Annual Environmental Monitoring Report – Water Management and Monitoring 2021/22

Mt Piper Power Station Brine Conditioned Fly Ash Co-Placement Project

28 September 2022

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Mt Piper Power Station Brine Conditioned Fly Ash Co-Placement Project

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Acronyms and Abbreviations

Name	Description
AEMR	Annual Environmental Monitoring Report
AHD	Australian Height Datum
ANZECC	Australia and New Zealand Environment Conservation Council
ANZG	Australia and New Zealand Guidelines
BCA	Brine conditioned ash
CSP	Coal Settling Pond
DPIE	NSW Department of Planning, Industry and Environment
EC	Electrical conductivity
EnergyAustralia	EnergyAustralia NSW Pty Limited
EPA	Environment Protection Authority
EP&A Act	Environmental Planning and Assessment Act 1979
EPL	Environment Protection Licence
ERM	Environmental Resources Management Australia Pty Ltd
ha	Hectares
LCC	Lithgow City Council
LDP	Licenced Discharge Point
LMP	Licenced Monitoring Point
LNAR	Lamberts North Ash Repository
LOR	Limit of reporting
MF	Micro filtration
mg/L	milligrams per litre
ML	Mega litre
MPAR	Mt Piper Ash Repository
MPPS	Mt Piper Power Station
Nalco	Nalco Water – Ecolab
NFR	Non-filterable Residue, also referred to as Turbidity.
NSW	New South Wales
OEMP	Operational Environmental Management Plan

Name	Description
POEO Act	Protection of the Environment Operations Act (NSW) 1997
QA/QC	Quality Assurance and Quality Control
RL	Relative Level
RO	Reverse Osmosis
SWTP	Springvale Water Treatment Plant
TARPs	Trigger Action Response Plans
TDS	Total Dissolved Solids
TKN	Total Kjeldahl Nitrogen
TSS	Total Suspended Solids
WCA	Water conditioned ash
WMP	Water Management and Monitoring Plan
µg/L	micrograms per litre
µS/cm	microSiemens per centimetre

Report Terminology

The Project - the Mt Piper Brine Conditioned Fly Ash Co-Placement Project approved under the conditions of development consent DA80/10060 (Mt Piper Consent).

The Mt Piper Consent – originally granted under the Environmental Planning and Assessment Act 1979 (NSW) (EP&A Act) on 1 April 1982 and has since been modified on eight occasions. The Mt Piper Consent, as currently modified (Modification 8, dated 24 July 2019), authorises the MPPS and ancillary activities, including the Mt Piper Ash Repository (MPAR).

The WMP - the Water Management and Monitoring Plan approved for the Project, prepared by ERM and dated 28 February 2020 (the WMP).

The AEMR – this report which has been developed in relation to water management and monitoring aspects of the Project in order to satisfy Conditions 44 and 45 of the Mt Piper Consent, and the relevant reporting requirements of the Water Management and Monitoring Plan approved for the Project (the WMP).

The Ash Repositories - The MPAR and the LNAR are together referred to as the Ash Repositories

1. INTRODUCTION

Environmental Resources Management Australia Pty Ltd (ERM) was engaged by EnergyAustralia NSW Pty Limited (EnergyAustralia) to prepare an Annual Environmental Monitoring Report (AEMR) for the Mt Piper Brine Conditioned Fly Ash Co-Placement Project (the Project). The Project is located at the Mount Piper Power Station (MPPS), 350 Boulder Road, Portland, New South Wales (NSW) (the site). Refer to Figure 1 showing the location of the site.

The Project is operated under the conditions of development consent DA80/10060 (Mt Piper Consent). The Mt Piper Consent was originally granted under the Environmental Planning and Assessment Act 1979 (NSW) (EP&A Act) on 1 April 1982 and has since been modified on eight occasions. The Mt Piper Consent, as currently modified (Modification 8, dated 24 July 2019), authorises the MPPS and ancillary activities, including the Mt Piper Ash Repository (MPAR).

This AEMR has been developed in relation to water management and monitoring aspects of the Project in order to satisfy Conditions 44 and 45 of the Mt Piper Consent, and the relevant reporting requirements of the Water Management and Monitoring Plan approved for the Project (the WMP). It has been developed in general accordance with the requirements of the NSW Department of Planning, Industry and Environment (DPIE) post approval compliance reporting requirements (2020). Appendix A presents a summary of the requirements of the Mt Piper Consent and the WMP, and where they are addressed in this AEMR.

This AEMR reports on the water monitoring carried out for the Project from July 2021 to June 2022 (the reporting period) in accordance with the conditions of the Mt Piper Consent. It will be provided to the Secretary, the NSW Environment Protection Authority (EPA), the Water Division within the NSW Department of Planning, Industry and Environment (DPIE), WaterNSW, and Lithgow City Council (LCC).

This report should be read in conjunction with the Statement of Limitations presented in Section 10.

1.1 Project Background

The MPPS is located in the western coalfields of NSW about 18 kilometres north-west of Lithgow. The MPPS is owned and operated by EnergyAustralia. The MPPS is regulated by a number of separate development consents and planning approvals under the EP&A Act, including the Mt Piper Consent. The MPPS is also regulated under the conditions of Environment Protection Licence 13007 (EPL) granted under the Protection of the Environment Operations Act 1997 (NSW) (the POEO Act). Table 1 lists the approvals that apply to the Project and form the subject of this AEMR. Body Text style. Used as the general text throughout.

Table 1: Summary of Approvals

Approval/ Licence	Details/Comments
Mt Piper Consent	Granted by Minister for Planning under the EP&A Act as currently modified. The WMP was approved under the conditions of the Mt Piper Consent.
EPL No. 13007	EPL held by EnergyAustralia for the MPPS, including the Project.

The Project incorporates brine management and storage facilities on the footprint of the MPPS and the ash emplacement area within the former Western Main Open Cut void adjacent to the operational power generation area. The ash placement area is comprised of the MPAR, which is authorised under the Mt Piper Consent, and the separately approved Lamberts North Ash Repository (LNAR). The MPAR and the LNAR are together referred to as the Ash Repositories. However, this AEMR is limited to the MPAR which was approved under the Mt Piper Consent.

The separately approved Springvale Water Treatment Project (SWTP) is also located on the MPPS footprint but outside of the EPL premises. Both the SWTP and the MPPS contribute brine to the MPAR. The SWTP also contributes solid mixed salts to the MPAR. Key features of the Project area are presented in Figure 2.

The Mt Piper Consent was modified on 3 April 2000 to authorise the co-placement of brine conditioned ash (BCA) in the existing MPAR placement area. This Stage 1 BCA co-placement activity was approved as Modification 4 to the Mt Piper Consent. As required by the conditions imposed as part of Modification 4, an early Water Management Plan was developed and implemented. Due to space limitations in the Stage 1 approval area and to provide for increased brine production due to the upgrade of generating capacity (authorised as Modification 6 to the Mt Piper Consent), a Stage 2 extension to the BCA co-placement area at the MPAR was approved on 23 March 2008 (authorised as Modification 7 to the Mt Piper Consent). A Water Management Plan (Mt Piper Power Station Brine Conditioned Flyash Co-Placement Extension Water Management and Monitoring Plan prepared by Connell Wagner and dated 26 September 2008) was prepared and implemented under the conditions of the Mt Piper Consent for the MPAR. This is referred to in this report as the "Prior WMP."

Following the approval of Modification 8 to the Mt Piper Consent (Condition 43A), the Prior WMP was updated to account for construction and operation of a new 60 ML pond (Settling Pond D) at the MPPS. The current WMP was prepared by ERM and is dated 28 February 2020 (ERM, 2020) (the WMP).

It is noted that a separate and broader investigation of surface and groundwater conditions in the vicinity of the Ash Repositories, including the Mt Piper Brine in Ash Co-Placement area is currently being completed in line with the contingency measures identified in the WMP (the independent assessment). Once the independent assessment is completed, the WMP will be further updated to reflect the key findings and provide further detail on the contingency measures proposed.

1.1.1 Relationship to Other Approvals and Plans

While the MPAR is approved under the Mt Piper Consent, the LNAR is separately approved by Project Approval 09_0186 granted under Part 3A of the EP&A Act on 16 February 2012 (LNAR Project Approval). The conditions of the LNAR Project Approval require:

- Implementation of a separately approved Operational Environmental Management Plan. The currently approved plan is the Lamberts North Ash Placement Project Operational Environmental Management Plan (Revision 6) originally prepared by CDM Smith in 2013 and last revised by EnergyAustralia in May 2022 (LNAR Operations Environment Management Plan (OEMP)). The LNAR OEMP includes a Groundwater Management Plan and a Surface Water Management Plan; and
- The carrying out of groundwater and surface water monitoring programs as specified in the LNAR OEMP. The results of the LNAR monitoring are reported in a separate AEMR prepared in accordance with the conditions of the LNAR Project Approval.

As the LNAR is operated in accordance with the separately approved LNAR OEMP under the conditions of the LNAR Project Approval, this AEMR does not cover water management, monitoring and reporting aspects required under the LNAR OEMP.

In addition, the SWTP was separately approved under development consent number SSD-7592 (SWTP Consent) granted under the EP&A Act in 2017.

1.2 Objectives

The objectives of the AEMR are to meet the reporting requirements of the Mt Piper Consent and the WMP for the reporting period (July 2021 to June 2022).

This includes the requirements under Condition 45 of the Mt Piper Consent which requires that the AEMR include:

- A summary and discussion of all available results and analyses from Water Monitoring Programs (i.e. those contained in the WMP);
- A discussion of the aims of the WMP and to what degree these aims have been attained in the context of results and analyses of the Water Monitoring Programs; and
- Actions taken, or intended to be taken, if any, to mitigate any adverse environmental impacts; and to meet the reasonable requirements of the Secretary, EPA, DPIE Water, WaterNSW or the LCC.

The WMP requires that the AEMR is to include the following scope of works:

- Review of surface water and groundwater quality data;
- Review of long-term trends in surface water and groundwater concentrations, with reference to statistical assessment of concentration trends and triggers;
- Assessment of the data to evaluate potential interactions with the Wangcol Creek water quality;
- Reporting when the Environmental Goals have not been achieved;
- An interpretation and discussion of results;
- Update on the contingency measures currently being implemented in accordance with the WMP; and
- Preparation of this report in accordance with the WMP and the Mt Piper Consent.

It is noted that other reporting requirements, including provision of water quality data, form part of the EPL annual return reporting process; the data presented in this AEMR will also be published online as required by regulation. The reporting requirements under the EPL will be provided separately to this AEMR.

1.3 Contacts

The contact details for the key personnel responsible for the environmental management of the Project are listed in Table 2.

Table 2: Contact Details

Contact Person	Organisation	Position	Telephone
Mr Ben Eastwood	EnergyAustralia	NSW Environment Leader	(02) 6354 8111

1.4 Scope of Works

In order to meet the objectives of the AEMR, the following works have been implemented:

- Import of environmental monitoring data provided by EnergyAustralia to the existing database for the site;
- Export of summary tables for all available water quality and weather data collected by EnergyAustralia from the monitoring conducted in accordance with the WMP;
- Preparation of selected graphs of environmental monitoring data collected by EnergyAustralia from the monitoring conducted in accordance with the WMP;
- Review of surface water (seven locations), groundwater (25 locations) and leak detection (two locations) monitoring data at the Project area for the reporting period;
- Review of changes in water quality data including long-term trends in surface water and groundwater concentrations and water levels;

- Assessment of the groundwater data to evaluate potential interactions with Wangcol Creek water quality; and
- Preparation of this AEMR to:
  - Present an overview of Project operations, including ash placement activities;
  - Present findings of the water quality monitoring, including interpretation and discussion of results, in accordance with the WMP;
  - Present outcomes of the statistical assessment of water quality data that exceeded Environmental Goals during the reporting period, including a discussion of trigger, action, response plans (TARPs) where implemented;
  - Provide an update on the contingency measures currently being implemented at the site in accordance with the WMP; and
  - Provide a summary of recommended actions to be taken, if any, to mitigate adverse environmental impacts, and to meet the requirements of the relevant government authorities and the WMP.

This AEMR has been developed with consideration of the ongoing independent assessment of groundwater and surface water conditions in the vicinity of both the MPAR and the LNAR (the independent assessment). Refer to Section 7.4 for further details.

2. OPERATIONS SUMMARY

All ash placement operations for MPPS, including those within the Project area, are undertaken by the contracted specialist in ash placement. ServiceStream is the current service provider for EnergyAustralia in all aspects of ash and dust management in relation to the Project, which is currently managed under an 'operate and maintain' contract with EnergyAustralia. Refer to Figure 2 for a site layout plan that present key features of the Project area.

2.1 Site Water Discharge

During the reporting period, discharge from the Coal Settling Pond (CSP) via the Licenced Discharge Point (LDP12) under EPL 13007 was estimated to be 23.9 Mega Litres (ML). LDP12 was subject to overtopping in accordance with EPL13007, due to localised flooding, for three days (between 06/03/2022 – 08/03/2022) during the reporting period, and therefore the exact amount discharged during the reporting period is unknown. Records of discharge flow at LDP12 during the reporting period are provided in Appendix B.

Discharge from LDP12 enters the Western Drain, which is part of the upstream Wangcol Creek catchment, before flowing into the Final Holding Pond (FHP). The FHP holds stormwater from the clean water diversions from around the MPPS, and has gates that can be closed in the event of an environmental incident to limit the likelihood of adverse impacts to the downstream surface water environment. The FHP was approved by the EPA and constructed within Wangcol Creek; it operates as the final pollution control structure for surface water associated with the MPPS. Surface water monitoring location LMP01 is the sampling location on Wangcol Creek downstream of the FHP, and is representative of instream conditions downstream of the FHP and upstream of the Ash Repositories.

A data summary for the CSP (when not discharging) and LDP12 (representative of discharge) are presented in this AEMR as the discharges from LDP12 report to the FHP and, from there to LMP01. Both LDP12 and LMP01 are included as monitoring points in the WMP. Figure 2 presents the locations of the CSP and the FHP. Figure 5 presents the locations of LDP12 and monitoring point LMP01.

2.2 Ash Placement and Geometry

The MPAR is located within the former Western Main Open Cut mine void in the eastern area of the MPPS facility, which is discussed further in Section 3.2.

The MPPS commenced operations in 1993 and since that time water conditioned ash (WCA) has been placed at the MPAR. WCA and BCA have been placed at the MPAR since 2000, with placement of BCA limited to approved areas, as described below. In accordance with the WMP, the conditioning of the ash occurs at the MPPS, and the conditioned ash is then transferred via conveyors or trucks to the MPAR for placement.

The MPAR has approval for development up to a Relative Level (RL) of 980 m Australian Height Datum (AHD), with the upper surface of the ash to be finished with 1 m of WCA, following the contours of the placement plan approved by the LCC in 1990, as replicated in Figure 3. Further, condition 38A of the Mt Piper Consent requires that the placement of BCA may only occur between the levels of RL 946 m AHD and RL 980 m AHD in approved BCA placement areas (Stage 1 and Stage 2 approval areas). Refer to Figure 2 and Figure 3 for representation of the approved MPAR placement area and schematic of external batter placement.

With reference to Appendix C and Figure 4, BCA continued to be deposited across Stage 1 and Stage 2 approval areas for the Project over the reporting period. Based on information supplied by EnergyAustralia, a total of 224,400 tonnes of BCA was placed in the MPAR over the reporting period. Refer to Table 3 for a summary of the Project operations for the reporting period, with comparison to the previous reporting period.

Table 3: Operations Summary for the Project

Activity	Previous Reporting Period (2020-2021)	Current Reporting Period (2021-2022)
Ash delivered (T)	673,885[1]	460,973[2]
WCA placed (T)	100,343[2]; 257,889[1]	236,573[2]
BCA placed (T)[2]	415,996	224,400[2]
Total ash footprint (ha)	57.45[2]	71.21[1]
Area of repository capped (ha)[2]	42.65	42.65

1 Refers to MPAR and LNAR combined
2 Refers to MPAR only
T – tonnes, ha - hectares

2.3 Brine Composition

Brine from MPPS is derived from the evaporative cooling process in the cooling towers. As water evaporates from the cooling towers, the concentration of salts contained in the circulating water increases, which would eventually impact upon the operation of the cooling system. A portion of the salty water is therefore regularly blown down and replaced with fresh “make up” water.

In addition, the separately approved SWTP produces brine from the treatment of mine water from dewatering facilities related to mining operations in the region (Figure 1). The separately approved brine and solid mixed salts from the SWTP is integrated with the MPPS water management system and brine from the SWTP is transferred to the MPPS for use in conditioning ash prior to its placement in the MPAR.

During the reporting period, blowdown water from the cooling towers was transferred to the Mine Water Buffer Pond for treatment by the SWTP or to the EnergyAustralia Reverse Osmosis (RO) brine concentrators and micro filtration (MF) infrastructure. The EnergyAustralia RO and MF system removes salts from the cooling water system, and recycles distillate back into the cooling water cycle. The SWTP brine crystalliser system produces a mixed salt and a dewatered lime salt. Both the EnergyAustralia RO and MF system and the SWTP transfer the brine stream to Brine Waste Pond A and Brine Waste Pond B for temporary storage. This brine is used to condition the ash that is placed in approved BCA placement areas.

Brine from the EnergyAustralia brine concentrators is typically transferred to Brine Waste Pond A, while brine from the SWTP is typically transferred to Brine Waste Pond B. Brine Waste Pond B can overtop to Brine Waste Pond A in order to manage stored brine volumes between the ponds. The brine composition depends on the source of water being treated (e.g. inputs from the SWTP and EnergyAustralia RO and MF system). Additionally, ERM understands that further treatment of the brine has been occurring through the EnergyAustralia RO and MF system. This has been implemented as a means of minimising the volume of brine requiring co-placement at the MPAR. Brine composition data has been used to inform the discussion of surface water and groundwater results below.

An average of the historical brine composition reported from Brine Waste Pond A is provided in Appendix D. During this reporting period the average concentrations of key parameters in brine stored in Brine Waste Pond A and Brine Waste Pond B were reported as follows:

- Alkalinity concentrations reported from Brine Waste Pond A averaged 11,836 mg/L while those in Brine Waste Pond B averaged 22,942 mg/L during the reporting period;
- Silver concentrations from Brine Waste Pond A and Brine Waste Pond B were generally reported as <0.01 mg/L throughout the reporting period, with the exception of 0.078 mg/L being reported from Brine Waste Pond B during the September 2021 sampling event;
- Chromium concentrations reported from Brine Waste Pond A averaged 0.055 mg/L while Brine Waste Pond B averaged 0.05 mg/L during the reporting period;
- Iron concentrations reported from Brine Waste Pond A averaged 0.043 mg/L while Brine Waste Pond B averaged 0.051 mg/L during the reporting period;
- Barium concentrations reported from Brine Waste Pond A averaged 0.11 mg/L while Brine Waste Pond B averaged 0.015 mg/L during the reporting period;
- Boron concentrations reported from Brine Waste Pond A averaged 4.74 mg/L while Brine Waste Pond B averaged 2.85 mg/L during the reporting period;
- Manganese concentrations reported from Brine Waste Pond A averaged 0.25 mg/L while Brine Waste Pond B averaged 0.36 mg/L during the reporting period; and
- Nickel concentrations reported from Brine Waste Pond A averaged 0.48 mg/L while Brine Waste Pond B averaged 0.31 mg/L during the reporting period.

3. ENVIRONMENTAL SETTING

Details of the environmental site setting are presented in the following sections to provide context to the surface water and groundwater assessments presented below.

3.1 Climate

The climate data below was provided by EnergyAustralia and is sourced from a weather station on site at MPPS (see Figure 2). A summary of the climate data is presented in Table 4 and a copy of the data is presented in Appendix E.

Table 4: Local Climate Data for 2021/2022

Month	Rainfall Total (mm)	Min. Temperature (°C)	Max. Temperature (°C)
July 2021	60.6	-7	17
August 2021	80.8	-5	20
September 2021	62.3	-4	21
October 2021	51.8	0	28
November 2021	189.8	3	23
December 2021	70.1	4	30
January 2022	125.7	10	30
February 2022	95.3	7	29
March 2022	147.1	6	26
April 2022	226.1	3	26
May 2022	66.0	-2	20
June 2022	15.8	-6	13
TOTAL / MIN / MAX	**1,191.4**	**-7**	**30**

Data from MPPS Weather Station provided by EnergyAustralia

The total rainfall for the reporting period was 1,191.4 mm. This is higher than the total reported rainfall of 607 mm for the 2020/21 reporting period, more than double the total reported rainfall of 513.1 mm for 2019/20 reporting period, and is higher than the average annual rainfall between 2012 and 2017, which was reported by Aurecon (2017) to be 756.5 mm/year.

The 2021/22 reporting period was characterised by higher than average rainfall throughout the reporting period, with April 2022 reporting the highest rainfall (226.1 mm). This was a continuation of a trend of higher than average rainfall which commenced generally between December 2020 and March 2021. This higher than average rainfall period broke the period of relative drought experienced at the site, and more broadly within NSW, between 2017 and 2020.

3.2 Geology and Hydrogeology

The site is located on the western margin of the Sydney Basin, and the geology is characterised by eastward dipping sedimentary deposits. The sedimentary deposits extend approximately 130 km east towards the NSW coast. Structurally, the western margin of the Sydney Basin is not complex, and no significant faulting or folding structures are present in the region surrounding the site (CDM Smith, 2012).

The site is located at an outcrop of the Illawarra Coal Measures, which have been mined throughout the region. The Narrabeen Group, comprised of sandstones, overlies the Illawarra Coal Measures in the vicinity of the site, forming the surrounding hillsides. The Illawarra Coal Measures host the coal seams that were previously mined out in the vicinity of the site, and overlie the Shoalhaven Group. Some characteristics of these units are listed in Table 5.

Table 5: Local Geological Units

Narrabeen Group	Illawarra Coal Measures	Shoalhaven Group
■ Sandstones, shale and claystone. ■ Up to approximately 800 m thick in parts, although generally absent in the immediate vicinity of the Ash Repositories. ■ Deposition in estuarine/alluvial, fluvial, and fluvial-deltaic environments. ■ Unconformably overlies Illawarra Coal Measures (Danis et al., 2011).	■ Interbedded shale, sandstone, conglomerate, and coal. ■ Dips 1-2 degrees to the east. ■ Outcrops extensively just east of Portland, exposing the Lidsdale and Lithgow coal seams close to the surface with approximately 15-20 m of sandstone overburden (CDM Smith, 2012).	■ Siltstones, lithic sandstones and conglomerate. ■ Marine sediments. ■ Berry Siltstone / Formation (earlier) & Snapper Point Formation (later). ■ Contains sulfide-bearing material and is acid generating in places where exposed via rock cuttings (SKM, 2010).

Groundwater beneath the site is present within the Illawarra Coal Measures, with a regional groundwater flow direction generally to the east / south east in the vicinity of the site (see Figure 6a to Figure 6b). The natural stratigraphy of the Illawarra Coal Measures in the vicinity of the site is generally as follows:

- Bunnyong Sandstone (Long Swamp Formation) – massive sandstone;
- Lidsdale Coal Seam – interbedded high ash coal and shale;
- Blackmans Flat Conglomerate – coarse sandstone and conglomerate;
- Lithgow Coal Seam; and
- Marrangaroo Conglomerate – massive sandstone and conglomerate.

Prior to the placement of ash in the former Western Main Open Cut mine void (now occupied by the MPAR), the bottom of the mine void was covered with mine spoil to a minimum level of 908 m AHD. This was to facilitate groundwater flow from the adjacent areas of the unmined Lithgow coal seam aquifer and mine goaf areas surrounding the Western Main Open Cut mine void (Connell Wagner, 2007). The background groundwater level (water table elevation) prior to the filling of the mine voids and placement of ash was reported to be approximately 910 m AHD.

Historically, groundwater seepage from beneath the MPAR was collected in the Groundwater Collection Basin that was previously located to the east of MPAR (SKM, 2010). In 2012, this basin was filled in with mine spoil and compacted as part of the construction of the adjacent LNAR; the footprint of the former Groundwater Collection Basin is located beneath the LNAR (refer to Figure 2).

The area surrounding the Ash Repositories is characterised by former open cut and below ground coal mining. The below ground mined out areas are variably filled in with goaf, or in some areas remain as voids. Former open cut mines remain as ponds, including within the alignment of Wangcol Creek to the north of MPAR, or have been filled in.

Long term groundwater monitoring at the site indicates that the water table occurs variably in the former below ground mined out areas and open cuts and, away from the Ash Repositories, predominantly in the overlying Bunnyong Sandstone. Over the monitoring period, the water table elevation ranged from approximately 903.5 m AHD to the southeast up to 918.5 m AHD to the northeast of the Ash Repositories (refer to Figure 6a and 6b). Perched water is present in the southern part of the MPAR.

3.3 Hydrology

The Project site is within the catchment of Wangcol Creek, a tributary of the Coxs River. The site itself sits on the eastern edge of the Great Dividing Range and includes the headwaters of Wangcol Creek.

Locally, Wangcol Creek is present to the north and north-east of the MPAR, approximately 250 m from the active ash placement area at its closest point. Wangcol Creek flows to the east and southeast, and joins the Coxs River approximately 3.2 km east of the site.

Clean water diversion structures divert surface waters around the operational areas of the MPPS, where possible (see Figure 2). Stormwater that falls within the operational area of the MPPS is directed to water management and storage infrastructure for use at the Project site.

4. WATER MONITORING AND MANAGEMENT PLAN

The aim of the WMP is to minimise the effect of ash placement on local natural surface waters and groundwater. The WMP addresses water cycle management associated with the Project. It includes a surface water and groundwater monitoring program, a requirement for an annual water quality report, and associated TARPs, contingency and strategies for brine reduction as appropriate for the reporting period.

The WMP approved under the Mt Piper Consent outlines the following key elements:

- A water cycle management plan describing the management of surface water run off at the ash repository;
- Brine cycle management including brine minimisation strategies and future mine disposal strategies;
- Water cycle management including the potential uses of multipurpose lined water storages present at the MPPS; and
- Water monitoring program, including surface water and groundwater monitoring, and the Environmental Goals to be adopted.

4.1 Environmental Goals

The Environmental Goals for groundwater and surface water monitoring in the WMP are consistent with those applied to monitoring of the LNAR, as approved in the LNAR OEMP. The Environmental Goals were developed by Aurecon (2009) to account for hardness corrected guideline values and were presented by CDM Smith (2013).

The Environmental Goals utilise the 95% ecosystem protection values, stock watering, irrigation water or drinking water values based on the Australian and New Zealand Guidelines (ANZG, 2018) water quality guidelines (formerly Australia and New Zealand Environment Conservation Council, ANZECC, 2000), in combination with 90th percentile pre-brine placement local environmental (groundwater/surface water) data, whichever is greater. The local guideline values incorporated into the Environmental Goals are based upon the 90th percentile pre-ash placement water quality results, as measured at surface water quality point WX22 (for surface water) or the former Groundwater Collection Basin (for groundwater).

It is noted that, where the Environmental Goals for groundwater are based on the ANZG (2018) water quality guidelines, these guidelines are applicable to receiving waters and not to groundwater. However, they form an appropriate basis for undertaking a conservative initial screening assessment.

The Environmental Goals adopted for this assessment are presented with the surface water and groundwater data in Appendix F and Appendix G respectively.

5. SURFACE WATER ASSESSMENT

5.1 Objective

The objective of the surface water monitoring program is to identify water quality changes at an early stage so that potential causes can be investigated and, if necessary, effects mitigated. The surface water data is compared between locations and to the established Environmental Goals to assess changes in water quality and to assess whether the TARPs or contingency measures should be considered and/or implemented.

5.2 Surface Water Monitoring Locations and Frequency

A summary of the surface water monitoring site locations under the WMP is described in Table 6 and the locations are shown on Figure 5.

Table 6: Surface Water Monitoring Locations

Site ID	Position	Location Description	Frequency	No. of Samples in 2021/22
CSP	Upstream	Monitors the stormwater in the CSP and discharge from the CSP. Sampling of the CSP is conducted routinely at times when discharge is not occurring. These samples are differentiated as CSP (not discharging) and LDP12 (when discharge is occurring). The data from LDP12 and CSP is not representative of instream surface water conditions. Data from LDP12 is not regulated by the Environmental Goals and is provided in this report for comparison only.	As required during discharge[1]	28 (CSP)
LDP12	Upstream			4 (LDP12)
LMP01	Upstream	This monitoring point is located north-west of the MPAR and immediately downstream of the FHP. It is located in an upstream position relative to the Ash Repositories and is the location where water from the headwaters of Wangcol Creek flows out from the MPPS operational area, downstream of the FHP.	Quarterly	18
NC01	Mid-stream	Located midstream in the monitored area of Wangcol Creek, upstream to the Ash Repositories.	Monthly	12
SW_C	Mid-stream	Located within Wangcol Creek, the monitoring location is located midstream in the monitored area of Wangcol Creek and near groundwater monitoring bore D107.	Quarterly	13
SW_E	Mid-stream	Located within Wangcol Creek, downstream of former open cuts "Area D" and "Area E" between the locations of groundwater monitoring bores D9 and D105.	Quarterly	12
WX22 / SW_F	Downstream	Located in Wangcol Creek at a stream gauge to the east/down-stream of the Ash Repositories. Also WaterNSW monitoring point 212055.	Monthly	12
SW_G	Downstream	Located within the downstream portion of Wangcol Creek, and downstream of WX22, within a former open cut mine working and in the vicinity of groundwater monitoring bore D103.	Quarterly	12

[1]*Selected field parameters monitored more regularly*

Although surface water from NC01 was sampled twice in November, the second November sample was taken on the 30th of November i.e. the Monday of the first week of December and was therefore considered as the December sampling event. The frequency of sampling conducted during the reporting period is considered adequate to meet the requirements of the WMP.

5.3 Surface Water Monitoring Methodology

Surface water quality monitoring was undertaken by Nalco Water – Ecolab (Nalco) on behalf of EnergyAustralia. Details regarding the Nalco sampling method and quality assurance and quality control (QA/QC) program are presented in Appendix N.

5.4 Surface Water Quality Dataset

Surface water samples were obtained by Nalco for field and/or laboratory analysis for the following parameters, in accordance with the monitoring and analysis schedule outlined within the WMP:

- Electrical conductivity (EC - µS/cm, field measured);
- pH (field measured);
- Total Dissolved Solids (TDS);
- Cations and anions (calcium, chloride, fluoride, potassium, sodium, sulfate) (i.e. major and minor ions);
- Alkalinity (total alkalinity, bicarbonate alkalinity, phenolphthalein alkalinity);
- Total and dissolved metals (aluminium, arsenic, barium, beryllium, boron, cadmium, chromium, copper, iron, lead, magnesium, manganese, mercury, molybdenum, nickel, selenium, silver, zinc) – field filtered at 0.45 µm for dissolved analysis;
- Non-filterable residue (NFR, turbidity, or Total Suspended Solids – TSS);
- Total phosphorus; and
- Nitrogen, nitrate, nitrite, total kjeldahl nitrogen (TKN).

The trace metals in surface water samples were reported as both total (unfiltered) and dissolved (filtered) samples, except for barium, beryllium, cadmium, chromium, lead, mercury, molybdenum, selenium, silver and magnesium, which were reported as total sample concentrations only.

Evidence of the collection of field QC samples (i.e. rinsate, trip blanks or trip spikes) during the field based programs was not provided. Results of laboratory QC measures including laboratory duplicate, triplicate, internal duplicates, method blanks or spike data were also not presented for review during compilation of this AEMR.

5.5 Surface Water Results

The surface water field and analytical results obtained for the reporting period are presented alongside the Environmental Goals for surface water in Appendix F and Figure 7. Graphs of concentrations over the last 10 years for selected analytes (boron, chloride, manganese, nickel, sulfate and TDS), considered to be indicators of potential changing conditions resulting from the Project, are provided in Appendix I.

5.5.1 Upstream Monitoring Results

LDP12 is the licenced discharge point for the MPPS under EPL 13007. The licenced discharge point is located at the CSP, which is a sediment basin for the coal stockpile area. Samples from the CSP are routinely collected between and prior to discharge events (these are presented as CSP; Appendix F).

Consequently, the data reported as CSP does not represent water quality of the discharge event. Discharge via LDP12 occurs in accordance with EPL13007 following confirmation by laboratory analysis that the water quality is within the approved EPL discharge limits. Samples of the discharge are collected from the discharge point and these are presented as LDP12. Locations CSP and LDP12 are not considered to be representative of upstream conditions relative to the MPAR in the monitored area of Wangcol Creek.

Discharge from LDP12 enters the western stormwater drain, which is part of the upstream Wangcol Creek catchment, before flowing into the FHP. The FHP holds stormwater from the clean water diversions from around the MPPS, and can be closed in the event of an environmental incident to limit the likelihood of adverse impacts to the downstream surface water environment. The FHP was constructed within Wangcol Creek and it operates as a pollution control structure downstream from the operational areas of the MPPS. LMP01 is the sampling location within Wangcol Creek downstream of the FHP.

LDP12 and LMP01 are located upstream of the MPAR and water quality at these locations is not considered to be influenced by activities at the Ash Repositories. However, other aspects of the Project (e.g. brine transfer pipelines and brine waste holding ponds) are located within the catchment upstream of these sampling locations.

Only data for LDP12 (i.e. when discharging) is presented in the following written sections of this report and in Figure 7. Data from both CSP (not discharging) and LDP12 (discharging) is presented in Appendix F, however assessment of trends and statistical assessment of CSP and LDP12 have not been conducted as these locations are not considered to be representative of in-stream conditions. Assessment of trends at LMP01, which receives flow from LDP12 and other upstream portions of the Wangcol Creek catchment, has been conducted as it is considered most appropriate for assessment of potential impacts from the Project on the upstream section of Wangcol Creek.

5.5.1.1 Field Parameters

Field parameters monitored at LDP12 and LMP01 for the reporting period are summarised as follows:

- pH values (field measured) of surface water samples from LMP01 were 7.03 to 8.19. The pH at LMP01 was marginally outside of the range (more alkaline) of the Environmental Goal (6.5 – 8) during sampling events in July (8.08), August (8.02) and September (8.19) of the reporting period. LDP12 pH values were 7.44 to 7.89 all within the range of the Environmental Goal; and
- Field EC values obtained from LDP12 were between 216 µS/cm and 414 µS/cm and field EC values from LMP01 were 184 µS/cm to 491 µS/cm. The reported EC values were consistent with the TDS concentrations (where reported) and all field EC and laboratory TDS values were below the Environmental Goals for surface water.

5.5.1.2 Major and Minor Ions

Throughout the reporting period, reported concentrations of major and minor ions for which there are Environmental Goals (chloride, sulfate and fluoride) at LDP12 and LMP01 were below the relevant Environmental Goals for surface water.

Graphs of concentrations over the last 10 years for LMP01 show fluctuations of sulfate and chloride over time however the concentrations for the current reporting period appear generally steady and within the historical range. High sulfate and chloride results relative to the historical dataset were reported intermittently from July 2019 to January 2020. The spikes in concentrations were attributed to a brine leak event that occurred in 2019 (ERM, 2020a); these were notified to the EPA and the liner was repaired in 2019.

5.5.1.3 Metals

Throughout the reporting period copper, iron, molybdenum, selenium and silver were identified on one or more occasions at concentrations above the relevant Environmental Goals for surface water at LMP01, as presented in Appendix F, and summarised in Figure 7.

Selenium was reported below or marginally above the 0.2 µg/L laboratory limit of reporting (LOR) and the Environmental Goal (5 µg/L) for the majority of surface water samples analysed during the reporting period. Surface water samples obtained from LMP01 during September, October, November, April, May and June had a laboratory LOR of 10 µg/L, which was above the Environmental Goal. The raised laboratory LOR above the Environmental Goal was due to a changed laboratory LOR part way through the reporting period. The laboratory LOR will be amended for future monitoring periods.

For all samples throughout the reporting period silver concentrations were reported below the laboratory LOR (<1 µg/L) exceeding the Environmental Goal for silver (0.05 µg/L). ERM understands that a laboratory LOR that is lower than the Environmental Goal for silver is unachievable by the laboratory. Based on the results of previous monitoring, including concentrations of silver in brine (<10 µg/L during 2020/21 and most samples for the current reporting period) and <1 µg/L groundwater, silver is not considered to represent a primary constituent of concern for monitoring in accordance with the WMP.

Graphs of concentrations over the last 10 years for LMP01 (Appendix I) show fluctuations of boron, manganese and nickel over time, however the concentrations measured during the current reporting period appear generally consistent and within the historical range. Concentrations of boron and manganese were below the Environmental Goals for surface water during the current reporting period.

5.5.2 Midstream Monitoring Results

Locations NC01, SW_C and SW_E are considered to represent midstream conditions relative to the MPAR in the monitored area of Wangcol Creek.

Locations NC01 and SW_C are located north of the MPAR along an area of Wangcol Creek that is not known to have been subject to open cut mining operations. SW_E is located further downstream of NC01 and SW_C, to the east of the MPAR and immediately downstream from an area of Wangcol Creek that was historically subject to open cut mining activities.

The surface water field and analytical results obtained from sample points NC01, SW_C and SW_E, for the reporting period are presented in Appendix F, and summarised in Figure 7.

A brief discussion of results is presented in the following subsections.

5.5.2.1 Field Parameters

Field parameters monitored at NC01, SW_C and SW_E for the reporting period are summarised as follows:

- pH (field) values were 6.53 to 7.99, with no results reported outside of the Environmental Goal range for surface water;
- Field EC values reported at NC01, SW_C and SW_E ranged from 108 µS/cm to 750 µS/cm, field EC values were generally consistent with laboratory TDS results, and no results were reported outside of the Environmental Goals for either EC or TDS;
- Graphs of concentrations over the last 10 years show TDS concentrations at NC01 and SW_C have remained low and stable. TDS at SW_E showed a spike in concentrations during the 2019/20 reporting period, but TDS concentrations have subsequently returned to within the historical range, and did not exceed the Environmental Goal during the 2020/21 reporting period or the current reporting period; and
- EC and TDS values at SW_E were generally higher compared to those further upstream at NC01 and SW_C.

5.5.2.2 Major and Minor Ions

Throughout the reporting period, major and minor ions including chloride, sulfate, and fluoride were reported at NC01, SW_C and SW_E at concentrations that were below the Environmental Goals for surface water.

Graphs of concentrations over the last 10 years for chloride and sulfate are consistent with those for TDS, and show chloride and sulfate concentrations at NC01 and SW_C have remained low and stable. Consistent with increased TDS and EC values, concentrations of chloride and sulfate in surface water from SW_E spiked during 2019/20, but returned to concentrations below the Environmental Goals during the 2020/21 reporting period; they remained below the Environmental Goal for the current reporting period.

Consistent with EC and TDS, the major ion concentrations at SW_E were generally higher compared to those further upstream at NC01 and SW_C.

5.5.2.3 Metals

Throughout the reporting period copper, iron, mercury, nickel, selenium and silver were identified on one or more occasions at concentrations above the relevant Environmental Goals for surface water at NC01, SW_C and SW_E as presented in Appendix F, and summarised in Figure 7.

For surface water monitoring locations downstream from LMP01 (i.e. all midstream and downstream locations), the selenium laboratory LOR was 10 µg/L, exceeding the Environmental Goal for the period April, May and June only. For all samples throughout the reporting period silver concentrations were reported below the laboratory LOR (<1 µg/L) exceeding the Environmental Goal for silver (0.05 µg/L). Refer to Section 5.5.1.3 for commentary relating to the laboratory limits of reporting versus the Environmental Goals for surface water.

Consistent with major ion concentrations and TDS and EC values, the nickel concentrations were higher at SW_E than at NC01 and SW_C, and SW_E accounts for the majority of nickel results above the Environmental Goal from the midstream monitoring locations. Total iron results were above the Environmental Goal from the midstream monitoring locations, with filtered iron only above the Environmental Goal at SW_E.

Graphs of concentrations over the last 10 years for boron, manganese and nickel (Appendix I) are consistent with TDS, and show that concentrations of these selected metals at NC01 and SW_C have remained low and stable. Boron, manganese and nickel concentrations at SW_E spiked during the 2019/20 reporting period, but decreased to within the historical range during the 2020/21 reporting period and concentrations of boron and manganese remained below the relevant Environmental Goals throughout the current reporting period. Nickel concentrations from SW_E were above the Environmental Goals for surface water in seven of the 12 samples analysed during the current reporting period but below the highest concentrations that were measured in the 2019/20 reporting period.

5.5.3 Downstream Monitoring Results

Locations WX22 (SW_F) and SW_G are considered to represent downstream conditions relative to the MPAR in the monitored area of Wangcol Creek.

Both WX22 and SW_G are located east of the MPAR along an area of Wangcol Creek that is downstream of and, in the case of SW_G, has been subject to, open cut mining operations.

The surface water field and analytical results obtained from sample points WX22 (SW_F) and SW_G for the reporting period are presented in Appendix F, and summarised in Figure 7.

A brief discussion of results is presented in the following subsections.

5.5.3.1 Field Parameters

Field parameters monitored at WX22 and SW_G for the reporting period are summarised as follows:

- Field pH values ranged from 6.85 to 7.67 and were within the Environmental Goal range for pH in surface water;
- Field measured EC values ranged from 180 µS/cm to 820 µS/cm and were generally consistent with the laboratory determined TDS values. EC and TDS were reported below the respective Environmental Goals for surface water at both locations during the reporting period; and
- Graphs of concentrations over the last 10 years for WX22 and SW_G show TDS (Appendix I) has fluctuated over time. Concentrations of TDS typically increase during summer months, with TDS exceeding the Environmental Goal for surface water at WX22 during February 2014, February 2018 and January 2020. The trends at SW_G are similar to those described for WX22; however, monitoring data at SW_G has only been collected since May 2018. TDS remained below the

Environmental Goal for surface water during the 2020/21 reporting period and the current reporting period.

5.5.3.2 Major and Minor Ions

Throughout the reporting period, concentrations of major and minor ions including chloride, sulfate and fluoride were reported at WX22 and SW_G at concentrations that were below the relevant Environmental Goals.

Graphs of concentrations over the last 10 years for WX22 and SW_G (Appendix I) show chloride and sulfate concentrations have fluctuated over time and are consistent with TDS trends (i.e. typically increase during summer months). As per TDS concentrations, chloride and sulfate concentrations were highest during February 2014, February 2018 and January 2020 but concentrations of both analytes remained below the Environmental Goals during the 2020/21 reporting period and the current reporting period.

5.5.3.3 Metals

Throughout the reporting period, copper, iron and nickel, selenium and silver were identified on one or more occasions at concentrations above the Environmental Goal for surface water at WX22 or SW_G, as presented in Appendix F, and summarised in Figure 7.

For surface water monitoring locations downstream from LMP01 (i.e. all midstream and downstream locations), the selenium laboratory LOR was 10 µg/L, exceeding the Environmental Goal for the period April, May and June only. For all samples throughout the reporting period silver concentrations were reported below the laboratory LOR (<1 µg/L) exceeding the Environmental Goal for silver (0.05 µg/L). Refer to Section 5.5.1.3 for commentary relating to the laboratory limits of reporting versus the Environmental Goals for surface water.

Graphs of concentrations over the last 10 years for WX22 and SW_G (Appendix I) show boron, manganese and nickel concentrations have fluctuated over time and are generally consistent with TDS trends (i.e. concentrations of these selected metals typically increase during summer months). Boron and manganese concentrations were reported below the Environmental Goal for surface water during the current reporting period. Concentrations of nickel fluctuate and exceeded the Environmental Goal periodically throughout the reporting period.

5.6 Summary

Copper, iron, molybdenum, nickel and pH results were reported above the relevant Environmental Goals for surface water at upstream monitoring location (LMP01) at times during the reporting period.

Results from midstream monitoring locations NC01, SW_C and SW_E were typically below the Environmental Goals for surface water. However, iron concentrations were consistently above the Environment Goal for surface water throughout the monitoring period at NC01, SW_C and SW_E. One result for copper was reported above the environmental goal at SW_C and NC01. Mercury was reported above the Environmental Goal for surface water at SW_C and SW_E on two occurrences during the reporting period, however the concentrations were not reported upstream, nor further downstream. Nickel concentrations were higher and above the Environmental Goals for surface water at midstream monitoring location SW_E. The surface water quality at the midstream locations is consistent with the reported conditions during the 2020/21 reporting period, compared to the spikes in concentration that were reported during 2019/20. This is likely to reflect the higher rainfall during the 2020/21 reporting period and again during the current reporting period compared to the drought conditions experienced in the 2019/20 reporting period, and prior years.

At the downstream monitoring locations (WX22 and SW_G), concentrations of iron and nickel in surface water exceeded the relevant Environmental Goals at times during the reporting period. Copper was reported above the Environmental Goals for surface water on one occurrence at SW_G. The concentrations of iron and nickel were similar at the midstream monitoring location SW_E and downstream locations WX22 and SW_G. The surface water quality at downstream locations WX22 and SW_ G stayed relatively stable when compared to the previous monitoring period (2020/21) and the spikes in concentration that were reported during the 2019/20 reporting period. This is likely to reflect the higher rainfall during the 2020/21 reporting period which has continued into the current reporting period when compared to 2019/20.

Iron and nickel concentrations consistently exceeded the Environmental Goals at midstream and downstream monitoring locations. Iron concentrations are related to background conditions in the local environment as a result of the mining history and disturbed geology. Nickel concentrations in surface water are considered to be influenced by interaction between groundwater and the surface water of Wangcol Creek. The periodic results where pH was outside the range of the Environmental Goal in upstream surface water were generally not observed to extend to midstream surface water sample locations. Overall, surface water quality is comparable to the 2020/21 reporting period, likely due to the continuation of higher than average rainfall during the 2020/21 and 2021/22 reporting periods.

6. GROUNDWATER

6.1 Objective

The objective of the groundwater monitoring program is to identify water quality changes at an early stage so that potential causes can be investigated and, if necessary, effects mitigated. The groundwater data is compared; between locations, to historical data, and to the established Environmental Goals to assess changes in water quality and the extent to which changes may be related to activities associated with the Project.

6.2 Groundwater Monitoring Locations and Frequency

A summary of the groundwater monitoring locations is presented in Table 7 and Figure 5.

Table 7: Groundwater Monitoring Network

Bore ID	Location Description	Screened Material	Frequency	No. of Samples in 2021/22
Within MPAR / mine disturbance area east of MPAR				
B5	Within the MPAR	Fill	Quarterly	0 (blocked)
SW3-D	Within the south-east portion of the MPAR	Fill – clay/silty clay	Quarterly	0 (dry)
MPGM4/D23	Adjacent (south) of the MPAR	Sandstone	Quarterly	0 (damaged)
MPGM4/D10	East (downgradient) of the MPAR, and adjacent to LN Pond 2	Fill / mine spoil	Quarterly	4
MPGM4/D11	Within the eastern extent of the MPAR	Fill beneath the ash	Quarterly	4
MPGM4/D19	East (downgradient) of the Ash Repositories	Fill / mine spoil	Quarterly	4
D113	East (downgradient) of the Ash Repositories. Nested (deeper) with D19	Siltstone	Quarterly	4
Within mine disturbance area – south and south-east of MPAR				
MPGM4/D15	South of the Ash Repositories	Sandstone and/or shale	Quarterly	4
MPGM4/D16 replaced with D16A	South of the Ash Repositories	Sandstone and/or shale	Quarterly	0
MPGM4/D17	South of the Ash Repositories	Sandstone and/or shale	Quarterly	4
MPGM4/D18	South of the Ash Repositories	Sandstone and/or shale	Quarterly	4
Adjacent MPAR – downgradient				
MPGM4/D1	North-east (downgradient) of the MPAR	Mudstone, sandstone and coal	Quarterly	4
MPGM4/D9	North-east (downgradient) of the MPAR and adjacent to Wangcol Creek	Alluvial deposits	Quarterly	4

Bore ID	Location Description	Screened Material	Frequency	No. of Samples in 2021/22
D102	North-east (downgradient) of the MPAR and adjacent to Wangcol Creek. Nested (deeper) with D9	Siltstone	Quarterly	4
D105	East (downgradient) of the MPAR and adjacent Wangcol Creek	Coal	Quarterly	4
MPGM4/D8	East (downgradient) of the MPAR and adjacent to the northern side of Wangcol Creek	Alluvial deposits	Quarterly	4
D104	East (downgradient) of the MPAR and adjacent Wangcol Creek	Sandstone	Quarterly	4
D103	East (downgradient) of the MPAR and adjacent Wangcol Creek	Coal and/or siltstone	Quarterly	4
MPGM4/D2	East (downgradient) of the MPAR and adjacent Wangcol Creek	Not known	Quarterly	4
Background and Adjacent MPAR				
MPGM4/D4	Background groundwater monitoring location, north-west (upgradient) of the MPAR	Fill	Quarterly	4
MPGM4/D5	Background groundwater monitoring location, north-west (upgradient) of the MPAR	Mudstone/ Sandstone and coal	Quarterly	4
MPGM4/D3	Background groundwater monitoring location, north (cross gradient) of the MPAR	Sandstone and/or siltstone	Quarterly	4
D107	North (cross gradient) of MPAR and adjacent Wangcol Creek	Siltstone and/or shale	Quarterly	5
D106	North (cross gradient) of MPAR and adjacent Wangcol Creek	Weathered sandstone and/or Shale	Quarterly	4
Brine waste pond leak detection bores				
MPGM5/D5	Adjacent (downgradient) Brine Waste Pond A	Not known	Quarterly	22
MPGM5/D6	Adjacent (downgradient) Brine Waste Pond B	Not known	Quarterly	23
MPGM/24 and MPGM/25	Adjacent Settling Pond D (north-west)	Not known	Quarterly	0 (dry)
MPGM/26 and MPGM/27	Adjacent Settling Pond D (south-east)	Not known	Quarterly	0 (dry)

Some bores were sampled and results were reported more frequently than the planned quarterly monitoring. In those cases all data has been adopted in this assessment. Information from EnergyAustralia provided the following clarifications as to why some bores were not sampled as frequently as required. Bores B5, SW3-D and MPGM4/D23 were not sampled during the reporting period because they were blocked (B5), recorded as dry (SW3-D), or damaged and unable to be sampled (MPGM4/D23). D16 has been decommissioned; bore D16A was installed as its replacement in April 2022, but has not yet been sampled.

6.3 Groundwater Monitoring Methodology

Groundwater quality monitoring was undertaken by Nalco on behalf of EnergyAustralia. Details regarding the Nalco sampling method and QA/QC program are presented in Appendix N.

6.4 Groundwater Quality Dataset

Nalco collected groundwater samples from 23 groundwater monitoring bores throughout the reporting period. Samples were obtained for field and laboratory analysis in accordance with the following monitoring and analysis schedule:

- Depth to water (to m AHD - prior to purging);
- EC (μS/cm, field measured);
- pH (field measured);
- TDS;
- Cations and anions (calcium, chloride, fluoride, potassium, sodium, sulfate);
- Alkalinity (total alkalinity, bicarbonate alkalinity, phenolphthalein alkalinity); and
- Total and dissolved metals (aluminium, antimony, arsenic, barium, beryllium, boron, cadmium, chromium, copper, iron, lead, magnesium, manganese, mercury, molybdenum, nickel, selenium, strontium, silver, vanadium, zinc) – field filtered at 0.45 μm for dissolved metals.

The trace metals in groundwater samples were reported as both total (unfiltered) and dissolved (filtered) samples except for antimony, barium, beryllium, cadmium, chromium, cobalt, lead, mercury, molybdenum, selenium, silver and strontium, which were reported as total sample concentrations only.

Evidence of the collection of field QC samples (i.e. rinsate, trip blanks or trip spikes) during the field based programs was not provided. Results of laboratory QC measures including laboratory duplicate, triplicate, internal duplicates, method blanks or spike data were also not provided for review during compilation of this AEMR.

6.5 Groundwater Results

For the purpose of this discussion, the groundwater data review has considered the groundwater monitoring locations (see Figure 5) in five monitoring zones:

- Brine waste pond leak detection bores (MPGM5/D5, MPGM5/D6);
- Bores within MPAR / mine disturbance area east of MPAR (MPGM4/D10, MPGM4/D11, MPGM4/D19, D113);
- Bores within mine disturbance area – south and south-east of MPAR (MPGM4/D15, MPGM4/D16, MPGM4/D17, MPGM4/D18);
- Bores adjacent to MPAR – downgradient (MPGM4/D1, MPGM4/D9, D102, D105, MPGM4/D8, D104, D103, MPGM4/D2); and
- Background bores (MPGM4/D4, MPGM4/D5) and bores adjacent to MPAR – to the north (MPGM4/D3, D107, D106).

Graphs of concentrations over the last 10 years for selected analytes (boron, chloride, manganese, nickel, sulfate and TDS) that are considered to be indicators of potential changing conditions resulting from Project activities are provided in Appendix J.

6.5.1 Groundwater Elevations and Inferred Flow Direction

Hydrographs showing groundwater elevations for each bore have been segregated to present graphs for bores in each monitoring zone described above (Appendix H). The hydrographs show that groundwater levels were generally stable or increased during the reporting period, consistent with the higher than average rainfall during the period between approximately August 2021 and May 2022.

Bores within mine disturbance area south to south-east of MPAR appear to be most influenced by the higher than average rainfall, with groundwater elevation at bore D15 rising 2.1 m between November 2021 and March 2022, and similar increased reported at D17 over the same period. However, groundwater elevations also increased to the north of MPAR, with groundwater elevations in monitoring bore D107 rising to above the previous top of casing at this location. Extension of the casing after October 2021 has resulted in this bore not currently being able to be gauged or sampled. Increasing groundwater elevations were also generally reported across the groundwater monitoring bore network, and the leak detection bores MPGM5/D5 and MPGM5/D6. As groundwater elevations were not all measured at the same time, the timing of groundwater gauging may influence the observed groundwater level trends.

Based on the data provided by EnergyAustralia, groundwater elevations at bore D11 appear to have decreased by approximately 7 m during the 2020/21 reporting period, from 913.4 m AHD in September 2020 to 906.3 m AHD in June 2021. This was due to the casing being extended to prevent the monitoring bore being buried in ash, rather than an actual decline in water level. Groundwater elevation remained relatively stable during the current reporting period as there was no further extension of D11 in the reporting period.

Consistent with 2019/20 and 2020/21 monitoring results, the groundwater elevations at bore D18 did not correlate with other nearby groundwater monitoring bores throughout the reporting period. Consistent with data reported during previous reporting periods, these observations are considered to indicate that the construction of this bore may be compromised.

One groundwater elevation measurement is available for each of D23 and B5 during the current reporting period, and no groundwater elevation data is available for SW3-D. No groundwater elevation data is available for bore D16 due to the bore being decommissioned and, as noted above due to artesian flow at bore D107, additional casing has been added and groundwater elevation data was not collected beyond October 2021. Survey data is not available for bores MPGM5/D5 and MPGM5/D6, so for these bores the groundwater levels are reported as metres below point the reference, rather than as groundwater elevation in metre Australia Height Datum (m AHD). The presence of water at these locations is not inferred to reflect the regional groundwater table as these bores are installed to approximately 5 m above the water bearing zone targeted by other nearby monitoring bores.

While the groundwater elevations have increased due to high rainfall, particularly to the south-east and north of the MPAR, groundwater elevation contours indicate that regional groundwater flow beneath the MPAR is generally toward the east. Although hydraulic gradients have changed in some areas, the inferred groundwater flow directions have remained relatively consistent throughout the reporting period, as indicated in the seasonal groundwater flow contours presented in Figure 6a and Figure 6b.

6.5.2 Groundwater Quality Upgradient of MPAR (background)

Data obtained from bores MPGM4/D4 and MPGM4/D5 located to the north-west and up hydraulic gradient (background) of the MPAR, is outlined below and compared to the Environmental Goals for groundwater. Bores MPGM4/D4 and MPGM4/D5 are considered to represent background groundwater conditions in the area and, based on their location up hydraulic gradient of MPAR, are not considered to have been affected by activities at MPAR. Groundwater monitoring data for the current reporting period is presented in Appendix G, and summarised in Figure 8c. Graphs of concentrations over the last 10 years are provided in Appendix J.

6.5.2.1 Field Parameters

Field parameters monitored at these bores for the reporting period are summarised as follows:

- pH values for groundwater from MPGM4/D4 and MPGM4/D5 ranged from 3.39 to 6.00. The pH from bore D4 has been consistently acidic, varying from 3.39 to 3.47 during the reporting period, consistent with the 2020/21 reporting period, and prior monitoring. Throughout the reporting period the reported pH was generally stable in groundwater from these bores, and consistently lower than the Environmental Goal range for groundwater; and
- EC values obtained from field measurements were 740 µS/cm to 1210 µS/cm and remained generally stable throughout the reporting period. TDS values were generally consistent with the field EC. EC and TDS values did not exceed the Environmental Goals for groundwater during the reporting period.

Graphs of concentrations over the last 10 years for up gradient (background) bores MPGM4/D4 and MPGM4/D5 show concentrations of TDS in groundwater have been stable and below the Environmental Goal for groundwater throughout the historical dataset.

6.5.2.2 Major and Minor Ions

Throughout the reporting period, concentrations of major and minor ions, including chloride, sulfate and fluoride were reported for bores MPGM4/D4 and MPGM4/D5. Concentrations were reported below the relevant Environmental Goals for groundwater at both locations throughout the reporting period.

Graphs of concentrations over the last 10 years for up gradient (background) bores MPGM4/D4 and MPGM4/D5 show concentrations of chloride and sulfate are consistent with TDS, and have been stable and below the Environmental Goals for groundwater throughout the historical dataset.

6.5.2.3 Metals

Throughout the reporting period arsenic, iron, lead and manganese were identified on one or more occasions at concentrations above the respective Environmental Goal for groundwater at bores MPGM4/D4 and/or MPGM4/D5, as presented in Appendix G and summarised in Figure 8c. Concentrations of metals were generally higher in groundwater from bore MPGM4/D4 (particularly arsenic, iron and lead) when compared to concentrations in groundwater from bore MPGM4/D5. However, manganese concentrations were higher in groundwater from MPGM4/D5 compared to that from MPGM4/D4.

Graphs of concentrations over the last 10 years (Appendix J) for up gradient (background) bores MPGM4/D4 and MPGM4/D5 show concentrations of boron, and nickel are consistent with TDS values, and have remained stable and below the Environmental Goal for groundwater throughout the historical dataset.

6.5.3 Groundwater Quality within MPAR and the Mine Disturbance Area East of MPAR

Data obtained from groundwater bores situated within the MPAR or in the mine disturbance area immediately to the east (D10, D11, D19, and D113) are summarised below and compared to the Environmental Goals for groundwater. Bores SW3-D, B5 and MPGM4/D23 are located within this area, but due to damaged, blocked or dry bores (insufficient water to sample), no groundwater quality data is available for these bores during this reporting period.

Groundwater monitoring data for the current reporting period is presented in Appendix G, and summarised in Figure 8a. Graphs of concentrations over the last 10 years showing concentrations versus time for key analytes are provided in Appendix J.

6.5.3.1 Field Parameters

Field parameters monitored at bores within the MPAR or in the mine disturbance area immediately to the east for the reporting period are summarised as follows:

- pH values of groundwater in this area were slightly acidic, ranging from 5.97 to 6.32 throughout the reporting period. Throughout the reporting period, pH values remained generally stable and similar to those reported in 2020/21; however, they were consistently lower than the Environmental Goal range for groundwater; and
- EC values obtained from field measurements were 2,290 µS/cm to 10,880 µS/cm, with average values remaining generally consistent with the previous reporting period. TDS concentrations ranged from 1,690 mg/L to 8,830 mg/L. Both EC and TDS values in groundwater from these bores were consistently above the Environmental Goals for groundwater during the reporting period.

Graphs of concentrations over the last 10 years for data from bores within this area show concentrations of TDS in groundwater have fluctuated over time, with a general increase in concentrations to above the Environmental Goal for groundwater occurring prior to 2012, from approximately 2010. The TDS concentrations in groundwater within this area no longer appear to be increasing, although they remain above the Environmental Goal for groundwater. TDS concentrations in groundwater from bores D10, D19 and D113 generally reported decreasing concentrations since mid-2018, before concentrations spiked in late 2019. Since early 2020 decreasing to stable concentrations have been apparent at these locations.

6.5.3.2 Major and Minor Ions

Throughout the reporting period, major and minor ions, including chloride, sulfate and fluoride were analysed in groundwater from D10, D11, D19, and D113. Sulfate concentrations generally exceeded the Environmental Goal for groundwater throughout the reporting period in groundwater from these four bores. Chloride concentrations in groundwater from bore D11 were consistently above the Environmental Goal for groundwater.

Graphs of concentrations over the last 10 years for bores within this area show chloride and sulfate concentrations have fluctuated over time. Consistent with TDS trends, chloride and sulfate concentrations increased from approximately 2010 to approximately 2017; however, concentrations no longer appear to be increasing. Although concentrations of sulfate typically remain above the Environmental Goals for groundwater, chloride concentrations have decreased to below the Environmental Goals at bores D10, D19 and D113 since mid-2020.

6.5.3.3 Metals

Throughout the reporting period boron, chromium, iron, lead, manganese and nickel were measured on one or more occasions at concentrations above the relevant Environmental Goals for groundwater in groundwater from bores D10, D11, D19 and D113. These results are presented in Appendix G, and summarised in Figure 8a. The Environmental Goals for groundwater for boron and iron were exceeded in all samples collected.

Graphs of concentrations over the last 10 years for bores within this area show boron, manganese and nickel concentrations have fluctuated over time. These selected metals were first reported at concentrations above the Environmental Goals for groundwater before 2010. Concentrations remain above the Environmental Goals on a consistent basis for boron in groundwater from all bores, and for manganese and nickel in D11. A spike in manganese and nickel concentrations was noted in bore D113 during the August sampling event, however this apparent increase in concentration was within the historical concentration range for this location. Concentrations of boron, manganese and nickel in groundwater appear relatively stable during the current reporting period at all locations, and have decreased since approximately 2019, particularly at bores D10 and D19.

6.5.4 Groundwater Quality within Mine Disturbance Area South and South-east of MPAR

Data obtained from groundwater bores that are considered to be situated within the mine disturbance area to the south and south-east of the MPAR is summarised below and compared to the groundwater Environmental Goals. Bores in this area include D15, D17 and D18 and are located south to south-east of the Mt Piper Ash Repository. There is no data available for D16/D16A for the current reporting period and therefore no discussion of historical concentrations is provided in this section. Groundwater monitoring data for the current reporting period is presented in Appendix G, and summarised in Figure 8b. Graphs of concentrations over the last 10 years are provided in Appendix J.

6.5.4.1 Field Parameters

Field parameters monitored at these bores, which are situated within the Mt Piper Ash Repository and mine spoil disturbance area, are summarised as follows for the reporting period:

- pH values were consistently lower than the Environmental Goal range for groundwater at D15 and D17, being generally stable between 5.13 and 6.31. pH values at D18 were generally stable between 6.65 and 6.72 and within the Environmental Goal range.
- EC values obtained from field measurements were 680 µS/cm to 3,200 µS/cm with laboratory TDS concentrations of 394 mg/L to 2,520 mg/L. EC and TDS were above the Environmental Goals for groundwater from bore D17 throughout the reporting period, and at bore D15 during the September and November monitoring events. EC and TDS were below the Environmental Goals for groundwater in groundwater from bore D18, consistent with prior monitoring.

Graphs of concentrations over the last 10 years for bores within this area show concentrations of TDS in groundwater from bores D15 and D17 have been increasing over time and have been above the groundwater Environmental Goal since mid-2013. However, since mid-2021 (beginning of this reporting period), TDS concentrations in these bores have declined, however remaining above the Environmental Goals for groundwater. Concentrations of TDS in groundwater from bore D18 appear stable and remained below the Environmental Goals for groundwater.

6.5.4.2 Major and Minor Ions

Throughout the reporting period, concentrations of major and minor ions including chloride, sulfate and fluoride were reported for groundwater from bores D15, D17 and D18. Concentrations of sulfate were generally higher in groundwater from bore D15 and D17, relative to D18, and were reported above the Environmental Goal for groundwater at D15 and D17. Chloride concentrations were reported below the Environmental Goals in groundwater from all bores in this monitoring area.

Graphs of concentrations over the last 10 years for bores within this area show concentrations of chloride and sulfate in groundwater that are consistent with the TDS observations. Concentrations of chloride and sulfate increased in groundwater from bores D15 and D17 from about 2013 to 2019 and sulfate concentrations in groundwater from bore D15 have been consistently above the Environmental Goal for groundwater since monitoring began in 2012, and for D17 since mid-2014. However, during this monitoring period concentrations of chloride and sulfate have decrease at bores D15 and D17, though sulfate concentrations remain above the Environmental Goal at these bores. Concentrations of chloride and sulfate in groundwater at D18 appear stable and remain below the Environmental Goals for groundwater.

6.5.4.3 Metals

Throughout the reporting period arsenic, barium, chromium, copper, iron, lead, mercury and nickel were identified on one or more occasions at concentrations above the Environmental Goal in groundwater from bores D15, D17 and D18. Results are presented in Appendix G, and summarised in Figure 8b. Bore D15 accounts for the majority of results reported above the Environmental Goals in this area, consistent with the 2020/21 reporting period.

Graphs of concentrations over the last 10 years for bores within this area show that concentration trends for boron, manganese and nickel in groundwater are different from the trends for TDS, chloride and sulfate.

Boron concentrations appear to have remained relatively stable, fluctuating within a similar concentration range at each monitoring bore in this area. The exception is for intermittent spikes in boron concentrations at D15 through the historical dataset. Concentrations of boron in groundwater from D15 and the other bores in this area were below the Environmental Goal for groundwater during the reporting period.

Concentrations of manganese appear relatively stable, although variable, at each location in this area. The highest manganese concentrations were reported in groundwater from D15 and D17. These were similar in magnitude to each other, and higher than concentrations reported in groundwater from bore D18. Manganese concentrations in groundwater from bores D15 and D17 have, overall, declined since approximately mid-2019. Manganese concentrations in groundwater from all bores in this area remained below the Environmental Goal for groundwater throughout the historical dataset and the reporting period.

Concentrations of nickel appear stable, although variable, since at least 2014. Concentrations in groundwater from bore D15 were higher than in groundwater from the other bores in this area and have remained above the Environmental Goal since 2017 until late 2021. However, nickel concentrations in groundwater from D15 have, overall, decreased since 2019 and continued to decrease during the current reporting period. Concentrations of nickel in groundwater from D17 and D18 appear generally stable since at least 2014 and have remained below the Environmental Goal for groundwater throughout the historical dataset.

6.5.5 Groundwater Quality Adjacent to MPAR (north)

Groundwater data obtained from groundwater bores MPGM4/D3, D106 and D107 adjacent and to the north of the MPAR (cross gradient) are summarised with reference to the Environmental Goals for groundwater below. Groundwater monitoring data for the current reporting period is presented in Appendix G, and summarised in Figure 8c. Graphs of concentrations over the last 10 years are provided in Appendix J.

6.5.5.1 Field Parameters

Field parameters monitored at bores adjacent and to the north of the MPAR (cross gradient) for the reporting period are summarised as follows:

- pH values in this area were 5.66 to 6.61, indicating slightly acidic groundwater conditions, and were consistently lower than the Environmental Goal range for groundwater throughout the reporting period (with the exception of bore D106 which was within the pH range on one occurrence); and
- EC values obtained from field measurements ranged from 208 µS/cm to 15,600 µS/cm and were generally consistent with laboratory TDS values reported between 134 mg/L and 14,600 mg/L. EC and TDS values were consistently above the Environmental Goals for groundwater at D106 and D107, however values in groundwater from bore MPGM4/D3 remained below the Environmental Goals throughout the reporting period.

Graphs of concentrations over the last 10 years show the concentrations of TDS in groundwater from bore MPGM4/D3 has been stable and below the Environmental Goal for groundwater throughout the historical dataset. This is consistent with data from up gradient (background) bores MPGM4/D4 and MPGM4/D5.

Graphs of concentrations over the last 10 years for bores D107 and D106 show concentrations of TDS in groundwater are higher and variable and have remained above the Environmental Goal since September 2018, when these bores were first sampled.

6.5.5.2 Major and Minor Ions

Throughout the reporting period, concentrations of major and minor ions, including chloride, sulfate, and fluoride were reported for groundwater from MPGM4/D3, D106 and D107. Concentrations of these ions were generally higher in groundwater from bores D106 and D107 when compared to those in groundwater from bore MPGM4/D3. Sulfate and chloride concentrations have consistently been above the Environmental Goals for groundwater in groundwater from bores D106 and D107 since they were first sampled in 2018, while concentrations at bore MPGM4/D3 remained below the Environmental Goals for groundwater. Fluoride concentrations in groundwater from each of these bores were below the Environmental Goal for groundwater with the exception of one occurrence reported at bore D107 during December 2021 sampling event.

Consistent with TDS, graphs of concentrations over the last 10 years of chloride and sulfate concentrations in groundwater from bore MPGM4/D3 indicate that concentrations have been stable and below the Environmental Goals throughout the historical dataset. This is consistent with up gradient (background) bores MPGM4/D4 and MPGM4/D5.

Also consistent with TDS, graphs of concentrations over the last 10 years indicate that chloride and sulfate concentrations in groundwater from bores D107 and D106 have been higher and have remained above the Environmental Goals for groundwater since September 2018 when these bores were first sampled.

6.5.5.3 Metals

Throughout the reporting period boron, chromium, copper, iron, lead, manganese, mercury nickel and silver were identified on one or more occasions at concentrations above the Environmental Goals in groundwater from bores MPGM4/D3 (chromium and iron only), D106 and D107. Results are presented in Appendix G, and summarised in Figure 8c. Similar to TDS and major and minor ions, concentrations in groundwater from bore MPGM4/D3, located further upstream were generally lower than concentrations in groundwater from bores D106 and D107. Bores D106 and D107 accounted for the majority of results reported above the Environmental Goals in this area.

Graphs of concentrations over the last 10 years for bores MPGM4/D3, D106 and D107 show concentrations of boron, manganese and nickel are generally consistent with TDS values. Graphs of concentrations over the last 10 years for bore MPGM4/D3 show concentrations of these selected metals have been stable and below the Environmental Goals for groundwater through the historical dataset. This is consistent with up gradient (background) bores MPGM4/D4 and MPGM4/D5.

Graphs of concentrations over the last 10 years for bore D107 and D106 show concentrations of boron, manganese and nickel in groundwater are higher and have been above the Environmental Goals for groundwater since September 2018 when these bores were first sampled.

6.5.6 Groundwater Quality Adjacent to MPAR and Downgradient

Groundwater data obtained from groundwater bores MPGM4/D1, MPGM4/D9, D102, D105, MPGM4/D8, D104, D103, MPGM4/D2 located adjacent to and down hydraulic gradient of the MPAR are summarised below, with reference to the Environmental Goals for groundwater. Groundwater monitoring data for the current reporting period is presented in Appendix G, and summarised in Figure 8d. Graphs of concentrations over the last 10 years are provided in Appendix J.

6.5.6.1 Field Parameters

Field parameters monitored at bores located adjacent to and down hydraulic gradient of the MPAR for the reporting period are summarised as follows:

- pH values in groundwater from these bores ranged from 5.44 to 6.15, indicating slightly acidic groundwater conditions throughout the reporting period. pH levels remained generally stable, however, were consistently lower than the Environmental Goal range for groundwater at all locations throughout the reporting period, and
- EC values obtained from field measurements were 174 μS/cm to 10,290 μS/cm. The EC results were comparable to laboratory TDS values reported at 194 mg/L to 9,520 mg/L. Over the reporting period, EC and TDS values were consistently above the Environmental Goals in groundwater from bores MPGM4/D1, MPGM4/D9, D102, D103 and D105. No results above the Environmental Goals for EC and TDS were reported for groundwater from bores MPGM4/D2, D104 and MPGM4/D8.

Concentrations graphs for the last 10 years show that, in groundwater from most bores in this area, concentrations of TDS in groundwater have been increasing over time, commencing with MPGM4/D1 and MPGM4/D9 since around 2011. TDS concentrations in groundwater from MPGM4/D1 have consistently been reported above the Environmental Goal for groundwater since 2011. TDS concentrations in groundwater from MPGM4/D9 were above or near the Environmental Goal from 2013 to early 2018, and have increased since 2018.

Concentrations graphs for bores D102, D103 and D105 show the concentrations of TDS in groundwater from these bores have remained above the Environmental Goal for groundwater since September 2018 when these bores were first sampled.

TDS concentrations in groundwater from bore MPGM4/D2 have decreased since early 2020 and remained stable and below the Environmental Goal during the reporting period.

Concentrations graphs for groundwater from bores D104 and MPGM4/D8 show fluctuating although stable TDS concentrations over time. Concentrations at these locations has been below the Environmental Goal throughout the historical dataset.

The previously increasing TDS concentrations at MPGM4/D1, MPGM4/D2, MPGM4/D9, D102, D103 and D105 have become generally stable to decreasing over the current reporting period.

6.5.6.2 Major and Minor Ions

Throughout the reporting period, concentrations of major and minor ions, including chloride, sulfate and fluoride were reported in groundwater from bores MPGM4/D1, MPGM4/D2, MPGM4/D8, MPGM4/D9, D102, D103, D104 and D105, with concentrations of chloride and sulfate exceeding the Environmental Goals for groundwater throughout the reporting period.

Concentrations of major and minor ions were generally lower in groundwater from bores MPGM4/D2, MPGM4/D8 and D104 when compared to concentrations in groundwater from bores MPGM4/D1, MPGM4/D9, D102, D103 and D105. The difference in groundwater quality between these locations is considered likely to be due to the spatial distribution of these locations relative to the MPAR and related groundwater flow paths.

Sulfate was reported at concentrations above the Environmental Goal in groundwater from bores MPGM4/D1, D102, MPGM4/D9, D103 and D105. No results were reported above the groundwater Environmental Goal for sulfate were reported at bores MPGM4/D2, MPGM4/D8 and D104 during the reporting period.

Chloride was reported at concentrations that were consistently above the Environmental Goal in groundwater from bores MPGM4/D1, D102 and MPGM4/D9. No results were reported above the groundwater Environmental Goal for chloride in groundwater from bores MPGM4/D2, MPGM4/D8, D103, D104 and D105.

Graphs of concentrations over the last 10 years for bores within this area show concentrations of chloride and sulfate in groundwater are consistent with TDS and, in all but bore D8, have increased, commencing with MPGM4/D1 and MPGM4/D9 near the beginning of 2011. Sulfate has consistently been reported at above the Environmental Goals for groundwater in groundwater from MPGM4/D1 and MPGM4/D9 since early 2013, while chloride has consistently been reported at above the Environmental Goals for groundwater at MPGM4/D1 since early 2015 and MPGM4/D9 since August 2018. During this reporting period concentrations of chloride and sulfate within these bores appear to have stabilised, and decreased towards the end of the monitoring period.

Chloride concentrations in groundwater from MPGM4/D2 generally increased, although fluctuating, until January 2020 when concentrations declined. Similar trends are apparent in sulfate concentrations in groundwater from MPGM4/D2 although sulfate concentrations increased above the Environmental Goal in 2013 and, have declined to concentrations below the Environmental Goal since January 2020. Sulfate and chloride concentrations have been stable in groundwater from MPGM4/D2 since decreasing in early 2020.

Graphs of concentrations over the last 10 years for bore D103 show the concentration of sulfate has remained generally stable, above the Environmental Goal since September 2018 when the bore was first sampled. Concentrations of chloride in groundwater from D103 have declined since monitoring commenced and have been below the Environmental Goal for groundwater since October 2019.

Sulfate concentrations in groundwater from D105 appear to be stable and consistently above the Environmental Goal for groundwater. Chloride concentrations in groundwater from D105 appear to be stable and consistently below the Environmental Goal for groundwater.

Graphs of concentrations over the last 10 years for bores D104 and MPGM4/D8 show fluctuating although stable chloride and sulfate concentrations over time, with concentrations of these analytes consistently reported below the Environmental Goals for groundwater through the historical dataset.

6.5.6.3 Metals

Throughout the reporting period boron, chromium, copper, iron, lead, manganese, mercury, and nickel were identified on one or more occasions at concentrations above the relevant Environmental Goals for groundwater at the bores located downgradient of MPAR. Results are presented in Appendix G, and summarised in Figure 8d.

Concentrations of metals were generally lower in groundwater from bores MPGM4/D2, MPGM4/D8 and D104, with concentrations highest in groundwater from bores MPGM4/D1, MPGM4/D9, D102, D103 and D105.

Graphs of concentrations over the last 10 years show concentrations of boron, manganese and nickel are generally consistent with TDS values. Concentrations of nickel, manganese and boron have remained stable and below the Environmental Goals in groundwater from MPGM4/D8 and D104. In groundwater from MPGM4/D2, concentrations have fluctuated around the Environmental Goals, but have decreased since early 2020 and are stable, below the Environmental Goals for boron, manganese and nickel.

Graphs of concentrations over the last 10 years show that concentrations of boron, manganese and nickel in groundwater have increased over time at MPGM4/D1 and MPGM4/D9 to concentrations that remain above the Environmental Goals for groundwater. During this reporting period nickel concentrations within these bores appear to have stabilised, and decreased towards the end of the monitoring period.

Graphs of concentrations over the last 10 years for bores D102, D103 and D105 show relatively stable concentrations of boron, manganese and nickel and generally above the Environmental Goal for groundwater since September 2018 when these bores were first sampled. Concentrations of manganese and nickel appear to have decreased at these three monitoring bores during the reporting period.

6.5.7 Groundwater Quality Adjacent to Brine Waste Holding Ponds

Water quality results from monitoring bores MPGM5/D5 and MPGM5/D6, adjacent to the Brine Waste Holding Ponds (to the west and upgradient of the MPAR, but downgradient of the Brine Waste Holding Ponds) are summarised with reference to the Environmental Goals for groundwater below. These bores are installed to approximately 10 m below ground level and were constructed for the purpose of leak detection from the Brine Waste Holding Ponds. Therefore, the presence of water at these locations is not inferred to reflect the regional groundwater table. Water monitoring data for the current reporting period is presented in Appendix G, and summarised in Figure 8e. Graphs of concentration vs time for available data over the last ten years are provided in Appendix J.

6.5.7.1 Field Parameters

Field parameters monitored at bores adjacent to the Brine Waste Holding Ponds for the reporting period are summarised as follows:

- pH values were 5.54 to 6.66, indicating slightly acidic groundwater conditions throughout the reporting period. pH values were consistently below the Environmental Goal range for groundwater of 6.5 – 8.0 in groundwater from both MPGM5/D5 and MPGM5/D6 throughout the reporting period with the exception of a sample collected on the 02/03/2022, the 12/04/2022 and the 08/06/2022 at MPGM5/D5 and 08/06/2022 at MPGM5/D6 which were within the Environmental Goal range for groundwater; and
- EC values obtained from field measurements at MPGM5/D5 were 2,320 µS/cm to 40,200 µS/cm, and this was consistent with laboratory TDS values reported at 27,400 mg/L to 38,600 mg/L. EC and TDS values consistently exceeded the Environmental Goals for groundwater at bore MPG5/D5. EC values obtained from field measurements at MPGM5/D6 were 1,095 µS/cm to 7,790 µS/cm, also consistent with laboratory TDS values reported at 714 mg/L to 3,610 mg/L, exceeding the Environmental goal intermittently throughout the reporting period.

Graphs of concentrations over the last 10 years show that TDS has historically remained below or within the range of the Environmental Goals at both bores until approximately October 2019, when a leak was detected in the liner of Brine Waste Bond A. The 2019 leak was repaired during the 2019/20 reporting period and notified to the EPA (ERM, 2020a). Since the repairs, TDS concentrations at MPGM5/D5 and MPGM5/D6 decreased toward pre-tear levels or below the Environmental Goal. However, TDS concentrations have increased since February 2021, with the recently increasing TDS concentrations considered to be related to the rising groundwater elevations remobilising residual impact related to the 2019 leak. This is discussed further in Section 6.6.6.

6.5.7.2 Major and Minor Ions

Throughout the reporting period, concentrations of major and minor ions, including chloride, sulfate and fluoride were reported at bores MPGM5/D5 and MPGM5/D6. Typically concentrations of chloride and sulfate were higher and above the Environmental Goal in groundwater from bore MPGM5/D5, but were lower and generally below the Environmental Goal at MPGM5/D6.

Fluoride concentrations were reported below the Environmental Goal at both locations except for a sample collected in July 2022 at MPGM5/D5 and May 2022 at MPGM/D6. The laboratory limit of reporting (LOR) was raised at MPGM5/D5 above the Environmental Goal for groundwater during October 2021, January 2022, and May 2022.

Concentration graphs show a similar trend for chloride and sulfate as for TDS, i.e. a spike in concentrations in 2019 at both bores, with subsequently decreasing concentrations toward pre-tear levels or below the Environmental Goal until early 2021. Concentrations of sulfate and chloride have fluctuated, through appear to be increasing at MPGM5/D5 and MPGM5/D6 throughout the current reporting period, and previous reporting period. The recently increasing sulfate and chloride concentrations considered to be related to the rising groundwater elevations remobilising residual impact related to the 2019 leak. This is discussed further in Section 6.6.6.

6.5.7.3 Metals

Throughout the reporting period boron, cadmium, chromium, copper, iron, lead, manganese, mercury, nickel and zinc were identified on one or more occasions at concentrations above the relevant Environmental Goals for groundwater at bores MPGM5/D5 and MPGM5/D6. Results are presented in Appendix G, and summarised in Figure 8e.

Bore MPGM5/D5 accounts for the majority of results reported above the groundwater Environmental Goal from the leak detection bores, with concentrations generally higher from this location compared to MPGM5/D6.

Graphs of concentrations over the last 10 years show a similar trend for boron, manganese and nickel as for TDS, i.e. a spike in concentrations in 2019 at both bores, with subsequently decreasing concentrations toward pre-tear levels or below the Environmental Goal until early 2021. Concentrations of these analytes have fluctuated, through appear to be increasing at MPGM5/D5 and MPGM5/D6 throughout the current reporting period, and previous reporting period. The recently increasing concentrations of select metals is considered to be related to the rising groundwater elevations remobilising residual impact related to the 2019 leak. This is discussed further in Section 6.6.6.

6.6 Summary

6.6.1 Background bores – Up gradient Water Quality

Acidic groundwater and concentrations of metals including arsenic, iron, lead and/or manganese that exceeded the Environmental Goals were identified in groundwater from background bores MPGM4/D4 and MPGM4/D5. As these bores are located up hydraulic gradient, and away, from the MPAR the reported results are not considered to be related to the Project activities. The area surrounding the MPAR has been highly disturbed by historical mining activities, and the low pH in this area has been reported as resulting from oxidation of iron sulfide (Connell Wagner, 2007). The elevated metals are likely associated with this oxidation and acidification mobilising metals into groundwater. Graphs of concentrations over the last 10 years presented in Appendix J for key analytes in groundwater including TDS, chloride, sulfate, boron, manganese and nickel show that the concentrations of these analytes have remained relatively stable in this area historically, as well as over the reporting period, consistent with them representing background conditions.

6.6.2 Groundwater Quality within MPAR and the Mine Disturbance Area East of MPAR

Elevated EC and TDS values as well as concentrations of sulfate, chloride (in particular D11) and metals including boron, chromium (D19 only), iron, lead, manganese (D11 only), and nickel were identified at concentrations at or above the Environmental Goals in groundwater from bores within the MPAR, and in downgradient areas to the east (D10, D11, D19 and D113). pH values in groundwater both within and downgradient of the MPAR were typically below (more acidic than) the Environmental Goal for groundwater. The lower pH values are considered to be consistent with background conditions in the area and may result from historical mine disturbance and/or be related to the regional groundwater quality. On this basis, the pH of groundwater in this area will continue to be monitored, consistent with the WMP, but is not discussed further.

Concentrations of iron, lead and manganese in groundwater from the bores at and downgradient of the MPAR were a similar order of magnitude to those in groundwater from the background monitoring bores (MPGM4/D4 and MPGM4/D5). These concentrations are considered to be related to background groundwater conditions.

The reported TDS, EC, sulfate, chloride, boron, chromium and nickel concentrations in groundwater from bores in this area are considered elevated relative to upgradient locations. Connell Wagner (2007) reported elevated levels of sulfate, boron, nickel, zinc, manganese and iron previously in this area based on pre-placement ash data from bore B904 (operational between 1997 and 2000), which may have been influenced by goaf underground mine workings to the south of this area. However, concentrations of sulfate, chloride, boron, nickel and zinc and potentially the other metals indicate a different composition relative to the background bores and pre-placement groundwater data from historical bore B904 (from Aurecon, 2017).

In consideration of the brine composition (refer to Section 2.3 and Appendix D), which also contains elevated concentrations of these constituents, groundwater in this area has been influenced by leaching of BCA higher in the MPAR to the underlying water table. The leaching of constituents from the BCA placement area to the underlying groundwater is currently subject to review and management as part of the independent assessment.

However, there is evidence of decreasing trends in TDS, chloride, sulfate, boron, nickel and manganese in groundwater from D10, D19 and D113 during 2019/20 and stable trends during the 2020/21 and current reporting period.

6.6.3 Groundwater Quality within Mine Disturbance Area South and Southeast of MPAR

Concentrations of analytes including sulfate, chloride and metals were typically lower in groundwater from D18 than in the surrounding bores in this area (D15 and D17, noting D16/D16A were not sampled during this reporting period). D18 results were also lower than when compared to background concentrations in groundwater from bores MPGM4/D4 and MPGM4/D5. Based on this information, the integrity of bore D18 may have been compromised, allowing fresh water to enter the borehole from the surface or may be directly connected through mine void or fill to surface water. Groundwater elevations in bore D18 have historically been more variable than in nearby bores, with more rapid responses to rainfall. Based on this information, water quality in bore D18 is not considered to represent groundwater quality in the area.

Elevated concentrations of iron were consistent in groundwater from bores within this area, except at D18, and were comparable to those reported in groundwater from background bores MPGM4/D4 and MPGM4/D5. These iron concentrations, which exceeded the Environmental Goal, are considered to be consistent with background groundwater conditions.

EC, TDS and sulfate concentrations were higher in groundwater from bores D15 and D17 than in the background bores MPGM4/D4 and MPGM4/D5, and exceeded the Environmental Goals for groundwater. Concentrations of chromium, copper, lead, mercury, and nickel more consistently exceeded the Environmental Goals in groundwater from bore D15. Concentrations of mercury were reported just above the environmental goal for groundwater during the September sampling event at bore D18 and concentrations of a number of metals were reported during the September sampling event in bore D18. However, the results reported above the groundwater Environmental Goal from bore D18 are not considered to be representative of groundwater conditions in the area given the potentially compromised integrity of bore D18.

Concentrations of target analytes in groundwater from bore D15 that exceed Environmental Goals are considered to be influenced by activities at the MPAR. Bore D15 appears to be located cross gradient, rather than directly down hydraulic gradient of the MPAR; however, the presence of preferential flow paths associated with former mine workings, and other water management activities are likely to be factors in the apparent distribution of the analytes in groundwater. The seepage of constituents from the BCA placement area to underlying and adjacent groundwater is currently subject to review and management as part of the independent assessment.

6.6.4 Groundwater Quality Adjacent to MPAR (north)

Groundwater quality at bore D3, which is the furthest up hydraulic gradient of the bores adjacent to MPAR was similar to the background groundwater conditions identified at background bores MPGM4/D4 and MPGM4/D5. Iron concentrations were within an order of magnitude of concentrations in the background bores, and the low pH values were also comparable to those in groundwater from MPGM4/D5.

Concentrations of EC, TDS, chloride, sulfate, boron, chromium, copper, iron, lead, manganese, mercury, nickel and silver exceeded the Environmental Goals in groundwater from bores D106 and D107, located to the north-east of the MPAR. The iron and a component of the manganese concentrations are considered to be related to background water quality in the area, based on concentrations in groundwater from the background bores MPGM4/D4 and MPGM4/D5, in which concentrations were a similar order of magnitude.

The EC, TDS, chloride, sulfate, boron and nickel concentrations in groundwater from bores D106 and D107 are considered to represent changes to water quality and are not primarily related to background and pre-ash placement conditions. These analytes are present at elevated concentrations in the brine and in groundwater beneath and immediately downgradient of the MPAR. Therefore, concentrations of analytes in groundwater from bores D106 and D107 are considered to related to BCA placement activities at the MPAR. The seepage of constituents from the BCA placement area to underlying and adjacent groundwater is currently subject to review and management as part of the independent assessment.

6.6.5 Groundwater Quality Adjacent to MPAR and Downgradient

Some results were reported above the groundwater Environmental Goal for iron in groundwater from bores D8, D2 and D104. These concentrations are considered likely to be related to the background water quality in the area, based on concentrations in groundwater from the background bores MPGM4/D4 and MPGM4/D5, which were higher.

Concentrations of TDS, EC, sulfate, chloride, boron, iron, nickel and/or manganese that exceeded the Environmental Goals were reported in groundwater from bores MPGM4/D1, MPGM4/D9, D102, D103, and D105, located down hydraulic gradient of the MPAR. pH values were also typically below the Environmental Goal range for groundwater. The elevated iron and manganese concentrations and the acidic pH values are considered to represent background groundwater conditions in the area.

The concentrations of EC and TDS, chloride, sulfate, boron and nickel that were above the Environmental Goals are considered to represent changes to water quality and are not primarily related to background and pre-ash placement conditions. These analytes are present at elevated concentrations in the brine used to condition the BCA, and in groundwater beneath and immediately downgradient of the MPAR. Concentrations of these analytes in groundwater from bores MPGM4/D1, MPGM4/D9, D102, D103 and D105 are considered to be related to BCA placement activities at the MPAR. This is currently subject to review and management as part of the independent assessment.

The concentrations of these key analytes in groundwater from MPGM4/D2 during the 2020/21 and current reporting period have declined compared to previous reporting periods, when increasing concentrations were observed. Except for iron, pH and copper once, the concentrations of key analytes were at or below the Environmental Goals for MPGM4/D2 during the current reporting period, and this bore is considered to be representative of groundwater conditions in the area.

The intermittent and irregular results reported above the groundwater Environmental Goal for chromium, copper, lead and mercury in groundwater from bores D1, D102, D103, D104, D105 and MPGM4/D2 that occurred during the 2019/20 reporting period have occurred similarly during the current reporting period.

6.6.6 Groundwater Quality Adjacent to Brine Waste Holding Ponds

Concentrations of EC, TDS, chloride, sulfate, boron, cadmium, copper, nickel and selenium in groundwater from MPGM5/D5 have remained stable when compared to the previous reporting period, although still exceeding the Environmental Goals. These concentrations are considered to be related to a tear identified in the liner at Brine Waste Pond A, which was repaired during the 2019/20 period and notified to the EPA. Concentrations of these analytes in groundwater from MPGM5/D6 have increased when compared to the previous reporting period with intermittent results reported above the groundwater Environmental Goals for a number of analytes including EC, TDS, sulfate, chloride, chromium, copper, iron, lead and mercury.

The suspected source of increasing concentrations in water from MPGM5/D5 in in 2021 and 2022 was subject to review by ERM (2022), and the following conclusions have been made:

- The results do not indicate a new or recent leak that would have led to the changes in water quality observed at bore MPGM5/D5 in 2021 and 2022. The recent composition of water from this bore is generally consistent with the composition and water quality observed from the 2019 leak from brine waste pond A.
- It is likely that the observed increase in concentrations at bore MPGM5/D5 during 2021 and 2022 are associated with residual brine from the 2019 leak that has remained in the ground near the ponds, and that is being mobilised by higher water levels following higher rainfall, particularly in late 2021 and into 2022.
- The groundwater impacts associated with the original 2019 leak of brine from waste pond A are delineated downgradient of bore MPGM5/D5 based on the field survey of EC conducted by ERM in March 2022.

7. EARLY WARNING ASSESSMENT

In addition to comparing results with the Environmental Goals for surface water and groundwater, an early warning assessment of the groundwater and surface water monitoring data is required as part of the WMP. This assessment includes assessment of concentration plots through time, including statistical analysis where appropriate.

7.1 Trend Assessment Approach

Trends in target analyte concentrations in groundwater and surface water were assessed through a combination of graphical and statistical tools.

Firstly, graphs of concentrations over the last 10 years were created for target analyte concentrations for individual monitoring locations to evaluate temporal trends of solute concentrations. A description of historical concentrations over the last ten years (since 2012) and Environmental Goals is provided in Section 5 (for surface water) and Section 6 (for groundwater). The graphs of concentrations over the last 10 years also include adopted Environmental Goals. As discussed in Section 5.5 and Section 6.5, graphs of concentrations over the last 10 years from July 2012 to June 2022 are presented for surface water and groundwater in Appendix I and Appendix J respectively.

7.2 Statistical Assessment of Trends

For both groundwater and surface water, the last two years of data, covering the last two reporting periods was adopted for the statistical assessment. Statistical tools were applied and included the use of the Mann-Kendall method and linear regressions to evaluate trends in target analyte concentrations in groundwater and surface water from each individual monitoring location. Statistical trend plots from the statistical assessment are presented in Appendix L and Appendix M respectively. Further details of the ERM Mann-Kendall and the data assessment methodology are provided in Appendix K.

7.2.1 Groundwater

Groundwater statistical trend plots (concentrations in groundwater and groundwater elevations vs time) were generated for each individual monitoring location for selected analytes by the ERM Mann Kendall application which was developed by the Data Science and Visualisation Group to facilitate Mann-Kendall trend analysis and reporting.

The outputs include data from the beginning of the 2020/21 reporting period, and the statistical trend assessment. For the groundwater trends, the p-value presented in the trend plots indicates the level of statistical significance that can be attributed to the trend. A p-value of less than 0.05 relates to a statistical significance of 95%, i.e. if a trend has a p-value of less than 0.05 there is a 95% level of confidence that the data presents an actual trend and not a random distribution of data. The 95% confidence level has been adopted by ERM as an indicator of statistical significance in trends, and trends with these characteristics are shown in a solid black line, those that are not statistically significant do not include a solid black line.

Where no p-value is provided on the graphical outputs, a sufficient number of data points were not available to evaluate the significance of trends through the Mann-Kendall test. Concentrations both above and below the laboratory limit of reporting and with respect to the relevant adopted background concentration (where available) are shown.

Further details on the Mann-Kendall procedure are presented in the Western Australia Department of Environment's guidance document entitled *Use of Monitored Natural Attenuation for Groundwater Remediation* (2004).

7.2.2 Surface water

Surface water statistical trend plots (linear regression graphs) comparing concentrations in surface water vs time, were generated for each individual monitoring location for select analytes reported during this reporting period. Where surface water concentrations were reported below the laboratory LOR, a half laboratory LOR concentration value was adopted for the statistical trend assessment.

Due to the variability within the data set for surface water, linear regression graphs were identified to be the most appropriate statistical assessment tool for the assessed two-year dataset. Similar to the groundwater assessment, the outputs in Appendix M include data from the beginning of the 2020/21 reporting period and the linear regression trend assessment. For the purposes of this assessment a trend was considered a positive trend (increasing trend) when the R was reported between 0.5 and 1, and a negative trend (decreasing trend) when the R was reported between -0.5 and -1.

For the surface water trends, the R^2 value presented in the surface water statistical trend plots evaluates the scatter of the data points around a fitted regression line (presented as a solid blue line on the trend graphs). The R^2 value is reported between -1 and 1, where a larger R^2 value, or one that is closer to 1, indicates a stronger trend, with less variability.

Table 8 presents a summary from the statistical assessment of trends assessed for all locations and analytes reported above the relevant Environmental Goal during the reporting period.

Table 8: Summary of Statistical Assessment for Target Analytes

Monitoring Location	As	B	Cd	Cl	Cr	Cu	F	Fe	Pb	Mn	Hg	Mo	Ni	Se	SO_4	Zn	TDS	EC
Surface Water																		
LMP01	NT	Down	Down	NT	NT	NT	NT	NT	NT	NT	NT	Down	NT	^	NT	NT	NT	NT
NC01	NT	NT	NT	NT	NT	NT	Down	NT	NT	NT	NT	Down	NT	^	NT	NT	NT	NT
SW_C	NT	NT	NT	NT	NT	NT	NT	NT	NT	Up	NT	Down	NT	^	NT	NT	NT	NT
SW_E	NT	Up	NT	NT	NT	NT	NT	NT	NT	NT	NT	Down	NT	^	NT	NT	NT	NT
WX22	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	^	NT	NT	NT	NT
SW_G	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	^	NT	NT	NT	NT
Within MPAR / mine disturbance area east of MPAR																		
B5	Not sampled in current reporting period (blocked)																	
SW3-D	Not sampled in current reporting period (dry)																	
D23	Not sampled in current reporting period (damaged)																	
D10	NT	NT	NT	NT	NT	*	*	NT	NT	NT	-	NT	NT	NT	NT	NT	NT	NT
D11	NT	NT	-	NT	-	*	*	NT	-	NT	-	*	NT	NT	NT	NT	*	NT
D19	NT	NT	*	NT	NT	NT	*	Down	NT	NT	-	*	NT	*	NT	NT	NT	NT
D113	NT	NT	NT	NT	NT	NT	-	Down	NT	NT	*	*	NT	*	NT	NT	NT	NT
Groundwater - within mine disturbance area – south and south-east of MPAR																		
D15	NT	NT	Down	Down	NT	NT	-	Down	NT	Down	*	NT	Down	NT	Down	Down	*	Down
D16	Not sampled in current reporting period																	
D17	NT	Down	-	Down	*	-	*	NT	-	Down	*	-	Down	-	NT	Down	NT	Down
D18	NT	NT	*	NT	NT	NT	NT	NT	*	NT	*	NT	NT	*	NT	NT	NT	NT

Monitoring Location	As	B	Cd	Cl	Cr	Cu	F	Fe	Pb	Mn	Hg	Mo	Ni	Se	SO_4	Zn	TDS	EC
Groundwater - background and adjacent MPAR – north and north-east																		
MPGM4/D4	NT	-	NT	NT	NT	*	*	NT	NT	NT	-	-	Down	*	NT	NT	NT	NT
MPGM4/D5	*	NT	-	NT	-	*	NT	NT	-	NT	-	-	NT	NT	NT	Up	NT	NT
MPGM4/D3	-	NT	*	NT	*	*	*	NT	-	NT	*	*	NT	*	NT	NT	NT	NT
D107	NT	NT	Up	NT	*	*	*	Down	Up	NT	*	-	NT	NT	NT	NT	NT	NT
D106	NT	NT	NT	NT	*	NT	-	NT	NT	NT	*	*	NT	NT	NT	NT	*	NT
Groundwater - adjacent MPAR – downgradient																		
MPGM4/D1	NT	NT	-	NT	NT	*	NT	NT	NT	Down	-	NT	Down	NT	NT	NT	NT	NT
MPGM4/D9	NT	Up	*	NT	NT	*	*	Down	NT	Down	NT	*	NT	NT	NT	NT	NT	NT
D102	NT	NT	*	NT	NT	*	*	NT	-	NT	*		NT	*	NT	NT	*	Down
D105	NT	NT		Down	*	-	-	Down	-	NT	*	-	Down	-	Down	NT	*	Down
MPGM4/D8	*	*	*	NT	-	NT	*	NT	*	NT	-	*	NT	-	NT	NT	NT	NT
D103	NT	NT	-	Down	NT	*	*	Down	-	Down	*	-	Down	*	Down	NT	*	Down
D104	*	NT	-	NT	*	NT	*	NT	-	NT	*	-	NT	-	NT	Down	*	NT
MPGM4/D2	NT	Down	-	Down	*	NT	NT	NT	NT	Down	-	-	Down	Up	Down	NT	NT	Down
Groundwater - brine waste pond leak detection bores																		
MPGM5/D5	Up	Up	NT	Up	NT	NT	*	Up	NT	NT	NT	*	Up	NT	NT	NT	NT	Up
MPGM5/D6	NT	*	*	NT	NT	NT	*	Down	NT	NT	*	-	NT	NT	NT	NT	*	NT

NT = No statistically significant trend apparent (downward black trend line presented on graph)
Up = Statistically significant increasing trend (upward black trend line presented on graph)
Down = Statistically significant decreasing trend (downward black trend line presented on graph; Appendix L)
- = Mann Kendall trend analysis not conducted
** Insufficient data with concentrations above LOR for trend analysis*
^ Raised LOR reported, interfering with the trend assessment. Therefore has been excluded

7.3 Trend Assessment Summary

7.3.1 Surface Water

A single statistically significant increasing trend was identified for boron in surface water from SW_E during the 2 years of data assessed. Decreasing trends were reported for boron, cadmium, fluoride and molybdenum in surface water at several locations, as indicated in Table 8. For the majority of analytes in surface water from most locations, no statistically significant trends were identified. .

7.3.2 Groundwater

Statistically significant increasing trends were reported for boron downgradient of the MPAR in groundwater from MPGM4/D9, and an increasing trend was reported for selenium in groundwater from bore MPGM4/D2.

Within and east of MPAR, groundwater concentration trends were generally stable (no trend) or decreasing, with no statistically significant increasing trends were reported for bores within this area. A decreasing trend for iron was reported at bores D19 and D113.

Analyte concentrations were also generally stable (no trend) or decreasing upgradient of MPAR in the groundwater from background bores. A statistically significant increasing trend was identified for zinc in groundwater from bore MPGM4/D5. A decreasing trend for nickel was reported in groundwater from bore MPGM4/D4.

Adjacent to MPAR to the north, a statistically significant increasing trend was identified for cadmium in groundwater from bore D107, while a statistically significant decreasing trend was identified for iron groundwater from bore D107.

Compared to previous years, the statistically significant increasing trends reported in groundwater from bores downgradient of the MPAR were not reported during this monitoring period. Only selected analytes at two bores within this area reported increasing trends; boron at MPGM4/D9 and selenium at MPGM4/D2. Generally, analyte concentrations in this area were stable (no trend) or decreasing.

The increasing trends which had been reported during previous reporting period were considered to be due to the leaching of these analytes from the BCA placed in the MPAR and subsequent transport of solutes with the regional groundwater. These processes and future management strategies are being further assessed as part of the independent assessment in accordance with contingency measures outlined in the WMP. The general stabilisation of trends across the monitoring network downgradient of the MPAR is likely to have been influenced by the higher than average rainfall over the reporting period.

Similarly, within the mine disturbance areas to the south and south-east of MPAR, the increasing trends which had previously been reported in groundwater from D18 were not reported during this monitoring period, noting that data for D16 was not available due to this bore having been decommissioned (now replaced by D16A). Stable or statistically significant decreasing trends were reported in groundwater from D15 and D17. Concentrations of target analytes in groundwater from bore MPGM4/D8, located north of Wangcol Creek, were stable.

Statistically significant increasing trends were noted for arsenic, fluoride, nickel, and electrical conductivity in groundwater from leak detection monitoring bore MPGM5/D5. This is inconsistent with data from last year which showed statistically significant decreasing trends for a number of analytes after the liner repairs at Brine Waste Pond A were completed. Trends were stable or decreasing, at MPGM5/D6. Refer to Section 6.6.6 for the discussion of ERM (2022) data review in relation to the brine waste pond leak detection bores.

7.4 Implementation of Contingency and Mitigation Measures

Where increasing trends have been identified, these have been recognised as triggers for action in accordance with the TARPs.

In the case of groundwater to the north and north-east, hydraulically downgradient of the MPAR, the independent assessment is currently being implemented in line with the contingency measures contained in the WMP to assess the extent to which the MPAR may be contributing to previously reported results above the Environmental Goals, and to identify further contingency measures if necessary. The independent assessment includes a separate and broader investigation of surface water and groundwater conditions in the vicinity of the Ash Repositories. Potential short- and long-term management measures are currently being evaluated as part of the independent assessment.

8. CONCLUSIONS

Based on the review of the surface water and groundwater quality data for the Project obtained in accordance with the WMP for the reporting period, it is considered that the objectives of the AEMR have been met, and the following conclusions are drawn.

- Concentrations of target analytes in groundwater have been reported above the Environmental Goal for groundwater at monitoring locations within and immediately downgradient to the east of the MPAR. Elevated concentrations of key analytes including chloride, sulfate, boron and nickel are considered to be due to the leaching of these analytes from the BCA placed in MPAR, and subsequent transport of solutes with the regional groundwater. However, groundwater from bores within the MPAR and immediately to the east (D10, D11, D19) reported stable and decreasing trends over the reporting period.
- Impacted groundwater is migrating from the vicinity of the MPAR toward the alignment of Wangcol Creek, as indicated by the groundwater quality results reported to the north at D106 and D107, to the east at MPGM4/D1, MPGM4/D9, D102 and to a lesser extent at D105 and D103. These locations in particular have reported concentrations of target analytes in groundwater above the Environmental Goal for groundwater in areas downgradient of the MPAR. However, with the exception of cadmium in groundwater from bore D107, boron at MPGM4/D9 and selenium at MPGM4/D2 which reported increasing concentration trends, concentrations of target analytes in groundwater downgradient of the MPAR to the north and the east have generally reported stable or decreasing concentration trends. The general stabilisation of trends across the monitoring network downgradient of the MPAR is likely to be influenced by the higher than average rainfall over the reporting period.
- Potential interaction of this impacted groundwater with the surface water of Wangcol Creek was identified during the 2019/20 reporting period (ERM, 2020a). During the current reporting period, the majority of analytes were reported to meet the Environmental Goal for surface water. The exceptions were: copper, mercury and molybdenum for which results were intermittently above the surface water Environmental Goals within the Wangcol Creek monitoring network; iron for which results were above the surface water Environmental Goal within the Wangcol Creek monitoring network; and nickel for which results were consistently above the surface water Environmental Goal from SW_E, WX22 and SW_G within the Wangcol Creek monitoring network. Overall, surface water quality trends have generally remained stable during the current reporting period, after the surface water conditions were reported to have improved during the previous reporting period (2020/21). The stable surface water quality, as supported by the predominantly stable and decreasing trends, is also likely to have been influenced by the higher than average rainfall over the reporting period, compared to 2020/21, 2019/20, and prior reporting periods.
- Concentrations of key target analytes at MPGM5/D5 and MPGM5/D6 reported a spike in concentrations in 2019, related to a leak from Brine Waste Pond A, which was subsequently repaired and reported to the EPA. Water conditions improved at MPGM5/D5 and MPGM5/D6 toward pre-tear levels or below the Environmental Goals until early 2021. Since early 2021, concentrations of key target analytes appear to have increased at MPGM5/D5. The suspected source of increasing concentrations in water from MPGM5/D5 in 2021 and 2022 was subject to review by ERM, and the following conclusions have been made:
  - The results do not indicate a new or recent leak that would have led to the changes in water quality observed at bore MPGM5/D5 in 2021 and 2022. The recent composition of water from this bore is generally consistent with the composition and water quality observed from the 2019 leak from brine waste pond A;
  - It is likely that the observed increase in concentrations at bore MPGM5/D5 during 2021 and 2022 are associated with residual brine from the known 2019 leak that has remained in the ground near the ponds, and that is being mobilised by higher water levels following higher rainfall, particularly in late 2021 and into 2022;

- The groundwater impacts associated with the original 2019 leak of brine from brine waste pond A are delineated downgradient of bore MPGM5/D5 based on a field survey of EC conducted by ERM in March 2022;
- Since the leak is considered to be associated with historic impacts in groundwater around brine waste pond A, and impacts to groundwater are localised (as indicated via the field survey), no further remediation, beyond the repair of the identified liner tear in 2019, is recommended as long as water quality data remains consistent or improves; and
- Monitoring of water levels and water quality in leak detection bore MPGM5/D5 will continue in accordance with the WMP.

Results of the groundwater and surface water monitoring program indicate that groundwater quality in the vicinity of the MPAR and the Brine Waste Ponds is influenced by the Project activities. In portions of Wangcol Creek, surface water quality has historically been shown to be affected, primarily through the flow of groundwater into the creek during periods of low rainfall. This is currently subject to review and management as part of the independent assessment, however the influence of the Project on Wangcol Creek water quality is less prominent with the higher than average rainfall seasons experienced since 2020.

Where increasing trends have been identified, these have been recognised as triggers for action in accordance with the TARPs. In the case of groundwater to the north, east and down hydraulic gradient of MPAR, and historically surface water, the independent assessment, including assessment of potential mitigation measures continues. The outcomes of the independent assessment will inform future AEMRs for the Project and will be reflected in revisions to the WMP, while groundwater elevation and quality will continue to be monitored.

Consistent with the 2019/20 and 2020/21 monitoring periods, due to bore construction appearing to have been compromised, permanently blocked, or bores repeatedly being dry or inaccessible, it is recommended that monitoring of bores B5, D23 and SW3D be removed from the monitoring program, and these bores be decommissioned if damaged. Data from the replacement bore D16A should be collected for inclusion in future reporting periods in order to maintain compliance reporting requirements.

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9.1 Project

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9.2 General

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10. STATEMENT OF LIMITATIONS

This report is based solely on the scope of work described in our proposal P0533074 dated 20/3/20 and confirmed via email on 24/4/20 (Scope of Work) and performed by Environmental Resources Management Australia Pty Ltd (ERM) for EnergyAustralia NSW Pty Ltd (the Client). The Scope of Work was governed by a contract between ERM and the Client (Contract).

No limitation, qualification or caveat set out below is intended to derogate from the rights and obligations of ERM and the Client under the Contract.

The findings of this report are solely based on, and the information provided in this report is strictly limited to that required by, the Scope of Work. Except to the extent stated otherwise, in preparing this report ERM has not considered any question, nor provides any information, beyond that required by the Scope of Work.

This report was prepared between July 2022 and 28 September 2022 and is based on conditions encountered and information reviewed at the time of preparation. The report does not, and cannot, take into account changes in law, factual circumstances, applicable regulatory instruments or any other future matter. ERM does not, and will not, provide any on-going advice on the impact of any future matters unless it has agreed with the Client to amend the Scope of Work or has entered into a new engagement to provide a further report.

Unless this report expressly states to the contrary, ERM's Scope of Work was limited strictly to identifying typical environmental conditions associated with the subject site(s) and does not evaluate the condition of any structure on the subject site nor any other issues. Although normal standards of professional practice have been applied, the absence of any identified hazardous or toxic materials or any identified impacted soil or groundwater on the site(s) should not be interpreted as a guarantee that such materials or impacts do not exist.

This report is based on one or more site inspections conducted by ERM personnel, the sampling and analyses described in the report, and information provided by the Client or third parties (including regulatory agencies). All conclusions and recommendations made in the report are the professional opinions of the ERM personnel involved. Whilst normal checking of data accuracy was undertaken, except to the extent expressly set out in this report ERM:

- Did not, nor was able to, make further enquiries to assess the reliability of the information or independently verify information provided by;
- Assumes no responsibility or liability for errors in data obtained from; and
- The Client, any third parties or external sources (including regulatory agencies).

Although the data that has been used in compiling this report is generally based on actual circumstances, if the report refers to hypothetical examples those examples may, or may not, represent actual existing circumstances.

Only the environmental conditions and or potential contaminants specifically referred to in this report have been considered. To the extent permitted by law and except as is specifically stated in this report, ERM makes no warranty or representation about:

- The suitability of the site(s) for any purpose or the permissibility of any use;
- The presence, absence or otherwise of any environmental conditions or contaminants at the site(s) or elsewhere; or
- The presence, absence or otherwise of asbestos, asbestos containing materials or any hazardous materials on the site(s).

Use of the site for any purpose may require planning and other approvals and, in some cases, environmental regulator and accredited site auditor approvals. ERM offers no opinion as to the likelihood of obtaining any such approvals, or the conditions and obligations which such approvals may impose, which may include the requirement for additional environment works.

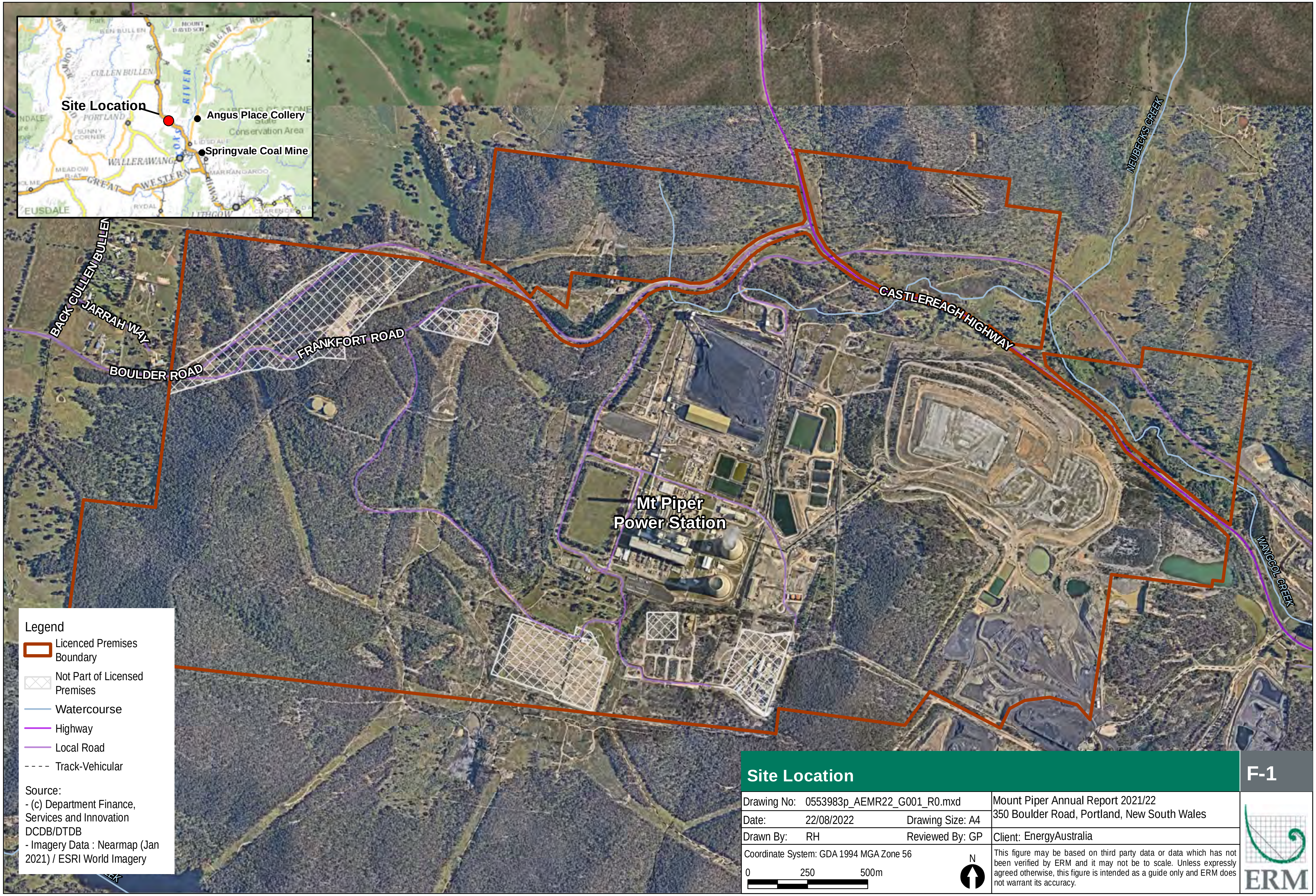
The ongoing use of the site or use of the site for a different purpose may require the management of or remediation of site conditions, such as contamination and other conditions, including but not limited to conditions referred to in this report.

This report should be read in full and no excerpts are to be taken as representative of the whole report. To ensure its contextual integrity, the report is not to be copied, distributed or referred to in part only. No responsibility or liability is accepted by ERM for use of any part of this report in any other context.

Except to the extent that ERM has agreed otherwise with the Client in the Scope of Work or the Contract, this report:

- Has been prepared and is intended only for the exclusive use of the Client;
- Must not to be relied upon or used by any other party;
- Has not been prepared nor is intended for the purpose of advertising, sales, promoting or endorsing any Client interests including raising investment capital, recommending investment decisions, or other publicity purposes;
- Does not purport to recommend or induce a decision to make (or not make) any purchase, disposal, investment, divestment, financial commitment or otherwise in or in relation to the site(s); and
- Does not purport to provide, nor should be construed as, legal advice.

FIGURES



Site Location
Angus Place Collery
Springvale Coal Mine
CASTLEREAGH HIGHWAY
NEUBECKS CREEK
BACK CULLEN BULLEN
JARRAH WAY
BOULDER ROAD
FRANKFORT ROAD
Mt Piper Power Station
WANGCOL CREEK
Legend
Licenced Premises Boundary
Not Part of Licensed Premises
Watercourse
Highway
Local Road
Track-Vehicular
Source:
- (c) Department Finance, Services and Innovation DCDB/DTDB
- Imagery Data : Nearmap (Jan 2021) / ESRI World Imagery
Site Location
F-1
Drawing No: 0553983p_AEMR22_G001_R0.mxd
Date: 22/08/2022
Drawing Size: A4
Drawn By: RH
Reviewed By: GP
Coordinate System: GDA 1994 MGA Zone 56
0
250
500m
N
Mount Piper Annual Report 2021/22
350 Boulder Road, Portland, New South Wales
Client: EnergyAustralia
This figure may be based on third party data or data which has not been verified by ERM and it may not be to scale. Unless expressly agreed otherwise, this figure is intended as a guide only and ERM does not warrant its accuracy.
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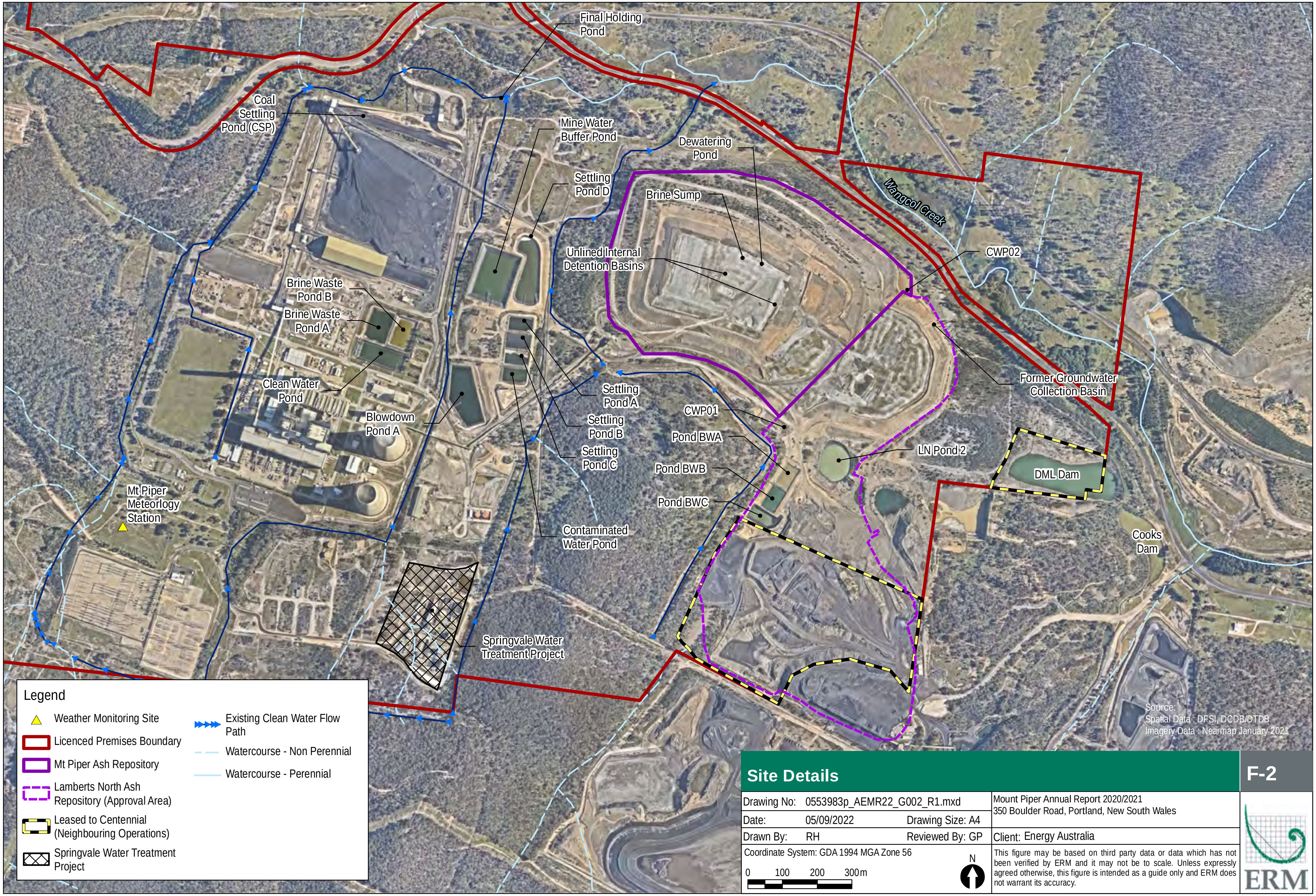
Final Holding Pond
Coal Settling Pond (CSP)
Mine Water Buffer Pond
Dewatering Pond
Settling Pond D
Brine Sump
Wangcol Creek
Unlined Internal Detention Basins
CWP02
Brine Waste Pond B
Brine Waste Pond A
Former Groundwater Collection Basin
Clean Water Pond
Settling Pond A
CWP01
Blowdown Pond A
Settling Pond B
Pond BWA
LN Pond 2
Settling Pond C
Pond BWB
DML Dam
Mt Piper Meteorlogy Station
Pond BWC
Cooks Dam
Contaminated Water Pond
Springvale Water Treatment Project
Legend
Weather Monitoring Site
Licenced Premises Boundary
Mt Piper Ash Repository
Lamberts North Ash Repository (Approval Area)
Leased to Centennial (Neighbouring Operations)
Springvale Water Treatment Project
Existing Clean Water Flow Path
Watercourse - Non Perennial
Watercourse - Perennial
Source:
Spatial Data : DFSI, DCDB/DTDB
Imagery Data : Nearmap January 2021
Site Details
F-2
Drawing No: 0553983p_AEMR22_G002_R1.mxd
Date: 05/09/2022
Drawing Size: A4
Drawn By: RH
Reviewed By: GP
Coordinate System: GDA 1994 MGA Zone 56
0 100 200 300 m
N
Mount Piper Annual Report 2020/2021
350 Boulder Road, Portland, New South Wales
Client: Energy Australia
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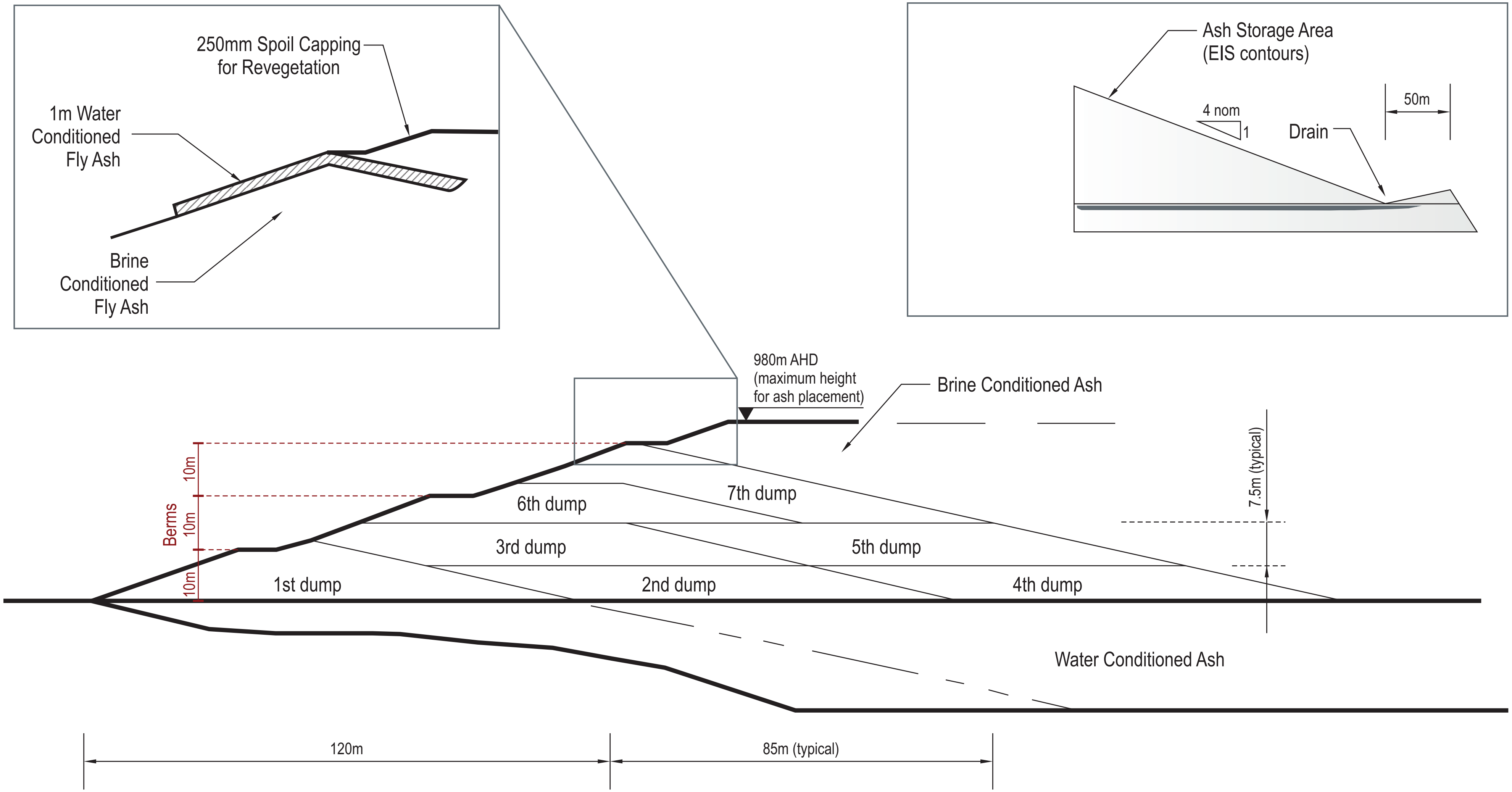
ERM



Notes:
Details shown are diagrammatical only.

Source:
Connell and Wagner, 2008. Mt Piper Power Station Brine Conditioned Flyash Co-placement Extension Water Management and Monitoring Plan. Prepared for Delta Electricity, September 2008.

Schematic of External Batter Placement

F - 3

Drawing No: 0553983s_AEMR22_C001_R0.cdr		**Mount Piper Annual Report 2021/2022** **350 Boulder Road, Portland, New South Wales**
Date: 22/08/2022	Drawing size: A4	
Drawn by: GC	Reviewed by: GP	Client: Energy Australia
Drawing Not to Scale		This figure may be based on third party data or data which has not been verified by ERM and it may not be to scale. Unless expressly agreed otherwise, this figure is intended as a guide only and ERM does not warrant its accuracy.

ERM

Ash Placement Plan

F4

Drawing No:	0553983s_AEMR22_G010_R0.mxd		
Date:	31/08/2022	Drawing Size:	A4
Drawn By:	GC	Reviewed By:	TC

Coordinate System: GDA 1994 MGA Zone 56

0 25 50 75m

N

Mount Piper Annual Report 2021/2022
350 Boulder Road, Portland, New South Wales

Client: -

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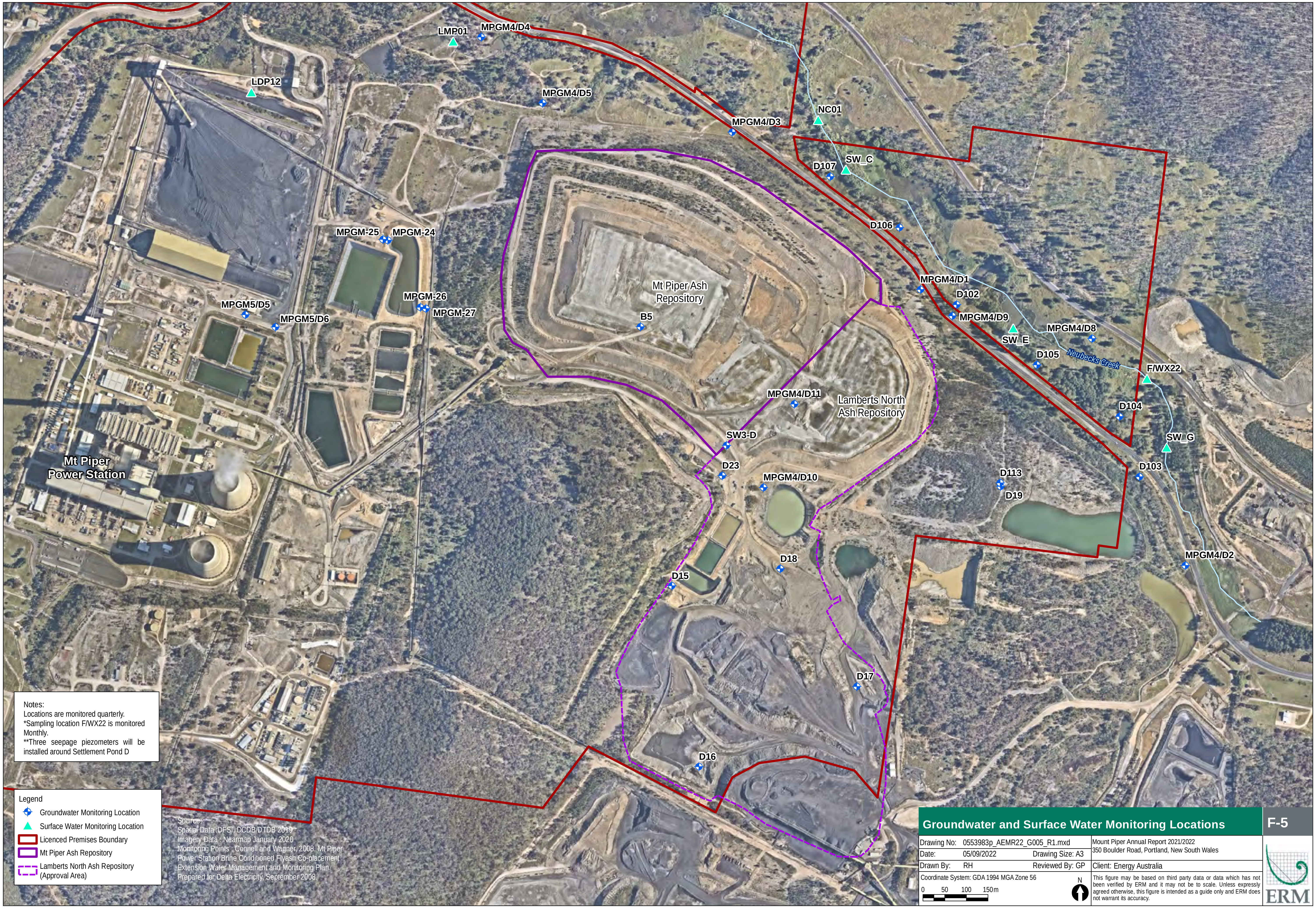
ERM



LMP01
MPGM4/D4
LDP12
MPGM4/D5
MPGM4/D3
NC01
SW_C
D107
D106
MPGM-25
MPGM-24
Mt Piper Ash Repository
MPGM4/D1
D102
MPGM4/D9
MPGM-26
MPGM-27
MPGM5/D5
MPGM5/D6
B5
SW_E
MPGM4/D8
D105
Neubecks Creek
F/WX22
MPGM4/D11
Lamberts North Ash Repository
D104
SW3-D
SW_G
Mt Piper Power Station
D23
MPGM4/D10
D113
D19
D103
D18
MPGM4/D2
D15
D17
D16
Notes:
Locations are monitored quarterly.
*Sampling location F/WX22 is monitored Monthly.
**Three seepage piezometers will be installed around Settlement Pond D
Legend
Groundwater Monitoring Location
Surface Water Monitoring Location
Licenced Premises Boundary
Mt Piper Ash Repository
Lamberts North Ash Repository (Approval Area)
Source:
Spatial Data :DFSI, DCDB/DTDB 2019
Imagery Data : Nearmap January 2020
Monitoring Points : Connell and Wagner, 2008. Mt Piper Power Station Brine Conditioned Flyash Co-placement Extension Water Management and Monitoring Plan. Prepared for Delta Electricity, September 2008.
Groundwater and Surface Water Monitoring Locations
F-5
Drawing No: 0553983p_AEMR22_G005_R1.mxd
Date: 05/09/2022
Drawing Size: A3
Drawn By: RH
Reviewed By: GP
Mount Piper Annual Report 2021/2022
350 Boulder Road, Portland, New South Wales
Client: Energy Australia
Coordinate System: GDA 1994 MGA Zone 56
0 50 100 150m
N
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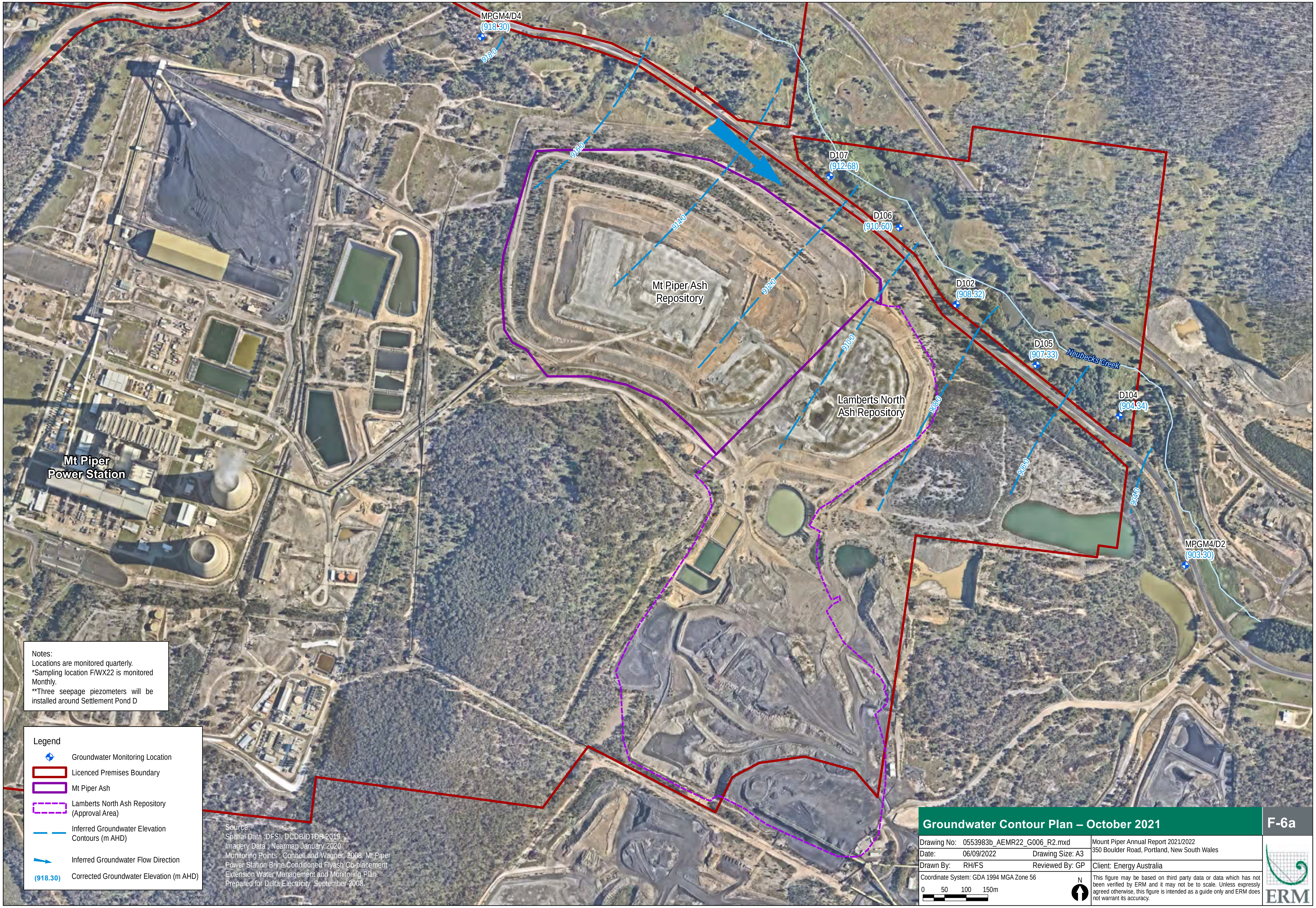
ERM


MPGM4/D4
(918.30)
918.0
916.0
914.0
912.0
910.0
908.0
906.0
904.0
D107
(912.68)
D106
(910.60)
D102
(908.32)
D105
(907.33)
Neubecks Creek
D104
(904.34)
MPGM4/D2
(903.30)
Mt Piper Ash Repository
Lamberts North Ash Repository
Mt Piper Power Station
Notes:
Locations are monitored quarterly.
*Sampling location F/WX22 is monitored Monthly.
**Three seepage piezometers will be installed around Settlement Pond D
Legend
Groundwater Monitoring Location
Licenced Premises Boundary
Mt Piper Ash
Lamberts North Ash Repository (Approval Area)
Inferred Groundwater Elevation Contours (m AHD)
Inferred Groundwater Flow Direction
(918.30) Corrected Groundwater Elevation (m AHD)
Source:
Spatial Data :DFSI, DCDB/DTDB 2019
Imagery Data : Nearmap January 2020
Monitoring Points : Connell and Wagner, 2008. Mt Piper Power Station Brine Conditioned Flyash Co-placement Extension Water Management and Monitoring Plan. Prepared for Delta Electricity, September 2008.
Groundwater Contour Plan – October 2021
F-6a
Drawing No: 0553983b_AEMR22_G006_R2.mxd
Date: 06/09/2022
Drawing Size: A3
Drawn By: RH/FS
Reviewed By: GP
Coordinate System: GDA 1994 MGA Zone 56
0 50 100 150m
N
Mount Piper Annual Report 2021/2022
350 Boulder Road, Portland, New South Wales
Client: Energy Australia
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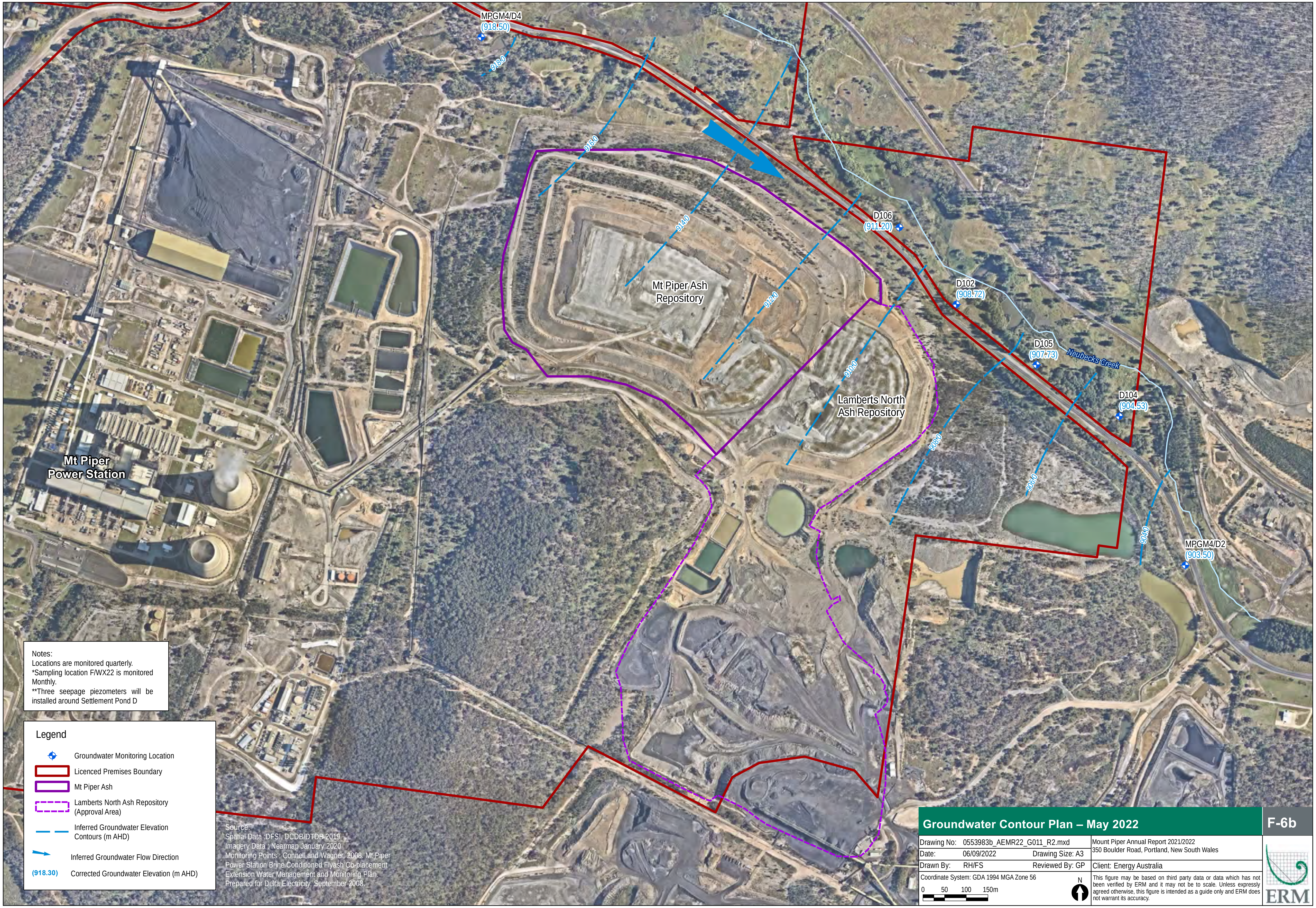
ERM



Groundwater Contour Plan – May 2022

F-6b

Drawing No: 0553983b_AEMR22_G011_R2.mxd
Date: 06/09/2022 Drawing Size: A3
Drawn By: RH/FS Reviewed By: GP
Coordinate System: GDA 1994 MGA Zone 56

Mount Piper Annual Report 2021/2022
350 Boulder Road, Portland, New South Wales

Client: Energy Australia

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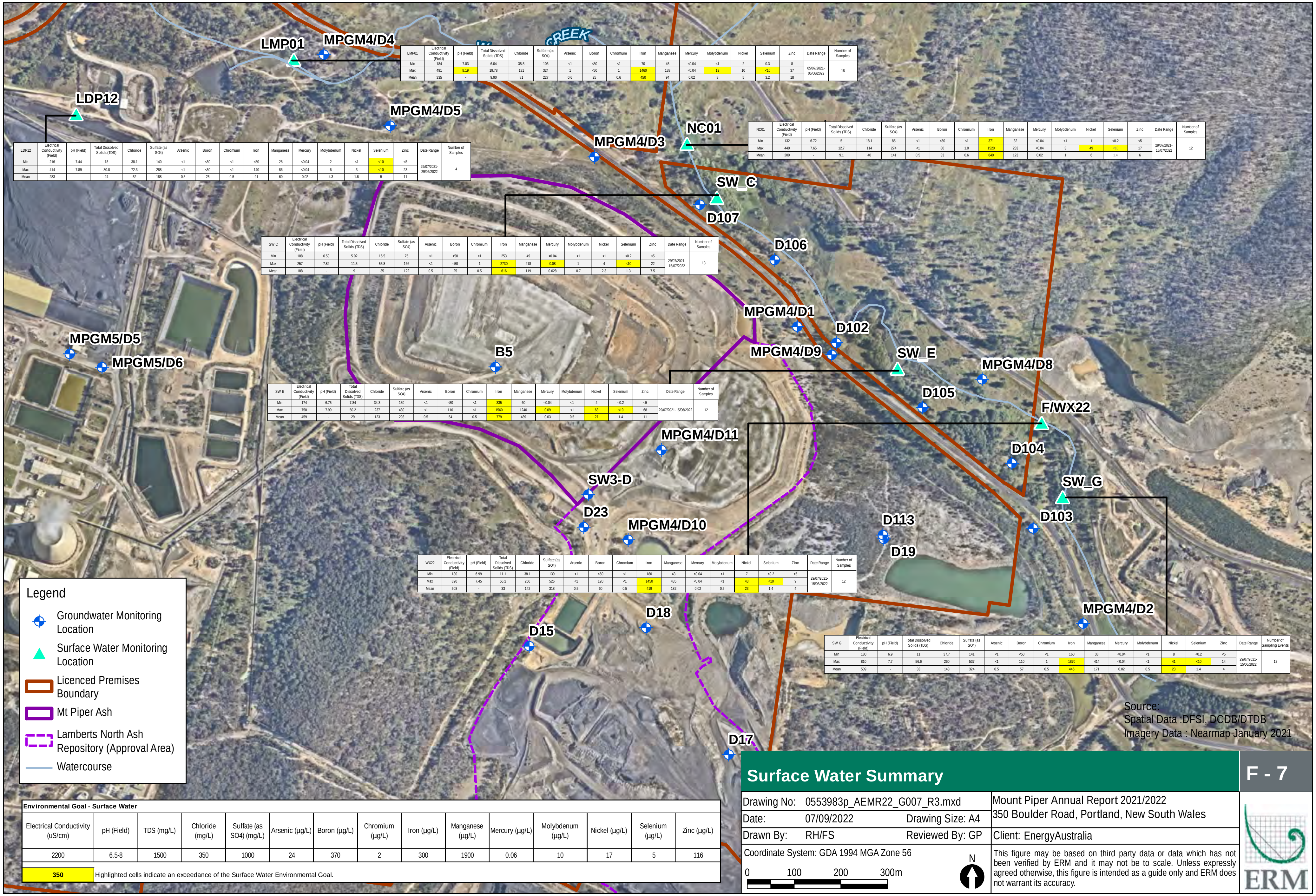
ERM



LMP01	Electrical Conductivity (Field)	pH (Field)	Total Dissolved Solids (TDS)	Chloride	Sulfate (as SO4)	Arsenic	Boron	Chromium	Iron	Manganese	Mercury	Molybdenum	Nickel	Selenium	Zinc	Date Range	Number of Samples
Min	184	7.03	6.04	35.5	106	<1	<50	<1	70	45	<0.04	<1	2	0.3	8	05/07/2021-06/06/2022	18
Max	491	8.19	19.78	131	324	1	<50	1	1460	138	<0.04	12	10	<10	37		
Mean	335	-	9.90	81	227	0.6	25	0.6	450	94	0.02	3	5	3.2	18		

NC01	Electrical Conductivity (Field)	pH (Field)	Total Dissolved Solids (TDS)	Chloride	Sulfate (as SO4)	Arsenic	Boron	Chromium	Iron	Manganese	Mercury	Molybdenum	Nickel	Selenium	Zinc	Date Range	Number of Samples
Min	132	6.72	5	18.1	85	<1	<50	<1	371	32	<0.04	<1	1	<0.2	<5	29/07/2021-15/07/2022	12
Max	440	7.65	12.7	114	274	<1	80	1.0	1520	233	<0.04	3	49	<10	17		
Mean	209	-	9.1	40	141	0.5	33	0.6	640	123	0.02	1	6	1.4	6		

LDP12	Electrical Conductivity (Field)	pH (Field)	Total Dissolved Solids (TDS)	Chloride	Sulfate (as SO4)	Arsenic	Boron	Chromium	Iron	Manganese	Mercury	Molybdenum	Nickel	Selenium	Zinc	Date Range	Number of Samples
Min	216	7.44	18	38.1	140	<1	<50	<1	<50	28	<0.04	2	<1	<10	<5	29/07/2021-29/06/2022	4
Max	414	7.89	30.8	72.3	288	<1	<50	<1	140	86	<0.04	6	3	<10	23		
Mean	283	-	24	52	188	0.5	25	0.5	91	60	0.02	4.3	1.6	5	11		

SW C	Electrical Conductivity (Field)	pH (Field)	Total Dissolved Solids (TDS)	Chloride	Sulfate (as SO4)	Arsenic	Boron	Chromium	Iron	Manganese	Mercury	Molybdenum	Nickel	Selenium	Zinc	Date Range	Number of Samples
Min	108	6.53	5.02	16.5	75	<1	<50	<1	253	49	<0.04	<1	<1	<0.2	<5	29/07/2021-15/07/2022	13
Max	257	7.82	11.5	55.8	166	<1	<50	1	2730	218	0.08	1	4	<10	22		
Mean	188	-	9	35	122	0.5	25	0.5	616	119	0.028	0.7	2.3	1.3	7.5		

SW E	Electrical Conductivity (Field)	pH (Field)	Total Dissolved Solids (TDS)	Chloride	Sulfate (as SO4)	Arsenic	Boron	Chromium	Iron	Manganese	Mercury	Molybdenum	Nickel	Selenium	Zinc	Date Range	Number of Samples
Min	174	6.75	7.84	34.3	130	<1	<50	<1	335	60	<0.04	<1	4	<0.2	<5	29/07/2021-15/06/2022	12
Max	750	7.99	50.2	237	480	<1	110	<1	1560	1240	0.09	<1	68	<10	68		
Mean	459	-	29	123	293	0.5	54	0.5	779	489	0.03	0.5	27	1.4	11		

WX22	Electrical Conductivity (Field)	pH (Field)	Total Dissolved Solids (TDS)	Chloride	Sulfate (as SO4)	Arsenic	Boron	Chromium	Iron	Manganese	Mercury	Molybdenum	Nickel	Selenium	Zinc	Date Range	Number of Samples
Min	180	6.99	11.1	38.1	139	<1	<50	<1	180	43	<0.04	<1	7	<0.2	<5	29/07/2021-15/06/2022	12
Max	820	7.45	56.2	260	526	<1	120	<1	1450	435	<0.04	<1	43	<10	9		
Mean	508	-	33	142	318	0.5	60	0.5	419	182	0.02	0.5	23	1.4	4		

SW G	Electrical Conductivity (Field)	pH (Field)	Total Dissolved Solids (TDS)	Chloride	Sulfate (as SO4)	Arsenic	Boron	Chromium	Iron	Manganese	Mercury	Molybdenum	Nickel	Selenium	Zinc	Date Range	Number of Sampling Events
Min	180	6.9	11	37.7	141	<1	<50	<1	160	38	<0.04	<1	8	<0.2	<5	29/07/2021-15/06/2022	12
Max	810	7.7	56.6	260	537	<1	110	1	1870	414	<0.04	<1	41	<10	14		
Mean	509	-	33	143	324	0.5	57	0.5	446	171	0.02	0.5	23	1.4	4		

Environmental Goal - Surface Water

Electrical Conductivity (uS/cm)	pH (Field)	TDS (mg/L)	Chloride (mg/L)	Sulfate (as SO4) (mg/L)	Arsenic (µg/L)	Boron (µg/L)	Chromium (µg/L)	Iron (µg/L)	Manganese (µg/L)	Mercury (µg/L)	Molybdenum (µg/L)	Nickel (µg/L)	Selenium (µg/L)	Zinc (µg/L)
2200	6.5-8	1500	350	1000	24	370	2	300	1900	0.06	10	17	5	116

350 Highlighted cells indicate an exceedance of the Surface Water Environmental Goal.

Surface Water Summary

F - 7

Drawing No:	0553983p_AEMR22_G007_R3.mxd		
Date:	07/09/2022	Drawing Size:	A4
Drawn By:	RH/FS	Reviewed By:	GP

Coordinate System: GDA 1994 MGA Zone 56

0 100 200 300m

N

Mount Piper Annual Report 2021/2022
350 Boulder Road, Portland, New South Wales

Client: EnergyAustralia

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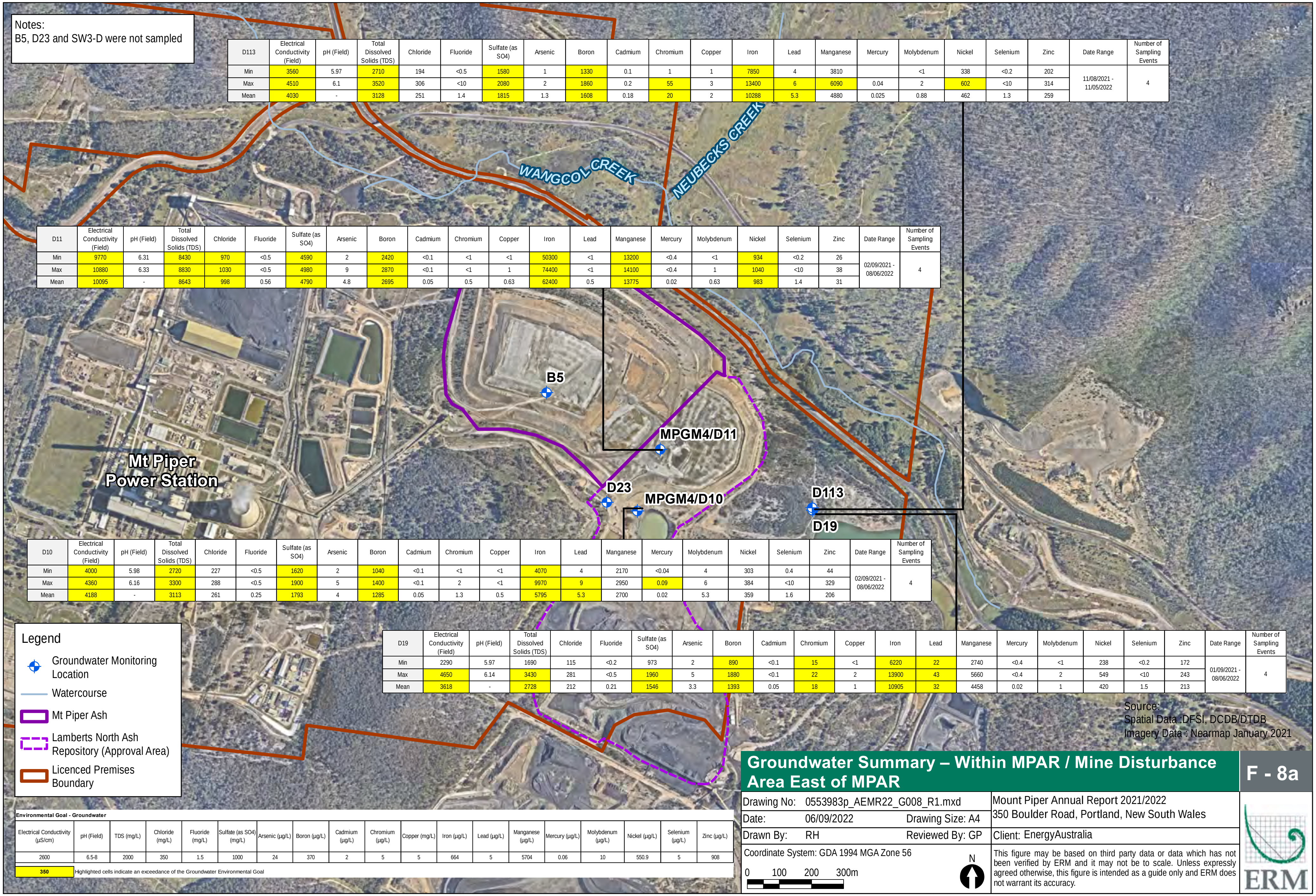
Notes:
B5, D23 and SW3-D were not sampled

D113	Electrical Conductivity (Field)	pH (Field)	Total Dissolved Solids (TDS)	Chloride	Fluoride	Sulfate (as SO4)	Arsenic	Boron	Cadmium	Chromium	Copper	Iron	Lead	Manganese	Mercury	Molybdenum	Nickel	Selenium	Zinc	Date Range	Number of Sampling Events
Min	3560	5.97	2710	194	<0.5	1580	1	1330	0.1	1	1	7850	4	3810		<1	338	<0.2	202	11/08/2021 - 11/05/2022	4
Max	4510	6.1	3520	306	<10	2080	2	1860	0.2	55	3	13400	6	6090	0.04	2	602	<10	314		
Mean	4030	-	3128	251	1.4	1815	1.3	1608	0.18	20	2	10288	5.3	4880	0.025	0.88	462	1.3	259		

D11	Electrical Conductivity (Field)	pH (Field)	Total Dissolved Solids (TDS)	Chloride	Fluoride	Sulfate (as SO4)	Arsenic	Boron	Cadmium	Chromium	Copper	Iron	Lead	Manganese	Mercury	Molybdenum	Nickel	Selenium	Zinc	Date Range	Number of Sampling Events
Min	9770	6.31	8430	970	<0.5	4590	2	2420	<0.1	<1	<1	50300	<1	13200	<0.4	<1	934	<0.2	26	02/09/2021 - 08/06/2022	4
Max	10880	6.33	8830	1030	<0.5	4980	9	2870	<0.1	<1	1	74400	<1	14100	<0.4	1	1040	<10	38		
Mean	10095	-	8643	998	0.56	4790	4.8	2695	0.05	0.5	0.63	62400	0.5	13775	0.02	0.63	983	1.4	31		



D10	Electrical Conductivity (Field)	pH (Field)	Total Dissolved Solids (TDS)	Chloride	Fluoride	Sulfate (as SO4)	Arsenic	Boron	Cadmium	Chromium	Copper	Iron	Lead	Manganese	Mercury	Molybdenum	Nickel	Selenium	Zinc	Date Range	Number of Sampling Events
Min	4000	5.98	2720	227	<0.5	1620	2	1040	<0.1	<1	<1	4070	4	2170	<0.04	4	303	0.4	44	02/09/2021 - 08/06/2022	4
Max	4360	6.16	3300	288	<0.5	1900	5	1400	<0.1	2	<1	9970	9	2950	0.09	6	384	<10	329		
Mean	4188	-	3113	261	0.25	1793	4	1285	0.05	1.3	0.5	5795	5.3	2700	0.02	5.3	359	1.6	206		

D19	Electrical Conductivity (Field)	pH (Field)	Total Dissolved Solids (TDS)	Chloride	Fluoride	Sulfate (as SO4)	Arsenic	Boron	Cadmium	Chromium	Copper	Iron	Lead	Manganese	Mercury	Molybdenum	Nickel	Selenium	Zinc	Date Range	Number of Sampling Events
Min	2290	5.97	1690	115	<0.2	973	2	890	<0.1	15	<1	6220	22	2740	<0.4	<1	238	<0.2	172	01/09/2021 - 08/06/2022	4
Max	4650	6.14	3430	281	<0.5	1960	5	1880	<0.1	22	2	13900	43	5660	<0.4	2	549	<10	243		
Mean	3618	-	2728	212	0.21	1546	3.3	1393	0.05	18	1	10905	32	4458	0.02	1	420	1.5	213		

Legend
- Groundwater Monitoring Location
- Watercourse
- Mt Piper Ash
- Lamberts North Ash Repository (Approval Area)
- Licenced Premises Boundary

Source:
Spatial Data :DFSI, DCDB/DTDB
Imagery Data : Nearmap January 2021

Environmental Goal - Groundwater

Electrical Conductivity (µS/cm)	pH (Field)	TDS (mg/L)	Chloride (mg/L)	Fluoride (mg/L)	Sulfate (as SO4) (mg/L)	Arsenic (µg/L)	Boron (µg/L)	Cadmium (µg/L)	Chromium (µg/L)	Copper (mg/L)	Iron (µg/L)	Lead (µg/L)	Manganese (µg/L)	Mercury (µg/L)	Molybdenum (µg/L)	Nickel (µg/L)	Selenium (µg/L)	Zinc (µg/L)
2600	6.5-8	2000	350	1.5	1000	24	370	2	5	5	664	5	5704	0.06	10	550.9	5	908

350 Highlighted cells indicate an exceedance of the Groundwater Environmental Goal

Groundwater Summary – Within MPAR / Mine Disturbance Area East of MPAR

F - 8a

Drawing No: 0553983p_AEMR22_G008_R1.mxd
Date: 06/09/2022 Drawing Size: A4
Drawn By: RH Reviewed By: GP
Coordinate System: GDA 1994 MGA Zone 56

0 100 200 300m

N

Mount Piper Annual Report 2021/2022
350 Boulder Road, Portland, New South Wales
Client: EnergyAustralia

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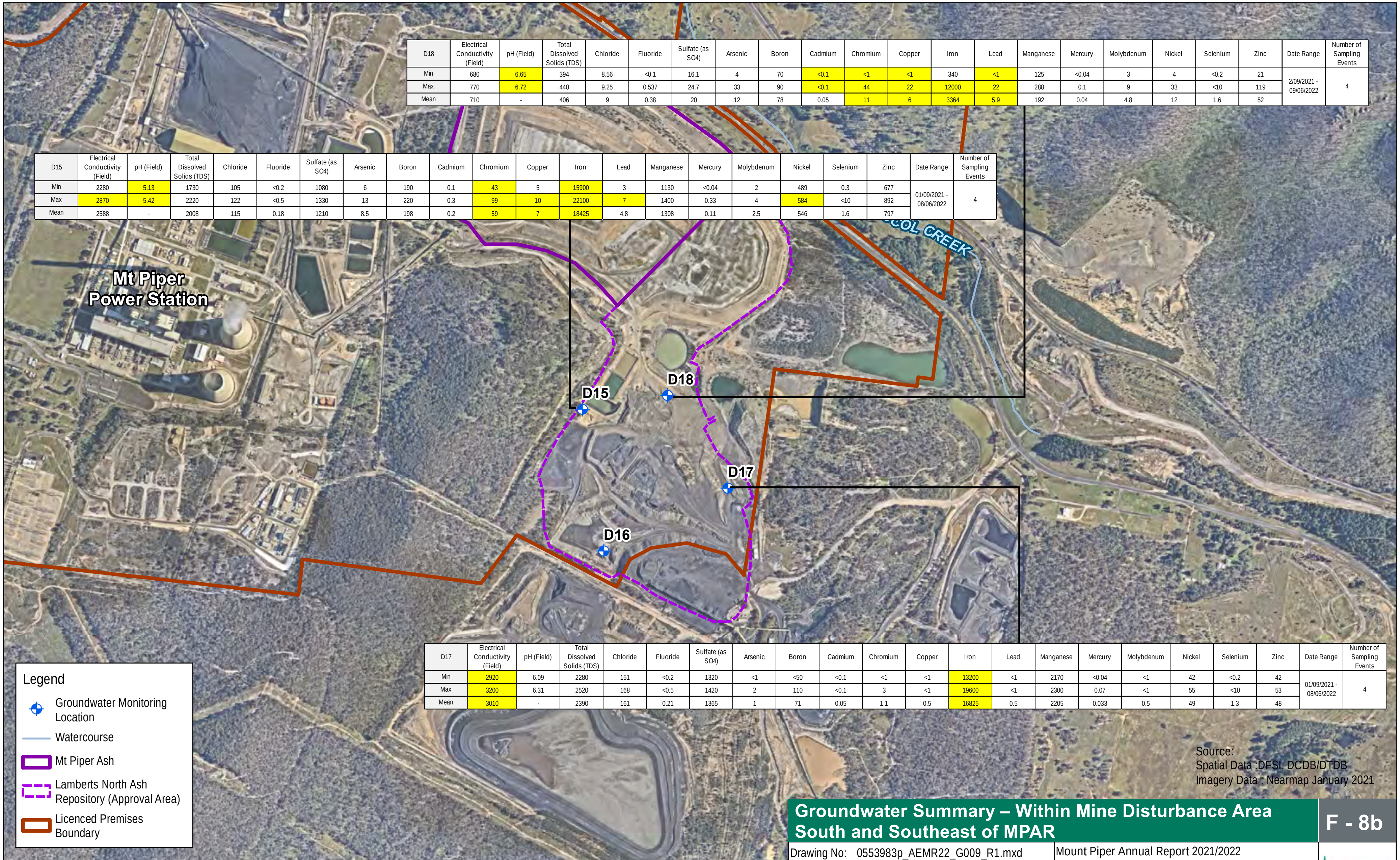

D18	Electrical Conductivity (Field)	pH (Field)	Total Dissolved Solids (TDS)	Chloride	Fluoride	Sulfate (as SO4)	Arsenic	Boron	Cadmium	Chromium	Copper	Iron	Lead	Manganese	Mercury	Molybdenum	Nickel	Selenium	Zinc	Date Range	Number of Sampling Events
Min	680	6.65	394	8.56	<0.1	16.1	4	70	<0.1	<1	<1	340	<1	125	<0.04	3	4	<0.2	21	2/09/2021 - 09/06/2022	4
Max	770	6.72	440	9.25	0.537	24.7	33	90	<0.1	44	22	12000	22	288	0.1	9	33	<10	119		
Mean	710	-	406	9	0.38	20	12	78	0.05	11	6	3364	5.9	192	0.04	4.8	12	1.6	52		

D15	Electrical Conductivity (Field)	pH (Field)	Total Dissolved Solids (TDS)	Chloride	Fluoride	Sulfate (as SO4)	Arsenic	Boron	Cadmium	Chromium	Copper	Iron	Lead	Manganese	Mercury	Molybdenum	Nickel	Selenium	Zinc	Date Range	Number of Sampling Events
Min	2280	5.13	1730	105	<0.2	1080	6	190	0.1	43	5	15900	3	1130	<0.04	2	489	0.3	677	01/09/2021 - 08/06/2022	4
Max	2870	5.42	2220	122	<0.5	1330	13	220	0.3	99	10	22100	7	1400	0.33	4	584	<10	892		
Mean	2588	-	2008	115	0.18	1210	8.5	198	0.2	59	7	18425	4.8	1308	0.11	2.5	546	1.6	797		

D17	Electrical Conductivity (Field)	pH (Field)	Total Dissolved Solids (TDS)	Chloride	Fluoride	Sulfate (as SO4)	Arsenic	Boron	Cadmium	Chromium	Copper	Iron	Lead	Manganese	Mercury	Molybdenum	Nickel	Selenium	Zinc	Date Range	Number of Sampling Events
Min	2920	6.09	2280	151	<0.2	1320	<1	<50	<0.1	<1	<1	13200	<1	2170	<0.04	<1	42	<0.2	42	01/09/2021 - 08/06/2022	4
Max	3200	6.31	2520	168	<0.5	1420	2	110	<0.1	3	<1	19600	<1	2300	0.07	<1	55	<10	53		
Mean	3010	-	2390	161	0.21	1365	1	71	0.05	1.1	0.5	16825	0.5	2205	0.033	0.5	49	1.3	48		

Environmental Goal - Groundwater

Electrical Conductivity (µS/cm)	pH (Field)	TDS (mg/L)	Chloride (mg/L)	Fluoride (mg/L)	Sulfate (as SO4) (mg/L)	Arsenic (µg/L)	Boron (µg/L)	Cadmium (µg/L)	Chromium (µg/L)	Copper (mg/L)	Iron (µg/L)	Lead (µg/L)	Manganese (µg/L)	Mercury (µg/L)	Molybdenum (µg/L)	Nickel (µg/L)	Selenium (µg/L)	Zinc (µg/L)
2600	6.5-8	2000	350	1.5	1000	24	370	2	5	5	664	5	5704	0.06	10	550.9	5	908

350 Highlighted cells indicate an exceedance of the Groundwater Environmental Goal

Groundwater Summary – Within Mine Disturbance Area South and Southeast of MPAR

F - 8b

Drawing No: 0553983p_AEMR22_G009_R1.mxd
Date: 06/09/2022 Drawing Size: A4
Drawn By: RH Reviewed By: GP
Coordinate System: GDA 1994 MGA Zone 56
0 100 200 300m
N

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350 Boulder Road, Portland, New South Wales
Client: EnergyAustralia

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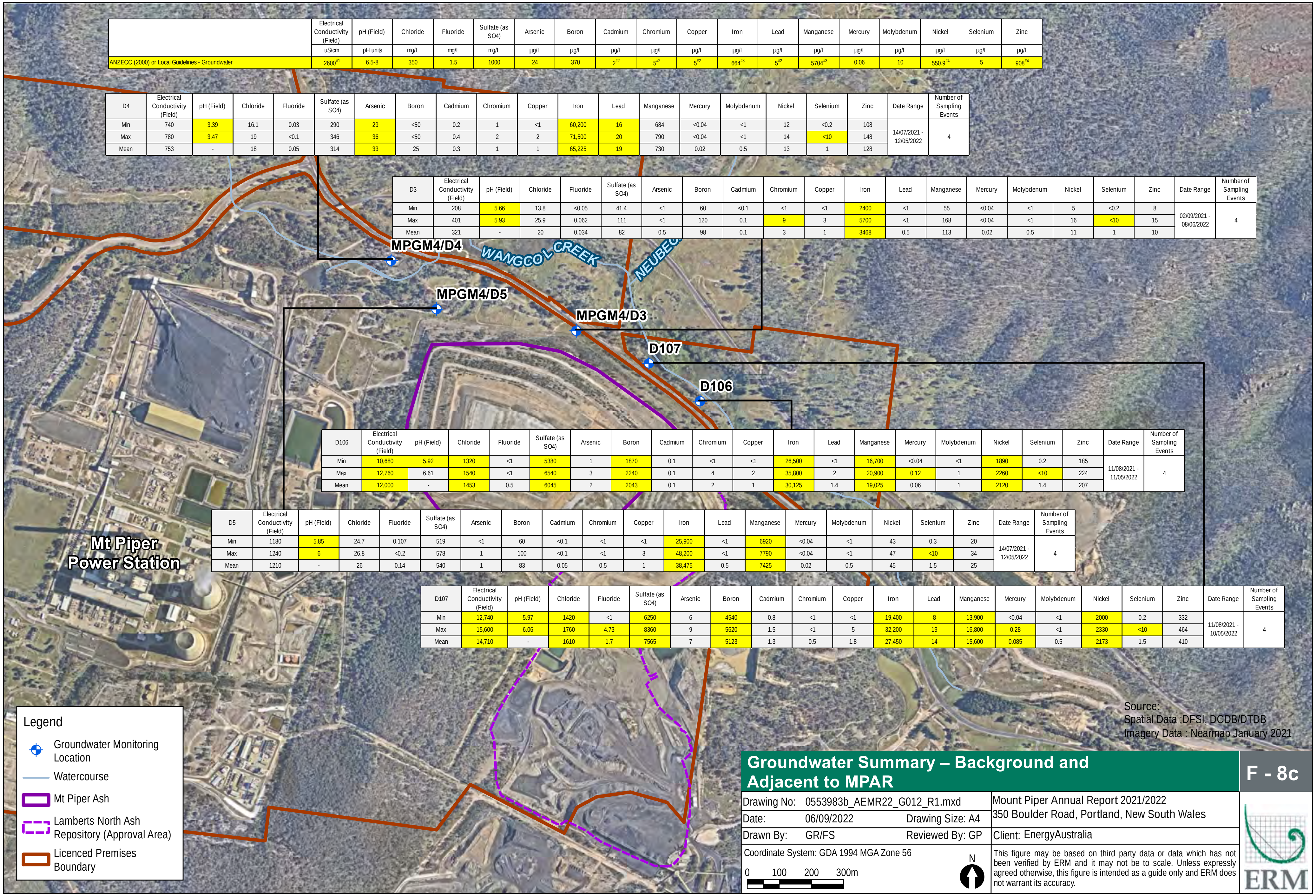
ERM



	Electrical Conductivity (Field)	pH (Field)	Chloride	Fluoride	Sulfate (as SO4)	Arsenic	Boron	Cadmium	Chromium	Copper	Iron	Lead	Manganese	Mercury	Molybdenum	Nickel	Selenium	Zinc
	uS/cm	pH units	mg/L	mg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
ANZECC (2000) or Local Guidelines - Groundwater	2600[#1]	6.5-8	350	1.5	1000	24	370	2[#2]	5[#2]	5[#2]	664[#3]	5[#2]	5704[#3]	0.06	10	550.9[#4]	5	908[#4]

D4	Electrical Conductivity (Field)	pH (Field)	Chloride	Fluoride	Sulfate (as SO4)	Arsenic	Boron	Cadmium	Chromium	Copper	Iron	Lead	Manganese	Mercury	Molybdenum	Nickel	Selenium	Zinc	Date Range	Number of Sampling Events
Min	740	3.39	16.1	0.03	290	29	<50	0.2	1	<1	60,200	16	684	<0.04	<1	12	<0.2	108	14/07/2021 - 12/05/2022	4
Max	780	3.47	19	<0.1	346	36	<50	0.4	2	2	71,500	20	790	<0.04	<1	14	<10	148		
Mean	753	-	18	0.05	314	33	25	0.3	1	1	65,225	19	730	0.02	0.5	13	1	128		

D3	Electrical Conductivity (Field)	pH (Field)	Chloride	Fluoride	Sulfate (as SO4)	Arsenic	Boron	Cadmium	Chromium	Copper	Iron	Lead	Manganese	Mercury	Molybdenum	Nickel	Selenium	Zinc	Date Range	Number of Sampling Events
Min	208	5.66	13.8	<0.05	41.4	<1	60	<0.1	<1	<1	2400	<1	55	<0.04	<1	5	<0.2	8	02/09/2021 - 08/06/2022	4
Max	401	5.93	25.9	0.062	111	<1	120	0.1	9	3	5700	<1	168	<0.04	<1	16	<10	15		
Mean	321	-	20	0.034	82	0.5	98	0.1	3	1	3468	0.5	113	0.02	0.5	11	1	10		

D106	Electrical Conductivity (Field)	pH (Field)	Chloride	Fluoride	Sulfate (as SO4)	Arsenic	Boron	Cadmium	Chromium	Copper	Iron	Lead	Manganese	Mercury	Molybdenum	Nickel	Selenium	Zinc	Date Range	Number of Sampling Events
Min	10,680	5.92	1320	<1	5380	1	1870	0.1	<1	<1	26,500	<1	16,700	<0.04	<1	1890	0.2	185	11/08/2021 - 11/05/2022	4
Max	12,760	6.61	1540	<1	6540	3	2240	0.1	4	2	35,800	2	20,900	0.12	1	2260	<10	224		
Mean	12,000	-	1453	0.5	6045	2	2043	0.1	2	1	30,125	1.4	19,025	0.06	1	2120	1.4	207		

D5	Electrical Conductivity (Field)	pH (Field)	Chloride	Fluoride	Sulfate (as SO4)	Arsenic	Boron	Cadmium	Chromium	Copper	Iron	Lead	Manganese	Mercury	Molybdenum	Nickel	Selenium	Zinc	Date Range	Number of Sampling Events
Min	1180	5.85	24.7	0.107	519	<1	60	<0.1	<1	<1	25,900	<1	6920	<0.04	<1	43	0.3	20	14/07/2021 - 12/05/2022	4
Max	1240	6	26.8	<0.2	578	1	100	<0.1	<1	3	48,200	<1	7790	<0.04	<1	47	<10	34		
Mean	1210	-	26	0.14	540	1	83	0.05	0.5	1	38,475	0.5	7425	0.02	0.5	45	1.5	25		

D107	Electrical Conductivity (Field)	pH (Field)	Chloride	Fluoride	Sulfate (as SO4)	Arsenic	Boron	Cadmium	Chromium	Copper	Iron	Lead	Manganese	Mercury	Molybdenum	Nickel	Selenium	Zinc	Date Range	Number of Sampling Events
Min	12,740	5.97	1420	<1	6250	6	4540	0.8	<1	<1	19,400	8	13,900	<0.04	<1	2000	0.2	332	11/08/2021 - 10/05/2022	4
Max	15,600	6.06	1760	4.73	8360	9	5620	1.5	<1	5	32,200	19	16,800	0.28	<1	2330	<10	464		
Mean	14,710	-	1610	1.7	7565	7	5123	1.3	0.5	1.8	27,450	14	15,600	0.085	0.5	2173	1.5	410		

Legend
- Groundwater Monitoring Location
- Watercourse
- Mt Piper Ash
- Lamberts North Ash Repository (Approval Area)
- Licenced Premises Boundary

Source:
Spatial Data :DFSI, DCDB/DTDB
Imagery Data : Nearmap January 2021

Groundwater Summary – Background and Adjacent to MPAR

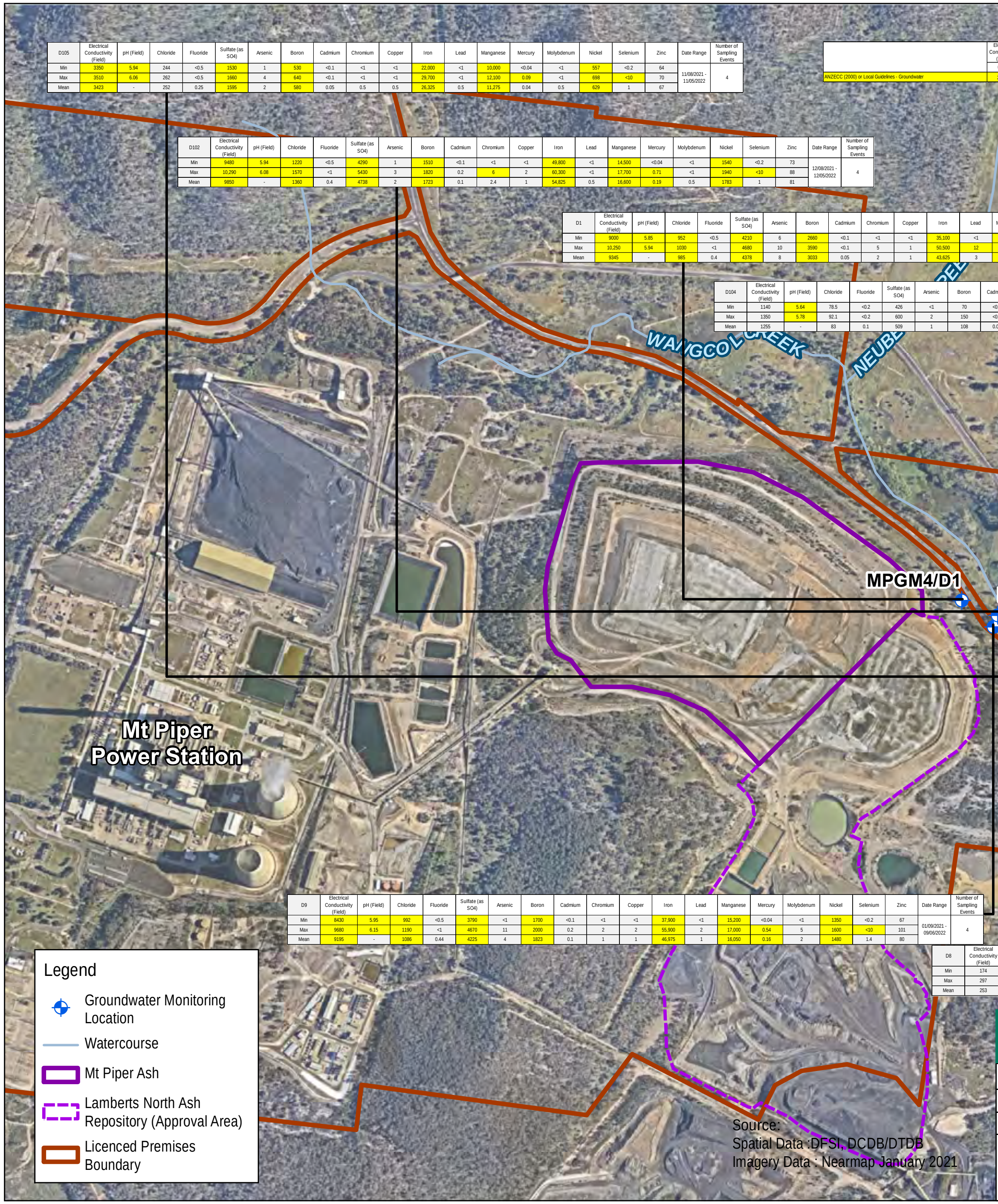
F - 8c

Drawing No: 0553983b_AEMR22_G012_R1.mxd
Date: 06/09/2022 Drawing Size: A4
Drawn By: GR/FS Reviewed By: GP
Coordinate System: GDA 1994 MGA Zone 56
0 100 200 300m
N

Mount Piper Annual Report 2021/2022
350 Boulder Road, Portland, New South Wales
Client: EnergyAustralia

This figure may be based on third party data or data which has not been verified by ERM and it may not be to scale. Unless expressly agreed otherwise, this figure is intended as a guide only and ERM does not warrant its accuracy.

ERM



	Electrical Conductivity (Field)	pH (Field)	Chloride	Fluoride	Sulfate (as SO4)	Arsenic	Boron	Cadmium	Chromium	Copper	Iron	Lead	Manganese	Mercury	Molybdenum	Nickel	Selenium	Zinc
	uS/cm	pH units	mg/L	mg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
ANZECC (2000) or Local Guidelines - Groundwater	2600[#1]	6.5-8	350	1.5	1000	24	370	2[#2]	5[#2]	5[#2]	664[#3]	5[#2]	5704[#3]	0.06	10	550.9[#4]	5	908[#4]

D105	Electrical Conductivity (Field)	pH (Field)	Chloride	Fluoride	Sulfate (as SO4)	Arsenic	Boron	Cadmium	Chromium	Copper	Iron	Lead	Manganese	Mercury	Molybdenum	Nickel	Selenium	Zinc	Date Range	Number of Sampling Events
Min	3350	5.94	244	<0.5	1530	1	530	<0.1	<1	<1	22,000	<1	10,000	<0.04	<1	557	<0.2	64	11/08/2021 - 11/05/2022	4
Max	3510	6.06	262	<0.5	1660	4	640	<0.1	<1	<1	29,700	<1	12,100	0.09	<1	698	<10	70		
Mean	3423	-	252	0.25	1595	2	580	0.05	0.5	0.5	26,325	0.5	11,275	0.04	0.5	629	1	67		

D102	Electrical Conductivity (Field)	pH (Field)	Chloride	Fluoride	Sulfate (as SO4)	Arsenic	Boron	Cadmium	Chromium	Copper	Iron	Lead	Manganese	Mercury	Molybdenum	Nickel	Selenium	Zinc	Date Range	Number of Sampling Events
Min	9480	5.94	1220	<0.5	4290	1	1510	<0.1	<1	<1	49,800	<1	14,500	<0.04	<1	1540	<0.2	73	12/08/2021 - 12/05/2022	4
Max	10,290	6.08	1570	<1	5430	3	1820	0.2	6	2	60,300	<1	17,700	0.71	<1	1940	<10	88		
Mean	9850	-	1360	0.4	4738	2	1723	0.1	2.4	1	54,825	0.5	16,600	0.19	0.5	1783	1	81		

D2	Electrical Conductivity (Field)	pH (Field)	Chloride	Fluoride	Sulfate (as SO4)	Arsenic	Boron	Cadmium	Chromium	Copper	Iron	Lead	Manganese	Mercury	Molybdenum	Nickel	Selenium	Zinc	Date Range	Number of Sampling Events
Min	473	5.66	25.1	0.095	157	<1	130	<0.1	<1	2	4240	2	588	<0.04	<1	36	0.3	60	15/07/2021 - 12/05/2022	4
Max	1240	5.8	76.6	0.123	530	2	280	<0.1	3	6	5790	5	1860	<0.04	<1	97	<10	294		
Mean	793	-	47	0.096	311	1	175	0.05	1	4	5178	4	1089	0.02	0.5	61	1.6	131		

D1	Electrical Conductivity (Field)	pH (Field)	Chloride	Fluoride	Sulfate (as SO4)	Arsenic	Boron	Cadmium	Chromium	Copper	Iron	Lead	Manganese	Mercury	Molybdenum	Nickel	Selenium	Zinc	Date Range	Number of Sampling Events
Min	9000	5.85	952	<0.5	4210	6	2660	<0.1	<1	<1	35,100	<1	18,300	<0.04	<1	1710	0.2	145	01/09/2021 - 08/06/2022	4
Max	10,250	5.94	1030	<1	4680	10	3590	<0.1	5	1	50,500	12	21,000	<0.04	2	1920	<10	167		
Mean	9345	-	985	0.4	4378	8	3033	0.05	2	1	43,625	3	19,700	0.02	1	1795	1.5	155		

D104	Electrical Conductivity (Field)	pH (Field)	Chloride	Fluoride	Sulfate (as SO4)	Arsenic	Boron	Cadmium	Chromium	Copper	Iron	Lead	Manganese	Mercury	Molybdenum	Nickel	Selenium	Zinc	Date Range	Number of Sampling Events
Min	1140	5.64	78.5	<0.2	426	<1	70	<0.1	<1	1	6510	<1	2090	<0.04	<1	39	<0.2	41	12/08/2021 - 12/05/2022	4
Max	1350	5.78	92.1	<0.2	600	2	150	<0.1	3	13	12,600	<1	2670	0.23	<1	53	<10	62		
Mean	1255	-	83	0.1	509	1	108	0.05	1	4.5	9393	0.5	2493	0.073	0.5	45	1	50		

D9	Electrical Conductivity (Field)	pH (Field)	Chloride	Fluoride	Sulfate (as SO4)	Arsenic	Boron	Cadmium	Chromium	Copper	Iron	Lead	Manganese	Mercury	Molybdenum	Nickel	Selenium	Zinc	Date Range	Number of Sampling Events
Min	8430	5.95	992	<0.5	3790	<1	1700	<0.1	<1	<1	37,900	<1	15,200	<0.04	<1	1350	<0.2	67	01/09/2021 - 09/06/2022	4
Max	9680	6.15	1190	<1	4670	11	2000	0.2	2	2	55,900	2	17,000	0.54	5	1600	<10	101		
Mean	9195	-	1086	0.44	4225	4	1823	0.1	1	1	46,975	1	16,050	0.16	2	1480	1.4	80		

D103	Electrical Conductivity (Field)	pH (Field)	Chloride	Fluoride	Sulfate (as SO4)	Arsenic	Boron	Cadmium	Chromium	Copper	Iron	Lead	Manganese	Mercury	Molybdenum	Nickel	Selenium	Zinc	Date Range	Number of Sampling Events
Min	3860	6.06	229	<0.5	1760	5	1600	<0.1	<1	<1	13,600	<1	8330	<0.04	<1	626	<0.2	120	11/08/2021 - 11/05/2022	4
Max	4110	6.14	270	<0.5	2030	7	1770	<0.1	10	1	18,600	<1	10,500	0.14	<1	786	<10	164		
Mean	4035	-	254	0.25	1928	6	1690	0.05	4.1	1	16,175	0.5	9640	0.05	0.5	723	1	145		

D8	Electrical Conductivity (Field)	pH (Field)	Chloride	Fluoride	Sulfate (as SO4)	Arsenic	Boron	Cadmium	Chromium	Copper	Iron	Lead	Manganese	Mercury	Molybdenum	Nickel	Selenium	Zinc	Date Range	Number of Sampling Events
Min	174	5.42	5.56	<0.02	54.6	<1	<50	<0.1	<1	2	188	<1	78	<0.04	<1	29	<0.2	30	02/09/2021 - 09/06/2022	4
Max	297	5.6	8.56	<0.05	115	2	<50	0.1	<1	4	496	3	161	<0.04	<1	36	<10	48		
Mean	253	-	7	0.02	91	1	25	0.1	0.5	3	306	1	110	0.02	0.5	34	1.3	41		

Groundwater Summary – Adjacent to MPAR and Downgradient

F - 8d

Drawing No: 0553983b_AEMR22_G013_R2.mxd
Date: 06/09/2022 Drawing Size: A4
Drawn By: GR/FS Reviewed By: GP
Coordinate System: GDA 1994 MGA Zone 56
0 100 200 300m
N

Mount Piper Annual Report 2021/2022
350 Boulder Road, Portland, New South Wales
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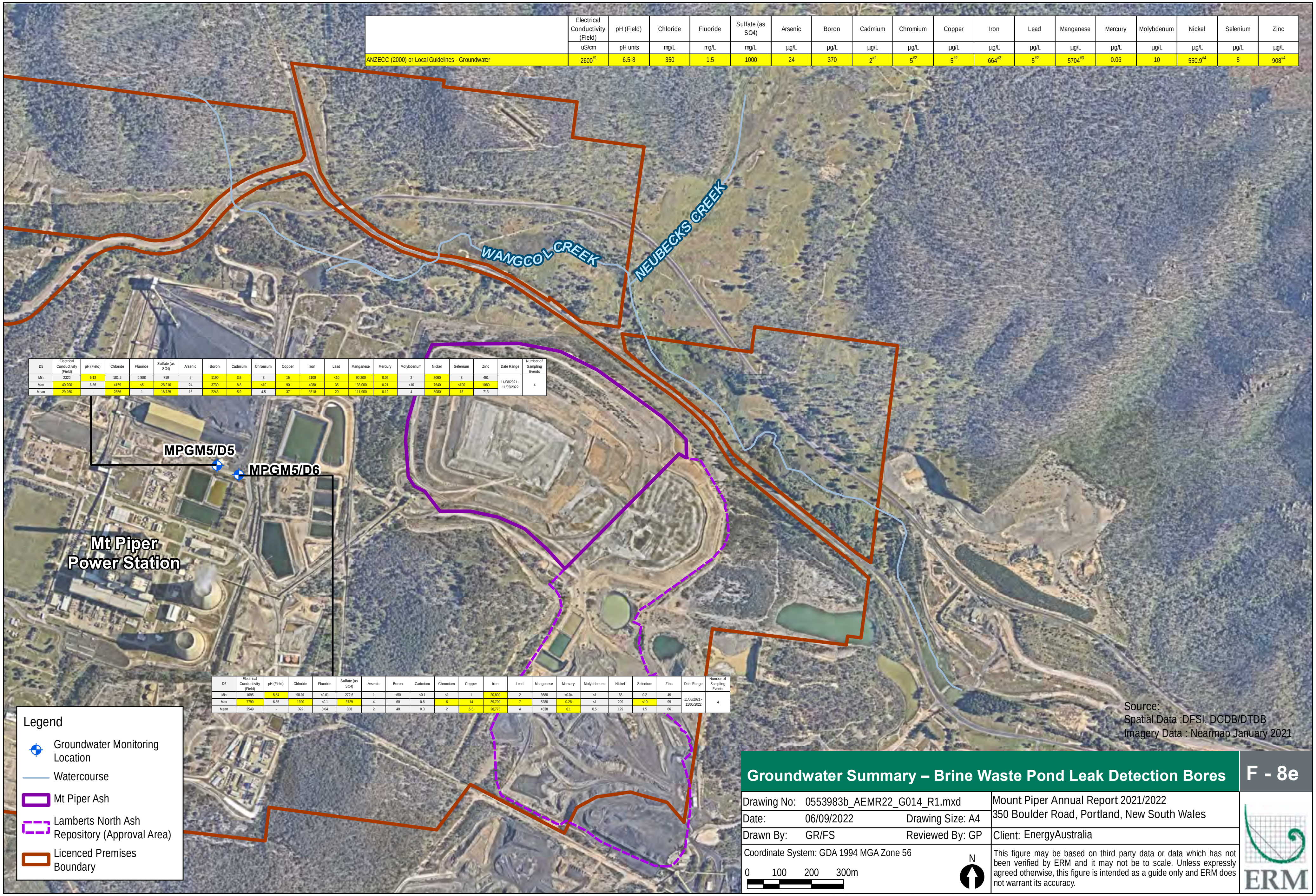
ERM

	Electrical Conductivity (Field)	pH (Field)	Chloride	Fluoride	Sulfate (as SO4)	Arsenic	Boron	Cadmium	Chromium	Copper	Iron	Lead	Manganese	Mercury	Molybdenum	Nickel	Selenium	Zinc
	uS/cm	pH units	mg/L	mg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
ANZECC (2000) or Local Guidelines - Groundwater	2600[#1]	6.5-8	350	1.5	1000	24	370	2[#2]	5[#2]	5[#2]	664[#3]	5[#2]	5704[#3]	0.06	10	550.9[#4]	5	908[#4]

D5	Electrical Conductivity (Field)	pH (Field)	Chloride	Fluoride	Sulfate (as SO4)	Arsenic	Boron	Cadmium	Chromium	Copper	Iron	Lead	Manganese	Mercury	Molybdenum	Nickel	Selenium	Zinc	Date Range	Number of Sampling Events
Min	2320	6.12	181.2	0.808	719	9	1190	3.5	3	15	2100	<10	90,200	0.06	2	5060	3	461	11/08/2021 - 11/05/2022	4
Max	40,200	6.66	4169	<5	28,210	24	3730	8.8	<10	90	4080	35	133,000	0.21	<10	7640	<100	1080		
Mean	29,260	-	2856	1	18,729	15	2243	5.9	4.5	37	3518	20	111,900	0.12	4	6080	15	713		

D6	Electrical Conductivity (Field)	pH (Field)	Chloride	Fluoride	Sulfate (as SO4)	Arsenic	Boron	Cadmium	Chromium	Copper	Iron	Lead	Manganese	Mercury	Molybdenum	Nickel	Selenium	Zinc	Date Range	Number of Sampling Events
Min	1095	5.54	98.91	<0.01	272.6	1	<50	<0.1	<1	1	20,800	2	3680	<0.04	<1	68	0.2	45	11/08/2021 - 11/05/2022	4
Max	7790	6.65	1390	<0.1	3729	4	60	0.8	6	14	39,700	7	5280	0.28	<1	299	<10	99		
Mean	2549	-	322	0.04	808	2	40	0.3	2	5.5	28,775	4	4538	0.1	0.5	129	1.5	66		



Source:
Spatial Data :DFSI, DCDB/DTDB
Imagery Data : Nearmap January 2021

Groundwater Summary – Brine Waste Pond Leak Detection Bores

F - 8e

Drawing No:	0553983b_AEMR22_G014_R1.mxd		
Date:	06/09/2022	Drawing Size:	A4
Drawn By:	GR/FS	Reviewed By:	GP

Coordinate System: GDA 1994 MGA Zone 56

Mount Piper Annual Report 2021/2022
350 Boulder Road, Portland, New South Wales

Client: EnergyAustralia

ERM

APPENDIX A MT PIPER CONSENT REQUIREMENTS

Project Approval Document	Condition	Consent Requirements	How addressed by this AEMR	Compliance Status
Mt Piper Consent	38A	38 A Notwithstanding the provisions of Condition No. 38, the brine and ash co-placement area may be extended and shall be undertaken generally in accordance with the Statement of Environmental Effects: Mount Piper Power Station Extension of Brine Conditioned Ash Placement Area, prepared by Connell Wagner Pty Ltd and dated June 2007. This includes: (i) The extended area must lie within the existing ash placement area; (ii) Co-placement activities in the proposed extended area must use existing facilities and methods; (iii) The placement of brine conditioned ash may only occur between the levels of RL 946 metres (the end-point of the water conditioned ash layer) and RL 980 metres.	Refer to Appendix C and Section 2 of this report.	Compliant
	38B	38 B The groundwater and surface water monitoring programs required by Condition No. 40 and 41 apply to the extension of the brine and ash co-placement area, permitted by Condition 38 A.	Refer to relevant conditions below.	Compliant
	38C	38 C The Applicant must update the Water Management Plan (WMP) required by Condition No. 43, and obtain the approval of the Secretary for the update, prior to undertaking any works permitted by Condition No. 38 A. In determining whether to grant approval, the Secretary must consult with the BCD, WaterNSW, DPIE Water, and Council.	Condition is met by the WMP dated 28 February 2020, as outlined in Section 1 and Section 4 to Section 8 of this report.	Compliant
	40	40. The Applicant shall, at least one month prior to the first placement of brine-conditioned flyash, consult with the EPA, DPIE Water and WaterNSW to establish the requirements for Water Monitoring Programs for groundwater and surface water. The Water Monitoring Programs shall: (i) be based on the monitoring programs presented in the Statement of Environmental Effects for this modification; (ii) include water quality testing at a minimum frequency of every three months; (iii) be at the expense of the Applicant.	Condition is met by the WMP dated 28 February 2020, as outlined in Section 1 and Section 4 to Section 8 of this report.	Compliant
	41	41. The Applicant shall expand the groundwater and surface water monitoring programs, including, if so required, the establishment of additional groundwater monitoring bores and surface water sampling points, in accordance with any reasonable requirements of the EPA, DPIE Water or WaterNSW.	Condition is met by the WMP dated 28 February 2020, as outlined in Section 1 and Section 4 to Section 8 of this report.	Compliant

Project Approval Document	Condition	Consent Requirements	How addressed by this AEMR	Compliance Status
	43	43. At least one month prior to the placement of brine-conditioned flyash, or within such further period as the Secretary may agree, the Applicant shall prepare and submit for the approval of the EPA, WaterNSW, DPIE Water, Council, and the Secretary, a Water Management Plan (WMP) which shall include, but not be limited to: (a) Details of the monitoring programs for surface water and groundwater required under conditions 40 and 41. (b) Details of measures to be employed to control surface water run-off from the site. (c) Contingency plans for the mitigation of environmental impacts should run-off or leachate from the site be found to be negatively impacting on natural surface water or groundwater. (d) Brine management objectives and strategies, with specific reference to measures aimed at reducing the volume of brine produced at the Mount Piper Power Station.	Condition is met by the WMP dated 28 February 2020, as outlined in Section 1 and Section 4 to Section 8 of this report.	Compliant
	43A	43A. The Applicant must update the Water Management Plan required by Condition 43 to the satisfaction of the Secretary, prior to commissioning the storage pond associated with Modification 8. The Applicant must implement the approved Water Management Plan.	Condition is met by the WMP dated 28 February 2020, as outlined in Section 1 and Section 4 to Section 8 of this report.	Compliant
	44	44. The Applicant shall provide to the Secretary, EPA, DPIE Water, WaterNSW and Council, an Environmental Monitoring Report (EMR) on a yearly basis, with the first EMR to be submitted no later than six months after the first placement of brine-conditioned flyash onsite. The Applicant shall agree to Council making the Environmental Monitoring Reports available on request for public inspection.	Condition is met by the development of this report in its entirety.	Compliant
	45	45. The Environmental Monitoring Report shall include, but not be limited to: (a) a summary and discussion of all available results and analyses from Water Monitoring Programs; (b) a discussion of the aims of the Water Management Plan and to what degree these aims have been attained in the context of results and analyses of the Water Monitoring Programs; (c) actions taken, or intended to be taken, if any, to mitigate any adverse environmental impacts; and to meet the reasonable requirements of the Secretary, EPA, DPIE Water, WaterNSW or Council.	Refer to Section 4 to Section 8, along with Appendix B to Appendix L of this report.	Compliant

Project Approval Document	Condition	Consent Requirements	How addressed by this AEMR	Compliance Status
The WMP (ERM, 2020)		Section 5.1 – Environmental Goals The results of all surface water and groundwater monitoring are intended to be assessed relative to the Environmental Goals	Refer to Section 5 (surface water) and Section 6 (groundwater), along with Appendix F to Appendix J of this report.	Compliant
		Section 5.1.1 – Early Warning Assessment In addition to comparing results with the Environmental Goals for surface water and groundwater an early warning assessment will be conducted. This assessment will include a review of concentration trends through time at each location, including statistical assessment.	Refer to Section 7, along with Appendix H to Appendix L of this report.	Compliant
		Section 6.1 – Monitoring Locations	Refer to Section 5.2 and Section 6.2 of this report.	Compliant
		Section 6.2 – Monitoring Frequency	Refer to Section 5.2 and Section 6.2 of this report.	Compliant
		Section 6.3 – Monitoring Method	Refer to Section 5.3 and Section 6.3 of this report.	Compliant
		Section 6.4 – Monitored Parameters	Refer to Section 5.4 and Section 6.4 of this report.	Compliant
		Section 6.5 – Data Management and Assessment The monitoring data is compared with the existing historical dataset for an assessment of trends related to potential influence of the brine management and BCA placement activities on surface water and groundwater.	Refer to Section 5.5, Section 5.6, Section 6.5, Section 6.6 and Section 7 of this report.	Compliant
		Section 6.6 – Reporting Requirements The reporting requirements of the WMP form the objectives of this AEMR.	Refer to Section 1.2, Section 5 to Section 8 of this report.	Compliant
		Section 7.1 – Performance Criteria	Refer to Section 7 of this report.	Compliant

Project Approval Document	Condition	Consent Requirements	How addressed by this AEMR	Compliance Status
		The key aim of TARPs is the mitigation and control of impacts, ideally through early detection. Therefore, TARPs for groundwater and surface water quality are based on the Environmental Goals for the monitoring program. In addition, long-term trends in surface and groundwater concentrations are assessed using the routine monitoring data and with reference to a statistical assessment of water quality data. Should concentrations at a given location indicate a statistically significant increasing concentration trend in groundwater or surface water, or exceed the relevant Environmental Goal, the triggers are considered to have been exceeded and actions are to be implemented.		
		Section 7.2 – Incident Response An impact to groundwater or surface water is considered to be present when concentrations of a monitoring parameter are recorded above the Environmental Goals. In the event of an impact to groundwater or surface water that is considered to be potentially associated with brine management and/or handling/placement of BCA at MPAR, the WMP outlines an incident response procedure. It is noted that the EPL 13007 outlines separate incident response requirements. The reporting requirements of the EPL will be provided to the regulators separately to this AEMR.	Refer to Section 7.4 of this report.	Compliant
		Section 7.3 – Contingency Measures Should routine monitoring data suggest that further changes in water quality are being caused by brine management (e.g. brine waste ponds) or other BCA placement and related activities at the MPPS, the WMP outlines contingency items that may be implemented.	Refer to Section 7.4 of this report.	Compliant

APPENDIX B STORMWATER FLOW VOLUME DATA

Mt Piper Power Station - LDP12 (formerly LDP01) discharge volumes

Date	Kilolitres / day	Start Pump (hh.mm)	Cease Pumping (hh.mm)
29/07/2021	4056	1244	2400
30/07/2021	3330	0	915
3/09/2021	2940	1550	2400
4/09/2021	5340	0	1450
23/11/2021	2937.6	1150	2000
24/11/2021	60	1100	1110
25/11/2021	930	1000	1510
6/03/2022	Overtopping		
7/03/2022	Overtopping		
8/03/2022	Overtopping		
29/06/2022	1243	1440	1700
30/06/2022	3108	1800	2350
TOTAL	**23945**	**-**	**-**

APPENDIX C ASH REPOSITORY SURVEY

N

CEH SURVEY
CONSULTING LAND, ENGINEERING AND MINING SURVEYORS
"Astrolabe" 1 Rutherford Lane,
LITHGOW 2790
ABN: 68 056 544 551 Office: (02) 6351 2281
Email: survey@ceh.com.au Website: www.ceh.com.au

DATE	19-05-2022
AMENDED	
SURVEYOR	TH/BN
DRAWN	GM/TH
CHECKED	

SERVICE STREAM LIMITED.

MOUNT PIPER - ASH PLACEMENT SURVEY : 19th MAY 2022

SCALE - 1:3500 (A3)

DATUM: MGA (ZONE 56)

DRAWING No:
MPA0522
(as surveyed)

CCAD6 JOB & DWG:
MPA0522 - MPA0522 as survey

APPENDIX D BRINE COMPOSITION DATA

ERM

APPENDIX D BRINE COMPOSITION DATA

Brine Composition Average Data

Parameter	Values from 1999 SEE Average[b]	2003 – 2006 Average[b]	July 2017 - Dec 2017 Average[a]	July 2019 – June 2020 Average[c]	July 2020 – June 2021 Average[d]	July 2021 – June 2022 Average Waste Pond B[e]	July 2021 – June 2022 Average Waste Pond A[e]
pH	7.9	8.1	7.9	9.3	8.75	10	10
Cond (us/cm)	63,664	127,982	88,556	61,320	73,196	51,302	58,797
TDS	116,650	137,170	118,500	64,257	89,948	51,341	61,111
Alk (CaCO3)	1,360	1,346	976	14,735	6,067	22,943	11,836
Cl	19,864	23,889	10,390	7,776	8,270	7,905	10,298
SO4	49,670	66,767	67,378	28,302	47,395	7,943	19,172
Na	25,678	30,103	37,400	23,475	28,694	17,305	19,797
K	4,258	7,362	3,460	1,721	2,518	1,498	1,738
Ca	645	606	780	696	458	29	146
Mg	5,480	9,010	4,010	1,540	2,541	57	88
ug/L							
As	409^^^	143	438	522	199	209	209
Ag	1.4^^	<50	10	<1	<1	6.6	4.7
Ba	272*	30	1,000	6.43	116	5.9	95
Be	17^	5.8	-	<10	<10	5	5
B	73,560*	115,000	35,800	41,500	9,570	2,847	4,738
Cd	19+	42	5.3	2.3	3.58	2.7	4.0
Cr ***	49+	<50	1,050	50	40.4	48	34
Cu	7,858*	7,197	12,400	5,991	4,626	237	764
F	21,178*	125,656	64,650	55,404	72,630	48	38
Fe	833*	-	1,580	151	340	201	884
Hg	1.35^^	-	0.04	0.11	0.23	0.23	0.23
Mn	17,530*	34,000	7,210	5,170	231	17	427
Mo	2,600^^	-	-	2,625	2,490	4877	5146
Ni	4,187*	4,017	3,880	348	1,570	309	492
Pb	6^^	-	10	<10	11.6	5	7.2
Se	245*	-	130	115	114	50	99
Zn	2,020*	-	1,050	2,180	1,373	223	1,477

a. Brine composition data provided by EnergyAustralia on 01 August 2018;
b. Connell Wagner (2007). Statement of Environmental Effects, Mount Piper Power Station, Extension of Brine Conditions Ash Placement Area. Prepared by Environmental Services, Pacific Power International for Delta Electricity, 21 June 2007.
c. data based on Nalco monitoring point reference 1050, EA BC Waste Pond
Notations relate to Average Trace element values, from 1999 Statement of Environmental Effects including:
* mostly 10 – 15 analyses (sources Hodgson, 1999) – AWT, 1996
** EPA (1999a) ^ one analysis ^^ 3 analyses ^^^ 5 analyses + 6 analyses
*** Total chromium reported (CrVI <25ug/l)
d. Brine composition data provided by EnergyAustralia on July 2021 – combined data of BC Waste Pond A & B.
e. Brine composition data provided by EnergyAustralia on August 2022 – averages of data for BC Waste Pond A & BC Pond B.

APPENDIX E SITE WEATHER DATA

Month	Jul-21			Aug-21			Sep-21			Oct-21			Nov-21			Dec-21		
Measurement	Min	Max	Rain	Min	Max	Rain	Min	Max	Rain	Min	Max	Rain	Min	Max	Rain	Min	Max	Rain
Date	°C	°C	mm	°C	°C	mm	°C	°C	mm	°C	°C	mm	°C	°C	mm	°C	°C	mm
1	5	11.9	9.4	2.7	17.7	1.6	-0.2	20.5	0.2	6.9	18.1	14.1	3.4	18.8	0	13.7	21.9	12
2	0.6	11.9	0.6	-2.4	11.6	2.4	0	19.5	0	5.1	15.1	2.6	5	21	0	10.1	25.1	0.2
3	-1.1	11	0.2	2.4	9.7	10	4.6	19.6	0.2	8.5	17.8	0.2	5.6	22.5	0	12	28.1	0.2
4	-2.7	7.1	0.2	1.6	5.4	1	10.4	12.9	8.2	7	16.4	0	11.7	15.1	19	11.9	23.8	0
5	-0.4	8.3	0	4.3	9.2	0	3.6	10.9	9.9	5.5	12	0	11.5	15.4	8.6	9.4	15.3	0
6	-5.7	9.9	0	-1.1	10.5	0	2.7	12.6	0	3.1	18.3	0	11.3	22.2	0.2	9.5	14.2	3.8
7	-5.5	10.2	0.4	-3.1	10.2	0.2	-1.8	14.7	0.2	4.1	21.1	0	10.2	19.4	19.6	12.1	22.9	4.6
8	-2.2	10.9	0.2	-2.2	10.2	0	-2.3	18.6	0	5.1	20.5	0	9.8	22.1	8.7	10.4	19.5	17.6
9	2.4	8.4	1	2.1	13	0.2	-3.8	18.6	0.3	2.6	23.3	0	9.7	23.3	0	9.4	19.6	9.4
10	2.5	10.9	0	-0.4	13.9	0	1.8	20.2	0	8.8	24.3	5.2	12.2	17.5	16.8	4.1	14.5	0.2
11	0.8	11.2	0	1.4	15.3	0.4	-0.4	20.6	0	6.4	11.4	2.8	9.8	20.7	28.2	5.4	16.6	0
12	-1.4	11.8	0.2	-2.2	12.5	4.4	4.3	20.8	0	5.9	9	8.2	7.9	19.7	15.4	7.3	20.5	0.2
13	-1	10.9	0	-4.4	11.8	0.2	-1	10.6	6.2	6.9	13.3	0.6	5.9	8.7	3	10.4	23.9	0
14	-0.6	10.3	2	-3.9	14.7	0	2.4	11.4	0.6	6.2	20.4	1.2	5	12.7	6	8	25.2	0
15	4.7	13.6	1.8	-2.7	13.6	0.2	-1.3	14	0	5.2	12.3	8.2	5	11.7	0	8.9	29.2	0
16	4.3	9	11	3.5	12.1	0	-0.2	14	0	6	11.3	0.4	5.1	15.6	0	13.8	26.5	0
17	0.7	5.6	14.2	-2.1	11.8	0	-0.2	18.2	0	3.8	17.5	0.2	4.2	18.9	0	12.7	27.5	0
18	2.7	9	0.2	-4.5	13.5	0	5	19.1	8.2	1.3	20.1	0	6.6	22.1	0	12.8	29.9	9.8
19	-2	6.1	0.4	-3.3	14.9	0.2	-0.7	15	0.2	4.2	20.2	0	12.5	22.2	0	13.3	24.6	4.5
20	2.5	5.9	2.2	-1.3	15.5	0	2	17	1.8	1.9	16.1	0.2	13.9	22.4	1.8	9.9	27.1	0
21	-4.3	7.8	0.8	2.2	16.1	0.2	0.4	8.3	0	3	17.3	0	9.5	14.2	13.4	8.1	30	0
22	-6.8	10.3	0.2	1.3	20	0	-0.3	15.4	0	7.8	22.1	0	9.7	15.8	0.4	11.8	28.6	0
23	1.8	7.1	2.4	5.2	18	13.2	0	19.2	0	10.1	27.7	7.7	10	18.6	0	14.4	22.5	0
24	4.1	7.9	3.2	1.5	6.3	45.8	2.2	17.9	0.2	2.8	17.5	0.2	13.9	22.6	2.2	12.9	27.6	0
25	0.5	5.1	5.6	1.6	9.1	0.2	2.7	15.6	0	-0.2	16.3	0	16.2	18.9	19.7	12.5	27.6	0
26	3.6	10.3	0	-2.2	12.7	0	4.4	9.3	0	1.7	20.3	0	10.1	16.8	22.2	11.8	26.4	6.6
27	4.5	13	0	1.7	8.7	0	4.5	15	0	4.7	23.7	0	8.5	12.4	4.4	11.6	16.2	0.4
28	4	15.3	4.2	-2.1	11.5	0	1.4	18.2	0	4.6	25.9	0	8.1	14.8	0.2	9.7	17.1	0.4
29	-3.1	9.1	0.2	-2.9	12.9	0.6	6	12.6	14.2	8.5	21.3	0	8.9	18.7	0	8.2	20.7	0
30	-6.7	12.8	0	0	13.7	0	5.3	16	11.9	3.2	16.9	0	12.1	21	0	5.9	23.6	0
31	0.5	17	0	-2.5	17	0				1	19	0				7.6	26.5	0.2
Min	-6.8	5.1	0	-4.5	5.4	0	-3.8	8.3	0	-0.2	9	0	3.4	8.7	0	4.1	14.2	0
Max	5	17	14.2	5.2	20	45.8	10.4	20.8	14.2	10.1	27.7	14.1	16.2	23.3	28.2	14.4	30	17.6
Average	0.05	9.99		-0.38	12.68		1.72	15.88		4.89	18.27		9.11	18.19		10.31	23.31	
Total			60.60			80.80			62.30			51.80			189.80			70.10

Month	Jan-22			Feb-22			Mar-22			Apr-22			May-22			Jun-22		
Measurement	Min	Max	Rain	Min	Max	Rain	Min	Max	Rain	Min	Max	Rain	Min	Max	Rain	Min	Max	Rain
Date	°C	°C	mm	°C	°C	mm	°C	°C	mm	°C	°C	mm	°C	°C	mm	°C	°C	mm
1	10	25.4	0	15	28	6.1	14.6	21.1	1.2	7.7	15.0	0.2	-0.1	17.4	0	0	4	2.4
2	10.9	28	1.5	13	22.2	17.4	14.5	21.2	2	4.8	16.0	0.0	6.4	17.6	0	0.9	10	0
3	15.1	26	0	11.6	19.7	0	15.4	20.8	6.2	3.6	18.0	0.2	3.3	18.1	1.2	-0.5	8.5	0.2
4	13.6	24.8	0	7.8	17.9	0	16.7	23.1	1.4	4.6	20.1	0.0	2.7	18.1	2	3.9	7.4	0
5	15.8	22.5	0.8	10.6	17.5	1.4	16.1	24.8	32.7	3.6	22.4	0.0	3.7	16.4	13.8	5.8	7.9	0
6	17.7	25.9	1	11.6	17.9	2.8	13.5	18.8	33.9	10.1	20.3	0.0	-0.9	11.6	0.4	2.5	7	4.4
7	16.2	25.9	56.4	10.8	18	0.8	16.6	20.5	22.7	11.0	17.4	7.6	1	10.6	0.2	2.5	5.4	5.2
8	15.5	27.7	9.6	8.6	21.7	0	14.1	18.7	12.2	11.7	16.8	1.6	1.4	13	0	1.9	4.3	0
9	16.3	20.5	3.6	7.4	26.3	0	10.7	20.8	0.2	12.5	19.5	1.2	0.8	14.7	1	1.9	5	0.2
10	17.8	27.2	2.9	9.3	28.4	0.4	10.8	21	0	10.9	21.5	0.0	9	13.7	2	4	6.9	0
11	18	24.9	6.5	12.5	22.7	0.2	11.9	19.3	0	7.4	22.7	0.2	9.4	12.18	10.8	3	6	0
12	15.4	23.1	0.6	13.1	19.9	0.6	10.6	21.2	0	11.1	19.8	0.0	11.21	13.61	17.6	3.1	5.9	0
13	15.2	23.4	1.8	12.4	22	1	9.1	21.2	0	10.7	17.0	0.4	11.84	19.24	11.4	-1.2	10.1	0
14	15.5	25.1	0.2	7.3	25.4	0	8.9	22.6	0	8.1	17.9	0.6	11.47	20.36	1	-4	11.6	0
15	15.2	26.5	0.2	10.7	26.4	0.2	11.9	19.8	0.4	6.6	19.8	0.2	10.06	19.14	0	0.1	7.2	0.6
16	13	30.1	0.2	10.8	26	0	11.8	22	0	4.3	19.7	0.0	5.65	16.25		6.6	11.1	0
17	14.1	29.7	3.2	9.1	28.6	0.2	10.4	23.9	0	4.5	20.3	0.2	4.4	13.23		4.7	10.6	0
18	15.6	20	6.6	11.4	26.9	0	13.3	23.7	0	4.4	20.7	0.2	3.08	11.59		-	-	-
19	12.1	16.3	10.2	13.9	18.2	0	8.7	19.4	0.2	6.2	21.4	11.0	-0.4	11.93	0	5.6	12	0
20	12.2	17.8	0	8.8	27.9	11.5	5.6	24.9	0.2	7.1	15.7	0.2	0.53	10.25	0	2.9	10.9	0
21	12.2	18.8	0.4	13.3	27.3	33.5	9.5	23.4	0	2.8	17.7	0.0	7.67	11.76	0	0.7	12.1	2.2
22	10.7	19.8	0	14.3	21.4	0.2	7.5	26	0.2	9.7	14.1	0.2	7.85	12.45	0	1.9	10.6	0.2
23	10.3	20.6	0	16.6	23.2	2.6	12.9	25.2	0	8.9	16.0	0.6	5.72	13.1	0	4.5	8.9	0
24	12.7	22.5	0	17.2	21.7	3.6	13.4	16.5	0.4	9.5	15.8	0.0	5.99	11.5	0	6.5	10.7	0
25	14.4	23.5	0	15.8	20.6	8	13.2	19.3	0.2	6.7	15.4	0.2	2.51	14.7	0	3.3	11.5	0
26	15.3	22.9	0	14	20.4	3.8	12.4	17.3	2.6	10.2	14.5	0.0	5.5	15.11	0	3	11.8	0.2
27	13.5	21.7	0	14.4	21.8	0.2	12.5	16.5	2.2	11.6	12.7	19.8	2.88	17.96	0	1.2	8.5	0
28	16.5	27.6	9	13.7	20.9	0.8	13.1	22.3	15.2	11.4	14.9	13.4	6.12	14.26	0	-0.7	9.2	0
29	15.3	26	9.6				14.5	16.3	9.6	11.9	19.8	0.0	2.65	9.5	0	1.1	10.4	0.2
30	15.9	25.2	1.2				13	20.3	1.8	7.0	15.7	9.2	-1.79	8.83	0	5.4	9.6	0
31	13.9	28.4	0.2				8.8	17.8	1.6				2.54	6.49	4.6			
Min	10	16.3	0	7.3	17.5	0	5.6	16.3	0	2.833333	12.73333	0	-1.79	6.49	0	-4	4	0
Max	18	30.1	56.4	17.2	28.6	33.5	16.7	26	33.9	12.46667	22.7	19.8	11.84	20.36	17.6	6.6	12.1	5.2
Average	14.38	24.12		11.96	22.82		12.13	20.96		8.02	17.95		4.59	14.02		2.43	8.80	
Total			125.70			95.30			147.10			67.20			66.00			15.80

APPENDIX F TABULATED SURFACE WATER DATA

			Field Parameters						Major Anions and Cations														NA				Nutrients						
			Dissolved Oxygen (Field)	Dissolved Oxygen (Field) (Filtered)	Electrical Conductivity (Field)	pH (Field)	Redox (Field)	Temperature (Field)	Carbonate (as CaCO3)	Bicarbonate Alkalinity (as CaCO3)	Calcium	Calcium (Filtered)	Carbonate Alkalinity (as CaCO3)	Chloride	Hydroxide Alkalinity (as CaCO3)	Fluoride	Fluoride (Filtered)	Magnesium	Phenolphthalein Alkalinity (CaCO3)	Potassium	Sodium	Sulfate (as SO4)	Calcium Hardness (as CaCO3) (mg/L)	Chlorine (Free Residual)	Dissolved Organic Carbon (mg/L) (Filtered)	Oil & Grease	Ammonia	Sulfur	Nitrate	Nitrite (as NO2-)	Nitrite + Nitrate (as N)	Nitrogen (N) - Kjeldahl	Nitrogen (N)
		Unit	mg/L	mg/L	uS/cm	pH units	mV	oC	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	µg/L	mg/L	µg/L	µg/L	mg/L	mg/L	mg/L
ANZECC (2000) or Local Guidelines - Surface Water					2200	6.5-8								350#1		1.5#2	1.5#2					1000#3											
Purpose	LocCode	Sampled_Date-Time																															
Upstream	LMP01	5/07/2021	7.1	7.1	302	8.08	-	-	-	-	-	-	-	9.03	-	-	0.159	-	-	-	-	69.4	-	-	-	<5	-	-	-	-	-	-	-
Upstream	LMP01	2/08/2021	9.4	9.4	373	8.02	-	-	-	-	-	-	-	19.78	-	-	0.09	-	-	-	-	71	-	-	-	<5	-	-	-	-	-	-	-
Upstream	LMP01	6/09/2021 9:25	-	-	229	7.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Upstream	LMP01	6/09/2021 11:40	7.8	7.8	229	7.7	-	12.8	-	-	15.9	-	-	6.923	-	0.102	-	7.62	-	4.75	23.5	55.4	-	-	-	<5	-	16	-	-	-	-	-
Upstream	LMP01	9/09/2021 11:25	-	-	285	8.19	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Upstream	LMP01	5/10/2021 10:15	-	8.9	262	7.78	-	-	-	-	24	-	-	6.04	-	0.18	-	12.8	-	5.53	18.4	56	-	-	-	5	-	20	-	-	-	-	-
Upstream	LMP01	25/10/2021 11:35	-	-	381	7.74	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Upstream	LMP01	1/11/2021 8:05	-	-	406	7.62	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Upstream	LMP01	1/11/2021 11:50	-	8.5	431	7.93	-	-	-	-	29.6	-	-	7.05	-	0.244	-	18.7	-	6.03	27.8	91.2	-	-	-	<5	-	32	-	-	-	-	-
Upstream	LMP01	5/11/2021	-	-	352	7.84	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Upstream	LMP01	8/11/2021	-	-	184.6	7.67	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Upstream	LMP01	6/12/2021	-	7.4	460	7.86	-	-	<1	94	34.3	-	94	12.4	-	0.111	-	24.8	<1	7.61	24.1	122	-	-	-	-	<10	40	70	<10	0.07	0.2	0.3
Upstream	LMP01	4/01/2022	-	8.3	491	7.83	-	-	<1	100	33.8	-	100	11.3	-	0.112	-	26.5	<1	7.15	23.1	131	-	-	-	-	<10	45	30	<10	0.03	0.1	0.1
Upstream	LMP01	7/02/2022	-	9.4	354	7.29	-	-	<1	92	25.2	-	92	8.41	-	0.145	-	17	<1	5.84	21.1	74.4	-	-	-	-	20	23	60	<10	0.06	0.3	0.4
Upstream	LMP01	7/03/2022	-	8.6	184	7.17	-	-	<1	36	11.7	-	36	7.47	-	0.098	-	5.98	<1	4.62	12.9	35.5	-	-	-	-	720	11	110	<10	0.11	1.3	1.4
Upstream	LMP01	4/04/2022	-	7.5	431	7.5	95	-	-	98.51	29.9	-	98.51	11.3	-	0.015	-	23.2	0	6.89	21	105	-	-	-	-	10	31	60	<10	0.06	0.2	0.3
Upstream	LMP01	2/05/2022	-	7.5	295	7.66	76.3	-	-	90.55	21.1	-	90.55	8.49	-	0.103	-	14.4	0	4.92	13.8	70	-	-	-	-	<10	20	60	<10	0.06	0.2	0.3
Upstream	LMP01	6/06/2022	-	7.7	383	7.03	140.5	-	-	91.54	28.2	-	91.54	10.7	-	0.062	-	20.3	0	6.65	21.6	96.5	-	-	-	-	<10	30	80	<10	0.08	0.2	0.3
	LMP01	**Min.**	7.1	7.1	184	7.03	76.3	12.8	<1	36	11.7	-	36	6.04	-	0.015	0.09	5.98	0	4.62	12.9	35.5	-	-	-	<5	<10	11	30	<10	0.03	0.1	0.1
	LMP01	**Max.**	9.4	9.4	491	8.19	140.5	12.8	<1	100	34.3	-	100	19.78	-	0.244	0.159	26.5	<1	7.61	27.8	131	-	-	-	5	720	45	110	<10	0.11	1.3	1.4
	LMP01	**Average**	8.1	8.2	335	7.7	104		0.5	86	25	-	86	9.90	-	0.12	0.125	17	0.3	6	21	81	-	-	-	3	110	27	67	5	0.07	0.36	0.4
Mid-stream	SW_C	29/07/2021	-	13	228	7.24	-	-	<1	52	15.6	-	52	9.71	-	0.054	-	8.48	<1	4.35	17.2	40.1	-	-	-	-	<10	13	20	<10	0.02	-	0.1
Mid-stream	SW_C	25/08/2021	-	11.3	137	7.1	-	-	<1	35	9.87	-	35	5.02	-	0.114	-	4.64	<1	4.08	11.4	23.7	-	-	-	-	<10	8	90	<10	0.09	0.1	0.2
Mid-stream	SW_C	16/09/2021	-	11.2	120	7.13	-	-	<1	24	4.74	-	24	11.5	-	0.028	-	3.09	<1	3.34	15.8	16.8	-	-	-	-	<10	5	30	<10	0.03	0.2	0.2
Mid-stream	SW_C	28/10/2021	-	8.6	108	6.71	-	-	<1	19	4.96	-	19	10.4	-	0.026	-	3.16	<1	2.57	11.1	16.5	-	-	-	-	<10	5	<10	<10	<0.01	0.2	0.2
Mid-stream	SW_C	17/11/2021	-	6.2	257	7.04	-	-	<1	56	19.9	-	56	8.47	-	0.077	-	11.6	<1	4.18	15.7	54.2	-	-	-	-	<10	17	10	<10	0.01	0.3	0.3
Mid-stream	SW_C	30/11/2021	-	8.3	231	7.65	-	-	<1	54	14.4	-	54	8	-	<0.25	-	9.42	<1	3.96	13.8	44	-	-	-	-	<10	14	20	<10	0.02	0.3	0.3
Mid-stream	SW_C	22/12/2021	-	6.7	241	7.15	-	-	<1	56	16.6	-	56	8.81	-	0.047	-	11.2	<1	4.18	15.5	50.2	-	-	-	-	<10	16	20	<10	0.02	0.2	0.2
Mid-stream	SW_C	20/01/2022	-	6.6	187	7.09	-	-	<1	52	13.1	-	52	8.88	-	0.074	-	7.95	<1	4.18	14.3	29.9	-	-	-	-	<10	9	<10	<10	<0.01	0.2	0.2
Mid-stream	SW_C	9/02/2022	-	7.3	162	6.98	-	-	<1	47	11	-	47	8.49	-	0.067	-	7.04	<1	3.91	15.2	23.9	-	-	-	-	<10	8	<10	<10	<0.01	0.2	0.2
Mid-stream	SW_C	9/03/2022	-	7.4	124	7.16	-	-	<1	31	7.91	-	31	7.55	-	0.019	-	4.24	<1	4.57	11.3	20.9	-	-	-	-	260	6	50	<10	0.05	1.1	1.2
Mid-stream	SW_C	13/04/2022	-	7	224	6.96	80.2	-	<1	47	13.8	-	47	9.81	<1	<0.05	-	10.4	<1	3.99	13	44.7	-	-	-	-	20	14	<10	<10	<0.01	0.2	0.2
Mid-stream	SW_C	10/05/2022	-	11.3	194	6.53	137.2	-	<1	40	12.1	-	40	8.72	<1	<0.05	-	8.35	<1	3.77	11.8	34.4	-	-	-	-	<10	11	20	<10	0.02	0.2	0.2
Mid-stream	SW_C	15/06/2022	-	13.1	235	7.82	3.5	-	<1	43	13.3	-	43	11	<1	0.033	-	9.71	<1	3.64	17.8	55.8	-	-	-	-	<10	18	30	<10	0.03	<0.1	<0.1
	SW_C	**Min.**	-	6.2	108	6.53	3.5	-	<1	19	4.74	-	19	5.02	<1	<0.05	-	3.09	<1	2.57	11.1	16.5	-	-	-	-	<10	5	<10	<10	<0.01	<0.1	<0.1
	SW_C	**Max.**	-	13.1	257	7.82	137.2	-	<1	56	19.9	-	56	11.5	<1	0.114	-	11.6	<1	4.57	17.8	55.8	-	-	-	-	260	18	90	<10	0.09	1.1	1.2
	SW_C	**Average**	-	9.1	188		74	-	0.5	43	12	-	43	9	0.5	0.055	-	7.6	0.5	3.9	14	35	-	-	-	-	26	11	24	5	0.02	0.3	0.3
Mid-stream	SW_E	29/07/2021	-	13.3	334	7.31	-	-	<1	48	17.1	-	48	21.1	-	0.06	-	11.8	<1	4.75	30.8	78.5	-	-	-	-	30	25	<10	<10	<0.01	<0.1	<0.1
Mid-stream	SW_E	25/08/2021	-	10.7	176	7.2	-	-	<1	37	10.1	-	37	7.84	-	0.104	-	5.65	<1	4.16	15.6	34.3	-	-	-	-	<10	11	60	<10	0.06	0.6	0.7
Mid-stream	SW_E	16/09/2021	-	11.2	620	6.75	-	-	<1	56	25.1	-	56	47.3	-	0.074	-	21.9	<1	7.32	67.5	168	-	-	-	-	10	54	40	<10	0.04	0.2	0.2
Mid-stream	SW_E	27/10/2021	-	9	670	7.06	-	-	<1	82	28.7	-	82	48.7	-	<0.1	-	22.8	<1	7.27	61	189	-	-	-	-	10	53	<10	<10	<0.01	0.2	0.2
Mid-stream	SW_E	17/11/2021	-	6.2	325	6.96	-	-	<1	56	19.7	-	56	15.6	-	0.098	-	12.6	<1	4.18	26.3	72.8	-	-	-	-	<10	21	<10	<10	<0.01	0.2	0.2
Mid-stream	SW_E	1/12/2021	-	8.1	374	7.99	-	-	<1	76	19.4	-	76	17.5	-	<0.5	-	13.7	<1	4.95	30	83.6	-	-	-	-	<10	26	<10	<10	<0.01	0.2	0.2
Mid-stream	SW_E	20/01/2022	-	7.4	431	7.2	-	-	<1	77	22.6	-	77	25.4	-	0.12	-	16.7	<1	6.77	41.1	101	-	-	-	-	<10	32	<10	<10	<0.01	0.2	0.2
Mid-stream	SW_E	9/02/2022	-	7.2	650	7.1	-	-	<1	74	31.8	-	74	42.6	-	0.084	-	24.6	<1	9.27	75.8	182	-	-	-	-	10	61	<10	<10	<0.01	0.3	0.3
Mid-stream	SW_E	9/03/2022	-	7.9	174	7.19	-	-	<1	34	9.02	-	34	10.8	-	0.023	-	5.55	<1	5.08	16.7	35	-	-	-	-	170	10	50	<10	0.05	1	1
Mid-stream	SW_E	13/04/2022	-	7.4	750	6.83	43.5	-	<1	59	30	-	59	50.2	<1	<0.1	-	27	<1	10.2	74.1	237	-	-	-	-	10	74	<10	<10	<0.01	0.2	0.2
Mid-stream	SW_E	10/05/2022	-	10.7	555	6.92	82.8	-	<1	45	12.6	-	45	37.2	<1	<0.1	-	14.1	<1	5.27	24.4	160	-	-	-	-	<10	31	10	<10	0.01	0.1	0.1
Mid-stream	SW_E	15/06/2022	-	12.1	453	7.44	2.6	-	<1	50	19.6	-	50	29	<1	<0.05	-	16.8	<1	5.47	41.9	131	-	-	-	-	<10	42	20	<10	0.02	0.1	0.1
	SW_E	**Min.**	-	6.2	174	6.75	2.6	-	<1	34	9.02	-	34	7.84	<1	< 0.05	-	5.55	<1	4.16	15.6	34.3	-	-	-	-	<10	10	<10	<10	<0.01	<0.1	<0.1
	SW_E	**Max.**	-	13.3	750	7.99	82.8	-	<1	82	31.8	-	82	50.2	<1	0.12	-	27	<1	10.2	75.8	237	-	-	-	-	170	74	60	<10	0.06	1	1
	SW_E	**Average**	-	9.3	459		43	-	0.5	58	20	-	58	29	0.5	0.082	-	16	0.5	6.2	42	123	-	-	-	-	23	37	18	5	0.02	0.3	0.3
Mid-stream	NC01	29/07/2021	12.7	12.7	231	7.35	-	-	<1	51	16	-	51	10.4	-	0.043	-	8.74	<1	4.33	17.8	43.1	-	-	-	-	<10	14	40	<10	0.04	0.2	0.2
Mid-stream	NC01	25/08/2021	10.6	10.6	139	7.07	-	-	<1	36	9.6	-	36	4.98	-	0.084	-	4.67	<1	4.04	11.7	24	-	-	-	-	20	8	90	<10	0.09	0.6	0.7
Mid-stream	NC01	16/09/2021	-	10	132	6.72	-	-	<1	24	6.5	-	24	11.6	-	0.045	-	3.94	<1	3.73	15.1	18.1	-	-	-	-	<10	6	20	<10	0.02	0.3	0.3
Mid-stream	NC01	28/10/2021	-	7.3	163	6.95	-	-	<1	38	9.46	-	38	10.2	-	0.053	-	5.54	<1	3.27	14.5	27.3	-	-	-	-	10	8	<10	<10	<0.01	0.3	0.3
Mid-stream	NC01	17/11/2021	-	5.6	253	7.1	-	-	<1	57	19.1	-	57	8.17	-	0.085	-	11	<1	4.11	15.4	51.5	-	-	-	-	50	16	50	<10	0.05	0.3	0.4
Mid-stream	NC01	30/11/2021	-	8	230	7.36	-	-	<1	66	14.7	-	66	7.79	-	<0.25	-	9.29	<1	3.83	14.3	39.7	-	-	-	-	<10	13	20	<10	0.02	0.2	0.2
Mid-stream	NC01	20/01/2022	-	6.7	201	7.11	-	-	<1	56	14.3	-	56	8.89	-	0.082	-	8.68	<1	4.41	14.9	32.6	-	-	-	-	<10	10	10	<10	0.01	0.4	0.4
Mid-stream	NC01	9/02/2022	-	6.3	166	7.02	-	-	<1	50	11.2	-	50	8.68	-	0.069	-	7.1	<1	3.96	15.6	23.2	-	-	-	-	<10	8	<10	<10	<0.01	0.2	0.2

ERM

			Field Parameters						Major Anions and Cations														NA				Nutrients						
			Dissolved Oxygen (Field)	Dissolved Oxygen (Field) (Filtered)	Electrical Conductivity (Field)	pH (Field)	Redox (Field)	Temperature (Field)	Carbonate (as CaCO3)	Bicarbonate Alkalinity (as CaCO3)	Calcium	Calcium (Filtered)	Carbonate Alkalinity (as CaCO3)	Chloride	Hydroxide Alkalinity (as CaCO3)	Fluoride	Fluoride (Filtered)	Magnesium	Phenolphthalein Alkalinity (CaCO3)	Potassium	Sodium	Sulfate (as SO4)	Calcium Hardness (as CaCO3) (mg/L)	Chlorine (Free Residual)	Dissolved Organic Carbon (mg/L) (Filtered)	Oil & Grease	Ammonia	Sulfur	Nitrate	Nitrite (as NO2-)	Nitrite + Nitrate (as N)	Nitrogen (N) - Kjeldahl	Nitrogen (N)
		Unit	mg/L	mg/L	uS/cm	pH units	mV	oC	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	µg/L	mg/L	µg/L	µg/L	mg/L	mg/L	mg/L
ANZECC (2000) or Local Guidelines - Surface Water					2200	6.5-8								350#1		1.5#2	1.5#2					1000#3											
Purpose	LocCode	Sampled_Date-Time																															
Mid-stream	NC01	9/03/2022	-	7.4	137	7.05	-	-	<1	34	8.47	-	34	7.68	-	<0.01	-	4.54	<1	4.74	11.6	23.5	-	-	-	-	290	7	60	<10	0.06	1.2	1.3
Mid-stream	NC01	13/04/2022	-	6.6	226	6.99	67.3	-	<1	46	14.5	-	46	9.78	<1	0.029	-	10.7	<1	4.14	13.2	43.7	-	-	-	-	60	18	<10	<10	<0.01	0.2	0.2
Mid-stream	NC01	10/05/2022	-	10.2	194	6.95	143.7	-	<1	43	12.2	-	43	8.62	<1	<0.05	-	8.33	<1	3.55	11.8	33.7	-	-	-	-	10	11	20	<10	0.02	0.2	0.2
Mid-stream	NC01	15/06/2022	-	13.1	440	7.65	2.6	-	<1	82	29.3	-	82	12.7	<1	0.056	-	21.2	<1	6.08	30.3	114	-	-	-	-	<10	38	70	<10	0.07	0.2	0.3
	NC01	**Min.**	10.6	5.6	132	6.72	2.6	-	<1	24	6.5	-	24	5	<1	<0.01	-	3.9	<1	3.27	11.6	18.1	-	-	-	-	<10	6	<10	<10	<0.01	0.2	0.2
	NC01	**Max.**	12.7	13.1	440	7.65	143.7	-	<1	82	29.3	-	82	12.7	<1	0.09	-	21.2	<1	6.08	30.3	114	-	-	-	-	290	38	90	<10	0.09	1.2	1.3
	NC01	**Average**	11.7	8.7	209		71	-	0.5	49	14	-	49	9.1	0.5	0.06	-	8.6	0.5	4.2	16	40	-	-	-	-	39	13	33	5	0.03	0.4	0.4
Downstream	SW_G	29/07/2021	-	13	483	7.16	-	-	<1	47	24.5	-	47	31.7	-	0.056	-	18.1	<1	5.71	42.9	129	-	-	-	-	<10	43	<10	<10	<0.01	<0.1	<0.1
Downstream	SW_G	25/08/2021	-	10.8	223	7	-	-	<1	37	12.1	-	37	12	-	0.107	-	7.93	<1	4.72	20.7	51	-	-	-	-	<10	16	50	<10	0.05	0.5	0.6
Downstream	SW_G	15/09/2021	-	9.7	588	7.29	-	-	<1	54	29	-	54	39.5	-	0.095	-	21.2	<1	7.22	60.2	162	-	-	-	-	<10	53	10	<10	0.01	0.2	0.2
Downstream	SW_G	28/10/2021	-	9	750	7.19	-	-	<1	77	35.9	-	77	56.6	-	<0.1	-	26.6	<1	7.18	71	226	-	-	-	-	<10	65	<10	<10	<0.01	0.2	0.2
Downstream	SW_G	17/11/2021	-	5.2	297	6.85	-	-	<1	56	18.4	-	56	14.6	-	0.098	-	12	<1	3.97	24.8	66.7	-	-	-	-	<10	20	<10	<10	<0.01	0.2	0.2
Downstream	SW_G	1/12/2021	-	8.3	352	7.31	-	-	<1	58	18	-	58	17.2	-	<0.5	-	12.4	<1	4.39	27.6	81.5	-	-	-	-	<10	24	<10	<10	<0.01	0.2	0.2
Downstream	SW_G	20/01/2022	-	7.1	563	7.27	-	-	<1	74	30.9	-	74	37	-	0.126	-	22.7	<1	8.05	52	154	-	-	-	-	<10	51	<10	<10	<0.01	0.3	0.3
Downstream	SW_G	9/02/2022	-	6.8	680	7.32	-	-	<1	74	33.6	-	74	44.8	-	0.089	-	25.6	<1	9.03	65.9	196	-	-	-	-	<10	62	20	<10	0.02	0.2	0.2
Downstream	SW_G	9/03/2022	-	8	180	7.21	-	-	<1	34	10	-	34	11	-	0.024	-	5.98	<1	5.32	16.7	37.7	-	-	-	-	150	11	70	<10	0.07	0.7	0.8
Downstream	SW_G	13/04/2022	-	6.8	810	7.23	65.4	-	<1	55	35	-	55	54.6	<1	<0.1	-	30.5	<1	10.5	79.5	260	-	-	-	-	<10	84	<10	<10	<0.01	0.2	0.2
Downstream	SW_G	10/05/2022	-	10.5	599	7.14	87.3	-	<1	44	24.4	-	44	39.4	<1	<0.1	-	21.4	<1	7.77	54.5	174	-	-	-	-	30	54	20	<10	0.02	0.2	0.2
Downstream	SW_G	15/06/2022	-	12.6	577	7.67	4.7	-	<1	49	25.8	-	49	39	<1	<0.1	-	22.2	<1	6.48	53.5	177	-	-	-	-	<10	60	20	<10	0.02	0.1	0.1
	SW_G	**Min.**	-	5.2	180	6.9	4.7	-	<1	34	10	-	34	11	<1	<0.1	-	5.98	<1	3.97	16.7	37.7	-	-	-	-	<10	11	<10	<10	<0.01	<0.1	<0.1
	SW_G	**Max.**	-	13	810	7.7	87.3	-	<1	77	35.9	-	77	56.6	<1	0.126	-	30.5	<1	10.5	79.5	260	-	-	-	-	150	84	70	<10	0.07	0.7	0.8
	SW_G	**Average**	-	9	509		52	-	0.5	55	25	-	55	33	0.5	0.087	-	19	0.5	6.7	47	143	-	-	-	-	19	45	18	5	0.02	0.3	0.3
Downstream	WX22	29/07/2021	13.2	13.2	484	7.2	-	-	<1	47	24.2	-	47	32.4	-	0.052	-	18	<1	5.85	43.1	131	-	-	-	-	<10	43	20	<10	0.02	0.1	0.1
Downstream	WX22	25/08/2021	10.9	10.9	224	6.99	-	-	<1	36	11.9	-	36	12	-	0.102	-	7.65	<1	4.56	20	51.7	-	-	-	-	<10	16	60	<10	0.06	0.4	0.5
Downstream	WX22	15/09/2021	-	9.7	595	7.23	-	-	<1	53	28.8	-	53	39.3	-	0.097	-	21.2	<1	7.23	60.3	161	-	-	-	-	<10	53	20	<10	0.02	0.2	0.2
Downstream	WX22	28/10/2021	-	8.4	740	7.15	-	-	<1	76	34.7	-	76	56.2	-	<0.1	-	26.1	<1	7.08	64	225	-	-	-	-	<10	64	<10	<10	<0.01	0.2	0.2
Downstream	WX22	17/11/2021	-	5.3	298	7.02	-	-	<1	52	17.8	-	52	14.4	-	0.096	-	11.6	<1	3.94	24.5	65.4	-	-	-	-	<10	20	<10	<10	<0.01	0.3	0.3
Downstream	WX22	1/12/2021	-	8.4	352	7.3	-	-	<1	57	18.2	-	57	16.5	-	<0.5	-	12.5	<1	4.33	27.9	76.2	-	-	-	-	<10	24	<10	<10	<0.01	0.2	0.2
Downstream	WX22	20/01/2022	-	7.3	563	7.24	-	-	<1	72	30.8	-	72	36.6	-	0.123	-	22.2	<1	7.82	51.4	152	-	-	-	-	<10	48	70	<10	0.07	0.3	0.4
Downstream	WX22	9/02/2022	-	7.3	680	7.27	-	-	<1	76	35.2	-	76	44.8	-	0.087	-	26.4	<1	9.07	74.5	195	-	-	-	-	<10	64	<10	<10	<0.01	0.2	0.2
Downstream	WX22	9/03/2022	-	7.9	180	7.1	-	-	<1	34	9.4	-	34	11.1	-	0.016	-	5.8	<1	5.1	16.4	38.1	-	-	-	-	150	11	40	<10	0.04	0.9	0.9
Downstream	WX22	13/04/2022	-	7.3	820	7.15	61.4	-	<1	54	35.2	-	54	54.5	<1	<0.1	-	30.7	<1	10.8	80.2	260	-	-	-	-	<10	84	20	<10	0.02	0.2	0.2
Downstream	WX22	10/05/2022	-	10.1	589	7.13	90.7	-	<1	46	23.8	-	46	39.8	<1	<0.1	-	20.8	<1	7.5	53.5	176	-	-	-	-	<10	53	10	<10	0.01	0.1	0.1
Downstream	WX22	15/06/2022	-	11.3	567	7.45	6.3	-	<1	45	26.1	-	45	38.6	<1	<0.1	-	22.5	<1	6.53	53.6	176	-	-	-	-	<10	60	20	<10	0.02	0.1	0.1
	WX22	**Min.**	10.9	5.3	180	6.99	6.3	-	0.5	34	9.4	-	34	11.1	<1	<0.1	-	5.8	<1	3.94	16.4	38.1	-	-	-	-	<10	11	<10	<10	<0.01	0.1	0.1
	WX22	**Max.**	13.2	13.2	820	7.45	90.7	-	<1	76	35.2	-	76	56.2	<1	0.123	-	30.7	<1	10.8	80.2	260	-	-	-	-	150	84	70	<10	0.07	0.9	0.9
	WX22	**Average**	12.1	8.9	508		53	-	0.5	54	25	-	54	33	0.5	0.085	-	19	0.5	6.7	47	142	-	-	-	-	17	45	23	5	0.02	0.3	0.3

Statistical Summary

Number of Results			21	92	132	134	22	1	65	96	96	14	96	105	15	90	15	96	96	96	96	105	10	6	19	27	93	96	93	93	93	83	93
Number of Detects			21	92	132	134	22	1	0	96	96	14	96	105	0	67	15	96	31	96	96	105	10	6	19	3	36	96	69	6	69	80	89
Minimum Concentration			7	5.2	108	6.53	2.6	12.8	<1	19	3.64	6.97	19	4.42	<1	<0.01	0.085	1.52	0	2.57	11.1	16.5	6.97	0	1	<5	<10	5	<10	<10	<0.01	<0.1	<0.1
Maximum Concentration			13.2	13.3	820	9.17	143.7	12.8	<1	100	35.9	43.2	100	64.29	<1	<0.5	0.208	30.7	<1	10.8	90.3	260	50	0.09	9	10	14800	84	570	30	0.59	16	16.3
Average Concentration			8.8	8.7	375	7.6	74		0.5	60	18	22	60	22	0.5	0.085	0.16	12	0.34	5.8	36	94	23	0.037	3.9	3	268	28	100	6	0.1	0.86	0.9
Median Concentration			8	8	350.5	7.61	81.5	12.8	0.5	55.04	16	20.75	55.04	16.5	0.5	0.0825	0.175	10.055	0.5	5.61	27.7	72.3	17.95	0.025	4	2.5	5	21.5	30	5	0.03	0.2	0.3
Standard Deviation			1.7	2	167	0.52	47		0	21	8.9	11	21	16	0	0.054	0.047	7.9	0.24	1.9	22	61	15	0.036	2.4	1.6	1574	19	141	4.3	0.14	2.2	2.2

Env Stds Comments

#1:Irrigation water; moderately tolerant crops.
#2:Drinking water
#3:Livestock
#4:Low land river conductivity; 0.68 x 2200 uS/cm.
#5:Adjusted for effects of hardness.
#6:Irrigation water; moderately tolerant crops. Note: Molybdenum drinking water Screening Level is 0.05 mg/L.
#7:Local guideline based upon 90th percentile pre-brine placement; Adjusted for effects of hardness

Purpose	LocCode	Sampled_Date-Time	Total Phosphate (PO4)	Total Phosphate (PO4) (Filtered)	Phosphorus	Phosphorus (Filtered)	Total Dissolved Solids (TDS)	Total Dissolved Solids (TDS) (Filtered)	Total Suspended Solids (TSS)	Turbidity	Aluminium	Aluminium (Filtered)	Antimony	Arsenic	Arsenic (Filtered)	Arsenic III	Arsenic V	Barium	Beryllium	Boron	Boron (Filtered)	Cadmium	Chromium	Chromium (Hexavalent)	Chromium (Trivalent)	Cobalt	Copper	Copper (Filtered)	Iron	Iron (Filtered)	Lead	Manganese	Manganese (Filtered)
							Physical Parameters				Metals																						
		Unit	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	NTU	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
ANZECC (2000) or Local Guidelines - Surface Water							1500[#4]	1500[#4]								24	13	700[#2]	100	370	370	0.85[#5]	2[#5]	1			3.5[#5]	3.5[#5]	300[#2]	300[#2]	5[#5]	1900	1900
Upstream	LMP01	5/07/2021	-	-	-	-	234	234	7.2	31.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Upstream	LMP01	2/08/2021	-	-	-	-	242	242	10.67	32.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Upstream	LMP01	6/09/2021 9:25	-	-	-	-	-	-	26.67	53.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Upstream	LMP01	6/09/2021 11:40	-	-	-	-	106	106	24	51.1	80	80	<1	<1	<1	-	-	17	<1	<50	<50	<0.1	<1	<10	<10	<1	2	2	70	70	<1	62	62
Upstream	LMP01	9/09/2021 11:25	-	-	-	-	-	-	5.2	31.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Upstream	LMP01	5/10/2021 10:15	-	-	-	-	-	144	45.67	80.2	770	70	<1	<1	<1	-	-	19	<1	<50	<50	<0.1	<1	<10	<10	<1	5	3	597	126	1	67	2
Upstream	LMP01	25/10/2021 11:35	-	-	-	-	-	-	20	42.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Upstream	LMP01	1/11/2021 8:05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Upstream	LMP01	1/11/2021 11:50	-	-	-	-	-	234	8	13.8	200	<10	<1	<1	<1	-	-	23	<1	<50	<50	<0.1	<1	<10	<10	<1	3	2	199	18	<1	138	<1
Upstream	LMP01	5/11/2021	-	-	-	-	-	-	53.33	111	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Upstream	LMP01	8/11/2021	-	-	-	-	-	-	55.6	114	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Upstream	LMP01	6/12/2021	-	-	<0.01	-	-	253	<5	8.6	270	20	<1	<1	<1	-	-	23	<1	<50	<50	<0.1	<1	<10	<10	<1	2	2	253	<50	<1	122	89
Upstream	LMP01	4/01/2022	-	-	<0.01	-	-	324	7	2.8	140	<10	<1	<1	<1	-	-	23	<1	<50	<50	<0.1	<1	<10	<10	<1	2	1	168	<50	<1	92	43
Upstream	LMP01	7/02/2022	-	-	0.02	-	-	260	10	20.5	570	20	<1	<1	<1	-	-	21	<1	<50	<50	<0.1	<1	<10	<10	<1	4	2	397	<50	<1	131	27
Upstream	LMP01	7/03/2022	-	-	0.1	-	-	190	80	205	1840	210	<1	1	<1	-	-	27	<1	<50	<50	<0.1	1	<10	<10	<1	11	3	1460	220	4	85	43
Upstream	LMP01	4/04/2022	-	-	0.01	-	-	291	6.333	14.3	290	10	<1	<1	<1	<1	<1	25	<1	<50	<50	<0.1	<1	<10	<10	<1	5	3	306	74	<1	133	81
Upstream	LMP01	2/05/2022	-	-	<0.01	-	-	189	7.5	33.9	610	40	<1	<1	<1	<1	<1	19	<1	<50	<50	<0.1	<1	<10	<10	<1	4	2	570	110	<1	45	8
Upstream	LMP01	6/06/2022	-	-	<0.01	-	-	258	5.5	23.5	290	20	<1	<1	<1	<1	<1	20	<1	<50	<50	<0.1	<1	<10	<10	<1	3	2	480	80	<1	66	24
	LMP01	**Min.**	-	-	<0.01	-	106	106	<5	2.8	80	<10	<1	<1	<1	<1	<1	17	<1	<50	<50	<0.1	<1	<10	<10	<1	2	1	70	18	<1	45	<1
	LMP01	**Max.**	-	-	0.1	-	242	324	80	205	1840	210	<1	1	<1	<1	<1	27	<1	<50	<50	<0.1	1	<10	<10	<1	11	3	1460	220	4	138	89
	LMP01	**Average**	-	-	0.02	-	194	227	22	51	506	48	0.5	0.6	0.5	0.5	0.5	22	0.5	25	25	0.05	0.6	5	5	0.5	4.1	2.2	450	77	0.9	94	38
Mid-stream	SW_C	29/07/2021	-	-	-	-	-	154	-	-	310	70	<1	<1	<1	-	-	22	<1	<50	<50	<0.1	<1	<10	<10	<1	2	1	377	100	<1	77	74
Mid-stream	SW_C	25/08/2021	-	-	0.06	-	-	110	44	-	1300	280	<1	<1	<1	-	-	24	<1	<50	<50	<0.1	1	<10	<10	1	5	3	2730	220	2	218	27
Mid-stream	SW_C	16/09/2021	-	-	<0.01	-	-	77	7	-	320	120	<1	<1	<1	-	-	29	<1	<50	<50	<0.1	<1	<10	<10	<1	<1	<1	253	140	<1	59	53
Mid-stream	SW_C	28/10/2021	-	-	<0.01	-	-	75	<5	7.5	400	90	<1	<1	<1	-	-	27	<1	<50	<50	<0.1	<1	<10	<10	<1	<1	<1	382	140	<1	70	66
Mid-stream	SW_C	17/11/2021	-	-	0.02	-	-	166	9	19.6	420	70	<1	<1	<1	-	-	22	<1	<50	<50	<0.1	<1	<10	<10	<1	2	<1	539	100	<1	100	87
Mid-stream	SW_C	30/11/2021	-	-	0.02	-	-	137	5	6.4	340	130	<1	<1	<1	-	-	24	<1	<50	<50	<0.1	<1	<10	<10	<1	<1	<1	348	140	<1	75	65
Mid-stream	SW_C	22/12/2021	-	-	0.01	-	-	145	<5	5	220	50	<1	<1	<1	-	-	26	<1	<50	<50	<0.1	<1	<10	<10	<1	2	<1	385	140	<1	204	172
Mid-stream	SW_C	20/01/2022	-	-	<0.01	-	-	106	<5	5.1	420	80	<1	<1	<1	-	-	23	<1	<50	<50	<0.1	<1	<10	<10	<1	<1	<1	513	140	<1	93	93
Mid-stream	SW_C	9/02/2022	-	-	<0.01	-	-	112	7	5.2	190	40	<1	<1	<1	-	-	24	<1	<50	<50	<0.1	<1	<10	<10	<1	1	<1	329	140	<1	135	113
Mid-stream	SW_C	9/03/2022	-	-	0.07	-	-	133	33	92.6	1060	150	<1	<1	<1	-	-	26	<1	<50	<50	<0.1	<1	<10	<10	<1	3	1	922	170	2	49	19
Mid-stream	SW_C	13/04/2022	-	-	<0.01	-	-	132	7	4.2	120	30	<1	<1	<1	<1	<1	29	<1	<50	<50	<0.1	<1	<10	<10	<1	<1	<1	400	120	<1	194	153
Mid-stream	SW_C	10/05/2022	-	-	0.03	-	-	100	<5	9.4	160	40	<1	<1	<1	<1	<1	20	<1	<50	<50	<0.1	<1	<10	<10	<1	<1	<1	460	140	<1	140	132
Mid-stream	SW_C	15/06/2022	-	-	0.03	-	-	145	<5	3.3	140	30	<1	<1	<1	<1	<1	25	<1	<50	<50	<0.1	<1	<10	<10	<1	1	<1	370	100	<1	134	123
	SW_C	**Min.**	-	-	<0.01	-	-	75	<5	3.3	120	30	<1	<1	<1	<1	<1	20	<1	<50	<50	<0.1	<1	<10	<10	<1	<1	<1	253	100	<1	49	19
	SW_C	**Max.**	-	-	0.07	-	-	166	44	92.6	1300	280	<1	<1	<1	<1	<1	29	<1	<50	<50	<0.1	1	<10	<10	1	5	3	2730	220	2	218	172
	SW_C	**Average**	-	-	0.02	-	-	122	10	16	415	91	0.5	0.5	0.5	0.5	0.5	25	0.5	25	25	0.05	0.5	5	5	0.5	1.5	0.8	616	138	0.7	119	91
Mid-stream	SW_E	29/07/2021	-	-	<0.01	-	-	248	6	-	60	<10	<1	<1	<1	-	-	11	<1	<50	<50	<0.1	<1	<10	<10	1	1	<1	335	190	<1	197	198
Mid-stream	SW_E	25/08/2021	-	-	0.07	-	-	130	16	-	770	230	<1	<1	<1	-	-	14	<1	<50	<50	<0.1	<1	<10	<10	<1	3	1	1560	240	<1	70	69
Mid-stream	SW_E	16/09/2021	-	-	<0.01	-	-	392	8	-	30	<10	<1	<1	<1	-	-	14	<1	70	60	<0.1	<1	<10	<10	5	<1	<1	842	660	<1	620	582
Mid-stream	SW_E	27/10/2021	-	-	<0.01	-	-	426	6	3.2	20	<10	<1	<1	<1	-	-	15	<1	80	70	<0.1	<1	<10	<10	4	<1	<1	868	340	<1	562	551
Mid-stream	SW_E	17/11/2021	-	-	<0.01	-	-	212	<5	3.3	100	20	<1	<1	<1	-	-	14	<1	<50	<50	<0.1	<1	<10	<10	1	<1	<1	511	220	<1	204	204
Mid-stream	SW_E	1/12/2021	-	-	<0.01	-	-	188	<5	1.9	80	20	<1	<1	<1	-	-	18	<1	<50	<50	<0.1	<1	<10	<10	2	<1	<1	641	220	<1	230	179
Mid-stream	SW_E	20/01/2022	-	-	<0.01	-	-	264	<5	2.2	60	20	<1	<1	<1	-	-	17	<1	60	60	<0.1	<1	<10	<10	2	<1	<1	703	330	<1	391	373
Mid-stream	SW_E	9/02/2022	-	-	0.18	-	-	448	<5	3.7	30	<10	<1	<1	<1	-	-	28	<1	110	80	<0.1	<1	<10	<10	4	<1	<1	717	520	<1	1240	1060
Mid-stream	SW_E	9/03/2022	-	-	0.06	-	-	134	30	63	910	170	<1	<1	<1	-	-	21	<1	<50	<50	<0.1	<1	<10	<10	<1	3	1	943	280	2	60	45
Mid-stream	SW_E	13/04/2022	-	-	<0.01	-	-	480	<5	3.3	30	<10	<1	<1	<1	<1	<1	36	<1	80	80	<0.1	<1	<10	<10	4	<1	<1	850	520	<1	1210	1130
Mid-stream	SW_E	10/05/2022	-	-	<0.01	-	-	309	<5	5.9	30	<10	<1	<1	<1	<1	<1	20	<1	60	60	<0.1	<1	<10	<10	2	<1	<1	630	340	<1	523	506
Mid-stream	SW_E	15/06/2022	-	-	0.01	-	-	284	<5	3.1	50	<10	<1	<1	<1	<1	<1	20	<1	60	<50	<0.1	<1	<10	<10	3	<1	<1	750	450	<1	557	524
	SW_E	**Min.**	-	-	<0.01	-	-	130	<5	1.9	20	<10	<1	<1	<1	<1	<1	11	<1	<50	<50	<0.1	<1	<10	<10	<1	<1	<1	335	190	<1	60	45
	SW_E	**Max.**	-	-	0.18	-	-	480	30	63	910	230	<1	<1	<1	<1	<1	36	<1	110	80	<0.1	<1	<10	<10	5	3	1	1560	660	2	1240	1130
	SW_E	**Average**	-	-	0.03	-	-	293	7	10	181	41	0.5	0.5	0.5	0.5	0.5	19	0.5	54	47	0.05	0.5	5	5	2.4	1	0.6	779	359	0.6	489	452
Mid-stream	NC01	29/07/2021	-	-	0.03	-	188	188	12	14.6	420	70	<1	<1	<1	-	-	23	<1	<50	<50	<0.1	<1	<10	<10	<1	2	1	408	80	<1	74	71
Mid-stream	NC01	25/08/2021	-	-	0.06	-	113	113	17	53.6	1170	270	<1	<1	<1	-	-	16	<1	<50	<50	<0.1	1	<10	<10	<1	3	2	1520	220	1	32	31
Mid-stream	NC01	16/09/2021	-	-	<0.01	-	-	85	10	6.4	400	100	<1	<1	<1	-	-	23	<1	<50	<50	<0.1	<1	<10	<10	<1	<1	1	409	140	<1	95	85
Mid-stream	NC01	28/10/2021	-	-	<0.01	-	-	108	5	8.4	370	60	<1	<1	<1	-	-	24	<1	70	<50	<0.1	<1	<10	<10	<1	1	<1	525	140	<1	126	121
Mid-stream	NC01	17/11/2021	-	-	0.02	-	-	159	11	18.4	400	70	<1	<1	<1	-	-	21	<1	<50	<50	<0.1	<1	<10	<10	<1	2	<1	669	110	<1	85	77
Mid-stream	NC01	30/11/2021	-	-	<0.01	-	-	142	<5	6.7	330	140	<1	<1	<1	-	-	21	<1	<50	<50	<0.1	<1	<10	<10	<1	<1	<1	385	180	<1	70	66
Mid-stream	NC01	20/01/2022	-	-	<0.01	-	-	118	10	9.2	390	70	<1	<1	<1	-	-	23	<1	<50	<50	<0.1	<1	<10	<10	<1	1	1	713	160	<1	145	106
Mid-stream	NC01	9/02/2022	-	-	0.01	-	-	116	8	6.5	220	40	2	<1	<1	-	-	25	<1	80	<50	<0.1	<1	<10	<10	<1	1	<1	371	190	<1	166	135

							Physical Parameters				Metals																						
			Total Phosphate (PO4)	Total Phosphate (PO4) (Filtered)	Phosphorus	Phosphorus (Filtered)	Total Dissolved Solids (TDS)	Total Dissolved Solids (TDS) (Filtered)	Total Suspended Solids (TSS)	Turbidity	Aluminium	Aluminium (Filtered)	Antimony	Arsenic	Arsenic (Filtered)	Arsenic III	Arsenic V	Barium	Beryllium	Boron	Boron (Filtered)	Cadmium	Chromium	Chromium (Hexavalent)	Chromium (Trivalent)	Cobalt	Copper	Copper (Filtered)	Iron	Iron (Filtered)	Lead	Manganese	Manganese (Filtered)
		Unit	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	NTU	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
ANZECC (2000) or Local Guidelines - Surface Water							1500[#4]	1500[#4]								24	13	700[#2]	100	370	370	0.85[#5]	2[#5]	1			3.5[#5]	3.5[#5]	300[#2]	300[#2]	5[#5]	1900	1900
Purpose	**LocCode**	**Sampled_Date-Time**																															
Mid-stream	NC01	9/03/2022	-	-	0.07	-	-	187	31	104	1180	160	<1	<1	<1	-	-	30	<1	<50	<50	<0.1	1	<10	<10	<1	4	2	1010	230	3	47	27
Mid-stream	NC01	13/04/2022	-	-	0.03	-	-	105	10	7.2	200	30	<1	<1	<1	<1	<1	29	<1	<50	<50	<0.1	<1	<10	<10	<1	<1	<1	540	160	<1	230	178
Mid-stream	NC01	10/05/2022	-	-	<0.01	-	-	102	<5	9.6	240	40	<1	<1	<1	<1	<1	21	<1	<50	<50	0.1	<1	<10	<10	<1	<1	<1	490	130	<1	169	165
Mid-stream	NC01	15/06/2022	-	-	0.02	-	-	274	<5	6	160	<10	<1	<1	<1	<1	<1	26	<1	<50	<50	<0.1	<1	<10	<10	<1	2	2	640	<50	<1	233	212
	NC01	**Min.**	-	-	<0.01	-	-	85	<5	6	160	<10	<1	<1	<1	<1	<1	16	<1	<50	<50	<0.1	<1	<10	<10	<1	<1	<1	371	<50	<1	32	27
	NC01	**Max.**	-	-	0.1	-	-	274	31	104	1180	270	2	<1	<1	<1	<1	30	<1	80	<50	0.1	1.0	<10	<10	<1	4	2	1520	230	3	233	212
	NC01	**Average**	-	-	0.02	-	-	141	10	21	457	88	0.6	0.5	0.5	0.5	0.5	24	0.5	33	25	0.1	0.6	5	5	0.5	1.5	1	640	147	1	123	106
Downstream	SW_G	29/07/2021	-	-	<0.01	-	-	346	<5	-	20	<10	<1	<1	<1	-	-	8	<1	<50	<50	<0.1	<1	<10	<10	<1	<1	<1	210	70	<1	44	42
Downstream	SW_G	25/08/2021	-	-	0.06	-	-	148	18	-	1660	270	<1	<1	<1	-	-	15	<1	<50	<50	<0.1	1	<10	<10	2	3	<1	1870	230	2	305	123
Downstream	SW_G	15/09/2021	-	-	0.01	-	-	388	6	-	30	<10	<1	<1	<1	-	-	13	<1	60	60	<0.1	<1	<10	<10	<1	<1	<1	183	60	<1	87	81
Downstream	SW_G	28/10/2021	-	-	<0.01	-	-	537	<5	2.2	30	<10	<1	<1	<1	-	-	16	<1	80	100	<0.1	<1	<10	<10	<1	<1	<1	171	<50	<1	203	188
Downstream	SW_G	17/11/2021	-	-	<0.01	-	-	180	<5	4.6	210	60	<1	<1	<1	-	-	7	<1	<50	<50	<0.1	<1	<10	<10	<1	6	1	428	140	<1	49	46
Downstream	SW_G	1/12/2021	-	-	<0.01	-	-	180	<5	1.8	130	20	<1	<1	<1	-	-	15	<1	<50	<50	<0.1	<1	<10	<10	<1	<1	<1	258	120	<1	56	35
Downstream	SW_G	20/01/2022	-	-	<0.01	-	-	322	<5	1.6	50	20	<1	<1	<1	-	-	15	<1	80	80	<0.1	<1	<10	<10	<1	<1	<1	370	140	<1	200	213
Downstream	SW_G	9/02/2022	-	-	<0.01	-	-	456	<5	1.2	20	<10	<1	<1	<1	-	-	17	<1	110	70	<0.1	<1	<10	<10	<1	<1	<1	172	70	<1	271	232
Downstream	SW_G	9/03/2022	-	-	0.14	-	-	141	27	56	960	140	<1	<1	<1	-	-	18	<1	<50	<50	<0.1	<1	<10	<10	<1	1	1	914	250	1	38	27
Downstream	SW_G	13/04/2022	-	-	<0.01	-	-	496	<5	1	20	<10	<1	<1	<1	<1	<1	27	<1	90	80	<0.1	<1	<10	<10	<1	<1	<1	160	60	<1	414	400
Downstream	SW_G	10/05/2022	-	-	<0.01	-	-	334	<5	4.6	40	10	<1	<1	<1	<1	<1	16	<1	60	70	<0.1	<1	<10	<10	<1	<1	<1	340	140	<1	231	220
Downstream	SW_G	15/06/2022	-	-	0.01	-	-	356	<5	1.7	50	<10	<1	<1	<1	<1	<1	17	<1	80	60	<0.1	<1	<10	<10	<1	<1	<1	280	70	<1	153	144
	SW_G	**Min.**	-	-	<0.01	-	-	141	<5	1	20	<10	<1	<1	<1	<1	<1	7	<1	<50	<50	<0.1	<1	<10	<10	<1	<1	<1	160	<50	<1	38	27
	SW_G	**Max.**	-	-	0.14	-	-	537	27	56	1660	270	<1	<1	<1	<1	<1	27	<1	110	100	<0.1	1	<10	<10	2	6	1	1870	250	2	414	400
	SW_G	**Average**	-	-	0.02	-	-	324	6	8.3	268	46	0.5	0.5	0.5	0.5	0.5	15	0.5	57	54	0.05	0.5	5	5	0.6	1.2	0.6	446	115	0.7	171	146
Downstream	WX22	29/07/2021	-	-	0.02	-	342	342	-	1.8	20	<10	<1	<1	<1	-	-	8	<1	<50	<50	<0.1	<1	<10	<10	<1	<1	<1	221	80	<1	43	44
Downstream	WX22	25/08/2021	-	-	0.05	-	139	139	-	57.1	900	180	<1	<1	<1	-	-	11	<1	<50	<50	<0.1	<1	<10	<10	<1	<1 - 2	<1	1450	180	<1	122 - 126	126
Downstream	WX22	15/09/2021	-	-	<0.01	-	-	379	-	1.2	30	<10	<1	<1	<1	-	-	13	<1	60	60	<0.1	<1	<10	<10	<1	<1	<1	197	70	<1	98	86
Downstream	WX22	28/10/2021	-	-	<0.01	-	-	480	-	1.4	30	<10	<1	<1	<1	-	-	17	<1	100	100	<0.1	<1	<10	<10	1	<1	<1	213	80	<1	227	213
Downstream	WX22	17/11/2021	-	-	<0.01	-	-	168	-	4.4	220	60	<1	<1	<1	-	-	7	<1	<50	<50	<0.1	<1	<10	<10	2	<1	<1	401	140	<1	216	47
Downstream	WX22	1/12/2021	-	-	<0.01	-	-	177	<5	1.9	80	30	<1	<1	<1	-	-	11	<1	<50	<50	<0.1	<1	<10	<10	<1	<1	<1	273	140	<1	62	42
Downstream	WX22	20/01/2022	-	-	<0.01	-	-	324	<5	1.5	50	20	<1	<1	<1	-	-	15	<1	80	80	<0.1	<1	<10	<10	<1	<1	<1	343	140	<1	240	218
Downstream	WX22	9/02/2022	-	-	<0.01	-	-	427	<5	1.3	20	<10	1	<1	<1	-	-	19	<1	120	90	<0.1	<1	<10	<10	<1	<1	<1	209	100	<1	300	238
Downstream	WX22	9/03/2022	-	-	0.05	-	-	154	23	59.3	800	170	<1	<1	<1	-	-	19	<1	<50	<50	<0.1	<1	<10	<10	<1	2	2	860	260	2	45	28
Downstream	WX22	13/04/2022	-	-	<0.01	-	-	526	<5	1.4	20	<10	<1	<1	<1	<1	<1	27	<1	90	80	<0.1	<1	<10	<10	1	<1	<1	180	60	<1	435	404
Downstream	WX22	10/05/2022	-	-	<0.01	-	-	342	<5	4	20	10	<1	<1	<1	<1	<1	15	<1	60	70	<0.1	<1	<10	<10	<1	<1	<1	420	140	<1	239	226
Downstream	WX22	15/06/2022	-	-	0.02	-	-	352	<5	1.3	20	<10	<1	<1	<1	<1	<1	17	<1	80	60	<0.1	<1	<10	<10	<1	<1	<1	260	80	<1	154	147
	WX22	**Min.**	-	-	<0.01	-	139	139	<5	1.2	20	<10	<1	<1	<1	<1	<1	7	<1	<50	<50	<0.1	<1	<10	<10	<1	<1	<1	180	60	<1	43	28
	WX22	**Max.**	-	-	0.05	-	342	526	23	59.3	900	180	1	<1	<1	<1	<1	27	<1	120	100	<0.1	<1	<10	<10	2	2	2	1450	260	2	435	404
	WX22	**Average**	-	-	0.02	-	241	318	5	11	184	42	0.5	0.5	0.5	0.5	0.5	15	0.5	60	55	0.05	0.5	5	5	1	1	1	419	123	1	182	152

Statistical Summary

	Total Phosphate (PO4)	Total Phosphate (PO4) (Filtered)	Phosphorus	Phosphorus (Filtered)	Total Dissolved Solids (TDS)	Total Dissolved Solids (TDS) (Filtered)	Total Suspended Solids (TSS)	Turbidity	Aluminium	Aluminium (Filtered)	Antimony	Arsenic	Arsenic (Filtered)	Arsenic III	Arsenic V	Barium	Beryllium	Boron	Boron (Filtered)	Cadmium	Chromium	Chromium (Hexavalent)	Chromium (Trivalent)	Cobalt	Copper	Copper (Filtered)	Iron	Iron (Filtered)	Lead	Manganese	Manganese (Filtered)
Number of Results	25	25	92	25	15	81	124	125	96	96	96	96	96	21	21	96	96	96	96	96	96	85	85	96	96	96	96	96	96	96	96
Number of Detects	12	5	53	10	15	81	91	125	95	59	4	9	0	0	0	96	4	23	22	4	16	0	0	30	48	29	94	74	26	96	95
Minimum Concentration	0.09	<0.01	<0.01	<0.01	106	75	<1	1	<10	<10	<1	<1	<1	<1	<1	5	<1	<50	<50	<0.1	<1	<10	<10	<1	<1	<1	<2	<2	<1	28	<1
Maximum Concentration	1.59	0.23	0.52	<0.1	342	537	2060	4000	12000	280	2	7	<1	<1	<1	147	3	120	100	0.4	10	<10	<10	13	19	6	10500	660	74	1240	1130
Average Concentration	0.28	0.061	0.041	0.017	209	235	91	265	889	48	0.53	0.7	0.5	0.5	0.5	22	0.56	38	36	0.057	0.88	5	5	1.2	2.3	0.98	819	125	2.9	180	143
Median Concentration	0.05	0.05	0.01	0.005	200	188	9.6665	18	295	20	0.5	0.5	0.5	0.5	0.5	19.5	0.5	25	25	0.05	0.5	5	5	0.5	0.75	0.5	435	100	0.5	123	81
Standard Deviation	0.43	0.053	0.083	0.021	80	123	298	717	1976	66	0.17	0.85	0	0	0	17	0.33	25	22	0.042	1.3	0	0	1.6	3.3	1.1	1444	121	9.4	197	185

Env Stds Comments

#1:Irrigation water; moderately tolerant crops.
#2:Drinking water
#3:Livestock
#4:Low land river conductivity; 0.68 x 2200 uS/cm.
#5:Adjusted for effects of hardness.
#6:Irrigation water; moderately tolerant crops. Note: Molybd
#7:Local guideline based upon 90th percentile pre-brine plac

Purpose	LocCode	Sampled_Date-Time	Mercury	Molybdenum	Nickel	Nickel (Filtered)	Selenium	Silver	Strontium	Vanadium	Vanadium (Filtered)	Zinc	Zinc (Filtered)
		Unit	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L
ANZECC (2000) or Local Guidelines - Surface Water			0.06	10#6	17#5	17#5	5	0.05				116#7	116#7
Upstream	LMP01	5/07/2021	-	-	-	-	-	-	-	-	-	-	-
Upstream	LMP01	2/08/2021	-	-	-	-	-	-	-	-	-	-	-
Upstream	LMP01	6/09/2021 9:25	-	-	-	-	-	-	-	-	-	-	-
Upstream	LMP01	6/09/2021 11:40	<0.04	1	2	2	<10	<1	0.044	<10	<10	14	14
Upstream	LMP01	9/09/2021 11:25	-	-	-	-	-	-	-	-	-	-	-
Upstream	LMP01	5/10/2021 10:15	<0.04	3	5	3	<10	<1	0.056	<10	<10	26	7
Upstream	LMP01	25/10/2021 11:35	-	-	-	-	-	-	-	-	-	-	-
Upstream	LMP01	1/11/2021 8:05	-	-	-	-	-	-	-	-	-	-	-
Upstream	LMP01	1/11/2021 11:50	<0.04	12	4	3	<10	<1	0.087	<10	<10	13	<5
Upstream	LMP01	5/11/2021	-	-	-	-	-	-	-	-	-	-	-
Upstream	LMP01	8/11/2021	-	-	-	-	-	-	-	-	-	-	-
Upstream	LMP01	6/12/2021	<0.04	5	7	6	0.3	<1	0.089	<10	<10	12	6
Upstream	LMP01	4/01/2022	<0.04	2	4	4	0.3	<1	0.097	<10	<10	8	<5
Upstream	LMP01	7/02/2022	<0.04	4	5	4	0.3	<1	0.071	<10	<10	16	7
Upstream	LMP01	7/03/2022	<0.04	<1	10	6	0.6	<1	0.039	<10	<10	37	15
Upstream	LMP01	4/04/2022	<0.04	<1	8	6	<10	<1	0.098	<10	<10	21	12
Upstream	LMP01	2/05/2022	<0.04	2	4	4	<10	<1	0.058	<10	<10	15	7
Upstream	LMP01	6/06/2022	<0.04	2	5	4	<10	<1	0.076	<10	<10	17	7
	LMP01	**Min.**	<0.04	<1	2	2	0.3	<1	0.039	<10	<10	8	<5
	LMP01	**Max.**	<0.04	12	10	6	<10	<1	0.098	<10	<10	37	15
	LMP01	**Average**	0.02	3	5	4	3.2	0.5	0.072	5	5	18	8
Mid-stream	SW_C	29/07/2021	<0.04	<1	2	<1	<0.2	<1	0.042	<10	<10	7	<5
Mid-stream	SW_C	25/08/2021	<0.04	<1	4	2	0.3	<1	0.028	<10	<10	22	10
Mid-stream	SW_C	16/09/2021	<0.04	<1	<1	1	<0.2	<1	0.025	<10	<10	<5	<5
Mid-stream	SW_C	28/10/2021	<0.04	<1	1	<1	<0.2	<1	0.025	<10	<10	5	<5
Mid-stream	SW_C	17/11/2021	<0.04	1	3	2	0.2	<1	0.057	<10	<10	7	6
Mid-stream	SW_C	30/11/2021	<0.04	1	3	3	<0.2	<1	0.05	<10	<10	6	6
Mid-stream	SW_C	22/12/2021	0.07	1	3	1	<0.2	<1	0.057	<10	<10	<5	6
Mid-stream	SW_C	20/01/2022	<0.04	<1	2	2	<0.2	<1	0.045	<10	<10	<5	<5
Mid-stream	SW_C	9/02/2022	<0.04	<1	2	<1	<0.2	<1	0.04	<10	<10	<5	<5
Mid-stream	SW_C	9/03/2022	<0.04	<1	4	2	0.3	<1	0.029	<10	<10	14	6
Mid-stream	SW_C	13/04/2022	<0.04	<1	1	<1	<10	<1	0.052	<10	<10	21	<5
Mid-stream	SW_C	10/05/2022	0.08	<1	2	2	<10	<1	0.039	<10	<10	<5	<5
Mid-stream	SW_C	15/06/2022	<0.04	1	2	2	<10	<1	0.047	<10	<10	<5	<5
	SW_C	**Min.**	<0.04	<1	<1	<1	<0.2	<1	0.025	<10	<10	<5	<5
	SW_C	**Max.**	0.08	1	4	3	<10	<1	0.057	<10	<10	22	10
	SW_C	**Average**	0.028	0.7	2.3	1.5	1.3	0.5	0.041	5	5	7.5	4.2
Mid-stream	SW_E	29/07/2021	<0.04	<1	13	12	<0.2	<1	0.058	<10	<10	6	<5
Mid-stream	SW_E	25/08/2021	<0.04	<1	4	4	0.2	<1	0.034	<10	<10	8	<5
Mid-stream	SW_E	16/09/2021	<0.04	<1	68	43	<0.2	<1	0.113	<10	<10	68	<5
Mid-stream	SW_E	27/10/2021	<0.04	<1	44	43	<0.2	<1	0.129	<10	<10	7	<5
Mid-stream	SW_E	17/11/2021	<0.04	<1	12	11	<0.2	<1	0.068	<10	<10	<5	<5
Mid-stream	SW_E	1/12/2021	0.09	<1	16	14	<0.2	<1	0.081	<10	<10	<5	<5
Mid-stream	SW_E	20/01/2022	<0.04	<1	20	19	<0.2	<1	0.094	<10	<10	<5	<5
Mid-stream	SW_E	9/02/2022	<0.04	<1	43	38	<0.2	<1	0.141	<10	<10	6	<5
Mid-stream	SW_E	9/03/2022	0.08	<1	6	5	0.3	<1	0.038	<10	<10	11	7
Mid-stream	SW_E	13/04/2022	<0.04	<1	45	43	<10	<1	0.161	<10	<10	7	<5
Mid-stream	SW_E	10/05/2022	<0.04	<1	28	30	<10	<1	0.101	<10	<10	<5	<5
Mid-stream	SW_E	15/06/2022	<0.04	<1	24	23	<10	<1	0.091	<10	<10	7	6
	SW_E	**Min.**	<0.04	<1	4	4	<0.2	<1	0.034	<10	<10	<5	<5
	SW_E	**Max.**	0.09	<1	68	43	<10	<1	0.161	<10	<10	68	7
	SW_E	**Average**	0.03	0.5	27	24	1.4	0.5	0.092	5	5	11	3
Mid-stream	NC01	29/07/2021	<0.04	<1	1	1	<0.2	<1	0.042	<10	<10	6	<5
Mid-stream	NC01	25/08/2021	<0.04	<1	3	3	0.3	<1	0.025	<10	<10	13	7
Mid-stream	NC01	16/09/2021	<0.04	<1	1	2	<0.2	<1	0.027	<10	<10	6	<5
Mid-stream	NC01	28/10/2021	<0.04	1	2	1	<0.2	<1	0.037	<10	<10	<5	<5
Mid-stream	NC01	17/11/2021	<0.04	1	3	2	0.2	<1	0.056	<10	<10	6	<5
Mid-stream	NC01	30/11/2021	<0.04	<1	3	3	<0.2	<1	0.05	<10	<10	<5	<5
Mid-stream	NC01	20/01/2022	<0.04	<1	2	2	<0.2	<1	0.049	<10	<10	6	<5
Mid-stream	NC01	9/02/2022	<0.04	1	2	2	<0.2	<1	0.043	<10	<10	<5	<5

ERM

Purpose	LocCode	Sampled_Date-Time	Mercury	Molybdenum	Nickel	Nickel (Filtered)	Selenium	Silver	Strontium	Vanadium	Vanadium (Filtered)	Zinc	Zinc (Filtered)
		Unit	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L
ANZECC (2000) or Local Guidelines - Surface Water			0.06	10#6	17#5	17#5	5	0.05				116#7	116#7
Mid-stream	NC01	9/03/2022	<0.04	<1	4	2	0.4	<1	0.032	<10	<10	17	7
Mid-stream	NC01	13/04/2022	<0.04	<1	49	<1	<10	<1	0.054	<10	<10	<5	<5
Mid-stream	NC01	10/05/2022	<0.04	<1	2	2	<10	<1	0.041	<10	<10	<5	<5
Mid-stream	NC01	15/06/2022	<0.04	3	3	3	<10	<1	0.088	<10	<10	9	<5
	NC01	**Min.**	<0.04	<1	1	<1	<0.2	<1	0.025	<10	<10	<5	<5
	NC01	**Max.**	<0.04	3	49	3	<10	<1	0.088	<10	<10	17	7
	NC01	**Average**	0.02	1	6	2	1.4	0.5	0.045	5	5	6	3
Downstream	SW_G	29/07/2021	<0.04	<1	16	16	<0.2	<1	0.086	<10	<10	<5	<5
Downstream	SW_G	25/08/2021	<0.04	<1	10	6	<0.2	<1	0.044	<10	<10	14	6
Downstream	SW_G	15/09/2021	<0.04	<1	22	22	<0.2	<1	0.116	<10	<10	<5	<5
Downstream	SW_G	28/10/2021	<0.04	<1	35	35	<0.2	<1	0.156	<10	<10	<5	<5
Downstream	SW_G	17/11/2021	<0.04	<1	10	10	<0.2	<1	0.063	<10	<10	<5	<5
Downstream	SW_G	1/12/2021	<0.04	<1	12	12	<0.2	<1	0.076	<10	<10	<5	<5
Downstream	SW_G	20/01/2022	<0.04	<1	27	26	<0.2	<1	0.126	<10	<10	<5	<5
Downstream	SW_G	9/02/2022	<0.04	<1	34	31	<0.2	<1	0.152	<10	<10	<5	<5
Downstream	SW_G	9/03/2022	<0.04	<1	8	6	0.4	<1	0.039	<10	<10	8	<5
Downstream	SW_G	13/04/2022	<0.04	<1	41	42	<10	<1	0.173	<10	<10	<5	<5
Downstream	SW_G	10/05/2022	<0.04	<1	28	28	<10	<1	0.11	<10	<10	<5	<5
Downstream	SW_G	15/06/2022	<0.04	<1	28	26	<10	<1	0.118	<10	<10	6	<5
	SW_G	**Min.**	<0.04	<1	8	6	<0.2	<1	0.039	<10	<10	<5	<5
	SW_G	**Max.**	<0.04	<1	41	42	<10	<1	0.173	<10	<10	14	6
	SW_G	**Average**	0.02	0.5	23	22	1.4	0.5	0.1	5	5	4	3
Downstream	WX22	29/07/2021	<0.04	<1	16	17	<0.2	<1	0.085	<10	<10	<5	8
Downstream	WX22	25/08/2021	<0.04	<1	7 - 8	7	0.2	<1	0.044	<10	<10	<5 - 9	<5
Downstream	WX22	15/09/2021	<0.04	<1	25	25	<0.2	<1	0.116	<10	<10	<5	<5
Downstream	WX22	28/10/2021	<0.04	<1	38	36	<0.2	<1	0.161	<10	<10	<5	5
Downstream	WX22	17/11/2021	<0.04	<1	10	9	<0.2	<1	0.066	<10	<10	7	<5
Downstream	WX22	1/12/2021	<0.04	<1	11	12	<0.2	<1	0.076	<10	<10	<5	<5
Downstream	WX22	20/01/2022	<0.04	<1	28	27	<0.2	<1	0.133	<10	<10	<5	<5
Downstream	WX22	9/02/2022	<0.04	<1	34	31	<0.2	<1	0.156	<10	<10	<5	<5
Downstream	WX22	9/03/2022	<0.04	<1	8	6	0.3	<1	0.041	<10	<10	9	<5
Downstream	WX22	13/04/2022	<0.04	<1	43	42	<10	<1	0.176	<10	<10	<5	<5
Downstream	WX22	10/05/2022	<0.04	<1	30	30	<10	<1	0.108	<10	<10	<5	<5
Downstream	WX22	15/06/2022	<0.04	<1	28	26	<10	<1	0.119	<10	<10	<5	<5
	WX22	**Min.**	<0.04	<1	7	6	<0.2	<1	0.041	<10	<10	<5	<5
	WX22	**Max.**	<0.04	<1	43	42	<10	<1	0.176	<10	<10	9	8
	WX22	**Average**	0.02	0.5	23	22	1.4	0.5	0.11	5	5	4	3

Statistical Summary

Statistic	Mercury	Molybdenum	Nickel	Nickel (Filtered)	Selenium	Silver	Strontium	Vanadium	Vanadium (Filtered)	Zinc	Zinc (Filtered)
Number of Results	85	96	96	96	96	96	96	96	96	96	96
Number of Detects	4	41	93	88	15	0	96	2	0	61	29
Minimum Concentration	<0.04	<1	<1	<1	<0.2	<1	0.009	<10	<10	<5	<5
Maximum Concentration	0.09	12	68	43	<10	<1	0.176	20	<10	161	18
Average Concentration	0.023	2.1	12	9.9	2.5	0.5	0.066	5.2	5	15	4.3
Median Concentration	0.02	0.5	5	3	0.4	0.5	0.053	5	5	7	2.5
Standard Deviation	0.013	2.6	14	13	2.4	0	0.041	1.6	0	23	3.2

Env Stds Comments

#1:Irrigation water; moderately tolerant crops.
#2:Drinking water
#3:Livestock
#4:Low land river conductivity; 0.68 x 2200 uS/cm.
#5:Adjusted for effects of hardness.
#6:Irrigation water; moderately tolerant crops. Note: Molybd
#7:Local guideline based upon 90th percentile pre-brine plac

