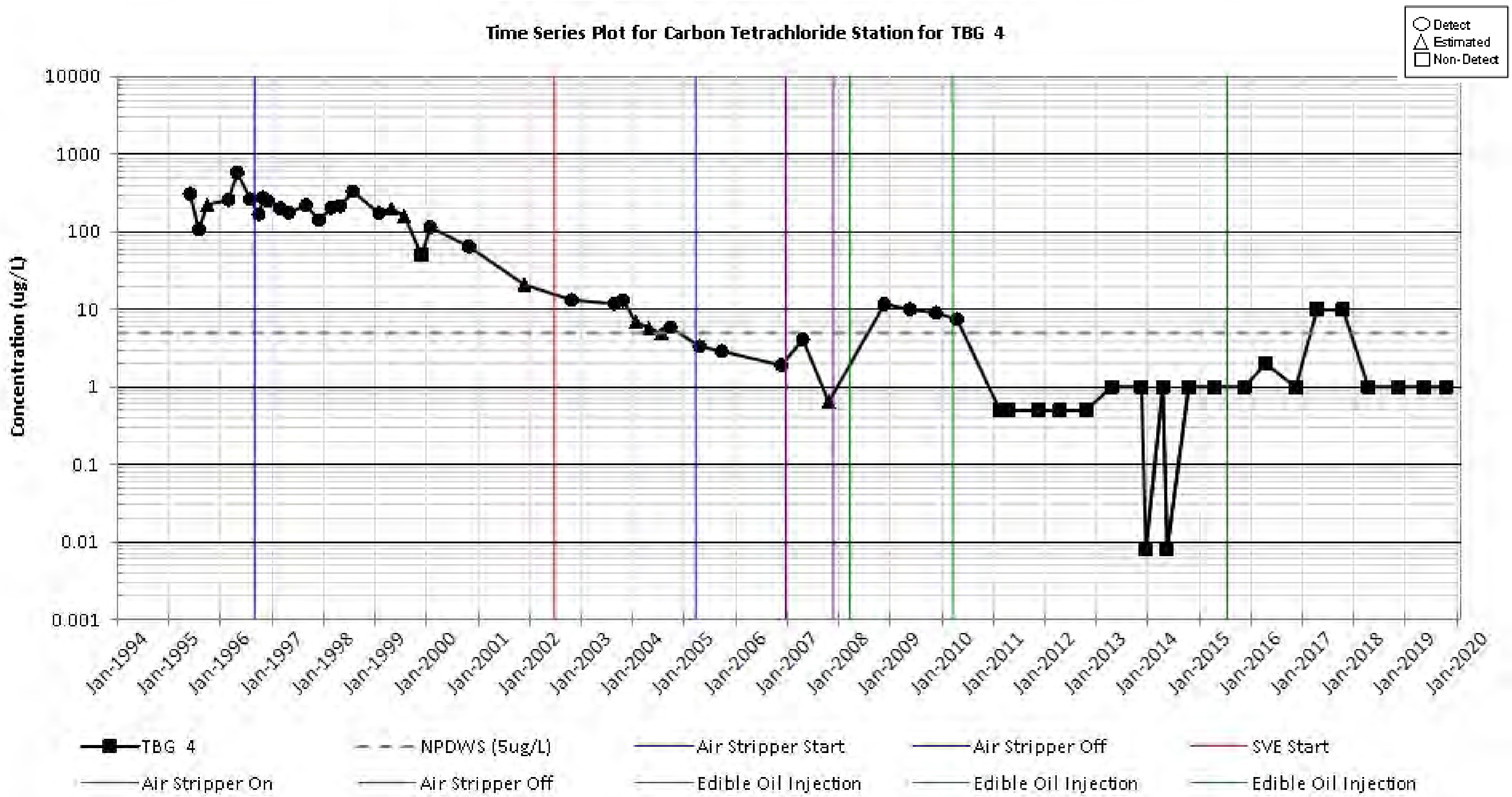
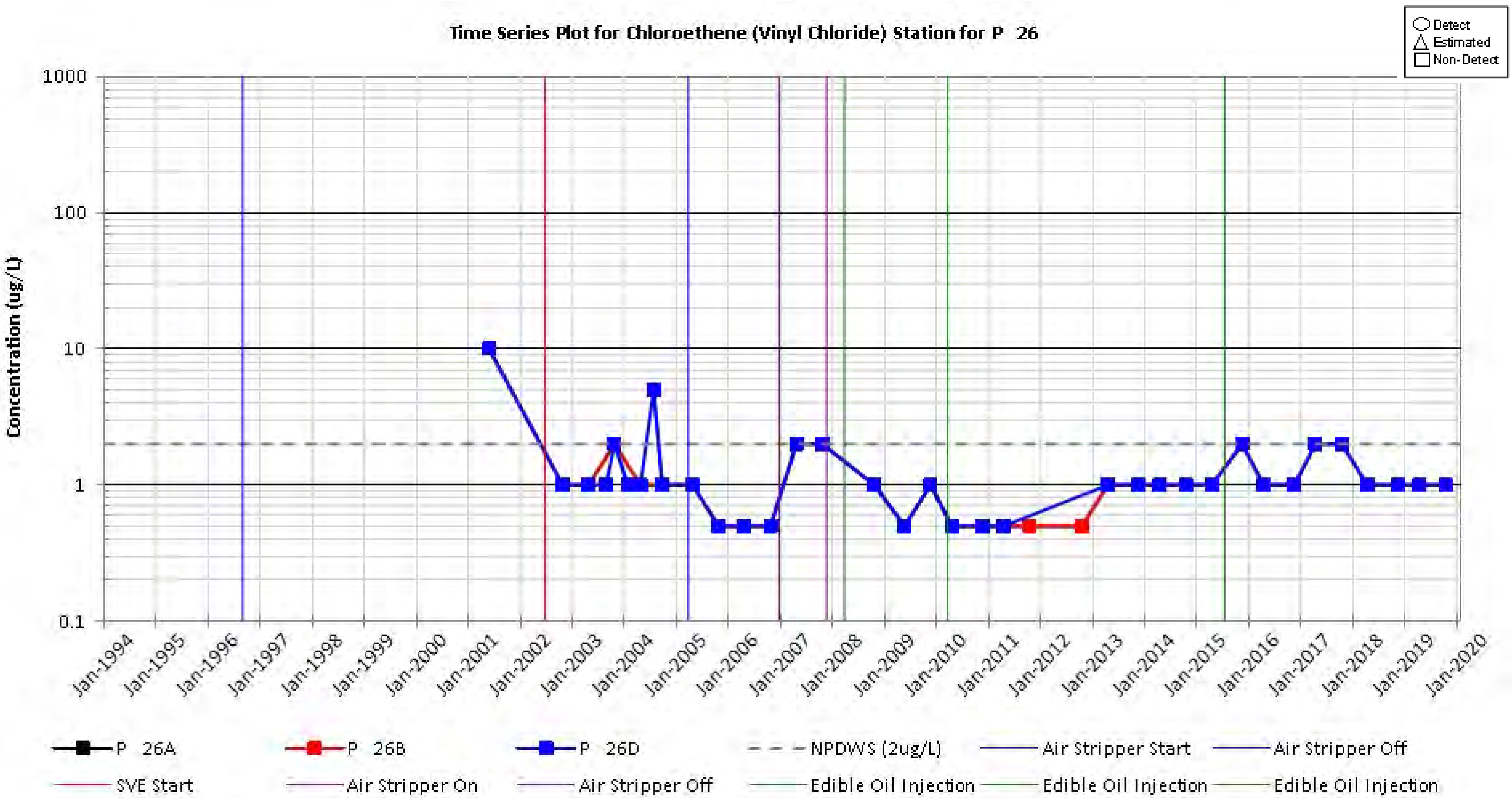
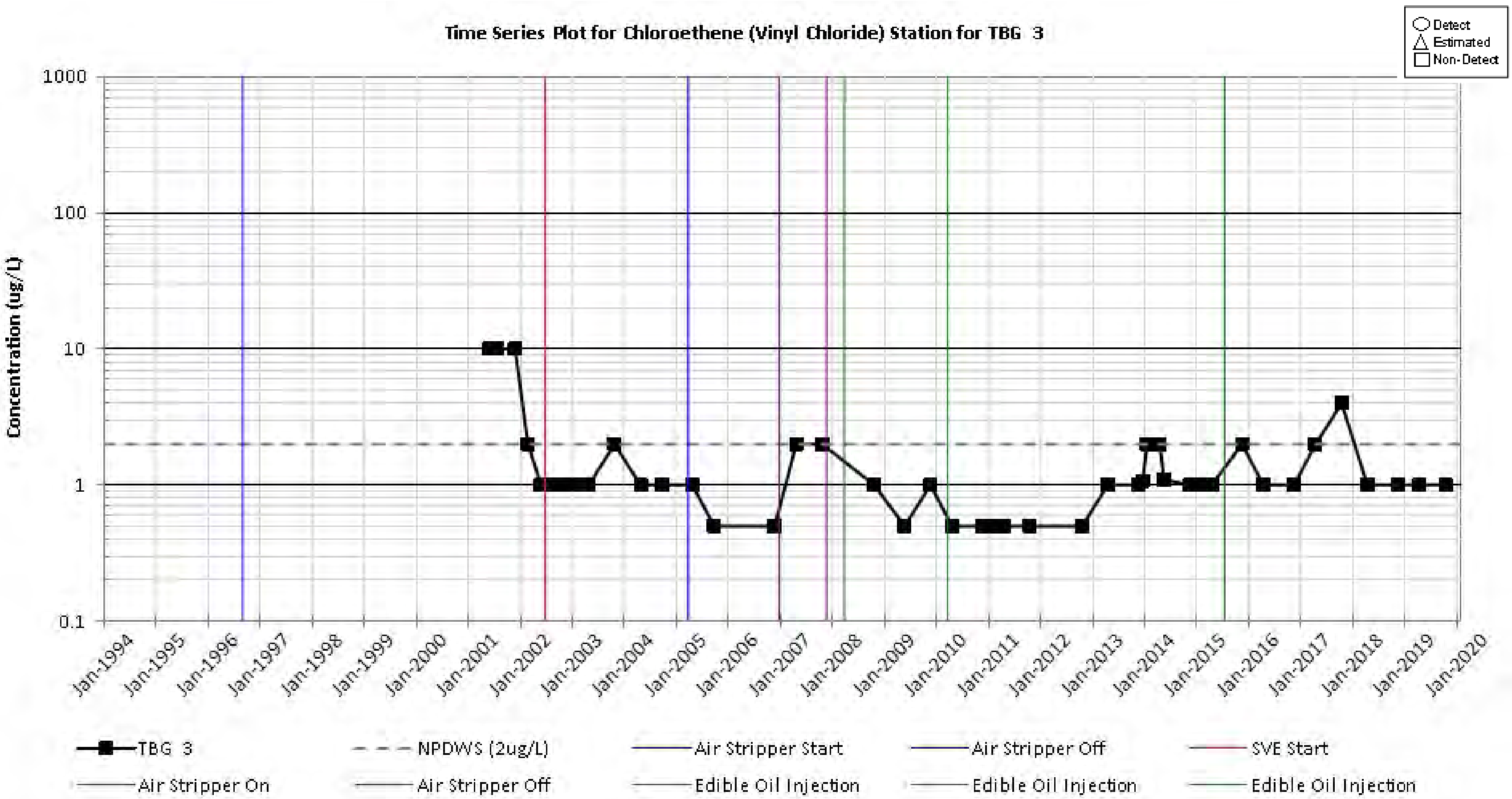

Time Series Plot for Carbon Tetrachloride Station for TBG 3
Detect
Estimated
Non-Detect
Concentration (ug/L)
10000
1000
100
10
1
0.1
0.01
0.001
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TBG 3
NPDWS (5ug/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection


Time Series Plot for Carbon Tetrachloride Station for TBG 4
Detect
Estimated
Non-Detect
Concentration (ug/L)
10000
1000
100
10
1
0.1
0.01
0.001
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TBG 4
NPDWS (5ug/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection


Time Series Plot for Chloroethene (Vinyl Chloride) Station for P 26
Detect
Estimated
Non-Detect
Concentration (ug/L)
1000
100
10
1
0.1
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
P 26A
P 26B
P 26D
NPDWS (2ug/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection


Time Series Plot for Chloroethene (Vinyl Chloride) Station for TBG 3
Detect
Estimated
Non-Detect
Concentration (ug/L)
1000
100
10
1
0.1
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
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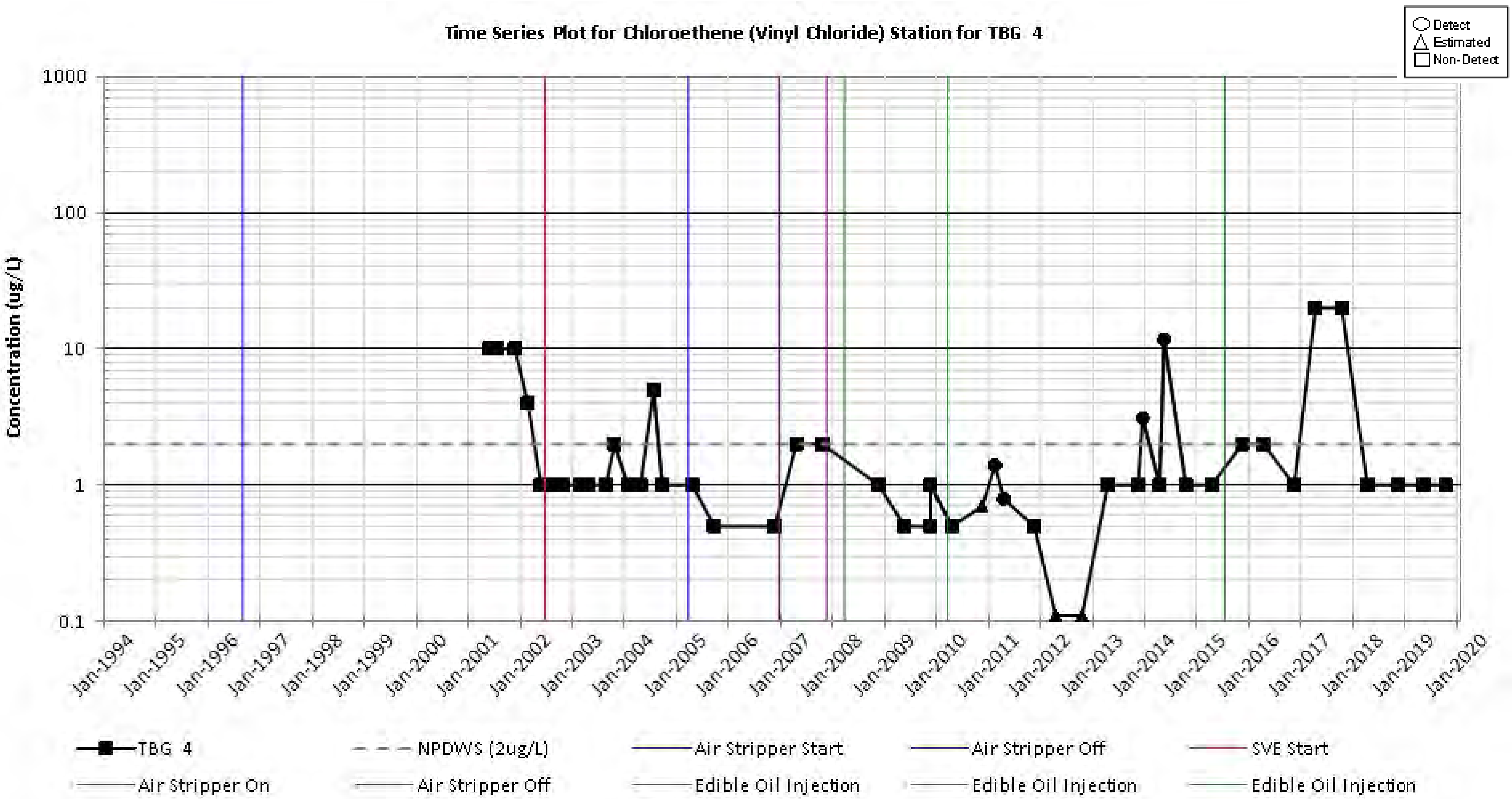
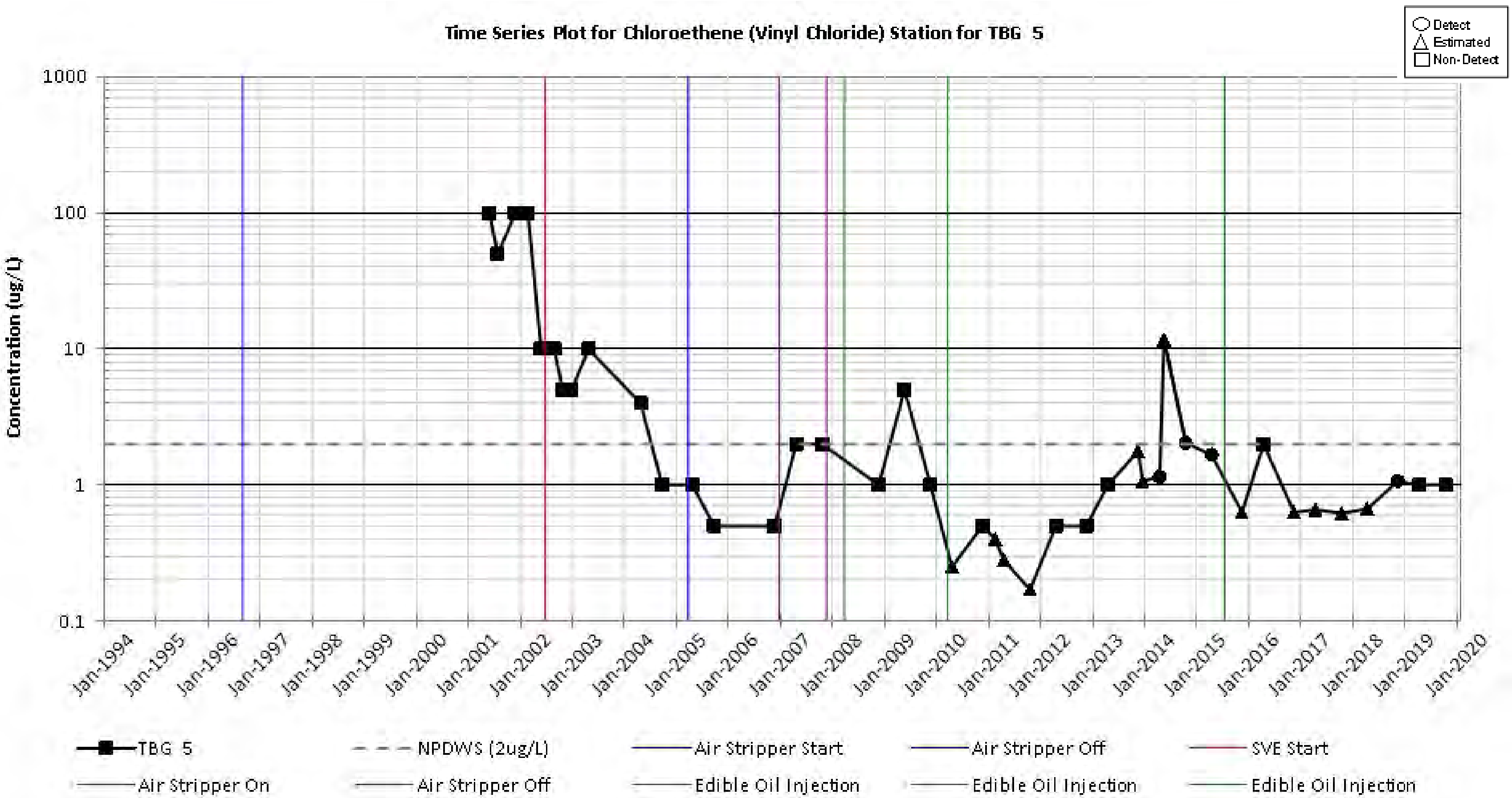
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TBG 3
NPDWS (2ug/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection


Time Series Plot for Chloroethene (Vinyl Chloride) Station for TBG 4
Detect
Estimated
Non-Detect
Concentration (ug/L)
1000
100
10
1
0.1
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TBG 4
NPDWS (2ug/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection


Time Series Plot for Chloroethene (Vinyl Chloride) Station for TBG 5
Detect
Estimated
Non-Detect
Concentration (ug/L)
1000
100
10
1
0.1
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
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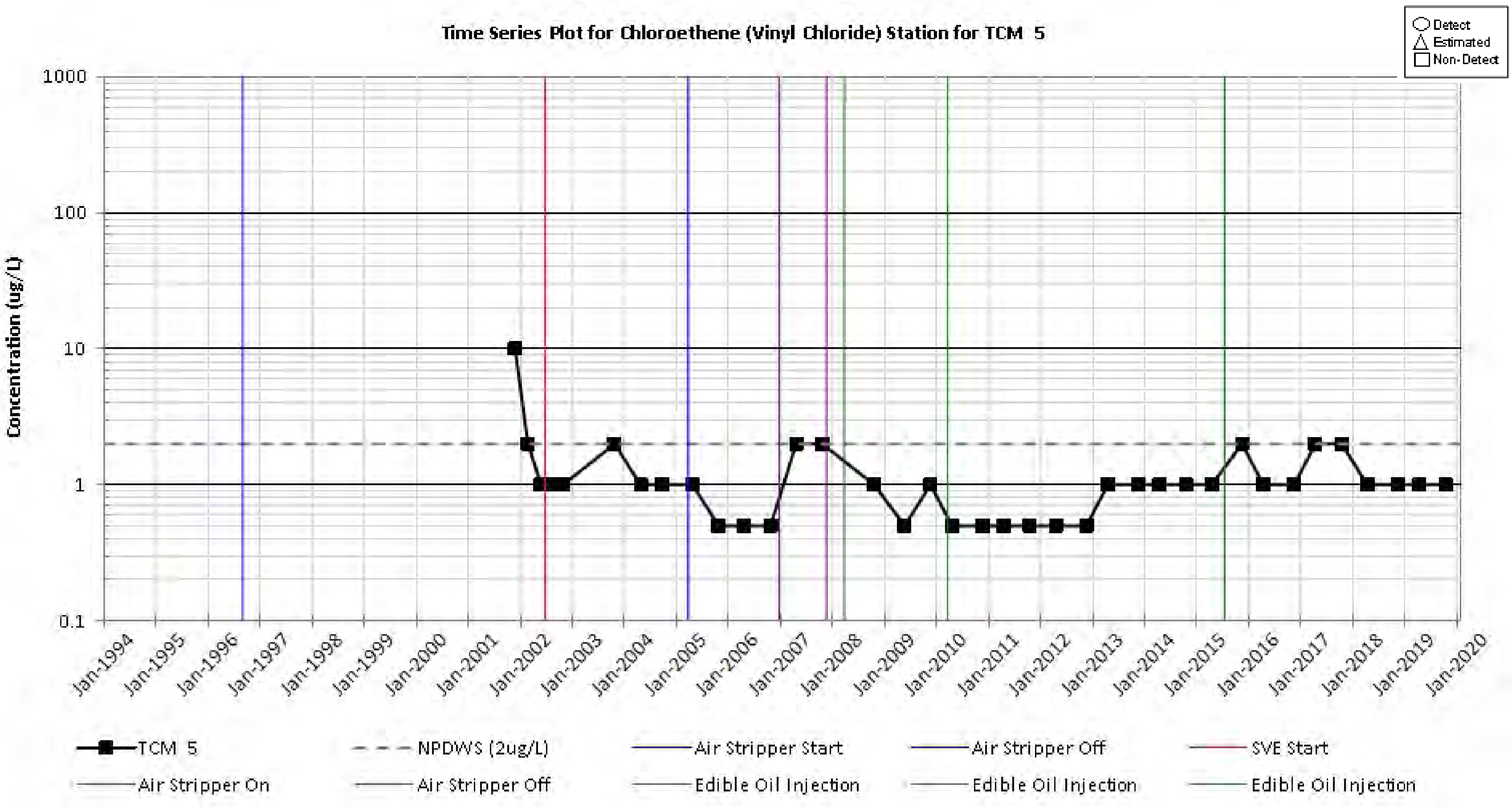
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TBG 5
NPDWS (2ug/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection


Time Series Plot for Chloroethene (Vinyl Chloride) Station for TCM 5
Detect
Estimated
Non-Detect
Concentration (ug/L)
1000
100
10
1
0.1
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
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Jan-2006
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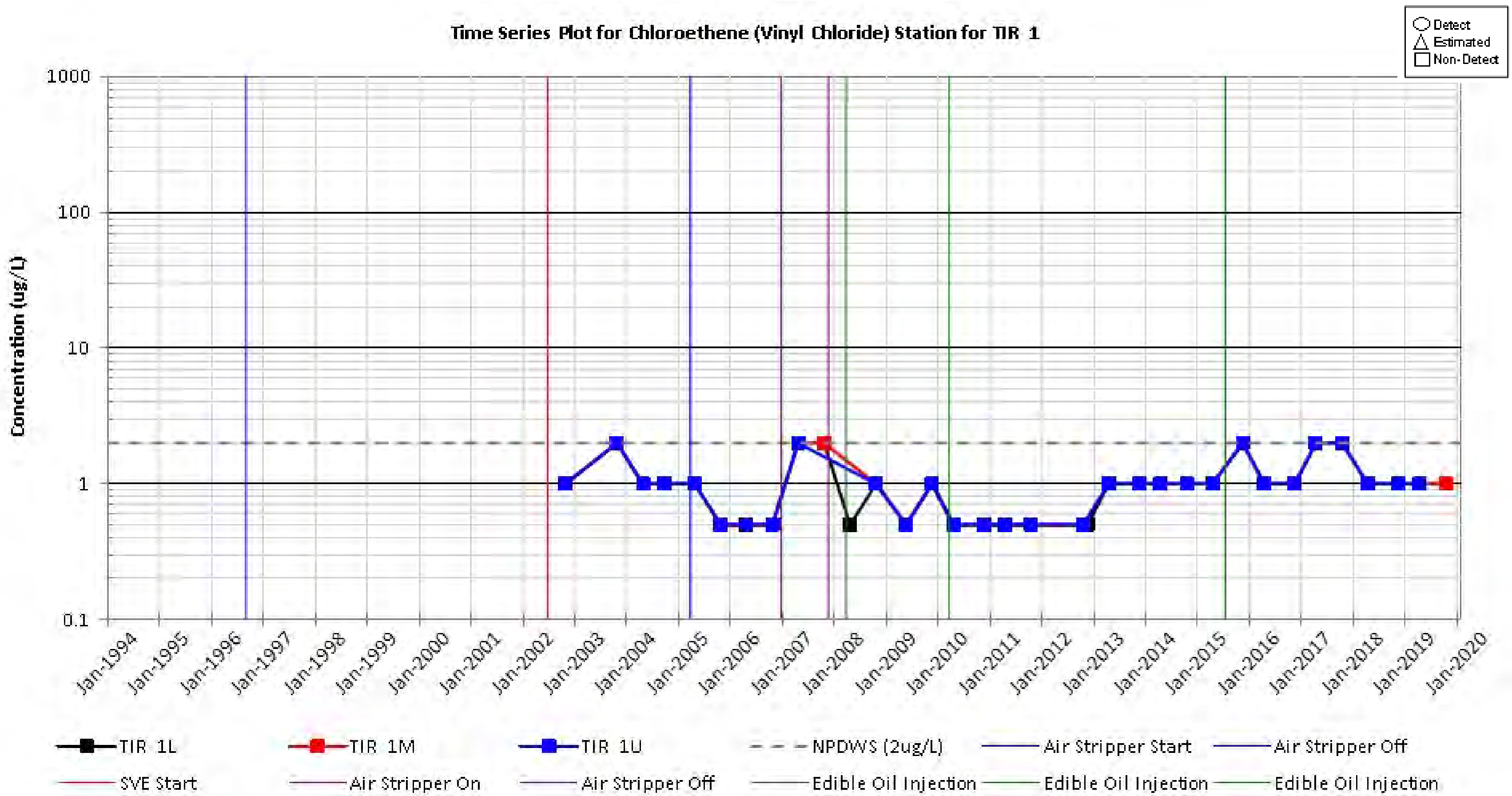
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TCM 5
NPDWS (2ug/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection


Time Series Plot for Chloroethene (Vinyl Chloride) Station for TIR 1
Detect
Estimated
Non-Detect
Concentration (ug/L)
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100
10
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0.1
Jan-1994
Jan-1995
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Jan-2008
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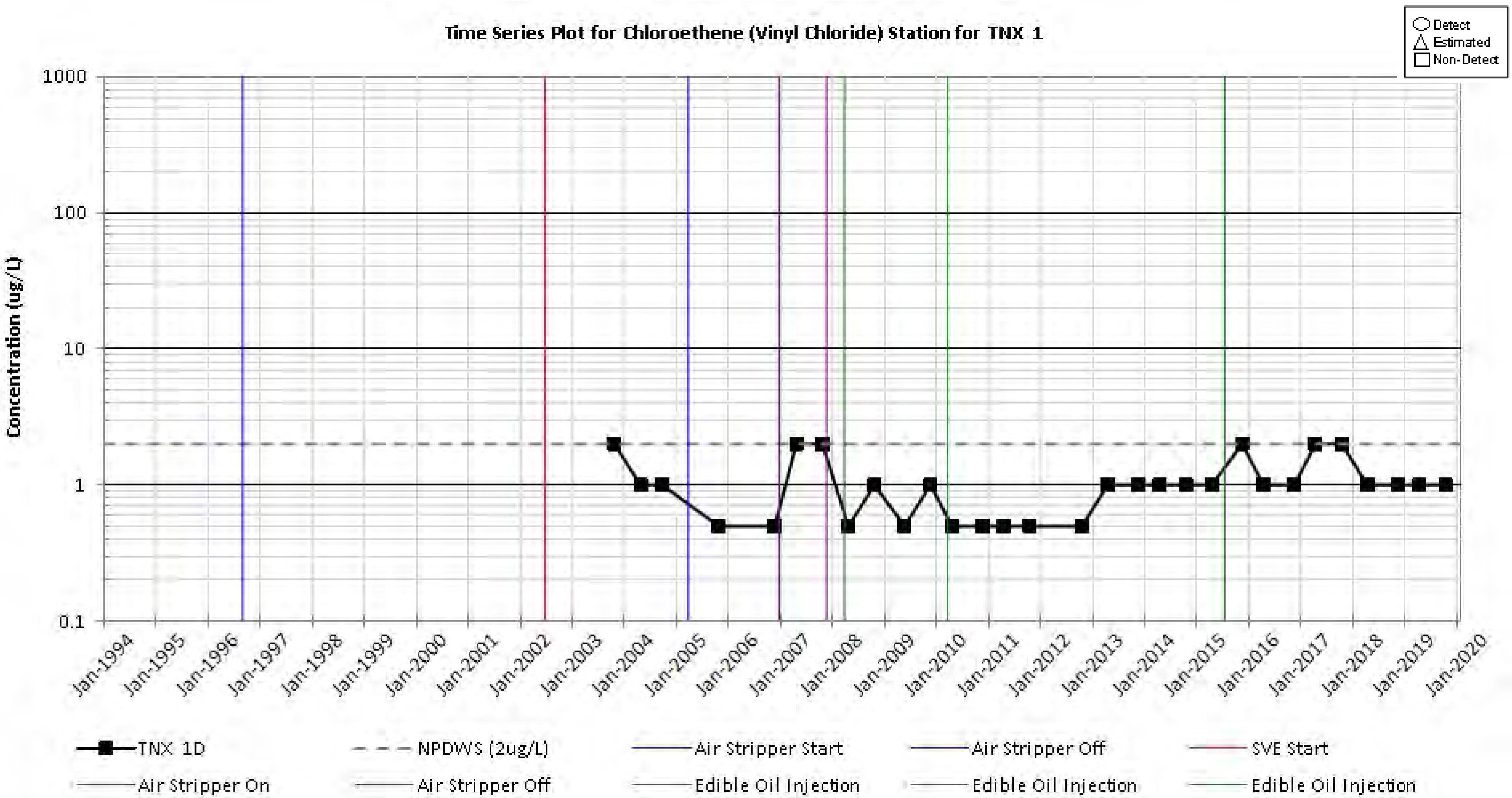
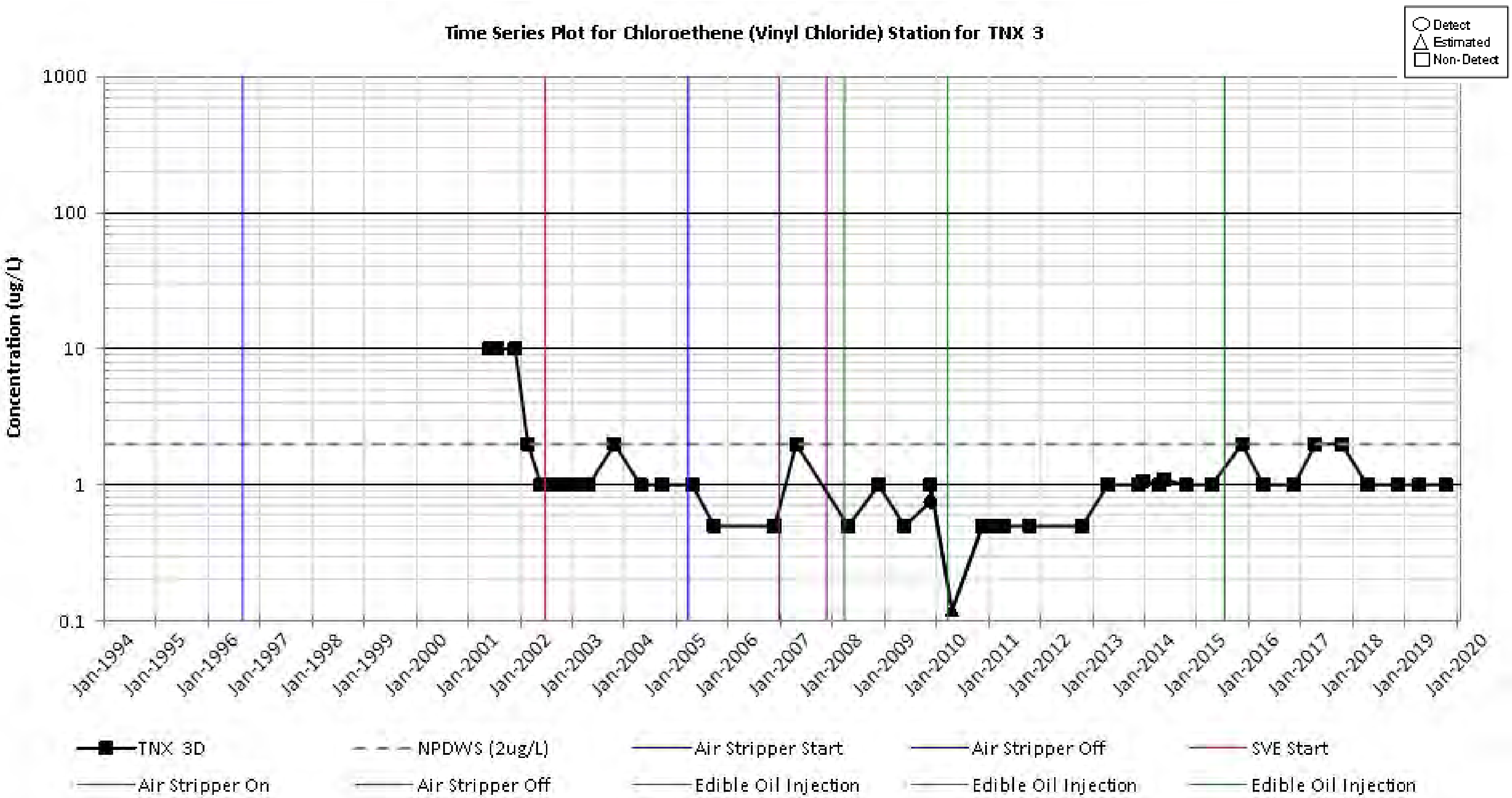
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TIR 1L
TIR 1M
TIR 1U
NPDWS (2ug/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection


Time Series Plot for Chloroethene (Vinyl Chloride) Station for TNX 1
Detect
Estimated
Non-Detect
Concentration (ug/L)
1000
100
10
1
0.1
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TNX 1D
NPDWS (2ug/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection


Time Series Plot for Chloroethene (Vinyl Chloride) Station for TNX 3
Detect
Estimated
Non-Detect
Concentration (ug/L)
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100
10
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0.1
Jan-1994
Jan-1995
Jan-1996
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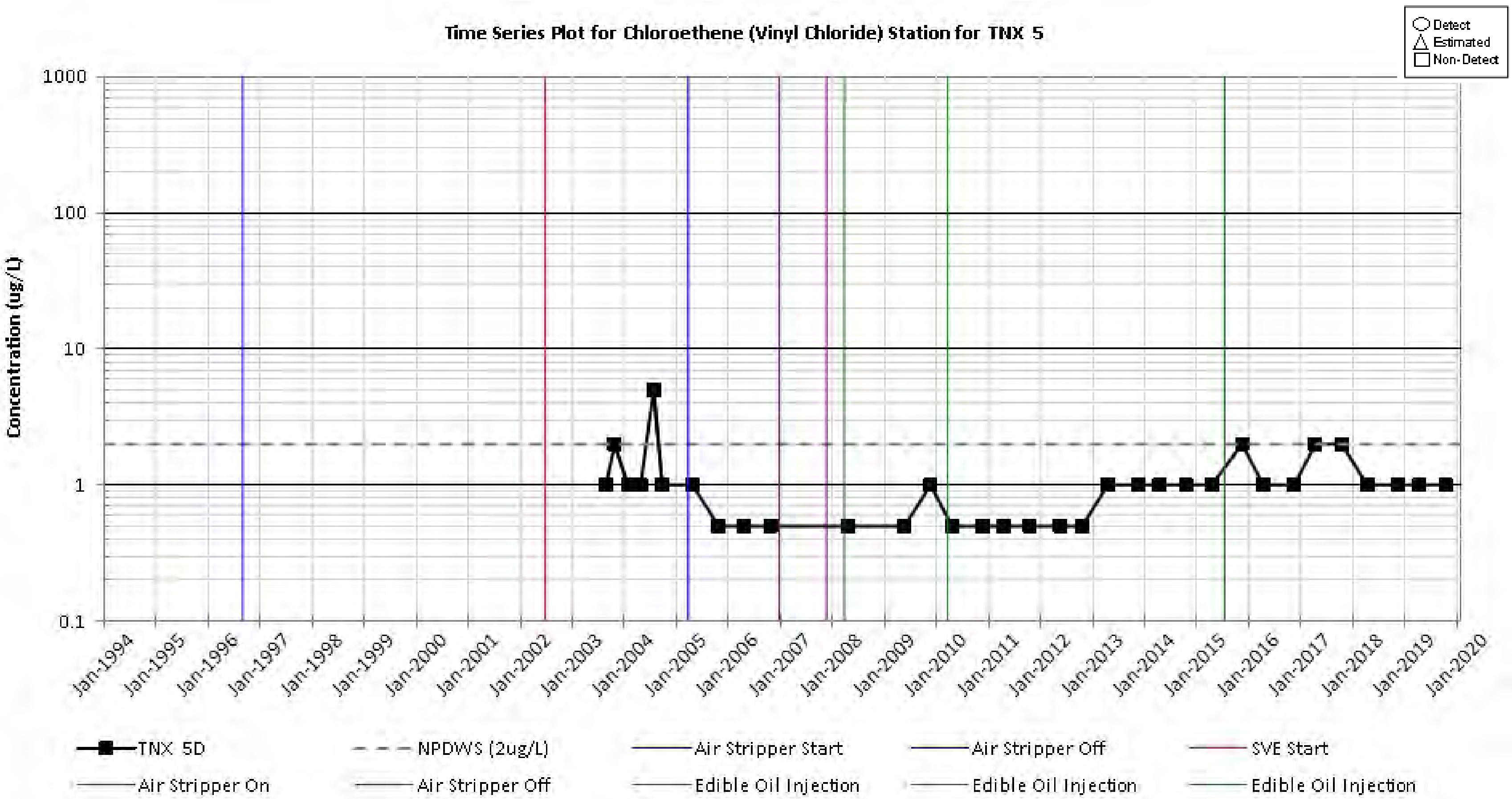
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TNX 3D
NPDWS (2ug/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection


Time Series Plot for Chloroethene (Vinyl Chloride) Station for TNX 5
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Estimated
Non-Detect
Concentration (ug/L)
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0.1
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Jan-2015
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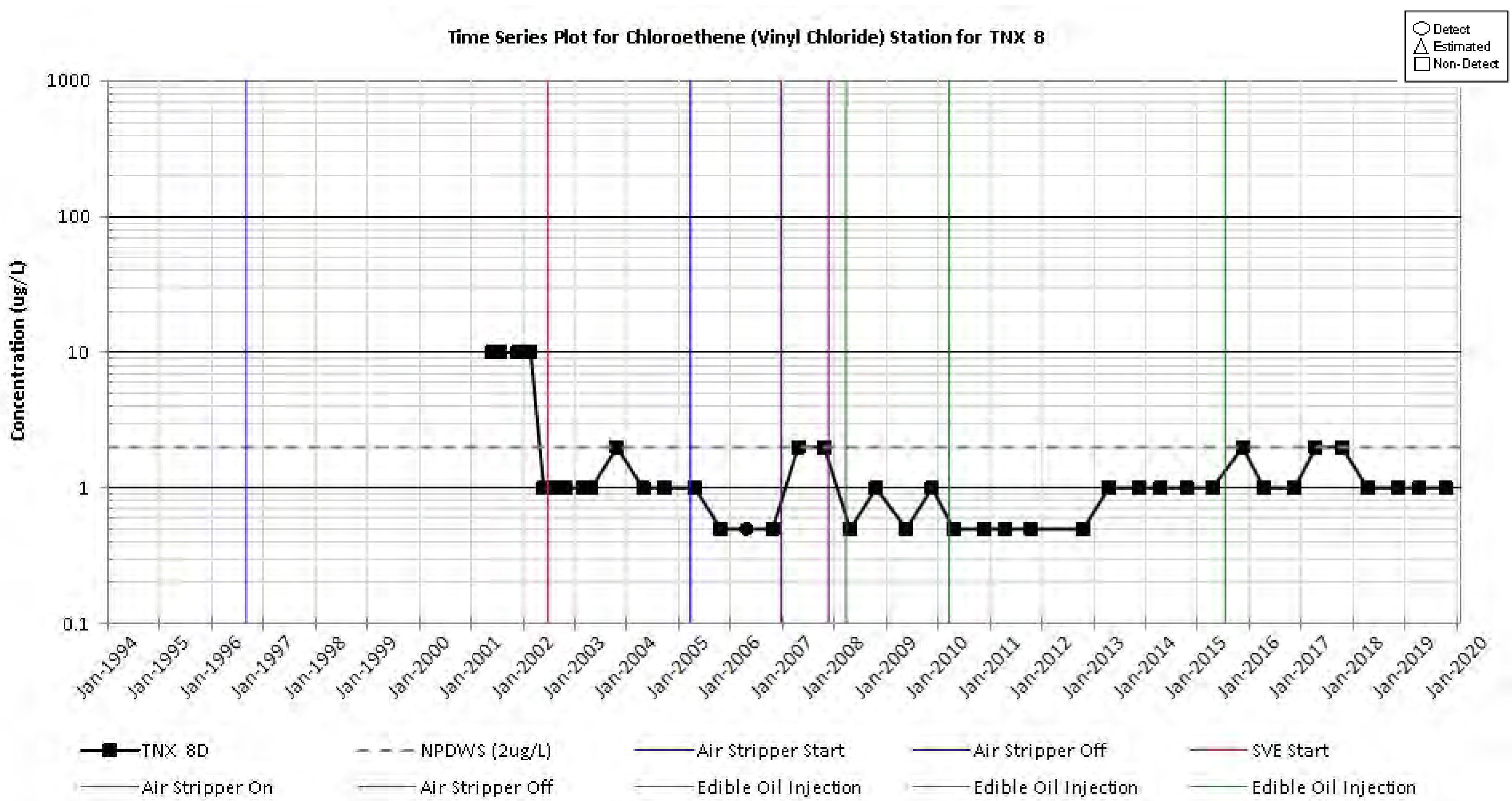
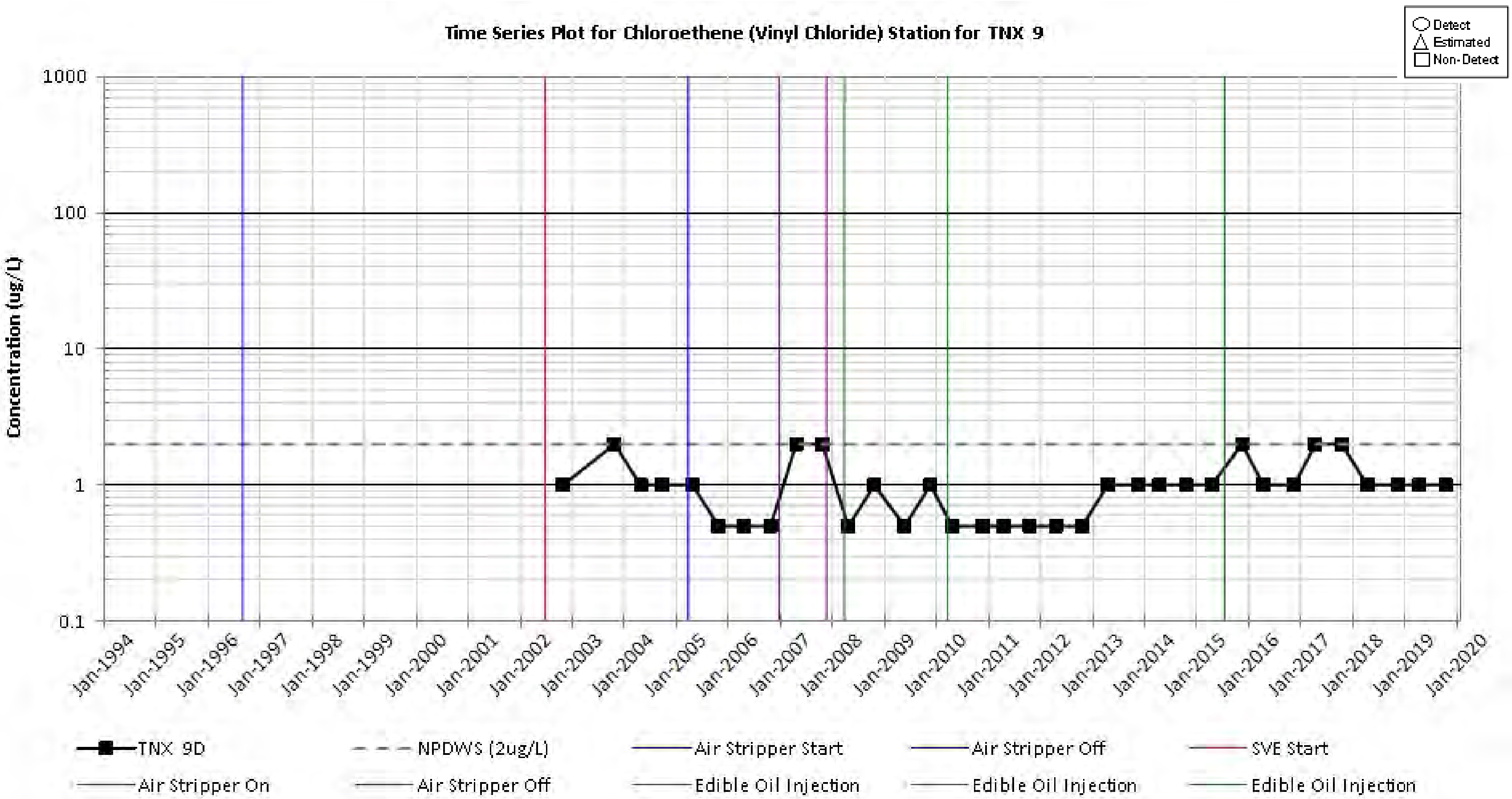
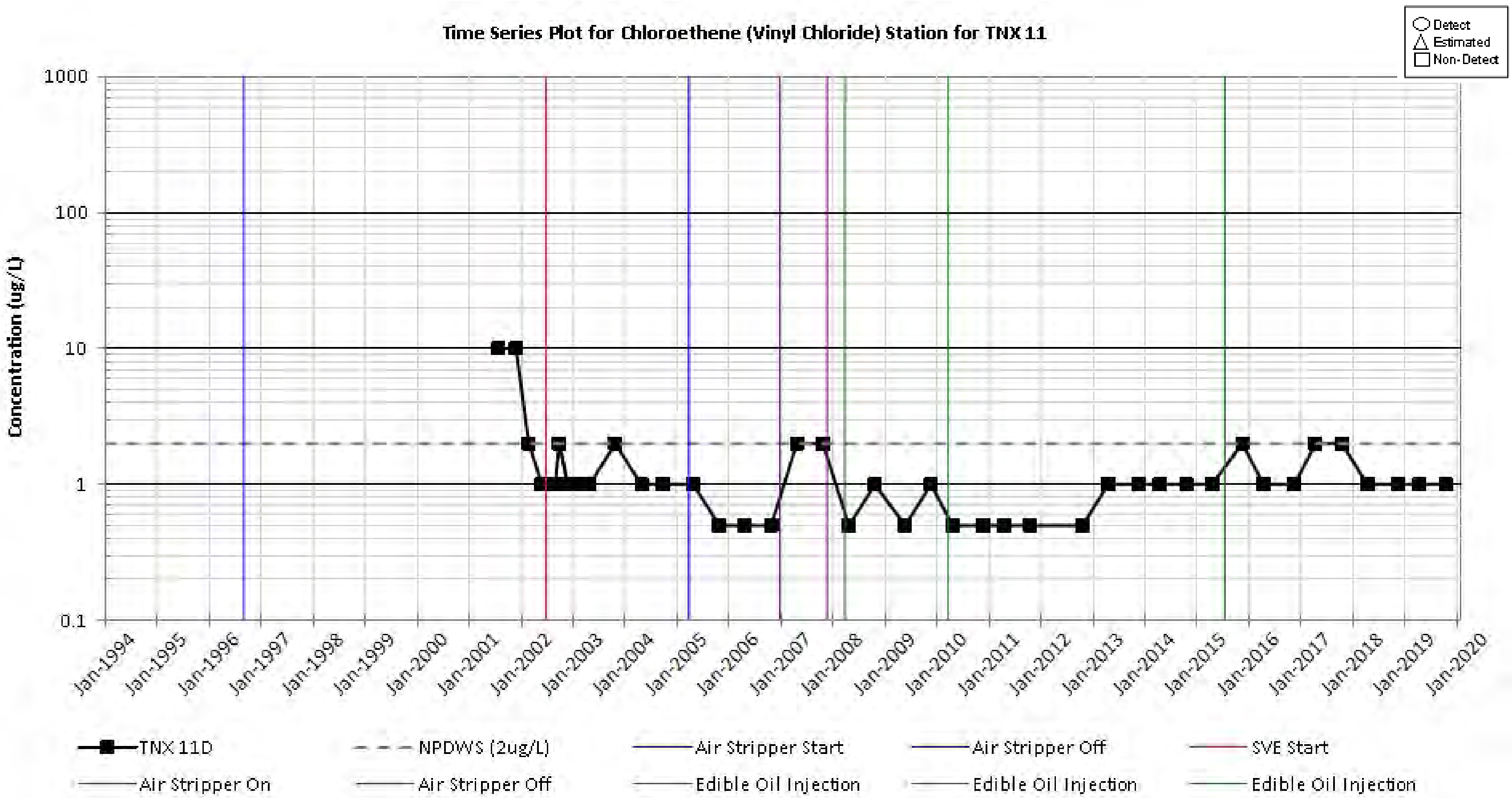
Jan-2019
Jan-2020
TNX 5D
NPDWS (2ug/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection


Time Series Plot for Chloroethene (Vinyl Chloride) Station for TNX 8
Detect
Estimated
Non-Detect
Concentration (ug/L)
1000
100
10
1
0.1
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TNX 8D
NPDWS (2ug/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection


Time Series Plot for Chloroethene (Vinyl Chloride) Station for TNX 9
Detect
Estimated
Non-Detect
Concentration (ug/L)
1000
100
10
1
0.1
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TNX 9D
NPDWS (2ug/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection


Time Series Plot for Chloroethene (Vinyl Chloride) Station for TNX 11
Detect
Estimated
Non-Detect
Concentration (ug/L)
1000
100
10
1
0.1
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
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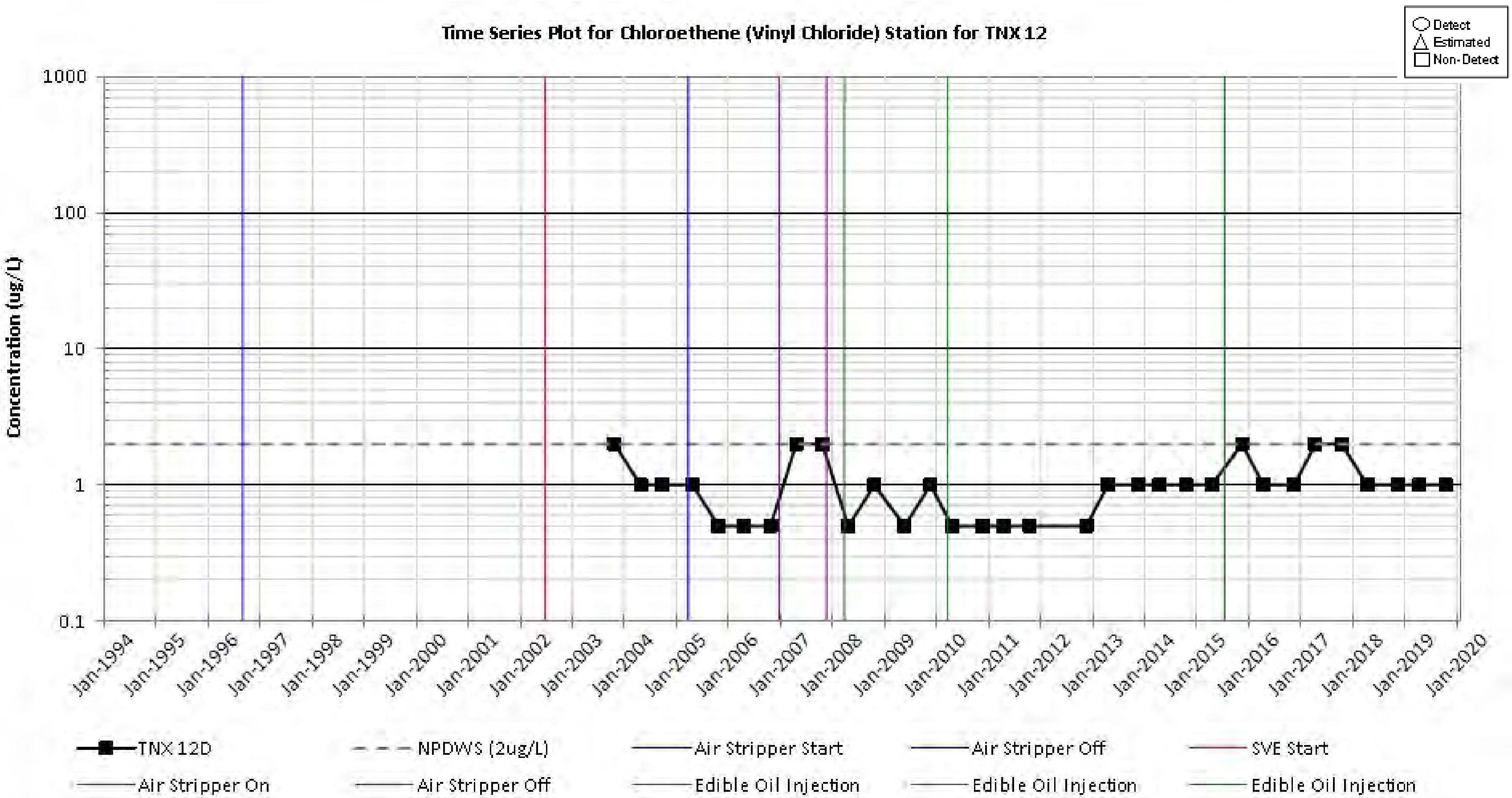
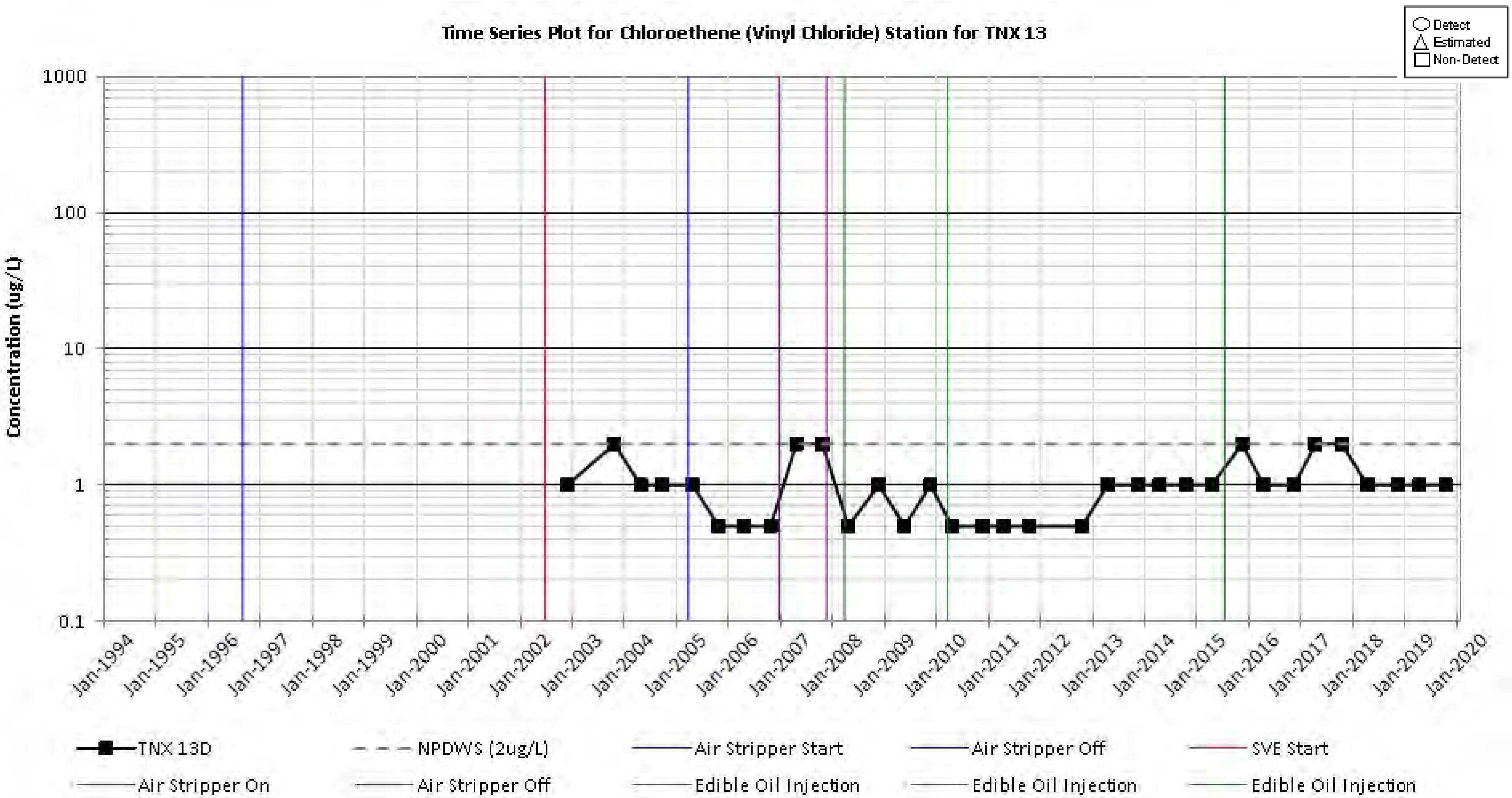
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TNX 11D
NPDWS (2ug/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection


Time Series Plot for Chloroethene (Vinyl Chloride) Station for TNX 12
Detect
Estimated
Non-Detect
Concentration (ug/L)
1000
100
10
1
0.1
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TNX 12D
NPDWS (2ug/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection


Time Series Plot for Chloroethene (Vinyl Chloride) Station for TNX 13
Detect
Estimated
Non-Detect
Concentration (ug/L)
1000
100
10
1
0.1
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
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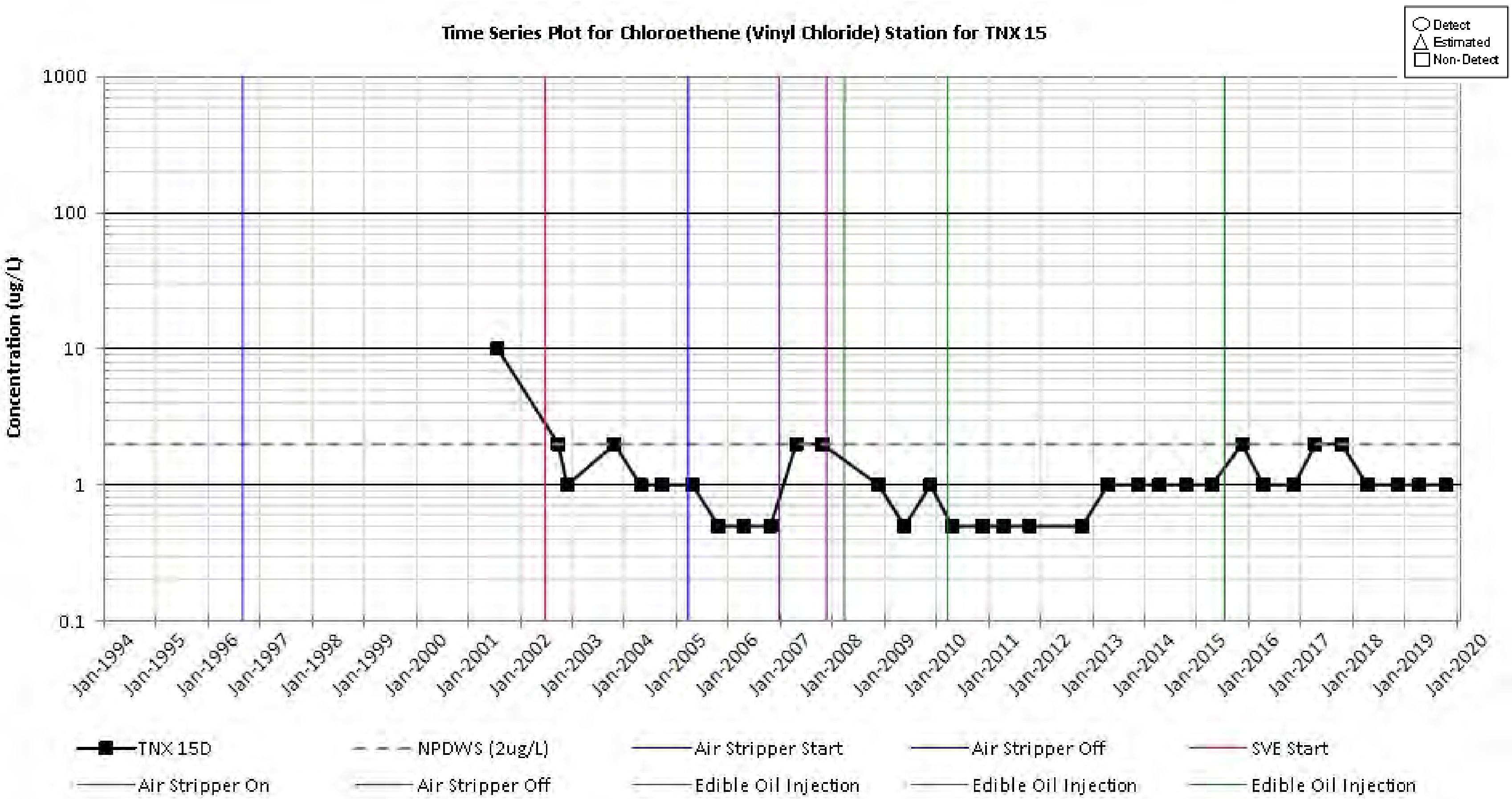
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TNX 13D
NPDWS (2ug/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection


Time Series Plot for Chloroethene (Vinyl Chloride) Station for TNX 15
Detect
Estimated
Non-Detect
Concentration (ug/L)
1000
100
10
1
0.1
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
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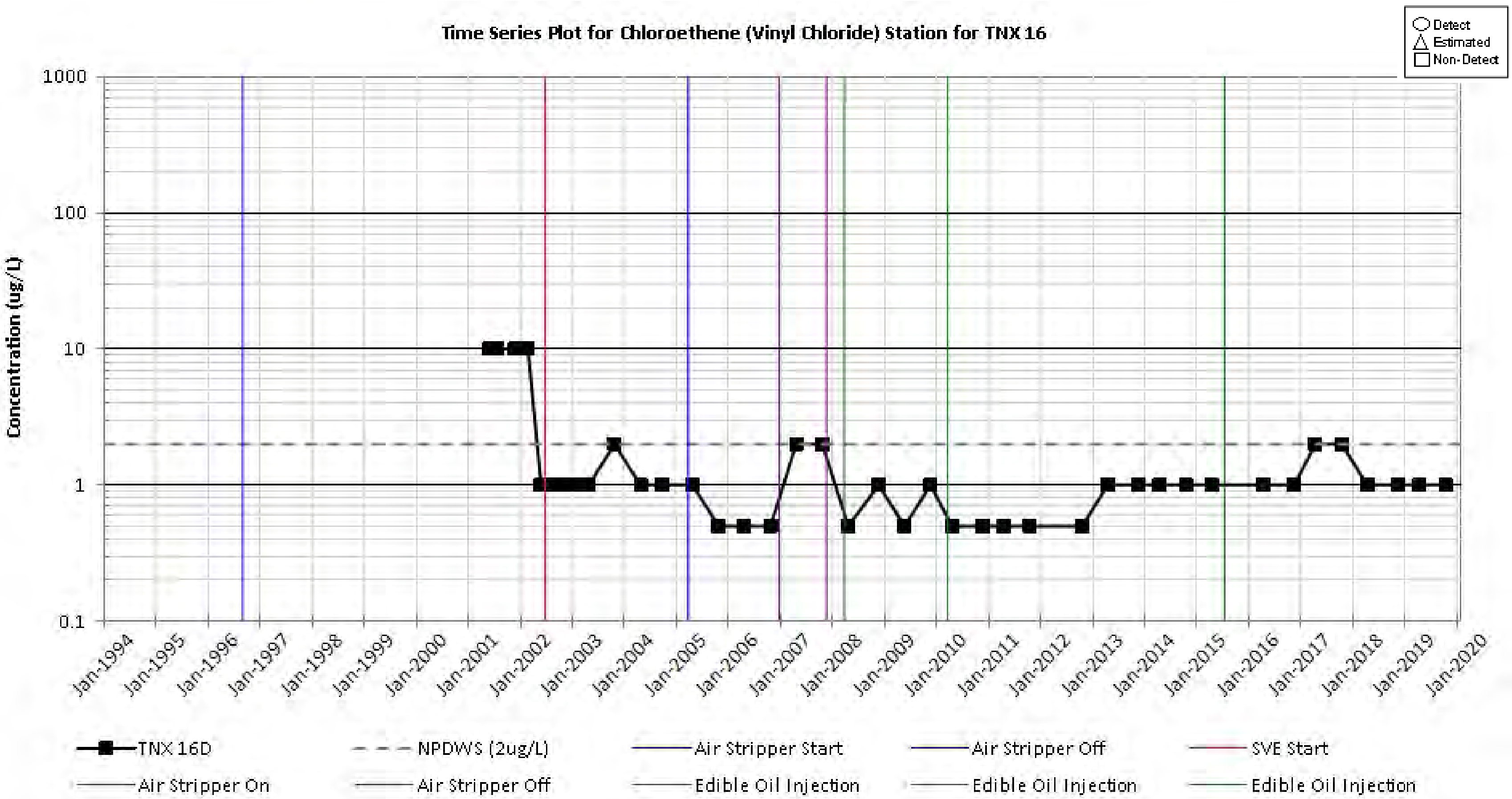
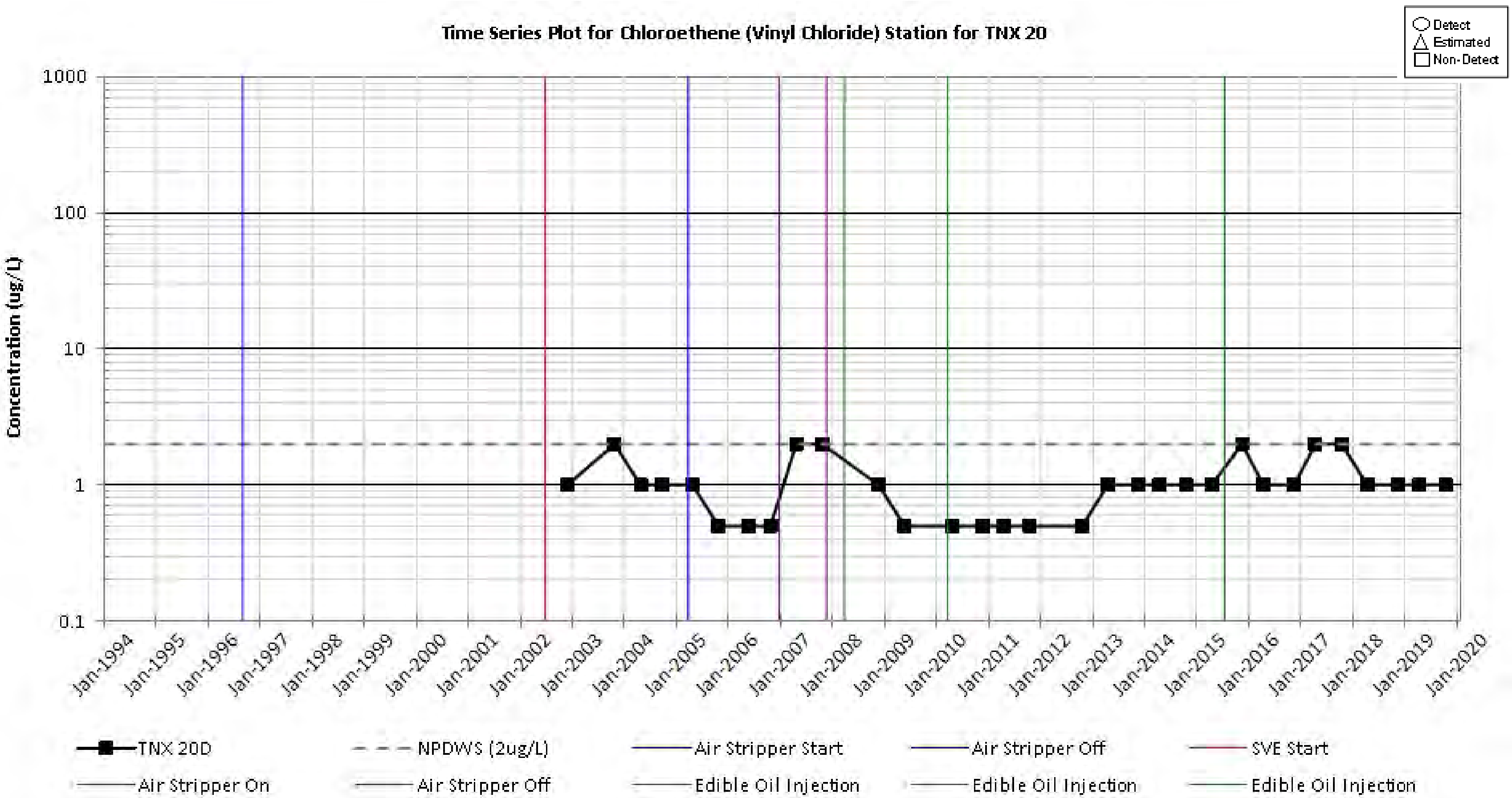
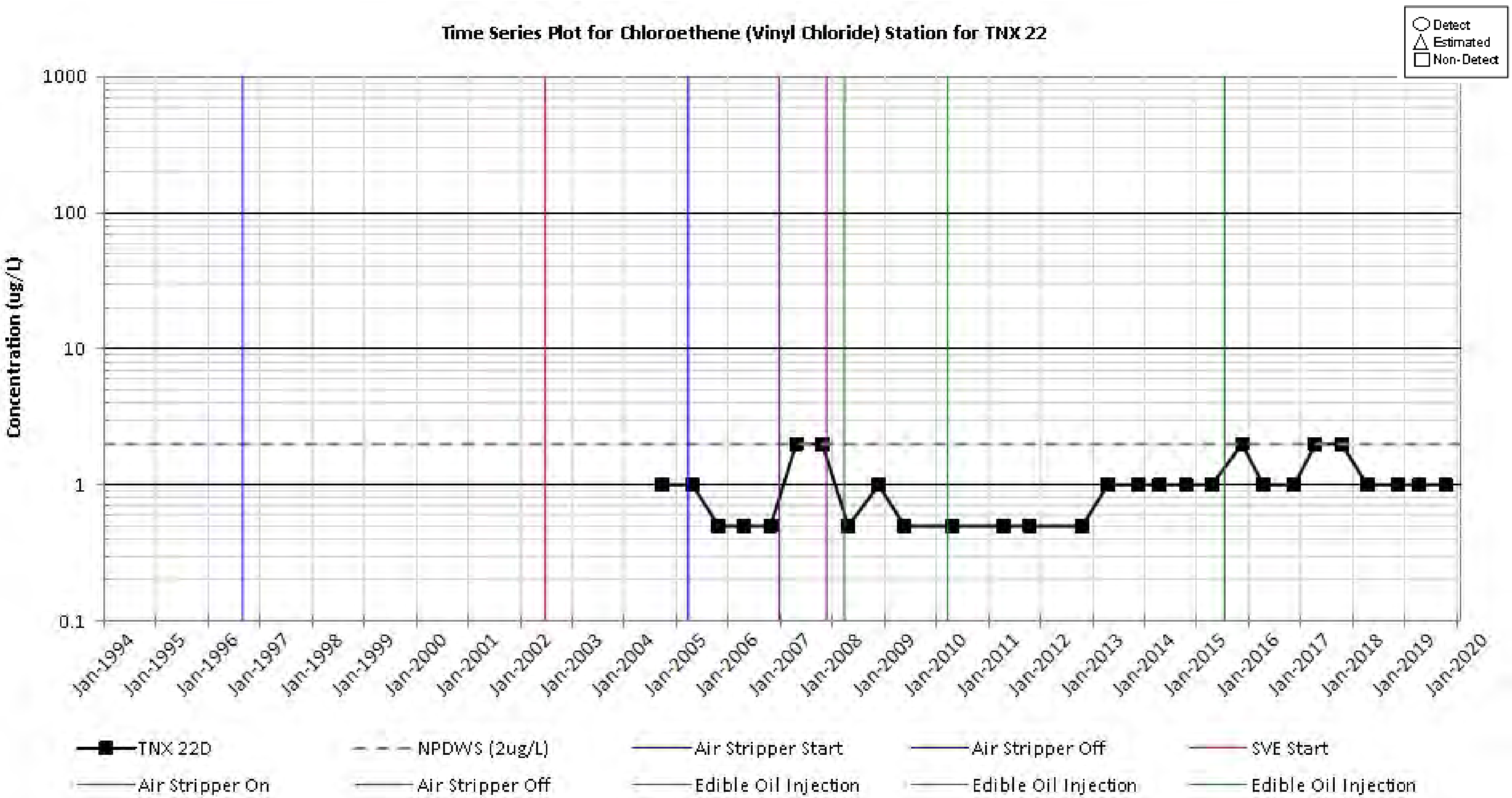
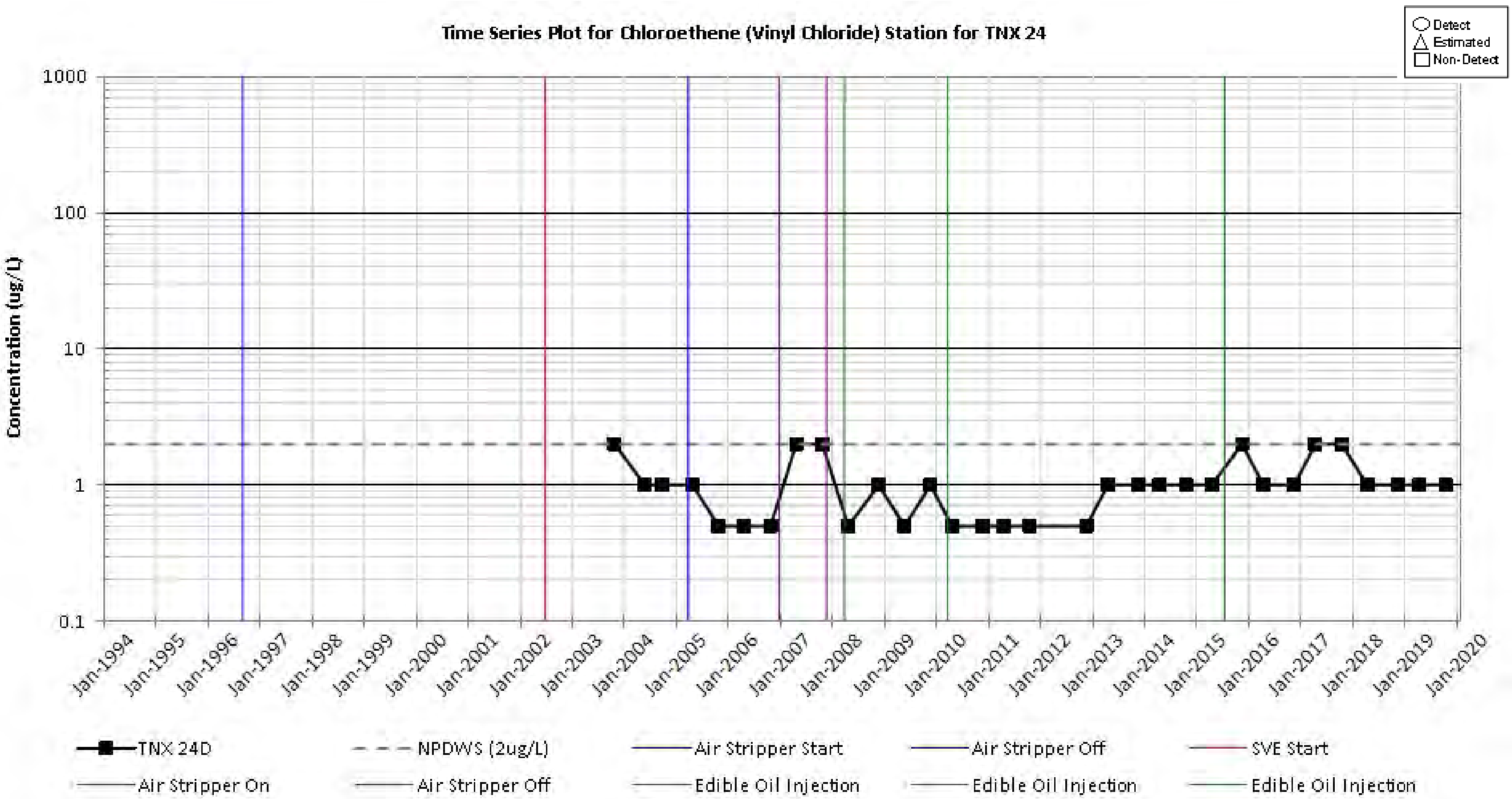
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TNX 15D
NPDWS (2ug/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection


Time Series Plot for Chloroethene (Vinyl Chloride) Station for TNX 16
Detect
Estimated
Non-Detect
Concentration (ug/L)
1000
100
10
1
0.1
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TNX 16D
NPDWS (2ug/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection


Time Series Plot for Chloroethene (Vinyl Chloride) Station for TNX 20
Detect
Estimated
Non-Detect
Concentration (ug/L)
1000
100
10
1
0.1
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TNX 20D
NPDWS (2ug/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection


Time Series Plot for Chloroethene (Vinyl Chloride) Station for TNX 22
Detect
Estimated
Non-Detect
Concentration (ug/L)
1000
100
10
1
0.1
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TNX 22D
NPDWS (2ug/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection


Time Series Plot for Chloroethene (Vinyl Chloride) Station for TNX 24
Detect
Estimated
Non-Detect
Concentration (ug/L)
1000
100
10
1
0.1
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
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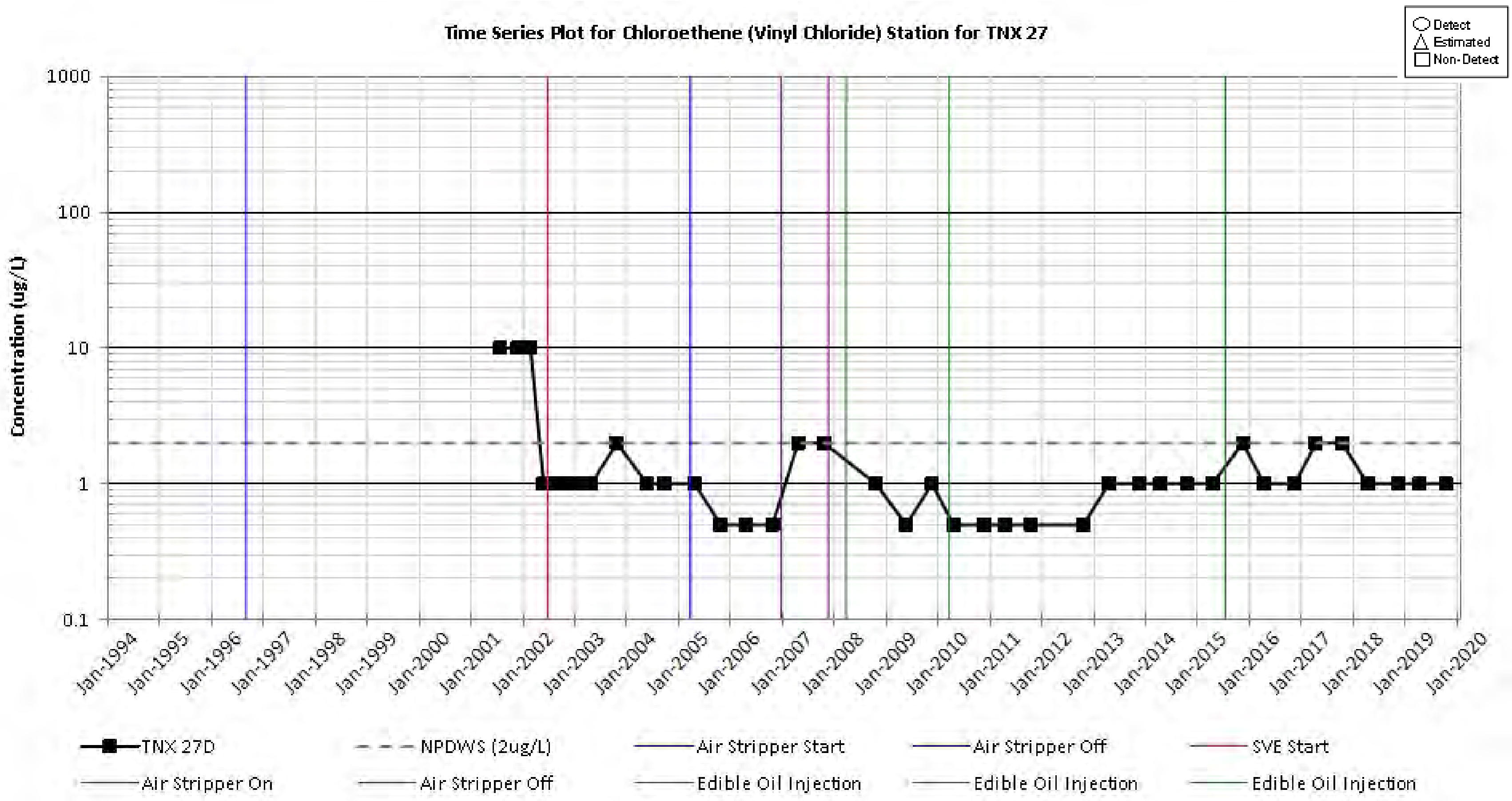
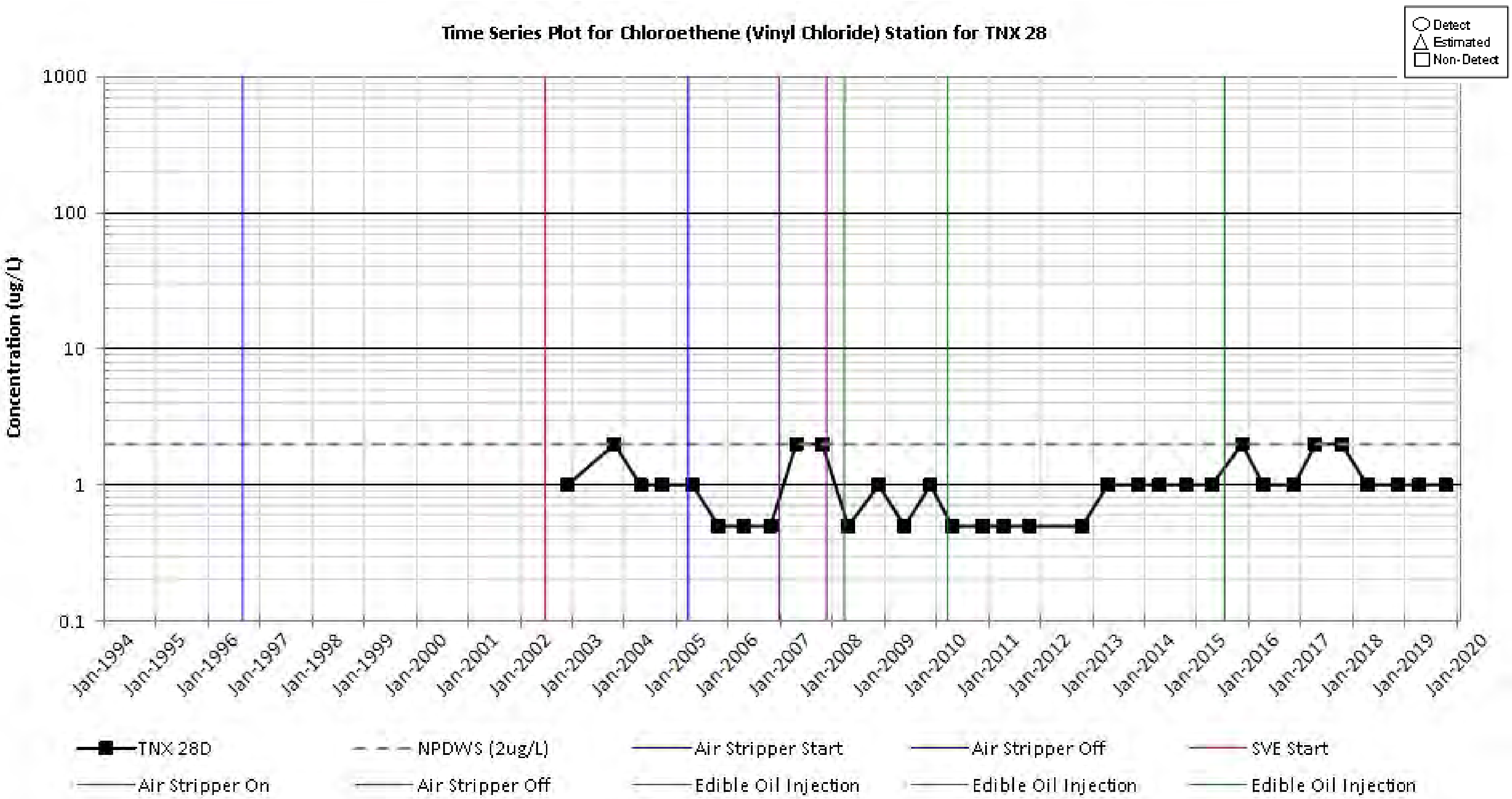
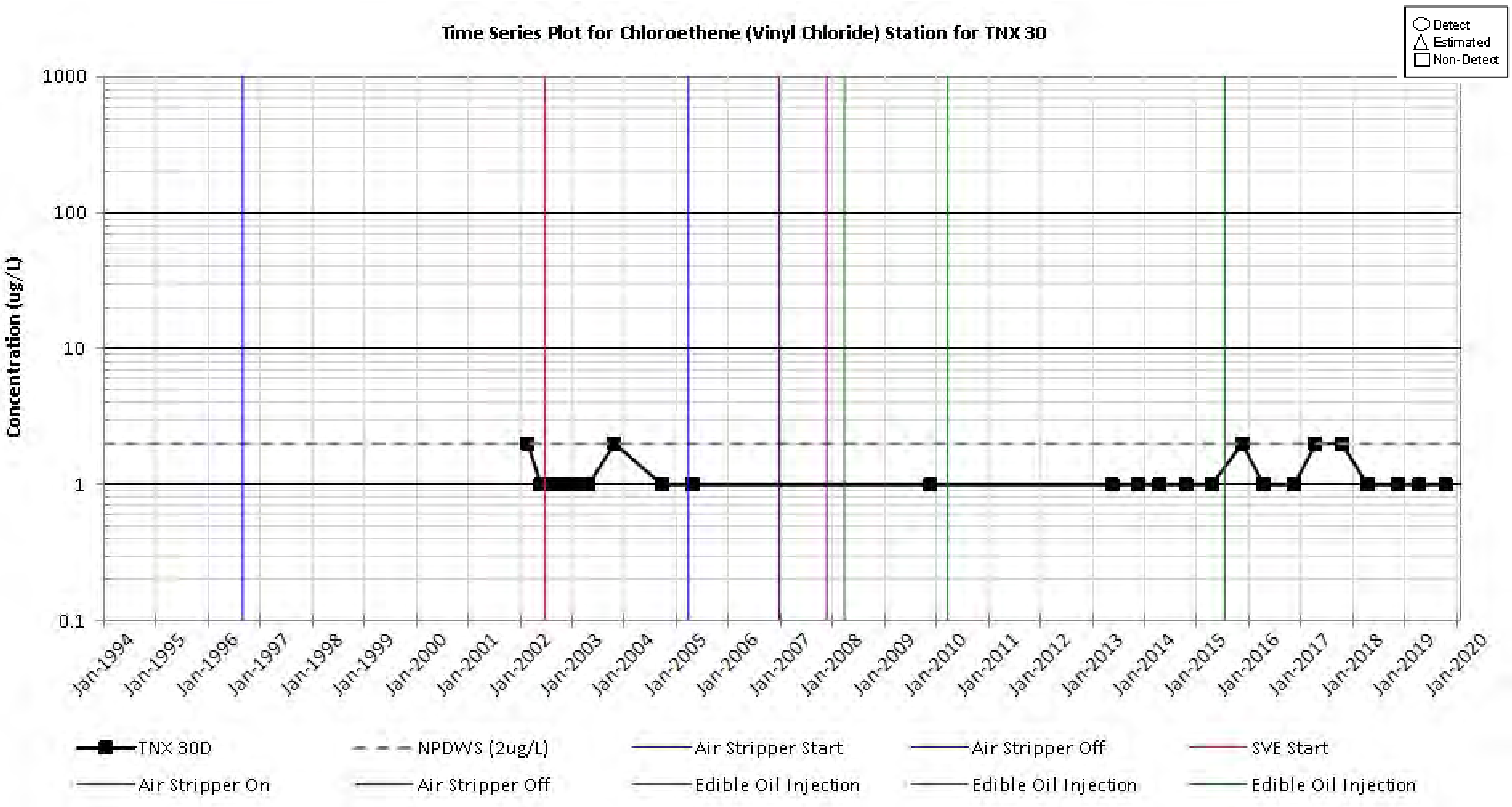
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TNX 24D
NPDWS (2ug/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection


Time Series Plot for Chloroethene (Vinyl Chloride) Station for TNX 27
Detect
Estimated
Non-Detect
Concentration (ug/L)
1000
100
10
1
0.1
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TNX 27D
NPDWS (2ug/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection


Time Series Plot for Chloroethene (Vinyl Chloride) Station for TNX 28
Detect
Estimated
Non-Detect
Concentration (ug/L)
1000
100
10
1
0.1
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TNX 28D
NPDWS (2ug/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection


Time Series Plot for Chloroethene (Vinyl Chloride) Station for TNX 30
Detect
Estimated
Non-Detect
Concentration (ug/L)
1000
100
10
1
0.1
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
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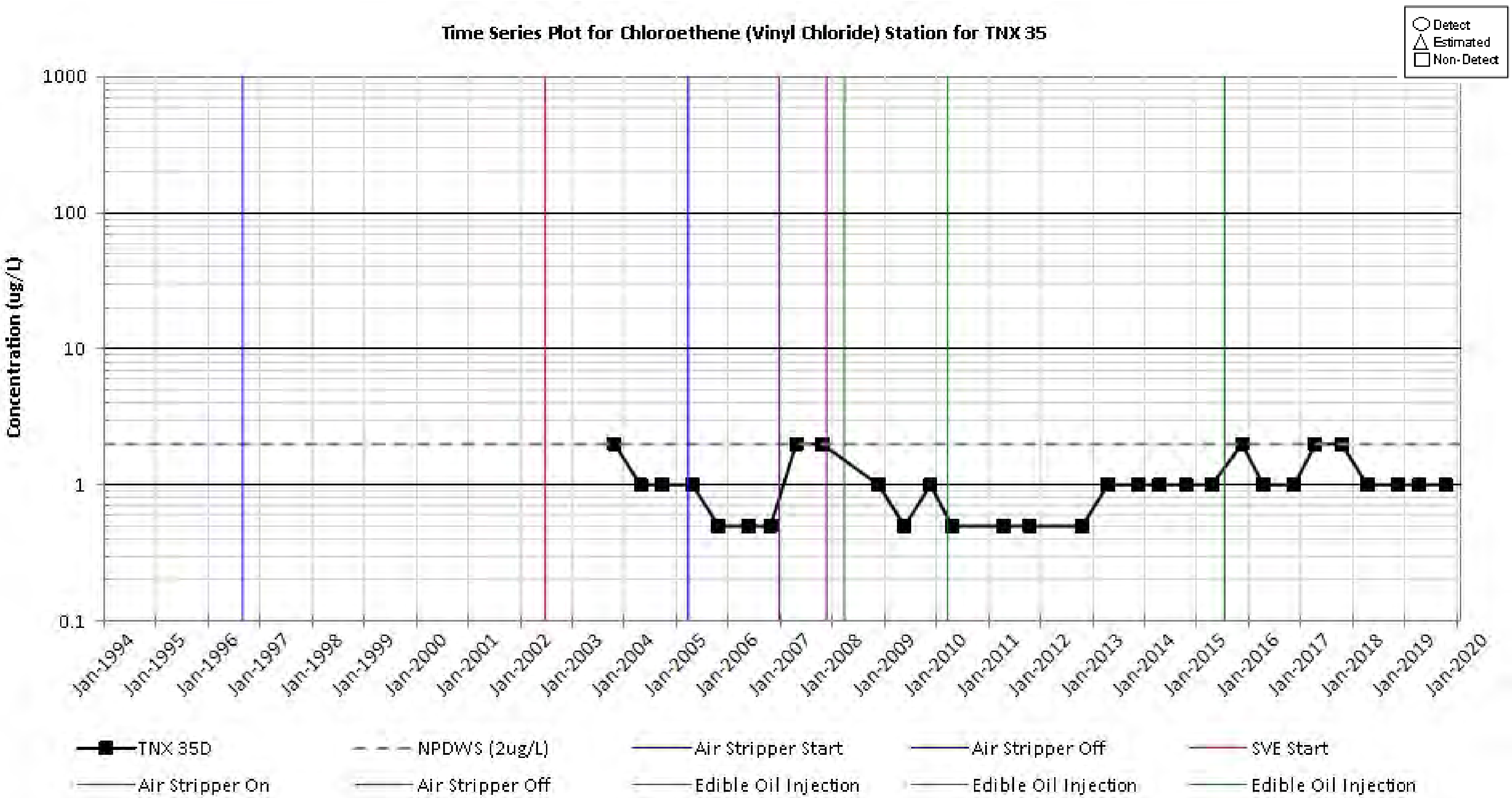
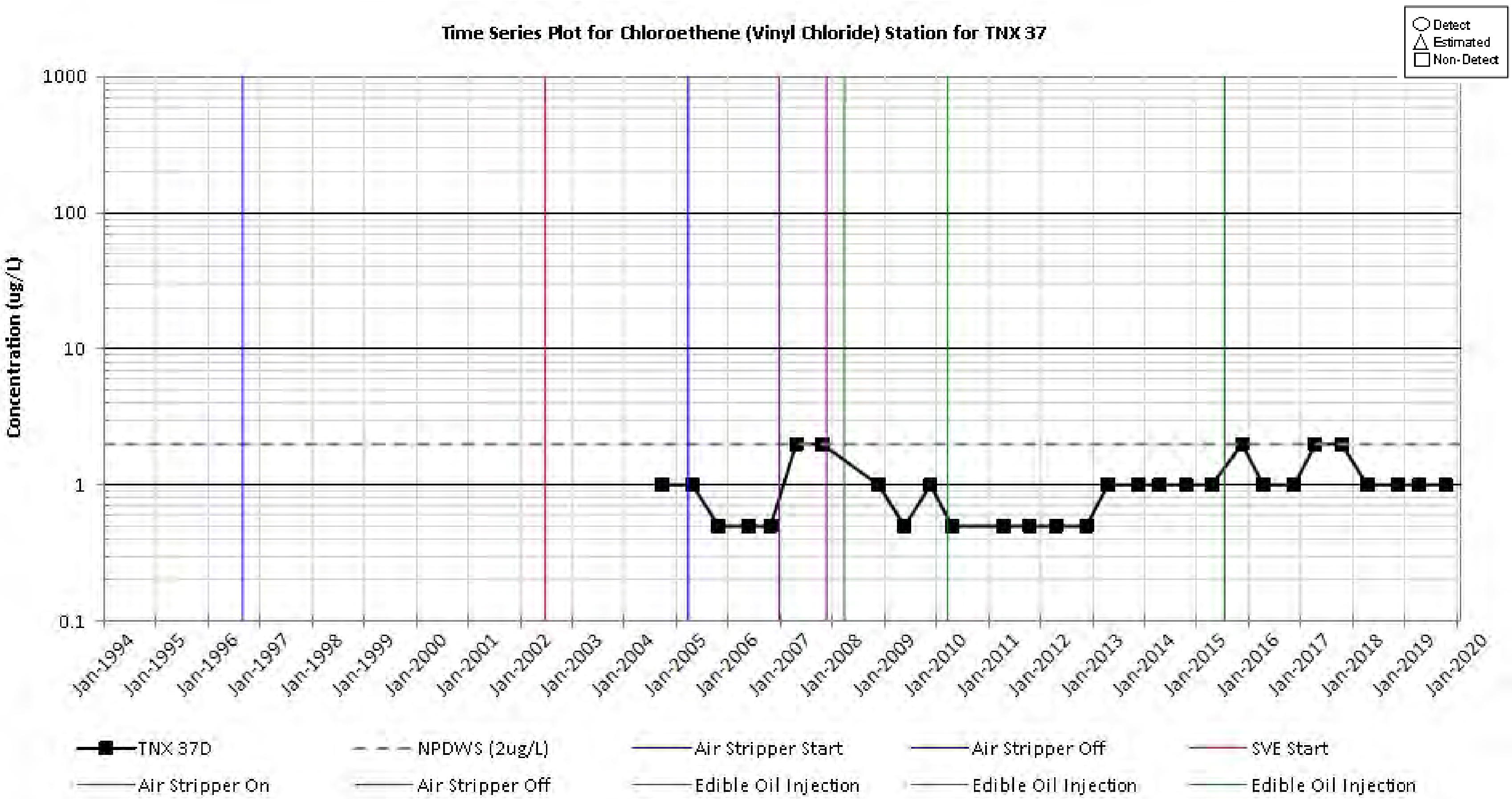
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TNX 30D
NPDWS (2ug/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection


Time Series Plot for Chloroethene (Vinyl Chloride) Station for TNX 35
Detect
Estimated
Non-Detect
Concentration (ug/L)
1000
100
10
1
0.1
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TNX 35D
NPDWS (2ug/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection


Time Series Plot for Chloroethene (Vinyl Chloride) Station for TNX 37
Detect
Estimated
Non-Detect
Concentration (ug/L)
1000
100
10
1
0.1
Jan-1994
Jan-1995
Jan-1996
Jan-1997
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Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
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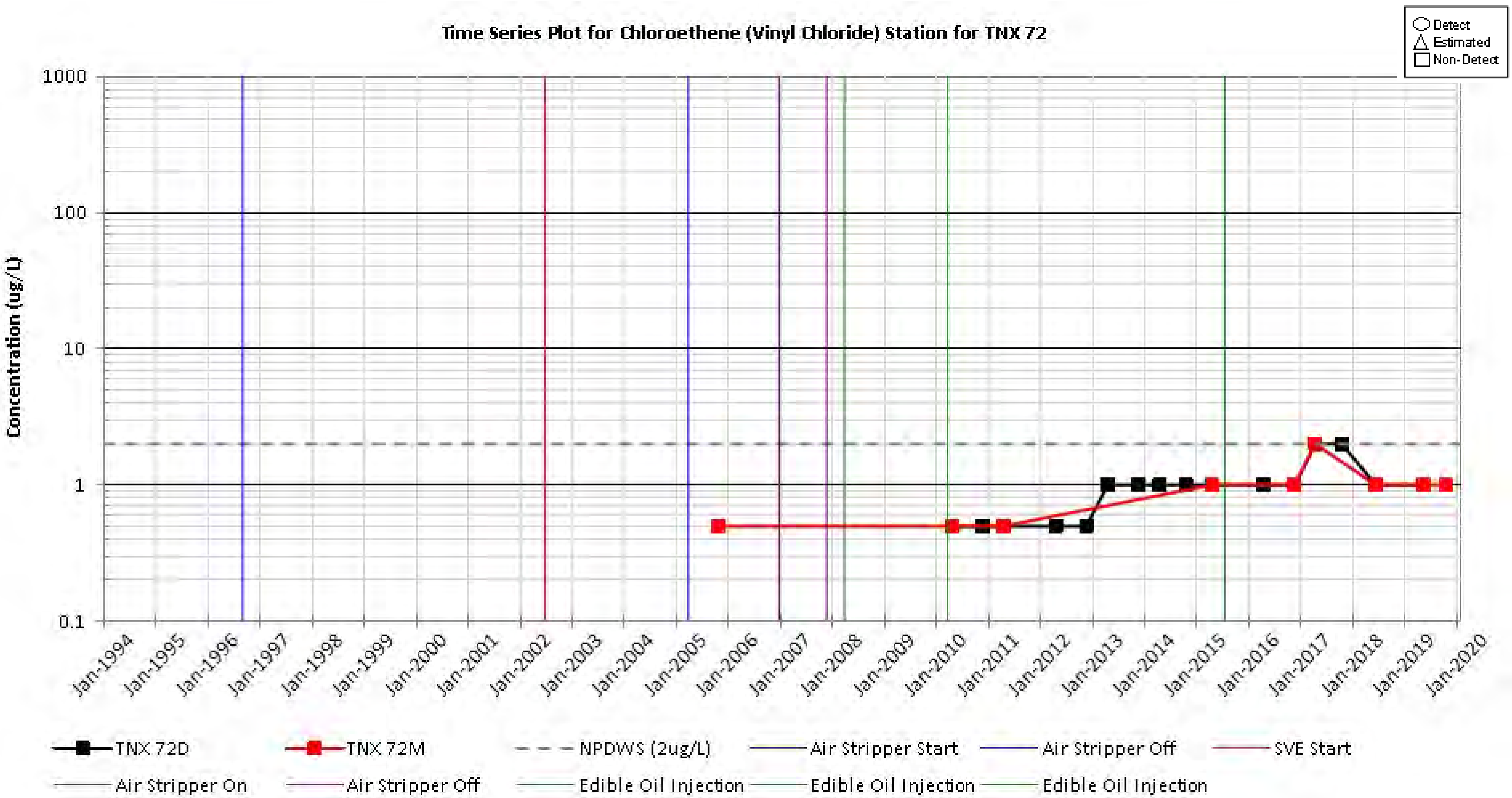
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TNX 37D
NPDWS (2ug/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection


Time Series Plot for Chloroethene (Vinyl Chloride) Station for TNX 72
Detect
Estimated
Non-Detect
Concentration (ug/L)
1000
100
10
1
0.1
Jan-1994
Jan-1995
Jan-1996
Jan-1997
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Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
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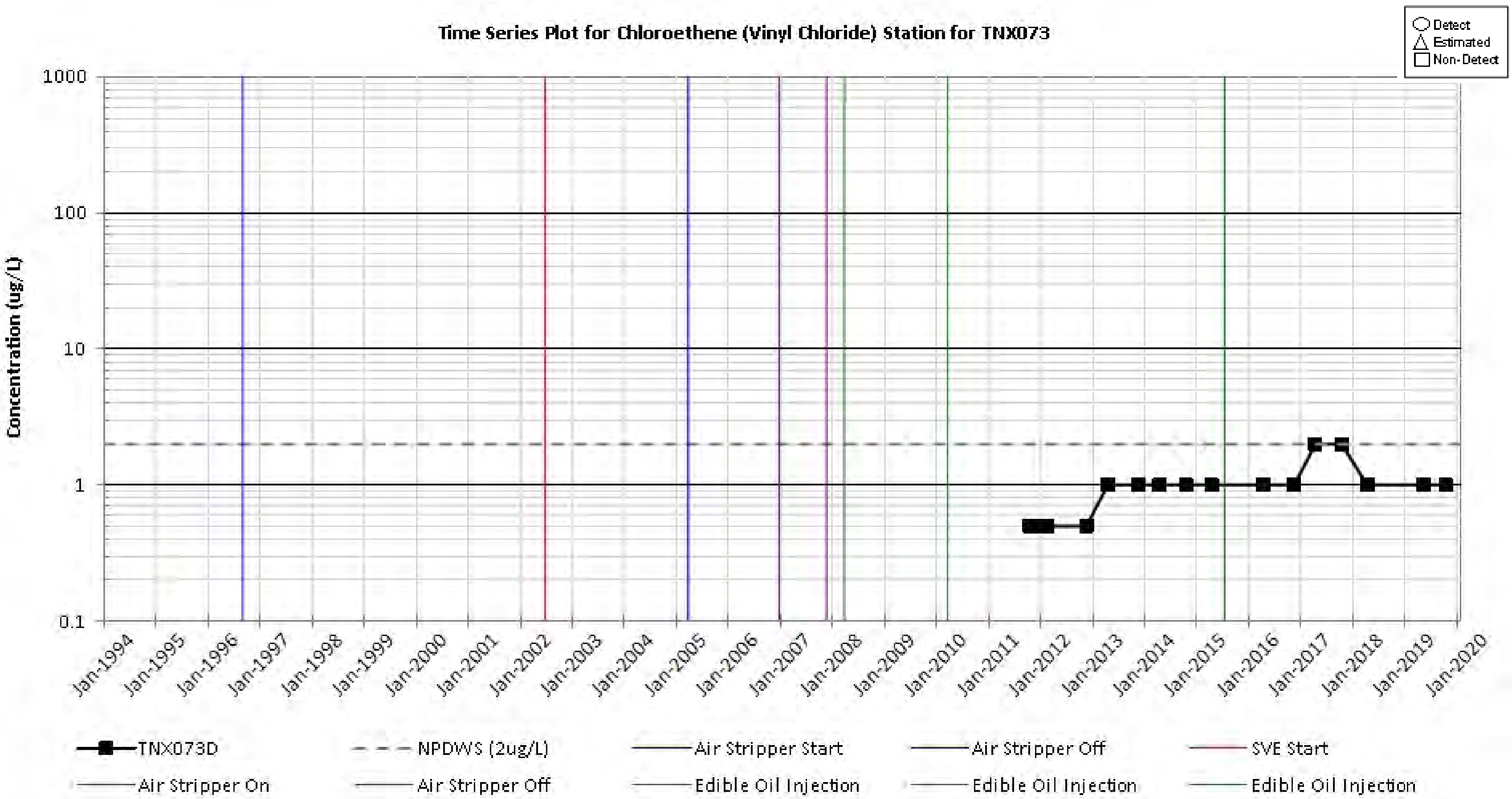
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TNX 72D
TNX 72M
NPDWS (2ug/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection


Time Series Plot for Chloroethene (Vinyl Chloride) Station for TNX073
Detect
Estimated
Non-Detect
Concentration (ug/L)
1000
100
10
1
0.1
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
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Jan-2006
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Jan-2008
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Jan-2010
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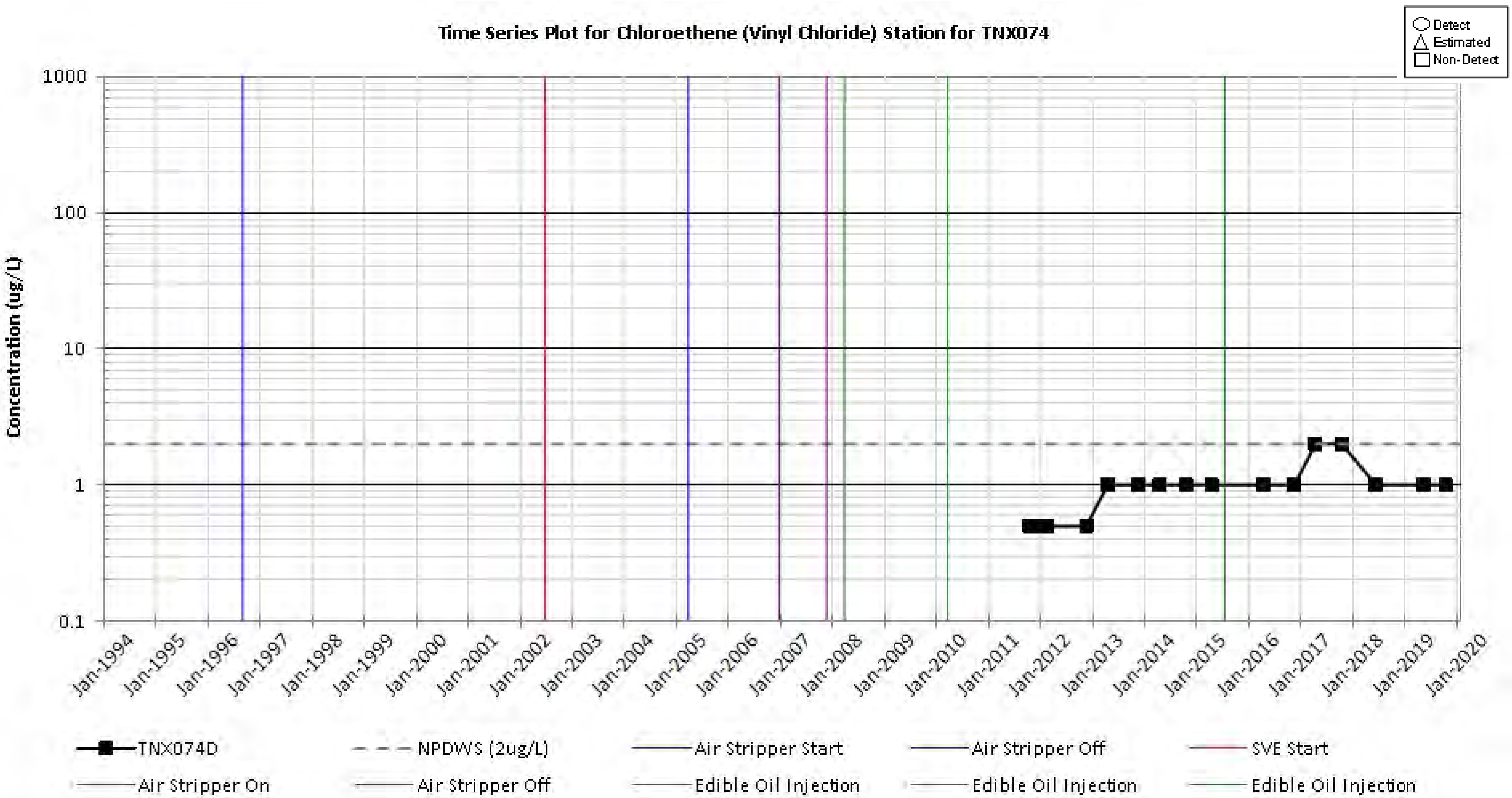
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TNX073D
NPDWS (2ug/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection


Time Series Plot for Chloroethene (Vinyl Chloride) Station for TNX074
Detect
Estimated
Non-Detect
Concentration (ug/L)
1000
100
10
1
0.1
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
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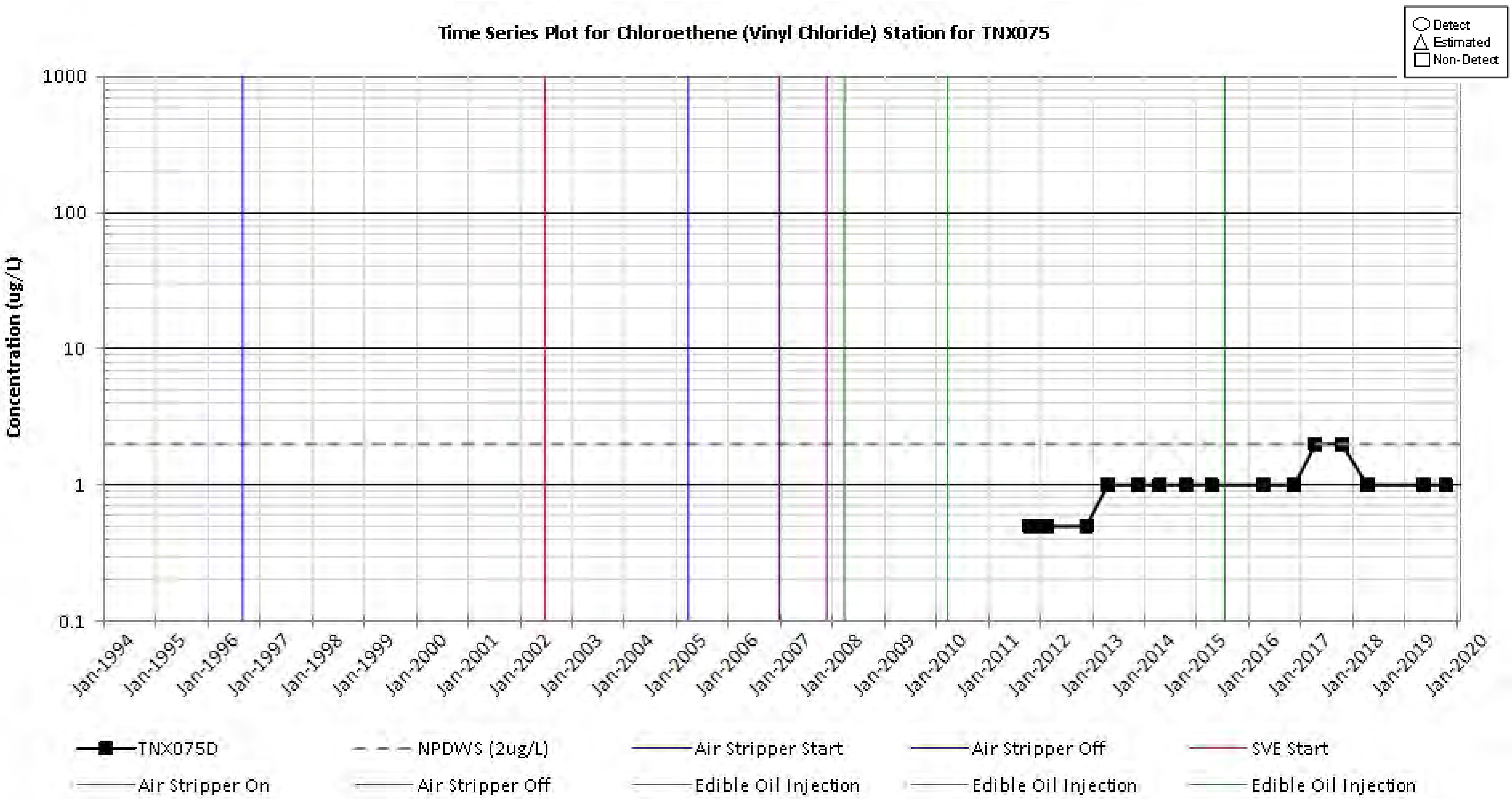
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TNX074D
NPDWS (2ug/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection


Time Series Plot for Chloroethene (Vinyl Chloride) Station for TNX075
Detect
Estimated
Non-Detect
Concentration (ug/L)
1000
100
10
1
0.1
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
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Jan-2010
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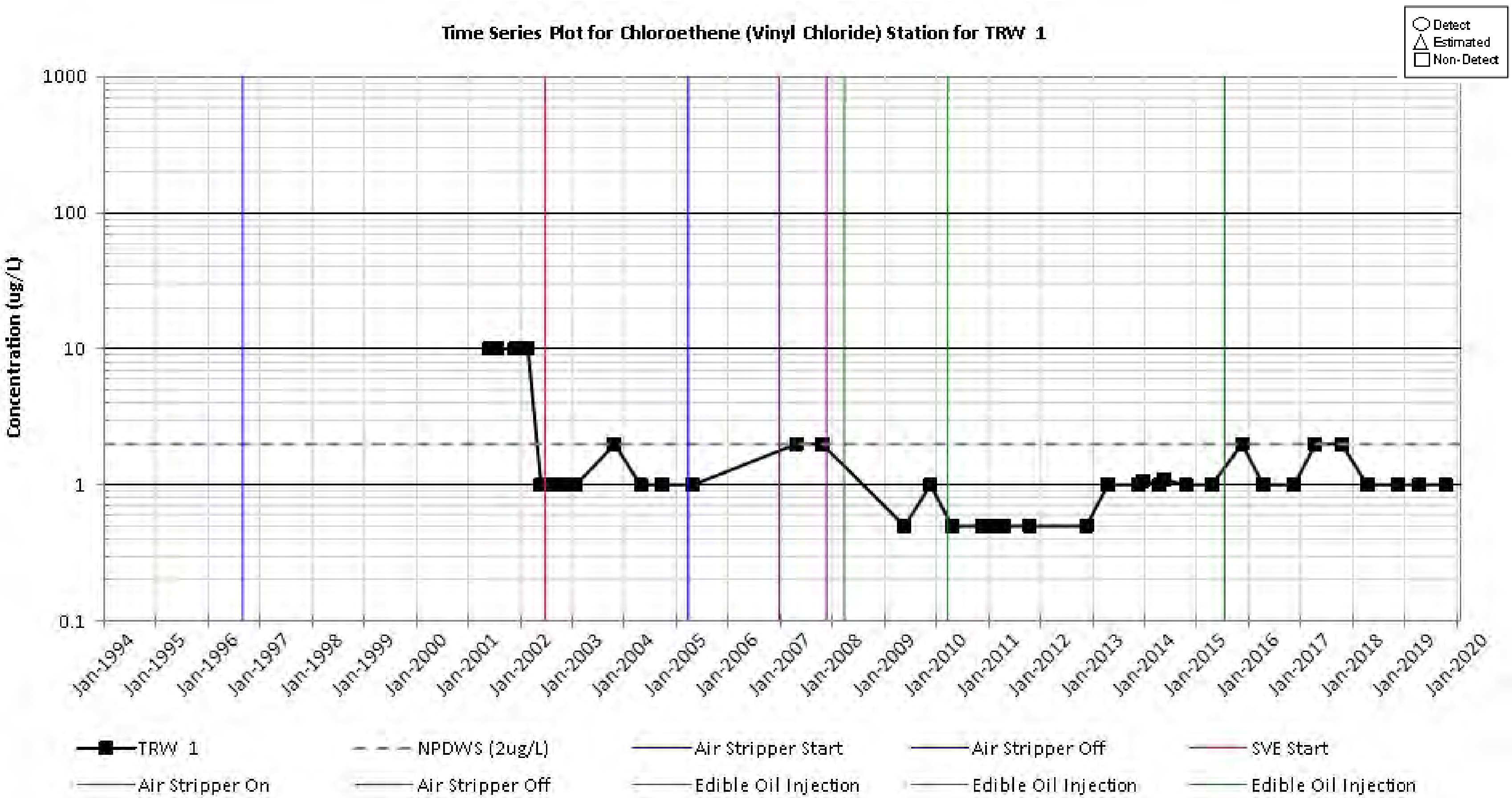
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TNX075D
NPDWS (2ug/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection


Time Series Plot for Chloroethene (Vinyl Chloride) Station for TRW 1
Detect
Estimated
Non-Detect
Concentration (ug/L)
1000
100
10
1
0.1
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
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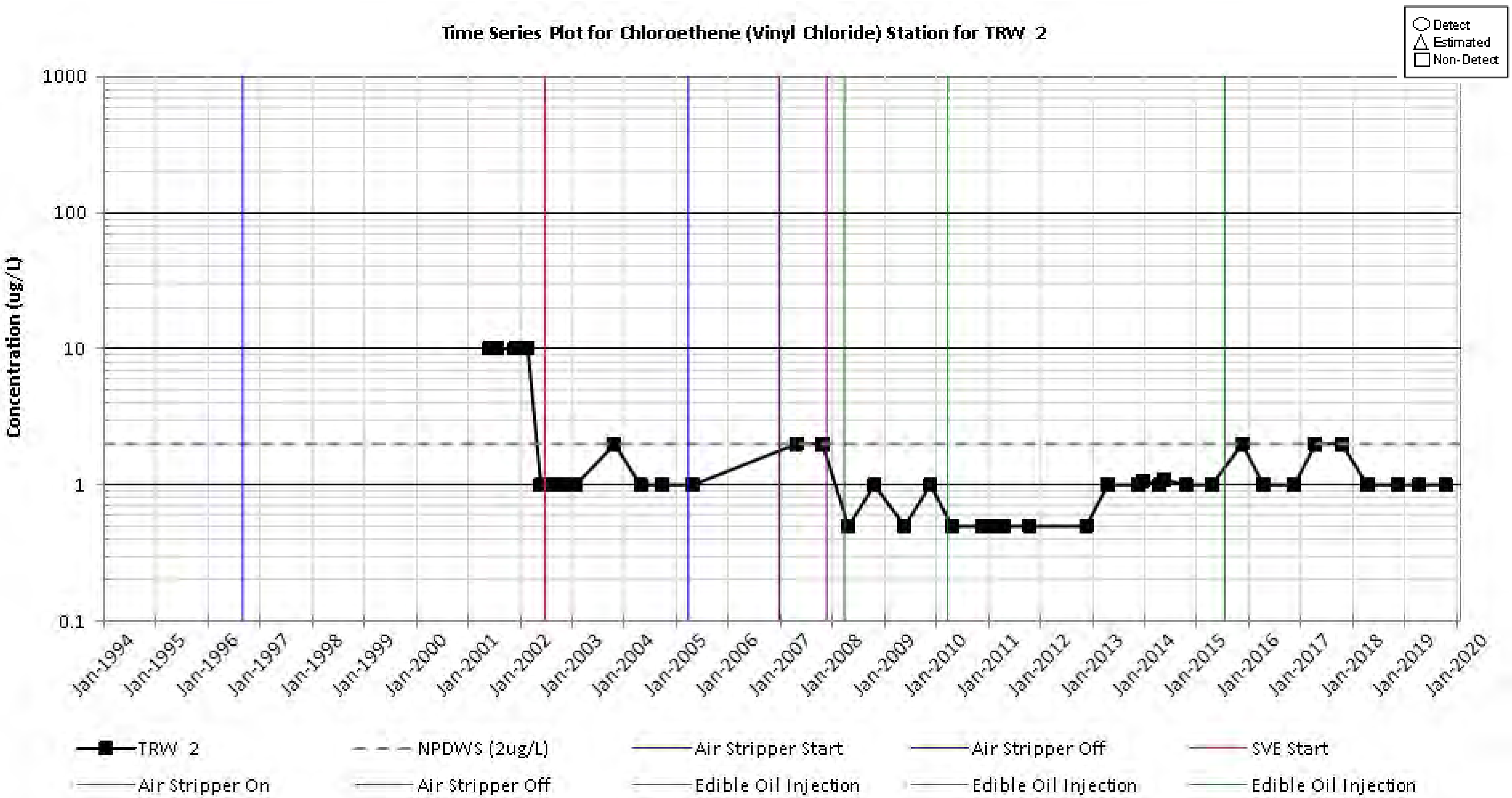
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TRW 1
NPDWS (2ug/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection


Time Series Plot for Chloroethene (Vinyl Chloride) Station for TRW 2
Detect
Estimated
Non-Detect
Concentration (ug/L)
1000
100
10
1
0.1
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
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Jan-2006
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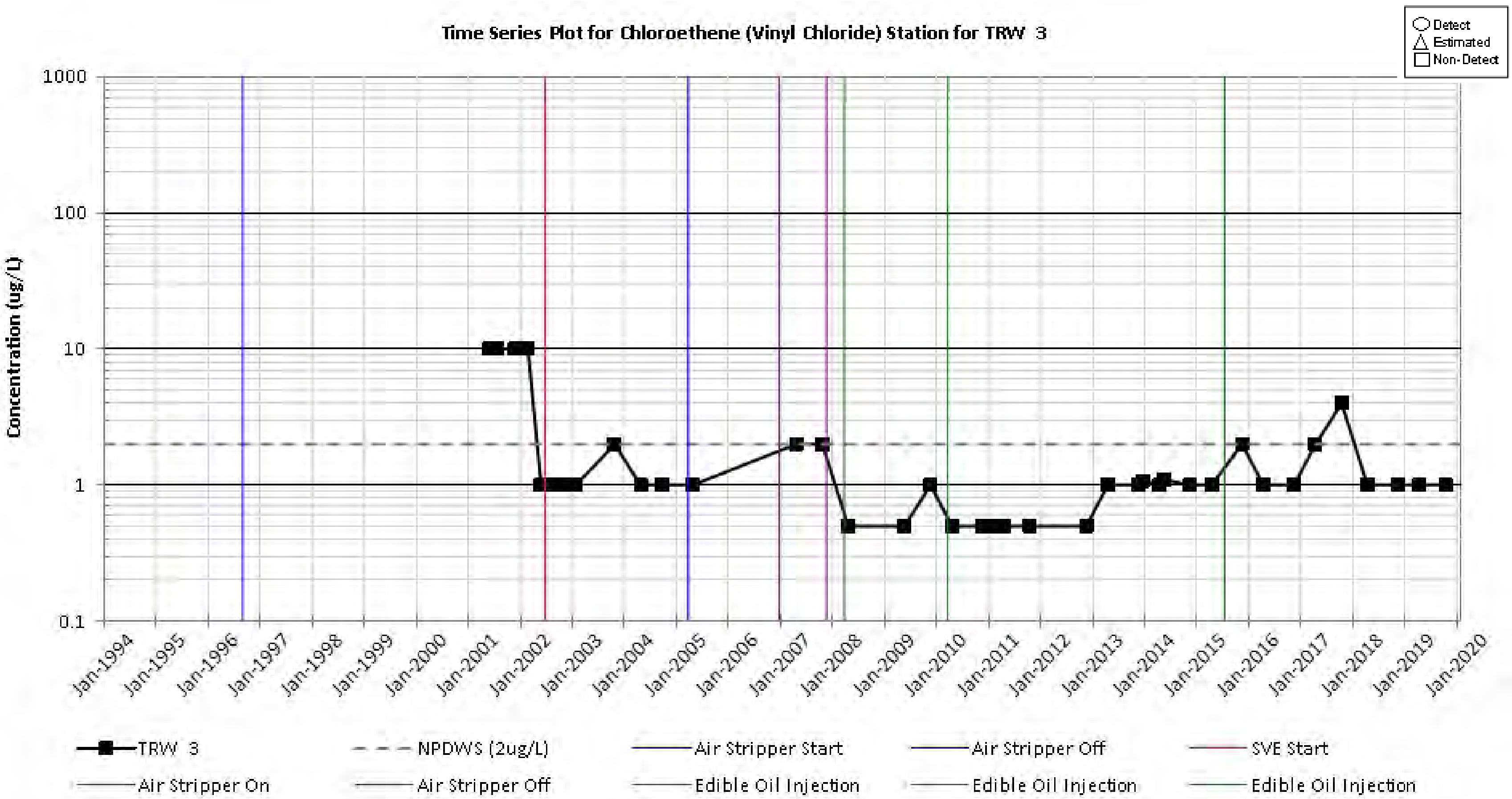
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TRW 2
NPDWS (2ug/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection


Time Series Plot for Chloroethene (Vinyl Chloride) Station for TRW 3
Detect
Estimated
Non-Detect
Concentration (ug/L)
1000
100
10
1
0.1
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
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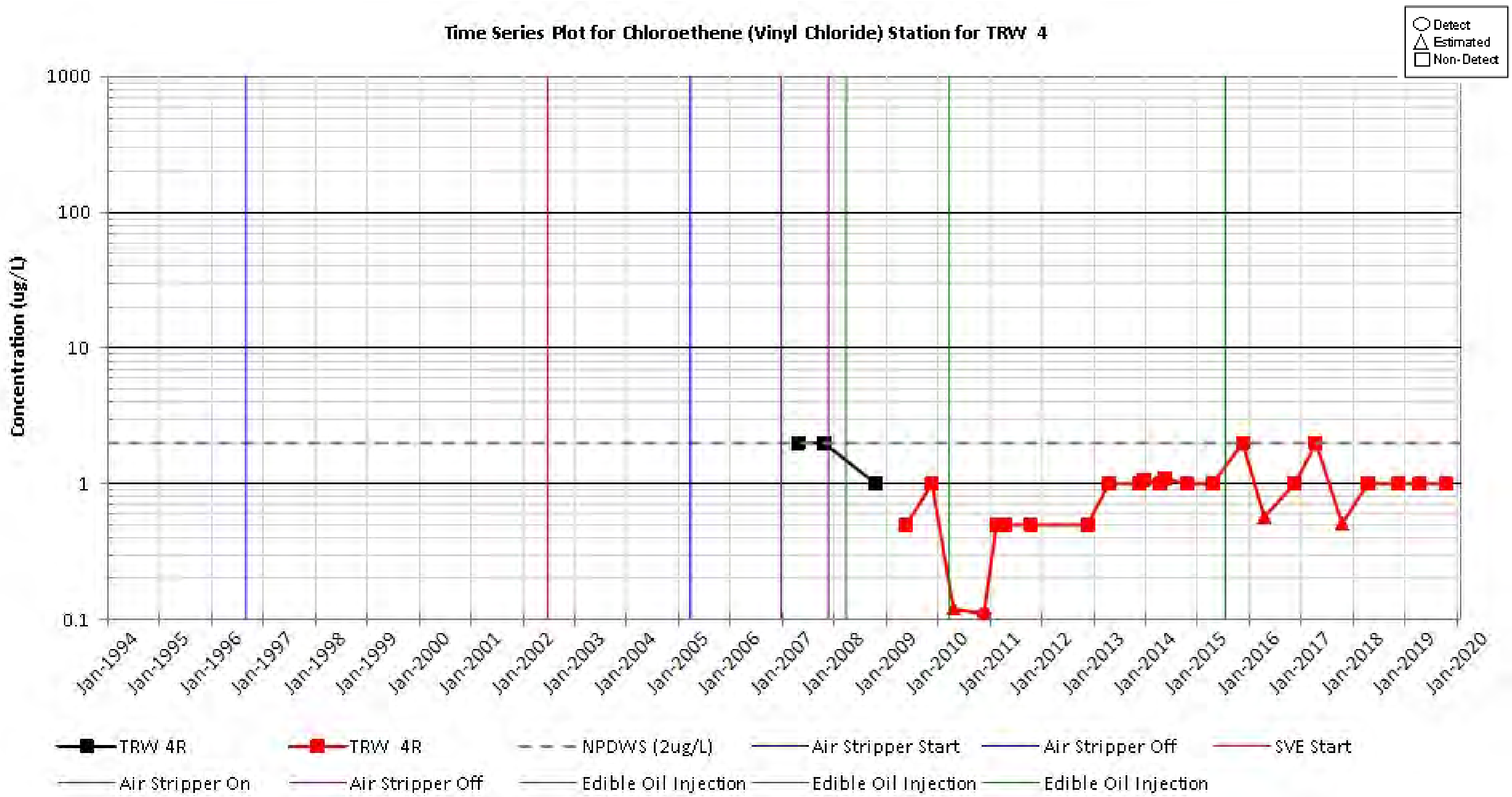
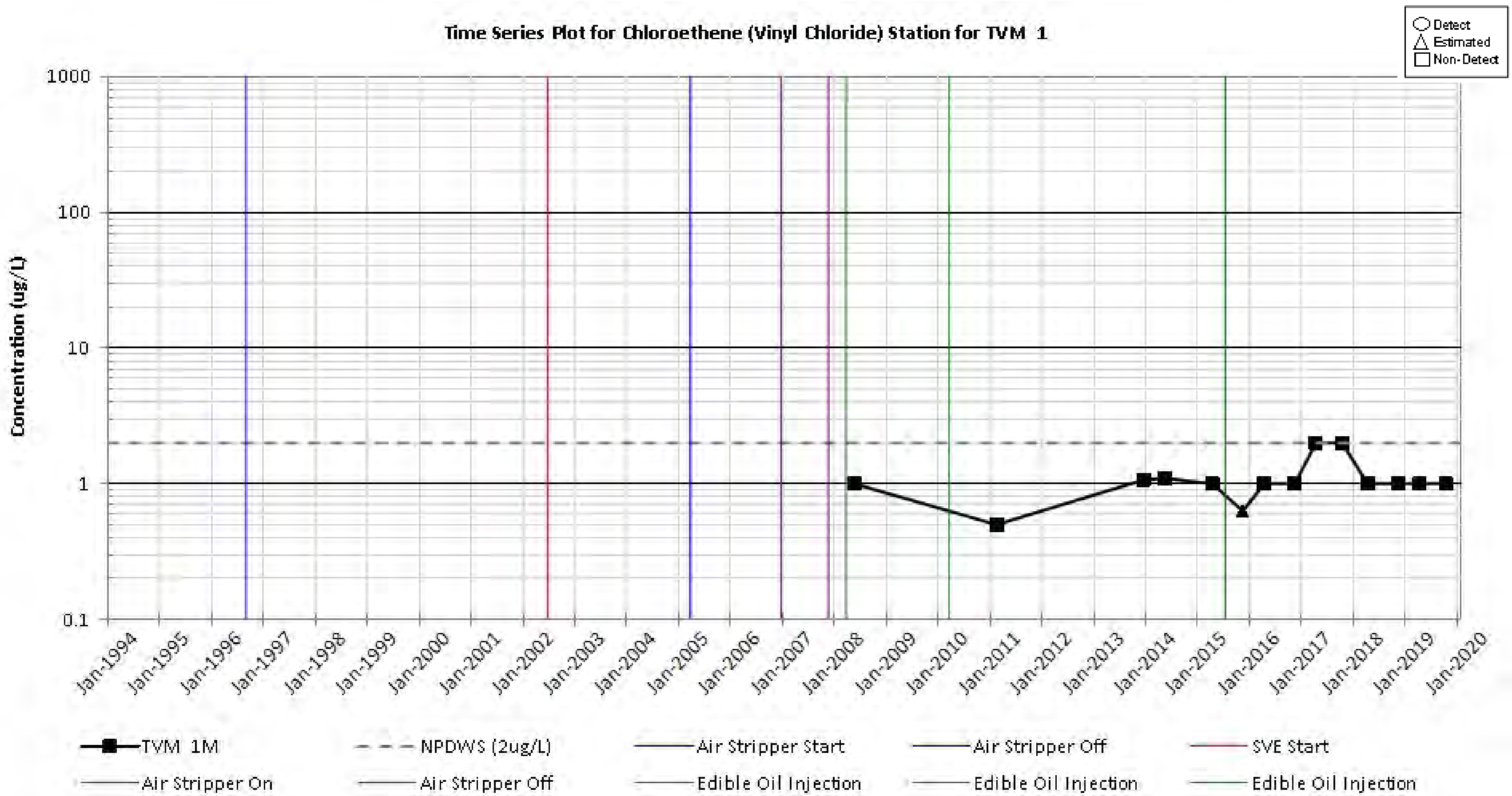
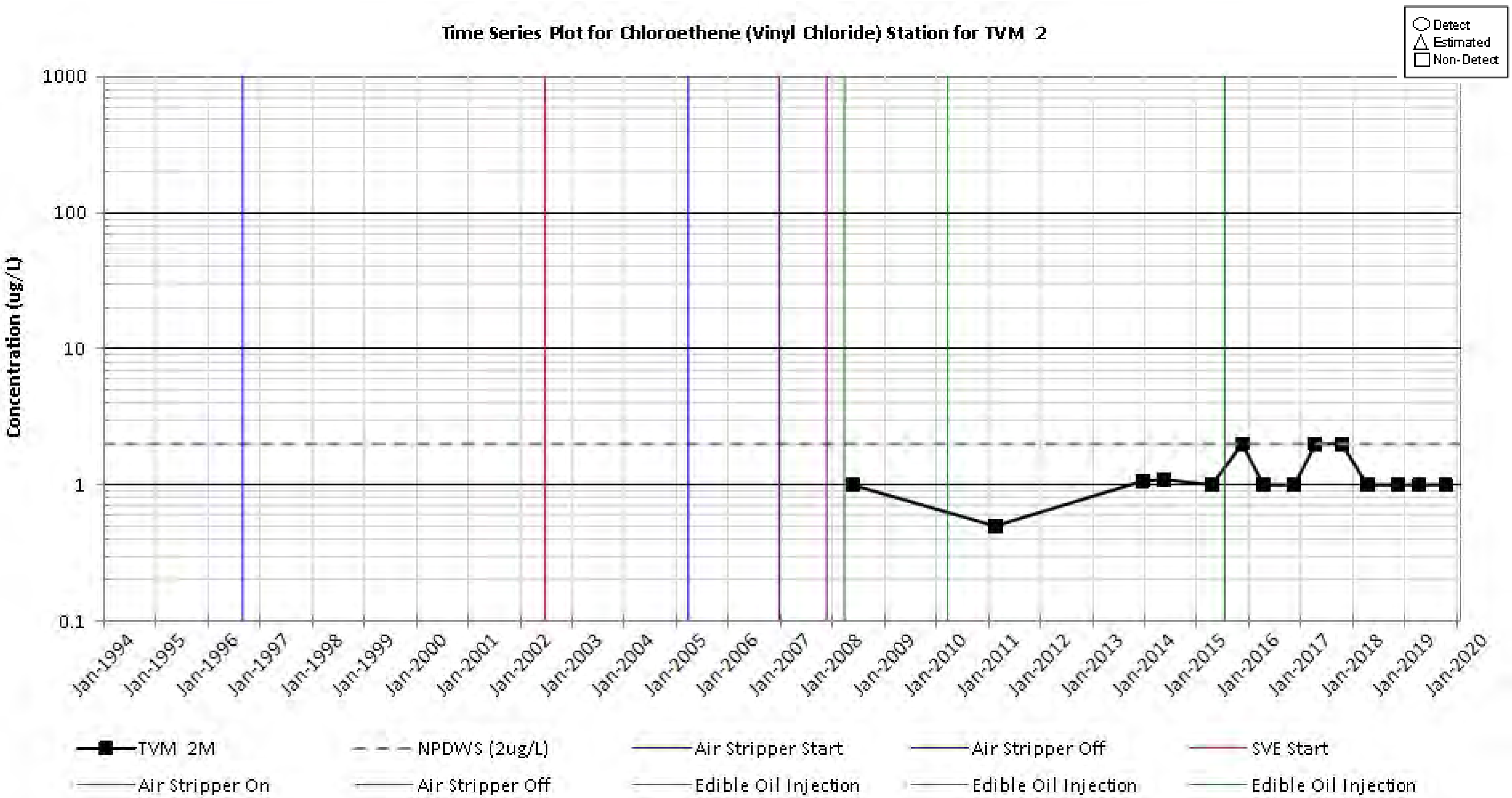
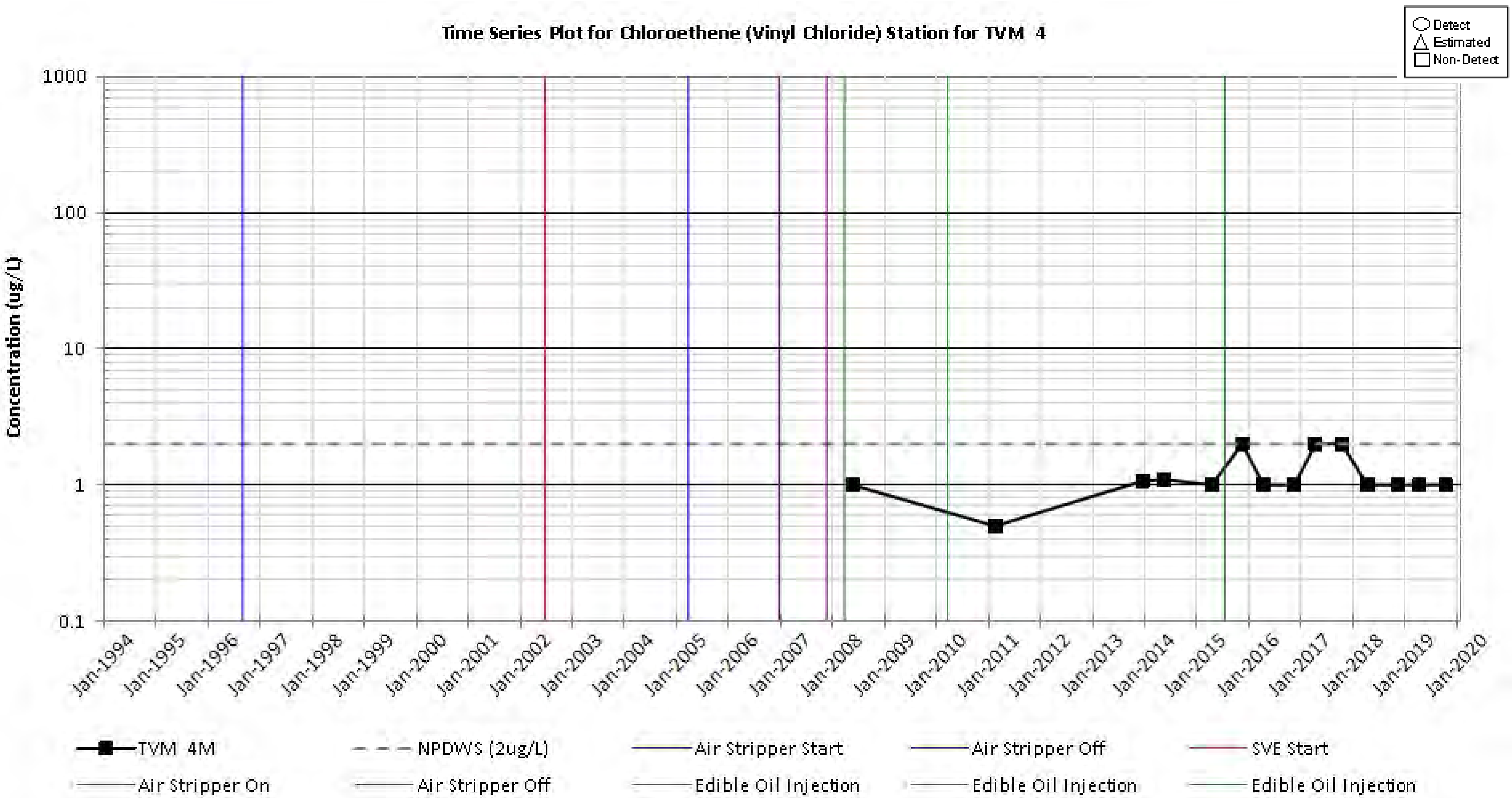
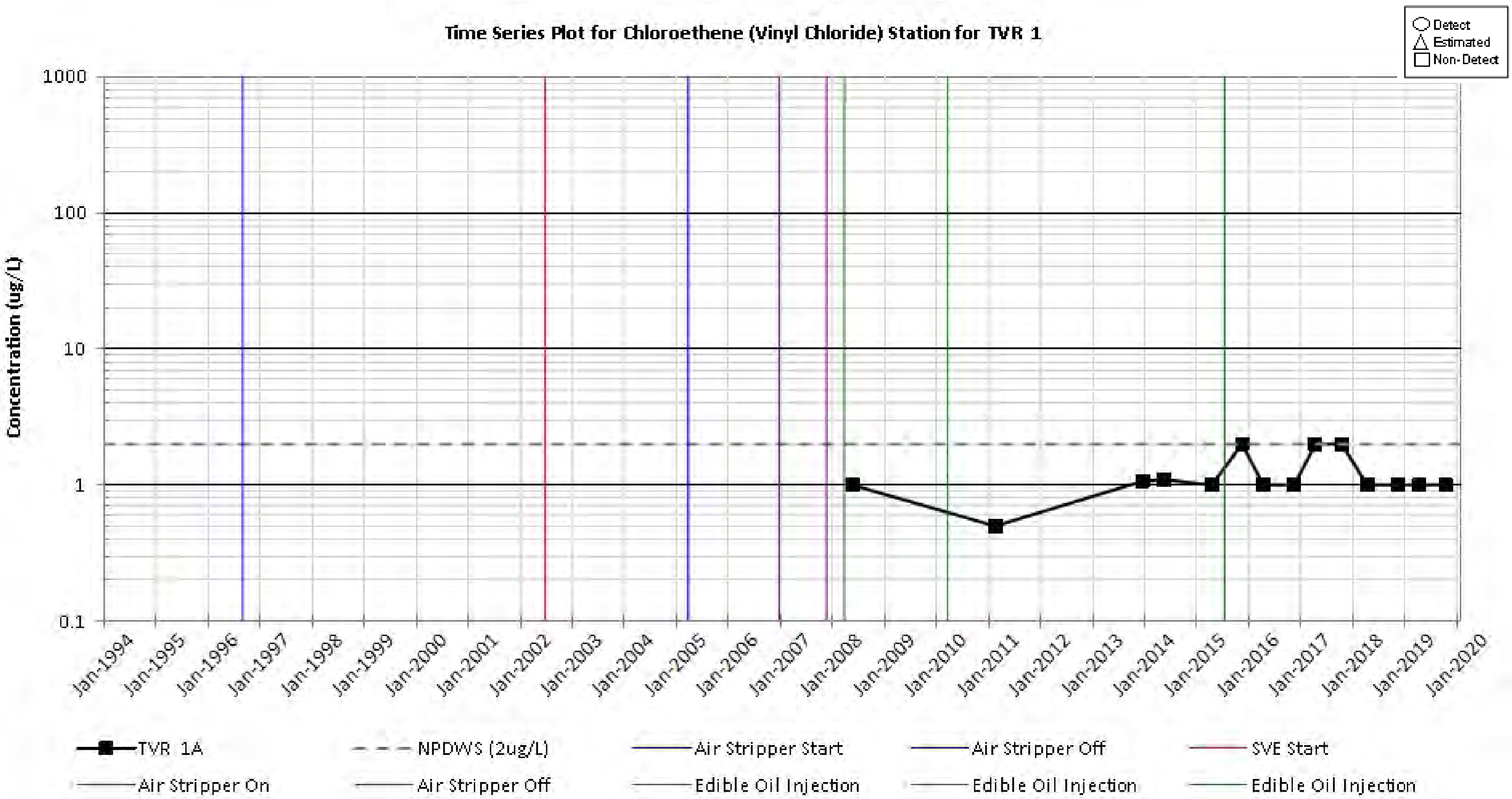
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TRW 3
NPDWS (2ug/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection


Time Series Plot for Chloroethene (Vinyl Chloride) Station for TRW 4
Detect
Estimated
Non-Detect
Concentration (ug/L)
1000
100
10
1
0.1
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TRW 4R
TRW 4R
NPDWS (2ug/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection


Time Series Plot for Chloroethene (Vinyl Chloride) Station for TVM 1
Detect
Estimated
Non-Detect
Concentration (ug/L)
1000
100
10
1
0.1
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TVM 1M
NPDWS (2ug/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection


Time Series Plot for Chloroethene (Vinyl Chloride) Station for TVM 2
Detect
Estimated
Non-Detect
Concentration (ug/L)
1000
100
10
1
0.1
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TVM 2M
NPDWS (2ug/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection


Time Series Plot for Chloroethene (Vinyl Chloride) Station for TVM 4
Detect
Estimated
Non-Detect
Concentration (ug/L)
1000
100
10
1
0.1
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TVM 4M
NPDWS (2ug/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection


Time Series Plot for Chloroethene (Vinyl Chloride) Station for TVR 1
Detect
Estimated
Non-Detect
Concentration (ug/L)
1000
100
10
1
0.1
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
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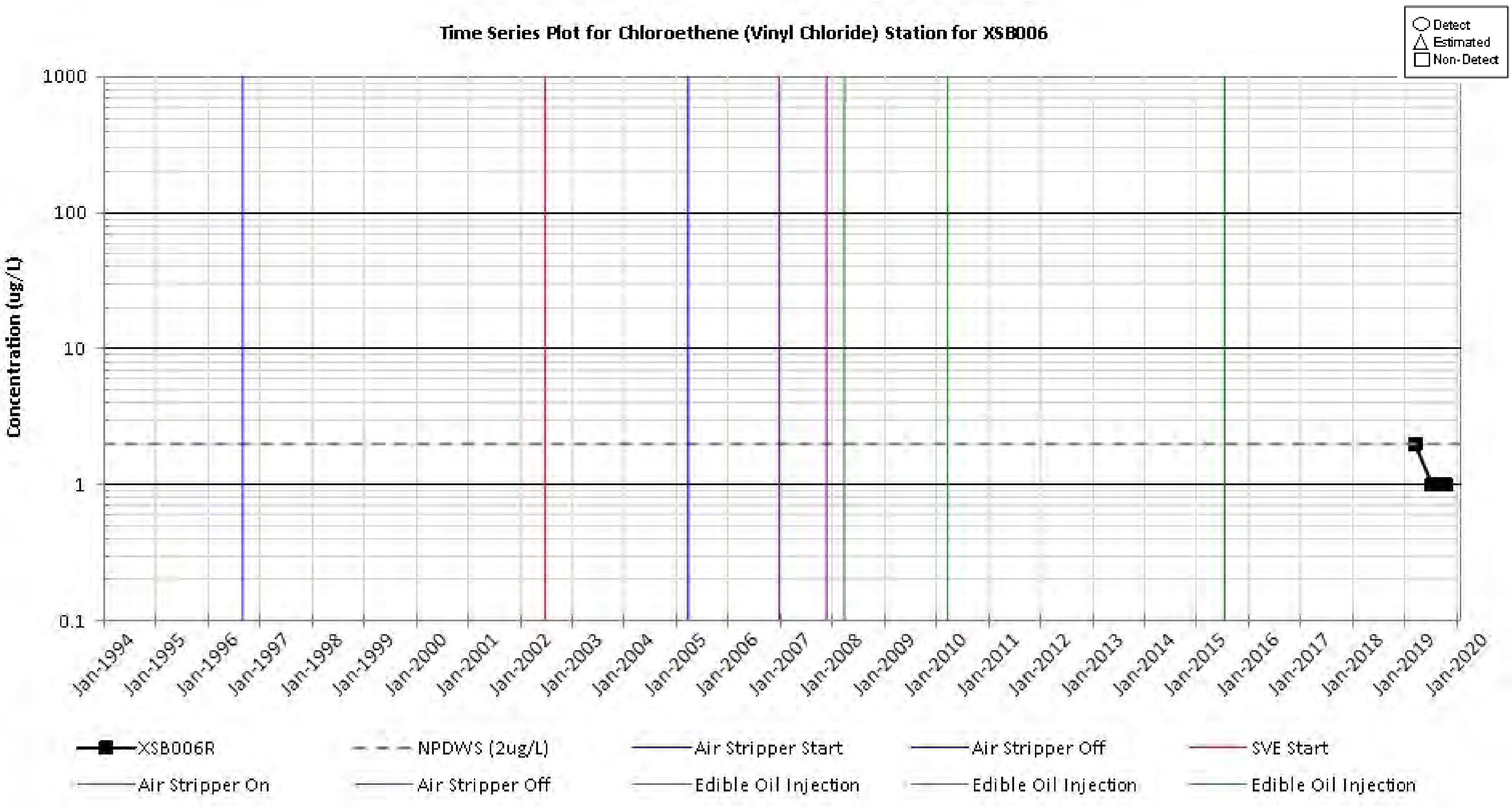
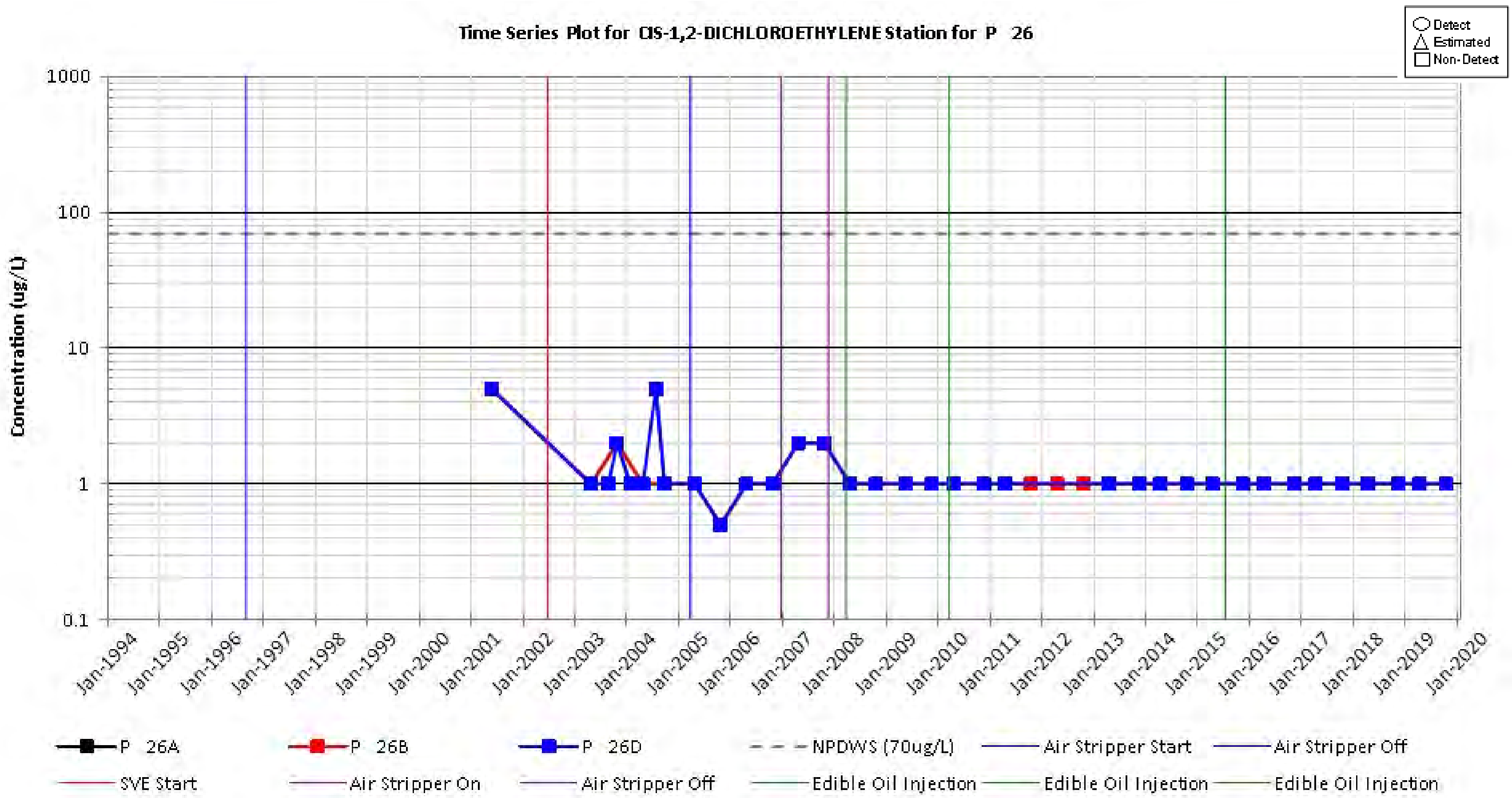
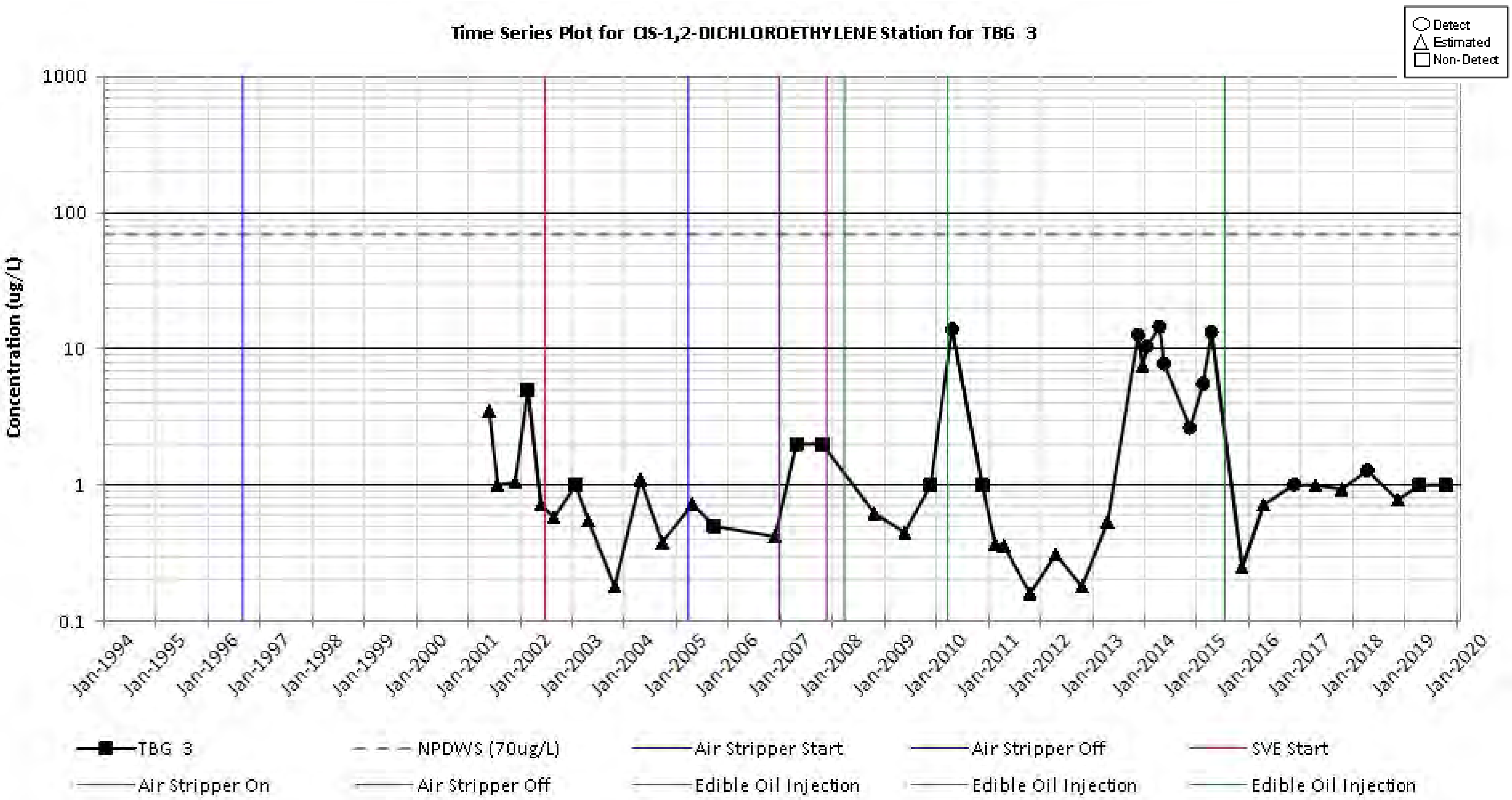
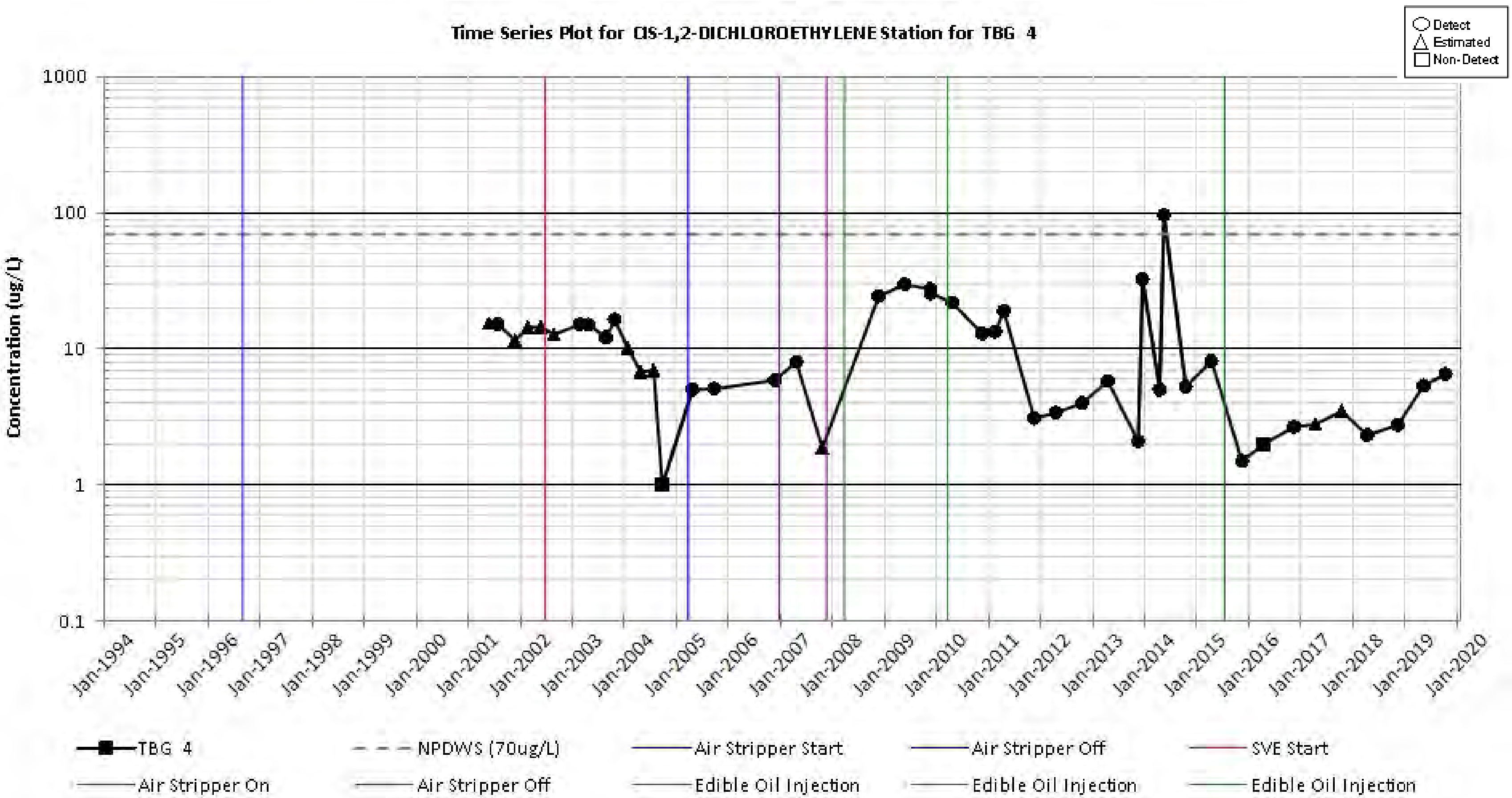
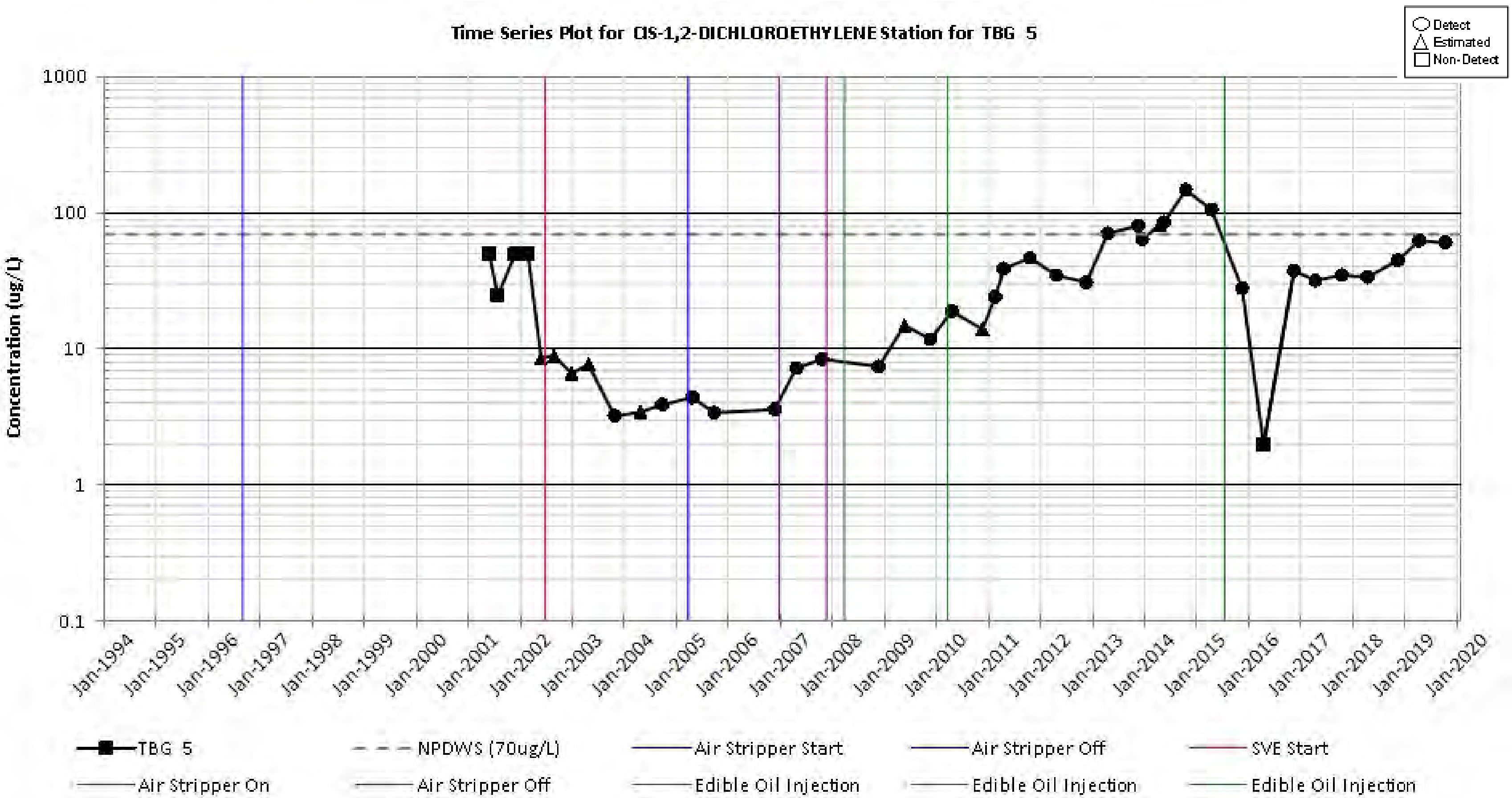
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TVR 1A
NPDWS (2ug/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection

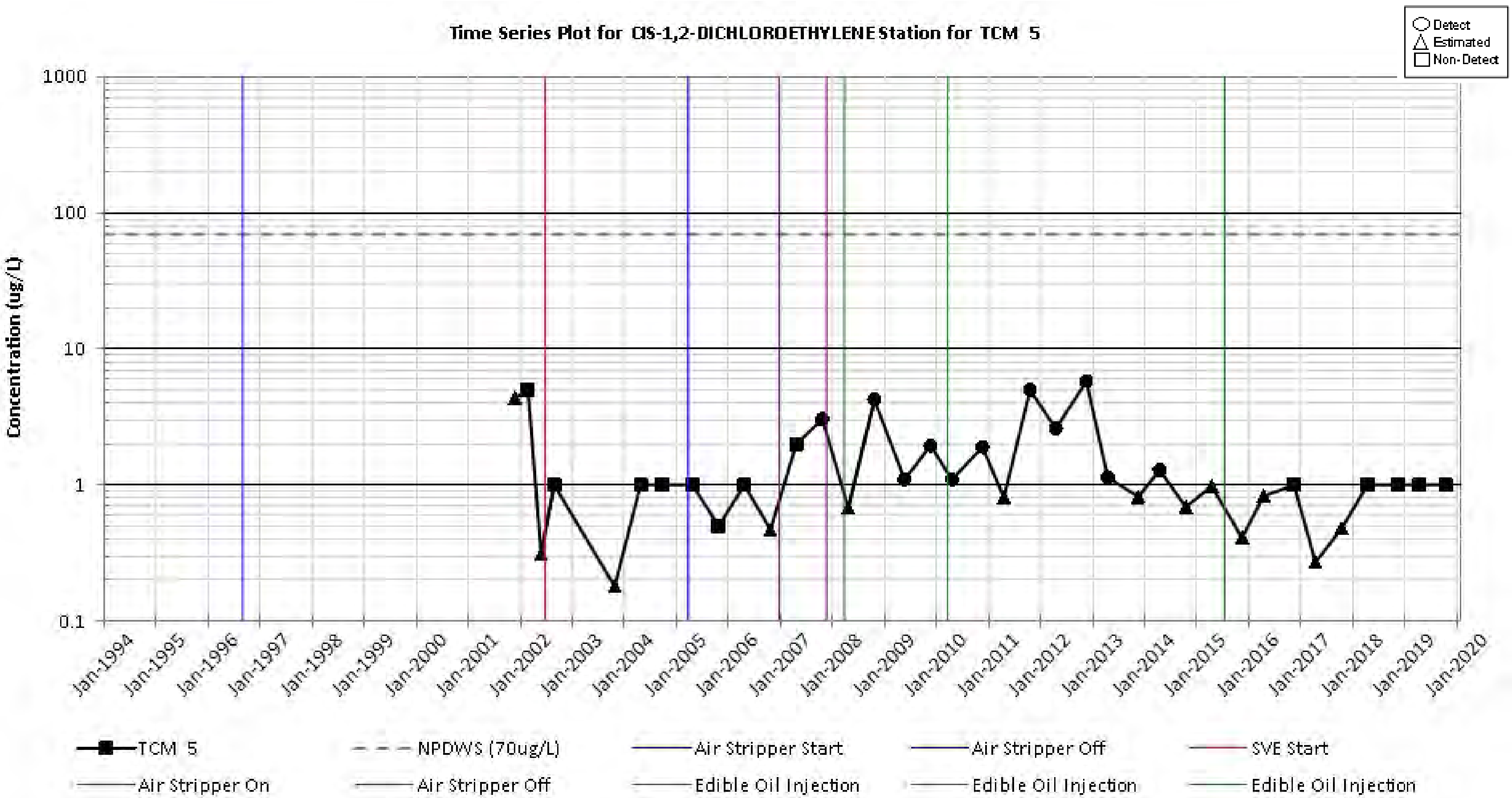

Time Series Plot for Chloroethene (Vinyl Chloride) Station for XSB006
Detect
Estimated
Non-Detect
Concentration (ug/L)
1000
100
10
1
0.1
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
XSB006R
NPDWS (2ug/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection


Time Series Plot for CIS-1,2-DICHLOROETHYLENE Station for P 26
Detect
Estimated
Non-Detect
Concentration (ug/L)
1000
100
10
1
0.1
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
P 26A
P 26B
P 26D
NPDWS (70ug/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection


Time Series Plot for CIS-1,2-DICHLOROETHYLENE Station for TBG 3
Detect
Estimated
Non-Detect
Concentration (ug/L)
1000
100
10
1
0.1
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TBG 3
NPDWS (70ug/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection


Time Series Plot for CIS-1,2-DICHLOROETHYLENE Station for TBG 4
Detect
Estimated
Non-Detect
Concentration (ug/L)
1000
100
10
1
0.1
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TBG 4
NPDWS (70ug/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection


Time Series Plot for CIS-1,2-DICHLOROETHYLENE Station for TBG 5
Detect
Estimated
Non-Detect
1000
100
10
1
0.1
Concentration (ug/L)
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TBG 5
NPDWS (70ug/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection


Time Series Plot for CIS-1,2-DICHLOROETHYLENE Station for TCM 5
Detect
Estimated
Non-Detect
Concentration (ug/L)
1000
100
10
1
0.1
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
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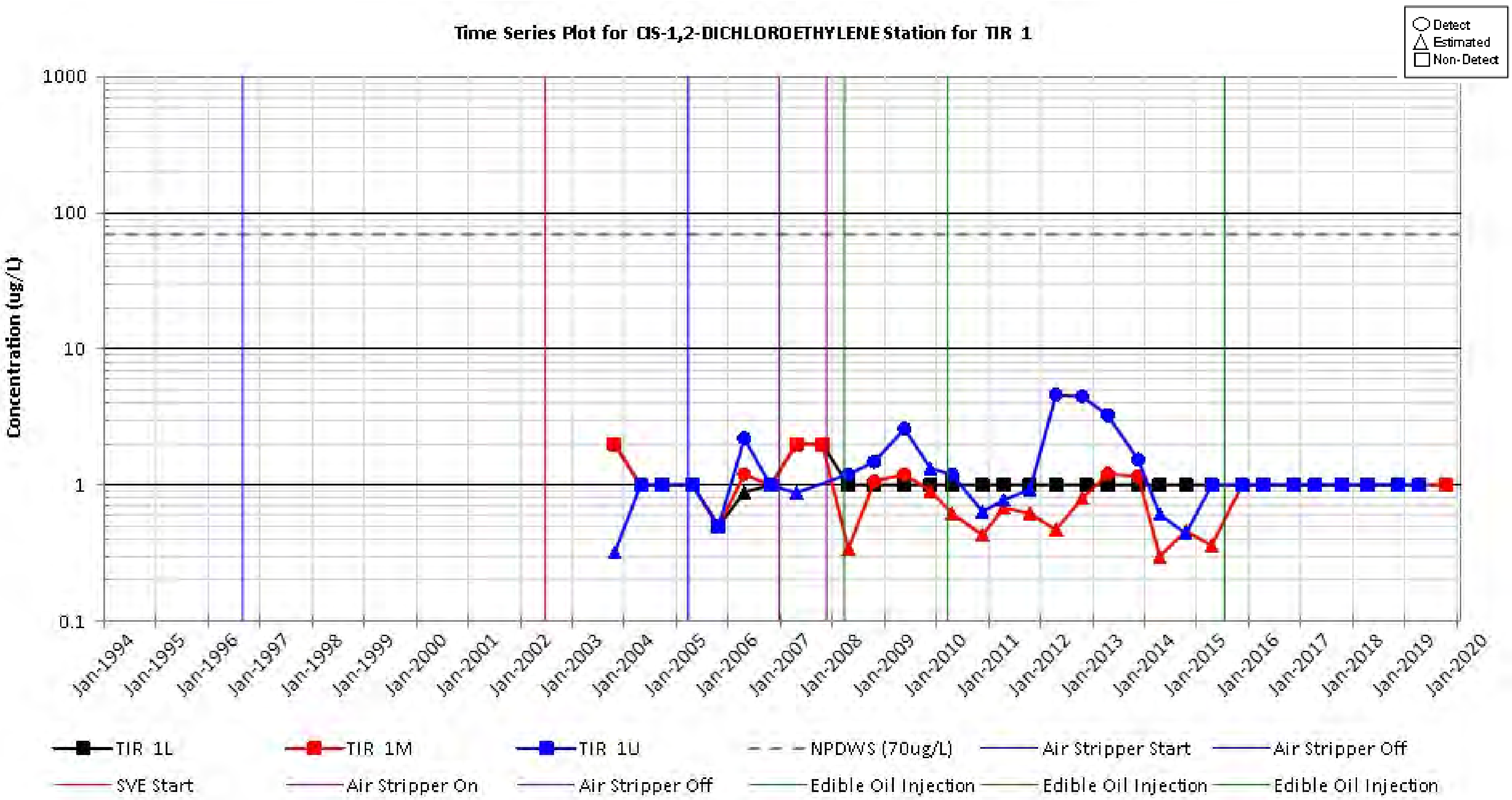
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TCM 5
NPDWS (70ug/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection


Time Series Plot for CIS-1,2-DICHLOROETHYLENE Station for TIR 1
Detect
Estimated
Non-Detect
Concentration (ug/L)
1000
100
10
1
0.1
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
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Jan-2011
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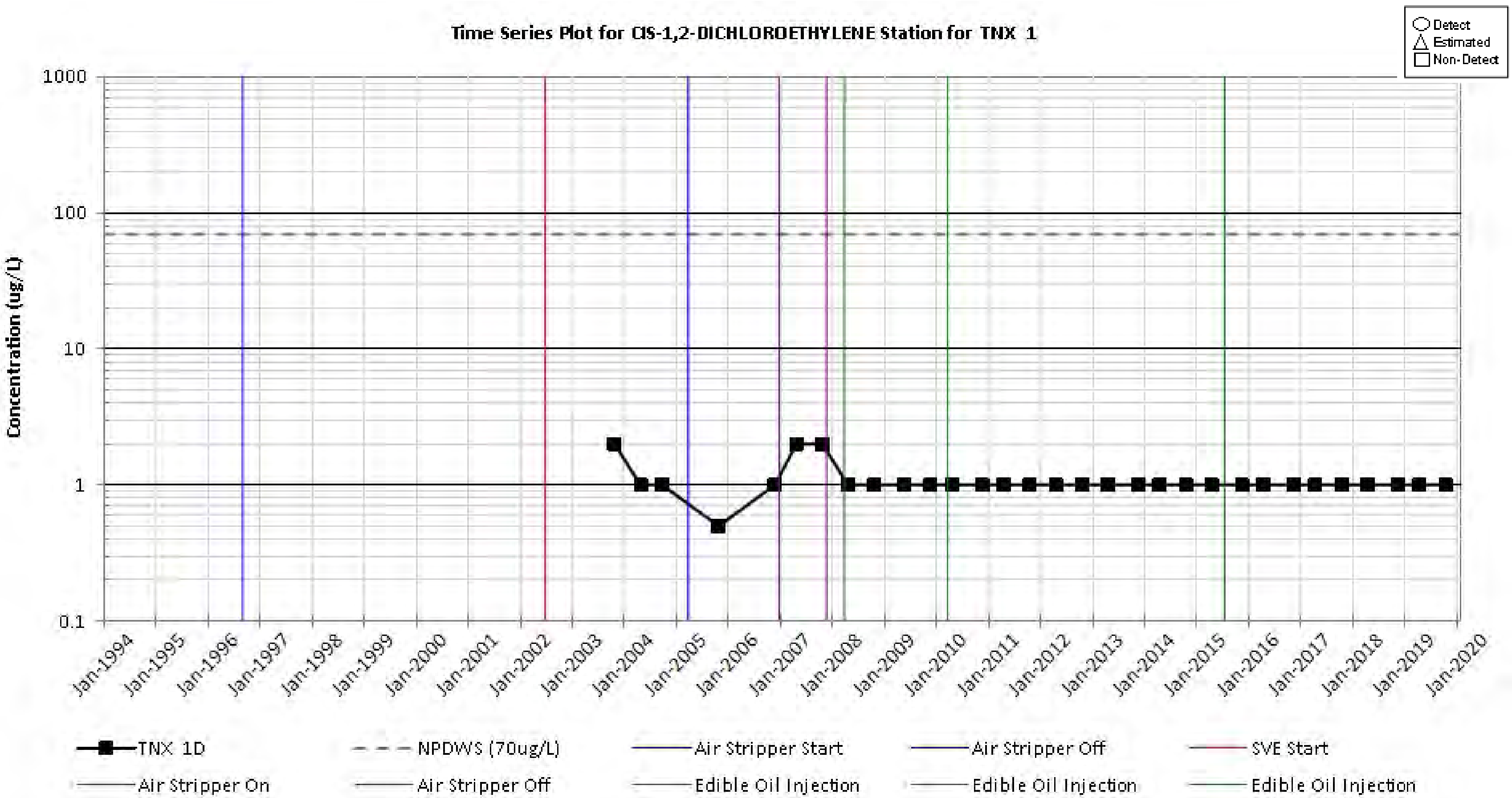
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TIR 1L
TIR 1M
TIR 1U
NPDWS (70ug/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection


Time Series Plot for CIS-1,2-DICHLOROETHYLENE Station for TNX 1
Detect
Estimated
Non-Detect
Concentration (ug/L)
1000
100
10
1
0.1
Jan-1994
Jan-1995
Jan-1996
Jan-1997
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Jan-1999
Jan-2000
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Jan-2002
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Jan-2008
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Jan-2010
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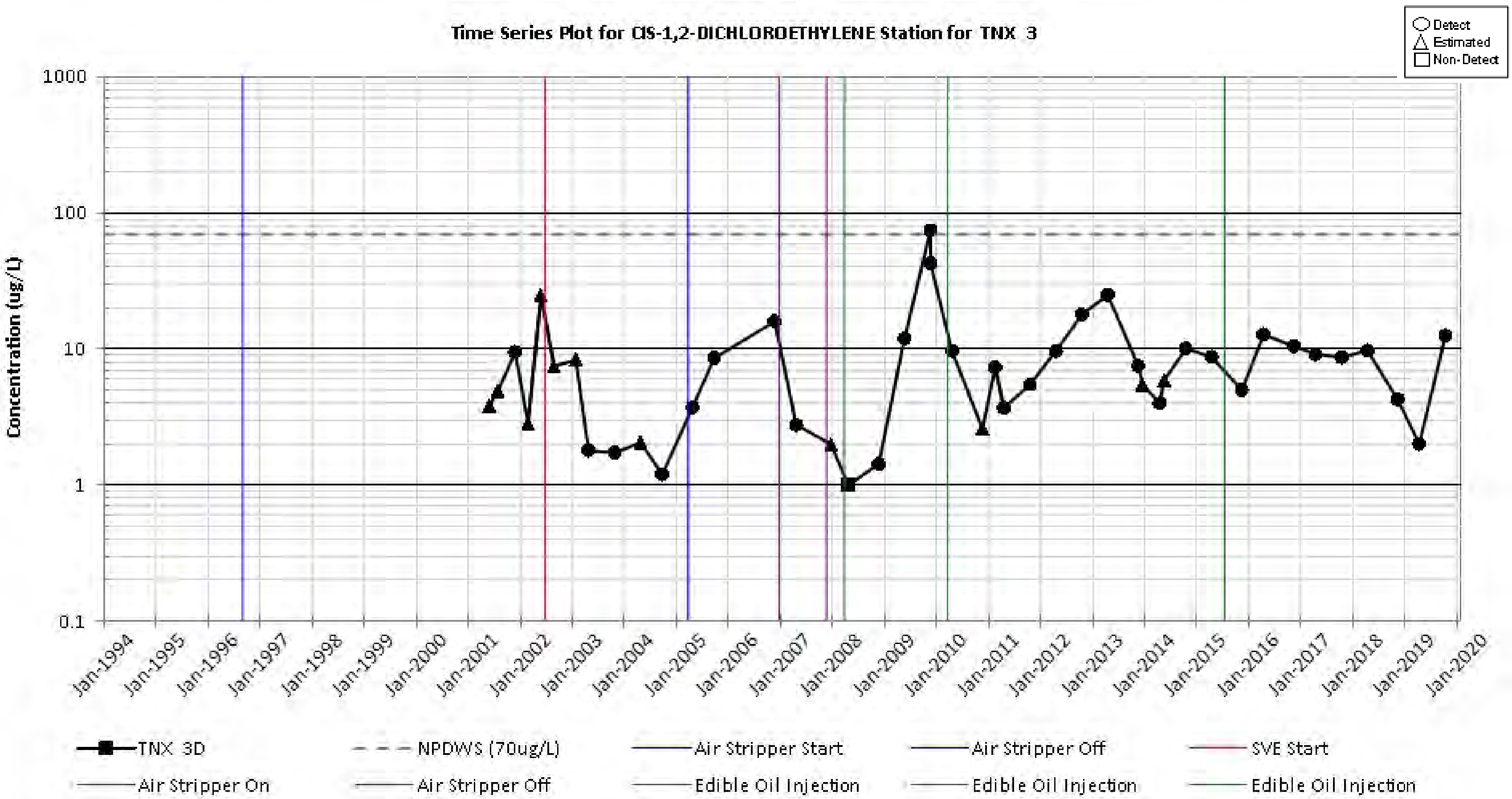
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TNX 1D
NPDWS (70ug/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection


Time Series Plot for CIS-1,2-DICHLOROETHYLENE Station for TNX 3
Detect
Estimated
Non-Detect
Concentration (ug/L)
1000
100
10
1
0.1
Jan-1994
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Jan-1999
Jan-2000
Jan-2001
Jan-2002
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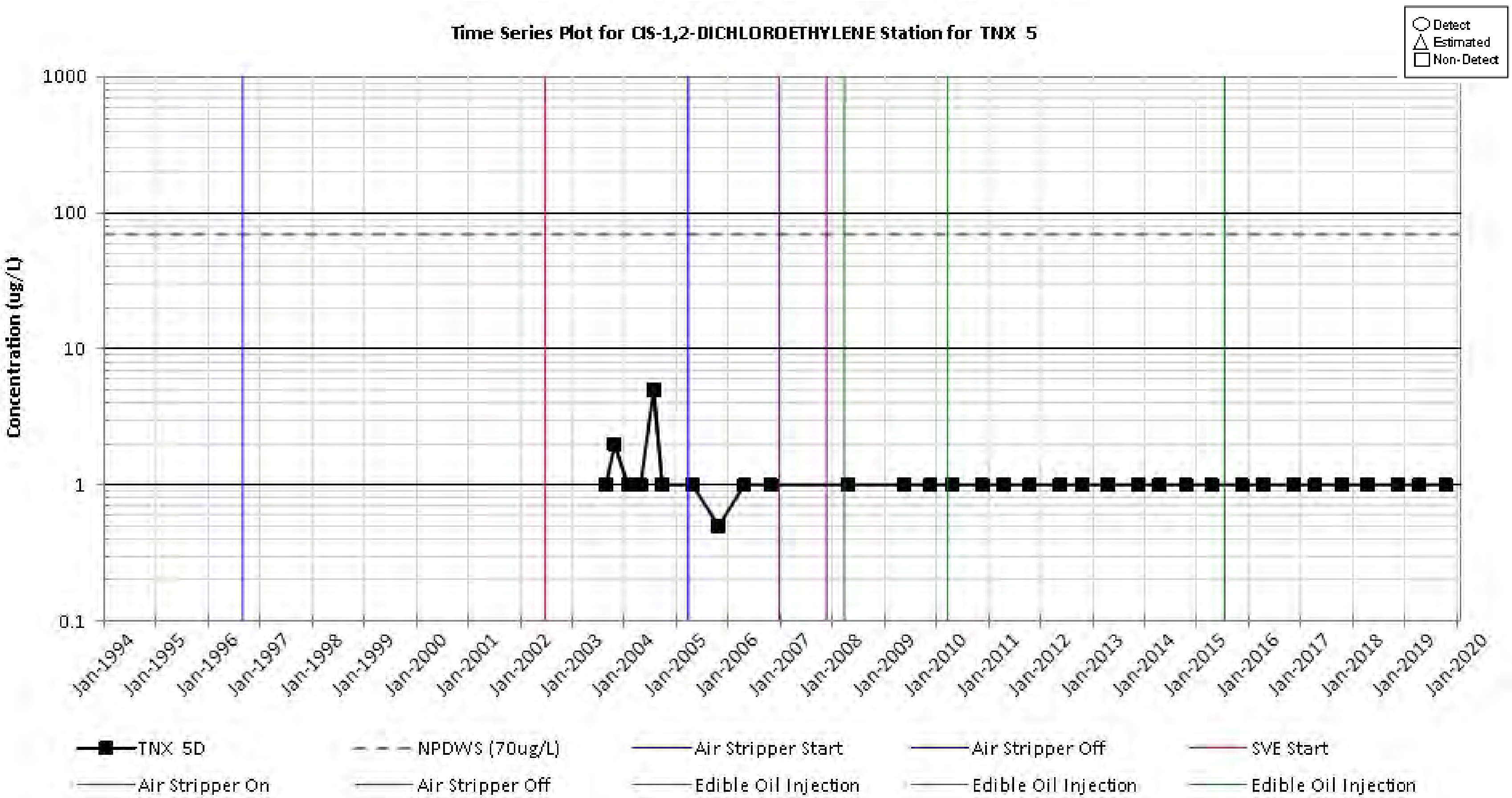
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TNX 3D
NPDWS (70ug/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection


Time Series Plot for CIS-1,2-DICHLOROETHYLENE Station for TNX 5
Detect
Estimated
Non-Detect
Concentration (ug/L)
1000
100
10
1
0.1
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
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Jan-2006
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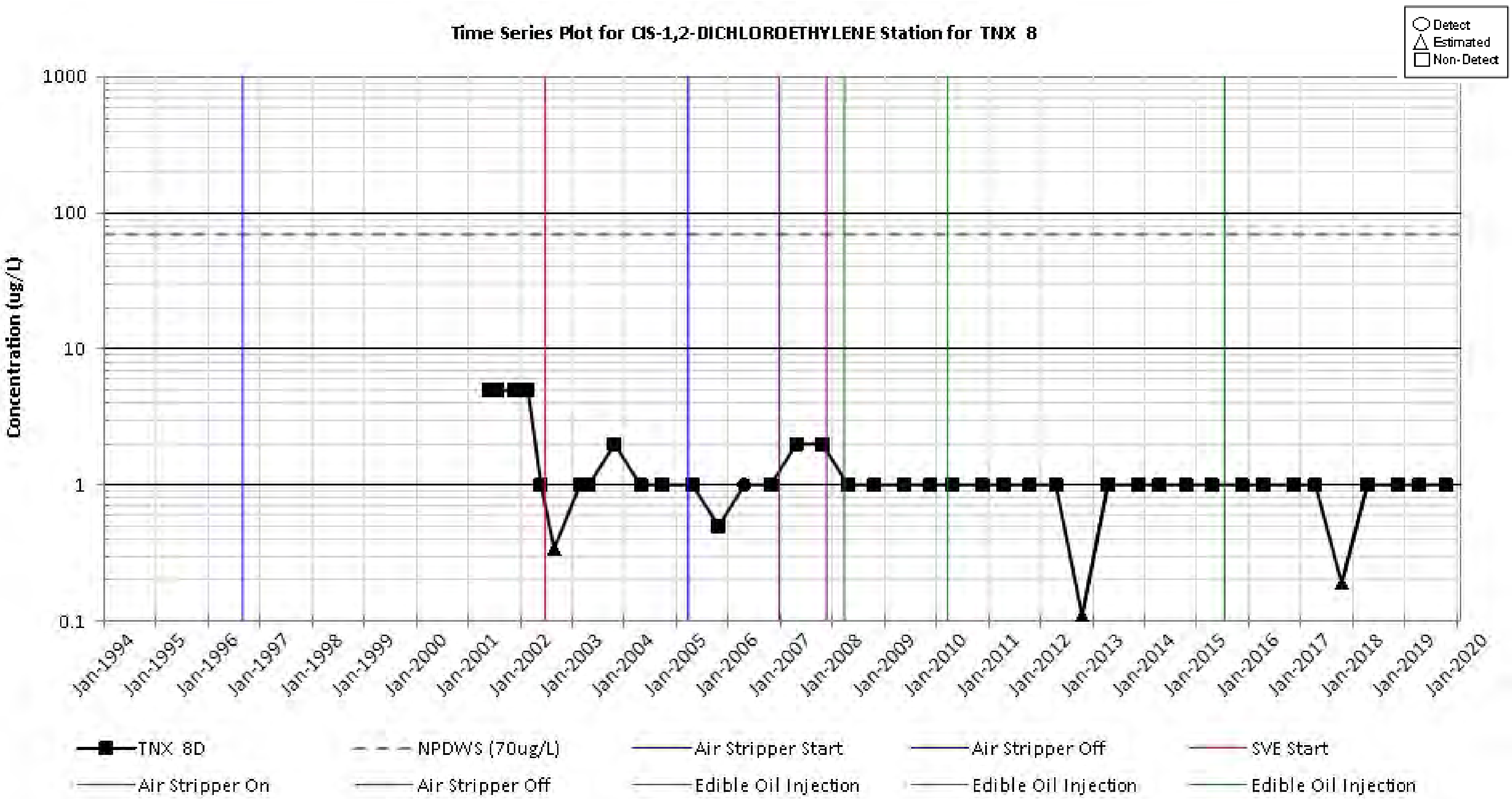
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TNX 5D
NPDWS (70ug/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection


Time Series Plot for CIS-1,2-DICHLOROETHYLENE Station for TNX 8
Detect
Estimated
Non-Detect
Concentration (ug/L)
1000
100
10
1
0.1
Jan-1994
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Jan-1997
Jan-1998
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Jan-2005
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Jan-2008
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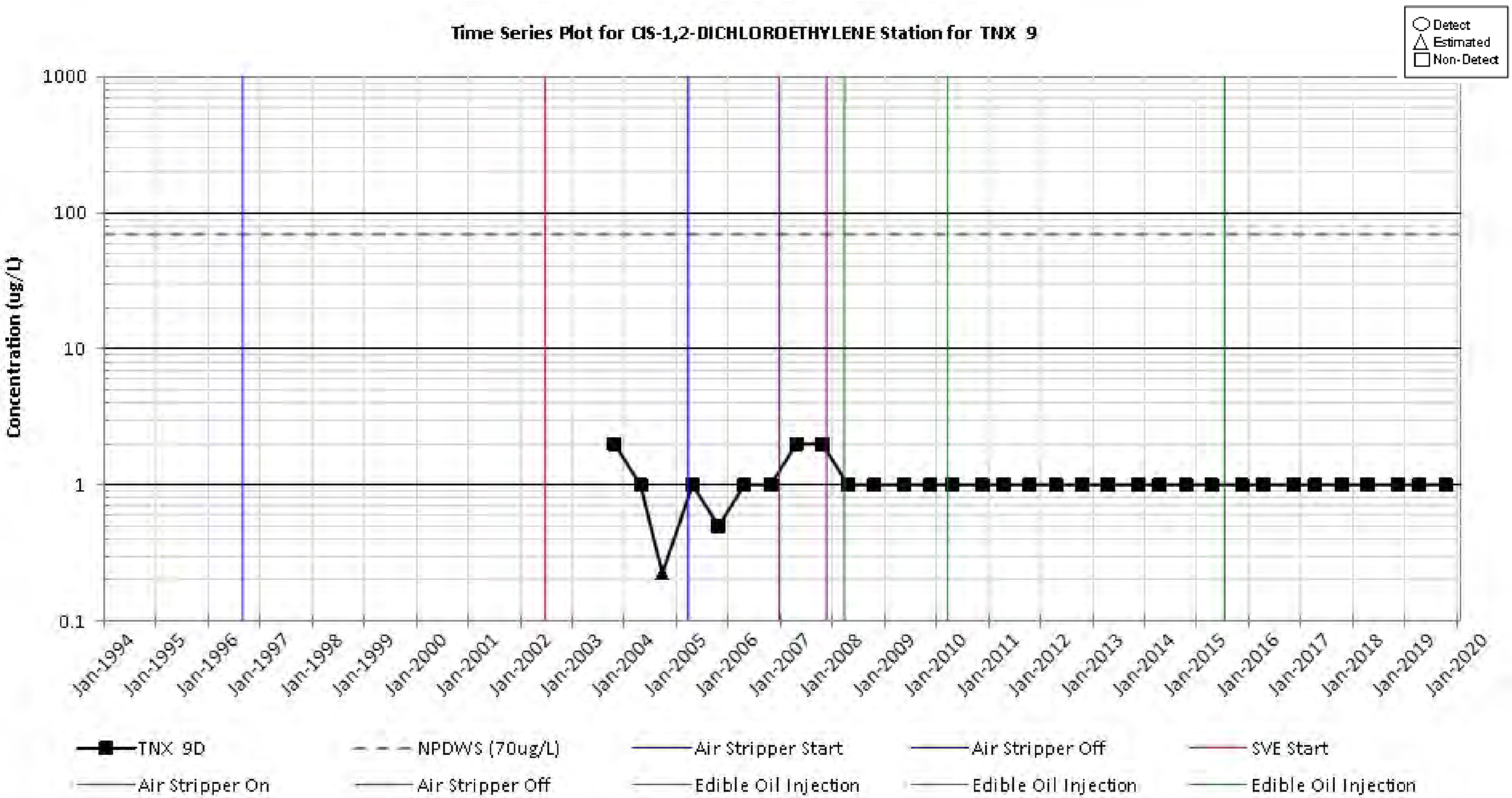
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TNX 8D
NPDWS (70ug/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection


Time Series Plot for CIS-1,2-DICHLOROETHYLENE Station for TNX 9
Detect
Estimated
Non-Detect
Concentration (ug/L)
1000
100
10
1
0.1
Jan-1994
Jan-1995
Jan-1996
Jan-1997
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Jan-2000
Jan-2001
Jan-2002
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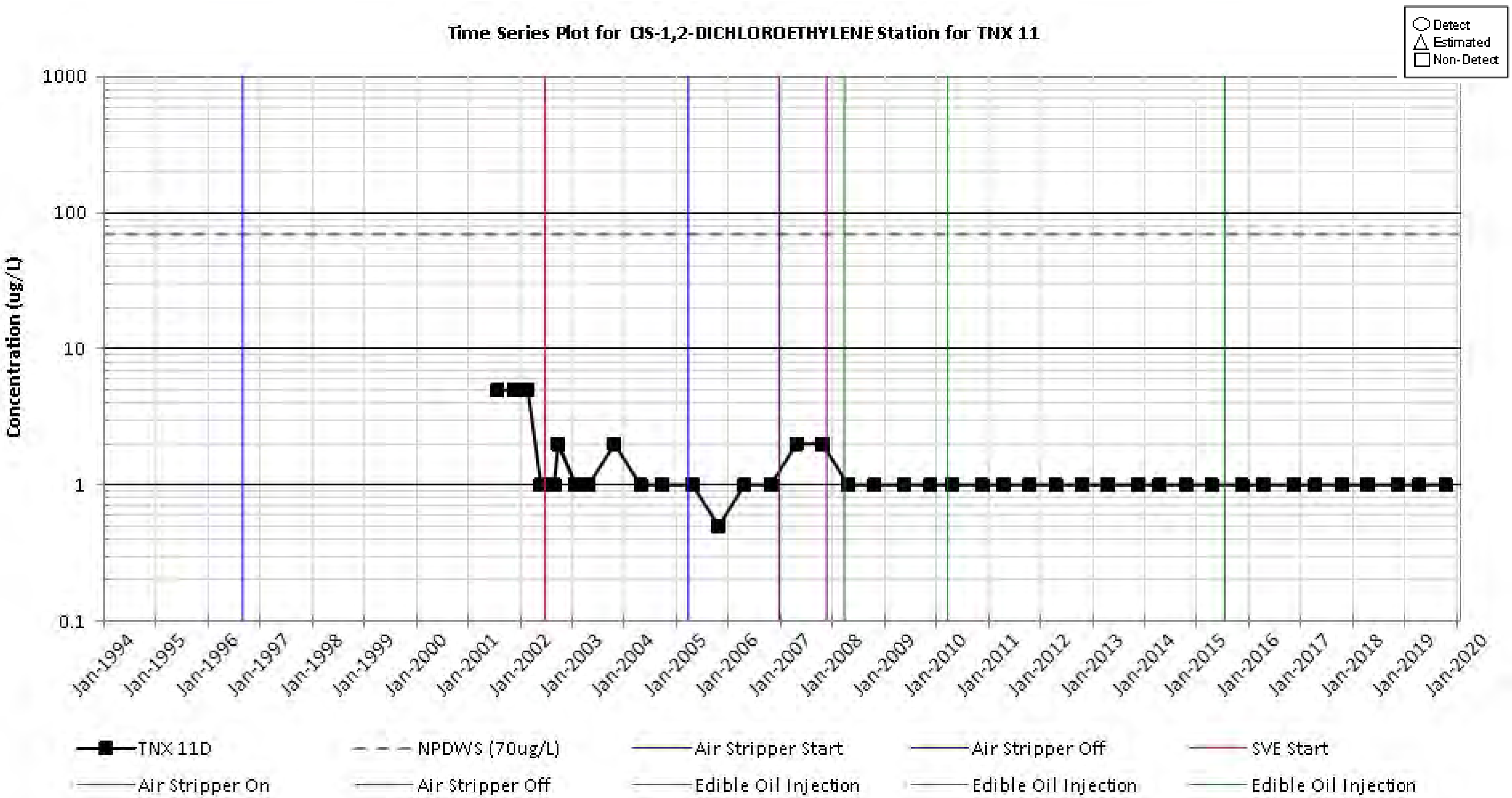
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TNX 9D
NPDWS (70ug/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection


Time Series Plot for CIS-1,2-DICHLOROETHYLENE Station for TNX 11
Detect
Estimated
Non-Detect
Concentration (ug/L)
1000
100
10
1
0.1
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
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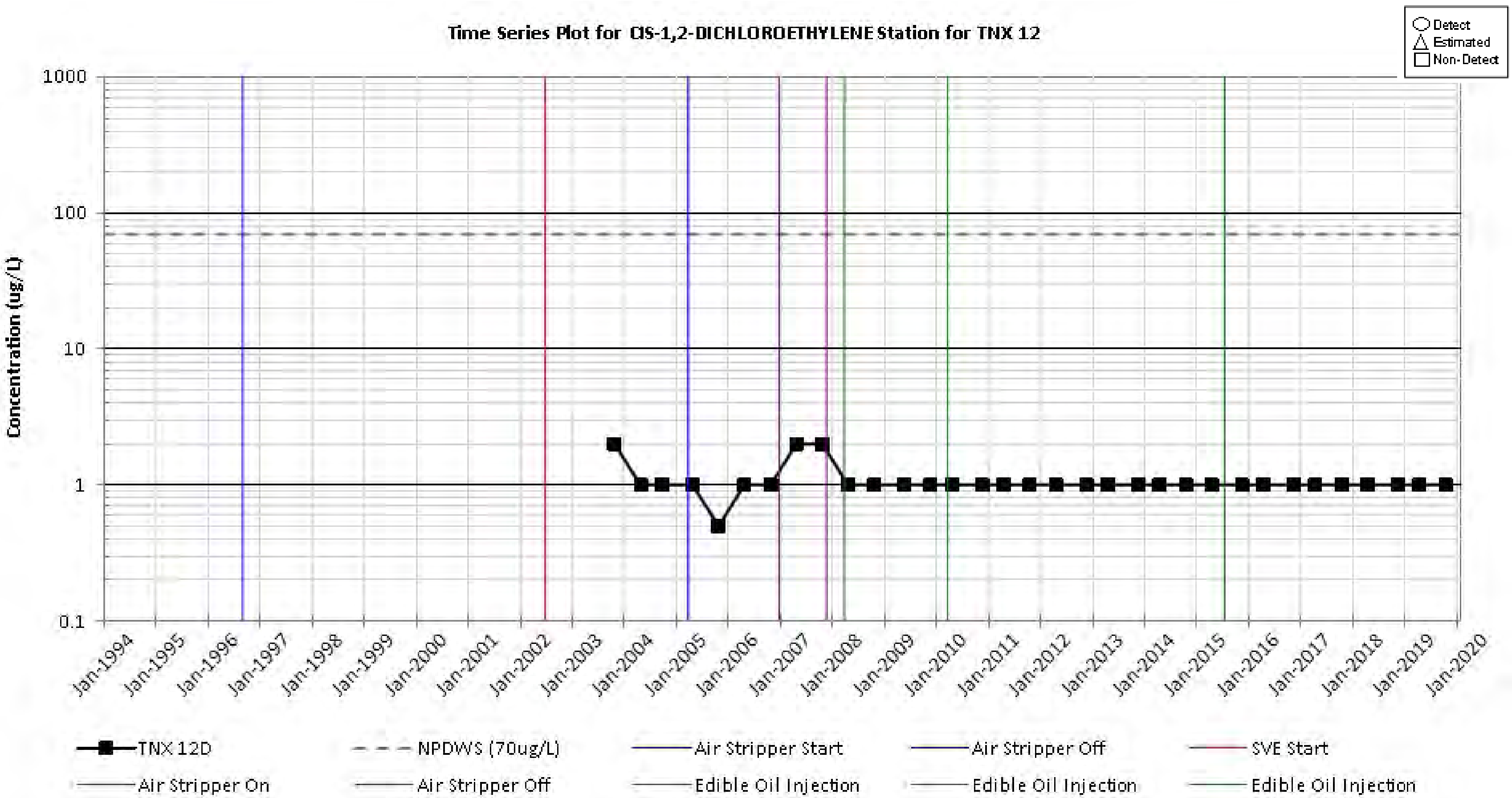
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TNX 11D
NPDWS (70ug/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection


Time Series Plot for CIS-1,2-DICHLOROETHYLENE Station for TNX 12
Detect
Estimated
Non-Detect
Concentration (ug/L)
1000
100
10
1
0.1
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
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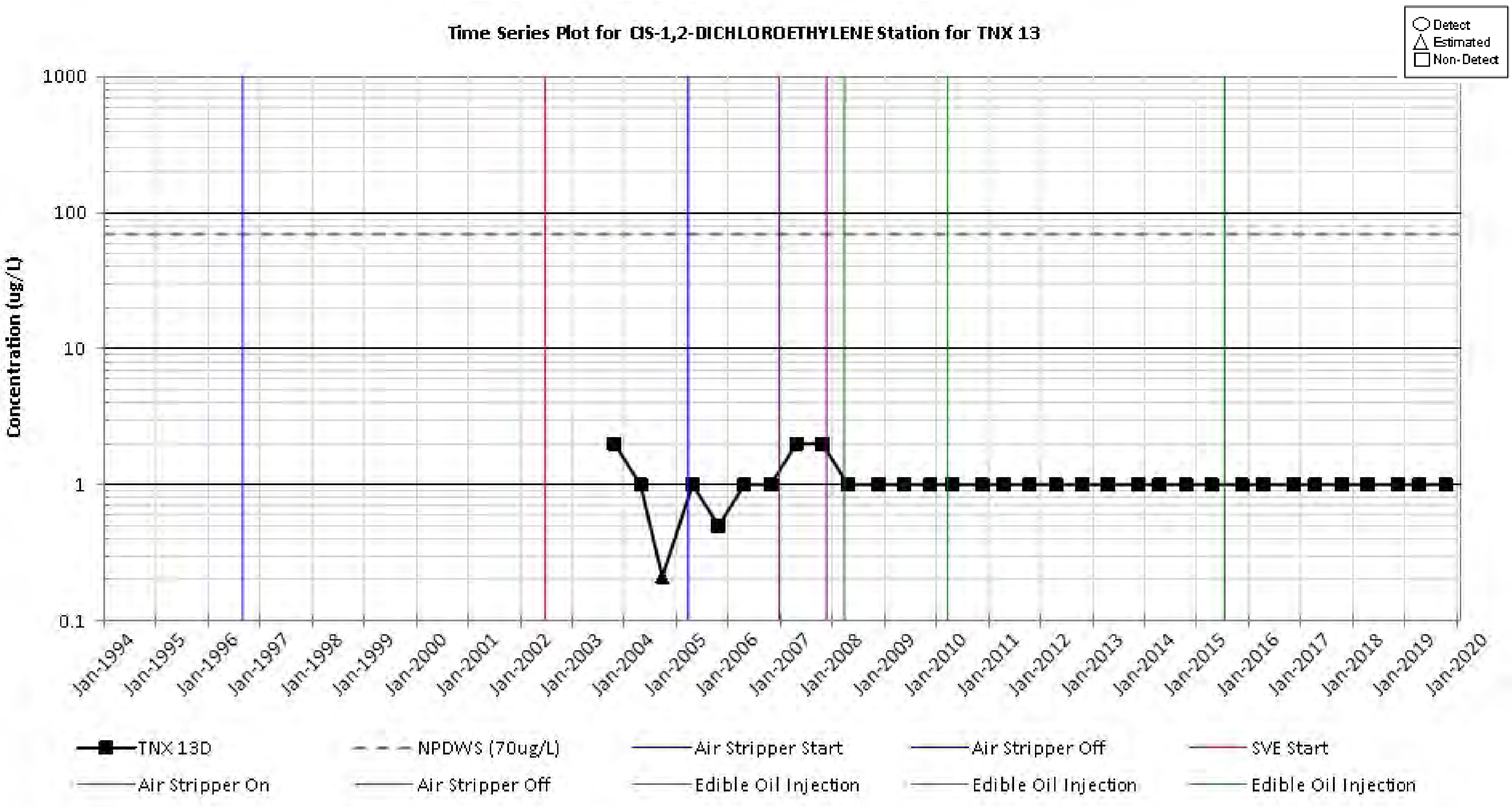
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TNX 12D
NPDWS (70ug/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection


Time Series Plot for CIS-1,2-DICHLOROETHYLENE Station for TNX 13
Detect
Estimated
Non-Detect
Concentration (ug/L)
1000
100
10
1
0.1
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
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Jan-2002
Jan-2003
Jan-2004
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Jan-2008
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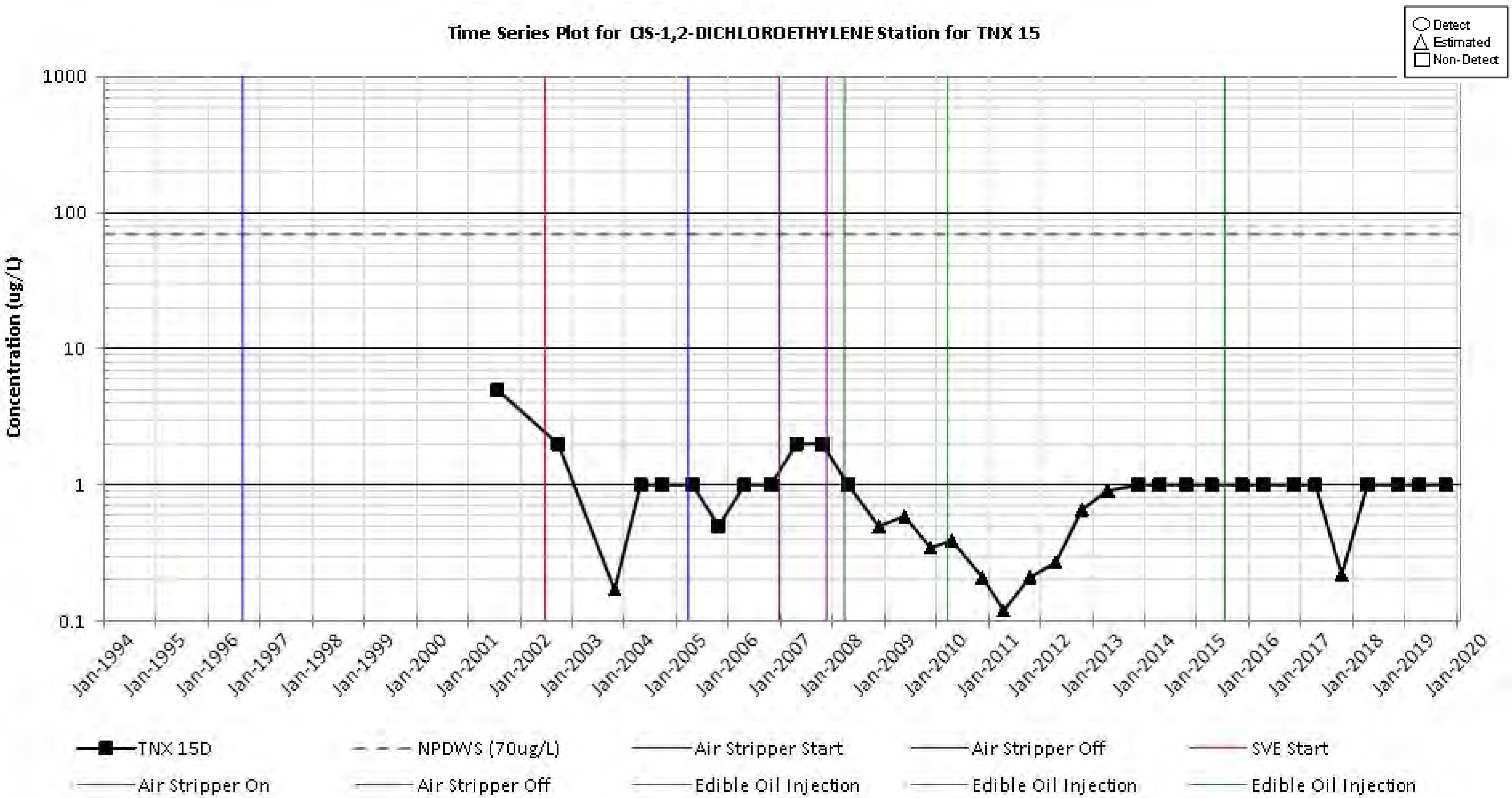
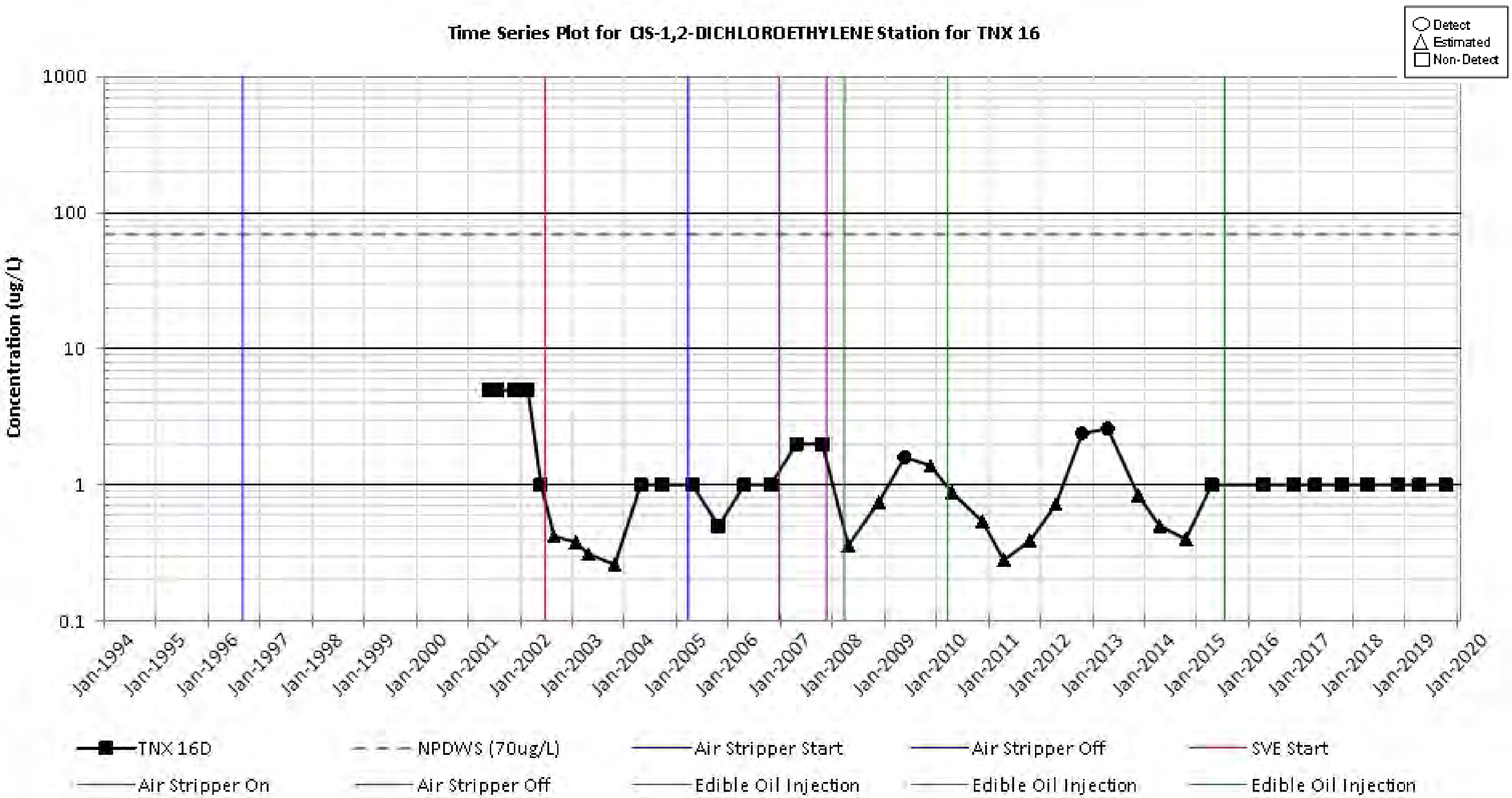
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TNX 13D
NPDWS (70ug/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection


Time Series Plot for CIS-1,2-DICHLOROETHYLENE Station for TNX 15
Detect
Estimated
Non-Detect
Concentration (ug/L)
1000
100
10
1
0.1
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TNX 15D
NPDWS (70ug/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection


Time Series Plot for CIS-1,2-DICHLOROETHYLENE Station for TNX 16
Detect
Estimated
Non-Detect
Concentration (ug/L)
1000
100
10
1
0.1
Jan-1994
Jan-1995
Jan-1996
Jan-1997
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Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
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Jan-2016
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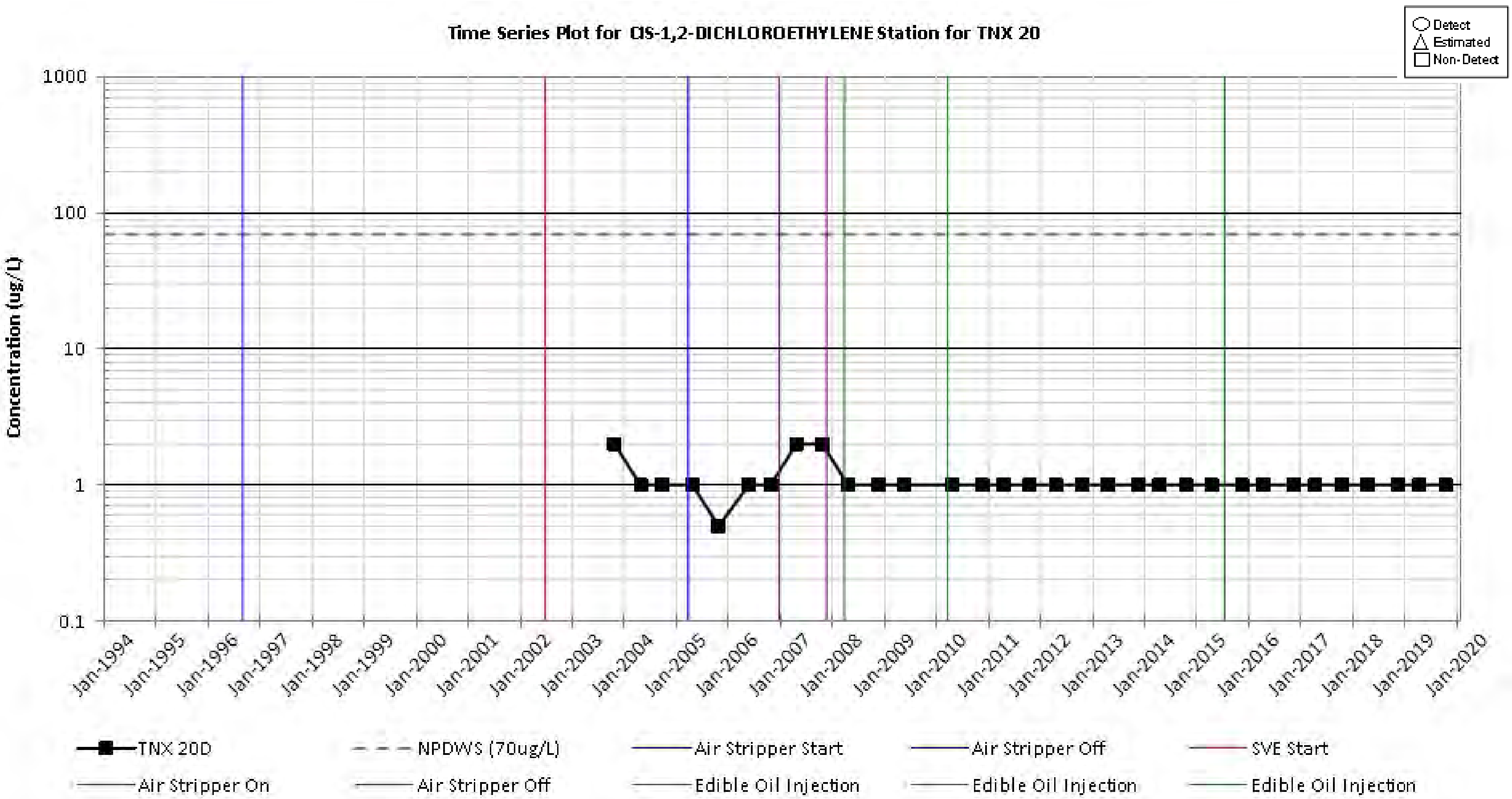
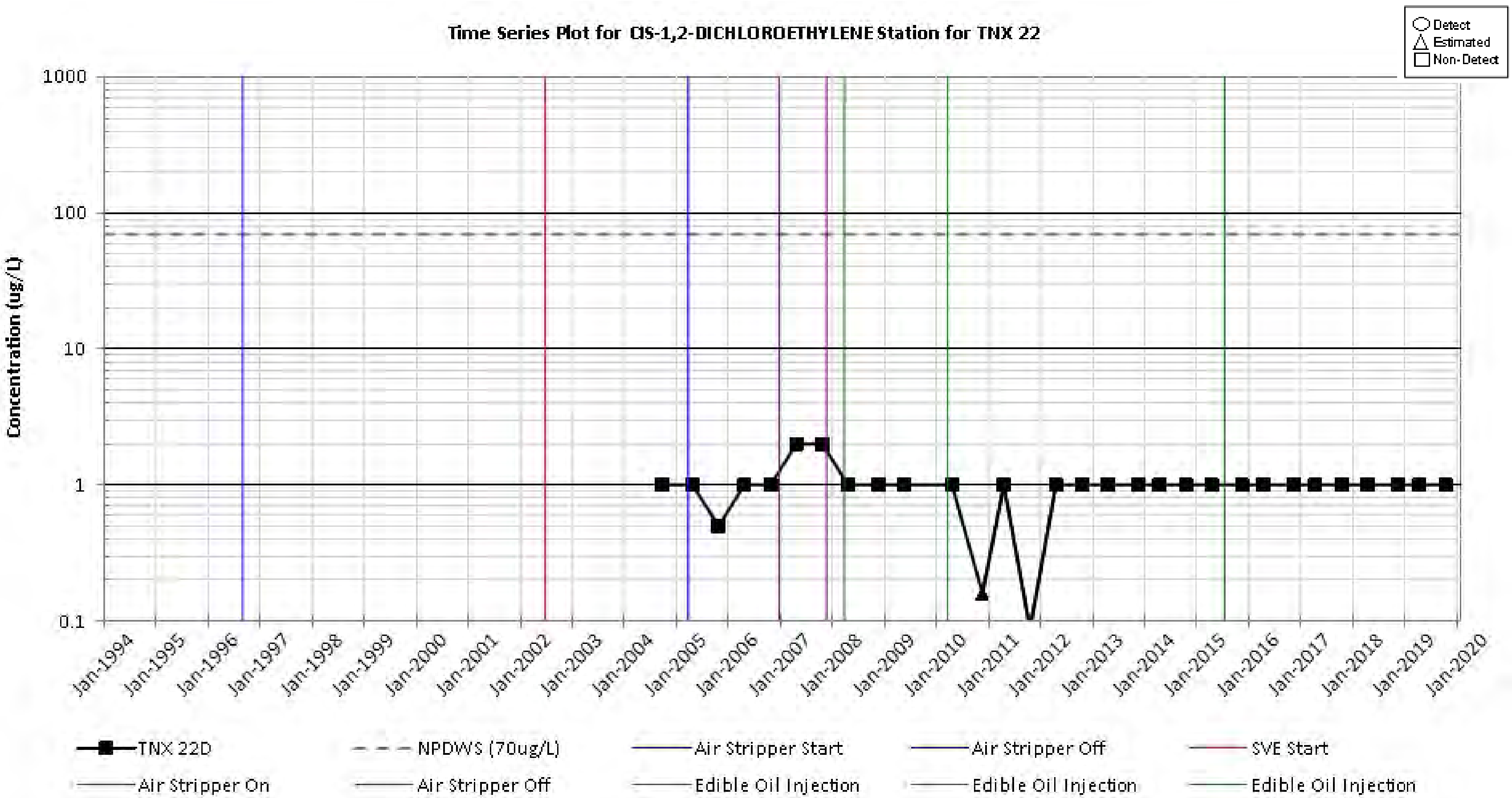
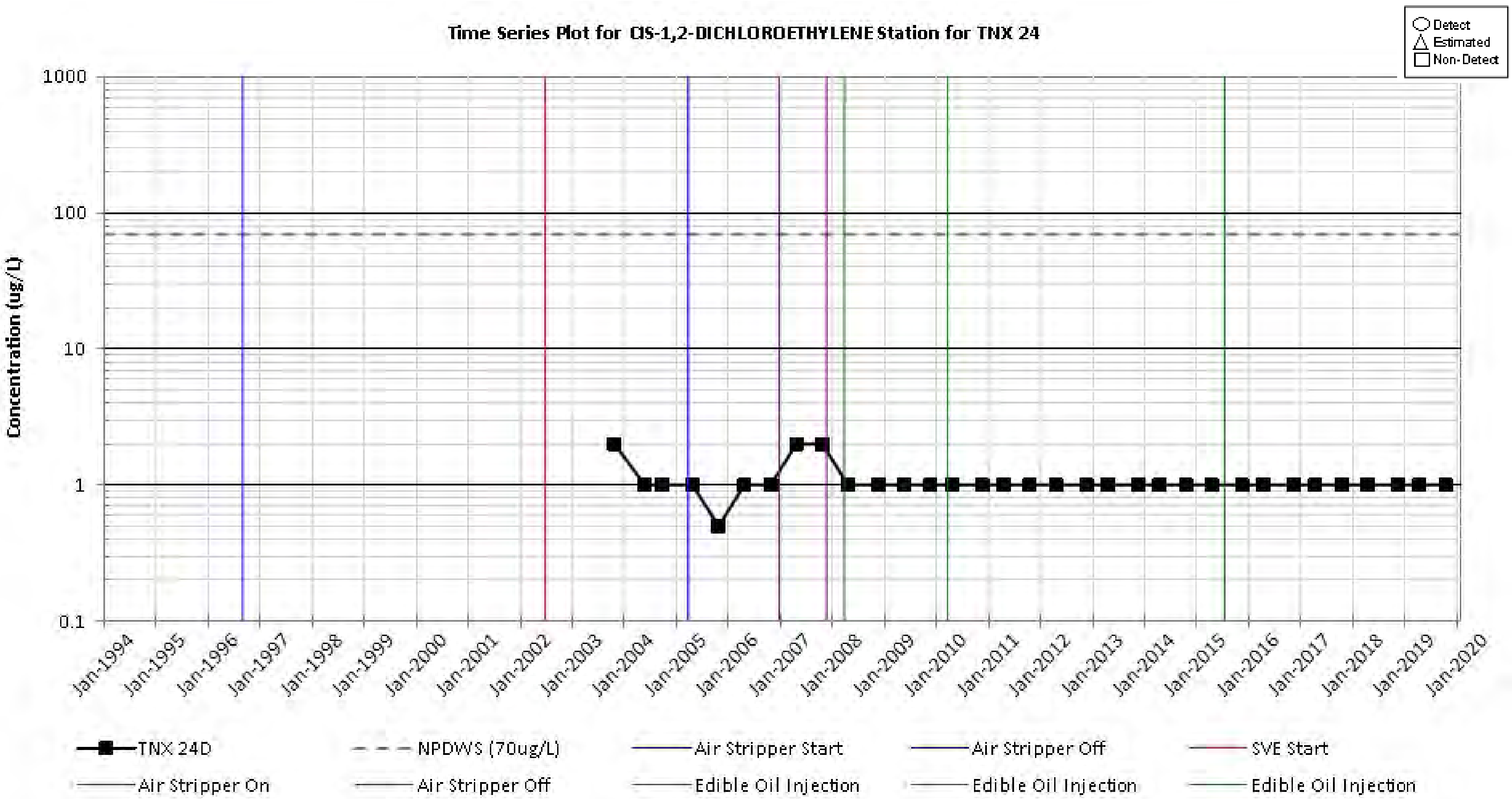
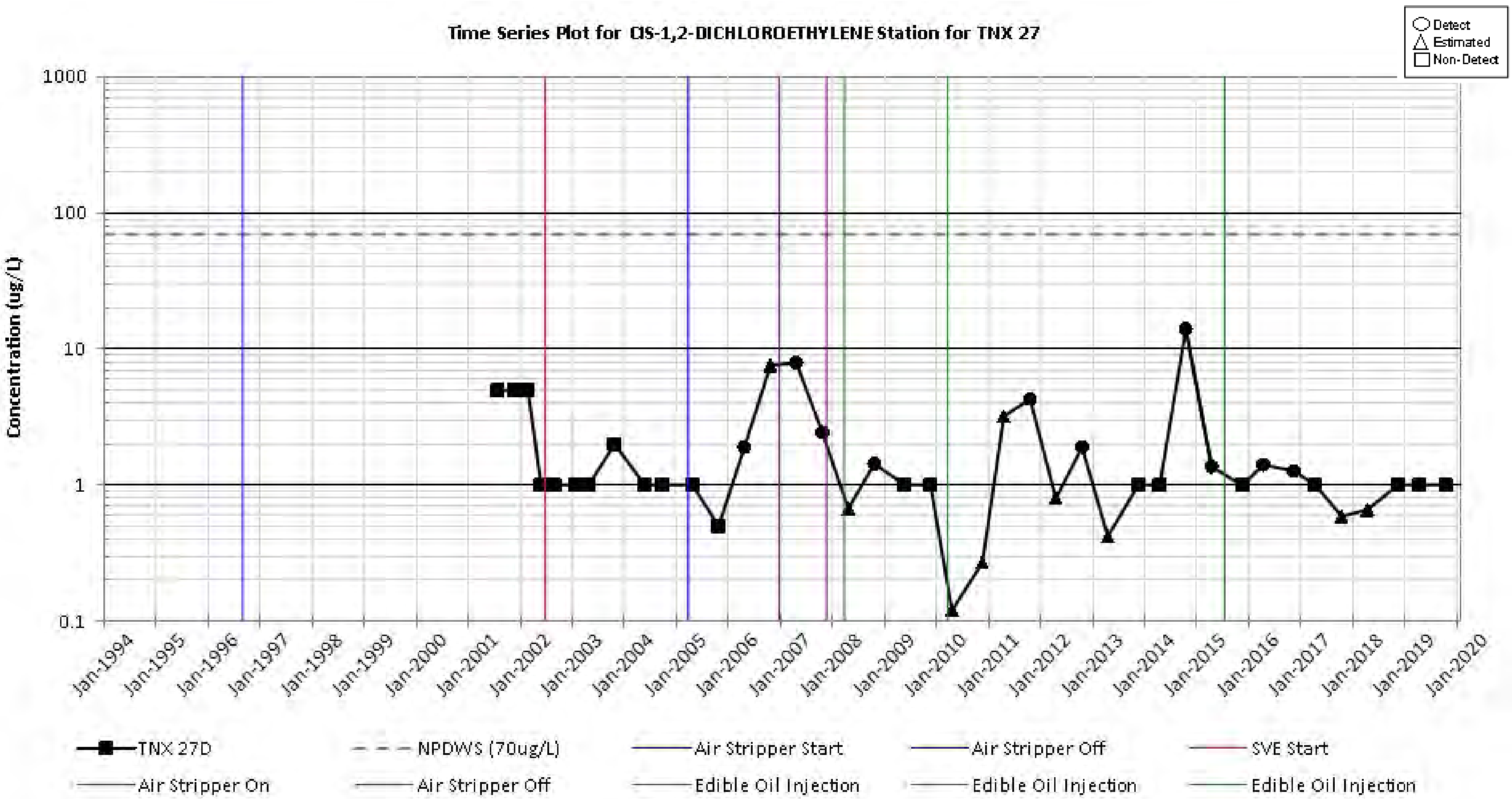
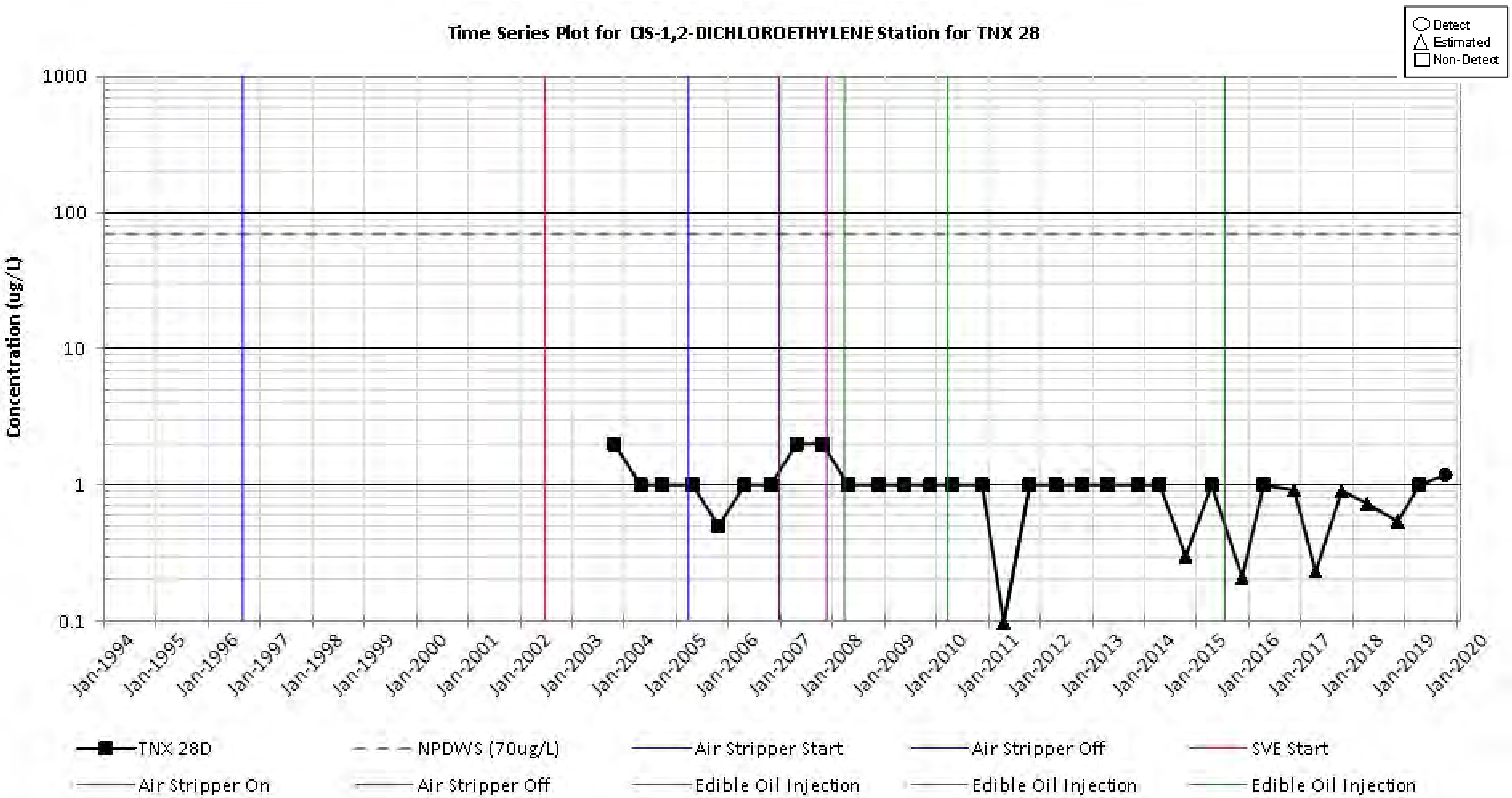
Jan-2018
Jan-2019
Jan-2020
TNX 16D
NPDWS (70ug/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection

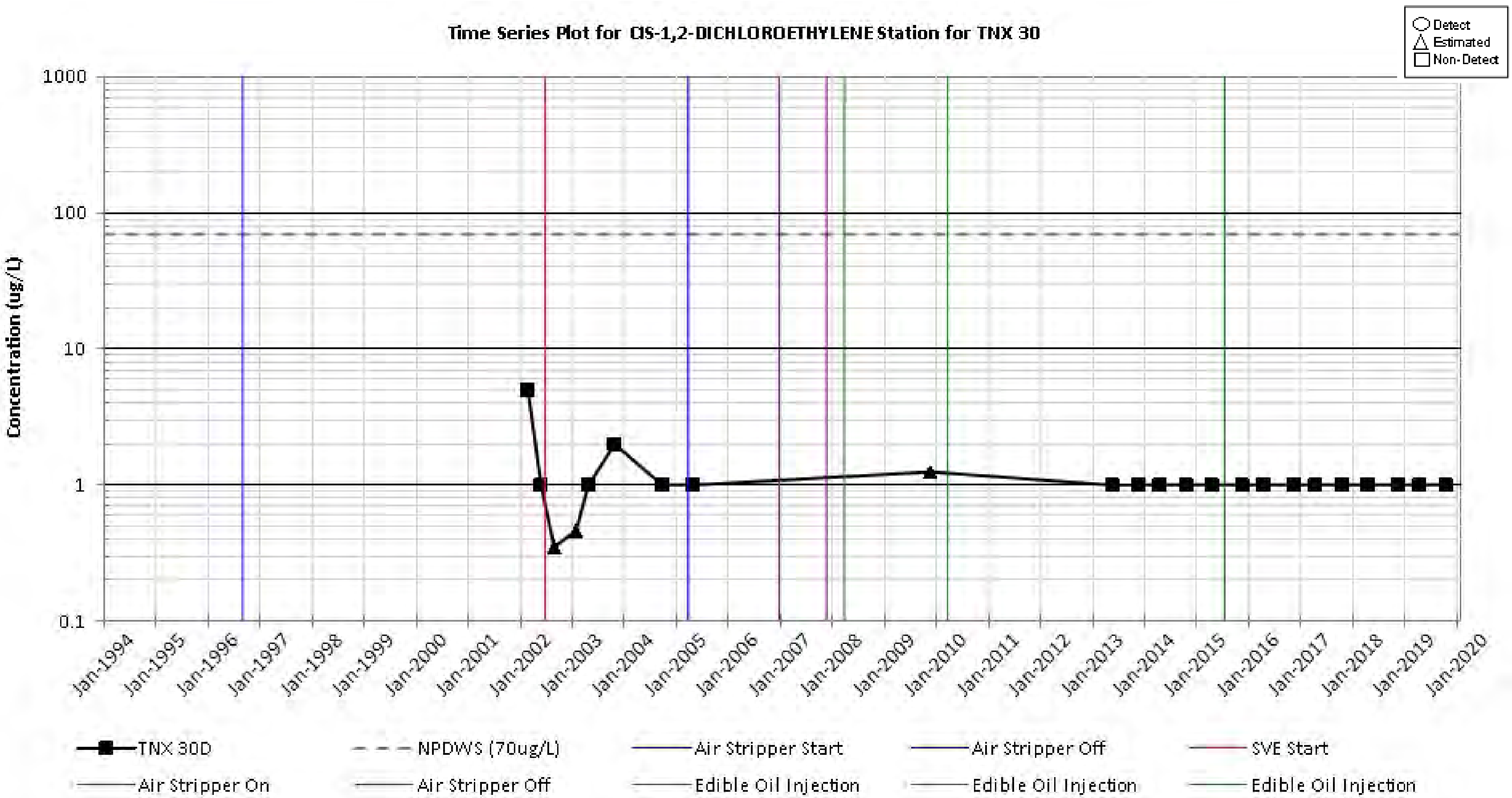

Time Series Plot for CIS-1,2-DICHLOROETHYLENE Station for TNX 20
Detect
Estimated
Non-Detect
Concentration (ug/L)
1000
100
10
1
0.1
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TNX 20D
NPDWS (70ug/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection

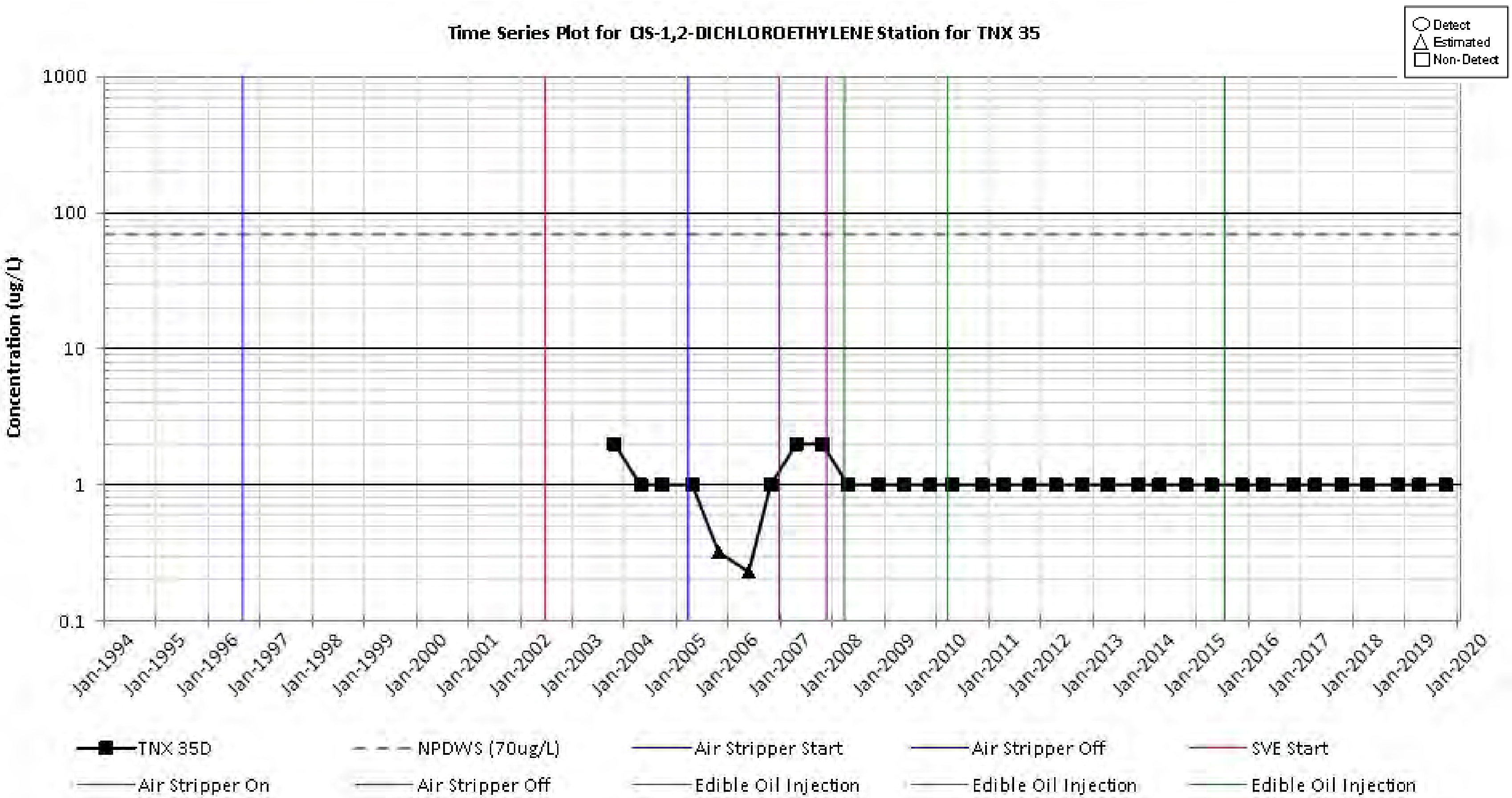

Time Series Plot for CIS-1,2-DICHLOROETHYLENE Station for TNX 22
Detect
Estimated
Non-Detect
Concentration (ug/L)
1000
100
10
1
0.1
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TNX 22D
NPDWS (70ug/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection

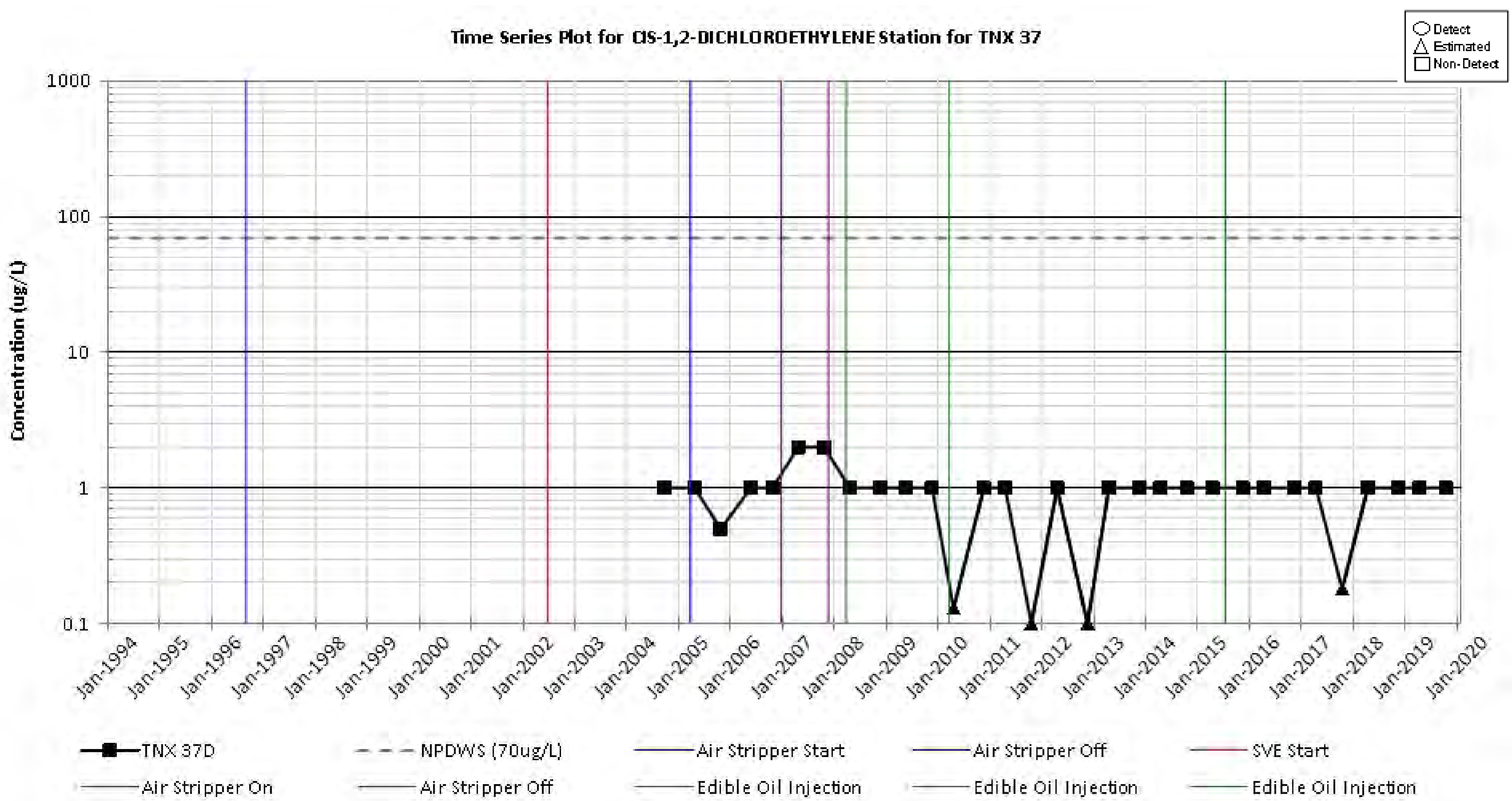

Time Series Plot for CIS-1,2-DICHLOROETHYLENE Station for TNX 24
Detect
Estimated
Non-Detect
1000
100
10
1
0.1
Concentration (ug/L)
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TNX 24D
NPDWS (70ug/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection

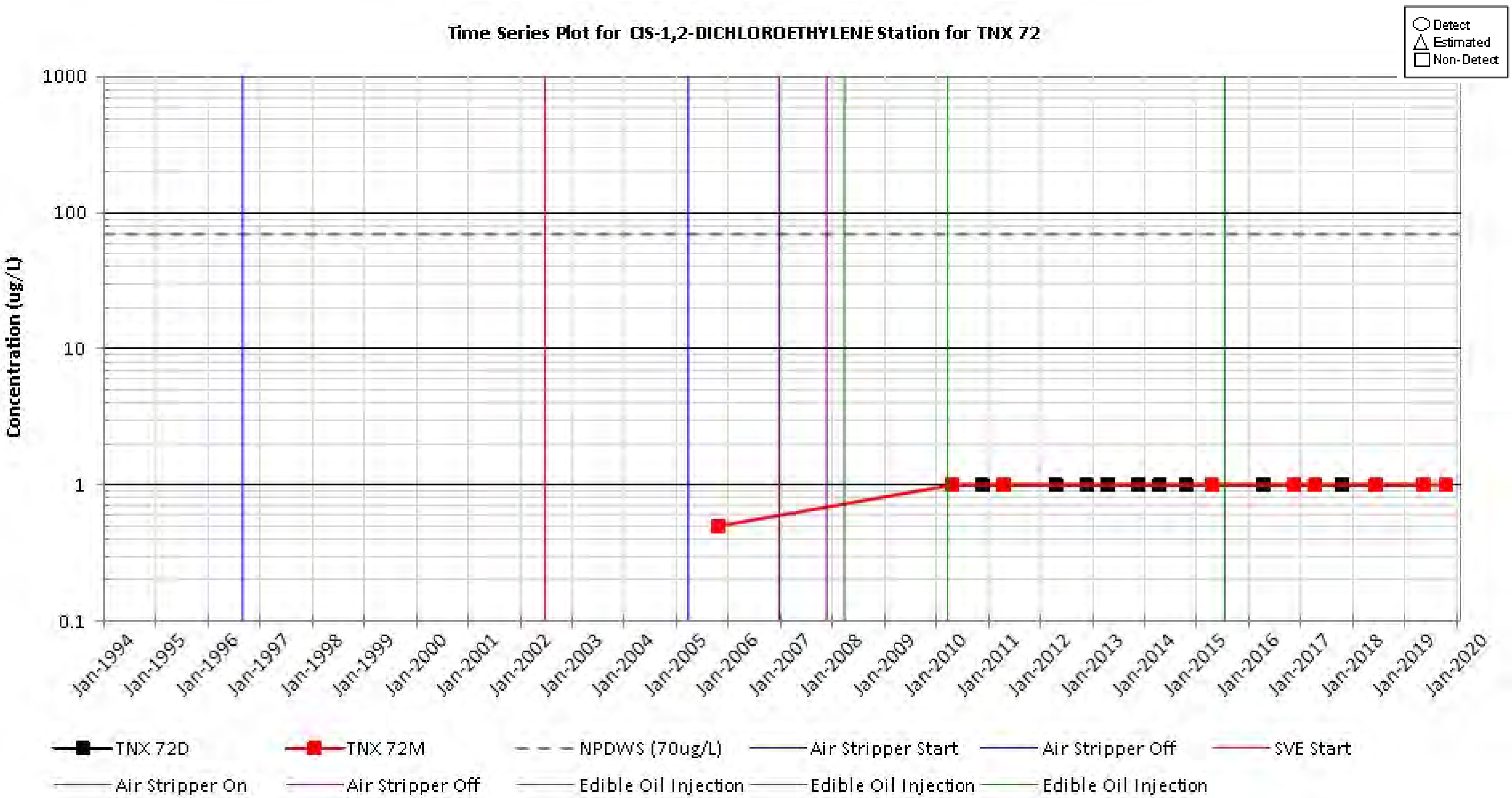

Time Series Plot for CIS-1,2-DICHLOROETHYLENE Station for TNX 27
Detect
Estimated
Non-Detect
Concentration (ug/L)
1000
100
10
1
0.1
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TNX 27D
NPDWS (70ug/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection

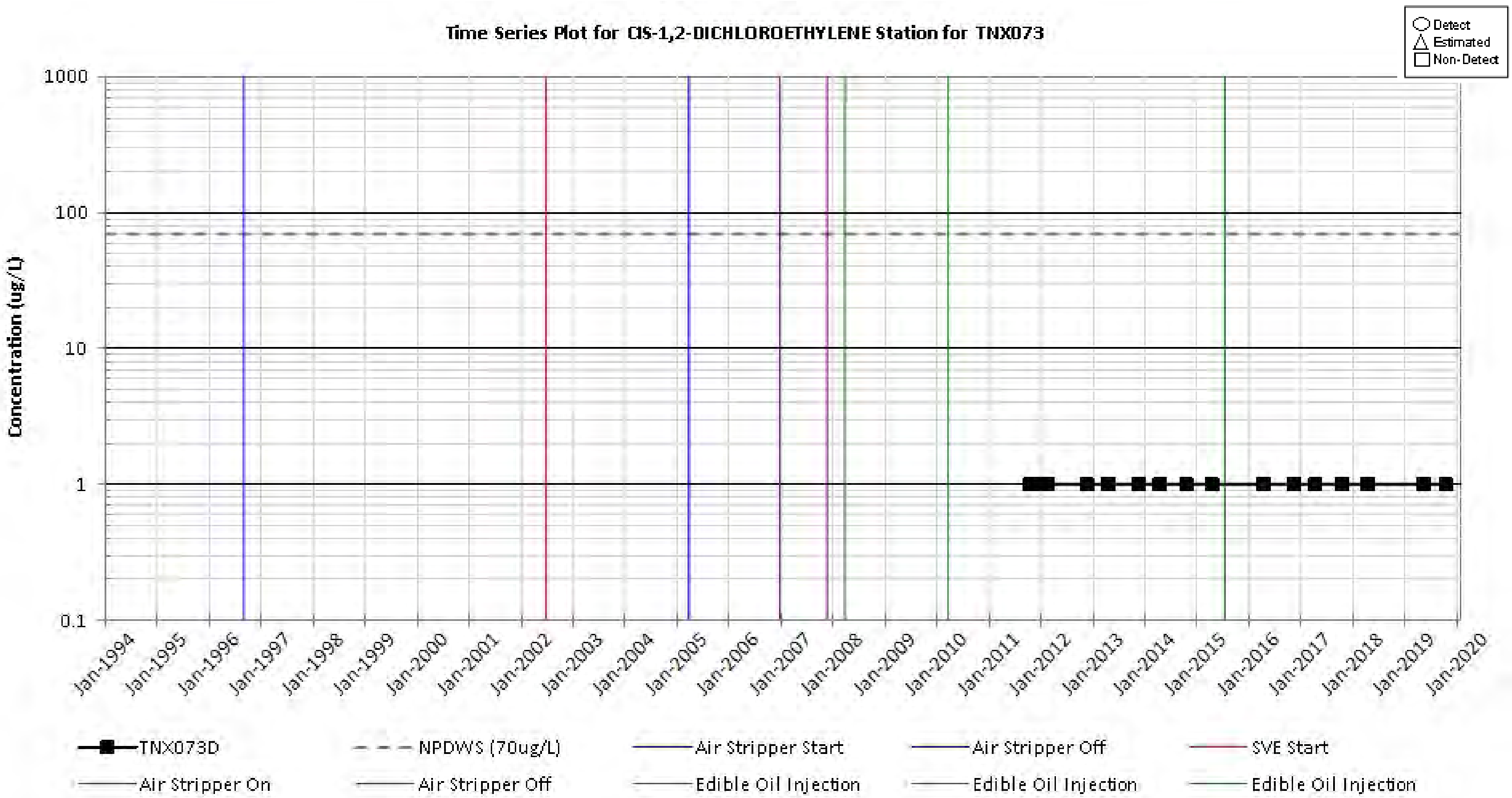

Time Series Plot for CIS-1,2-DICHLOROETHYLENE Station for TNX 28
Detect
Estimated
Non-Detect
Concentration (ug/L)
1000
100
10
1
0.1
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TNX 28D
NPDWS (70ug/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection

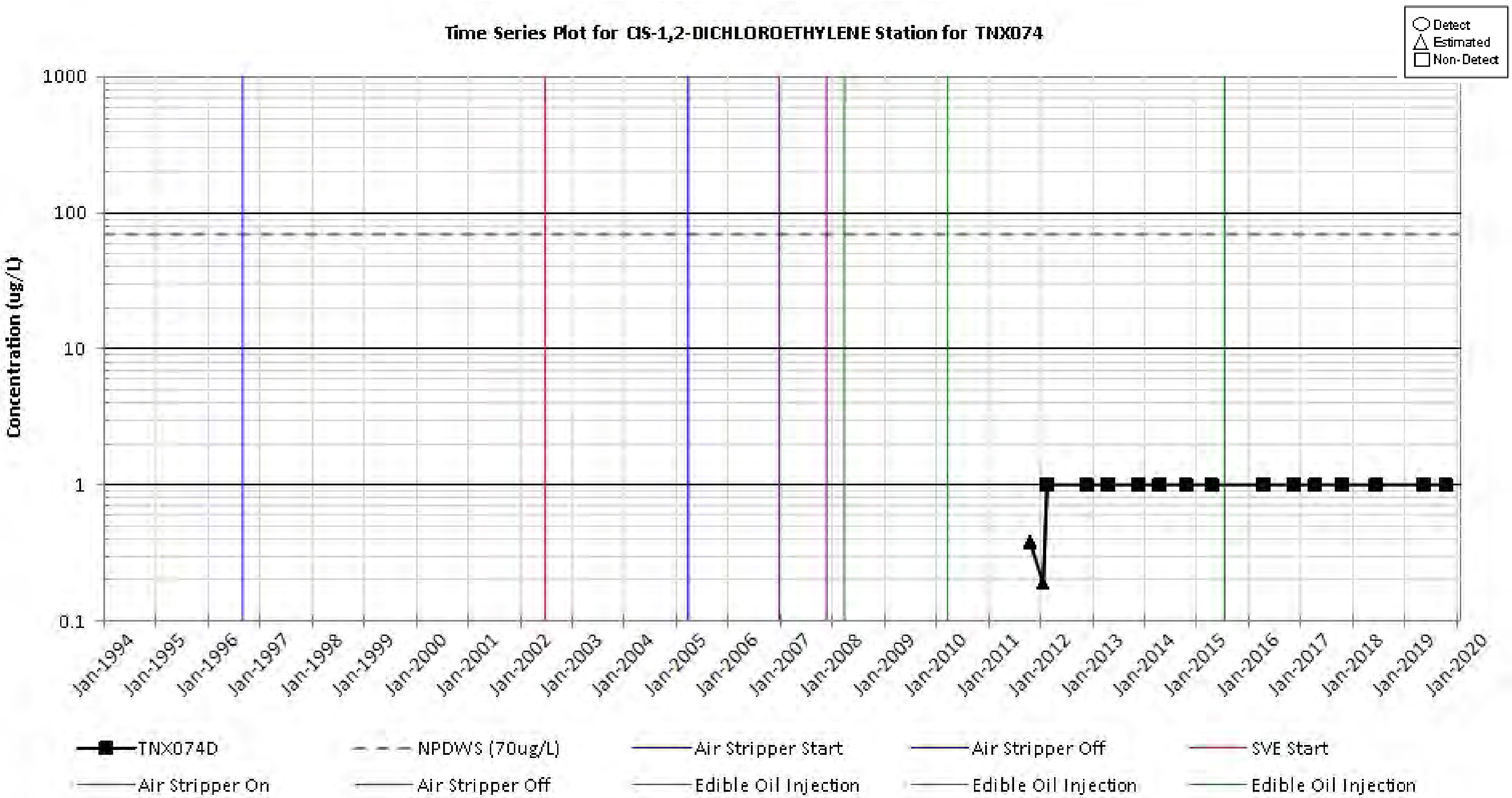

Time Series Plot for CIS-1,2-DICHLOROETHYLENE Station for TNX 30
Detect
Estimated
Non-Detect
Concentration (ug/L)
1000
100
10
1
0.1
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TNX 30D
NPDWS (70ug/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection

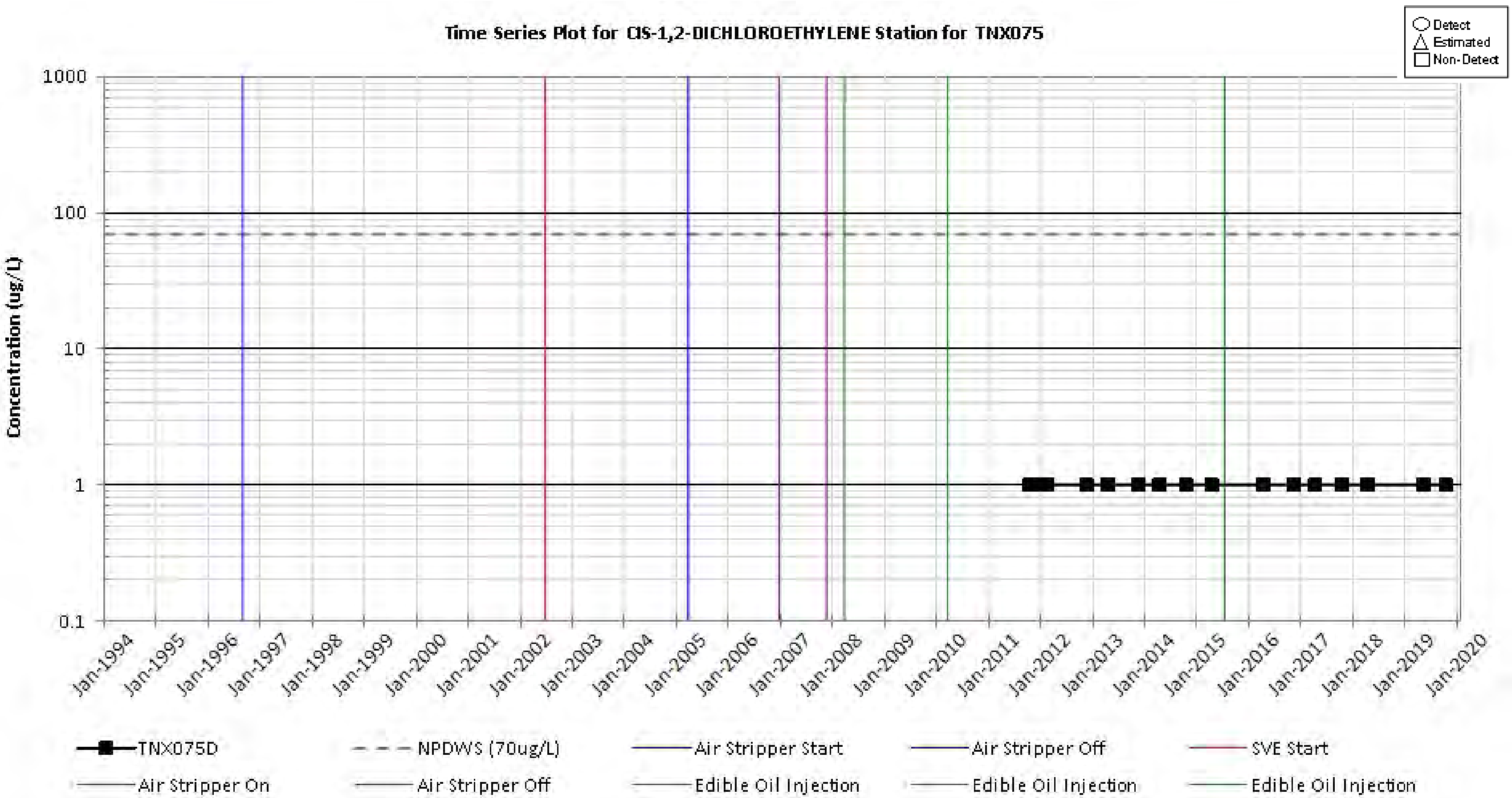

Time Series Plot for CIS-1,2-DICHLOROETHYLENE Station for TNX 35
Detect
Estimated
Non-Detect
Concentration (ug/L)
1000
100
10
1
0.1
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TNX 35D
NPDWS (70ug/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection

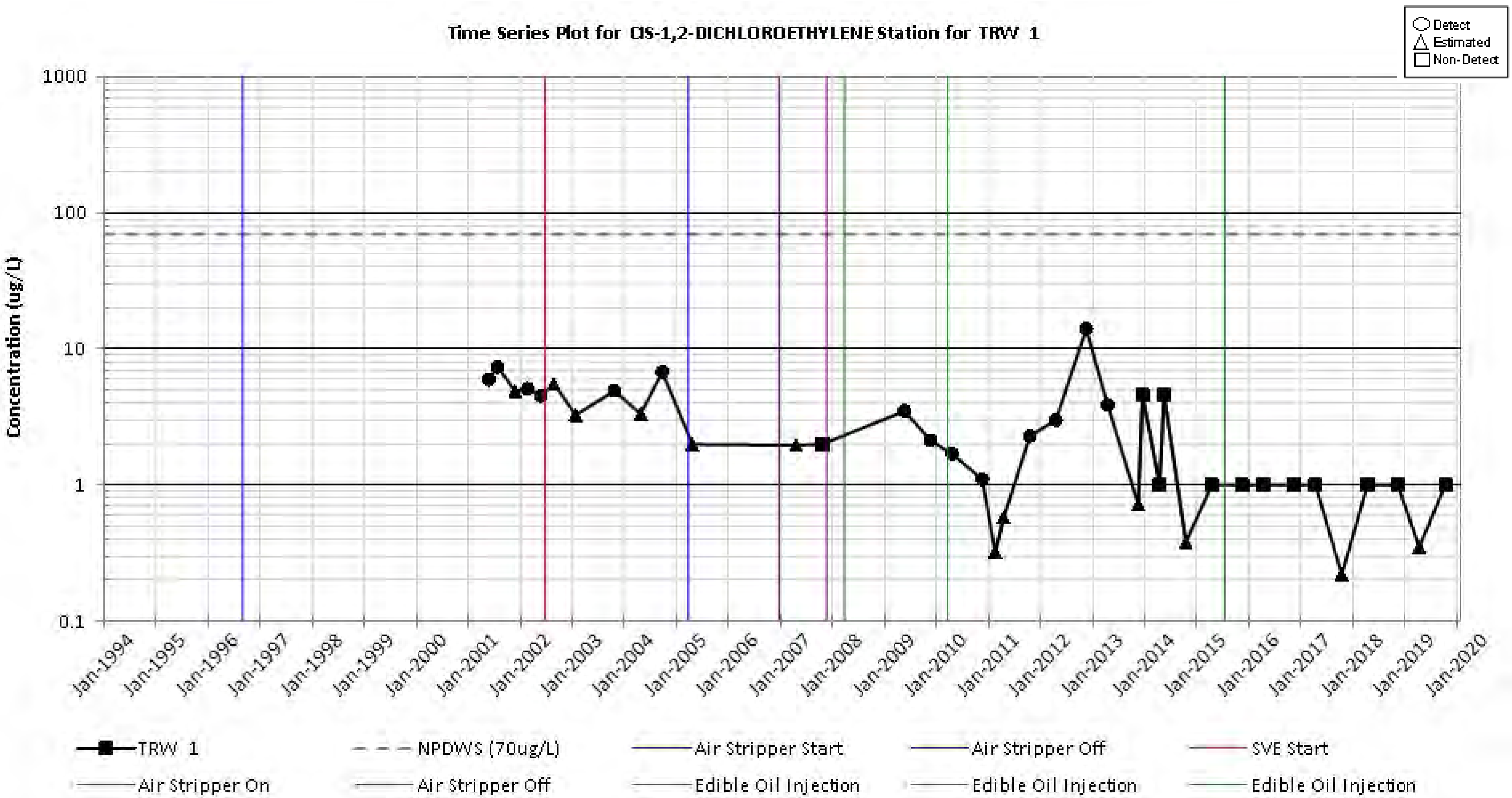

Time Series Plot for CIS-1,2-DICHLOROETHYLENE Station for TNX 37
Detect
Estimated
Non-Detect
Concentration (ug/L)
1000
100
10
1
0.1
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TNX 37D
NPDWS (70ug/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection

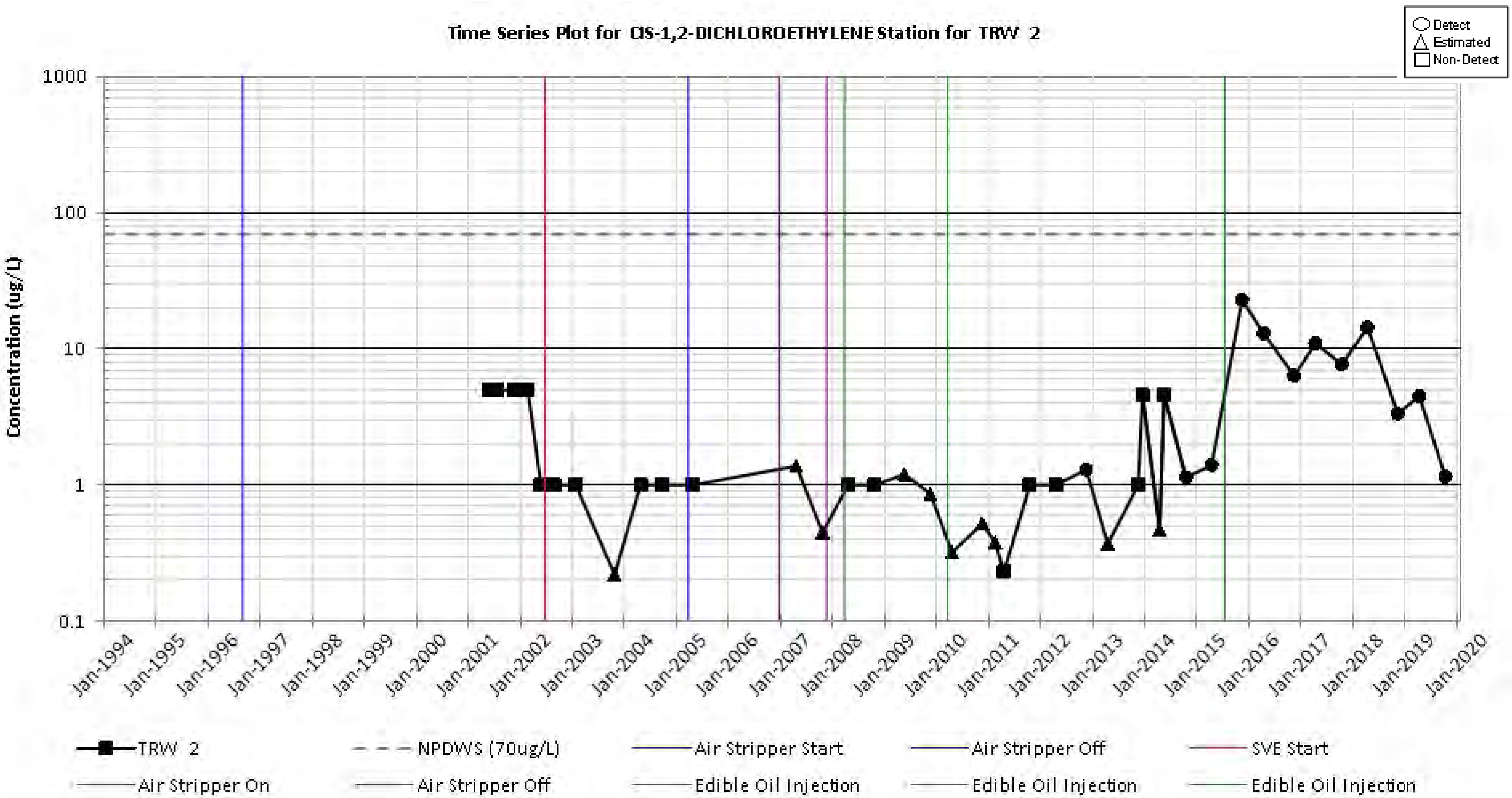

Time Series Plot for CIS-1,2-DICHLOROETHYLENE Station for TNX 72
Detect
Estimated
Non-Detect
Concentration (ug/L)
1000
100
10
1
0.1
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TNX 72D
TNX 72M
NPDWS (70ug/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection

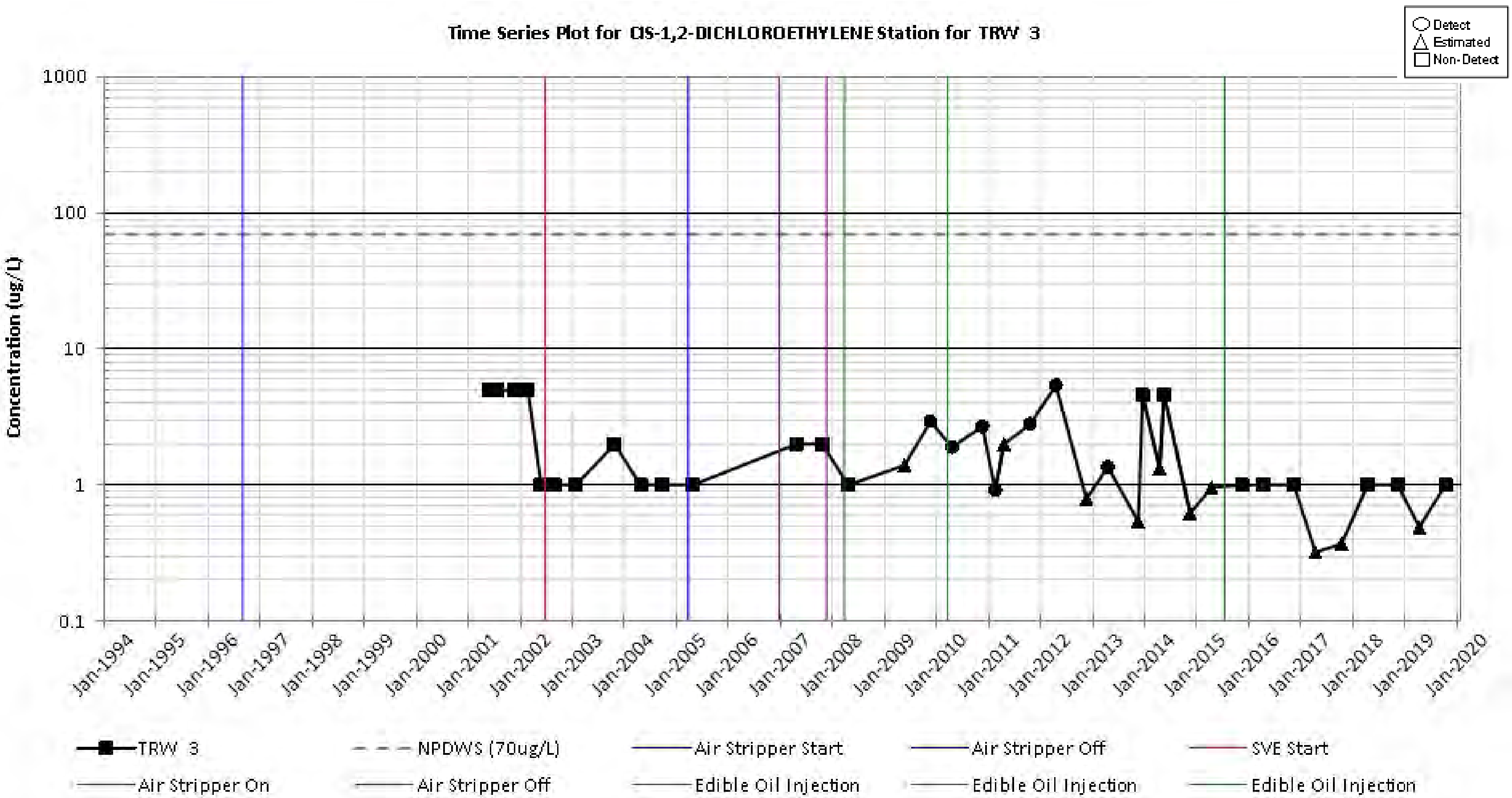

Time Series Plot for CIS-1,2-DICHLOROETHYLENE Station for TNX073
Detect
Estimated
Non-Detect
Concentration (ug/L)
1000
100
10
1
0.1
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TNX073D
NPDWS (70ug/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection

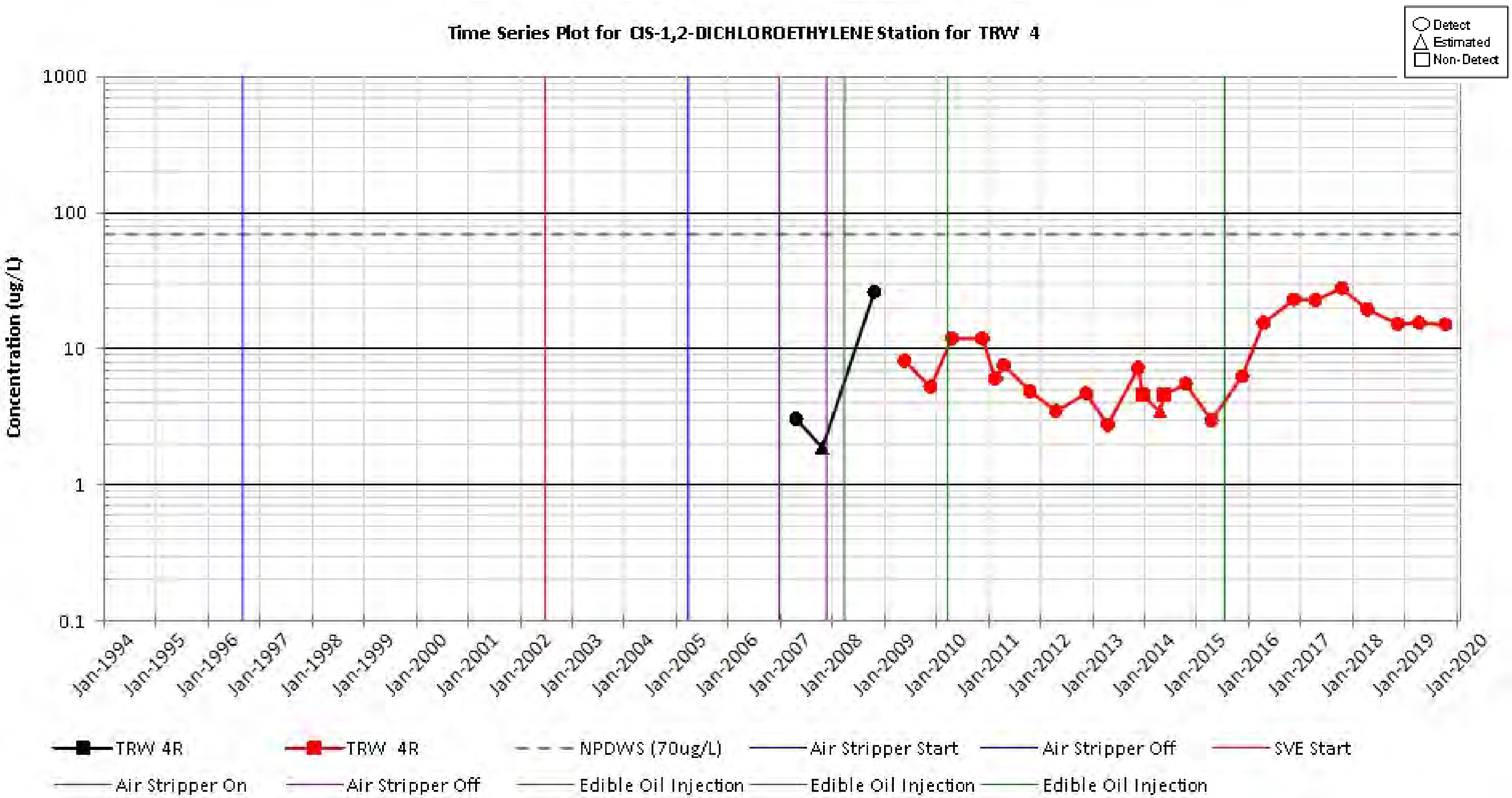

Time Series Plot for CIS-1,2-DICHLOROETHYLENE Station for TNX074
Detect
Estimated
Non-Detect
Concentration (ug/L)
1000
100
10
1
0.1
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TNX074D
NPDWS (70ug/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection

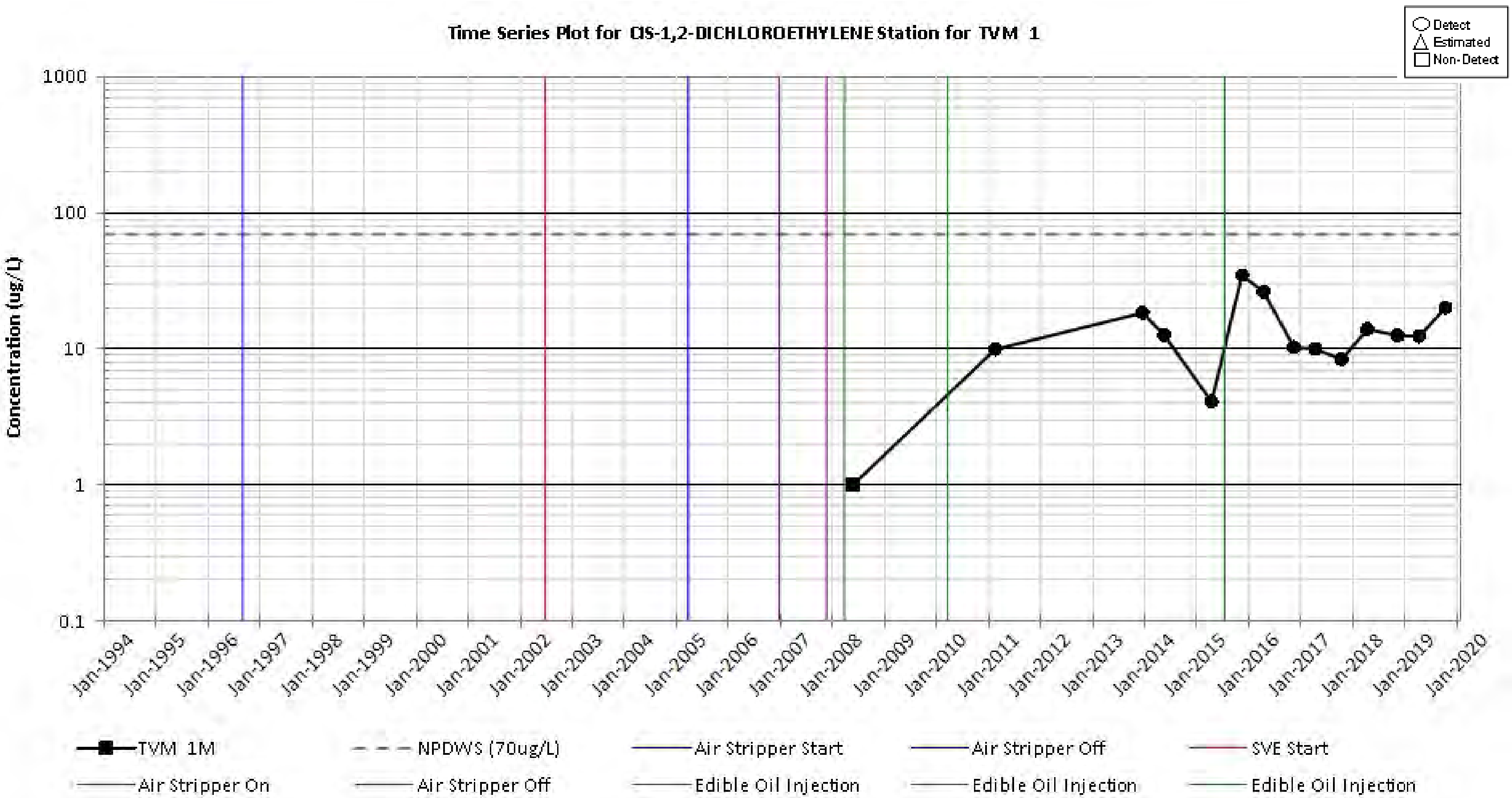

Time Series Plot for CIS-1,2-DICHLOROETHYLENE Station for TNX075
Detect
Estimated
Non-Detect
Concentration (ug/L)
1000
100
10
1
0.1
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TNX075D
NPDWS (70ug/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection

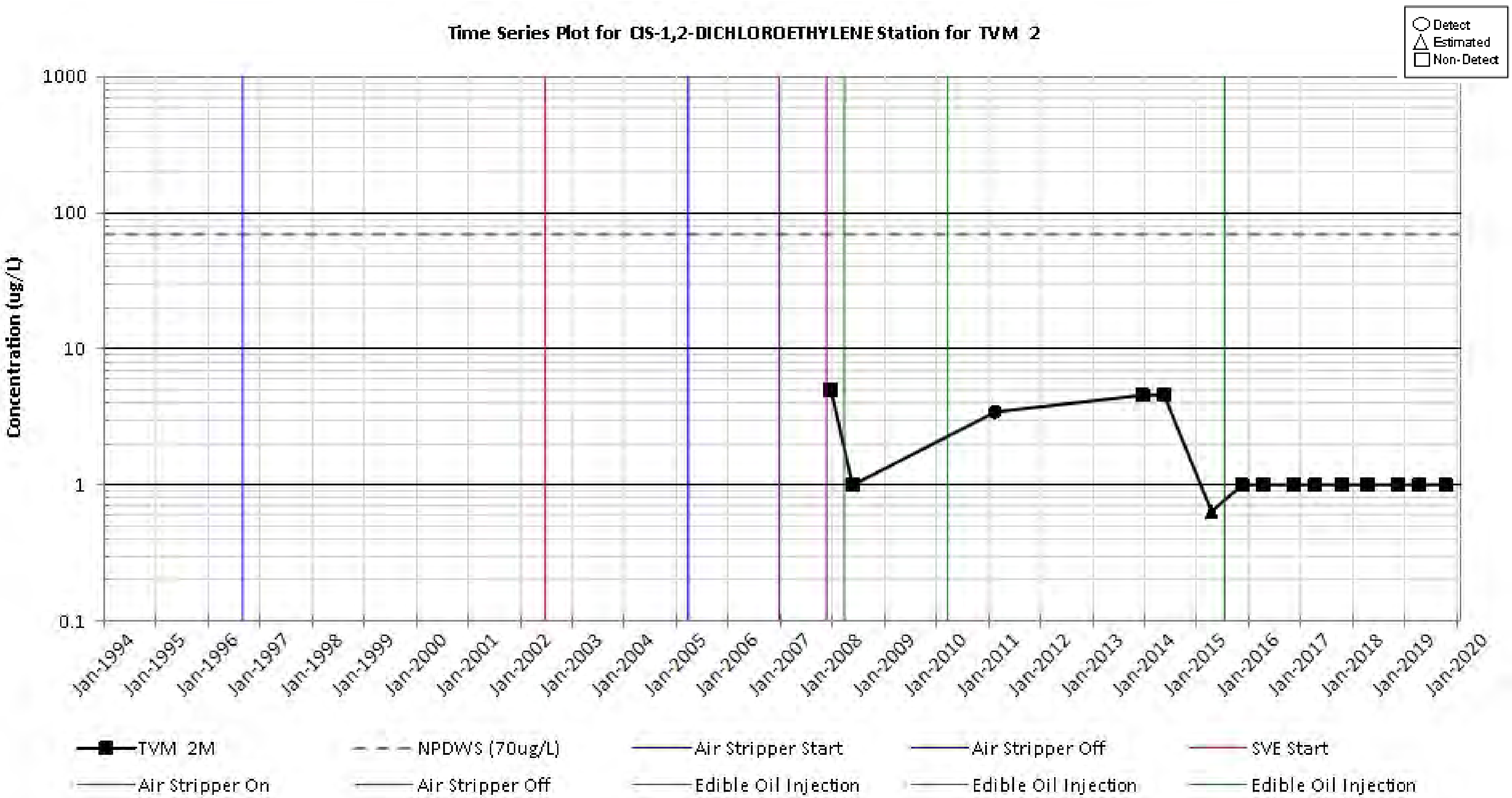

Time Series Plot for CIS-1,2-DICHLOROETHYLENE Station for TRW 1
Detect
Estimated
Non-Detect
Concentration (ug/L)
1000
100
10
1
0.1
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TRW 1
NPDWS (70ug/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection

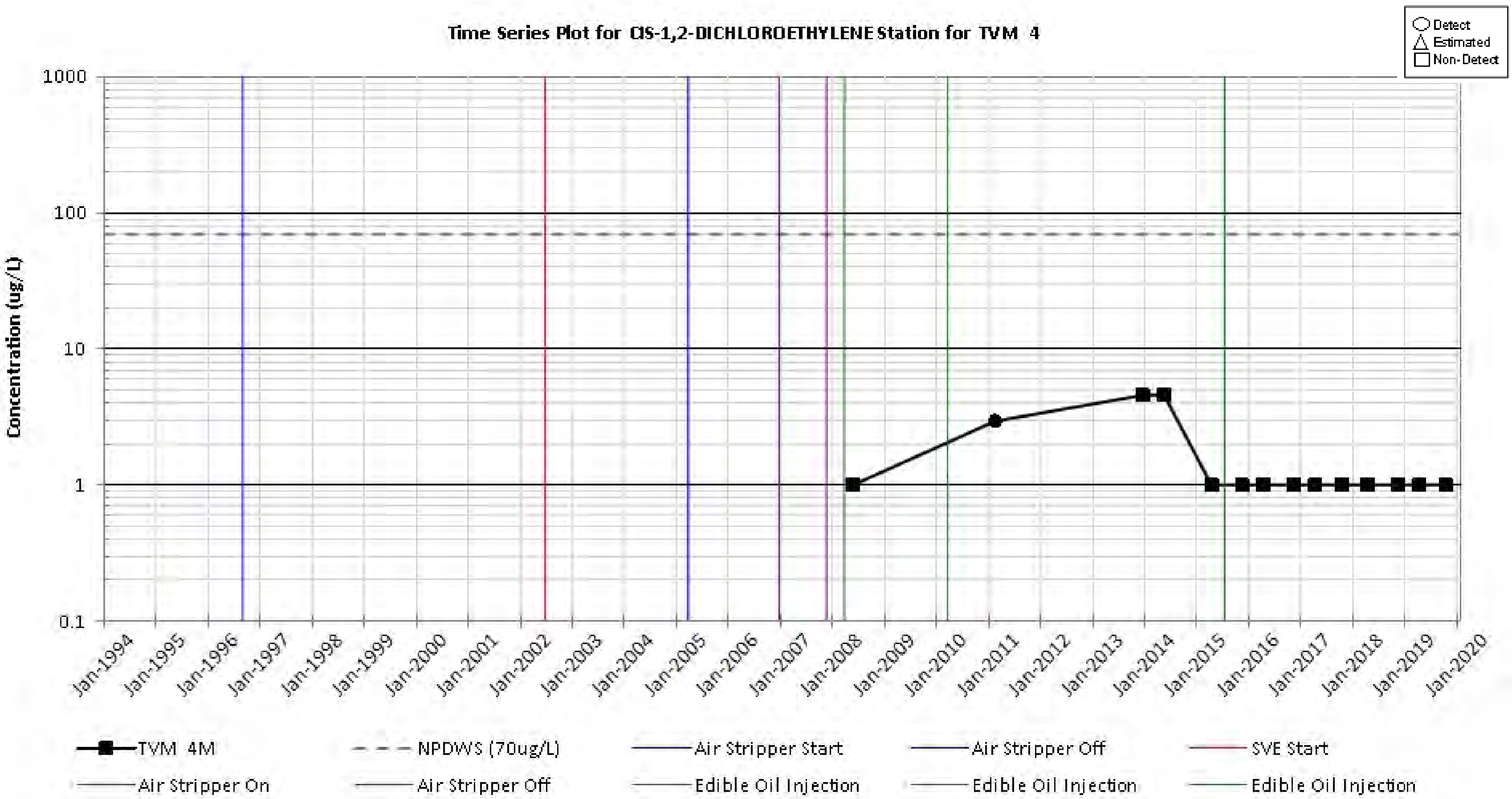

Time Series Plot for CIS-1,2-DICHLOROETHYLENE Station for TRW 2
Detect
Estimated
Non-Detect
Concentration (ug/L)
1000
100
10
1
0.1
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TRW 2
NPDWS (70ug/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection

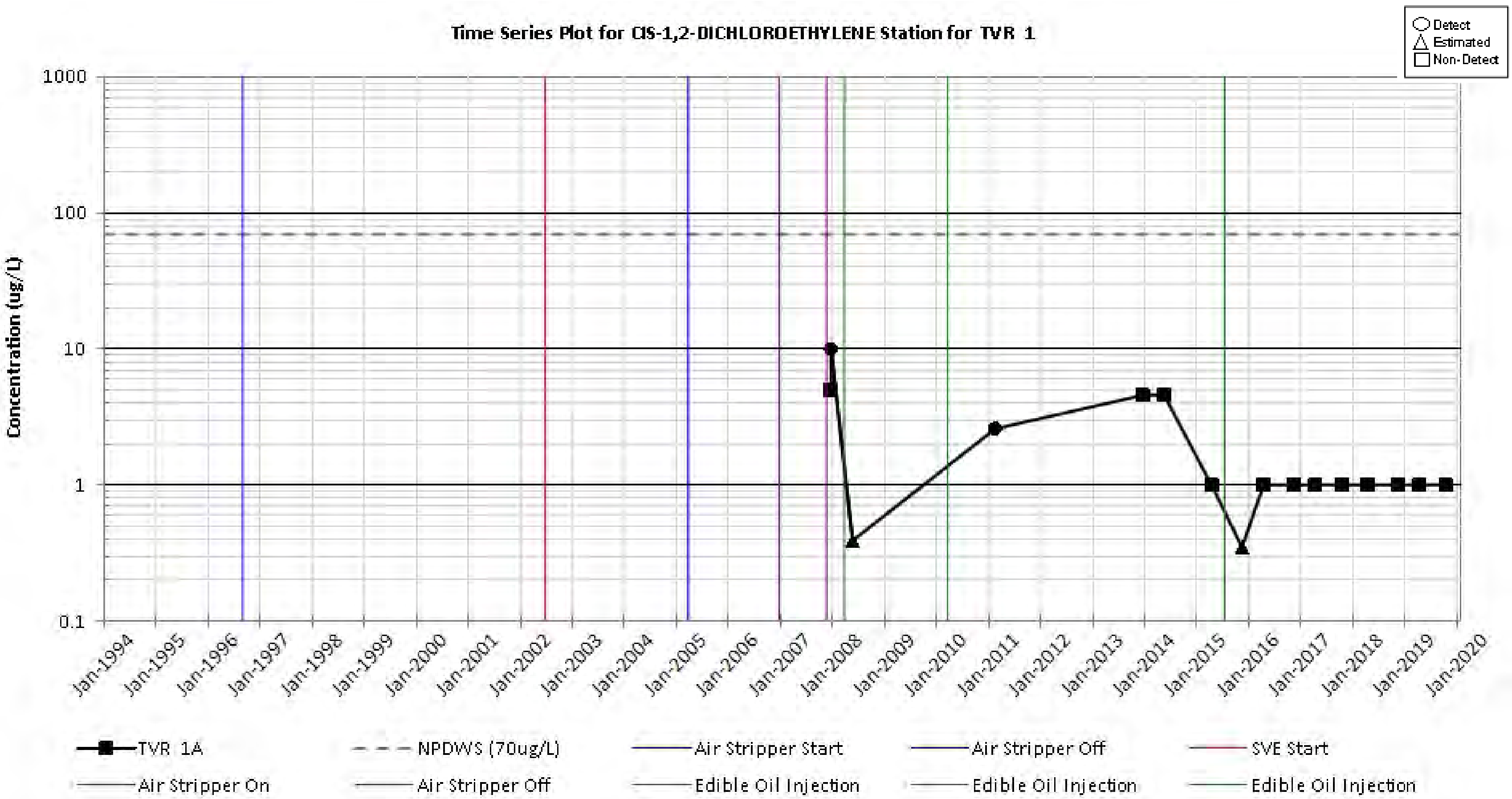

Time Series Plot for CIS-1,2-DICHLOROETHYLENE Station for TRW 3
Detect
Estimated
Non-Detect
Concentration (ug/L)
1000
100
10
1
0.1
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TRW 3
NPDWS (70ug/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection

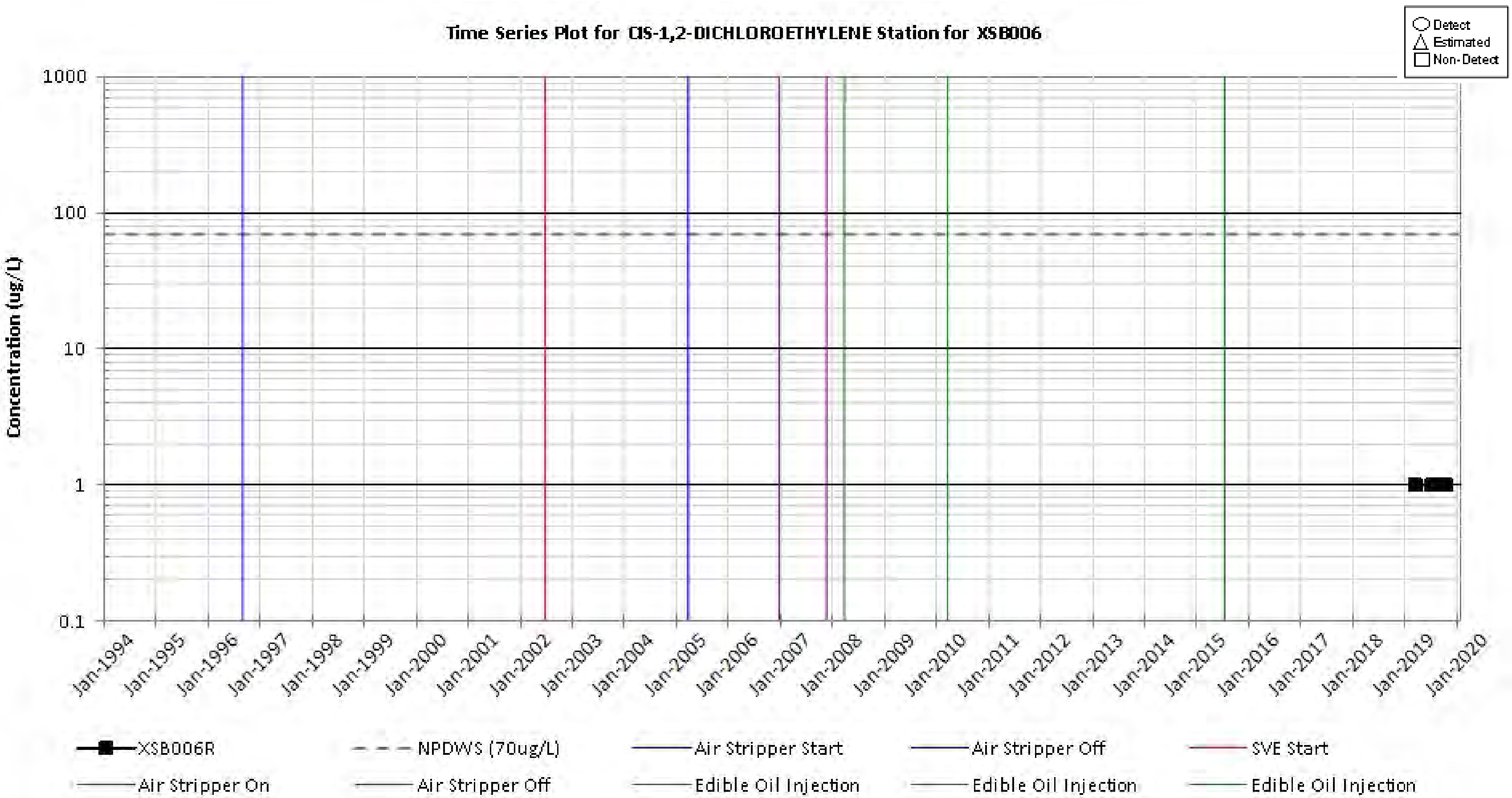

Time Series Plot for CIS-1,2-DICHLOROETHYLENE Station for TRW 4
Detect
Estimated
Non-Detect
Concentration (ug/L)
1000
100
10
1
0.1
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TRW 4R
TRW 4R
NPDWS (70ug/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection

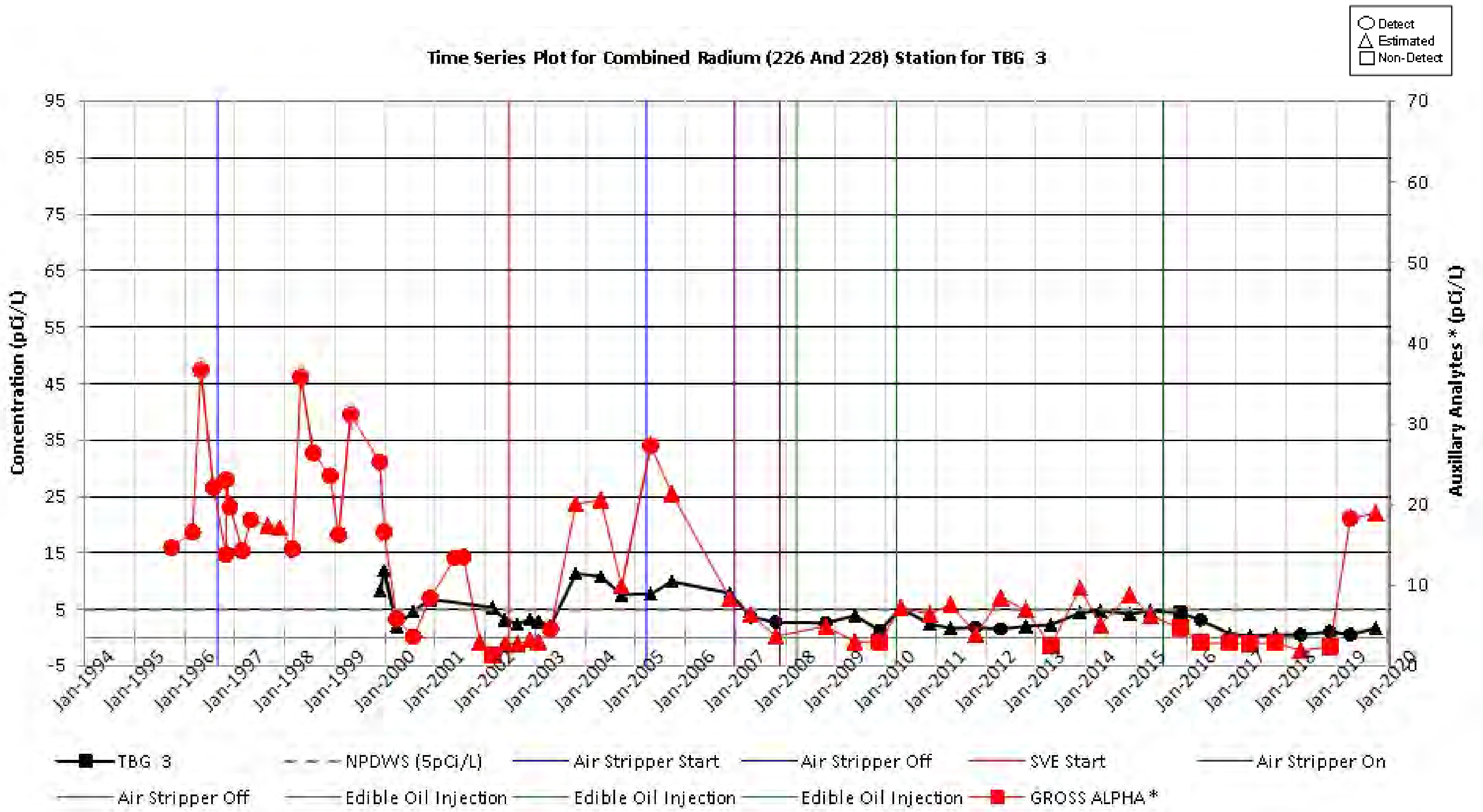

Time Series Plot for CIS-1,2-DICHLOROETHYLENE Station for TVM 1
Detect
Estimated
Non-Detect
Concentration (ug/L)
1000
100
10
1
0.1
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TVM 1M
NPDWS (70ug/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection

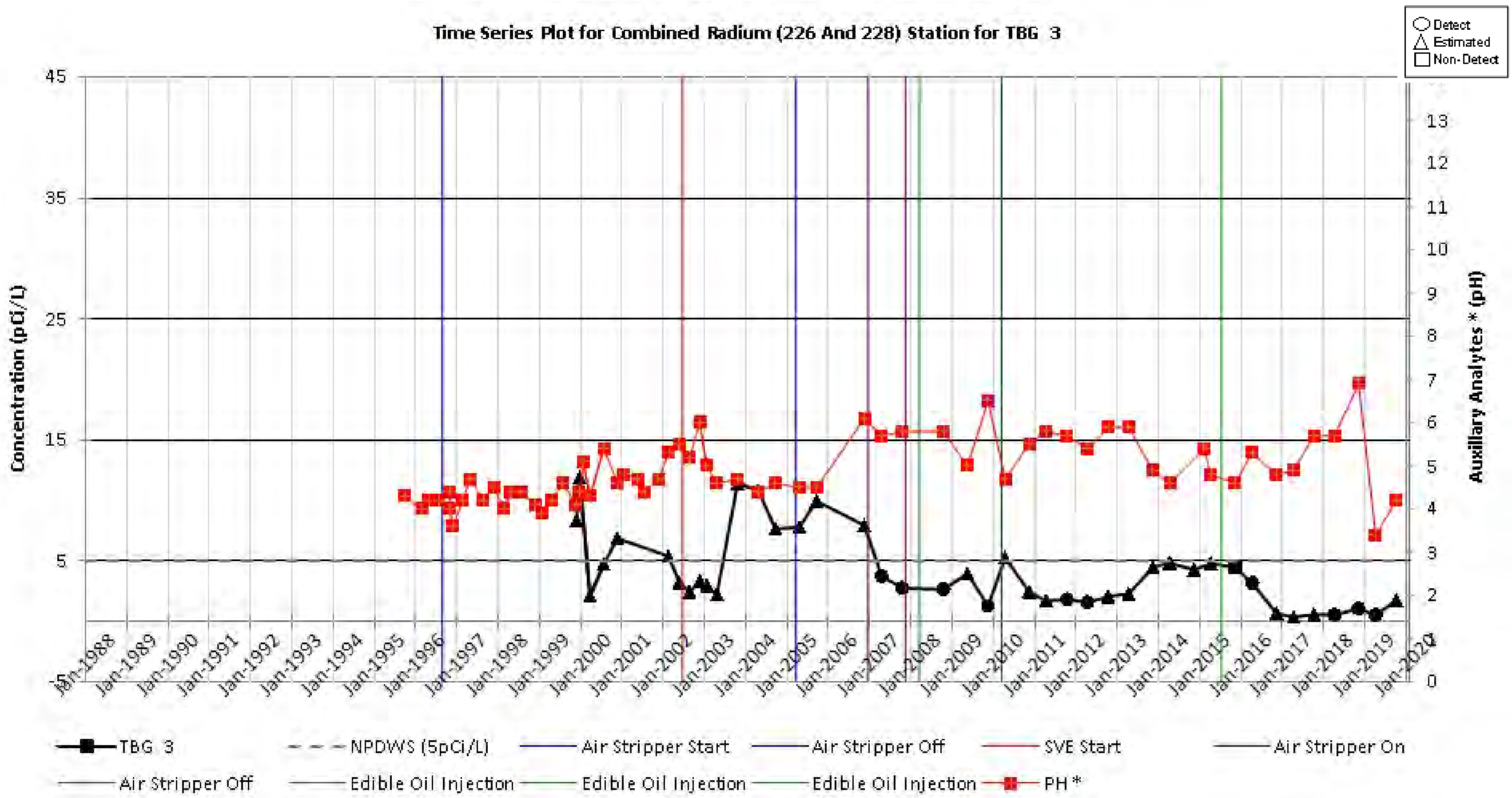

Time Series Plot for CIS-1,2-DICHLOROETHYLENE Station for TVM 2
Detect
Estimated
Non-Detect
Concentration (ug/L)
1000
100
10
1
0.1
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TVM 2M
NPDWS (70ug/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection


Time Series Plot for CIS-1,2-DICHLOROETHYLENE Station for TVM 4
Detect
Estimated
Non-Detect
Concentration (ug/L)
1000
100
10
1
0.1
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TVM 4M
NPDWS (70ug/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection


Time Series Plot for CIS-1,2-DICHLOROETHYLENE Station for TVR 1
Detect
Estimated
Non-Detect
Concentration (ug/L)
1000
100
10
1
0.1
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TVR 1A
NPDWS (70ug/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection


Time Series Plot for CIS-1,2-DICHLOROETHYLENE Station for XSB006
Detect
Estimated
Non-Detect
Concentration (ug/L)
1000
100
10
1
0.1
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
XSB006R
NPDWS (70ug/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection


Detect
Estimated
Non-Detect
Time Series Plot for Combined Radium (226 And 228) Station for TBG 3
Concentration (pCi/L)
Auxillary Analytes * (pCi/L)
95
85
75
65
55
45
35
25
15
5
-5
70
60
50
40
30
20
10
0
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TBG 3
NPDWS (5pCi/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection
GROSS ALPHA *


Time Series Plot for Combined Radium (226 And 228) Station for TBG 3
Detect
Estimated
Non-Detect
Concentration (pCi/L)
Auxillary Analytes * (pH)
45
35
25
15
5
-5
13
12
11
10
9
8
7
6
5
4
3
2
1
0
Jan-1988
Jan-1989
Jan-1990
Jan-1991
Jan-1992
Jan-1993
Jan-1994
Jan-1995
Jan-1996
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Jan-2000
Jan-2001
Jan-2002
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Jan-2004
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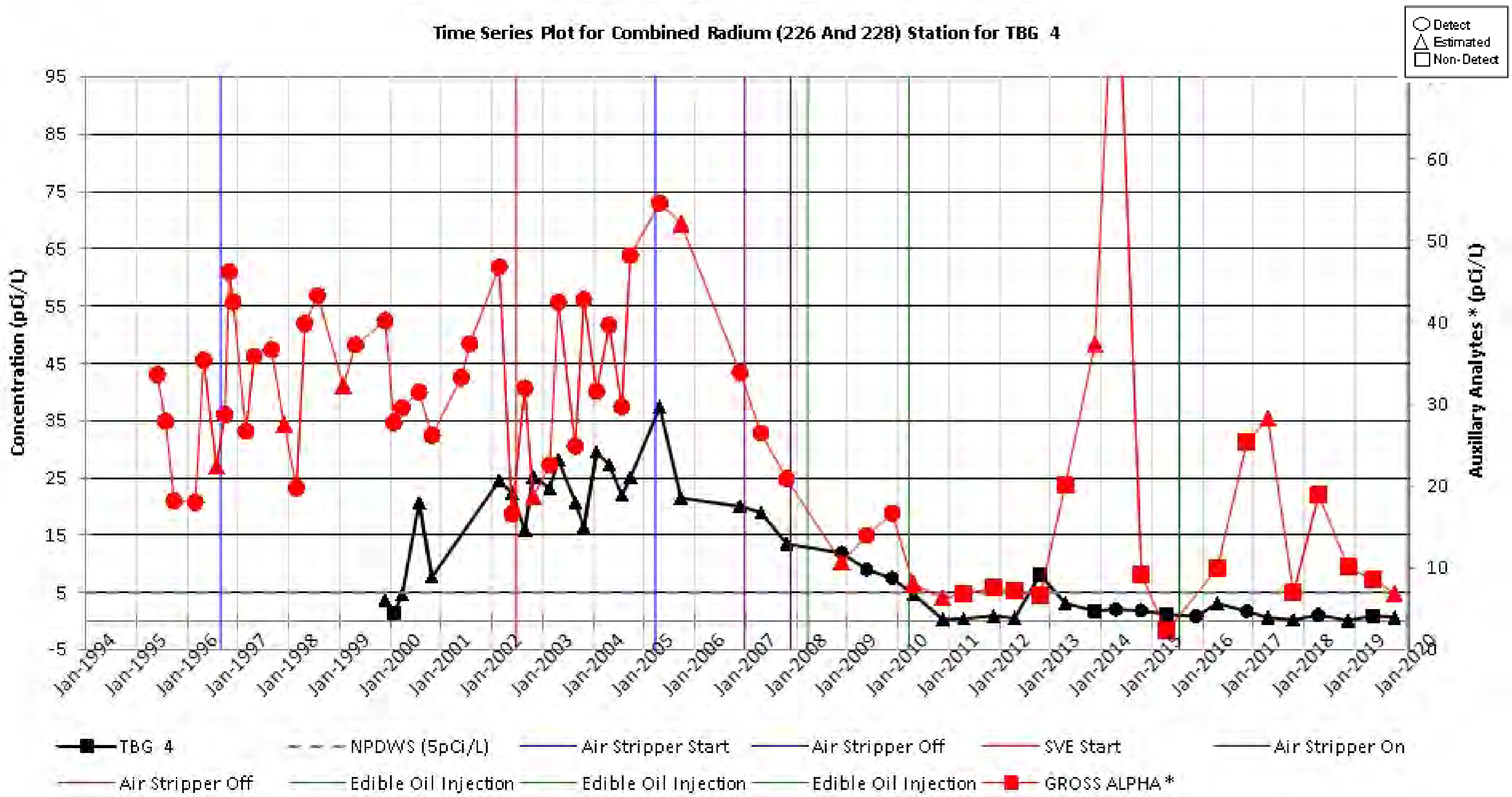
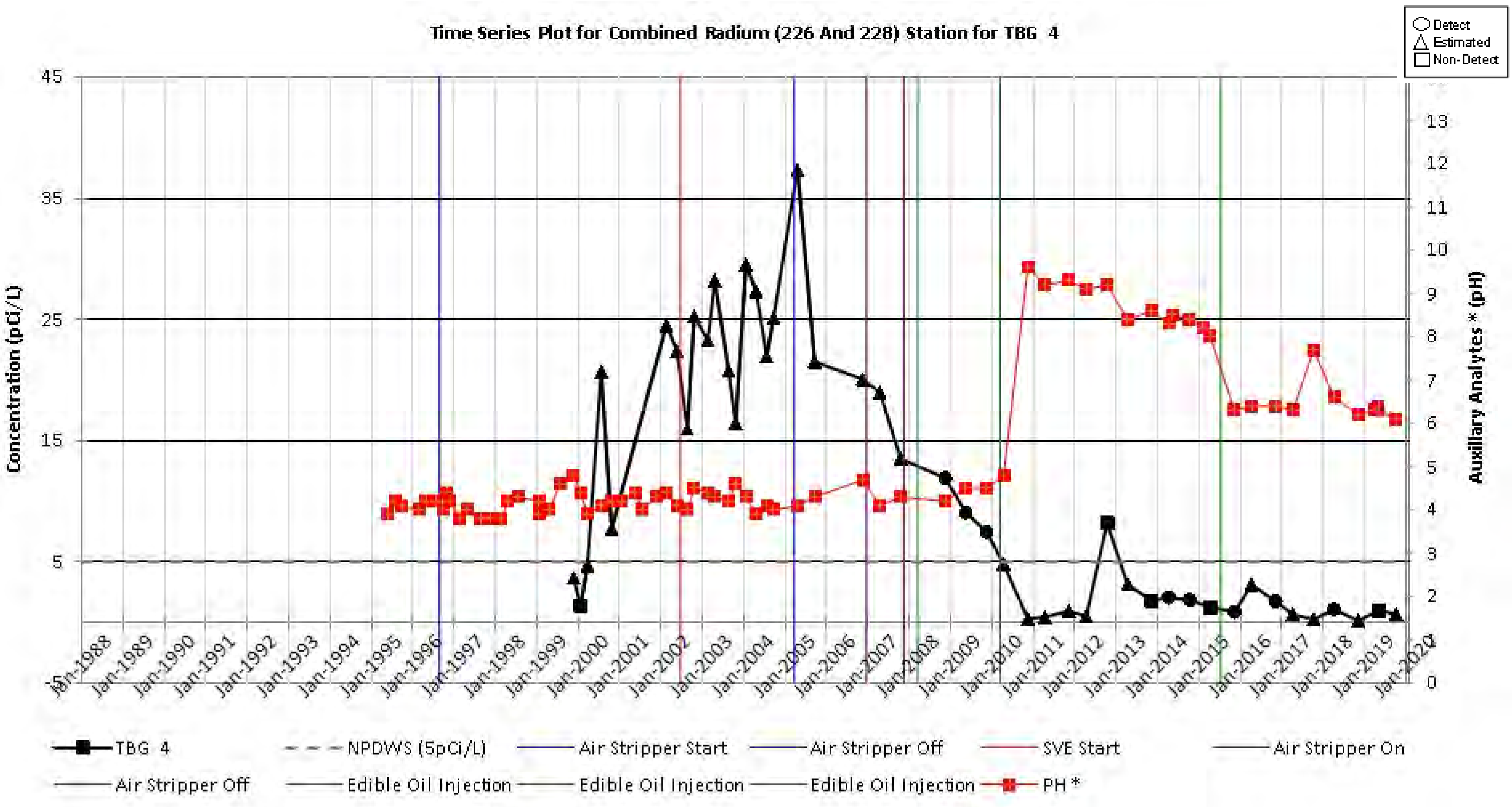
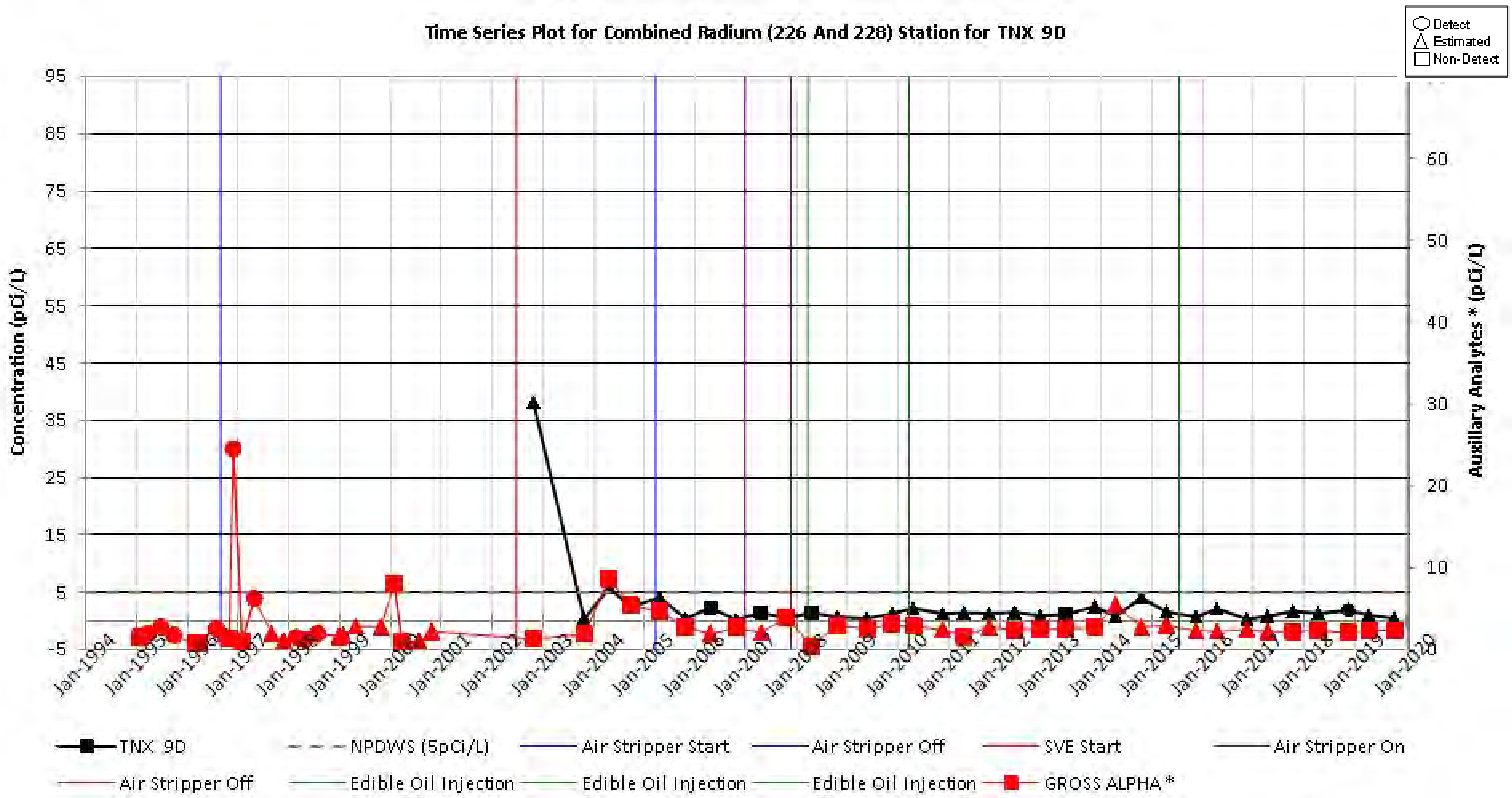
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TBG 3
NPDWS (5pCi/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection
PH *


Time Series Plot for Combined Radium (226 And 228) Station for TBG 4
Detect
Estimated
Non-Detect
Concentration (pCi/L)
Auxillary Analytes * (pCi/L)
TBG 4
NPDWS (5pCi/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection
GROSS ALPHA *


Time Series Plot for Combined Radium (226 And 228) Station for TBG 4
Detect
Estimated
Non-Detect
Concentration (pCi/L)
Auxiliary Analytes * (pH)
TBG 4
NPDWS (5pCi/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection
PH *


Time Series Plot for Combined Radium (226 And 228) Station for TNX 9D
Detect
Estimated
Non-Detect
Concentration (pCi/L)
Auxillary Analytes * (pCi/L)
95
85
75
65
55
45
35
25
15
5
-5
60
50
40
30
20
10
0
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
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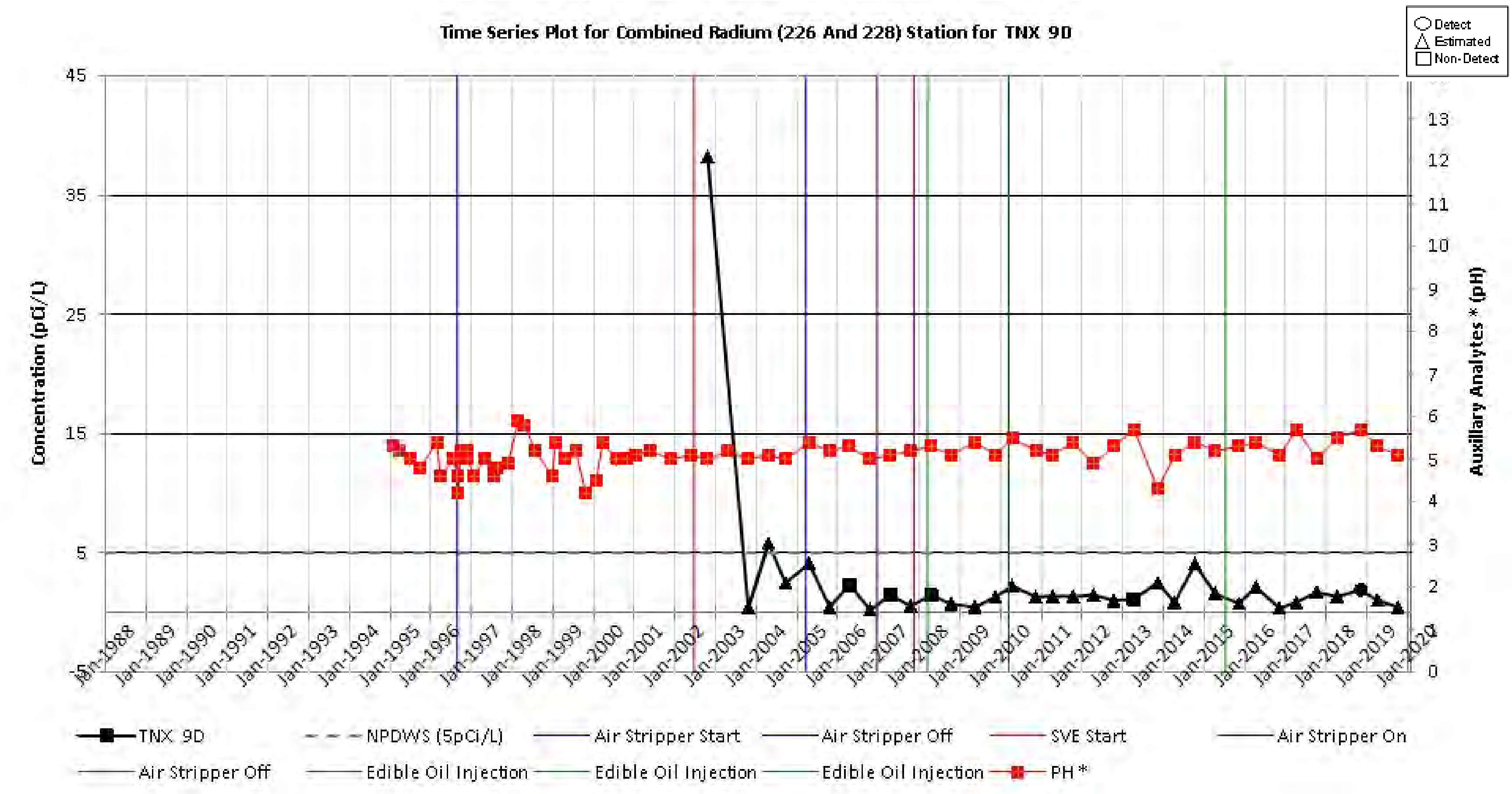
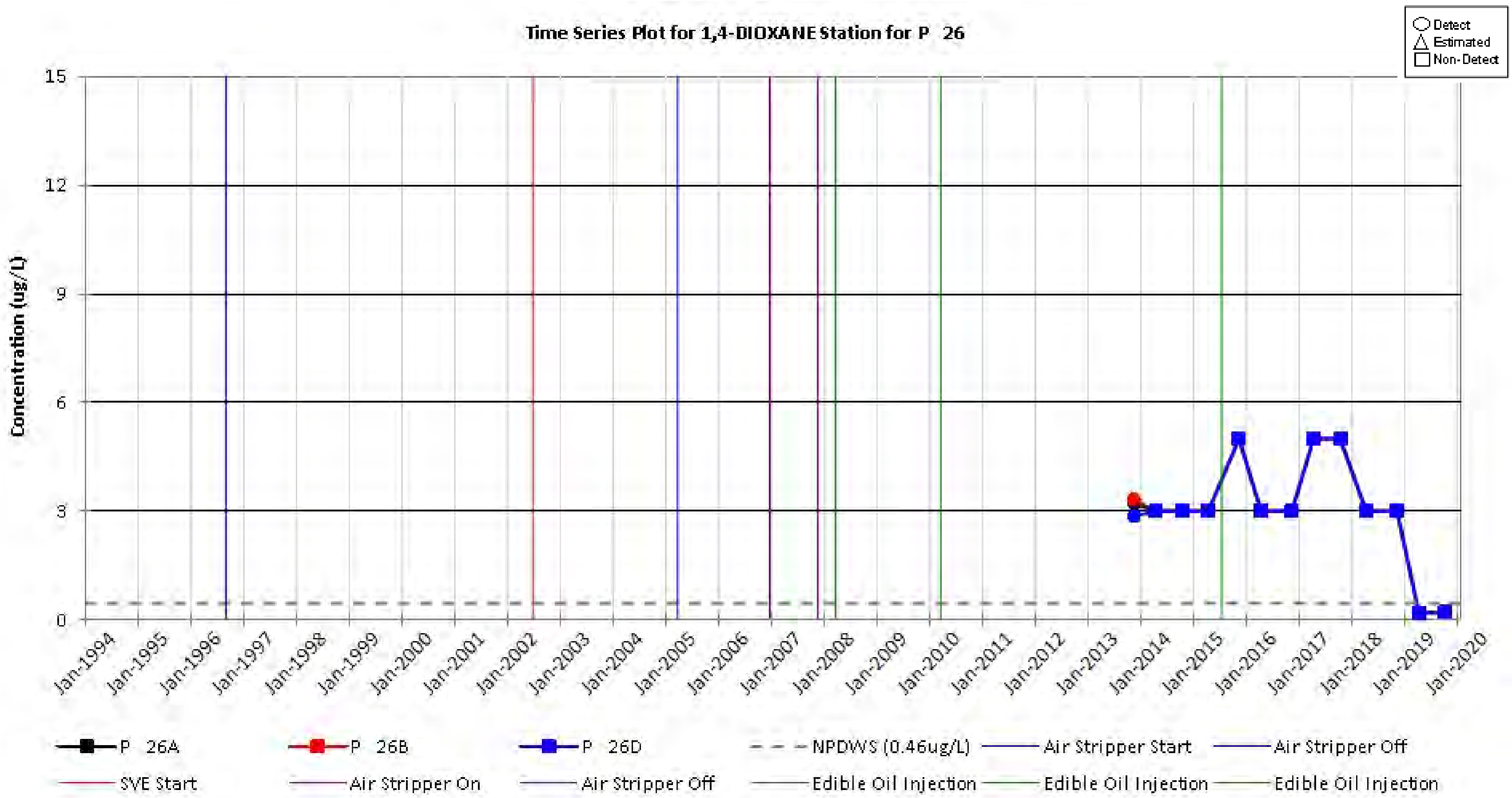
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TNX 9D
NPDWS (5pCi/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection
GROSS ALPHA *


Time Series Plot for Combined Radium (226 And 228) Station for TNX 9D
Detect
Estimated
Non-Detect
Concentration (pCi/L)
Auxillary Analytes * (pH)
TNX 9D
NPDWS (5pCi/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection
PH *


Time Series Plot for 1,4-DIOXANE Station for P 26
Detect
Estimated
Non-Detect
Concentration (ug/L)
15
12
9
6
3
0
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
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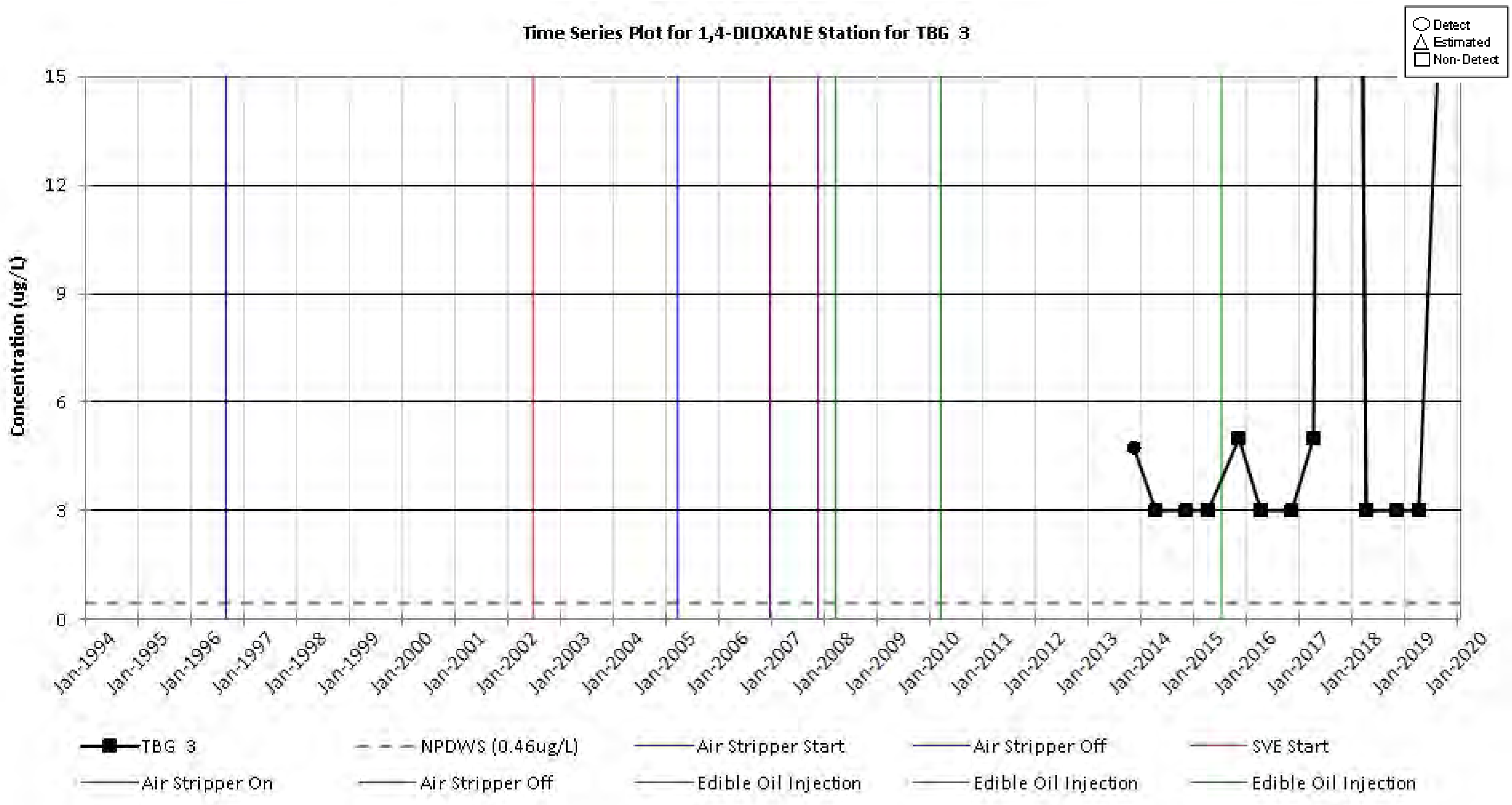
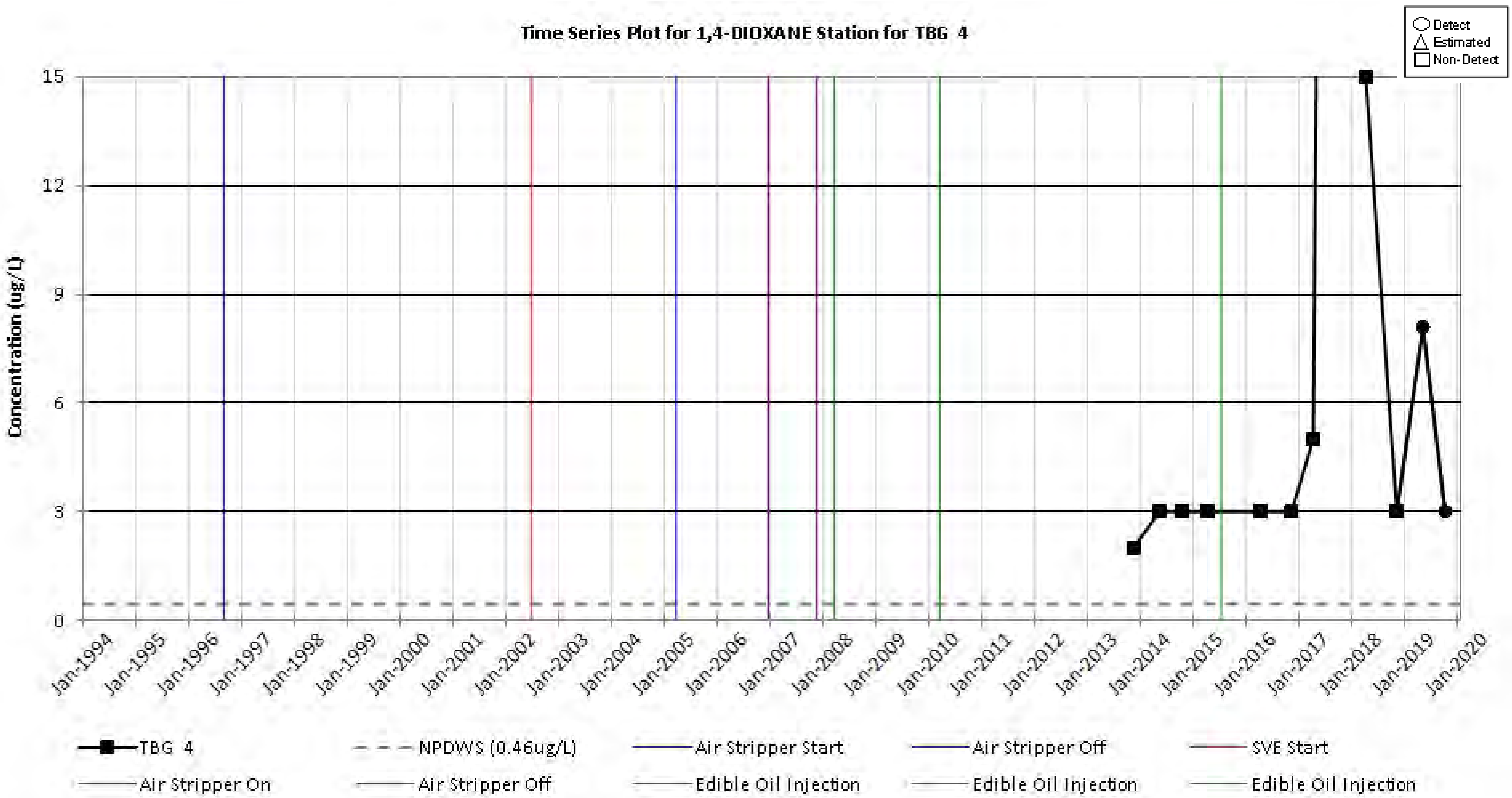
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
P 26A
P 26B
P 26D
NPDWS (0.46ug/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection


Time Series Plot for 1,4-DIOXANE Station for TBG 3
Detect
Estimated
Non-Detect
Concentration (ug/L)
15
12
9
6
3
0
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TBG 3
NPDWS (0.46ug/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection


Time Series Plot for 1,4-DIOXANE Station for TBG 4
Detect
Estimated
Non-Detect
Concentration (ug/L)
15
12
9
6
3
0
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
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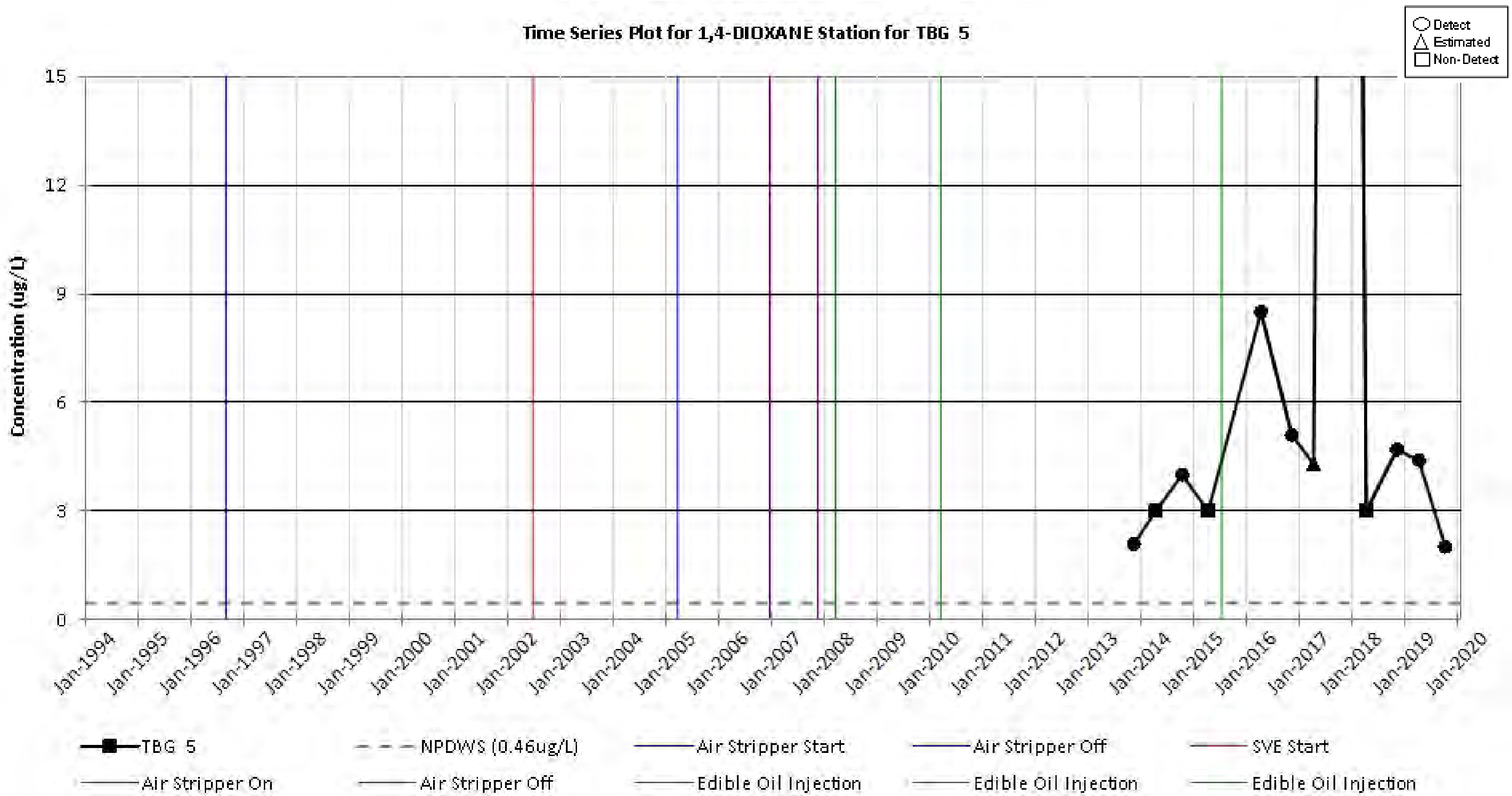
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TBG 4
NPDWS (0.46ug/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection


Time Series Plot for 1,4-DIOXANE Station for TBG 5
Detect
Estimated
Non-Detect
Concentration (ug/L)
15
12
9
6
3
0
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
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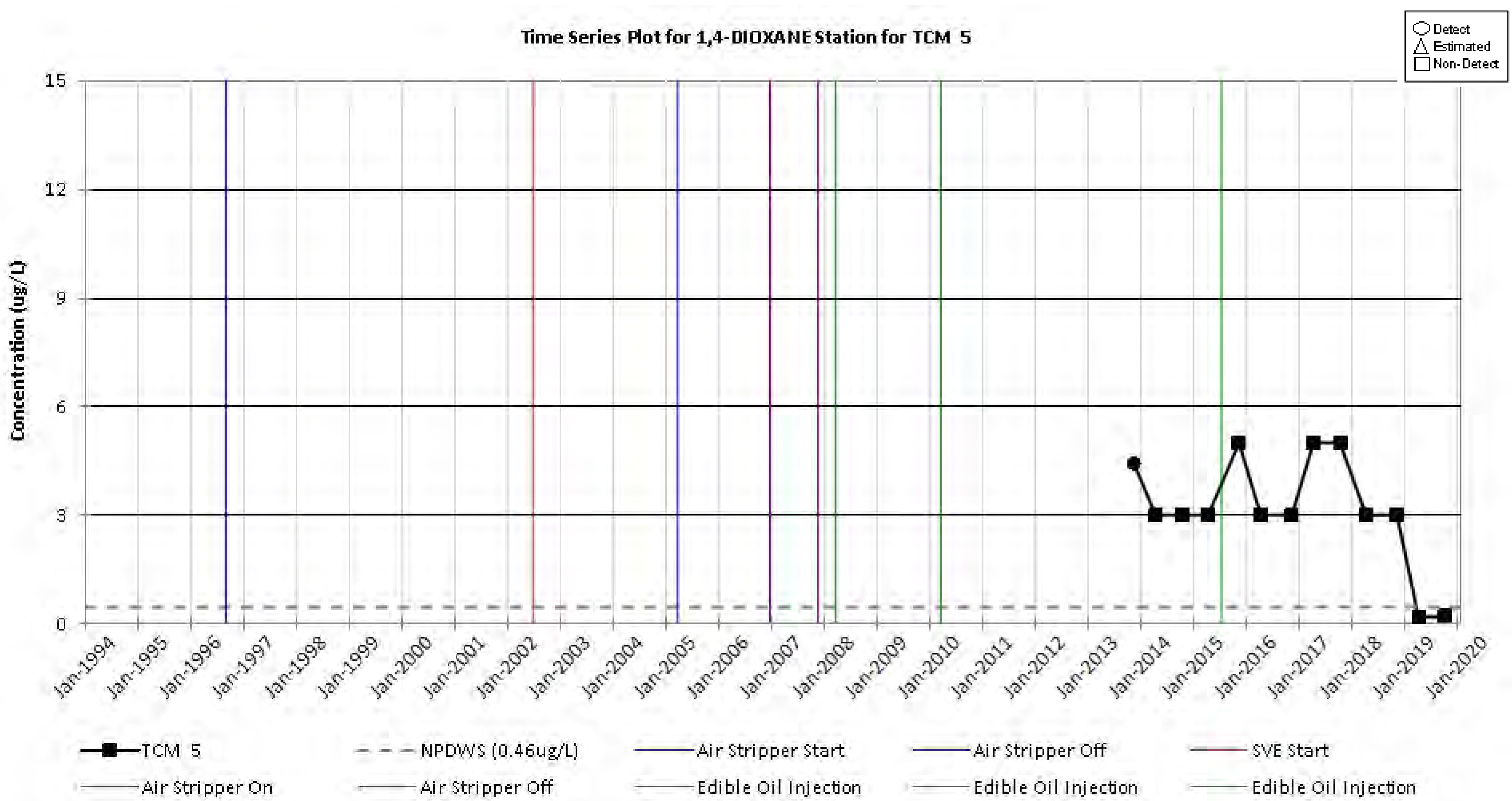
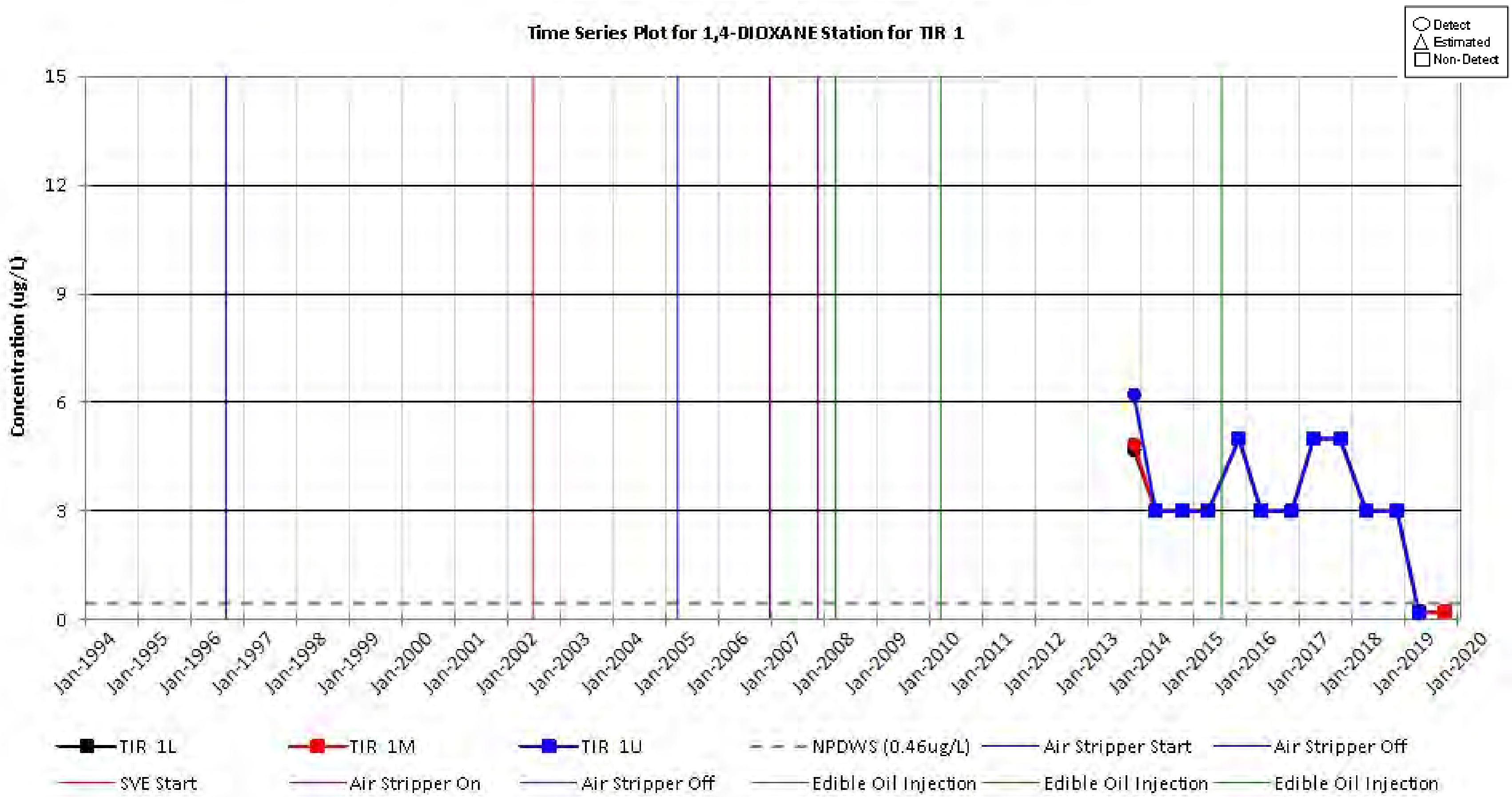
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TBG 5
NPDWS (0.46ug/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection


Time Series Plot for 1,4-DIOXANE Station for TCM 5
Detect
Estimated
Non-Detect
Concentration (ug/L)
15
12
9
6
3
0
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TCM 5
NPDWS (0.46ug/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection


Time Series Plot for 1,4-DIOXANE Station for TIR 1
Detect
Estimated
Non-Detect
Concentration (ug/L)
15
12
9
6
3
0
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
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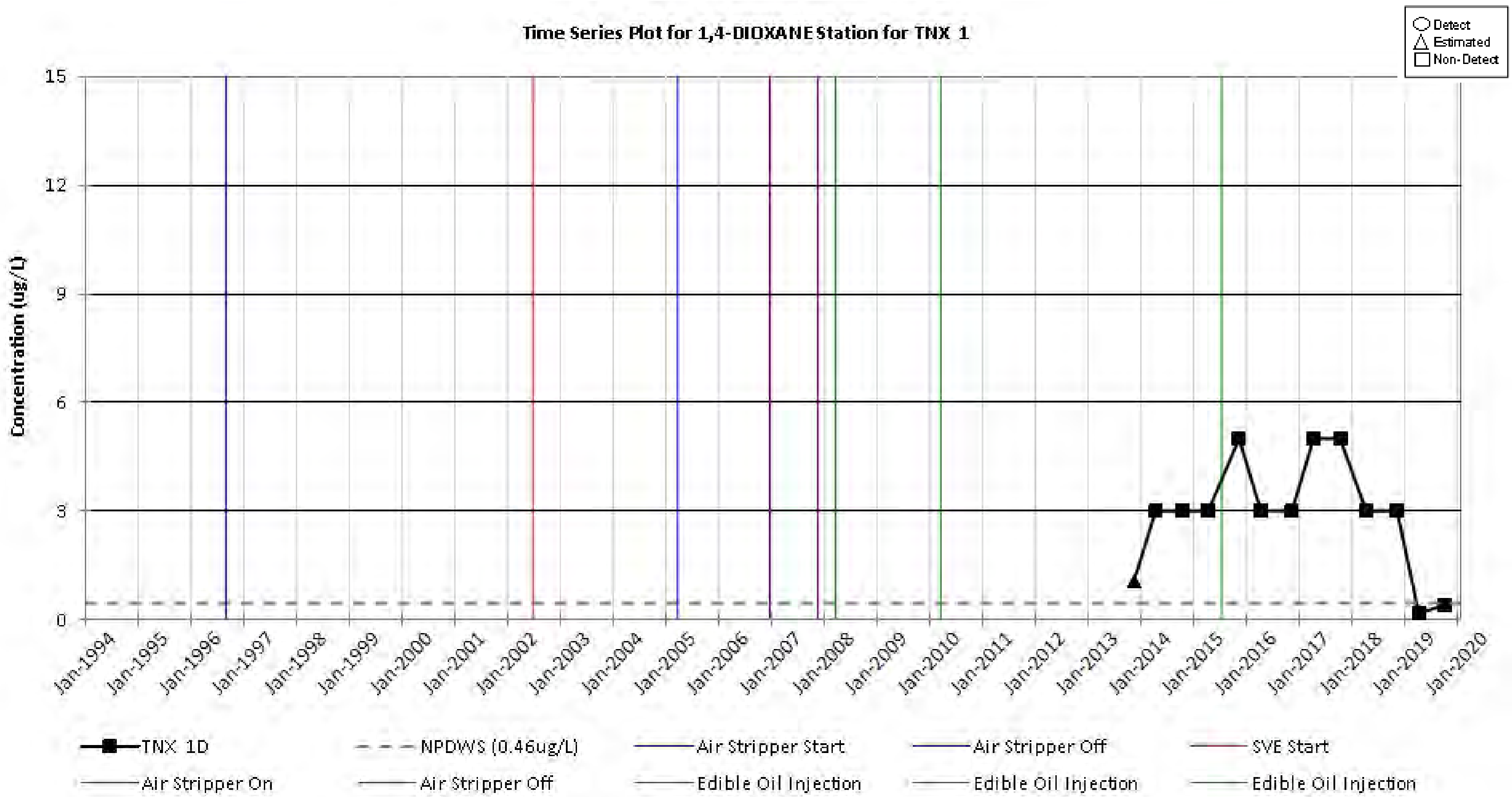
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TIR 1L
TIR 1M
TIR 1U
NPDWS (0.46ug/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection


Time Series Plot for 1,4-DIOXANE Station for TNX 1
Detect
Estimated
Non-Detect
Concentration (ug/L)
15
12
9
6
3
0
Jan-1994
Jan-1995
Jan-1996
Jan-1997
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Jan-1999
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Jan-2001
Jan-2002
Jan-2003
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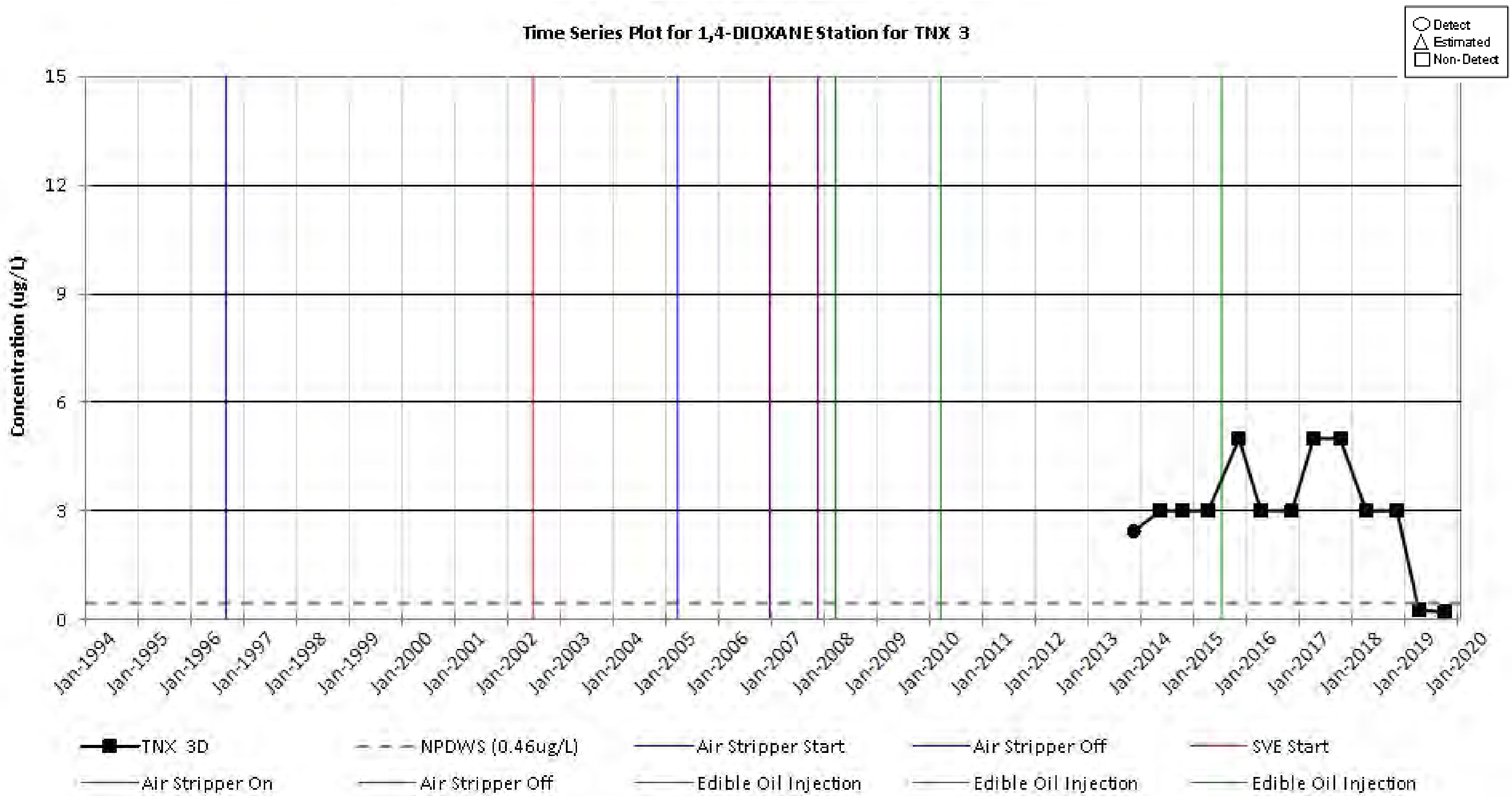
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TNX 1D
NPDWS (0.46ug/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection


Time Series Plot for 1,4-DIOXANE Station for TNX 3
Detect
Estimated
Non-Detect
Concentration (ug/L)
0
3
6
9
12
15
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
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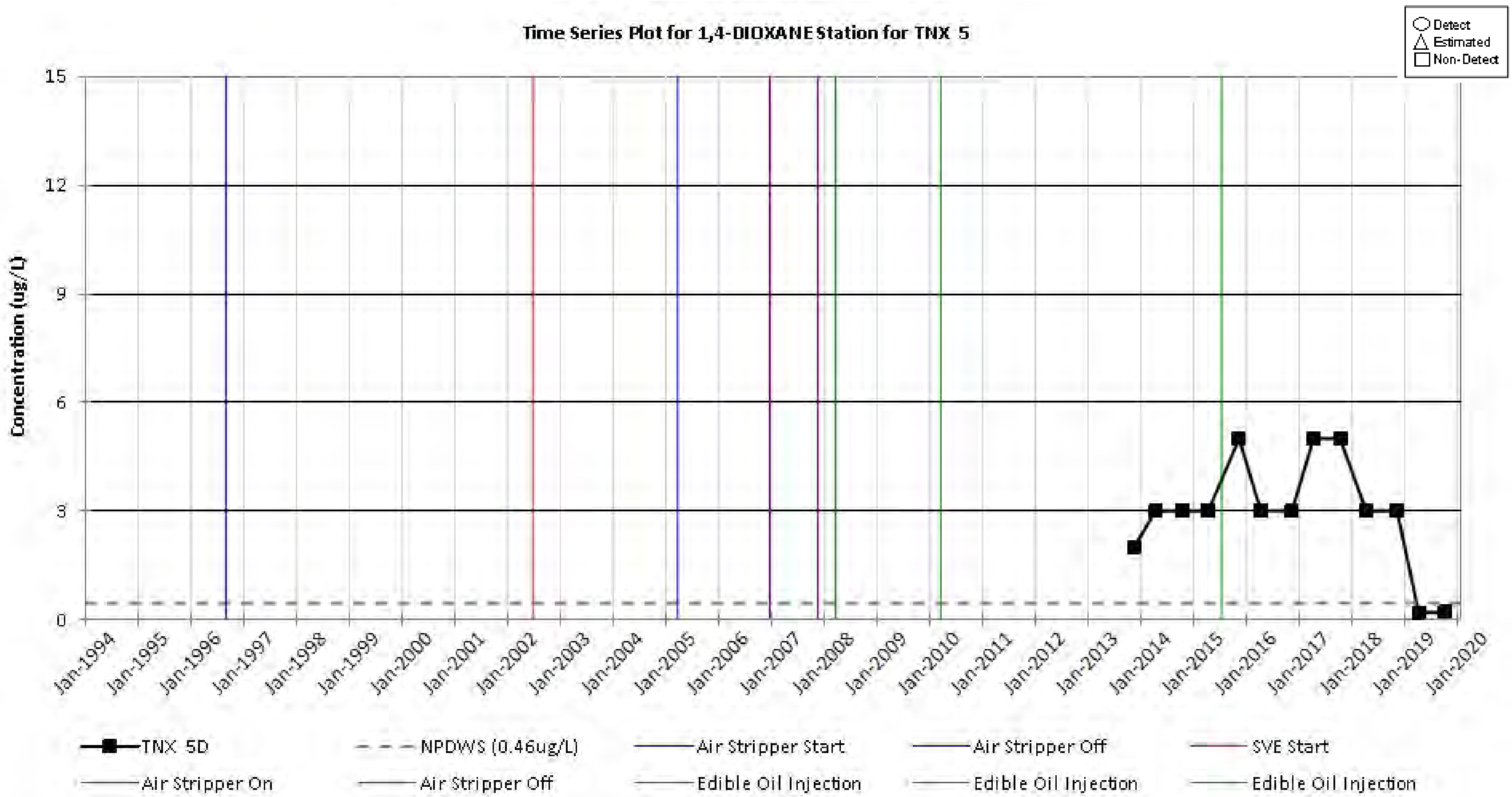
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TNX 3D
NPDWS (0.46ug/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection


Time Series Plot for 1,4-DIOXANE Station for TNX 5
Detect
Estimated
Non-Detect
Concentration (ug/L)
15
12
9
6
3
0
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
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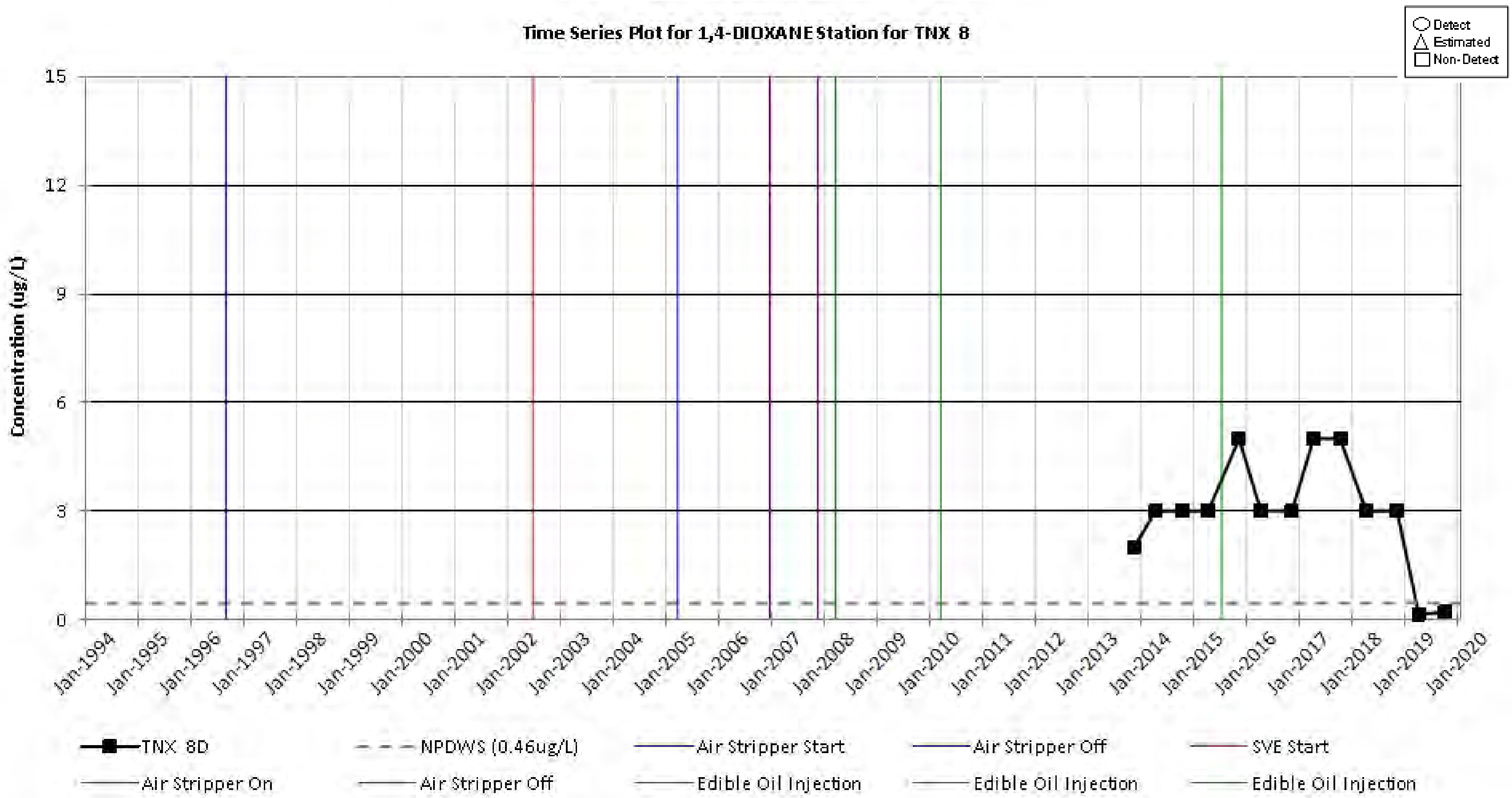
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TNX 5D
NPDWS (0.46ug/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection


Time Series Plot for 1,4-DIOXANE Station for TNX 8
Detect
Estimated
Non-Detect
Concentration (ug/L)
15
12
9
6
3
0
Jan-1994
Jan-1995
Jan-1996
Jan-1997
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Jan-2002
Jan-2003
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Jan-2006
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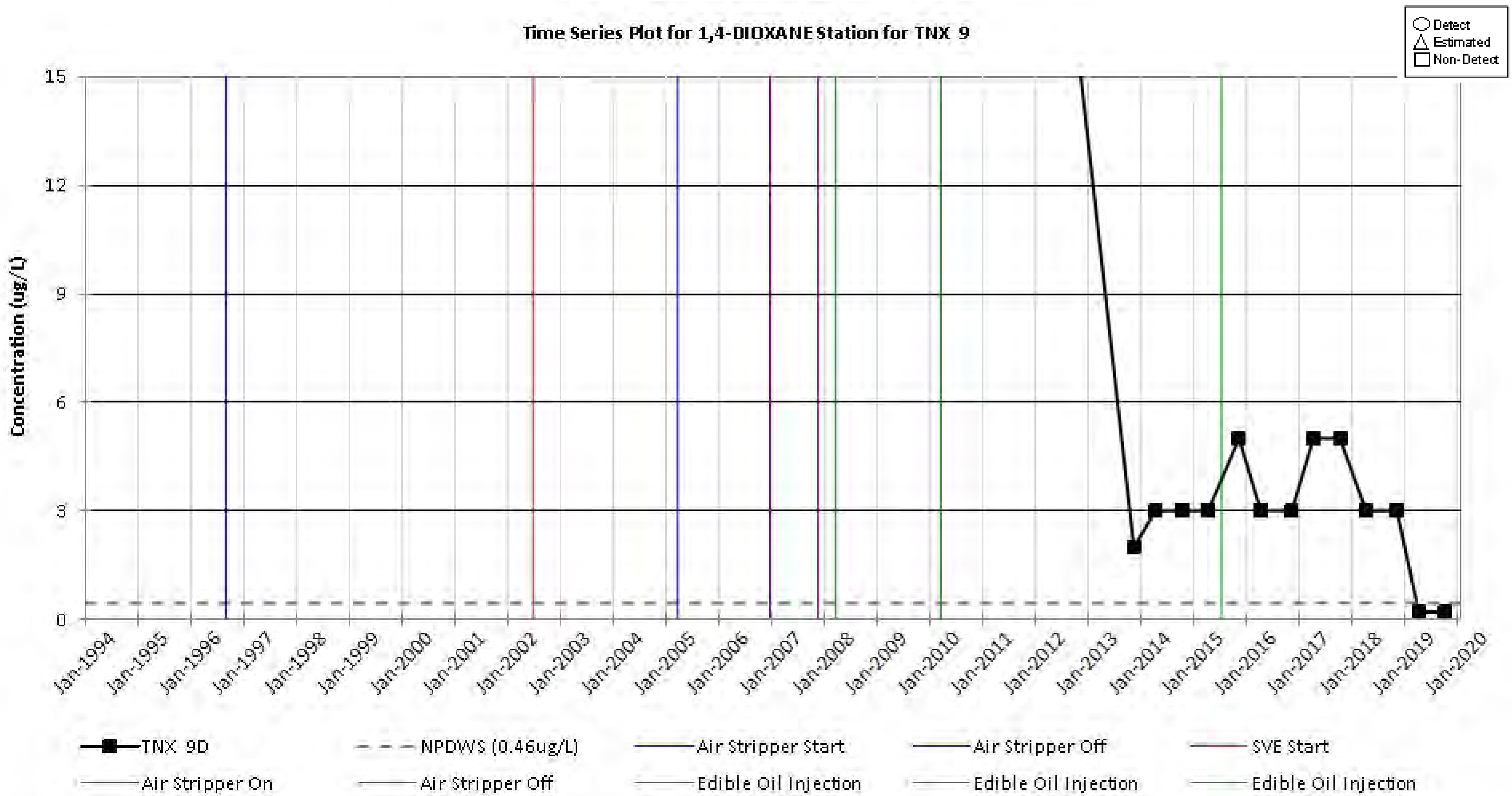
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TNX 8D
NPDWS (0.46ug/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection


Time Series Plot for 1,4-DIOXANE Station for TNX 9
Detect
Estimated
Non-Detect
Concentration (ug/L)
15
12
9
6
3
0
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
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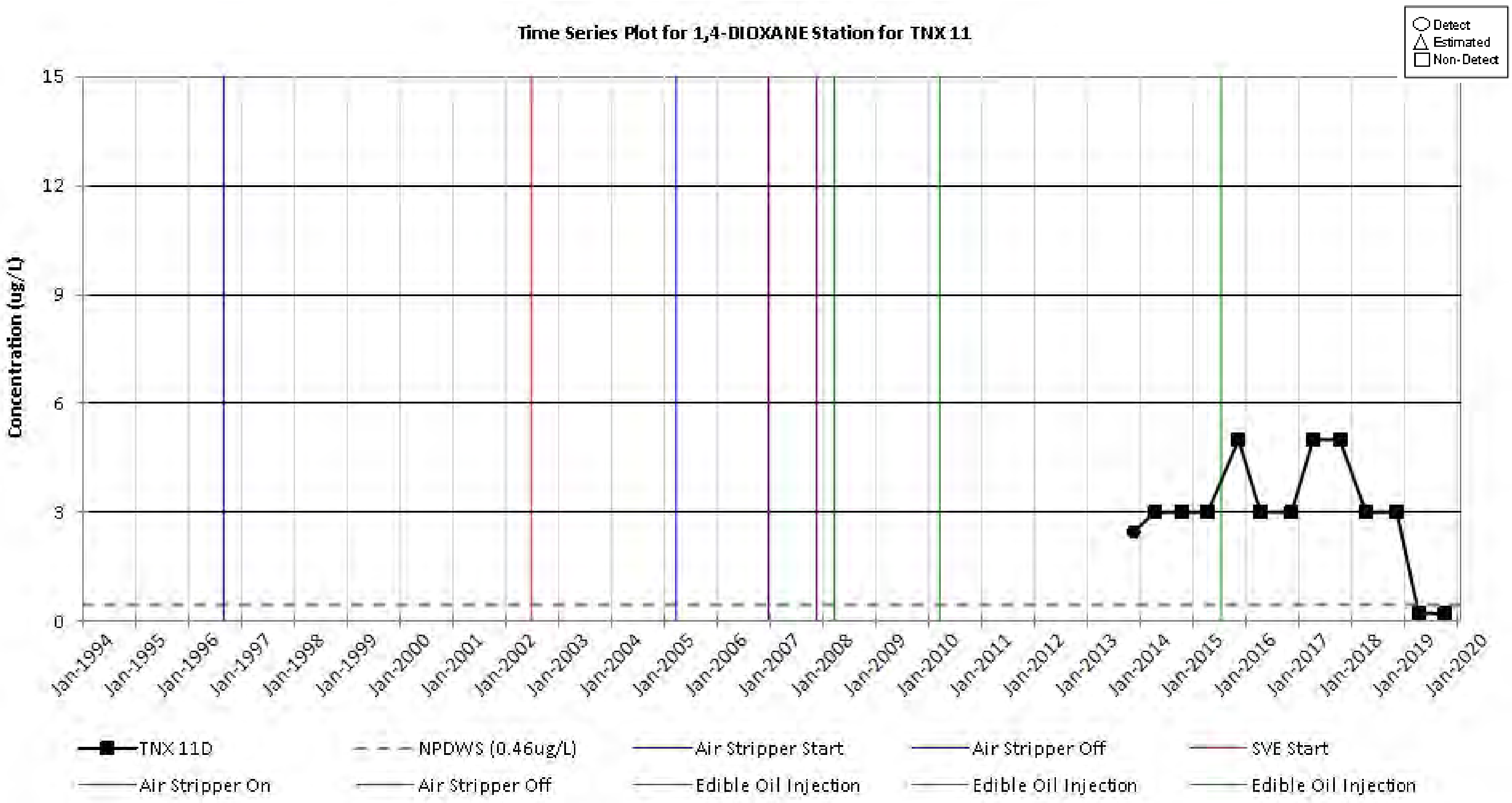
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TNX 9D
NPDWS (0.46ug/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection


Time Series Plot for 1,4-DIOXANE Station for TNX 11
Detect
Estimated
Non-Detect
Concentration (ug/L)
15
12
9
6
3
0
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
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Jan-2008
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Jan-2010
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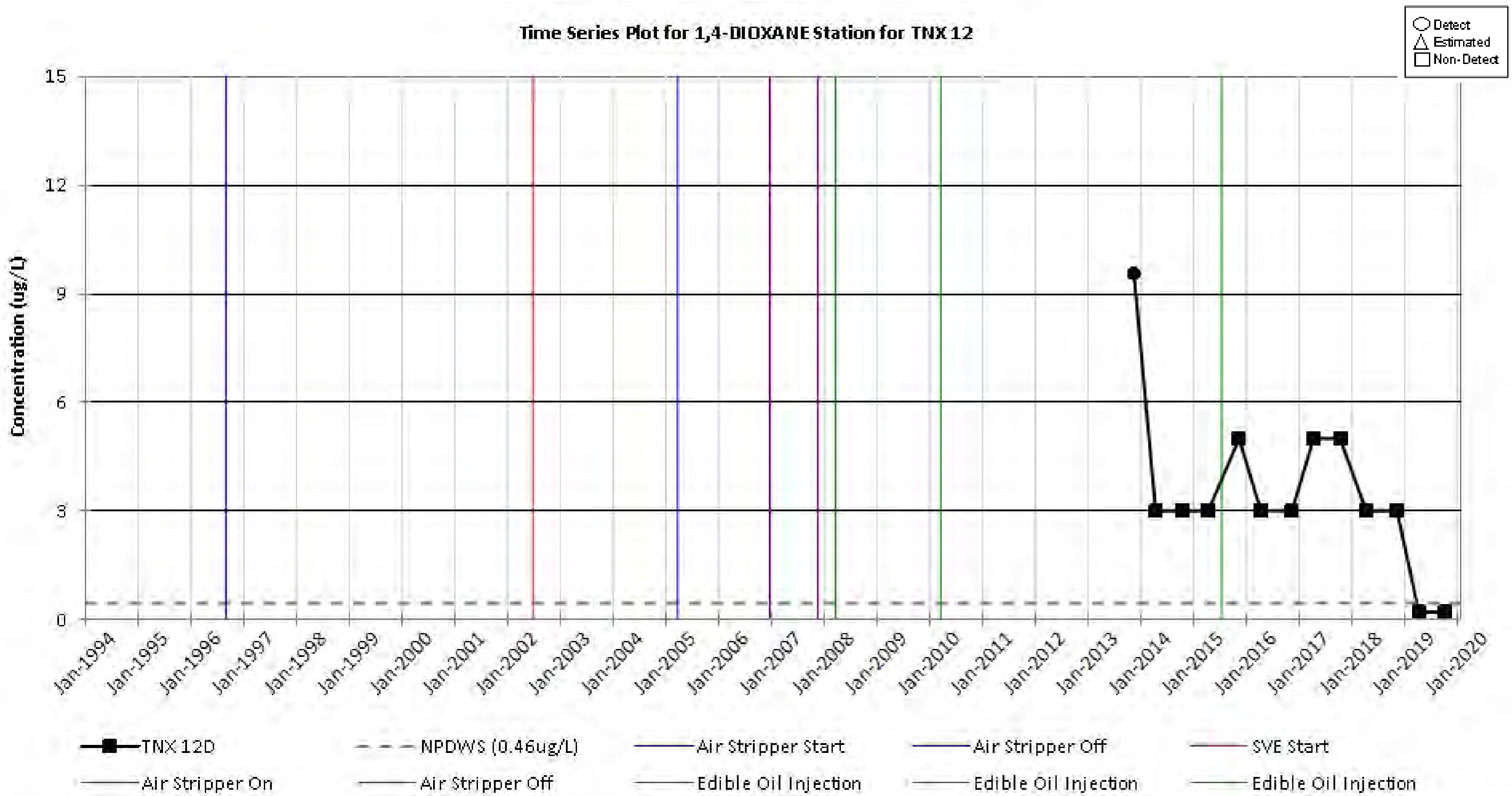
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TNX 11D
NPDWS (0.46ug/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection


Time Series Plot for 1,4-DIOXANE Station for TNX 12
Detect
Estimated
Non-Detect
Concentration (ug/L)
15
12
9
6
3
0
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
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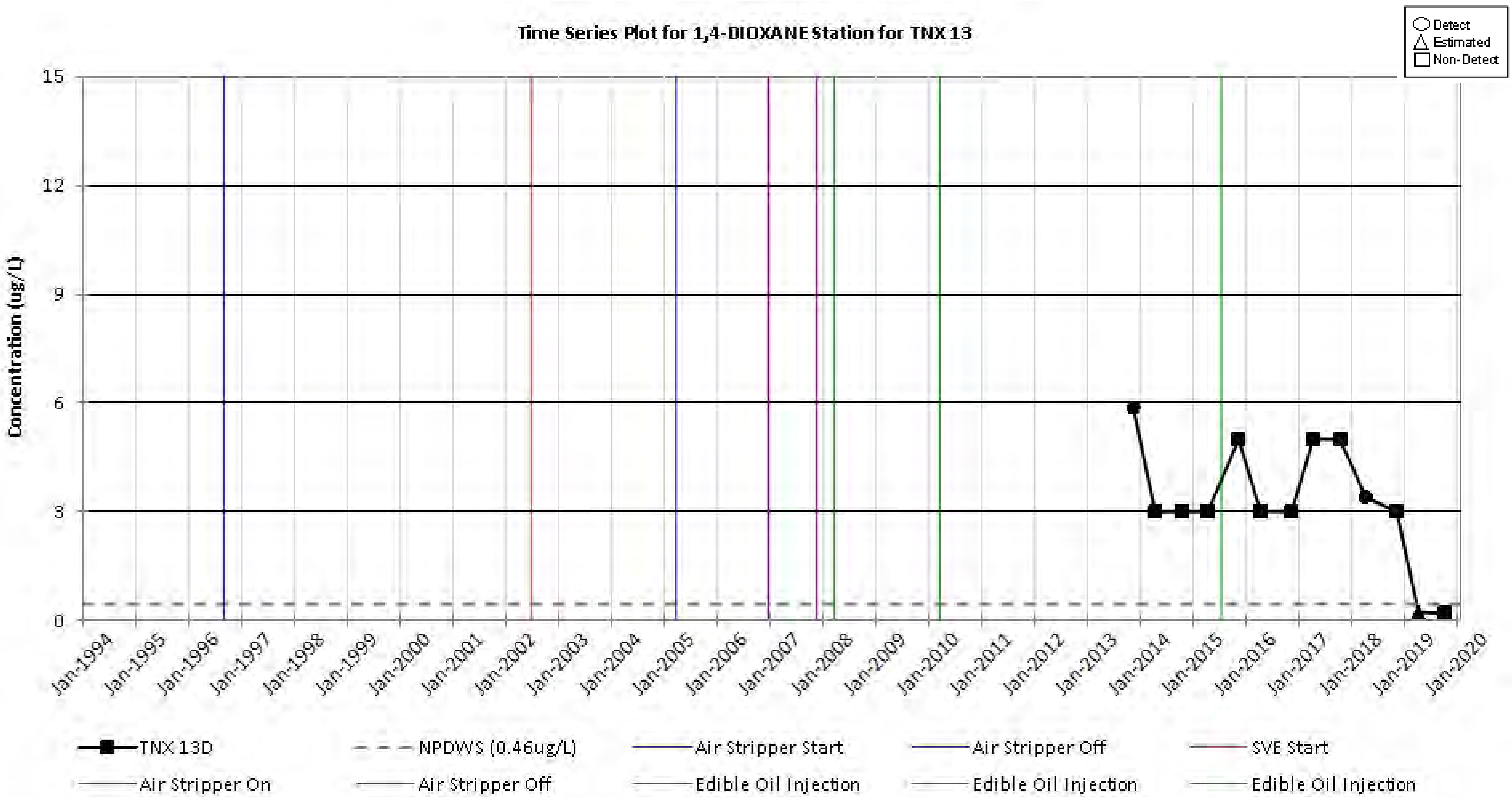
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TNX 12D
NPDWS (0.46ug/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection


Time Series Plot for 1,4-DIOXANE Station for TNX 13
Detect
Estimated
Non-Detect
Concentration (ug/L)
15
12
9
6
3
0
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
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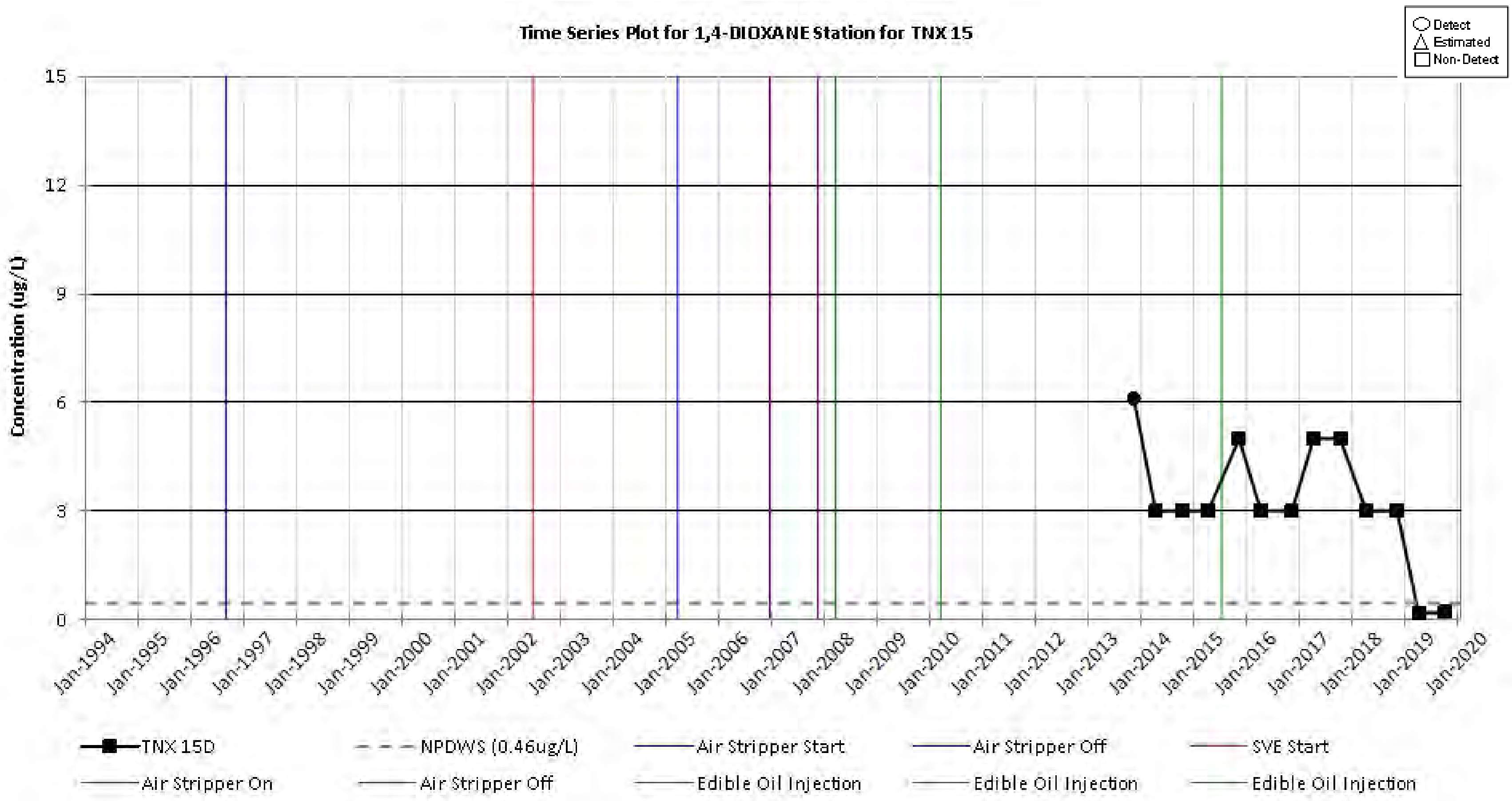
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TNX 13D
NPDWS (0.46ug/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection


Time Series Plot for 1,4-DIOXANE Station for TNX 15
Detect
Estimated
Non-Detect
Concentration (ug/L)
15
12
9
6
3
0
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
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Jan-2002
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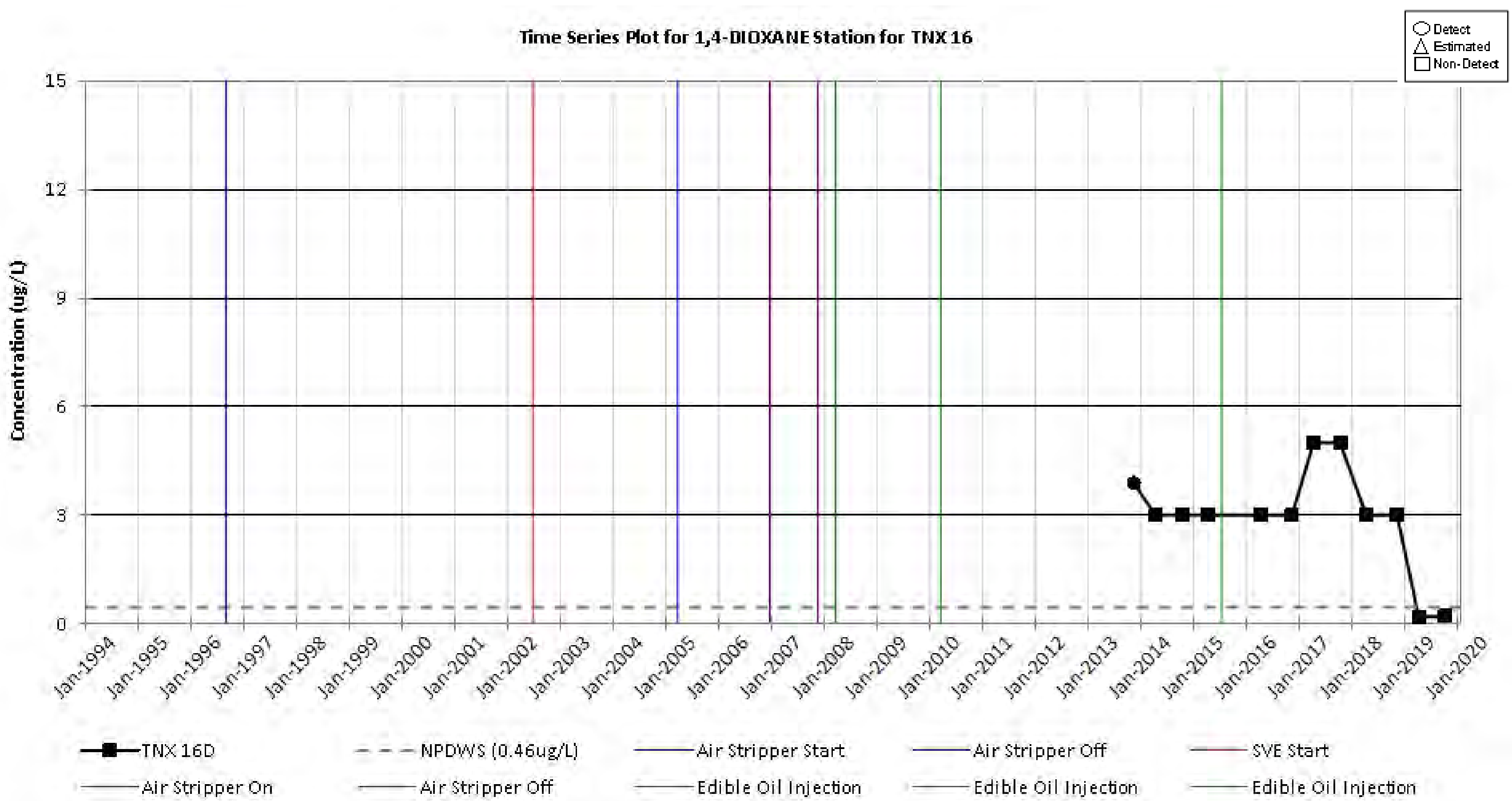
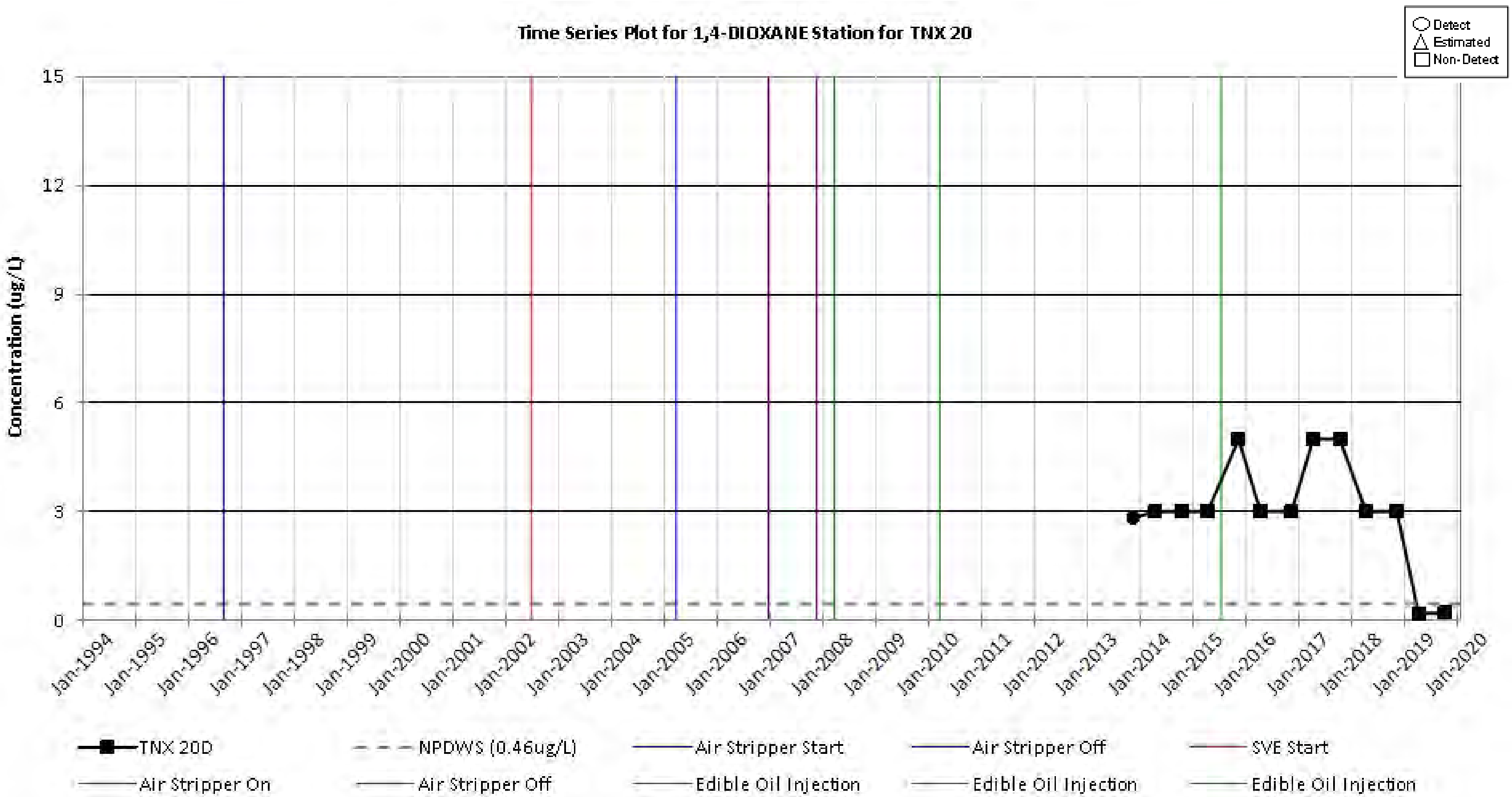
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TNX 15D
NPDWS (0.46ug/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection


Time Series Plot for 1,4-DIOXANE Station for TNX 16
Detect
Estimated
Non-Detect
Concentration (ug/L)
15
12
9
6
3
0
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TNX 16D
NPDWS (0.46ug/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection


Time Series Plot for 1,4-DIOXANE Station for TNX 20
Detect
Estimated
Non-Detect
Concentration (ug/L)
15
12
9
6
3
0
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
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Jan-2001
Jan-2002
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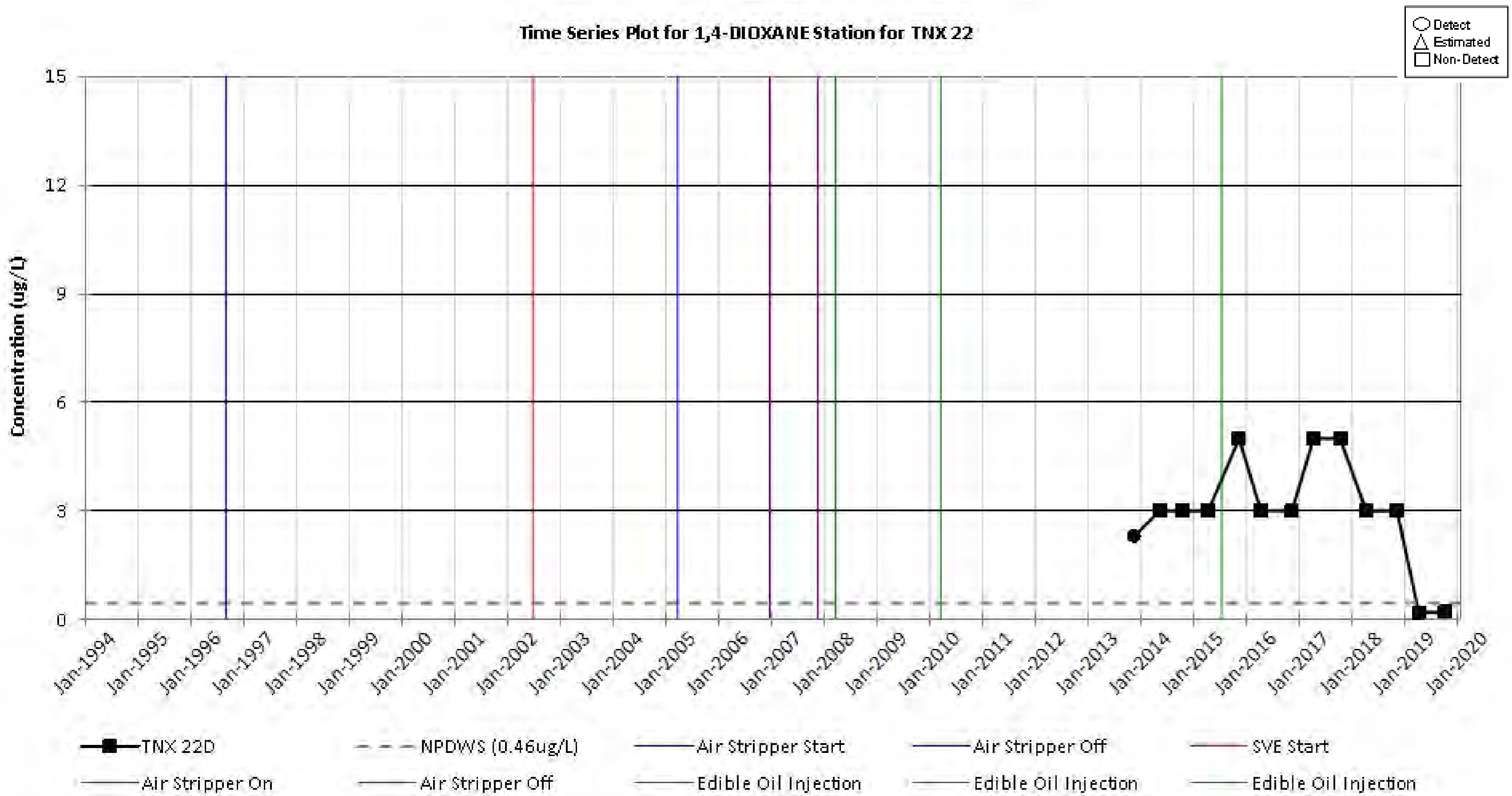
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TNX 20D
NPDWS (0.46ug/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection


Time Series Plot for 1,4-DIOXANE Station for TNX 22
Detect
Estimated
Non-Detect
Concentration (ug/L)
15
12
9
6
3
0
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
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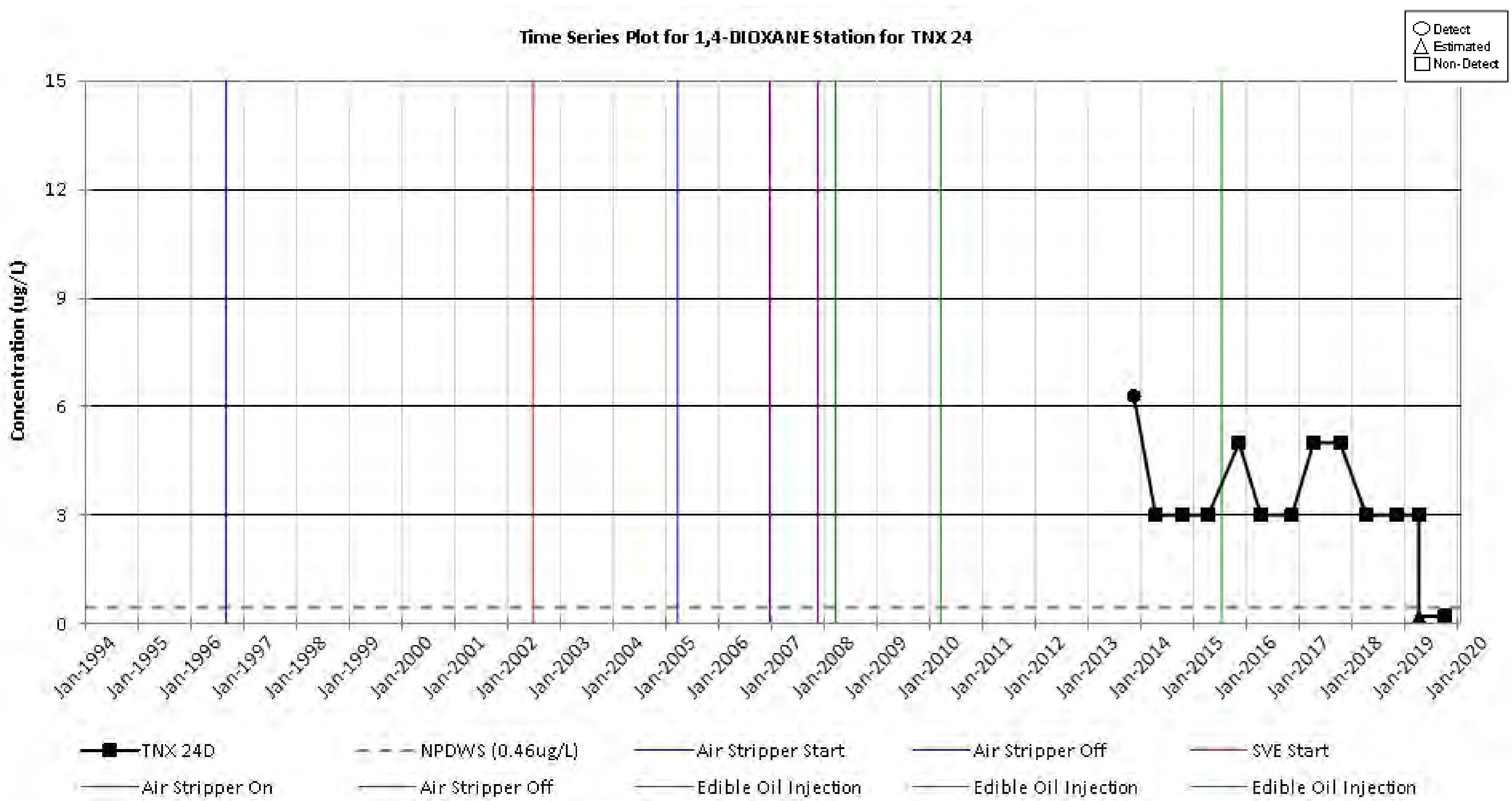
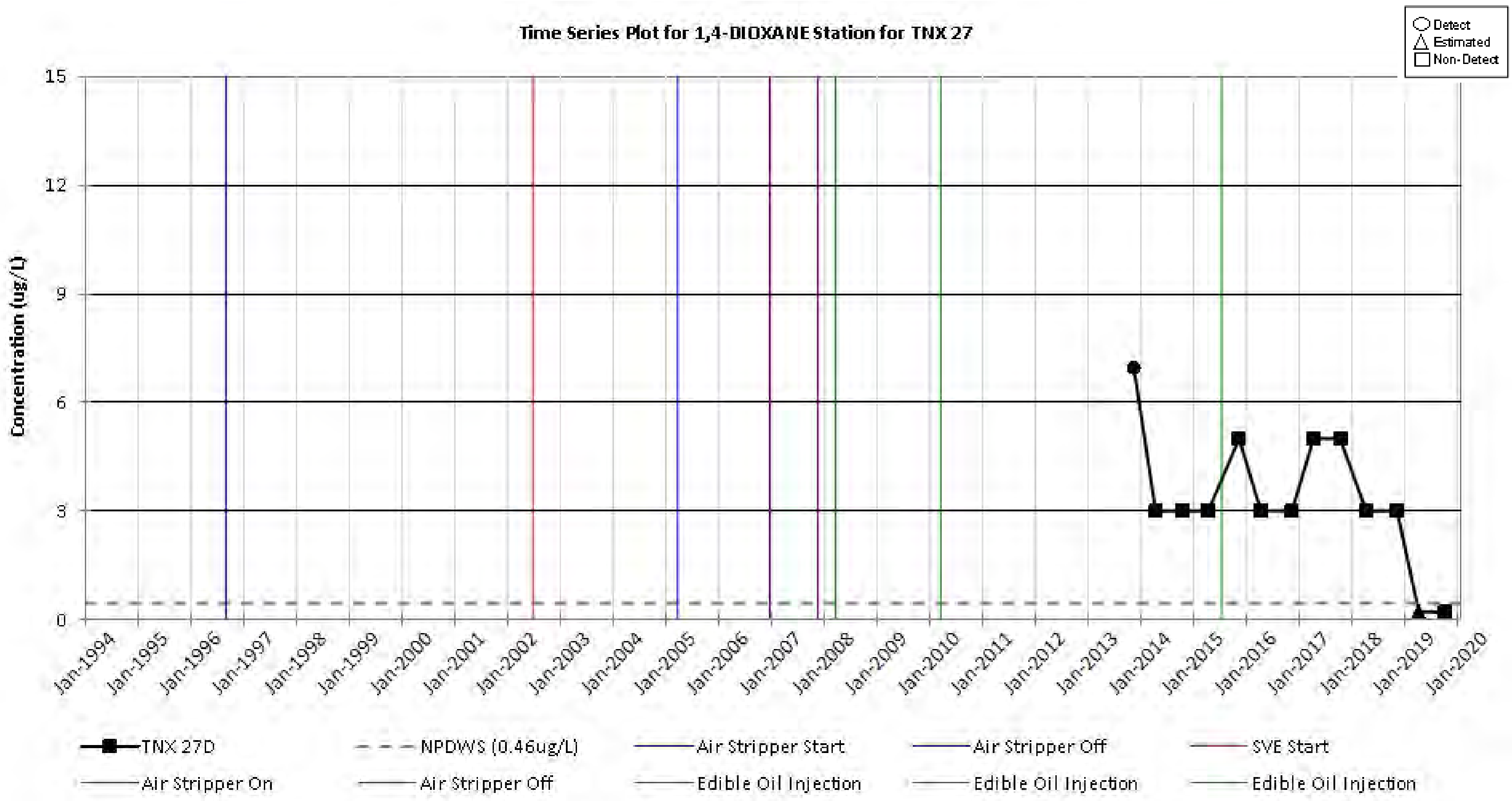
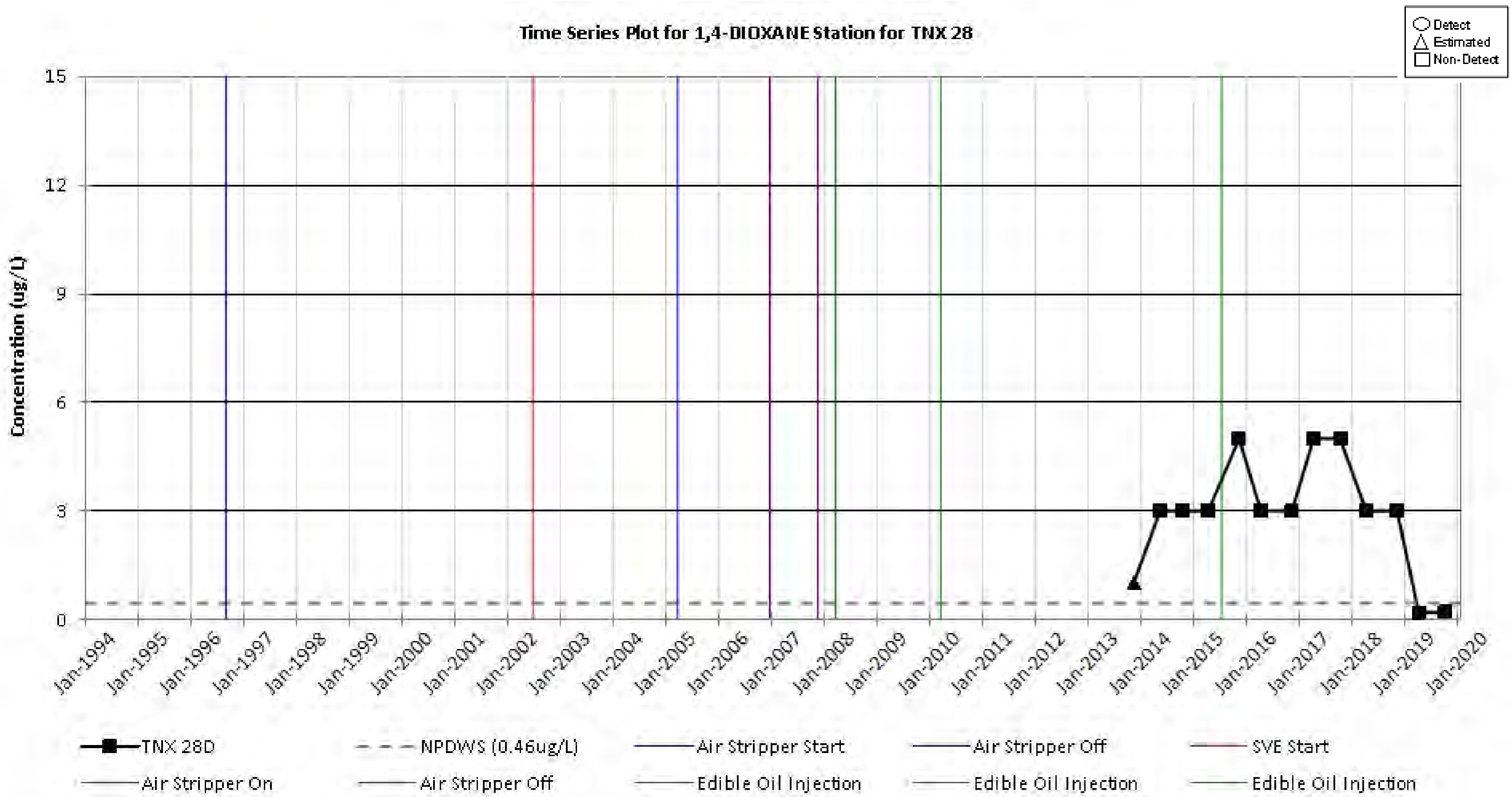
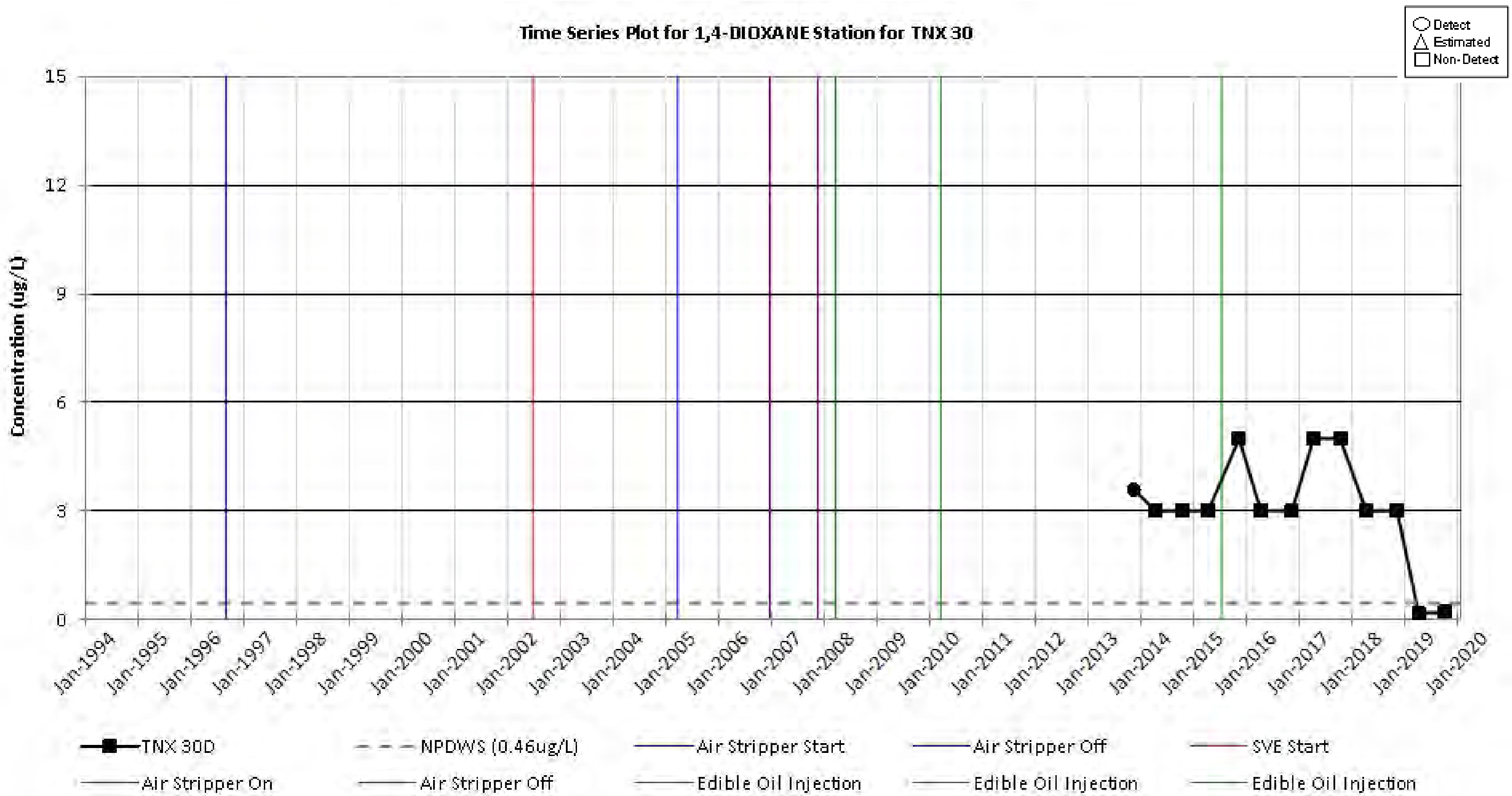
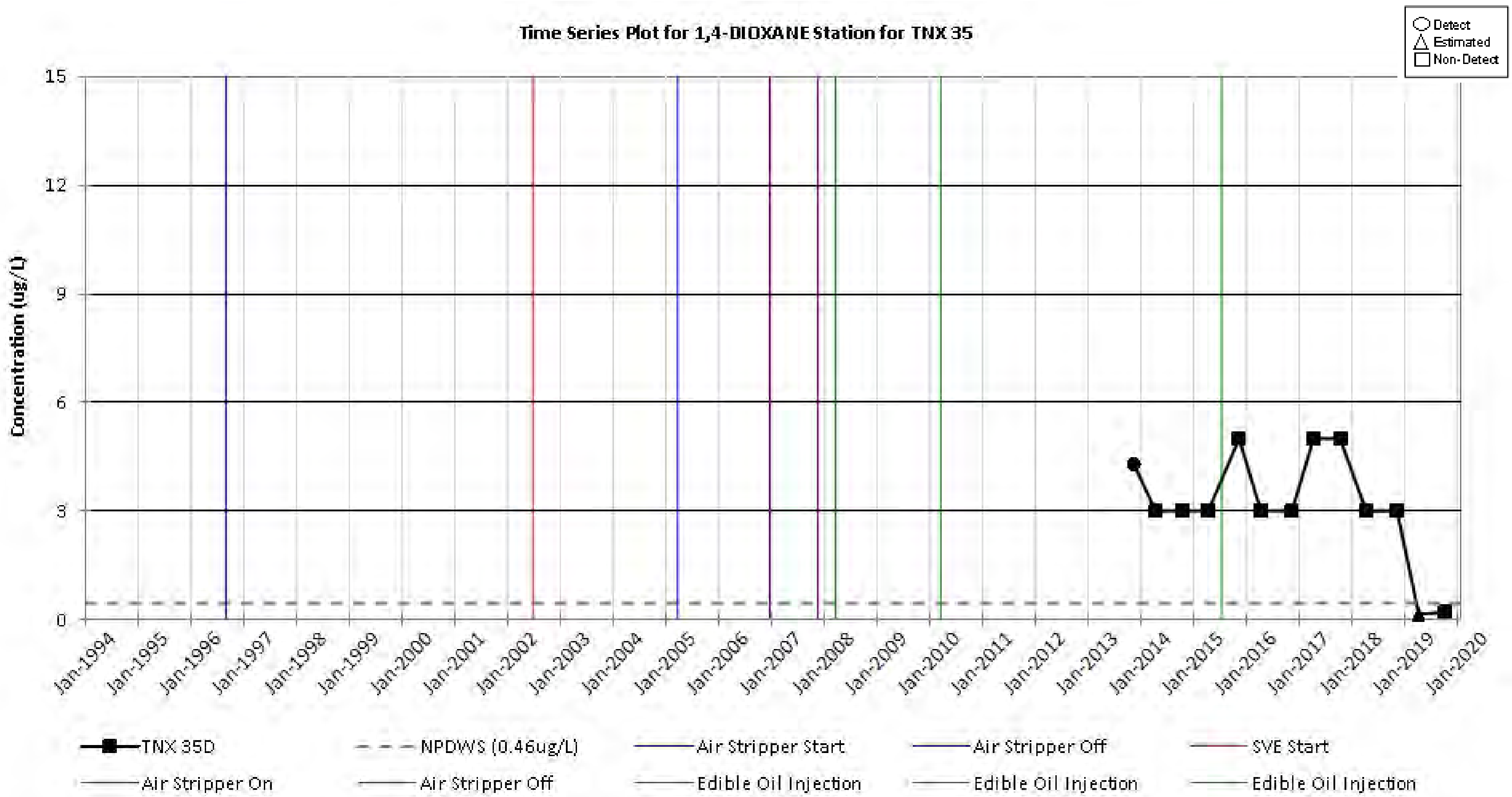
Jan-2020
TNX 22D
NPDWS (0.46ug/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection

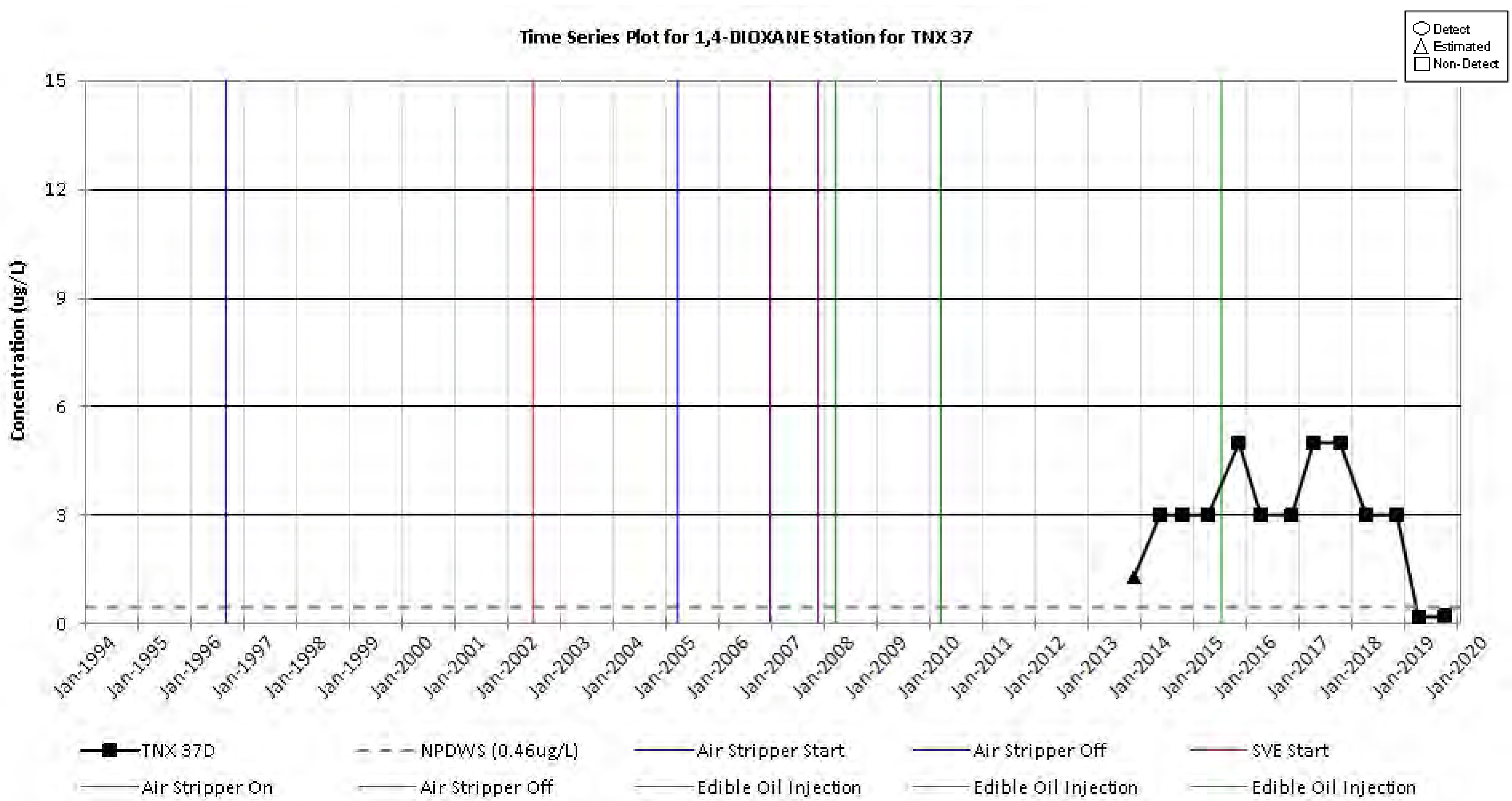

Time Series Plot for 1,4-DIOXANE Station for TNX 24
Detect
Estimated
Non-Detect
Concentration (ug/L)
15
12
9
6
3
0
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TNX 24D
NPDWS (0.46ug/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection

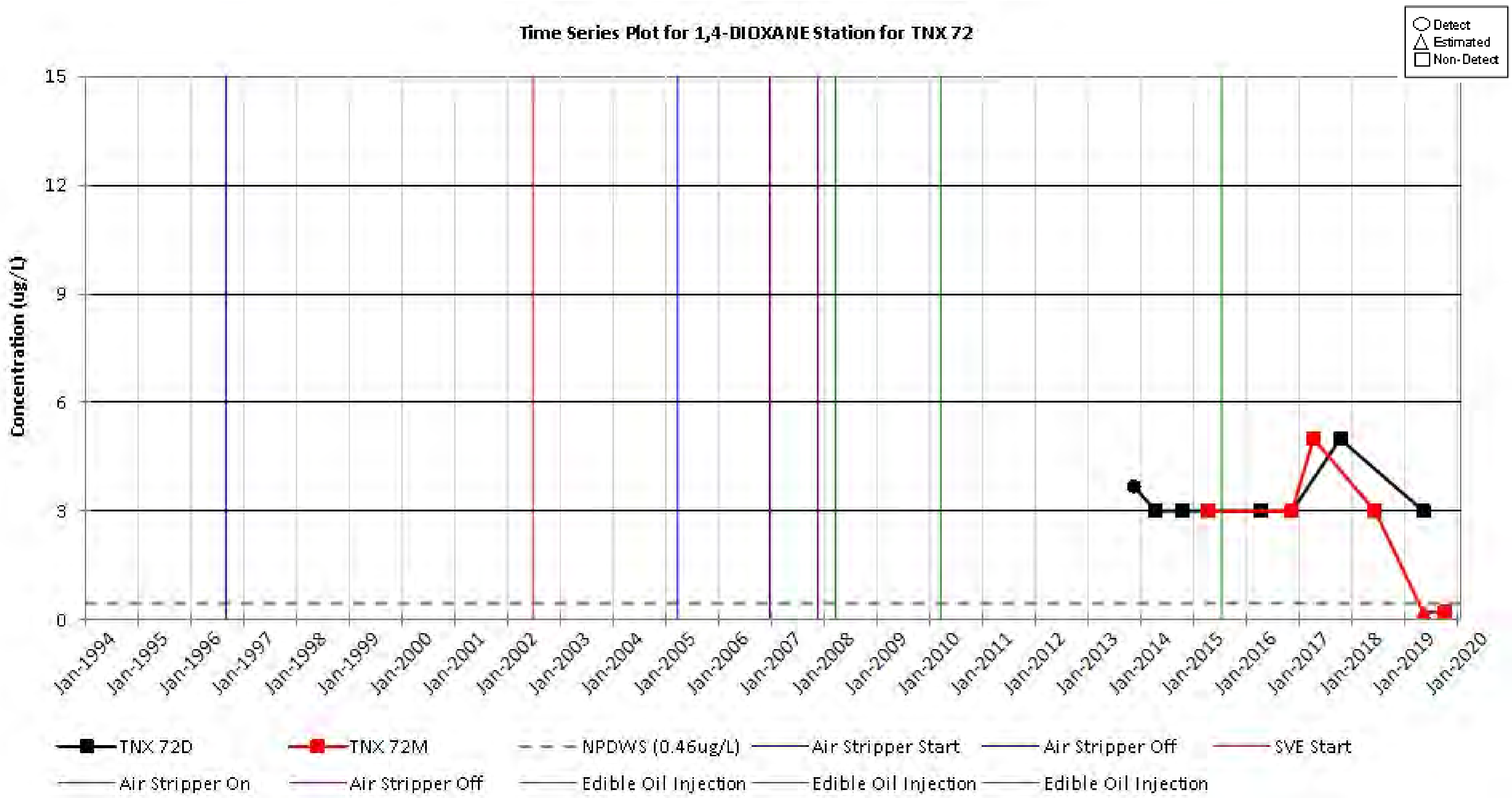

Time Series Plot for 1,4-DIOXANE Station for TNX 27
Detect
Estimated
Non-Detect
Concentration (ug/L)
15
12
9
6
3
0
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TNX 27D
NPDWS (0.46ug/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection


Time Series Plot for 1,4-DIOXANE Station for TNX 28
Detect
Estimated
Non-Detect
Concentration (ug/L)
15
12
9
6
3
0
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TNX 28D
NPDWS (0.46ug/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection


Time Series Plot for 1,4-DIOXANE Station for TNX 30
Detect
Estimated
Non-Detect
Concentration (ug/L)
15
12
9
6
3
0
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TNX 30D
NPDWS (0.46ug/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection


Time Series Plot for 1,4-DIOXANE Station for TNX 35
Detect
Estimated
Non-Detect
Concentration (ug/L)
15
12
9
6
3
0
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TNX 35D
NPDWS (0.46ug/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection


Time Series Plot for 1,4-DIOXANE Station for TNX 37
Detect
Estimated
Non-Detect
Concentration (ug/L)
15
12
9
6
3
0
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TNX 37D
NPDWS (0.46ug/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection


Time Series Plot for 1,4-DIOXANE Station for TNX 72
Detect
Estimated
Non-Detect
Concentration (ug/L)
15
12
9
6
3
0
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
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Jan-2008
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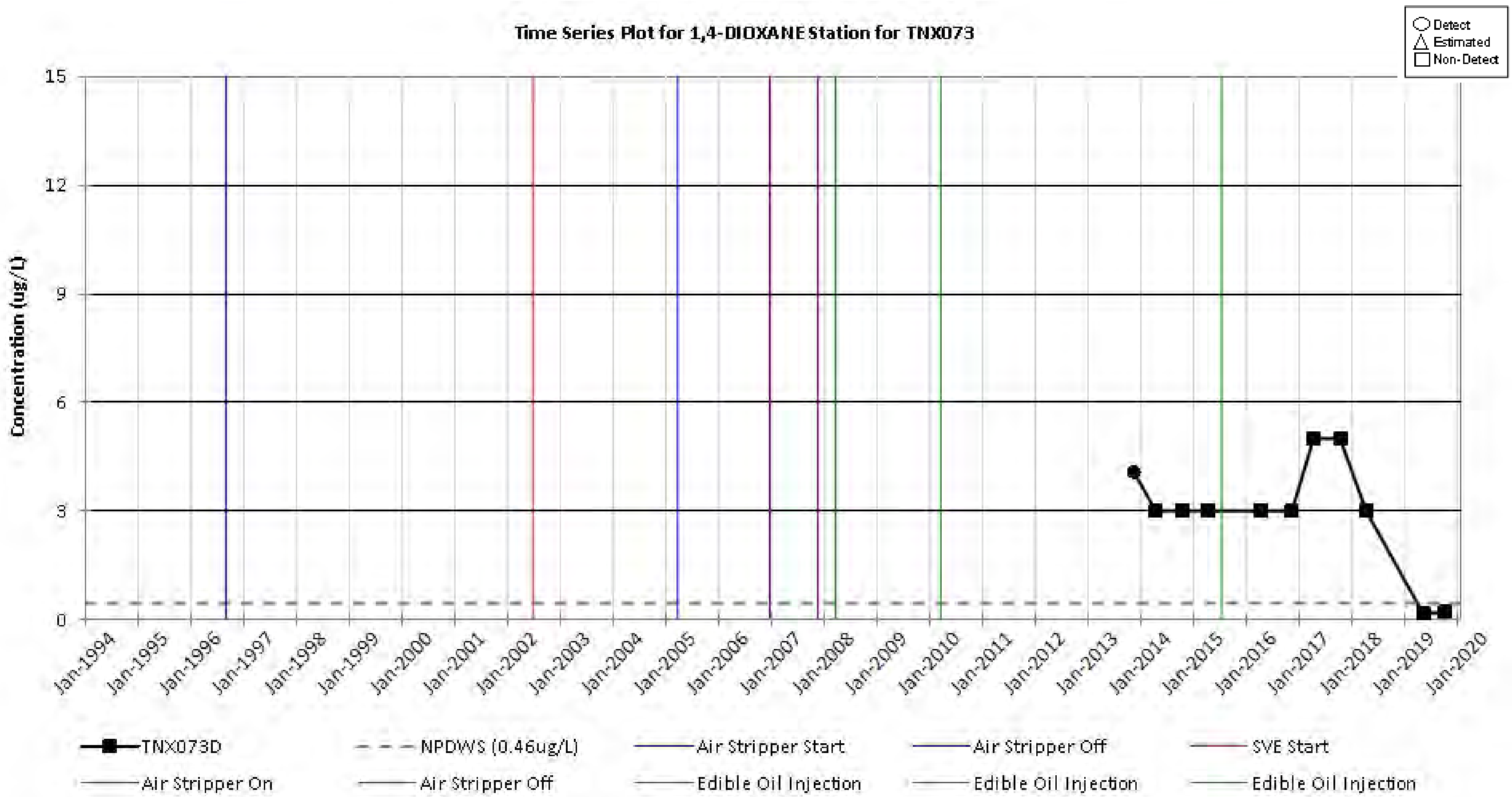
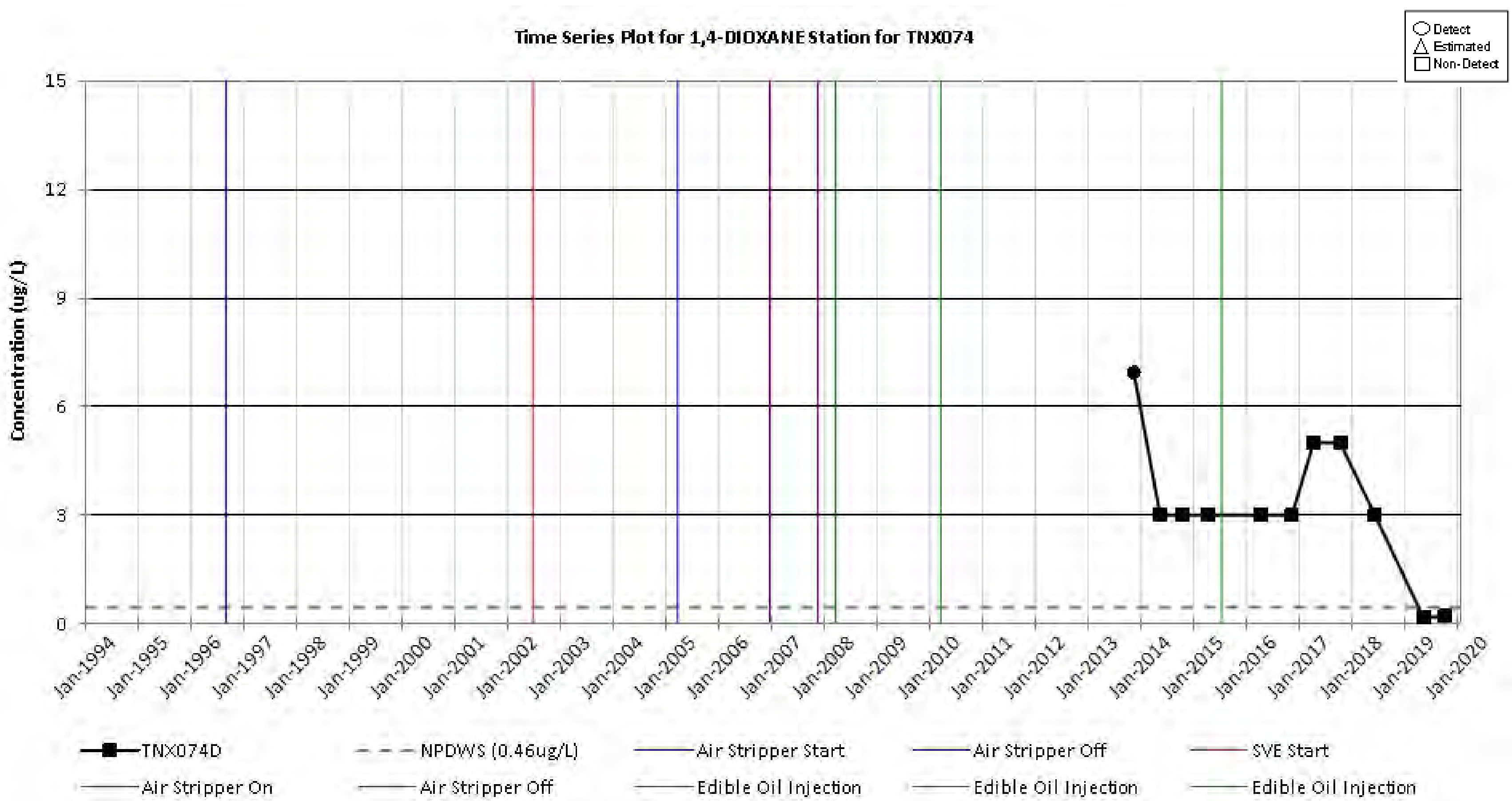
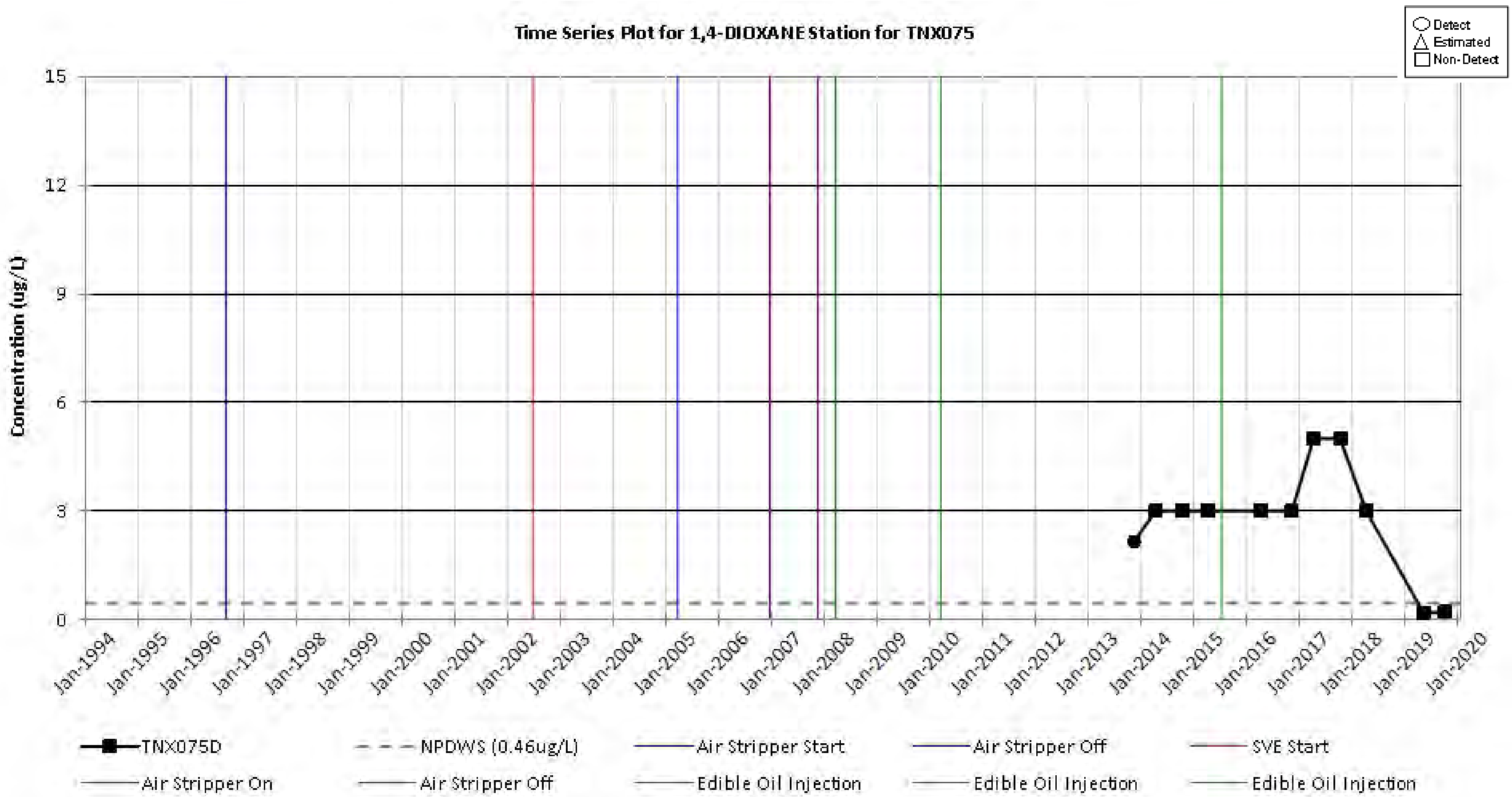
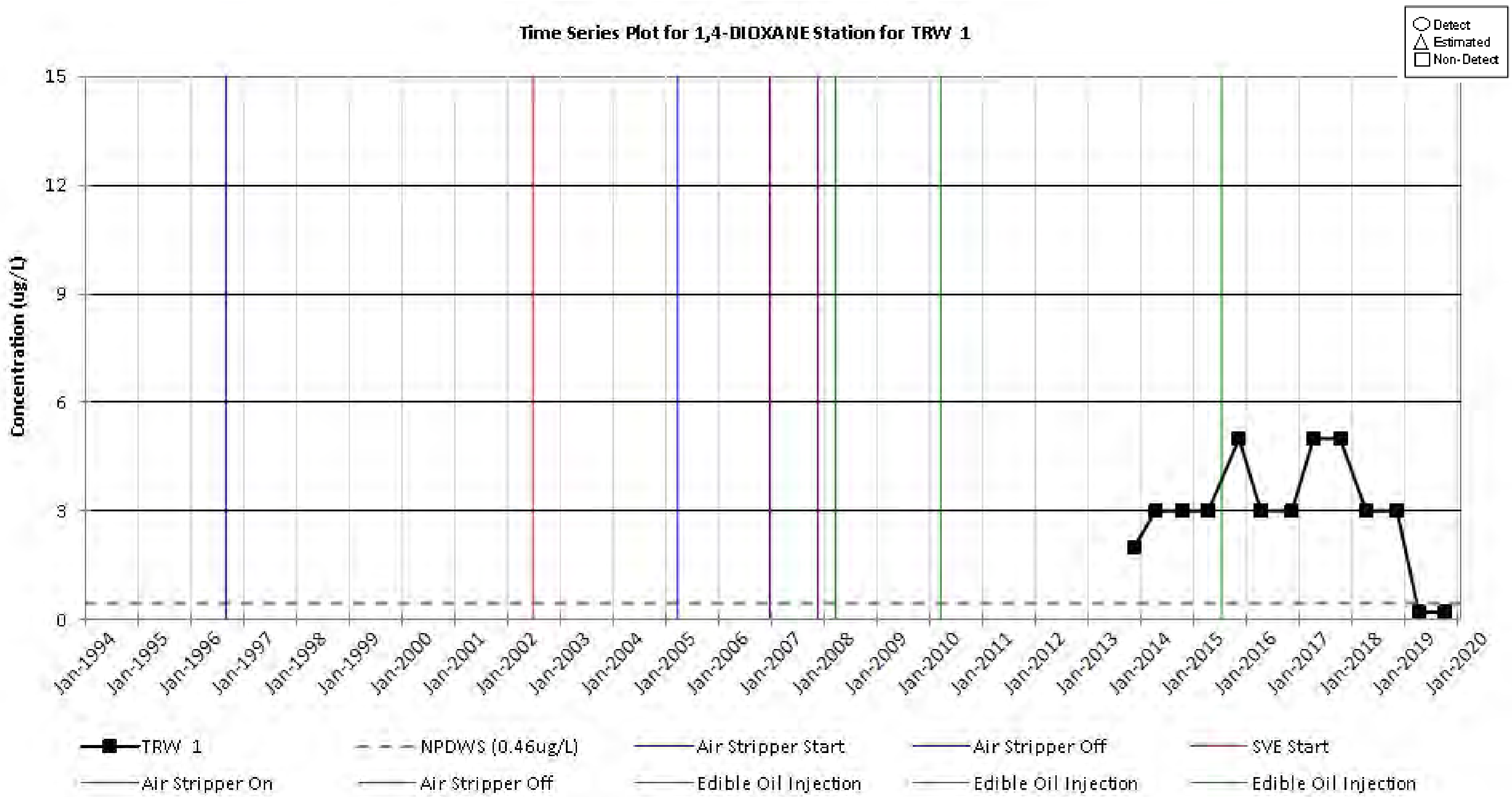
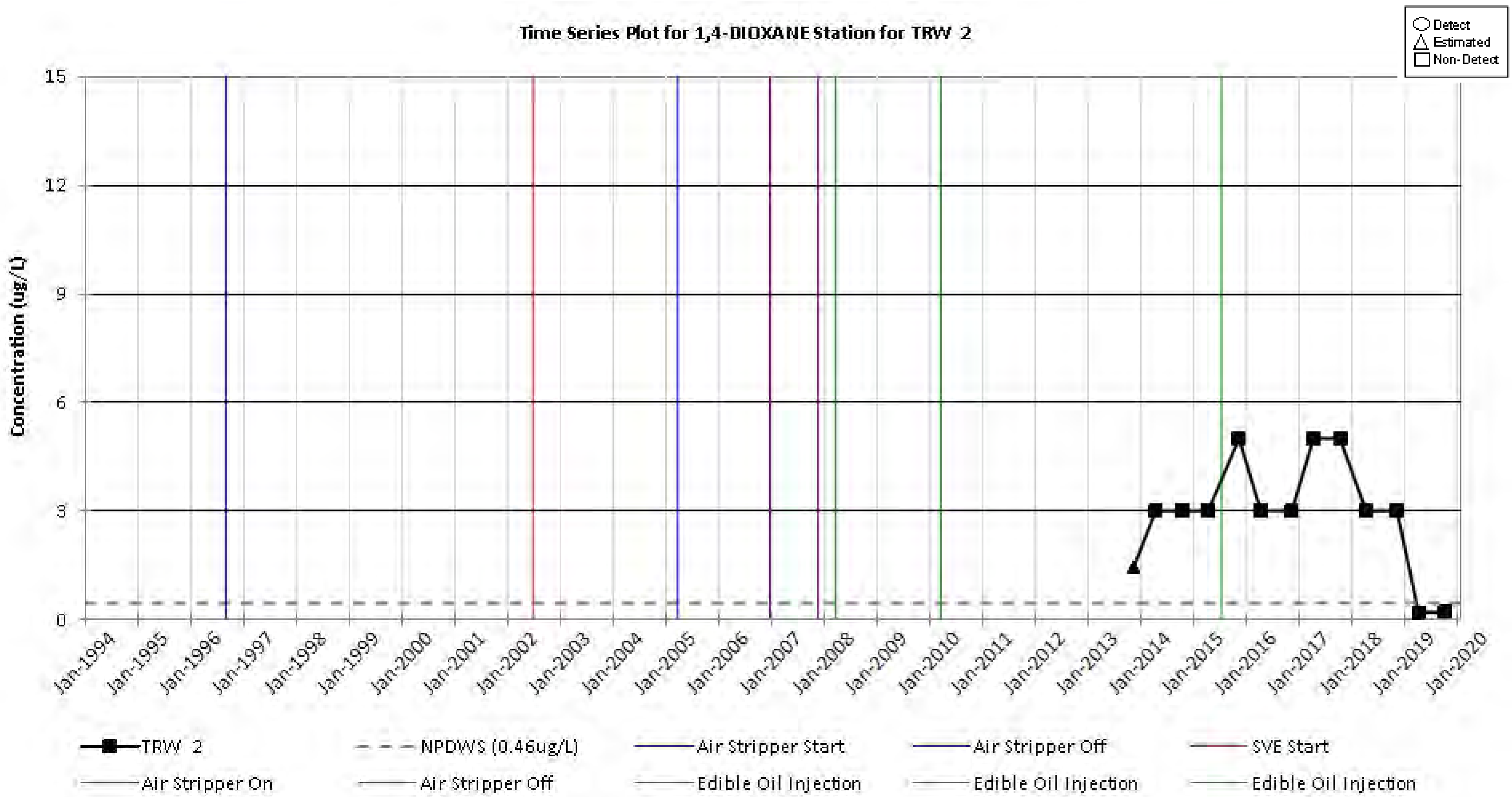
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TNX 72D
TNX 72M
NPDWS (0.46ug/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection

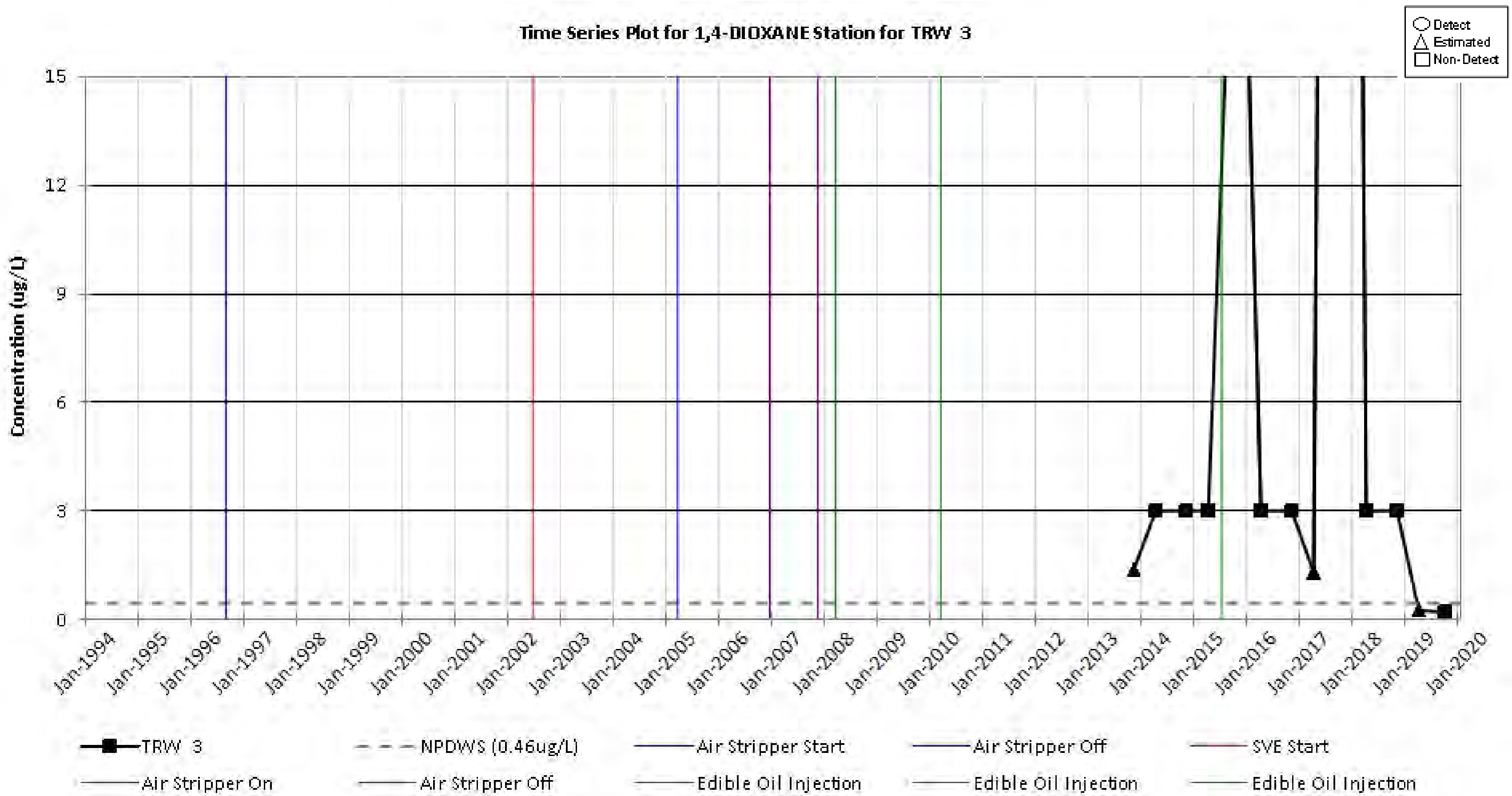

Time Series Plot for 1,4-DIOXANE Station for TNX073
Detect
Estimated
Non-Detect
Concentration (ug/L)
15
12
9
6
3
0
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TNX073D
NPDWS (0.46ug/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection

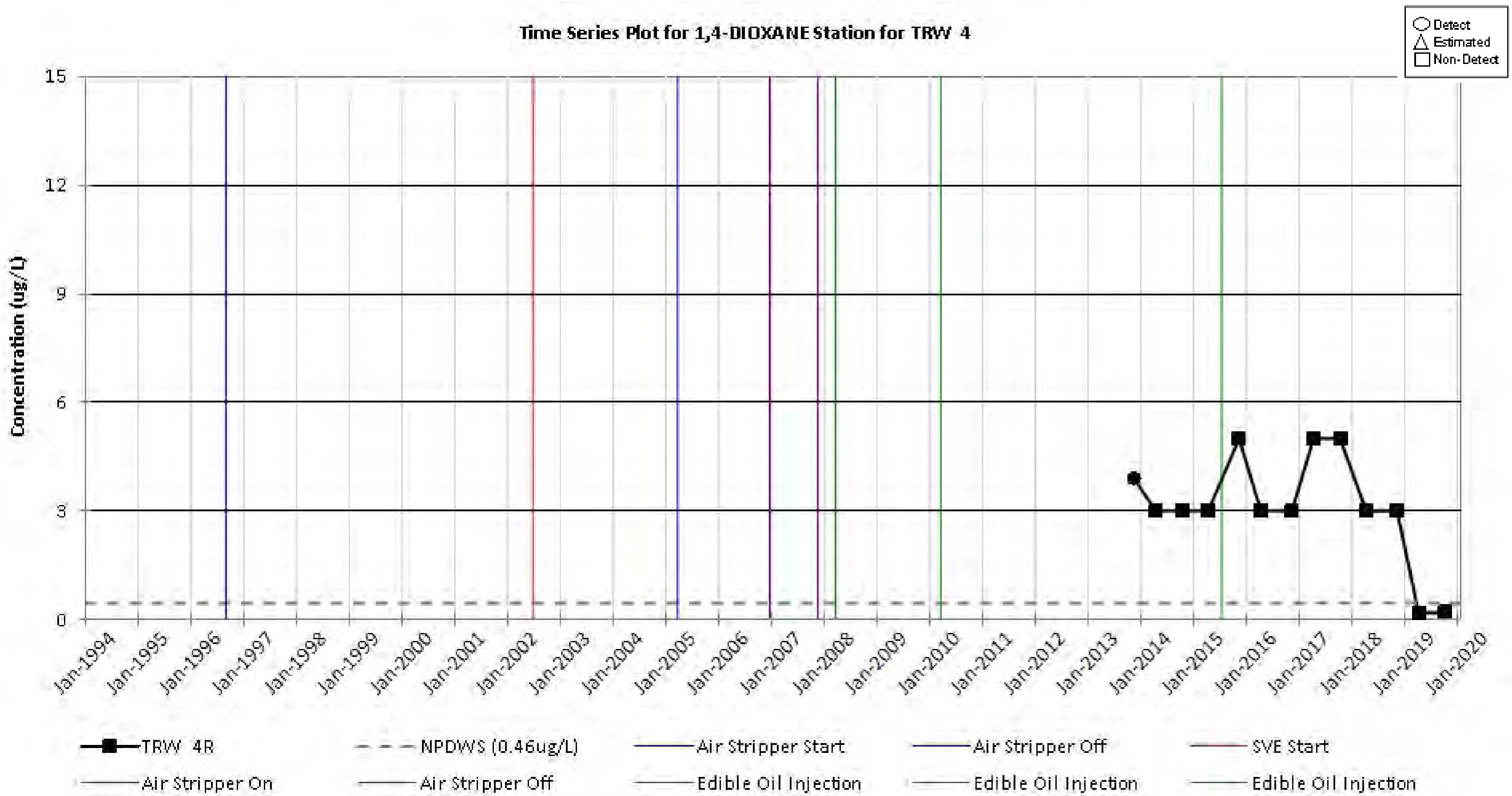

Time Series Plot for 1,4-DIOXANE Station for TNX074
Detect
Estimated
Non-Detect
Concentration (ug/L)
15
12
9
6
3
0
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TNX074D
NPDWS (0.46ug/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection

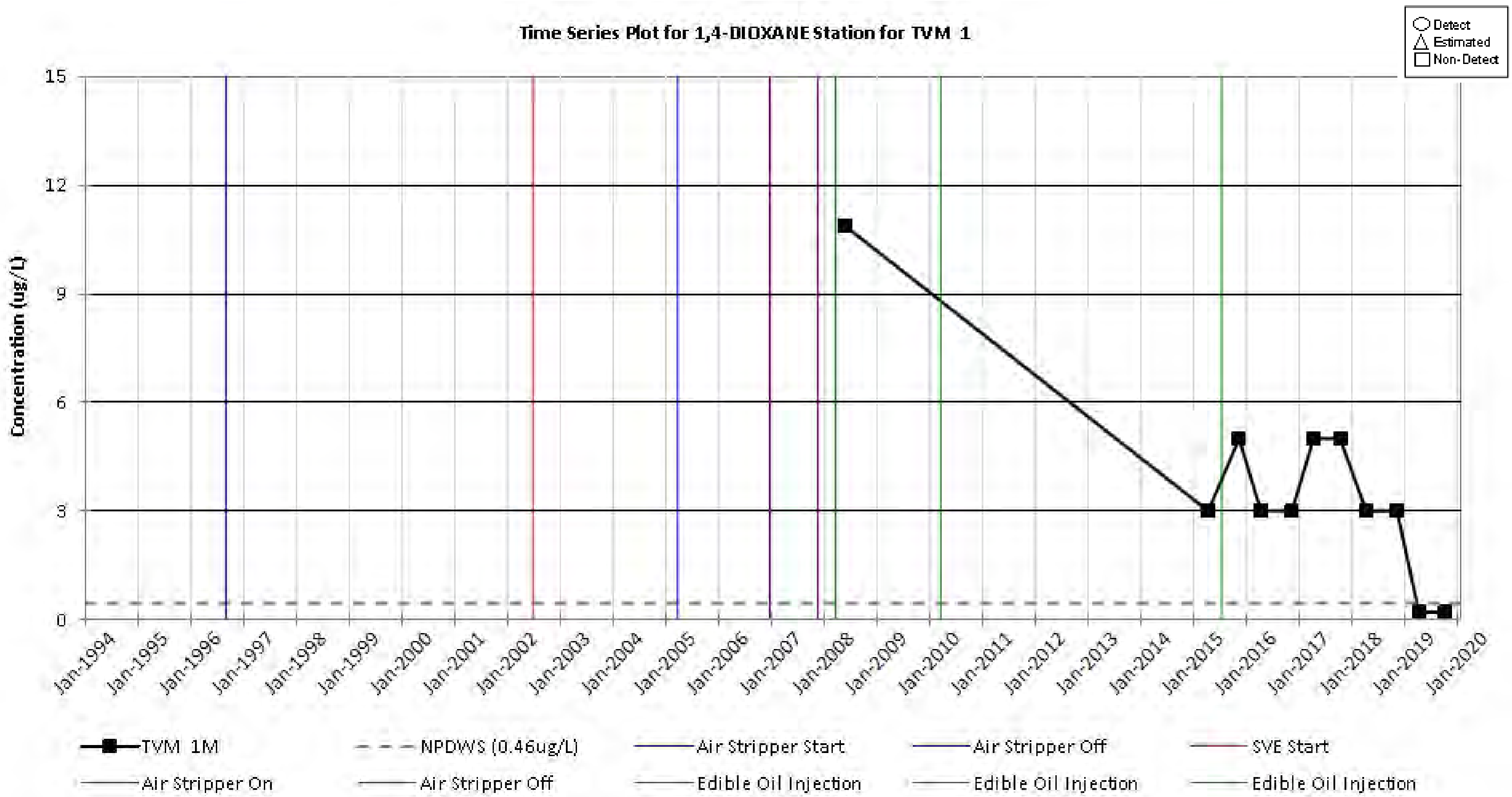

Time Series Plot for 1,4-DIOXANE Station for TNX075
Detect
Estimated
Non-Detect
Concentration (ug/L)
15
12
9
6
3
0
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TNX075D
NPDWS (0.46ug/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection

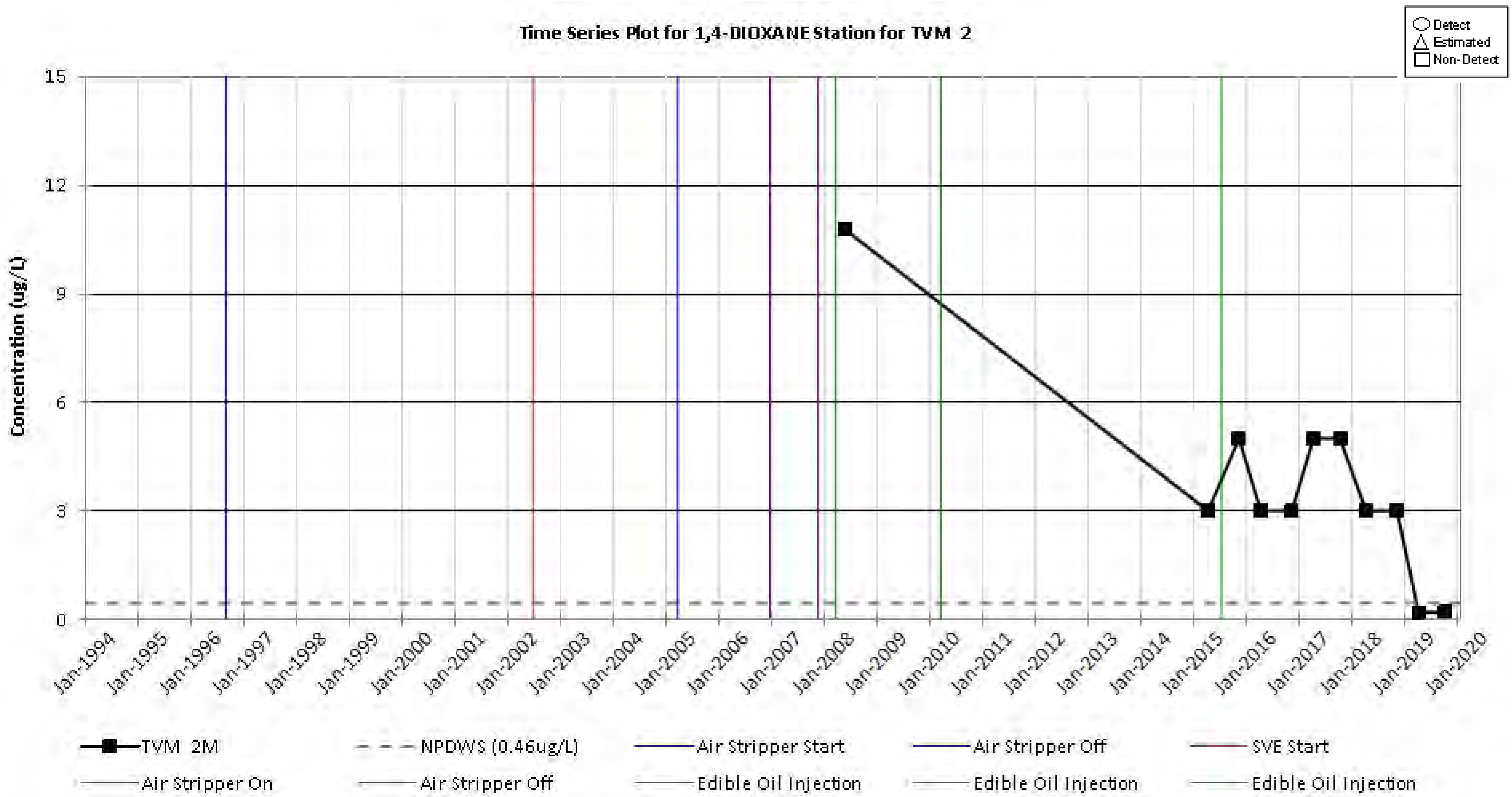

Time Series Plot for 1,4-DIOXANE Station for TRW 1
Detect
Estimated
Non-Detect
Concentration (ug/L)
15
12
9
6
3
0
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TRW 1
NPDWS (0.46ug/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection

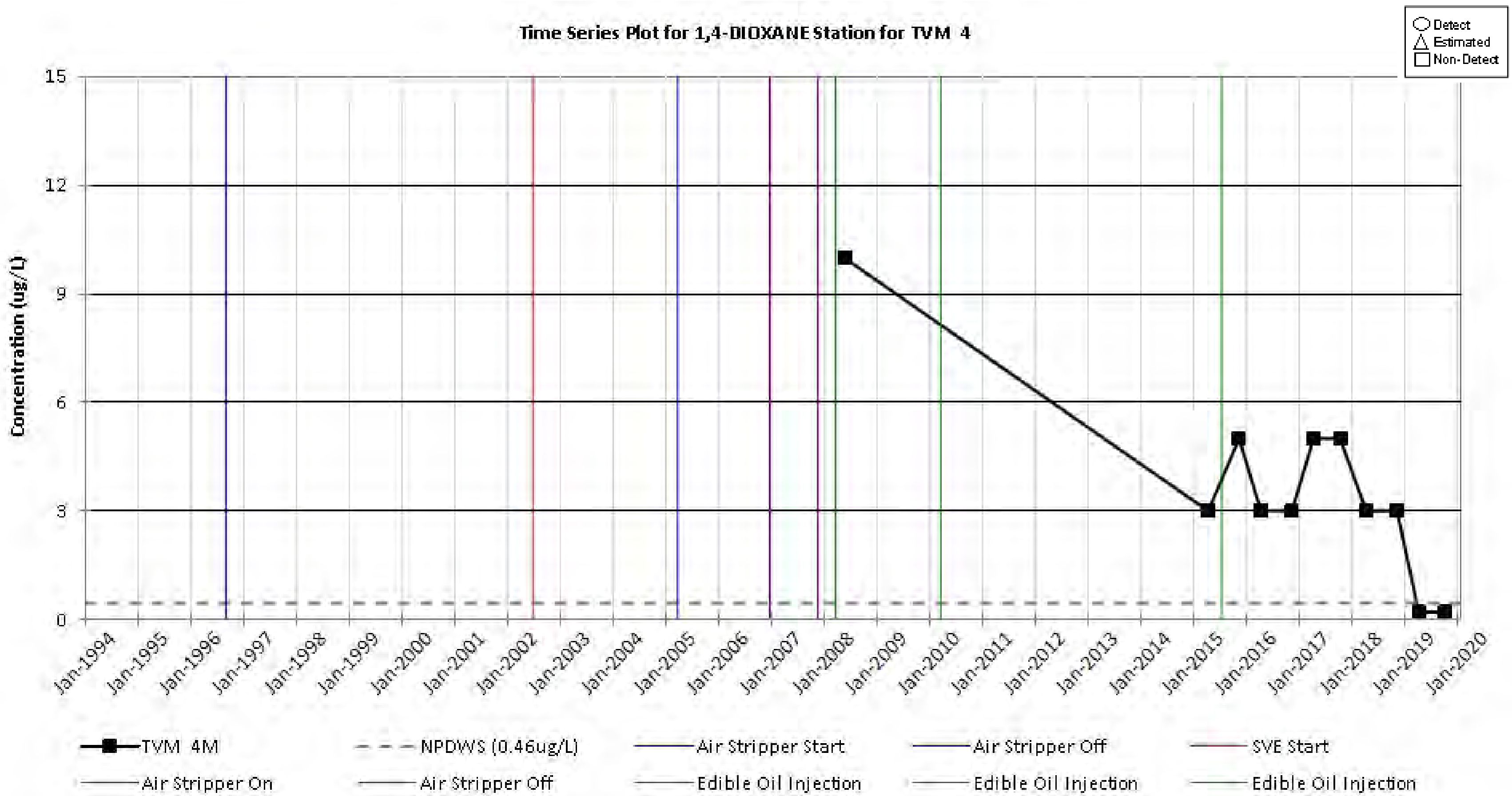

Time Series Plot for 1,4-DIOXANE Station for TRW 2
Detect
Estimated
Non-Detect
Concentration (ug/L)
15
12
9
6
3
0
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TRW 2
NPDWS (0.46ug/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection

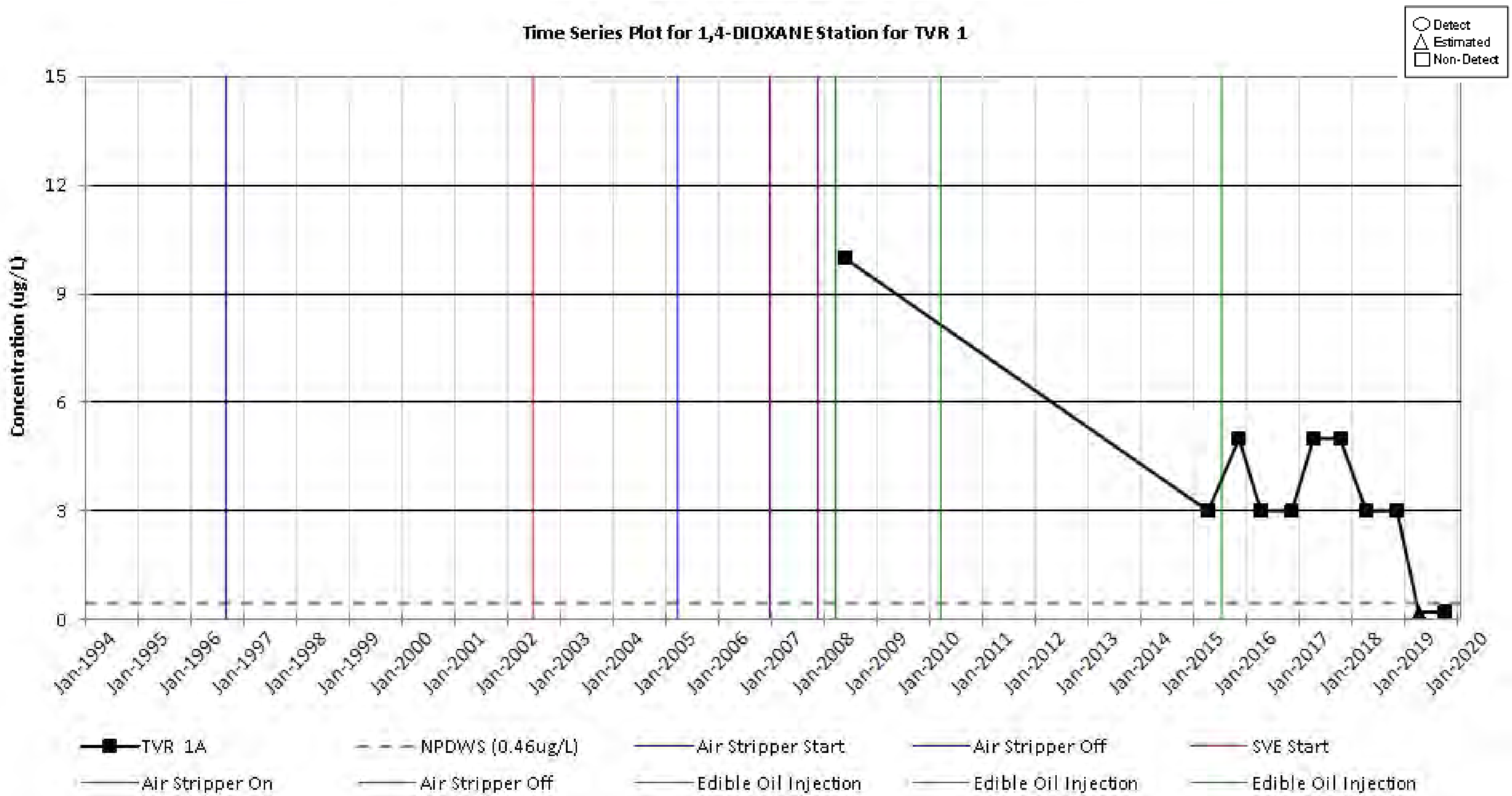

Time Series Plot for 1,4-DIOXANE Station for TRW 3
Detect
Estimated
Non-Detect
Concentration (ug/L)
15
12
9
6
3
0
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TRW 3
NPDWS (0.46ug/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection

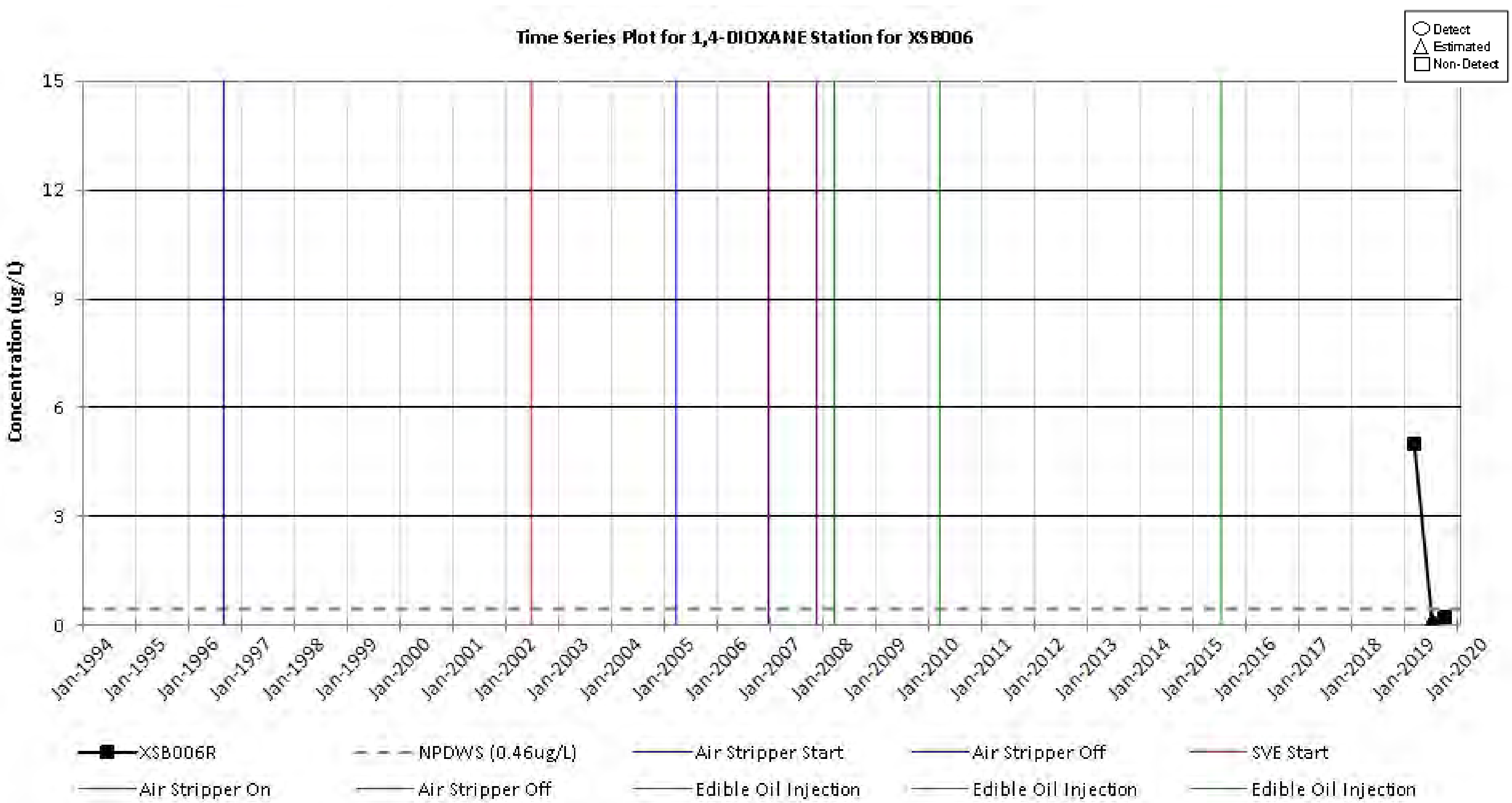

Time Series Plot for 1,4-DIOXANE Station for TRW 4
Detect
Estimated
Non-Detect
Concentration (ug/L)
15
12
9
6
3
0
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TRW 4R
NPDWS (0.46ug/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection

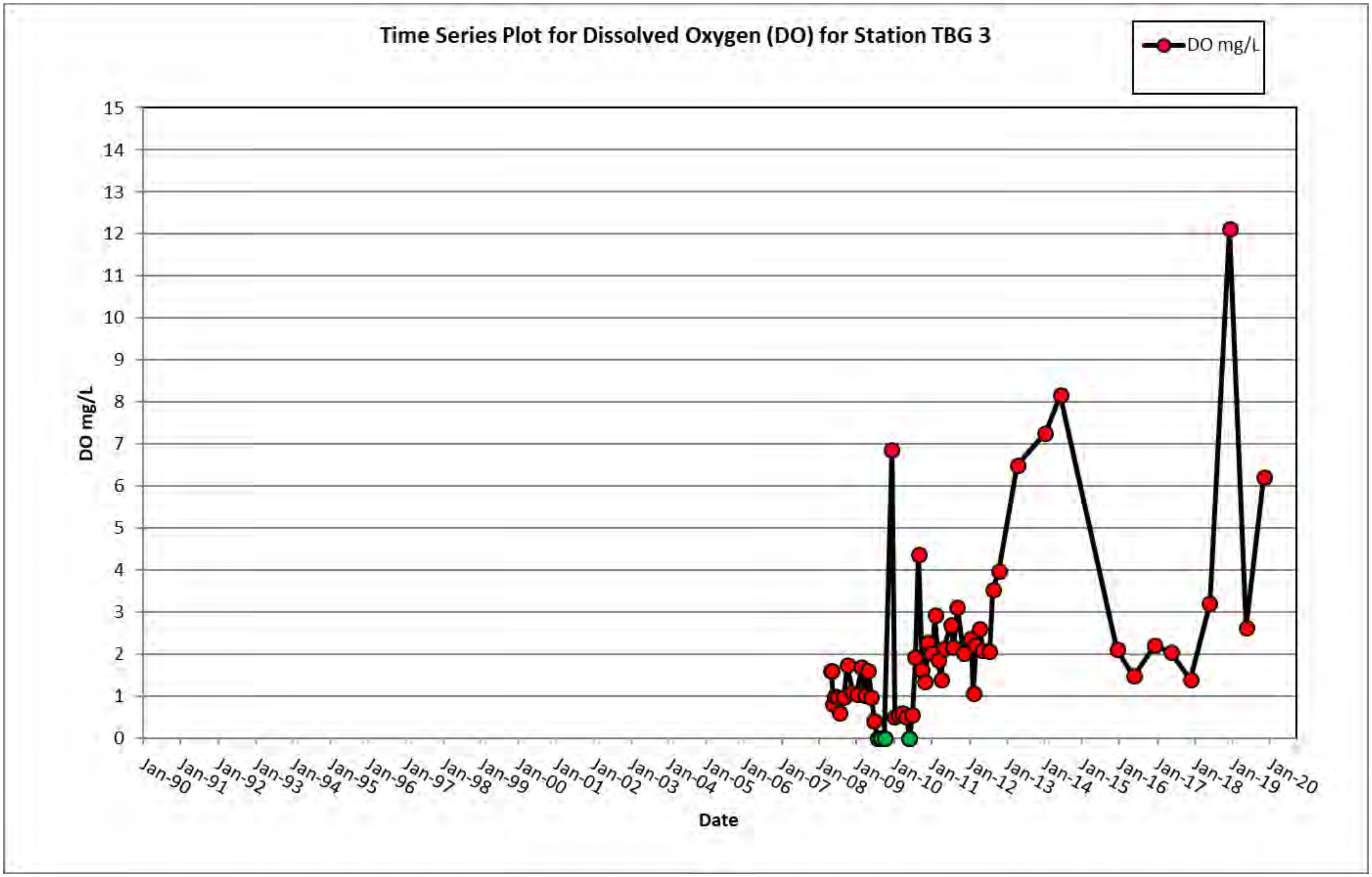

Time Series Plot for 1,4-DIOXANE Station for TVM 1
Detect
Estimated
Non-Detect
Concentration (ug/L)
15
12
9
6
3
0
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TVM 1M
NPDWS (0.46ug/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection


Time Series Plot for 1,4-DIOXANE Station for TVM 2
Detect
Estimated
Non-Detect
Concentration (ug/L)
15
12
9
6
3
0
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TVM 2M
NPDWS (0.46ug/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection


Time Series Plot for 1,4-DIOXANE Station for TVM 4
Detect
Estimated
Non-Detect
Concentration (ug/L)
15
12
9
6
3
0
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TVM 4M
NPDWS (0.46ug/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection


Time Series Plot for 1,4-DIOXANE Station for TVR 1
Detect
Estimated
Non-Detect
Concentration (ug/L)
15
12
9
6
3
0
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TVR 1A
NPDWS (0.46ug/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection


Time Series Plot for 1,4-DIOXANE Station for XSB006
Detect
Estimated
Non-Detect
Concentration (ug/L)
15
12
9
6
3
0
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
XSB006R
NPDWS (0.46ug/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection


Time Series Plot for Dissolved Oxygen (DO) for Station TBG 3
DO mg/L
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1
0
DO mg/L
Jan-90
Jan-91
Jan-92
Jan-93
Jan-94
Jan-95
Jan-96
Jan-97
Jan-98
Jan-99
Jan-00
Jan-01
Jan-02
Jan-03
Jan-04
Jan-05
Jan-06
Jan-07
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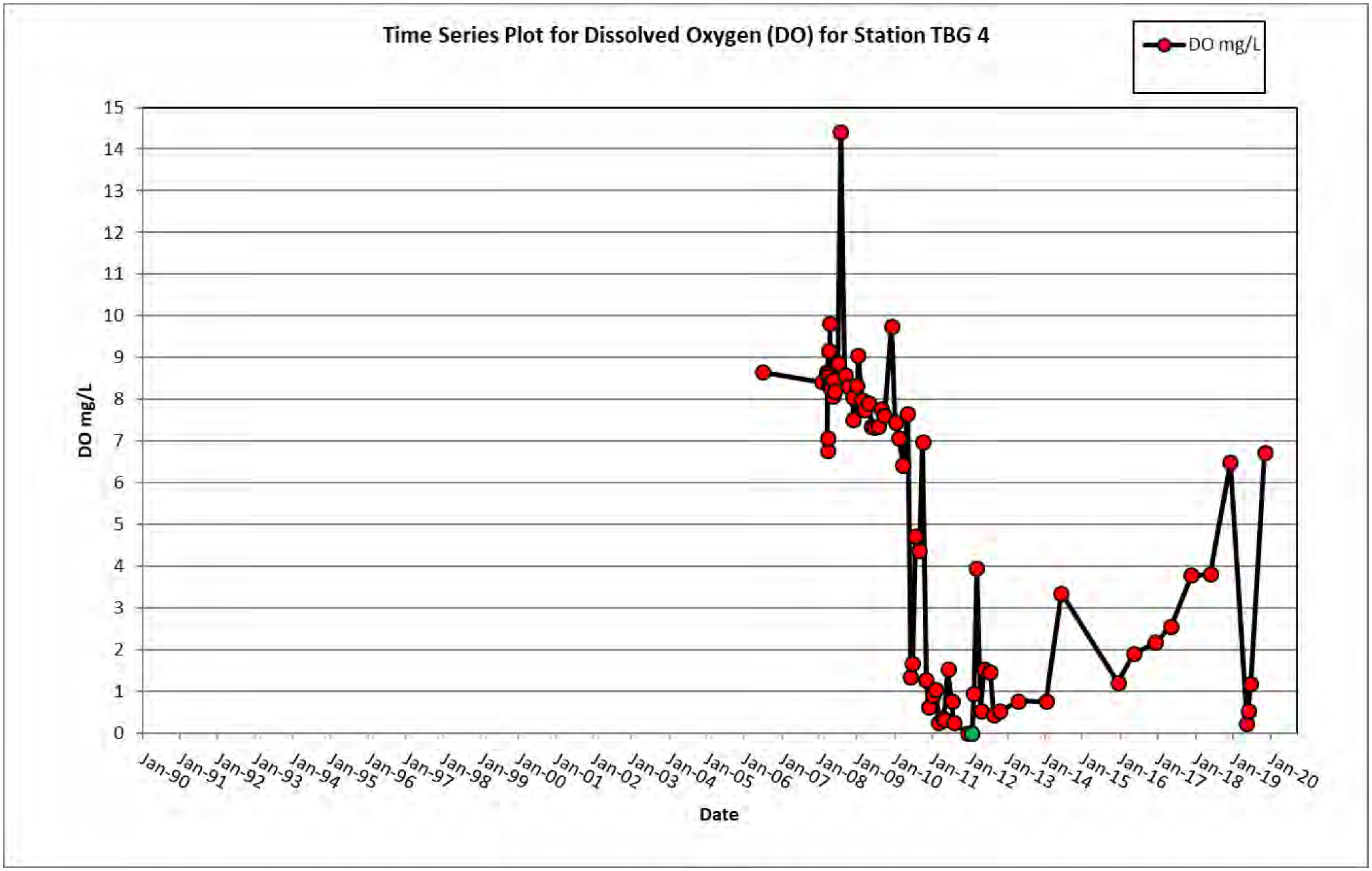
Jan-18
Jan-19
Jan-20
Date


Time Series Plot for Dissolved Oxygen (DO) for Station TBG 4
DO mg/L
DO mg/L
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1
0
Jan-90
Jan-91
Jan-92
Jan-93
Jan-94
Jan-95
Jan-96
Jan-97
Jan-98
Jan-99
Jan-00
Jan-01
Jan-02
Jan-03
Jan-04
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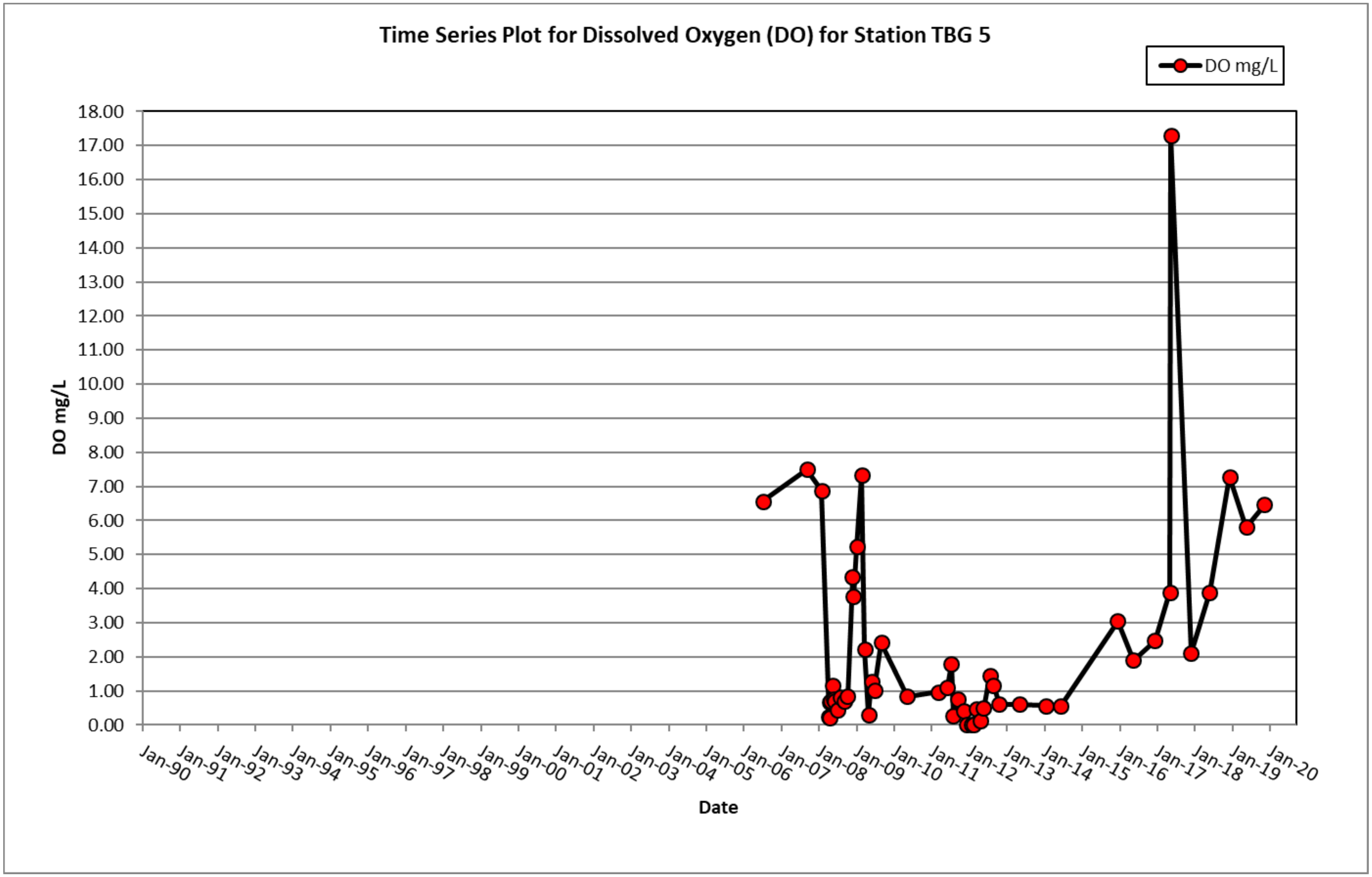
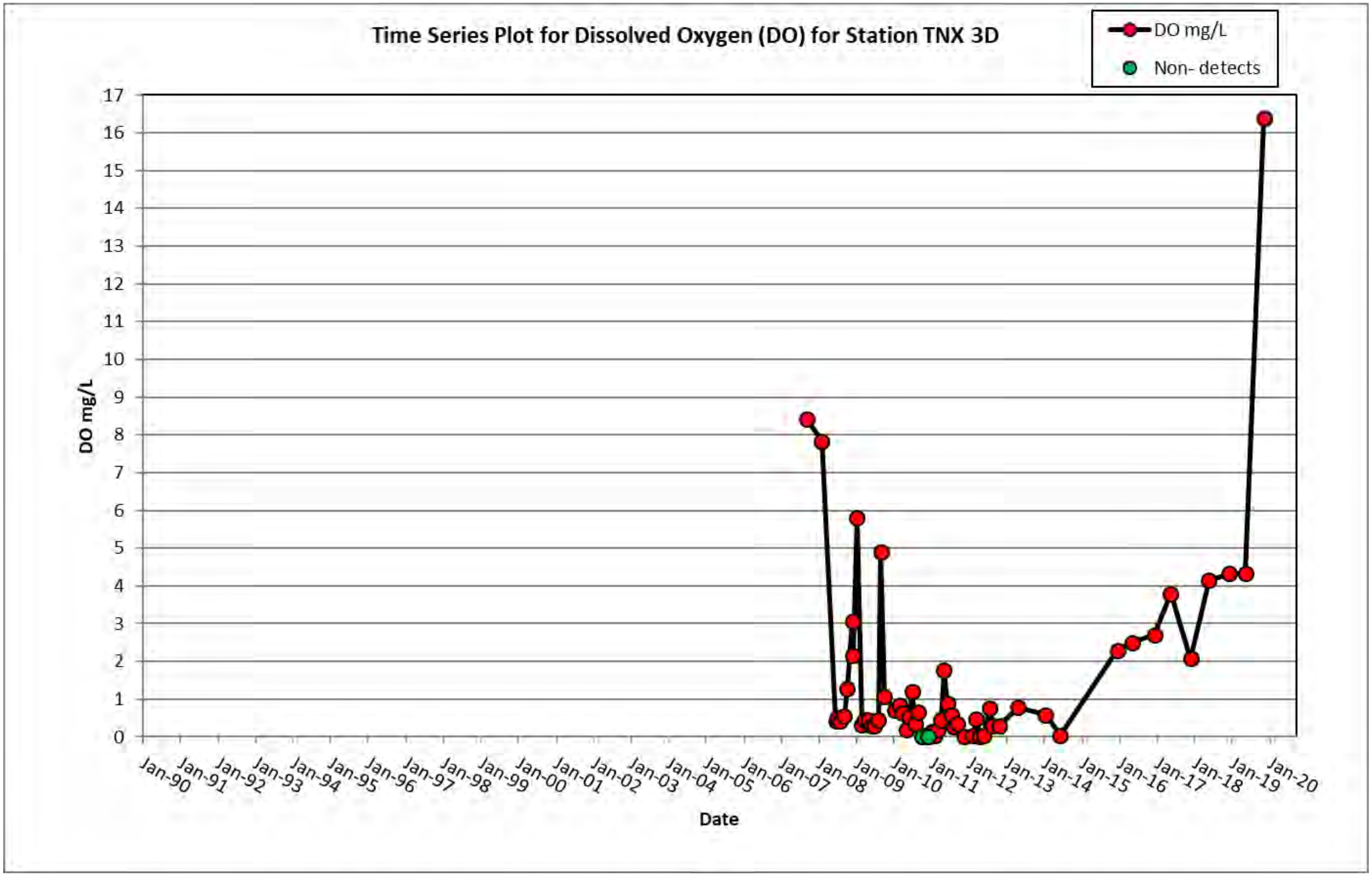
Jan-17
Jan-18
Jan-19
Jan-20
Date


Time Series Plot for Dissolved Oxygen (DO) for Station TBG 5
DO mg/L
18.00
17.00
16.00
15.00
14.00
13.00
12.00
11.00
10.00
9.00
8.00
7.00
6.00
5.00
4.00
3.00
2.00
1.00
0.00
DO mg/L
Jan-90
Jan-91
Jan-92
Jan-93
Jan-94
Jan-95
Jan-96
Jan-97
Jan-98
Jan-99
Jan-00
Jan-01
Jan-02
Jan-03
Jan-04
Jan-05
Jan-06
Jan-07
Jan-08
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Date


Time Series Plot for Dissolved Oxygen (DO) for Station TNX 3D
DO mg/L
Non- detects
DO mg/L
17
16
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1
0
Jan-90
Jan-91
Jan-92
Jan-93
Jan-94
Jan-95
Jan-96
Jan-97
Jan-98
Jan-99
Jan-00
Jan-01
Jan-02
Jan-03
Jan-04
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Jan-07
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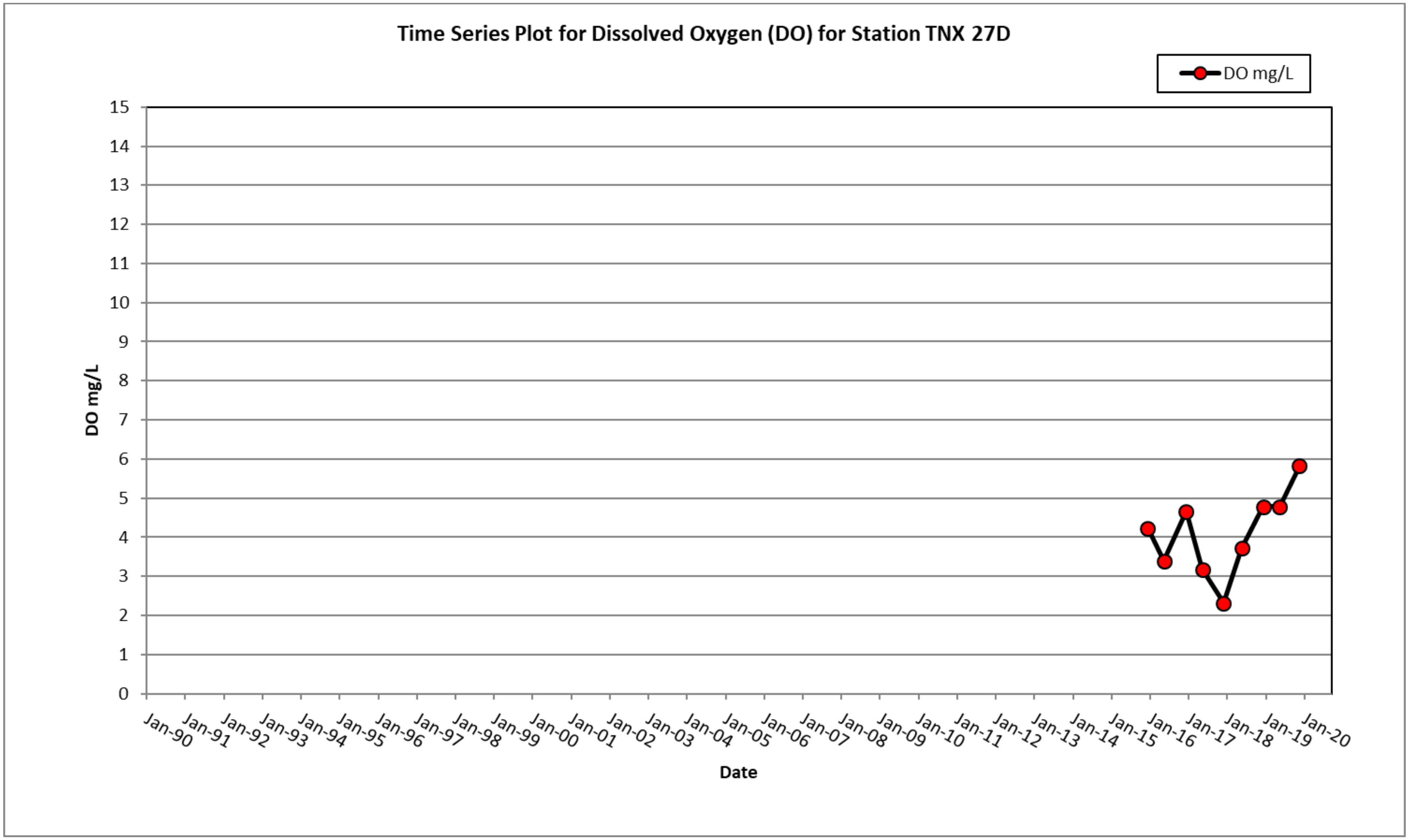
Date


Time Series Plot for Dissolved Oxygen (DO) for Station TNX 27D
DO mg/L
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1
0
DO mg/L
Jan-90
Jan-91
Jan-92
Jan-93
Jan-94
Jan-95
Jan-96
Jan-97
Jan-98
Jan-99
Jan-00
Jan-01
Jan-02
Jan-03
Jan-04
Jan-05
Jan-06
Jan-07
Jan-08
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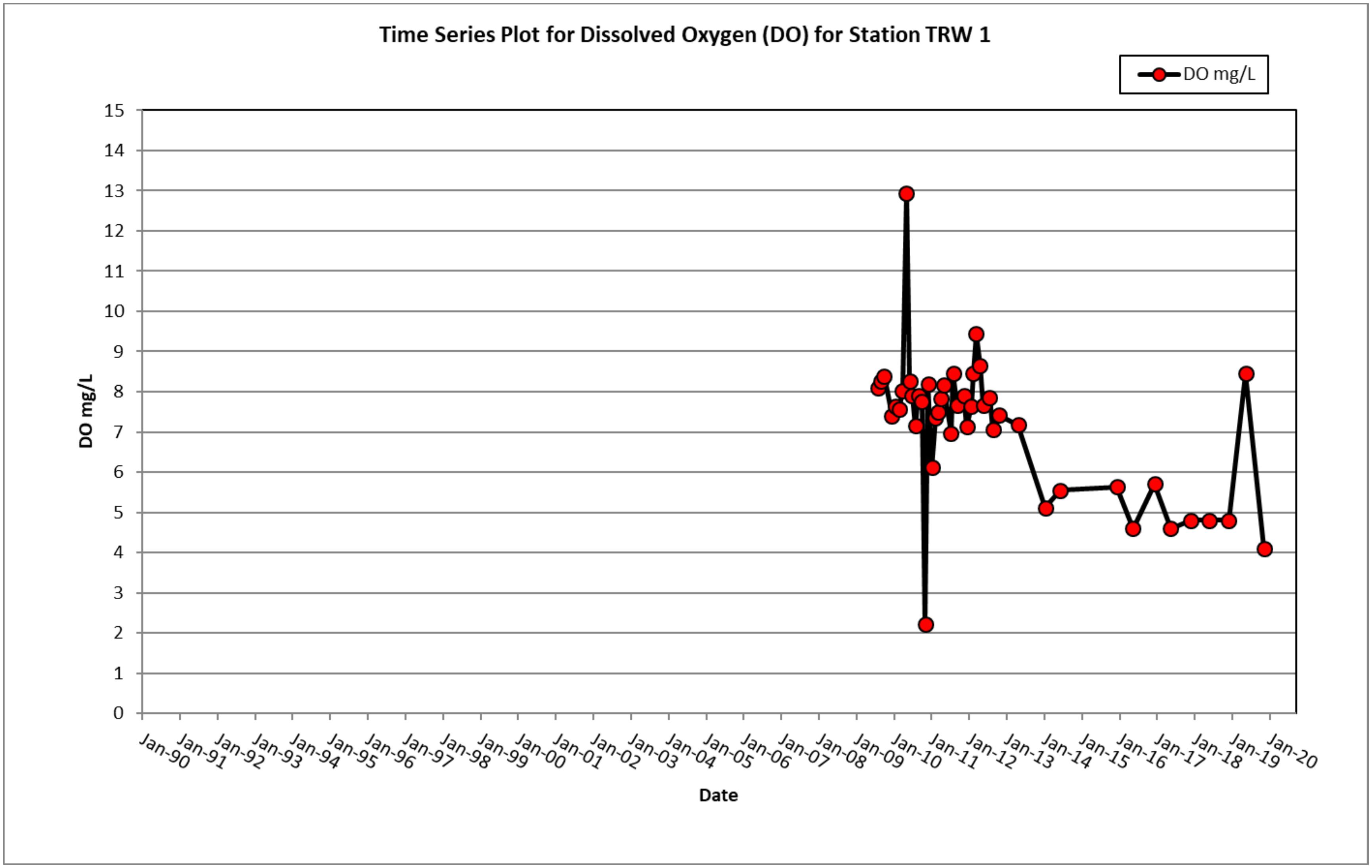
Jan-17
Jan-18
Jan-19
Jan-20
Date


Time Series Plot for Dissolved Oxygen (DO) for Station TRW 1
DO mg/L
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1
0
DO mg/L
Jan-90
Jan-91
Jan-92
Jan-93
Jan-94
Jan-95
Jan-96
Jan-97
Jan-98
Jan-99
Jan-00
Jan-01
Jan-02
Jan-03
Jan-04
Jan-05
Jan-06
Jan-07
Jan-08
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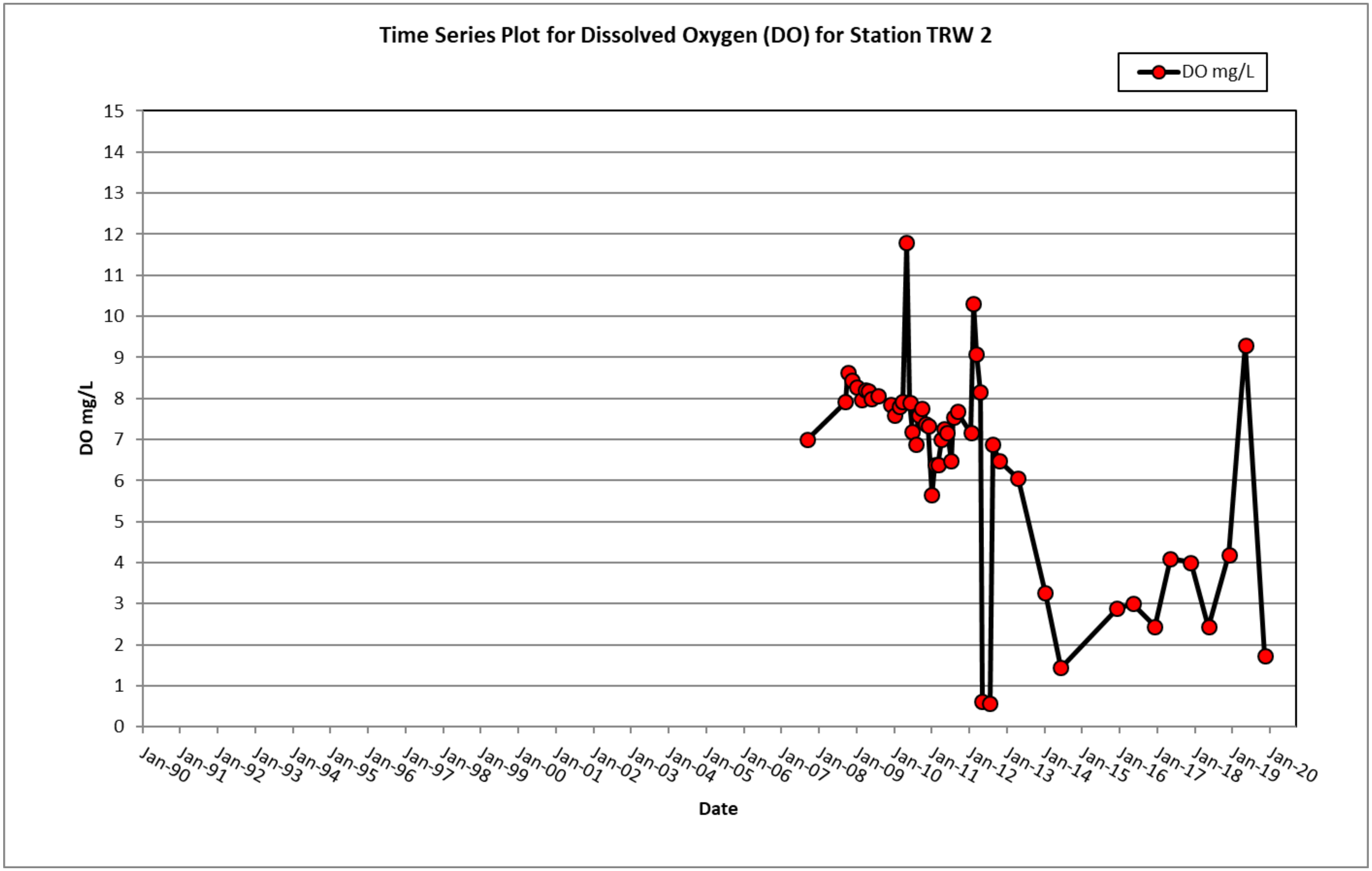
Jan-17
Jan-18
Jan-19
Jan-20
Date


Time Series Plot for Dissolved Oxygen (DO) for Station TRW 2
DO mg/L
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1
0
DO mg/L
Jan-90
Jan-91
Jan-92
Jan-93
Jan-94
Jan-95
Jan-96
Jan-97
Jan-98
Jan-99
Jan-00
Jan-01
Jan-02
Jan-03
Jan-04
Jan-05
Jan-06
Jan-07
Jan-08
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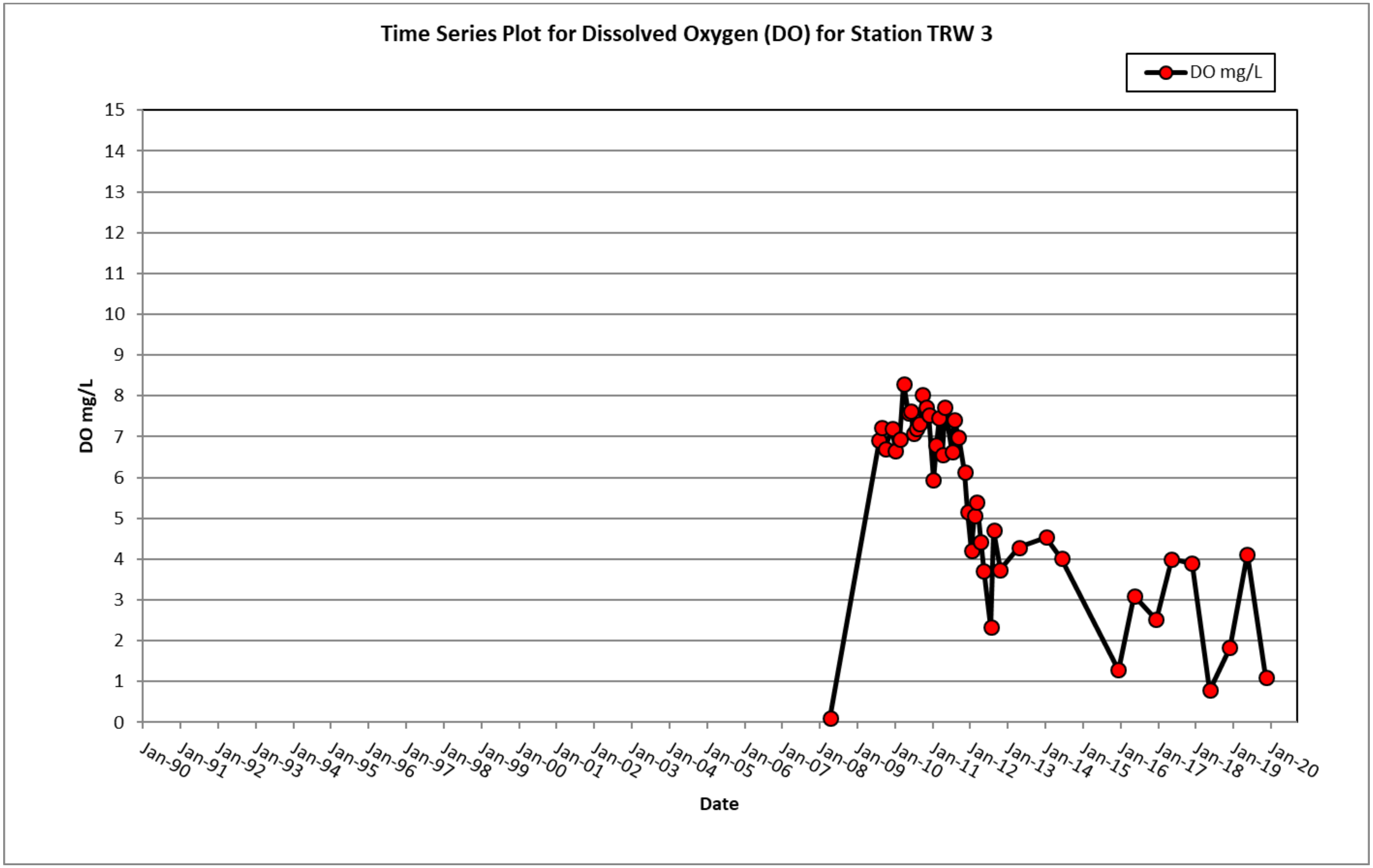
Jan-19
Jan-20
Date


Time Series Plot for Dissolved Oxygen (DO) for Station TRW 3
DO mg/L
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1
0
DO mg/L
Jan-90
Jan-91
Jan-92
Jan-93
Jan-94
Jan-95
Jan-96
Jan-97
Jan-98
Jan-99
Jan-00
Jan-01
Jan-02
Jan-03
Jan-04
Jan-05
Jan-06
Jan-07
Jan-08
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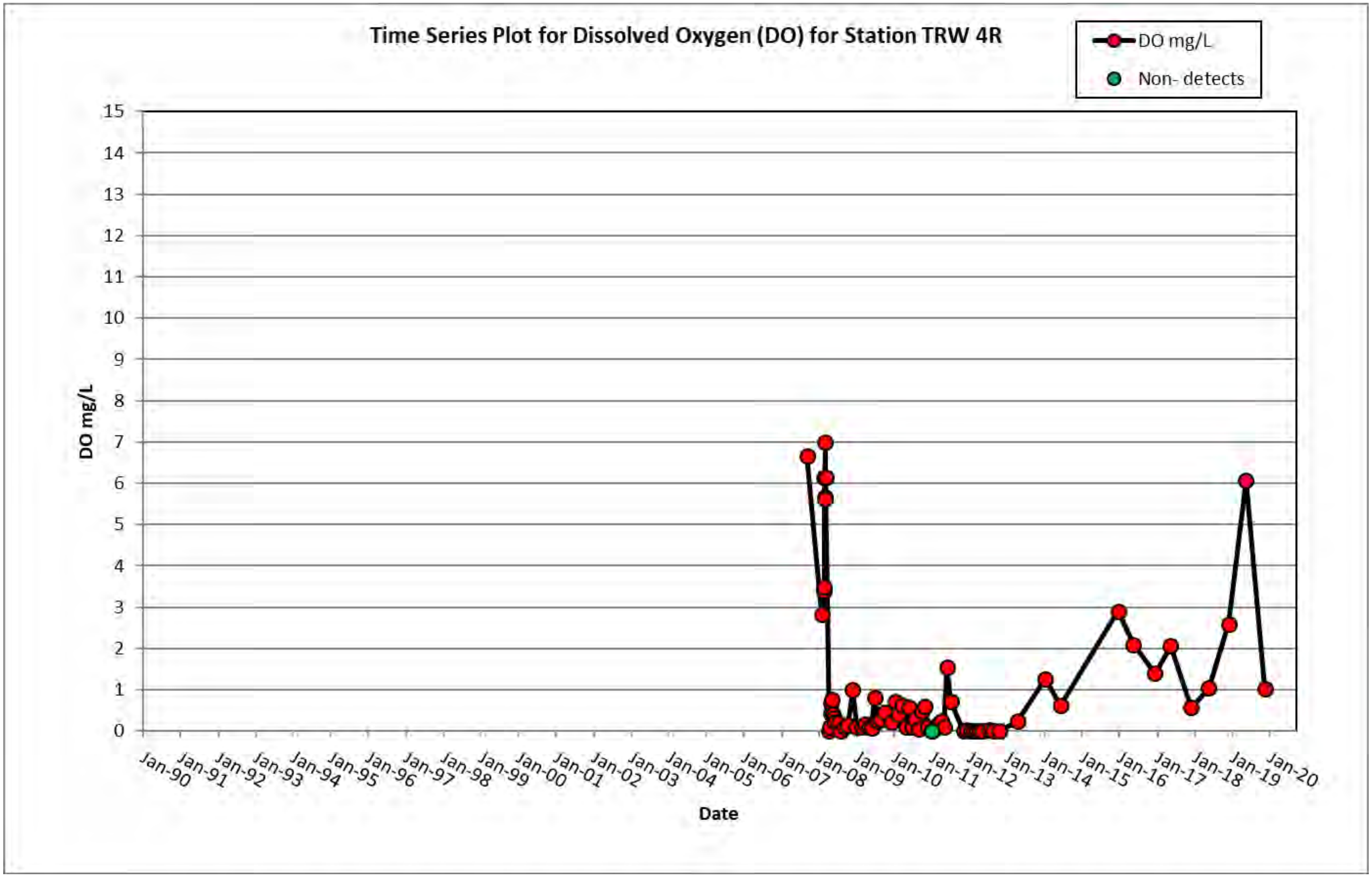
Date


Time Series Plot for Dissolved Oxygen (DO) for Station TRW 4R
DO mg/L
Non- detects
DO mg/L
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
Jan-90
Jan-91
Jan-92
Jan-93
Jan-94
Jan-95
Jan-96
Jan-97
Jan-98
Jan-99
Jan-00
Jan-01
Jan-02
Jan-03
Jan-04
Jan-05
Jan-06
Jan-07
Jan-08
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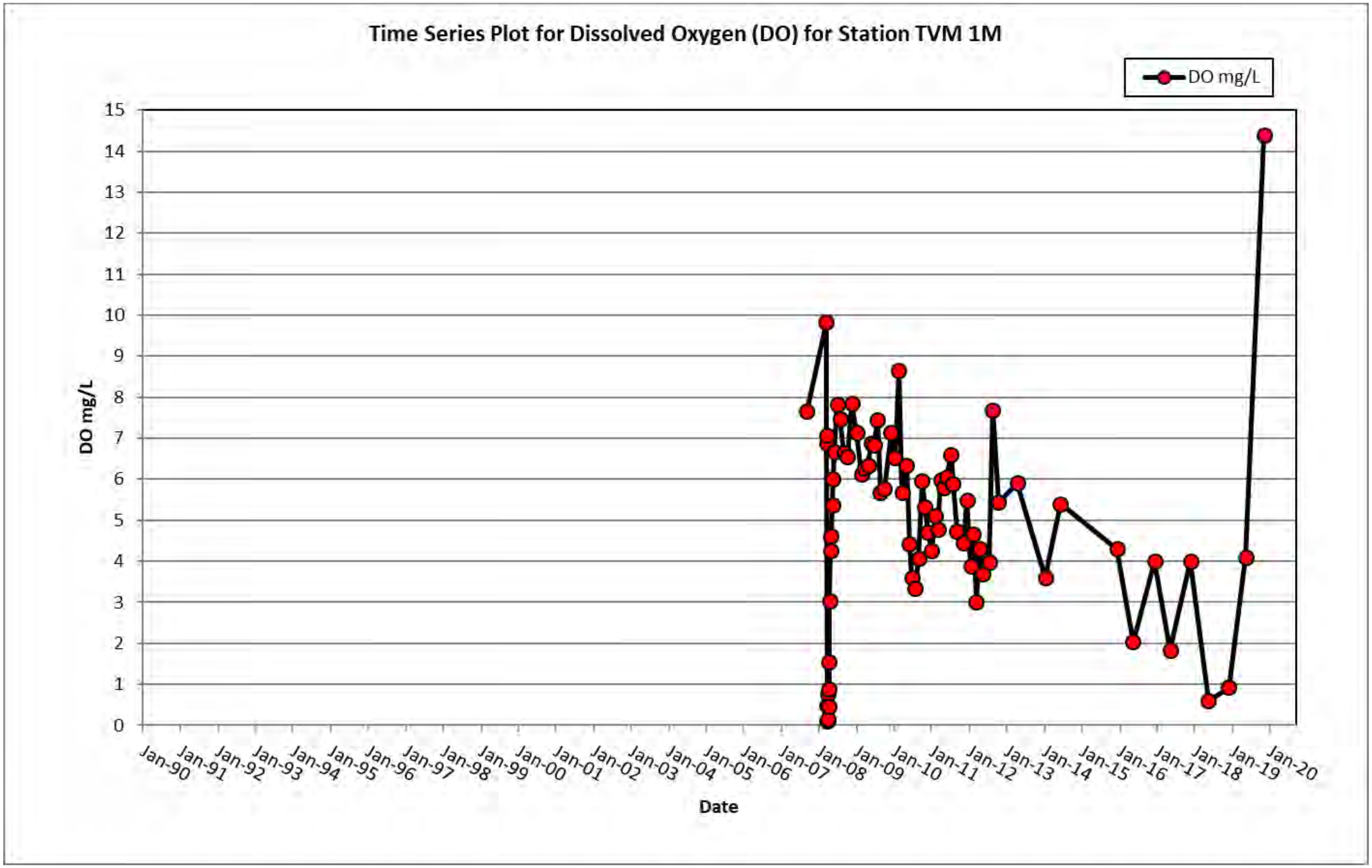
Jan-19
Jan-20
Date


Time Series Plot for Dissolved Oxygen (DO) for Station TVM 1M
DO mg/L
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1
0
DO mg/L
Jan-90
Jan-91
Jan-92
Jan-93
Jan-94
Jan-95
Jan-96
Jan-97
Jan-98
Jan-99
Jan-00
Jan-01
Jan-02
Jan-03
Jan-04
Jan-05
Jan-06
Jan-07
Jan-08
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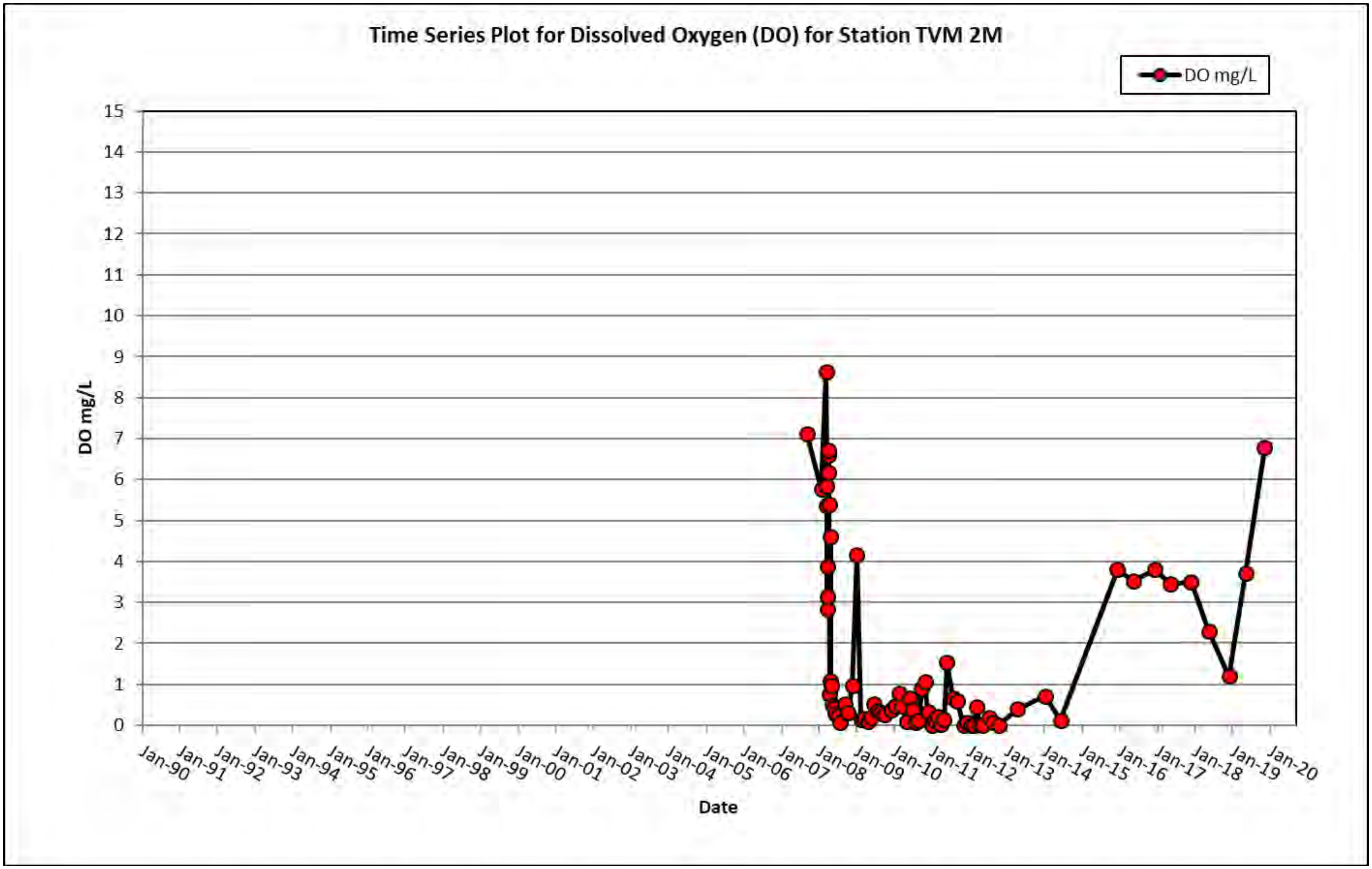
Jan-18
Jan-19
Jan-20
Date


Time Series Plot for Dissolved Oxygen (DO) for Station TVM 2M
DO mg/L
DO mg/L
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
Jan-90
Jan-91
Jan-92
Jan-93
Jan-94
Jan-95
Jan-96
Jan-97
Jan-98
Jan-99
Jan-00
Jan-01
Jan-02
Jan-03
Jan-04
Jan-05
Jan-06
Jan-07
Jan-08
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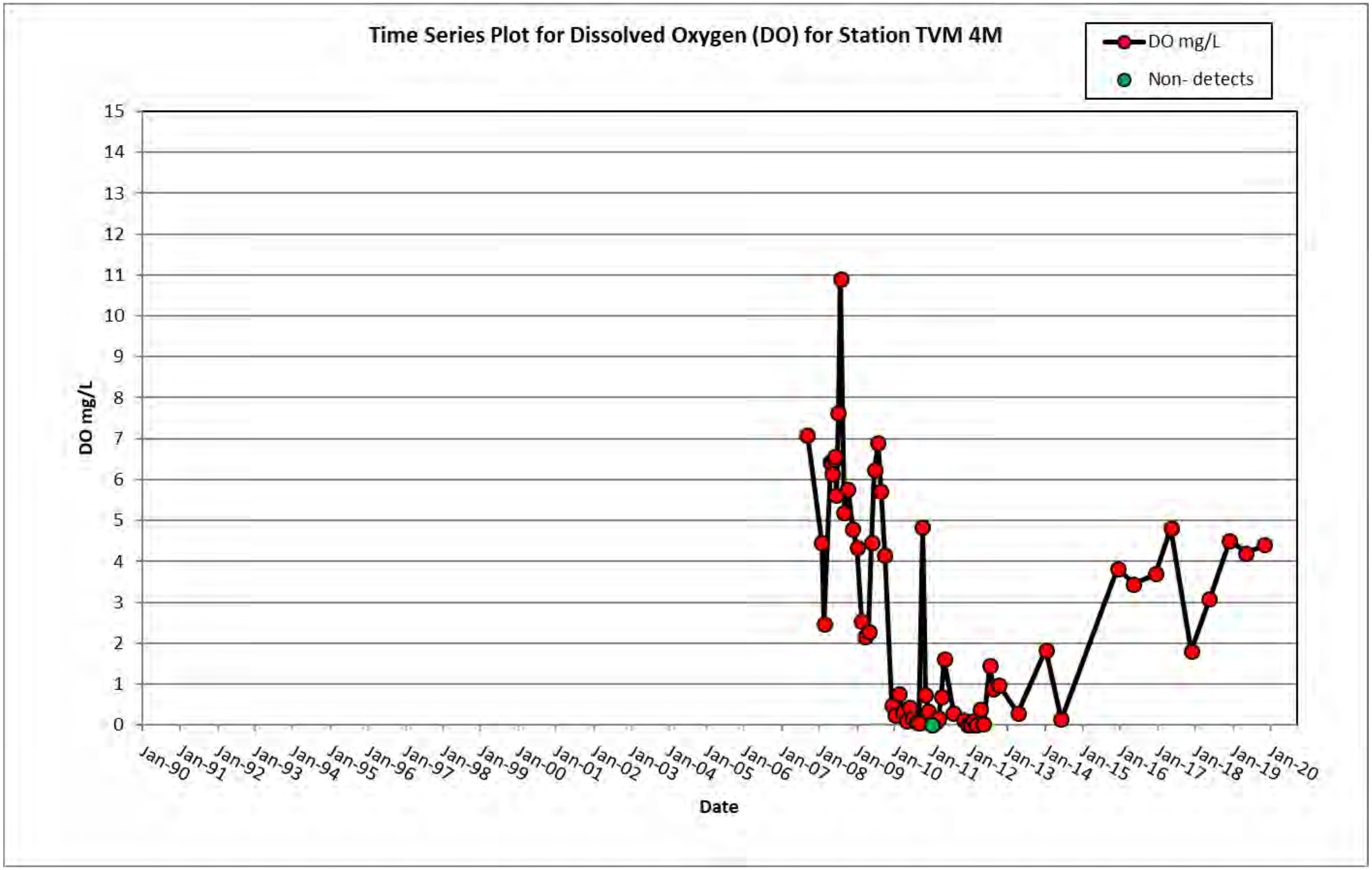
Jan-18
Jan-19
Jan-20
Date


Time Series Plot for Dissolved Oxygen (DO) for Station TVM 4M
DO mg/L
Non- detects
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1
0
DO mg/L
Jan-90
Jan-91
Jan-92
Jan-93
Jan-94
Jan-95
Jan-96
Jan-97
Jan-98
Jan-99
Jan-00
Jan-01
Jan-02
Jan-03
Jan-04
Jan-05
Jan-06
Jan-07
Jan-08
Jan-09
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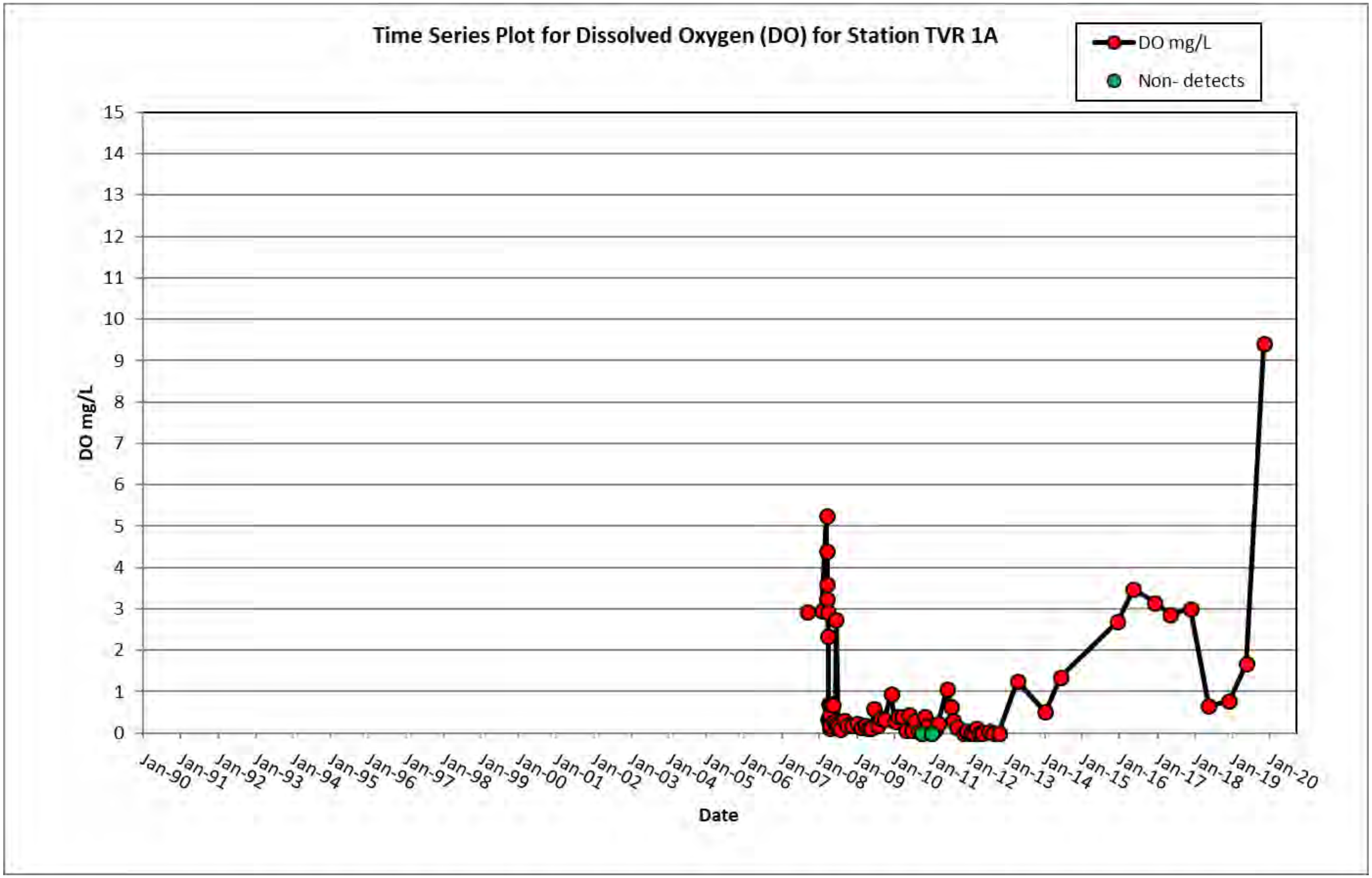
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Date


Time Series Plot for Dissolved Oxygen (DO) for Station TVR 1A
DO mg/L
Non- detects
DO mg/L
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1
0
Jan-90
Jan-91
Jan-92
Jan-93
Jan-94
Jan-95
Jan-96
Jan-97
Jan-98
Jan-99
Jan-00
Jan-01
Jan-02
Jan-03
Jan-04
Jan-05
Jan-06
Jan-07
Jan-08
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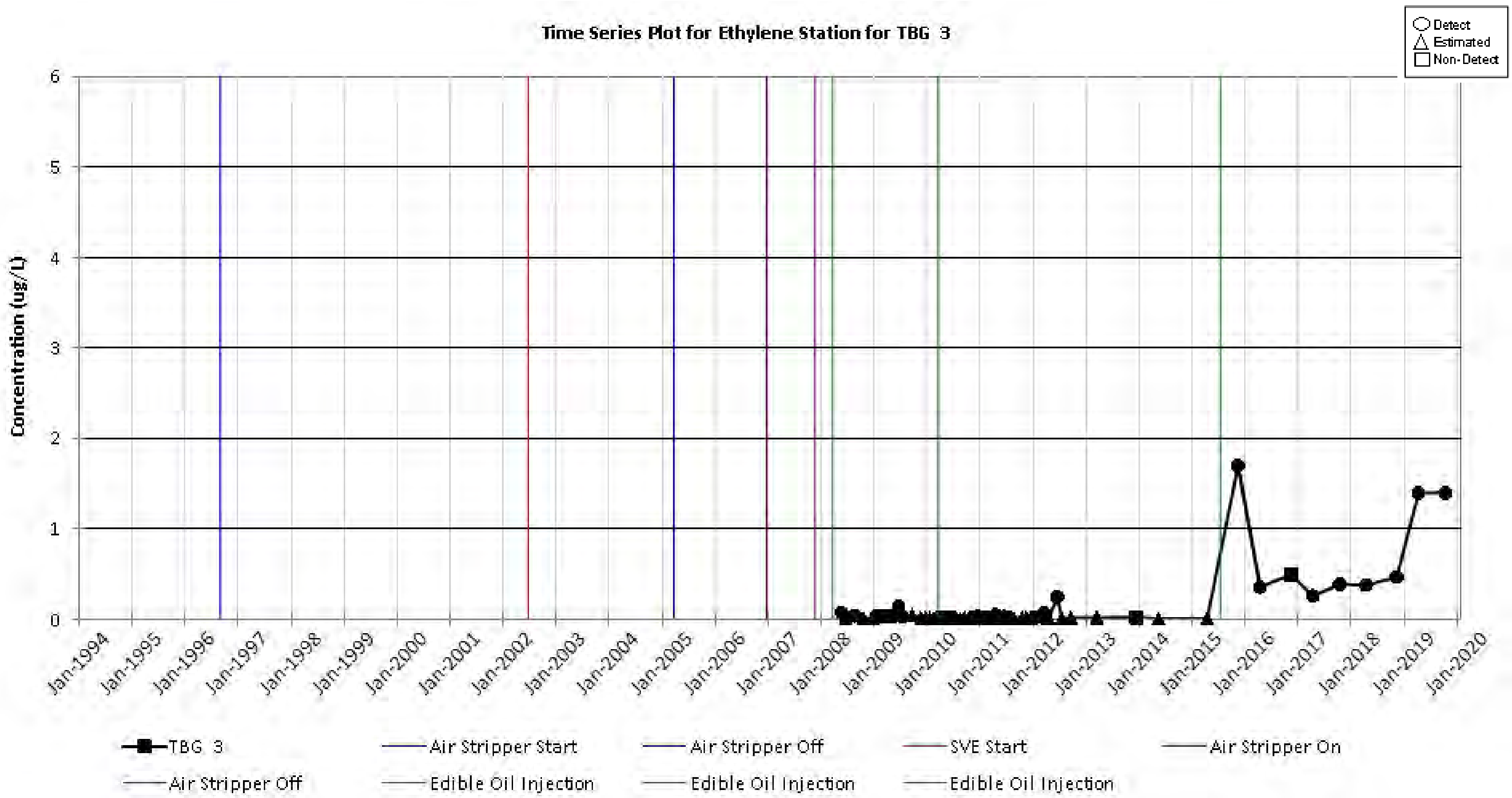
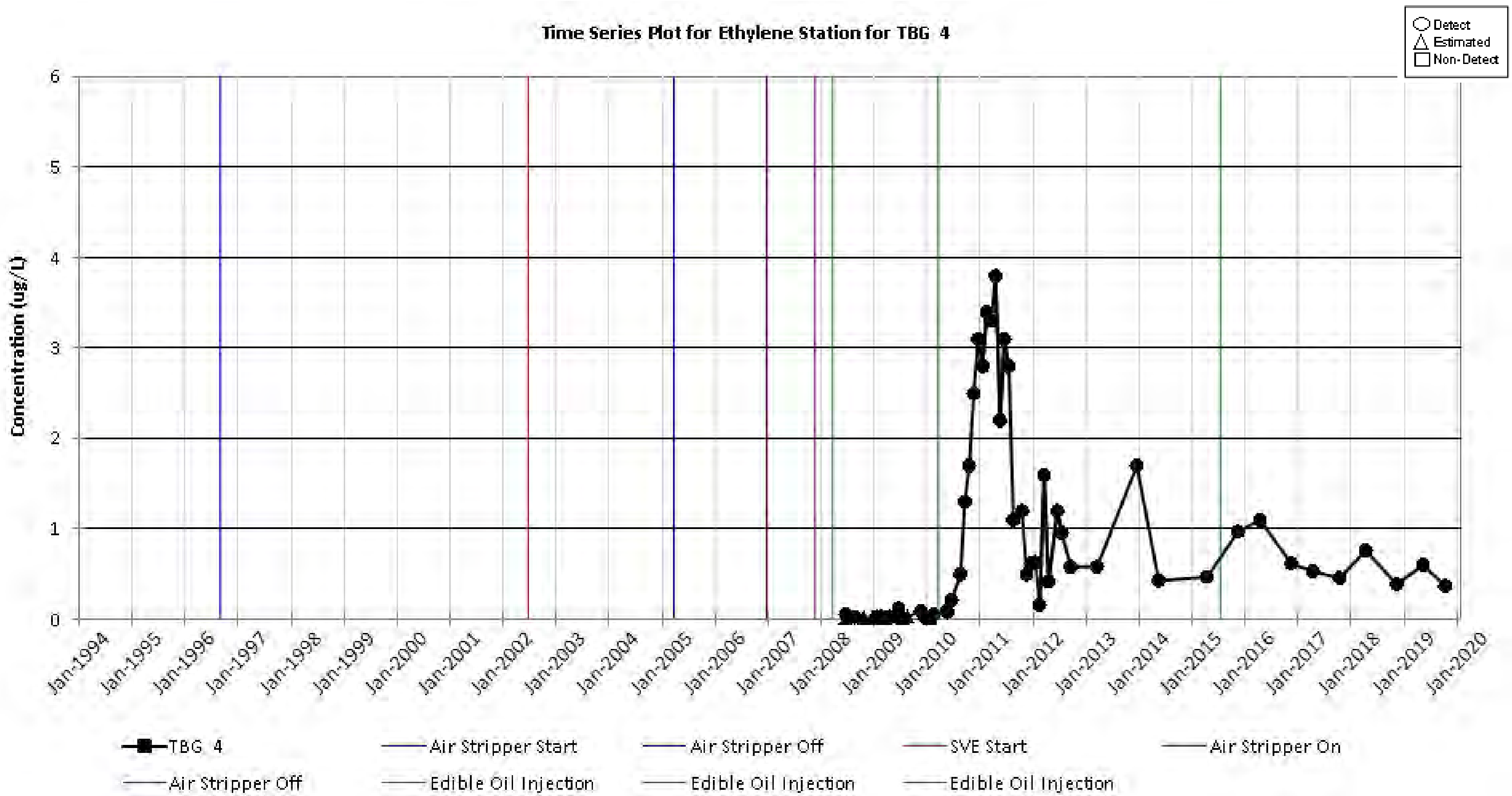
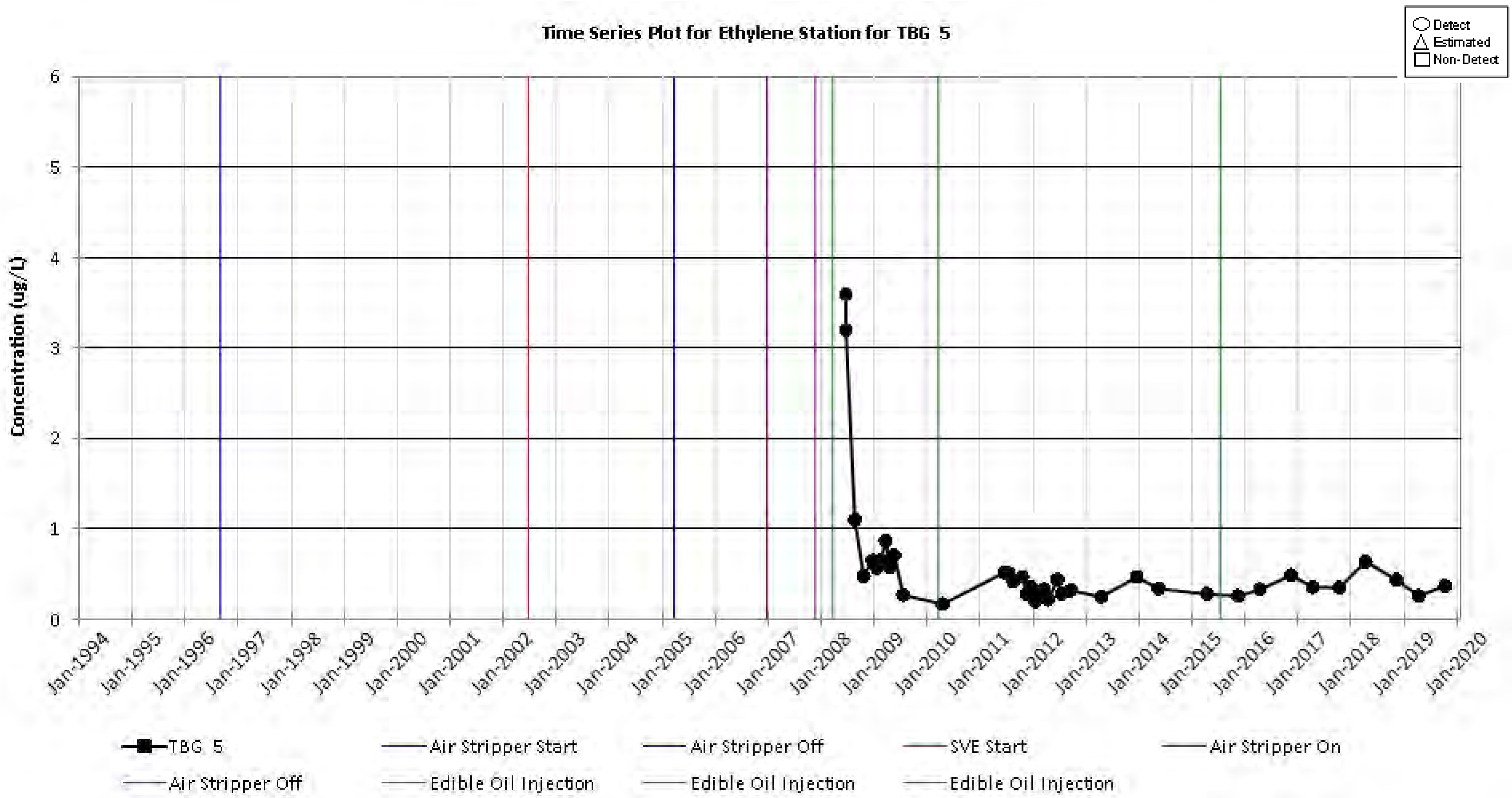
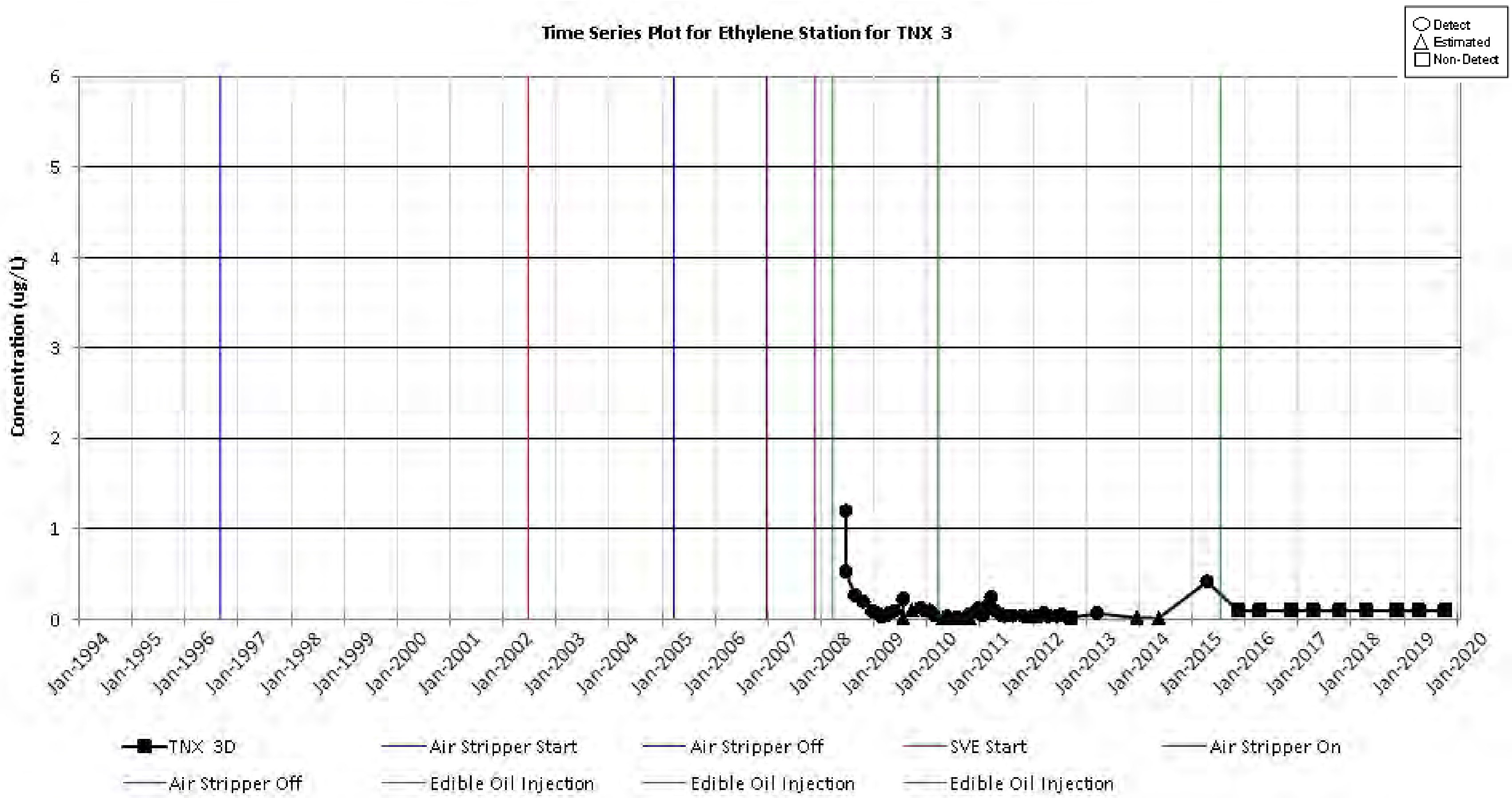
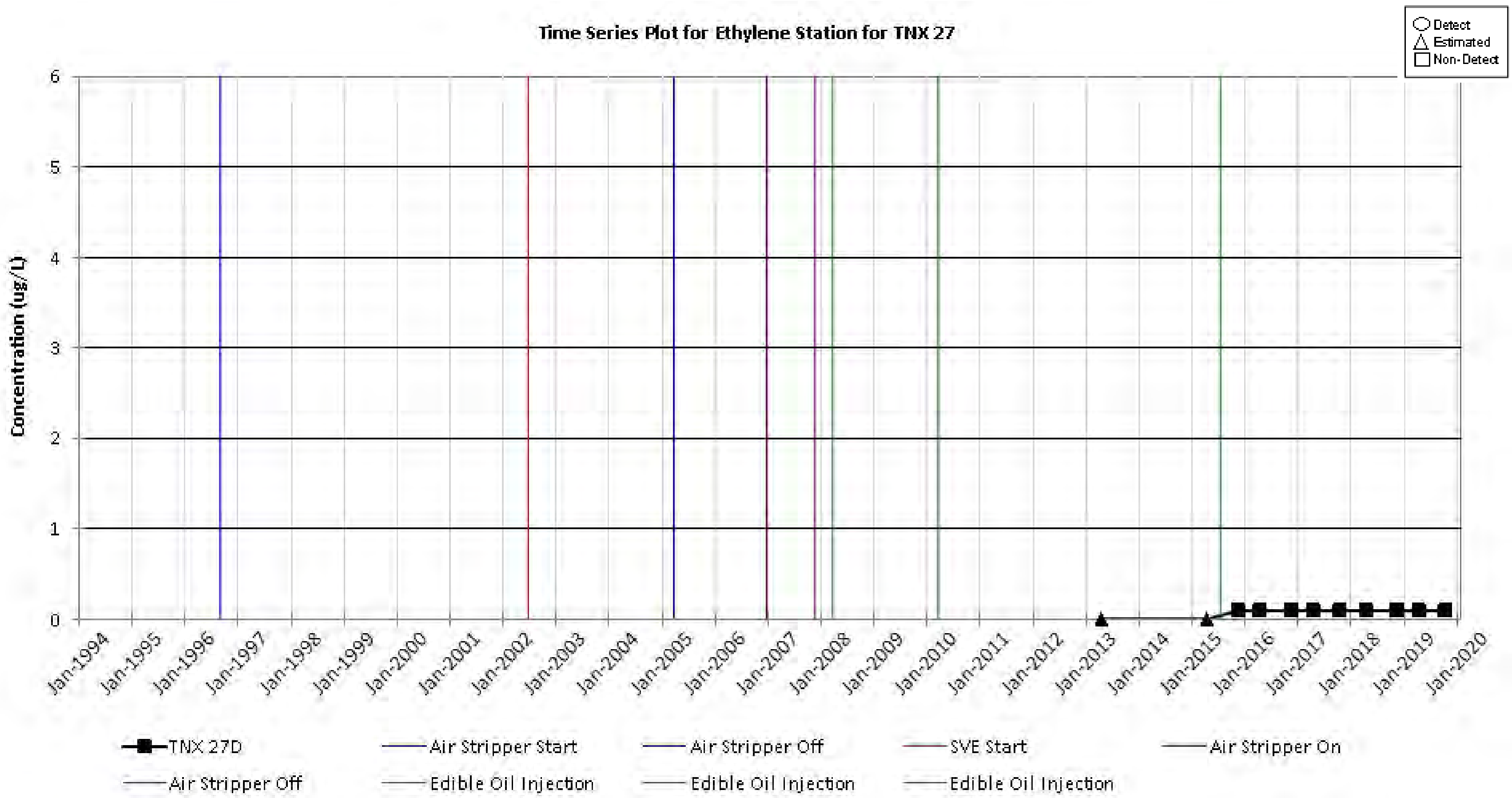
Jan-17
Jan-18
Jan-19
Jan-20
Date

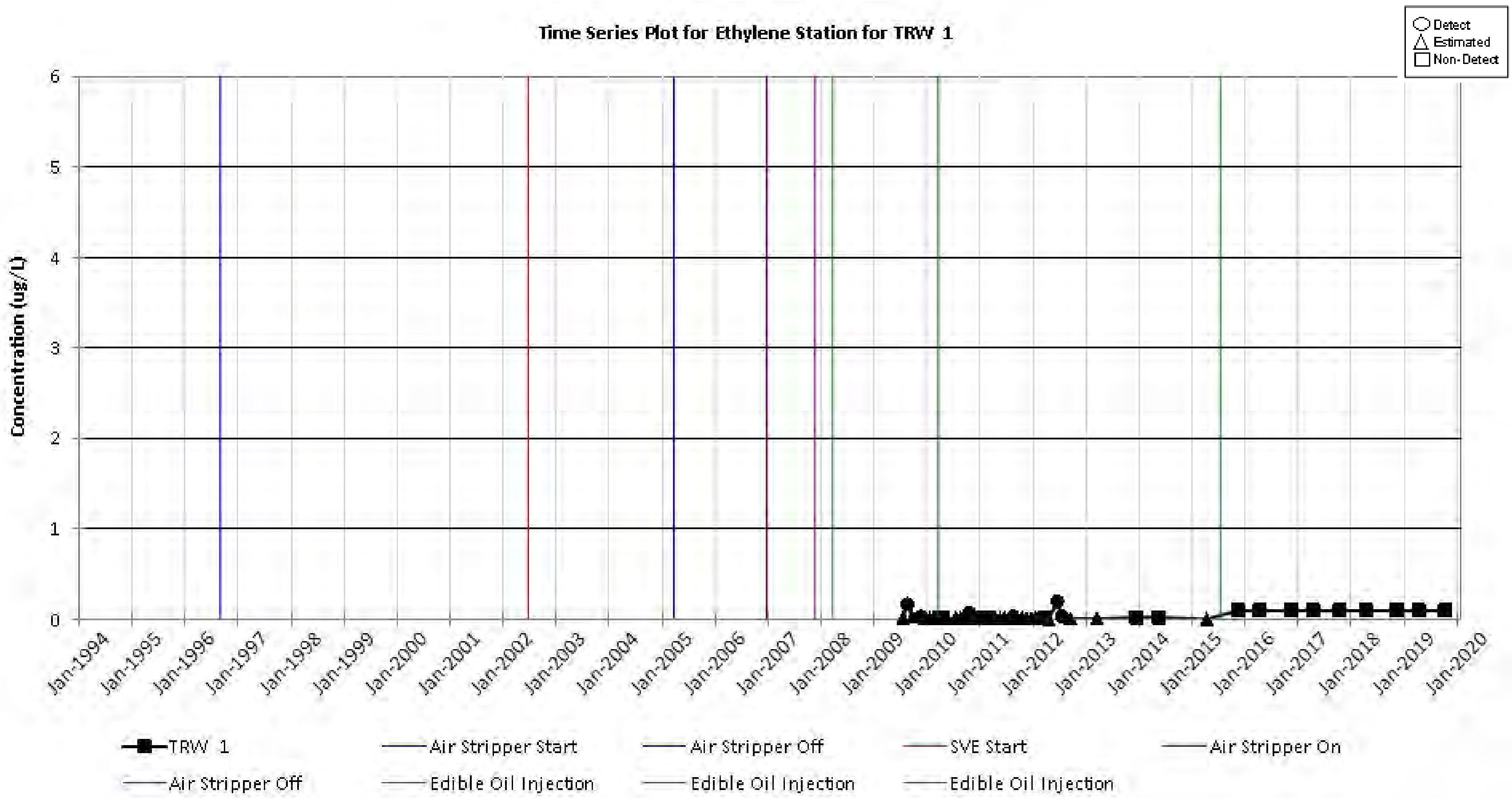

Time Series Plot for Ethylene Station for TBG 3
Detect
Estimated
Non-Detect
Concentration (ug/L)
0
1
2
3
4
5
6
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TBG 3
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection

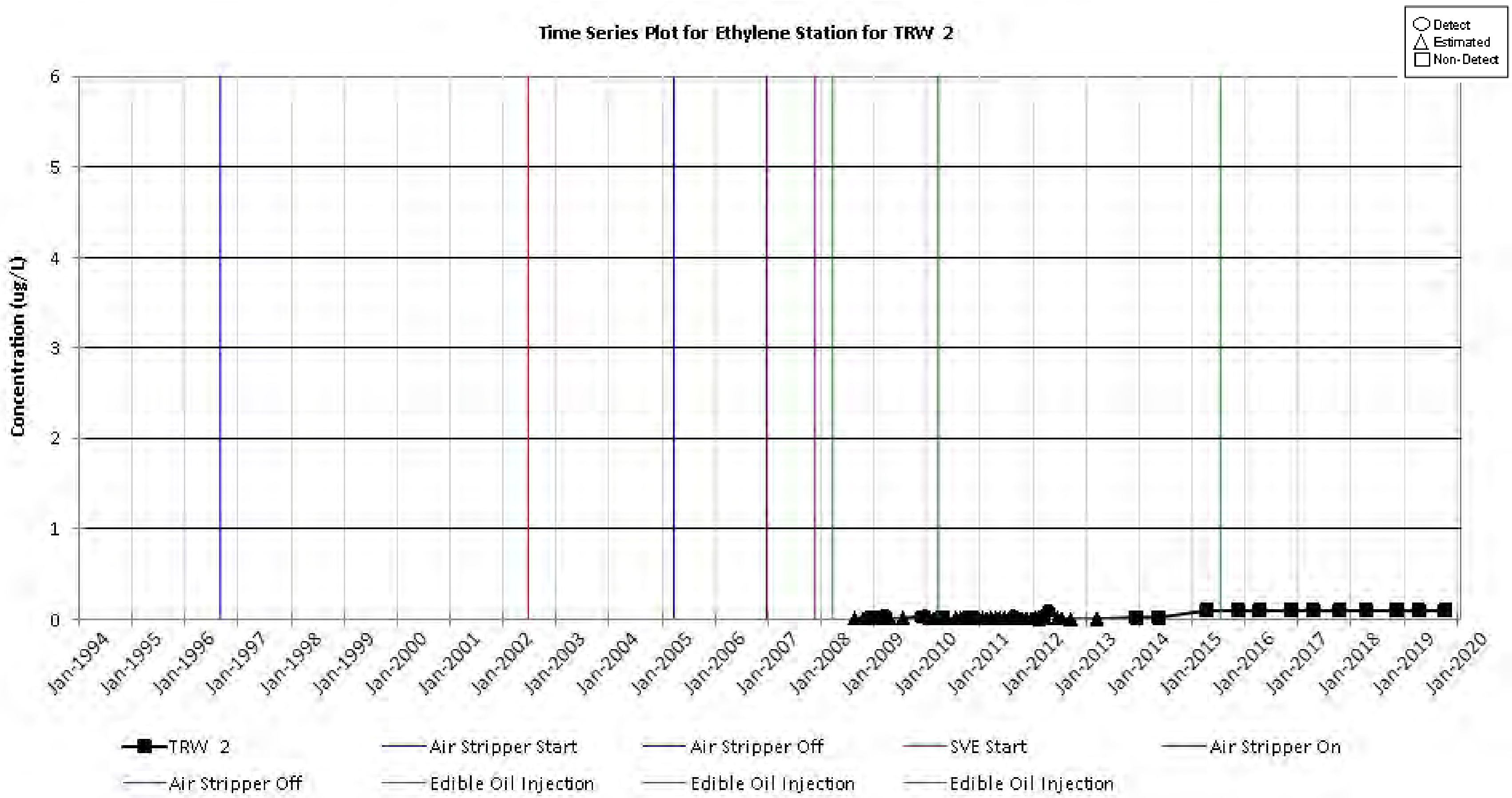

Time Series Plot for Ethylene Station for TBG 4
Detect
Estimated
Non-Detect
Concentration (ug/L)
0
1
2
3
4
5
6
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TBG 4
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection

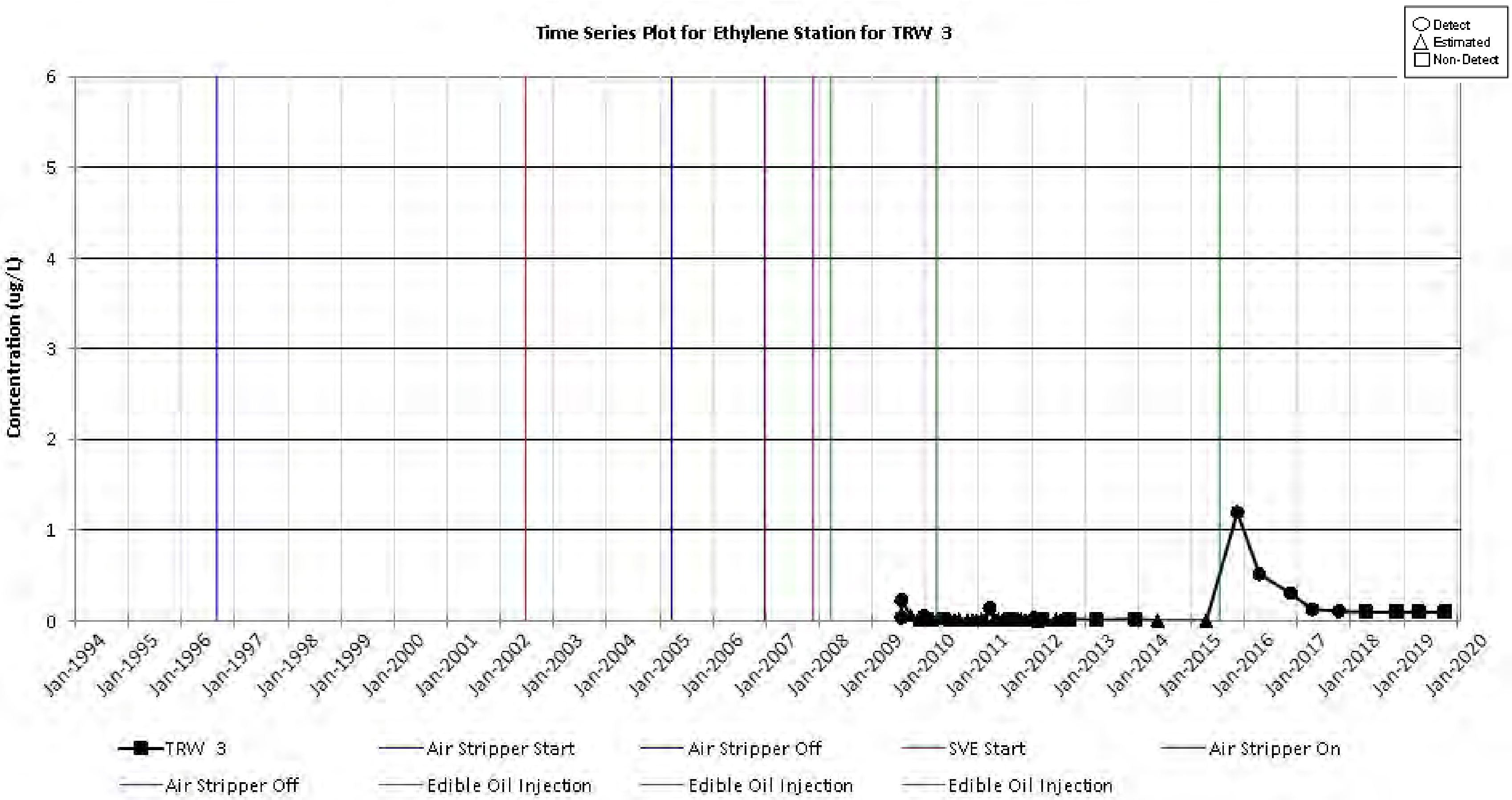

Time Series Plot for Ethylene Station for TBG 5
Detect
Estimated
Non-Detect
Concentration (ug/L)
6
5
4
3
2
1
0
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TBG 5
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection

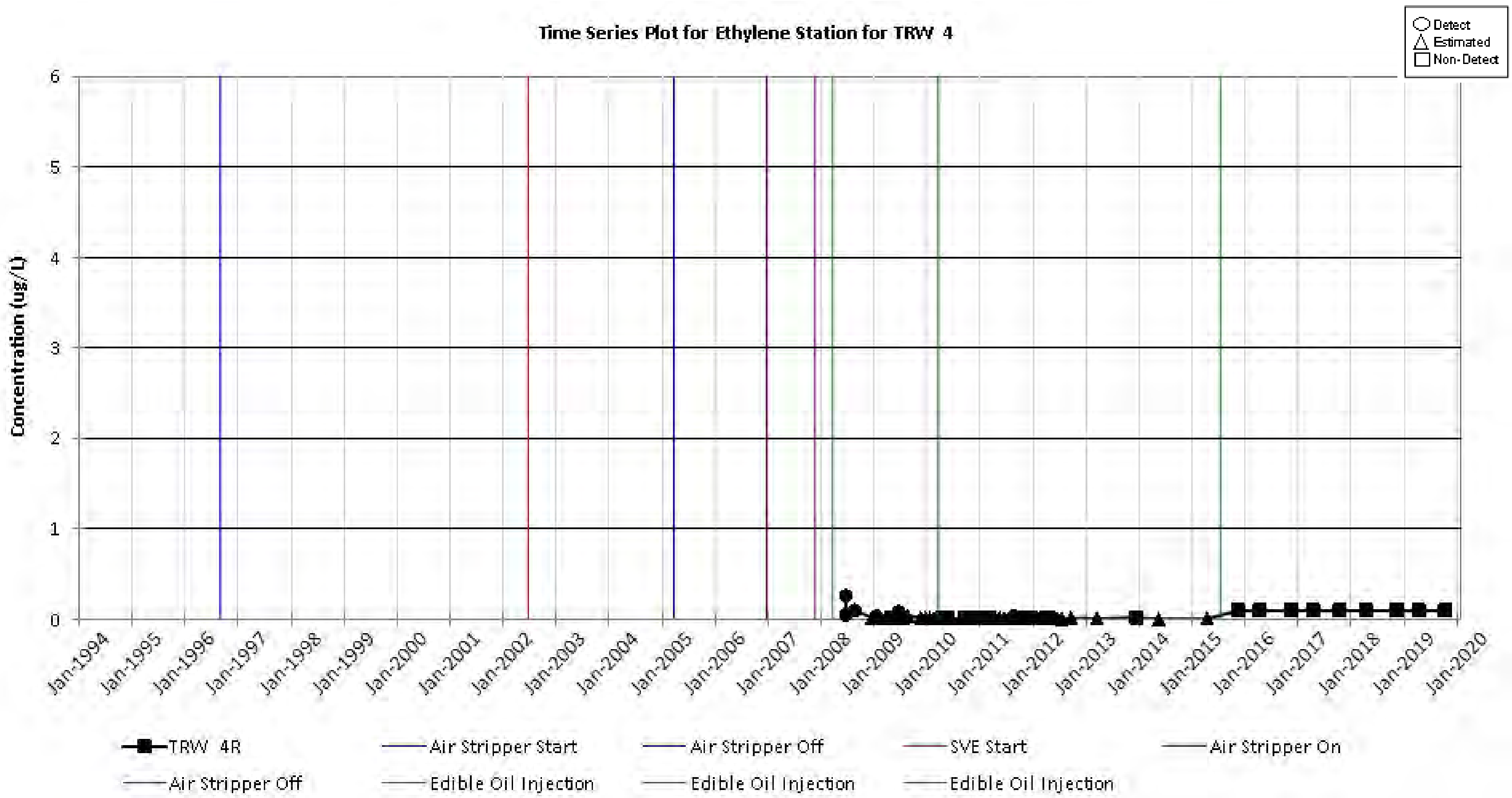

Time Series Plot for Ethylene Station for TNX 3
Detect
Estimated
Non-Detect
Concentration (ug/L)
0
1
2
3
4
5
6
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TNX 3D
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection

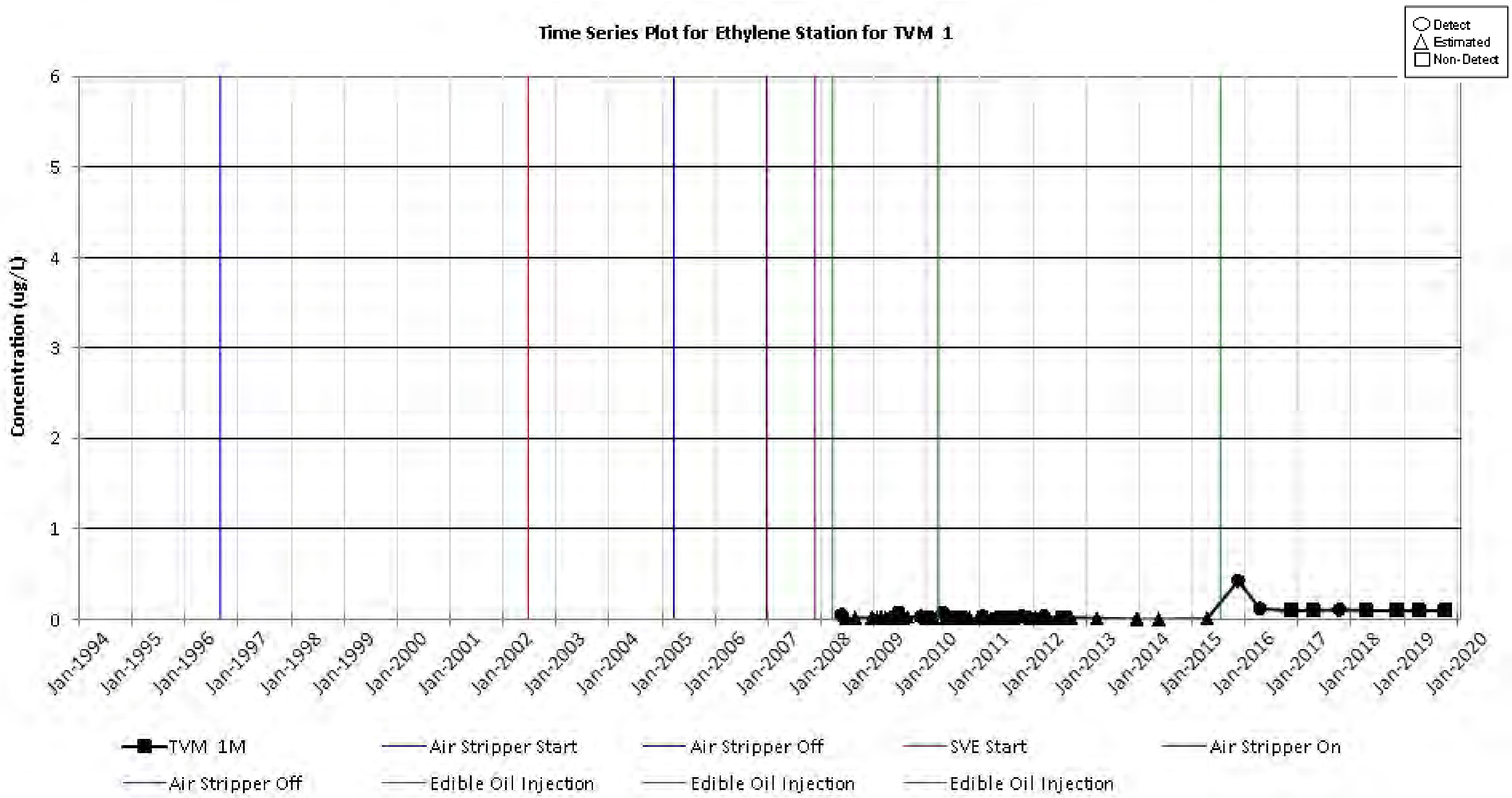

Time Series Plot for Ethylene Station for TNX 27
Detect
Estimated
Non-Detect
Concentration (ug/L)
0
1
2
3
4
5
6
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TNX 27D
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection

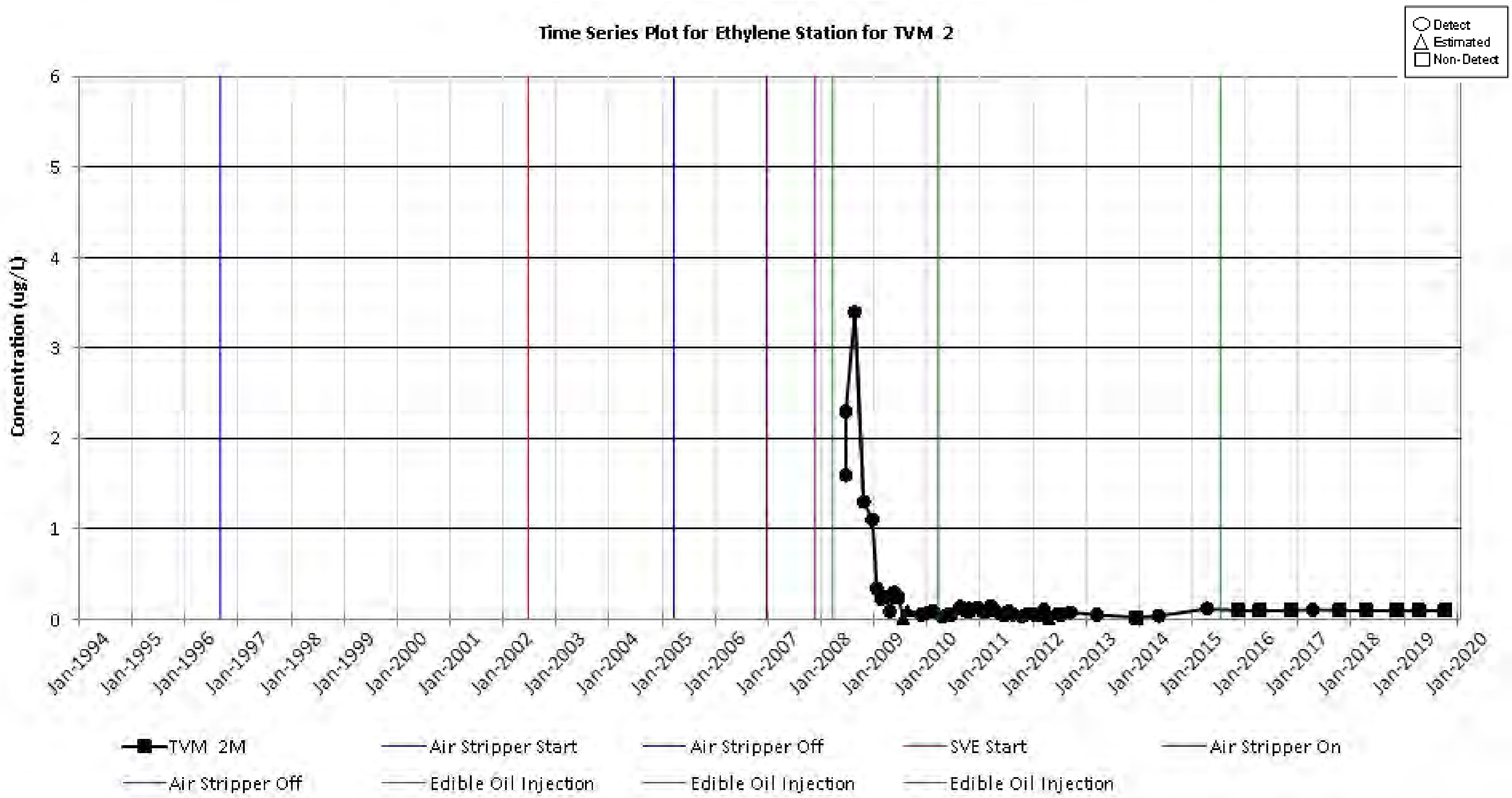

Time Series Plot for Ethylene Station for TRW 1
Detect
Estimated
Non-Detect
Concentration (ug/L)
0
1
2
3
4
5
6
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TRW 1
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection

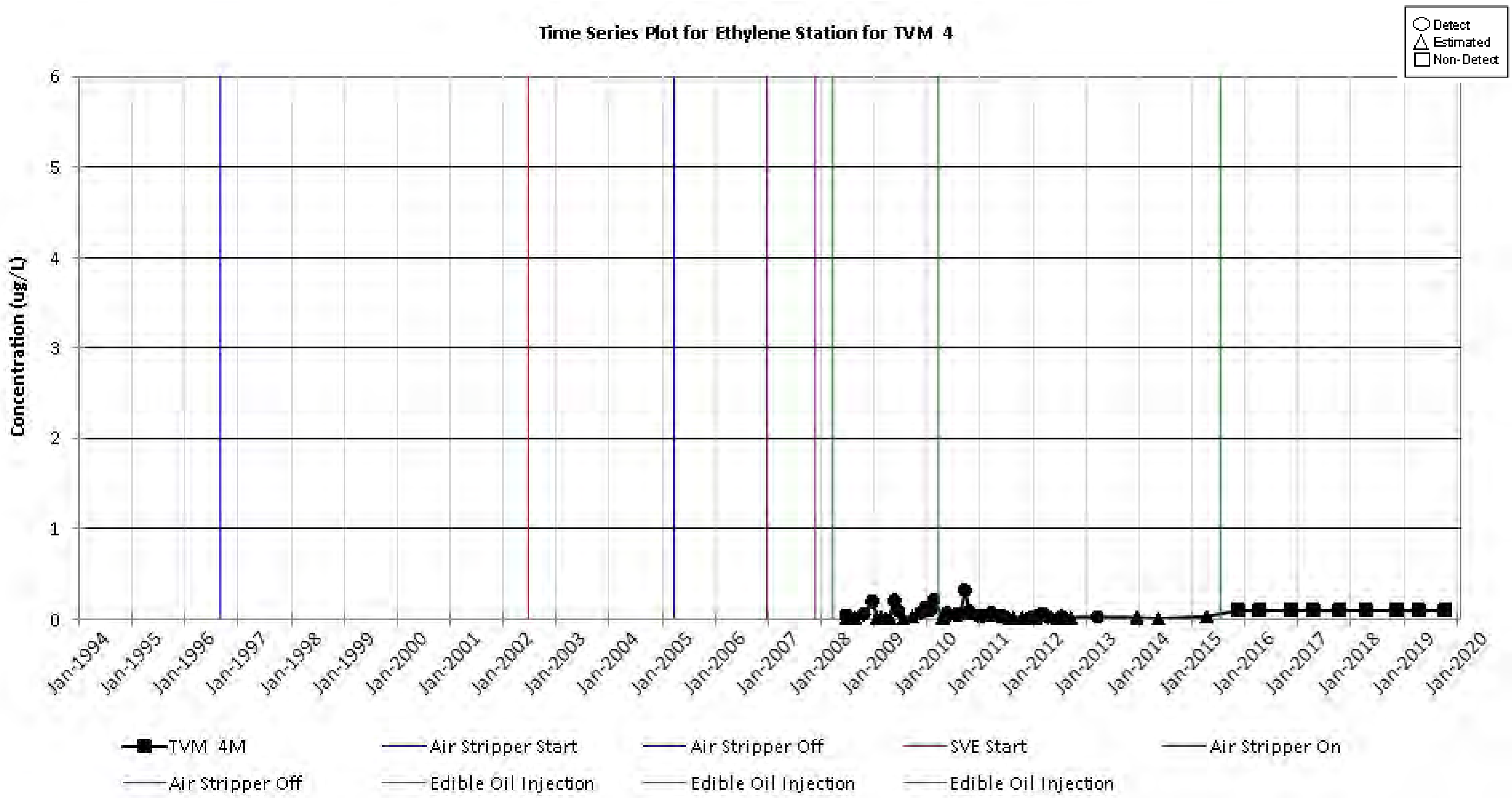

Time Series Plot for Ethylene Station for TRW 2
Detect
Estimated
Non-Detect
Concentration (ug/L)
0
1
2
3
4
5
6
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TRW 2
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection

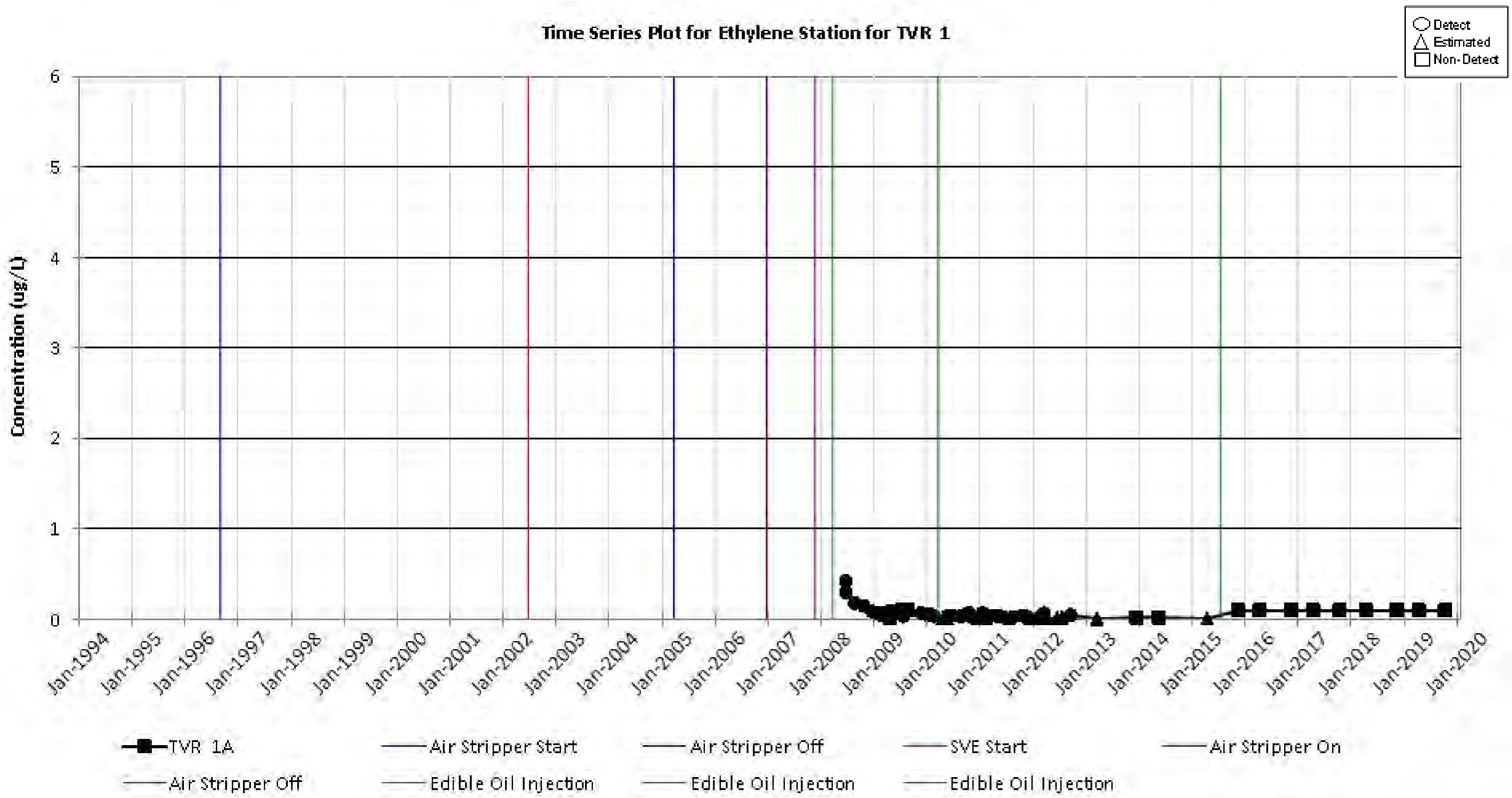

Time Series Plot for Ethylene Station for TRW 3
Detect
Estimated
Non-Detect
Concentration (ug/L)
6
5
4
3
2
1
0
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TRW 3
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection

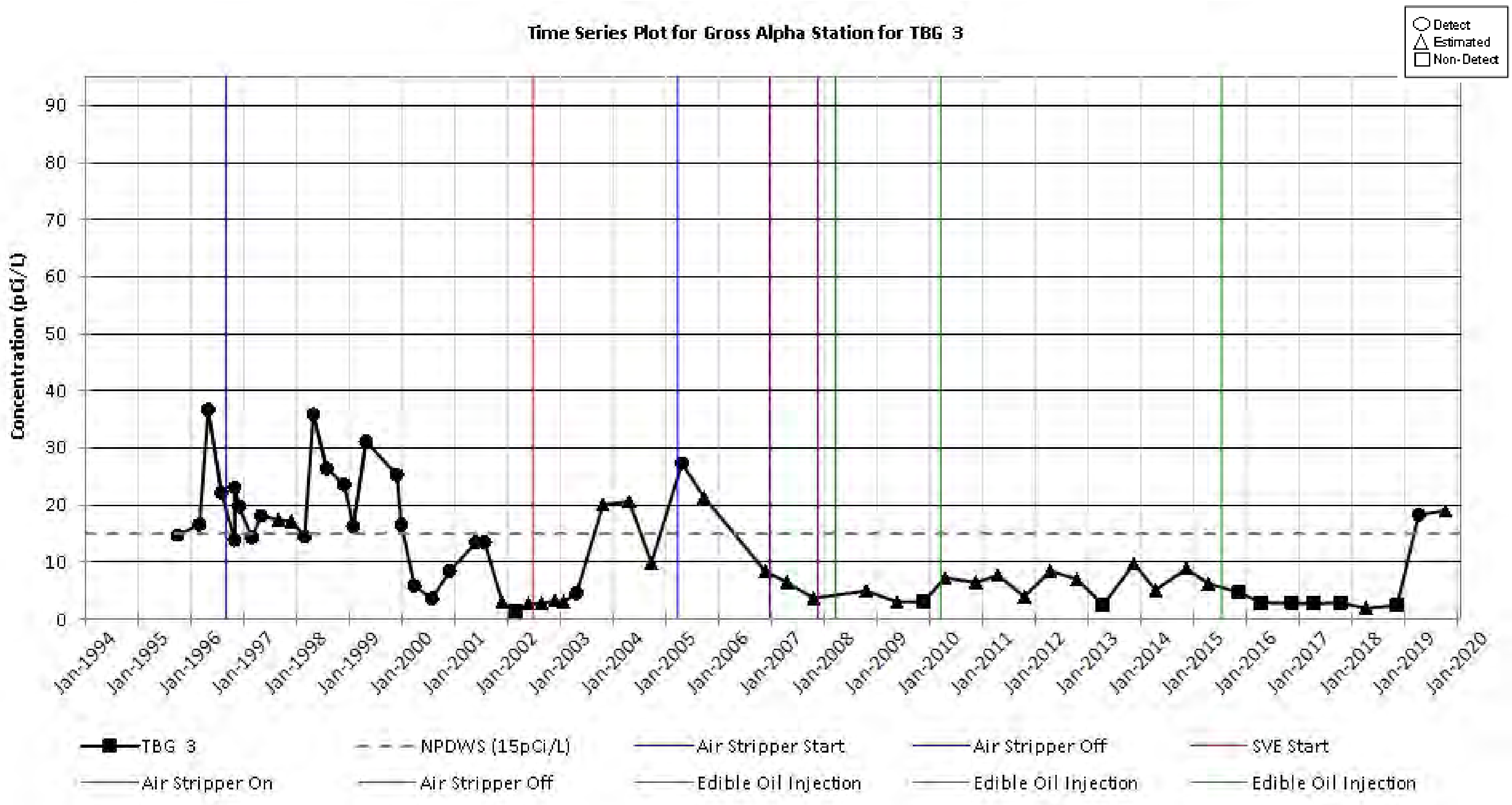

Time Series Plot for Ethylene Station for TRW 4
Detect
Estimated
Non-Detect
Concentration (ug/L)
6
5
4
3
2
1
0
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TRW 4R
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection


Time Series Plot for Ethylene Station for TVM 1
Detect
Estimated
Non-Detect
Concentration (ug/L)
0
1
2
3
4
5
6
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TVM 1M
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection


Time Series Plot for Ethylene Station for TVM 2
Detect
Estimated
Non-Detect
Concentration (ug/L)
0
1
2
3
4
5
6
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TVM 2M
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection


Time Series Plot for Ethylene Station for TVM 4
Detect
Estimated
Non-Detect
Concentration (ug/L)
0
1
2
3
4
5
6
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TVM 4M
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection


Time Series Plot for Ethylene Station for TVR 1
Detect
Estimated
Non-Detect
Concentration (ug/L)
0
1
2
3
4
5
6
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TVR 1A
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection


Time Series Plot for Gross Alpha Station for TBG 3
Detect
Estimated
Non-Detect
Concentration (pCi/L)
0
10
20
30
40
50
60
70
80
90
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
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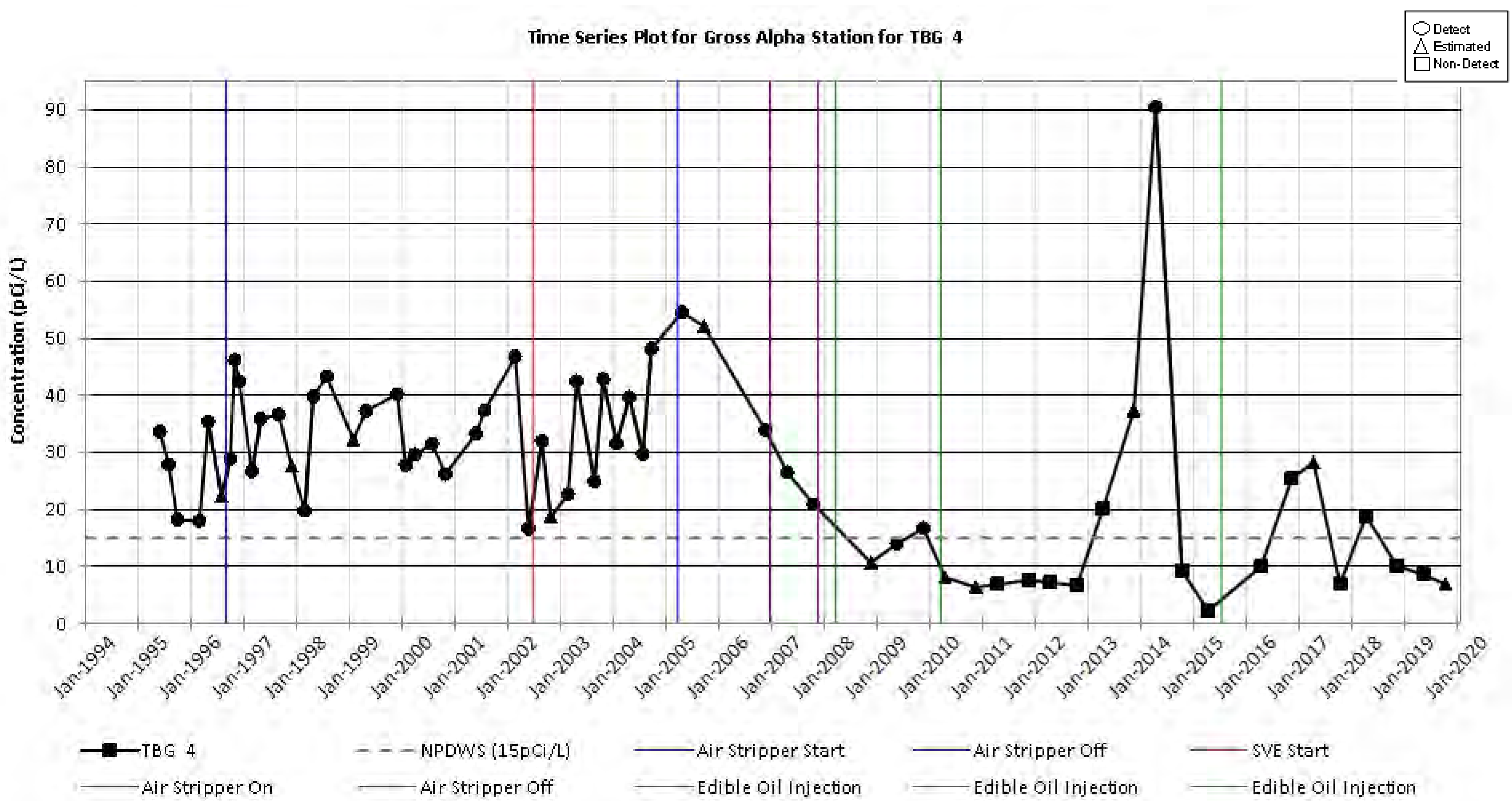
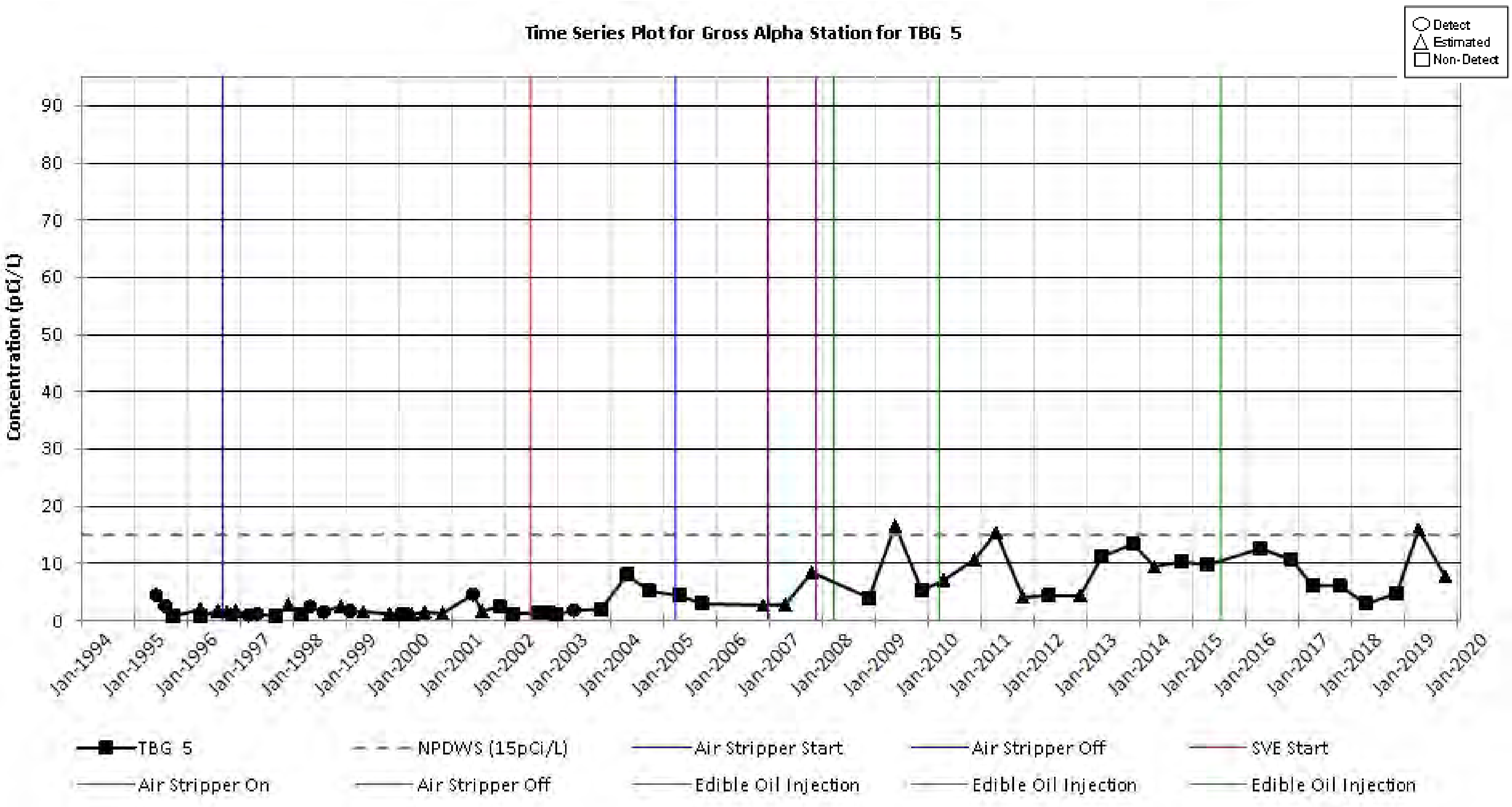
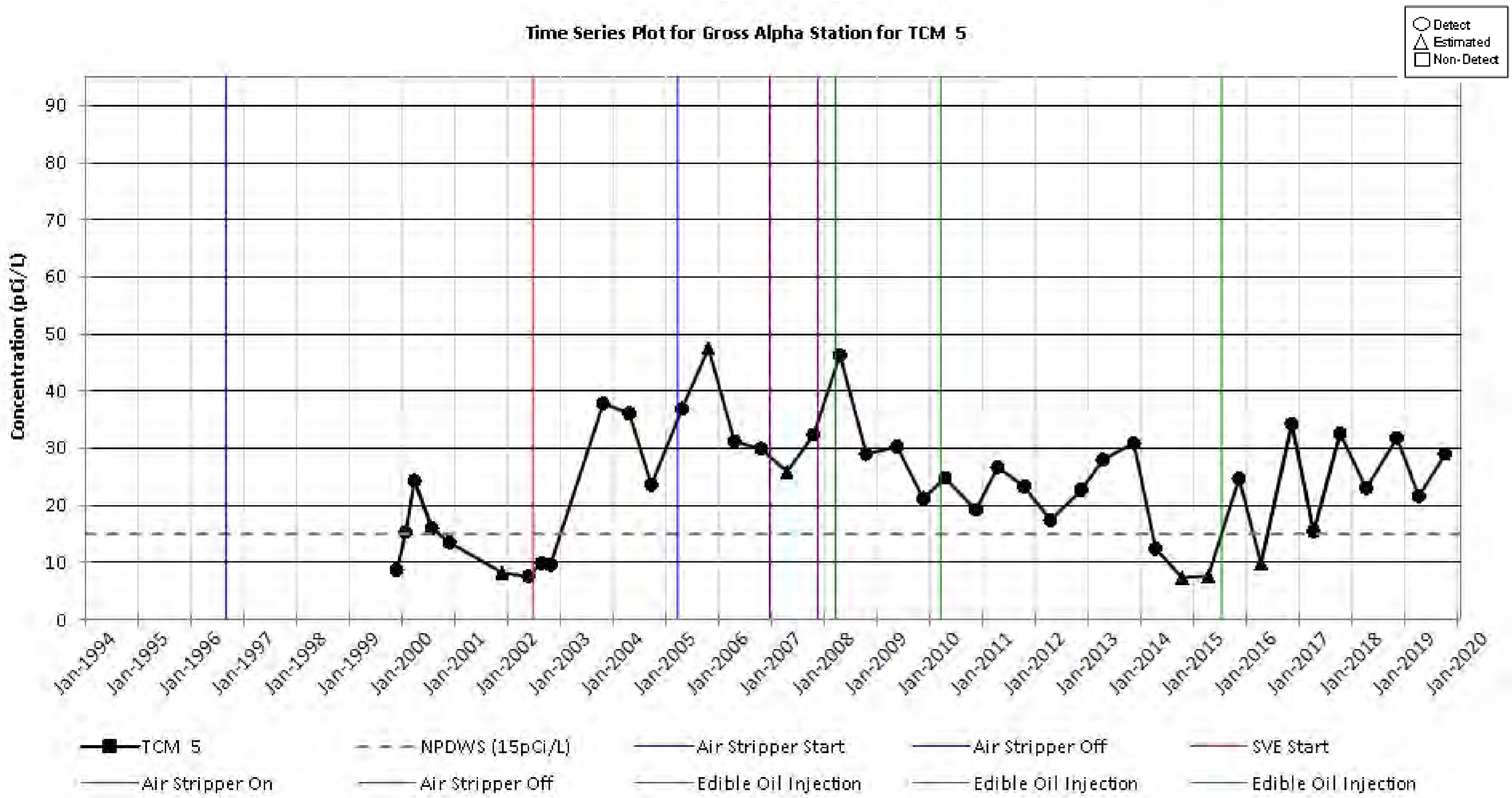
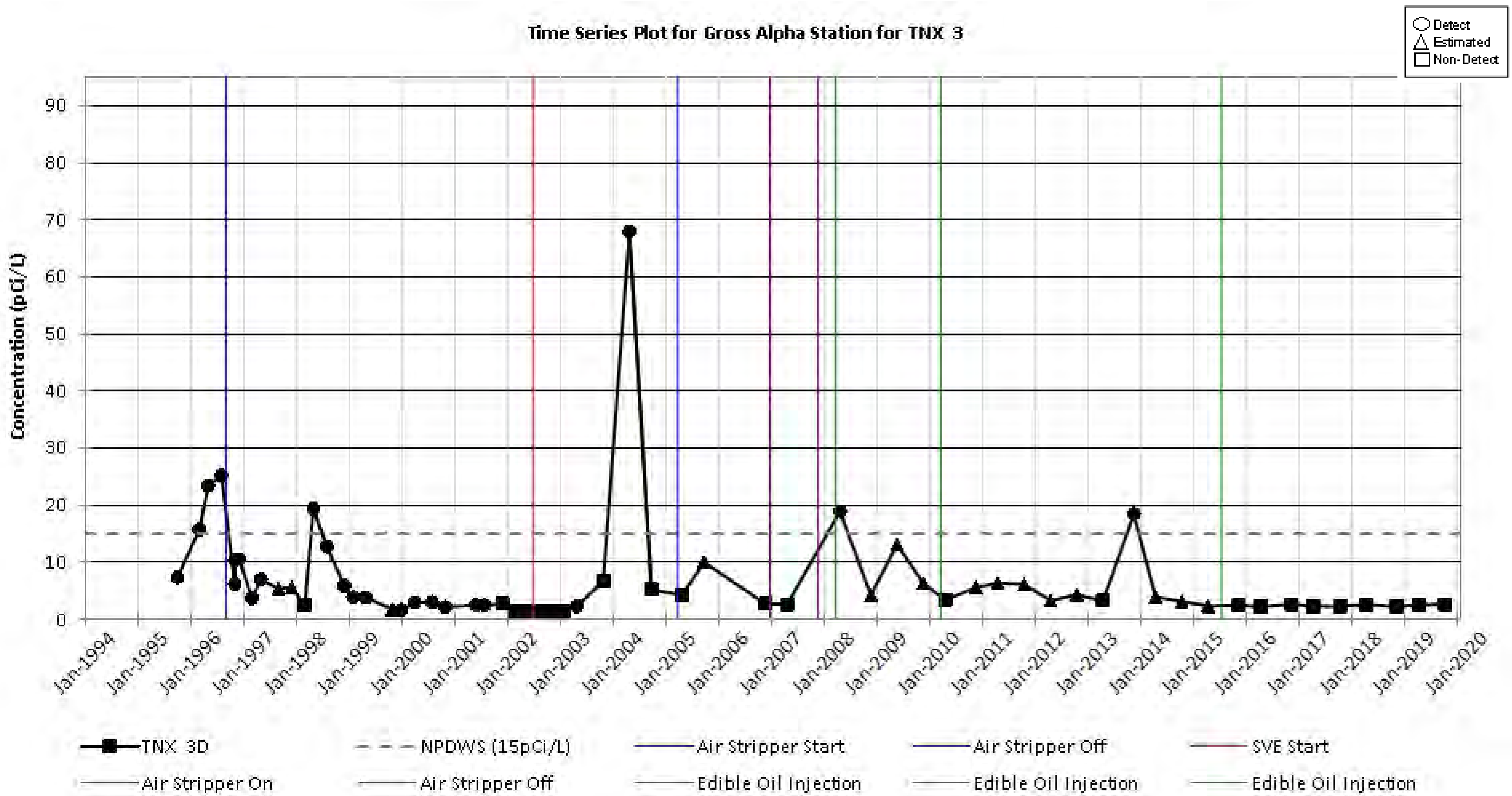
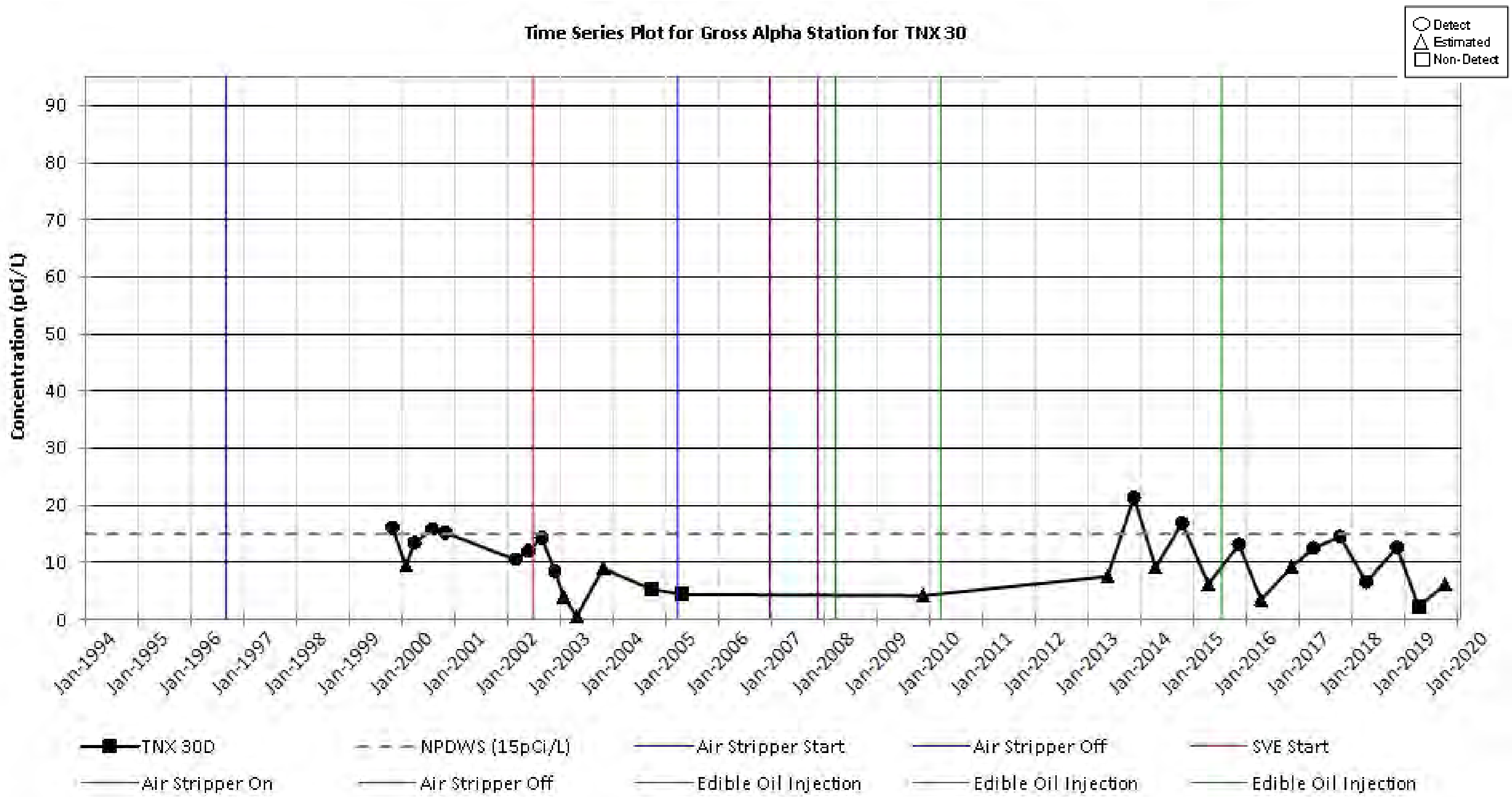
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TBG 3
NPDWS (15pCi/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection

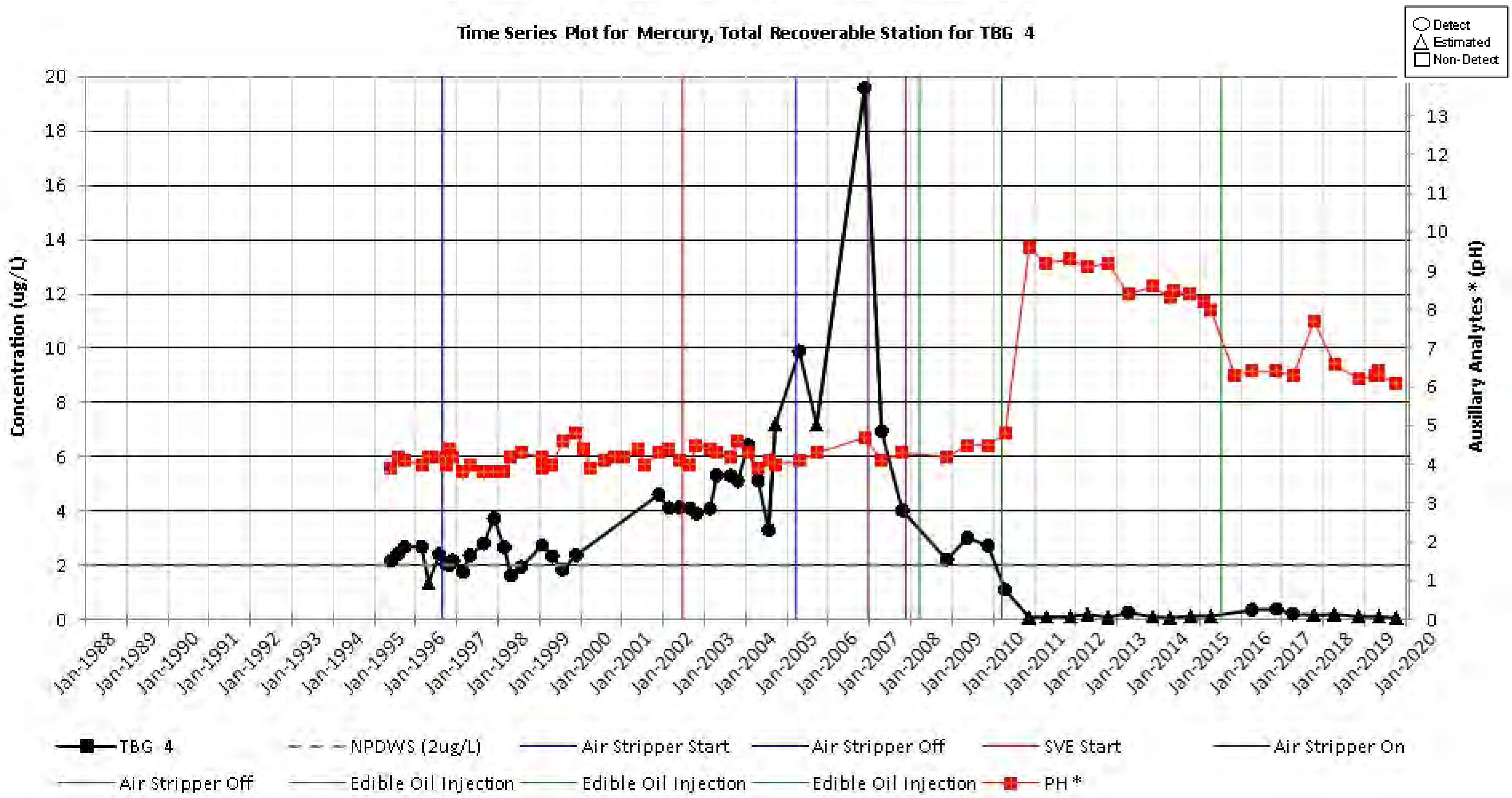

Time Series Plot for Gross Alpha Station for TBG 4
Detect
Estimated
Non-Detect
Concentration (pCi/L)
90
80
70
60
50
40
30
20
10
0
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TBG 4
NPDWS (15pCi/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection

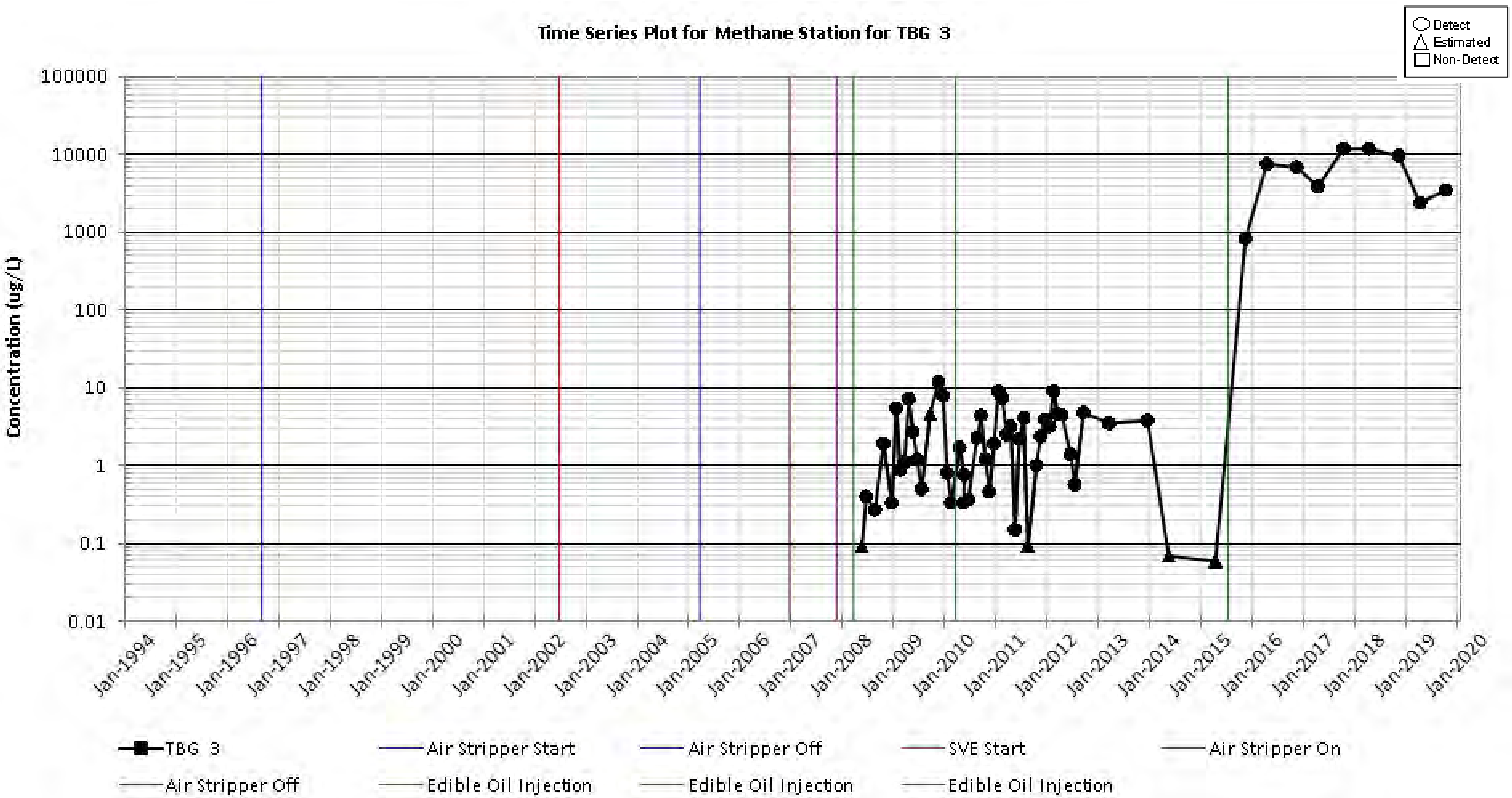

Time Series Plot for Gross Alpha Station for TBG 5
Detect
Estimated
Non-Detect
Concentration (pCi/L)
0
10
20
30
40
50
60
70
80
90
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TBG 5
NPDWS (15pCi/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection

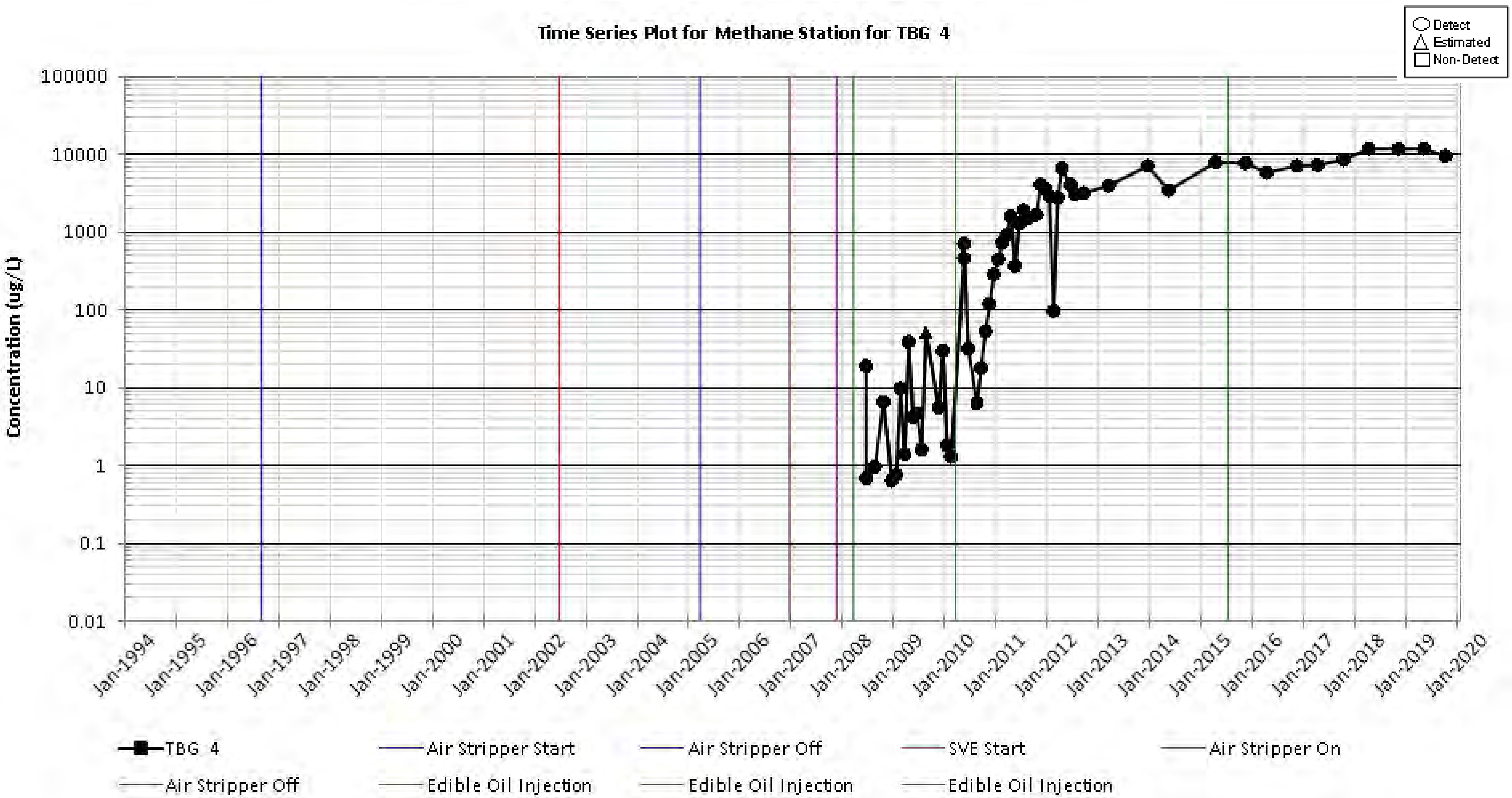

Time Series Plot for Gross Alpha Station for TCM 5
Detect
Estimated
Non-Detect
Concentration (pCi/L)
0
10
20
30
40
50
60
70
80
90
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TCM 5
NPDWS (15pCi/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection

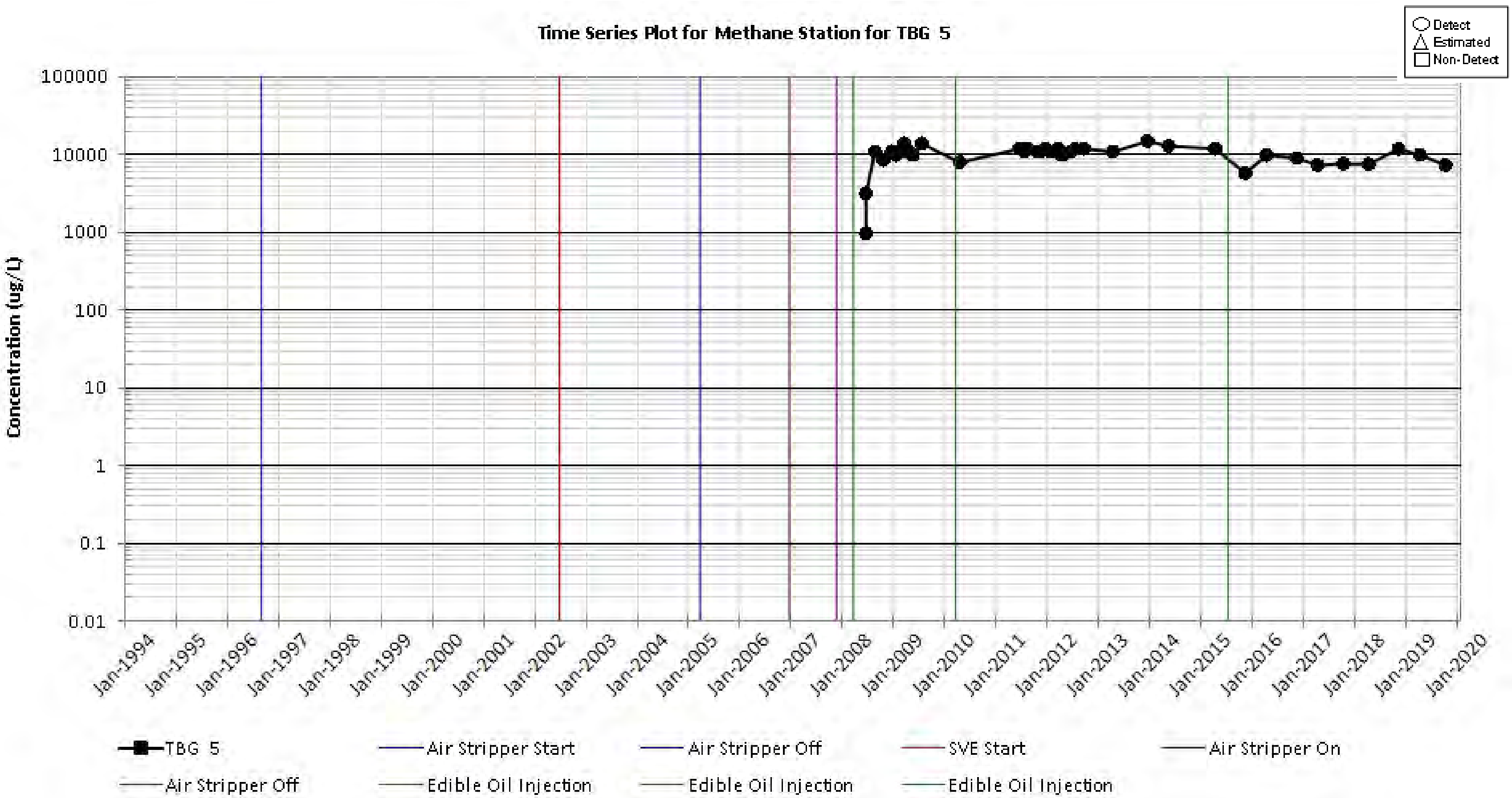

Time Series Plot for Gross Alpha Station for TNX 3
Detect
Estimated
Non-Detect
Concentration (pCi/L)
0
10
20
30
40
50
60
70
80
90
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TNX 3D
NPDWS (15pCi/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection

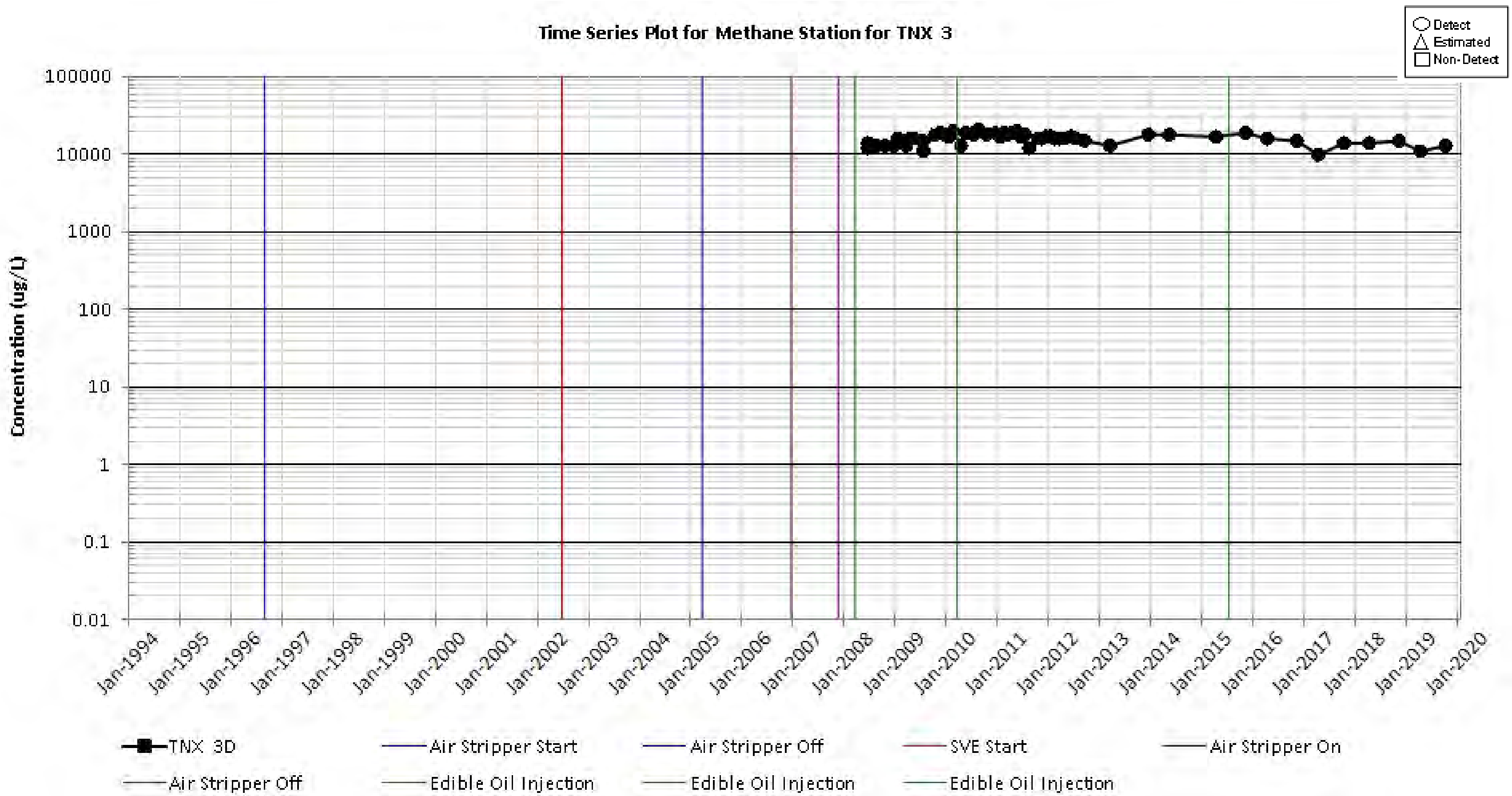

Time Series Plot for Gross Alpha Station for TNX 30
Detect
Estimated
Non-Detect
Concentration (pCi/L)
90
80
70
60
50
40
30
20
10
0
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TNX 30D
NPDWS (15pCi/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection

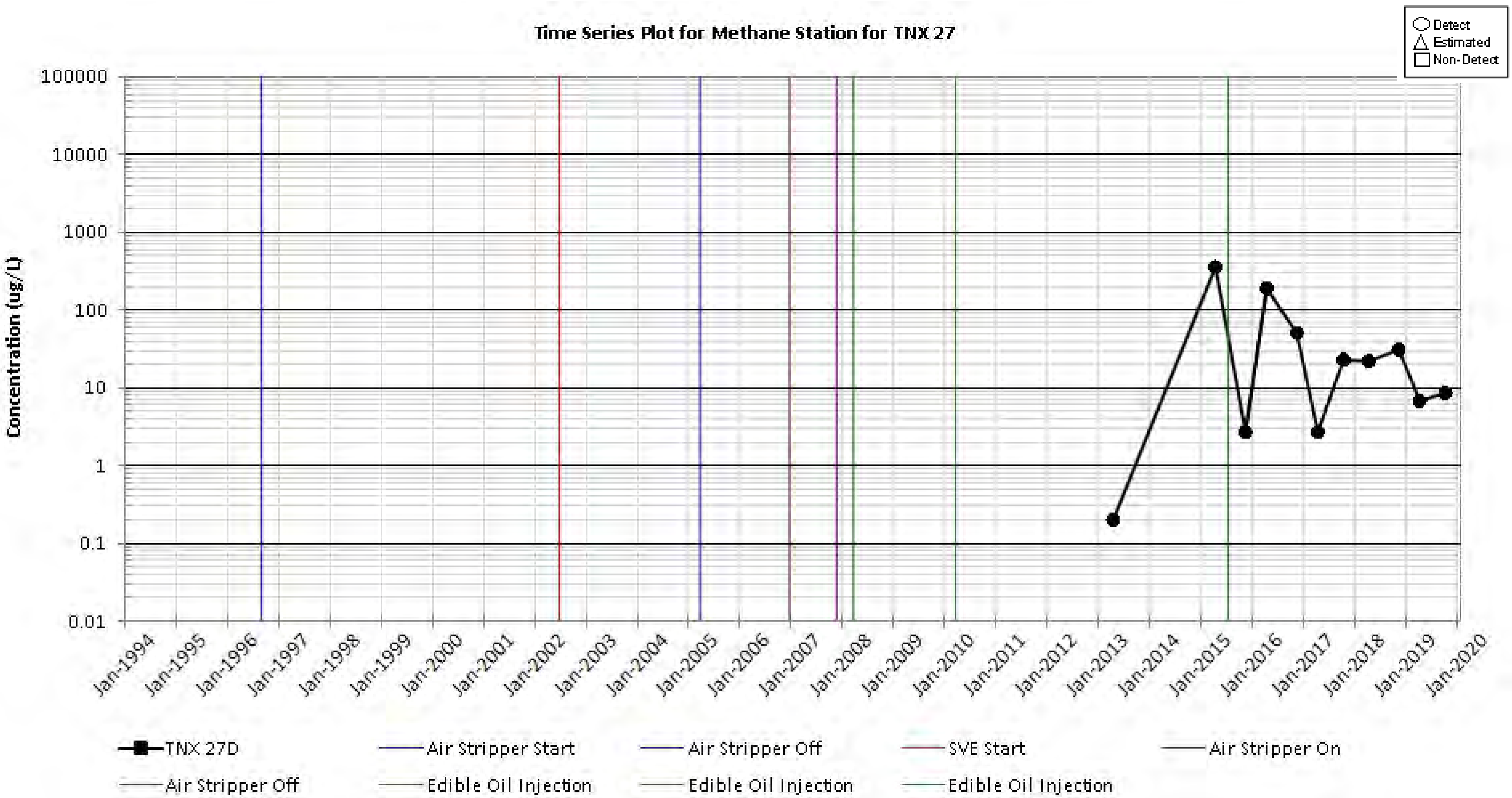

Time Series Plot for Mercury, Total Recoverable Station for TBG 4
Detect
Estimated
Non-Detect
Concentration (ug/L)
Auxillary Analytes * (pH)
0
2
4
6
8
10
12
14
16
18
20
0
1
2
3
4
5
6
7
8
9
10
11
12
13
Jan-1988
Jan-1989
Jan-1990
Jan-1991
Jan-1992
Jan-1993
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TBG 4
NPDWS (2ug/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection
PH *

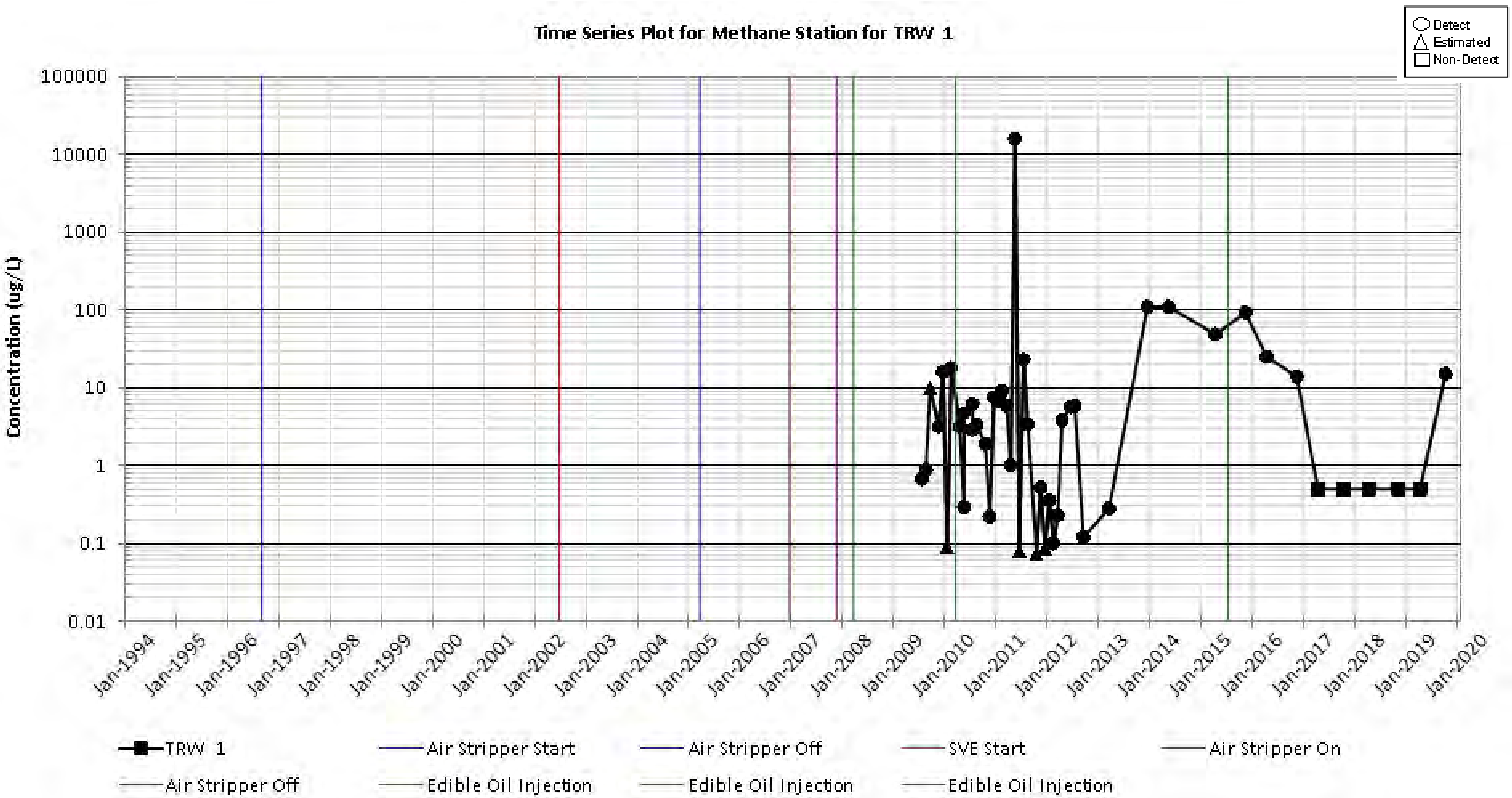

Time Series Plot for Methane Station for TBG 3
Detect
Estimated
Non-Detect
Concentration (ug/L)
100000
10000
1000
100
10
1
0.1
0.01
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TBG 3
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection

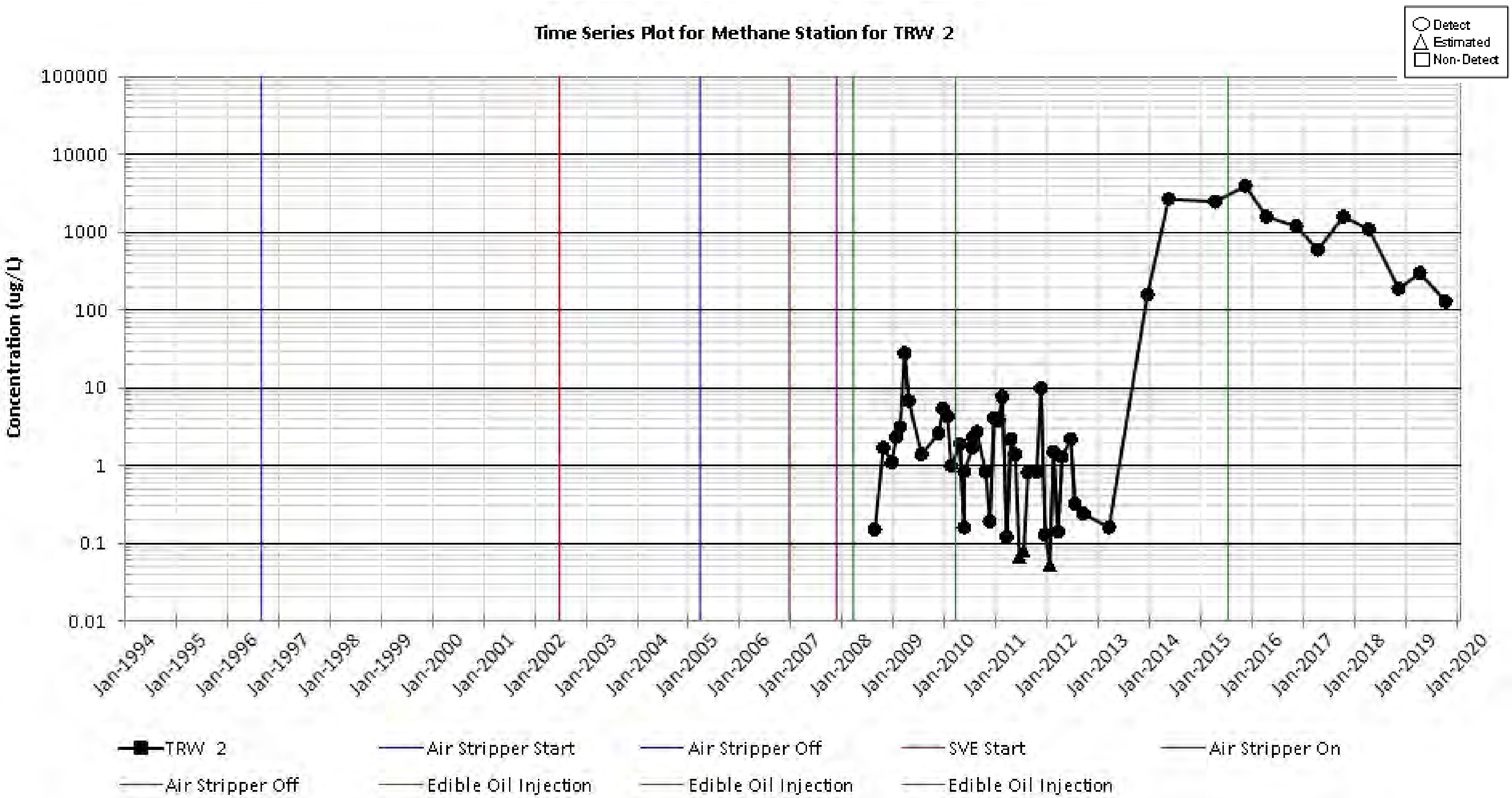

Time Series Plot for Methane Station for TBG 4
Detect
Estimated
Non-Detect
Concentration (ug/L)
100000
10000
1000
100
10
1
0.1
0.01
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TBG 4
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection

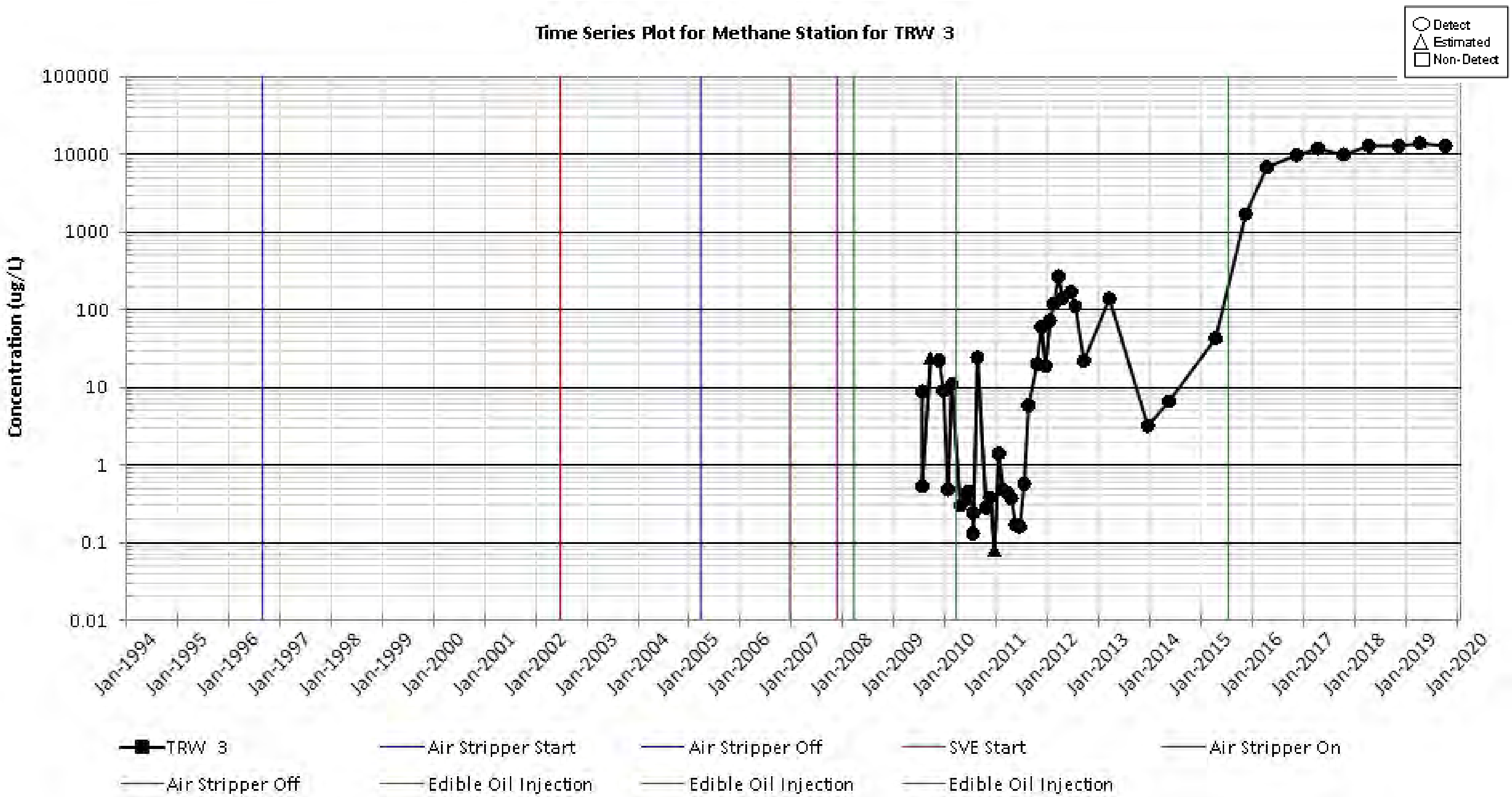

Time Series Plot for Methane Station for TBG 5
Detect
Estimated
Non-Detect
Concentration (ug/L)
100000
10000
1000
100
10
1
0.1
0.01
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TBG 5
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection

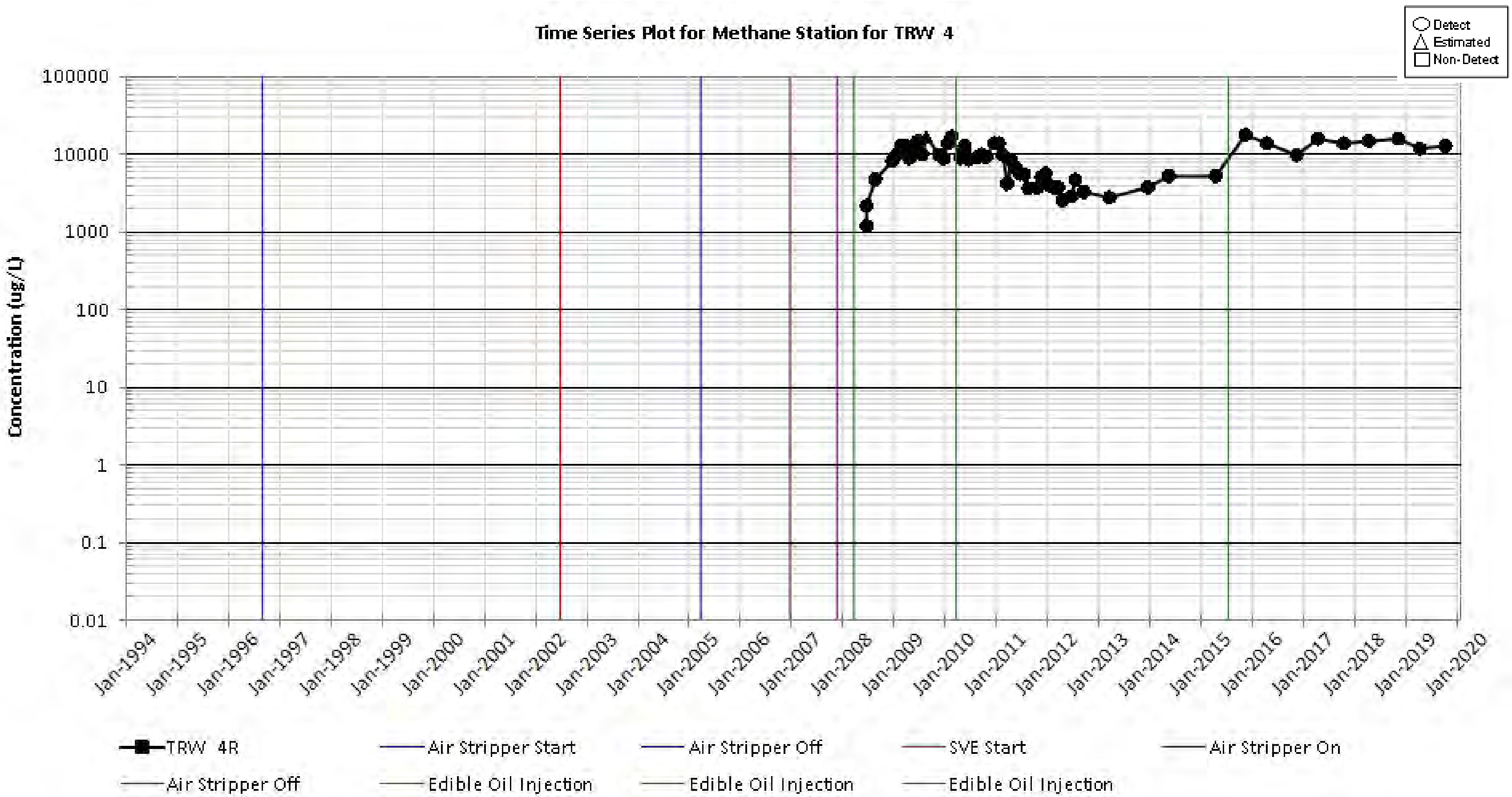

Time Series Plot for Methane Station for TNX 3
Detect
Estimated
Non-Detect
Concentration (ug/L)
100000
10000
1000
100
10
1
0.1
0.01
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TNX 3D
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection

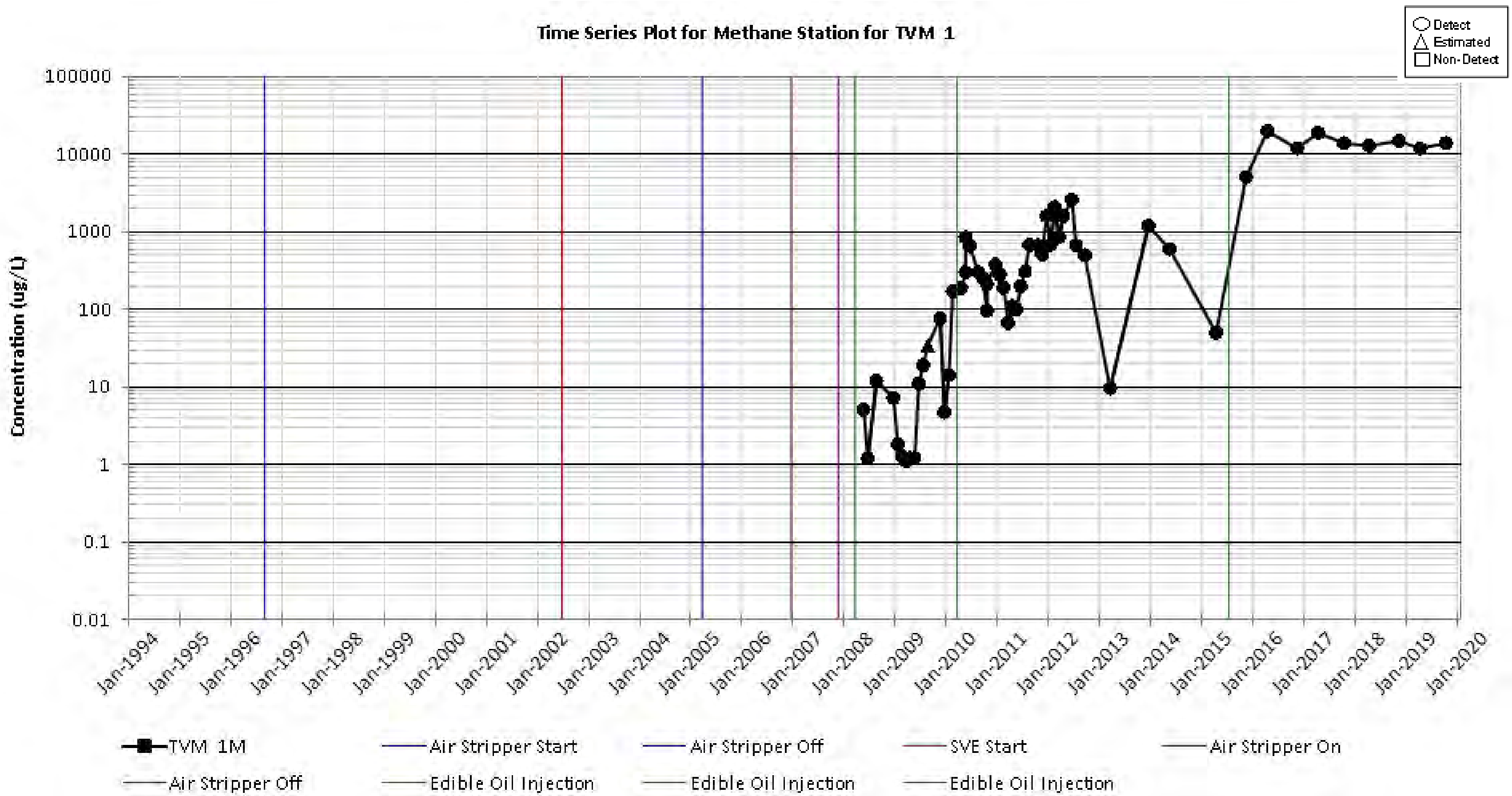

Time Series Plot for Methane Station for TNX 27
Detect
Estimated
Non-Detect
Concentration (ug/L)
100000
10000
1000
100
10
1
0.1
0.01
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TNX 27D
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection

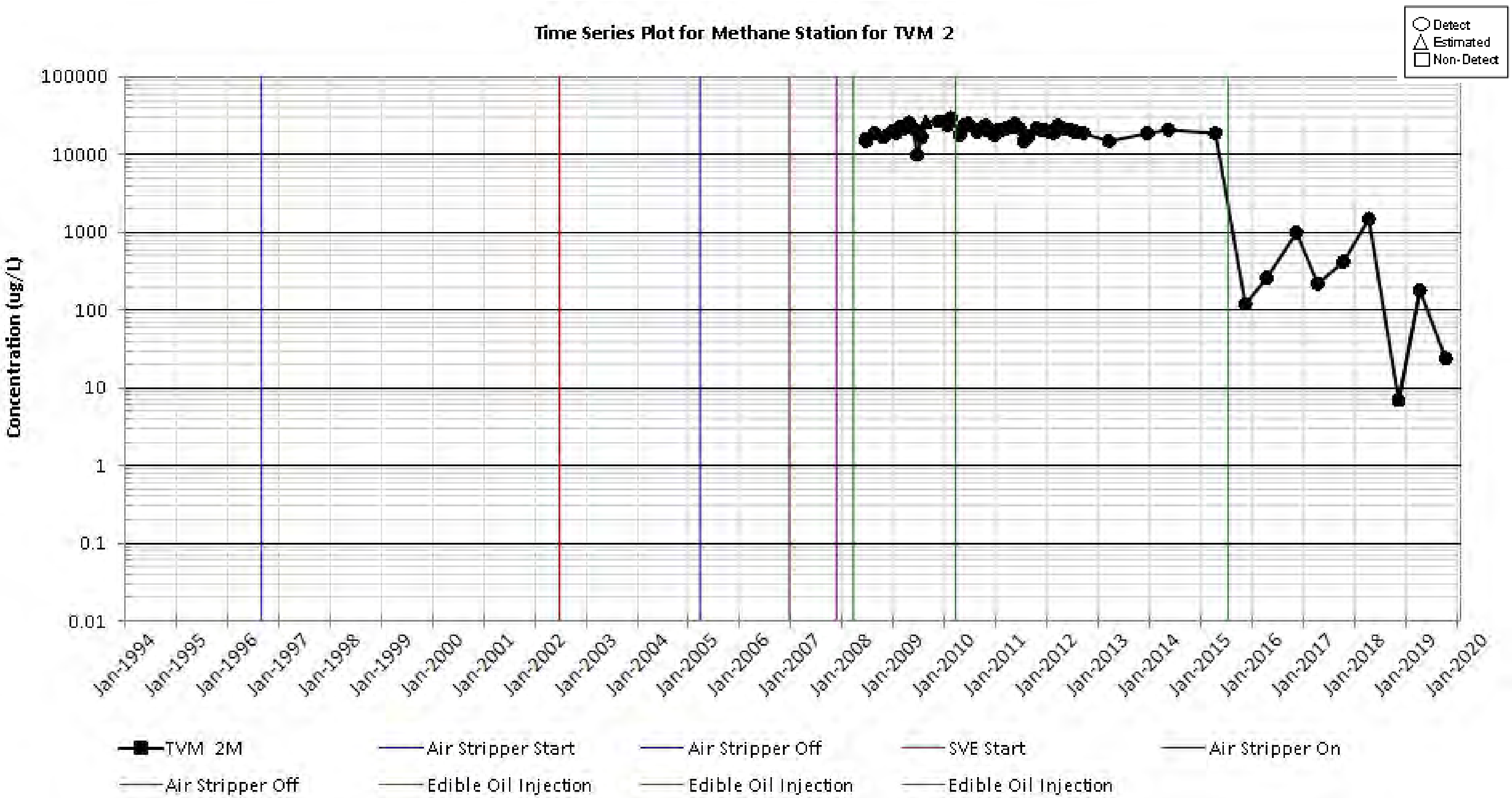

Time Series Plot for Methane Station for TRW 1
Detect
Estimated
Non-Detect
Concentration (ug/L)
100000
10000
1000
100
10
1
0.1
0.01
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TRW 1
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection

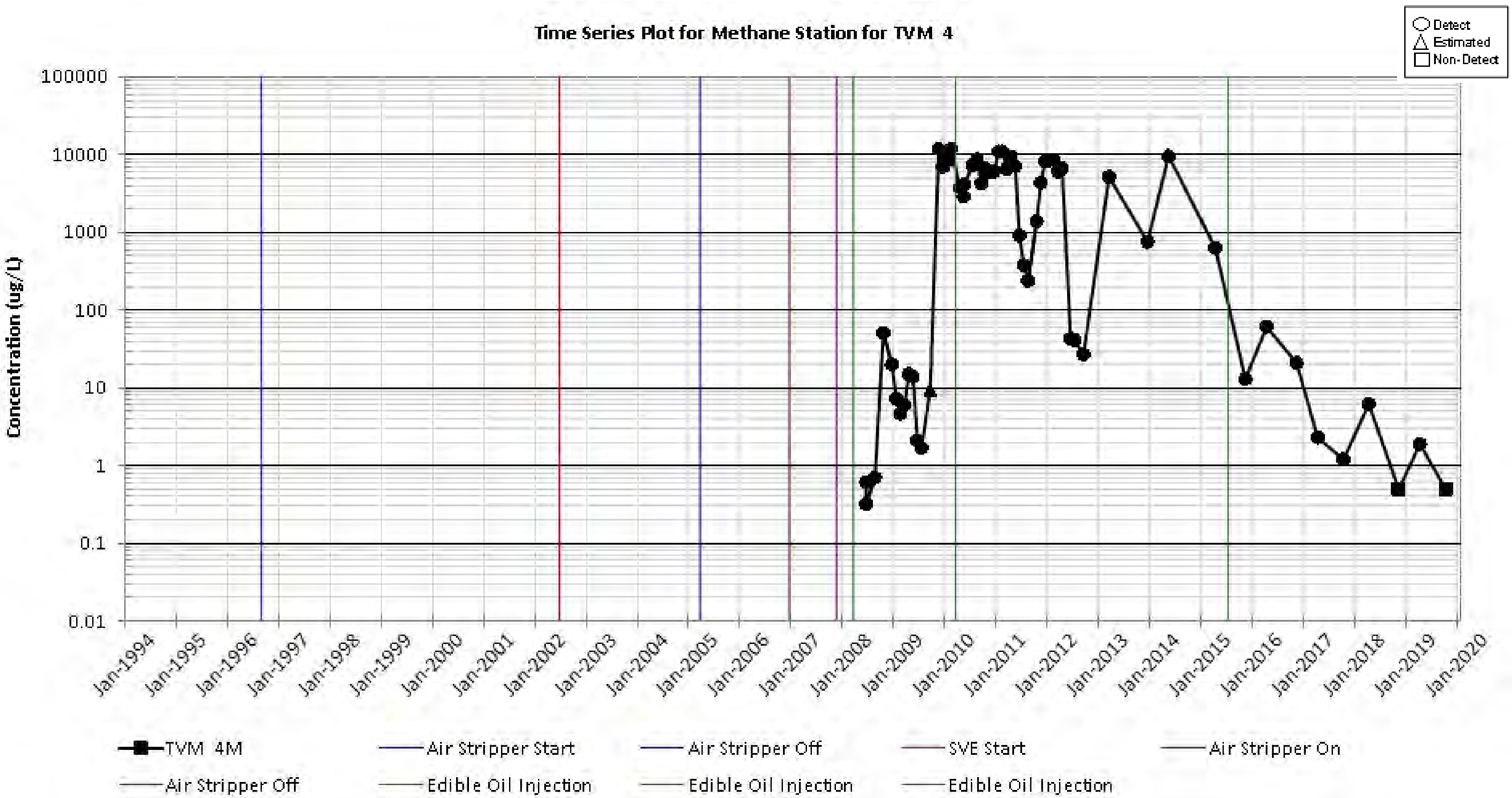

Time Series Plot for Methane Station for TRW 2
Detect
Estimated
Non-Detect
Concentration (ug/L)
100000
10000
1000
100
10
1
0.1
0.01
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TRW 2
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection

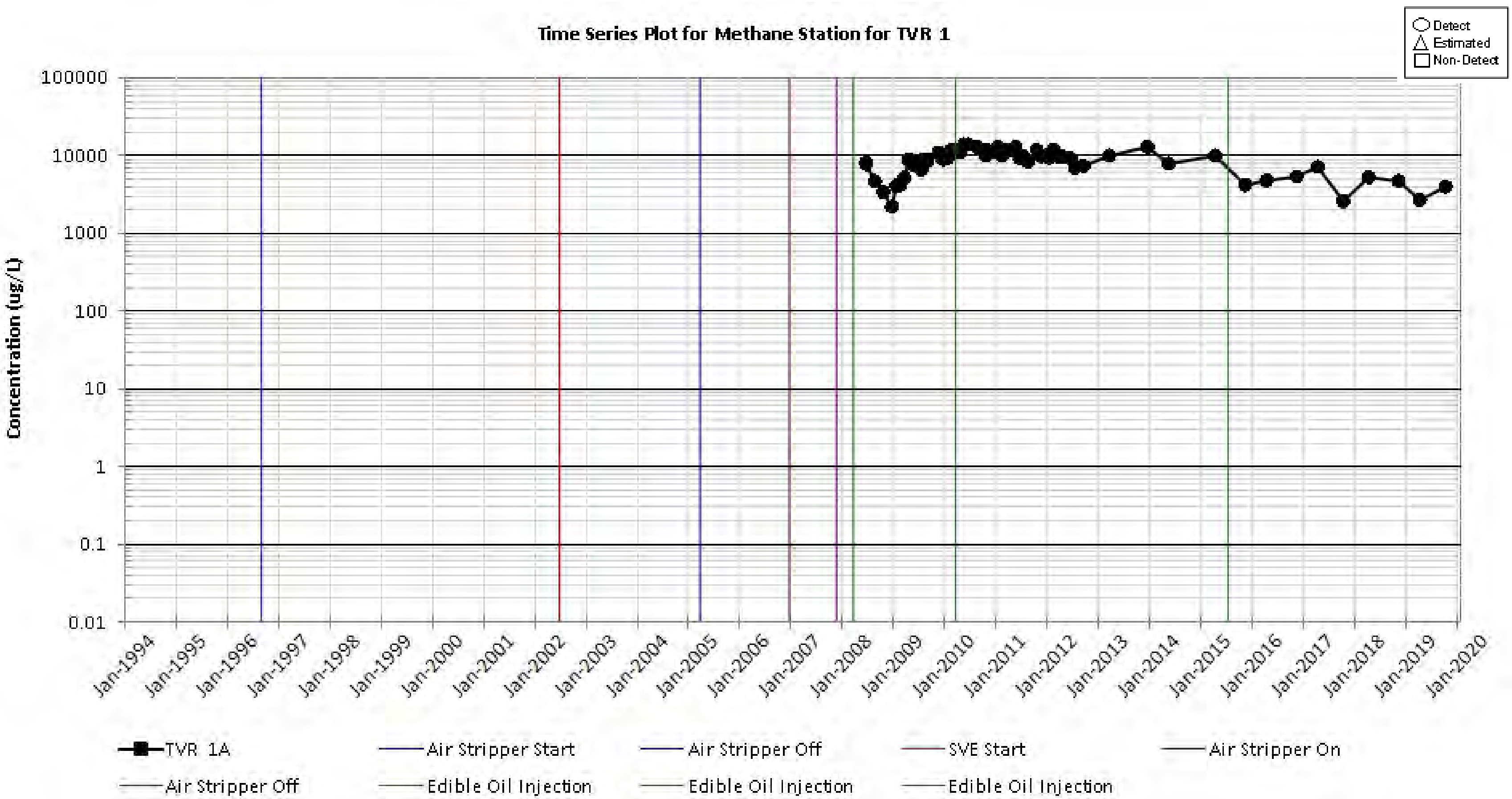

Time Series Plot for Methane Station for TRW 3
Detect
Estimated
Non-Detect
Concentration (ug/L)
100000
10000
1000
100
10
1
0.1
0.01
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TRW 3
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection

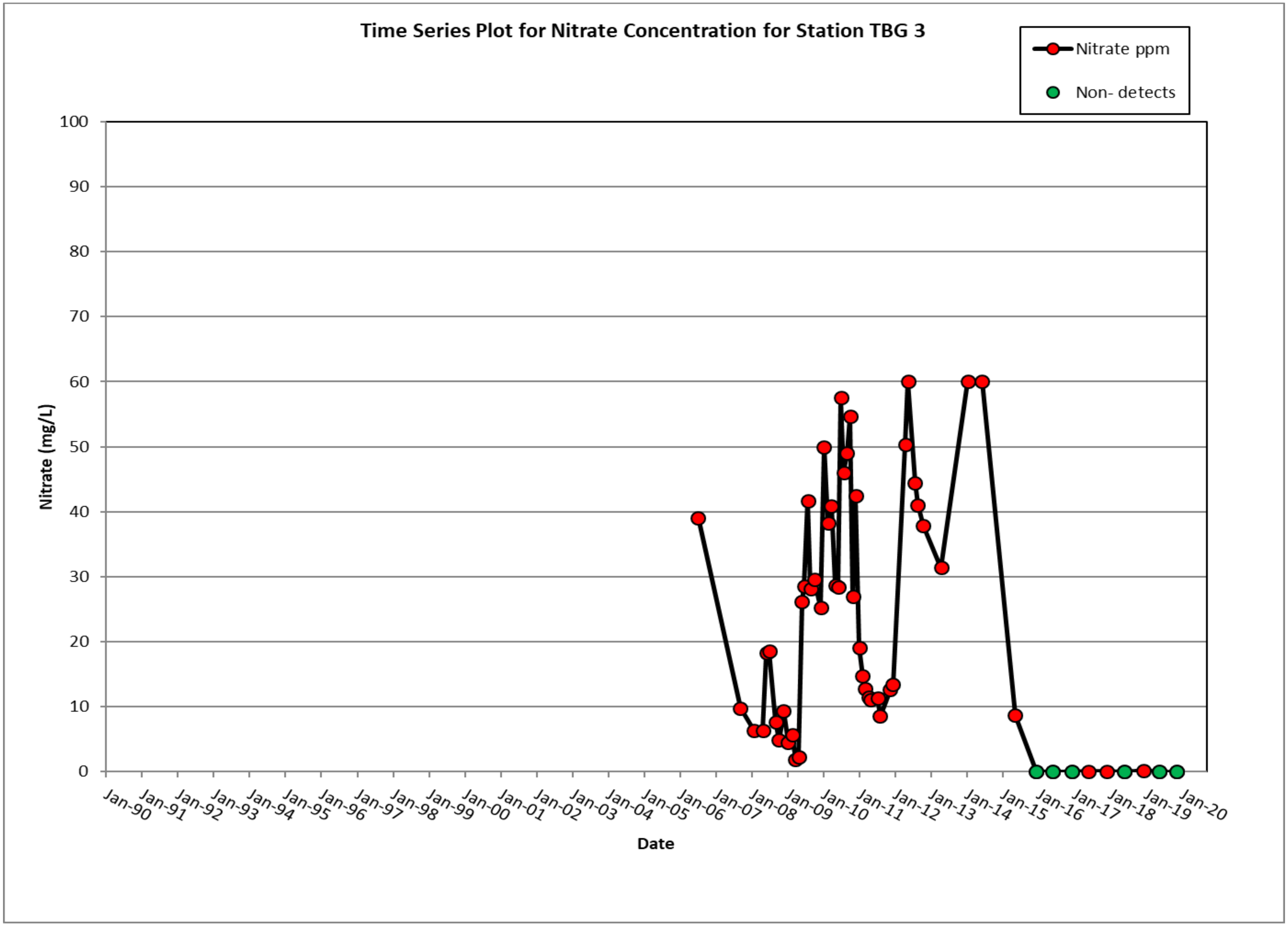

Time Series Plot for Methane Station for TRW 4
Detect
Estimated
Non-Detect
Concentration (ug/L)
100000
10000
1000
100
10
1
0.1
0.01
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TRW 4R
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection


Time Series Plot for Methane Station for TVM 1
Detect
Estimated
Non-Detect
Concentration (ug/L)
100000
10000
1000
100
10
1
0.1
0.01
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TVM 1M
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection


Time Series Plot for Methane Station for TVM 2
Detect
Estimated
Non-Detect
Concentration (ug/L)
100000
10000
1000
100
10
1
0.1
0.01
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TVM 2M
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection


Time Series Plot for Methane Station for TVM 4
Detect
Estimated
Non-Detect
Concentration (ug/L)
100000
10000
1000
100
10
1
0.1
0.01
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TVM 4M
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection


Time Series Plot for Methane Station for TVR 1
Detect
Estimated
Non-Detect
Concentration (ug/L)
100000
10000
1000
100
10
1
0.1
0.01
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TVR 1A
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection


Time Series Plot for Nitrate Concentration for Station TBG 3
Nitrate ppm
Non- detects
Nitrate (mg/L)
100
90
80
70
60
50
40
30
20
10
0
Jan-90
Jan-91
Jan-92
Jan-93
Jan-94
Jan-95
Jan-96
Jan-97
Jan-98
Jan-99
Jan-00
Jan-01
Jan-02
Jan-03
Jan-04
Jan-05
Jan-06
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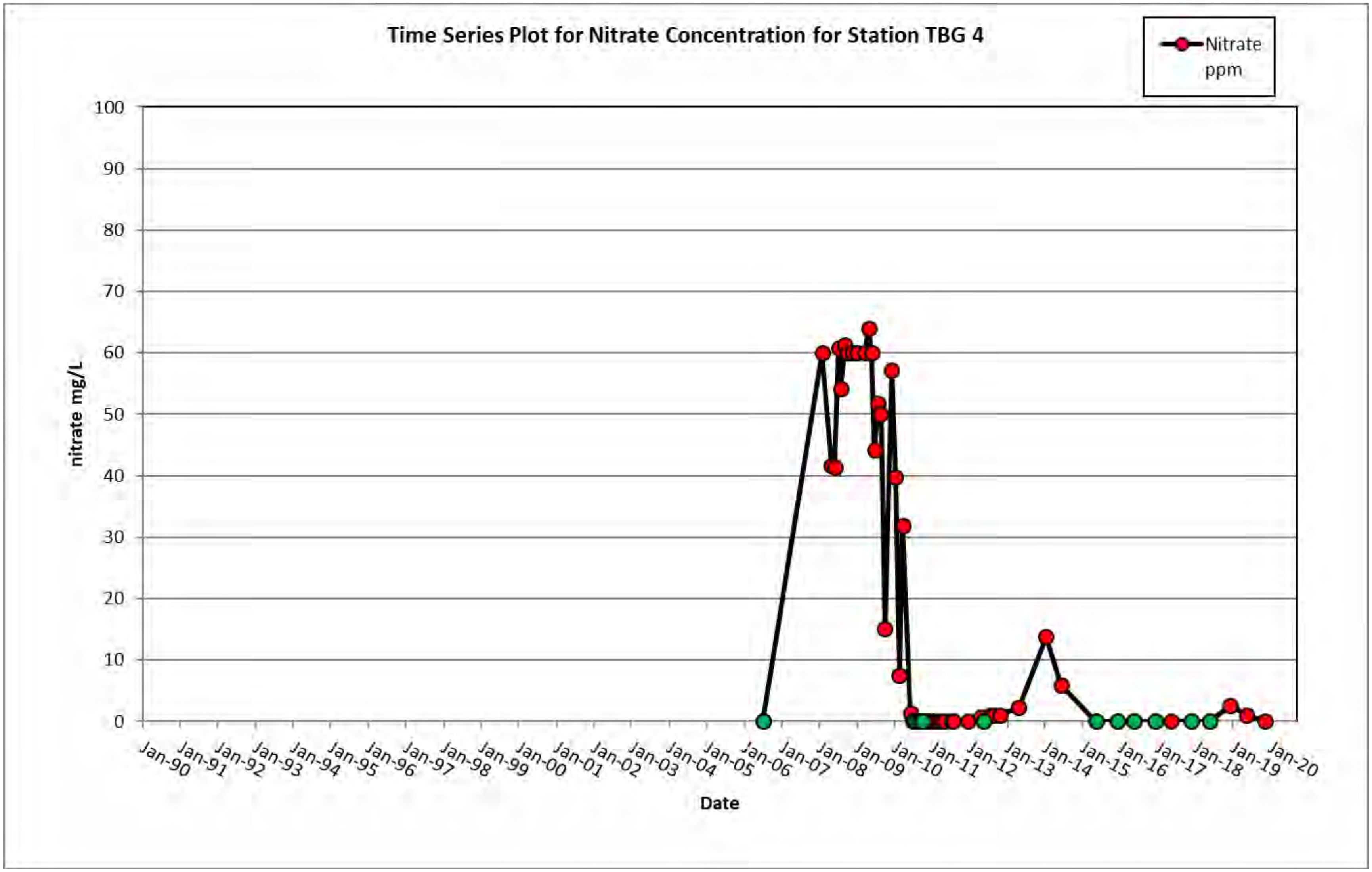
Jan-18
Jan-19
Jan-20
Date


Time Series Plot for Nitrate Concentration for Station TBG 4
Nitrate ppm
nitrate mg/L
100
90
80
70
60
50
40
30
20
10
0
Jan-90
Jan-91
Jan-92
Jan-93
Jan-94
Jan-95
Jan-96
Jan-97
Jan-98
Jan-99
Jan-00
Jan-01
Jan-02
Jan-03
Jan-04
Jan-05
Jan-06
Jan-07
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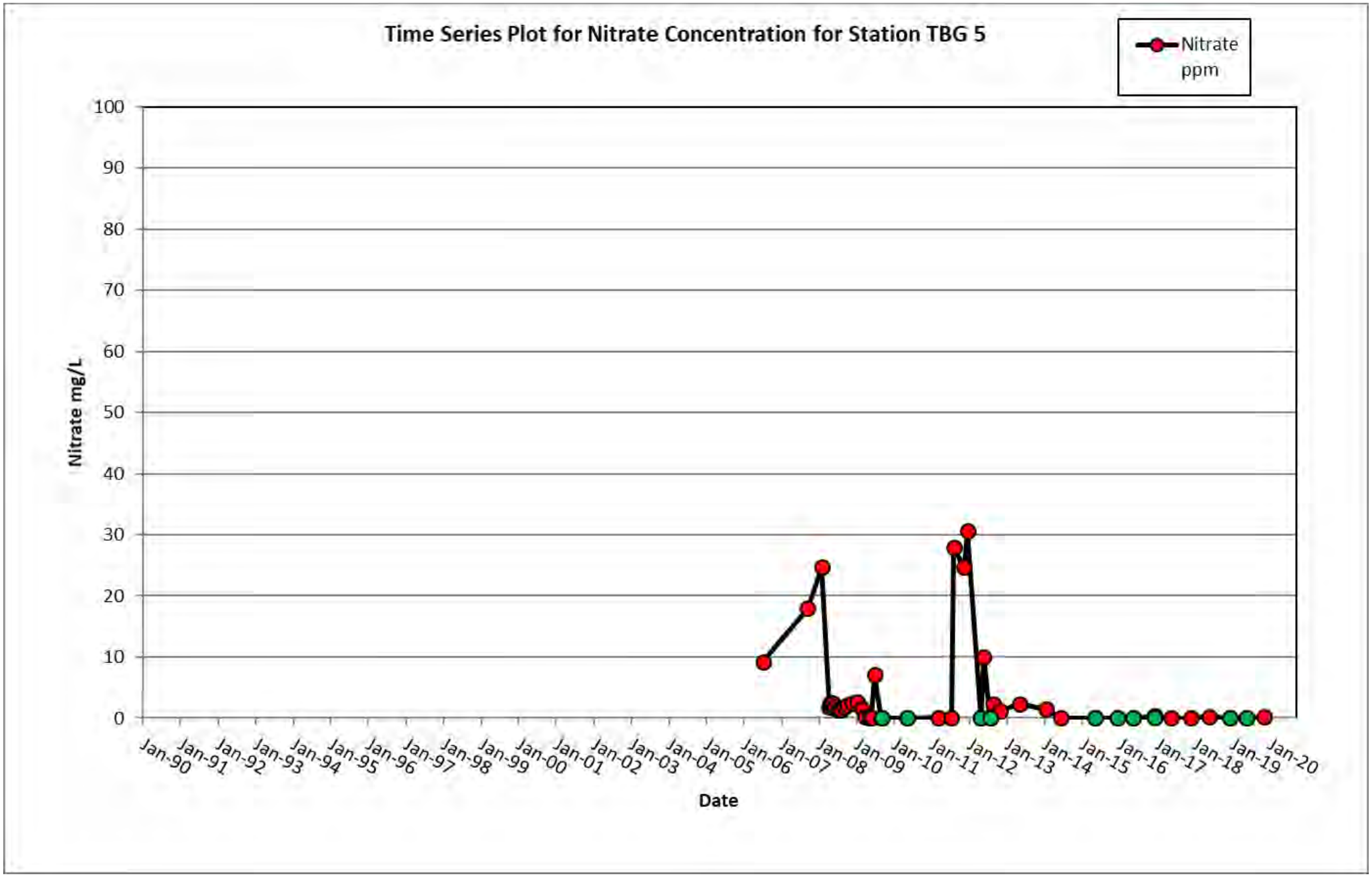
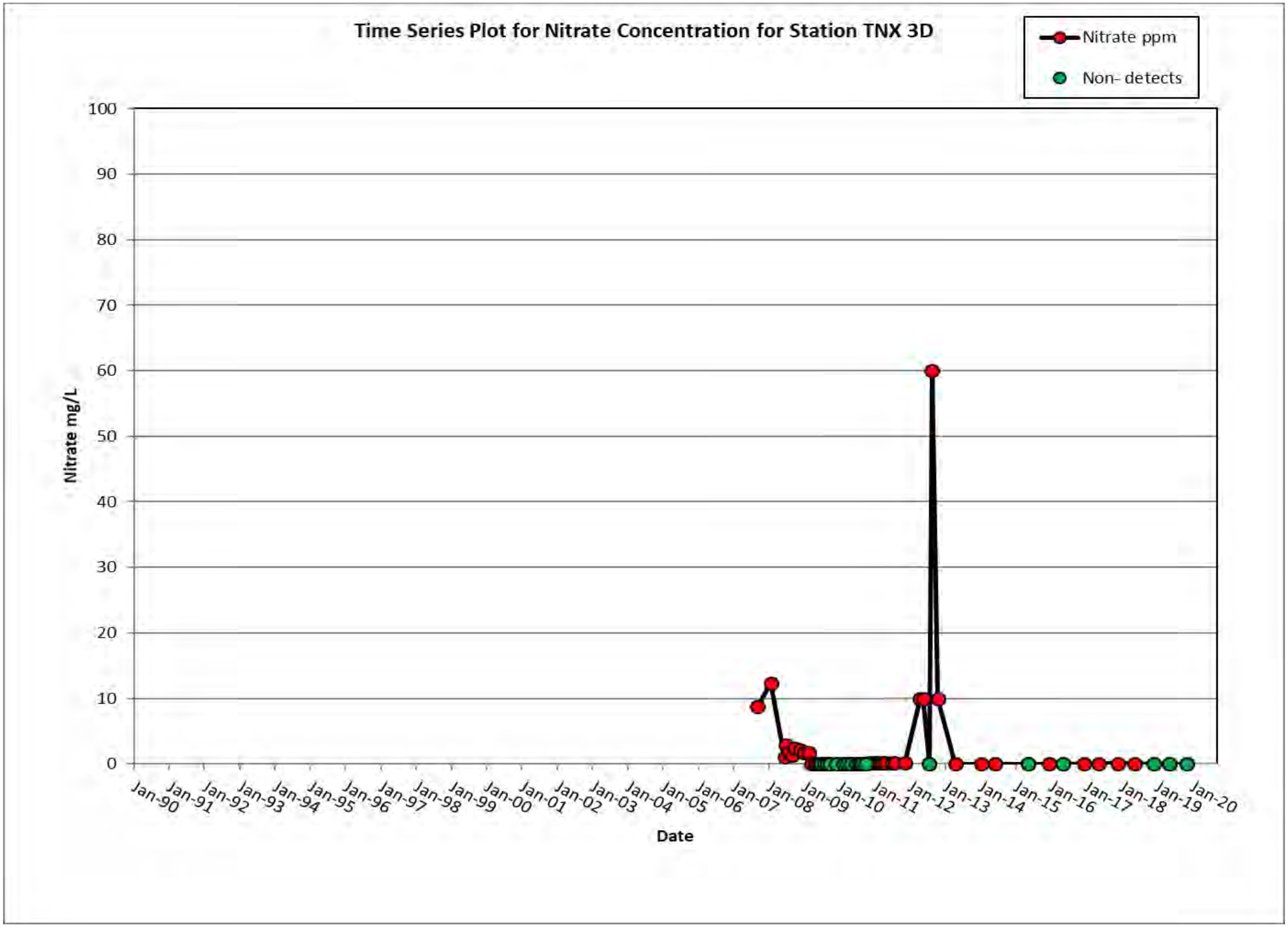
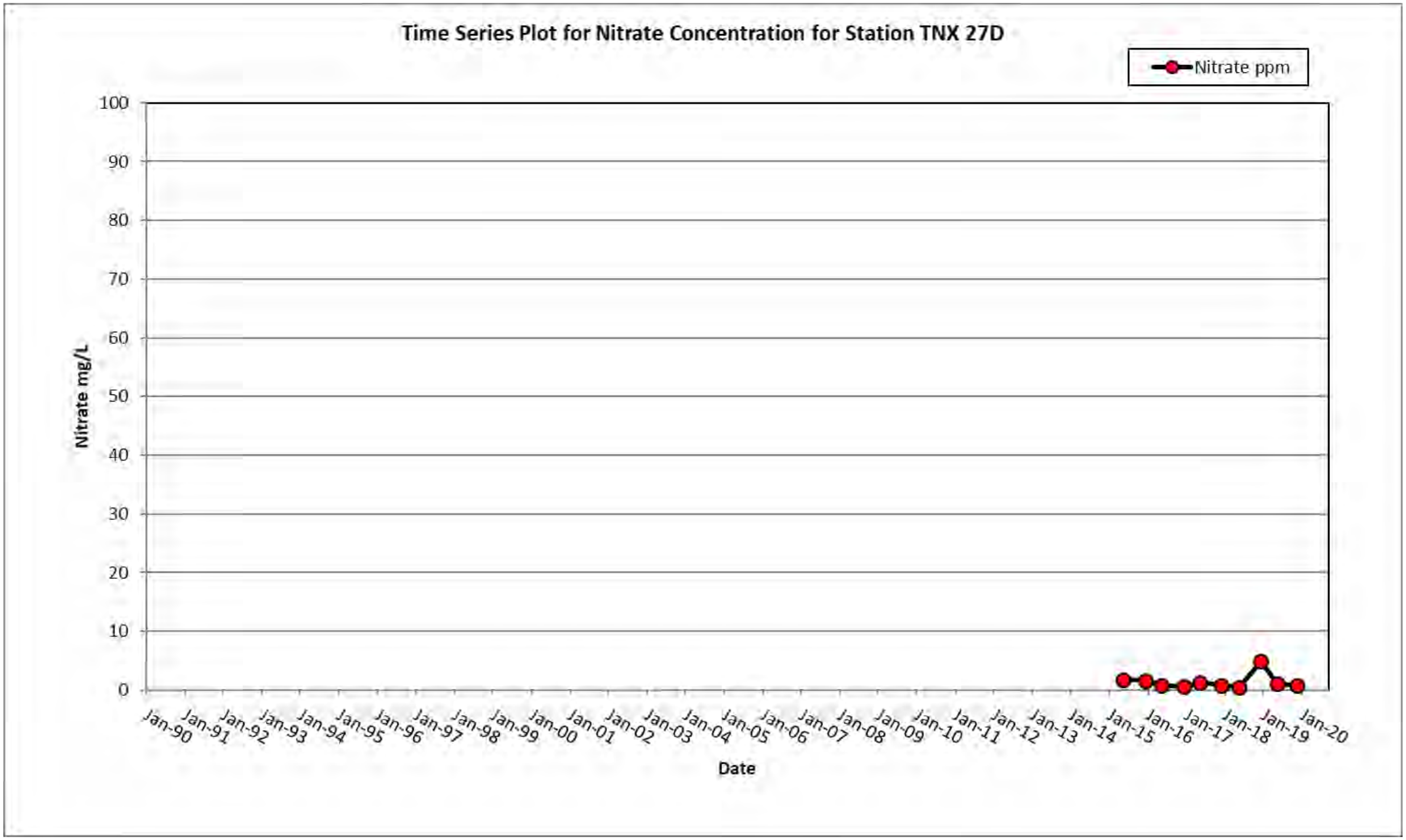
Jan-20
Date


Time Series Plot for Nitrate Concentration for Station TBG 5
Nitrate ppm
Nitrate mg/L
100
90
80
70
60
50
40
30
20
10
0
Jan-90
Jan-91
Jan-92
Jan-93
Jan-94
Jan-95
Jan-96
Jan-97
Jan-98
Jan-99
Jan-00
Jan-01
Jan-02
Jan-03
Jan-04
Jan-05
Jan-06
Jan-07
Jan-08
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Date


Time Series Plot for Nitrate Concentration for Station TNX 3D
Nitrate ppm
Non- detects
Nitrate mg/L
100
90
80
70
60
50
40
30
20
10
0
Jan-90 Jan-91 Jan-92 Jan-93 Jan-94 Jan-95 Jan-96 Jan-97 Jan-98 Jan-99 Jan-00 Jan-01 Jan-02 Jan-03 Jan-04 Jan-05 Jan-06 Jan-07 Jan-08 Jan-09 Jan-10 Jan-11 Jan-12 Jan-13 Jan-14 Jan-15 Jan-16 Jan-17 Jan-18 Jan-19 Jan-20
Date


Time Series Plot for Nitrate Concentration for Station TNX 27D
Nitrate ppm
Nitrate mg/L
100
90
80
70
60
50
40
30
20
10
0
Jan-90
Jan-91
Jan-92
Jan-93
Jan-94
Jan-95
Jan-96
Jan-97
Jan-98
Jan-99
Jan-00
Jan-01
Jan-02
Jan-03
Jan-04
Jan-05
Jan-06
Jan-07
Jan-08
Jan-09
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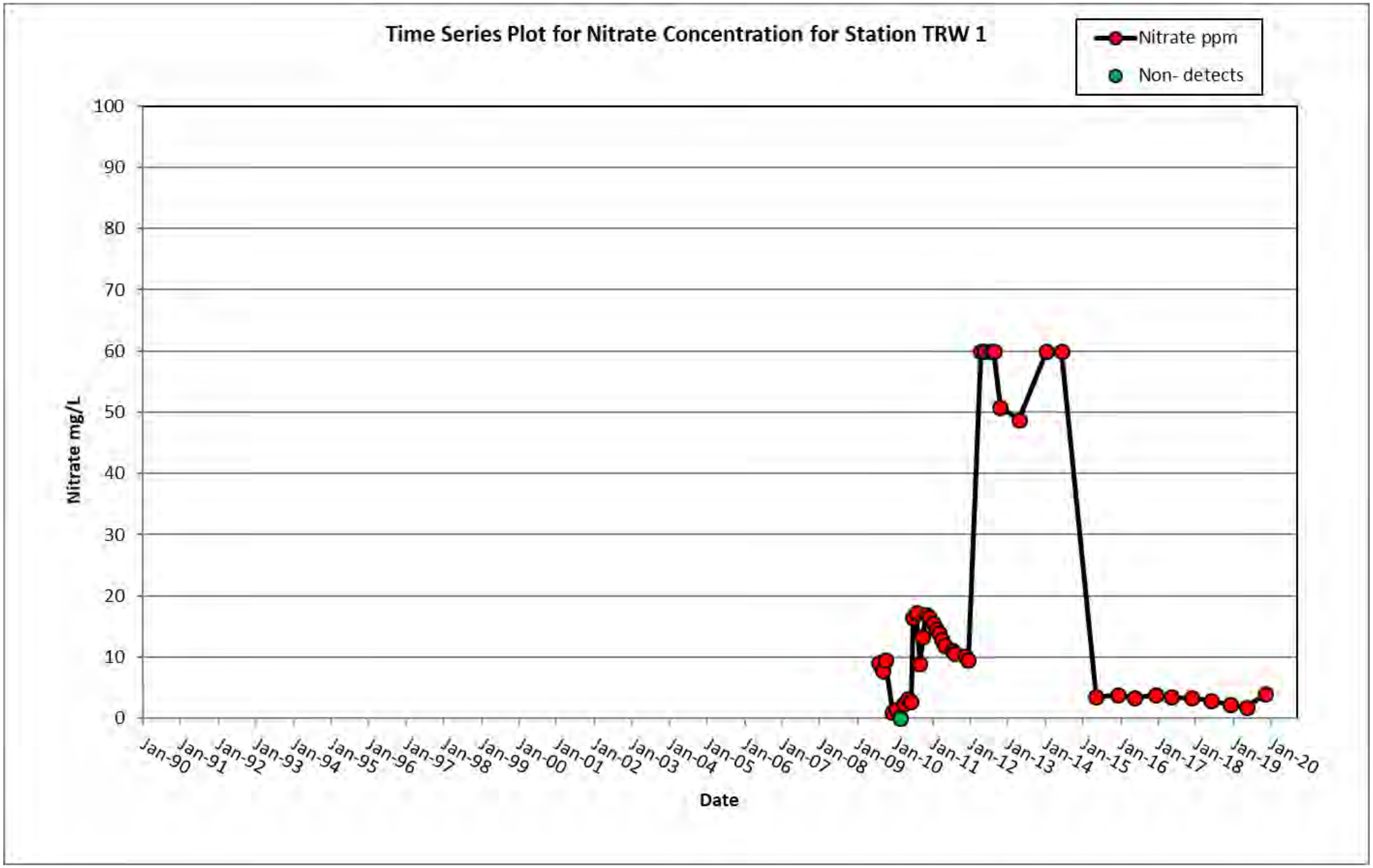
Jan-17
Jan-18
Jan-19
Jan-20
Date


Time Series Plot for Nitrate Concentration for Station TRW 1
Nitrate ppm
Non- detects
Nitrate mg/L
100
90
80
70
60
50
40
30
20
10
0
Jan-90
Jan-91
Jan-92
Jan-93
Jan-94
Jan-95
Jan-96
Jan-97
Jan-98
Jan-99
Jan-00
Jan-01
Jan-02
Jan-03
Jan-04
Jan-05
Jan-06
Jan-07
Jan-08
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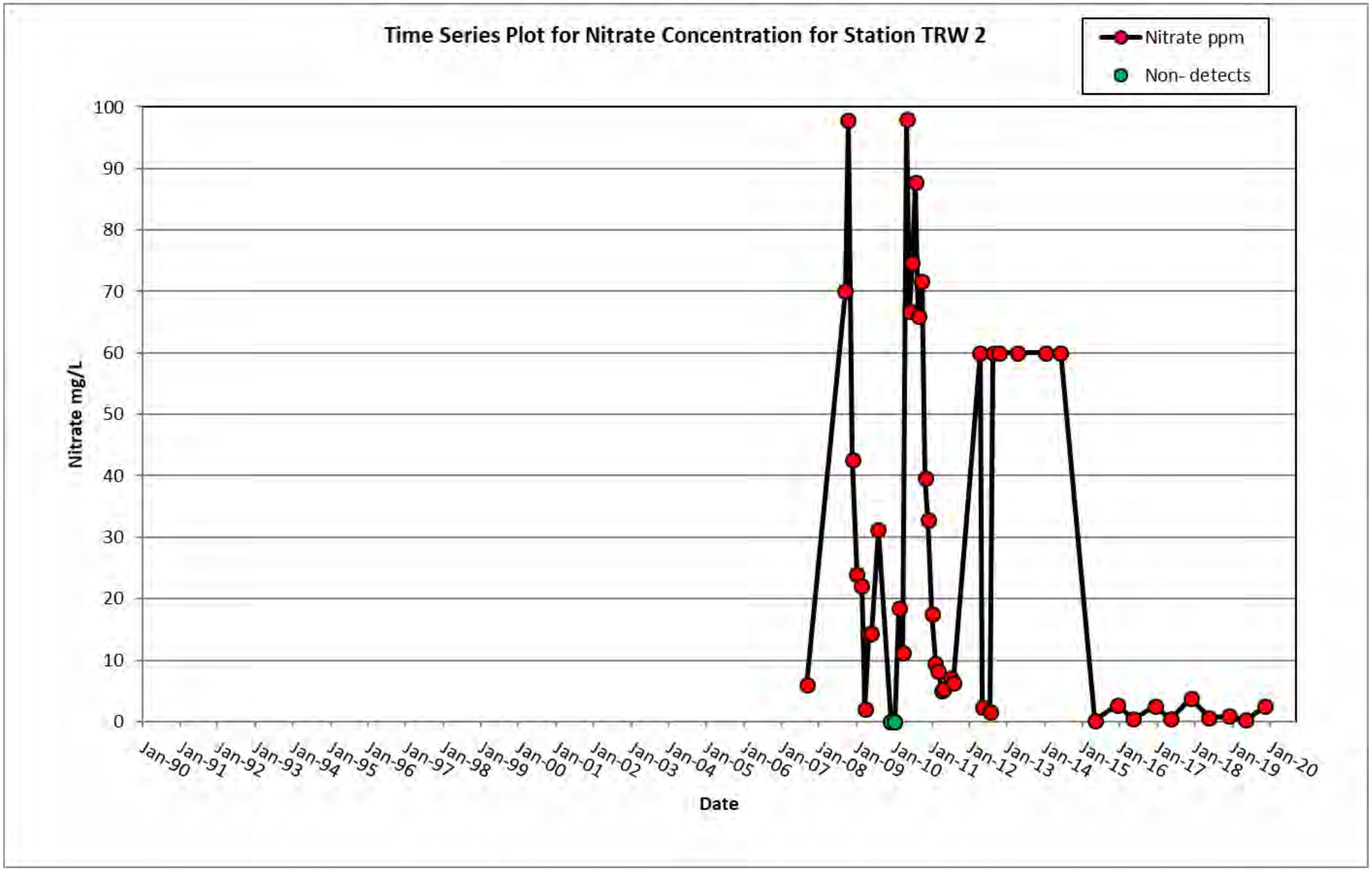
Jan-17
Jan-18
Jan-19
Jan-20
Date


Time Series Plot for Nitrate Concentration for Station TRW 2
Nitrate ppm
Non- detects
Nitrate mg/L
100
90
80
70
60
50
40
30
20
10
0
Jan-90
Jan-91
Jan-92
Jan-93
Jan-94
Jan-95
Jan-96
Jan-97
Jan-98
Jan-99
Jan-00
Jan-01
Jan-02
Jan-03
Jan-04
Jan-05
Jan-06
Jan-07
Jan-08
Jan-09
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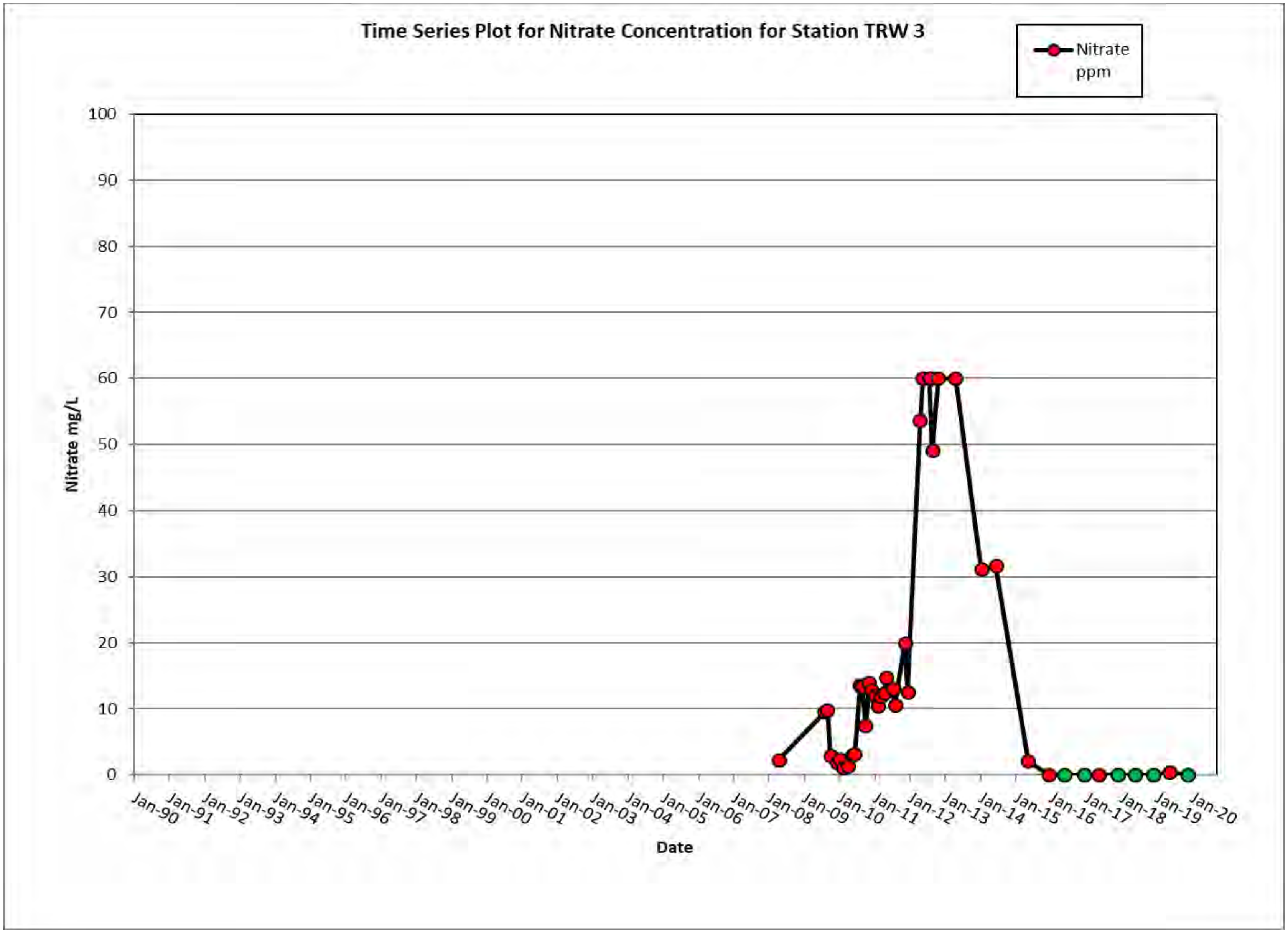
Jan-19
Jan-20
Date


Time Series Plot for Nitrate Concentration for Station TRW 3
Nitrate ppm
Nitrate mg/L
100
90
80
70
60
50
40
30
20
10
0
Jan-90
Jan-91
Jan-92
Jan-93
Jan-94
Jan-95
Jan-96
Jan-97
Jan-98
Jan-99
Jan-00
Jan-01
Jan-02
Jan-03
Jan-04
Jan-05
Jan-06
Jan-07
Jan-08
Jan-09
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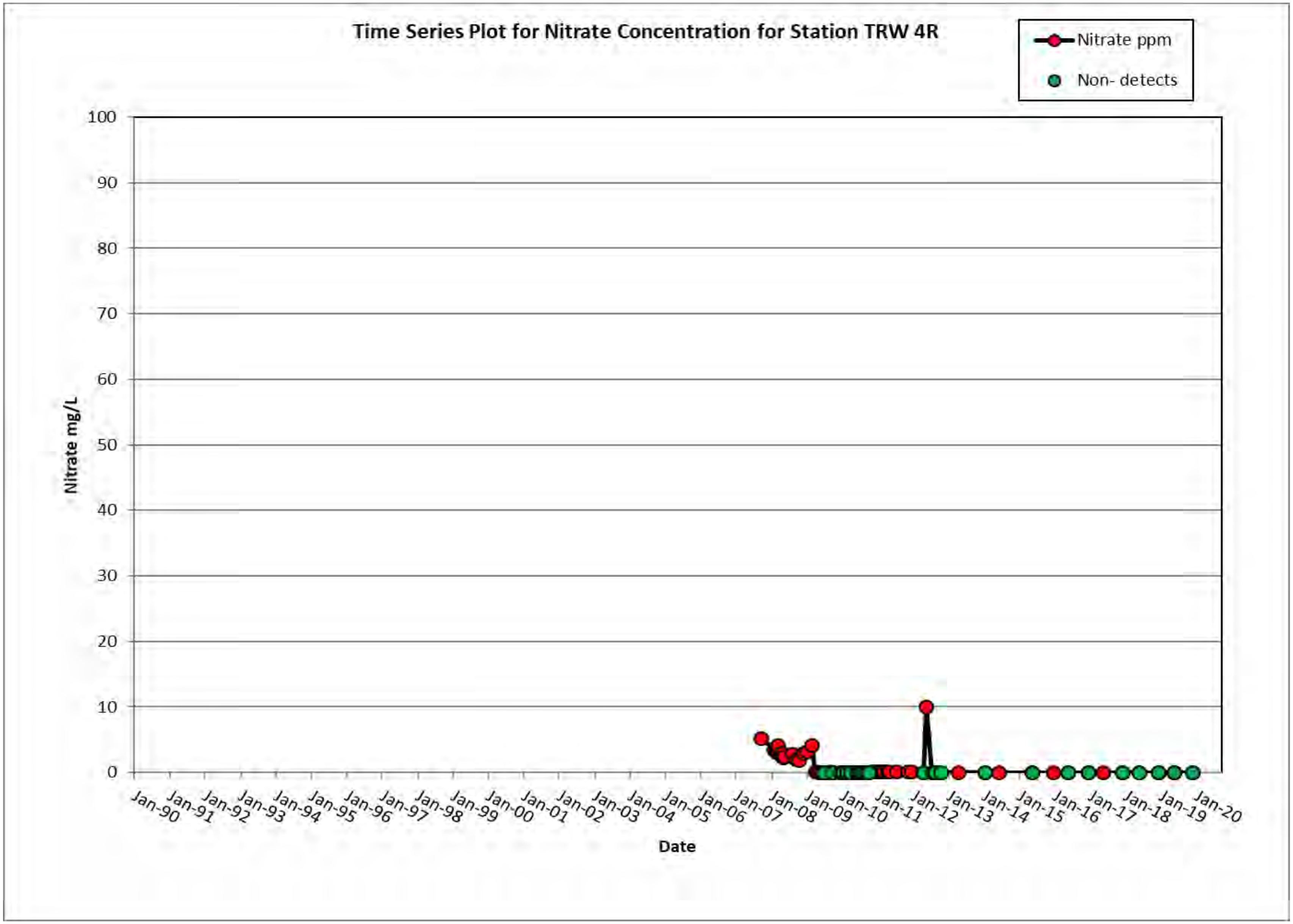
Jan-19
Jan-20
Date


Time Series Plot for Nitrate Concentration for Station TRW 4R
Nitrate ppm
Non- detects
Nitrate mg/L
100
90
80
70
60
50
40
30
20
10
0
Jan-90
Jan-91
Jan-92
Jan-93
Jan-94
Jan-95
Jan-96
Jan-97
Jan-98
Jan-99
Jan-00
Jan-01
Jan-02
Jan-03
Jan-04
Jan-05
Jan-06
Jan-07
Jan-08
Jan-09
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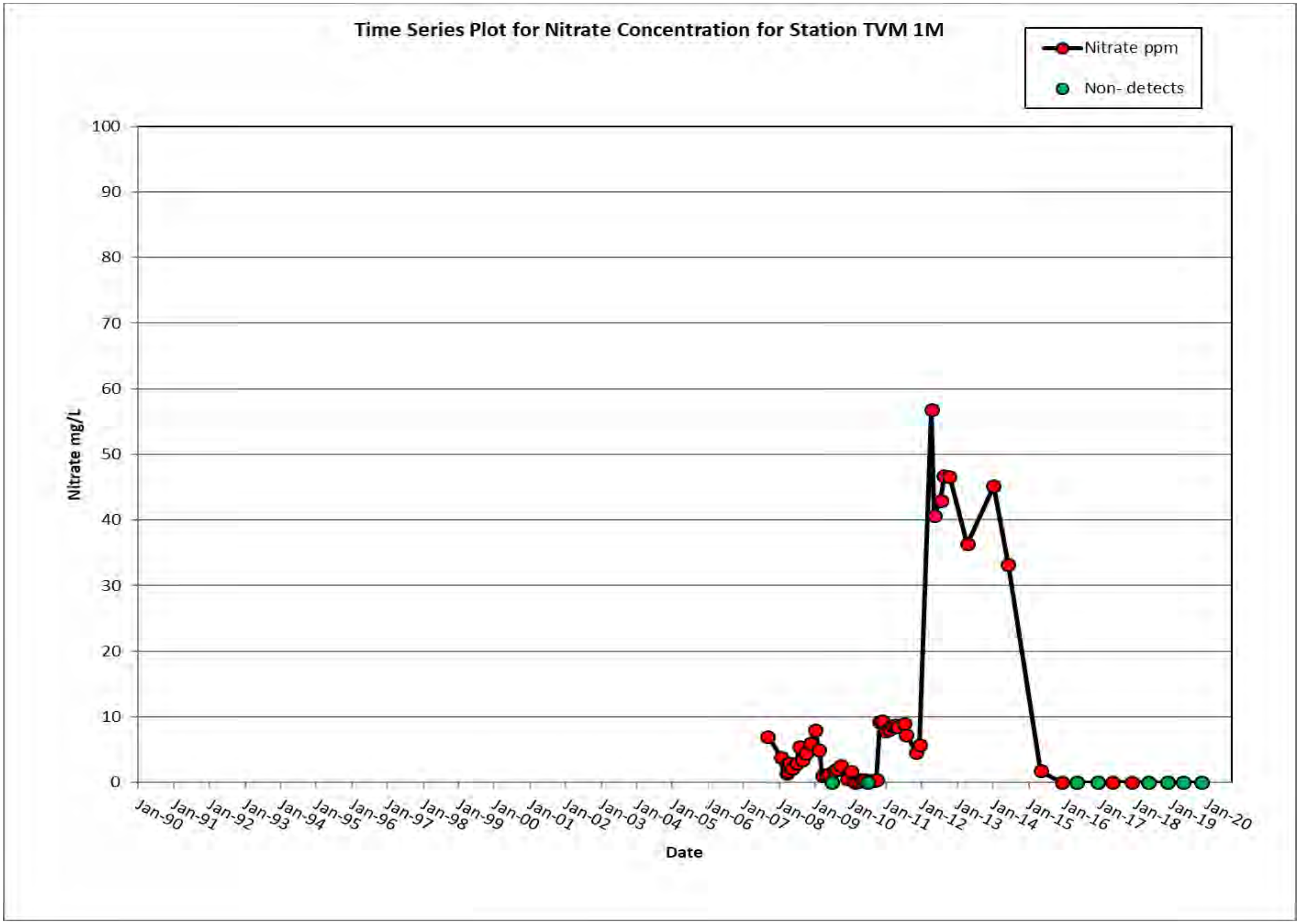
Jan-17
Jan-18
Jan-19
Jan-20
Date


Time Series Plot for Nitrate Concentration for Station TVM 1M
Nitrate ppm
Non- detects
Nitrate mg/L
100
90
80
70
60
50
40
30
20
10
0
Jan-90
Jan-91
Jan-92
Jan-93
Jan-94
Jan-95
Jan-96
Jan-97
Jan-98
Jan-99
Jan-00
Jan-01
Jan-02
Jan-03
Jan-04
Jan-05
Jan-06
Jan-07
Jan-08
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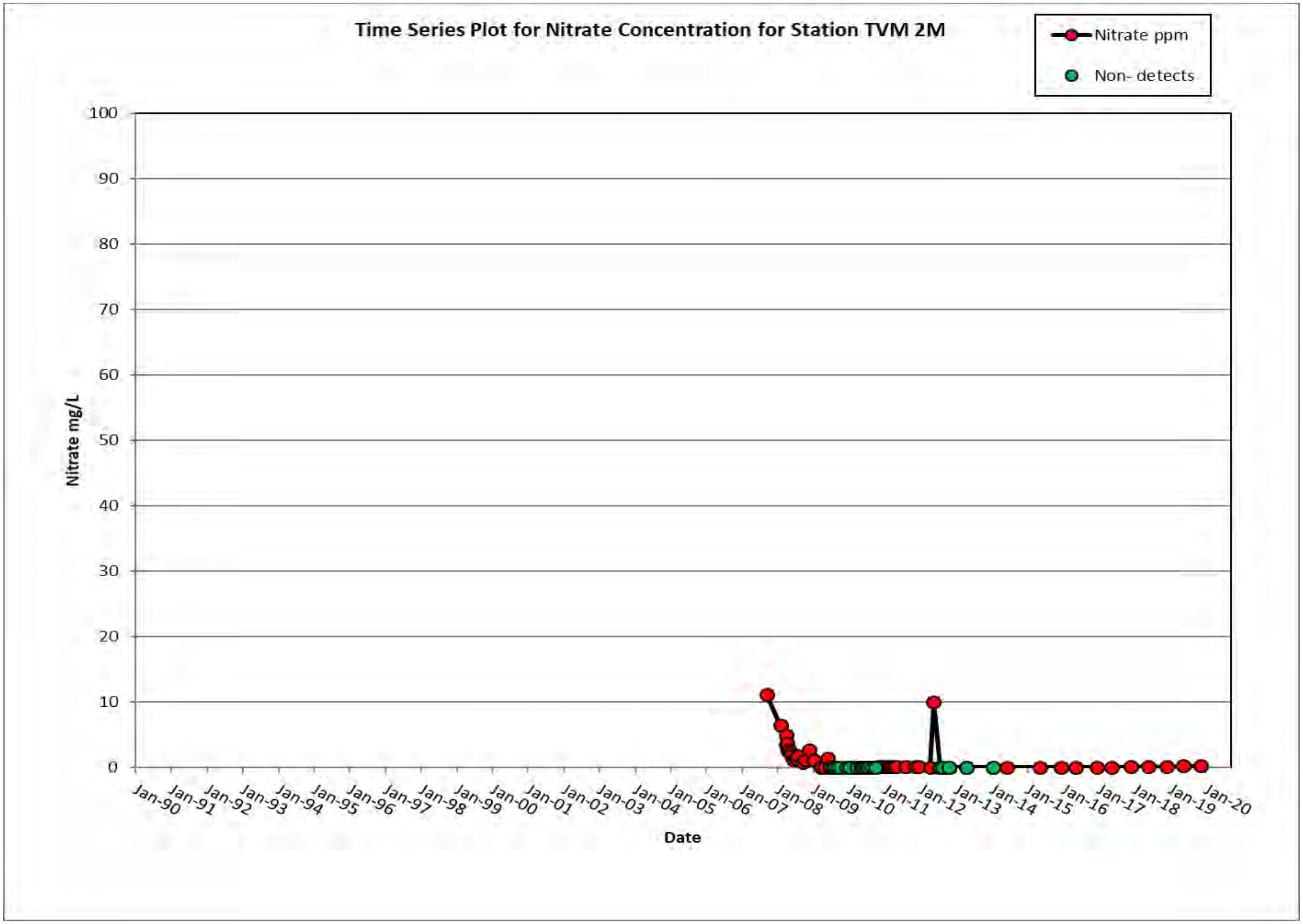
Jan-19
Jan-20
Date