ERM

			Field Parameters						Major Anions and Cations														NA				Nutrients						
			Dissolved Oxygen (Field)	Dissolved Oxygen (Field) (Filtered)	Electrical Conductivity (Field)	pH (Field)	Redox (Field)	Temperature (Field)	Carbonate (as CaCO3)	Bicarbonate Alkalinity (as CaCO3)	Calcium	Calcium (Filtered)	Carbonate Alkalinity (as CaCO3)	Chloride	Hydroxide Alkalinity (as CaCO3)	Fluoride	Fluoride (Filtered)	Magnesium	Phenolphthalein Alkalinity (CaCO3)	Potassium	Sodium	Sulfate (as SO4)	Calcium Hardness (as CaCO3) (mg/L)	Chlorine (Free Residual)	Dissolved Organic Carbon (mg/L) (Filtered)	Oil & Grease	Ammonia	Sulfur	Nitrate	Nitrite (as NO2-)	Nitrite + Nitrate (as N)	Nitrogen (N) - Kjeldahl	Nitrogen (N)
		Unit	mg/L	mg/L	uS/cm	pH units	mV	oC	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	µg/L	mg/L	µg/L	µg/L	mg/L	mg/L	mg/L
ANZECC (2000) or Local Guidelines - Surface Water					2200	6.5-8								350#1		1.5#2	1.5#2					1000#3											
EPL Discharge Limits for LDP12					500	6.5-8.5																				10							
Purpose	**LocCode**	**Sampled_Date-Time**																															
Upstream	LDP12	29/07/2021	-	9.4	414	7.61	-	-	-	73.44	8.4	-	73.44	26.7	-	-	0.085	3.57	0	5.94	63.7	72.3	-	-	-	<5	<100	28	370	<10	0.37	0.3	0.7
Upstream	LDP12	3/09/2021	-	9	254	7.89	-	-	-	47.94	6.24	-	47.94	18	-	0.083	-	2.67	0	4.22	43.4	56.8	-	-	-	<5	<100	18	250	<10	0.25	0.6	0.8
Upstream	LDP12	23/11/2021	-	7.6	249	7.67	-	-	-	47.15	3.64	-	47.15	30.8	-	0.097	-	1.52	0	3.99	44.3	39.6	-	-	-	5	<100	12	240	<10	0.24	0.2	0.4
Upstream	LDP12	29/06/2022	-	7.6	216	7.44	103.8	-	-	43.78	6.8	-	43.78	19.1	-	<0.05	-	2.48	0	4.38	35.2	38.1	-	-	-	<5	200	12	390	30	0.42	0.3	0.7
	LDP12	**Min.**	-	7.6	216	7.44	103.8	-	-	43.78	3.64	-	43.78	18	-	<0.05	0.085	1.52	0	3.99	35.2	38.1	-	-	-	<5	<100	12	240	<10	0.24	0.2	0.4
	LDP12	**Max.**	-	9.4	414	7.89	103.8	-	-	73.44	8.4	-	73.44	30.8	-	0.097	0.085	3.57	0	5.94	63.7	72.3	-	-	-	5	200	28	390	30	0.42	0.6	0.8
	LDP12	**Average**	-	8.4	283	-	-	-	-	53	6.3	-	53	24	-	0.068		2.6	0	4.6	47	52	-	-	-	3.1	88	18	313	11	0.32	0.4	0.7
Upstream	CSP	1/07/2021	-	-	562	8.22	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Upstream	CSP	5/07/2021	-	7.9	520	8.54	-	-	-	98.94	8.58	20.8	98.94	34.7	-	0.112	-	3.62	0	7.99	90.3	114	-	-	2	<5	100	36	410	<10	0.41	0.5	0.9
Upstream	CSP	12/07/2021	7.9	7.9	542	8.51	-	-	-	-	-	-	-	31.65	-	-	0.2	-	-	-	-	115.5	-	-	-	<5	-	-	-	-	-	-	-
Upstream	CSP	19/07/2021	8	8	460	8.38	-	-	-	-	-	-	-	64.29	-	-	0.208	-	-	-	-	179.6	-	-	-	<5	-	-	-	-	-	-	-
Upstream	CSP	26/07/2021	8	8	440	8.17	-	-	-	-	-	-	-	23.74	-	-	0.182	-	-	-	-	127.5	-	-	-	<5	-	-	-	-	-	-	-
Upstream	CSP	26/07/2021		-	440	8.17	-	-	-	-	-	-	-	23.74	-	-	0.182	-	-	-	-	127.5	-	-	-	-	-	-	-	-	-	-	-
Upstream	CSP	29/07/2021	-	-	410	7.92	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<5	-	-	-	-	-	-	-
Upstream	CSP	2/08/2021	9.1	9.1	511	8.41	-	-	-	99.96	13.5	33.2	99.96	26.7	-	0.125	-	6.57	0	7.52	74.6	116	-	-	2	<5	100	40	360	<10	0.36	0.4	0.8
Upstream	CSP	6/09/2021	7.8	7.8	256	8.44	-	-	-	71.75	16	15.2	71.75	4.42	-	0.157	-	5.69	0	10	45.6	64.3	15.2	-	6	<5	<100	19	110	<10	0.11	9.5	9.6
Upstream	CSP	5/10/2021	-	9.3	327	8.43	-	-	-	78.93	13.7	20.7	78.93	16.8	-	0.134	-	4.49	0	8.11	55.4	76.2	20.7	-	4	10	<100	25	310	20	0.33	4	4.3
Upstream	CSP	1/11/2021	-	9	555	7.9	-	-	-	100	17	43.2	100	49.7	-	0.074	-	6.95	0	8.22	76.5	98.2	43.2	-	5	<5	100	30	240	<10	0.24	1.1	1.3
Upstream	CSP	23/11/2021	-	-	255	7.76	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Upstream	CSP	6/12/2021	-	6.4	265	7.94	-	-	-	45.1	3.64	6.97	45.1	33.3	-	0.046	-	1.53	0	5.69	46.7	41.1	6.97	-	2	<5	<100	13	230	<10	0.23	0.4	0.6
Upstream	CSP	21/12/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Upstream	CSP	24/12/2021	-	-	-	7.93	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Upstream	CSP	24/12/2021	-	-	-	7.97	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Upstream	CSP	29/12/2021	-	-	319	7.89	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	50	-	-	-	-	-	-	-	-	-	-
Upstream	CSP	30/12/2021	-	-	325	8.11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	12	-	-	-	-	-	-	-	-	-	-
Upstream	CSP	4/01/2022	-	6.1	340	7.81	-	-	-	56.38	6.19	11.8	56.38	35	-	<0.01	-	2.63	0	7.3	54.8	59.8	11.8	-	4	<5	<100	21	320	<10	0.32	1	1.3
Upstream	CSP	13/01/2022	-	-	609	7.46	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Upstream	CSP	7/02/2022	-	9.6	613	7.62	-	-	-	55.08	13.9	34	55.08	29.3	-	0.11	-	5.72	0	9.68	60.5	187	34	-	1	<5	14,800	57	270	30	0.3	16	16.3
Upstream	CSP	7/03/2022	-	7.9	253	8.32	-	-	-	46.92	8.07	8.86	46.92	11.2	-	0.121	-	3.41	0	6.21	34.5	65.3	8.86	-	8	<5	2900	20	160	<10	0.16	6.3	6.5
Upstream	CSP	4/04/2022	-	7.9	424	7.87	109.8	-	-	65.67	14.4	23.9	65.67	44.51	-	0.21	-	5.87	0	9.36	60.1	193.2	23.9	-	8	<5	2320	34	560	10	0.57	4.8	5.4
Upstream	CSP	11/04/2022	-	-	455	7.35	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<5	-	-	-	-	-	-	-
Upstream	CSP	21/04/2022	-	-	436	8.02	-	-	-	56.72	-	-	56.72	-	-	-	-	-	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Upstream	CSP	2/05/2022	-	7.6	278	7.8	86.7	-	-	47.76	10.2	19.2	47.76	34.99	-	0.118	-	3.78	0	6.13	38.3	171.8	-	-	9	<5	770	22	570	20	0.59	4.9	5.5
Upstream	CSP	6/06/2022	-	7.1	261	7.22	139.9	-	-	48.76	7.92	16.8	48.76	54.79	-	0.125	-	2.93	0	6.01	45.7	92.4	-	-	2	<5	450	20	560	10	0.57	1.1	1.7
Upstream	CSP	29/06/2022	-	-	216	7.45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<5	-	-	-	-	-	-	-
	CSP	**Min.**	7.8	6.1	216	7.22	86.7	-	-	45.1	3.64	6.97	45.1	4.42	-	<0.01	0.182	1.53	0	5.69	34.5	41.1	6.97	-	1	<5	<100	13	110	<10	0.11	0.4	0.6
	CSP	**Max.**	9.1	9.6	613	8.54	139.9	-	-	100	17	43.2	100	64.29	-	0.21	0.208	6.95	0	10	90.3	193.2	50	-	9	10	14800	57	570	30	0.59	16	16.3
	CSP	**Average**	8.2	8	403	-	112	-	-	67	11	21	67	32	-	0.11	0.19	4.4	0	7.7	57	114	23	-	4.4	2.9	1812	28	342	10	0.35	4.2	4.5

Statistical Summary

	Dissolved Oxygen (Field)	Dissolved Oxygen (Field) (Filtered)	Electrical Conductivity (Field)	pH (Field)	Redox (Field)	Temperature (Field)	Carbonate (as CaCO3)	Bicarbonate Alkalinity (as CaCO3)	Calcium	Calcium (Filtered)	Carbonate Alkalinity (as CaCO3)	Chloride	Hydroxide Alkalinity (as CaCO3)	Fluoride	Fluoride (Filtered)	Magnesium	Phenolphthalein Alkalinity (CaCO3)	Potassium	Sodium	Sulfate (as SO4)	Calcium Hardness (as CaCO3) (mg/L)	Chlorine (Free Residual)	Dissolved Organic Carbon (mg/L) (Filtered)	Oil & Grease	Ammonia	Sulfur	Nitrate	Nitrite (as NO2-)	Nitrite + Nitrate (as N)	Nitrogen (N) - Kjeldahl	Nitrogen (N)
Number of Results	21	92	132	134	22	1	65	96	96	14	96	105	15	90	15	96	96	96	96	105	10	6	19	27	93	96	93	93	93	83	93
Number of Detects	21	92	132	134	22	1	0	96	96	14	96	105	0	67	15	96	31	96	96	105	10	6	19	3	36	96	69	6	69	80	89
Minimum Concentration	7	5.2	108	6.53	2.6	12.8	<1	19	3.64	6.97	19	4.42	<1	<0.01	0.085	1.52	0	2.57	11.1	16.5	6.97	0	1	<5	<10	5	<10	<10	<0.01	<0.1	<0.1
Maximum Concentration	13.2	13.3	820	9.17	143.7	12.8	<1	100	35.9	43.2	100	64.29	<1	<0.5	0.208	30.7	<1	10.8	90.3	260	50	0.09	9	10	14800	84	570	30	0.59	16	16.3
Average Concentration	8.8	8.7	375	7.6	74		0.5	60	18	22	60	22	0.5	0.085	0.16	12	0.34	5.8	36	94	23	0.037	3.9	3	268	28	100	6	0.1	0.86	0.9
Median Concentration	8	8	350.5	7.61	81.5	12.8	0.5	55.04	16	20.75	55.04	16.5	0.5	0.0825	0.175	10.055	0.5	5.61	27.7	72.3	17.95	0.025	4	2.5	5	21.5	30	5	0.03	0.2	0.3
Standard Deviation	1.7	2	167	0.52	47		0	21	8.9	11	21	16	0	0.054	0.047	7.9	0.24	1.9	22	61	15	0.036	2.4	1.6	1574	19	141	4.3	0.14	2.2	2.2

Env Stds Comments

#1:Irrigation water; moderately tolerant crops.
#2:Drinking water
#3:Livestock
#4:Low land river conductivity; 0.68 x 2200 uS/cm.
#5:Adjusted for effects of hardness.
#6:Irrigation water; moderately tolerant crops. Note: Molybdenum drinking water Screening Level is 0.05 mg/L.
#7:Local guideline based upon 90th percentile pre-brine placement; Adjusted for effects of hardness

							Physical Parameters				Metals																						
			Total Phosphate (PO4)	Total Phosphate (PO4) (Filtered)	Phosphorus	Phosphorus (Filtered)	Total Dissolved Solids (TDS)	Total Dissolved Solids (TDS) (Filtered)	Total Suspended Solids (TSS)	Turbidity	Aluminium	Aluminium (Filtered)	Antimony	Arsenic	Arsenic (Filtered)	Arsenic III	Arsenic V	Barium	Beryllium	Boron	Boron (Filtered)	Cadmium	Chromium	Chromium (Hexavalent)	Chromium (Trivalent)	Cobalt	Copper	Copper (Filtered)	Iron	Iron (Filtered)	Lead	Manganese	Manganese (Filtered)
		Unit	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	NTU	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
ANZECC (2000) or Local Guidelines - Surface Water							1500#4	1500#4								24	13	700#2	100	370	370	0.85#5	2#5	1			3.5#5	3.5#5	300#2	300#2	5#5	1900	1900
EPL Discharge Limits for LDP12									50	25																							
Purpose	**LocCode**	**Sampled_Date-Time**																															
Upstream	LDP12	29/07/2021	<0.1	<0.1	0.02	0.01	-	288	11.2	15.9	300	<10	1	<1	<1	-	-	10	<1	<50	<50	<0.1	<1	<10	<10	1	<1	<1	130	<50	<1	86	84
Upstream	LDP12	3/09/2021	<0.1	<0.1	0.01	<0.01	-	140	5.2	6.24	490	10	<1	<1	<1	-	-	7	<1	<50	80	<0.1	<1	<10	<10	<1	<1	<1	140	<50	<1	80	74
Upstream	LDP12	23/11/2021	<0.1	<0.1	<0.01	<0.01	-	180	8.4	17.1	270	<10	<1	<1	<1	-	-	5	<1	<50	<50	<0.1	<1	<10	<10	<1	<1	<1	70	<50	<1	28	25
Upstream	LDP12	29/06/2022	<0.1	<0.1	0.03	0.02	-	142	8	10.4	780	<10	<1	<1	<1	<1	<1	8	<1	<50	<50	<0.1	<1	<10	<10	<1	1	<1	<50	<50	<1	45	43
	LDP12	**Min.**	<0.1	<0.1	<0.01	<0.01	-	140	5.2	6.24	270	<10	<1	<1	<1	<1	<1	5	<1	<50	<50	<0.1	<1	<10	<10	<1	<1	<1	<50	<50	<1	28	25
	LDP12	**Max.**	<0.1	<0.1	0.03	0.02	-	288	11.2	17.1	780	10	1	<1	<1	<1	<1	10	<1	<50	80	<0.1	<1	<10	<10	1	1	<1	140	<50	<1	86	84
	LDP12	**Average**	0.05	0.05	0.02	0.01	-	188	8.2	12	460	6.3	0.6	0.5	0.5	0.5	0.5	7.5	0.5	25	39	0.05	0.5	5	5	0.6	0.6	0.5	91	25	0.5	60	57
Upstream	CSP	1/07/2021	-	-	-	-	-	-	94.8	162	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Upstream	CSP	5/07/2021	0.12	0.06	0.04	0.02	-	-	17.33	103	830	<10	<1	<1	<1	-	-	16	<1	<50	<50	<0.1	<1	-	-	1	<1	<1	442	<2	2	79	63
Upstream	CSP	12/07/2021	-	-	-	-	-	-	27	150	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Upstream	CSP	19/07/2021	-	-	-	-	-	-	588	1630	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Upstream	CSP	26/07/2021	-	-	-	-	-	-	798	2324	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Upstream	CSP	26/07/2021	-	-	-	-	-	-	798	2324	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Upstream	CSP	29/07/2021	-	-	-	-	-	-	20	29.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Upstream	CSP	2/08/2021	<0.1	<0.1	0.02	<0.01	-	-	49	109	860	<10	<1	<1	<1	-	-	17	<1	<50	<50	<0.1	<1	-	-	3	<1	<1	540	<2	2	275	240
Upstream	CSP	6/09/2021	0.23	0.23	0.08	0.08	-	-	2060	>4000	<10	<10	<1	<1	<1	-	-	147	3	<50	<50	0.4	10	-	-	13	<1	<1	<2	<2	74	31	31
Upstream	CSP	5/10/2021	1.59	0.1	0.52	0.03	-	-	748	1991	6280	<10	<1	3	<1	-	-	52	1	<50	<50	<0.1	4	-	-	4	8	<1	4780	<2	22	207	47
Upstream	CSP	1/11/2021	0.09	<0.01	0.03	<0.01	-	-	78.67	87.8	2990	20	<1	1	<1	-	-	24	<1	<50	<50	0.2	1	-	-	3	10	<1	356	<2	3	301	263
Upstream	CSP	23/11/2021	-	-	-	-	-	-	3.6	12.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Upstream	CSP	6/12/2021	<0.1	<0.1	0.02	<0.01	-	-	29	110	1620	10	<1	<1	<1	-	-	10	<1	<50	<50	<0.1	<1	-	-	<1	3	<1	565	<2	2	33	22
Upstream	CSP	21/12/2021	-	-	-	-	-	-	-	420	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Upstream	CSP	24/12/2021	-	-	-	-	-	-	-	379	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Upstream	CSP	24/12/2021	-	-	-	-	-	-	-	399	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Upstream	CSP	29/12/2021	-	-	-	-	-	-	404	490	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Upstream	CSP	30/12/2021	-	-	-	-	-	-	88	412	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Upstream	CSP	4/01/2022	0.27	<0.01	0.09	<0.01	-	-	91	446	3880	<10	<1	2	<1	-	-	27	<1	<50	<50	<0.1	2	-	-	1	2	<1	1680	2	10	94	34
Upstream	CSP	13/01/2022	-	-	-	-	-	-	-	2000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Upstream	CSP	7/02/2022	0.48	<0.01	0.16	<0.01	-	-	58	257	12,000	<10	<1	1	<1	-	-	51	<1	<50	<50	<0.1	2	-	-	2	2	<1	1060	<50	6	201	153
Upstream	CSP	7/03/2022	1.07	0.22	0.35	0.07	-	-	756	3020	9850	<10	<1	7	<1	-	-	85	2	<50	<50	0.2	6	-	-	5	19	<1	10,500	4	42	245	38
Upstream	CSP	4/04/2022	1.04	<0.1	0.34	<0.1	-	468	135	1805	9360	120	<1	4	<1	-	-	74	2	<50	<50	<0.1	5	<10	<10	4	15	<1	7620	24	30	286	88
Upstream	CSP	11/04/2022	-	-	-	-	-	-	40	23.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Upstream	CSP	21/04/2022	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Upstream	CSP	2/05/2022	1.06	<0.1	0.34	<0.01	-	232	210	1598	4710	10	<1	3	<1	<1	<1	44	<1	<50	<50	<0.1	3	<10	<10	2	8	1	4990	<50	19	176	55
Upstream	CSP	6/06/2022	0.1	<0.1	0.03	<0.01	-	214	38	261	1880	<10	<1	<1	<1	<1	<1	19	<1	<50	<50	<0.1	1	<10	<10	<1	2	<1	1380	<50	5	83	56
Upstream	CSP	29/06/2022	-	-	-	-	-	142	9.2	12	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	CSP	**Min.**	0.09	<0.01	0.02	<0.01	-	142	3.6	12	<10	<10	<1	<1	<1	<1	<1	10	<1	<50	<50	<0.1	<1	<10	<10	<1	<1	<1	<2	<2	2	31	22
	CSP	**Max.**	1.59	0.23	0.52	<0.1	-	468	2060	4000	12000	120	<1	7	<1	<1	<1	147	3	<50	<50	0.4	10	<10	<10	13	19	1	10,500	<50	74	301	263
	CSP	**Average**	0.51	0.073	0.17	0.024	-	264	310	909	4522	17	0.5	2	0.5	0.5	0.5	47	1	25	25	0.1	3	5	5	3.3	5.9	0.54	2826	9.3	18	168	91

Statistical Summary

	Total Phosphate (PO4)	Total Phosphate (PO4) (Filtered)	Phosphorus	Phosphorus (Filtered)	Total Dissolved Solids (TDS)	Total Dissolved Solids (TDS) (Filtered)	Total Suspended Solids (TSS)	Turbidity	Aluminium	Aluminium (Filtered)	Antimony	Arsenic	Arsenic (Filtered)	Arsenic III	Arsenic V	Barium	Beryllium	Boron	Boron (Filtered)	Cadmium	Chromium	Chromium (Hexavalent)	Chromium (Trivalent)	Cobalt	Copper	Copper (Filtered)	Iron	Iron (Filtered)	Lead	Manganese	Manganese (Filtered)
Number of Results	25	25	92	25	15	81	124	125	96	96	96	96	96	21	21	96	96	96	96	96	96	85	85	96	96	96	96	96	96	96	96
Number of Detects	12	5	53	10	15	81	91	125	95	59	4	9	0	0	0	96	4	23	22	4	16	0	0	30	48	29	94	74	26	96	95
Minimum Concentration	0.09	<0.01	<0.01	<0.01	106	75	<1	1	<10	<10	<1	<1	<1	<1	<1	5	<1	<50	<50	<0.1	<1	<10	<10	<1	<1	<1	<2	<2	<1	28	<1
Maximum Concentration	1.59	0.23	0.52	<0.1	342	537	2060	4000	12000	280	2	7	<1	<1	<1	147	3	120	100	0.4	10	<10	<10	13	19	6	10500	660	74	1240	1130
Average Concentration	0.28	0.061	0.041	0.017	209	235	91	265	889	48	0.53	0.7	0.5	0.5	0.5	22	0.56	38	36	0.057	0.88	5	5	1.2	2.3	0.98	819	125	2.9	180	143
Median Concentration	0.05	0.05	0.01	0.005	200	188	9.6665	18	295	20	0.5	0.5	0.5	0.5	0.5	19.5	0.5	25	25	0.05	0.5	5	5	0.5	0.75	0.5	435	100	0.5	123	81
Standard Deviation	0.43	0.053	0.083	0.021	80	123	298	717	1976	66	0.17	0.85	0	0	0	17	0.33	25	22	0.042	1.3	0	0	1.6	3.3	1.1	1444	121	9.4	197	185

Env Stds Comments

#1:Irrigation water; moderately tolerant crops.
#2:Drinking water
#3:Livestock
#4:Low land river conductivity; 0.68 x 2200 uS/cm.
#5:Adjusted for effects of hardness.
#6:Irrigation water; moderately tolerant crops. Note: Mol
#7:Local guideline based upon 90th percentile pre-brine |

ERM

Purpose	LocCode	Sampled_Date-Time	Mercury	Molybdenum	Nickel	Nickel (Filtered)	Selenium	Silver	Strontium	Vanadium	Vanadium (Filtered)	Zinc	Zinc (Filtered)
		Unit	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L
ANZECC (2000) or Local Guidelines - Surface Water			0.06	10#6	17#5	17#5	5	0.05				116#7	116#7
EPL Discharge Limits for LDP12													
Upstream	LDP12	29/07/2021	<0.04	6	3	3	<10	<1	0.018	<10	<10	11	9
Upstream	LDP12	3/09/2021	<0.04	5	2	1	<10	<1	0.014	<10	<10	8	<5
Upstream	LDP12	23/11/2021	<0.04	4	1	<1	<10	<1	0.009	<10	<10	<5	<5
Upstream	LDP12	29/06/2022	<0.04	2	<1	<1	<10	<1	0.025	<10	<10	23	<5
	LDP12	**Min.**	<0.04	2	<1	<1	<10	<1	0.009	<10	<10	<5	<5
	LDP12	**Max.**	<0.04	6	3	3	<10	<1	0.025	<10	<10	23	9
	LDP12	**Average**	0.02	4.3	1.6	1.3	5	0.5	0.017	5	5	11	4.1
Upstream	CSP	1/07/2021	-	-	-	-	-	-	-	-	-	-	-
Upstream	CSP	5/07/2021	-	9	4	3	<10	<1	0.023	<10	<10	15	<5
Upstream	CSP	12/07/2021	-	-	-	-	-	-	-	-	-	-	-
Upstream	CSP	19/07/2021	-	-	-	-	-	-	-	-	-	-	-
Upstream	CSP	26/07/2021	-	-	-	-	-	-	-	-	-	-	-
Upstream	CSP	26/07/2021	-	-	-	-	-	-	-	-	-	-	-
Upstream	CSP	29/07/2021	-	-	-	-	-	-	-	-	-	-	-
Upstream	CSP	2/08/2021	-	7	5	3	<10	<1	0.033	<10	<10	18	<5
Upstream	CSP	6/09/2021	-	6	1	1	<10	<1	0.057	<10	<10	<5	<5
Upstream	CSP	5/10/2021	-	8	10	1	<10	<1	0.033	<10	<10	96	12
Upstream	CSP	1/11/2021	-	10	5	3	<10	<1	0.045	<10	<10	36	<5
Upstream	CSP	23/11/2021	-	-	-	-	-	-	-	-	-	-	-
Upstream	CSP	6/12/2021	-	3	<1	1	<10	<1	0.013	<10	<10	12	<5
Upstream	CSP	21/12/2021	-	-	-	-	-	-	-	-	-	-	-
Upstream	CSP	24/12/2021	-	-	-	-	-	-	-	-	-	-	-
Upstream	CSP	24/12/2021	-	-	-	-	-	-	-	-	-	-	-
Upstream	CSP	29/12/2021	-	-	-	-	-	-	-	-	-	-	-
Upstream	CSP	30/12/2021	-	-	-	-	-	-	-	-	-	-	-
Upstream	CSP	4/01/2022	-	4	4	1	<10	<1	0.018	<10	<10	40	<5
Upstream	CSP	13/01/2022	-	-	-	-	-	-	-	-	-	-	-
Upstream	CSP	7/02/2022	-	4	7	5	<10	<1	0.054	<10	<10	25	<5
Upstream	CSP	7/03/2022	-	3	18	1	<10	<1	0.033	20	<10	98	<5
Upstream	CSP	4/04/2022	<0.04	3	14	2	<10	<1	0.048	10	<10	161	<5
Upstream	CSP	11/04/2022	-	-	-	-	-	-	-	-	-	-	-
Upstream	CSP	21/04/2022	-	-	-	-	-	-	-	-	-	-	-
Upstream	CSP	2/05/2022	<0.04	2	7	2	<10	<1	0.027	<10	<10	67	11
Upstream	CSP	6/06/2022	<0.04	3	2	<1	<10	<1	0.021	<10	<10	22	<5
Upstream	CSP	29/06/2022	-	-	-	-	-	-	-	-	-	-	-
	CSP	**Min.**	<0.04	2	<1	<1	<10	<1	0.013	<10	<10	<5	<5
	CSP	**Max.**	<0.04	10	18	5	<10	<1	0.057	20	<10	161	12
	CSP	**Average**	0.02	5.2	6.5	2	5	0.5	0.034	6.7	5	49	4

Statistical Summary

	Mercury	Molybdenum	Nickel	Nickel (Filtered)	Selenium	Silver	Strontium	Vanadium	Vanadium (Filtered)	Zinc	Zinc (Filtered)
Number of Results	85	96	96	96	96	96	96	96	96	96	96
Number of Detects	4	41	93	88	15	0	96	2	0	61	29
Minimum Concentration	<0.04	<1	<1	<1	<0.2	<1	0.009	<10	<10	<5	<5
Maximum Concentration	0.09	12	68	43	<10	<1	0.176	20	<10	161	18
Average Concentration	0.023	2.1	12	9.9	2.5	0.5	0.066	5.2	5	15	4.3
Median Concentration	0.02	0.5	5	3	0.4	0.5	0.053	5	5	7	2.5
Standard Deviation	0.013	2.6	14	13	2.4	0	0.041	1.6	0	23	3.2

Env Stds Comments

#1:Irrigation water; moderately tolerant crops.
#2:Drinking water
#3:Livestock
#4:Low land river conductivity; 0.68 x 2200 uS/cm.
#5:Adjusted for effects of hardness.
#6:Irrigation water; moderately tolerant crops. Note: Mol
#7:Local guideline based upon 90th percentile pre-brine

APPENDIX G TABULATED GROUNDWATER DATA

Purpose	LocCode	Value	Sampled_Date	SampleCode	Field Parameters					Major Anions and Cations												Nutrients				
					Dissolved Oxygen (Field) (Filtered)	Electrical Conductivity (Field)	pH (Field)	Purge Volume	Redox (Field)	Carbonate (as CaCO3)	Bicarbonate Alkalinity (as CaCO3)	Calcium	Carbonate Alkalinity (as CaCO3)	Chloride	Hydroxide Alkalinity (as CaCO3)	Fluoride	Magnesium	Phenolphthalein Alkalinity (CaCO3)	Potassium	Sodium	Sulfate (as SO4)	Ammonia	Sulfur	Nitrate	Nitrite (as NO2-)	Nitrite + Nitrate (as N)
					mg/L	uS/cm	pH units	L	mV	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	µg/L	mg/L	µg/L	µg/L	mg/L
ANZECC (2000) or Local Guidelines - Groundwater						2600#1	6.5-8							350		1.5					1000					
Within MPAR / Mine Disturbance Area East of MPAR	D10		2/09/2021	D10D10_02 Sep 21 1405	1	4360	6.13	175	-	<1	212	145	212	288	-	<0.5	123	<1	89.7	711	1870	260	666	<10	<10	<0.01
Within MPAR / Mine Disturbance Area East of MPAR	D10		24/11/2021	D10D10_24 Nov 21 1255	1.4	4000	6.16	188	-	<1	164	112	164	227	-	<0.5	87.4	<1	69.9	569	1620	300	498	<10	<10	<0.01
Within MPAR / Mine Disturbance Area East of MPAR	D10		9/03/2022	D10D10_09 Mar 22 1300	0.9	4120	5.98	195	-	<1	156	125	156	258	-	<0.5	110	<1	75.9	642	1780	290	608	<10	<10	<0.01
Within MPAR / Mine Disturbance Area East of MPAR	D10		8/06/2022	D10D10_08 Jun 22 1320	1.6	4270	6.03	181	62.7	<1	170	142	170	272	<1	<0.5	118	<1	81.9	675	1900	330	660	<10	<10	<0.01
		Min.			0.9	4000	5.98	175	62.7	<1	156	112	156	227	<1	<0.5	87.4	<1	69.9	569	1620	260	498	<10	<10	<0.01
		Max.			1.6	4360	6.16	195	62.7	<1	212	145	212	288	<1	<0.5	123	<1	89.7	711	1900	330	666	<10	<10	<0.01
		Average			1.2	4188	-	185	-	0.5	176	131	176	261	-	0.25	110	0.5	79	649	1793	295	608	5	5	0.005
Within MPAR / Mine Disturbance Area East of MPAR	D11		2/09/2021	D11D11_02 Sep 21 1150	1	9800	6.32	43	-	<1	221	518	221	970	-	<1	429	<1	111	1600	4680	1060	1500	<10	<10	<0.01
Within MPAR / Mine Disturbance Area East of MPAR	D11		24/11/2021	D11D11_24 Nov 21 1105	1.1	10880	6.33	57	-	<1	152	509	152	1000	-	<1	402	<1	124	1440	4910	1080	1470	<10	<10	<0.01
Within MPAR / Mine Disturbance Area East of MPAR	D11		9/03/2022	D11D11_09 Mar 22 1345	0.8	9930	6.32	61	-	<1	150	479	150	1030	-	<2	407	<1	104	1610	4980	1190	1580	<10	<10	<0.01
Within MPAR / Mine Disturbance Area East of MPAR	D11		8/06/2022	D11D11_08 Jun 22 1400	1.3	9770	6.31	51	-59.9	<1	204	486	204	991	<1	<0.5	414	<1	106	1520	4590	930	1540	<100	<100	<0.1
		Min.			0.8	9770	6.31	43	-59.9	<1	150	479	150	970	<1	<0.5	402	<1	104	1440	4590	930	1470	<10	<10	<0.01
		Max.			1.3	10880	6.33	61	-	<1	221	518	221	1030	<1	<2	429	<1	124	1610	4980	1190	1580	<100	<100	<0.1
		Average			1.1	10095	-	53	-	0.5	182	498	182	998	-	0.56	413	0.5	111	1543	4790	1065	1523	16	16	0.02
Within MPAR / Mine Disturbance Area East of MPAR	D19		1/09/2021	D19D19_01 Sep 21 1500	2.1	4320	6.04	15	-	<1	184	170	184	281	-	<0.5	146	<1	85	670	1910	260	690	<10	<10	<0.01
Within MPAR / Mine Disturbance Area East of MPAR	D19		24/11/2021	D19D19_24 Nov 21 1425	2.6	4650	6.14	18	-	<1	157	159	157	278	-	<0.5	133	<1	79.6	603	1960	260	614	<10	<10	<0.01
Within MPAR / Mine Disturbance Area East of MPAR	D19		9/03/2022	D19D19_09 Mar 22 1410	3.1	3210	6.13	22	-	<1	177	105	177	173	-	<0.5	92.3	<1	55.6	467	1340	220	476	30	<10	0.03
Within MPAR / Mine Disturbance Area East of MPAR	D19		8/06/2022	D19D19_08 Jun 22 1420	2.9	2290	5.97	19	47.1	<1	113	86.5	113	115	<1	<0.2	72.5	<1	44.1	310	973	150	337	60	<10	0.06
		Min.			2.1	2290	5.97	15	47.1	<1	113	86.5	113	115	<1	<0.2	72.5	<1	44.1	310	973	150	337	<10	<10	<0.01
		Max.			3.1	4650	6.14	22	47.1	<1	184	170	184	281	<1	<0.5	146	<1	85	670	1960	260	690	60	<10	0.06
		Average			2.7	3618	-	19	-	0.5	158	130	158	212	-	0.2	111	0.5	66	513	1546	223	529	25	5	0.025
Within MPAR / Mine Disturbance Area East of MPAR	D113		11/08/2021	D113D113_11 Aug 21 0000	1.2	4510	5.97	51	-	<1	179	181	179	306	-	<10	150	<1	90.9	728	2080	240	695	<10	<10	<0.01
Within MPAR / Mine Disturbance Area East of MPAR	D113		27/10/2021	D113D113_27 Oct 21 1025	1.4	4150	6.06	53	-	<1	175	144	175	272	-	<0.5	118	<1	76.1	579	1900	240	538	<10	<10	<0.01
Within MPAR / Mine Disturbance Area East of MPAR	D113		9/02/2022	D113D113_09 Feb 22 1345	1.1	3900	6.1	57	-	<1	179	141	179	232	-	<0.5	124	<1	86.1	583	1700	240	583	<10	<10	<0.01
Within MPAR / Mine Disturbance Area East of MPAR	D113		11/05/2022	D113D113_11 May 22 1345	1.2	3560	6.04	57	50.4	<1	152	126	152	194	<1	<0.5	109	<1	65	516	1580	230	522	<10	<10	<0.01
		Min.			1.1	3560	5.97	51	50.4	<1	152	126	152	194	<1	<0.5	109	<1	65	516	1580	230	522	<10	<10	<0.01
		Max.			1.4	4510	6.1	57	50.4	<1	179	181	179	306	<1	<10	150	<1	90.9	728	2080	240	695	<10	<10	<0.01
		Average			1.2	4030	-	55	-	0.5	171	148	171	251	-	1.4	125	0.5	80	602	1815	238	585	5	5	0.005
Within Mine Disturbance Area S & SE of MPAR	D15		1/09/2021	D15D15_01 Sep 21 1435	2.9	2700	5.13	25	-	<1	15	165	15	120	-	<0.2	70.5	<1	36.4	342	1250	440	458	<10	<10	<0.01
Within Mine Disturbance Area S & SE of MPAR	D15		24/11/2021	D15D15_24 Nov 21 1400	2.5	2870	5.19	25	-	<1	13	156	13	122	-	<0.5	65.9	<1	34.6	308	1330	420	404	<10	<10	<0.01
Within Mine Disturbance Area S & SE of MPAR	D15		9/03/2022	D15D15_09 Mar 22 1125	2.2	2500	5.42	38	-	<1	13	133	13	113	-	<0.5	61.4	<1	31.3	310	1180	420	421	<10	<10	<0.01
Within Mine Disturbance Area S & SE of MPAR	D15		8/06/2022	D15D15_08 Jun 22 1155	2.2	2280	5.2	26	149.6	<1	29	124	29	105	<1	<0.2	54.8	<1	31.6	288	1080	390	376	<10	<10	<0.01
		Min.			2.2	2280	5.13	25	149.6	<1	13	124	13	105	<1	<0.2	54.8	<1	31.3	288	1080	390	376	<10	<10	<0.01
		Max.			2.9	2870	5.42	38	149.6	<1	29	165	29	122	<1	<0.5	70.5	<1	36.4	342	1330	440	458	<10	<10	<0.01
		Average			2.5	2588	-	29	-	0.5	18	145	18	115	-	0.18	63	0.5	33	312	1210	418	415	5	5	0.005
Within Mine Disturbance Area S & SE of MPAR	D17		1/09/2021	D17D17_01 Sep 21 1410	1.1	2960	6.09	36	-	<1	141	231	141	168	-	<0.5	131	<1	24.5	282	1380	110	482	<10	<10	<0.01
Within Mine Disturbance Area S & SE of MPAR	D17		24/11/2021	D17D17_24 Nov 21 1330	1	3200	6.22	40	-	<1	130	235	130	166	-	<0.5	132	<1	23.5	249	1420	100	441	<10	<10	<0.01
Within Mine Disturbance Area S & SE of MPAR	D17		9/03/2022	D17D17_09 Mar 22 1030	1	2960	6.31	48	-	<1	138	201	138	151	-	<0.5	127	<1	22.3	283	1340	100	484	<10	<10	<0.01
Within Mine Disturbance Area S & SE of MPAR	D17		8/06/2022	D17D17_08 Jun 22 1110	1.3	2920	6.09	40	16.5	<1	129	219	129	158	<1	<0.2	127	<1	23.4	261	1320	100	461	<10	<10	<0.01
		Min.			1	2920	6.09	36	16.5	<1	129	201	129	151	<1	<0.2	127	<1	22.3	249	1320	100	441	<10	<10	<0.01
		Max.			1.3	3200	6.31	48	16.5	<1	141	235	141	168	<1	<0.5	132	<1	24.5	283	1420	110	484	<10	<10	<0.01
		Average			1.1	3010	-	41	-	0.5	135	222	135	161	-	0.2	129	0.5	23	269	1365	103	467	5	5	0.005
Within Mine Disturbance Area S & SE of MPAR	D18		2/09/2021	D18D18_02 Sep 21 1320	1.8	700	6.67	22	-	<1	376	91.3	376	9.18	-	0.537	32.6	<1	22.3	23.4	24.7	120	10	100	<10	0.1
Within Mine Disturbance Area S & SE of MPAR	D18		25/11/2021	D18D18_25 Nov 21 0835	1.9	770	6.65	15	-	<1	347	85.8	347	9.25	-	0.472	30.6	<1	19.2	21.8	21.2	120	7	20	<10	0.02
Within Mine Disturbance Area S & SE of MPAR	D18		10/03/2022	D18D18_10 Mar 22 0735	2.4	690	6.72	15	-	<1	360	78.1	360	8.56	-	<0.1	29.5	<1	19.2	20	16.1	140	5	20	<10	0.02
Within Mine Disturbance Area S & SE of MPAR	D18		9/06/2022	D18D18_09 Jun 22 0725	2.5	680	6.69	15	108.8	<1	358	84.3	358	9.11	<1	0.444	31.1	<1	20.6	23	18.5	140	8	70	<10	0.07

Purpose	LocCode	Value	Sampled_Date	SampleCode	Physical Parameters: Total Dissolved Solids (TDS) (Filtered)	Metals: Aluminium	Aluminium (Filtered)	Antimony	Arsenic	Arsenic (Filtered)	Barium	Beryllium	Boron	Boron (Filtered)	Cadmium	Chromium	Chromium (Hexavalent)	Chromium (Trivalent)	Cobalt	Copper	Copper (Filtered)	Iron	Iron (Filtered)	Lead	Manganese	Manganese (Filtered)	Mercury	Molybdenum	Nickel	Nickel (Filtered)	Selenium	Silver	Strontium	Vanadium	Vanadium (Filtered)	Zinc	Zinc (Filtered)
					mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L
ANZECC (2000) or Local Guidelines - Groundwater					2000				24	24	700	100	370	370	2[#2]	5[#2]				5[#2]	5[#2]	664[#3]	664[#3]	5[#2]	5704[#3]	5704[#3]	0.06	10	550.9[#4]	550.9[#4]	5	0.05				908[#4]	908[#4]
Within MPAR / Mine Disturbance Area East of MPAR	D10		2/09/2021	D10D10_02 Sep 21 1405	3300	40	<10	<1	4	<1	23	<1	1320	1260	<0.1	<1	<100	<100	141	<1	<1	9970	4000	4	2950	2770	<0.04	4	382	356	0.4	<1	1.28	<10	<10	44	35
Within MPAR / Mine Disturbance Area East of MPAR	D10		24/11/2021	D10D10_24 Nov 21 1255	2720	50	30	<1	5	4	19	<1	1040	840	<0.1	<1	<10	<10	90	<1	<1	4510	4440	4	2170	1980	<0.04	6	303	269	0.4	<1	0.94	<10	<10	173	162
Within MPAR / Mine Disturbance Area East of MPAR	D10		9/03/2022	D10D10_09 Mar 22 1300	3180	50	40	<1	5	4	26	<1	1400	770	<0.1	2	<10	<10	125	<1	<1	4070	4460	9	2810	2690	<0.04	5	384	364	0.4	<1	1.35	<10	<10	329	315
Within MPAR / Mine Disturbance Area East of MPAR	D10		8/06/2022	D10D10_08 Jun 22 1320	3250	40	20	<1	2	1	22	<1	1380	1340	<0.1	2	<10	<10	112	<1	<1	4630	3300	4	2870	2800	<0.04	6	367	362	<10	<1	1.31	<10	<10	279	268
		Min.			2720	40	<10	<1	2	<1	19	<1	1040	770	<0.1	<1	<10	<10	90	<1	<1	4070	3300	4	2170	1980	<0.04	4	303	269	0.4	<1	0.94	<10	<10	44	35
		Max.			3300	50	40	<1	5	4	26	<1	1400	1340	<0.1	2	<100	<100	141	<1	<1	9970	4460	9	2950	2800	<0.04	6	384	364	<10	<1	1.35	<10	<10	329	315
		Average			3113	45	24	0.5	4	2	23	0.5	1285	1053	0.05	1	16	16	117	0.5	0.5	5795	4050	5.3	2700	2560	0.02	5.3	359	338	1.6	0.5	1.2	5	5	206	195
Within MPAR / Mine Disturbance Area East of MPAR	D11		2/09/2021	D11D11_02 Sep 21 1150	8520	10	<10	<1	3	<1	64	<1	2750	2700	<0.1	<1	<100	<100	156	<1	<1	59,000	45,000	<1	13,800	13,100	<0.04	<1	939	920	<0.2	<1	4.07	<10	<10	29	22
Within MPAR / Mine Disturbance Area East of MPAR	D11		24/11/2021	D11D11_24 Nov 21 1105	8830	20	<10	<1	9	6	89	<1	2740	2350	<0.1	<1	<10	<10	164	<1	<1	74,400	65,900	<1	14,000	13,600	<0.04	1	1040	920	0.2	<1	4.08	<10	<10	38	31
Within MPAR / Mine Disturbance Area East of MPAR	D11		9/03/2022	D11D11_09 Mar 22 1345	8790	10	<10	<1	5	2	120	<1	2420	1200	<0.1	<1	<10	<10	159	<1	<1	50,300	48,400	<1	14,100	13,500	<0.04	<1	1020	955	0.2	<1	4.44	<10	<10	26	18
Within MPAR / Mine Disturbance Area East of MPAR	D11		8/06/2022	D11D11_08 Jun 22 1400	8430	20	10	<1	2	3	120	<1	2870	2690	<0.1	<1	<10	<10	148	1	<1	65,900	61,600	<1	13,200	12,900	<0.04	<1	934	922	<10	<1	4.17	<10	<10	29	26
		Min.			8430	10	<10	<1	2	<1	64	<1	2420	1200	<0.1	<1	<10	<10	148	<1	<1	50,300	45,000	<1	13,200	12,900	<0.04	<1	934	920	<0.2	<1	4.07	<10	<10	26	18
		Max.			8830	20	10	<1	9	6	120	<1	2870	2700	<0.1	<1	<100	<100	164	1	<1	74,400	65,900	<1	14,100	13,600	<0.04	1	1040	955	<10	<1	4.44	<10	<10	38	31
		Average			8643	15	6.3	0.5	5	3	98	0.5	2695	2235	0.05	0.5	16	16	157	0.6	0.5	62,400	55,225	0.5	13,775	13,275	0.02	0.6	983	929	1.4	0.5	4.2	5	5	31	24
Within MPAR / Mine Disturbance Area East of MPAR	D19		1/09/2021	D19D19_01 Sep 21 1500	3430	100	<10	<1	2	<1	12	<1	1880	1860	<0.1	18	<100	<100	161	<1	<1	12,200	11,000	6	5660	5650	<0.04	<1	549	524	<0.2	<1	1.25	<10	<10	243	231
Within MPAR / Mine Disturbance Area East of MPAR	D19		24/11/2021	D19D19_24 Nov 21 1425	3360	270	<10	<1	4	2	13	<1	1610	1390	<0.1	17	<10	<10	155	<1	<1	13,900	11,700	8	5540	5410	<0.04	2	541	471	<0.2	<1	1.17	<10	<10	231	219
Within MPAR / Mine Disturbance Area East of MPAR	D19		9/03/2022	D19D19_09 Mar 22 1410	2430	220	<10	<1	5	1	16	<1	1190	590	<0.1	15	<10	<10	108	1	<1	11,300	7900	13	3890	3630	<0.04	<1	351	316	0.7	<1	0.878	<10	<10	206	168
Within MPAR / Mine Disturbance Area East of MPAR	D19		8/06/2022	D19D19_08 Jun 22 1420	1690	110	<10	<1	2	<1	16	<1	890	990	<0.1	22	<10	<10	72	2	<1	6220	4190	4	2740	2560	<0.04	1	238	216	<10	<1	0.642	<10	<10	172	158
		Min.			1690	100	<10	<1	2	<1	12	<1	890	590	<0.1	15	<10	<10	72	<1	<1	6220	4190	4	2740	2560	<0.04	<1	238	216	<0.2	<1	0.642	<10	<10	172	158
		Max.			3430	270	<10	<1	5	2	16	<1	1880	1860	<0.1	22	<100	<100	161	2	<1	13900	11700	13	5660	5650	<0.04	2	549	524	<10	<1	1.25	<10	<10	243	231
		Average			2728	175	5	0.5	3	1	14	0.5	1393	1208	0.05	18	16	16	124	1	0.5	10905	8698	7.8	4458	4313	0.02	1	420	382	1.5	0.5	0.99	5	5	213	194
Within MPAR / Mine Disturbance Area East of MPAR	D113		11/08/2021	D113D113_11 Aug 21 0000	3520	290	<10	<1	1	1	13	<1	1860	1860	0.2	55	<100	<100	180	2	<1	13,400	11,700	5	6090	5460	<0.04	2	602	508	<0.2	<1	1.44	<10	<10	314	278
Within MPAR / Mine Disturbance Area East of MPAR	D113		27/10/2021	D113D113_27 Oct 21 1025	3170	460	<10	<1	2	<1	14	<1	1750	1680	0.2	1	<10	<10	152	2	<1	10,500	7650	6	5020	4700	<0.04	<1	502	462	<0.2	<1	1.21	<10	<10	273	244
Within MPAR / Mine Disturbance Area East of MPAR	D113		9/02/2022	D113D113_09 Feb 22 1345	3110	180	<10	5	1	<1	13	<1	1490	1250	0.2	2	<10	<10	132	1	<1	9400	9780	6	4600	4480	0.04	<1	406	375	<0.2	<1	1.15	<10	<10	246	225
Within MPAR / Mine Disturbance Area East of MPAR	D113		11/05/2022	D113D113_11 May 22 1345	2710	140	20	<1	1	1	13	<1	1330	1440	0.1	22	<10	<10	108	3	1	7850	6250	4	3810	3600	<0.04	<1	338	322	<10	<1	0.929	<10	<10	202	187
		Min.			2710	140	<10	<1	1	<1	13	<1	1330	1250	0.1	1	<10	<10	108	1	<1	7850	6250	4	3810	3600	<0.04	<1	338	322	<0.2	<1	0.929	<10	<10	202	187
		Max.			3520	460	20	5	2	1	14	<1	1860	1860	0.2	55	<100	<100	180	3	1	13,400	11,700	6	6090	5460	0.04	2	602	508	<10	<1	1.44	<10	<10	314	278
		Average			3128	268	9	2	1	1	13	0.5	1608	1558	0.2	20	16	16	143	2	1	10,288	8845	5	4880	4560	0.03	1	462	417	1	0.5	1.2	5	5	259	234
Within Mine Disturbance Area S & SE of MPAR	D15		1/09/2021	D15D15_01 Sep 21 1435	2160	820	90	<1	13	1	16	1	190	170	0.3	48	<10	<10	414	10	<1	22,100	19,700	7	1400	1340	<0.04	2	584	527	0.7	<1	0.615	<10	<10	892	849
Within Mine Disturbance Area S & SE of MPAR	D15		24/11/2021	D15D15_24 Nov 21 1400	2220	810	90	<1	8	2	18	1	190	170	0.2	43	<10	<10	387	5	<1	19,800	18,300	5	1380	1260	<0.04	2	578	501	0.3	<1	0.581	<10	<10	836	804
Within Mine Disturbance Area S & SE of MPAR	D15		9/03/2022	D15D15_09 Mar 22 1125	1920	410	40	4	7	1	19	1	220	<50	0.2	46	<10	<10	359	5	<1	15,900	13,600	4	1320	931	0.33	2	531	365	0.4	<1	0.574	<10	<10	784	716
Within Mine Disturbance Area S & SE of MPAR	D15		8/06/2022	D15D15_08 Jun 22 1155	1730	580	70	<1	6	1	18	<1	190	180	0.1	99	<10	<10	318	8	<1	15,900	14,500	3	1130	1090	0.06	4	489	433	<10	<1	0.496	<10	<10	677	673
		Min.			1730	410	40	<1	6	1	16	<1	190	<50	0.1	43	<10	<10	318	5	<1	15,900	13,600	3	1130	931	<0.04	2	489	365	0.3	<1	0.496	<10	<10	677	673
		Max.			2220	820	90	4	13	2	19	1	220	180	0.3	99	<10	<10	414	10	<1	22,100	19,700	7	1400	1340	0.33	4	584	527	<10	<1	0.615	<10	<10	892	849
		Average			2008	655	73	1	8.5	1	18	1	198	136	0.2	59	5	5	370	7	0.5	18,425	16,525	5	1308	1155	0.11	2.5	546	457	1.6	0.5	0.57	5	5	797	761
Within Mine Disturbance Area S & SE of MPAR	D17		1/09/2021	D17D17_01 Sep 21 1410	2520	<10	<10	<1	<1	<1	15	<1	110	100	<0.1	3	<10	<10	9	<1	<1	18,700	16,800	<1	2180	2120	<0.04	<1	49	45	<0.2	<1	0.814	<10	<10	53	49
Within Mine Disturbance Area S & SE of MPAR	D17		24/11/2021	D17D17_24 Nov 21 1330	2400	<10	<10	<1	2	<1	12	<1	100	100	<0.1	<1	<10	<10	8	<1	<1	15,800	13,600	<1	2170	2140	<0.04	<1	48	43	<0.2	<1	0.806	<10	<10	42	38
Within Mine Disturbance Area S & SE of MPAR	D17		9/03/2022	D17D17_09 Mar 22 1030	2360	<10	<10	<1	1	<1	13	<1	50	110	<0.1	<1	<10	<10	12	<1	<1	13,200	10,200	<1	2300	2350	0.07	<1	55	55	<0.2	<1	0.774	<10	<10	44	35
Within Mine Disturbance Area S & SE of MPAR	D17		8/06/2022	D17D17_08 Jun 22 1110	2280	20	<10	<1	<1	<1	12	<1	<50	<50	<0.1	<1	<10	<10	8	<1	<1	19,600	9140	<1	2170	2090	<0.04	<1	42	39	<10	<1	0.822	<10	<10	53	38
		Min.			2280	<10	<10	<1	<1	<1	12	<1	<50	<50	<0.1	<1	<10	<10	8	<1	<1	13,200	9140	<1	2170	2090	<0.04	<1	42	39	<0.2	<1	0.774	<10	<10	42	35
		Max.			2520	20	<10	<1	2	<1	15	<1	110	110	<0.1	3	<10	<10	12	<1	<1	19,600	16,800	<1	2300	2350	0.07	<1	55	55	<10	<1	0.822	<10	<10	53	49
		Average			2390	9	5	0.5	1	0.5	13	0.5	71	84	0.05	1	5	5	9	0.5	0.5	16,825	12,435	0.5	2205	2175	0.03	0.5	49	46	1.3	0.5	0.8	5	5	48	40
Within Mine Disturbance Area S & SE of MPAR	D18		2/09/2021	D18D18_02 Sep 21 1320	440	3160	<10	2	33	9	763	1	90	70	<0.1	44	<10	<10	7	22	<1	12,000	610	22	288	155	0.1	9	33	6	1.2	<1	0.439	20	<10	119	19
Within Mine Disturbance Area S & SE of MPAR	D18		25/11/2021	D18D18_25 Nov 21 0835	396	100	<10	<1	4	2	662	<1	70	60	<0.1	<1	<10	<10	2	<1	<1	508	170	<1	216	139	<0.04	4	6	6	<0.2	<1	0.402	<10	<10	33	26
Within Mine Disturbance Area S & SE of MPAR	D18		10/03/2022	D18D18_10 Mar 22 0735	394	20	<10	<1	7	5	674	<1	70	<50	<0.1	<1	<10	<10	1	<1	<1	606	350	<1	125	118	<0.04	3	4	4	<0.2	<1	0.413	<10	<10	21	17
Within Mine Disturbance Area S & SE of MPAR	D18		9/06/2022	D18D18_09 Jun 22 0725	394	40	<10	<1	4	2	619	<1	80	70	<0.1	<1	<10	<10	1	1	<1	340	<50	<1	138	123	<0.04	3	6	5	<10	<1	0.413	<10	<10	35	25

Purpose	LocCode	Value	Sampled_Date	SampleCode	Dissolved Oxygen (Field) (Filtered)	Electrical Conductivity (Field)	pH (Field)	Purge Volume	Redox (Field)	Carbonate (as CaCO3)	Bicarbonate Alkalinity (as CaCO3)	Calcium	Carbonate Alkalinity (as CaCO3)	Chloride	Hydroxide Alkalinity (as CaCO3)	Fluoride	Magnesium	Phenolphthalein Alkalinity (CaCO3)	Potassium	Sodium	Sulfate (as SO4)	Ammonia	Sulfur	Nitrate	Nitrite (as NO2-)	Nitrite + Nitrate (as N)
					Field Parameters					Major Anions and Cations												Nutrients				
					mg/L	uS/cm	pH units	L	mV	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	µg/L	mg/L	µg/L	µg/L	mg/L
ANZECC (2000) or Local Guidelines - Groundwater						2600#1	6.5-8							350		1.5					1000					
		Min.			1.8	680	6.65	15	108.8	<1	347	78.1	347	8.56	<1	<0.1	29.5	<1	19.2	20	16.1	120	5	20	<10	0.02
		Max.			2.5	770	6.72	22	108.8	<1	376	91.3	376	9.25	<1	0.537	32.6	<1	22.3	23.4	24.7	140	10	100	<10	0.1
		Average			2.2	710	-	17	-	0.5	360	85	360	9	-	0.38	31	0.5	20	22	20	130	8	53	5	0.05
Background and Adjacent to MPAR	D3		2/09/2021	D3D3_02 Sep 21 0955	5	322	5.93	229	-	<1	39	21.2	39	19.9	-	0.062	13.5	<1	3.69	24.5	89	<10	29	20	<10	0.02
Background and Adjacent to MPAR	D3		25/11/2021	D3D3_25 Nov 21 1410	3.9	352	5.81	241	-	<1	51	20	51	19.7	-	<0.05	12.8	<1	3.42	24.9	84.7	<10	26	10	<10	0.01
Background and Adjacent to MPAR	D3		10/03/2022	D3D3_10 Mar 22 1320	1.4	208	5.79	260	-	<1	39	11.5	39	13.8	-	<0.05	8.27	<1	3.86	17.5	41.4	<10	13	<10	<10	<0.01
Background and Adjacent to MPAR	D3		8/06/2022	D3D3_08 Jun 22 1015	1.7	401	5.66	255	124.3	<1	46	26.6	46	25.9	<1	<0.05	17.2	<1	4.39	28.9	111	20	35	30	<10	0.03
		Min.			1.4	208	5.66	229	124.3	<1	39	11.5	39	13.8	<1	<0.05	8.27	<1	3.42	17.5	41.4	<10	13	<10	<10	<0.01
		Max.			5	401	5.93	260	124.3	<1	51	26.6	51	25.9	<1	0.062	17.2	<1	4.39	28.9	111	20	35	30	<10	0.03
		Average			3	321	-	246	-	0.5	44	20	44	20	-	0.034	13	0.5	3.8	24	82	8.8	26	16	5	0.02
Background and Adjacent to MPAR	D4		14/07/2021	D4D4_14 Jul 21 0000	0.7	780	3.39	126	-	<1	<1	15.6	<1	16.7	-	0.03	8.6	<1	9.53	21.5	346	240	97	<10	<10	<0.01
Background and Adjacent to MPAR	D4		21/10/2021	D4D4_21 Oct 21 0930	1.7	740	3.39	126	-	<1	<1	15.9	<1	19	-	<0.1	8.64	<1	8.21	22	317	180	106	<10	<10	<0.01
Background and Adjacent to MPAR	D4		19/01/2022	D4D4_19 Jan 22 1010	1.7	740	3.47	134	-	<1	<1	15.9	<1	18.3	-	<0.1	8.76	<1	9.18	24	290	190	95	<10	<10	<0.01
Background and Adjacent to MPAR	D4		12/05/2022	D4D4_12 May 22 1115	10	750	3.45	131	272.5	<1	<1	12.9	<1	16.1	<1	<0.1	8.48	<1	8.57	22	304	190	93	<10	<10	<0.01
		Min.			0.7	740	3.39	126	272.5	<1	<1	12.9	<1	16.1	<1	0.03	8.48	<1	8.21	21.5	290	180	93	<10	<10	<0.01
		Max.			10	780	3.47	134	272.5	<1	<1	15.9	<1	19	<1	<0.1	8.76	<1	9.53	24	346	240	106	<10	<10	<0.01
		Average			3.5	753	-	129	-	0.5	0.5	15	0.5	18	-	0.05	8.6	0.5	8.9	22	314	200	98	5	5	0.005
Background and Adjacent to MPAR	D5		14/07/2021	D5D5_14 Jul 21 0000	1.9	1240	5.91	266	-	<1	77	100	77	26.4	-	0.107	68.5	<1	11.6	32.2	578	90	172	10	<10	0.01
Background and Adjacent to MPAR	D5		21/10/2021	D5D5_21 Oct 21 0855	1.6	1220	5.9	269	-	<1	130	102	130	26.8	-	0.174	68.3	<1	10.9	32.1	540	110	162	<10	<10	<0.01
Background and Adjacent to MPAR	D5		20/01/2022	D5D5_20 Jan 22 0945	1.9	1200	6	286	-	<1	63	102	63	26.7	-	0.184	68.6	<1	11.5	35.2	523	100	176	<10	<10	<0.01
Background and Adjacent to MPAR	D5		12/05/2022	D5D5_12 May 22 1055	1.2	1180	5.85	292	1.2	<1	76	89.2	76	24.7	<1	<0.2	62.2	<1	9.75	30.9	519	190	165	<10	<10	<0.01
		Min.			1.2	1180	5.85	266	1.2	<1	63	89.2	63	24.7	<1	0.107	62.2	<1	9.75	30.9	519	90	162	<10	<10	<0.01
		Max.			1.9	1240	6	292	1.2	<1	130	102	130	26.8	<1	<0.2	68.6	<1	11.6	35.2	578	190	176	10	<10	0.01
		Average			1.7	1210	-	278	-	0.5	87	98	87	26	-	0.14	67	0.5	11	33	540	123	169	6.3	5	0.01
Background and Adjacent to MPAR	D106		11/08/2021	D106D106_11 Aug 21 0000	1.3	10680	5.92	23	-	<1	175	516	175	1320	-	<1	543	<1	108	1810	5380	360	1930	<10	<10	<0.01
Background and Adjacent to MPAR	D106		27/10/2021	D106D106_27 Oct 21 1345	2.3	12080	6.61	23	-	<1	160	548	160	1480	-	<1	634	<1	107	1900	6020	370	1930	<100	<100	<0.1
Background and Adjacent to MPAR	D106		9/02/2022	D106D106_09 Feb 22 1005	2.3	12480	6.05	34	-	<1	152	531	152	1540	-	<1	712	<1	120	2080	6540	410	1980	<10	<10	<0.01
Background and Adjacent to MPAR	D106		11/05/2022	D106D106_11 May 22 0830	1.6	12760	5.93	27	69.5	<1	148	526	148	1470	<1	<1	655	<1	99.3	1990	6240	400	1970	<10	<10	<0.01
		Min.			1.3	10680	5.92	23	69.5	<1	148	516	148	1320	<1	<1	543	<1	99.3	1810	5380	360	1930	<10	<10	<0.01
		Max.			2.3	12760	6.61	34	69.5	<1	175	548	175	1540	<1	<1	712	<1	120	2080	6540	410	1980	<100	<100	<0.1
		Average			1.9	12000	-	27	-	0.5	159	530	159	1453	-	0.5	636	0.5	109	1945	6045	385	1953	16	16	0.02
Background and Adjacent to MPAR	D107		11/08/2021	D107D107_11 Aug 21 0000	2	12990	5.96	58	-	<1	268	440	268	1500	-	<1	592	<1	244	2450	6460	400	2280	<100	<100	<0.1
Background and Adjacent to MPAR	D107		27/10/2021	D107D107_27 Oct 21 1320	2	12740	5.99	59	-	<1	194	411	194	1420	-	<1	568	<1	243	2140	6250	380	2010	<100	<100	<0.1
Background and Adjacent to MPAR	D107		22/12/2021	D107D107_22 Dec 21 0835	2.3	15600	6.02	-	-	<1	173	497	173	1760	-	4.73	736	<1	378	2720	8360	420	2500	<10	<10	<0.01
Background and Adjacent to MPAR	D107		9/02/2022	D107D107_09 Feb 22 0925	2.1	15470	6.06	-	-	<1	196	445	196	1700	-	<2	784	<1	357	2960	8170	410	2580	<100	<100	<0.1
Background and Adjacent to MPAR	D107		10/05/2022	D107D107_10 May 22 0750	2.8	15030	5.97	-	80	<1	174	411	174	1560	<1	<1	663	<1	318	2630	7480	390	2350	<10	<10	<0.01
		Min.			2	12740	5.97	59	80	<1	173	411	173	1420	<1	<1	568	<1	243	2140	6250	380	2010	<10	<10	<0.01
		Max.			2.8	15600	6.06	59	80	<1	196	497	196	1760	<1	4.73	784	<1	378	2960	8360	420	2580	<100	<100	<0.1
		Average			2.3	14710	-	-	-	0.5	184	441	184	1610	-	1.7	688	0.5	324	2613	7565	400	2360	28	28	0.03
Adjacent to MPAR and Downgradient	D1		1/09/2021	D1D1_01 Sep 21 0955	2	9000	5.93	135	-	<1	189	512	189	978	-	<1	477	<1	111	1350	4300	400	1390	<10	<10	<0.01
Adjacent to MPAR and Downgradient	D1		25/11/2021	D1D1_25 Nov 21 1340	0.9	10250	5.94	145	-	<1	161	525	161	1030	-	<1	469	<1	103	1300	4680	390	1400	<10	<10	<0.01
Adjacent to MPAR and Downgradient	D1		10/03/2022	D1D1_10 Mar 22 1245	1.3	9090	5.89	149	-	<1	137	438	137	980	-	<1	426	<1	100	1350	4320	420	1460	<10	<10	<0.01
Adjacent to MPAR and Downgradient	D1		8/06/2022	D1D1_08 Jun 22 0935	1.2	9040	5.85	144	58.6	<1	169	436	169	952	<1	<0.5	439	<1	101	1390	4210	560	1390	<100	<100	<0.1
		Min.			0.9	9000	5.85	135	58.6	<1	137	436	137	952	<1	<0.5	426	<1	100	1300	4210	390	1390	<10	<10	<0.01
		Max.			2	10250	5.94	149	58.6	<1	189	525	189	1030	<1	<1	477	<1	111	1390	4680	560	1460	<100	<100	<0.1
		Average			1.4	9345	-	143	-	0.5	164	478	164	985	-	0.4	453	0.5	104	1348	4378	443	1410	16	16	0.02
Adjacent to MPAR and Downgradient	D2		15/07/2021	D2D2_15 Jul 21 0000	2.6	1240	5.72	37	-	<1	10	63.2	10	76.6	-	0.095	50.1	<1	14.3	114	530	20	162	<10	<10	<0.01
Adjacent to MPAR and Downgradient	D2		21/10/2021	D2D2_21 Oct 21 0755	2.5	780	5.66	71	-	<1	34	39.6	34	46.6	-	0.114	29.8	<1	9.89	76.1	310	40	109	<10	<10	<0.01
Adjacent to MPAR and Downgradient	D2		20/01/2022	D2D2_20 Jan 22 1200	1.7	473	5.8	63	-	<1	18	22.1	18	25.1	-	0.123	16.7	<1	8.74	45.8	157	30	50	<10	<10	<0.01
Adjacent to MPAR and Downgradient	D2		12/05/2022	D2D2_12 May 22 0820	1.9	680	5.76	65	88.5	<1	12	28.5	12	39.8	<1	<0.1	25.5	<1	9.48	58	248	20	76	<10	<10	<0.01

					Physical Parameters	Metals																														
					Total Dissolved Solids (TDS) (Filtered)	Aluminium	Aluminium (Filtered)	Antimony	Arsenic	Arsenic (Filtered)	Barium	Beryllium	Boron	Boron (Filtered)	Cadmium	Chromium	Chromium (Hexavalent)	Chromium (Trivalent)	Cobalt	Copper	Copper (Filtered)	Iron	Iron (Filtered)	Lead	Manganese	Manganese (Filtered)	Mercury	Molybdenum	Nickel	Nickel (Filtered)	Selenium	Silver	Strontium	Vanadium	Vanadium (Filtered)	Zinc	Zinc (Filtered)
					mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L
ANZECC (2000) or Local Guidelines - Groundwater					2000				24	24	700	100	370	370	2[#2]	5[#2]				5[#2]	5[#2]	664[#3]	664[#3]	5[#2]	5704[#3]	5704[#3]	0.06	10	550.9[#4]	550.9[#4]	5	0.05				908[#4]	908[#4]
Purpose	**LocCode**	**Value**	**Sampled_Date**	**SampleCode**																																
		Min.			394	20	<10	<1	4	2	619	<1	70	<50	<0.1	<1	<10	<10	1	<1	<1	340	<50	<1	125	118	<0.04	3	4	4	<0.2	<1	0.402	<10	<10	21	17
		Max.			440	3160	<10	2	33	9	763	1	90	70	<0.1	44	<10	<10	7	22	<1	12,000	610	22	288	155	0.1	9	33	6	<10	<1	0.439	20	<10	119	26
		Average			406	830	5	0.9	12	4.5	680	1	78	56	0.05	11	5	5	2.8	6	0.5	3364	289	5.9	192	134	0.04	5	12	5	1.6	0.5	0.42	9	5	52	22
Background and Adjacent to MPAR	D3		2/09/2021	D3D3_02 Sep 21 0955	222	40	10	2	<1	<1	44	<1	60	130	<0.1	<1	<10	<10	<1	<1	<1	2400	960	<1	101	99	<0.04	<1	5	4	<0.2	<1	0.111	<10	<10	9	8
Background and Adjacent to MPAR	D3		25/11/2021	D3D3_25 Nov 21 1410	222	140	20	<1	<1	<1	50	<1	120	120	0.1	9	<10	<10	<1	<1	<1	3060	620	<1	128	97	<0.04	<1	10	6	<0.2	<1	0.11	<10	<10	8	8
Background and Adjacent to MPAR	D3		10/03/2022	D3D3_10 Mar 22 1320	134	110	20	<1	<1	<1	52	<1	110	120	<0.1	<1	<10	<10	<1	3	<1	5700	110	<1	55	44	<0.04	<1	11	9	<0.2	<1	0.08	<10	<10	8	7
Background and Adjacent to MPAR	D3		8/06/2022	D3D3_08 Jun 22 1015	254	60	<10	<1	<1	<1	62	<1	100	90	<0.1	<1	<10	<10	<1	<1	<1	2710	1550	<1	168	161	<0.04	<1	16	14	<10	<1	0.152	<10	<10	15	14
		Min.			134	40	<10	<1	<1	<1	44	<1	60	90	<0.1	<1	<10	<10	<1	<1	<1	2400	110	<1	55	44	<0.04	<1	5	4	<0.2	<1	0.08	<10	<10	8	7
		Max.			254	140	20	2	<1	<1	62	<1	120	130	0.1	9	<10	<10	<1	3	<1	5700	1550	<1	168	161	<0.04	<1	16	14	<10	<1	0.152	<10	<10	15	14
		Average			208	88	14	1	0.5	0.5	52	0.5	98	115	0.1	3	5	5	0.5	1	0.5	3468	810	0.5	113	100	0.02	0.5	11	8	1	0.5	0.11	5	5	10	9.3
Background and Adjacent to MPAR	D4		14/07/2021	D4D4_14 Jul 21 0000	592	11,100	10,700	<1	36	35	15	2	<50	<50	0.4	2	<10	<10	4	2	<1	71,500	68,000	19	790	766	<0.04	<1	14	13	0.3	<1	0.08	<10	<10	148	142
Background and Adjacent to MPAR	D4		21/10/2021	D4D4_21 Oct 21 0930	529	8880	8900	<1	30	30	12	2	<50	<50	0.2	1	<10	<10	3	<1	<1	60,200	60,500	19	684	649	<0.04	<1	12	11	0.2	<1	0.072	<10	<10	108	114
Background and Adjacent to MPAR	D4		19/01/2022	D4D4_19 Jan 22 1010	618	9870	9210	<1	36	34	13	2	<50	<50	0.3	1	<10	<10	4	<1	<1	66,000	60,800	20	729	681	<0.04	<1	12	12	<0.2	<1	0.078	<10	<10	129	122
Background and Adjacent to MPAR	D4		12/05/2022	D4D4_12 May 22 1115	587	8960	8540	<1	29	26	13	2	<50	<50	0.4	1	<10	<10	3	1	<1	63,200	62,500	16	718	672	<0.04	<1	12	12	<10	<1	0.072	<10	<10	126	113
		Min.			529	8880	8540	<1	29	26	12	2	<50	<50	0.2	1	<10	<10	3	<1	<1	60,200	60,500	16	684	649	<0.04	<1	12	11	<0.2	<1	0.072	<10	<10	108	113
		Max.			618	11100	10700	<1	36	35	15	2	<50	<50	0.4	2	<10	<10	4	2	<1	71,500	68,000	20	790	766	<0.04	<1	14	13	<10	<1	0.08	<10	<10	148	142
		Average			582	9703	9338	0.5	33	31	13	2	25	25	0.3	1	5	5	3.5	1	0.5	65,225	62,950	19	730	692	0.02	0.5	13	12	1	0.5	0.076	5	5	128	123
Background and Adjacent to MPAR	D5		14/07/2021	D5D5_14 Jul 21 0000	880	100	60	<1	1	1	18	2	100	100	<0.1	<1	<10	<10	20	<1	<1	48,200	44,400	<1	7380	7420	<0.04	<1	43	44	0.4	<1	0.421	<10	<10	26	28
Background and Adjacent to MPAR	D5		21/10/2021	D5D5_21 Oct 21 0855	810	90	70	<1	1	1	17	2	70	80	<0.1	<1	<100	<100	20	<1	<1	45,800	46,400	<1	7610	7610	<0.04	<1	43	42	0.4	<1	0.409	<10	<10	20	25
Background and Adjacent to MPAR	D5		20/01/2022	D5D5_20 Jan 22 0945	964	120	40	<1	<1	<1	18	1	100	90	<0.1	<1	<10	<10	21	<1	<1	34,000	19,100	<1	7790	7590	<0.04	<1	45	43	0.3	<1	0.415	<10	<10	21	15
Background and Adjacent to MPAR	D5		12/05/2022	D5D5_12 May 22 1055	904	140	80	<1	<1	<1	17	2	60	70	<0.1	<1	<10	<10	22	3	<1	25,900	17,600	<1	6920	6780	<0.04	<1	47	47	<10	<1	0.37	<10	<10	34	29
		Min.			810	90	40	<1	<1	<1	17	1	60	70	<0.1	<1	<10	<10	20	<1	<1	25,900	17,600	<1	6920	6780	<0.04	<1	43	42	0.3	<1	0.37	<10	<10	20	15
		Max.			964	140	80	<1	1	1	18	2	100	100	<0.1	<1	<100	<100	22	3	<1	48,200	46,400	<1	7790	7610	<0.04	<1	47	47	<10	<1	0.421	<10	<10	34	29
		Average			890	113	63	0.5	1	1	18	1.8	83	85	0.05	0.5	16	16	21	1	0.5	38,475	31,875	0.5	7425	7350	0.02	0.5	45	44	1.5	0.5	0.4	5	5	25	24
Background and Adjacent to MPAR	D106		11/08/2021	D106D106_11 Aug 21 0000	9610	50	<10	<1	1	1	22	<1	1870	1760	0.1	<1	<100	<100	322	<1	<1	26,500	25,900	<1	16,700	15,400	<0.04	<1	1890	1760	0.2	<1	3.17	<10	<10	185	171
Background and Adjacent to MPAR	D106		27/10/2021	D106D106_27 Oct 21 1345	11600	660	<10	<1	3	<1	26	<1	2170	1990	0.1	<1	<100	<100	387	2	<1	35,800	23,600	2	20,400	18,800	<0.04	<1	2260	2110	0.2	<1	3.43	<10	<10	224	188
Background and Adjacent to MPAR	D106		9/02/2022	D106D106_09 Feb 22 1005	11800	360	<10	<1	2	1	26	<1	2240	1990	0.1	2	<10	<10	378	1	<1	31,700	33,400	2	20,900	20,700	0.06	<1	2240	2020	0.2	<1	3.67	<10	<10	214	191
Background and Adjacent to MPAR	D106		11/05/2022	D106D106_11 May 22 0830	11600	80	<10	<1	2	<1	23	<1	1890	2050	0.1	4	<10	<10	344	<1	<1	26,500	19,600	1	18,100	17,300	0.12	1	2090	2010	<10	<1	3.14	<10	<10	206	179
		Min.			9610	50	<10	<1	1	<1	22	<1	1870	1760	0.1	<1	<10	<10	322	<1	<1	26,500	19,600	<1	16,700	15,400	<0.04	<1	1890	1760	0.2	<1	3.14	<10	<10	185	171
		Max.			11800	660	<10	<1	3	1	26	<1	2240	2050	0.1	4	<100	<100	387	2	<1	35,800	33,400	2	20,900	20,700	0.12	1	2260	2110	<10	<1	3.67	<10	<10	224	191
		Average			11153	288	5	0.5	2	1	24	0.5	2043	1948	0.1	2	28	28	358	1	0.5	30,125	25,625	1.4	19,025	18,050	0.06	1	2120	1975	1.4	0.5	3.4	5	5	207	182
Background and Adjacent to MPAR	D107		11/08/2021	D107D107_11 Aug 21 0000	11600	30	<10	<1	7	4	22	<1	4540	4290	0.8	5	<100	<100	394	<1	<1	32,200	29,000	8	16,300	14,700	<0.04	<1	2150	1930	0.4	<1	4.46	<10	<10	362	322
Background and Adjacent to MPAR	D107		27/10/2021	D107D107_27 Oct 21 1320	12100	<10	<10	<1	6	3	19	<1	4680	4240	0.8	<1	<10	<10	358	<1	<1	27,400	21,400	8	14,900	14,000	<0.04	<1	2060	1970	0.2	<1	4.17	<10	<10	332	307
Background and Adjacent to MPAR	D107		22/12/2021	D107D107_22 Dec 21 0835	14600	10	<10	1	8	11	20	<1	5450	5270	1.4	<1	<10	<10	411	<1	2	30,800	34,700	19	16,800	15,700	<0.04	<1	2300	2340	0.3	2	4.9	<10	<10	452	437
Background and Adjacent to MPAR	D107		9/02/2022	D107D107_09 Feb 22 0925	14500	50	<10	<1	9	8	23	<1	5620	5360	1.5	<1	<10	<10	411	1	<1	32,200	35,600	17	16,800	16,500	0.28	<1	2330	2120	0.4	<1	5.2	<10	<10	464	424
Background and Adjacent to MPAR	D107		10/05/2022	D107D107_10 May 22 0750	13500	<10	<10	<1	6	3	17	<1	4740	5040	1.5	<1	<10	<10	346	5	<1	19,400	20,900	12	13,900	13,700	<0.04	<1	2000	1970	<10	<1	4.17	<10	<10	390	358
		Min.			11600	<10	<10	<1	6	3	17	<1	4540	4240	0.8	<1	<10	<10	346	<1	<1	19,400	20,900	8	13,900	13,700	<0.04	<1	2000	1970	0.2	<1	4.17	<10	<10	332	307
		Max.			14600	50	<10	1	9	11	23	<1	5620	5360	1.5	<1	<10	<10	411	5	2	32,200	35,600	19	16,800	16,500	0.28	<1	2330	2340	<10	2	5.2	<10	<10	464	437
		Average			13675	18	5	1	7	6	20	0.5	5123	4978	1.3	0.5	5	5	382	1.8	1	27,450	28,150	14	15,600	14,975	0.085	0.5	2173	2100	1.5	0.88	4.6	5	5	410	382
Adjacent to MPAR and Downgradient	D1		1/09/2021	D1D1_01 Sep 21 0955	8190	80	<10	<1	6	2	28	<1	2660	2590	<0.1	<1	<10	<10	346	<1	<1	48,500	41,400	<1	19,900	19,600	<0.04	1	1760	1700	0.2	<1	2.61	<10	<10	145	140
Adjacent to MPAR and Downgradient	D1		25/11/2021	D1D1_25 Nov 21 1340	8520	150	<10	<1	10	4	26	<1	2710	2390	<0.1	5	<10	<10	350	<1	<1	50,500	36,000	<1	21,000	20,600	<0.04	2	1920	1710	0.2	<1	2.68	<10	<10	154	132
Adjacent to MPAR and Downgradient	D1		10/03/2022	D1D1_10 Mar 22 1245	8190	360	<10	<1	8	3	32	<1	3590	3130	<0.1	<1	<10	<10	332	<1	<1	35,100	24,700	12	19,600	19,100	<0.04	<1	1790	1640	0.4	<1	2.64	<10	<10	152	108
Adjacent to MPAR and Downgradient	D1		8/06/2022	D1D1_08 Jun 22 0935	7750	70	10	<1	8	5	23	<1	3170	2990	<0.1	<1	<10	<10	326	1	<1	40,400	34,900	<1	18,300	17,300	<0.04	<1	1710	1640	<10	<1	2.53	<10	<10	167	151
		Min.			7750	70	<10	<1	6	2	23	<1	2660	2390	<0.1	<1	<10	<10	326	<1	<1	35,100	24,700	<1	18,300	17,300	<0.04	<1	1710	1640	0.2	<1	2.53	<10	<10	145	108
		Max.			8520	360	10	<1	10	5	32	<1	3590	3130	<0.1	5	<10	<10	350	1	<1	50,500	41,400	12	21,000	20,600	<0.04	2	1920	1710	<10	<1	2.68	<10	<10	167	151
		Average			8163	165	6	0.5	8	4	27	0.5	3033	2775	0.05	2	5	5	339	1	0.5	43,625	34,250	3	19,700	19,150	0.02	1	1795	1673	1.5	0.5	2.6	5	5	155	133
Adjacent to MPAR and Downgradient	D2		15/07/2021	D2D2_15 Jul 21 0000	878	650	420	<1	<1	<1	34	<1	280	280	<0.1	<1	<10	<10	58	3	1	5790	3880	2	1860	1860	<0.04	<1	97	96	0.3	<1	0.288	<10	<10	60	57
Adjacent to MPAR and Downgradient	D2		21/10/2021	D2D2_21 Oct 21 0755	556	1080	680	<1	1	<1	22	<1	150	140	<0.1	<1	<10	<10	40	4	3	5420	2880	5	1170	1050	<0.04	<1	65	60	0.5	<1	0.175	<10	<10	294	279
Adjacent to MPAR and Downgradient	D2		20/01/2022	D2D2_20 Jan 22 1200	396	3920	1040	<1	2	2	24	<1	140	140	<0.1	3	<10	<10	21	6	4	4240	3290	5	588	544	<0.04	<1	36	33	0.4	<1	0.11	<10	<10	78	77
Adjacent to MPAR and Downgradient	D2		12/05/2022	D2D2_12 May 22 0820	454	1020	660	<1	1	<1	28	<1	130	140	<0.1	1	<10	<10	31	2	2	5260	3820	3	738	694	<0.04	<1	44	42	<10	<1	0.154	<10	<10	90	82

					Field Parameters					Major Anions and Cations												Nutrients				
					Dissolved Oxygen (Field) (Filtered)	Electrical Conductivity (Field)	pH (Field)	Purge Volume	Redox (Field)	Carbonate (as CaCO3)	Bicarbonate Alkalinity (as CaCO3)	Calcium	Carbonate Alkalinity (as CaCO3)	Chloride	Hydroxide Alkalinity (as CaCO3)	Fluoride	Magnesium	Phenolphthalein Alkalinity (CaCO3)	Potassium	Sodium	Sulfate (as SO4)	Ammonia	Sulfur	Nitrate	Nitrite (as NO2-)	Nitrite + Nitrate (as N)
					mg/L	uS/cm	pH units	L	mV	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	µg/L	mg/L	µg/L	µg/L	mg/L
ANZECC (2000) or Local Guidelines - Groundwater						2600#1	6.5-8							350		1.5					1000					
Purpose	LocCode	Value	Sampled_Date	SampleCode																						
		Min.			1.7	473	5.66	37	88.5	<1	10	22.1	10	25.1	<1	0.095	16.7	<1	8.74	45.8	157	20	50	<10	<10	<0.01
		Max.			2.6	1240	5.8	71	88.5	<1	34	63.2	34	76.6	<1	0.123	50.1	<1	14.3	114	530	40	162	<10	<10	<0.01
		Average			2.2	793	-	59	-	0.5	19	38	19	47	-	0.096	31	0.5	11	73	311	28	99	5	5	0.005
Adjacent to MPAR and Downgradient	D8		2/09/2021	D8D8_02 Sep 21 0755	7.4	297	5.46	50	-	<1	11	23.5	11	7.45	-	<0.05	16.8	<1	2.64	10.6	115	<10	38	30	<10	0.03
Adjacent to MPAR and Downgradient	D8		25/11/2021	D8D8_25 Nov 21 0920	5	295	5.42	55	-	<1	18	20.7	18	6.49	-	<0.05	14.8	<1	2.35	7.69	105	<10	32	20	<10	0.02
Adjacent to MPAR and Downgradient	D8		10/03/2022	D8D8_10 Mar 22 0805	5.6	174	5.6	70	-	<1	14	12	14	5.56	-	<0.02	8.04	<1	2.69	5.4	54.6	<10	17	<10	<10	<0.01
Adjacent to MPAR and Downgradient	D8		9/06/2022	D8D8_09 Jun 22 0815	7.2	245	5.54	51	171.6	<1	17	18.5	17	8.56	<1	<0.05	13.5	<1	2.3	8.94	90.6	20	28	10	<10	0.01
		Min.			5	174	5.42	50	171.6	<1	11	12	11	5.56	<1	<0.02	8.04	<1	2.3	5.4	54.6	<10	17	<10	<10	<0.01
		Max.			7.4	297	5.6	70	171.6	<1	18	23.5	18	8.56	<1	<0.05	16.8	<1	2.69	10.6	115	20	38	30	<10	0.03
		Average			6.3	253	-	57	-	0.5	15	19	15	7	-	0.02	13	0.5	2.5	8.2	91	8.8	29	16	5	0.02
Adjacent to MPAR and Downgradient	D9		1/09/2021	D9D9_01 Sep 21 0915	3.2	9680	6.07	17	-	<1	161	641	161	1190	-	<1	522	<1	89.5	1320	4670	450	1490	<10	<10	<0.01
Adjacent to MPAR and Downgradient	D9		24/11/2021	D9D9_24 Nov 21 0955	4.1	9580	6.15	20	-	<1	87	608	87	1070	-	<1	460	<1	64.9	1060	4260	420	1270	<10	<10	<0.01
Adjacent to MPAR and Downgradient	D9		10/03/2022	D9D9_10 Mar 22 0820	2.3	8430	6.07	18	-	<1	97	551	97	992	-	<1	437	<1	62.2	1090	3790	350	1300	<10	<10	<0.01
Adjacent to MPAR and Downgradient	D9		9/06/2022	D9D9_09 Jun 22 0840	3	9090	5.95	10	46.6	<1	130	573	130	1090	<1	<0.5	485	<1	75.6	1230	4180	470	1420	<100	<100	<0.1
		Min.			2.3	8430	5.95	10	46.6	<1	87	551	87	992	<1	<0.5	437	<1	62.2	1060	3790	350	1270	<10	<10	<0.01
		Max.			4.1	9680	6.15	20	46.6	<1	161	641	161	1190	<1	<1	522	<1	89.5	1320	4670	470	1490	<100	<100	<0.1
		Average			3.2	9195	-	16	-	0.5	119	593	119	1086	-	0.44	476	0.5	73	1175	4225	423	1370	16	16	0.016
Adjacent to MPAR and Downgradient	D102		12/08/2021	D102D102_12 Aug 21 0000	2.2	10290	6.03	7	-	<1	182	566	182	1570	-	<1	546	<1	99.3	1550	5430	310	1720	<100	<100	<0.1
Adjacent to MPAR and Downgradient	D102		28/10/2021	D102D102_28 Oct 21 0850	1.7	9840	6.04	15	-	<1	102	530	102	1350	-	<1	508	<1	96	1300	4650	280	1430	<100	<100	<0.1
Adjacent to MPAR and Downgradient	D102		10/02/2022	D102D102_10 Feb 22 0800	1.8	9790	6.08	12.5	-	<1	58	554	58	1300	-	<1	586	<1	95.1	1380	4580	310	1470	<100	<100	<0.1
Adjacent to MPAR and Downgradient	D102		12/05/2022	D102D102_12 May 22 0800	1.9	9480	5.94	15	52.4	<1	90	502	90	1220	<1	<0.5	481	<1	74.5	1200	4290	180	1310	<100	<100	<0.1
		Min.			1.7	9480	5.94	7	52.4	<1	58	502	58	1220	<1	<0.5	481	<1	74.5	1200	4290	180	1310	<100	<100	<0.1
		Max.			2.2	10290	6.08	15	52.4	<1	182	566	182	1570	<1	<1	586	<1	99.3	1550	5430	310	1720	<100	<100	<0.1
		Average			1.9	9850	-	12	-	0.5	108	538	108	1360	-	0.4	530	0.5	91	1358	4738	270	1483	50	50	0.05
Adjacent to MPAR and Downgradient	D103		11/08/2021	D103D103_11 Aug 21 0000	2.2	4100	6.06	38	-	<1	195	205	195	270	-	<0.5	194	<1	35.7	581	2030	180	665	<10	<10	<0.01
Adjacent to MPAR and Downgradient	D103		27/10/2021	D103D103_27 Oct 21 1055	1.5	4110	6.11	38	-	<1	171	184	171	270	-	<0.5	176	<1	33.6	489	2030	180	577	<10	<10	<0.01
Adjacent to MPAR and Downgradient	D103		10/02/2022	D103D103_10 Feb 22 1355	2.5	4070	6.14	40	-	<1	177	195	177	248	-	<0.5	193	<1	40.3	531	1890	190	653	<10	<10	<0.01
Adjacent to MPAR and Downgradient	D103		11/05/2022	D103D103_11 May 22 1005	2.5	3860	6.11	40	55.3	<1	171	162	171	229	<1	<0.5	167	<1	30.9	509	1760	170	594	<10	<10	<0.01
		Min.			1.5	3860	6.06	38	55.3	<1	171	162	171	229	<1	<0.5	167	<1	30.9	489	1760	170	577	<10	<10	<0.01
		Max.			2.5	4110	6.14	40	55.3	<1	195	205	195	270	<1	<0.5	194	<1	40.3	581	2030	190	665	<10	<10	<0.01
		Average			2.2	4035	-	39	-	0.5	179	187	179	254	-	0.25	183	0.5	35	528	1928	180	622	5	5	0.005
Adjacent to MPAR and Downgradient	D104		12/08/2021	D104D104_12 Aug 21 0000	3.5	1320	5.75	11	-	<1	58	102	58	81.9	-	<0.2	65.5	<1	10.2	84.3	538	80	176	<10	<10	<0.01
Adjacent to MPAR and Downgradient	D104		28/10/2021	D104D104_28 Oct 21 0900	3.8	1350	5.64	14	-	<1	38	96.9	38	92.1	-	<0.2	62.6	<1	10.5	85.5	600	80	164	20	<10	0.02
Adjacent to MPAR and Downgradient	D104		10/02/2022	D104D104_10 Feb 22 0815	1.7	1210	5.78	9	-	<1	41	88.9	41	78.6	-	<0.2	60.9	<1	11.5	88.2	471	90	158	10	<10	0.01
Adjacent to MPAR and Downgradient	D104		12/05/2022	D104D104_12 May 22 0810	2.4	1140	5.74	5	84.5	<1	44	74.8	44	78.5	<1	<0.2	53.3	<1	8.68	76.2	426	80	139	20	<10	0.02
		Min.			1.7	1140	5.64	5	84.5	<1	38	74.8	38	78.5	<1	<0.2	53.3	<1	8.68	76.2	426	80	139	<10	<10	<0.01
		Max.			3.8	1350	5.78	14	84.5	<1	58	102	58	92.1	<1	<0.2	65.5	<1	11.5	88.2	600	90	176	20	<10	0.02
		Average			2.9	1255	-	10	-	0.5	45	91	45	83	-	0.1	61	0.5	10	84	509	83	159	14	5	0.01
Adjacent to MPAR and Downgradient	D105		11/08/2021	D105D105_11 Aug 21 0000	1.4	3510	5.98	31	-	<1	174	221	174	252	-	<0.5	209	<1	26.4	344	1640	130	558	<10	<10	<0.01
Adjacent to MPAR and Downgradient	D105		27/10/2021	D105D105_27 Oct 21 1425	1.6	3440	5.98	32	-	<1	133	199	133	262	-	<0.5	185	<1	25.8	305	1660	150	482	10	<10	0.01
Adjacent to MPAR and Downgradient	D105		9/02/2022	D105D105_09 Feb 22 1050	1.4	3390	6.06	34	-	<1	119	200	119	244	-	<0.5	194	<1	29.5	325	1550	100	520	<10	<10	<0.01
Adjacent to MPAR and Downgradient	D105		11/05/2022	D105D105_11 May 22 0905	1.2	3350	5.94	34	57.2	<1	114	181	114	248	<1	<0.5	174	<1	22.8	326	1530	110	491	<10	<10	<0.01
		Min.			1.2	3350	5.94	31	57.2	<1	114	181	114	244	<1	<0.5	174	<1	22.8	305	1530	100	482	<10	<10	<0.01
		Max.			1.6	3510	6.06	34	57.2	<1	174	221	174	262	<1	<0.5	209	<1	29.5	344	1660	150	558	10	<10	0.01
		Average			1.4	3423	-	33	-	0.5	135	200	135	252	-	0.25	191	0.5	26	325	1595	123	513	6	5	0.01
Brine waste pond leak detection bores	MPGM5-D5		15/07/2021	MPGM5-D5MPGM5-D5_15 Jul 21 0000	1.8	27130	6.12	18	-	<1	722	338	722	2720	-	0.808	1500	<1	194	7630	18100	3240	5820	20	<10	0.02
Brine waste pond leak detection bores	MPGM5-D5		22/09/2021	MPGM5-D5MPGM5-D5_22 Sep 21 0810	-	29200	6.2	-	-	-	-	-	-	2618	-	-	-	-	-	-	20680	-	-	-	-	-
Brine waste pond leak detection bores	MPGM5-D5		29/09/2021	MPGM5-D5MPGM5-D5_29 Sep 21 0855	-	31000	6.31	30	-	-	-	-	-	2819	-	-	-	-	-	-	22520	-	-	-	-	-
Brine waste pond leak detection bores	MPGM5-D5		6/10/2021	MPGM5-D5MPGM5-D5_06 Oct 21 0810	-	16140	6.25	32	-	-	-	-	-	1611	-	-	-	-	-	-	8430	-	-	-	-	-
Brine waste pond leak detection bores	MPGM5-D5		13/10/2021	MPGM5-D5MPGM5-D5_13 Oct 21 0835	-	2320	6.17	27	-	-	-	-	-	181.2	-	-	-	-	-	-	719	-	-	-	-	-
Brine waste pond leak detection bores	MPGM5-D5		20/10/2021	MPGM5-D5MPGM5-D5_20 Oct 21 0810	3.4	26250	6.28	27	-	<1	809	266	809	2640	-	<2.5	1040	<1	227	6060	16900	2170	6220	10	40	0.05

					Physical Parameters	Metals																															
					Total Dissolved Solids (TDS) (Filtered)	Aluminium	Aluminium (Filtered)	Antimony	Arsenic	Arsenic (Filtered)	Barium	Beryllium	Boron	Boron (Filtered)	Cadmium	Chromium	Chromium (Hexavalent)	Chromium (Trivalent)	Cobalt	Copper	Copper (Filtered)	Iron	Iron (Filtered)	Lead	Manganese	Manganese (Filtered)	Mercury	Molybdenum	Nickel	Nickel (Filtered)	Selenium	Silver	Strontium	Vanadium	Vanadium (Filtered)	Zinc	Zinc (Filtered)
					mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L
ANZECC (2000) or Local Guidelines - Groundwater					2000				24	24	700	100	370	370	2#2	5#2				5#2	5#2	664#3	664#3	5#2	5704#3	5704#3	0.06	10	550.9#4	550.9#4	5	0.05				908#4	908#4
Purpose	**LocCode**	**Value**	**Sampled_Date**	**SampleCode**																																	
		Min.			396	650	420	<1	<1	<1	22	<1	130	140	<0.1	<1	<10	<10	21	2	1	4240	2880	2	588	544	<0.04	<1	36	33	0.3	<1	0.11	<10	<10	60	57
		Max.			878	3920	1040	<1	2	2	34	<1	280	280	<0.1	3	<10	<10	58	6	4	5790	3880	5	1860	1860	<0.04	<1	97	96	<10	<1	0.288	<10	<10	294	279
		Average			571	1668	700	0.5	1	1	27	0.5	175	175	0.05	1	5	5	38	4	2.5	5178	3468	4	1089	1037	0.02	0.5	61	58	1.6	0.5	0.18	5	5	131	124
Adjacent to MPAR and Downgradient	D8		2/09/2021	D8D8_02 Sep 21 0755	228	170	40	<1	<1	<1	31	<1	<50	<50	<0.1	<1	<10	<10	<1	2	2	188	60	<1	78	72	<0.04	<1	34	29	<0.2	<1	0.114	<10	<10	43	36
Adjacent to MPAR and Downgradient	D8		25/11/2021	D8D8_25 Nov 21 0920	181	440	90	<1	2	<1	30	1	<50	<50	0.1	<1	<10	<10	1	4	2	289	60	<1	114	78	<0.04	<1	36	31	<0.2	<1	0.1	<10	<10	48	44
Adjacent to MPAR and Downgradient	D8		10/03/2022	D8D8_10 Mar 22 0805	139	820	510	<1	<1	<1	35	<1	<50	<50	<0.1	<1	<10	<10	<1	4	2	496	210	3	86	69	<0.04	<1	29	24	<0.2	<1	0.063	<10	<10	30	23
Adjacent to MPAR and Downgradient	D8		9/06/2022	D8D8_09 Jun 22 0815	178	190	20	<1	<1	<1	30	<1	<50	<50	<0.1	<1	<10	<10	2	2	2	250	<50	<1	161	140	<0.04	<1	36	36	<10	<1	0.09	<10	<10	41	51
		Min.			139	170	20	<1	<1	<1	30	<1	<50	<50	<0.1	<1	<10	<10	<1	2	2	188	<50	<1	78	69	<0.04	<1	29	24	<0.2	<1	0.063	<10	<10	30	23
		Max.			228	820	510	<1	2	<1	35	1	<50	<50	0.1	<1	<10	<10	2	4	2	496	210	3	161	140	<0.04	<1	36	36	<10	<1	0.114	<10	<10	48	51
		Average			182	405	165	0.5	1	0.5	32	1	25	25	0.1	0.5	5	5	1	3	2	306	89	1	110	90	0.02	0.5	34	30	1.3	0.5	0.092	5	5	41	39
Adjacent to MPAR and Downgradient	D9		1/09/2021	D9D9_01 Sep 21 0915	8970	70	<10	<1	3	<1	27	<1	1700	1760	<0.1	2	<100	<100	272	<1	1	47900	32500	<1	16,200	16,000	<0.04	1	1600	1590	0.2	<1	3.04	<10	<10	76	63
Adjacent to MPAR and Downgradient	D9		24/11/2021	D9D9_24 Nov 21 0955	7980	310	<10	<1	11	2	32	<1	1700	1430	0.2	1	<10	<10	242	2	<1	55900	33600	1	17,000	16,200	0.54	5	1520	1310	0.4	<1	2.94	<10	<10	101	50
Adjacent to MPAR and Downgradient	D9		10/03/2022	D9D9_10 Mar 22 0820	7490	90	<10	1	2	1	34	<1	2000	1320	<0.1	<1	<10	<10	208	<1	<1	37900	30000	1	15,200	14,900	0.04	<1	1350	1310	<0.2	<1	2.84	<10	<10	67	45
Adjacent to MPAR and Downgradient	D9		9/06/2022	D9D9_09 Jun 22 0840	7890	60	<10	<1	<1	<1	32	<1	1890	1790	<0.1	2	<10	<10	229	<1	<1	46200	26700	2	15,800	14,800	<0.04	<1	1450	1430	<10	<1	2.98	<10	<10	76	58
		Min.			7490	60	<10	<1	<1	<1	27	<1	1700	1320	<0.1	<1	<10	<10	208	<1	<1	37900	26700	<1	15,200	14,800	<0.04	<1	1350	1310	<0.2	<1	2.84	<10	<10	67	45
		Max.			8970	310	<10	1	11	2	34	<1	2000	1790	0.2	2	<100	<100	272	2	1	55900	33600	2	17,000	16,200	0.54	5	1600	1590	<10	<1	3.04	<10	<10	101	63
		Average			8083	133	5	1	4	1	31	0.5	1823	1575	0.1	1	16	16	238	1	1	46975	30700	1	16,050	15,475	0.16	2	1480	1410	1.4	0.5	3	5	5	80	54
Adjacent to MPAR and Downgradient	D102		12/08/2021	D102D102_12 Aug 21 0000	9100	40	<10	<1	1	1	27	<1	1820	1770	<0.1	2	<100	<100	321	<1	<1	57800	56000	<1	17,700	16,800	<0.04	<1	1940	1870	<0.2	<1	3.64	<10	<10	88	77
Adjacent to MPAR and Downgradient	D102		28/10/2021	D102D102_28 Oct 21 0850	9070	40	<10	<1	2	<1	23	<1	1790	1800	<0.1	1	<10	<10	293	2	<1	49800	33200	<1	16,700	16,600	<0.04	<1	1850	1840	<0.2	<1	3.34	<10	<10	75	54
Adjacent to MPAR and Downgradient	D102		10/02/2022	D102D102_10 Feb 22 0800	8970	80	<10	<1	3	2	26	1	1770	1530	0.2	6	<10	<10	289	2	<1	60300	65100	<1	17,500	17,300	0.71	<1	1800	1640	<0.2	<1	3.5	<10	<10	87	78
Adjacent to MPAR and Downgradient	D102		12/05/2022	D102D102_12 May 22 0800	8360	40	<10	<1	1	<1	22	<1	1510	1500	<0.1	<1	<10	<10	248	<1	<1	51400	21100	<1	14,500	14,300	<0.04	<1	1540	1510	<10	<1	2.97	<10	<10	73	43
		Min.			8360	40	<10	<1	1	<1	22	<1	1510	1500	<0.1	<1	<10	<10	248	<1	<1	49800	21100	<1	14,500	14,300	<0.04	<1	1540	1510	<0.2	<1	2.97	<10	<10	73	43
		Max.			9100	80	<10	<1	3	2	27	1	1820	1800	0.2	6	<100	<100	321	2	<1	60300	65100	<1	17,700	17,300	0.71	<1	1940	1870	<10	<1	3.64	<10	<10	88	78
		Average			8875	50	5	0.5	2	1	25	1	1723	1650	0.1	2.4	16	16	288	1	0.5	54825	43850	0.5	16,600	16,250	0.19	0.5	1783	1715	1	0.5	3.4	5	5	81	63
Adjacent to MPAR and Downgradient	D103		11/08/2021	D103D103_11 Aug 21 0000	3410	510	<10	<1	7	5	24	<1	1700	1670	<0.1	10	<100	<100	224	1	<1	18600	16600	<1	10,500	9670	<0.04	<1	786	725	<0.2	<1	0.964	<10	<10	164	143
Adjacent to MPAR and Downgradient	D103		27/10/2021	D103D103_27 Oct 21 1055	3370	400	10	<1	5	3	22	<1	1690	1700	<0.1	2	<10	<10	205	<1	<1	16000	14600	<1	9630	9780	<0.04	<1	748	737	<0.2	<1	0.869	<10	<10	148	140
Adjacent to MPAR and Downgradient	D103		10/02/2022	D103D103_10 Feb 22 1355	3320	300	<10	<1	7	5	21	<1	1770	1440	<0.1	4	<10	<10	201	1	<1	16500	18000	<1	10,100	9990	0.14	<1	730	672	<0.2	<1	0.902	<10	<10	146	134
Adjacent to MPAR and Downgradient	D103		11/05/2022	D103D103_11 May 22 1005	2980	150	40	<1	6	<1	19	<1	1600	1550	<0.1	<1	<10	<10	171	<1	<1	13600	11000	<1	8330	7940	<0.04	<1	626	599	<10	<1	0.762	<10	<10	120	100
		Min.			2980	150	<10	<1	5	<1	19	<1	1600	1440	<0.1	<1	<10	<10	171	<1	<1	13600	11000	<1	8330	7940	<0.04	<1	626	599	<0.2	<1	0.762	<10	<10	120	100
		Max.			3410	510	40	<1	7	5	24	<1	1770	1700	<0.1	10	<100	<100	224	1	<1	18600	18000	<1	10,500	9990	0.14	<1	786	737	<10	<1	0.964	<10	<10	164	143
		Average			3270	340	15	0.5	6	3	22	0.5	1690	1590	0.05	4.1	16	16	200	1	0.5	16175	15050	0.5	9640	9345	0.05	0.5	723	683	1	0.5	0.87	5	5	145	129
Adjacent to MPAR and Downgradient	D104		12/08/2021	D104D104_12 Aug 21 0000	880	300	<10	<1	2	1	22	<1	70	60	<0.1	<1	<100	<100	10	2	<1	12600	11800	<1	2670	2570	<0.04	<1	42	39	<0.2	<1	0.425	<10	<10	62	59
Adjacent to MPAR and Downgradient	D104		28/10/2021	D104D104_28 Oct 21 0900	1000	150	<10	<1	<1	<1	20	<1	150	<50	<0.1	<1	<10	<10	9	1	<1	8060	6500	<1	2620	2520	<0.04	<1	46	42	<0.2	<1	0.406	<10	<10	43	40
Adjacent to MPAR and Downgradient	D104		10/02/2022	D104D104_10 Feb 22 0815	908	190	<10	<1	1	<1	24	<1	110	<50	<0.1	3	<10	<10	14	2	<1	10400	10100	<1	2590	2500	0.23	<1	53	48	<0.2	<1	0.37	<10	<10	41	36
Adjacent to MPAR and Downgradient	D104		12/05/2022	D104D104_12 May 22 0810	765	80	<10	<1	<1	<1	19	<1	100	100	<0.1	<1	<10	<10	8	13	<1	6510	6200	<1	2090	2050	<0.04	<1	39	38	<10	<1	0.308	<10	<10	55	36
		Min.			765	80	<10	<1	<1	<1	19	<1	70	<50	<0.1	<1	<10	<10	8	1	<1	6510	6200	<1	2090	2050	<0.04	<1	39	38	<0.2	<1	0.308	<10	<10	41	36
		Max.			1000	300	<10	<1	2	1	24	<1	150	100	<0.1	3	<100	<100	14	13	<1	12600	11800	<1	2670	2570	0.23	<1	53	48	<10	<1	0.425	<10	<10	62	59
		Average			888	180	5	0.5	1	1	21	0.5	108	53	0.05	1	16	16	10	4.5	0.5	9393	8650	0.5	2493	2410	0.073	0.5	45	42	1	0.5	0.38	5	5	50	43
Adjacent to MPAR and Downgradient	D105		11/08/2021	D105D105_11 Aug 21 0000	2860	40	<10	<1	1	<1	22	<1	530	520	<0.1	<1	<100	<100	183	<1	<1	29700	28800	<1	12,100	11,400	<0.04	<1	698	658	<0.2	<1	0.825	<10	<10	68	62
Adjacent to MPAR and Downgradient	D105		27/10/2021	D105D105_27 Oct 21 1425	2920	20	<10	<1	2	<1	19	<1	610	570	<0.1	<1	<10	<10	164	<1	<1	27100	16800	<1	11,300	10,800	<0.04	<1	639	617	<0.2	<1	0.76	<10	<10	64	53
Adjacent to MPAR and Downgradient	D105		9/02/2022	D105D105_09 Feb 22 1050	2920	40	<10	<1	4	<1	21	<1	640	540	<0.1	<1	<10	<10	165	<1	<1	26500	28100	<1	11,700	11,600	<0.04	<1	621	569	<0.2	<1	0.787	<10	<10	70	63
Adjacent to MPAR and Downgradient	D105		11/05/2022	D105D105_11 May 22 0905	2620	20	<10	<1	2	<1	18	<1	540	580	<0.1	<1	<10	<10	150	<1	<1	22000	9320	<1	10,000	9650	0.09	<1	557	537	<10	<1	0.705	<10	<10	64	46
		Min.			2620	20	<10	<1	1	<1	18	<1	530	520	<0.1	<1	<10	<10	150	<1	<1	22000	9320	<1	10,000	9650	<0.04	<1	557	537	<0.2	<1	0.705	<10	<10	64	46
		Max.			2920	40	<10	<1	4	<1	22	<1	640	580	<0.1	<1	<100	<100	183	<1	<1	29700	28800	<1	12,100	11,600	0.09	<1	698	658	<10	<1	0.825	<10	<10	70	63
		Average			2830	30	5	0.5	2	0.5	20	0.5	580	553	0.05	0.5	16	16	166	0.5	0.5	26325	20755	0.5	11,275	10,863	0.04	0.5	629	595	1	0.5	0.77	5	5	67	56
Brine waste pond leak detection bores	MPGM5-D5		15/07/2021	MPGM5-D5MPGM5-D5_15 Jul 21 0000	27400	530	<100	<10	<10	<10	60	<10	1380	1410	3.6	<10	<10	<10	1040	16	14	4080	3380	<10	125,000	116,000	0.06	<10	5060	5170	3.4	<10	2.08	<100	<100	461	466
Brine waste pond leak detection bores	MPGM5-D5		22/09/2021	MPGM5-D5MPGM5-D5_22 Sep 21 0810	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Brine waste pond leak detection bores	MPGM5-D5		29/09/2021	MPGM5-D5MPGM5-D5_29 Sep 21 0855	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Brine waste pond leak detection bores	MPGM5-D5		6/10/2021	MPGM5-D5MPGM5-D5_06 Oct 21 0810	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Brine waste pond leak detection bores	MPGM5-D5		13/10/2021	MPGM5-D5MPGM5-D5_13 Oct 21 0835	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Brine waste pond leak detection bores	MPGM5-D5		20/10/2021	MPGM5-D5MPGM5-D5_20 Oct 21 0810	31500	310	10	<1	9	9	41	<1	1190	1230	3.5	3	<10	<10	1300	15	12	3900	3320	20	99,400	103,000	0.06	2	5090	5060	3.5	<1	1.68	<10	<10	585	577

					Field Parameters					Major Anions and Cations												Nutrients				
					Dissolved Oxygen (Field) (Filtered)	Electrical Conductivity (Field)	pH (Field)	Purge Volume	Redox (Field)	Carbonate (as CaCO3)	Bicarbonate Alkalinity (as CaCO3)	Calcium	Carbonate Alkalinity (as CaCO3)	Chloride	Hydroxide Alkalinity (as CaCO3)	Fluoride	Magnesium	Phenolphthalein Alkalinity (CaCO3)	Potassium	Sodium	Sulfate (as SO4)	Ammonia	Sulfur	Nitrate	Nitrite (as NO2-)	Nitrite + Nitrate (as N)
					mg/L	uS/cm	pH units	L	mV	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	µg/L	mg/L	µg/L	µg/L	mg/L
ANZECC (2000) or Local Guidelines - Groundwater						2600[#1]	6.5-8							350		1.5					1000					
Purpose	**LocCode**	**Value**	**Sampled_Date**	**SampleCode**																						
Brine waste pond leak detection bores	MPGM5-D5		27/10/2021	MPGM5-D5MPGM5-D5_27 Oct 21 0755	-	31900	6.45	25	-	-	-	-	-	3423	-	-	-	-	-	-	20880	-	-	-	-	-
Brine waste pond leak detection bores	MPGM5-D5		3/11/2021	MPGM5-D5MPGM5-D5_03 Nov 21 0835	-	35500	6.36	27	-	-	-	-	-	3222	-	-	-	-	-	-	24100	-	-	-	-	-
Brine waste pond leak detection bores	MPGM5-D5		10/11/2021	MPGM5-D5MPGM5-D5_10 Nov 21 0755	-	4150	6.16	28	-	-	-	-	-	347.4	-	-	-	-	-	-	1594	-	-	-	-	-
Brine waste pond leak detection bores	MPGM5-D5		24/11/2021	MPGM5-D5MPGM5-D5_24 Nov 21 0830	-	40200	6.34	34	-	-	-	-	-	4169	-	-	-	-	-	-	28190	-	-	-	-	-
Brine waste pond leak detection bores	MPGM5-D5		8/12/2021	MPGM5-D5MPGM5-D5_08 Dec 21 0805	-	37200	6.36	20	-	-	-	-	-	3722	-	-	-	-	-	-	28210	-	-	-	-	-
Brine waste pond leak detection bores	MPGM5-D5		22/12/2021	MPGM5-D5MPGM5-D5_22 Dec 21 0730	-	38100	6.35	30	-	-	-	-	-	4070	-	-	-	-	-	-	25720	-	-	-	-	-
Brine waste pond leak detection bores	MPGM5-D5		5/01/2022	MPGM5-D5MPGM5-D5_05 Jan 22 1405	-	36020	6.43	25	-	-	-	-	-	3673	-	-	-	-	-	-	26350	-	-	-	-	-
Brine waste pond leak detection bores	MPGM5-D5		19/01/2022	MPGM5-D5MPGM5-D5_19 Jan 22 0745	2.6	33730	6.41	23	-	<1	1550	446	1550	3573	-	<5	1150	<1	320	8520	21100	3610	6340	<10	<10	<0.01
Brine waste pond leak detection bores	MPGM5-D5		2/02/2022	MPGM5-D5MPGM5-D5_02 Feb 22 0745	-	33800	6.47	27	-	-	-	-	-	3276	-	-	-	-	-	-	20940	-	-	-	-	-
Brine waste pond leak detection bores	MPGM5-D5		16/02/2022	MPGM5-D5MPGM5-D5_16 Feb 22 0810	-	33900	6.48	38	-	-	-	-	-	3387	-	-	-	-	-	-	20880	-	-	-	-	-
Brine waste pond leak detection bores	MPGM5-D5		2/03/2022	MPGM5-D5MPGM5-D5_02 Mar 22 0800	-	32200	6.53	40	-	-	-	-	-	3165	-	-	-	-	-	-	17070	-	-	-	-	-
Brine waste pond leak detection bores	MPGM5-D5		15/03/2022	MPGM5-D5MPGM5-D5_15 Mar 22 0730	-	34200	6.48	40	-	-	-	-	-	3264	-	-	-	-	-	-	20490	-	-	-	-	-
Brine waste pond leak detection bores	MPGM5-D5		30/03/2022	MPGM5-D5MPGM5-D5_30 Mar 22 0730	-	25100	6.39	50	-	-	-	-	-	2176	-	-	-	-	-	-	14320	-	-	-	-	-
Brine waste pond leak detection bores	MPGM5-D5		12/04/2022	MPGM5-D5MPGM5-D5_12 Apr 22 0740	-	29500	6.58	60	-	-	-	-	-	2769	-	-	-	-	-	-	17470	-	-	-	-	-
Brine waste pond leak detection bores	MPGM5-D5		25/05/2022	MPGM5-D5MPGM5-D5_25 May 22 0735	2.5	33870	6.32	45	38.8	<1	1670	415	1670	3210	<1	<2	876	<1	411	9000	19000	680	6560	<100	<100	<0.1
Brine waste pond leak detection bores	MPGM5-D5		8/06/2022	MPGM5-D5MPGM5-D5_08 Jun 22 0725	-	32300	6.66	39	-	-	-	-	-	2789	-	-	-	-	-	-	18370	-	-	-	-	-
		Min.			1.8	2320	6.12	18	38.8	<1	722	266	722	181.2	<1	0.808	876	<1	194	6060	719	680	5820	<10	<10	<0.01
		Max.			3.4	40200	6.66	60	38.8	<1	1670	446	1670	4169	<1	<5	1500	<1	411	9000	28210	3610	6560	<100	<100	<0.1
		Average			2.6	29260	-	33	-	0.5	1188	366	1188	2856	-	1	1142	0.5	288	7803	18729	2425	6235	21	25	0.03
Brine waste pond leak detection bores	MPGM5-D6		15/07/2021	MPGM5-D6MPGM5-D6_15 Jul 21 0000	1.4	1310	5.77	3	-	<1	140	17.4	140	145	-	<0.01	39.7	<1	7.1	150	311	1110	93	40	<10	0.04
Brine waste pond leak detection bores	MPGM5-D6		22/09/2021	MPGM5-D6MPGM5-D6_22 Sep 21 0815	-	1202	5.87	-	-	-	-	-	-	161.1	-	-	-	-	-	-	301.5	-	-	-	-	-
Brine waste pond leak detection bores	MPGM5-D6		29/09/2021	MPGM5-D6MPGM5-D6_29 Sep 21 0900	-	1238	5.83	9	-	-	-	-	-	140.9	-	-	-	-	-	-	293.2	-	-	-	-	-
Brine waste pond leak detection bores	MPGM5-D6		6/10/2021	MPGM5-D6MPGM5-D6_06 Oct 21 0815	-	2320	5.83	8	-	-	-	-	-	241.6	-	-	-	-	-	-	665	-	-	-	-	-
Brine waste pond leak detection bores	MPGM5-D6		13/10/2021	MPGM5-D6MPGM5-D6_13 Oct 21 0840	-	1285	5.74	7	-	-	-	-	-	151	-	-	-	-	-	-	336.4	-	-	-	-	-
Brine waste pond leak detection bores	MPGM5-D6		20/10/2021 12.00AM	MPGM5-D6MPGM5-D6_20 Oct 21 0000	-	1260	5.54	5	-	-	-	-	-	151	-	-	-	-	-	-	307.4	-	-	-	-	-
Brine waste pond leak detection bores	MPGM5-D6		20/10/2021 08:15AM	MPGM5-D6MPGM5-D6_20 Oct 21 0815	2.2	1260	5.54	5	-	<1	77	11.3	77	158	-	<0.1	32.1	<1	5.21	165	306	840	110	30	10	0.04
Brine waste pond leak detection bores	MPGM5-D6		27/10/2021	MPGM5-D6MPGM5-D6_27 Oct 21 0800	-	7790	6.07	5	-	-	-	-	-	644.3	-	-	-	-	-	-	3729	-	-	-	-	-
Brine waste pond leak detection bores	MPGM5-D6		3/11/2021	MPGM5-D6MPGM5-D6_03 Nov 21 0840	-	4710	5.93	10	-	-	-	-	-	453.1	-	-	-	-	-	-	2003	-	-	-	-	-
Brine waste pond leak detection bores	MPGM5-D6		10/11/2021	MPGM5-D6MPGM5-D6_10 Nov 21 0800	-	2140	5.72	5	-	-	-	-	-	218.4	-	-	-	-	-	-	587	-	-	-	-	-
Brine waste pond leak detection bores	MPGM5-D6		24/11/2021	MPGM5-D6MPGM5-D6_24 Nov 21 0805	-	1126	5.7	10	-	-	-	-	-	102.6	-	-	-	-	-	-	290	-	-	-	-	-
Brine waste pond leak detection bores	MPGM5-D6		8/12/2021	MPGM5-D6MPGM5-D6_08 Dec 21 0810	-	1095	5.78	8	-	-	-	-	-	129	-	-	-	-	-	-	287.2	-	-	-	-	-
Brine waste pond leak detection bores	MPGM5-D6		20/12/2021	MPGM5-D6MPGM5-D6_20 Dec 21 0735	-	1216	5.81	8	-	-	-	-	-	132.3	-	-	-	-	-	-	282.4	-	-	-	-	-
Brine waste pond leak detection bores	MPGM5-D6		5/01/2022	MPGM5-D6MPGM5-D6_05 Jan 22 1410	-	1480	5.85	10	-	-	-	-	-	1390	-	-	-	-	-	-	344.2	-	-	-	-	-
Brine waste pond leak detection bores	MPGM5-D6		19/01/2022	MPGM5-D6MPGM5-D6_19 Jan 22 0755	2.6	1150	5.77	3	-	<1	119	16.6	119	132.3	-	<0.1	36.1	<1	7.57	144	272.6	1070	83	60	<10	0.06
Brine waste pond leak detection bores	MPGM5-D6		2/02/2022	MPGM5-D6MPGM5-D6_02 Feb 22 0750	-	3920	5.98	8	-	-	-	-	-	277.9	-	-	-	-	-	-	1400	-	-	-	-	-
Brine waste pond leak detection bores	MPGM5-D6		16/02/2022	MPGM5-D6MPGM5-D6_16 Feb 22 0815	-	4940	6.12	10	-	-	-	-	-	378.5	-	-	-	-	-	-	1630	-	-	-	-	-
Brine waste pond leak detection bores	MPGM5-D6		2/03/2022	MPGM5-D6MPGM5-D6_02 Mar 22 0810	-	1527	6.12	12	-	-	-	-	-	178	-	-	-	-	-	-	344	-	-	-	-	-
Brine waste pond leak detection bores	MPGM5-D6		15/03/2022	MPGM5-D6MPGM5-D6_15 Mar 22 0735	-	1170	6.09	10	-	-	-	-	-	98.91	-	-	-	-	-	-	308.4	-	-	-	-	-
Brine waste pond leak detection bores	MPGM5-D6		30/03/2022	MPGM5-D6MPGM5-D6_30 Mar 22 0735	-	1359	6.12	12	-	-	-	-	-	123.6	-	-	-	-	-	-	313.4	-	-	-	-	-
Brine waste pond leak detection bores	MPGM5-D6		12/04/2022	MPGM5-D6MPGM5-D6_12 Apr 22 0745	-	2180	6.3	12	-	-	-	-	-	257.2	-	-	-	-	-	-	578.4	-	-	-	-	-
Brine waste pond leak detection bores	MPGM5-D6		25/05/2022	MPGM5-D6MPGM5-D6_25 May 22 0745	1.7	5170	6.21	12	-28.2	<1	642	141	642	662	<1	0.056	306	<1	23.7	661	1641	1070	468	90	10	0.1
Brine waste pond leak detection bores	MPGM5-D6		8/06/2022	MPGM5-D6MPGM5-D6_08 Jun 22 0730	-	7790	6.65	14	-	-	-	-	-	1076	-	-	-	-	-	-	2058	-	-	-	-	-
		Min.			1.4	1095	5.54	3	-28.2	<1	77	11.3	77	98.91	<1	<0.01	32.1	<1	5.21	144	272.6	840	83	30	<10	0.04
		Max.			2.6	7790	6.65	14	0	<1	642	141	642	1390	<1	<0.1	306	<1	23.7	661	3729	1110	468	90	10	0.1
		Average			2	2549	-	8.5		0.5	245	47	245	322	-	0.04	103	0.5	11	280	808	1023	189	55	8	0.06

Statistical Summary

	Dissolved Oxygen (Field) (Filtered)	Electrical Conductivity (Field)	pH (Field)	Purge Volume	Redox (Field)	Carbonate (as CaCO3)	Bicarbonate Alkalinity (as CaCO3)	Calcium	Carbonate Alkalinity (as CaCO3)	Chloride	Hydroxide Alkalinity (as CaCO3)	Fluoride	Magnesium	Phenolphthalein Alkalinity (CaCO3)	Potassium	Sodium	Sulfate (as SO4)	Ammonia	Sulfur	Nitrate	Nitrite (as NO2-)	Nitrite + Nitrate (as N)
Number of Results	106	142	142	137	26	105	105	105	105	142	26	105	105	105	105	105	142	105	105	105	105	105
Number of Detects	106	142	142	137	26	0	101	105	101	142	0	19	105	0	105	105	142	99	105	27	3	27
Minimum Concentration	0.5	174	3.39	3	-59.9	<1	<1	11.3	<1	5.56	<1	<0.01	8.04	<1	2.3	5.4	16.1	<10	5	<10	<10	<0.01
Minimum Detect	0.5	174	3.39	3	ND	ND	6	11.3	6	5.56	ND	0.03	8.04	ND	2.3	5.4	16.1	20	5	10	10	0.01
Maximum Concentration	25.7	40200	6.72	292	272.5	<1	1670	768	1670	4169	<1	11.9	1500	<1	411	9000	28210	3610	6560	1320	<100	1.32
Maximum Detect	25.7	40200	6.72	292	272.5	ND	1670	768	1670	4169	ND	11.9	1500	ND	411	9000	28210	3610	6560	1320	40	1.32
Average Concentration	2.5	8339	6	59	72	0.5	174	252	174	810	0.5	0.71	256	0.5	75	941	4653	433	955	55	12	0.055
Median Concentration	1.9	4035	6.025	32	57.9	0.5	141	181	141	246	0.5	0.25	127	0.5	48.8	509	1730	260	558	5	5	0.005
Standard Deviation	2.7	10418	0.53	71	68	0	241	203	241	1070	0	1.8	279	0	86	1549	6923	593	1245	193	16	0.19
Number of Guideline Exceedances	0	93	133	0	0	0	0	0	0	55	0	11	0	0	0	0	95	0	0	0	0	0
Number of Guideline Exceedances(Detects Only)	0	93	133	0	0	0	0	0	0	55	0	5	0	0	0	0	95	0	0	0	0	0

Env Stds Comments

#1:2000 mg/L TDS/0.77

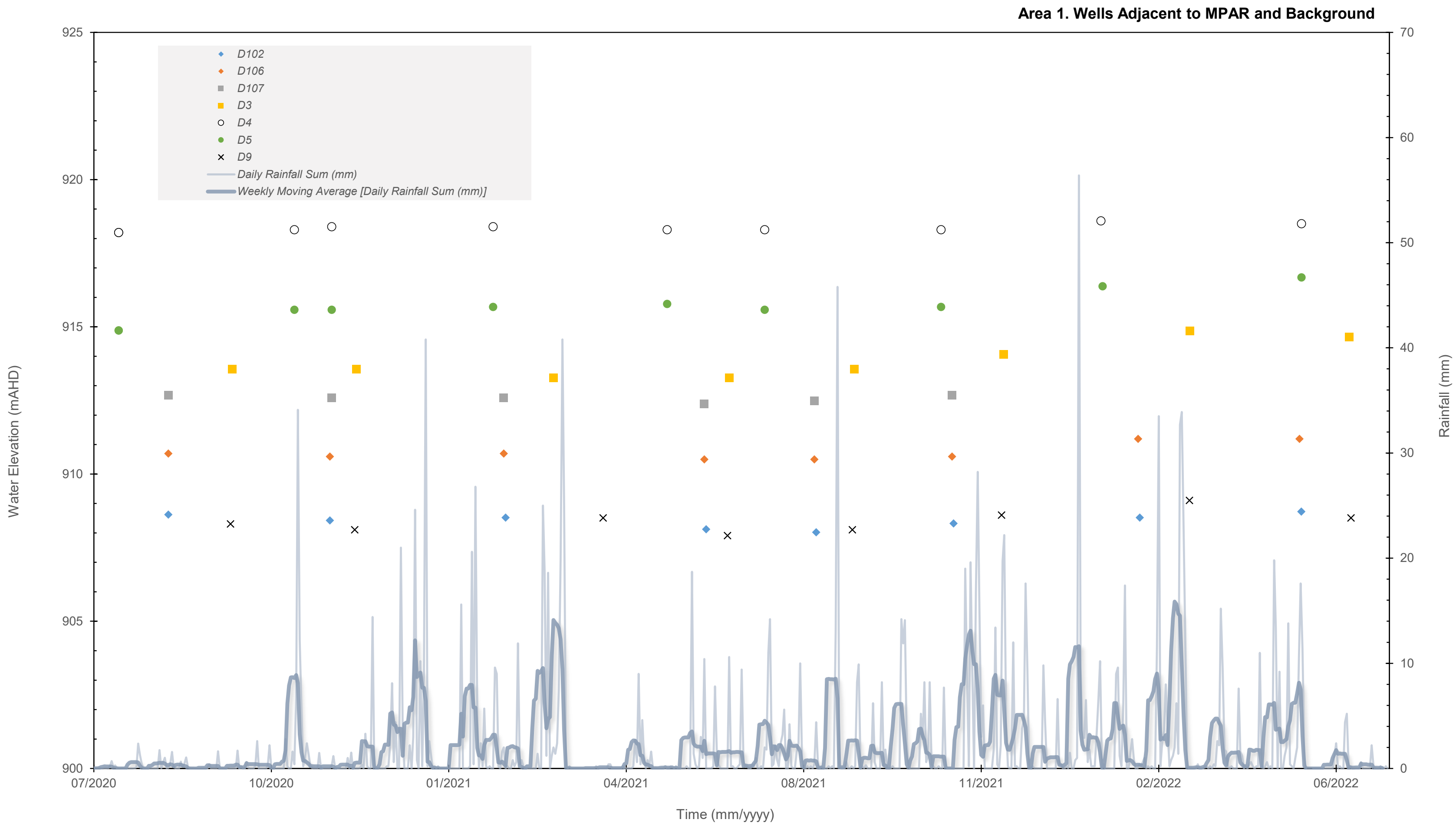
					Physical Parameters	Metals																															
					Total Dissolved Solids (TDS) (Filtered)	Aluminium	Aluminium (Filtered)	Antimony	Arsenic	Arsenic (Filtered)	Barium	Beryllium	Boron	Boron (Filtered)	Cadmium	Chromium	Chromium (Hexavalent)	Chromium (Trivalent)	Cobalt	Copper	Copper (Filtered)	Iron	Iron (Filtered)	Lead	Manganese	Manganese (Filtered)	Mercury	Molybdenum	Nickel	Nickel (Filtered)	Selenium	Silver	Strontium	Vanadium	Vanadium (Filtered)	Zinc	Zinc (Filtered)
					mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L
ANZECC (2000) or Local Guidelines - Groundwater					2000				24	24	700	100	370	370	2[#2]	5[#2]				5[#2]	5[#2]	664[#3]	664[#3]	5[#2]	5704[#3]	5704[#3]	0.06	10	550.9[#4]	550.9[#4]	5	0.05				908[#4]	908[#4]
Purpose	**LocCode**	**Value**	**Sampled_Date**	**SampleCode**																																	
Brine waste pond leak detection bores	MPGM5-D5		27/10/2021	MPGM5-D5MPGM5-D5_27 Oct 21 0755	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Brine waste pond leak detection bores	MPGM5-D5		3/11/2021	MPGM5-D5MPGM5-D5_03 Nov 21 0835	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Brine waste pond leak detection bores	MPGM5-D5		10/11/2021	MPGM5-D5MPGM5-D5_10 Nov 21 0755	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Brine waste pond leak detection bores	MPGM5-D5		24/11/2021	MPGM5-D5MPGM5-D5_24 Nov 21 0830	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Brine waste pond leak detection bores	MPGM5-D5		8/12/2021	MPGM5-D5MPGM5-D5_08 Dec 21 0805	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Brine waste pond leak detection bores	MPGM5-D5		22/12/2021	MPGM5-D5MPGM5-D5_22 Dec 21 0730	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Brine waste pond leak detection bores	MPGM5-D5		5/01/2022	MPGM5-D5MPGM5-D5_05 Jan 22 1405	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Brine waste pond leak detection bores	MPGM5-D5		19/01/2022	MPGM5-D5MPGM5-D5_19 Jan 22 0745	38600	220	<100	<10	20	19	52	<10	2670	2440	8.8	<10	<10	<10	2320	25	14	2100	2030	35	133,000	116,000	0.14	<10	7640	6190	4.5	<10	2.28	<100	<100	1080	885
Brine waste pond leak detection bores	MPGM5-D5		2/02/2022	MPGM5-D5MPGM5-D5_02 Feb 22 0745	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Brine waste pond leak detection bores	MPGM5-D5		16/02/2022	MPGM5-D5MPGM5-D5_16 Feb 22 0810	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Brine waste pond leak detection bores	MPGM5-D5		2/03/2022	MPGM5-D5MPGM5-D5_02 Mar 22 0800	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Brine waste pond leak detection bores	MPGM5-D5		15/03/2022	MPGM5-D5MPGM5-D5_15 Mar 22 0730	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Brine waste pond leak detection bores	MPGM5-D5		30/03/2022	MPGM5-D5MPGM5-D5_30 Mar 22 0730	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Brine waste pond leak detection bores	MPGM5-D5		12/04/2022	MPGM5-D5MPGM5-D5_12 Apr 22 0740	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Brine waste pond leak detection bores	MPGM5-D5		25/05/2022	MPGM5-D5MPGM5-D5_25 May 22 0735	33800	420	100	<10	24	14	47	<10	3730	3550	7.6	<10	<10	<10	1600	90	19	3990	3860	21	90,200	90,600	0.21	<10	6530	6430	<100	<10	1.75	<100	<100	727	667
Brine waste pond leak detection bores	MPGM5-D5		8/06/2022	MPGM5-D5MPGM5-D5_08 Jun 22 0725	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		Min.			27400	220	10	<1	9	9	41	<1	1190	1230	3.5	3	<10	<10	1040	15	12	2100	2030	<10	90,200	90,600	0.06	2	5060	5060	3	<1	1.68	<10	<10	461	466
		Max.			38600	530	100	<10	24	19	60	<10	3730	3550	8.8	<10	<10	<10	2320	90	19	4080	3860	35	133,000	116,000	0.21	<10	7640	6430	<100	<10	2.28	<100	<100	1080	885
		Average			32825	370	53	4	15	12	50	4	2243	2158	5.9	4.5	5	5	1565	37	15	3518	3148	20	111,900	106,400	0.12	4	6080	5713	15	3.9	1.9	39	39	713	649
Brine waste pond leak detection bores	MPGM5-D6		15/07/2021	MPGM5-D6MPGM5-D6_15 Jul 21 0000	840	210	<10	<1	2	1	25	<1	<50	<50	0.1	1	<10	<10	34	2	<1	39,700	35,100	3	5140	5050	<0.04	<1	74	72	0.3	<1	0.148	<10	<10	52	48
Brine waste pond leak detection bores	MPGM5-D6		22/09/2021	MPGM5-D6MPGM5-D6_22 Sep 21 0815	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Brine waste pond leak detection bores	MPGM5-D6		29/09/2021	MPGM5-D6MPGM5-D6_29 Sep 21 0900	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Brine waste pond leak detection bores	MPGM5-D6		6/10/2021	MPGM5-D6MPGM5-D6_06 Oct 21 0815	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Brine waste pond leak detection bores	MPGM5-D6		13/10/2021	MPGM5-D6MPGM5-D6_13 Oct 21 0840	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Brine waste pond leak detection bores	MPGM5-D6		20/10/2021 12.00AM	MPGM5-D6MPGM5-D6_20 Oct 21 0000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Brine waste pond leak detection bores	MPGM5-D6		20/10/2021 08:15AM	MPGM5-D6MPGM5-D6_20 Oct 21 0815	714	1110	<10	<1	4	1	38	<1	<50	<50	0.1	6	<100	<100	33	5	<1	31,600	25,700	7	3680	3550	<0.04	<1	75	68	0.4	<1	0.102	<10	<10	68	53
Brine waste pond leak detection bores	MPGM5-D6		27/10/2021	MPGM5-D6MPGM5-D6_27 Oct 21 0800	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Brine waste pond leak detection bores	MPGM5-D6		3/11/2021	MPGM5-D6MPGM5-D6_03 Nov 21 0840	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Brine waste pond leak detection bores	MPGM5-D6		10/11/2021	MPGM5-D6MPGM5-D6_10 Nov 21 0800	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Brine waste pond leak detection bores	MPGM5-D6		24/11/2021	MPGM5-D6MPGM5-D6_24 Nov 21 0805	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Brine waste pond leak detection bores	MPGM5-D6		8/12/2021	MPGM5-D6MPGM5-D6_08 Dec 21 0810	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Brine waste pond leak detection bores	MPGM5-D6		20/12/2021	MPGM5-D6MPGM5-D6_20 Dec 21 0735	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Brine waste pond leak detection bores	MPGM5-D6		5/01/2022	MPGM5-D6MPGM5-D6_05 Jan 22 1410	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Brine waste pond leak detection bores	MPGM5-D6		19/01/2022	MPGM5-D6MPGM5-D6_19 Jan 22 0755	736	110	<10	2	1	<1	32	<1	50	<50	<0.1	1	<10	<10	29	1	<1	20,800	17,800	2	4050	3840	0.28	<1	68	68	0.2	<1	0.126	<10	<10	45	35
Brine waste pond leak detection bores	MPGM5-D6		2/02/2022	MPGM5-D6MPGM5-D6_02 Feb 22 0750	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Brine waste pond leak detection bores	MPGM5-D6		16/02/2022	MPGM5-D6MPGM5-D6_16 Feb 22 0815	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Brine waste pond leak detection bores	MPGM5-D6		2/03/2022	MPGM5-D6MPGM5-D6_02 Mar 22 0810	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Brine waste pond leak detection bores	MPGM5-D6		15/03/2022	MPGM5-D6MPGM5-D6_15 Mar 22 0735	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Brine waste pond leak detection bores	MPGM5-D6		30/03/2022	MPGM5-D6MPGM5-D6_30 Mar 22 0735	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Brine waste pond leak detection bores	MPGM5-D6		12/04/2022	MPGM5-D6MPGM5-D6_12 Apr 22 0745	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Brine waste pond leak detection bores	MPGM5-D6		25/05/2022	MPGM5-D6MPGM5-D6_25 May 22 0745	3610	240	<10	<1	1	1	77	<1	60	<50	0.8	<1	<10	<10	141	14	10	23,000	22,200	4	5280	5180	0.08	<1	299	281	<10	<1	0.746	<10	<10	99	87
Brine waste pond leak detection bores	MPGM5-D6		8/06/2022	MPGM5-D6MPGM5-D6_08 Jun 22 0730	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		Min.			714	110	<10	<1	1	<1	25	<1	<50	<50	<0.1	<1	<10	<10	29	1	<1	20,800	17,800	2	3680	3550	<0.04	<1	68	68	0.2	<1	0.102	<10	<10	45	35
		Max.			3610	1110	<10	2	4	1	77	<1	60	<50	0.8	6	<100	<100	141	14	10	39,700	35,100	7	5280	5180	0.28	<1	299	281	<10	<1	0.746	<10	<10	99	87
		Average			1475	418	5	1	2	1	43	0.5	40	25	0.3	2	16	16	59	5.5	3	28,775	25,200	4	4538	4405	0.1	0.5	129	122	1.5	0.5	0.28	5	5	66	56

Statistical Summary

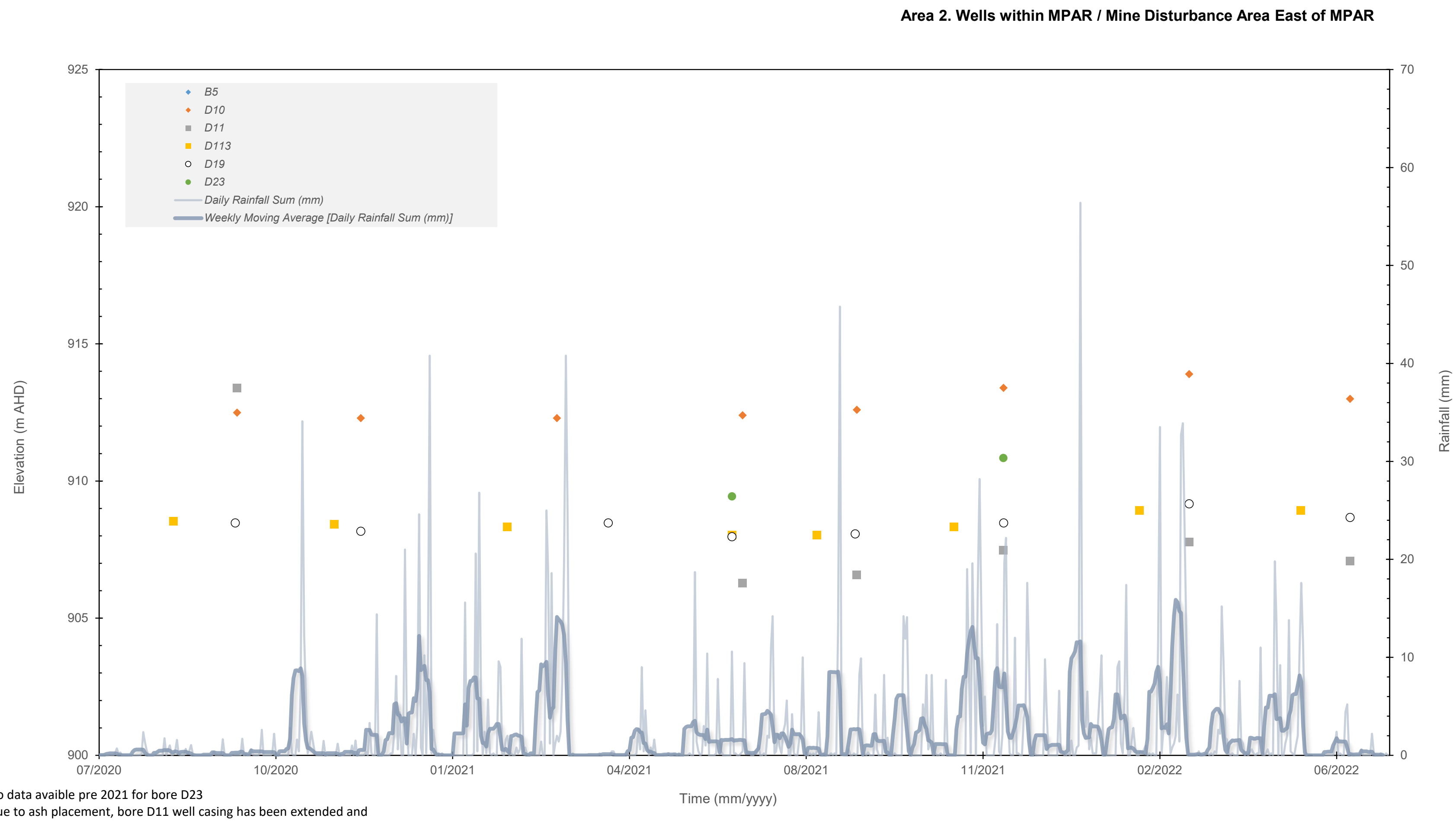
Number of Results	105	105	105	105	105	105	105	105	105	105	105	105	105	105	105	105	105	105	105	105	105	105	105	105	105	105	105	105	105	105	105	105	105
Number of Detects	105	100	45	11	89	65	105	22	94	88	44	54	0	0	99	60	18	105	103	54	105	105	25	34	105	105	49	1	105	2	0	105	105
Minimum Concentration	134	<10	<10	<1	<1	<1	12	<1	<50	<50	<0.1	<1	<10	<10	<1	<1	<1	174	<50	<1	55	44	<0.04	<1	4	4	<0.2	<1	0.063	<10	<10	8	7
Minimum Detect	134	10	10	1	1	1	12	1	50	60	0.1	1	ND	ND	1	1	1	174	60	1	55	44	0.04	1	4	4	0.2	2	0.063	10	ND	8	7
Maximum Concentration	38600	18100	10700	<10	44	35	763	10	15800	15700	81.6	223	<100	<100	2320	90	19	74400	68000	43	133000	116000	0.74	529	7640	6430	167	<10	13.2	<100	<100	2600	2470
Maximum Detect	38600	18100	10700	5	44	35	763	10	15800	15700	81.6	223	ND	ND	2320	90	19	74400	68000	43	133000	116000	0.74	529	7640	6430	167	2	13.2	20	ND	2600	2470
Average Concentration	5254	1309	674	0.83	6.5	4	53	1.1	1813	1675	3.2	9	12	12	212	3.8	1.3	23788	19952	5.4	12313	11804	0.065	20	900	846	6.7	0.64	1.9	6.5	6.3	269	240
Median Concentration	3110	160	5	0.5	3	1	23	0.5	1320	1090	0.05	1	5	5	156	1	0.5	18700	16600	1	5660	5460	0.02	0.5	520	471	0.3	0.5	0.902	5	5	145	100
Standard Deviation	6725	3048	2258	1	9	6.7	127	1.7	2828	2683	13	26	17	17	316	9.7	2.9	20636	18852	8.5	21596	20401	0.13	92	1277	1193	25	0.76	2.4	7.7	7.5	419	412
Number of Guideline Exceedances	70	0	0	0	9	4	1	0	65	65	12	30	0	0	0	19	5	96	93	33	52	51	22	6	49	45	29	105	0	0	0	5	4
Number of Guideline Exceedances(Detects Only)	70	0	0	0	9	4	1	0	65	65	12	27	0	0	0	19	5	96	93	32	52	51	22	6	49	45	4	1	0	0	0	5	4

Env Stds Comments
#1:2000 mg/L TDS/0.77

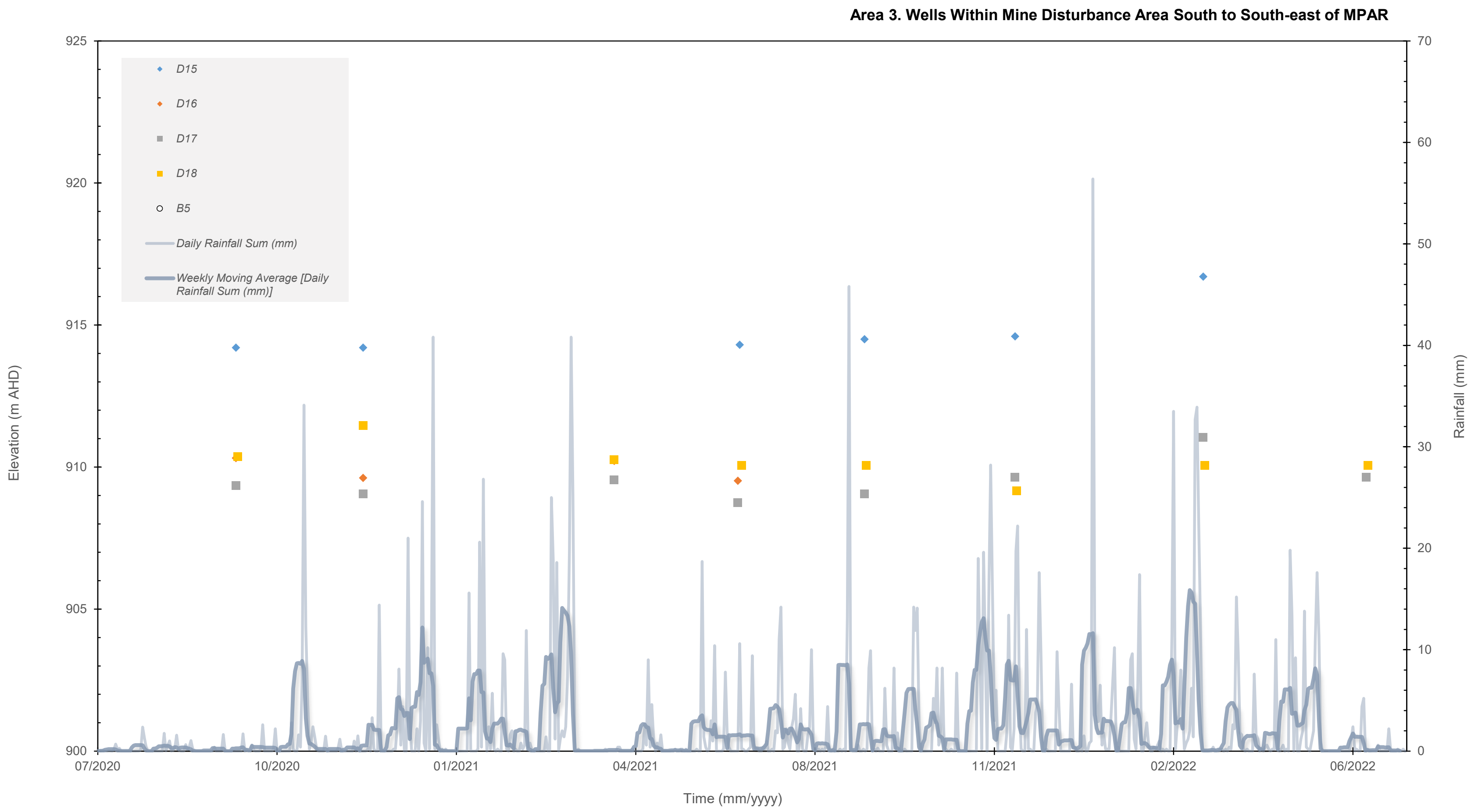
APPENDIX H HYDROGRAPHS

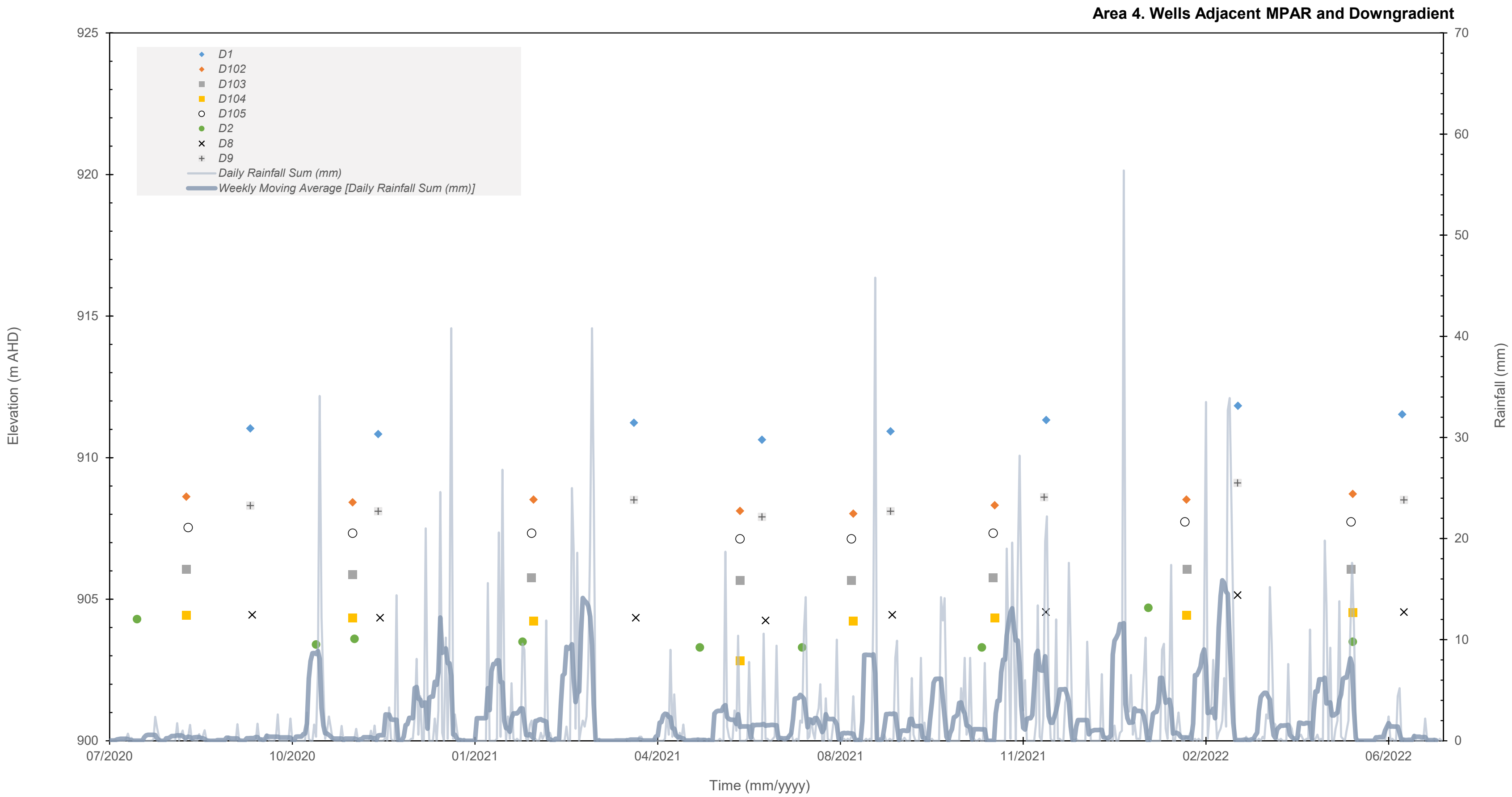


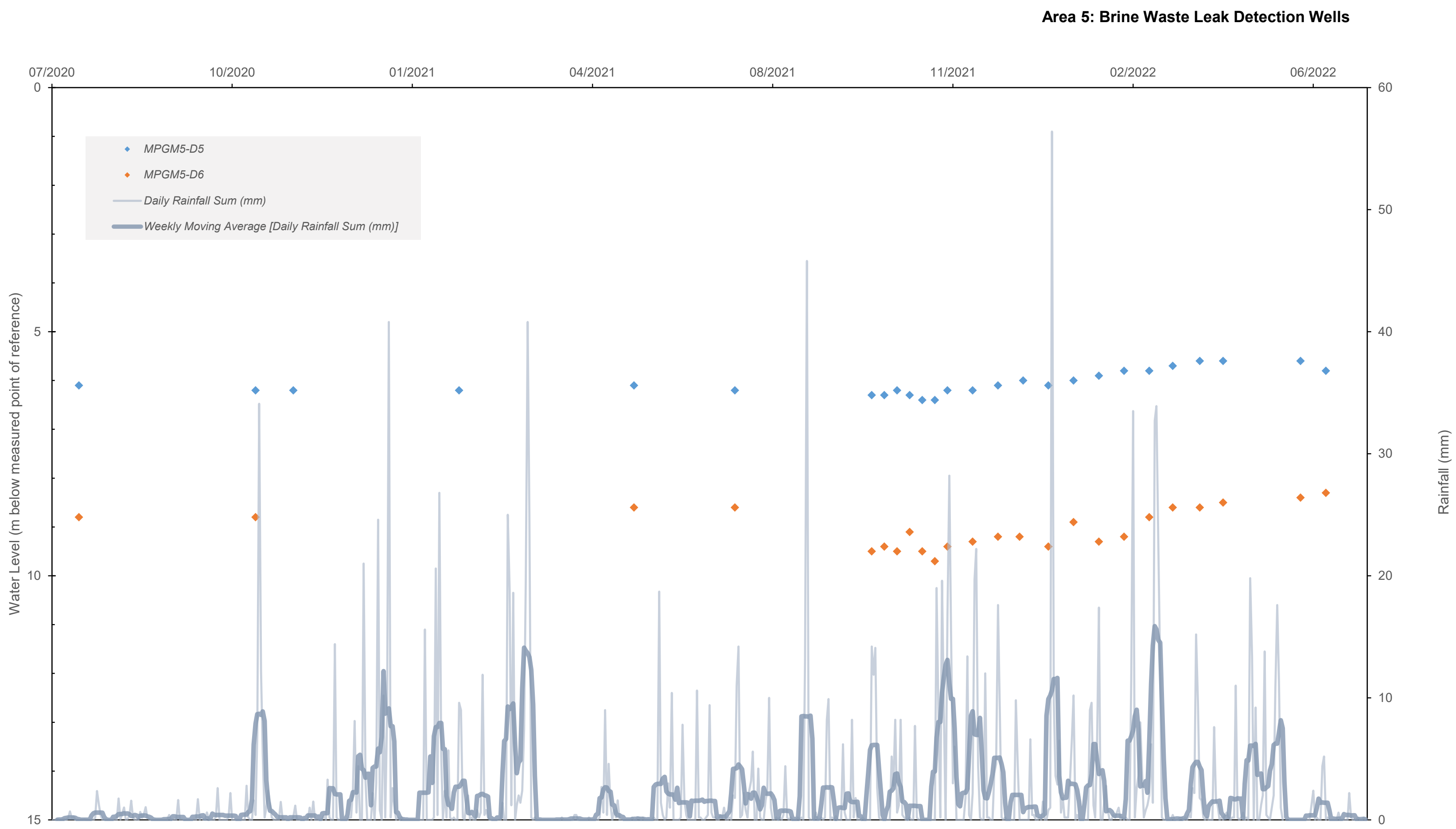
*D107 - Water levels not recorded beyond October 2021 due to well extension to mitigate artesian flow



*No data avaible pre 2021 for bore D23
*Due to ash placement, bore D11 well casing has been extended and has not been resurveyed resulting in drop in groundwater elevation

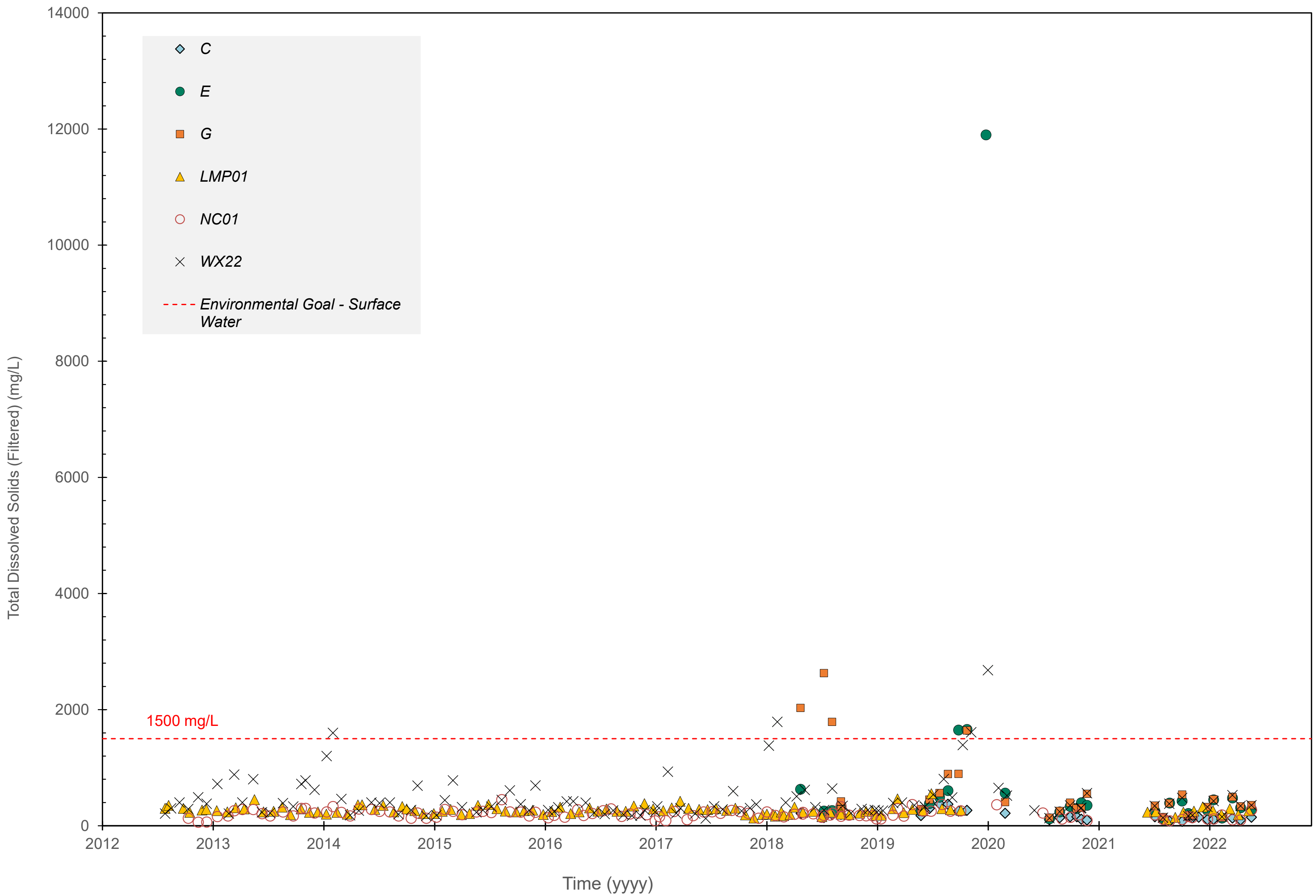

Area 3. Wells Within Mine Disturbance Area South to South-east of MPAR
D15
D16
D17
D18
B5
Daily Rainfall Sum (mm)
Weekly Moving Average [Daily Rainfall Sum (mm)]
Elevation (m AHD)
Rainfall (mm)
Time (mm/yyyy)
925
920
915
910
905
900
70
60
50
40
30
20
10
0
07/2020
10/2020
01/2021
04/2021
08/2021
11/2021
02/2022
06/2022

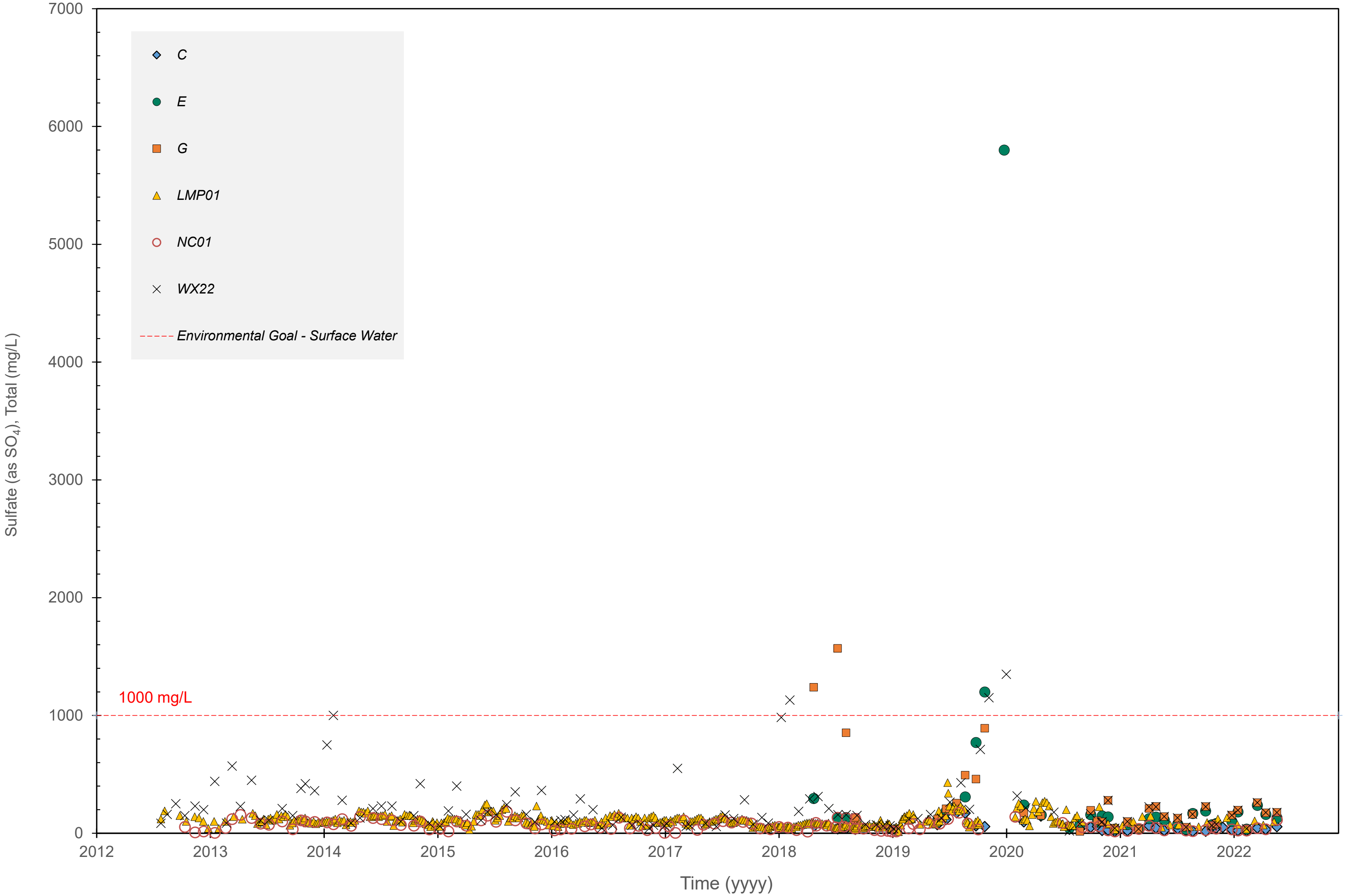

Area 4. Wells Adjacent MPAR and Downgradient
D1
D102
D103
D104
D105
D2
D8
D9
Daily Rainfall Sum (mm)
Weekly Moving Average [Daily Rainfall Sum (mm)]
Elevation (m AHD)
Rainfall (mm)
Time (mm/yyyy)
925
920
915
910
905
900
70
60
50
40
30
20
10
0
07/2020
10/2020
01/2021
04/2021
08/2021
11/2021
02/2022
06/2022

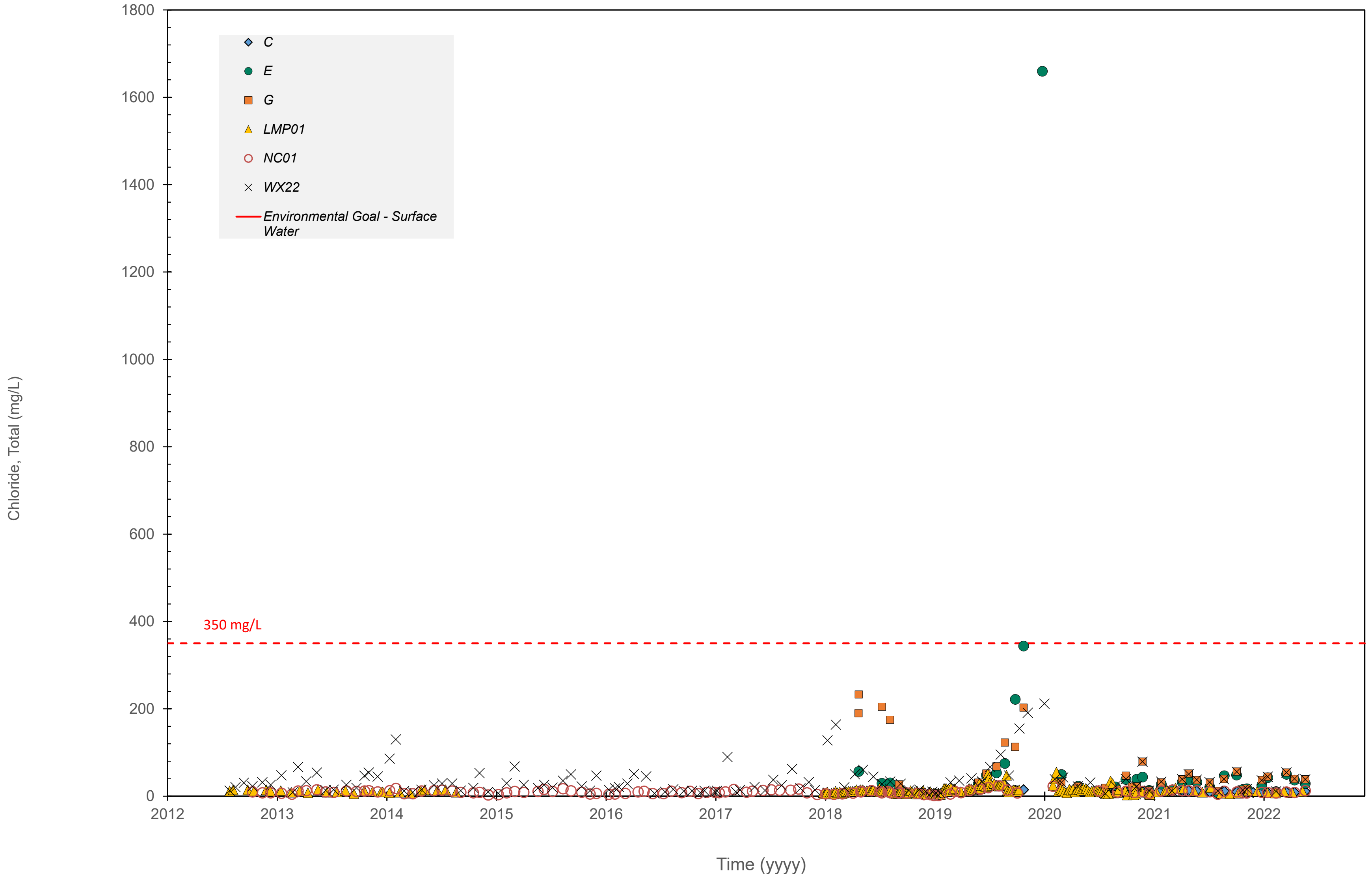


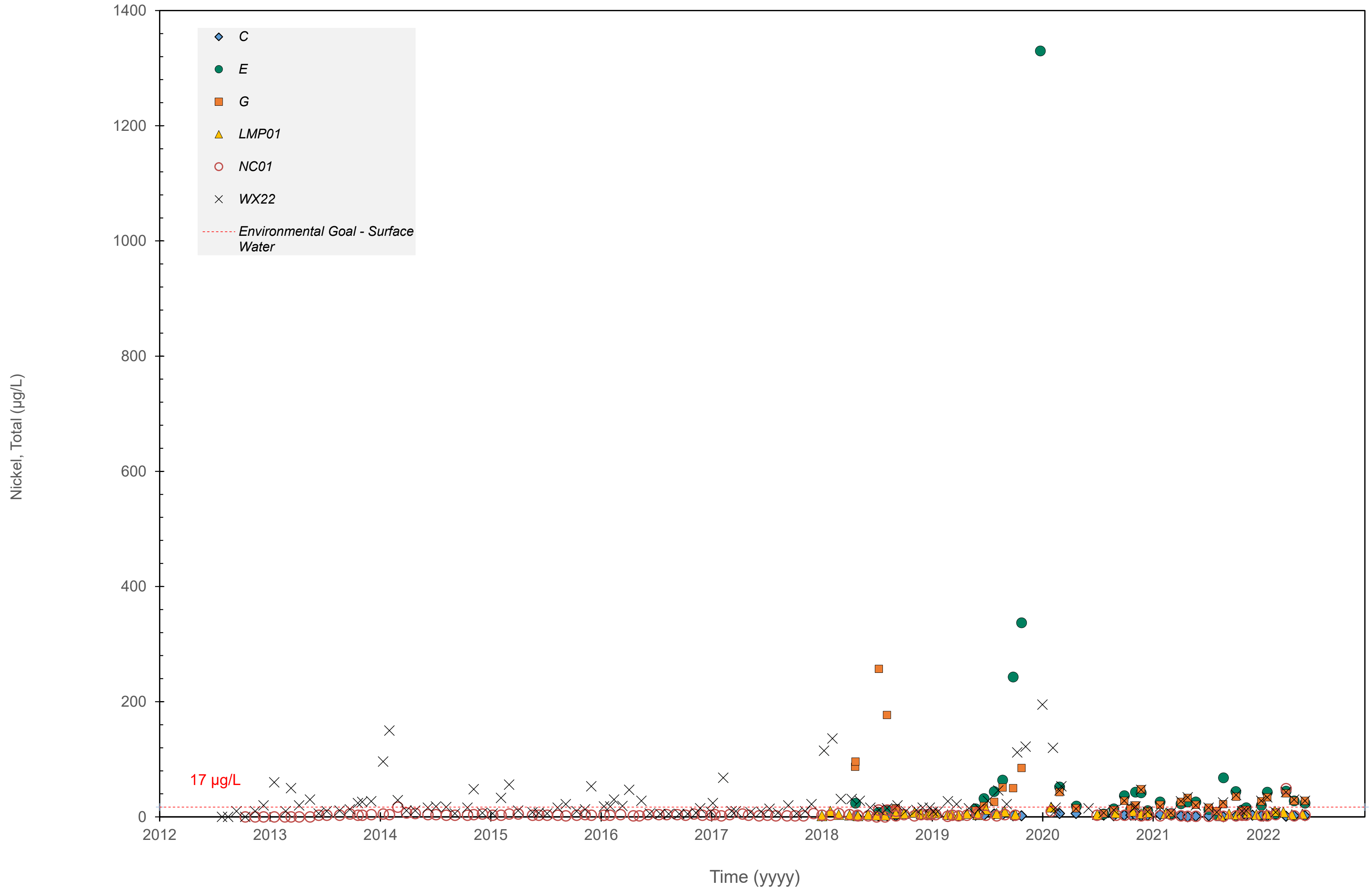
Note: Monitoring wells have not been surveyed. Water levels are reported as meters below measured point of reference

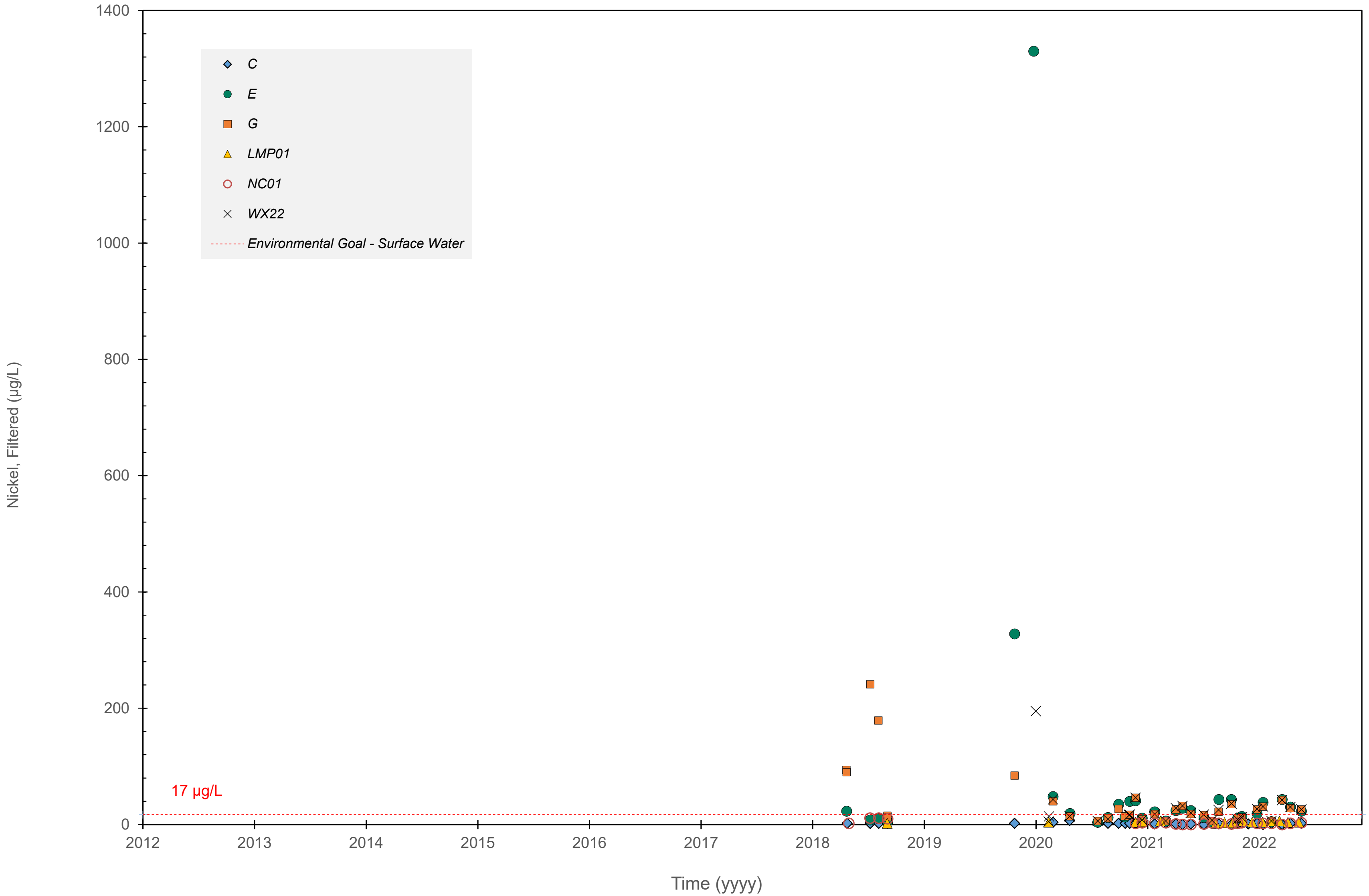
APPENDIX I SURFACE WATER TRENDS

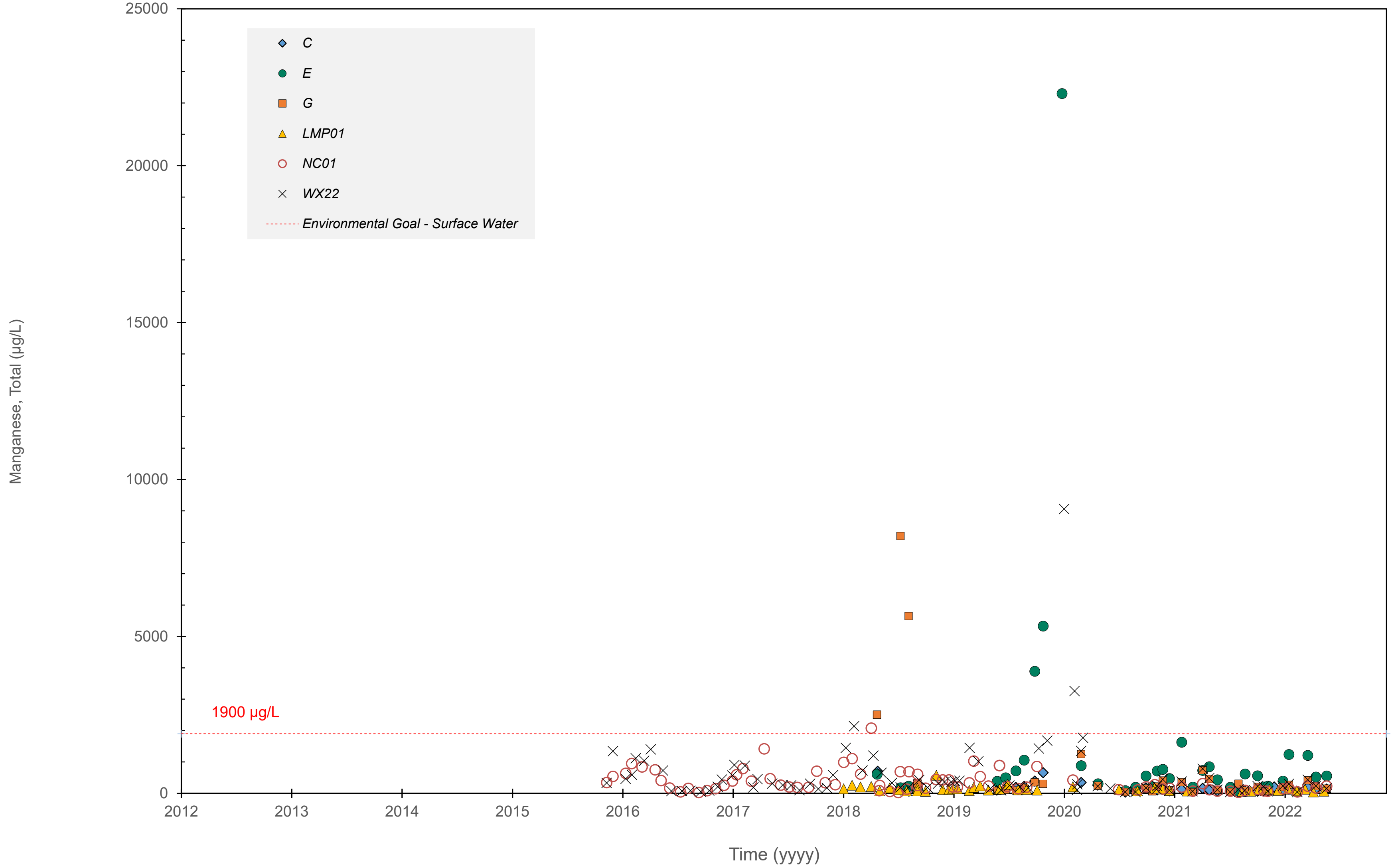

14000
12000
10000
8000
6000
4000
2000
0
Total Dissolved Solids (Filtered) (mg/L)
C
E
G
LMP01
NC01
WX22
Environmental Goal - Surface Water
1500 mg/L
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
Time (yyyy)

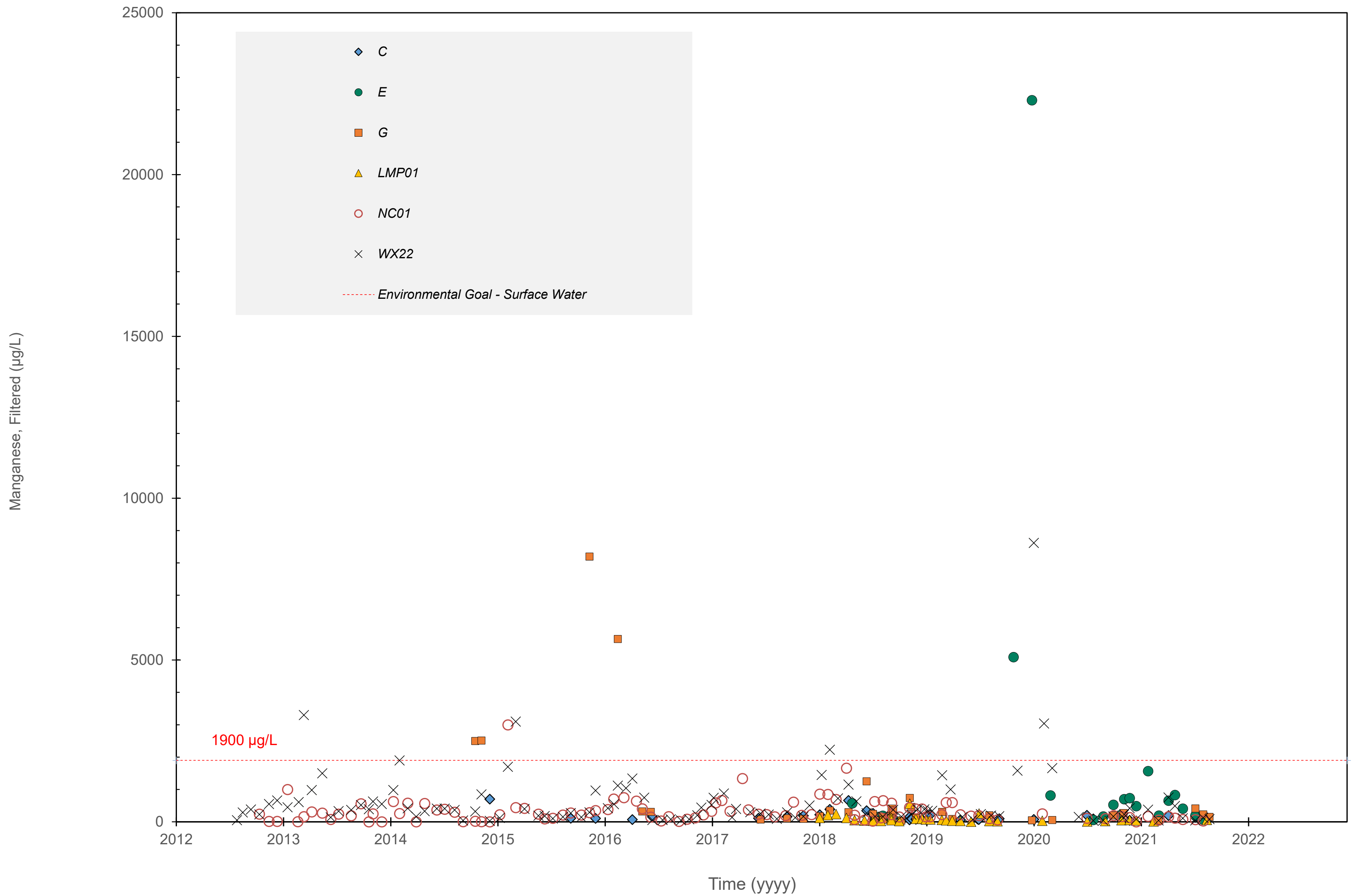

7000
6000
5000
4000
3000
2000
1000
0
Sulfate (as SO_4), Total (mg/L)
C
E
G
LMP01
NC01
WX22
Environmental Goal - Surface Water
1000 mg/L
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
Time (yyyy)

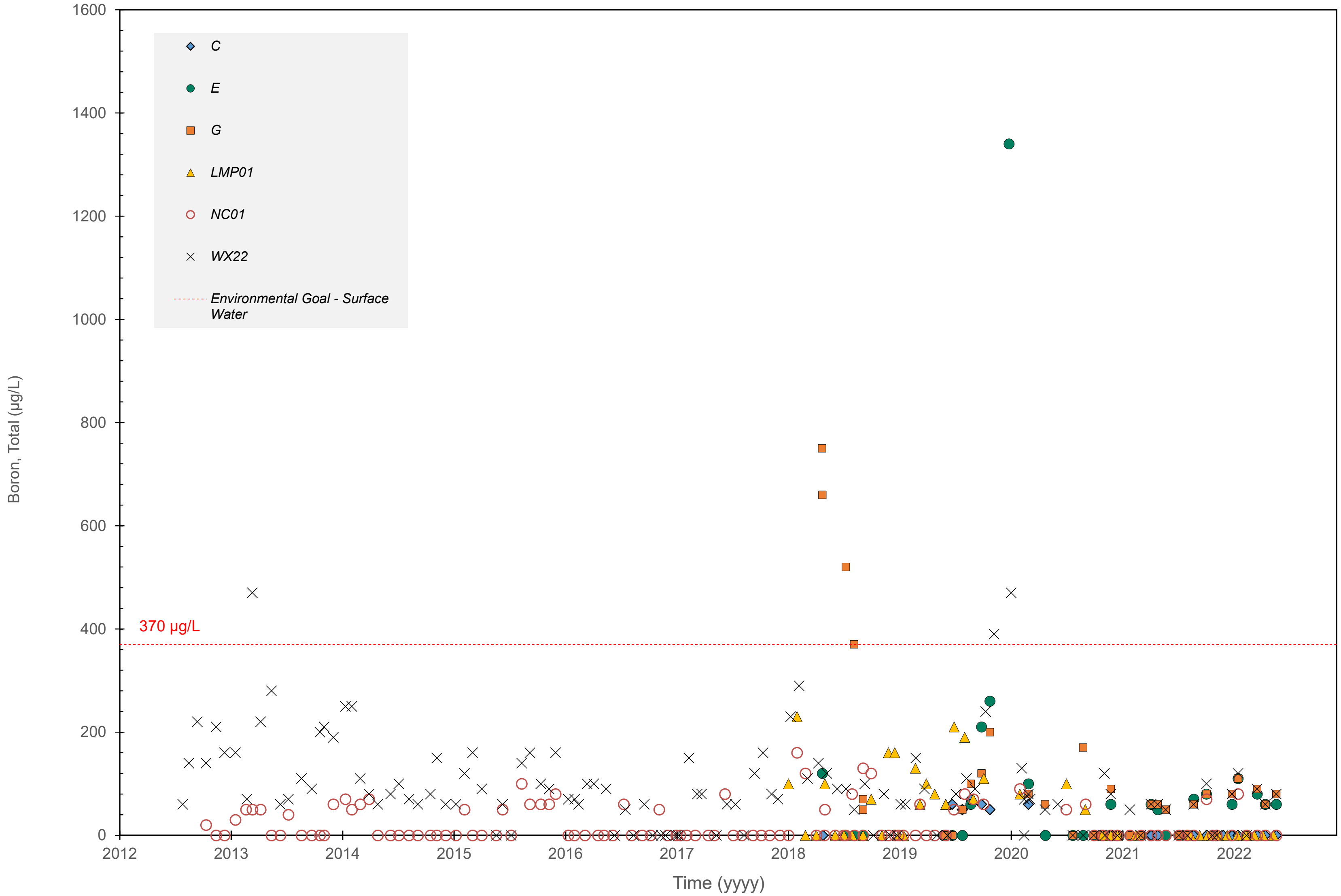

C
E
G
LMP01
NC01
WX22
Environmental Goal - Surface Water
350 mg/L
Chloride, Total (mg/L)
Time (yyyy)
0
200
400
600
800
1000
1200
1400
1600
1800
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022

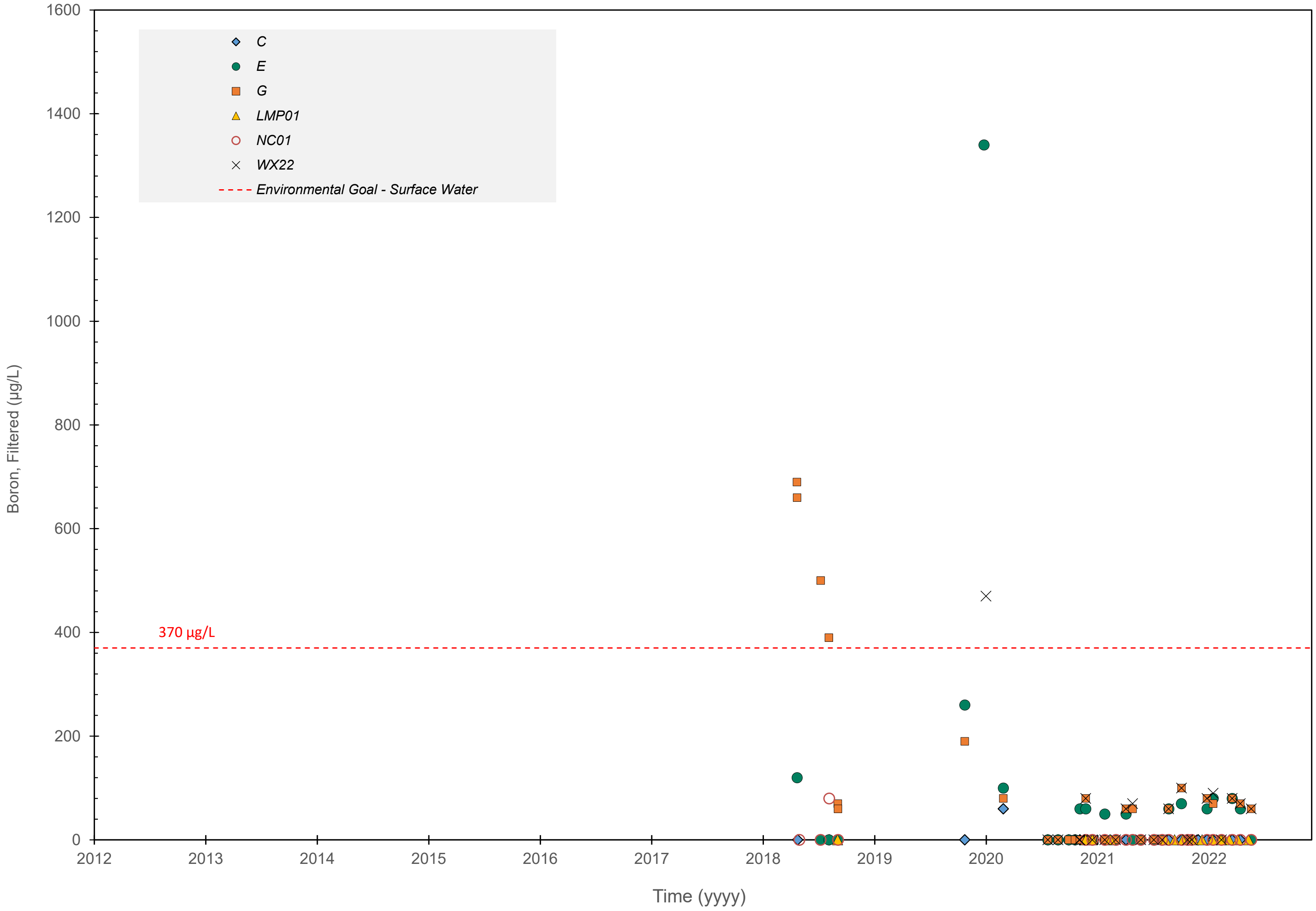

C
E
G
LMP01
NC01
WX22
Environmental Goal - Surface Water
17 µg/L
Nickel, Total (µg/L)
Time (yyyy)
0
200
400
600
800
1000
1200
1400
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022


1400
1200
1000
800
600
400
200
0
Nickel, Filtered (µg/L)
C
E
G
LMP01
NC01
WX22
Environmental Goal - Surface Water
17 µg/L
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
Time (yyyy)

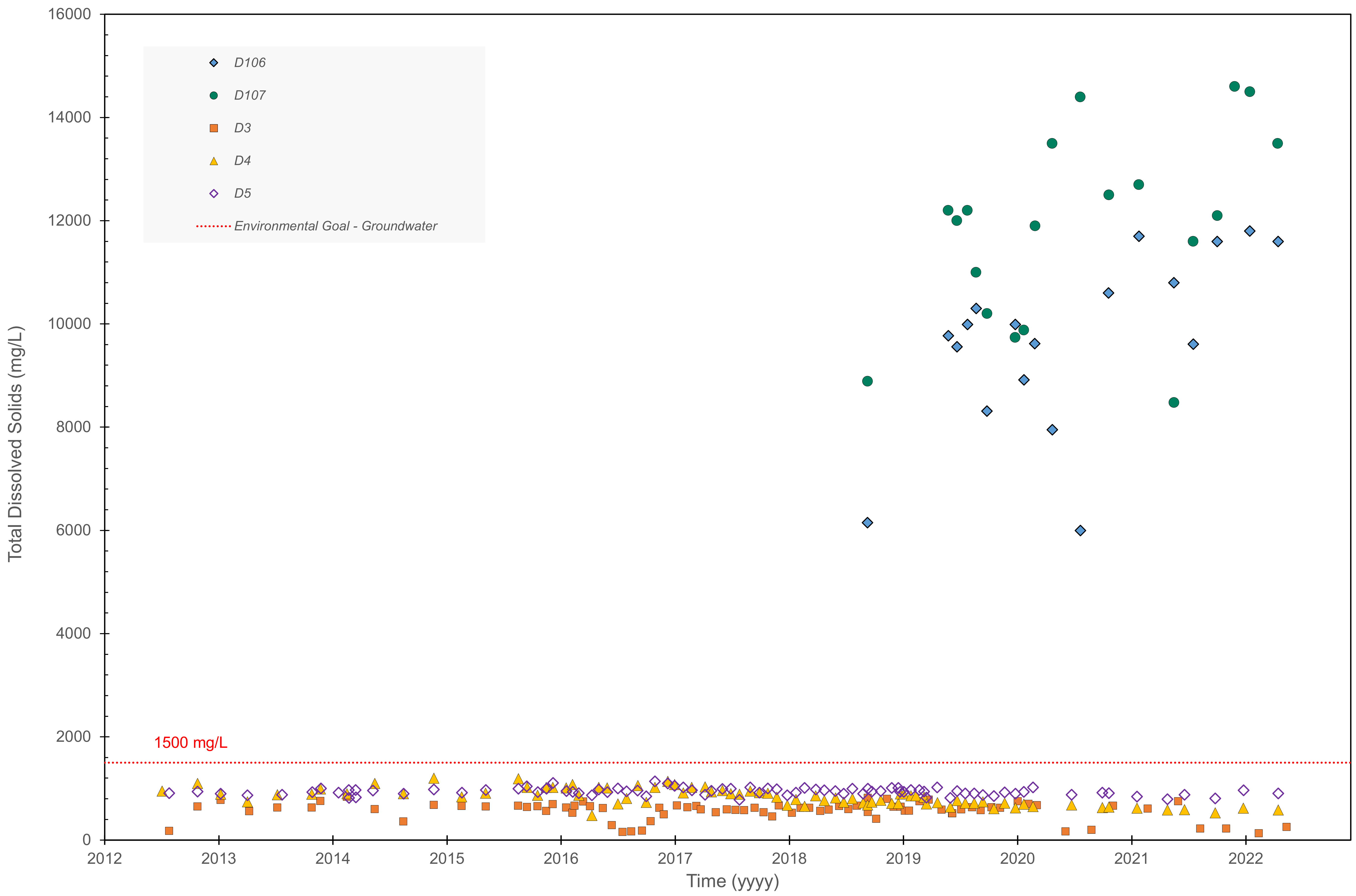

C
E
G
LMP01
NC01
WX22
Environmental Goal - Surface Water
1900 µg/L
25000
20000
15000
10000
5000
0
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
Manganese, Total (µg/L)
Time (yyyy)

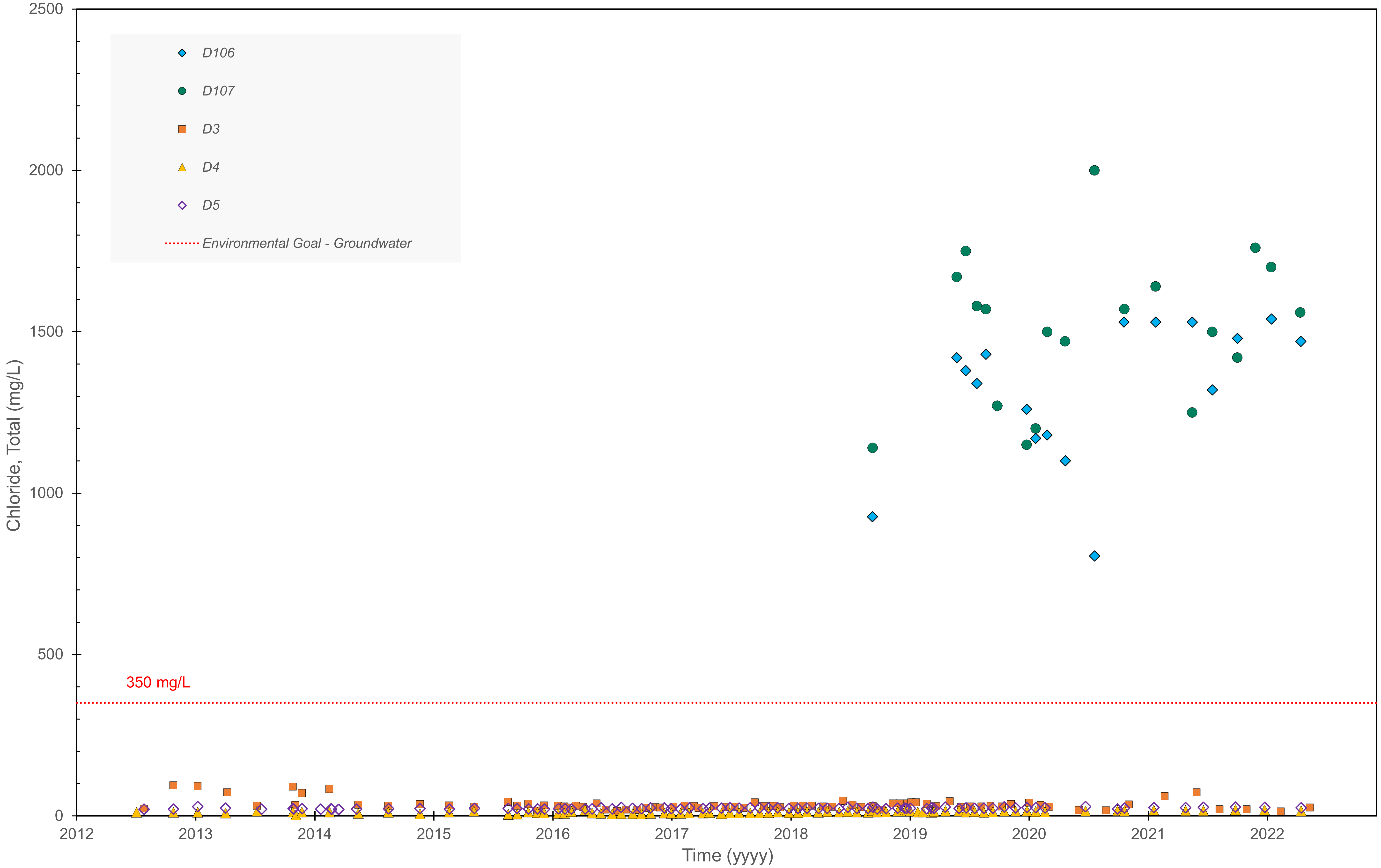

25000
20000
15000
10000
5000
0
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
Manganese, Filtered (µg/L)
Time (yyyy)
C
E
G
LMP01
NC01
WX22
Environmental Goal - Surface Water
1900 µg/L

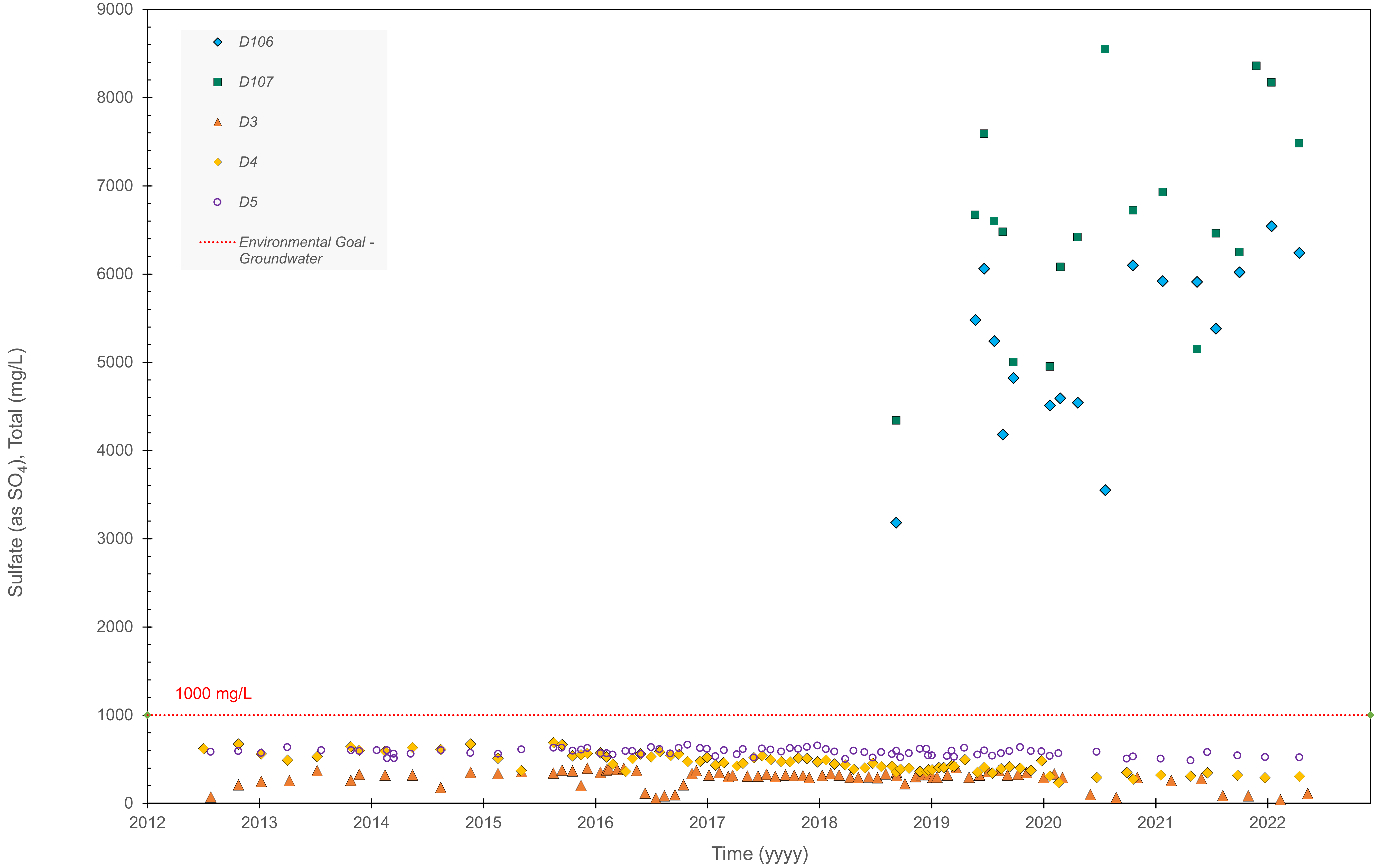

C
E
G
LMP01
NC01
WX22
Environmental Goal - Surface Water
370 µg/L
Boron, Total (µg/L)
Time (yyyy)
0
200
400
600
800
1000
1200
1400
1600
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022

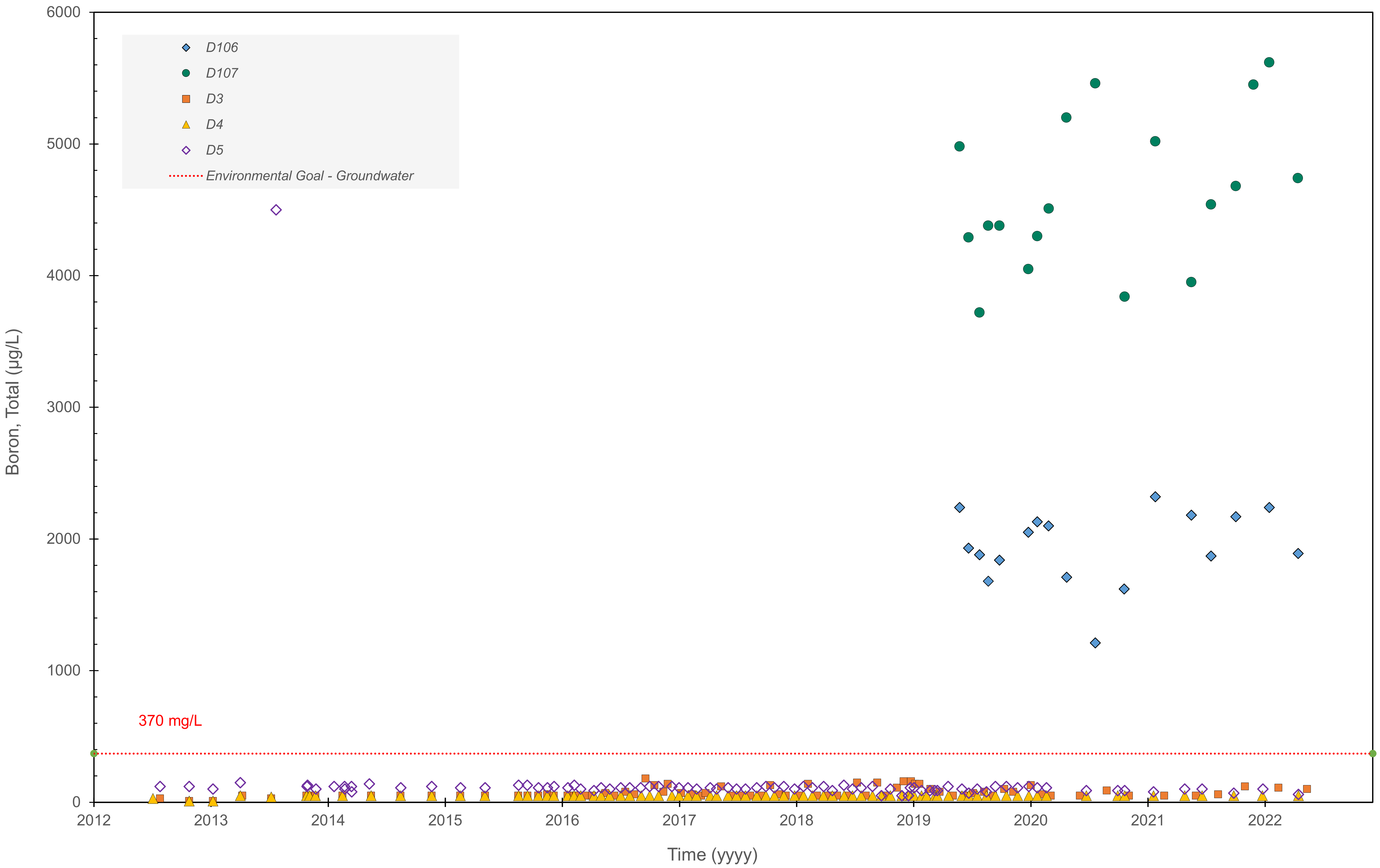

C
E
G
LMP01
NC01
WX22
Environmental Goal - Surface Water
370 µg/L
Boron, Filtered (µg/L)
Time (yyyy)
0
200
400
600
800
1000
1200
1400
1600
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022

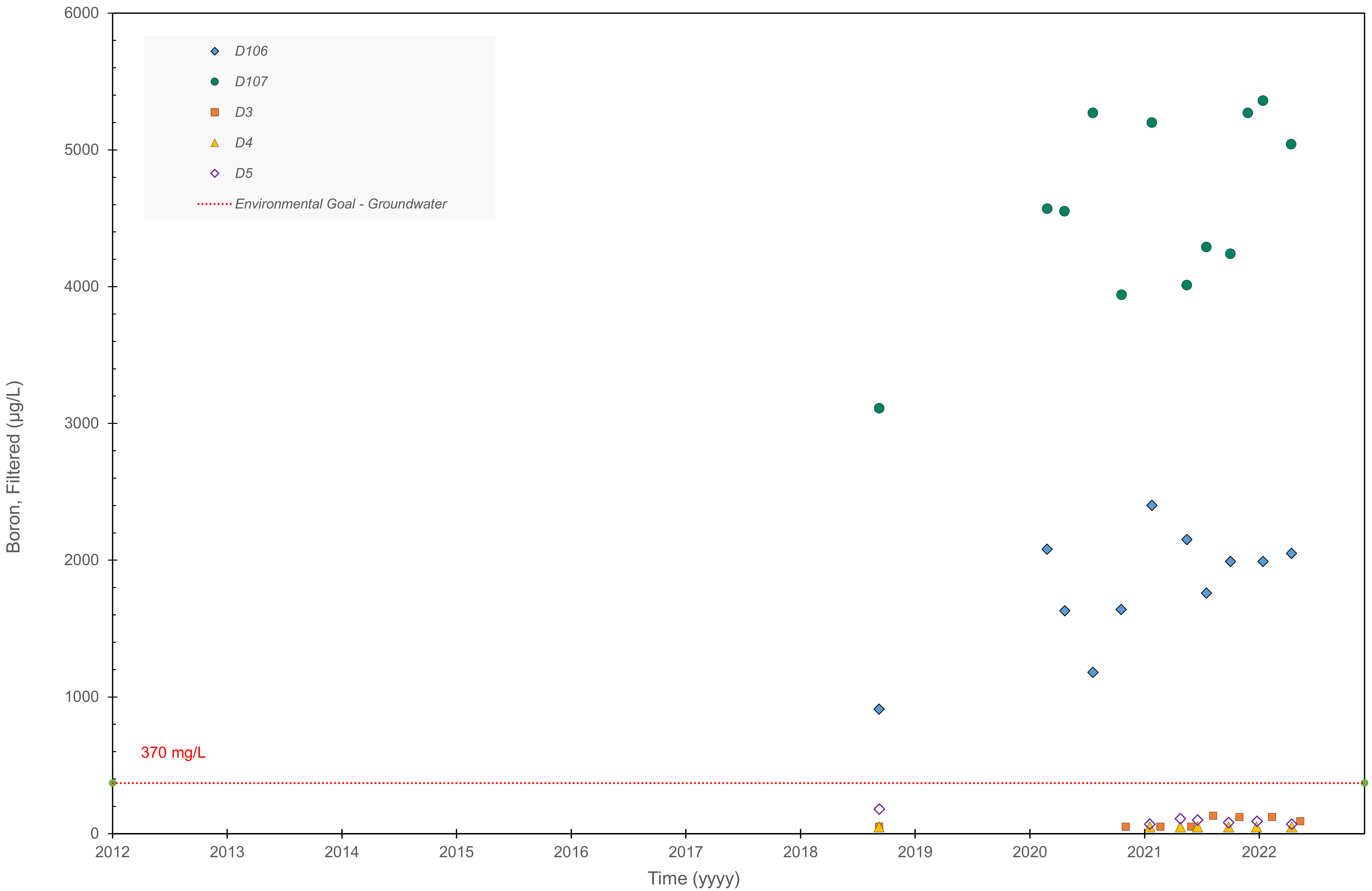
APPENDIX J GROUNDWATER TRENDS

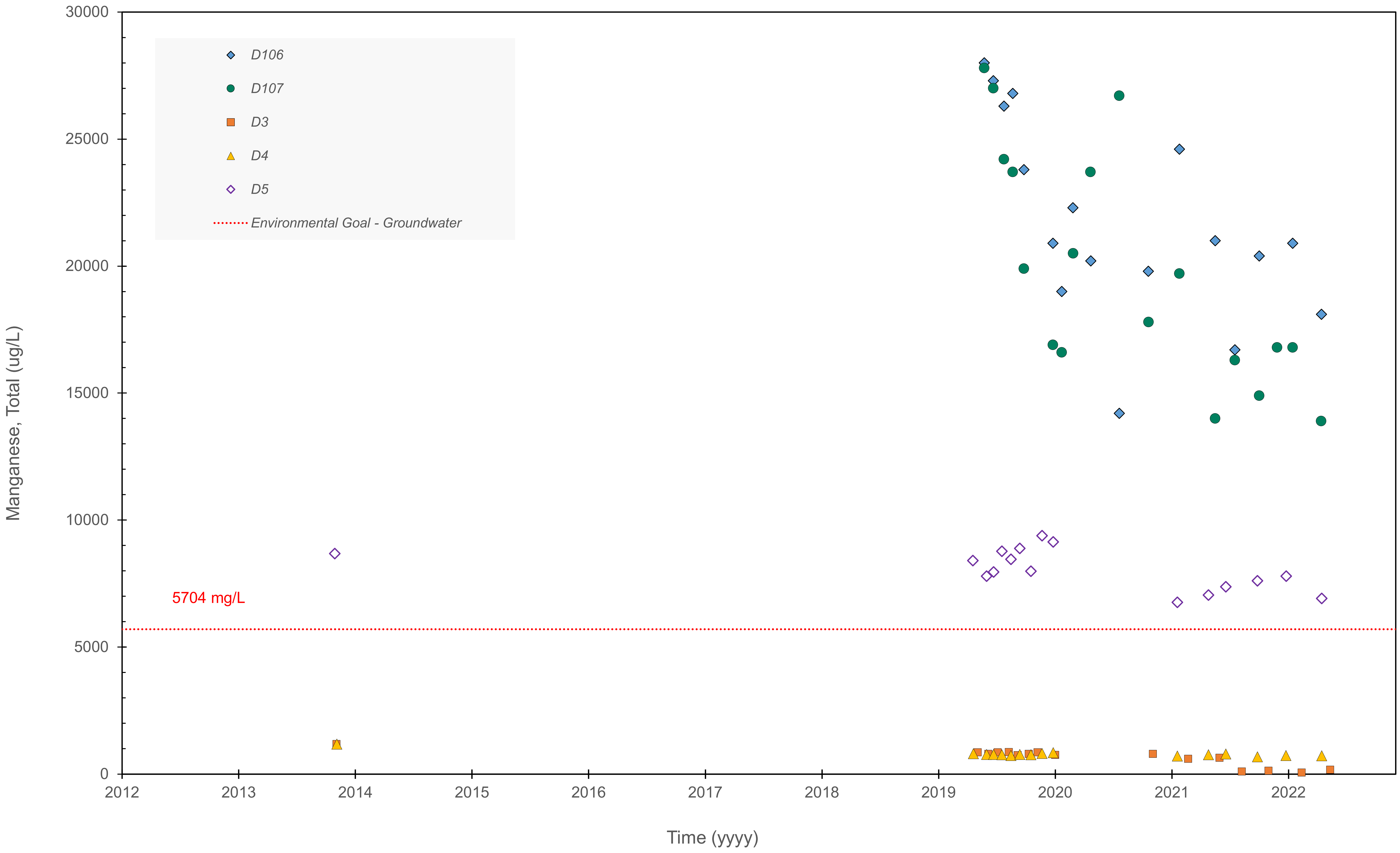

D106
D107
D3
D4
D5
Environmental Goal - Groundwater
1500 mg/L
Total Dissolved Solids (mg/L)
0
2000
4000
6000
8000
10000
12000
14000
16000
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
Time (yyyy)

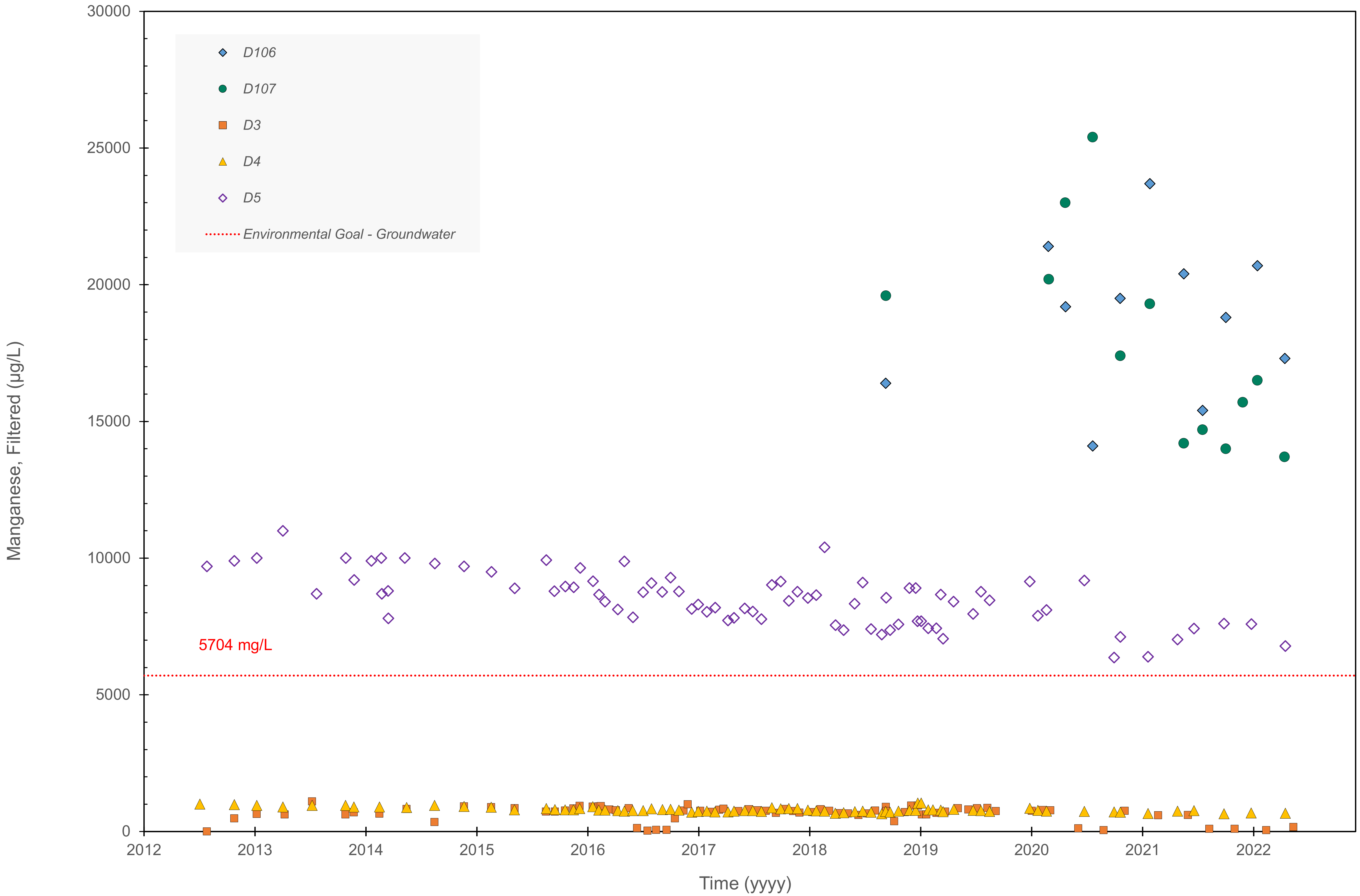

D106
D107
D3
D4
D5
Environmental Goal - Groundwater
350 mg/L
Chloride, Total (mg/L)
Time (yyyy)
0
500
1000
1500
2000
2500
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022

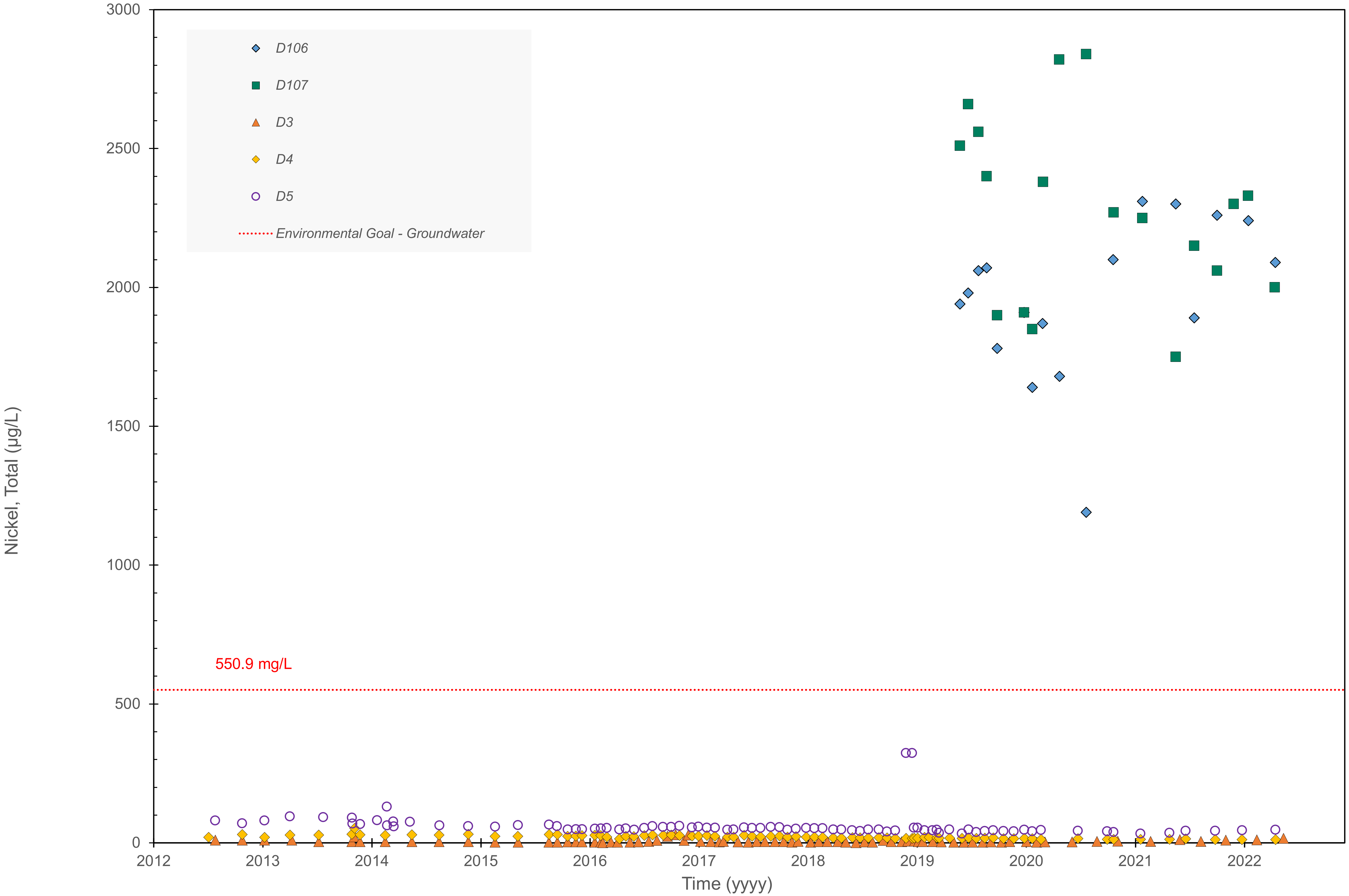

D106
D107
D3
D4
D5
Environmental Goal - Groundwater
1000 mg/L
9000
8000
7000
6000
5000
4000
3000
2000
1000
0
Sulfate (as SO4), Total (mg/L)
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
Time (yyyy)

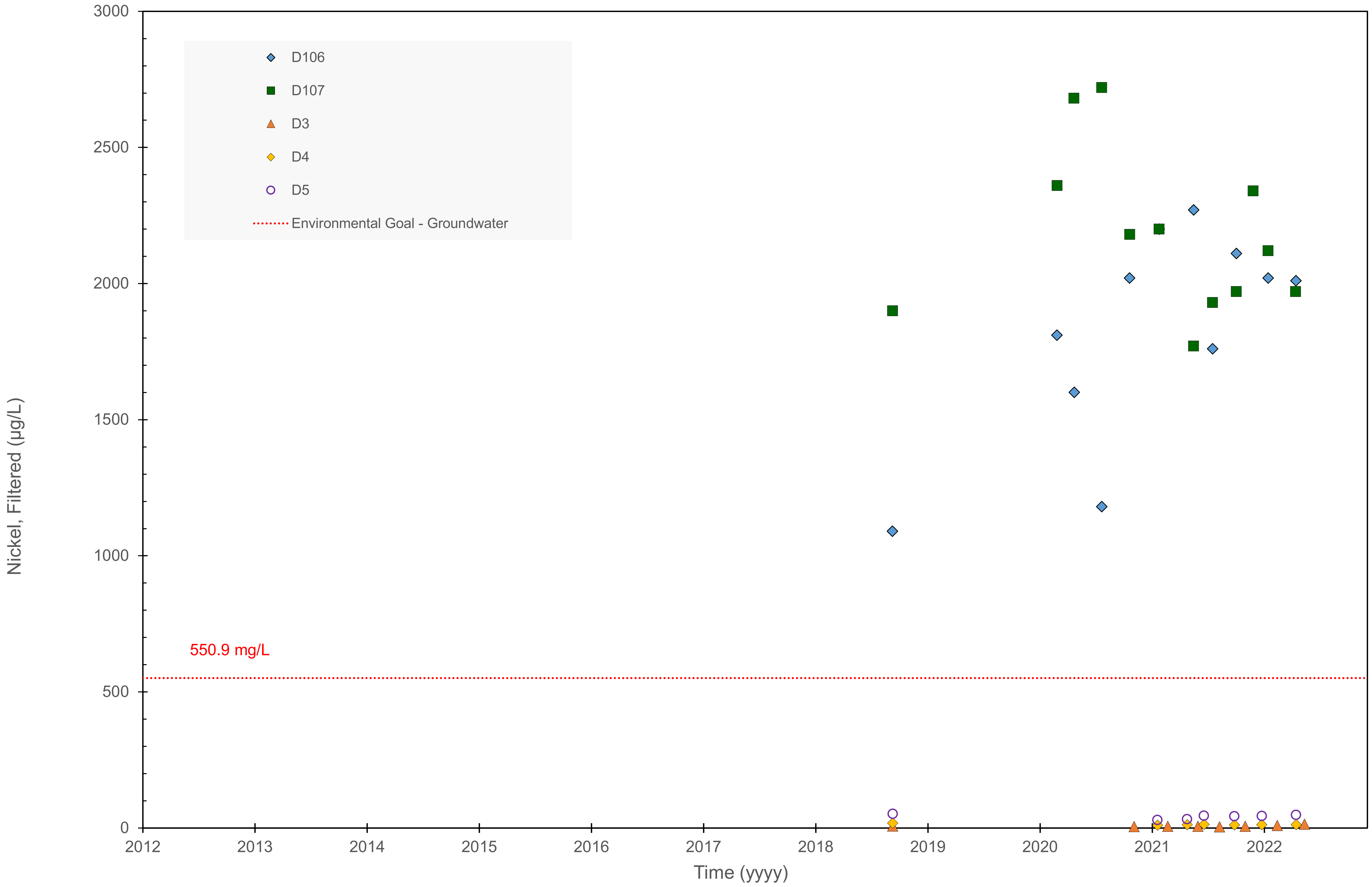

D106
D107
D3
D4
D5
Environmental Goal - Groundwater
370 mg/L
Boron, Total (µg/L)
Time (yyyy)
0
1000
2000
3000
4000
5000
6000
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022

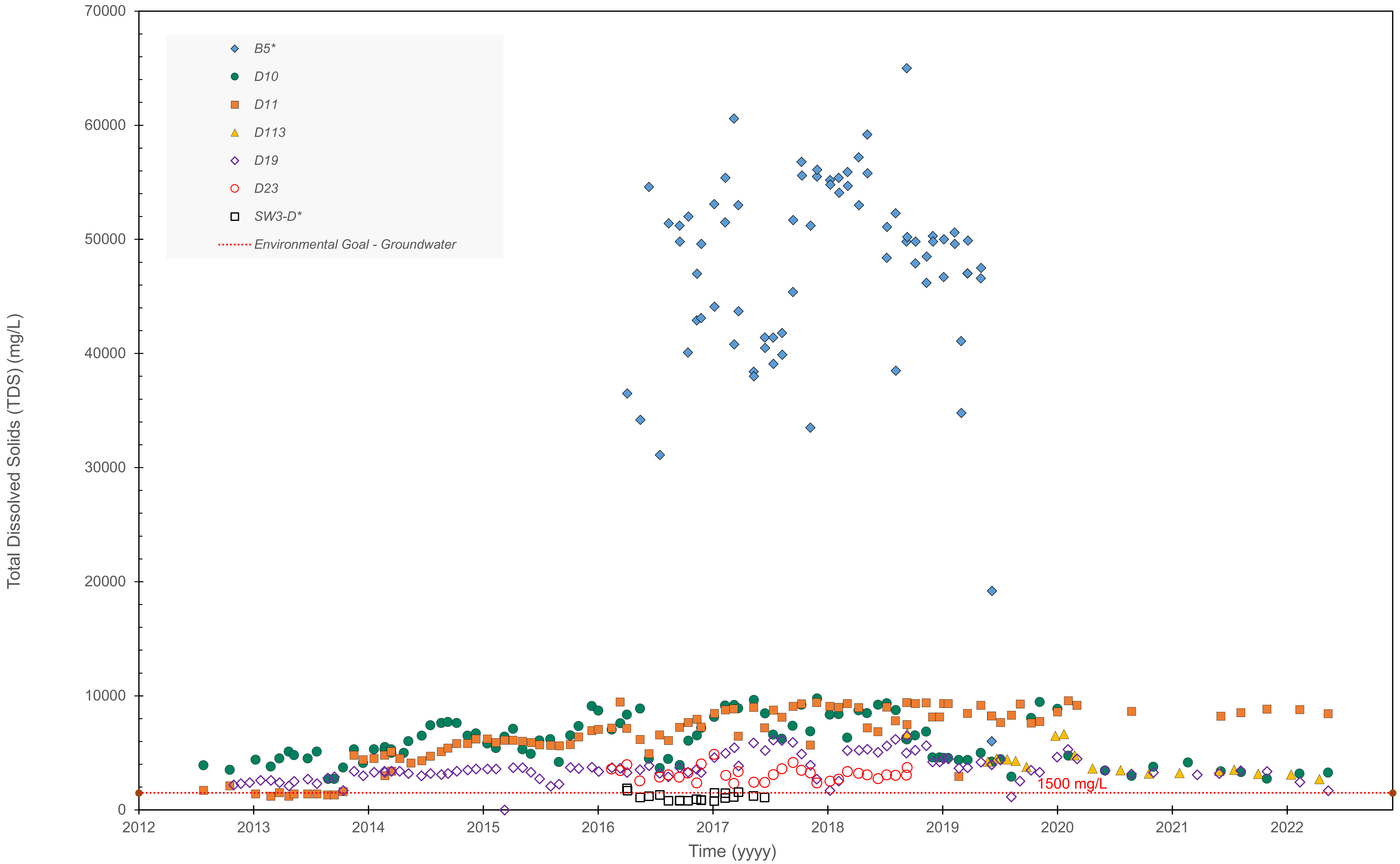

D106
D107
D3
D4
D5
Environmental Goal - Groundwater
370 mg/L
Boron, Filtered (µg/L)
Time (yyyy)
0
1000
2000
3000
4000
5000
6000
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022


D106
D107
D3
D4
D5
Environmental Goal - Groundwater
5704 mg/L
Manganese, Total (ug/L)
Time (yyyy)
30000
25000
20000
15000
10000
5000
0
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022

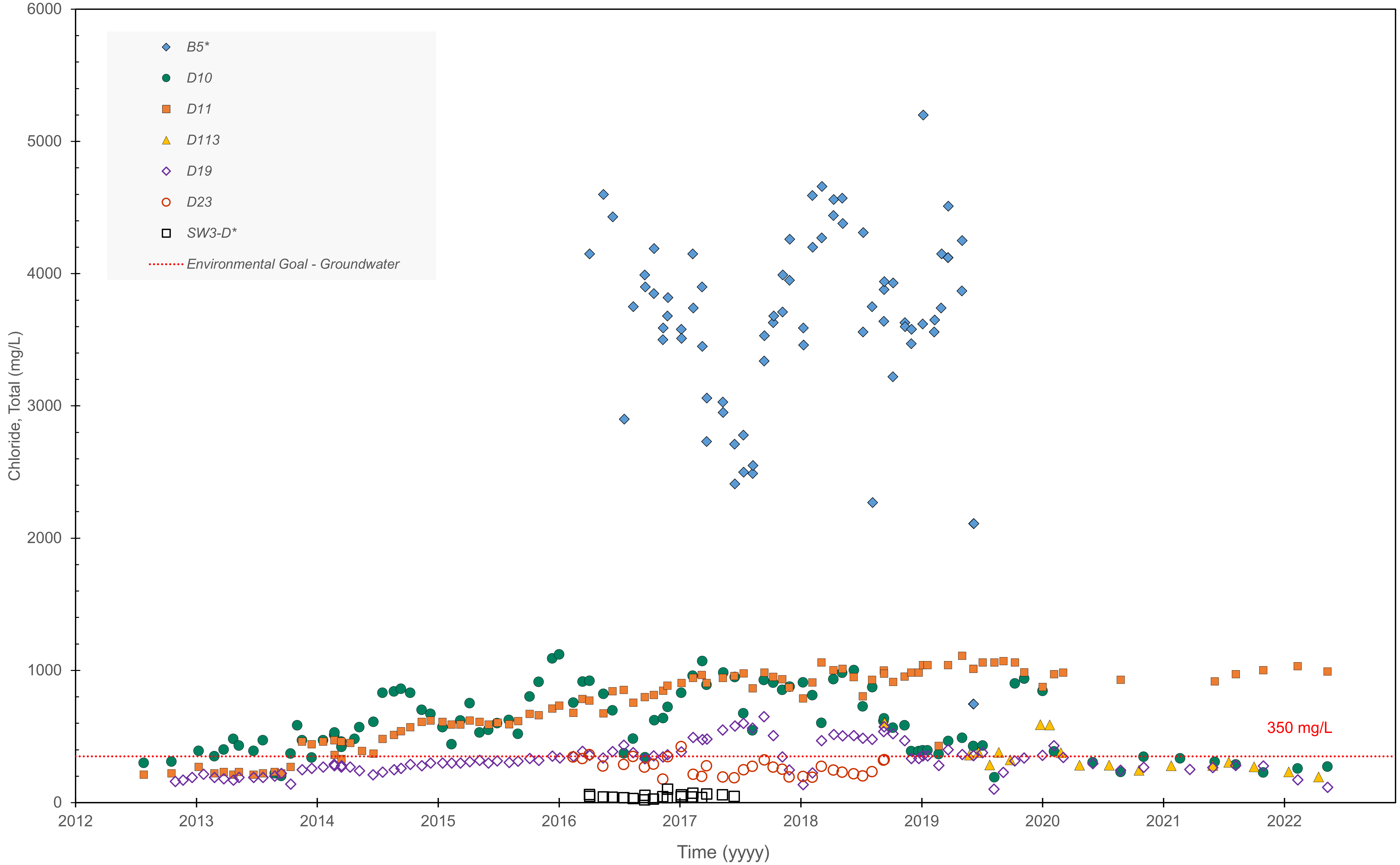

D106
D107
D3
D4
D5
Environmental Goal - Groundwater
5704 mg/L
Manganese, Filtered (µg/L)
Time (yyyy)
30000
25000
20000
15000
10000
5000
0
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022


3000
2500
2000
1500
1000
500
0
D106
D107
D3
D4
D5
Environmental Goal - Groundwater
550.9 mg/L
Nickel, Total (µg/L)
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
Time (yyyy)

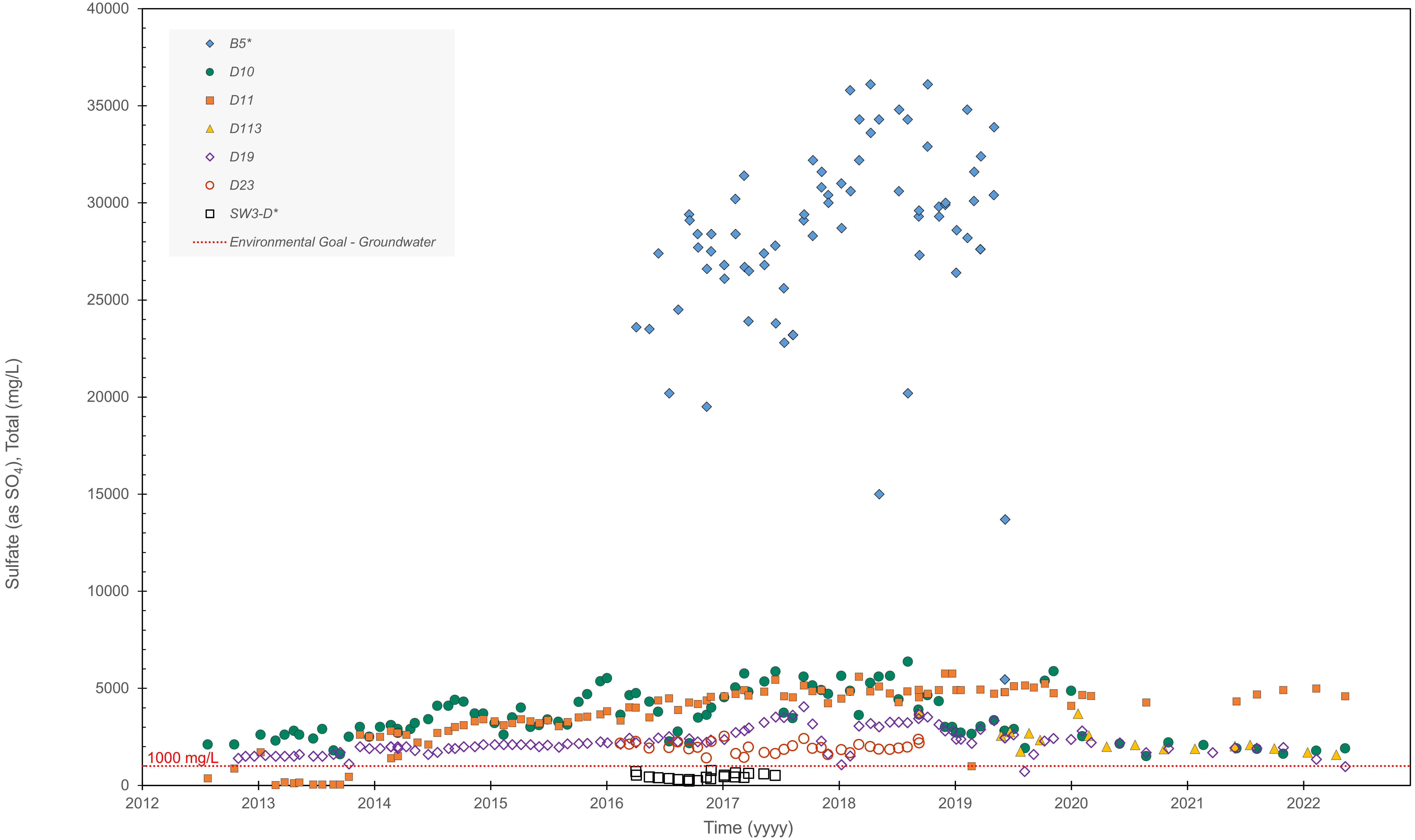

3000
2500
2000
1500
1000
500
0
D106
D107
D3
D4
D5
Environmental Goal - Groundwater
550.9 mg/L
Nickel, Filtered (µg/L)
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
Time (yyyy)



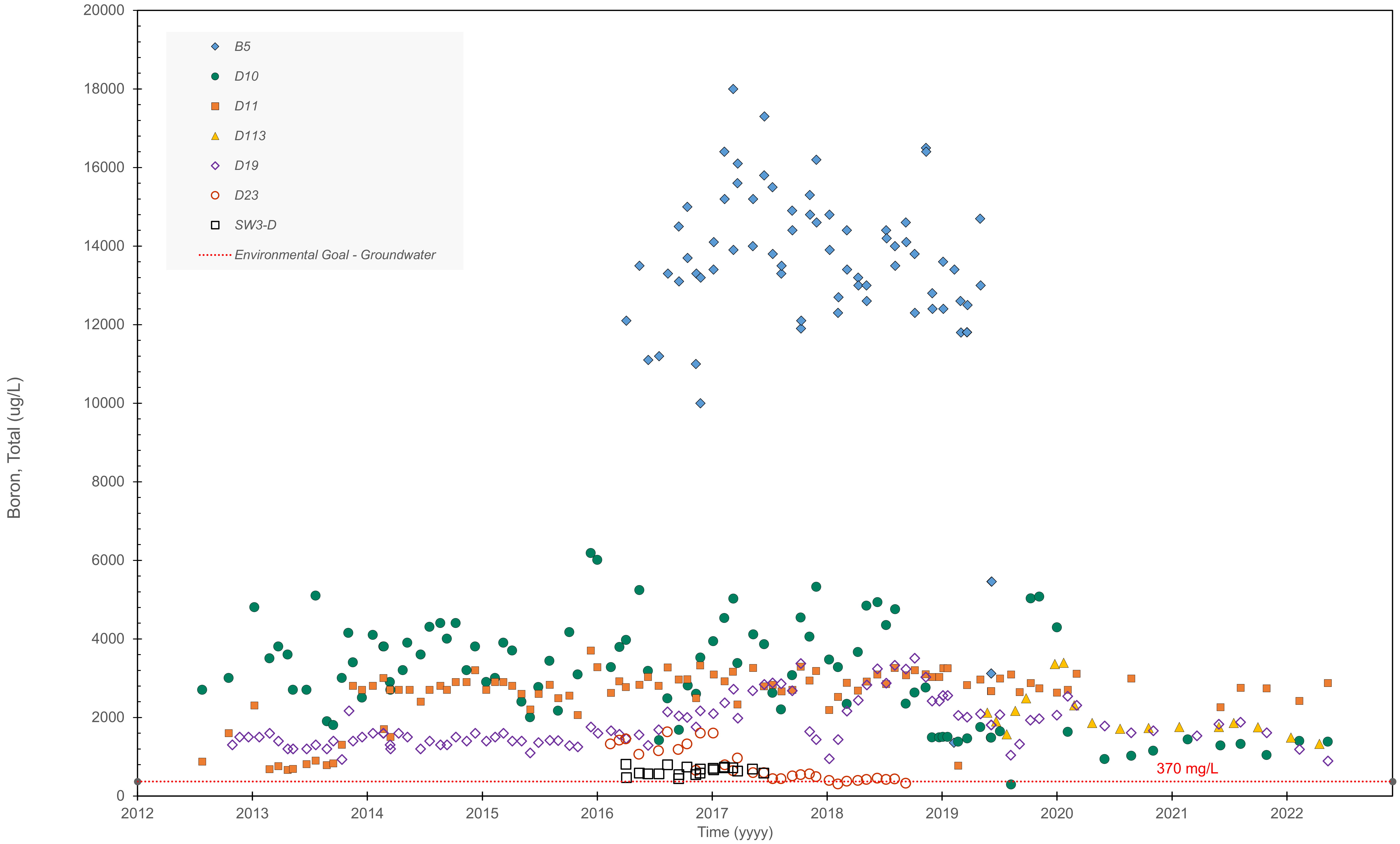
*Data for B5 and SWD-3 has not been supplied by EnergyAustralia since 2017 due to wells reported as either blocked or dry.



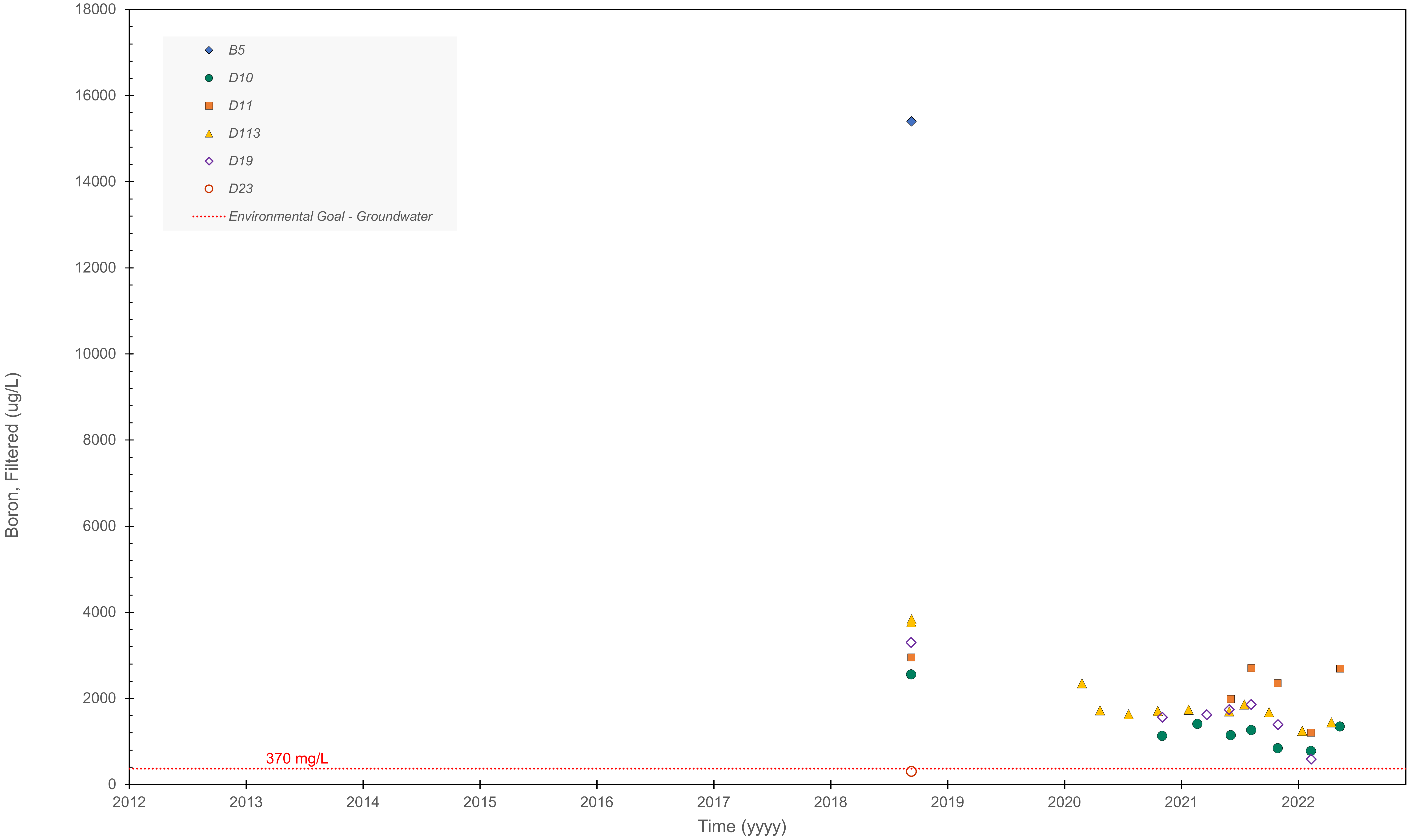
*Data for B5 and SWD-3 has not been supplied by EnergyAustralia since 2017 due to wells reported as either blocked or dry.



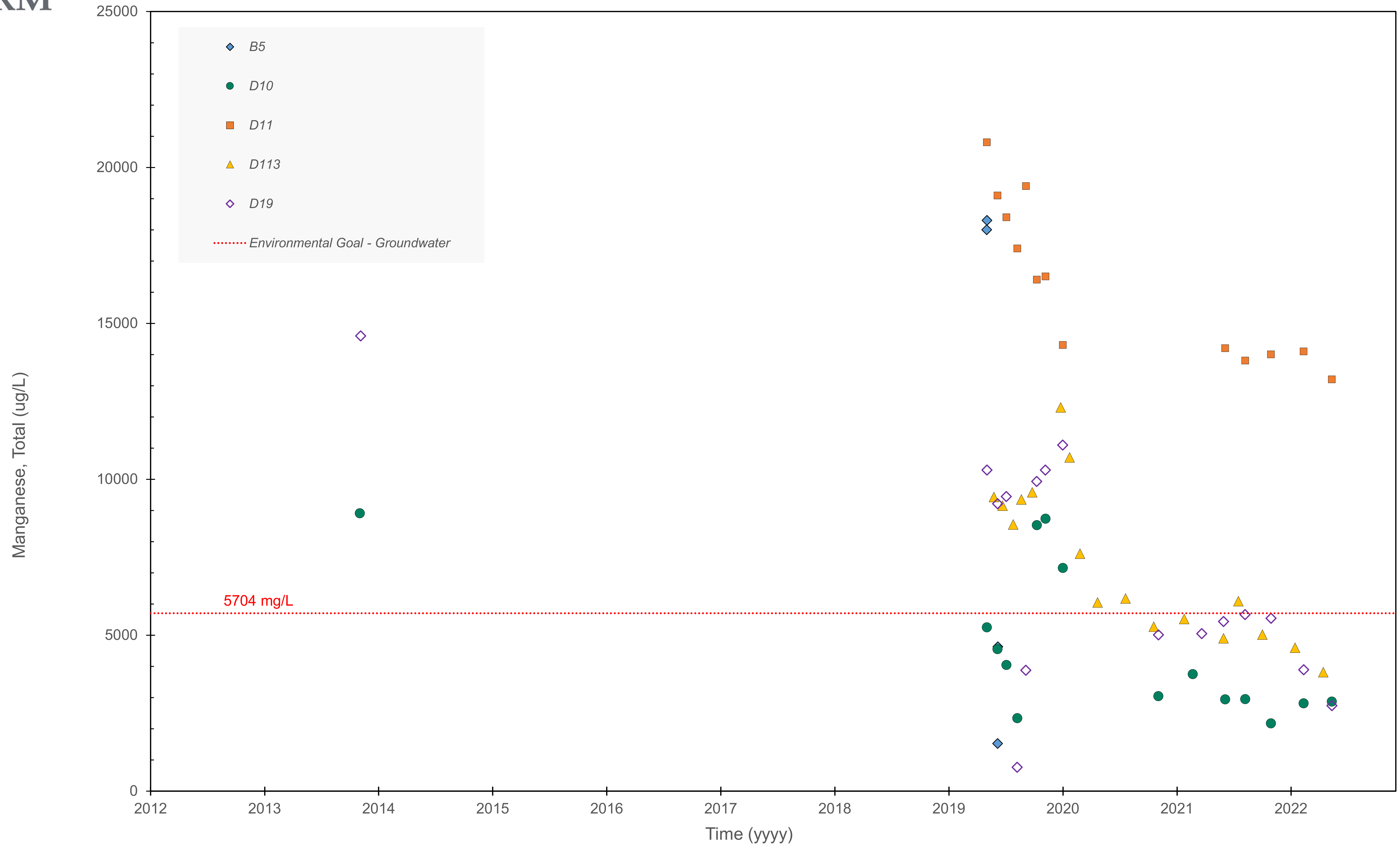
*Data for B5 and SWD-3 has not been supplied by EnergyAustralia since 2017 due to wells reported as either blocked or dry.

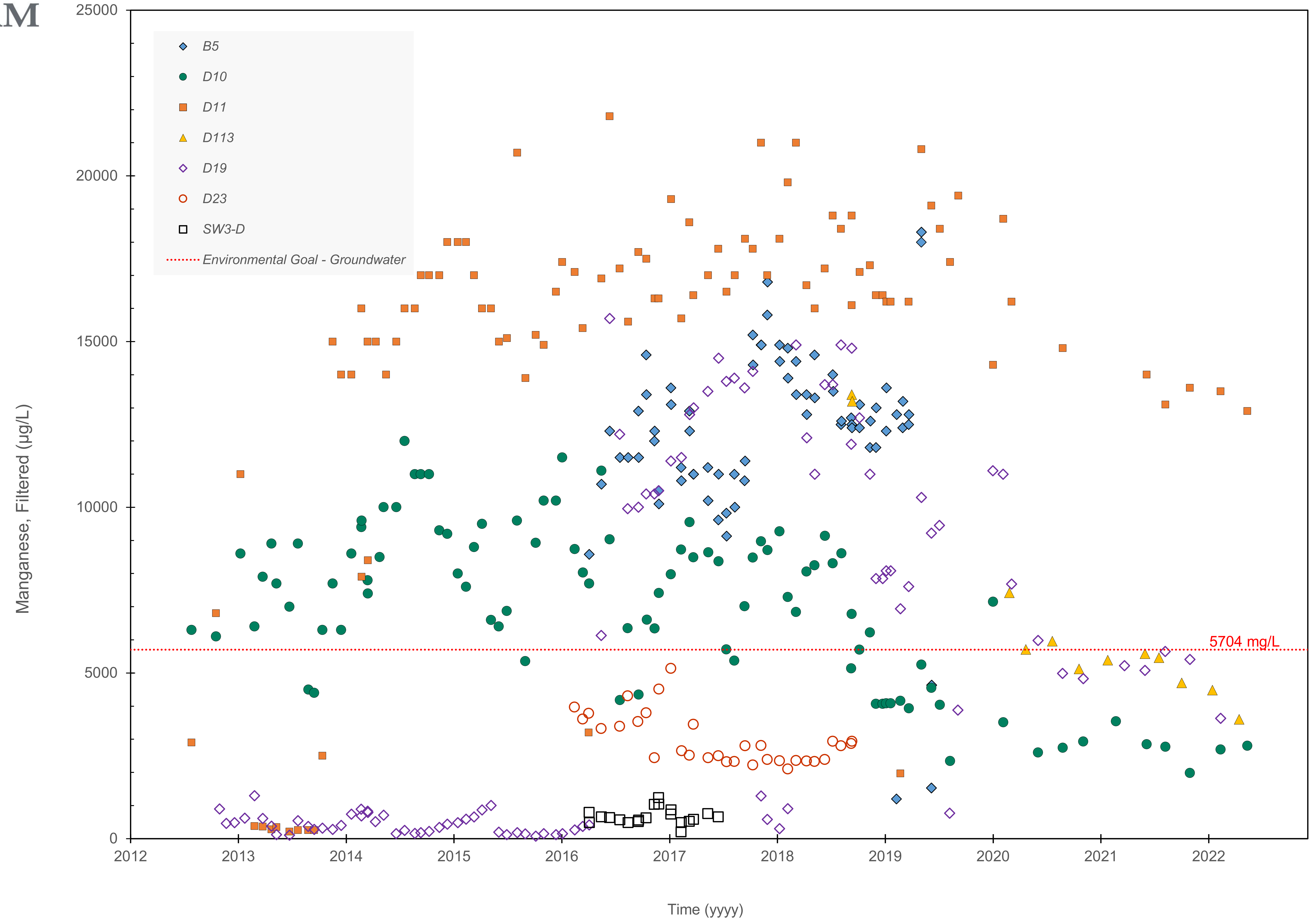


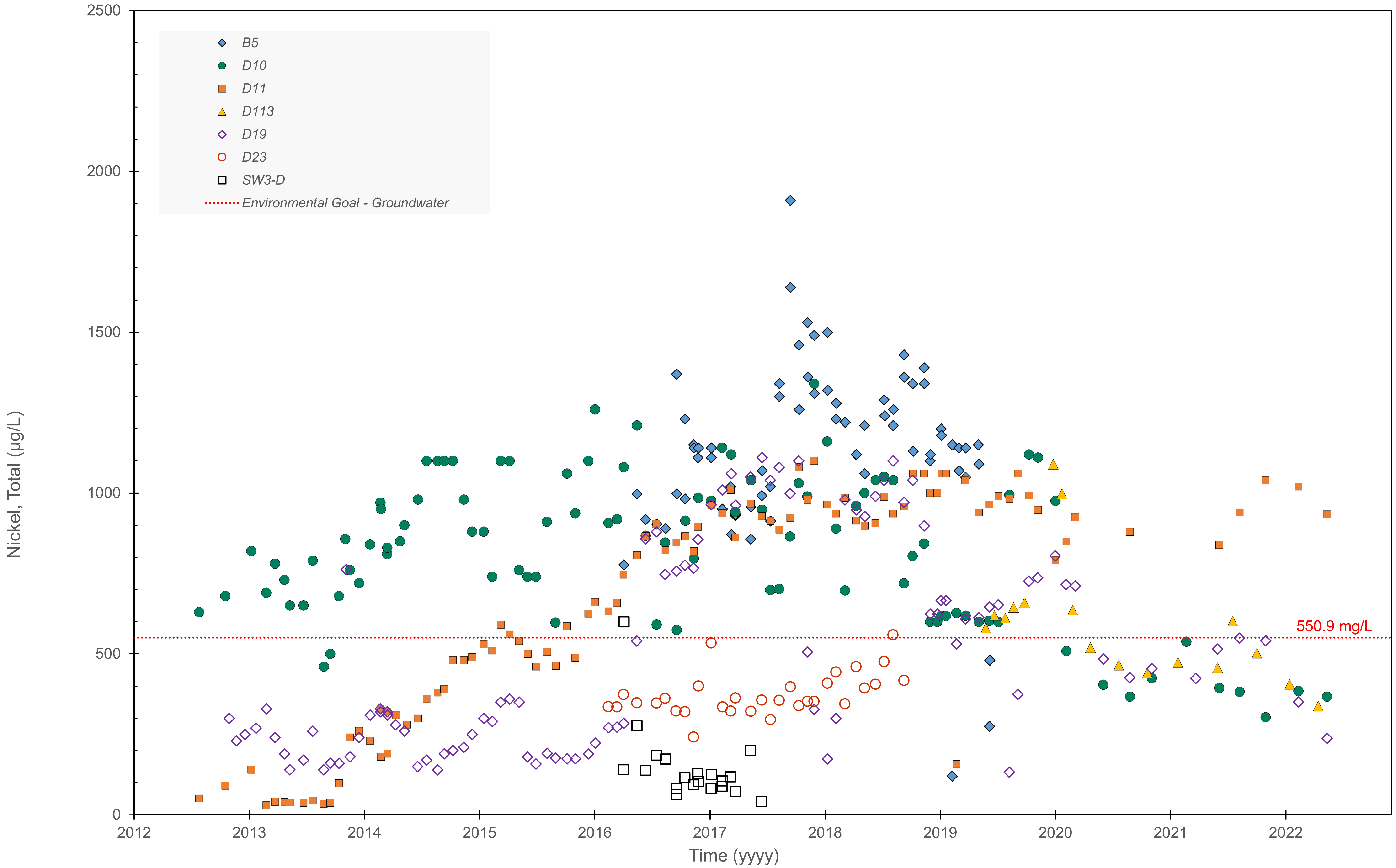
*Data for B5 and SWD-3 has not been supplied by EnergyAustralia since 2017 due to wells reported as either blocked or dry.

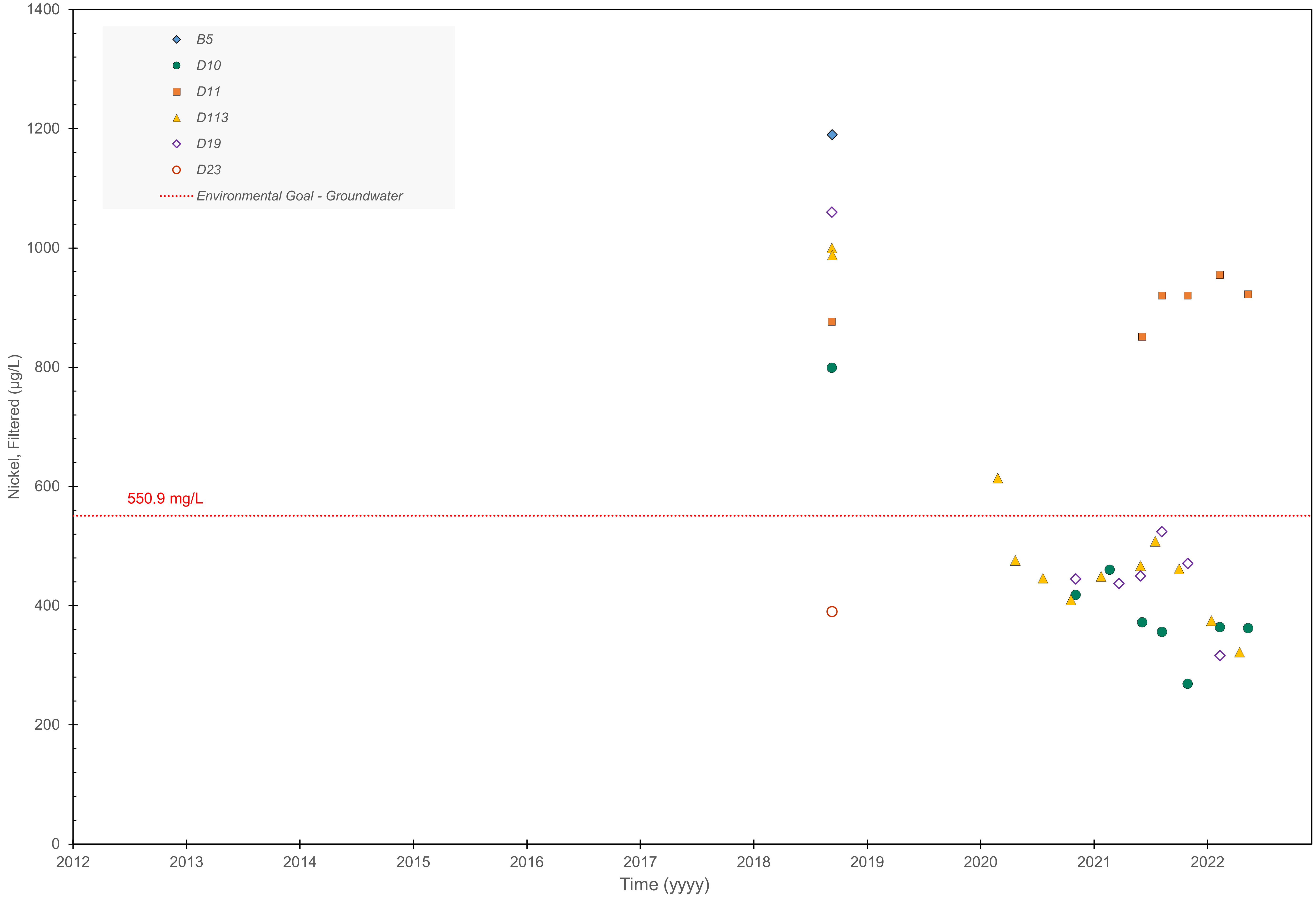


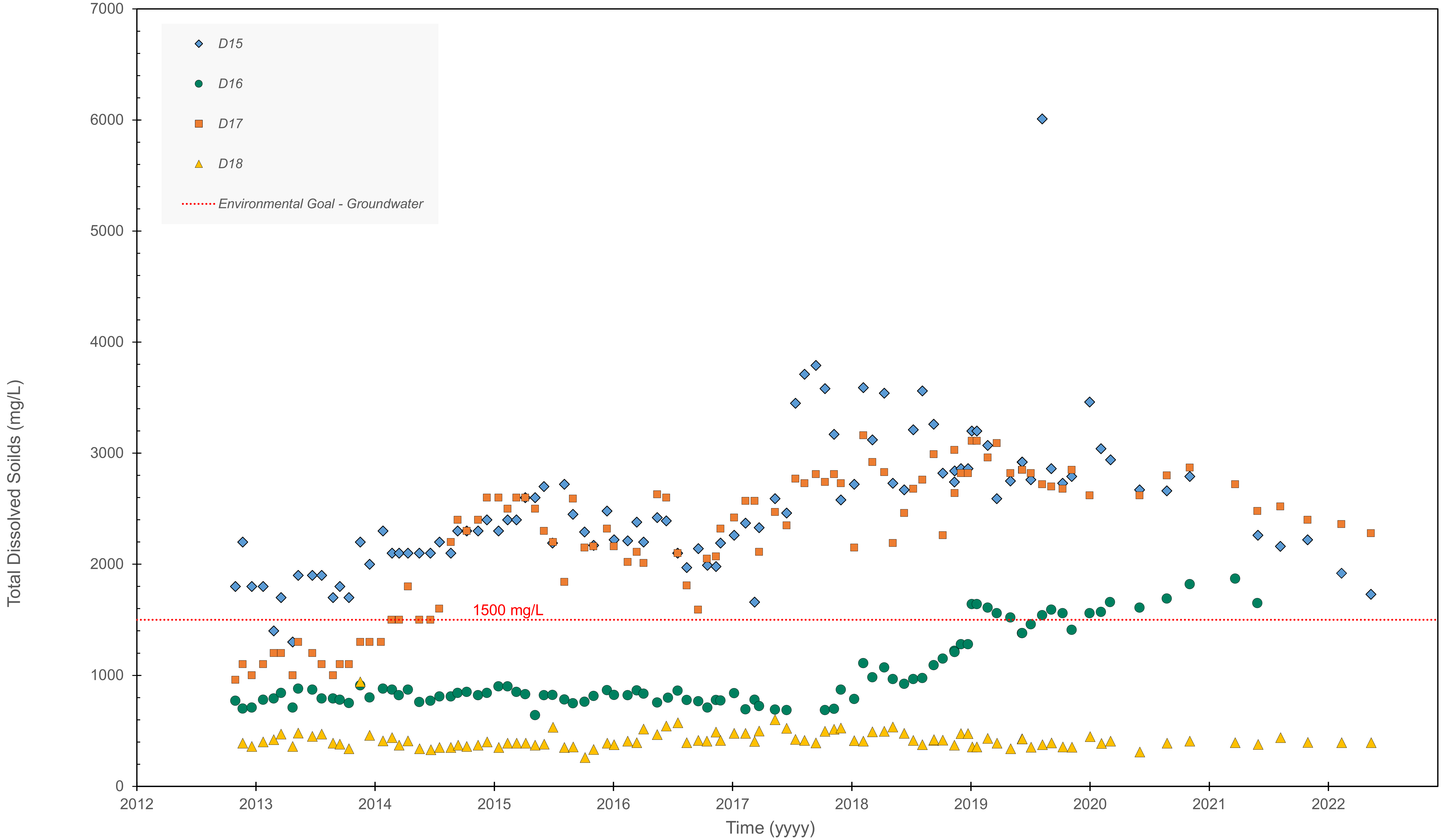
*Data for B5 and SWD-3 has not been supplied by EnergyAustralia since 2017 due to wells reported as either blocked or dry.