Time Series Plot for Nitrate Concentration for Station TVM 2M
Nitrate ppm
Non- detects
Nitrate mg/L
100
90
80
70
60
50
40
30
20
10
0
Jan-90
Jan-91
Jan-92
Jan-93
Jan-94
Jan-95
Jan-96
Jan-97
Jan-98
Jan-99
Jan-00
Jan-01
Jan-02
Jan-03
Jan-04
Jan-05
Jan-06
Jan-07
Jan-08
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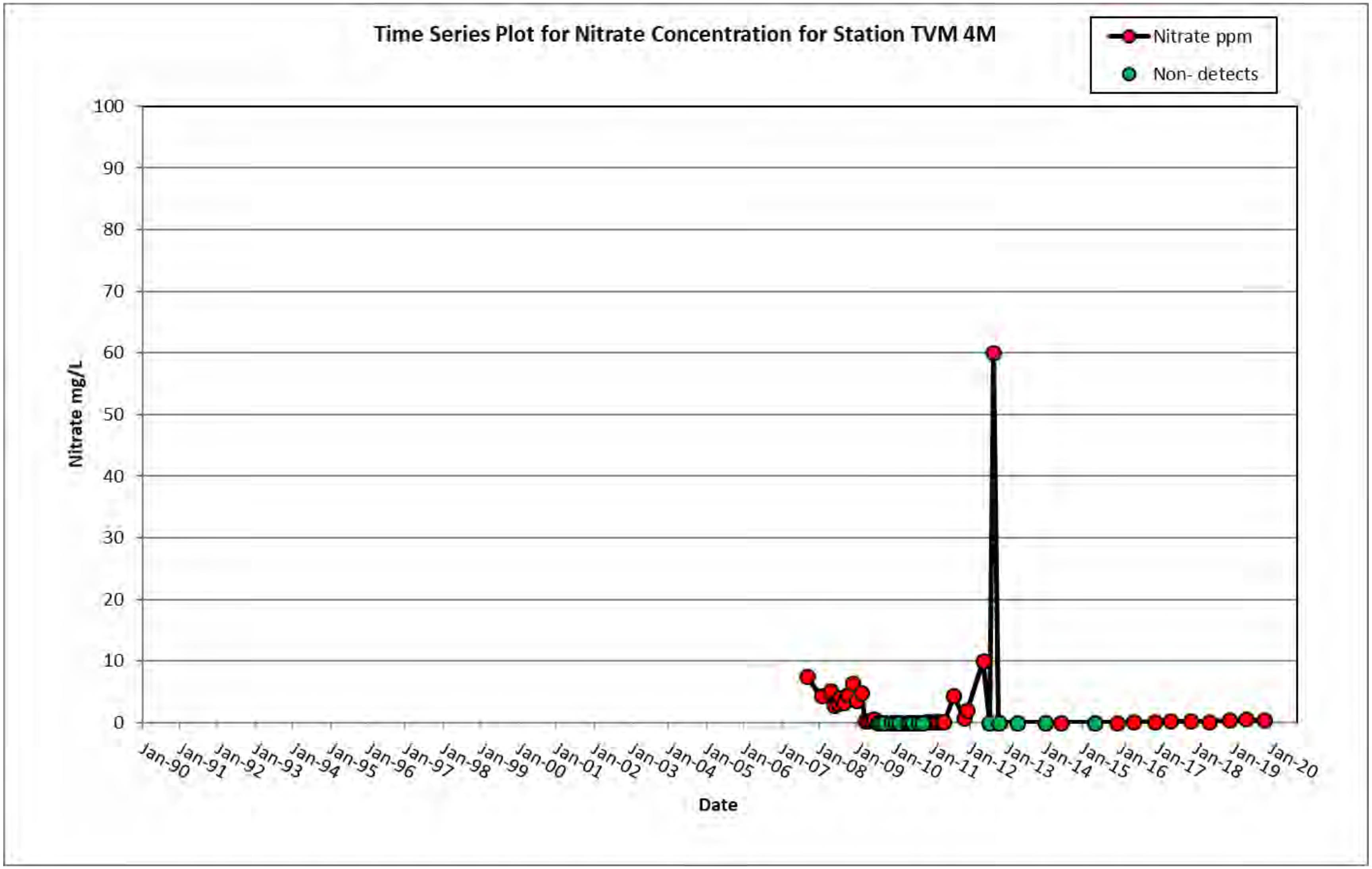
Jan-17
Jan-18
Jan-19
Jan-20
Date


Time Series Plot for Nitrate Concentration for Station TVM 4M
Nitrate ppm
Non- detects
Nitrate mg/L
100
90
80
70
60
50
40
30
20
10
0
Jan-90
Jan-91
Jan-92
Jan-93
Jan-94
Jan-95
Jan-96
Jan-97
Jan-98
Jan-99
Jan-00
Jan-01
Jan-02
Jan-03
Jan-04
Jan-05
Jan-06
Jan-07
Jan-08
Jan-09
Jan-10
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Jan-13
Jan-14
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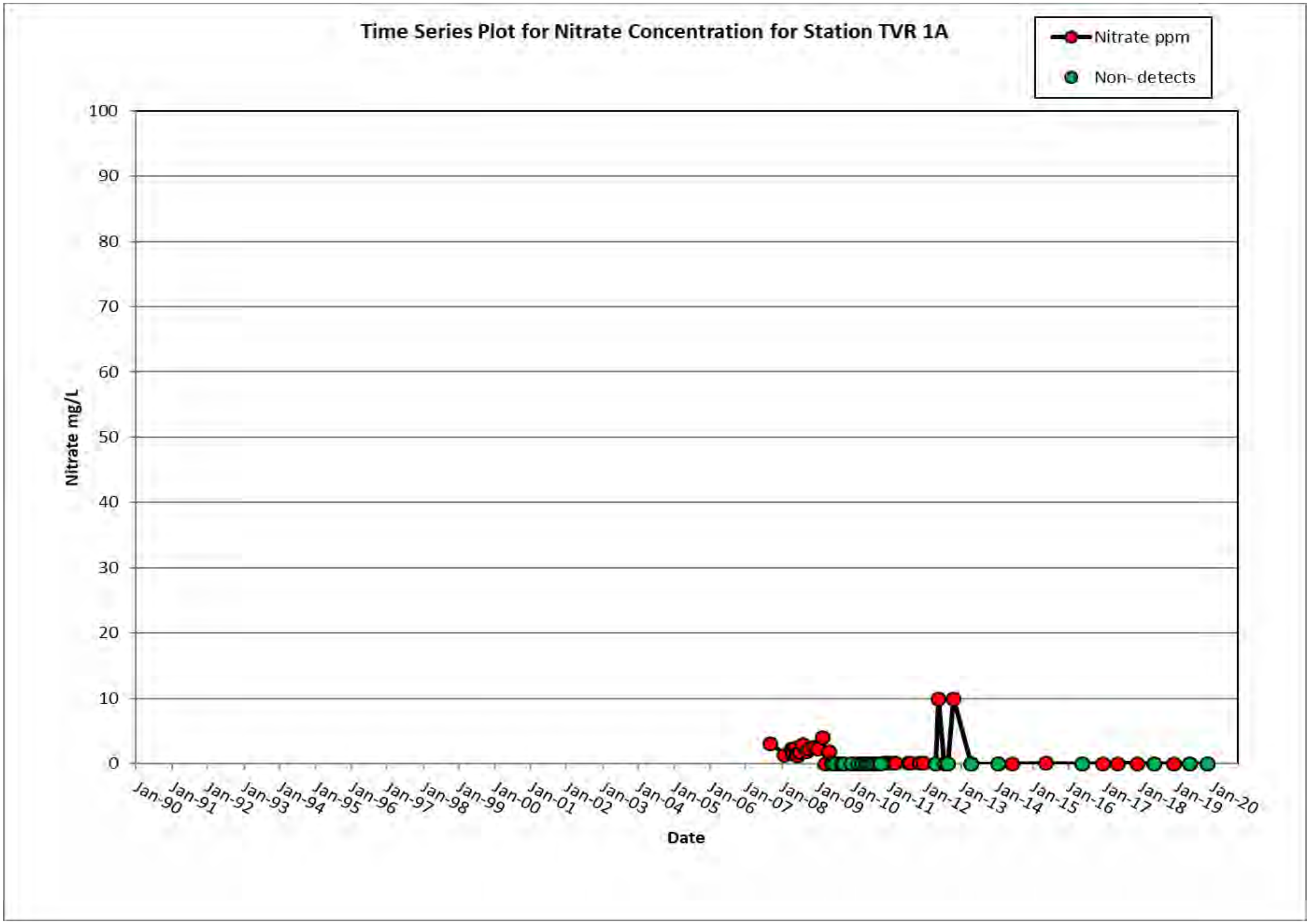
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Date


Time Series Plot for Nitrate Concentration for Station TVR 1A
Nitrate ppm
Non- detects
Nitrate mg/L
100
90
80
70
60
50
40
30
20
10
0
Jan-90
Jan-91
Jan-92
Jan-93
Jan-94
Jan-95
Jan-96
Jan-97
Jan-98
Jan-99
Jan-00
Jan-01
Jan-02
Jan-03
Jan-04
Jan-05
Jan-06
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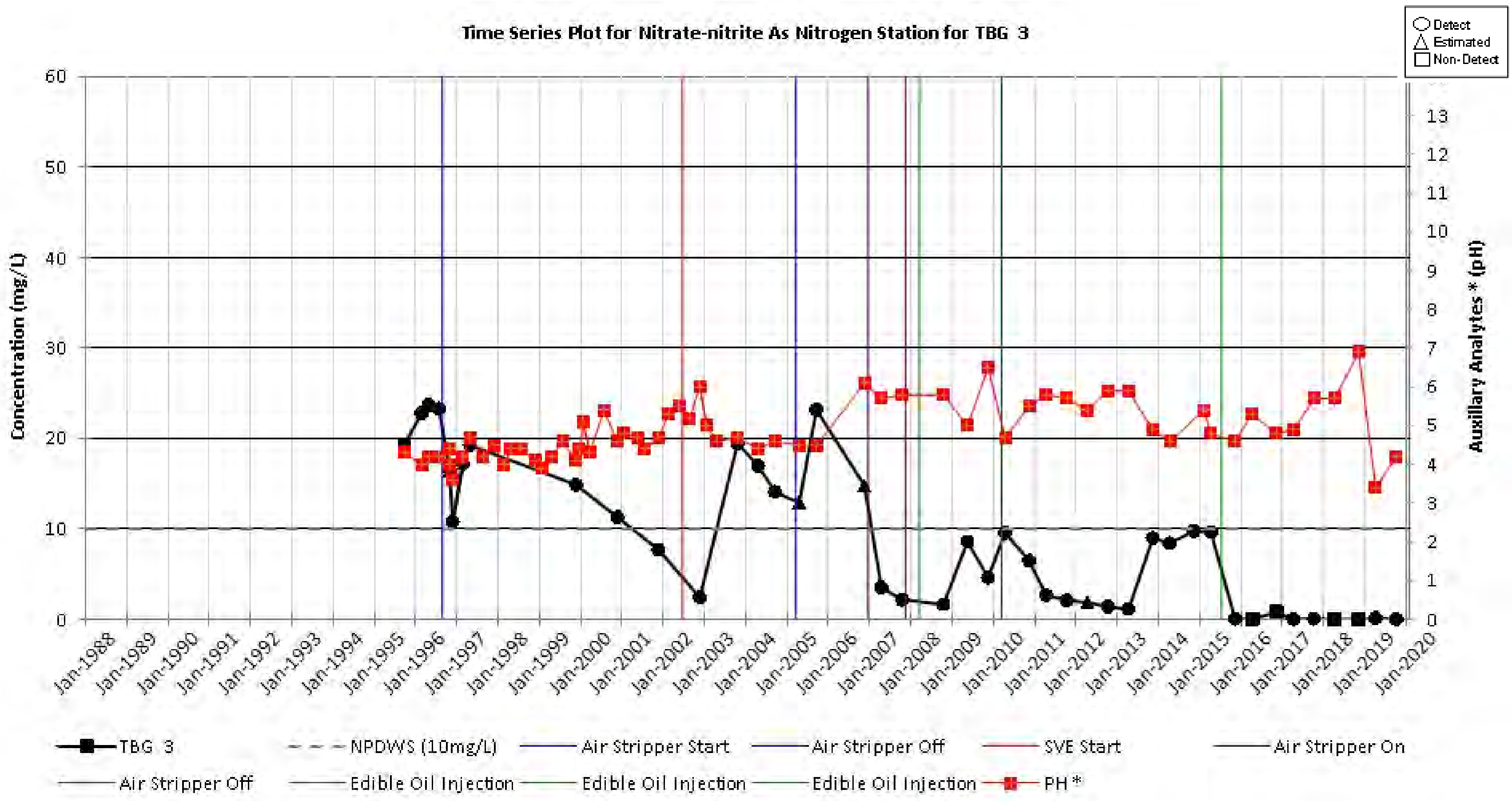
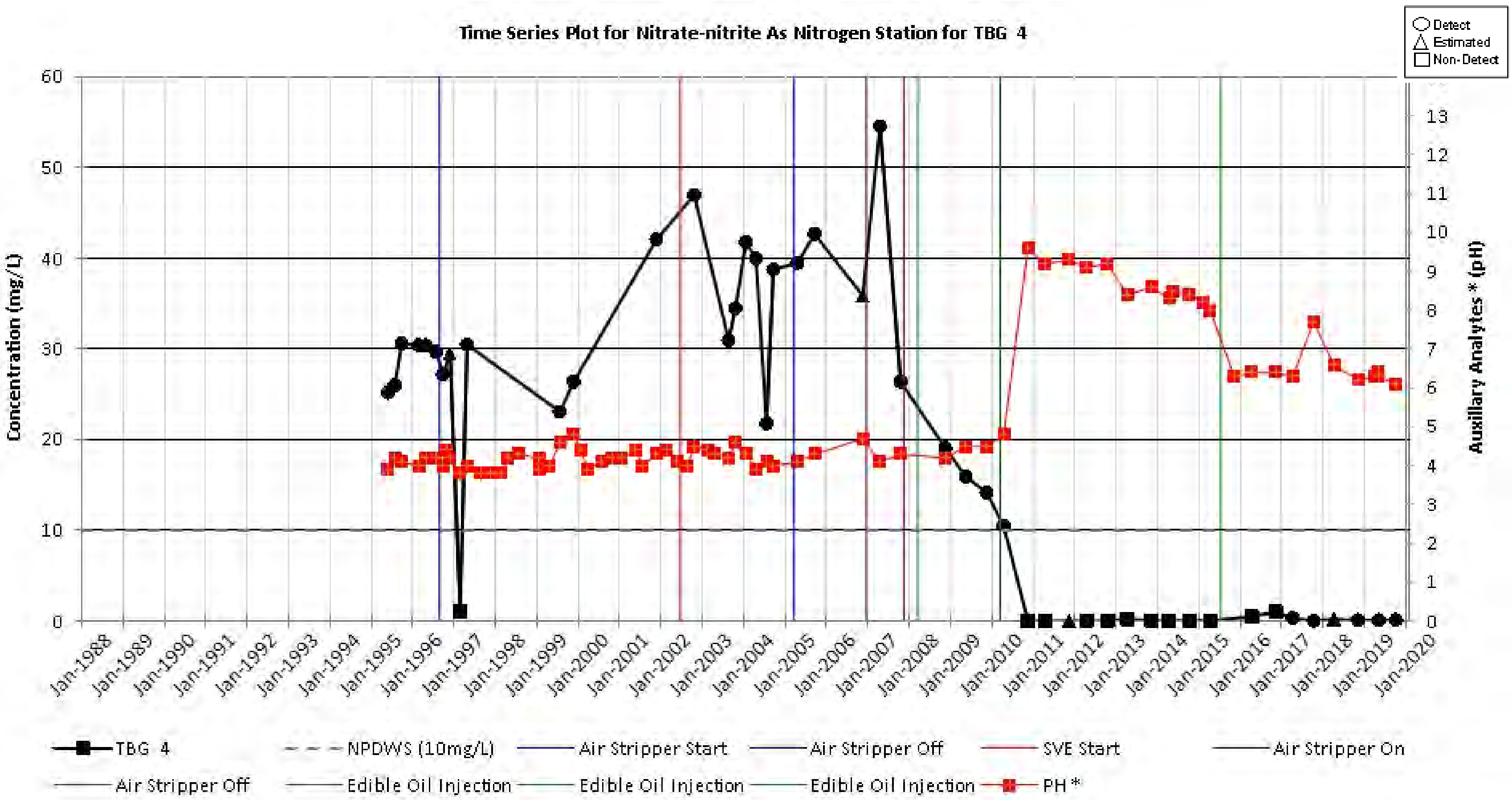
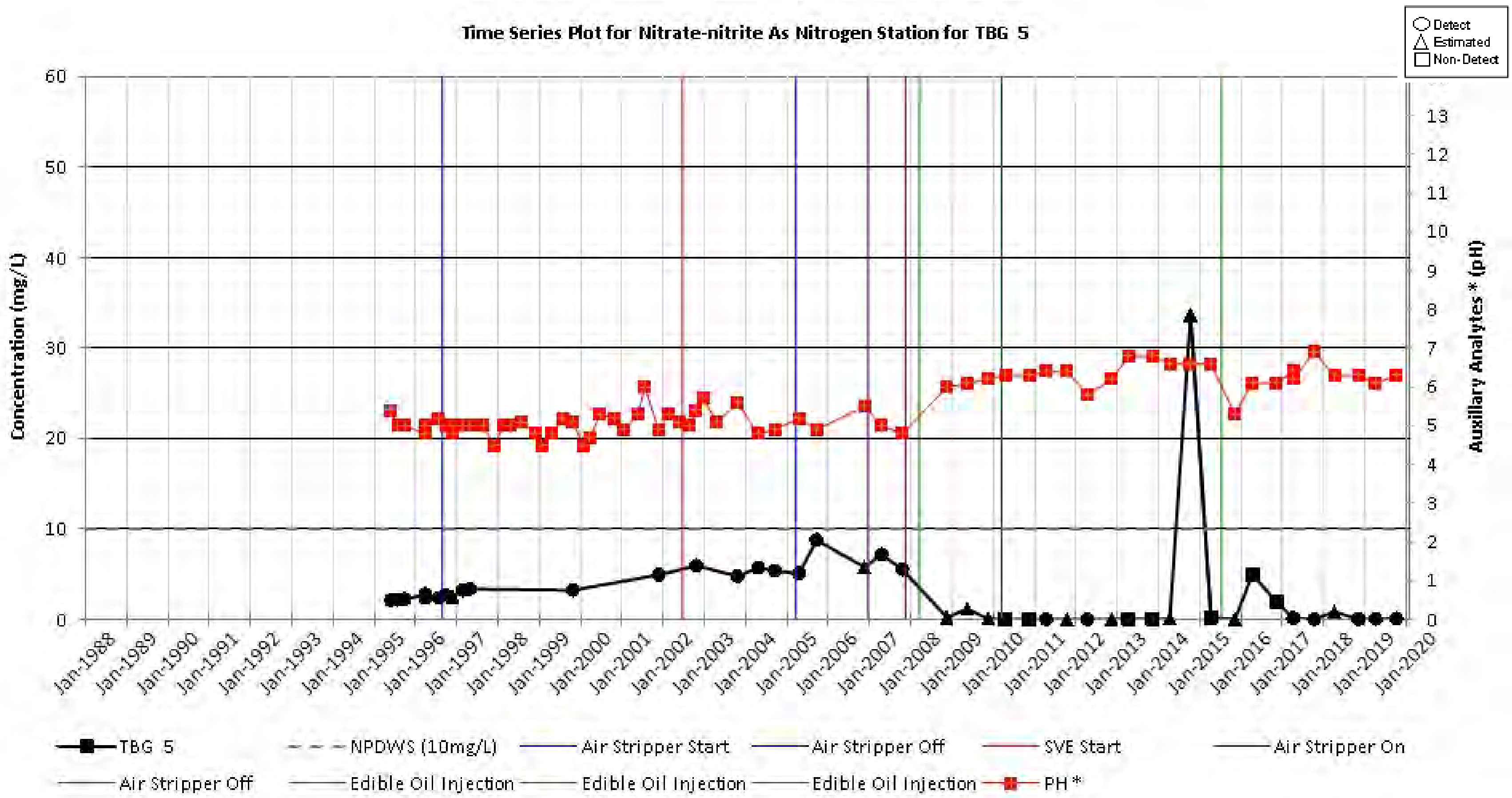
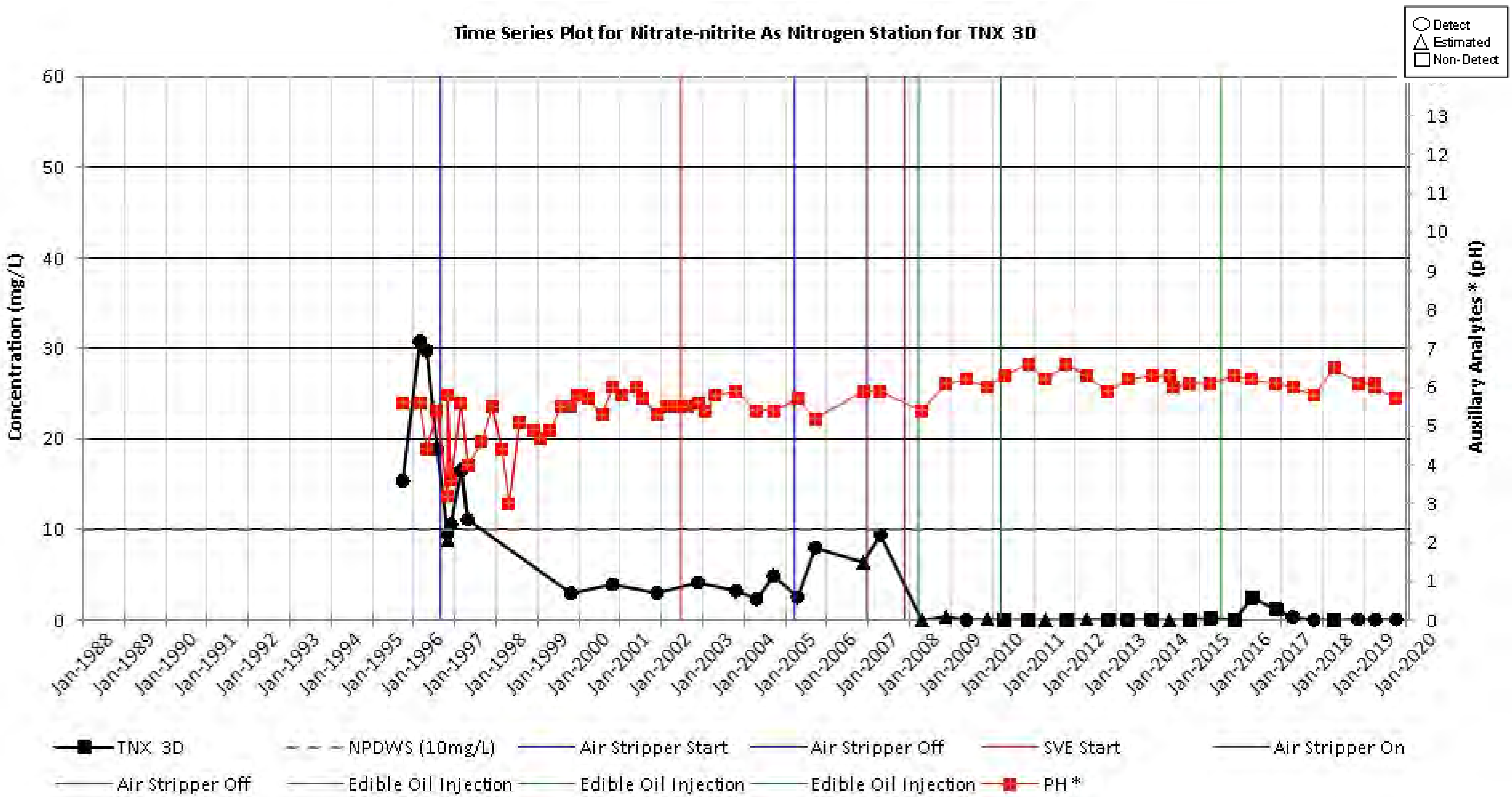
Jan-17
Jan-18
Jan-19
Jan-20
Date


Time Series Plot for Nitrate-nitrite As Nitrogen Station for TBG 3
Detect
Estimated
Non-Detect
Concentration (mg/L)
Auxillary Analytes * (pH)
0
10
20
30
40
50
60
0
1
2
3
4
5
6
7
8
9
10
11
12
13
Jan-1988
Jan-1989
Jan-1990
Jan-1991
Jan-1992
Jan-1993
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TBG 3
NPDWS (10mg/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection
PH *


Time Series Plot for Nitrate-nitrite As Nitrogen Station for TBG 4
Detect
Estimated
Non-Detect
Concentration (mg/L)
Auxillary Analytes * (pH)
0
10
20
30
40
50
60
0
1
2
3
4
5
6
7
8
9
10
11
12
13
Jan-1988
Jan-1989
Jan-1990
Jan-1991
Jan-1992
Jan-1993
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TBG 4
NPDWS (10mg/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection
PH *


Time Series Plot for Nitrate-nitrite As Nitrogen Station for TBG 5
Detect
Estimated
Non-Detect
Concentration (mg/L)
Auxillary Analytes * (pH)
TBG 5
NPDWS (10mg/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection
PH *


Time Series Plot for Nitrate-nitrite As Nitrogen Station for TNX 3D
Detect
Estimated
Non-Detect
Concentration (mg/L)
Auxillary Analytes * (pH)
0
10
20
30
40
50
60
0
1
2
3
4
5
6
7
8
9
10
11
12
13
Jan-1988
Jan-1989
Jan-1990
Jan-1991
Jan-1992
Jan-1993
Jan-1994
Jan-1995
Jan-1996
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Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
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Jan-2006
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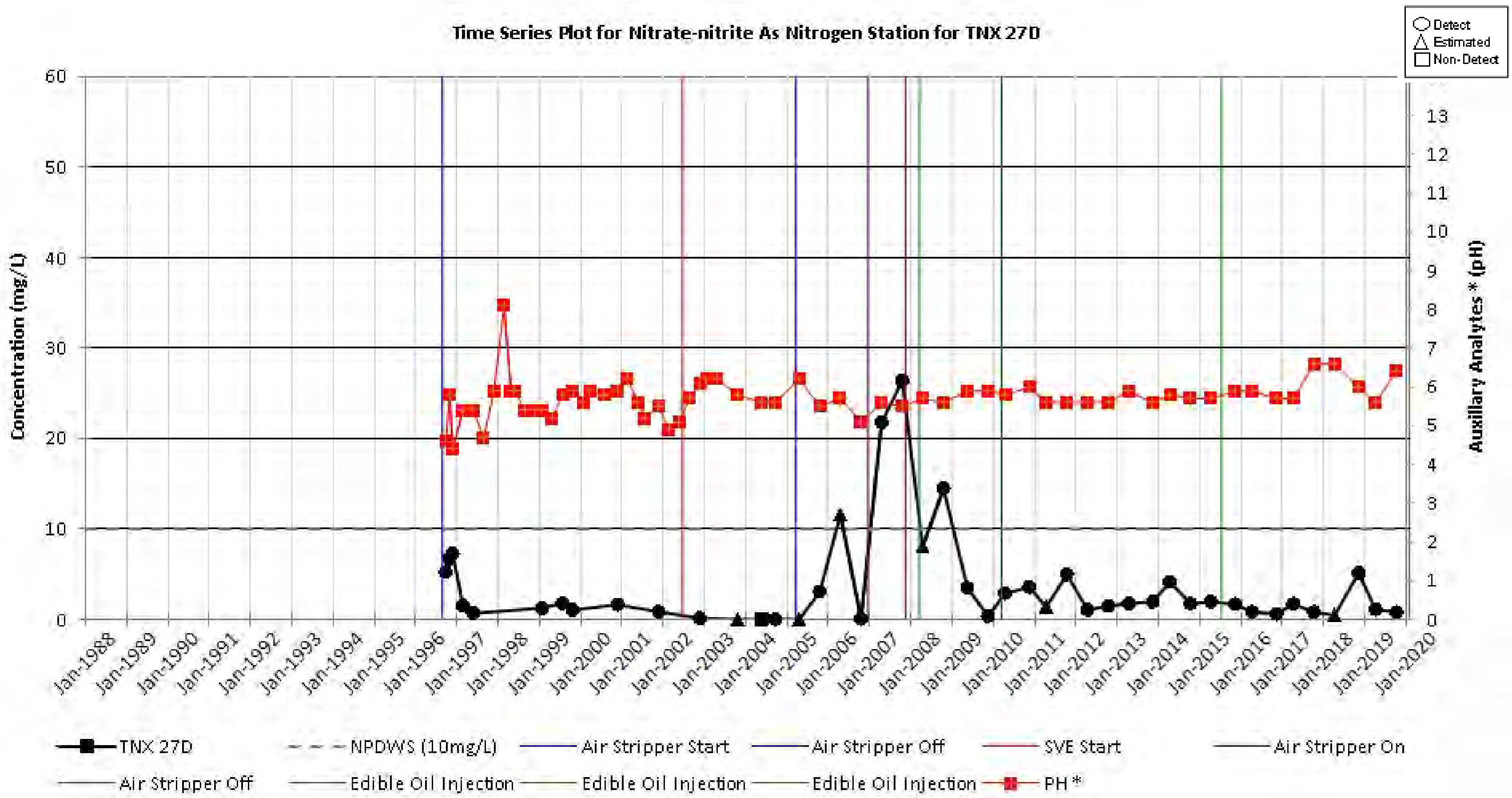
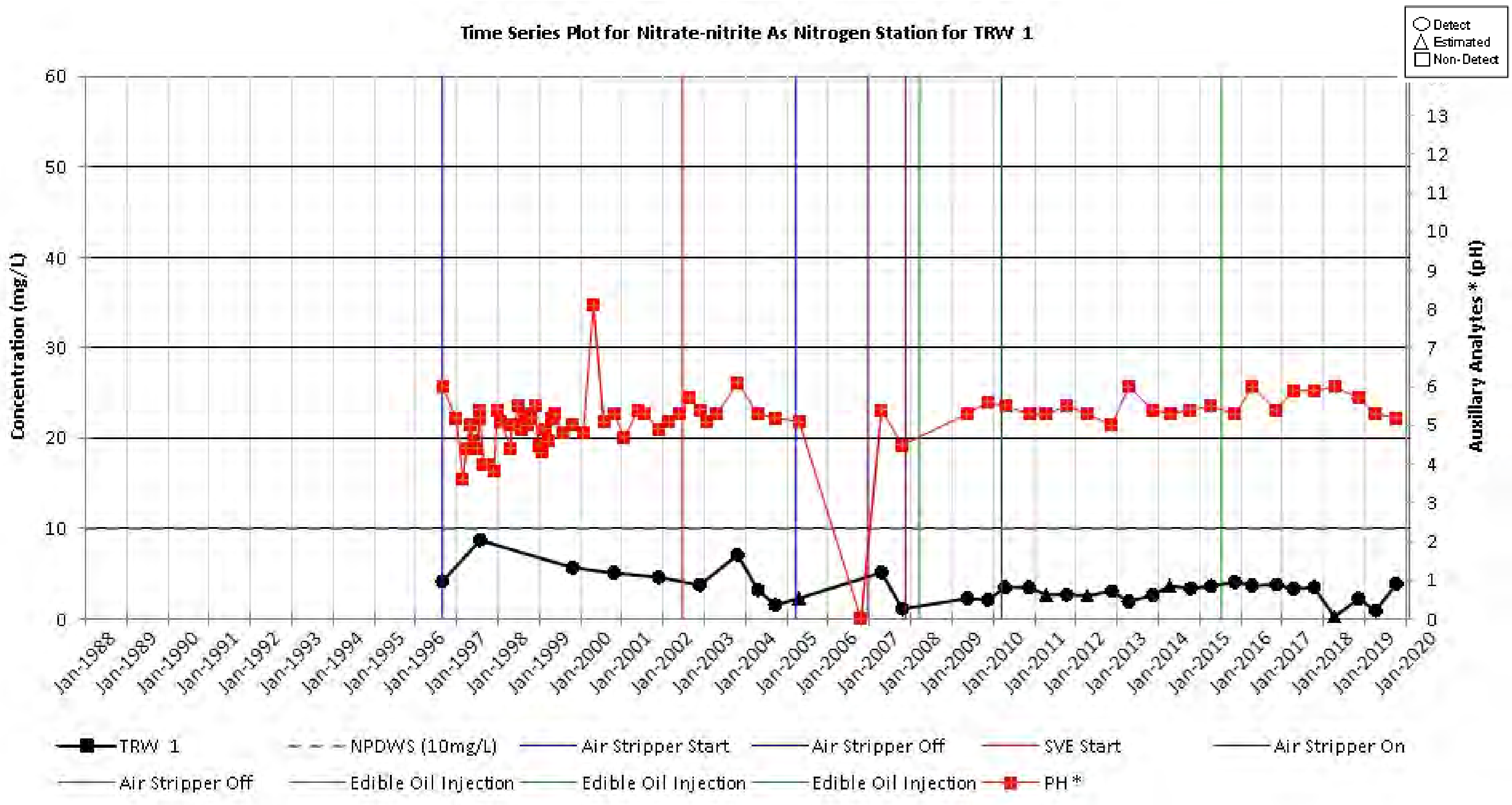
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TNX 3D
NPDWS (10mg/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection
PH *


Time Series Plot for Nitrate-nitrite As Nitrogen Station for TNX 27D
Detect
Estimated
Non-Detect
Concentration (mg/L)
Auxillary Analytes * (pH)
60
50
40
30
20
10
0
13
12
11
10
9
8
7
6
5
4
3
2
1
0
Jan-1988
Jan-1989
Jan-1990
Jan-1991
Jan-1992
Jan-1993
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TNX 27D
NPDWS (10mg/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection
PH *


Time Series Plot for Nitrate-nitrite As Nitrogen Station for TRW 1
Detect
Estimated
Non-Detect
Concentration (mg/L)
Auxillary Analytes * (pH)
0
10
20
30
40
50
60
0
1
2
3
4
5
6
7
8
9
10
11
12
13
Jan-1988
Jan-1989
Jan-1990
Jan-1991
Jan-1992
Jan-1993
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Jan-1996
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Jan-1999
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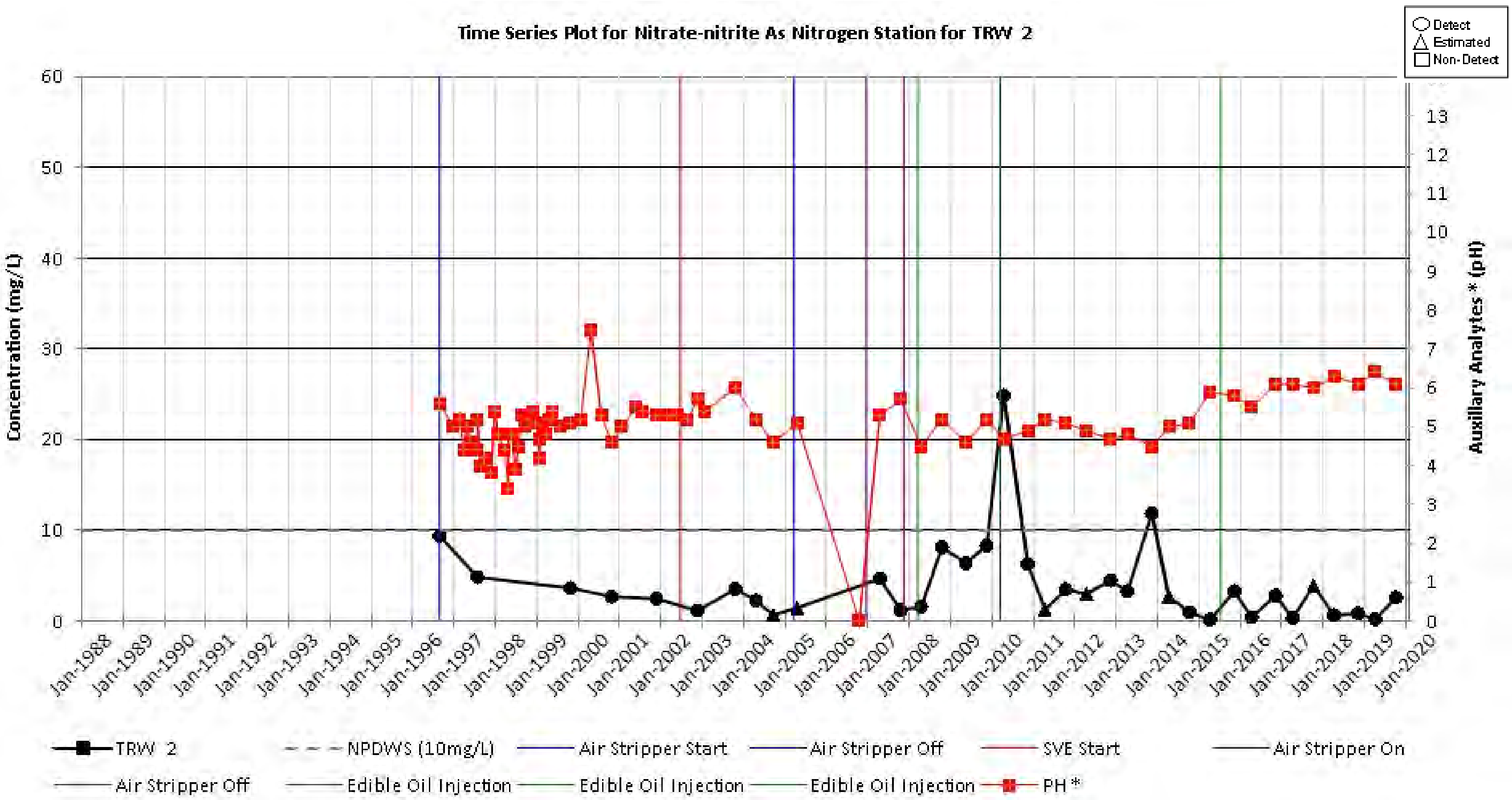
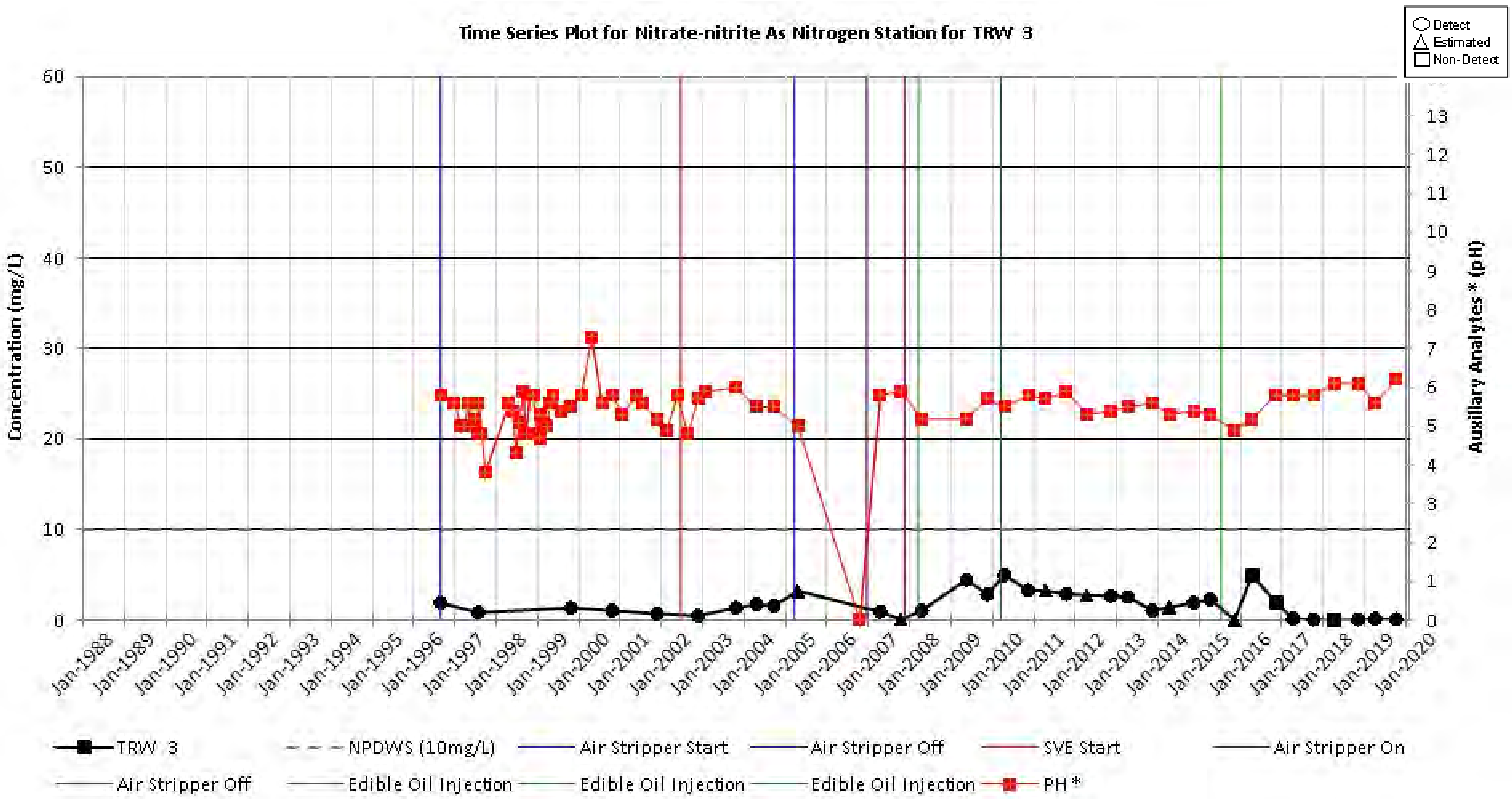
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TRW 1
NPDWS (10mg/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection
PH *


Time Series Plot for Nitrate-nitrite As Nitrogen Station for TRW 2
Detect
Estimated
Non-Detect
Concentration (mg/L)
Auxillary Analytes * (pH)
60
50
40
30
20
10
0
13
12
11
10
9
8
7
6
5
4
3
2
1
0
Jan-1988
Jan-1989
Jan-1990
Jan-1991
Jan-1992
Jan-1993
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TRW 2
NPDWS (10mg/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection
PH *


Time Series Plot for Nitrate-nitrite As Nitrogen Station for TRW 3
Detect
Estimated
Non-Detect
Concentration (mg/L)
Auxillary Analytes * (pH)
0
10
20
30
40
50
60
0
1
2
3
4
5
6
7
8
9
10
11
12
13
Jan-1988
Jan-1989
Jan-1990
Jan-1991
Jan-1992
Jan-1993
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
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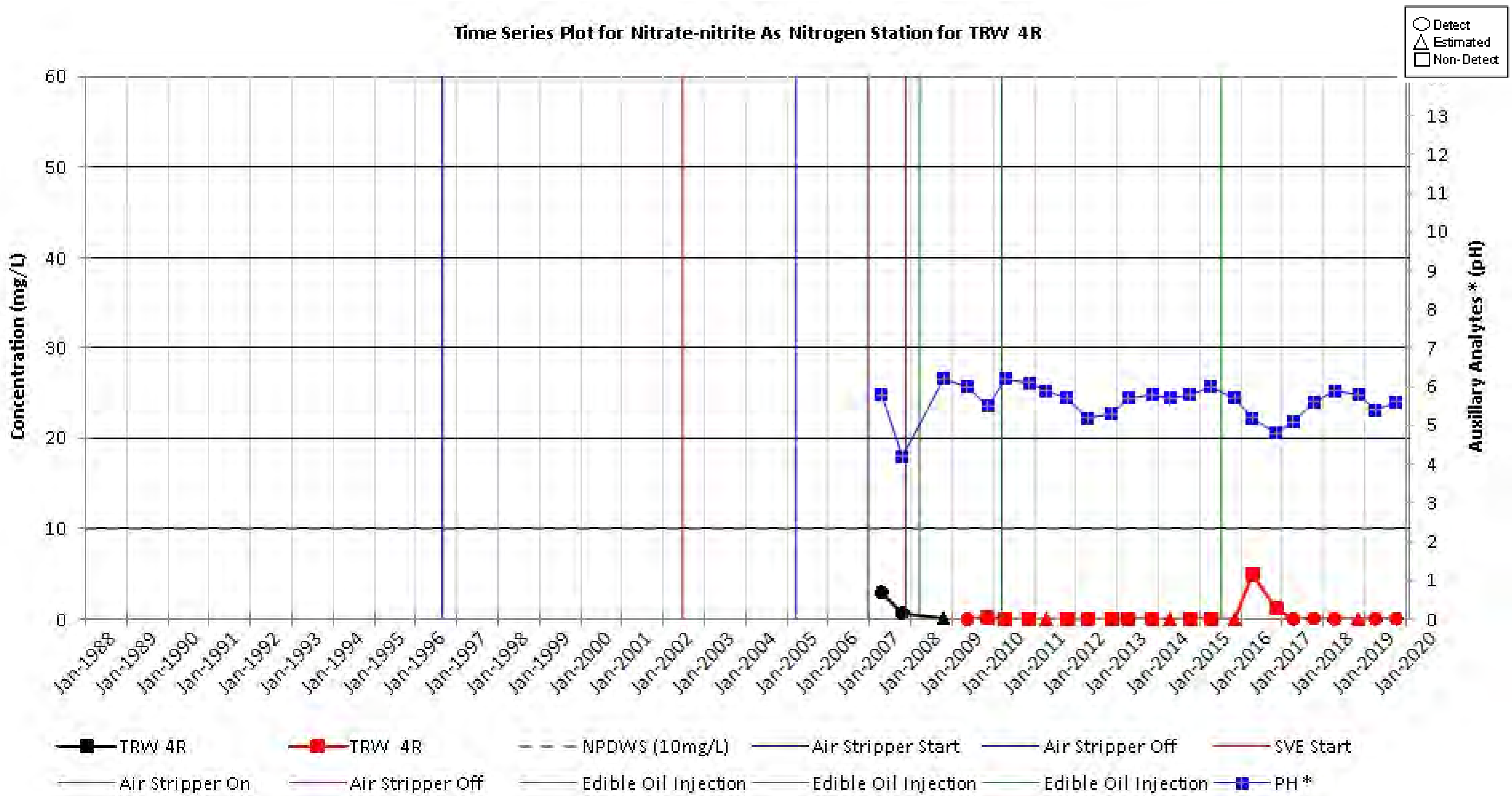
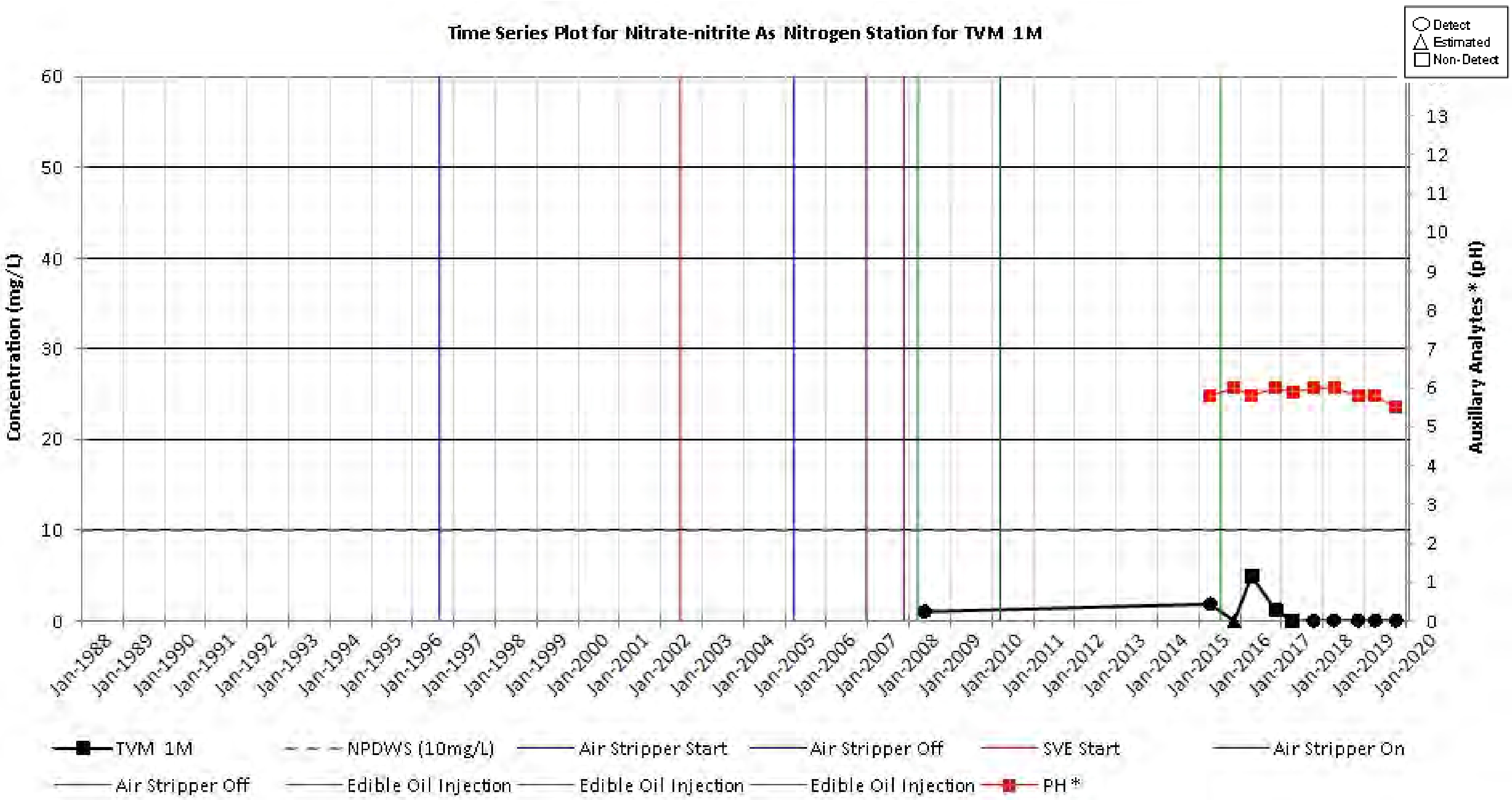
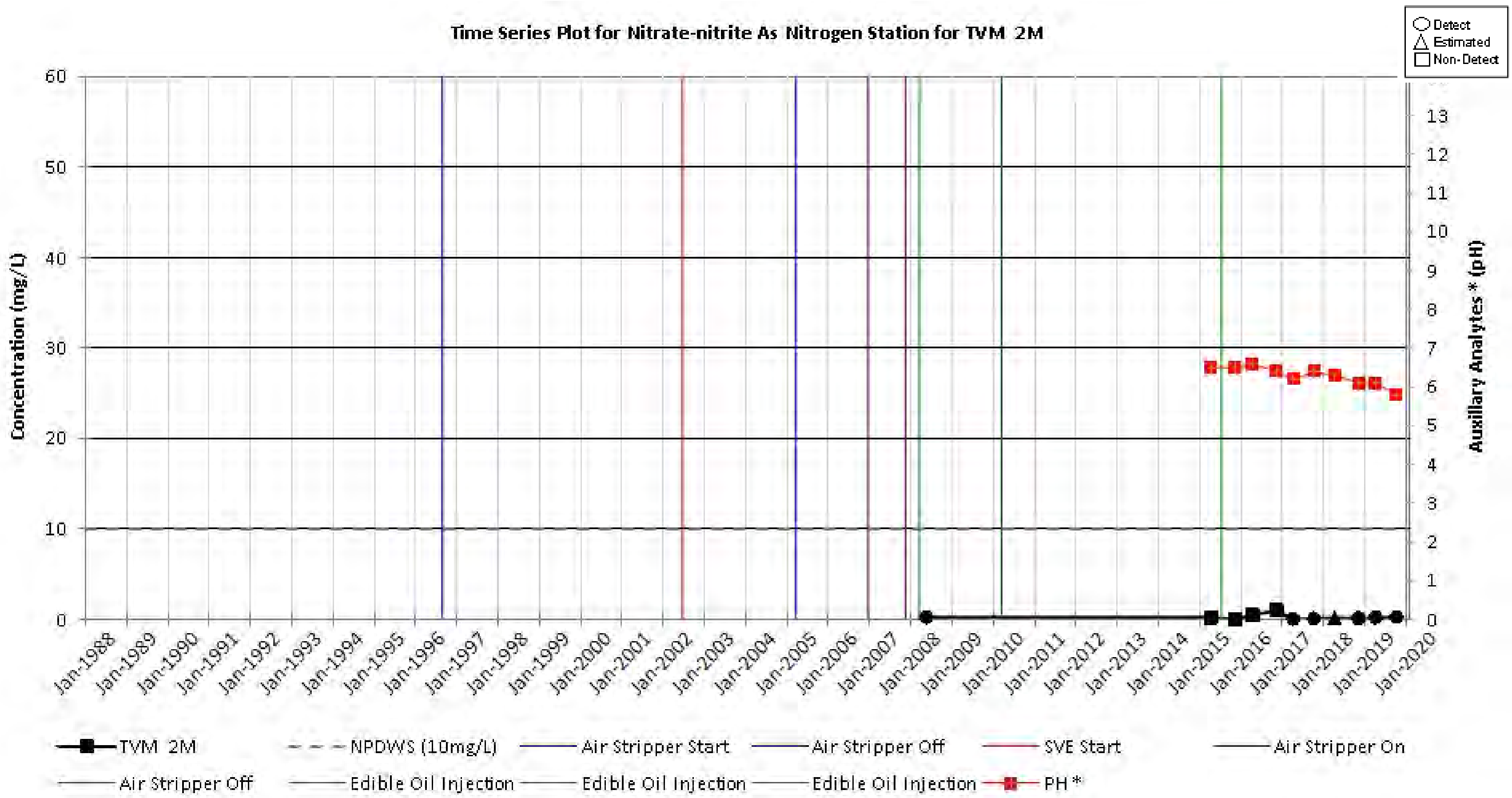
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TRW 3
NPDWS (10mg/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection
PH *


Time Series Plot for Nitrate-nitrite As Nitrogen Station for TRW 4R
Detect
Estimated
Non-Detect
Concentration (mg/L)
Auxillary Analytes * (pH)
0
10
20
30
40
50
60
0
1
2
3
4
5
6
7
8
9
10
11
12
13
Jan-1988
Jan-1989
Jan-1990
Jan-1991
Jan-1992
Jan-1993
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TRW 4R
TRW 4R
NPDWS (10mg/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection
PH *


Time Series Plot for Nitrate-nitrite As Nitrogen Station for TVM 1M
Detect
Estimated
Non-Detect
Concentration (mg/L)
Auxillary Analytes * (pH)
0
10
20
30
40
50
60
Jan-1988
Jan-2020
TVM 1M
NPDWS (10mg/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection
PH *


Time Series Plot for Nitrate-nitrite As Nitrogen Station for TVM 2M
Detect
Estimated
Non-Detect
Concentration (mg/L)
Auxillary Analytes * (pH)
0
10
20
30
40
50
60
0
1
2
3
4
5
6
7
8
9
10
11
12
13
Jan-1988
Jan-1989
Jan-1990
Jan-1991
Jan-1992
Jan-1993
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
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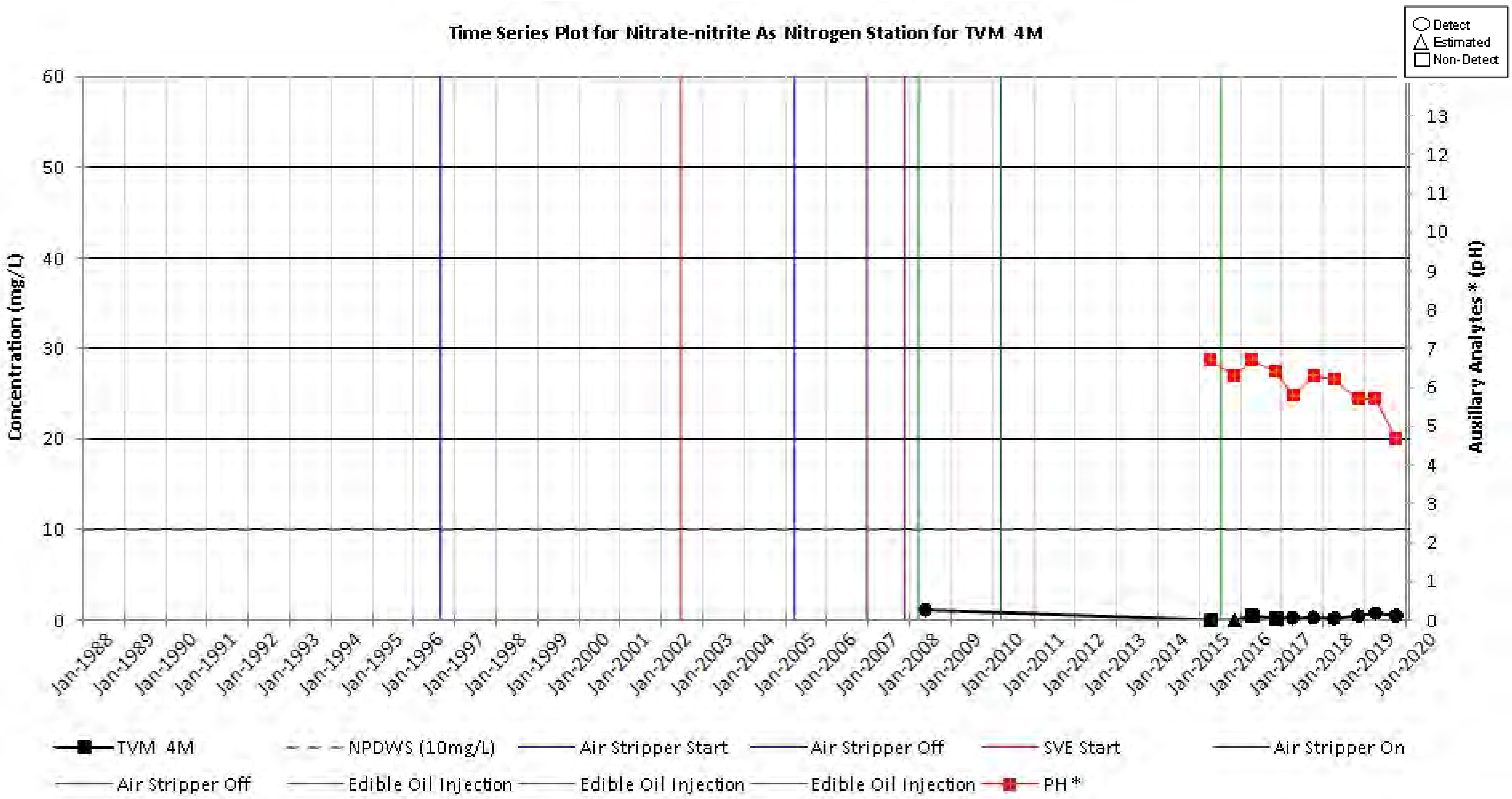
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TVM 2M
NPDWS (10mg/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection
PH *


Time Series Plot for Nitrate-nitrite As Nitrogen Station for TVM 4M
Detect
Estimated
Non-Detect
Concentration (mg/L)
Auxillary Analytes * (pH)
0
10
20
30
40
50
60
0
1
2
3
4
5
6
7
8
9
10
11
12
13
Jan-1988
Jan-1989
Jan-1990
Jan-1991
Jan-1992
Jan-1993
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Jan-1998
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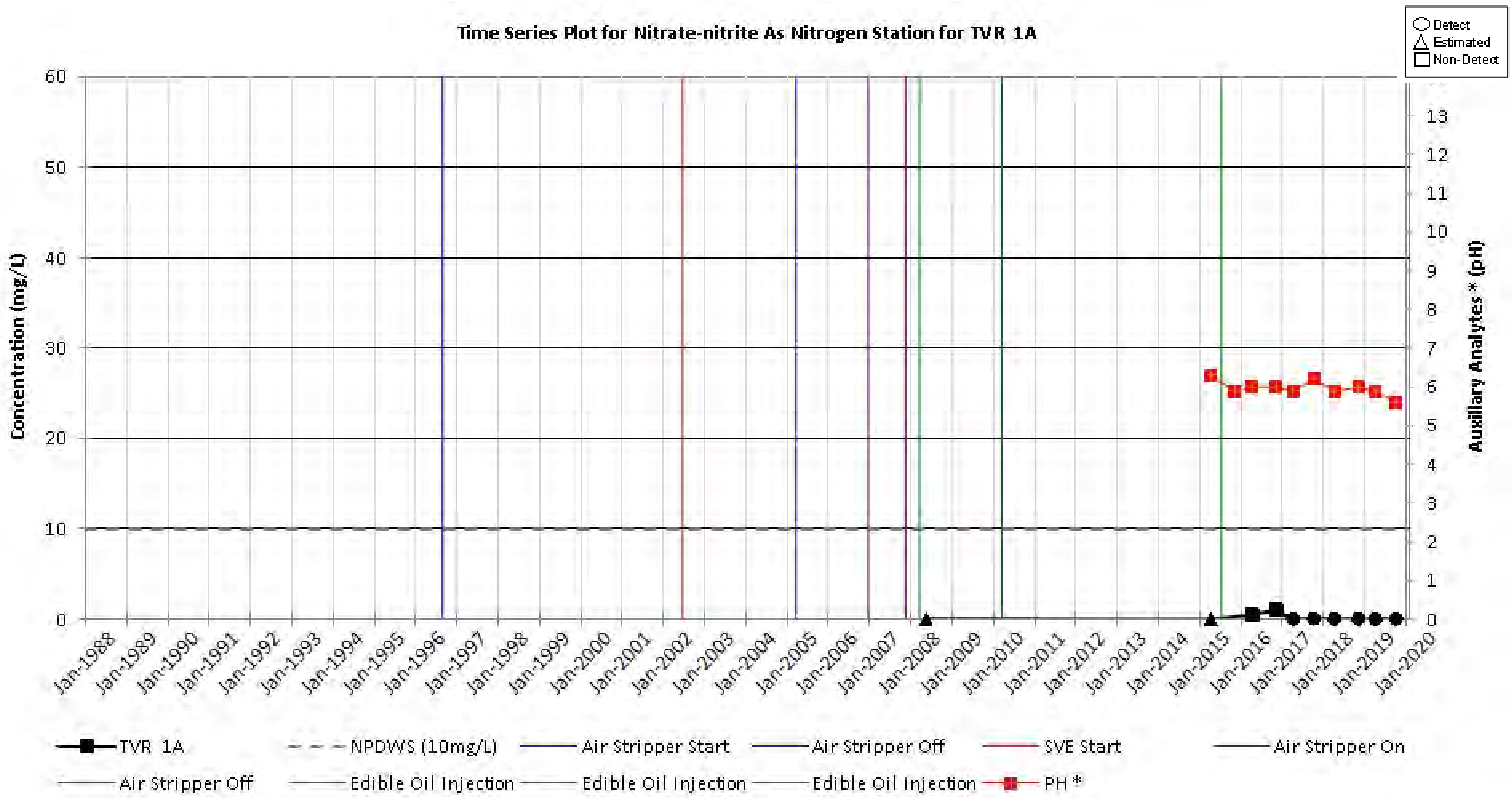
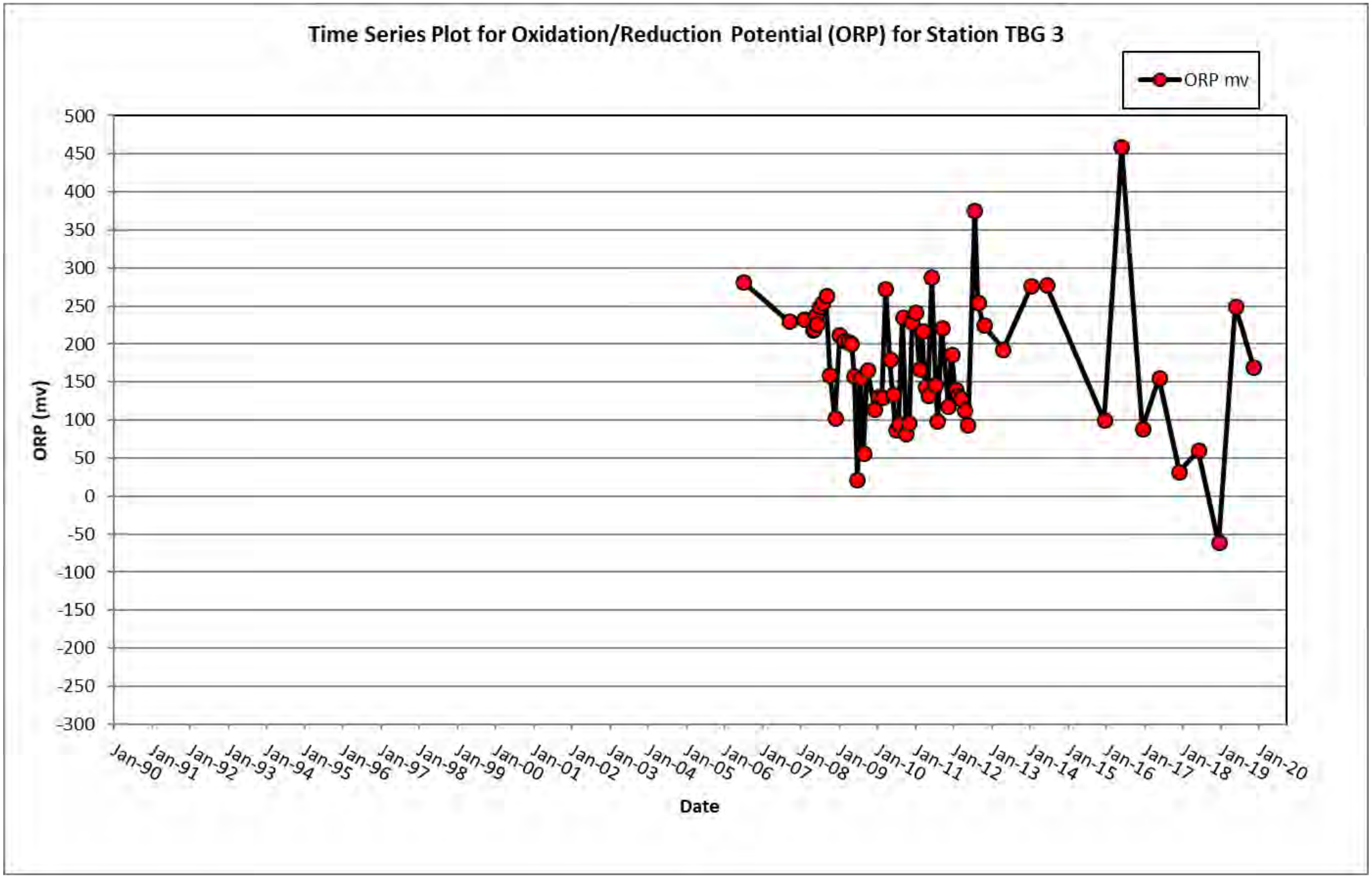
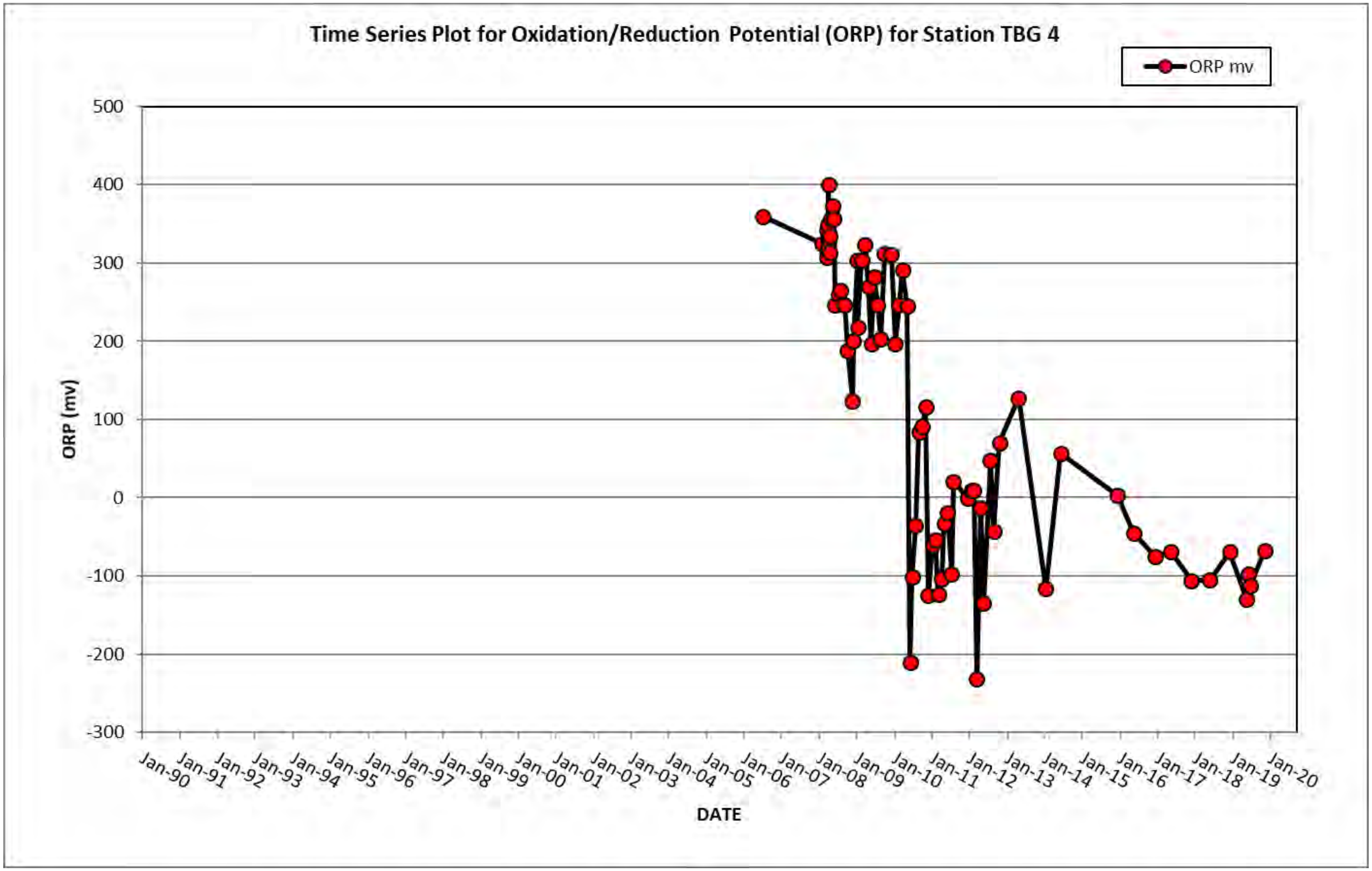
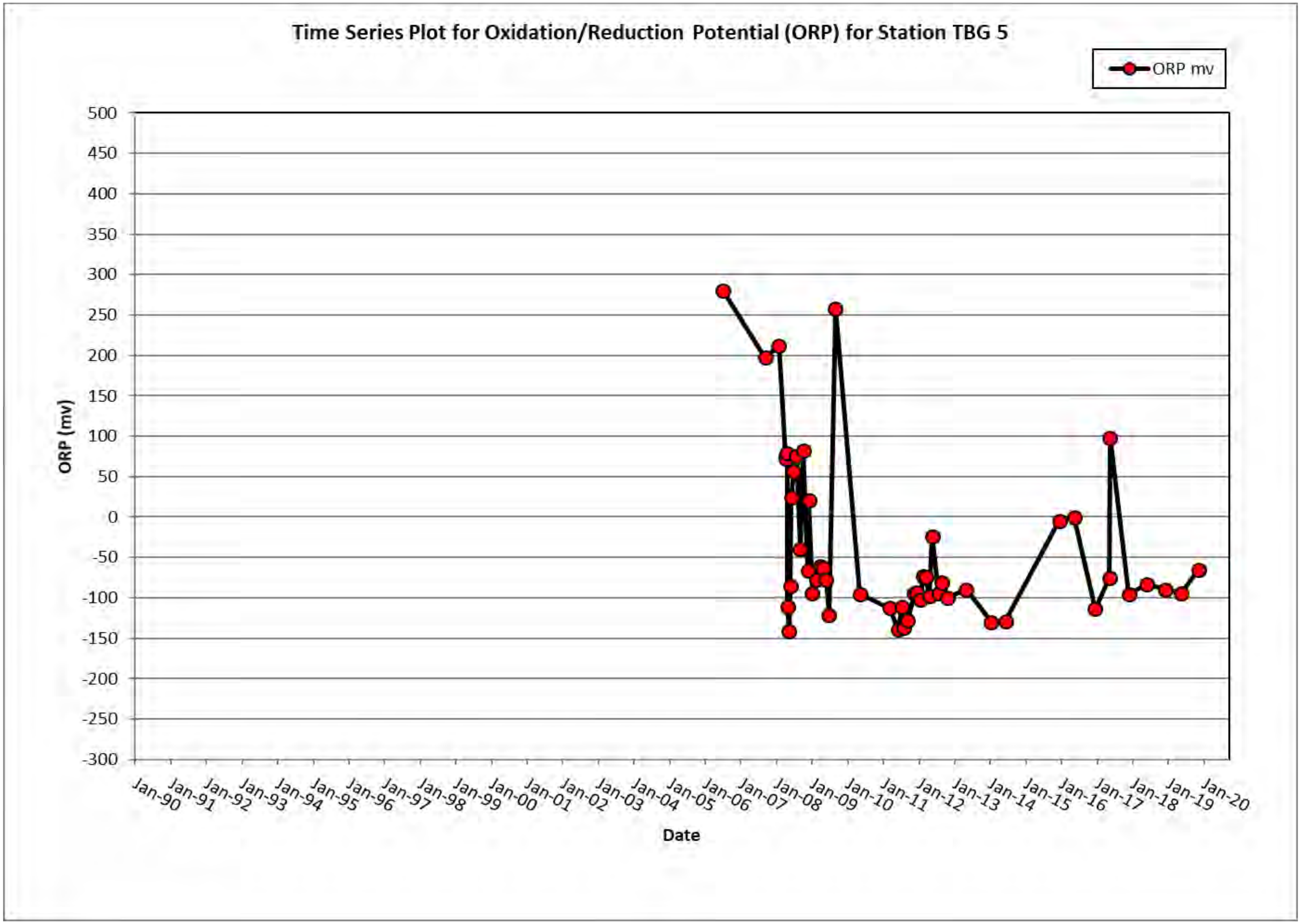
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TVM 4M
NPDWS (10mg/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection
PH *


Time Series Plot for Nitrate-nitrite As Nitrogen Station for TVR 1A
Detect
Estimated
Non-Detect
Concentration (mg/L)
Auxillary Analytes * (pH)
0
10
20
30
40
50
60
0
1
2
3
4
5
6
7
8
9
10
11
12
13
Jan-1988
Jan-1989
Jan-1990
Jan-1991
Jan-1992
Jan-1993
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TVR 1A
NPDWS (10mg/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection
PH *


Time Series Plot for Oxidation/Reduction Potential (ORP) for Station TBG 3
ORP mv
500
450
400
350
300
250
200
150
100
50
0
-50
-100
-150
-200
-250
-300
ORP (mv)
Jan-90
Jan-91
Jan-92
Jan-93
Jan-94
Jan-95
Jan-96
Jan-97
Jan-98
Jan-99
Jan-00
Jan-01
Jan-02
Jan-03
Jan-04
Jan-05
Jan-06
Jan-07
Jan-08
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Date



Time Series Plot for Oxidation/Reduction Potential (ORP) for Station TBG 4
ORP mv
ORP (mv)
500
400
300
200
100
0
-100
-200
-300
Jan-90
Jan-91
Jan-92
Jan-93
Jan-94
Jan-95
Jan-96
Jan-97
Jan-98
Jan-99
Jan-00
Jan-01
Jan-02
Jan-03
Jan-04
Jan-05
Jan-06
Jan-07
Jan-08
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
DATE


Time Series Plot for Oxidation/Reduction Potential (ORP) for Station TBG 5
ORP mv
500
450
400
350
300
250
200
150
100
50
0
-50
-100
-150
-200
-250
-300
ORP (mv)
Jan-90
Jan-91
Jan-92
Jan-93
Jan-94
Jan-95
Jan-96
Jan-97
Jan-98
Jan-99
Jan-00
Jan-01
Jan-02
Jan-03
Jan-04
Jan-05
Jan-06
Jan-07
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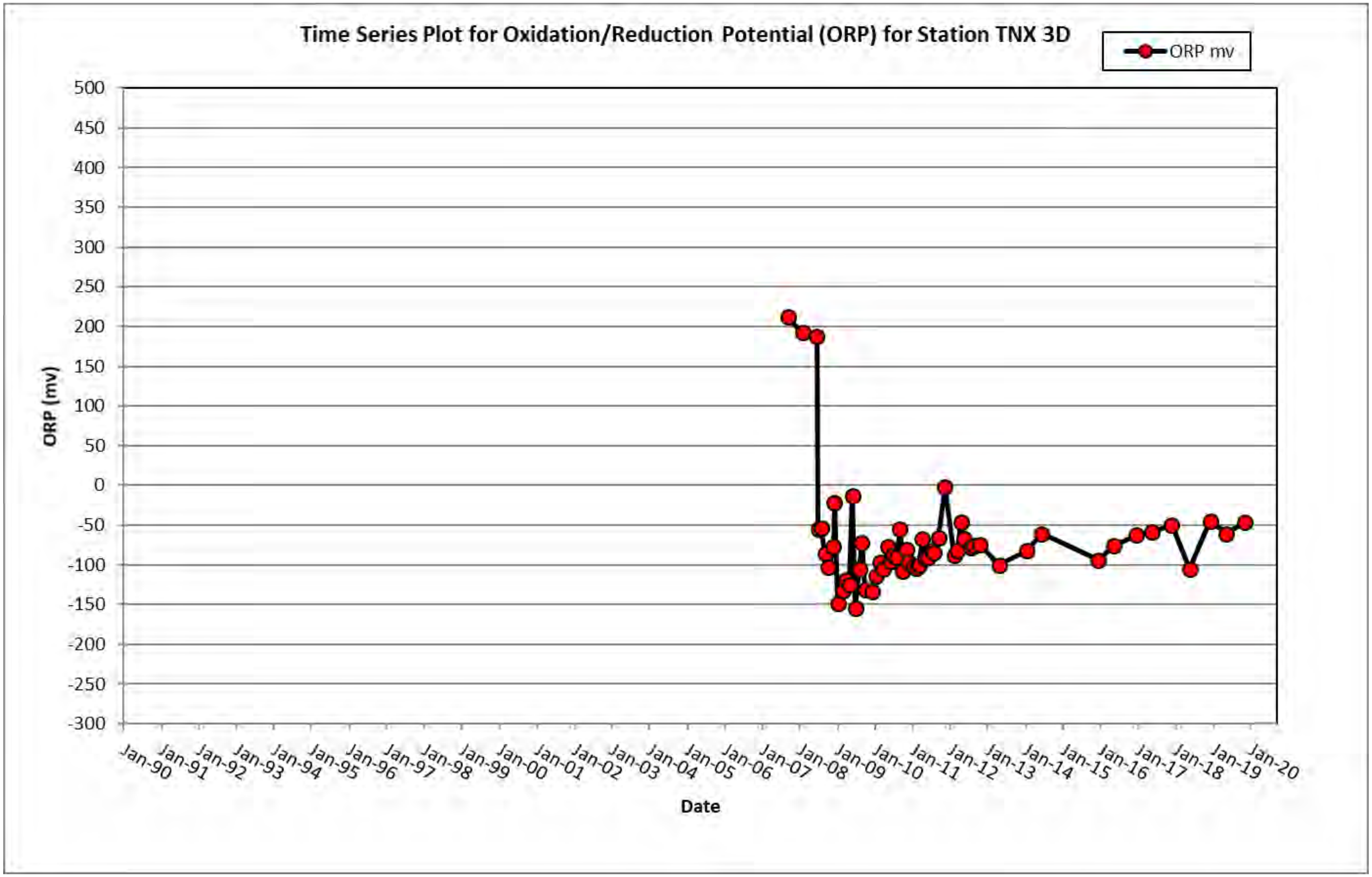
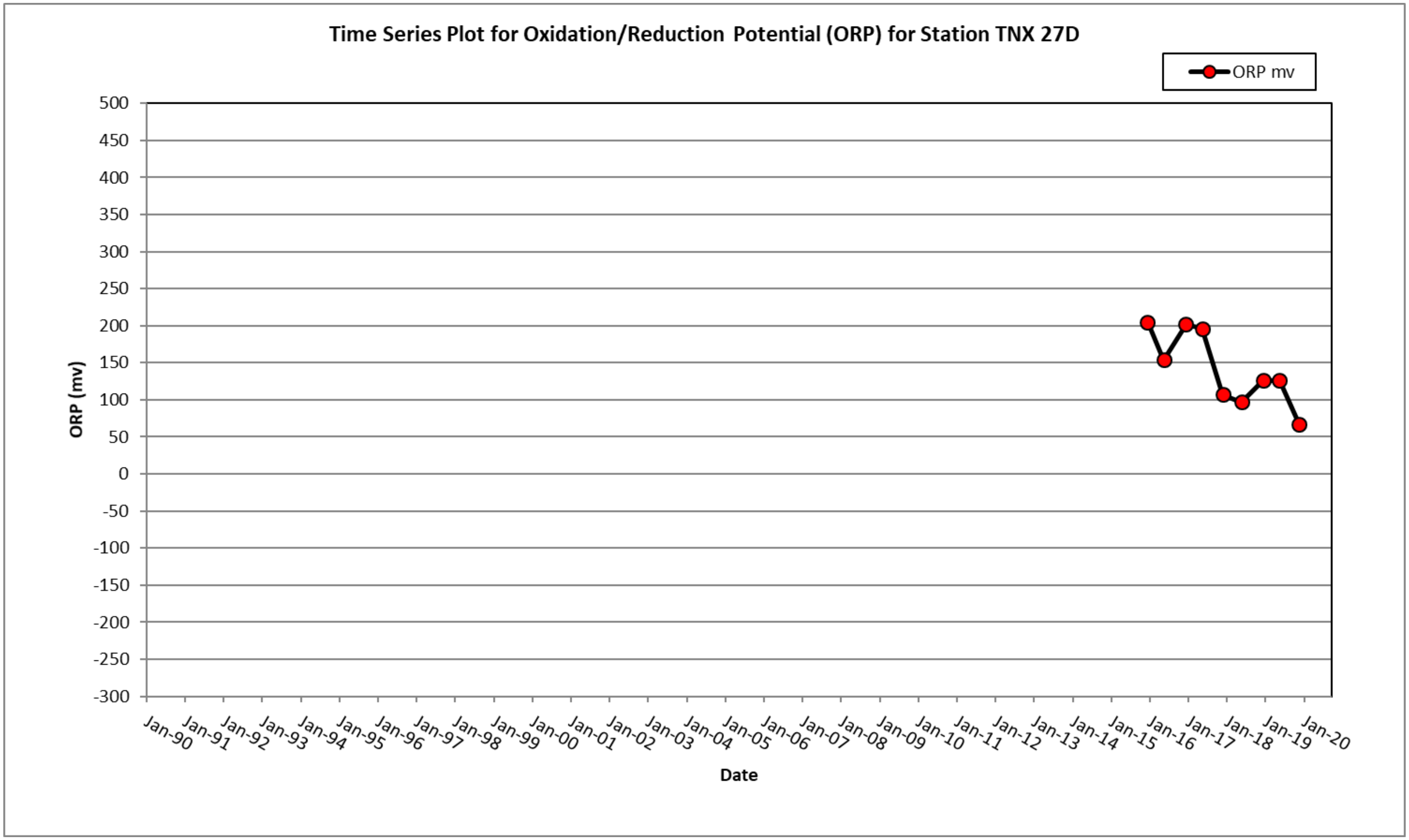
Jan-18
Jan-19
Jan-20
Date


Time Series Plot for Oxidation/Reduction Potential (ORP) for Station TNX 3D
ORP mv
ORP (mv)
500
450
400
350
300
250
200
150
100
50
0
-50
-100
-150
-200
-250
-300
Jan-90 Jan-91 Jan-92 Jan-93 Jan-94 Jan-95 Jan-96 Jan-97 Jan-98 Jan-99 Jan-00 Jan-01 Jan-02 Jan-03 Jan-04 Jan-05 Jan-06 Jan-07 Jan-08 Jan-09 Jan-10 Jan-11 Jan-12 Jan-13 Jan-14 Jan-15 Jan-16 Jan-17 Jan-18 Jan-19 Jan-20
Date


Time Series Plot for Oxidation/Reduction Potential (ORP) for Station TNX 27D
ORP mv
ORP (mv)
500
450
400
350
300
250
200
150
100
50
0
-50
-100
-150
-200
-250
-300
Jan-90
Jan-91
Jan-92
Jan-93
Jan-94
Jan-95
Jan-96
Jan-97
Jan-98
Jan-99
Jan-00
Jan-01
Jan-02
Jan-03
Jan-04
Jan-05
Jan-06
Jan-07
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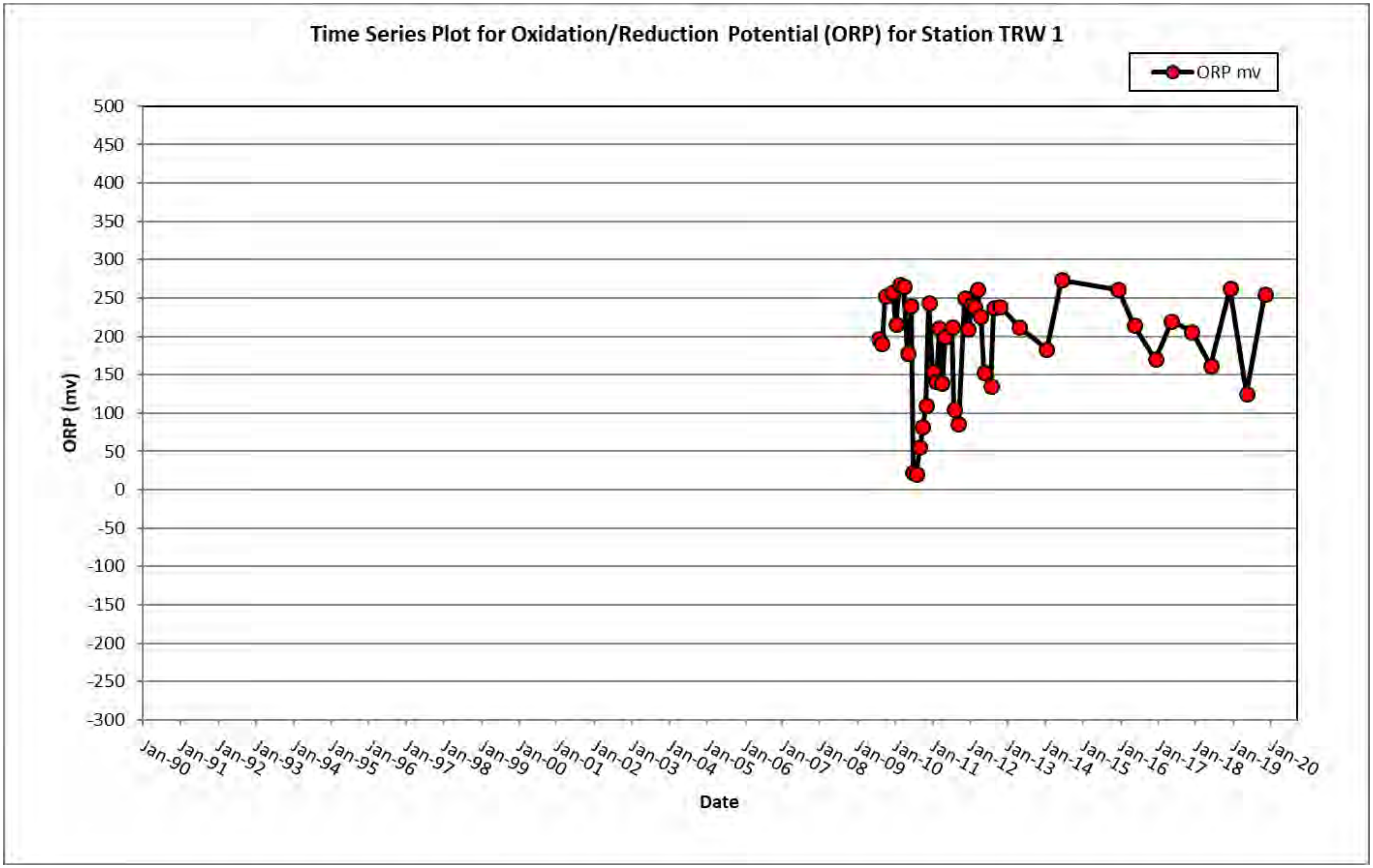
Jan-17
Jan-18
Jan-19
Jan-20
Date


Time Series Plot for Oxidation/Reduction Potential (ORP) for Station TRW 1
ORP mv
500
450
400
350
300
250
200
150
100
50
0
-50
-100
-150
-200
-250
-300
ORP (mv)
Jan-90
Jan-91
Jan-92
Jan-93
Jan-94
Jan-95
Jan-96
Jan-97
Jan-98
Jan-99
Jan-00
Jan-01
Jan-02
Jan-03
Jan-04
Jan-05
Jan-06
Jan-07
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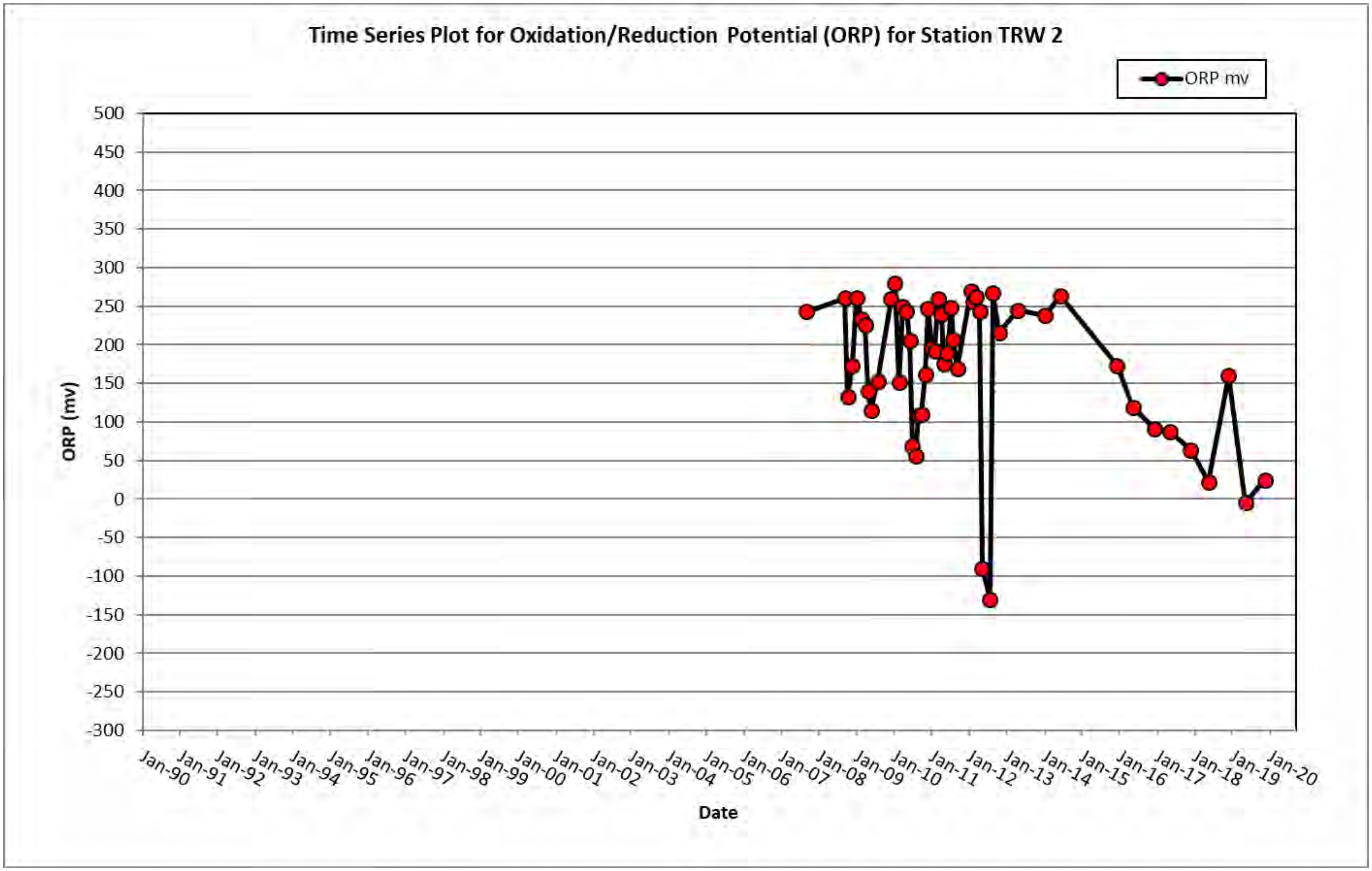
Jan-18
Jan-19
Jan-20
Date


Time Series Plot for Oxidation/Reduction Potential (ORP) for Station TRW 2
ORP mv
ORP (mv)
500
450
400
350
300
250
200
150
100
50
0
-50
-100
-150
-200
-250
-300
Jan-90
Jan-91
Jan-92
Jan-93
Jan-94
Jan-95
Jan-96
Jan-97
Jan-98
Jan-99
Jan-00
Jan-01
Jan-02
Jan-03
Jan-04
Jan-05
Jan-06
Jan-07
Jan-08
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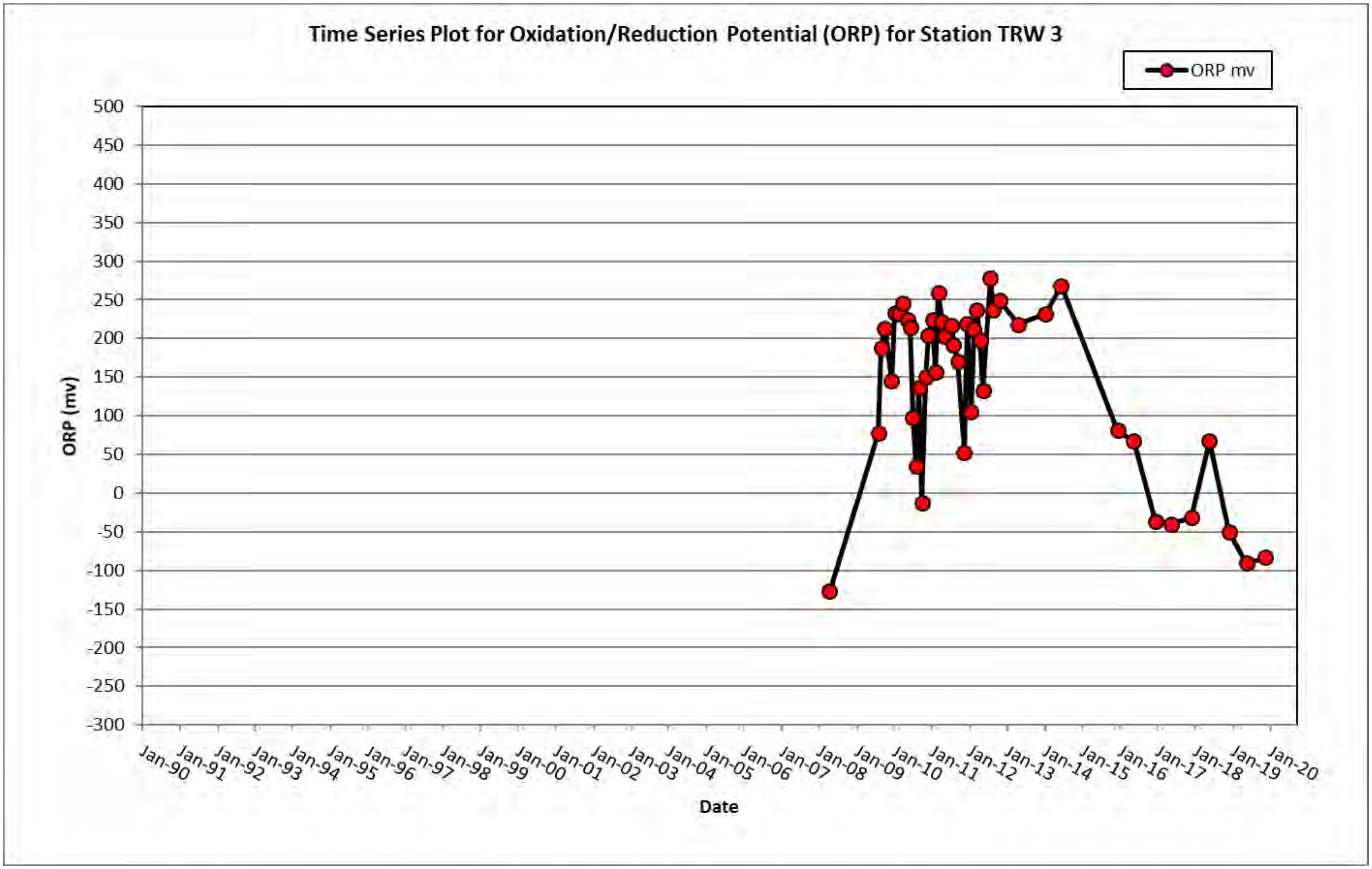
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Date


Time Series Plot for Oxidation/Reduction Potential (ORP) for Station TRW 3
ORP mv
ORP (mv)
500
450
400
350
300
250
200
150
100
50
0
-50
-100
-150
-200
-250
-300
Jan-90
Jan-91
Jan-92
Jan-93
Jan-94
Jan-95
Jan-96
Jan-97
Jan-98
Jan-99
Jan-00
Jan-01
Jan-02
Jan-03
Jan-04
Jan-05
Jan-06
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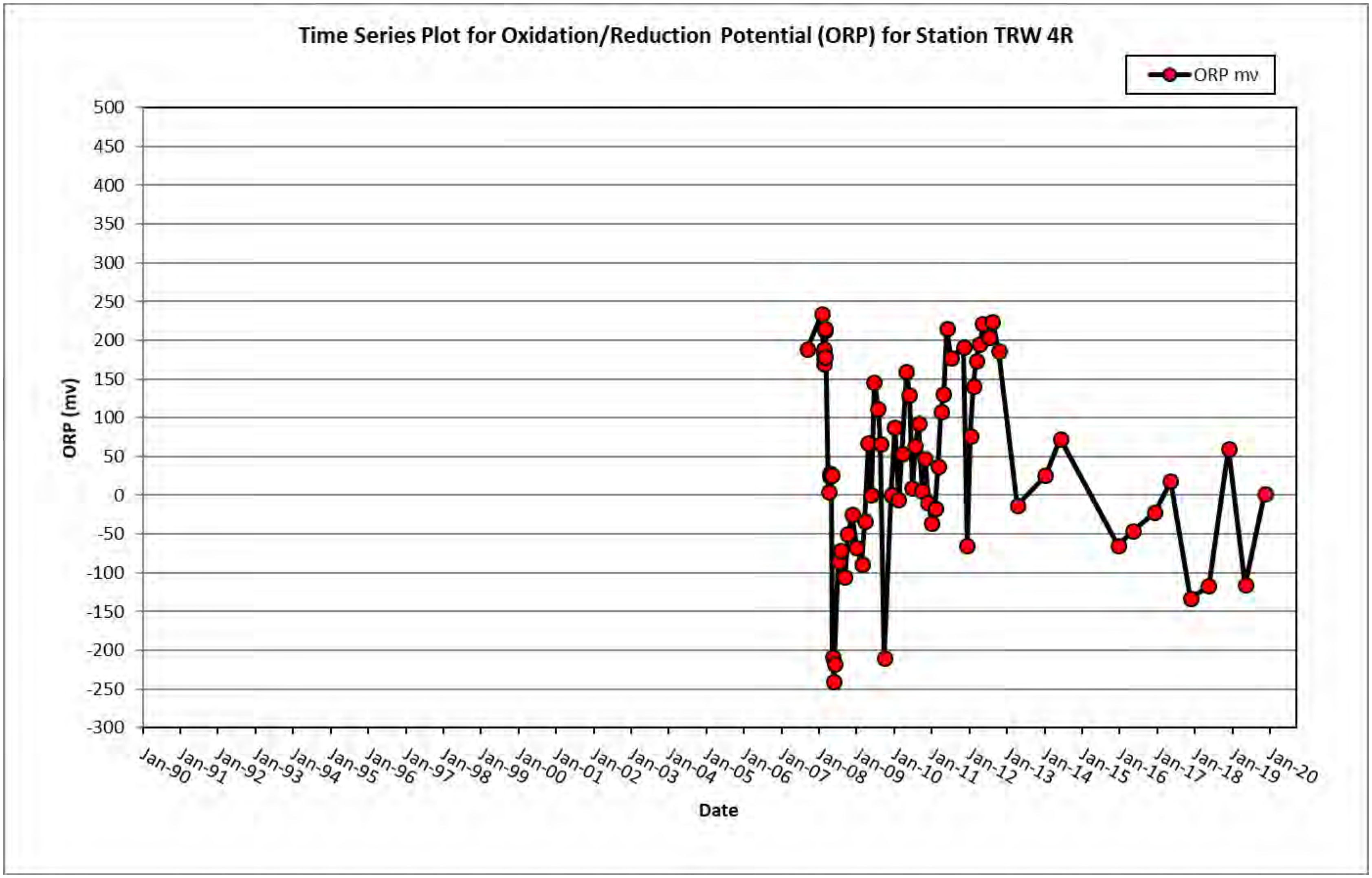
Jan-18
Jan-19
Jan-20
Date


Time Series Plot for Oxidation/Reduction Potential (ORP) for Station TRW 4R
ORP mv
ORP (mv)
500
450
400
350
300
250
200
150
100
50
0
-50
-100
-150
-200
-250
-300
Jan-90
Jan-91
Jan-92
Jan-93
Jan-94
Jan-95
Jan-96
Jan-97
Jan-98
Jan-99
Jan-00
Jan-01
Jan-02
Jan-03
Jan-04
Jan-05
Jan-06
Jan-07
Jan-08
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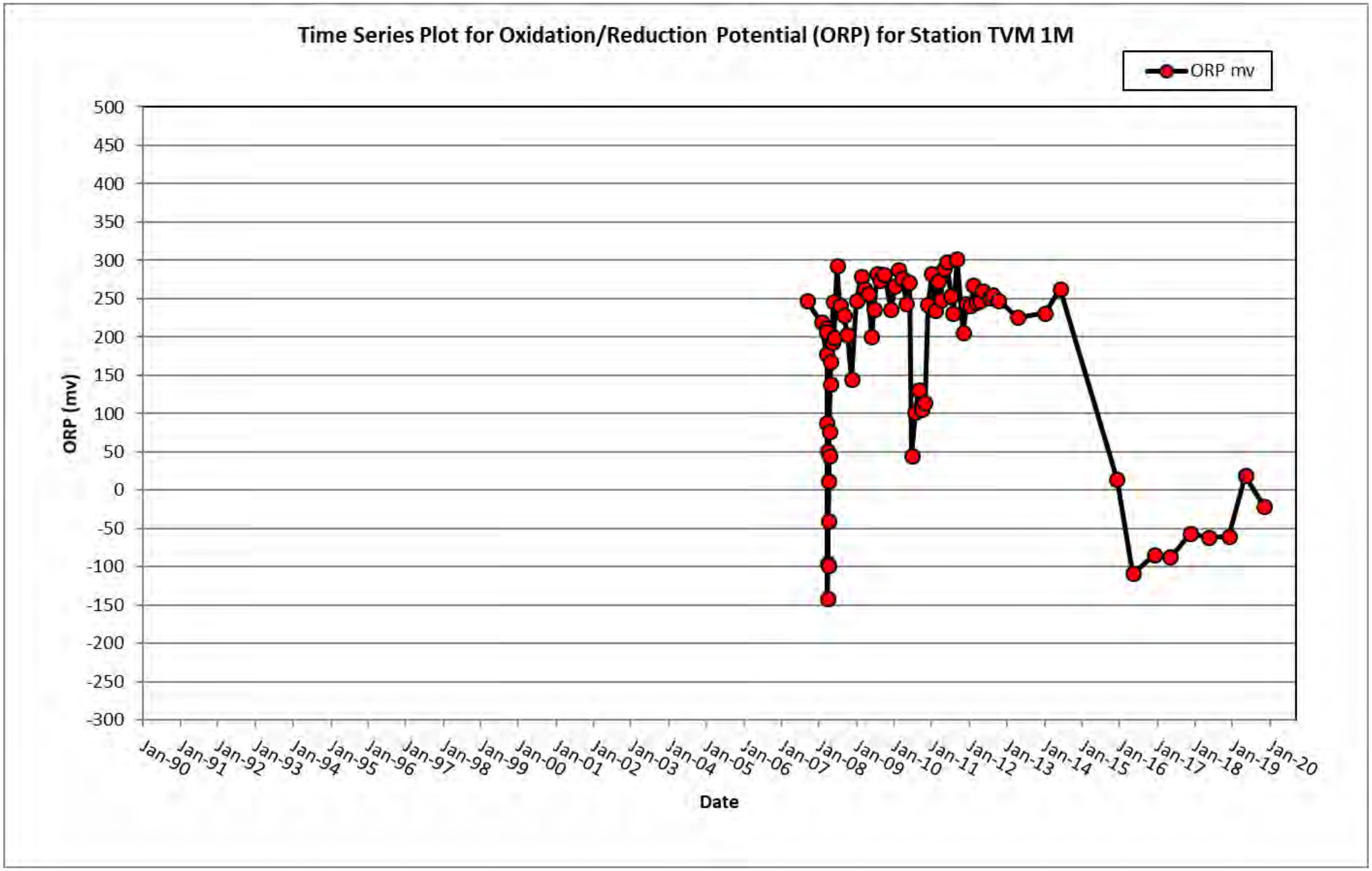
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Date


Time Series Plot for Oxidation/Reduction Potential (ORP) for Station TVM 1M
ORP mv
ORP (mv)
500
450
400
350
300
250
200
150
100
50
0
-50
-100
-150
-200
-250
-300
Jan-90
Jan-91
Jan-92
Jan-93
Jan-94
Jan-95
Jan-96
Jan-97
Jan-98
Jan-99
Jan-00
Jan-01
Jan-02
Jan-03
Jan-04
Jan-05
Jan-06
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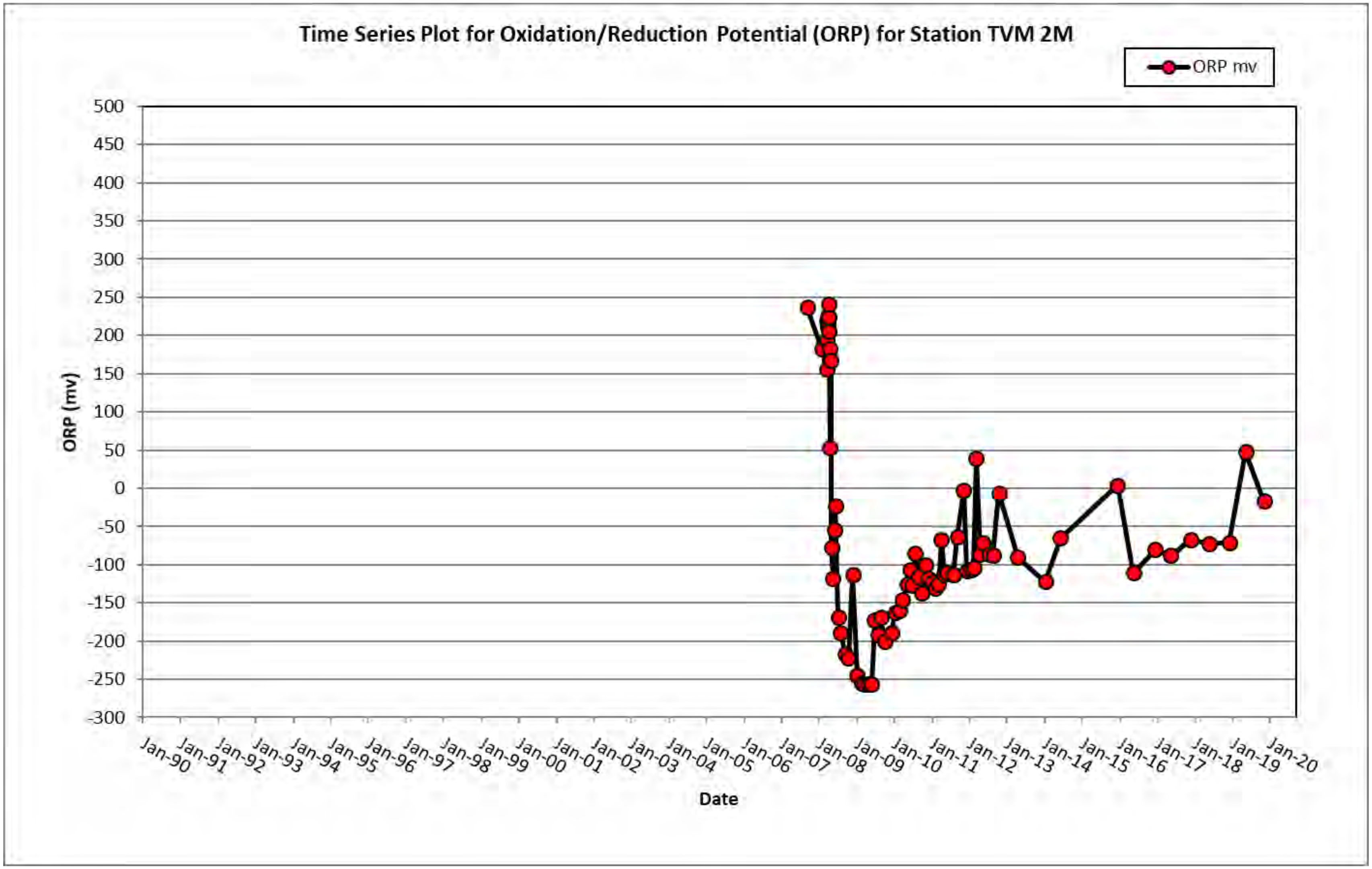
Jan-18
Jan-19
Jan-20
Date


Time Series Plot for Oxidation/Reduction Potential (ORP) for Station TVM 2M
ORP mv
ORP (mv)
500
450
400
350
300
250
200
150
100
50
0
-50
-100
-150
-200
-250
-300
Jan-90
Jan-91
Jan-92
Jan-93
Jan-94
Jan-95
Jan-96
Jan-97
Jan-98
Jan-99
Jan-00
Jan-01
Jan-02
Jan-03
Jan-04
Jan-05
Jan-06
Jan-07
Jan-08
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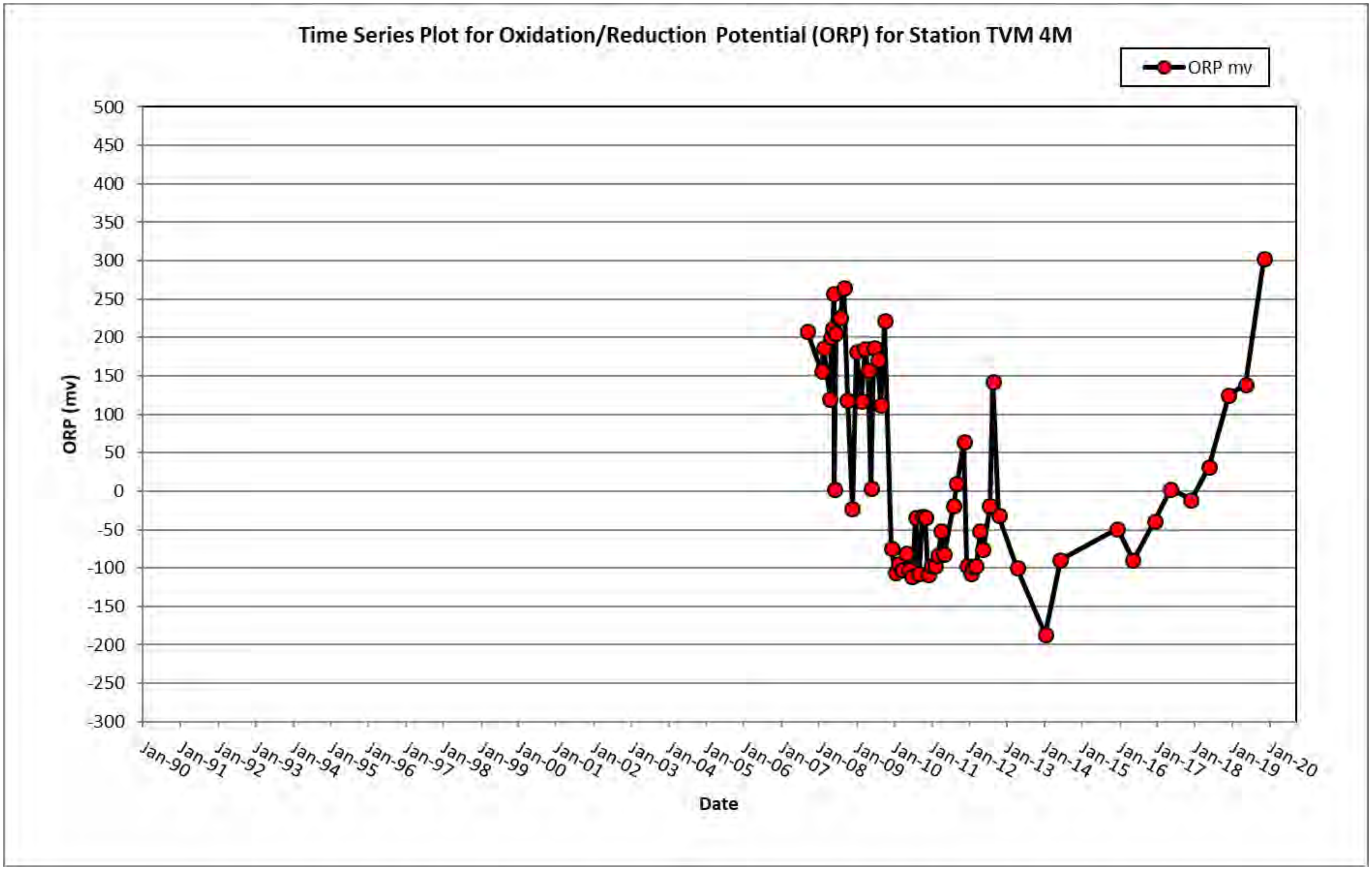
Jan-17
Jan-18
Jan-19
Jan-20
Date


Time Series Plot for Oxidation/Reduction Potential (ORP) for Station TVM 4M
ORP mv
ORP (mv)
500
450
400
350
300
250
200
150
100
50
0
-50
-100
-150
-200
-250
-300
Jan-90
Jan-91
Jan-92
Jan-93
Jan-94
Jan-95
Jan-96
Jan-97
Jan-98
Jan-99
Jan-00
Jan-01
Jan-02
Jan-03
Jan-04
Jan-05
Jan-06
Jan-07
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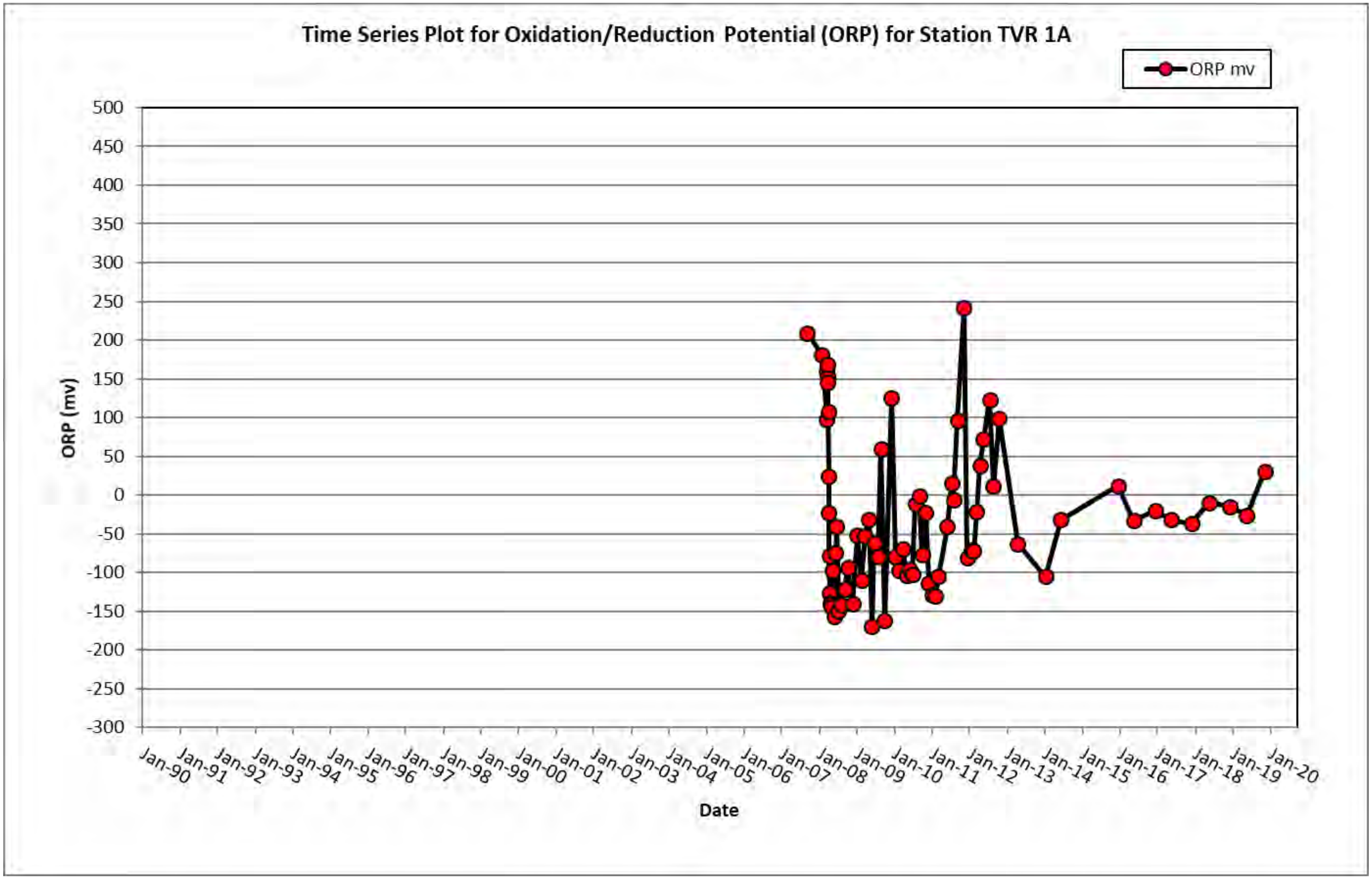
Jan-18
Jan-19
Jan-20
Date


Time Series Plot for Oxidation/Reduction Potential (ORP) for Station TVR 1A
ORP mv
ORP (mv)
500
450
400
350
300
250
200
150
100
50
0
-50
-100
-150
-200
-250
-300
Jan-90
Jan-91
Jan-92
Jan-93
Jan-94
Jan-95
Jan-96
Jan-97
Jan-98
Jan-99
Jan-00
Jan-01
Jan-02
Jan-03
Jan-04
Jan-05
Jan-06
Jan-07
Jan-08
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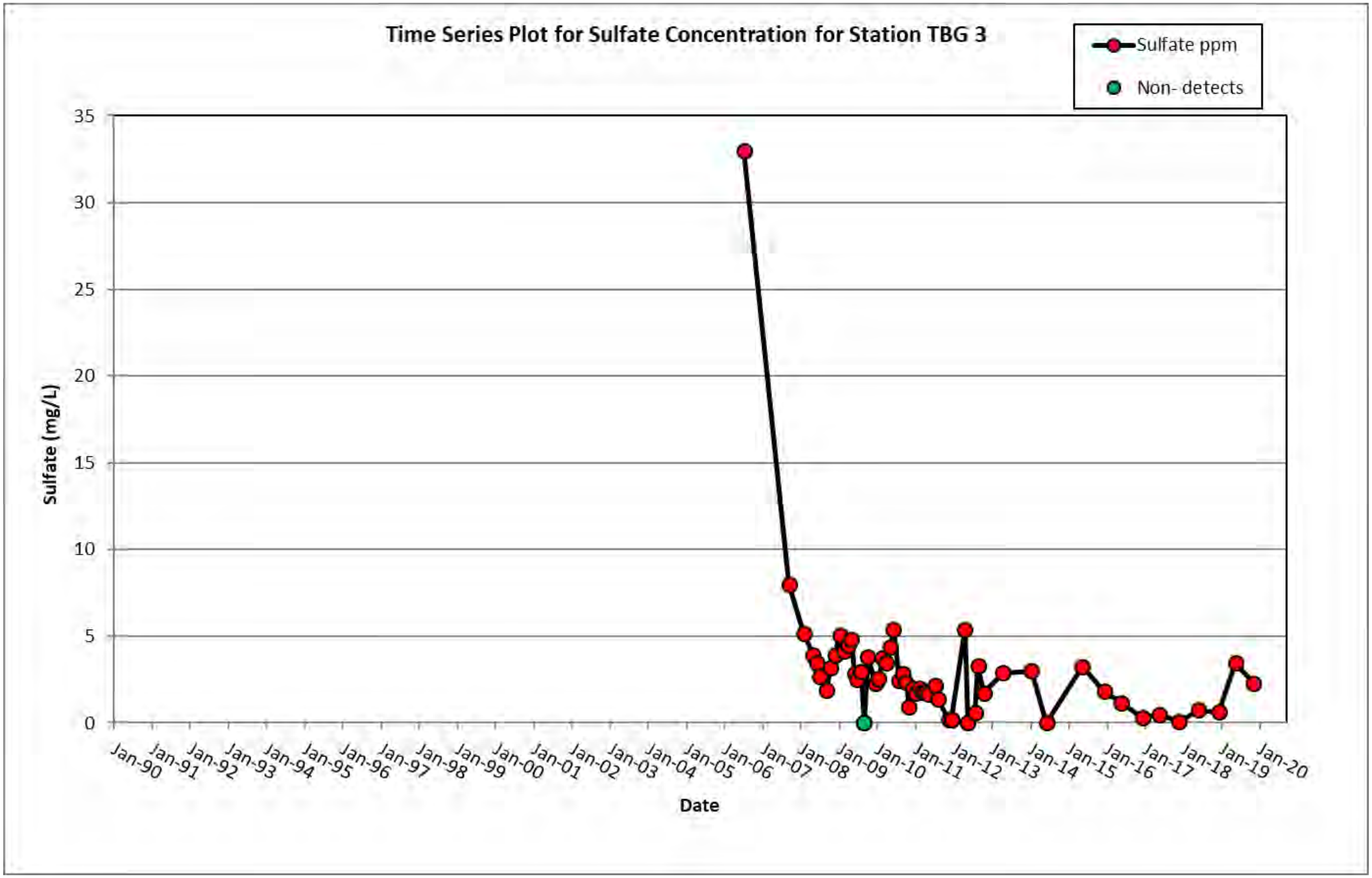
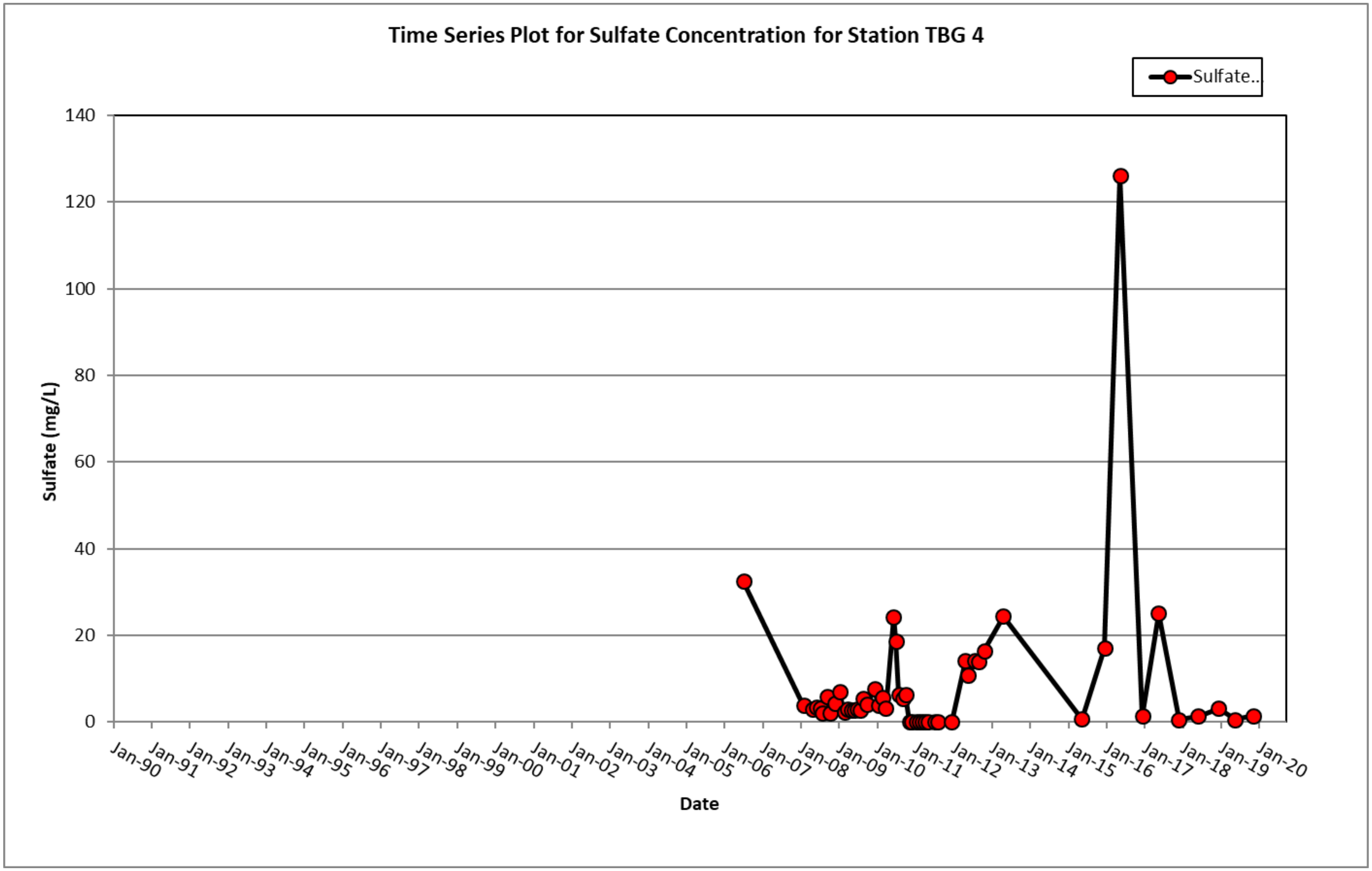
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Date


Time Series Plot for Sulfate Concentration for Station TBG 3
Sulfate ppm
Non- detects
Sulfate (mg/L)
35
30
25
20
15
10
5
0
Jan-90 Jan-91 Jan-92 Jan-93 Jan-94 Jan-95 Jan-96 Jan-97 Jan-98 Jan-99 Jan-00 Jan-01 Jan-02 Jan-03 Jan-04 Jan-05 Jan-06 Jan-07 Jan-08 Jan-09 Jan-10 Jan-11 Jan-12 Jan-13 Jan-14 Jan-15 Jan-16 Jan-17 Jan-18 Jan-19 Jan-20
Date


Time Series Plot for Sulfate Concentration for Station TBG 4
Sulfate..
Sulfate (mg/L)
0
20
40
60
80
100
120
140
Jan-90
Jan-91
Jan-92
Jan-93
Jan-94
Jan-95
Jan-96
Jan-97
Jan-98
Jan-99
Jan-00
Jan-01
Jan-02
Jan-03
Jan-04
Jan-05
Jan-06
Jan-07
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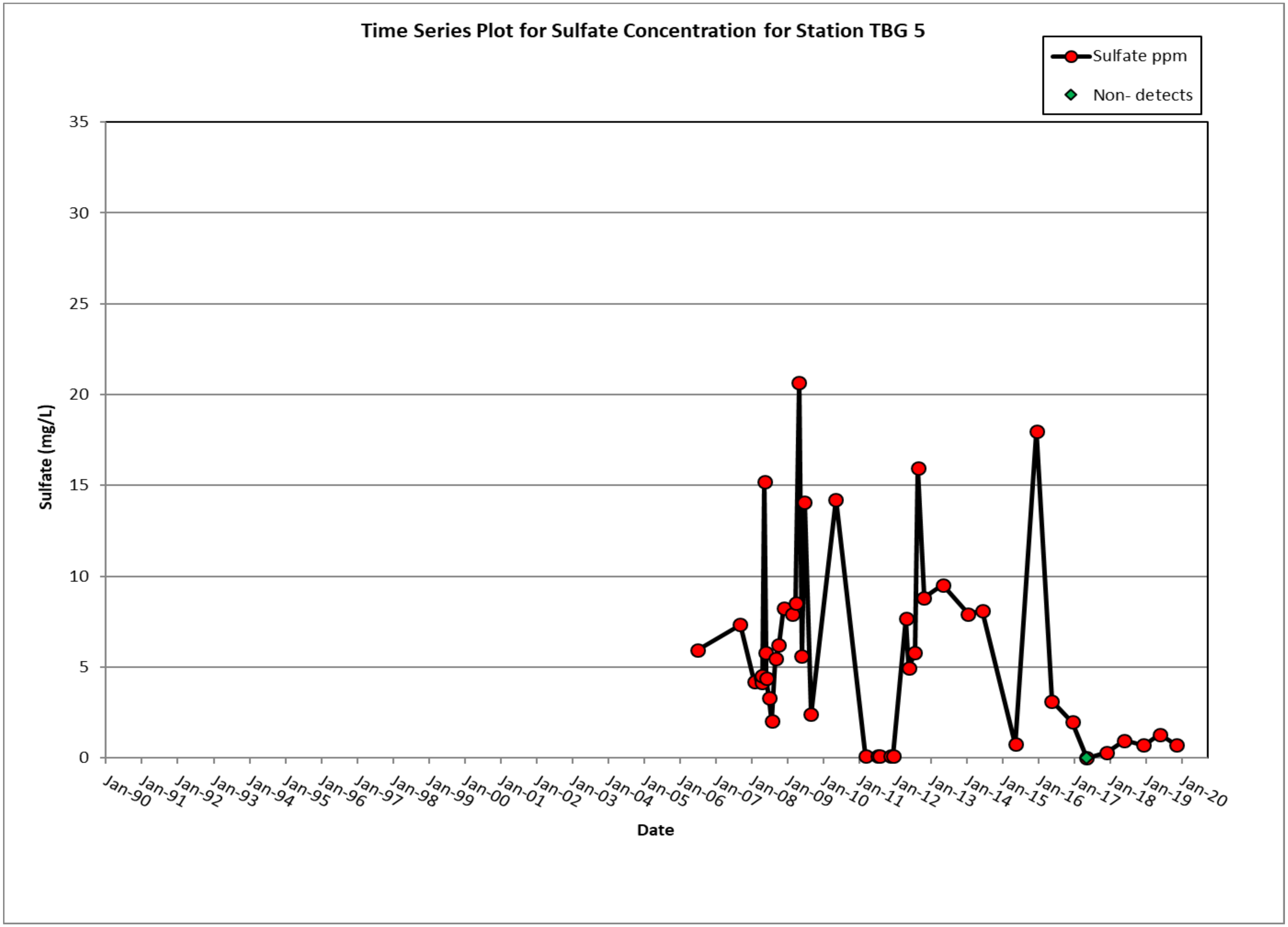
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Date


Time Series Plot for Sulfate Concentration for Station TBG 5
Sulfate ppm
Non- detects
Sulfate (mg/L)
35
30
25
20
15
10
5
0
Jan-90
Jan-91
Jan-92
Jan-93
Jan-94
Jan-95
Jan-96
Jan-97
Jan-98
Jan-99
Jan-00
Jan-01
Jan-02
Jan-03
Jan-04
Jan-05
Jan-06
Jan-07
Jan-08
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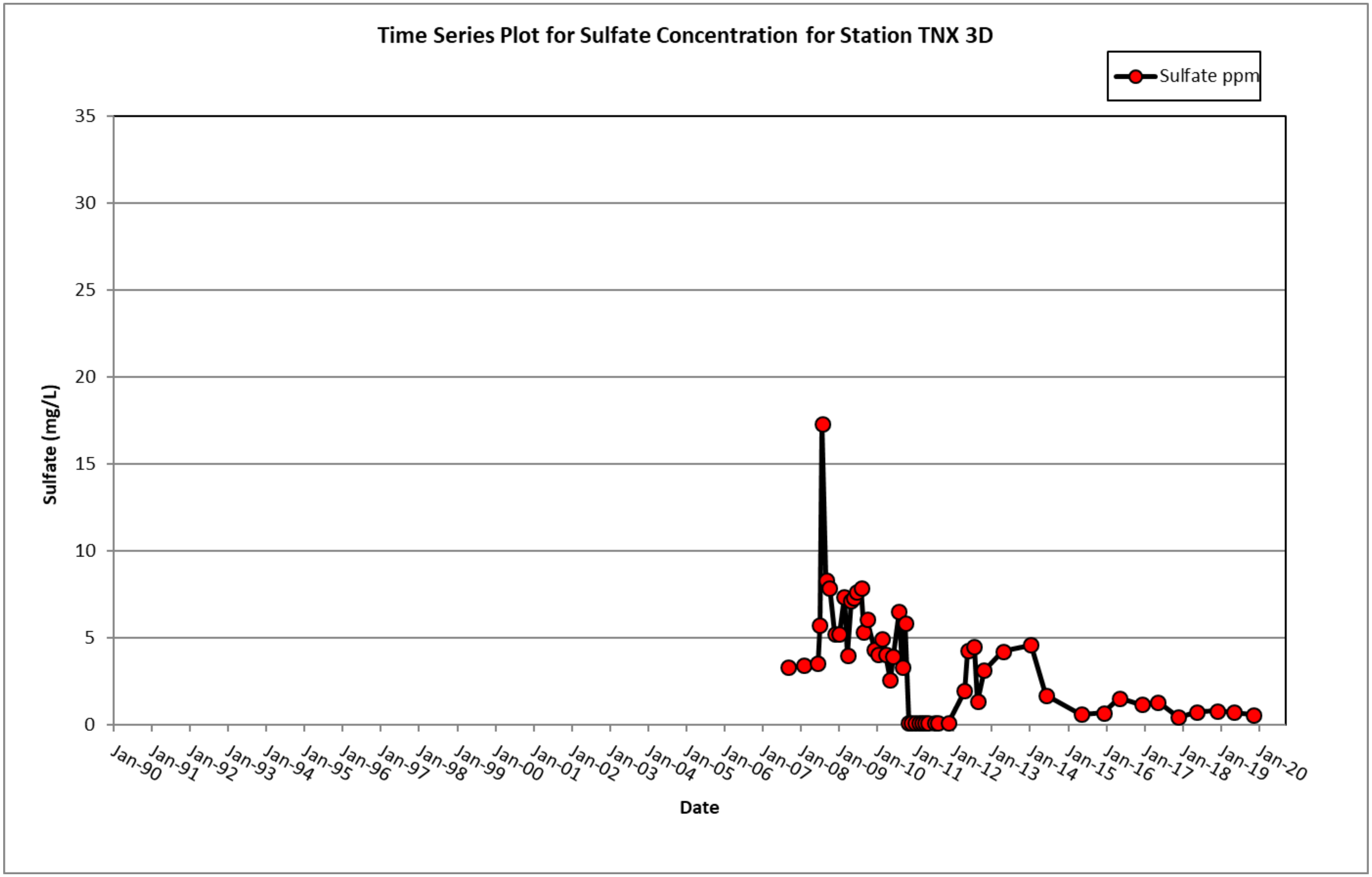
Jan-18
Jan-19
Jan-20
Date


Time Series Plot for Sulfate Concentration for Station TNX 3D
Sulfate ppm
35
30
25
20
15
10
5
0
Sulfate (mg/L)
Jan-90
Jan-91
Jan-92
Jan-93
Jan-94
Jan-95
Jan-96
Jan-97
Jan-98
Jan-99
Jan-00
Jan-01
Jan-02
Jan-03
Jan-04
Jan-05
Jan-06
Jan-07
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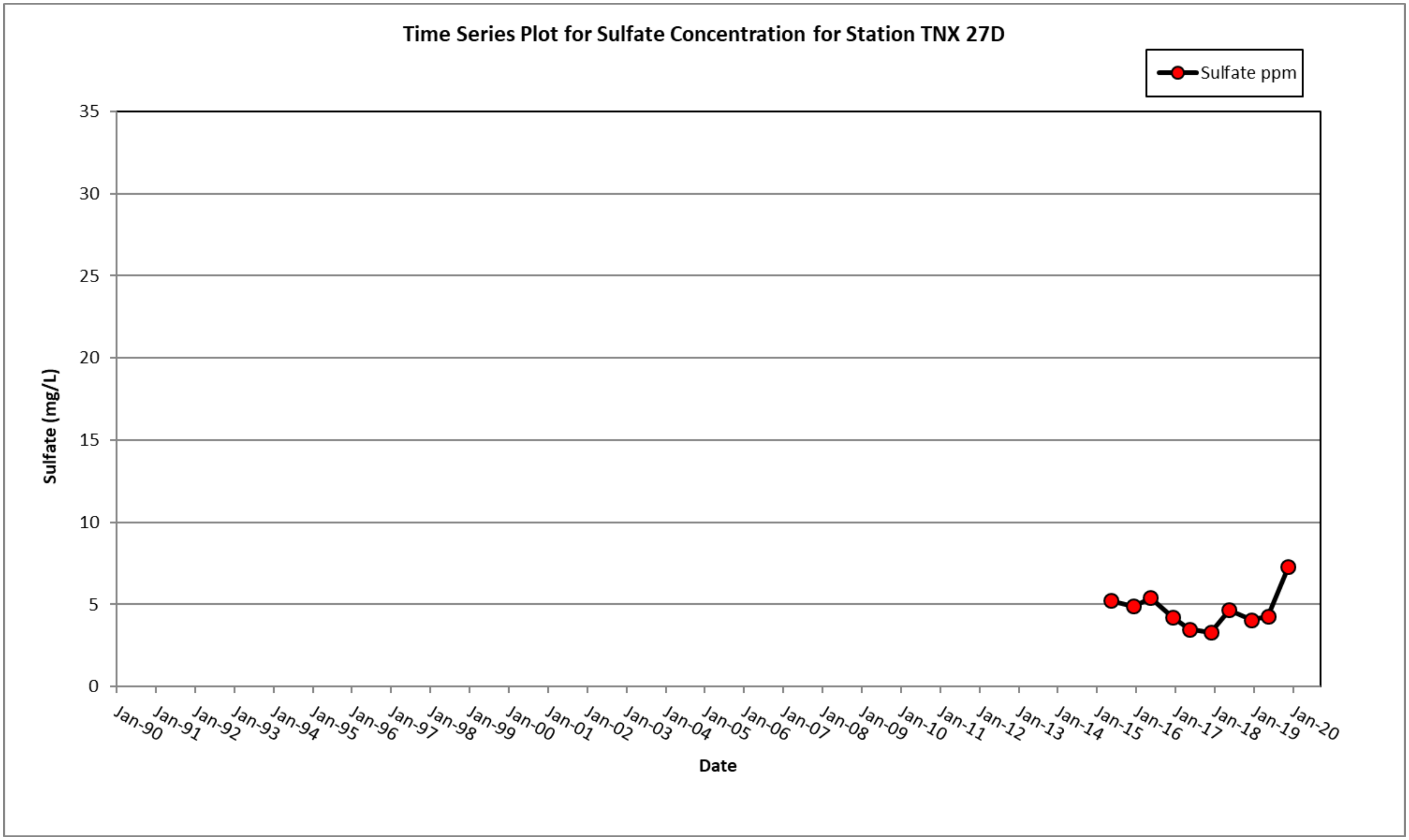
Jan-17
Jan-18
Jan-19
Jan-20
Date