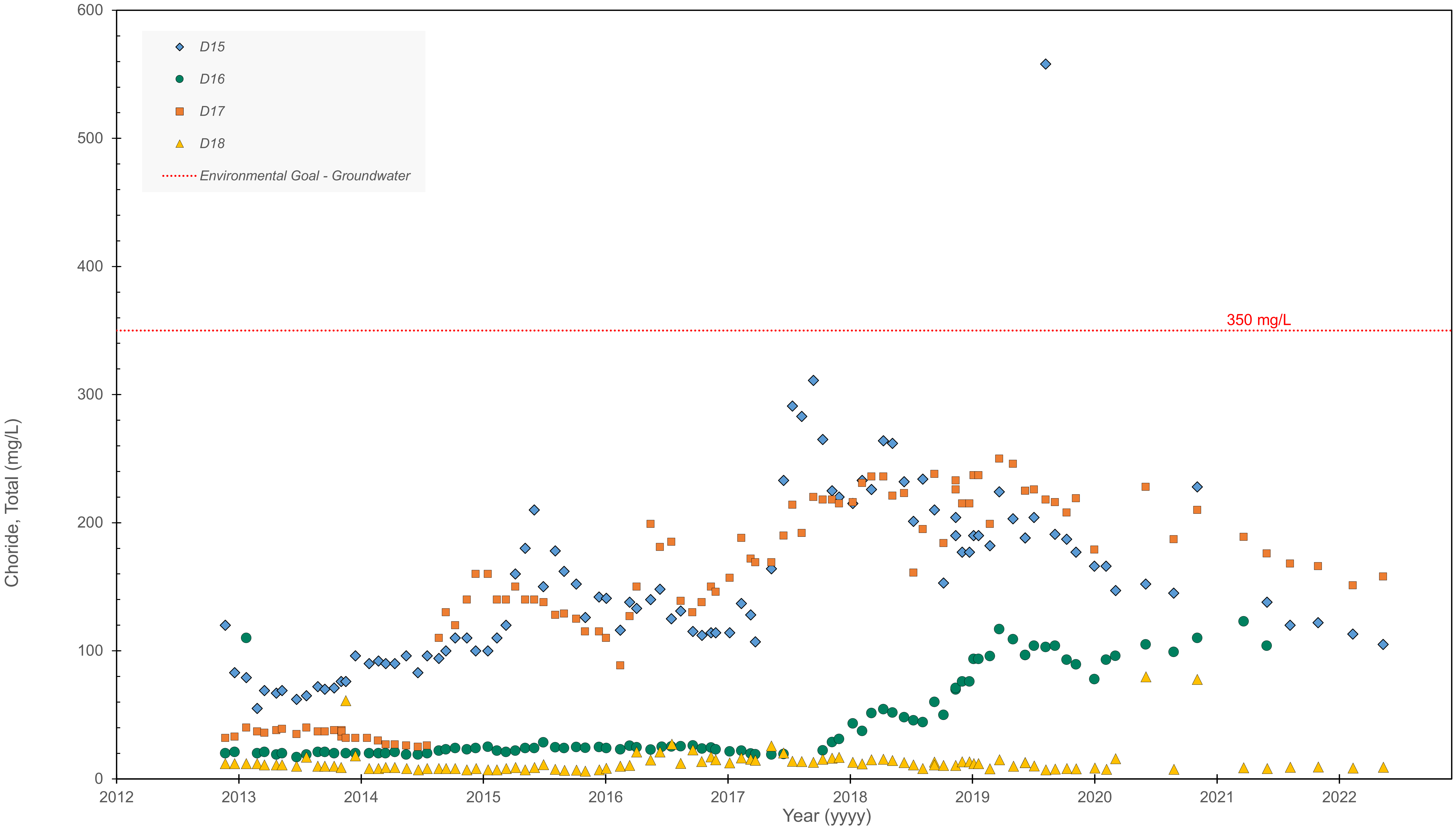

25000
20000
15000
10000
5000
0
Manganese, Total (ug/L)
B5
D10
D11
D113
D19
Environmental Goal - Groundwater
5704 mg/L
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
Time (yyyy)

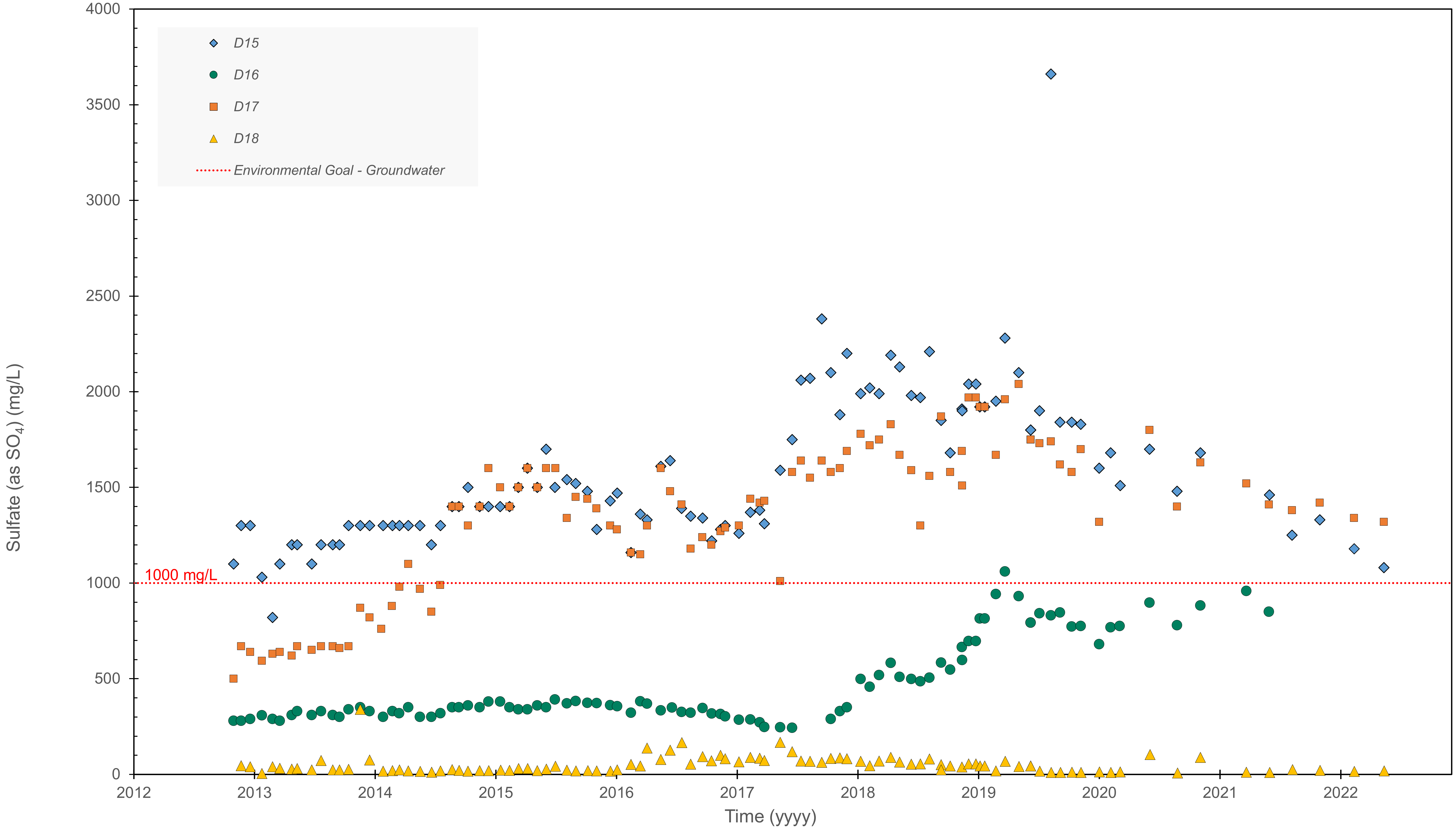

B5
D10
D11
D113
D19
D23
SW3-D
Environmental Goal - Groundwater
5704 mg/L
Manganese, Filtered (µg/L)
Time (yyyy)
25000
20000
15000
10000
5000
0
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022

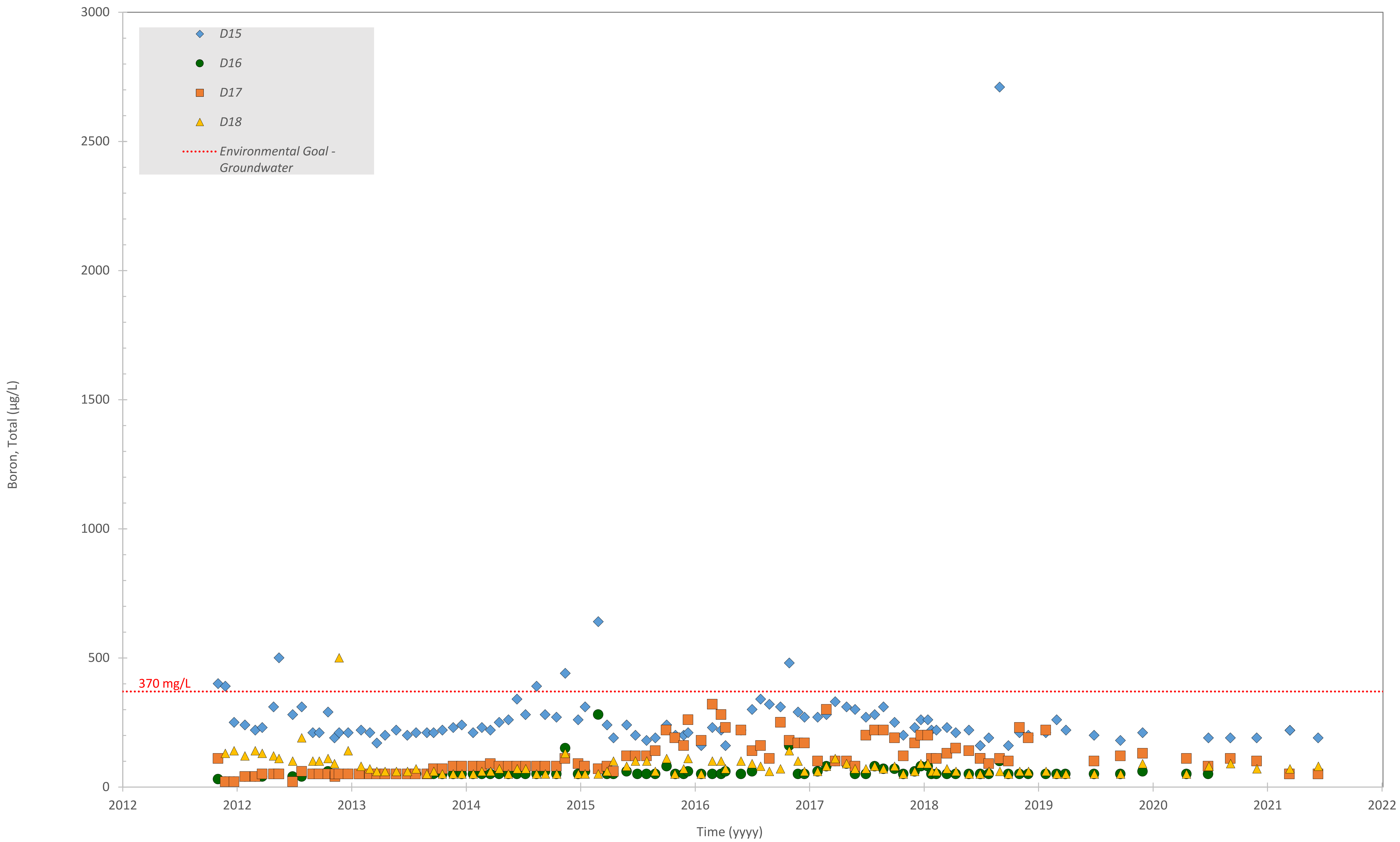

B5
D10
D11
D113
D19
D23
SW3-D
Environmental Goal - Groundwater
550.9 mg/L
Nickel, Total (µg/L)
Time (yyyy)
0
500
1000
1500
2000
2500
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022

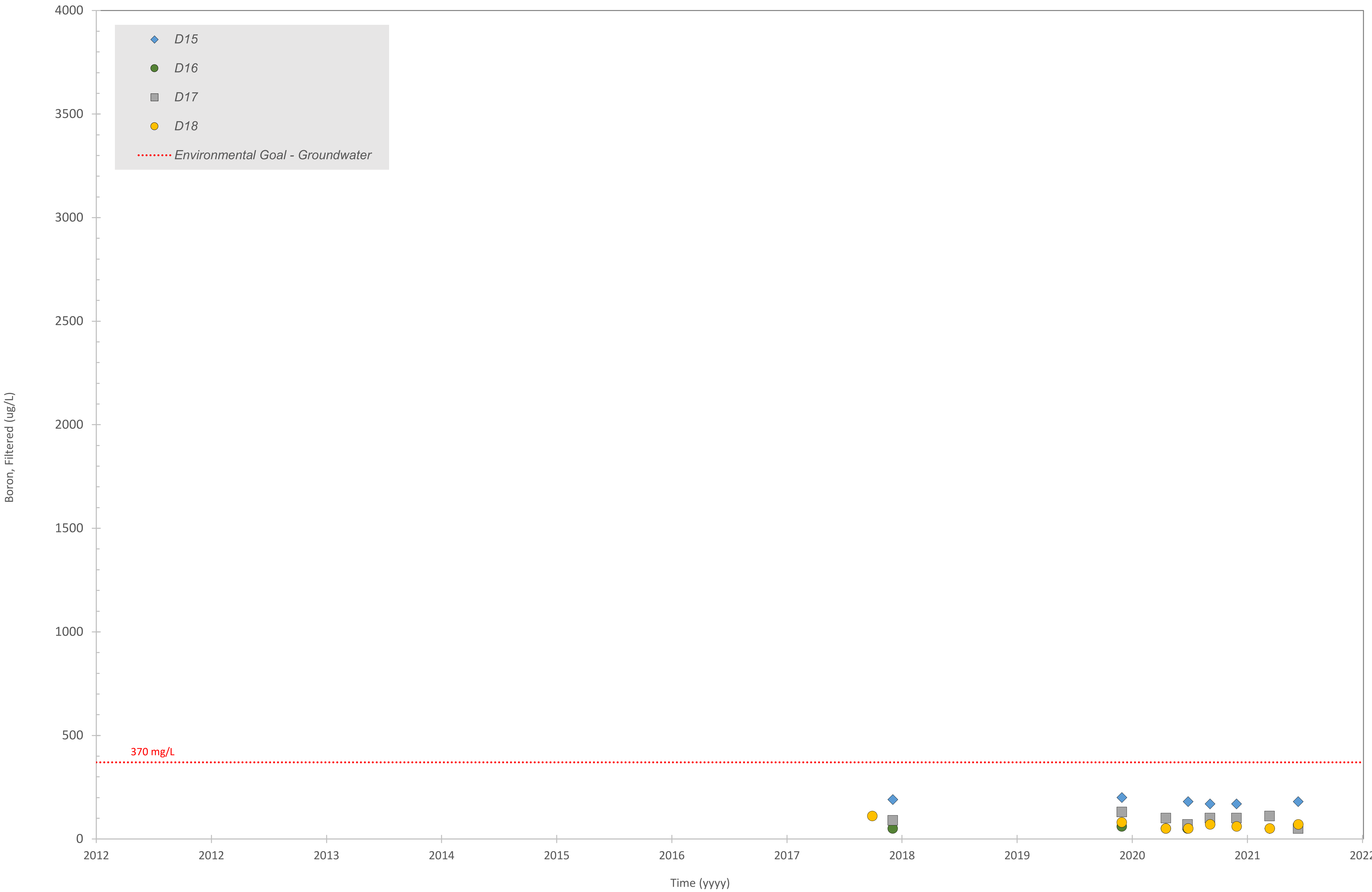

B5
D10
D11
D113
D19
D23
Environmental Goal - Groundwater
550.9 mg/L
Nickel, Filtered (µg/L)
0
200
400
600
800
1000
1200
1400
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
Time (yyyy)

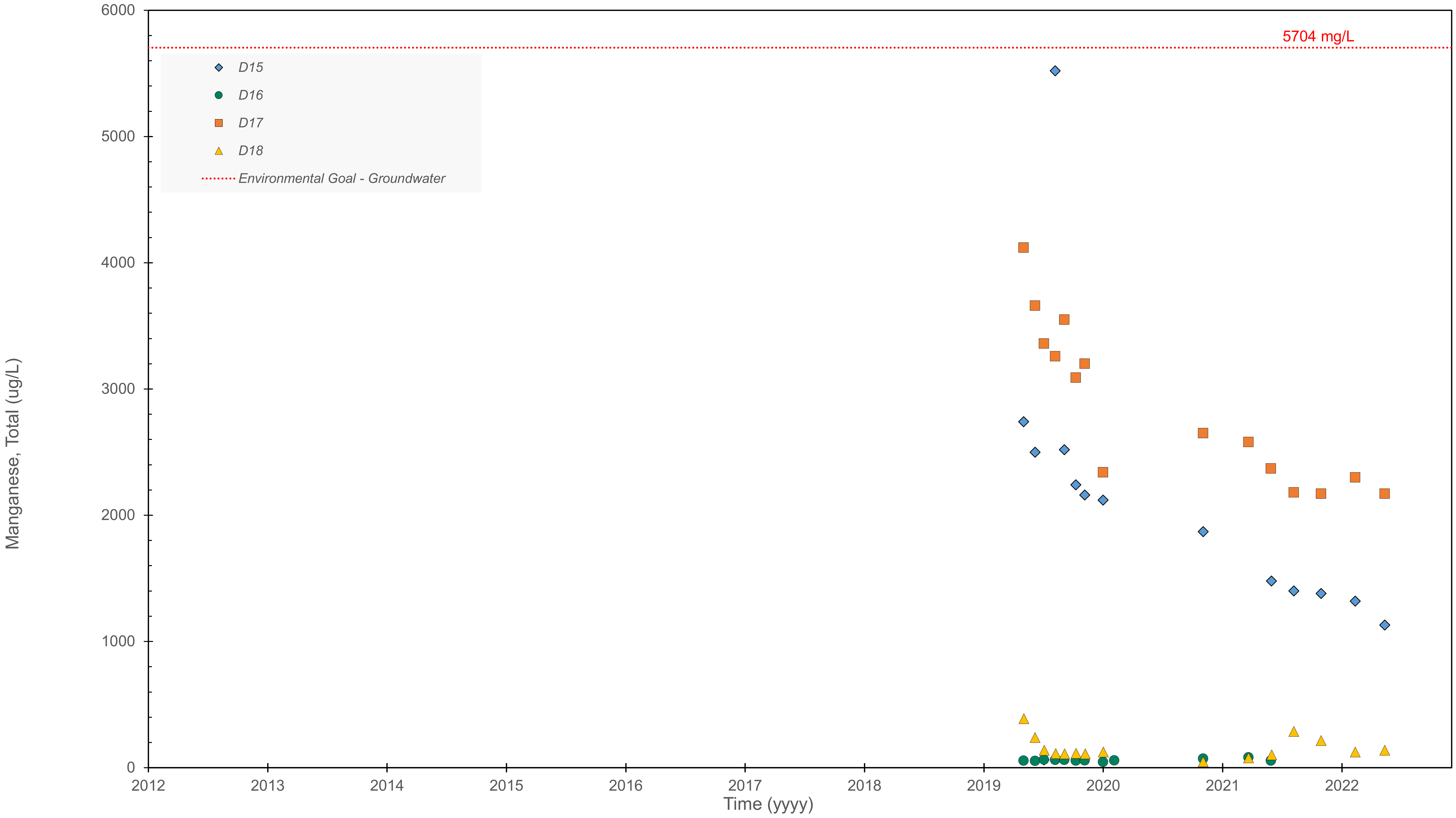

7000
6000
5000
4000
3000
2000
1000
0
Total Dissolved Solids (mg/L)
D15
D16
D17
D18
Environmental Goal - Groundwater
1500 mg/L
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
Time (yyyy)

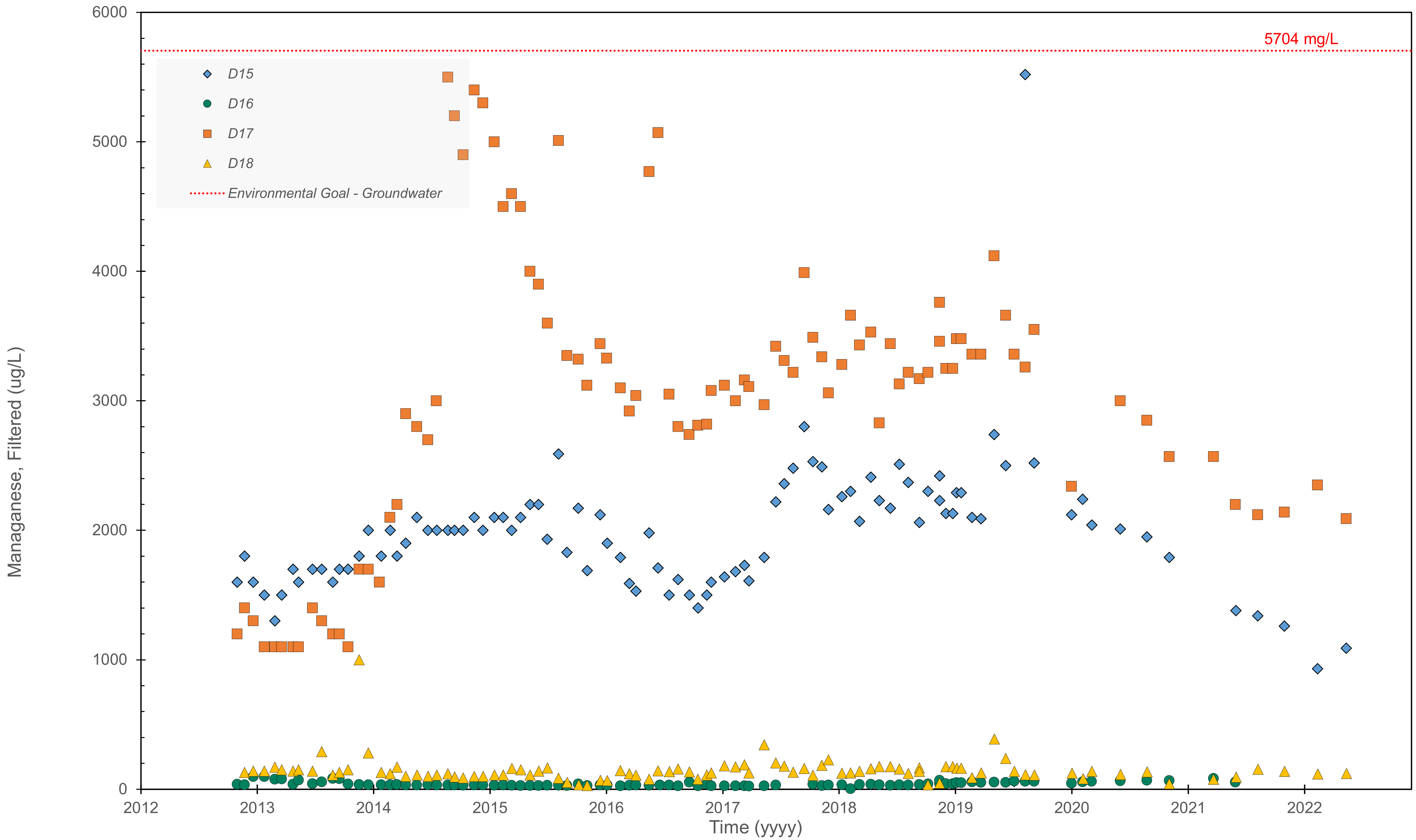

D15
D16
D17
D18
Environmental Goal - Groundwater
350 mg/L
Choride, Total (mg/L)
Year (yyyy)
0
100
200
300
400
500
600
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022

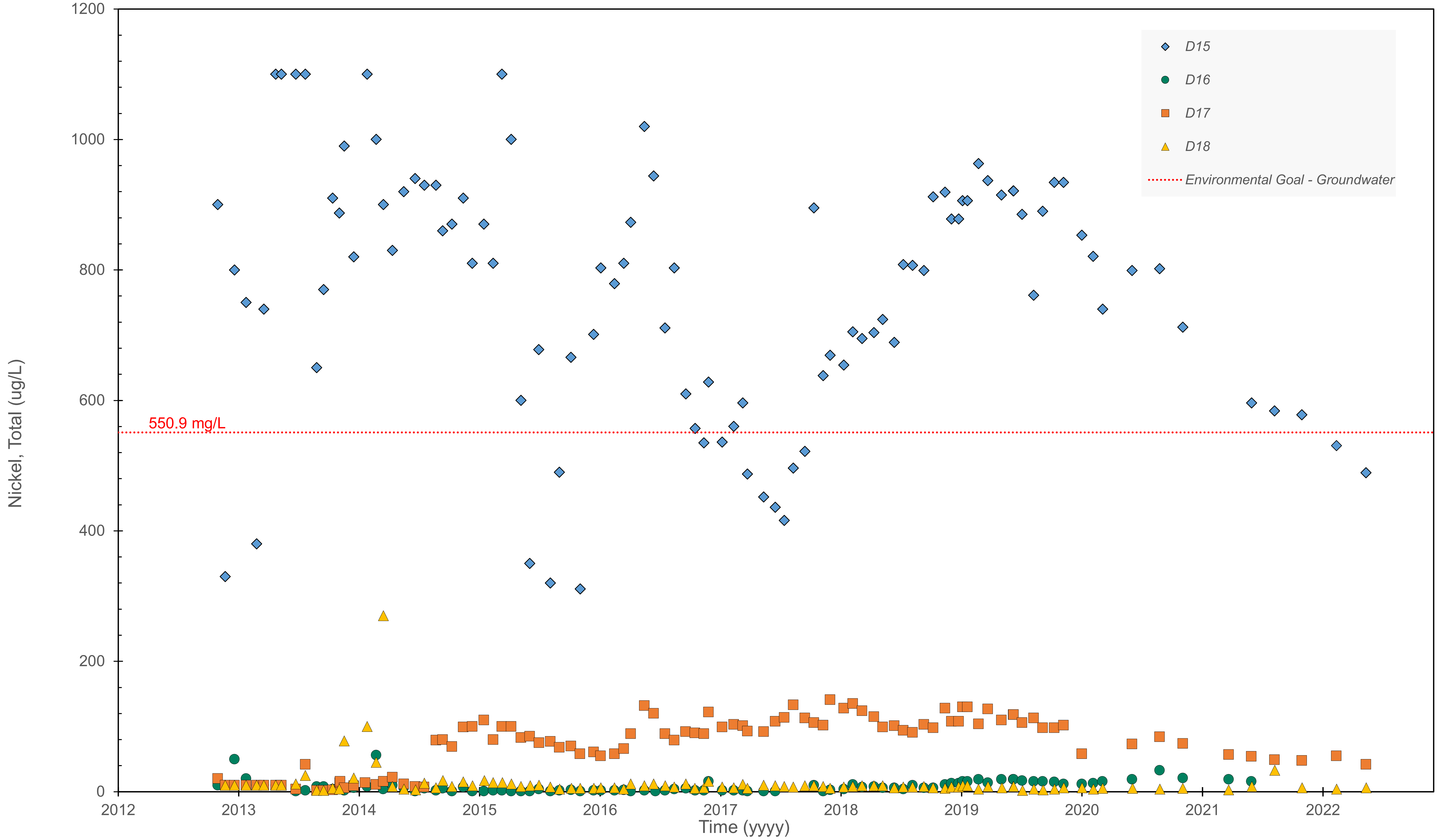

D15
D16
D17
D18
Environmental Goal - Groundwater
1000 mg/L
Sulfate (as SO_4) (mg/L)
Time (yyyy)
0
500
1000
1500
2000
2500
3000
3500
4000
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022

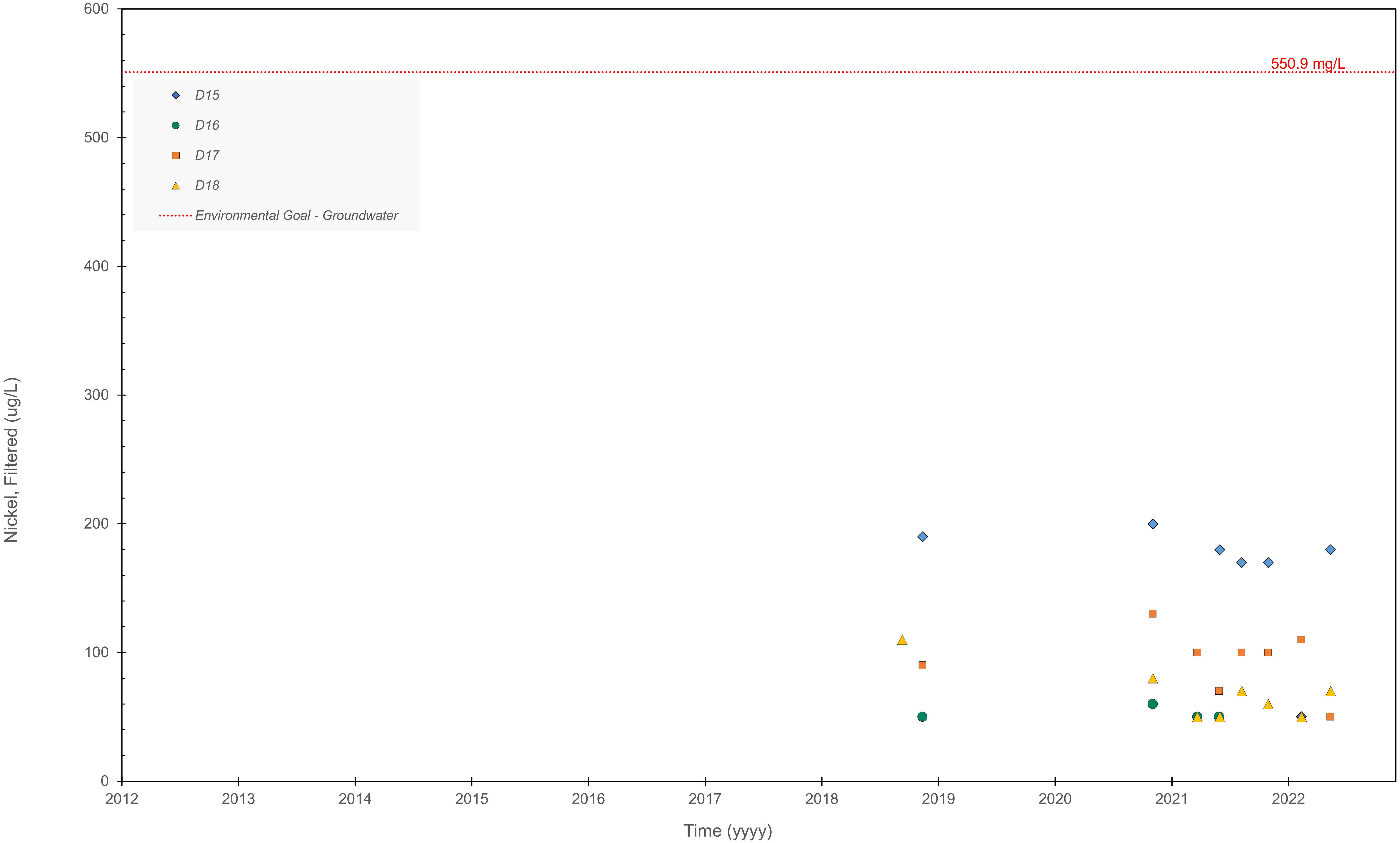

D15
D16
D17
D18
Environmental Goal - Groundwater
370 mg/L
Boron, Total (µg/L)
Time (yyyy)
0
500
1000
1500
2000
2500
3000
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022

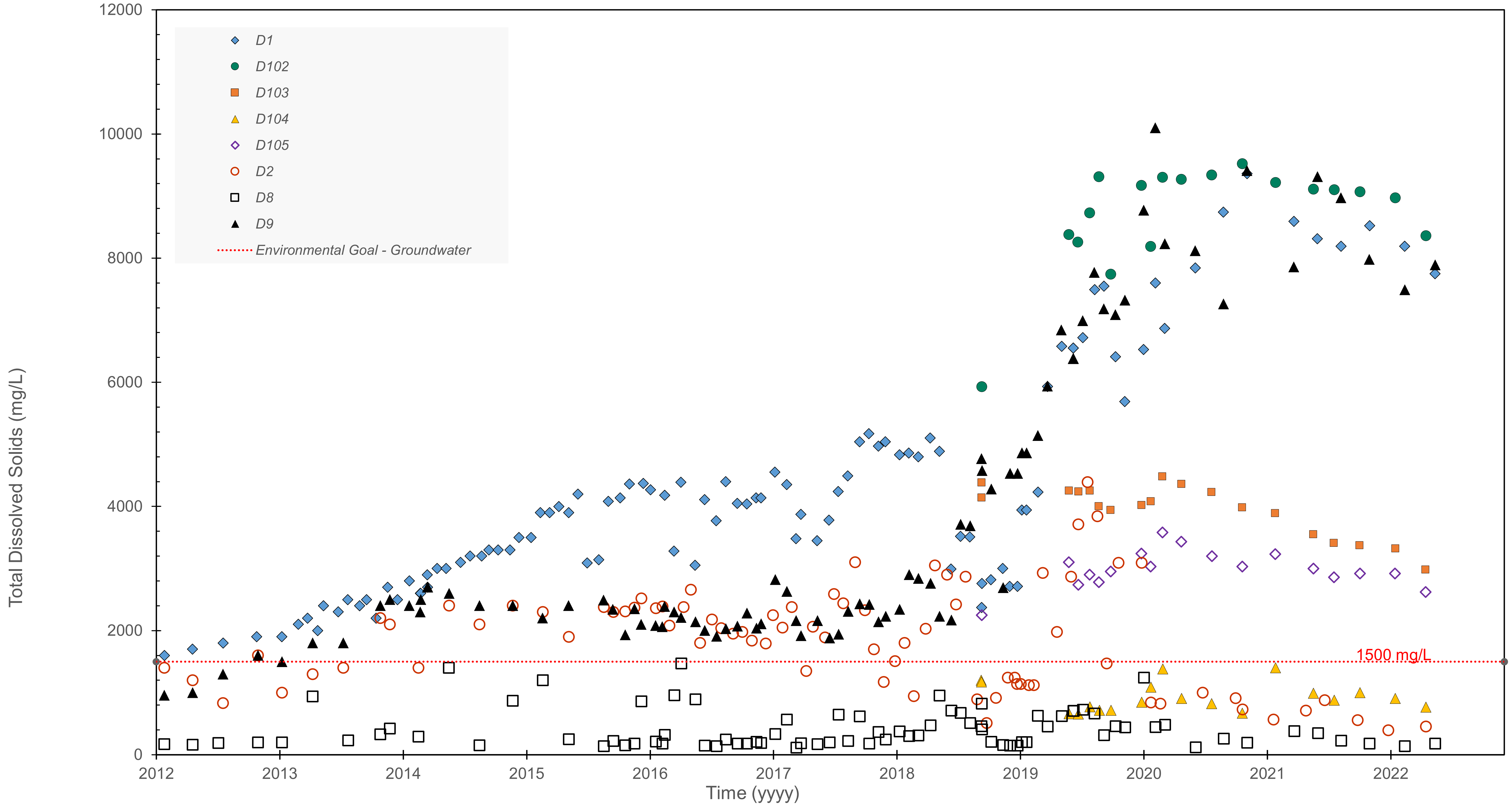

D15
D16
D17
D18
Environmental Goal - Groundwater
370 mg/L
Boron, Filtered (ug/L)
Time (yyyy)
0
500
1000
1500
2000
2500
3000
3500
4000
2012
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022

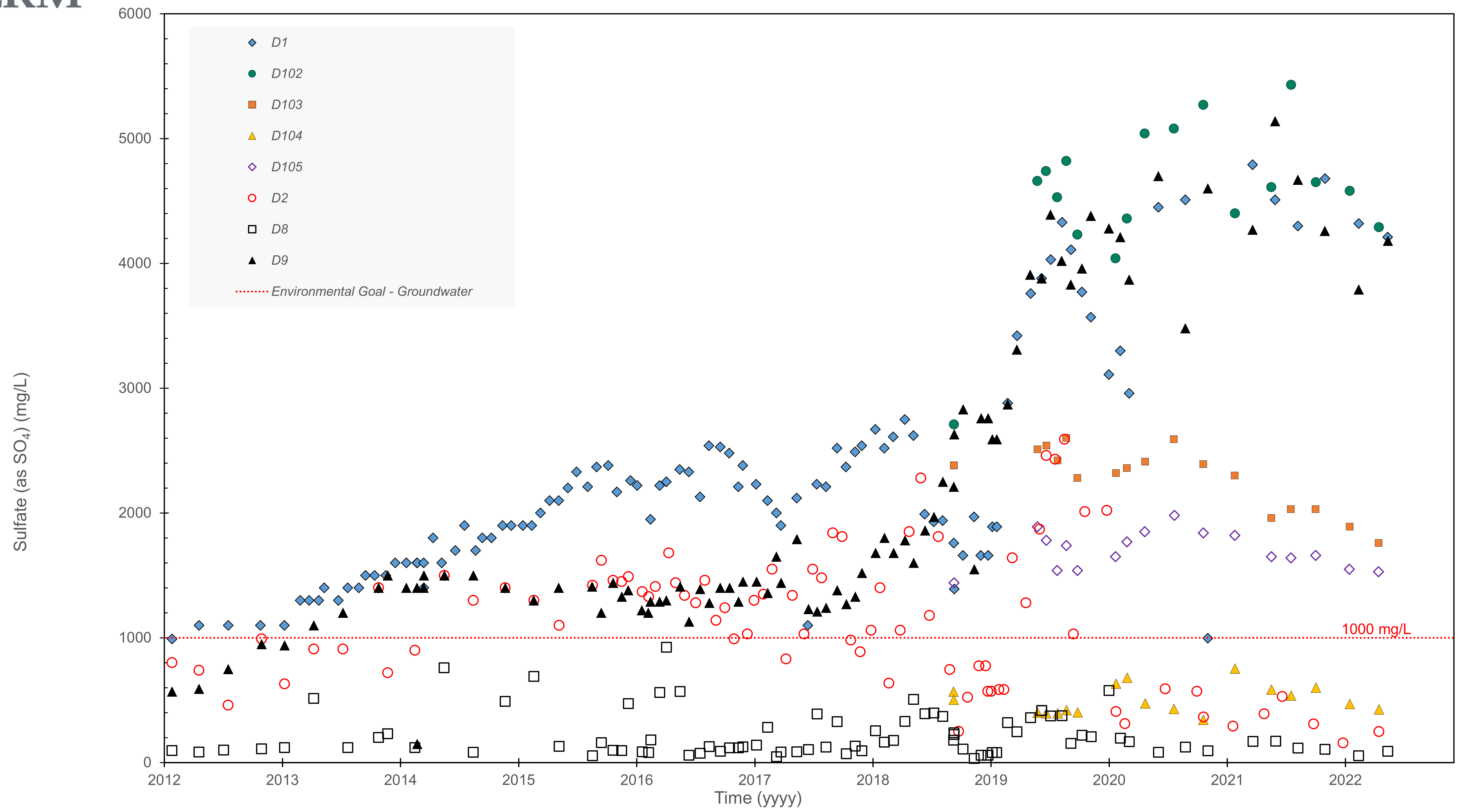

Manganese, Total (ug/L)
6000
5000
4000
3000
2000
1000
0
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
Time (yyyy)
5704 mg/L
D15
D16
D17
D18
Environmental Goal - Groundwater

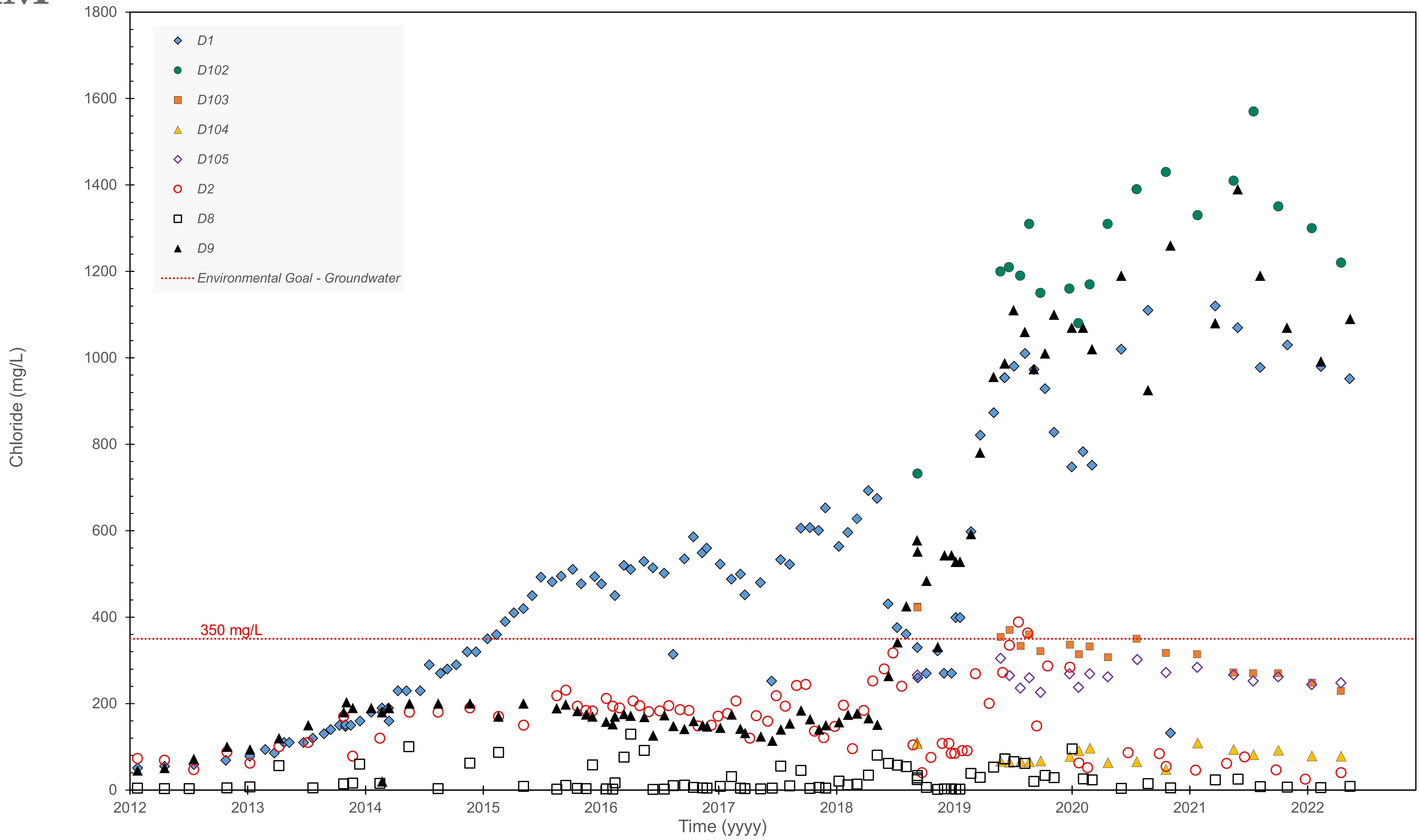

6000
5000
4000
3000
2000
1000
0
5704 mg/L
D15
D16
D17
D18
Environmental Goal - Groundwater
Managanese, Filtered (ug/L)
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
Time (yyyy)

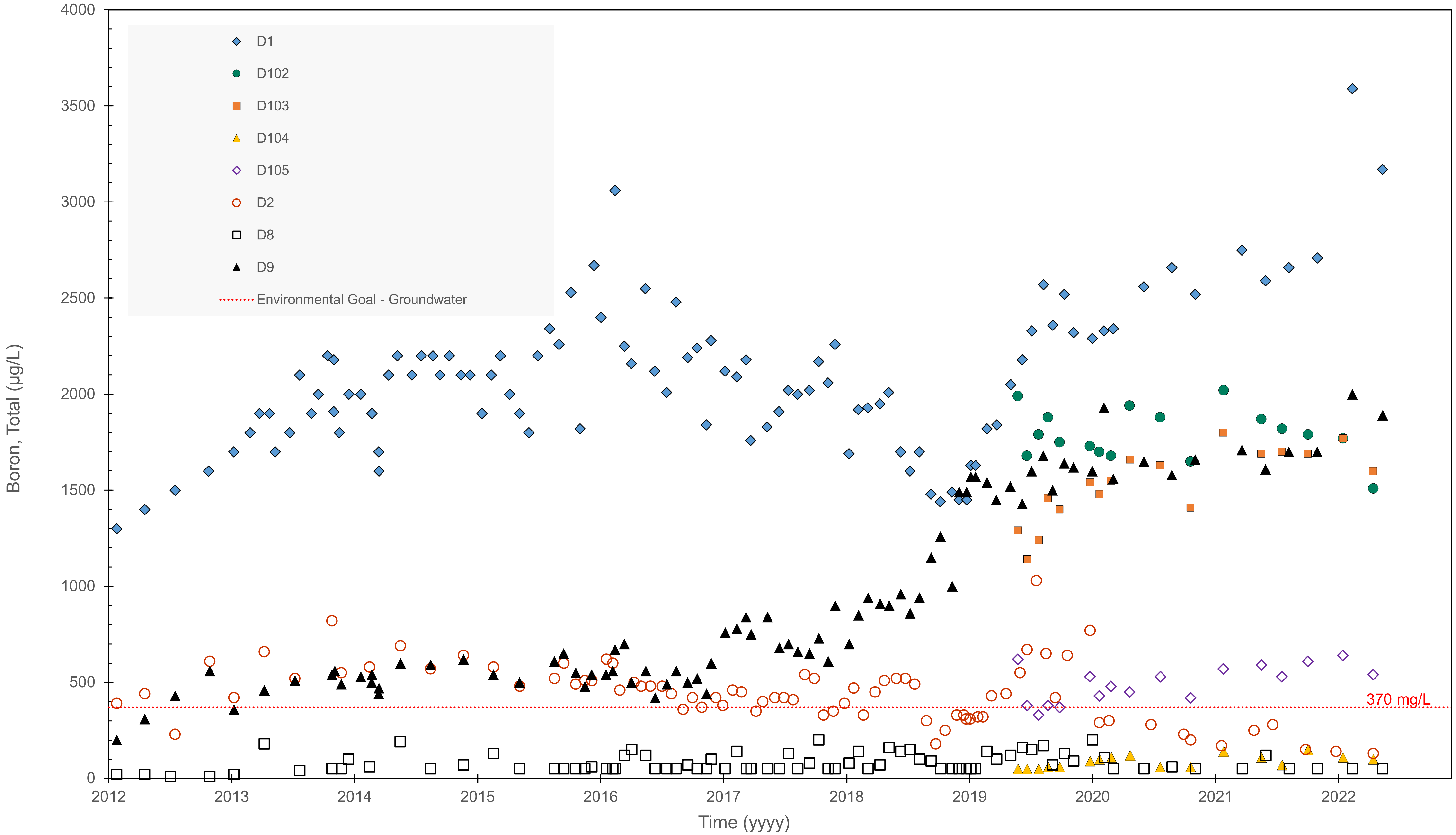

Nickel, Total (ug/L)
0
200
400
600
800
1000
1200
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
Time (yyyy)
550.9 mg/L
D15
D16
D17
D18
Environmental Goal - Groundwater

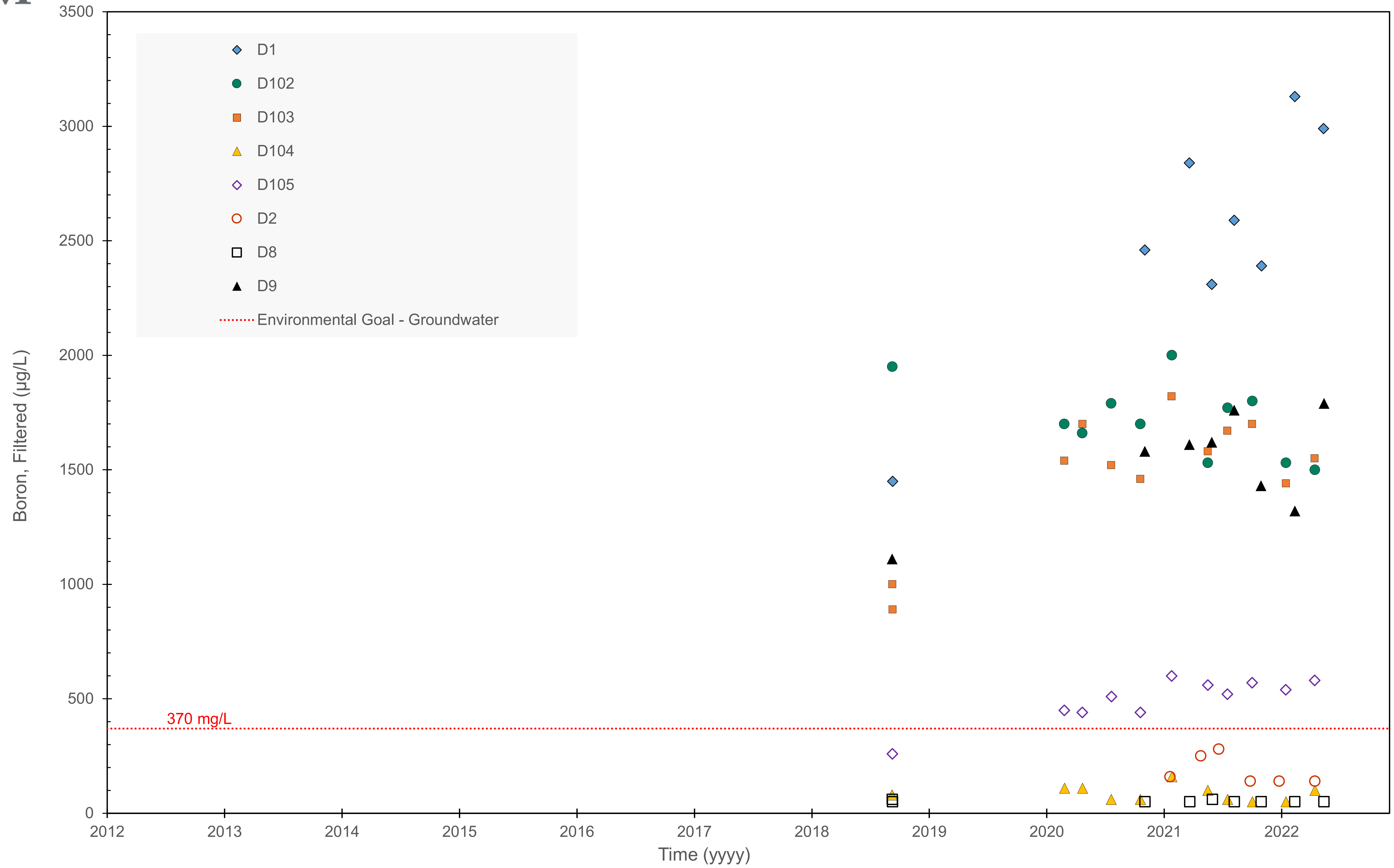

550.9 mg/L
D15
D16
D17
D18
Environmental Goal - Groundwater
Nickel, Filtered (ug/L)
0
100
200
300
400
500
600
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
Time (yyyy)

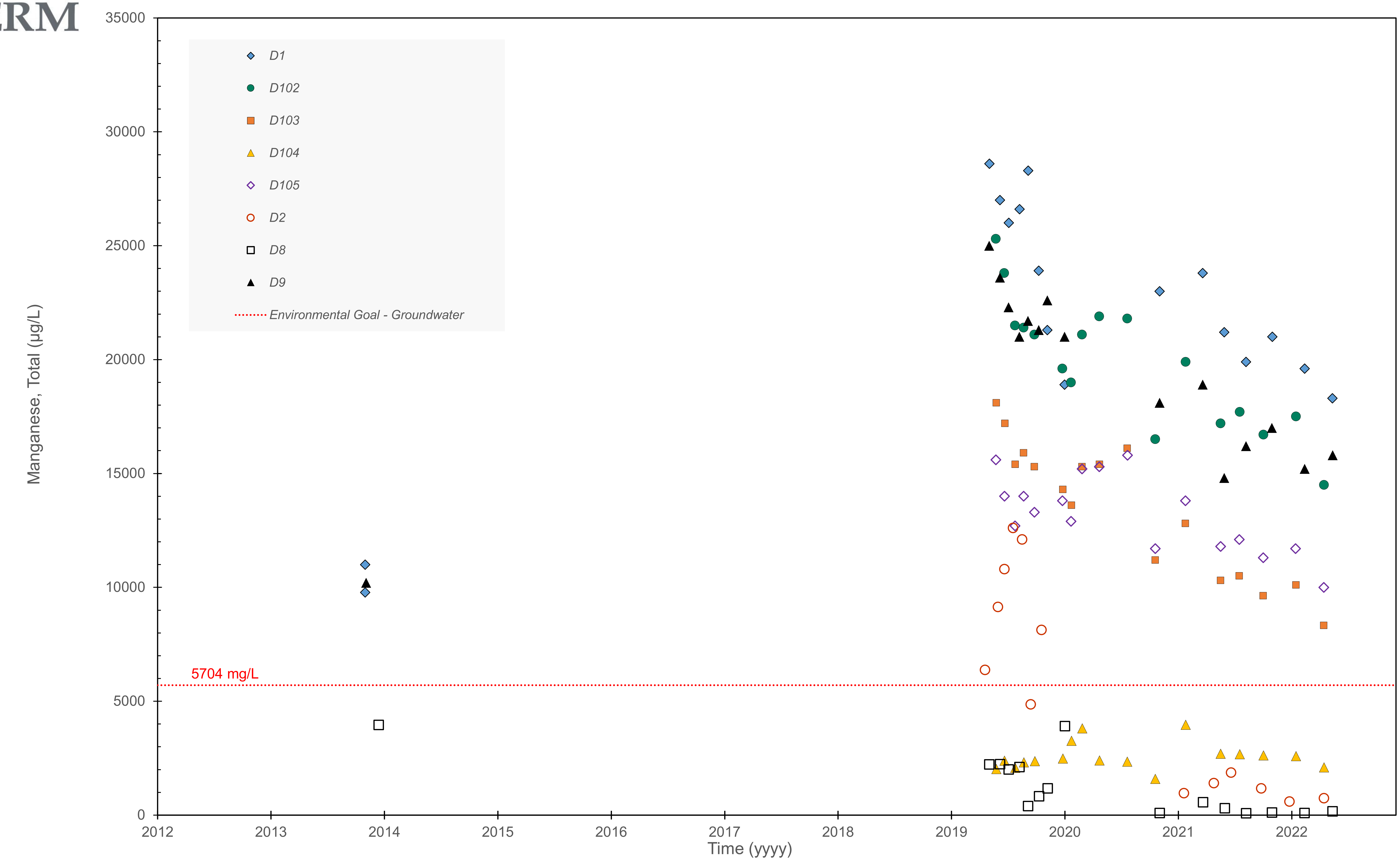

12000
10000
8000
6000
4000
2000
0
Total Dissolved Solids (mg/L)
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
Time (yyyy)
D1
D102
D103
D104
D105
D2
D8
D9
Environmental Goal - Groundwater
1500 mg/L

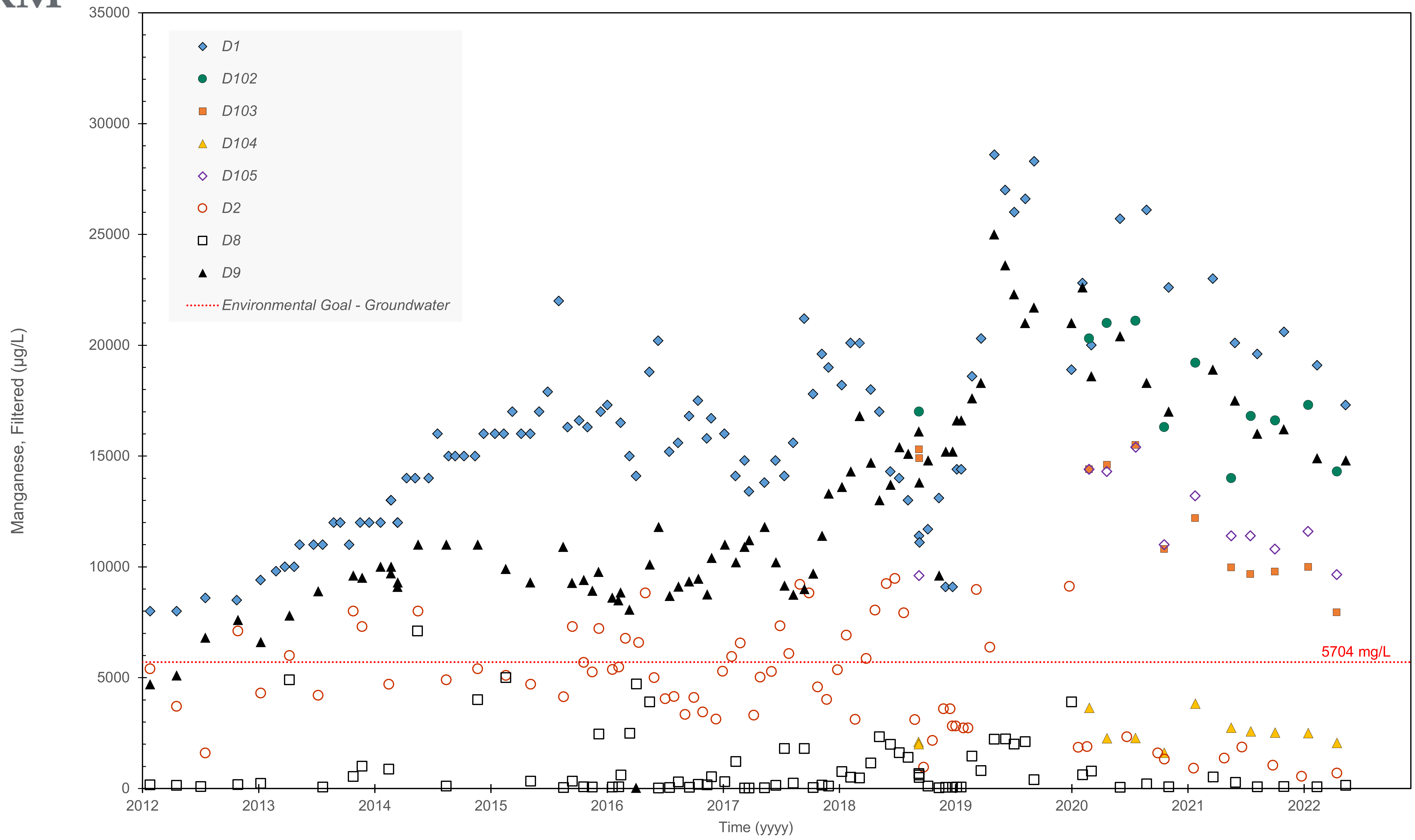

6000
5000
4000
3000
2000
1000
0
Sulfate (as SO4) (mg/L)
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
Time (yyyy)
D1
D102
D103
D104
D105
D2
D8
D9
Environmental Goal - Groundwater
1000 mg/L


Chloride (mg/L)
Time (yyyy)
D1
D102
D103
D104
D105
D2
D8
D9
Environmental Goal - Groundwater
350 mg/L
0
200
400
600
800
1000
1200
1400
1600
1800
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022

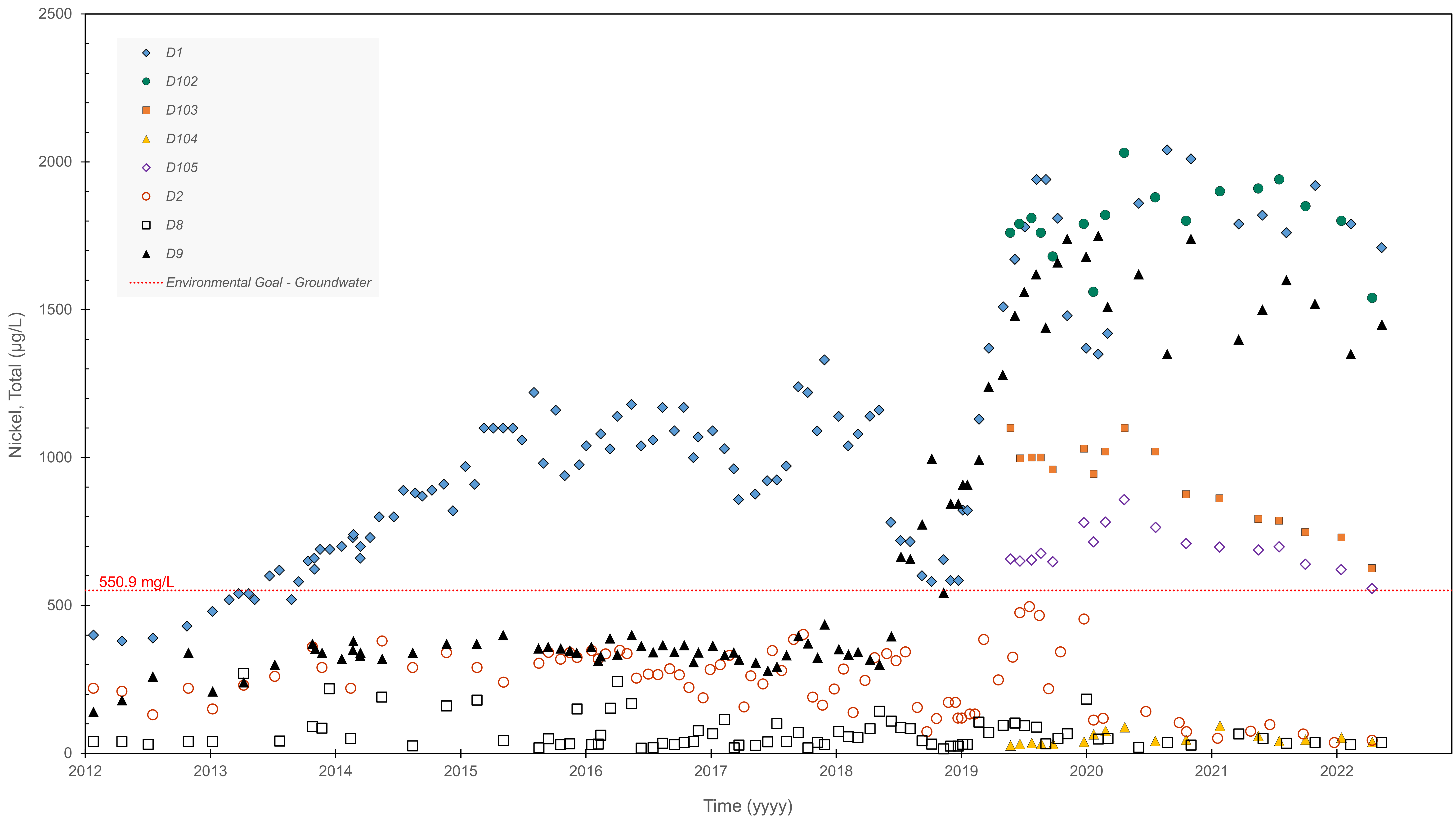

D1
D102
D103
D104
D105
D2
D8
D9
Environmental Goal - Groundwater
370 mg/L
Boron, Total (µg/L)
Time (yyyy)
0
500
1000
1500
2000
2500
3000
3500
4000
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022

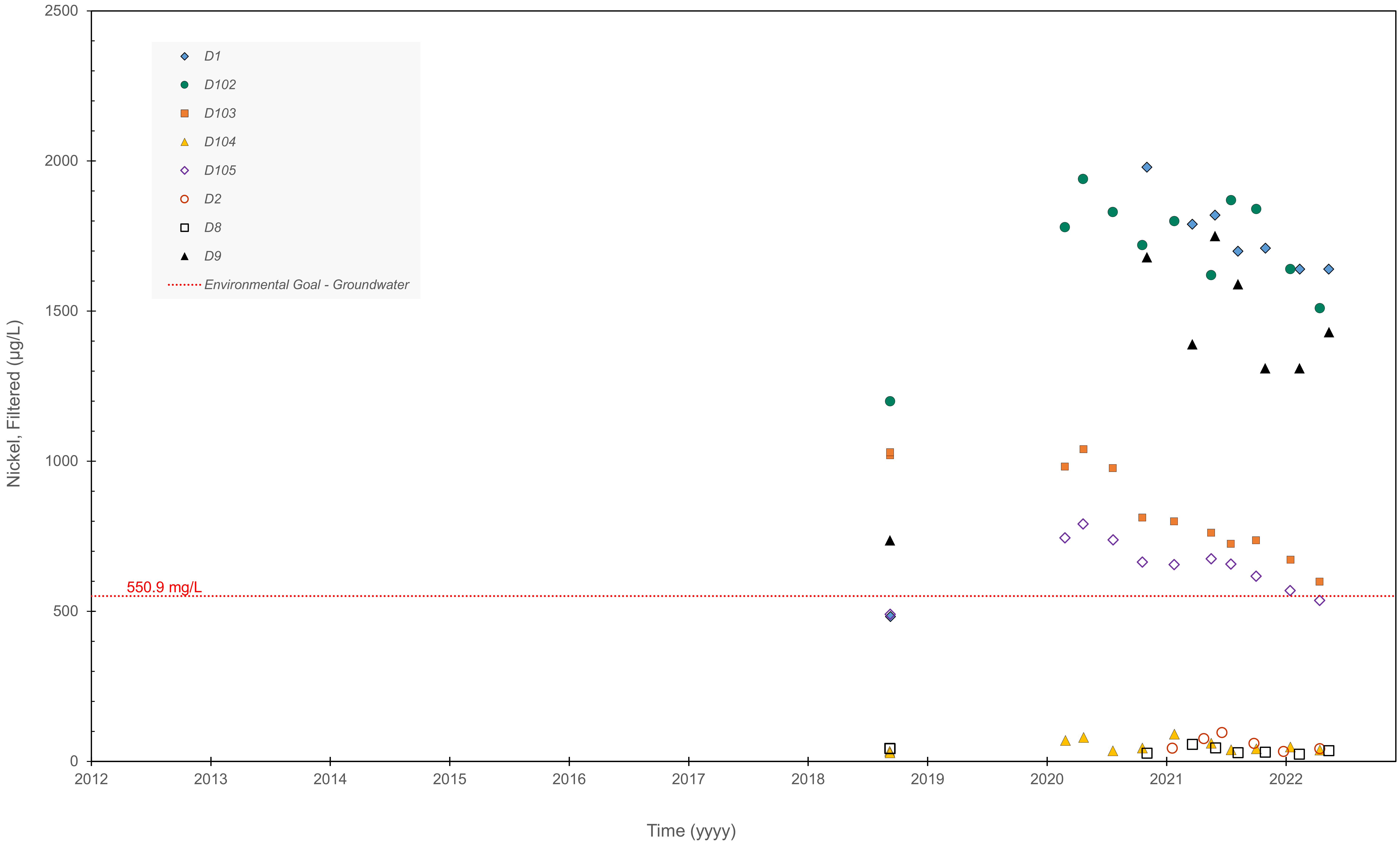

D1
D102
D103
D104
D105
D2
D8
D9
Environmental Goal - Groundwater
370 mg/L
Boron, Filtered (µg/L)
Time (yyyy)
0
500
1000
1500
2000
2500
3000
3500
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022

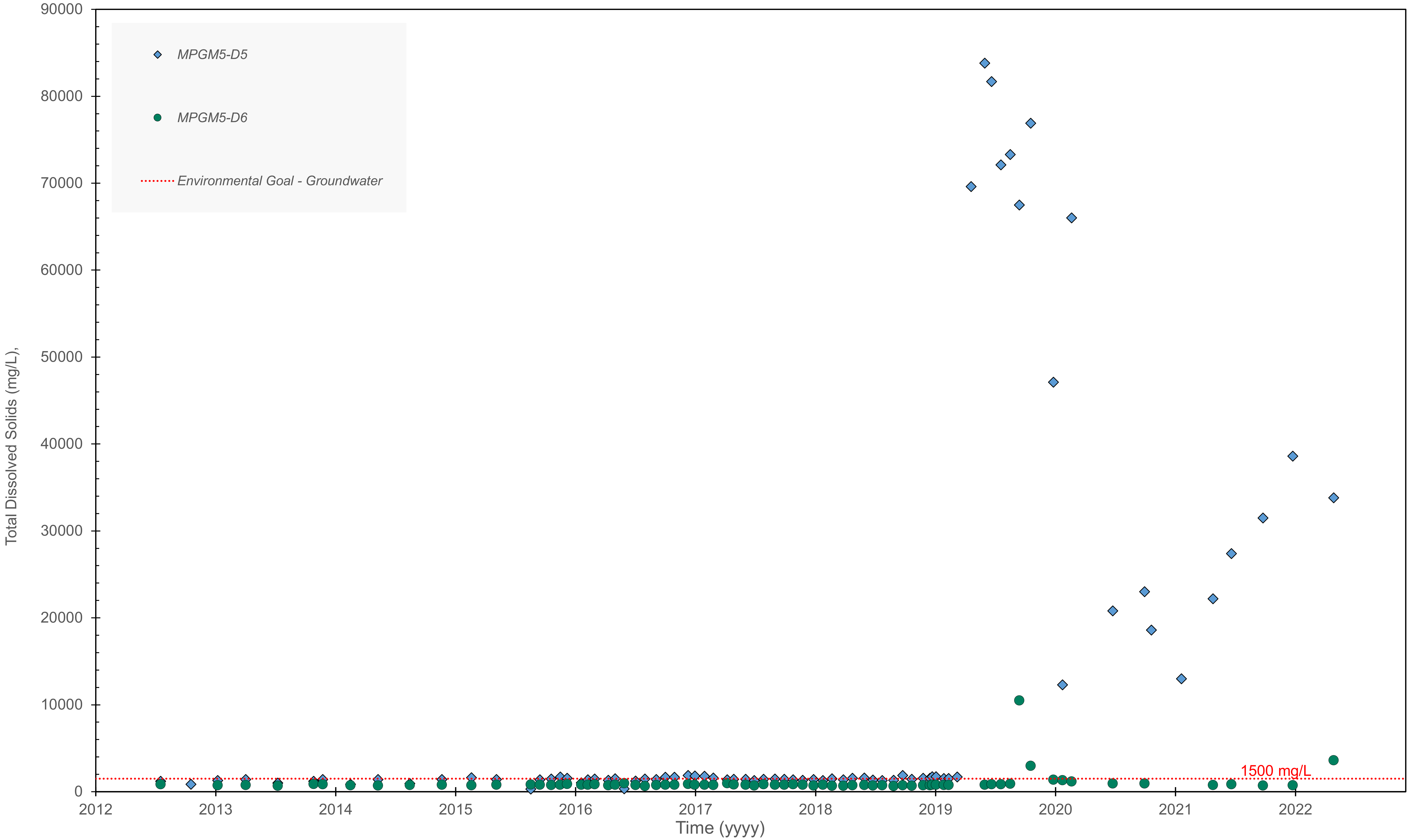

35000
30000
25000
20000
15000
10000
5000
0
Manganese, Total (µg/L)
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
Time (yyyy)
D1
D102
D103
D104
D105
D2
D8
D9
Environmental Goal - Groundwater
5704 mg/L

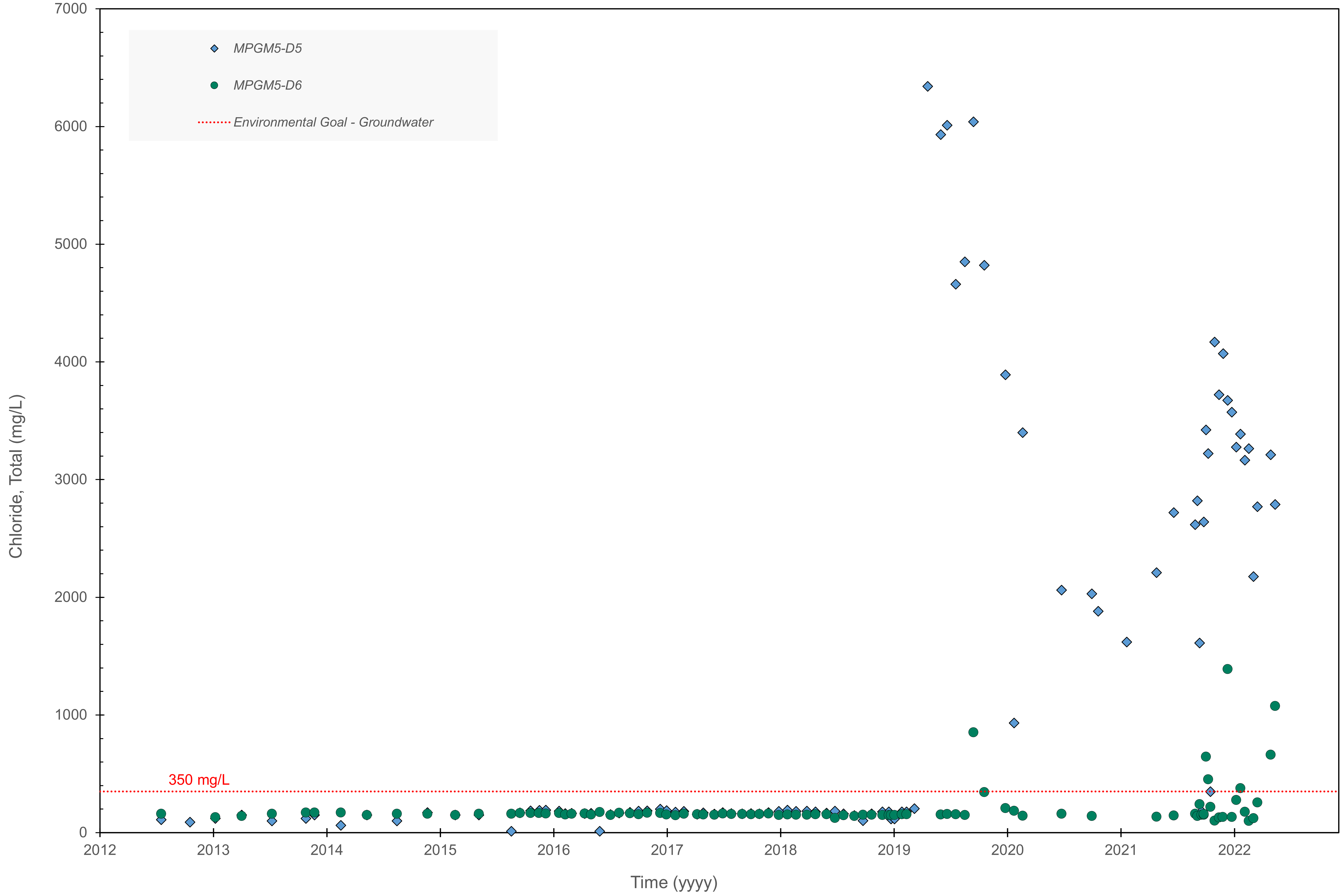

35000
30000
25000
20000
15000
10000
5000
0
Manganese, Filtered (µg/L)
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
Time (yyyy)
D1
D102
D103
D104
D105
D2
D8
D9
Environmental Goal - Groundwater
5704 mg/L

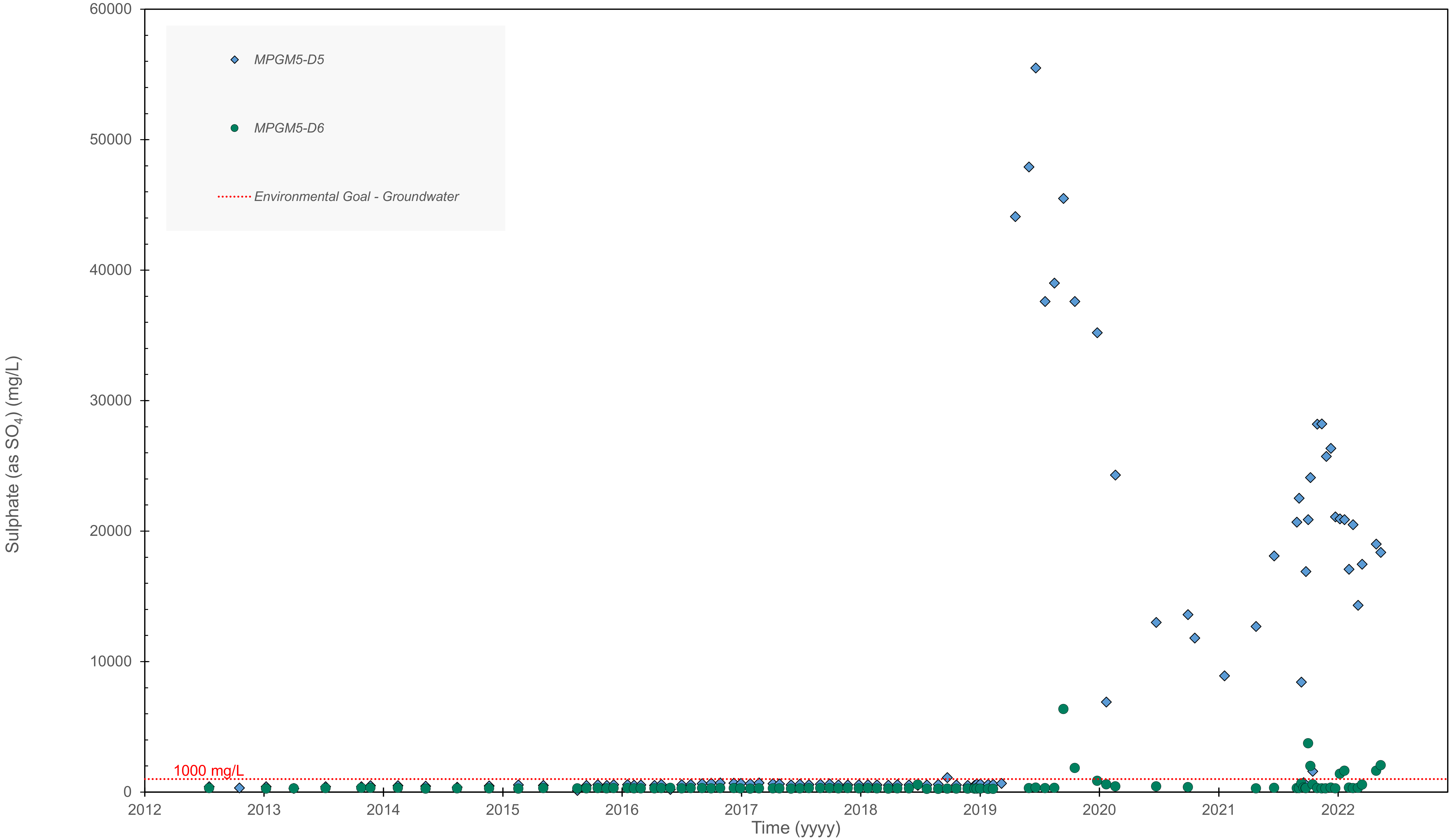
i. Total Nickel

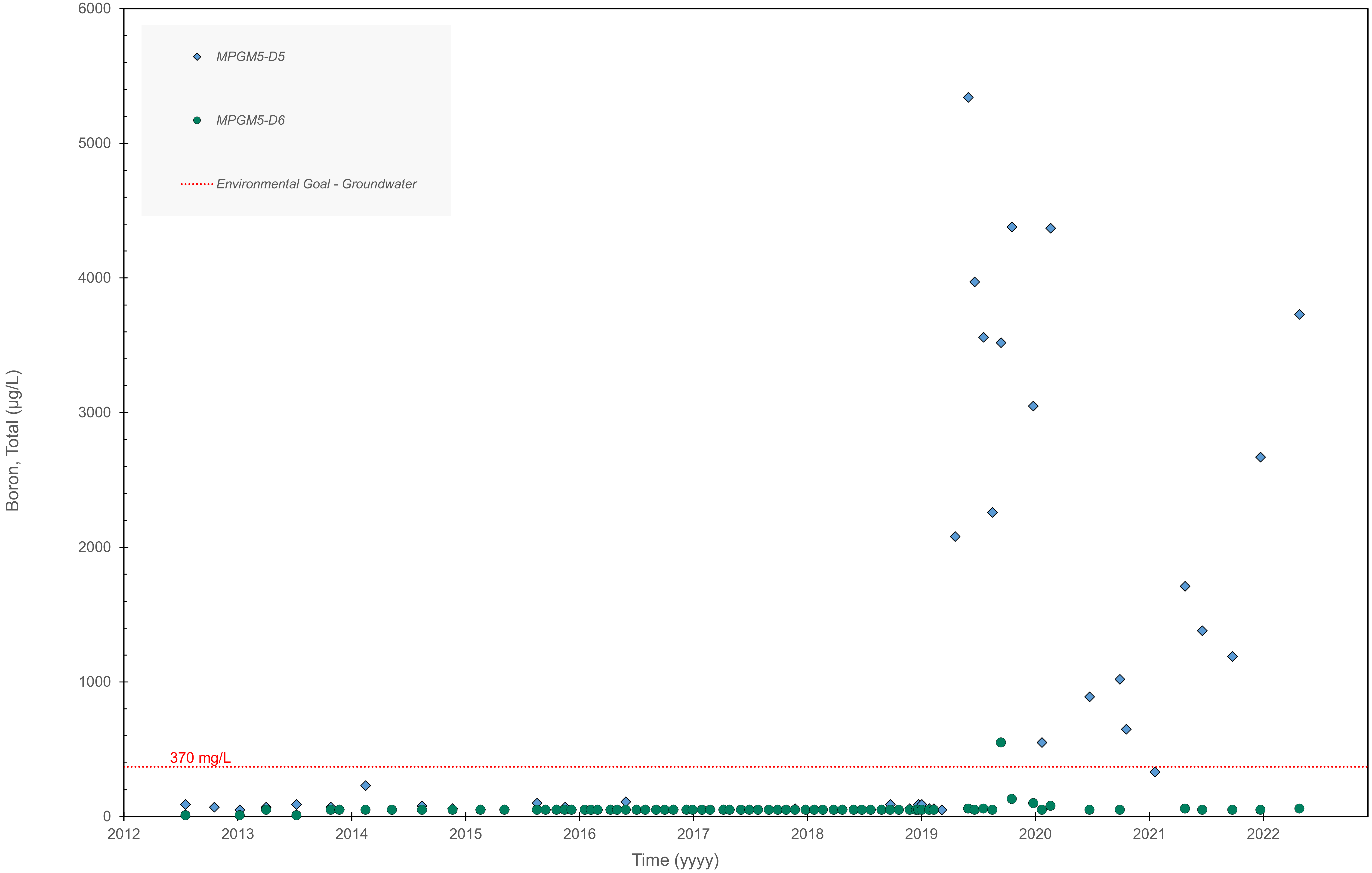


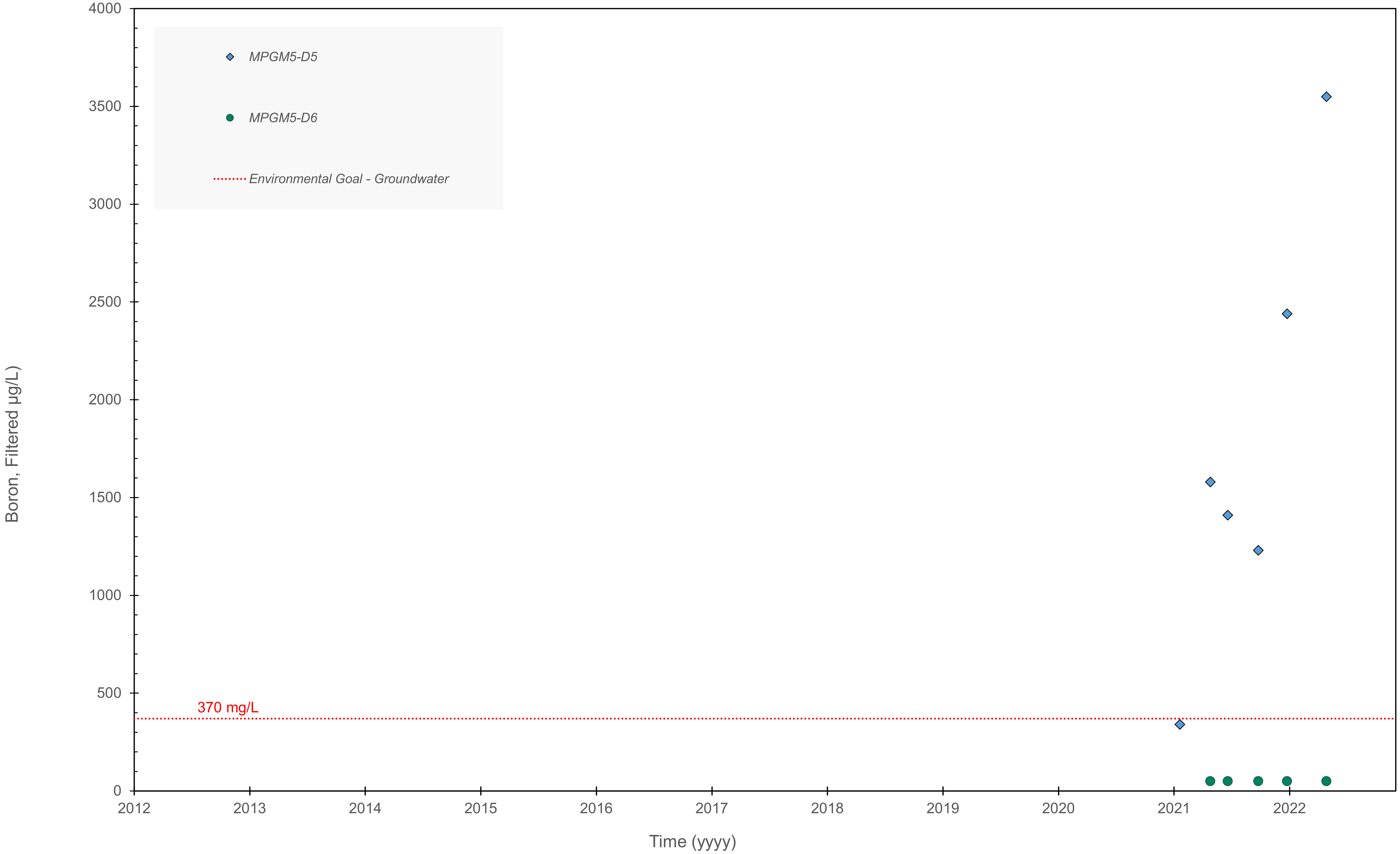

2500
2000
1500
1000
500
0
Nickel, Filtered (µg/L)
D1
D102
D103
D104
D105
D2
D8
D9
Environmental Goal - Groundwater
550.9 mg/L
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
Time (yyyy)

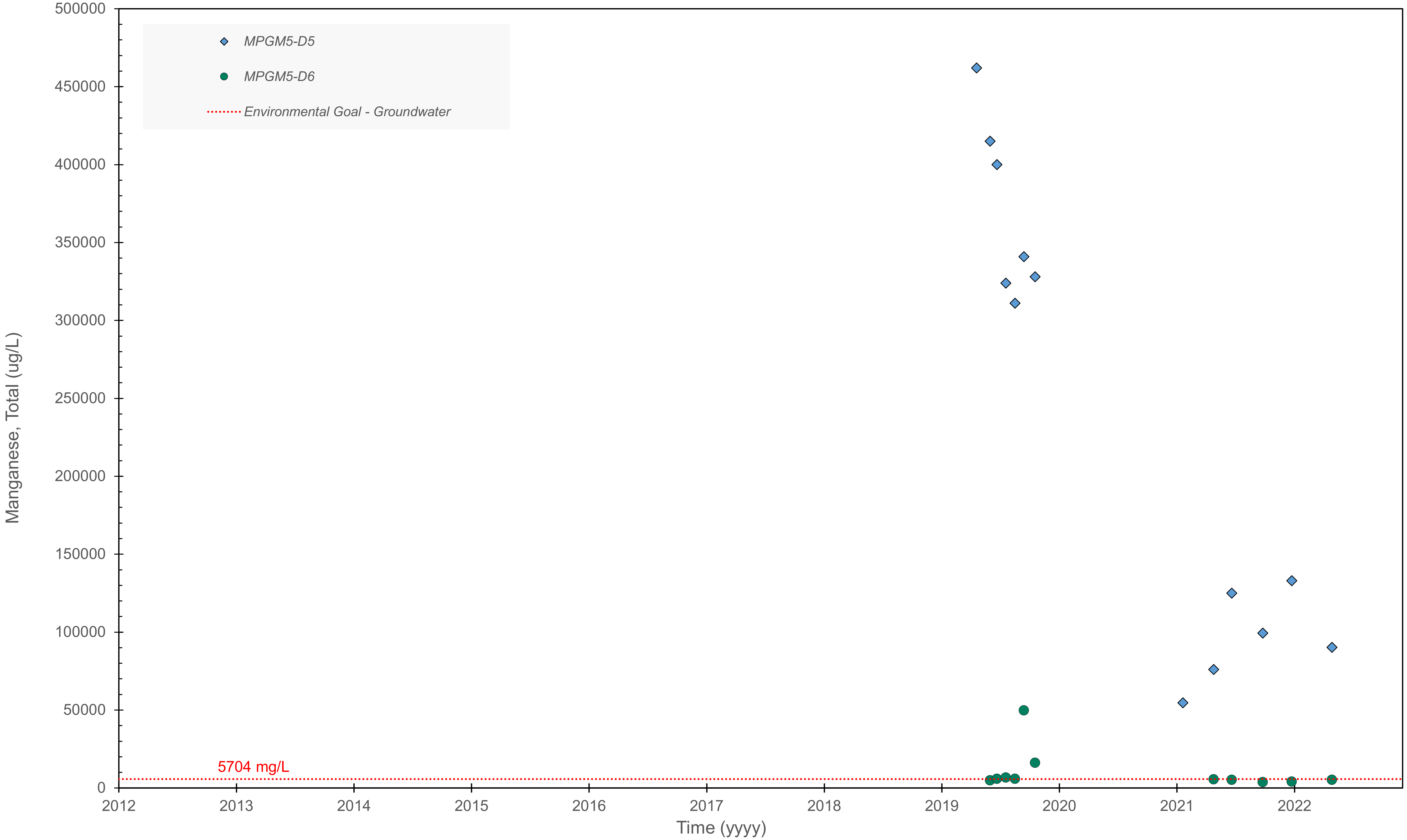

90000
80000
70000
60000
50000
40000
30000
20000
10000
0
Total Dissolved Solids (mg/L),
MPGM5-D5
MPGM5-D6
Environmental Goal - Groundwater
1500 mg/L
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
Time (yyyy)

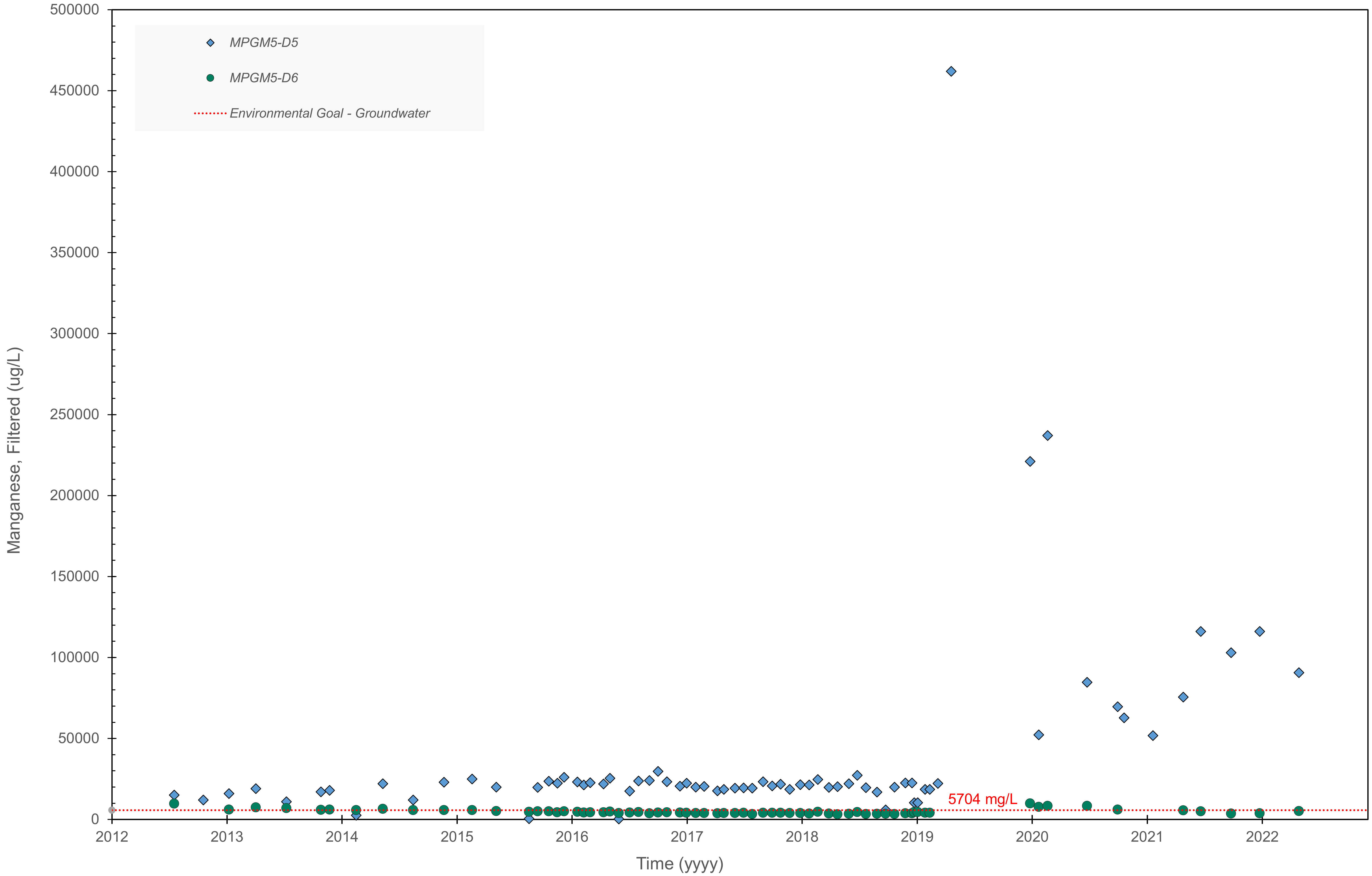

7000
6000
5000
4000
3000
2000
1000
0
Chloride, Total (mg/L)
MPGM5-D5
MPGM5-D6
Environmental Goal - Groundwater
350 mg/L
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
Time (yyyy)

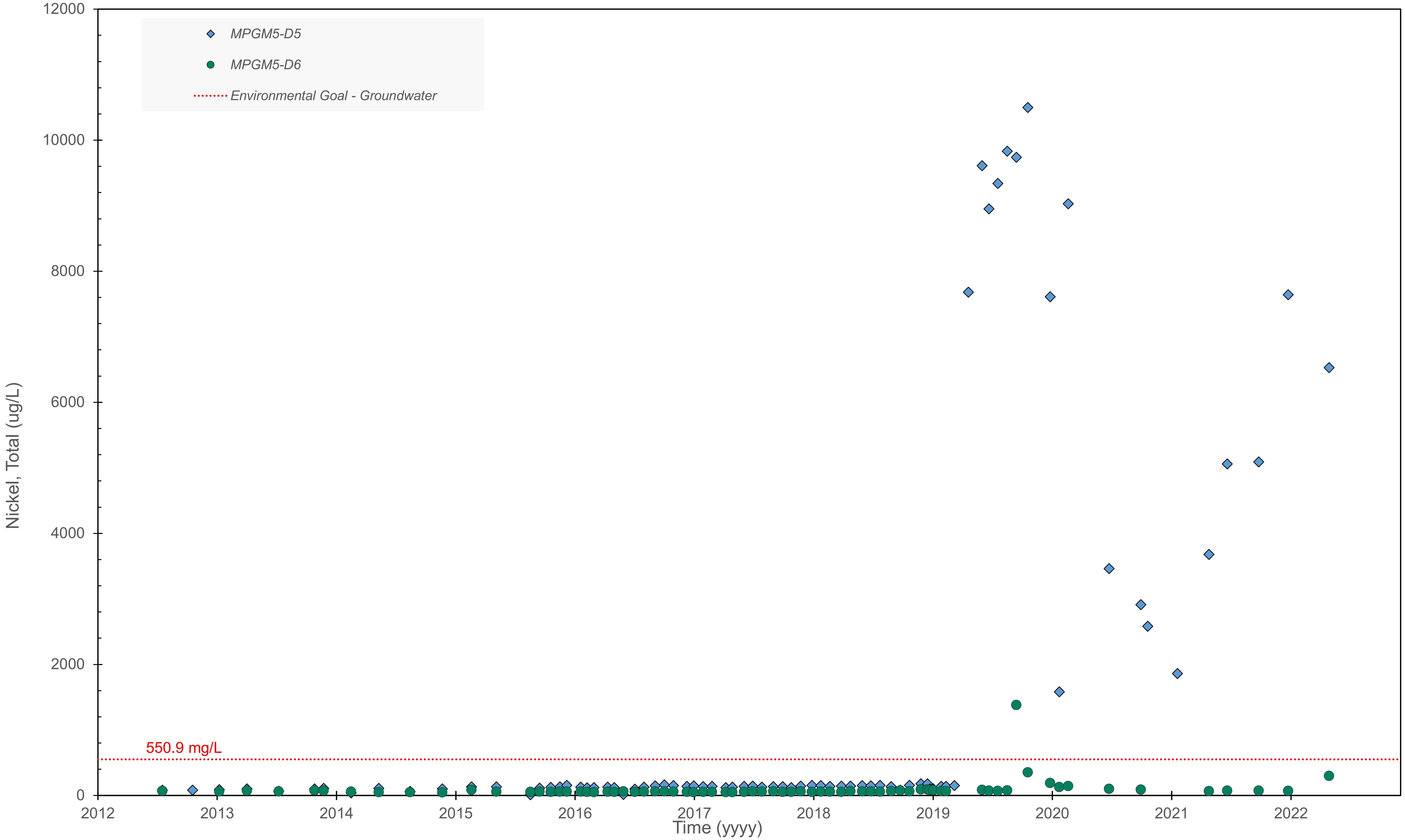

MPGM5-D5
MPGM5-D6
Environmental Goal - Groundwater
1000 mg/L
Sulphate (as SO_4) (mg/L)
Time (yyyy)
60000
50000
40000
30000
20000
10000
0
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022

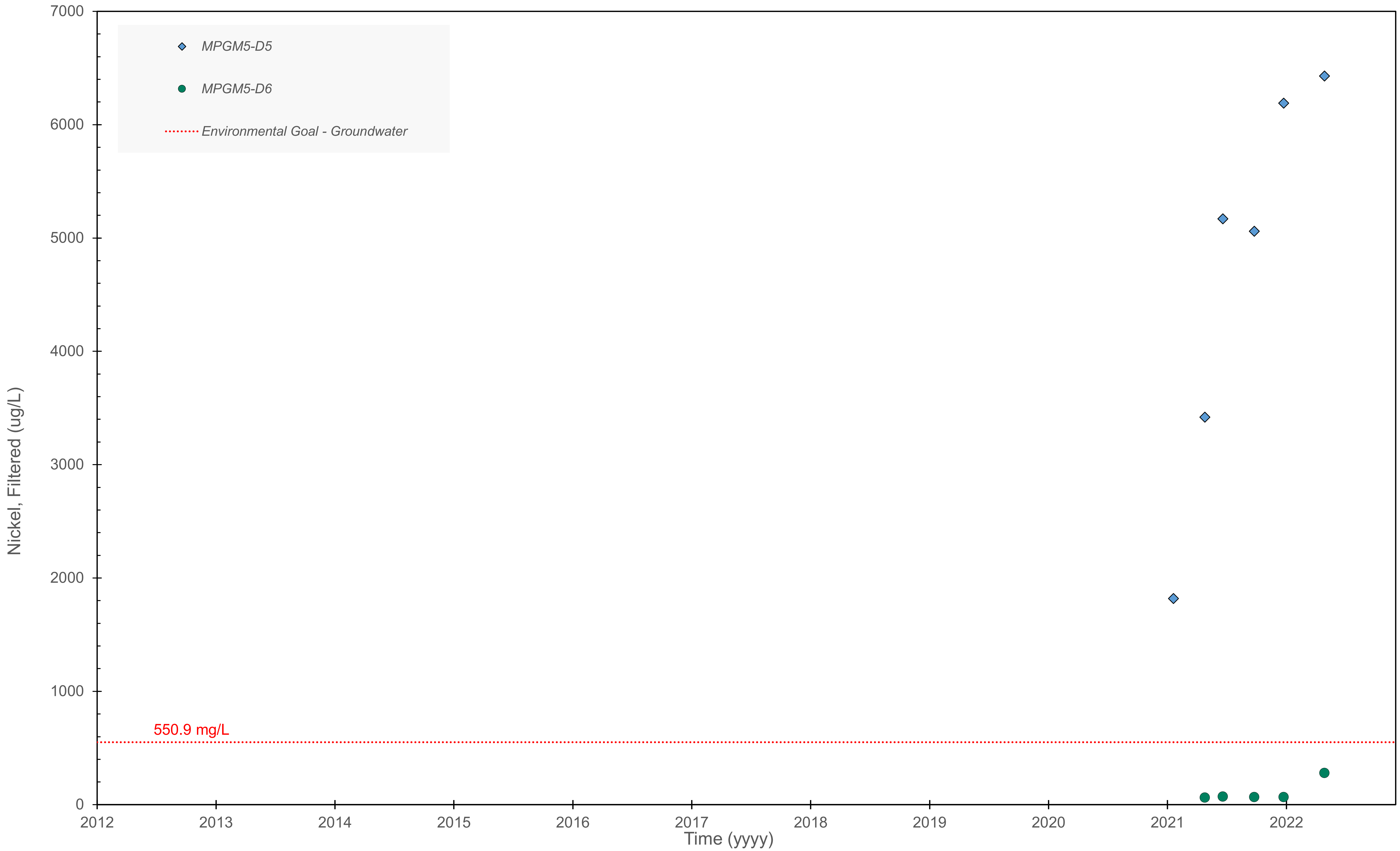

MPGM5-D5
MPGM5-D6
Environmental Goal - Groundwater
370 mg/L
Boron, Total (µg/L)
Time (yyyy)
6000
5000
4000
3000
2000
1000
0
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022


MPGM5-D5
MPGM5-D6
Environmental Goal - Groundwater
370 mg/L
Boron, Filtered µg/L)
Time (yyyy)
0
500
1000
1500
2000
2500
3000
3500
4000
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022


MPGM5-D5
MPGM5-D6
Environmental Goal - Groundwater
5704 mg/L
Manganese, Total (ug/L)
Time (yyyy)
0
50000
100000
150000
200000
250000
300000
350000
400000
450000
500000
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022


MPGM5-D5
MPGM5-D6
Environmental Goal - Groundwater
5704 mg/L
Manganese, Filtered (ug/L)
Time (yyyy)
500000
450000
400000
350000
300000
250000
200000
150000
100000
50000
0
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022


MPGM5-D5
MPGM5-D6
Environmental Goal - Groundwater
550.9 mg/L
Nickel, Total (ug/L)
Time (yyyy)
12000
10000
8000
6000
4000
2000
0
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022


MPGM5-D5
MPGM5-D6
Environmental Goal - Groundwater
550.9 mg/L
7000
6000
5000
4000
3000
2000
1000
0
Nickel, Filtered (ug/L)
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
Time (yyyy)

APPENDIX K MANN-KENDALL DATA ASSESSMENT METHODOLOGY

Trend Analysis Report

August 31, 2022

1. USER WARNINGS

Mann Kendall analysis is a commonly used statistical tool for assessing changes in concentration over time. Like most statistical analyses, Mann Kendall makes some assumptions about the data being analyzed. If these assumptions are not met, the results of the Mann Kendall may be wrong or misleading. The final section of this memo discusses scenarios that will likely require the input of a qualified statistician to ensure that the results of the trend test are appropriate for your data. A careful review of the results tables and figures can help identify any anomalies in the data that merit further assessment.

Selection of an appropriate α: Statistical convention typically uses an α equal to 0.05 which sets the probability of drawing a false positive conclusion (saying there is a trend when one does not exist) in the statistical analysis at 5 percent. α can be adjusted up or down to meet specific programmatic needs or to meet data quality objectives, but changes in α should be made a priori and should not be changed in an attempt to obtain a more 'favorable' result. Often decreasing α will result in a reduction in the probability of finding a false negative result (saying there is no trend when one actually exists).

2. INTRODUCTION

This report covers the MTPIPER data quality, descriptive statistics, and trend analysis.

- The data file used in this report (WG 2019-22 MK Input.xlsx) consists of samples from July 2020 to June 2022.
- The analysis includes 35 unique wells and 69 analytes.
- Descriptive statistics and trend analysis are run for every unique combination of: sys_loc_code, chemical_name (referred to as *Group* from hereon). There are 1198 unique Groups.
- Trends were conducted at 95% confidence with minimum data requirements of at least 4 detected values and 50% detection frequency for each Group.

3. DATA HANDLING

This section describes the data included in this evaluation, the handling of field duplicates, data qualifiers, censored values, and handling of anomalous data points.

3.1 Field Duplicates

Only one set of primary and field duplicate measurements were retained for statistical evaluation. While field duplicates can provide useful information on the sampling methodology, the duplicates are almost always statistically dependant on the parent sample (USEPA 2009, Page 6-27). Although complicated methods can be used to allow the inclusion of both values in statistical tests, simpler strategies involve keeping the maximum value between the two samples, randomly selecting one of the two samples, or removing the duplicates altogether (USEPA 2009, Page 6-28). Unless otherwise noted, field duplicates were removed prior to all analysis.

3.2 Data Qualifiers

Data was qualified by a data validator to ensure the quality of the reported results. Consistent with lab conventions, J-flagged values were estimated quantities. Guidance allows for J-flagged values to be used with reported concentrations but cautions against making regulatory decision based on these values (USEPA 2014).

Measurements that have an R-flag had their concentration rejected; the result is rejected due to serious deficiencies in meeting quality control criteria and the analyte may or may not be present in the sample (USEPA 2014). The data quality review found the results to be valid, reliable and useable for decision making purposes with the listed qualifiers. No analytical results were rejected.

3.3 Non-Detects

Non-detects (NDs) commonly reported in water monitoring are statistically known as “left censored” measurements because the concentration of any ND can only be estimated. NDs are assumed to fall between zero and the reporting limit (USEPA 2009). USEPA (2015) offers a number of options for handling non-detected values, including Kaplan-Meier estimators, Regression on Order Statistics, and replacement with surrogate values. The appropriate handling of NDs depends on the statistical test being used and will be discussed in the following sections as appropriate.

4. DESCRIPTIVE STATISTICS

Descriptive statistics were calculated for all Groups and can be found in Table 1. Non-detects were substituted with a value of half the reporting limit for calculations. The descriptive statistics highlight a number of relevant characteristics about the datasets, including:

There are a total of 1198 Groups.

- 1198 Groups have detection rates greater than or equal to 50 percent.
- 0 Groups have 100 percent non-detects.
- 1198 Groups have 100 percent detects.
- 804 Groups follow a normal distribution (using Shapiro-Wilks Normality Test) and 61 Groups follow a log-normal distribution. The remaining 333 Groups have no discernible distribution.

5. TESTING FOR TRENDS

Trend tests are a commonly used tool to assess the effectiveness of remediation efforts. By examining whether concentrations are increasing, decreasing, or not significant, trend tests provide one line of evidence about the directional change in concentrations over time.

5.1 Trend Testing Approach

A Mann Kendall test was used to detect changes in concentrations over time. The Mann Kendall Test is a non-parametric method that tests the following null hypothesis (USEPA 2009):

- Null Hypothesis (Ho): No monotonic trend exists.
- Alternative Hypothesis (Ha): A monotonic trend exists.

A monotonic upward (downward) trend means that the variable consistently increases (decreases) through time, but the trend may or may not be linear. The Mann-Kendall test is based on the premise that the lack of monotonic trend should correspond to a time series plot fluctuating randomly about a constant median with no visually apparent upward or downward pattern (Helsel and Hirsch 2002). Significantly increasing or decreasing trends (τ) are identified at a significant level (α) of less than or equal to 0.05. τ^2 can be used like an R^2 value to estimate how much variance in y is explained by x (i.e., what proportion of the variability in concentration is explained by time). USEPA 2009 guidance and/or Helsel and Hirsch (2002) may be consulted for further details for the Mann-Kendall test. With the specified 95% confidence, significantly increasing or decreasing trends are identified with p-values as follows:

Tau	p-value	Conclusion	Trend
Positive	p <= 0.05	Ho Rejected	Increasing
Negative	p <= 0.05	Ho Rejected	Decreasing
Positive or Negative	p > 0.05	Ho Accepted	Not Significant

5.2 Data Constraints

Guidance recommends that trend tests be performed with at least eight detected data points to ensure a reasonable amount of confidence in results (USEPA 2009, p. 17-24). However, it is mathematically possible to carry out the test with five detected samples. The consequences of using the minimum sample size is that there is a greater chance of concluding that there is no trend when, in fact there is a trend (USEPA 2009). If a dataset is comprised of more than 50 percent ND values, the loss of information is considered too great to support a reliable analysis of trends, so no Mann Kendall test was formed.

Consistent with guidance, in cases where FOD was greater than 50 percent, NDs were substituted with a constant that is below the lowest detected value (Helsel and Hirsch 2002). This ensures that all NDs are "tied" in the Mann Kendall and that changing reporting limits have limited influence on whether trends are detected (USEPA 2009, Helsel and Hirsch 2002). NDs were chosen to be substituted with a value of zero for the trend analysis.

5.3 Results

Trend tests were calculated with 95% confidence for all Groups that met the minimum data requirements of at least 4 detected values and 50% detection frequency. A full report of the Mann Kendall trend test results and timeseries plots can be found in Table 2. The following summarize the results of the trend analysis:

- There are a total of 1198 Groups in the dataset.
- 918 Groups meet the data requirements of the trend test. Of those:
- 31 Groups had a significant increasing trend,
- 83 Groups had a significant decreasing trend,
- 800 Groups had no significant trend.

Time series scatterplots are provided in Figure 1 for each Group. Detection limits for each sample are also plotted for an easy visual assessment of changing detection limits over time. For Groups with significant trend, a visual of the linear fit is provided on the graph. The Mann Kendall is a correlation test and does not provide an estimate of the slope and y-intercept. A parametric test was used to provide a visual guide only.

6. SPECIAL CONSIDERATIONS

Like most statistical analyses, Mann Kendall makes some assumptions about the data being analyzed including:

- Observations or data obtained over time are independent.
- The observations obtained over time are representative of the true conditions at sampling times.
- The sample collection, handling, and measurement methods provide unbiased and representative observations of the underlying populations over time.
- There is no requirement that the measurements be normally distributed. The Mann Kendall test can be computed if there are missing values and varying detection limits, but the performance of the test will be adversely affected by such events. The assumption of independence requires that the time between samples be sufficiently large so that there is no correlation between measurements collected at different times.

The Mann Kendall test does not assume that the underlying relationship is linear. However, in cases where the data are clearly curvilinear, it may be more appropriate to consult with a statistician to employ different statistical techniques that more accurately characterize the changes in concentration over time.

Special consideration should be given to dataset with clear seasonality and/or NDs. These are considered in the following sections.

6.1 Seasonality

Seasonal changes in precipitation and temperature can cause cyclical fluctuations in groundwater concentrations. These seasonal fluctuations functionally add 'noise' to the data. This type of noise is called serial dependence and can make it difficult to determine trends in the data because of a long-term persistent pattern (like seasonality) or whether it represents a true, underlying change. USEPA Guidance (2009) strongly recommends accounting for seasonality when performing linear trends in hydrologic data. Seasonality has not been explicitly handled in the data described herein.

6.2 Non-Detects and Detection Limits

Non-detects (NDs) commonly reported in water monitoring are statistically known as "left censored" measurements because the concentration of any non-detect either cannot be estimated or is not reported directly. Rather, it is known or assumed only to fall within a certain range of concentration values (USEPA 2009 p. 15-1). With higher detection limits, that uncertainty is greater because the true value lies somewhere in a larger range of possible values.

USEPA (2006) notes that no general procedures exist for the statistical analyses of censored datasets. If a dataset is comprised of more than 50 percent non-detected (ND) values, guidance cautions the user when interpreting the results of statistical tests, especially for relatively small datasets (USEPA 2009). In the context of Mann Kendall, there is general agreement that substituting a constant below the lowest detected value is the best solution for handling non-detected values.

When detection rates are below 85 percent, however, this simple substitution method may lead to bias in the correlation estimates. Visually reviewing the data is a key step in interpreting the appropriateness of the statistical results. The time series plots have been generated using the detection limit for non-detects so that detection rates and multiple detection limits can be visualized. Additional statistical testing may be needed to address datasets with low detection rates or elevated detection limits.

7. REFERENCES

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APPENDIX L MANN-KENDALL OUTPUTS

ERM

Table 1
Descriptive Statistics
MTPIPER

sys_loc_code	chemical_name	Units	N	Num Detects	Num ND	Percent Detects	Min Detect	Median	Mean	Max Detect	SD	CV	Distribution
D1	Aluminium	ug/L	8	8	0	100.00%	10	115	158.8	360	123.5	77.77%	Normal
D1	Aluminium (Filtered)	ug/L	1	1	0	100.00%	10	10	10	10			NDD
D1	Ammonia	ug/L	7	7	0	100.00%	200	400	384.3	560	108.6	28.26%	Normal
D1	Arsenic	ug/L	8	8	0	100.00%	3	6.5	6.75	10	2.053	30.41%	Normal
D1	Arsenic (Filtered)	ug/L	7	7	0	100.00%	2	4	4	6	1.414	35.36%	Normal
D1	Barium	ug/L	8	8	0	100.00%	23	27	28	37	4.84	17.29%	Normal
D1	Bicarbonate Alkalinity (as CaCO3)	mg/L	7	7	0	100.00%	116	161	158.6	189	25.77	16.25%	Normal
D1	Boron	ug/L	8	8	0	100.00%	2520	2685	2831	3590	363.6	12.84%	NDD
D1	Boron (Filtered)	ug/L	7	7	0	100.00%	2310	2590	2673	3130	316.6	11.84%	Normal
D1	Calcium	mg/L	8	8	0	100.00%	29.9	511	453.2	591	180.3	39.79%	NDD
D1	Carbonate Alkalinity (as CaCO3)	mg/L	4	4	0	100.00%	137	165	164	189	21.51	13.12%	Normal
D1	Chloride	mg/L	8	8	0	100.00%	132	1005	921.5	1120	325.1	35.27%	NDD
D1	Chromium	ug/L	1	1	0	100.00%	5	5	5	5			NDD
D1	Cobalt	ug/L	7	7	0	100.00%	326	350	359.3	422	32.4	9.02%	Normal
D1	Copper	ug/L	2	2	0	100.00%	1	1	1	1	0	0.00%	NDD
D1	Dissolved Oxygen (Field)	na	3	3	0	100.00%	1.4	2.5	4.967	11	5.254	105.78%	Normal
D1	Dissolved Oxygen (Field) (Filtered)	mg/L	4	4	0	100.00%	0.9	1.25	1.35	2	0.4655	34.48%	Normal
D1	Electrical Conductivity (Field)	uS/cm	8	8	0	100.00%	9000	9215	9442	10250	479.9	5.08%	Normal
D1	Fluoride	mg/L	1	1	0	100.00%	0.75	0.75	0.75	0.75			NDD
D1	Iron	ug/L	7	7	0	100.00%	35100	49900	47500	55800	7209	15.18%	Normal
D1	Iron (Filtered)	ug/L	8	8	0	100.00%	24700	38450	38800	48700	7736	19.94%	Normal
D1	Lead	ug/L	1	1	0	100.00%	12	12	12	12			NDD
D1	Magnesium	mg/L	8	8	0	100.00%	21	473	425.6	549	168.7	39.64%	NDD
D1	Manganese	ug/L	7	7	0	100.00%	18300	21000	20970	23800	1929	9.20%	Normal
D1	Manganese (Filtered)	ug/L	8	8	0	100.00%	17300	20350	21050	26100	2746	13.04%	Normal
D1	Molybdenum	ug/L	2	2	0	100.00%	1	1.5	1.5	2	0.7071	47.14%	NDD
D1	Nickel	ug/L	8	8	0	100.00%	1710	1805	1855	2040	120.8	6.51%	Normal
D1	Nickel (Filtered)	ug/L	7	7	0	100.00%	1640	1710	1754	1980	120.8	6.89%	Normal
D1	pH (Field)	pH units	8	8	0	100.00%	5.84	5.915	5.904	5.95	0.04069	0.69%	Normal
D1	Potassium	mg/L	8	8	0	100.00%	3.95	102	90.63	111	35.36	39.01%	NDD
D1	Redox (Field)	mV	1	1	0	100.00%	58.6	58.6	58.6	58.6			NDD
D1	Selenium	ug/L	6	6	0	100.00%	0.2	0.4	0.3833	0.7	0.1835	47.87%	Normal
D1	Sodium	mg/L	8	8	0	100.00%	25.8	1345	1173	1390	466.2	39.74%	NDD
D1	Strontium	mg/L	7	7	0	100.00%	2.53	2.68	2.709	3.02	0.1561	5.76%	Normal
D1	Sulfate (as SO4)	mg/L	8	8	0	100.00%	997	4415	4040	4790	1245	30.82%	NDD
D1	Sulfur	mg/L	7	7	0	100.00%	59	1400	1281	1680	550.4	42.96%	NDD
D1	Total Alkalinity (as CaCO3)	mg/L	4	4	0	100.00%	116	140.5	145.2	184	30.37	20.91%	Normal
D1	Total Dissolved Solids (TDS)	mg/L	4	4	0	100.00%	8310	8665	8750	9360	444	5.07%	Normal
D1	Total Dissolved Solids (TDS) (Filtered)	mg/L	4	4	0	100.00%	7750	8190	8162	8520	316	3.87%	Normal
D1	Zinc	ug/L	8	8	0	100.00%	145	161	164.9	191	16.64	10.09%	Normal
D1	Zinc (Filtered)	ug/L	7	7	0	100.00%	108	151	148.6	176	24.18	16.27%	Normal
D10	Aluminium	ug/L	8	8	0	100.00%	40	50	56.25	110	23.87	42.43%	NDD
D10	Aluminium (Filtered)	ug/L	6	6	0	100.00%	10	35	33.33	60	17.51	52.54%	Normal
D10	Ammonia	ug/L	7	7	0	100.00%	260	300	294.3	330	26.99	9.17%	Normal
D10	Arsenic	ug/L	8	8	0	100.00%	2	4	4	8	2.07	51.75%	Normal
D10	Arsenic (Filtered)	ug/L	6	6	0	100.00%	1	3	3.333	8	2.658	79.75%	Normal
D10	Barium	ug/L	8	8	0	100.00%	16	20.5	20.62	26	3.114	15.10%	Normal
D10	Bicarbonate Alkalinity (as CaCO3)	mg/L	7	7	0	100.00%	136	170	173.9	212	27.36	15.74%	Normal
D10	Boron	ug/L	8	8	0	100.00%	1020	1300	1254	1440	164	13.08%	Normal
D10	Boron (Filtered)	ug/L	7	7	0	100.00%	770	1140	1124	1400	240.7	21.41%	Normal
D10	Cadmium	ug/L	4	4	0	100.00%	0.1	0.1	0.3	0.9	0.4	133.33%	NDD
D10	Calcium	mg/L	8	8	0	100.00%	112	143.5	142	165	17.29	12.17%	Normal
D10	Carbonate Alkalinity (as CaCO3)	mg/L	4	4	0	100.00%	156	167	175.5	212	25	14.25%	Normal
D10	Chloride	mg/L	8	8	0	100.00%	227	280	282.8	345	44.38	15.69%	Normal
D10	Chromium	ug/L	4	4	0	100.00%	1	2	5	15	6.683	133.67%	Lognormal
D10	Cobalt	ug/L	7	7	0	100.00%	90	139	135.7	175	29.98	22.09%	Normal
D10	Copper	ug/L	1	1	0	100.00%	1	1	1	1			NDD
D10	Dissolved Oxygen (Field)	na	3	3	0	100.00%	1	1.5	4.467	10.9	5.577	124.86%	Normal
D10	Dissolved Oxygen (Field) (Filtered)	mg/L	4	4	0	100.00%	0.9	1.2	1.225	1.6	0.3304	26.97%	Normal
D10	Electrical Conductivity (Field)	uS/cm	8	8	0	100.00%	4000	4315	4415	5190	415.3	9.41%	Normal
D10	Fluoride	mg/L	2	2	0	100.00%	0.463	0.553	0.553	0.643	0.1273	23.02%	NDD
D10	Iron	ug/L	7	7	0	100.00%	4070	9970	9540	16000	5228	54.81%	Normal
D10	Iron (Filtered)	ug/L	8	8	0	100.00%	3300	5655	7944	15300	4787	60.26%	Normal
D10	Lead	ug/L	8	8	0	100.00%	3	5.5	8.875	32	9.598	108.15%	Lognormal
D10	Magnesium	mg/L	8	8	0	100.00%	87.4	120.5	119.4	148	18.68	15.64%	Normal
D10	Manganese	ug/L	7	7	0	100.00%	2170	2940	2933	3750	462	15.75%	Normal
D10	Manganese (Filtered)	ug/L	8	8	0	100.00%	1980	2785	2788	3540	423.4	15.19%	Normal
D10	Molybdenum	ug/L	8	8	0	100.00%	2	4.5	6	17	4.629	77.15%	Lognormal
D10	Nickel	ug/L	8	8	0	100.00%	303	383	395	538	67.26	17.03%	Normal
D10	Nickel (Filtered)	ug/L	7	7	0	100.00%	269	364	371.6	460	59	15.88%	Normal
D10	pH (Field)	pH units	8	8	0	100.00%	5.98	6.06	6.074	6.22	0.09039	1.49%	Normal
D10	Potassium	mg/L	8	8	0	100.00%	69.9	85.2	86.5	106	13.82	15.98%	Normal
D10	Redox (Field)	mV	1	1	0	100.00%	62.7	62.7	62.7	62.7			NDD
D10	Selenium	ug/L	7	7	0	100.00%	0.4	0.4	0.4857	0.8	0.1574	32.40%	NDD
D10	Sodium	mg/L	8	8	0	100.00%	569	691	689.5	880	100.7	14.61%	Normal
D10	Strontium	mg/L	7	7	0	100.00%	0.94	1.28	1.306	1.76	0.2412	18.48%	Normal
D10	Sulfate (as SO4)	mg/L	8	8	0	100.00%	1500	1885	1856	2210	227.8	12.27%	Normal
D10	Sulfur	mg/L	7	7	0	100.00%	498	666	652.9	754	81.89	12.54%	Normal
D10	Total Alkalinity (as CaCO3)	mg/L	4	4	0	100.00%	136	163	167.5	208	30.56	18.24%	Normal
D10	Total Dissolved Solids (TDS)	mg/L	4	4	0	100.00%	2970	3575	3565	4140	506.3	14.20%	Normal
D10	Total Dissolved Solids (TDS) (Filtered)	mg/L	4	4	0	100.00%	2720	3215	3112	3300	266.3	8.55%	Normal
D10	Zinc	ug/L	8	8	0	100.00%	44	289	272.5	621	190.4	69.87%	Normal
D10	Zinc (Filtered)	ug/L	7	7	0	100.00%	26	246	205.6	387	137.6	66.95%	Normal
D102	Aluminium	ug/L	7	7	0	100.00%	20	40	50	90	25.17	50.33%	Normal
D102	Ammonia	ug/L	7	7	0	100.00%	180	310	361.4	710	167	46.20%	Normal
D102	Arsenic	ug/L	5	5	0	100.00%	1	2	1.8	3	0.8367	46.48%	Normal
D102	Arsenic (Filtered)	ug/L	3	3	0	100.00%	1	1	1.333	2	0.5774	43.30%	NDD
D102	Barium	ug/L	7	7	0	100.00%	22	26	25.71	30	2.628	10.22%	Normal
D102	Barium (Filtered)	ug/L	1	1	0	100.00%	26	26	26	26			NDD
D102	Beryllium	ug/L	1	1	0	100.00%	1	1	1	1			NDD
D102	Bicarbonate Alkalinity (as CaCO3)	mg/L	7	7	0	100.00%	58	125	118.1	182	39.65	33.56%	Normal
D102	Boron	ug/L	7	7	0	100.00%	1510	1790	1776	2020	161.8	9.11%	Normal
D102	Boron (Filtered)	ug/L	7	7	0	100.00%	1500	1700	1690	2000	183.5	10.86%	Normal
D102	Cadmium	ug/L	2	2	0	100.00%	0.1	0.15	0.15	0.2	0.07071	47.14%	NDD
D102	Calcium	mg/L	7	7	0	100.00%	502	547	561.4	713	70.31	12.52%	NDD
D102	Calcium (Filtered)	mg/L	1	1	0	100.00%	612	612	612	612			NDD
D102	Carbonate Alkalinity (as CaCO3)	mg/L	4	4	0	100.00%	58	96	108	182	52.71	48.81%	Normal
D102	Chloride	mg/L	7	7	0	100.00%	1220	1350	1373	1570	111.5	8.12%	Normal
D102	Chromium	ug/L	4	4	0	100.00%	1	2	2.75	6	2.217	80.63%	Normal
D102	Cobalt	ug/L	7	7	0	100.00%	248	317	302.9	332	28.78	9.50%	Normal
D102	Copper	ug/L	3	3	0	100.00%	1	2	1.667	2	0.5774	34.64%	NDD
D102	Dissolved Oxygen (Field)	na	3	3	0	100.00%	1.8	2.4	4.6	9.6	4.341	94.36%	Normal
D102	Dissolved Oxygen (Field) (Filtered)	mg/L	4	4	0	100.00%	1.7	1.85	1.9	2.2	0.216	11.37%	Normal
D102	Electrical Conductivity (Field)	uS/cm	7	7	0	100.00%	9480	10140	10020	10420	329.9	3.29%	Normal
D102	Fluoride	mg/L	1	1	0	100.00%	0.066	0.066	0.066	0.066			NDD
D102	Iron	ug/L	7	7	0	100.00%	49800	52000	54590	60300	4226	7.74%	Normal
D102	Iron (Filtered)	ug/L	7	7	0	100.00%	21100	35100	40340	65100	16250	40.29%	Normal
D102	Magnesium	mg/L	7	7	0	100.00%	481	546	545.4	615	45.24	8.29%	Normal
D102	Magnesium (Filtered)	mg/L	1	1	0	100.00%	513	513	513	513			NDD
D102	Manganese	ug/L	7	7	0	100.00%	14500	17200	17140	19900	1614	9.42%	Normal
D102	Manganese (Filtered)	ug/L	7	7	0	100.00%	14000	16600	16360	19200	1780	10.88%	Normal
D102	Mercury	ug/L	2	2	0	100.00%	0.06	0.385	0.385	0.71	0.4596	119.38%	NDD
D102	Nickel	ug/L	7	7	0	100.00%	1540	1850	1820	1940	134.8	7.41%	NDD
D102	Nickel (Filtered)	ug/L	7	7	0	100.00%	1510	1720	1714	1870	131.4	7.66%	Normal
D102	pH (Field)	pH units	7	7	0	100.00%	5.94	6.06	6.046	6.1	0.05224	0.86%	Normal
D102	Potassium	mg/L	7	7	0	100.00%	74.5	96	96.36	120	13.46	13.97%	Normal
D102	Potassium (Filtered)	mg/L	1	1	0	100.00%	96.5	96.5	96.5	96.5			NDD
D102	Redox (Field)	mV	1	1	0	100.00%	52.4	52.4	52.4	52.4			NDD
D102	Selenium	ug/L	2	2	0	100.00%	0.3	0.3	0.3	0.3	0	0.00%	NDD
D102	Selenium (Filtered)	ug/L	1	1	0	100.00%	0.2	0.2	0.2	0.2			NDD
D102	Sodium	mg/L	7	7	0	100.00%	1200	1380	1377	1550	112.1	8.14%	Normal
D102	Sodium (Filtered)	mg/L	1	1	0	100.00%	1200	1200	1200	1200			NDD
D102	Strontium	mg/L	7	7	0	100.00%	2.97	3.5	3.429	3.65	0.2328	6.79%	Normal
D102	Sulfate (as SO4)	mg/L	7	7	0	100.00%	4290	4610	4747	5430	433.1	9.12%	Normal
D102	Sulfur	mg/L	7	7	0	100.00%	1130	1470	1543	1930	287.3	18.62%	Normal
D102	Total Alkalinity (as CaCO3)	mg/L	3	3	0	100.00%	125	129	131.7	141	8.327	6.32%	Normal
D102	Total Dissolved Solids (TDS)	mg/L	3	3	0	100.00%	9110	9220	9283	9520	212.2	2.29%	Normal
D102	Total Dissolved Solids (TDS) (Filtered)	mg/L	4	4	0	100.00%	8360	9020	8875	9100	347.8	3.92%	NDD
D102	Zinc	ug/L	7	7	0	100.00%	48	75	74.86	97	17.75	23.71%	Normal
D102	Zinc (Filtered)	ug/L	7	7	0	100.00%	41	54	60.86	92	21.13	34.72%	Normal
D103	Aluminium	ug/L	7	7	0	100.00%	150	340	370	580	142.8	38.60%	Normal
D103	Aluminium (Filtered)	ug/L	2	2	0	100.00%	10	25	25	40	21.21	84.85%	NDD

sys_loc_code	chemical_name	Units	N	Num Detects	Num ND	Percent Detects	Min Detect	Median	Mean	Max Detect	SD	CV	Distribution
D103	Ammonia	ug/L	7	7	0	100.00%	170	190	192.9	230	19.76	10.25%	Normal
D103	Arsenic	ug/L	7	7	0	100.00%	4	7	6.571	9	1.718	26.15%	Normal
D103	Arsenic (Filtered)	ug/L	5	5	0	100.00%	1	4	3.6	5	1.673	46.48%	Normal
D103	Barium	ug/L	7	7	0	100.00%	19	22	22.71	26	2.43	10.70%	Normal
D103	Barium (Filtered)	ug/L	1	1	0	100.00%	19	19	19	19			NDD
D103	Bicarbonate Alkalinity (as CaCO3)	mg/L	7	7	0	100.00%	162	177	177.4	195	11.12	6.27%	Normal
D103	Boron	ug/L	7	7	0	100.00%	1410	1690	1666	1800	129.7	7.79%	Normal
D103	Boron (Filtered)	ug/L	7	7	0	100.00%	1440	1580	1603	1820	136.2	8.50%	Normal
D103	Calcium	mg/L	7	7	0	100.00%	162	205	203.9	256	29.14	14.29%	Normal
D103	Calcium (Filtered)	mg/L	1	1	0	100.00%	236	236	236	236			NDD
D103	Carbonate Alkalinity (as CaCO3)	mg/L	4	4	0	100.00%	171	174	178.5	195	11.36	6.36%	Normal
D103	Chloride	mg/L	7	7	0	100.00%	229	270	274.3	317	32.11	11.71%	Normal
D103	Chromium	ug/L	4	4	0	100.00%	2	3	4.5	10	3.786	84.13%	Normal
D103	Cobalt	ug/L	7	7	0	100.00%	171	224	221.1	260	31.79	14.37%	Normal
D103	Copper	ug/L	2	2	0	100.00%	1	1	1	1	0	0.00%	NDD
D103	Dissolved Oxygen (Field)	na	3	3	0	100.00%	2.6	3.9	6.067	11.7	4.922	81.13%	Normal
D103	Dissolved Oxygen (Field) (Filtered)	mg/L	4	4	0	100.00%	1.5	2.35	2.175	2.5	0.4717	21.69%	Normal
D103	Electrical Conductivity (Field)	uS/cm	7	7	0	100.00%	3860	4110	4226	4710	294.9	6.98%	Normal
D103	Fluoride	mg/L	1	1	0	100.00%	0.056	0.056	0.056	0.056			NDD
D103	Iron	ug/L	7	7	0	100.00%	13600	18600	19300	25300	4436	22.99%	Normal
D103	Iron (Filtered)	ug/L	7	7	0	100.00%	9950	15800	15210	20500	3737	24.58%	Normal
D103	Magnesium	mg/L	7	7	0	100.00%	167	194	199.7	254	28.65	14.35%	Normal
D103	Magnesium (Filtered)	mg/L	1	1	0	100.00%	223	223	223	223			NDD
D103	Manganese	ug/L	7	7	0	100.00%	8330	10300	10410	12800	1378	13.24%	Normal
D103	Manganese (Filtered)	ug/L	7	7	0	100.00%	7940	9970	10050	12200	1282	12.76%	Normal
D103	Mercury	ug/L	1	1	0	100.00%	0.14	0.14	0.14	0.14			NDD
D103	Nickel	ug/L	7	7	0	100.00%	626	786	774.3	876	84.79	10.95%	Normal
D103	Nickel (Filtered)	ug/L	7	7	0	100.00%	599	737	729.6	812	74.44	10.20%	Normal
D103	pH (Field)	pH units	7	7	0	100.00%	6.06	6.14	6.139	6.22	0.05336	0.87%	Normal
D103	Potassium	mg/L	7	7	0	100.00%	30.9	35.5	36.27	42.7	3.992	11.01%	Normal
D103	Potassium (Filtered)	mg/L	1	1	0	100.00%	35.8	35.8	35.8	35.8			NDD
D103	Redox (Field)	mV	1	1	0	100.00%	55.3	55.3	55.3	55.3			NDD
D103	Selenium	ug/L	2	2	0	100.00%	0.2	0.25	0.25	0.3	0.07071	28.28%	NDD
D103	Sodium	mg/L	7	7	0	100.00%	489	535	540	583	34.98	6.48%	Normal
D103	Sodium (Filtered)	mg/L	1	1	0	100.00%	516	516	516	516			NDD
D103	Strontium	mg/L	7	7	0	100.00%	0.762	0.964	0.947	1.1	0.1139	12.03%	Normal
D103	Sulfate (as SO4)	mg/L	7	7	0	100.00%	1760	2030	2051	2390	222.4	10.84%	Normal
D103	Sulfur	mg/L	7	7	0	100.00%	529	612	652.1	935	132.9	20.38%	Lognormal
D103	Total Alkalinity (as CaCO3)	mg/L	3	3	0	100.00%	162	178	176	188	13.11	7.45%	Normal
D103	Total Dissolved Solids (TDS)	mg/L	3	3	0	100.00%	3550	3890	3807	3980	226.8	5.96%	Normal
D103	Total Dissolved Solids (TDS) (Filtered)	mg/L	4	4	0	100.00%	2980	3345	3270	3410	196.8	6.02%	Normal
D103	Zinc	ug/L	7	7	0	100.00%	120	154	155.7	196	22.96	14.75%	Normal
D103	Zinc (Filtered)	ug/L	7	7	0	100.00%	100	137	136	179	24.17	17.77%	Normal
D104	Aluminium	ug/L	7	7	0	100.00%	20	180	168.6	300	97.03	57.56%	Normal
D104	Ammonia	ug/L	7	7	0	100.00%	30	80	78.57	100	22.68	28.86%	NDD
D104	Arsenic	ug/L	3	3	0	100.00%	1	2	1.667	2	0.5774	34.64%	NDD
D104	Arsenic (Filtered)	ug/L	1	1	0	100.00%	1	1	1	1			NDD
D104	Barium	ug/L	7	7	0	100.00%	19	22	23.86	36	6.094	25.55%	Normal
D104	Barium (Filtered)	ug/L	1	1	0	100.00%	37	37	37	37			NDD
D104	Bicarbonate Alkalinity (as CaCO3)	mg/L	7	7	0	100.00%	38	44	46	58	7.095	15.42%	Normal
D104	Boron	ug/L	7	7	0	100.00%	60	110	105.7	150	33.09	31.31%	Normal
D104	Boron (Filtered)	ug/L	5	5	0	100.00%	60	100	96	160	40.99	42.70%	Normal
D104	Calcium	mg/L	7	7	0	100.00%	56.1	96.9	91.1	113	19.79	21.72%	Normal
D104	Calcium (Filtered)	mg/L	1	1	0	100.00%	54.5	54.5	54.5	54.5			NDD
D104	Carbonate Alkalinity (as CaCO3)	mg/L	4	4	0	100.00%	38	42.5	45.25	58	8.846	19.55%	Normal
D104	Chloride	mg/L	7	7	0	100.00%	47.4	81.9	83.01	109	19.06	22.96%	Normal
D104	Chromium	ug/L	1	1	0	100.00%	3	3	3	3			NDD
D104	Cobalt	ug/L	7	7	0	100.00%	8	13	13.29	21	4.821	36.28%	Normal
D104	Copper	ug/L	6	6	0	100.00%	1	2	3.667	13	4.633	126.36%	Lognormal
D104	Copper (Filtered)	ug/L	1	1	0	100.00%	3	3	3	3			NDD
D104	Dissolved Oxygen (Field)	na	3	3	0	100.00%	2.2	2.2	5.5	12.1	5.716	103.92%	NDD
D104	Dissolved Oxygen (Field) (Filtered)	mg/L	4	4	0	100.00%	1.7	2.95	2.85	3.8	0.9747	34.20%	Normal
D104	Electrical Conductivity (Field)	uS/cm	7	7	0	100.00%	910	1320	1301	1760	262.9	20.20%	Normal
D104	Fluoride	mg/L	1	1	0	100.00%	0.013	0.013	0.013	0.013			NDD
D104	Iron	ug/L	7	7	0	100.00%	1190	8060	8033	12600	3767	46.89%	Normal
D104	Iron (Filtered)	ug/L	7	7	0	100.00%	21	6500	6762	11800	3967	58.68%	Normal
D104	Magnesium	mg/L	7	7	0	100.00%	36.9	62.6	61.73	82.1	14.14	22.91%	Normal
D104	Magnesium (Filtered)	mg/L	1	1	0	100.00%	34.2	34.2	34.2	34.2			NDD
D104	Manganese	ug/L	7	7	0	100.00%	1590	2620	2603	3970	726.9	27.93%	Normal
D104	Manganese (Filtered)	ug/L	7	7	0	100.00%	1610	2520	2544	3820	681.4	26.78%	Normal
D104	Mercury	ug/L	1	1	0	100.00%	0.23	0.23	0.23	0.23			NDD
D104	Nickel	ug/L	7	7	0	100.00%	39	46	54	93	18.46	34.18%	Lognormal
D104	Nickel (Filtered)	ug/L	7	7	0	100.00%	38	45	52	91	18.85	36.25%	Lognormal
D104	Nitrate	ug/L	5	5	0	100.00%	10	20	20	30	7.071	35.36%	Normal
D104	Nitrite + Nitrate (as N)	mg/L	5	5	0	100.00%	0.01	0.02	0.02	0.03	0.007071	35.36%	Normal
D104	pH (Field)	pH units	7	7	0	100.00%	5.64	5.75	5.744	5.88	0.07955	1.38%	Normal
D104	Potassium	mg/L	7	7	0	100.00%	8.29	10.5	10.24	11.8	1.325	12.94%	Normal
D104	Potassium (Filtered)	mg/L	1	1	0	100.00%	7.58	7.58	7.58	7.58			NDD
D104	Redox (Field)	mV	1	1	0	100.00%	84.5	84.5	84.5	84.5			NDD
D104	Sodium	mg/L	7	7	0	100.00%	76.2	86.6	93.83	130	18.31	19.51%	Normal
D104	Sodium (Filtered)	mg/L	1	1	0	100.00%	81.2	81.2	81.2	81.2			NDD
D104	Strontium	mg/L	7	7	0	100.00%	0.218	0.402	0.3821	0.546	0.1018	26.65%	Normal
D104	Sulfate (as SO4)	mg/L	7	7	0	100.00%	344	538	531	754	133.5	25.14%	Normal
D104	Sulfur	mg/L	7	7	0	100.00%	139	164	165.6	195	21.11	12.75%	Normal
D104	Total Alkalinity (as CaCO3)	mg/L	3	3	0	100.00%	41	48	47	52	5.568	11.85%	Normal
D104	Total Dissolved Solids (TDS)	mg/L	3	3	0	100.00%	670	990	1020	1400	365.9	35.87%	Normal
D104	Total Dissolved Solids (TDS) (Filtered)	mg/L	4	4	0	100.00%	765	894	888.2	1000	96.84	10.90%	Normal
D104	Zinc	ug/L	7	7	0	100.00%	41	55	55.29	72	12.43	22.49%	Normal
D104	Zinc (Filtered)	ug/L	7	7	0	100.00%	36	47	48.71	65	11.97	24.57%	Normal
D105	Aluminium	ug/L	7	7	0	100.00%	20	40	48.57	140	42.98	88.50%	Lognormal
D105	Ammonia	ug/L	7	7	0	100.00%	100	110	117.1	150	17.99	15.36%	Normal
D105	Arsenic	ug/L	6	6	0	100.00%	1	1.5	1.833	4	1.169	63.77%	Lognormal
D105	Arsenic (Filtered)	ug/L	1	1	0	100.00%	1	1	1	1			NDD
D105	Barium	ug/L	7	7	0	100.00%	18	22	21.57	25	2.44	11.31%	Normal
D105	Barium (Filtered)	ug/L	1	1	0	100.00%	22	22	22	22			NDD
D105	Bicarbonate Alkalinity (as CaCO3)	mg/L	7	7	0	100.00%	114	146	140.1	174	20.31	14.49%	Normal
D105	Boron	ug/L	7	7	0	100.00%	420	570	557.1	640	71.58	12.85%	Normal
D105	Boron (Filtered)	ug/L	7	7	0	100.00%	440	560	544.3	600	52.87	9.71%	Normal
D105	Calcium	mg/L	7	7	0	100.00%	181	220	214.1	245	22.05	10.30%	Normal
D105	Calcium (Filtered)	mg/L	1	1	0	100.00%	212	212	212	212			NDD
D105	Carbonate Alkalinity (as CaCO3)	mg/L	4	4	0	100.00%	114	126	135	174	27.22	20.16%	Normal
D105	Chloride	mg/L	7	7	0	100.00%	244	262	261.3	284	14.29	5.47%	Normal
D105	Chromium	ug/L	1	1	0	100.00%	1	1	1	1			NDD
D105	Cobalt	ug/L	7	7	0	100.00%	150	183	174.7	192	15.18	8.69%	Normal
D105	Dissolved Oxygen (Field)	na	3	3	0	100.00%	1.5	1.7	4.3	9.7	4.678	108.78%	Lognormal
D105	Dissolved Oxygen (Field) (Filtered)	mg/L	4	4	0	100.00%	1.2	1.4	1.4	1.6	0.1633	11.66%	Normal
D105	Electrical Conductivity (Field)	uS/cm	7	7	0	100.00%	3350	3510	3556	3960	209	5.88%	Normal
D105	Iron	ug/L	7	7	0	100.00%	22000	29700	29670	39600	5530	18.64%	Normal
D105	Iron (Filtered)	ug/L	7	7	0	100.00%	9320	19900	21620	33300	8660	40.06%	Normal
D105	Magnesium	mg/L	7	7	0	100.00%	174	209	204.4	239	21.81	10.67%	Normal
D105	Magnesium (Filtered)	mg/L	1	1	0	100.00%	204	204	204	204			NDD
D105	Manganese	ug/L	7	7	0	100.00%	10000	11700	11770	13800	1125	9.56%	Normal
D105	Manganese (Filtered)	ug/L	7	7	0	100.00%	9650	11400	11290	13200	1063	9.41%	Normal
D105	Mercury	ug/L	1	1	0	100.00%	0.09	0.09	0.09	0.09			NDD
D105	Nickel	ug/L	7	7	0	100.00%	557	688	658.4	709	55.61	8.45%	Normal
D105	Nickel (Filtered)	ug/L	7	7	0	100.00%	537	656	625.1	675	53.25	8.52%	Normal
D105	Nitrate	ug/L	1	1	0	100.00%	10	10	10	10			NDD
D105	Nitrite + Nitrate (as N)	mg/L	1	1	0	100.00%	0.01	0.01	0.01	0.01			NDD
D105	pH (Field)	pH units	7	7	0	100.00%	5.94	6.03	6.014	6.06	0.04756	0.79%	Normal
D105	Potassium	mg/L	7	7	0	100.00%	22.8	26.4	26.69	29.5	2.25	8.43%	Normal
D105	Potassium (Filtered)	mg/L	1	1	0	100.00%	25.4	25.4	25.4	25.4			NDD
D105	Redox (Field)	mV	1	1	0	100.00%	57.2	57.2	57.2	57.2			NDD
D105	Sodium	mg/L	7	7	0	100.00%	305	325	324.1	344	11.42	3.52%	Normal
D105	Sodium (Filtered)	mg/L	1	1	0	100.00%	279	279	279	279			NDD
D105	Strontium	mg/L	7	7	0	100.00%	0.705	0.82	0.8047	0.891	0.06051	7.52%	Normal
D105	Sulfate (as SO4)	mg/L	7	7	0	100.00%	1530	1650	1670	1840	120.3	7.20%	Normal
D105	Sulfur	mg/L	7	7	0	100.00%	434	514	515.9	612	57.02	11.05%	Normal
D105	Total Alkalinity (as CaCO3)	mg/L	3	3	0	100.00%	146	146	147	149	1.732	1.18%	NDD
D105	Total Dissolved Solids (TDS)	mg/L	3	3	0	100.00%	3000	3030	3087	3230	125	4.05%	Normal
D105	Total Dissolved Solids (TDS) (Filtered)	mg/L	4	4	0	100.00%	2620	2890	2830	2920	142.8	5.05%	Normal
D105	Zinc	ug/L	7	7	0	100.00%	53	64	65.43	75	6.828	10.44%	Normal
D105	Zinc (Filtered)	ug/L	7	7	0	100.00%	37	55	54.14	63	9.839	18.17%	Normal
D106	Aluminium	ug/L	7	7	0	100.00%	50	110	397.1	1420	501.4	126.26%	Lognormal
D106	Ammonia	ug/L	7	7	0	100.00%	360	400	407.1	480	39.88	9.80%	Normal
D106	Arsenic	ug/L	7	7	0	100.00%	1	2	2.143	4	1.069	49.89%	Normal
D106	Arsenic (Filtered)	ug/L	2	2	0	100.00%	1	1	1	1	0	0.00%	NDD
D106	Barium	ug/L	7	7	0	100.00%	22	26	25.43	31	3.101	12.20%	Normal

ERM

sys_loc_code	chemical_name	Units	N	Num Detects	Num ND	Percent Detects	Min Detect	Median	Mean	Max Detect	SD	CV	Distribution
D106	Barium (Filtered)	ug/L	1	1	0	100.00%	23	23	23	23			NDD
D106	Bicarbonate Alkalinity (as CaCO3)	mg/L	7	7	0	100.00%	148	170	167.9	189	15.18	9.04%	Normal
D106	Boron	ug/L	7	7	0	100.00%	1620	2170	2041	2320	252.5	12.37%	Normal
D106	Boron (Filtered)	ug/L	7	7	0	100.00%	1640	1990	1997	2400	249.1	12.47%	Normal
D106	Cadmium	ug/L	7	7	0	100.00%	0.1	0.1	0.1	0.1	0	0.00%	NDD
D106	Calcium	mg/L	7	7	0	100.00%	516	548	557.7	611	36.79	6.60%	Normal
D106	Calcium (Filtered)	mg/L	1	1	0	100.00%	493	493	493	493			NDD
D106	Carbonate Alkalinity (as CaCO3)	mg/L	4	4	0	100.00%	148	156	158.8	175	11.93	7.51%	Normal
D106	Chloride	mg/L	7	7	0	100.00%	1320	1530	1486	1540	78.07	5.25%	NDD
D106	Chromium	ug/L	3	3	0	100.00%	2	4	5.333	10	4.163	78.06%	Normal
D106	Cobalt	ug/L	7	7	0	100.00%	322	387	380.6	422	36.03	9.47%	Normal
D106	Copper	ug/L	4	4	0	100.00%	1	3.5	4	8	3.162	79.06%	Normal
D106	Dissolved Oxygen (Field)	na	3	3	0	100.00%	1.5	2.3	4.767	10.5	4.981	104.50%	Normal
D106	Dissolved Oxygen (Field) (Filtered)	mg/L	4	4	0	100.00%	1.3	1.95	1.875	2.3	0.5058	26.98%	Normal
D106	Electrical Conductivity (Field)	uS/cm	7	7	0	100.00%	10680	12160	12080	12760	683.4	5.66%	Normal
D106	Iron	ug/L	7	7	0	100.00%	26500	35800	37330	55000	10370	27.77%	Normal
D106	Iron (Filtered)	ug/L	7	7	0	100.00%	19600	25900	28490	38000	6589	23.13%	Normal
D106	Lead	ug/L	5	5	0	100.00%	1	2	2	3	0.7071	35.36%	Normal
D106	Magnesium	mg/L	7	7	0	100.00%	543	665	668.1	746	68.18	10.21%	Normal
D106	Magnesium (Filtered)	mg/L	1	1	0	100.00%	604	604	604	604			NDD
D106	Manganese	ug/L	7	7	0	100.00%	16700	20400	20210	24600	2495	12.34%	Normal
D106	Manganese (Filtered)	ug/L	7	7	0	100.00%	15400	19500	19400	23700	2644	13.63%	Normal
D106	Mercury	ug/L	3	3	0	100.00%	0.05	0.06	0.07667	0.12	0.03786	49.38%	Normal
D106	Molybdenum	ug/L	1	1	0	100.00%	1	1	1	1			NDD
D106	Nickel	ug/L	7	7	0	100.00%	1890	2240	2170	2310	152.3	7.02%	Normal
D106	Nickel (Filtered)	ug/L	7	7	0	100.00%	1760	2020	2056	2270	164.2	7.99%	Normal
D106	pH (Field)	pH units	7	7	0	100.00%	5.92	6	6.079	6.61	0.2399	3.95%	NDD
D106	Potassium	mg/L	7	7	0	100.00%	99.3	108	108.9	120	7.99	7.34%	Normal
D106	Potassium (Filtered)	mg/L	1	1	0	100.00%	105	105	105	105			NDD
D106	Redox (Field)	mV	1	1	0	100.00%	69.5	69.5	69.5	69.5			NDD
D106	Selenium	ug/L	6	6	0	100.00%	0.2	0.25	0.2667	0.4	0.08165	30.62%	Normal
D106	Sodium	mg/L	7	7	0	100.00%	1810	1900	1941	2100	116.3	5.99%	Normal
D106	Sodium (Filtered)	mg/L	1	1	0	100.00%	1500	1500	1500	1500			NDD
D106	Strontium	mg/L	7	7	0	100.00%	3.14	3.43	3.444	3.86	0.2741	7.96%	Normal
D106	Sulfate (as SO4)	mg/L	7	7	0	100.00%	5380	6020	6016	6540	355.1	5.90%	Normal
D106	Sulfur	mg/L	7	7	0	100.00%	1500	1930	1833	1980	194	10.58%	NDD
D106	Total Alkalinity (as CaCO3)	mg/L	3	3	0	100.00%	170	181	180	189	9.539	5.30%	Normal
D106	Total Dissolved Solids (TDS)	mg/L	3	3	0	100.00%	10600	10800	11030	11700	585.9	5.31%	Normal
D106	Total Dissolved Solids (TDS) (Filtered)	mg/L	4	4	0	100.00%	9610	11600	11150	11800	1033	9.26%	NDD
D106	Zinc	ug/L	7	7	0	100.00%	185	214	214.9	236	16.48	7.67%	Normal
D106	Zinc (Filtered)	ug/L	7	7	0	100.00%	171	188	189.9	225	17.5	9.22%	Normal
D107	Aluminium	ug/L	5	5	0	100.00%	10	20	24	50	16.73	69.72%	Normal
D107	Ammonia	ug/L	8	8	0	100.00%	380	415	440	570	70.1	15.93%	NDD
D107	Antimony	ug/L	1	1	0	100.00%	1	1	1	1			NDD
D107	Arsenic	ug/L	8	8	0	100.00%	1	6.5	6	9	2.507	41.79%	Normal
D107	Arsenic (Filtered)	ug/L	6	6	0	100.00%	3	4.5	5.667	11	3.204	56.54%	Normal
D107	Barium	ug/L	8	8	0	100.00%	17	19.5	19.75	23	1.982	10.04%	Normal
D107	Barium (Filtered)	ug/L	1	1	0	100.00%	18	18	18	18			NDD
D107	Bicarbonate Alkalinity (as CaCO3)	mg/L	8	8	0	100.00%	173	199	202.1	268	29.54	14.61%	Lognormal
D107	Boron	ug/L	8	8	0	100.00%	3840	4710	4730	5620	636.3	13.45%	Normal
D107	Boron (Filtered)	ug/L	8	8	0	100.00%	3940	4665	4669	5360	603.8	12.93%	Normal
D107	Cadmium	ug/L	8	8	0	100.00%	0.6	0.85	1.038	1.5	0.3662	35.30%	Lognormal
D107	Cadmium (Filtered)	ug/L	1	1	0	100.00%	0.7	0.7	0.7	0.7			NDD
D107	Calcium	mg/L	8	8	0	100.00%	378	442.5	442.2	504	43.09	9.74%	Normal
D107	Calcium (Filtered)	mg/L	1	1	0	100.00%	442	442	442	442			NDD
D107	Carbonate Alkalinity (as CaCO3)	mg/L	5	5	0	100.00%	173	194	201	268	38.97	19.39%	Lognormal
D107	Chloride	mg/L	8	8	0	100.00%	1250	1565	1550	1760	162.4	10.48%	Normal
D107	Chromium	ug/L	1	1	0	100.00%	5	5	5	5			NDD
D107	Cobalt	ug/L	8	8	0	100.00%	331	402.5	394	455	45.63	11.58%	Normal
D107	Copper	ug/L	3	3	0	100.00%	1	1	2.333	5	2.309	98.97%	NDD
D107	Copper (Filtered)	ug/L	1	1	0	100.00%	2	2	2	2			NDD
D107	Dissolved Oxygen (Field)	na	3	3	0	100.00%	1.9	2.4	5.267	11.5	5.404	102.61%	Normal
D107	Dissolved Oxygen (Field) (Filtered)	mg/L	5	5	0	100.00%	2	2.1	2.24	2.8	0.3362	15.01%	Normal
D107	Electrical Conductivity (Field)	uS/cm	8	8	0	100.00%	11300	13930	13870	15600	1491	10.75%	Normal
D107	Fluoride	mg/L	1	1	0	100.00%	4.73	4.73	4.73	4.73			NDD
D107	Iron	ug/L	8	8	0	100.00%	19400	32200	32580	43900	7434	22.82%	Normal
D107	Iron (Filtered)	ug/L	8	8	0	100.00%	6800	31850	27890	38200	10840	38.89%	Normal
D107	Lead	ug/L	8	8	0	100.00%	2	8	9.875	19	5.793	58.66%	Normal
D107	Magnesium	mg/L	8	8	0	100.00%	502	652	655.2	784	99	15.11%	Normal
D107	Magnesium (Filtered)	mg/L	1	1	0	100.00%	635	635	635	635			NDD
D107	Manganese	ug/L	8	8	0	100.00%	13900	16550	16280	19700	1975	12.14%	Normal
D107	Manganese (Filtered)	ug/L	8	8	0	100.00%	13700	15200	15690	19300	1950	12.43%	Normal
D107	Mercury	ug/L	1	1	0	100.00%	0.28	0.28	0.28	0.28			NDD
D107	Nickel	ug/L	8	8	0	100.00%	1750	2200	2139	2330	196	9.16%	Normal
D107	Nickel (Filtered)	ug/L	8	8	0	100.00%	1770	2045	2060	2340	182.5	8.86%	Normal
D107	pH (Field)	pH units	8	8	0	100.00%	5.92	5.99	5.994	6.06	0.04534	0.76%	Normal
D107	Potassium	mg/L	8	8	0	100.00%	191	245	276.1	378	66.44	24.06%	Normal
D107	Potassium (Filtered)	mg/L	1	1	0	100.00%	204	204	204	204			NDD
D107	Redox (Field)	mV	1	1	0	100.00%	80	80	80	80			NDD
D107	Selenium	ug/L	7	7	0	100.00%	0.2	0.4	0.3286	0.4	0.09512	28.95%	NDD
D107	Selenium (Filtered)	ug/L	1	1	0	100.00%	0.4	0.4	0.4	0.4			NDD
D107	Silver	ug/L	1	1	0	100.00%	2	2	2	2			NDD
D107	Sodium	mg/L	8	8	0	100.00%	1900	2480	2459	2960	332.8	13.53%	Normal
D107	Sodium (Filtered)	mg/L	1	1	0	100.00%	2070	2070	2070	2070			NDD
D107	Strontium	mg/L	8	8	0	100.00%	3.4	4.495	4.458	5.2	0.5574	12.50%	Normal
D107	Sulfate (as SO4)	mg/L	8	8	0	100.00%	5150	6825	6940	8360	1054	15.19%	Normal
D107	Sulfur	mg/L	8	8	0	100.00%	1570	2270	2156	2580	365.4	16.95%	Normal
D107	Total Alkalinity (as CaCO3)	mg/L	3	3	0	100.00%	202	203	204	207	2.646	1.30%	Normal
D107	Total Dissolved Solids (TDS)	mg/L	3	3	0	100.00%	8480	12500	11230	12700	2381	21.21%	Normal
D107	Total Dissolved Solids (TDS) (Filtered)	mg/L	5	5	0	100.00%	11600	13500	13260	14600	1369	10.32%	Normal
D107	Zinc	ug/L	8	8	0	100.00%	270	376	376.6	464	63.96	16.98%	Normal
D107	Zinc (Filtered)	ug/L	8	8	0	100.00%	256	340	353.1	437	64.01	18.13%	Normal
D11	Aluminium	ug/L	6	6	0	100.00%	10	20	263.3	1480	596.1	226.38%	NDD
D11	Aluminium (Filtered)	ug/L	1	1	0	100.00%	10	10	10	10			NDD
D11	Ammonia	ug/L	5	5	0	100.00%	930	1080	1384	2660	719.3	51.97%	NDD
D11	Arsenic	ug/L	6	6	0	100.00%	2	4	4.667	9	2.582	55.33%	Normal
D11	Arsenic (Filtered)	ug/L	4	4	0	100.00%	2	4.5	4.25	6	2.062	48.51%	Normal
D11	Barium	ug/L	6	6	0	100.00%	56	91.5	90.5	120	27.01	29.84%	Normal
D11	Bicarbonate Alkalinity (as CaCO3)	mg/L	5	5	0	100.00%	150	188	183	221	31.46	17.19%	Normal
D11	Boron	ug/L	6	6	0	100.00%	2260	2745	2672	2990	277.2	10.38%	Normal
D11	Boron (Filtered)	ug/L	5	5	0	100.00%	1200	2350	2184	2700	624.4	28.59%	Normal
D11	Calcium	mg/L	6	6	0	100.00%	479	513.5	535.5	671	71.02	13.26%	Normal
D11	Carbonate Alkalinity (as CaCO3)	mg/L	4	4	0	100.00%	150	178	181.8	221	36.19	19.91%	Normal
D11	Chloride	mg/L	6	6	0	100.00%	917	980.5	972.8	1030	43.32	4.45%	Normal
D11	Cobalt	ug/L	5	5	0	100.00%	134	156	152.2	164	11.71	7.70%	Normal
D11	Copper	ug/L	1	1	0	100.00%	1	1	1	1			NDD
D11	Dissolved Oxygen (Field)	na	1	1	0	100.00%	1.1	1.1	1.1	1.1			NDD
D11	Dissolved Oxygen (Field) (Filtered)	mg/L	4	4	0	100.00%	0.8	1.05	1.05	1.3	0.2082	19.83%	Normal
D11	Electrical Conductivity (Field)	uS/cm	6	6	0	100.00%	9290	9830	9922	10880	521.4	5.25%	Normal
D11	Fluoride	mg/L	1	1	0	100.00%	0.435	0.435	0.435	0.435			NDD
D11	Iron	ug/L	5	5	0	100.00%	50300	65900	70320	102000	19800	28.16%	Normal
D11	Iron (Filtered)	ug/L	6	6	0	100.00%	45000	55000	58450	83100	14790	25.30%	Normal
D11	Magnesium	mg/L	6	6	0	100.00%	402	421.5	435.7	530	47.71	10.95%	NDD
D11	Manganese	ug/L	5	5	0	100.00%	13200	14000	13860	14200	397.5	2.87%	Normal
D11	Manganese (Filtered)	ug/L	6	6	0	100.00%	12900	13550	13650	14800	683.4	5.01%	Normal
D11	Molybdenum	ug/L	2	2	0	100.00%	1	5	5	9	5.657	113.14%	NDD
D11	Nickel	ug/L	6	6	0	100.00%	839	936.5	941.8	1040	77.9	8.27%	Normal
D11	Nickel (Filtered)	ug/L	5	5	0	100.00%	851	920	913.6	955	38.03	4.16%	Normal
D11	pH (Field)	pH units	6	6	0	100.00%	6.25	6.32	6.308	6.33	0.02927	0.46%	NDD
D11	Potassium	mg/L	6	6	0	100.00%	104	109.5	113.8	130	10.63	9.34%	Normal
D11	Redox (Field)	mV	1	1	0	100.00%	-59.9	-59.9	-59.9	-59.9			NDD
D11	Selenium	ug/L	4	4	0	100.00%	0.2	0.25	0.3	0.5	0.1414	47.14%	Normal
D11	Sodium	mg/L	6	6	0	100.00%	1440	1560	1582	1840	142.9	9.03%	Normal
D11	Strontium	mg/L	5	5	0	100.00%	3.32	4.08	4.016	4.44	0.4168	10.38%	Normal
D11	Sulfate (as SO4)	mg/L	6	6	0	100.00%	4270	4635	4625	4980	293.4	6.34%	Normal
D11	Sulfur	mg/L	5	5	0	100.00%	1470	1540	1574	1780	122.4	7.78%	Normal
D11	Total Alkalinity (as CaCO3)	mg/L	2	2	0	100.00%	125	156.5	156.5	188	44.55	28.47%	NDD
D11	Total Dissolved Solids (TDS)	mg/L	2	2	0	100.00%	8200	8410	8410	8620	297	3.53%	NDD
D11	Total Dissolved Solids (TDS) (Filtered)	mg/L	4	4	0	100.00%	8430	8655	8642	8830	197.5	2.29%	Normal
D11	Zinc	ug/L	6	6	0	100.00%	23	28.5	28.83	38	5.037	17.47%	Normal
D11	Zinc (Filtered)	ug/L	5	5	0	100.00%	18	22	23.4	31	5.177	22.12%	Normal
D110	Aluminium	ug/L	4	4	0	100.00%	80	365	377.5	700	303.8	80.48%	Normal
D110	Aluminium (Filtered)	ug/L	3	3	0	100.00%	10	10	13.33	20	5.774	43.30%	NDD
D110	Ammonia	ug/L	4	4	0	100.00%	260	285	307.5	400	66.02	21.47%	Normal
D110	Arsenic	ug/L	4	4	0	100.00%	7	8	8	9	0.8165	10.21%	Normal
D110	Arsenic (Filtered)	ug/L	3	3	0	100.00%	4	7	6	7	1.732	28.87%	NDD
D110	Barium	ug/L	4	4	0	100.00%	14	15	16.5	22	3.786	22.95%	Normal

ERM

sys_loc_code	chemical_name	Units	N	Num Detects	Num ND	Percent Detects	Min Detect	Median	Mean	Max Detect	SD	CV	Distribution
D110	Bicarbonate Alkalinity (as CaCO3)	mg/L	4	4	0	100.00%	46	82	91.75	157	48.71	53.09%	Normal
D110	Boron	ug/L	4	4	0	100.00%	1760	1895	1908	2080	148.6	7.79%	Normal
D110	Boron (Filtered)	ug/L	4	4	0	100.00%	1700	1760	1800	1980	123.3	6.85%	Normal
D110	Calcium	mg/L	4	4	0	100.00%	595	634.5	658	768	78.26	11.89%	Normal
D110	Carbonate Alkalinity (as CaCO3)	mg/L	4	4	0	100.00%	46	82	91.75	157	48.71	53.09%	Normal
D110	Chloride	mg/L	4	4	0	100.00%	1040	1175	1182	1340	122.8	10.39%	Normal
D110	Chromium	ug/L	4	4	0	100.00%	1	15	14.75	28	14.22	96.42%	Normal
D110	Cobalt	ug/L	4	4	0	100.00%	297	348.5	337.2	355	27.04	8.02%	NDD
D110	Copper	ug/L	2	2	0	100.00%	1	1	1	1	0	0.00%	NDD
D110	Dissolved Oxygen (Field) (Filtered)	mg/L	4	4	0	100.00%	0.5	1.3	1.65	3.5	1.313	79.56%	Normal
D110	Electrical Conductivity (Field)	uS/cm	4	4	0	100.00%	8990	9310	9312	9640	268.5	2.88%	Normal
D110	Iron	ug/L	4	4	0	100.00%	51600	57050	57080	62600	4605	8.07%	Normal
D110	Iron (Filtered)	ug/L	4	4	0	100.00%	31800	50550	49300	64300	15750	31.95%	Normal
D110	Lead	ug/L	1	1	0	100.00%	1	1	1	1			NDD
D110	Magnesium	mg/L	4	4	0	100.00%	468	491	492.2	519	28.08	5.70%	Normal
D110	Manganese	ug/L	4	4	0	100.00%	15400	17600	17380	18900	1455	8.37%	Normal
D110	Manganese (Filtered)	ug/L	4	4	0	100.00%	15100	16700	16880	19000	1607	9.52%	Normal
D110	Mercury	ug/L	1	1	0	100.00%	0.09	0.09	0.09	0.09			NDD
D110	Molybdenum	ug/L	2	2	0	100.00%	1	1	1	1	0	0.00%	NDD
D110	Nickel	ug/L	4	4	0	100.00%	1460	1770	1700	1800	161.5	9.50%	NDD
D110	Nickel (Filtered)	ug/L	4	4	0	100.00%	1450	1655	1625	1740	134.3	8.26%	Normal
D110	pH (Field)	pH units	4	4	0	100.00%	5.84	5.89	5.922	6.07	0.1014	1.71%	Normal
D110	Potassium	mg/L	4	4	0	100.00%	97	102	102.5	109	5	4.88%	Normal
D110	Redox (Field)	mV	1	1	0	100.00%	34.8	34.8	34.8	34.8			NDD
D110	Selenium	ug/L	3	3	0	100.00%	0.3	0.3	0.3	0.3	0	0.00%	NDD
D110	Sodium	mg/L	4	4	0	100.00%	1080	1130	1160	1300	99.33	8.56%	Normal
D110	Strontium	mg/L	4	4	0	100.00%	3.19	4.015	3.838	4.13	0.4351	11.34%	NDD
D110	Sulfate (as SO4)	mg/L	4	4	0	100.00%	3880	4505	4538	5260	567.9	12.52%	Normal
D110	Sulfur	mg/L	4	4	0	100.00%	1300	1425	1468	1720	178.8	12.18%	Normal
D110	Total Dissolved Solids (TDS) (Filtered)	mg/L	4	4	0	100.00%	8010	8610	8505	8790	342.3	4.02%	Normal
D110	Zinc	ug/L	4	4	0	100.00%	295	329.5	326	350	23.42	7.19%	Normal
D110	Zinc (Filtered)	ug/L	4	4	0	100.00%	252	295.5	300.8	360	48.15	16.01%	Normal
D113	Aluminium	ug/L	7	7	0	100.00%	140	170	218.6	460	118.5	54.23%	Lognormal
D113	Aluminium (Filtered)	ug/L	1	1	0	100.00%	20	20	20	20			NDD
D113	Ammonia	ug/L	7	7	0	100.00%	190	240	232.9	250	19.76	8.49%	NDD
D113	Antimony	ug/L	1	1	0	100.00%	5	5	5	5			NDD
D113	Arsenic	ug/L	7	7	0	100.00%	1	1	1.286	2	0.488	37.95%	NDD
D113	Arsenic (Filtered)	ug/L	4	4	0	100.00%	1	1	1	1	0	0.00%	NDD
D113	Barium	ug/L	7	7	0	100.00%	12	13	13.14	14	0.6901	5.25%	Normal
D113	Barium (Filtered)	ug/L	1	1	0	100.00%	10	10	10	10			NDD
D113	Bicarbonate Alkalinity (as CaCO3)	mg/L	7	7	0	100.00%	152	175	171	179	9.832	5.75%	Normal
D113	Boron	ug/L	7	7	0	100.00%	1330	1750	1669	1860	187.2	11.22%	Normal
D113	Boron (Filtered)	ug/L	7	7	0	100.00%	1250	1700	1626	1860	207.8	12.78%	Normal
D113	Cadmium	ug/L	7	7	0	100.00%	0.1	0.2	0.1571	0.2	0.05345	34.02%	NDD
D113	Cadmium (Filtered)	ug/L	1	1	0	100.00%	0.1	0.1	0.1	0.1			NDD
D113	Calcium	mg/L	7	7	0	100.00%	126	144	149.9	181	19.43	12.96%	Normal
D113	Calcium (Filtered)	mg/L	1	1	0	100.00%	141	141	141	141			NDD
D113	Carbonate Alkalinity (as CaCO3)	mg/L	4	4	0	100.00%	152	177	171.2	179	12.97	7.57%	NDD
D113	Chloride	mg/L	7	7	0	100.00%	194	272	258.6	306	37.53	14.51%	Normal
D113	Chromium	ug/L	7	7	0	100.00%	1	10	17.14	55	18.86	110.03%	Normal
D113	Cobalt	ug/L	7	7	0	100.00%	108	144	144.3	180	22.58	15.65%	Normal
D113	Copper	ug/L	5	5	0	100.00%	1	2	2	3	0.7071	35.36%	Normal
D113	Copper (Filtered)	ug/L	1	1	0	100.00%	1	1	1	1			NDD
D113	Dissolved Oxygen (Field)	na	3	3	0	100.00%	1.1	1.5	3.967	9.3	4.623	116.55%	Normal
D113	Dissolved Oxygen (Field) (Filtered)	mg/L	4	4	0	100.00%	1.1	1.2	1.225	1.4	0.1258	10.27%	Normal
D113	Electrical Conductivity (Field)	uS/cm	7	7	0	100.00%	3560	4170	4114	4510	307.7	7.48%	Normal
D113	Iron	ug/L	7	7	0	100.00%	7850	13300	11760	14200	2491	21.17%	Normal
D113	Iron (Filtered)	ug/L	7	7	0	100.00%	6250	11500	10470	13200	2699	25.78%	Normal
D113	Lead	ug/L	7	7	0	100.00%	3	5	4.714	6	1.113	23.60%	Normal
D113	Lead (Filtered)	ug/L	1	1	0	100.00%	3	3	3	3			NDD
D113	Magnesium	mg/L	7	7	0	100.00%	109	121	126.7	150	15.6	12.31%	Normal
D113	Magnesium (Filtered)	mg/L	1	1	0	100.00%	119	119	119	119			NDD
D113	Manganese	ug/L	7	7	0	100.00%	3810	5020	5030	6090	720.1	14.32%	Normal
D113	Manganese (Filtered)	ug/L	7	7	0	100.00%	3600	5120	4904	5580	703.7	14.35%	Normal
D113	Mercury	ug/L	1	1	0	100.00%	0.04	0.04	0.04	0.04			NDD
D113	Molybdenum	ug/L	2	2	0	100.00%	1	1.5	1.5	2	0.7071	47.14%	NDD
D113	Nickel	ug/L	7	7	0	100.00%	338	457	460	602	81.95	17.82%	Normal
D113	Nickel (Filtered)	ug/L	7	7	0	100.00%	322	449	427.6	508	63.09	14.76%	Normal
D113	Nitrate	ug/L	1	1	0	100.00%	20	20	20	20			NDD
D113	Nitrite + Nitrate (as N)	mg/L	1	1	0	100.00%	0.02	0.02	0.02	0.02			NDD
D113	pH (Field)	pH units	7	7	0	100.00%	5.96	6.04	6.023	6.1	0.05122	0.85%	Normal
D113	Potassium	mg/L	7	7	0	100.00%	65	86.1	82.3	91.7	9.687	11.77%	Normal
D113	Potassium (Filtered)	mg/L	1	1	0	100.00%	87	87	87	87			NDD
D113	Redox (Field)	mV	1	1	0	100.00%	50.4	50.4	50.4	50.4			NDD
D113	Selenium	ug/L	1	1	0	100.00%	0.2	0.2	0.2	0.2			NDD
D113	Selenium (Filtered)	ug/L	1	1	0	100.00%	0.3	0.3	0.3	0.3			NDD
D113	Sodium	mg/L	7	7	0	100.00%	516	590	601	728	63.82	10.62%	Normal
D113	Sodium (Filtered)	mg/L	1	1	0	100.00%	576	576	576	576			NDD
D113	Strontium	mg/L	7	7	0	100.00%	0.929	1.15	1.16	1.44	0.1568	13.52%	Normal
D113	Sulfate (as SO4)	mg/L	7	7	0	100.00%	1580	1890	1863	2080	173.5	9.31%	Normal
D113	Sulfur	mg/L	7	7	0	100.00%	450	583	575.3	695	82.27	14.30%	Normal
D113	Total Alkalinity (as CaCO3)	mg/L	3	3	0	100.00%	164	172	170.7	176	6.11	3.58%	Normal
D113	Total Dissolved Solids (TDS)	mg/L	3	3	0	100.00%	3190	3230	3277	3410	117.2	3.58%	Normal
D113	Total Dissolved Solids (TDS) (Filtered)	mg/L	4	4	0	100.00%	2710	3140	3128	3520	331.9	10.61%	Normal
D113	Zinc	ug/L	7	7	0	100.00%	202	267	266.1	314	36.09	13.56%	Normal
D113	Zinc (Filtered)	ug/L	7	7	0	100.00%	187	248	249	290	35.24	14.15%	Normal
D117	Aluminium	ug/L	4	4	0	100.00%	4480	7120	7330	10600	2632	35.91%	Normal
D117	Aluminium (Filtered)	ug/L	4	4	0	100.00%	4240	7025	7122	10200	2662	37.37%	Normal
D117	Ammonia	ug/L	4	4	0	100.00%	1410	1745	1732	2030	328.1	18.94%	Normal
D117	Antimony	ug/L	4	4	0	100.00%	2	2	2.5	4	1	40.00%	NDD
D117	Arsenic	ug/L	4	4	0	100.00%	3	5	6.25	12	4.031	64.50%	Normal
D117	Arsenic (Filtered)	ug/L	4	4	0	100.00%	3	6	6.25	10	3.304	52.86%	Normal
D117	Barium	ug/L	4	4	0	100.00%	26	28	28.25	31	2.63	9.31%	Normal
D117	Beryllium	ug/L	4	4	0	100.00%	5	8	7.75	10	2.217	28.61%	Normal
D117	Bicarbonate Alkalinity (as CaCO3)	mg/L	4	4	0	100.00%	6	29	31.5	62	29.73	94.37%	Normal
D117	Boron	ug/L	4	4	0	100.00%	13000	13850	14120	15800	1242	8.79%	Normal
D117	Boron (Filtered)	ug/L	4	4	0	100.00%	11600	12900	13280	15700	1879	14.15%	Normal
D117	Cadmium	ug/L	4	4	0	100.00%	51	62.05	64.18	81.6	14.11	21.99%	Normal
D117	Calcium	mg/L	4	4	0	100.00%	376	422.5	424.8	478	55.33	13.03%	Normal
D117	Carbonate Alkalinity (as CaCO3)	mg/L	4	4	0	100.00%	6	29	31.5	62	29.73	94.37%	Normal
D117	Chloride	mg/L	4	4	0	100.00%	131	132.5	132.8	135	1.708	1.29%	Normal
D117	Chromium	ug/L	1	1	0	100.00%	2	2	2	2			NDD
D117	Cobalt	ug/L	4	4	0	100.00%	159	168.5	172.8	195	15.92	9.22%	Normal
D117	Copper	ug/L	3	3	0	100.00%	1	2	1.667	2	0.5774	34.64%	NDD
D117	Copper (Filtered)	ug/L	2	2	0	100.00%	2	2	2	2	0	0.00%	NDD
D117	Dissolved Oxygen (Field) (Filtered)	mg/L	4	4	0	100.00%	1.6	1.9	2.075	2.9	0.5737	27.65%	Normal
D117	Electrical Conductivity (Field)	uS/cm	4	4	0	100.00%	4830	5235	5195	5480	317.1	6.10%	Normal
D117	Fluoride	mg/L	4	4	0	100.00%	6.28	7.925	8.508	11.9	2.415	28.38%	Normal
D117	Iron	ug/L	4	4	0	100.00%	174	507.5	528.5	925	384.4	72.74%	Normal
D117	Iron (Filtered)	ug/L	4	4	0	100.00%	70	420	417.5	760	384.2	92.03%	Lognormal
D117	Magnesium	mg/L	4	4	0	100.00%	106	116	115.8	125	9.639	8.33%	Normal
D117	Manganese	ug/L	4	4	0	100.00%	4330	6920	6900	9430	2729	39.55%	Normal
D117	Manganese (Filtered)	ug/L	4	4	0	100.00%	4020	6585	6452	8620	2469	38.27%	Normal
D117	Molybdenum	ug/L	4	4	0	100.00%	407	483.5	475.8	529	56.04	11.78%	Normal
D117	Nickel	ug/L	4	4	0	100.00%	460	508	524.2	621	69.05	13.17%	Normal
D117	Nickel (Filtered)	ug/L	4	4	0	100.00%	436	522	514.8	579	68.22	13.25%	Normal
D117	Nitrate	ug/L	4	4	0	100.00%	640	965	972.5	1320	333	34.24%	Normal
D117	Nitrite + Nitrate (as N)	mg/L	4	4	0	100.00%	0.64	0.965	0.9725	1.32	0.333	34.24%	Normal
D117	pH (Field)	pH units	4	4	0	100.00%	5.21	5.585	5.558	5.85	0.321	5.78%	Normal
D117	Potassium	mg/L	4	4	0	100.00%	164	200	199.2	233	36.29	18.21%	Normal
D117	Redox (Field)	mV	1	1	0	100.00%	182.4	182.4	182.4	182.4			NDD
D117	Selenium	ug/L	4	4	0	100.00%	94.2	121	125.8	167	34.76	27.63%	Normal
D117	Sodium	mg/L	4	4	0	100.00%	521	597	593.8	660	73.49	12.38%	Normal
D117	Strontium	mg/L	4	4	0	100.00%	10.2	11.6	11.65	13.2	1.622	13.92%	Normal
D117	Sulfate (as SO4)	mg/L	4	4	0	100.00%	2820	3015	3050	3350	236.2	7.74%	Normal
D117	Sulfur	mg/L	4	4	0	100.00%	892	973.5	984.8	1100	88.2	8.96%	Normal
D117	Total Dissolved Solids (TDS) (Filtered)	mg/L	4	4	0	100.00%	4310	4405	4528	4990	311.8	6.89%	Normal
D117	Zinc	ug/L	4	4	0	100.00%	1550	1985	2030	2600	498.5	24.55%	Normal
D117	Zinc (Filtered)	ug/L	4	4	0	100.00%	1480	2015	1995	2470	538.5	26.99%	Normal
D119	Aluminium	ug/L	4	4	0	100.00%	4360	8260	9745	18100	6076	62.35%	Normal
D119	Aluminium (Filtered)	ug/L	1	1	0	100.00%	20	20	20	20			NDD
D119	Ammonia	ug/L	4	4	0	100.00%	240	305	302.5	360	56.79	18.77%	Normal
D119	Arsenic	ug/L	4	4	0	100.00%	23	29	31.25	44	9.845	31.50%	Normal
D119	Arsenic (Filtered)	ug/L	4	4	0	100.00%	13	14	14	15	1.155	8.25%	NDD
D119	Barium	ug/L	4	4	0	100.00%	27	32	36.75	56	13.07	35.57%	Normal
D119	Beryllium	ug/L	4	4	0	100.00%	1	2.5	2.5	4	1.291	51.64%	Normal
D119	Bicarbonate Alkalinity (as CaCO3)	mg/L	4	4	0	100.00%	171	235	234.8	298	53.67	22.86%	Normal

sys_loc_code	chemical_name	Units	N	Num Detects	Num ND	Percent Detects	Min Detect	Median	Mean	Max Detect	SD	CV	Distribution
D119	Boron	ug/L	4	4	0	100.00%	450	565	585	760	133.8	22.87%	Normal
D119	Boron (Filtered)	ug/L	4	4	0	100.00%	380	490	485	580	82.26	16.96%	Normal
D119	Cadmium	ug/L	4	4	0	100.00%	0.2	0.4	0.525	1.1	0.4272	81.37%	Normal
D119	Calcium	mg/L	4	4	0	100.00%	95.1	100.55	102	112	7.988	7.83%	Normal
D119	Carbonate Alkalinity (as CaCO3)	mg/L	4	4	0	100.00%	171	235	234.8	298	53.67	22.86%	Normal
D119	Chloride	mg/L	4	4	0	100.00%	180	193	195.8	217	17.1	8.73%	Normal
D119	Chromium	ug/L	4	4	0	100.00%	7	21	68	223	103.7	152.50%	Lognormal
D119	Cobalt	ug/L	4	4	0	100.00%	58	70	69.5	80	11.12	16.00%	Normal
D119	Copper	ug/L	4	4	0	100.00%	7	10	11.25	18	5.315	47.25%	Normal
D119	Dissolved Oxygen (Field) (Filtered)	mg/L	4	4	0	100.00%	1.7	1.9	1.975	2.4	0.3096	15.67%	Normal
D119	Electrical Conductivity (Field)	uS/cm	4	4	0	100.00%	2940	3215	3195	3410	202.7	6.35%	Normal
D119	Fluoride	mg/L	1	1	0	100.00%	0.25	0.25	0.25	0.25			NDD
D119	Iron	ug/L	4	4	0	100.00%	22500	23650	25950	34000	5394	20.79%	NDD
D119	Iron (Filtered)	ug/L	4	4	0	100.00%	18400	21050	21850	26900	4071	18.63%	Normal
D119	Lead	ug/L	4	4	0	100.00%	22	32	32.25	43	11.84	36.72%	NDD
D119	Magnesium	mg/L	4	4	0	100.00%	69.4	74.85	74.85	80.3	5.797	7.74%	Normal
D119	Manganese	ug/L	4	4	0	100.00%	1450	1555	1585	1780	140.6	8.87%	Normal
D119	Manganese (Filtered)	ug/L	4	4	0	100.00%	1370	1480	1505	1690	134.8	8.96%	Normal
D119	Mercury	ug/L	4	4	0	100.00%	0.05	0.36	0.3775	0.74	0.3437	91.06%	Normal
D119	Molybdenum	ug/L	4	4	0	100.00%	5	10	13.25	28	10.63	80.20%	Normal
D119	Nickel	ug/L	4	4	0	100.00%	188	226.5	247	347	69.24	28.03%	Normal
D119	Nickel (Filtered)	ug/L	4	4	0	100.00%	178	204.5	203.2	226	21.44	10.55%	Normal
D119	pH (Field)	pH units	4	4	0	100.00%	6.08	6.39	6.338	6.49	0.1826	2.88%	Normal
D119	Potassium	mg/L	4	4	0	100.00%	55	55.6	56.85	61.2	2.924	5.14%	NDD
D119	Redox (Field)	mV	1	1	0	100.00%	47.6	47.6	47.6	47.6			NDD
D119	Selenium	ug/L	3	3	0	100.00%	1.2	1.9	2.067	3.1	0.9609	46.50%	Normal
D119	Sodium	mg/L	4	4	0	100.00%	464	515	508.8	541	36.53	7.18%	Normal
D119	Strontium	mg/L	4	4	0	100.00%	0.506	0.57	0.5648	0.613	0.04447	7.87%	Normal
D119	Sulfate (as SO4)	mg/L	4	4	0	100.00%	1160	1240	1250	1360	95.92	7.67%	Normal
D119	Sulfur	mg/L	4	4	0	100.00%	407	419	422.2	444	17.21	4.08%	Normal
D119	Total Dissolved Solids (TDS) (Filtered)	mg/L	4	4	0	100.00%	1940	2280	2240	2460	245.5	10.96%	Normal
D119	Vanadium	ug/L	1	1	0	100.00%	10	10	10	10			NDD
D119	Zinc	ug/L	4	4	0	100.00%	182	289	293.2	413	119.2	40.63%	Normal
D119	Zinc (Filtered)	ug/L	4	4	0	100.00%	25	36.5	36.75	49	10.47	28.48%	Normal
D15	Aluminium	ug/L	7	7	0	100.00%	340	810	662.9	870	218.3	32.93%	Normal
D15	Aluminium (Filtered)	ug/L	6	6	0	100.00%	40	90	90	150	36.33	40.37%	Normal
D15	Ammonia	ug/L	5	5	0	100.00%	390	420	420	440	18.71	4.45%	Normal
D15	Antimony	ug/L	1	1	0	100.00%	4	4	4	4			NDD
D15	Arsenic	ug/L	7	7	0	100.00%	3	7	7.286	13	2.984	40.96%	Normal
D15	Arsenic (Filtered)	ug/L	6	6	0	100.00%	1	1.5	1.5	2	0.5477	36.51%	NDD
D15	Barium	ug/L	7	7	0	100.00%	16	18	18.29	22	2.059	11.26%	Normal
D15	Beryllium	ug/L	5	5	0	100.00%	1	1	1.2	2	0.4472	37.27%	NDD
D15	Bicarbonate Alkalinity (as CaCO3)	mg/L	6	6	0	100.00%	12	14	16.33	29	6.377	39.04%	NDD
D15	Boron	ug/L	7	7	0	100.00%	180	190	195.7	220	13.97	7.14%	Normal
D15	Boron (Filtered)	ug/L	5	5	0	100.00%	170	180	180	200	12.25	6.80%	Normal
D15	Cadmium	ug/L	7	7	0	100.00%	0.1	0.2	0.2714	0.5	0.138	50.85%	Normal
D15	Calcium	mg/L	7	7	0	100.00%	124	165	166	210	31.66	19.07%	Normal
D15	Carbonate Alkalinity (as CaCO3)	mg/L	4	4	0	100.00%	13	14	17.5	29	7.724	44.14%	NDD
D15	Chloride	mg/L	7	7	0	100.00%	105	122	138.7	228	41.71	30.07%	Lognormal
D15	Chromium	ug/L	7	7	0	100.00%	1	46	52.14	126	46.4	88.99%	Normal
D15	Cobalt	ug/L	6	6	0	100.00%	318	400.5	411.8	544	78.82	19.14%	Normal
D15	Copper	ug/L	7	7	0	100.00%	1	6	6.571	11	3.409	51.87%	Normal
D15	Dissolved Oxygen (Field)	na	1	1	0	100.00%	2.8	2.8	2.8	2.8			NDD
D15	Dissolved Oxygen (Field) (Filtered)	mg/L	4	4	0	100.00%	2.2	2.35	2.45	2.9	0.3317	13.54%	Normal
D15	Electrical Conductivity (Field)	uS/cm	7	7	0	100.00%	2280	2790	2806	3280	361	12.87%	Normal
D15	Iron	ug/L	6	6	0	100.00%	15900	20950	20180	24700	3667	18.17%	Normal
D15	Iron (Filtered)	ug/L	7	7	0	100.00%	13600	19700	19510	25800	4428	22.69%	Normal
D15	Lead	ug/L	7	7	0	100.00%	3	5	5	7	1.414	28.28%	Normal
D15	Magnesium	mg/L	7	7	0	100.00%	54.8	70.5	73.57	96.7	15.31	20.80%	Normal
D15	Manganese	ug/L	6	6	0	100.00%	1130	1390	1430	1870	245.6	17.17%	Normal
D15	Manganese (Filtered)	ug/L	7	7	0	100.00%	931	1340	1392	1950	363.7	26.14%	Normal
D15	Mercury	ug/L	2	2	0	100.00%	0.06	0.195	0.195	0.33	0.1909	97.91%	NDD
D15	Molybdenum	ug/L	5	5	0	100.00%	2	2	3	5	1.414	47.14%	NDD
D15	Nickel	ug/L	7	7	0	100.00%	489	584	613.1	802	108	17.61%	Normal
D15	Nickel (Filtered)	ug/L	6	6	0	100.00%	365	514	507.2	688	108.9	21.48%	Normal
D15	Nitrate	ug/L	1	1	0	100.00%	80	80	80	80			NDD
D15	Nitrite + Nitrate (as N)	mg/L	1	1	0	100.00%	0.08	0.08	0.08	0.08			NDD
D15	pH (Field)	pH units	7	7	0	100.00%	5	5.13	5.169	5.42	0.1288	2.49%	Normal
D15	Potassium	mg/L	7	7	0	100.00%	31.3	36.4	36.27	42.5	4.091	11.28%	Normal
D15	Redox (Field)	mV	1	1	0	100.00%	149.6	149.6	149.6	149.6			NDD
D15	Selenium	ug/L	6	6	0	100.00%	0.2	0.55	0.55	1	0.3017	54.85%	Normal
D15	Sodium	mg/L	7	7	0	100.00%	288	335	335.4	388	36.93	11.01%	Normal
D15	Strontium	mg/L	6	6	0	100.00%	0.496	0.598	0.619	0.81	0.1053	17.01%	Normal
D15	Sulfate (as SO4)	mg/L	7	7	0	100.00%	1080	1330	1351	1680	204.2	15.11%	Normal
D15	Sulfur	mg/L	5	5	0	100.00%	376	421	423.8	460	35.93	8.48%	Normal
D15	Total Alkalinity (as CaCO3)	mg/L	3	3	0	100.00%	12	16	15	17	2.646	17.64%	Normal
D15	Total Dissolved Solids (TDS)	mg/L	3	3	0	100.00%	2260	2660	2570	2790	276.2	10.75%	Normal
D15	Total Dissolved Solids (TDS) (Filtered)	mg/L	4	4	0	100.00%	1730	2040	2008	2220	225.9	11.25%	Normal
D15	Zinc	ug/L	7	7	0	100.00%	677	892	958.4	1300	227.9	23.78%	Normal
D15	Zinc (Filtered)	ug/L	6	6	0	100.00%	673	826.5	859.7	1190	185.6	21.59%	Normal
D16	Aluminium	ug/L	1	1	0	100.00%	10	10	10	10			NDD
D16	Ammonia	ug/L	3	3	0	100.00%	320	330	350	400	43.59	12.45%	Normal
D16	Barium	ug/L	4	4	0	100.00%	8	9.5	10	13	2.16	21.60%	Normal
D16	Bicarbonate Alkalinity (as CaCO3)	mg/L	3	3	0	100.00%	201	201	206.3	217	9.238	4.48%	NDD
D16	Boron	ug/L	1	1	0	100.00%	60	60	60	60			NDD
D16	Boron (Filtered)	ug/L	1	1	0	100.00%	60	60	60	60			NDD
D16	Calcium	mg/L	4	4	0	100.00%	275	279	284.5	305	13.82	4.86%	Normal
D16	Chloride	mg/L	4	4	0	100.00%	99.2	107	109	123	10.3	9.44%	Normal
D16	Chromium	ug/L	3	3	0	100.00%	5	6	6.667	9	2.082	31.22%	Normal
D16	Dissolved Oxygen (Field)	na	3	3	0	100.00%	1.1	1.3	4.7	11.7	6.063	129.00%	Lognormal
D16	Electrical Conductivity (Field)	uS/cm	4	4	0	100.00%	2000	2100	2090	2160	68.31	3.27%	Normal
D16	Fluoride	mg/L	2	2	0	100.00%	0.063	0.145	0.145	0.227	0.116	79.98%	NDD
D16	Iron	ug/L	3	3	0	100.00%	3060	3360	3557	4250	618.9	17.40%	Normal
D16	Iron (Filtered)	ug/L	4	4	0	100.00%	2620	3415	3352	3960	579	17.27%	Normal
D16	Magnesium	mg/L	4	4	0	100.00%	96.3	100.15	100.2	104	3.219	3.21%	Normal
D16	Manganese	ug/L	3	3	0	100.00%	56	71	69.67	82	13.05	18.73%	Normal
D16	Manganese (Filtered)	ug/L	4	4	0	100.00%	55	68	68.5	83	11.47	16.75%	Normal
D16	Nickel	ug/L	4	4	0	100.00%	16	20	22.25	33	7.455	33.51%	Normal
D16	Nickel (Filtered)	ug/L	3	3	0	100.00%	13	16	16.33	20	3.512	21.50%	Normal
D16	pH (Field)	pH units	4	4	0	100.00%	6.27	6.295	6.3	6.34	0.03162	0.50%	Normal
D16	Potassium	mg/L	4	4	0	100.00%	29.4	31.4	31.02	31.9	1.121	3.61%	Normal
D16	Sodium	mg/L	4	4	0	100.00%	41.9	50.5	50.5	59.1	7.644	15.14%	Normal
D16	Strontium	mg/L	3	3	0	100.00%	1.13	1.18	1.187	1.25	0.06028	5.08%	Normal
D16	Sulfate (as SO4)	mg/L	4	4	0	100.00%	779	866.5	867.5	958	74.32	8.57%	Normal
D16	Sulfur	mg/L	3	3	0	100.00%	270	280	284.3	303	16.92	5.95%	Normal
D16	Total Alkalinity (as CaCO3)	mg/L	4	4	0	100.00%	199	201	204.5	217	8.386	4.10%	NDD
D16	Total Dissolved Solids (TDS)	mg/L	4	4	0	100.00%	1650	1755	1758	1870	104.4	5.94%	Normal

ERM

sys_loc_code	chemical_name	Units	N	Num Detects	Num ND	Percent Detects	Min Detect	Median	Mean	Max Detect	SD	CV	Distribution
D16	Zinc	ug/L	2	2	0	100.00%	6	9	9	12	4.243	47.14%	NDD
D16	Zinc (Filtered)	ug/L	2	2	0	100.00%	6	7.5	7.5	9	2.121	28.28%	NDD
D17	Aluminium	ug/L	2	2	0	100.00%	20	25	25	30	7.071	28.28%	NDD
D17	Ammonia	ug/L	6	6	0	100.00%	100	105	106.7	120	8.165	7.65%	Normal
D17	Arsenic	ug/L	3	3	0	100.00%	1	1	1.333	2	0.5774	43.30%	NDD
D17	Arsenic (Filtered)	ug/L	1	1	0	100.00%	2	2	2	2			NDD
D17	Barium	ug/L	8	8	0	100.00%	11	12.5	12.62	15	1.408	11.15%	Normal
D17	Bicarbonate Alkalinity (as CaCO3)	mg/L	7	7	0	100.00%	107	138	132.6	145	12.63	9.53%	Normal
D17	Boron	ug/L	7	7	0	100.00%	50	110	100	130	27.08	27.08%	Normal
D17	Boron (Filtered)	ug/L	6	6	0	100.00%	70	100	101.7	130	19.41	19.09%	Normal
D17	Calcium	mg/L	8	8	0	100.00%	201	228.5	226.2	240	12.1	5.35%	Normal
D17	Carbonate Alkalinity (as CaCO3)	mg/L	4	4	0	100.00%	129	134	134.5	141	5.916	4.40%	Normal
D17	Chloride	mg/L	8	8	0	100.00%	151	172	175.6	210	19.12	10.88%	Normal
D17	Chromium	ug/L	2	2	0	100.00%	3	4.5	4.5	6	2.121	47.14%	NDD
D17	Cobalt	ug/L	7	7	0	100.00%	8	10	10.57	16	2.82	26.68%	Normal
D17	Dissolved Oxygen (Field)	na	3	3	0	100.00%	0.9	1.1	4.467	11.4	6.005	134.45%	Lognormal
D17	Dissolved Oxygen (Field) (Filtered)	mg/L	4	4	0	100.00%	1	1.05	1.1	1.3	0.1414	12.86%	Normal
D17	Electrical Conductivity (Field)	uS/cm	8	8	0	100.00%	2920	3115	3144	3520	212.7	6.77%	Normal
D17	Fluoride	mg/L	1	1	0	100.00%	0.368	0.368	0.368	0.368			NDD
D17	Iron	ug/L	7	7	0	100.00%	13200	19600	20070	27700	4975	24.79%	Normal
D17	Iron (Filtered)	ug/L	8	8	0	100.00%	9140	14850	15020	21200	4257	28.35%	Normal
D17	Magnesium	mg/L	8	8	0	100.00%	127	133	134.1	145	6.686	4.98%	Normal
D17	Manganese	ug/L	7	7	0	100.00%	2170	2300	2346	2650	199.7	8.52%	Normal
D17	Manganese (Filtered)	ug/L	8	8	0	100.00%	2090	2275	2361	2850	275.9	11.68%	Normal
D17	Mercury	ug/L	1	1	0	100.00%	0.07	0.07	0.07	0.07			NDD
D17	Nickel	ug/L	8	8	0	100.00%	42	54.5	57.88	84	14.12	24.39%	Normal
D17	Nickel (Filtered)	ug/L	7	7	0	100.00%	39	48	51.71	72	11.46	22.15%	Normal
D17	Nitrate	ug/L	1	1	0	100.00%	10	10	10	10			NDD
D17	Nitrite + Nitrate (as N)	mg/L	1	1	0	100.00%	0.01	0.01	0.01	0.01			NDD
D17	pH (Field)	pH units	8	8	0	100.00%	6.06	6.105	6.138	6.31	0.08413	1.37%	NDD
D17	Potassium	mg/L	8	8	0	100.00%	22.3	24.55	24.41	26.4	1.321	5.41%	Normal
D17	Redox (Field)	mV	1	1	0	100.00%	16.5	16.5	16.5	16.5			NDD
D17	Sodium	mg/L	8	8	0	100.00%	249	282.5	288.9	339	32	11.08%	Normal
D17	Strontium	mg/L	7	7	0	100.00%	0.774	0.822	0.8221	0.852	0.0273	3.32%	Normal
D17	Sulfate (as SO4)	mg/L	8	8	0	100.00%	1320	1405	1428	1630	101.5	7.11%	Normal
D17	Sulfur	mg/L	7	7	0	100.00%	441	482	474.9	505	20.67	4.35%	Normal
D17	Total Alkalinity (as CaCO3)	mg/L	4	4	0	100.00%	107	127	126.5	145	17.94	14.18%	Normal
D17	Total Dissolved Solids (TDS)	mg/L	4	4	0	100.00%	2480	2760	2718	2870	169.8	6.25%	Normal
D17	Total Dissolved Solids (TDS) (Filtered)	mg/L	4	4	0	100.00%	2280	2380	2390	2520	100	4.18%	Normal
D17	Zinc	ug/L	8	8	0	100.00%	42	57.5	59.5	78	13.75	23.11%	Normal
D17	Zinc (Filtered)	ug/L	7	7	0	100.00%	35	49	51	72	14.97	29.35%	Normal
D18	Aluminium	ug/L	8	8	0	100.00%	20	45	435	3160	1101	253.19%	NDD
D18	Ammonia	ug/L	6	6	0	100.00%	80	120	113.3	140	27.33	24.11%	Normal
D18	Antimony	ug/L	1	1	0	100.00%	2	2	2	2			NDD
D18	Arsenic	ug/L	7	7	0	100.00%	1	4	9.571	33	11.12	116.16%	Lognormal
D18	Arsenic (Filtered)	ug/L	5	5	0	100.00%	2	2	4	9	3.082	77.06%	NDD
D18	Barium	ug/L	8	8	0	100.00%	586	659.5	654.2	763	54.85	8.38%	Normal
D18	Beryllium	ug/L	1	1	0	100.00%	1	1	1	1			NDD
D18	Bicarbonate Alkalinity (as CaCO3)	mg/L	7	7	0	100.00%	347	362	365.9	388	13.4	3.66%	Normal
D18	Boron	ug/L	7	7	0	100.00%	50	80	75.71	90	13.97	18.45%	Normal
D18	Boron (Filtered)	ug/L	4	4	0	100.00%	60	70	70	80	8.165	11.66%	Normal
D18	Cadmium	ug/L	1	1	0	100.00%	0.2	0.2	0.2	0.2			NDD
D18	Calcium	mg/L	8	8	0	100.00%	75.9	82.15	82.15	91.3	5.091	6.20%	Normal
D18	Carbonate Alkalinity (as CaCO3)	mg/L	4	4	0	100.00%	347	359	360.2	376	11.95	3.32%	Normal
D18	Chloride	mg/L	8	8	0	100.00%	7.53	8.94	17.26	77.7	24.43	141.51%	NDD
D18	Chromium	ug/L	3	3	0	100.00%	2	7	17.67	44	22.94	129.86%	Normal
D18	Cobalt	ug/L	5	5	0	100.00%	1	1	2.4	7	2.608	108.65%	NDD
D18	Copper	ug/L	4	4	0	100.00%	1	1.5	6.5	22	10.34	159.14%	Lognormal
D18	Dissolved Oxygen (Field)	na	3	3	0	100.00%	1.9	2.9	5.367	11.3	5.163	96.20%	Normal
D18	Dissolved Oxygen (Field) (Filtered)	mg/L	4	4	0	100.00%	1.8	2.15	2.15	2.5	0.3512	16.33%	Normal
D18	Electrical Conductivity (Field)	uS/cm	8	8	0	100.00%	670	680	691.2	770	33.57	4.86%	NDD
D18	Fluoride	mg/L	7	7	0	100.00%	0.274	0.472	0.8179	3.04	0.9834	120.24%	NDD
D18	Iron	ug/L	7	7	0	100.00%	200	508	2075	12000	4379	211.07%	NDD
D18	Iron (Filtered)	ug/L	5	5	0	100.00%	130	350	570	1590	600.8	105.41%	Normal
D18	Lead	ug/L	1	1	0	100.00%	22	22	22	22			NDD
D18	Magnesium	mg/L	8	8	0	100.00%	27.1	29.85	29.88	32.6	1.652	5.53%	Normal
D18	Manganese	ug/L	7	7	0	100.00%	48	125	142.1	288	83.3	58.60%	Normal
D18	Manganese (Filtered)	ug/L	8	8	0	100.00%	43	120.5	110.6	155	36.82	33.28%	Normal
D18	Mercury	ug/L	2	2	0	100.00%	0.06	0.08	0.08	0.1	0.02828	35.36%	NDD
D18	Molybdenum	ug/L	8	8	0	100.00%	3	4.5	5	9	2.204	44.08%	Normal
D18	Nickel	ug/L	8	8	0	100.00%	3	5.5	8.625	33	9.97	115.60%	NDD
D18	Nickel (Filtered)	ug/L	7	7	0	100.00%	3	4	4.571	6	1.134	24.80%	Normal
D18	Nitrate	ug/L	7	7	0	100.00%	20	100	90	220	67.58	75.09%	Normal
D18	Nitrite (as NO2-)	ug/L	1	1	0	100.00%	10	10	10	10			NDD
D18	Nitrite + Nitrate (as N)	mg/L	7	7	0	100.00%	0.02	0.1	0.09143	0.23	0.07081	77.45%	Normal
D18	pH (Field)	pH units	8	8	0	100.00%	6.65	6.68	6.692	6.74	0.03327	0.50%	Normal
D18	Potassium	mg/L	8	8	0	100.00%	18	19.7	19.76	22.3	1.389	7.03%	Normal
D18	Redox (Field)	mV	1	1	0	100.00%	108.8	108.8	108.8	108.8			NDD
D18	Selenium	ug/L	2	2	0	100.00%	0.5	0.85	0.85	1.2	0.495	58.23%	NDD
D18	Sodium	mg/L	8	8	0	100.00%	16.4	19.25	19.77	23.4	2.69	13.60%	Normal
D18	Strontium	mg/L	7	7	0	100.00%	0.377	0.402	0.4019	0.439	0.02179	5.42%	Normal
D18	Sulfate (as SO4)	mg/L	8	8	0	100.00%	7.42	17.3	24.73	88.7	26.5	107.19%	Lognormal
D18	Sulfur	mg/L	7	7	0	100.00%	3	5	5.714	10	2.69	47.08%	Normal
D18	Total Alkalinity (as CaCO3)	mg/L	4	4	0	100.00%	362	375	375	388	11.37	3.03%	Normal
D18	Total Dissolved Solids (TDS)	mg/L	4	4	0	100.00%	378	391	392	408	12.54	3.20%	Normal
D18	Total Dissolved Solids (TDS) (Filtered)	mg/L	4	4	0	100.00%	394	395	406	440	22.69	5.59%	NDD
D18	Vanadium	ug/L	1	1	0	100.00%	20	20	20	20			NDD
D18	Zinc	ug/L	8	8	0	100.00%	21	32.5	39.75	119	32.52	81.80%	NDD
D18	Zinc (Filtered)	ug/L	7	7	0	100.00%	17	22	22.86	33	5.64	24.67%	Normal
D19	Aluminium	ug/L	8	8	0	100.00%	10	215	211.2	430	136.8	64.78%	Normal
D19	Ammonia	ug/L	7	7	0	100.00%	100	250	214.3	260	64.25	29.99%	NDD
D19	Arsenic	ug/L	7	7	0	100.00%	2	3	3.286	5	1.113	33.86%	Normal
D19	Arsenic (Filtered)	ug/L	5	5	0	100.00%	1	1	1.2	2	0.4472	37.27%	NDD
D19	Barium	ug/L	8	8	0	100.00%	11	15.5	14.5	17	2.204	15.20%	Normal
D19	Bicarbonate Alkalinity (as CaCO3)	mg/L	7	7	0	100.00%	113	167	163.3	184	24.2	14.82%	Normal
D19	Boron	ug/L	8	8	0	100.00%	890	1610	1525	1880	331.1	21.71%	Normal
D19	Boron (Filtered)	ug/L	7	7	0	100.00%	590	1560	1393	1860	451.9	32.44%	Normal
D19	Cadmium	ug/L	3	3	0	100.00%	0.1	0.1	0.1	0.1	0	0.00%	NDD
D19	Calcium	mg/L	8	8	0	100.00%	86.5	132.5	132.7	170	28.34	21.36%	Normal
D19	Carbonate Alkalinity (as CaCO3)	mg/L	4	4	0	100.00%	113	167	157.8	184	31.95	20.25%	Normal
D19	Chloride	mg/L	8	8	0	100.00%	115	259	234.5	281	59.24	25.26%	NDD
D19	Chromium	ug/L	7	7	0	100.00%	2	17	16	32	9.95	62.19%	Normal
D19	Cobalt	ug/L	7	7	0	100.00%	72	140	132.4	161	32.03	24.18%	Normal
D19	Copper	ug/L	5	5	0	100.00%	1	2	2.6	5	1.517	58.33%	Normal
D19	Dissolved Oxygen (Field)	na	3	3	0	100.00%	1.4	1.5	4.7	11.2	5.629	119.77%	Lognormal
D19	Dissolved Oxygen (Field) (Filtered)	mg/L	4	4	0	100.00%	2.1	2.75	2.675	3.1	0.4349	16.26%	Normal
D19	Electrical Conductivity (Field)	uS/cm	8	8	0	100.00%	2290	4130	3850	4650	751.3	19.52%	Normal
D19	Fluoride	mg/L	1	1	0	100.00%	0.453	0.453	0.453	0.453			NDD
D19	Iron	ug/L	7	7	0	100.00%	6220	13900	13200	17400	3840	29.08%	Normal
D19	Iron (Filtered)	ug/L	8	8	0	100.00%	4190	11350	11070	16800	3785	34.18%	Normal
D19	Lead	ug/L	8	8	0	100.00%	2	8	7.375	13	3.42	46.37%	Normal
D19	Magnesium	mg/L	8	8	0	100.00%	72.5	117	114.7	146	23.86	20.79%	Normal
D19	Manganese	ug/L	7	7	0	100.00%	2740	5050	4761	5660	1070	22.46%	Normal
D19	Manganese (Filtered)	ug/L	8	8	0	100.00%	2560	5035	4671	5650	1045	22.37%	NDD
D19	Molybdenum	ug/L	3	3	0	100.00%	1	1	1.333	2	0.5774	43.30%	NDD
D19	Nickel	ug/L	8	8	0	100.00%	238	440	437.2	549	104.9	23.99%	Normal
D19	Nickel (Filtered)	ug/L	7	7	0	100.00%	216	445	408.4	524	105.5	25.82%	Normal
D19	Nitrate	ug/L	2	2	0	100.00%	30	45	45	60	21.21	47.14%	NDD
D19	Nitrite + Nitrate (as N)	mg/L	2	2	0	100.00%	0.03	0.045	0.045	0.06	0.02121	47.14%	NDD
D19	pH (Field)	pH units	8	8	0	100.00%	5.97	6.04	6.06	6.14	0.05529	0.91%	Normal
D19	Potassium	mg/L	8	8	0	100.00%	44.1	75.35	71.36	85	14.39	20.17%	Normal
D19	Redox (Field)	mV	1	1	0	100.00%	47.1	47.1	47.1	47.1			NDD
D19	Selenium	ug/L	3	3	0	100.00%	0.3	0.4	0.4667	0.7	0.2082	44.61%	Normal
D19	Sodium	mg/L	8	8	0	100.00%	310	573	549.2	670	114.1	20.77%	Normal
D19	Strontium	mg/L	7	7	0	100.00%	0.642	1.04	1.013	1.25	0.2029	20.04%	Normal
D19	Sulfate (as SO4)	mg/L	8	8	0	100.00%	973	1795	1674	1960	350	20.91%	NDD
D19	Sulfur	mg/L	7	7	0	100.00%	337	604	556.4	690	116.1	20.87%	Normal
D19	Total Alkalinity (as CaCO3)	mg/L	4	4	0	100.00%	155	165.5	166.8	181	10.78	6.47%	Normal
D19	Total Dissolved Solids (TDS)	mg/L	4	4	0	100.00%	3080	3165	3175	3290	88.88	2.80%	Normal
D19	Total Dissolved Solids (TDS) (Filtered)	mg/L	4	4	0	100.00%	1690	2895	2728	3430	828.3	30.37%	Normal
D19	Zinc	ug/L	8	8	0	100.00%	172	227	221.2	260	28.49	12.88%	Normal
D19	Zinc (Filtered)	ug/L	7	7	0	100.00%	158	219	205.9	231	29.72	14.44%	NDD
D2	Aluminium	ug/L	9	9	0	100.00%	470	750	1113	3920	1069	96.03%	NDD
D2	Aluminium (Filtered)	ug/L	6	6	0	100.00%	420	630	640	1040	224.5	35.08%	Normal
D2	Ammonia	ug/L	6	6	0	100.00%	20	30	30	40	8.944	29.81%	Normal
D2	Arsenic	ug/L	6	6	0	100.00%	1	1.5	1.5	2	0.5477	36.51%	NDD
D2	Arsenic (Filtered)	ug/L	2	2	0	100.00%	1	1.5	1.5	2	0.7071	47.14%	NDD

sys_loc_code	chemical_name	Units	N	Num Detects	Num ND	Percent Detects	Min Detect	Median	Mean	Max Detect	SD	CV	Distribution
D2	Barium	ug/L	9	9	0	100.00%	18	28	27	36	6.364	23.57%	Normal
D2	Bicarbonate Alkalinity (as CaCO3)	mg/L	6	6	0	100.00%	10	16	19.67	34	9.993	50.81%	Normal
D2	Boron	ug/L	9	9	0	100.00%	130	200	203.3	280	59.16	29.10%	Normal
D2	Boron (Filtered)	ug/L	6	6	0	100.00%	140	150	185	280	63.17	34.14%	NDD
D2	Calcium	mg/L	9	9	0	100.00%	22.1	51.1	49.13	81.1	19.4	39.49%	Normal
D2	Carbonate Alkalinity (as CaCO3)	mg/L	4	4	0	100.00%	10	15	18.5	34	10.88	58.80%	Normal
D2	Chloride	mg/L	9	9	0	100.00%	25.1	54.3	57.76	86.4	21.07	36.48%	Normal
D2	Chromium	ug/L	3	3	0	100.00%	1	2	2	3	1	50.00%	Normal
D2	Cobalt	ug/L	6	6	0	100.00%	21	35.5	38.5	58	13.66	35.49%	Normal
D2	Copper	ug/L	9	9	0	100.00%	2	3	3.111	6	1.364	43.85%	Lognormal
D2	Copper (Filtered)	ug/L	6	6	0	100.00%	1	2.5	2.5	4	1.049	41.95%	Normal
D2	Dissolved Oxygen (Field)	na	2	2	0	100.00%	1.2	1.7	1.7	2.2	0.7071	41.59%	NDD
D2	Dissolved Oxygen (Field) (Filtered)	mg/L	4	4	0	100.00%	1.7	2.2	2.175	2.6	0.4425	20.35%	Normal
D2	Electrical Conductivity (Field)	uS/cm	9	9	0	100.00%	473	1030	980.3	1460	324.8	33.14%	Normal
D2	Fluoride	mg/L	6	6	0	100.00%	0.095	0.1185	0.1205	0.162	0.02312	19.19%	Normal
D2	Iron	ug/L	6	6	0	100.00%	4240	5605	6065	9340	1748	28.82%	Normal
D2	Iron (Filtered)	ug/L	9	9	0	100.00%	2880	3880	4960	11000	2699	54.42%	Lognormal
D2	Lead	ug/L	9	9	0	100.00%	2	3	3.556	5	1.014	28.51%	Normal
D2	Magnesium	mg/L	9	9	0	100.00%	16.7	38.6	39.84	64.4	15.74	39.50%	Normal
D2	Manganese	ug/L	6	6	0	100.00%	588	1064.5	1119	1860	465.5	41.59%	Normal
D2	Manganese (Filtered)	ug/L	9	9	0	100.00%	544	1320	1297	2330	572.9	44.16%	Normal
D2	Nickel	ug/L	9	9	0	100.00%	36	73	76.22	141	33.22	43.59%	Normal
D2	Nickel (Filtered)	ug/L	6	6	0	100.00%	33	52	58.5	96	23.86	40.79%	Normal
D2	Nitrate	ug/L	1	1	0	100.00%	20	20	20	20			NDD
D2	Nitrite + Nitrate (as N)	mg/L	1	1	0	100.00%	0.02	0.02	0.02	0.02			NDD
D2	pH (Field)	pH units	9	9	0	100.00%	5.66	5.8	5.871	6.6	0.2806	4.78%	NDD
D2	Potassium	mg/L	9	9	0	100.00%	8.74	11.4	11.73	15.6	2.663	22.71%	Normal
D2	Redox (Field)	mV	1	1	0	100.00%	88.5	88.5	88.5	88.5			NDD
D2	Selenium	ug/L	8	8	0	100.00%	0.2	0.3	0.325	0.5	0.08864	27.27%	Normal
D2	Sodium	mg/L	9	9	0	100.00%	45.8	93.4	90.07	141	31.21	34.65%	Normal
D2	Strontium	mg/L	6	6	0	100.00%	0.11	0.1645	0.1878	0.288	0.06623	35.26%	Normal
D2	Sulfate (as SO4)	mg/L	9	9	0	100.00%	157	366	383.8	590	151.5	39.47%	Normal
D2	Sulfur	mg/L	6	6	0	100.00%	50	100	103.7	162	40.39	38.96%	Normal
D2	Total Alkalinity (as CaCO3)	mg/L	5	5	0	100.00%	8	14	16.2	30	8.198	50.60%	Normal
D2	Total Dissolved Solids (TDS)	mg/L	5	5	0	100.00%	567	732	784.2	1000	171.4	21.86%	Normal
D2	Total Dissolved Solids (TDS) (Filtered)	mg/L	4	4	0	100.00%	396	505	571	878	215.1	37.67%	Normal
D2	Zinc	ug/L	9	9	0	100.00%	48	80	111	294	75.9	68.38%	Lognormal
D2	Zinc (Filtered)	ug/L	6	6	0	100.00%	45	67	99.17	279	89.21	89.96%	Lognormal
D20	Aluminium	ug/L	4	4	0	100.00%	620	730	950	1720	517.6	54.48%	Lognormal
D20	Aluminium (Filtered)	ug/L	4	4	0	100.00%	10	20	37.5	100	41.93	111.82%	Lognormal
D20	Ammonia	ug/L	4	4	0	100.00%	300	340	340	380	36.51	10.74%	Normal
D20	Arsenic	ug/L	4	4	0	100.00%	2	3	3.25	5	1.5	46.15%	Normal
D20	Arsenic (Filtered)	ug/L	4	4	0	100.00%	1	1	1.25	2	0.5	40.00%	NDD
D20	Barium	ug/L	4	4	0	100.00%	20	25	29	46	11.6	40.02%	Normal
D20	Bicarbonate Alkalinity (as CaCO3)	mg/L	4	4	0	100.00%	196	269	263.2	319	50.66	19.24%	Normal
D20	Boron	ug/L	4	4	0	100.00%	2090	3815	3718	5150	1306	35.13%	Normal
D20	Boron (Filtered)	ug/L	4	4	0	100.00%	1090	3485	3275	5040	1695	51.75%	Normal
D20	Cadmium	ug/L	4	4	0	100.00%	4.3	7.5	9.375	18.2	6.357	67.81%	Normal
D20	Calcium	mg/L	4	4	0	100.00%	257	299	290.8	308	23.41	8.05%	Normal
D20	Carbonate Alkalinity (as CaCO3)	mg/L	4	4	0	100.00%	196	269	263.2	319	50.66	19.24%	Normal
D20	Chloride	mg/L	4	4	0	100.00%	113	123.5	122.2	129	6.702	5.48%	Normal
D20	Chromium	ug/L	4	4	0	100.00%	8	13.5	13.25	18	4.992	37.67%	Normal
D20	Cobalt	ug/L	4	4	0	100.00%	227	292.5	310.2	429	85.26	27.48%	Normal
D20	Copper	ug/L	4	4	0	100.00%	3	3	4.25	8	2.5	58.82%	NDD
D20	Dissolved Oxygen (Field) (Filtered)	mg/L	4	4	0	100.00%	1.9	2.25	2.35	3	0.4796	20.41%	Normal
D20	Electrical Conductivity (Field)	uS/cm	4	4	0	100.00%	3880	4010	4105	4520	290.8	7.08%	Normal
D20	Iron	ug/L	4	4	0	100.00%	2820	4000	4990	9140	2850	57.12%	Normal
D20	Iron (Filtered)	ug/L	4	4	0	100.00%	2230	3145	4280	8600	2934	68.54%	Normal
D20	Lead	ug/L	4	4	0	100.00%	3	5	6	11	3.559	59.32%	Normal
D20	Magnesium	mg/L	4	4	0	100.00%	272	316.5	310	335	28.39	9.16%	Normal
D20	Manganese	ug/L	4	4	0	100.00%	24400	28250	27480	29000	2081	7.57%	Normal
D20	Manganese (Filtered)	ug/L	4	4	0	100.00%	23600	27050	26580	28600	2114	7.95%	Normal
D20	Molybdenum	ug/L	2	2	0	100.00%	1	1	1	1	0	0.00%	NDD
D20	Nickel	ug/L	4	4	0	100.00%	573	650.5	681.5	852	121.5	17.83%	Normal
D20	Nickel (Filtered)	ug/L	4	4	0	100.00%	524	601	626.5	780	108.7	17.36%	Normal
D20	pH (Field)	pH units	4	4	0	100.00%	5.77	5.92	5.912	6.04	0.1153	1.95%	Normal
D20	Potassium	mg/L	4	4	0	100.00%	31.4	35.75	37.92	48.8	7.615	20.08%	Normal
D20	Redox (Field)	mV	1	1	0	100.00%	65.7	65.7	65.7	65.7			NDD
D20	Selenium	ug/L	3	3	0	100.00%	0.3	0.3	0.3667	0.5	0.1155	31.49%	NDD
D20	Sodium	mg/L	4	4	0	100.00%	266	288.5	297.2	346	37.05	12.47%	Normal
D20	Strontium	mg/L	4	4	0	100.00%	1.15	1.245	1.28	1.48	0.1568	12.25%	Normal
D20	Sulfate (as SO4)	mg/L	4	4	0	100.00%	2060	2185	2220	2450	168.3	7.58%	Normal
D20	Sulfur	mg/L	4	4	0	100.00%	748	781	785.5	832	37.67	4.80%	Normal
D20	Total Dissolved Solids (TDS) (Filtered)	mg/L	4	4	0	100.00%	3520	3625	3665	3890	164.2	4.48%	Normal
D20	Zinc	ug/L	4	4	0	100.00%	245	321.5	402.8	723	217.3	53.95%	Normal
D20	Zinc (Filtered)	ug/L	4	4	0	100.00%	210	298.5	362.2	642	192.2	53.04%	Normal
D23	Dissolved Oxygen (Field) (Filtered)	mg/L	1	1	0	100.00%	25.7	25.7	25.7	25.7			NDD
D3	Aluminium	ug/L	8	8	0	100.00%	40	60	80	140	35.05	43.81%	Normal
D3	Aluminium (Filtered)	ug/L	4	4	0	100.00%	10	20	30	70	27.08	90.27%	Normal
D3	Ammonia	ug/L	3	3	0	100.00%	20	60	50	70	26.46	52.92%	Normal
D3	Antimony	ug/L	1	1	0	100.00%	2	2	2	2			NDD
D3	Barium	ug/L	8	8	0	100.00%	32	51	51.25	63	10.7	20.88%	Normal
D3	Bicarbonate Alkalinity (as CaCO3)	mg/L	7	7	0	100.00%	39	51	82.71	171	52.4	63.35%	Normal
D3	Boron	ug/L	6	6	0	100.00%	50	95	88.33	120	27.87	31.55%	Normal
D3	Boron (Filtered)	ug/L	4	4	0	100.00%	90	120	115	130	17.32	15.06%	Normal
D3	Cadmium	ug/L	1	1	0	100.00%	0.1	0.1	0.1	0.1			NDD
D3	Calcium	mg/L	8	8	0	100.00%	11.5	23.9	41.72	90.8	31.72	76.03%	Lognormal
D3	Carbonate Alkalinity (as CaCO3)	mg/L	4	4	0	100.00%	39	42.5	43.75	51	5.852	13.38%	Normal
D3	Chloride	mg/L	8	8	0	100.00%	13.8	22.9	33.06	73	22.08	66.78%	Lognormal
D3	Chromium	ug/L	3	3	0	100.00%	2	9	6.667	9	4.041	60.62%	NDD
D3	Copper	ug/L	2	2	0	100.00%	1	2	2	3	1.414	70.71%	NDD
D3	Dissolved Oxygen (Field)	na	3	3	0	100.00%	1.7	2.1	5.133	11.6	5.604	109.17%	Normal
D3	Dissolved Oxygen (Field) (Filtered)	mg/L	4	4	0	100.00%	1.4	2.8	3	5	1.738	57.93%	Normal
D3	Electrical Conductivity (Field)	uS/cm	8	8	0	100.00%	208	376.5	554.9	1090	338.3	60.96%	Normal
D3	Fluoride	mg/L	1	1	0	100.00%	0.062	0.062	0.062	0.062			NDD
D3	Iron	ug/L	7	7	0	100.00%	2400	5700	6796	13200	4432	65.22%	Normal
D3	Iron (Filtered)	ug/L	8	8	0	100.00%	80	1255	3082	9060	3541	114.89%	Normal
D3	Magnesium	mg/L	8	8	0	100.00%	8.27	15.35	25.25	53.4	17.85	70.71%	Lognormal
D3	Manganese	ug/L	7	7	0	100.00%	55	168	356.9	795	311.4	87.26%	Normal
D3	Manganese (Filtered)	ug/L	8	8	0	100.00%	44	130	299.4	759	297	99.20%	Lognormal
D3	Mercury	ug/L	1	1	0	100.00%	0.24	0.24	0.24	0.24			NDD
D3	Molybdenum	ug/L	1	1	0	100.00%	1	1	1	1			NDD
D3	Nickel	ug/L	8	8	0	100.00%	5	8	8.75	16	4.132	47.22%	Normal
D3	Nickel (Filtered)	ug/L	7	7	0	100.00%	4	6	7.143	14	3.388	47.43%	Lognormal
D3	Nitrate	ug/L	5	5	0	100.00%	10	20	18	30	8.367	46.48%	Normal
D3	Nitrite + Nitrate (as N)	mg/L	5	5	0	100.00%	0.01	0.02	0.018	0.03	0.008367	46.48%	Normal
D3	pH (Field)	pH units	8	8	0	100.00%	5.66	5.885	5.914	6.22	0.1812	3.06%	Normal

sys_loc_code	chemical_name	Units	N	Num Detects	Num ND	Percent Detects	Min Detect	Median	Mean	Max Detect	SD	CV	Distribution
D3	Potassium	mg/L	8	8	0	100.00%	3.42	4.125	6.352	12.9	3.724	58.62%	NDD
D3	Redox (Field)	mV	1	1	0	100.00%	124.3	124.3	124.3	124.3			NDD
D3	Selenium	ug/L	1	1	0	100.00%	0.2	0.2	0.2	0.2			NDD
D3	Sodium	mg/L	8	8	0	100.00%	17.5	26.9	33.01	57.8	14.19	42.98%	Normal
D3	Strontium	mg/L	7	7	0	100.00%	0.08	0.152	0.2183	0.384	0.1348	61.78%	Normal
D3	Sulfate (as SO4)	mg/L	8	8	0	100.00%	41.4	100	152.9	291	104.7	68.52%	Lognormal
D3	Sulfur	mg/L	7	7	0	100.00%	13	35	54	96	35.94	66.55%	Normal
D3	Total Alkalinity (as CaCO3)	mg/L	4	4	0	100.00%	47	116.5	112.8	171	51.53	45.70%	Normal
D3	Total Dissolved Solids (TDS)	mg/L	4	4	0	100.00%	196	637	555.2	751	246.4	44.38%	Normal
D3	Total Dissolved Solids (TDS) (Filtered)	mg/L	4	4	0	100.00%	134	222	208	254	51.59	24.80%	Normal
D3	Zinc	ug/L	8	8	0	100.00%	6	8	8.75	15	2.712	31.00%	Lognormal
D3	Zinc (Filtered)	ug/L	6	6	0	100.00%	7	9	9.667	14	2.582	26.71%	Normal
D4	Aluminium	ug/L	9	9	0	100.00%	8880	9880	10160	11500	923.6	9.09%	Normal
D4	Aluminium (Filtered)	ug/L	6	6	0	100.00%	8540	9240	9553	10700	925.4	9.69%	Normal
D4	Ammonia	ug/L	6	6	0	100.00%	180	205	208.3	240	24.83	11.92%	Normal
D4	Arsenic	ug/L	9	9	0	100.00%	26	36	36.33	48	7.176	19.75%	Normal
D4	Arsenic (Filtered)	ug/L	6	6	0	100.00%	26	34.5	34.17	43	5.845	17.11%	Normal
D4	Barium	ug/L	9	9	0	100.00%	11	13	12.67	15	1.118	8.83%	Normal
D4	Beryllium	ug/L	6	6	0	100.00%	2	2	2	2	0	0.00%	NDD
D4	Cadmium	ug/L	9	9	0	100.00%	0.2	0.3	0.3111	0.4	0.0928	29.83%	NDD
D4	Calcium	mg/L	9	9	0	100.00%	12.9	15.9	15.76	17.5	1.219	7.74%	NDD
D4	Chloride	mg/L	9	9	0	100.00%	14.9	16.7	16.86	19	1.263	7.49%	Normal
D4	Chromium	ug/L	9	9	0	100.00%	1	2	1.556	2	0.527	33.88%	NDD
D4	Cobalt	ug/L	6	6	0	100.00%	3	3.5	3.5	4	0.5477	15.65%	NDD
D4	Copper	ug/L	2	2	0	100.00%	1	1.5	1.5	2	0.7071	47.14%	NDD
D4	Copper (Filtered)	ug/L	1	1	0	100.00%	1	1	1	1			NDD
D4	Dissolved Oxygen (Field)	na	2	2	0	100.00%	0.8	1	1	1.2	0.2828	28.28%	NDD
D4	Dissolved Oxygen (Field) (Filtered)	mg/L	4	4	0	100.00%	0.7	1.7	3.525	10	4.342	123.19%	Lognormal
D4	Electrical Conductivity (Field)	uS/cm	9	9	0	100.00%	740	770	762.2	790	17.87	2.34%	Normal
D4	Fluoride	mg/L	2	2	0	100.00%	0.03	0.0465	0.0465	0.063	0.02333	50.18%	NDD
D4	Iron	ug/L	6	6	0	100.00%	60200	68750	68150	74800	5887	8.64%	Normal
D4	Iron (Filtered)	ug/L	9	9	0	100.00%	54900	62500	63640	75000	5606	8.81%	Normal
D4	Lead	ug/L	9	9	0	100.00%	16	19	18.67	20	1.225	6.56%	Normal
D4	Magnesium	mg/L	9	9	0	100.00%	8.43	8.76	9.017	10	0.6029	6.69%	Normal
D4	Manganese	ug/L	6	6	0	100.00%	684	723.5	732.8	790	38.75	5.29%	Normal
D4	Manganese (Filtered)	ug/L	9	9	0	100.00%	649	708	703.8	766	40.75	5.79%	Normal
D4	Nickel	ug/L	9	9	0	100.00%	12	13	13	15	1	7.69%	Normal
D4	Nickel (Filtered)	ug/L	6	6	0	100.00%	10	12	11.67	13	1.033	8.85%	Normal
D4	Nitrate	ug/L	1	1	0	100.00%	20	20	20	20			NDD
D4	Nitrite + Nitrate (as N)	mg/L	1	1	0	100.00%	0.02	0.02	0.02	0.02			NDD
D4	pH (Field)	pH units	9	9	0	100.00%	3.39	3.45	3.443	3.57	0.05979	1.74%	Normal
D4	Potassium	mg/L	9	9	0	100.00%	7.19	8.21	8.3	9.53	0.7502	9.04%	Normal
D4	Redox (Field)	mV	1	1	0	100.00%	272.5	272.5	272.5	272.5			NDD
D4	Selenium	ug/L	2	2	0	100.00%	0.2	0.25	0.25	0.3	0.07071	28.28%	NDD
D4	Sodium	mg/L	9	9	0	100.00%	17.6	20.5	20.71	24	1.948	9.41%	Normal
D4	Strontium	mg/L	6	6	0	100.00%	0.072	0.0735	0.07483	0.08	0.003371	4.51%	Normal
D4	Sulfate (as SO4)	mg/L	9	9	0	100.00%	275	308	311.1	347	24.38	7.84%	Normal
D4	Sulfur	mg/L	6	6	0	100.00%	93	99	99.67	106	5.574	5.59%	Normal
D4	Total Dissolved Solids (TDS)	mg/L	5	5	0	100.00%	583	632	631	682	35.62	5.65%	Normal
D4	Total Dissolved Solids (TDS) (Filtered)	mg/L	4	4	0	100.00%	529	589.5	581.5	618	37.55	6.46%	Normal
D4	Zinc	ug/L	9	9	0	100.00%	108	127	128.4	148	12.5	9.73%	Normal
D4	Zinc (Filtered)	ug/L	6	6	0	100.00%	108	118	121.5	142	12.68	10.43%	Normal
D5	Aluminium	ug/L	9	9	0	100.00%	20	30	63.33	140	48.73	76.95%	NDD
D5	Aluminium (Filtered)	ug/L	6	6	0	100.00%	20	50	48.33	80	25.63	53.02%	Normal
D5	Ammonia	ug/L	6	6	0	100.00%	90	110	121.7	190	36.01	29.60%	Normal
D5	Arsenic	ug/L	3	3	0	100.00%	1	1	1.333	2	0.5774	43.30%	NDD
D5	Arsenic (Filtered)	ug/L	2	2	0	100.00%	1	1	1	1	0	0.00%	NDD
D5	Barium	ug/L	9	9	0	100.00%	15	17	17.11	18	1.054	6.16%	NDD
D5	Beryllium	ug/L	6	6	0	100.00%	1	1.5	1.5	2	0.5477	36.51%	NDD
D5	Bicarbonate Alkalinity (as CaCO3)	mg/L	6	6	0	100.00%	63	76.5	83.83	130	23.63	28.18%	Lognormal
D5	Boron	ug/L	9	9	0	100.00%	60	90	86.67	100	14.14	16.32%	Normal
D5	Boron (Filtered)	ug/L	6	6	0	100.00%	70	85	86.67	110	16.33	18.84%	Normal
D5	Calcium	mg/L	9	9	0	100.00%	89.1	100	98.04	107	6.385	6.51%	Normal
D5	Carbonate Alkalinity (as CaCO3)	mg/L	4	4	0	100.00%	63	76.5	86.5	130	29.69	34.33%	Normal
D5	Chloride	mg/L	9	9	0	100.00%	21.9	25.7	25.63	29	2.007	7.83%	Normal
D5	Cobalt	ug/L	6	6	0	100.00%	14	20	19.33	22	2.805	14.51%	Normal
D5	Copper	ug/L	1	1	0	100.00%	3	3	3	3			NDD
D5	Dissolved Oxygen (Field)	na	2	2	0	100.00%	0.9	1.35	1.35	1.8	0.6364	47.14%	NDD
D5	Dissolved Oxygen (Field) (Filtered)	mg/L	4	4	0	100.00%	1.2	1.75	1.65	1.9	0.3317	20.10%	Normal
D5	Electrical Conductivity (Field)	uS/cm	9	9	0	100.00%	1150	1220	1209	1260	38.55	3.19%	Normal
D5	Fluoride	mg/L	7	7	0	100.00%	0.107	0.182	0.2427	0.711	0.2113	87.04%	Lognormal
D5	Iron	ug/L	6	6	0	100.00%	25900	44000	40320	48200	8592	21.31%	Normal
D5	Iron (Filtered)	ug/L	9	9	0	100.00%	17600	23000	30580	51800	13560	44.35%	Lognormal
D5	Magnesium	mg/L	9	9	0	100.00%	62.2	68.3	68.02	74.5	3.247	4.77%	Normal
D5	Manganese	ug/L	6	6	0	100.00%	6760	7215	7252	7790	406.7	5.61%	Normal
D5	Manganese (Filtered)	ug/L	9	9	0	100.00%	6360	7120	7274	9180	852.6	11.72%	Normal
D5	Nickel	ug/L	9	9	0	100.00%	33	43	41	47	4.5	10.98%	Normal
D5	Nickel (Filtered)	ug/L	6	6	0	100.00%	29	42.5	39.5	47	7.232	18.31%	Normal
D5	Nitrate	ug/L	2	2	0	100.00%	10	15	15	20	7.071	47.14%	NDD
D5	Nitrite + Nitrate (as N)	mg/L	2	2	0	100.00%	0.01	0.015	0.015	0.02	0.007071	47.14%	NDD
D5	pH (Field)	pH units	9	9	0	100.00%	5.85	5.92	5.939	6.05	0.05925	1.00%	Normal
D5	Potassium	mg/L	9	9	0	100.00%	8.84	10.9	10.58	11.9	1.043	9.87%	Normal
D5	Redox (Field)	mV	1	1	0	100.00%	1.2	1.2	1.2	1.2			NDD
D5	Selenium	ug/L	7	7	0	100.00%	0.2	0.3	0.3143	0.4	0.06901	21.96%	Normal
D5	Sodium	mg/L	9	9	0	100.00%	26.6	31.8	31.77	36.5	2.905	9.15%	Normal
D5	Strontium	mg/L	6	6	0	100.00%	0.37	0.3985	0.396	0.421	0.02202	5.56%	Normal
D5	Sulfate (as SO4)	mg/L	9	9	0	100.00%	484	523	529.6	582	32.87	6.21%	Normal
D5	Sulfur	mg/L	6	6	0	100.00%	158	163.5	165.8	176	6.824	4.11%	Normal
D5	Total Alkalinity (as CaCO3)	mg/L	5	5	0	100.00%	73	93	90.4	106	12.5	13.83%	Normal
D5	Total Dissolved Solids (TDS)	mg/L	5	5	0	100.00%	794	882	869.4	921	51.83	5.96%	Normal
D5	Total Dissolved Solids (TDS) (Filtered)	mg/L	4	4	0	100.00%	810	892	889.5	964	63.69	7.16%	Normal
D5	Zinc	ug/L	9	9	0	100.00%	8	16	17.67	34	8.617	48.77%	Normal
D5	Zinc (Filtered)	ug/L	6	6	0	100.00%	9	20	19.5	29	8.894	45.61%	Normal
D8	Aluminium	ug/L	8	8	0	100.00%	120	200	326.2	820	241.1	73.91%	Lognormal
D8	Aluminium (Filtered)	ug/L	6	6	0	100.00%	20	65	191.7	510	225.3	117.57%	Lognormal
D8	Ammonia	ug/L	3	3	0	100.00%	10	20	23.33	40	15.28	65.47%	Normal
D8	Arsenic	ug/L	1	1	0	100.00%	2	2	2	2			NDD
D8	Barium	ug/L	8	8	0	100.00%	27	33	35	52	7.964	22.75%	Normal
D8	Beryllium	ug/L	1	1	0	100.00%	1	1	1	1			NDD
D8	Bicarbonate Alkalinity (as CaCO3)	mg/L	7	7	0	100.00%	11	14	14.14	18	2.545	17.99%	Normal
D8	Boron	ug/L	2	2	0	100.00%	60	90	90	120	42.43	47.14%	NDD
D8	Boron (Filtered)	ug/L	1	1	0	100.00%	60	60	60	60			NDD
D8	Cadmium	ug/L	1	1	0	100.00%	0.1	0.1	0.1	0.1			NDD
D8	Calcium	mg/L	8	8	0	100.00%	12	22.1	29.96	95.4	27.02	90.17%	Lognormal
D8	Carbonate Alkalinity (as CaCO3)	mg/L	4	4	0	100.00%	11	15.5	15	18	3.162	21.08%	Normal
D8	Chloride	mg/L	8	8	0	100.00%	4.73	8.005	11.96	25.2	8.15	68.13%	Lognormal
D8	Cobalt	ug/L	4	4	0	100.00%	1	2.5	3	6	2.16	72.01%	Normal
D8	Copper	ug/L	8	8	0	100.00%	2	3	2.875	4	0.8345	29.03%	Normal
D8	Copper (Filtered)	ug/L	7	7	0	100.00%	2	2	2	2	0	0.00%	NDD
D8	Dissolved Oxygen (Field)	na	3	3	0	100.00%	5.4	6.1	7.8	11.9	3.568	45.74%	Normal
D8	Dissolved Oxygen (Field) (Filtered)	mg/L	4	4	0	100.00%	5	6.4	6.3	7.4	1.183	18.78%	Normal
D8	Electrical Conductivity (Field)	uS/cm	8	8	0	100.00%	174	296	316.4	477	113.2	35.78%	Normal
D8	Fluoride	mg/L	1	1	0	100.00%	0.037	0.037	0.037	0.037			NDD
D8	Iron	ug/L	7	7	0	100.00%	188	289	1392	7880	2863	205.73%	NDD
D8	Iron (Filtered)	ug/L	6	6	0	100.00%	31	100	113.5	210	73.44	64.71%	Normal
D8	Lead	ug/L	1	1	0	100.00%	3	3	3	3			NDD
D8	Magnesium	mg/L	8	8	0	100.00%	8.04	15.8	23.03	81	23.77	103.23%	Lognormal
D8	Manganese	ug/L	7	7	0	100.00%	78	114	198.7	566	179.5	90.33%	Lognormal
D8	Manganese (Filtered)	ug/L	8	8	0	100.00%	69	109	178	518	156.1	87.67%	Lognormal
D8	Molybdenum	ug/L	1	1	0	100.00%	2	2	2	2			NDD
D8	Nickel	ug/L	8	8	0	100.00%	28	36	39.25	65	12.36	31.49%	Lognormal
D8	Nickel (Filtered)	ug/L	7	7	0	100.00%	24	31	35.57	57	11.69	32.86%	Normal
D8	Nitrate	ug/L	6	6	0	100.00%	10	20	21.67	40	11.69	53.96%	Normal
D8	Nitrite + Nitrate (as N)	mg/L	6	6	0	100.00%	0.01	0.02	0.02167	0.04	0.01169	53.96%	Normal
D8	pH (Field)	pH units	8	8	0	100.00%	5.42	5.535	5.542	5.72	0.09331	1.68%	Normal

sys_loc_code	chemical_name	Units	N	Num Detects	Num ND	Percent Detects	Min Detect	Median	Mean	Max Detect	SD	CV	Distribution
D8	Potassium	mg/L	8	8	0	100.00%	2.3	2.665	4.539	16.7	4.952	109.10%	NDD
D8	Redox (Field)	mV	1	1	0	100.00%	171.6	171.6	171.6	171.6			NDD
D8	Sodium	mg/L	8	8	0	100.00%	5.4	9.77	33.17	181	60.3	181.81%	NDD
D8	Strontium	mg/L	7	7	0	100.00%	0.063	0.1	0.1041	0.149	0.032	30.72%	Normal
D8	Sulfate (as SO4)	mg/L	8	8	0	100.00%	54.6	110	115.4	172	39.64	34.34%	Normal
D8	Sulfur	mg/L	7	7	0	100.00%	17	32	62.14	242	80.11	128.91%	Lognormal
D8	Total Alkalinity (as CaCO3)	mg/L	4	4	0	100.00%	12	13.5	13.25	14	0.9574	7.23%	Normal
D8	Total Dissolved Solids (TDS)	mg/L	4	4	0	100.00%	194	304.5	295.2	378	84.12	28.49%	Normal
D8	Total Dissolved Solids (TDS) (Filtered)	mg/L	4	4	0	100.00%	139	179.5	181.5	228	36.43	20.07%	Normal
D8	Zinc	ug/L	8	8	0	100.00%	30	42.5	47.62	71	15.07	31.64%	Normal
D8	Zinc (Filtered)	ug/L	7	7	0	100.00%	23	44	45.57	69	15.47	33.94%	Normal
D9	Aluminium	ug/L	8	8	0	100.00%	60	135	251.2	820	259.4	103.25%	Lognormal
D9	Ammonia	ug/L	7	7	0	100.00%	200	350	360	470	94.52	26.25%	Normal
D9	Antimony	ug/L	1	1	0	100.00%	1	1	1	1			NDD
D9	Arsenic	ug/L	7	7	0	100.00%	1	3	4.571	11	3.69	80.73%	Normal
D9	Arsenic (Filtered)	ug/L	3	3	0	100.00%	1	2	1.667	2	0.5774	34.64%	NDD
D9	Barium	ug/L	8	8	0	100.00%	27	32.5	33.62	48	6.209	18.47%	NDD
D9	Bicarbonate Alkalinity (as CaCO3)	mg/L	7	7	0	100.00%	78	122	119	161	33.18	27.88%	Normal
D9	Boron	ug/L	8	8	0	100.00%	1580	1700	1731	2000	142.7	8.24%	Normal
D9	Boron (Filtered)	ug/L	7	7	0	100.00%	1320	1610	1587	1790	167.7	10.57%	Normal
D9	Cadmium	ug/L	3	3	0	100.00%	0.1	0.2	0.1667	0.2	0.05774	34.64%	NDD
D9	Calcium	mg/L	8	8	0	100.00%	551	625	619.1	665	40.85	6.60%	Normal
D9	Carbonate Alkalinity (as CaCO3)	mg/L	4	4	0	100.00%	87	113.5	118.8	161	33.63	28.32%	Normal
D9	Chloride	mg/L	8	8	0	100.00%	925	1085	1125	1390	149.6	13.30%	Normal
D9	Chromium	ug/L	4	4	0	100.00%	1	1.5	1.5	2	0.5774	38.49%	NDD
D9	Cobalt	ug/L	7	7	0	100.00%	208	254	254.3	320	35.51	13.96%	Normal
D9	Copper	ug/L	3	3	0	100.00%	2	7	5.667	8	3.215	56.73%	Normal
D9	Copper (Filtered)	ug/L	1	1	0	100.00%	1	1	1	1			NDD
D9	Dissolved Oxygen (Field)	na	3	3	0	100.00%	1.6	2.8	4.867	10.2	4.658	95.70%	Normal
D9	Dissolved Oxygen (Field) (Filtered)	mg/L	4	4	0	100.00%	2.3	3.1	3.15	4.1	0.7416	23.54%	Normal
D9	Electrical Conductivity (Field)	uS/cm	8	8	0	100.00%	8410	9335	9255	10330	725.4	7.84%	Normal
D9	Fluoride	mg/L	2	2	0	100.00%	0.045	1.6425	1.642	3.24	2.259	137.55%	NDD
D9	Iron	ug/L	7	7	0	100.00%	37900	55900	54600	67700	11010	20.16%	Normal
D9	Iron (Filtered)	ug/L	8	8	0	100.00%	25300	33050	34500	47400	8072	23.40%	Normal
D9	Lead	ug/L	5	5	0	100.00%	1	2	4	10	3.937	98.43%	Normal
D9	Magnesium	mg/L	8	8	0	100.00%	437	486.5	493.8	579	45.41	9.20%	Normal
D9	Manganese	ug/L	7	7	0	100.00%	14800	16200	16570	18900	1511	9.12%	Normal
D9	Manganese (Filtered)	ug/L	8	8	0	100.00%	14800	16600	16700	18900	1499	8.97%	Normal
D9	Mercury	ug/L	5	5	0	100.00%	0.04	0.54	0.428	0.74	0.3276	76.54%	Normal
D9	Molybdenum	ug/L	2	2	0	100.00%	1	3	3	5	2.828	94.28%	NDD
D9	Nickel	ug/L	8	8	0	100.00%	1350	1475	1489	1740	133.4	8.96%	Normal
D9	Nickel (Filtered)	ug/L	7	7	0	100.00%	1310	1430	1494	1750	178.9	11.97%	Normal
D9	Nitrate	ug/L	1	1	0	100.00%	20	20	20	20			NDD
D9	Nitrite + Nitrate (as N)	mg/L	1	1	0	100.00%	0.02	0.02	0.02	0.02			NDD
D9	pH (Field)	pH units	8	8	0	100.00%	5.95	6.075	6.08	6.15	0.06256	1.03%	Normal
D9	Potassium	mg/L	8	8	0	100.00%	62.2	73.35	77.04	105	14.25	18.49%	Normal
D9	Redox (Field)	mV	1	1	0	100.00%	46.6	46.6	46.6	46.6			NDD
D9	Selenium	ug/L	6	6	0	100.00%	0.2	0.4	0.45	0.7	0.2074	46.08%	Normal
D9	Sodium	mg/L	8	8	0	100.00%	944	1160	1158	1360	150.2	12.97%	Normal
D9	Strontium	mg/L	7	7	0	100.00%	2.84	2.94	2.97	3.26	0.1473	4.96%	Normal
D9	Sulfate (as SO4)	mg/L	8	8	0	100.00%	3480	4265	4299	5140	518.5	12.06%	Normal
D9	Sulfur	mg/L	7	7	0	100.00%	1270	1420	1487	1850	219.4	14.75%	Normal
D9	Total Alkalinity (as CaCO3)	mg/L	4	4	0	100.00%	78	124	121	158	32.88	27.18%	Normal
D9	Total Dissolved Solids (TDS)	mg/L	4	4	0	100.00%	7260	8585	8460	9410	1068	12.63%	Normal
D9	Total Dissolved Solids (TDS) (Filtered)	mg/L	4	4	0	100.00%	7490	7935	8082	8970	628.8	7.78%	Normal
D9	Zinc	ug/L	8	8	0	100.00%	67	97	167.6	589	178.7	106.62%	NDD
D9	Zinc (Filtered)	ug/L	7	7	0	100.00%	45	62	61.71	78	12.26	19.86%	Normal
MPGM5-D5	Aluminium	ug/L	9	9	0	100.00%	180	310	320	530	106.5	33.29%	Normal
MPGM5-D5	Aluminium (Filtered)	ug/L	3	3	0	100.00%	10	10	40	100	51.96	129.90%	NDD
MPGM5-D5	Ammonia	ug/L	6	6	0	100.00%	680	2085	2133	3610	1149	53.87%	Normal
MPGM5-D5	Antimony	ug/L	1	1	0	100.00%	2	2	2	2			NDD
MPGM5-D5	Arsenic	ug/L	7	7	0	100.00%	2	6	10.14	24	8.454	83.35%	Normal
MPGM5-D5	Arsenic (Filtered)	ug/L	5	5	0	100.00%	2	9	10	19	6.671	66.71%	Normal
MPGM5-D5	Barium	ug/L	9	9	0	100.00%	41	47	47.33	60	5.788	12.23%	Normal
MPGM5-D5	Bicarbonate Alkalinity (as CaCO3)	mg/L	6	6	0	100.00%	312	959.5	1029	1670	518.8	50.42%	Normal
MPGM5-D5	Boron	ug/L	9	9	0	100.00%	330	1190	1508	3730	1072	71.08%	Normal
MPGM5-D5	Boron (Filtered)	ug/L	6	6	0	100.00%	340	1495	1758	3550	1106	62.91%	Normal
MPGM5-D5	Cadmium	ug/L	9	9	0	100.00%	2.1	3.7	4.822	8.8	2.198	45.57%	Normal
MPGM5-D5	Calcium	mg/L	9	9	0	100.00%	266	360	375.7	526	77.91	20.74%	Normal
MPGM5-D5	Carbonate Alkalinity (as CaCO3)	mg/L	4	4	0	100.00%	722	1179.5	1188	1670	491.3	41.36%	Normal
MPGM5-D5	Chloride	mg/L	27	27	0	100.00%	181.2	2789	2690	4169	990.2	36.81%	Normal
MPGM5-D5	Chromium	ug/L	4	4	0	100.00%	1	2.5	2.25	3	0.9574	42.55%	Normal
MPGM5-D5	Cobalt	ug/L	6	6	0	100.00%	315	1310	1316	2320	658.3	50.03%	Normal
MPGM5-D5	Copper	ug/L	9	9	0	100.00%	6	16	24.11	90	25.31	104.95%	Lognormal
MPGM5-D5	Copper (Filtered)	ug/L	6	6	0	100.00%	6	14	14.17	20	5.076	35.83%	Normal
MPGM5-D5	Dissolved Oxygen (Field)	na	2	2	0	100.00%	2	2.15	2.15	2.3	0.2121	9.87%	NDD
MPGM5-D5	Dissolved Oxygen (Field) (Filtered)	mg/L	4	4	0	100.00%	1.8	2.55	2.575	3.4	0.6551	25.44%	Normal
MPGM5-D5	Electrical Conductivity (Field)	uS/cm	27	27	0	100.00%	2320	31000	27510	40200	9740	35.41%	NDD
MPGM5-D5	Fluoride	mg/L	3	3	0	100.00%	0.507	0.808	0.749	0.932	0.2186	29.18%	Normal
MPGM5-D5	Iron	ug/L	6	6	0	100.00%	1200	3000	2802	4080	1334	47.63%	Normal
MPGM5-D5	Iron (Filtered)	ug/L	9	9	0	100.00%	295	1180	1781	3860	1401	78.64%	Normal
MPGM5-D5	Lead	ug/L	7	7	0	100.00%	2	9	13.71	35	12.08	88.08%	Normal
MPGM5-D5	Magnesium	mg/L	9	9	0	100.00%	876	1070	1136	1500	195	17.16%	Normal
MPGM5-D5	Manganese	ug/L	6	6	0	100.00%	54700	94800	96400	133000	29520	30.62%	Normal
MPGM5-D5	Manganese (Filtered)	ug/L	9	9	0	100.00%	51700	84700	85530	116000	22940	26.82%	Normal
MPGM5-D5	Mercury	ug/L	5	5	0	100.00%	0.06	0.07	0.108	0.21	0.06611	61.21%	Normal
MPGM5-D5	Molybdenum	ug/L	3	3	0	100.00%	2	2	5.333	12	5.774	108.25%	NDD
MPGM5-D5	Nickel	ug/L	9	9	0	100.00%	1860	3680	4312	7640	1913	44.35%	Normal
MPGM5-D5	Nickel (Filtered)	ug/L	6	6	0	100.00%	1820	5115	4682	6430	1760	37.60%	Normal
MPGM5-D5	Nitrate	ug/L	3	3	0	100.00%	10	20	83.33	220	118.5	142.15%	Normal
MPGM5-D5	Nitrite (as NO2-)	ug/L	2	2	0	100.00%	20	30	30	40	14.14	47.14%	NDD
MPGM5-D5	Nitrite + Nitrate (as N)	mg/L	3	3	0	100.00%	0.02	0.05	0.1033	0.24	0.1193	115.46%	Normal
MPGM5-D5	pH (Field)	pH units	27	27	0	100.00%	5.89	6.35	6.312	6.66	0.1888	2.99%	Normal
MPGM5-D5	Potassium	mg/L	9	9	0	100.00%	59.4	193	197.5	411	110.2	55.78%	Normal
MPGM5-D5	Redox (Field)	mV	1	1	0	100.00%	38.8	38.8	38.8	38.8			NDD
MPGM5-D5	Selenium	ug/L	8	8	0	100.00%	1.3	3.2	3.275	5.7	1.361	41.57%	Normal
MPGM5-D5	Sodium	mg/L	9	9	0	100.00%	2430	6060	5811	9000	2270	39.07%	Normal
MPGM5-D5	Strontium	mg/L	6	6	0	100.00%	1.28	1.715	1.782	2.28	0.354	19.87%	Normal
MPGM5-D5	Sulfate (as SO4)	mg/L	27	27	0	100.00%	719	18370	17480	28210	7087	40.54%	Normal
MPGM5-D5	Sulfur	mg/L	6	6	0	100.00%	2790	6020	5350	6560	1479	27.64%	Normal
MPGM5-D5	Total Alkalinity (as CaCO3)	mg/L	5	5	0	100.00%	312	497	581.8	1110	310.4	53.35%	Normal
MPGM5-D5	Total Dissolved Solids (TDS)	mg/L	5	5	0	100.00%	13000	20800	19520	23000	4009	20.54%	Normal
MPGM5-D5	Total Dissolved Solids (TDS) (Filtered)	mg/L	4	4	0	100.00%	27400	32650	32820	38600	4672	14.23%	Normal
MPGM5-D5	Zinc	ug/L	9	9	0	100.00%	304	531	565.8	1080	233.4	41.24%	Normal
MPGM5-D5	Zinc (Filtered)	ug/L	6	6	0	100.00%	295	577	577.8	885	197.4	34.16%	Normal
MPGM5-D6	Aluminium	ug/L	7	7	0	100.00%	90	210	317.1	1110	360.5	113.68%	Lognormal

sys_loc_code	chemical_name	Units	N	Num Detects	Num ND	Percent Detects	Min Detect	Median	Mean	Max Detect	SD	CV	Distribution
MPGM5-D6	Ammonia	ug/L	5	5	0	100.00%	840	1070	1026	1110	106.9	10.42%	NDD
MPGM5-D6	Antimony	ug/L	1	1	0	100.00%	2	2	2	2			NDD
MPGM5-D6	Arsenic	ug/L	7	7	0	100.00%	1	2	2	4	1.155	57.74%	Normal
MPGM5-D6	Arsenic (Filtered)	ug/L	4	4	0	100.00%	1	1	1.25	2	0.5	40.00%	NDD
MPGM5-D6	Barium	ug/L	7	7	0	100.00%	23	29	35.43	77	19.07	53.82%	Lognormal
MPGM5-D6	Bicarbonate Alkalinity (as CaCO3)	mg/L	5	5	0	100.00%	77	139	223.4	642	235.4	105.37%	Lognormal
MPGM5-D6	Boron	ug/L	3	3	0	100.00%	50	60	56.67	60	5.774	10.19%	NDD
MPGM5-D6	Boron (Filtered)	ug/L	1	1	0	100.00%	50	50	50	50			NDD
MPGM5-D6	Cadmium	ug/L	3	3	0	100.00%	0.1	0.1	0.3333	0.8	0.4041	121.24%	NDD
MPGM5-D6	Calcium	mg/L	7	7	0	100.00%	11.3	17.9	34.9	141	46.88	134.32%	NDD
MPGM5-D6	Carbonate Alkalinity (as CaCO3)	mg/L	4	4	0	100.00%	77	129.5	244.5	642	266.3	108.91%	Lognormal
MPGM5-D6	Chloride	mg/L	26	26	0	100.00%	98.91	159.5	301.5	1390	316.1	104.83%	NDD
MPGM5-D6	Chromium	ug/L	4	4	0	100.00%	1	1.5	2.5	6	2.38	95.22%	Normal
MPGM5-D6	Cobalt	ug/L	5	5	0	100.00%	29	33	53.8	141	48.78	90.67%	NDD
MPGM5-D6	Copper	ug/L	6	6	0	100.00%	1	1.5	4	14	5.138	128.45%	Lognormal
MPGM5-D6	Copper (Filtered)	ug/L	1	1	0	100.00%	10	10	10	10			NDD
MPGM5-D6	Dissolved Oxygen (Field)	na	1	1	0	100.00%	2	2	2	2			NDD
MPGM5-D6	Dissolved Oxygen (Field) (Filtered)	mg/L	4	4	0	100.00%	1.4	1.95	1.975	2.6	0.5315	26.91%	Normal
MPGM5-D6	Electrical Conductivity (Field)	uS/cm	26	26	0	100.00%	1095	1409.5	2421	7790	2011	83.05%	NDD
MPGM5-D6	Fluoride	mg/L	1	1	0	100.00%	0.056	0.056	0.056	0.056			NDD
MPGM5-D6	Iron	ug/L	5	5	0	100.00%	20800	31600	31500	42400	9654	30.65%	Normal
MPGM5-D6	Iron (Filtered)	ug/L	7	7	0	100.00%	17800	30200	30810	43600	9641	31.29%	Normal
MPGM5-D6	Lead	ug/L	6	6	0	100.00%	2	3.5	4	7	2.098	52.44%	Normal
MPGM5-D6	Magnesium	mg/L	7	7	0	100.00%	32.1	41.4	77.83	306	100.7	129.41%	NDD
MPGM5-D6	Manganese	ug/L	5	5	0	100.00%	3680	5140	4728	5490	808.3	17.09%	Normal
MPGM5-D6	Manganese (Filtered)	ug/L	7	7	0	100.00%	3550	5180	5371	8370	1596	29.72%	Normal
MPGM5-D6	Mercury	ug/L	3	3	0	100.00%	0.06	0.08	0.14	0.28	0.1217	86.90%	Normal
MPGM5-D6	Nickel	ug/L	7	7	0	100.00%	67	75	110.3	299	84.06	76.22%	NDD
MPGM5-D6	Nickel (Filtered)	ug/L	5	5	0	100.00%	64	68	110.6	281	95.3	86.16%	NDD
MPGM5-D6	Nitrate	ug/L	5	5	0	100.00%	10	40	46	90	30.5	66.30%	Normal
MPGM5-D6	Nitrite (as NO2-)	ug/L	3	3	0	100.00%	10	10	46.67	120	63.51	136.09%	NDD
MPGM5-D6	Nitrite + Nitrate (as N)	mg/L	5	5	0	100.00%	0.04	0.06	0.074	0.13	0.03975	53.72%	Normal
MPGM5-D6	pH (Field)	pH units	26	26	0	100.00%	5.54	5.83	5.903	6.65	0.2513	4.26%	Lognormal
MPGM5-D6	Potassium	mg/L	7	7	0	100.00%	5.21	7.1	9.057	23.7	6.507	71.84%	NDD
MPGM5-D6	Redox (Field)	mV	1	1	0	100.00%	-28.2	-28.2	-28.2	-28.2			NDD
MPGM5-D6	Selenium	ug/L	6	6	0	100.00%	0.2	0.3	0.2833	0.4	0.07528	26.57%	Normal
MPGM5-D6	Sodium	mg/L	7	7	0	100.00%	144	165	234.6	661	188.8	80.48%	NDD
MPGM5-D6	Strontium	mg/L	5	5	0	100.00%	0.102	0.148	0.254	0.746	0.2757	108.54%	NDD
MPGM5-D6	Sulfate (as SO4)	mg/L	26	26	0	100.00%	272.6	340.2	756.4	3729	835	110.39%	NDD
MPGM5-D6	Sulfur	mg/L	5	5	0	100.00%	83	98	170.4	468	166.6	97.80%	NDD
MPGM5-D6	Total Alkalinity (as CaCO3)	mg/L	3	3	0	100.00%	110	113	120.7	139	15.95	13.22%	Normal
MPGM5-D6	Total Dissolved Solids (TDS)	mg/L	3	3	0	100.00%	762	945	887.3	955	108.7	12.25%	Normal
MPGM5-D6	Total Dissolved Solids (TDS) (Filtered)	mg/L	4	4	0	100.00%	714	788	1475	3610	1424	96.57%	NDD
MPGM5-D6	Zinc	ug/L	7	7	0	100.00%	33	52	55.86	99	21.87	39.16%	Normal
MPGM5-D6	Zinc (Filtered)	ug/L	5	5	0	100.00%	29	48	50.4	87	22.62	44.89%	Normal

Notes

Data file input: WG 2019-22 MK Input.xlsx
Data date range: NA to NA
Non-detects were substituted with a value of zero for trend analysis
N: number of data points
Num ND: number of non-detected data points
Min RL: The minimum reporting limit value
Max RL: The maximum reporting limit value
SD: Standard Deviation
CV: Coefficient of Variation (standard deviation divided by the mean)
Normal: the data fit a normal distribution
Lognormal: the data fit a lognormal distribution
NDD: No discernible distribution
GammaHW or GammaWH: the data fit one of the particular gamma distributions

Table 2
Mann Kendall Test for Trends
MTPIPER

sys_loc_code	chemical_name	N	Num Detects	Percent Detects	Meet Data Reqs	p-value	tau2	tau	Trend
D1	Aluminium	8	8	100.00%	Yes	0.708	0.0119	-0.109	Not Significant
D1	Aluminium (Filtered)	1	1	100.00%	No				
D1	Ammonia	7	7	100.00%	Yes	0.0151	0.61	0.781	Increasing
D1	Arsenic	8	8	100.00%	Yes	0.123	0.214	0.463	Not Significant
D1	Arsenic (Filtered)	7	7	100.00%	Yes	0.878	0.00251	0.0501	Not Significant
D1	Barium	8	8	100.00%	Yes	0.262	0.107	-0.327	Not Significant
D1	Bicarbonate Alkalinity (as CaCO3)	7	7	100.00%	Yes	0.562	0.0567	0.238	Not Significant
D1	Boron	8	8	100.00%	Yes	0.0615	0.298	0.546	Not Significant
D1	Boron (Filtered)	7	7	100.00%	Yes	0.381	0.111	0.333	Not Significant
D1	Calcium	8	8	100.00%	Yes	0.179	0.184	-0.429	Not Significant
D1	Carbonate Alkalinity (as CaCO3)	4	4	100.00%	Yes	0.75	0.111	-0.333	Not Significant
D1	Chloride	8	8	100.00%	Yes	0.275	0.128	-0.357	Not Significant
D1	Chromium	1	1	100.00%	No				
D1	Cobalt	7	7	100.00%	Yes	0.00278	0.819	-0.905	Decreasing
D1	Copper	2	2	100.00%	No				
D1	Dissolved Oxygen (Field)	3	3	100.00%	No				
D1	Dissolved Oxygen (Field) (Filtered)	4	4	100.00%	Yes	0.75	0.111	-0.333	Not Significant
D1	Electrical Conductivity (Field)	8	8	100.00%	Yes	0.275	0.128	-0.357	Not Significant
D1	Fluoride	1	1	100.00%	No				
D1	Iron	7	7	100.00%	Yes	0.069	0.383	-0.619	Not Significant
D1	Iron (Filtered)	8	8	100.00%	Yes	0.179	0.184	-0.429	Not Significant
D1	Lead	1	1	100.00%	No				
D1	Magnesium	8	8	100.00%	Yes	0.061	0.327	-0.571	Not Significant
D1	Manganese	7	7	100.00%	Yes	0.0107	0.655	-0.81	Decreasing
D1	Manganese (Filtered)	8	8	100.00%	Yes	0.00551	0.617	-0.786	Decreasing
D1	Molybdenum	2	2	100.00%	No				
D1	Nickel	8	8	100.00%	Yes	0.034	0.382	-0.618	Decreasing
D1	Nickel (Filtered)	7	7	100.00%	Yes	0.0151	0.61	-0.781	Decreasing
D1	pH (Field)	8	8	100.00%	Yes	0.72	0.0204	-0.143	Not Significant
D1	Potassium	8	8	100.00%	Yes	0.901	0.00132	-0.0364	Not Significant
D1	Redox (Field)	1	1	100.00%	No				
D1	Selenium	6	6	100.00%	Yes	0.15	0.297	-0.545	Not Significant
D1	Sodium	8	8	100.00%	Yes	0.209	0.137	0.371	Not Significant
D1	Strontium	7	7	100.00%	Yes	0.0302	0.51	-0.714	Decreasing
D1	Sulfate (as SO4)	8	8	100.00%	Yes	0.533	0.0331	-0.182	Not Significant
D1	Sulfur	7	7	100.00%	Yes	0.543	0.0381	-0.195	Not Significant
D1	Total Alkalinity (as CaCO3)	4	4	100.00%	Yes	0.333	0.444	0.667	Not Significant
D1	Total Dissolved Solids (TDS)	4	4	100.00%	Yes	0.333	0.444	-0.667	Not Significant
D1	Total Dissolved Solids (TDS) (Filtered)	4	4	100.00%	Yes	0.279	0.3	-0.548	Not Significant
D1	Zinc	8	8	100.00%	Yes	0.109	0.25	-0.5	Not Significant
D1	Zinc (Filtered)	7	7	100.00%	Yes	0.069	0.383	-0.619	Not Significant
D10	Aluminium	8	8	100.00%	Yes	0.115	0.234	-0.483	Not Significant
D10	Aluminium (Filtered)	6	6	100.00%	Yes	0.444	0.0762	-0.276	Not Significant
D10	Ammonia	7	7	100.00%	Yes	0.645	0.0226	0.15	Not Significant
D10	Arsenic	8	8	100.00%	Yes	0.897	0.00155	0.0394	Not Significant
D10	Arsenic (Filtered)	6	6	100.00%	Yes	0.33	0.128	-0.358	Not Significant
D10	Barium	8	8	100.00%	Yes	0.109	0.25	0.5	Not Significant
D10	Bicarbonate Alkalinity (as CaCO3)	7	7	100.00%	Yes	1	0.00227	0.0476	Not Significant
D10	Boron	8	8	100.00%	Yes	0.275	0.128	0.357	Not Significant
D10	Boron (Filtered)	7	7	100.00%	Yes	0.773	0.0204	-0.143	Not Significant
D10	Cadmium	4	4	100.00%	Yes	0.18	0.5	-0.707	Not Significant
D10	Calcium	8	8	100.00%	Yes	0.399	0.0816	-0.286	Not Significant
D10	Carbonate Alkalinity (as CaCO3)	4	4	100.00%	Yes	0.75	0.111	-0.333	Not Significant
D10	Chloride	8	8	100.00%	Yes	0.275	0.128	-0.357	Not Significant
D10	Chromium	4	4	100.00%	Yes	0.718	0.0333	0.183	Not Significant
D10	Cobalt	7	7	100.00%	Yes	0.069	0.383	-0.619	Not Significant
D10	Copper	1	1	100.00%	No				
D10	Dissolved Oxygen (Field)	3	3	100.00%	No				
D10	Dissolved Oxygen (Field) (Filtered)	4	4	100.00%	Yes	0.75	0.111	0.333	Not Significant
D10	Electrical Conductivity (Field)	8	8	100.00%	Yes	0.533	0.0331	-0.182	Not Significant
D10	Fluoride	2	2	100.00%	No				
D10	Iron	7	7	100.00%	Yes	0.069	0.383	-0.619	Not Significant
D10	Iron (Filtered)	8	8	100.00%	Yes	0.061	0.327	-0.571	Not Significant
D10	Lead	8	8	100.00%	Yes	0.252	0.116	-0.34	Not Significant
D10	Magnesium	8	8	100.00%	Yes	0.548	0.0459	-0.214	Not Significant
D10	Manganese	7	7	100.00%	Yes	0.136	0.274	-0.524	Not Significant
D10	Manganese (Filtered)	8	8	100.00%	Yes	0.399	0.0816	-0.286	Not Significant
D10	Molybdenum	8	8	100.00%	Yes	0.0723	0.292	0.54	Not Significant
D10	Nickel	8	8	100.00%	Yes	0.262	0.107	-0.327	Not Significant
D10	Nickel (Filtered)	7	7	100.00%	Yes	0.136	0.274	-0.524	Not Significant
D10	pH (Field)	8	8	100.00%	Yes	0.901	0.00132	0.0364	Not Significant
D10	Potassium	8	8	100.00%	Yes	0.708	0.0119	-0.109	Not Significant
D10	Redox (Field)	1	1	100.00%	No				
D10	Selenium	7	7	100.00%	Yes	0.0871	0.351	-0.592	Not Significant
D10	Sodium	8	8	100.00%	Yes	0.72	0.0204	-0.143	Not Significant
D10	Strontium	7	7	100.00%	Yes	1	0.00227	0.0476	Not Significant
D10	Sulfate (as SO4)	8	8	100.00%	Yes	0.533	0.0331	-0.182	Not Significant
D10	Sulfur	7	7	100.00%	Yes	0.239	0.184	-0.429	Not Significant
D10	Total Alkalinity (as CaCO3)	4	4	100.00%	Yes	0.333	0.444	0.667	Not Significant
D10	Total Dissolved Solids (TDS)	4	4	100.00%	Yes	0.75	0.111	0.333	Not Significant
D10	Total Dissolved Solids (TDS) (Filtered)	4	4	100.00%	Yes	1	0	0	Not Significant
D10	Zinc	8	8	100.00%	Yes	0.262	0.107	-0.327	Not Significant
D10	Zinc (Filtered)	7	7	100.00%	Yes	1	0.00227	0.0476	Not Significant
D102	Aluminium	7	7	100.00%	Yes	0.867	0.00317	0.0563	Not Significant
D102	Ammonia	7	7	100.00%	Yes	0.00625	0.771	-0.878	Decreasing
D102	Arsenic	5	5	100.00%	Yes	1	0	0	Not Significant
D102	Arsenic (Filtered)	3	3	100.00%	No				
D102	Barium	7	7	100.00%	Yes	0.117	0.265	-0.514	Not Significant
D102	Barium (Filtered)	1	1	100.00%	No				

Table 2
Mann Kendall Test for Trends
MTPIPER

sys_loc_code	chemical_name	N	Num Detects	Percent Detects	Meet Data Reqs	p-value	tau2	tau	Trend
D102	Beryllium	1	1	100.00%	No				
D102	Bicarbonate Alkalinity (as CaCO3)	7	7	100.00%	Yes	0.136	0.274	-0.524	Not Significant
D102	Boron	7	7	100.00%	Yes	0.136	0.274	-0.524	Not Significant
D102	Boron (Filtered)	7	7	100.00%	Yes	0.224	0.152	-0.39	Not Significant
D102	Cadmium	2	2	100.00%	No				
D102	Calcium	7	7	100.00%	Yes	0.239	0.184	-0.429	Not Significant
D102	Calcium (Filtered)	1	1	100.00%	No				
D102	Carbonate Alkalinity (as CaCO3)	4	4	100.00%	Yes	0.333	0.444	-0.667	Not Significant
D102	Chloride	7	7	100.00%	Yes	0.136	0.274	-0.524	Not Significant
D102	Chromium	4	4	100.00%	Yes	0.718	0.0333	0.183	Not Significant
D102	Cobalt	7	7	100.00%	Yes	0.069	0.383	-0.619	Not Significant
D102	Copper	3	3	100.00%	No				
D102	Dissolved Oxygen (Field)	3	3	100.00%	No				
D102	Dissolved Oxygen (Field) (Filtered)	4	4	100.00%	Yes	1	0	0	Not Significant
D102	Electrical Conductivity (Field)	7	7	100.00%	Yes	0.0302	0.51	-0.714	Decreasing
D102	Fluoride	1	1	100.00%	No				
D102	Iron	7	7	100.00%	Yes	0.543	0.0381	-0.195	Not Significant
D102	Iron (Filtered)	7	7	100.00%	Yes	1	0.00227	-0.0476	Not Significant
D102	Magnesium	7	7	100.00%	Yes	0.239	0.184	-0.429	Not Significant
D102	Magnesium (Filtered)	1	1	100.00%	No				
D102	Manganese	7	7	100.00%	Yes	0.562	0.0567	-0.238	Not Significant
D102	Manganese (Filtered)	7	7	100.00%	Yes	1	0.00227	-0.0476	Not Significant
D102	Mercury	2	2	100.00%	No				
D102	Nickel	7	7	100.00%	Yes	0.362	0.0857	-0.293	Not Significant
D102	Nickel (Filtered)	7	7	100.00%	Yes	0.562	0.0567	-0.238	Not Significant
D102	pH (Field)	7	7	100.00%	Yes	0.562	0.0567	-0.238	Not Significant
D102	Potassium	7	7	100.00%	Yes	0.136	0.274	-0.524	Not Significant
D102	Potassium (Filtered)	1	1	100.00%	No				
D102	Redox (Field)	1	1	100.00%	No				
D102	Selenium	2	2	100.00%	No				
D102	Selenium (Filtered)	1	1	100.00%	No				
D102	Sodium	7	7	100.00%	Yes	0.239	0.184	-0.429	Not Significant
D102	Sodium (Filtered)	1	1	100.00%	No				
D102	Strontium	7	7	100.00%	Yes	0.239	0.184	-0.429	Not Significant
D102	Sulfate (as SO4)	7	7	100.00%	Yes	0.381	0.111	-0.333	Not Significant
D102	Sulfur	7	7	100.00%	Yes	0.239	0.184	-0.429	Not Significant
D102	Total Alkalinity (as CaCO3)	3	3	100.00%	No				
D102	Total Dissolved Solids (TDS)	3	3	100.00%	No				
D102	Total Dissolved Solids (TDS) (Filtered)	4	4	100.00%	Yes	0.0833	1	-1	Not Significant
D102	Zinc	7	7	100.00%	Yes	1	0.00227	0.0476	Not Significant
D102	Zinc (Filtered)	7	7	100.00%	Yes	0.761	0.00952	0.0976	Not Significant
D103	Aluminium	7	7	100.00%	Yes	0.381	0.111	-0.333	Not Significant
D103	Aluminium (Filtered)	2	2	100.00%	No				
D103	Ammonia	7	7	100.00%	Yes	0.0211	0.564	-0.751	Decreasing
D103	Arsenic	7	7	100.00%	Yes	0.543	0.0381	-0.195	Not Significant
D103	Arsenic (Filtered)	5	5	100.00%	Yes	0.448	0.1	0.316	Not Significant
D103	Barium	7	7	100.00%	Yes	0.0683	0.343	-0.586	Not Significant
D103	Barium (Filtered)	1	1	100.00%	No				
D103	Bicarbonate Alkalinity (as CaCO3)	7	7	100.00%	Yes	0.761	0.00952	-0.0976	Not Significant
D103	Boron	7	7	100.00%	Yes	1	0	0	Not Significant
D103	Boron (Filtered)	7	7	100.00%	Yes	0.773	0.0204	-0.143	Not Significant
D103	Calcium	7	7	100.00%	Yes	0.0107	0.655	-0.81	Decreasing
D103	Calcium (Filtered)	1	1	100.00%	No				
D103	Carbonate Alkalinity (as CaCO3)	4	4	100.00%	Yes	0.279	0.3	-0.548	Not Significant
D103	Chloride	7	7	100.00%	Yes	0.00238	0.952	-0.976	Decreasing
D103	Chromium	4	4	100.00%	Yes	0.718	0.0333	0.183	Not Significant
D103	Cobalt	7	7	100.00%	Yes	<0.001	1	-1	Decreasing
D103	Copper	2	2	100.00%	No				
D103	Dissolved Oxygen (Field)	3	3	100.00%	No				
D103	Dissolved Oxygen (Field) (Filtered)	4	4	100.00%	Yes	0.279	0.3	0.548	Not Significant
D103	Electrical Conductivity (Field)	7	7	100.00%	Yes	0.00278	0.819	-0.905	Decreasing
D103	Fluoride	1	1	100.00%	No				
D103	Iron	7	7	100.00%	Yes	0.0107	0.655	-0.81	Decreasing
D103	Iron (Filtered)	7	7	100.00%	Yes	0.773	0.0204	-0.143	Not Significant
D103	Magnesium	7	7	100.00%	Yes	0.00278	0.819	-0.905	Decreasing
D103	Magnesium (Filtered)	1	1	100.00%	No				
D103	Manganese	7	7	100.00%	Yes	0.0302	0.51	-0.714	Decreasing
D103	Manganese (Filtered)	7	7	100.00%	Yes	0.136	0.274	-0.524	Not Significant
D103	Mercury	1	1	100.00%	No				
D103	Nickel	7	7	100.00%	Yes	<0.001	1	-1	Decreasing
D103	Nickel (Filtered)	7	7	100.00%	Yes	0.00278	0.819	-0.905	Decreasing
D103	pH (Field)	7	7	100.00%	Yes	0.442	0.0627	-0.25	Not Significant
D103	Potassium	7	7	100.00%	Yes	0.381	0.111	-0.333	Not Significant
D103	Potassium (Filtered)	1	1	100.00%	No				
D103	Redox (Field)	1	1	100.00%	No				
D103	Selenium	2	2	100.00%	No				
D103	Sodium	7	7	100.00%	Yes	0.069	0.383	-0.619	Not Significant
D103	Sodium (Filtered)	1	1	100.00%	No				
D103	Strontium	7	7	100.00%	Yes	0.0107	0.655	-0.81	Decreasing
D103	Sulfate (as SO4)	7	7	100.00%	Yes	0.0151	0.61	-0.781	Decreasing
D103	Sulfur	7	7	100.00%	Yes	0.773	0.0204	-0.143	Not Significant
D103	Total Alkalinity (as CaCO3)	3	3	100.00%	No				
D103	Total Dissolved Solids (TDS)	3	3	100.00%	No				
D103	Total Dissolved Solids (TDS) (Filtered)	4	4	100.00%	Yes	0.0833	1	-1	Not Significant
D103	Zinc	7	7	100.00%	Yes	0.069	0.383	-0.619	Not Significant
D103	Zinc (Filtered)	7	7	100.00%	Yes	0.381	0.111	-0.333	Not Significant
D104	Aluminium	7	7	100.00%	Yes	0.562	0.0567	-0.238	Not Significant
D104	Ammonia	7	7	100.00%	Yes	0.874	0.0028	0.0529	Not Significant
D104	Arsenic	3	3	100.00%	No				
D104	Arsenic (Filtered)	1	1	100.00%	No				

Table 2
Mann Kendall Test for Trends
MTPIPER

sys_loc_code	chemical_name	N	Num Detects	Percent Detects	Meet Data Reqs	p-value	tau2	tau	Trend
D104	Barium	7	7	100.00%	Yes	0.129	0.238	-0.488	Not Significant
D104	Barium (Filtered)	1	1	100.00%	No				
D104	Bicarbonate Alkalinity (as CaCO3)	7	7	100.00%	Yes	0.362	0.0857	-0.293	Not Significant
D104	Boron	7	7	100.00%	Yes	0.761	0.00952	0.0976	Not Significant
D104	Boron (Filtered)	5	5	100.00%	Yes	1	0	0	Not Significant
D104	Calcium	7	7	100.00%	Yes	0.239	0.184	-0.429	Not Significant
D104	Calcium (Filtered)	1	1	100.00%	No				
D104	Carbonate Alkalinity (as CaCO3)	4	4	100.00%	Yes	1	0	0	Not Significant
D104	Chloride	7	7	100.00%	Yes	0.381	0.111	-0.333	Not Significant
D104	Chromium	1	1	100.00%	No				
D104	Cobalt	7	7	100.00%	Yes	0.069	0.383	-0.619	Not Significant
D104	Copper	6	6	100.00%	Yes	0.559	0.0462	0.215	Not Significant
D104	Copper (Filtered)	1	1	100.00%	No				
D104	Dissolved Oxygen (Field)	3	3	100.00%	No				
D104	Dissolved Oxygen (Field) (Filtered)	4	4	100.00%	Yes	0.75	0.111	-0.333	Not Significant
D104	Electrical Conductivity (Field)	7	7	100.00%	Yes	0.381	0.111	-0.333	Not Significant
D104	Fluoride	1	1	100.00%	No				
D104	Iron	7	7	100.00%	Yes	1	0.00227	0.0476	Not Significant
D104	Iron (Filtered)	7	7	100.00%	Yes	0.562	0.0567	0.238	Not Significant
D104	Magnesium	7	7	100.00%	Yes	0.239	0.184	-0.429	Not Significant
D104	Magnesium (Filtered)	1	1	100.00%	No				
D104	Manganese	7	7	100.00%	Yes	0.239	0.184	-0.429	Not Significant
D104	Manganese (Filtered)	7	7	100.00%	Yes	0.239	0.184	-0.429	Not Significant
D104	Mercury	1	1	100.00%	No				
D104	Nickel	7	7	100.00%	Yes	0.224	0.152	-0.39	Not Significant
D104	Nickel (Filtered)	7	7	100.00%	Yes	0.239	0.184	-0.429	Not Significant
D104	Nitrate	5	5	100.00%	Yes	0.405	0.129	-0.359	Not Significant
D104	Nitrite + Nitrate (as N)	5	5	100.00%	Yes	0.405	0.129	-0.359	Not Significant
D104	pH (Field)	7	7	100.00%	Yes	0.381	0.111	-0.333	Not Significant
D104	Potassium	7	7	100.00%	Yes	1	0.00227	-0.0476	Not Significant
D104	Potassium (Filtered)	1	1	100.00%	No				
D104	Redox (Field)	1	1	100.00%	No				
D104	Sodium	7	7	100.00%	Yes	0.239	0.184	-0.429	Not Significant
D104	Sodium (Filtered)	1	1	100.00%	No				
D104	Strontium	7	7	100.00%	Yes	0.562	0.0567	-0.238	Not Significant
D104	Sulfate (as SO4)	7	7	100.00%	Yes	0.562	0.0567	-0.238	Not Significant
D104	Sulfur	7	7	100.00%	Yes	0.136	0.274	-0.524	Not Significant
D104	Total Alkalinity (as CaCO3)	3	3	100.00%	No				
D104	Total Dissolved Solids (TDS)	3	3	100.00%	No				
D104	Total Dissolved Solids (TDS) (Filtered)	4	4	100.00%	Yes	0.75	0.111	-0.333	Not Significant
D104	Zinc	7	7	100.00%	Yes	0.136	0.274	-0.524	Not Significant
D104	Zinc (Filtered)	7	7	100.00%	Yes	0.0151	0.61	-0.781	Decreasing
D105	Aluminium	7	7	100.00%	Yes	0.427	0.07	-0.265	Not Significant
D105	Ammonia	7	7	100.00%	Yes	0.878	0.00251	0.0501	Not Significant
D105	Arsenic	6	6	100.00%	Yes	0.0643	0.491	0.701	Not Significant
D105	Arsenic (Filtered)	1	1	100.00%	No				
D105	Barium	7	7	100.00%	Yes	0.0151	0.61	-0.781	Decreasing
D105	Barium (Filtered)	1	1	100.00%	No				
D105	Bicarbonate Alkalinity (as CaCO3)	7	7	100.00%	Yes	0.129	0.238	-0.488	Not Significant
D105	Boron	7	7	100.00%	Yes	0.239	0.184	0.429	Not Significant
D105	Boron (Filtered)	7	7	100.00%	Yes	0.562	0.0567	0.238	Not Significant
D105	Calcium	7	7	100.00%	Yes	0.0302	0.51	-0.714	Decreasing
D105	Calcium (Filtered)	1	1	100.00%	No				
D105	Carbonate Alkalinity (as CaCO3)	4	4	100.00%	Yes	0.0833	1	-1	Not Significant
D105	Chloride	7	7	100.00%	Yes	0.0302	0.51	-0.714	Decreasing
D105	Chromium	1	1	100.00%	No				
D105	Cobalt	7	7	100.00%	Yes	0.0151	0.61	-0.781	Decreasing
D105	Dissolved Oxygen (Field)	3	3	100.00%	No				
D105	Dissolved Oxygen (Field) (Filtered)	4	4	100.00%	Yes	0.279	0.3	-0.548	Not Significant
D105	Electrical Conductivity (Field)	7	7	100.00%	Yes	0.00278	0.819	-0.905	Decreasing
D105	Iron	7	7	100.00%	Yes	0.00278	0.819	-0.905	Decreasing
D105	Iron (Filtered)	7	7	100.00%	Yes	0.381	0.111	-0.333	Not Significant
D105	Magnesium	7	7	100.00%	Yes	0.00278	0.819	-0.905	Decreasing
D105	Magnesium (Filtered)	1	1	100.00%	No				
D105	Manganese	7	7	100.00%	Yes	0.129	0.238	-0.488	Not Significant
D105	Manganese (Filtered)	7	7	100.00%	Yes	0.362	0.0857	-0.293	Not Significant
D105	Mercury	1	1	100.00%	No				
D105	Nickel	7	7	100.00%	Yes	0.0107	0.655	-0.81	Decreasing
D105	Nickel (Filtered)	7	7	100.00%	Yes	0.0302	0.51	-0.714	Decreasing
D105	Nitrate	1	1	100.00%	No				
D105	Nitrite + Nitrate (as N)	1	1	100.00%	No				
D105	pH (Field)	7	7	100.00%	Yes	0.282	0.123	-0.35	Not Significant
D105	Potassium	7	7	100.00%	Yes	0.381	0.111	-0.333	Not Significant
D105	Potassium (Filtered)	1	1	100.00%	No				
D105	Redox (Field)	1	1	100.00%	No				
D105	Sodium	7	7	100.00%	Yes	0.362	0.0857	0.293	Not Significant
D105	Sodium (Filtered)	1	1	100.00%	No				
D105	Strontium	7	7	100.00%	Yes	0.069	0.383	-0.619	Not Significant
D105	Sulfate (as SO4)	7	7	100.00%	Yes	0.0107	0.655	-0.81	Decreasing
D105	Sulfur	7	7	100.00%	Yes	0.773	0.0204	-0.143	Not Significant
D105	Total Alkalinity (as CaCO3)	3	3	100.00%	No				
D105	Total Dissolved Solids (TDS)	3	3	100.00%	No				
D105	Total Dissolved Solids (TDS) (Filtered)	4	4	100.00%	Yes	0.718	0.0333	-0.183	Not Significant
D105	Zinc	7	7	100.00%	Yes	0.754	0.0106	0.103	Not Significant
D105	Zinc (Filtered)	7	7	100.00%	Yes	1	0	0	Not Significant
D106	Aluminium	7	7	100.00%	Yes	1	0.00227	-0.0476	Not Significant
D106	Ammonia	7	7	100.00%	Yes	0.362	0.0857	-0.293	Not Significant
D106	Arsenic	7	7	100.00%	Yes	0.634	0.0252	0.159	Not Significant
D106	Arsenic (Filtered)	2	2	100.00%	No				
D106	Barium	7	7	100.00%	Yes	0.645	0.0226	-0.15	Not Significant

Table 2
Mann Kendall Test for Trends
MTPIPER

sys_loc_code	chemical_name	N	Num Detects	Percent Detects	Meet Data Reqs	p-value	tau2	tau	Trend
D106	Barium (Filtered)	1	1	100.00%	No				
D106	Bicarbonate Alkalinity (as CaCO3)	7	7	100.00%	Yes	0.0107	0.655	-0.81	Decreasing
D106	Boron	7	7	100.00%	Yes	1	0.00227	0.0476	Not Significant
D106	Boron (Filtered)	7	7	100.00%	Yes	0.761	0.00952	0.0976	Not Significant
D106	Cadmium	7	7	100.00%	Yes	NA			
D106	Calcium	7	7	100.00%	Yes	0.136	0.274	-0.524	Not Significant
D106	Calcium (Filtered)	1	1	100.00%	No				
D106	Carbonate Alkalinity (as CaCO3)	4	4	100.00%	Yes	0.0833	1	-1	Not Significant
D106	Chloride	7	7	100.00%	Yes	0.53	0.0423	-0.206	Not Significant
D106	Chromium	3	3	100.00%	No				
D106	Cobalt	7	7	100.00%	Yes	0.136	0.274	-0.524	Not Significant
D106	Copper	4	4	100.00%	Yes	0.0833	1	-1	Not Significant
D106	Dissolved Oxygen (Field)	3	3	100.00%	No				
D106	Dissolved Oxygen (Field) (Filtered)	4	4	100.00%	Yes	0.718	0.0333	0.183	Not Significant
D106	Electrical Conductivity (Field)	7	7	100.00%	Yes	0.381	0.111	0.333	Not Significant
D106	Iron	7	7	100.00%	Yes	0.129	0.238	-0.488	Not Significant
D106	Iron (Filtered)	7	7	100.00%	Yes	0.136	0.274	-0.524	Not Significant
D106	Lead	5	5	100.00%	Yes	0.166	0.357	-0.598	Not Significant
D106	Magnesium	7	7	100.00%	Yes	0.381	0.111	-0.333	Not Significant
D106	Magnesium (Filtered)	1	1	100.00%	No				
D106	Manganese	7	7	100.00%	Yes	0.562	0.0567	-0.238	Not Significant
D106	Manganese (Filtered)	7	7	100.00%	Yes	0.562	0.0567	-0.238	Not Significant
D106	Mercury	3	3	100.00%	No				
D106	Molybdenum	1	1	100.00%	No				
D106	Nickel	7	7	100.00%	Yes	0.381	0.111	-0.333	Not Significant
D106	Nickel (Filtered)	7	7	100.00%	Yes	0.362	0.0857	-0.293	Not Significant
D106	pH (Field)	7	7	100.00%	Yes	0.761	0.00952	0.0976	Not Significant
D106	Potassium	7	7	100.00%	Yes	0.562	0.0567	-0.238	Not Significant
D106	Potassium (Filtered)	1	1	100.00%	No				
D106	Redox (Field)	1	1	100.00%	No				
D106	Selenium	6	6	100.00%	Yes	0.15	0.297	-0.545	Not Significant
D106	Sodium	7	7	100.00%	Yes	0.562	0.0567	0.238	Not Significant
D106	Sodium (Filtered)	1	1	100.00%	No				
D106	Strontium	7	7	100.00%	Yes	0.562	0.0567	-0.238	Not Significant
D106	Sulfate (as SO4)	7	7	100.00%	Yes	0.562	0.0567	0.238	Not Significant
D106	Sulfur	7	7	100.00%	Yes	0.0334	0.467	0.683	Increasing
D106	Total Alkalinity (as CaCO3)	3	3	100.00%	No				
D106	Total Dissolved Solids (TDS)	3	3	100.00%	No				
D106	Total Dissolved Solids (TDS) (Filtered)	4	4	100.00%	Yes	0.279	0.3	0.548	Not Significant
D106	Zinc	7	7	100.00%	Yes	0.381	0.111	-0.333	Not Significant
D106	Zinc (Filtered)	7	7	100.00%	Yes	0.562	0.0567	-0.238	Not Significant
D107	Aluminium	5	5	100.00%	Yes	0.207	0.278	0.527	Not Significant
D107	Ammonia	8	8	100.00%	Yes	0.0615	0.298	-0.546	Not Significant
D107	Antimony	1	1	100.00%	No				
D107	Arsenic	8	8	100.00%	Yes	0.132	0.198	0.445	Not Significant
D107	Arsenic (Filtered)	6	6	100.00%	Yes	0.702	0.019	-0.138	Not Significant
D107	Barium	8	8	100.00%	Yes	0.615	0.022	0.148	Not Significant
D107	Barium (Filtered)	1	1	100.00%	No				
D107	Bicarbonate Alkalinity (as CaCO3)	8	8	100.00%	Yes	0.275	0.128	-0.357	Not Significant
D107	Boron	8	8	100.00%	Yes	0.061	0.327	0.571	Not Significant
D107	Boron (Filtered)	8	8	100.00%	Yes	0.109	0.25	0.5	Not Significant
D107	Cadmium	8	8	100.00%	Yes	0.04	0.381	0.617	Increasing
D107	Cadmium (Filtered)	1	1	100.00%	No				
D107	Calcium	8	8	100.00%	Yes	0.383	0.0648	-0.255	Not Significant
D107	Calcium (Filtered)	1	1	100.00%	No				
D107	Carbonate Alkalinity (as CaCO3)	5	5	100.00%	Yes	0.483	0.16	-0.4	Not Significant
D107	Chloride	8	8	100.00%	Yes	0.72	0.0204	0.143	Not Significant
D107	Chromium	1	1	100.00%	No				
D107	Cobalt	8	8	100.00%	Yes	0.262	0.107	-0.327	Not Significant
D107	Copper	3	3	100.00%	No				
D107	Copper (Filtered)	1	1	100.00%	No				
D107	Dissolved Oxygen (Field)	3	3	100.00%	No				
D107	Dissolved Oxygen (Field) (Filtered)	5	5	100.00%	Yes	0.077	0.544	0.738	Not Significant
D107	Electrical Conductivity (Field)	8	8	100.00%	Yes	0.548	0.0459	0.214	Not Significant
D107	Fluoride	1	1	100.00%	No				
D107	Iron	8	8	100.00%	Yes	0.00884	0.583	-0.764	Decreasing
D107	Iron (Filtered)	8	8	100.00%	Yes	0.548	0.0459	-0.214	Not Significant
D107	Lead	8	8	100.00%	Yes	0.0304	0.413	0.643	Increasing
D107	Magnesium	8	8	100.00%	Yes	0.72	0.0204	0.143	Not Significant
D107	Magnesium (Filtered)	1	1	100.00%	No				
D107	Manganese	8	8	100.00%	Yes	0.262	0.107	-0.327	Not Significant
D107	Manganese (Filtered)	8	8	100.00%	Yes	0.275	0.128	-0.357	Not Significant
D107	Mercury	1	1	100.00%	No				
D107	Nickel	8	8	100.00%	Yes	1	0	0	Not Significant
D107	Nickel (Filtered)	8	8	100.00%	Yes	0.901	0.00132	0.0364	Not Significant
D107	pH (Field)	8	8	100.00%	Yes	0.262	0.107	0.327	Not Significant
D107	Potassium	8	8	100.00%	Yes	0.179	0.184	0.429	Not Significant
D107	Potassium (Filtered)	1	1	100.00%	No				
D107	Redox (Field)	1	1	100.00%	No				
D107	Selenium	7	7	100.00%	Yes	0.734	0.0136	-0.117	Not Significant
D107	Selenium (Filtered)	1	1	100.00%	No				
D107	Silver	1	1	100.00%	No				
D107	Sodium	8	8	100.00%	Yes	0.275	0.128	0.357	Not Significant
D107	Sodium (Filtered)	1	1	100.00%	No				
D107	Strontium	8	8	100.00%	Yes	0.708	0.0119	0.109	Not Significant
D107	Sulfate (as SO4)	8	8	100.00%	Yes	0.399	0.0816	0.286	Not Significant
D107	Sulfur	8	8	100.00%	Yes	0.109	0.25	0.5	Not Significant
D107	Total Alkalinity (as CaCO3)	3	3	100.00%	No				
D107	Total Dissolved Solids (TDS)	3	3	100.00%	No				
D107	Total Dissolved Solids (TDS) (Filtered)	5	5	100.00%	Yes	0.483	0.16	0.4	Not Significant

Table 2
Mann Kendall Test for Trends
MTPIPER

sys_loc_code	chemical_name	N	Num Detects	Percent Detects	Meet Data Reqs	p-value	tau2	tau	Trend
D107	Zinc	8	8	100.00%	Yes	0.275	0.128	0.357	Not Significant
D107	Zinc (Filtered)	8	8	100.00%	Yes	0.399	0.0816	0.286	Not Significant
D11	Aluminium	6	6	100.00%	Yes	0.173	0.251	-0.501	Not Significant
D11	Aluminium (Filtered)	1	1	100.00%	No				
D11	Ammonia	5	5	100.00%	Yes	0.483	0.16	-0.4	Not Significant
D11	Arsenic	6	6	100.00%	Yes	0.702	0.019	-0.138	Not Significant
D11	Arsenic (Filtered)	4	4	100.00%	Yes	0.279	0.3	-0.548	Not Significant
D11	Barium	6	6	100.00%	Yes	0.0558	0.476	0.69	Not Significant
D11	Bicarbonate Alkalinity (as CaCO3)	5	5	100.00%	Yes	0.817	0.04	-0.2	Not Significant
D11	Boron	6	6	100.00%	Yes	1	0.00444	-0.0667	Not Significant
D11	Boron (Filtered)	5	5	100.00%	Yes	1	0	0	Not Significant
D11	Calcium	6	6	100.00%	Yes	0.0556	0.538	-0.733	Not Significant
D11	Carbonate Alkalinity (as CaCO3)	4	4	100.00%	Yes	0.75	0.111	-0.333	Not Significant
D11	Chloride	6	6	100.00%	Yes	0.136	0.36	0.6	Not Significant
D11	Cobalt	5	5	100.00%	Yes	0.817	0.04	0.2	Not Significant
D11	Copper	1	1	100.00%	No				
D11	Dissolved Oxygen (Field)	1	1	100.00%	No				
D11	Dissolved Oxygen (Field) (Filtered)	4	4	100.00%	Yes	0.75	0.111	0.333	Not Significant
D11	Electrical Conductivity (Field)	6	6	100.00%	Yes	1	0.00444	0.0667	Not Significant
D11	Fluoride	1	1	100.00%	No				
D11	Iron	5	5	100.00%	Yes	0.483	0.16	-0.4	Not Significant
D11	Iron (Filtered)	6	6	100.00%	Yes	1	0.00444	0.0667	Not Significant
D11	Magnesium	6	6	100.00%	Yes	0.272	0.218	-0.467	Not Significant
D11	Manganese	5	5	100.00%	Yes	0.483	0.16	-0.4	Not Significant
D11	Manganese (Filtered)	6	6	100.00%	Yes	0.0556	0.538	-0.733	Not Significant
D11	Molybdenum	2	2	100.00%	No				
D11	Nickel	6	6	100.00%	Yes	0.469	0.111	0.333	Not Significant
D11	Nickel (Filtered)	5	5	100.00%	Yes	0.077	0.544	0.738	Not Significant
D11	pH (Field)	6	6	100.00%	Yes	0.687	0.0222	0.149	Not Significant
D11	Potassium	6	6	100.00%	Yes	0.469	0.111	-0.333	Not Significant
D11	Redox (Field)	1	1	100.00%	No				
D11	Selenium	4	4	100.00%	Yes	0.071	0.833	-0.913	Not Significant
D11	Sodium	6	6	100.00%	Yes	1	0.00444	-0.0667	Not Significant
D11	Strontium	5	5	100.00%	Yes	0.0833	0.64	0.8	Not Significant
D11	Sulfate (as SO4)	6	6	100.00%	Yes	0.136	0.36	0.6	Not Significant
D11	Sulfur	5	5	100.00%	Yes	0.817	0.04	-0.2	Not Significant
D11	Total Alkalinity (as CaCO3)	2	2	100.00%	No				
D11	Total Dissolved Solids (TDS)	2	2	100.00%	No				
D11	Total Dissolved Solids (TDS) (Filtered)	4	4	100.00%	Yes	0.75	0.111	-0.333	Not Significant
D11	Zinc	6	6	100.00%	Yes	0.444	0.0762	0.276	Not Significant
D11	Zinc (Filtered)	5	5	100.00%	Yes	0.817	0.04	0.2	Not Significant
D110	Aluminium	4	4	100.00%	Yes	0.333	0.444	-0.667	Not Significant
D110	Aluminium (Filtered)	3	3	100.00%	No				
D110	Ammonia	4	4	100.00%	Yes	0.071	0.833	0.913	Not Significant
D110	Arsenic	4	4	100.00%	Yes	0.718	0.0333	-0.183	Not Significant
D110	Arsenic (Filtered)	3	3	100.00%	No				
D110	Barium	4	4	100.00%	Yes	0.279	0.3	-0.548	Not Significant
D110	Bicarbonate Alkalinity (as CaCO3)	4	4	100.00%	Yes	0.75	0.111	-0.333	Not Significant
D110	Boron	4	4	100.00%	Yes	1	0	0	Not Significant
D110	Boron (Filtered)	4	4	100.00%	Yes	0.279	0.3	-0.548	Not Significant
D110	Calcium	4	4	100.00%	Yes	0.0833	1	-1	Not Significant
D110	Carbonate Alkalinity (as CaCO3)	4	4	100.00%	Yes	0.75	0.111	-0.333	Not Significant
D110	Chloride	4	4	100.00%	Yes	0.0833	1	-1	Not Significant
D110	Chromium	4	4	100.00%	Yes	1	0	0	Not Significant
D110	Cobalt	4	4	100.00%	Yes	0.75	0.111	-0.333	Not Significant
D110	Copper	2	2	100.00%	No				
D110	Dissolved Oxygen (Field) (Filtered)	4	4	100.00%	Yes	0.75	0.111	-0.333	Not Significant
D110	Electrical Conductivity (Field)	4	4	100.00%	Yes	0.0833	1	-1	Not Significant
D110	Iron	4	4	100.00%	Yes	0.333	0.444	-0.667	Not Significant
D110	Iron (Filtered)	4	4	100.00%	Yes	0.75	0.111	-0.333	Not Significant
D110	Lead	1	1	100.00%	No				
D110	Magnesium	4	4	100.00%	Yes	0.718	0.0333	-0.183	Not Significant
D110	Manganese	4	4	100.00%	Yes	1	0	0	Not Significant
D110	Manganese (Filtered)	4	4	100.00%	Yes	0.75	0.111	-0.333	Not Significant
D110	Mercury	1	1	100.00%	No				
D110	Molybdenum	2	2	100.00%	No				
D110	Nickel	4	4	100.00%	Yes	0.333	0.444	-0.667	Not Significant
D110	Nickel (Filtered)	4	4	100.00%	Yes	0.333	0.444	-0.667	Not Significant
D110	pH (Field)	4	4	100.00%	Yes	0.75	0.111	-0.333	Not Significant
D110	Potassium	4	4	100.00%	Yes	0.0833	1	-1	Not Significant
D110	Redox (Field)	1	1	100.00%	No				
D110	Selenium	3	3	100.00%	No				
D110	Sodium	4	4	100.00%	Yes	0.333	0.444	-0.667	Not Significant
D110	Strontium	4	4	100.00%	Yes	0.75	0.111	-0.333	Not Significant
D110	Sulfate (as SO4)	4	4	100.00%	Yes	0.0833	1	-1	Not Significant
D110	Sulfur	4	4	100.00%	Yes	0.333	0.444	-0.667	Not Significant
D110	Total Dissolved Solids (TDS) (Filtered)	4	4	100.00%	Yes	0.333	0.444	-0.667	Not Significant
D110	Zinc	4	4	100.00%	Yes	0.75	0.111	-0.333	Not Significant
D110	Zinc (Filtered)	4	4	100.00%	Yes	0.333	0.444	-0.667	Not Significant
D113	Aluminium	7	7	100.00%	Yes	1	0	0	Not Significant
D113	Aluminium (Filtered)	1	1	100.00%	No				
D113	Ammonia	7	7	100.00%	Yes	0.867	0.00317	-0.0563	Not Significant
D113	Antimony	1	1	100.00%	No				
D113	Arsenic	7	7	100.00%	Yes	0.439	0.0762	-0.276	Not Significant
D113	Arsenic (Filtered)	4	4	100.00%	Yes	NA			
D113	Barium	7	7	100.00%	Yes	1	0	0	Not Significant
D113	Barium (Filtered)	1	1	100.00%	No				
D113	Bicarbonate Alkalinity (as CaCO3)	7	7	100.00%	Yes	0.761	0.00952	0.0976	Not Significant
D113	Boron	7	7	100.00%	Yes	0.224	0.152	-0.39	Not Significant
D113	Boron (Filtered)	7	7	100.00%	Yes	0.136	0.274	-0.524	Not Significant

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Table 2
Mann Kendall Test for Trends
MTPIPER

sys_loc_code	chemical_name	N	Num Detects	Percent Detects	Meet Data Reqs	p-value	tau2	tau	Trend
D113	Cadmium	7	7	100.00%	Yes	0.724	0.0159	0.126	Not Significant
D113	Cadmium (Filtered)	1	1	100.00%	No				
D113	Calcium	7	7	100.00%	Yes	0.381	0.111	-0.333	Not Significant
D113	Calcium (Filtered)	1	1	100.00%	No				
D113	Carbonate Alkalinity (as CaCO3)	4	4	100.00%	Yes	0.279	0.3	-0.548	Not Significant
D113	Chloride	7	7	100.00%	Yes	0.381	0.111	-0.333	Not Significant
D113	Chromium	7	7	100.00%	Yes	1	0.00227	0.0476	Not Significant
D113	Cobalt	7	7	100.00%	Yes	0.381	0.111	-0.333	Not Significant
D113	Copper	5	5	100.00%	Yes	0.782	0.0143	0.12	Not Significant
D113	Copper (Filtered)	1	1	100.00%	No				
D113	Dissolved Oxygen (Field)	3	3	100.00%	No				
D113	Dissolved Oxygen (Field) (Filtered)	4	4	100.00%	Yes	0.718	0.0333	-0.183	Not Significant
D113	Electrical Conductivity (Field)	7	7	100.00%	Yes	0.129	0.238	-0.488	Not Significant
D113	Iron	7	7	100.00%	Yes	0.0302	0.51	-0.714	Decreasing
D113	Iron (Filtered)	7	7	100.00%	Yes	0.0683	0.343	-0.586	Not Significant
D113	Lead	7	7	100.00%	Yes	0.351	0.0952	0.309	Not Significant
D113	Lead (Filtered)	1	1	100.00%	No				
D113	Magnesium	7	7	100.00%	Yes	0.761	0.00952	-0.0976	Not Significant
D113	Magnesium (Filtered)	1	1	100.00%	No				
D113	Manganese	7	7	100.00%	Yes	0.136	0.274	-0.524	Not Significant
D113	Manganese (Filtered)	7	7	100.00%	Yes	0.136	0.274	-0.524	Not Significant
D113	Mercury	1	1	100.00%	No				
D113	Molybdenum	2	2	100.00%	No				
D113	Nickel	7	7	100.00%	Yes	0.562	0.0567	-0.238	Not Significant
D113	Nickel (Filtered)	7	7	100.00%	Yes	0.562	0.0567	-0.238	Not Significant
D113	Nitrate	1	1	100.00%	No				
D113	Nitrite + Nitrate (as N)	1	1	100.00%	No				
D113	pH (Field)	7	7	100.00%	Yes	0.129	0.238	0.488	Not Significant
D113	Potassium	7	7	100.00%	Yes	0.239	0.184	-0.429	Not Significant
D113	Potassium (Filtered)	1	1	100.00%	No				
D113	Redox (Field)	1	1	100.00%	No				
D113	Selenium	1	1	100.00%	No				
D113	Selenium (Filtered)	1	1	100.00%	No				
D113	Sodium	7	7	100.00%	Yes	0.239	0.184	-0.429	Not Significant
D113	Sodium (Filtered)	1	1	100.00%	No				
D113	Strontium	7	7	100.00%	Yes	0.761	0.00952	-0.0976	Not Significant
D113	Sulfate (as SO4)	7	7	100.00%	Yes	0.562	0.0567	-0.238	Not Significant
D113	Sulfur	7	7	100.00%	Yes	0.773	0.0204	-0.143	Not Significant
D113	Total Alkalinity (as CaCO3)	3	3	100.00%	No				
D113	Total Dissolved Solids (TDS)	3	3	100.00%	No				
D113	Total Dissolved Solids (TDS) (Filtered)	4	4	100.00%	Yes	0.0833	1	-1	Not Significant
D113	Zinc	7	7	100.00%	Yes	0.239	0.184	-0.429	Not Significant
D113	Zinc (Filtered)	7	7	100.00%	Yes	0.069	0.383	-0.619	Not Significant
D117	Aluminium	4	4	100.00%	Yes	0.333	0.444	-0.667	Not Significant
D117	Aluminium (Filtered)	4	4	100.00%	Yes	0.333	0.444	-0.667	Not Significant
D117	Ammonia	4	4	100.00%	Yes	0.333	0.444	-0.667	Not Significant
D117	Antimony	4	4	100.00%	Yes	0.655	0.0556	0.236	Not Significant
D117	Arsenic	4	4	100.00%	Yes	0.75	0.111	-0.333	Not Significant
D117	Arsenic (Filtered)	4	4	100.00%	Yes	0.75	0.111	-0.333	Not Significant
D117	Barium	4	4	100.00%	Yes	0.279	0.3	-0.548	Not Significant
D117	Beryllium	4	4	100.00%	Yes	0.333	0.444	-0.667	Not Significant
D117	Bicarbonate Alkalinity (as CaCO3)	4	4	100.00%	Yes	0.279	0.3	0.548	Not Significant
D117	Boron	4	4	100.00%	Yes	0.333	0.444	-0.667	Not Significant
D117	Boron (Filtered)	4	4	100.00%	Yes	0.333	0.444	-0.667	Not Significant
D117	Cadmium	4	4	100.00%	Yes	0.333	0.444	-0.667	Not Significant
D117	Calcium	4	4	100.00%	Yes	0.333	0.444	-0.667	Not Significant
D117	Carbonate Alkalinity (as CaCO3)	4	4	100.00%	Yes	0.279	0.3	0.548	Not Significant
D117	Chloride	4	4	100.00%	Yes	1	0	0	Not Significant
D117	Chromium	1	1	100.00%	No				
D117	Cobalt	4	4	100.00%	Yes	0.0833	1	-1	Not Significant
D117	Copper	3	3	100.00%	No				
D117	Copper (Filtered)	2	2	100.00%	No				
D117	Dissolved Oxygen (Field) (Filtered)	4	4	100.00%	Yes	0.0833	1	-1	Not Significant
D117	Electrical Conductivity (Field)	4	4	100.00%	Yes	1	0	0	Not Significant
D117	Fluoride	4	4	100.00%	Yes	0.333	0.444	-0.667	Not Significant
D117	Iron	4	4	100.00%	Yes	1	0	0	Not Significant
D117	Iron (Filtered)	4	4	100.00%	Yes	1	0	0	Not Significant
D117	Magnesium	4	4	100.00%	Yes	0.75	0.111	0.333	Not Significant
D117	Manganese	4	4	100.00%	Yes	1	0	0	Not Significant
D117	Manganese (Filtered)	4	4	100.00%	Yes	1	0	0	Not Significant
D117	Molybdenum	4	4	100.00%	Yes	0.333	0.444	-0.667	Not Significant
D117	Nickel	4	4	100.00%	Yes	0.333	0.444	-0.667	Not Significant
D117	Nickel (Filtered)	4	4	100.00%	Yes	0.333	0.444	-0.667	Not Significant
D117	Nitrate	4	4	100.00%	Yes	0.75	0.111	-0.333	Not Significant
D117	Nitrite + Nitrate (as N)	4	4	100.00%	Yes	0.75	0.111	-0.333	Not Significant
D117	pH (Field)	4	4	100.00%	Yes	0.75	0.111	0.333	Not Significant
D117	Potassium	4	4	100.00%	Yes	0.333	0.444	-0.667	Not Significant
D117	Redox (Field)	1	1	100.00%	No				
D117	Selenium	4	4	100.00%	Yes	1	0	0	Not Significant
D117	Sodium	4	4	100.00%	Yes	1	0	0	Not Significant
D117	Strontium	4	4	100.00%	Yes	0.333	0.444	-0.667	Not Significant
D117	Sulfate (as SO4)	4	4	100.00%	Yes	0.333	0.444	-0.667	Not Significant
D117	Sulfur	4	4	100.00%	Yes	1	0	0	Not Significant
D117	Total Dissolved Solids (TDS) (Filtered)	4	4	100.00%	Yes	0.0833	1	-1	Not Significant
D117	Zinc	4	4	100.00%	Yes	0.333	0.444	-0.667	Not Significant
D117	Zinc (Filtered)	4	4	100.00%	Yes	0.75	0.111	-0.333	Not Significant
D119	Aluminium	4	4	100.00%	Yes	0.333	0.444	-0.667	Not Significant
D119	Aluminium (Filtered)	1	1	100.00%	No				
D119	Ammonia	4	4	100.00%	Yes	0.0833	1	1	Not Significant
D119	Arsenic	4	4	100.00%	Yes	0.333	0.444	-0.667	Not Significant

Table 2
Mann Kendall Test for Trends
MTPIPER

sys_loc_code	chemical_name	N	Num Detects	Percent Detects	Meet Data Reqs	p-value	tau2	tau	Trend
D119	Arsenic (Filtered)	4	4	100.00%	Yes	1	0	0	Not Significant
D119	Barium	4	4	100.00%	Yes	0.333	0.444	-0.667	Not Significant
D119	Beryllium	4	4	100.00%	Yes	0.333	0.444	-0.667	Not Significant
D119	Bicarbonate Alkalinity (as CaCO3)	4	4	100.00%	Yes	0.0833	1	-1	Not Significant
D119	Boron	4	4	100.00%	Yes	0.333	0.444	0.667	Not Significant
D119	Boron (Filtered)	4	4	100.00%	Yes	0.0833	1	1	Not Significant
D119	Cadmium	4	4	100.00%	Yes	0.279	0.3	-0.548	Not Significant
D119	Calcium	4	4	100.00%	Yes	0.333	0.444	0.667	Not Significant
D119	Carbonate Alkalinity (as CaCO3)	4	4	100.00%	Yes	0.0833	1	-1	Not Significant
D119	Chloride	4	4	100.00%	Yes	0.75	0.111	-0.333	Not Significant
D119	Chromium	4	4	100.00%	Yes	0.333	0.444	-0.667	Not Significant
D119	Cobalt	4	4	100.00%	Yes	0.0833	1	-1	Not Significant
D119	Copper	4	4	100.00%	Yes	0.279	0.3	-0.548	Not Significant
D119	Dissolved Oxygen (Field) (Filtered)	4	4	100.00%	Yes	0.333	0.444	0.667	Not Significant
D119	Electrical Conductivity (Field)	4	4	100.00%	Yes	0.75	0.111	-0.333	Not Significant
D119	Fluoride	1	1	100.00%	No				
D119	Iron	4	4	100.00%	Yes	0.75	0.111	-0.333	Not Significant
D119	Iron (Filtered)	4	4	100.00%	Yes	0.333	0.444	-0.667	Not Significant
D119	Lead	4	4	100.00%	Yes	0.071	0.833	-0.913	Not Significant
D119	Magnesium	4	4	100.00%	Yes	0.333	0.444	0.667	Not Significant
D119	Manganese	4	4	100.00%	Yes	1	0	0	Not Significant
D119	Manganese (Filtered)	4	4	100.00%	Yes	1	0	0	Not Significant
D119	Mercury	4	4	100.00%	Yes	0.75	0.111	0.333	Not Significant
D119	Molybdenum	4	4	100.00%	Yes	0.333	0.444	-0.667	Not Significant
D119	Nickel	4	4	100.00%	Yes	0.333	0.444	-0.667	Not Significant
D119	Nickel (Filtered)	4	4	100.00%	Yes	0.75	0.111	-0.333	Not Significant
D119	pH (Field)	4	4	100.00%	Yes	0.0833	1	-1	Not Significant
D119	Potassium	4	4	100.00%	Yes	1	0	0	Not Significant
D119	Redox (Field)	1	1	100.00%	No				
D119	Selenium	3	3	100.00%	No				
D119	Sodium	4	4	100.00%	Yes	0.75	0.111	-0.333	Not Significant
D119	Strontium	4	4	100.00%	Yes	0.75	0.111	0.333	Not Significant
D119	Sulfate (as SO4)	4	4	100.00%	Yes	1	0	0	Not Significant
D119	Sulfur	4	4	100.00%	Yes	0.75	0.111	0.333	Not Significant
D119	Total Dissolved Solids (TDS) (Filtered)	4	4	100.00%	Yes	1	0	0	Not Significant
D119	Vanadium	1	1	100.00%	No				
D119	Zinc	4	4	100.00%	Yes	0.333	0.444	-0.667	Not Significant
D119	Zinc (Filtered)	4	4	100.00%	Yes	0.75	0.111	-0.333	Not Significant
D15	Aluminium	7	7	100.00%	Yes	0.224	0.152	-0.39	Not Significant
D15	Aluminium (Filtered)	6	6	100.00%	Yes	0.0217	0.686	-0.828	Decreasing
D15	Ammonia	5	5	100.00%	Yes	0.077	0.544	-0.738	Not Significant
D15	Antimony	1	1	100.00%	No				
D15	Arsenic	7	7	100.00%	Yes	0.754	0.0106	-0.103	Not Significant
D15	Arsenic (Filtered)	6	6	100.00%	Yes	0.127	0.363	-0.602	Not Significant
D15	Barium	7	7	100.00%	Yes	0.756	0.0106	-0.103	Not Significant
D15	Beryllium	5	5	100.00%	Yes	0.157	0.4	-0.632	Not Significant
D15	Bicarbonate Alkalinity (as CaCO3)	6	6	100.00%	Yes	0.444	0.0762	0.276	Not Significant
D15	Boron	7	7	100.00%	Yes	0.402	0.0794	0.282	Not Significant
D15	Boron (Filtered)	5	5	100.00%	Yes	0.296	0.2	-0.447	Not Significant
D15	Cadmium	7	7	100.00%	Yes	0.0121	0.677	-0.823	Decreasing
D15	Calcium	7	7	100.00%	Yes	<0.001	1	-1	Decreasing
D15	Carbonate Alkalinity (as CaCO3)	4	4	100.00%	Yes	0.718	0.0333	0.183	Not Significant
D15	Chloride	7	7	100.00%	Yes	0.0107	0.655	-0.81	Decreasing
D15	Chromium	7	7	100.00%	Yes	0.773	0.0204	0.143	Not Significant
D15	Cobalt	6	6	100.00%	Yes	0.00278	1	-1	Decreasing
D15	Copper	7	7	100.00%	Yes	0.543	0.0381	-0.195	Not Significant
D15	Dissolved Oxygen (Field)	1	1	100.00%	No				
D15	Dissolved Oxygen (Field) (Filtered)	4	4	100.00%	Yes	0.071	0.833	-0.913	Not Significant
D15	Electrical Conductivity (Field)	7	7	100.00%	Yes	0.0107	0.655	-0.81	Decreasing
D15	Iron	6	6	100.00%	Yes	0.00741	0.933	-0.966	Decreasing
D15	Iron (Filtered)	7	7	100.00%	Yes	0.00278	0.819	-0.905	Decreasing
D15	Lead	7	7	100.00%	Yes	0.0909	0.303	-0.551	Not Significant
D15	Magnesium	7	7	100.00%	Yes	<0.001	1	-1	Decreasing
D15	Manganese	6	6	100.00%	Yes	0.00278	1	-1	Decreasing
D15	Manganese (Filtered)	7	7	100.00%	Yes	0.00278	0.819	-0.905	Decreasing
D15	Mercury	2	2	100.00%	No				
D15	Molybdenum	5	5	100.00%	Yes	0.782	0.0143	-0.12	Not Significant
D15	Nickel	7	7	100.00%	Yes	<0.001	1	-1	Decreasing
D15	Nickel (Filtered)	6	6	100.00%	Yes	0.0167	0.751	-0.867	Decreasing
D15	Nitrate	1	1	100.00%	No				
D15	Nitrite + Nitrate (as N)	1	1	100.00%	No				
D15	pH (Field)	7	7	100.00%	Yes	0.0334	0.467	0.683	Increasing
D15	Potassium	7	7	100.00%	Yes	0.0107	0.655	-0.81	Decreasing
D15	Redox (Field)	1	1	100.00%	No				
D15	Selenium	6	6	100.00%	Yes	0.251	0.171	-0.414	Not Significant
D15	Sodium	7	7	100.00%	Yes	0.0302	0.51	-0.714	Decreasing
D15	Strontium	6	6	100.00%	Yes	0.00278	1	-1	Decreasing
D15	Sulfate (as SO4)	7	7	100.00%	Yes	0.0107	0.655	-0.81	Decreasing
D15	Sulfur	5	5	100.00%	Yes	0.0833	0.64	-0.8	Not Significant
D15	Total Alkalinity (as CaCO3)	3	3	100.00%	No				
D15	Total Dissolved Solids (TDS)	3	3	100.00%	No				
D15	Total Dissolved Solids (TDS) (Filtered)	4	4	100.00%	Yes	0.333	0.444	-0.667	Not Significant
D15	Zinc	7	7	100.00%	Yes	<0.001	1	-1	Decreasing
D15	Zinc (Filtered)	6	6	100.00%	Yes	0.00278	1	-1	Decreasing
D16	Aluminium	1	1	100.00%	No				
D16	Ammonia	3	3	100.00%	No				
D16	Barium	4	4	100.00%	Yes	0.75	0.111	-0.333	Not Significant
D16	Bicarbonate Alkalinity (as CaCO3)	3	3	100.00%	No				
D16	Boron	1	1	100.00%	No				
D16	Boron (Filtered)	1	1	100.00%	No				

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Table 2
Mann Kendall Test for Trends
MTPIPER

sys_loc_code	chemical_name	N	Num Detects	Percent Detects	Meet Data Reqs	p-value	tau2	tau	Trend
D16	Calcium	4	4	100.00%	Yes	0.333	0.444	0.667	Not Significant
D16	Chloride	4	4	100.00%	Yes	0.75	0.111	0.333	Not Significant
D16	Chromium	3	3	100.00%	No				
D16	Dissolved Oxygen (Field)	3	3	100.00%	No				
D16	Electrical Conductivity (Field)	4	4	100.00%	Yes	0.75	0.111	-0.333	Not Significant
D16	Fluoride	2	2	100.00%	No				
D16	Iron	3	3	100.00%	No				
D16	Iron (Filtered)	4	4	100.00%	Yes	0.75	0.111	-0.333	Not Significant
D16	Magnesium	4	4	100.00%	Yes	0.75	0.111	-0.333	Not Significant
D16	Manganese	3	3	100.00%	No				
D16	Manganese (Filtered)	4	4	100.00%	Yes	0.75	0.111	-0.333	Not Significant
D16	Nickel	4	4	100.00%	Yes	0.0833	1	-1	Not Significant
D16	Nickel (Filtered)	3	3	100.00%	No				
D16	pH (Field)	4	4	100.00%	Yes	0.0833	1	1	Not Significant
D16	Potassium	4	4	100.00%	Yes	0.75	0.111	-0.333	Not Significant
D16	Sodium	4	4	100.00%	Yes	0.333	0.444	-0.667	Not Significant
D16	Strontium	3	3	100.00%	No				
D16	Sulfate (as SO4)	4	4	100.00%	Yes	0.75	0.111	0.333	Not Significant
D16	Sulfur	3	3	100.00%	No				
D16	Total Alkalinity (as CaCO3)	4	4	100.00%	Yes	0.071	0.833	0.913	Not Significant
D16	Total Dissolved Solids (TDS)	4	4	100.00%	Yes	1	0	0	Not Significant
D16	Zinc	2	2	100.00%	No				
D16	Zinc (Filtered)	2	2	100.00%	No				
D17	Aluminium	2	2	100.00%	No				
D17	Ammonia	6	6	100.00%	Yes	0.0238	0.733	-0.856	Decreasing
D17	Arsenic	3	3	100.00%	No				
D17	Arsenic (Filtered)	1	1	100.00%	No				
D17	Barium	8	8	100.00%	Yes	0.899	0.00143	-0.0378	Not Significant
D17	Bicarbonate Alkalinity (as CaCO3)	7	7	100.00%	Yes	0.761	0.00952	-0.0976	Not Significant
D17	Boron	7	7	100.00%	Yes	0.0334	0.467	-0.683	Decreasing
D17	Boron (Filtered)	6	6	100.00%	Yes	1	0	0	Not Significant
D17	Calcium	8	8	100.00%	Yes	0.72	0.0204	-0.143	Not Significant
D17	Carbonate Alkalinity (as CaCO3)	4	4	100.00%	Yes	0.333	0.444	-0.667	Not Significant
D17	Chloride	8	8	100.00%	Yes	0.00551	0.617	-0.786	Decreasing
D17	Chromium	2	2	100.00%	No				
D17	Cobalt	7	7	100.00%	Yes	0.0683	0.343	-0.586	Not Significant
D17	Dissolved Oxygen (Field)	3	3	100.00%	No				
D17	Dissolved Oxygen (Field) (Filtered)	4	4	100.00%	Yes	0.718	0.0333	0.183	Not Significant
D17	Electrical Conductivity (Field)	8	8	100.00%	Yes	0.00884	0.583	-0.764	Decreasing
D17	Fluoride	1	1	100.00%	No				
D17	Iron	7	7	100.00%	Yes	0.136	0.274	-0.524	Not Significant
D17	Iron (Filtered)	8	8	100.00%	Yes	0.275	0.128	-0.357	Not Significant
D17	Magnesium	8	8	100.00%	Yes	0.0057	0.665	-0.815	Decreasing
D17	Manganese	7	7	100.00%	Yes	0.0151	0.61	-0.781	Decreasing
D17	Manganese (Filtered)	8	8	100.00%	Yes	0.0178	0.478	-0.691	Decreasing
D17	Mercury	1	1	100.00%	No				
D17	Nickel	8	8	100.00%	Yes	0.00551	0.617	-0.786	Decreasing
D17	Nickel (Filtered)	7	7	100.00%	Yes	0.0302	0.51	-0.714	Decreasing
D17	Nitrate	1	1	100.00%	No				
D17	Nitrite + Nitrate (as N)	1	1	100.00%	No				
D17	pH (Field)	8	8	100.00%	Yes	0.708	0.0119	0.109	Not Significant
D17	Potassium	8	8	100.00%	Yes	0.0141	0.51	-0.714	Decreasing
D17	Redox (Field)	1	1	100.00%	No				
D17	Sodium	8	8	100.00%	Yes	0.061	0.327	-0.571	Not Significant
D17	Strontium	7	7	100.00%	Yes	0.0302	0.51	-0.714	Decreasing
D17	Sulfate (as SO4)	8	8	100.00%	Yes	0.061	0.327	-0.571	Not Significant
D17	Sulfur	7	7	100.00%	Yes	0.136	0.274	-0.524	Not Significant
D17	Total Alkalinity (as CaCO3)	4	4	100.00%	Yes	0.333	0.444	0.667	Not Significant
D17	Total Dissolved Solids (TDS)	4	4	100.00%	Yes	0.333	0.444	-0.667	Not Significant
D17	Total Dissolved Solids (TDS) (Filtered)	4	4	100.00%	Yes	0.0833	1	-1	Not Significant
D17	Zinc	8	8	100.00%	Yes	0.00884	0.583	-0.764	Decreasing
D17	Zinc (Filtered)	7	7	100.00%	Yes	0.00625	0.771	-0.878	Decreasing
D18	Aluminium	8	8	100.00%	Yes	0.708	0.0119	0.109	Not Significant
D18	Ammonia	6	6	100.00%	Yes	0.0171	0.8	0.894	Increasing
D18	Antimony	1	1	100.00%	No				
D18	Arsenic	7	7	100.00%	Yes	1	0	0	Not Significant
D18	Arsenic (Filtered)	5	5	100.00%	Yes	0.782	0.0143	-0.12	Not Significant
D18	Barium	8	8	100.00%	Yes	0.905	0.0051	0.0714	Not Significant
D18	Beryllium	1	1	100.00%	No				
D18	Bicarbonate Alkalinity (as CaCO3)	7	7	100.00%	Yes	0.136	0.274	-0.524	Not Significant
D18	Boron	7	7	100.00%	Yes	1	0	0	Not Significant
D18	Boron (Filtered)	4	4	100.00%	Yes	0.279	0.3	-0.548	Not Significant
D18	Cadmium	1	1	100.00%	No				
D18	Calcium	8	8	100.00%	Yes	0.275	0.128	0.357	Not Significant
D18	Carbonate Alkalinity (as CaCO3)	4	4	100.00%	Yes	0.75	0.111	-0.333	Not Significant
D18	Chloride	8	8	100.00%	Yes	0.72	0.0204	0.143	Not Significant
D18	Chromium	3	3	100.00%	No				
D18	Cobalt	5	5	100.00%	Yes	0.405	0.129	-0.359	Not Significant
D18	Copper	4	4	100.00%	Yes	0.718	0.0333	-0.183	Not Significant
D18	Dissolved Oxygen (Field)	3	3	100.00%	No				
D18	Dissolved Oxygen (Field) (Filtered)	4	4	100.00%	Yes	0.0833	1	1	Not Significant
D18	Electrical Conductivity (Field)	8	8	100.00%	Yes	0.304	0.0952	0.309	Not Significant
D18	Fluoride	7	7	100.00%	Yes	0.773	0.0204	-0.143	Not Significant
D18	Iron	7	7	100.00%	Yes	0.381	0.111	0.333	Not Significant
D18	Iron (Filtered)	5	5	100.00%	Yes	0.817	0.04	-0.2	Not Significant
D18	Lead	1	1	100.00%	No				
D18	Magnesium	8	8	100.00%	Yes	0.275	0.128	0.357	Not Significant
D18	Manganese	7	7	100.00%	Yes	0.136	0.274	0.524	Not Significant
D18	Manganese (Filtered)	8	8	100.00%	Yes	0.399	0.0816	0.286	Not Significant
D18	Mercury	2	2	100.00%	No				

Table 2
Mann Kendall Test for Trends
MTPIPER

sys_loc_code	chemical_name	N	Num Detects	Percent Detects	Meet Data Reqs	p-value	tau2	tau	Trend
D18	Molybdenum	8	8	100.00%	Yes	0.524	0.0357	-0.189	Not Significant
D18	Nickel	8	8	100.00%	Yes	0.451	0.0495	0.222	Not Significant
D18	Nickel (Filtered)	7	7	100.00%	Yes	0.266	0.137	0.37	Not Significant
D18	Nitrate	7	7	100.00%	Yes	0.039	0.473	-0.688	Decreasing
D18	Nitrite (as NO2-)	1	1	100.00%	No				
D18	Nitrite + Nitrate (as N)	7	7	100.00%	Yes	0.039	0.473	-0.688	Decreasing
D18	pH (Field)	8	8	100.00%	Yes	0.899	0.00143	-0.0378	Not Significant
D18	Potassium	8	8	100.00%	Yes	0.383	0.0648	0.255	Not Significant
D18	Redox (Field)	1	1	100.00%	No				
D18	Selenium	2	2	100.00%	No				
D18	Sodium	8	8	100.00%	Yes	0.0312	0.413	0.643	Increasing
D18	Strontium	7	7	100.00%	Yes	0.0683	0.343	0.586	Not Significant
D18	Sulfate (as SO4)	8	8	100.00%	Yes	0.72	0.0204	0.143	Not Significant
D18	Sulfur	7	7	100.00%	Yes	0.129	0.238	0.488	Not Significant
D18	Total Alkalinity (as CaCO3)	4	4	100.00%	Yes	0.75	0.111	-0.333	Not Significant
D18	Total Dissolved Solids (TDS)	4	4	100.00%	Yes	0.75	0.111	-0.333	Not Significant
D18	Total Dissolved Solids (TDS) (Filtered)	4	4	100.00%	Yes	0.071	0.833	-0.913	Not Significant
D18	Vanadium	1	1	100.00%	No				
D18	Zinc	8	8	100.00%	Yes	0.383	0.0648	0.255	Not Significant
D18	Zinc (Filtered)	7	7	100.00%	Yes	0.773	0.0204	-0.143	Not Significant
D19	Aluminium	8	8	100.00%	Yes	0.548	0.0459	-0.214	Not Significant
D19	Ammonia	7	7	100.00%	Yes	1	0	0	Not Significant
D19	Arsenic	7	7	100.00%	Yes	0.756	0.0106	0.103	Not Significant
D19	Arsenic (Filtered)	5	5	100.00%	Yes	0.48	0.1	0.316	Not Significant
D19	Barium	8	8	100.00%	Yes	0.524	0.0357	0.189	Not Significant
D19	Bicarbonate Alkalinity (as CaCO3)	7	7	100.00%	Yes	0.562	0.0567	-0.238	Not Significant
D19	Boron	8	8	100.00%	Yes	0.262	0.107	-0.327	Not Significant
D19	Boron (Filtered)	7	7	100.00%	Yes	0.381	0.111	-0.333	Not Significant
D19	Cadmium	3	3	100.00%	No				
D19	Calcium	8	8	100.00%	Yes	0.905	0.0051	-0.0714	Not Significant
D19	Carbonate Alkalinity (as CaCO3)	4	4	100.00%	Yes	0.333	0.444	-0.667	Not Significant
D19	Chloride	8	8	100.00%	Yes	0.72	0.0204	-0.143	Not Significant
D19	Chromium	7	7	100.00%	Yes	0.562	0.0567	0.238	Not Significant
D19	Cobalt	7	7	100.00%	Yes	0.362	0.0857	-0.293	Not Significant
D19	Copper	5	5	100.00%	Yes	0.448	0.1	-0.316	Not Significant
D19	Dissolved Oxygen (Field)	3	3	100.00%	No				
D19	Dissolved Oxygen (Field) (Filtered)	4	4	100.00%	Yes	0.333	0.444	0.667	Not Significant
D19	Electrical Conductivity (Field)	8	8	100.00%	Yes	0.383	0.0648	-0.255	Not Significant
D19	Fluoride	1	1	100.00%	No				
D19	Iron	7	7	100.00%	Yes	0.0302	0.51	-0.714	Decreasing
D19	Iron (Filtered)	8	8	100.00%	Yes	0.061	0.327	-0.571	Not Significant
D19	Lead	8	8	100.00%	Yes	0.899	0.00143	0.0378	Not Significant
D19	Magnesium	8	8	100.00%	Yes	0.905	0.0051	-0.0714	Not Significant
D19	Manganese	7	7	100.00%	Yes	0.773	0.0204	-0.143	Not Significant
D19	Manganese (Filtered)	8	8	100.00%	Yes	0.72	0.0204	-0.143	Not Significant
D19	Molybdenum	3	3	100.00%	No				
D19	Nickel	8	8	100.00%	Yes	0.72	0.0204	-0.143	Not Significant
D19	Nickel (Filtered)	7	7	100.00%	Yes	0.562	0.0567	-0.238	Not Significant
D19	Nitrate	2	2	100.00%	No				
D19	Nitrite + Nitrate (as N)	2	2	100.00%	No				
D19	pH (Field)	8	8	100.00%	Yes	0.79	0.00649	0.0806	Not Significant
D19	Potassium	8	8	100.00%	Yes	0.548	0.0459	-0.214	Not Significant
D19	Redox (Field)	1	1	100.00%	No				
D19	Selenium	3	3	100.00%	No				
D19	Sodium	8	8	100.00%	Yes	0.399	0.0816	-0.286	Not Significant
D19	Strontium	7	7	100.00%	Yes	0.562	0.0567	-0.238	Not Significant
D19	Sulfate (as SO4)	8	8	100.00%	Yes	0.708	0.0119	-0.109	Not Significant
D19	Sulfur	7	7	100.00%	Yes	0.381	0.111	-0.333	Not Significant
D19	Total Alkalinity (as CaCO3)	4	4	100.00%	Yes	0.333	0.444	0.667	Not Significant
D19	Total Dissolved Solids (TDS)	4	4	100.00%	Yes	1	0	0	Not Significant
D19	Total Dissolved Solids (TDS) (Filtered)	4	4	100.00%	Yes	0.0833	1	-1	Not Significant
D19	Zinc	8	8	100.00%	Yes	0.399	0.0816	-0.286	Not Significant
D19	Zinc (Filtered)	7	7	100.00%	Yes	0.381	0.111	-0.333	Not Significant
D2	Aluminium	9	9	100.00%	Yes	0.0747	0.229	0.479	Not Significant
D2	Aluminium (Filtered)	6	6	100.00%	Yes	0.469	0.111	0.333	Not Significant
D2	Ammonia	6	6	100.00%	Yes	0.427	0.0889	-0.298	Not Significant
D2	Arsenic	6	6	100.00%	Yes	0.827	0.00741	-0.0861	Not Significant
D2	Arsenic (Filtered)	2	2	100.00%	No				
D2	Barium	9	9	100.00%	Yes	0.761	0.0123	-0.111	Not Significant
D2	Bicarbonate Alkalinity (as CaCO3)	6	6	100.00%	Yes	0.719	0.04	-0.2	Not Significant
D2	Boron	9	9	100.00%	Yes	0.0277	0.35	-0.592	Decreasing
D2	Boron (Filtered)	6	6	100.00%	Yes	0.227	0.2	-0.447	Not Significant
D2	Calcium	9	9	100.00%	Yes	0.0247	0.373	-0.611	Decreasing
D2	Carbonate Alkalinity (as CaCO3)	4	4	100.00%	Yes	1	0	0	Not Significant
D2	Chloride	9	9	100.00%	Yes	0.0247	0.373	-0.611	Decreasing
D2	Chromium	3	3	100.00%	No				
D2	Cobalt	6	6	100.00%	Yes	0.444	0.0762	-0.276	Not Significant
D2	Copper	9	9	100.00%	Yes	0.121	0.194	0.441	Not Significant
D2	Copper (Filtered)	6	6	100.00%	Yes	0.845	0.00513	0.0716	Not Significant
D2	Dissolved Oxygen (Field)	2	2	100.00%	No				
D2	Dissolved Oxygen (Field) (Filtered)	4	4	100.00%	Yes	0.333	0.444	-0.667	Not Significant
D2	Electrical Conductivity (Field)	9	9	100.00%	Yes	0.00589	0.522	-0.722	Decreasing
D2	Fluoride	6	6	100.00%	Yes	1	0.00444	0.0667	Not Significant
D2	Iron	6	6	100.00%	Yes	0.0556	0.538	-0.733	Not Significant
D2	Iron (Filtered)	9	9	100.00%	Yes	0.119	0.198	-0.444	Not Significant
D2	Lead	9	9	100.00%	Yes	0.657	0.0159	0.126	Not Significant
D2	Magnesium	9	9	100.00%	Yes	0.0127	0.444	-0.667	Decreasing
D2	Manganese	6	6	100.00%	Yes	0.469	0.111	-0.333	Not Significant
D2	Manganese (Filtered)	9	9	100.00%	Yes	0.0446	0.309	-0.556	Decreasing
D2	Nickel	9	9	100.00%	Yes	0.0247	0.373	-0.611	Decreasing

Table 2
Mann Kendall Test for Trends
MTPIPER

sys_loc_code	chemical_name	N	Num Detects	Percent Detects	Meet Data Reqs	p-value	tau2	tau	Trend
D2	Nickel (Filtered)	6	6	100.00%	Yes	0.469	0.111	-0.333	Not Significant
D2	Nitrate	1	1	100.00%	No				
D2	Nitrite + Nitrate (as N)	1	1	100.00%	No				
D2	pH (Field)	9	9	100.00%	Yes	0.116	0.179	-0.423	Not Significant
D2	Potassium	9	9	100.00%	Yes	0.0752	0.25	-0.5	Not Significant
D2	Redox (Field)	1	1	100.00%	No				
D2	Selenium	8	8	100.00%	Yes	0.0218	0.508	0.713	Increasing
D2	Sodium	9	9	100.00%	Yes	0.0127	0.444	-0.667	Decreasing
D2	Strontium	6	6	100.00%	Yes	0.444	0.0762	-0.276	Not Significant
D2	Sulfate (as SO4)	9	9	100.00%	Yes	0.0247	0.373	-0.611	Decreasing
D2	Sulfur	6	6	100.00%	Yes	0.469	0.111	-0.333	Not Significant
D2	Total Alkalinity (as CaCO3)	5	5	100.00%	Yes	0.801	0.0111	0.105	Not Significant
D2	Total Dissolved Solids (TDS)	5	5	100.00%	Yes	0.0833	0.64	-0.8	Not Significant
D2	Total Dissolved Solids (TDS) (Filtered)	4	4	100.00%	Yes	0.333	0.444	-0.667	Not Significant
D2	Zinc	9	9	100.00%	Yes	0.919	0.00309	0.0556	Not Significant
D2	Zinc (Filtered)	6	6	100.00%	Yes	0.0556	0.538	0.733	Not Significant
D20	Aluminium	4	4	100.00%	Yes	0.333	0.444	-0.667	Not Significant
D20	Aluminium (Filtered)	4	4	100.00%	Yes	0.279	0.3	-0.548	Not Significant
D20	Ammonia	4	4	100.00%	Yes	1	0	0	Not Significant
D20	Arsenic	4	4	100.00%	Yes	0.071	0.833	-0.913	Not Significant
D20	Arsenic (Filtered)	4	4	100.00%	Yes	0.18	0.5	-0.707	Not Significant
D20	Barium	4	4	100.00%	Yes	0.0833	1	-1	Not Significant
D20	Bicarbonate Alkalinity (as CaCO3)	4	4	100.00%	Yes	0.333	0.444	0.667	Not Significant
D20	Boron	4	4	100.00%	Yes	0.75	0.111	-0.333	Not Significant
D20	Boron (Filtered)	4	4	100.00%	Yes	0.75	0.111	-0.333	Not Significant
D20	Cadmium	4	4	100.00%	Yes	1	0	0	Not Significant
D20	Calcium	4	4	100.00%	Yes	1	0	0	Not Significant
D20	Carbonate Alkalinity (as CaCO3)	4	4	100.00%	Yes	0.333	0.444	0.667	Not Significant
D20	Chloride	4	4	100.00%	Yes	1	0	0	Not Significant
D20	Chromium	4	4	100.00%	Yes	0.333	0.444	-0.667	Not Significant
D20	Cobalt	4	4	100.00%	Yes	0.75	0.111	-0.333	Not Significant
D20	Copper	4	4	100.00%	Yes	0.18	0.5	-0.707	Not Significant
D20	Dissolved Oxygen (Field) (Filtered)	4	4	100.00%	Yes	0.75	0.111	0.333	Not Significant
D20	Electrical Conductivity (Field)	4	4	100.00%	Yes	1	0	0	Not Significant
D20	Iron	4	4	100.00%	Yes	0.75	0.111	-0.333	Not Significant
D20	Iron (Filtered)	4	4	100.00%	Yes	0.75	0.111	-0.333	Not Significant
D20	Lead	4	4	100.00%	Yes	1	0	0	Not Significant
D20	Magnesium	4	4	100.00%	Yes	0.75	0.111	0.333	Not Significant
D20	Manganese	4	4	100.00%	Yes	0.75	0.111	0.333	Not Significant
D20	Manganese (Filtered)	4	4	100.00%	Yes	0.75	0.111	0.333	Not Significant
D20	Molybdenum	2	2	100.00%	No				
D20	Nickel	4	4	100.00%	Yes	0.333	0.444	-0.667	Not Significant
D20	Nickel (Filtered)	4	4	100.00%	Yes	0.75	0.111	-0.333	Not Significant
D20	pH (Field)	4	4	100.00%	Yes	0.75	0.111	0.333	Not Significant
D20	Potassium	4	4	100.00%	Yes	0.75	0.111	-0.333	Not Significant
D20	Redox (Field)	1	1	100.00%	No				
D20	Selenium	3	3	100.00%	No				
D20	Sodium	4	4	100.00%	Yes	0.75	0.111	-0.333	Not Significant
D20	Strontium	4	4	100.00%	Yes	0.75	0.111	-0.333	Not Significant
D20	Sulfate (as SO4)	4	4	100.00%	Yes	0.75	0.111	-0.333	Not Significant
D20	Sulfur	4	4	100.00%	Yes	1	0	0	Not Significant
D20	Total Dissolved Solids (TDS) (Filtered)	4	4	100.00%	Yes	1	0	0	Not Significant
D20	Zinc	4	4	100.00%	Yes	0.75	0.111	-0.333	Not Significant
D20	Zinc (Filtered)	4	4	100.00%	Yes	0.75	0.111	-0.333	Not Significant
D23	Dissolved Oxygen (Field) (Filtered)	1	1	100.00%	No				
D3	Aluminium	8	8	100.00%	Yes	0.688	0.0153	0.124	Not Significant
D3	Aluminium (Filtered)	4	4	100.00%	Yes	0.718	0.0333	-0.183	Not Significant
D3	Ammonia	3	3	100.00%	No				
D3	Antimony	1	1	100.00%	No				
D3	Barium	8	8	100.00%	Yes	0.399	0.0816	0.286	Not Significant
D3	Bicarbonate Alkalinity (as CaCO3)	7	7	100.00%	Yes	0.224	0.152	-0.39	Not Significant
D3	Boron	6	6	100.00%	Yes	0.469	0.111	0.333	Not Significant
D3	Boron (Filtered)	4	4	100.00%	Yes	0.071	0.833	-0.913	Not Significant
D3	Cadmium	1	1	100.00%	No				
D3	Calcium	8	8	100.00%	Yes	0.72	0.0204	-0.143	Not Significant
D3	Carbonate Alkalinity (as CaCO3)	4	4	100.00%	Yes	0.718	0.0333	0.183	Not Significant
D3	Chloride	8	8	100.00%	Yes	0.72	0.0204	-0.143	Not Significant
D3	Chromium	3	3	100.00%	No				
D3	Copper	2	2	100.00%	No				
D3	Dissolved Oxygen (Field)	3	3	100.00%	No				
D3	Dissolved Oxygen (Field) (Filtered)	4	4	100.00%	Yes	0.333	0.444	-0.667	Not Significant
D3	Electrical Conductivity (Field)	8	8	100.00%	Yes	0.905	0.0051	-0.0714	Not Significant
D3	Fluoride	1	1	100.00%	No				
D3	Iron	7	7	100.00%	Yes	0.381	0.111	-0.333	Not Significant
D3	Iron (Filtered)	8	8	100.00%	Yes	0.905	0.0051	-0.0714	Not Significant
D3	Magnesium	8	8	100.00%	Yes	0.72	0.0204	-0.143	Not Significant
D3	Manganese	7	7	100.00%	Yes	0.136	0.274	-0.524	Not Significant
D3	Manganese (Filtered)	8	8	100.00%	Yes	0.383	0.0648	-0.255	Not Significant
D3	Mercury	1	1	100.00%	No				
D3	Molybdenum	1	1	100.00%	No				
D3	Nickel	8	8	100.00%	Yes	0.0561	0.321	0.567	Not Significant
D3	Nickel (Filtered)	7	7	100.00%	Yes	0.0599	0.381	0.617	Not Significant
D3	Nitrate	5	5	100.00%	Yes	0.602	0.05	0.224	Not Significant
D3	Nitrite + Nitrate (as N)	5	5	100.00%	Yes	0.602	0.05	0.224	Not Significant
D3	pH (Field)	8	8	100.00%	Yes	0.109	0.25	-0.5	Not Significant
D3	Potassium	8	8	100.00%	Yes	1	0	0	Not Significant
D3	Redox (Field)	1	1	100.00%	No				
D3	Selenium	1	1	100.00%	No				
D3	Sodium	8	8	100.00%	Yes	0.905	0.0051	-0.0714	Not Significant
D3	Strontium	7	7	100.00%	Yes	0.136	0.274	-0.524	Not Significant

Table 2
Mann Kendall Test for Trends
MTPIPER

sys_loc_code	chemical_name	N	Num Detects	Percent Detects	Meet Data Reqs	p-value	tau2	tau	Trend
D3	Sulfate (as SO4)	8	8	100.00%	Yes	0.399	0.0816	-0.286	Not Significant
D3	Sulfur	7	7	100.00%	Yes	0.069	0.383	-0.619	Not Significant
D3	Total Alkalinity (as CaCO3)	4	4	100.00%	Yes	0.0833	1	1	Not Significant
D3	Total Dissolved Solids (TDS)	4	4	100.00%	Yes	0.333	0.444	0.667	Not Significant
D3	Total Dissolved Solids (TDS) (Filtered)	4	4	100.00%	Yes	0.718	0.0333	0.183	Not Significant
D3	Zinc	8	8	100.00%	Yes	0.441	0.0536	0.231	Not Significant
D3	Zinc (Filtered)	6	6	100.00%	Yes	0.702	0.019	-0.138	Not Significant
D4	Aluminium	9	9	100.00%	Yes	0.119	0.198	-0.444	Not Significant
D4	Aluminium (Filtered)	6	6	100.00%	Yes	0.126	0.305	-0.552	Not Significant
D4	Ammonia	6	6	100.00%	Yes	0.251	0.171	-0.414	Not Significant
D4	Arsenic	9	9	100.00%	Yes	0.116	0.179	-0.423	Not Significant
D4	Arsenic (Filtered)	6	6	100.00%	Yes	0.0556	0.538	-0.733	Not Significant
D4	Barium	9	9	100.00%	Yes	0.313	0.0833	0.289	Not Significant
D4	Beryllium	6	6	100.00%	Yes	NA			
D4	Cadmium	9	9	100.00%	Yes	0.652	0.0171	-0.131	Not Significant
D4	Calcium	9	9	100.00%	Yes	0.249	0.096	-0.31	Not Significant
D4	Chloride	9	9	100.00%	Yes	0.173	0.134	0.366	Not Significant
D4	Chromium	9	9	100.00%	Yes	0.0864	0.272	-0.522	Not Significant
D4	Cobalt	6	6	100.00%	Yes	0.827	0.00741	-0.0861	Not Significant
D4	Copper	2	2	100.00%	No				
D4	Copper (Filtered)	1	1	100.00%	No				
D4	Dissolved Oxygen (Field)	2	2	100.00%	No				
D4	Dissolved Oxygen (Field) (Filtered)	4	4	100.00%	Yes	0.071	0.833	0.913	Not Significant
D4	Electrical Conductivity (Field)	9	9	100.00%	Yes	0.0673	0.259	-0.509	Not Significant
D4	Fluoride	2	2	100.00%	No				
D4	Iron	6	6	100.00%	Yes	0.0556	0.538	-0.733	Not Significant
D4	Iron (Filtered)	9	9	100.00%	Yes	0.761	0.0123	-0.111	Not Significant
D4	Lead	9	9	100.00%	Yes	0.657	0.0159	-0.126	Not Significant
D4	Magnesium	9	9	100.00%	Yes	0.26	0.111	-0.333	Not Significant
D4	Manganese	6	6	100.00%	Yes	1	0.00444	-0.0667	Not Significant
D4	Manganese (Filtered)	9	9	100.00%	Yes	0.358	0.0772	-0.278	Not Significant
D4	Nickel	9	9	100.00%	Yes	0.0333	0.371	-0.609	Decreasing
D4	Nickel (Filtered)	6	6	100.00%	Yes	0.421	0.0889	0.298	Not Significant
D4	Nitrate	1	1	100.00%	No				
D4	Nitrite + Nitrate (as N)	1	1	100.00%	No				
D4	pH (Field)	9	9	100.00%	Yes	0.669	0.0139	-0.118	Not Significant
D4	Potassium	9	9	100.00%	Yes	0.18	0.151	0.389	Not Significant
D4	Redox (Field)	1	1	100.00%	No				
D4	Selenium	2	2	100.00%	No				
D4	Sodium	9	9	100.00%	Yes	0.0159	0.42	0.648	Increasing
D4	Strontium	6	6	100.00%	Yes	0.702	0.019	-0.138	Not Significant
D4	Sulfate (as SO4)	9	9	100.00%	Yes	0.761	0.0123	-0.111	Not Significant
D4	Sulfur	6	6	100.00%	Yes	0.126	0.305	-0.552	Not Significant
D4	Total Dissolved Solids (TDS)	5	5	100.00%	Yes	0.0833	0.64	-0.8	Not Significant
D4	Total Dissolved Solids (TDS) (Filtered)	4	4	100.00%	Yes	1	0	0	Not Significant
D4	Zinc	9	9	100.00%	Yes	0.477	0.0494	-0.222	Not Significant
D4	Zinc (Filtered)	6	6	100.00%	Yes	1	0.00444	-0.0667	Not Significant
D5	Aluminium	9	9	100.00%	Yes	0.0186	0.42	0.648	Increasing
D5	Aluminium (Filtered)	6	6	100.00%	Yes	0.0558	0.476	0.69	Not Significant
D5	Ammonia	6	6	100.00%	Yes	1	0	0	Not Significant
D5	Arsenic	3	3	100.00%	No				
D5	Arsenic (Filtered)	2	2	100.00%	No				
D5	Barium	9	9	100.00%	Yes	0.737	0.00926	0.0962	Not Significant
D5	Beryllium	6	6	100.00%	Yes	0.275	0.185	0.43	Not Significant
D5	Bicarbonate Alkalinity (as CaCO3)	6	6	100.00%	Yes	1	0.00444	-0.0667	Not Significant
D5	Boron	9	9	100.00%	Yes	0.664	0.0148	-0.122	Not Significant
D5	Boron (Filtered)	6	6	100.00%	Yes	0.444	0.0762	-0.276	Not Significant
D5	Calcium	9	9	100.00%	Yes	0.753	0.00714	-0.0845	Not Significant
D5	Carbonate Alkalinity (as CaCO3)	4	4	100.00%	Yes	0.75	0.111	-0.333	Not Significant
D5	Chloride	9	9	100.00%	Yes	0.477	0.0494	0.222	Not Significant
D5	Cobalt	6	6	100.00%	Yes	0.00741	0.933	0.966	Increasing
D5	Copper	1	1	100.00%	No				
D5	Dissolved Oxygen (Field)	2	2	100.00%	No				
D5	Dissolved Oxygen (Field) (Filtered)	4	4	100.00%	Yes	0.279	0.3	-0.548	Not Significant
D5	Electrical Conductivity (Field)	9	9	100.00%	Yes	0.173	0.134	-0.366	Not Significant
D5	Fluoride	7	7	100.00%	Yes	0.562	0.0567	-0.238	Not Significant
D5	Iron	6	6	100.00%	Yes	0.272	0.218	-0.467	Not Significant
D5	Iron (Filtered)	9	9	100.00%	Yes	0.26	0.111	-0.333	Not Significant
D5	Magnesium	9	9	100.00%	Yes	0.761	0.0123	-0.111	Not Significant
D5	Manganese	6	6	100.00%	Yes	0.272	0.218	0.467	Not Significant
D5	Manganese (Filtered)	9	9	100.00%	Yes	0.761	0.0123	0.111	Not Significant
D5	Nickel	9	9	100.00%	Yes	0.11	0.189	0.435	Not Significant
D5	Nickel (Filtered)	6	6	100.00%	Yes	0.0556	0.538	0.733	Not Significant
D5	Nitrate	2	2	100.00%	No				
D5	Nitrite + Nitrate (as N)	2	2	100.00%	No				
D5	pH (Field)	9	9	100.00%	Yes	0.173	0.134	-0.366	Not Significant
D5	Potassium	9	9	100.00%	Yes	0.917	0.000794	0.0282	Not Significant
D5	Redox (Field)	1	1	100.00%	No				
D5	Selenium	7	7	100.00%	Yes	0.497	0.0544	0.233	Not Significant
D5	Sodium	9	9	100.00%	Yes	0.477	0.0494	0.222	Not Significant
D5	Strontium	6	6	100.00%	Yes	1	0.00444	0.0667	Not Significant
D5	Sulfate (as SO4)	9	9	100.00%	Yes	0.6	0.0198	-0.141	Not Significant
D5	Sulfur	6	6	100.00%	Yes	0.126	0.305	0.552	Not Significant
D5	Total Alkalinity (as CaCO3)	5	5	100.00%	Yes	0.233	0.36	-0.6	Not Significant
D5	Total Dissolved Solids (TDS)	5	5	100.00%	Yes	0.233	0.36	-0.6	Not Significant
D5	Total Dissolved Solids (TDS) (Filtered)	4	4	100.00%	Yes	0.75	0.111	0.333	Not Significant
D5	Zinc	9	9	100.00%	Yes	0.00877	0.496	0.704	Increasing
D5	Zinc (Filtered)	6	6	100.00%	Yes	0.136	0.36	0.6	Not Significant
D8	Aluminium	8	8	100.00%	Yes	0.708	0.0119	0.109	Not Significant
D8	Aluminium (Filtered)	6	6	100.00%	Yes	0.702	0.019	-0.138	Not Significant

Table 2
Mann Kendall Test for Trends
MTPIPER

sys_loc_code	chemical_name	N	Num Detects	Percent Detects	Meet Data Reqs	p-value	tau2	tau	Trend
D8	Ammonia	3	3	100.00%	No				
D8	Arsenic	1	1	100.00%	No				
D8	Barium	8	8	100.00%	Yes	0.315	0.0879	-0.296	Not Significant
D8	Beryllium	1	1	100.00%	No				
D8	Bicarbonate Alkalinity (as CaCO3)	7	7	100.00%	Yes	0.224	0.152	0.39	Not Significant
D8	Boron	2	2	100.00%	No				
D8	Boron (Filtered)	1	1	100.00%	No				
D8	Cadmium	1	1	100.00%	No				
D8	Calcium	8	8	100.00%	Yes	0.179	0.184	-0.429	Not Significant
D8	Carbonate Alkalinity (as CaCO3)	4	4	100.00%	Yes	0.75	0.111	0.333	Not Significant
D8	Chloride	8	8	100.00%	Yes	0.72	0.0204	-0.143	Not Significant
D8	Cobalt	4	4	100.00%	Yes	0.333	0.444	-0.667	Not Significant
D8	Copper	8	8	100.00%	Yes	0.895	0.0017	0.0412	Not Significant
D8	Copper (Filtered)	7	7	100.00%	Yes	NA			
D8	Dissolved Oxygen (Field)	3	3	100.00%	No				
D8	Dissolved Oxygen (Field) (Filtered)	4	4	100.00%	Yes	1	0	0	Not Significant
D8	Electrical Conductivity (Field)	8	8	100.00%	Yes	0.275	0.128	-0.357	Not Significant
D8	Fluoride	1	1	100.00%	No				
D8	Iron	7	7	100.00%	Yes	0.773	0.0204	-0.143	Not Significant
D8	Iron (Filtered)	6	6	100.00%	Yes	0.444	0.0762	0.276	Not Significant
D8	Lead	1	1	100.00%	No				
D8	Magnesium	8	8	100.00%	Yes	0.179	0.184	-0.429	Not Significant
D8	Manganese	7	7	100.00%	Yes	0.773	0.0204	-0.143	Not Significant
D8	Manganese (Filtered)	8	8	100.00%	Yes	0.383	0.0648	-0.255	Not Significant
D8	Molybdenum	1	1	100.00%	No				
D8	Nickel	8	8	100.00%	Yes	0.702	0.0129	-0.113	Not Significant
D8	Nickel (Filtered)	7	7	100.00%	Yes	0.773	0.0204	-0.143	Not Significant
D8	Nitrate	6	6	100.00%	Yes	0.559	0.0462	-0.215	Not Significant
D8	Nitrite + Nitrate (as N)	6	6	100.00%	Yes	0.559	0.0462	-0.215	Not Significant
D8	pH (Field)	8	8	100.00%	Yes	0.72	0.0204	-0.143	Not Significant
D8	Potassium	8	8	100.00%	Yes	0.179	0.184	-0.429	Not Significant
D8	Redox (Field)	1	1	100.00%	No				
D8	Sodium	8	8	100.00%	Yes	0.275	0.128	-0.357	Not Significant
D8	Strontium	7	7	100.00%	Yes	0.239	0.184	-0.429	Not Significant
D8	Sulfate (as SO4)	8	8	100.00%	Yes	0.179	0.184	-0.429	Not Significant
D8	Sulfur	7	7	100.00%	Yes	0.239	0.184	-0.429	Not Significant
D8	Total Alkalinity (as CaCO3)	4	4	100.00%	Yes	0.718	0.0333	-0.183	Not Significant
D8	Total Dissolved Solids (TDS)	4	4	100.00%	Yes	0.75	0.111	0.333	Not Significant
D8	Total Dissolved Solids (TDS) (Filtered)	4	4	100.00%	Yes	0.333	0.444	-0.667	Not Significant
D8	Zinc	8	8	100.00%	Yes	0.72	0.0204	-0.143	Not Significant
D8	Zinc (Filtered)	7	7	100.00%	Yes	0.562	0.0567	-0.238	Not Significant
D9	Aluminium	8	8	100.00%	Yes	0.179	0.184	-0.429	Not Significant
D9	Ammonia	7	7	100.00%	Yes	0.069	0.383	0.619	Not Significant
D9	Antimony	1	1	100.00%	No				
D9	Arsenic	7	7	100.00%	Yes	0.543	0.0381	0.195	Not Significant
D9	Arsenic (Filtered)	3	3	100.00%	No				
D9	Barium	8	8	100.00%	Yes	0.451	0.0495	-0.222	Not Significant
D9	Bicarbonate Alkalinity (as CaCO3)	7	7	100.00%	Yes	0.562	0.0567	0.238	Not Significant
D9	Boron	8	8	100.00%	Yes	0.034	0.382	0.618	Increasing
D9	Boron (Filtered)	7	7	100.00%	Yes	0.773	0.0204	0.143	Not Significant
D9	Cadmium	3	3	100.00%	No				
D9	Calcium	8	8	100.00%	Yes	0.0615	0.298	-0.546	Not Significant
D9	Carbonate Alkalinity (as CaCO3)	4	4	100.00%	Yes	1	0	0	Not Significant
D9	Chloride	8	8	100.00%	Yes	0.905	0.0051	-0.0714	Not Significant
D9	Chromium	4	4	100.00%	Yes	0.439	0.167	0.408	Not Significant
D9	Cobalt	7	7	100.00%	Yes	0.0302	0.51	-0.714	Decreasing
D9	Copper	3	3	100.00%	No				
D9	Copper (Filtered)	1	1	100.00%	No				
D9	Dissolved Oxygen (Field)	3	3	100.00%	No				
D9	Dissolved Oxygen (Field) (Filtered)	4	4	100.00%	Yes	0.75	0.111	-0.333	Not Significant
D9	Electrical Conductivity (Field)	8	8	100.00%	Yes	0.905	0.0051	-0.0714	Not Significant
D9	Fluoride	2	2	100.00%	No				
D9	Iron	7	7	100.00%	Yes	0.0302	0.51	-0.714	Decreasing
D9	Iron (Filtered)	8	8	100.00%	Yes	0.275	0.128	-0.357	Not Significant
D9	Lead	5	5	100.00%	Yes	0.207	0.278	-0.527	Not Significant
D9	Magnesium	8	8	100.00%	Yes	0.548	0.0459	-0.214	Not Significant
D9	Manganese	7	7	100.00%	Yes	0.381	0.111	-0.333	Not Significant
D9	Manganese (Filtered)	8	8	100.00%	Yes	0.0141	0.51	-0.714	Decreasing
D9	Mercury	5	5	100.00%	Yes	0.817	0.04	-0.2	Not Significant
D9	Molybdenum	2	2	100.00%	No				
D9	Nickel	8	8	100.00%	Yes	0.901	0.00132	-0.0364	Not Significant
D9	Nickel (Filtered)	7	7	100.00%	Yes	0.224	0.152	-0.39	Not Significant
D9	Nitrate	1	1	100.00%	No				
D9	Nitrite + Nitrate (as N)	1	1	100.00%	No				
D9	pH (Field)	8	8	100.00%	Yes	0.199	0.149	-0.386	Not Significant
D9	Potassium	8	8	100.00%	Yes	0.72	0.0204	-0.143	Not Significant
D9	Redox (Field)	1	1	100.00%	No				
D9	Selenium	6	6	100.00%	Yes	0.0795	0.415	-0.645	Not Significant
D9	Sodium	8	8	100.00%	Yes	0.548	0.0459	0.214	Not Significant
D9	Strontium	7	7	100.00%	Yes	0.543	0.0381	-0.195	Not Significant
D9	Sulfate (as SO4)	8	8	100.00%	Yes	0.72	0.0204	-0.143	Not Significant
D9	Sulfur	7	7	100.00%	Yes	0.381	0.111	-0.333	Not Significant
D9	Total Alkalinity (as CaCO3)	4	4	100.00%	Yes	0.75	0.111	0.333	Not Significant
D9	Total Dissolved Solids (TDS)	4	4	100.00%	Yes	0.75	0.111	0.333	Not Significant
D9	Total Dissolved Solids (TDS) (Filtered)	4	4	100.00%	Yes	0.333	0.444	-0.667	Not Significant
D9	Zinc	8	8	100.00%	Yes	0.105	0.224	-0.473	Not Significant
D9	Zinc (Filtered)	7	7	100.00%	Yes	0.136	0.274	-0.524	Not Significant
MPGM5-D5	Aluminium	9	9	100.00%	Yes	0.917	0.000794	0.0282	Not Significant
MPGM5-D5	Aluminium (Filtered)	3	3	100.00%	No				
MPGM5-D5	Ammonia	6	6	100.00%	Yes	0.719	0.04	0.2	Not Significant

Table 2
Mann Kendall Test for Trends
MTPIPER

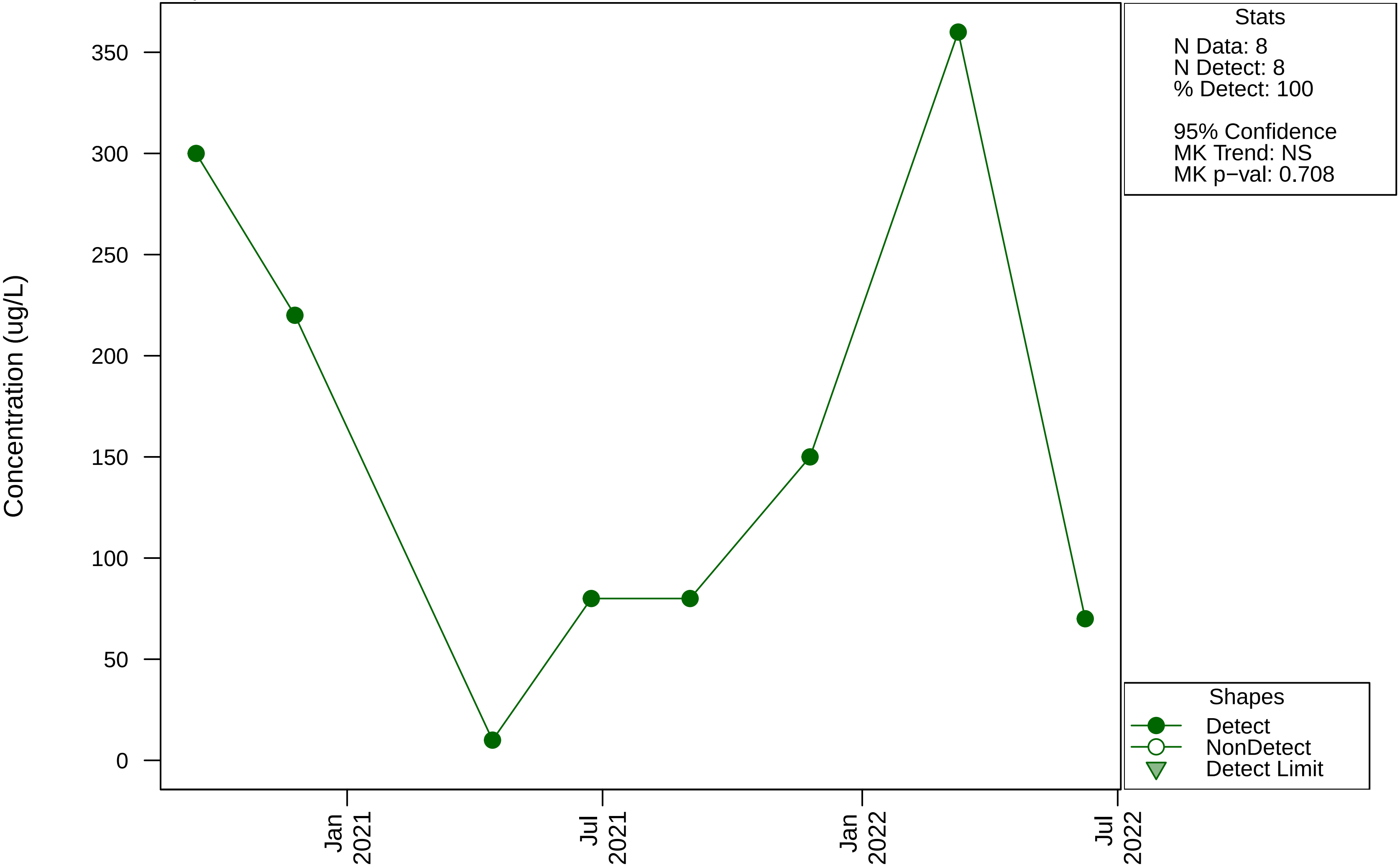
sys_loc_code	chemical_name	N	Num Detects	Percent Detects	Meet Data Reqs	p-value	tau2	tau	Trend
MPGM5-D5	Antimony	1	1	100.00%	No				
MPGM5-D5	Arsenic	7	7	100.00%	Yes	0.0334	0.467	0.683	Increasing
MPGM5-D5	Arsenic (Filtered)	5	5	100.00%	Yes	0.0833	0.64	0.8	Not Significant
MPGM5-D5	Barium	9	9	100.00%	Yes	0.463	0.0389	0.197	Not Significant
MPGM5-D5	Bicarbonate Alkalinity (as CaCO3)	6	6	100.00%	Yes	0.0556	0.538	0.733	Not Significant
MPGM5-D5	Boron	9	9	100.00%	Yes	0.0446	0.309	0.556	Increasing
MPGM5-D5	Boron (Filtered)	6	6	100.00%	Yes	0.136	0.36	0.6	Not Significant
MPGM5-D5	Cadmium	9	9	100.00%	Yes	0.345	0.0643	0.254	Not Significant
MPGM5-D5	Calcium	9	9	100.00%	Yes	0.761	0.0123	0.111	Not Significant
MPGM5-D5	Carbonate Alkalinity (as CaCO3)	4	4	100.00%	Yes	0.0833	1	1	Not Significant
MPGM5-D5	Chloride	27	27	100.00%	Yes	0.0493	0.0733	0.271	Increasing
MPGM5-D5	Chromium	4	4	100.00%	Yes	0.279	0.3	0.548	Not Significant
MPGM5-D5	Cobalt	6	6	100.00%	Yes	0.136	0.36	0.6	Not Significant
MPGM5-D5	Copper	9	9	100.00%	Yes	0.119	0.198	0.444	Not Significant
MPGM5-D5	Copper (Filtered)	6	6	100.00%	Yes	0.444	0.0762	0.276	Not Significant
MPGM5-D5	Dissolved Oxygen (Field)	2	2	100.00%	No				
MPGM5-D5	Dissolved Oxygen (Field) (Filtered)	4	4	100.00%	Yes	1	0	0	Not Significant
MPGM5-D5	Electrical Conductivity (Field)	27	27	100.00%	Yes	0.01	0.123	0.35	Increasing
MPGM5-D5	Fluoride	3	3	100.00%	No				
MPGM5-D5	Iron	6	6	100.00%	Yes	0.272	0.218	0.467	Not Significant
MPGM5-D5	Iron (Filtered)	9	9	100.00%	Yes	0.00243	0.605	0.778	Increasing
MPGM5-D5	Lead	7	7	100.00%	Yes	0.069	0.383	0.619	Not Significant
MPGM5-D5	Magnesium	9	9	100.00%	Yes	0.249	0.096	-0.31	Not Significant
MPGM5-D5	Manganese	6	6	100.00%	Yes	0.272	0.218	0.467	Not Significant
MPGM5-D5	Manganese (Filtered)	9	9	100.00%	Yes	0.173	0.134	0.366	Not Significant
MPGM5-D5	Mercury	5	5	100.00%	Yes	0.207	0.278	0.527	Not Significant
MPGM5-D5	Molybdenum	3	3	100.00%	No				
MPGM5-D5	Nickel	9	9	100.00%	Yes	0.0247	0.373	0.611	Increasing
MPGM5-D5	Nickel (Filtered)	6	6	100.00%	Yes	0.0167	0.751	0.867	Increasing
MPGM5-D5	Nitrate	3	3	100.00%	No				
MPGM5-D5	Nitrite (as NO2-)	2	2	100.00%	No				
MPGM5-D5	Nitrite + Nitrate (as N)	3	3	100.00%	No				
MPGM5-D5	pH (Field)	27	27	100.00%	Yes	<0.001	0.443	0.666	Increasing
MPGM5-D5	Potassium	9	9	100.00%	Yes	0.0127	0.444	0.667	Increasing
MPGM5-D5	Redox (Field)	1	1	100.00%	No				
MPGM5-D5	Selenium	8	8	100.00%	Yes	0.548	0.0459	0.214	Not Significant
MPGM5-D5	Sodium	9	9	100.00%	Yes	0.0247	0.373	0.611	Increasing
MPGM5-D5	Strontium	6	6	100.00%	Yes	0.136	0.36	0.6	Not Significant
MPGM5-D5	Sulfate (as SO4)	27	27	100.00%	Yes	0.156	0.0376	0.194	Not Significant
MPGM5-D5	Sulfur	6	6	100.00%	Yes	0.00278	1	1	Increasing
MPGM5-D5	Total Alkalinity (as CaCO3)	5	5	100.00%	Yes	0.817	0.04	0.2	Not Significant
MPGM5-D5	Total Dissolved Solids (TDS)	5	5	100.00%	Yes	0.817	0.04	-0.2	Not Significant
MPGM5-D5	Total Dissolved Solids (TDS) (Filtered)	4	4	100.00%	Yes	0.333	0.444	0.667	Not Significant
MPGM5-D5	Zinc	9	9	100.00%	Yes	0.119	0.198	0.444	Not Significant
MPGM5-D5	Zinc (Filtered)	6	6	100.00%	Yes	0.0558	0.476	0.69	Not Significant
MPGM5-D6	Aluminium	7	7	100.00%	Yes	0.562	0.0567	0.238	Not Significant
MPGM5-D6	Ammonia	5	5	100.00%	Yes	0.801	0.0111	0.105	Not Significant
MPGM5-D6	Antimony	1	1	100.00%	No				
MPGM5-D6	Arsenic	7	7	100.00%	Yes	0.634	0.0252	-0.159	Not Significant
MPGM5-D6	Arsenic (Filtered)	4	4	100.00%	Yes	0.18	0.5	-0.707	Not Significant
MPGM5-D6	Barium	7	7	100.00%	Yes	0.0302	0.51	0.714	Increasing
MPGM5-D6	Bicarbonate Alkalinity (as CaCO3)	5	5	100.00%	Yes	0.817	0.04	0.2	Not Significant
MPGM5-D6	Boron	3	3	100.00%	No				
MPGM5-D6	Boron (Filtered)	1	1	100.00%	No				
MPGM5-D6	Cadmium	3	3	100.00%	No				
MPGM5-D6	Calcium	7	7	100.00%	Yes	0.381	0.111	-0.333	Not Significant
MPGM5-D6	Carbonate Alkalinity (as CaCO3)	4	4	100.00%	Yes	0.75	0.111	0.333	Not Significant
MPGM5-D6	Chloride	26	26	100.00%	Yes	0.251	0.0258	0.161	Not Significant
MPGM5-D6	Chromium	4	4	100.00%	Yes	0.718	0.0333	-0.183	Not Significant
MPGM5-D6	Cobalt	5	5	100.00%	Yes	0.817	0.04	0.2	Not Significant
MPGM5-D6	Copper	6	6	100.00%	Yes	0.107	0.356	0.596	Not Significant
MPGM5-D6	Copper (Filtered)	1	1	100.00%	No				
MPGM5-D6	Dissolved Oxygen (Field)	1	1	100.00%	No				
MPGM5-D6	Dissolved Oxygen (Field) (Filtered)	4	4	100.00%	Yes	0.75	0.111	0.333	Not Significant
MPGM5-D6	Electrical Conductivity (Field)	26	26	100.00%	Yes	0.28	0.0229	0.151	Not Significant
MPGM5-D6	Fluoride	1	1	100.00%	No				
MPGM5-D6	Iron	5	5	100.00%	Yes	0.0833	0.64	-0.8	Not Significant
MPGM5-D6	Iron (Filtered)	7	7	100.00%	Yes	0.0302	0.51	-0.714	Decreasing
MPGM5-D6	Lead	6	6	100.00%	Yes	0.702	0.019	0.138	Not Significant
MPGM5-D6	Magnesium	7	7	100.00%	Yes	0.381	0.111	-0.333	Not Significant
MPGM5-D6	Manganese	5	5	100.00%	Yes	0.817	0.04	-0.2	Not Significant
MPGM5-D6	Manganese (Filtered)	7	7	100.00%	Yes	0.069	0.383	-0.619	Not Significant
MPGM5-D6	Mercury	3	3	100.00%	No				
MPGM5-D6	Nickel	7	7	100.00%	Yes	1	0.00227	-0.0476	Not Significant
MPGM5-D6	Nickel (Filtered)	5	5	100.00%	Yes	0.207	0.278	0.527	Not Significant
MPGM5-D6	Nitrate	5	5	100.00%	Yes	0.0833	0.64	0.8	Not Significant
MPGM5-D6	Nitrite (as NO2-)	3	3	100.00%	No				
MPGM5-D6	Nitrite + Nitrate (as N)	5	5	100.00%	Yes	0.801	0.0111	0.105	Not Significant
MPGM5-D6	pH (Field)	26	26	100.00%	Yes	<0.001	0.31	0.557	Increasing
MPGM5-D6	Potassium	7	7	100.00%	Yes	0.381	0.111	0.333	Not Significant
MPGM5-D6	Redox (Field)	1	1	100.00%	No				
MPGM5-D6	Selenium	6	6	100.00%	Yes	0.837	0.00606	0.0778	Not Significant
MPGM5-D6	Sodium	7	7	100.00%	Yes	0.562	0.0567	-0.238	Not Significant

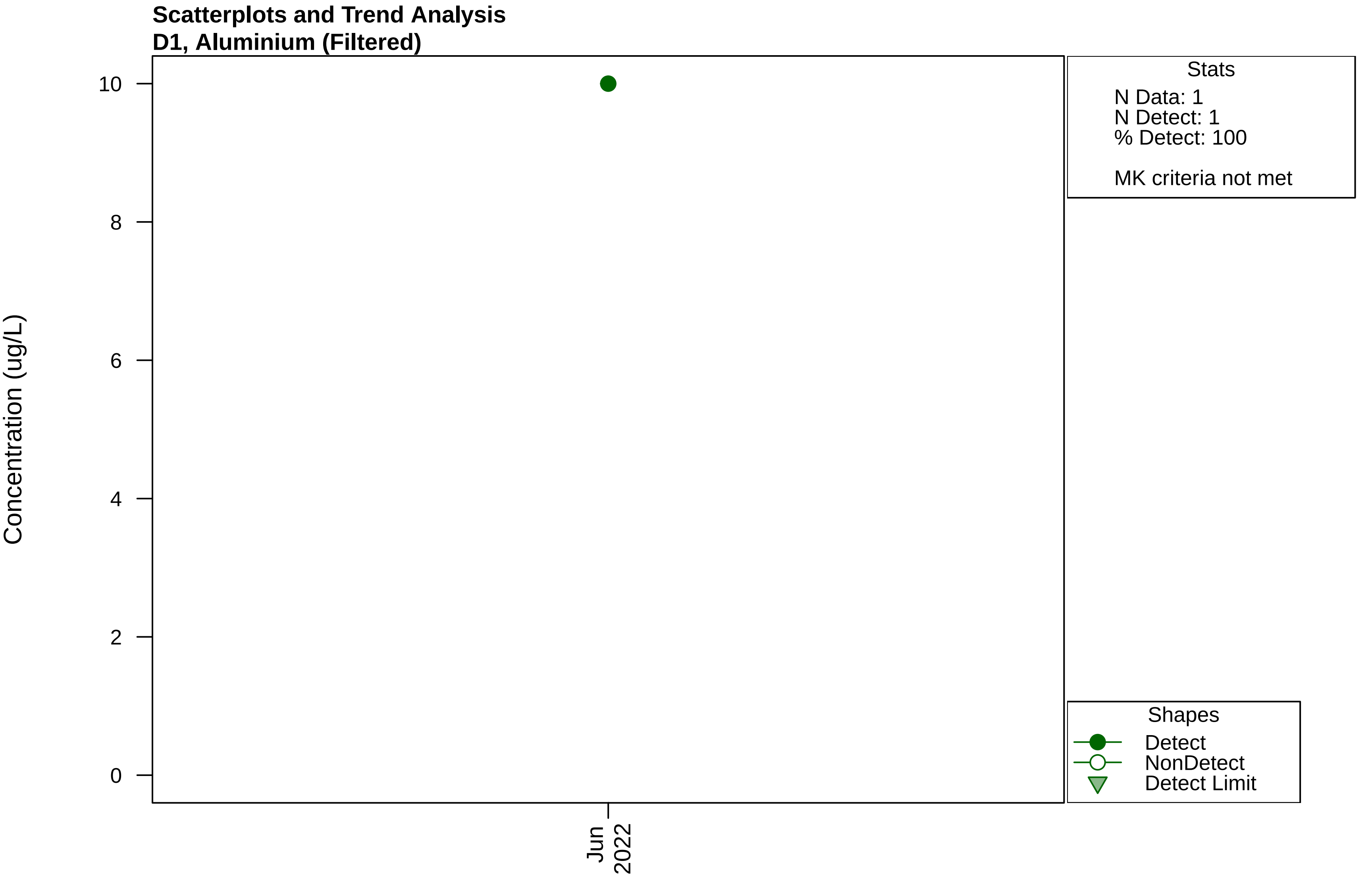
Table 2
Mann Kendall Test for Trends
MTPIPER

sys_loc_code	chemical_name	N	Num Detects	Percent Detects	Meet Data Reqs	p-value	tau2	tau	Trend
MPGM5-D6	Strontium	5	5	100.00%	Yes	0.801	0.0111	0.105	Not Significant
MPGM5-D6	Sulfate (as SO4)	26	26	100.00%	Yes	0.252	0.0257	0.16	Not Significant
MPGM5-D6	Sulfur	5	5	100.00%	Yes	0.817	0.04	0.2	Not Significant
MPGM5-D6	Total Alkalinity (as CaCO3)	3	3	100.00%	No				
MPGM5-D6	Total Dissolved Solids (TDS)	3	3	100.00%	No				
MPGM5-D6	Total Dissolved Solids (TDS) (Filtered)	4	4	100.00%	Yes	0.75	0.111	0.333	Not Significant
MPGM5-D6	Zinc	7	7	100.00%	Yes	0.224	0.152	0.39	Not Significant
MPGM5-D6	Zinc (Filtered)	5	5	100.00%	Yes	0.233	0.36	0.6	Not Significant

Notes
Data file input: WG 2019-22 MK Input.xlsx
Data date range: NA to NA
Non-detects were substituted with a value of zero for trend analysis
N: number of data points
Meet Data Reqs: trend tests were performed only if the dataset had >=4 detected values and >=50 percent detects.
tau2: tau^2, measure of linear model fit
tau: Kendall's tau statistic
p-value: A two-sided p-value describing the probability of the H0 being true (a=0.05)

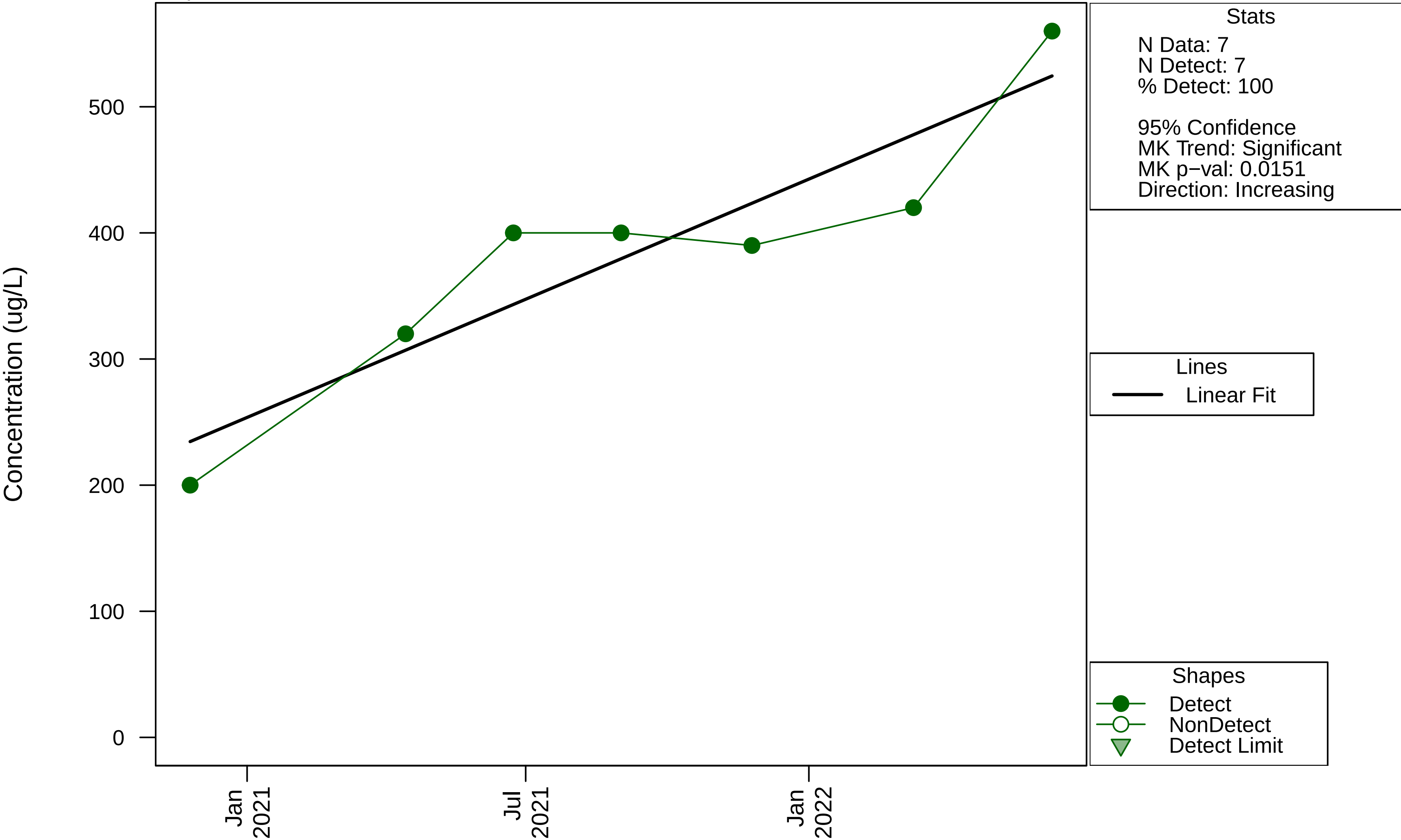
Scatterplots and Trend Analysis
D1, Aluminium

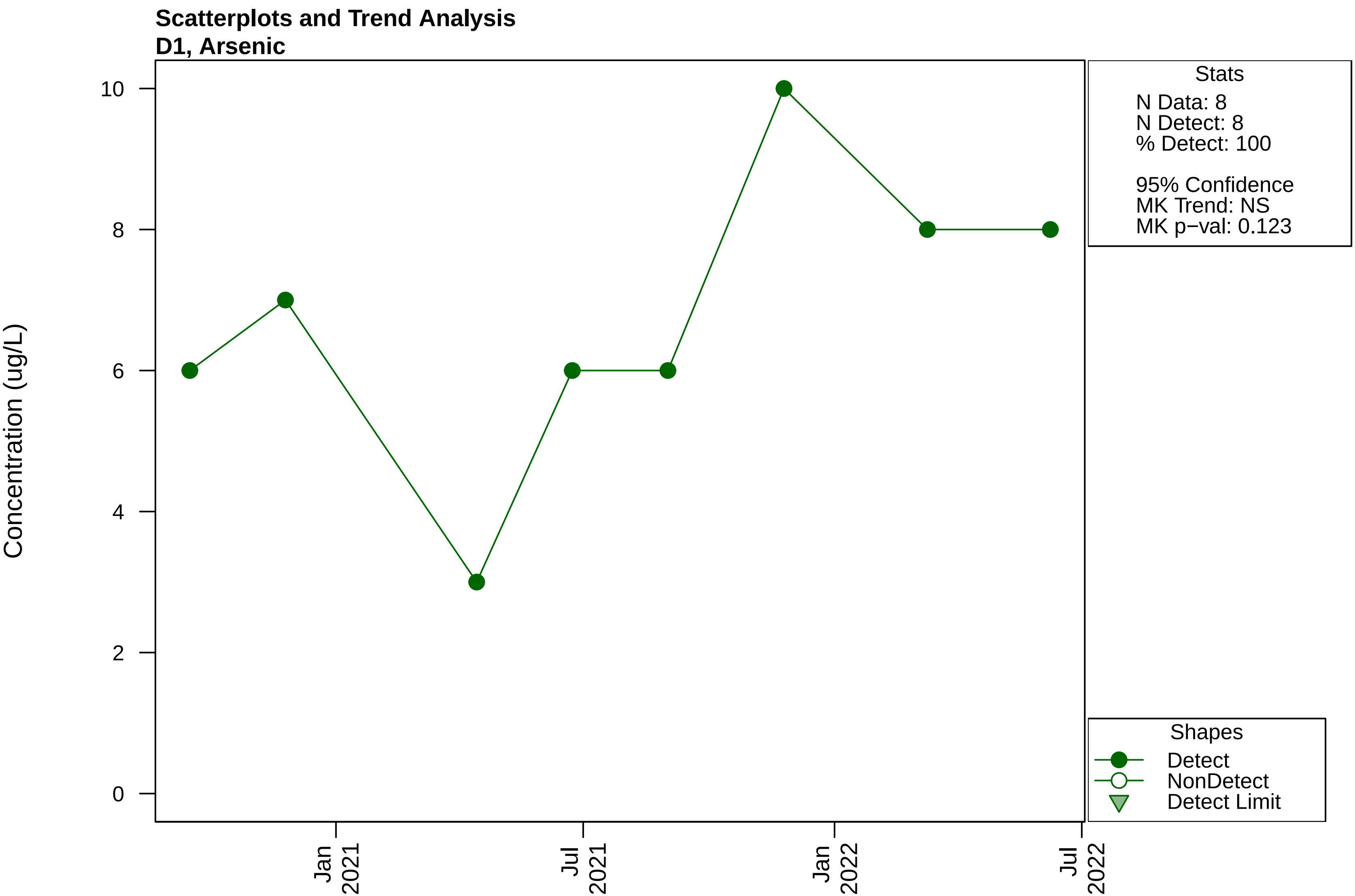




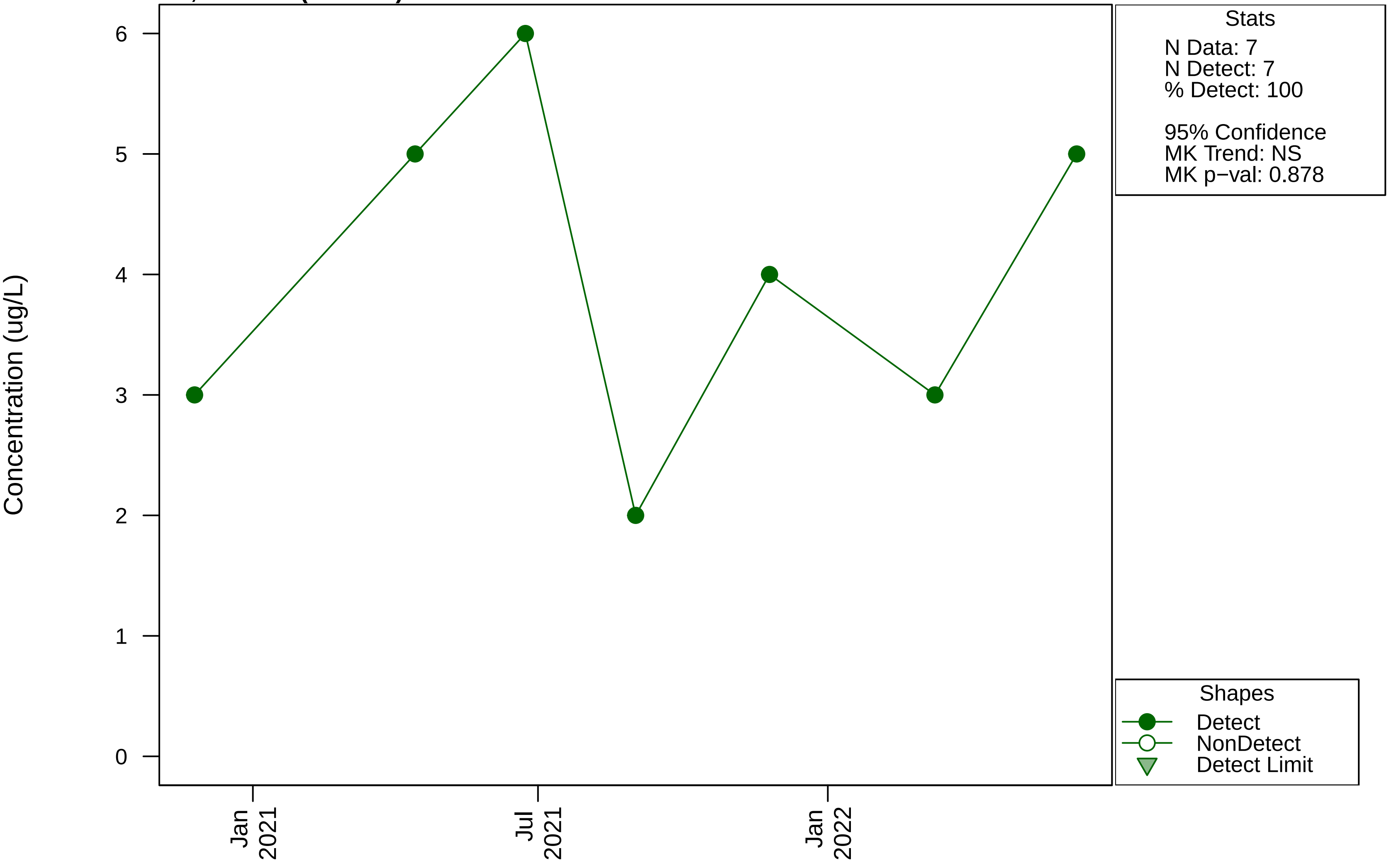
Scatterplots and Trend Analysis
D1, Aluminium (Filtered)
Concentration (ug/L)
0
2
4
6
8
10
Jun
2022
Stats
N Data: 1
N Detect: 1
% Detect: 100
MK criteria not met
Shapes
Detect
NonDetect
Detect Limit

Scatterplots and Trend Analysis
D1, Ammonia

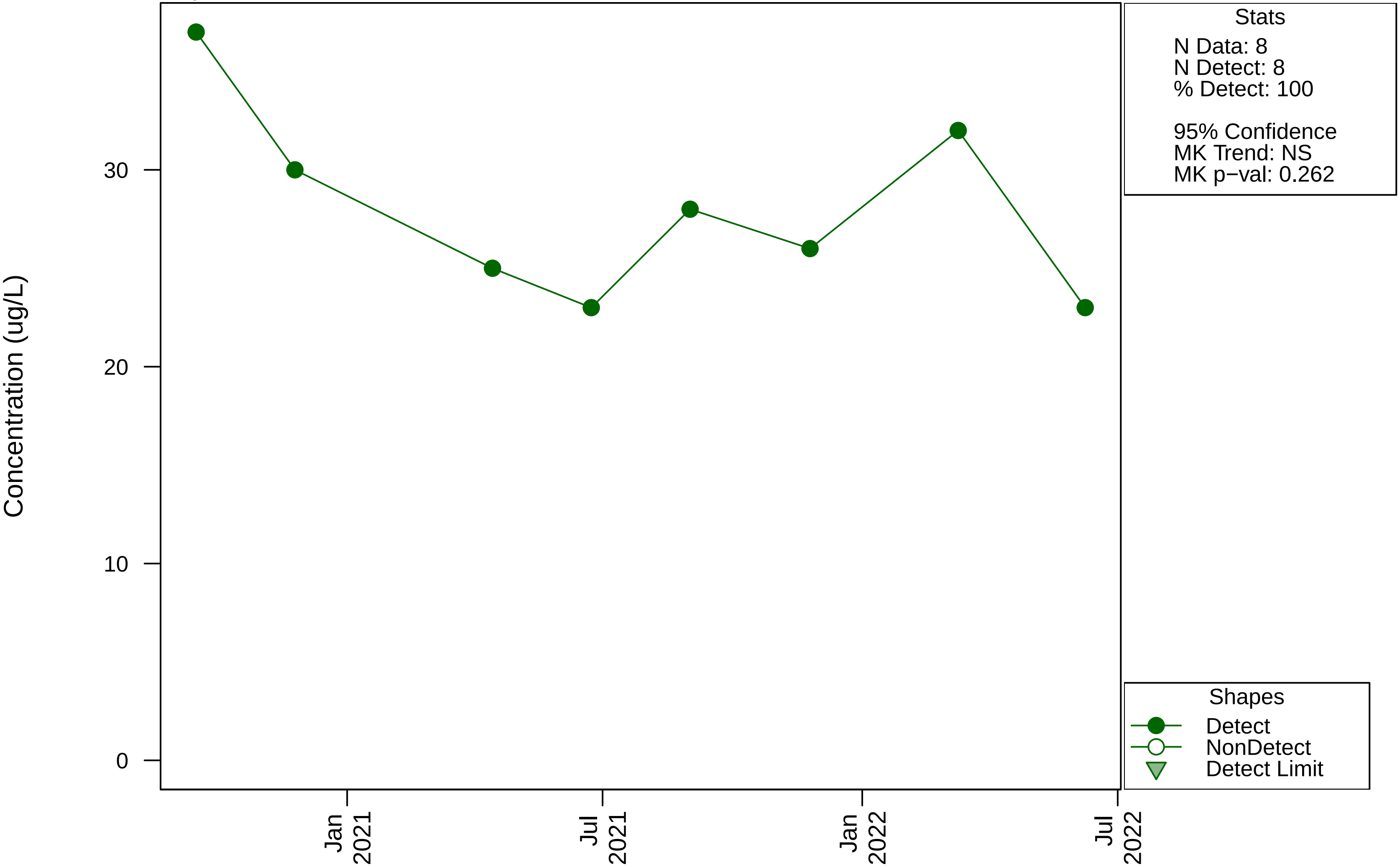



Scatterplots and Trend Analysis
D1, Arsenic
Concentration (ug/L)
0
2
4
6
8
10
Jan 2021
Jul 2021
Jan 2022
Jul 2022
Stats
N Data: 8
N Detect: 8
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.123
Shapes
Detect
NonDetect
Detect Limit

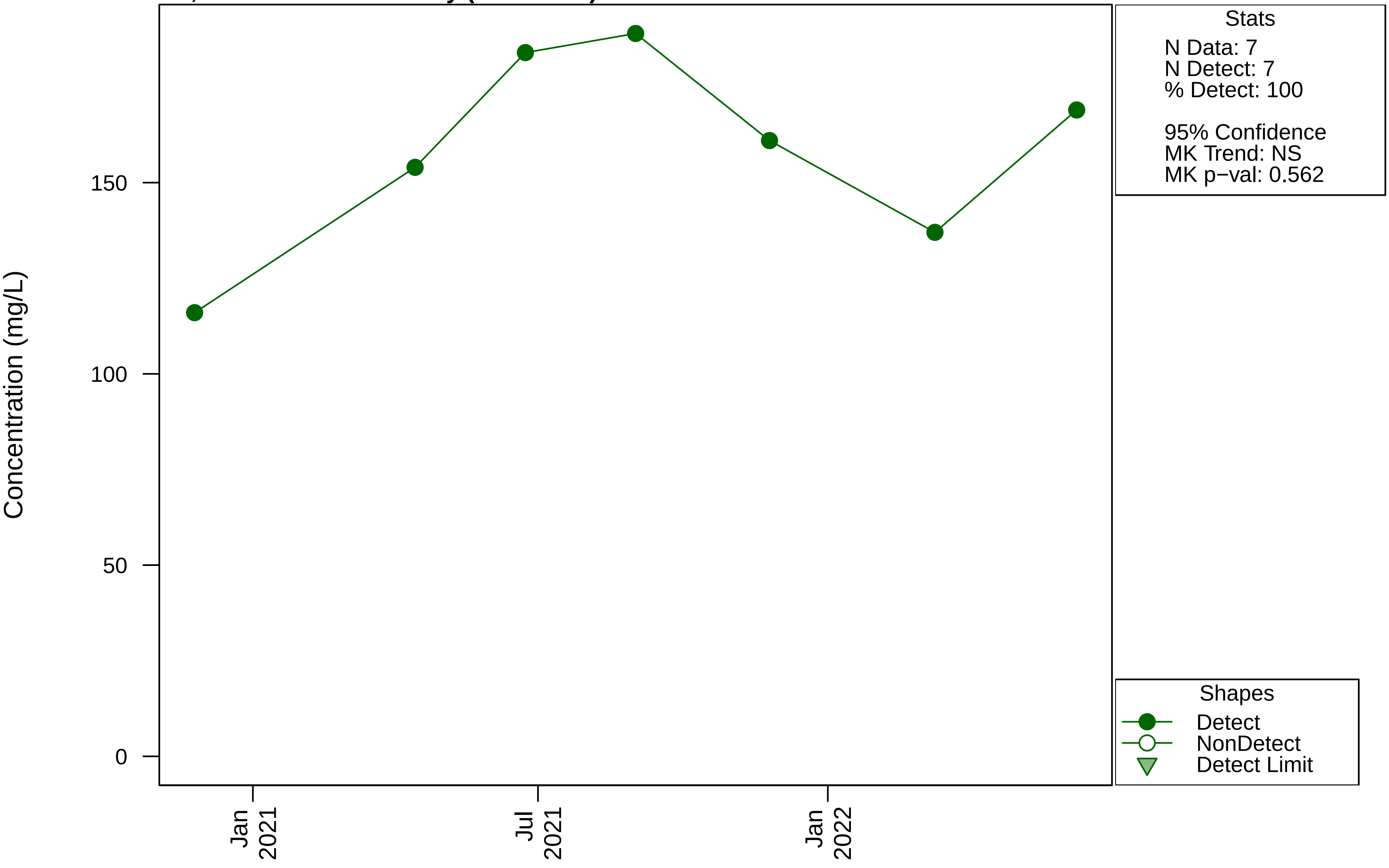
Scatterplots and Trend Analysis
D1, Arsenic (Filtered)



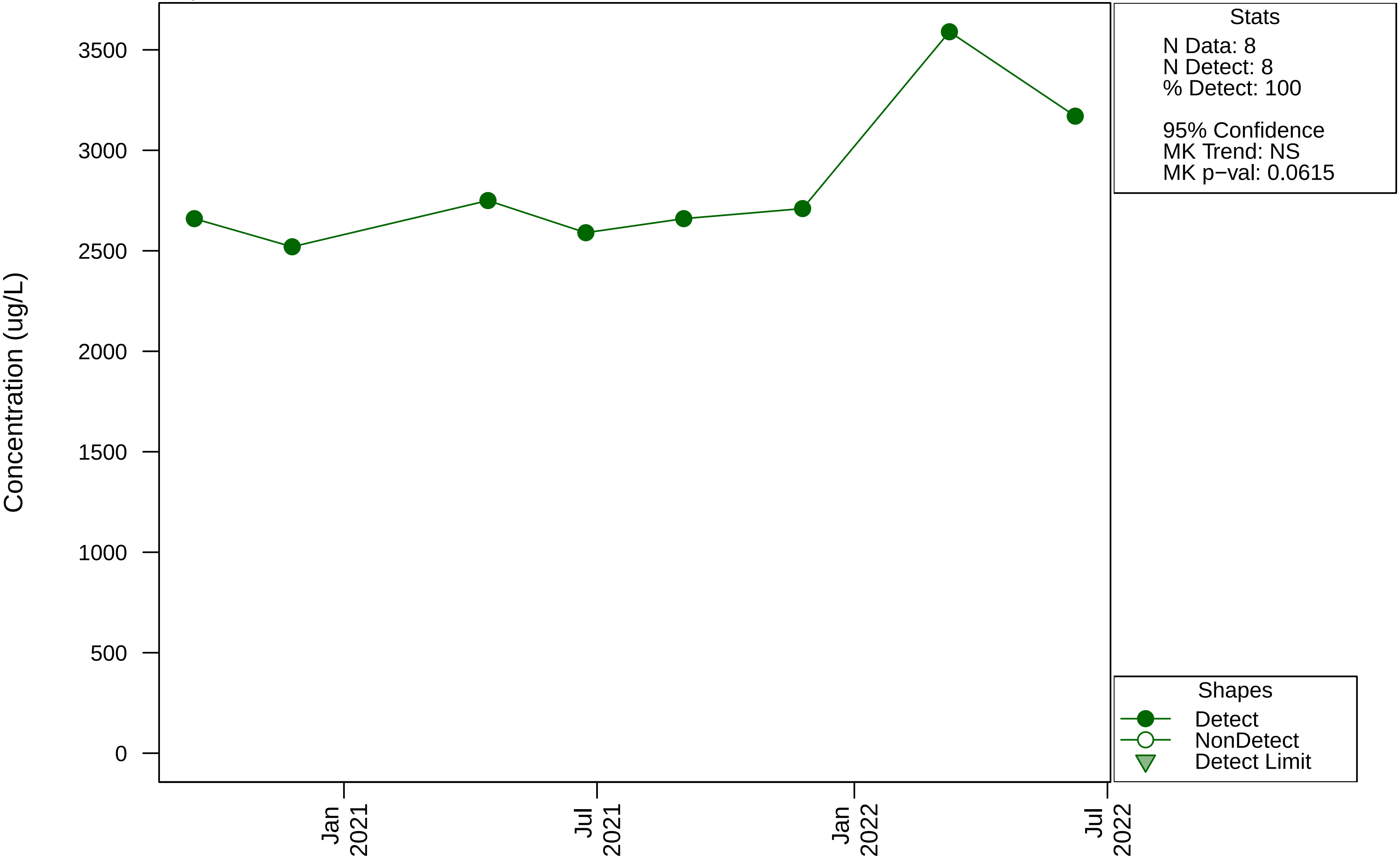
Scatterplots and Trend Analysis
D1, Barium



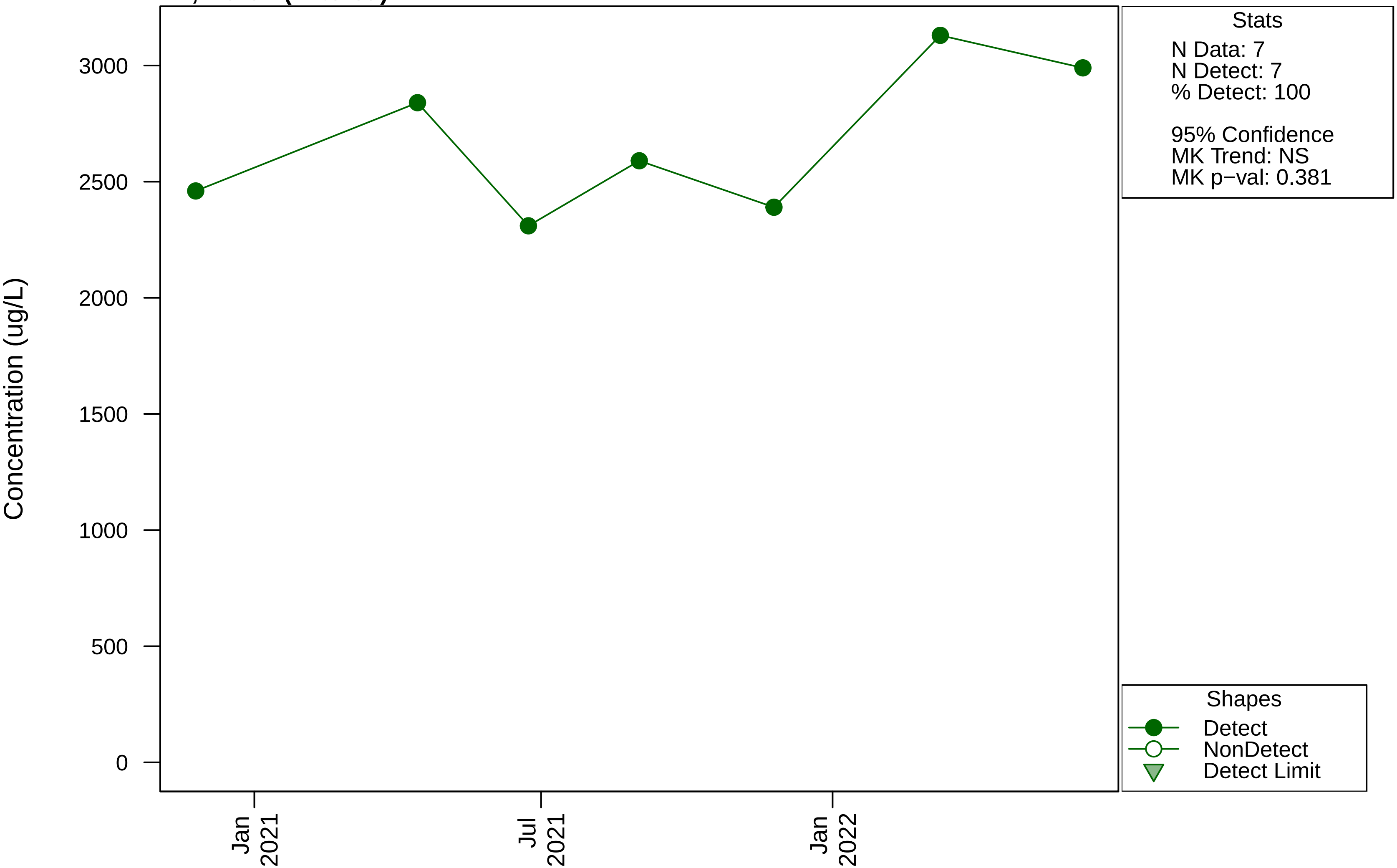
Scatterplots and Trend Analysis
D1, Bicarbonate Alkalinity (as CaCO3)

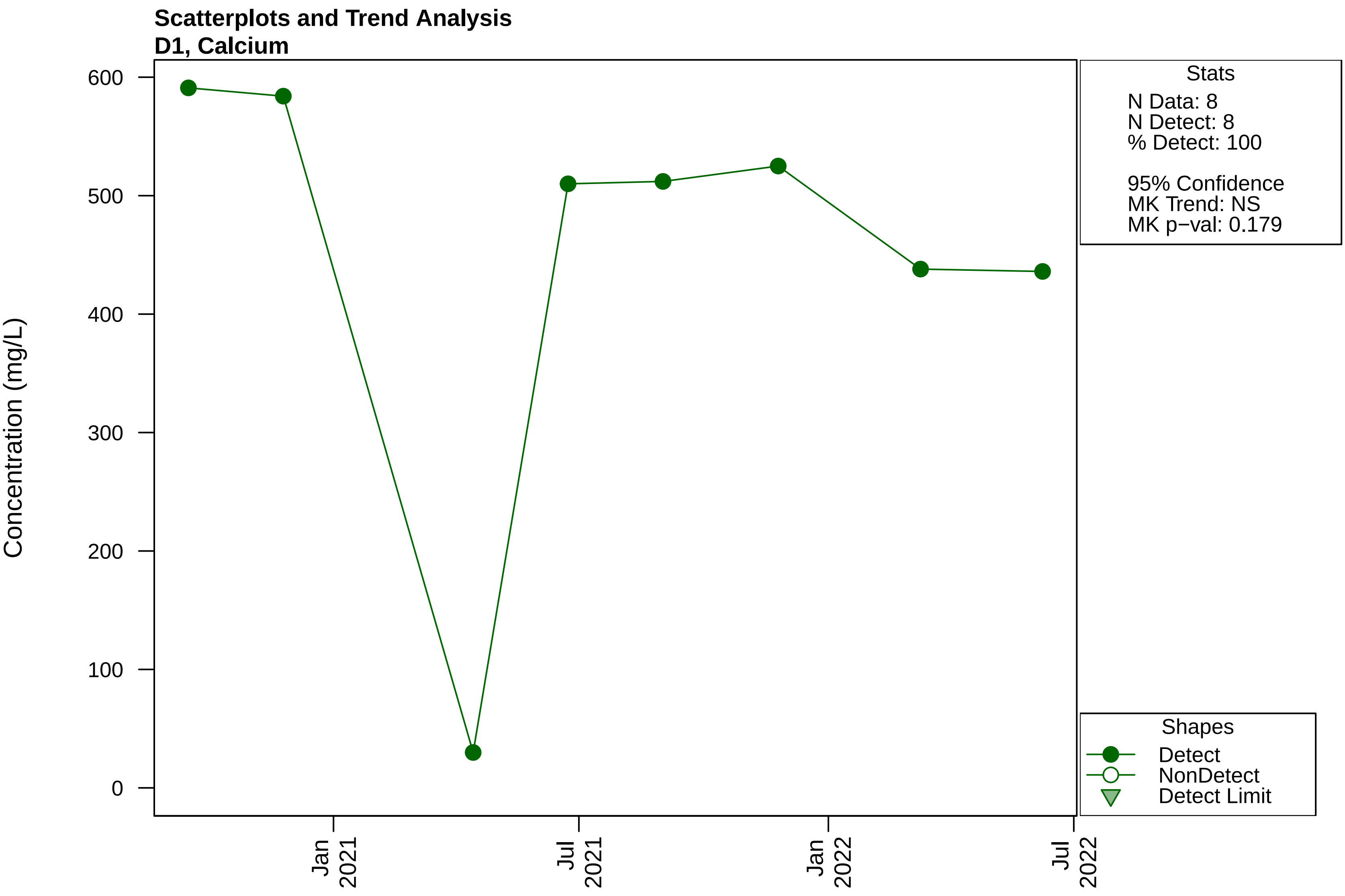


Scatterplots and Trend Analysis
D1, Boron

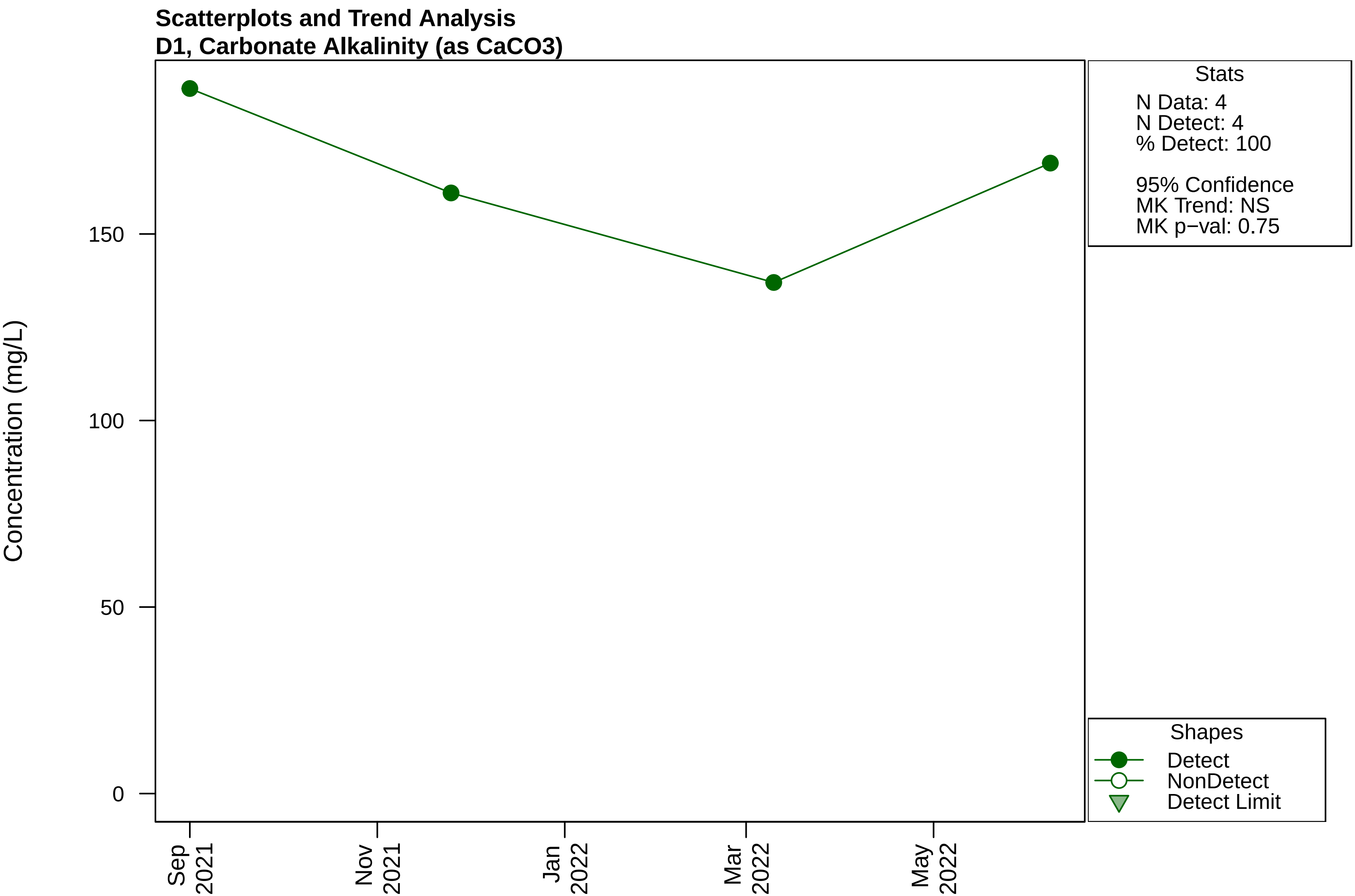


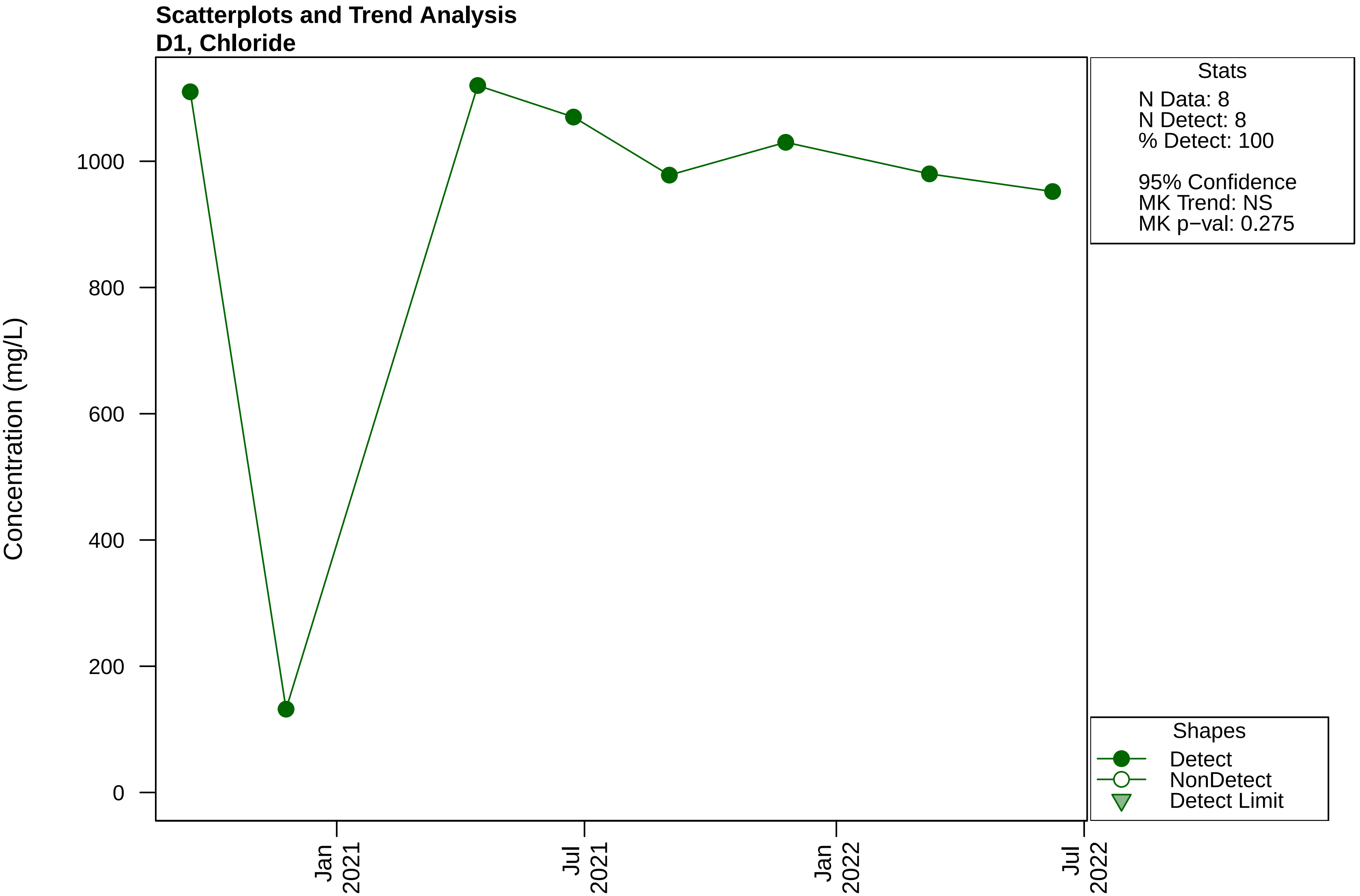
Scatterplots and Trend Analysis
D1, Boron (Filtered)



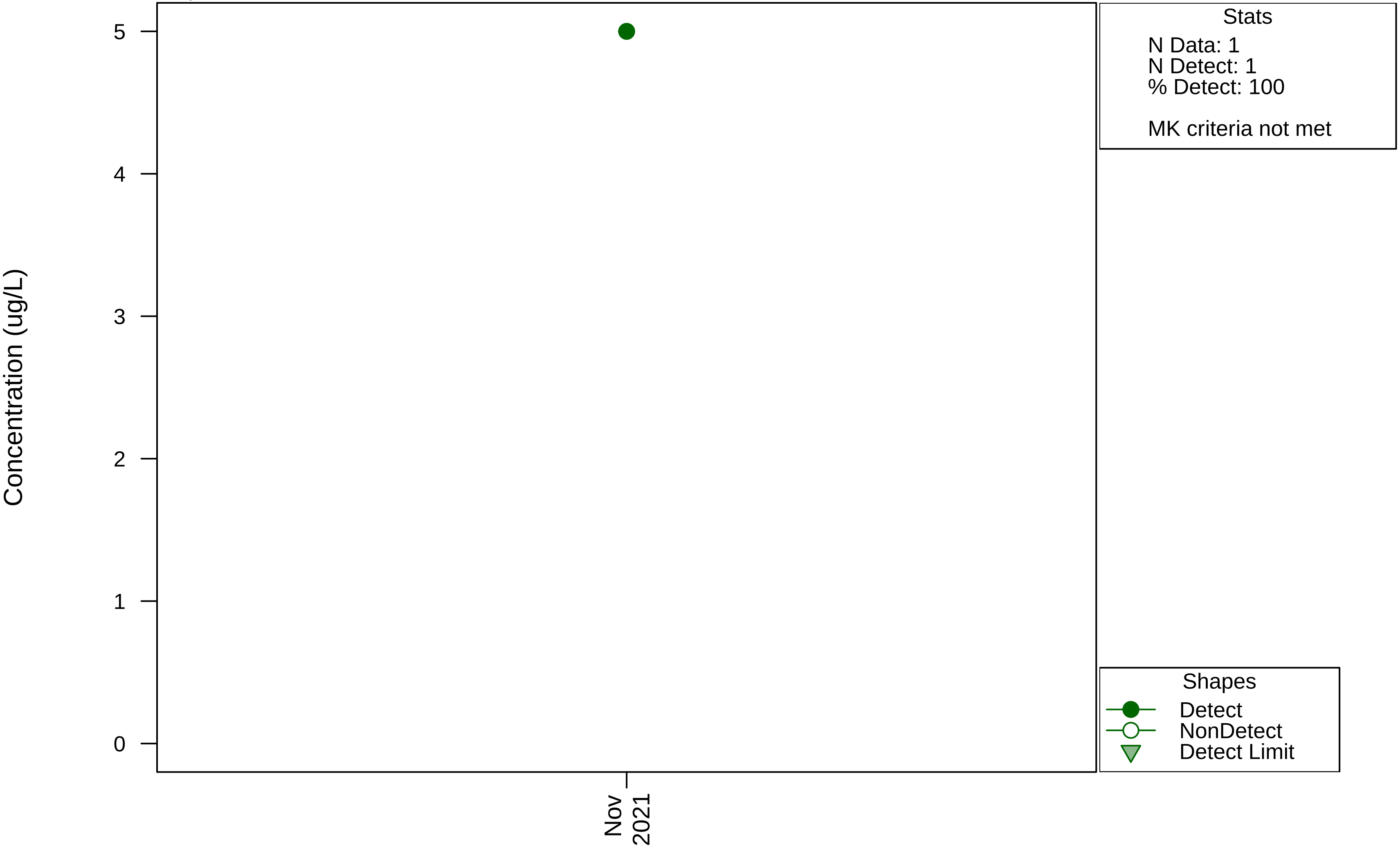


Scatterplots and Trend Analysis
D1, Calcium
Concentration (mg/L)
0
100
200
300
400
500
600
Jan 2021
Jul 2021
Jan 2022
Jul 2022
Stats
N Data: 8
N Detect: 8
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.179
Shapes
Detect
NonDetect
Detect Limit

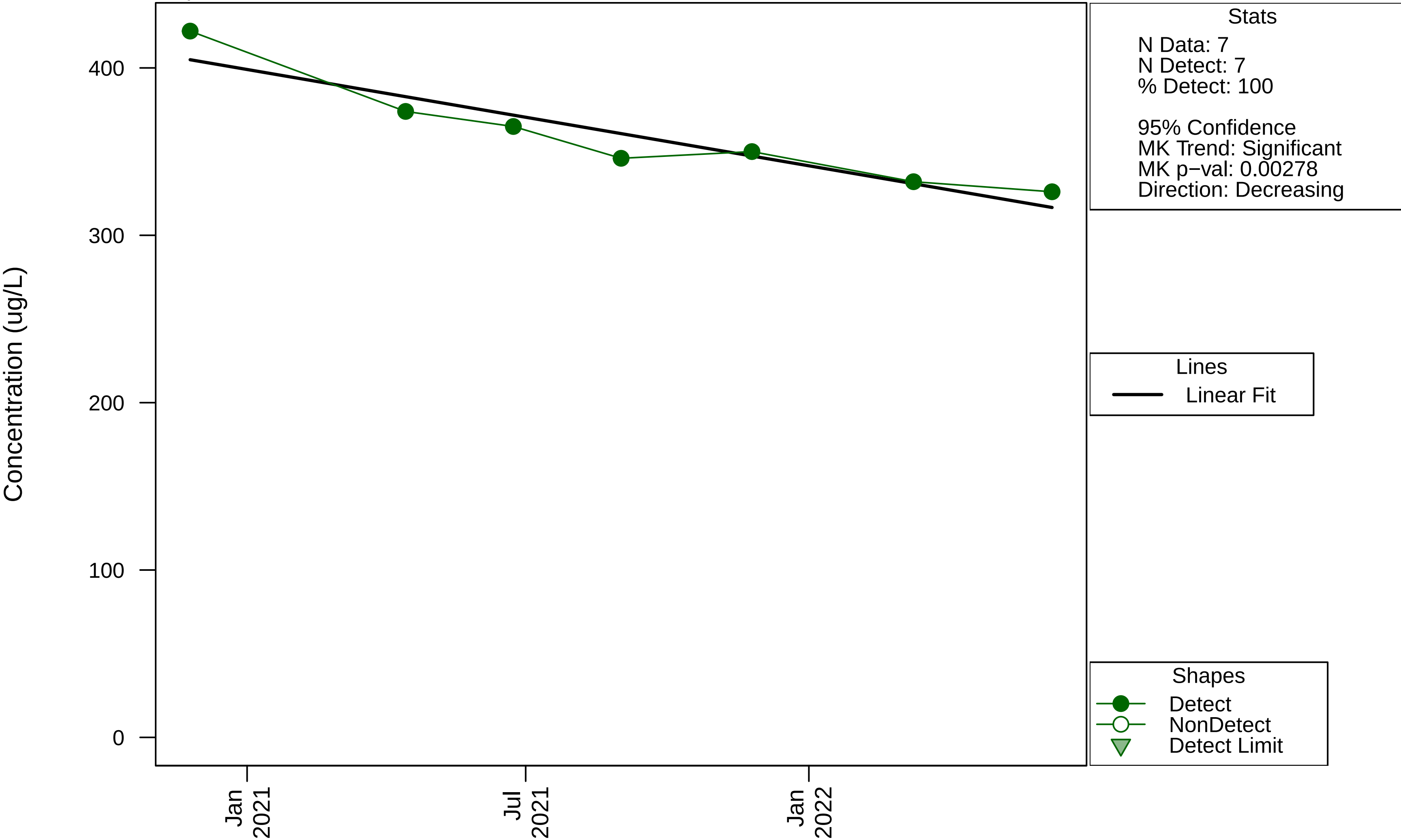

Scatterplots and Trend Analysis
D1, Carbonate Alkalinity (as CaCO3)
Concentration (mg/L)
0
50
100
150
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 4
N Detect: 4
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.75
Shapes
Detect
NonDetect
Detect Limit

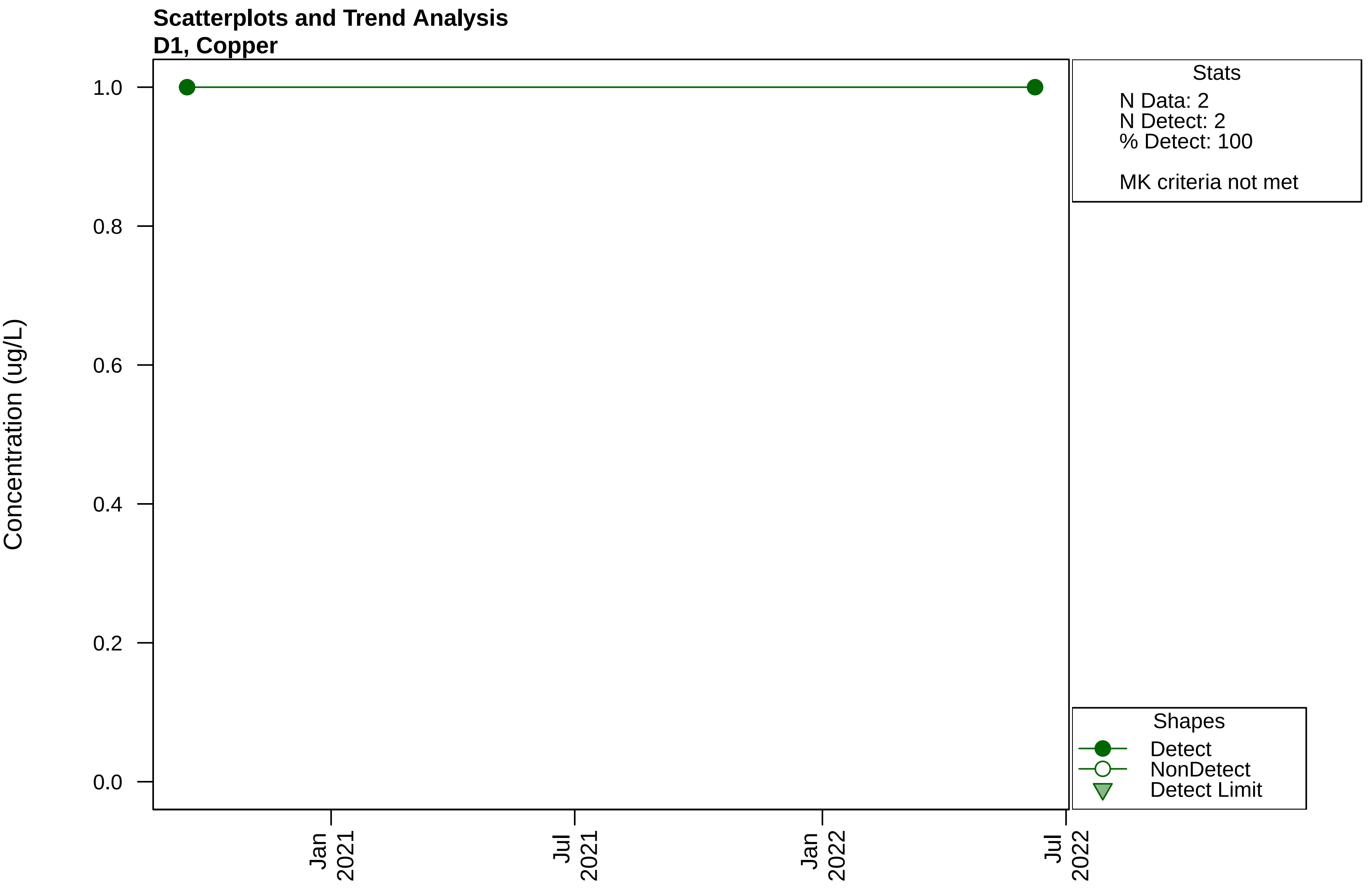

Scatterplots and Trend Analysis
D1, Chloride
Concentration (mg/L)
0
200
400
600
800
1000
Jan 2021
Jul 2021
Jan 2022
Jul 2022
Stats
N Data: 8
N Detect: 8
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.275
Shapes
Detect
NonDetect
Detect Limit

Scatterplots and Trend Analysis
D1, Chromium

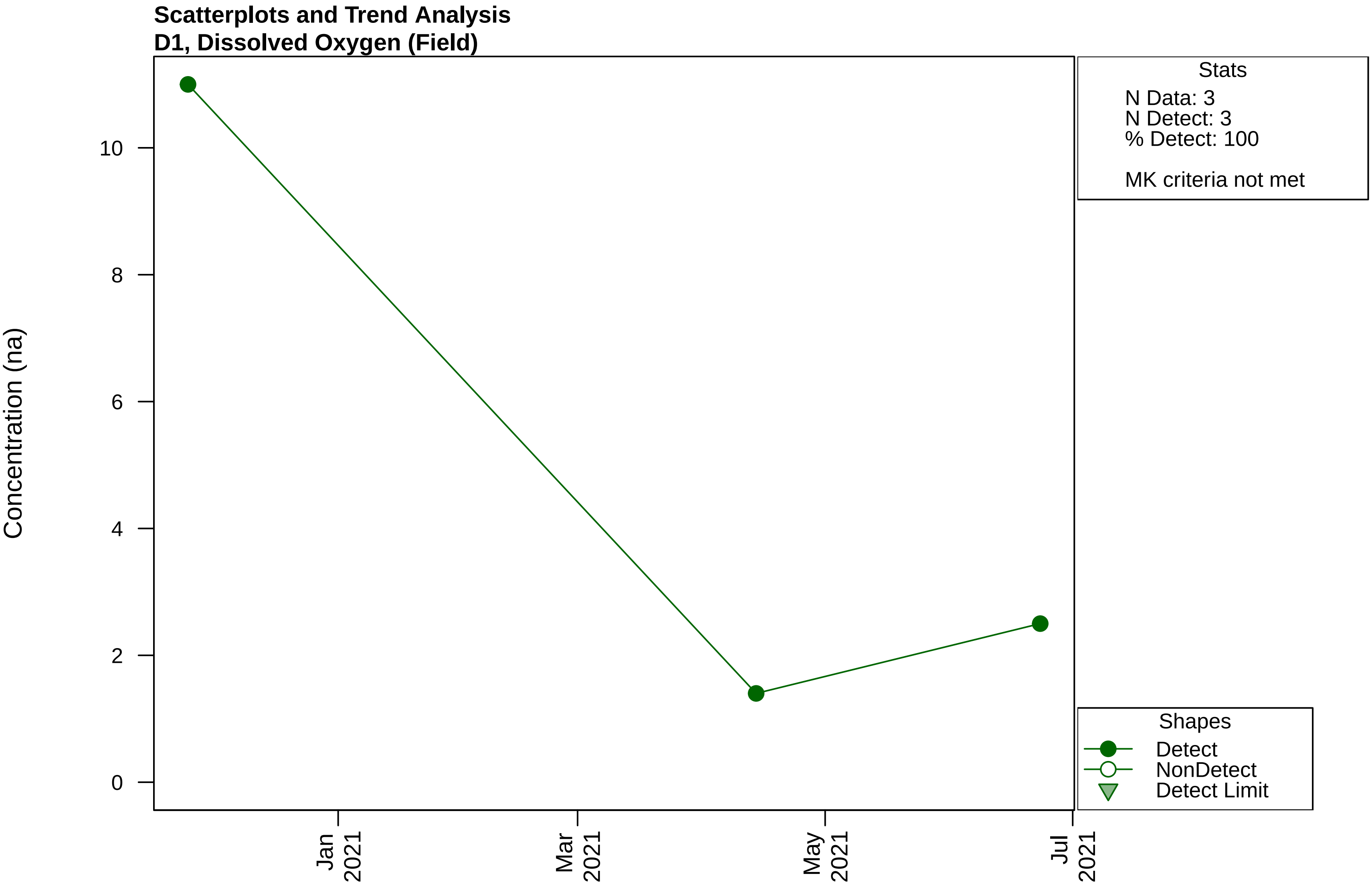


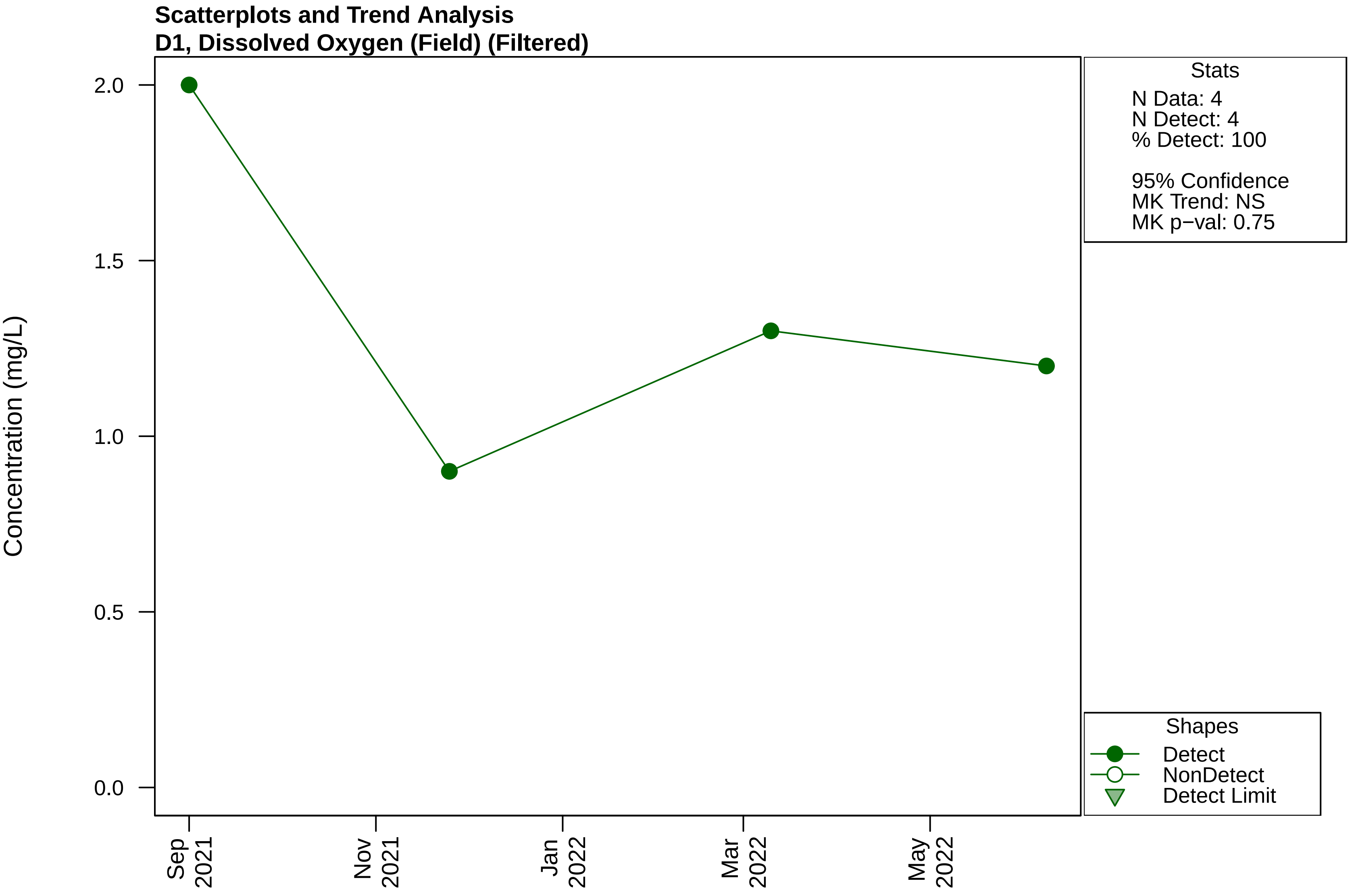
Scatterplots and Trend Analysis
D1, Cobalt



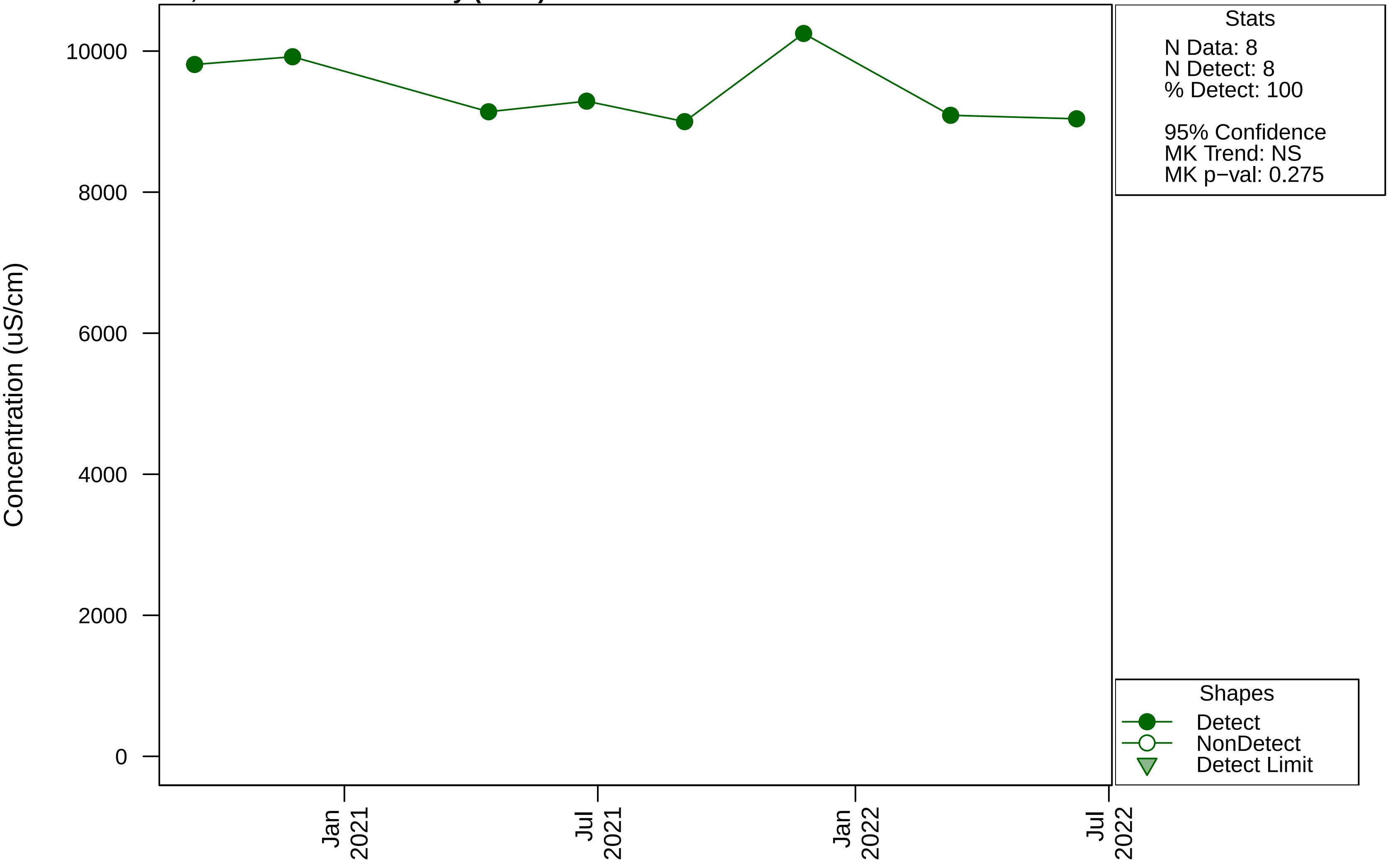


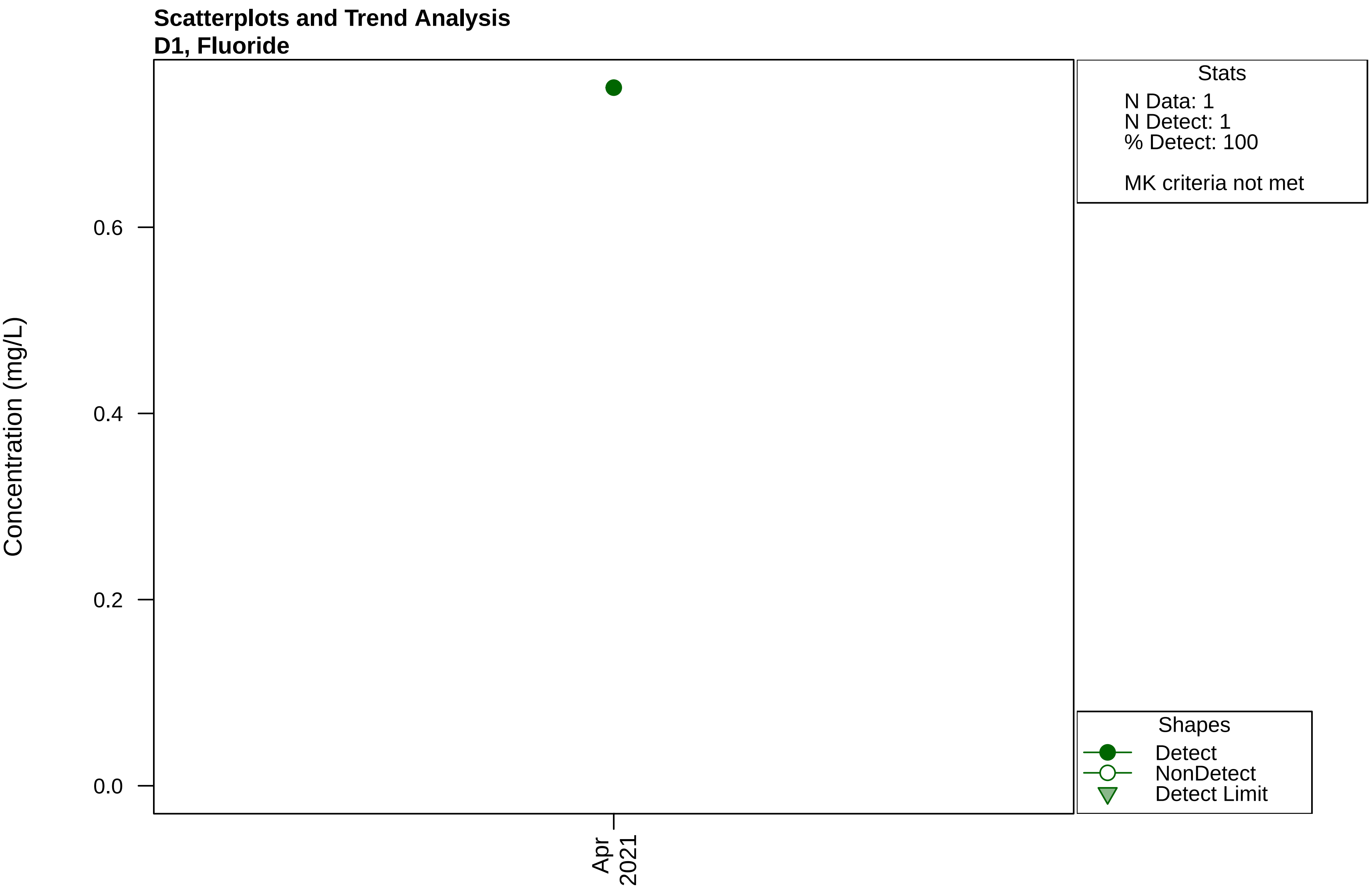
Scatterplots and Trend Analysis
D1, Copper
Concentration (ug/L)
0.0
0.2
0.4
0.6
0.8
1.0
Jan 2021
Jul 2021
Jan 2022
Jul 2022
Stats
N Data: 2
N Detect: 2
% Detect: 100
MK criteria not met
Shapes
Detect
NonDetect
Detect Limit


Scatterplots and Trend Analysis
D1, Dissolved Oxygen (Field)
Concentration (na)
0
2
4
6
8
10
Jan 2021
Mar 2021
May 2021
Jul 2021
Stats
N Data: 3
N Detect: 3
% Detect: 100
MK criteria not met
Shapes
Detect
NonDetect
Detect Limit

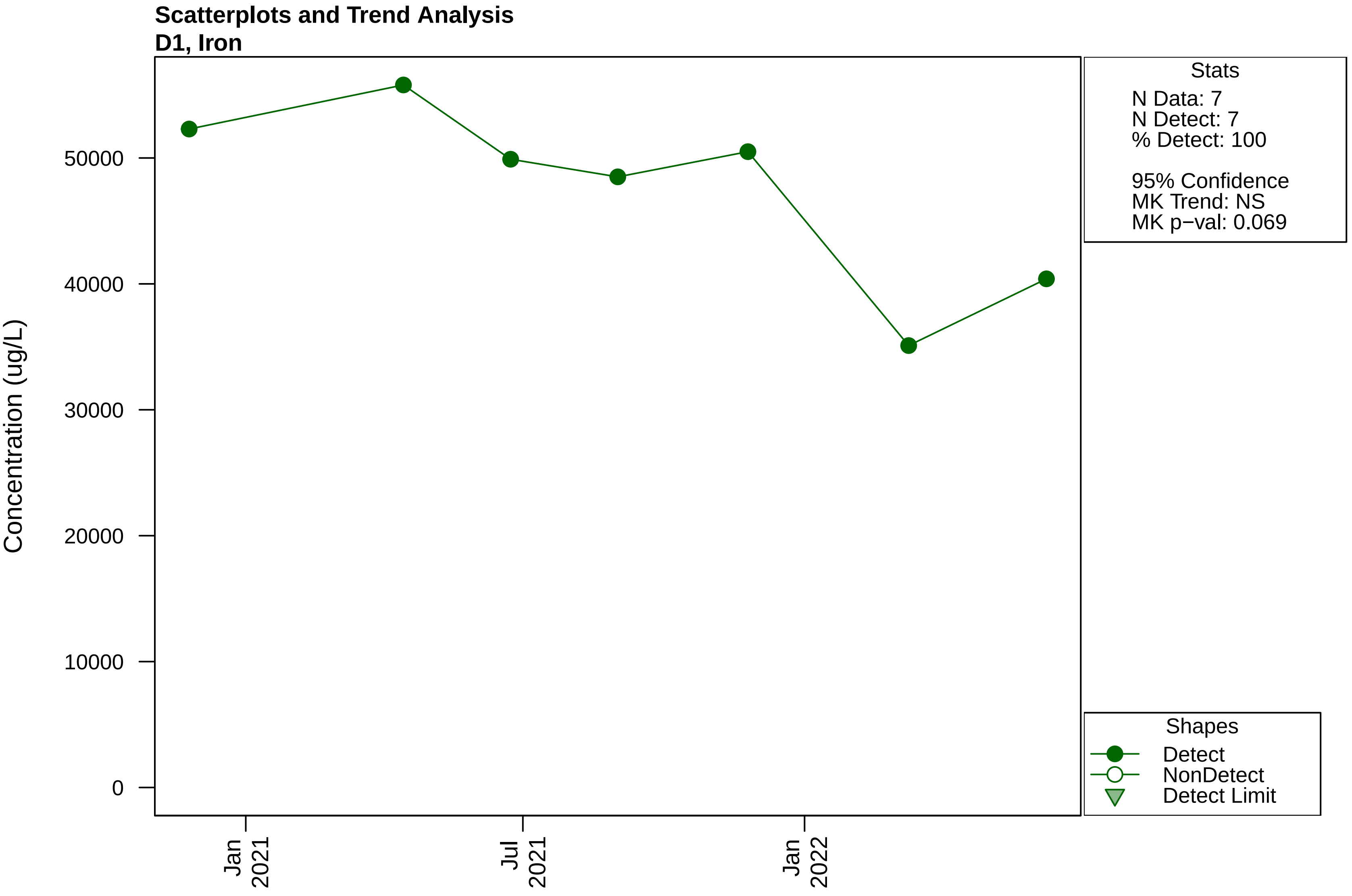

Scatterplots and Trend Analysis
D1, Dissolved Oxygen (Field) (Filtered)
Concentration (mg/L)
2.0
1.5
1.0
0.5
0.0
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 4
N Detect: 4
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.75
Shapes
Detect
NonDetect
Detect Limit

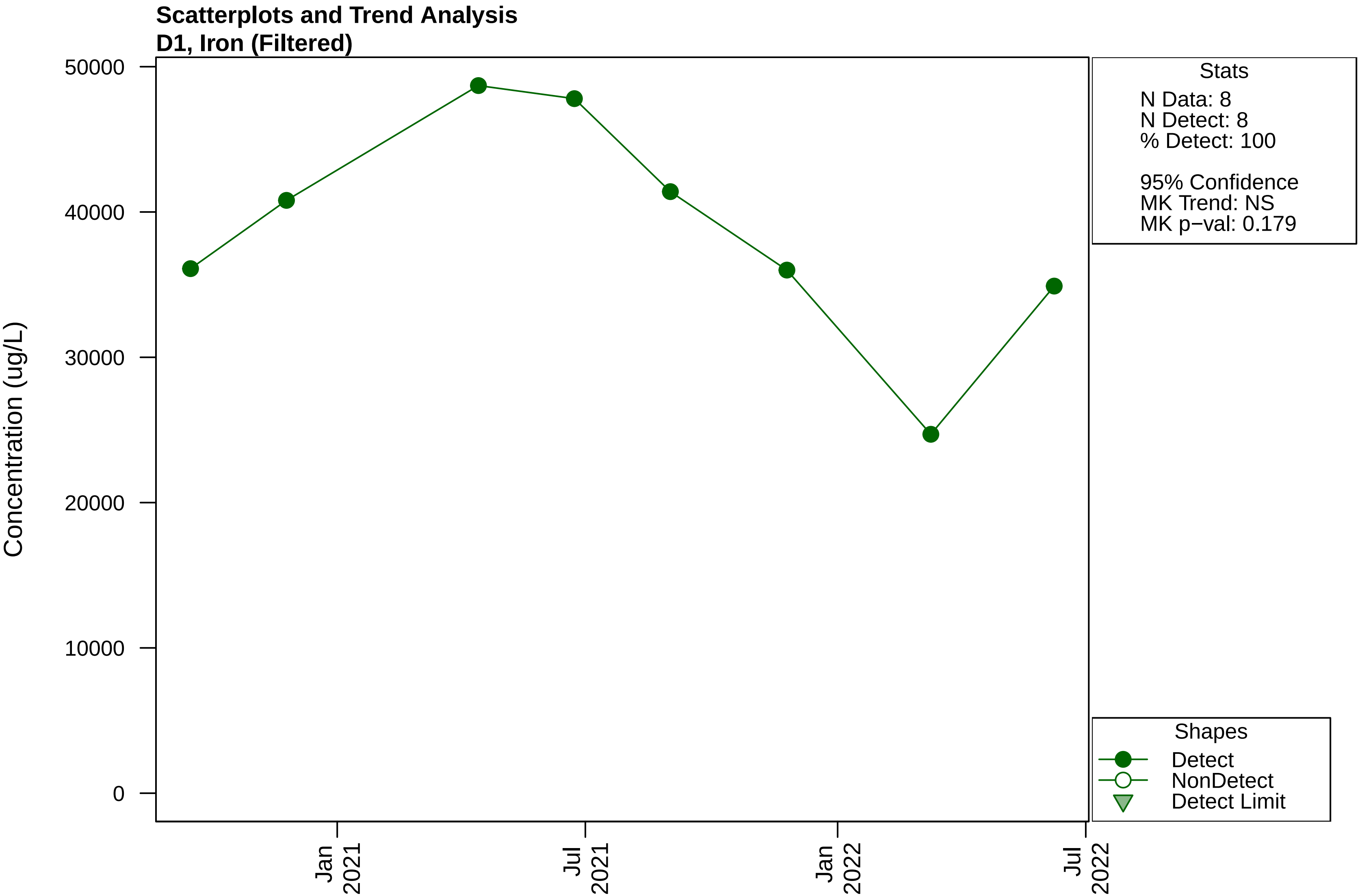
Scatterplots and Trend Analysis
D1, Electrical Conductivity (Field)



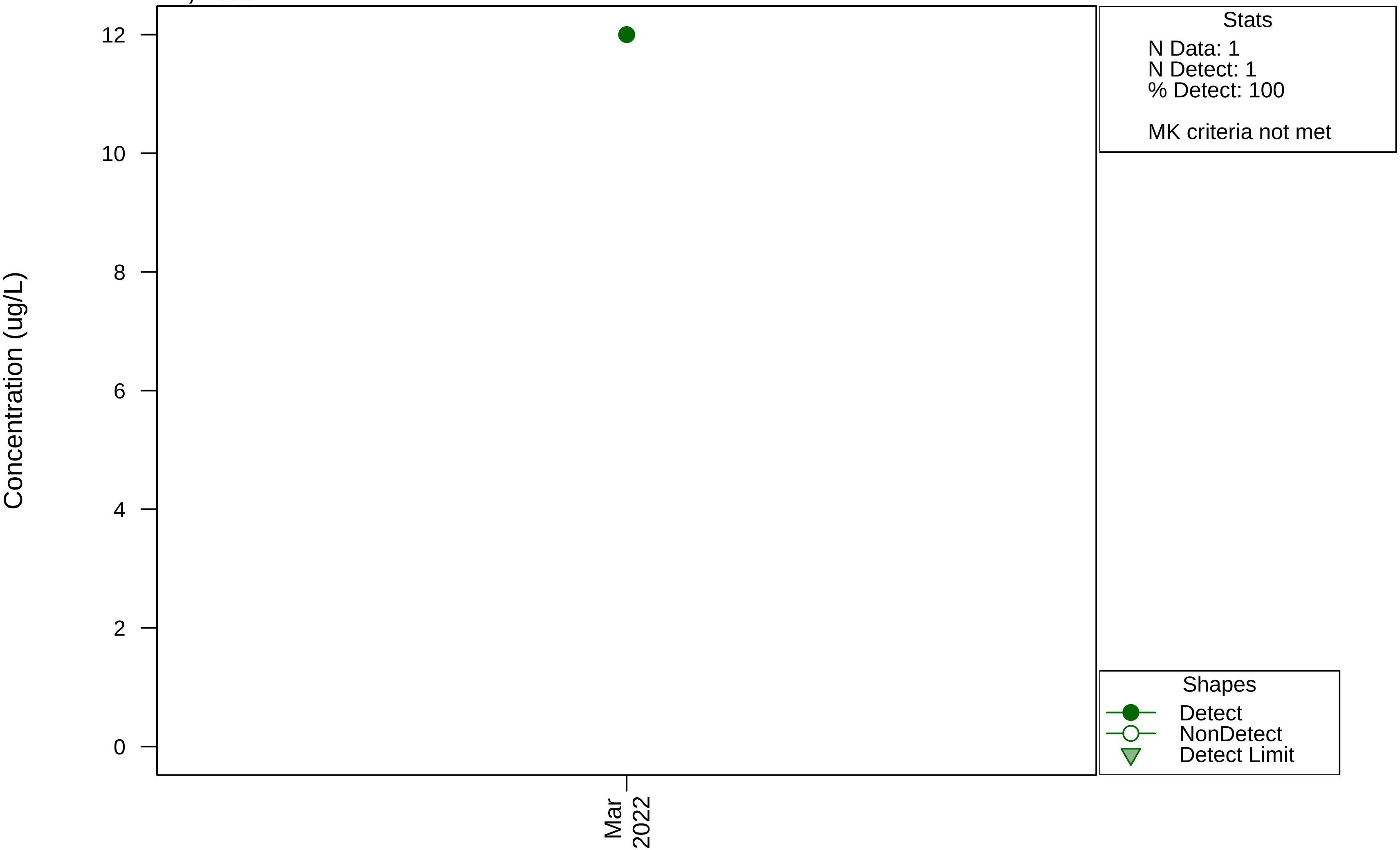


Scatterplots and Trend Analysis
D1, Fluoride
Concentration (mg/L)
0.0
0.2
0.4
0.6
Apr 2021
Stats
N Data: 1
N Detect: 1
% Detect: 100
MK criteria not met
Shapes
Detect
NonDetect
Detect Limit

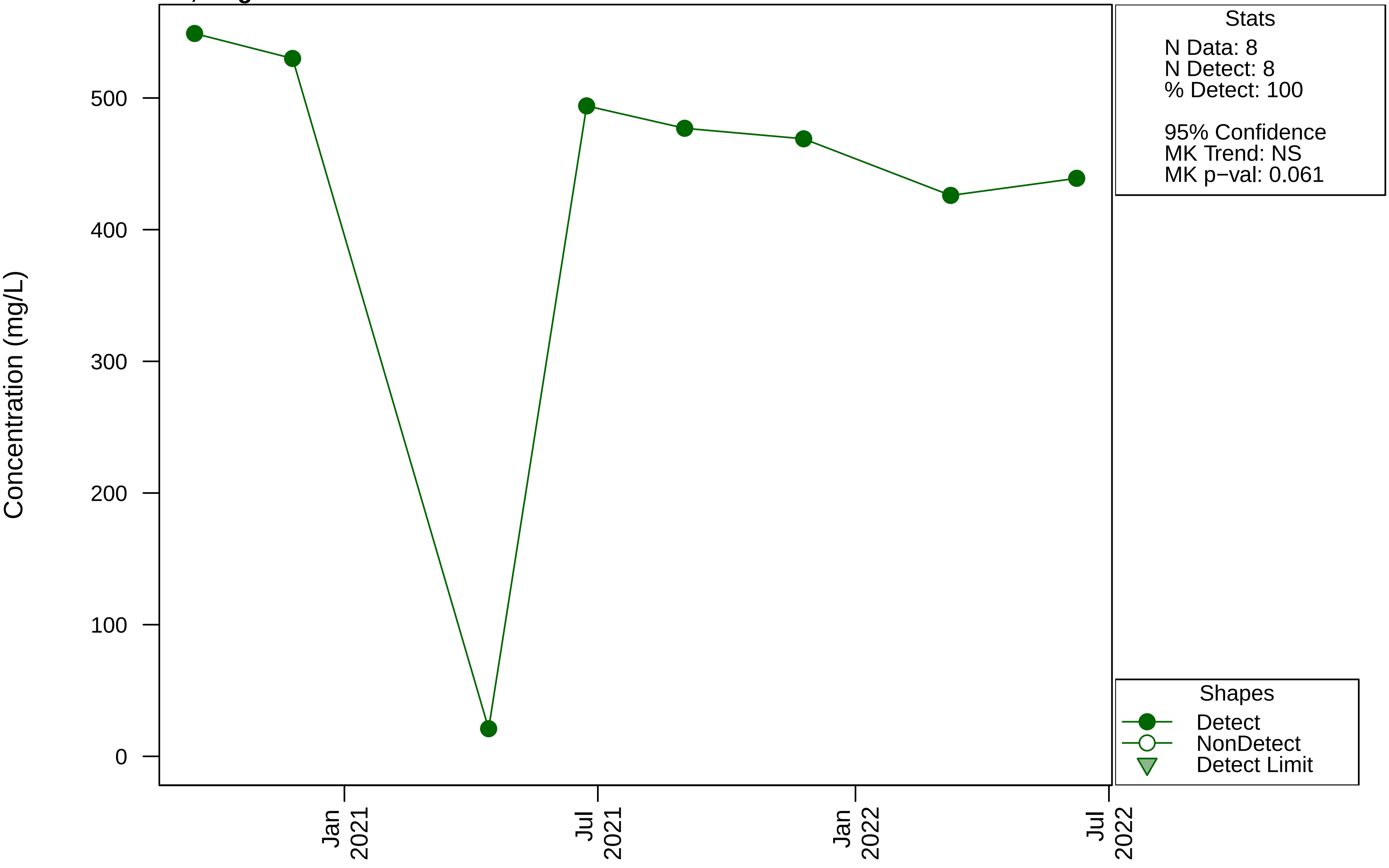

Scatterplots and Trend Analysis
D1, Iron
Concentration (ug/L)
50000
40000
30000
20000
10000
0
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 7
N Detect: 7
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.069
Shapes
Detect
NonDetect
Detect Limit


Scatterplots and Trend Analysis
D1, Iron (Filtered)
Concentration (ug/L)
50000
40000
30000
20000
10000
0
Jan 2021
Jul 2021
Jan 2022
Jul 2022
Stats
N Data: 8
N Detect: 8
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.179
Shapes
Detect
NonDetect
Detect Limit

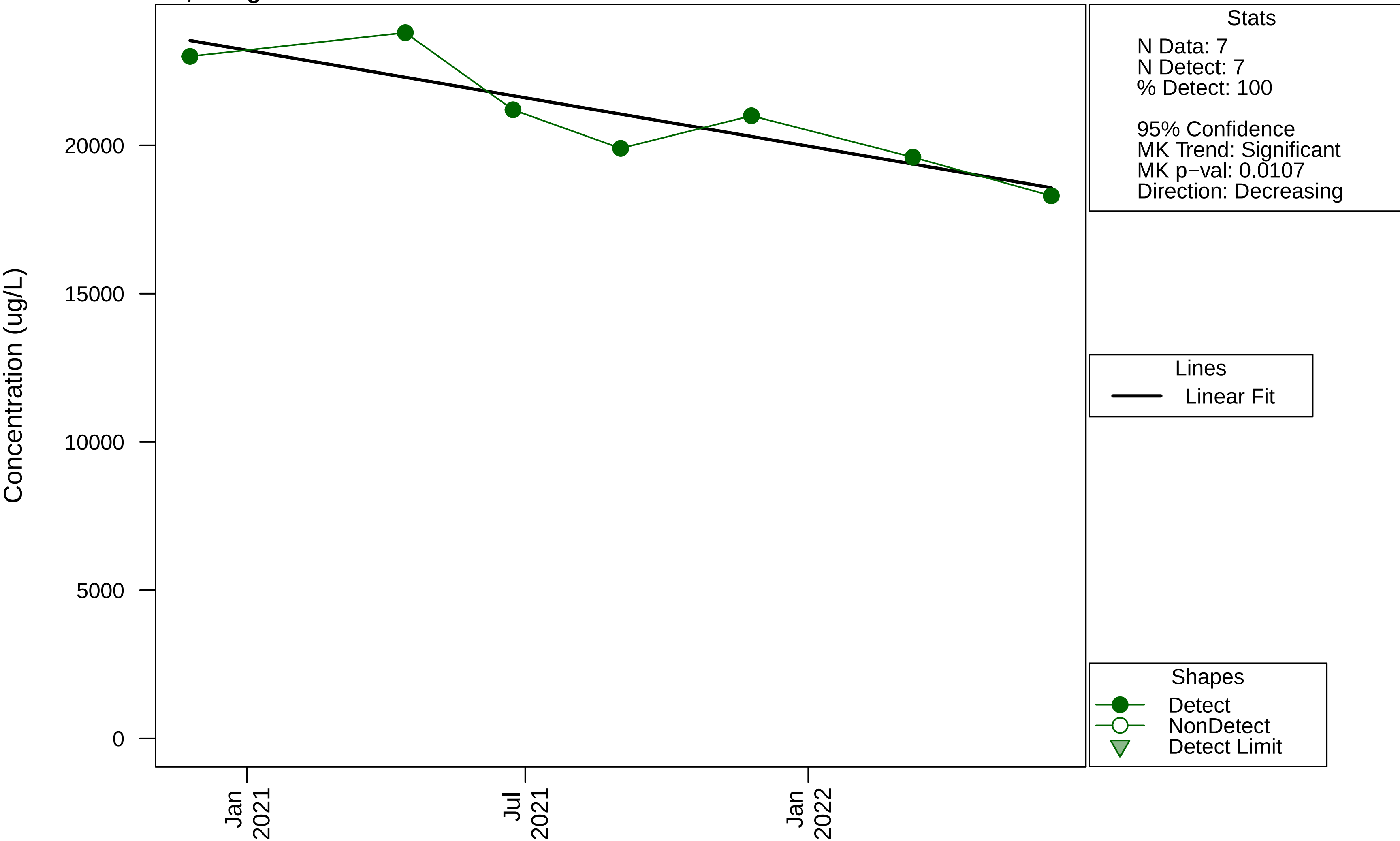
Scatterplots and Trend Analysis
D1, Lead



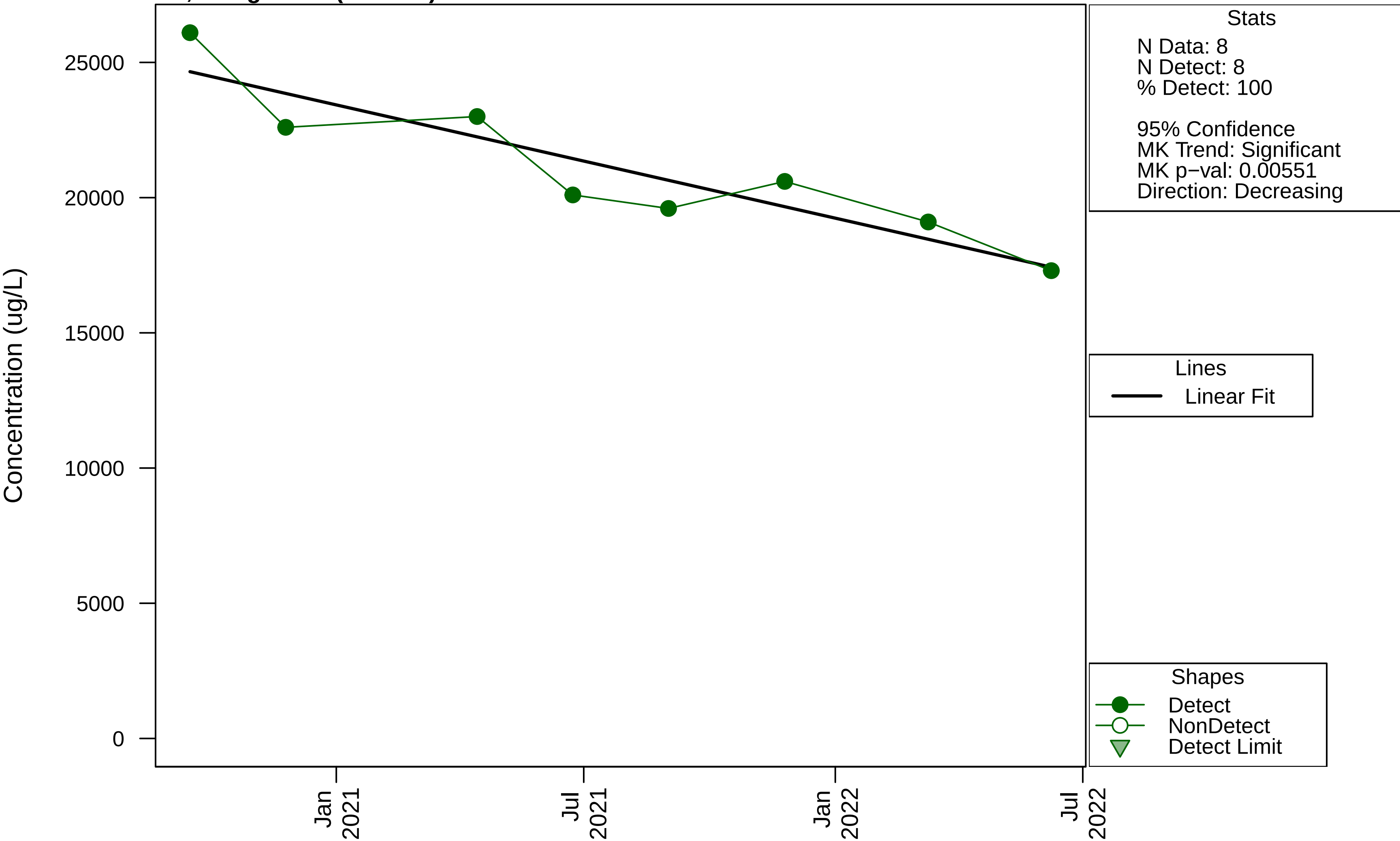
Scatterplots and Trend Analysis
D1, Magnesium



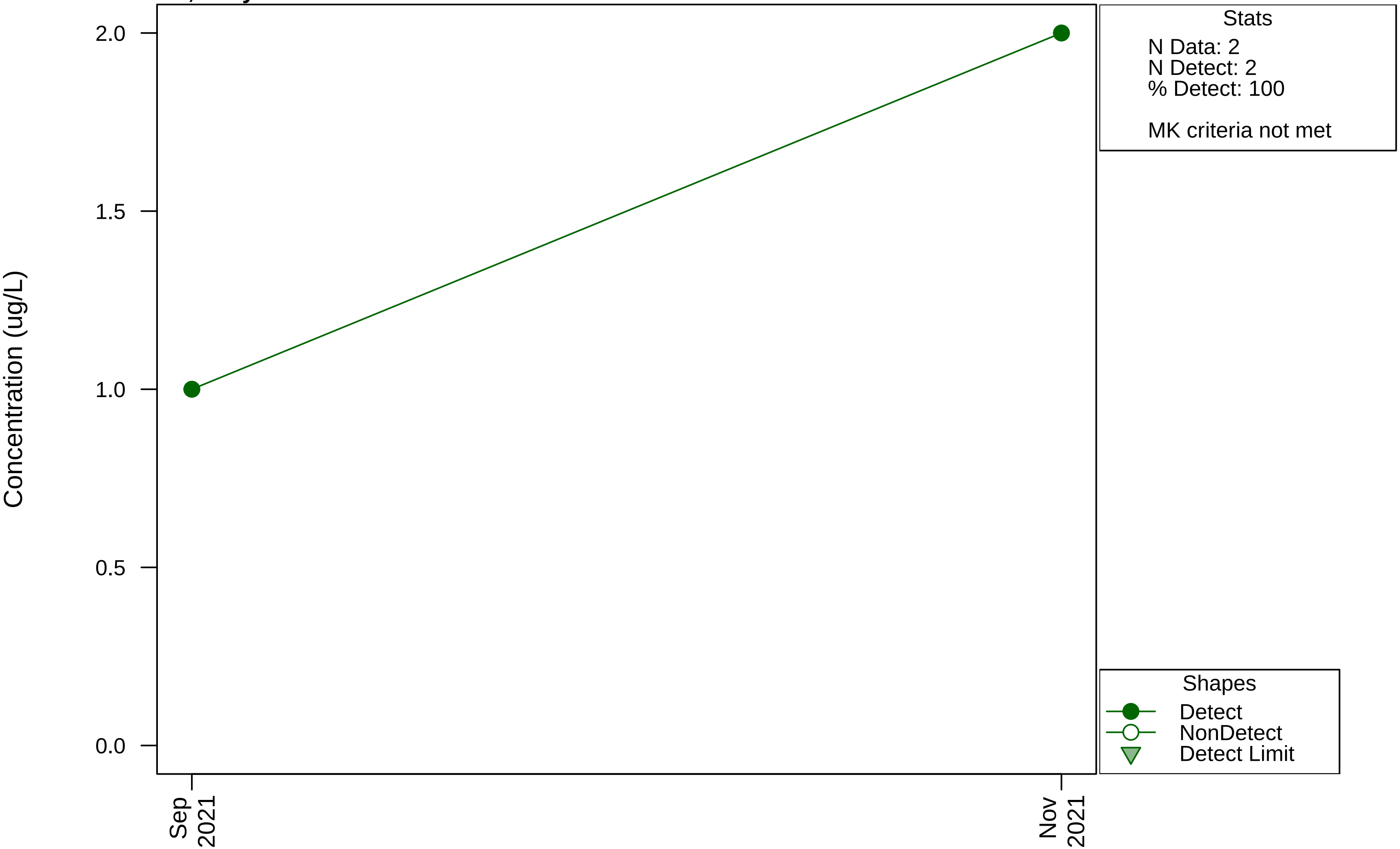
Scatterplots and Trend Analysis
D1, Manganese



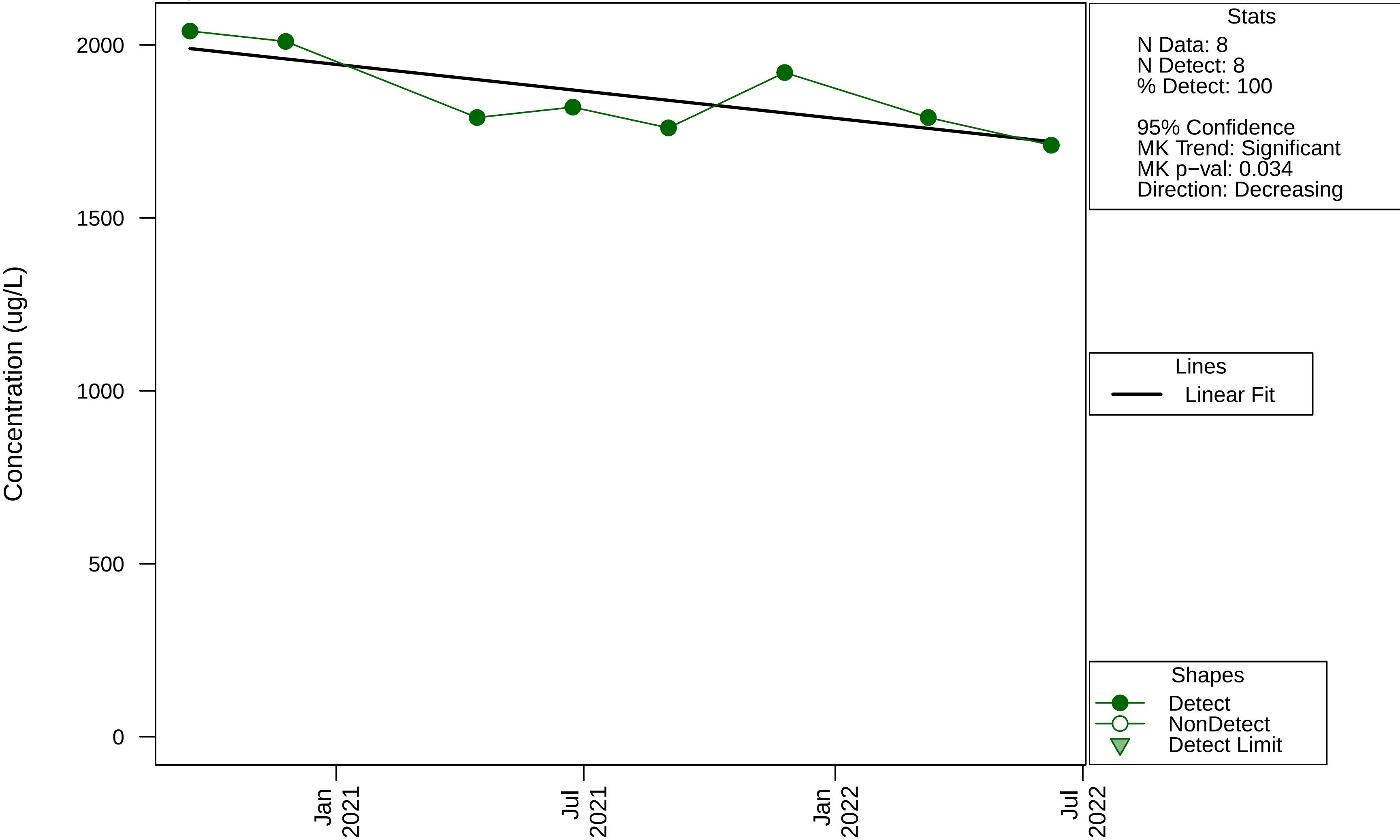
Scatterplots and Trend Analysis
D1, Manganese (Filtered)



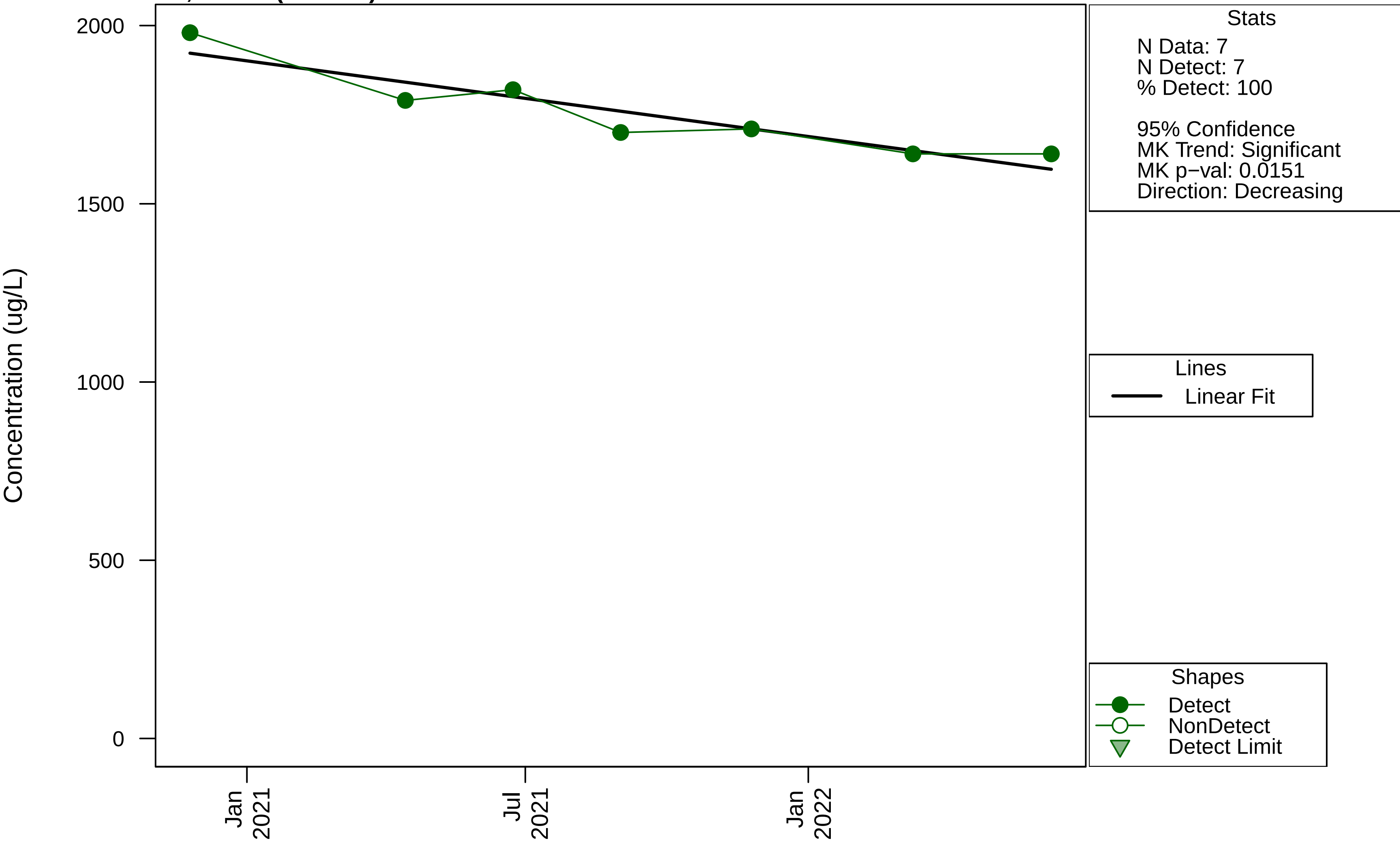
Scatterplots and Trend Analysis
D1, Molybdenum

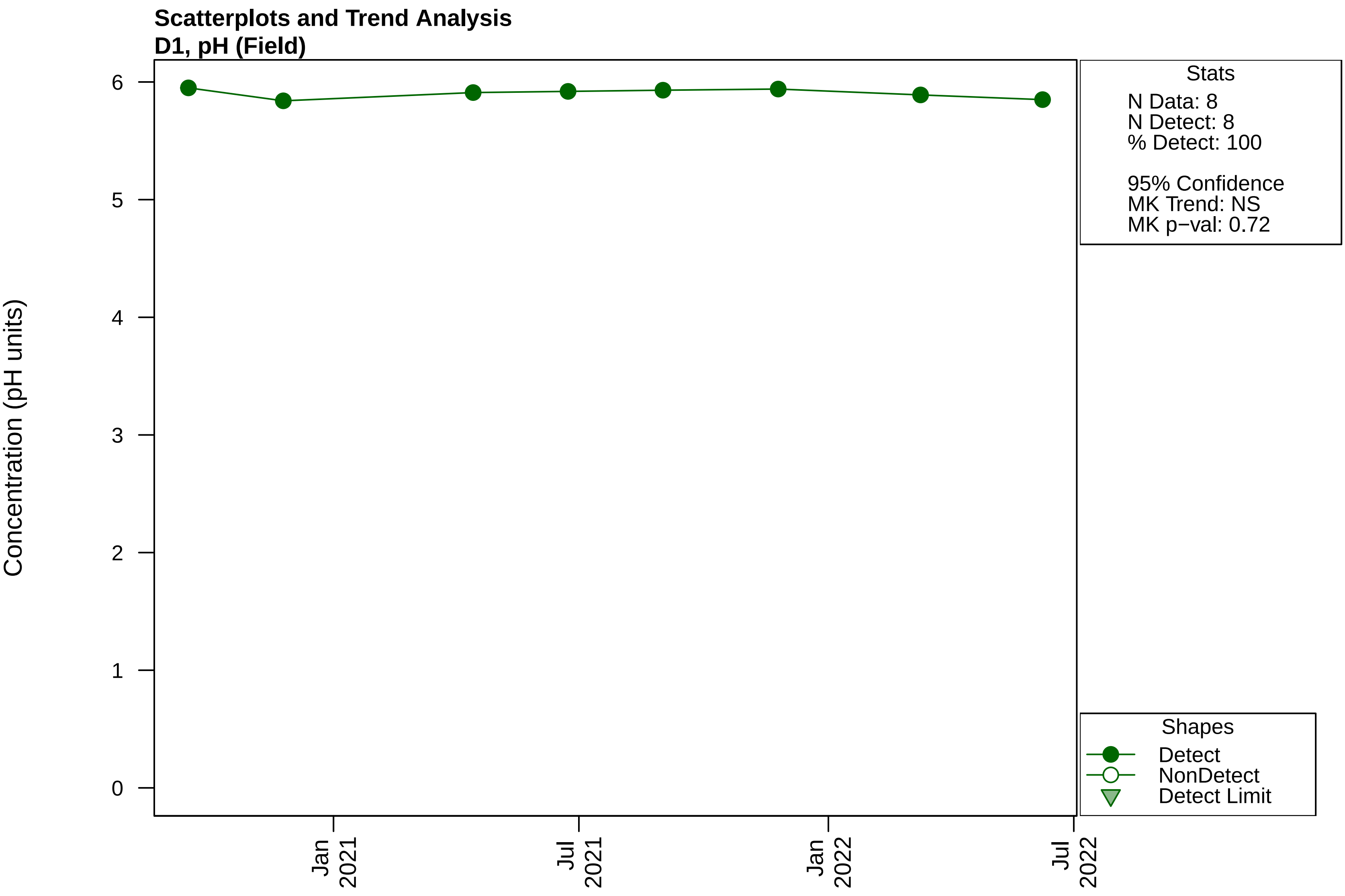


Scatterplots and Trend Analysis
D1, Nickel

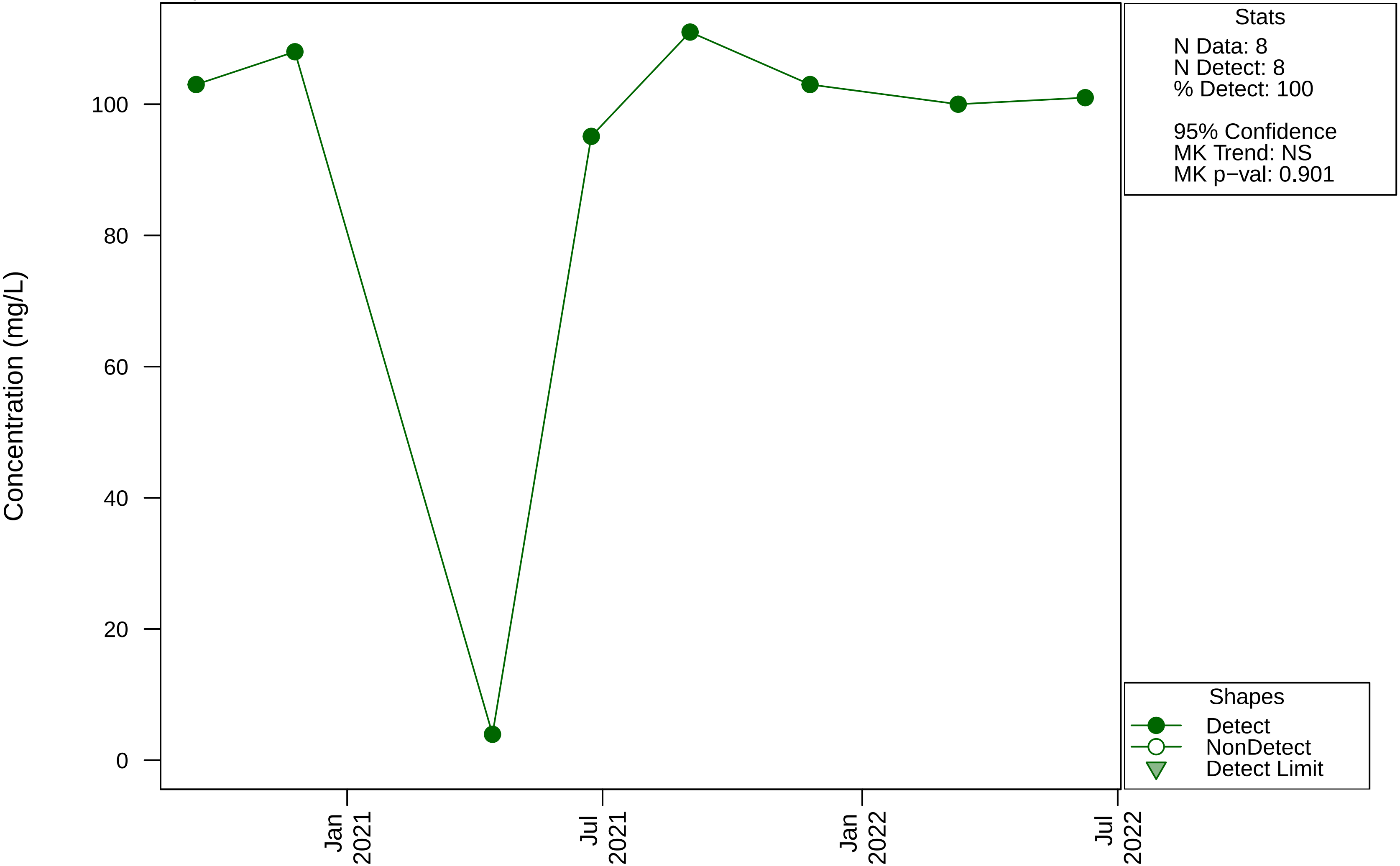


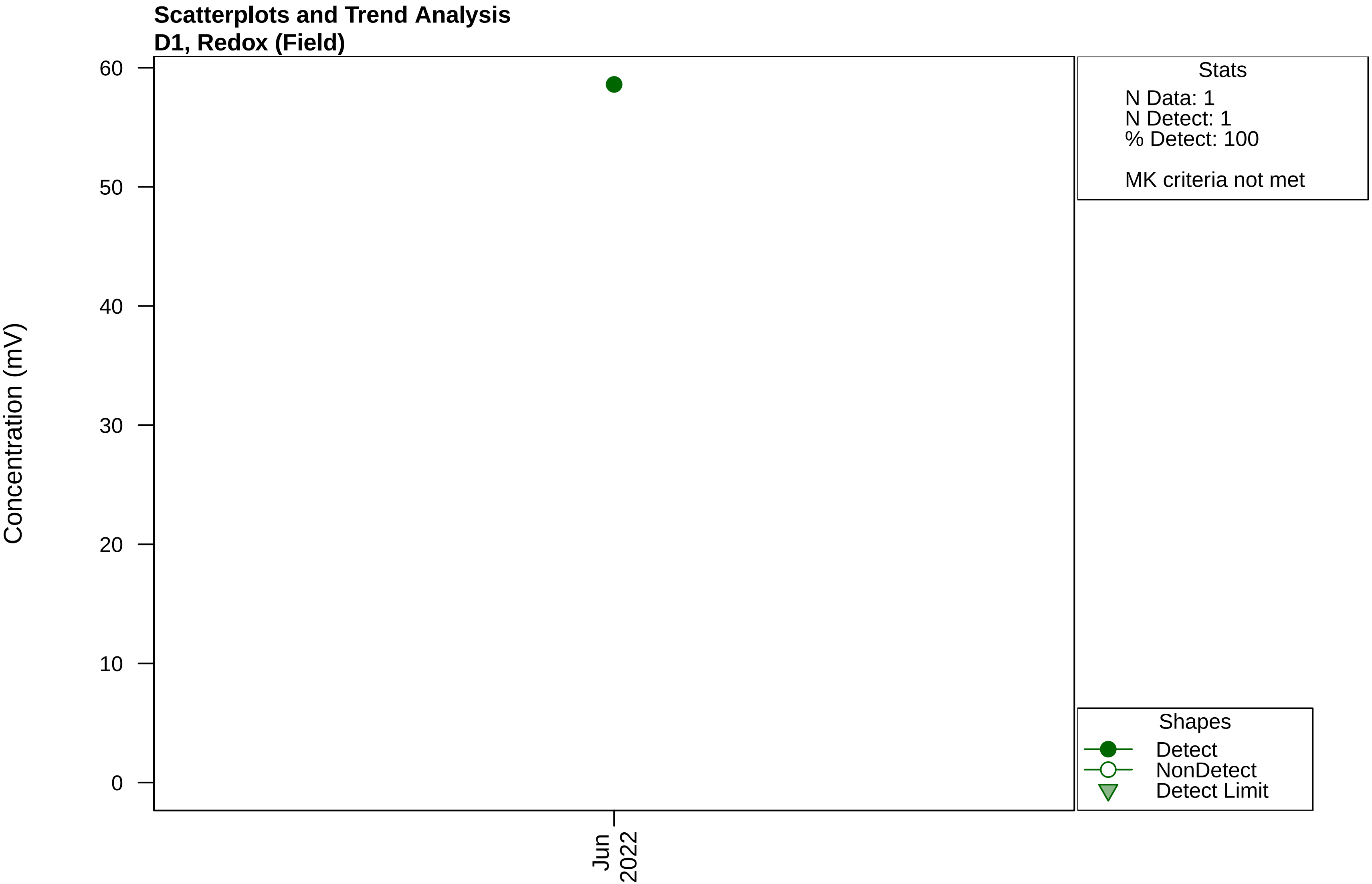
Scatterplots and Trend Analysis
D1, Nickel (Filtered)



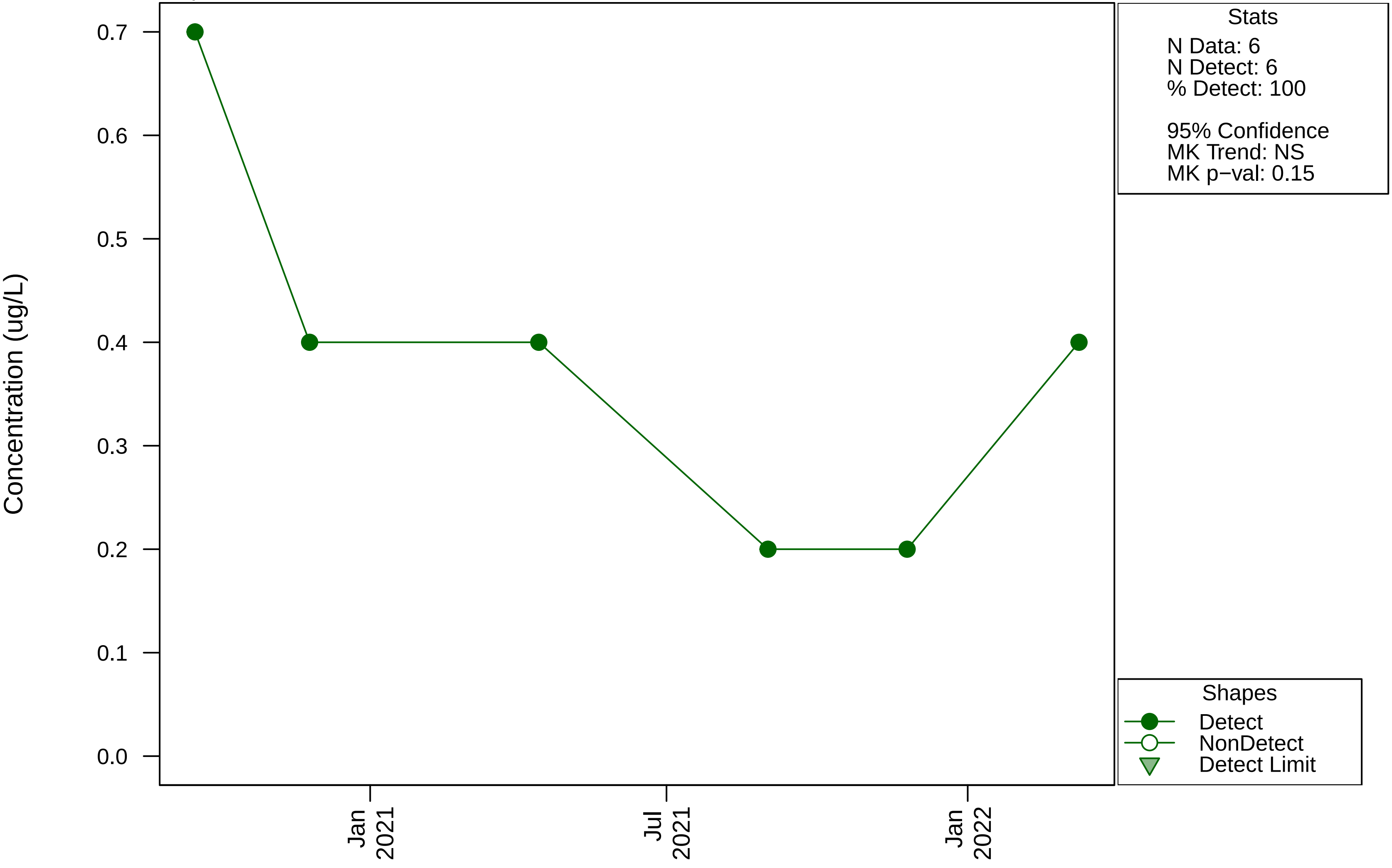

Scatterplots and Trend Analysis
D1, pH (Field)
Concentration (pH units)
0
1
2
3
4
5
6
Jan 2021
Jul 2021
Jan 2022
Jul 2022
Stats
N Data: 8
N Detect: 8
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.72
Shapes
Detect
NonDetect
Detect Limit

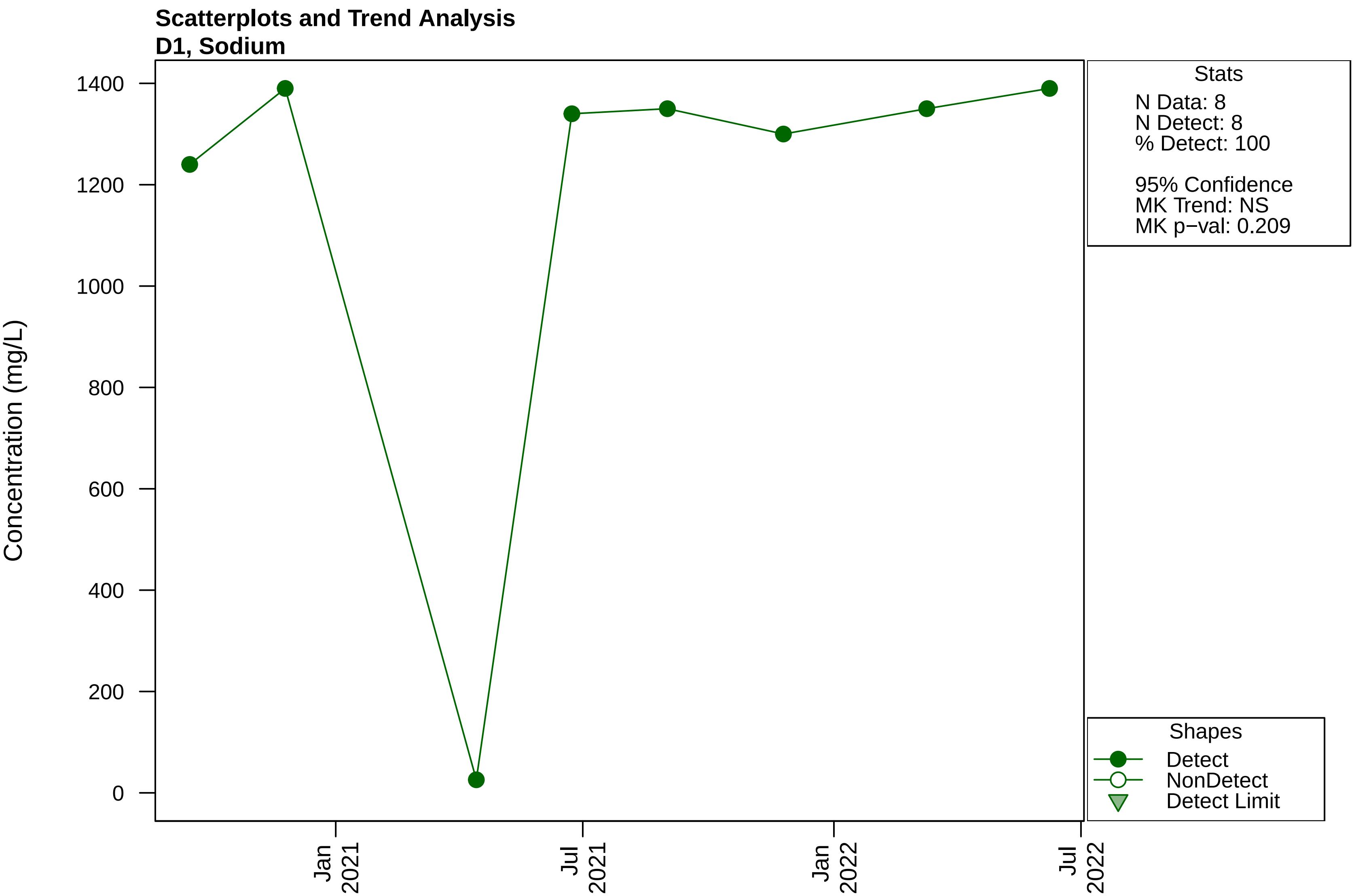
Scatterplots and Trend Analysis
D1, Potassium



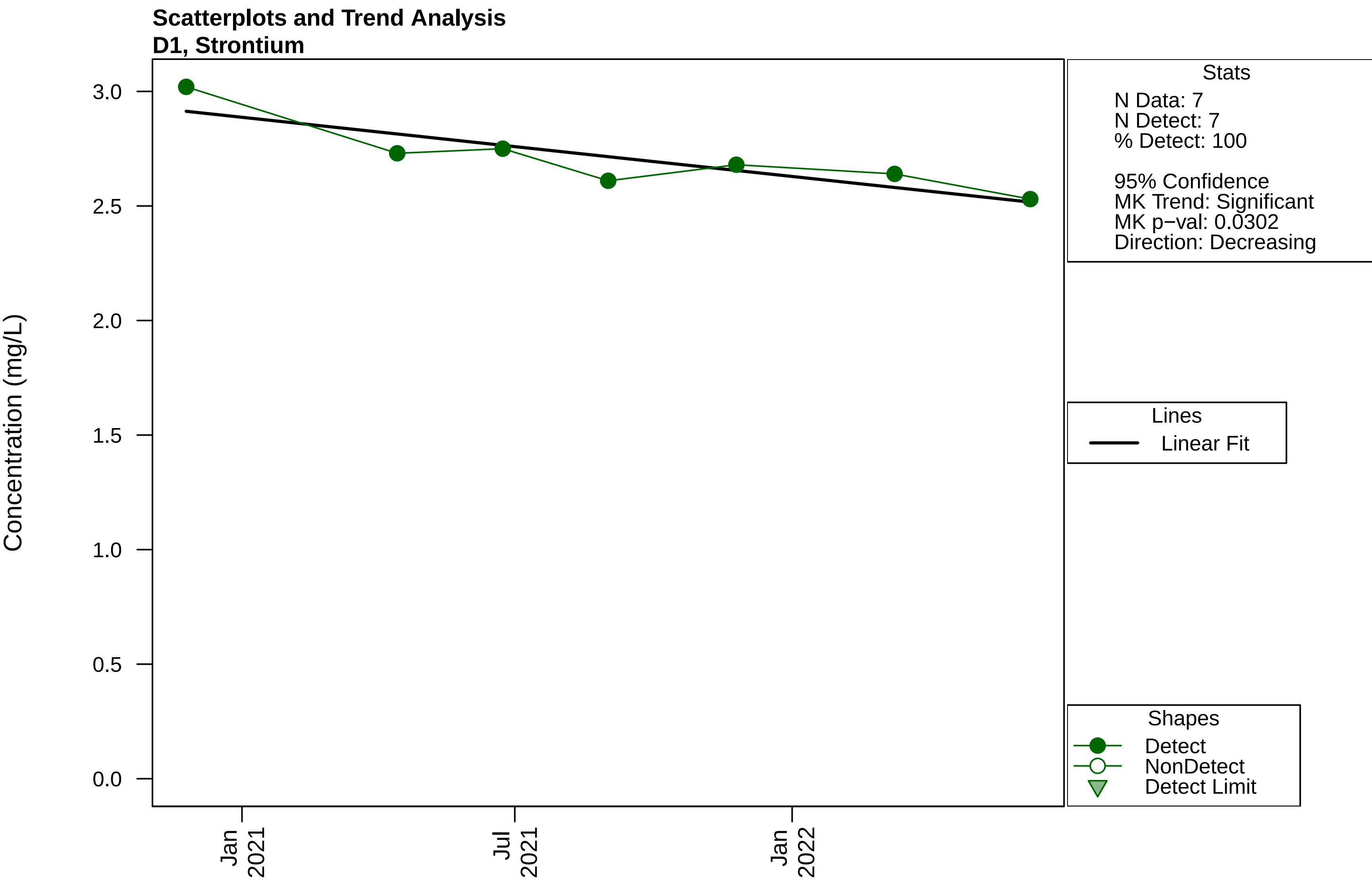

Scatterplots and Trend Analysis
D1, Redox (Field)
Concentration (mV)
60
50
40
30
20
10
0
Jun 2022
Stats
N Data: 1
N Detect: 1
% Detect: 100
MK criteria not met
Shapes
Detect
NonDetect
Detect Limit

Scatterplots and Trend Analysis
D1, Selenium

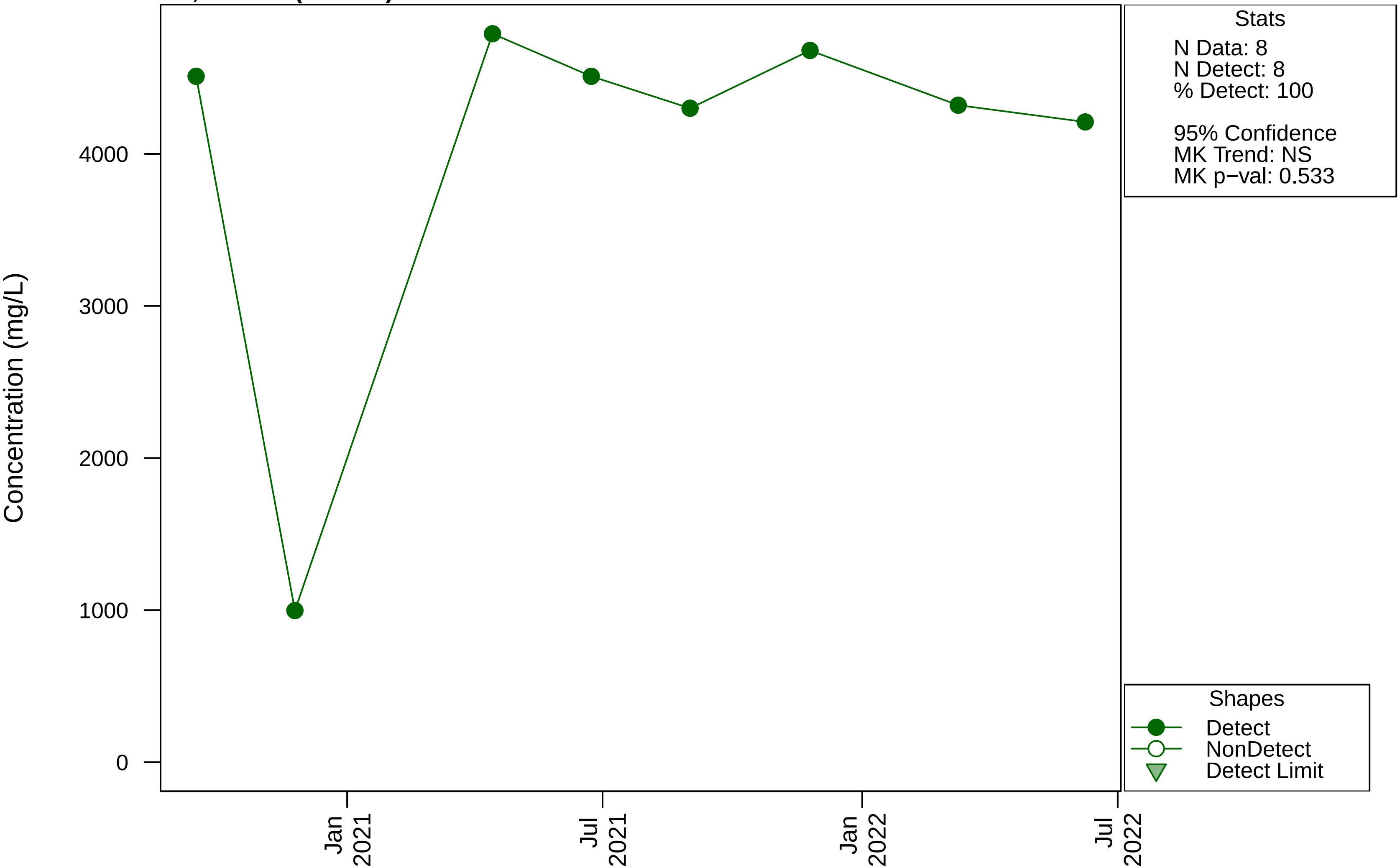




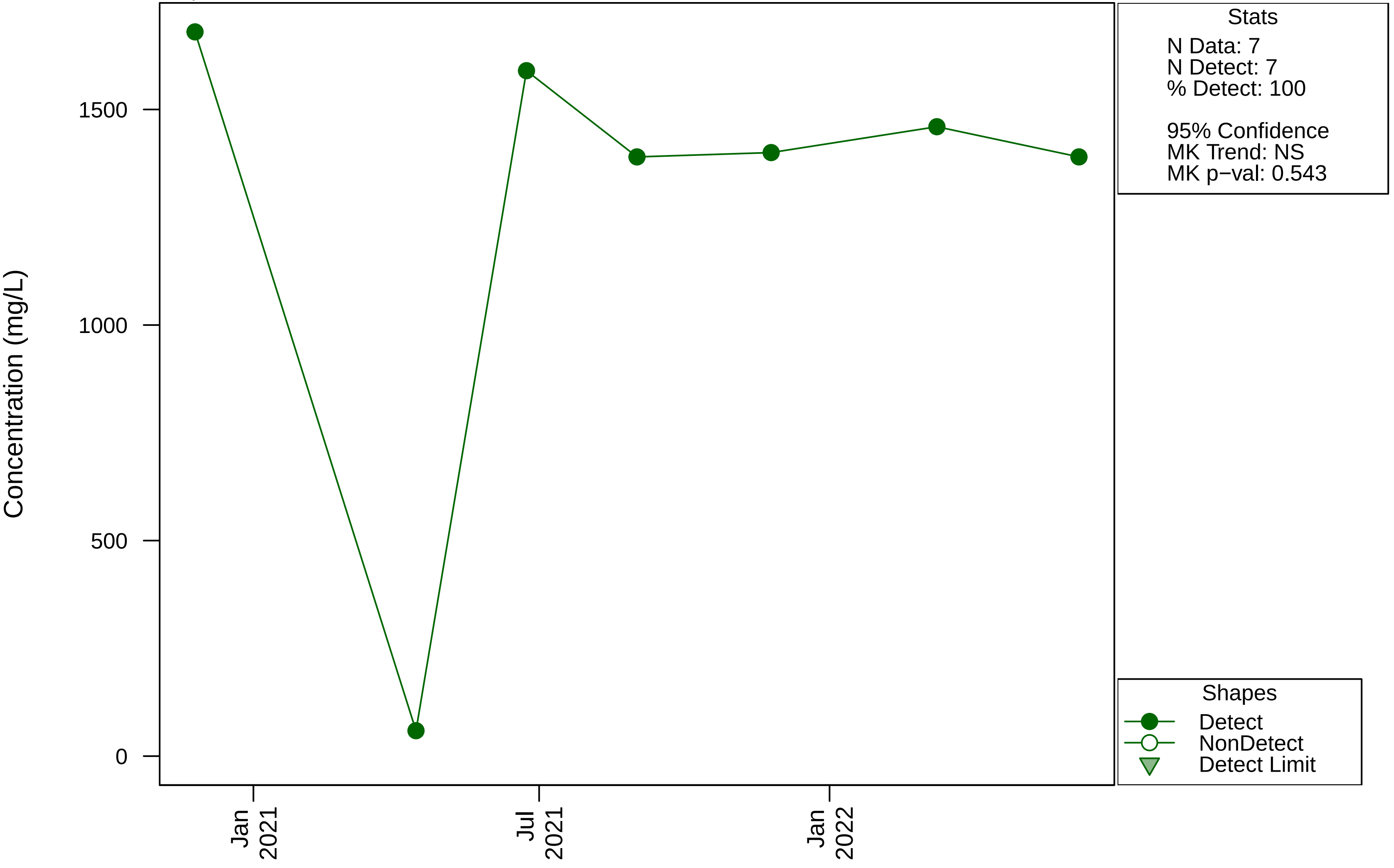
Scatterplots and Trend Analysis
D1, Sodium
Concentration (mg/L)
1400
1200
1000
800
600
400
200
0
Jan 2021
Jul 2021
Jan 2022
Jul 2022
Stats
N Data: 8
N Detect: 8
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.209
Shapes
Detect
NonDetect
Detect Limit

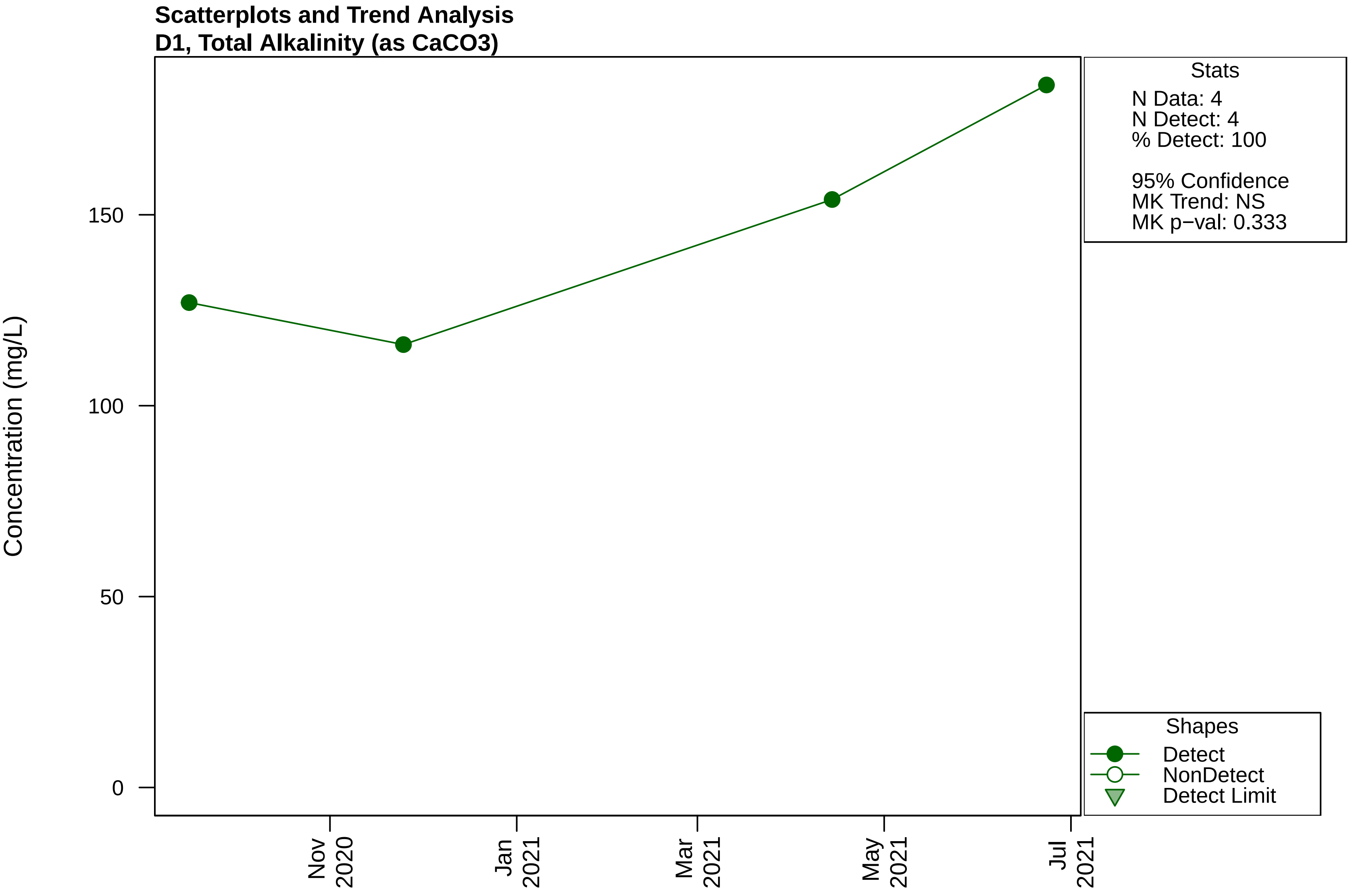

Scatterplots and Trend Analysis
D1, Strontium
Concentration (mg/L)
3.0
2.5
2.0
1.5
1.0
0.5
0.0
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 7
N Detect: 7
% Detect: 100
95% Confidence
MK Trend: Significant
MK p−val: 0.0302
Direction: Decreasing
Lines
Linear Fit
Shapes
Detect
NonDetect
Detect Limit

Scatterplots and Trend Analysis
D1, Sulfate (as SO4)

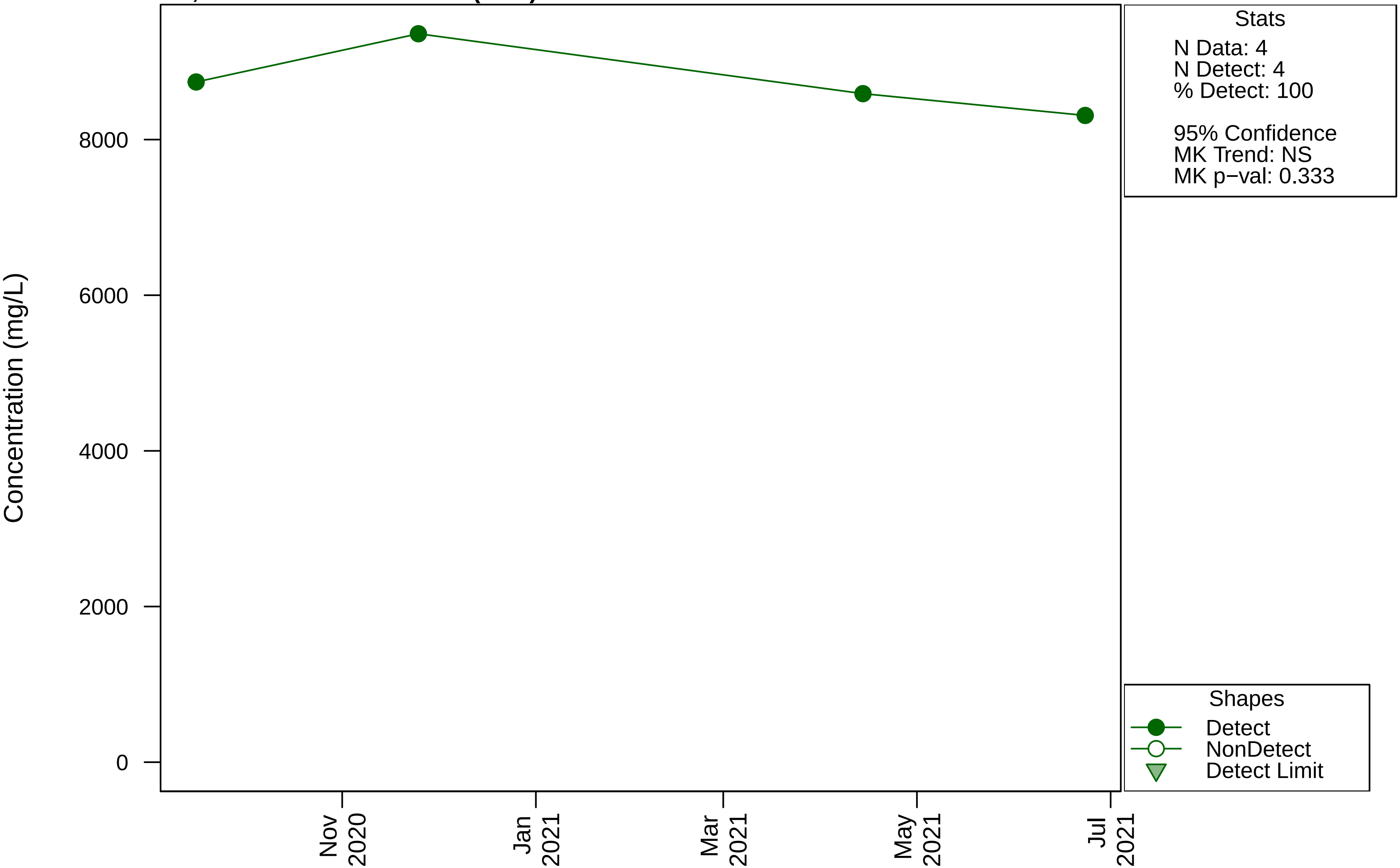


Scatterplots and Trend Analysis
D1, Sulfur

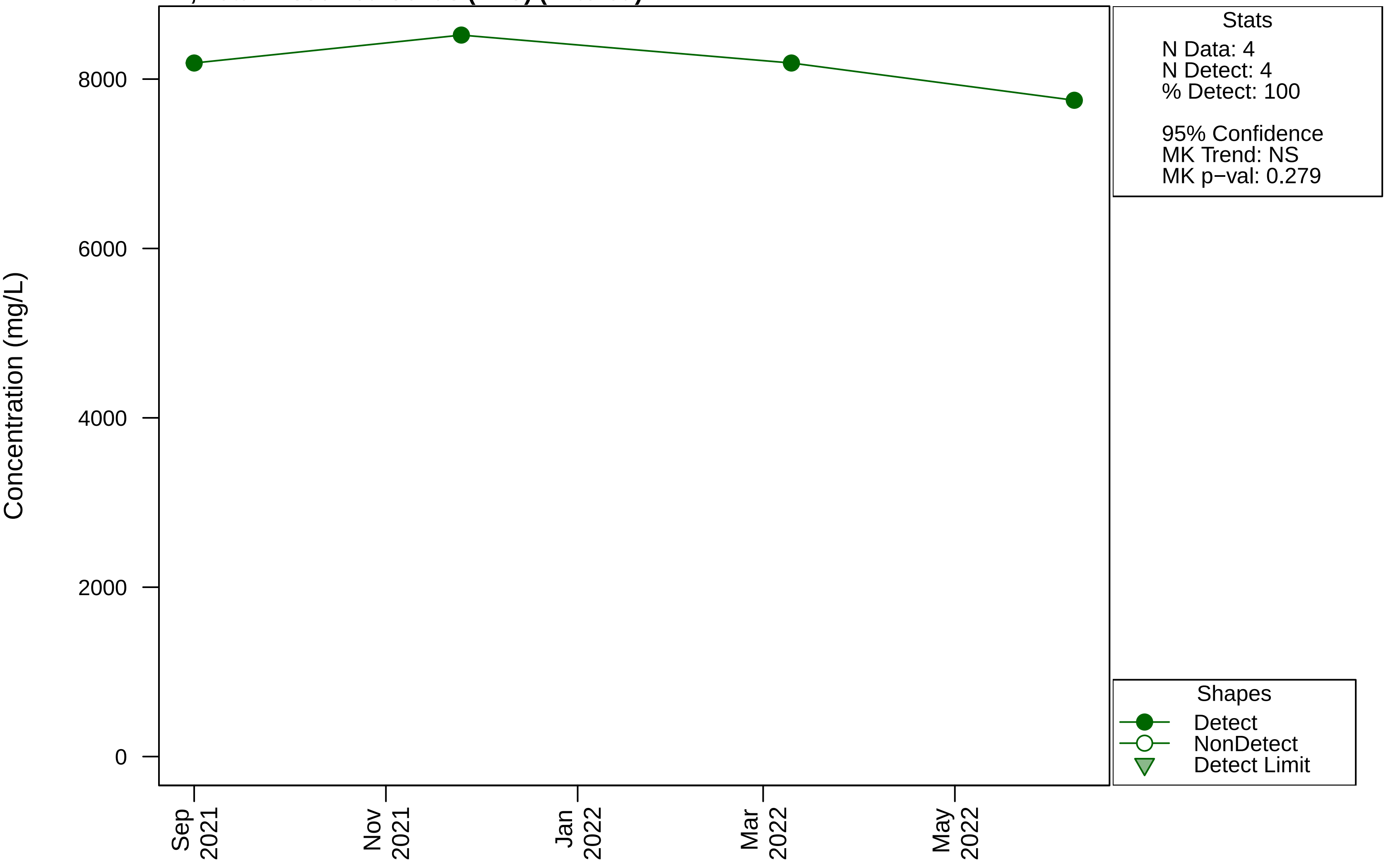



Scatterplots and Trend Analysis
D1, Total Alkalinity (as CaCO3)
Concentration (mg/L)
0
50
100
150
Nov 2020
Jan 2021
Mar 2021
May 2021
Jul 2021
Stats
N Data: 4
N Detect: 4
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.333
Shapes
Detect
NonDetect
Detect Limit

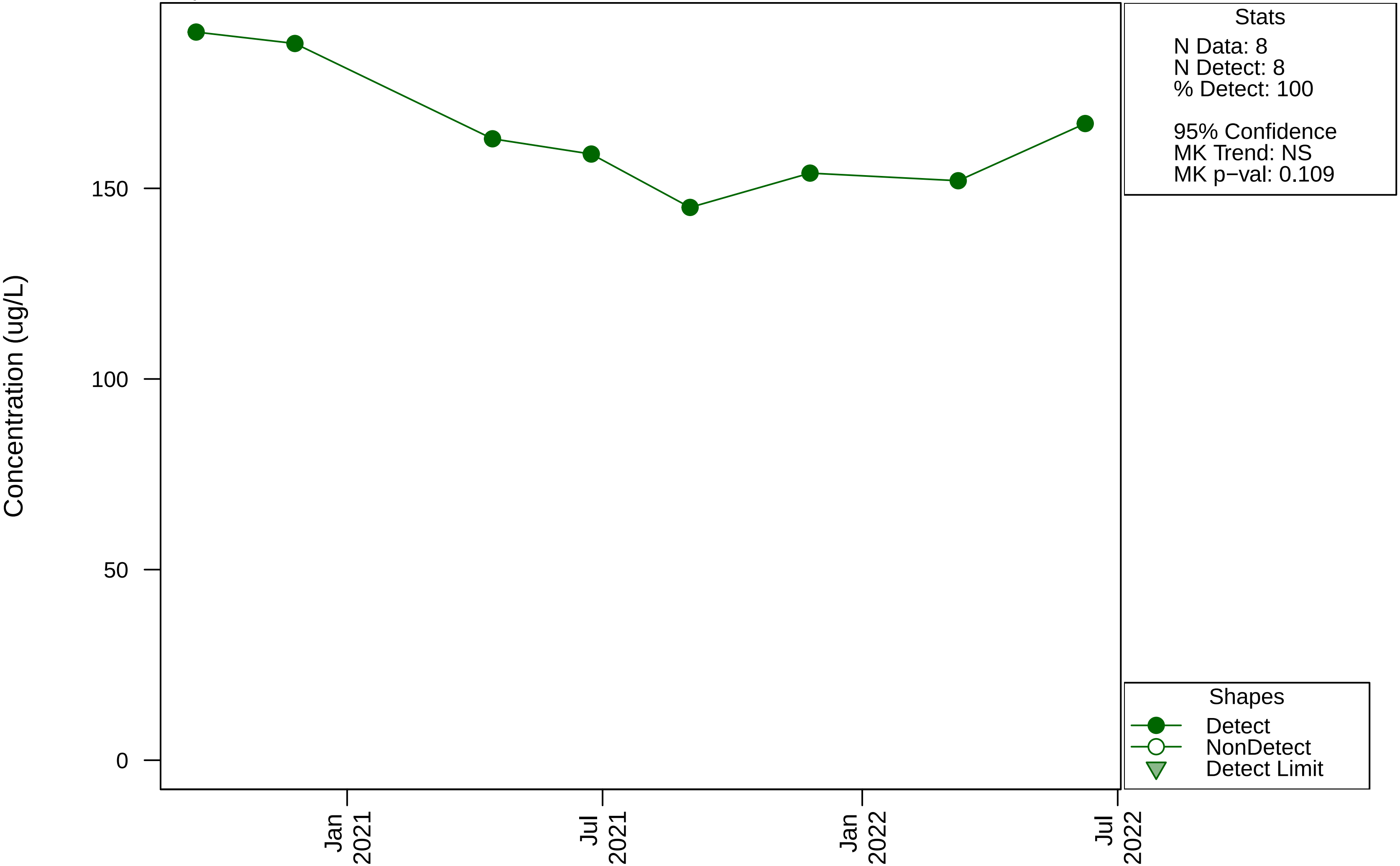
Scatterplots and Trend Analysis
D1, Total Dissolved Solids (TDS)

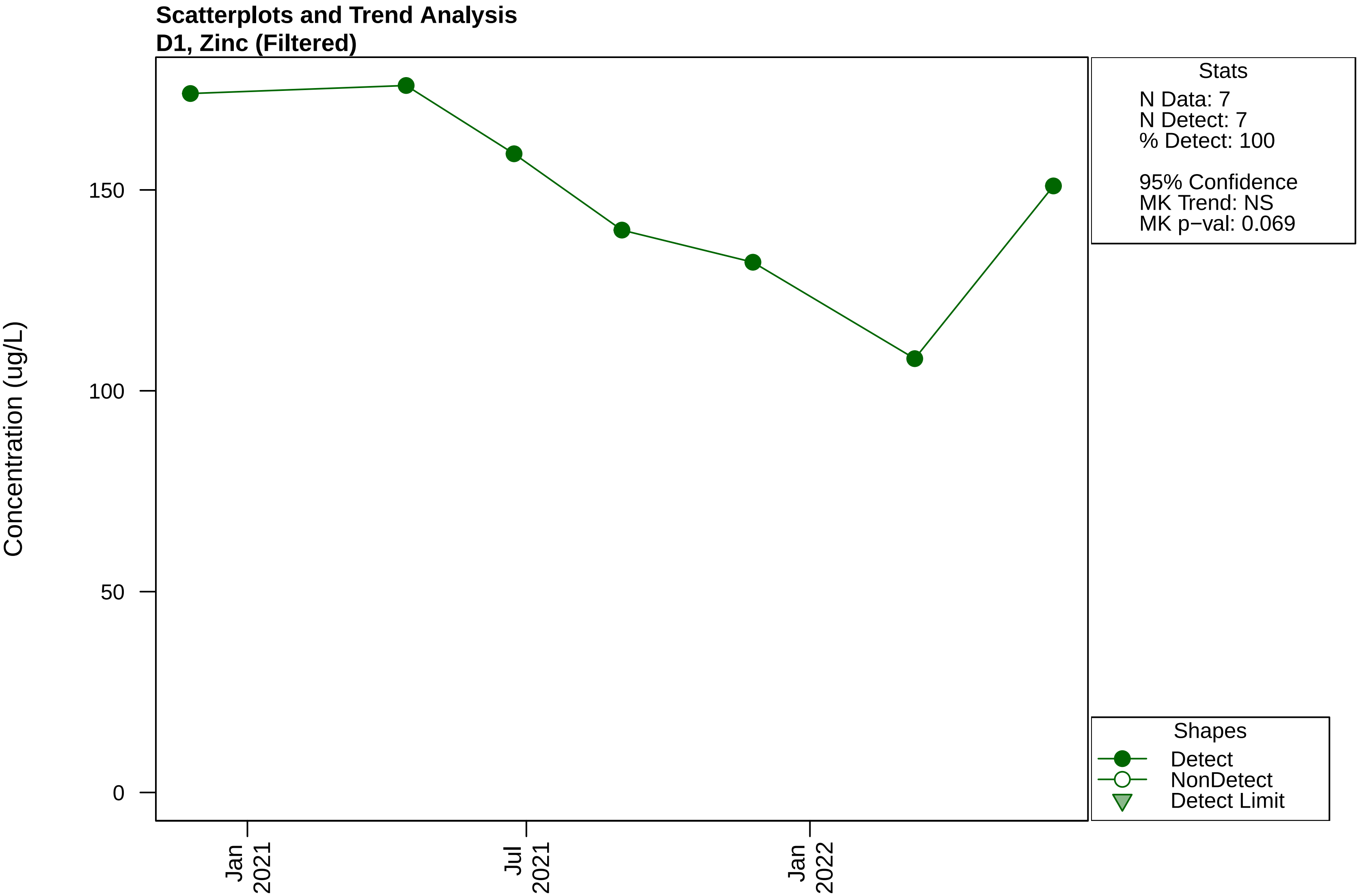


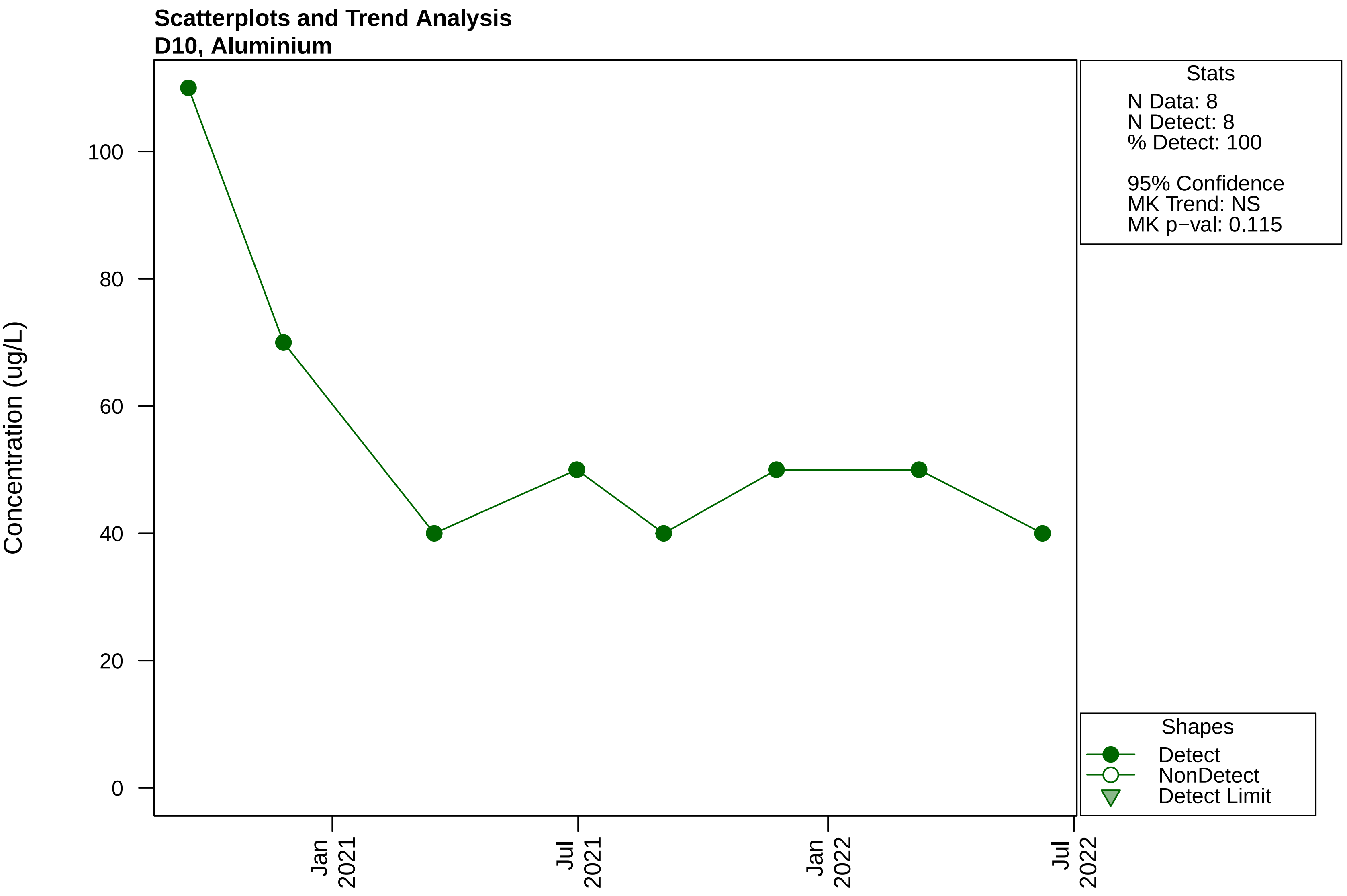
Scatterplots and Trend Analysis
D1, Total Dissolved Solids (TDS) (Filtered)



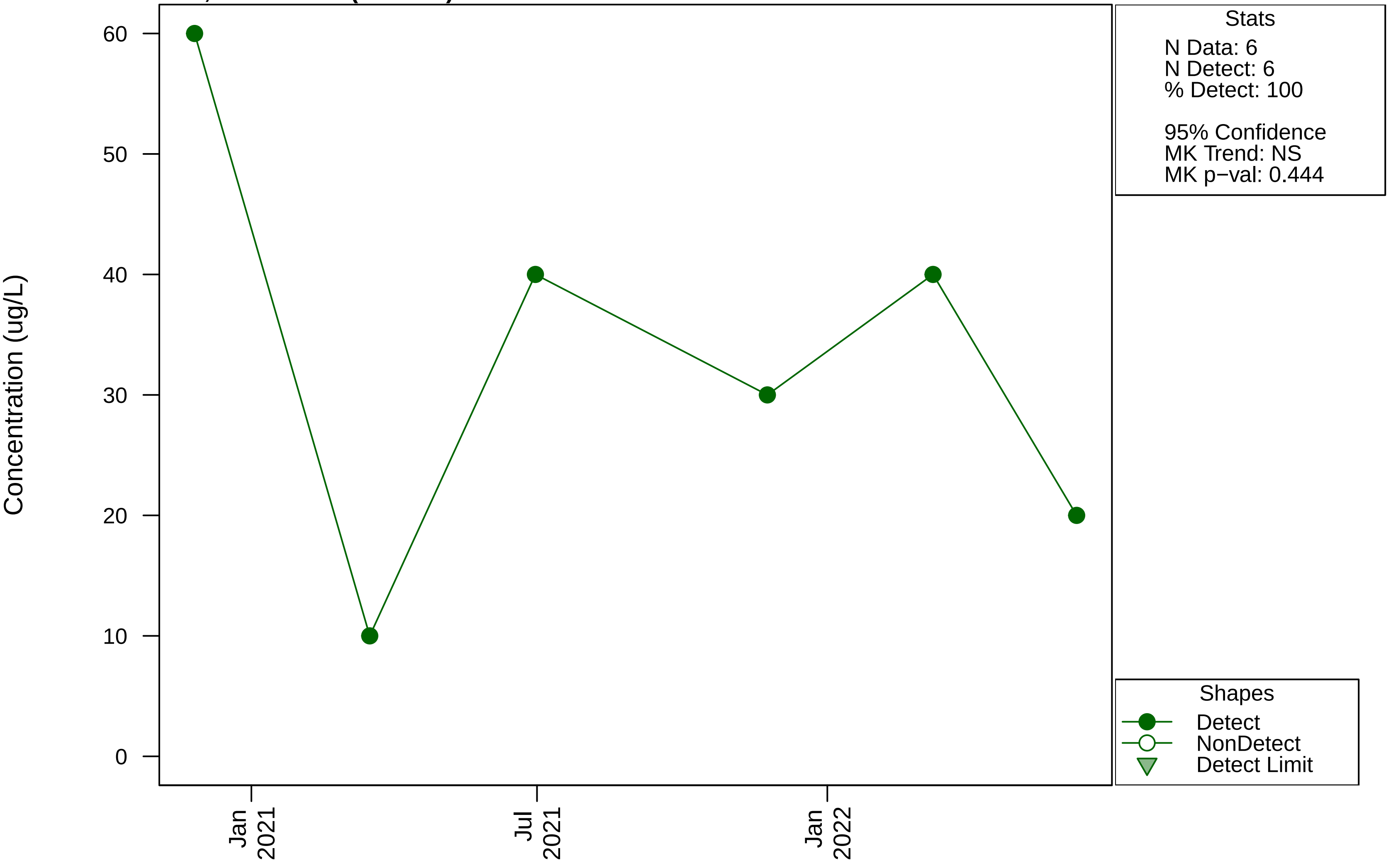
Scatterplots and Trend Analysis
D1, Zinc



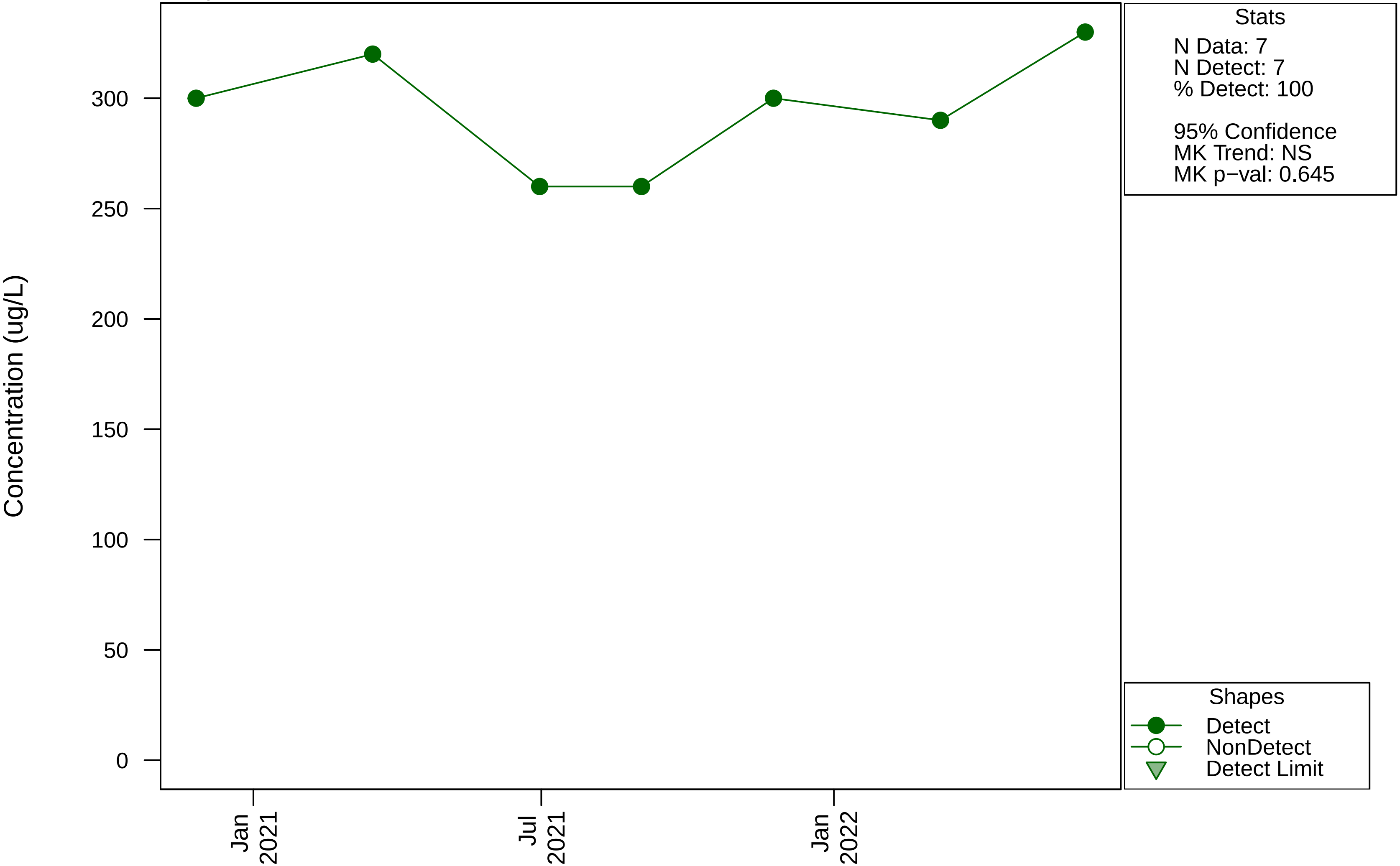

Scatterplots and Trend Analysis
D1, Zinc (Filtered)
Concentration (ug/L)
0
50
100
150
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 7
N Detect: 7
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.069
Shapes
Detect
NonDetect
Detect Limit

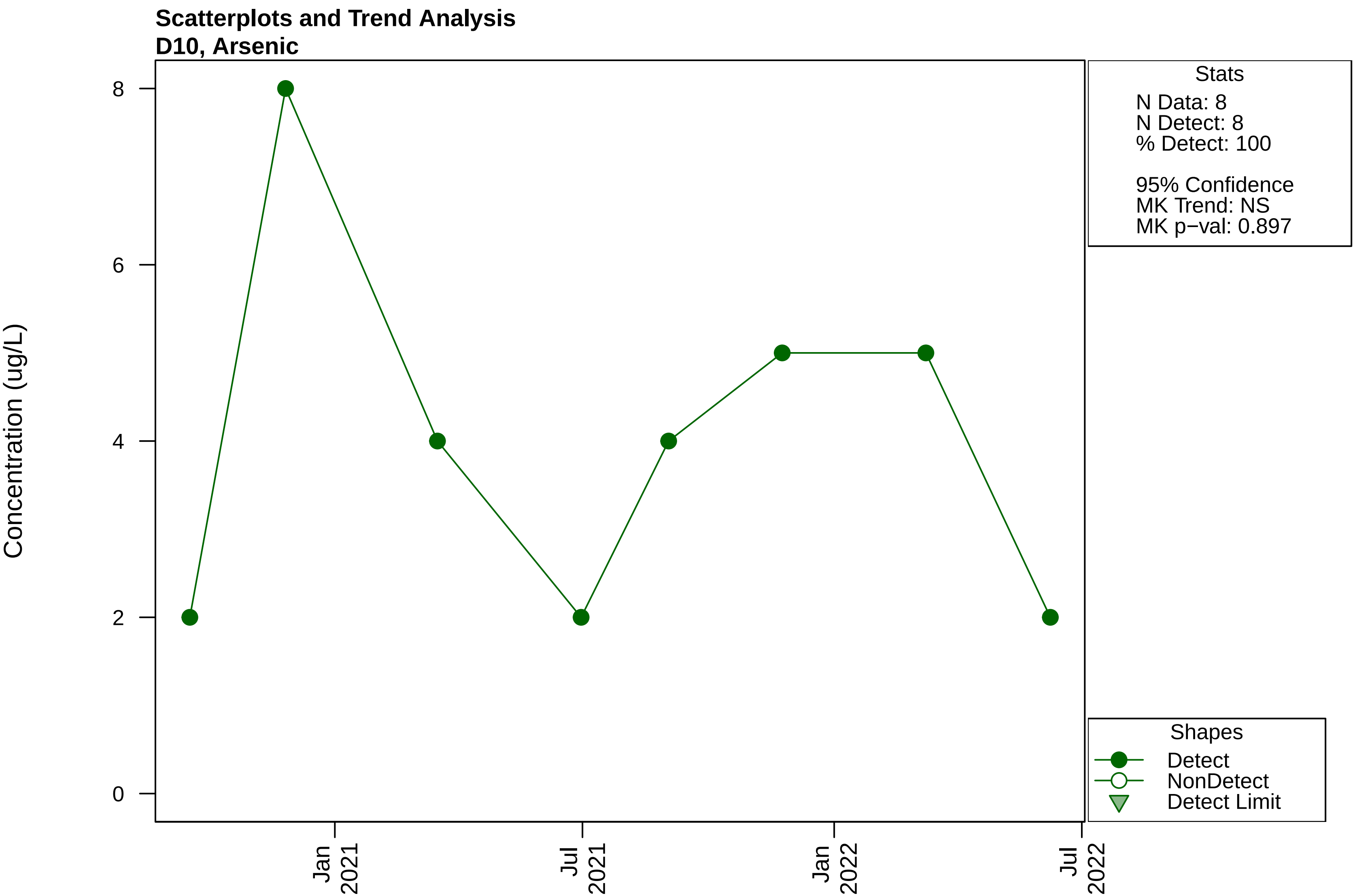

Scatterplots and Trend Analysis
D10, Aluminium
Concentration (ug/L)
0
20
40
60
80
100
Jan 2021
Jul 2021
Jan 2022
Jul 2022
Stats
N Data: 8
N Detect: 8
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.115
Shapes
Detect
NonDetect
Detect Limit

Scatterplots and Trend Analysis
D10, Aluminium (Filtered)

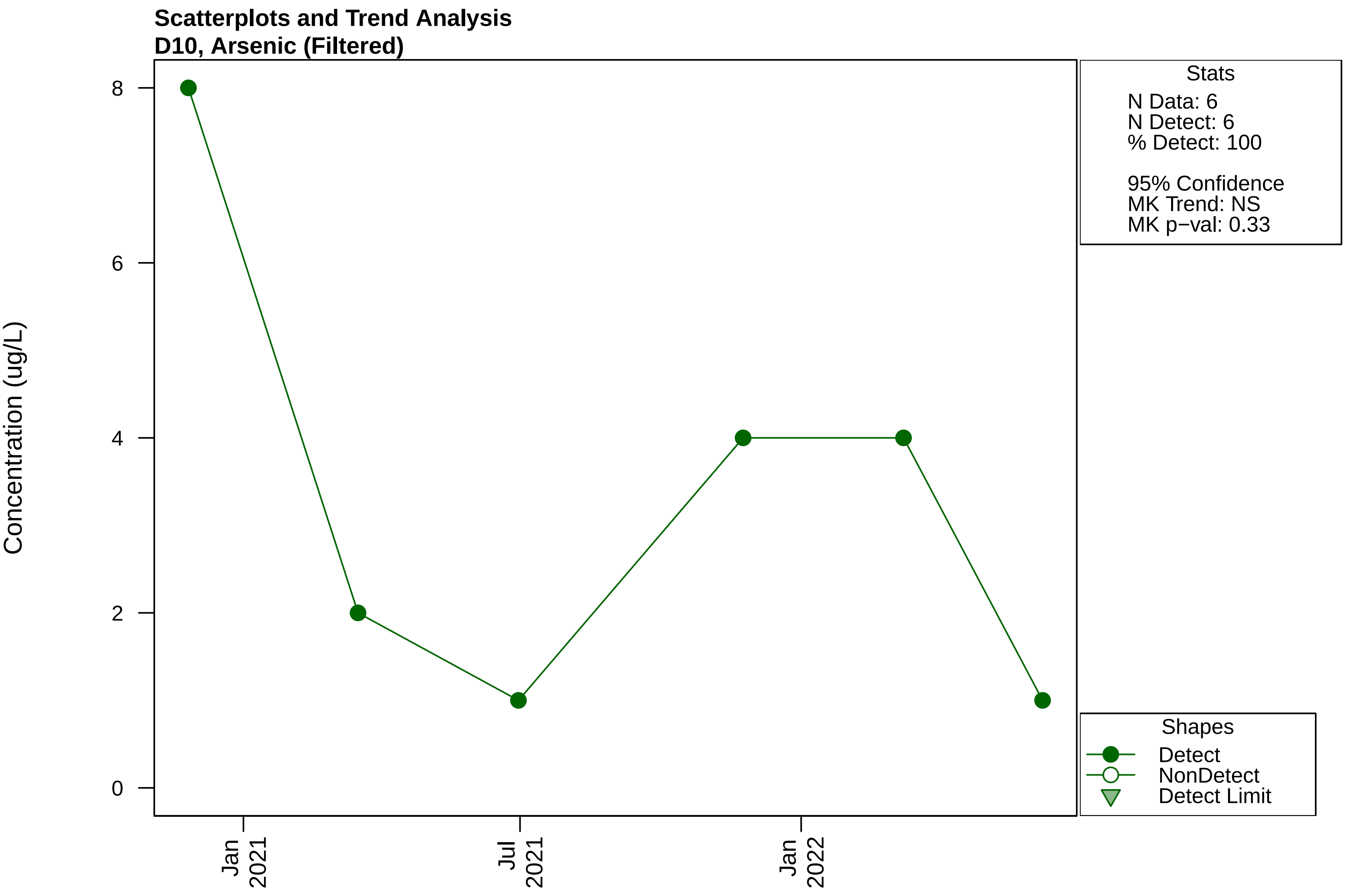


Scatterplots and Trend Analysis
D10, Ammonia

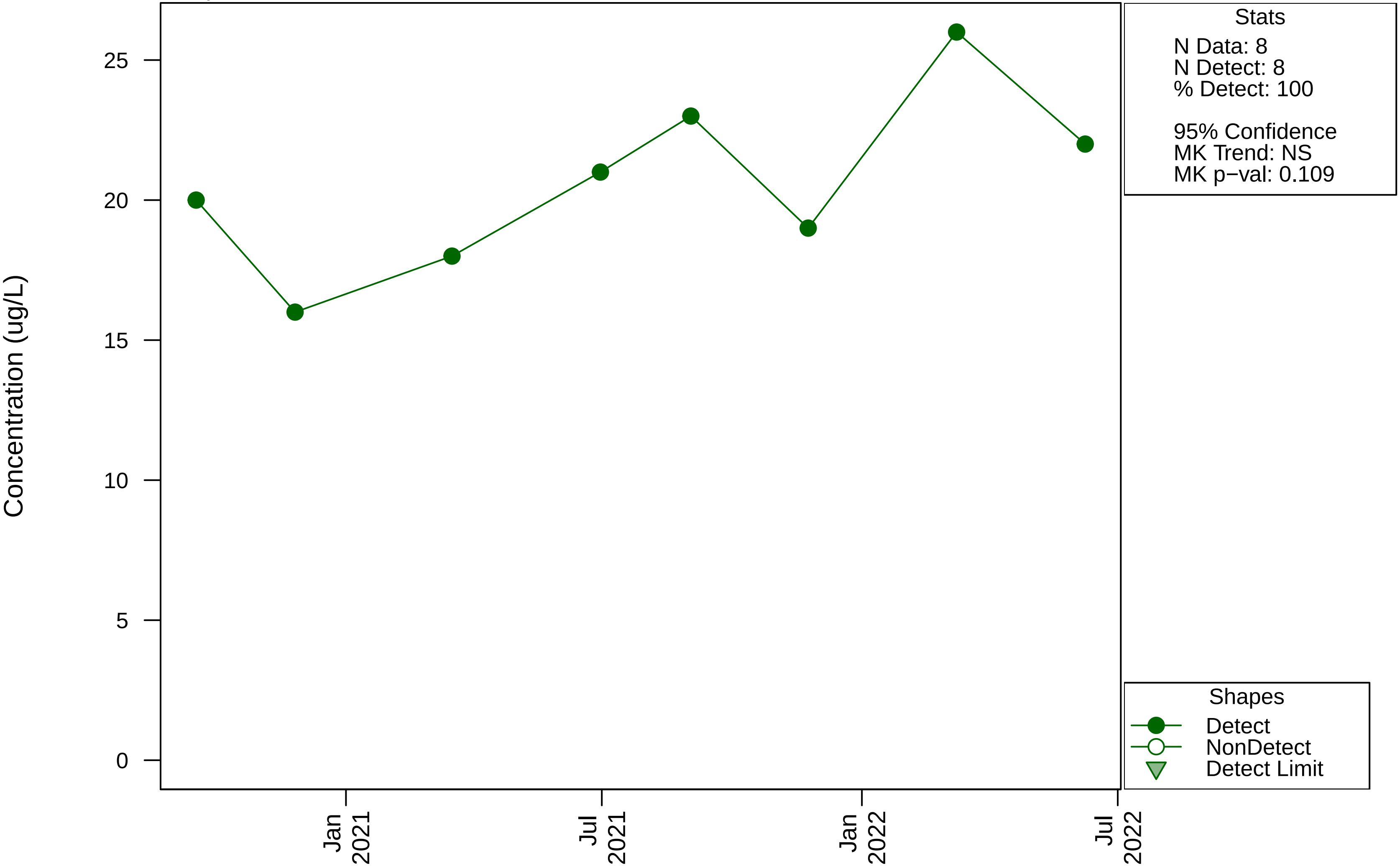


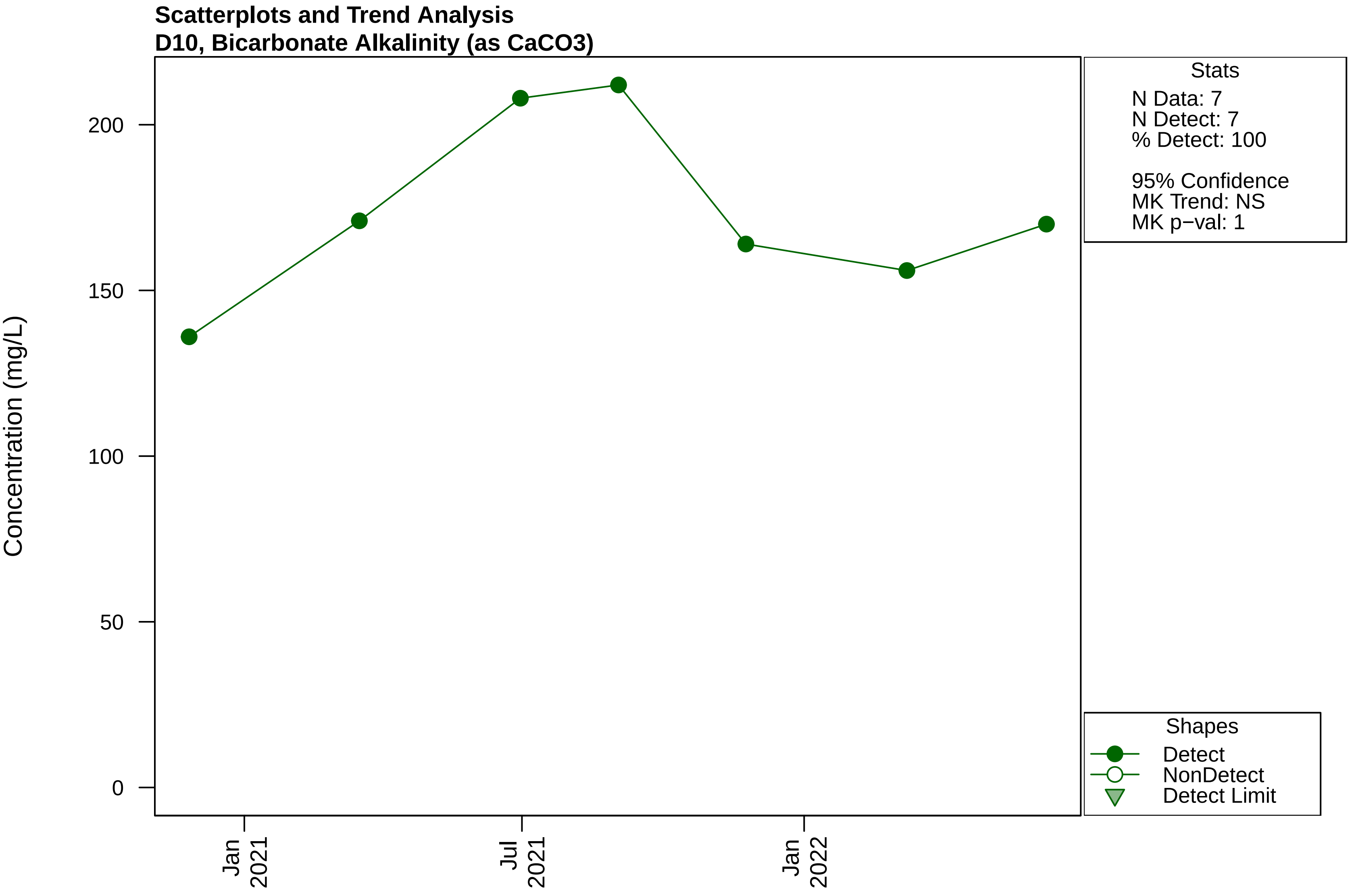


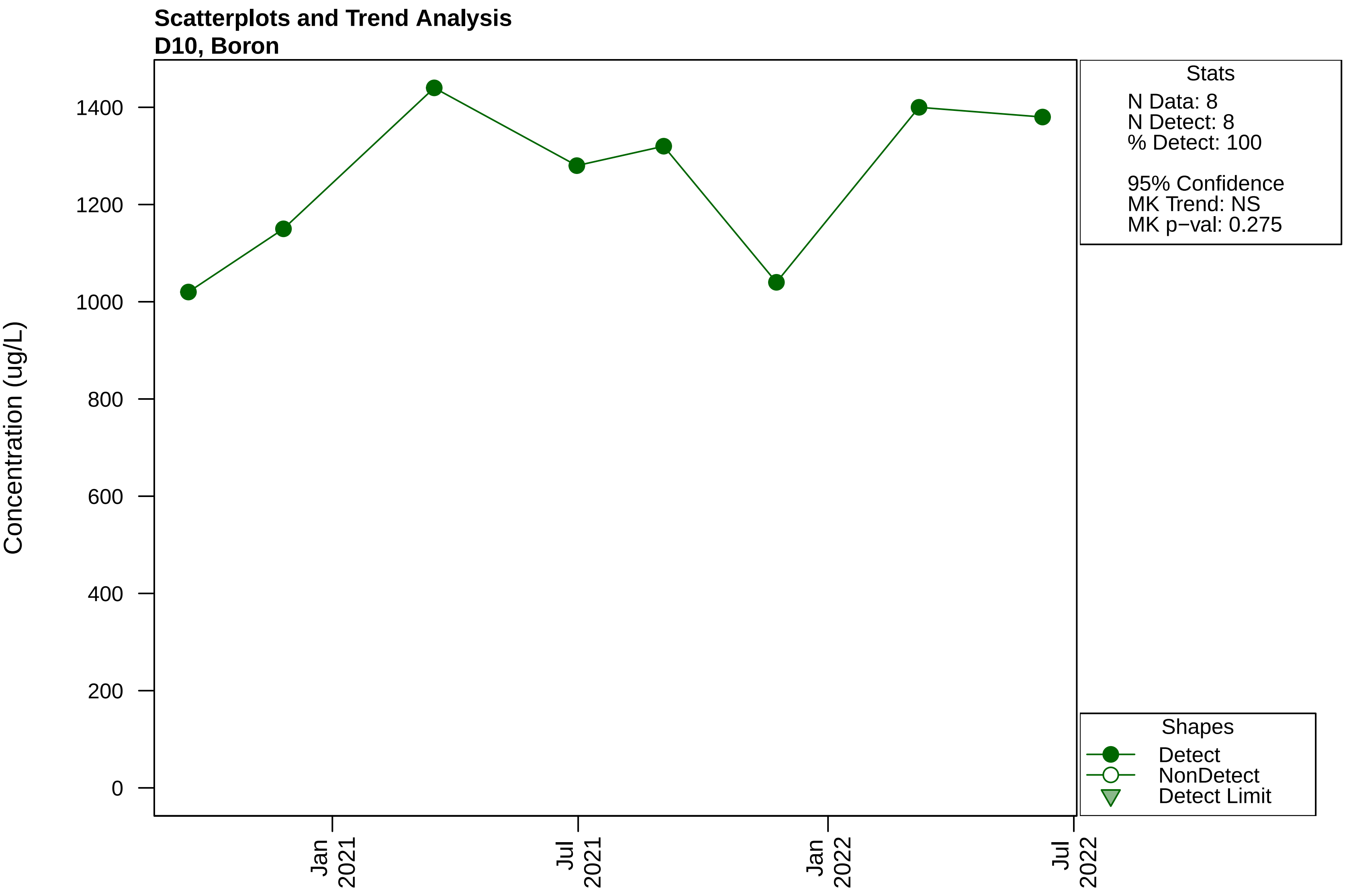
Scatterplots and Trend Analysis
D10, Arsenic
Concentration (ug/L)
0
2
4
6
8
Jan 2021
Jul 2021
Jan 2022
Jul 2022
Stats
N Data: 8
N Detect: 8
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.897
Shapes
Detect
NonDetect
Detect Limit


Scatterplots and Trend Analysis
D10, Arsenic (Filtered)
Concentration (ug/L)
0
2
4
6
8
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 6
N Detect: 6
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.33
Shapes
Detect
NonDetect
Detect Limit

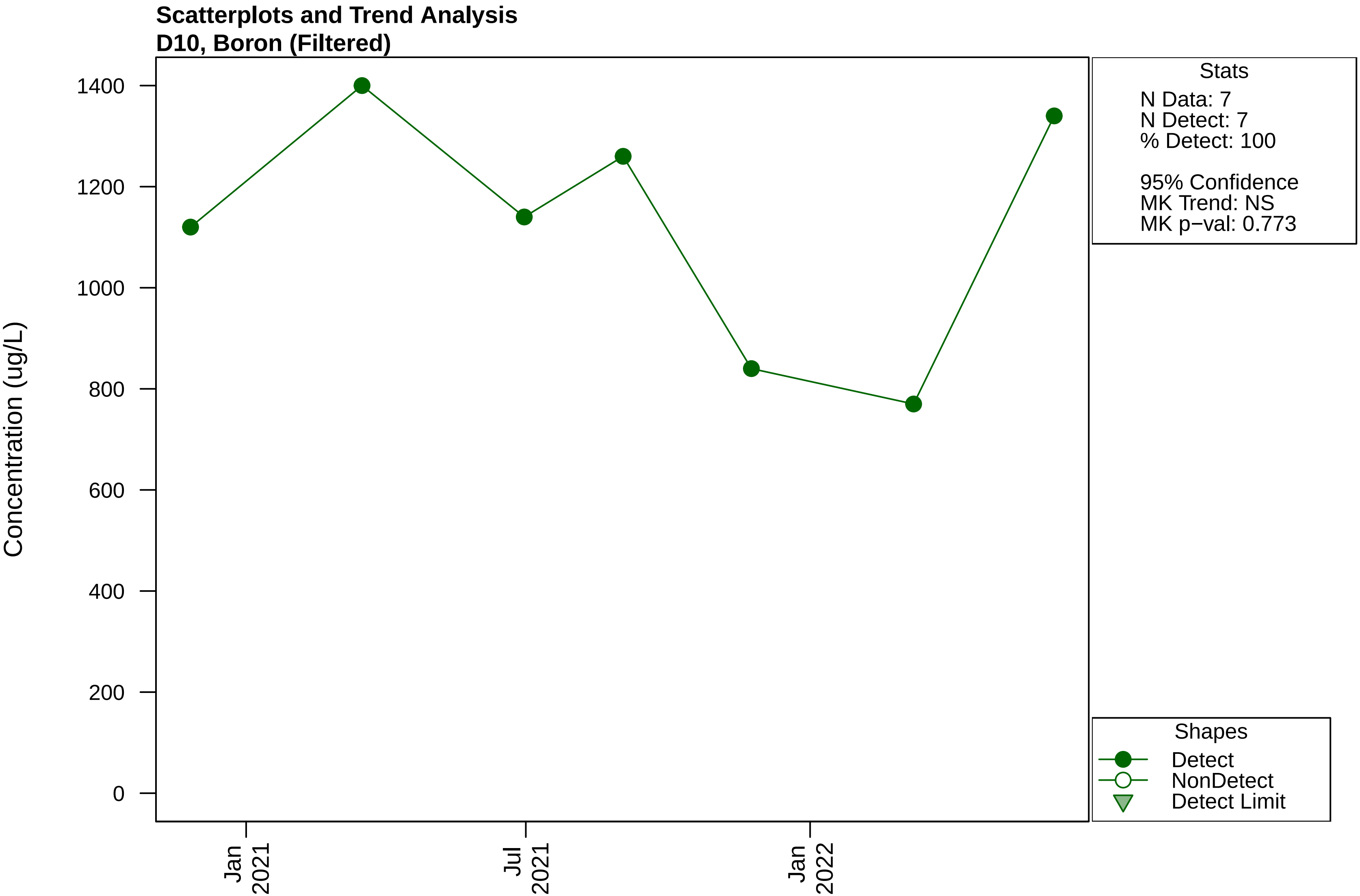
Scatterplots and Trend Analysis
D10, Barium



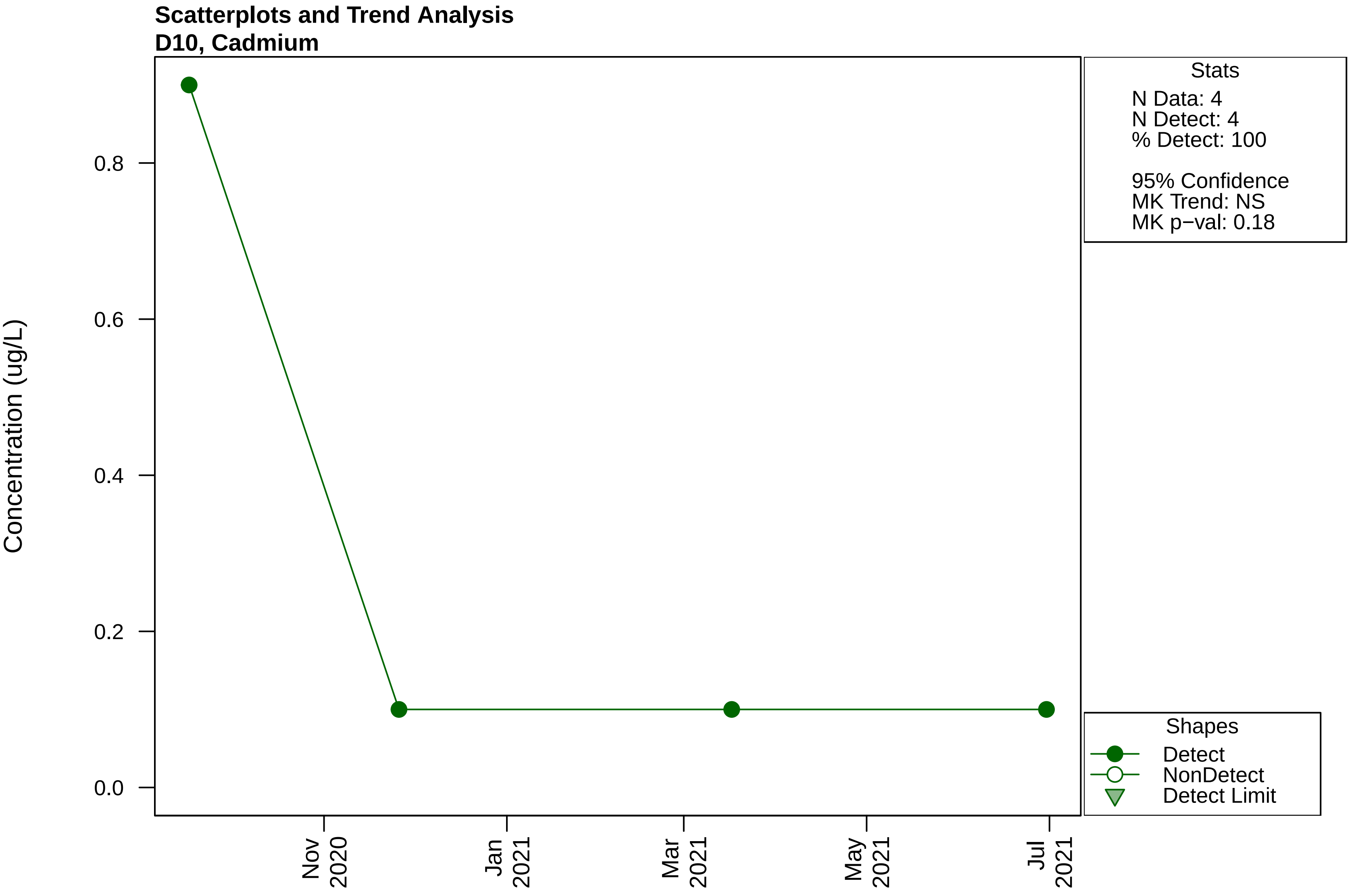

Scatterplots and Trend Analysis
D10, Bicarbonate Alkalinity (as CaCO3)
Concentration (mg/L)
0
50
100
150
200
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 7
N Detect: 7
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 1
Shapes
Detect
NonDetect
Detect Limit



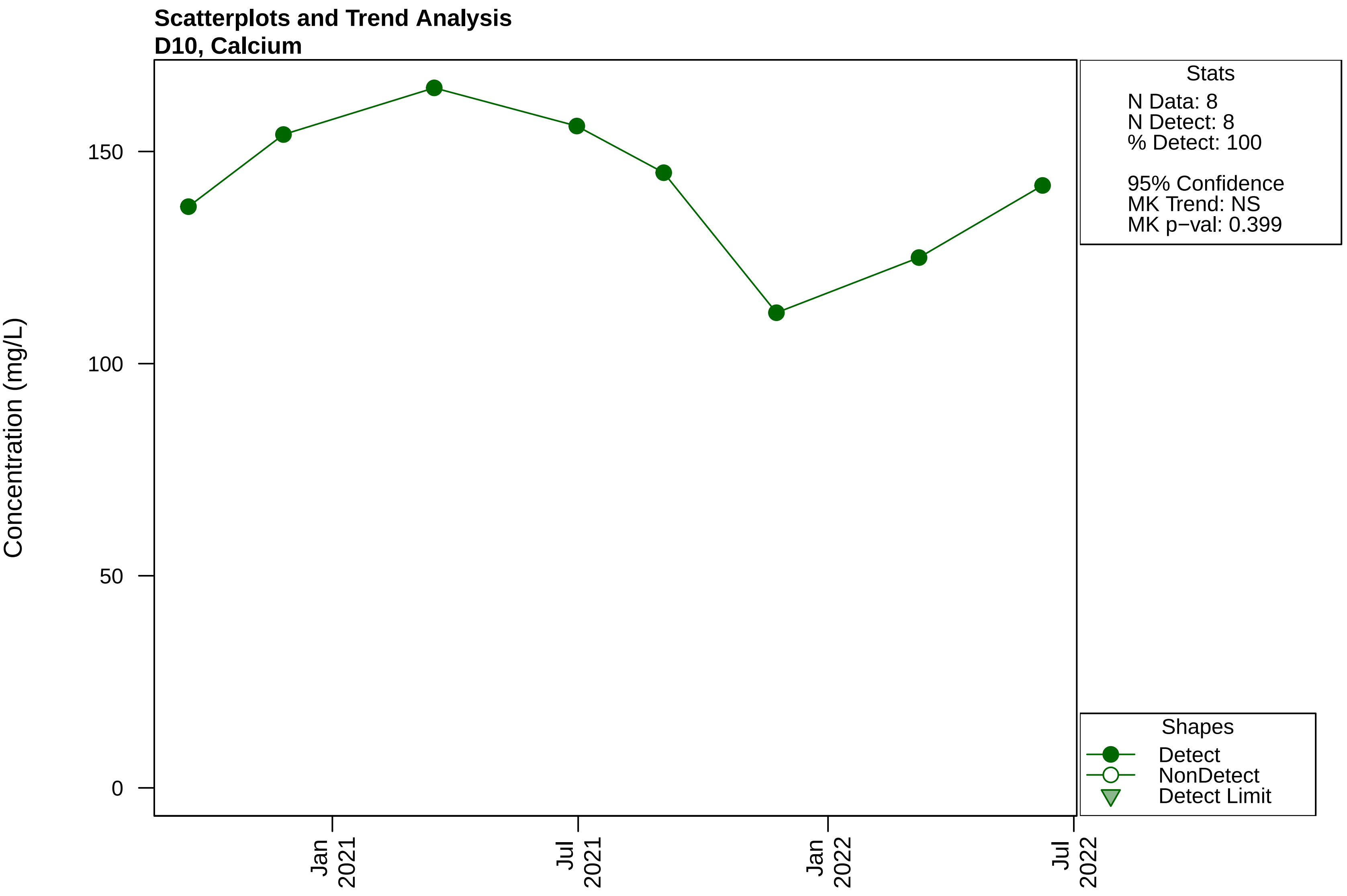
Scatterplots and Trend Analysis
D10, Boron
Concentration (ug/L)
0
200
400
600
800
1000
1200
1400
Jan 2021
Jul 2021
Jan 2022
Jul 2022
Stats
N Data: 8
N Detect: 8
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.275
Shapes
Detect
NonDetect
Detect Limit



Scatterplots and Trend Analysis
D10, Boron (Filtered)
Concentration (ug/L)
0
200
400
600
800
1000
1200
1400
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 7
N Detect: 7
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.773
Shapes
Detect
NonDetect
Detect Limit

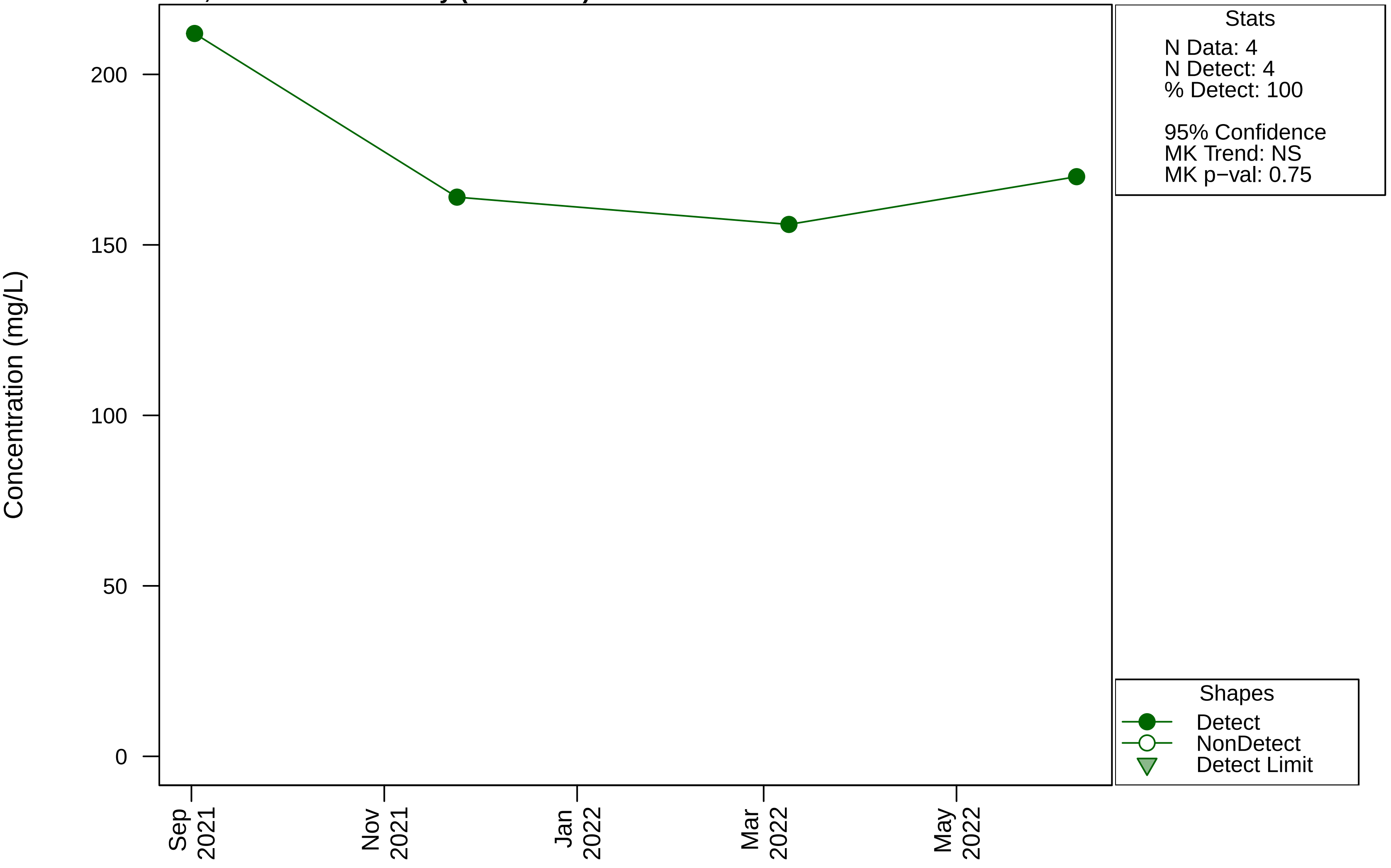


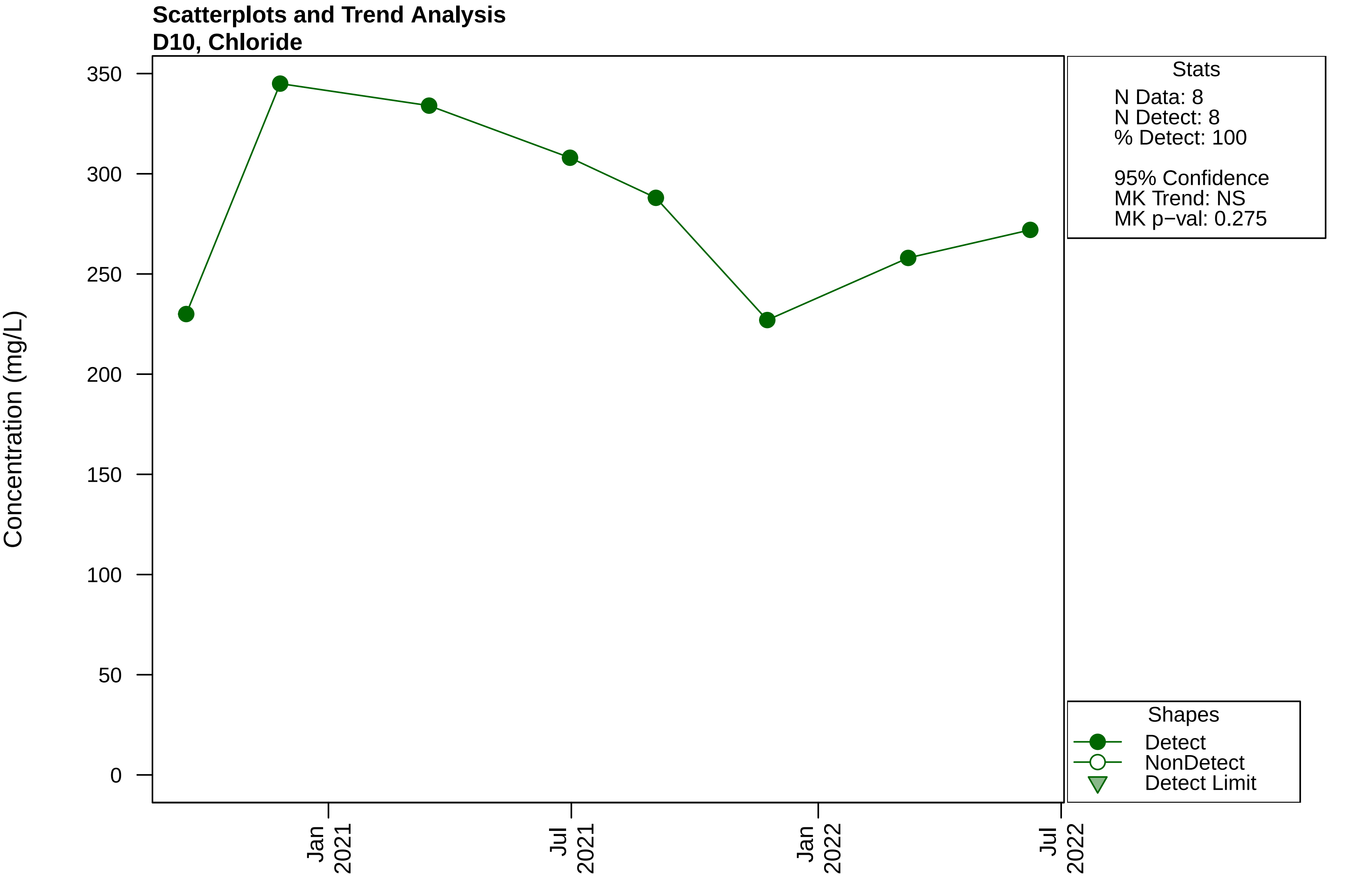
Scatterplots and Trend Analysis
D10, Cadmium
Concentration (ug/L)
0.0
0.2
0.4
0.6
0.8
Nov 2020
Jan 2021
Mar 2021
May 2021
Jul 2021
Stats
N Data: 4
N Detect: 4
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.18
Shapes
Detect
NonDetect
Detect Limit

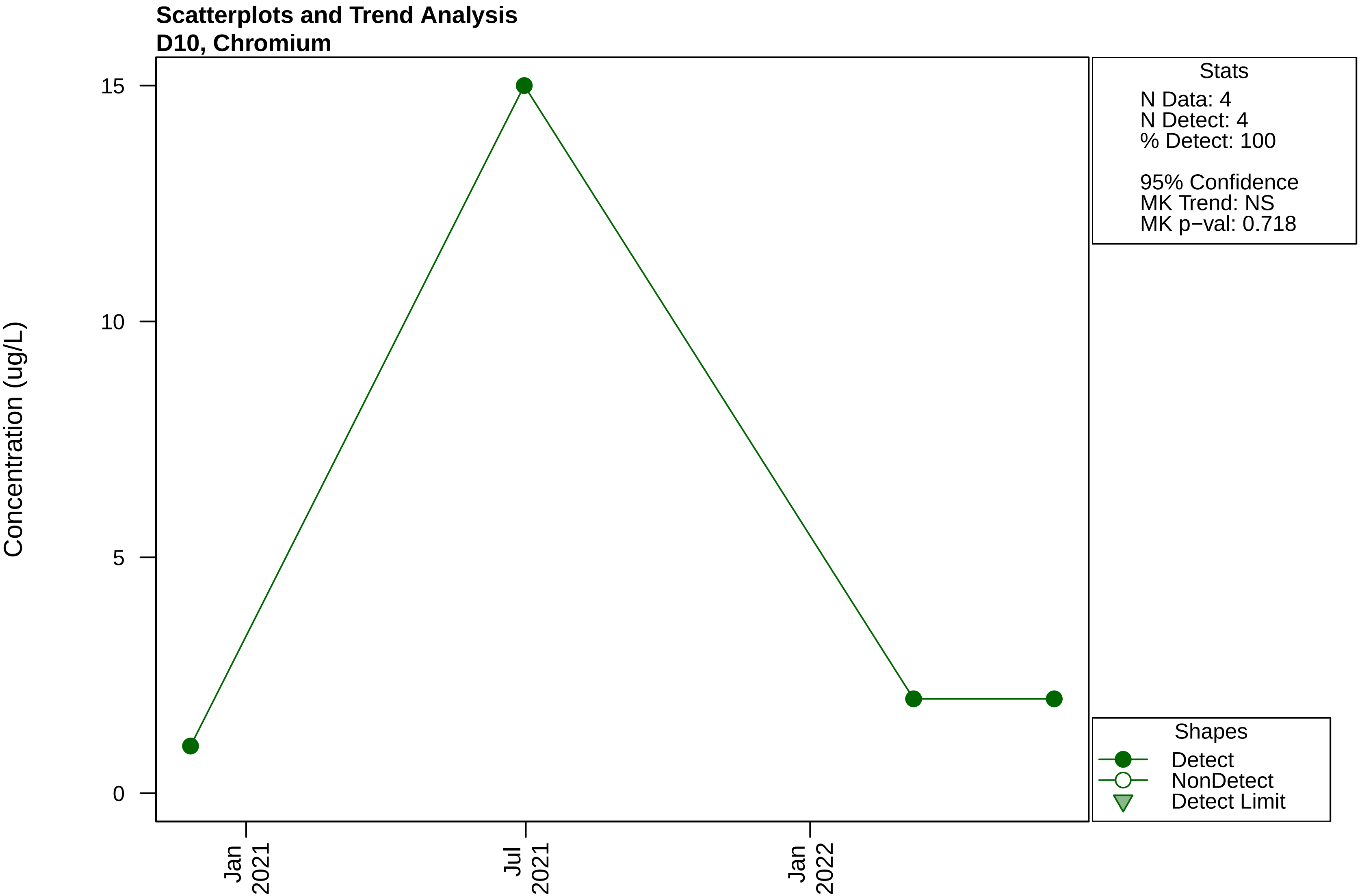


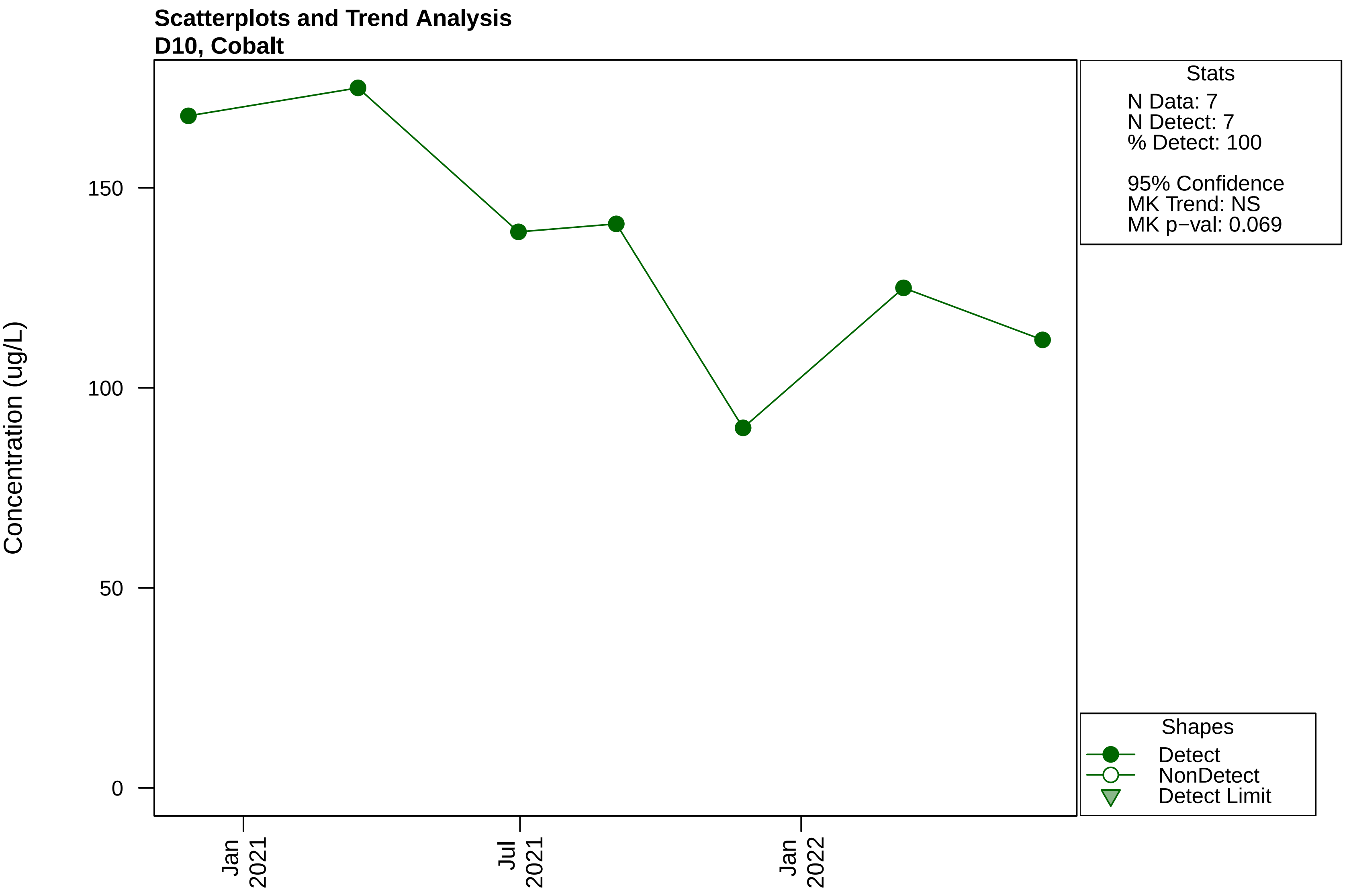
Scatterplots and Trend Analysis
D10, Calcium
Concentration (mg/L)
0
50
100
150
Jan 2021
Jul 2021
Jan 2022
Jul 2022
Stats
N Data: 8
N Detect: 8
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.399
Shapes
Detect
NonDetect
Detect Limit