Time Series Plot for Sulfate Concentration for Station TNX 27D
Sulfate ppm
35
30
25
20
15
10
5
0
Sulfate (mg/L)
Jan-90
Jan-91
Jan-92
Jan-93
Jan-94
Jan-95
Jan-96
Jan-97
Jan-98
Jan-99
Jan-00
Jan-01
Jan-02
Jan-03
Jan-04
Jan-05
Jan-06
Jan-07
Jan-08
Jan-09
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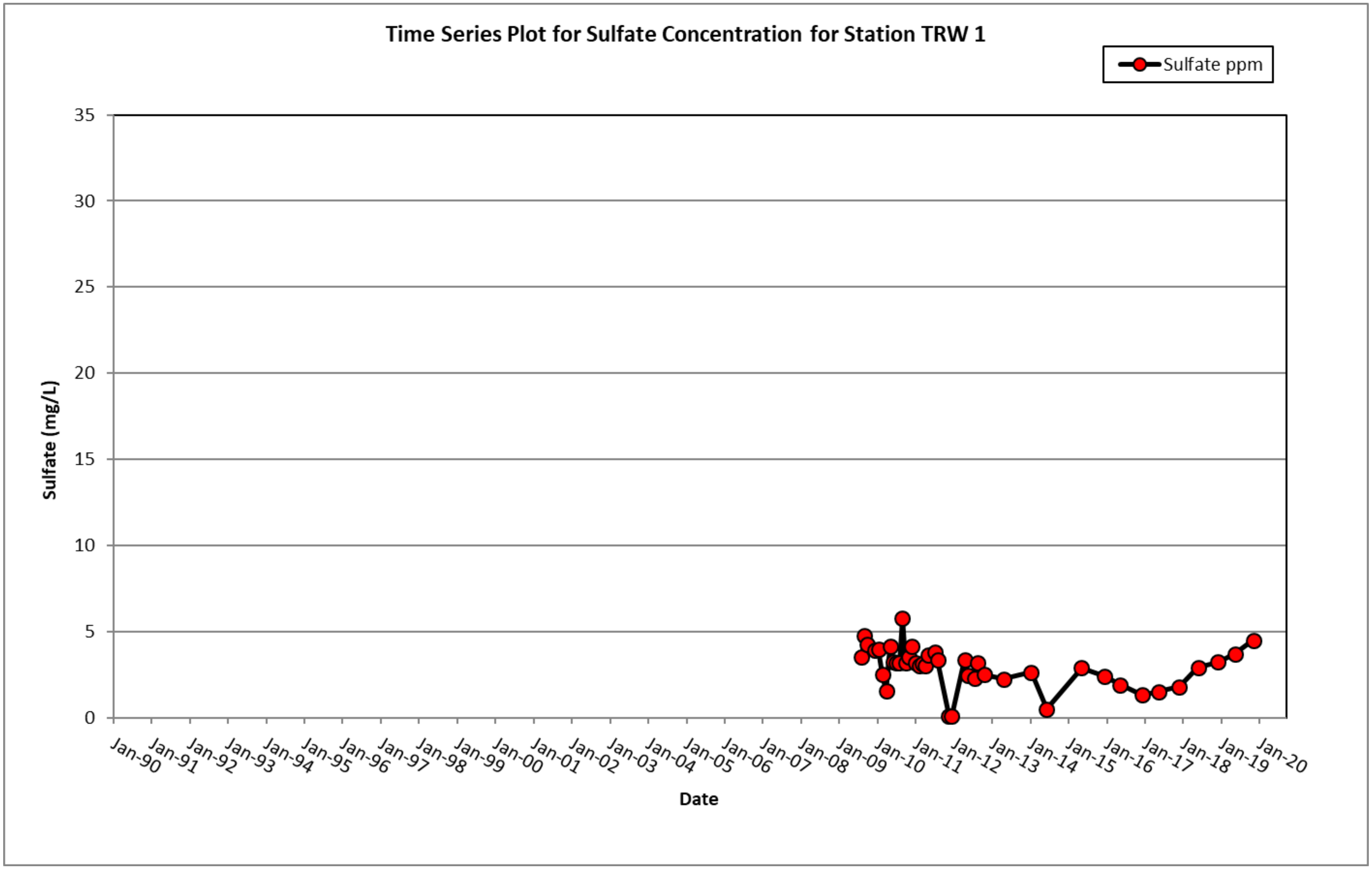
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Date


Time Series Plot for Sulfate Concentration for Station TRW 1
Sulfate ppm
Sulfate (mg/L)
35
30
25
20
15
10
5
0
Jan-90
Jan-91
Jan-92
Jan-93
Jan-94
Jan-95
Jan-96
Jan-97
Jan-98
Jan-99
Jan-00
Jan-01
Jan-02
Jan-03
Jan-04
Jan-05
Jan-06
Jan-07
Jan-08
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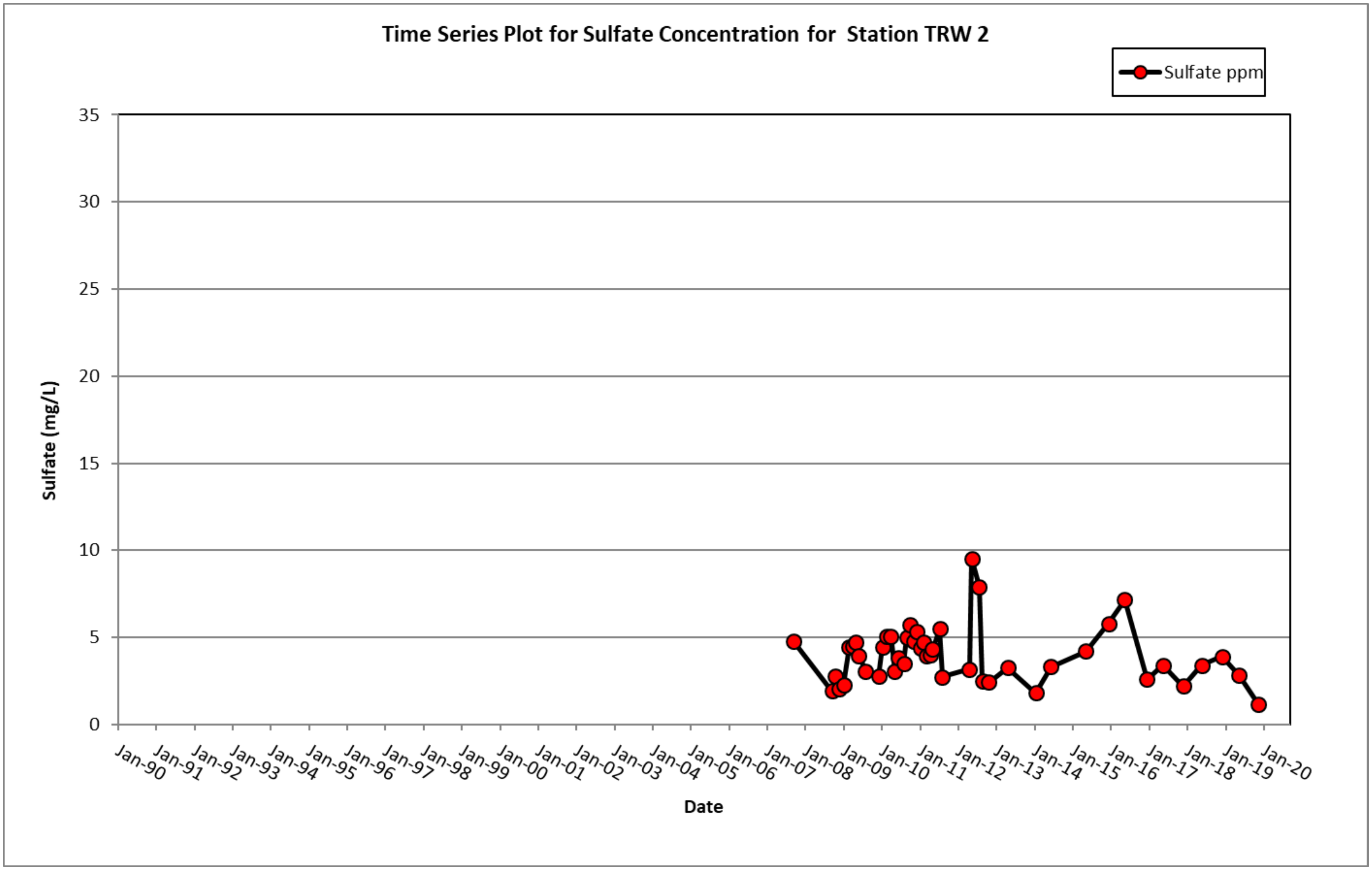
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Date


Time Series Plot for Sulfate Concentration for Station TRW 2
Sulfate ppm
Sulfate (mg/L)
35
30
25
20
15
10
5
0
Jan-90
Jan-91
Jan-92
Jan-93
Jan-94
Jan-95
Jan-96
Jan-97
Jan-98
Jan-99
Jan-00
Jan-01
Jan-02
Jan-03
Jan-04
Jan-05
Jan-06
Jan-07
Jan-08
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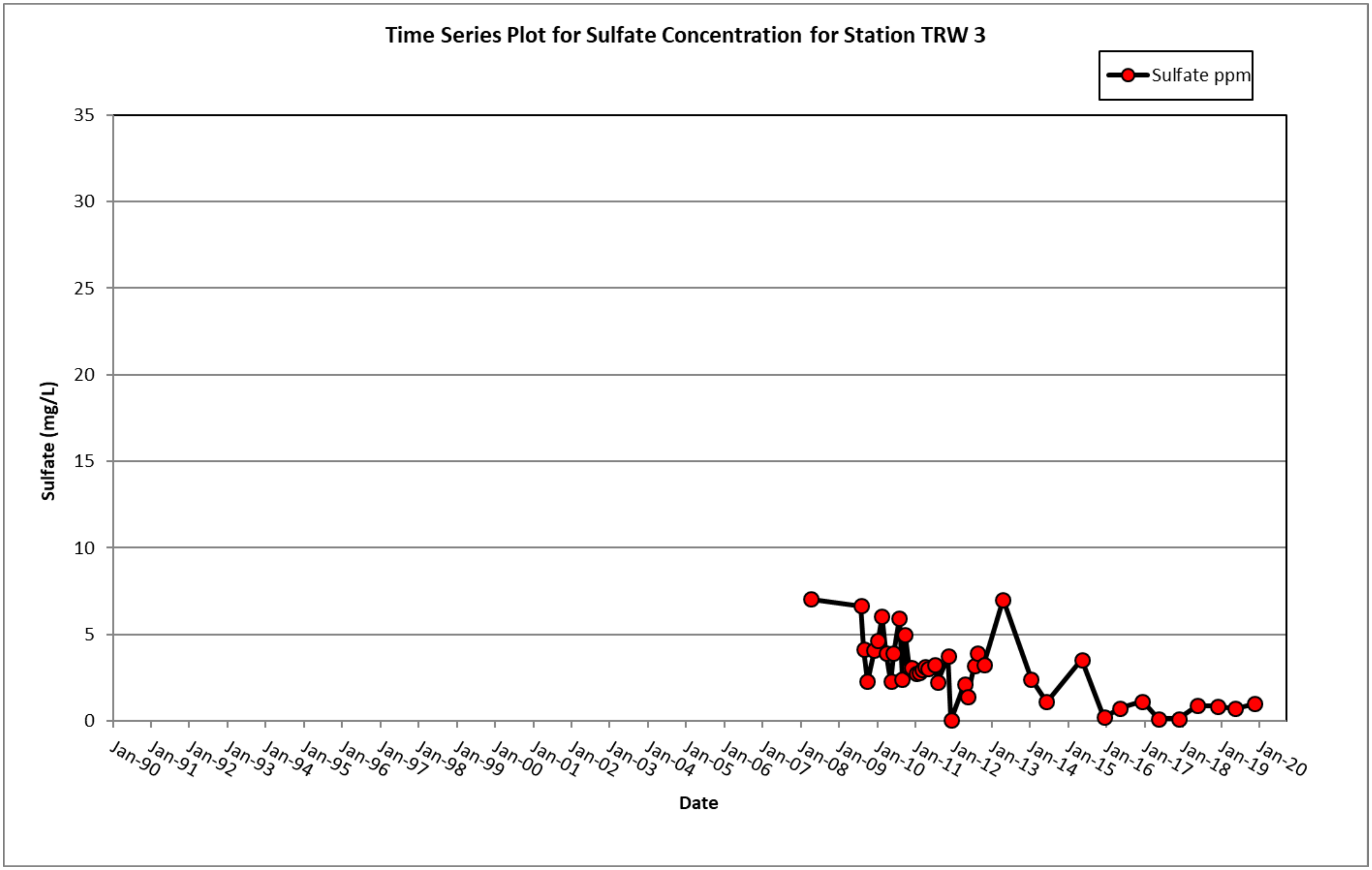
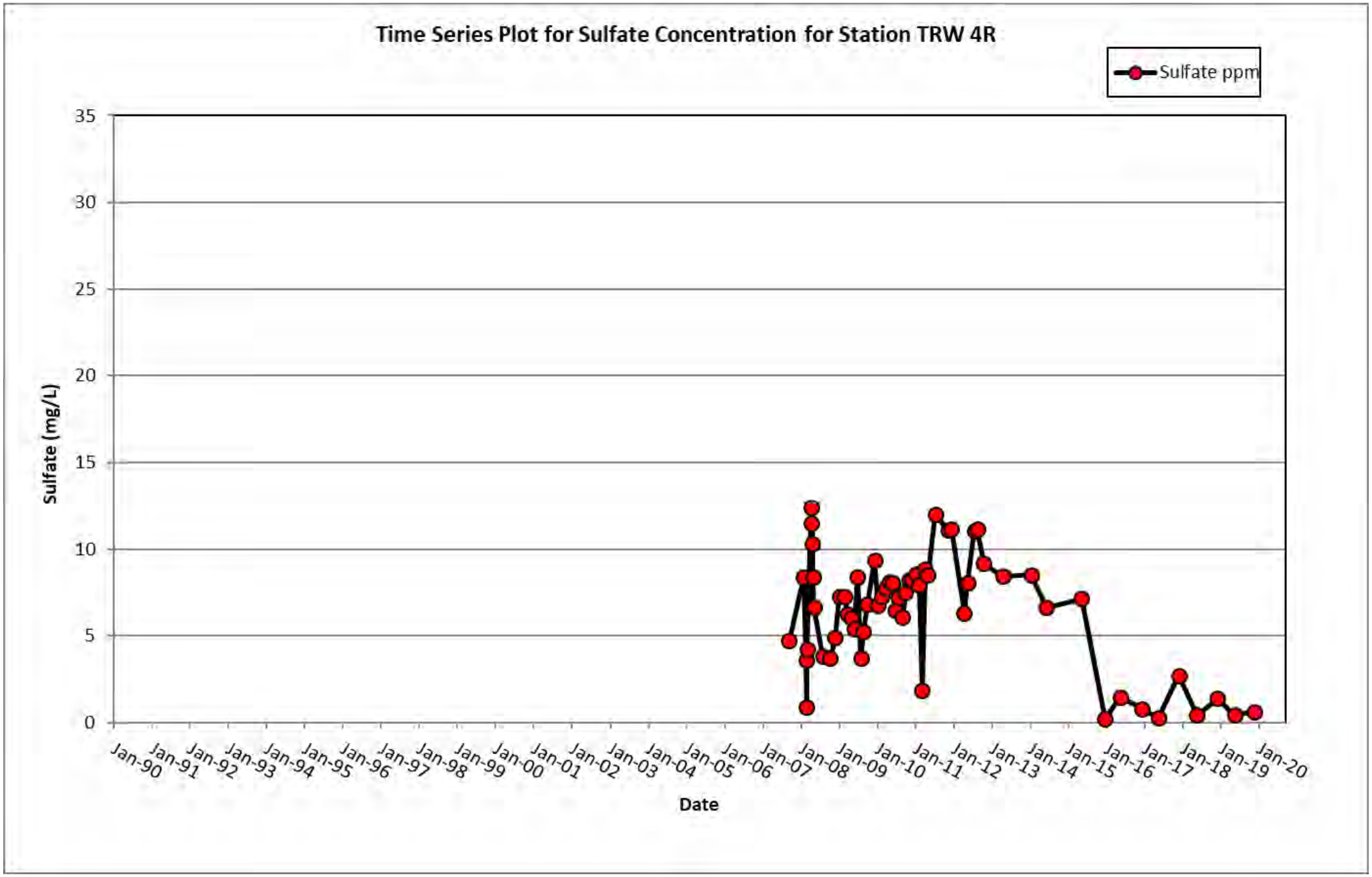
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Date


Time Series Plot for Sulfate Concentration for Station TRW 3
Sulfate ppm
Sulfate (mg/L)
35
30
25
20
15
10
5
0
Jan-90 Jan-91 Jan-92 Jan-93 Jan-94 Jan-95 Jan-96 Jan-97 Jan-98 Jan-99 Jan-00 Jan-01 Jan-02 Jan-03 Jan-04 Jan-05 Jan-06 Jan-07 Jan-08 Jan-09 Jan-10 Jan-11 Jan-12 Jan-13 Jan-14 Jan-15 Jan-16 Jan-17 Jan-18 Jan-19 Jan-20
Date


Time Series Plot for Sulfate Concentration for Station TRW 4R
Sulfate ppm
Sulfate (mg/L)
35
30
25
20
15
10
5
0
Jan-90
Jan-91
Jan-92
Jan-93
Jan-94
Jan-95
Jan-96
Jan-97
Jan-98
Jan-99
Jan-00
Jan-01
Jan-02
Jan-03
Jan-04
Jan-05
Jan-06
Jan-07
Jan-08
Jan-09
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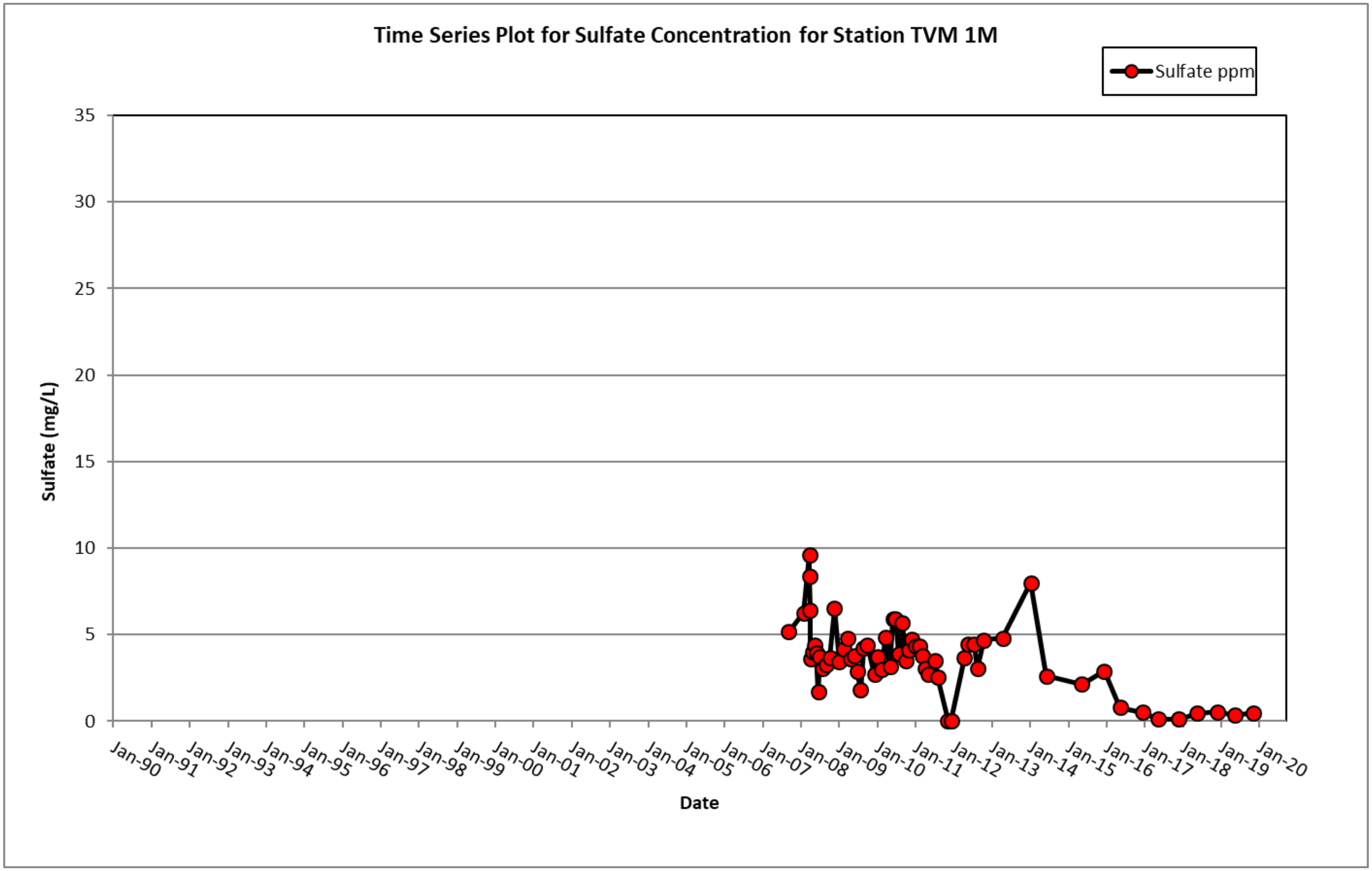
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Date


Time Series Plot for Sulfate Concentration for Station TVM 1M
Sulfate ppm
Sulfate (mg/L)
35
30
25
20
15
10
5
0
Jan-90
Jan-91
Jan-92
Jan-93
Jan-94
Jan-95
Jan-96
Jan-97
Jan-98
Jan-99
Jan-00
Jan-01
Jan-02
Jan-03
Jan-04
Jan-05
Jan-06
Jan-07
Jan-08
Jan-09
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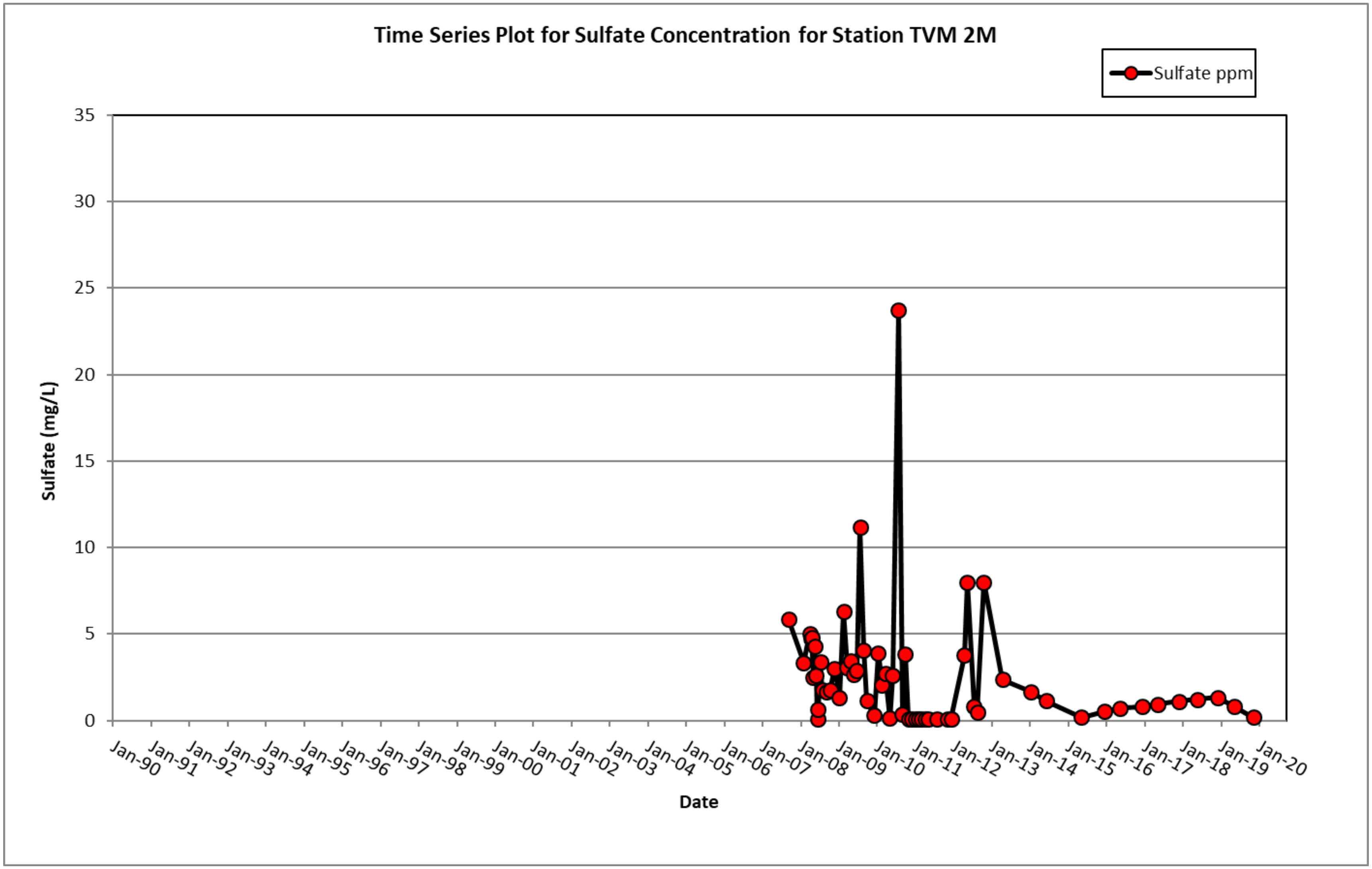
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Date


Time Series Plot for Sulfate Concentration for Station TVM 2M
Sulfate ppm
Sulfate (mg/L)
35
30
25
20
15
10
5
0
Jan-90
Jan-91
Jan-92
Jan-93
Jan-94
Jan-95
Jan-96
Jan-97
Jan-98
Jan-99
Jan-00
Jan-01
Jan-02
Jan-03
Jan-04
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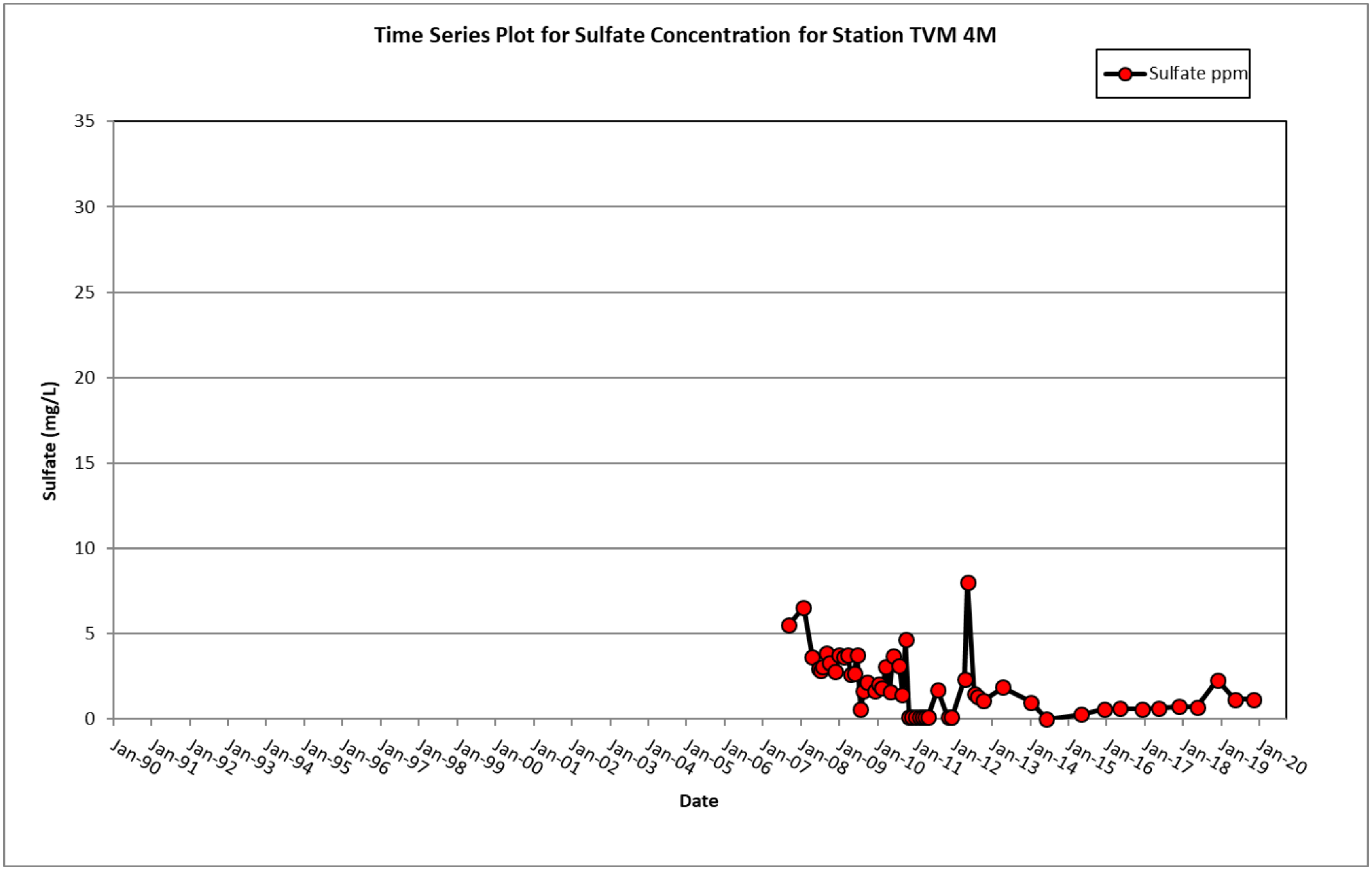
Jan-20
Date


Time Series Plot for Sulfate Concentration for Station TVM 4M
Sulfate ppm
Sulfate (mg/L)
35
30
25
20
15
10
5
0
Jan-90
Jan-91
Jan-92
Jan-93
Jan-94
Jan-95
Jan-96
Jan-97
Jan-98
Jan-99
Jan-00
Jan-01
Jan-02
Jan-03
Jan-04
Jan-05
Jan-06
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Jan-08
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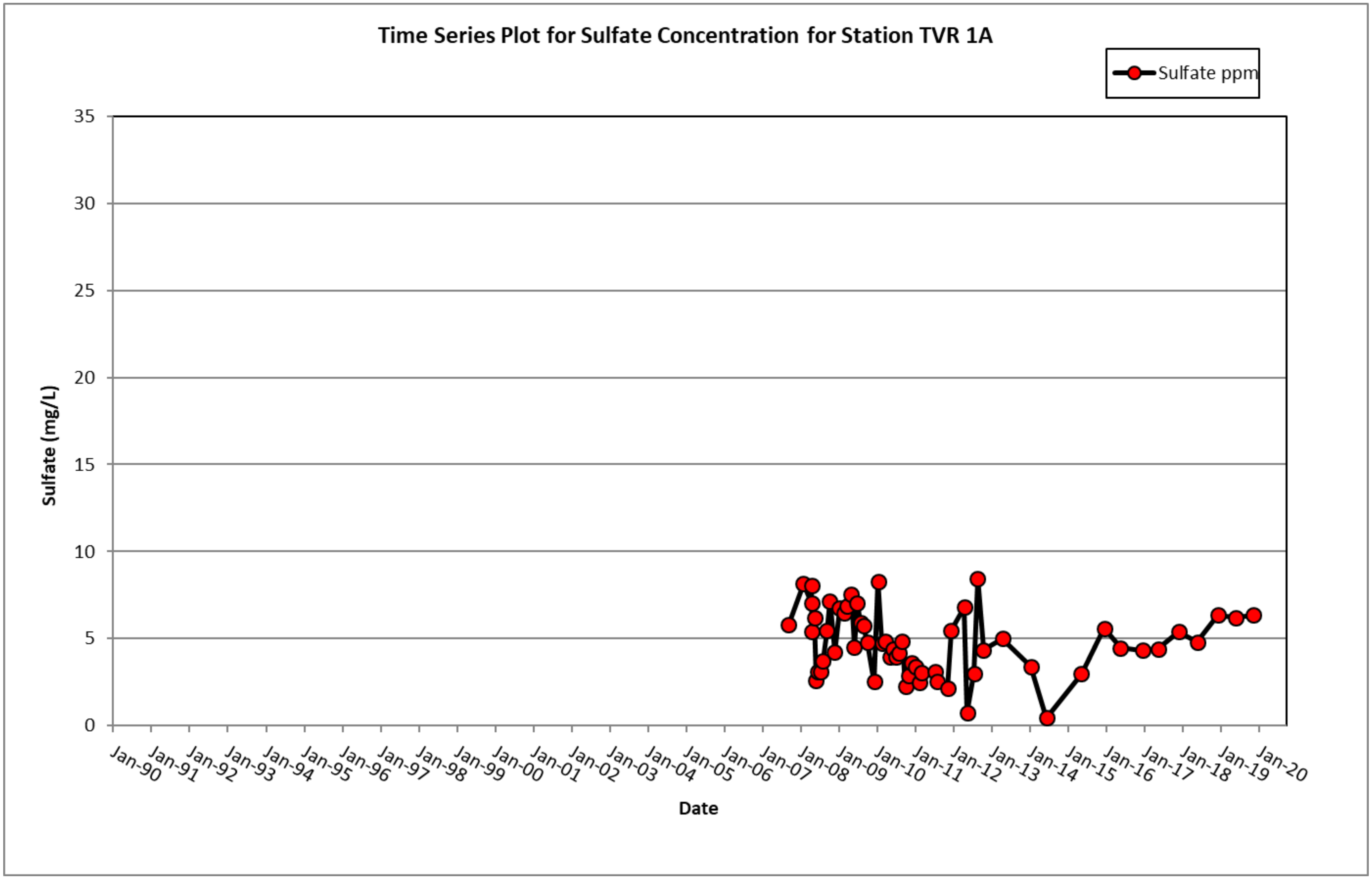
Jan-19
Jan-20
Date


Time Series Plot for Sulfate Concentration for Station TVR 1A
Sulfate ppm
Sulfate (mg/L)
0
5
10
15
20
25
30
35
Jan-90
Jan-91
Jan-92
Jan-93
Jan-94
Jan-95
Jan-96
Jan-97
Jan-98
Jan-99
Jan-00
Jan-01
Jan-02
Jan-03
Jan-04
Jan-05
Jan-06
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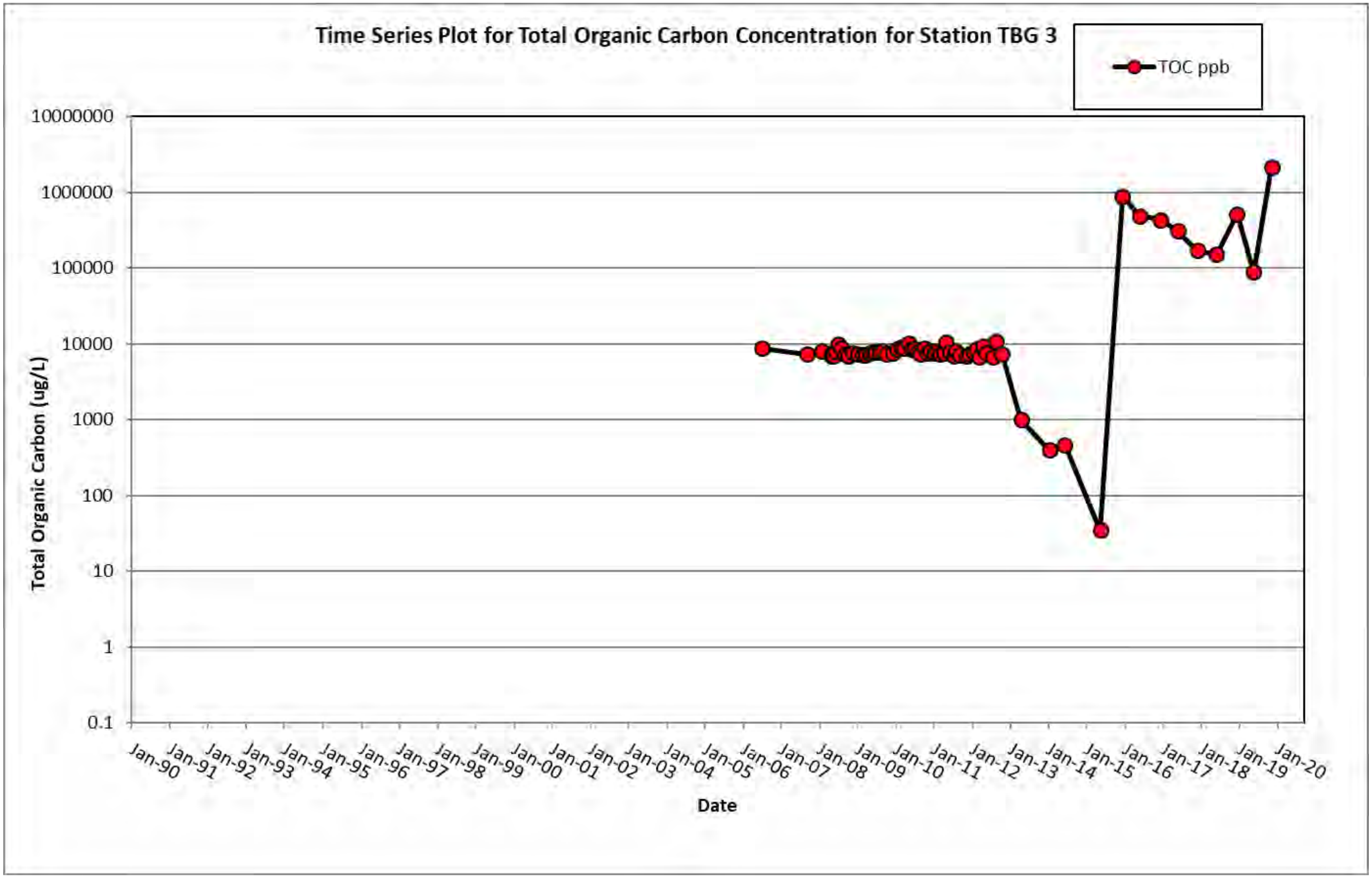
Jan-19
Jan-20
Date


Time Series Plot for Total Organic Carbon Concentration for Station TBG 3
TOC ppb
Total Organic Carbon (ug/L)
10000000
1000000
100000
10000
1000
100
10
1
0.1
Jan-90
Jan-91
Jan-92
Jan-93
Jan-94
Jan-95
Jan-96
Jan-97
Jan-98
Jan-99
Jan-00
Jan-01
Jan-02
Jan-03
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Jan-05
Jan-06
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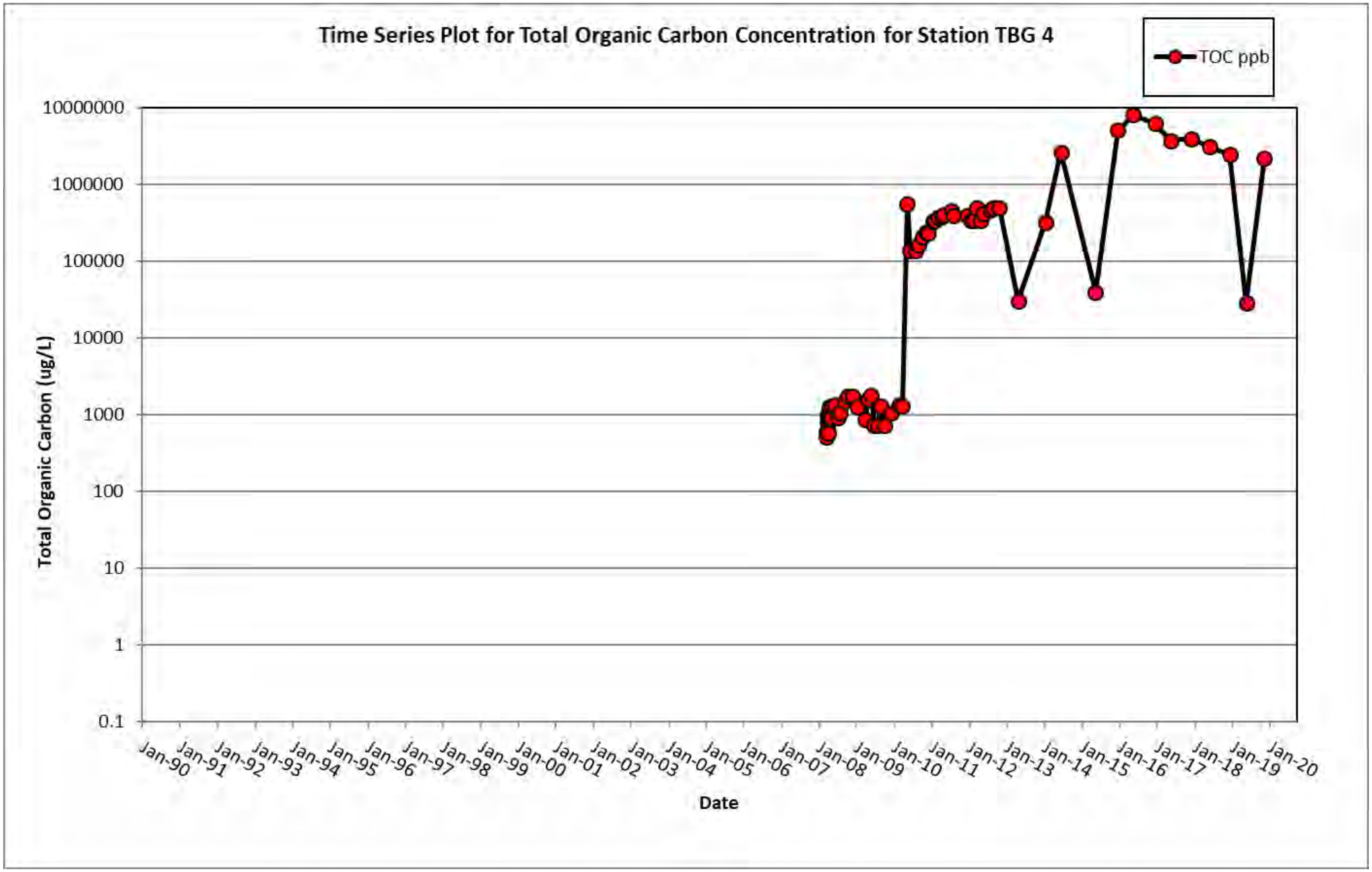
Jan-19
Jan-20
Date


Time Series Plot for Total Organic Carbon Concentration for Station TBG 4
TOC ppb
Total Organic Carbon (ug/L)
10000000
1000000
100000
10000
1000
100
10
1
0.1
Jan-90
Jan-91
Jan-92
Jan-93
Jan-94
Jan-95
Jan-96
Jan-97
Jan-98
Jan-99
Jan-00
Jan-01
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Jan-03
Jan-04
Jan-05
Jan-06
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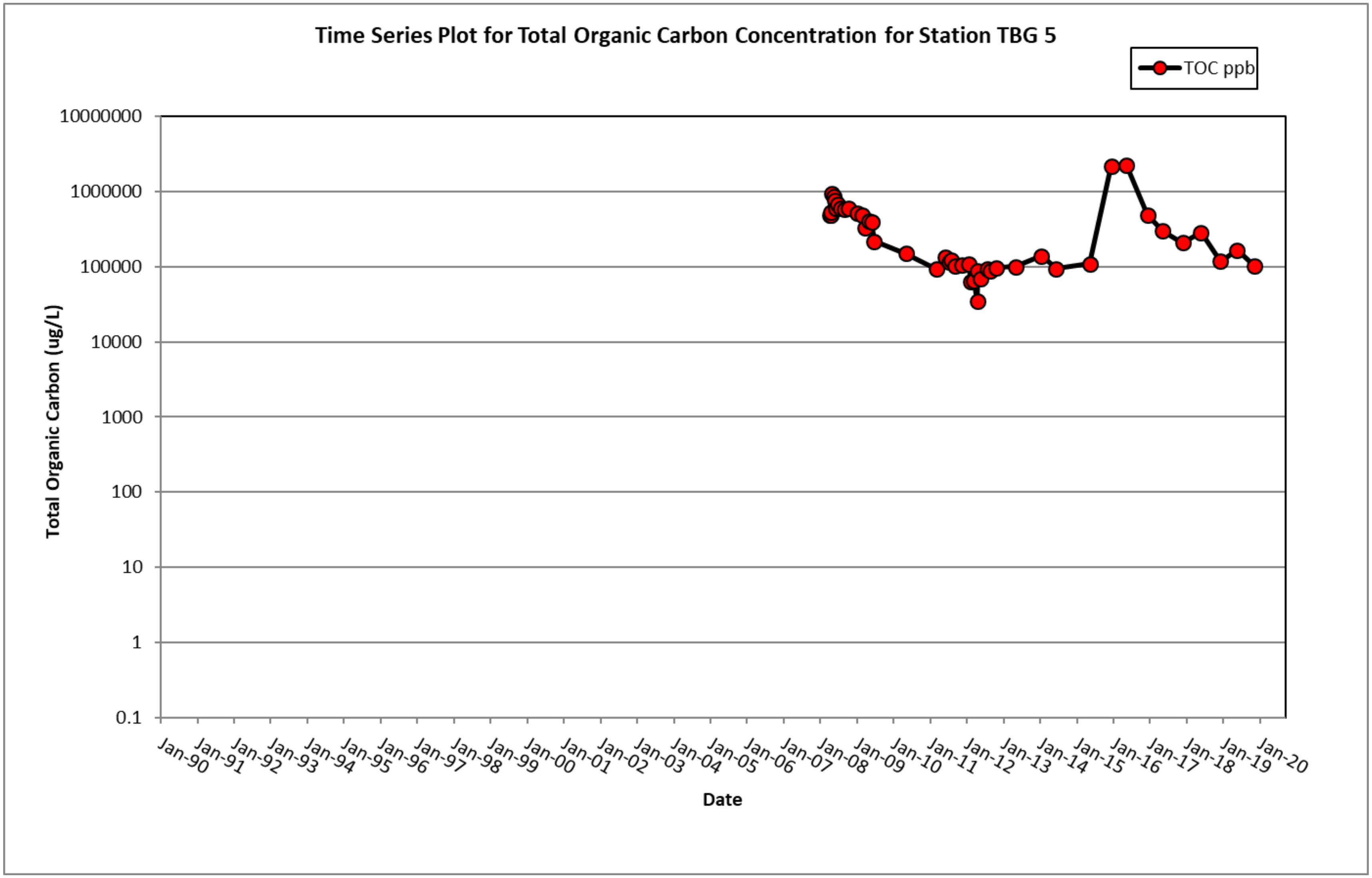
Jan-19
Jan-20
Date


Time Series Plot for Total Organic Carbon Concentration for Station TBG 5
TOC ppb
Total Organic Carbon (ug/L)
10000000
1000000
100000
10000
1000
100
10
1
0.1
Jan-90
Jan-91
Jan-92
Jan-93
Jan-94
Jan-95
Jan-96
Jan-97
Jan-98
Jan-99
Jan-00
Jan-01
Jan-02
Jan-03
Jan-04
Jan-05
Jan-06
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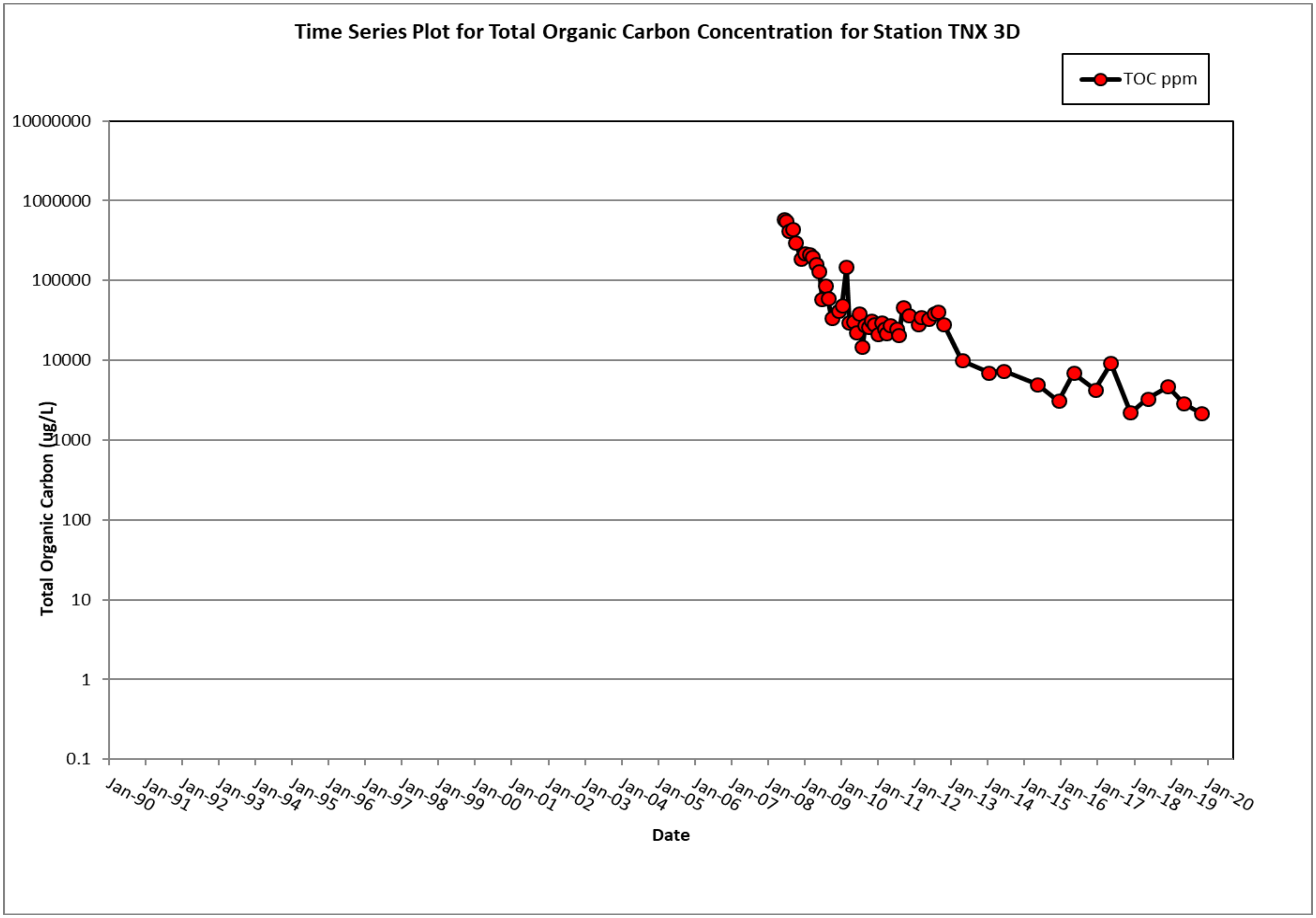
Jan-19
Jan-20
Date


Time Series Plot for Total Organic Carbon Concentration for Station TNX 3D
TOC ppm
10000000
1000000
100000
10000
1000
100
10
1
0.1
Total Organic Carbon (µg/L)
Jan-90
Jan-91
Jan-92
Jan-93
Jan-94
Jan-95
Jan-96
Jan-97
Jan-98
Jan-99
Jan-00
Jan-01
Jan-02
Jan-03
Jan-04
Jan-05
Jan-06
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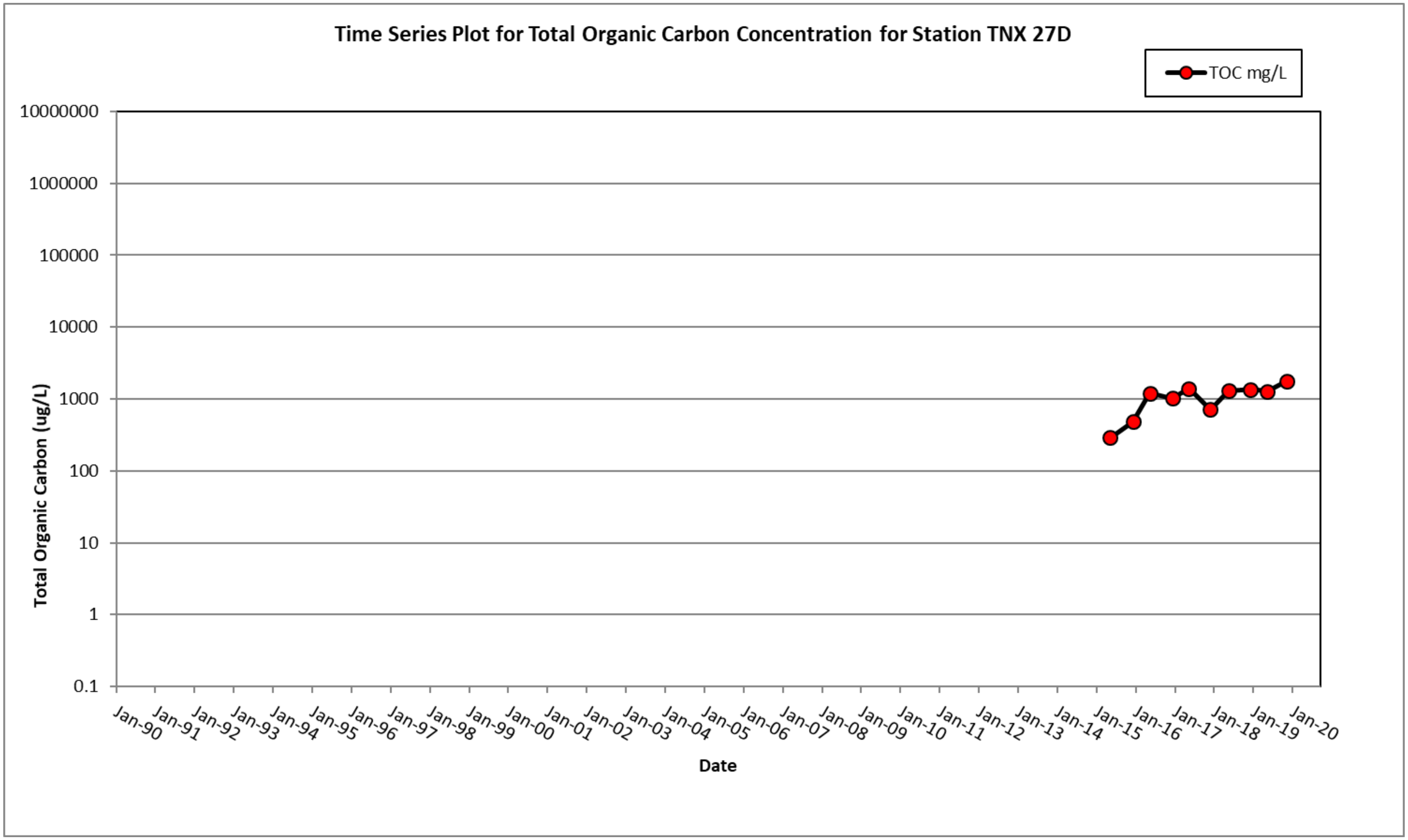
Jan-18
Jan-19
Jan-20
Date


Time Series Plot for Total Organic Carbon Concentration for Station TNX 27D
TOC mg/L
Total Organic Carbon (ug/L)
10000000
1000000
100000
10000
1000
100
10
1
0.1
Jan-90
Jan-91
Jan-92
Jan-93
Jan-94
Jan-95
Jan-96
Jan-97
Jan-98
Jan-99
Jan-00
Jan-01
Jan-02
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Jan-05
Jan-06
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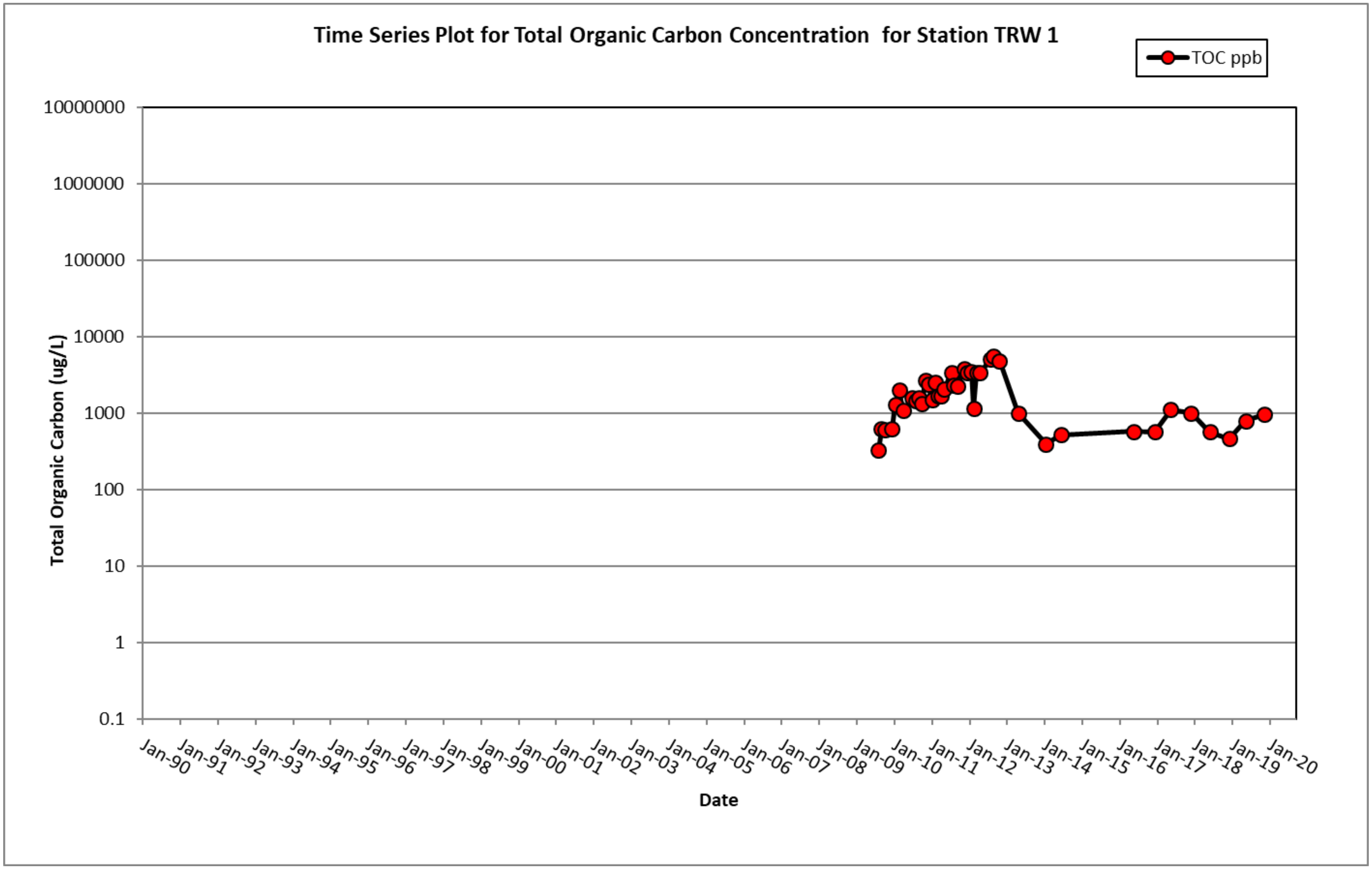
Jan-19
Jan-20
Date


Time Series Plot for Total Organic Carbon Concentration for Station TRW 1
TOC ppb
Total Organic Carbon (ug/L)
10000000
1000000
100000
10000
1000
100
10
1
0.1
Jan-90
Jan-91
Jan-92
Jan-93
Jan-94
Jan-95
Jan-96
Jan-97
Jan-98
Jan-99
Jan-00
Jan-01
Jan-02
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Jan-05
Jan-06
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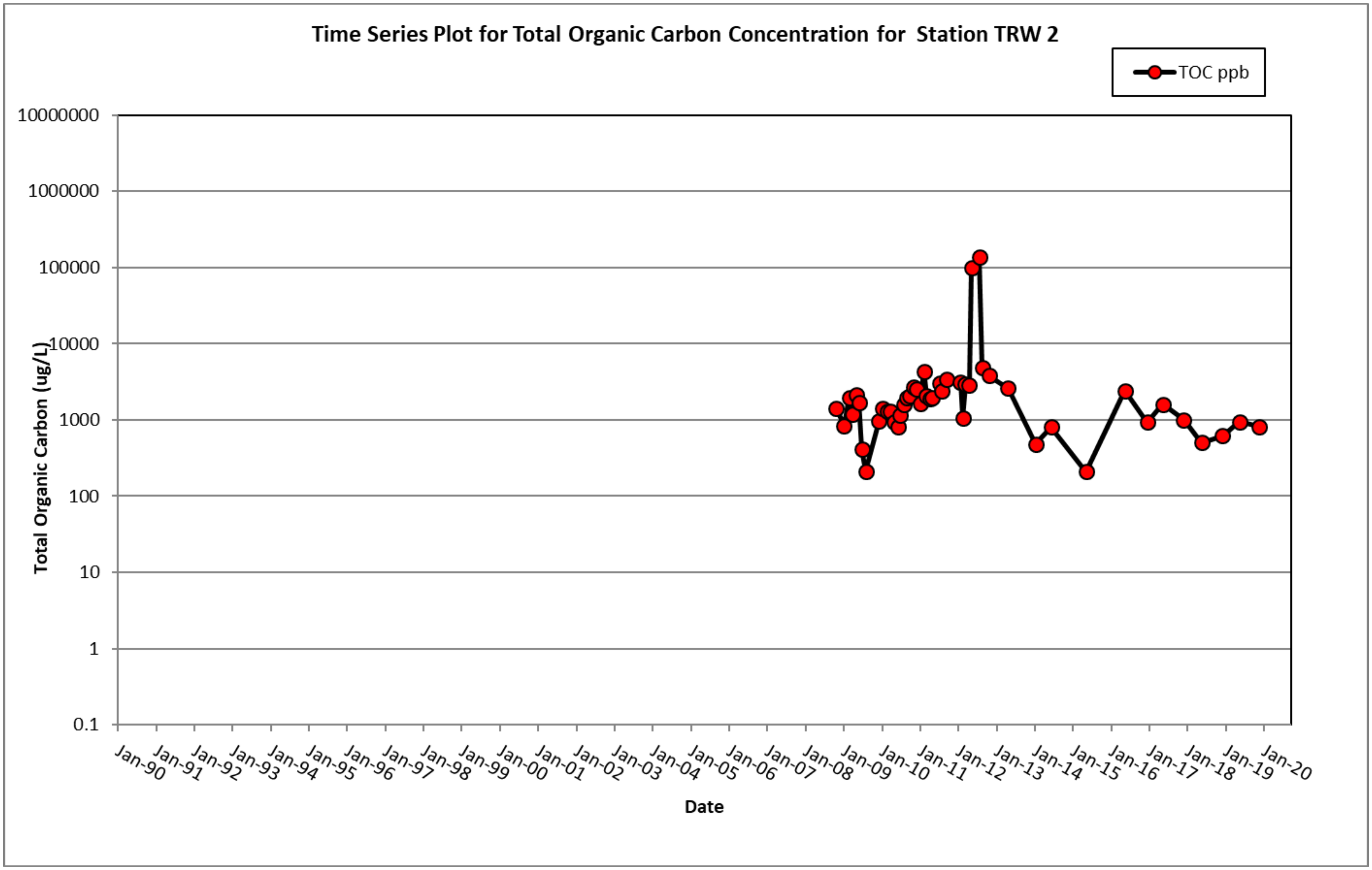
Jan-20
Date


Time Series Plot for Total Organic Carbon Concentration for Station TRW 2
TOC ppb
10000000
1000000
100000
10000
1000
100
10
1
0.1
Total Organic Carbon (ug/L)
Jan-90
Jan-91
Jan-92
Jan-93
Jan-94
Jan-95
Jan-96
Jan-97
Jan-98
Jan-99
Jan-00
Jan-01
Jan-02
Jan-03
Jan-04
Jan-05
Jan-06
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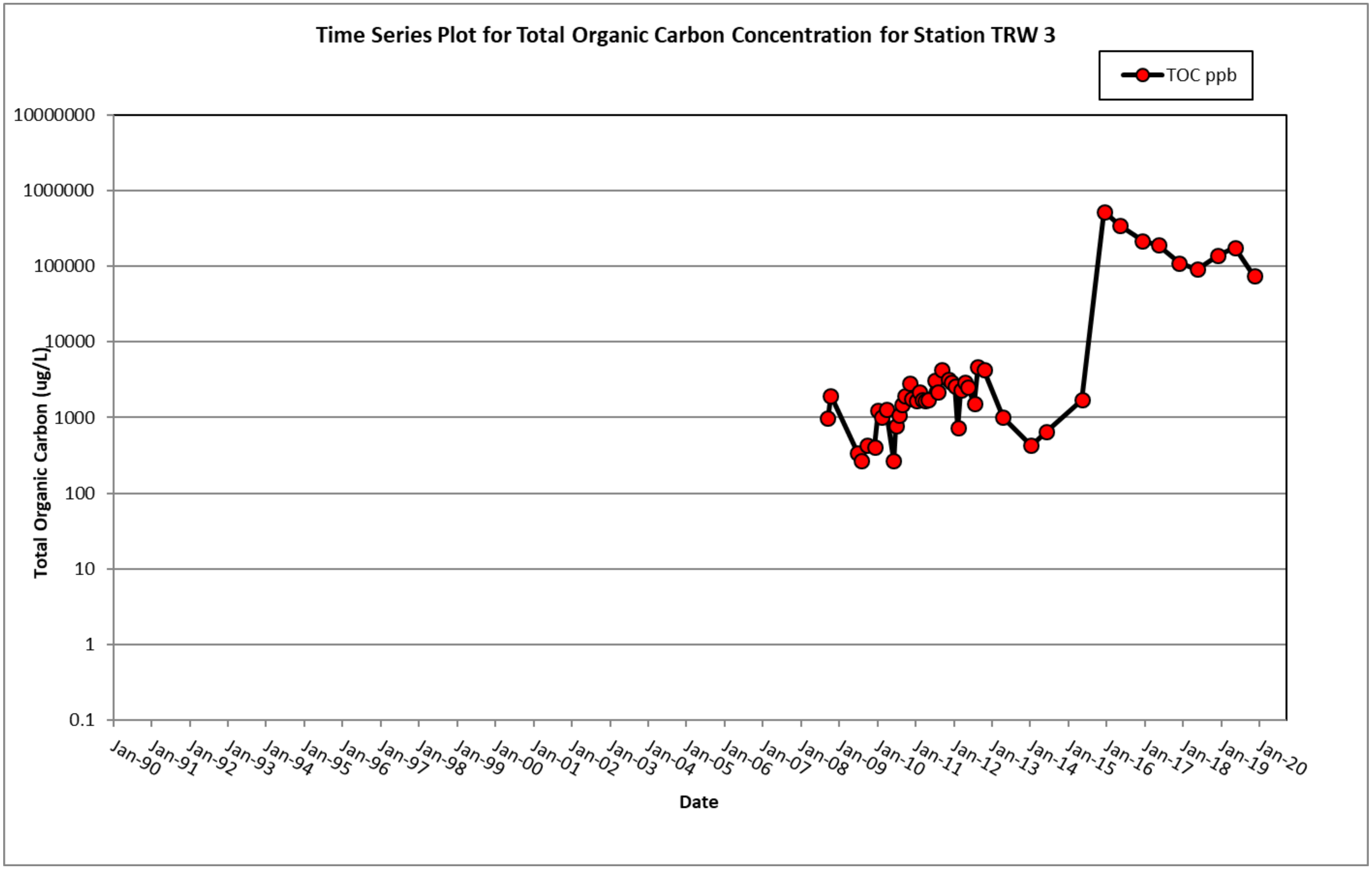
Jan-19
Jan-20
Date


Time Series Plot for Total Organic Carbon Concentration for Station TRW 3
TOC ppb
10000000
1000000
100000
10000
1000
100
10
1
0.1
Total Organic Carbon (ug/L)
Jan-90
Jan-91
Jan-92
Jan-93
Jan-94
Jan-95
Jan-96
Jan-97
Jan-98
Jan-99
Jan-00
Jan-01
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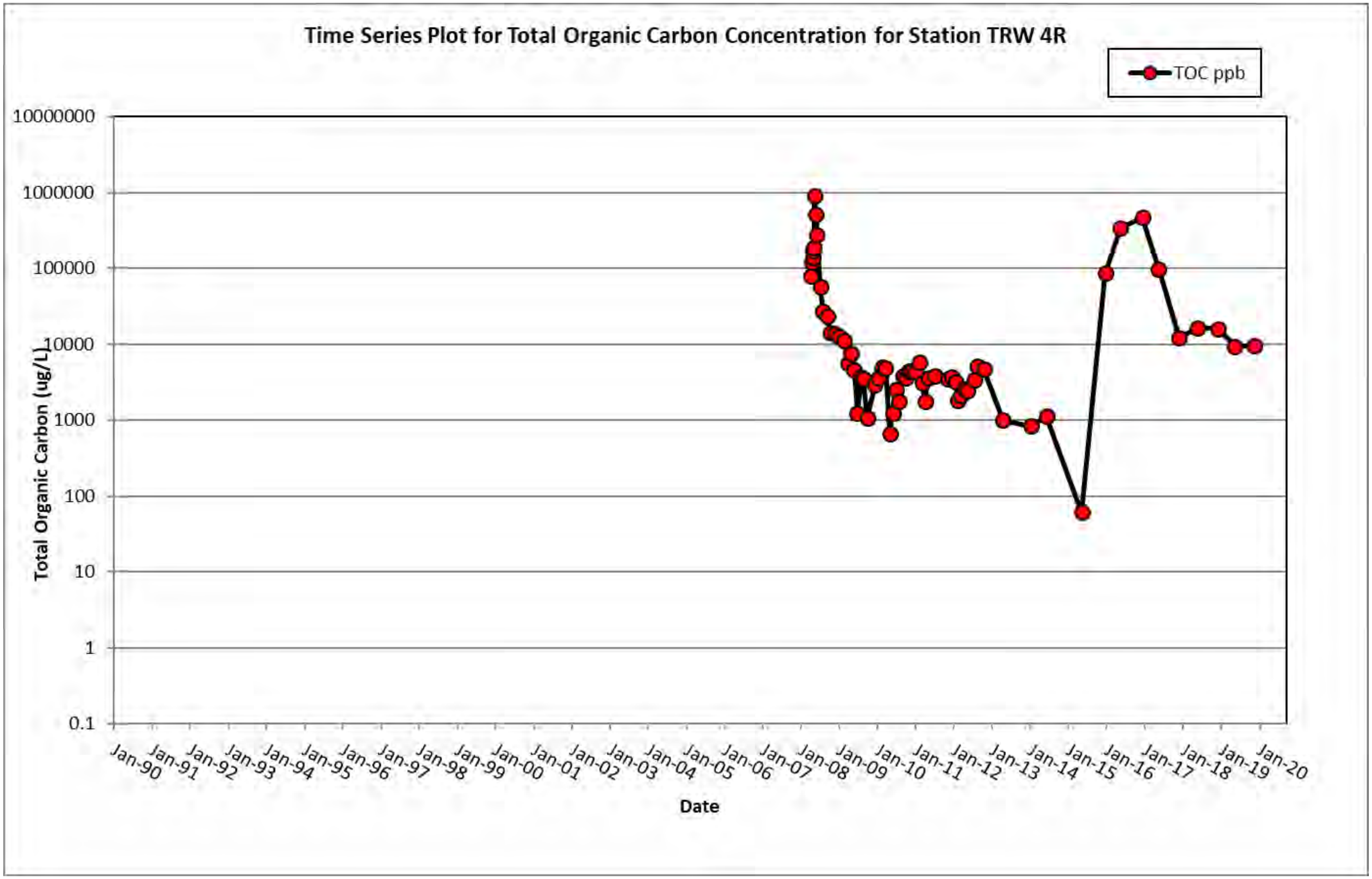
Date


Time Series Plot for Total Organic Carbon Concentration for Station TRW 4R
TOC ppb
Total Organic Carbon (ug/L)
10000000
1000000
100000
10000
1000
100
10
1
0.1
Jan-90
Jan-91
Jan-92
Jan-93
Jan-94
Jan-95
Jan-96
Jan-97
Jan-98
Jan-99
Jan-00
Jan-01
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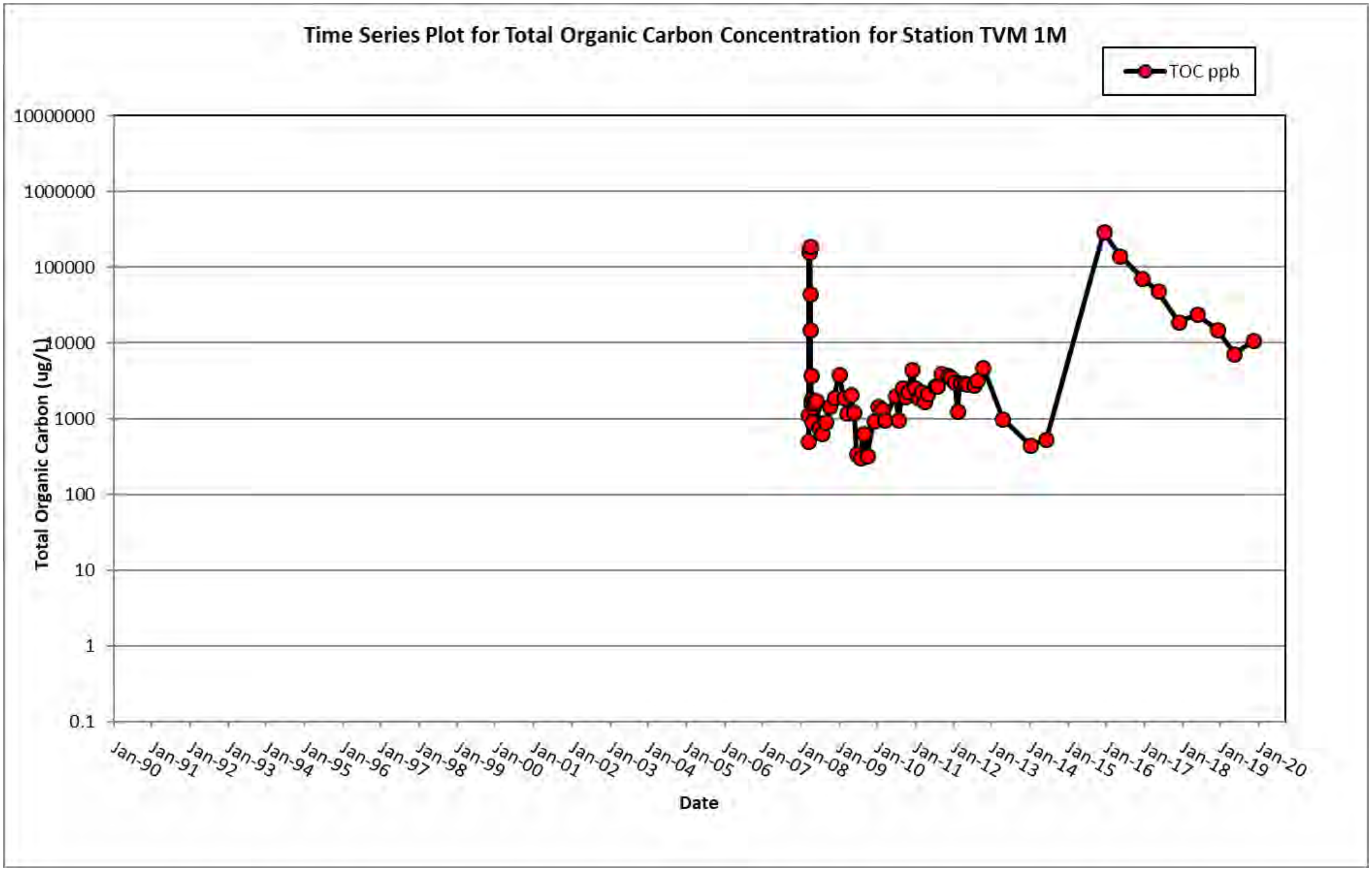
Jan-20
Date


Time Series Plot for Total Organic Carbon Concentration for Station TVM 1M
TOC ppb
Total Organic Carbon (ug/L)
10000000
1000000
100000
10000
1000
100
10
1
0.1
Jan-90
Jan-91
Jan-92
Jan-93
Jan-94
Jan-95
Jan-96
Jan-97
Jan-98
Jan-99
Jan-00
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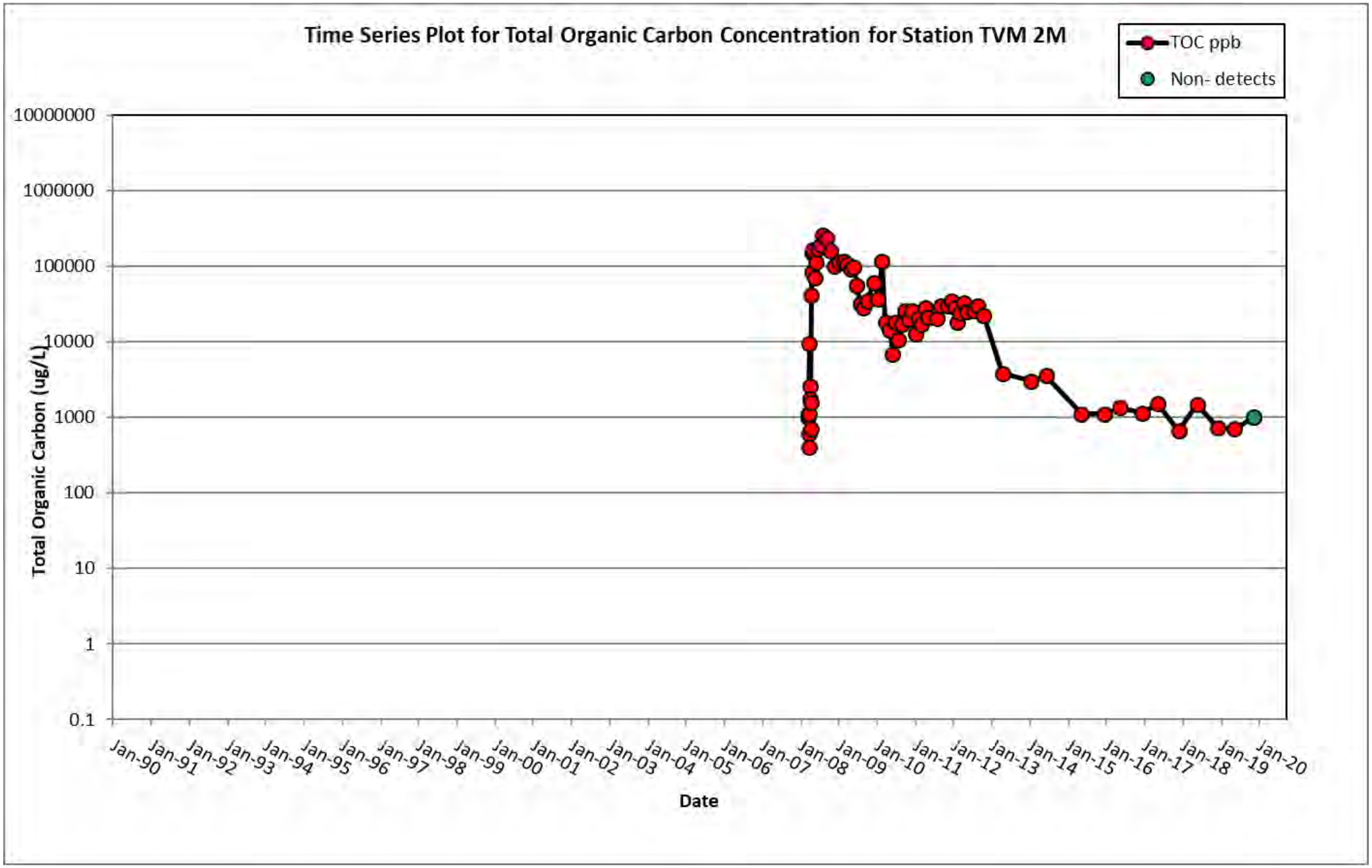
Date


Time Series Plot for Total Organic Carbon Concentration for Station TVM 2M
TOC ppb
Non- detects
10000000
1000000
100000
10000
1000
100
10
1
0.1
Total Organic Carbon (ug/L)
Jan-90
Jan-91
Jan-92
Jan-93
Jan-94
Jan-95
Jan-96
Jan-97
Jan-98
Jan-99
Jan-00
Jan-01
Jan-02
Jan-03
Jan-04
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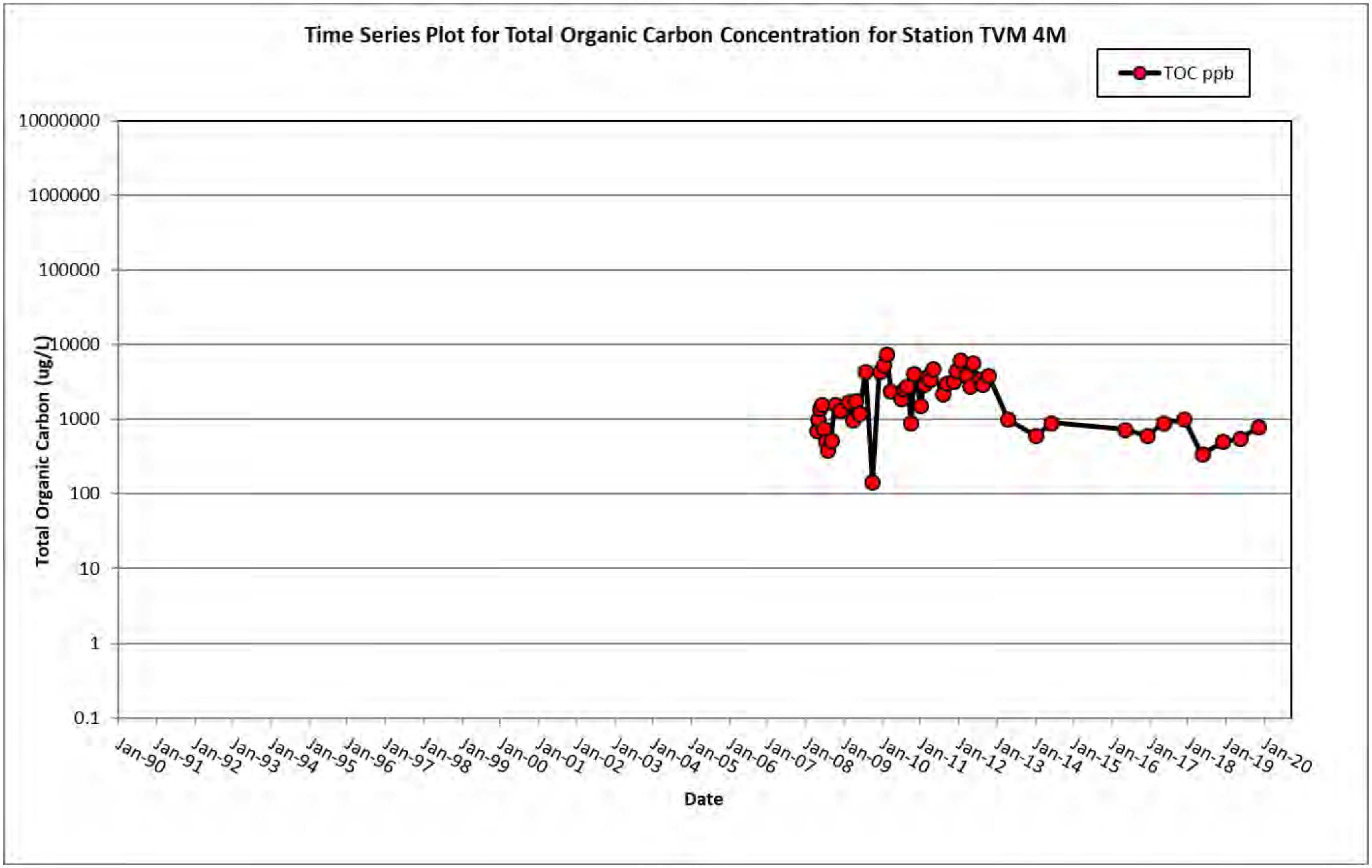
Jan-19
Jan-20
Date


Time Series Plot for Total Organic Carbon Concentration for Station TVM 4M
TOC ppb
Total Organic Carbon (ug/L)
10000000
1000000
100000
10000
1000
100
10
1
0.1
Jan-90
Jan-91
Jan-92
Jan-93
Jan-94
Jan-95
Jan-96
Jan-97
Jan-98
Jan-99
Jan-00
Jan-01
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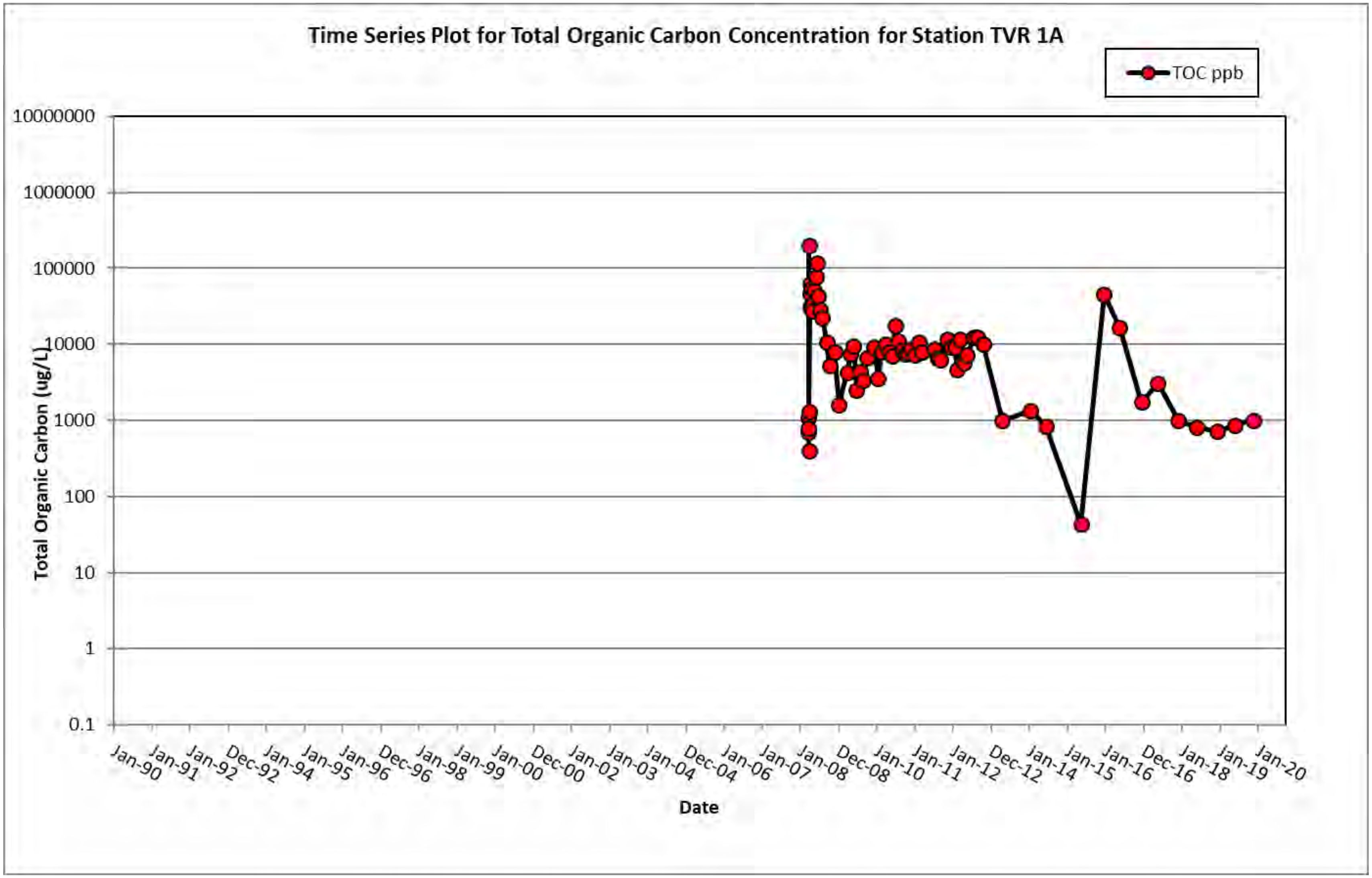
Jan-19
Jan-20
Date


Time Series Plot for Total Organic Carbon Concentration for Station TVR 1A
TOC ppb
10000000
1000000
100000
10000
1000
100
10
1
0.1
Total Organic Carbon (ug/L)
Jan-90
Jan-91
Jan-92
Dec-92
Jan-94
Jan-95
Jan-96
Dec-96
Jan-98
Jan-99
Jan-00
Dec-00
Jan-02
Jan-03
Jan-04
Dec-04
Jan-06
Jan-07
Jan-08
Dec-08
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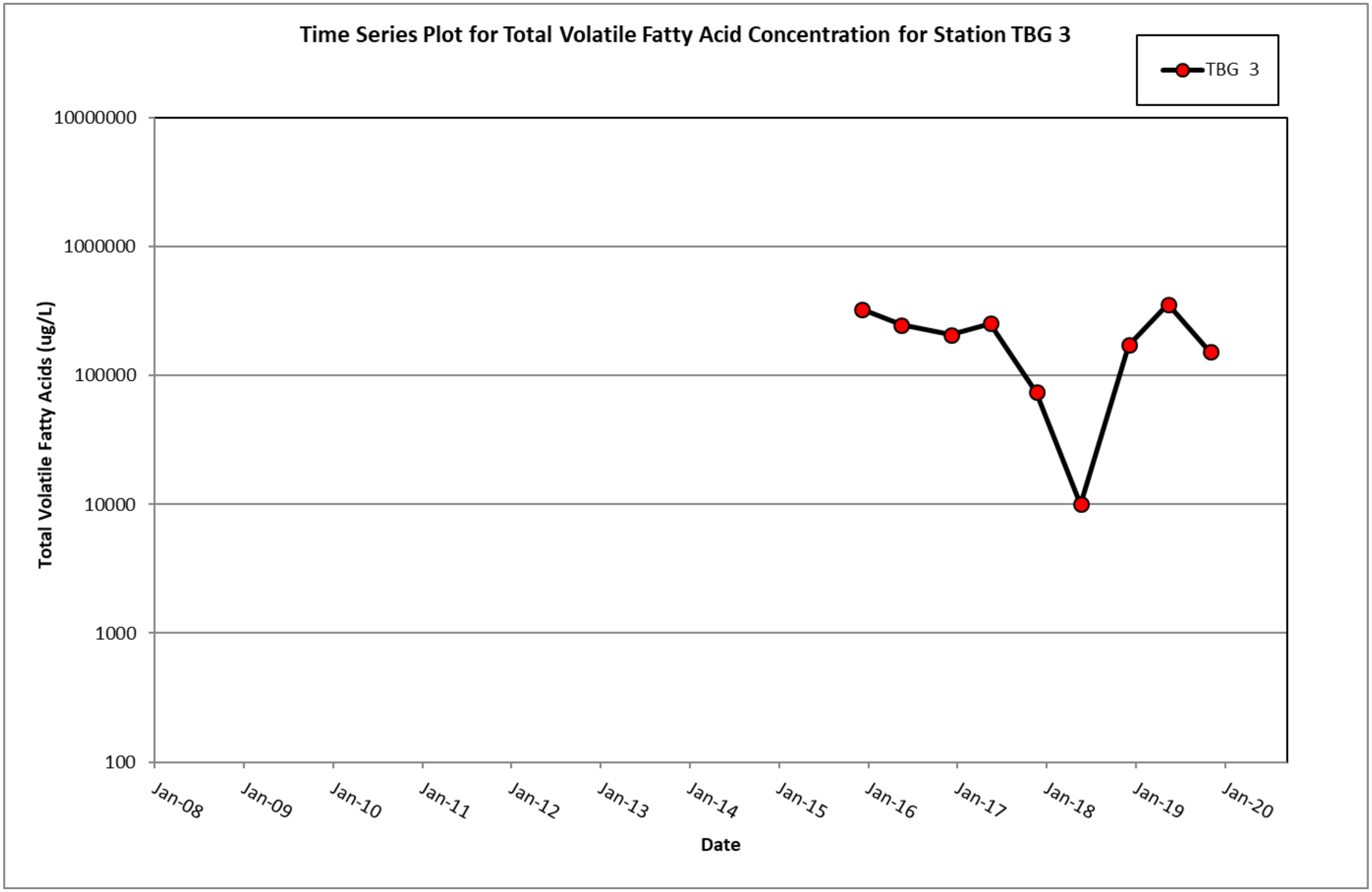
Jan-19
Jan-20
Date


Time Series Plot for Total Volatile Fatty Acid Concentration for Station TBG 3
TBG 3
Total Volatile Fatty Acids (ug/L)
10000000
1000000
100000
10000
1000
100
Jan-08
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
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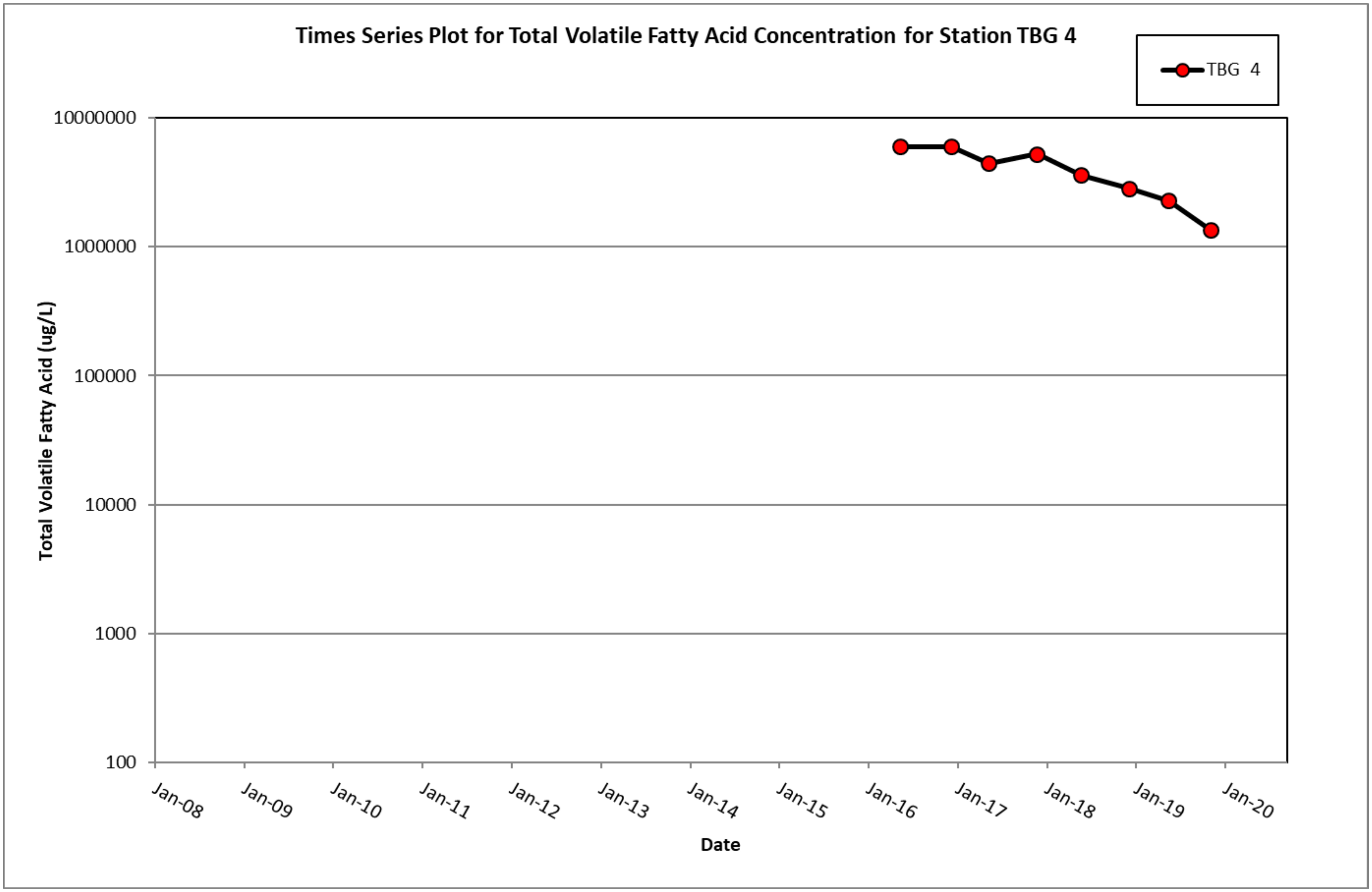
Jan-19
Jan-20
Date


Times Series Plot for Total Volatile Fatty Acid Concentration for Station TBG 4
TBG 4
Total Volatile Fatty Acid (ug/L)
10000000
1000000
100000
10000
1000
100
Jan-08
Jan-09
Jan-10
Jan-11
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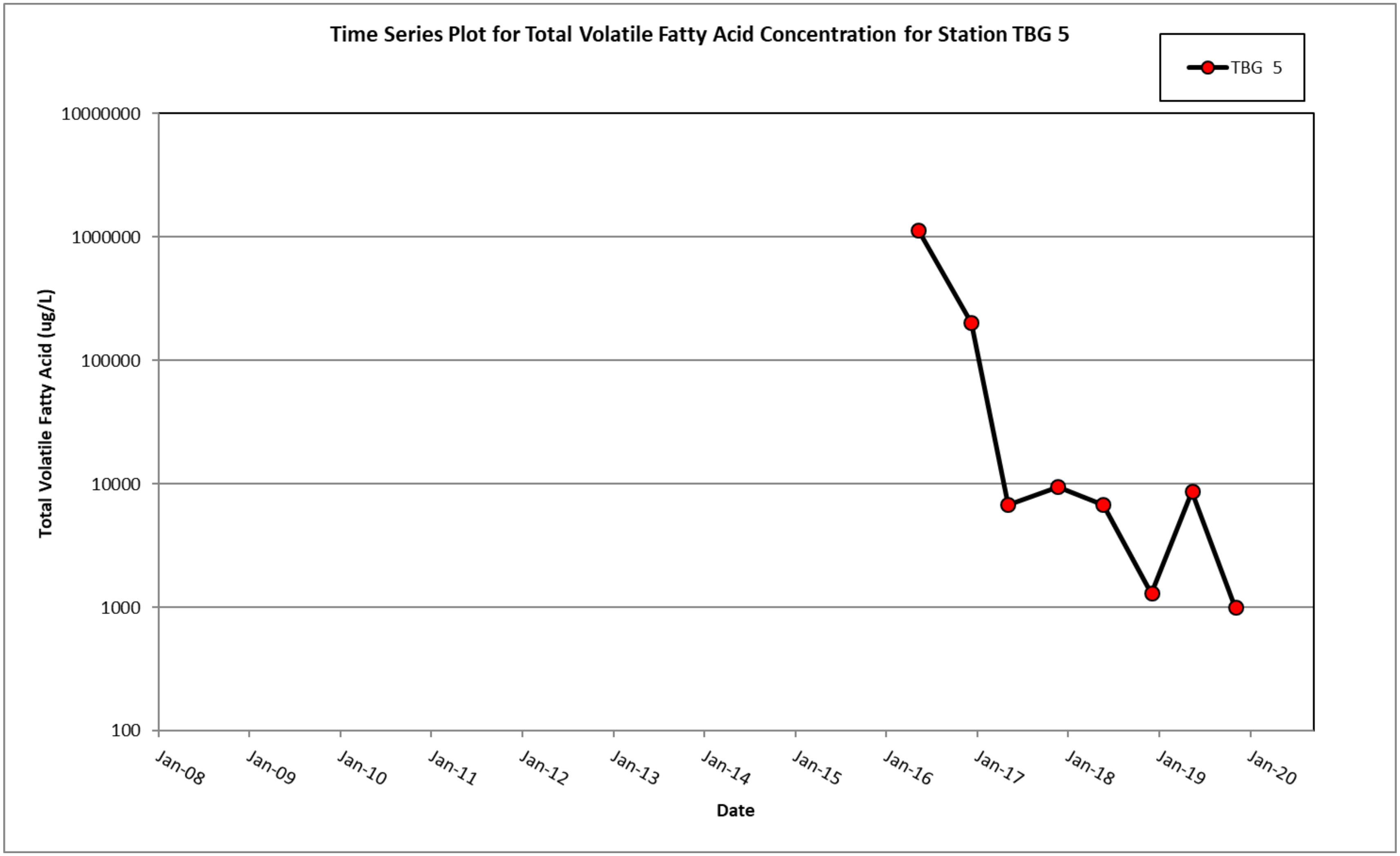
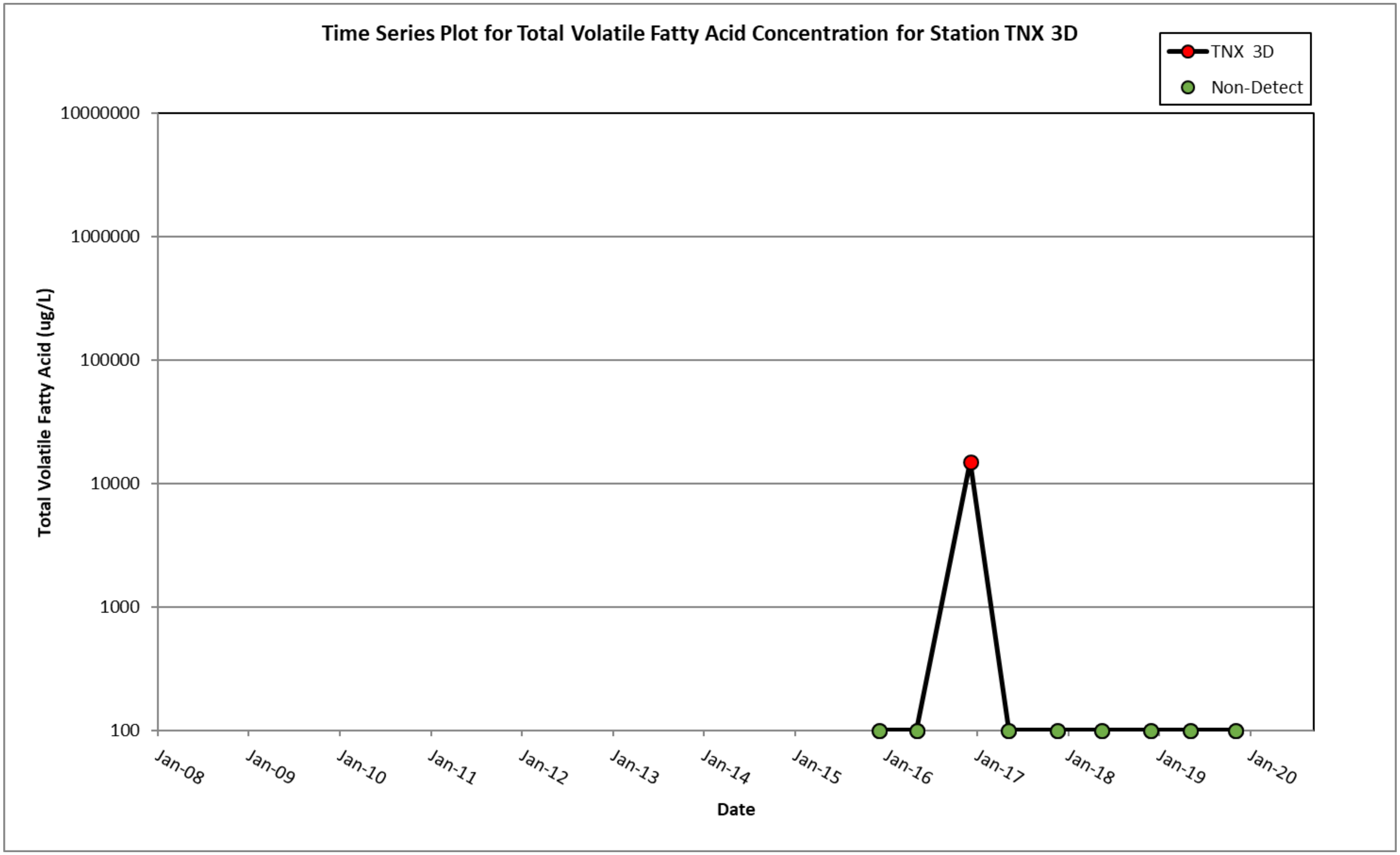
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Date


Time Series Plot for Total Volatile Fatty Acid Concentration for Station TBG 5
TBG 5
10000000
1000000
100000
10000
1000
100
Total Volatile Fatty Acid (ug/L)
Jan-08
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Date


Time Series Plot for Total Volatile Fatty Acid Concentration for Station TNX 3D
TNX 3D
Non-Detect
Total Volatile Fatty Acid (ug/L)
10000000
1000000
100000
10000
1000
100
Jan-08
Jan-09
Jan-10
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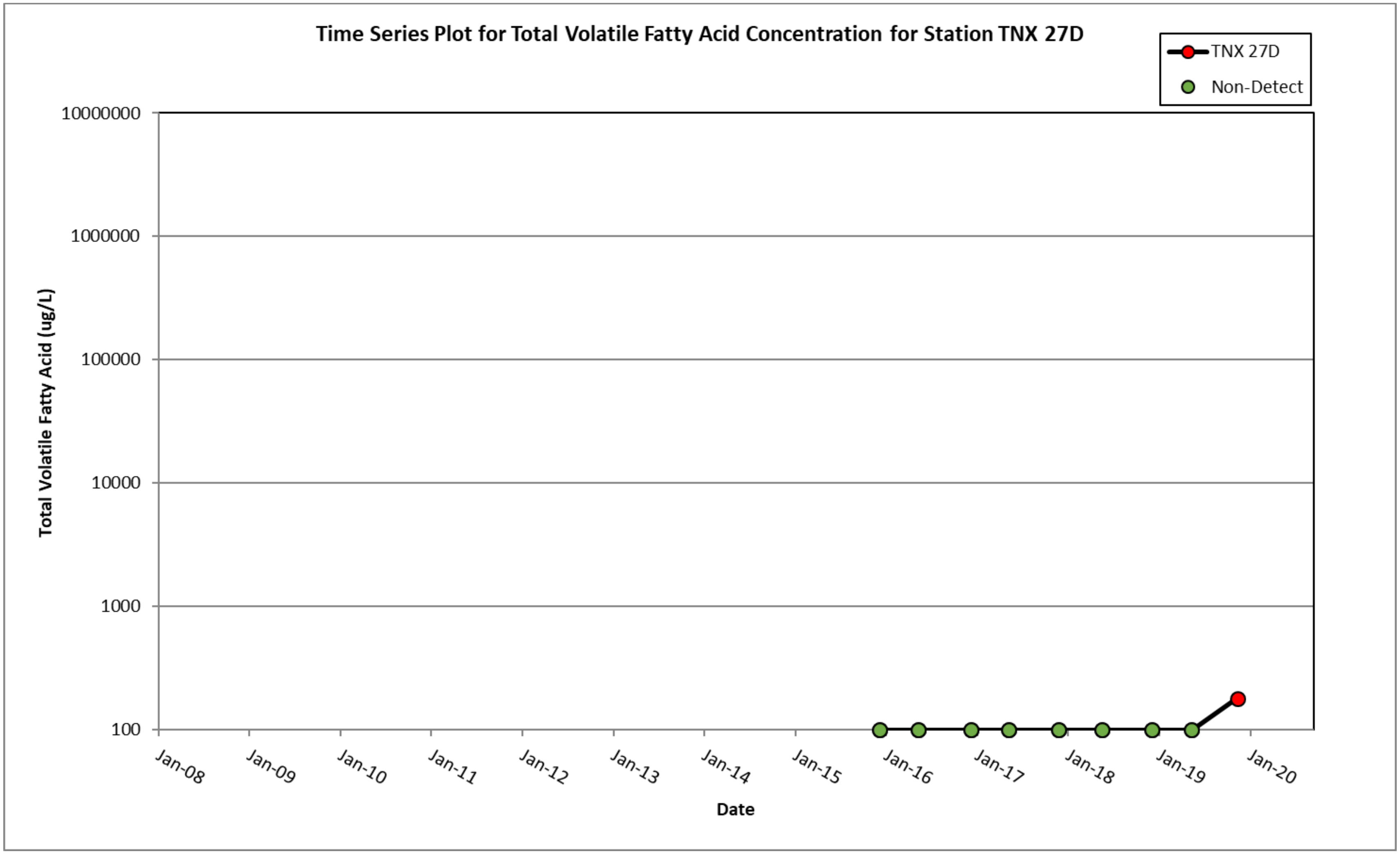
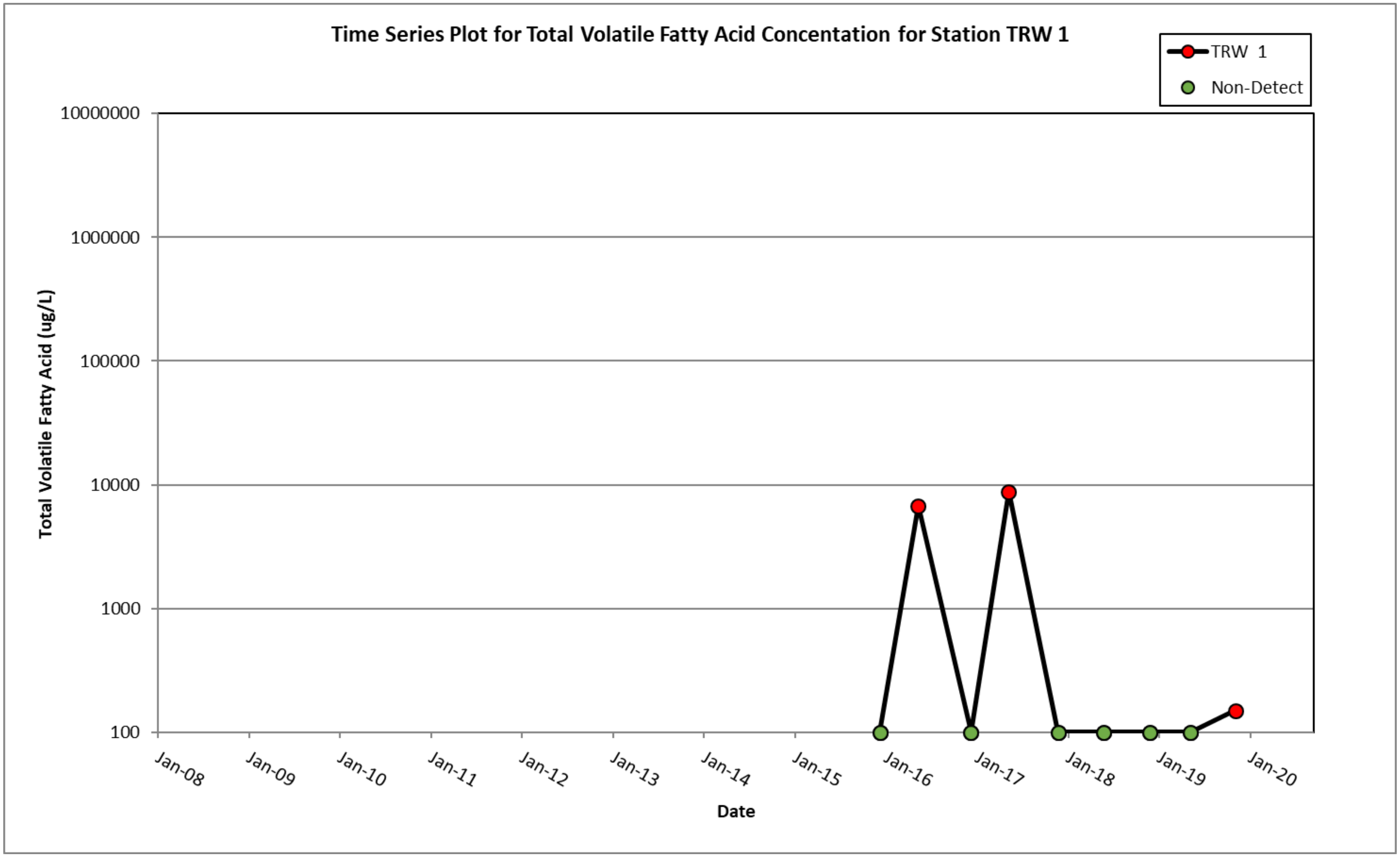
Jan-19
Jan-20
Date


Time Series Plot for Total Volatile Fatty Acid Concentration for Station TNX 27D
TNX 27D
Non-Detect
10000000
1000000
100000
10000
1000
100
Total Volatile Fatty Acid (ug/L)
Jan-08
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Date


Time Series Plot for Total Volatile Fatty Acid Concentation for Station TRW 1
TRW 1
Non-Detect
Total Volatile Fatty Acid (ug/L)
10000000
1000000
100000
10000
1000
100
Jan-08
Jan-09
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Jan-11
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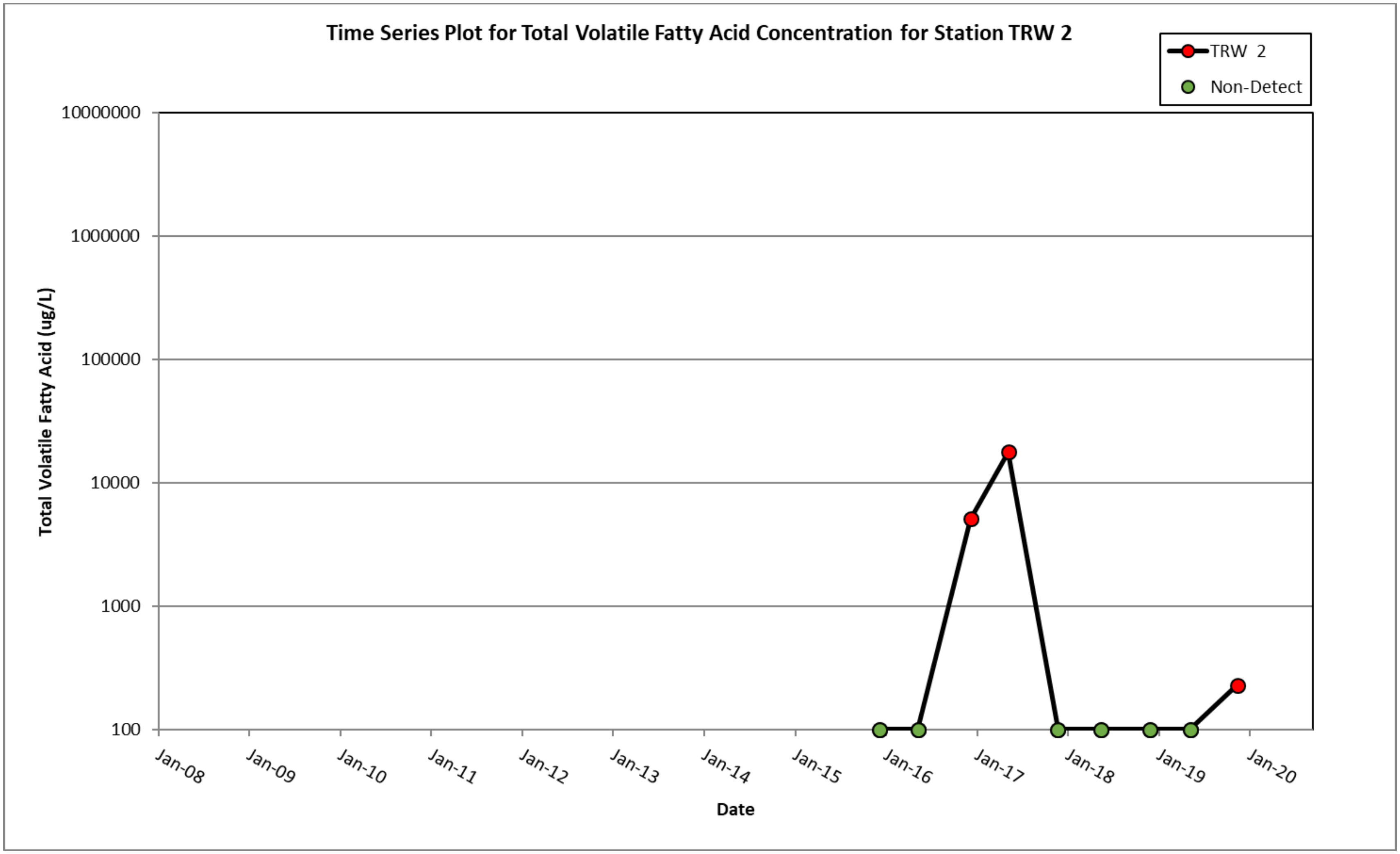
Jan-19
Jan-20
Date


Time Series Plot for Total Volatile Fatty Acid Concentration for Station TRW 2
TRW 2
Non-Detect
Total Volatile Fatty Acid (ug/L)
10000000
1000000
100000
10000
1000
100
Jan-08
Jan-09
Jan-10
Jan-11
Jan-12
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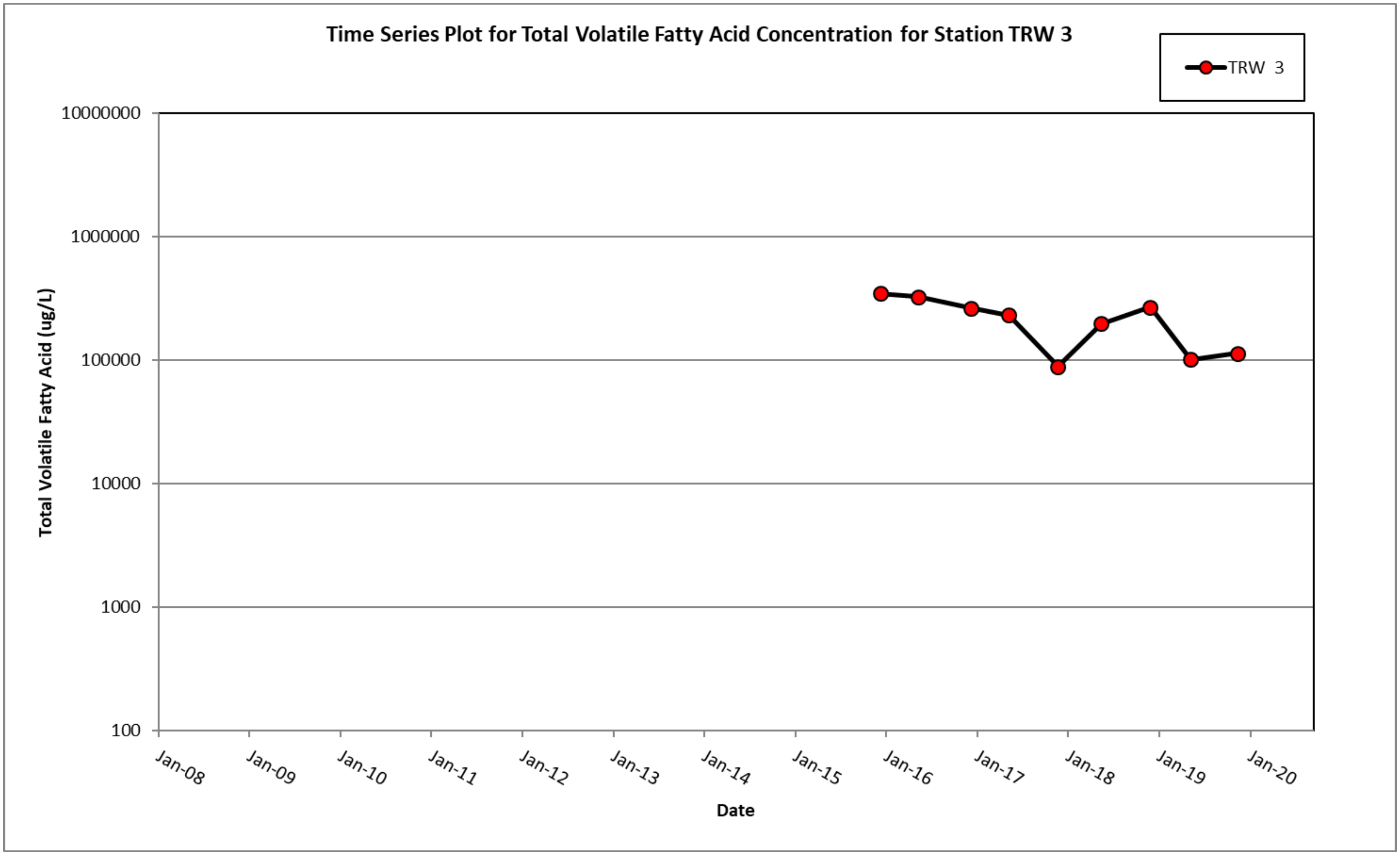
Jan-19
Jan-20
Date


Time Series Plot for Total Volatile Fatty Acid Concentration for Station TRW 3
TRW 3
Total Volatile Fatty Acid (ug/L)
10000000
1000000
100000
10000
1000
100
Jan-08
Jan-09
Jan-10
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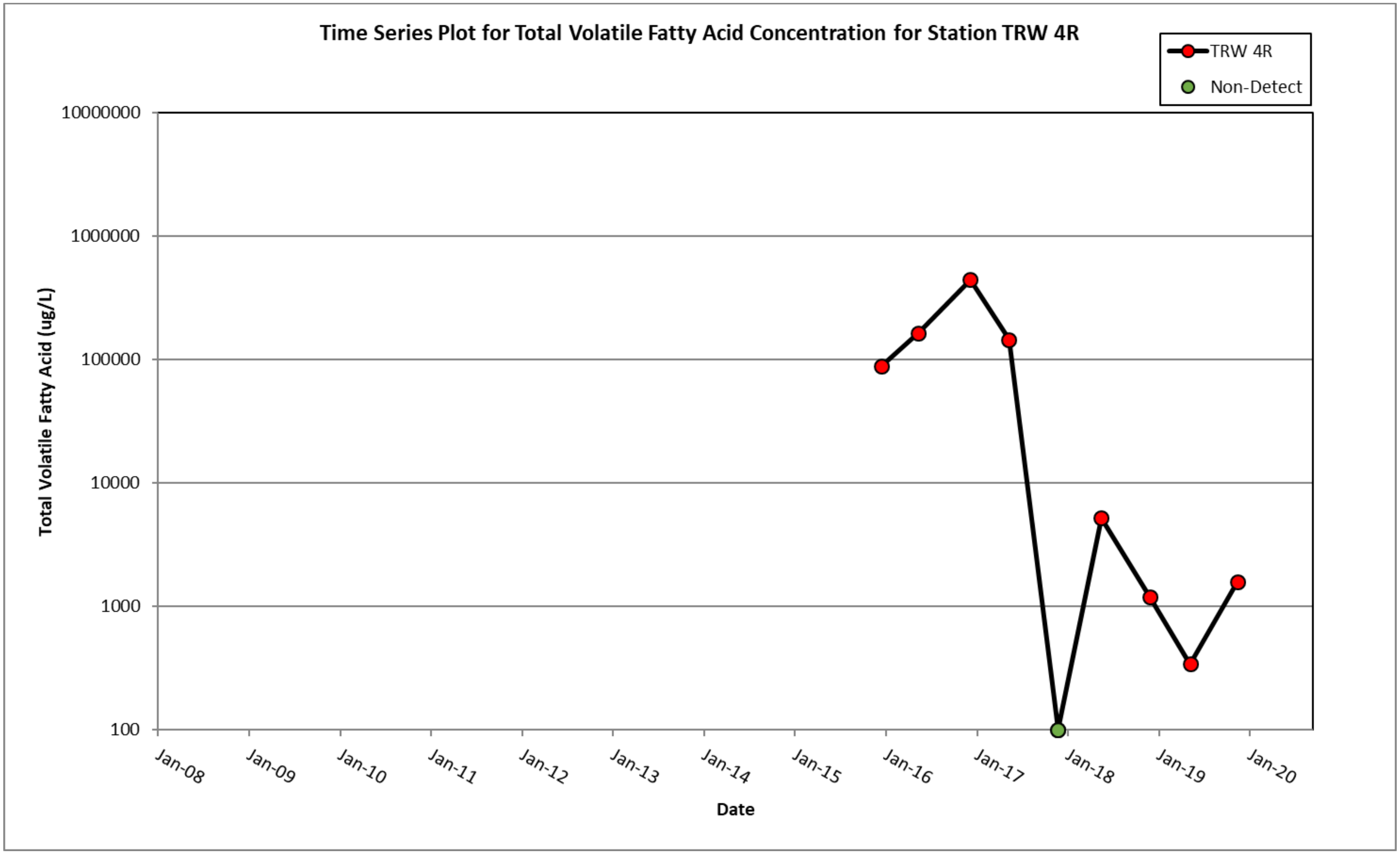
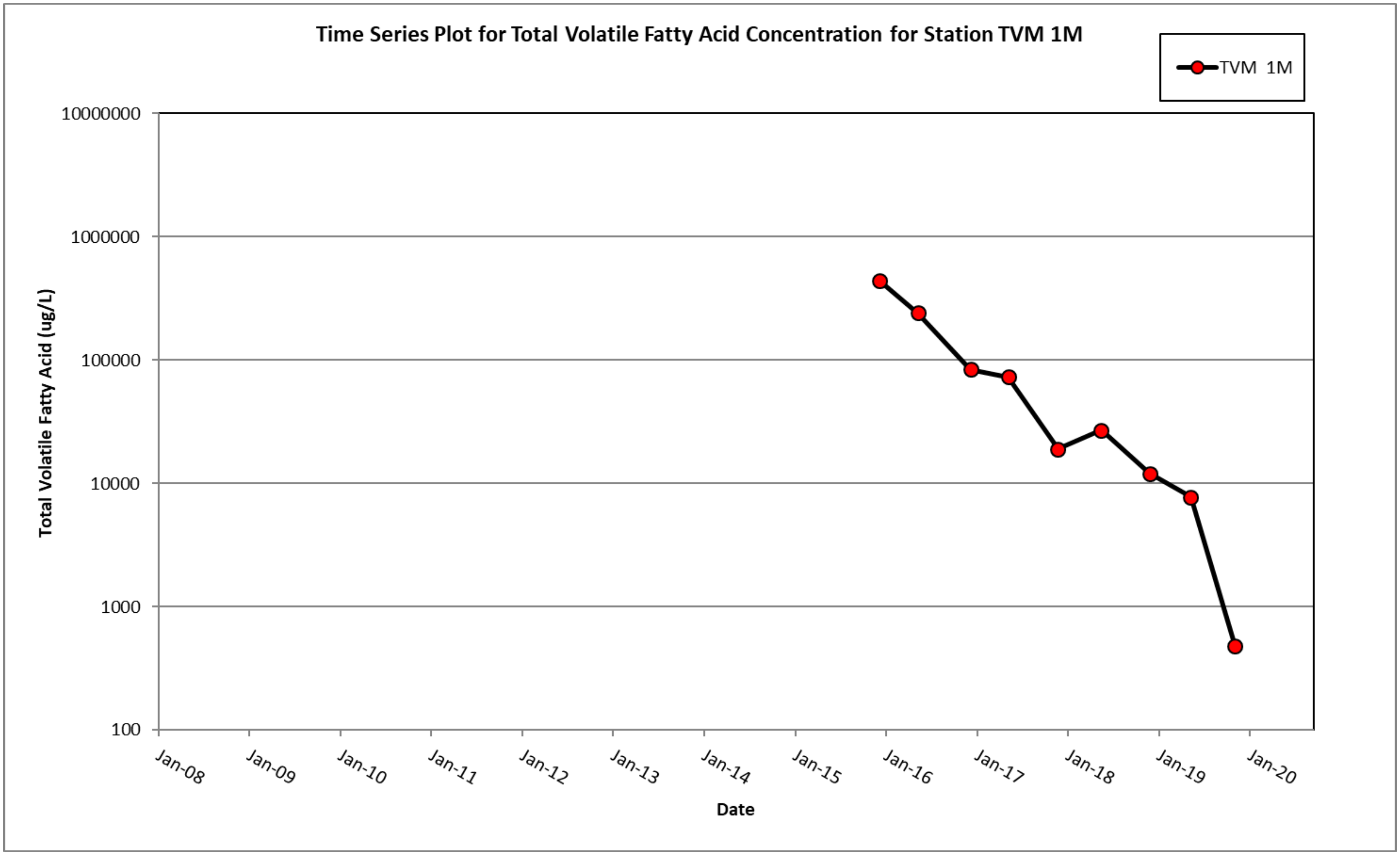
Jan-19
Jan-20
Date


Time Series Plot for Total Volatile Fatty Acid Concentration for Station TRW 4R
TRW 4R
Non-Detect
10000000
1000000
100000
10000
1000
100
Total Volatile Fatty Acid (ug/L)
Jan-08
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Date


Time Series Plot for Total Volatile Fatty Acid Concentration for Station TVM 1M
TVM 1M
Total Volatile Fatty Acid (ug/L)
10000000
1000000
100000
10000
1000
100
Jan-08
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
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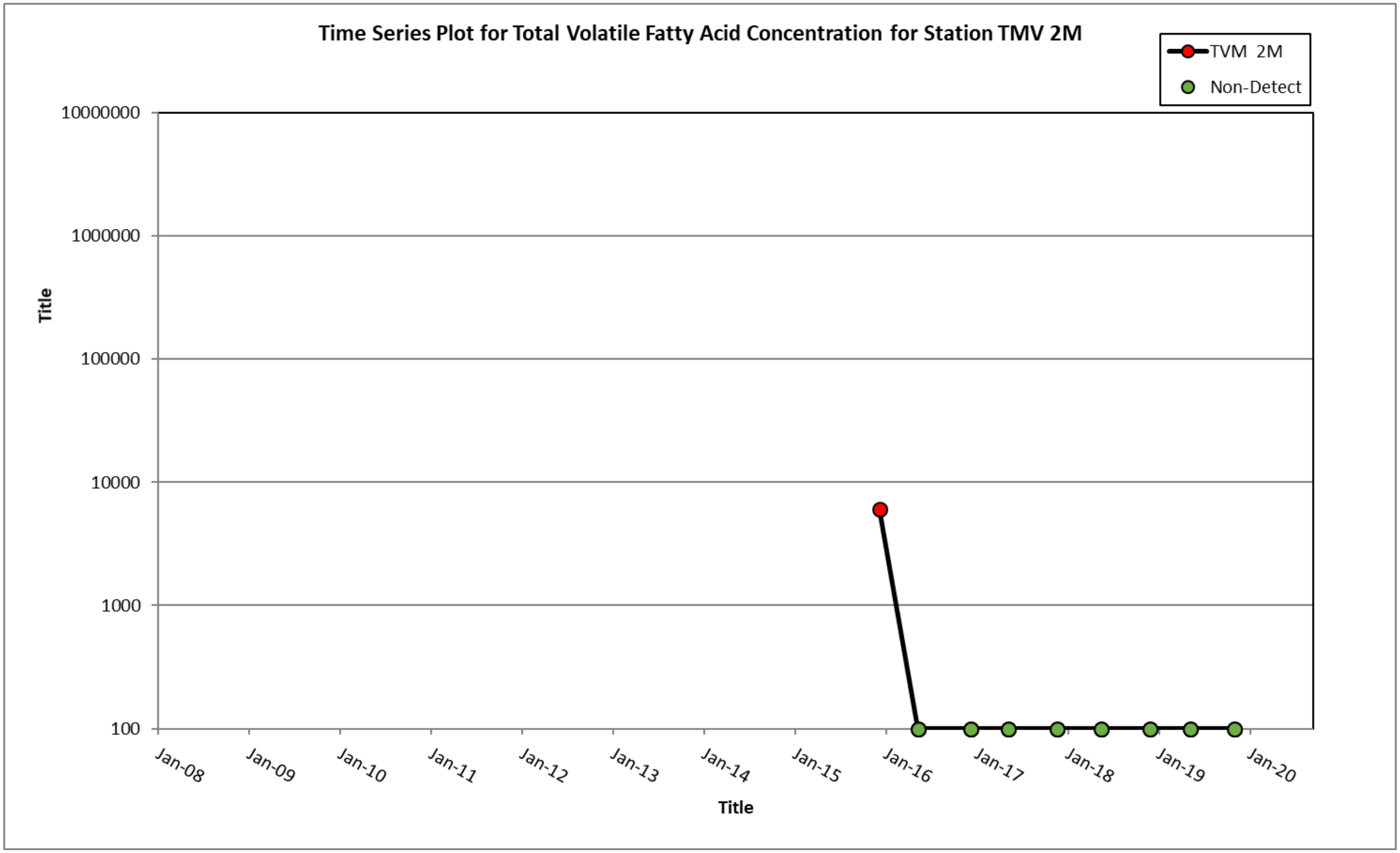
Jan-19
Jan-20
Date


Time Series Plot for Total Volatile Fatty Acid Concentration for Station TMV 2M
TVM 2M
Non-Detect
Title
10000000
1000000
100000
10000
1000
100
Jan-08
Jan-09
Jan-10
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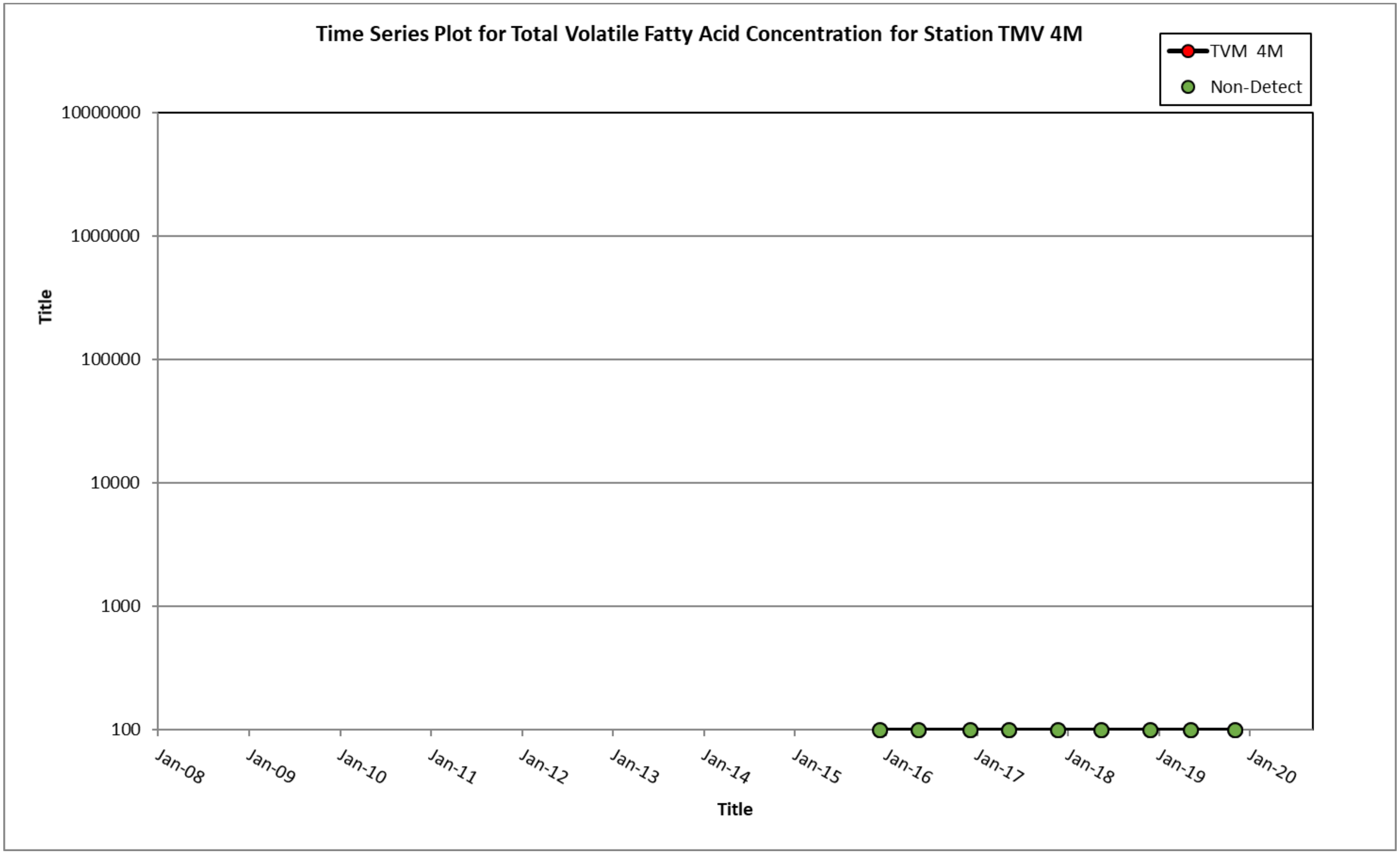
Jan-19
Jan-20
Title