Scatterplots and Trend Analysis
D10, Carbonate Alkalinity (as CaCO3)

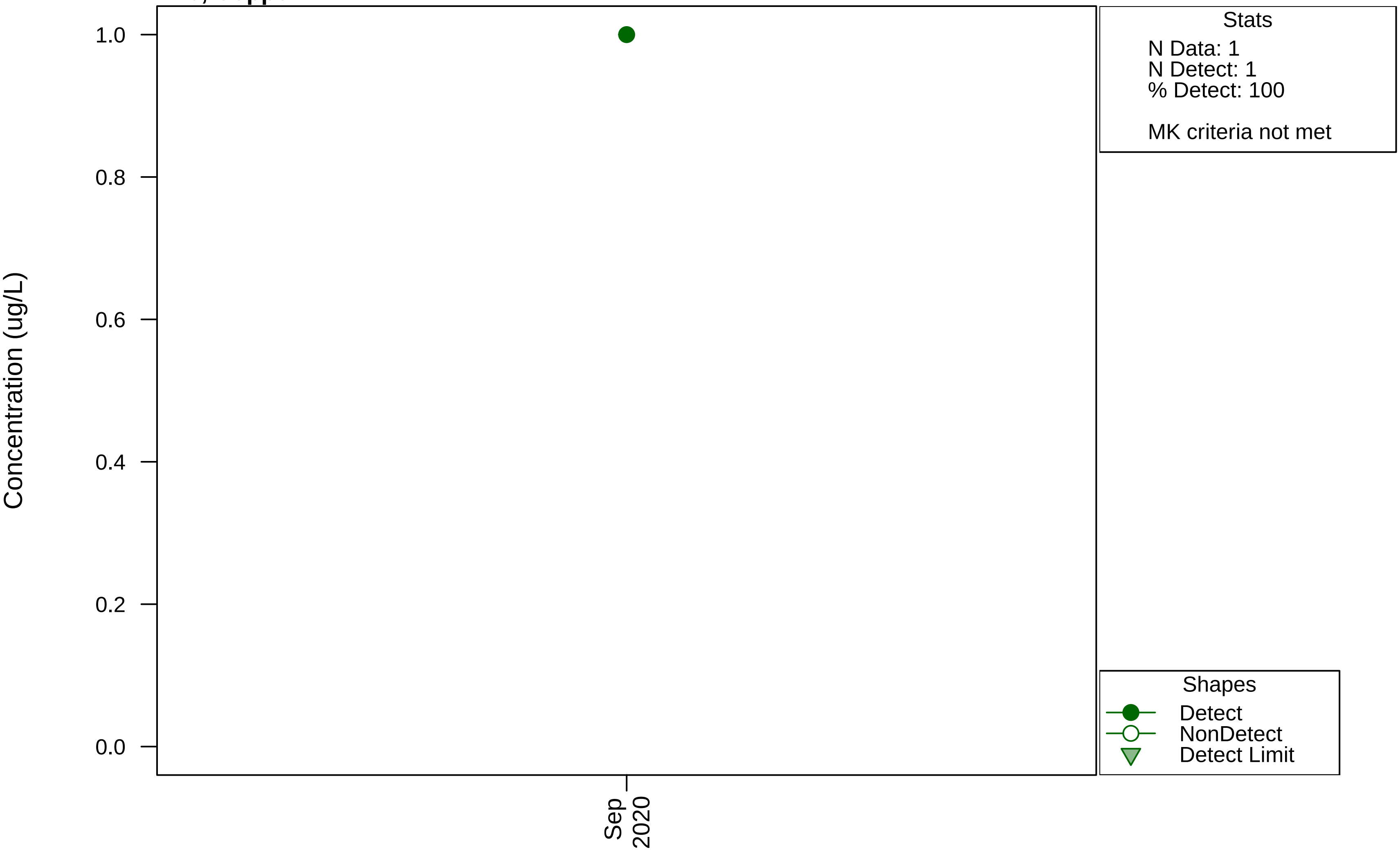


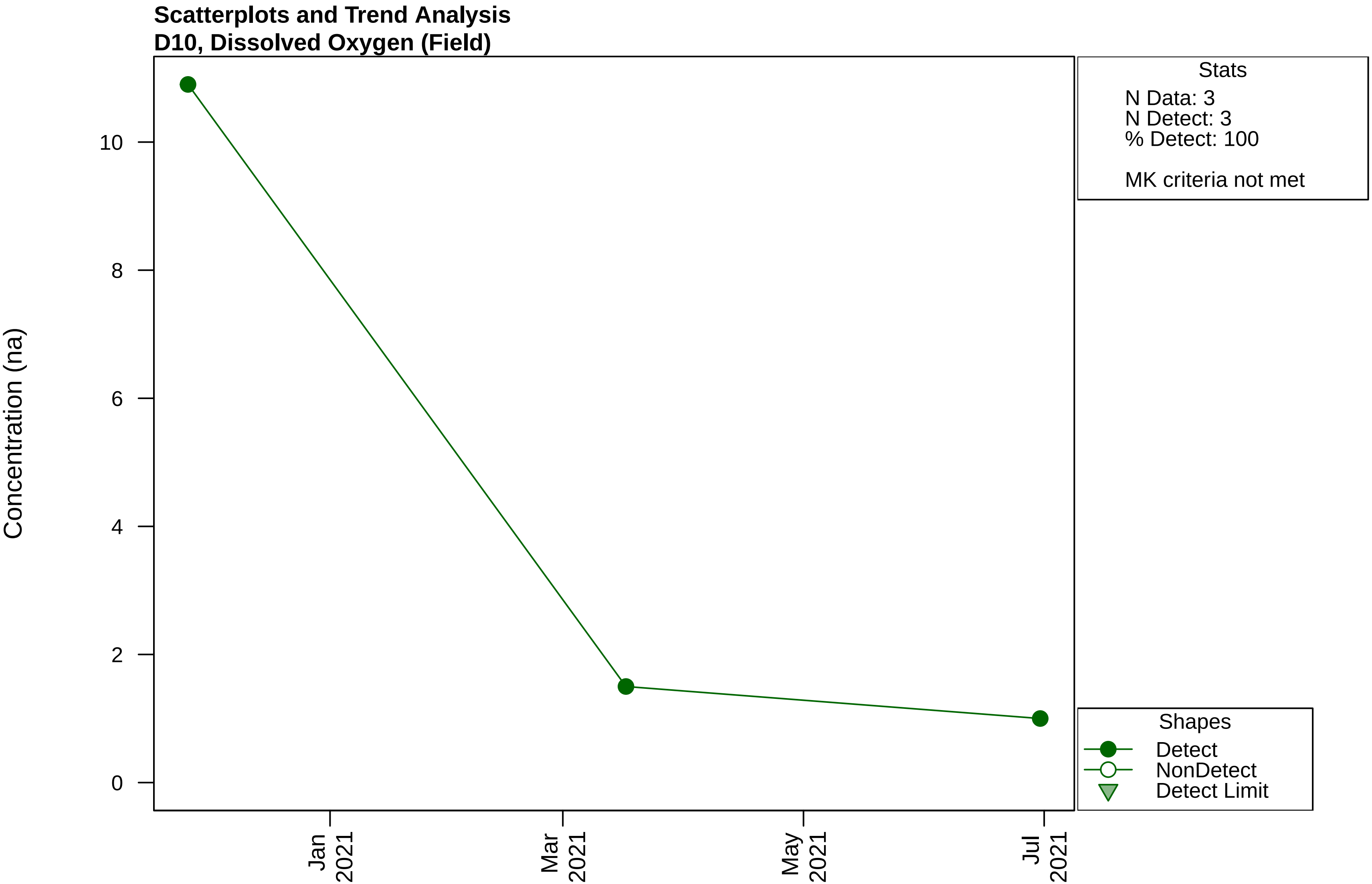

Scatterplots and Trend Analysis
D10, Chloride
Concentration (mg/L)
350
300
250
200
150
100
50
0
Jan 2021
Jul 2021
Jan 2022
Jul 2022
Stats
N Data: 8
N Detect: 8
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.275
Shapes
Detect
NonDetect
Detect Limit


Scatterplots and Trend Analysis
D10, Chromium
Concentration (ug/L)
0
5
10
15
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 4
N Detect: 4
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.718
Shapes
Detect
NonDetect
Detect Limit

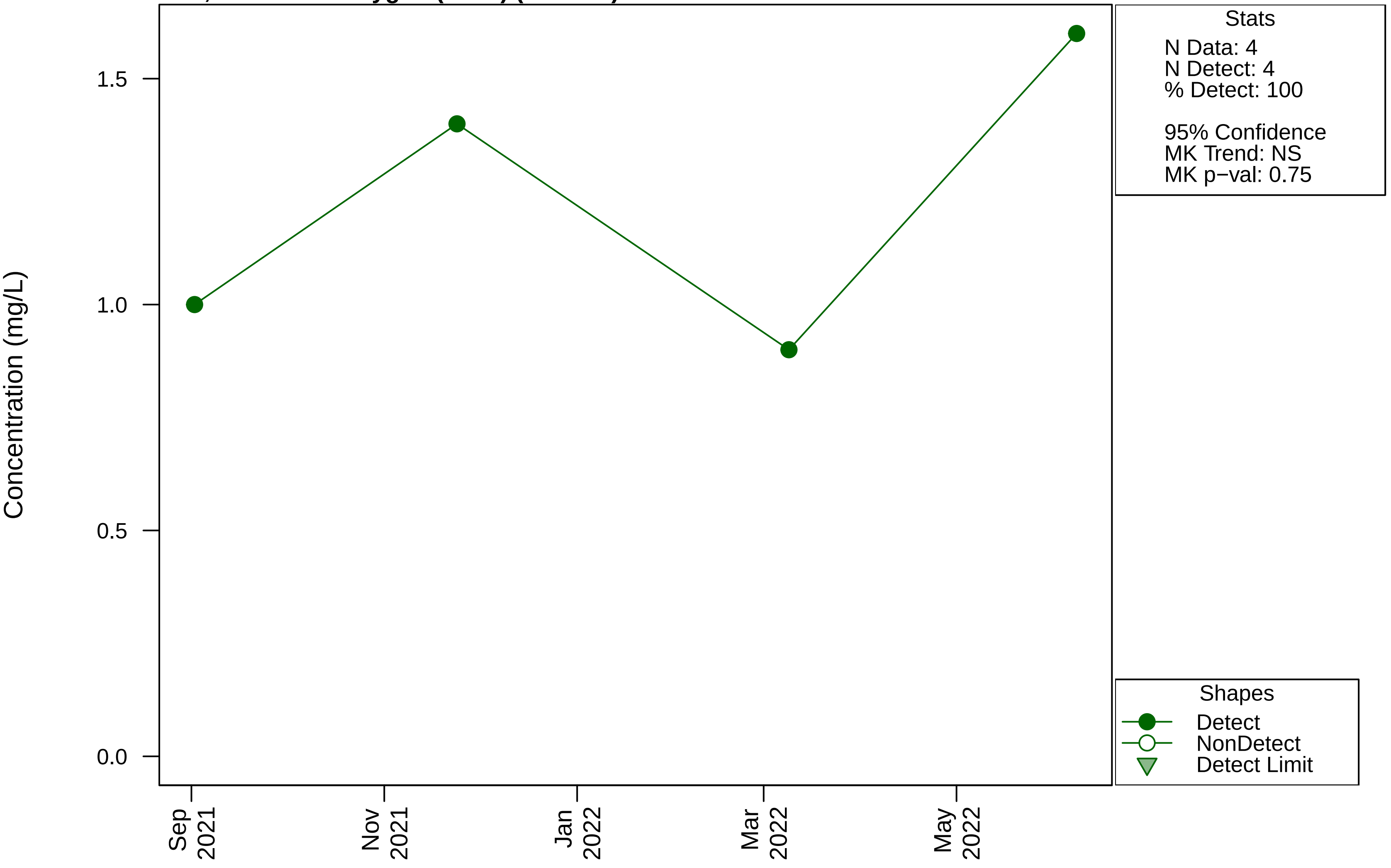

Scatterplots and Trend Analysis
D10, Cobalt
Concentration (ug/L)
0
50
100
150
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 7
N Detect: 7
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.069
Shapes
Detect
NonDetect
Detect Limit

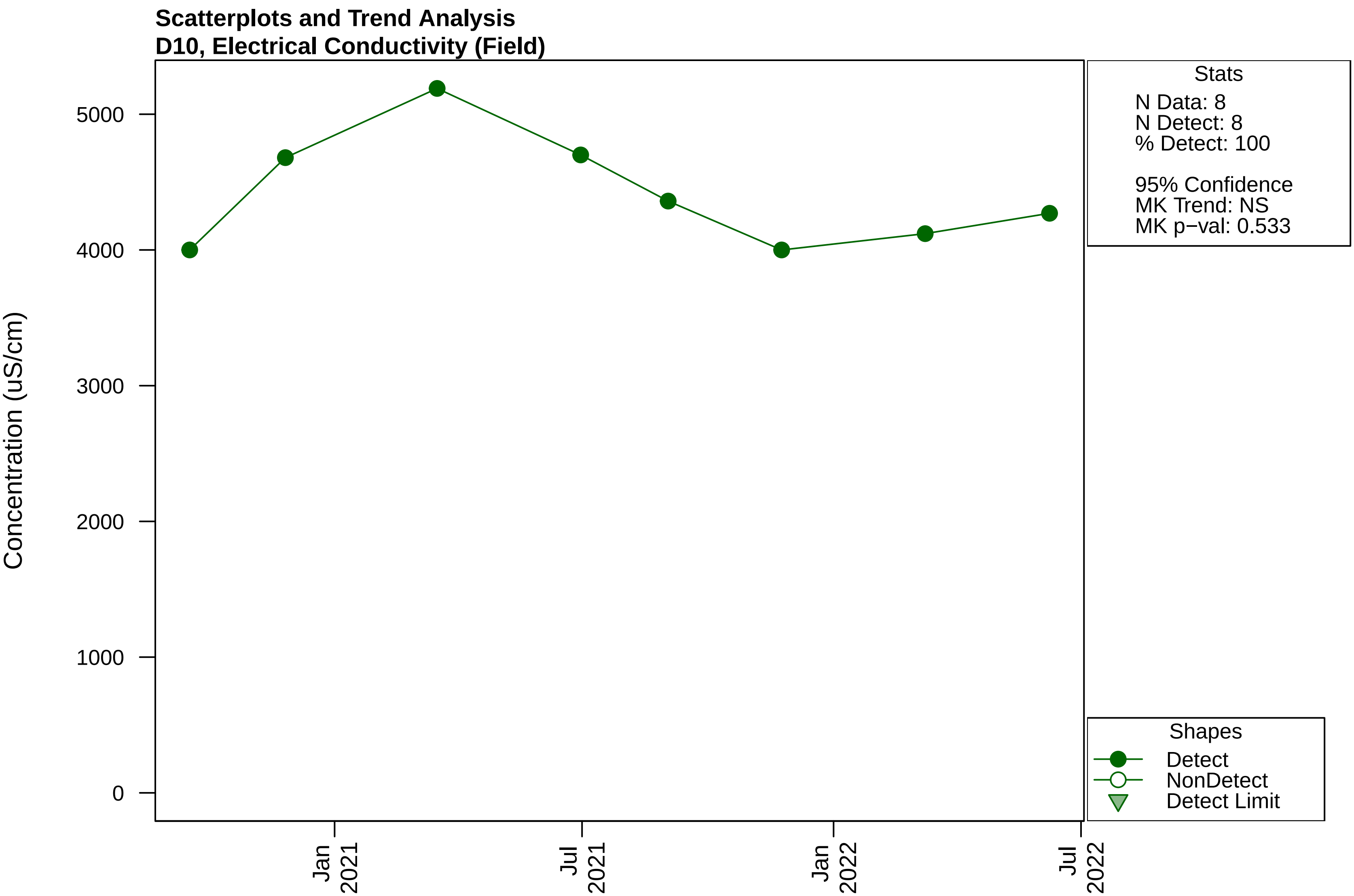
Scatterplots and Trend Analysis
D10, Copper



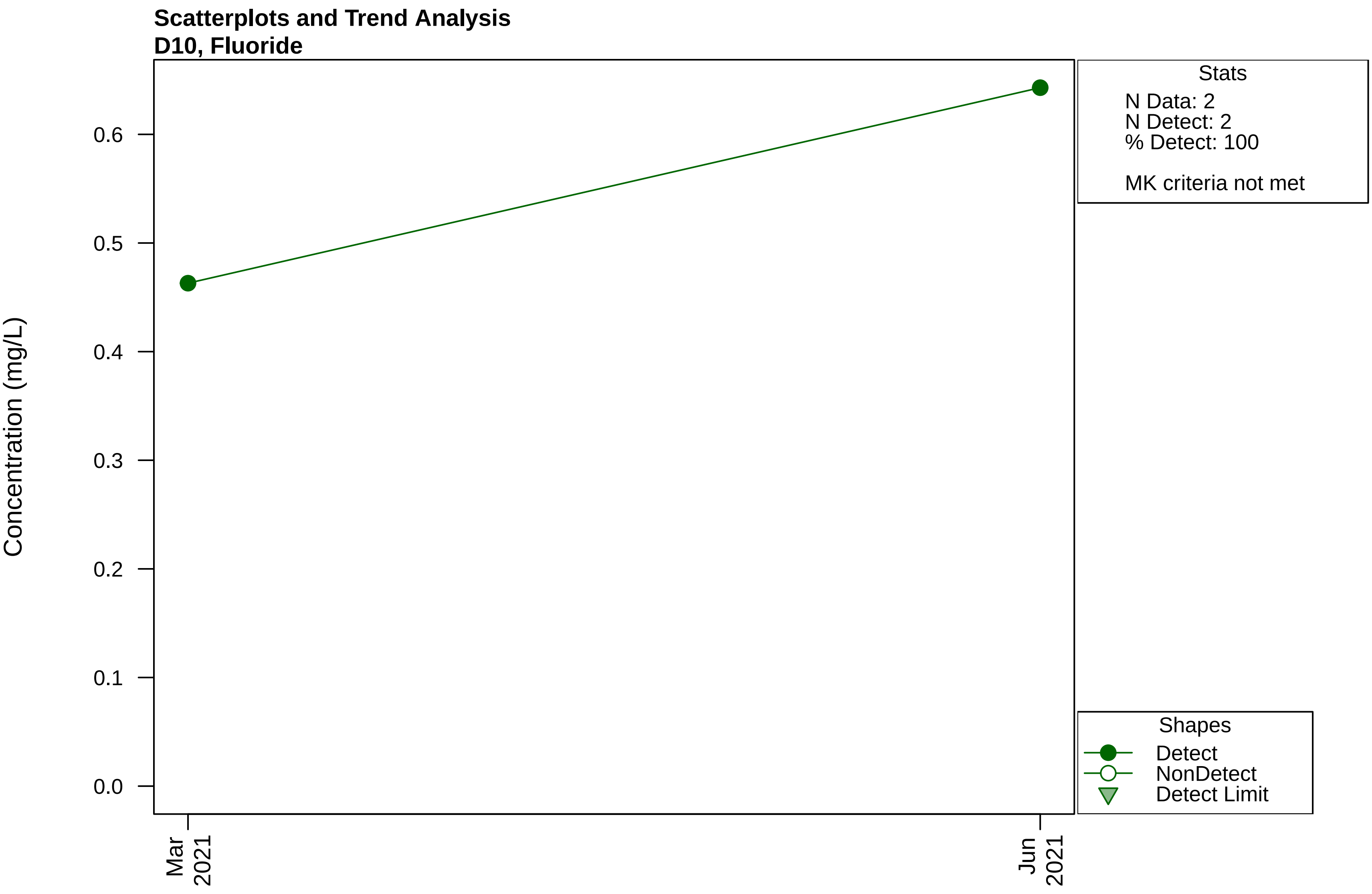

Scatterplots and Trend Analysis
D10, Dissolved Oxygen (Field)
Concentration (na)
0
2
4
6
8
10
Jan 2021
Mar 2021
May 2021
Jul 2021
Stats
N Data: 3
N Detect: 3
% Detect: 100
MK criteria not met
Shapes
Detect
NonDetect
Detect Limit

Scatterplots and Trend Analysis
D10, Dissolved Oxygen (Field) (Filtered)

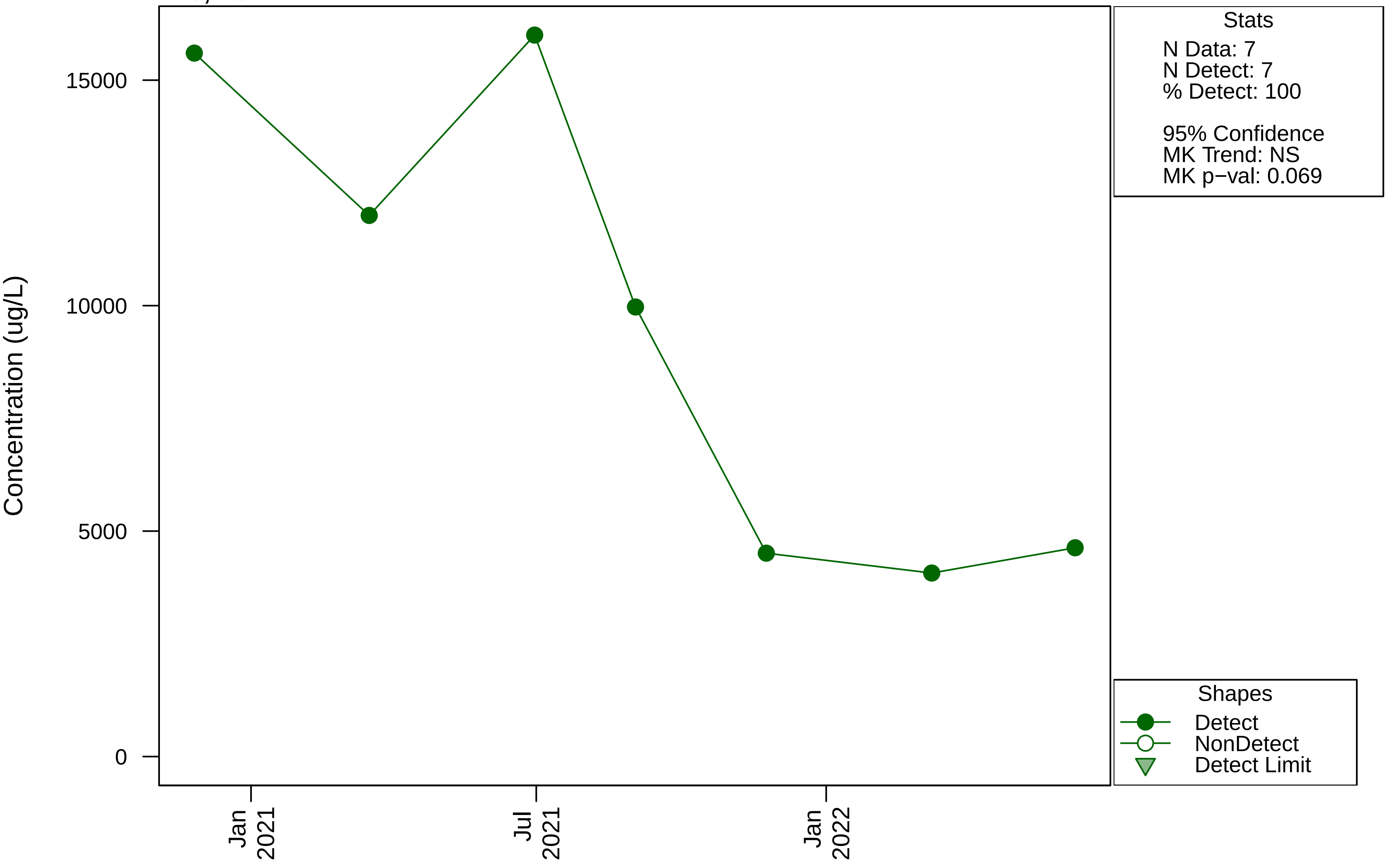




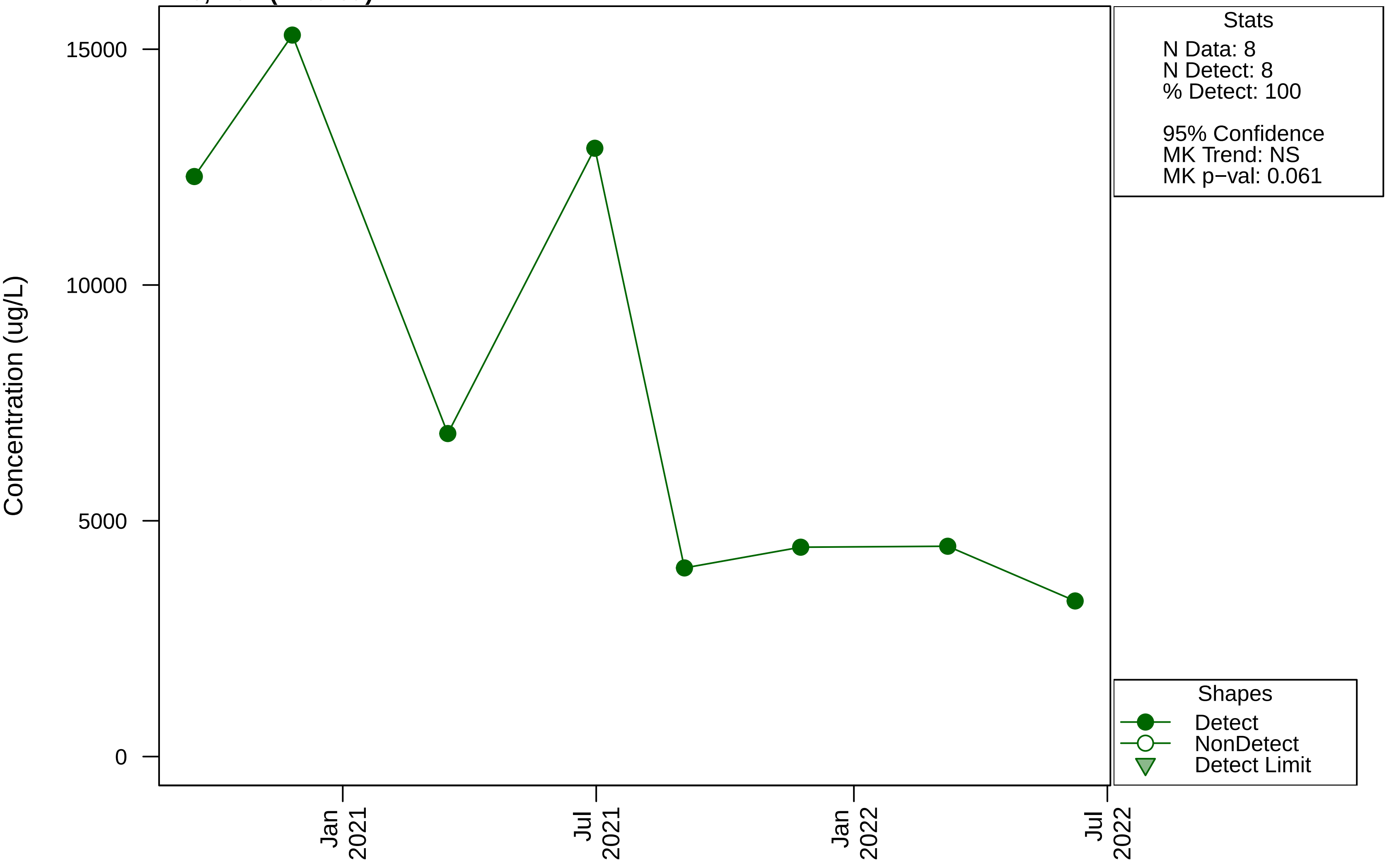
Scatterplots and Trend Analysis
D10, Electrical Conductivity (Field)
Concentration (uS/cm)
5000
4000
3000
2000
1000
0
Jan 2021
Jul 2021
Jan 2022
Jul 2022
Stats
N Data: 8
N Detect: 8
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.533
Shapes
Detect
NonDetect
Detect Limit

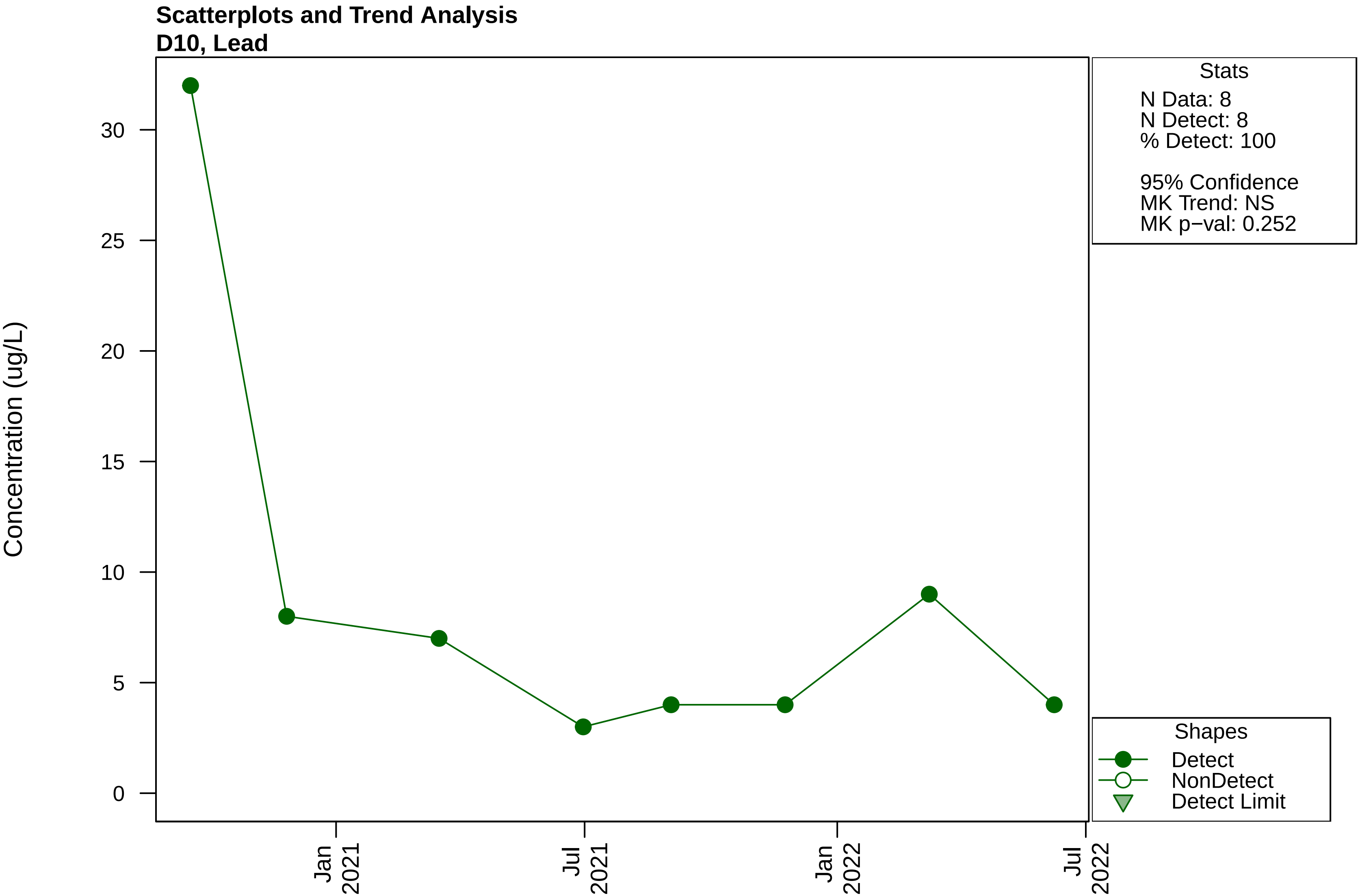

Scatterplots and Trend Analysis
D10, Fluoride
Concentration (mg/L)
0.0
0.1
0.2
0.3
0.4
0.5
0.6
Mar 2021
Jun 2021
Stats
N Data: 2
N Detect: 2
% Detect: 100
MK criteria not met
Shapes
Detect
NonDetect
Detect Limit

Scatterplots and Trend Analysis
D10, Iron

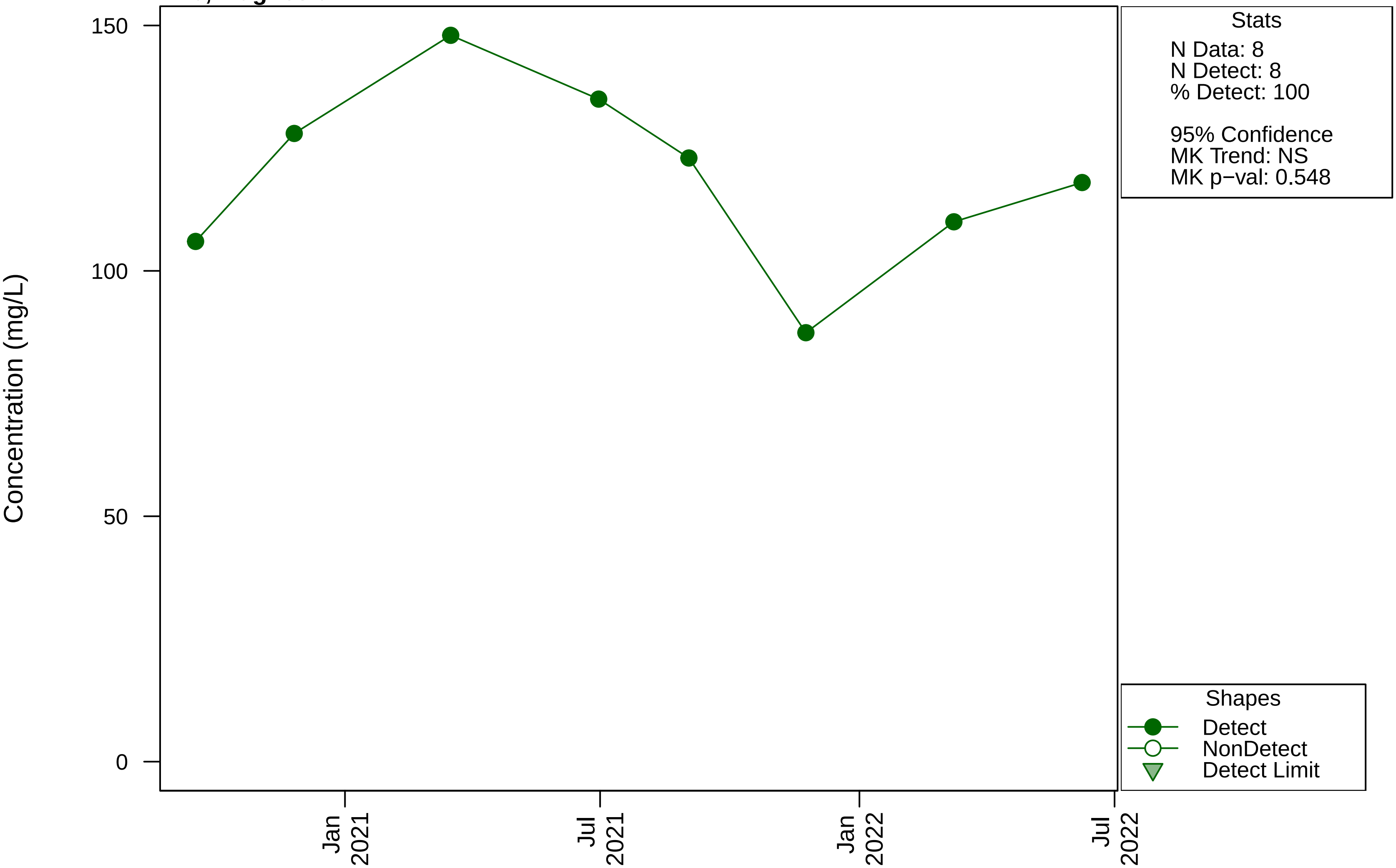


Scatterplots and Trend Analysis
D10, Iron (Filtered)

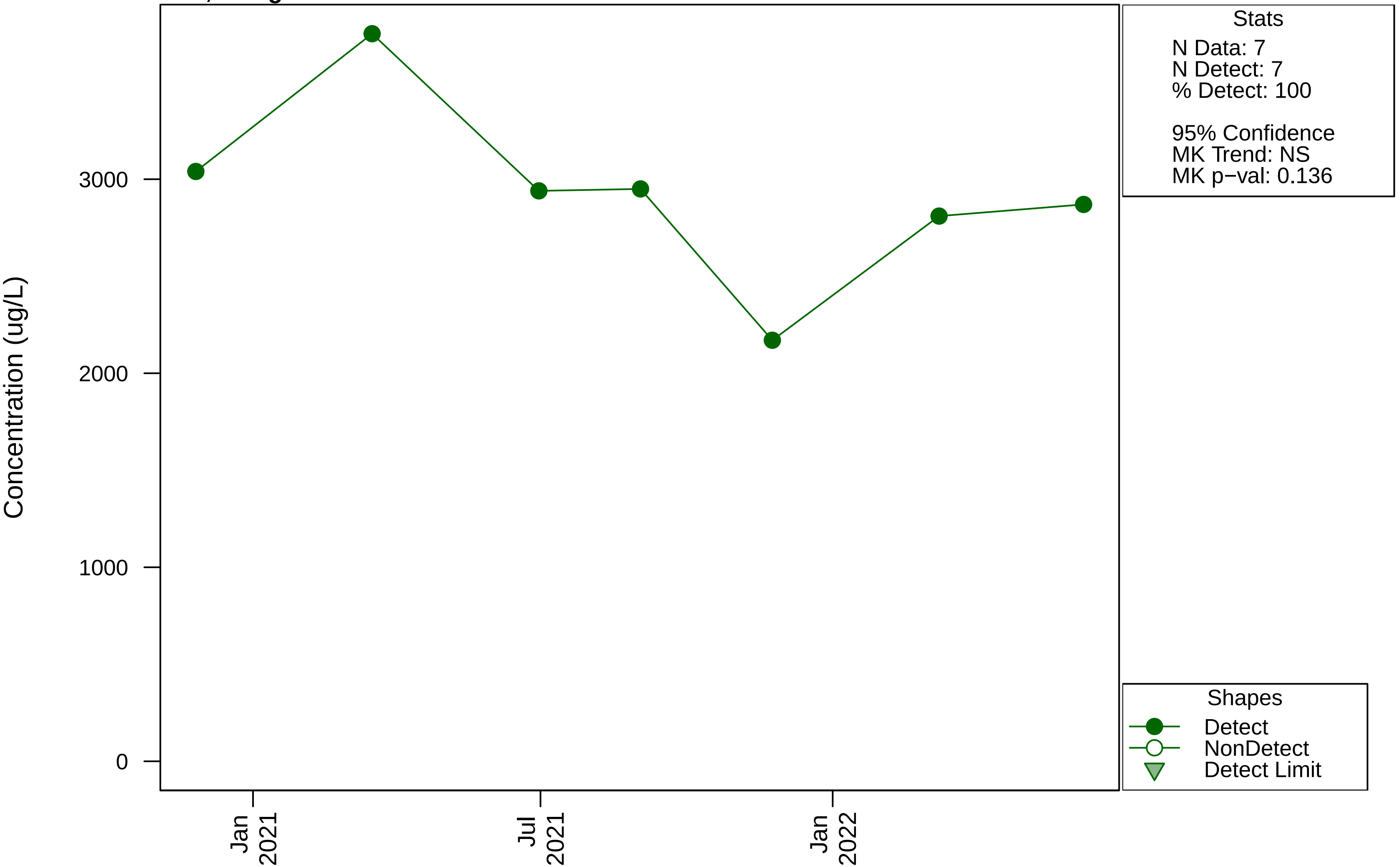


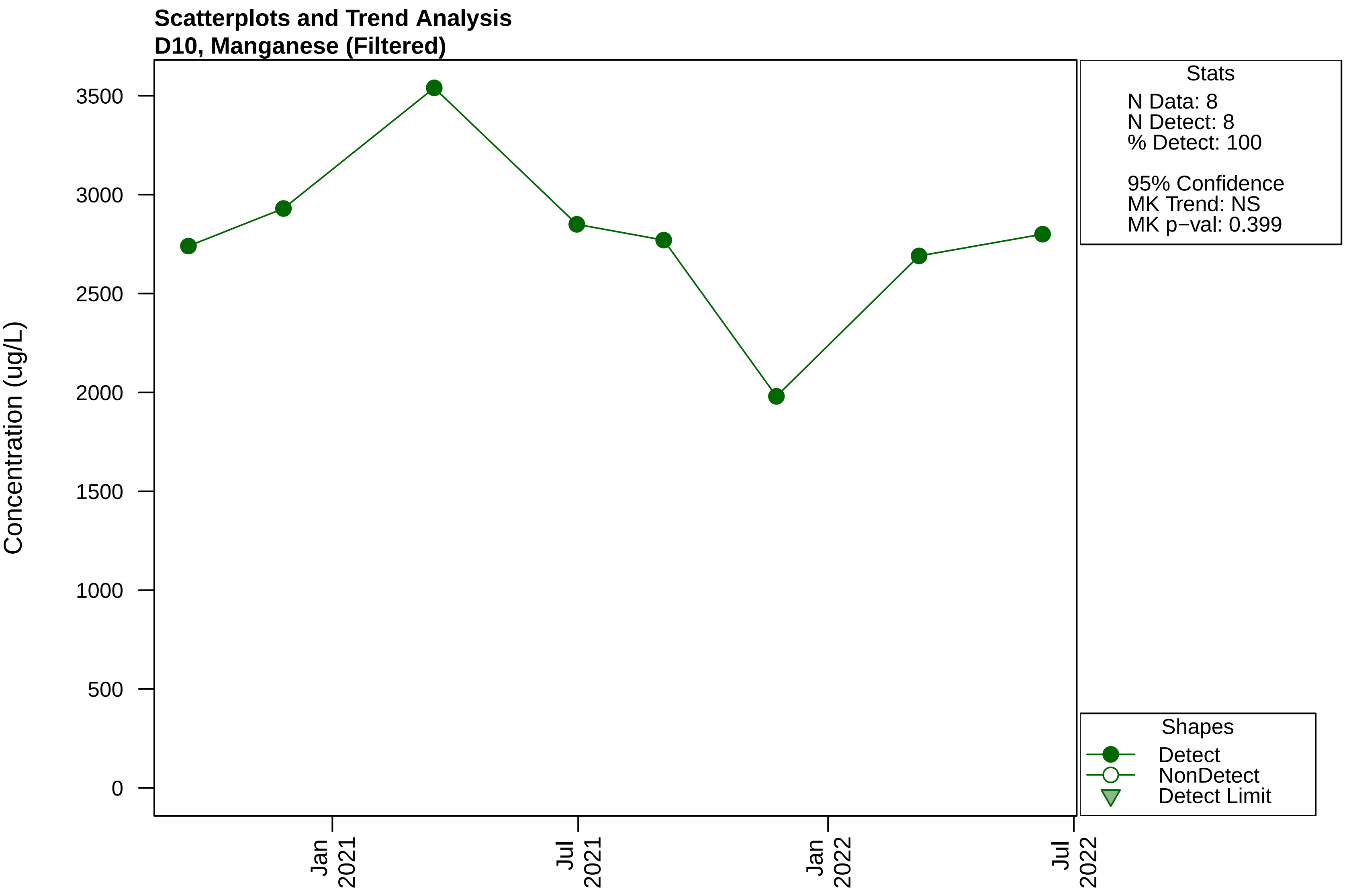

Scatterplots and Trend Analysis
D10, Lead
Concentration (ug/L)
0
5
10
15
20
25
30
Jan 2021
Jul 2021
Jan 2022
Jul 2022
Stats
N Data: 8
N Detect: 8
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.252
Shapes
Detect
NonDetect
Detect Limit

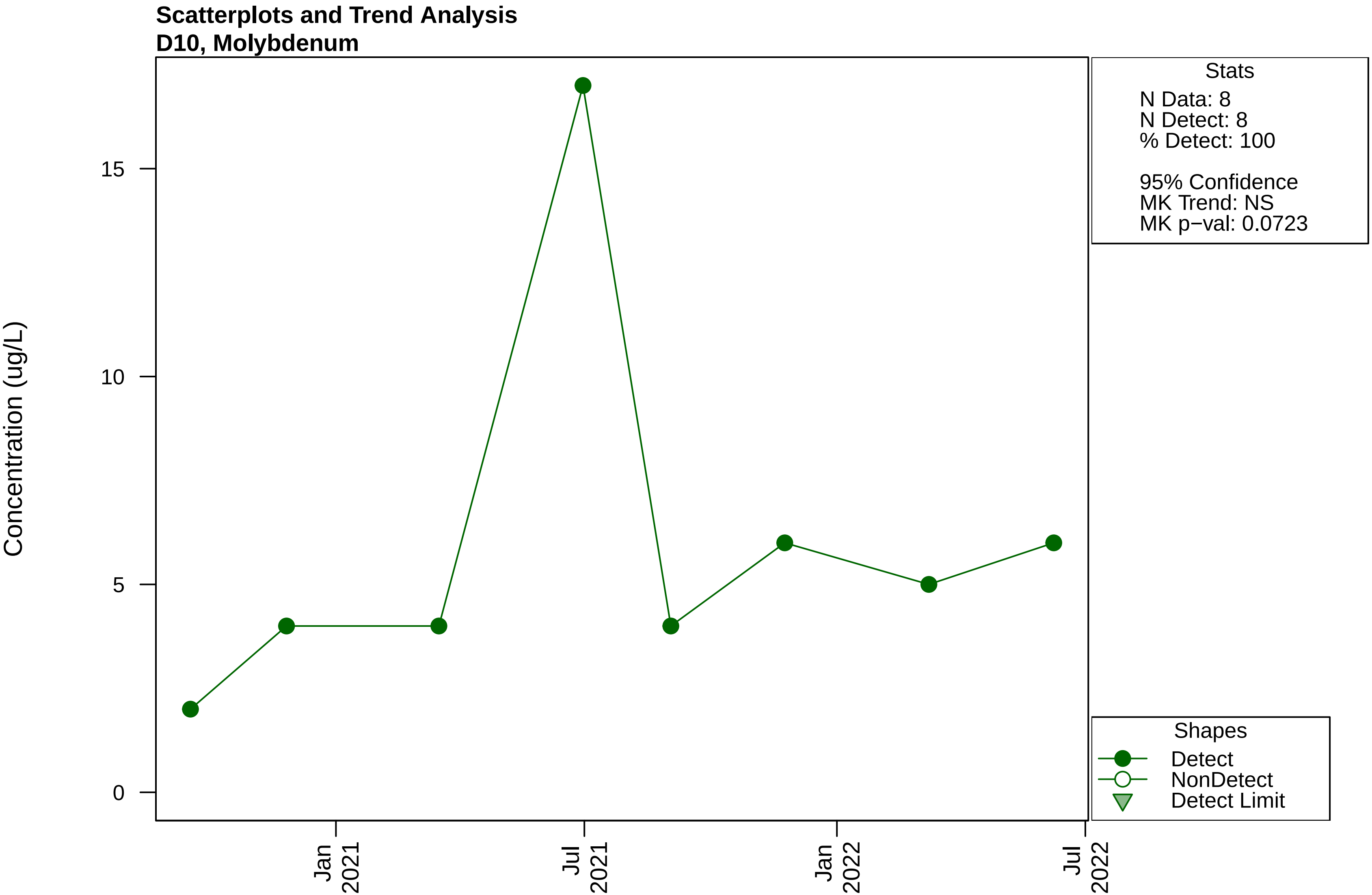
Scatterplots and Trend Analysis
D10, Magnesium



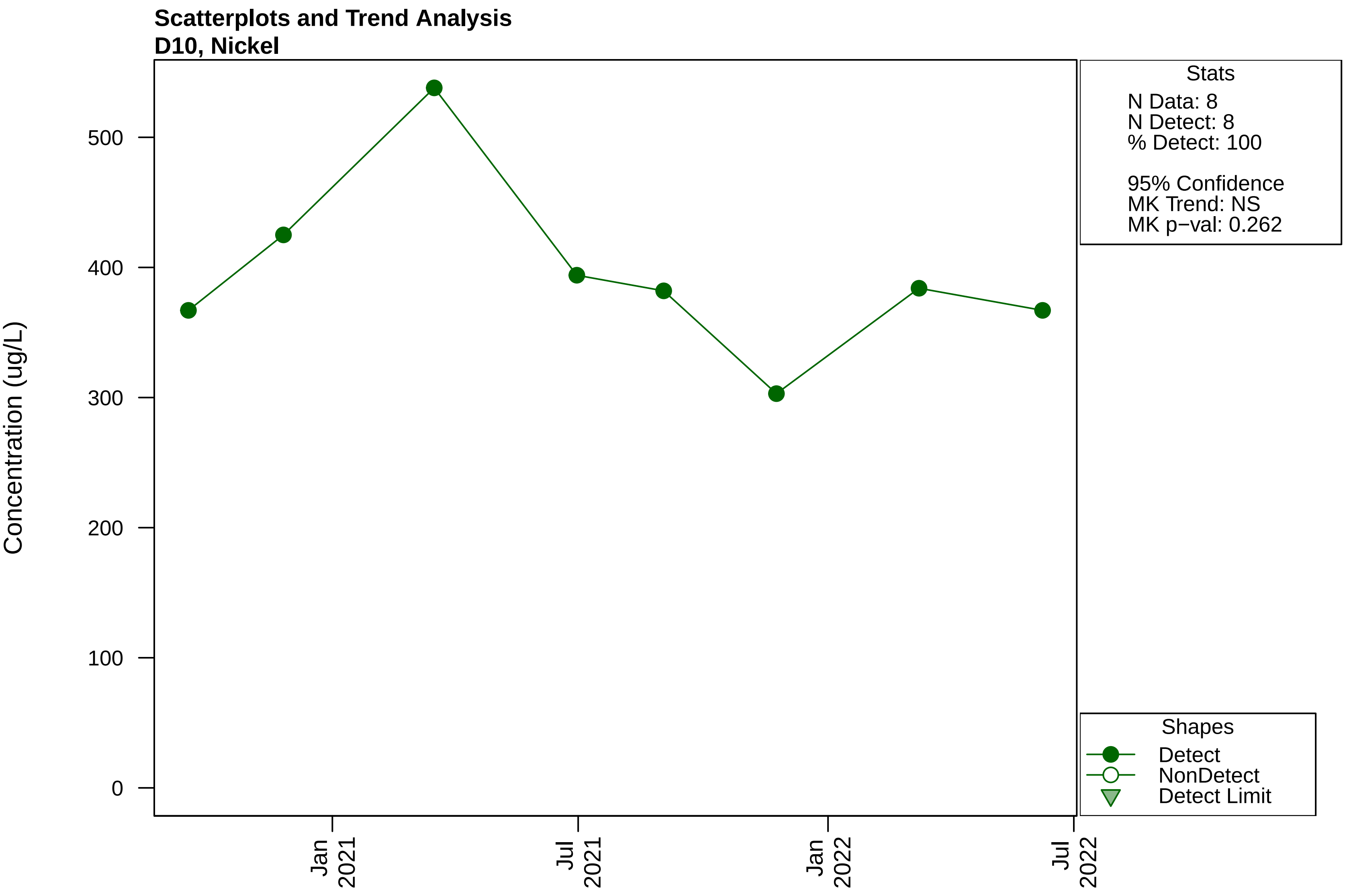
Scatterplots and Trend Analysis
D10, Manganese



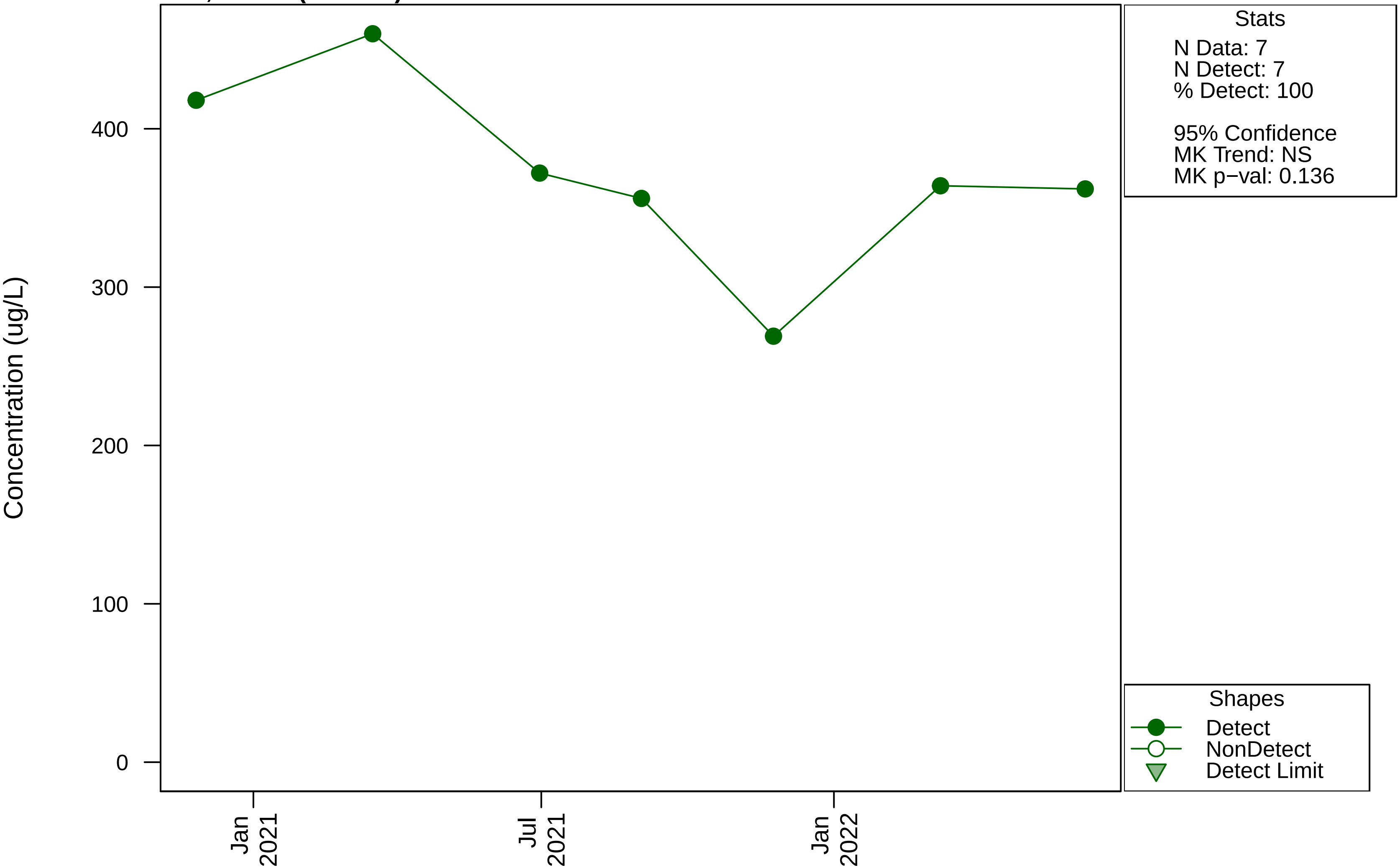

Scatterplots and Trend Analysis
D10, Manganese (Filtered)
Concentration (ug/L)
0
500
1000
1500
2000
2500
3000
3500
Jan 2021
Jul 2021
Jan 2022
Jul 2022
Stats
N Data: 8
N Detect: 8
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.399
Shapes
Detect
NonDetect
Detect Limit

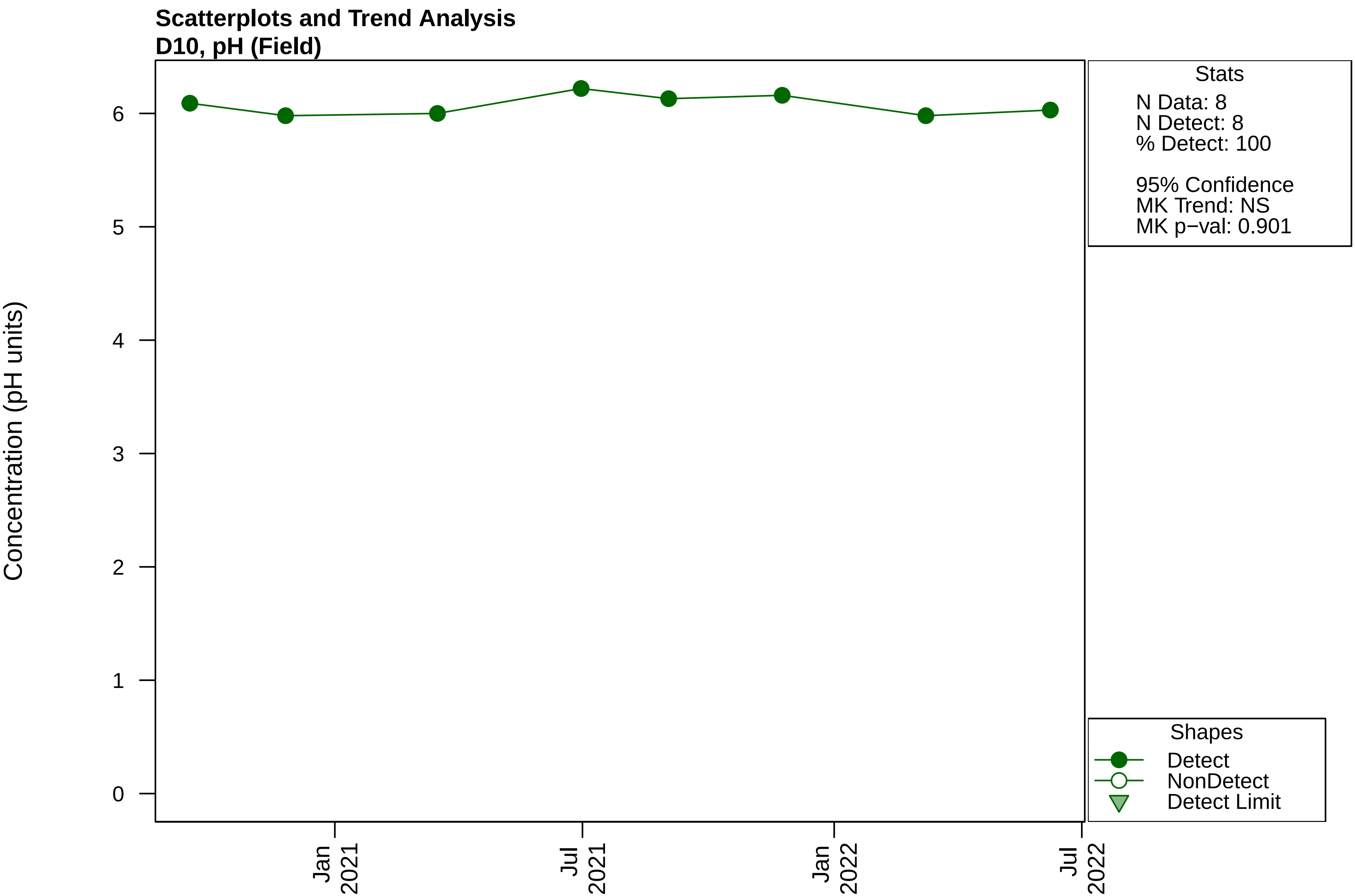


Scatterplots and Trend Analysis
D10, Molybdenum
Concentration (ug/L)
0
5
10
15
Jan 2021
Jul 2021
Jan 2022
Jul 2022
Stats
N Data: 8
N Detect: 8
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.0723
Shapes
Detect
NonDetect
Detect Limit

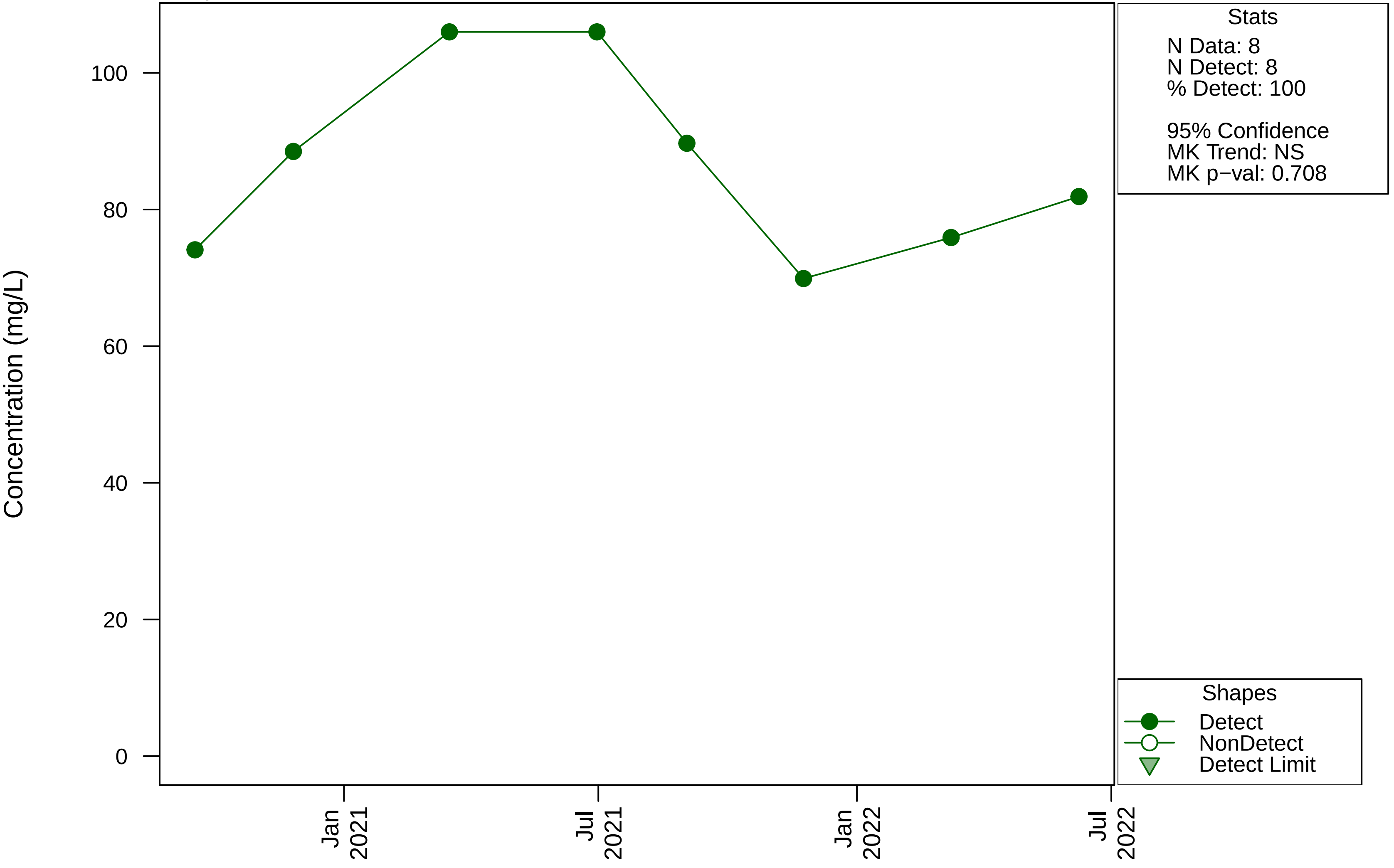

Scatterplots and Trend Analysis
D10, Nickel
Concentration (ug/L)
0
100
200
300
400
500
Jan 2021
Jul 2021
Jan 2022
Jul 2022
Stats
N Data: 8
N Detect: 8
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.262
Shapes
Detect
NonDetect
Detect Limit

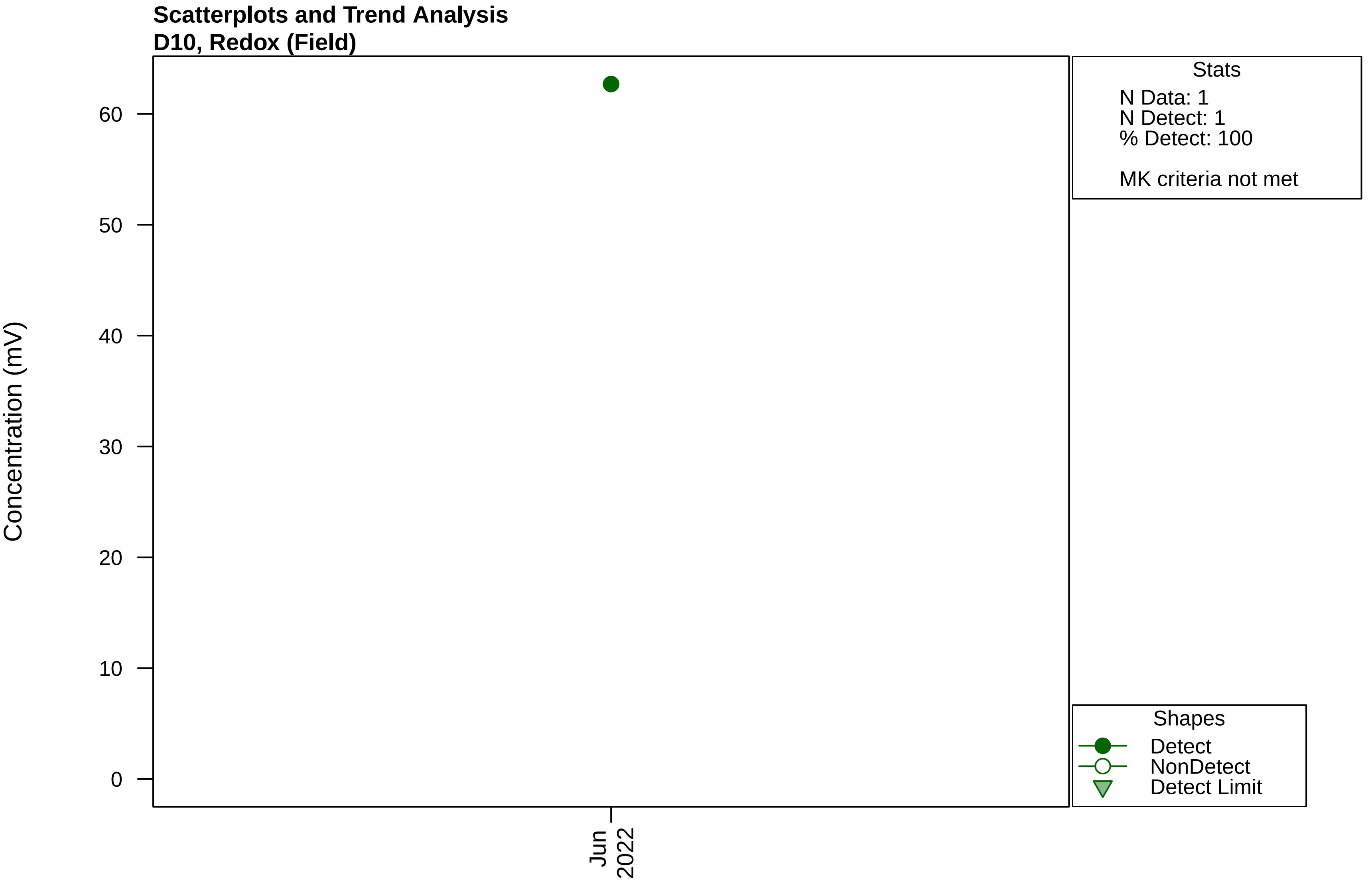
Scatterplots and Trend Analysis
D10, Nickel (Filtered)




Scatterplots and Trend Analysis
D10, pH (Field)
Concentration (pH units)
0
1
2
3
4
5
6
Jan 2021
Jul 2021
Jan 2022
Jul 2022
Stats
N Data: 8
N Detect: 8
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.901
Shapes
Detect
NonDetect
Detect Limit

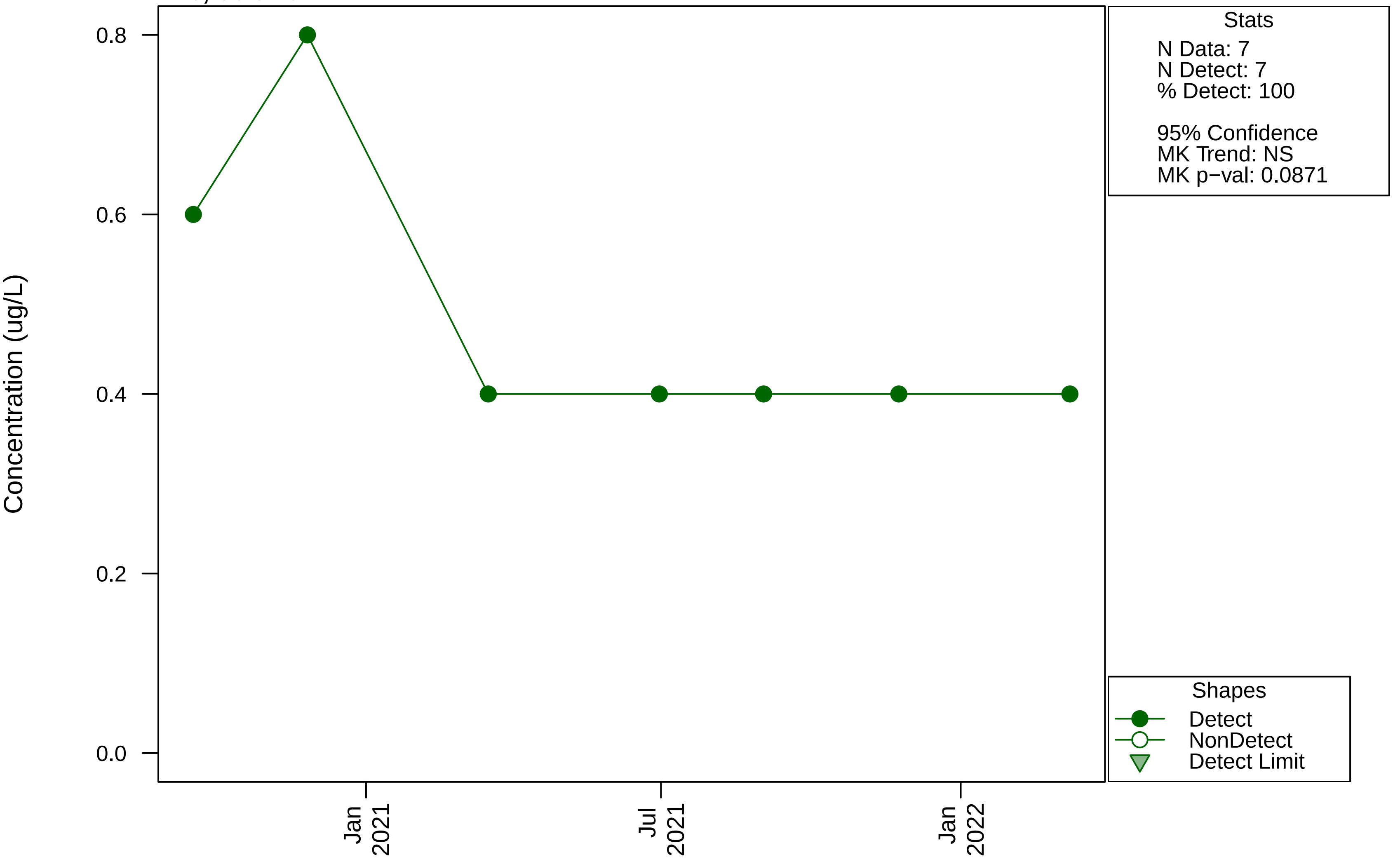
Scatterplots and Trend Analysis
D10, Potassium

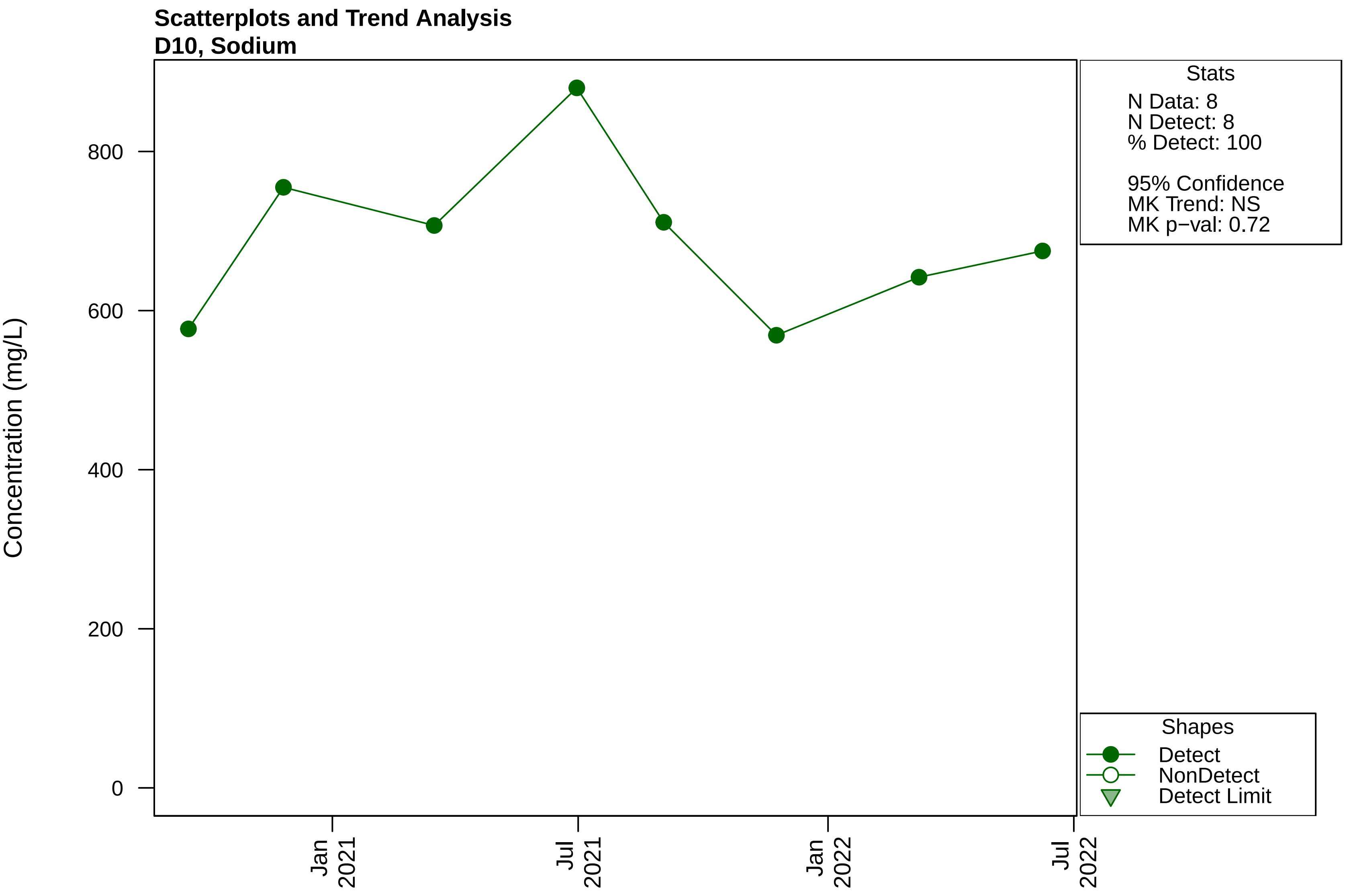




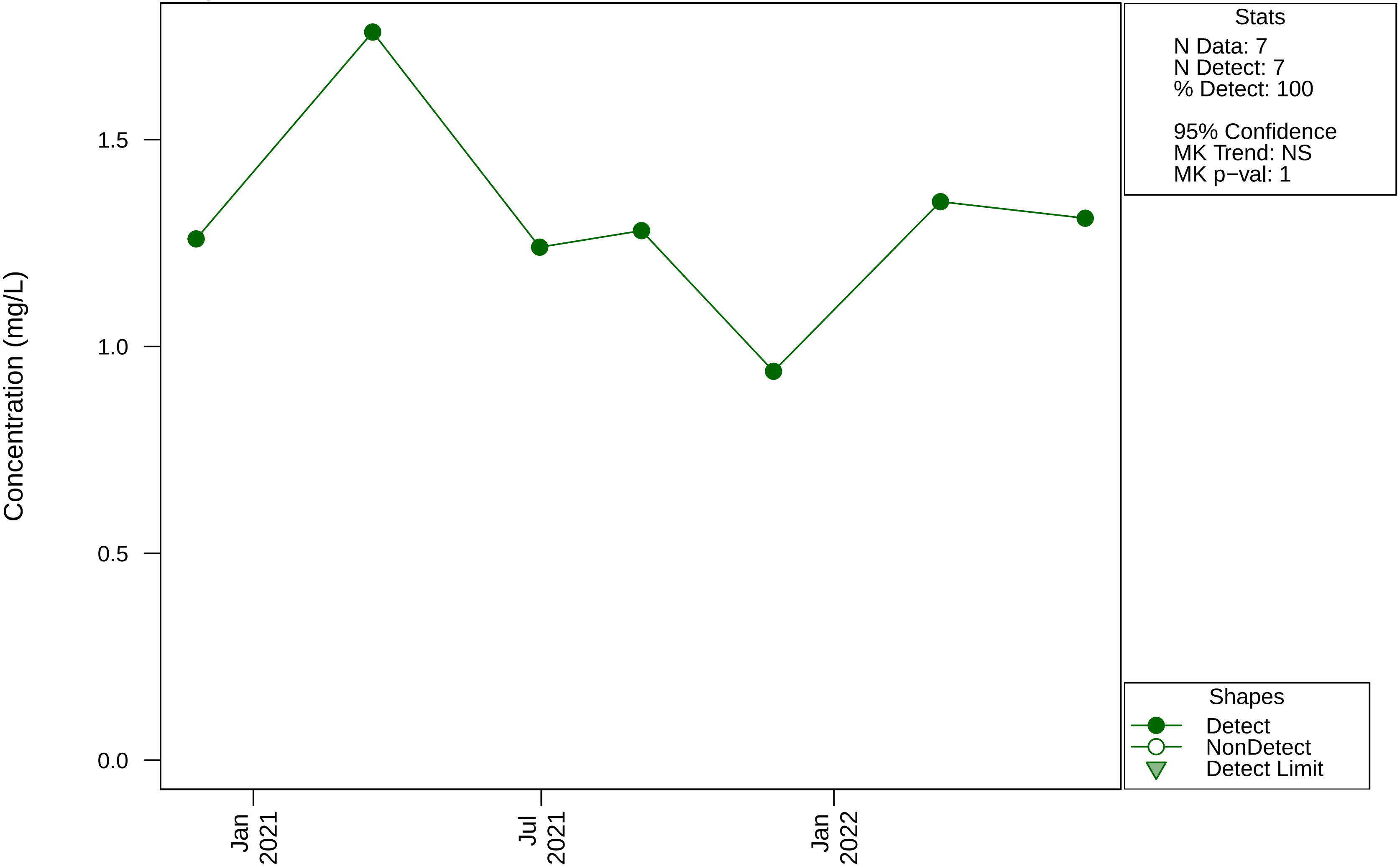
Scatterplots and Trend Analysis
D10, Redox (Field)
Concentration (mV)
60
50
40
30
20
10
0
Jun
2022
Stats
N Data: 1
N Detect: 1
% Detect: 100
MK criteria not met
Shapes
Detect
NonDetect
Detect Limit

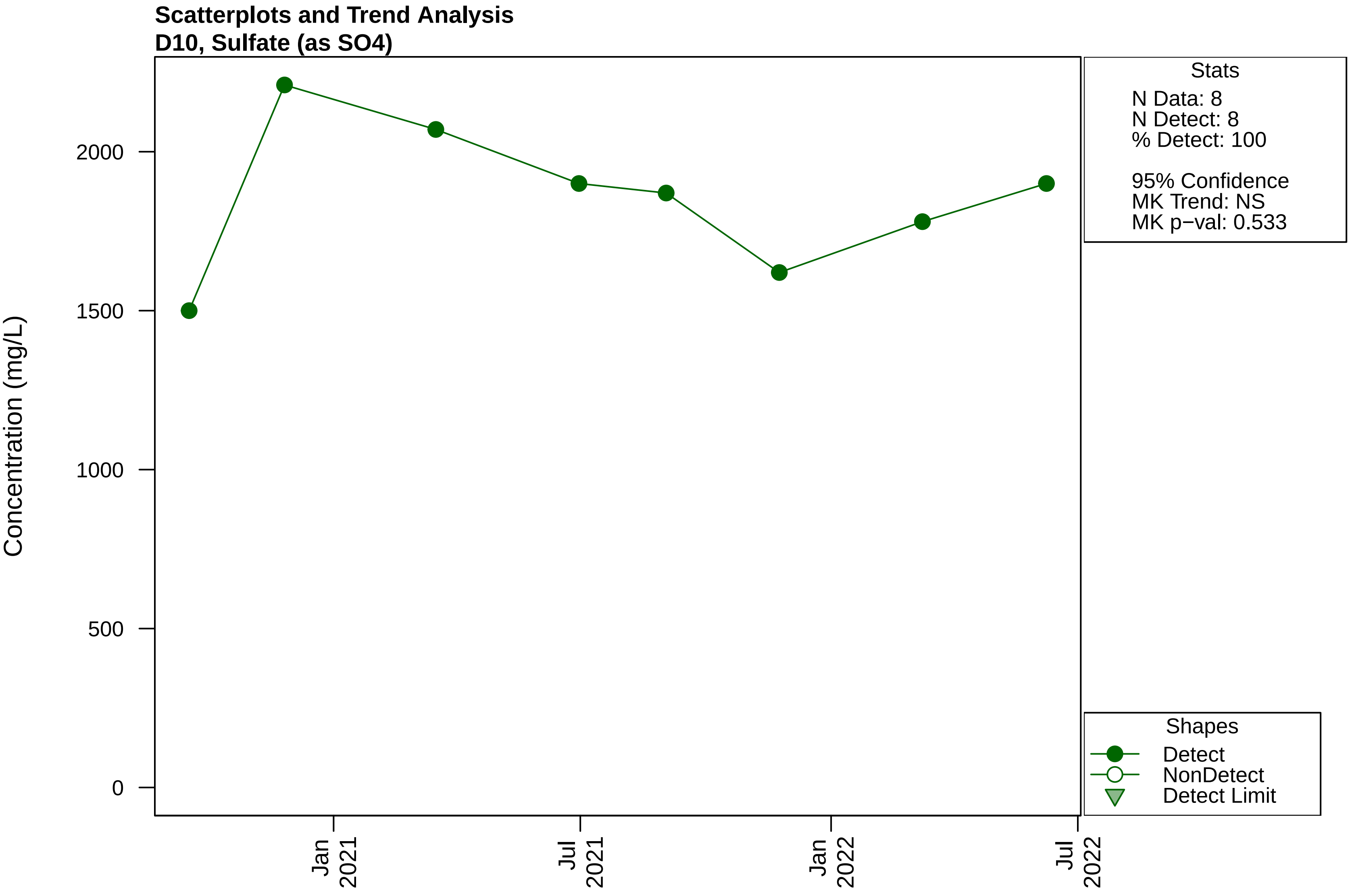
Scatterplots and Trend Analysis
D10, Selenium

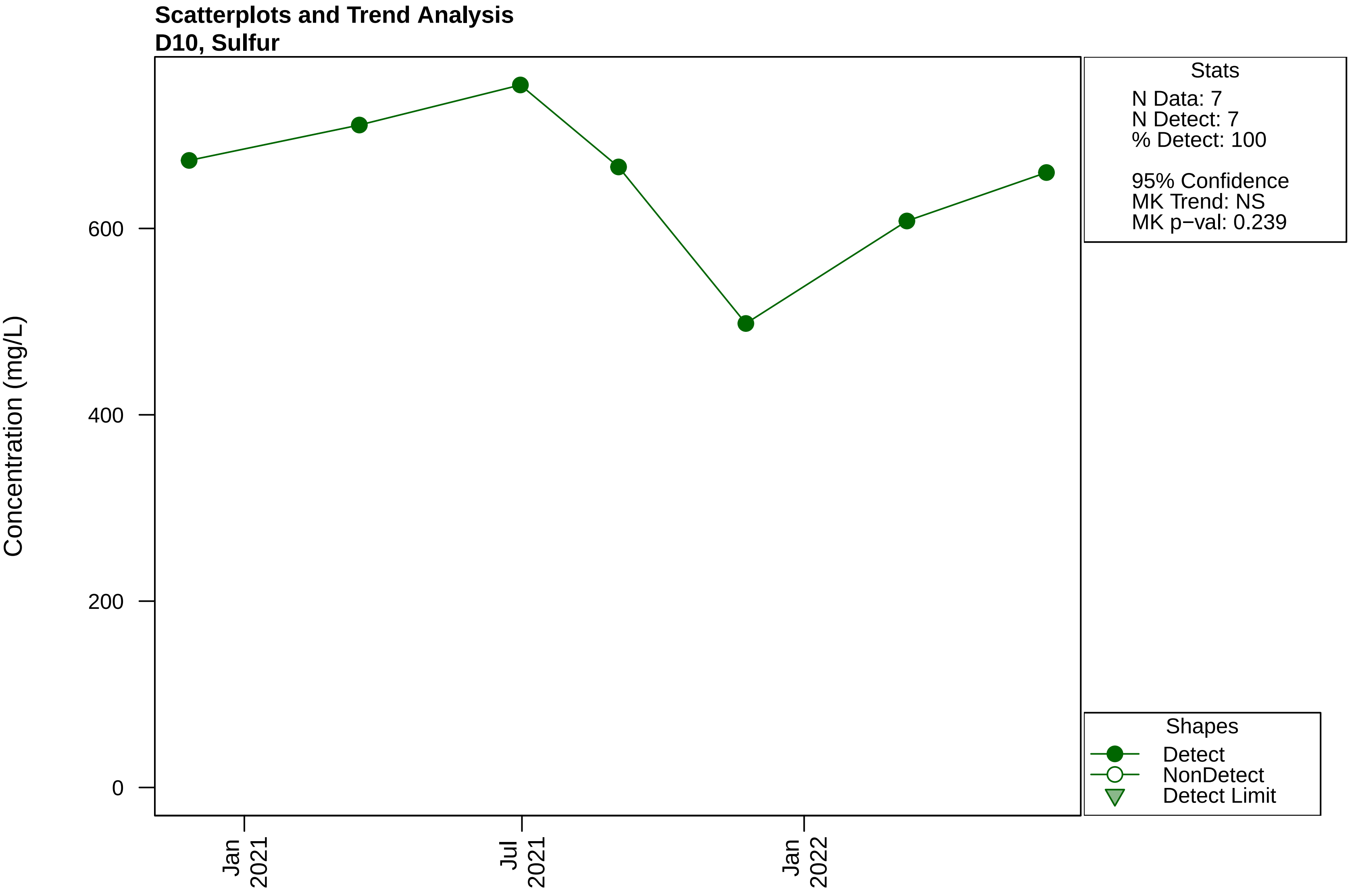



Scatterplots and Trend Analysis
D10, Sodium
Concentration (mg/L)
0
200
400
600
800
Jan 2021
Jul 2021
Jan 2022
Jul 2022
Stats
N Data: 8
N Detect: 8
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.72
Shapes
Detect
NonDetect
Detect Limit

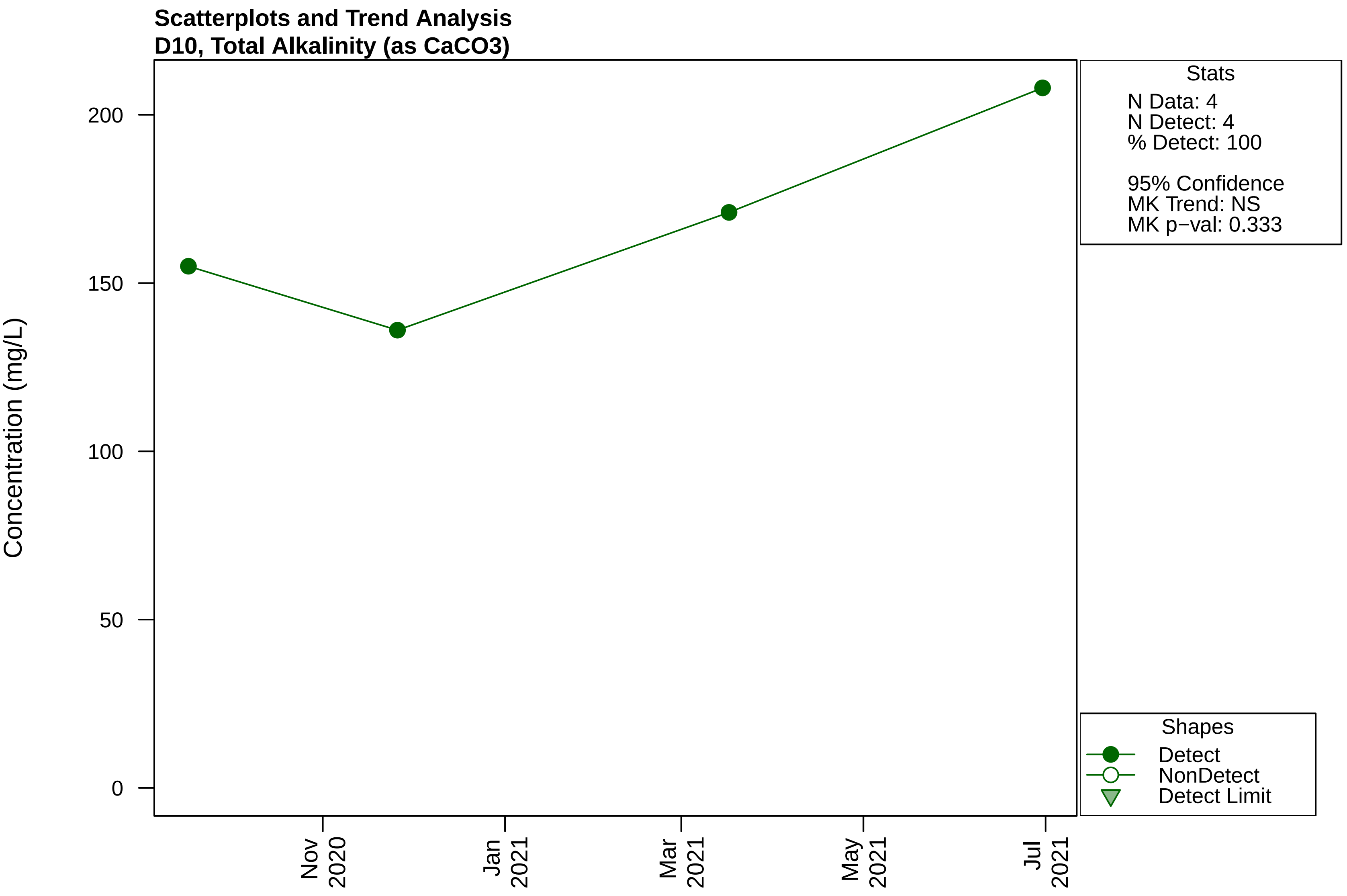
Scatterplots and Trend Analysis
D10, Strontium




Scatterplots and Trend Analysis
D10, Sulfate (as SO4)
Concentration (mg/L)
0
500
1000
1500
2000
Jan 2021
Jul 2021
Jan 2022
Jul 2022
Stats
N Data: 8
N Detect: 8
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.533
Shapes
Detect
NonDetect
Detect Limit

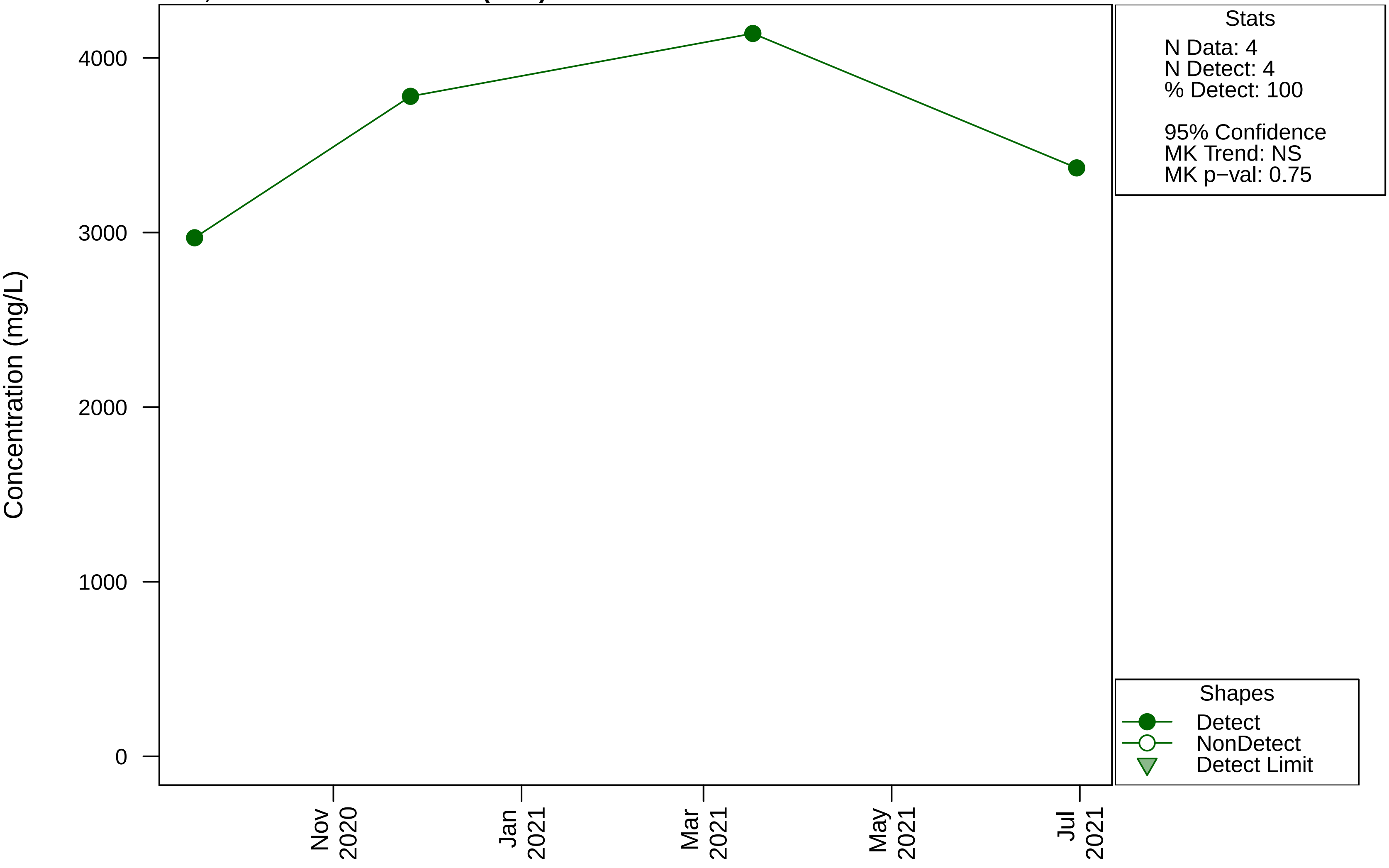


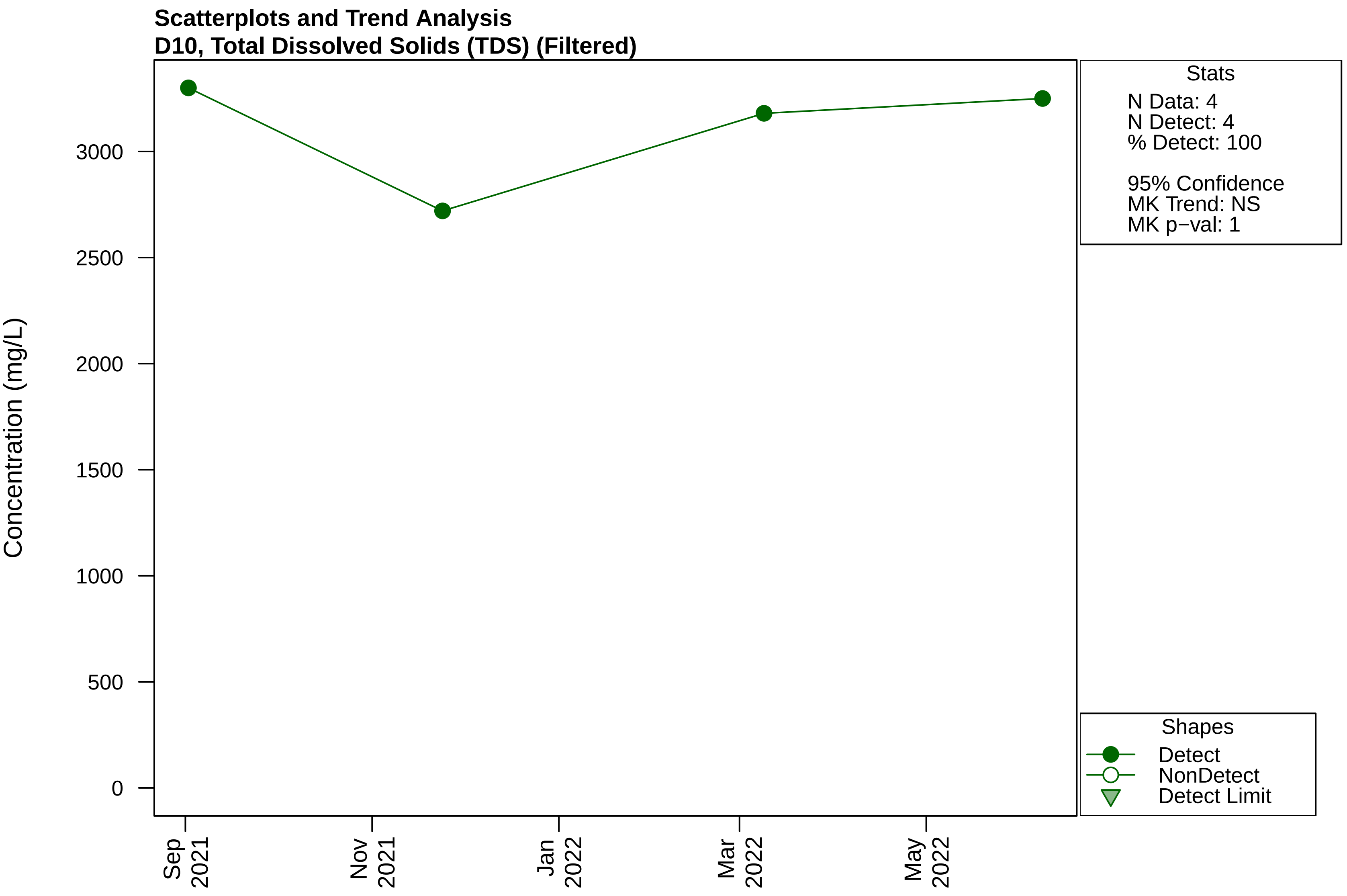
Scatterplots and Trend Analysis
D10, Sulfur
Concentration (mg/L)
0
200
400
600
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 7
N Detect: 7
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.239
Shapes
Detect
NonDetect
Detect Limit



Scatterplots and Trend Analysis
D10, Total Alkalinity (as CaCO3)
Concentration (mg/L)
0
50
100
150
200
Nov 2020
Jan 2021
Mar 2021
May 2021
Jul 2021
Stats
N Data: 4
N Detect: 4
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.333
Shapes
Detect
NonDetect
Detect Limit

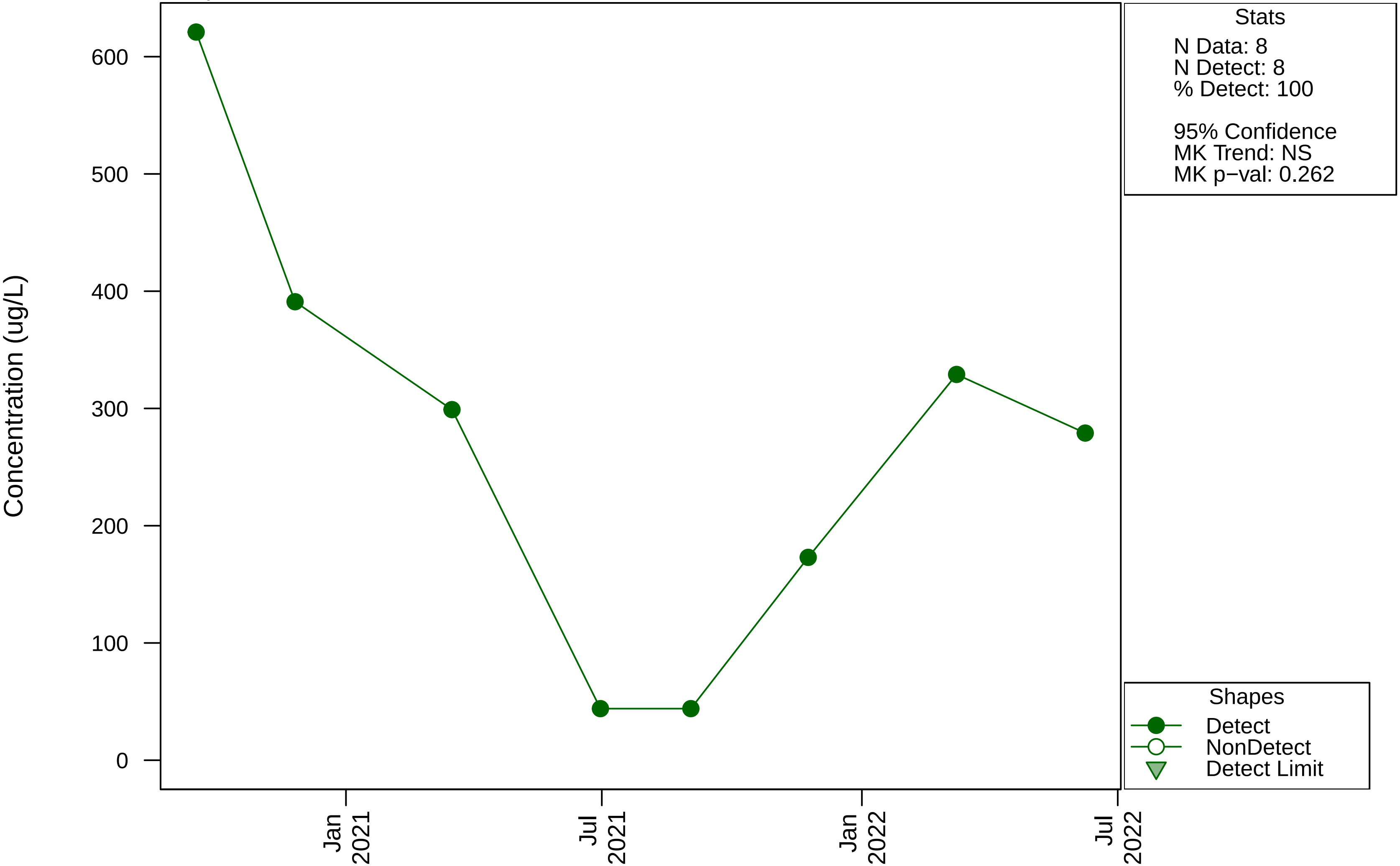
Scatterplots and Trend Analysis
D10, Total Dissolved Solids (TDS)

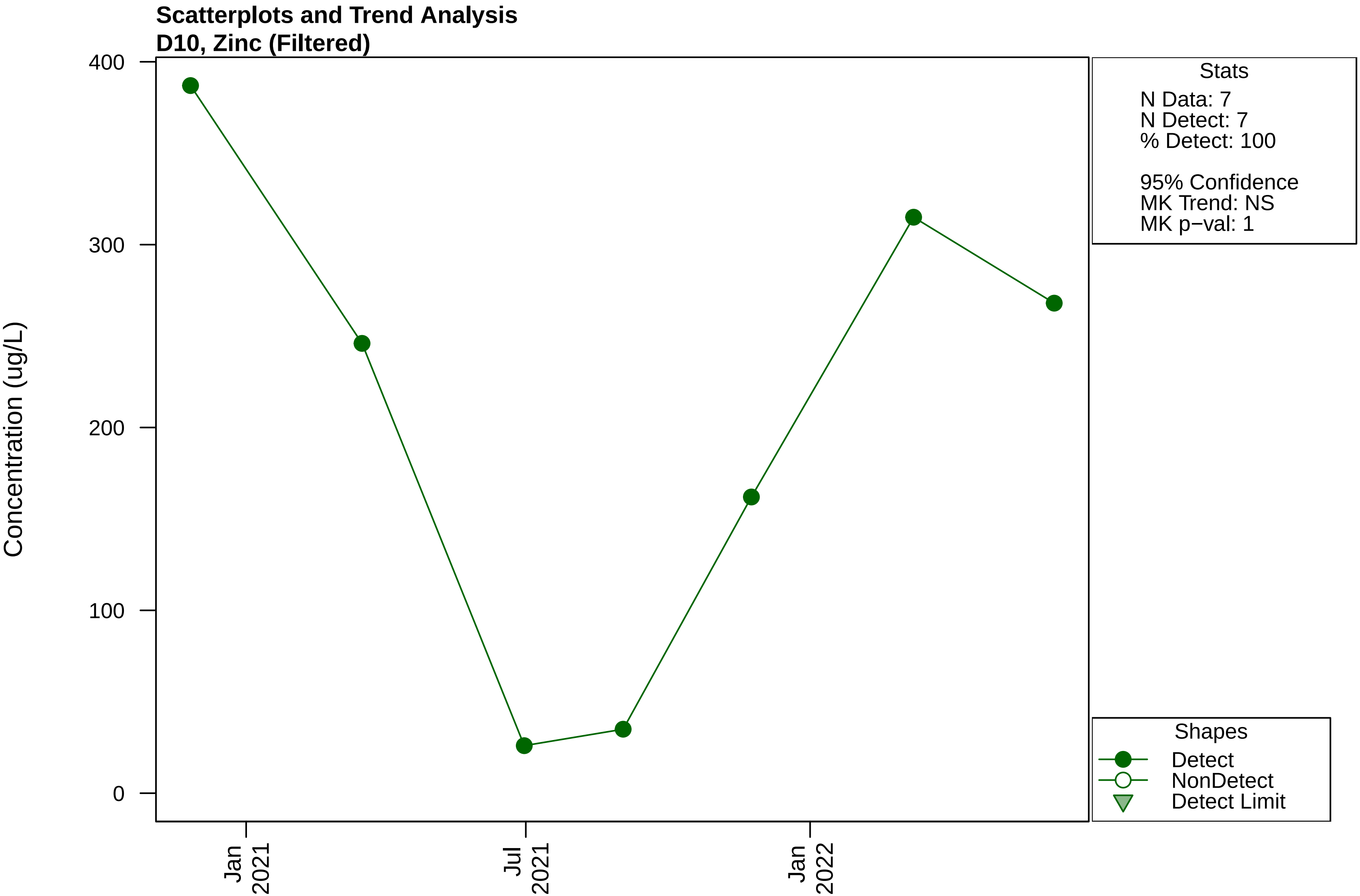




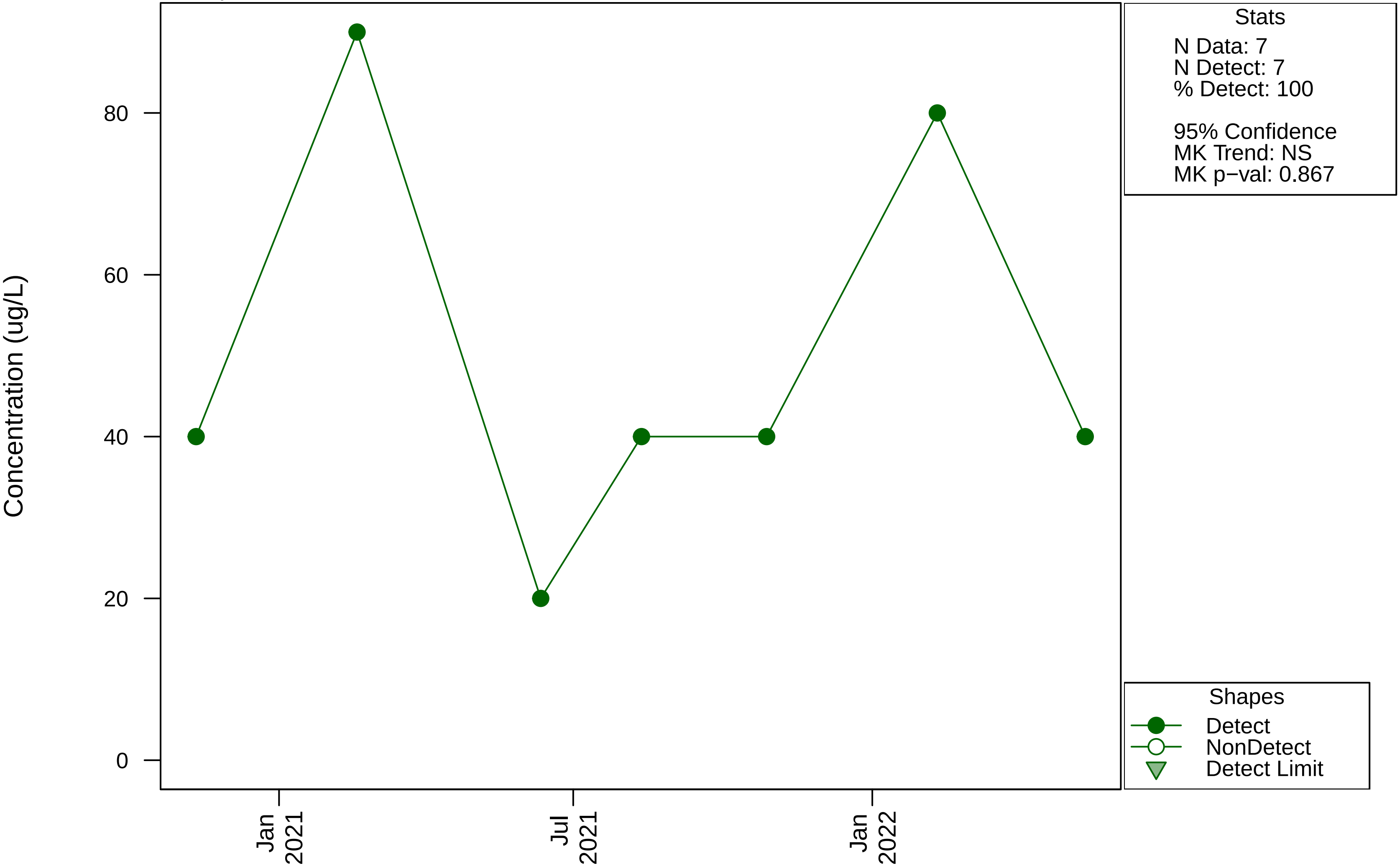
Scatterplots and Trend Analysis
D10, Total Dissolved Solids (TDS) (Filtered)
Concentration (mg/L)
0
500
1000
1500
2000
2500
3000
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 4
N Detect: 4
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 1
Shapes
Detect
NonDetect
Detect Limit

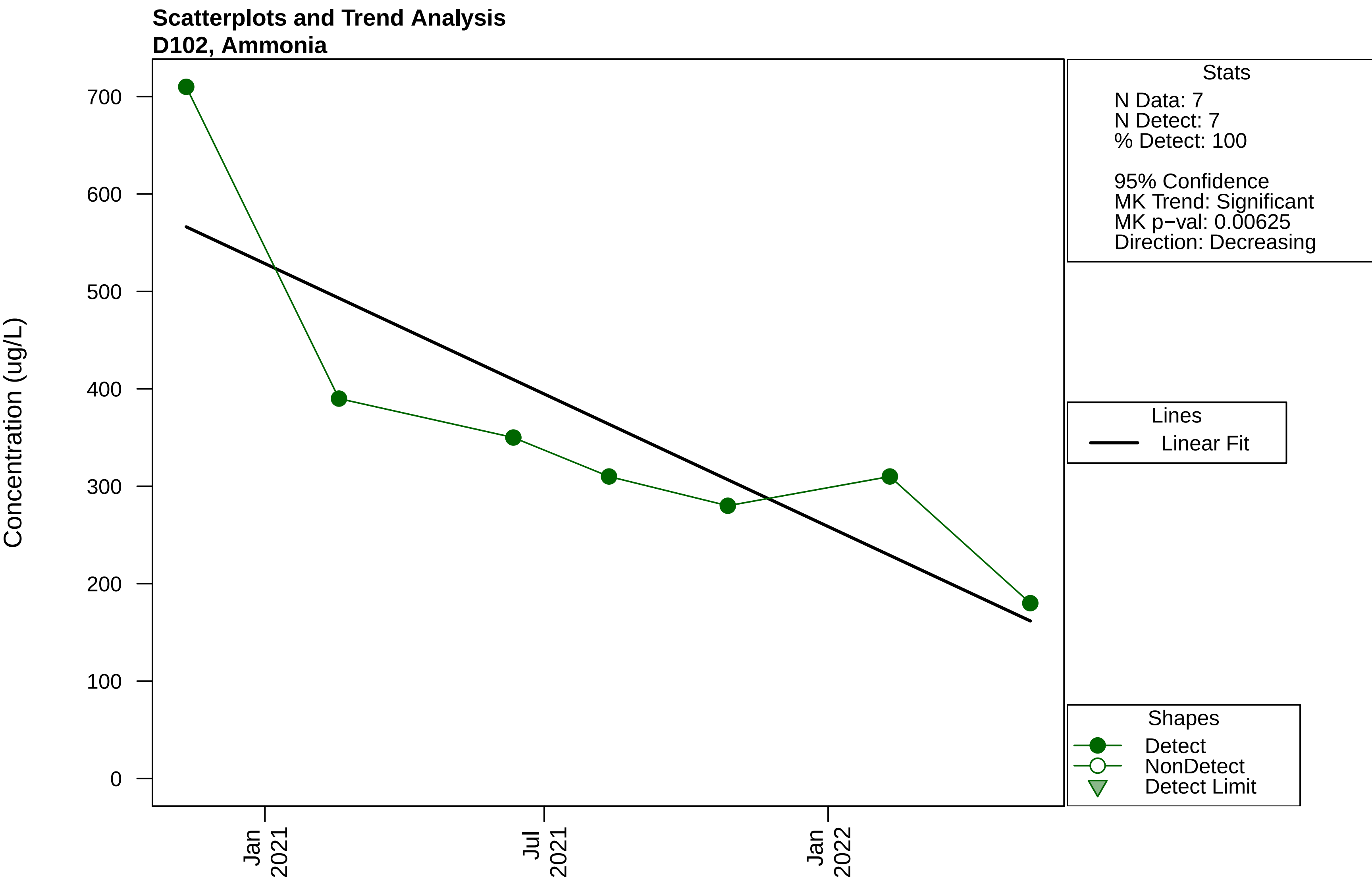
Scatterplots and Trend Analysis
D10, Zinc



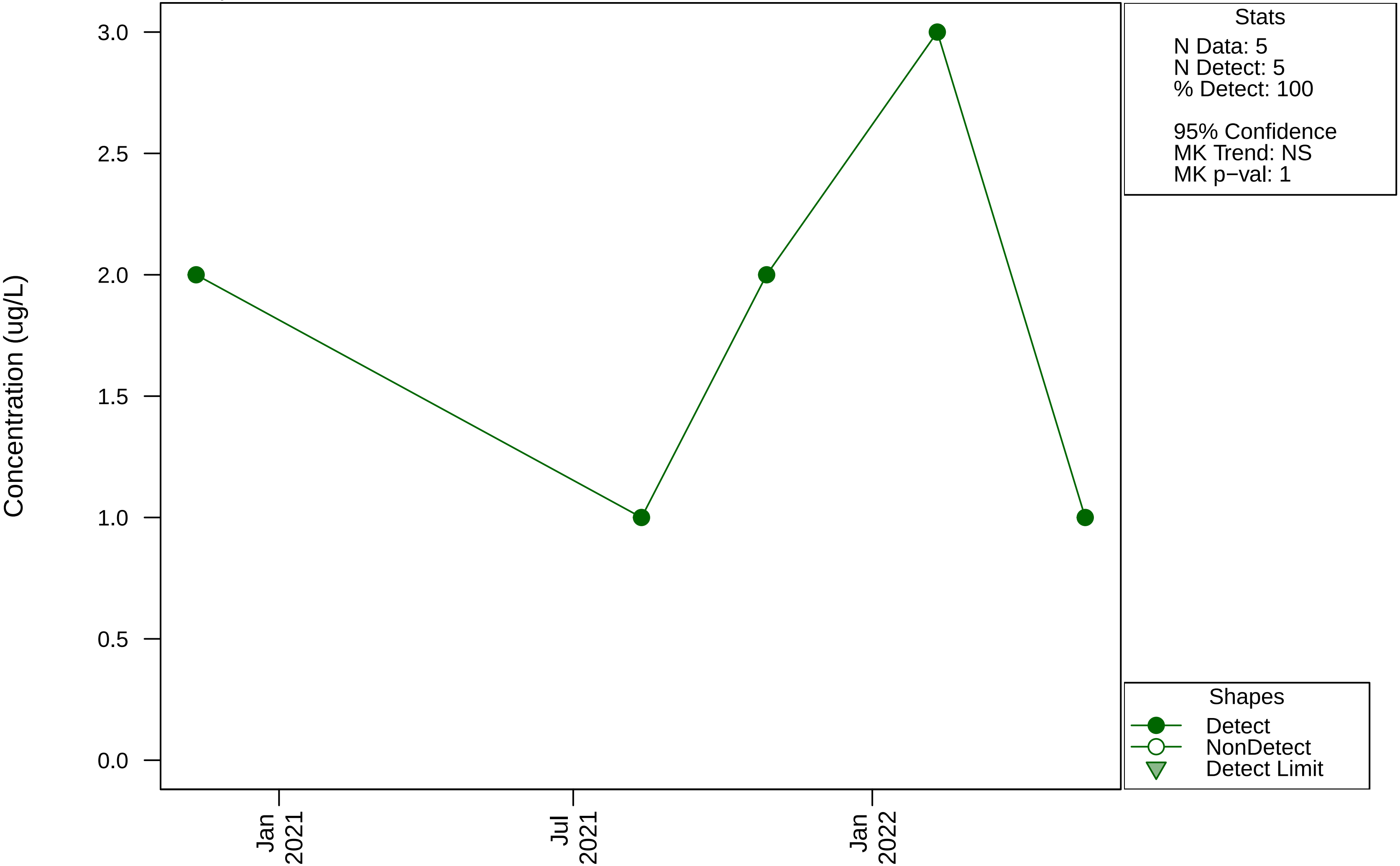

Scatterplots and Trend Analysis
D10, Zinc (Filtered)
Concentration (ug/L)
400
300
200
100
0
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 7
N Detect: 7
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 1
Shapes
Detect
NonDetect
Detect Limit

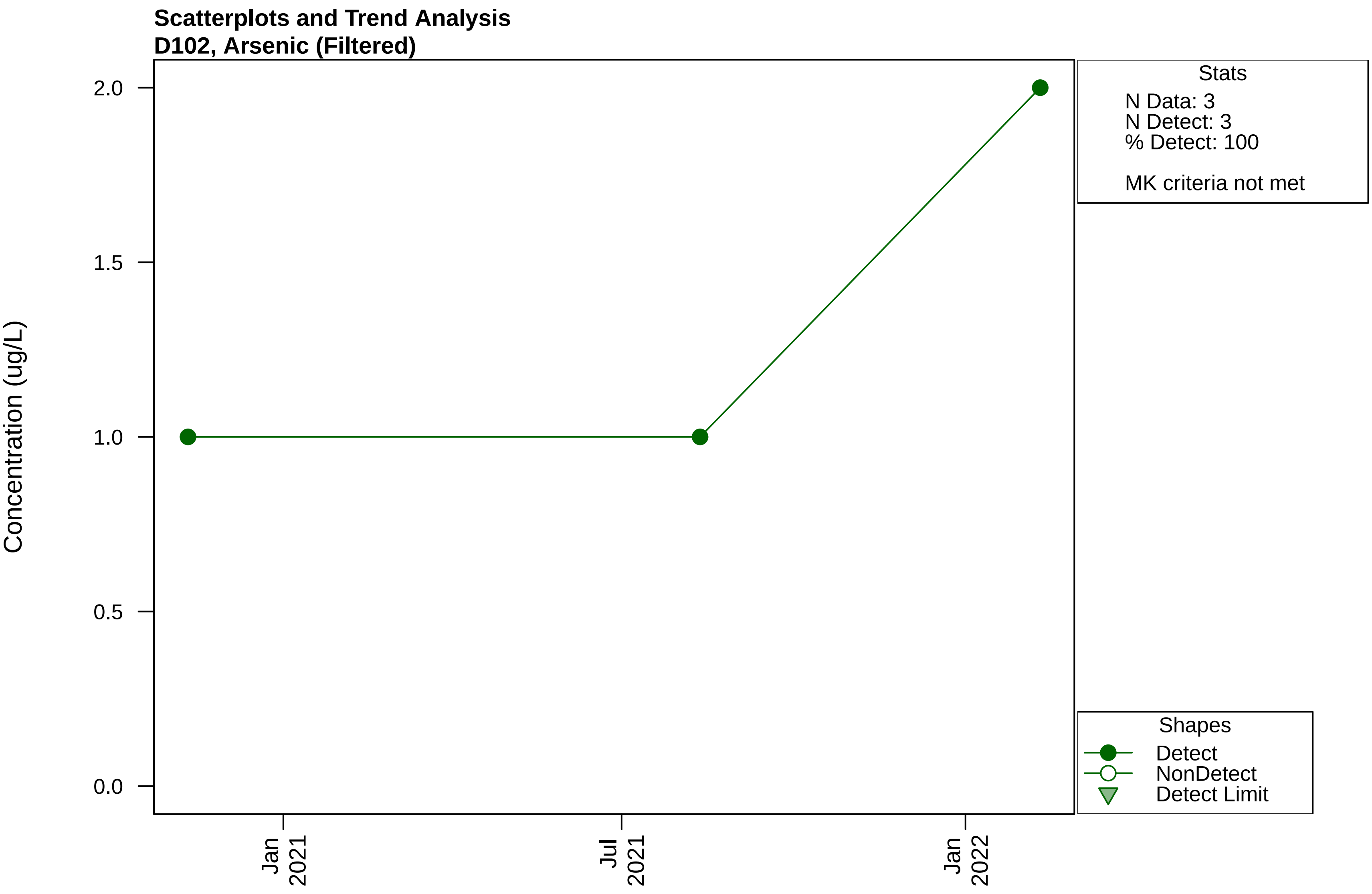
Scatterplots and Trend Analysis
D102, Aluminium



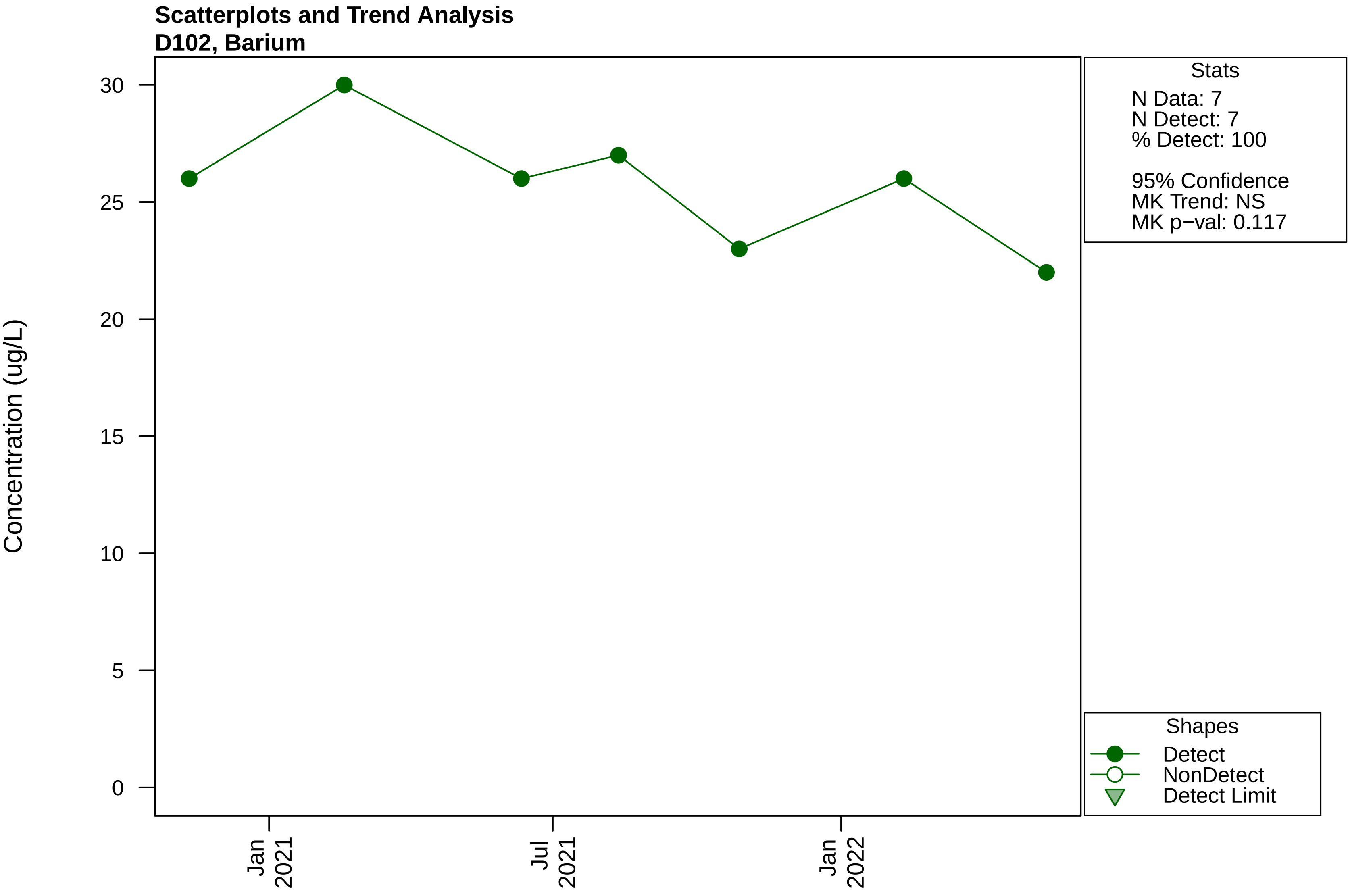

Scatterplots and Trend Analysis
D102, Ammonia
Concentration (ug/L)
700
600
500
400
300
200
100
0
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 7
N Detect: 7
% Detect: 100
95% Confidence
MK Trend: Significant
MK p−val: 0.00625
Direction: Decreasing
Lines
Linear Fit
Shapes
Detect
NonDetect
Detect Limit

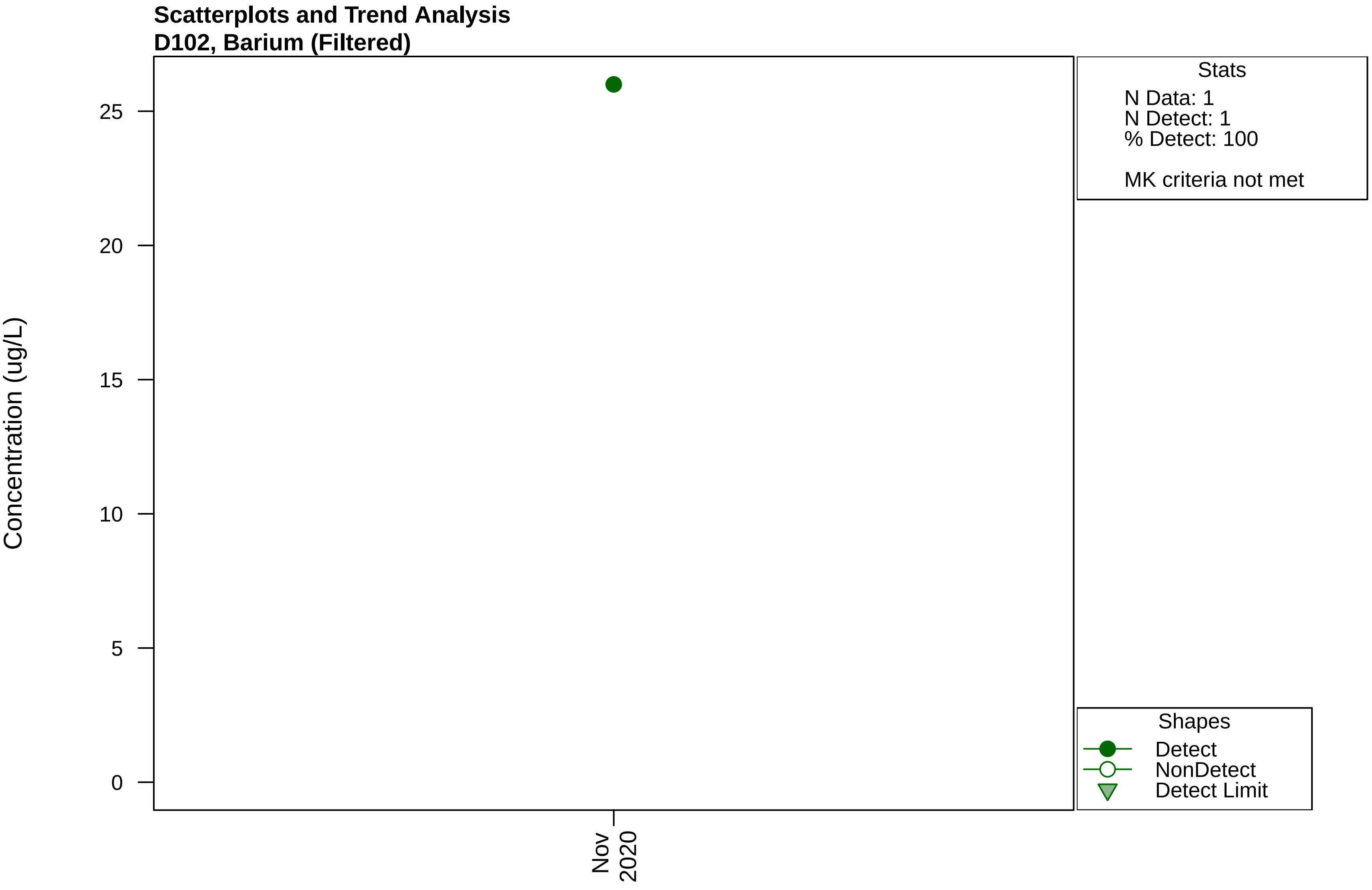
Scatterplots and Trend Analysis
D102, Arsenic



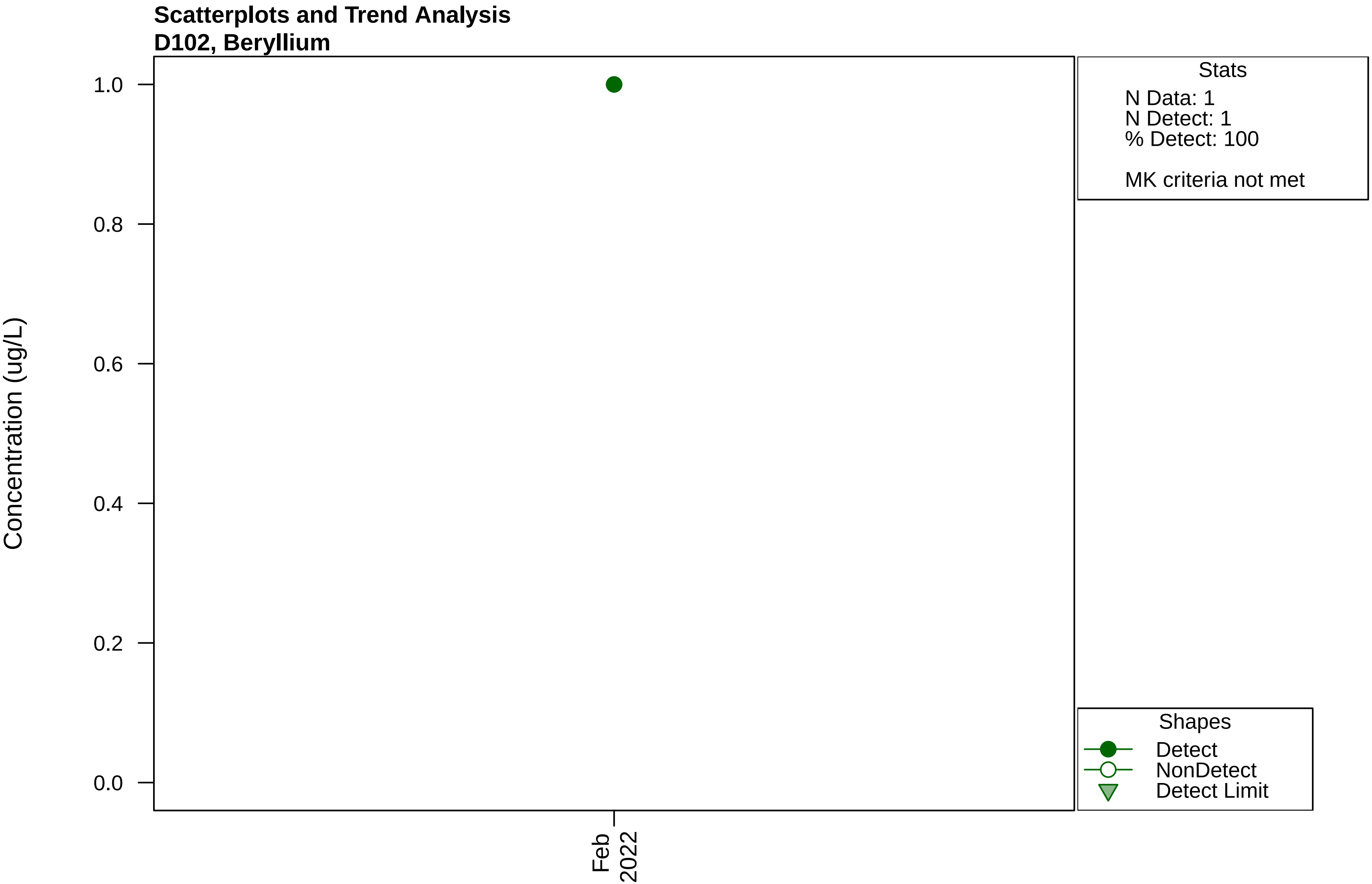


Scatterplots and Trend Analysis
D102, Arsenic (Filtered)
Concentration (ug/L)
2.0
1.5
1.0
0.5
0.0
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 3
N Detect: 3
% Detect: 100
MK criteria not met
Shapes
Detect
NonDetect
Detect Limit

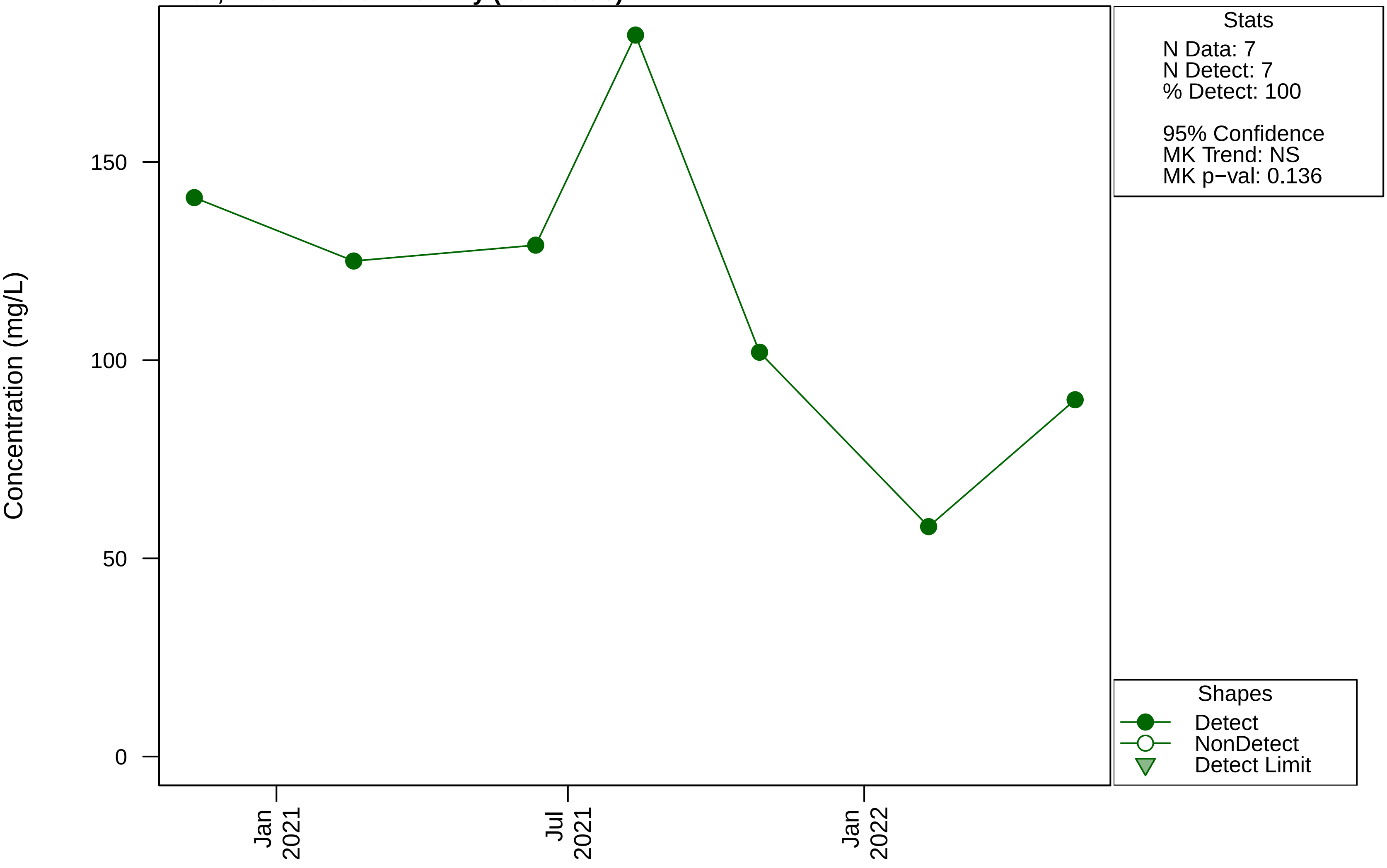

Scatterplots and Trend Analysis
D102, Barium
Concentration (ug/L)
0
5
10
15
20
25
30
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 7
N Detect: 7
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.117
Shapes
Detect
NonDetect
Detect Limit

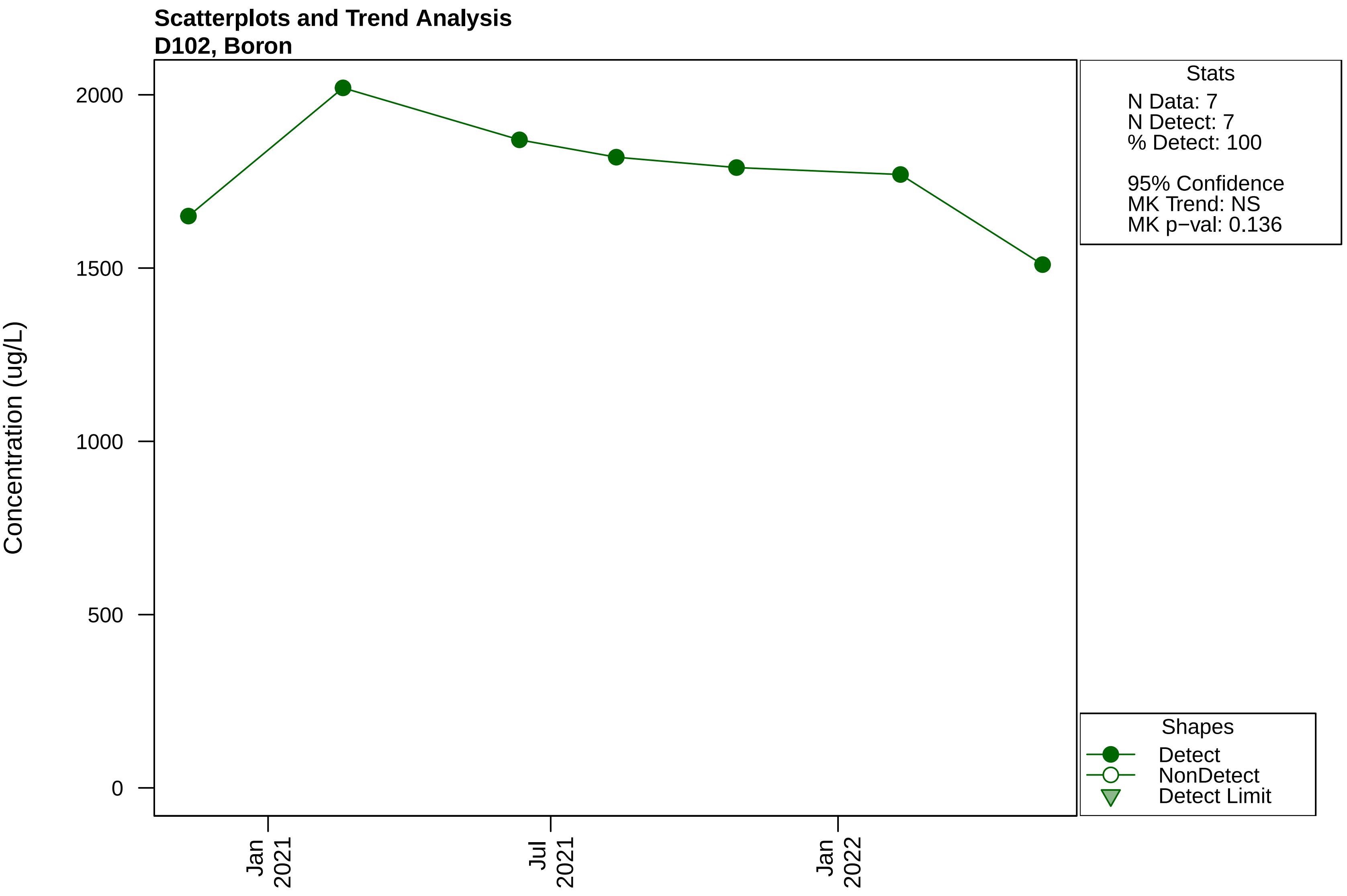


Scatterplots and Trend Analysis
D102, Barium (Filtered)
Concentration (ug/L)
0
5
10
15
20
25
Nov 2020
Stats
N Data: 1
N Detect: 1
% Detect: 100
MK criteria not met
Shapes
Detect
NonDetect
Detect Limit

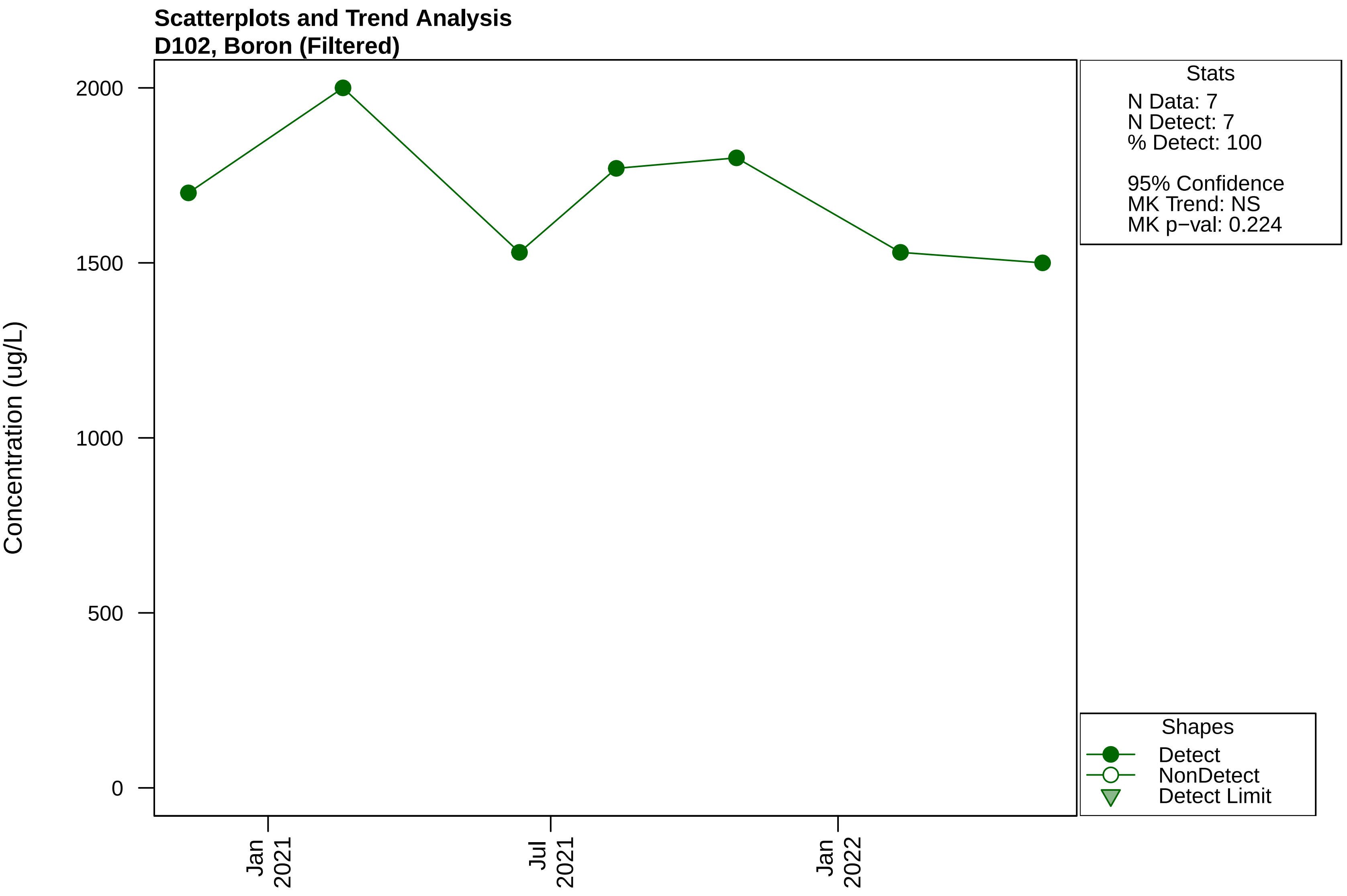

Scatterplots and Trend Analysis
D102, Beryllium
Concentration (ug/L)
1.0
0.8
0.6
0.4
0.2
0.0
Feb
2022
Stats
N Data: 1
N Detect: 1
% Detect: 100
MK criteria not met
Shapes
Detect
NonDetect
Detect Limit

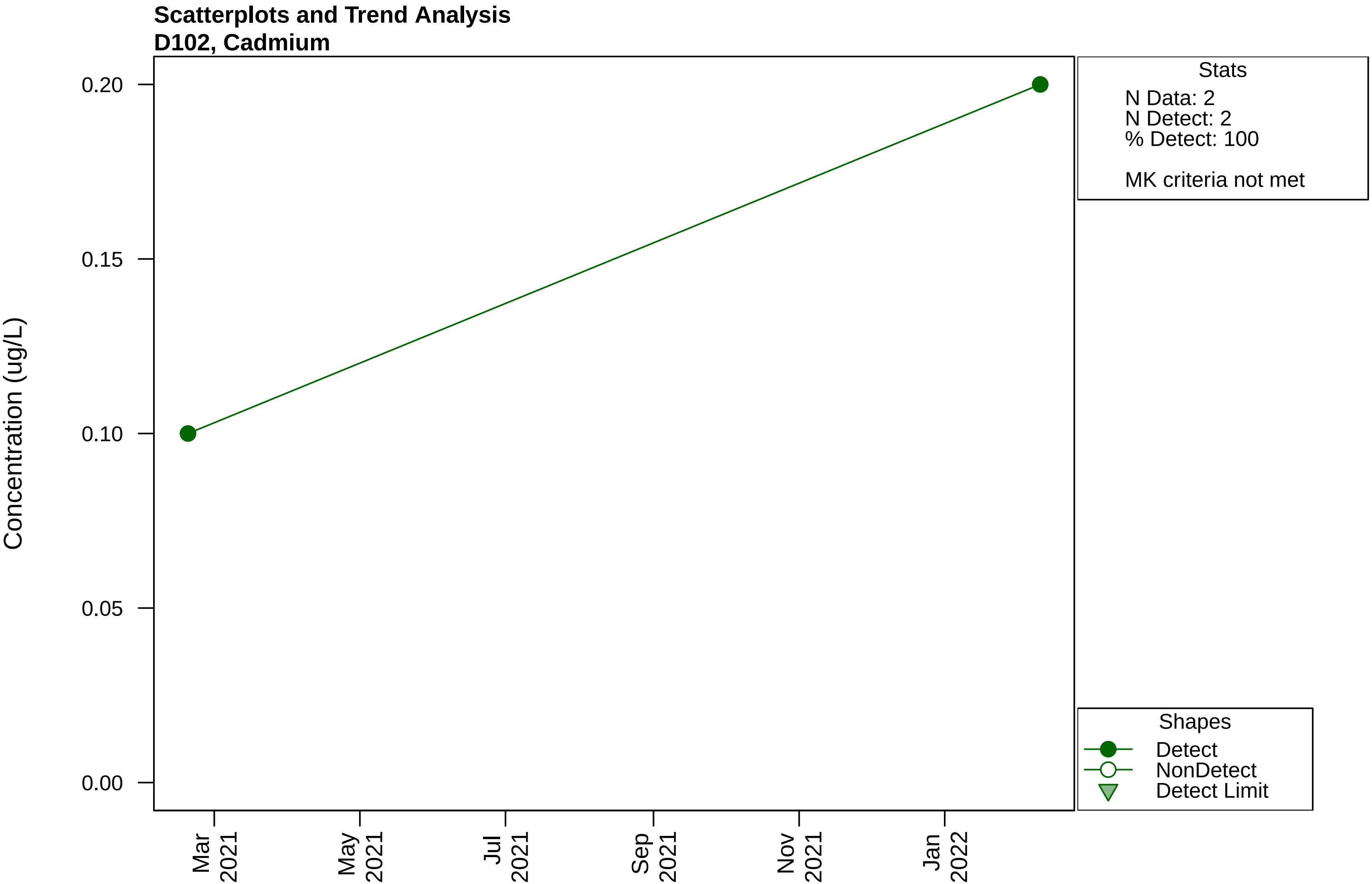
Scatterplots and Trend Analysis
D102, Bicarbonate Alkalinity (as CaCO3)





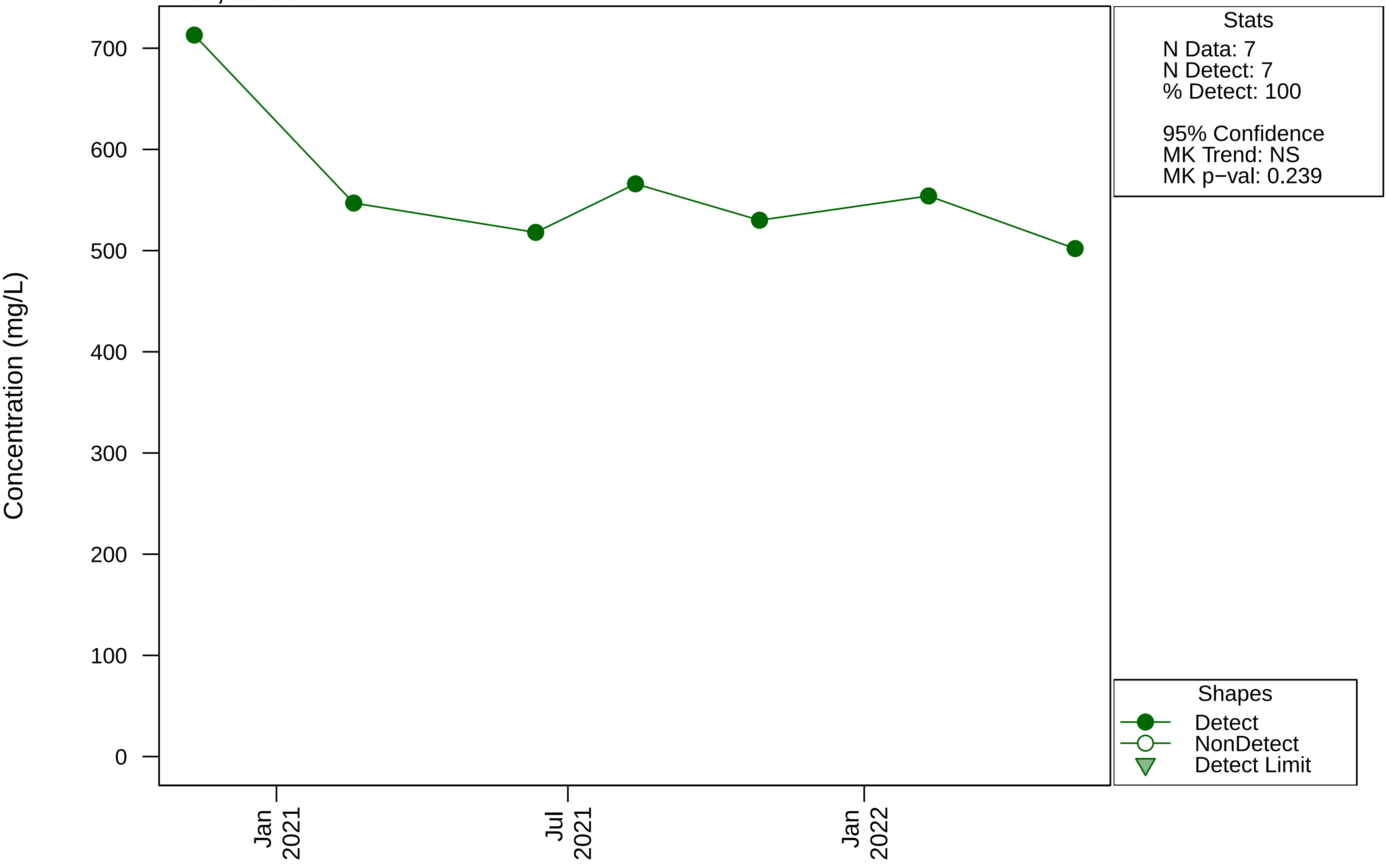
Scatterplots and Trend Analysis
D102, Boron
Concentration (ug/L)
2000
1500
1000
500
0
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 7
N Detect: 7
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.136
Shapes
Detect
NonDetect
Detect Limit

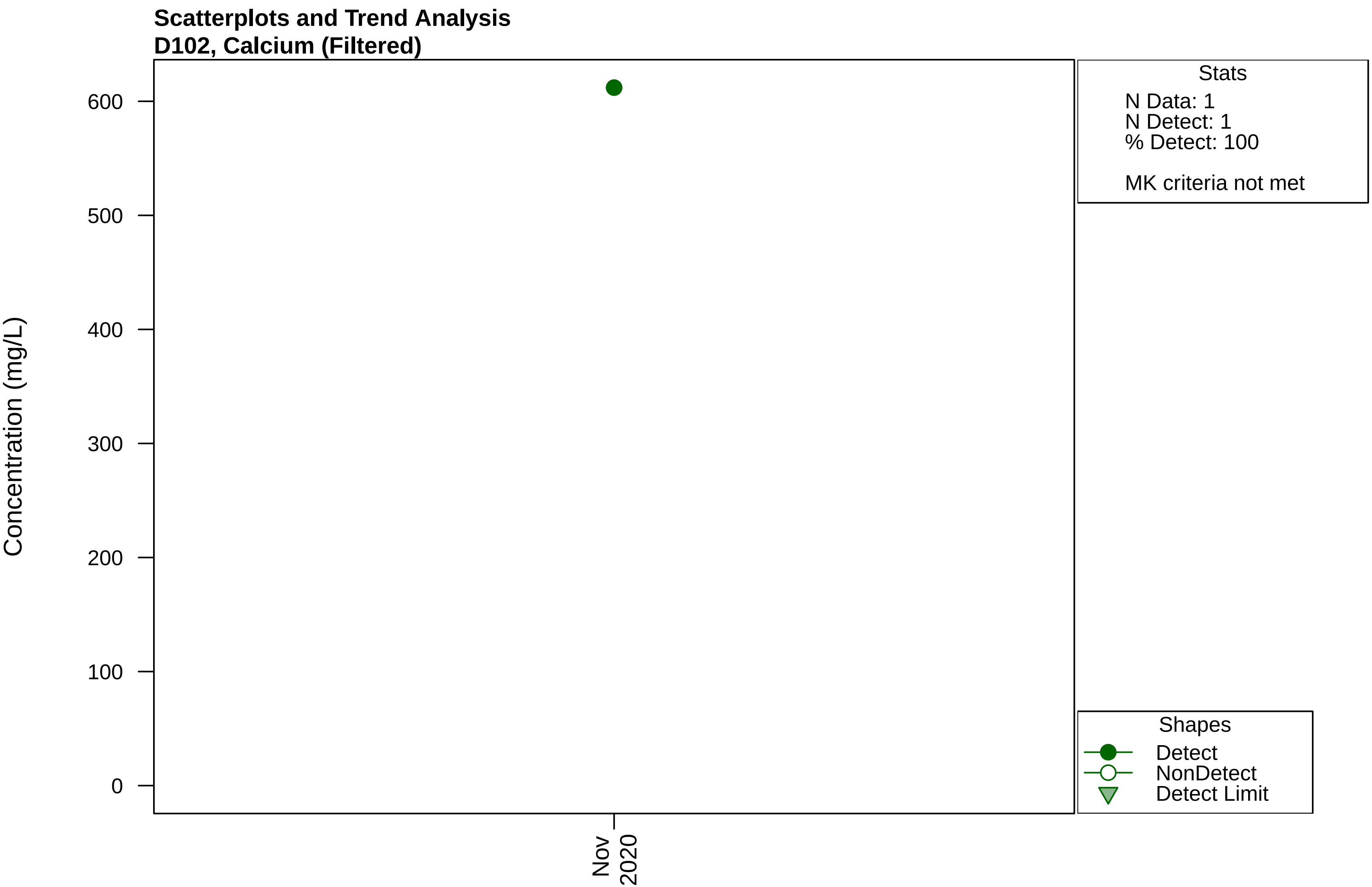

Scatterplots and Trend Analysis
D102, Boron (Filtered)
Concentration (ug/L)
2000
1500
1000
500
0
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 7
N Detect: 7
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.224
Shapes
Detect
NonDetect
Detect Limit



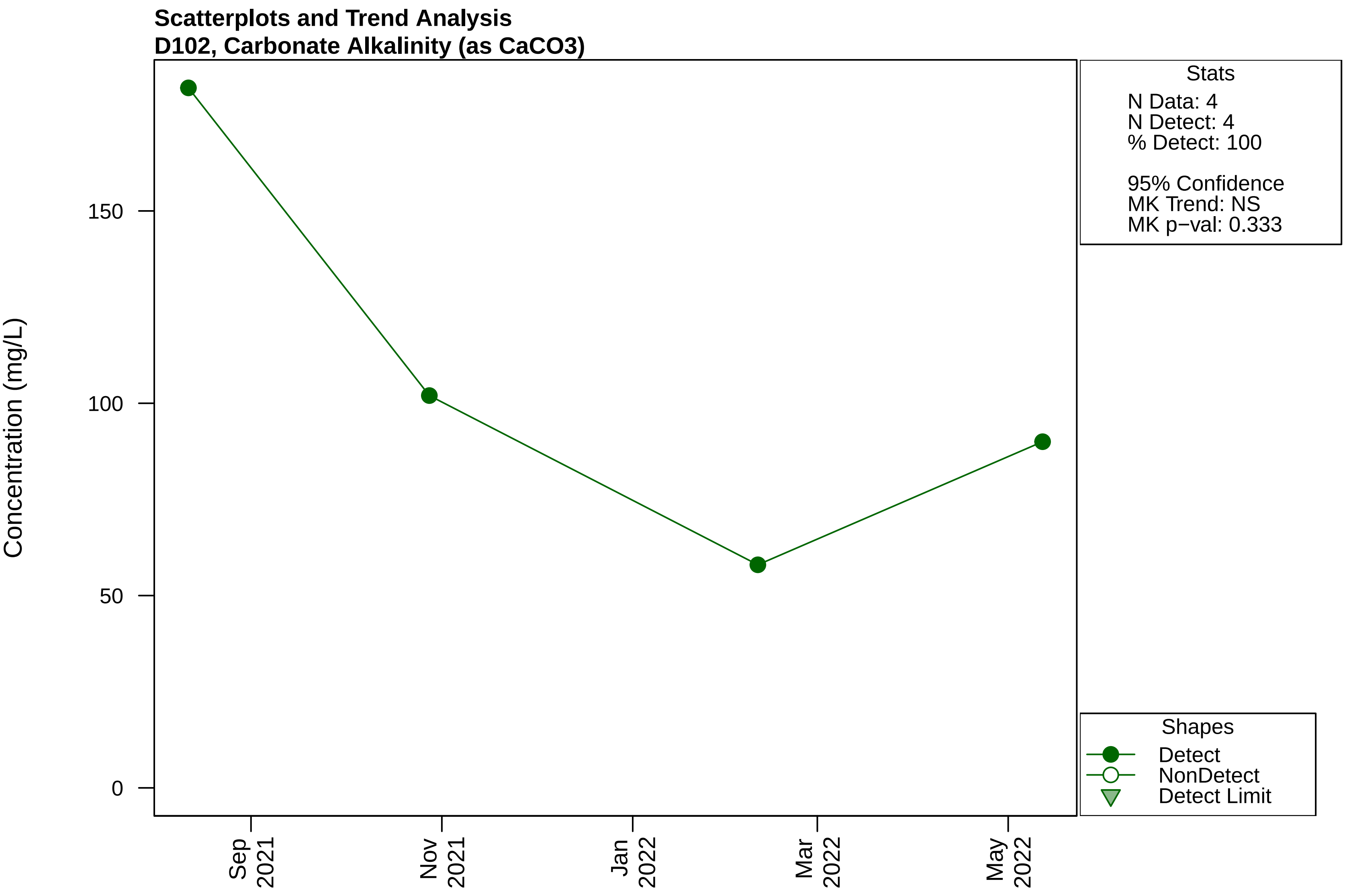
Scatterplots and Trend Analysis
D102, Cadmium
Concentration (ug/L)
0.20
0.15
0.10
0.05
0.00
Mar 2021
May 2021
Jul 2021
Sep 2021
Nov 2021
Jan 2022
Stats
N Data: 2
N Detect: 2
% Detect: 100
MK criteria not met
Shapes
Detect
NonDetect
Detect Limit

Scatterplots and Trend Analysis
D102, Calcium



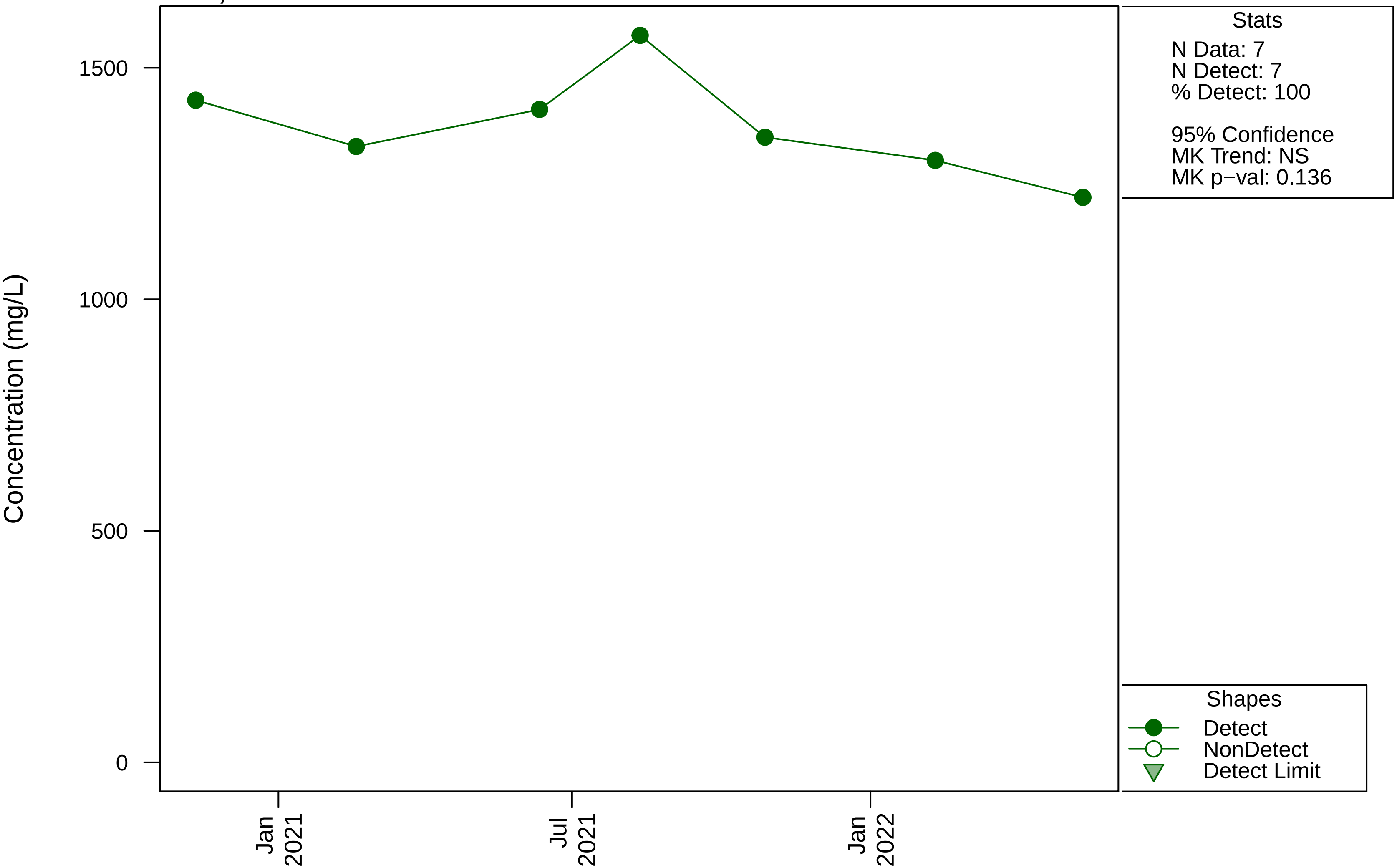


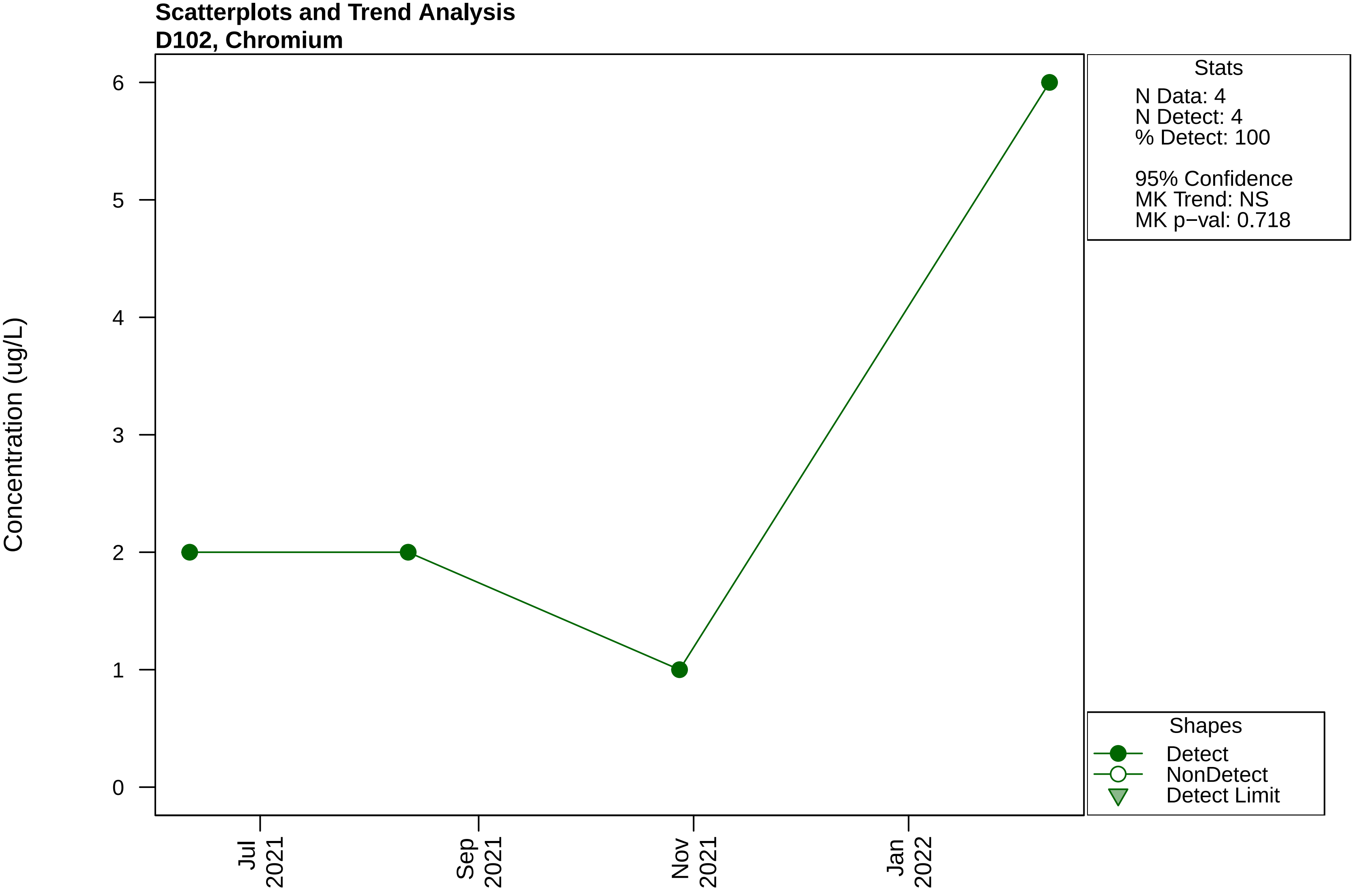
Scatterplots and Trend Analysis
D102, Calcium (Filtered)
Concentration (mg/L)
0
100
200
300
400
500
600
Nov 2020
Stats
N Data: 1
N Detect: 1
% Detect: 100
MK criteria not met
Shapes
Detect
NonDetect
Detect Limit

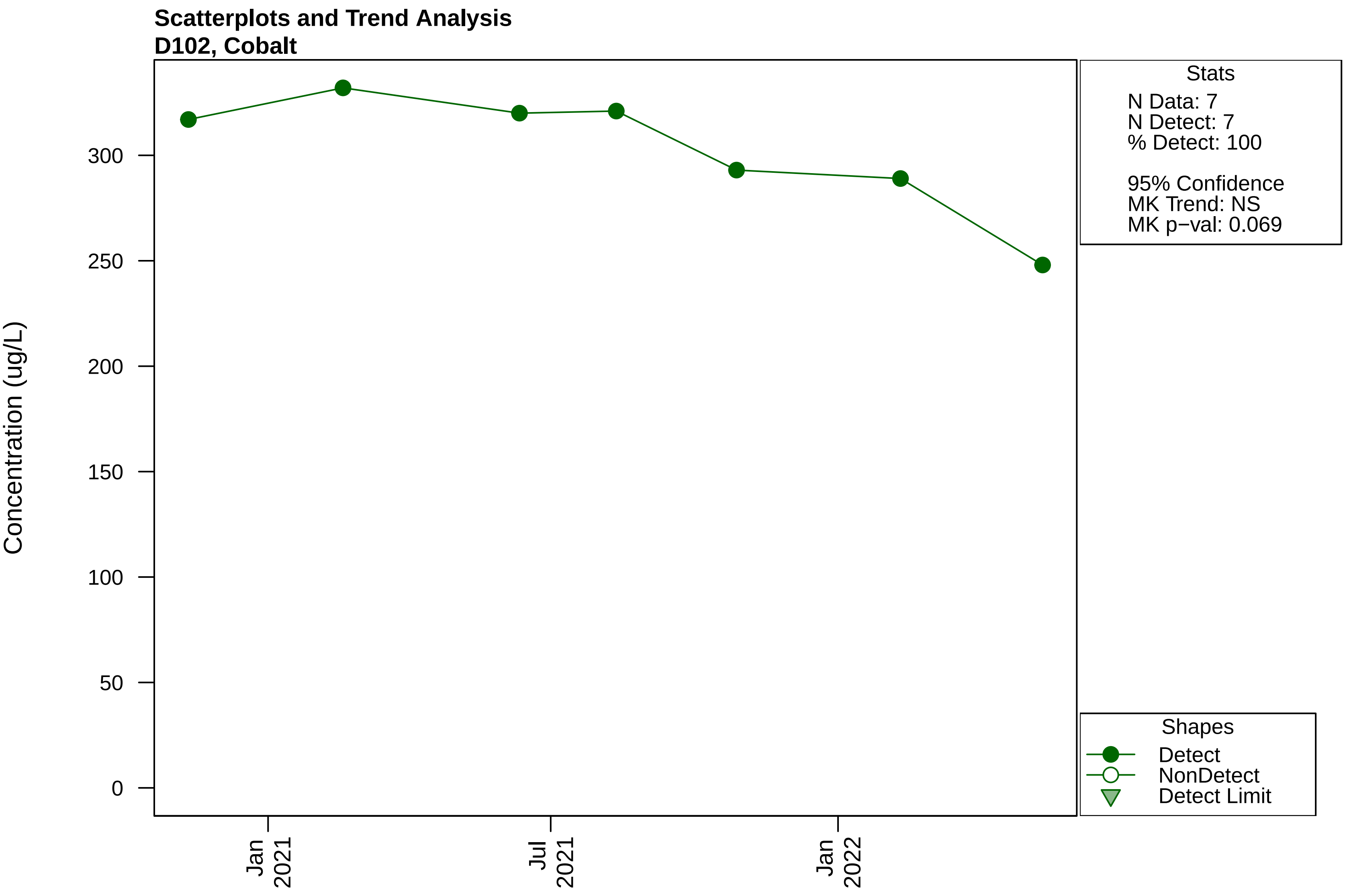


Scatterplots and Trend Analysis
D102, Carbonate Alkalinity (as CaCO3)
Concentration (mg/L)
150
100
50
0
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 4
N Detect: 4
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.333
Shapes
Detect
NonDetect
Detect Limit

Scatterplots and Trend Analysis
D102, Chloride

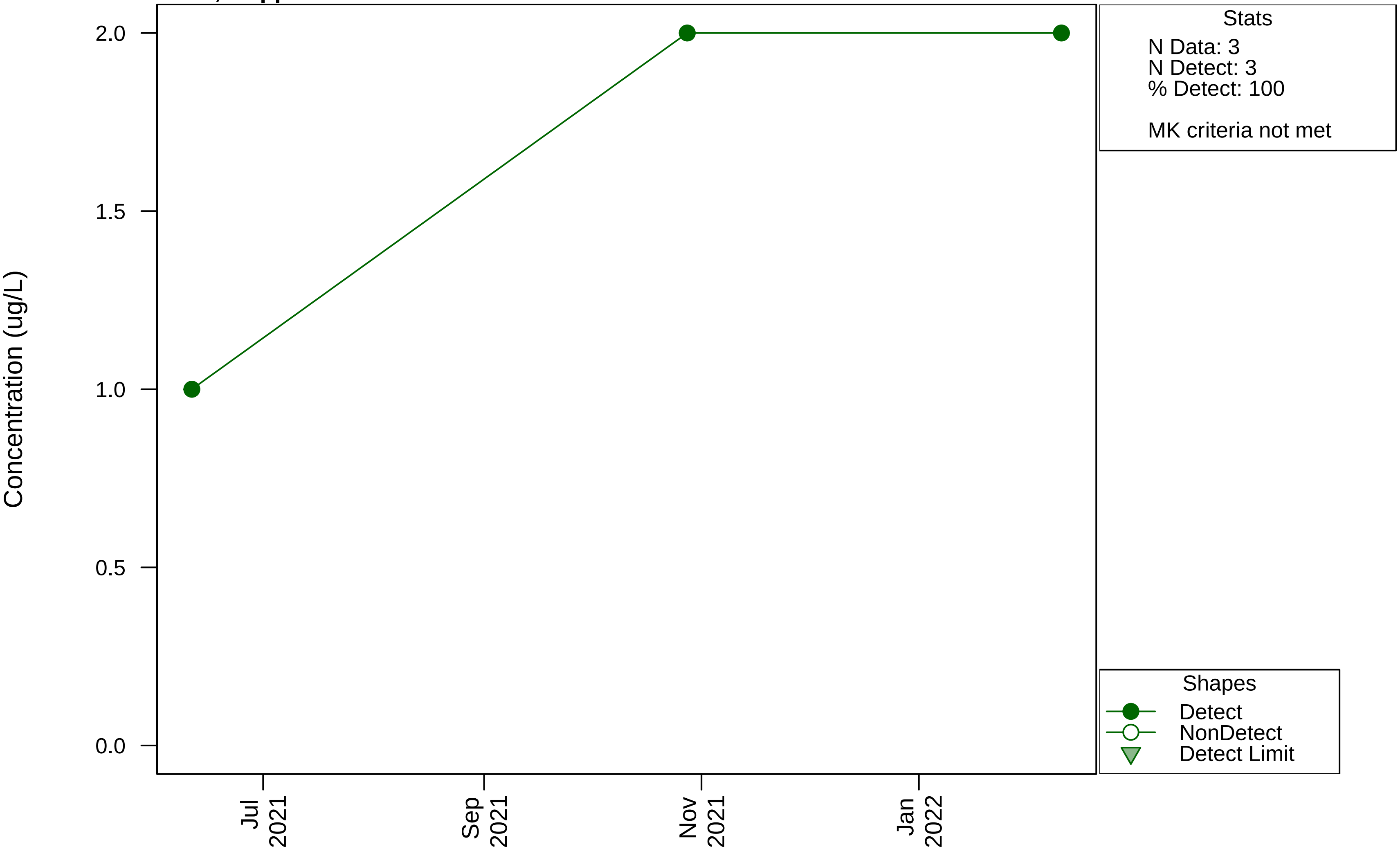


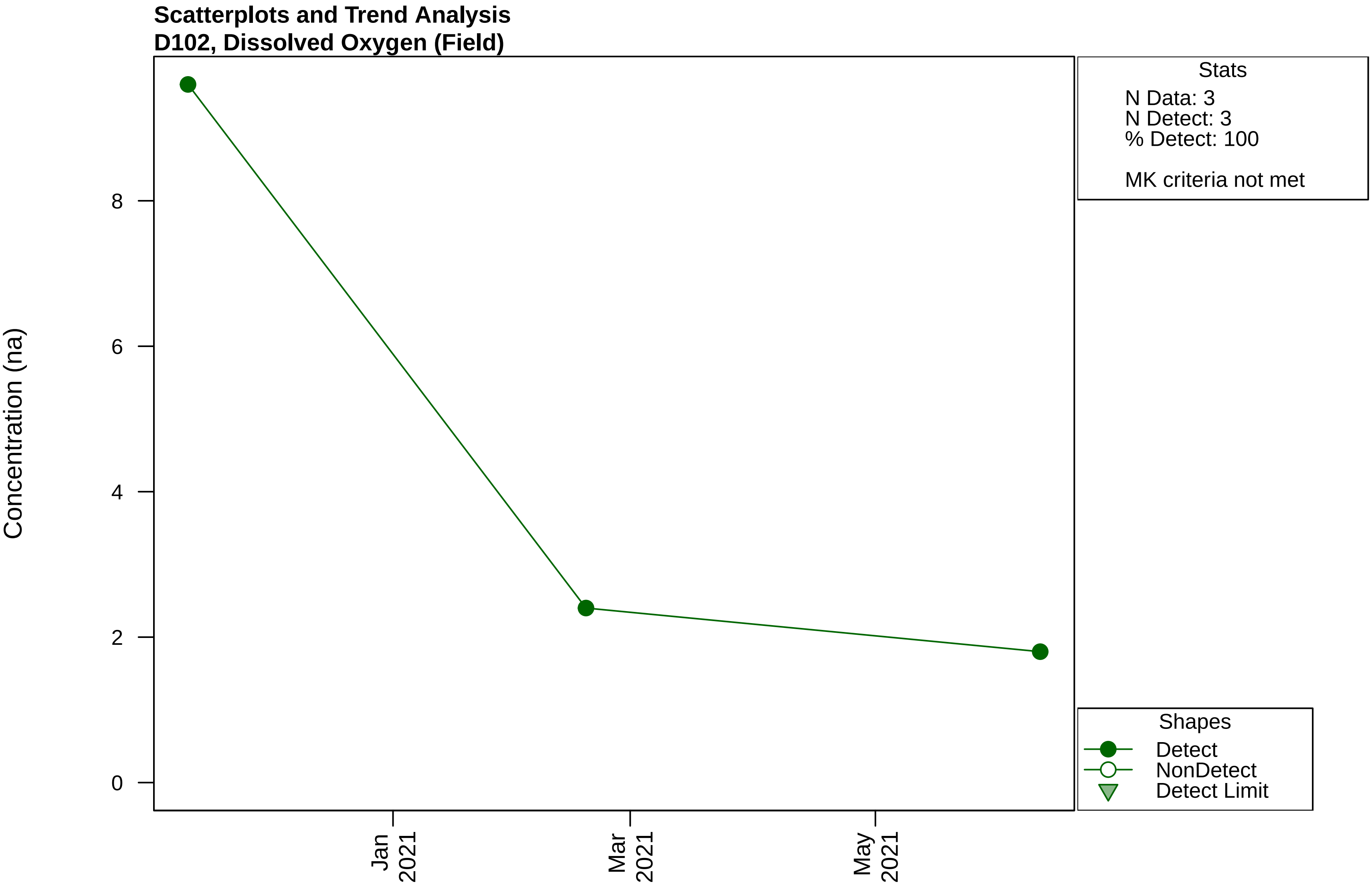

Scatterplots and Trend Analysis
D102, Chromium
Concentration (ug/L)
0
1
2
3
4
5
6
Jul 2021
Sep 2021
Nov 2021
Jan 2022
Stats
N Data: 4
N Detect: 4
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.718
Shapes
Detect
NonDetect
Detect Limit

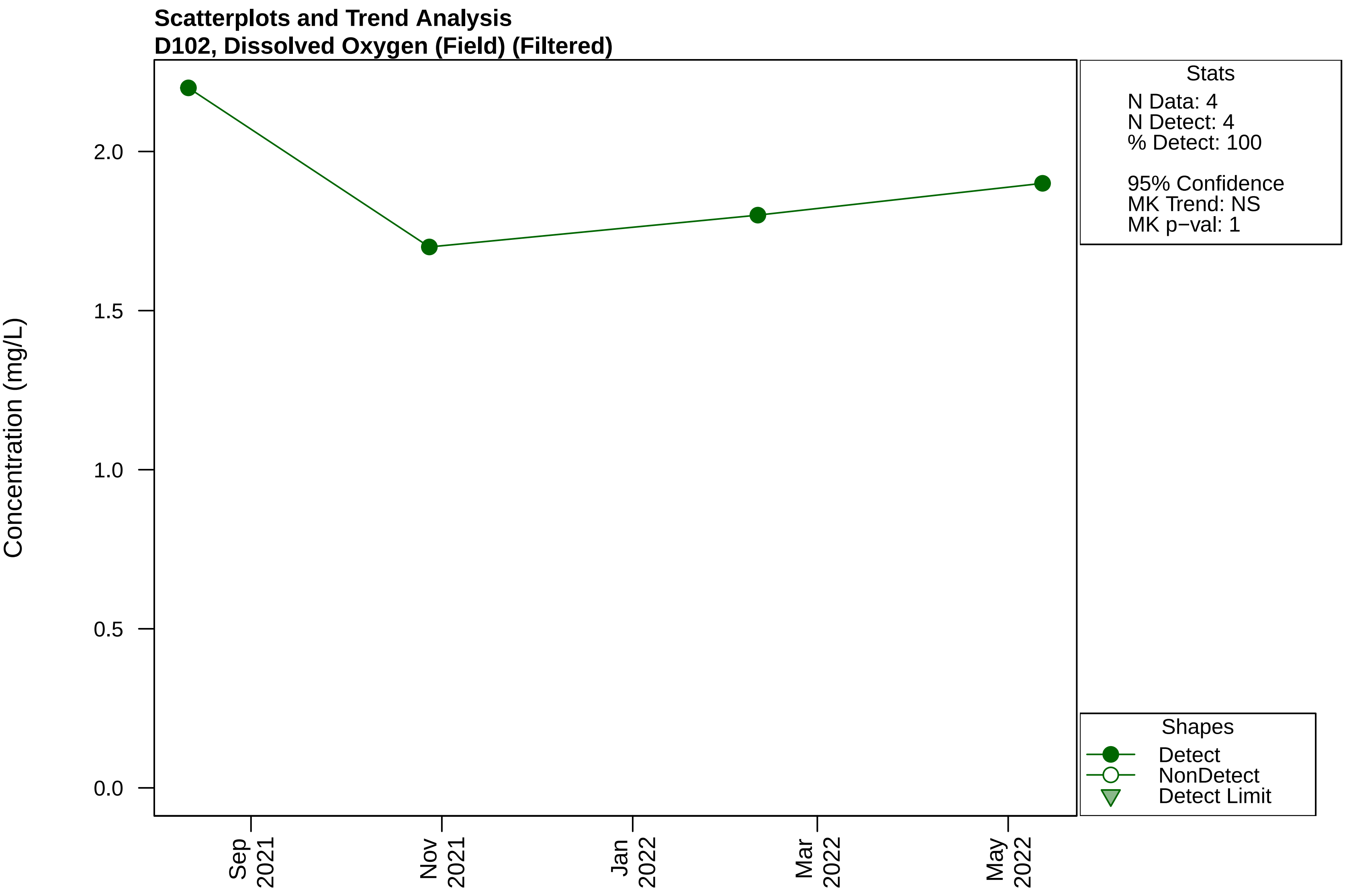


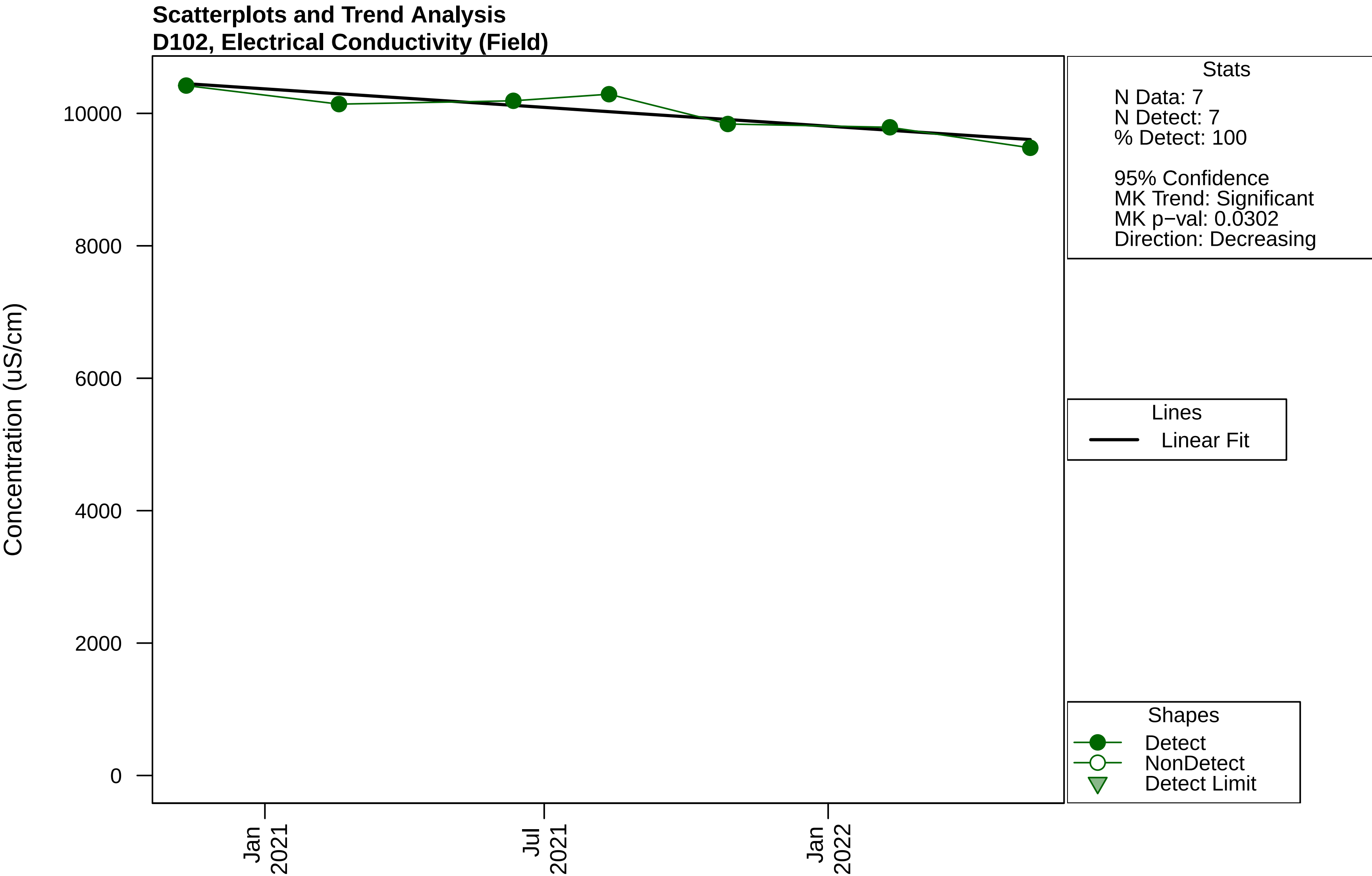
Scatterplots and Trend Analysis
D102, Cobalt
Concentration (ug/L)
0
50
100
150
200
250
300
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 7
N Detect: 7
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.069
Shapes
Detect
NonDetect
Detect Limit

Scatterplots and Trend Analysis
D102, Copper

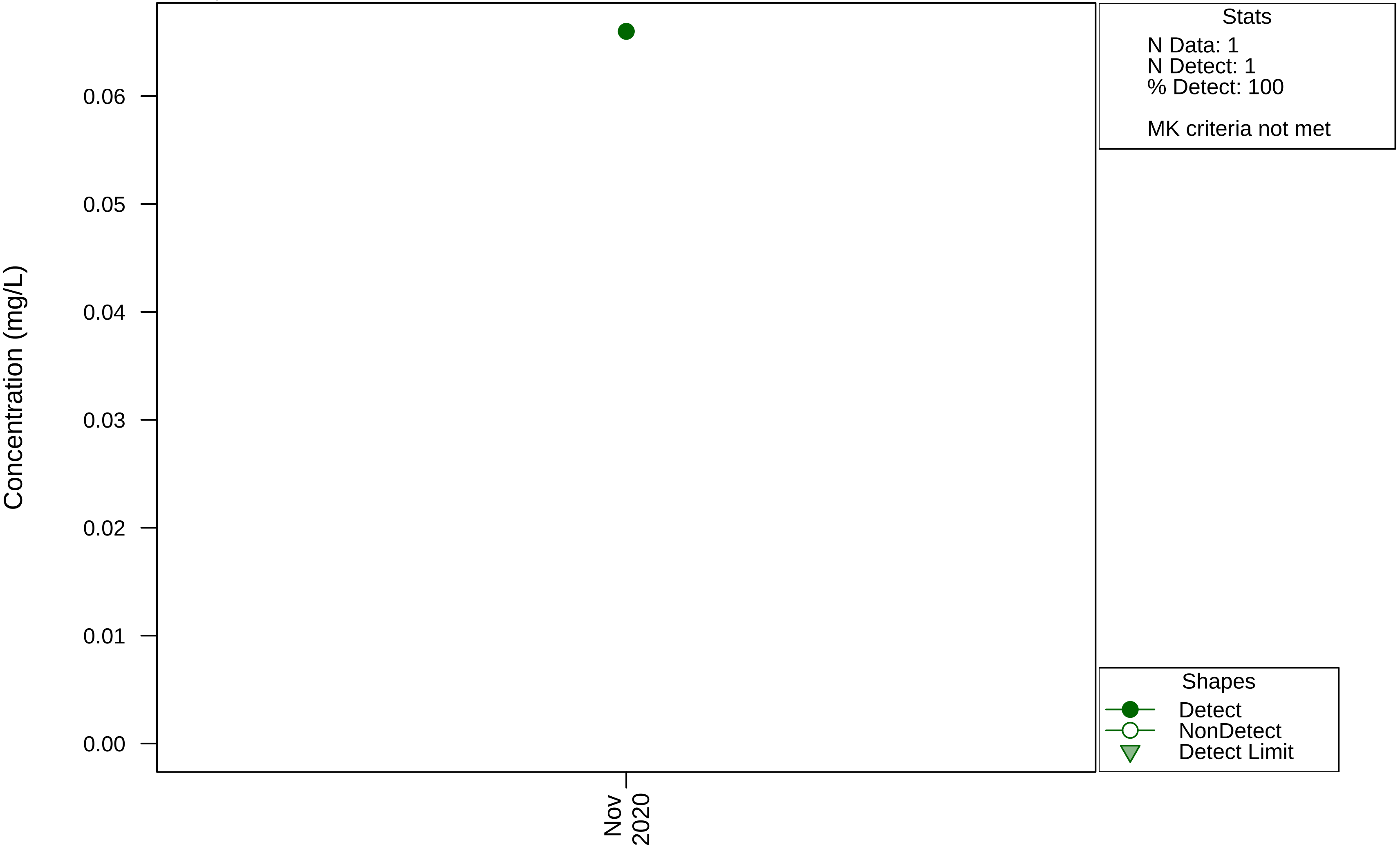


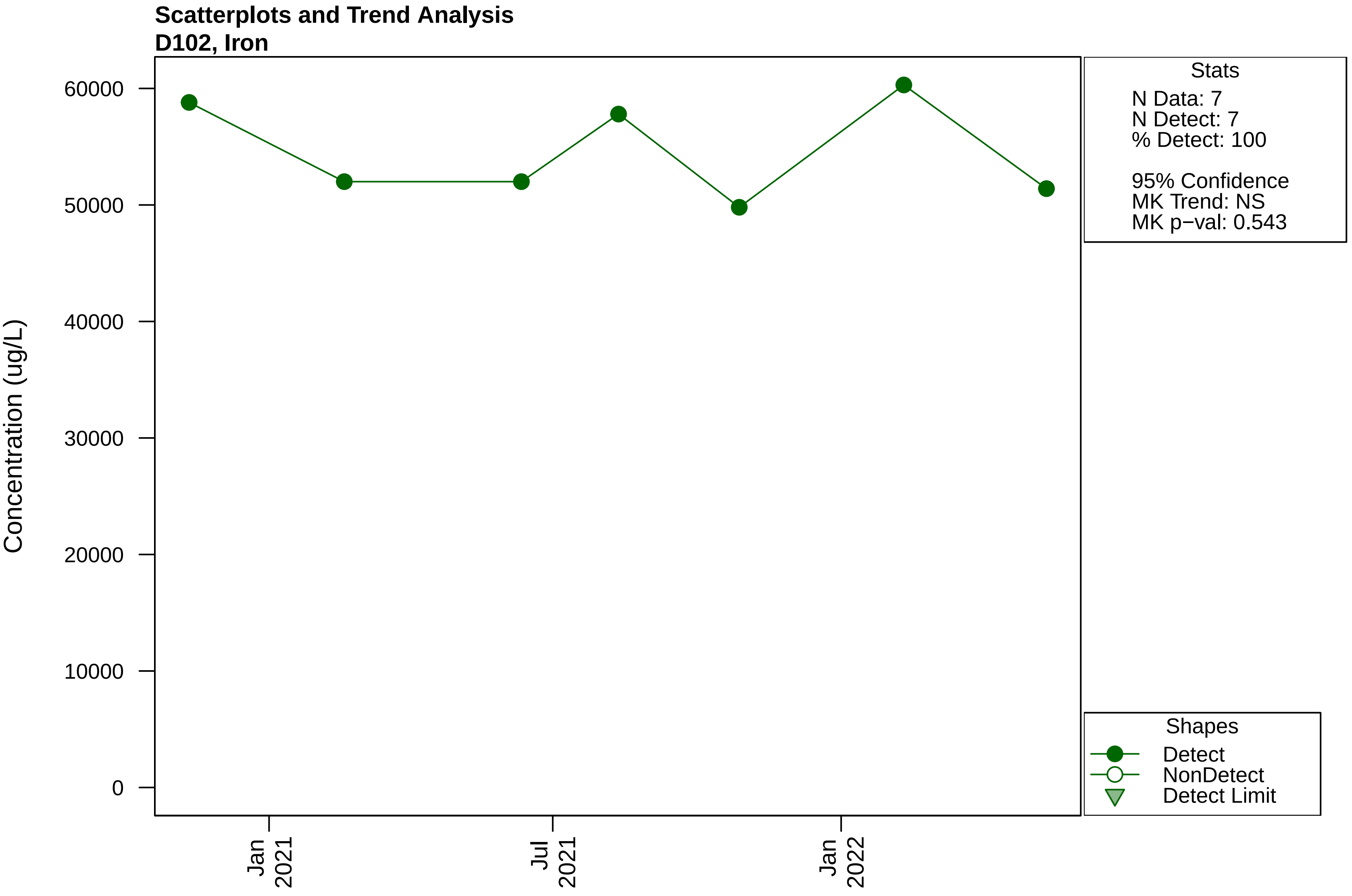

Scatterplots and Trend Analysis
D102, Dissolved Oxygen (Field)
Concentration (na)
0
2
4
6
8
Jan 2021
Mar 2021
May 2021
Stats
N Data: 3
N Detect: 3
% Detect: 100
MK criteria not met
Shapes
Detect
NonDetect
Detect Limit


Scatterplots and Trend Analysis
D102, Dissolved Oxygen (Field) (Filtered)
Concentration (mg/L)
0.0
0.5
1.0
1.5
2.0
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 4
N Detect: 4
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 1
Shapes
Detect
NonDetect
Detect Limit


Scatterplots and Trend Analysis
D102, Electrical Conductivity (Field)
Concentration (uS/cm)
10000
8000
6000
4000
2000
0
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 7
N Detect: 7
% Detect: 100
95% Confidence
MK Trend: Significant
MK p−val: 0.0302
Direction: Decreasing
Lines
Linear Fit
Shapes
Detect
NonDetect
Detect Limit

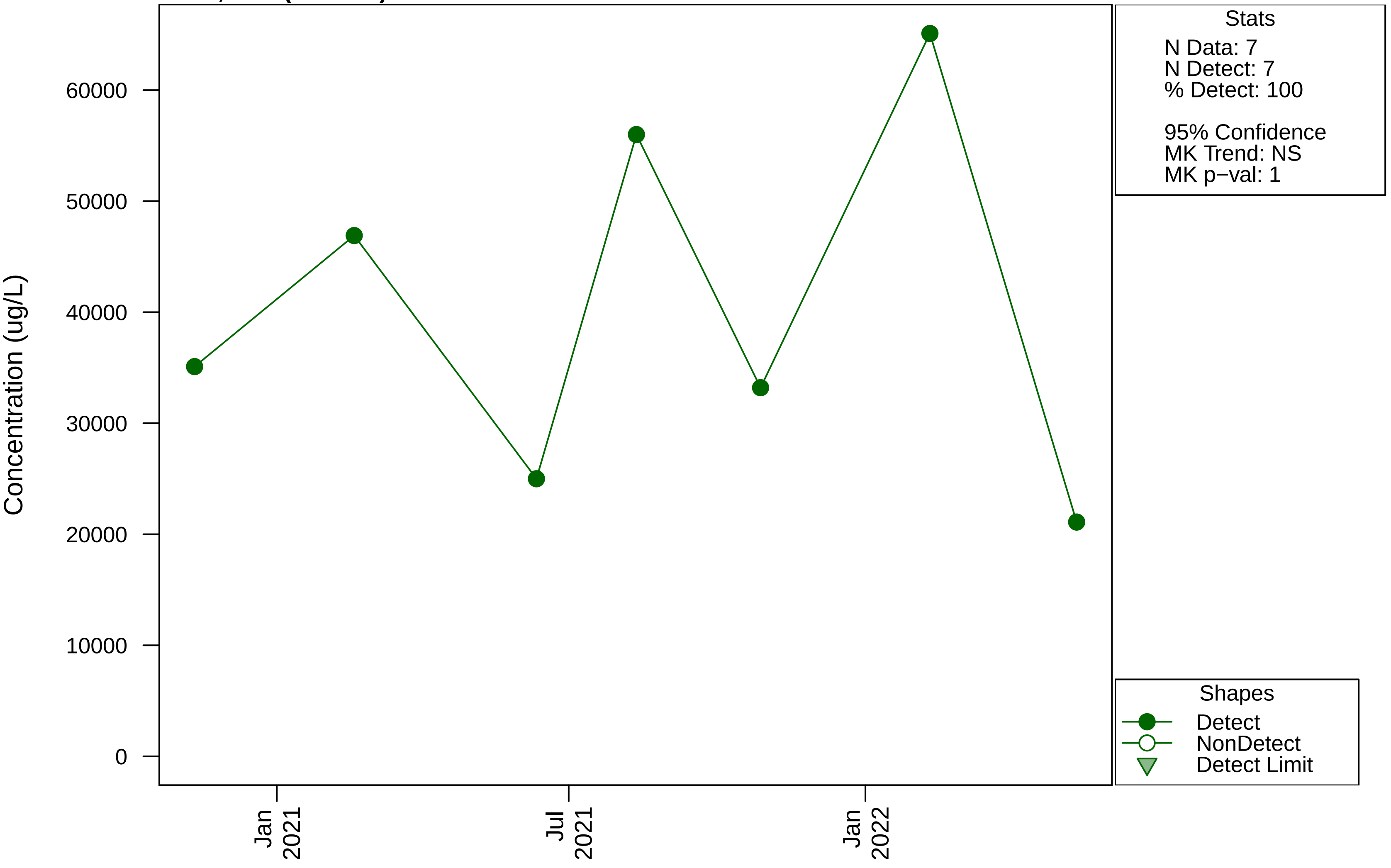
Scatterplots and Trend Analysis
D102, Fluoride



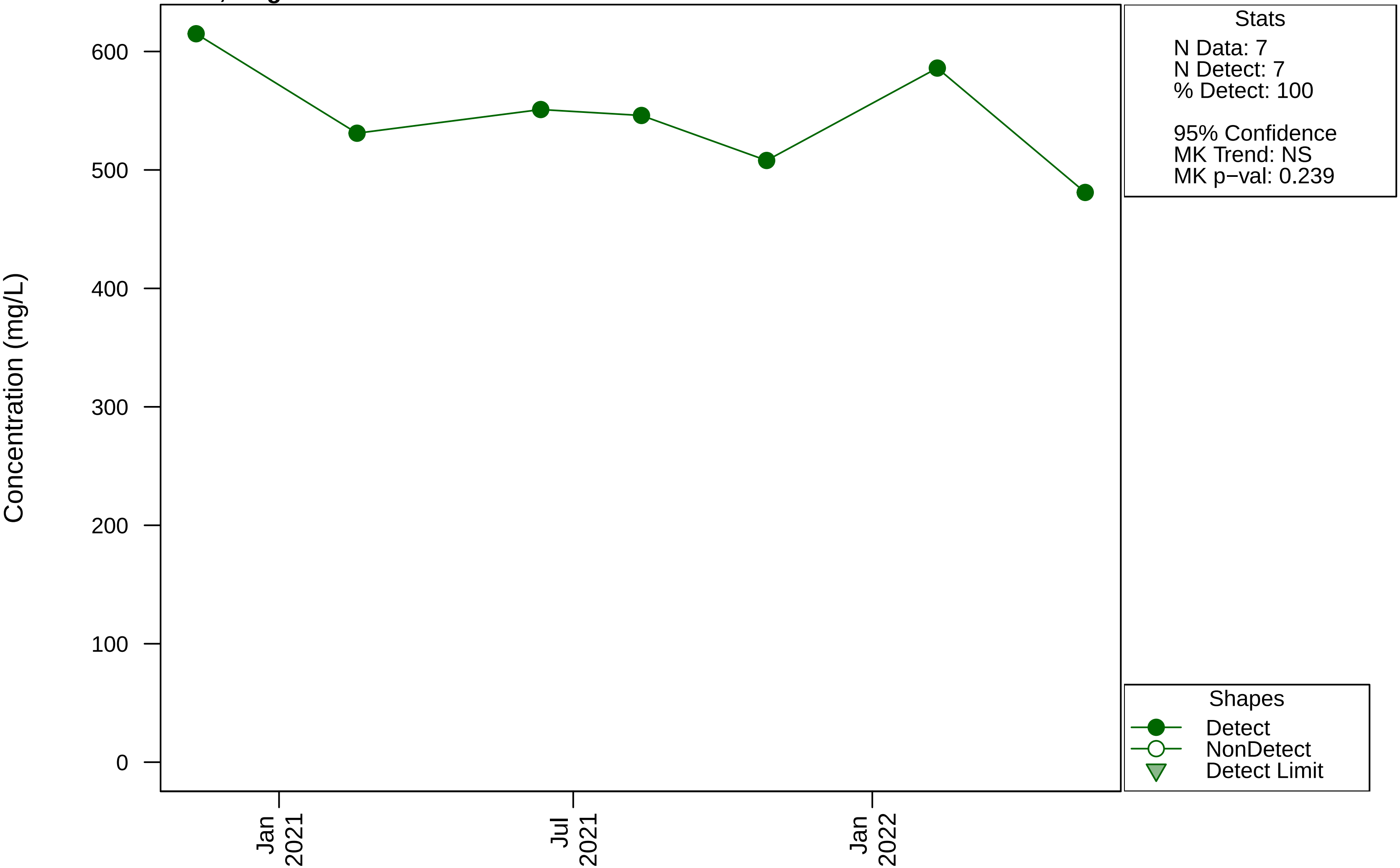


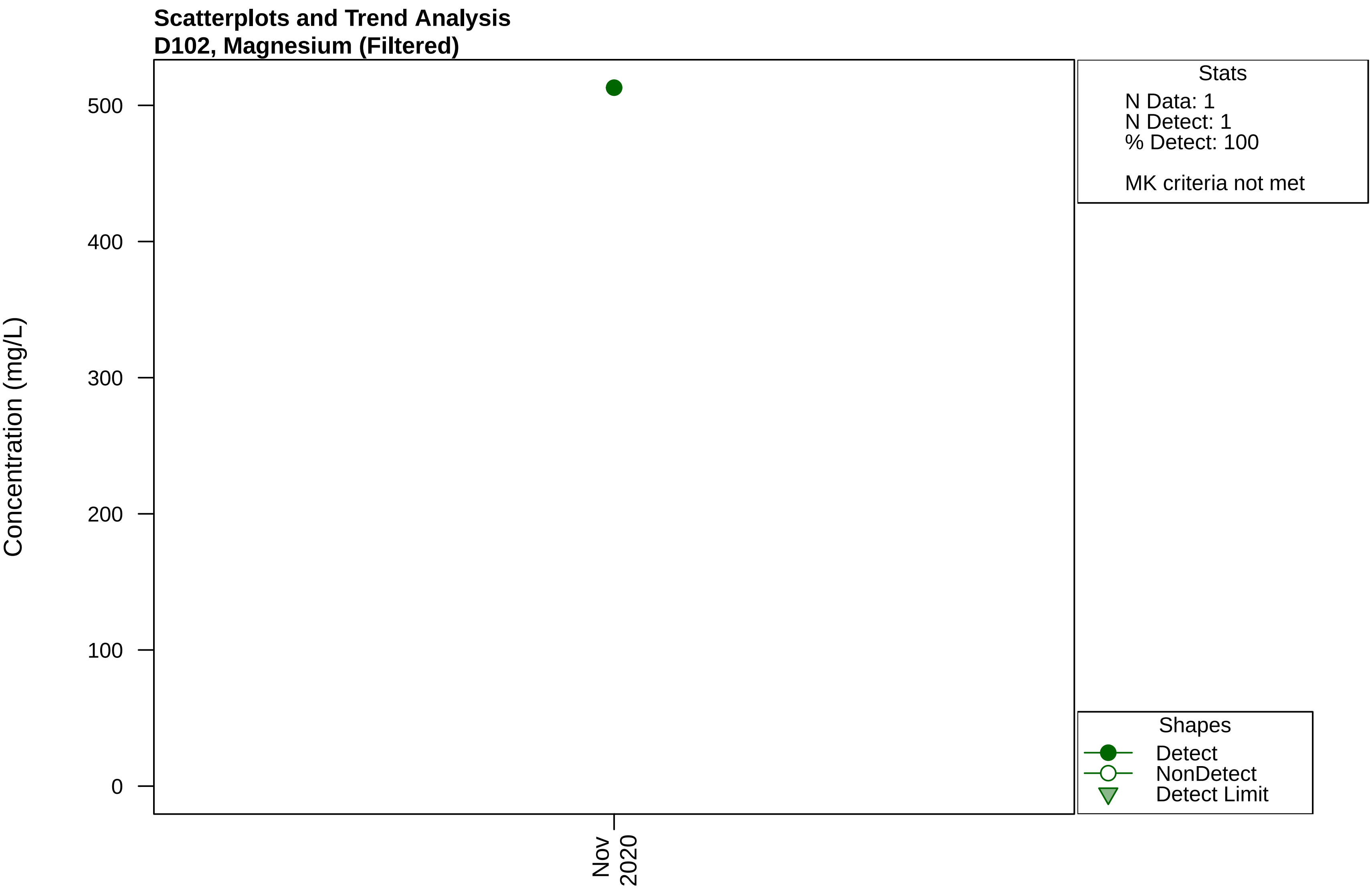
Scatterplots and Trend Analysis
D102, Iron
Concentration (ug/L)
60000
50000
40000
30000
20000
10000
0
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 7
N Detect: 7
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.543
Shapes
Detect
NonDetect
Detect Limit

Scatterplots and Trend Analysis
D102, Iron (Filtered)

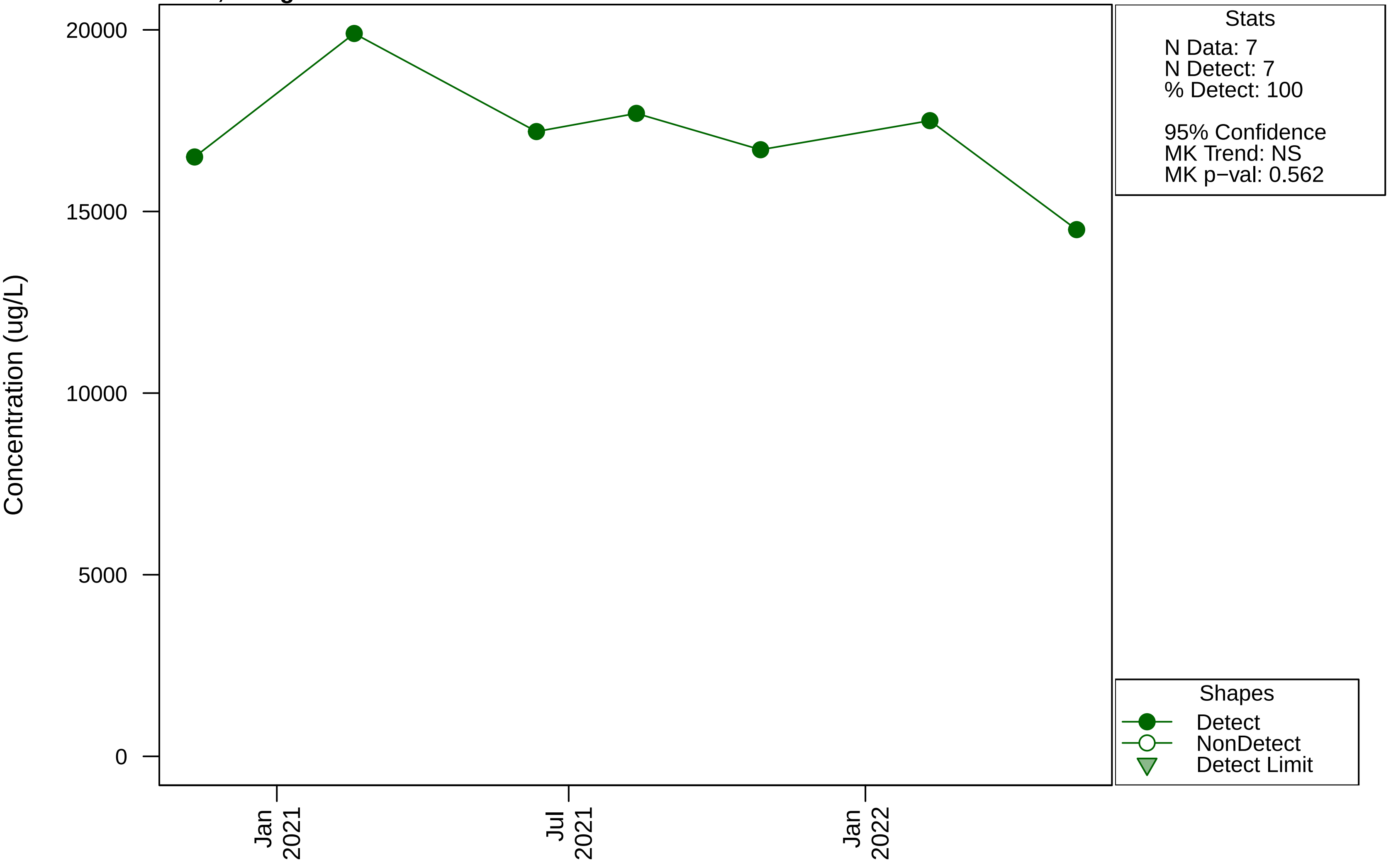


Scatterplots and Trend Analysis
D102, Magnesium

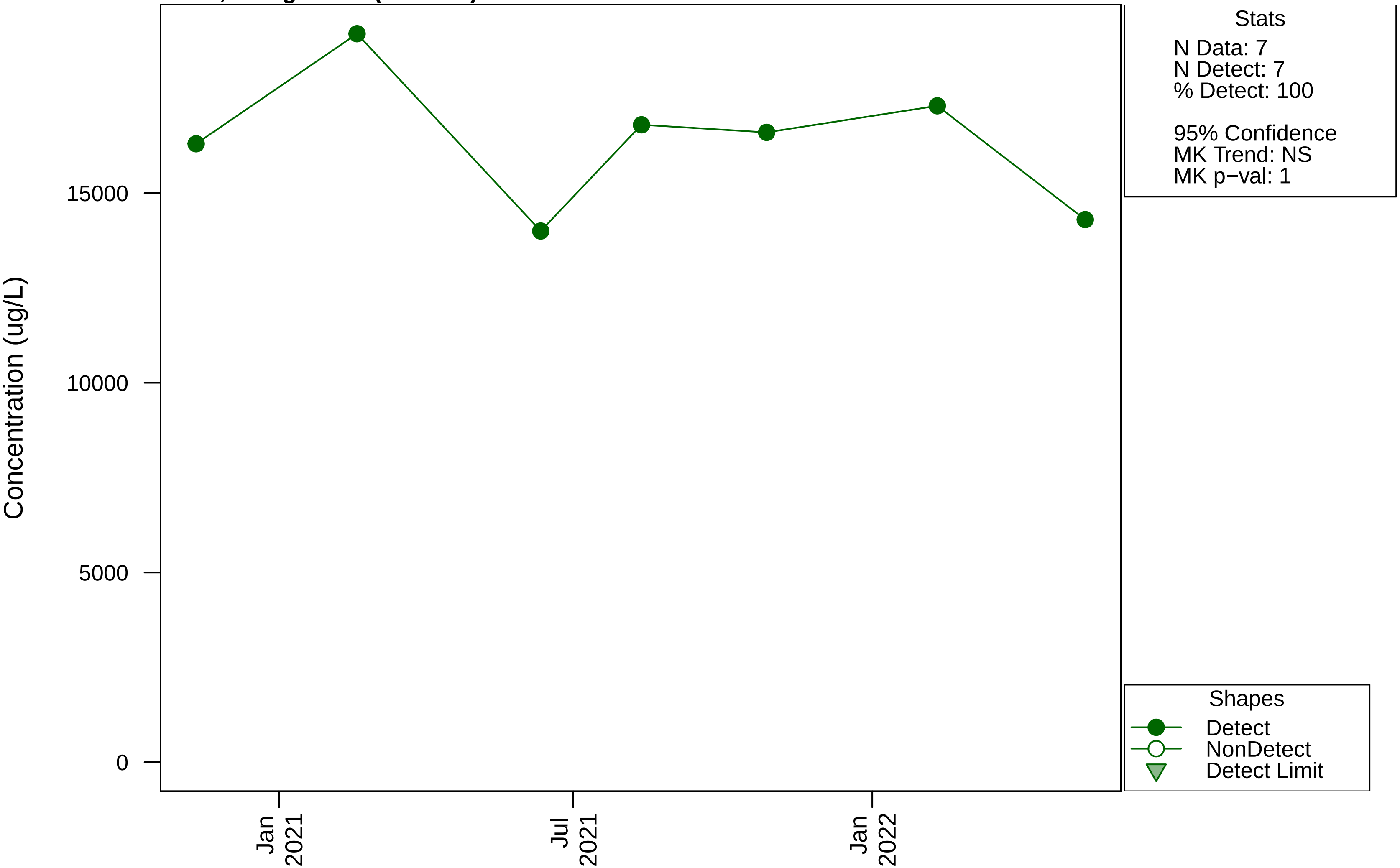



Scatterplots and Trend Analysis
D102, Magnesium (Filtered)
Concentration (mg/L)
0
100
200
300
400
500
Nov 2020
Stats
N Data: 1
N Detect: 1
% Detect: 100
MK criteria not met
Shapes
Detect
NonDetect
Detect Limit

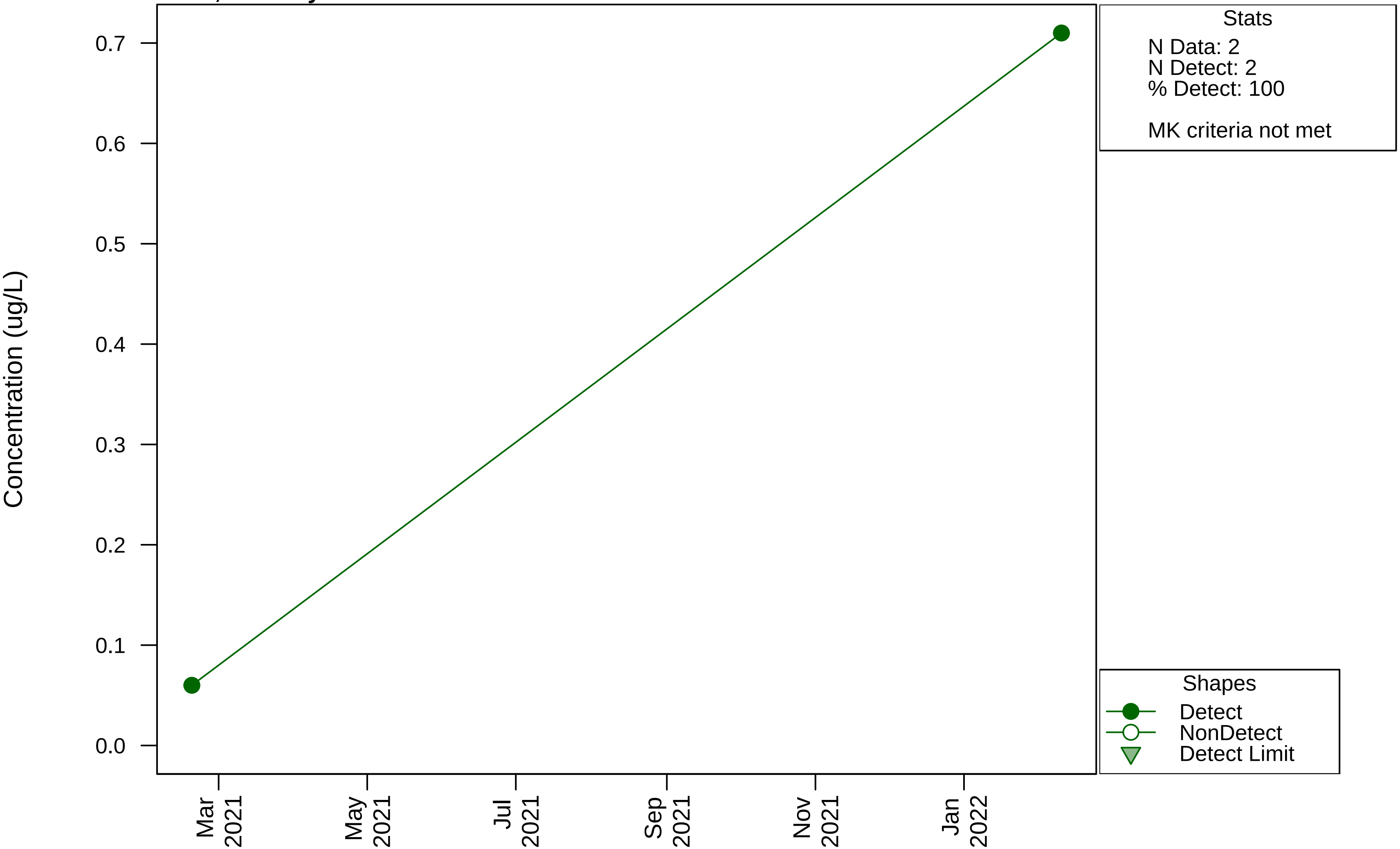
Scatterplots and Trend Analysis
D102, Manganese



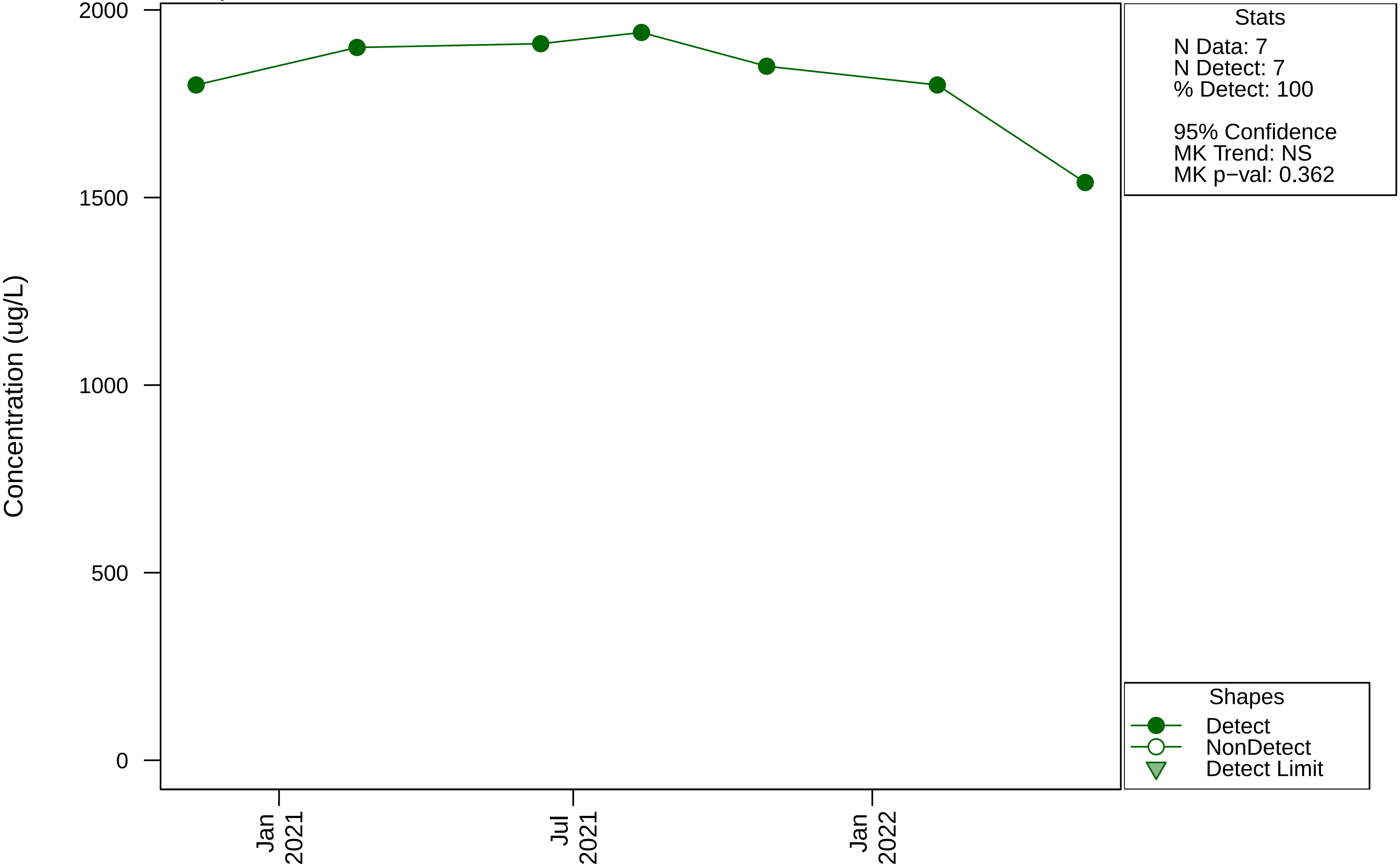
Scatterplots and Trend Analysis
D102, Manganese (Filtered)



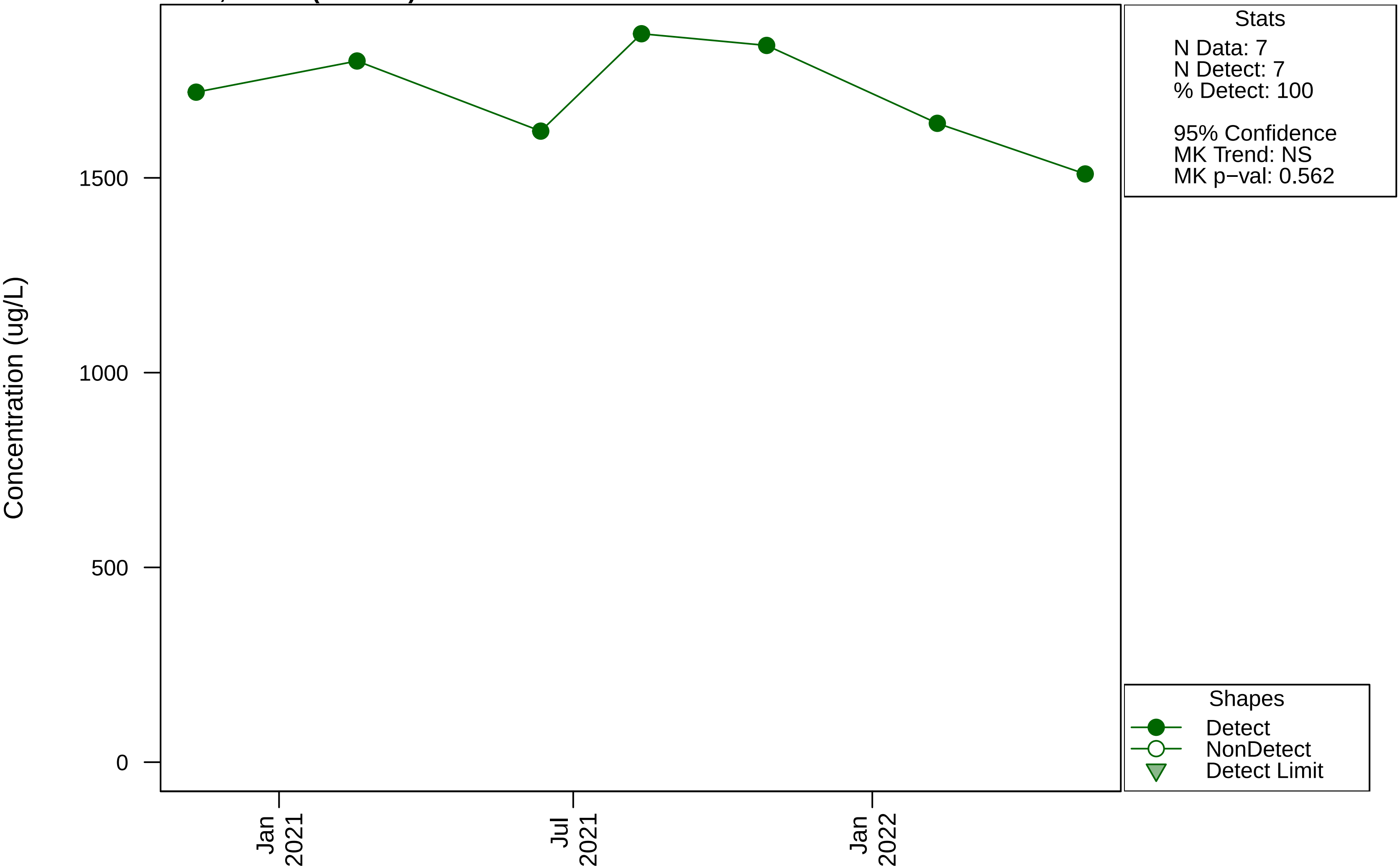
Scatterplots and Trend Analysis
D102, Mercury



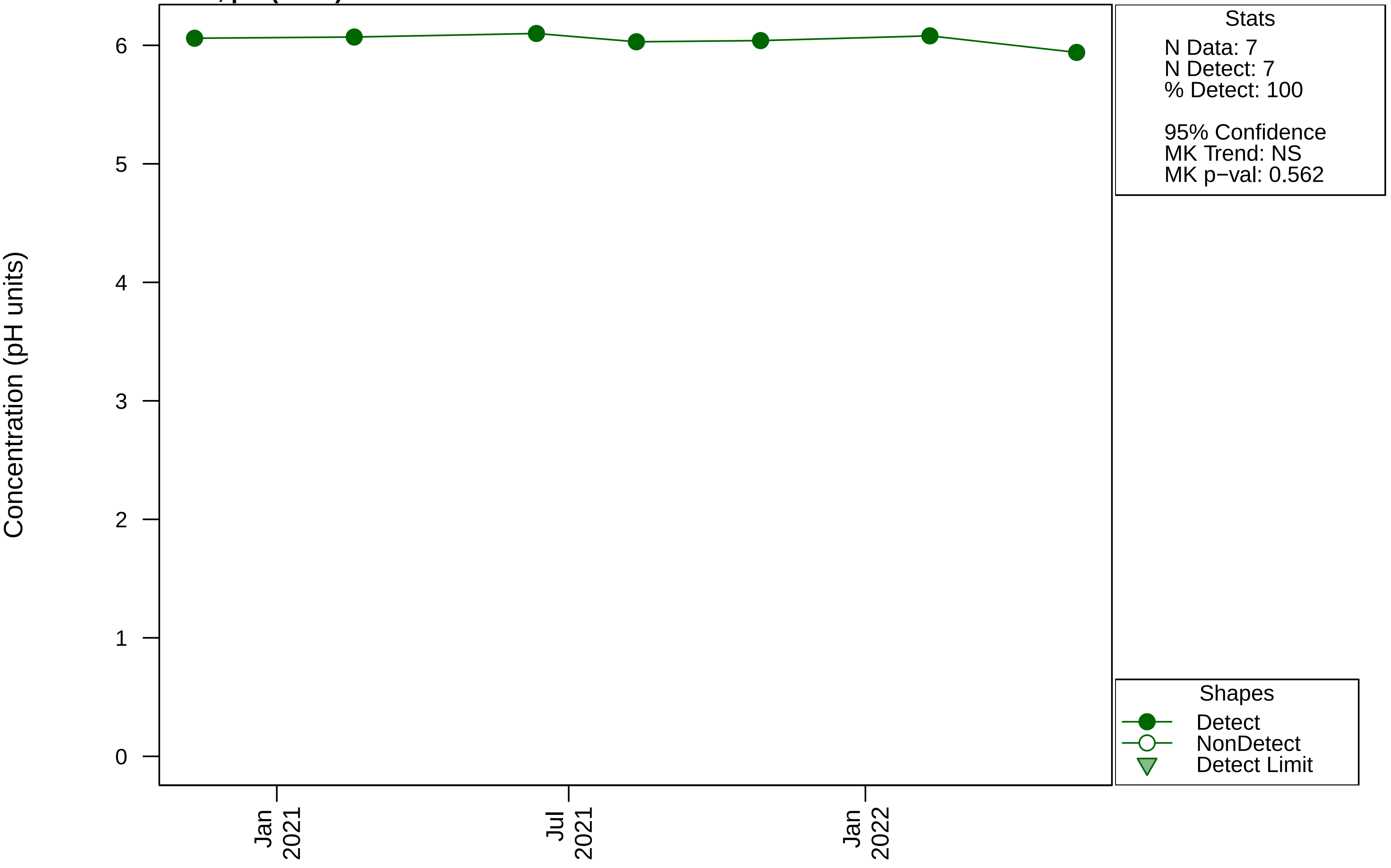
Scatterplots and Trend Analysis
D102, Nickel

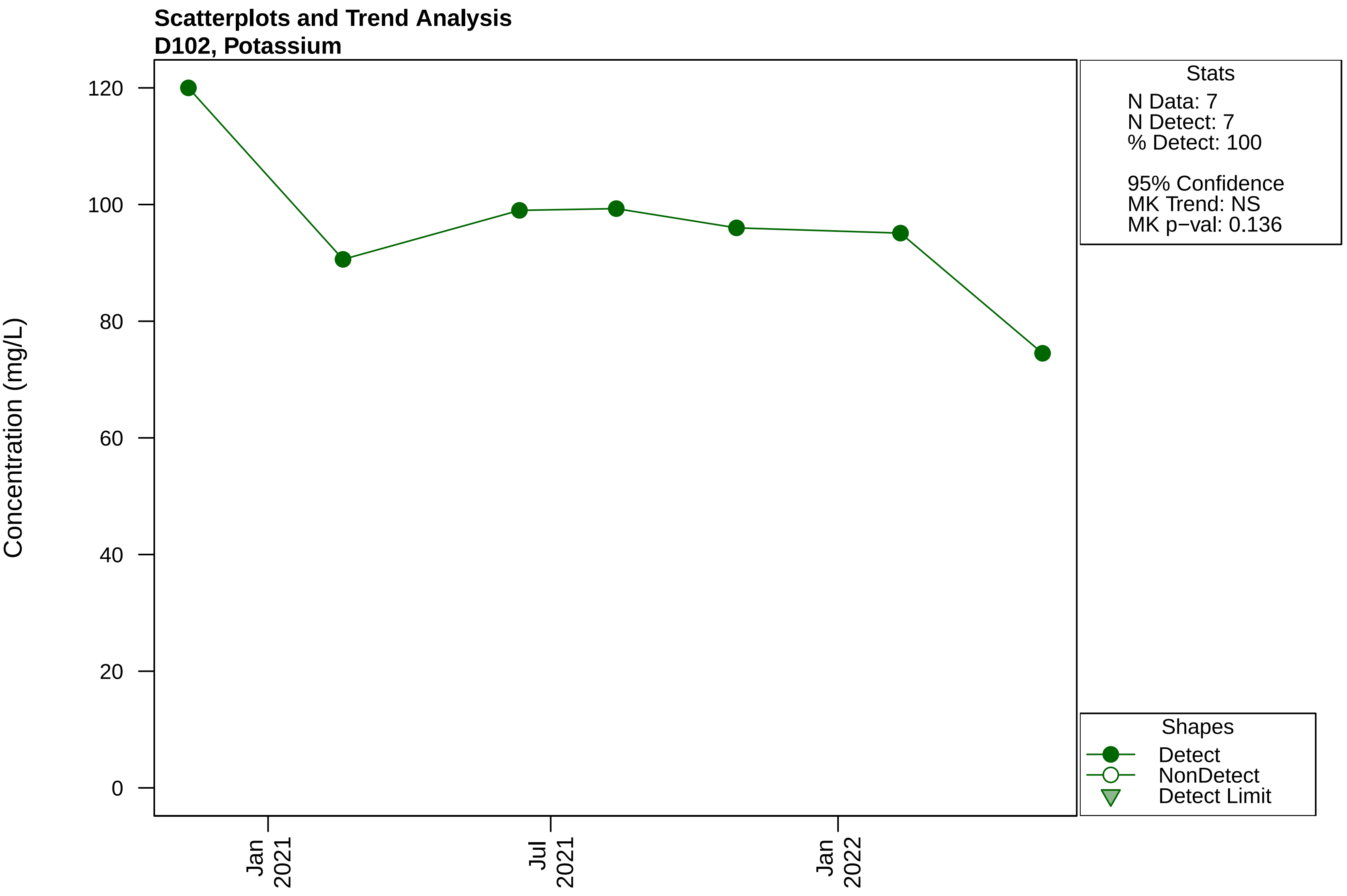


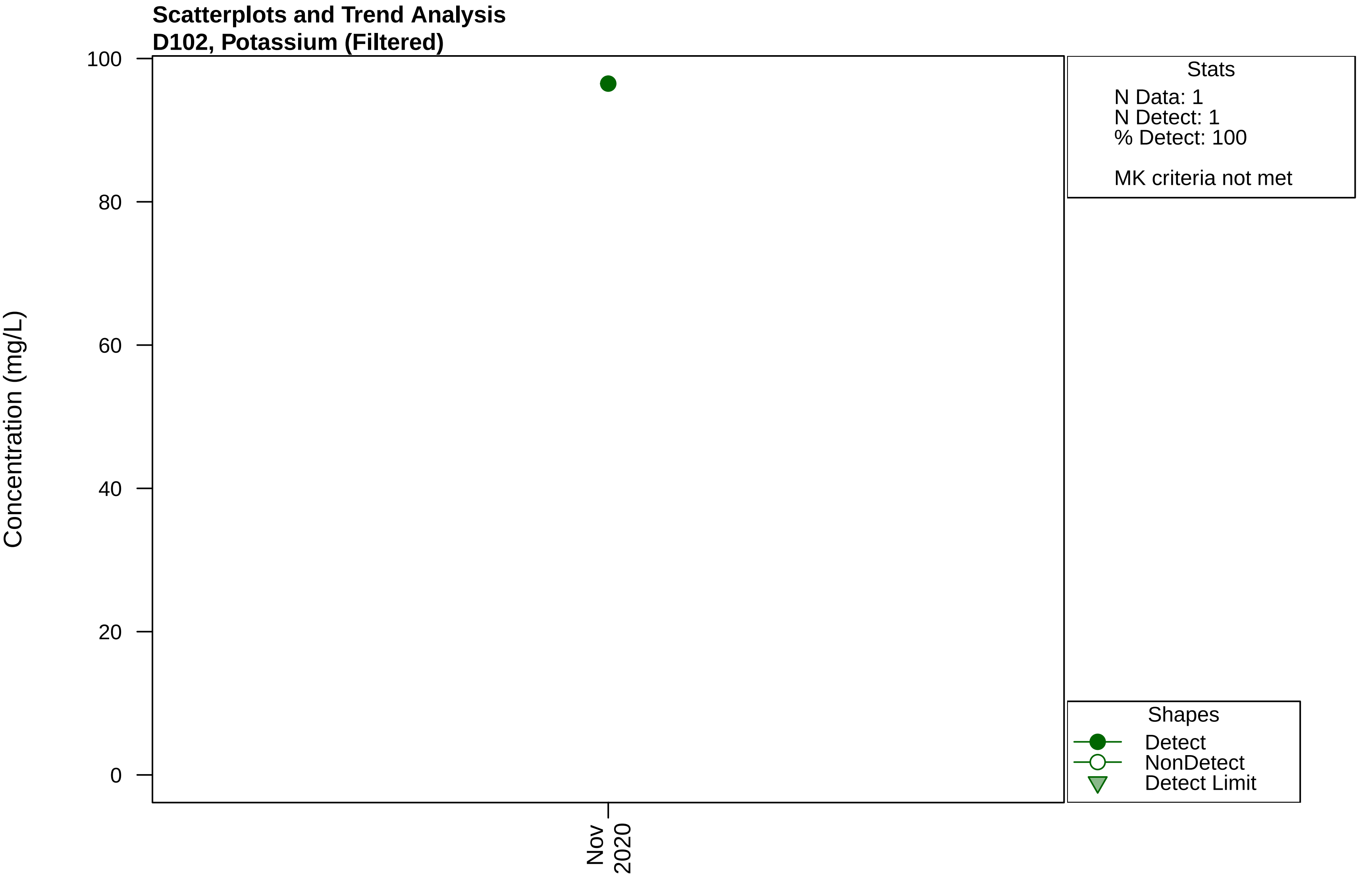
Scatterplots and Trend Analysis
D102, Nickel (Filtered)

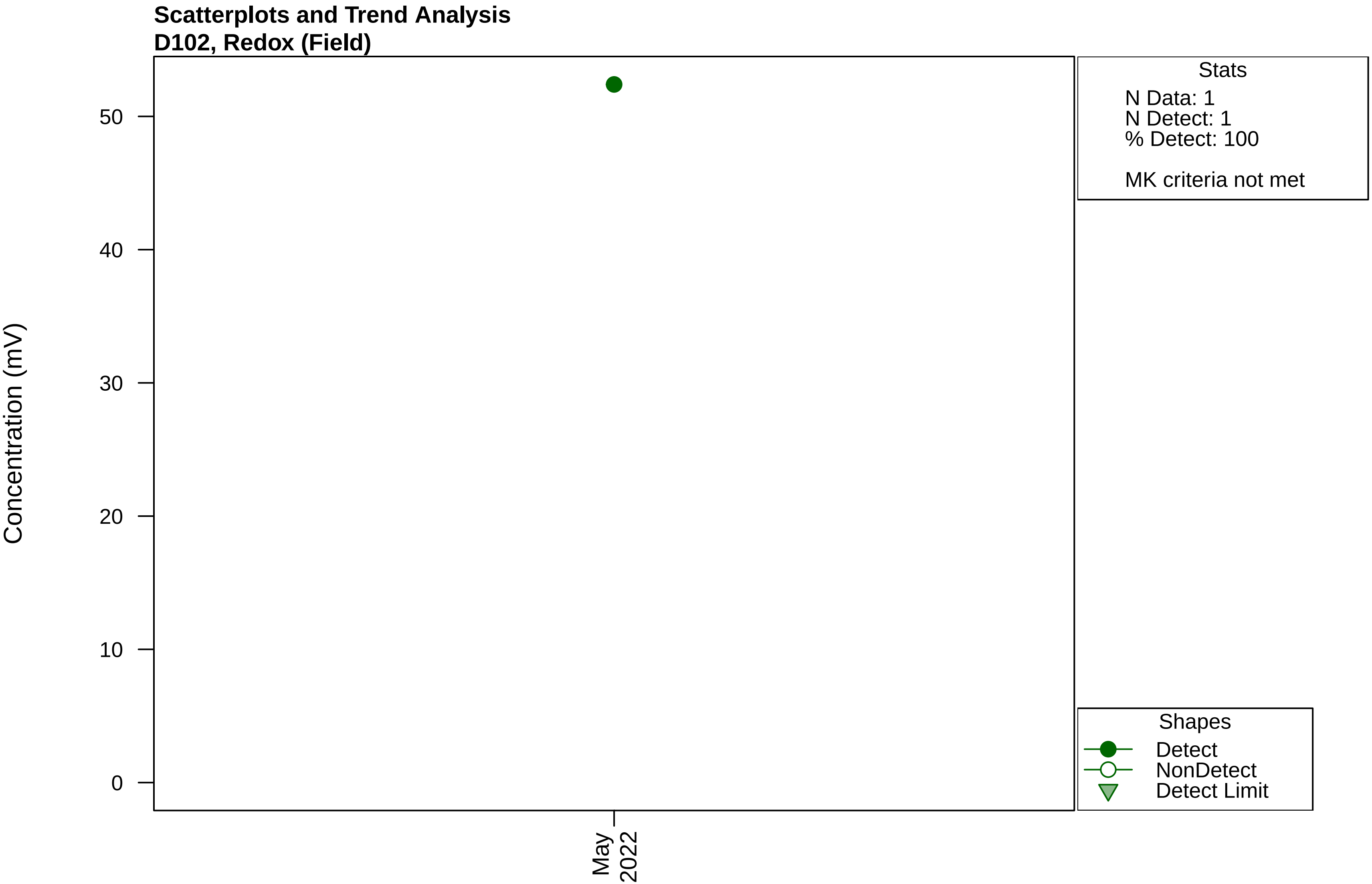


Scatterplots and Trend Analysis
D102, pH (Field)

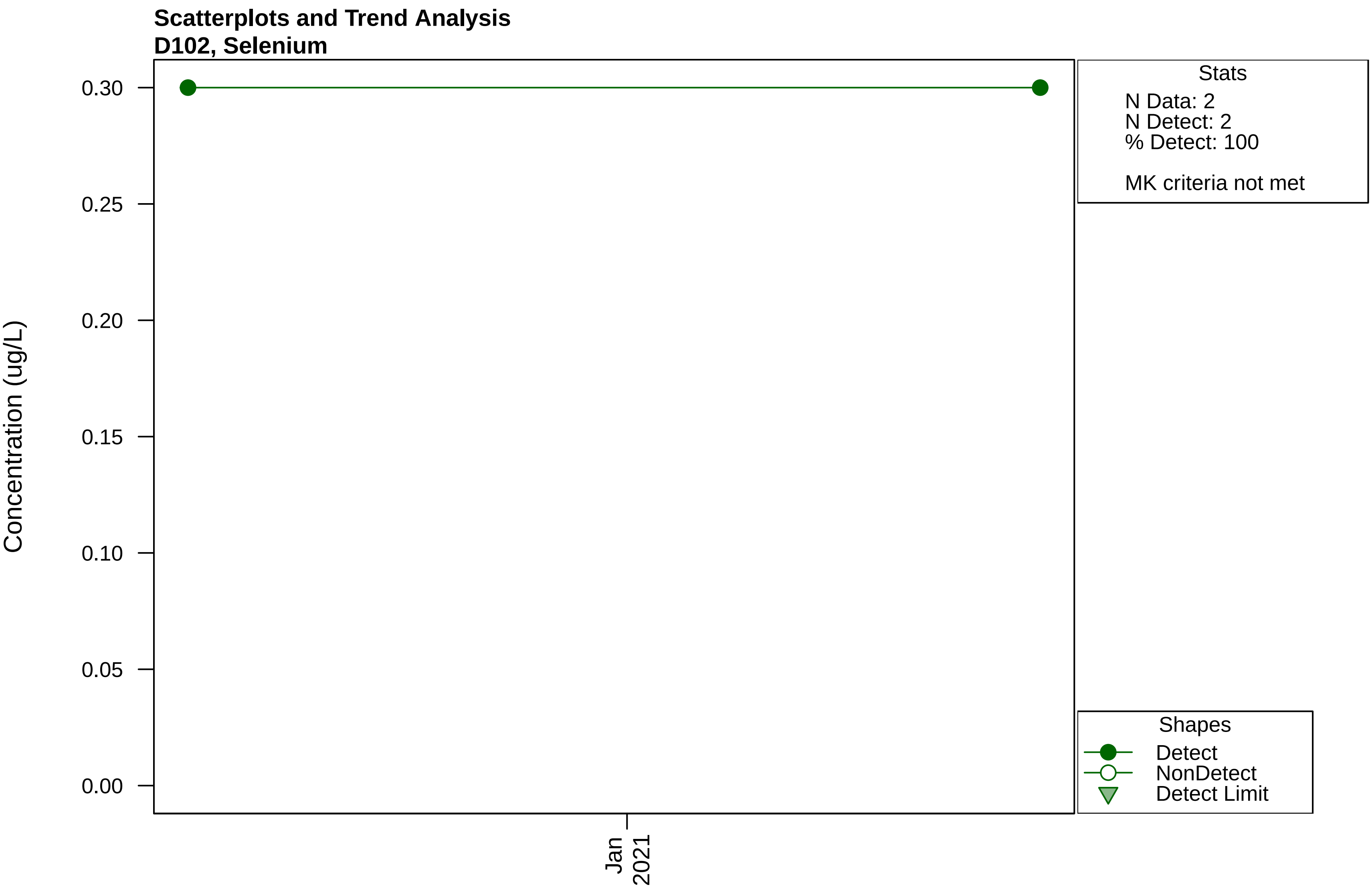



Scatterplots and Trend Analysis
D102, Potassium
Concentration (mg/L)
0
20
40
60
80
100
120
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 7
N Detect: 7
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.136
Shapes
Detect
NonDetect
Detect Limit


Scatterplots and Trend Analysis
D102, Potassium (Filtered)
Concentration (mg/L)
100
80
60
40
20
0
Nov 2020
Stats
N Data: 1
N Detect: 1
% Detect: 100
MK criteria not met
Shapes
Detect
NonDetect
Detect Limit

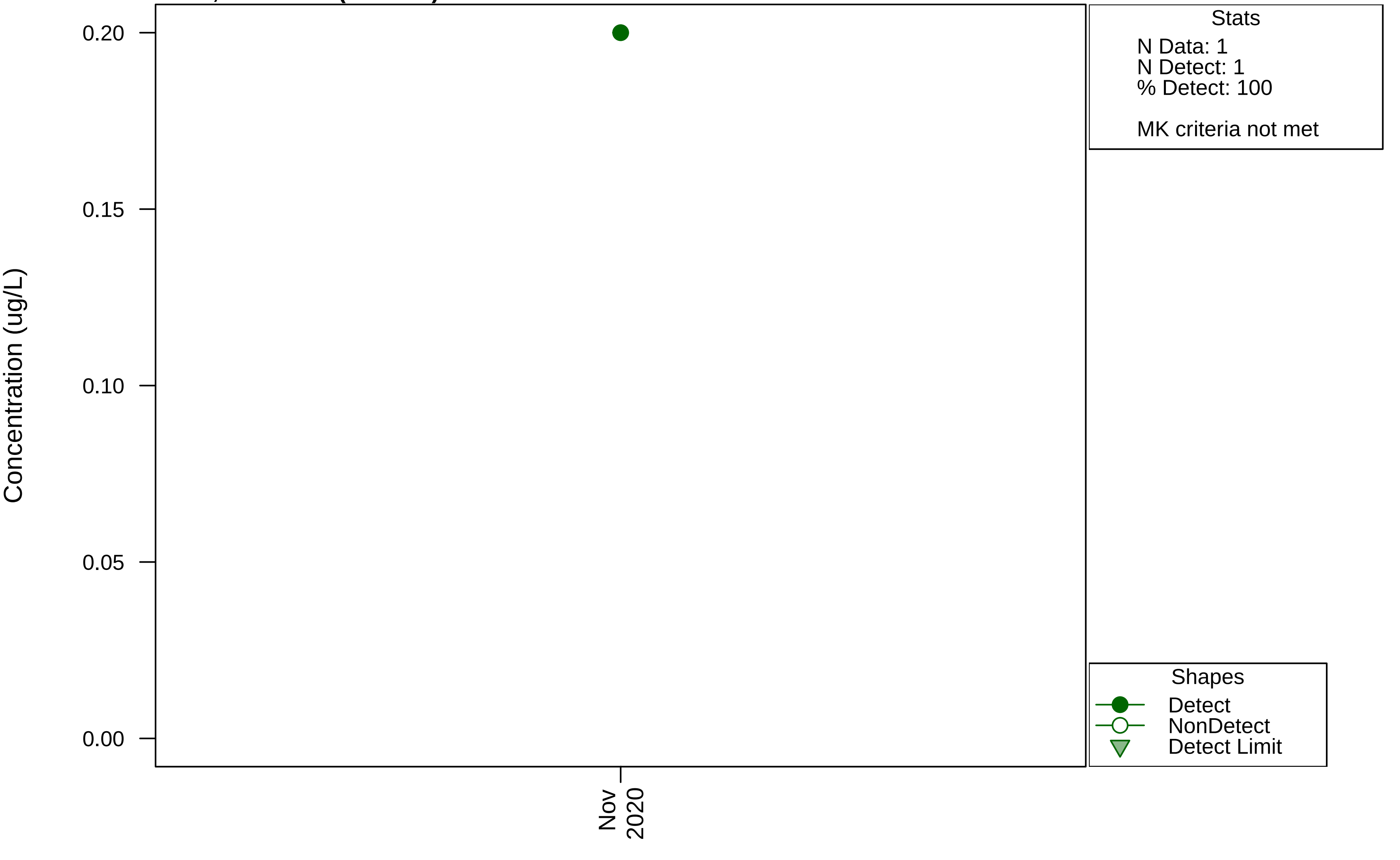


Scatterplots and Trend Analysis
D102, Redox (Field)
Concentration (mV)
0
10
20
30
40
50
May
2022
Stats
N Data: 1
N Detect: 1
% Detect: 100
MK criteria not met
Shapes
Detect
NonDetect
Detect Limit

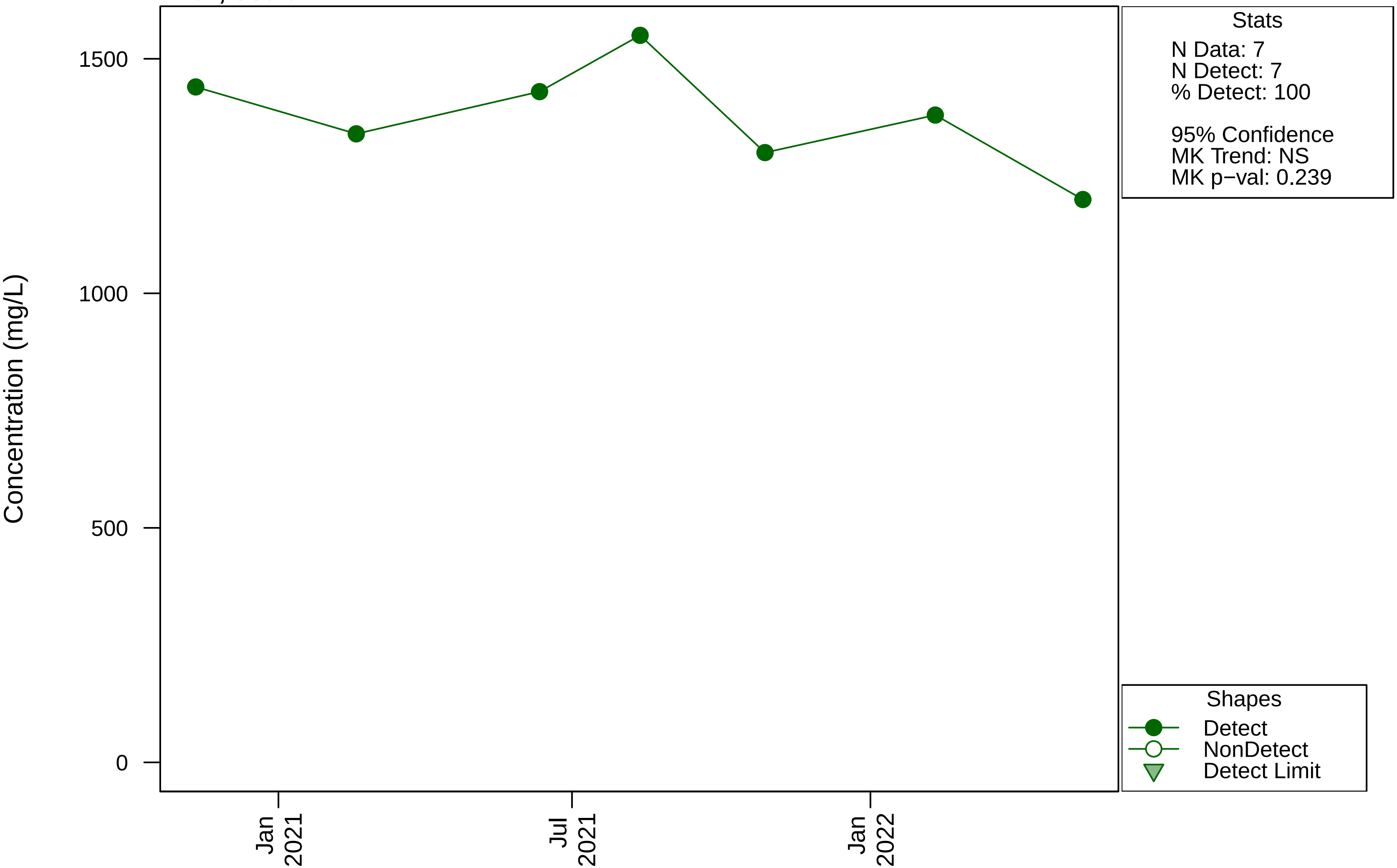


Scatterplots and Trend Analysis
D102, Selenium
Concentration (ug/L)
0.30
0.25
0.20
0.15
0.10
0.05
0.00
Jan 2021
Stats
N Data: 2
N Detect: 2
% Detect: 100
MK criteria not met
Shapes
Detect
NonDetect
Detect Limit

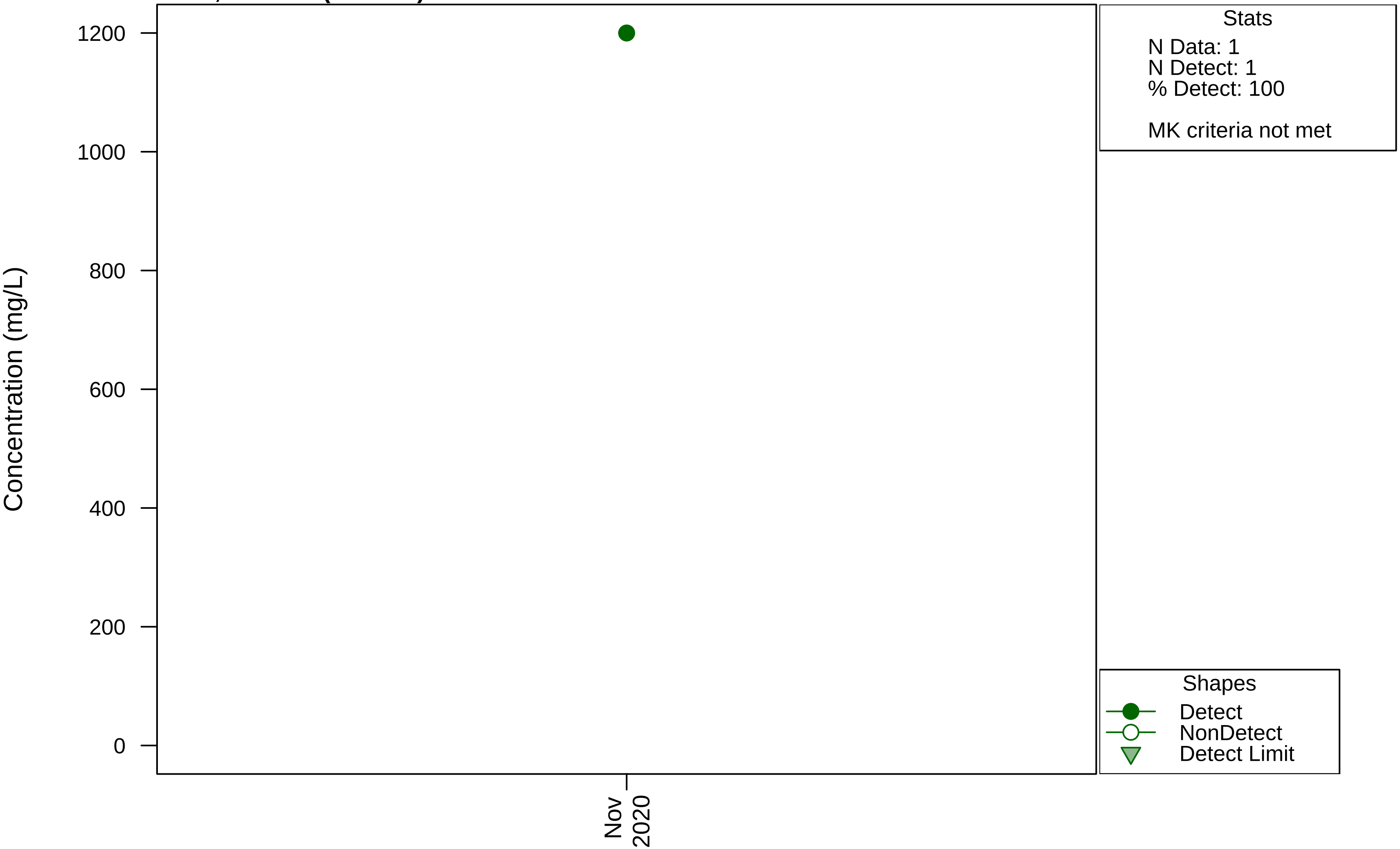
Scatterplots and Trend Analysis
D102, Selenium (Filtered)



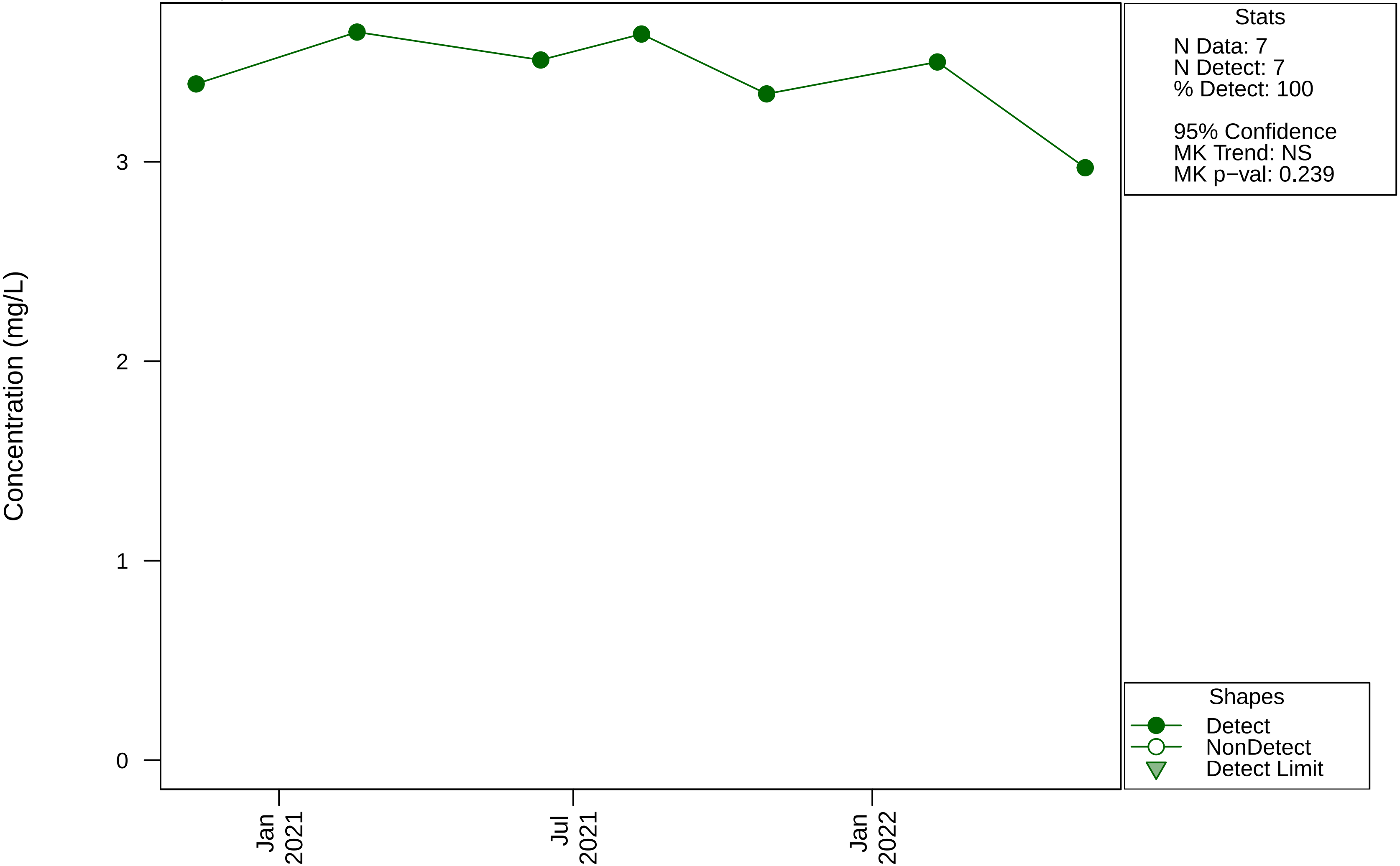
Scatterplots and Trend Analysis
D102, Sodium

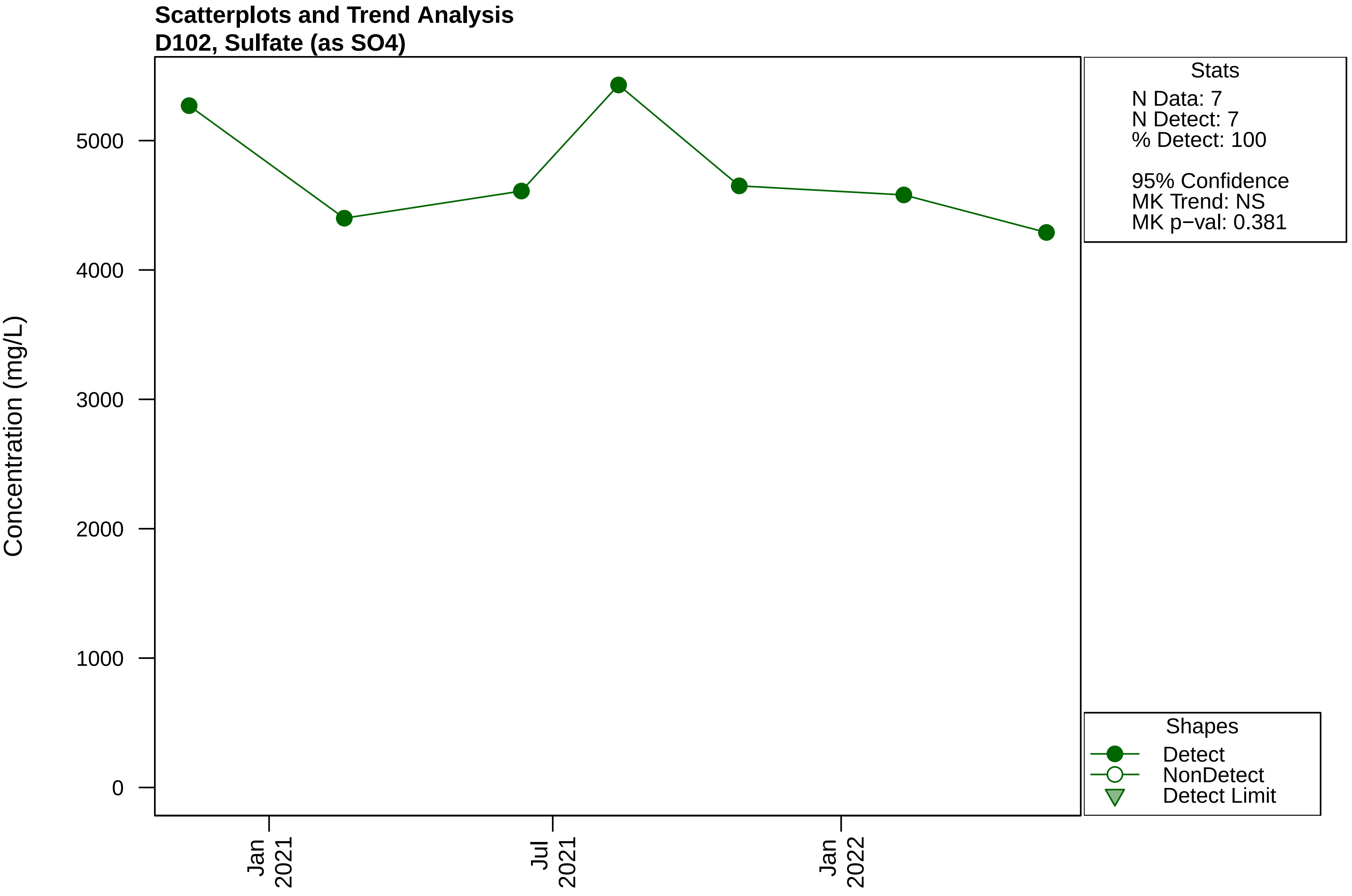


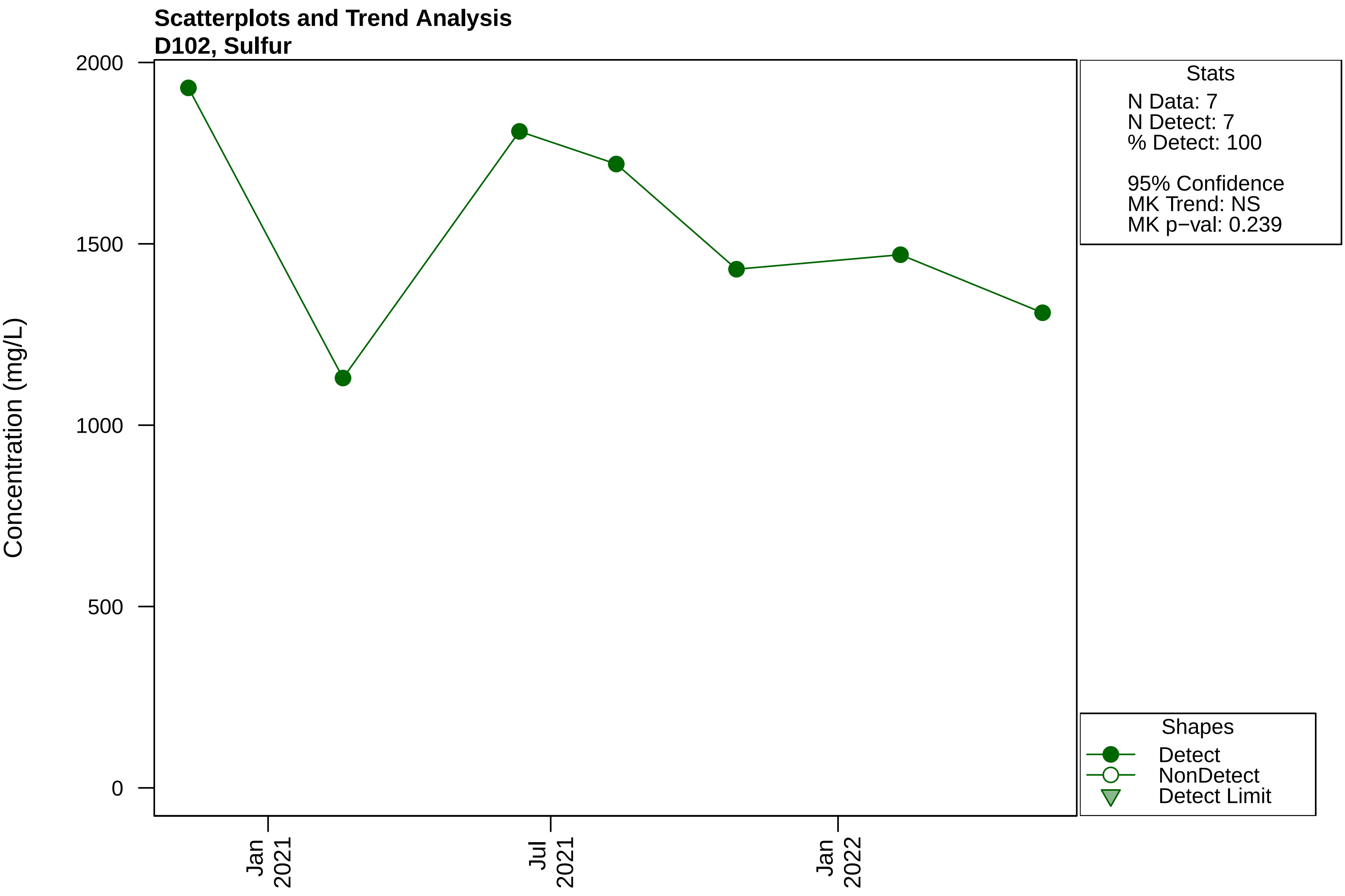
Scatterplots and Trend Analysis
D102, Sodium (Filtered)



Scatterplots and Trend Analysis
D102, Strontium

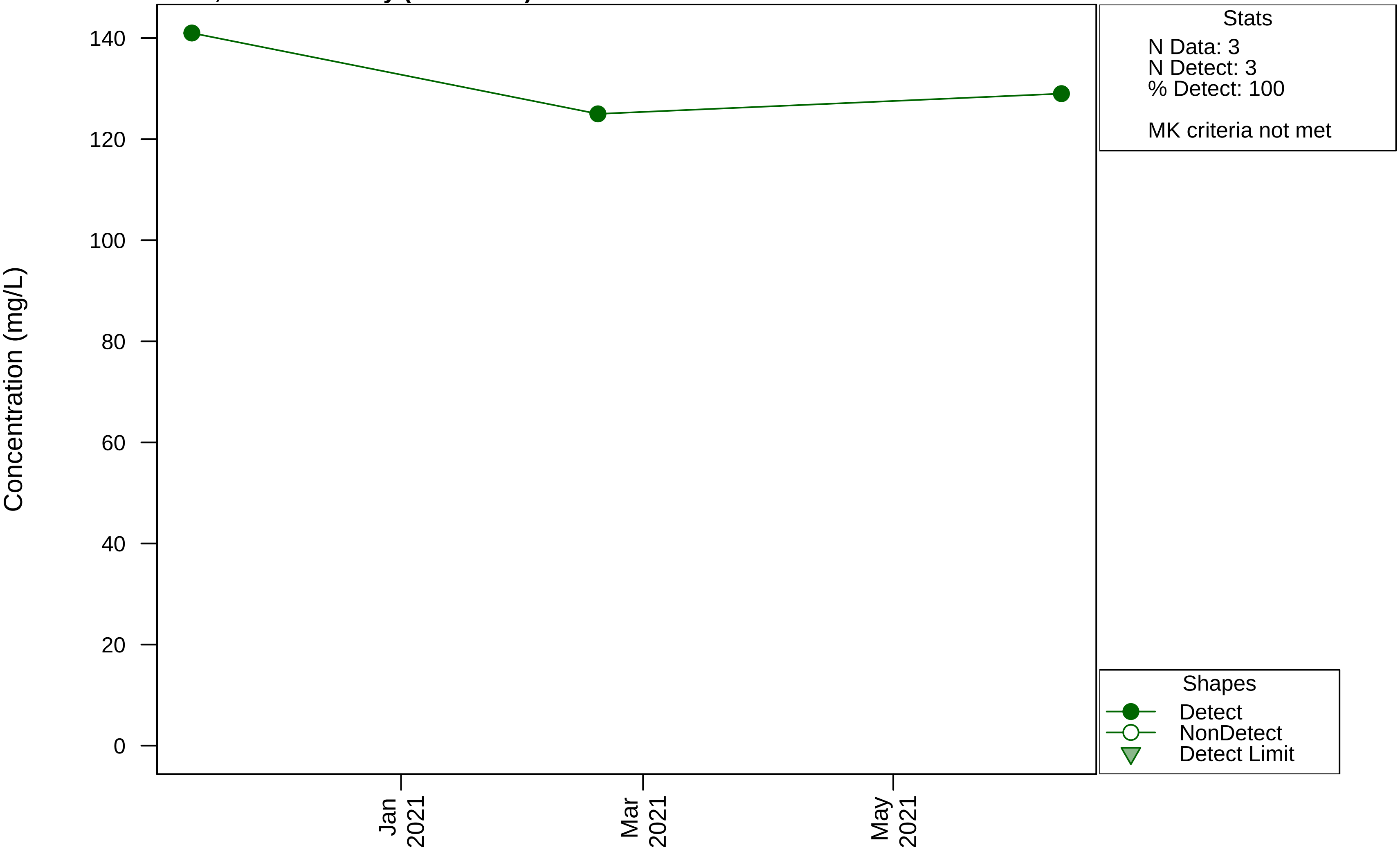


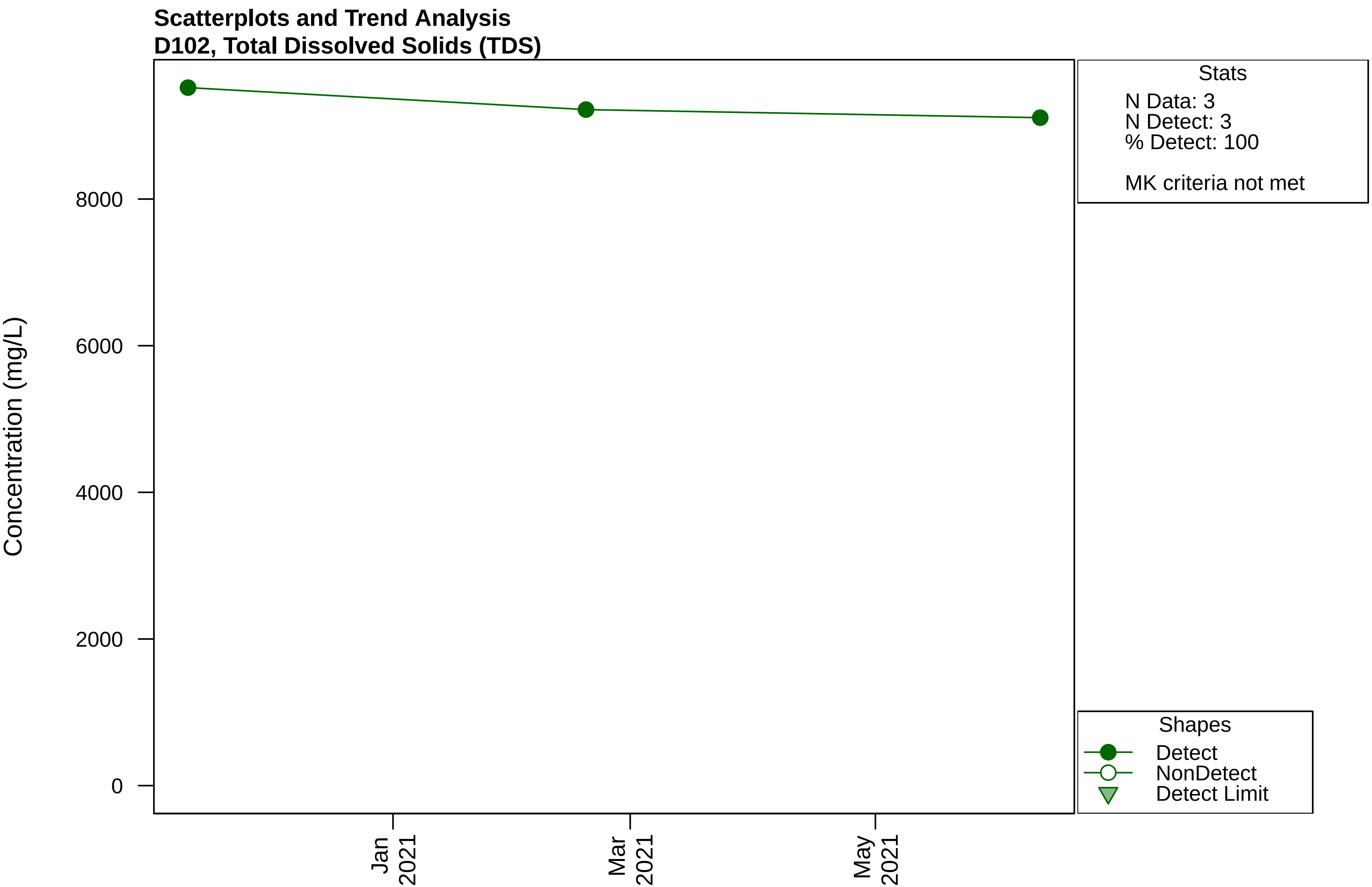

Scatterplots and Trend Analysis
D102, Sulfate (as SO4)
Concentration (mg/L)
0
1000
2000
3000
4000
5000
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 7
N Detect: 7
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.381
Shapes
Detect
NonDetect
Detect Limit

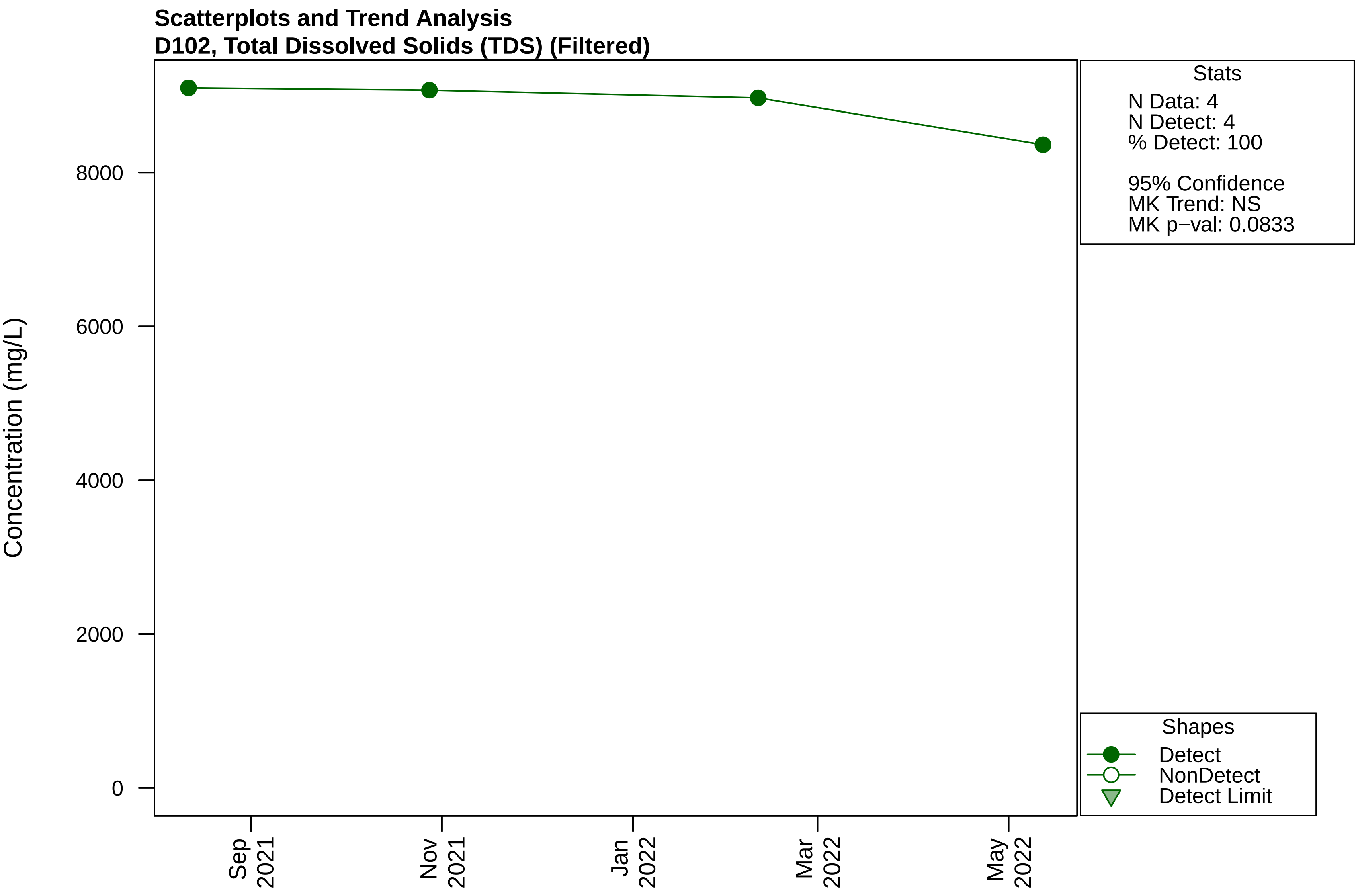


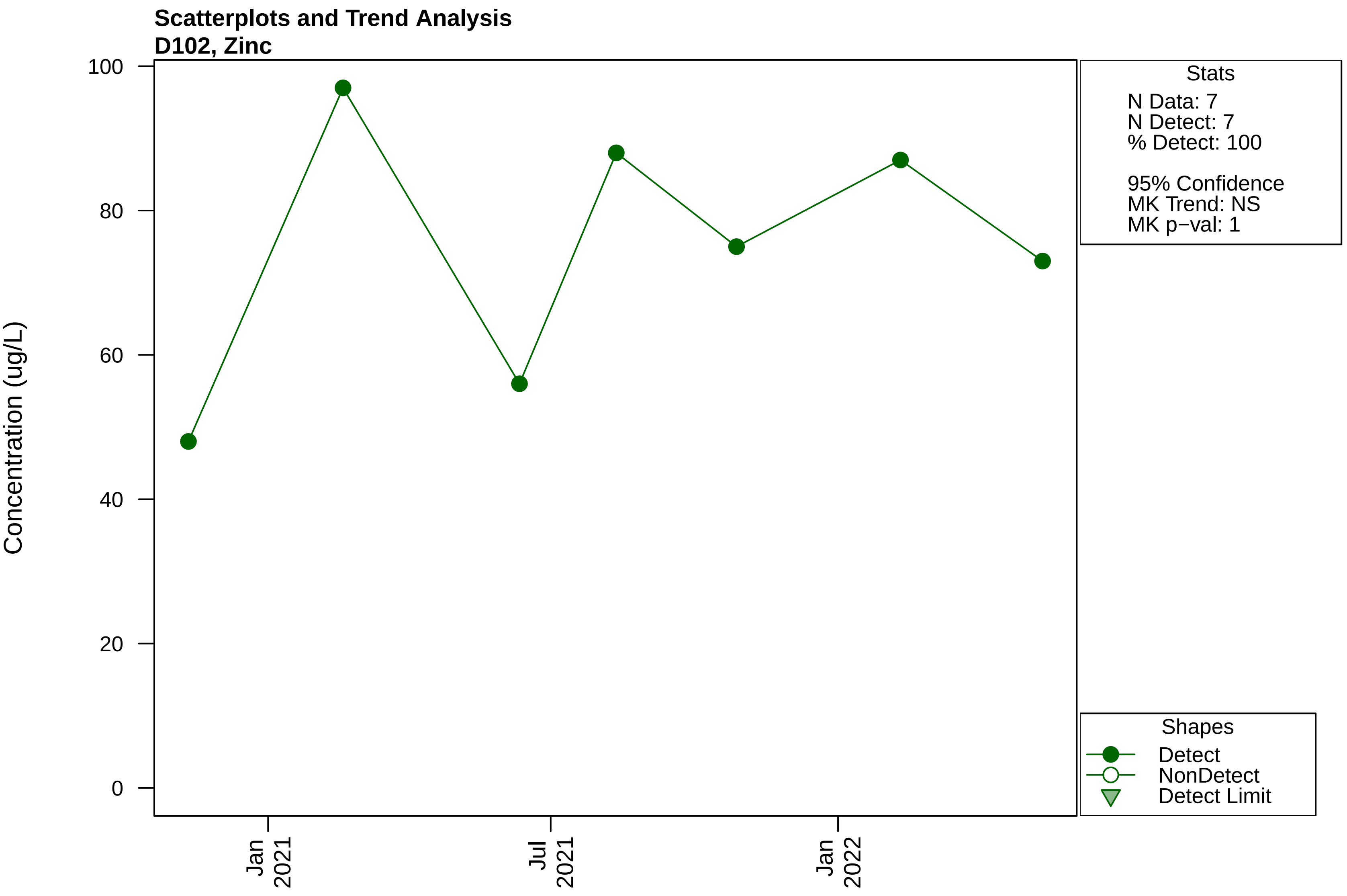
Scatterplots and Trend Analysis
D102, Sulfur
Concentration (mg/L)
2000
1500
1000
500
0
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 7
N Detect: 7
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.239
Shapes
Detect
NonDetect
Detect Limit

Scatterplots and Trend Analysis
D102, Total Alkalinity (as CaCO3)

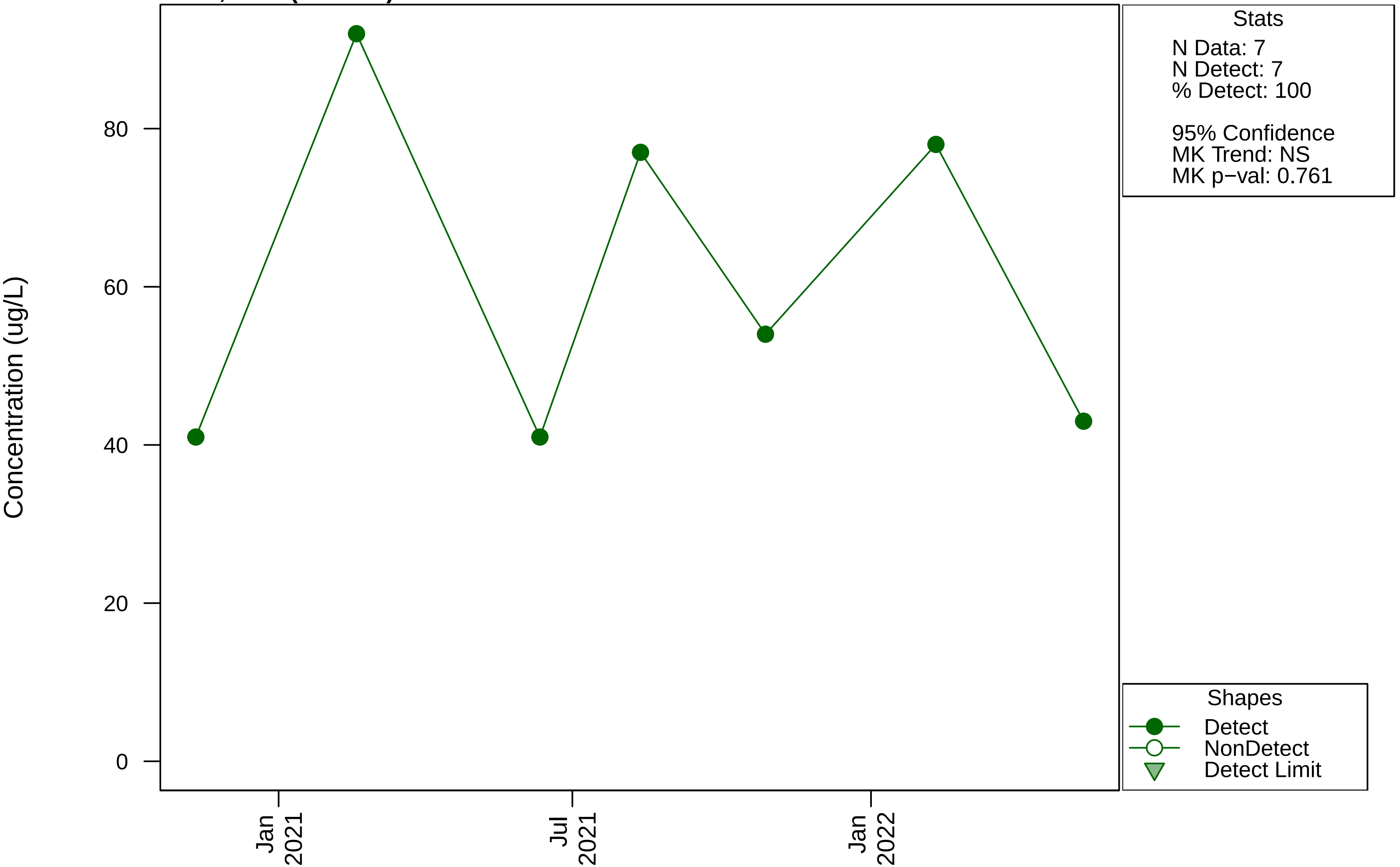


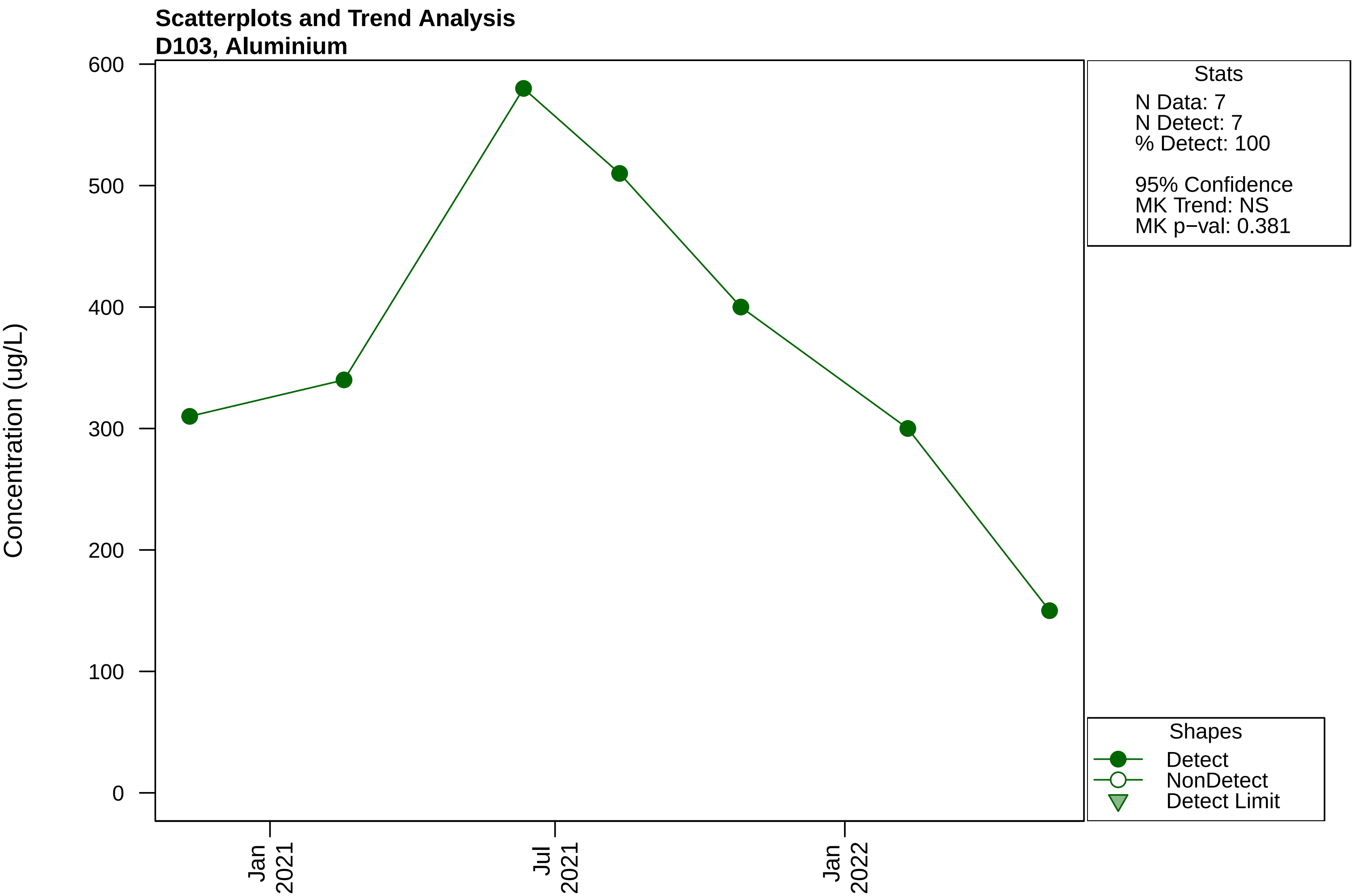

Scatterplots and Trend Analysis
D102, Total Dissolved Solids (TDS)
Concentration (mg/L)
0
2000
4000
6000
8000
Jan 2021
Mar 2021
May 2021
Stats
N Data: 3
N Detect: 3
% Detect: 100
MK criteria not met
Shapes
Detect
NonDetect
Detect Limit


Scatterplots and Trend Analysis
D102, Total Dissolved Solids (TDS) (Filtered)
Concentration (mg/L)
0
2000
4000
6000
8000
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 4
N Detect: 4
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.0833
Shapes
Detect
NonDetect
Detect Limit

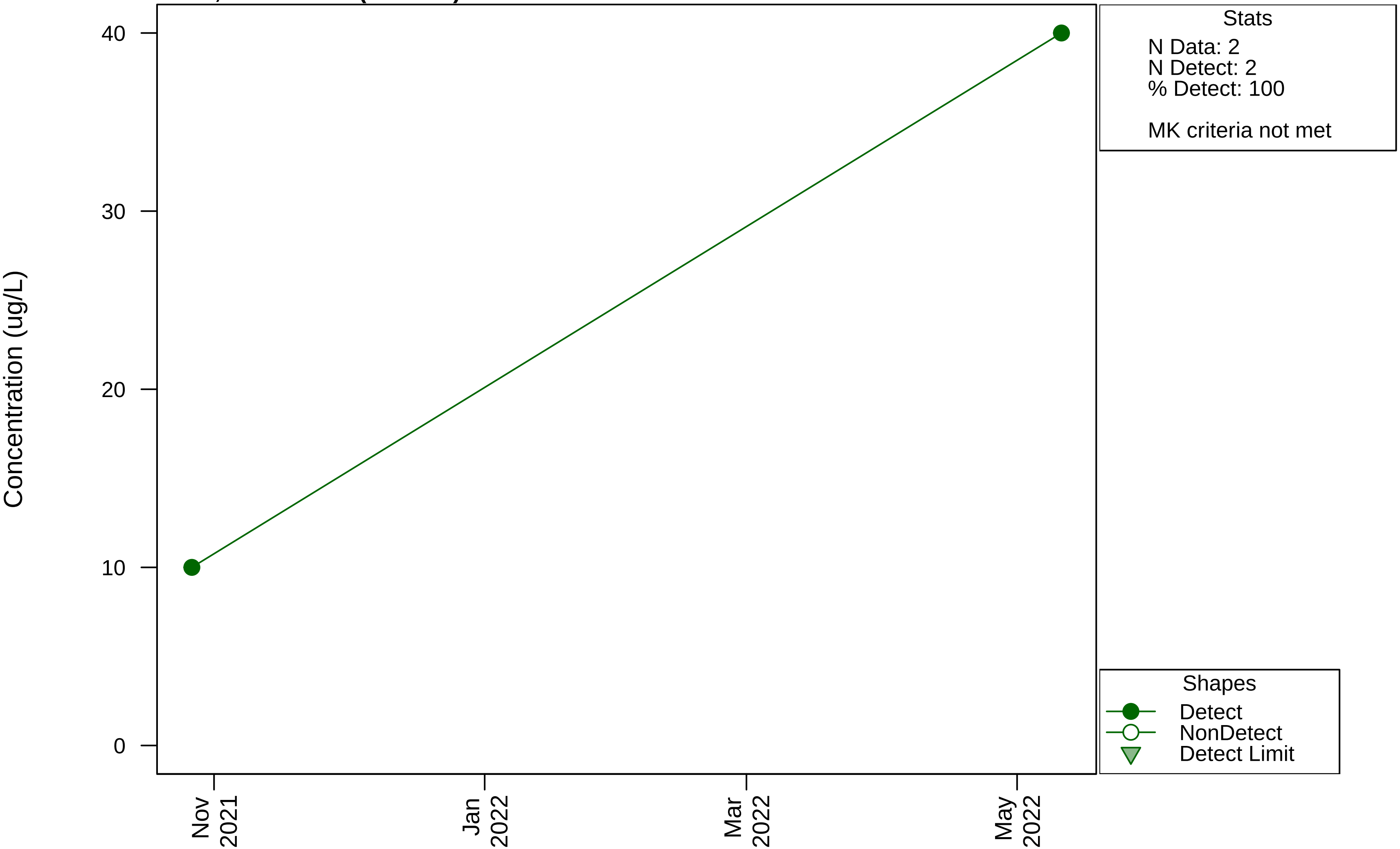

Scatterplots and Trend Analysis
D102, Zinc
Concentration (ug/L)
100
80
60
40
20
0
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 7
N Detect: 7
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 1
Shapes
Detect
NonDetect
Detect Limit

Scatterplots and Trend Analysis
D102, Zinc (Filtered)

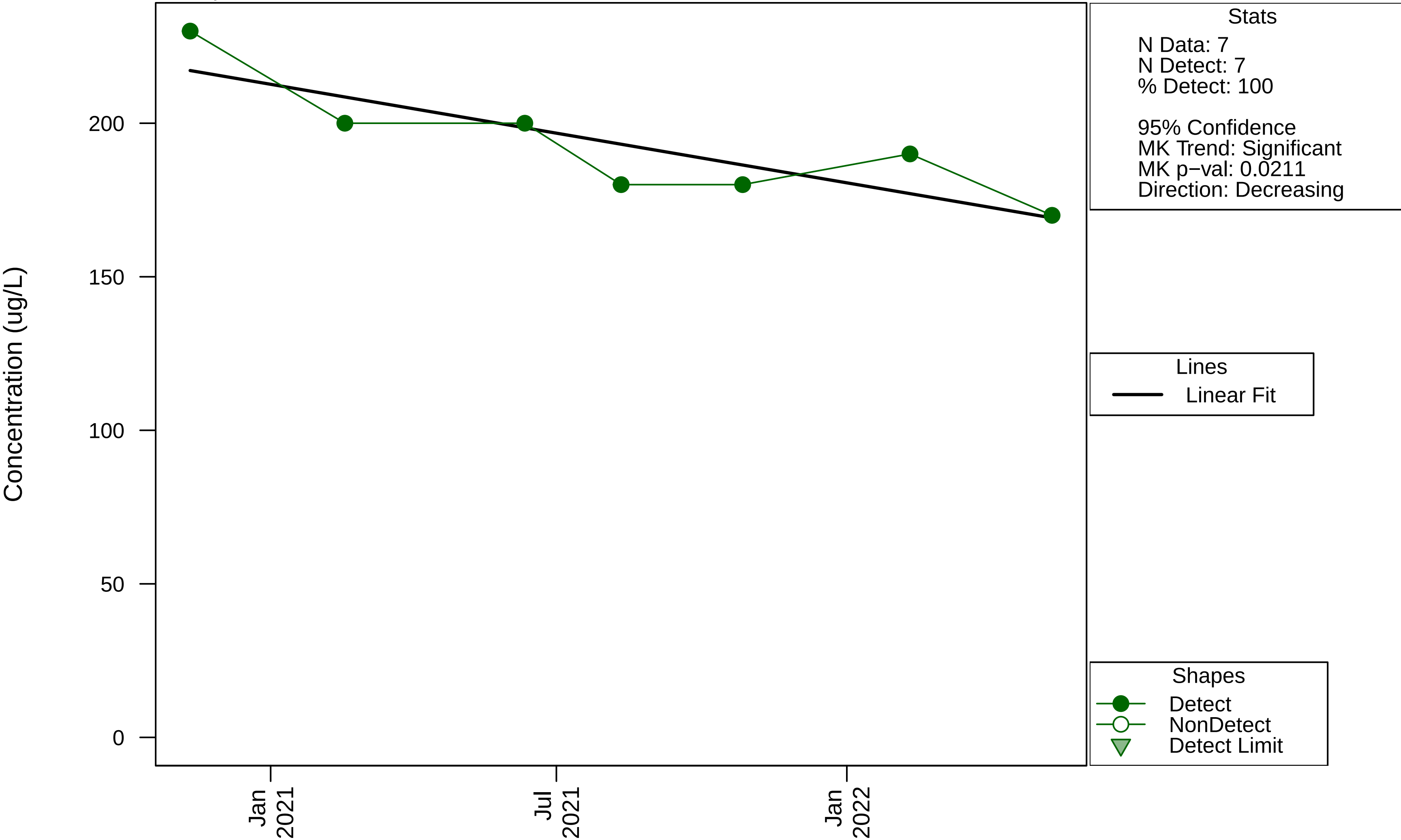


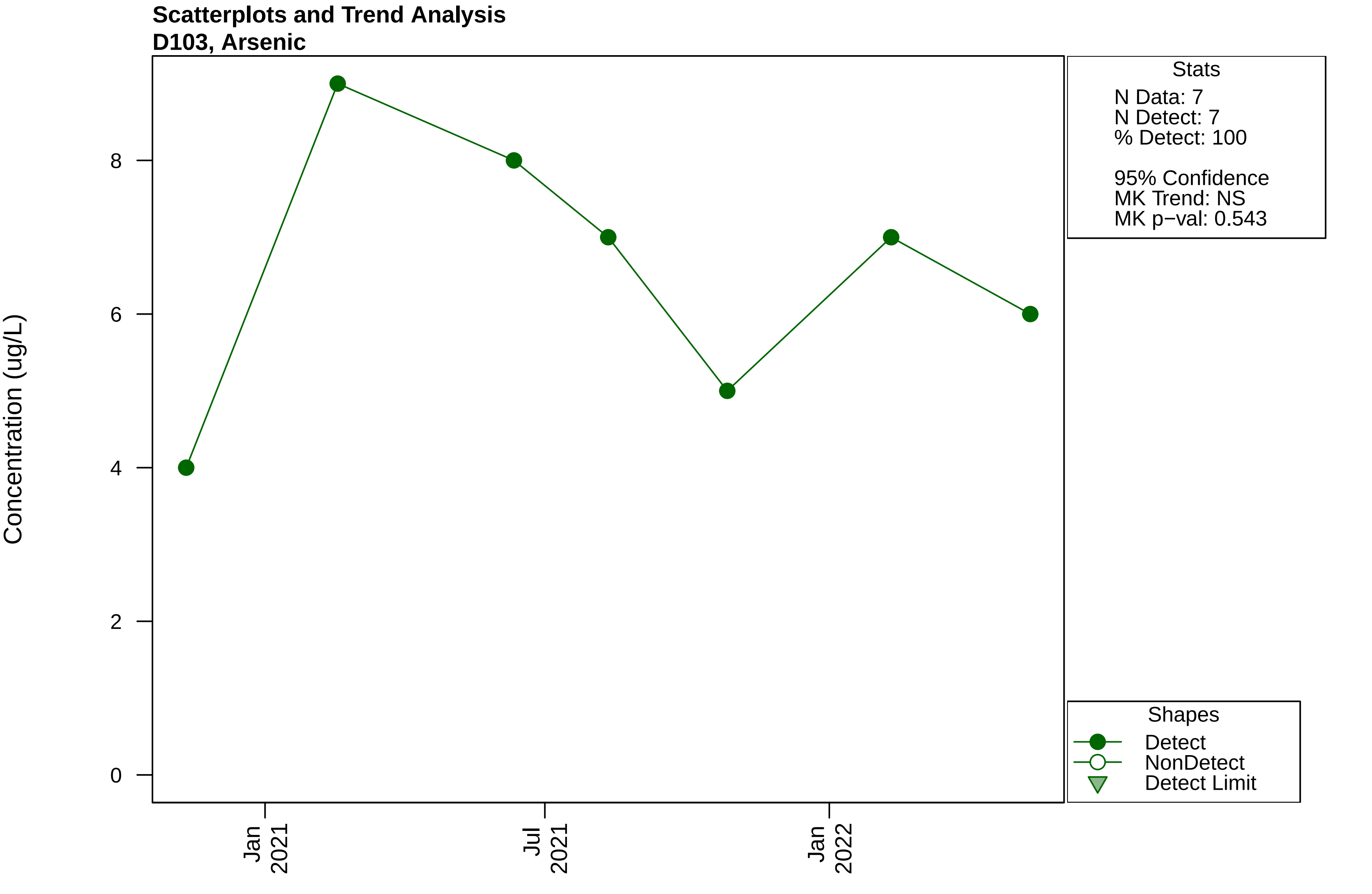

Scatterplots and Trend Analysis
D103, Aluminium
Concentration (ug/L)
0
100
200
300
400
500
600
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 7
N Detect: 7
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.381
Shapes
Detect
NonDetect
Detect Limit

Scatterplots and Trend Analysis
D103, Aluminium (Filtered)

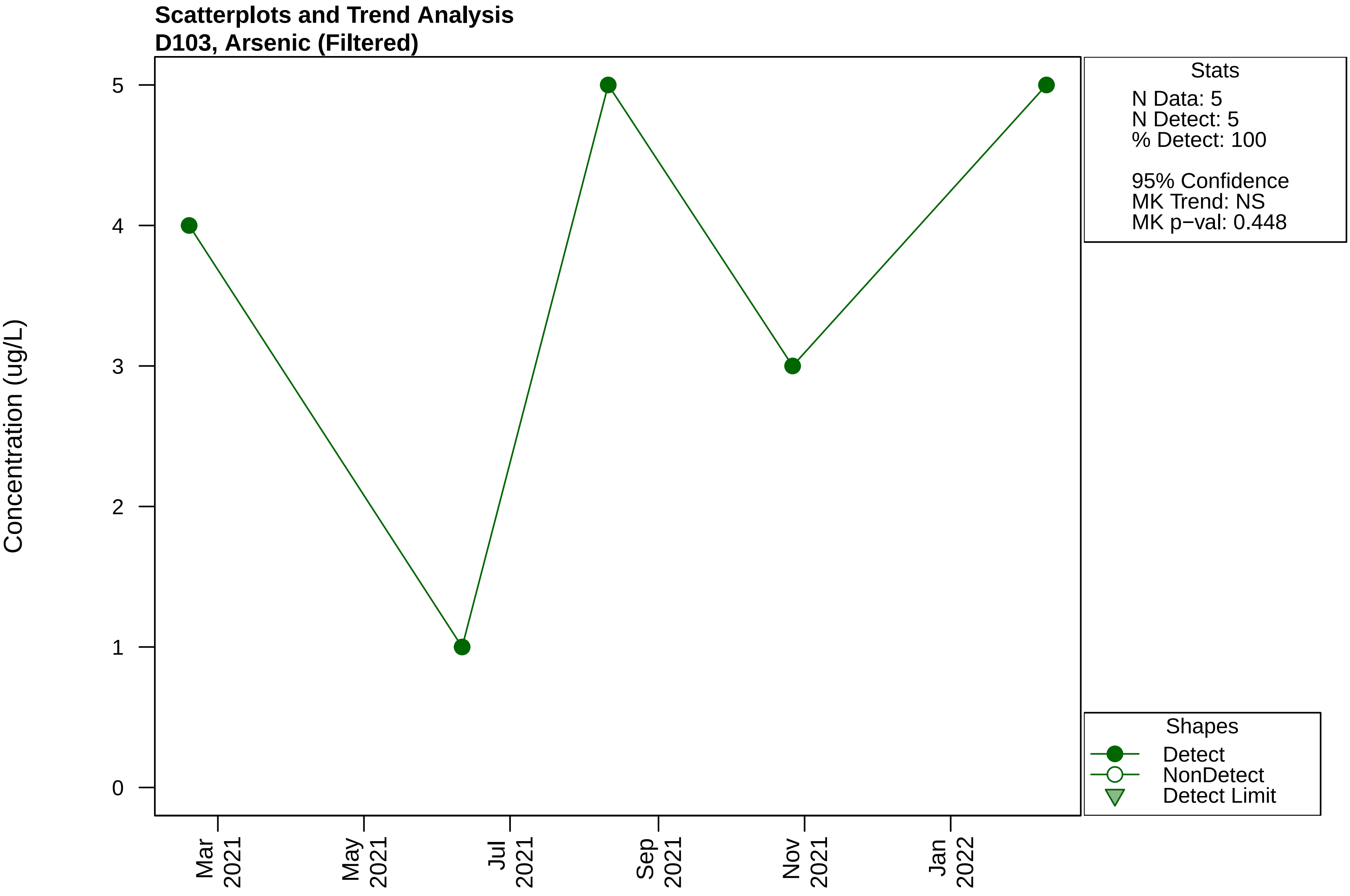


Scatterplots and Trend Analysis
D103, Ammonia

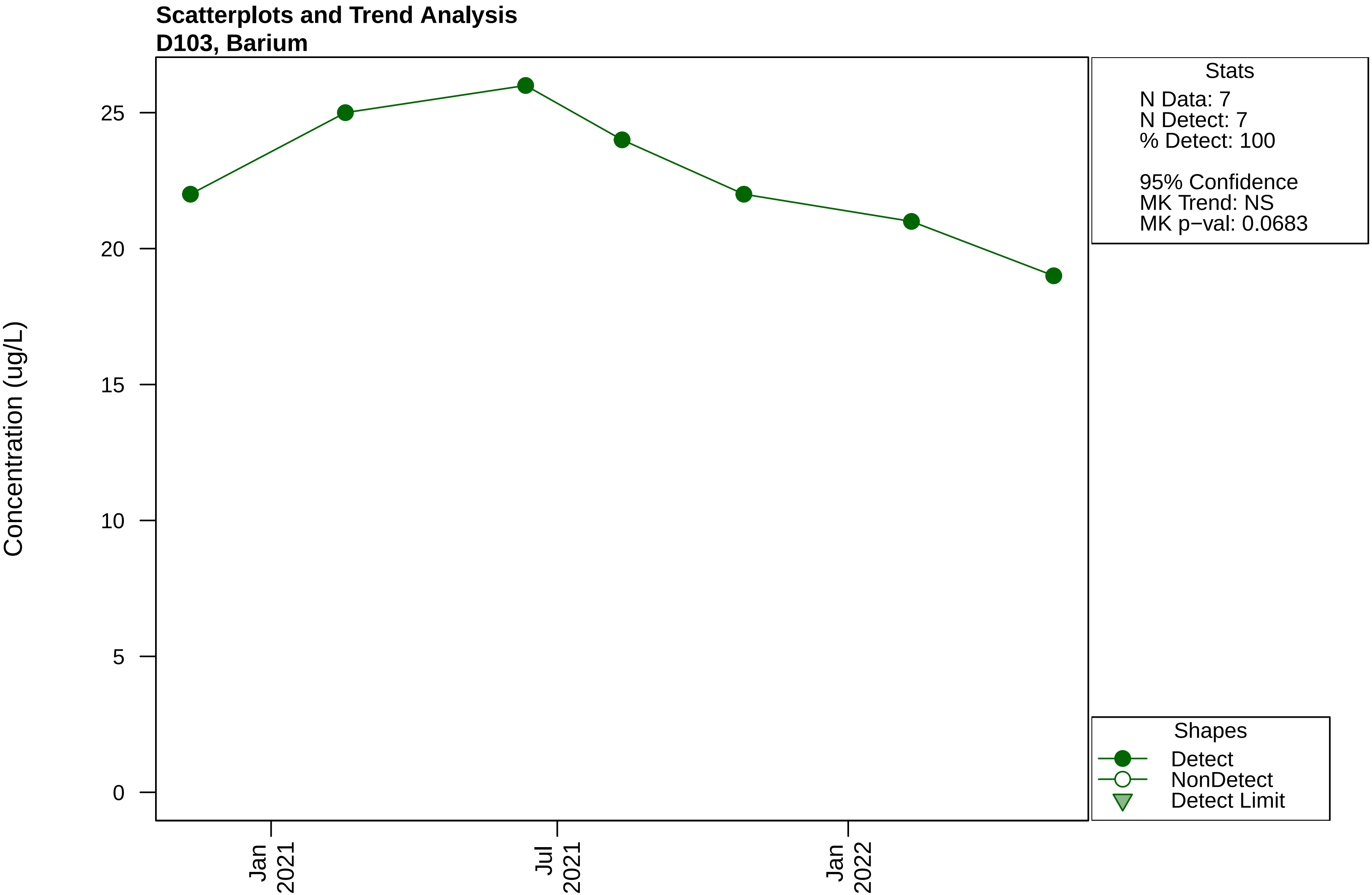




Scatterplots and Trend Analysis
D103, Arsenic
Concentration (ug/L)
0
2
4
6
8
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 7
N Detect: 7
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.543
Shapes
Detect
NonDetect
Detect Limit

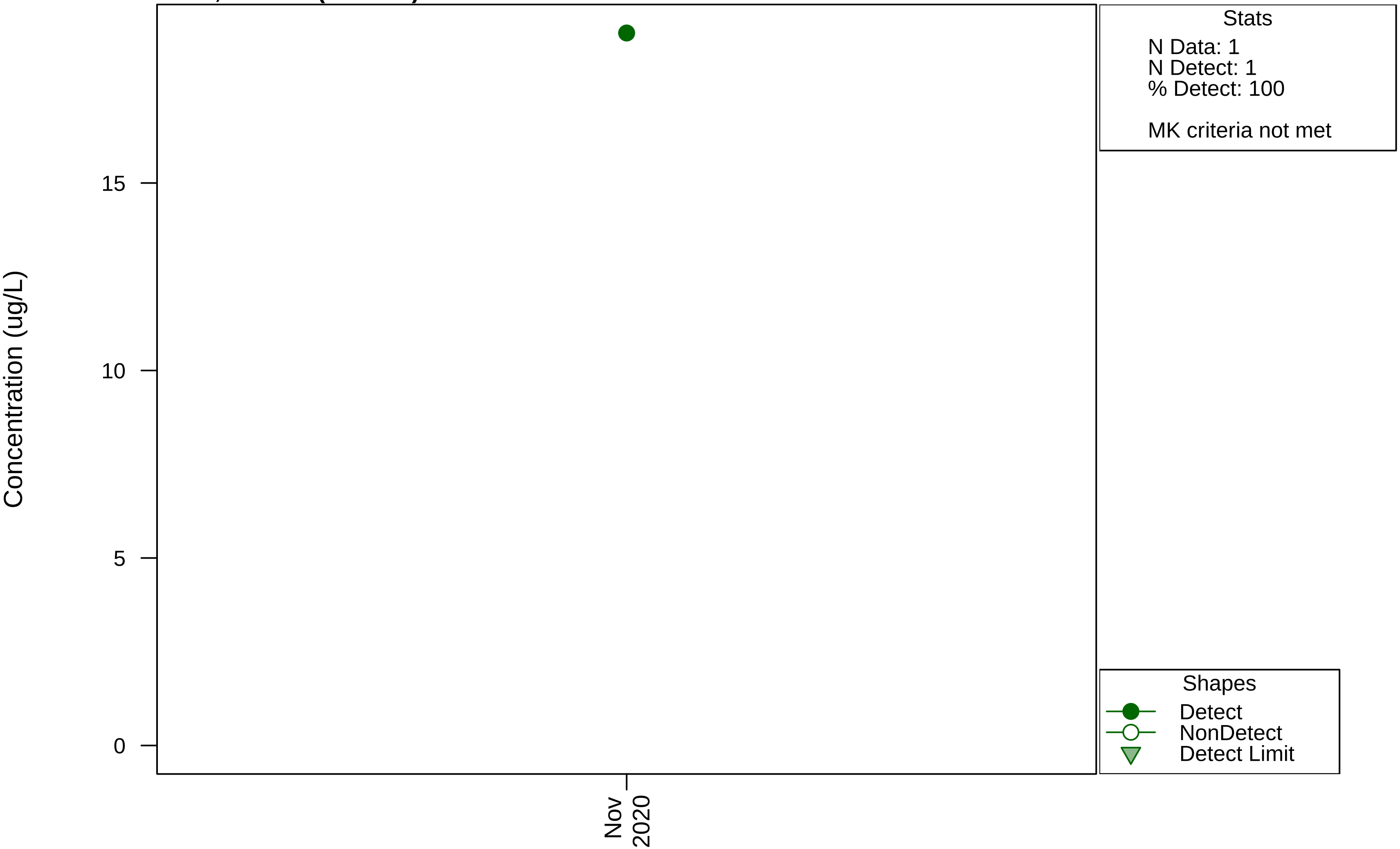


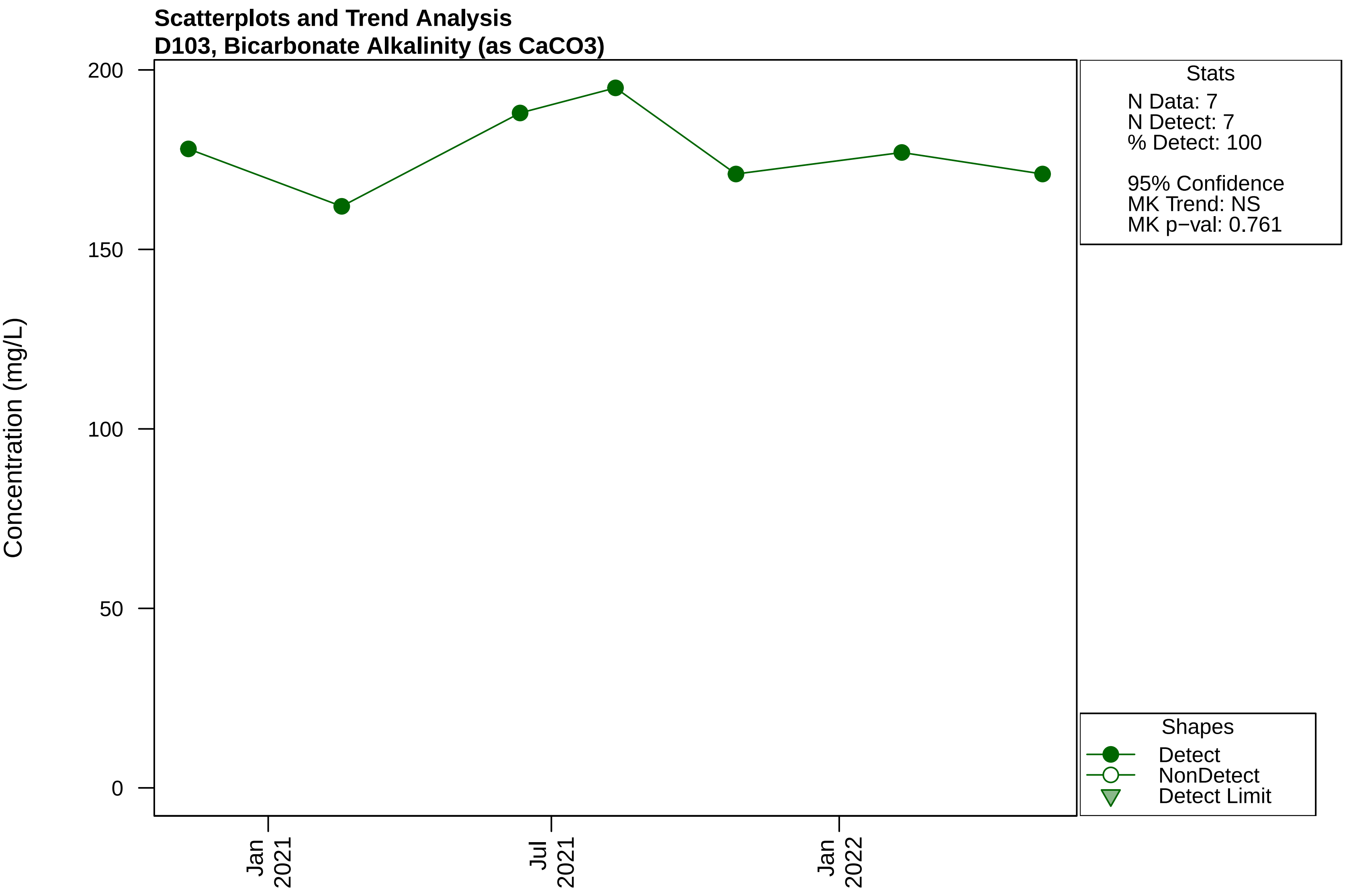
Scatterplots and Trend Analysis
D103, Arsenic (Filtered)
Concentration (ug/L)
0
1
2
3
4
5
Mar 2021
May 2021
Jul 2021
Sep 2021
Nov 2021
Jan 2022
Stats
N Data: 5
N Detect: 5
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.448
Shapes
Detect
NonDetect
Detect Limit



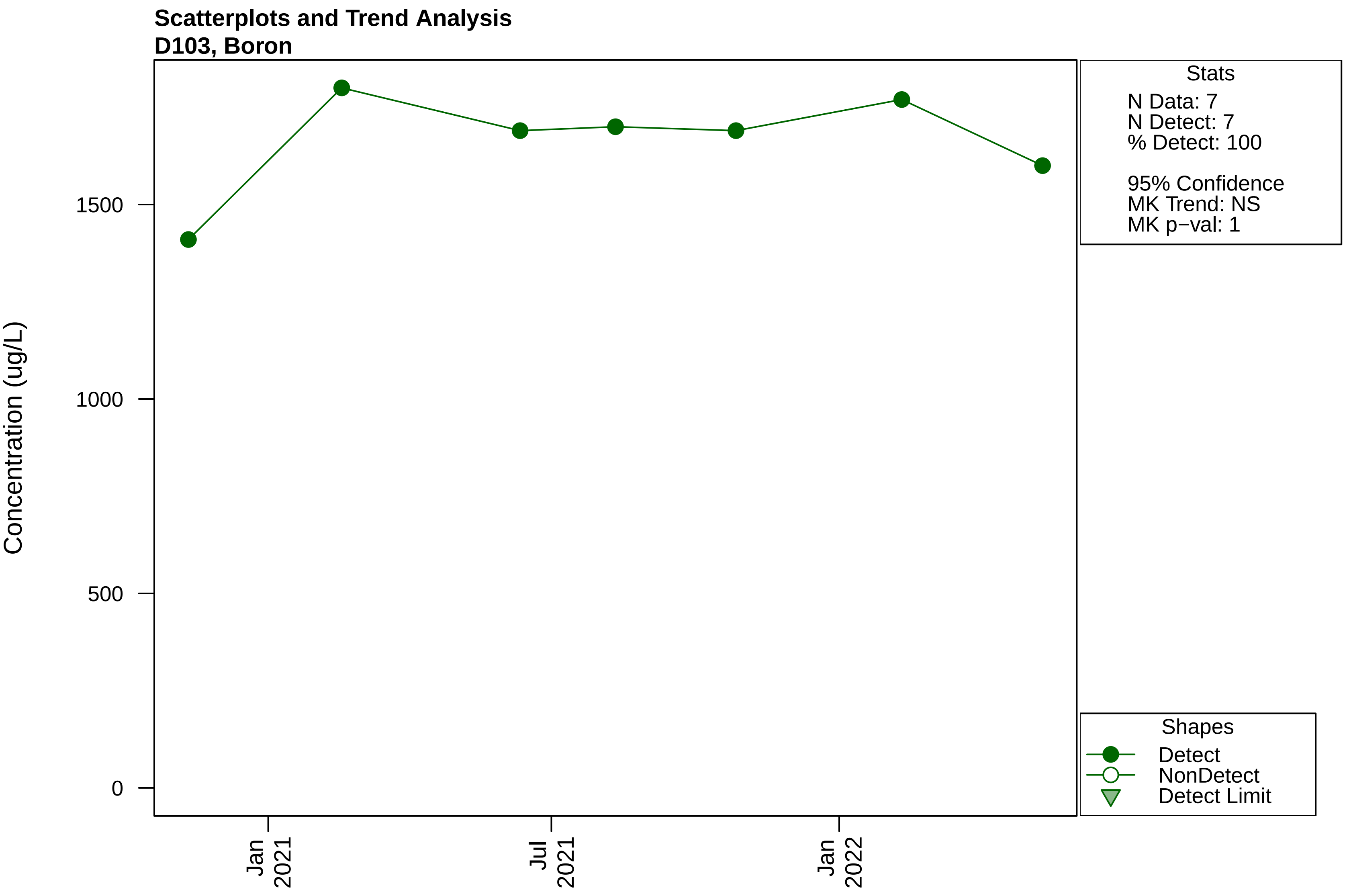
Scatterplots and Trend Analysis
D103, Barium
Concentration (ug/L)
0
5
10
15
20
25
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 7
N Detect: 7
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.0683
Shapes
Detect
NonDetect
Detect Limit

Scatterplots and Trend Analysis
D103, Barium (Filtered)



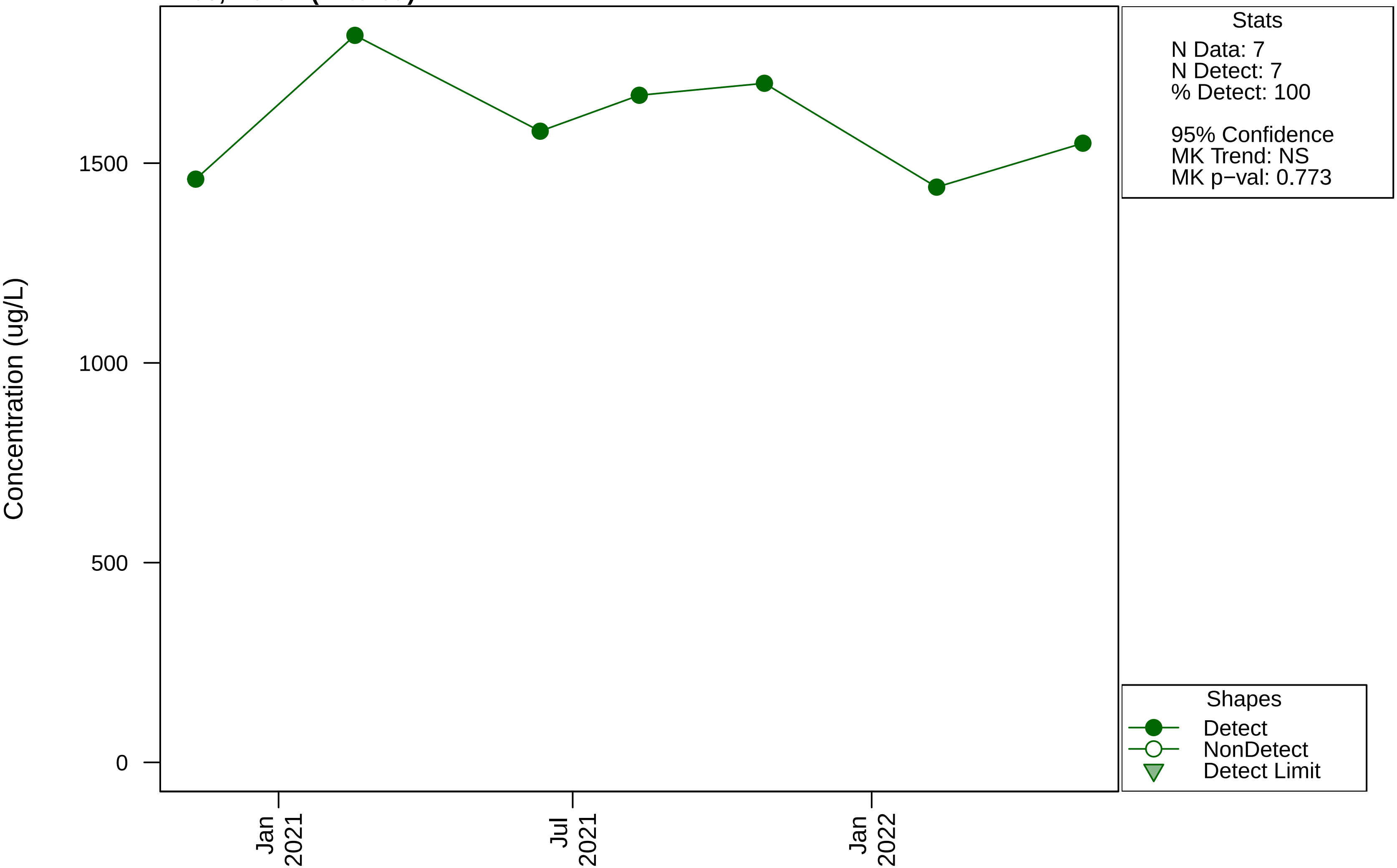


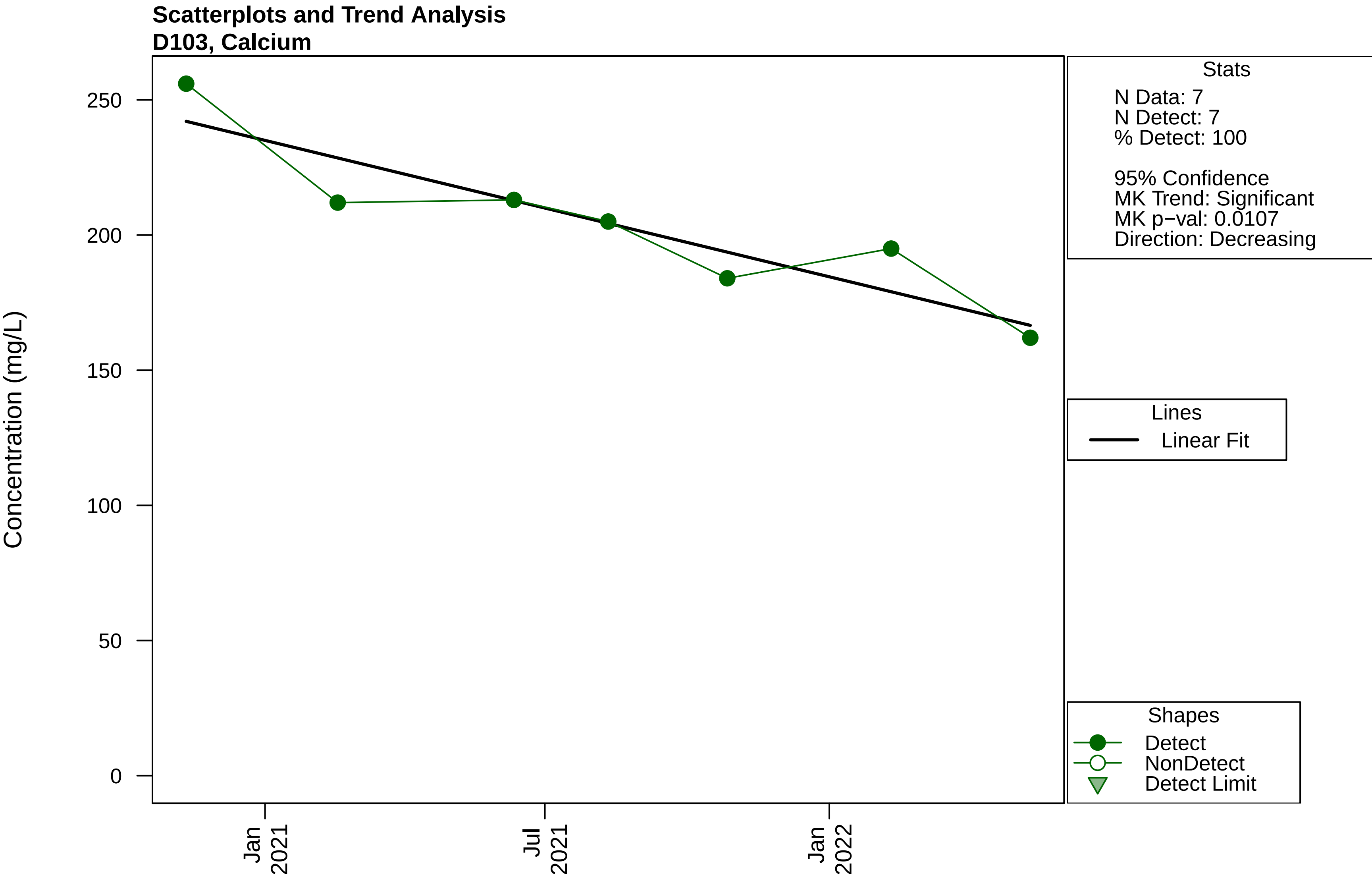
Scatterplots and Trend Analysis
D103, Bicarbonate Alkalinity (as CaCO3)
Concentration (mg/L)
200
150
100
50
0
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 7
N Detect: 7
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.761
Shapes
Detect
NonDetect
Detect Limit



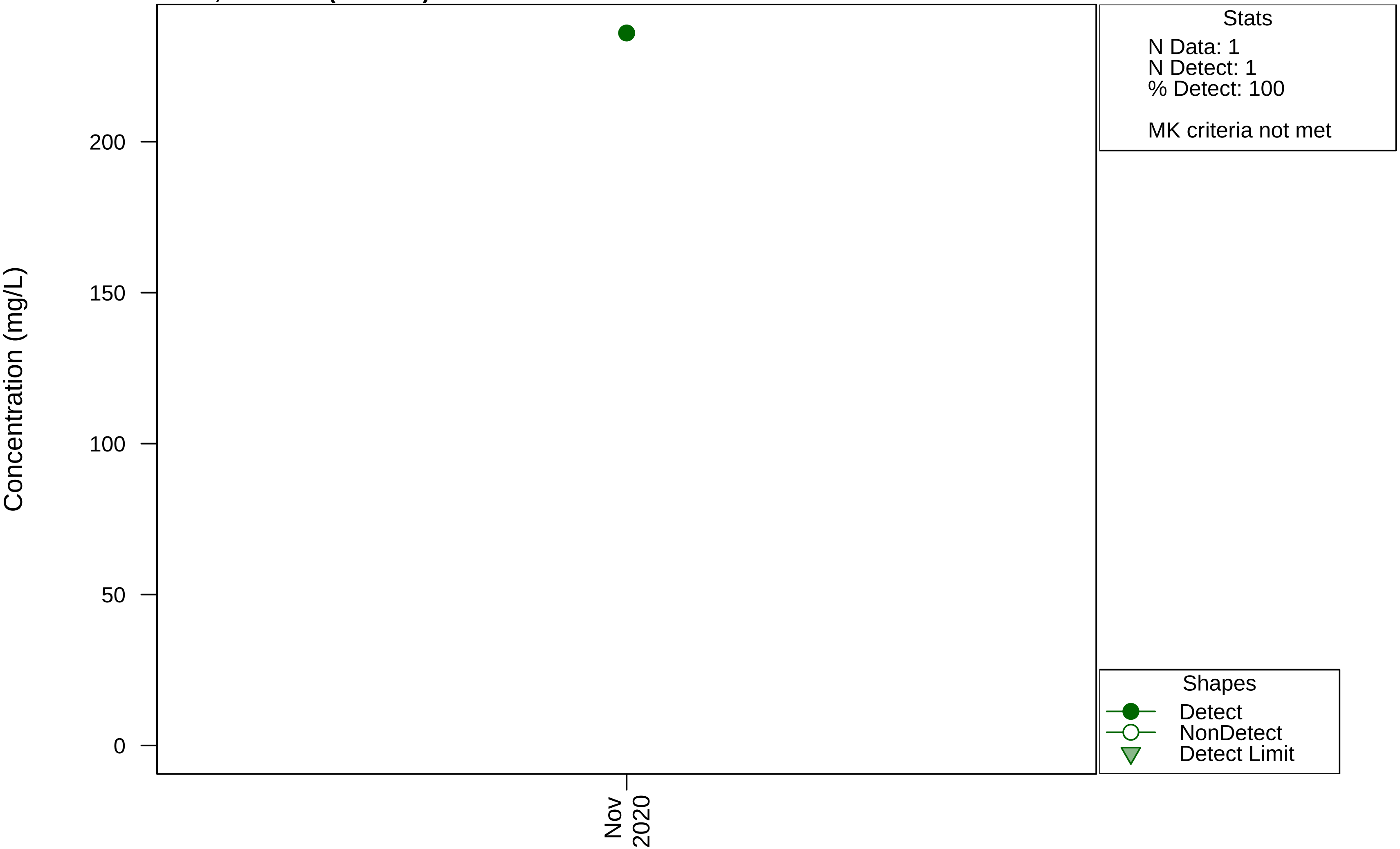
Scatterplots and Trend Analysis
D103, Boron
Concentration (ug/L)
0
500
1000
1500
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 7
N Detect: 7
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 1
Shapes
Detect
NonDetect
Detect Limit

Scatterplots and Trend Analysis
D103, Boron (Filtered)

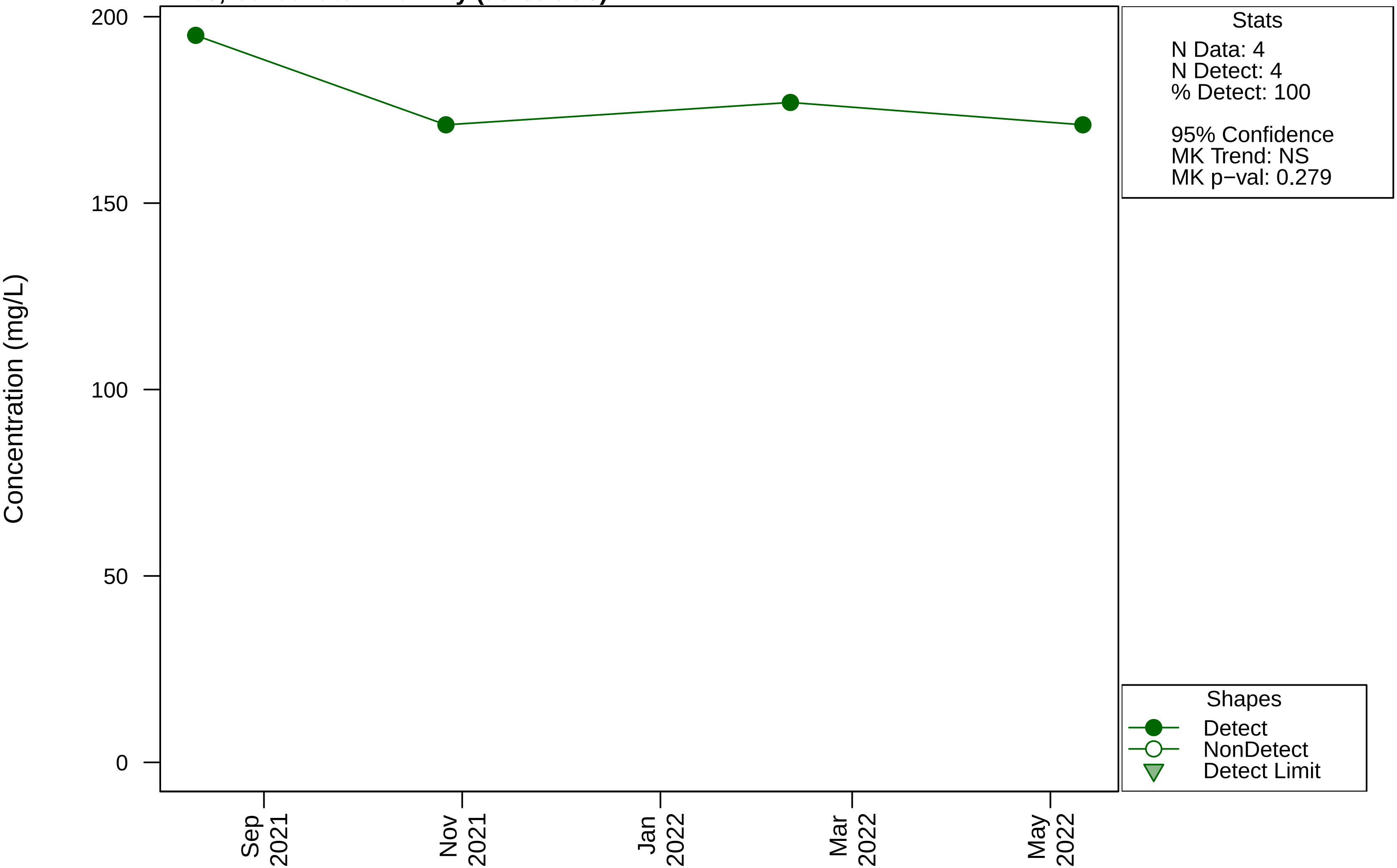



Scatterplots and Trend Analysis
D103, Calcium
Concentration (mg/L)
250
200
150
100
50
0
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 7
N Detect: 7
% Detect: 100
95% Confidence
MK Trend: Significant
MK p−val: 0.0107
Direction: Decreasing
Lines
Linear Fit
Shapes
Detect
NonDetect
Detect Limit

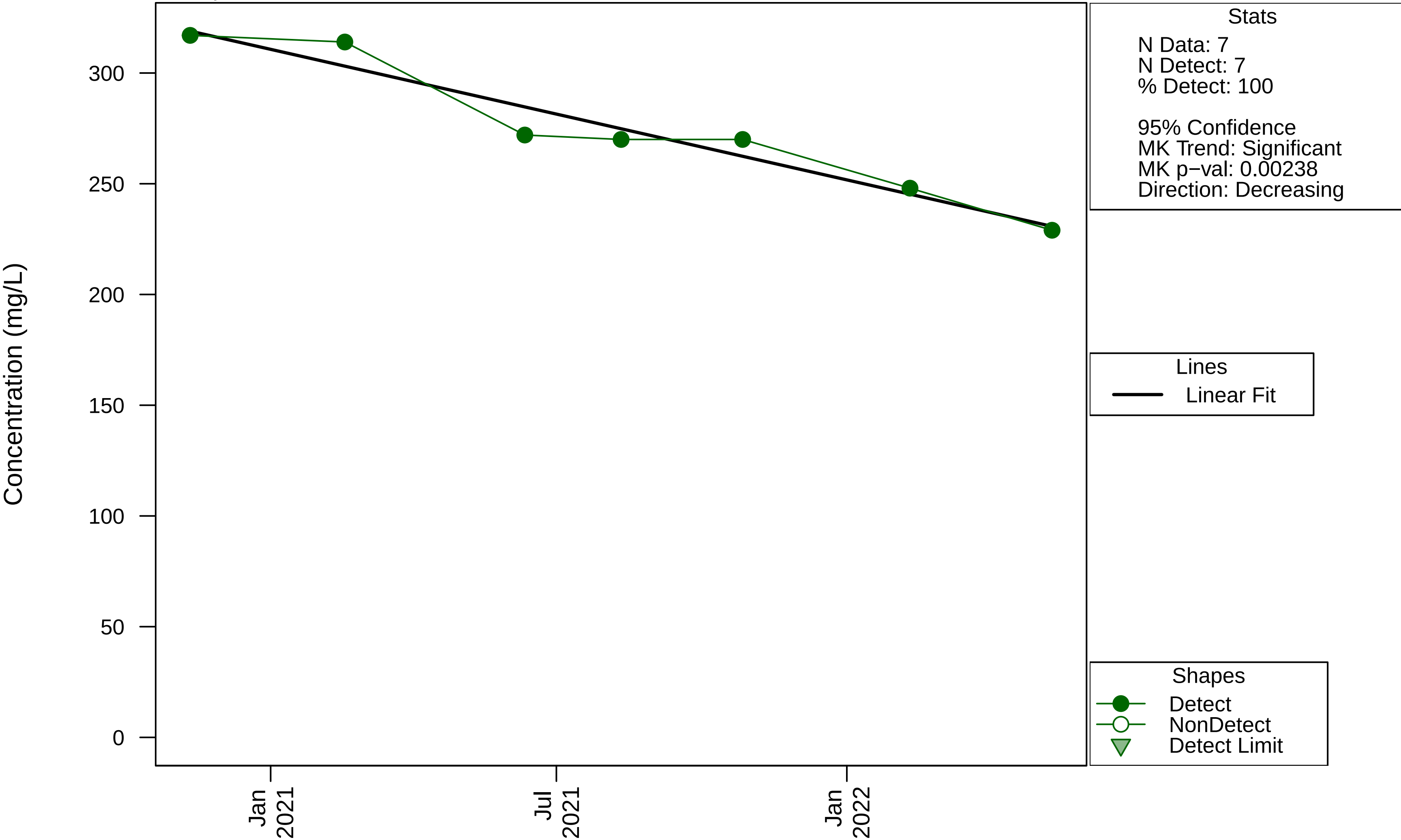
Scatterplots and Trend Analysis
D103, Calcium (Filtered)



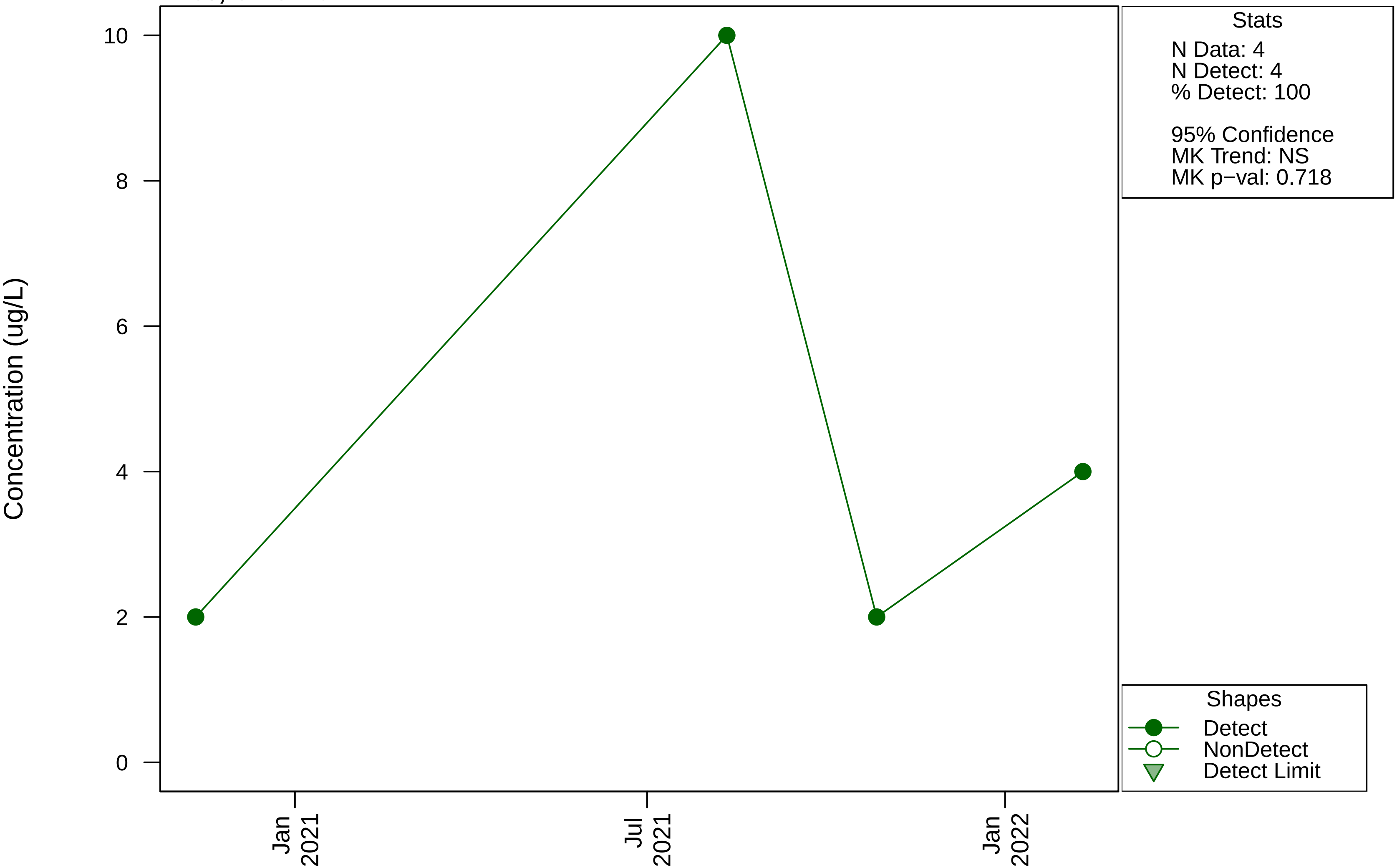
Scatterplots and Trend Analysis
D103, Carbonate Alkalinity (as CaCO3)

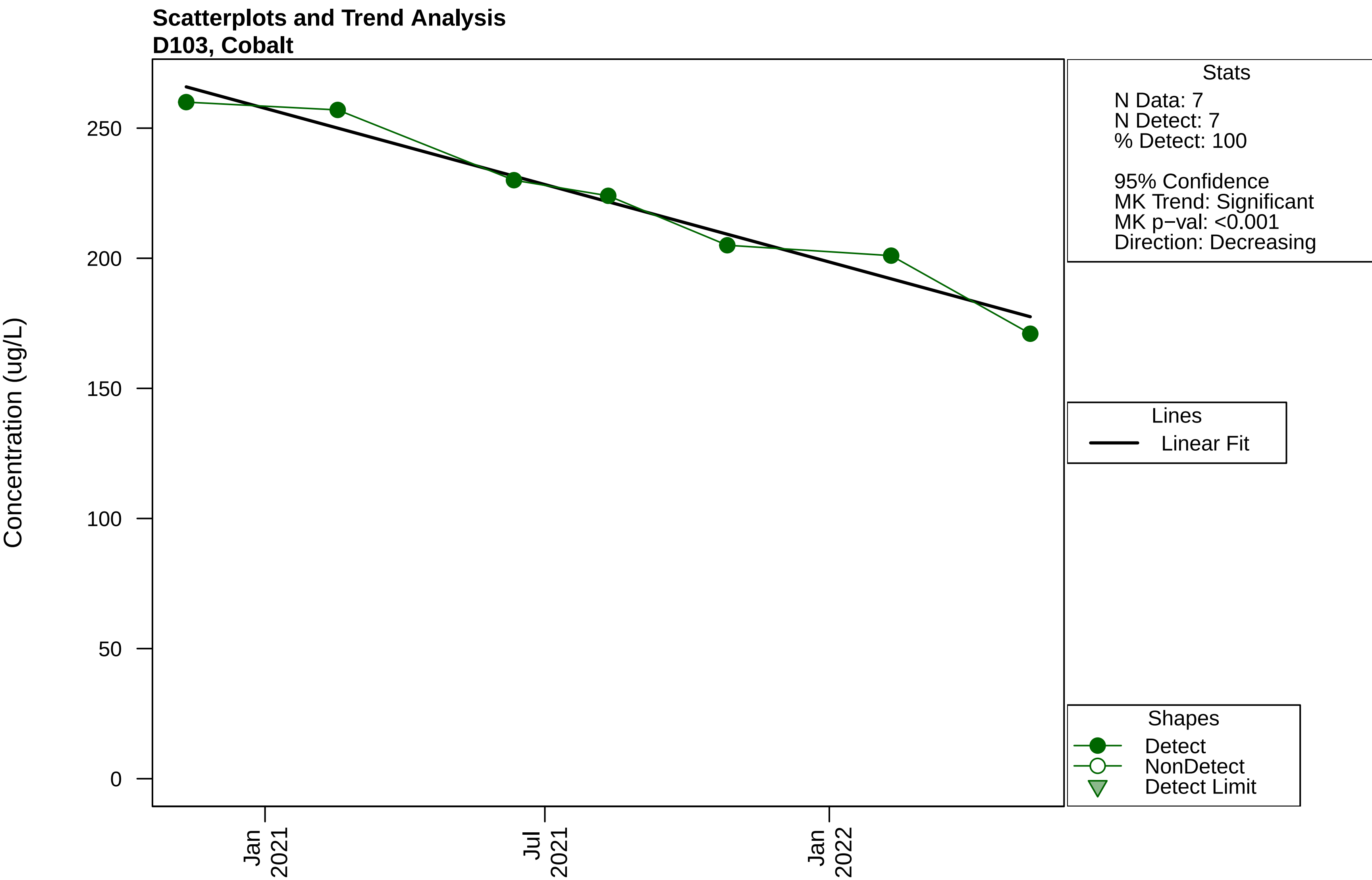


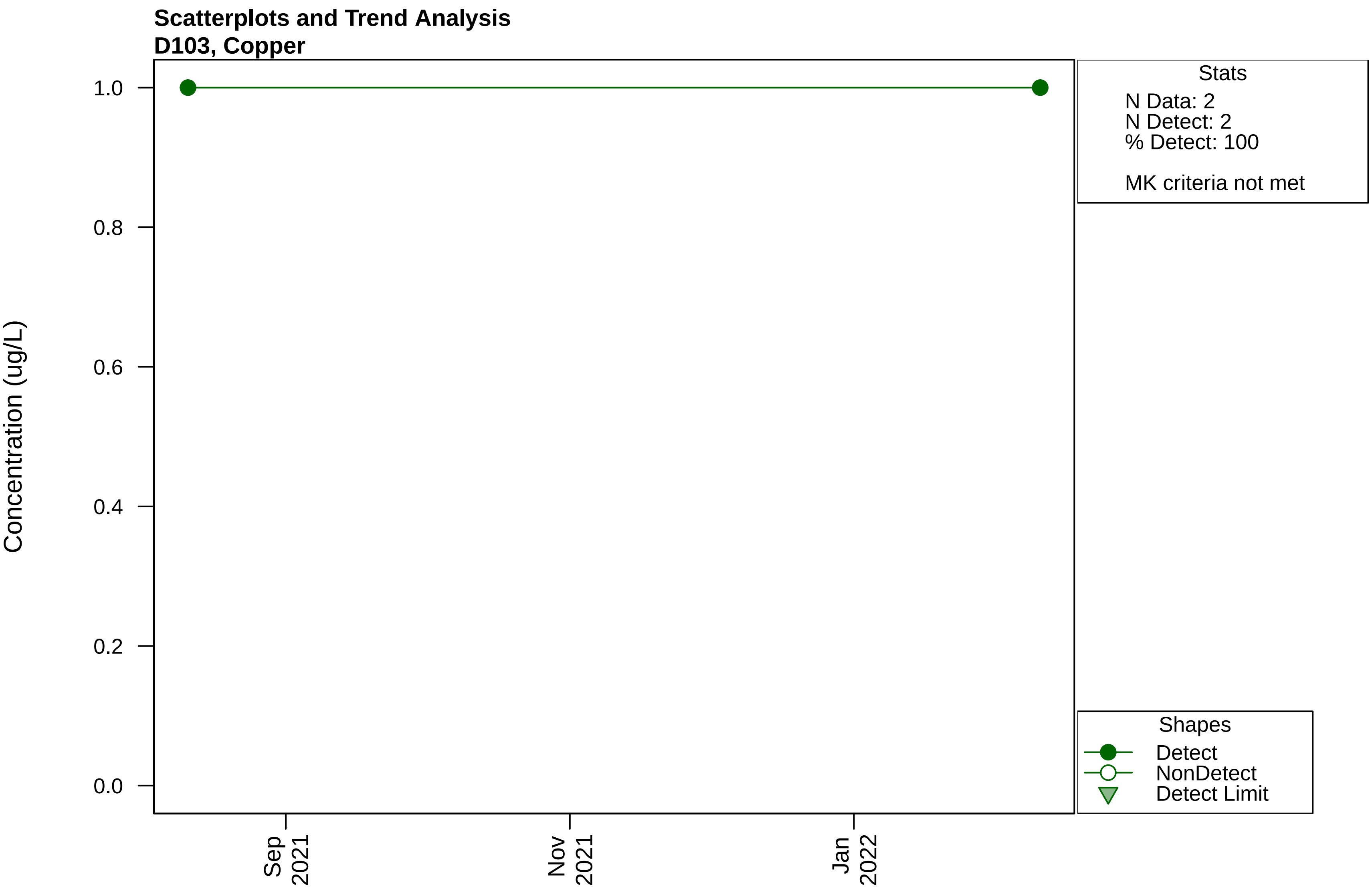
Scatterplots and Trend Analysis
D103, Chloride



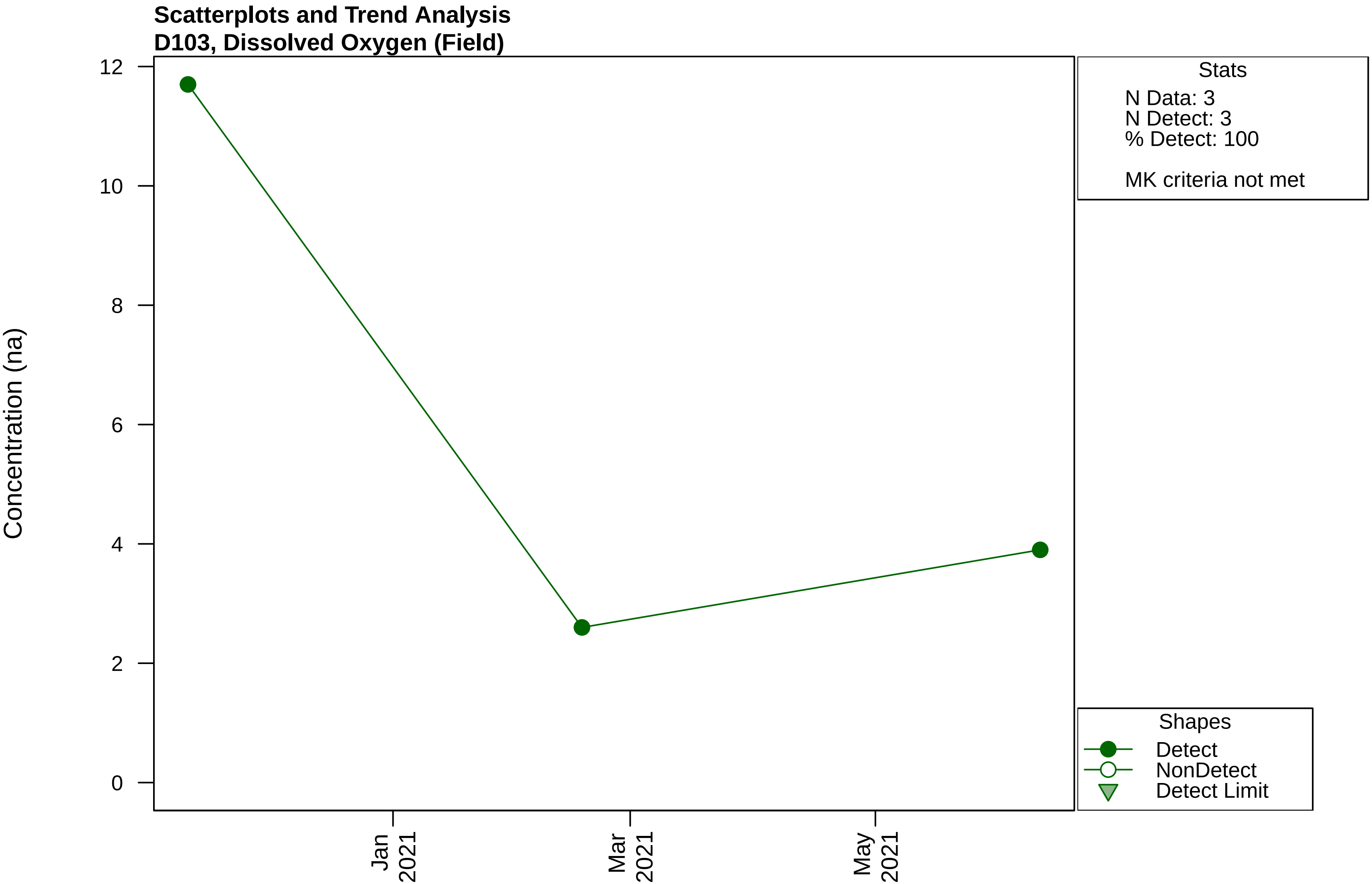
Scatterplots and Trend Analysis
D103, Chromium




Scatterplots and Trend Analysis
D103, Cobalt
Concentration (ug/L)
0
50
100
150
200
250
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 7
N Detect: 7
% Detect: 100
95% Confidence
MK Trend: Significant
MK p−val: <0.001
Direction: Decreasing
Lines
Linear Fit
Shapes
Detect
NonDetect
Detect Limit

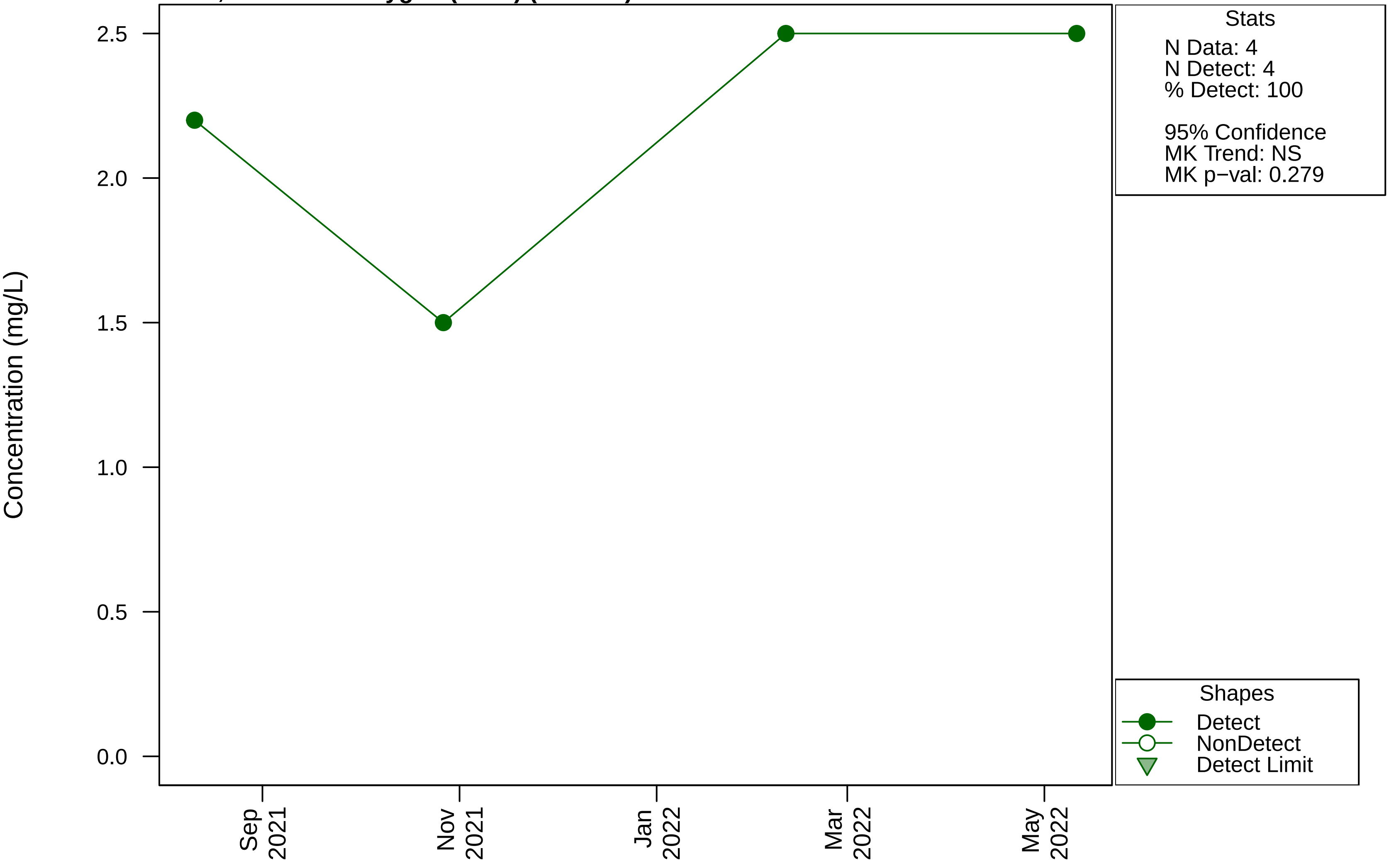


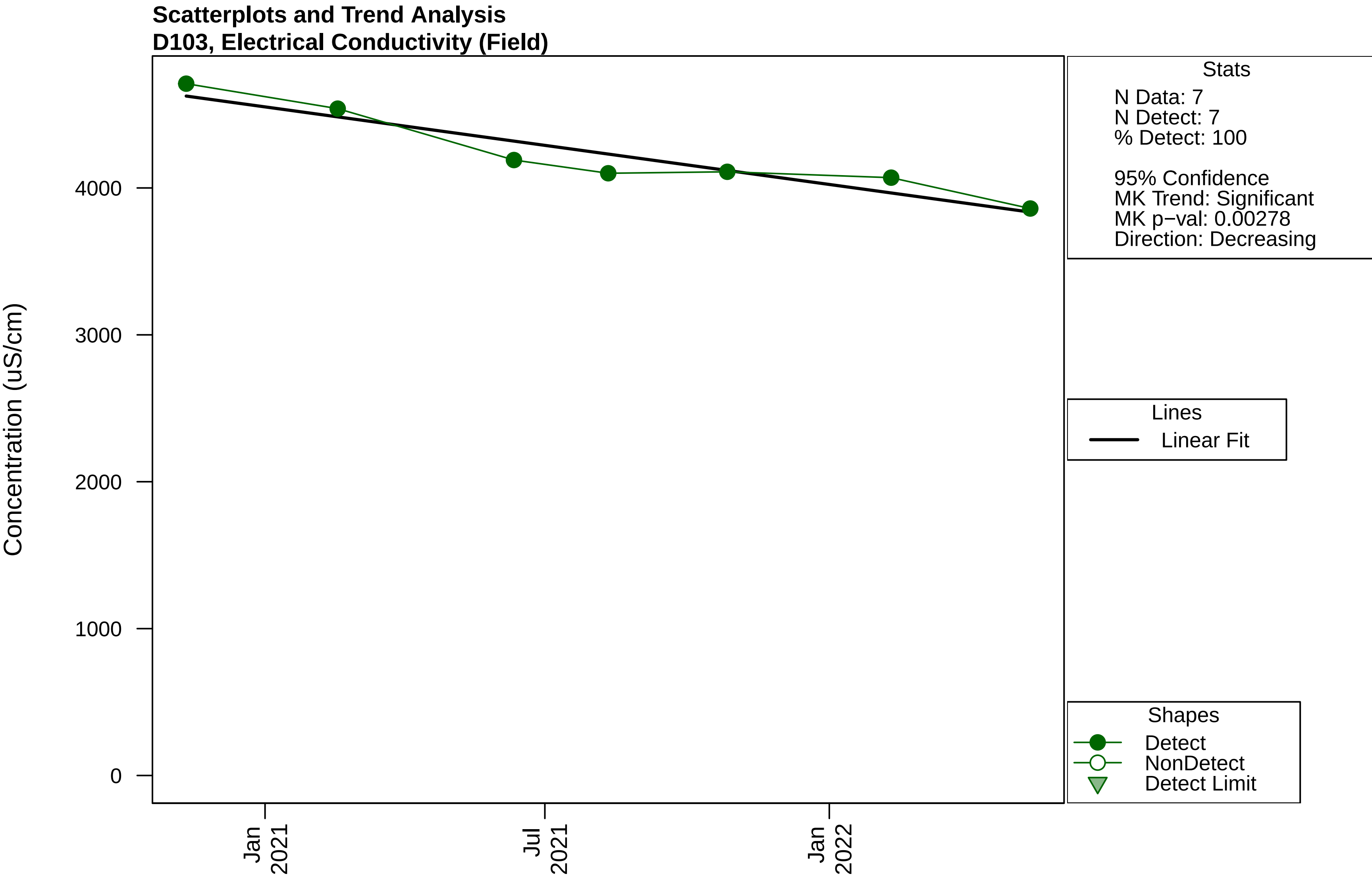
Scatterplots and Trend Analysis
D103, Copper
Concentration (ug/L)
1.0
0.8
0.6
0.4
0.2
0.0
Sep 2021
Nov 2021
Jan 2022
Stats
N Data: 2
N Detect: 2
% Detect: 100
MK criteria not met
Shapes
Detect
NonDetect
Detect Limit



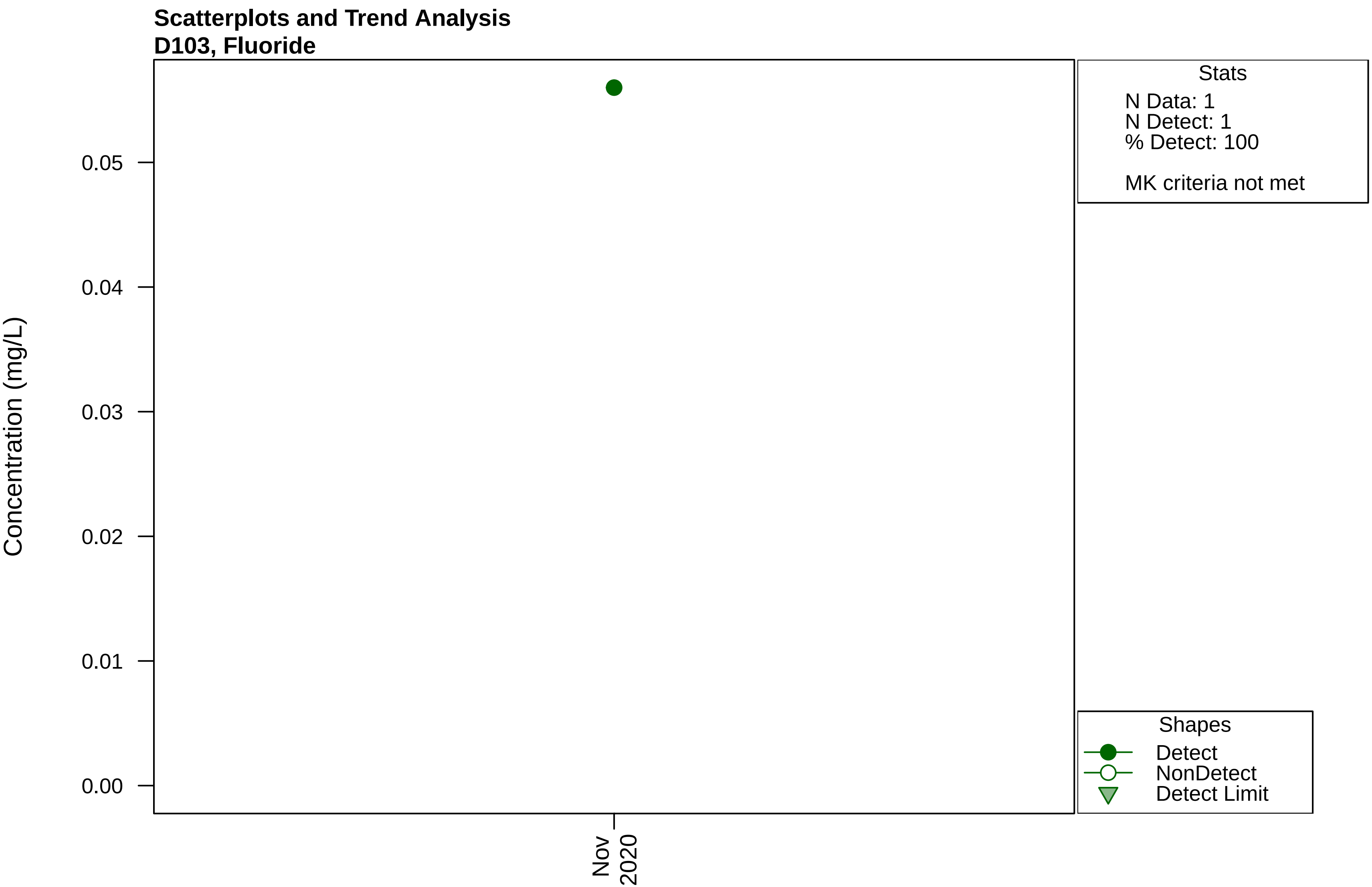
Scatterplots and Trend Analysis
D103, Dissolved Oxygen (Field)
Concentration (na)
0
2
4
6
8
10
12
Jan 2021
Mar 2021
May 2021
Stats
N Data: 3
N Detect: 3
% Detect: 100
MK criteria not met
Shapes
Detect
NonDetect
Detect Limit

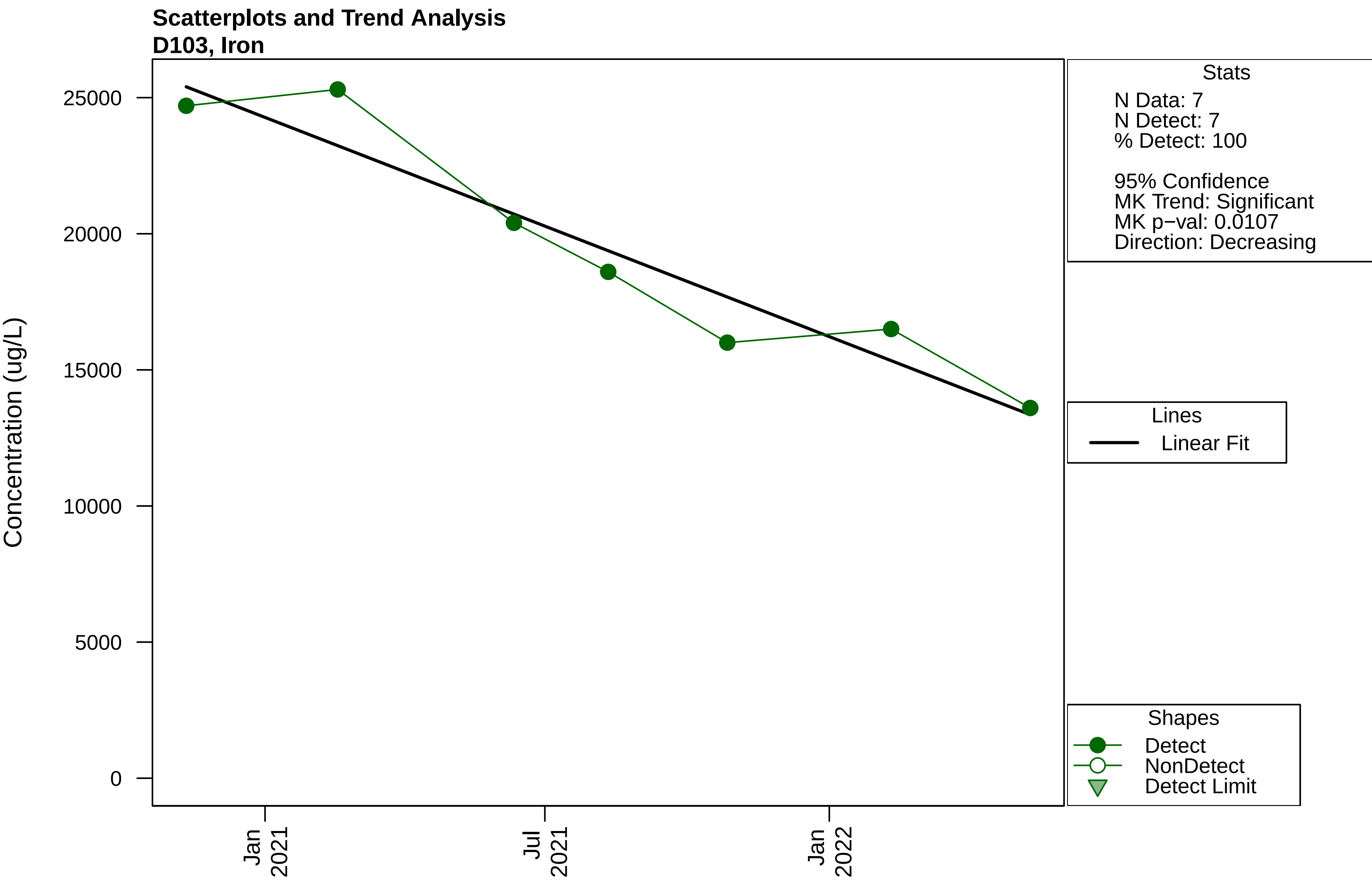
Scatterplots and Trend Analysis
D103, Dissolved Oxygen (Field) (Filtered)



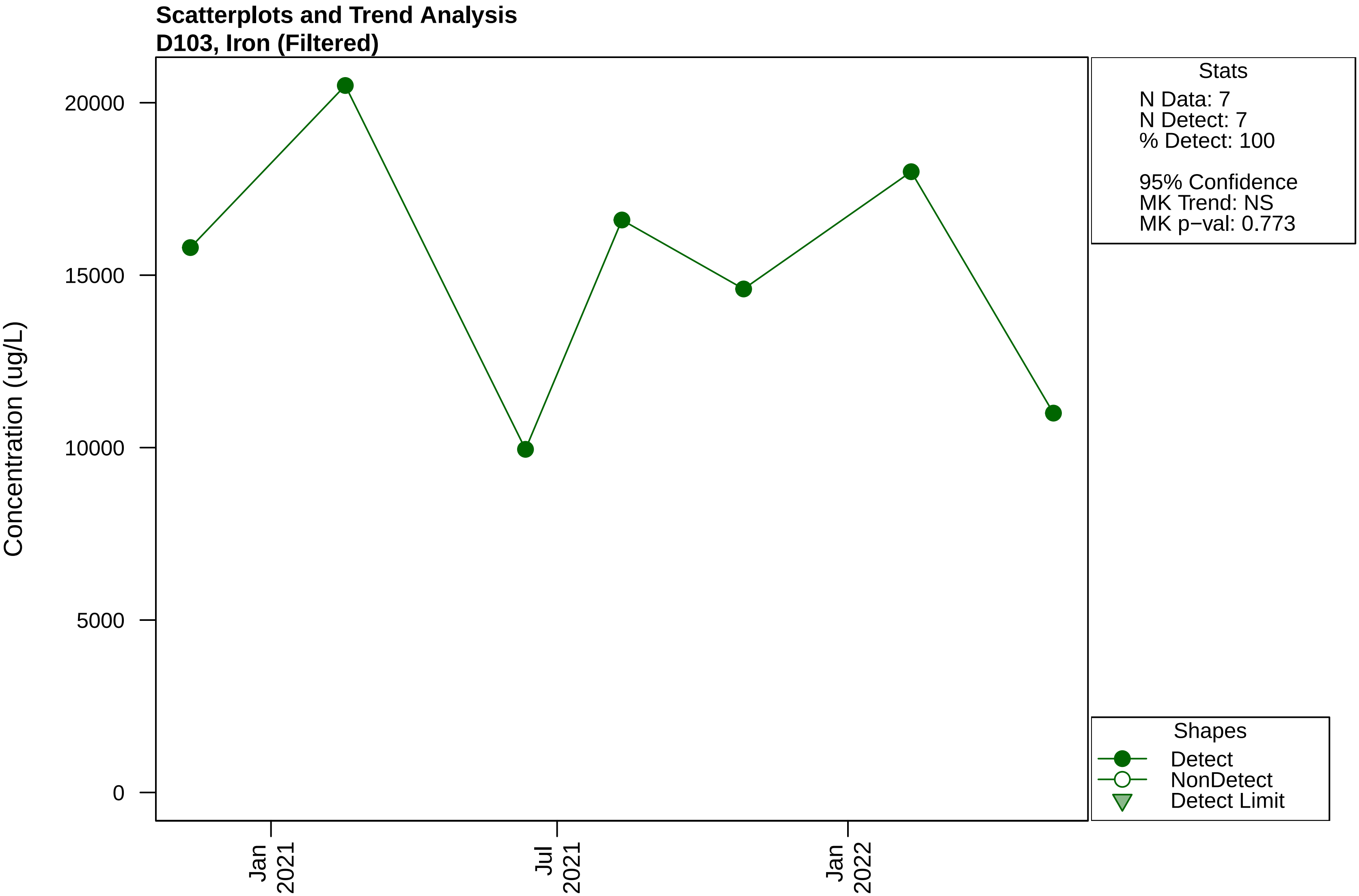


Scatterplots and Trend Analysis
D103, Electrical Conductivity (Field)
Concentration (uS/cm)
4000
3000
2000
1000
0
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 7
N Detect: 7
% Detect: 100
95% Confidence
MK Trend: Significant
MK p−val: 0.00278
Direction: Decreasing
Lines
Linear Fit
Shapes
Detect
NonDetect
Detect Limit

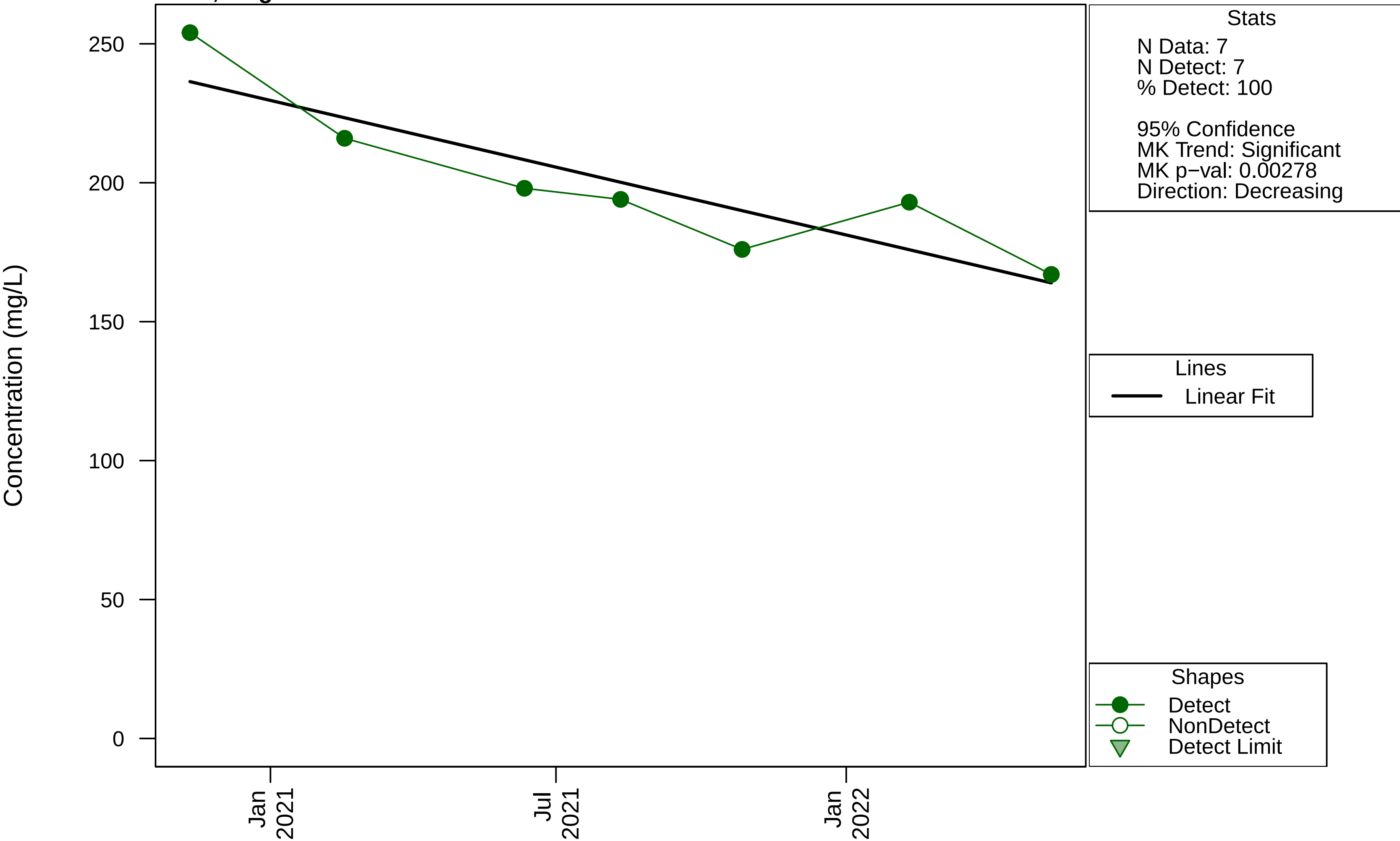

Scatterplots and Trend Analysis
D103, Fluoride
Concentration (mg/L)
0.00
0.01
0.02
0.03
0.04
0.05
Nov 2020
Stats
N Data: 1
N Detect: 1
% Detect: 100
MK criteria not met
Shapes
Detect
NonDetect
Detect Limit



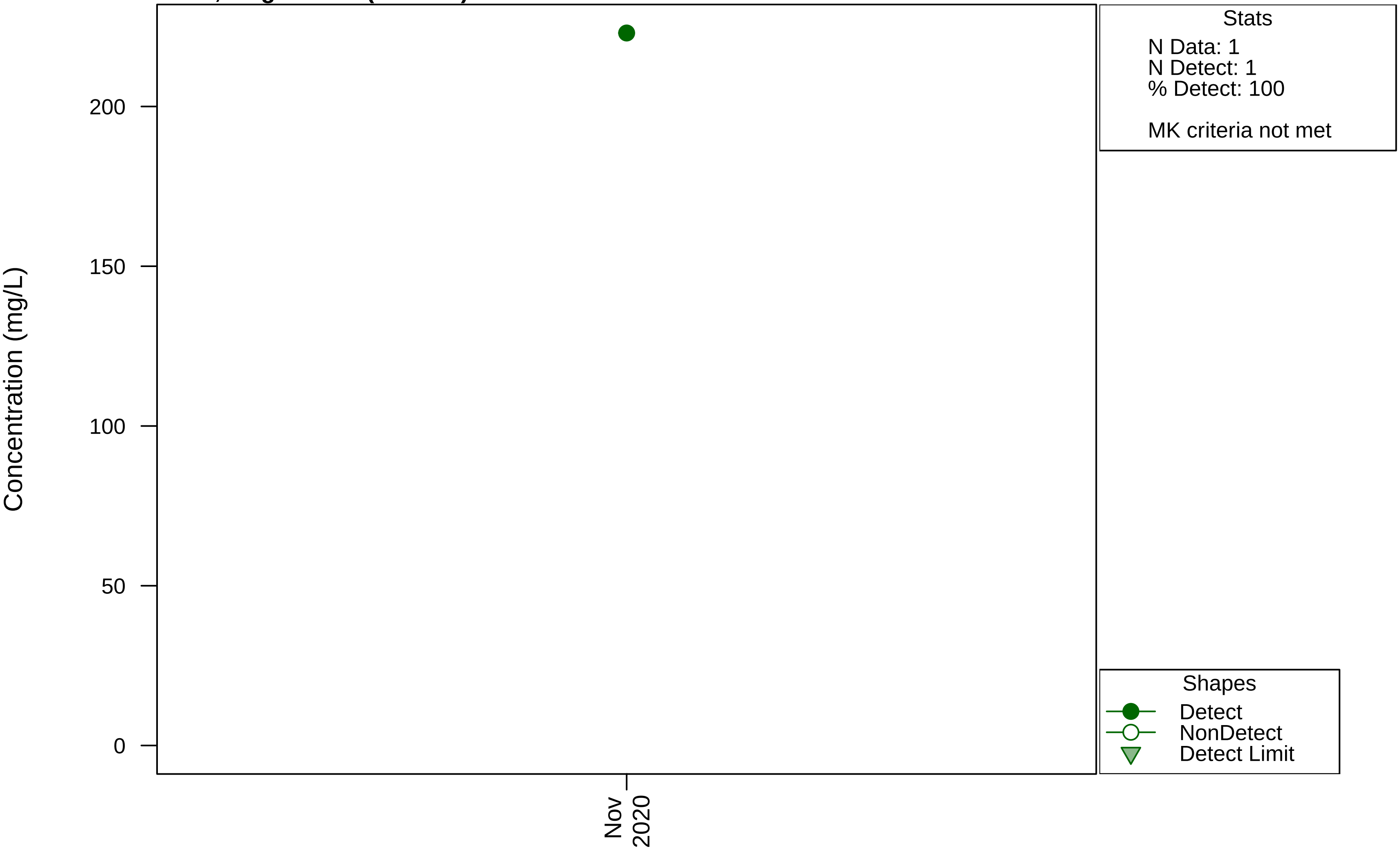
Scatterplots and Trend Analysis
D103, Iron
Concentration (ug/L)
25000
20000
15000
10000
5000
0
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 7
N Detect: 7
% Detect: 100
95% Confidence
MK Trend: Significant
MK p−val: 0.0107
Direction: Decreasing
Lines
Linear Fit
Shapes
Detect
NonDetect
Detect Limit


Scatterplots and Trend Analysis
D103, Iron (Filtered)
Concentration (ug/L)
20000
15000
10000
5000
0
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 7
N Detect: 7
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.773
Shapes
Detect
NonDetect
Detect Limit

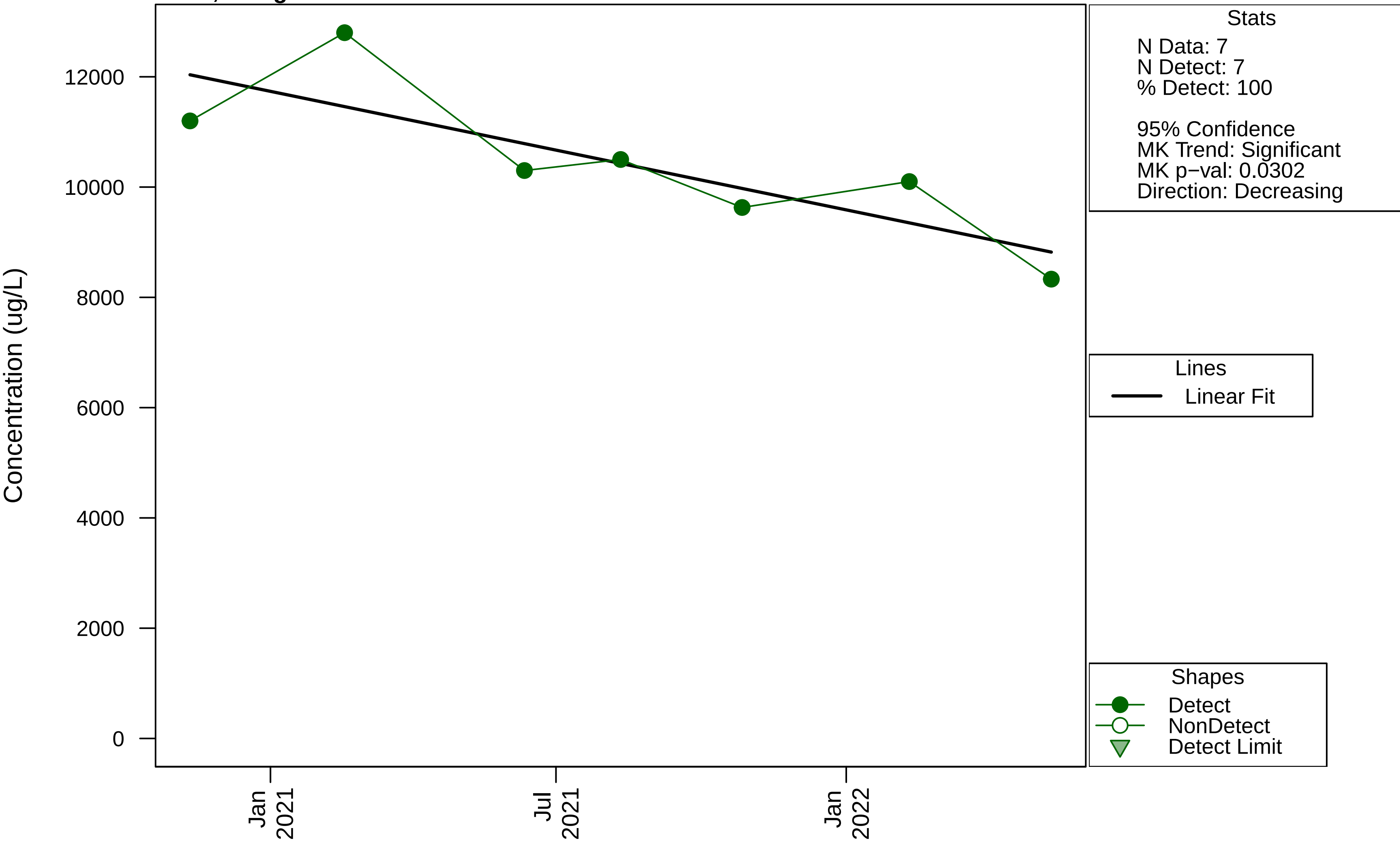
Scatterplots and Trend Analysis
D103, Magnesium

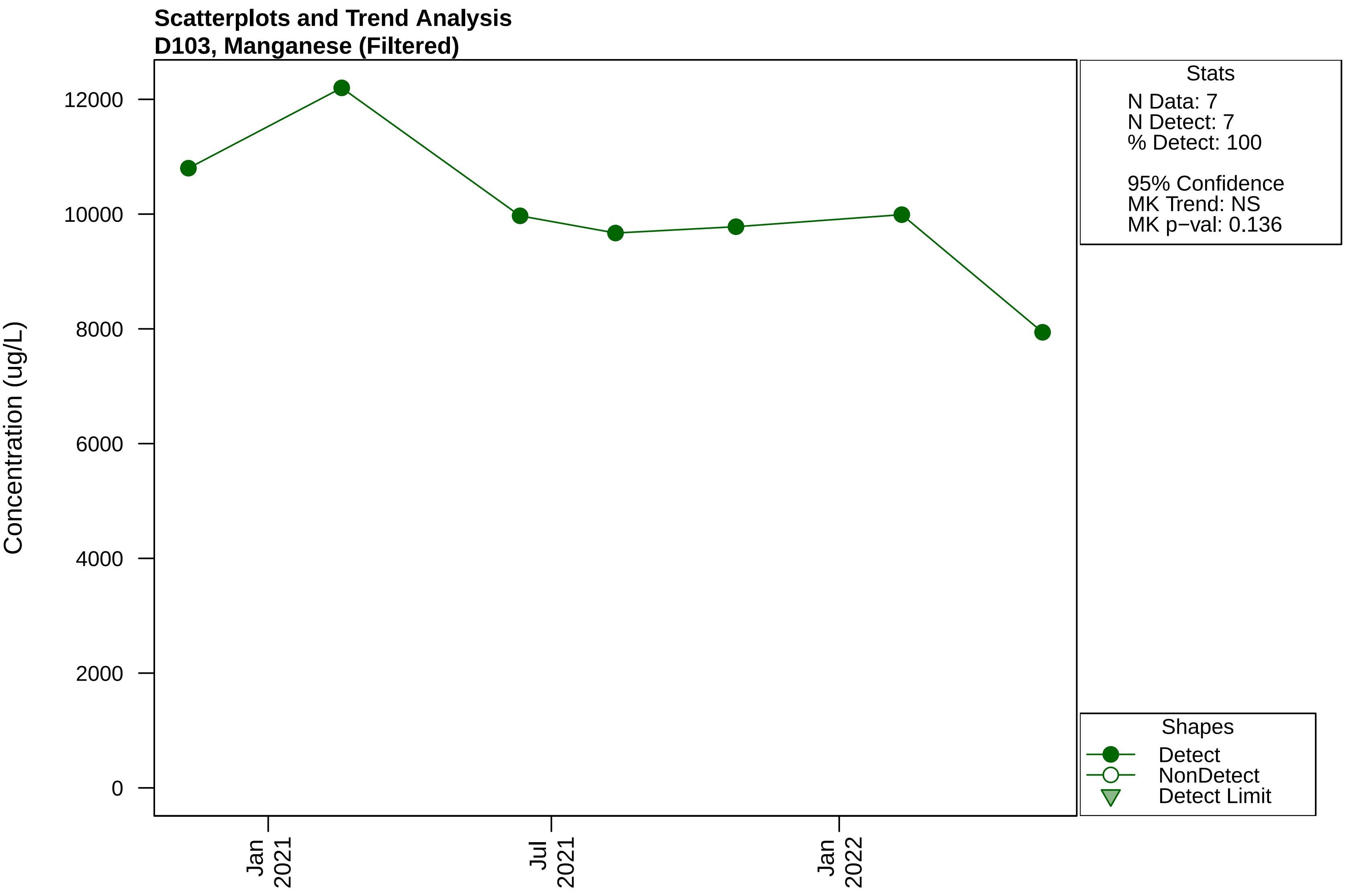


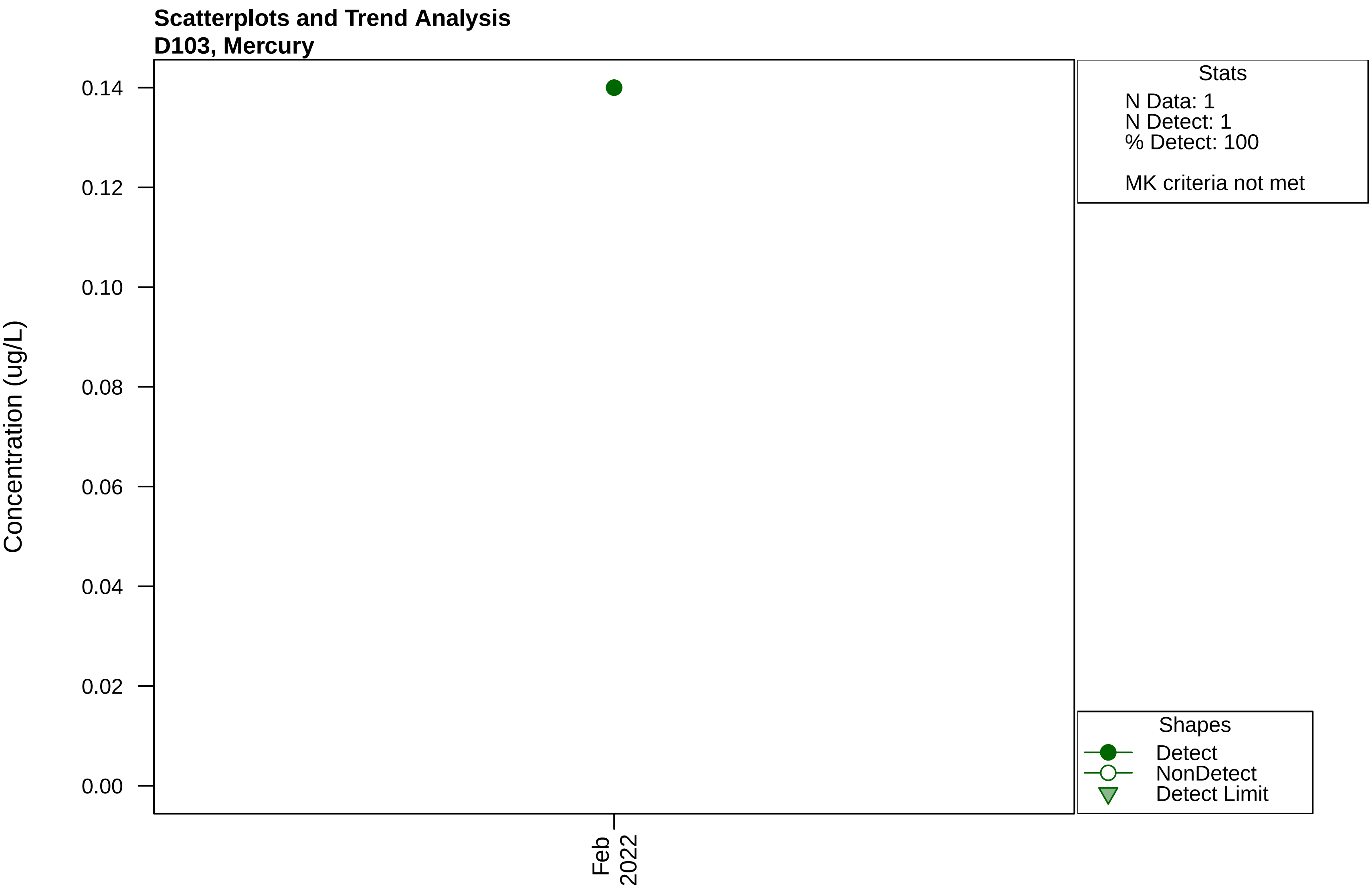
Scatterplots and Trend Analysis
D103, Magnesium (Filtered)



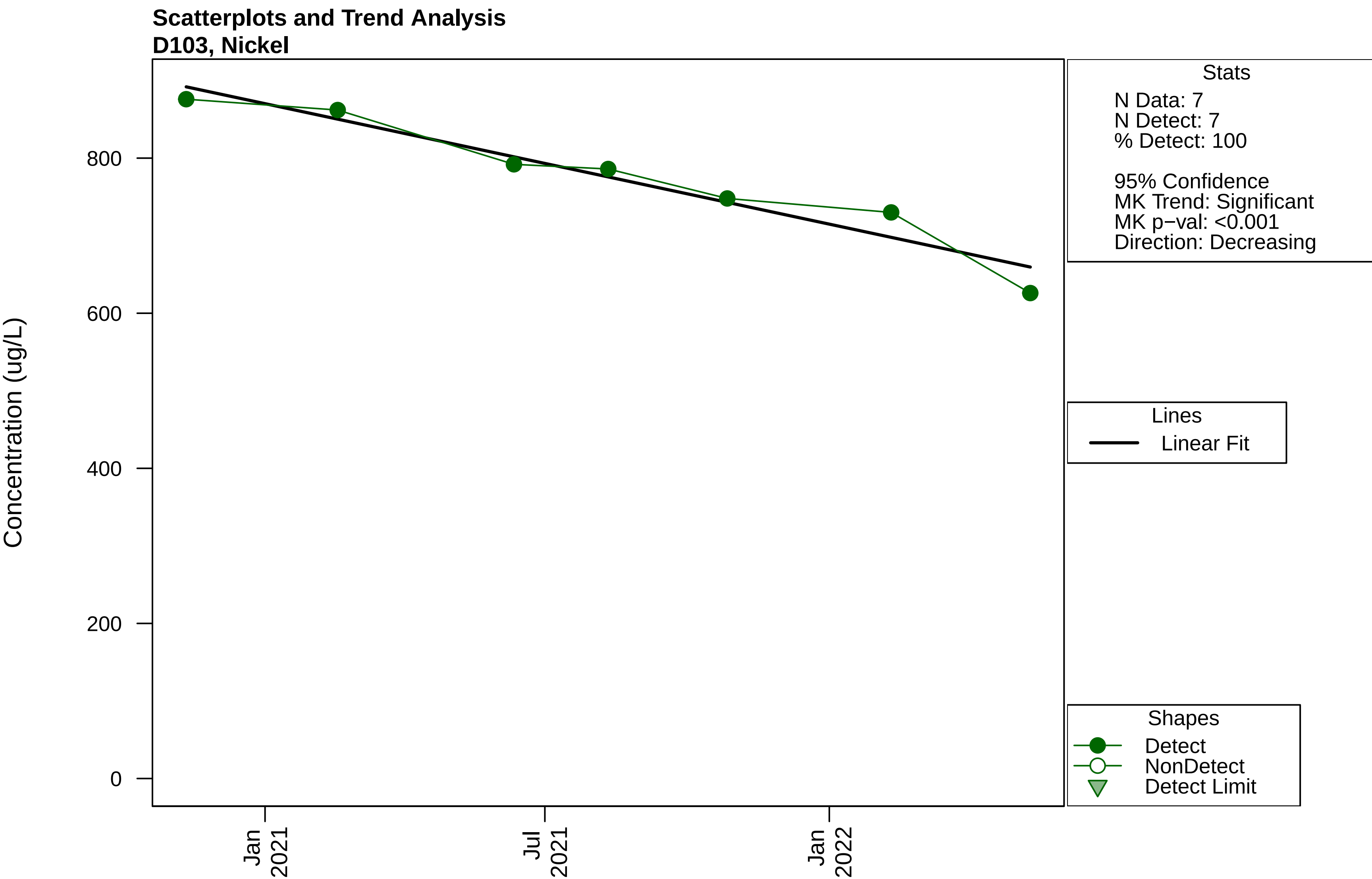
Scatterplots and Trend Analysis
D103, Manganese



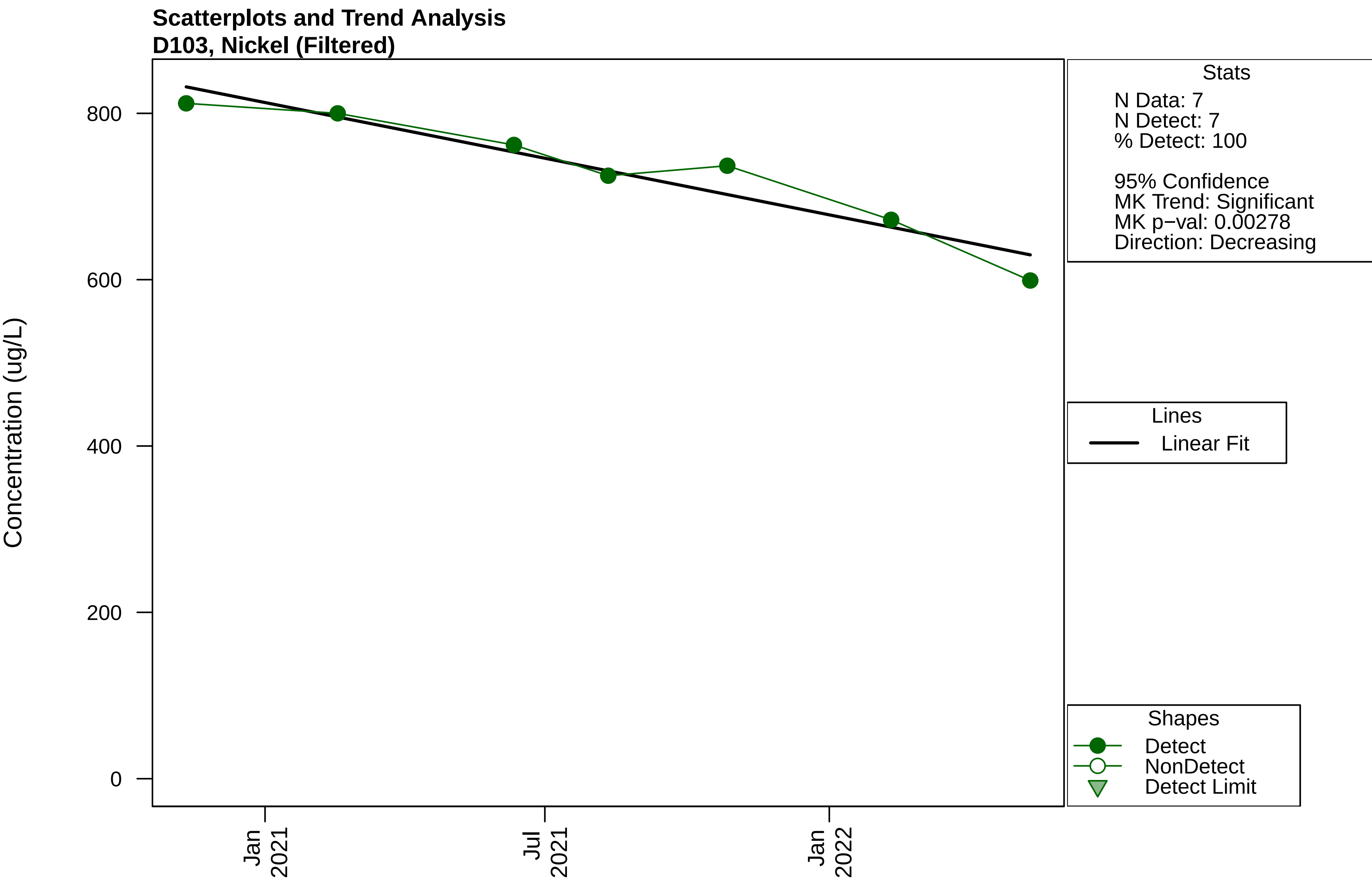

Scatterplots and Trend Analysis
D103, Manganese (Filtered)
Concentration (ug/L)
12000
10000
8000
6000
4000
2000
0
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 7
N Detect: 7
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.136
Shapes
Detect
NonDetect
Detect Limit

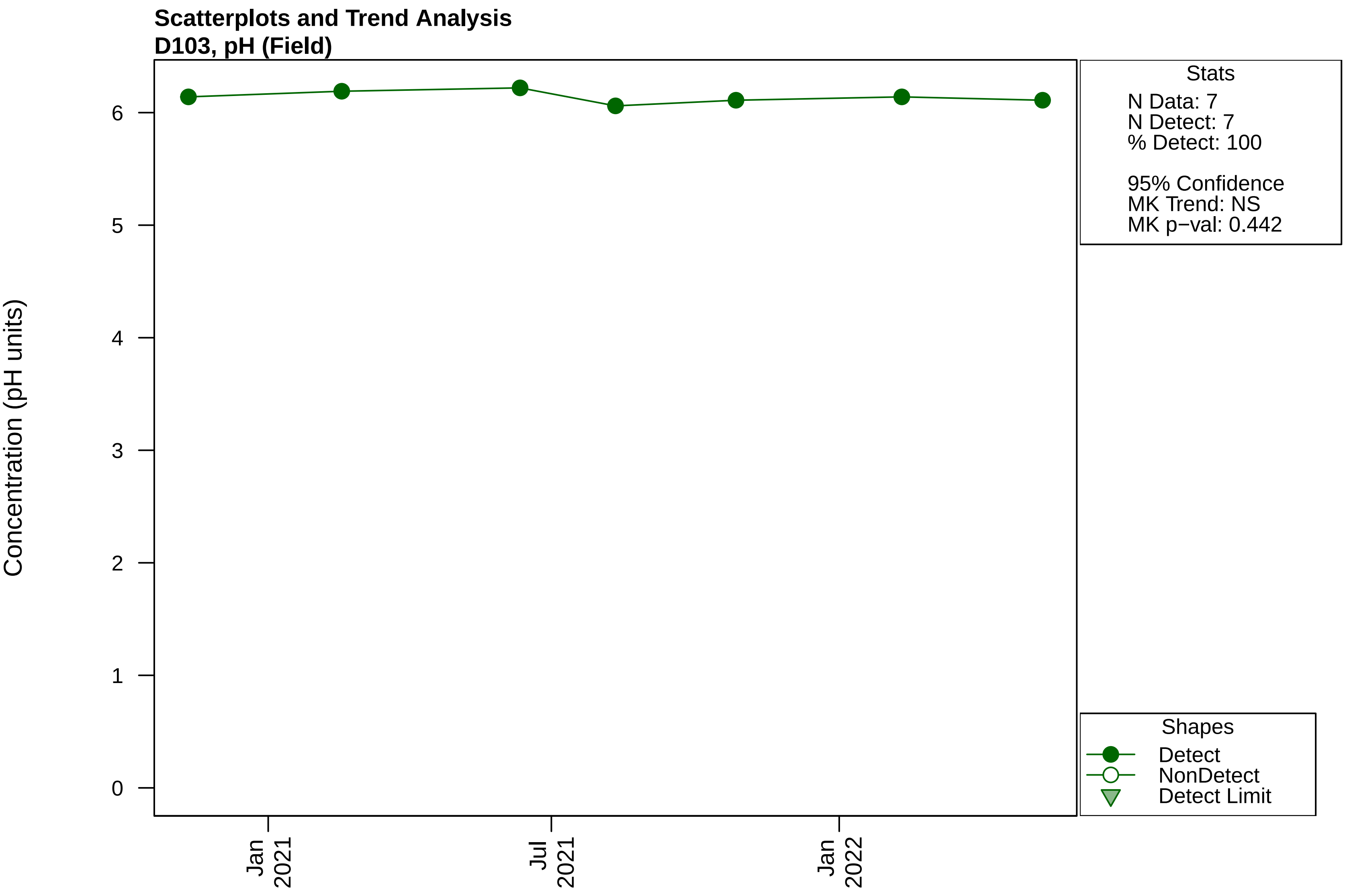


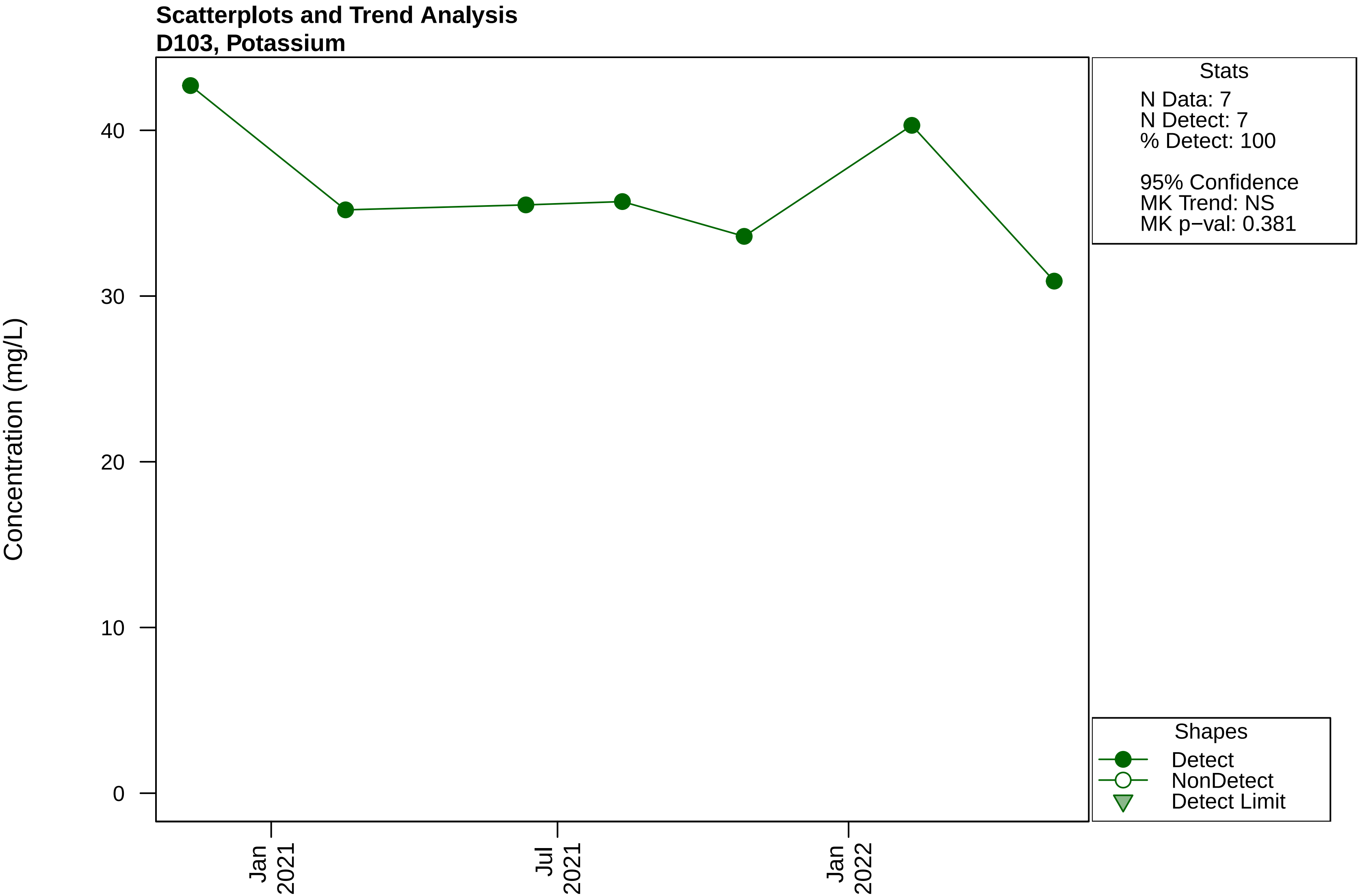
Scatterplots and Trend Analysis
D103, Mercury
Concentration (ug/L)
0.14
0.12
0.10
0.08
0.06
0.04
0.02
0.00
Feb 2022
Stats
N Data: 1
N Detect: 1
% Detect: 100
MK criteria not met
Shapes
Detect
NonDetect
Detect Limit



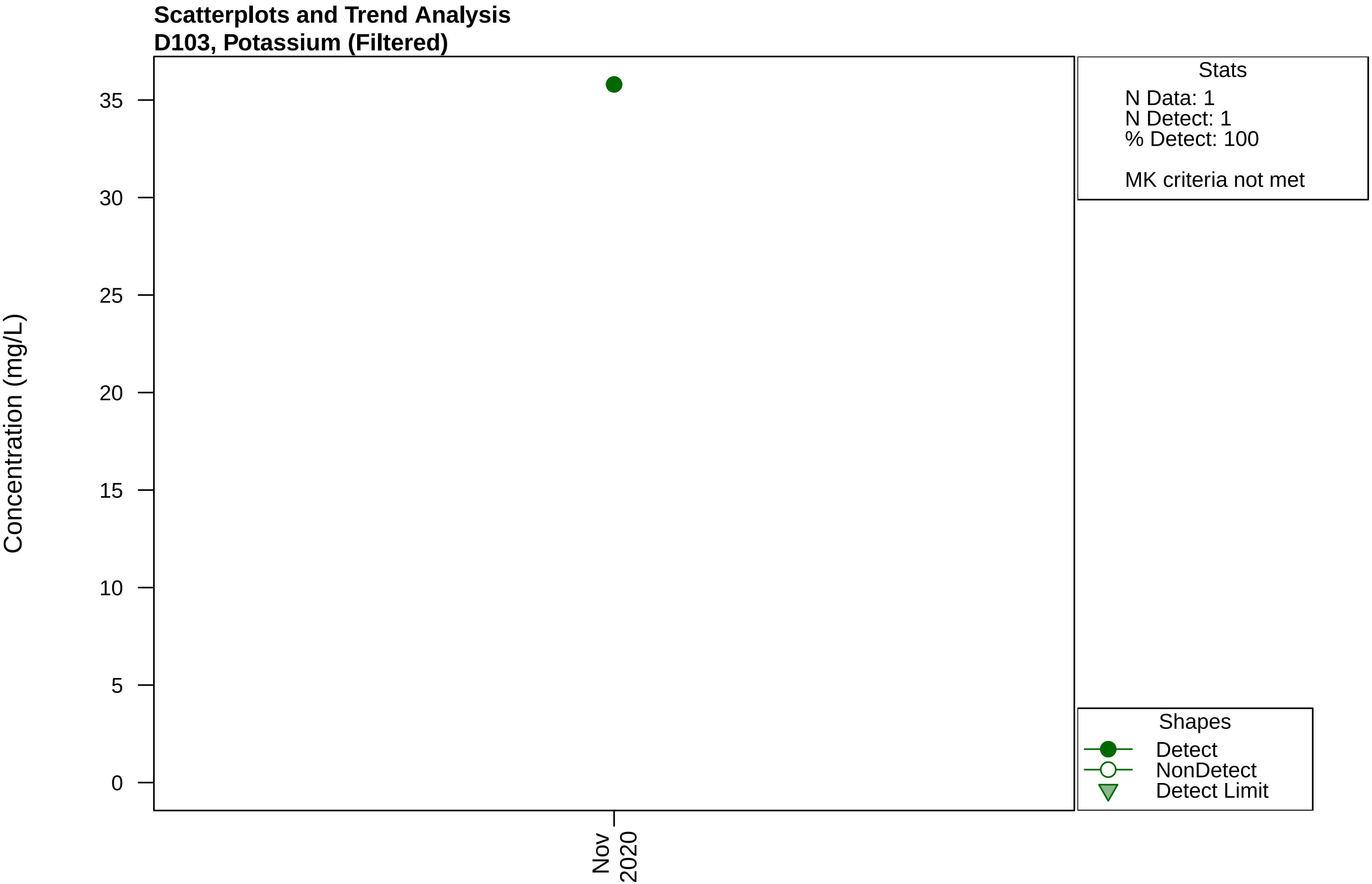
Scatterplots and Trend Analysis
D103, Nickel
Concentration (ug/L)
0
200
400
600
800
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 7
N Detect: 7
% Detect: 100
95% Confidence
MK Trend: Significant
MK p−val: <0.001
Direction: Decreasing
Lines
Linear Fit
Shapes
Detect
NonDetect
Detect Limit


Scatterplots and Trend Analysis
D103, Nickel (Filtered)
Concentration (ug/L)
0
200
400
600
800
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 7
N Detect: 7
% Detect: 100
95% Confidence
MK Trend: Significant
MK p−val: 0.00278
Direction: Decreasing
Lines
Linear Fit
Shapes
Detect
NonDetect
Detect Limit


Scatterplots and Trend Analysis
D103, pH (Field)
Concentration (pH units)
0
1
2
3
4
5
6
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 7
N Detect: 7
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.442
Shapes
Detect
NonDetect
Detect Limit

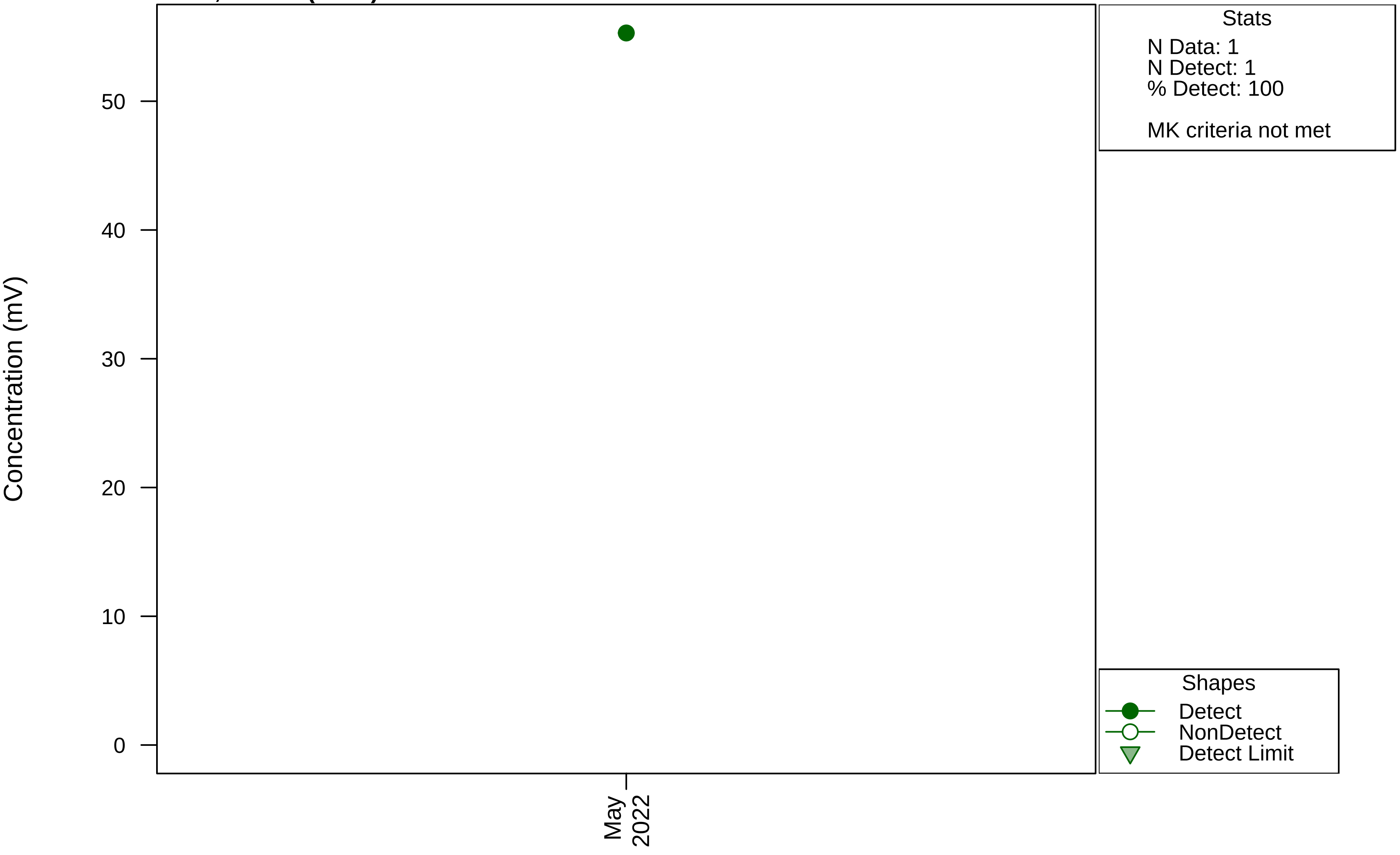


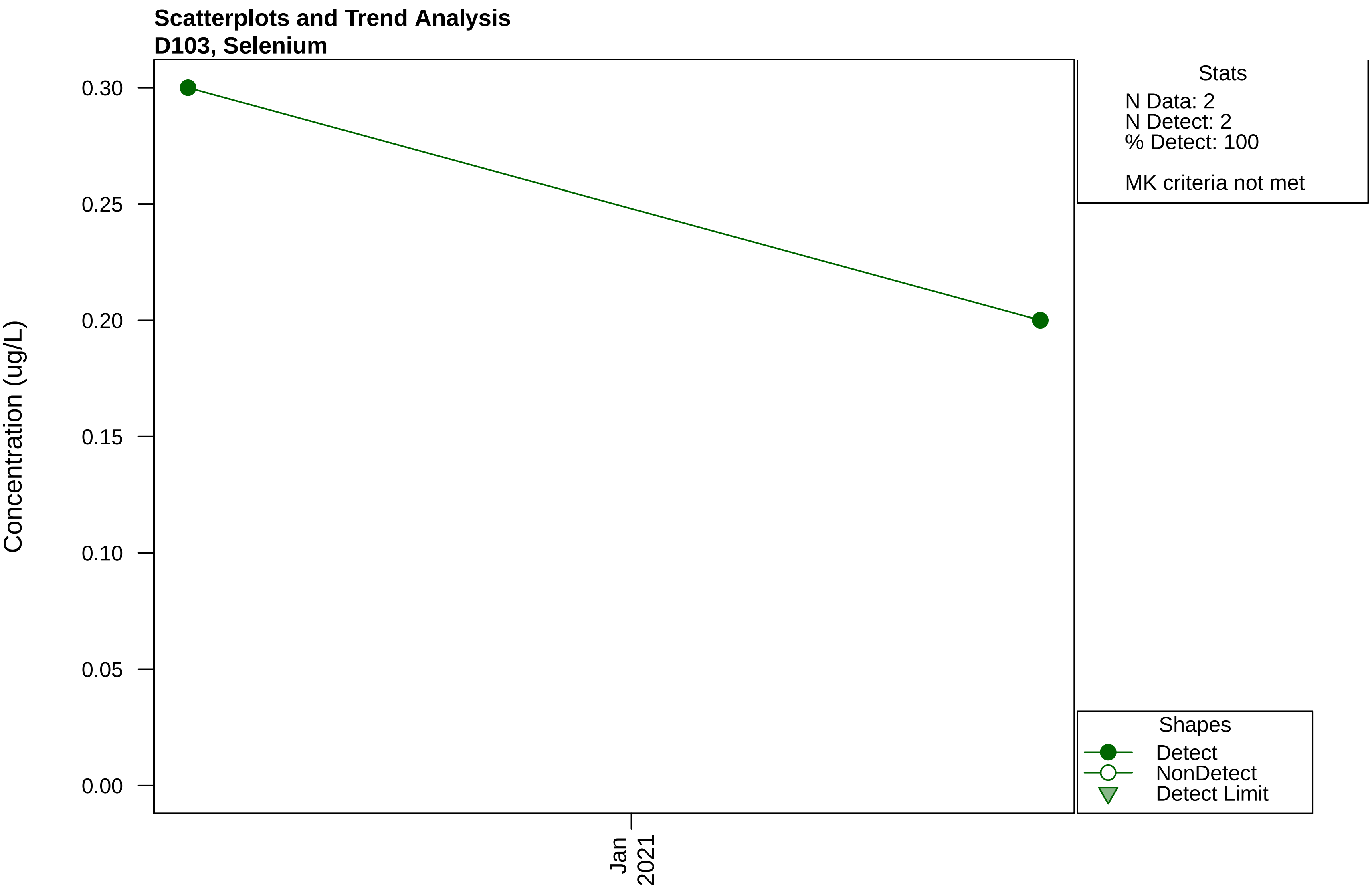
Scatterplots and Trend Analysis
D103, Potassium
Concentration (mg/L)
0
10
20
30
40
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 7
N Detect: 7
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.381
Shapes
Detect
NonDetect
Detect Limit



Scatterplots and Trend Analysis
D103, Potassium (Filtered)
Concentration (mg/L)
0
5
10
15
20
25
30
35
Nov
2020
Stats
N Data: 1
N Detect: 1
% Detect: 100
MK criteria not met
Shapes
Detect
NonDetect
Detect Limit

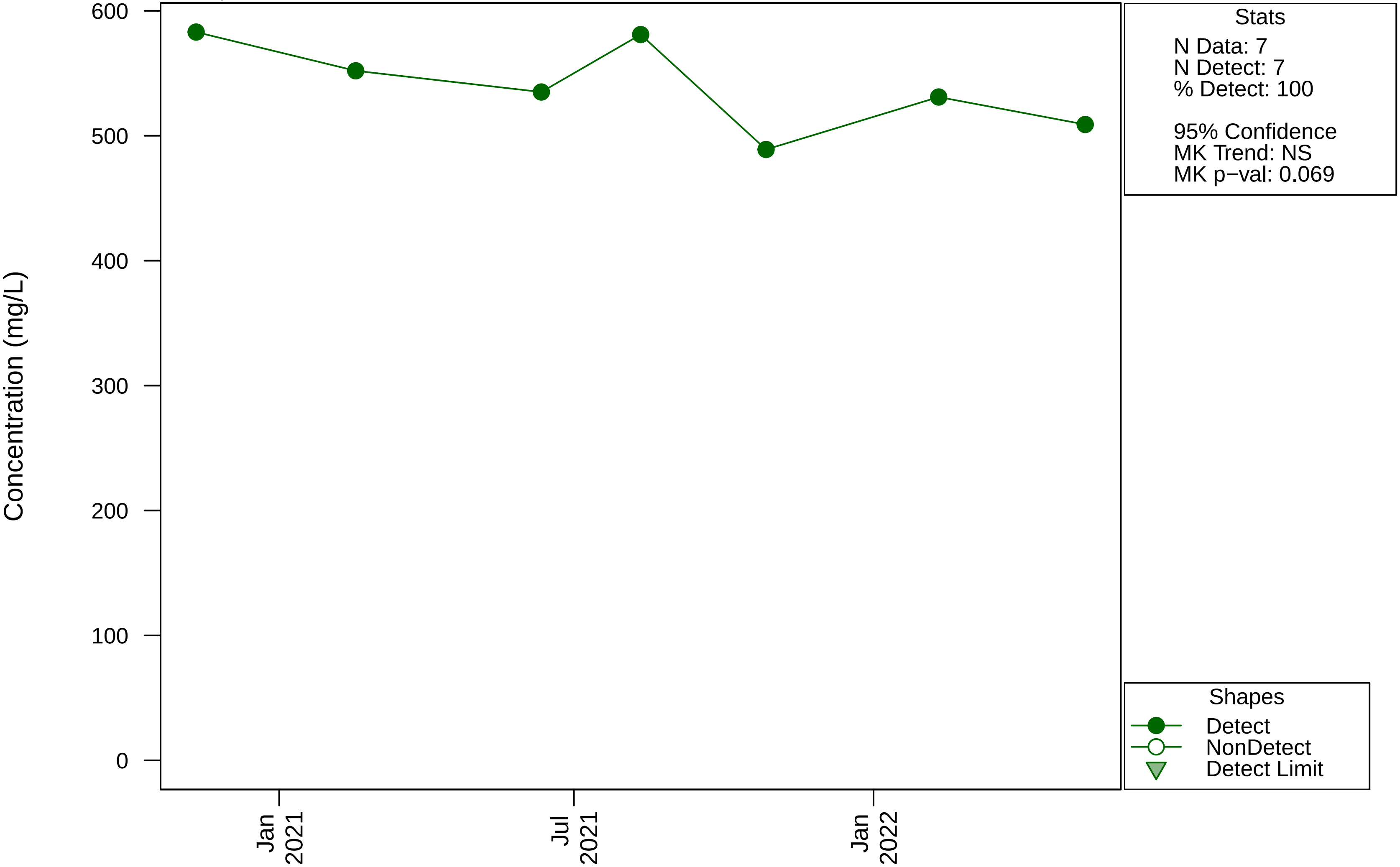
Scatterplots and Trend Analysis
D103, Redox (Field)



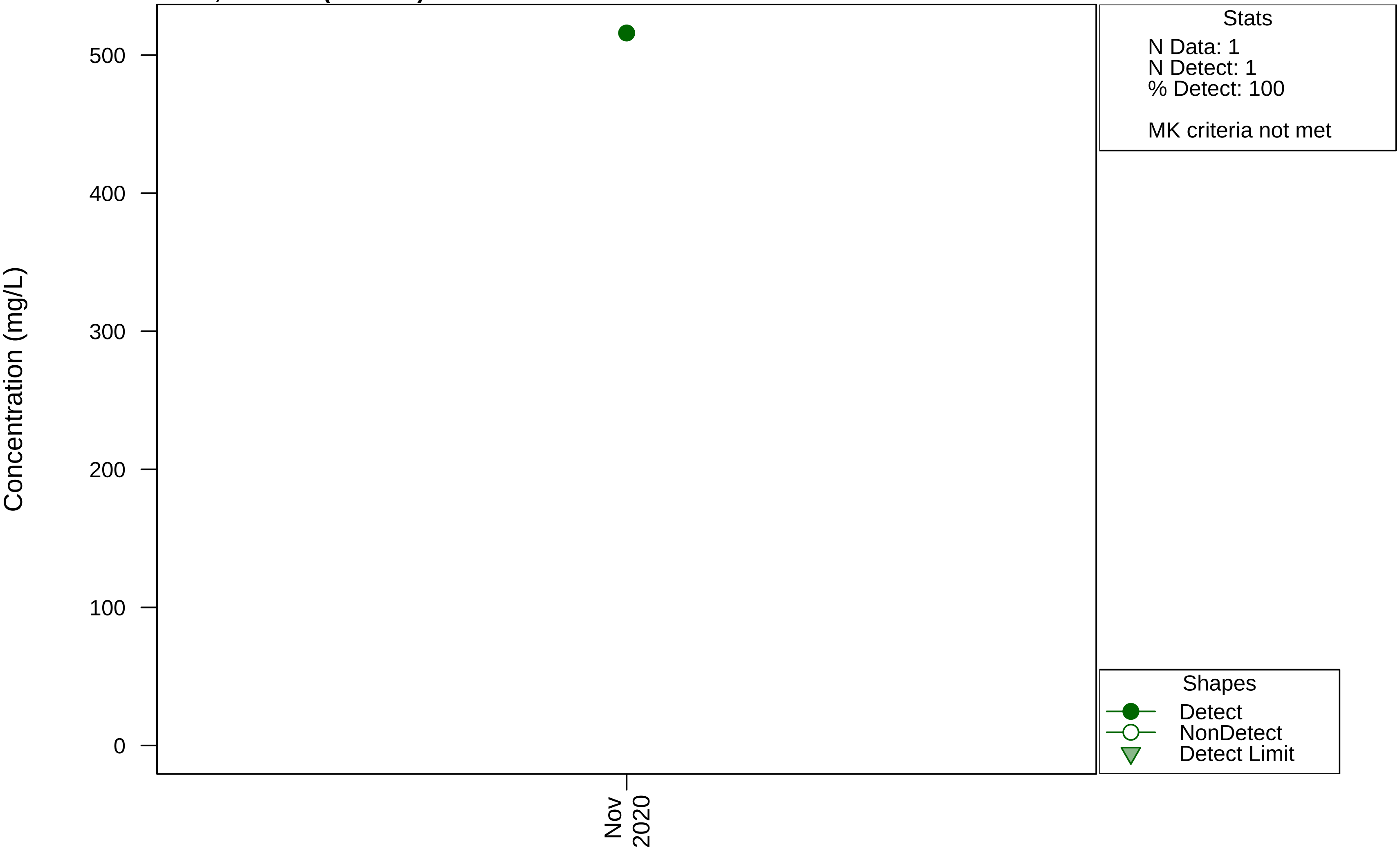


Scatterplots and Trend Analysis
D103, Selenium
Concentration (ug/L)
0.30
0.25
0.20
0.15
0.10
0.05
0.00
Jan 2021
Stats
N Data: 2
N Detect: 2
% Detect: 100
MK criteria not met
Shapes
Detect
NonDetect
Detect Limit

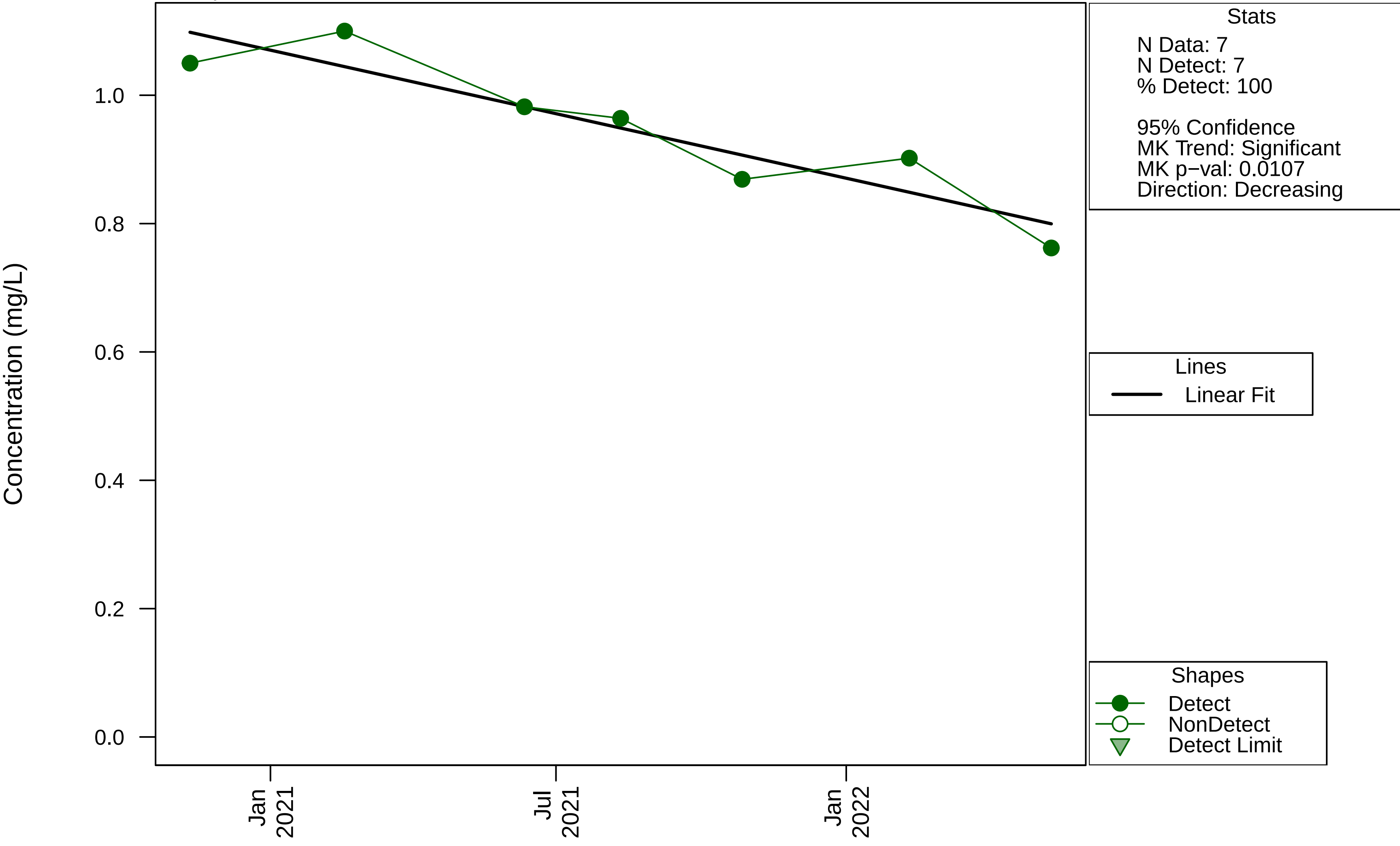
Scatterplots and Trend Analysis
D103, Sodium



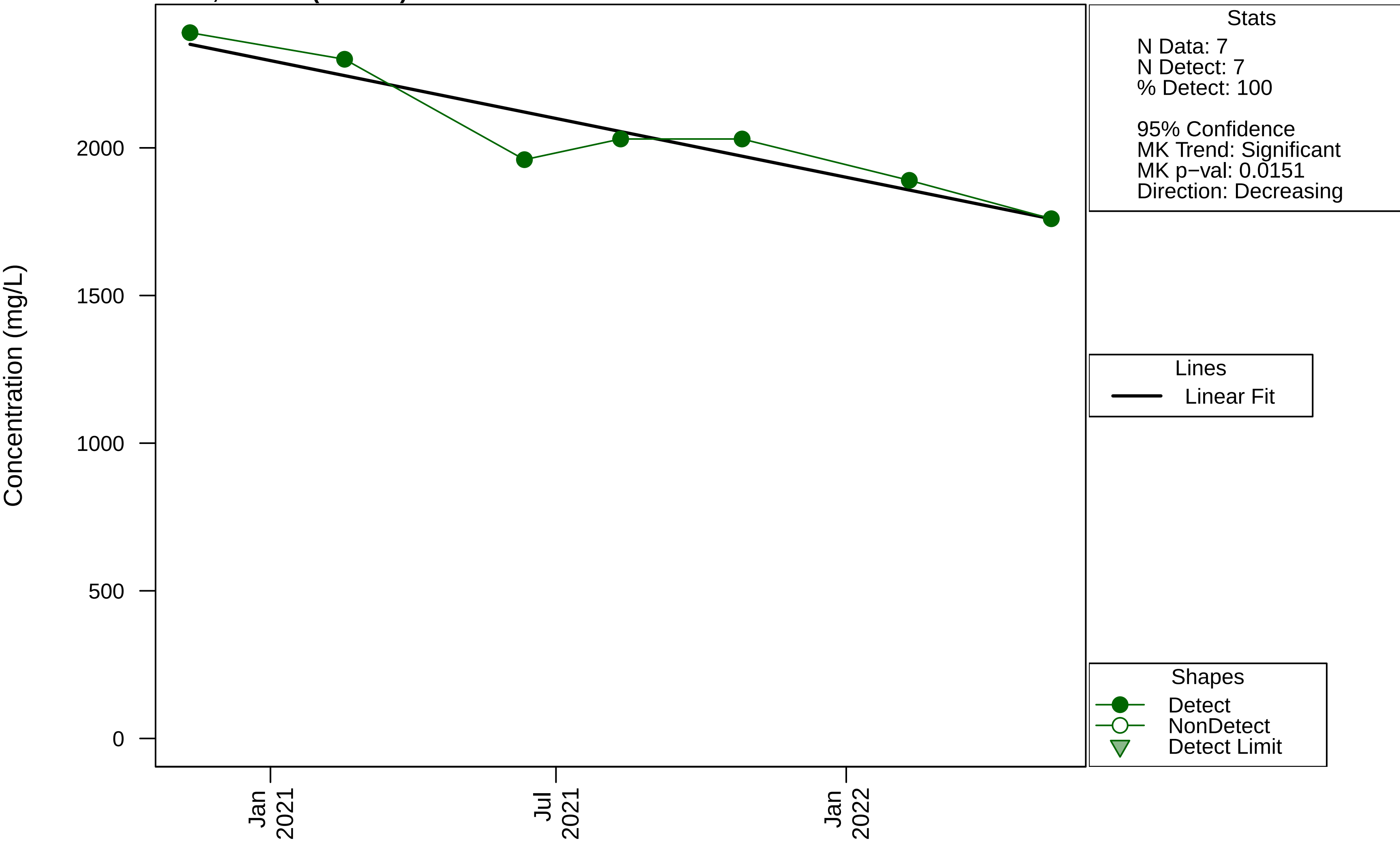
Scatterplots and Trend Analysis
D103, Sodium (Filtered)



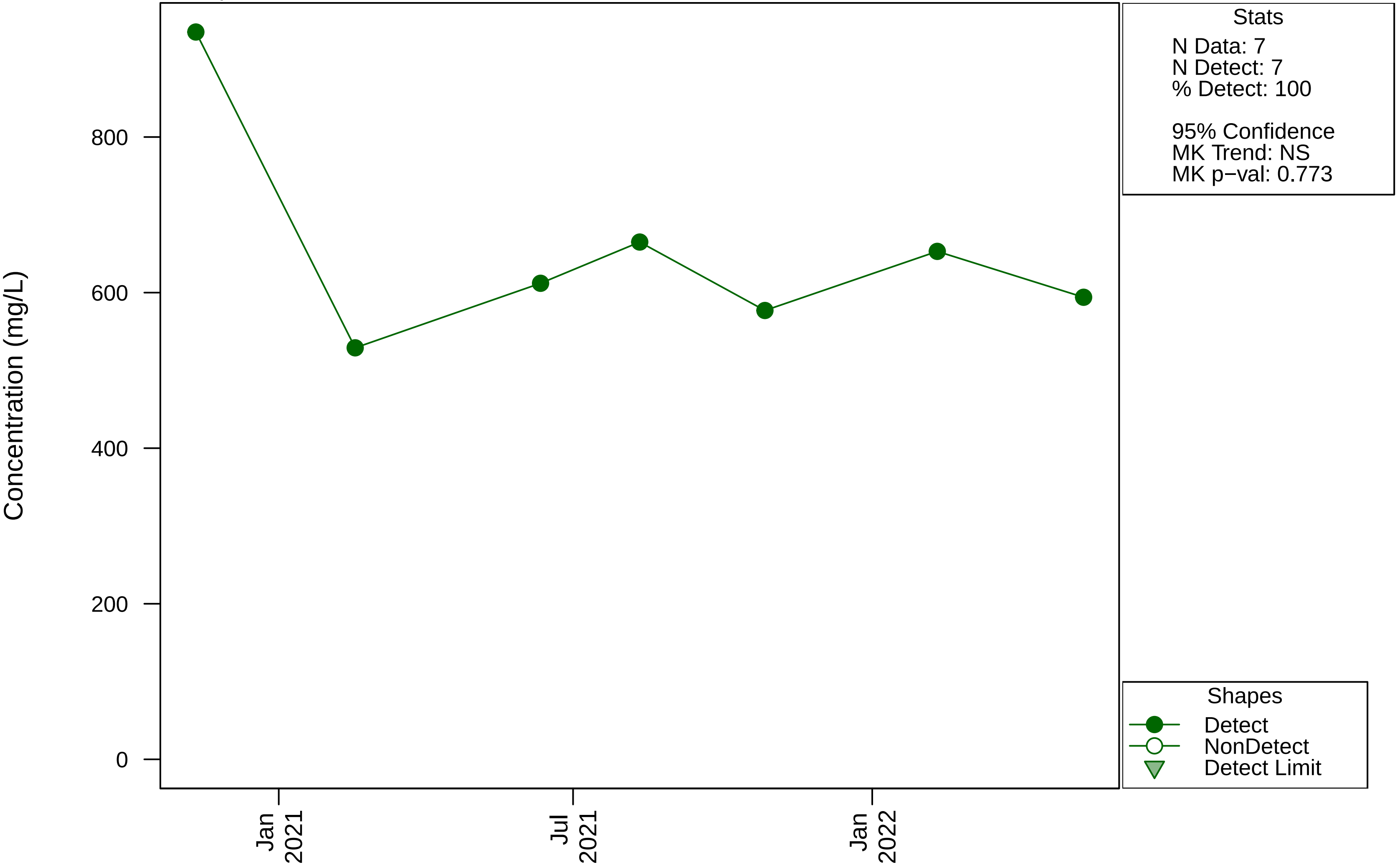
Scatterplots and Trend Analysis
D103, Strontium

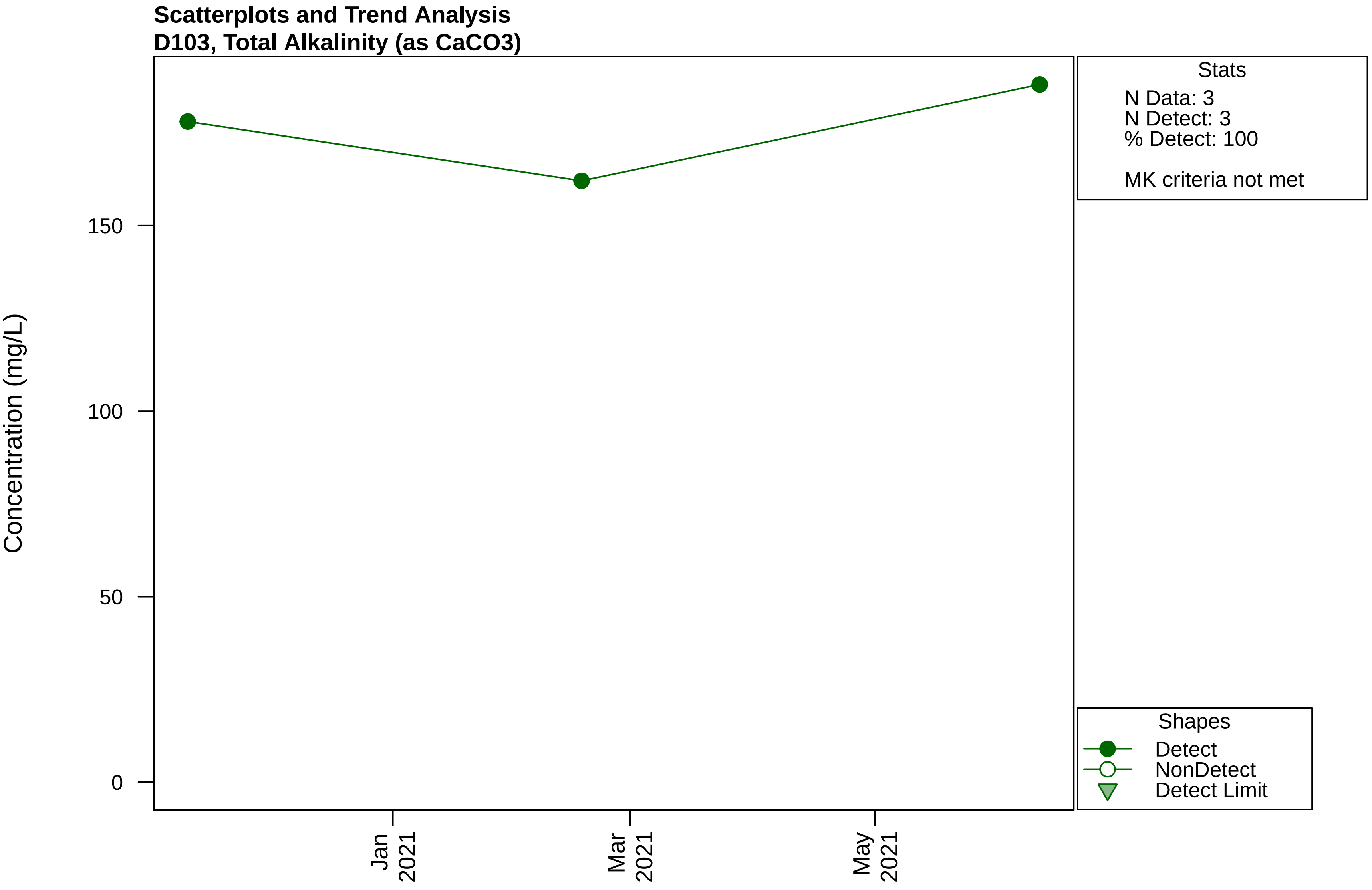


Scatterplots and Trend Analysis
D103, Sulfate (as SO4)

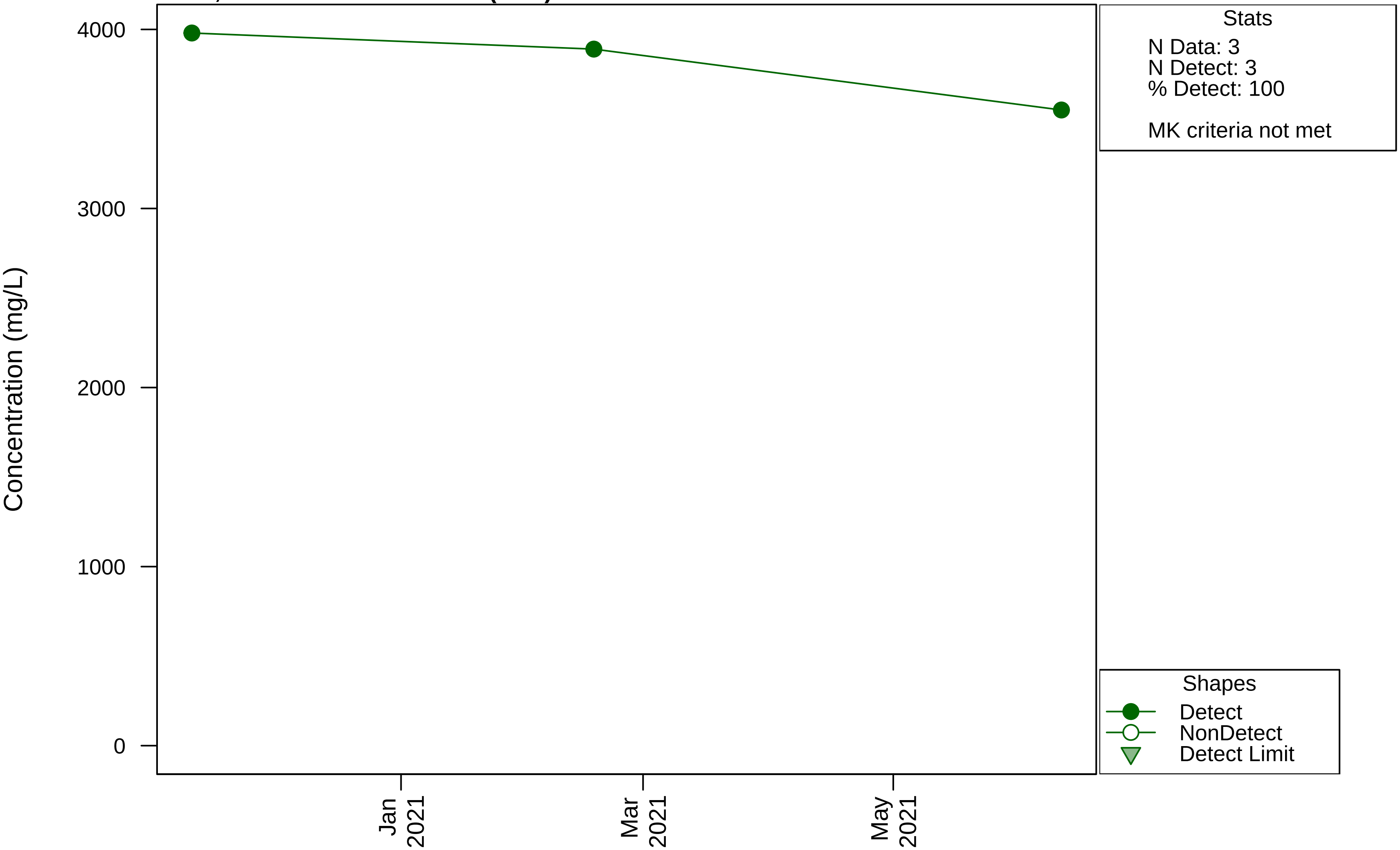


Scatterplots and Trend Analysis
D103, Sulfur

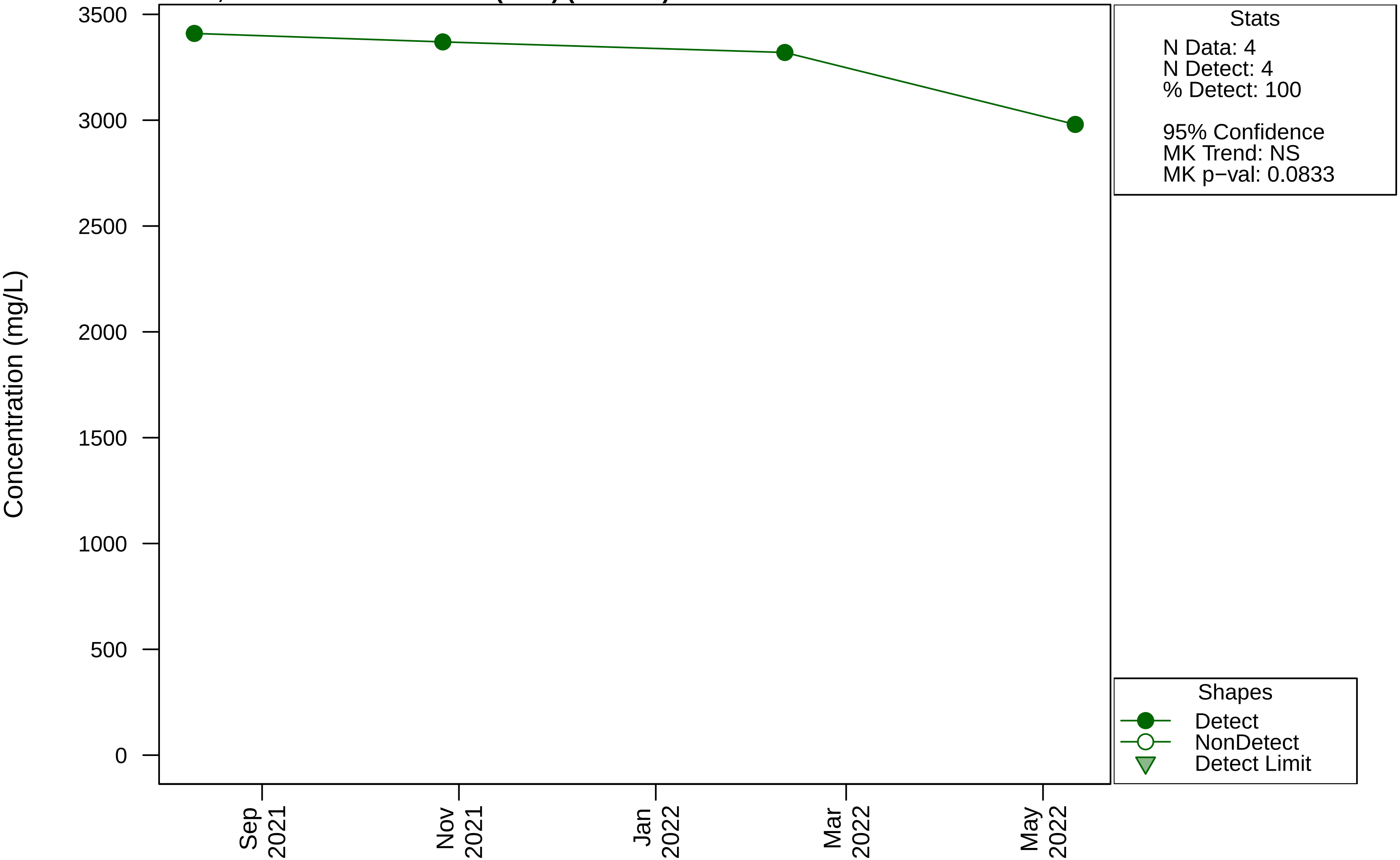


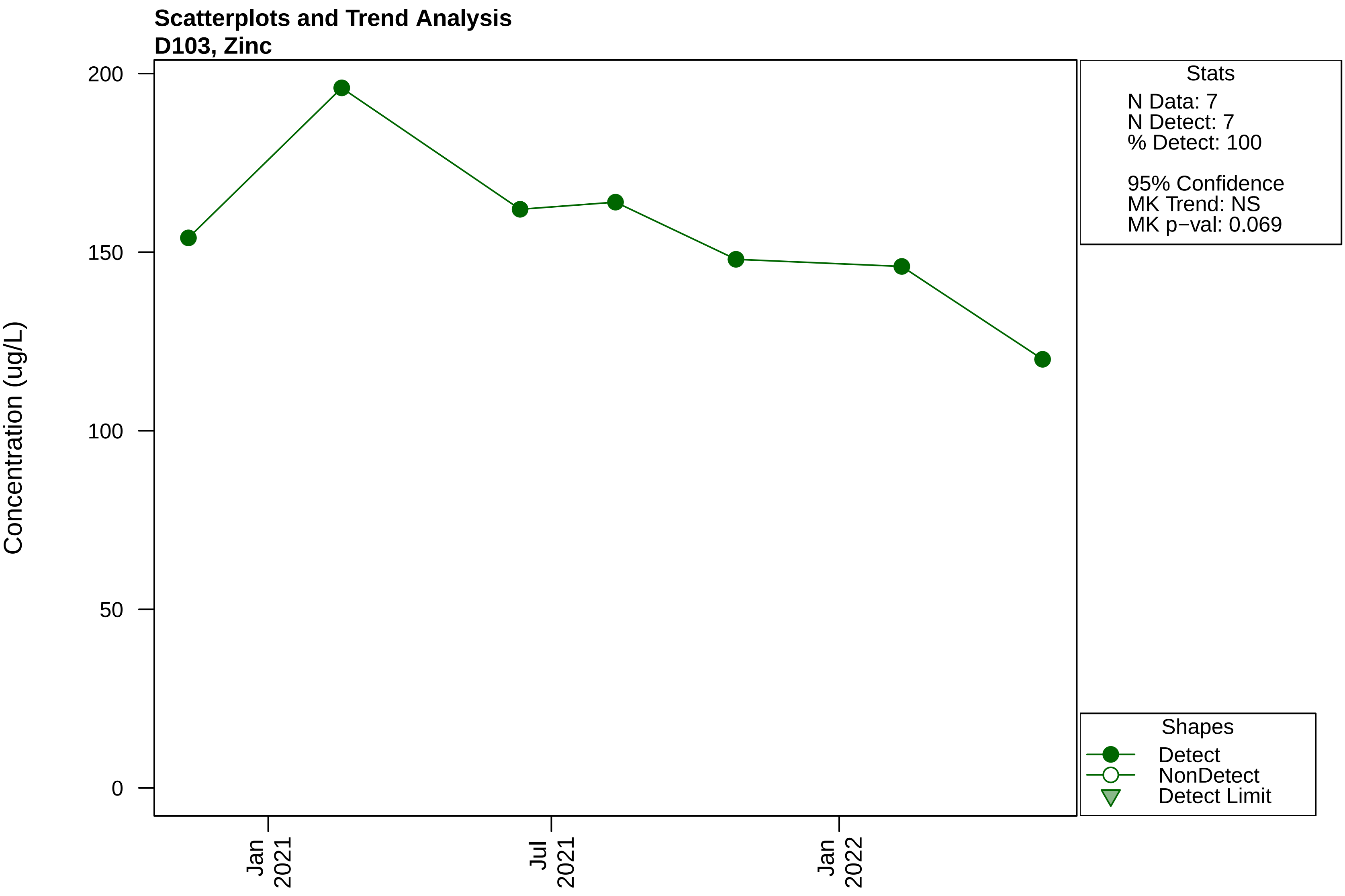

Scatterplots and Trend Analysis
D103, Total Alkalinity (as CaCO3)
Concentration (mg/L)
0
50
100
150
Jan 2021
Mar 2021
May 2021
Stats
N Data: 3
N Detect: 3
% Detect: 100
MK criteria not met
Shapes
Detect
NonDetect
Detect Limit

Scatterplots and Trend Analysis
D103, Total Dissolved Solids (TDS)

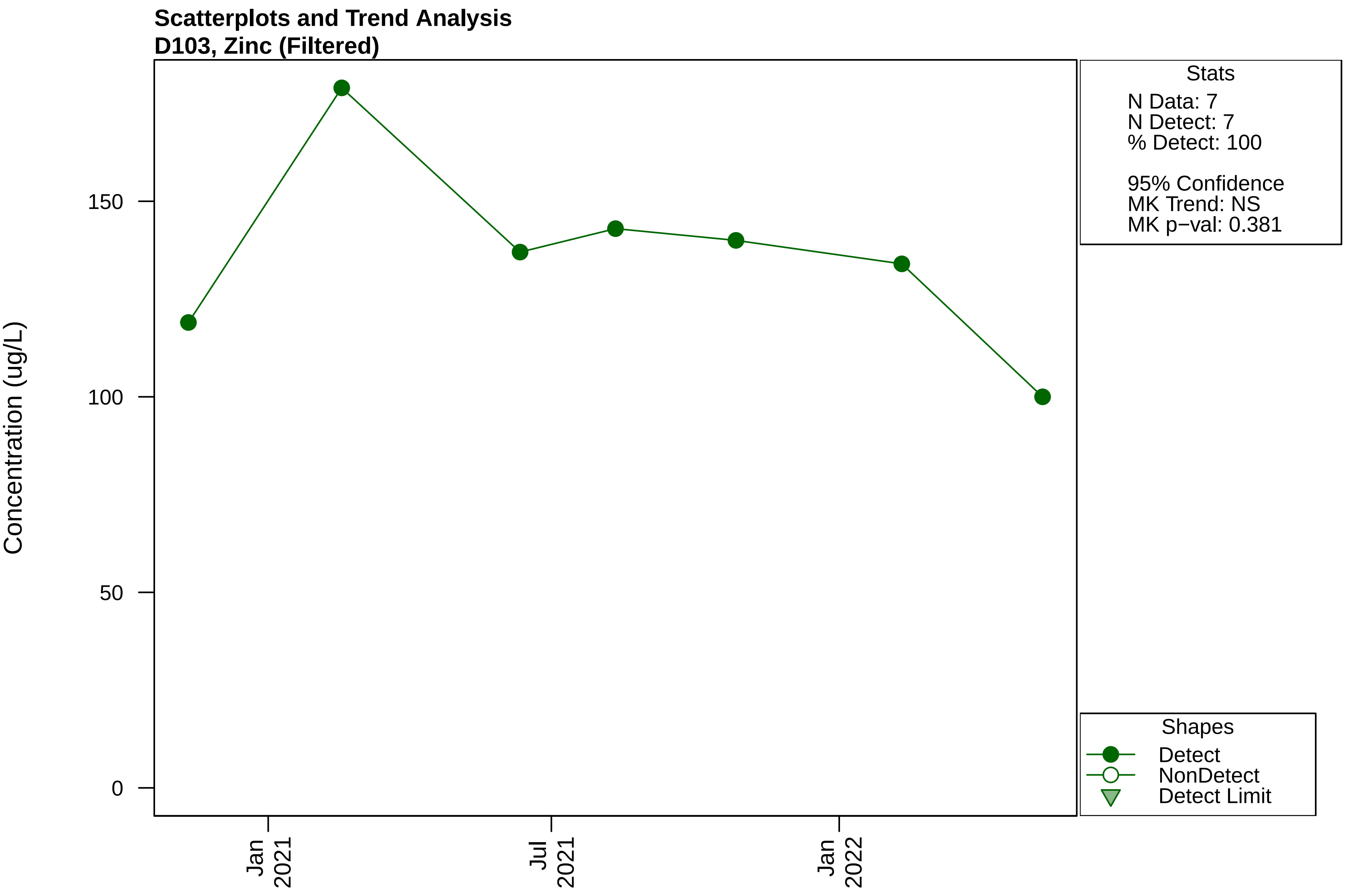


Scatterplots and Trend Analysis
D103, Total Dissolved Solids (TDS) (Filtered)

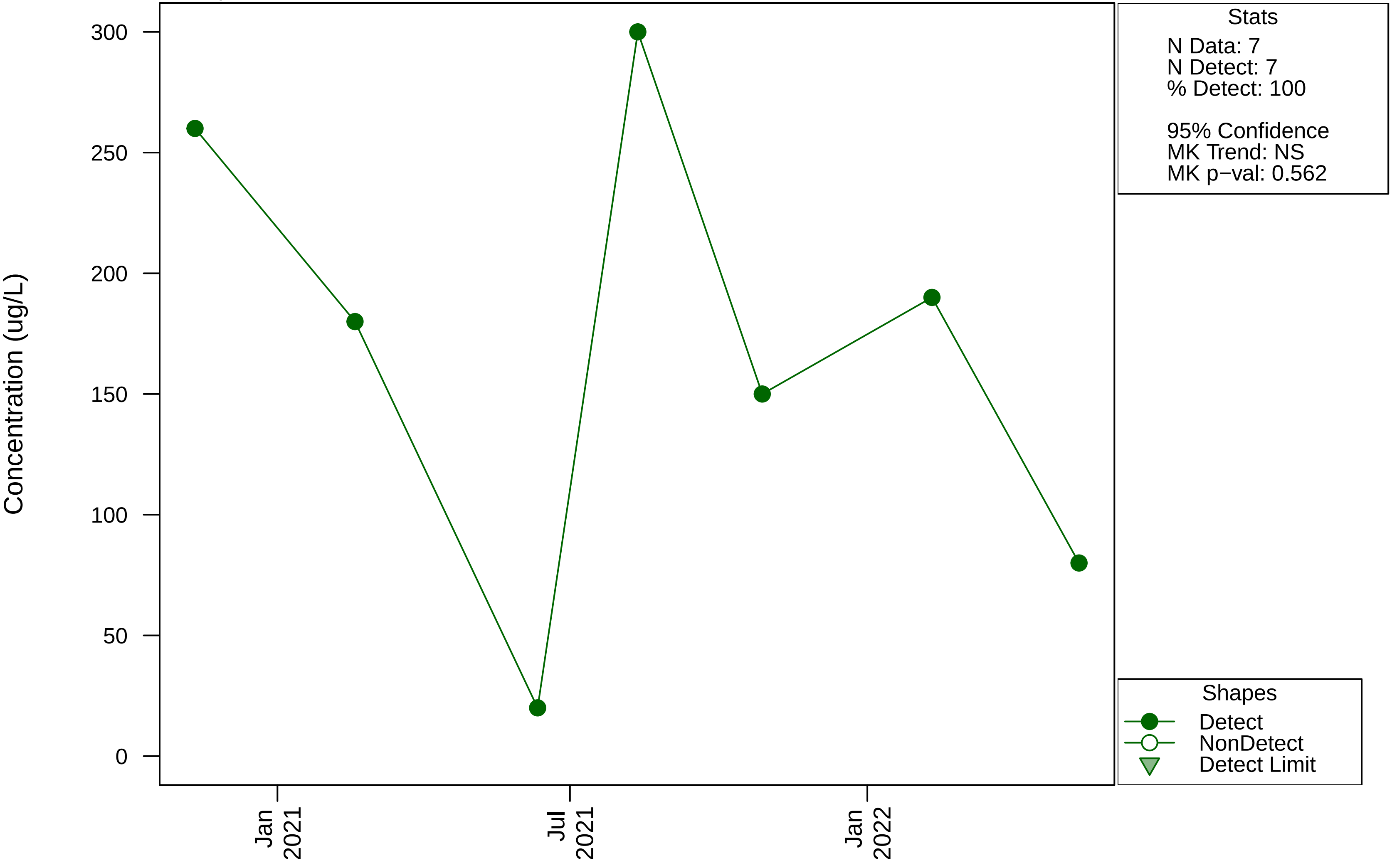


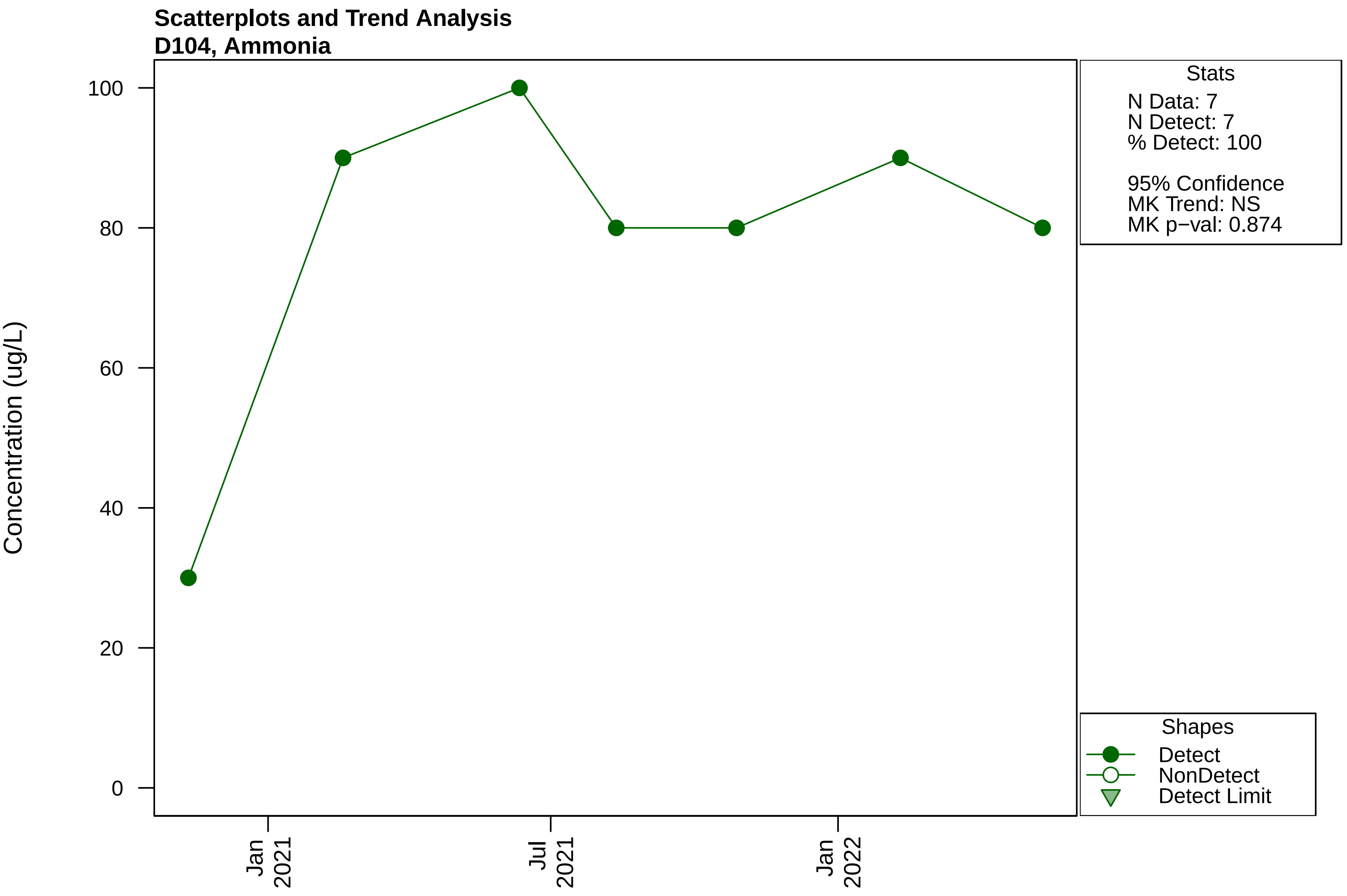


Scatterplots and Trend Analysis
D103, Zinc
Concentration (ug/L)
200
150
100
50
0
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 7
N Detect: 7
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.069
Shapes
Detect
NonDetect
Detect Limit

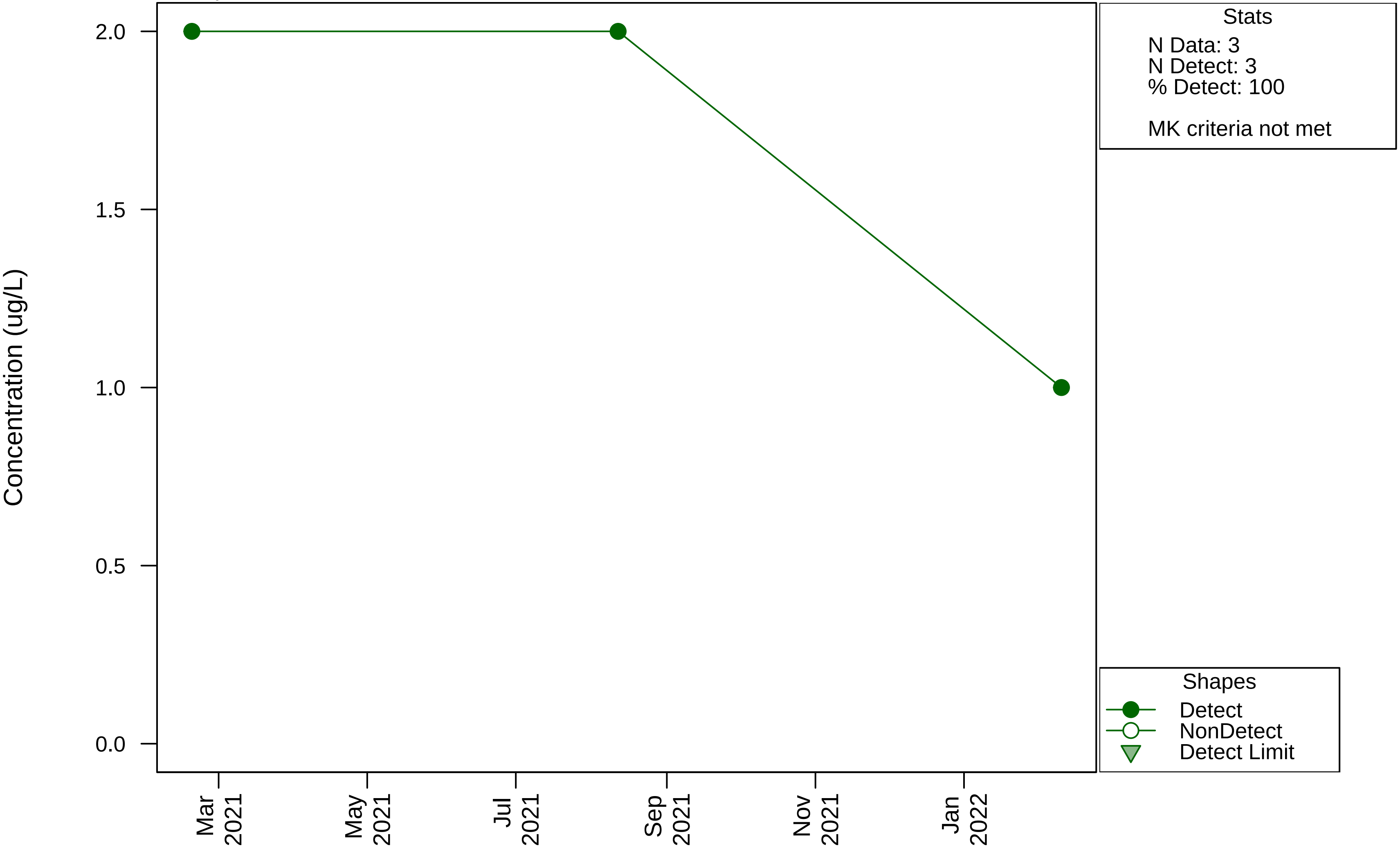

Scatterplots and Trend Analysis
D103, Zinc (Filtered)
Concentration (ug/L)
0
50
100
150
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 7
N Detect: 7
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.381
Shapes
Detect
NonDetect
Detect Limit

Scatterplots and Trend Analysis
D104, Aluminium

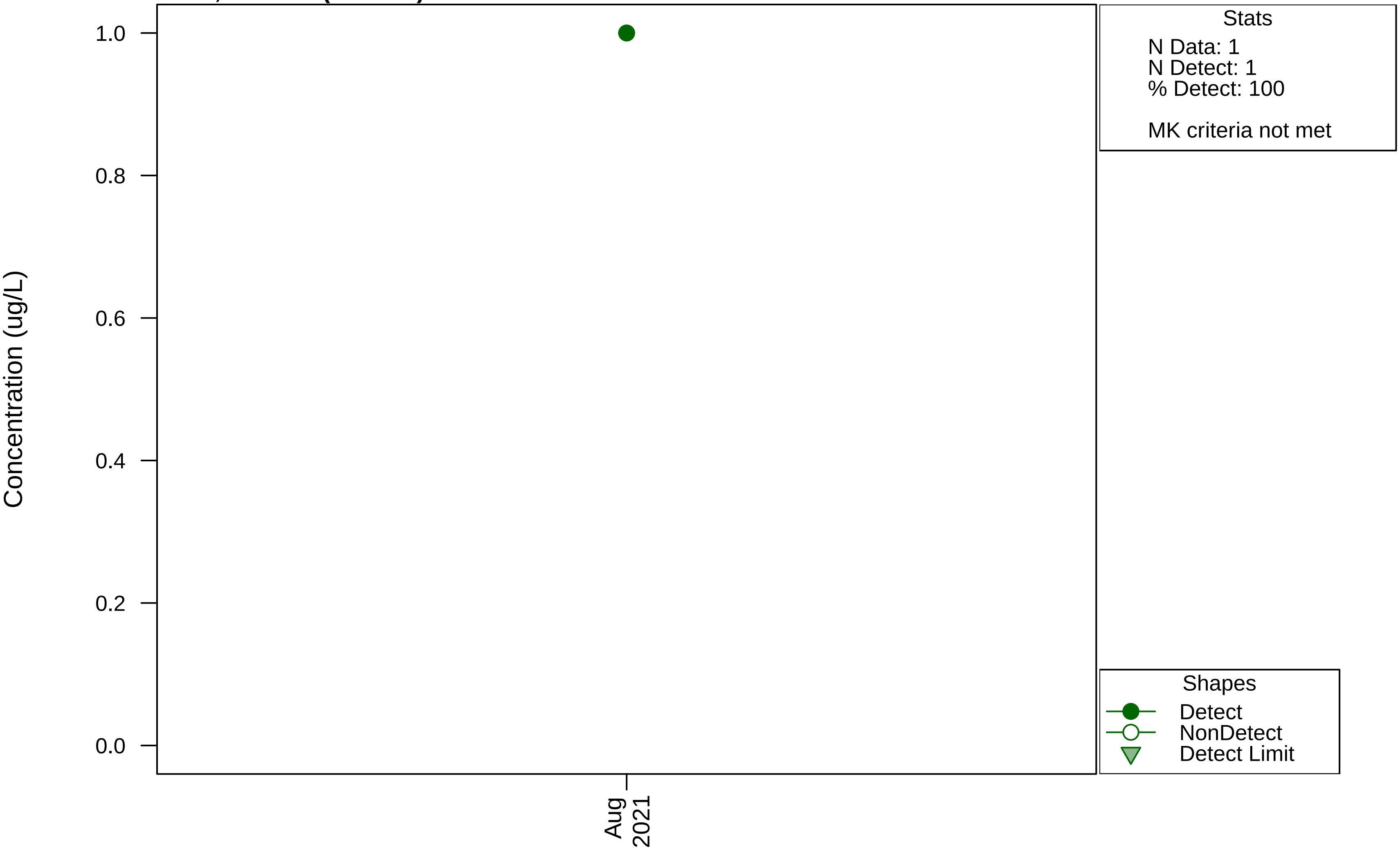


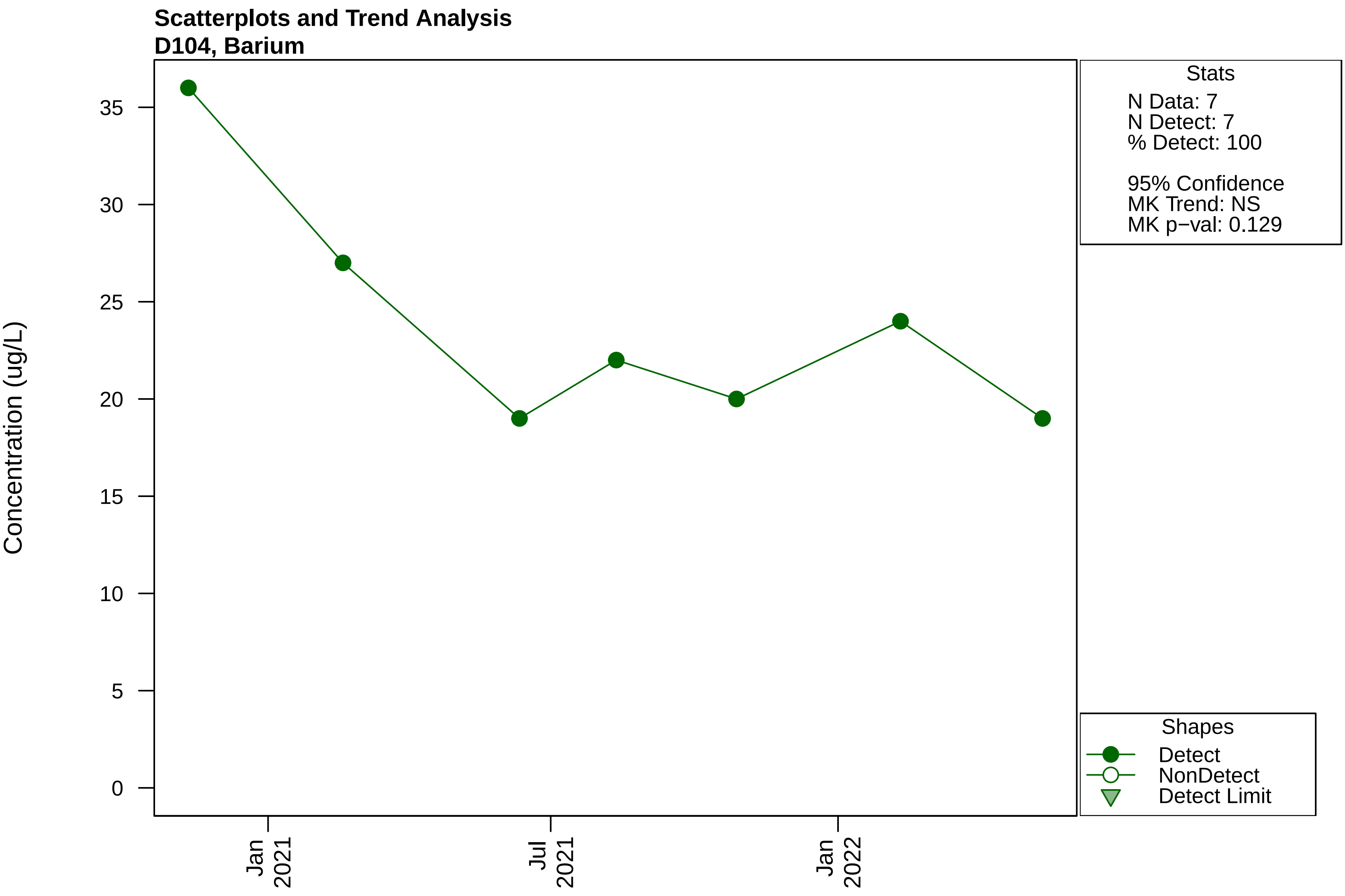

Scatterplots and Trend Analysis
D104, Ammonia
Concentration (ug/L)
0
20
40
60
80
100
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 7
N Detect: 7
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.874
Shapes
Detect
NonDetect
Detect Limit

Scatterplots and Trend Analysis
D104, Arsenic

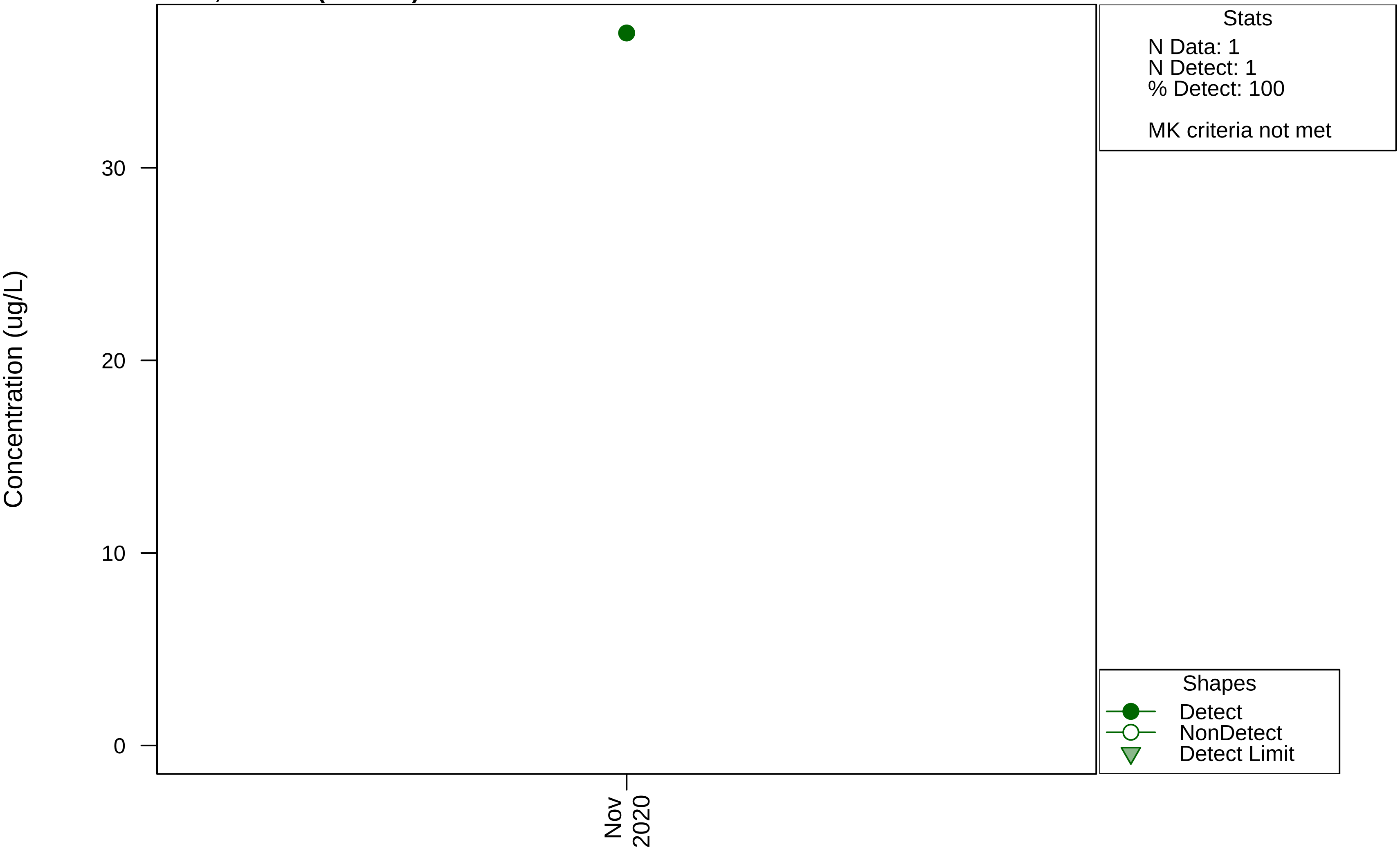


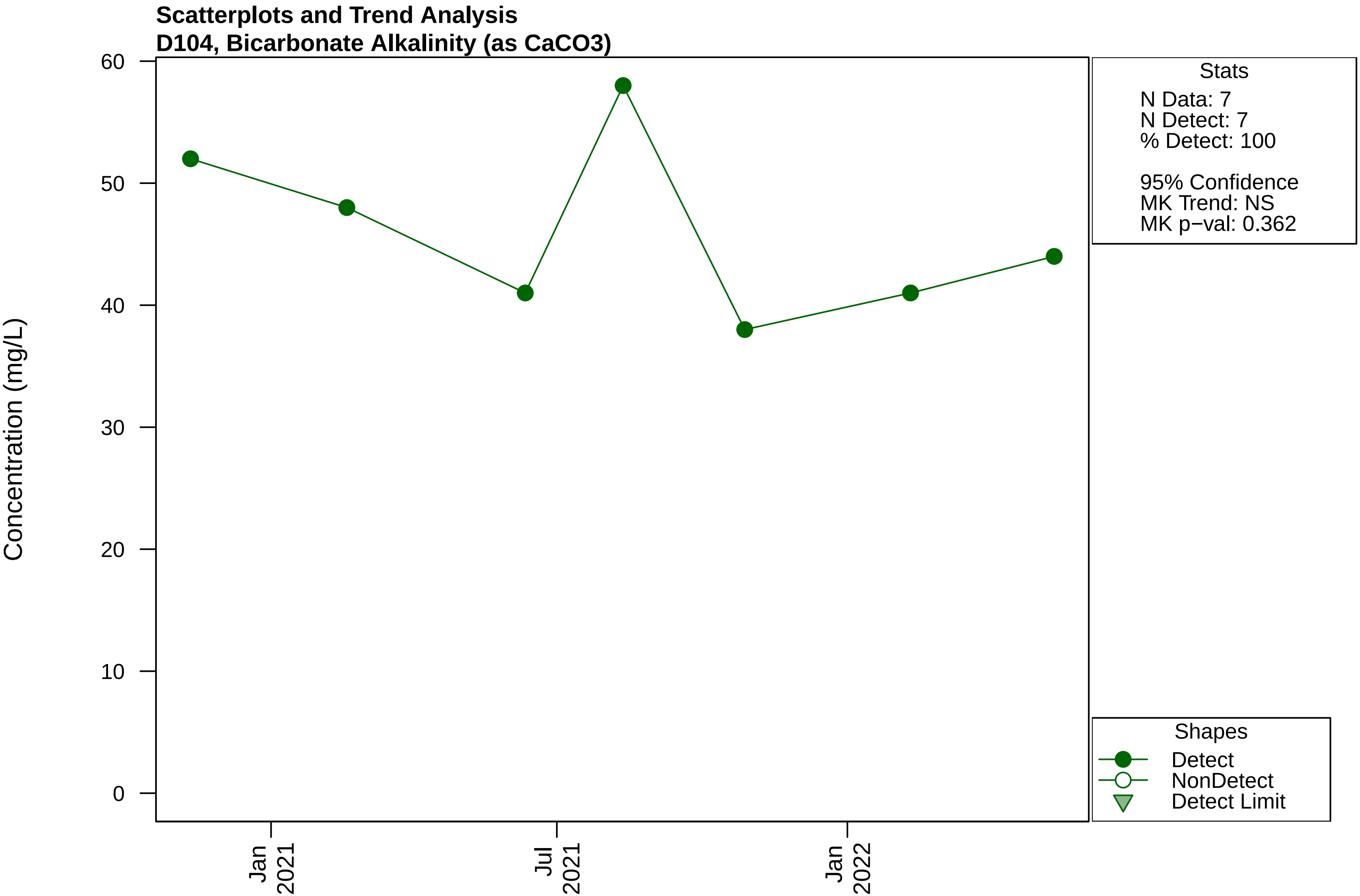
Scatterplots and Trend Analysis
D104, Arsenic (Filtered)



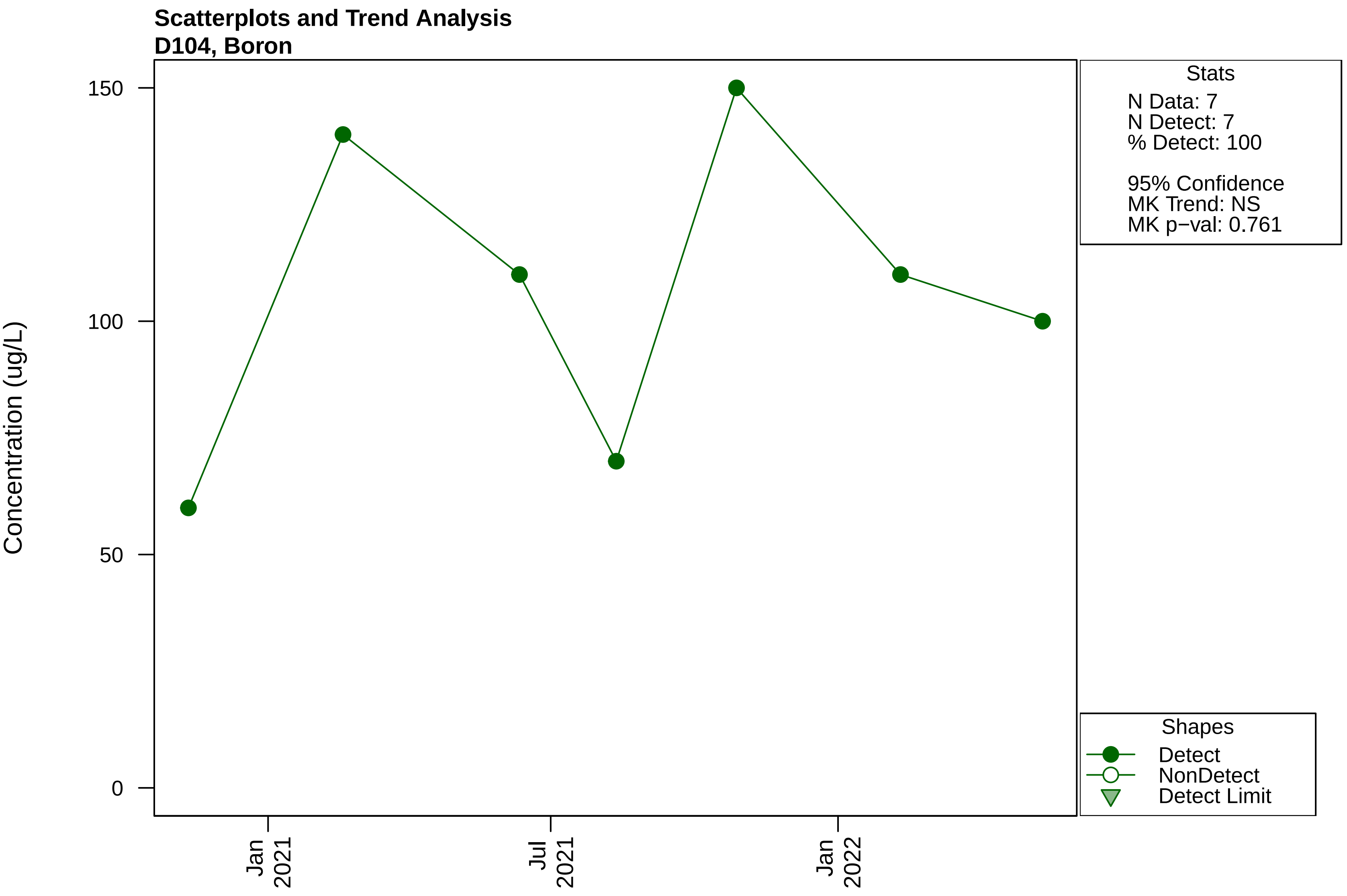

Scatterplots and Trend Analysis
D104, Barium
Concentration (ug/L)
35
30
25
20
15
10
5
0
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 7
N Detect: 7
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.129
Shapes
Detect
NonDetect
Detect Limit

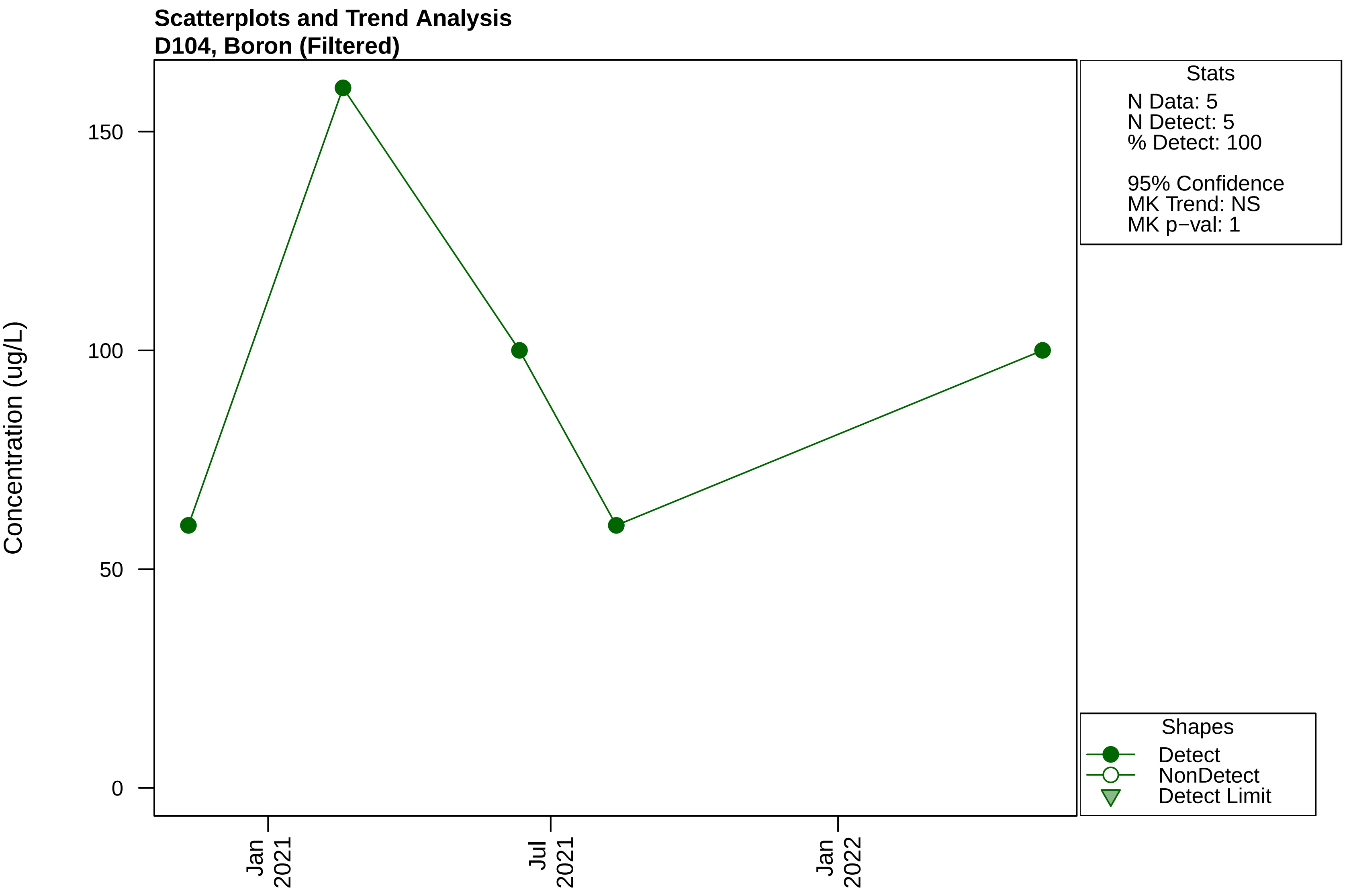
Scatterplots and Trend Analysis
D104, Barium (Filtered)



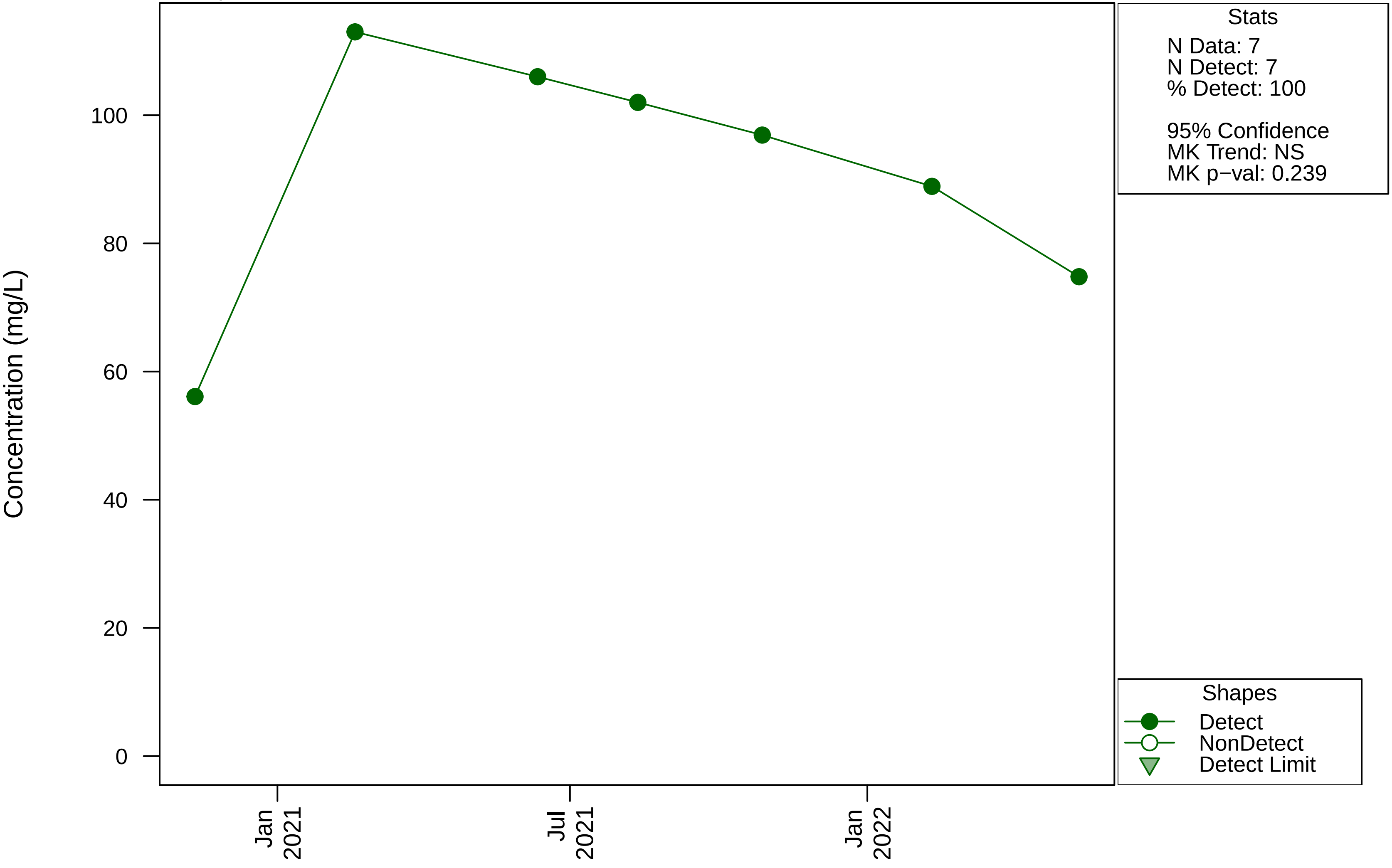


Scatterplots and Trend Analysis
D104, Bicarbonate Alkalinity (as CaCO3)
Concentration (mg/L)
0
10
20
30
40
50
60
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 7
N Detect: 7
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.362
Shapes
Detect
NonDetect
Detect Limit

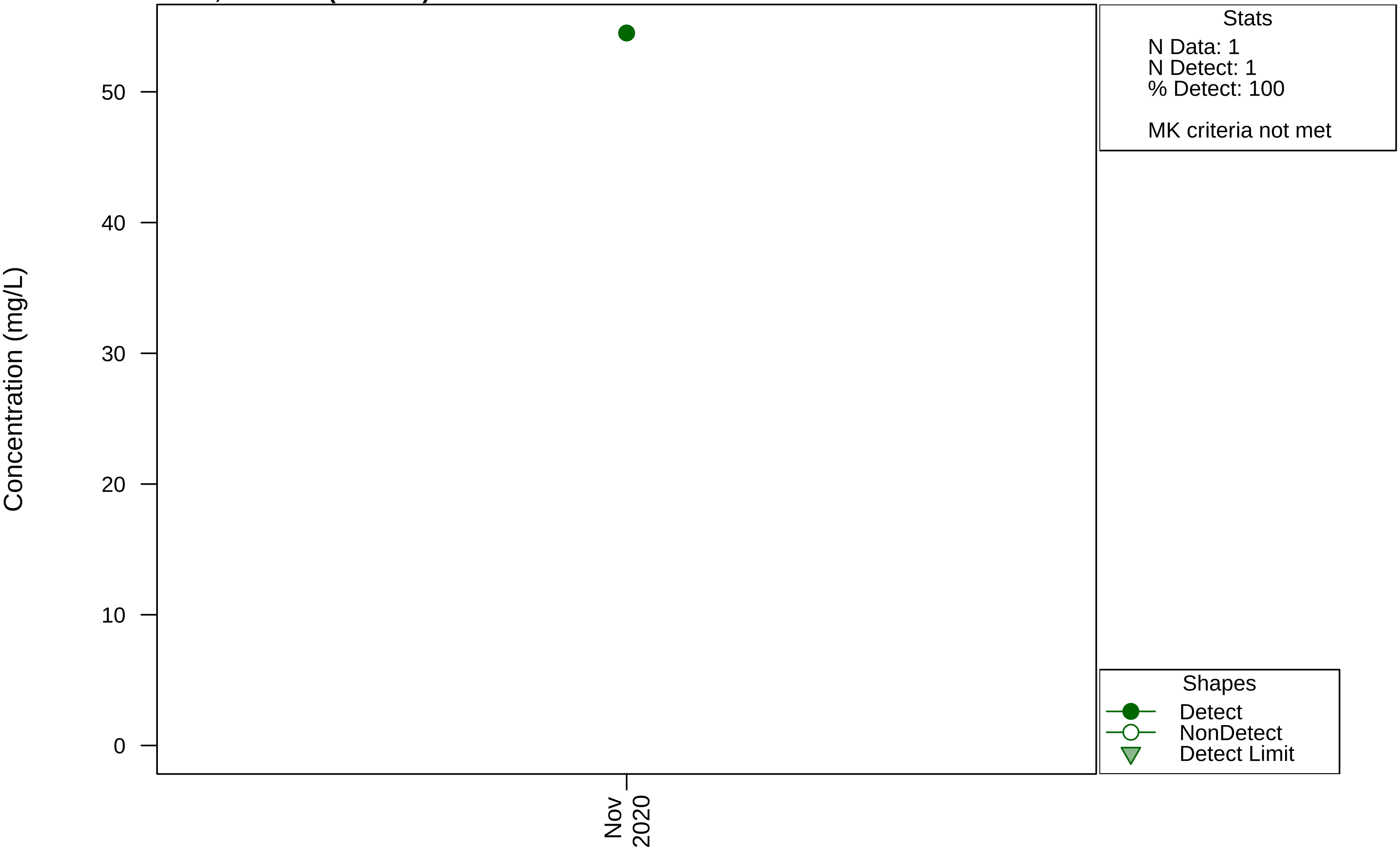

Scatterplots and Trend Analysis
D104, Boron
Concentration (ug/L)
150
100
50
0
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 7
N Detect: 7
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.761
Shapes
Detect
NonDetect
Detect Limit

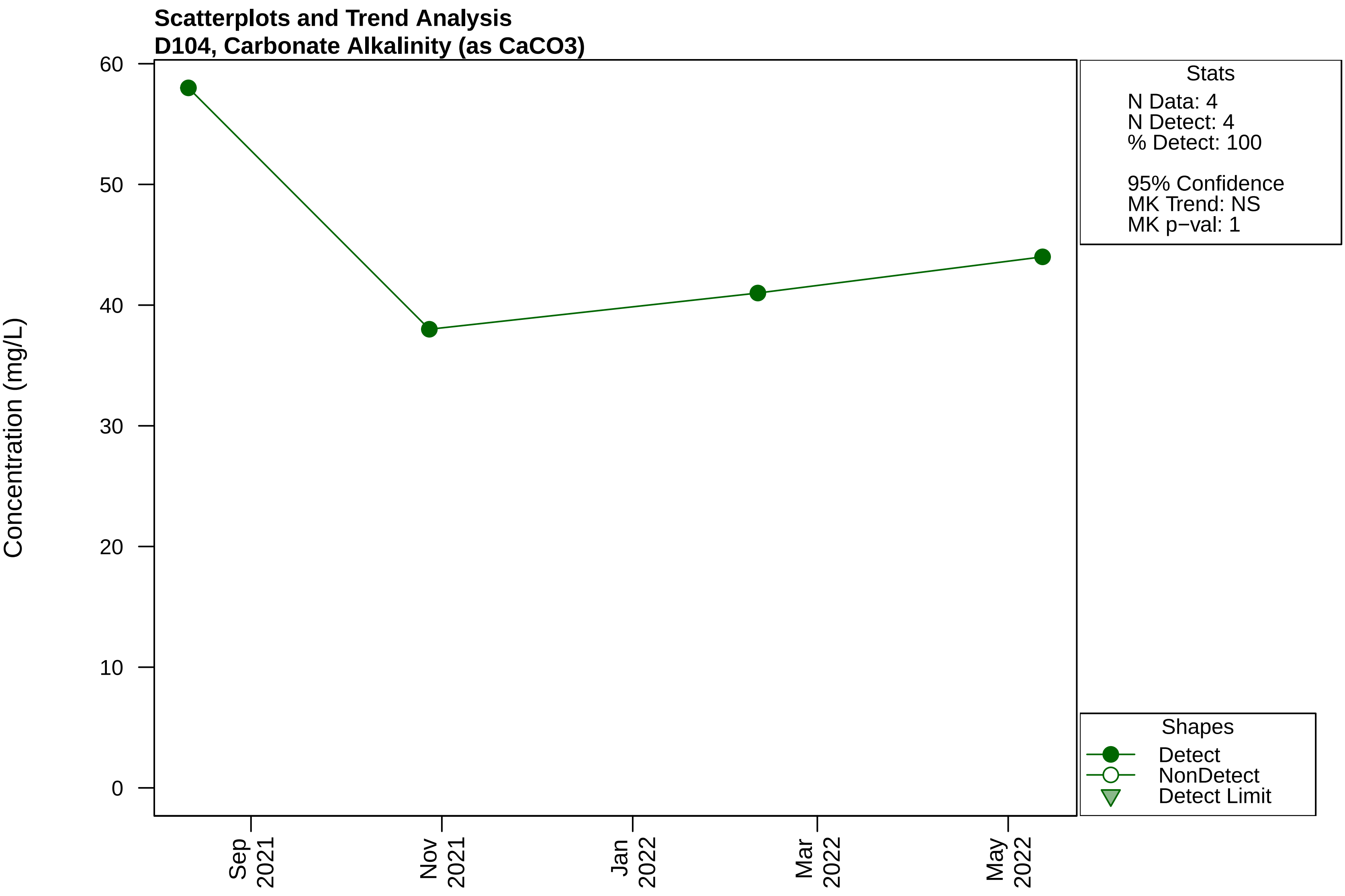

Scatterplots and Trend Analysis
D104, Boron (Filtered)
Concentration (ug/L)
0
50
100
150
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 5
N Detect: 5
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 1
Shapes
Detect
NonDetect
Detect Limit

Scatterplots and Trend Analysis
D104, Calcium



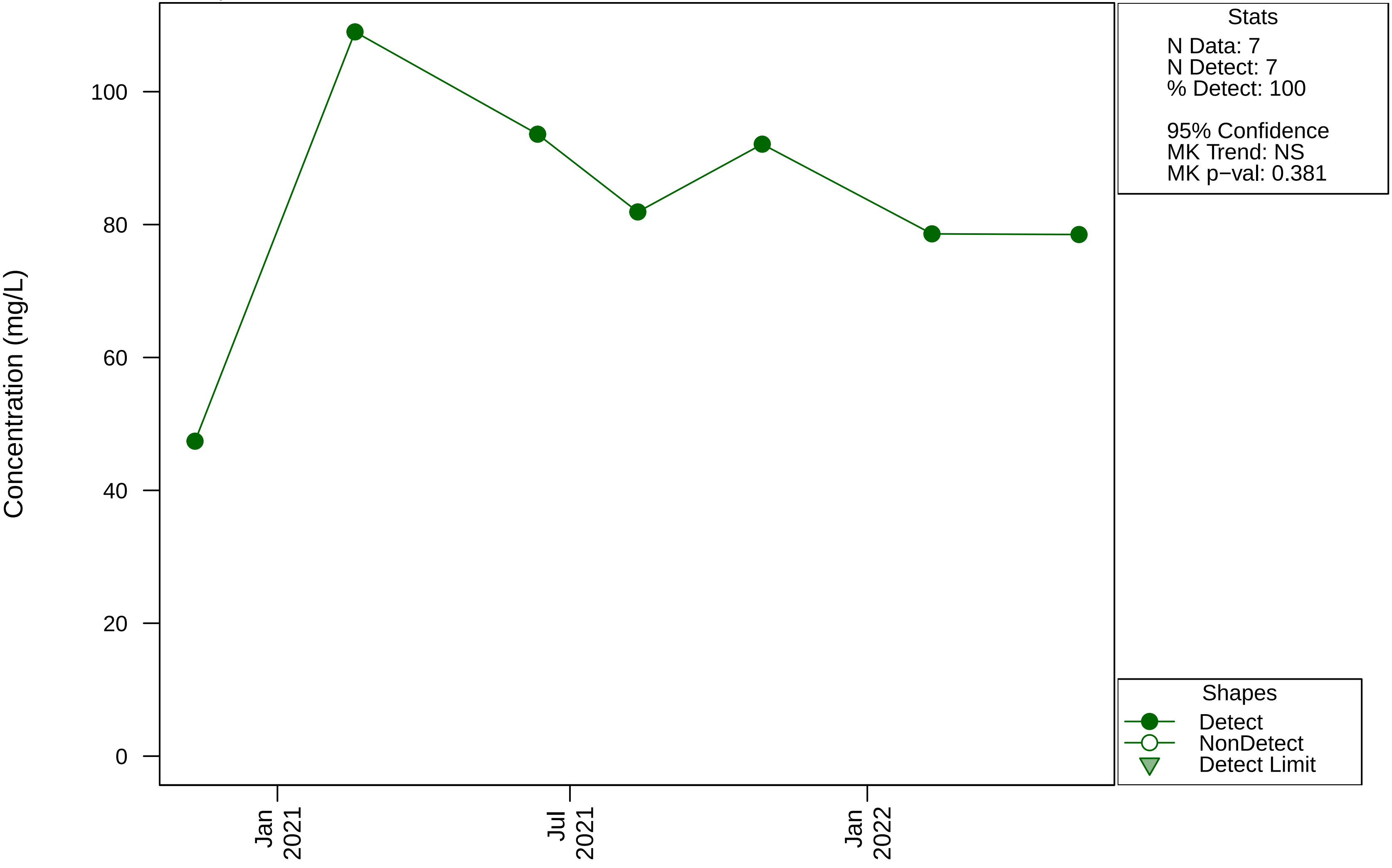
Scatterplots and Trend Analysis
D104, Calcium (Filtered)

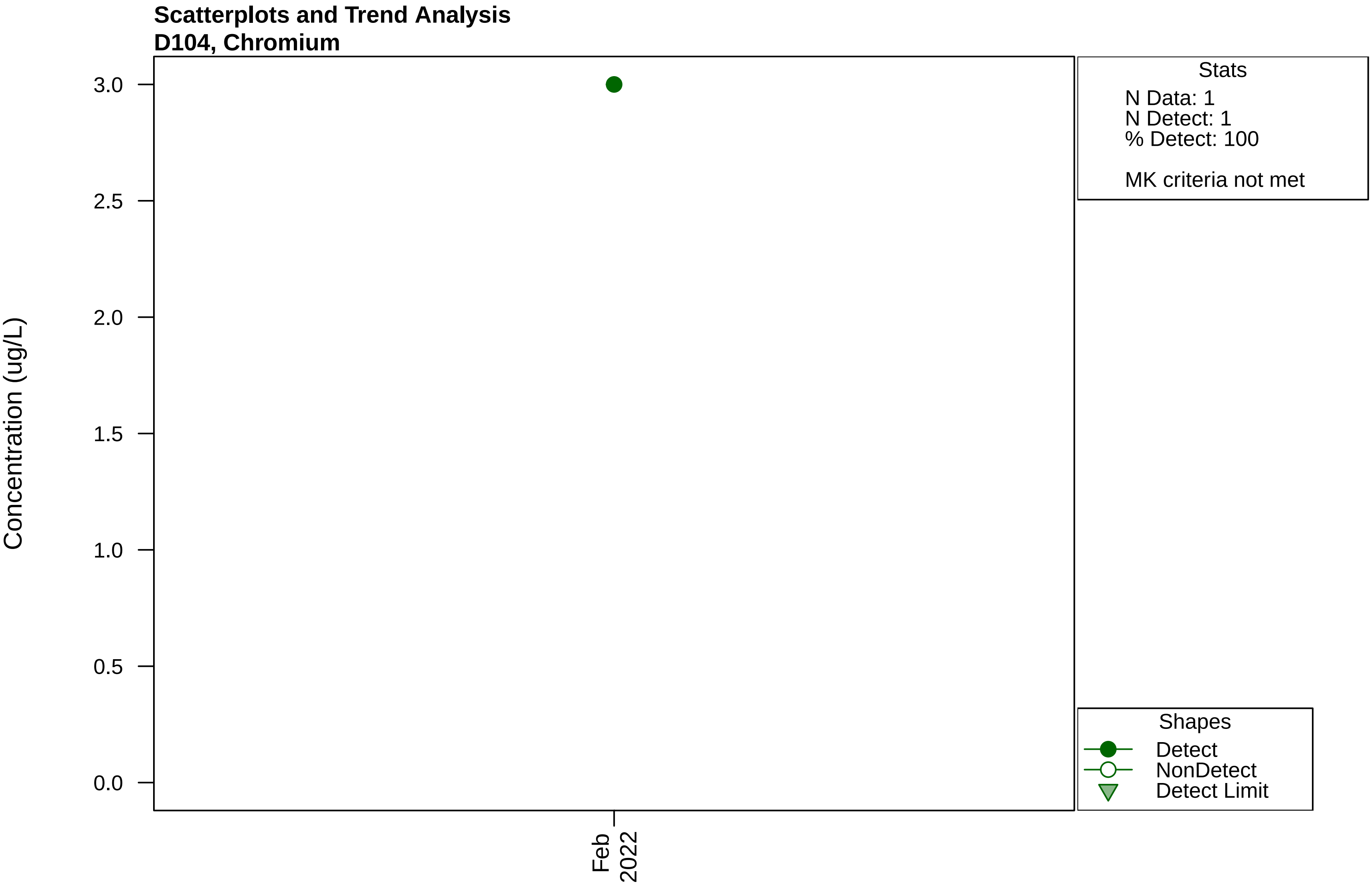


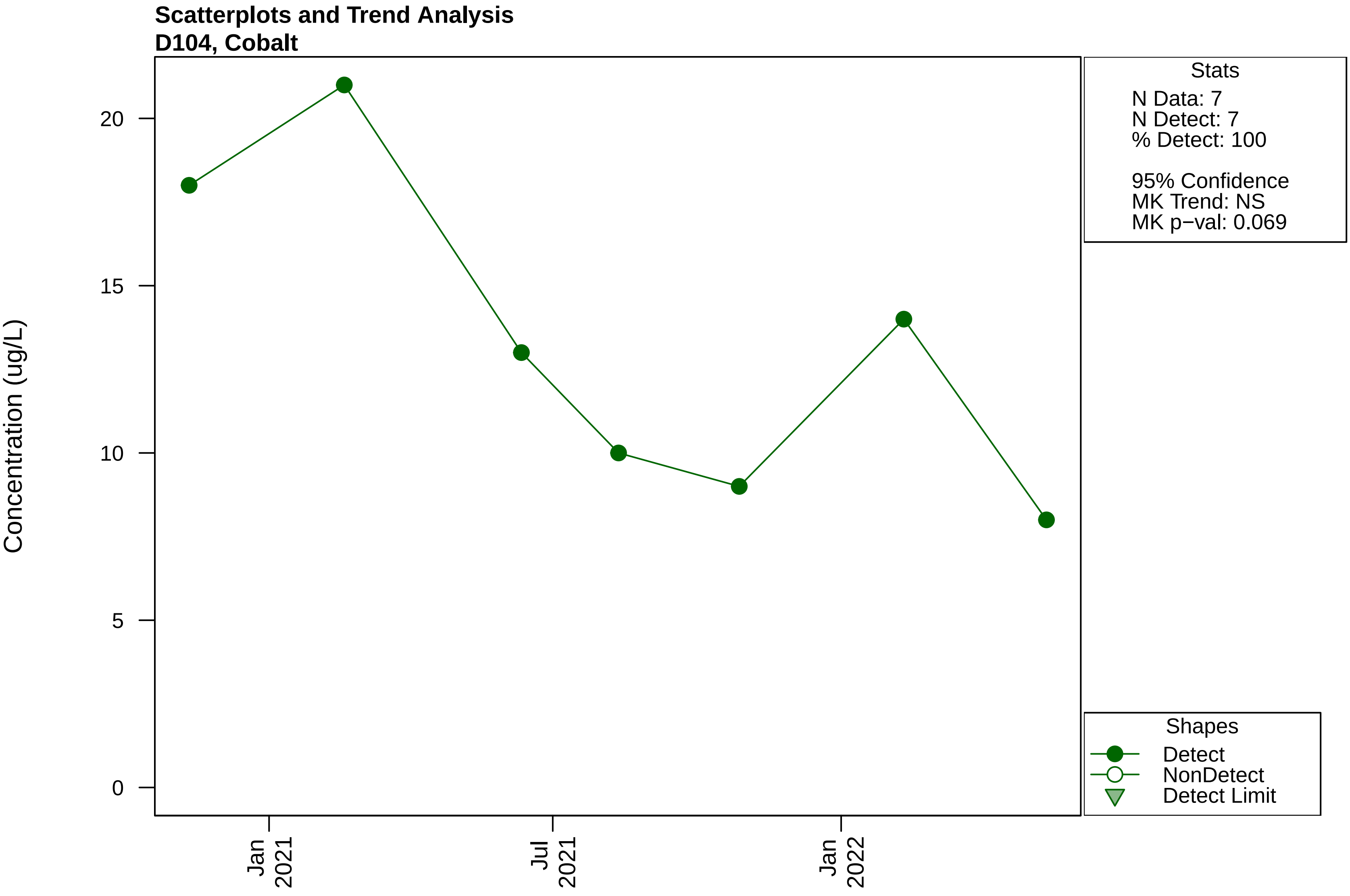


Scatterplots and Trend Analysis
D104, Carbonate Alkalinity (as CaCO3)
Concentration (mg/L)
0
10
20
30
40
50
60
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 4
N Detect: 4
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 1
Shapes
Detect
NonDetect
Detect Limit

Scatterplots and Trend Analysis
D104, Chloride

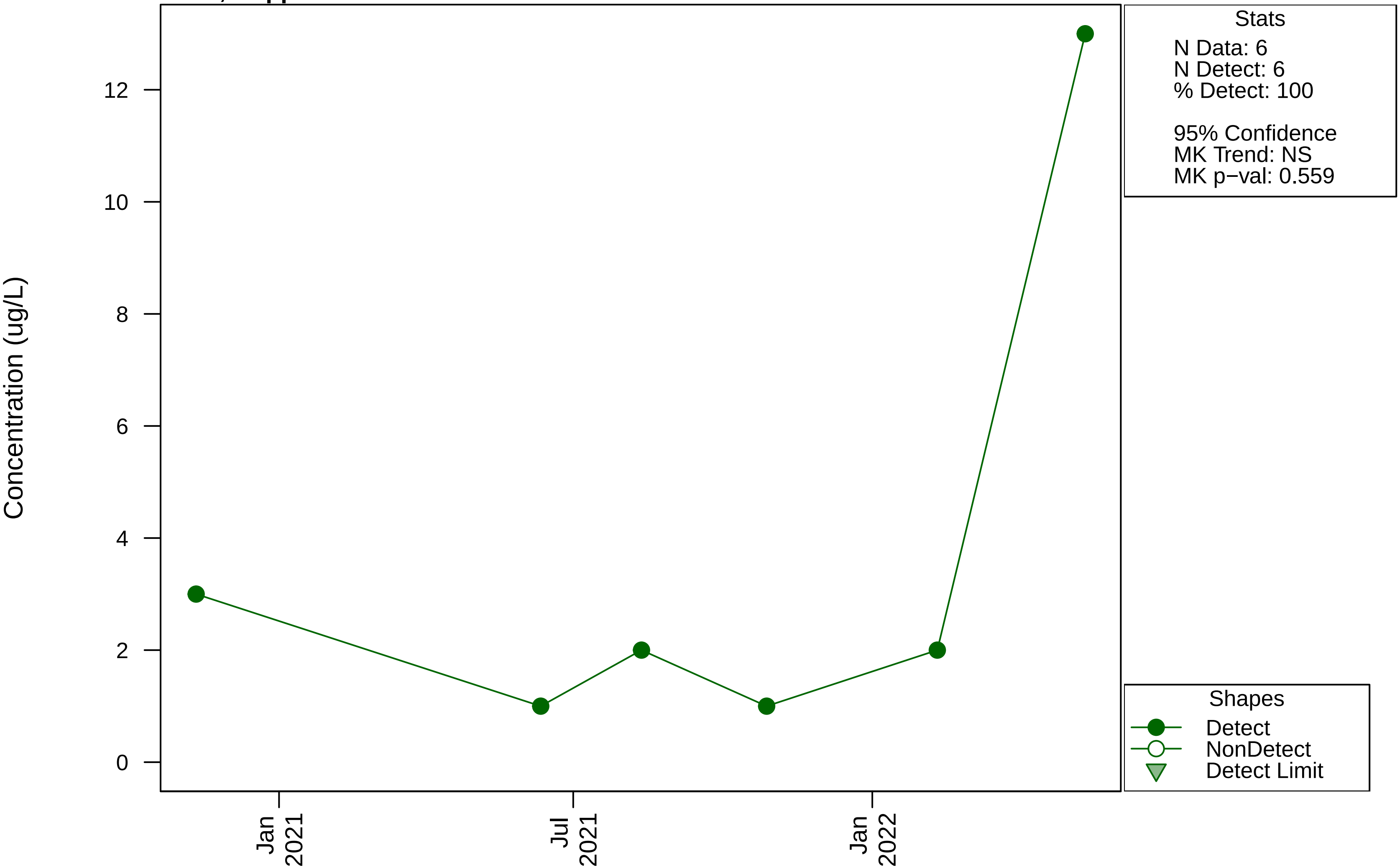



Scatterplots and Trend Analysis
D104, Chromium
Concentration (ug/L)
3.0
2.5
2.0
1.5
1.0
0.5
0.0
Feb 2022
Stats
N Data: 1
N Detect: 1
% Detect: 100
MK criteria not met
Shapes
Detect
NonDetect
Detect Limit

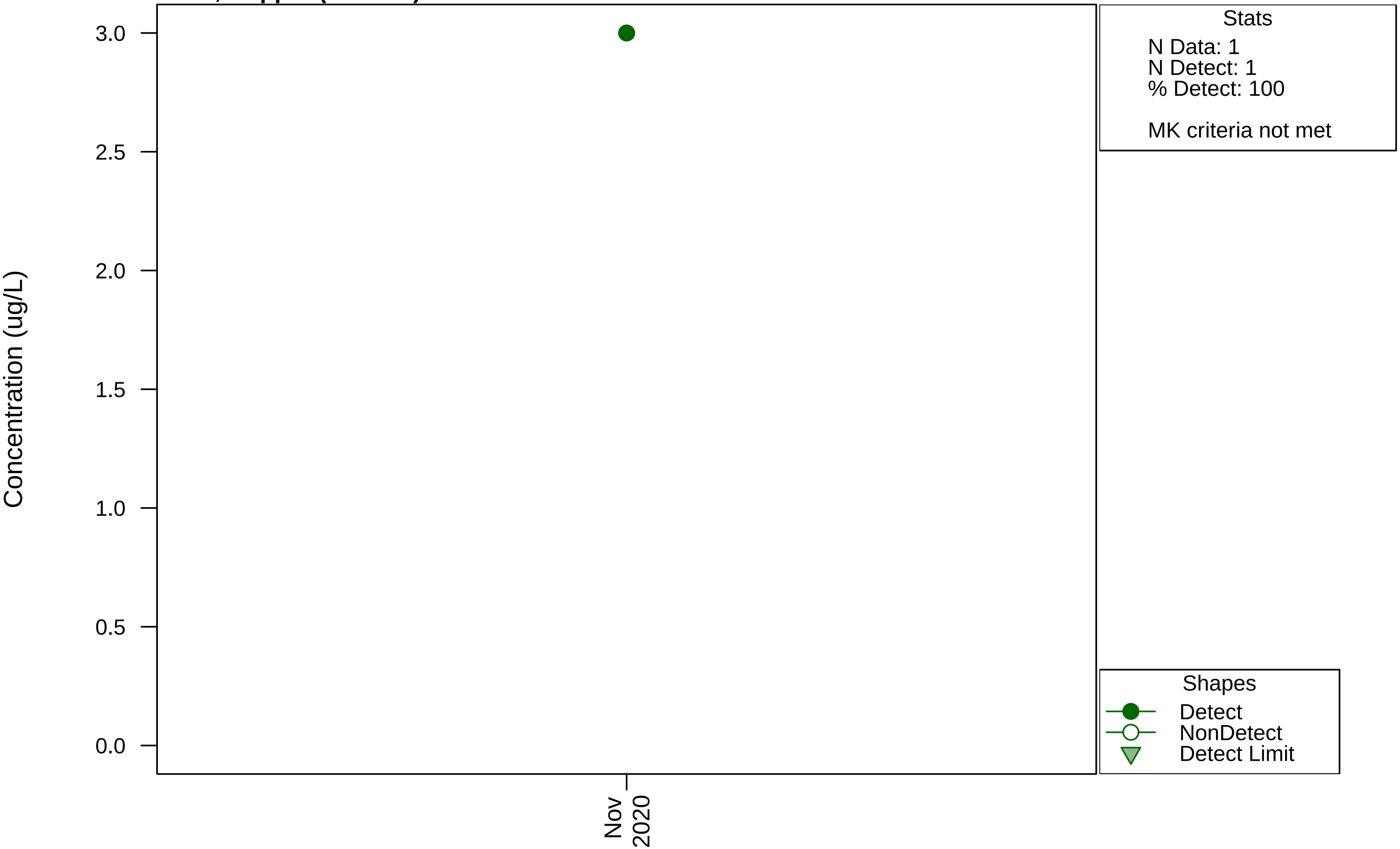


Scatterplots and Trend Analysis
D104, Cobalt
Concentration (ug/L)
0
5
10
15
20
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 7
N Detect: 7
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.069
Shapes
Detect
NonDetect
Detect Limit

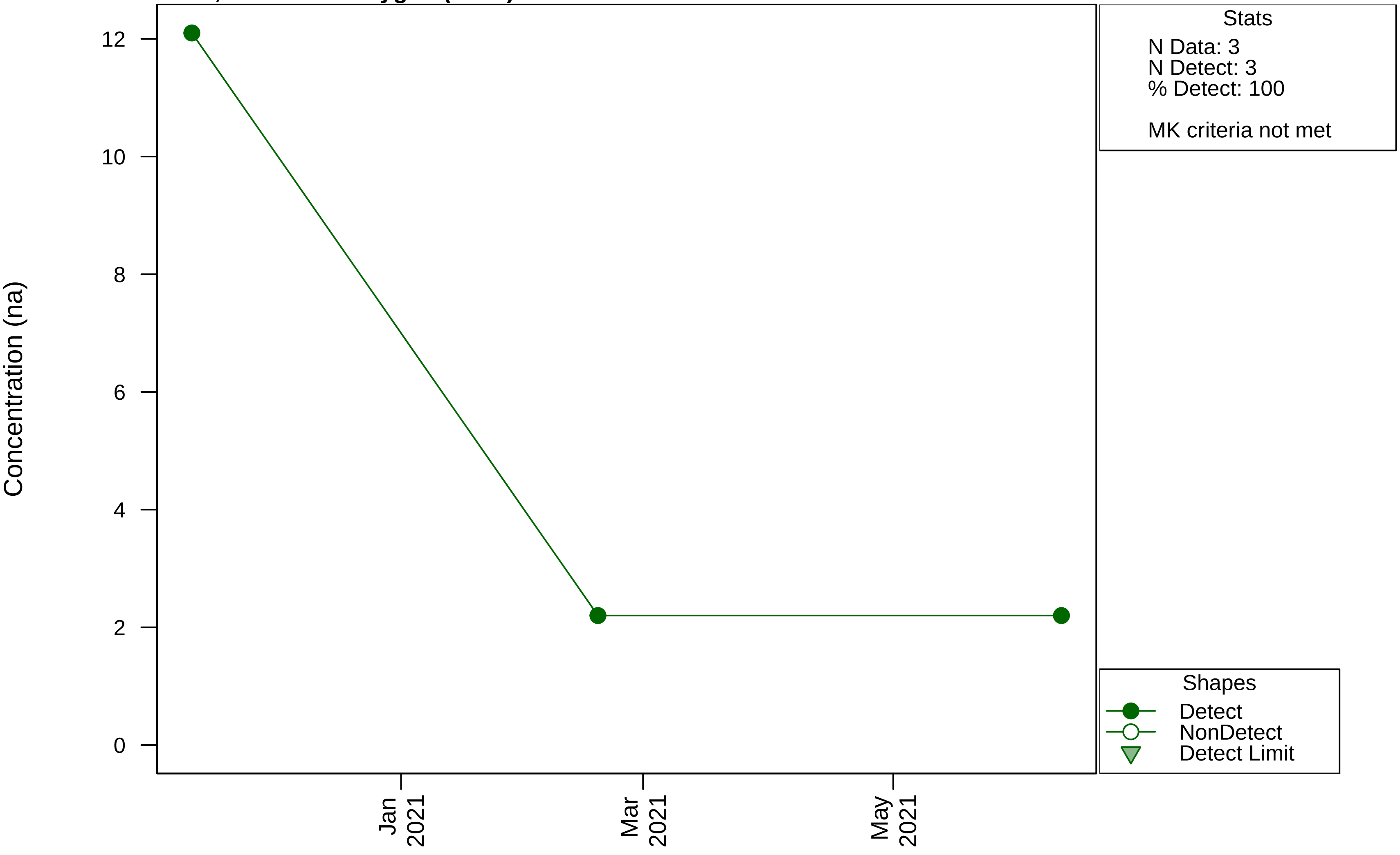
Scatterplots and Trend Analysis
D104, Copper



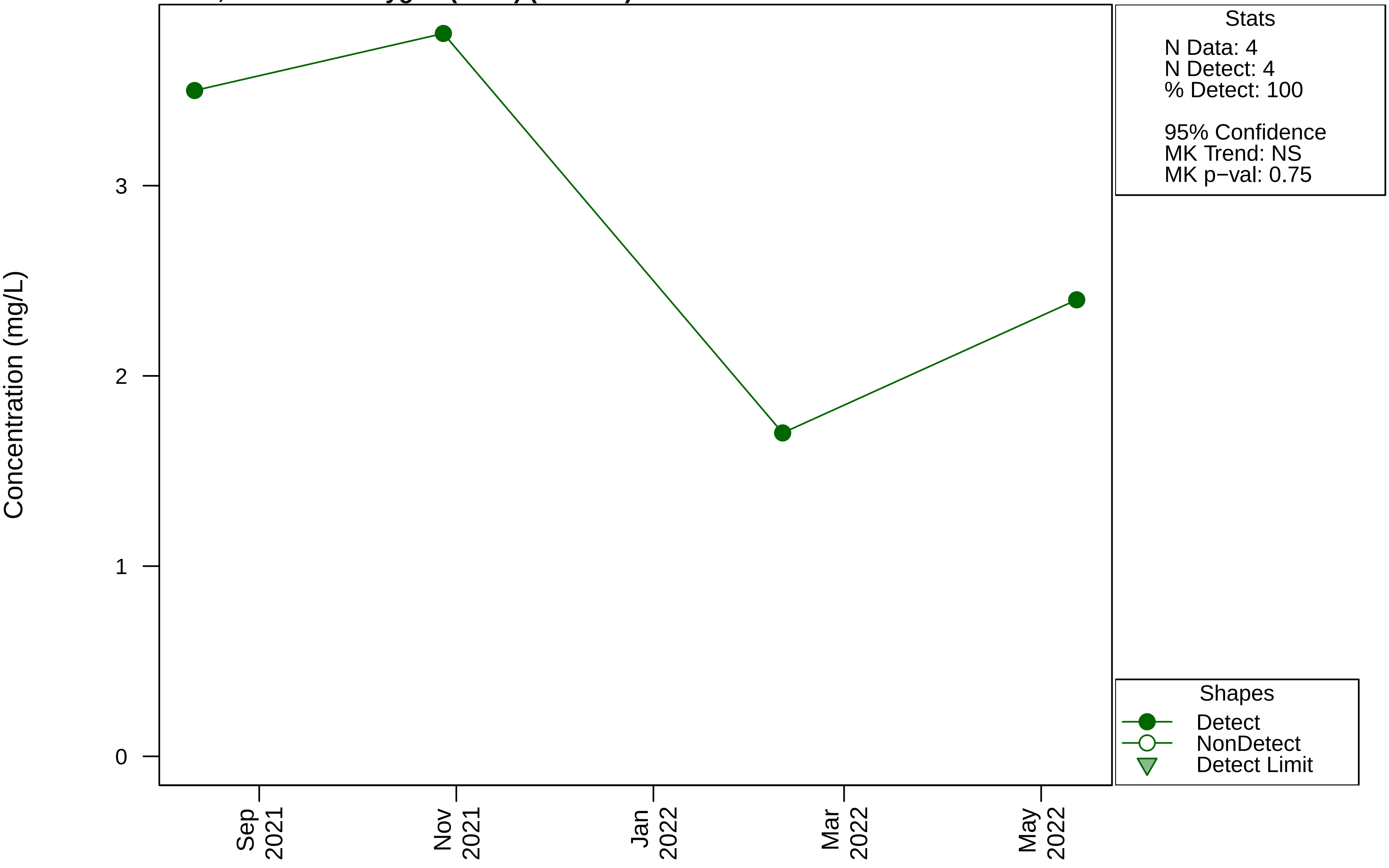
Scatterplots and Trend Analysis
D104, Copper (Filtered)



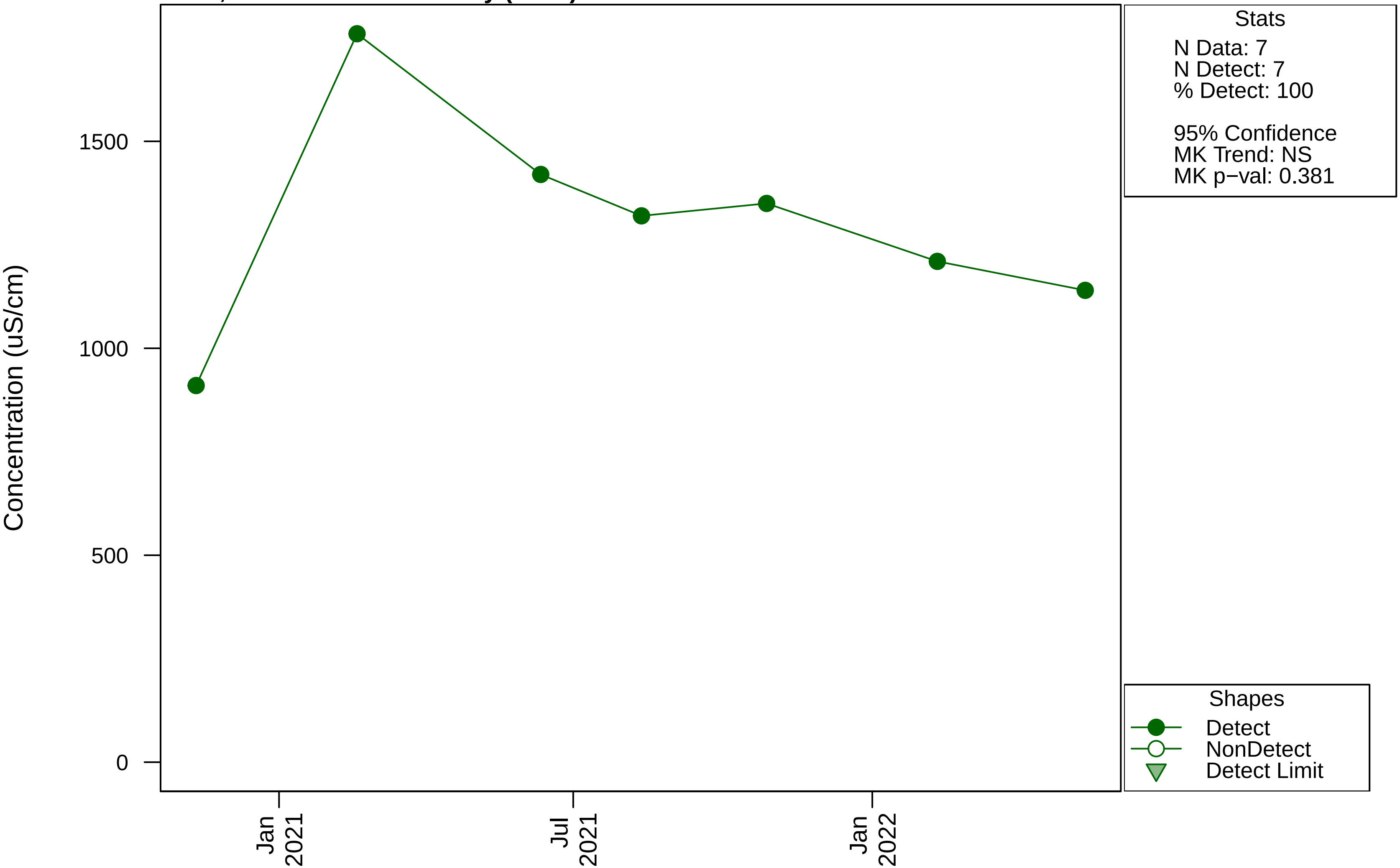
Scatterplots and Trend Analysis
D104, Dissolved Oxygen (Field)



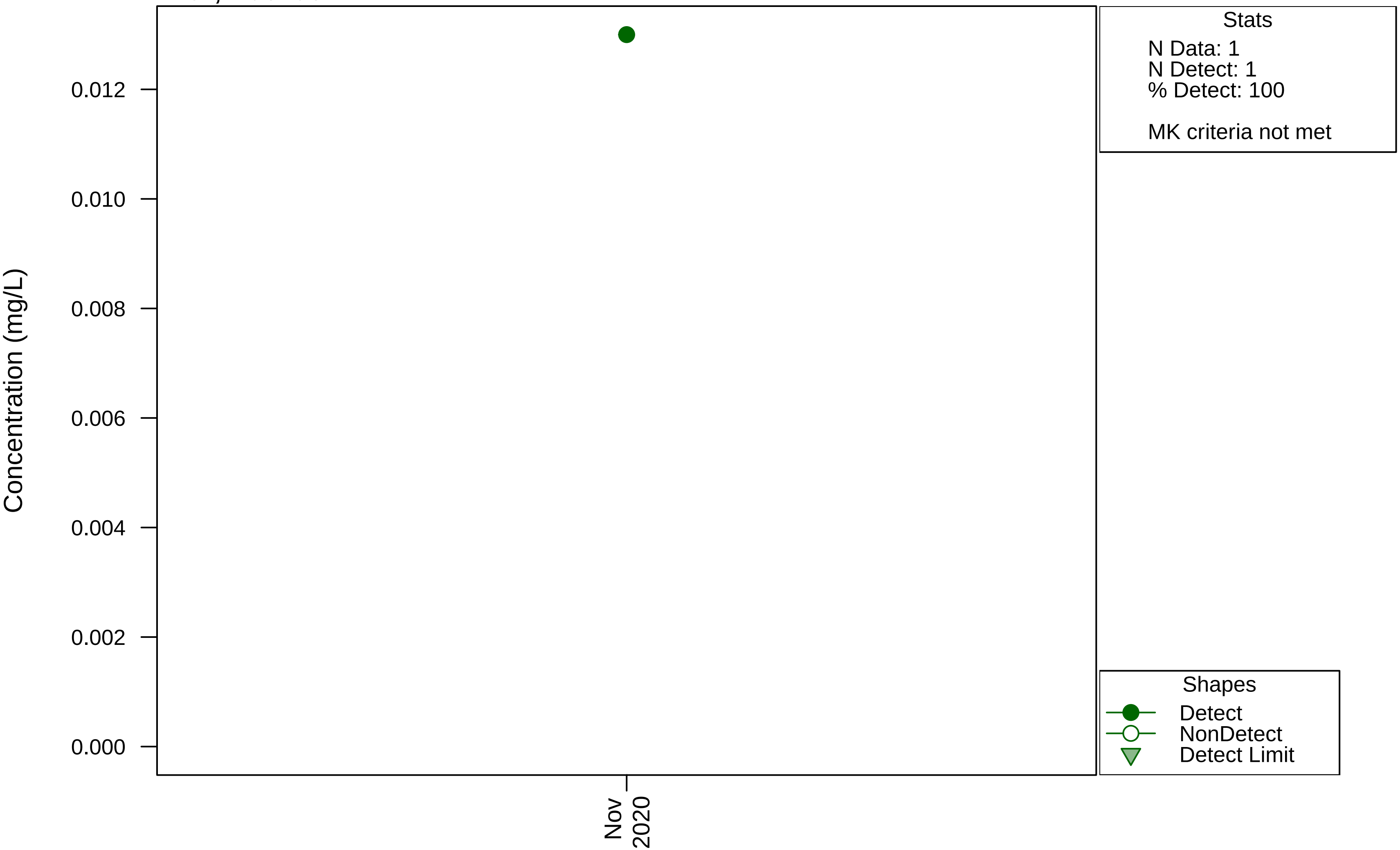
Scatterplots and Trend Analysis
D104, Dissolved Oxygen (Field) (Filtered)

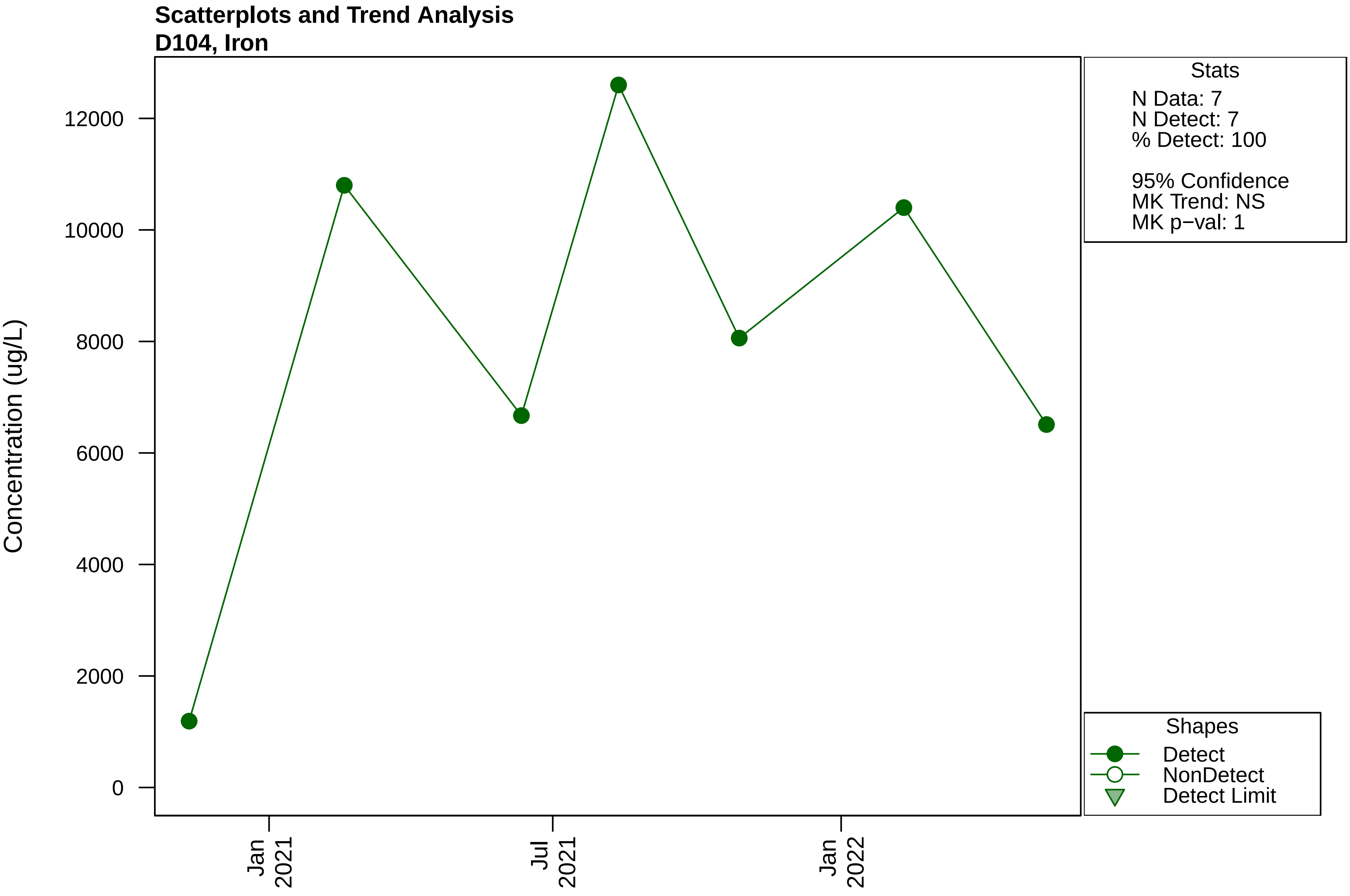


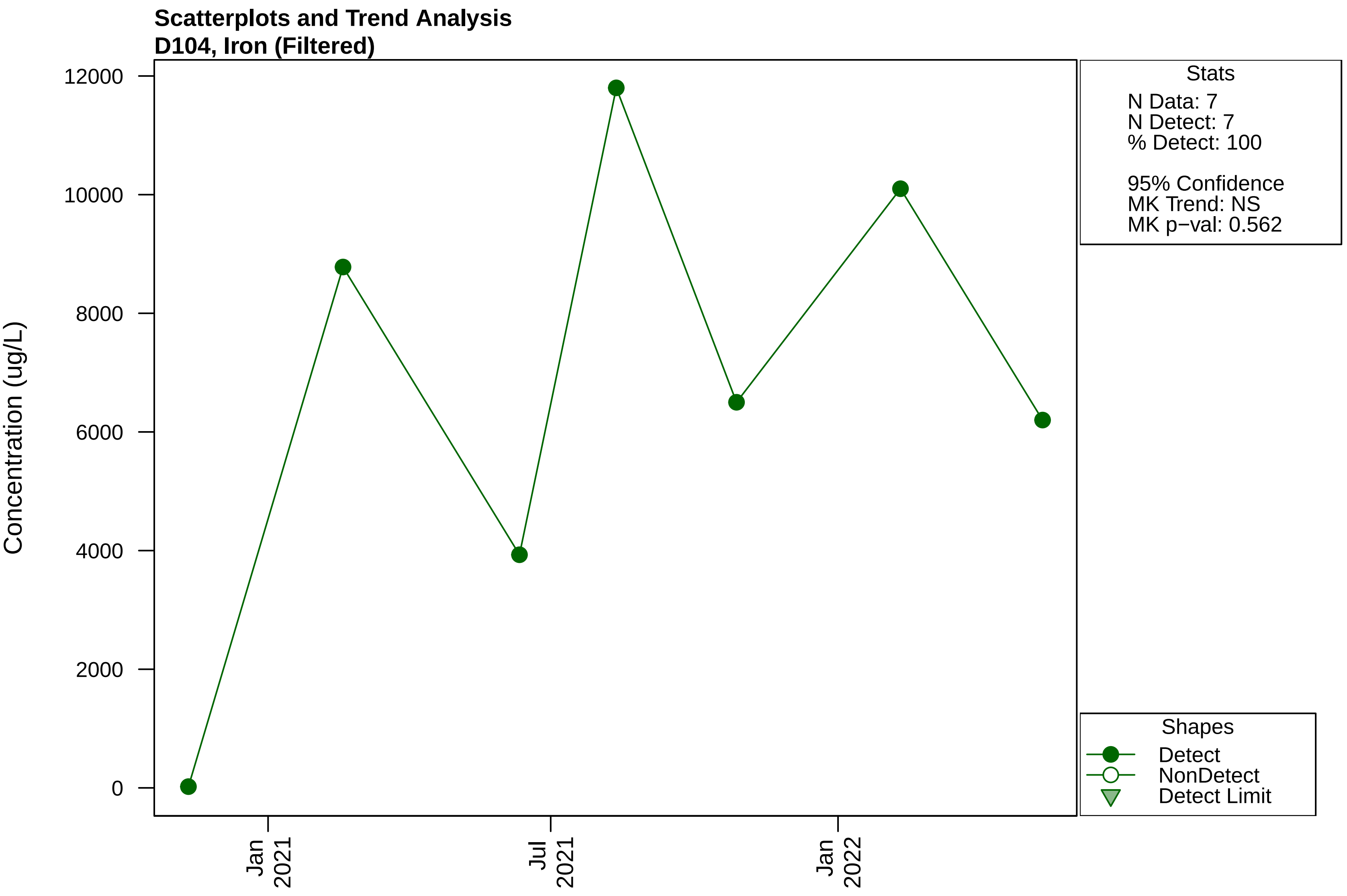
Scatterplots and Trend Analysis
D104, Electrical Conductivity (Field)



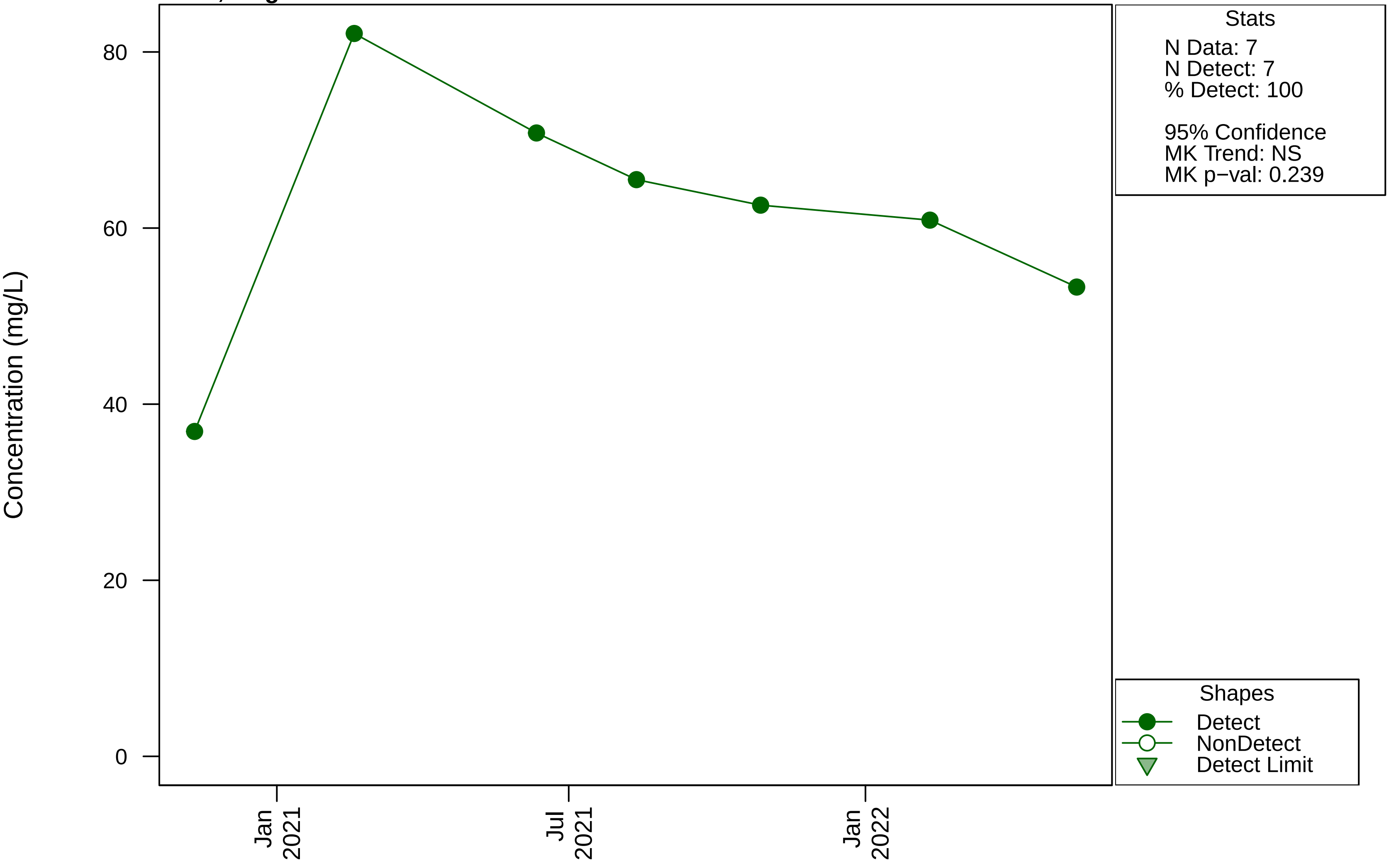
Scatterplots and Trend Analysis
D104, Fluoride



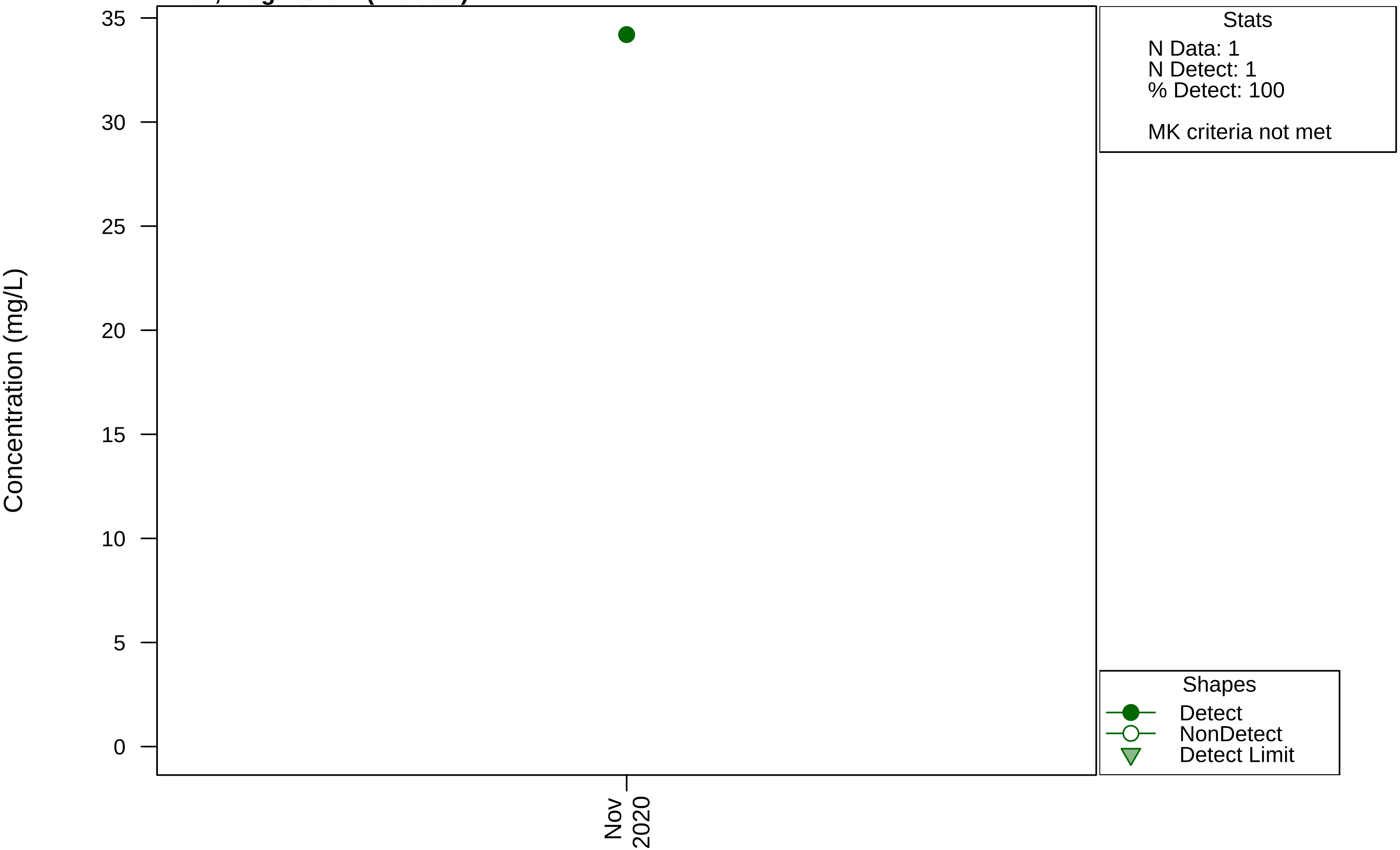

Scatterplots and Trend Analysis
D104, Iron
Concentration (ug/L)
0
2000
4000
6000
8000
10000
12000
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 7
N Detect: 7
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 1
Shapes
Detect
NonDetect
Detect Limit

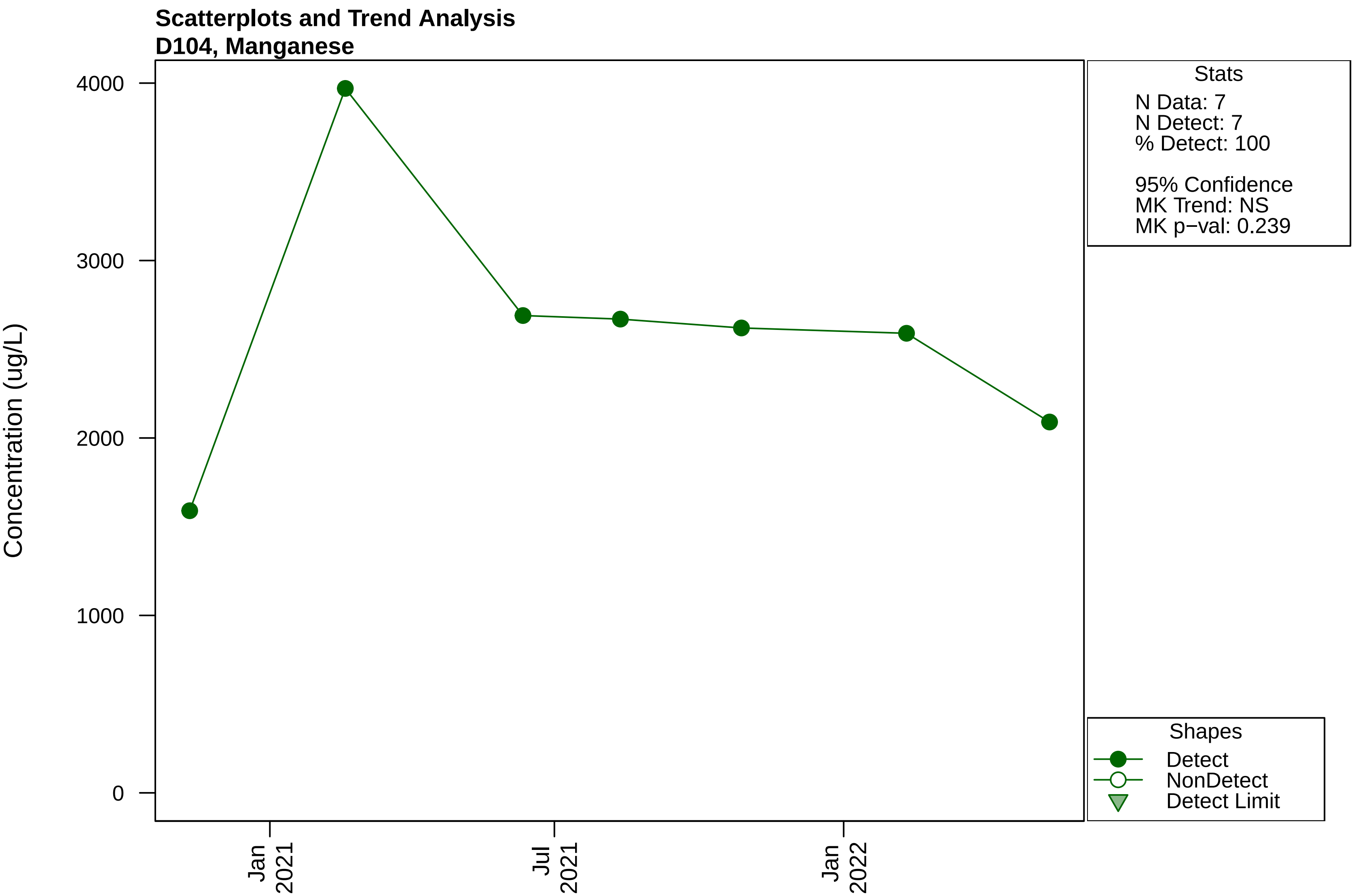

Scatterplots and Trend Analysis
D104, Iron (Filtered)
Concentration (ug/L)
0
2000
4000
6000
8000
10000
12000
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 7
N Detect: 7
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.562
Shapes
Detect
NonDetect
Detect Limit