Time Series Plot for Total Volatile Fatty Acid Concentration for Station TMV 4M
TVM 4M
Non-Detect
10000000
1000000
100000
10000
1000
100
Title
Jan-08
Jan-09
Jan-10
Jan-11
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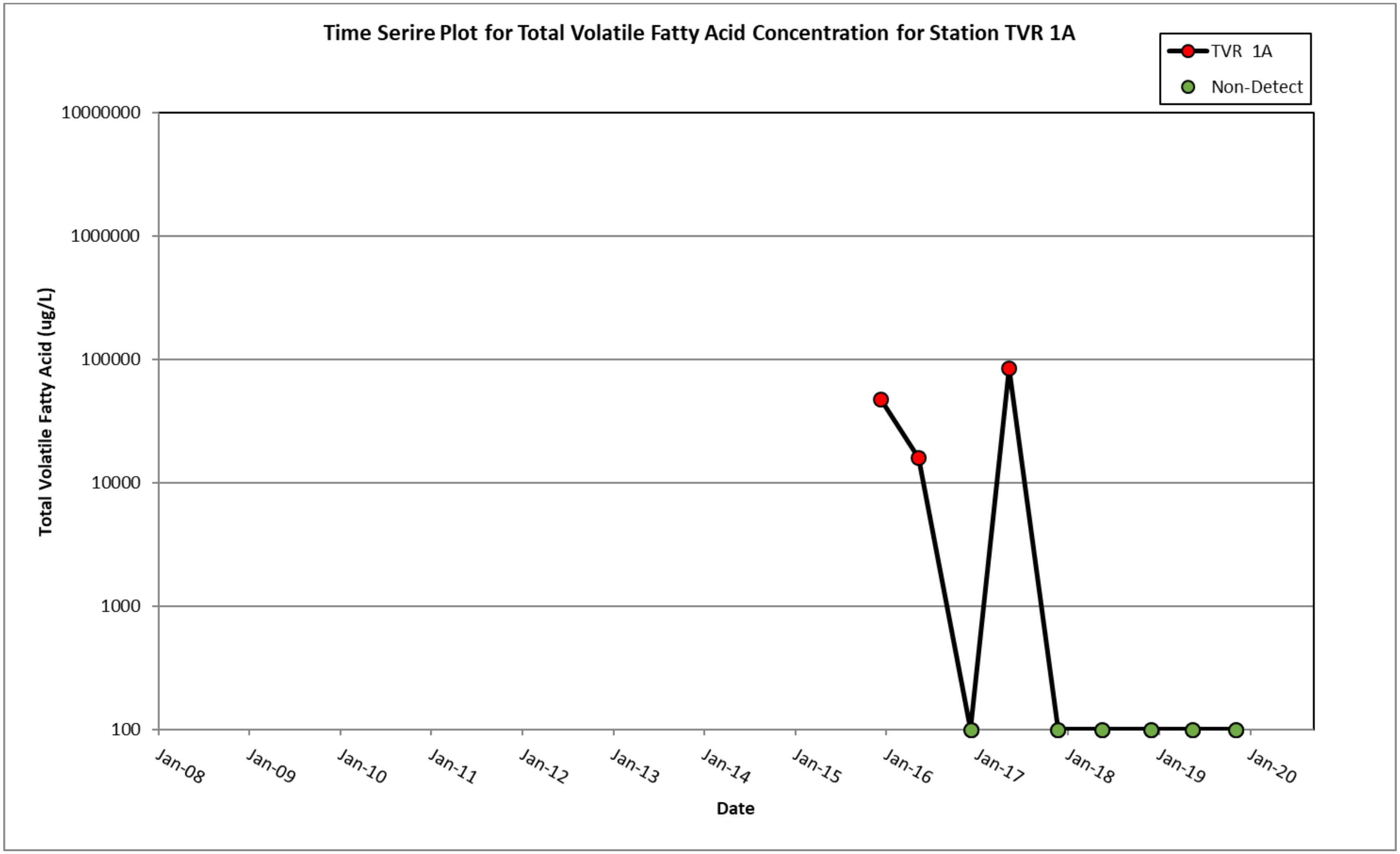
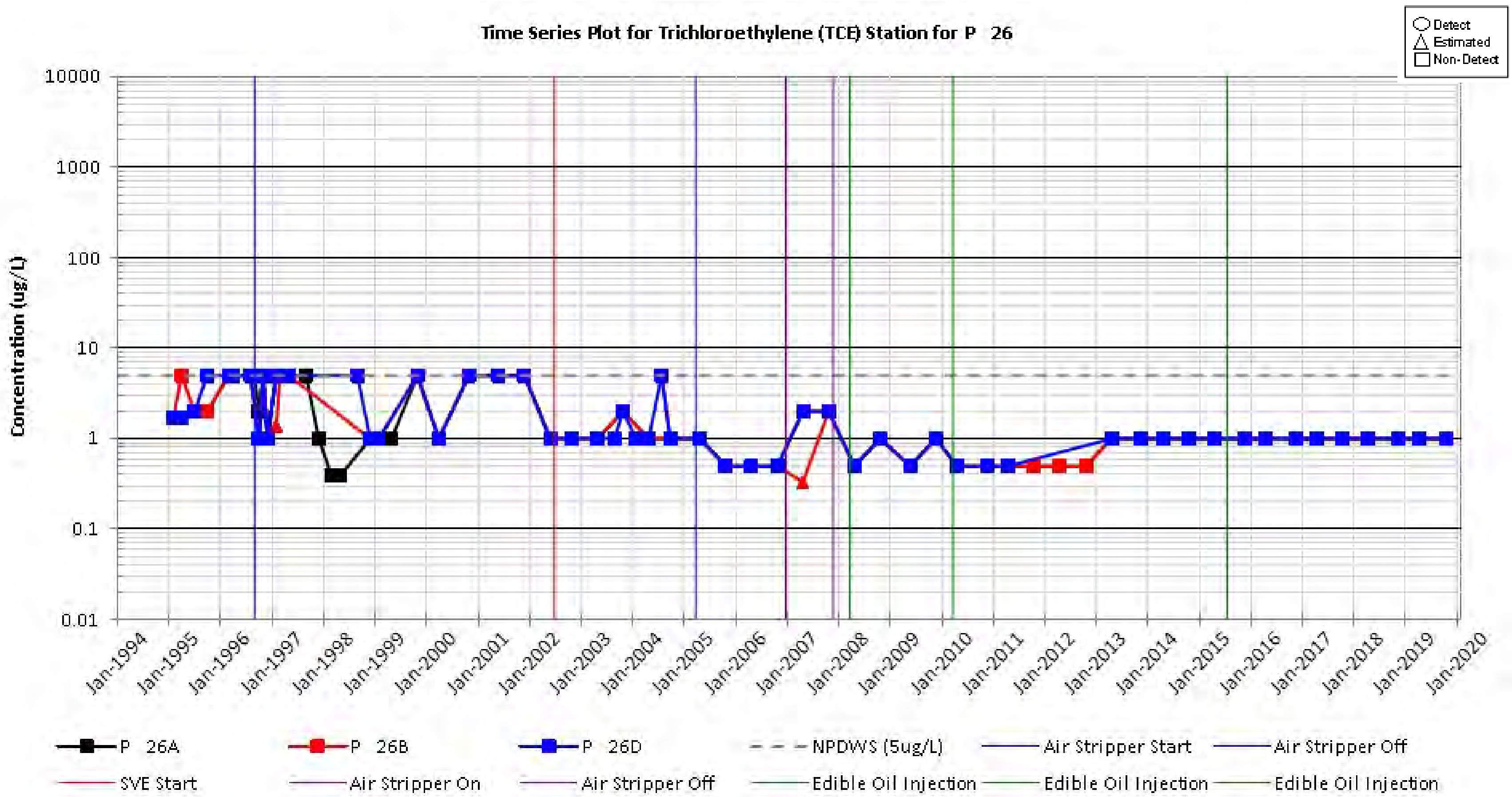
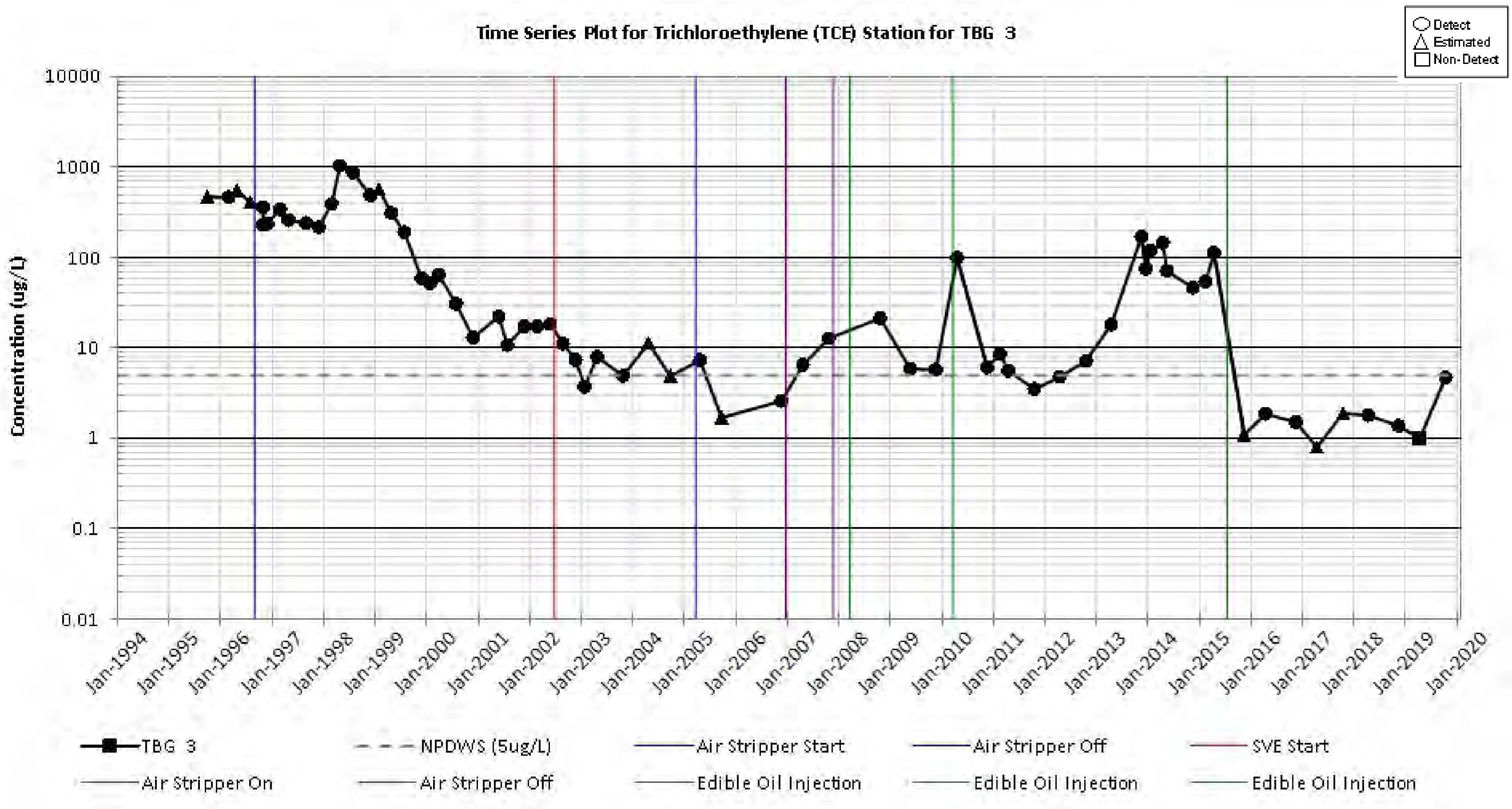
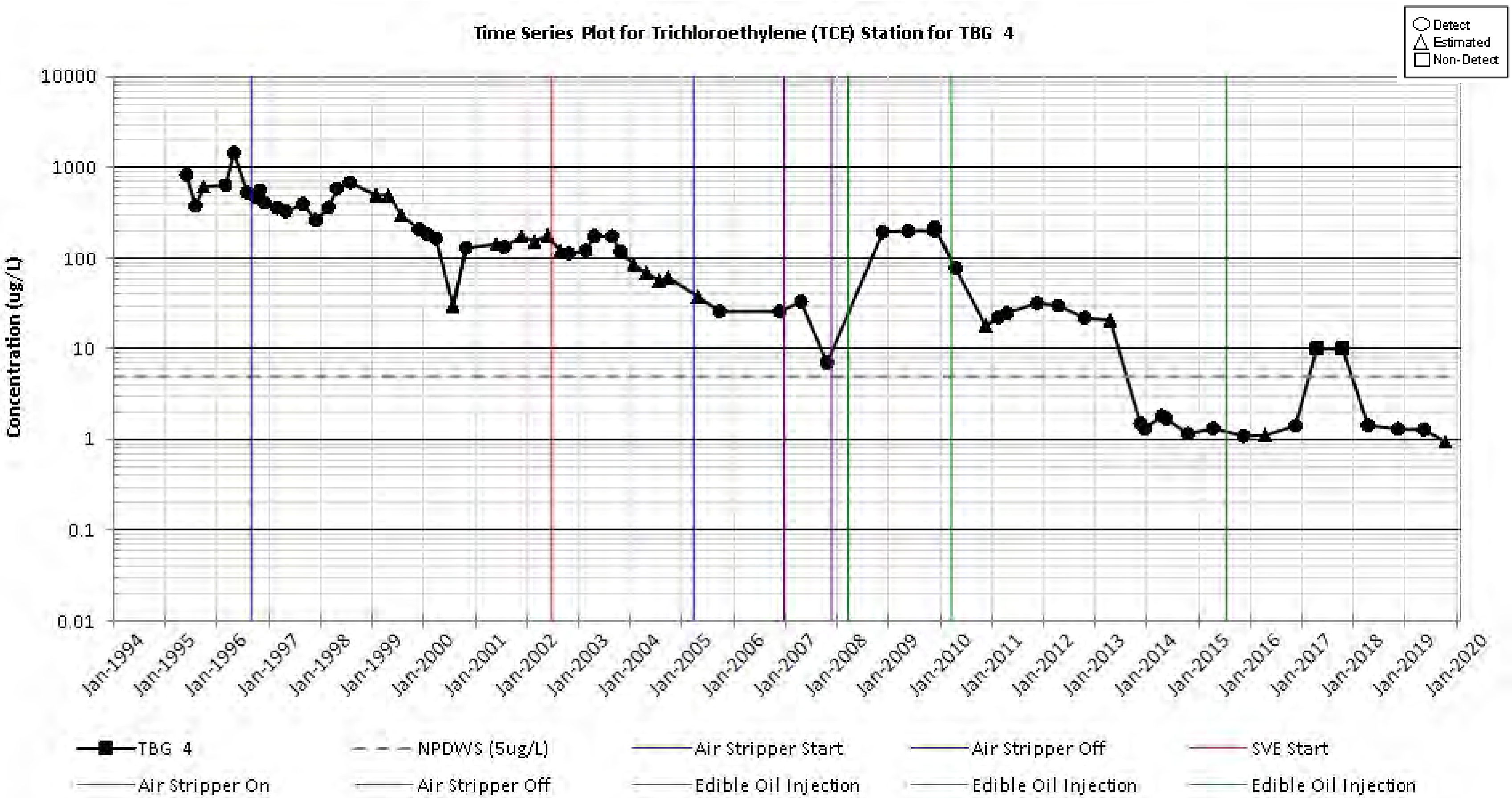
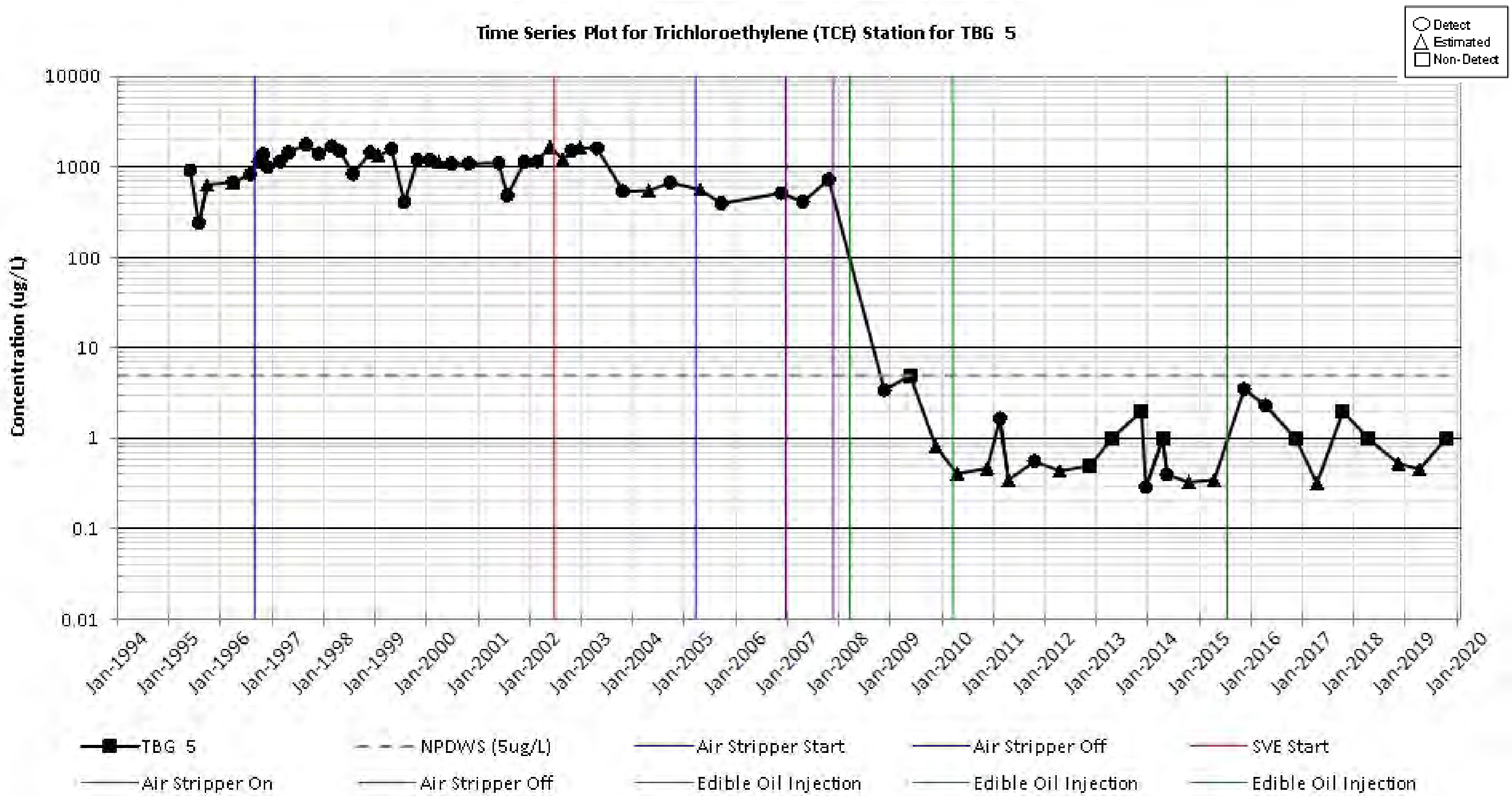
Jan-19
Jan-20
Title

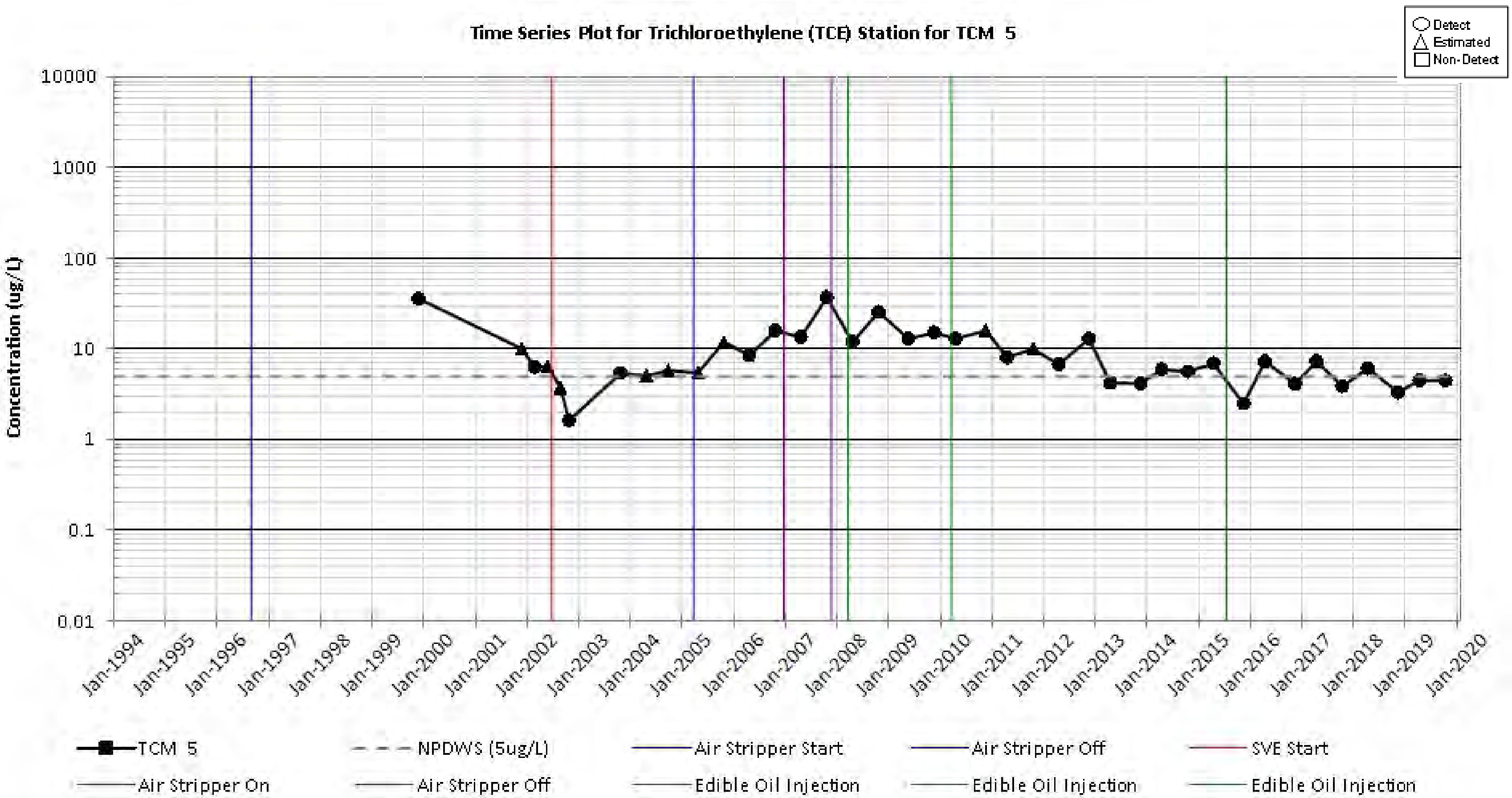

Time Serire Plot for Total Volatile Fatty Acid Concentration for Station TVR 1A
TVR 1A
Non-Detect
Total Volatile Fatty Acid (ug/L)
10000000
1000000
100000
10000
1000
100
Jan-08
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Date

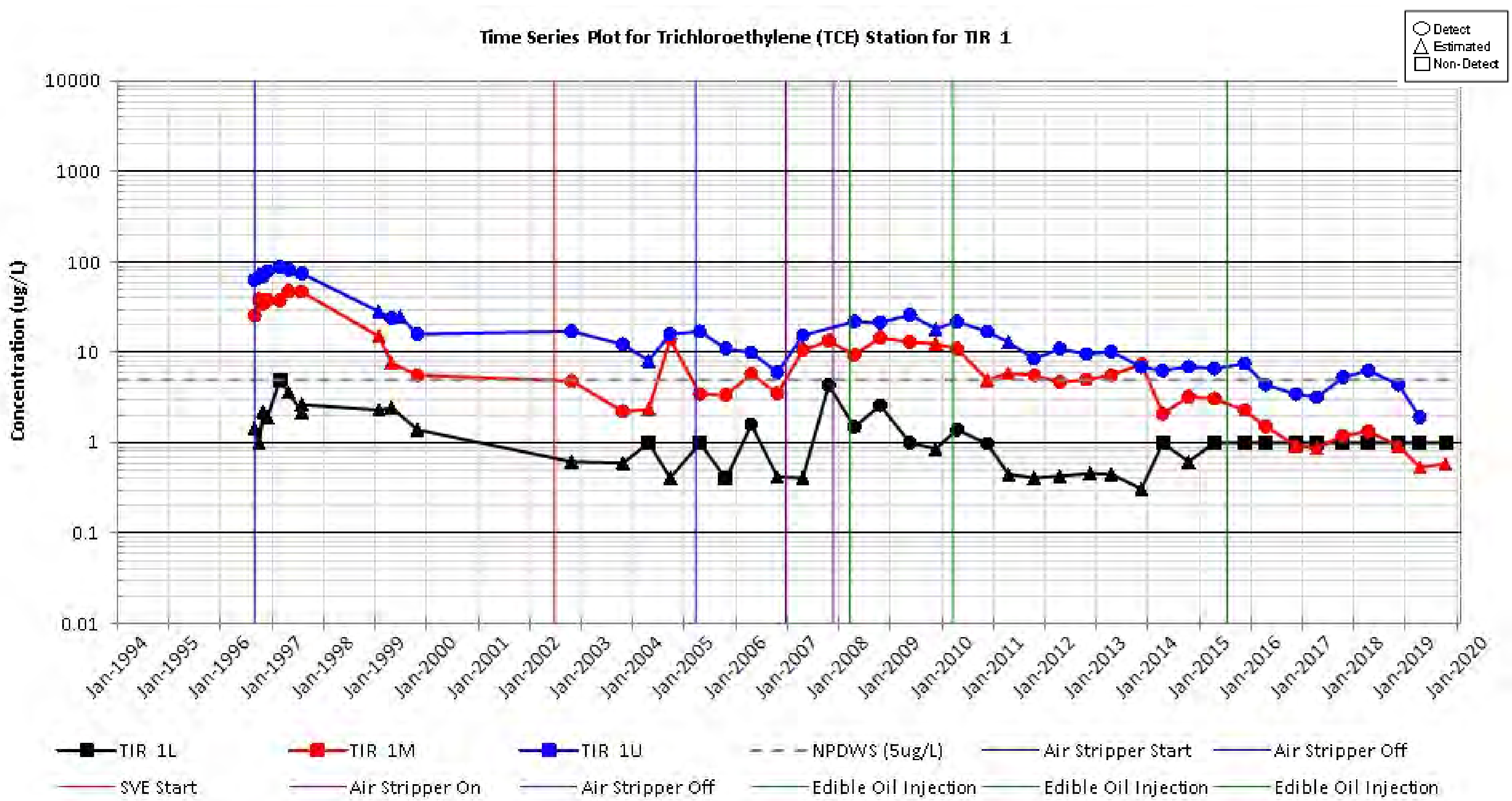

Time Series Plot for Trichloroethylene (TCE) Station for P 26
Detect
Estimated
Non-Detect
Concentration (ug/L)
10000
1000
100
10
1
0.1
0.01
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
P 26A
P 26B
P 26D
NPDWS (5ug/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection

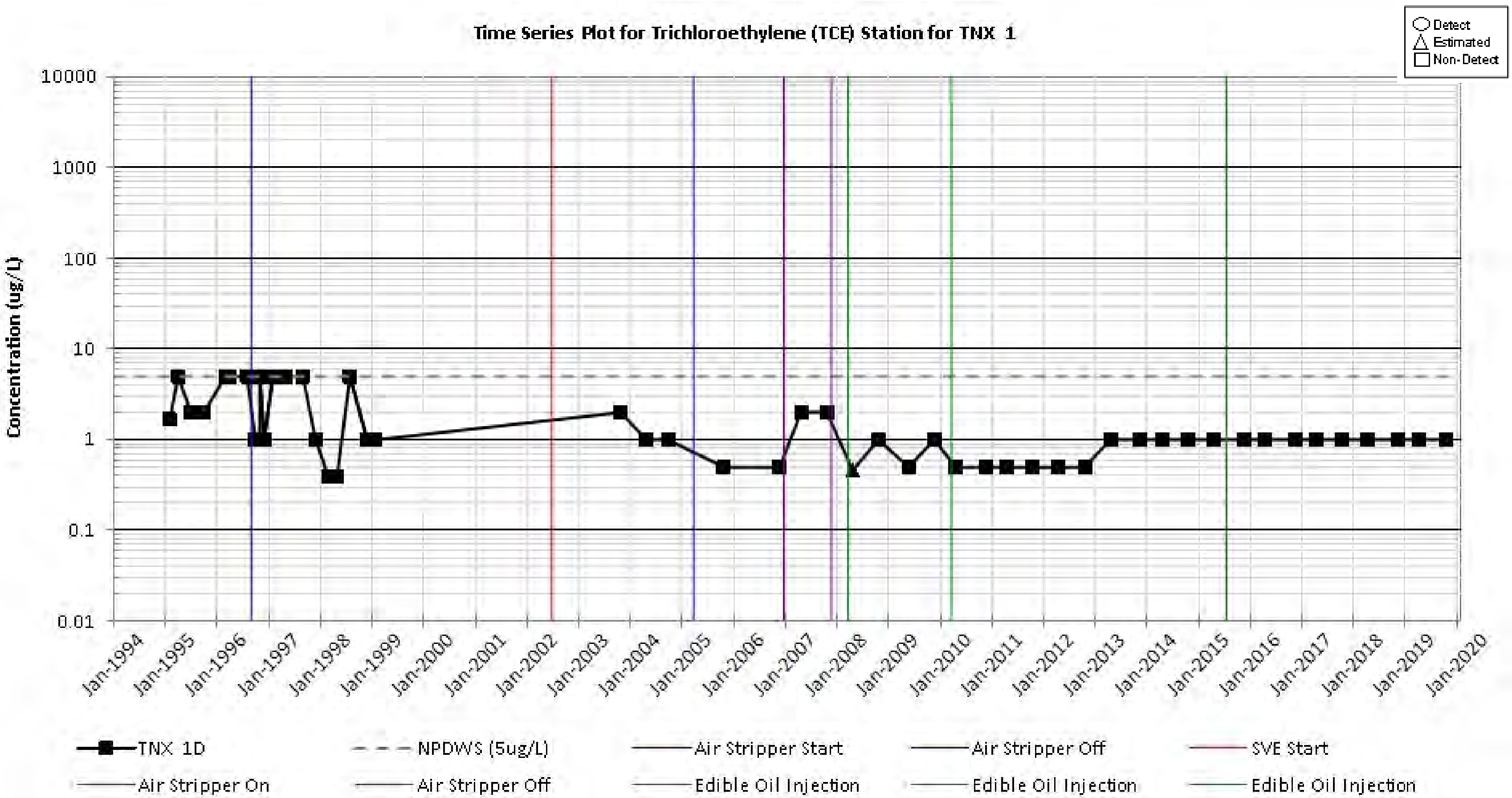

Time Series Plot for Trichloroethylene (TCE) Station for TBG 3
Detect
Estimated
Non-Detect
Concentration (ug/L)
10000
1000
100
10
1
0.1
0.01
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TBG 3
NPDWS (5ug/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection


Time Series Plot for Trichloroethylene (TCE) Station for TBG 4
Detect
Estimated
Non-Detect
Concentration (ug/L)
10000
1000
100
10
1
0.1
0.01
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TBG 4
NPDWS (5ug/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection


Time Series Plot for Trichloroethylene (TCE) Station for TBG 5
Detect
Estimated
Non-Detect
Concentration (ug/L)
10000
1000
100
10
1
0.1
0.01
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TBG 5
NPDWS (5ug/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection


Time Series Plot for Trichloroethylene (TCE) Station for TCM 5
Detect
Estimated
Non-Detect
Concentration (ug/L)
10000
1000
100
10
1
0.1
0.01
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TCM 5
NPDWS (5ug/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection


Time Series Plot for Trichloroethylene (TCE) Station for TIR 1
Detect
Estimated
Non-Detect
Concentration (ug/L)
10000
1000
100
10
1
0.1
0.01
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TIR 1L
TIR 1M
TIR 1U
NPDWS (5ug/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection


Time Series Plot for Trichloroethylene (TCE) Station for TNX 1
Detect
Estimated
Non-Detect
Concentration (ug/L)
10000
1000
100
10
1
0.1
0.01
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
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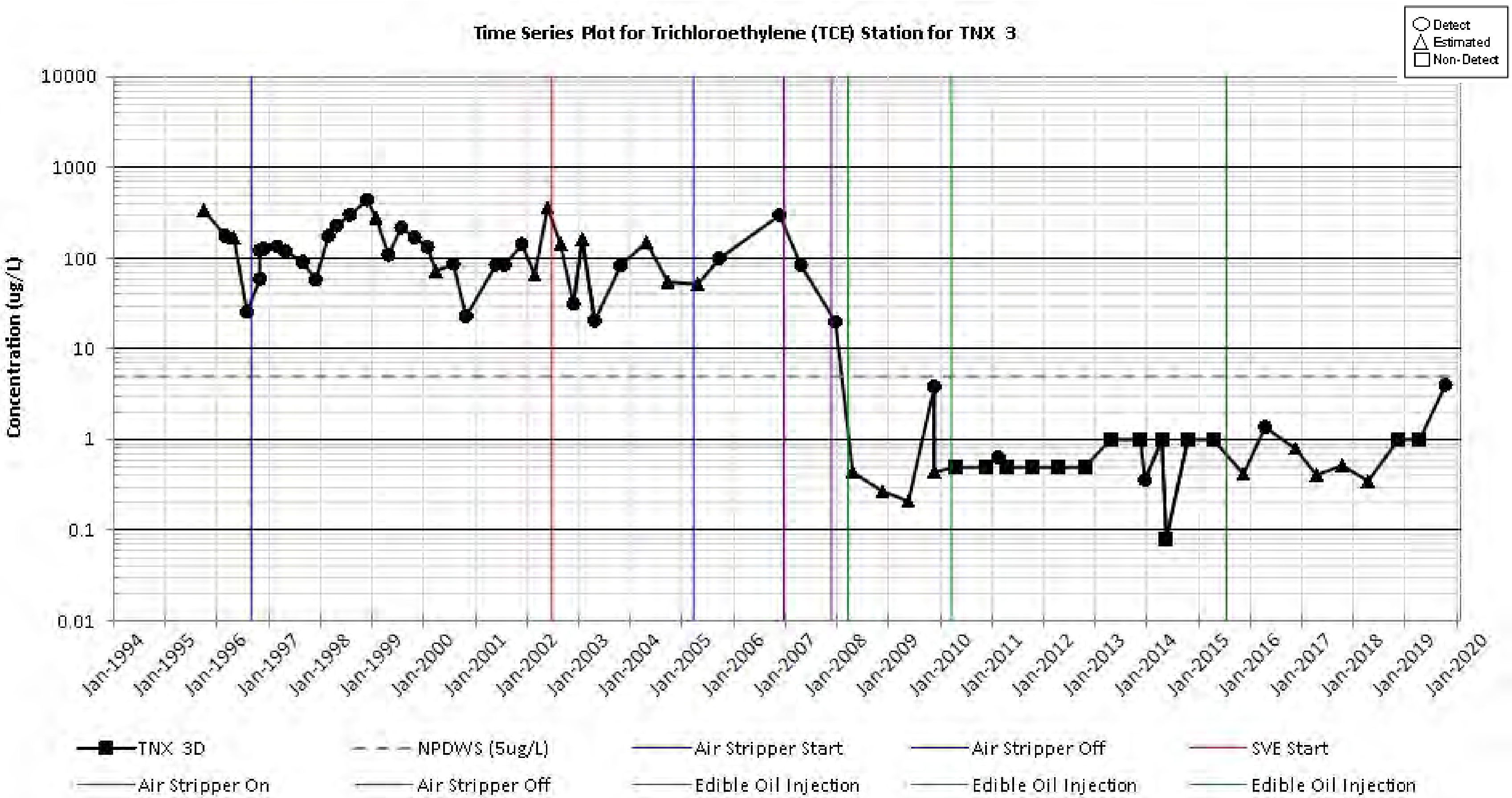
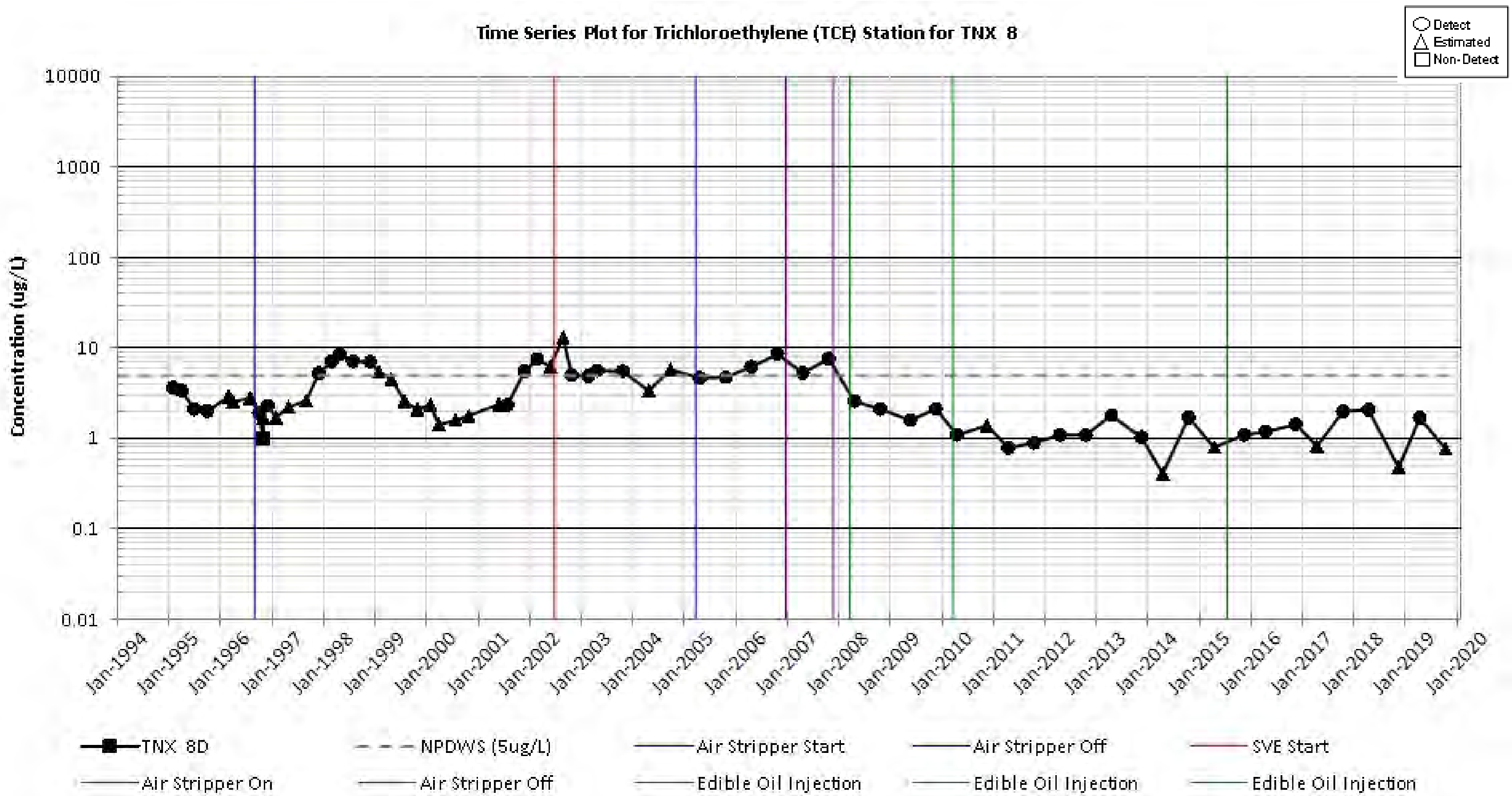
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TNX 1D
NPDWS (5ug/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection


Time Series Plot for Trichloroethylene (TCE) Station for TNX 3
Detect
Estimated
Non-Detect
Concentration (ug/L)
10000
1000
100
10
1
0.1
0.01
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TNX 3D
NPDWS (5ug/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection


Time Series Plot for Trichloroethylene (TCE) Station for TNX 5
Detect
Estimated
Non-Detect
Concentration (ug/L)
10000
1000
100
10
1
0.1
0.01
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TNX 5D
NPDWS (5ug/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection


Time Series Plot for Trichloroethylene (TCE) Station for TNX 8
Detect
Estimated
Non-Detect
Concentration (ug/L)
10000
1000
100
10
1
0.1
0.01
Jan-1994
Jan-1995
Jan-1996
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Jan-1999
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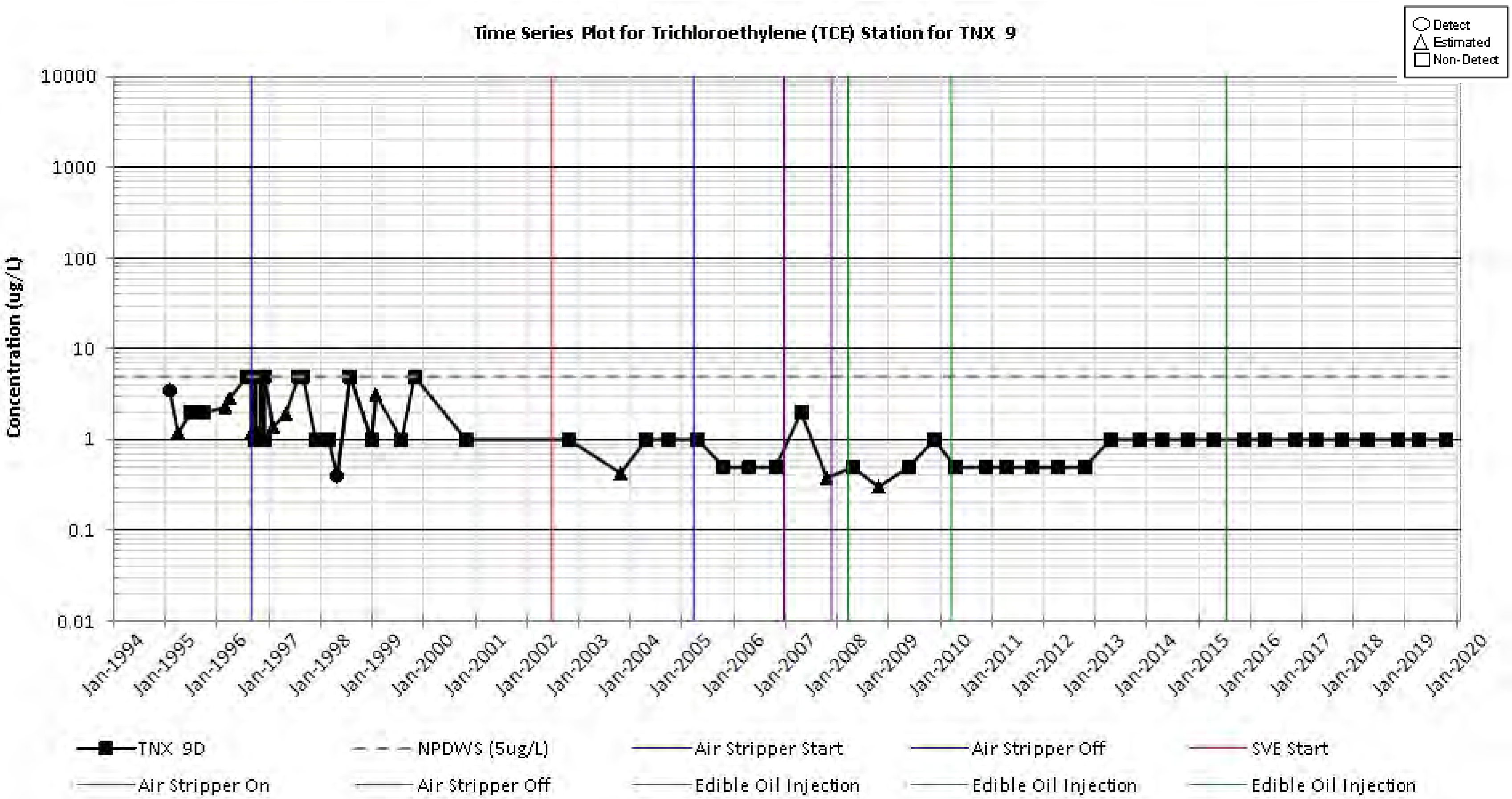
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TNX 8D
NPDWS (5ug/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection


Time Series Plot for Trichloroethylene (TCE) Station for TNX 9
Detect
Estimated
Non-Detect
Concentration (ug/L)
10000
1000
100
10
1
0.1
0.01
Jan-1994
Jan-1995
Jan-1996
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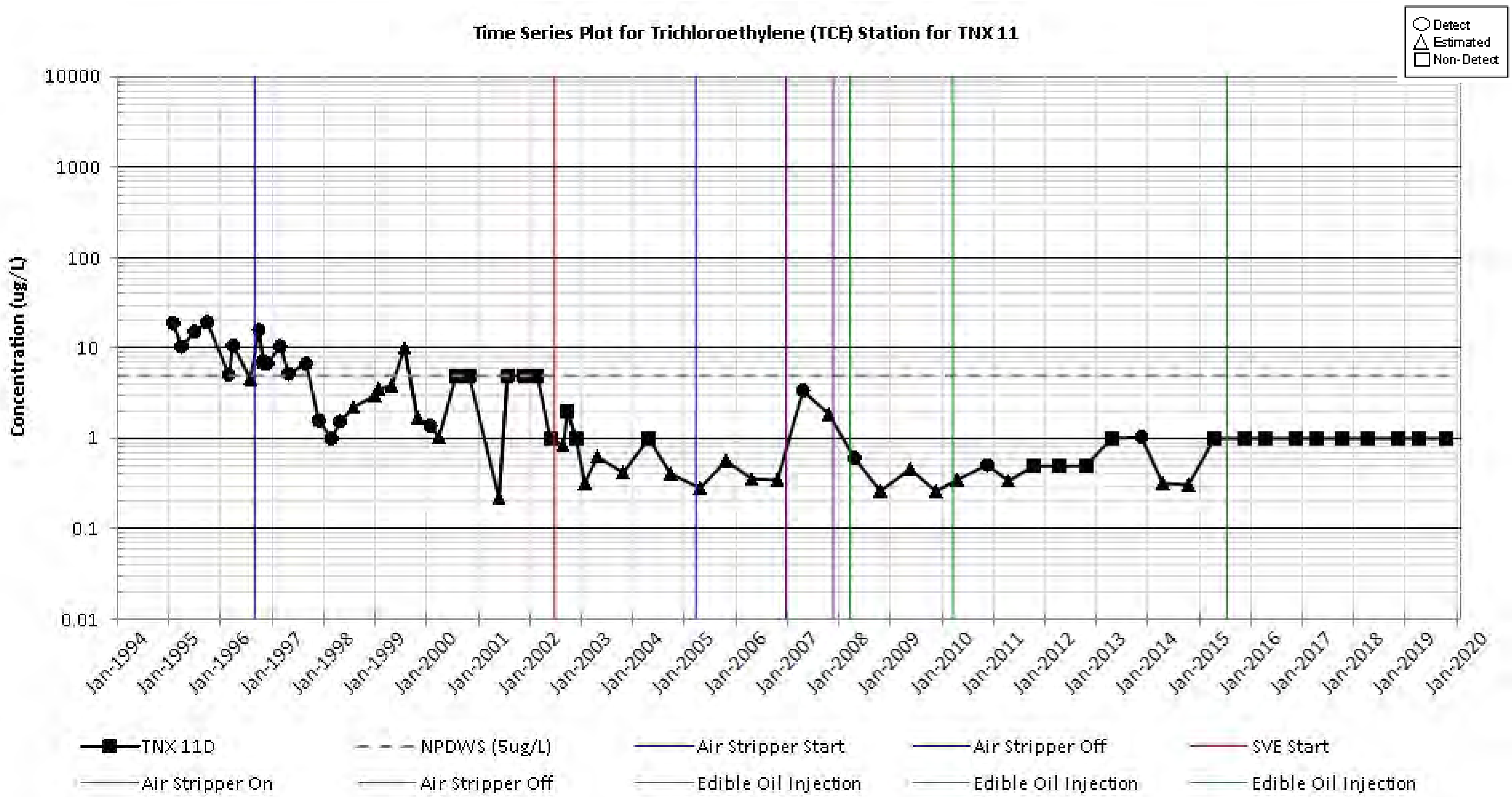
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TNX 9D
NPDWS (5ug/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection


Time Series Plot for Trichloroethylene (TCE) Station for TNX 11
Detect
Estimated
Non-Detect
Concentration (ug/L)
10000
1000
100
10
1
0.1
0.01
Jan-1994
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Jan-2008
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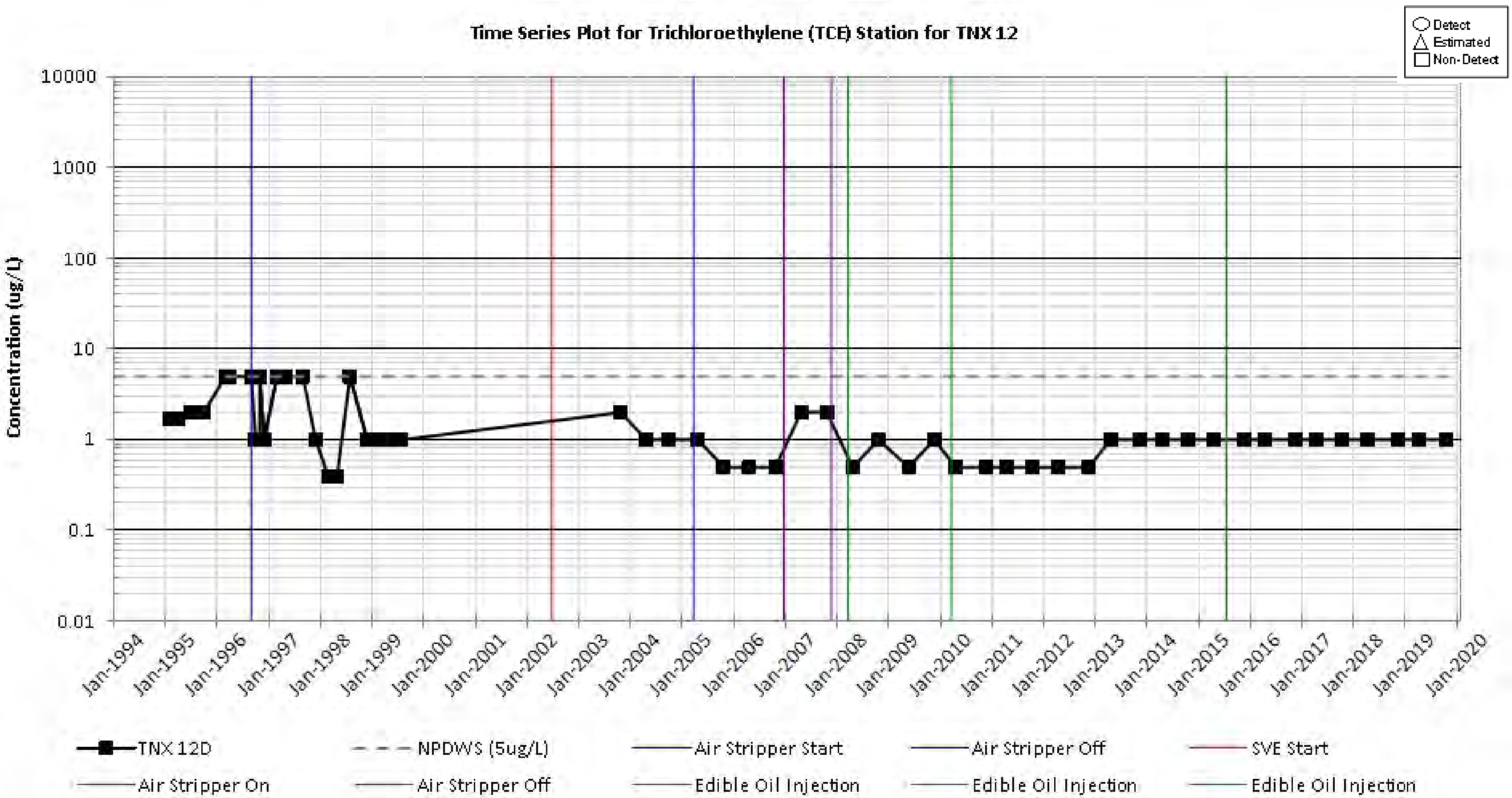
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TNX 11D
NPDWS (5ug/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection


Time Series Plot for Trichloroethylene (TCE) Station for TNX 12
Detect
Estimated
Non-Detect
Concentration (ug/L)
10000
1000
100
10
1
0.1
0.01
Jan-1994
Jan-1995
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Jan-1998
Jan-1999
Jan-2000
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Jan-2002
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Jan-2006
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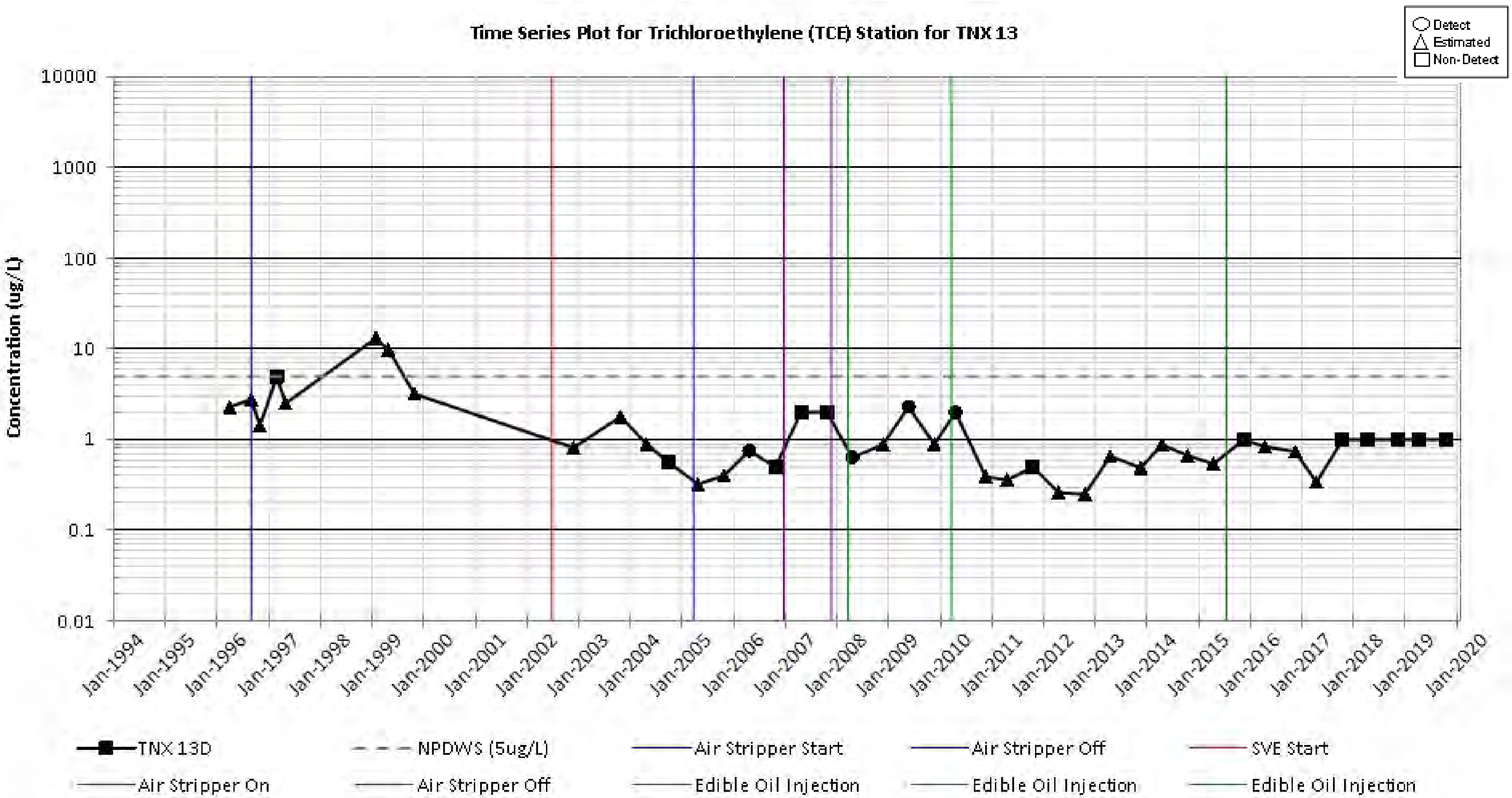
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TNX 12D
NPDWS (5ug/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection


Time Series Plot for Trichloroethylene (TCE) Station for TNX 13
Detect
Estimated
Non-Detect
Concentration (ug/L)
10000
1000
100
10
1
0.1
0.01
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
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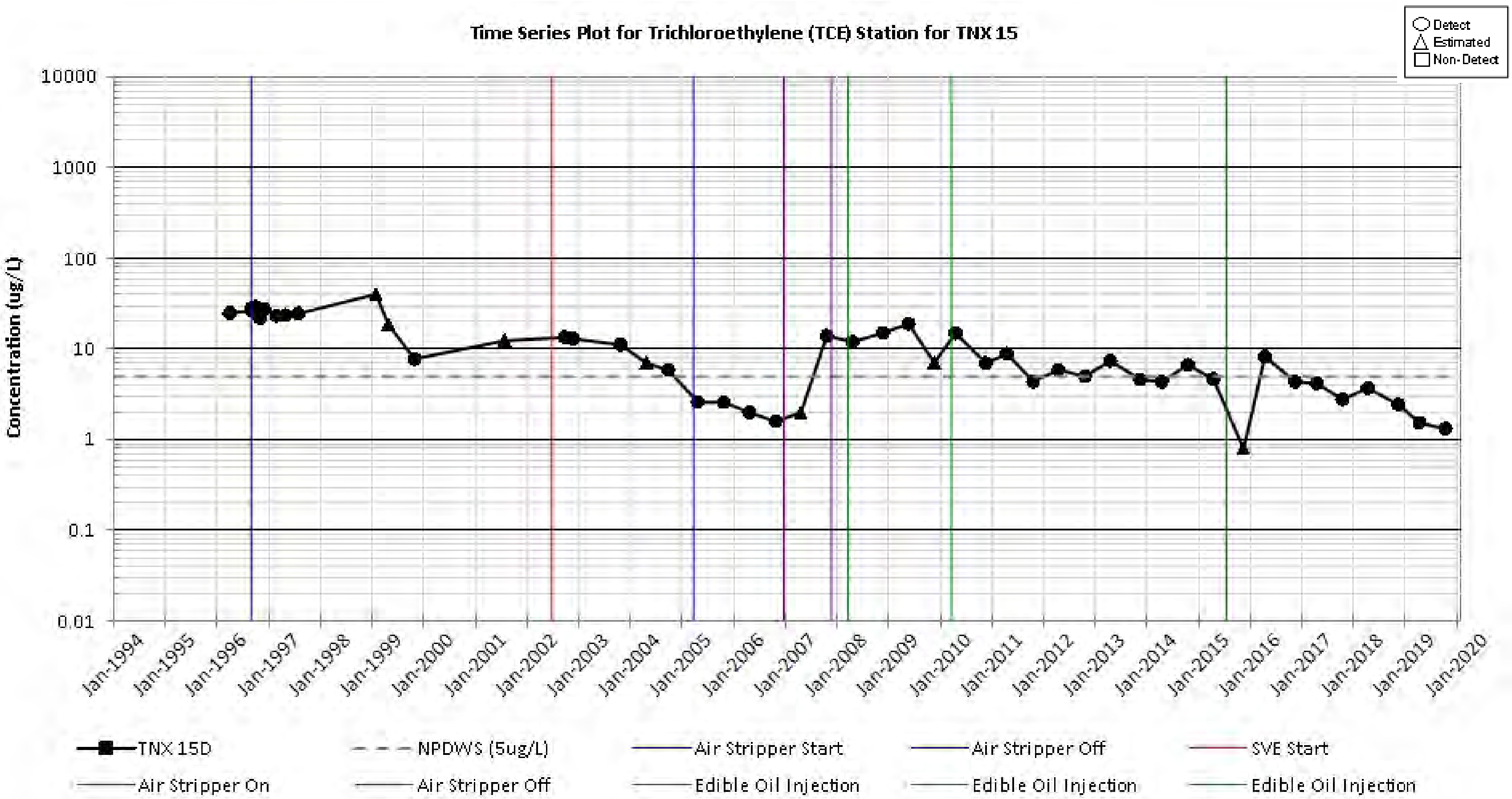
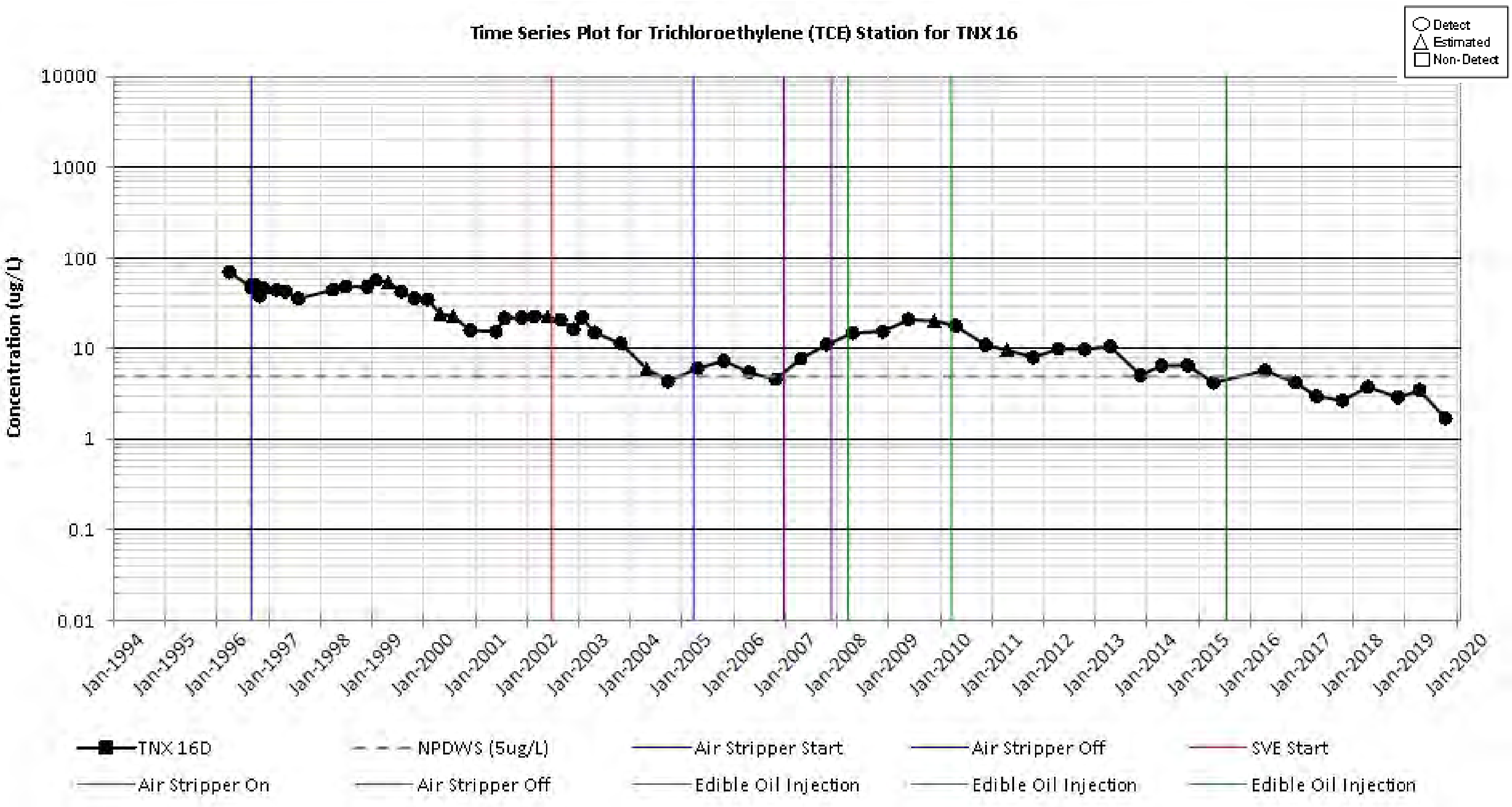
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TNX 13D
NPDWS (5ug/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection


Time Series Plot for Trichloroethylene (TCE) Station for TNX 15
Detect
Estimated
Non-Detect
Concentration (ug/L)
10000
1000
100
10
1
0.1
0.01
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TNX 15D
NPDWS (5ug/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection


Time Series Plot for Trichloroethylene (TCE) Station for TNX 16
Detect
Estimated
Non-Detect
Concentration (ug/L)
10000
1000
100
10
1
0.1
0.01
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
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Jan-2004
Jan-2005
Jan-2006
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Jan-2008
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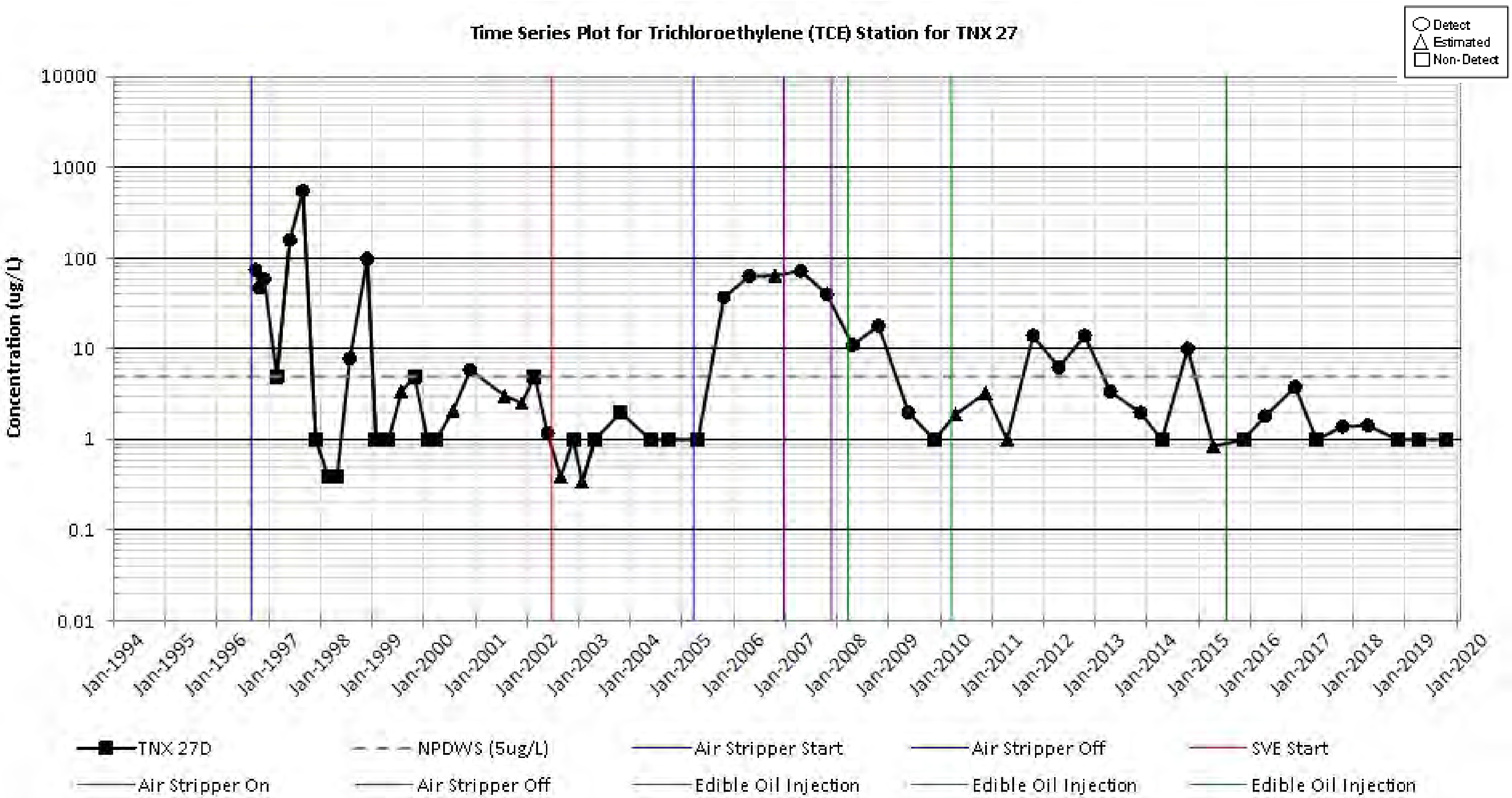
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TNX 16D
NPDWS (5ug/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection


Time Series Plot for Trichloroethylene (TCE) Station for TNX 20
Detect
Estimated
Non-Detect
Concentration (ug/L)
10000
1000
100
10
1
0.1
0.01
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TNX 20D
NPDWS (5ug/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection


Time Series Plot for Trichloroethylene (TCE) Station for TNX 22
Detect
Estimated
Non-Detect
Concentration (ug/L)
10000
1000
100
10
1
0.1
0.01
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TNX 22D
NPDWS (5ug/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection


Time Series Plot for Trichloroethylene (TCE) Station for TNX 24
Detect
Estimated
Non-Detect
Concentration (ug/L)
10000
1000
100
10
1
0.1
0.01
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TNX 24D
NPDWS (5ug/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection


Time Series Plot for Trichloroethylene (TCE) Station for TNX 27
Detect
Estimated
Non-Detect
Concentration (ug/L)
10000
1000
100
10
1
0.1
0.01
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
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Jan-2006
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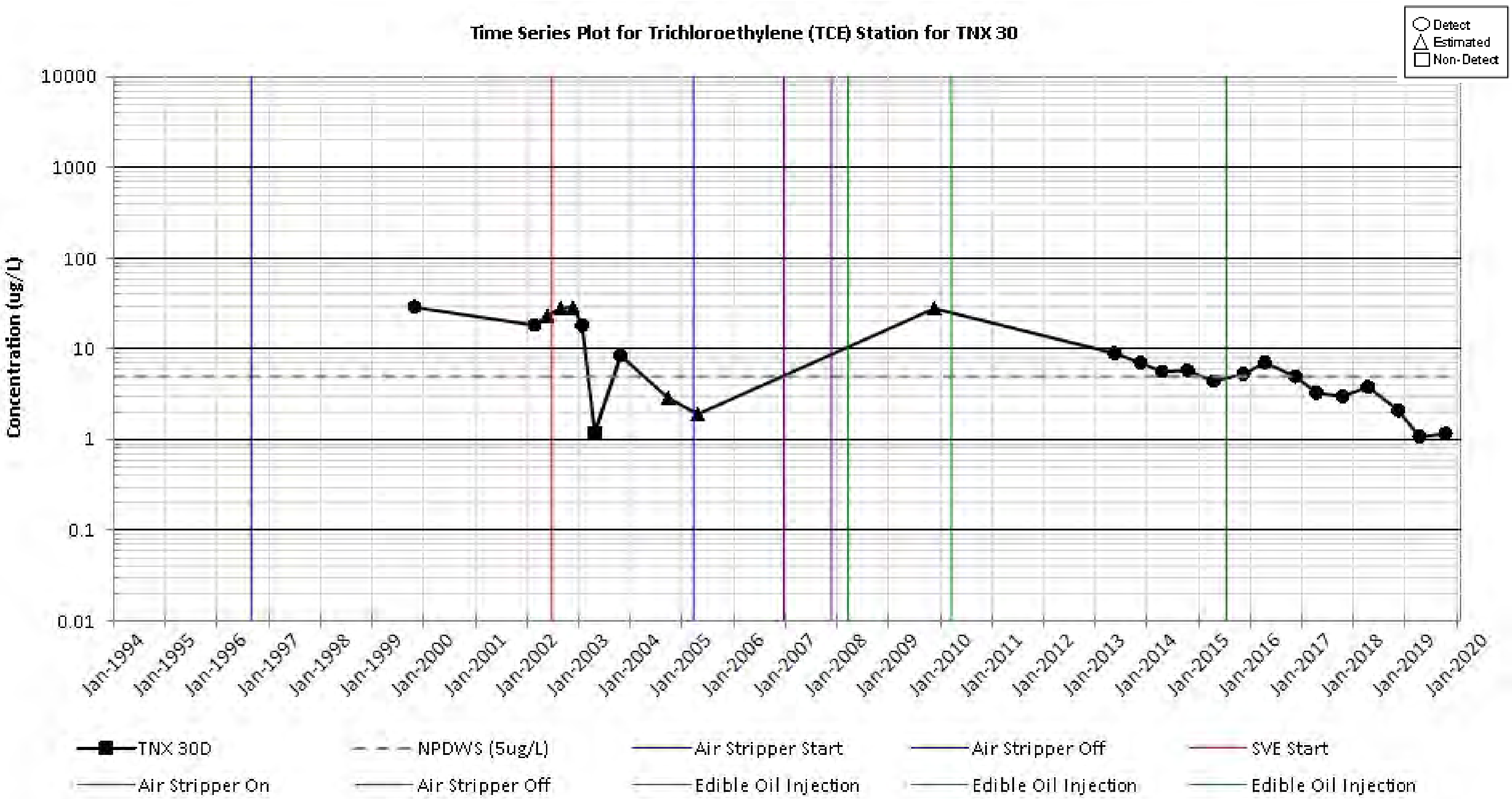
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TNX 27D
NPDWS (5ug/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection


Time Series Plot for Trichloroethylene (TCE) Station for TNX 28
Detect
Estimated
Non-Detect
Concentration (ug/L)
10000
1000
100
10
1
0.1
0.01
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TNX 28D
NPDWS (5ug/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection


Time Series Plot for Trichloroethylene (TCE) Station for TNX 30
Detect
Estimated
Non-Detect
Concentration (ug/L)
10000
1000
100
10
1
0.1
0.01
Jan-1994
Jan-1995
Jan-1996
Jan-1997
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Jan-1999
Jan-2000
Jan-2001
Jan-2002
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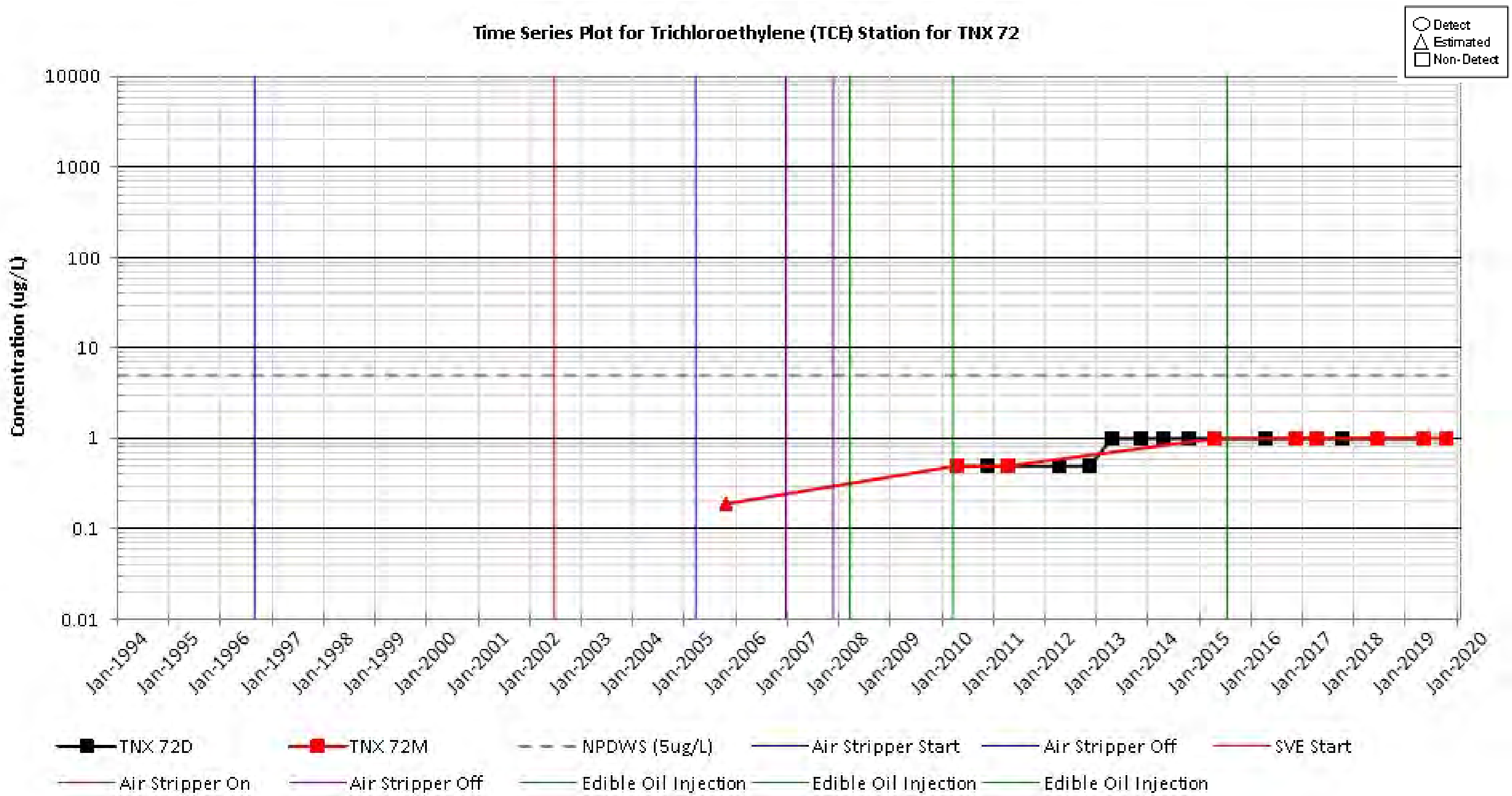
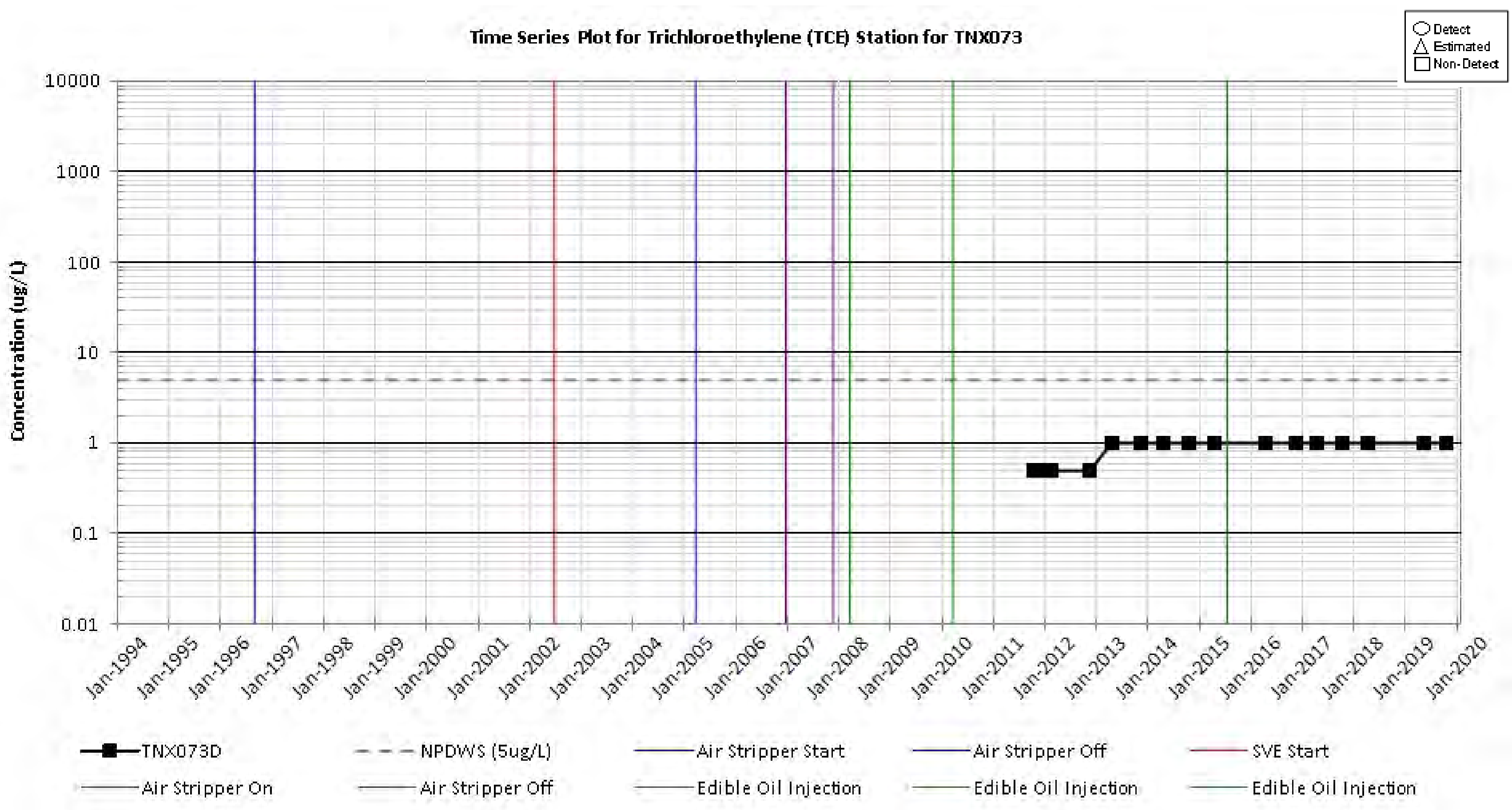
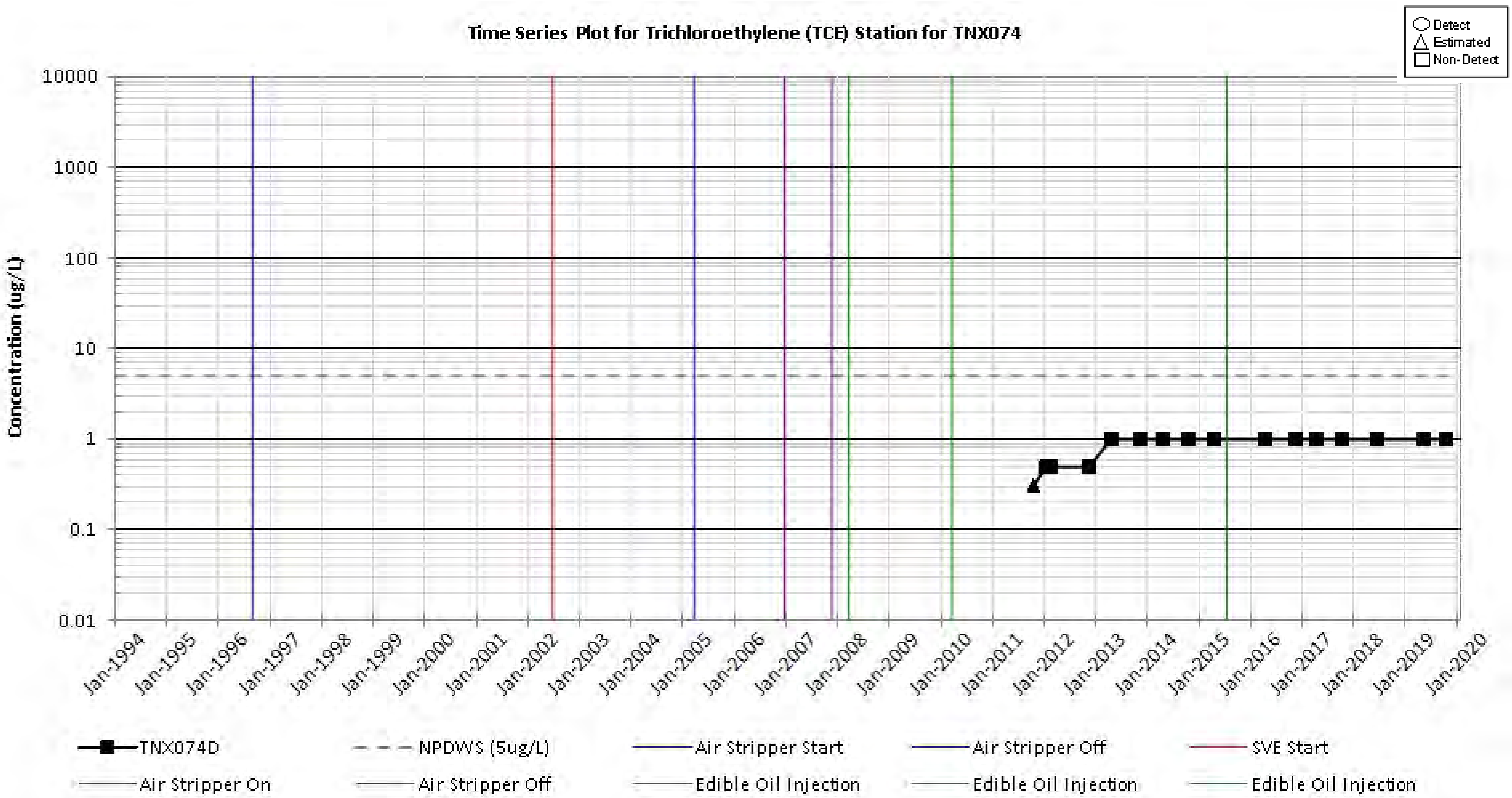
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TNX 30D
NPDWS (5ug/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection

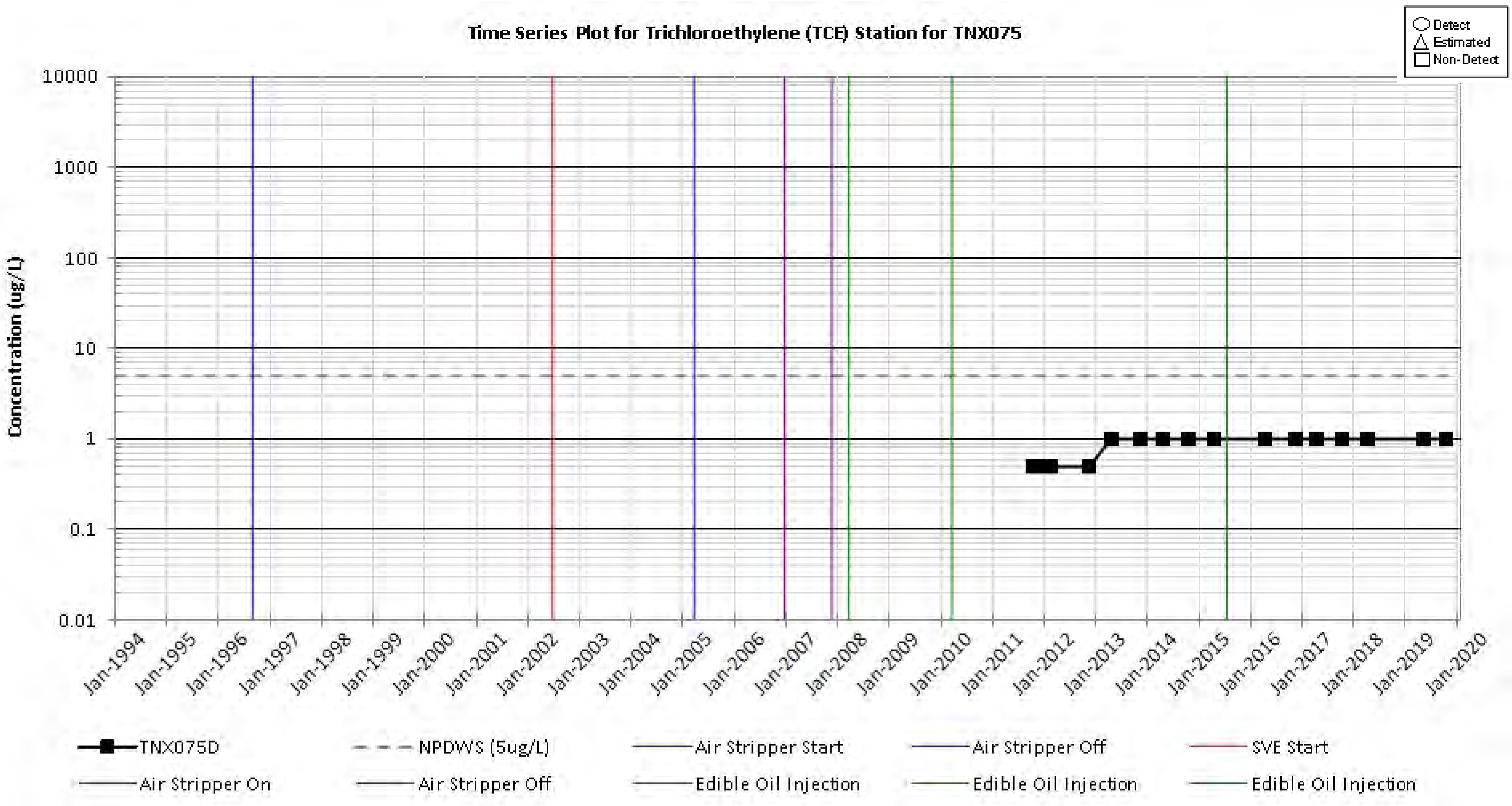

Time Series Plot for Trichloroethylene (TCE) Station for TNX 35
Detect
Estimated
Non-Detect
Concentration (ug/L)
10000
1000
100
10
1
0.1
0.01
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TNX 35D
NPDWS (5ug/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection

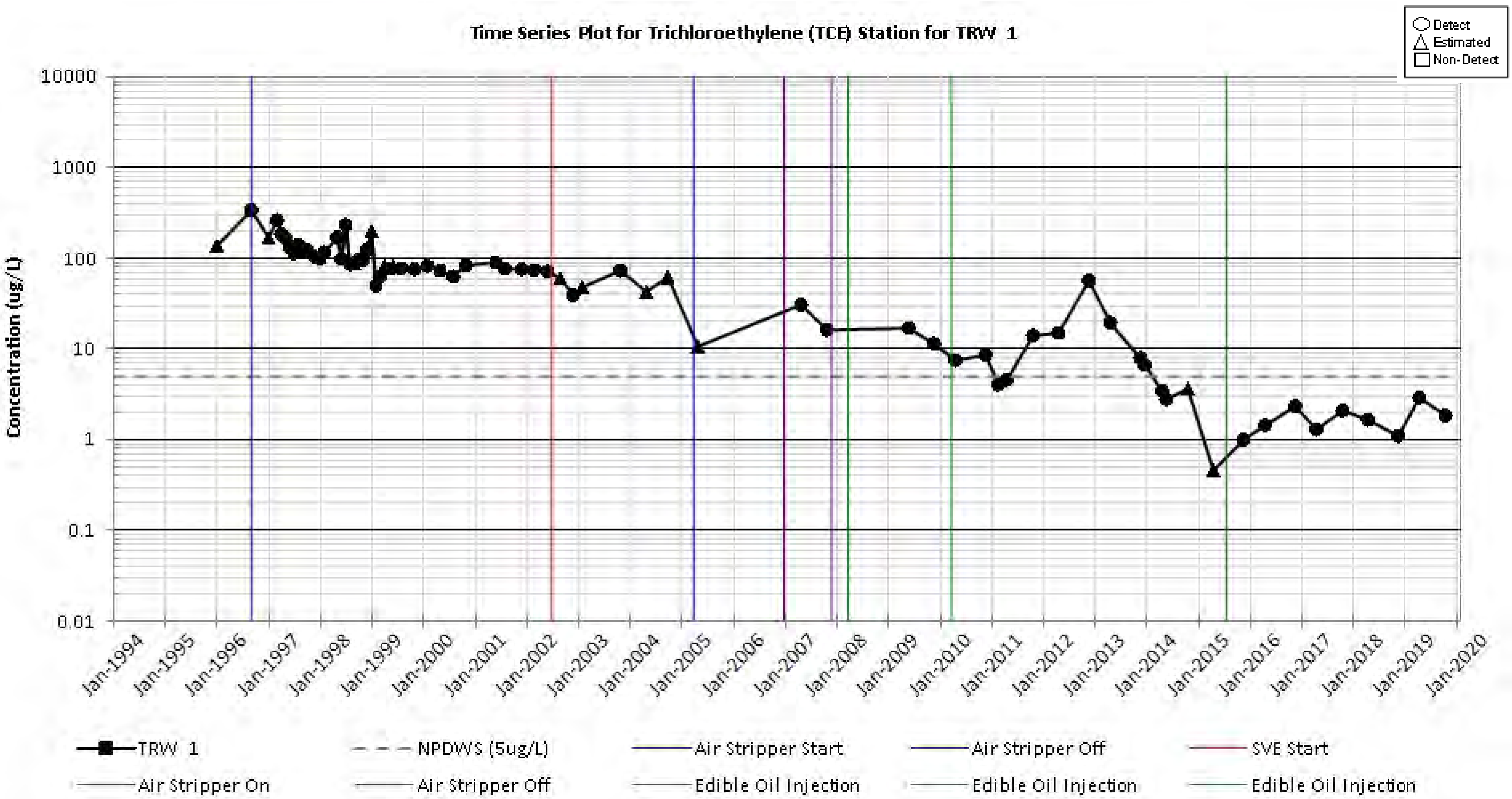

Time Series Plot for Trichloroethylene (TCE) Station for TNX 37
Detect
Estimated
Non-Detect
Concentration (ug/L)
10000
1000
100
10
1
0.1
0.01
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TNX 37D
NPDWS (5ug/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection

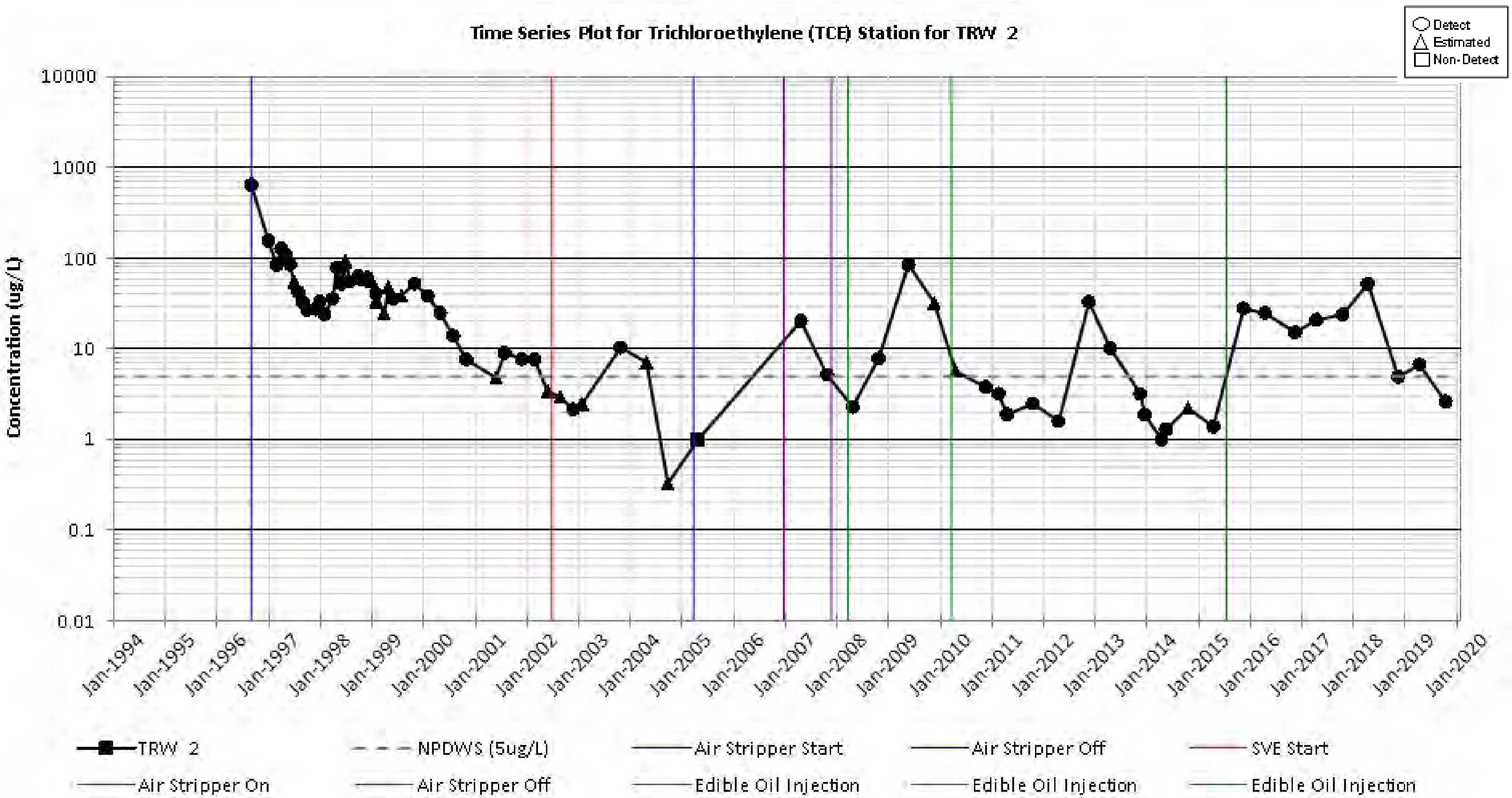

Time Series Plot for Trichloroethylene (TCE) Station for TNX 72
Detect
Estimated
Non-Detect
Concentration (ug/L)
10000
1000
100
10
1
0.1
0.01
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TNX 72D
TNX 72M
NPDWS (5ug/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection

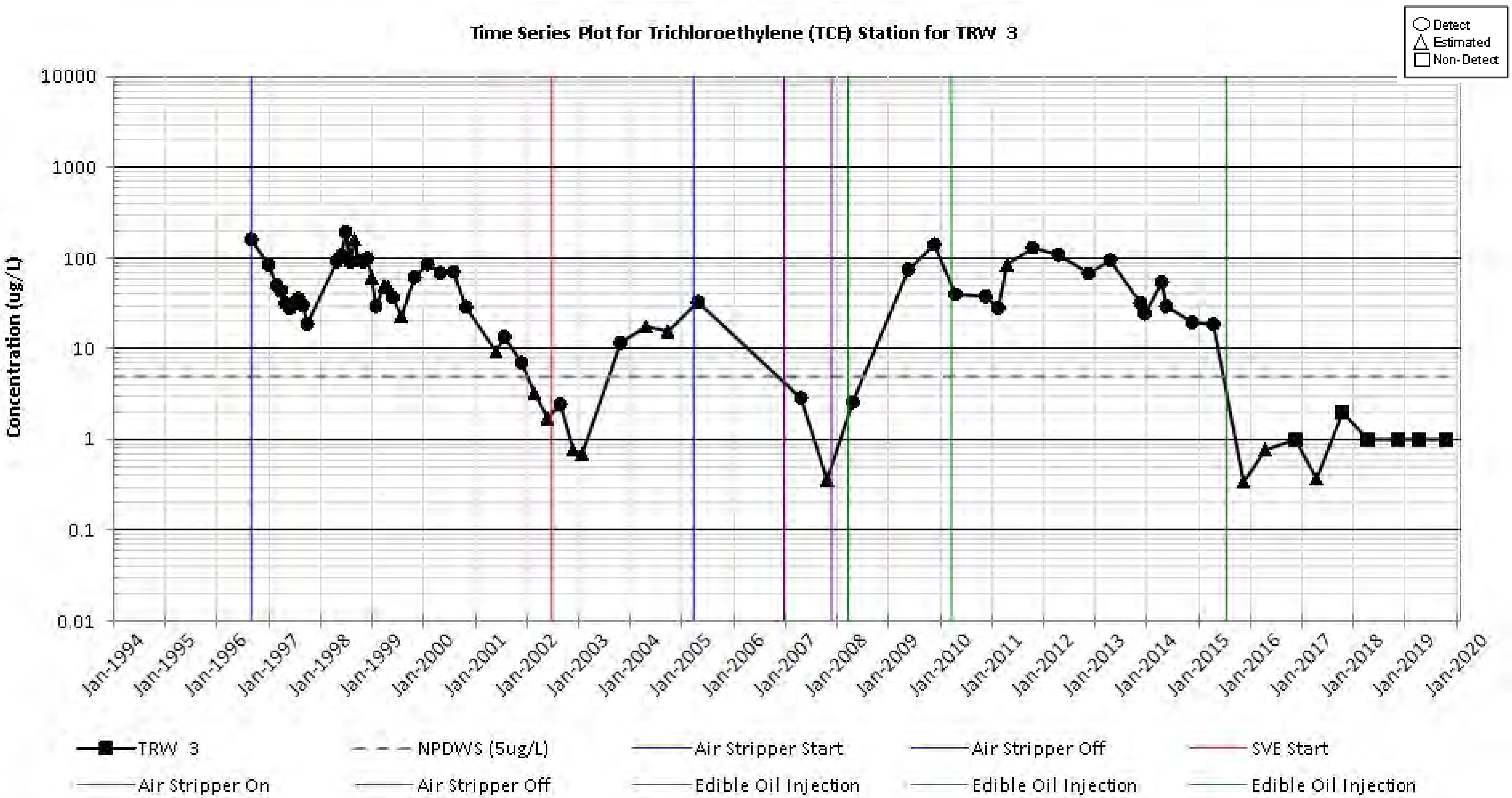

Time Series Plot for Trichloroethylene (TCE) Station for TNX073
Detect
Estimated
Non-Detect
Concentration (ug/L)
10000
1000
100
10
1
0.1
0.01
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TNX073D
NPDWS (5ug/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection

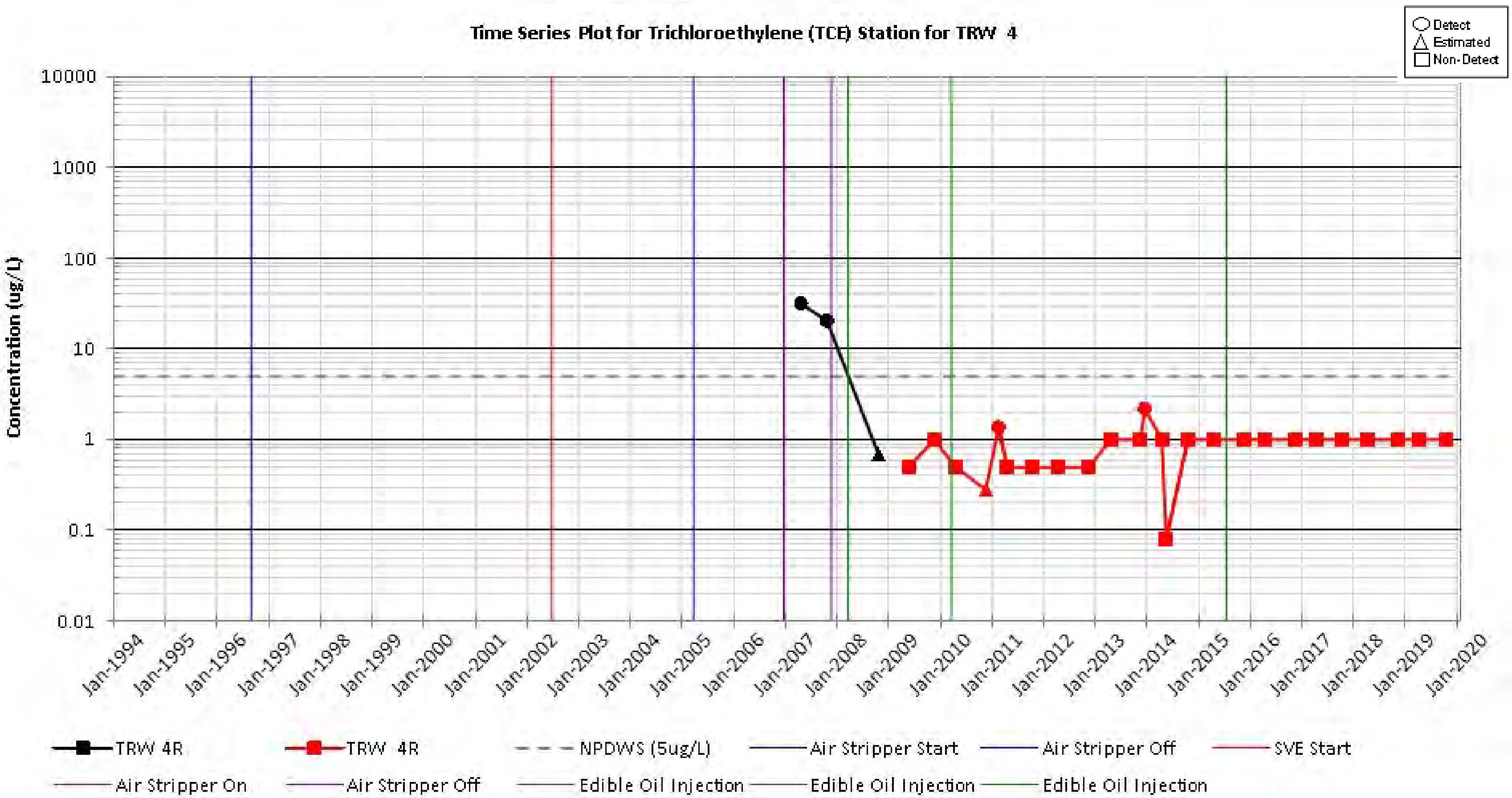

Time Series Plot for Trichloroethylene (TCE) Station for TNX074
Detect
Estimated
Non-Detect
Concentration (ug/L)
10000
1000
100
10
1
0.1
0.01
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TNX074D
NPDWS (5ug/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection

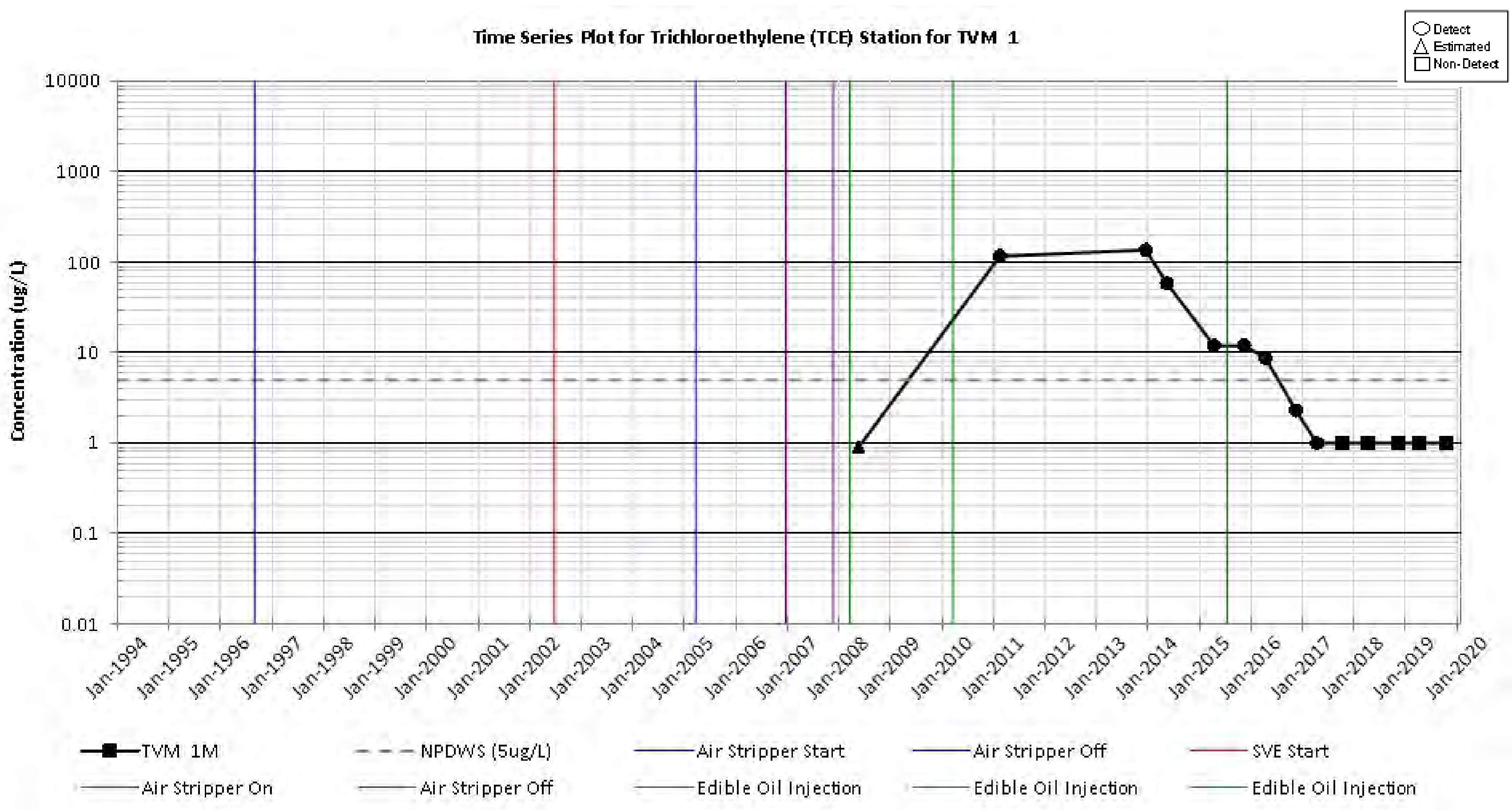

Time Series Plot for Trichloroethylene (TCE) Station for TNX075
Detect
Estimated
Non-Detect
Concentration (ug/L)
10000
1000
100
10
1
0.1
0.01
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TNX075D
NPDWS (5ug/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection

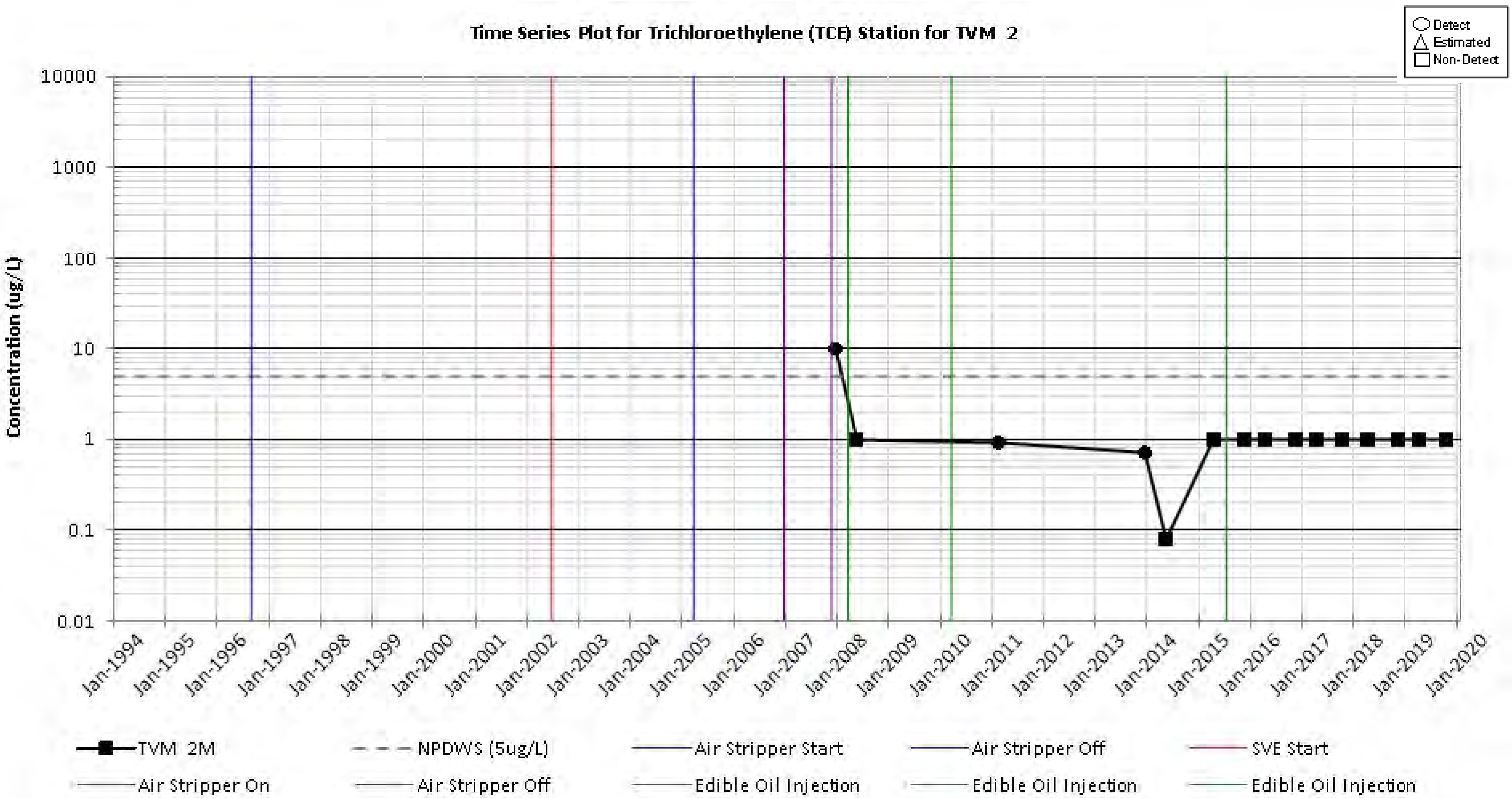

Time Series Plot for Trichloroethylene (TCE) Station for TRW 1
Detect
Estimated
Non-Detect
Concentration (ug/L)
10000
1000
100
10
1
0.1
0.01
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TRW 1
NPDWS (5ug/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection

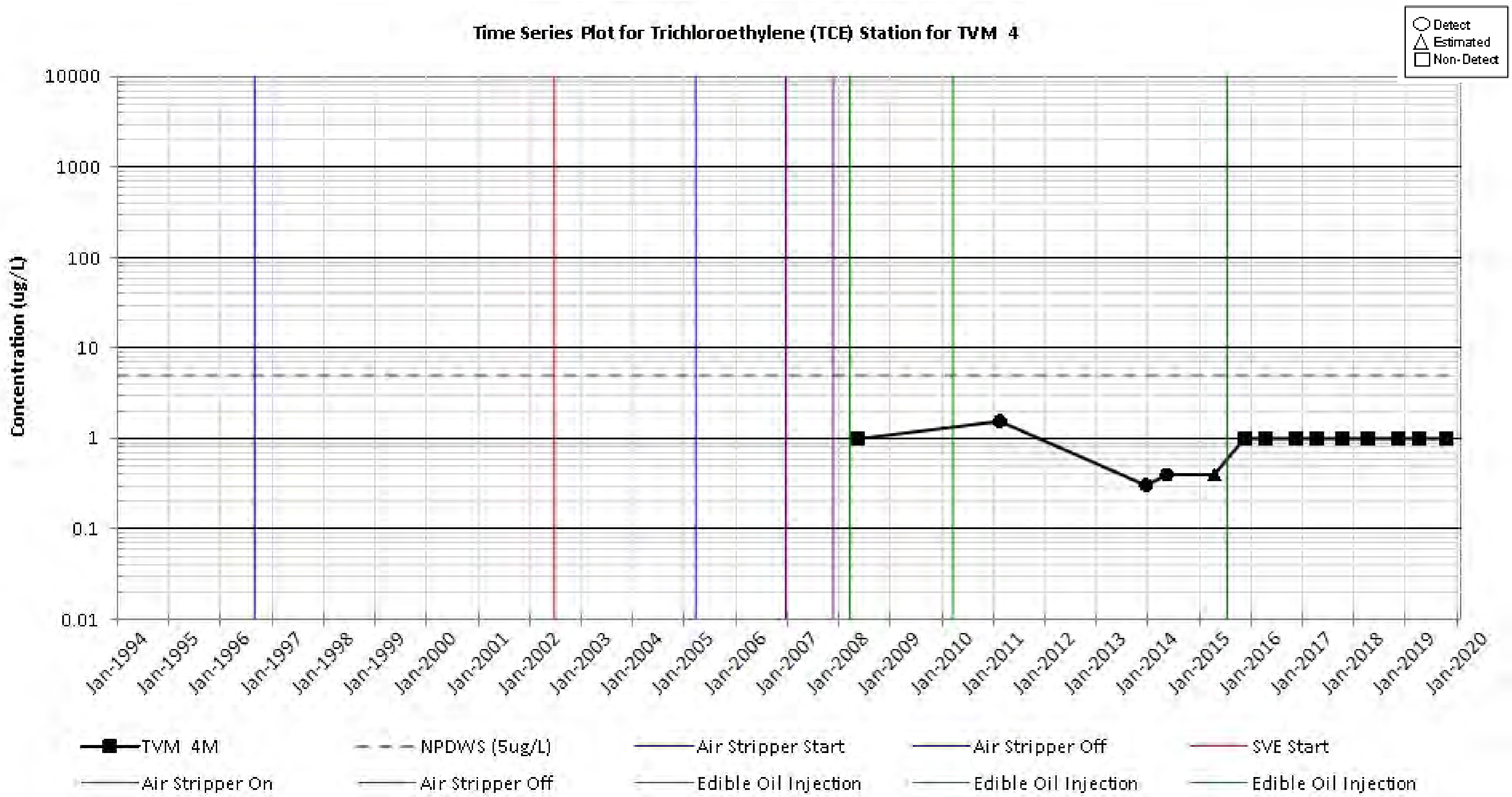

Time Series Plot for Trichloroethylene (TCE) Station for TRW 2
Detect
Estimated
Non-Detect
Concentration (ug/L)
10000
1000
100
10
1
0.1
0.01
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TRW 2
NPDWS (5ug/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection


Time Series Plot for Trichloroethylene (TCE) Station for TRW 3
Detect
Estimated
Non-Detect
Concentration (ug/L)
10000
1000
100
10
1
0.1
0.01
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TRW 3
NPDWS (5ug/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection

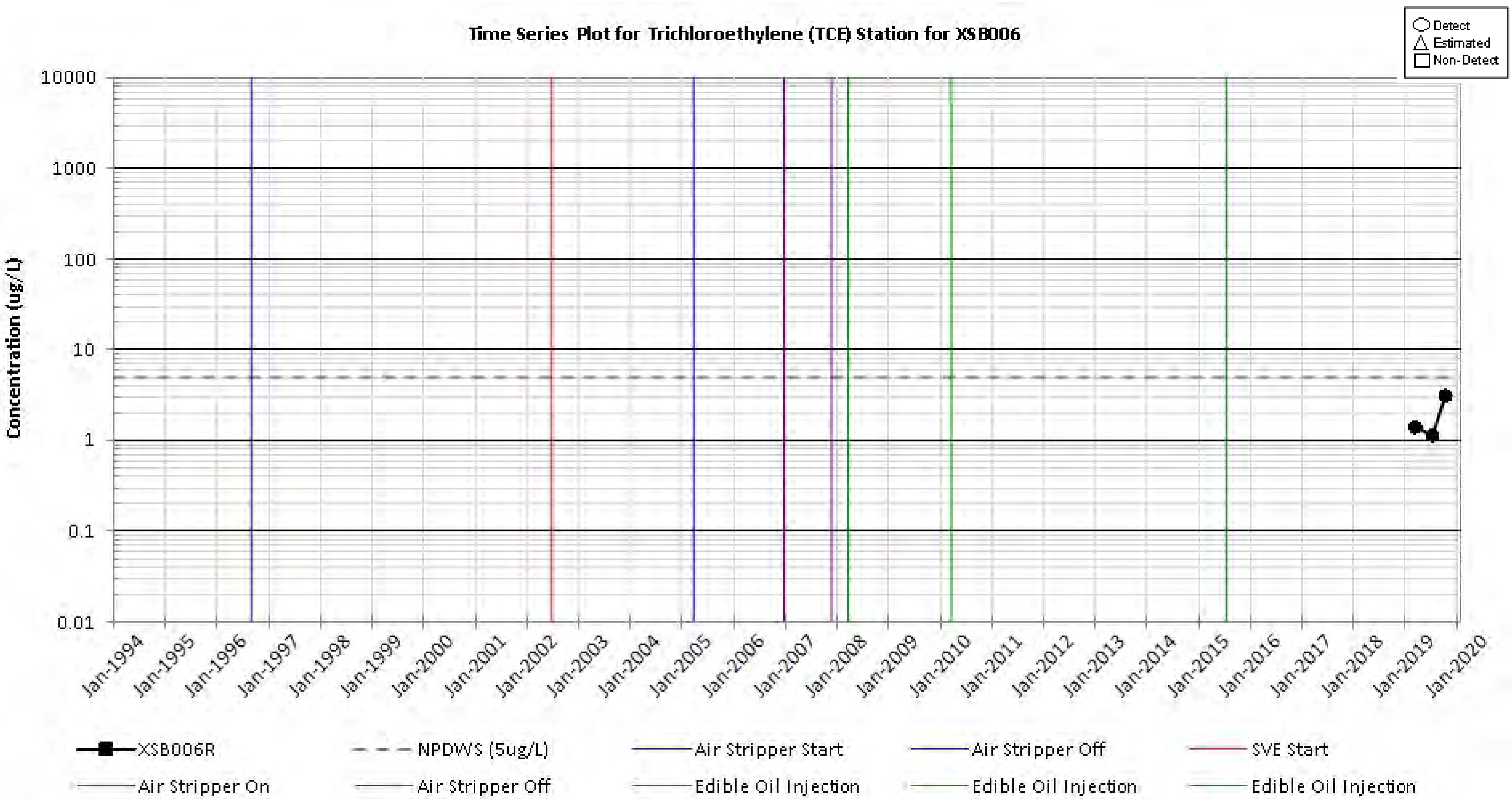

Time Series Plot for Trichloroethylene (TCE) Station for TRW 4
Detect
Estimated
Non-Detect
Concentration (ug/L)
10000
1000
100
10
1
0.1
0.01
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TRW 4R
TRW 4R
NPDWS (5ug/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection


Time Series Plot for Trichloroethylene (TCE) Station for TVM 1
Detect
Estimated
Non-Detect
Concentration (ug/L)
10000
1000
100
10
1
0.1
0.01
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TVM 1M
NPDWS (5ug/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection


Time Series Plot for Trichloroethylene (TCE) Station for TVM 2
Detect
Estimated
Non-Detect
Concentration (ug/L)
10000
1000
100
10
1
0.1
0.01
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TVM 2M
NPDWS (5ug/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection


Time Series Plot for Trichloroethylene (TCE) Station for TVM 4
Detect
Estimated
Non-Detect
Concentration (ug/L)
10000
1000
100
10
1
0.1
0.01
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TVM 4M
NPDWS (5ug/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection


Time Series Plot for Trichloroethylene (TCE) Station for TVR 1
Detect
Estimated
Non-Detect
Concentration (ug/L)
10000
1000
100
10
1
0.1
0.01
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TVR 1A
NPDWS (5ug/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection


Time Series Plot for Trichloroethylene (TCE) Station for XSB006
Detect
Estimated
Non-Detect
Concentration (ug/L)
10000
1000
100
10
1
0.1
0.01
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
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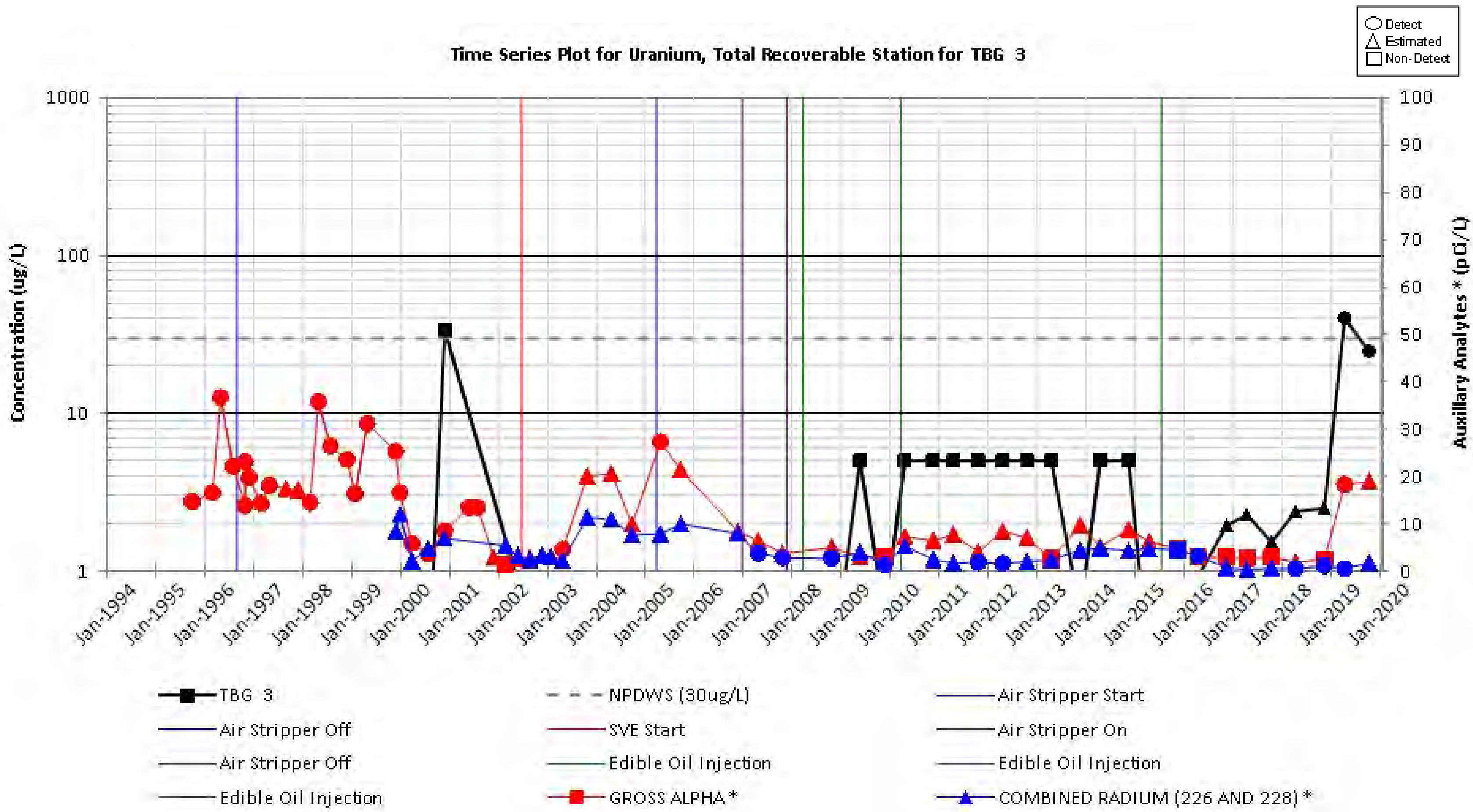
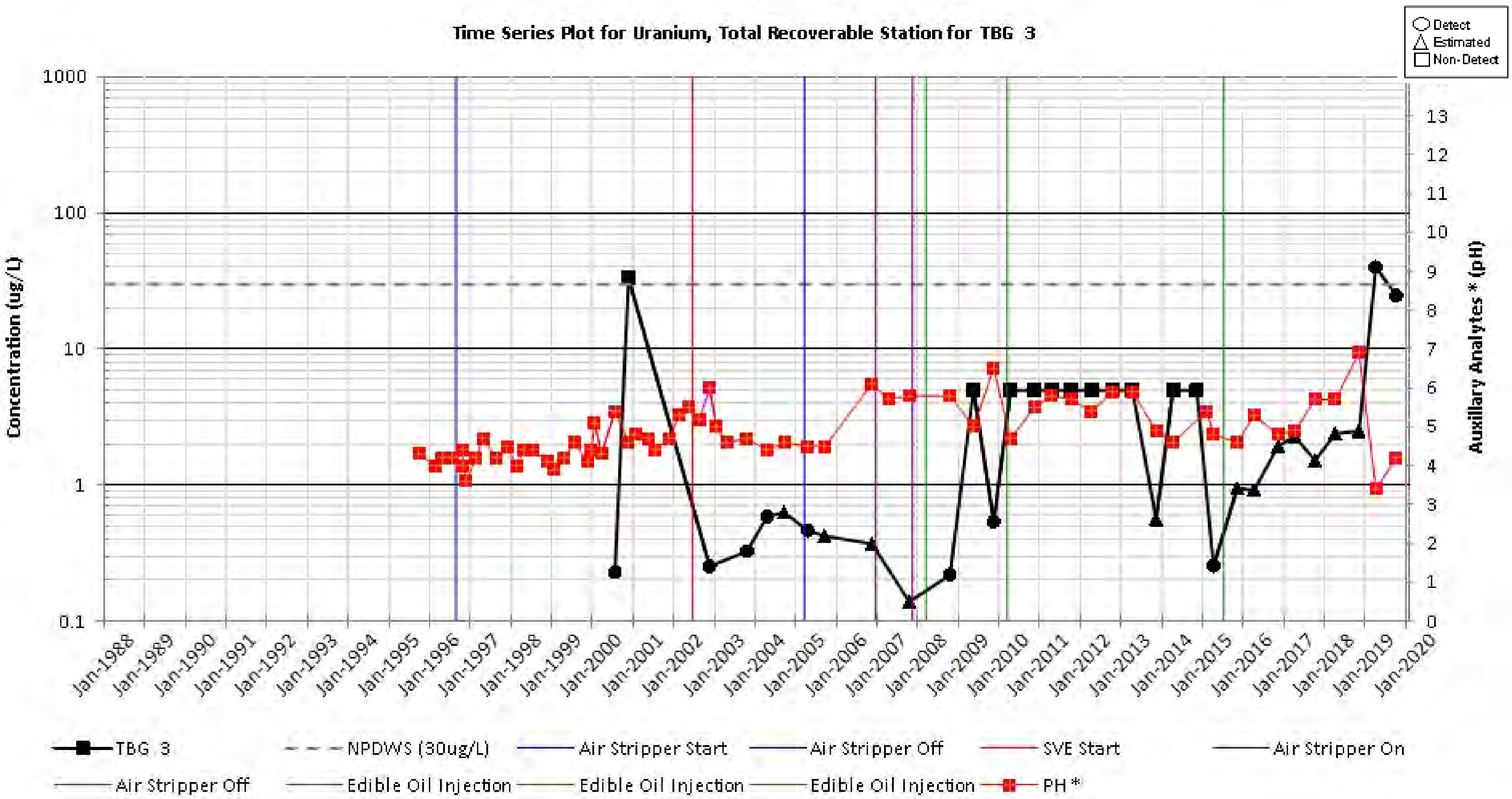
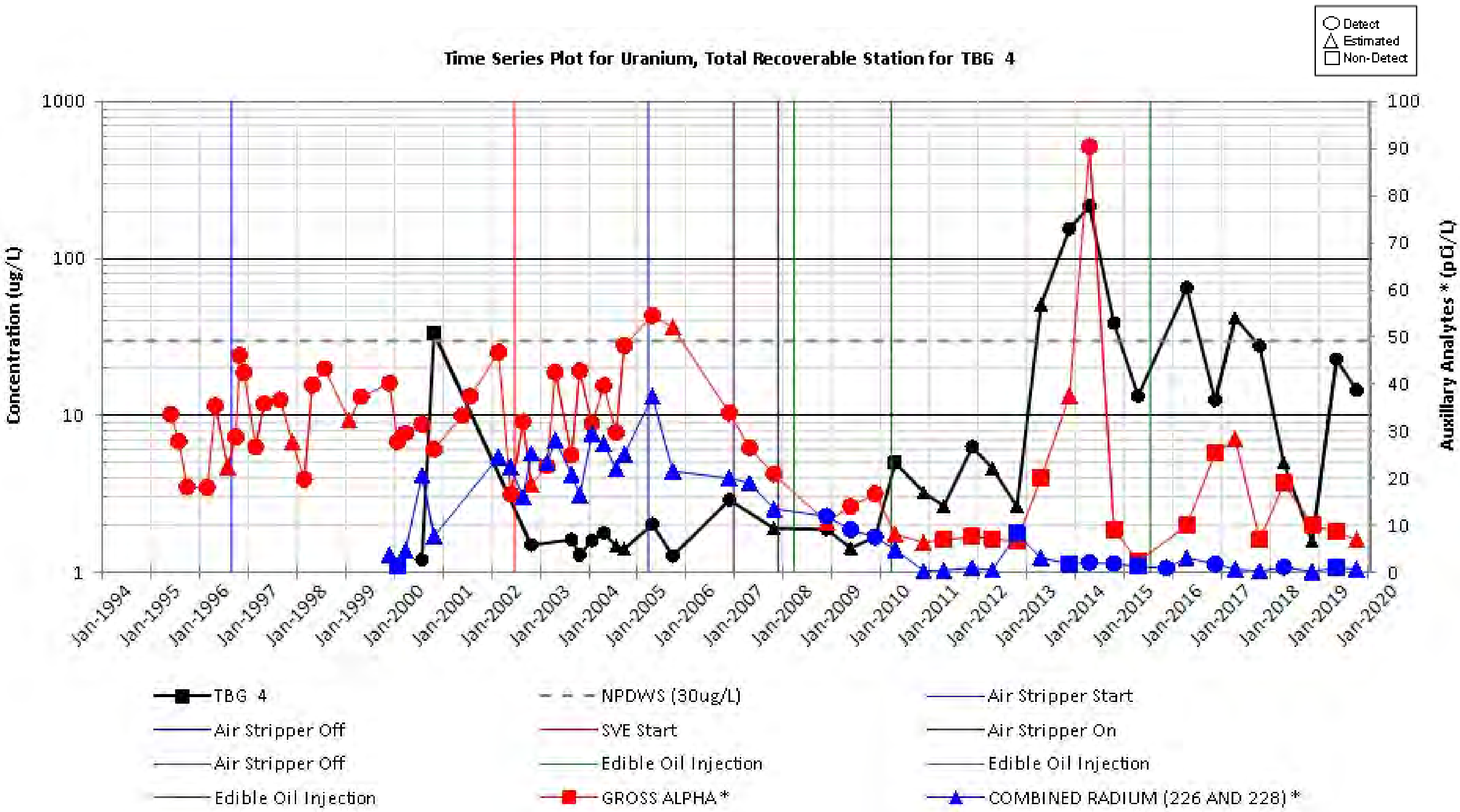
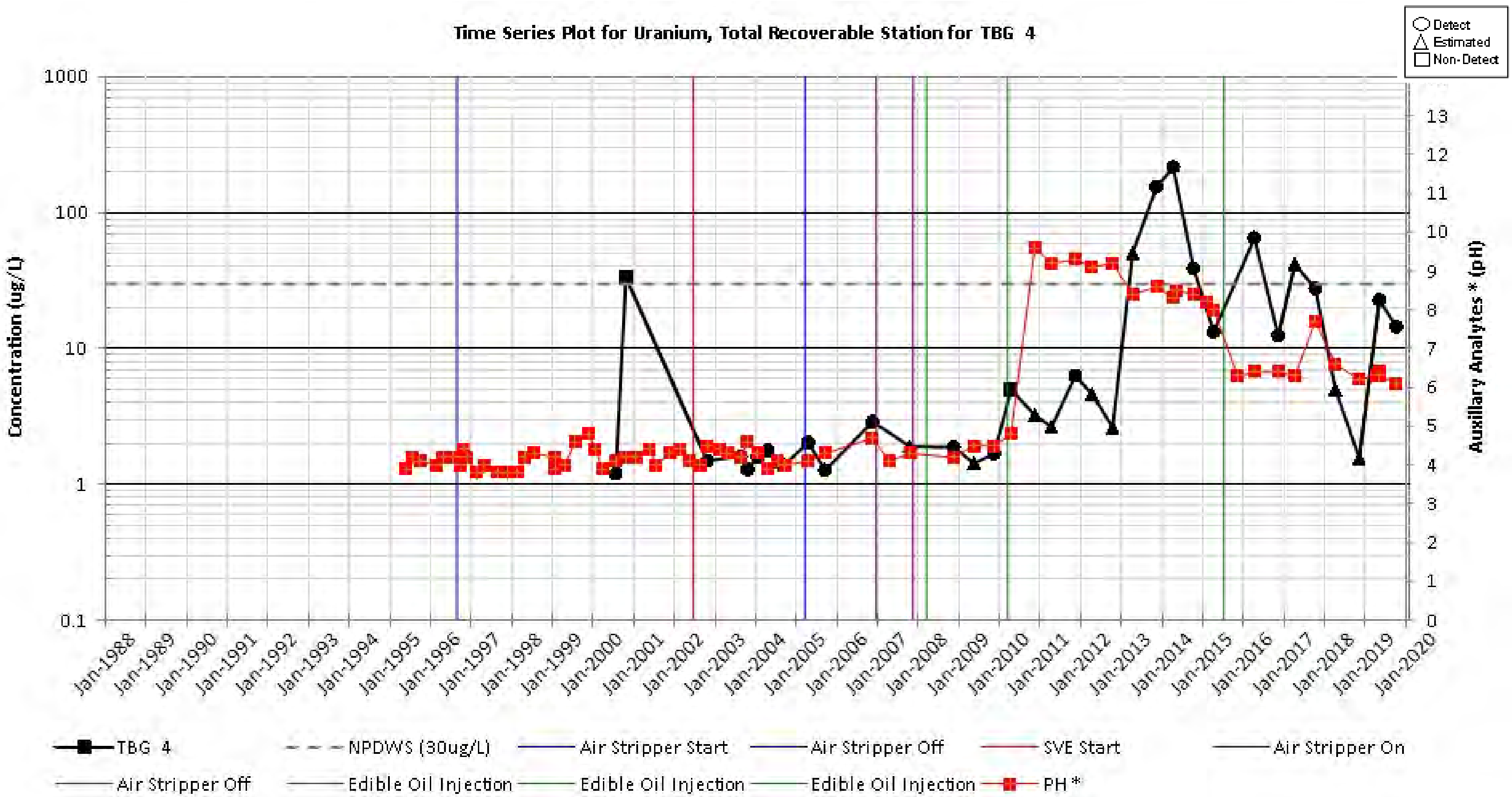
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
XSB006R
NPDWS (5ug/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection


Time Series Plot for Uranium, Total Recoverable Station for TBG 3
Detect
Estimated
Non-Detect
Concentration (ug/L)
Auxillary Analytes * (pCi/L)
1000
100
10
1
100
90
80
70
60
50
40
30
20
10
0
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TBG 3
NPDWS (30ug/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection
GROSS ALPHA *
COMBINED RADIUM (226 AND 228) *


Time Series Plot for Uranium, Total Recoverable Station for TBG 3
Detect
Estimated
Non-Detect
Concentration (ug/L)
Auxillary Analytes * (pH)
TBG 3
NPDWS (30ug/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection
PH *


Detect
Estimated
Non-Detect
Time Series Plot for Uranium, Total Recoverable Station for TBG 4
Concentration (ug/L)
Auxillary Analytes * (pCi/L)
1000
100
10
1
100
90
80
70
60
50
40
30
20
10
0
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TBG 4
NPDWS (30ug/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection
GROSS ALPHA *
COMBINED RADIUM (226 AND 228) *


Time Series Plot for Uranium, Total Recoverable Station for TBG 4
Detect
Estimated
Non-Detect
Concentration (ug/L)
Auxillary Analytes * (pH)
1000
100
10
1
0.1
13
12
11
10
9
8
7
6
5
4
3
2
1
0
Jan-1988
Jan-1989
Jan-1990
Jan-1991
Jan-1992
Jan-1993
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
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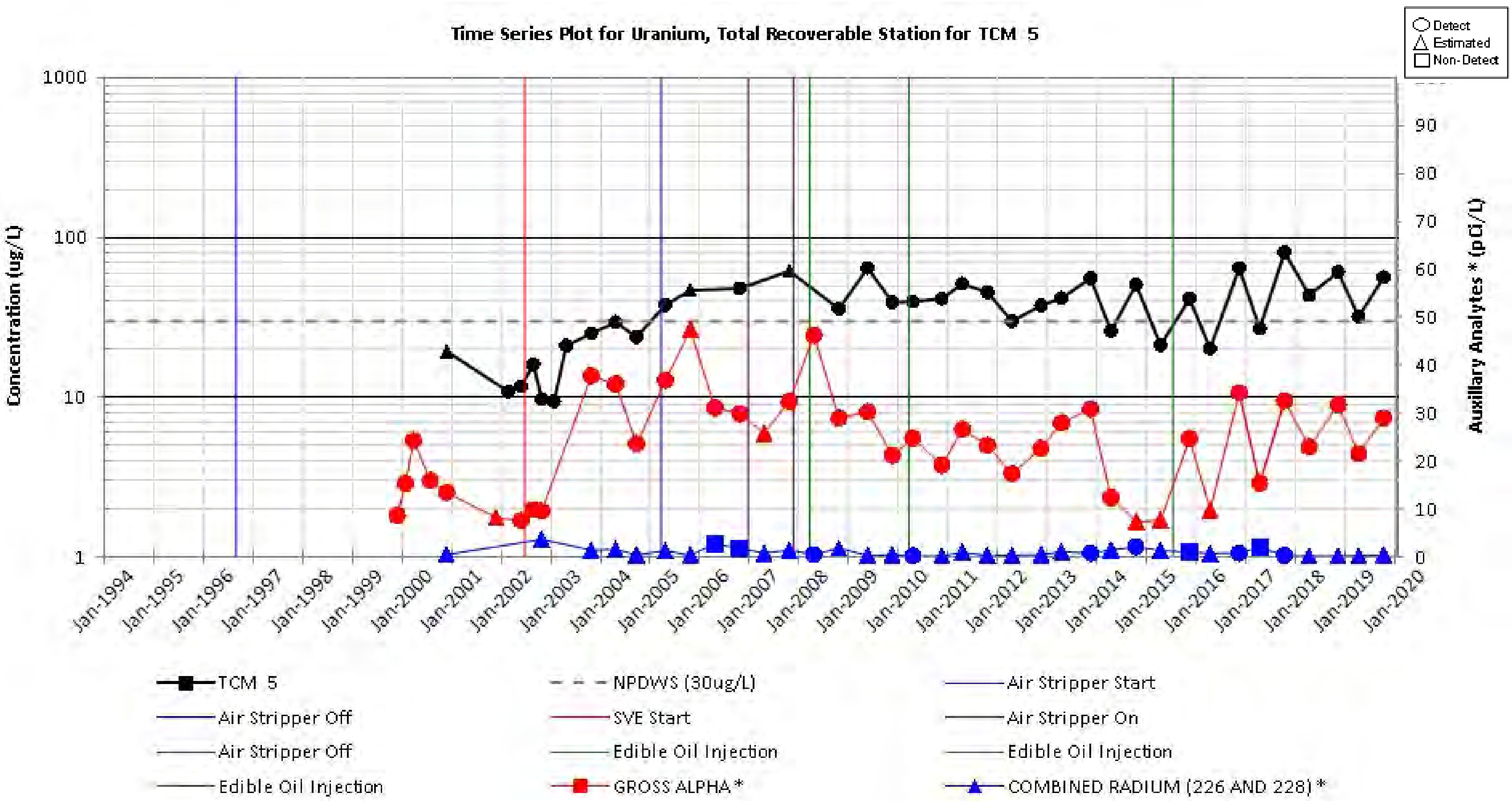
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TBG 4
NPDWS (30ug/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection
PH *


Time Series Plot for Uranium, Total Recoverable Station for TCM 5
Detect
Estimated
Non-Detect
Concentration (ug/L)
1000
100
10
1
Auxillary Analytes * (pCi/L)
90
80
70
60
50
40
30
20
10
0
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
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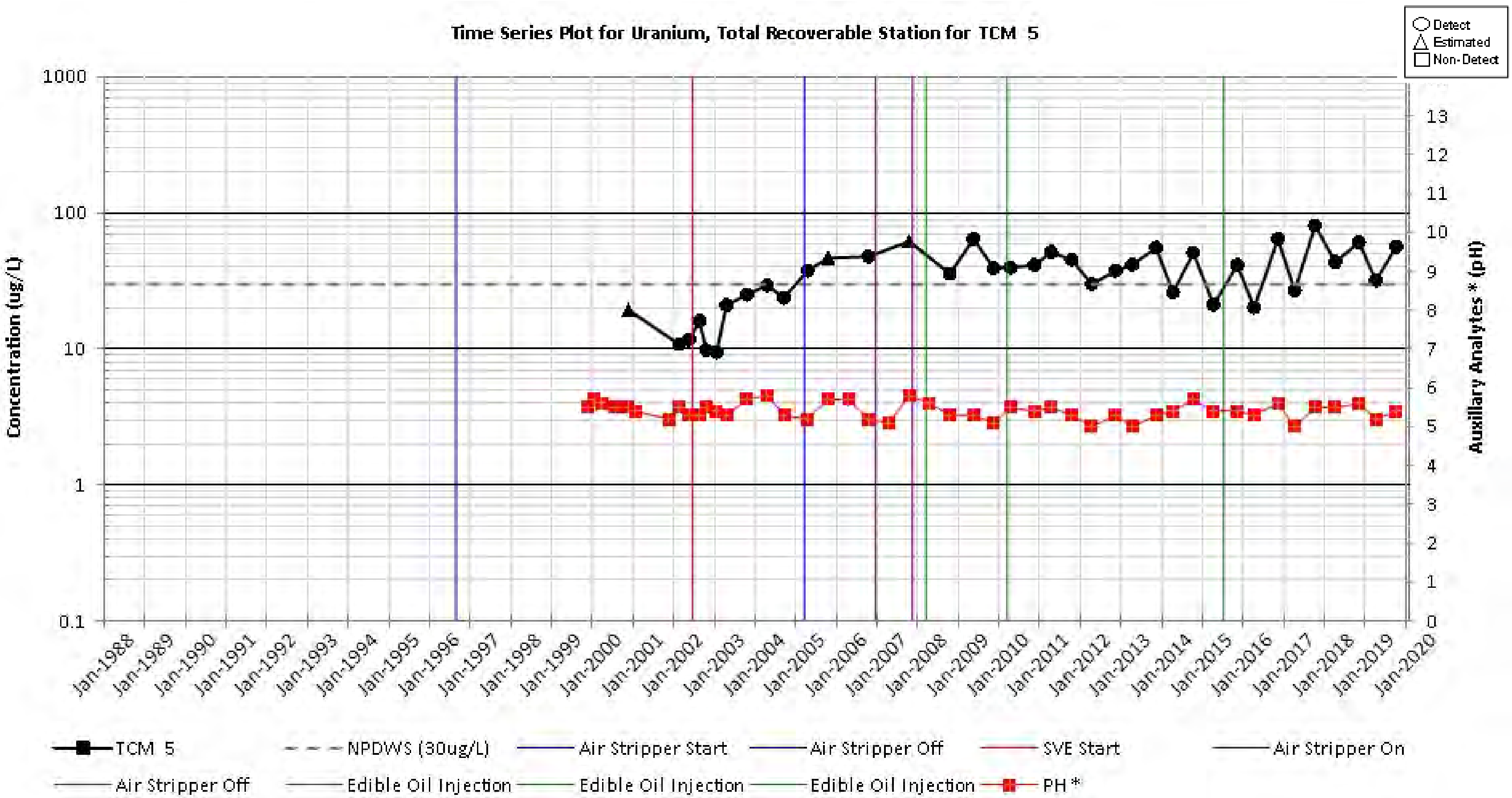
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TCM 5
NPDWS (30ug/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection
GROSS ALPHA *
COMBINED RADIUM (226 AND 228) *


Time Series Plot for Uranium, Total Recoverable Station for TCM 5
Detect
Estimated
Non-Detect
Concentration (ug/L)
Auxillary Analytes * (pH)
1000
100
10
1
0.1
13
12
11
10
9
8
7
6
5
4
3
2
1
0
Jan-1988
Jan-1989
Jan-1990
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Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
Jan-2020
TCM 5
NPDWS (30ug/L)
Air Stripper Start
Air Stripper Off
SVE Start
Air Stripper On
Air Stripper Off
Edible Oil Injection
Edible Oil Injection
Edible Oil Injection
PH *

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