Scatterplots and Trend Analysis
D104, Magnesium

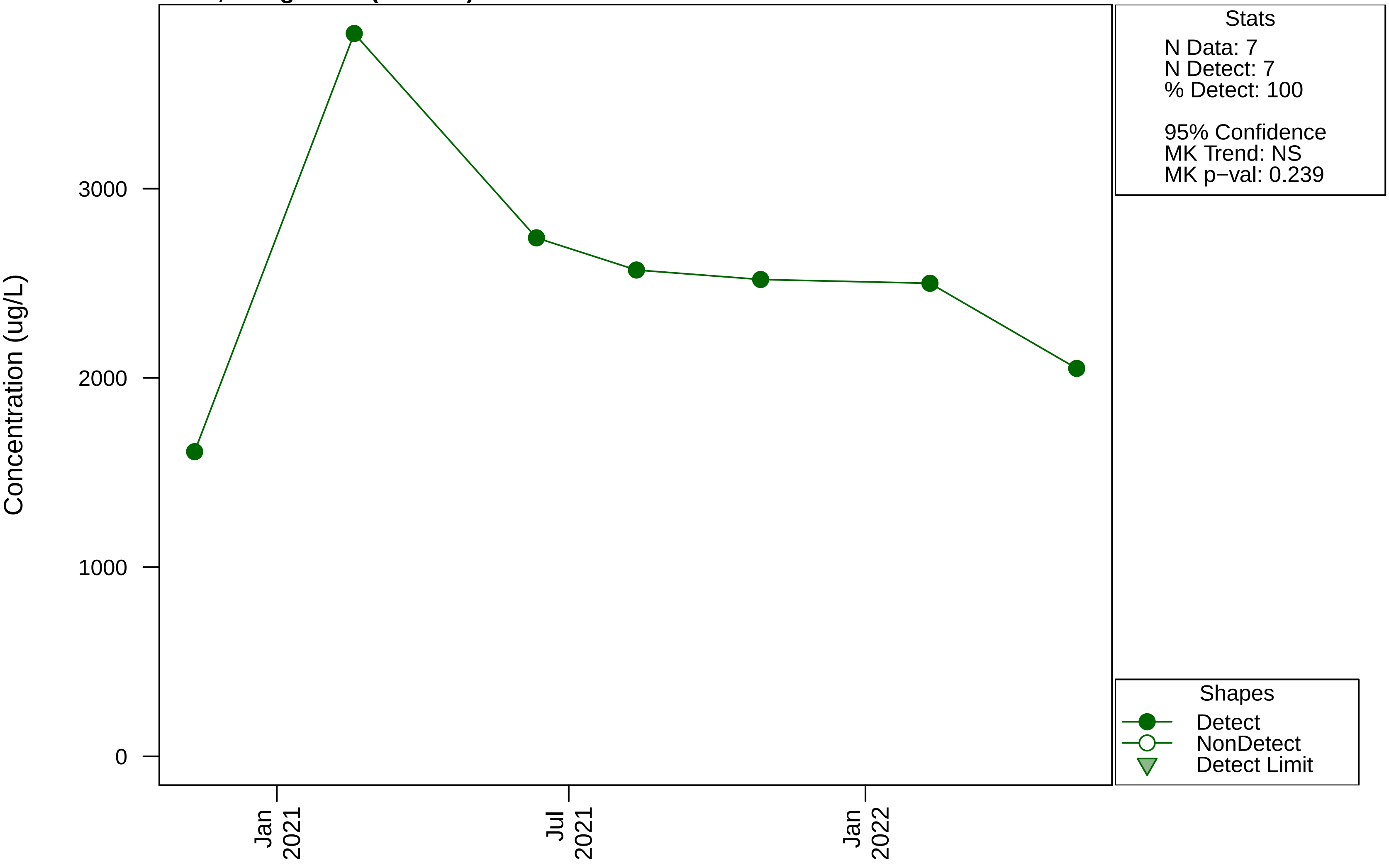


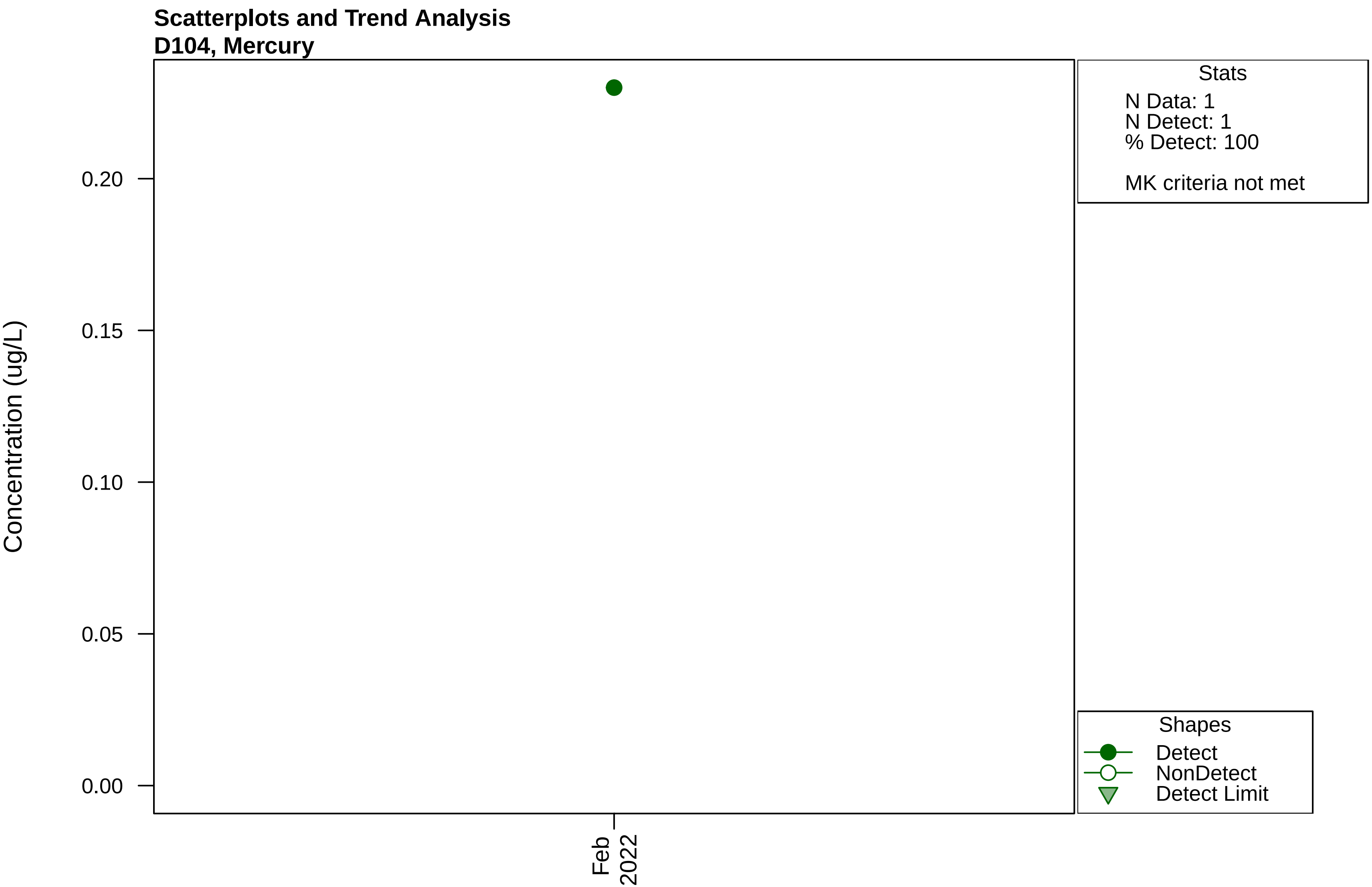
Scatterplots and Trend Analysis
D104, Magnesium (Filtered)



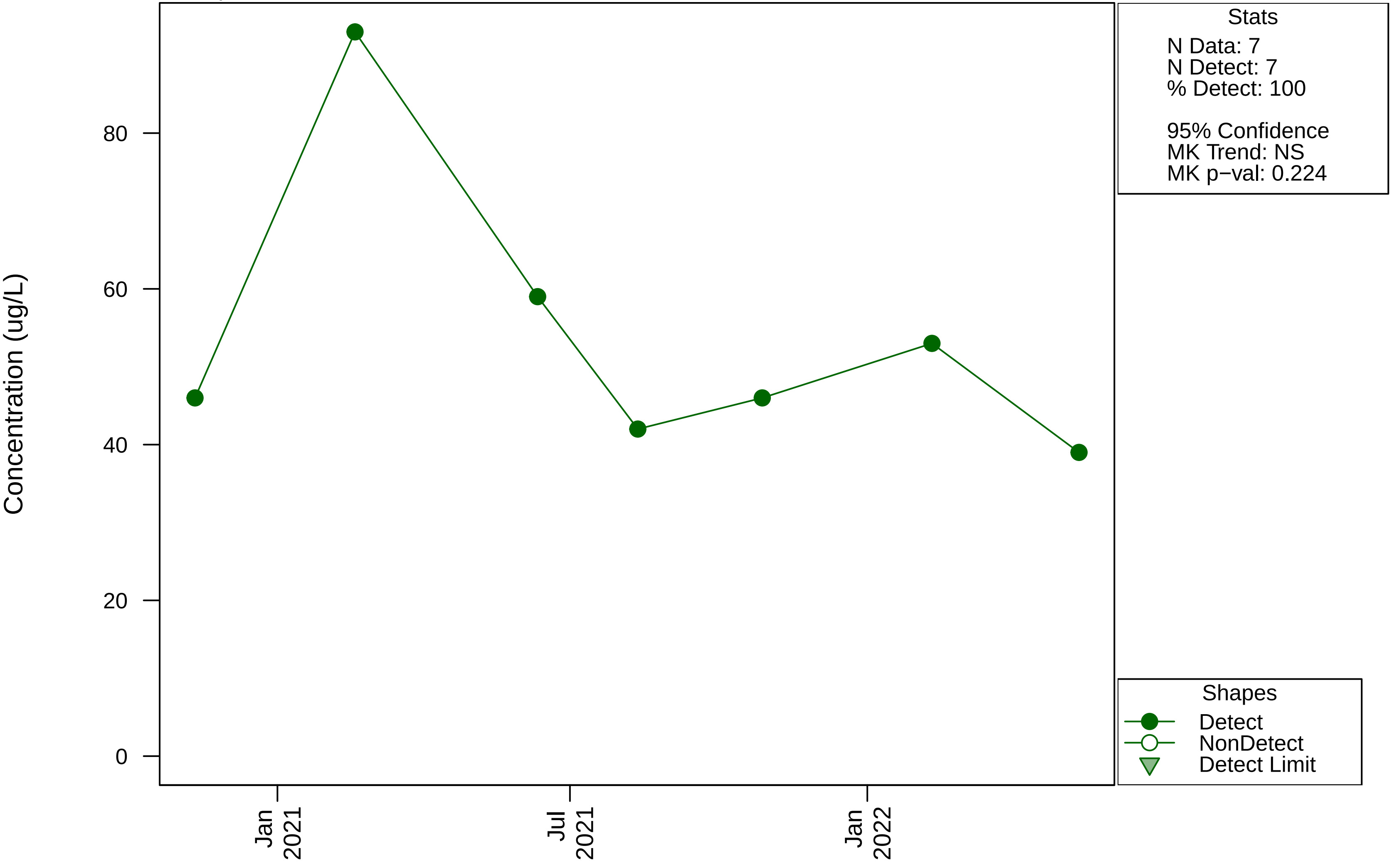

Scatterplots and Trend Analysis
D104, Manganese
Concentration (ug/L)
4000
3000
2000
1000
0
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 7
N Detect: 7
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.239
Shapes
Detect
NonDetect
Detect Limit

Scatterplots and Trend Analysis
D104, Manganese (Filtered)

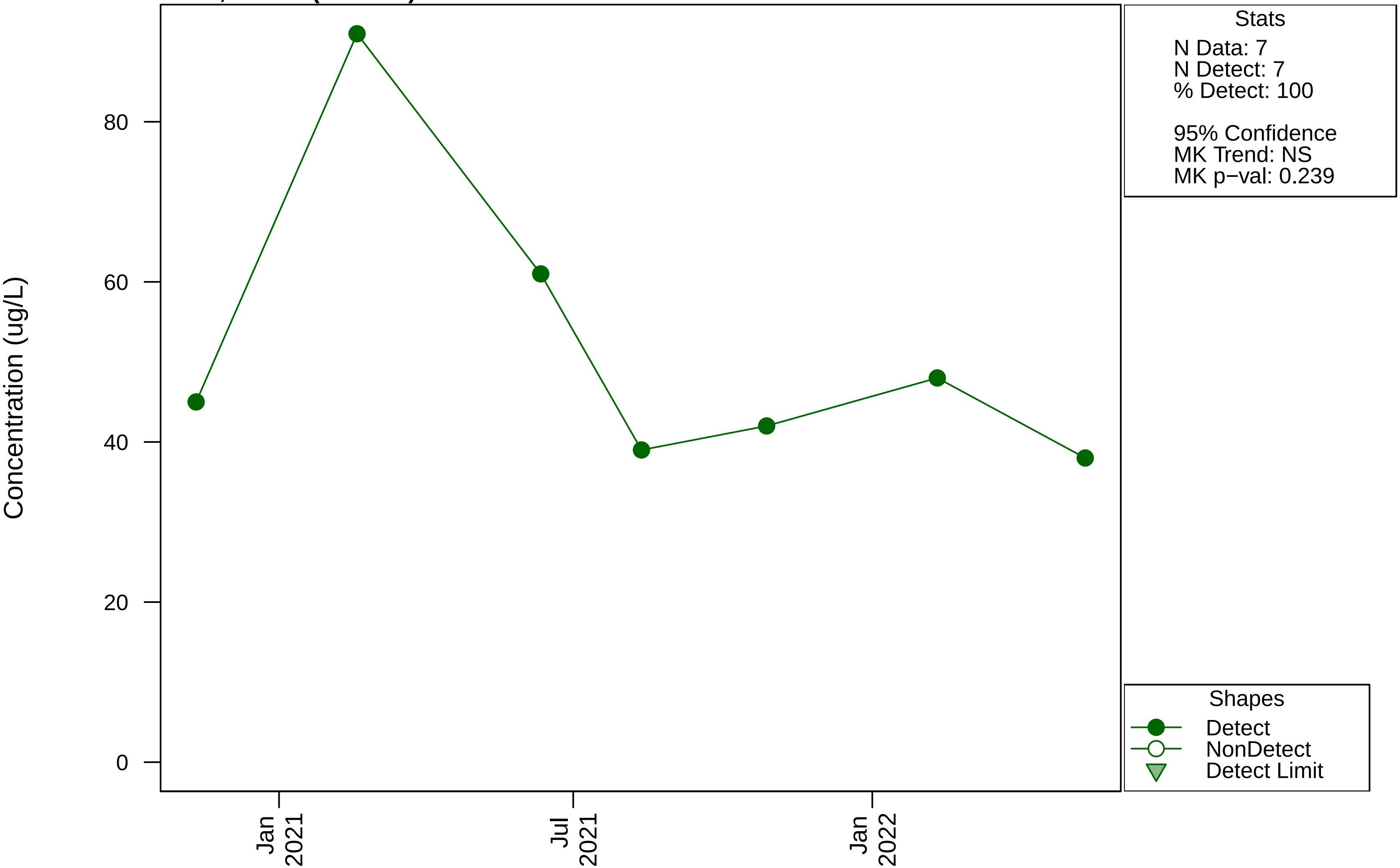


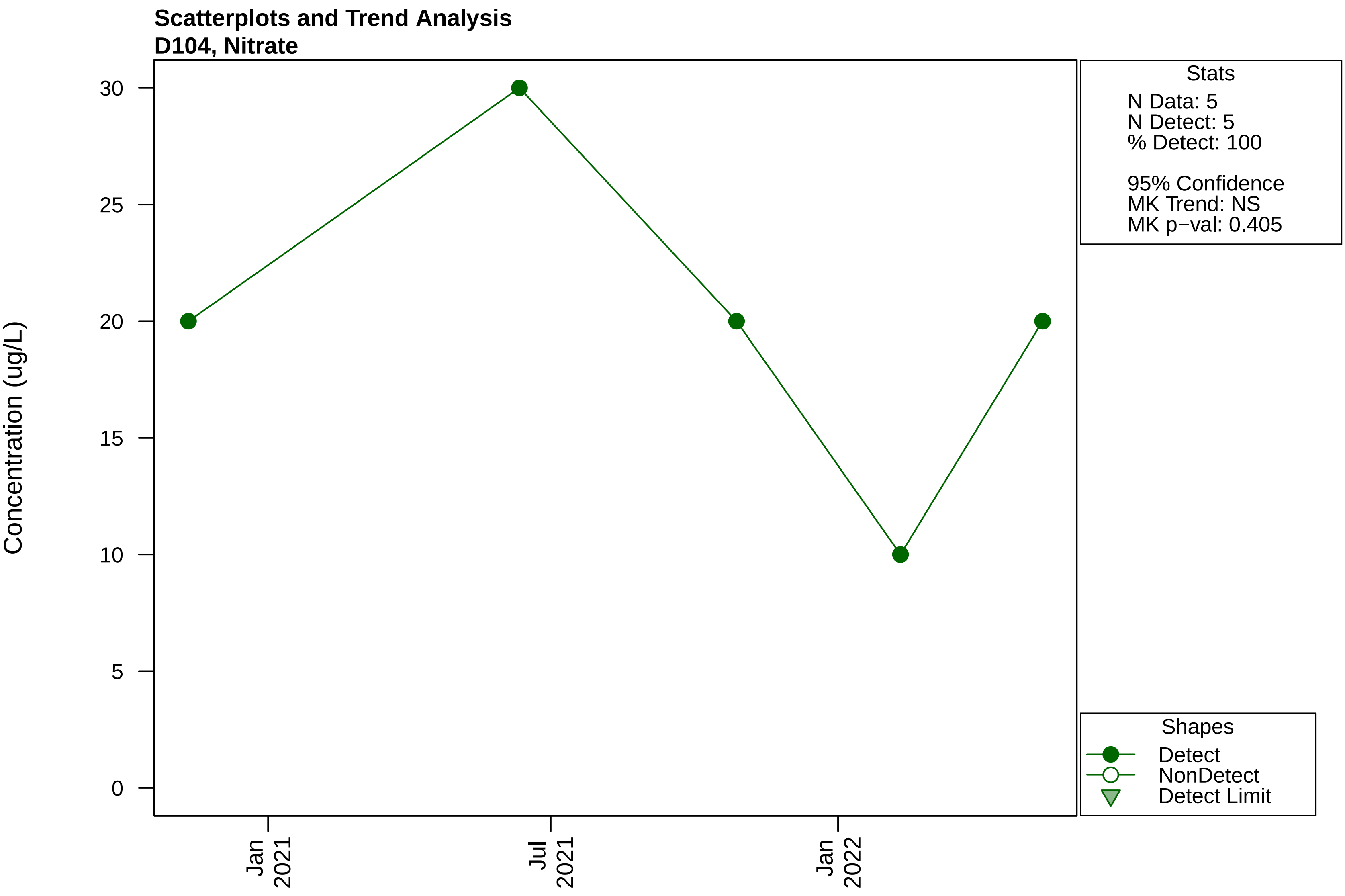

Scatterplots and Trend Analysis
D104, Mercury
Concentration (ug/L)
0.20
0.15
0.10
0.05
0.00
Feb 2022
Stats
N Data: 1
N Detect: 1
% Detect: 100
MK criteria not met
Shapes
Detect
NonDetect
Detect Limit

Scatterplots and Trend Analysis
D104, Nickel

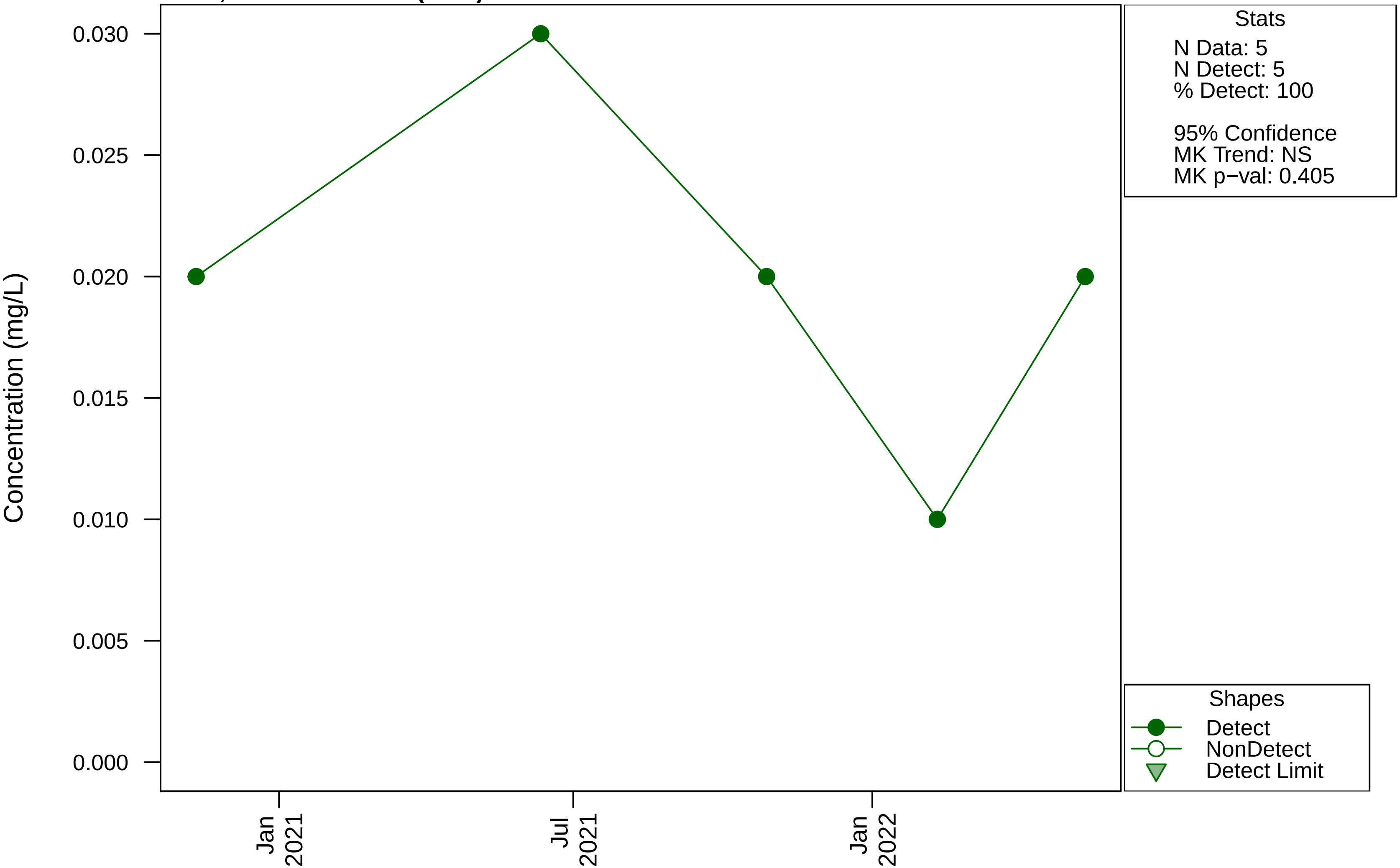


Scatterplots and Trend Analysis
D104, Nickel (Filtered)

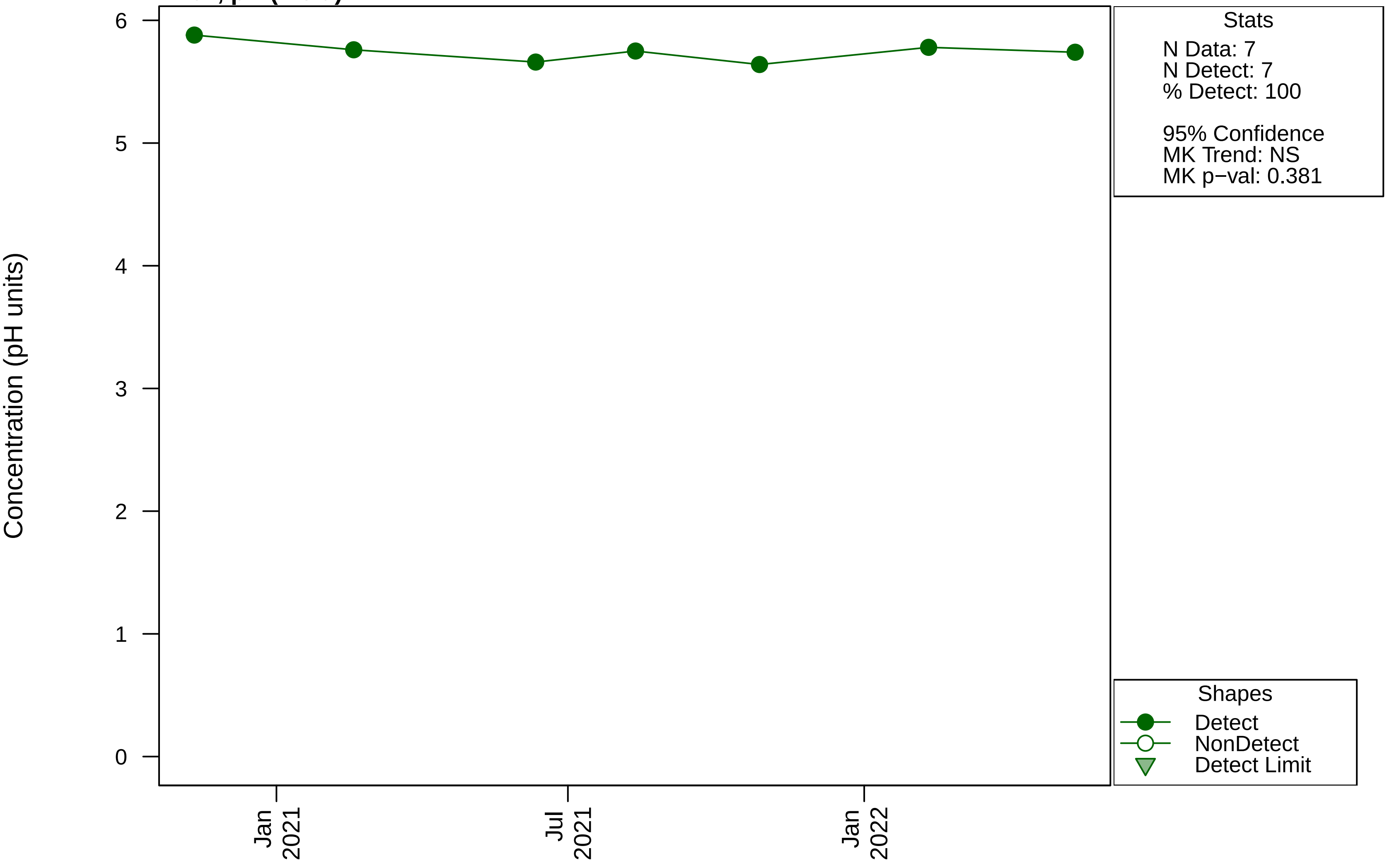


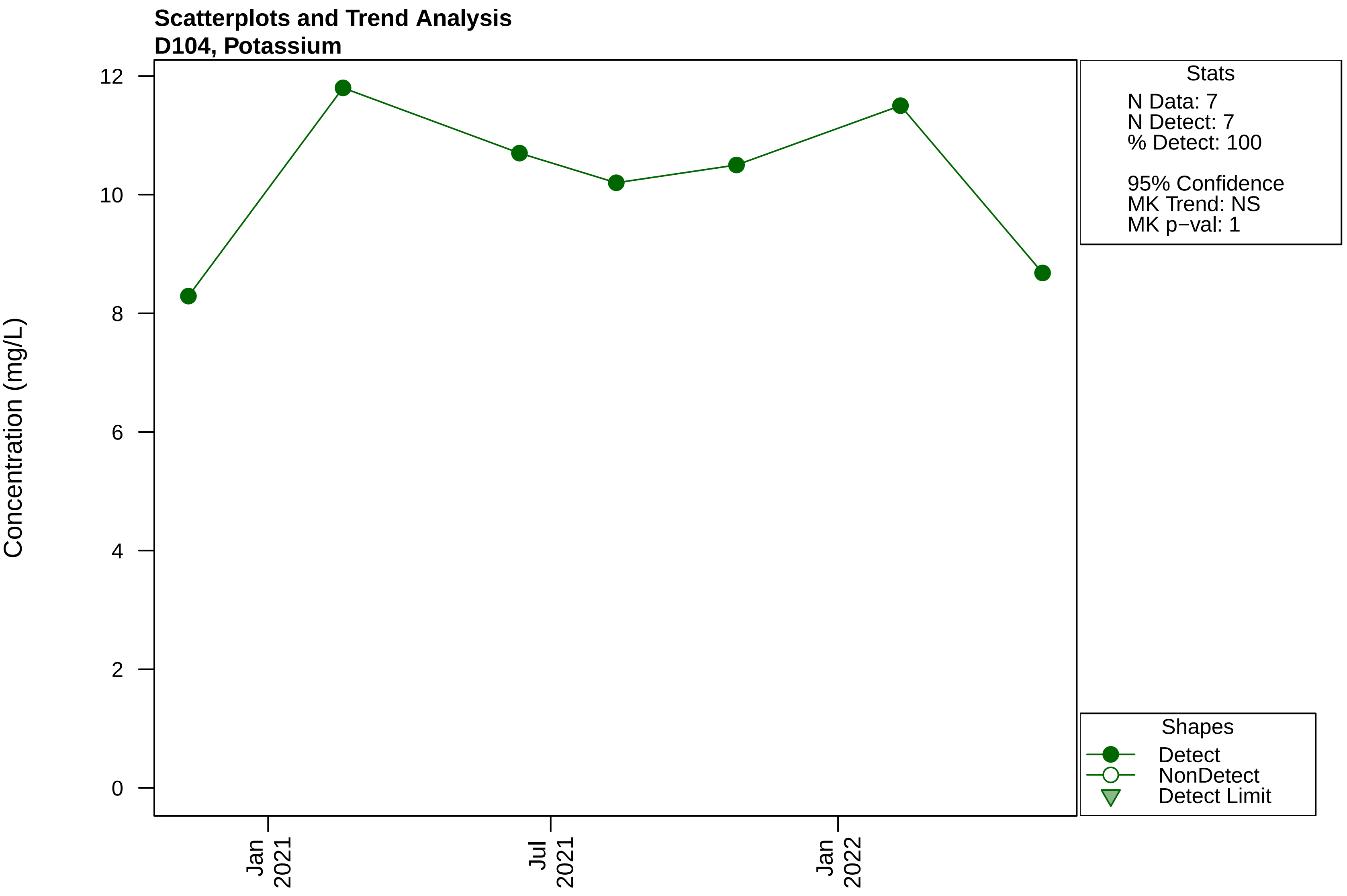

Scatterplots and Trend Analysis
D104, Nitrate
Concentration (ug/L)
0
5
10
15
20
25
30
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 5
N Detect: 5
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.405
Shapes
Detect
NonDetect
Detect Limit

Scatterplots and Trend Analysis
D104, Nitrite + Nitrate (as N)



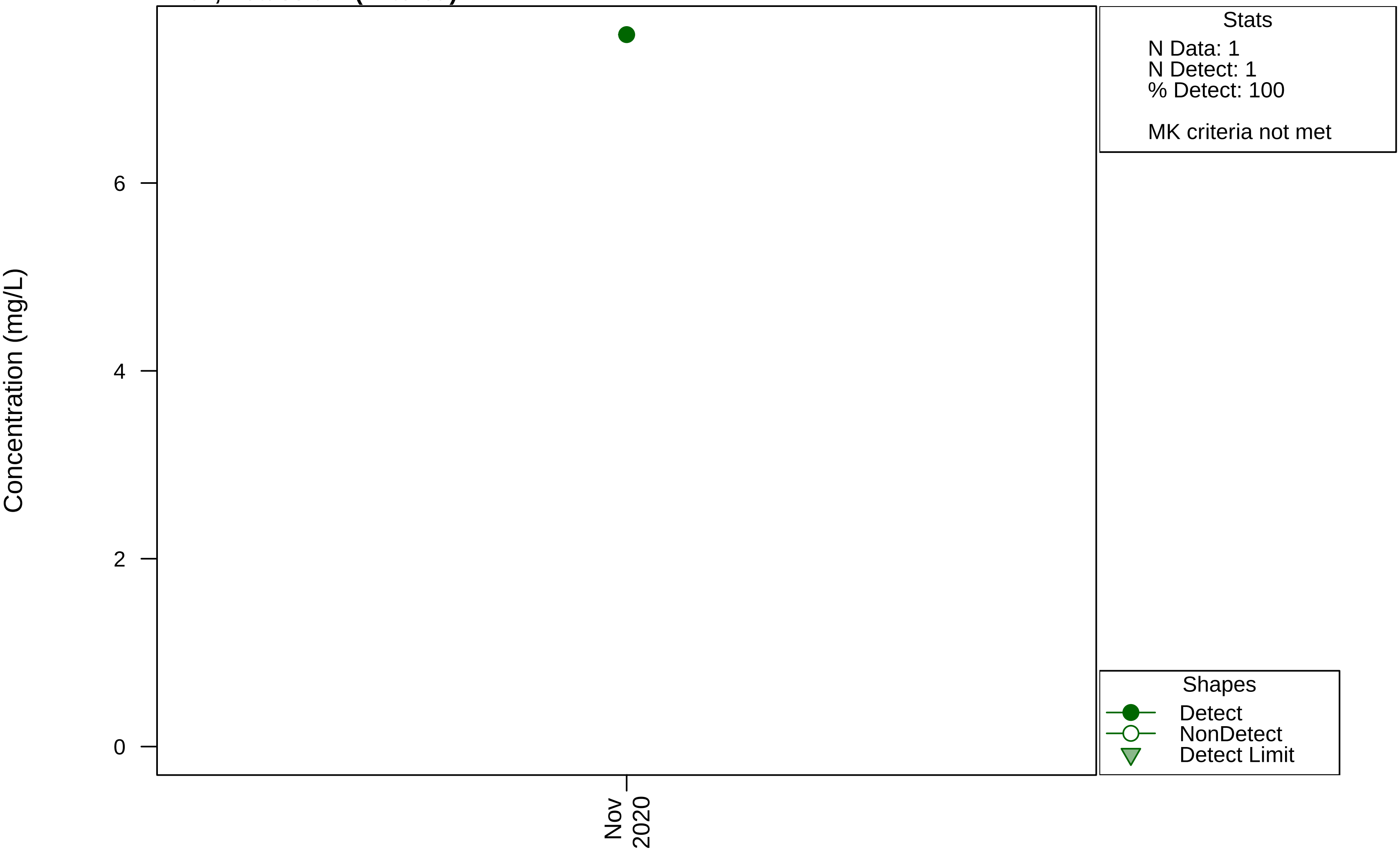
Scatterplots and Trend Analysis
D104, pH (Field)

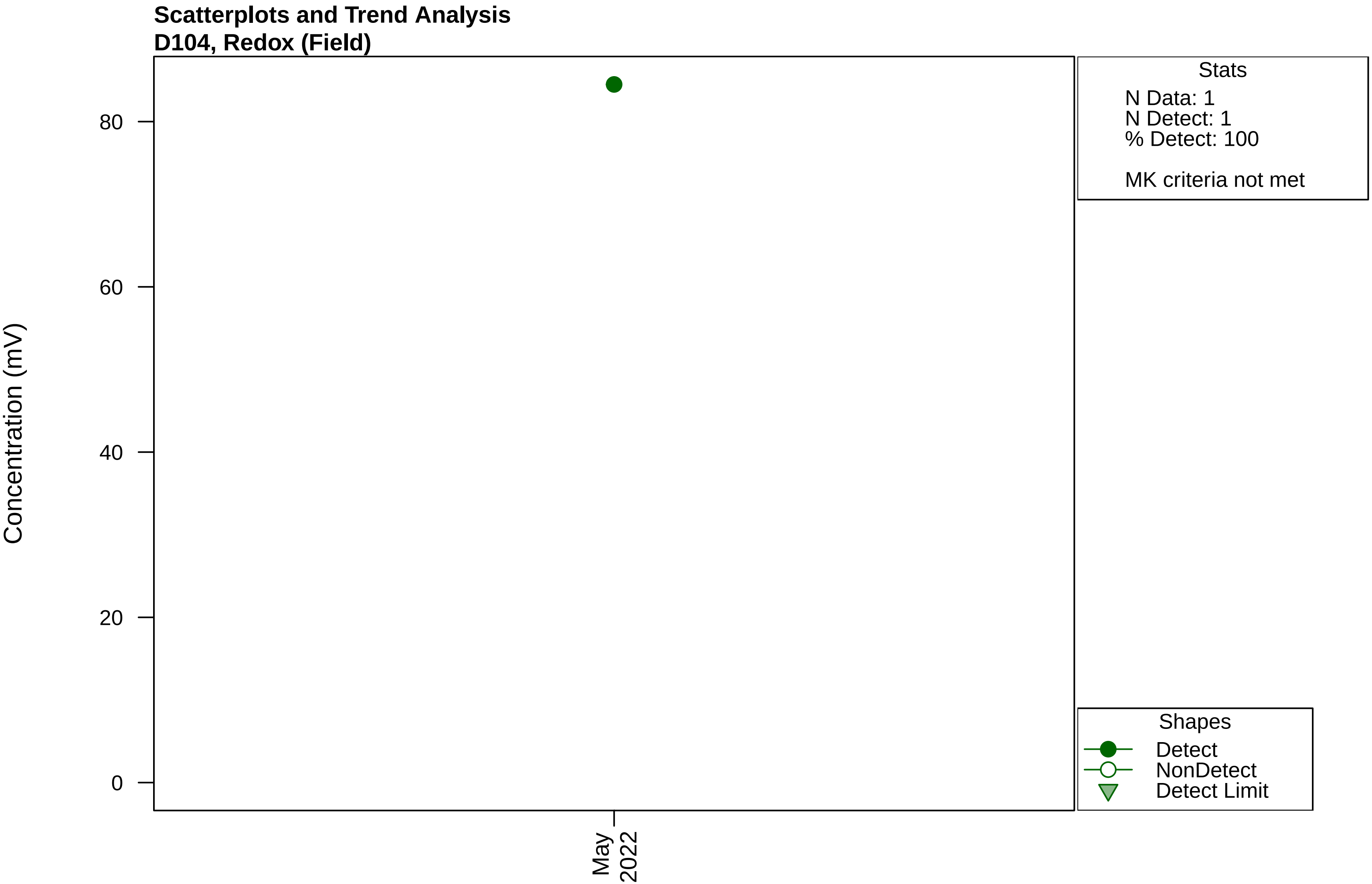




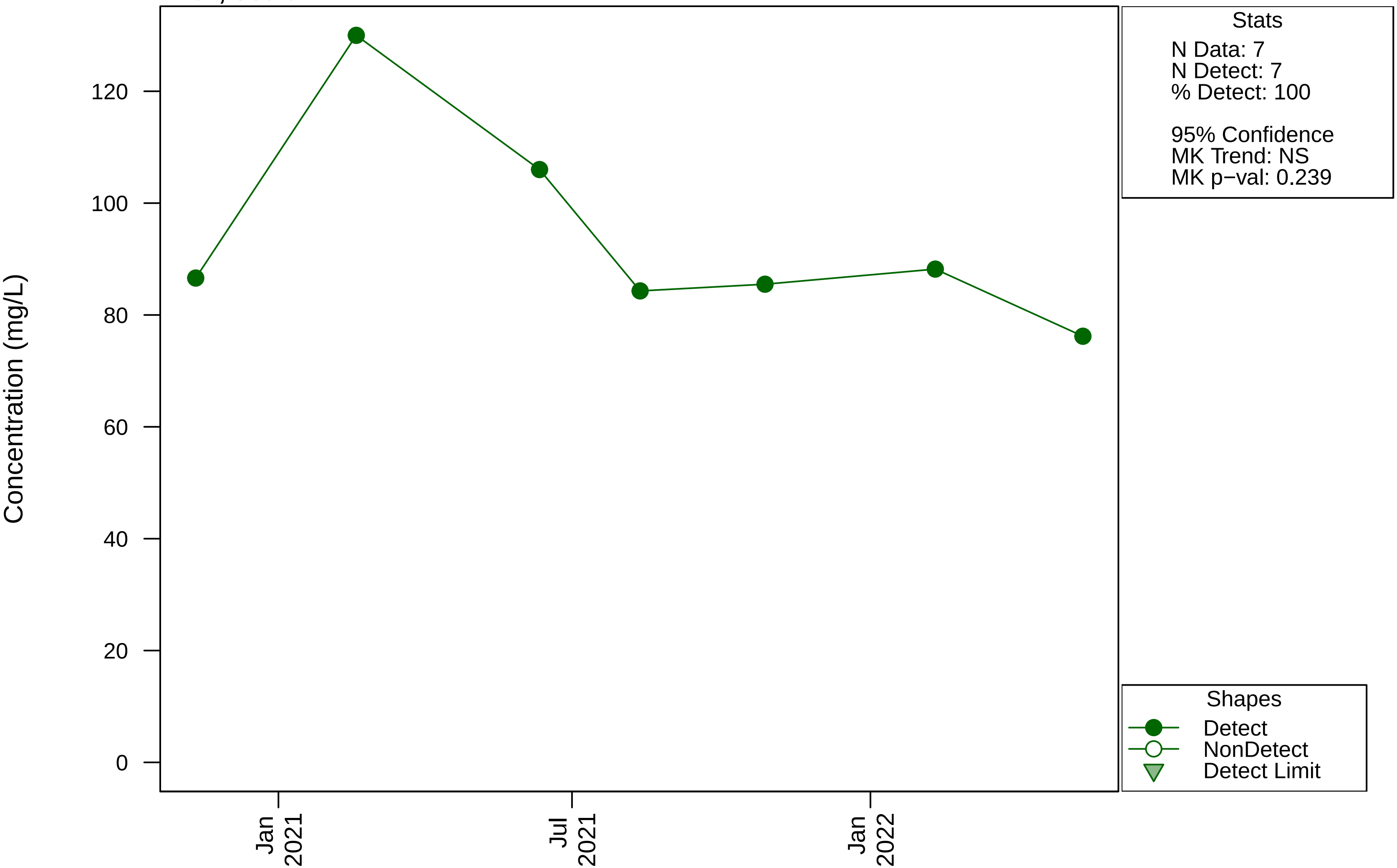
Scatterplots and Trend Analysis
D104, Potassium
Concentration (mg/L)
0
2
4
6
8
10
12
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 7
N Detect: 7
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 1
Shapes
Detect
NonDetect
Detect Limit

Scatterplots and Trend Analysis
D104, Potassium (Filtered)

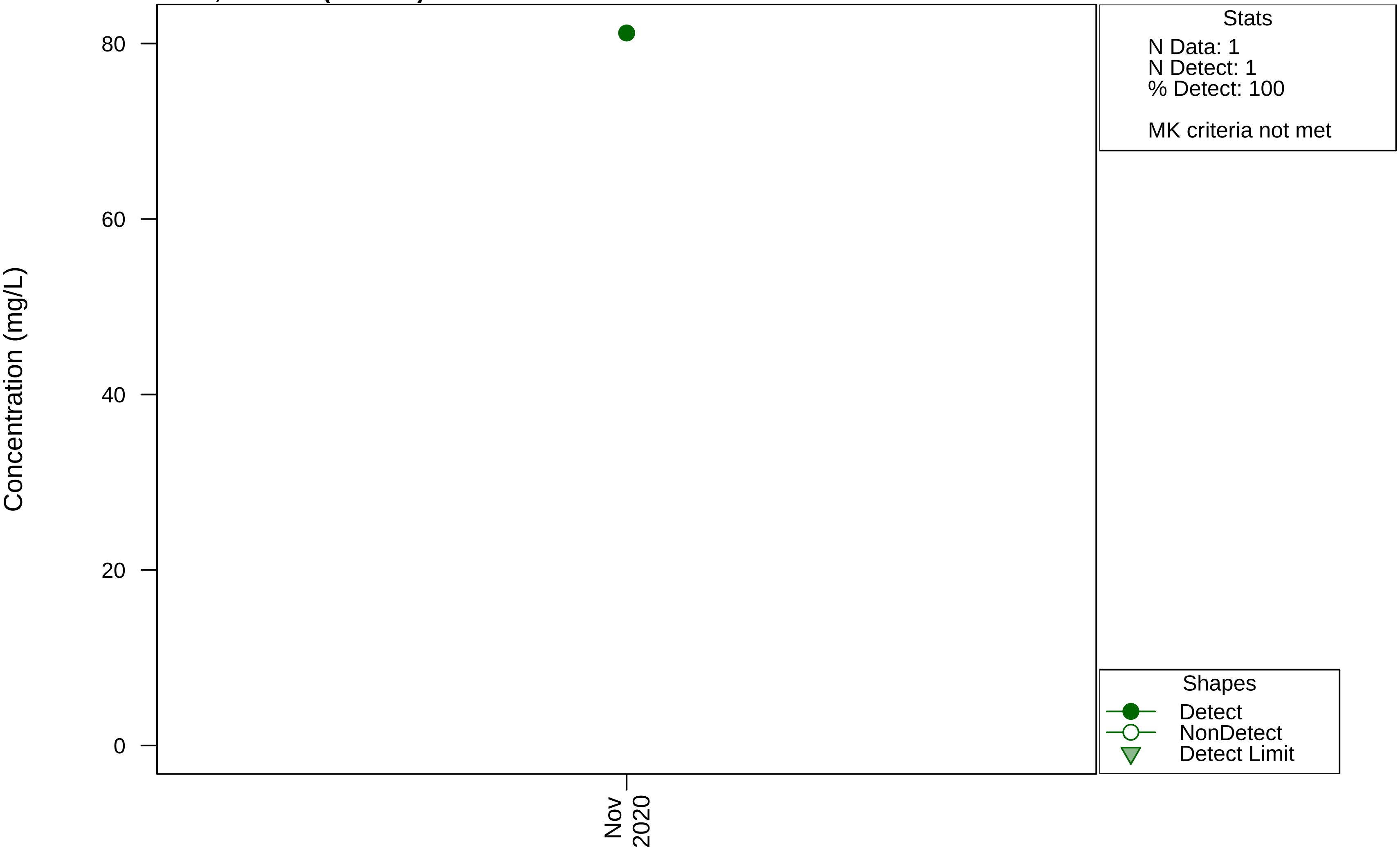



Scatterplots and Trend Analysis
D104, Redox (Field)
Concentration (mV)
80
60
40
20
0
May 2022
Stats
N Data: 1
N Detect: 1
% Detect: 100
MK criteria not met
Shapes
Detect
NonDetect
Detect Limit

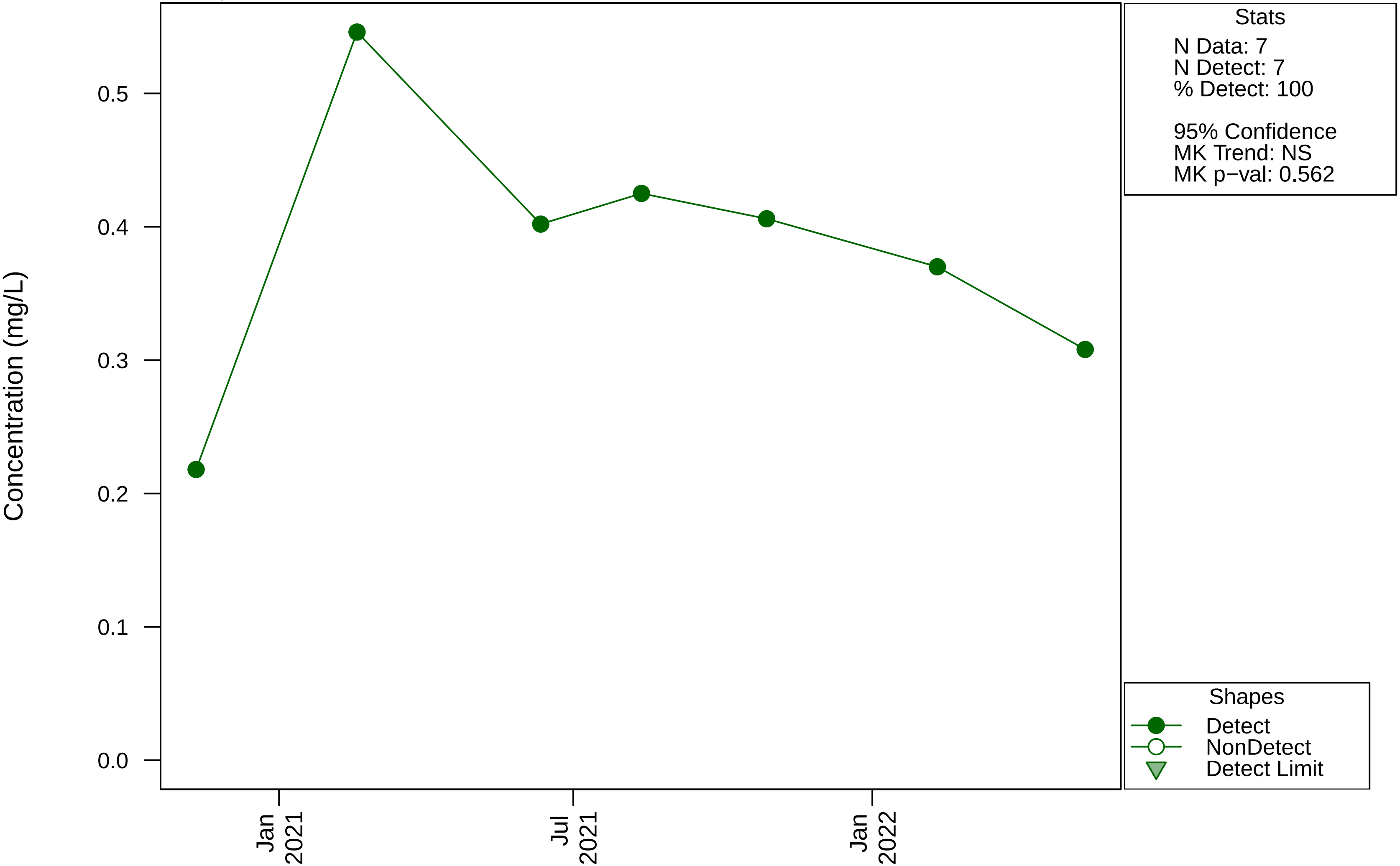
Scatterplots and Trend Analysis
D104, Sodium

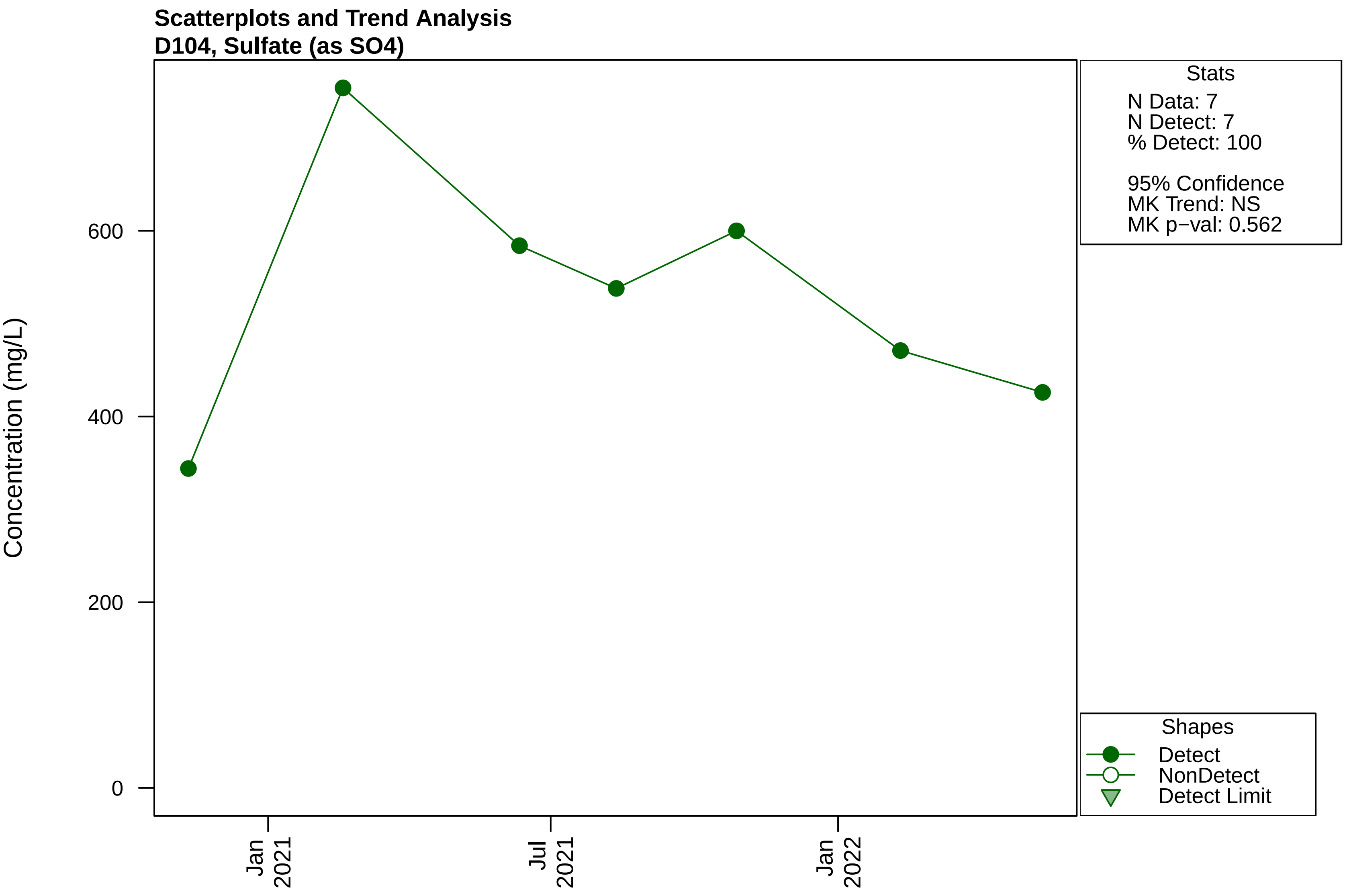


Scatterplots and Trend Analysis
D104, Sodium (Filtered)



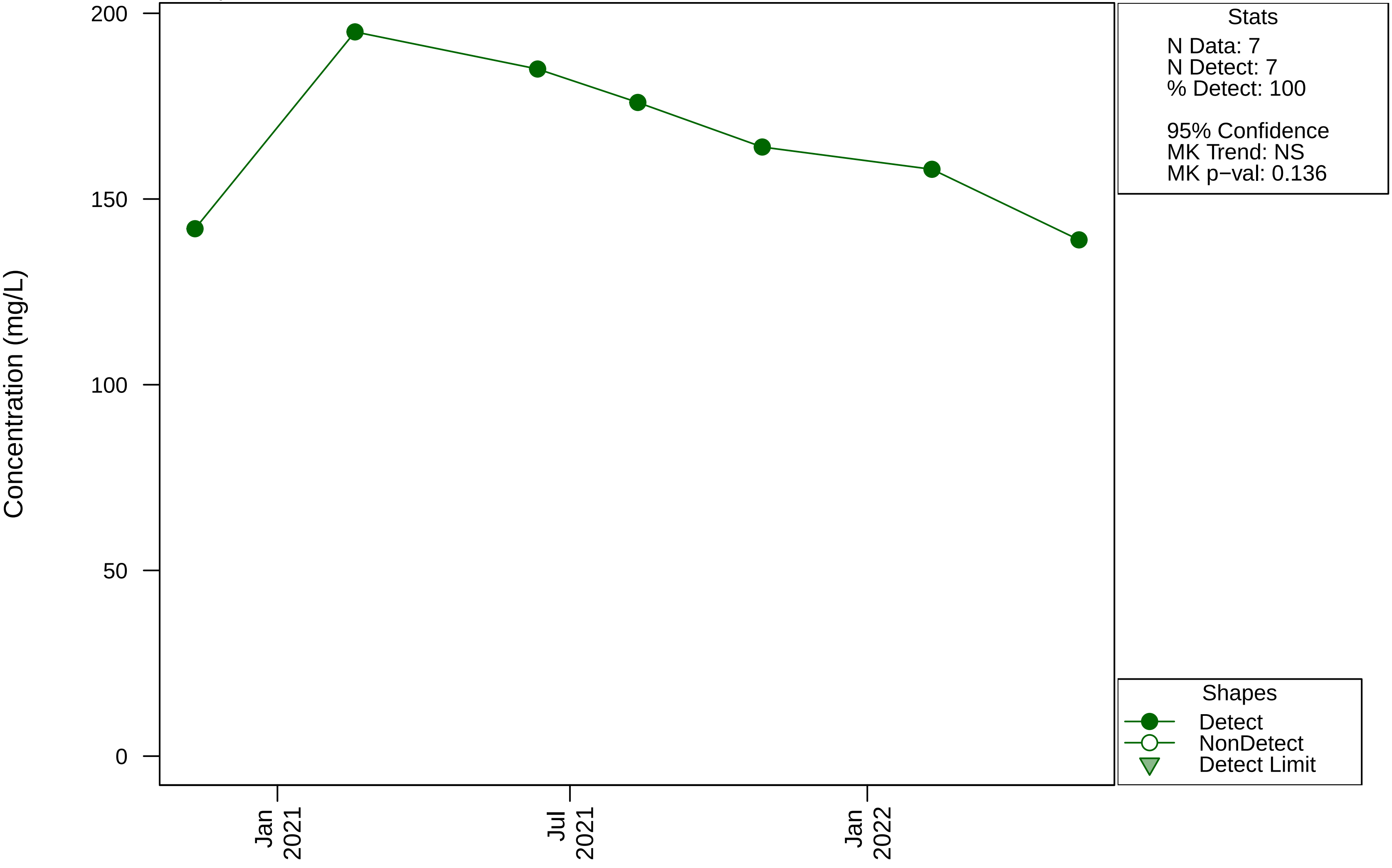
Scatterplots and Trend Analysis
D104, Strontium

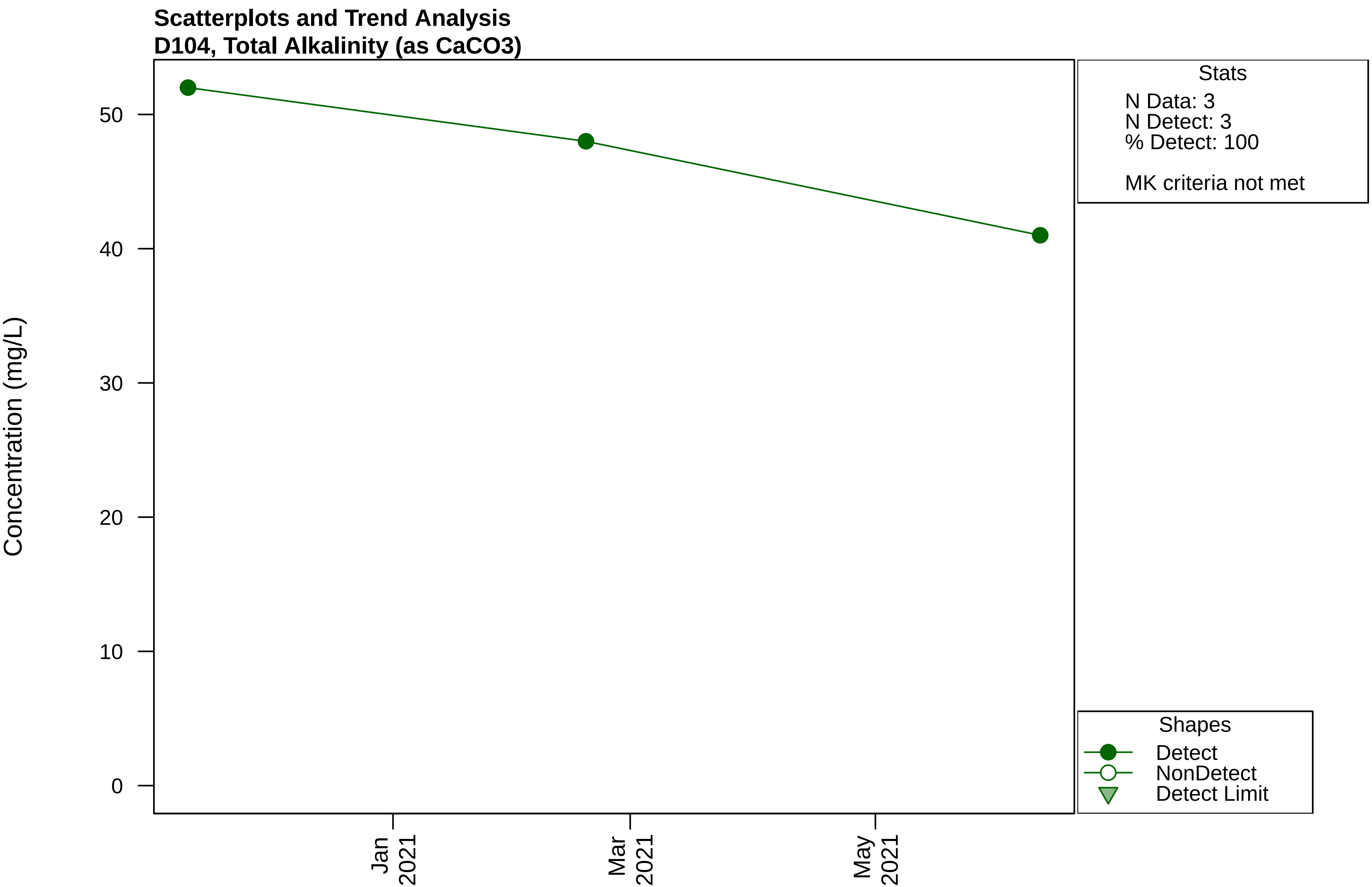


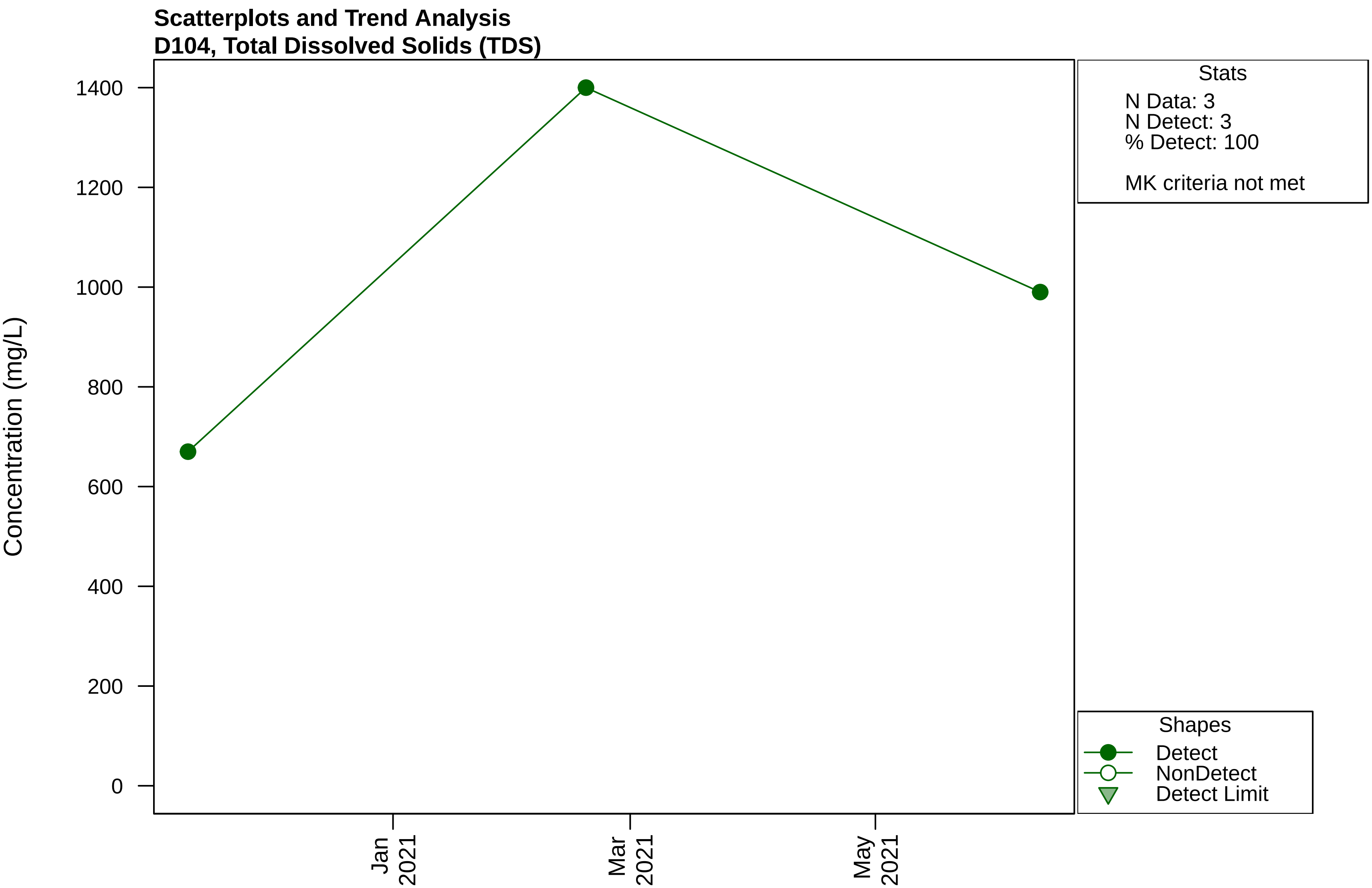


Scatterplots and Trend Analysis
D104, Sulfate (as SO4)
Concentration (mg/L)
0
200
400
600
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 7
N Detect: 7
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.562
Shapes
Detect
NonDetect
Detect Limit

Scatterplots and Trend Analysis
D104, Sulfur

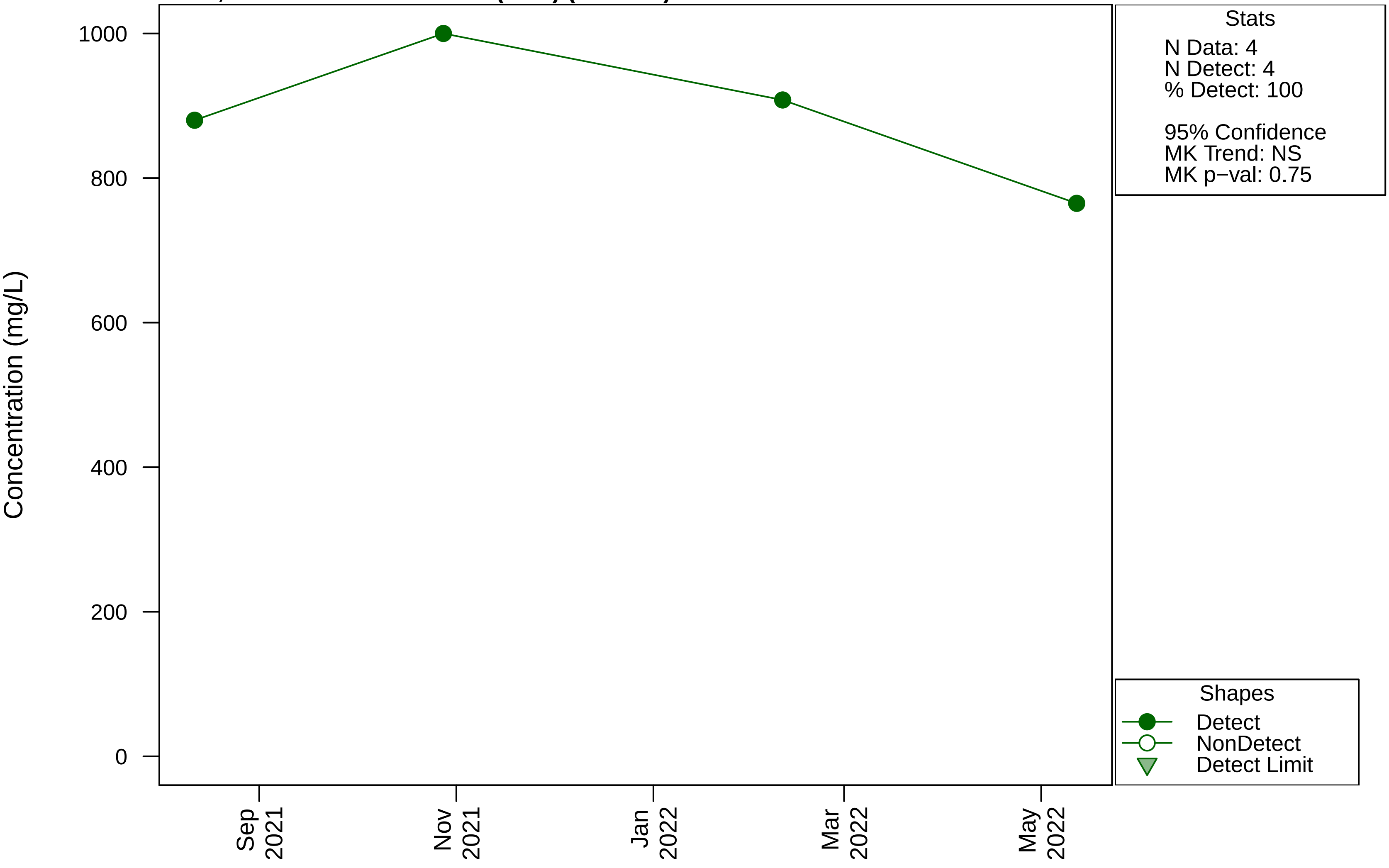


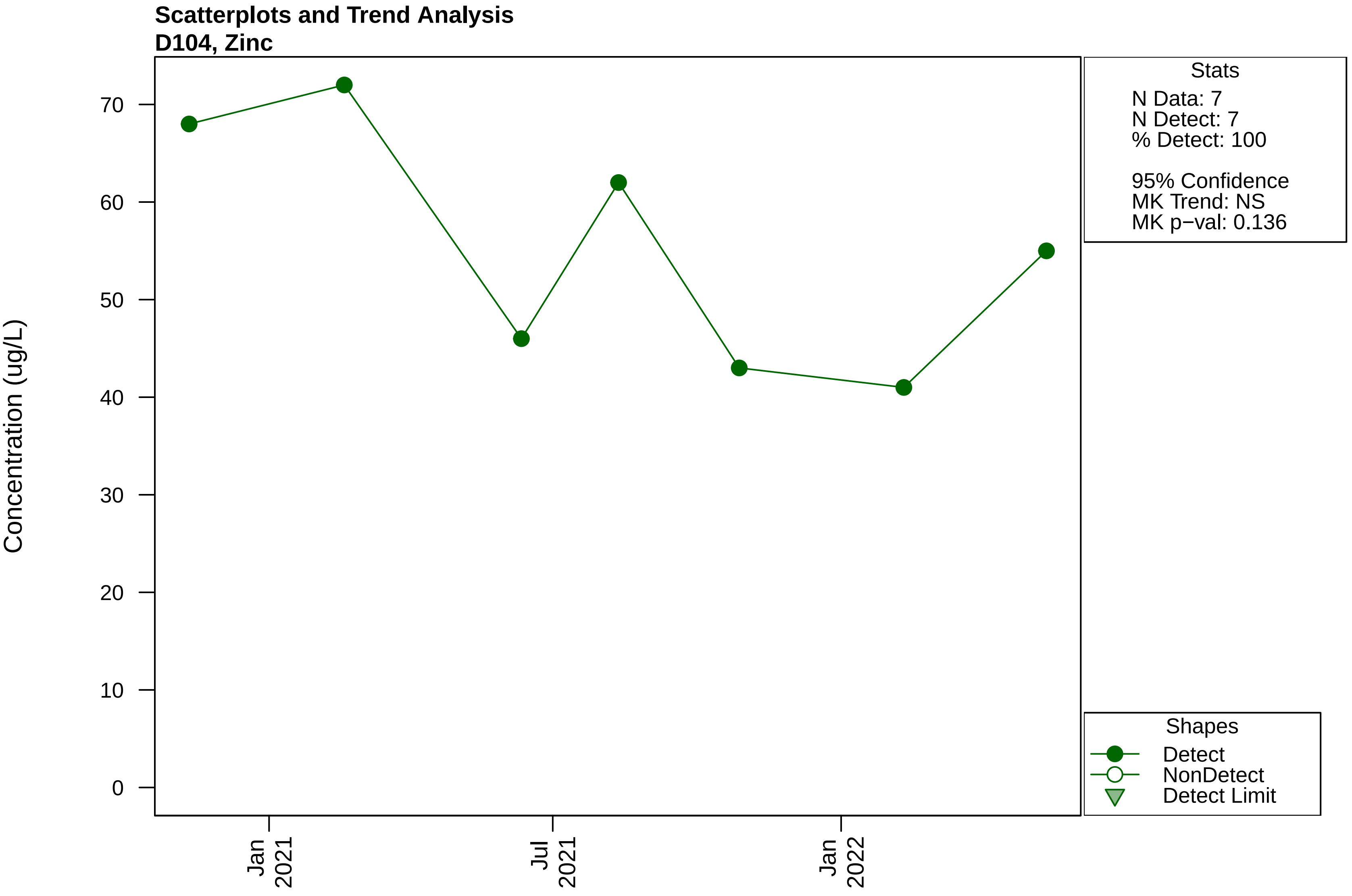

Scatterplots and Trend Analysis
D104, Total Alkalinity (as CaCO3)
Concentration (mg/L)
0
10
20
30
40
50
Jan 2021
Mar 2021
May 2021
Stats
N Data: 3
N Detect: 3
% Detect: 100
MK criteria not met
Shapes
Detect
NonDetect
Detect Limit



Scatterplots and Trend Analysis
D104, Total Dissolved Solids (TDS)
Concentration (mg/L)
0
200
400
600
800
1000
1200
1400
Jan 2021
Mar 2021
May 2021
Stats
N Data: 3
N Detect: 3
% Detect: 100
MK criteria not met
Shapes
Detect
NonDetect
Detect Limit

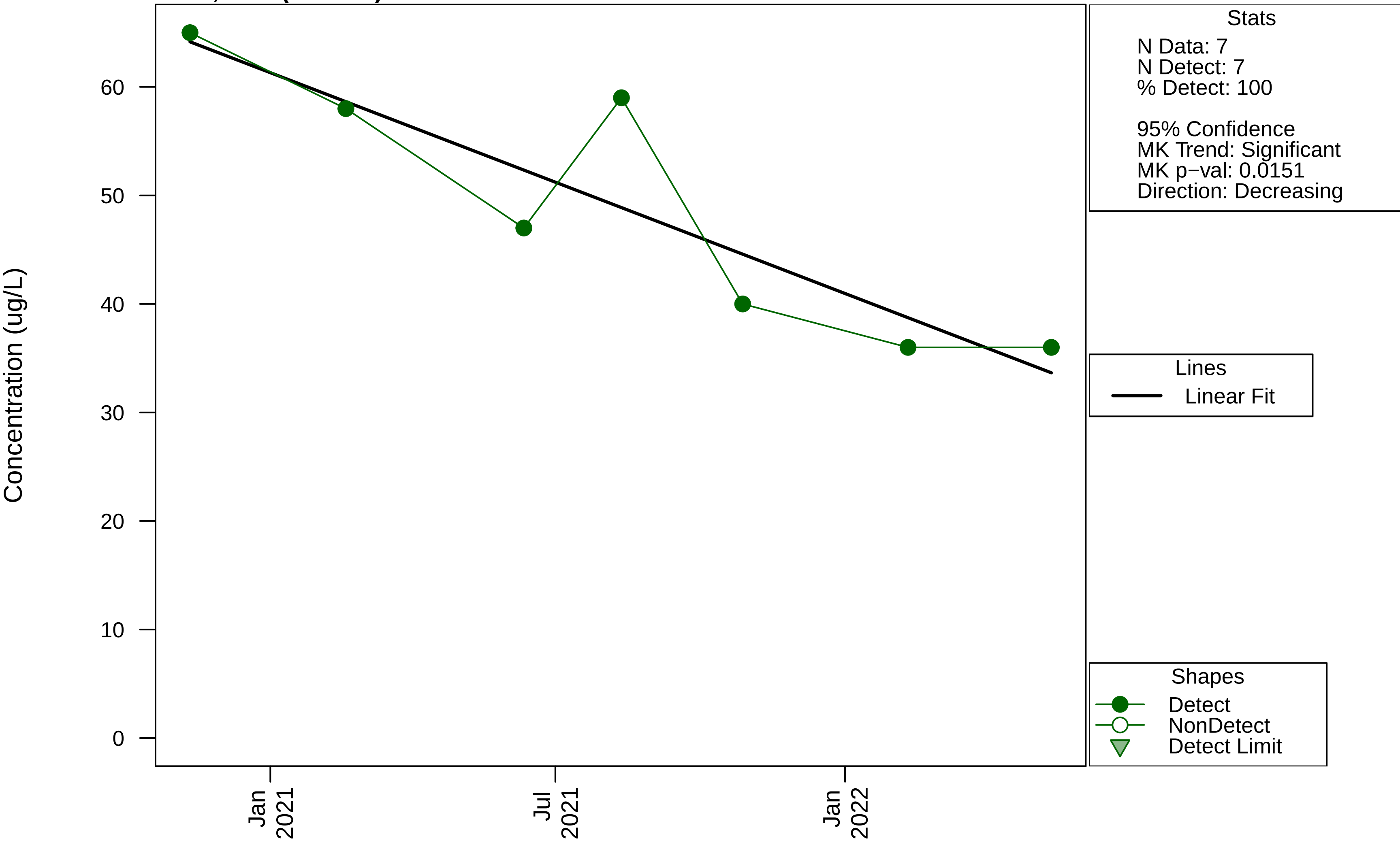
Scatterplots and Trend Analysis
D104, Total Dissolved Solids (TDS) (Filtered)

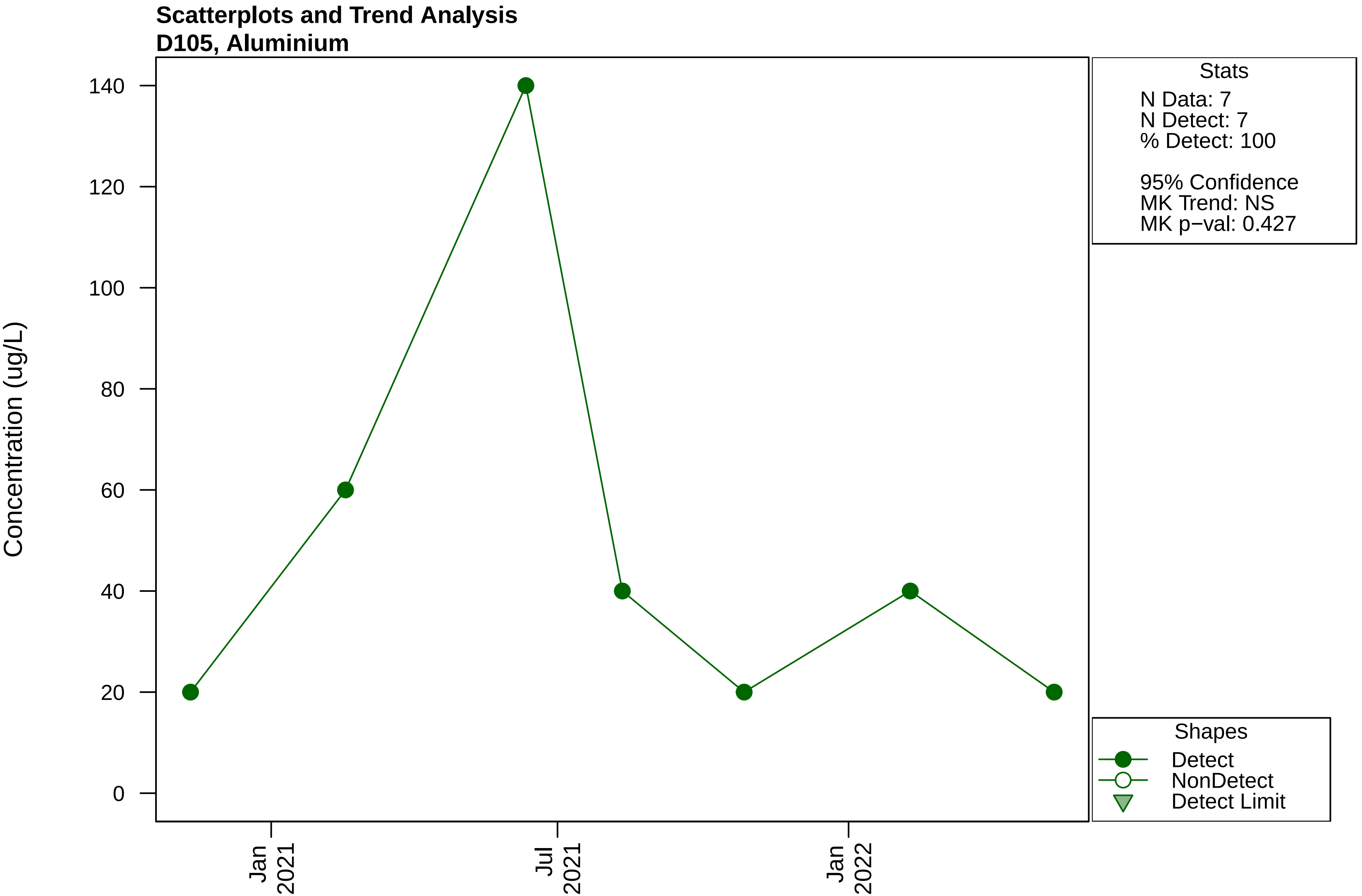


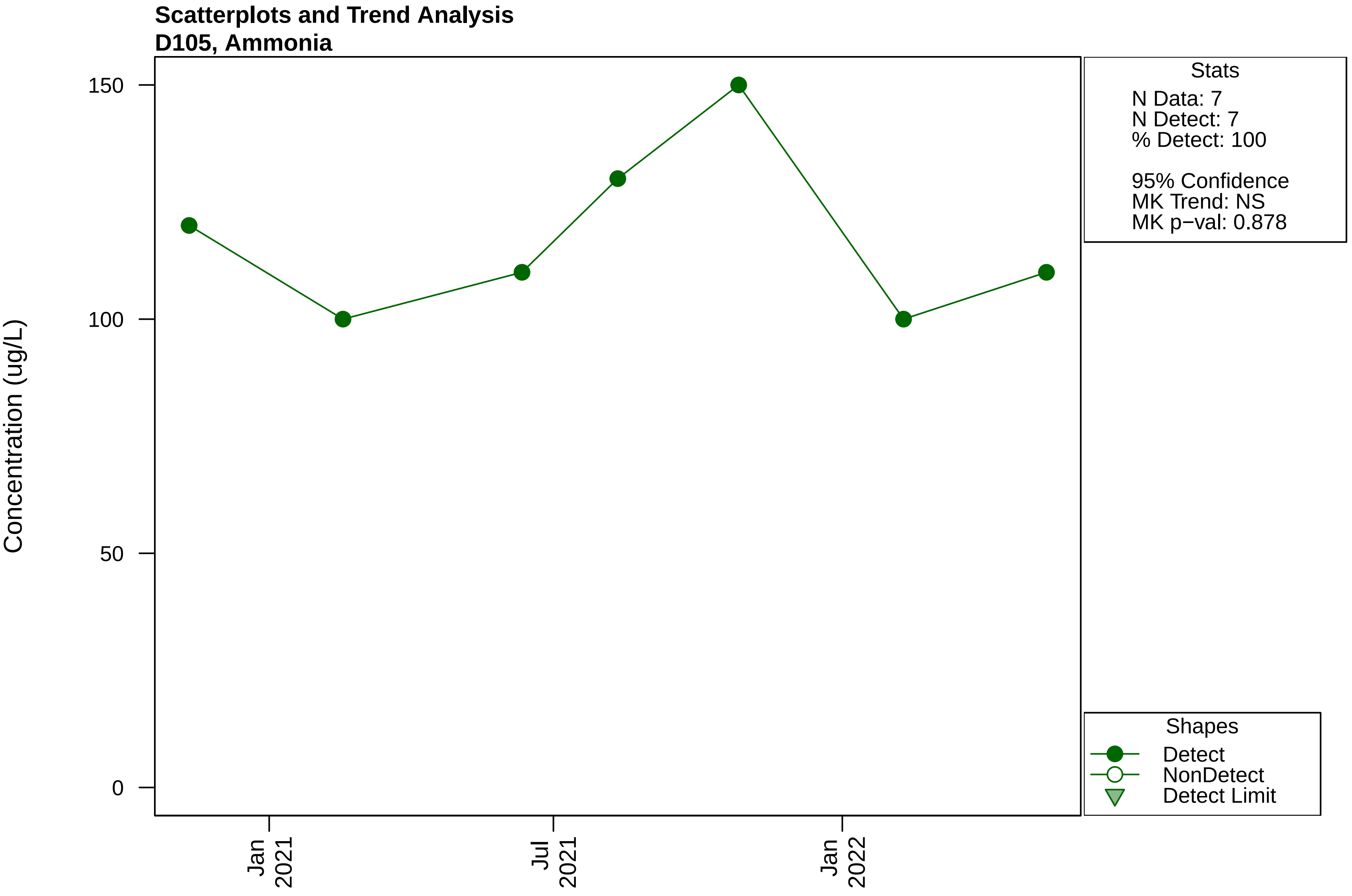


Scatterplots and Trend Analysis
D104, Zinc
Concentration (ug/L)
0
10
20
30
40
50
60
70
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 7
N Detect: 7
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.136
Shapes
Detect
NonDetect
Detect Limit

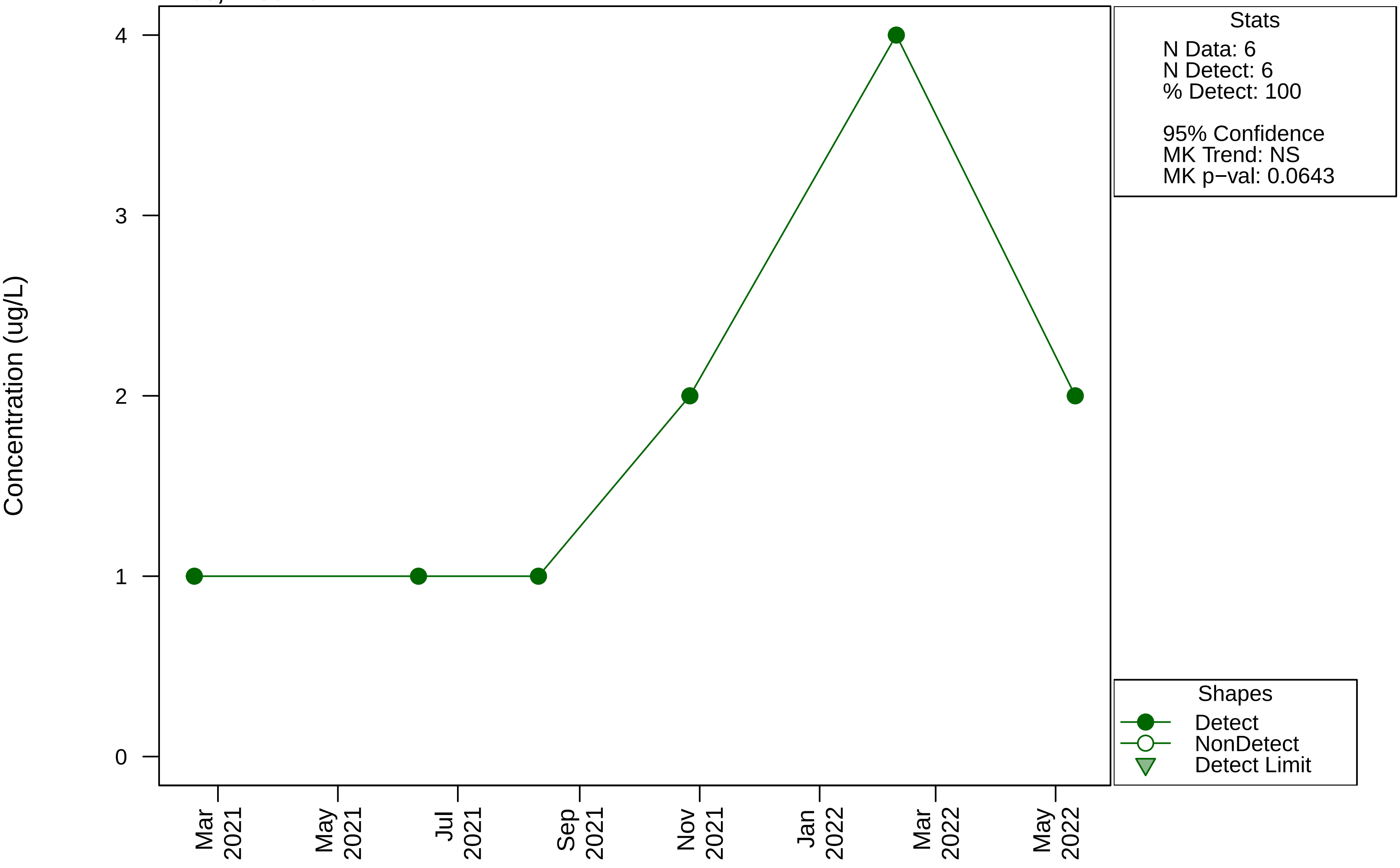
Scatterplots and Trend Analysis
D104, Zinc (Filtered)



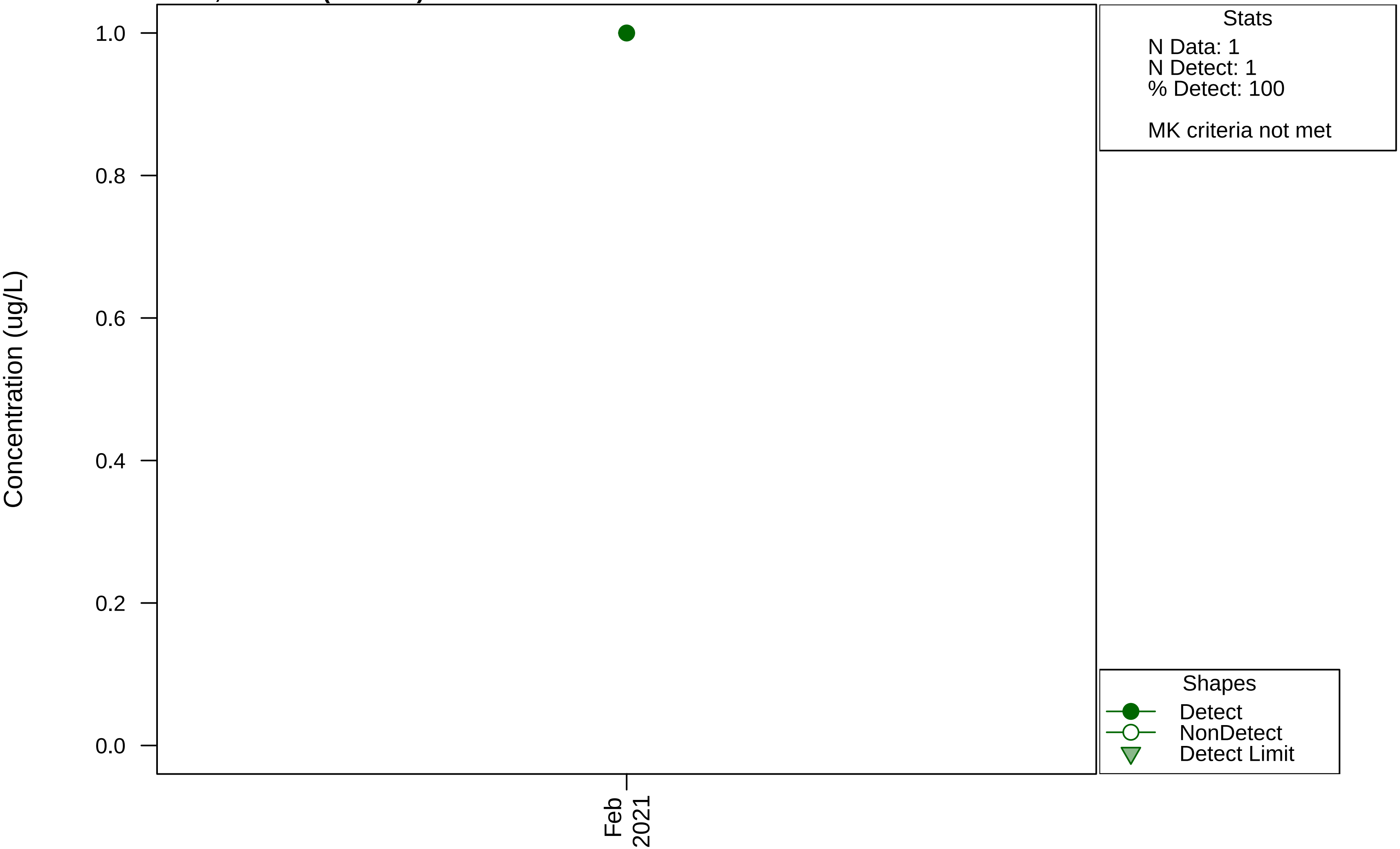

Scatterplots and Trend Analysis
D105, Aluminium
Concentration (ug/L)
0
20
40
60
80
100
120
140
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 7
N Detect: 7
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.427
Shapes
Detect
NonDetect
Detect Limit


Scatterplots and Trend Analysis
D105, Ammonia
Concentration (ug/L)
0
50
100
150
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 7
N Detect: 7
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.878
Shapes
Detect
NonDetect
Detect Limit

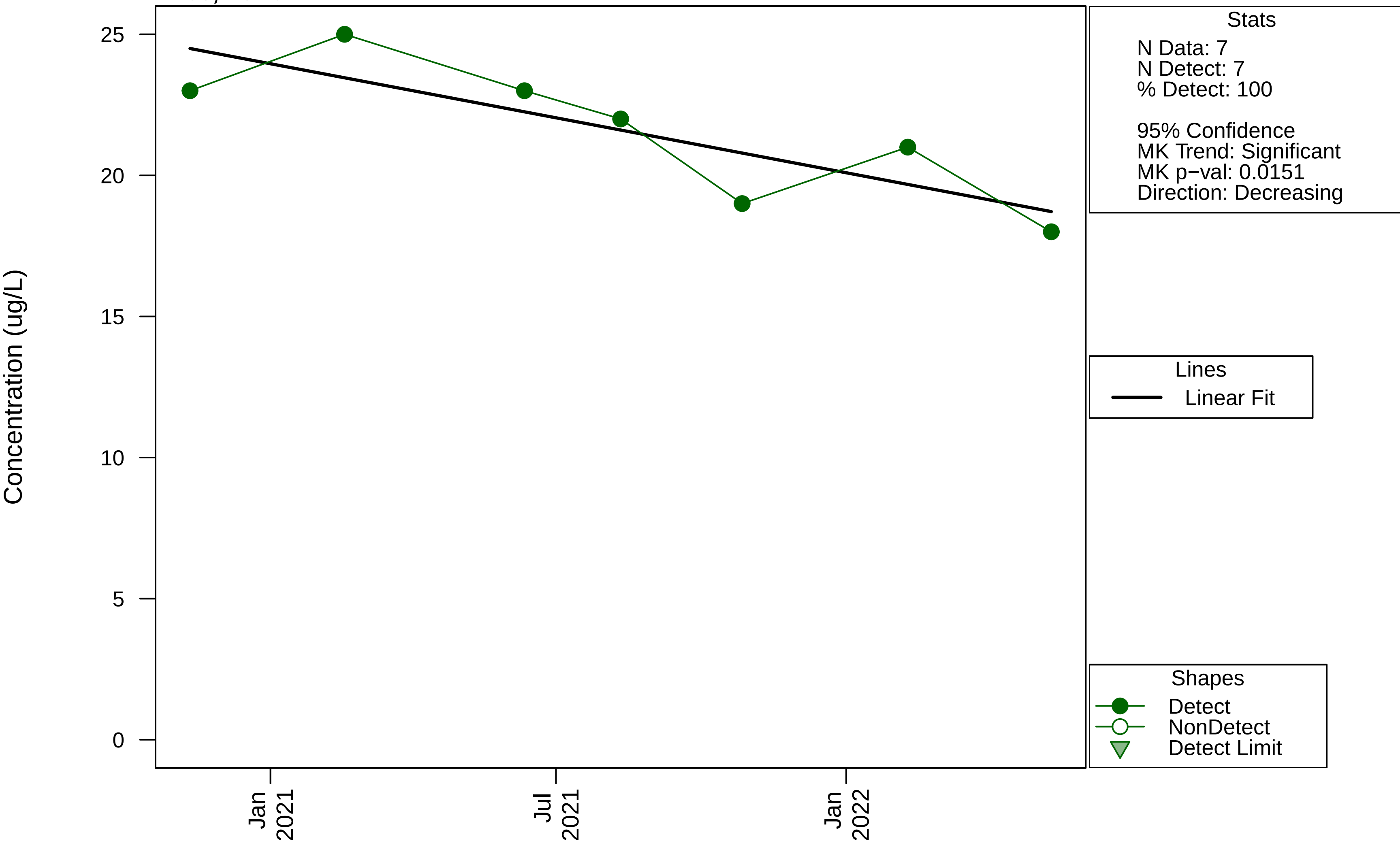
Scatterplots and Trend Analysis
D105, Arsenic



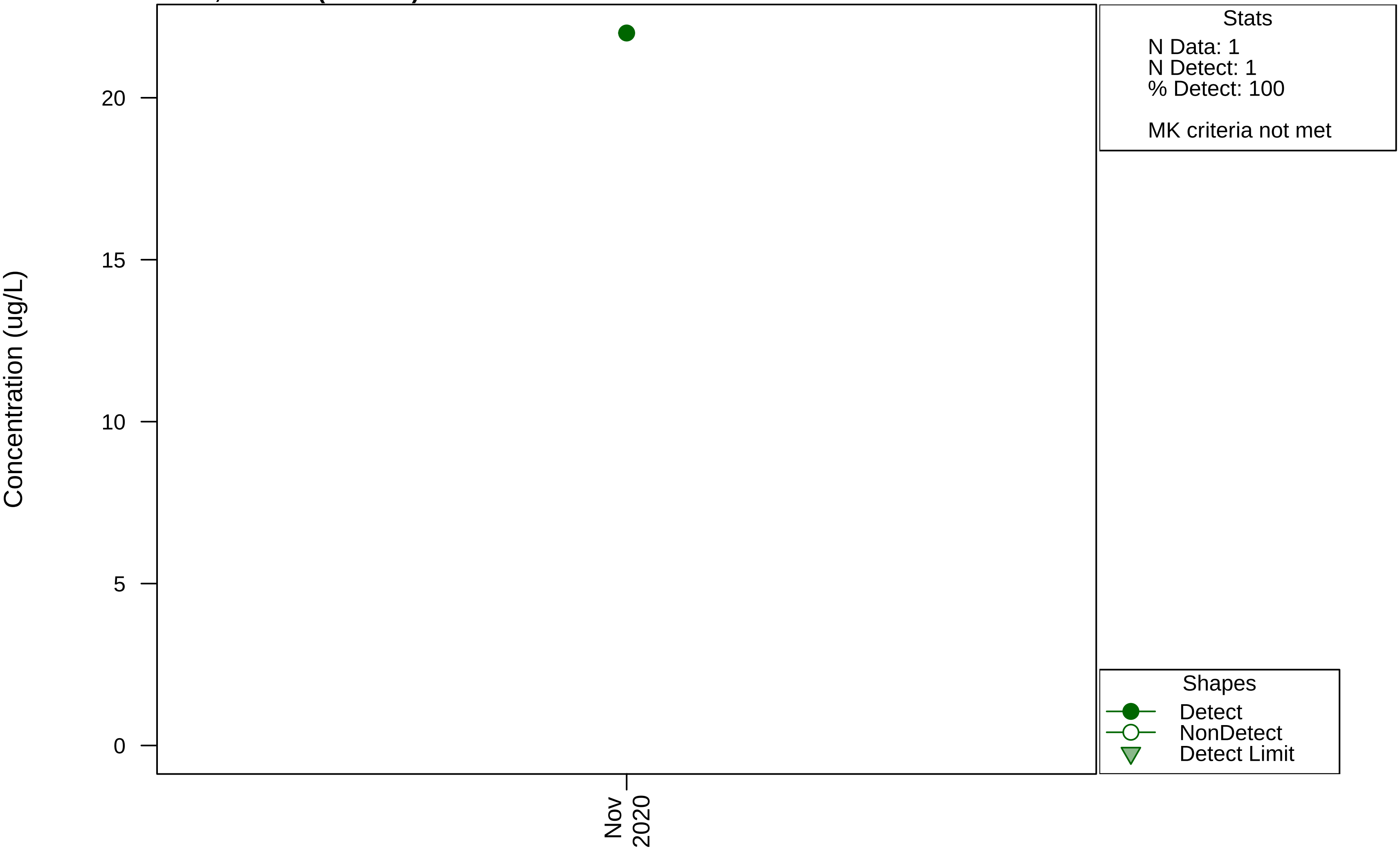
Scatterplots and Trend Analysis
D105, Arsenic (Filtered)



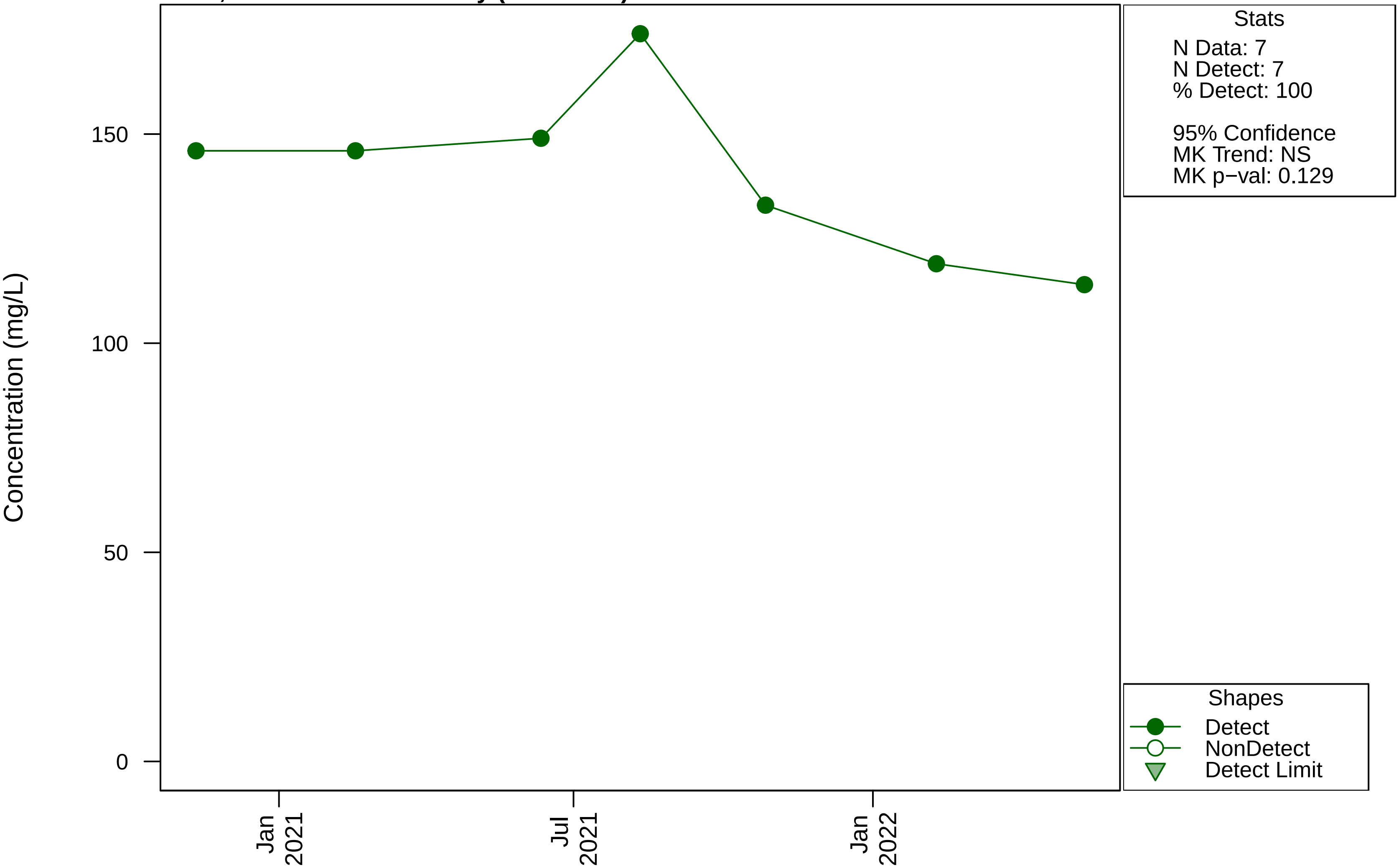
Scatterplots and Trend Analysis
D105, Barium

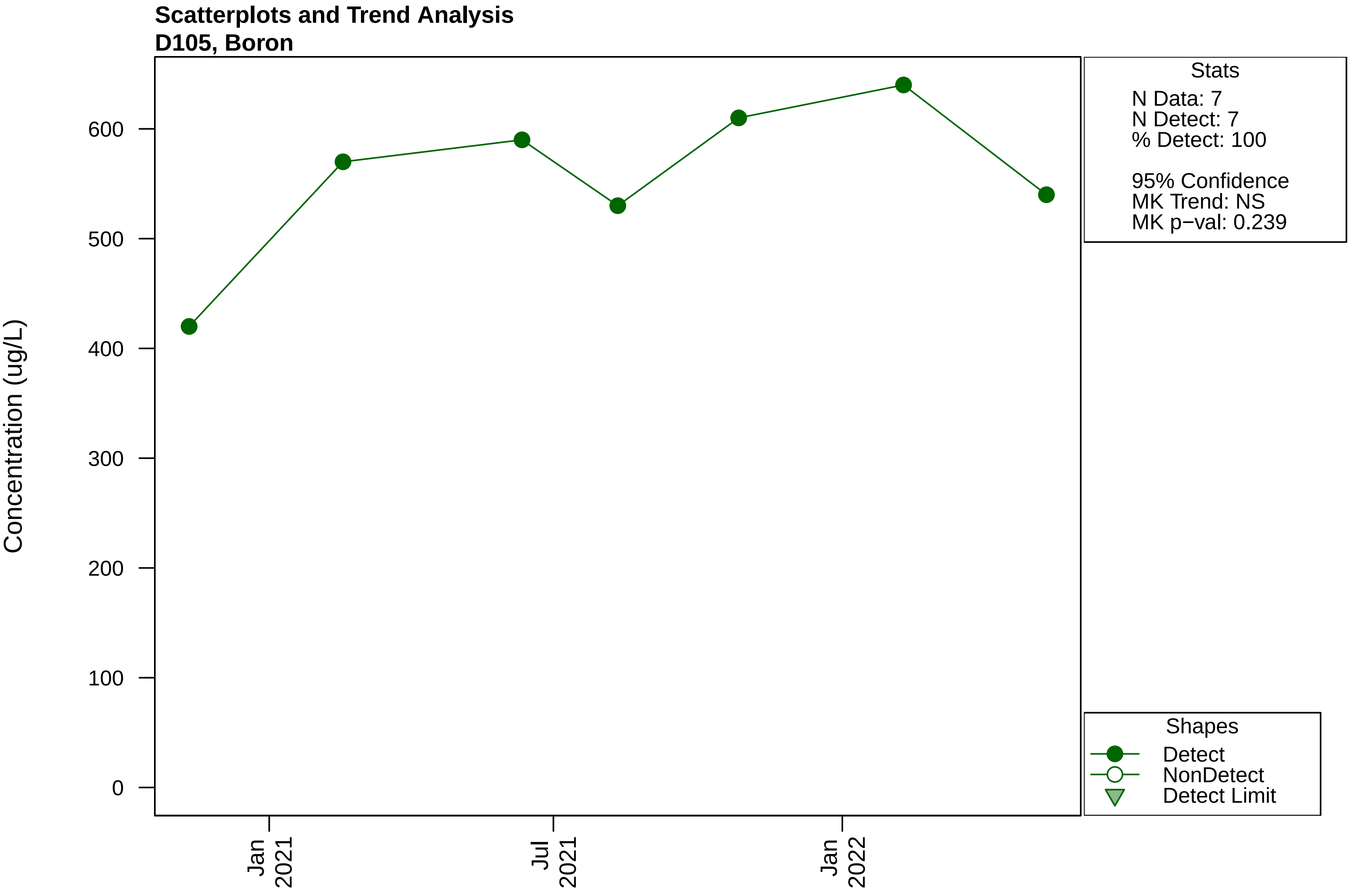


Scatterplots and Trend Analysis
D105, Barium (Filtered)



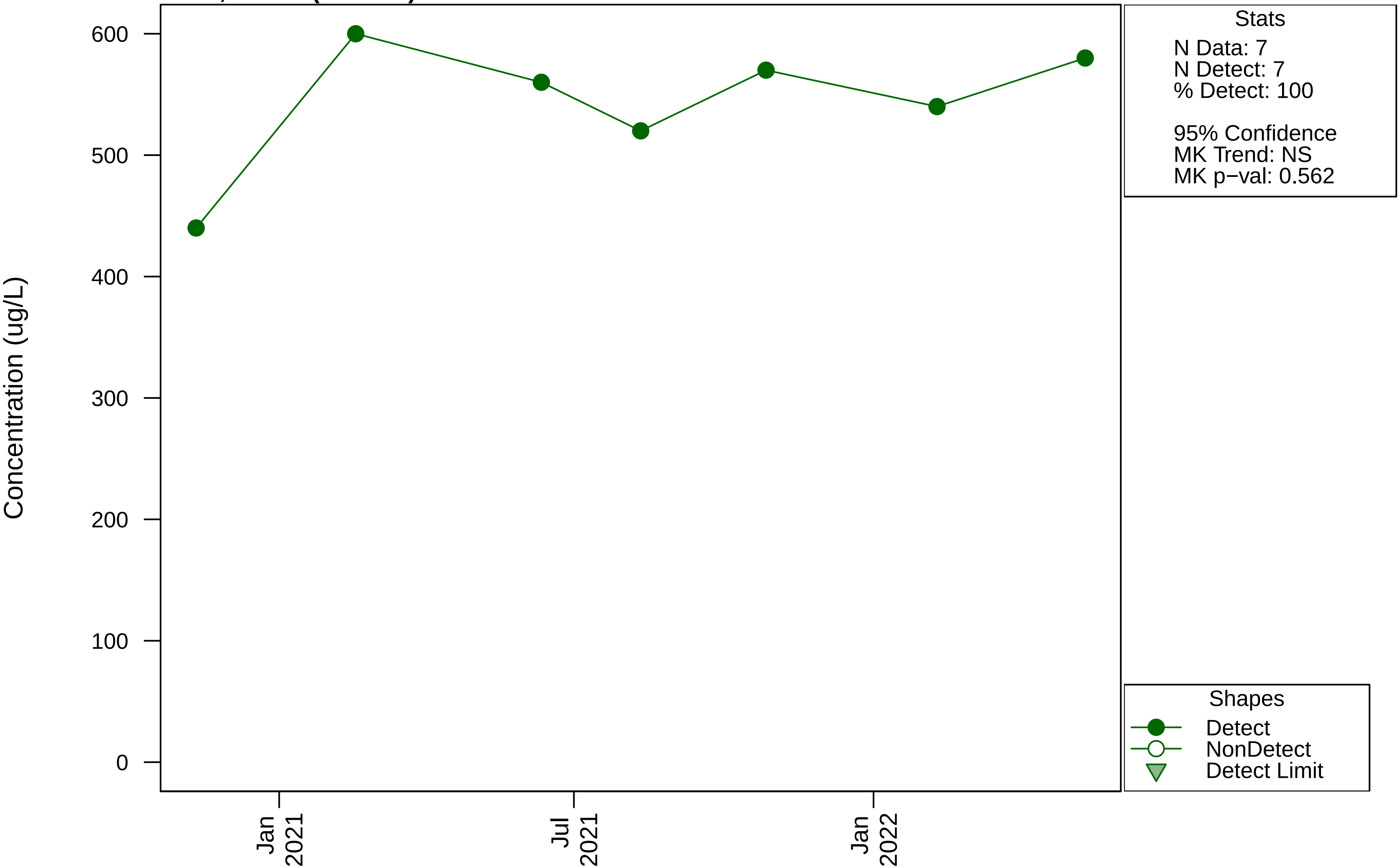
Scatterplots and Trend Analysis
D105, Bicarbonate Alkalinity (as CaCO3)

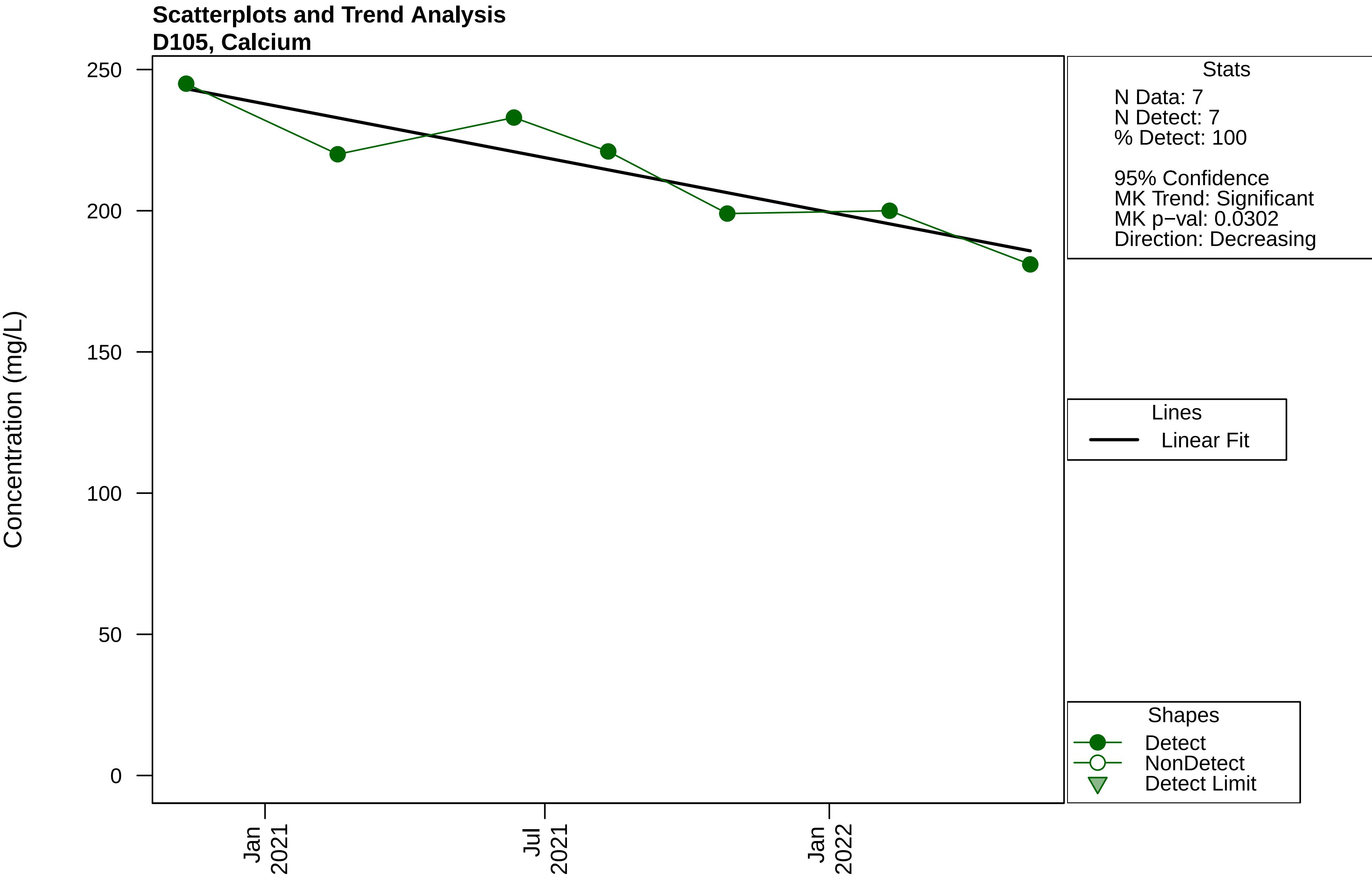




Scatterplots and Trend Analysis
D105, Boron
Concentration (ug/L)
0
100
200
300
400
500
600
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 7
N Detect: 7
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.239
Shapes
Detect
NonDetect
Detect Limit

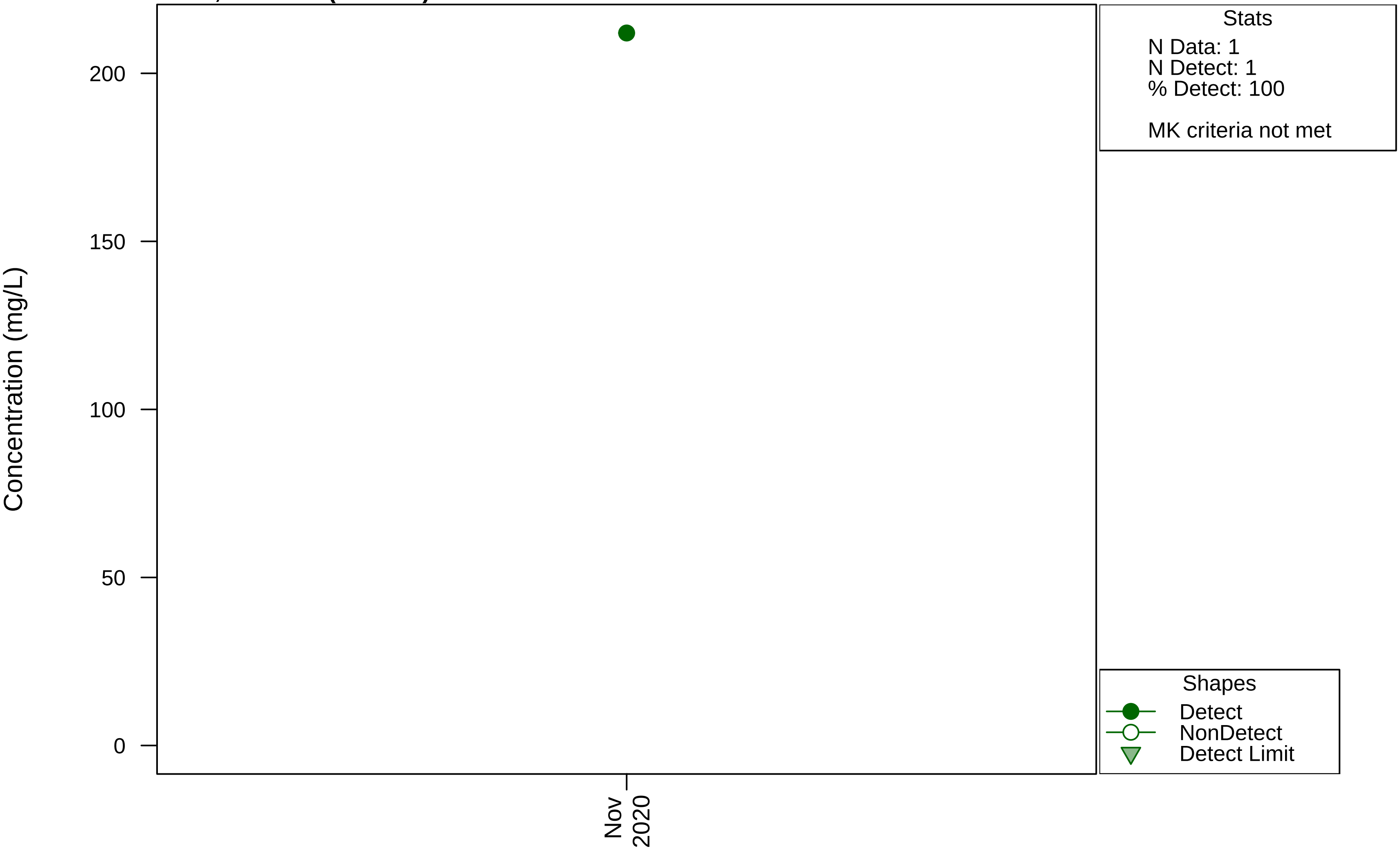
Scatterplots and Trend Analysis
D105, Boron (Filtered)

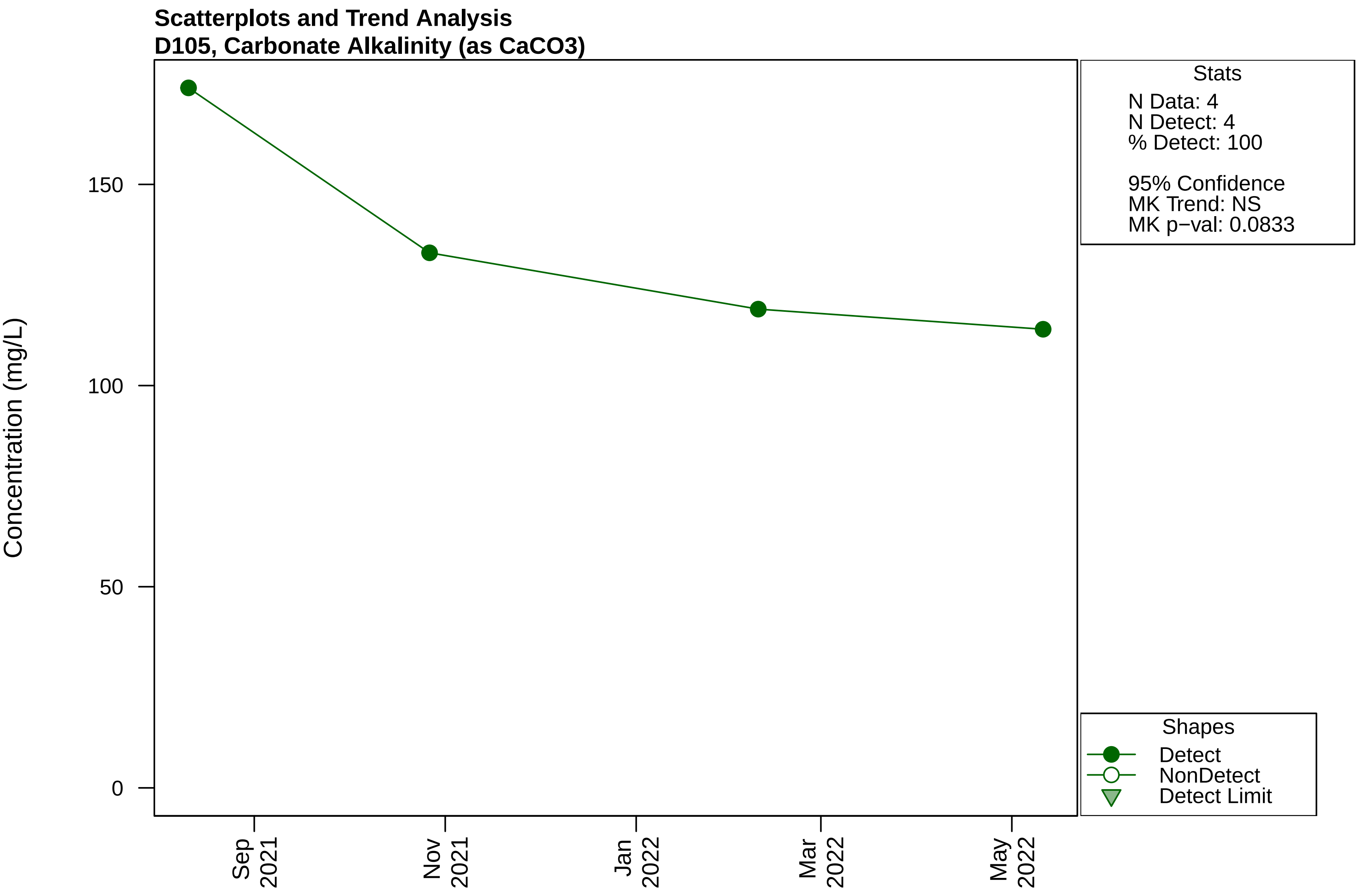




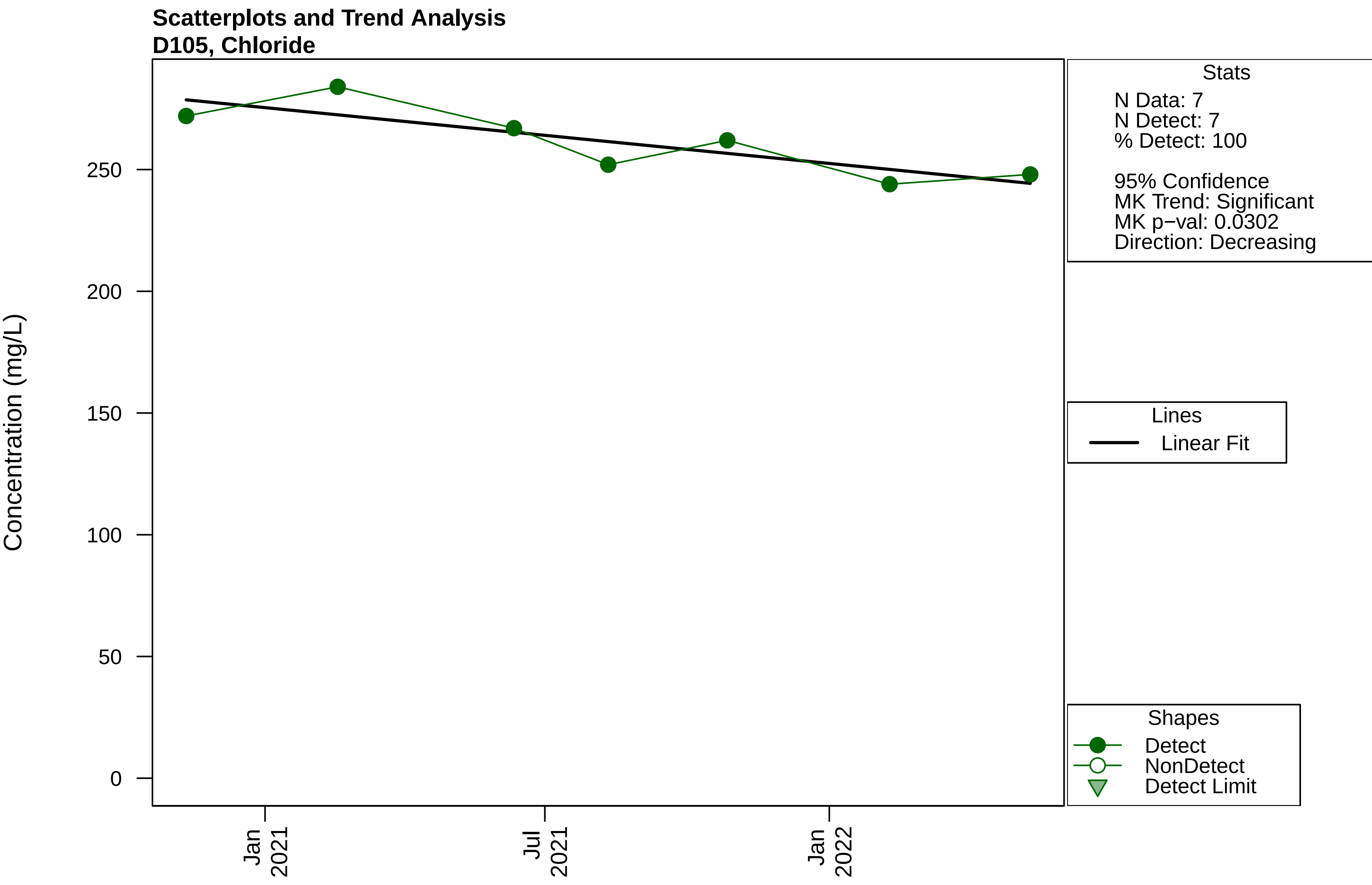
Scatterplots and Trend Analysis
D105, Calcium
Concentration (mg/L)
250
200
150
100
50
0
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 7
N Detect: 7
% Detect: 100
95% Confidence
MK Trend: Significant
MK p−val: 0.0302
Direction: Decreasing
Lines
Linear Fit
Shapes
Detect
NonDetect
Detect Limit

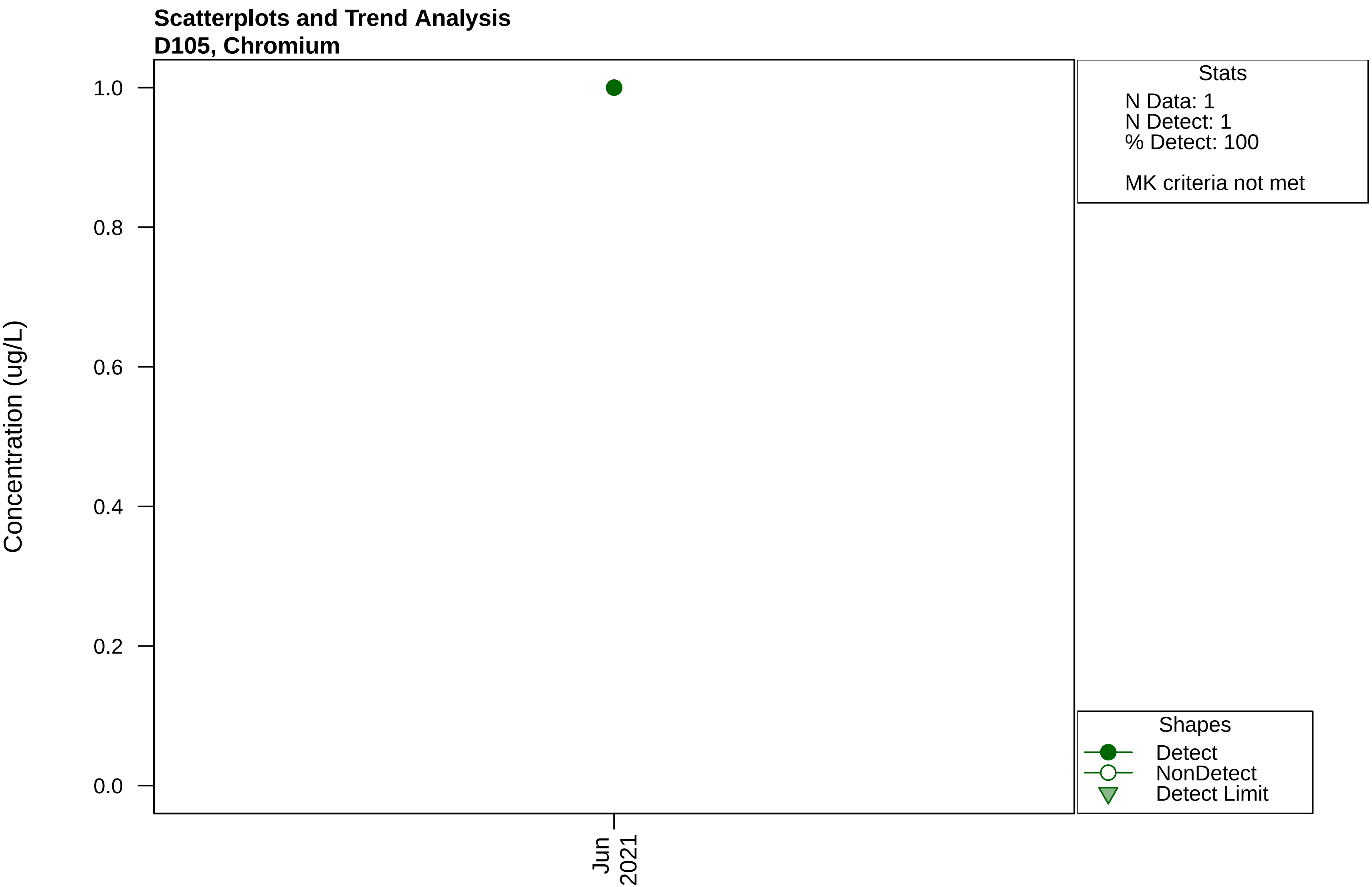
Scatterplots and Trend Analysis
D105, Calcium (Filtered)



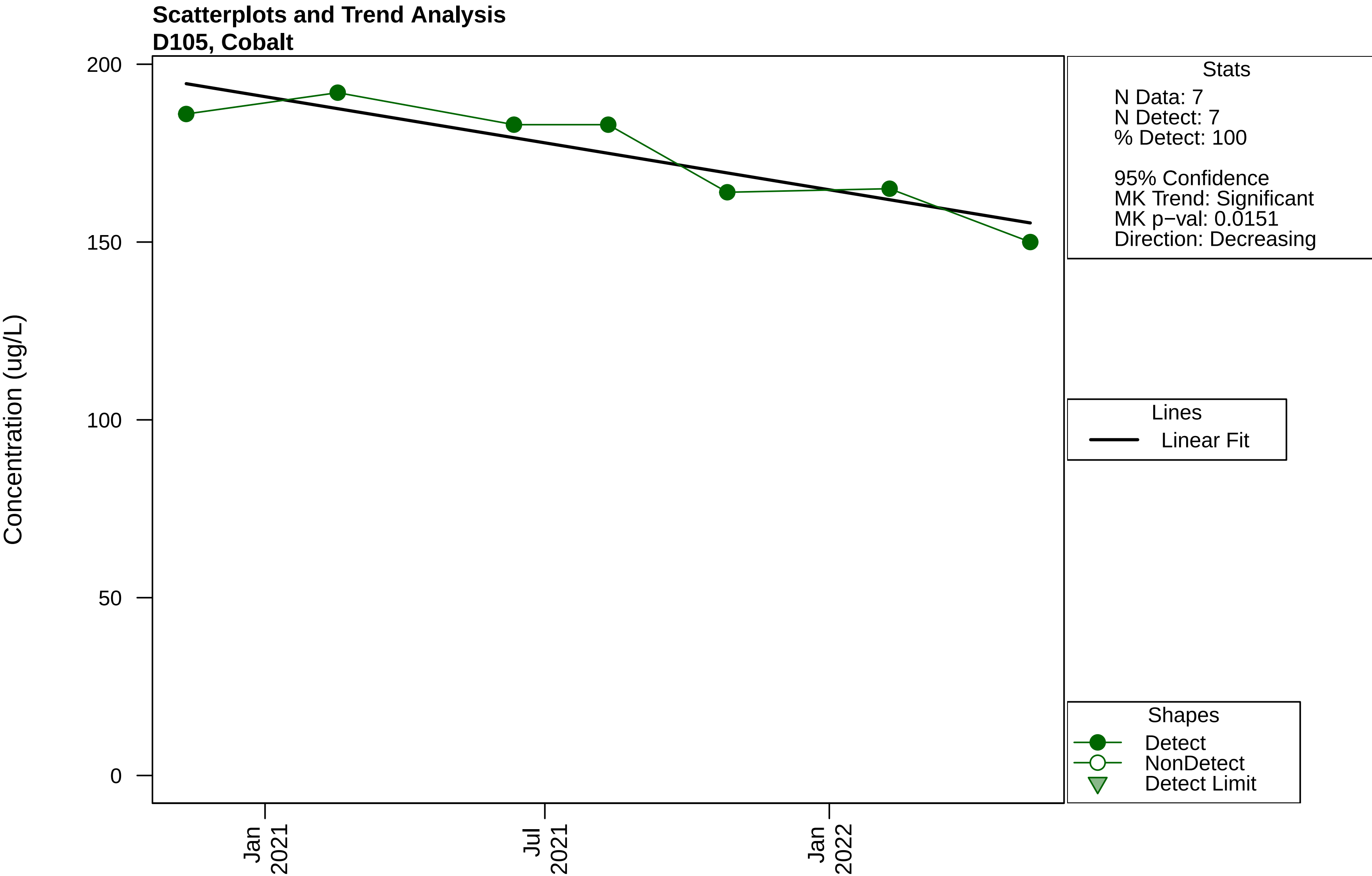


Scatterplots and Trend Analysis
D105, Carbonate Alkalinity (as CaCO3)
Concentration (mg/L)
150
100
50
0
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 4
N Detect: 4
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.0833
Shapes
Detect
NonDetect
Detect Limit

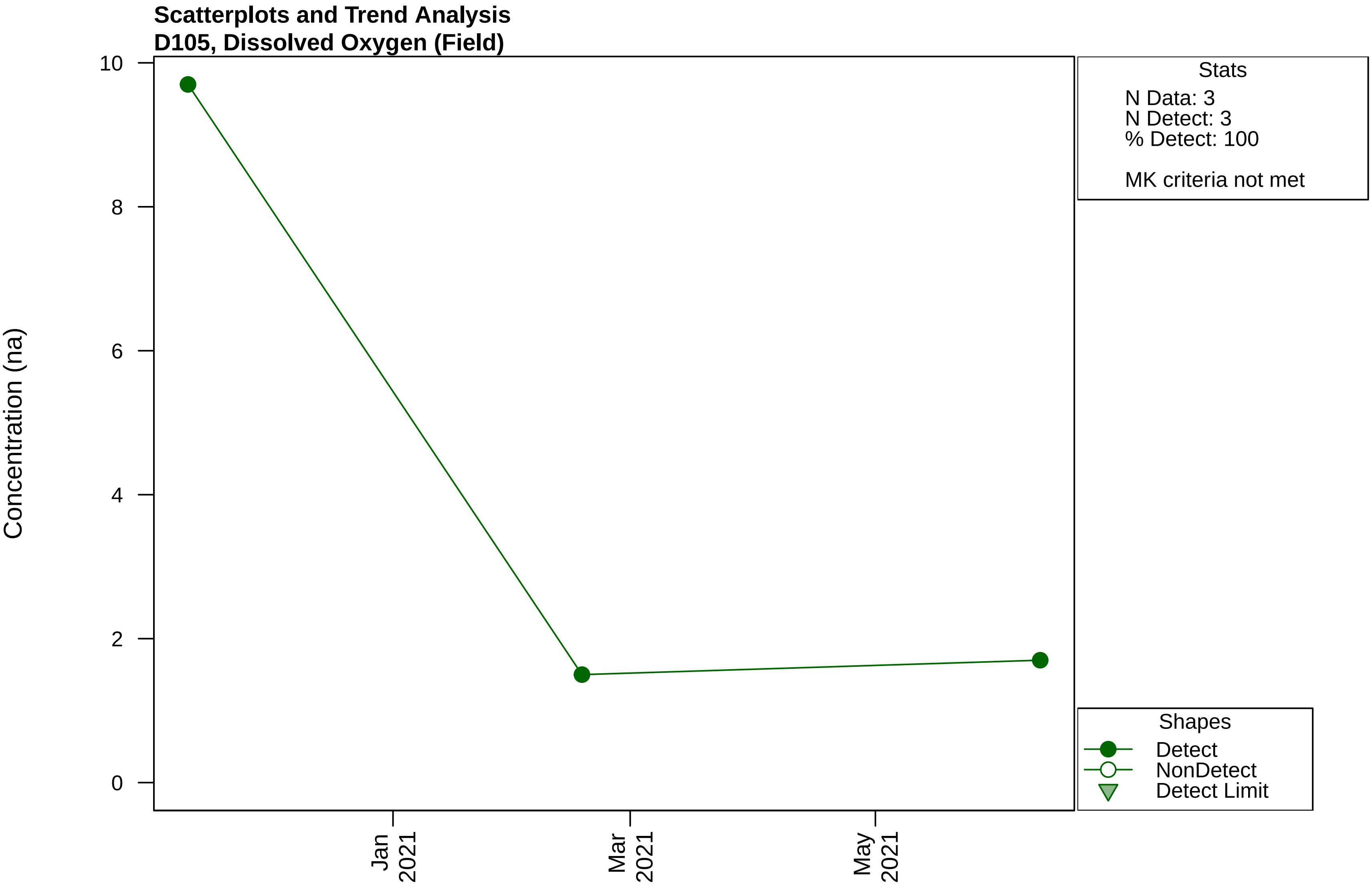

Scatterplots and Trend Analysis
D105, Chloride
Concentration (mg/L)
0
50
100
150
200
250
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 7
N Detect: 7
% Detect: 100
95% Confidence
MK Trend: Significant
MK p−val: 0.0302
Direction: Decreasing
Lines
Linear Fit
Shapes
Detect
NonDetect
Detect Limit



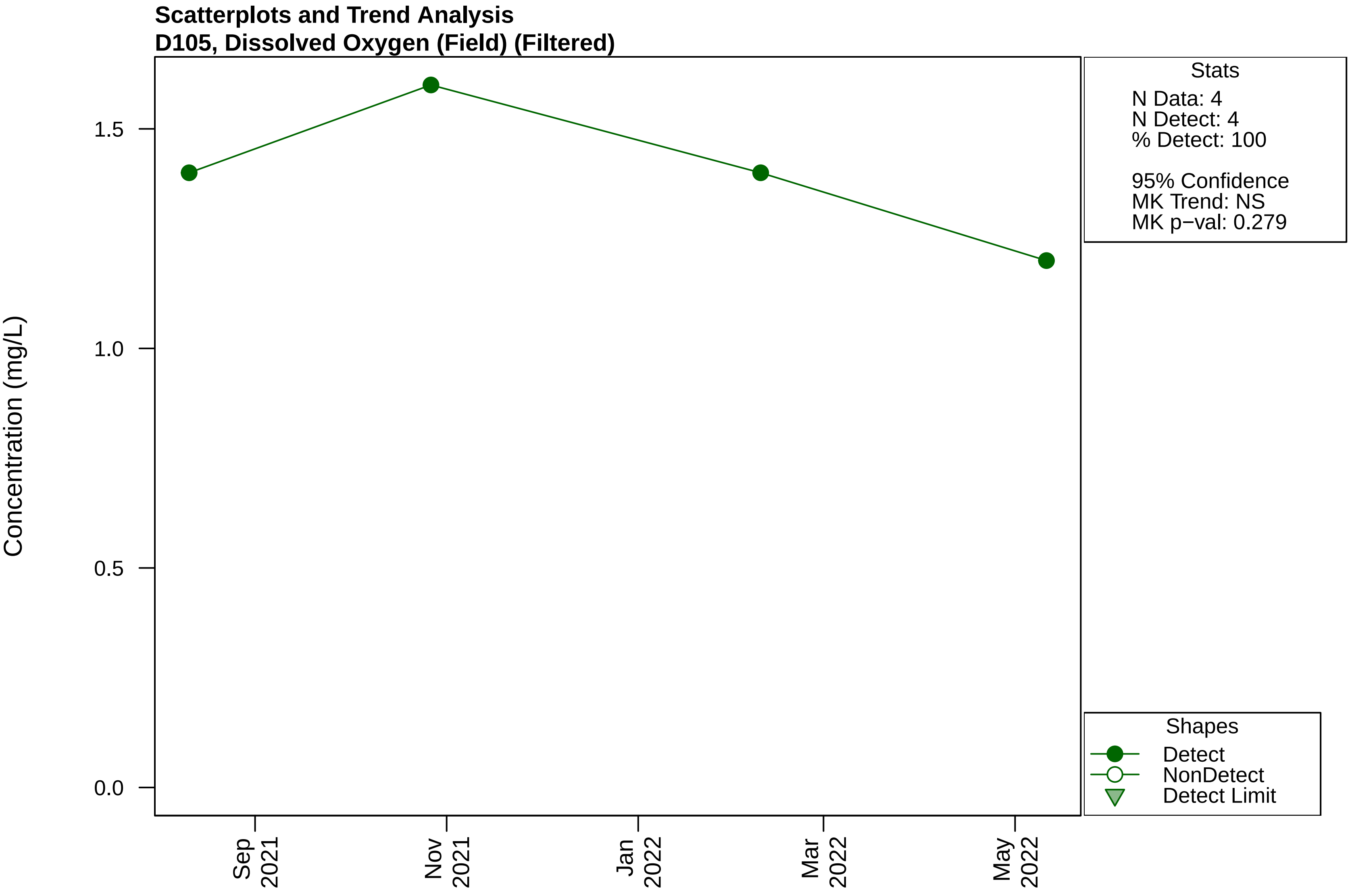
Scatterplots and Trend Analysis
D105, Chromium
Concentration (ug/L)
1.0
0.8
0.6
0.4
0.2
0.0
Jun 2021
Stats
N Data: 1
N Detect: 1
% Detect: 100
MK criteria not met
Shapes
Detect
NonDetect
Detect Limit



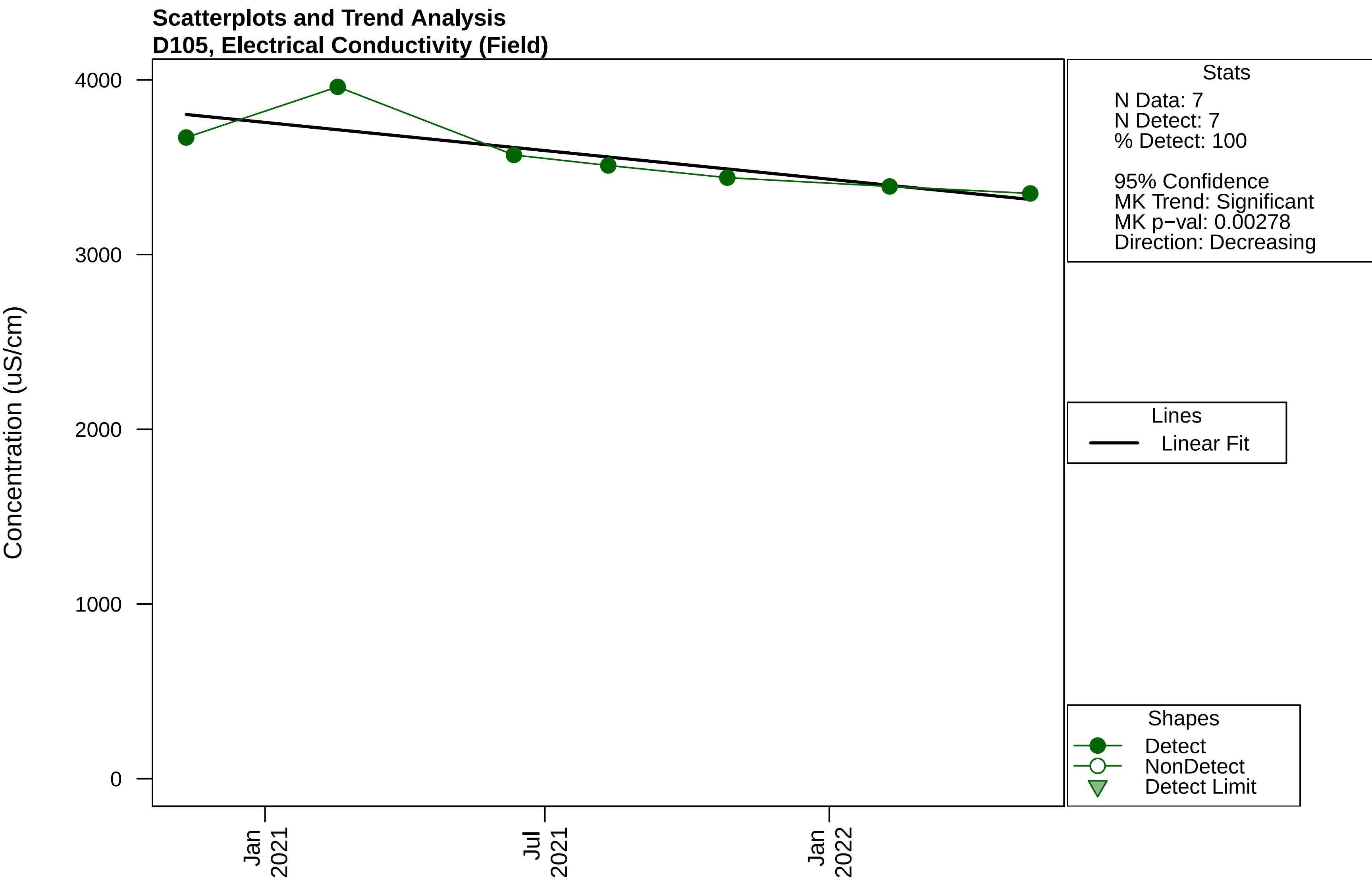
Scatterplots and Trend Analysis
D105, Cobalt
Concentration (ug/L)
200
150
100
50
0
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 7
N Detect: 7
% Detect: 100
95% Confidence
MK Trend: Significant
MK p−val: 0.0151
Direction: Decreasing
Lines
Linear Fit
Shapes
Detect
NonDetect
Detect Limit

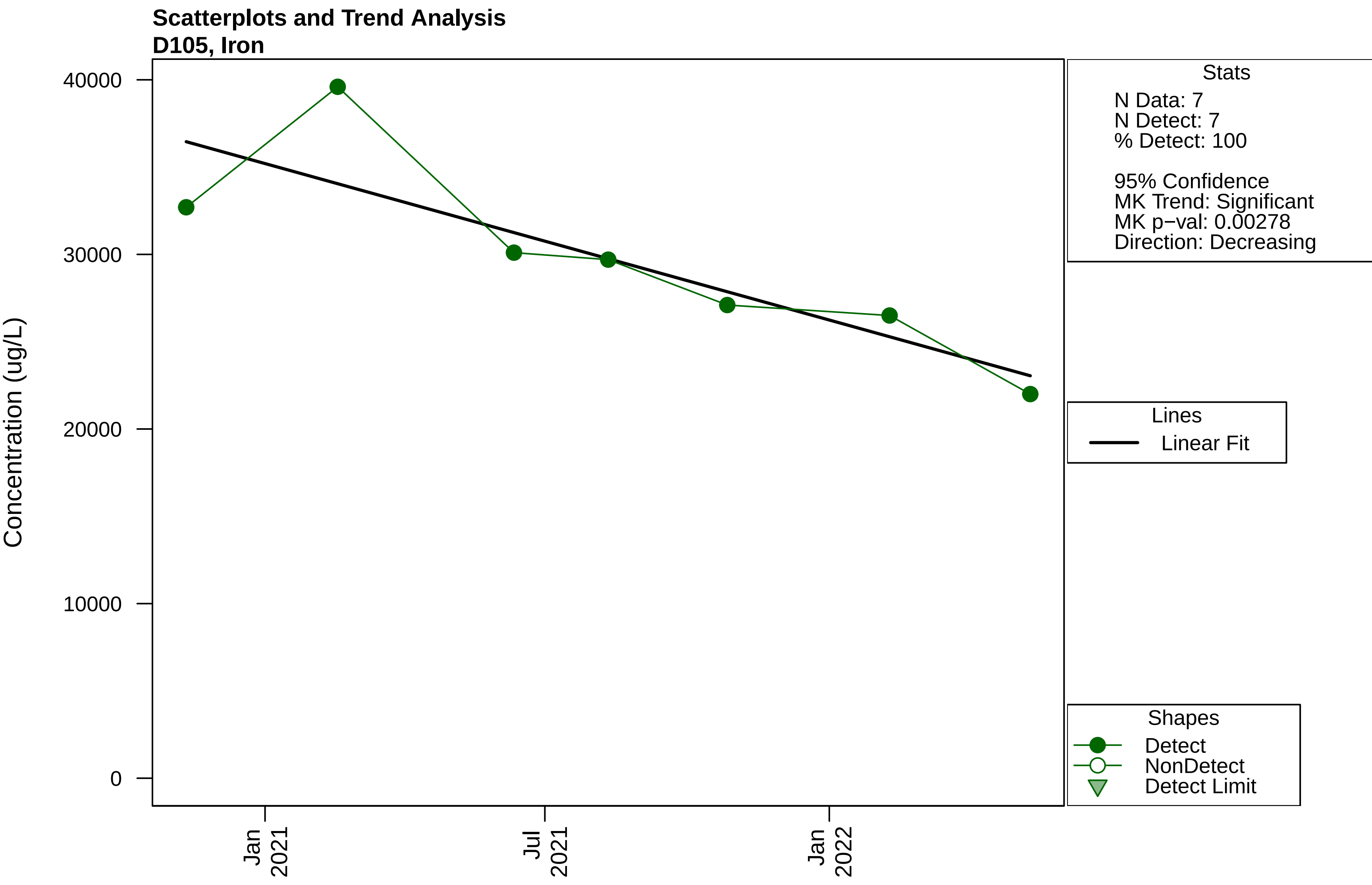


Scatterplots and Trend Analysis
D105, Dissolved Oxygen (Field)
Concentration (na)
10
8
6
4
2
0
Jan 2021
Mar 2021
May 2021
Stats
N Data: 3
N Detect: 3
% Detect: 100
MK criteria not met
Shapes
Detect
NonDetect
Detect Limit

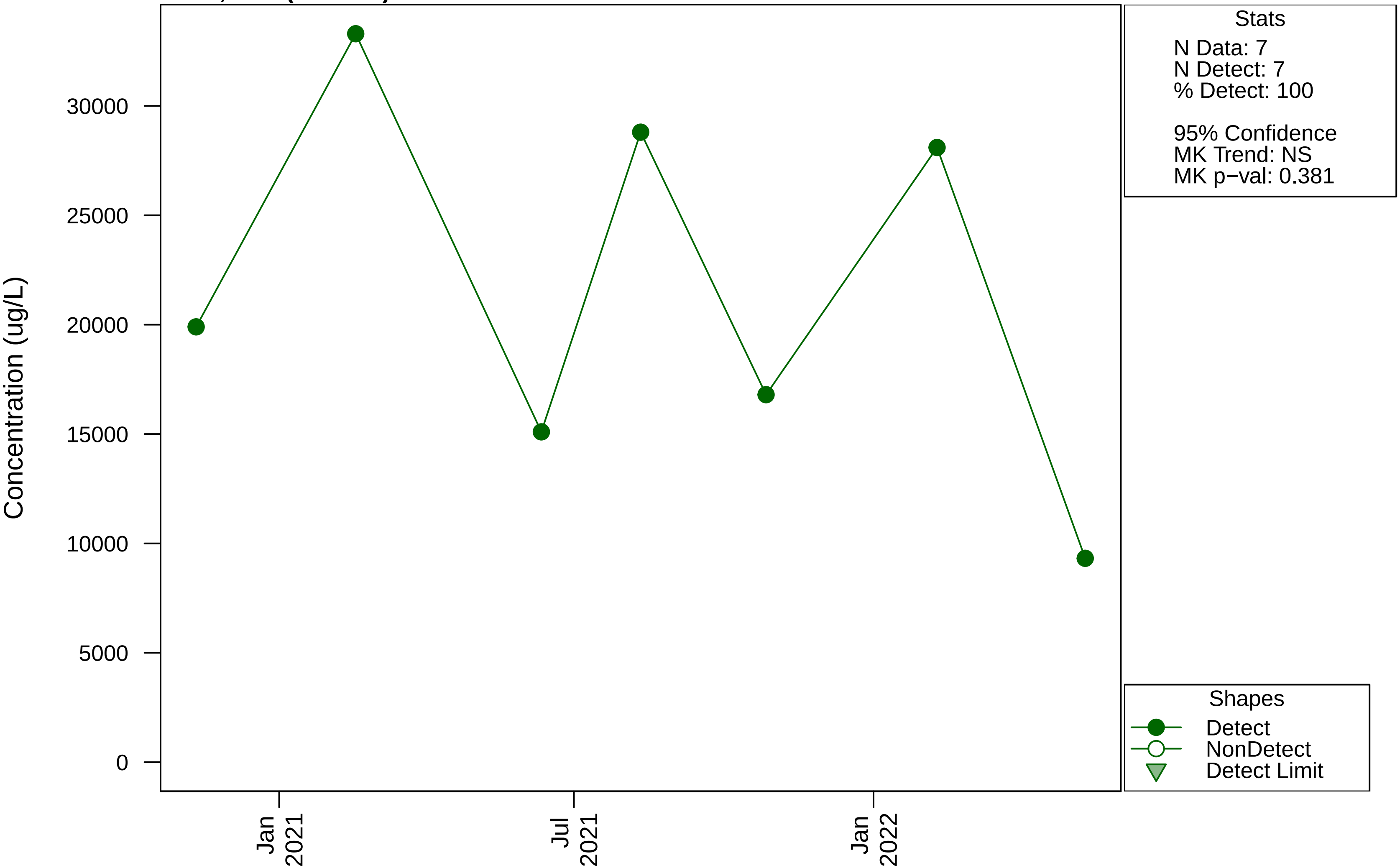


Scatterplots and Trend Analysis
D105, Dissolved Oxygen (Field) (Filtered)
Concentration (mg/L)
0.0
0.5
1.0
1.5
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 4
N Detect: 4
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.279
Shapes
Detect
NonDetect
Detect Limit

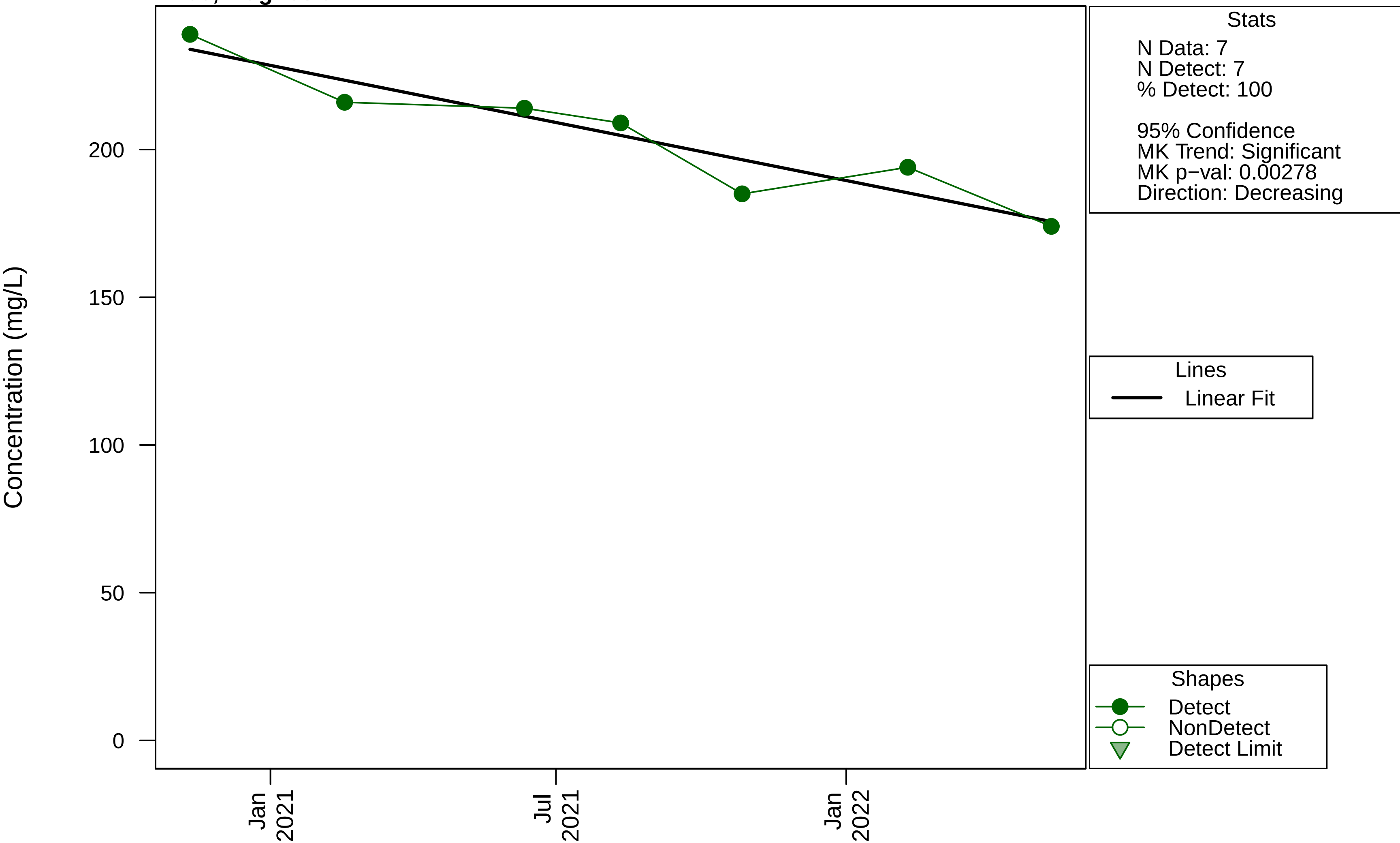

Scatterplots and Trend Analysis
D105, Electrical Conductivity (Field)
Concentration (uS/cm)
4000
3000
2000
1000
0
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 7
N Detect: 7
% Detect: 100
95% Confidence
MK Trend: Significant
MK p−val: 0.00278
Direction: Decreasing
Lines
Linear Fit
Shapes
Detect
NonDetect
Detect Limit


Scatterplots and Trend Analysis
D105, Iron
Concentration (ug/L)
40000
30000
20000
10000
0
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 7
N Detect: 7
% Detect: 100
95% Confidence
MK Trend: Significant
MK p−val: 0.00278
Direction: Decreasing
Lines
Linear Fit
Shapes
Detect
NonDetect
Detect Limit

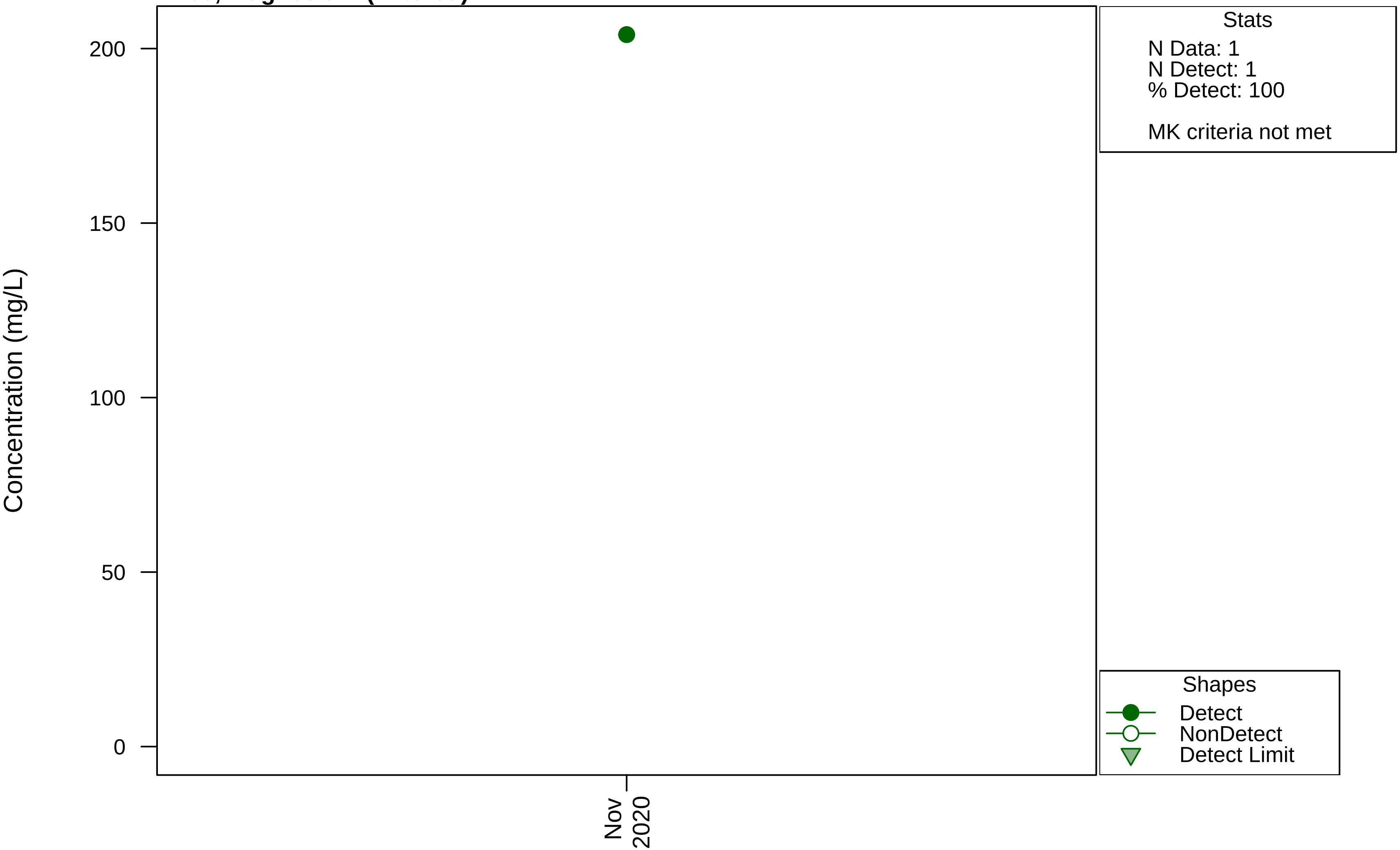
Scatterplots and Trend Analysis
D105, Iron (Filtered)

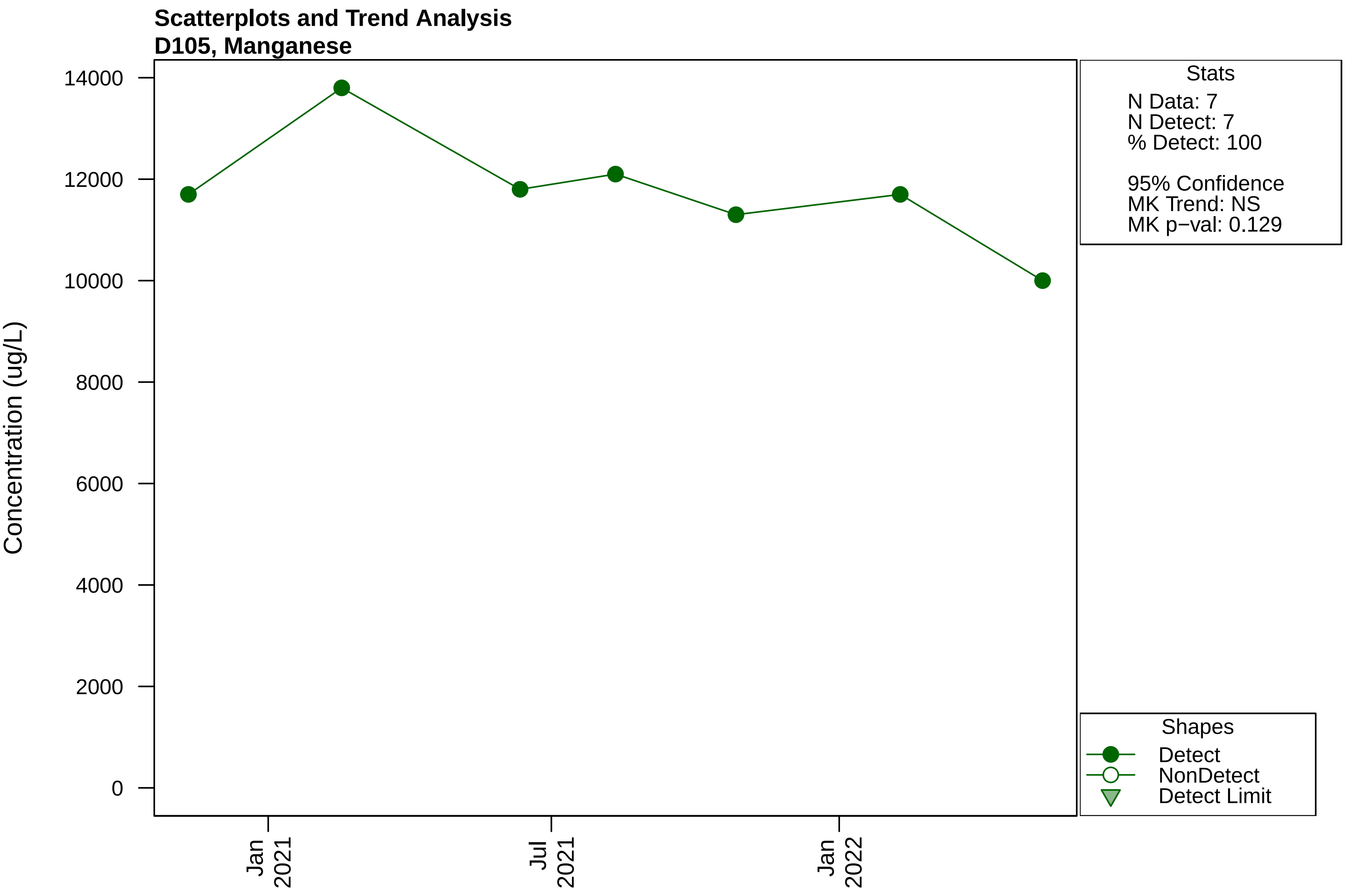


Scatterplots and Trend Analysis
D105, Magnesium



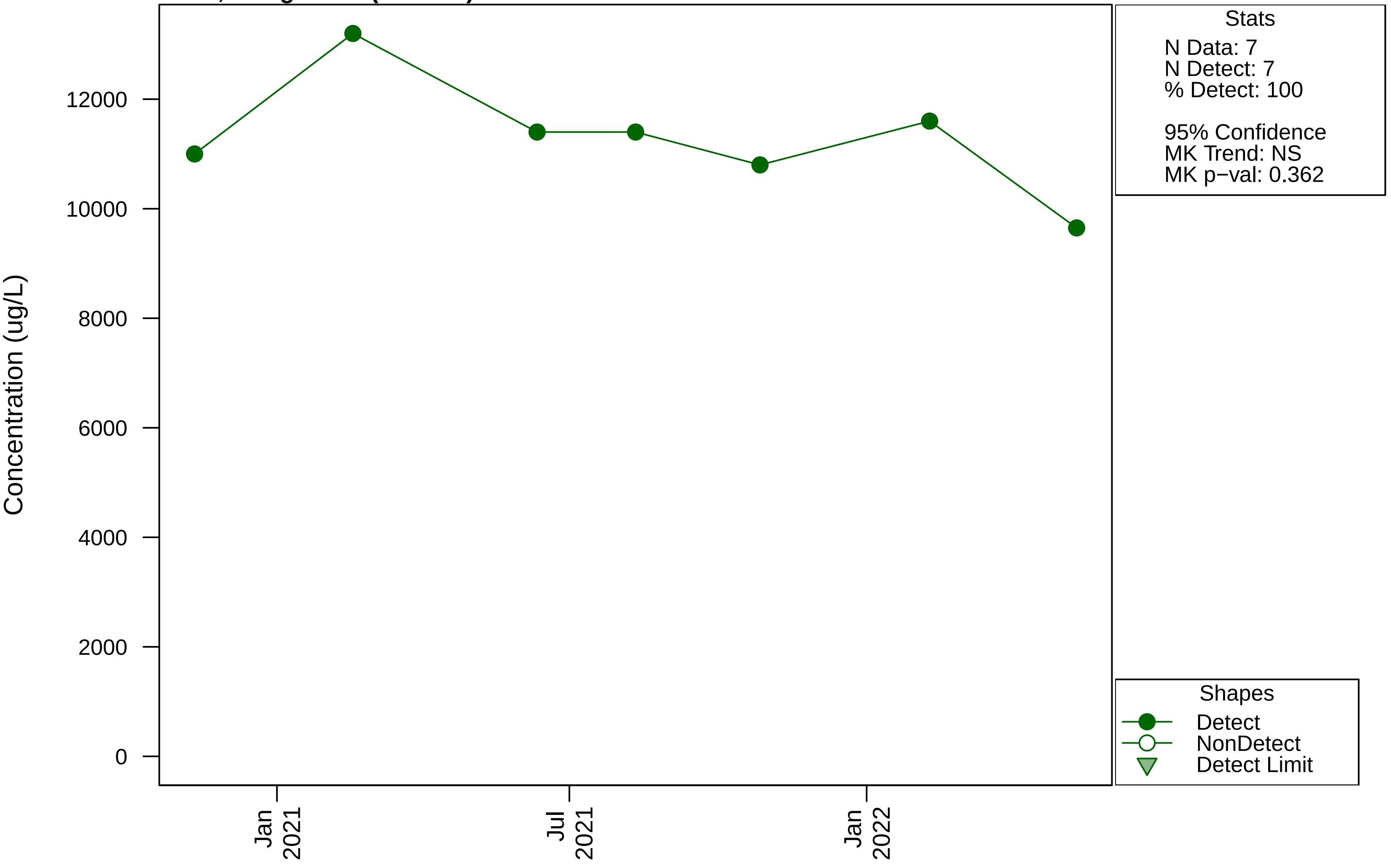
Scatterplots and Trend Analysis
D105, Magnesium (Filtered)



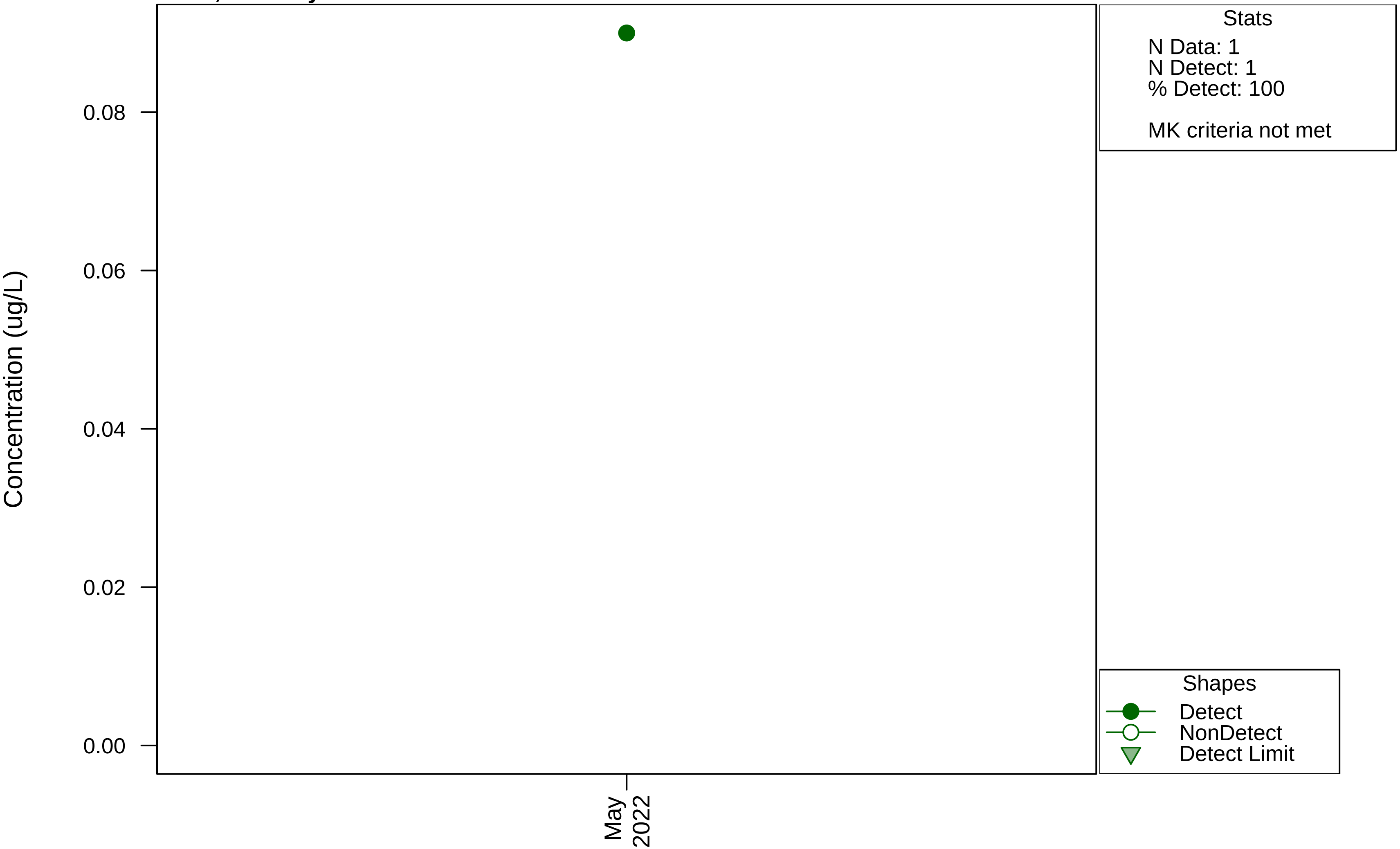


Scatterplots and Trend Analysis
D105, Manganese
Concentration (ug/L)
14000
12000
10000
8000
6000
4000
2000
0
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 7
N Detect: 7
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.129
Shapes
Detect
NonDetect
Detect Limit

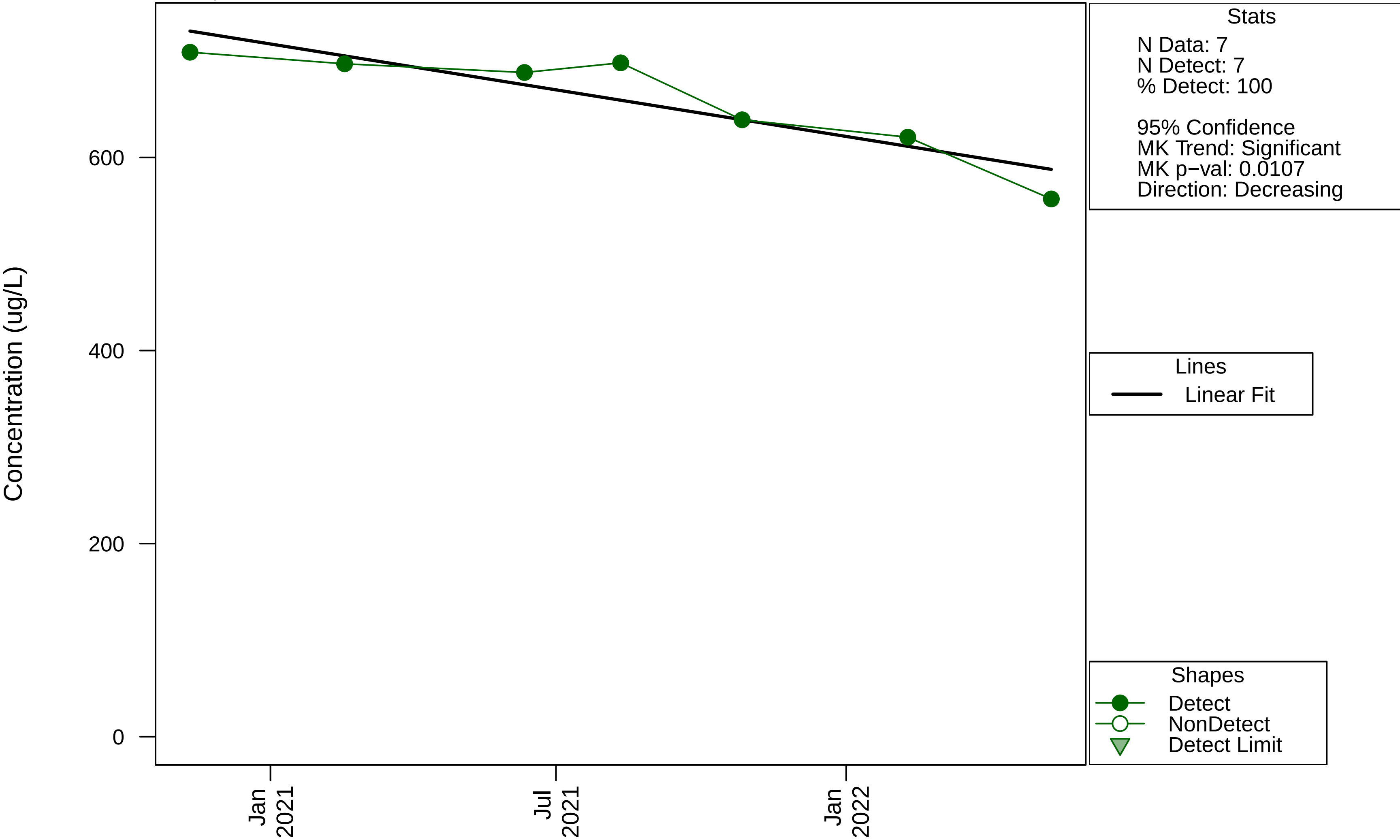
Scatterplots and Trend Analysis
D105, Manganese (Filtered)



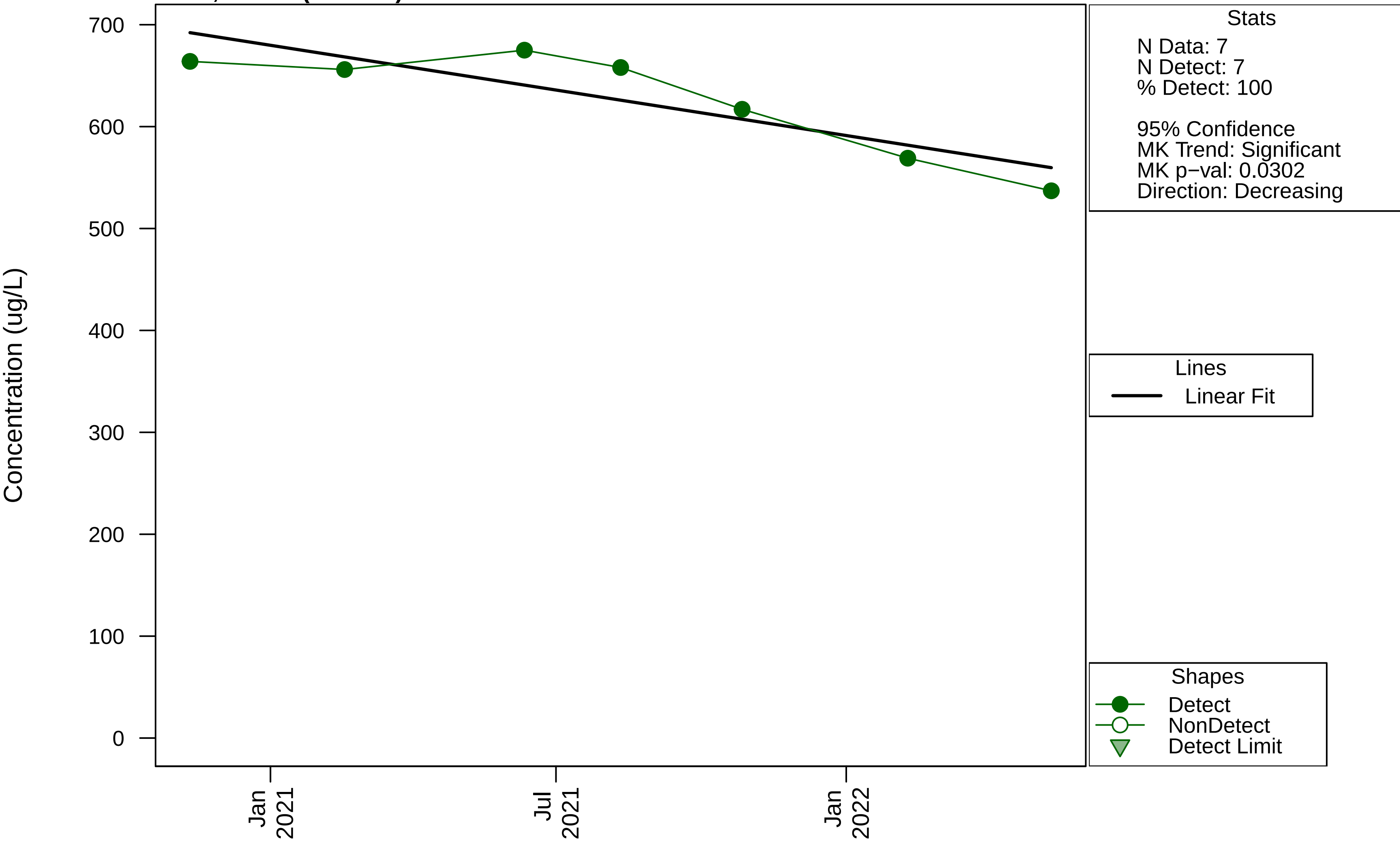
Scatterplots and Trend Analysis
D105, Mercury



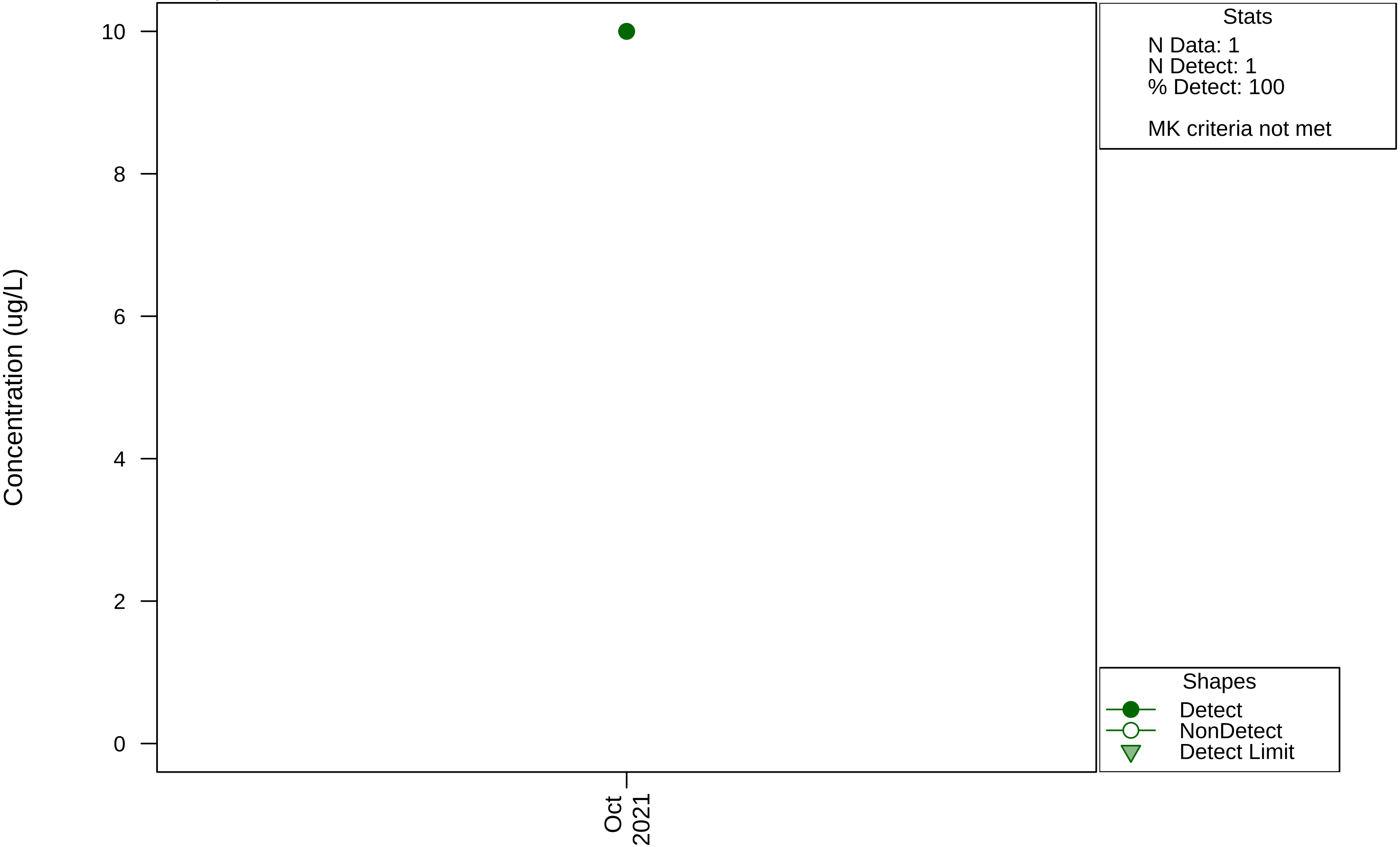
Scatterplots and Trend Analysis
D105, Nickel

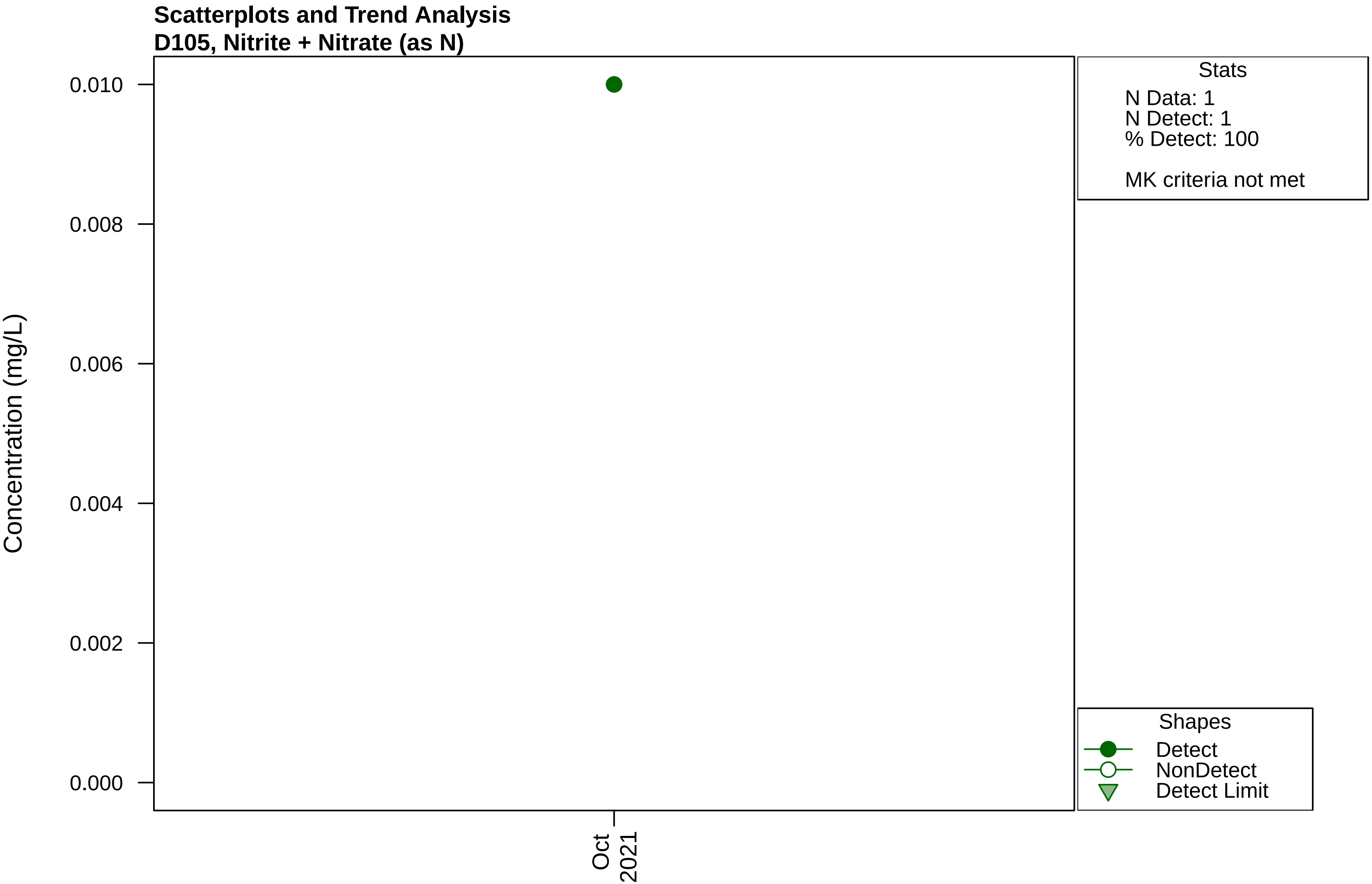


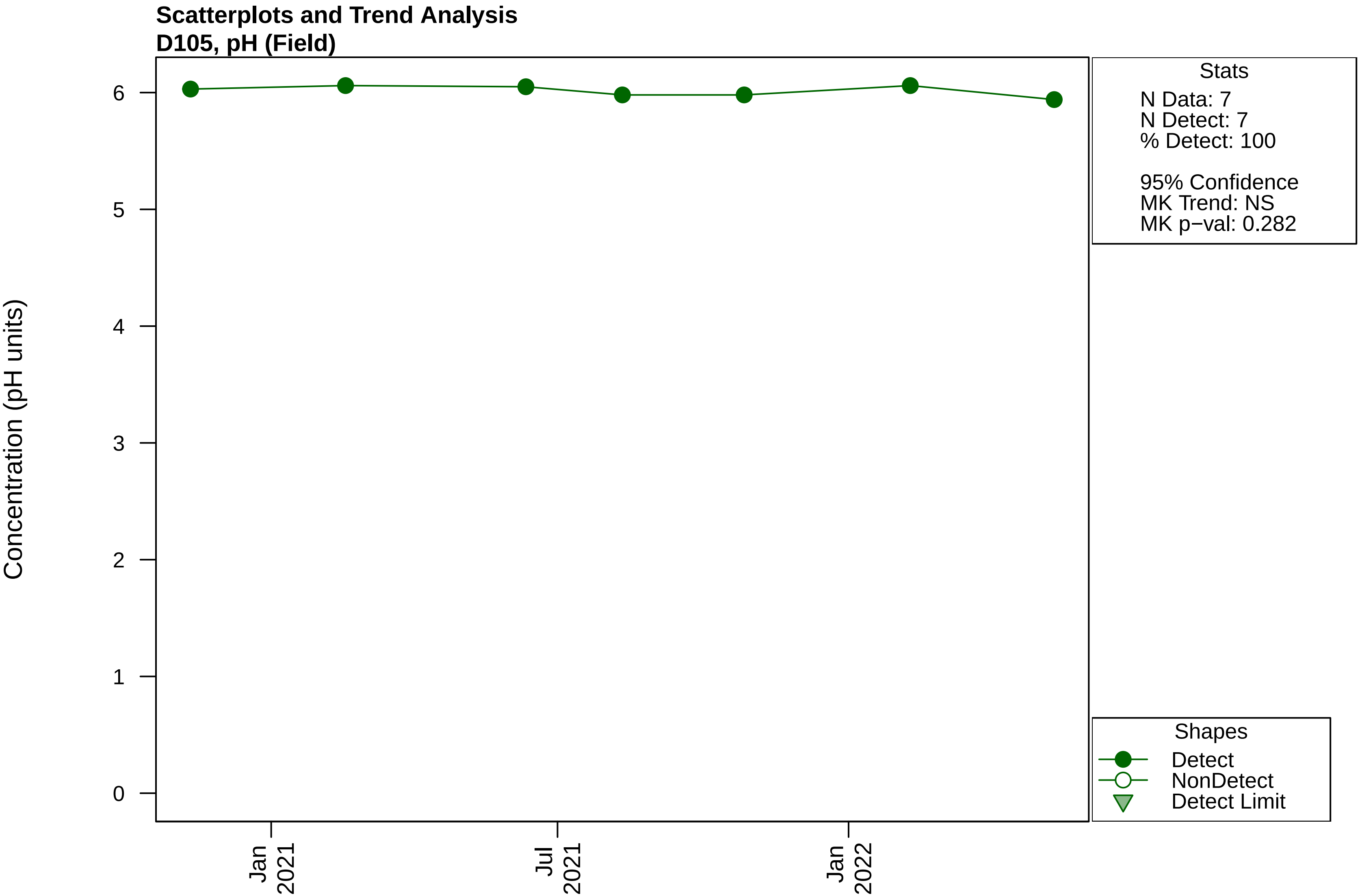
Scatterplots and Trend Analysis
D105, Nickel (Filtered)

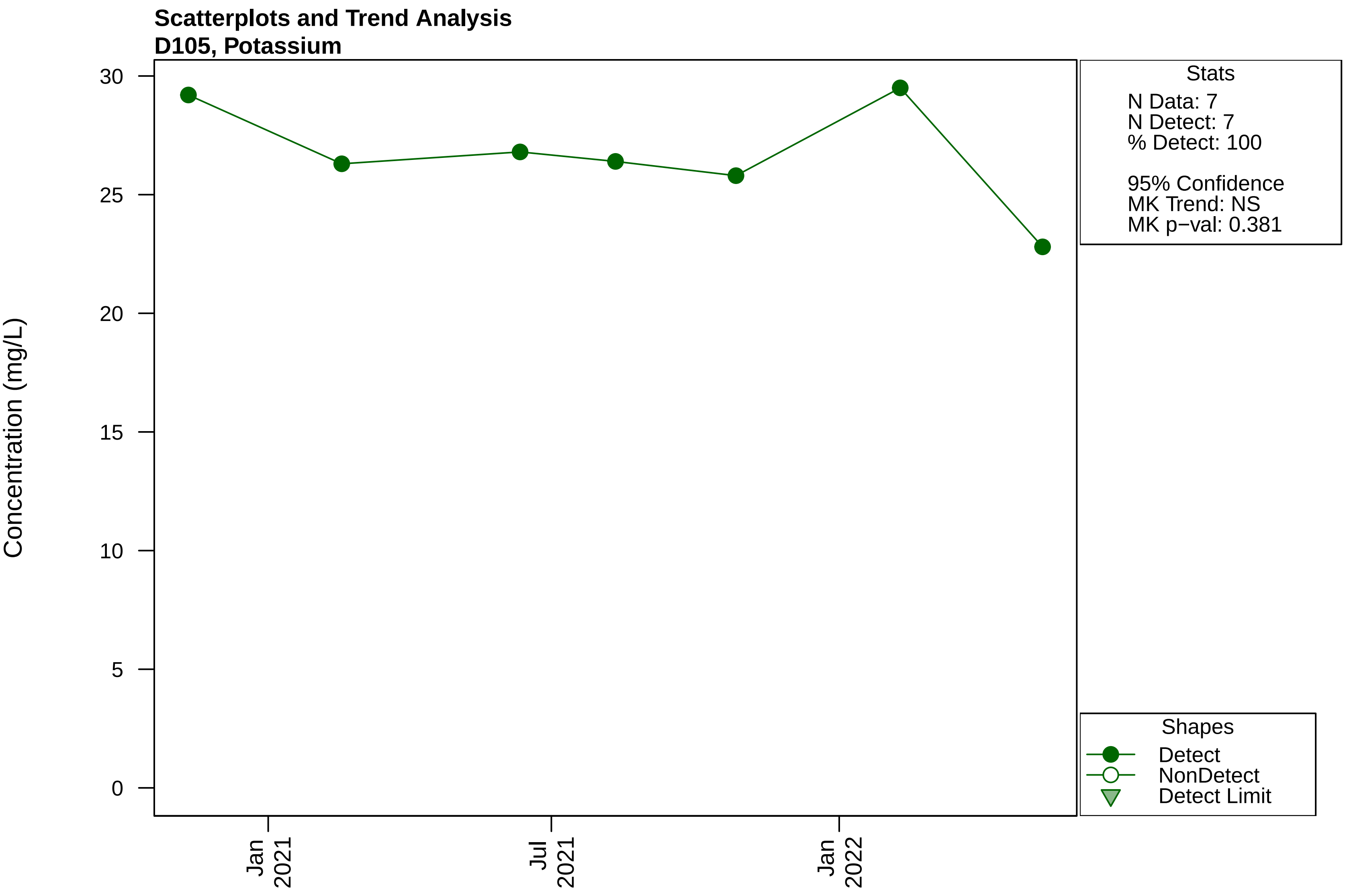


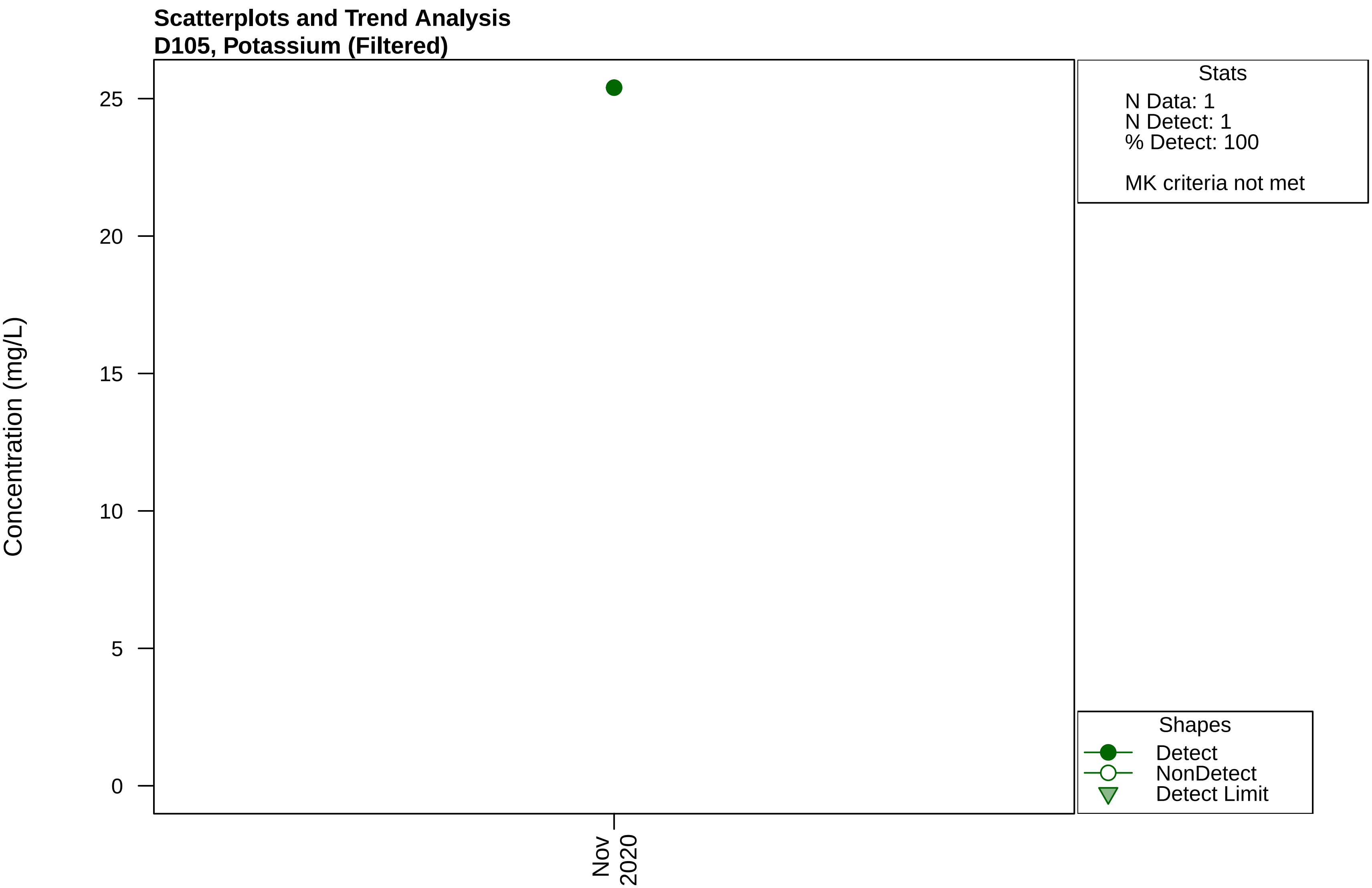
Scatterplots and Trend Analysis
D105, Nitrate



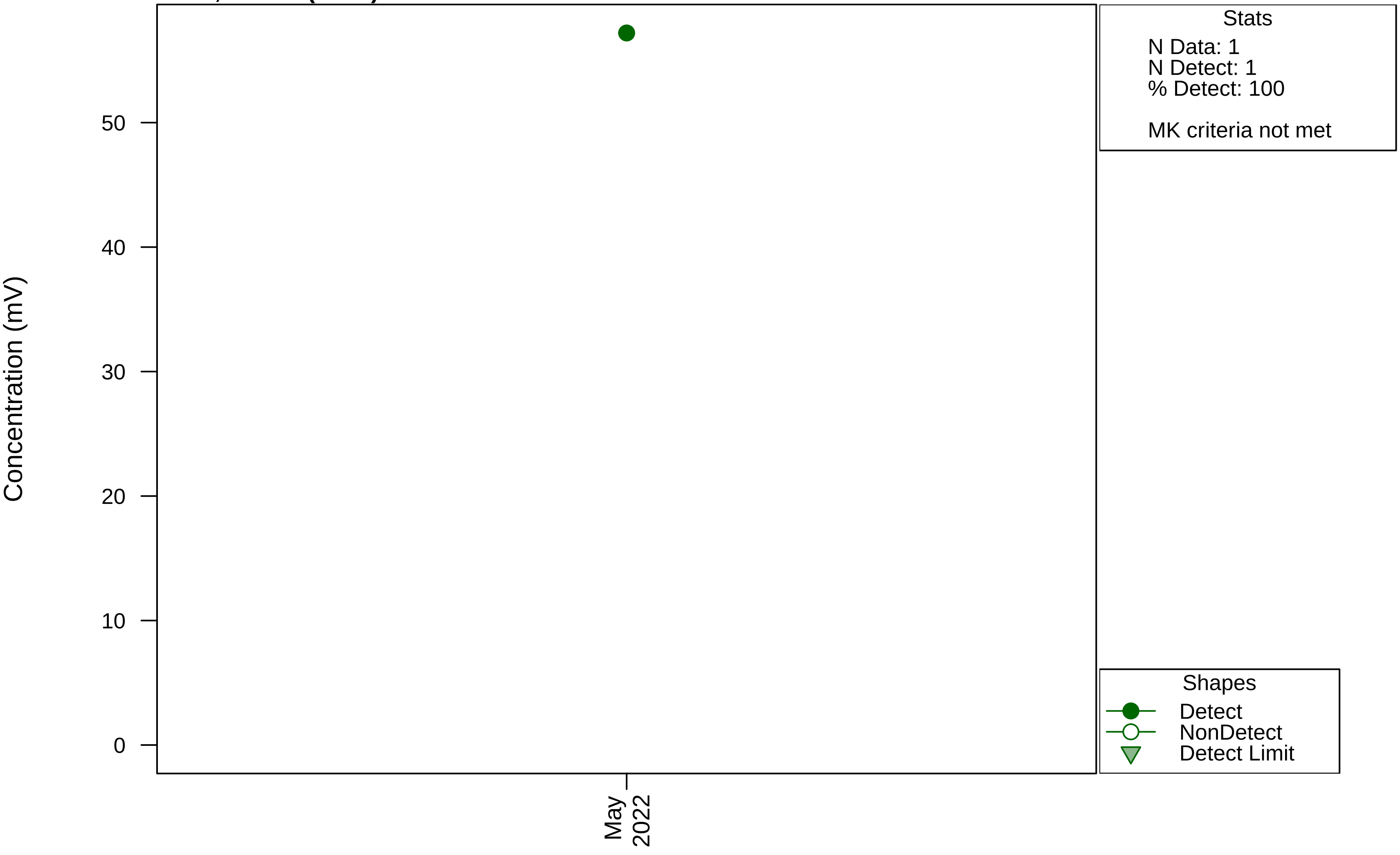

Scatterplots and Trend Analysis
D105, Nitrite + Nitrate (as N)
Concentration (mg/L)
0.010
0.008
0.006
0.004
0.002
0.000
Oct 2021
Stats
N Data: 1
N Detect: 1
% Detect: 100
MK criteria not met
Shapes
Detect
NonDetect
Detect Limit


Scatterplots and Trend Analysis
D105, pH (Field)
Concentration (pH units)
0
1
2
3
4
5
6
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 7
N Detect: 7
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.282
Shapes
Detect
NonDetect
Detect Limit

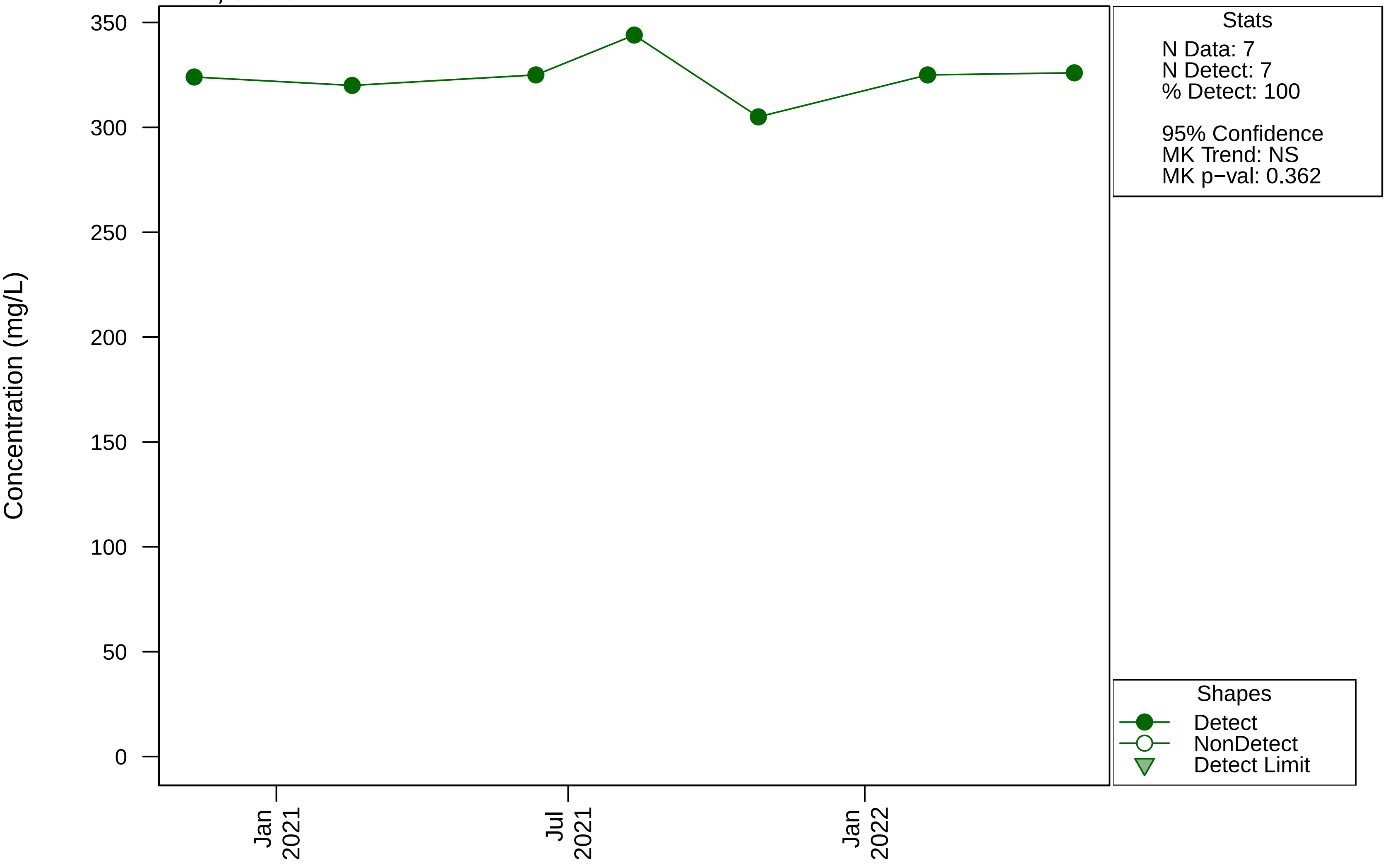

Scatterplots and Trend Analysis
D105, Potassium
Concentration (mg/L)
30
25
20
15
10
5
0
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 7
N Detect: 7
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.381
Shapes
Detect
NonDetect
Detect Limit

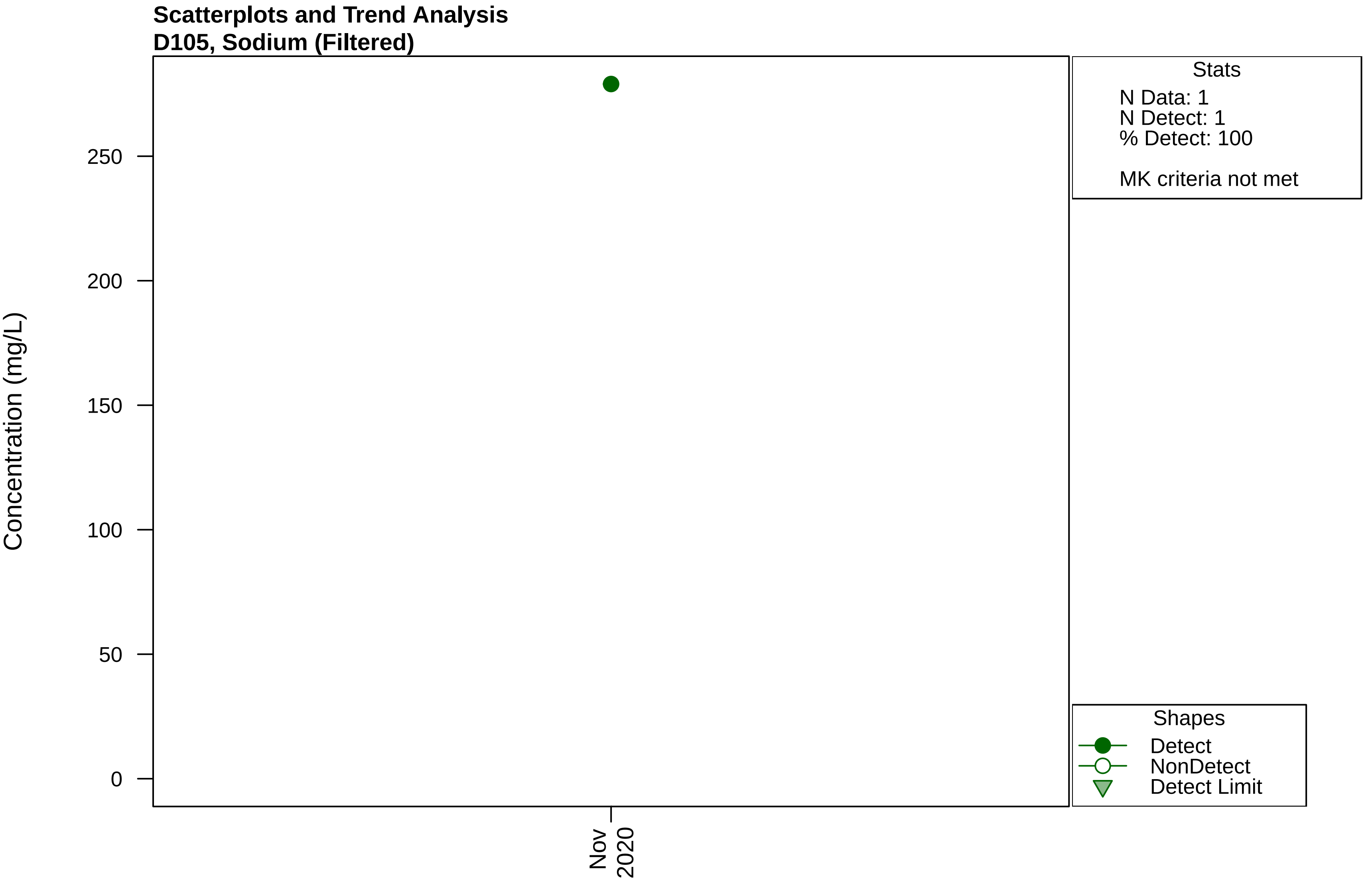

Scatterplots and Trend Analysis
D105, Potassium (Filtered)
Concentration (mg/L)
0
5
10
15
20
25
Nov 2020
Stats
N Data: 1
N Detect: 1
% Detect: 100
MK criteria not met
Shapes
Detect
NonDetect
Detect Limit

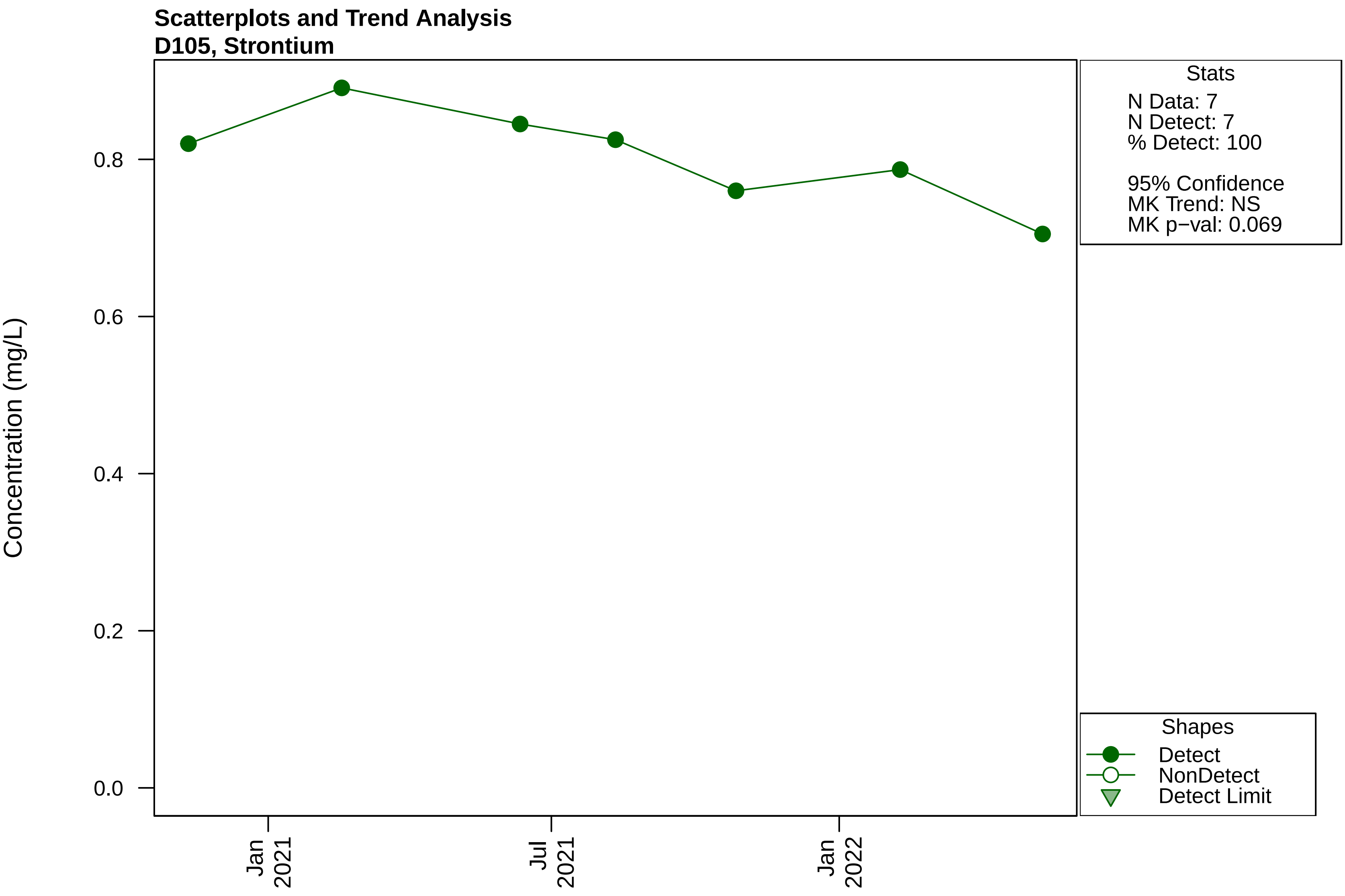
Scatterplots and Trend Analysis
D105, Redox (Field)



Scatterplots and Trend Analysis
D105, Sodium

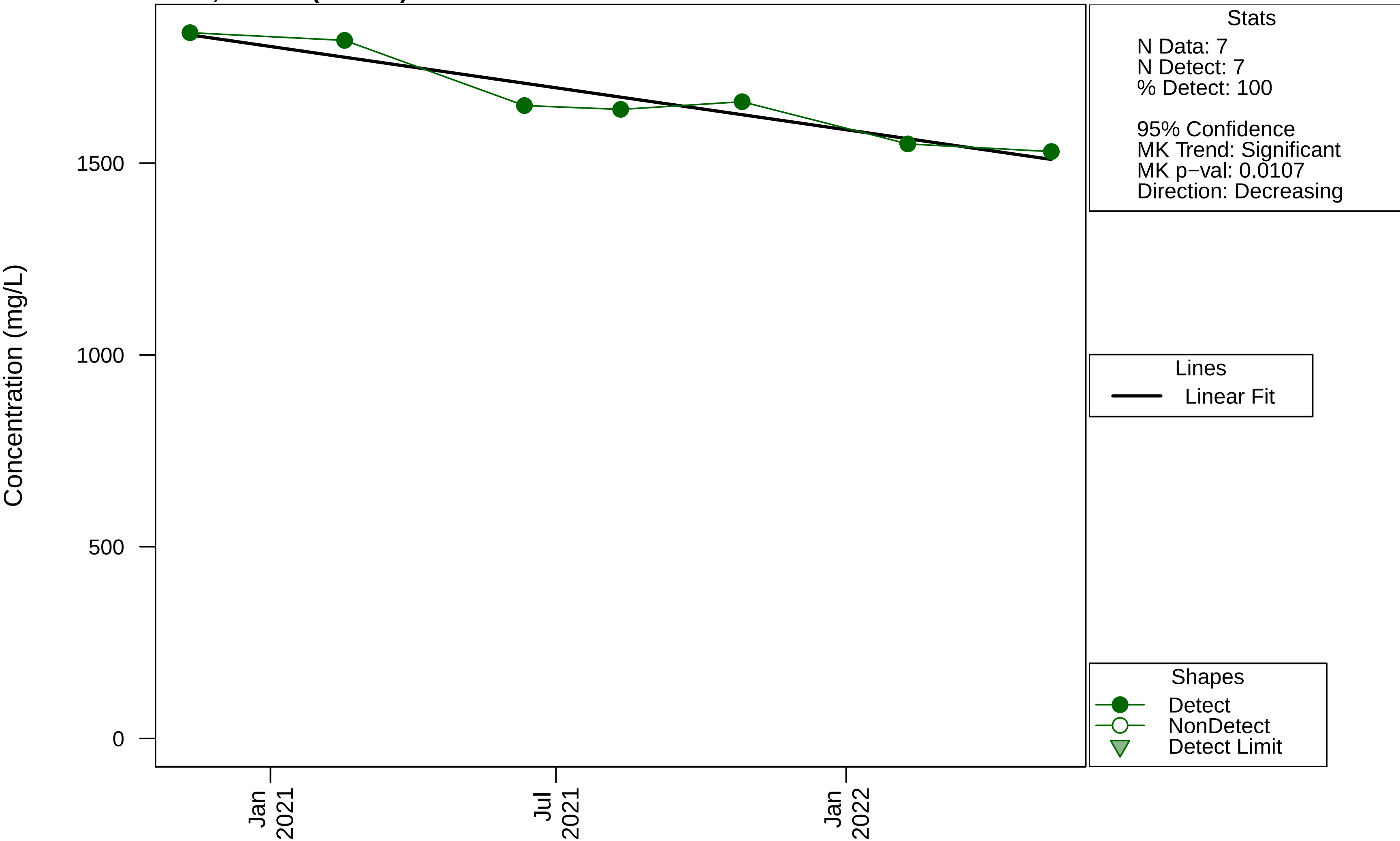


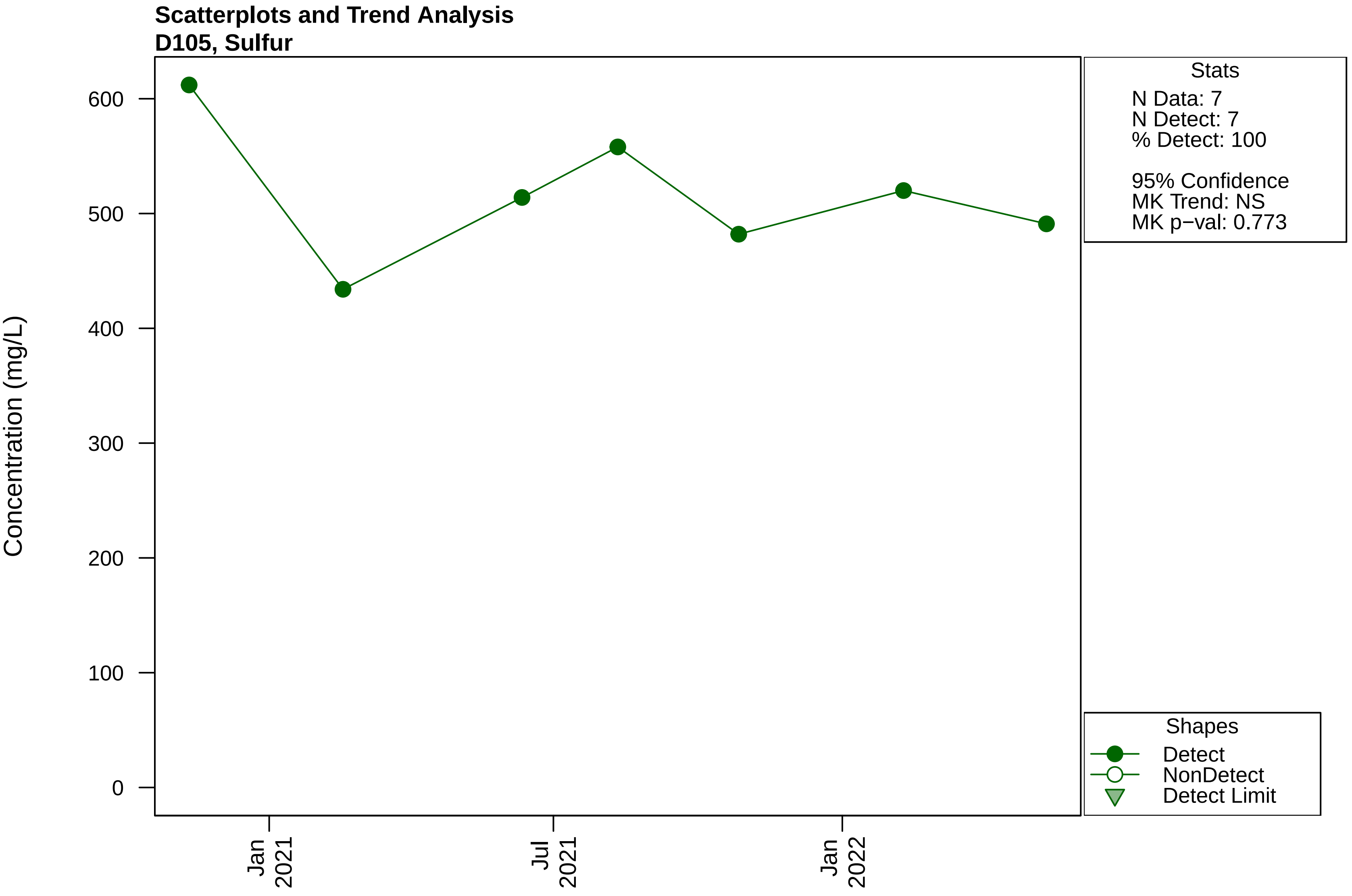

Scatterplots and Trend Analysis
D105, Sodium (Filtered)
Concentration (mg/L)
0
50
100
150
200
250
Nov 2020
Stats
N Data: 1
N Detect: 1
% Detect: 100
MK criteria not met
Shapes
Detect
NonDetect
Detect Limit

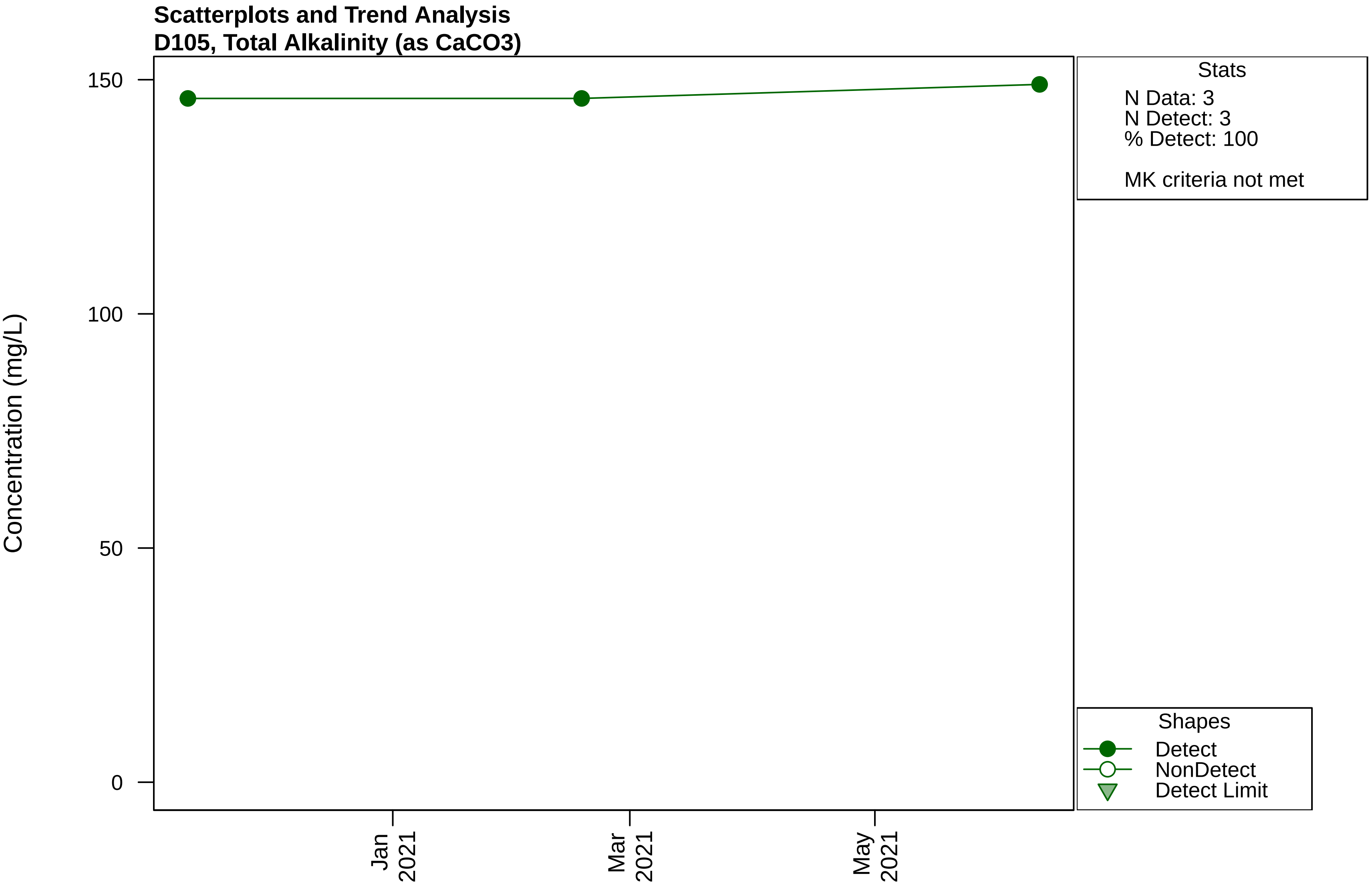


Scatterplots and Trend Analysis
D105, Strontium
Concentration (mg/L)
0.0
0.2
0.4
0.6
0.8
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 7
N Detect: 7
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.069
Shapes
Detect
NonDetect
Detect Limit

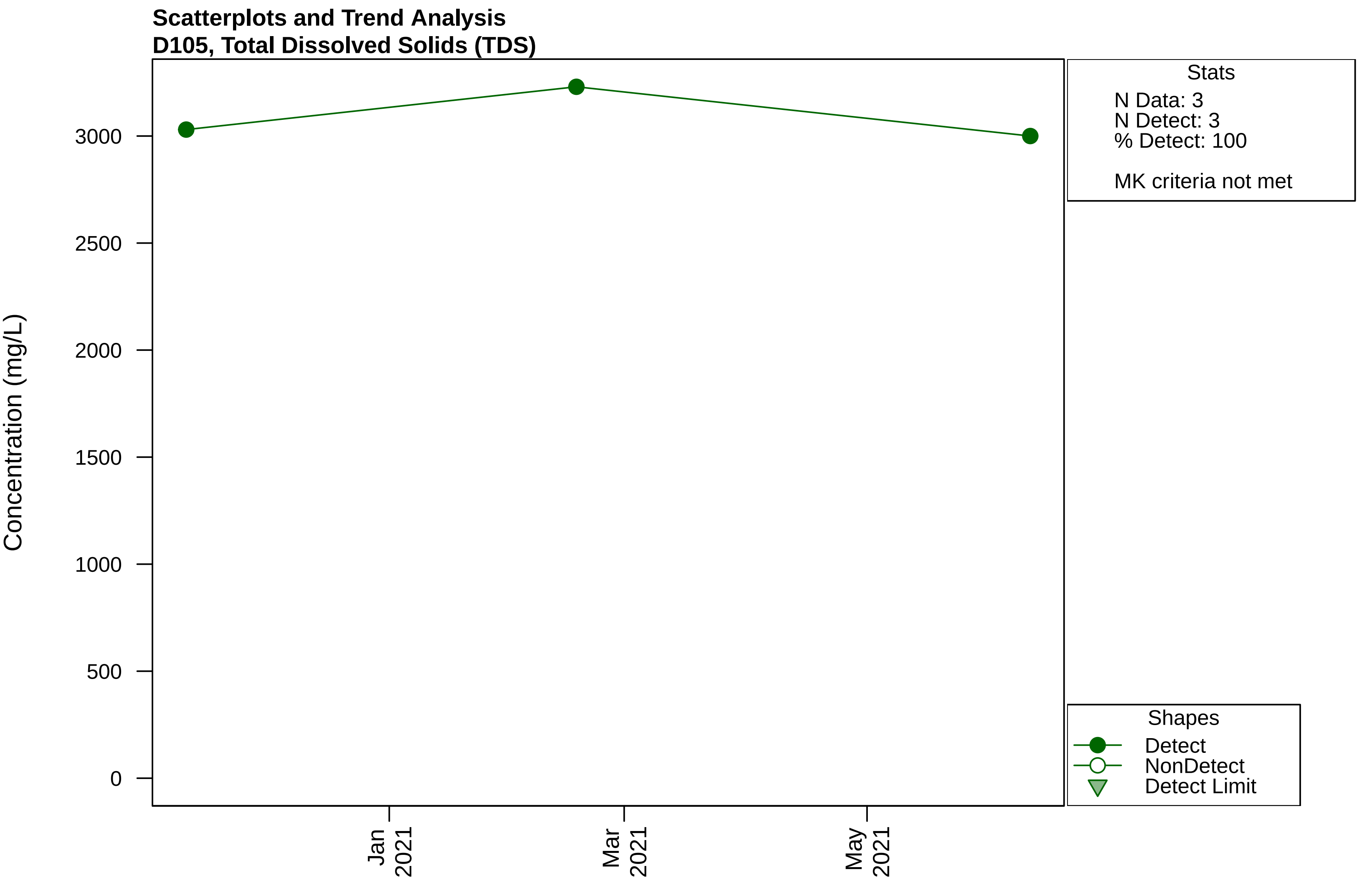
Scatterplots and Trend Analysis
D105, Sulfate (as SO4)



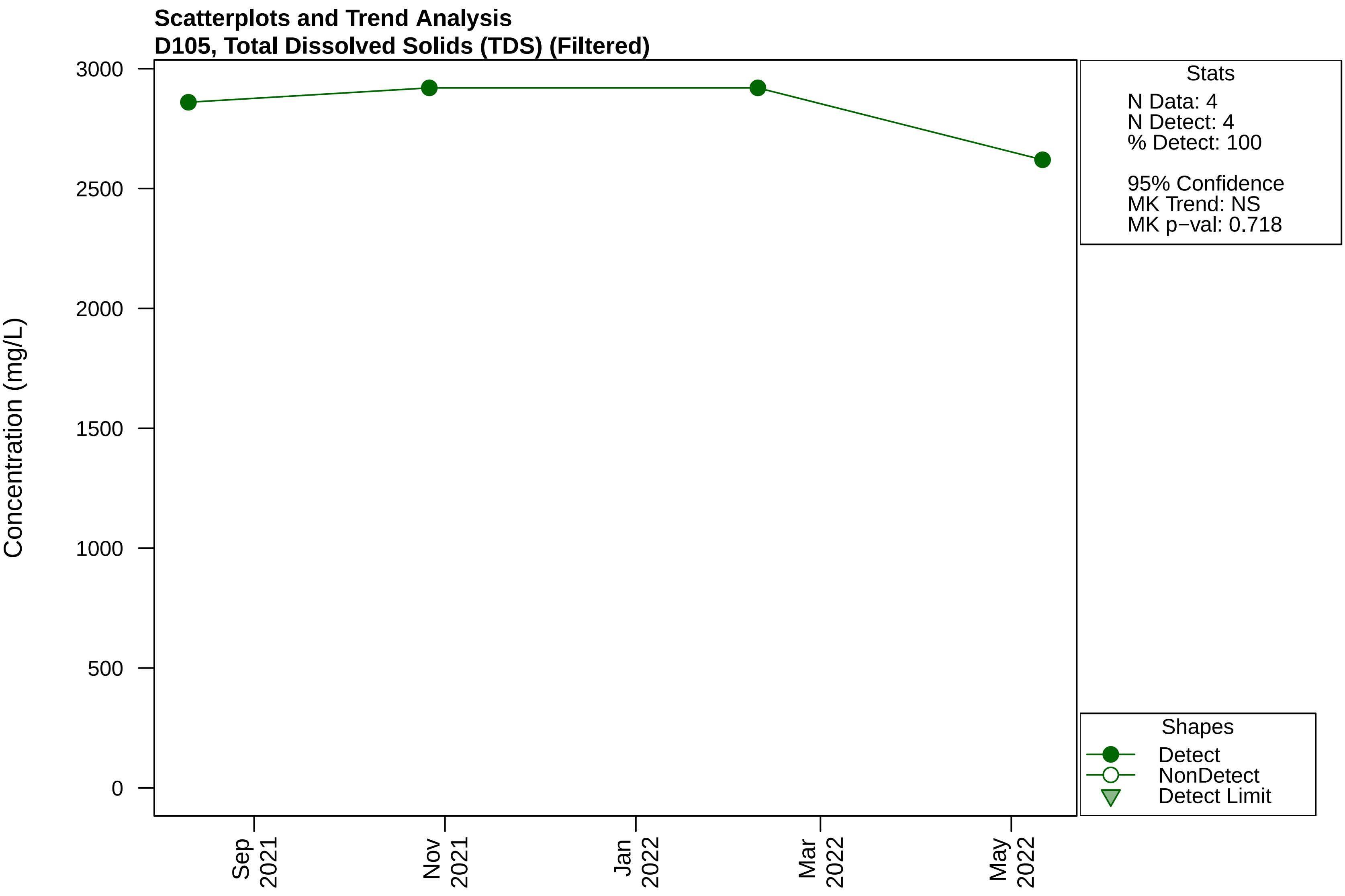

Scatterplots and Trend Analysis
D105, Sulfur
Concentration (mg/L)
0
100
200
300
400
500
600
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 7
N Detect: 7
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.773
Shapes
Detect
NonDetect
Detect Limit



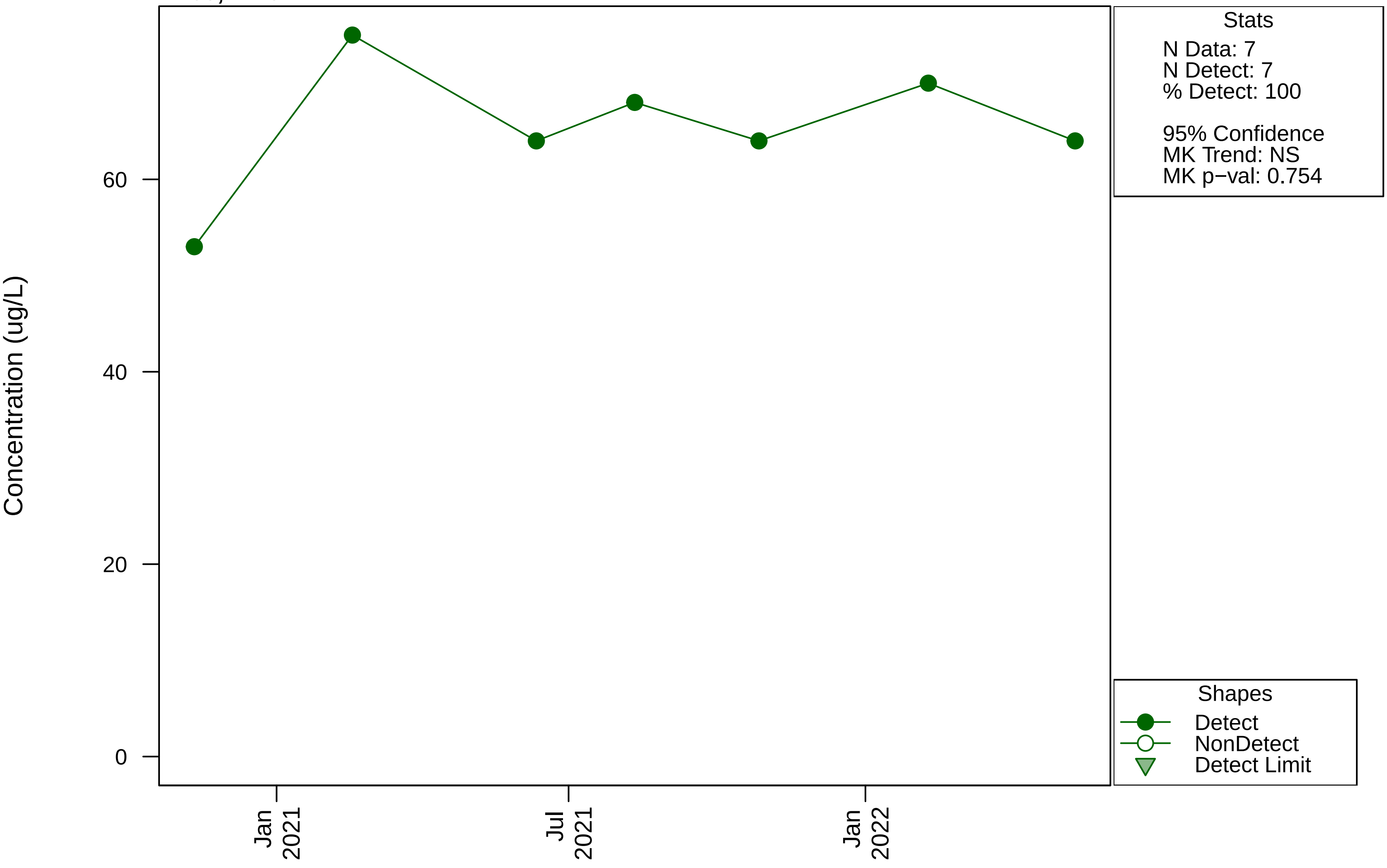
Scatterplots and Trend Analysis
D105, Total Alkalinity (as CaCO3)
Concentration (mg/L)
150
100
50
0
Jan 2021
Mar 2021
May 2021
Stats
N Data: 3
N Detect: 3
% Detect: 100
MK criteria not met
Shapes
Detect
NonDetect
Detect Limit

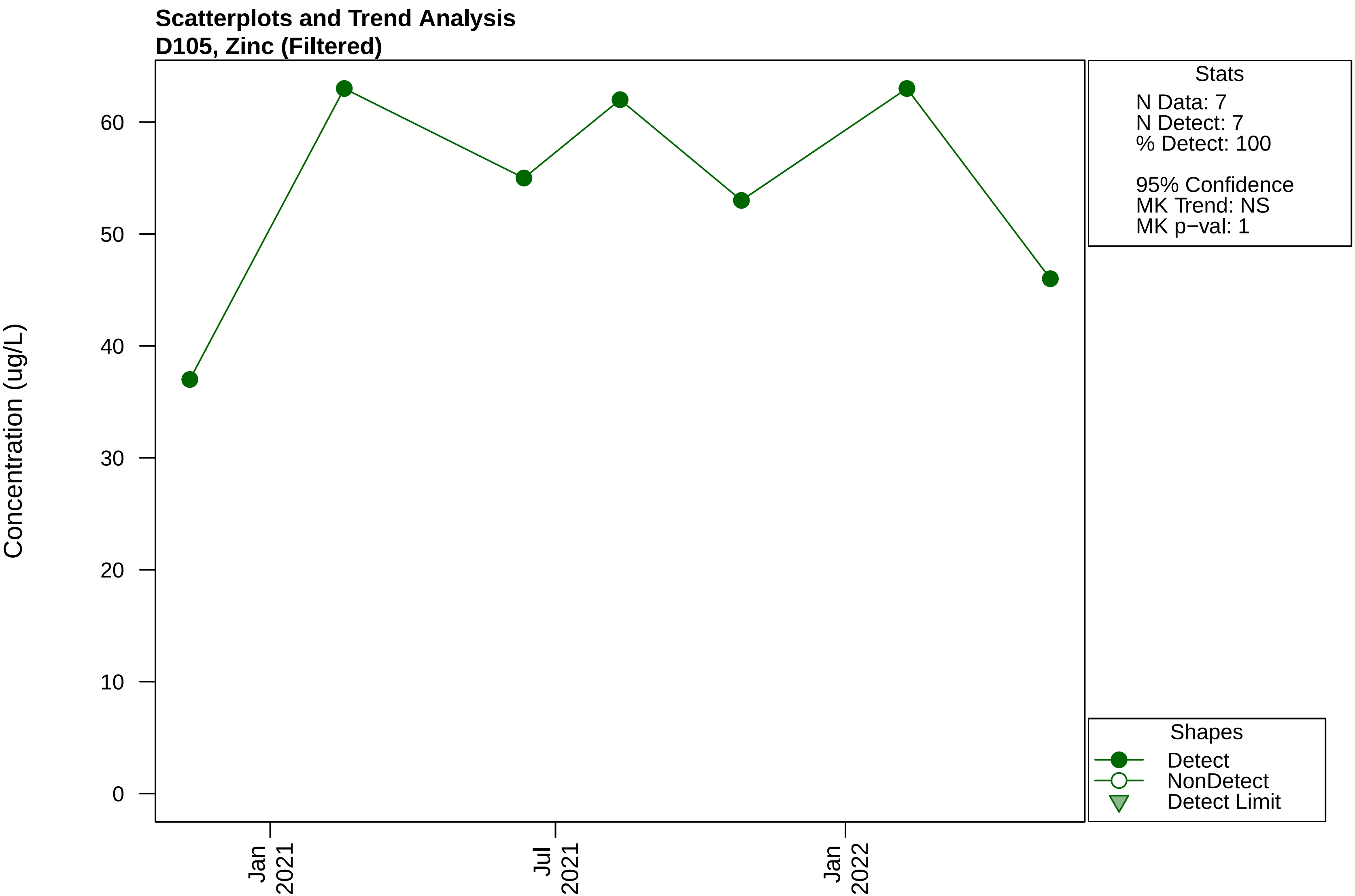


Scatterplots and Trend Analysis
D105, Total Dissolved Solids (TDS)
Concentration (mg/L)
0
500
1000
1500
2000
2500
3000
Jan 2021
Mar 2021
May 2021
Stats
N Data: 3
N Detect: 3
% Detect: 100
MK criteria not met
Shapes
Detect
NonDetect
Detect Limit

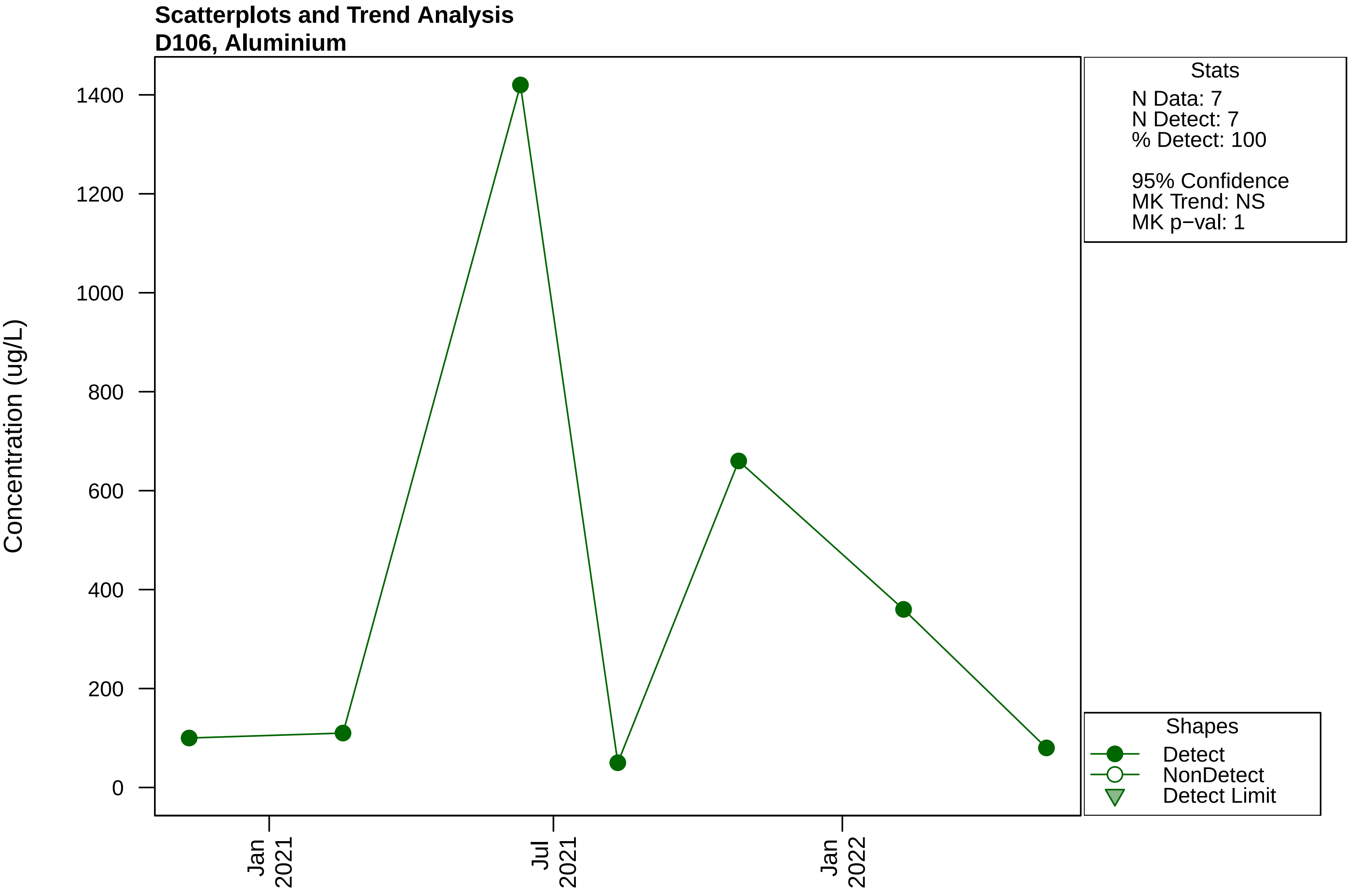

Scatterplots and Trend Analysis
D105, Total Dissolved Solids (TDS) (Filtered)
Concentration (mg/L)
3000
2500
2000
1500
1000
500
0
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 4
N Detect: 4
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.718
Shapes
Detect
NonDetect
Detect Limit

Scatterplots and Trend Analysis
D105, Zinc

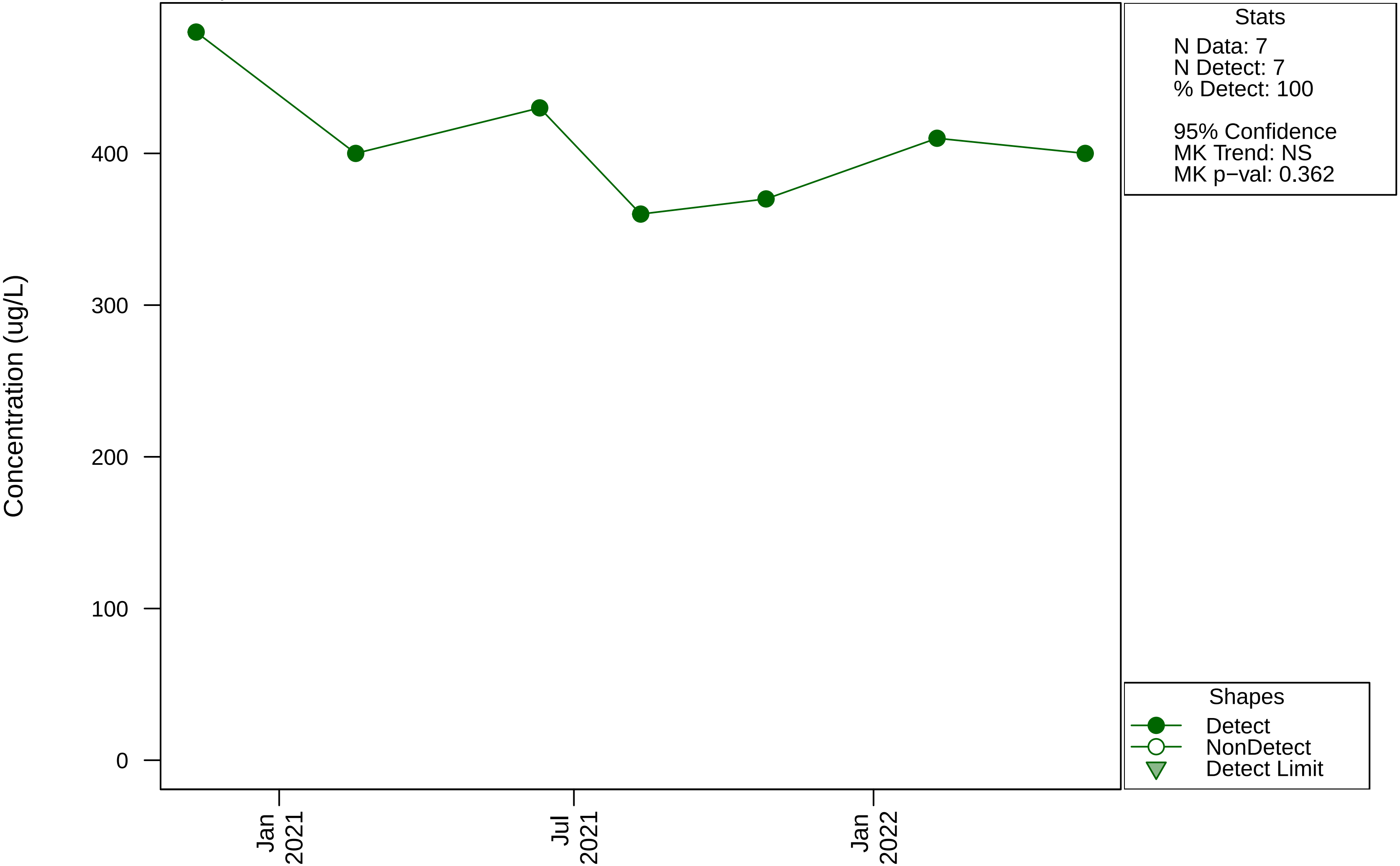


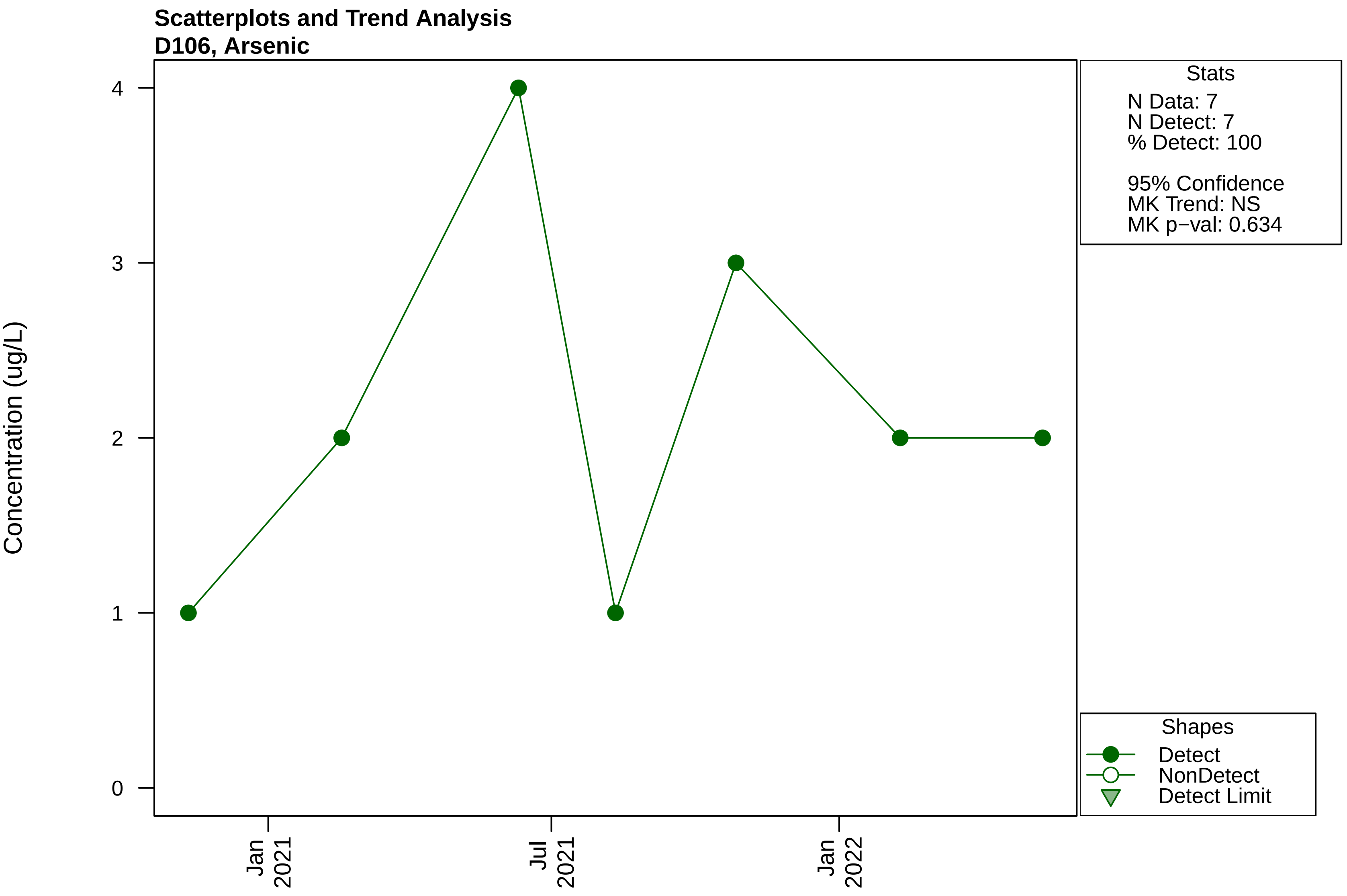


Scatterplots and Trend Analysis
D105, Zinc (Filtered)
Concentration (ug/L)
0
10
20
30
40
50
60
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 7
N Detect: 7
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 1
Shapes
Detect
NonDetect
Detect Limit

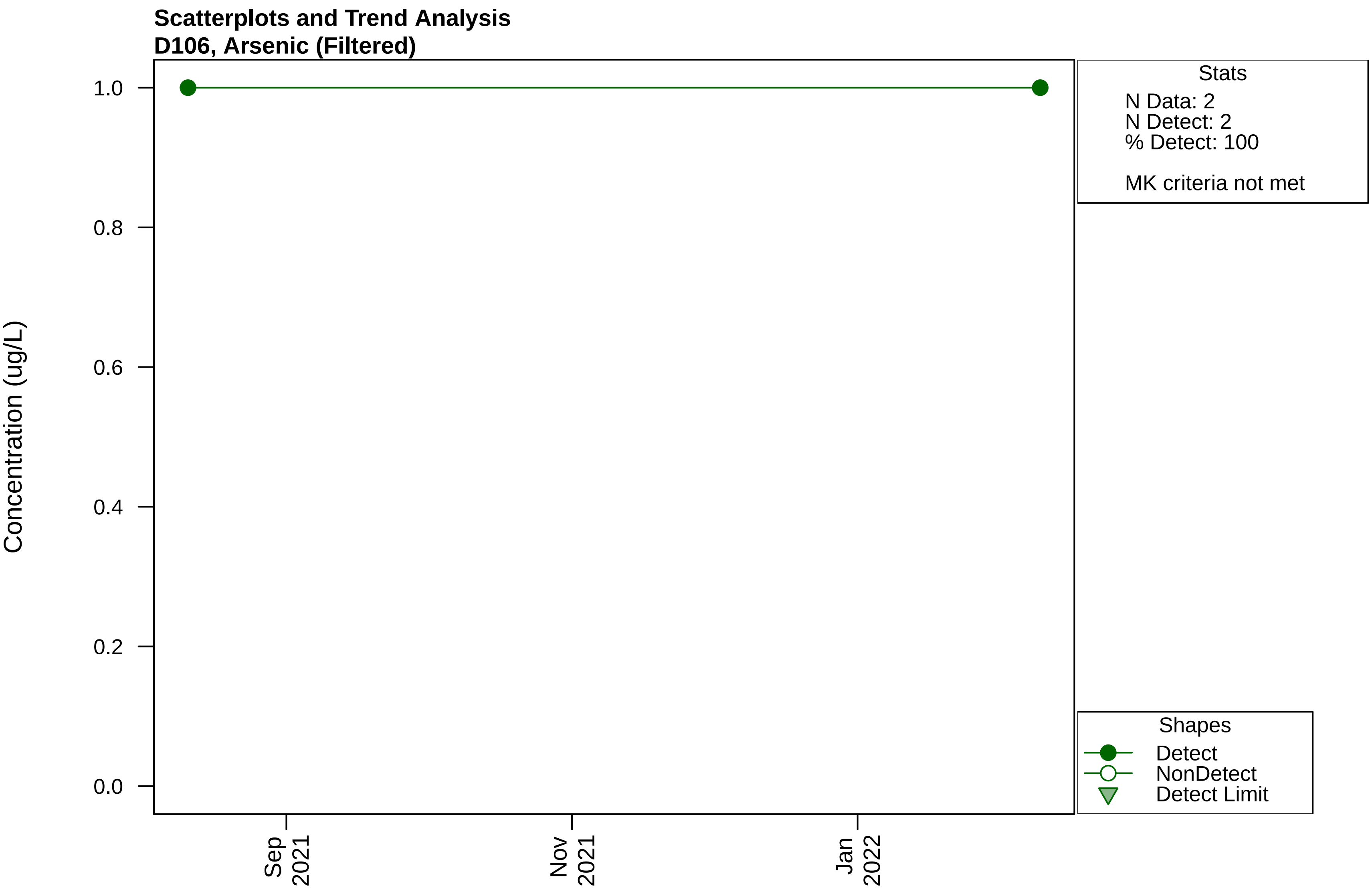

Scatterplots and Trend Analysis
D106, Aluminium
Concentration (ug/L)
0
200
400
600
800
1000
1200
1400
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 7
N Detect: 7
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 1
Shapes
Detect
NonDetect
Detect Limit

Scatterplots and Trend Analysis
D106, Ammonia

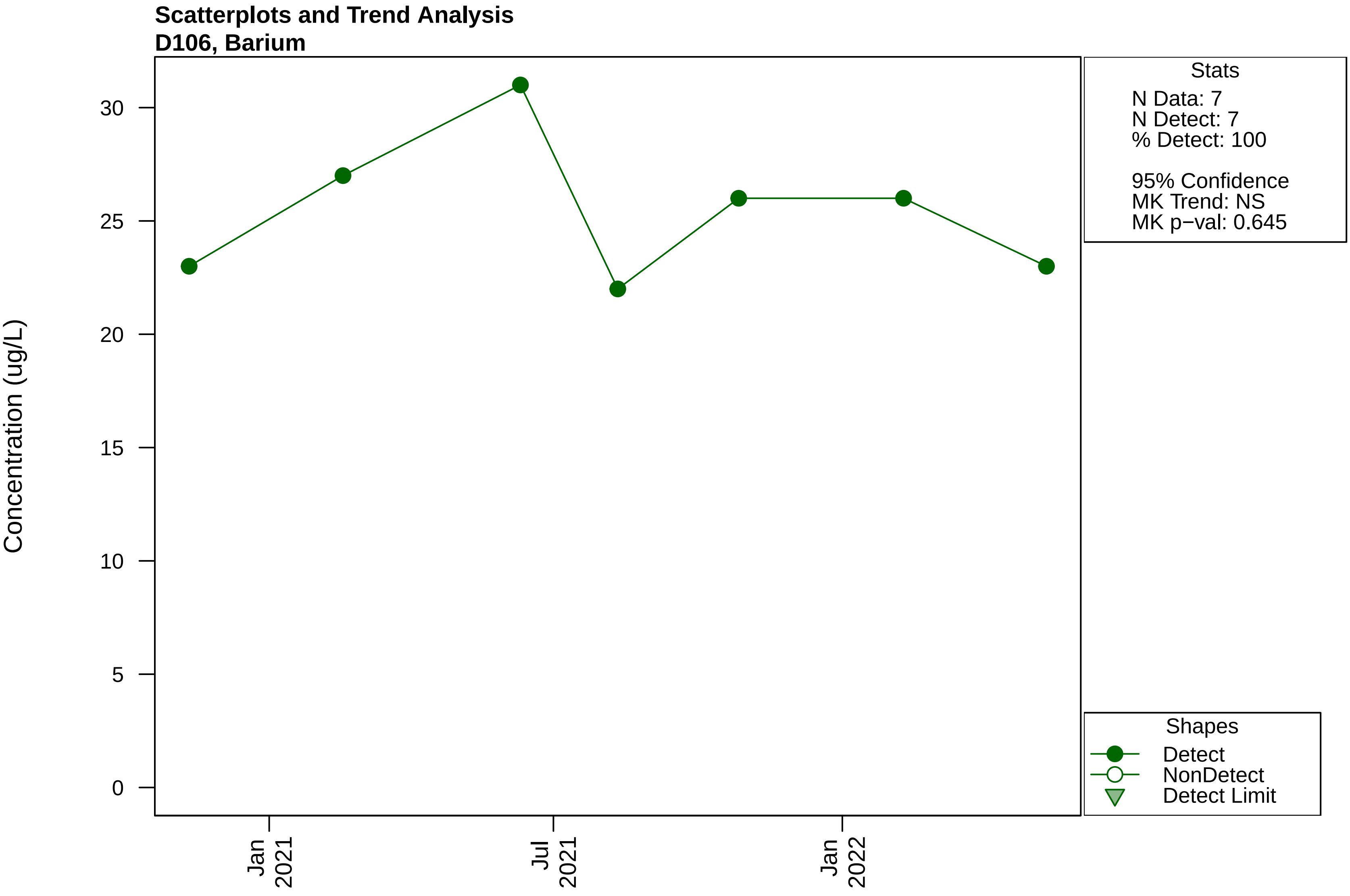




Scatterplots and Trend Analysis
D106, Arsenic
Concentration (ug/L)
0
1
2
3
4
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 7
N Detect: 7
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.634
Shapes
Detect
NonDetect
Detect Limit

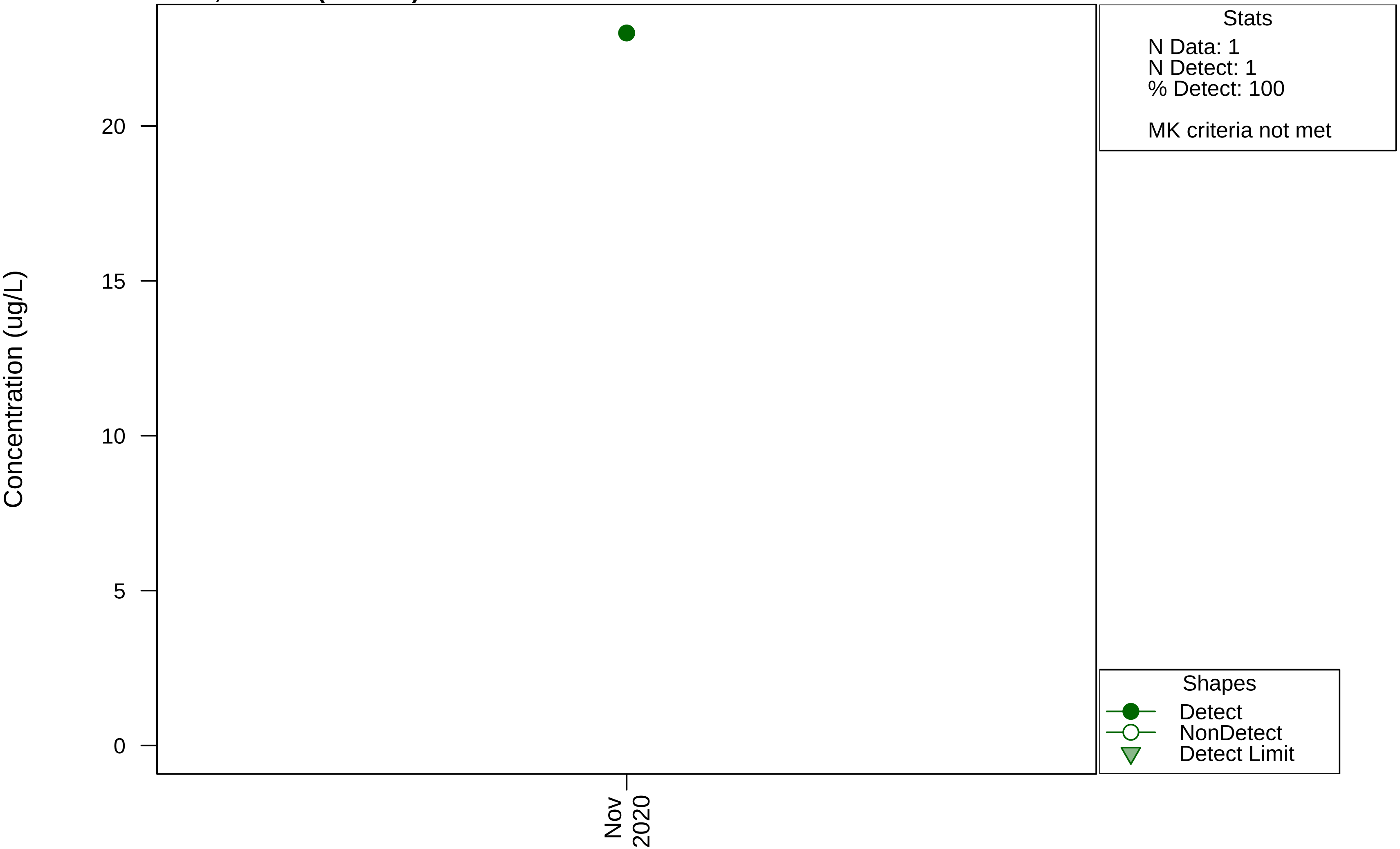


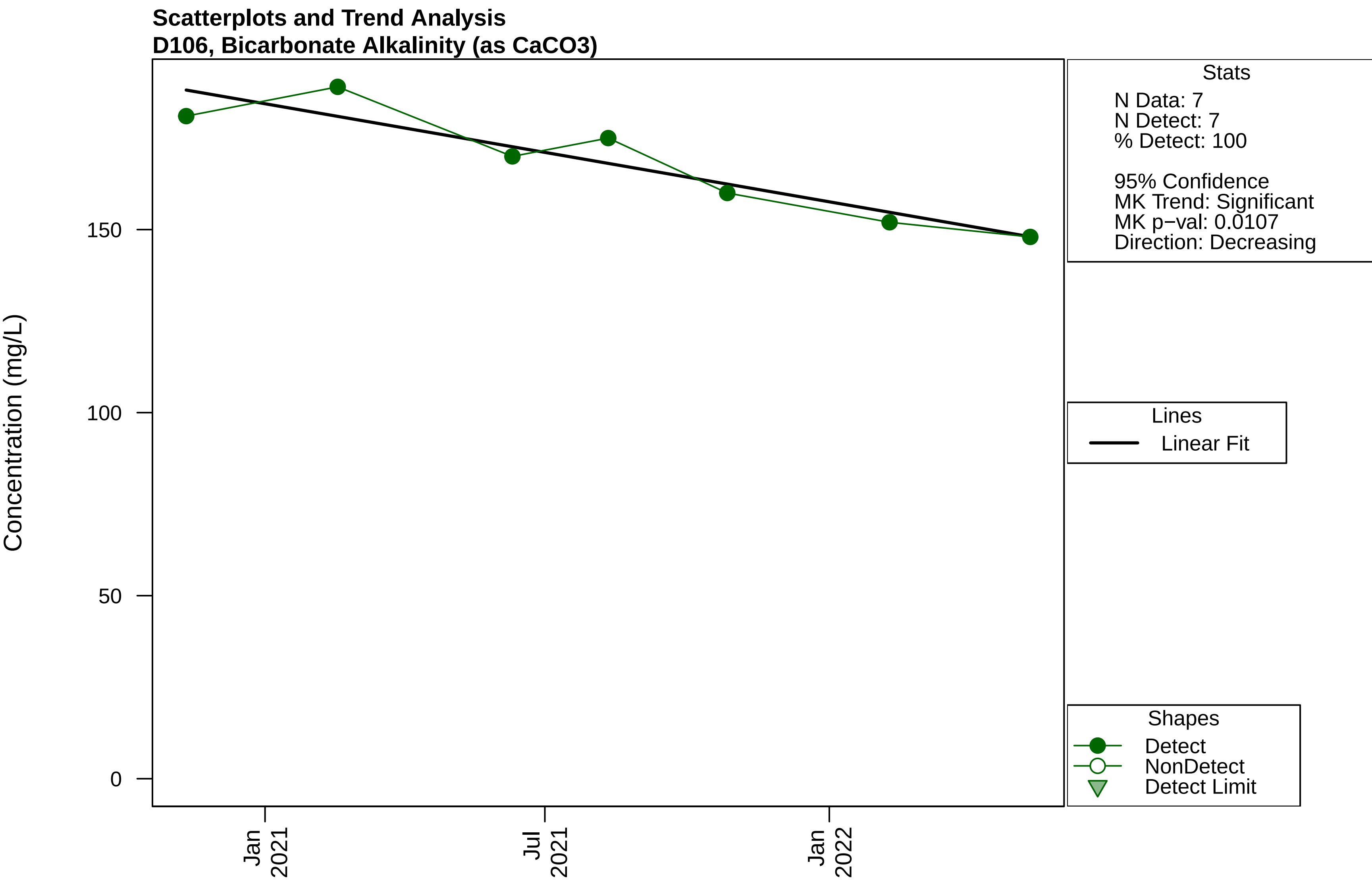
Scatterplots and Trend Analysis
D106, Arsenic (Filtered)
Concentration (ug/L)
1.0
0.8
0.6
0.4
0.2
0.0
Sep 2021
Nov 2021
Jan 2022
Stats
N Data: 2
N Detect: 2
% Detect: 100
MK criteria not met
Shapes
Detect
NonDetect
Detect Limit



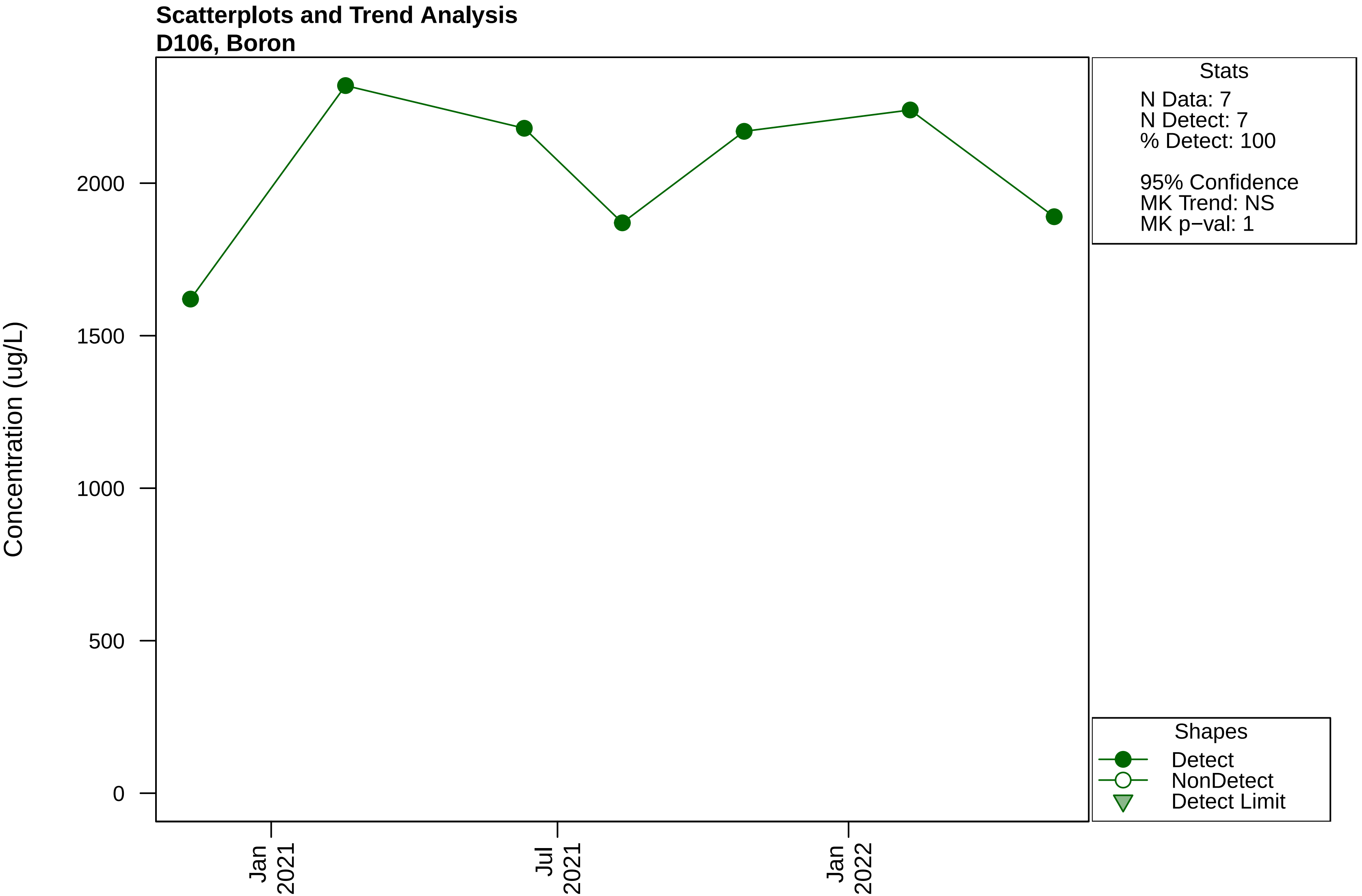
Scatterplots and Trend Analysis
D106, Barium
Concentration (ug/L)
0
5
10
15
20
25
30
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 7
N Detect: 7
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.645
Shapes
Detect
NonDetect
Detect Limit

Scatterplots and Trend Analysis
D106, Barium (Filtered)



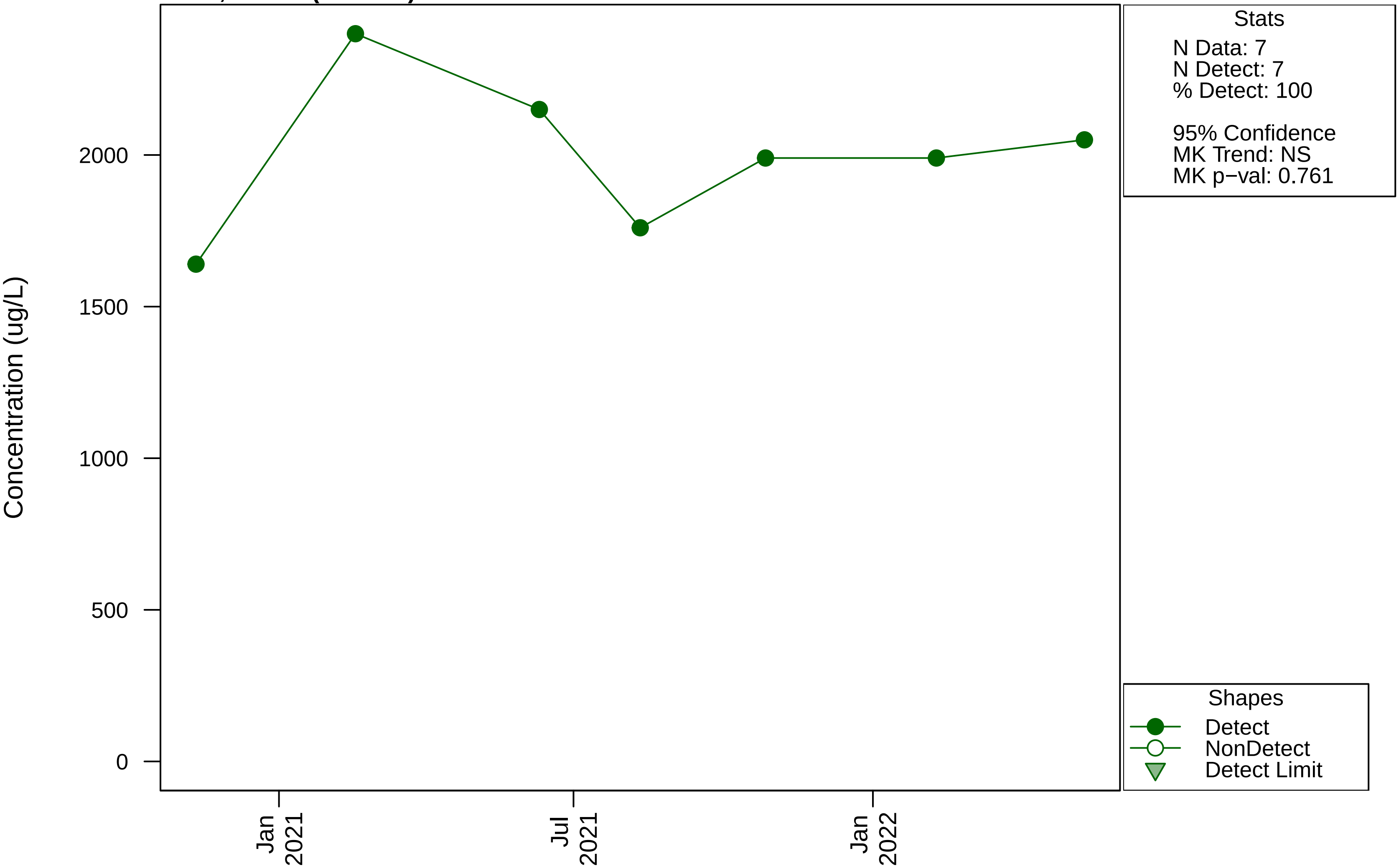


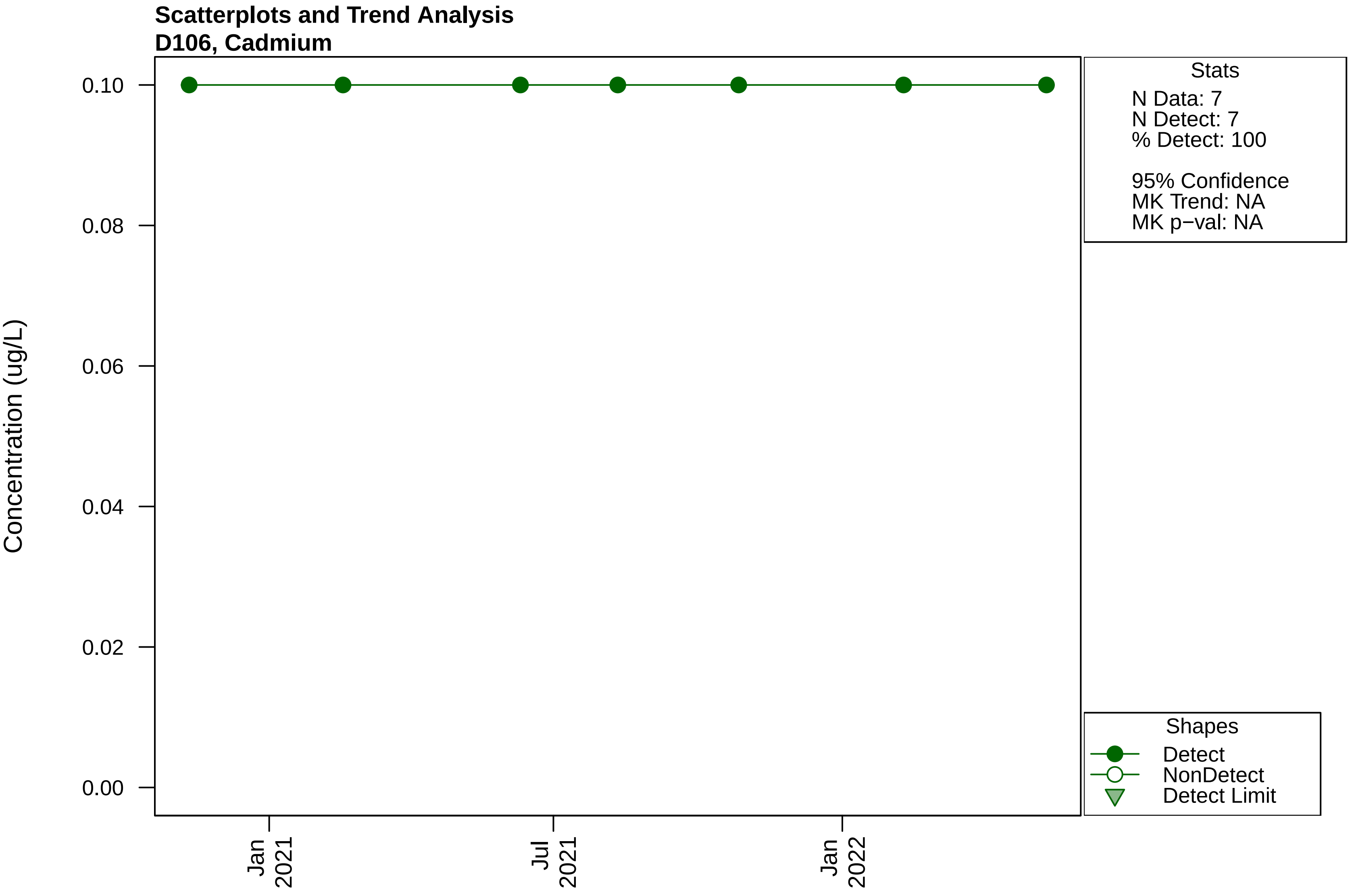
Scatterplots and Trend Analysis
D106, Bicarbonate Alkalinity (as CaCO3)
Concentration (mg/L)
150
100
50
0
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 7
N Detect: 7
% Detect: 100
95% Confidence
MK Trend: Significant
MK p−val: 0.0107
Direction: Decreasing
Lines
Linear Fit
Shapes
Detect
NonDetect
Detect Limit



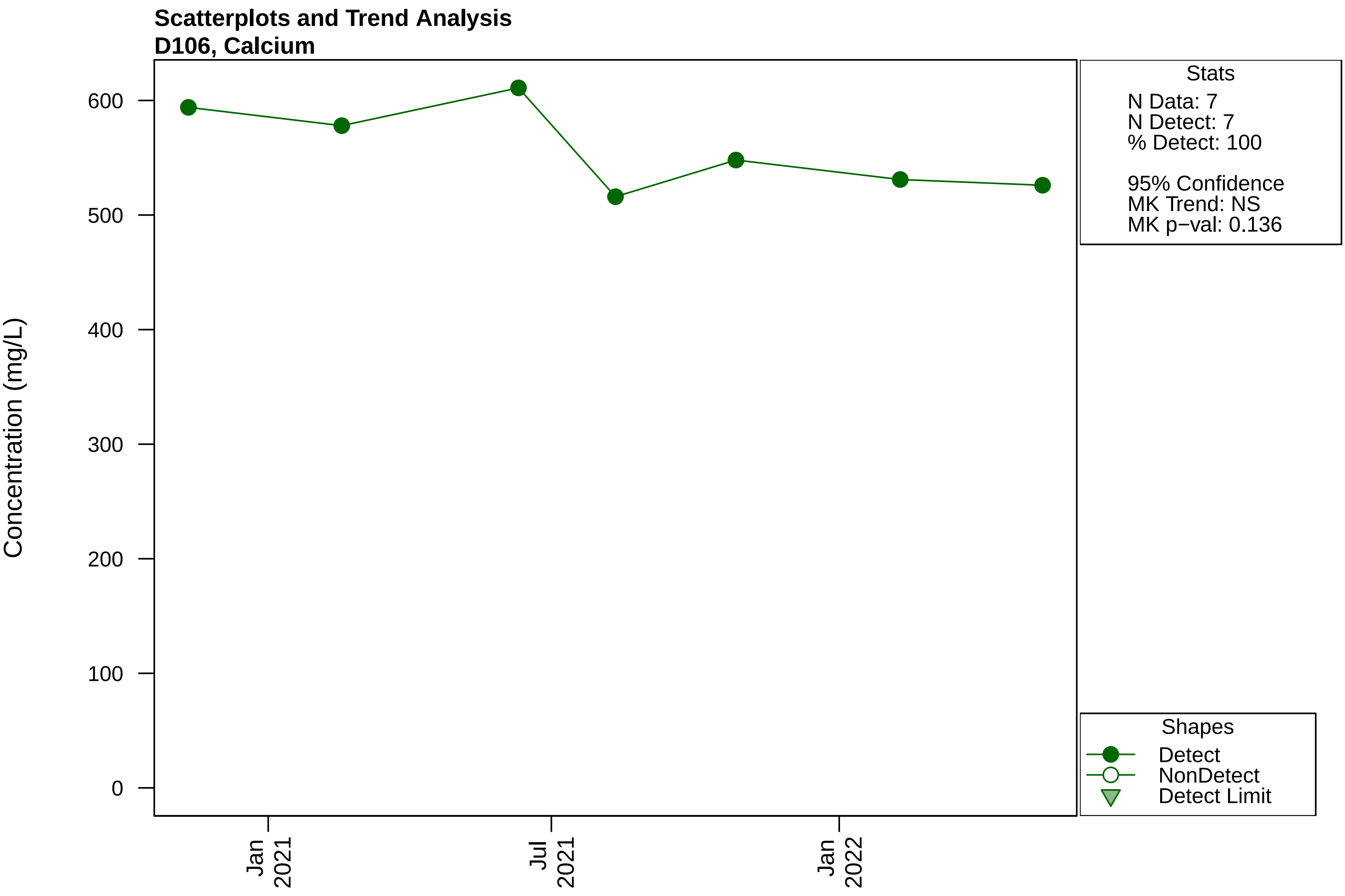
Scatterplots and Trend Analysis
D106, Boron
Concentration (ug/L)
0
500
1000
1500
2000
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 7
N Detect: 7
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 1
Shapes
Detect
NonDetect
Detect Limit

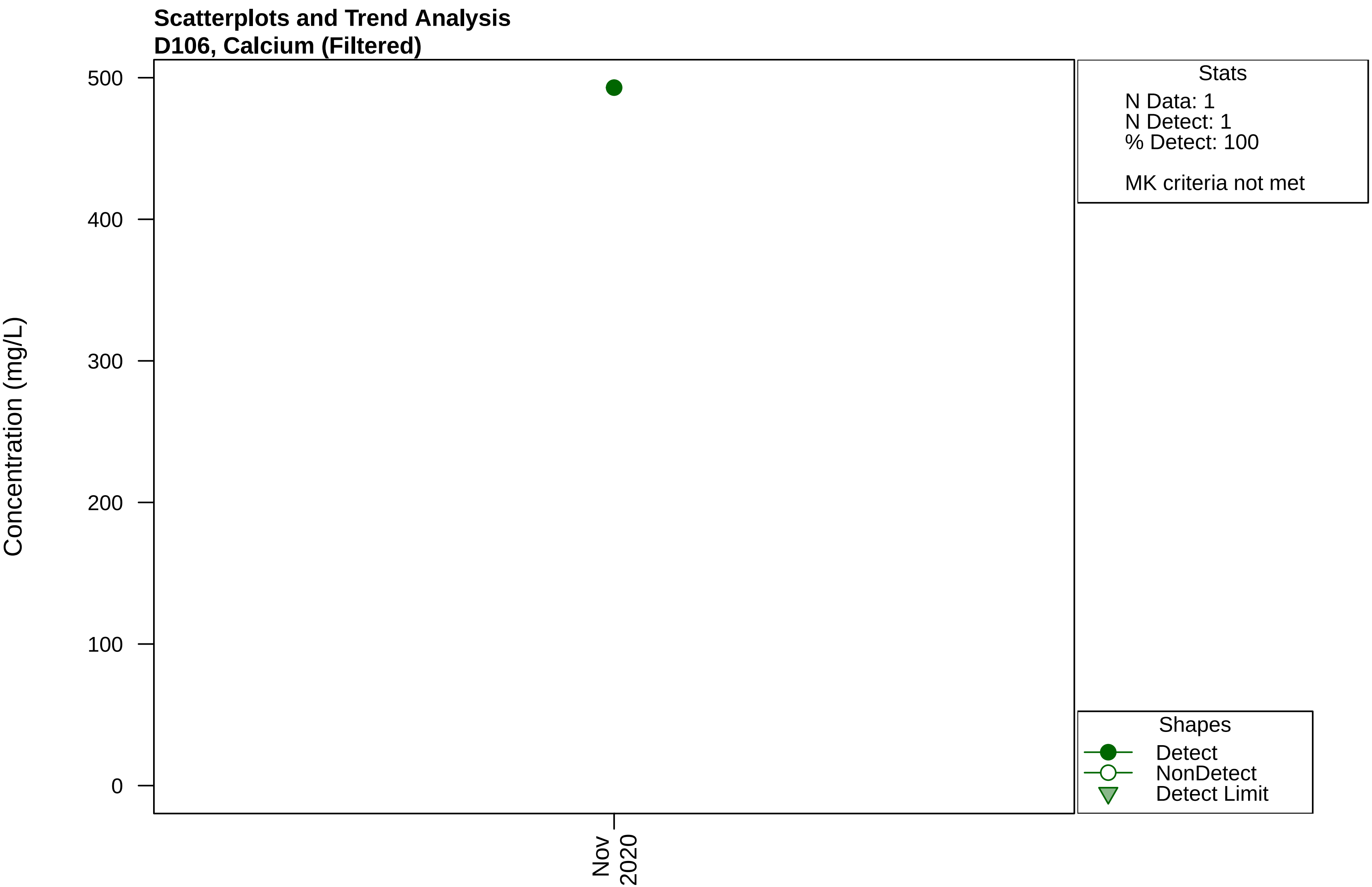
Scatterplots and Trend Analysis
D106, Boron (Filtered)



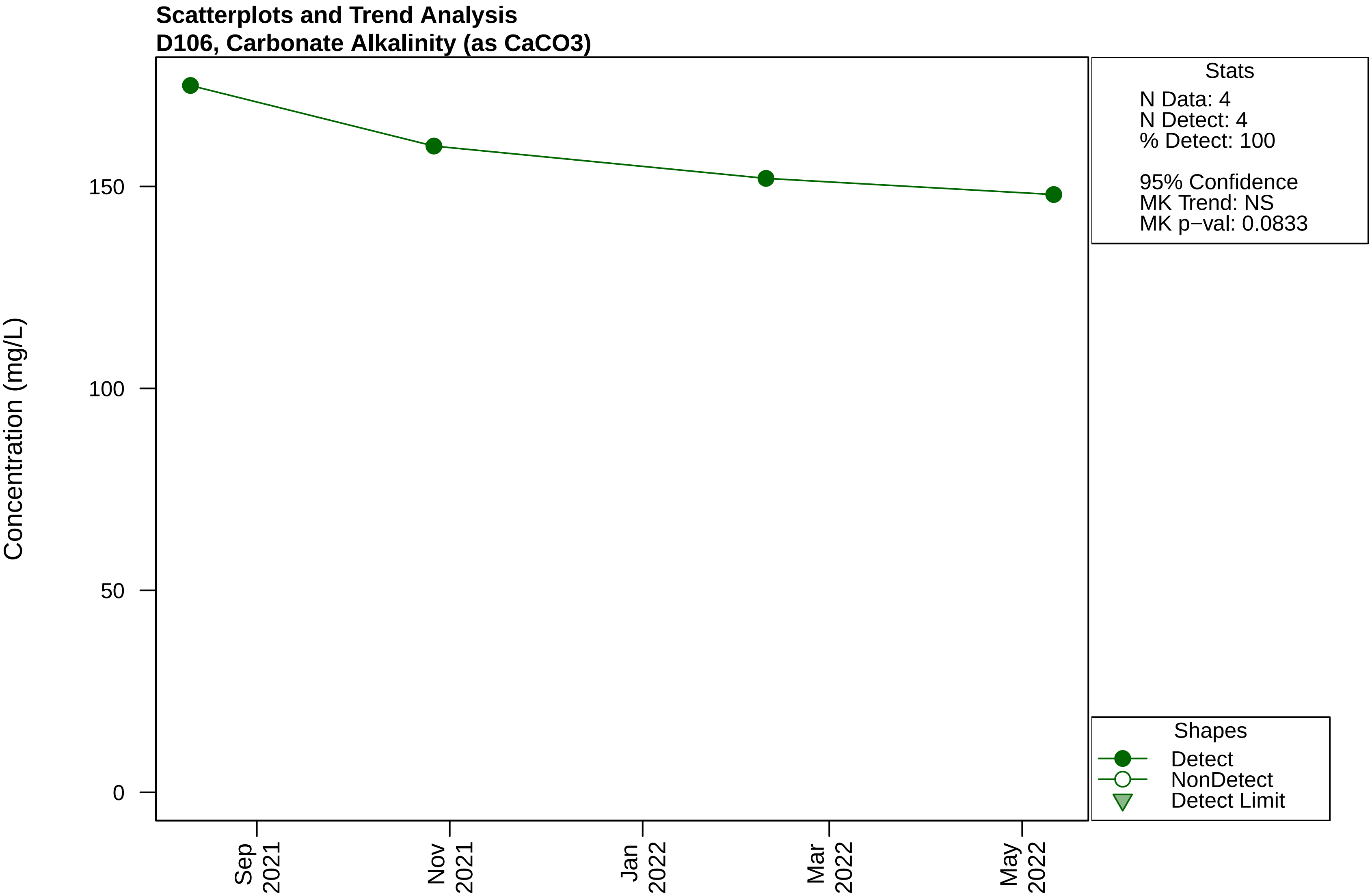


Scatterplots and Trend Analysis
D106, Cadmium
Concentration (ug/L)
0.10
0.08
0.06
0.04
0.02
0.00
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 7
N Detect: 7
% Detect: 100
95% Confidence
MK Trend: NA
MK p−val: NA
Shapes
Detect
NonDetect
Detect Limit

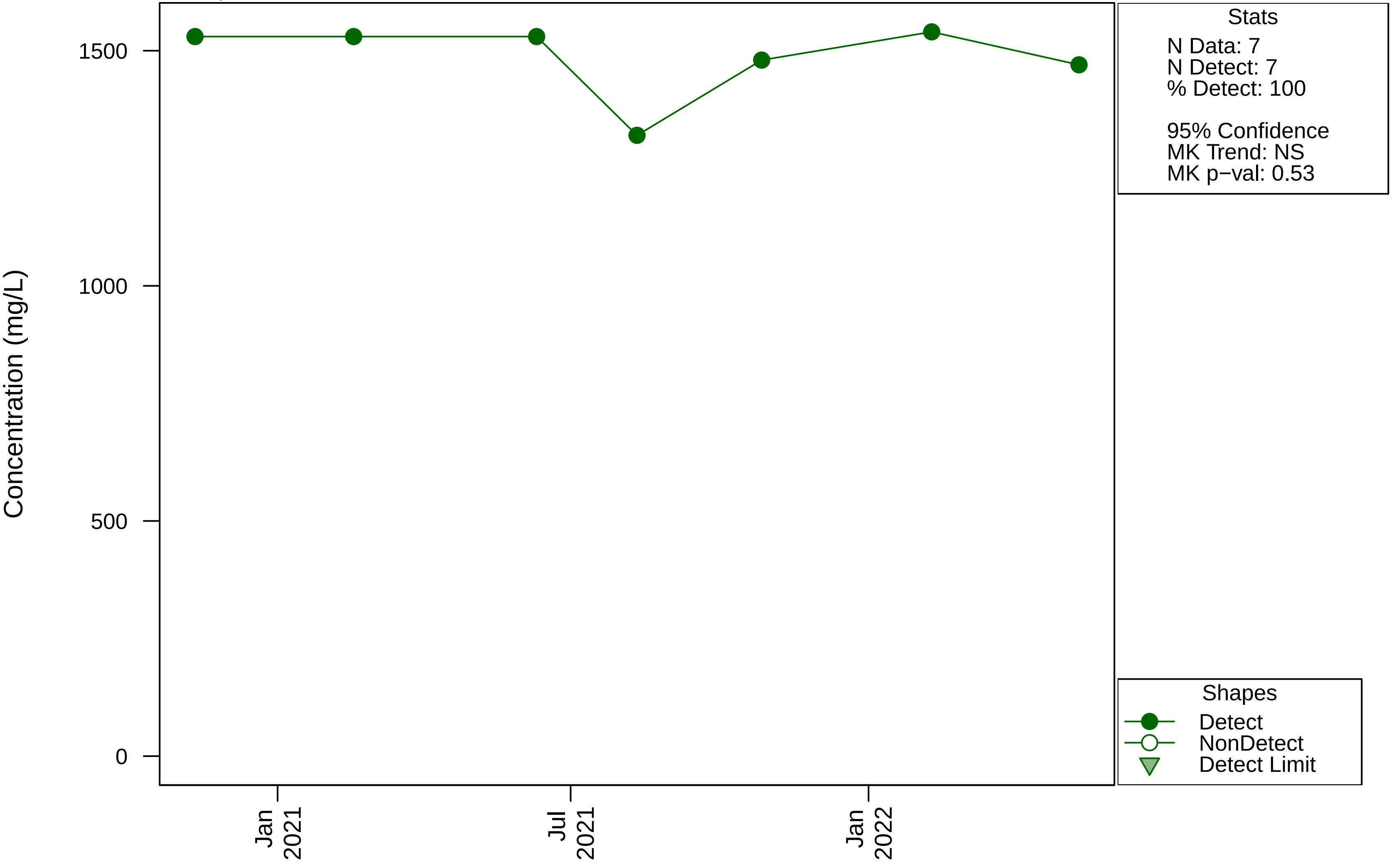

Scatterplots and Trend Analysis
D106, Calcium
Concentration (mg/L)
0
100
200
300
400
500
600
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 7
N Detect: 7
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.136
Shapes
Detect
NonDetect
Detect Limit

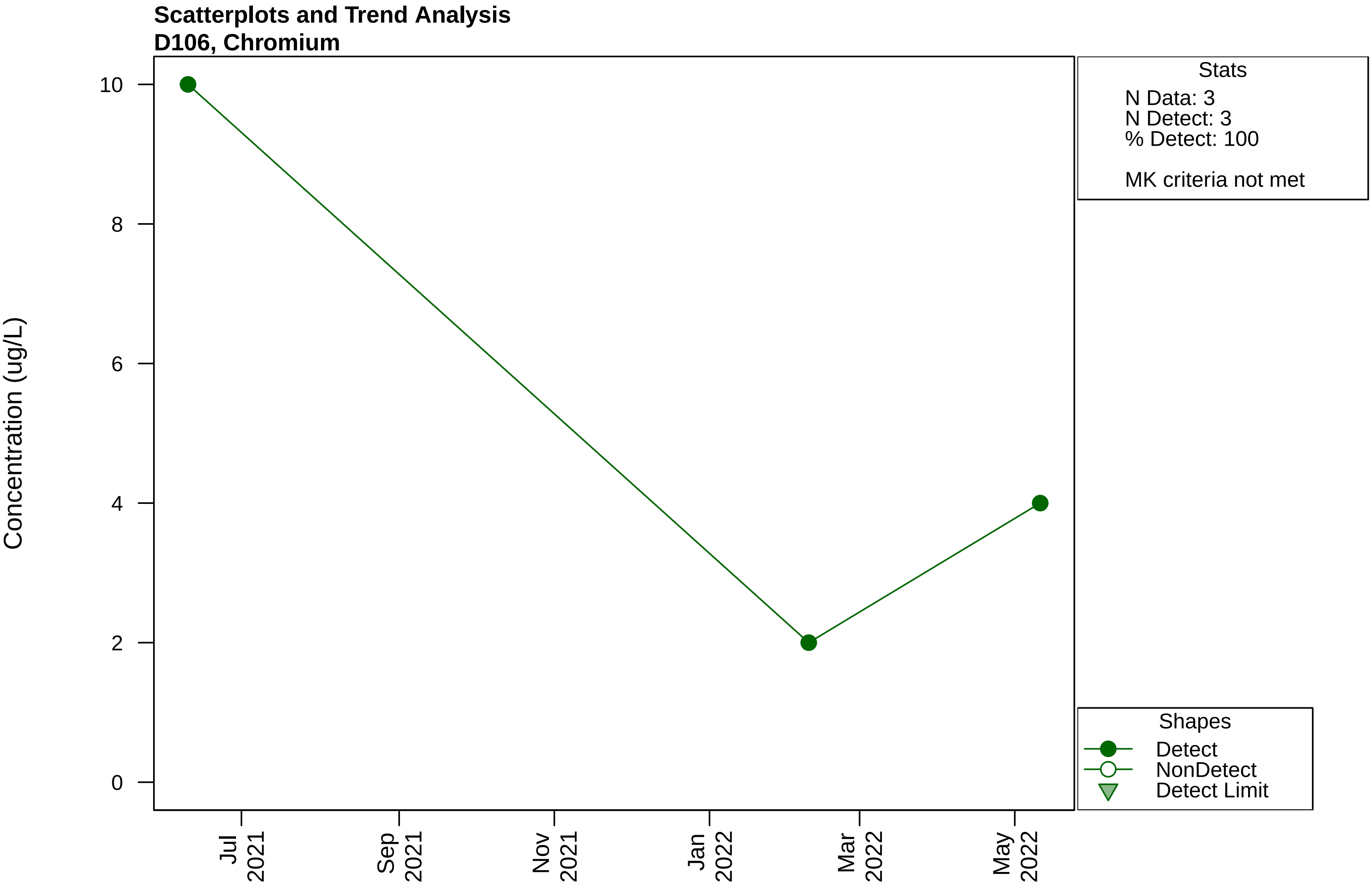


Scatterplots and Trend Analysis
D106, Calcium (Filtered)
Concentration (mg/L)
500
400
300
200
100
0
Nov 2020
Stats
N Data: 1
N Detect: 1
% Detect: 100
MK criteria not met
Shapes
Detect
NonDetect
Detect Limit

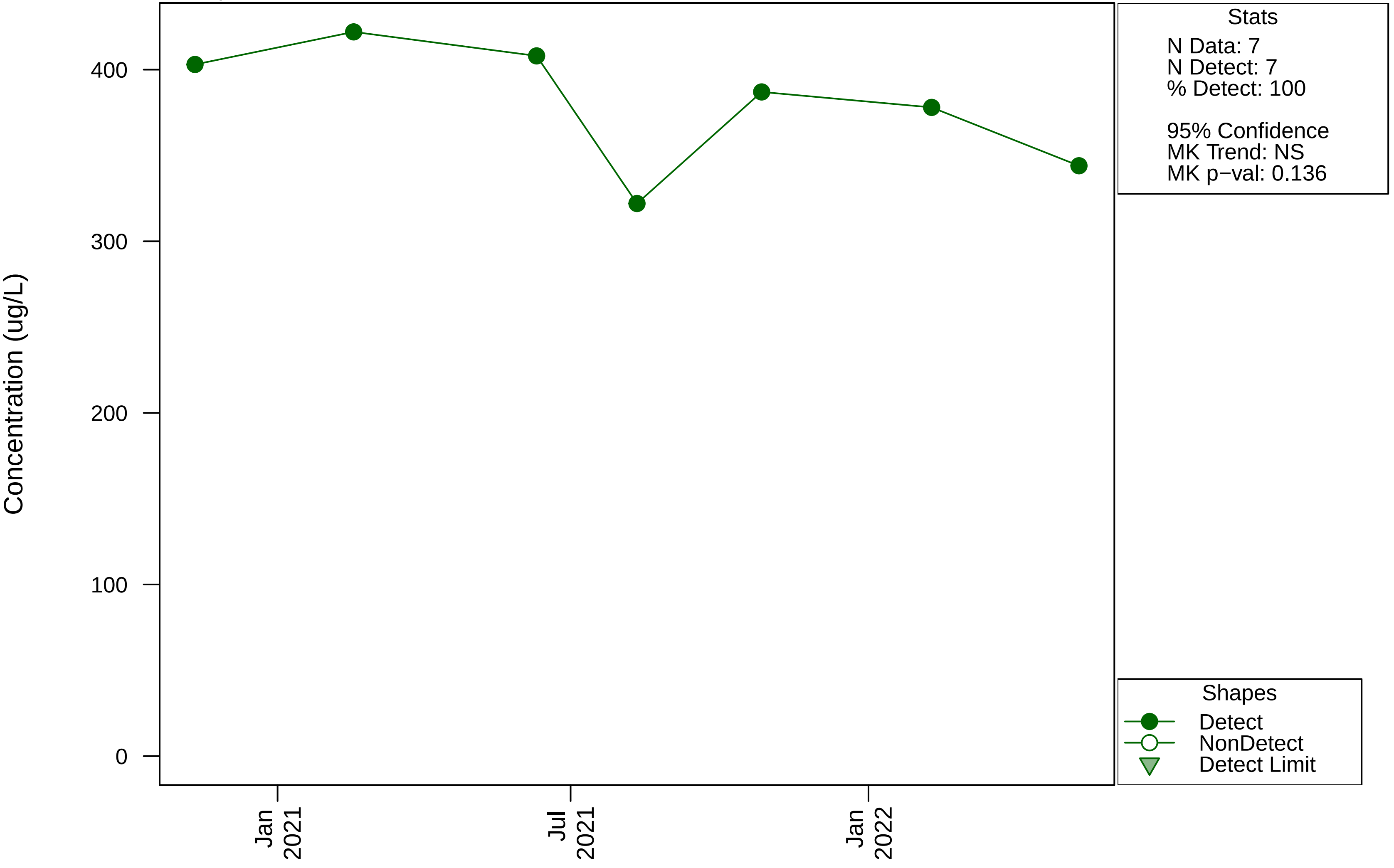

Scatterplots and Trend Analysis
D106, Carbonate Alkalinity (as CaCO3)
Concentration (mg/L)
0
50
100
150
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 4
N Detect: 4
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.0833
Shapes
Detect
NonDetect
Detect Limit

Scatterplots and Trend Analysis
D106, Chloride

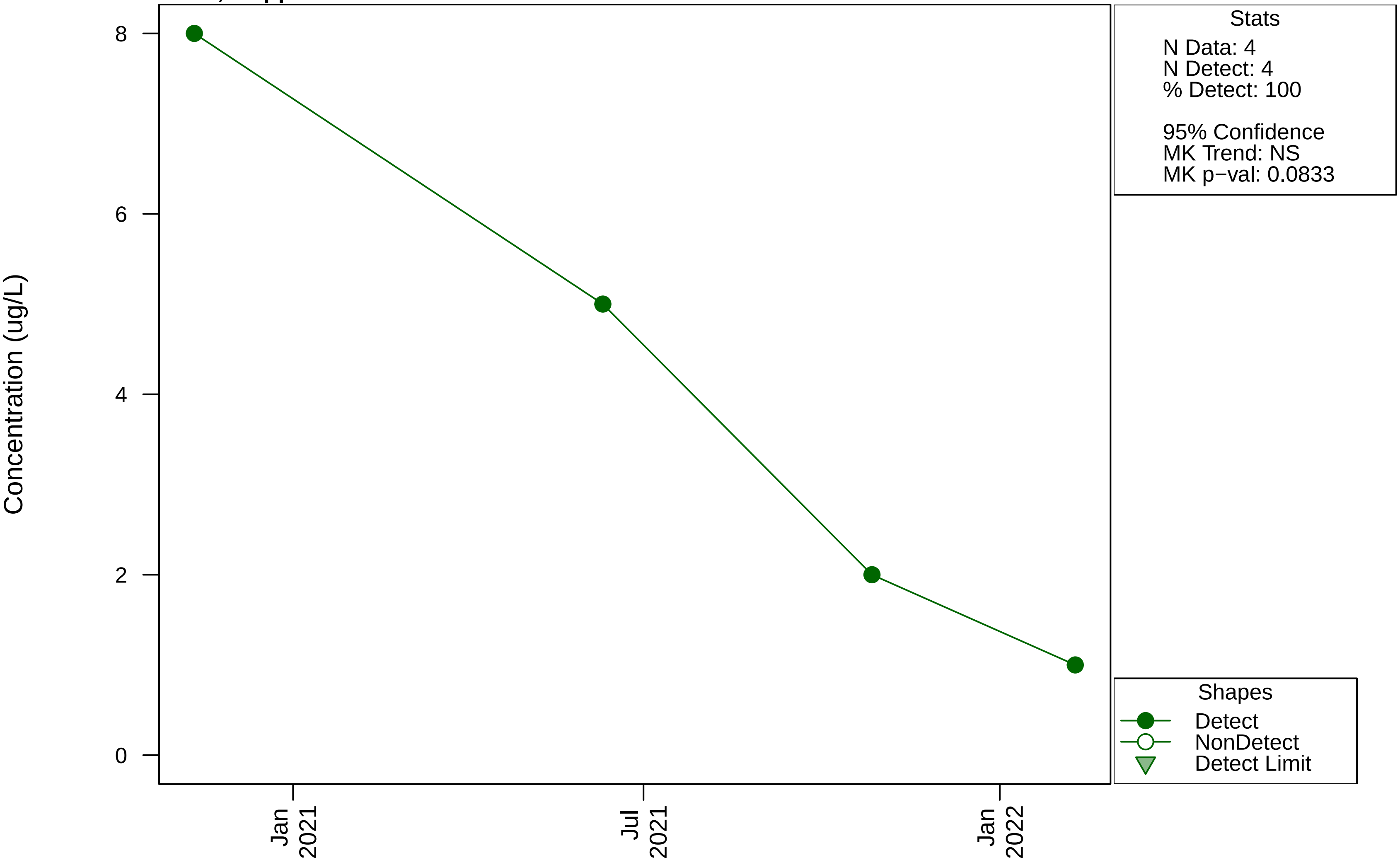



Scatterplots and Trend Analysis
D106, Chromium
Concentration (ug/L)
0
2
4
6
8
10
Jul 2021
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 3
N Detect: 3
% Detect: 100
MK criteria not met
Shapes
Detect
NonDetect
Detect Limit

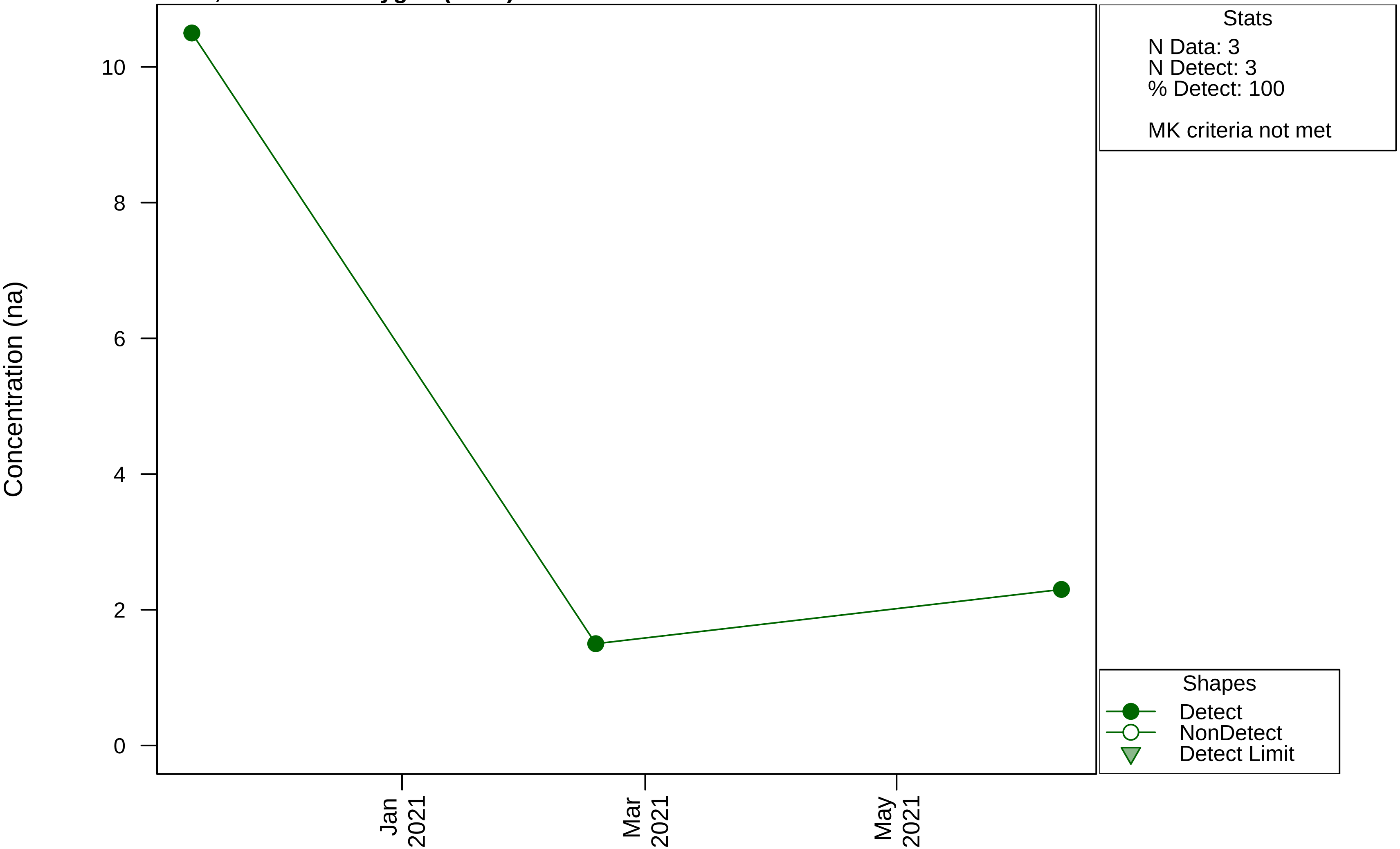
Scatterplots and Trend Analysis
D106, Cobalt



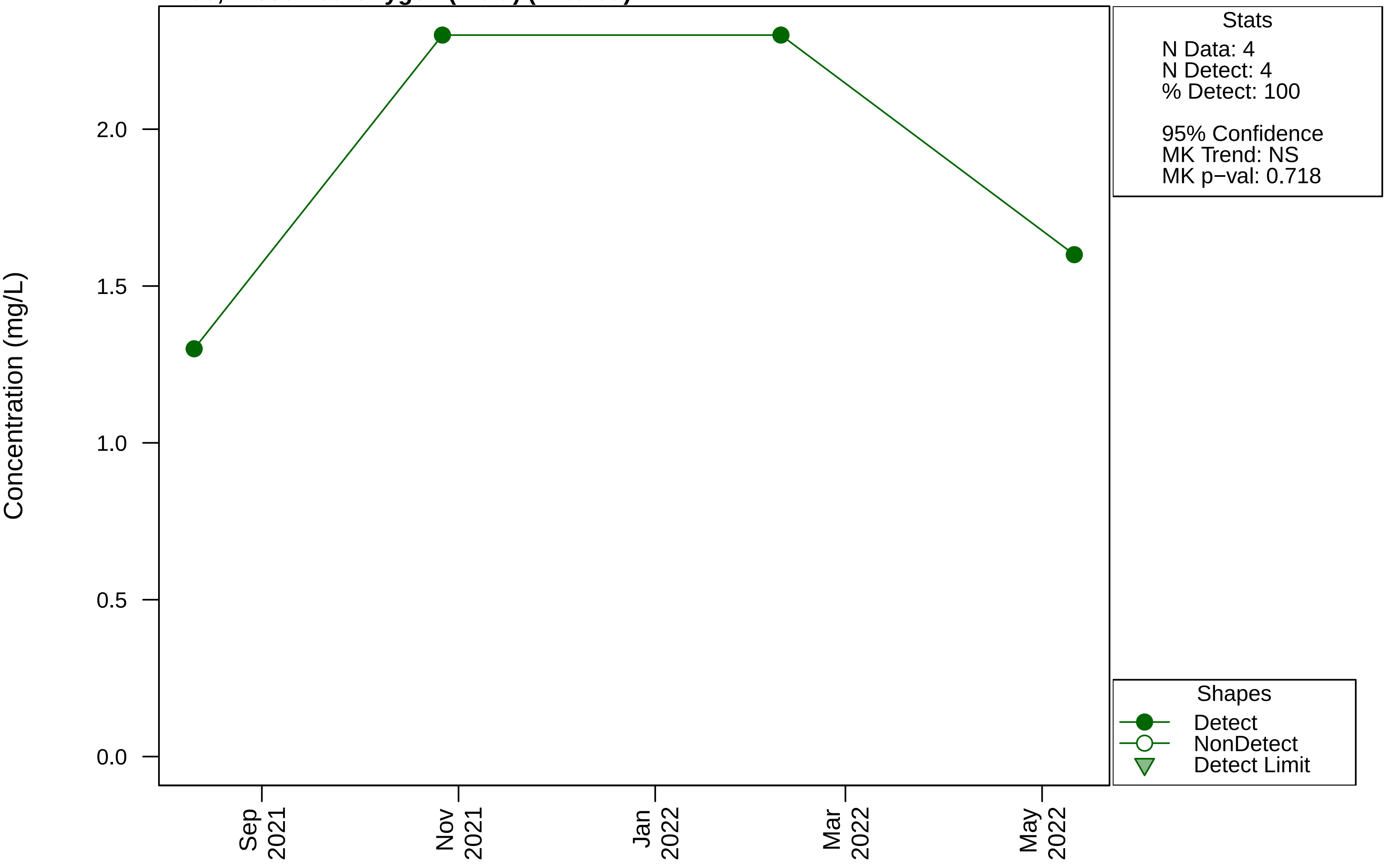
Scatterplots and Trend Analysis
D106, Copper



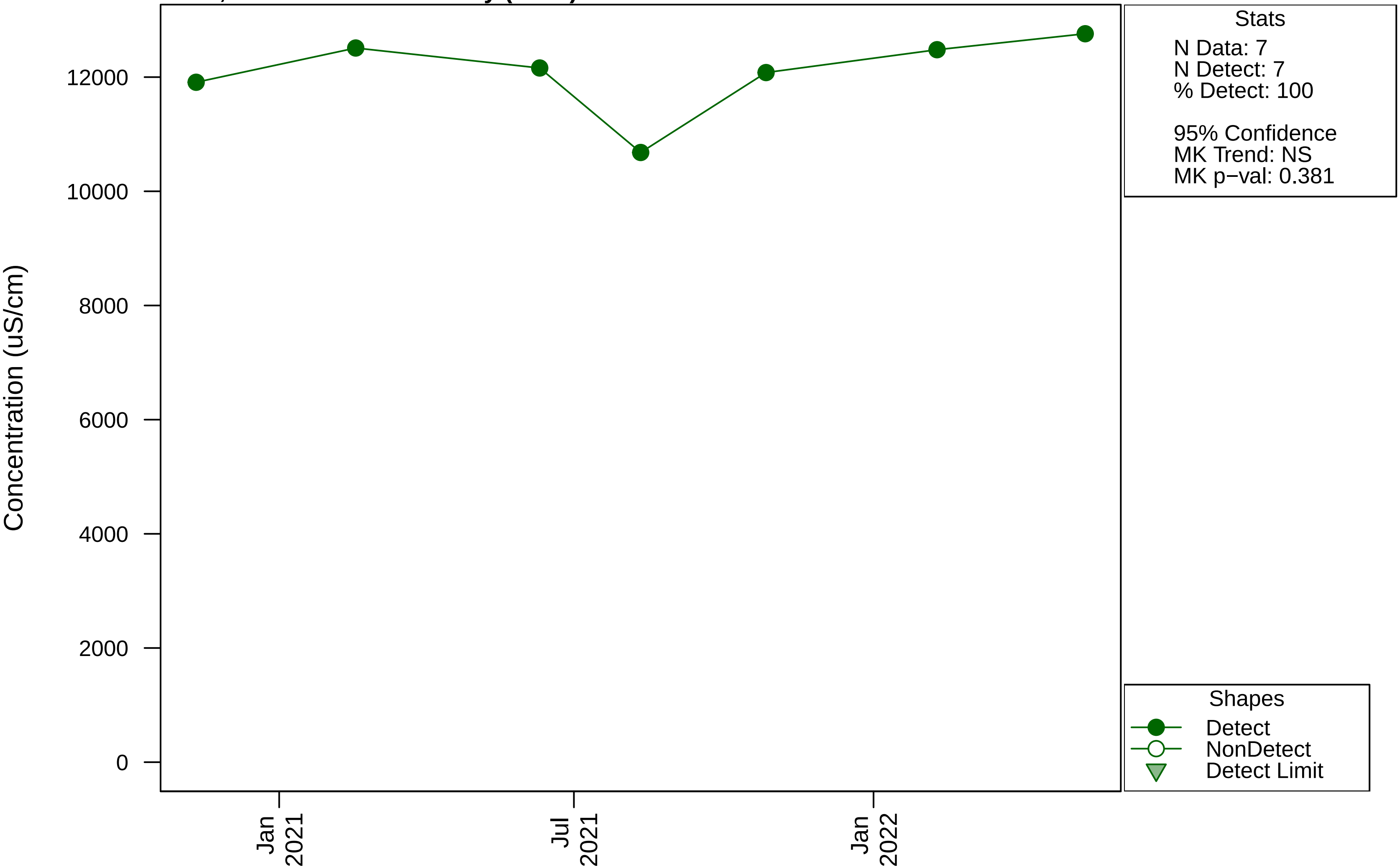
Scatterplots and Trend Analysis
D106, Dissolved Oxygen (Field)



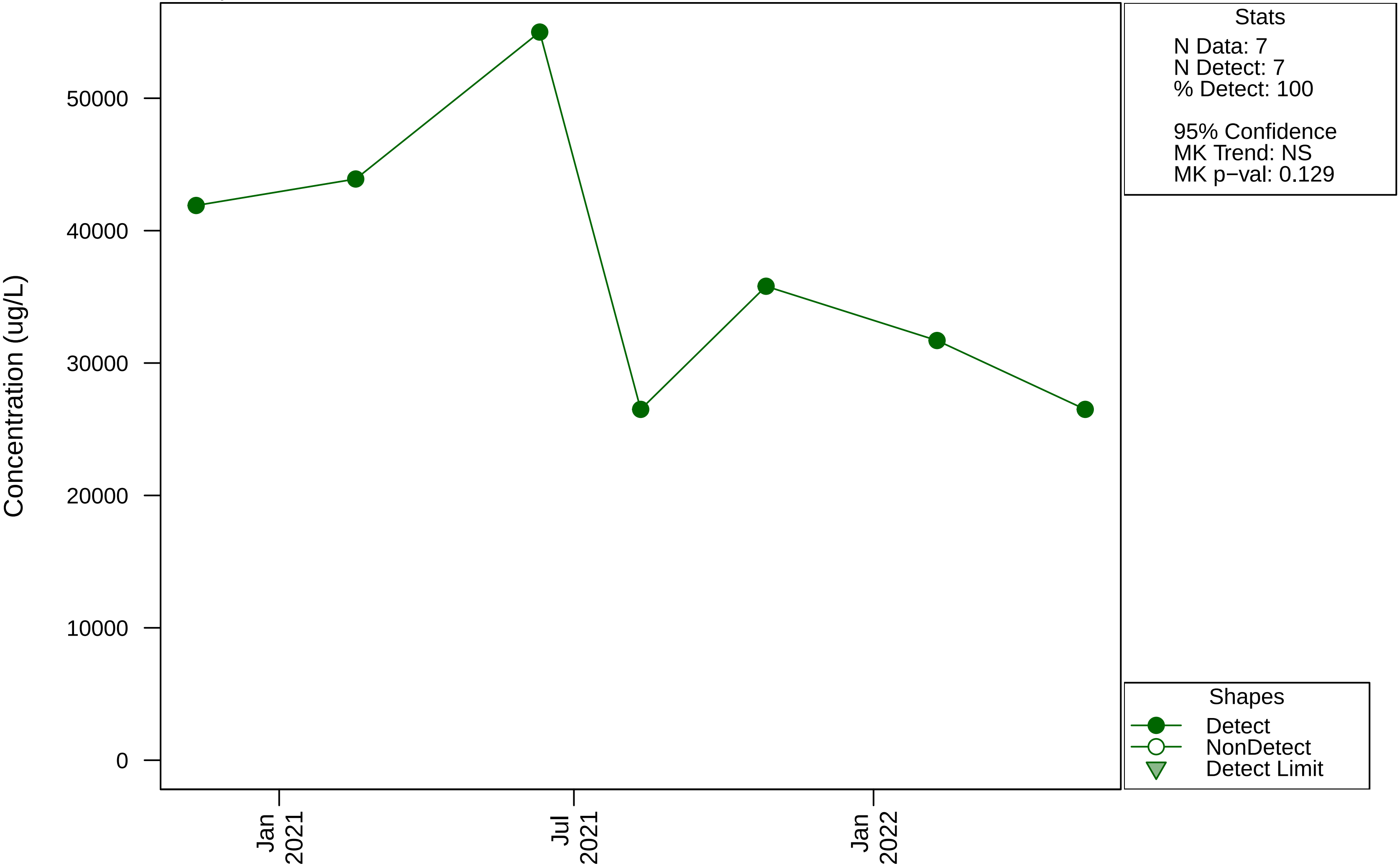
Scatterplots and Trend Analysis
D106, Dissolved Oxygen (Field) (Filtered)

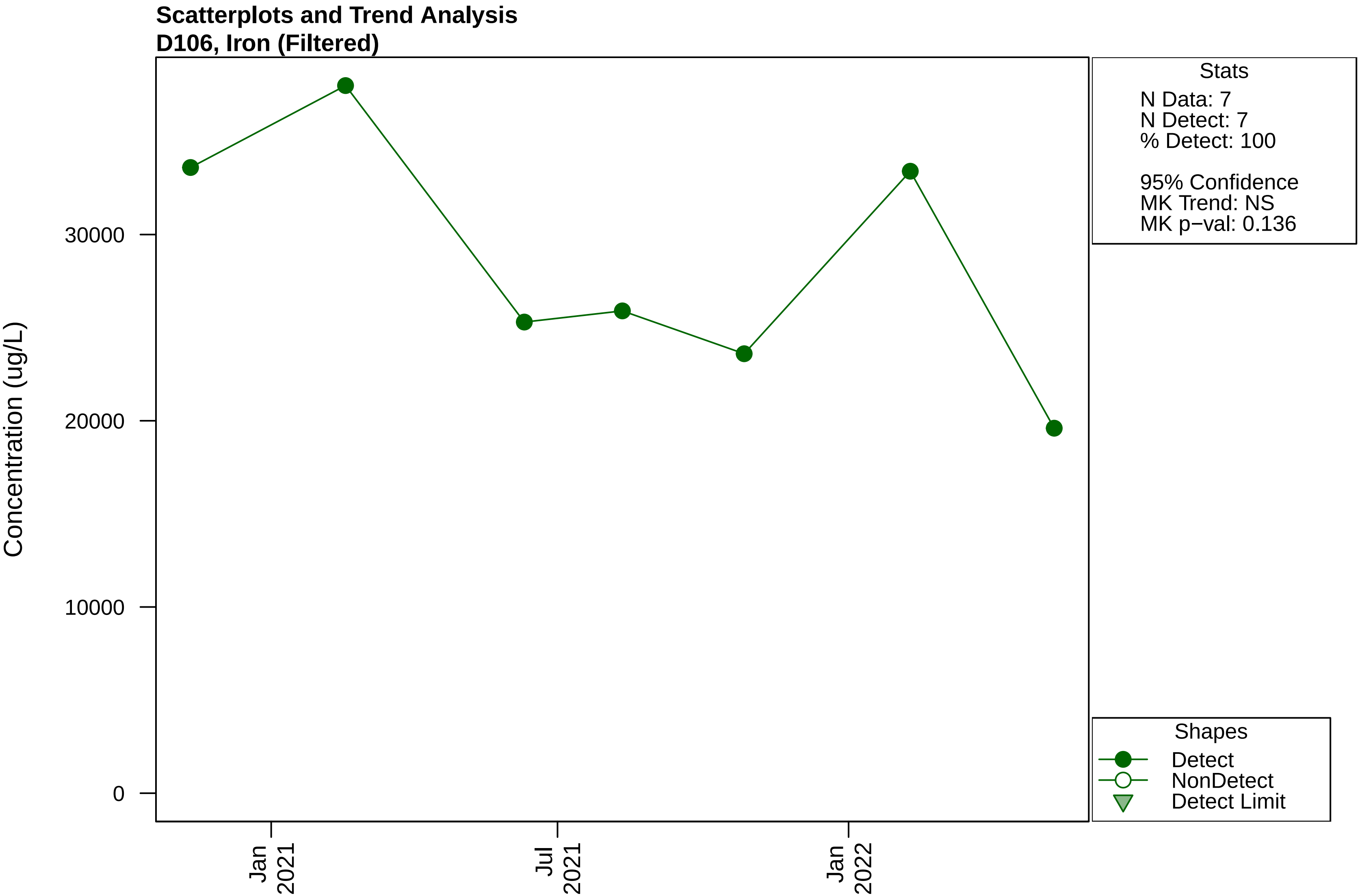


Scatterplots and Trend Analysis
D106, Electrical Conductivity (Field)

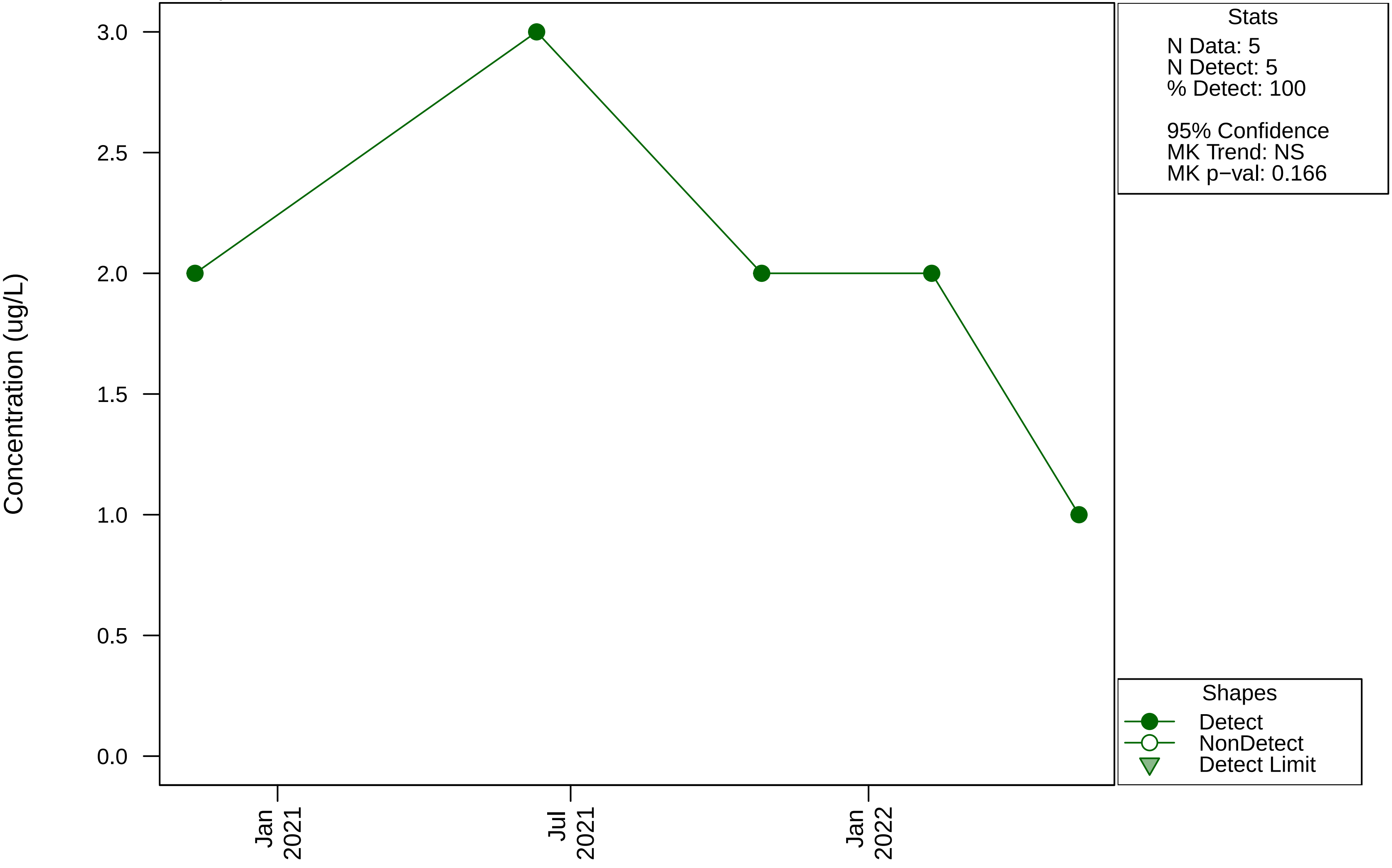


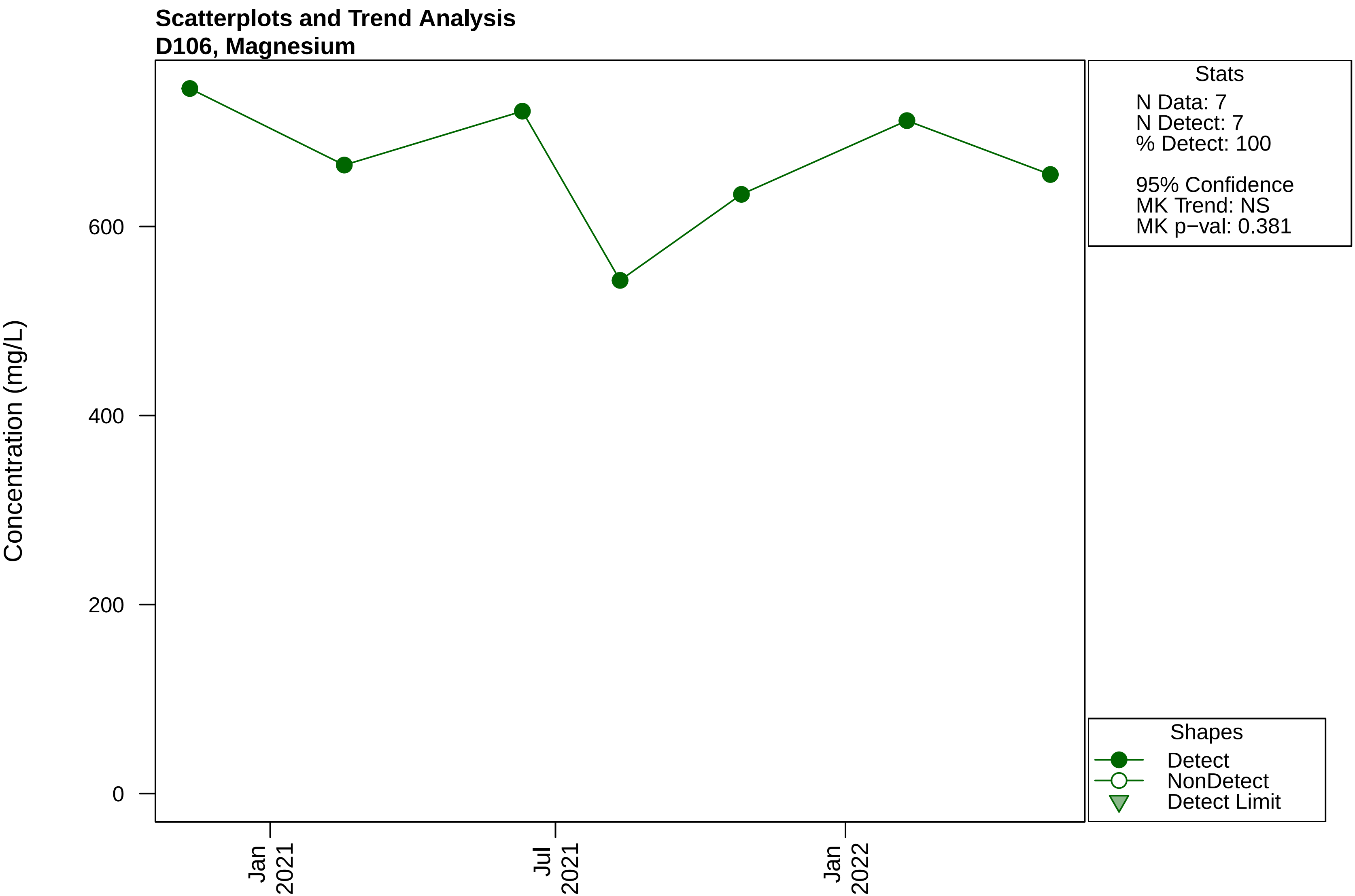
Scatterplots and Trend Analysis
D106, Iron



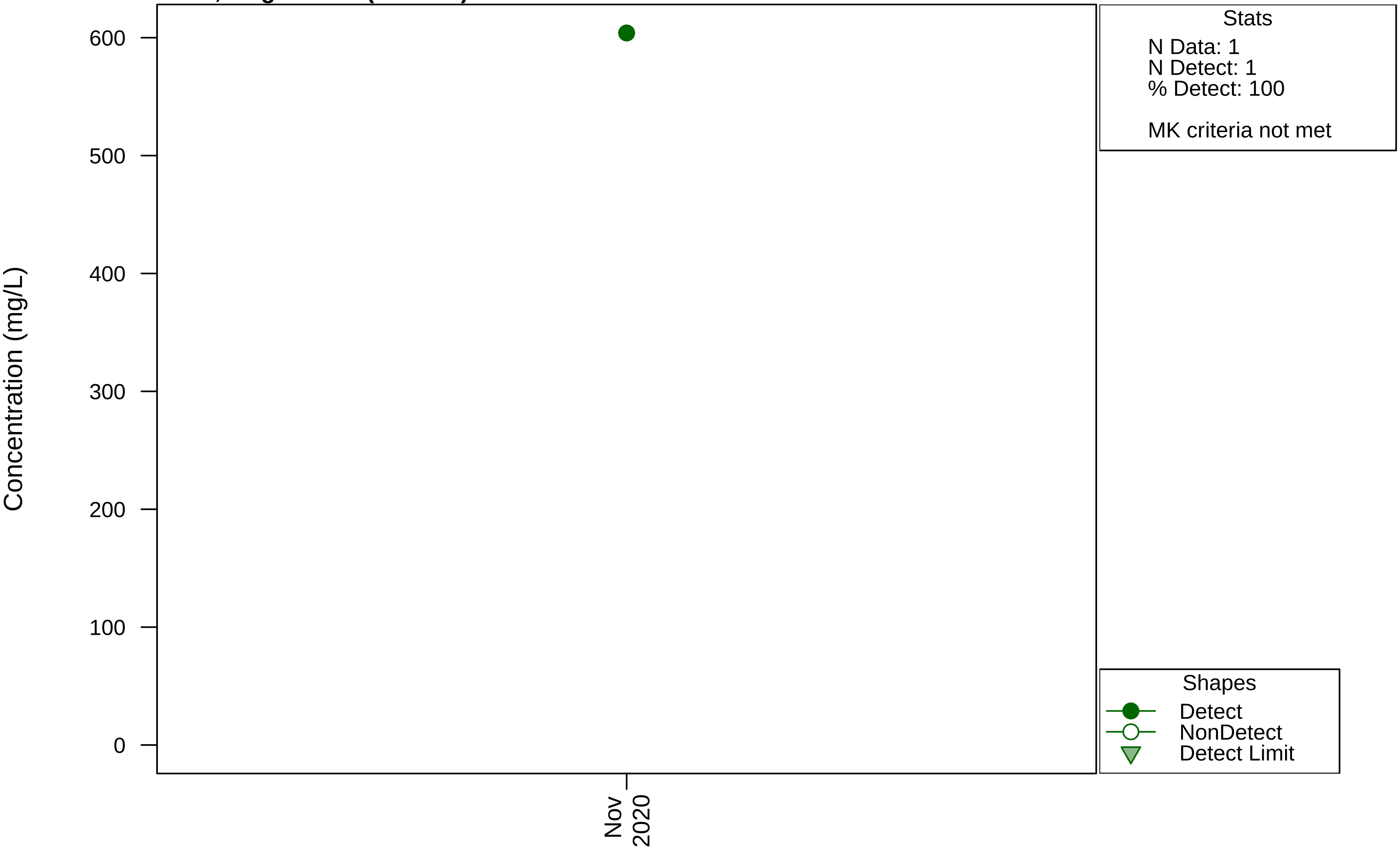

Scatterplots and Trend Analysis
D106, Iron (Filtered)
Concentration (ug/L)
0
10000
20000
30000
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 7
N Detect: 7
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.136
Shapes
Detect
NonDetect
Detect Limit

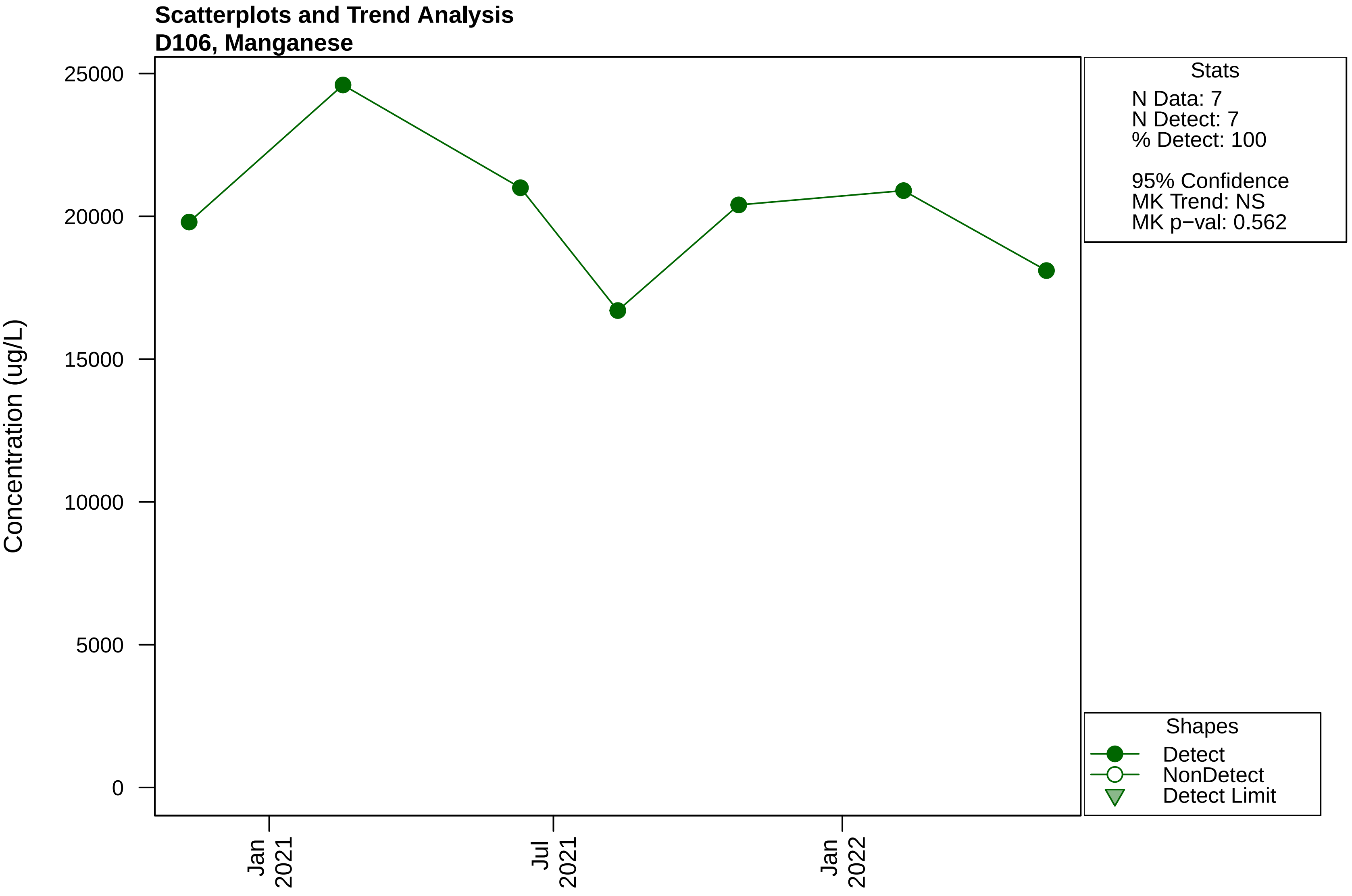
Scatterplots and Trend Analysis
D106, Lead

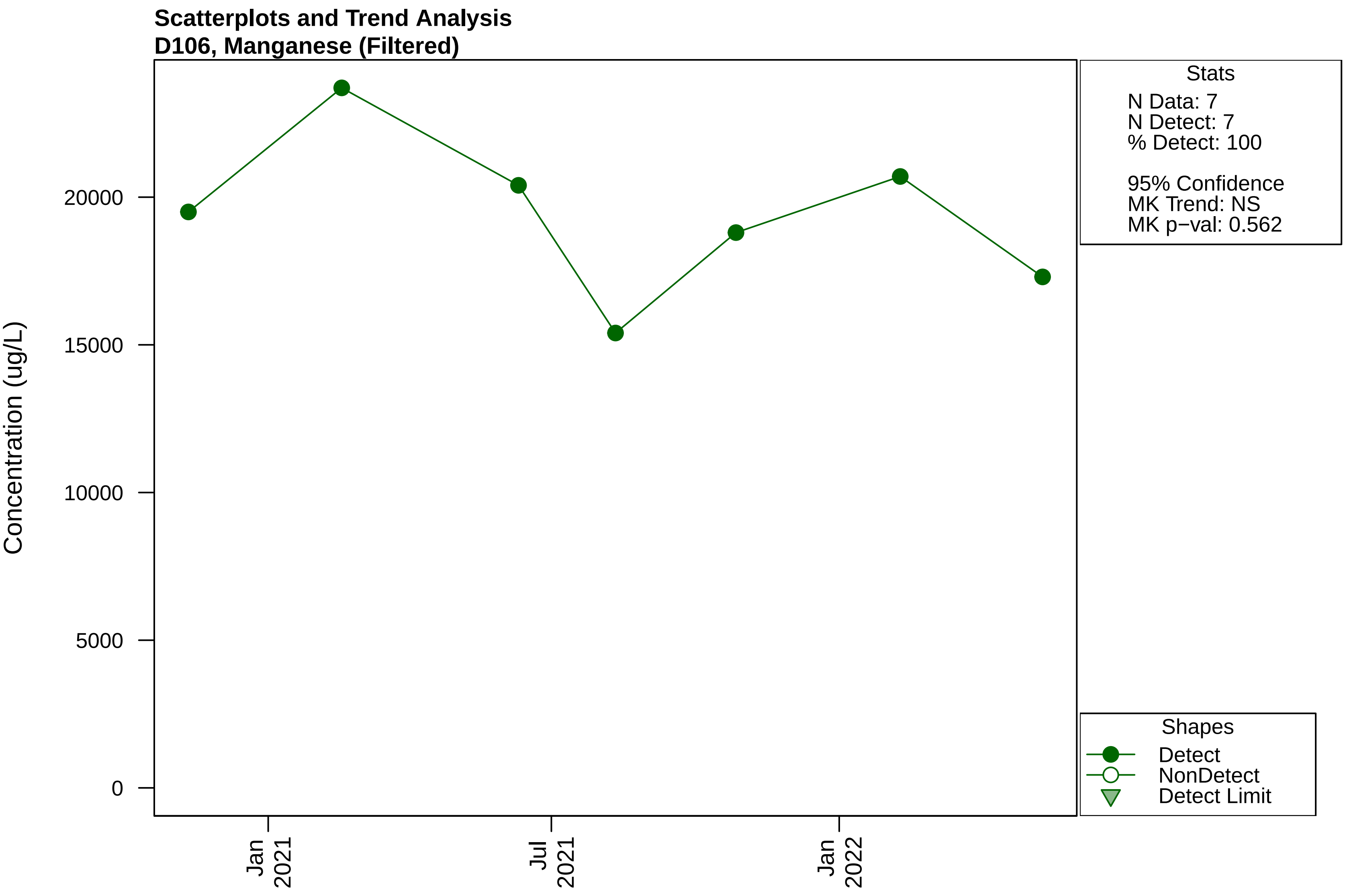



Scatterplots and Trend Analysis
D106, Magnesium
Concentration (mg/L)
0
200
400
600
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 7
N Detect: 7
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.381
Shapes
Detect
NonDetect
Detect Limit

Scatterplots and Trend Analysis
D106, Magnesium (Filtered)

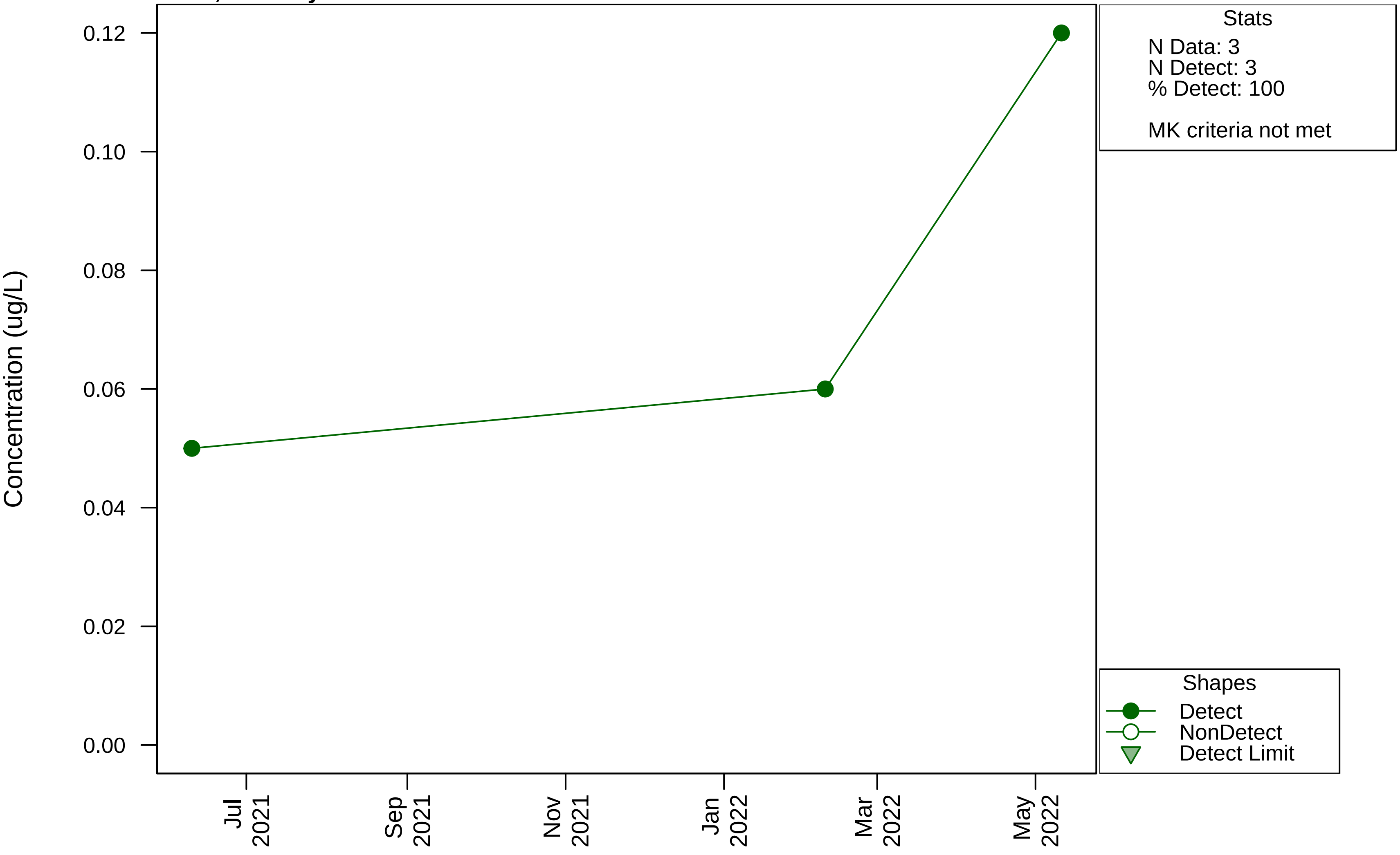



Scatterplots and Trend Analysis
D106, Manganese
Concentration (ug/L)
25000
20000
15000
10000
5000
0
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 7
N Detect: 7
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.562
Shapes
Detect
NonDetect
Detect Limit

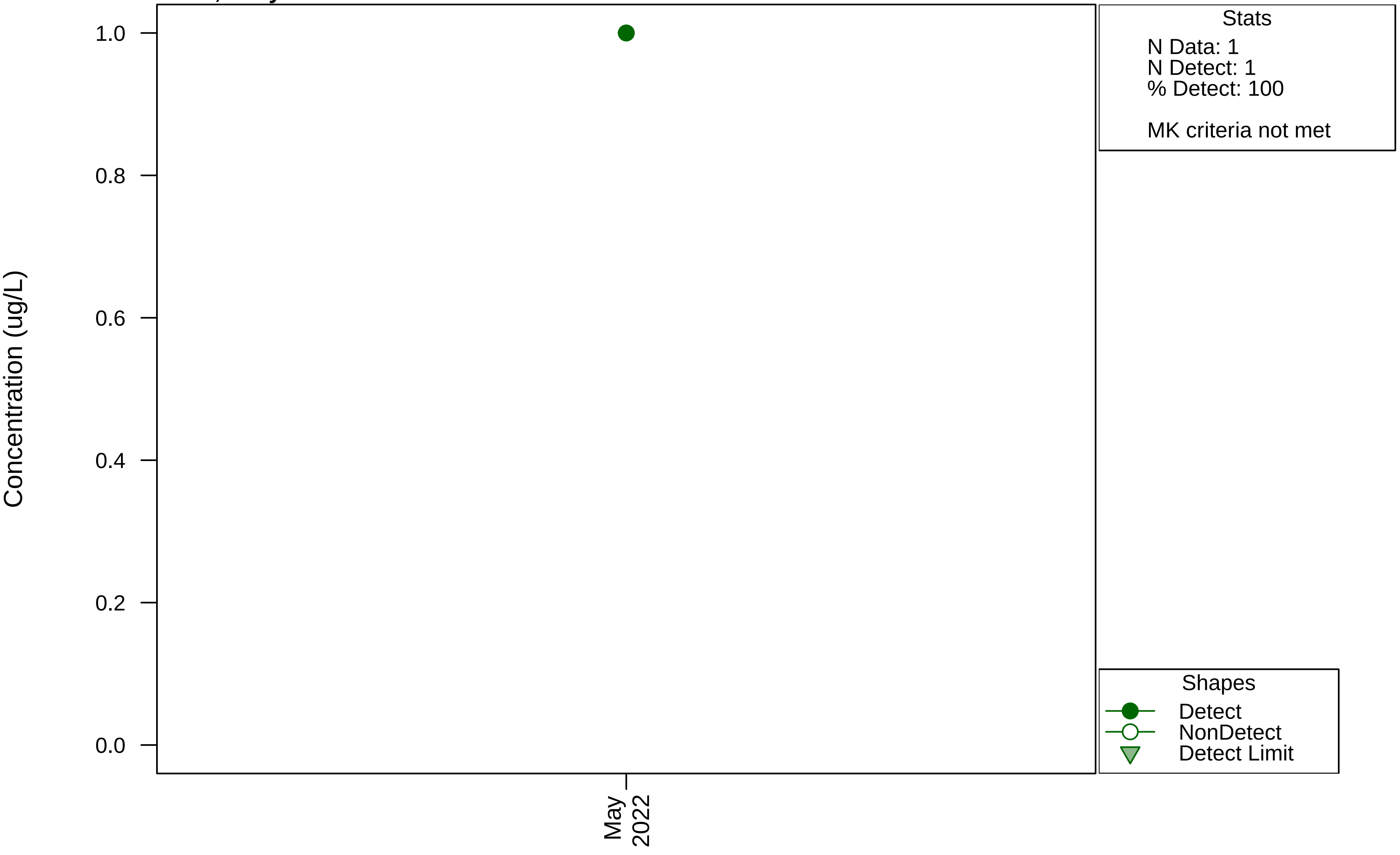


Scatterplots and Trend Analysis
D106, Manganese (Filtered)
Concentration (ug/L)
20000
15000
10000
5000
0
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 7
N Detect: 7
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.562
Shapes
Detect
NonDetect
Detect Limit

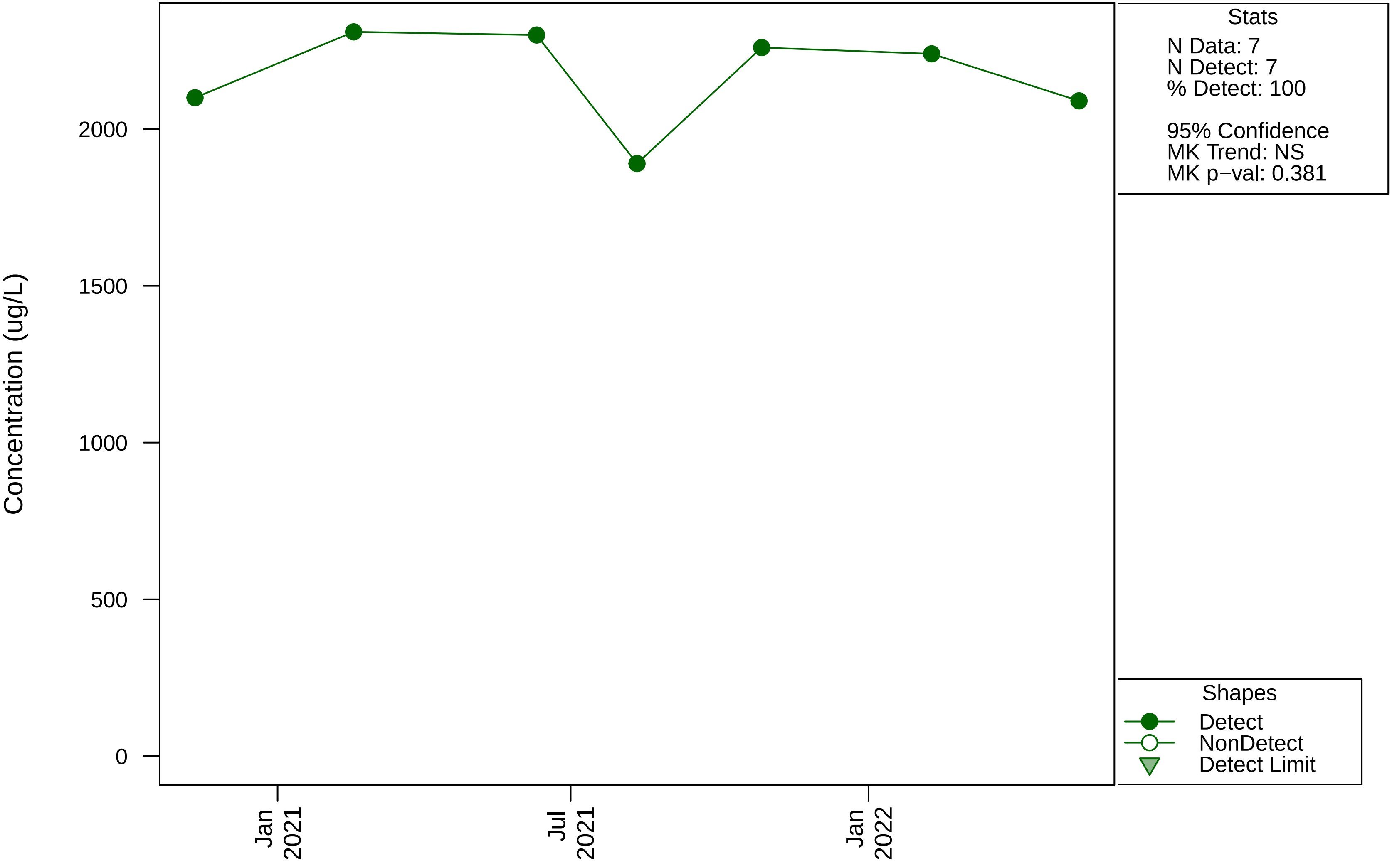
Scatterplots and Trend Analysis
D106, Mercury

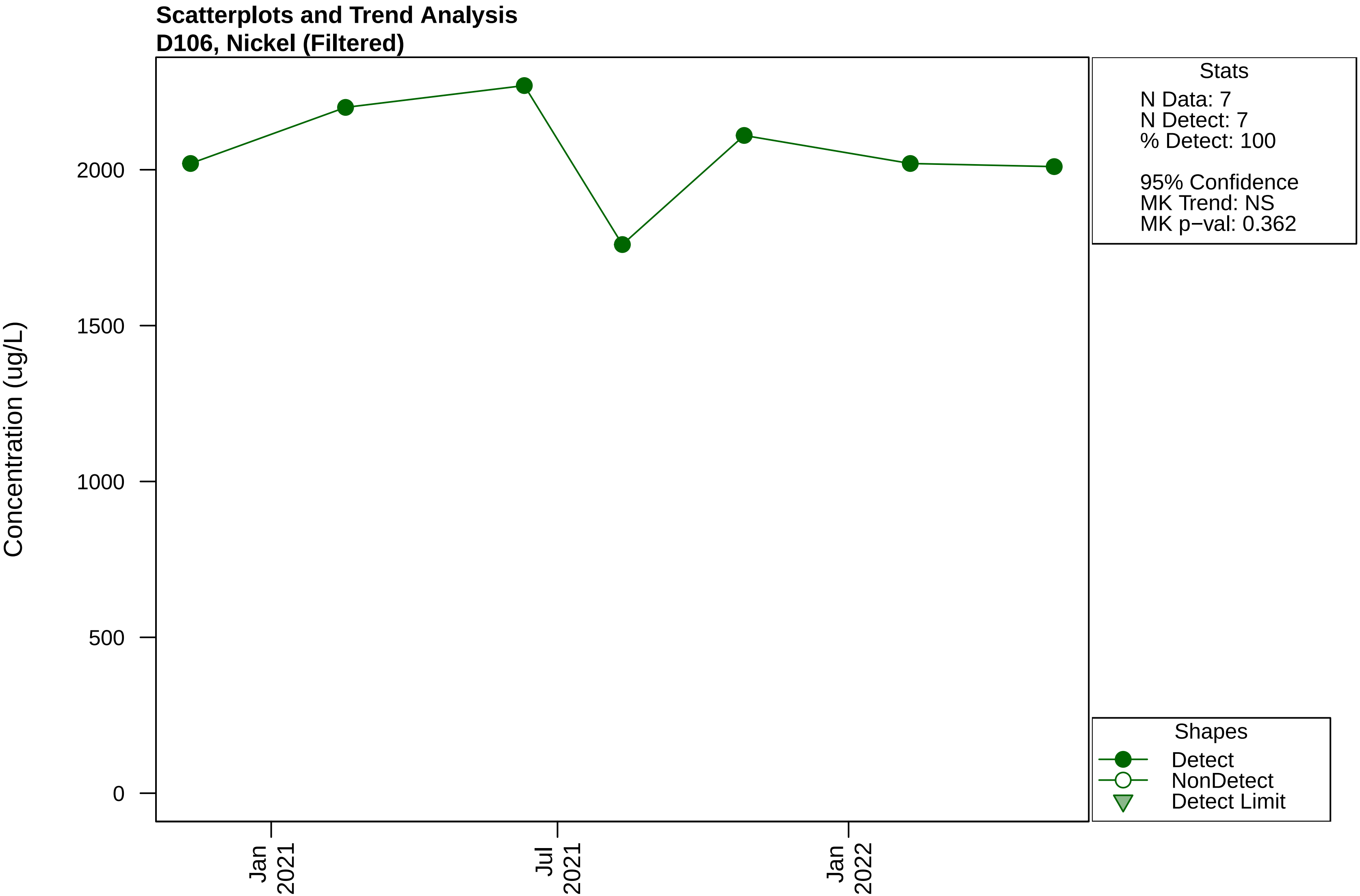


Scatterplots and Trend Analysis
D106, Molybdenum

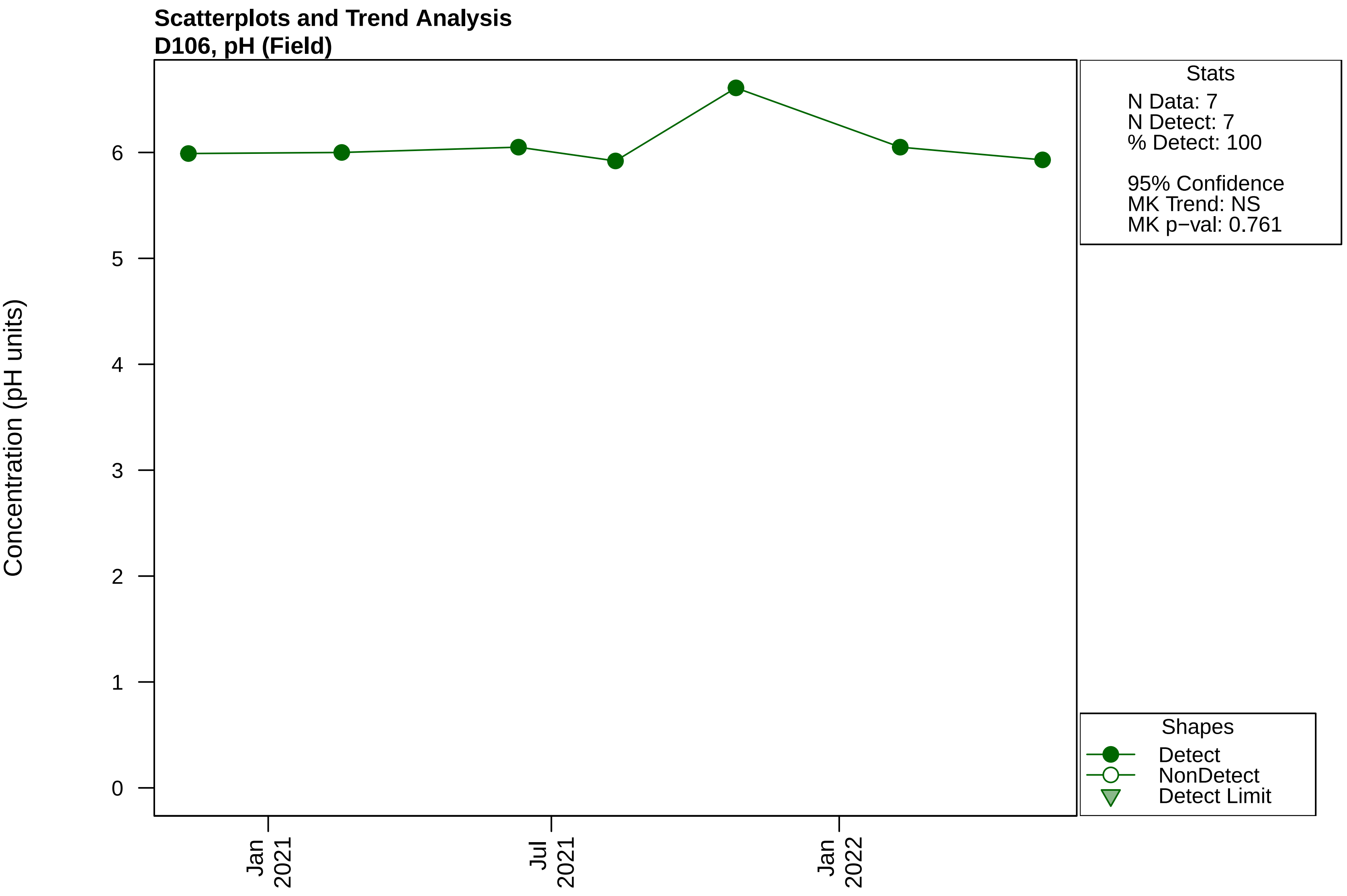


Scatterplots and Trend Analysis
D106, Nickel



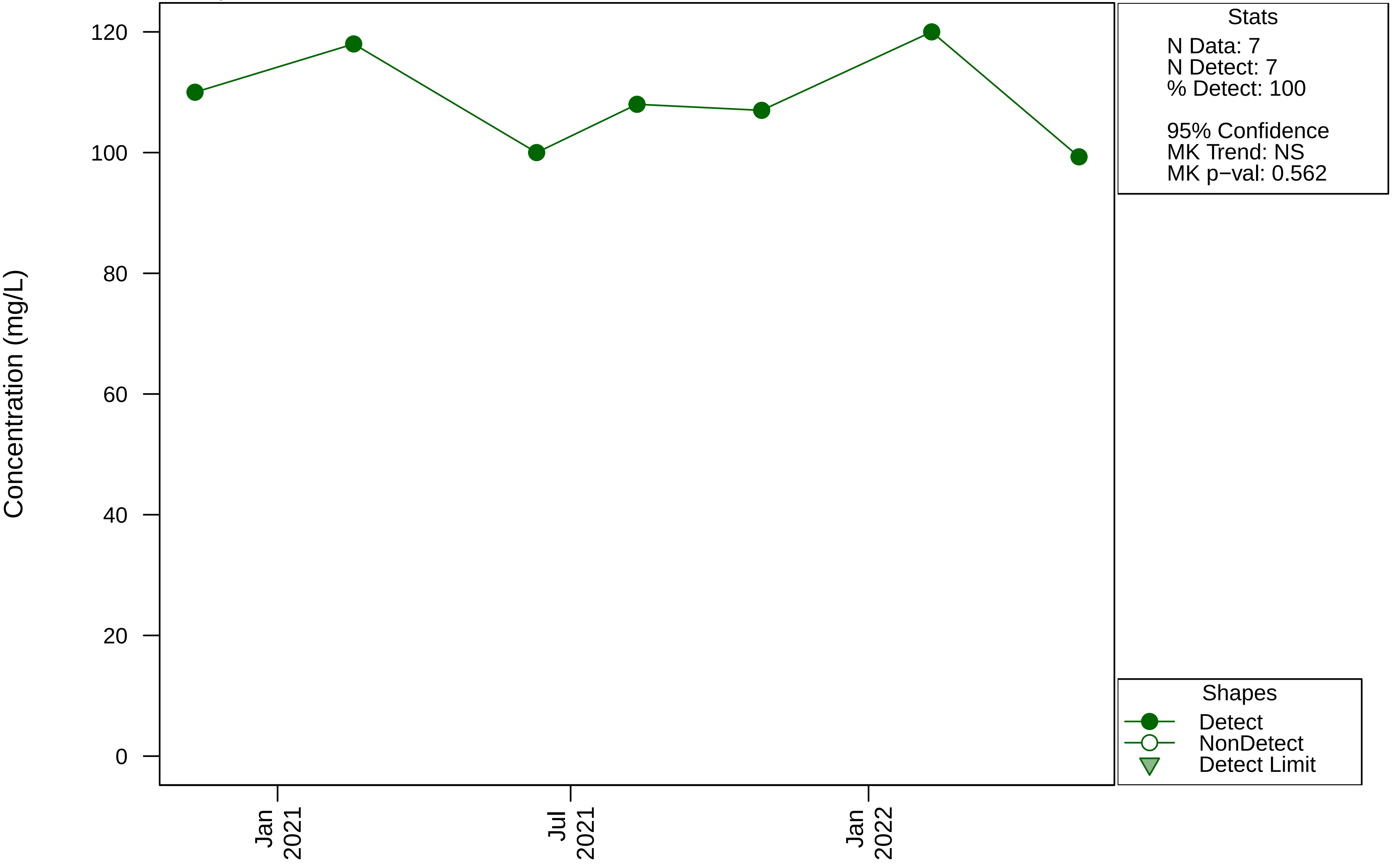


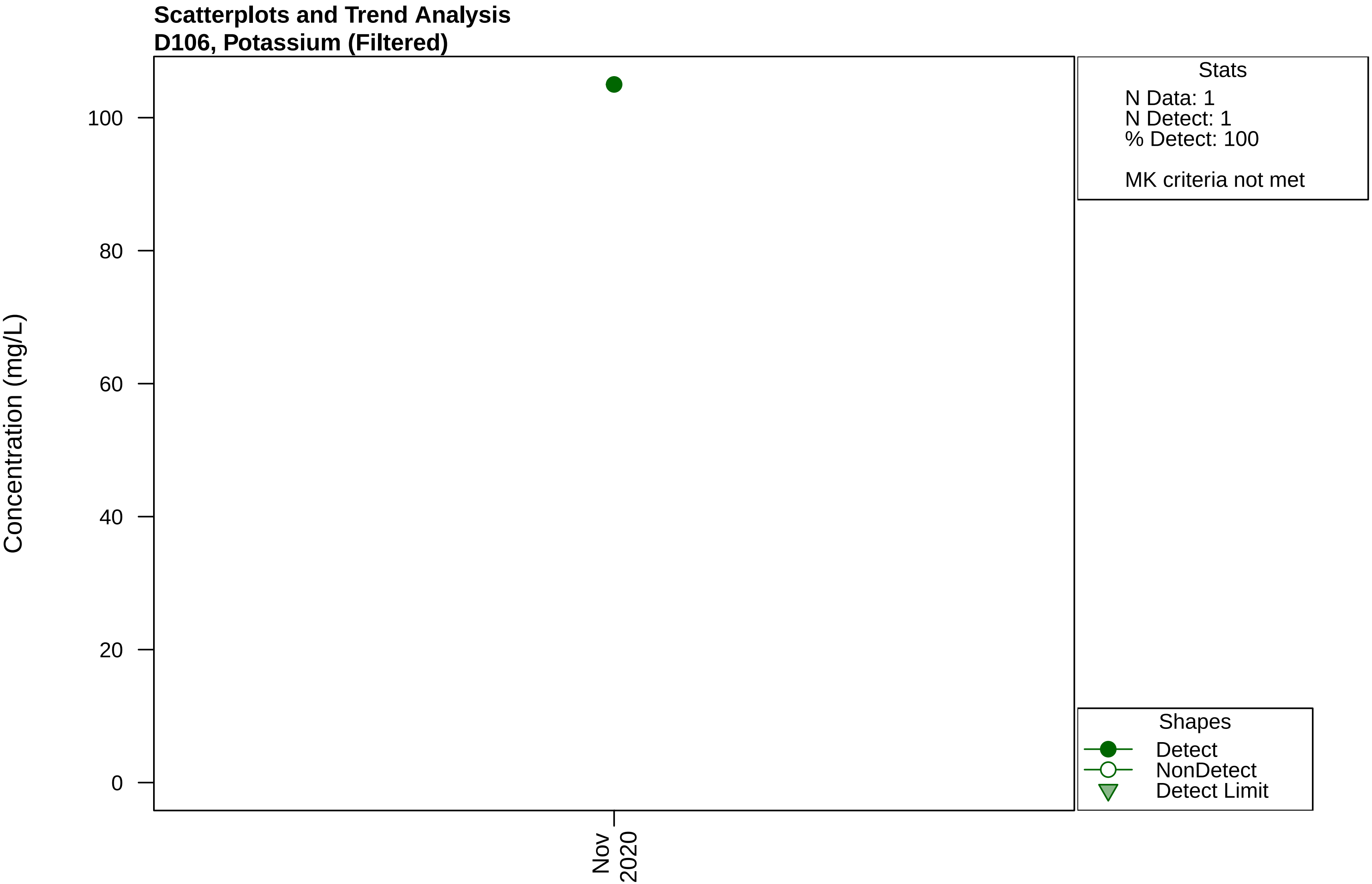
Scatterplots and Trend Analysis
D106, Nickel (Filtered)
Concentration (ug/L)
0
500
1000
1500
2000
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 7
N Detect: 7
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.362
Shapes
Detect
NonDetect
Detect Limit



Scatterplots and Trend Analysis
D106, pH (Field)
Concentration (pH units)
0
1
2
3
4
5
6
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 7
N Detect: 7
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.761
Shapes
Detect
NonDetect
Detect Limit

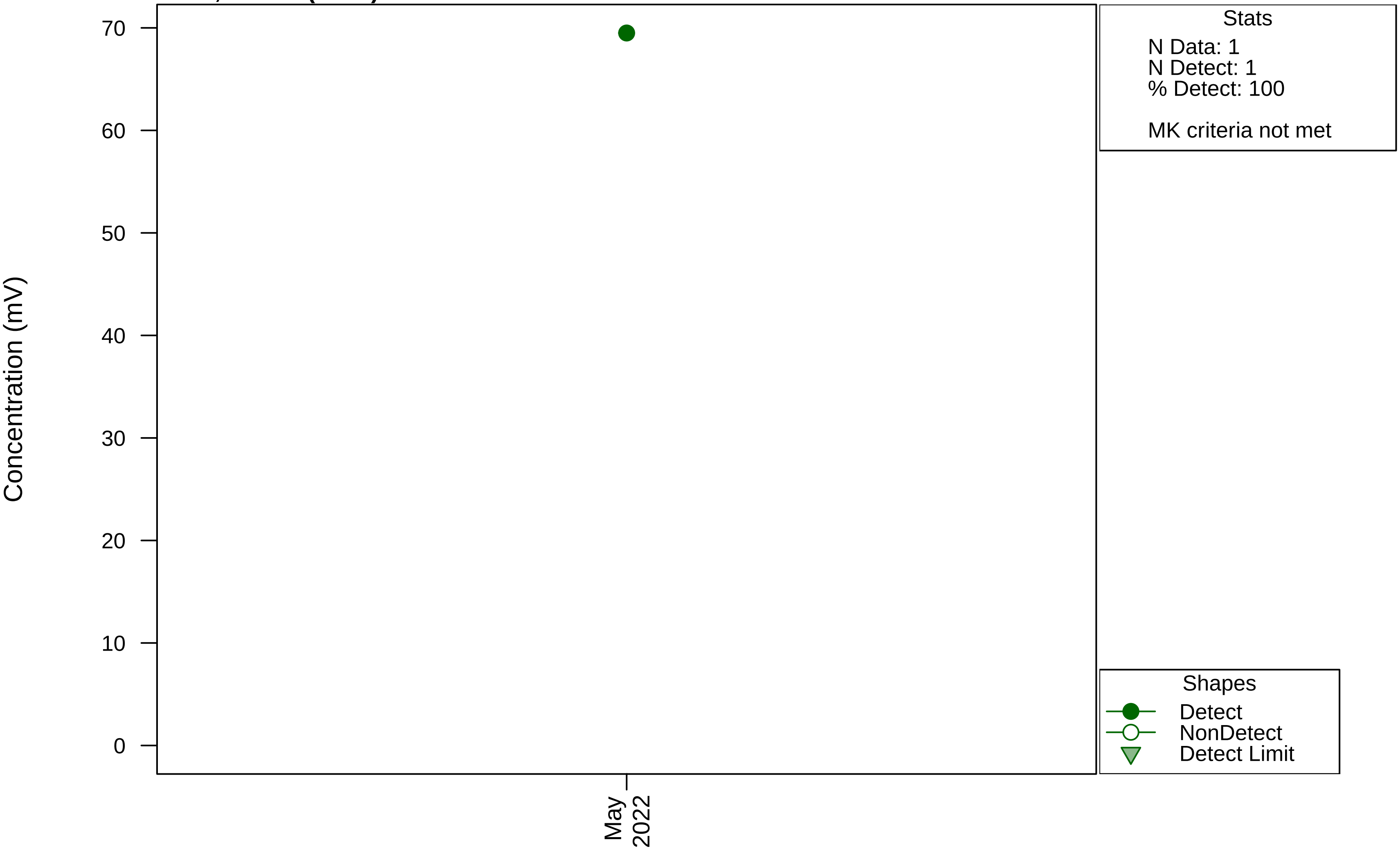
Scatterplots and Trend Analysis
D106, Potassium



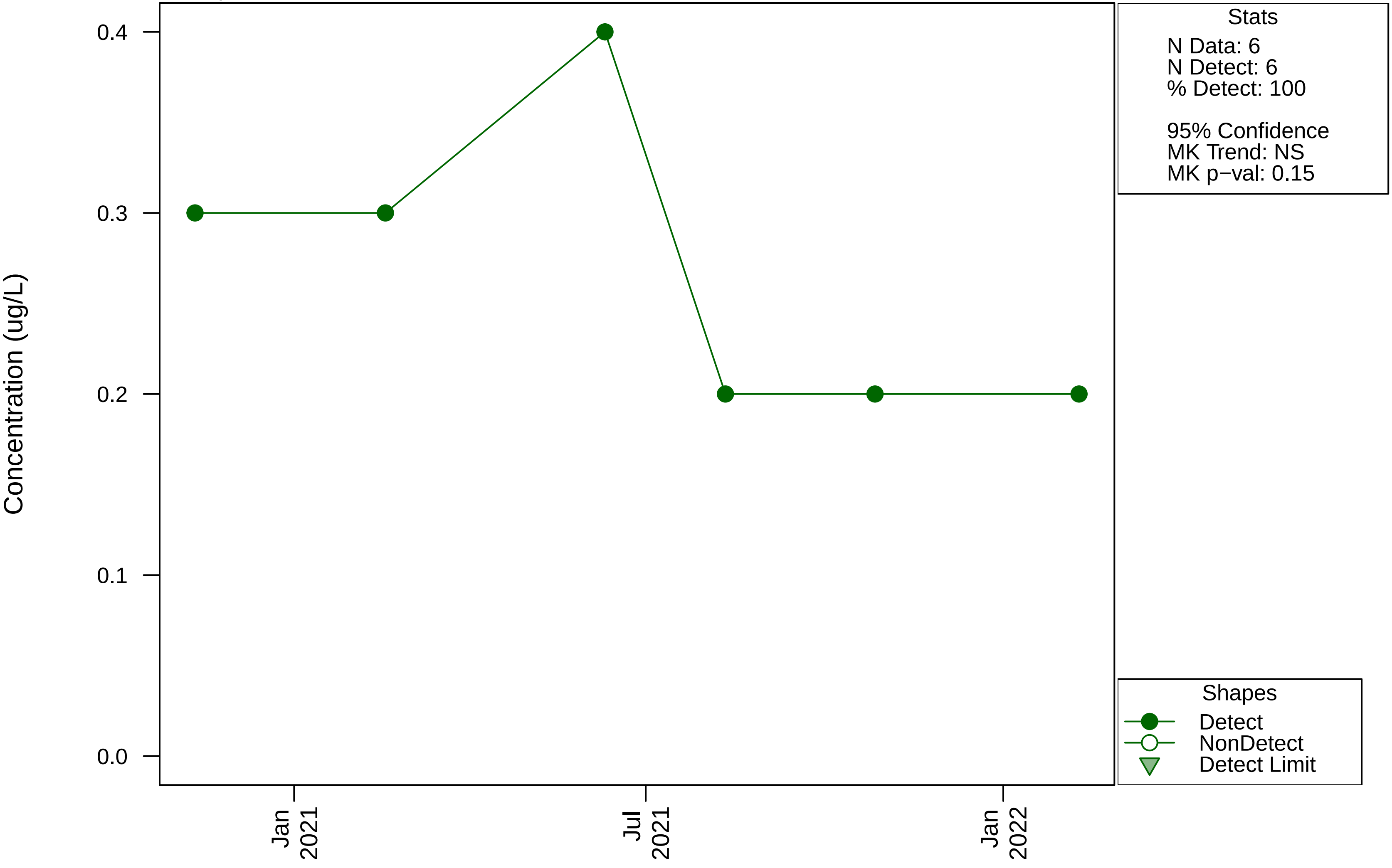


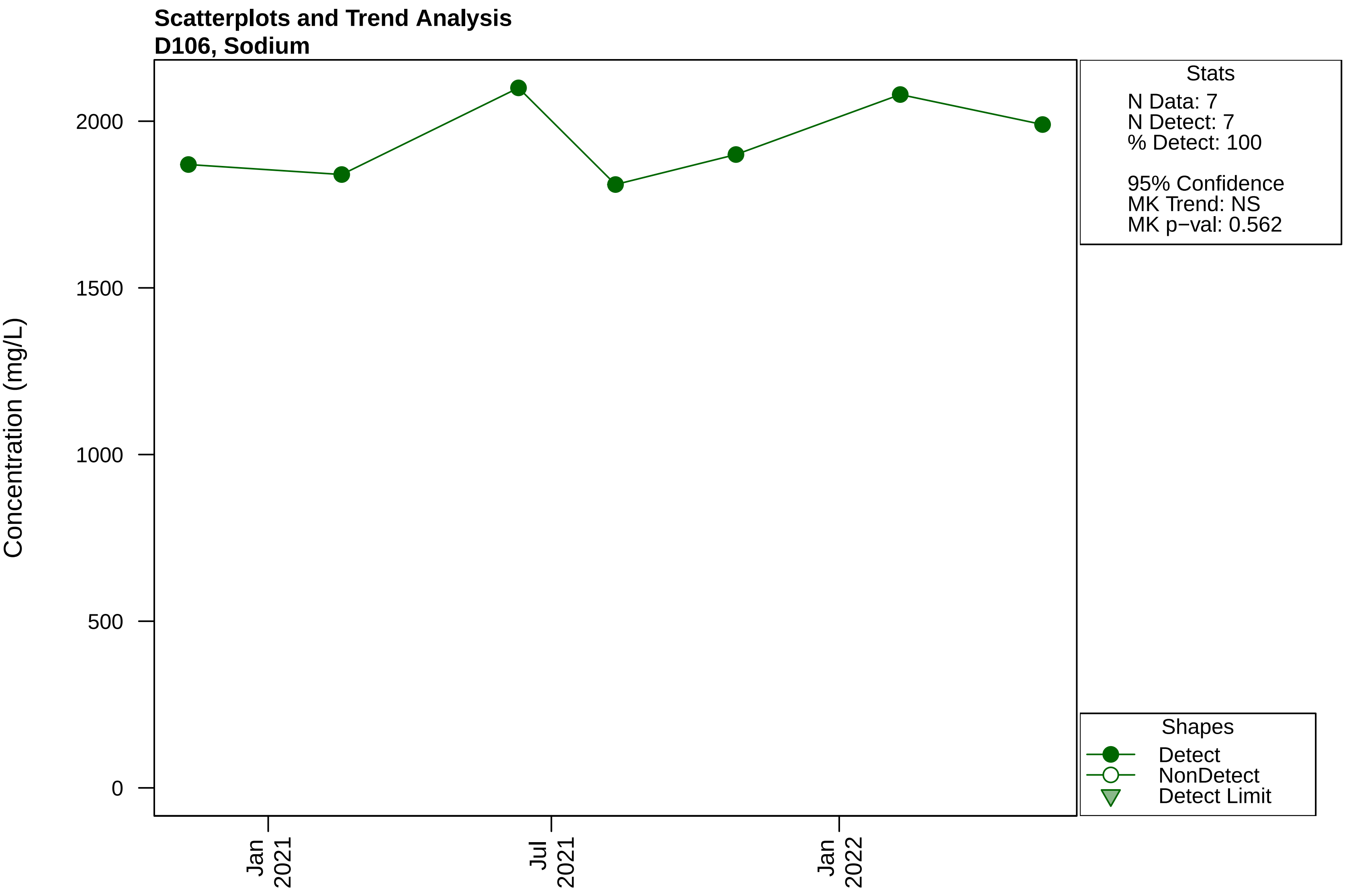
Scatterplots and Trend Analysis
D106, Potassium (Filtered)
Concentration (mg/L)
0
20
40
60
80
100
Nov 2020
Stats
N Data: 1
N Detect: 1
% Detect: 100
MK criteria not met
Shapes
Detect
NonDetect
Detect Limit

Scatterplots and Trend Analysis
D106, Redox (Field)

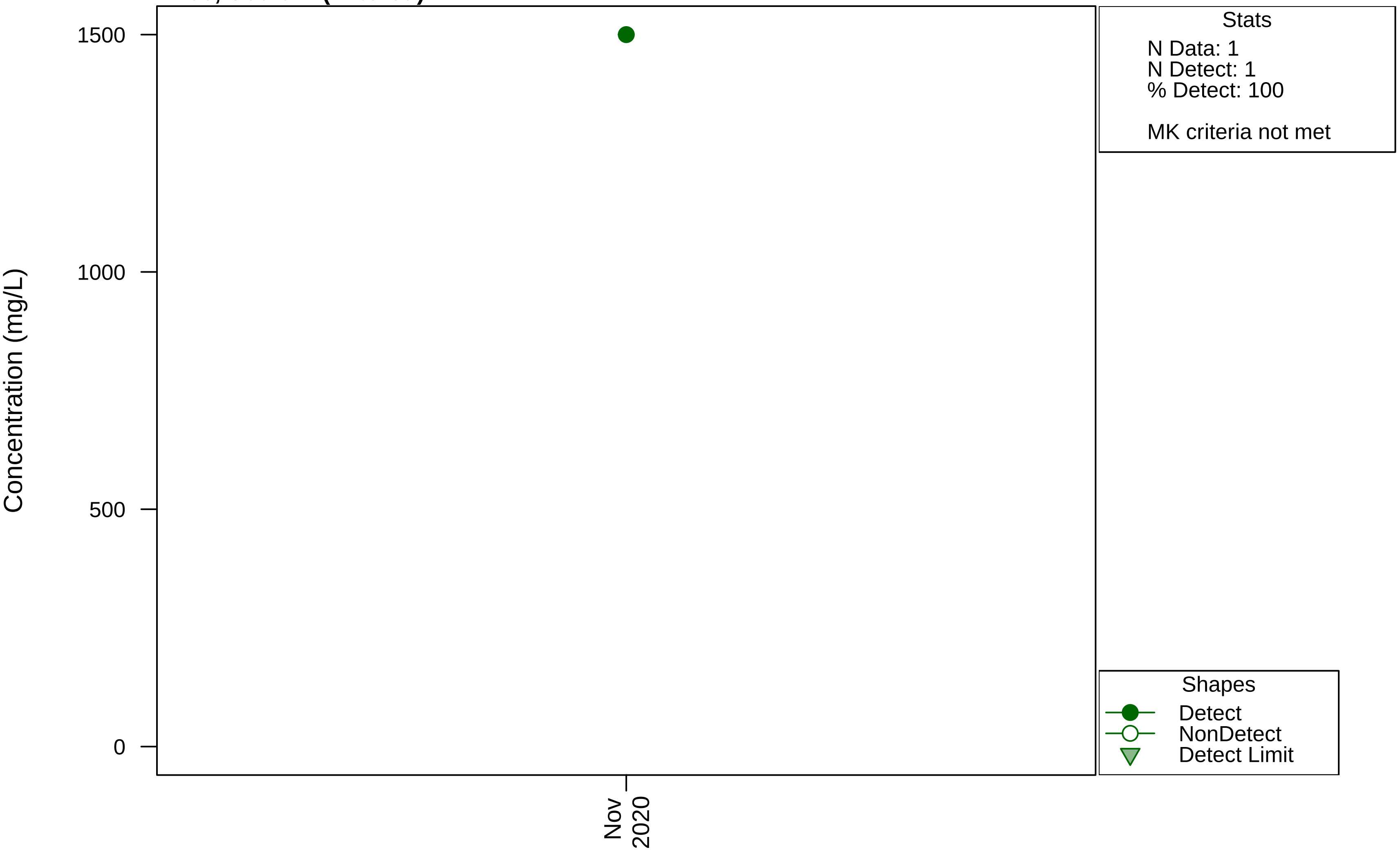


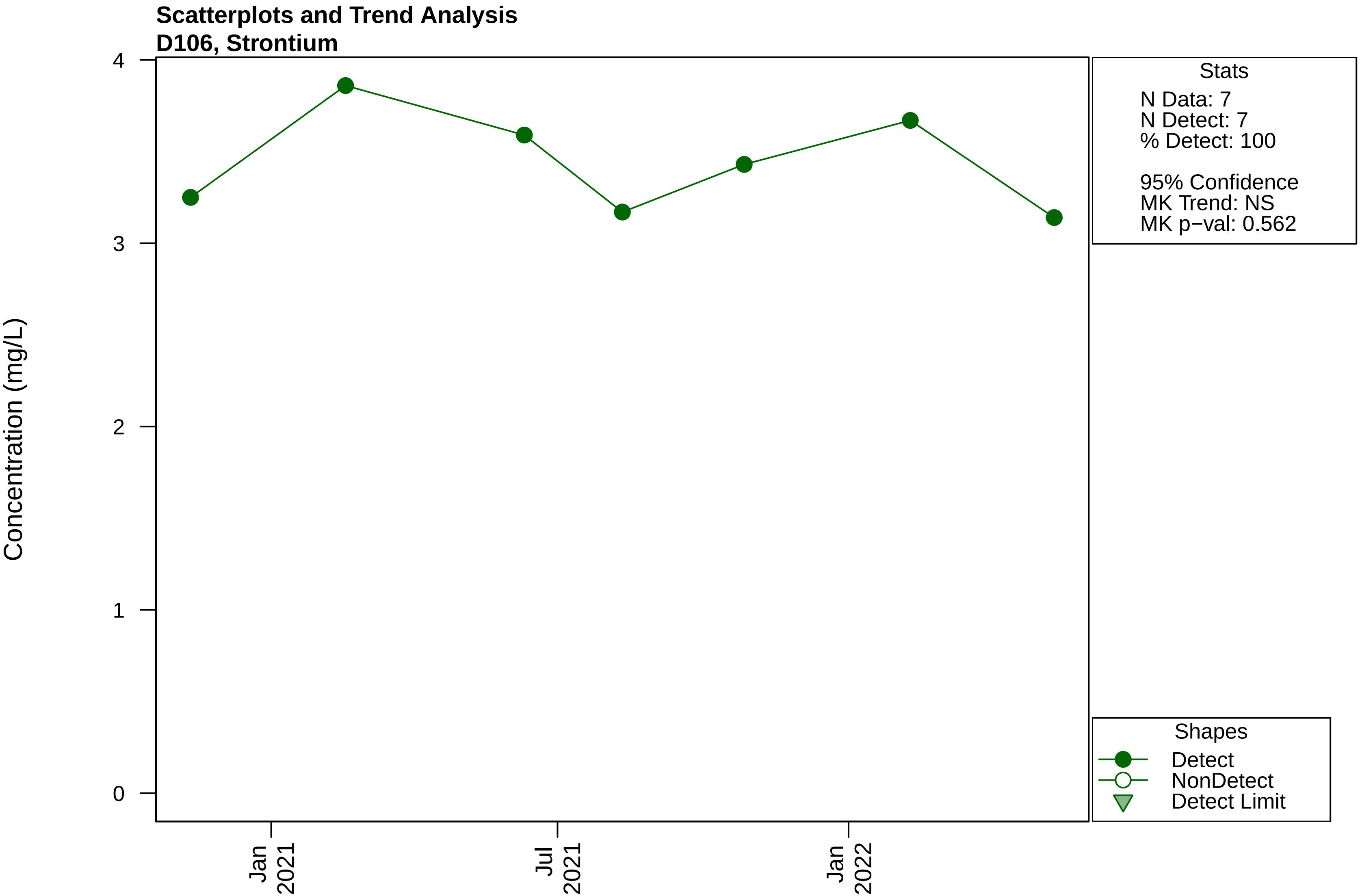
Scatterplots and Trend Analysis
D106, Selenium



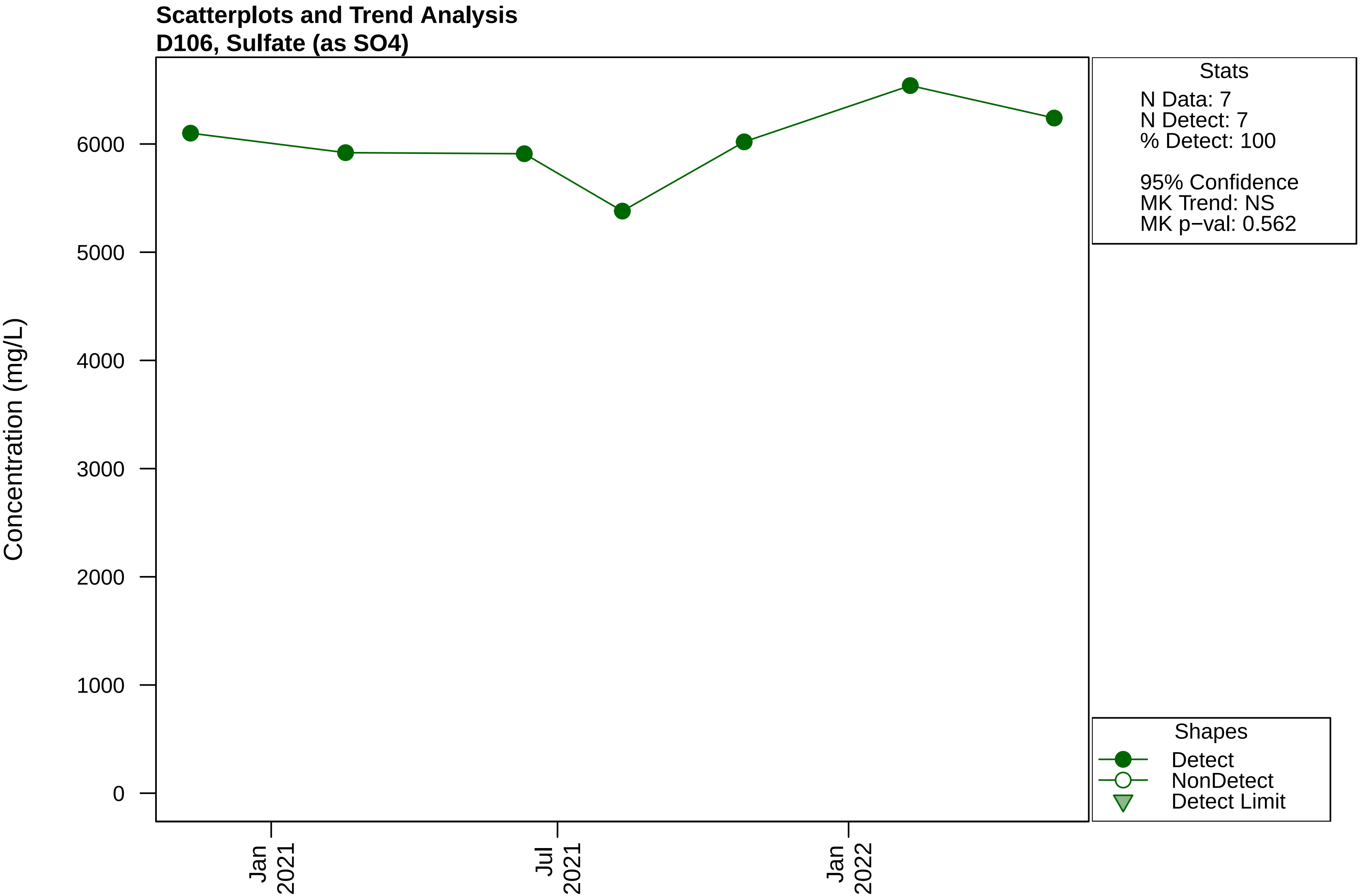

Scatterplots and Trend Analysis
D106, Sodium
Concentration (mg/L)
0
500
1000
1500
2000
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 7
N Detect: 7
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.562
Shapes
Detect
NonDetect
Detect Limit

Scatterplots and Trend Analysis
D106, Sodium (Filtered)

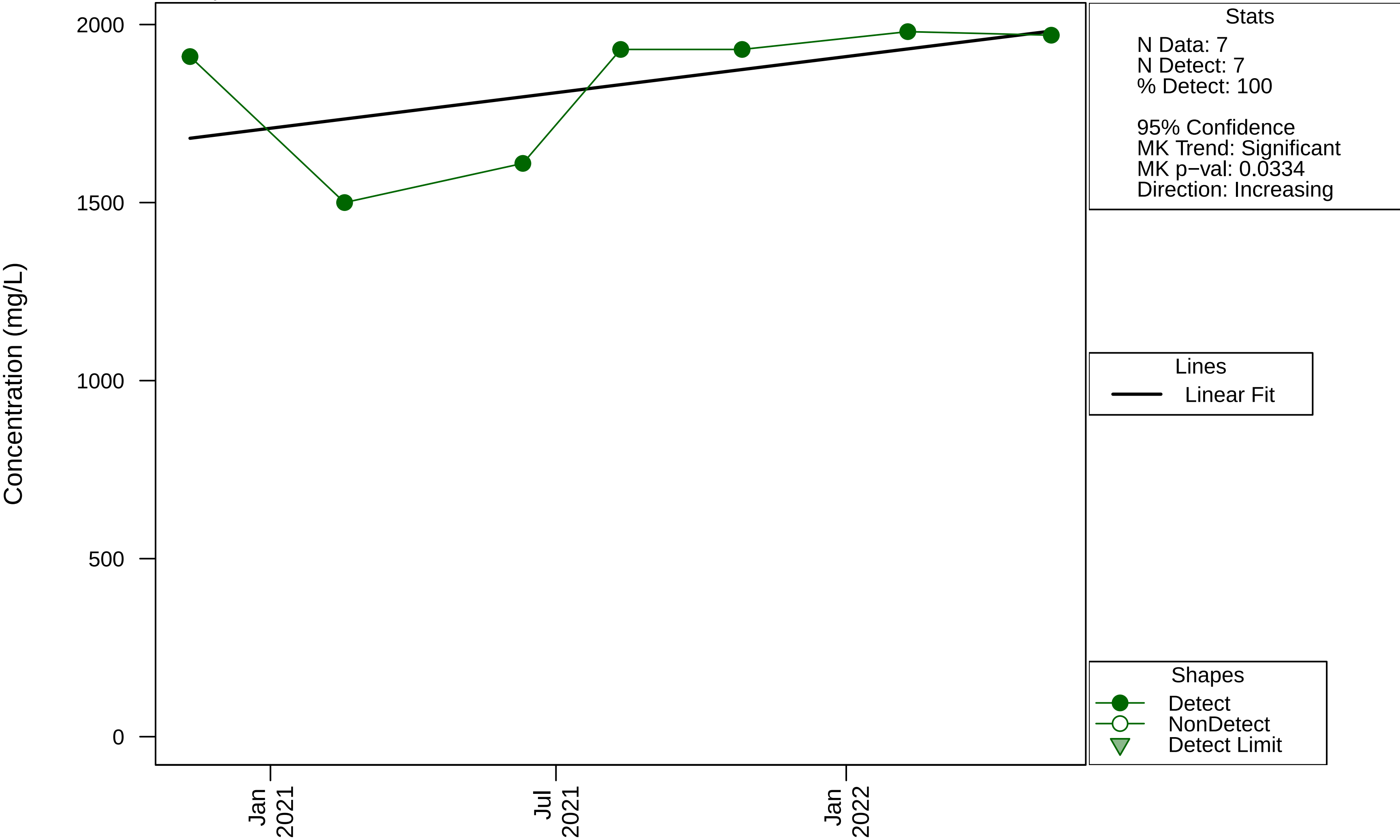


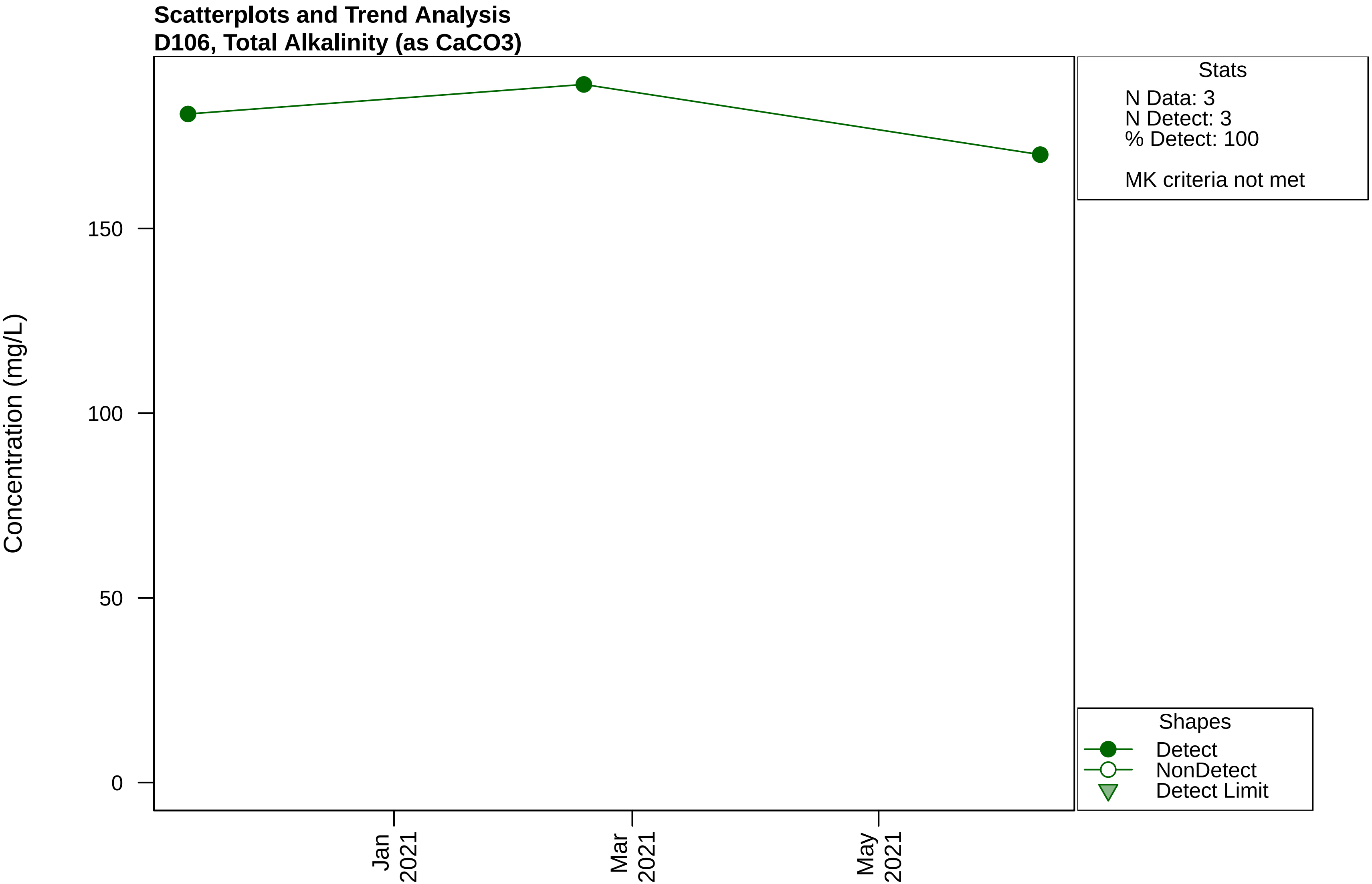


Scatterplots and Trend Analysis
D106, Strontium
Concentration (mg/L)
0
1
2
3
4
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 7
N Detect: 7
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.562
Shapes
Detect
NonDetect
Detect Limit

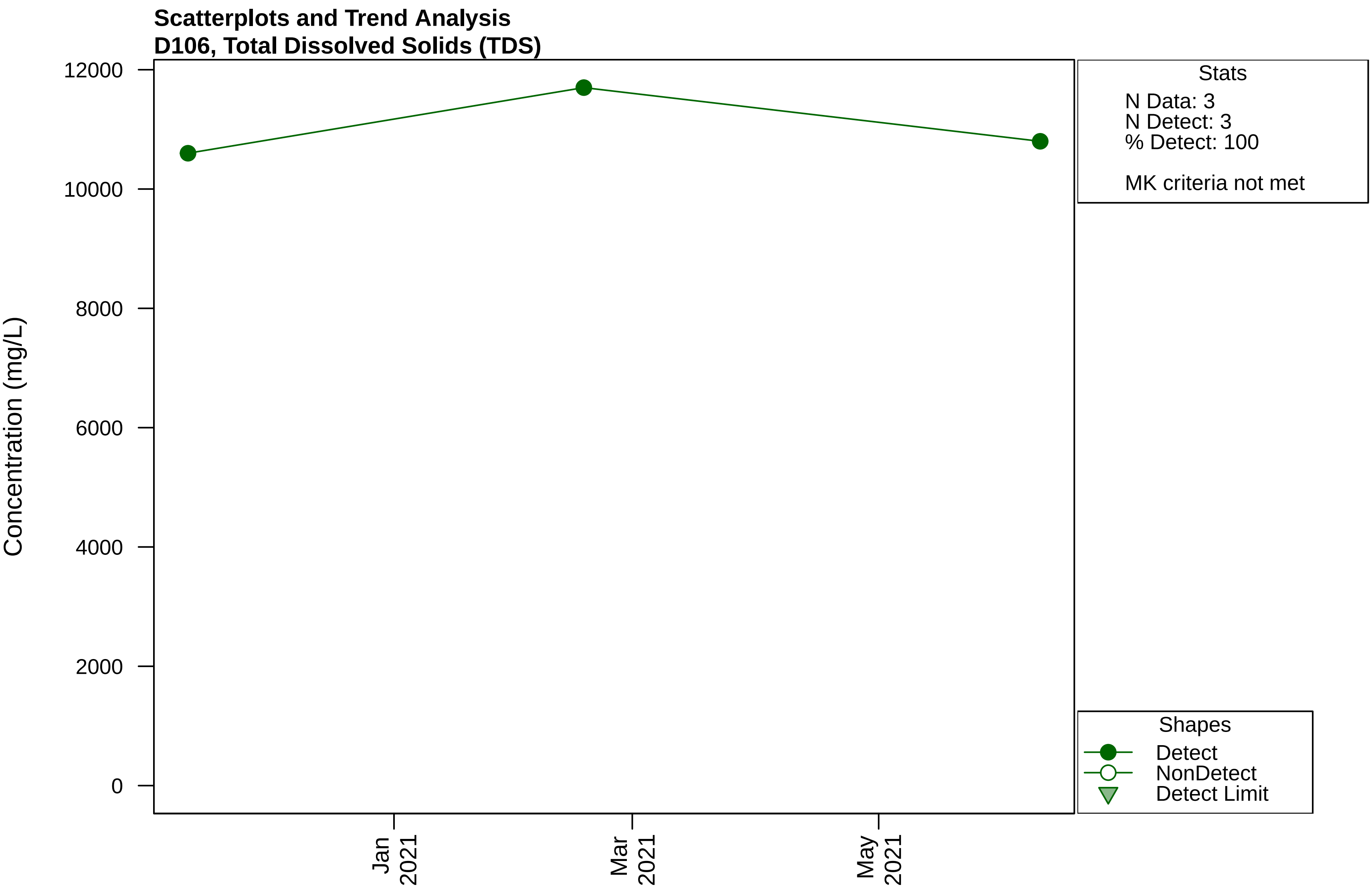

Scatterplots and Trend Analysis
D106, Sulfate (as SO4)
Concentration (mg/L)
0
1000
2000
3000
4000
5000
6000
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 7
N Detect: 7
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.562
Shapes
Detect
NonDetect
Detect Limit

Scatterplots and Trend Analysis
D106, Sulfur



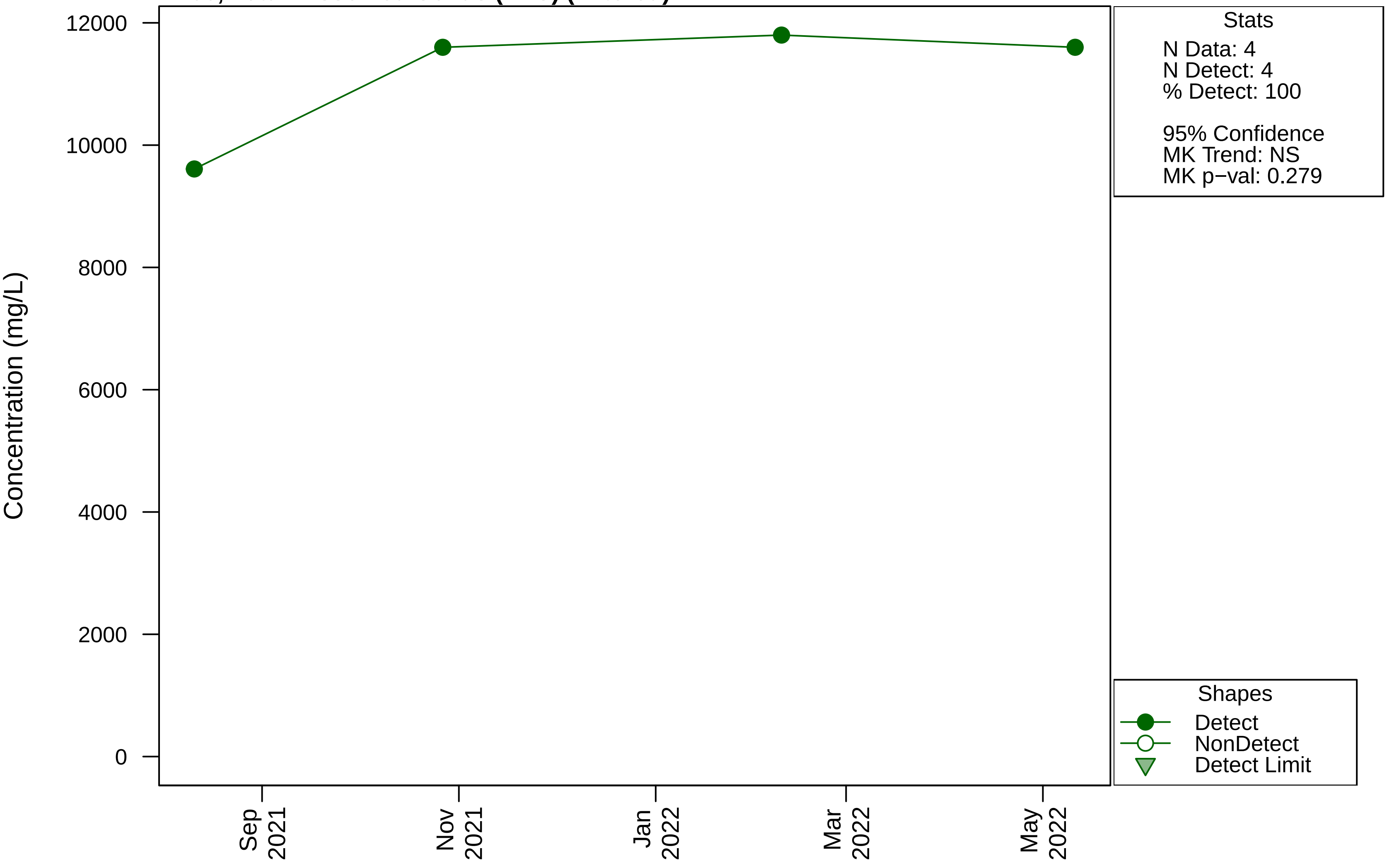


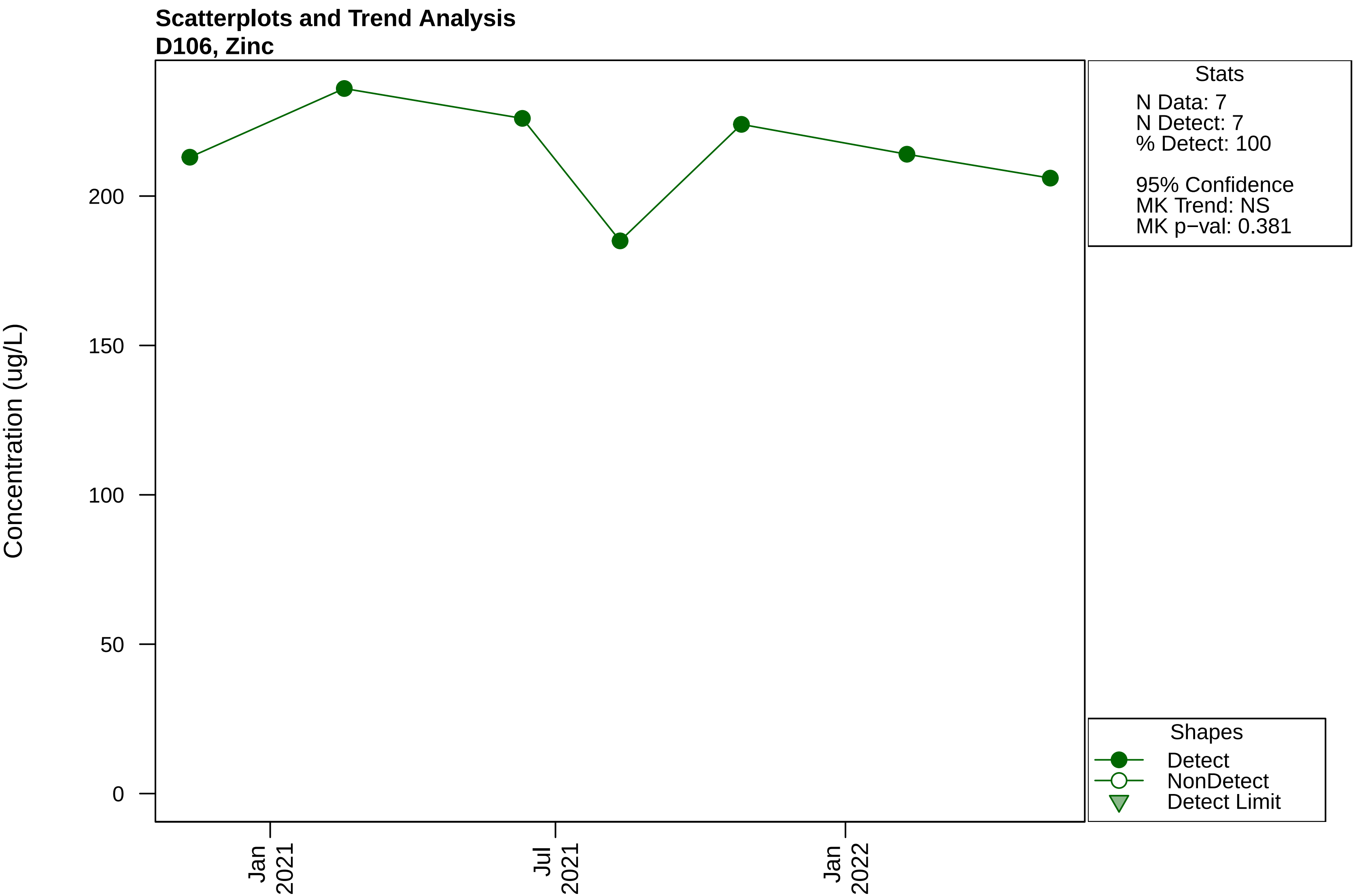
Scatterplots and Trend Analysis
D106, Total Alkalinity (as CaCO3)
Concentration (mg/L)
0
50
100
150
Jan 2021
Mar 2021
May 2021
Stats
N Data: 3
N Detect: 3
% Detect: 100
MK criteria not met
Shapes
Detect
NonDetect
Detect Limit



Scatterplots and Trend Analysis
D106, Total Dissolved Solids (TDS)
Concentration (mg/L)
12000
10000
8000
6000
4000
2000
0
Jan 2021
Mar 2021
May 2021
Stats
N Data: 3
N Detect: 3
% Detect: 100
MK criteria not met
Shapes
Detect
NonDetect
Detect Limit

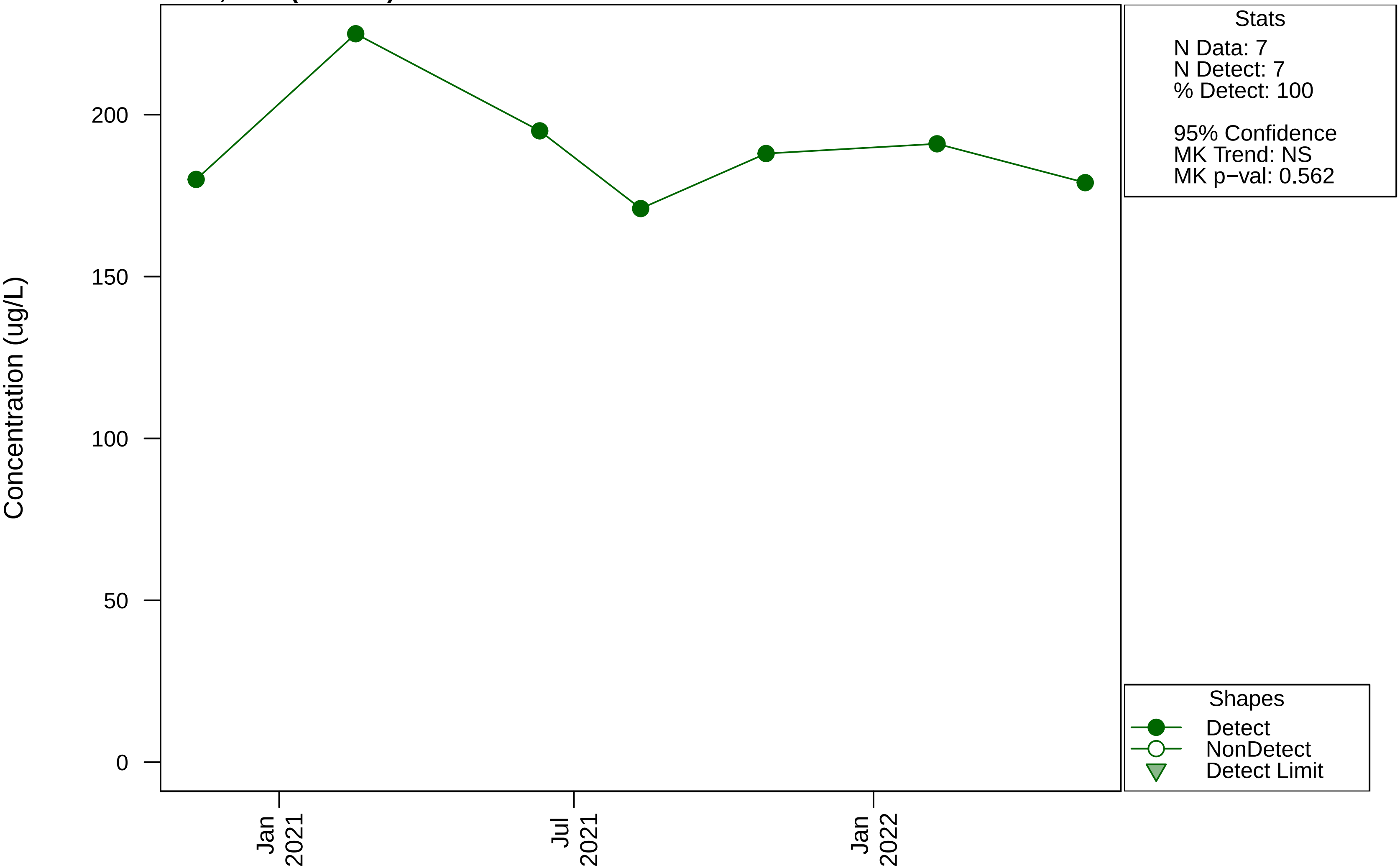
Scatterplots and Trend Analysis
D106, Total Dissolved Solids (TDS) (Filtered)

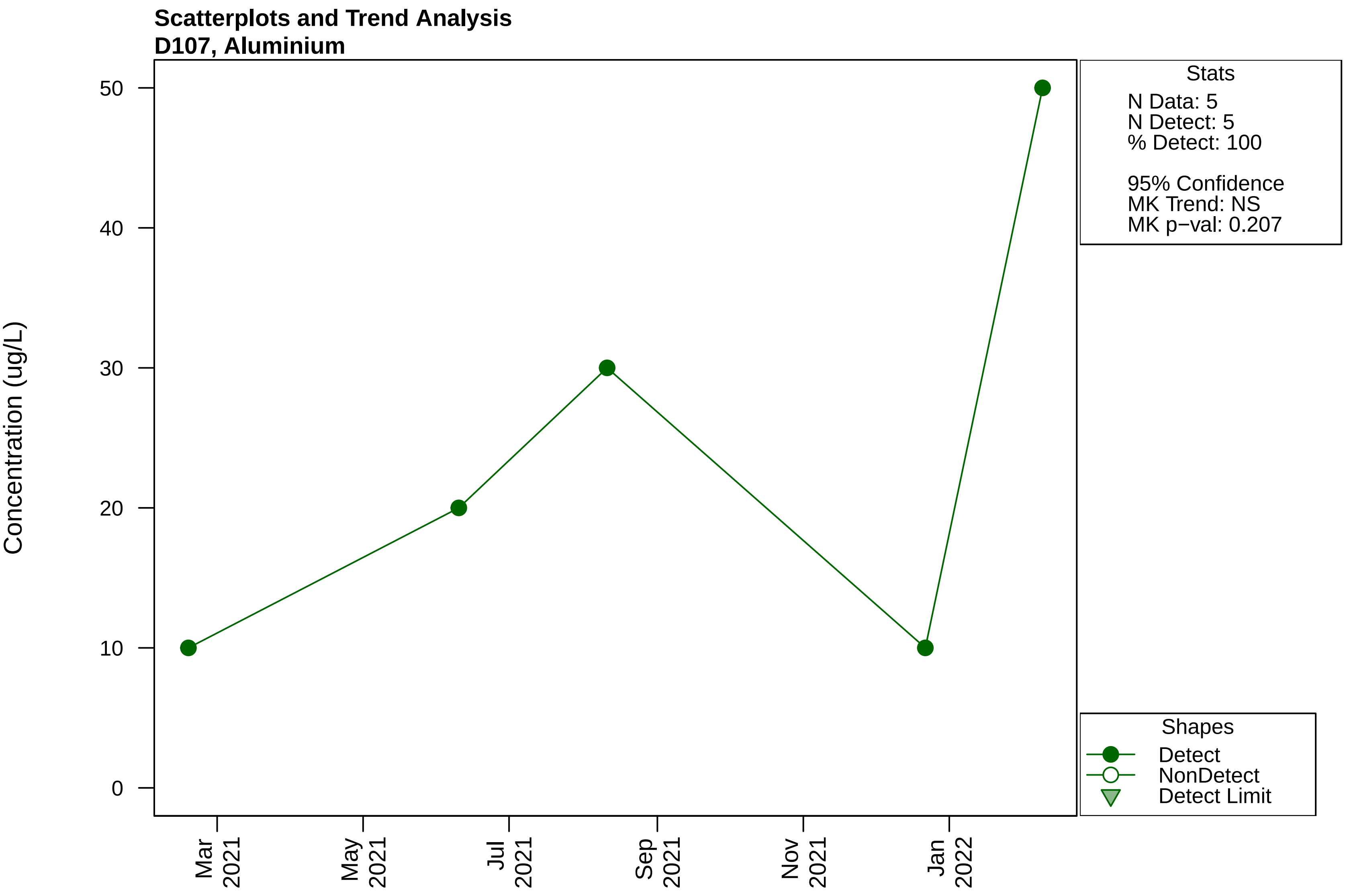


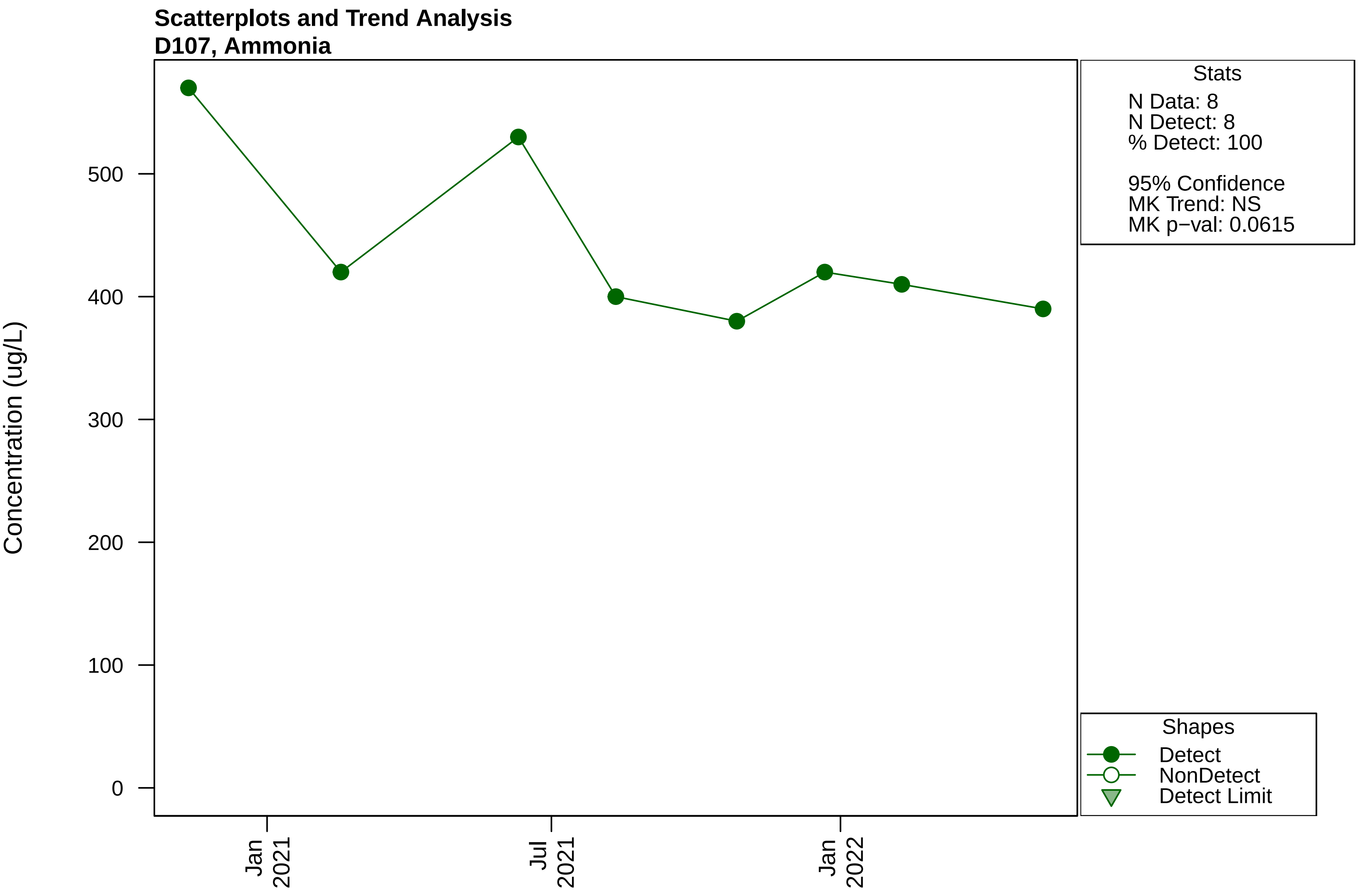


Scatterplots and Trend Analysis
D106, Zinc
Concentration (ug/L)
0
50
100
150
200
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 7
N Detect: 7
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.381
Shapes
Detect
NonDetect
Detect Limit

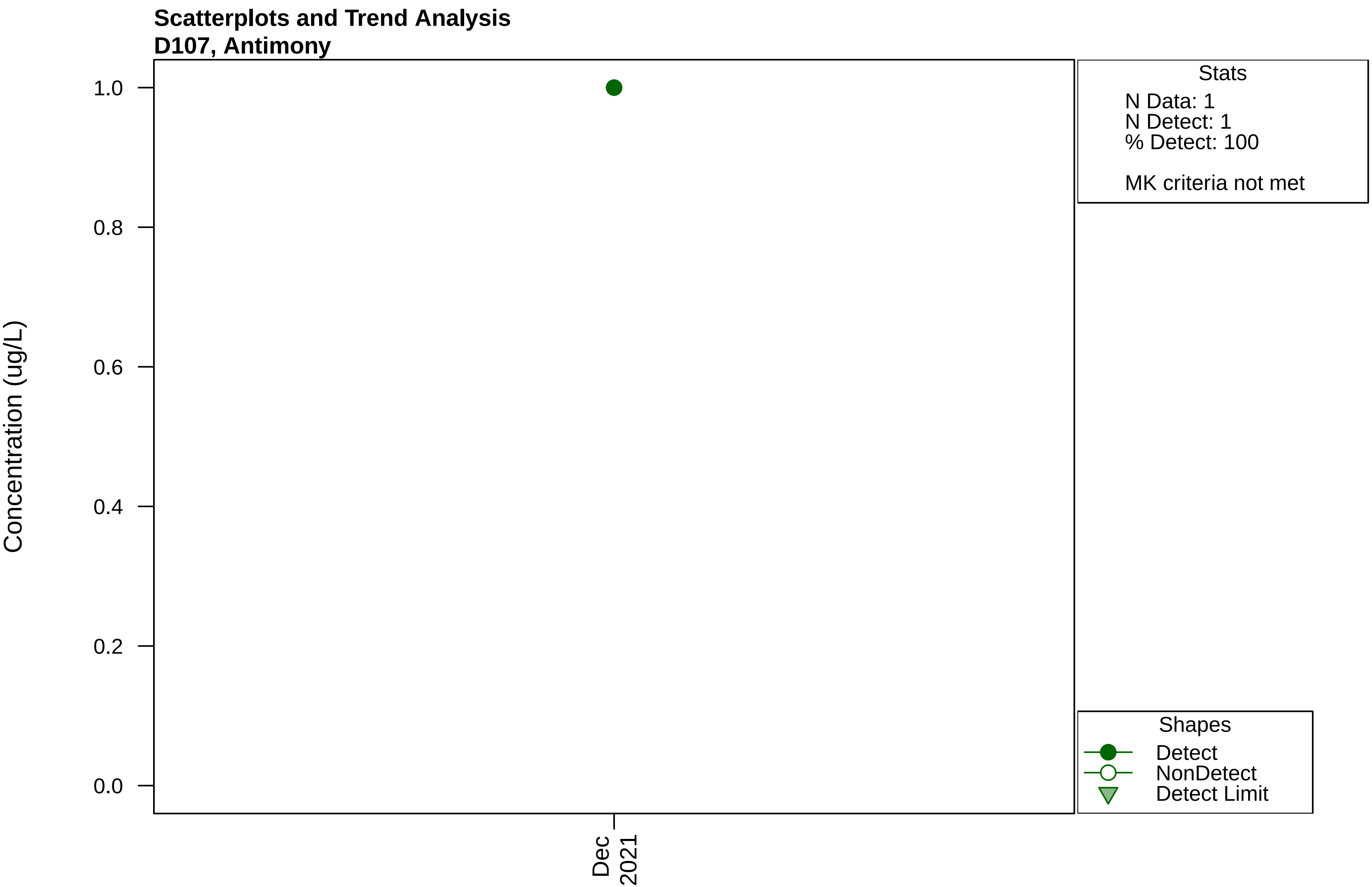
Scatterplots and Trend Analysis
D106, Zinc (Filtered)



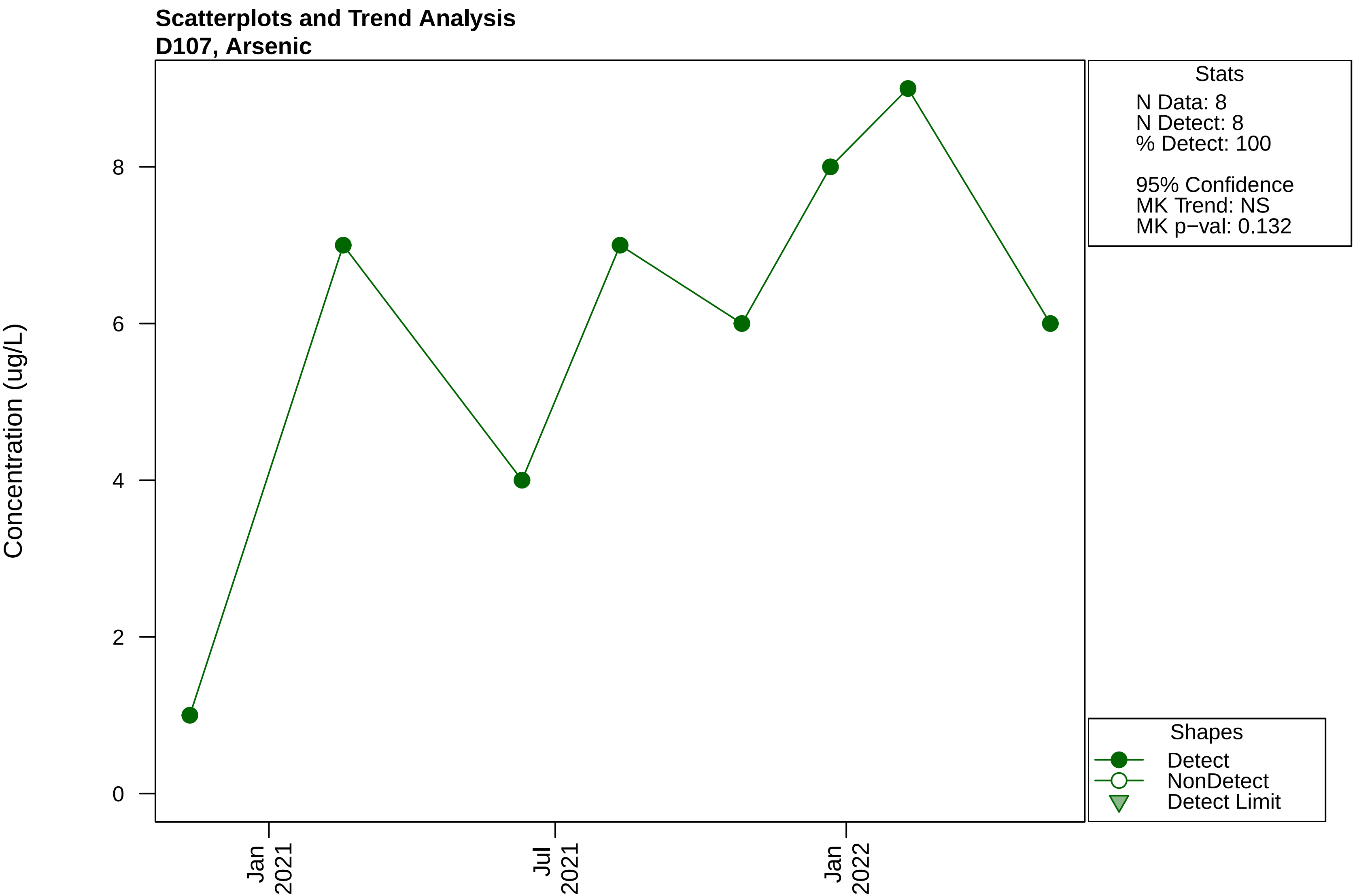

Scatterplots and Trend Analysis
D107, Aluminium
Concentration (ug/L)
0
10
20
30
40
50
Mar 2021
May 2021
Jul 2021
Sep 2021
Nov 2021
Jan 2022
Stats
N Data: 5
N Detect: 5
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.207
Shapes
Detect
NonDetect
Detect Limit

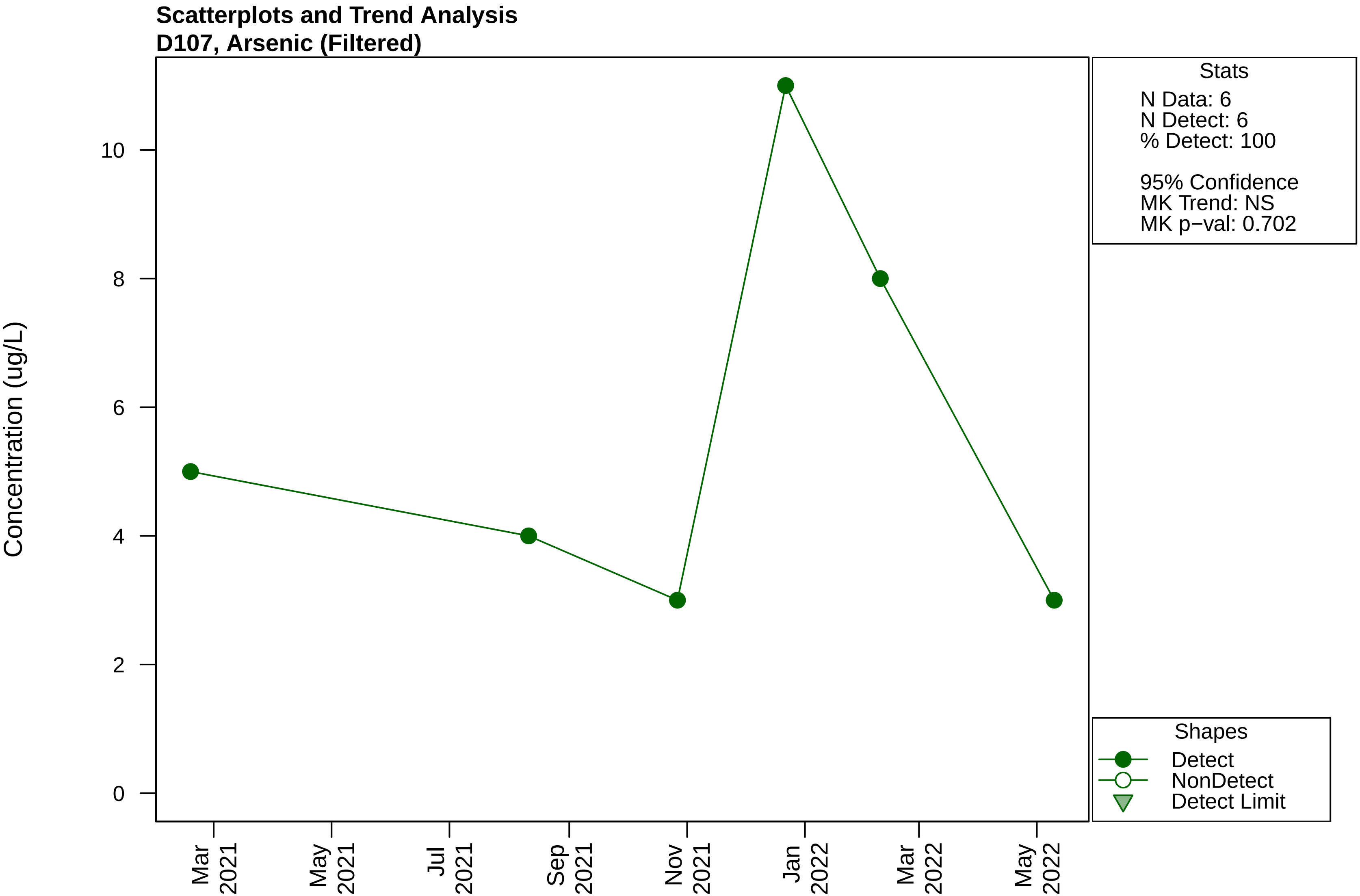


Scatterplots and Trend Analysis
D107, Ammonia
Concentration (ug/L)
0
100
200
300
400
500
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 8
N Detect: 8
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.0615
Shapes
Detect
NonDetect
Detect Limit

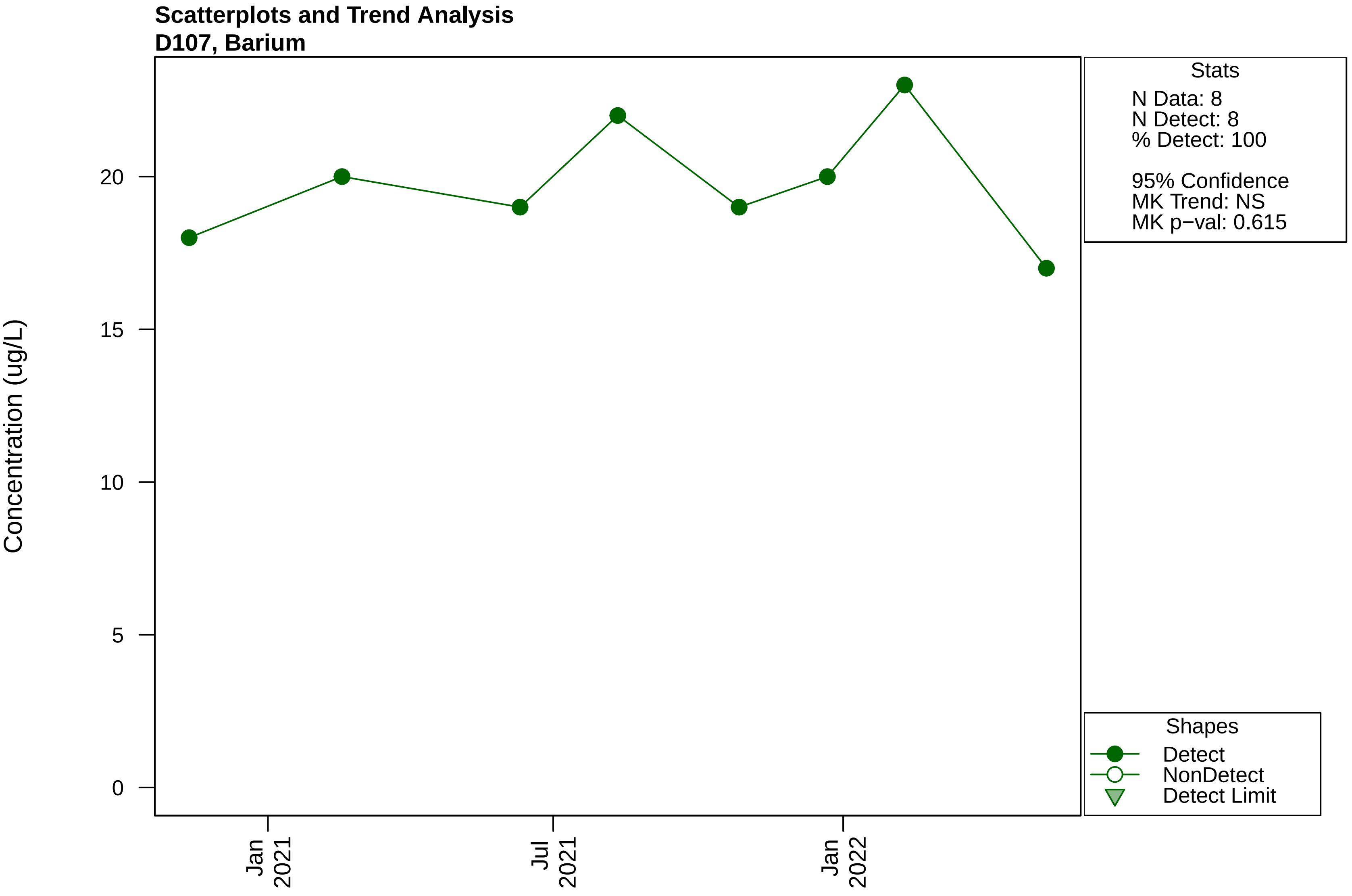


Scatterplots and Trend Analysis
D107, Antimony
Concentration (ug/L)
1.0
0.8
0.6
0.4
0.2
0.0
Dec 2021
Stats
N Data: 1
N Detect: 1
% Detect: 100
MK criteria not met
Shapes
Detect
NonDetect
Detect Limit


Scatterplots and Trend Analysis
D107, Arsenic
Concentration (ug/L)
0
2
4
6
8
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 8
N Detect: 8
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.132
Shapes
Detect
NonDetect
Detect Limit

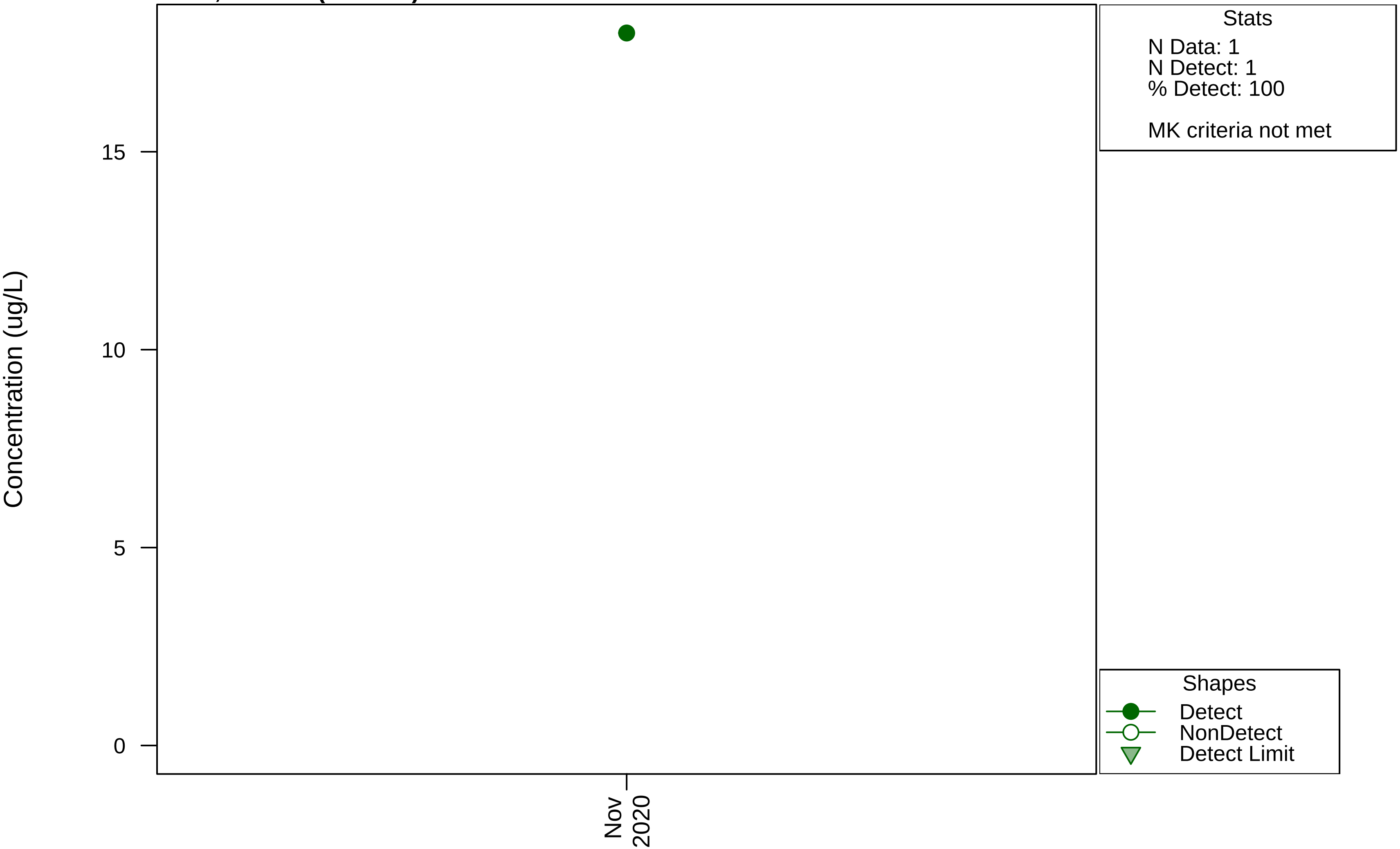


Scatterplots and Trend Analysis
D107, Arsenic (Filtered)
Concentration (ug/L)
0
2
4
6
8
10
Mar 2021
May 2021
Jul 2021
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 6
N Detect: 6
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.702
Shapes
Detect
NonDetect
Detect Limit

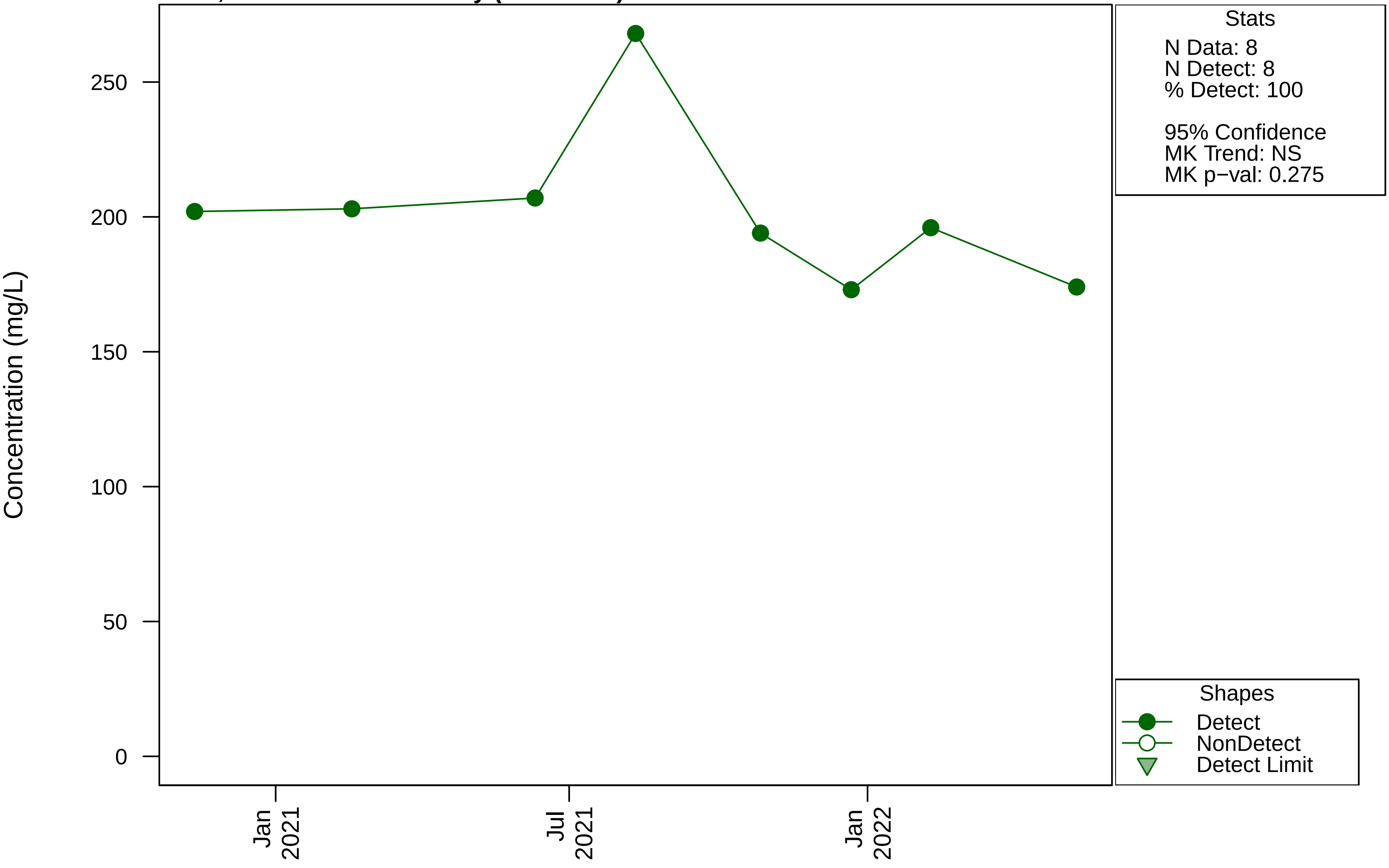


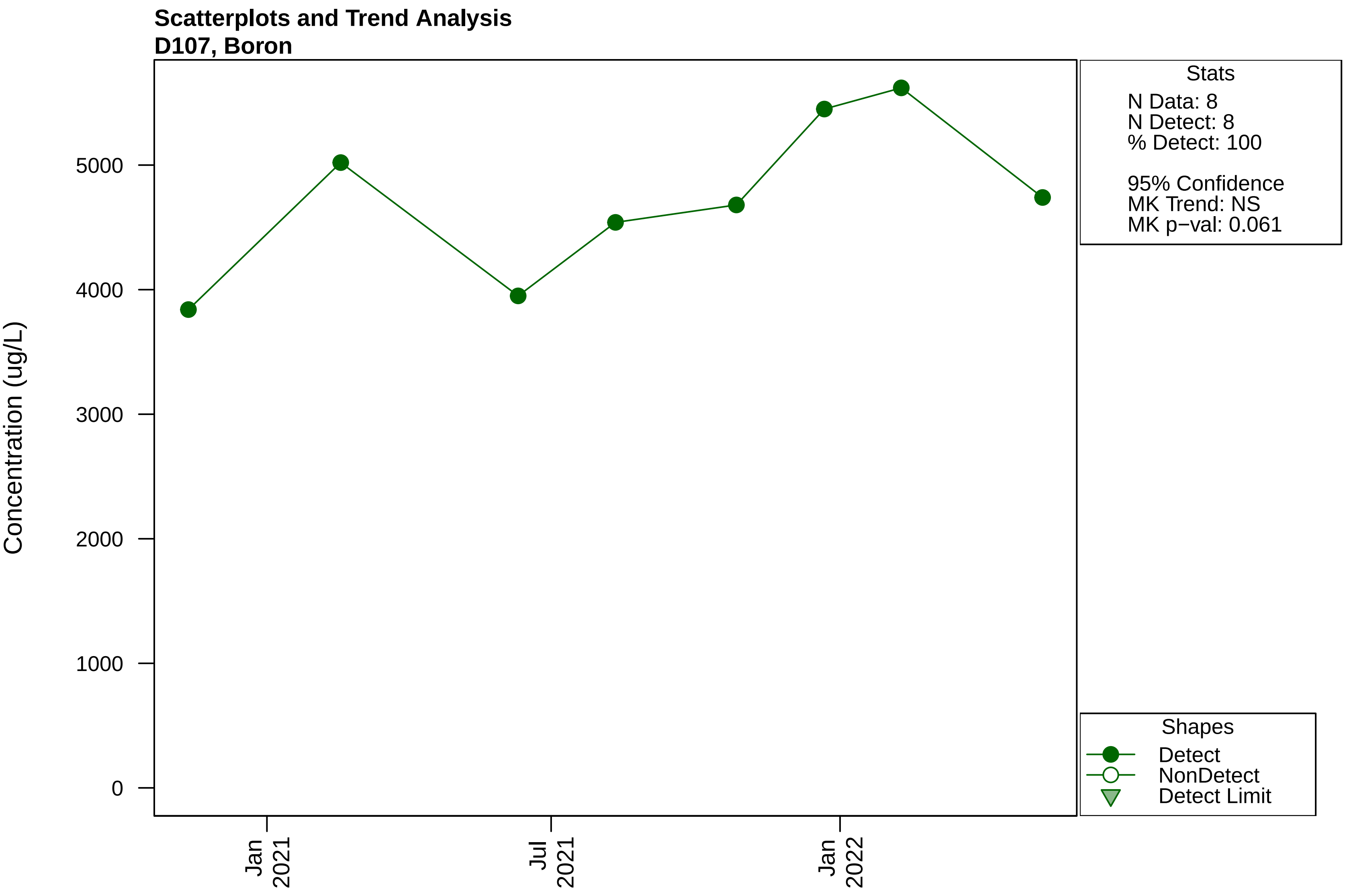
Scatterplots and Trend Analysis
D107, Barium
Concentration (ug/L)
0
5
10
15
20
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 8
N Detect: 8
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.615
Shapes
Detect
NonDetect
Detect Limit

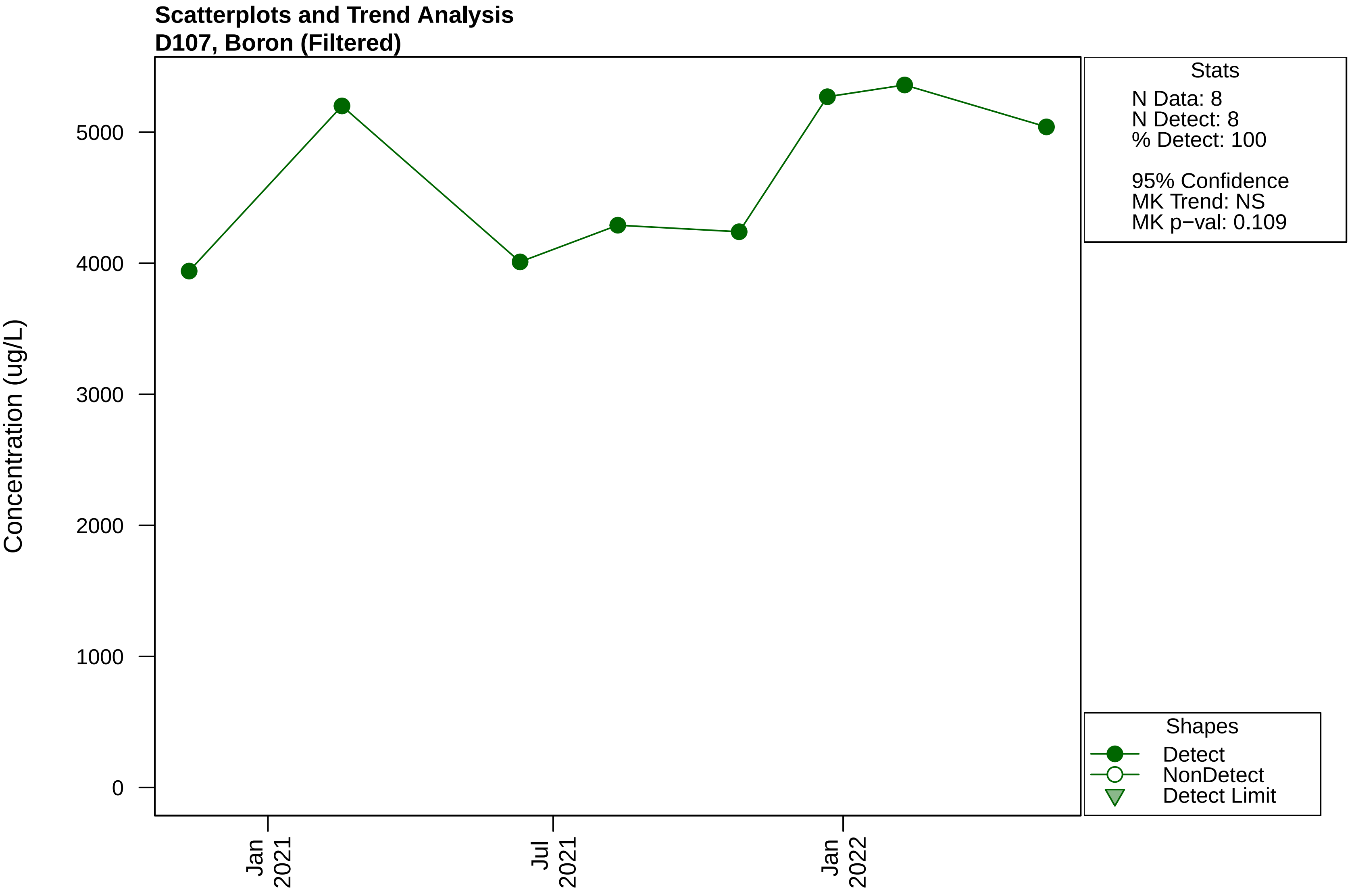
Scatterplots and Trend Analysis
D107, Barium (Filtered)

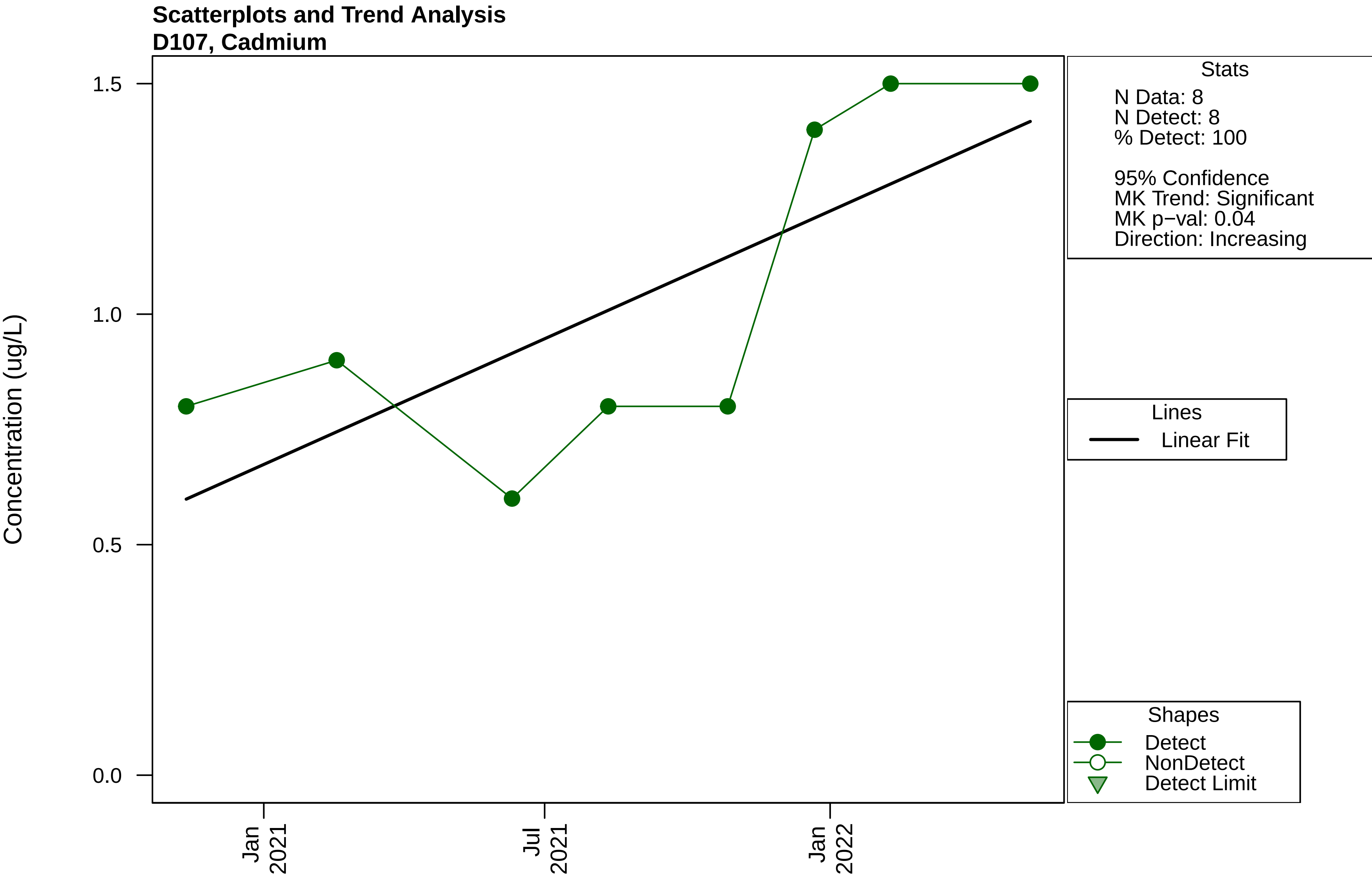


Scatterplots and Trend Analysis
D107, Bicarbonate Alkalinity (as CaCO3)



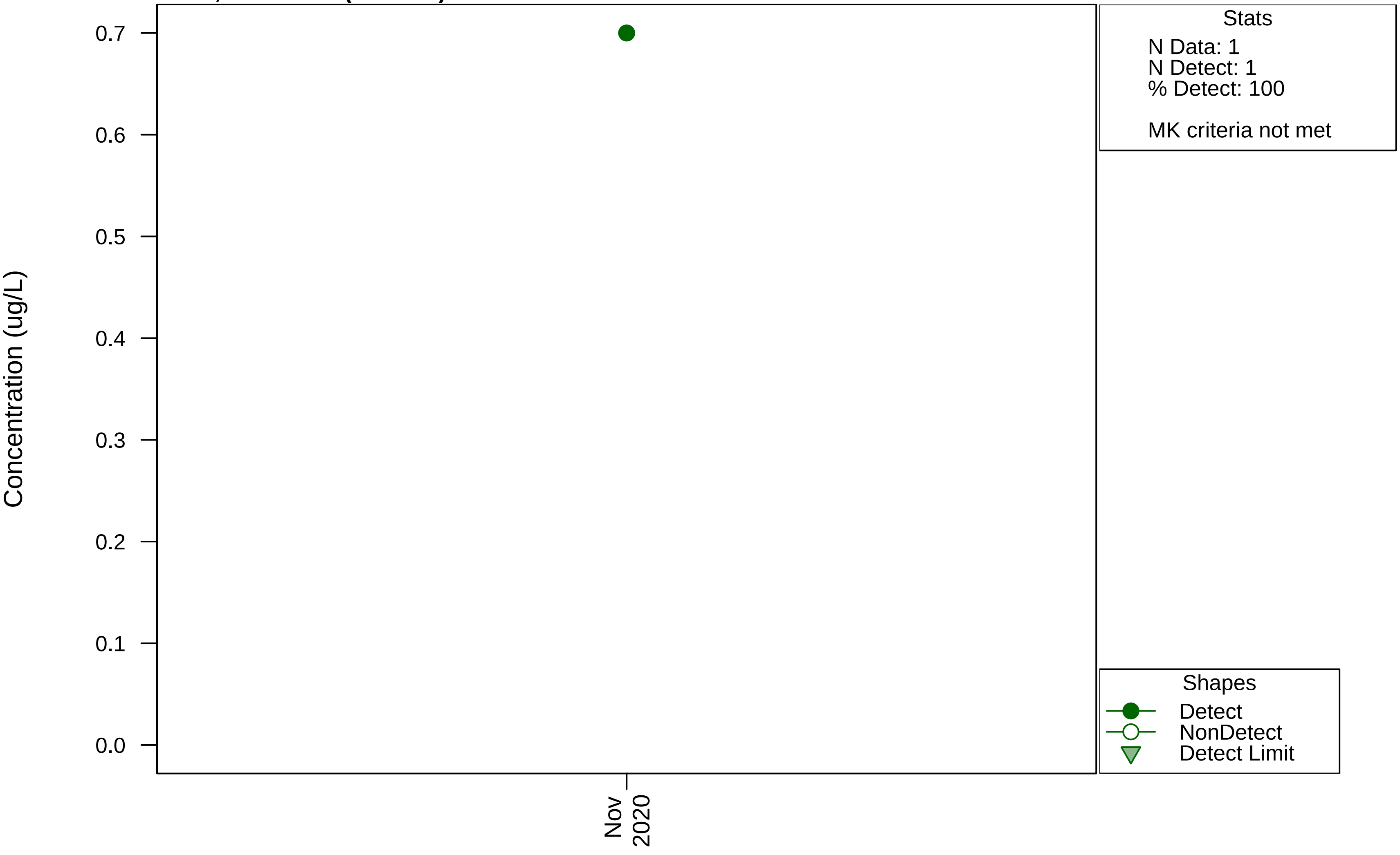

Scatterplots and Trend Analysis
D107, Boron
Concentration (ug/L)
0
1000
2000
3000
4000
5000
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 8
N Detect: 8
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.061
Shapes
Detect
NonDetect
Detect Limit

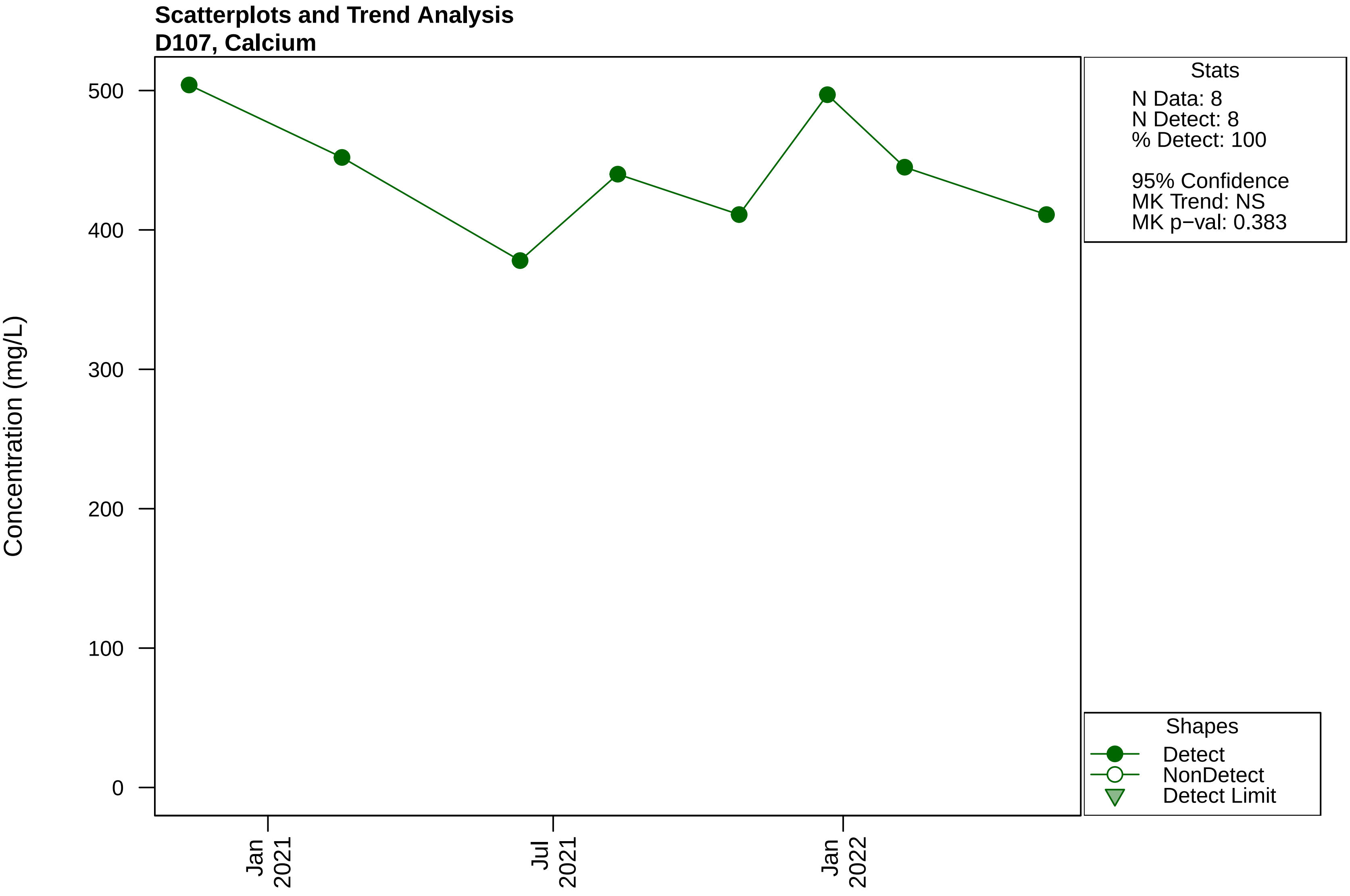

Scatterplots and Trend Analysis
D107, Boron (Filtered)
Concentration (ug/L)
0
1000
2000
3000
4000
5000
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 8
N Detect: 8
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.109
Shapes
Detect
NonDetect
Detect Limit



Scatterplots and Trend Analysis
D107, Cadmium
Concentration (ug/L)
1.5
1.0
0.5
0.0
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 8
N Detect: 8
% Detect: 100
95% Confidence
MK Trend: Significant
MK p−val: 0.04
Direction: Increasing
Lines
Linear Fit
Shapes
Detect
NonDetect
Detect Limit

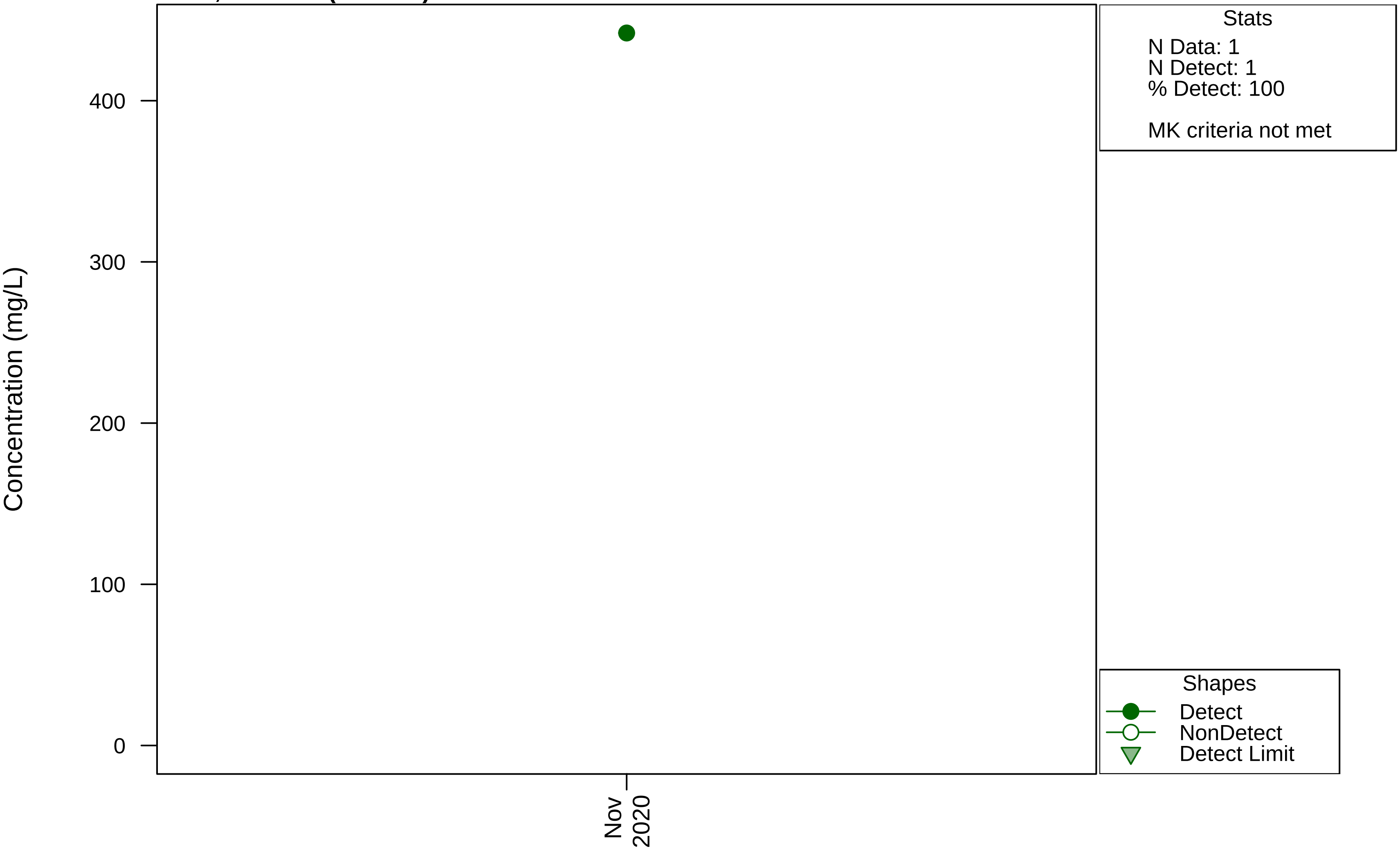
Scatterplots and Trend Analysis
D107, Cadmium (Filtered)

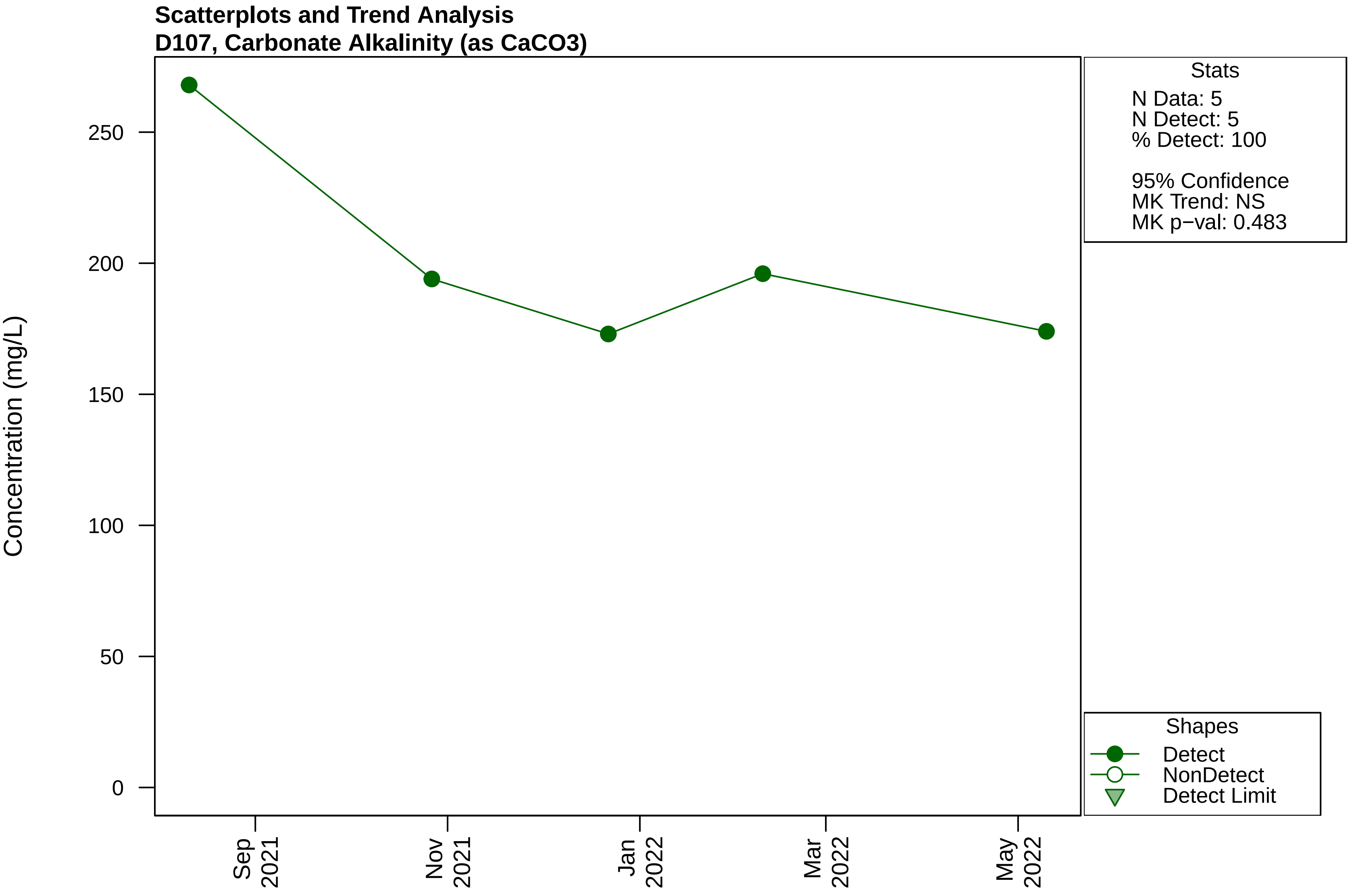


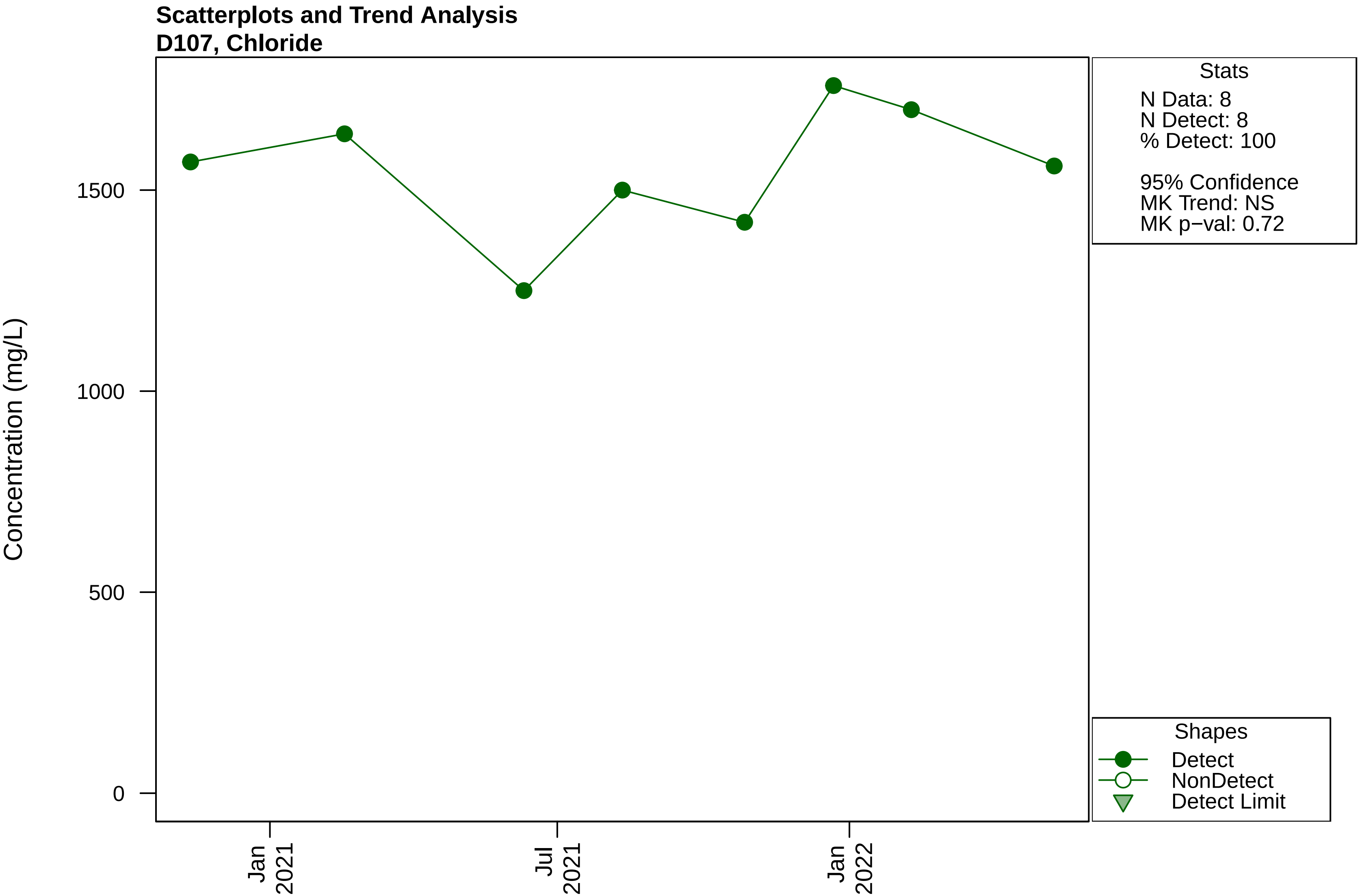


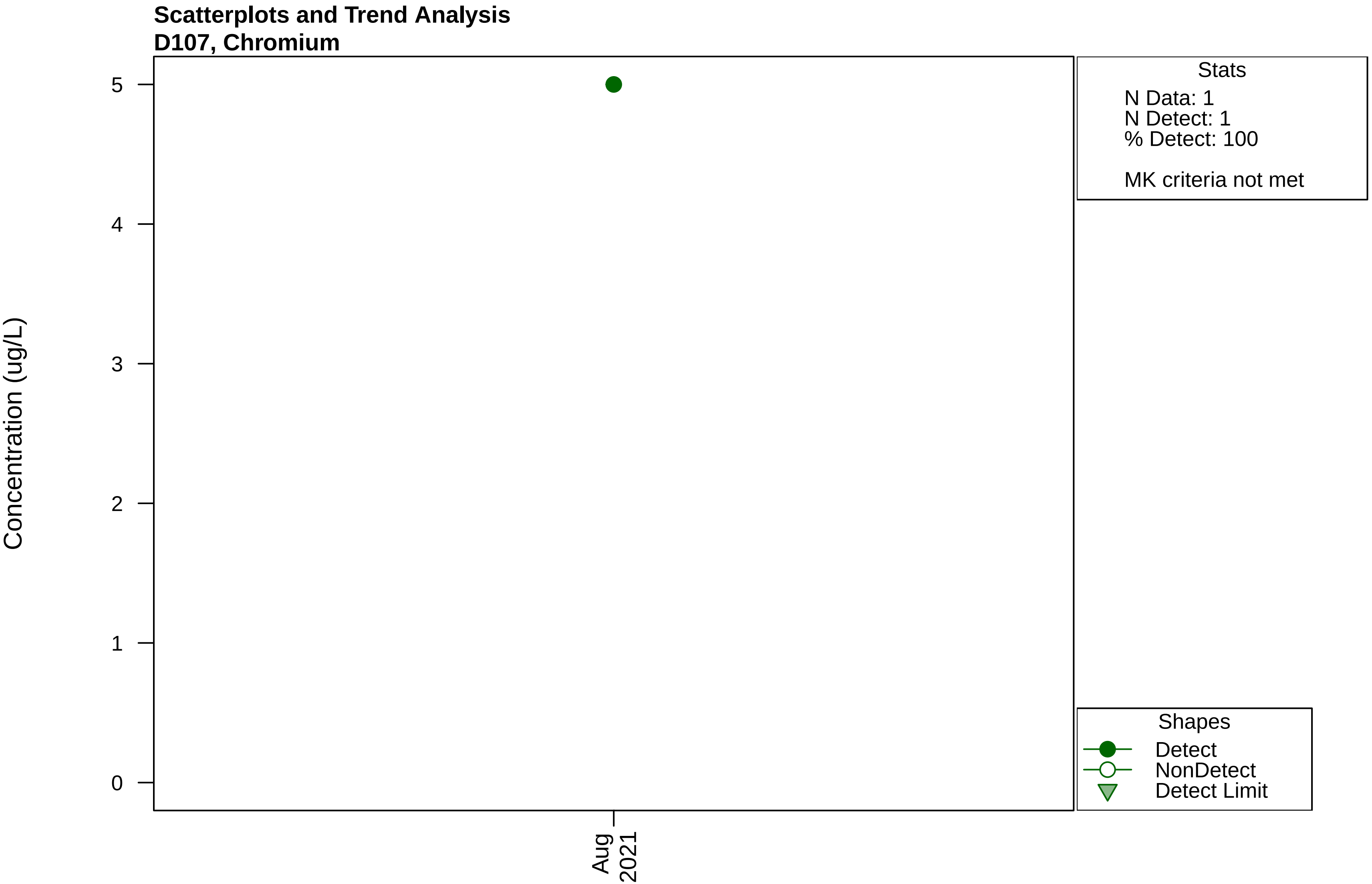
Scatterplots and Trend Analysis
D107, Calcium
Concentration (mg/L)
0
100
200
300
400
500
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 8
N Detect: 8
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.383
Shapes
Detect
NonDetect
Detect Limit

Scatterplots and Trend Analysis
D107, Calcium (Filtered)

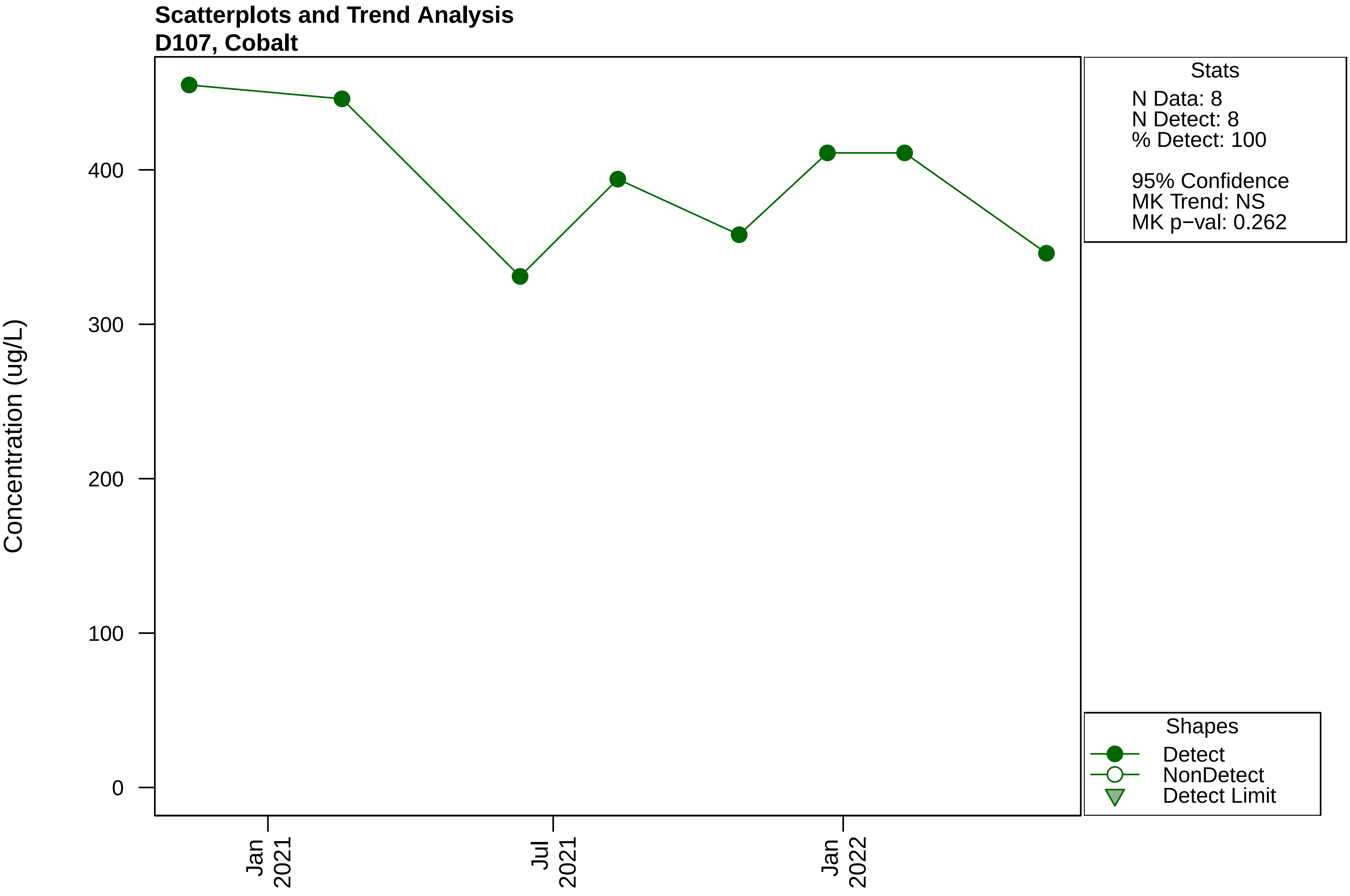



Scatterplots and Trend Analysis
D107, Carbonate Alkalinity (as CaCO3)
Concentration (mg/L)
0
50
100
150
200
250
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 5
N Detect: 5
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.483
Shapes
Detect
NonDetect
Detect Limit


Scatterplots and Trend Analysis
D107, Chloride
Concentration (mg/L)
0
500
1000
1500
Jan
2021
Jul
2021
Jan
2022
Stats
N Data: 8
N Detect: 8
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.72
Shapes
Detect
NonDetect
Detect Limit

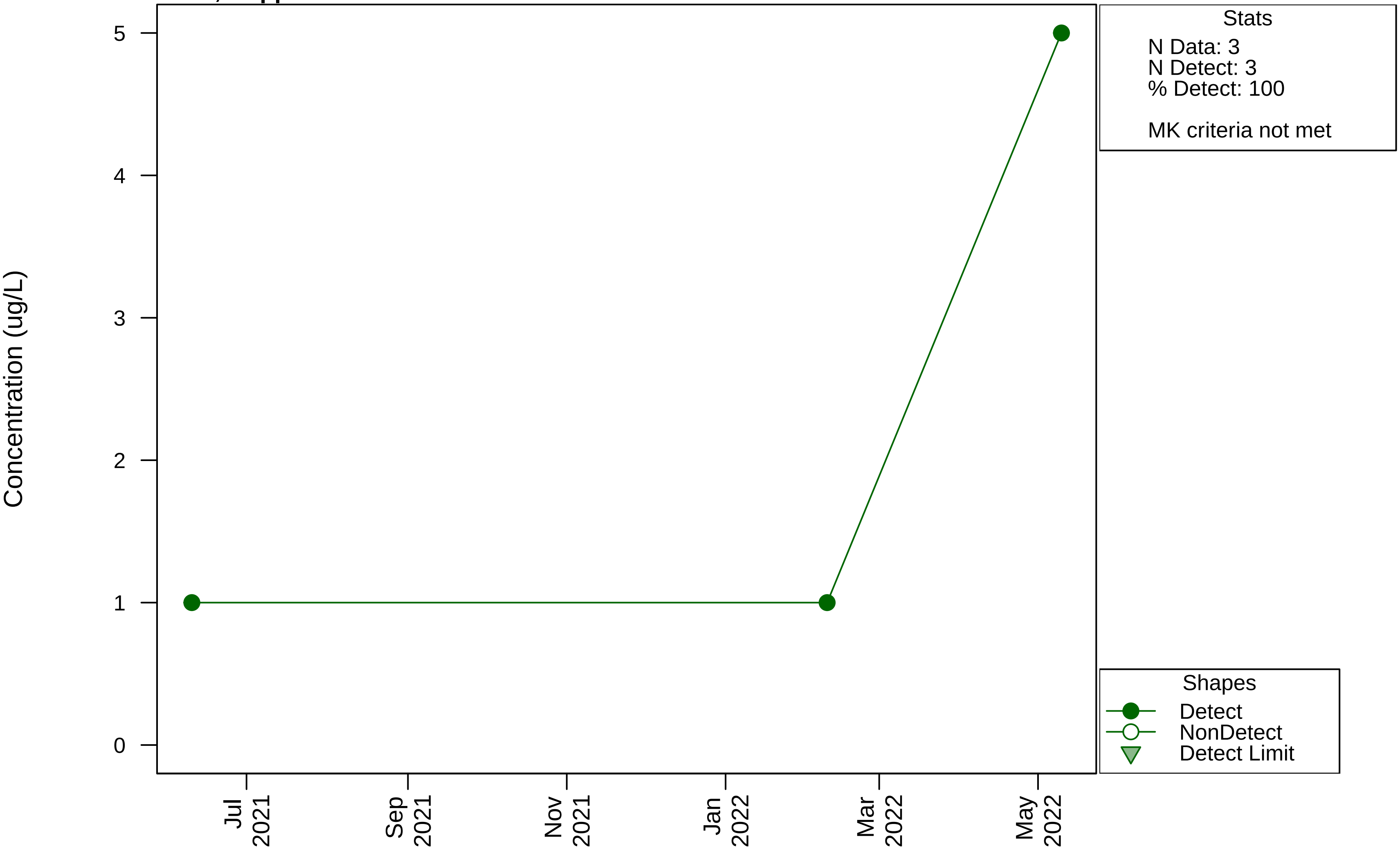


Scatterplots and Trend Analysis
D107, Chromium
Concentration (ug/L)
0
1
2
3
4
5
Aug 2021
Stats
N Data: 1
N Detect: 1
% Detect: 100
MK criteria not met
Shapes
Detect
NonDetect
Detect Limit

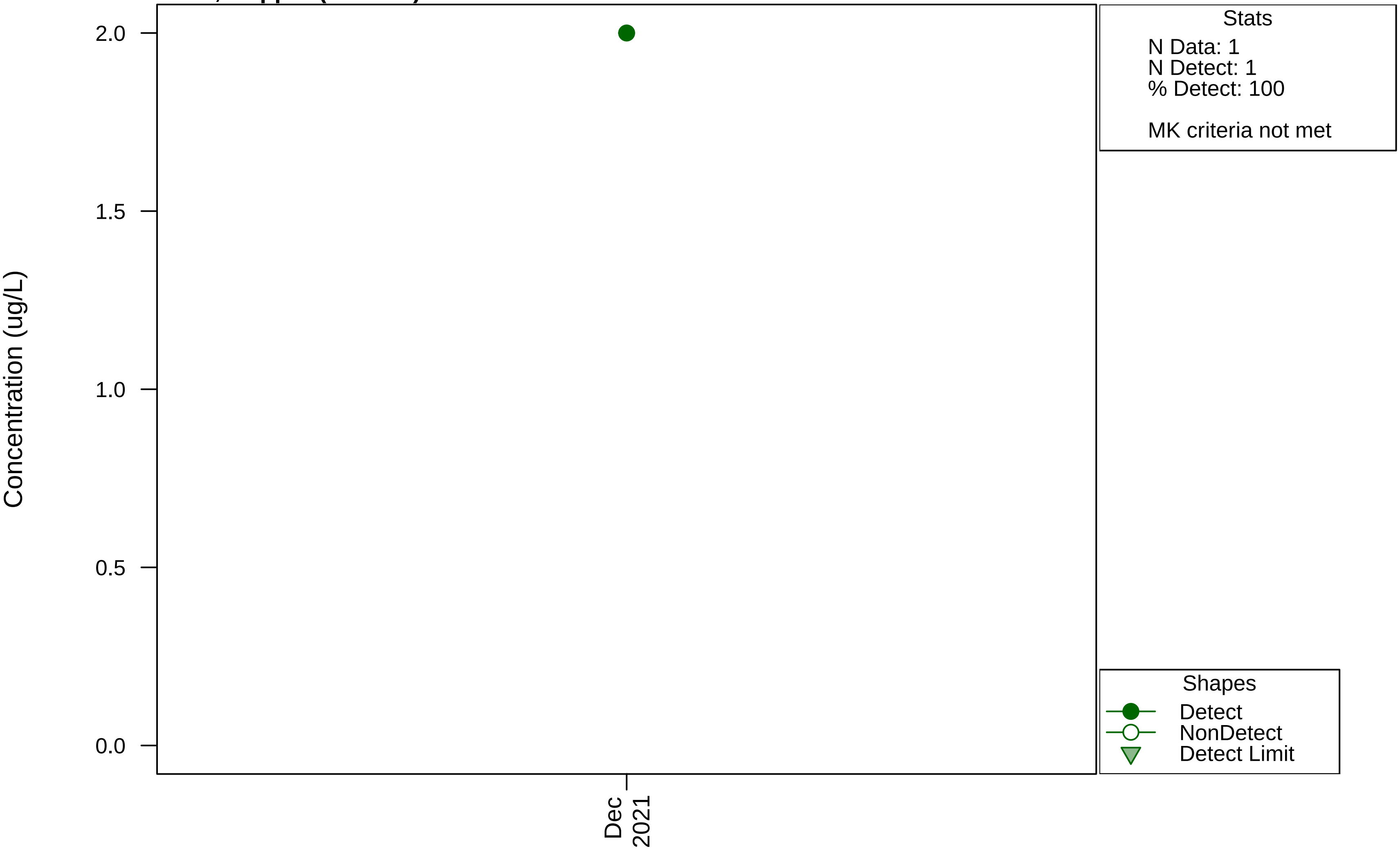


Scatterplots and Trend Analysis
D107, Cobalt
Concentration (ug/L)
0
100
200
300
400
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 8
N Detect: 8
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.262
Shapes
Detect
NonDetect
Detect Limit

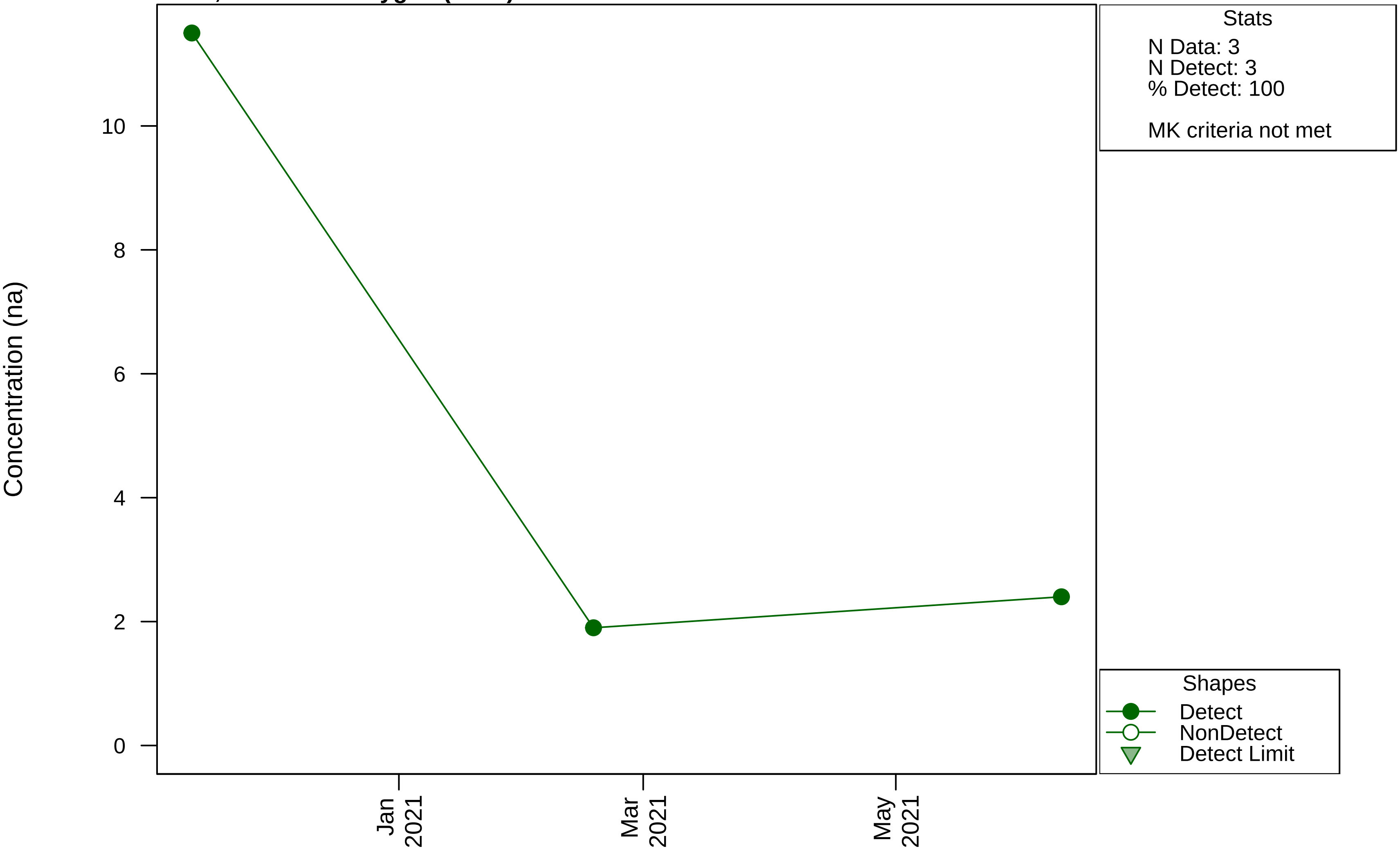
Scatterplots and Trend Analysis
D107, Copper

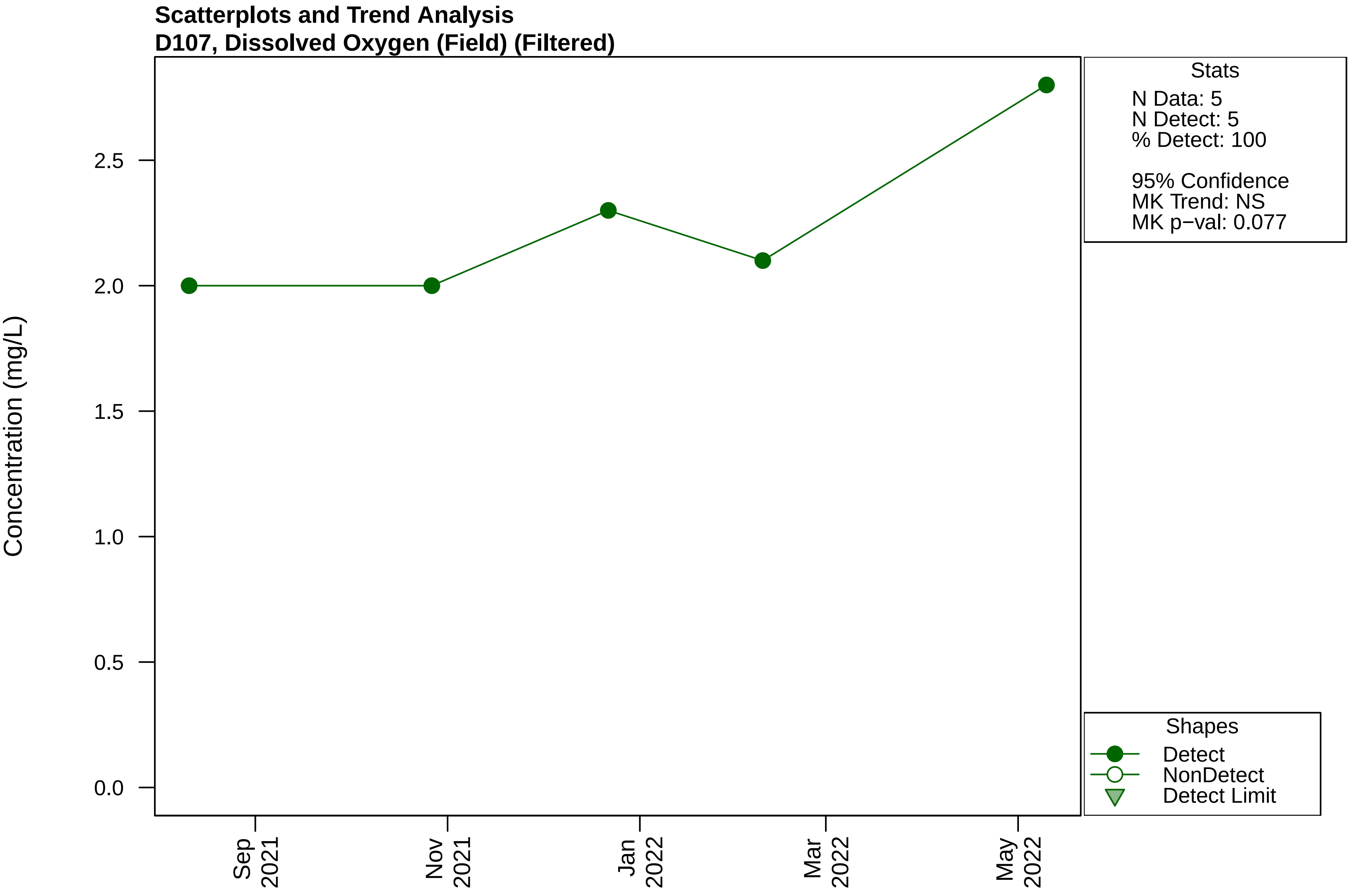


Scatterplots and Trend Analysis
D107, Copper (Filtered)



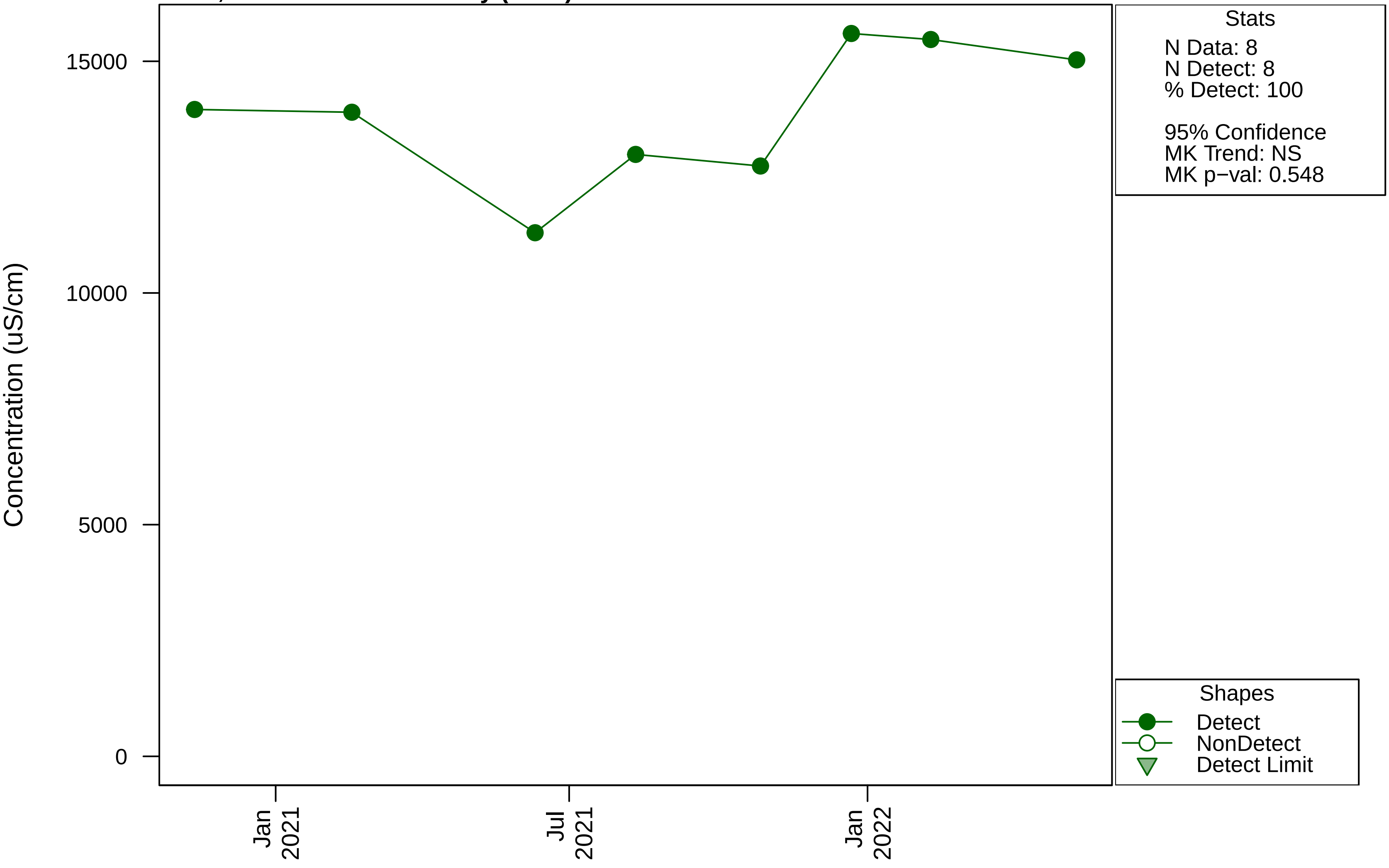
Scatterplots and Trend Analysis
D107, Dissolved Oxygen (Field)



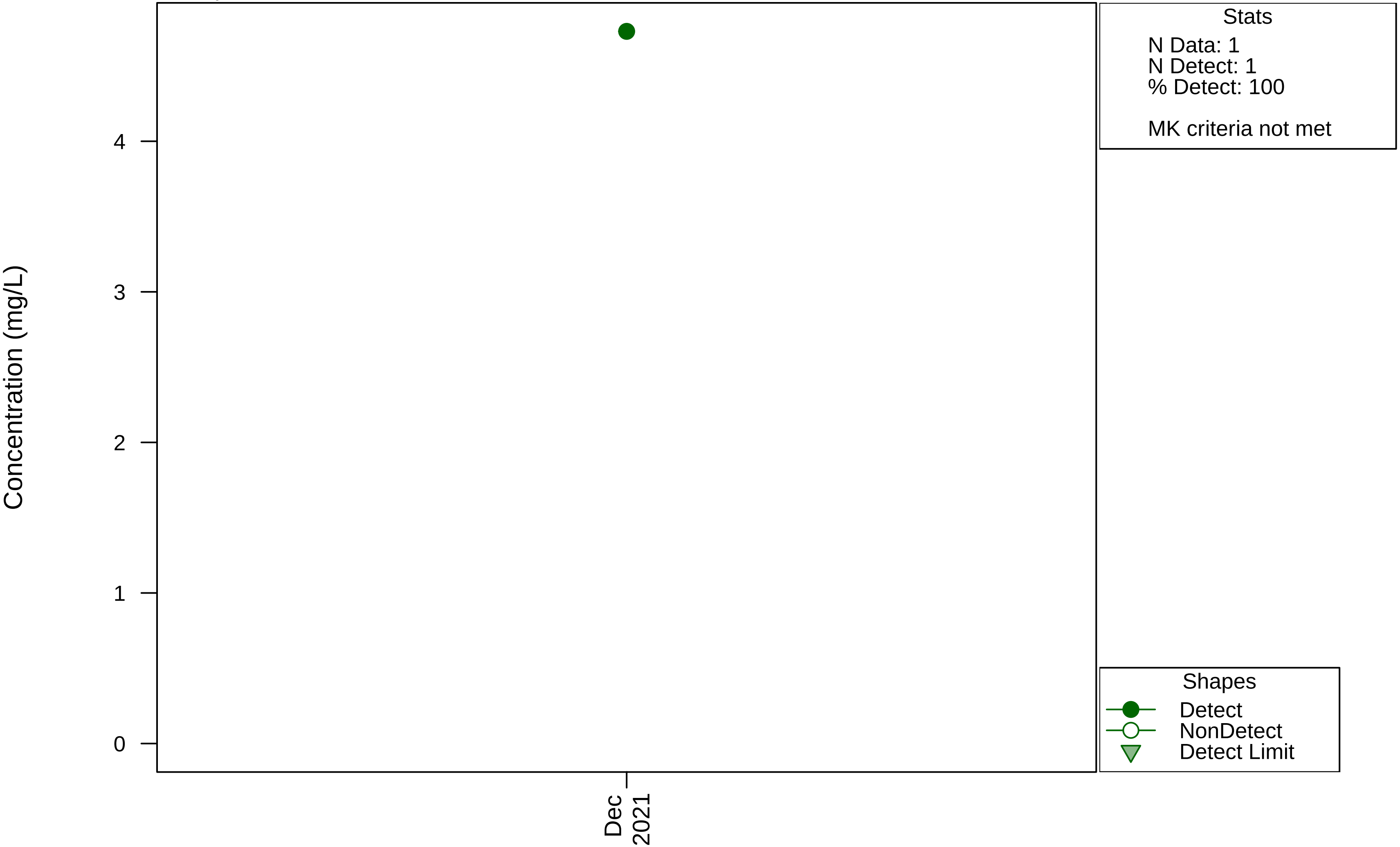


Scatterplots and Trend Analysis
D107, Dissolved Oxygen (Field) (Filtered)
Concentration (mg/L)
0.0
0.5
1.0
1.5
2.0
2.5
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 5
N Detect: 5
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.077
Shapes
Detect
NonDetect
Detect Limit

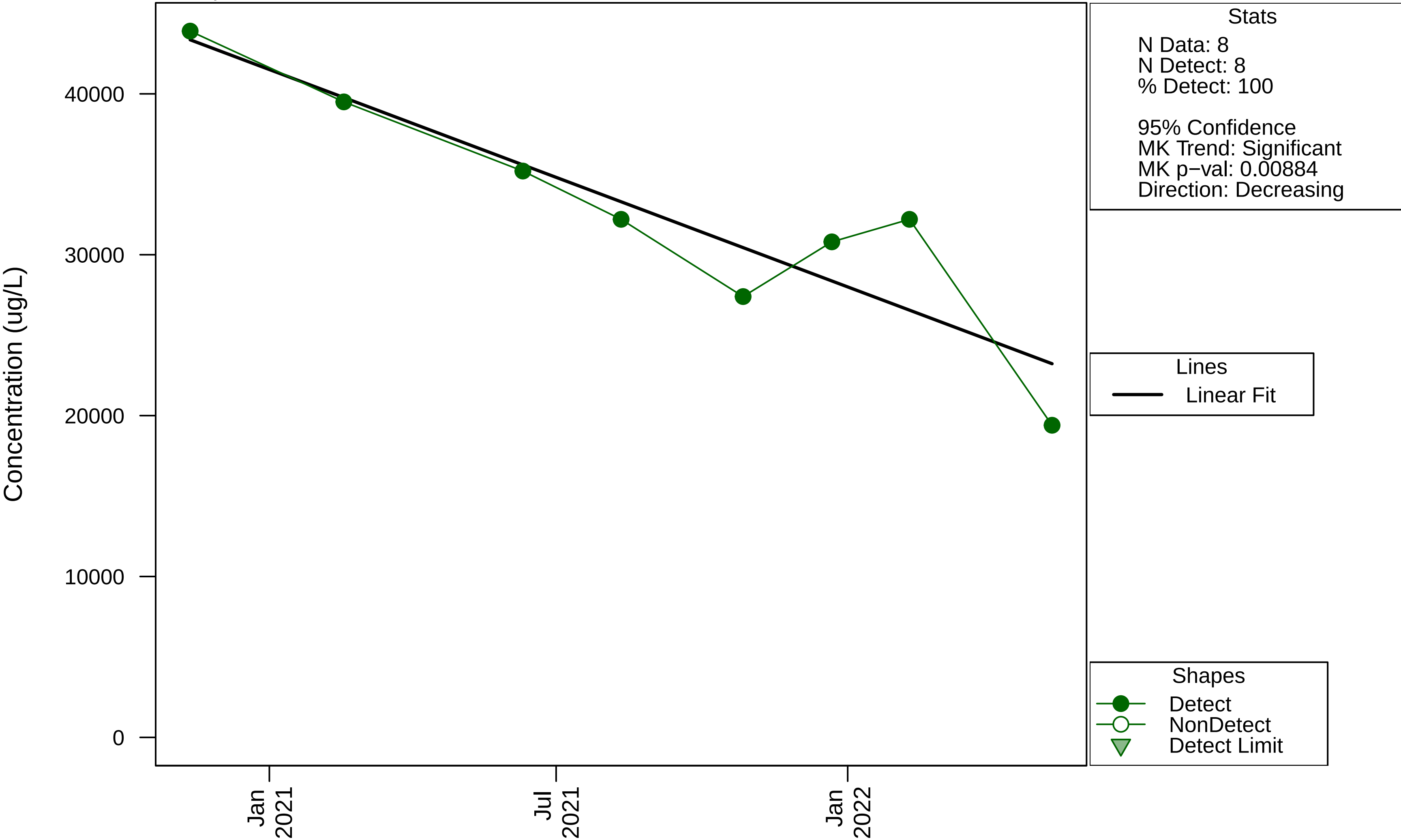
Scatterplots and Trend Analysis
D107, Electrical Conductivity (Field)



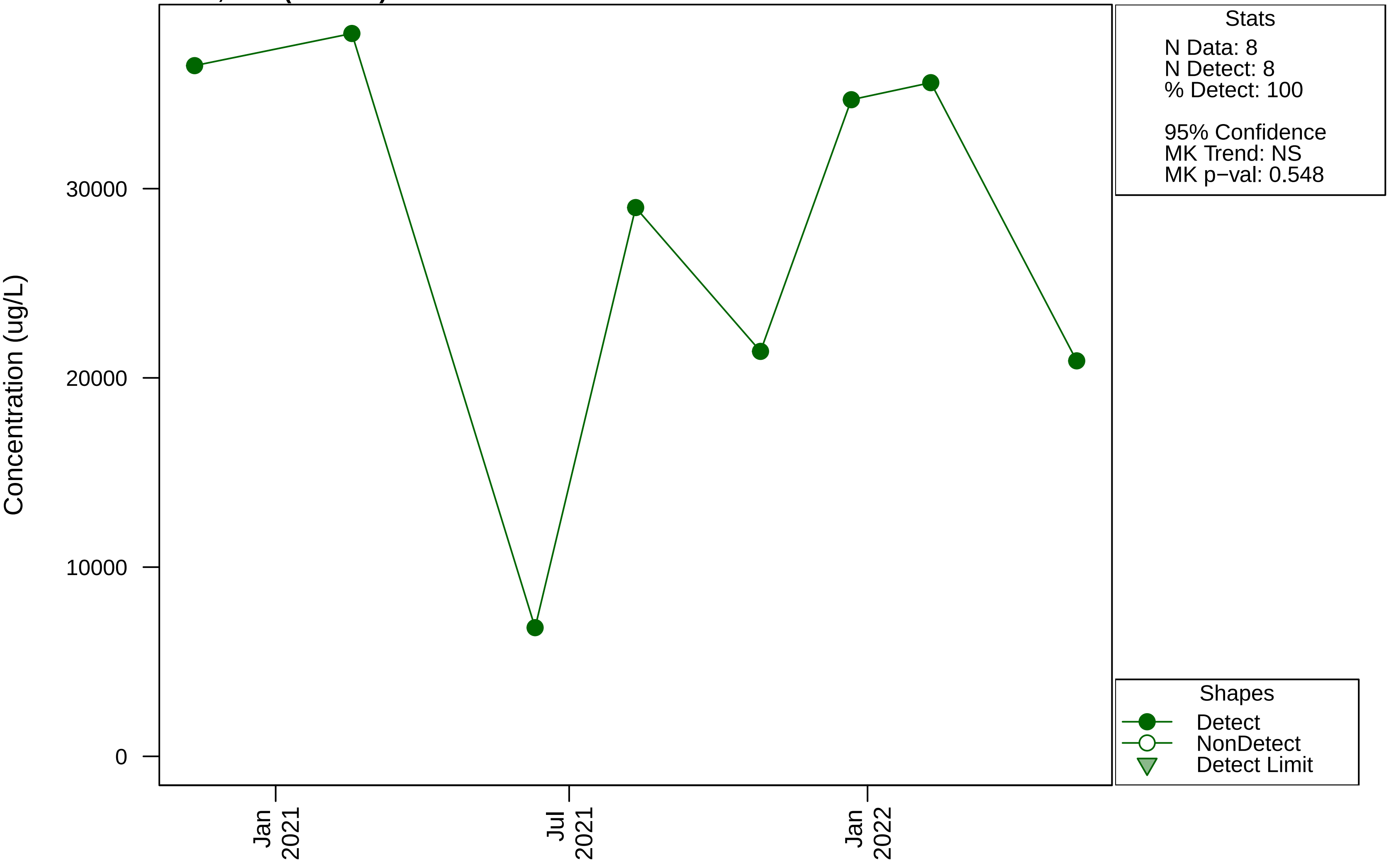
Scatterplots and Trend Analysis
D107, Fluoride

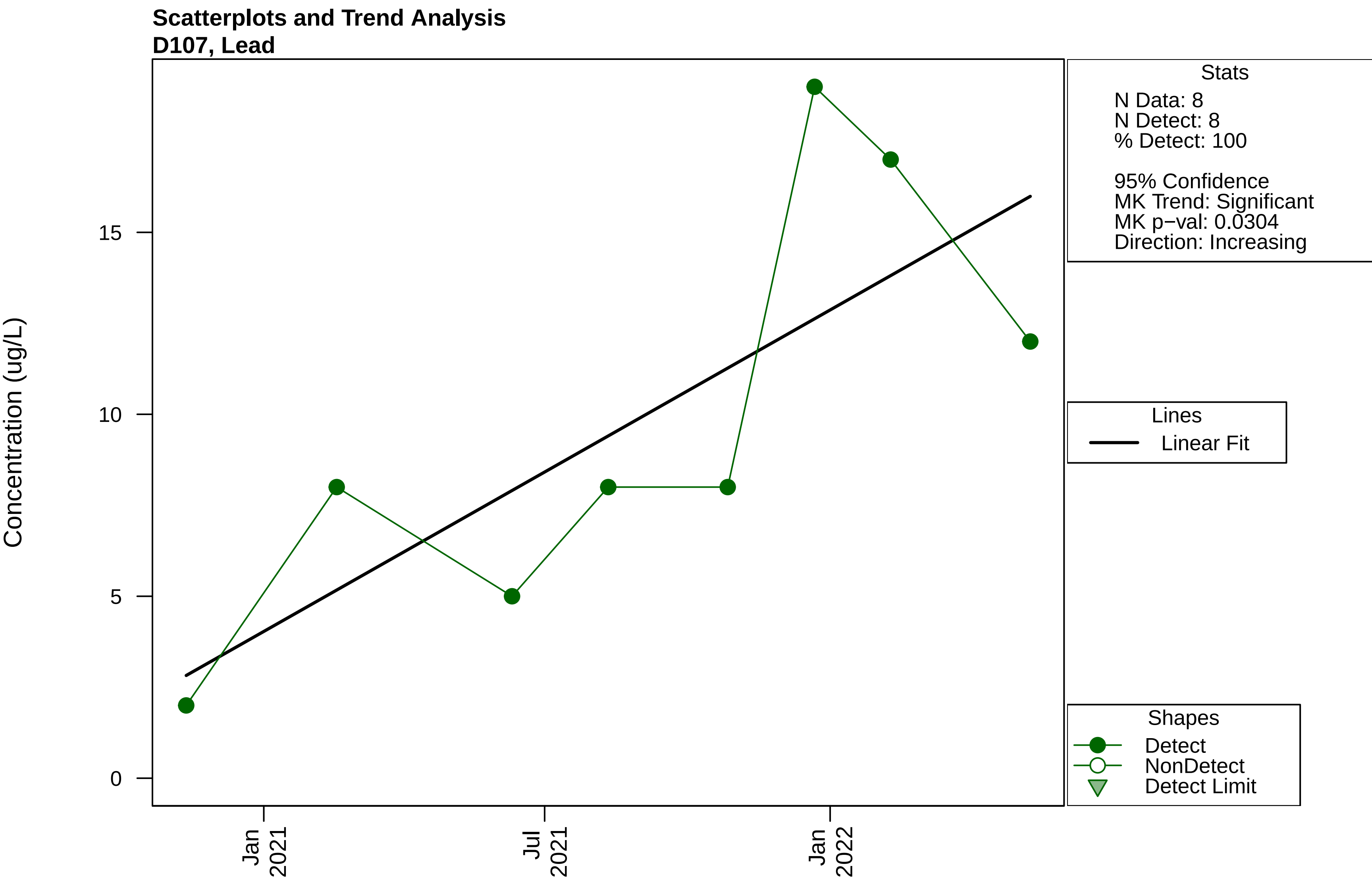


Scatterplots and Trend Analysis
D107, Iron

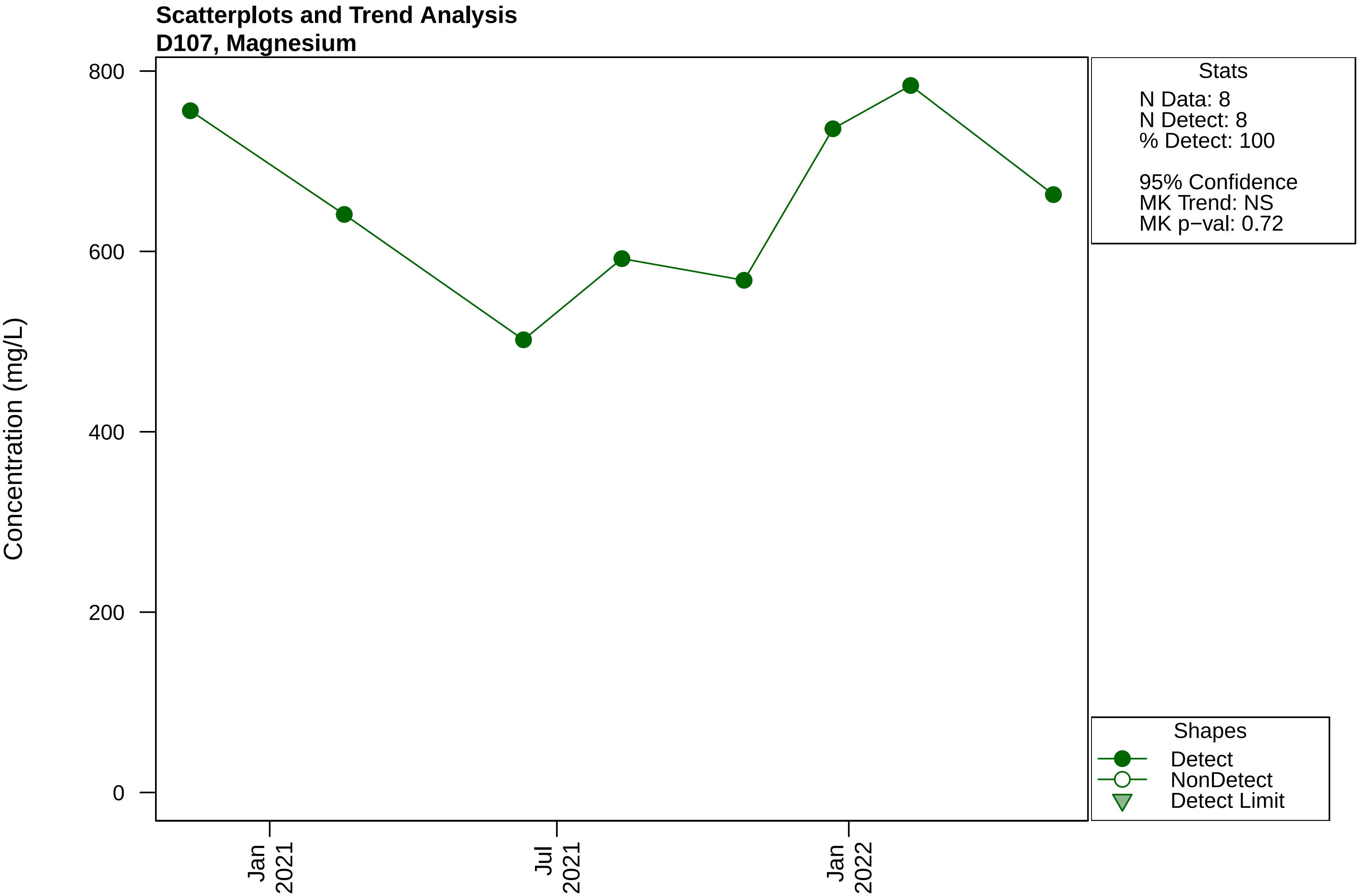


Scatterplots and Trend Analysis
D107, Iron (Filtered)

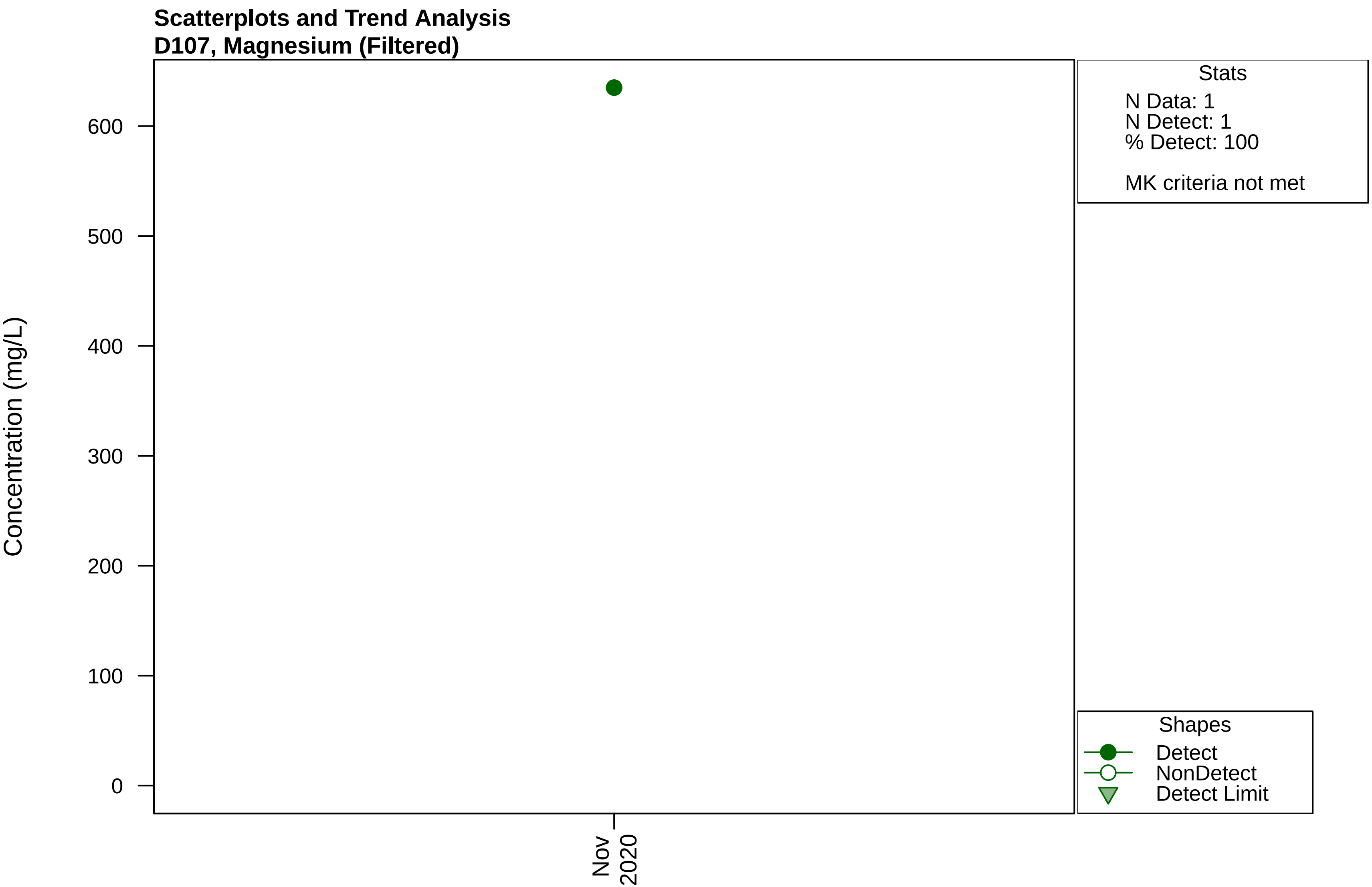


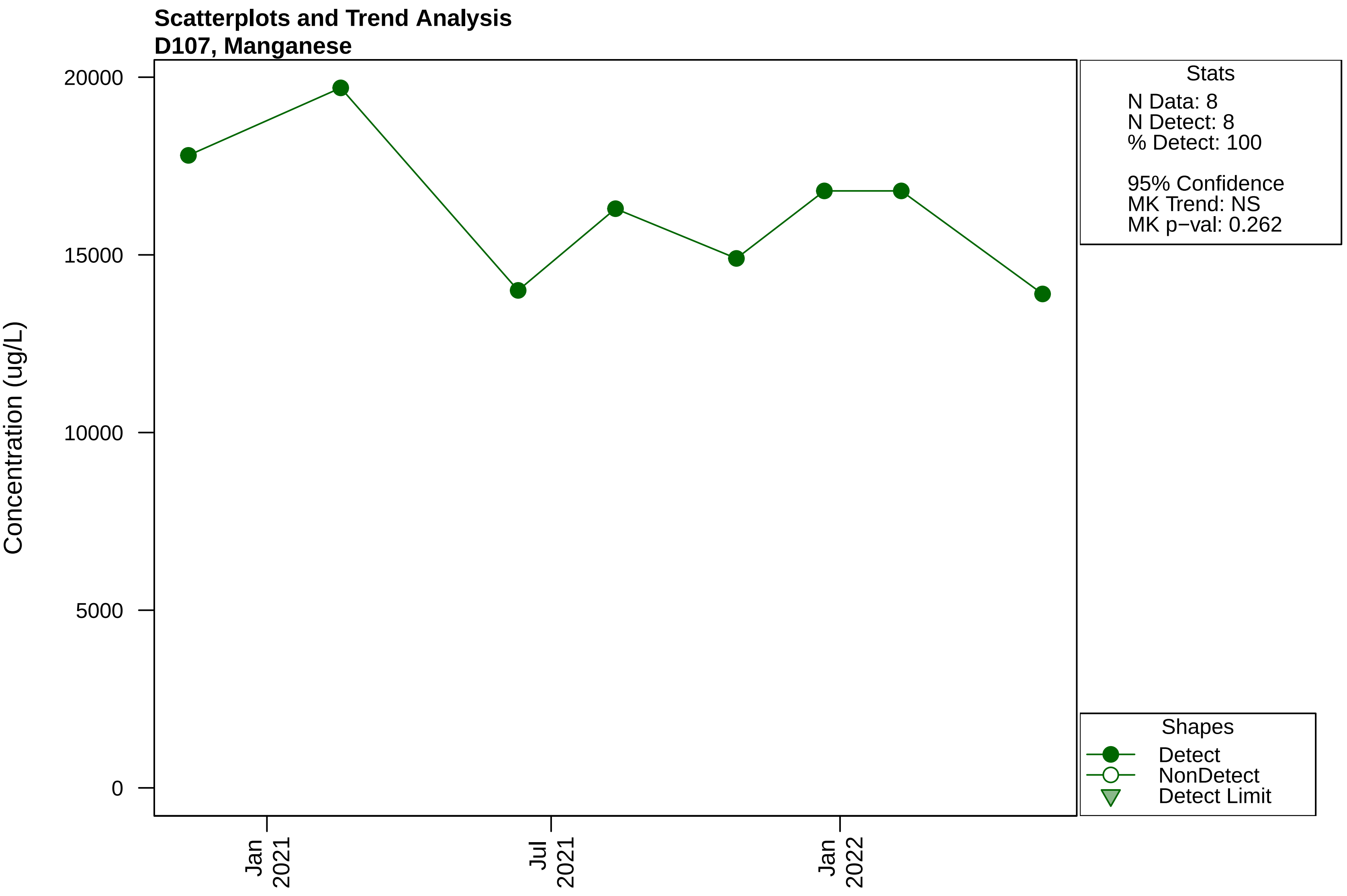


Scatterplots and Trend Analysis
D107, Lead
Concentration (ug/L)
0
5
10
15
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 8
N Detect: 8
% Detect: 100
95% Confidence
MK Trend: Significant
MK p−val: 0.0304
Direction: Increasing
Lines
Linear Fit
Shapes
Detect
NonDetect
Detect Limit

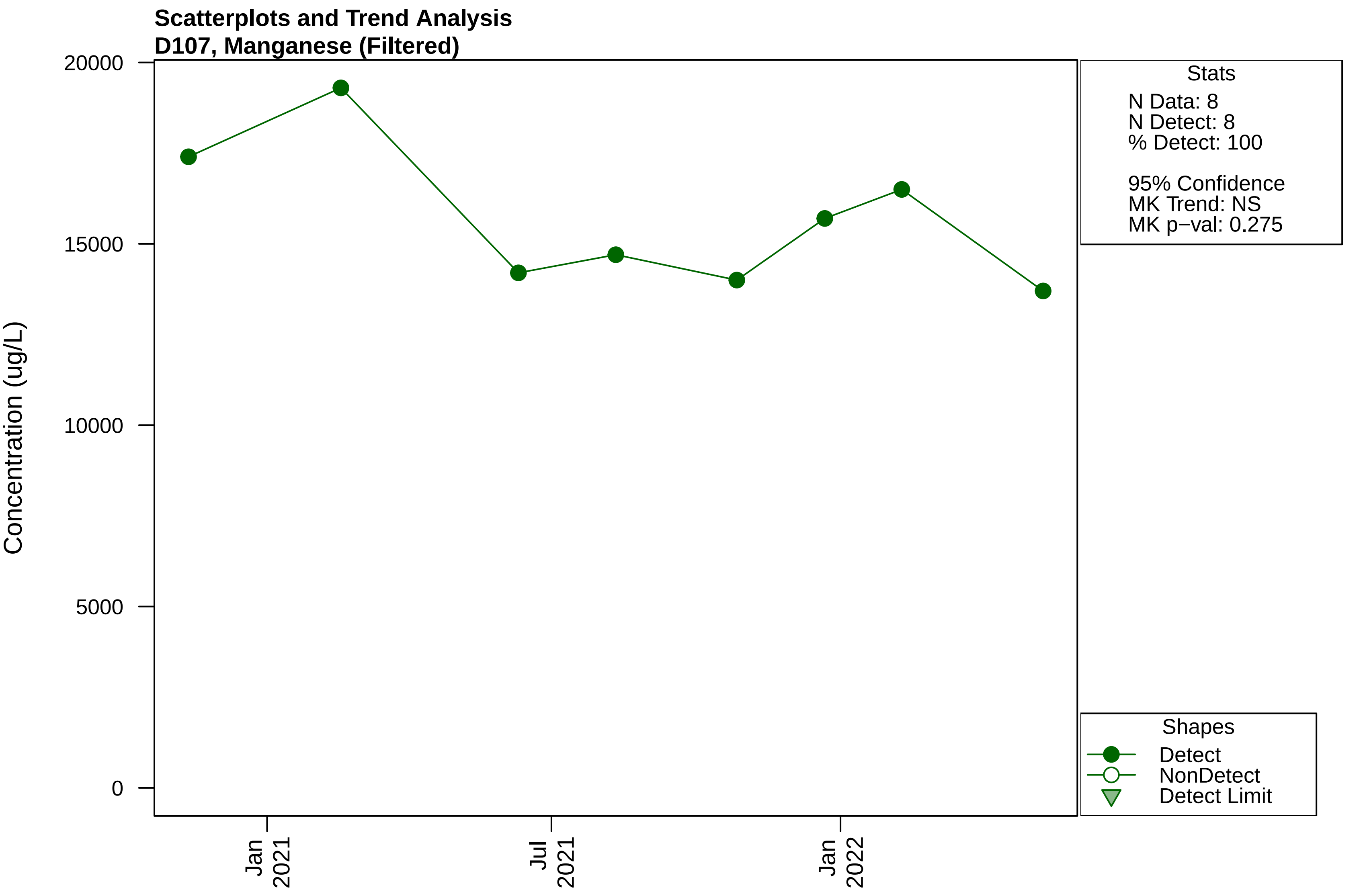


Scatterplots and Trend Analysis
D107, Magnesium
Concentration (mg/L)
800
600
400
200
0
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 8
N Detect: 8
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.72
Shapes
Detect
NonDetect
Detect Limit

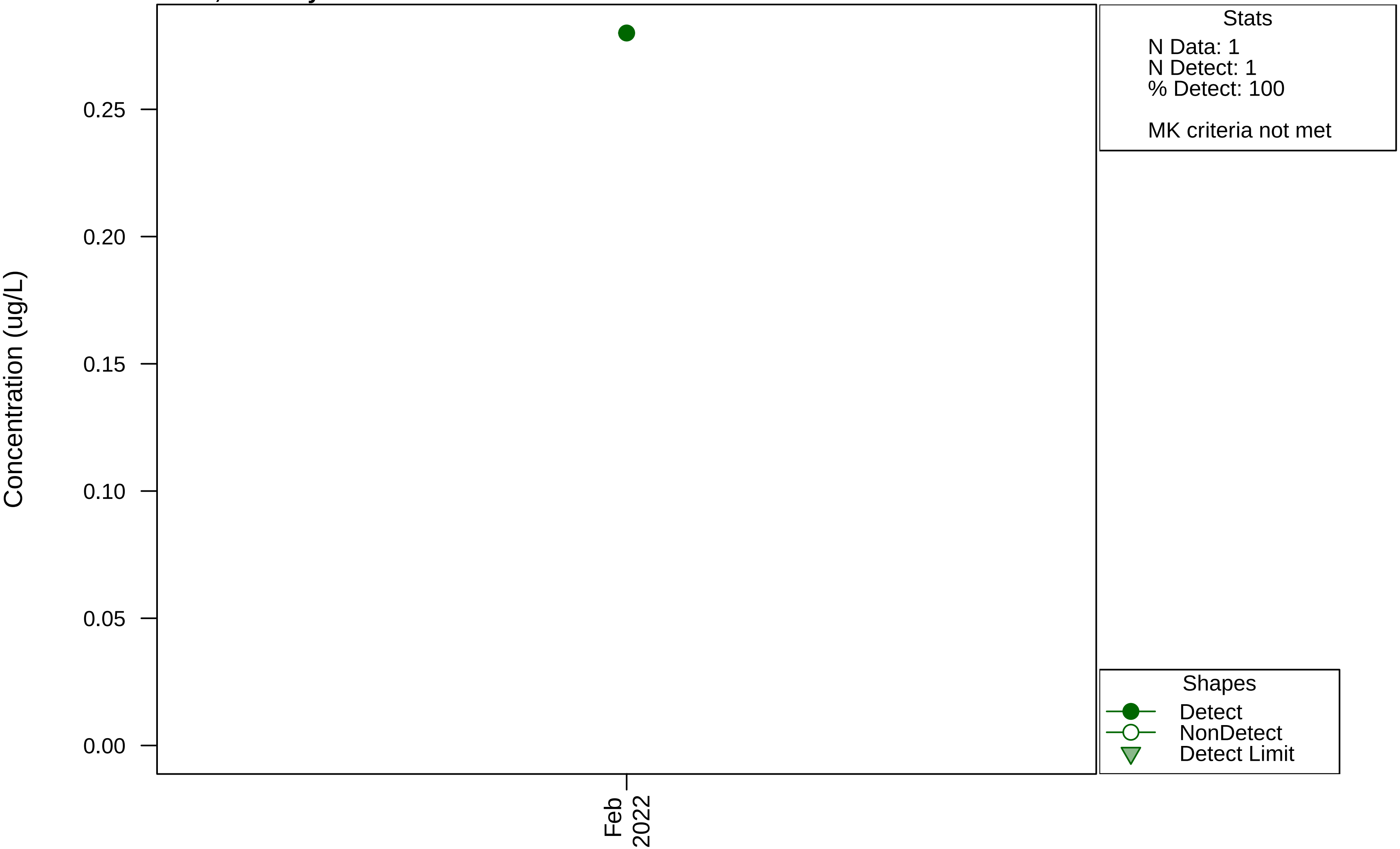

Scatterplots and Trend Analysis
D107, Magnesium (Filtered)
Concentration (mg/L)
0
100
200
300
400
500
600
Nov
2020
Stats
N Data: 1
N Detect: 1
% Detect: 100
MK criteria not met
Shapes
Detect
NonDetect
Detect Limit



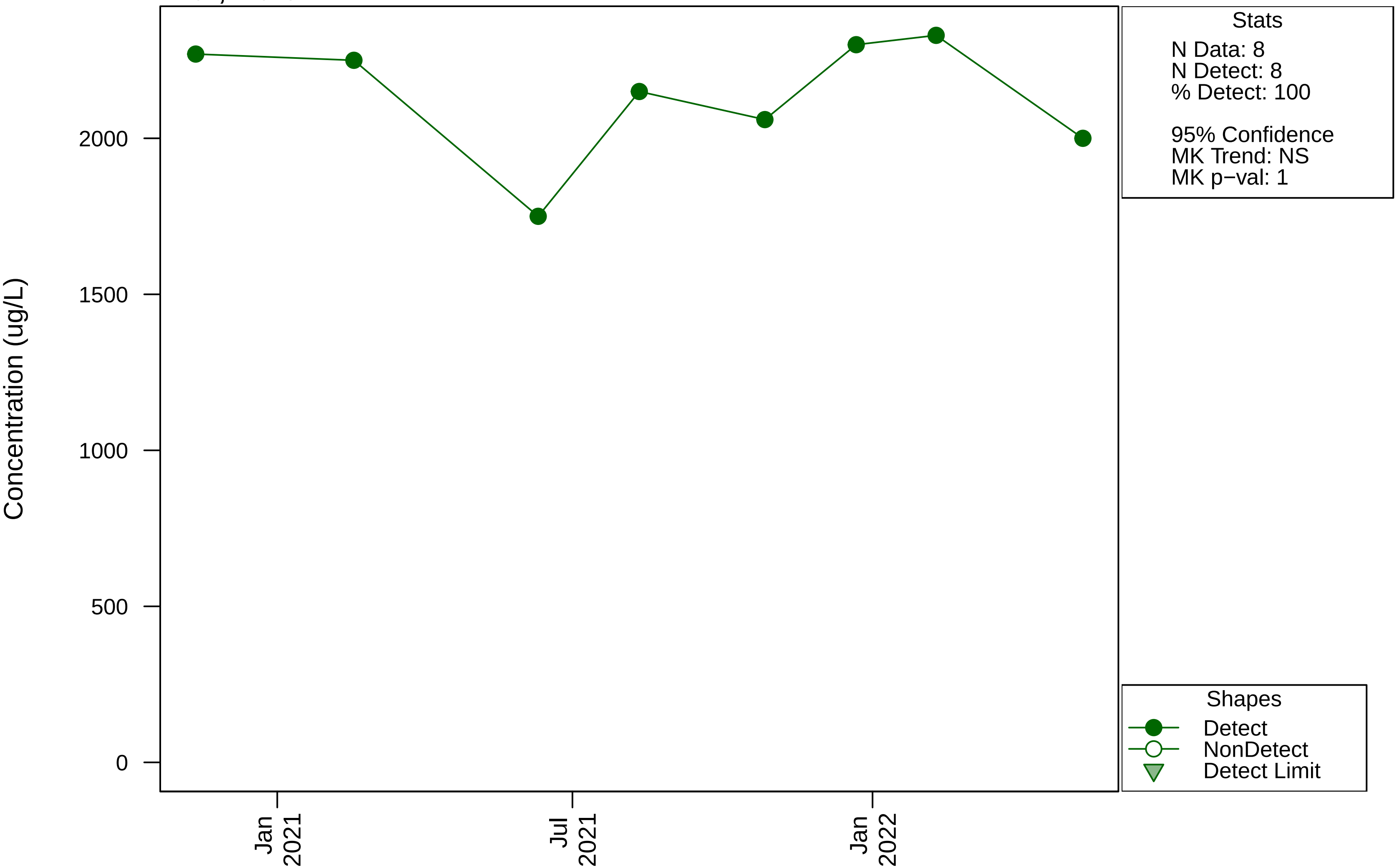
Scatterplots and Trend Analysis
D107, Manganese
Concentration (ug/L)
20000
15000
10000
5000
0
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 8
N Detect: 8
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.262
Shapes
Detect
NonDetect
Detect Limit


Scatterplots and Trend Analysis
D107, Manganese (Filtered)
Concentration (ug/L)
20000
15000
10000
5000
0
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 8
N Detect: 8
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.275
Shapes
Detect
NonDetect
Detect Limit

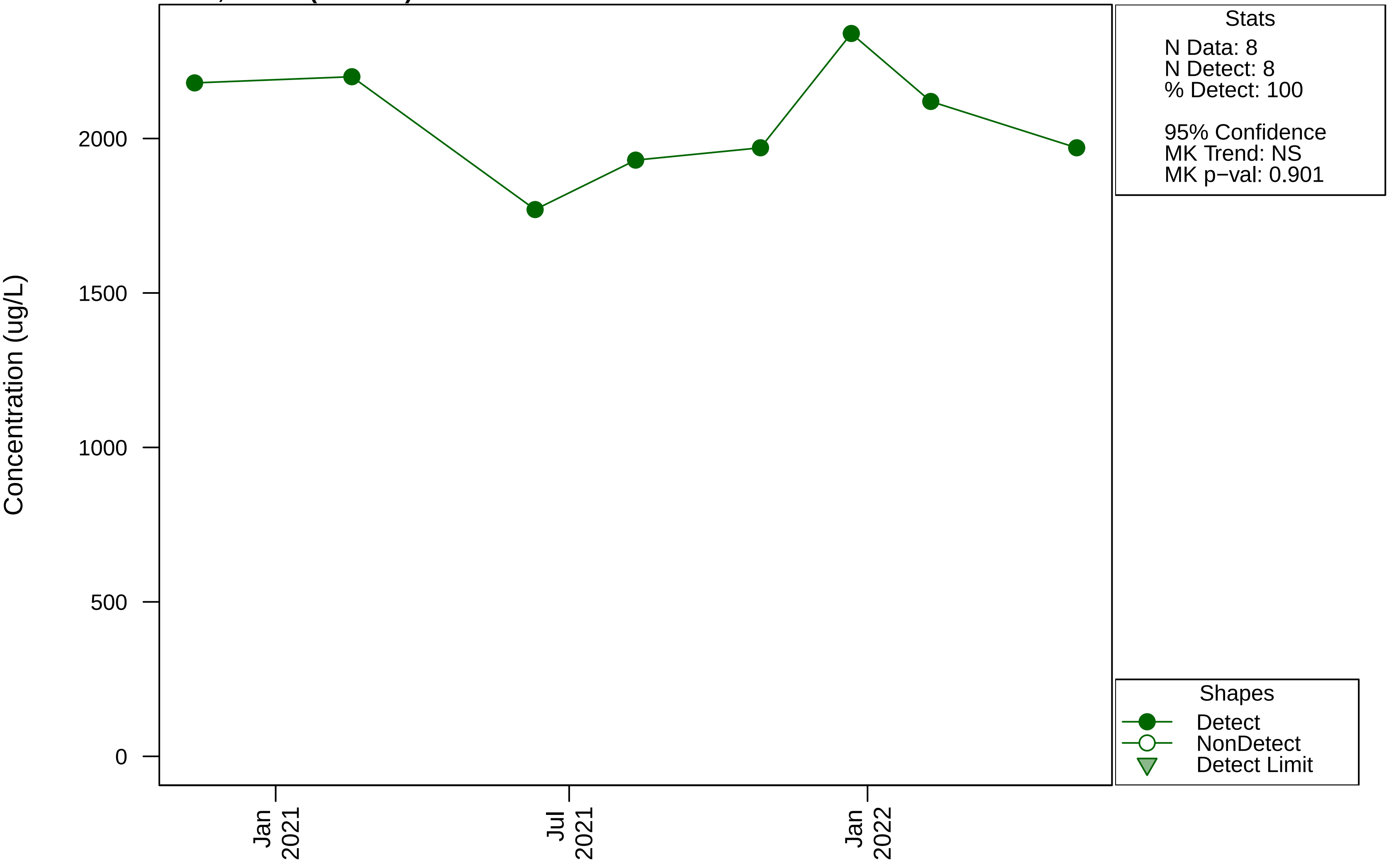
Scatterplots and Trend Analysis
D107, Mercury

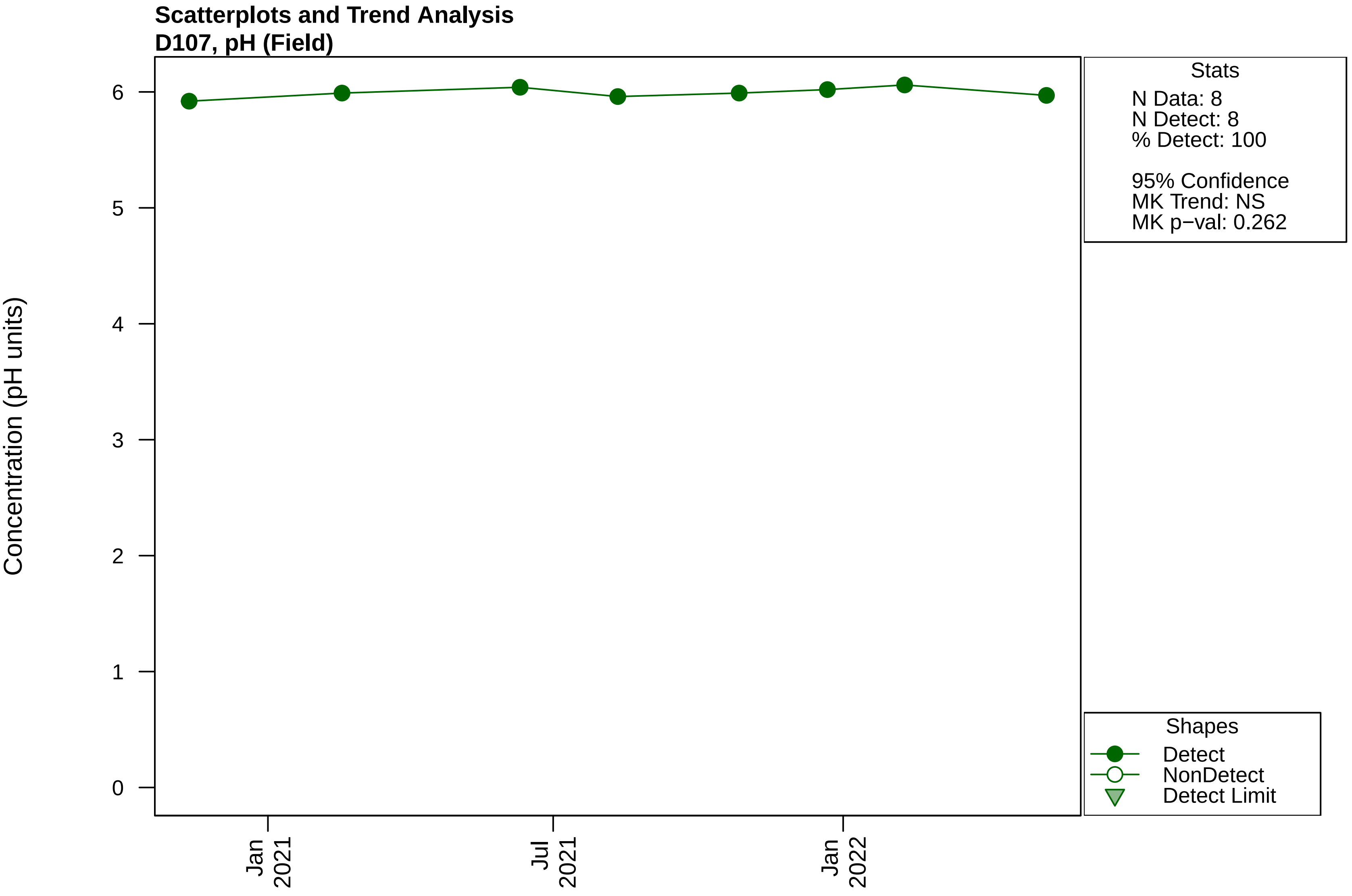


Scatterplots and Trend Analysis
D107, Nickel



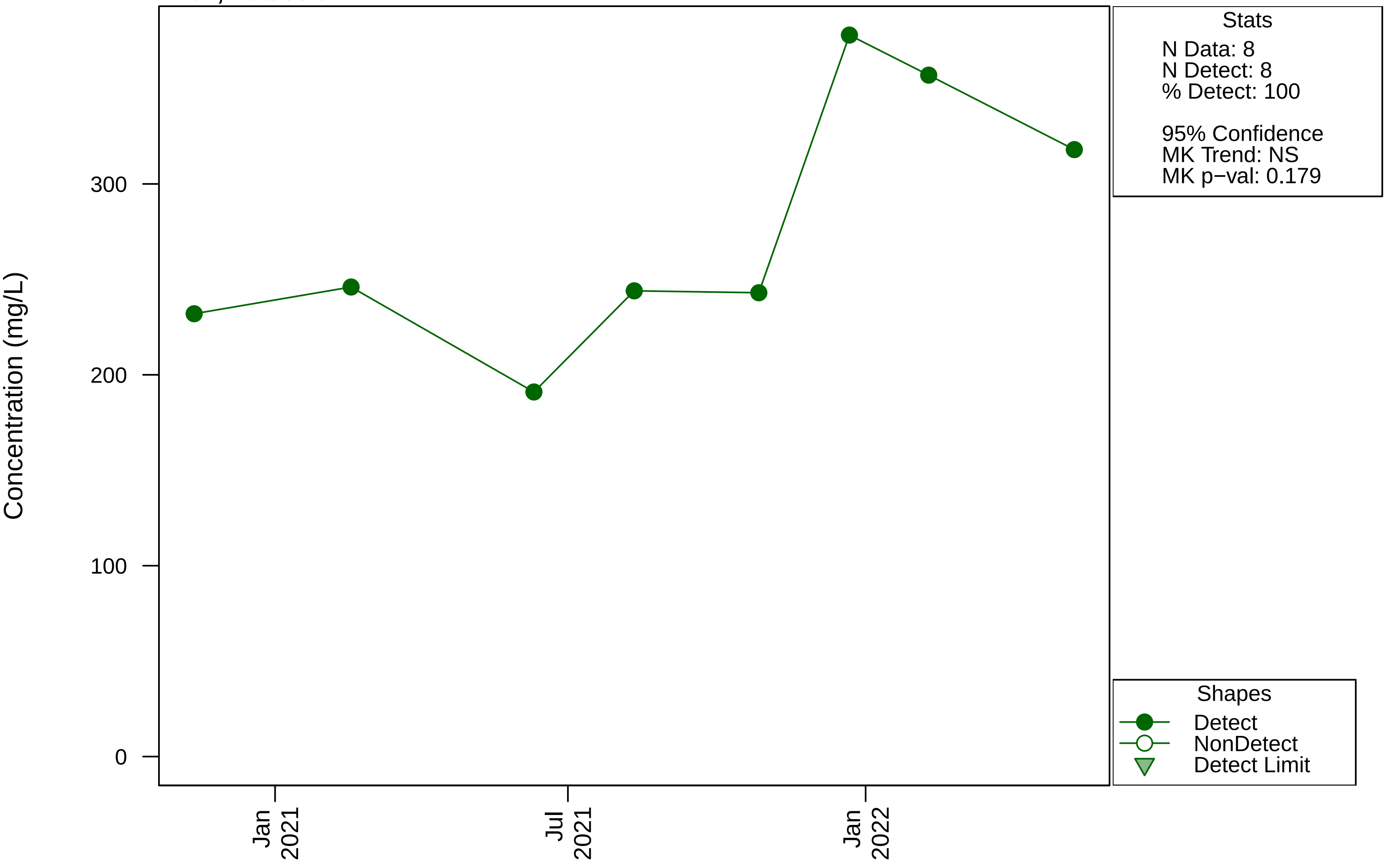
Scatterplots and Trend Analysis
D107, Nickel (Filtered)



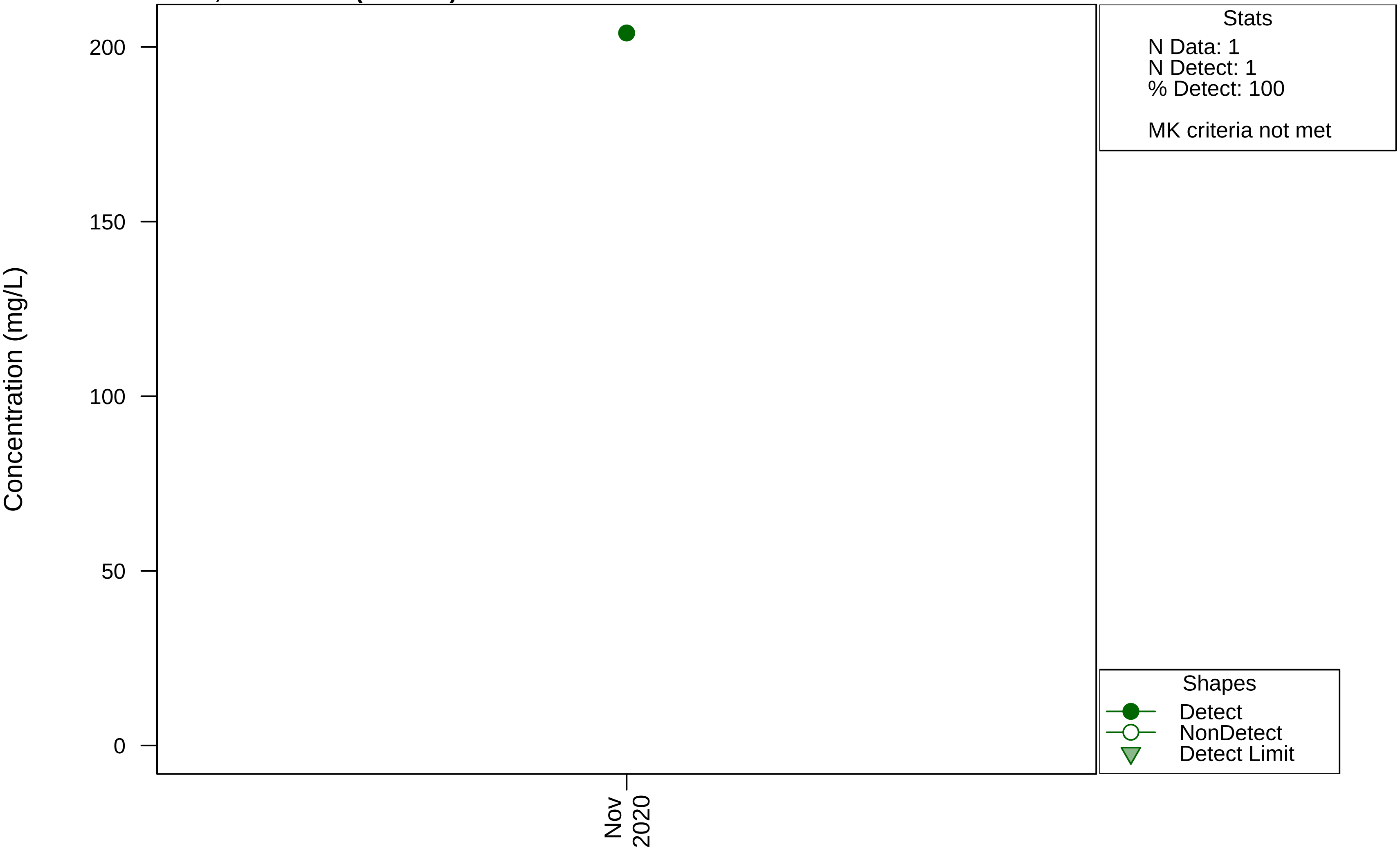


Scatterplots and Trend Analysis
D107, pH (Field)
Concentration (pH units)
0
1
2
3
4
5
6
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 8
N Detect: 8
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.262
Shapes
Detect
NonDetect
Detect Limit

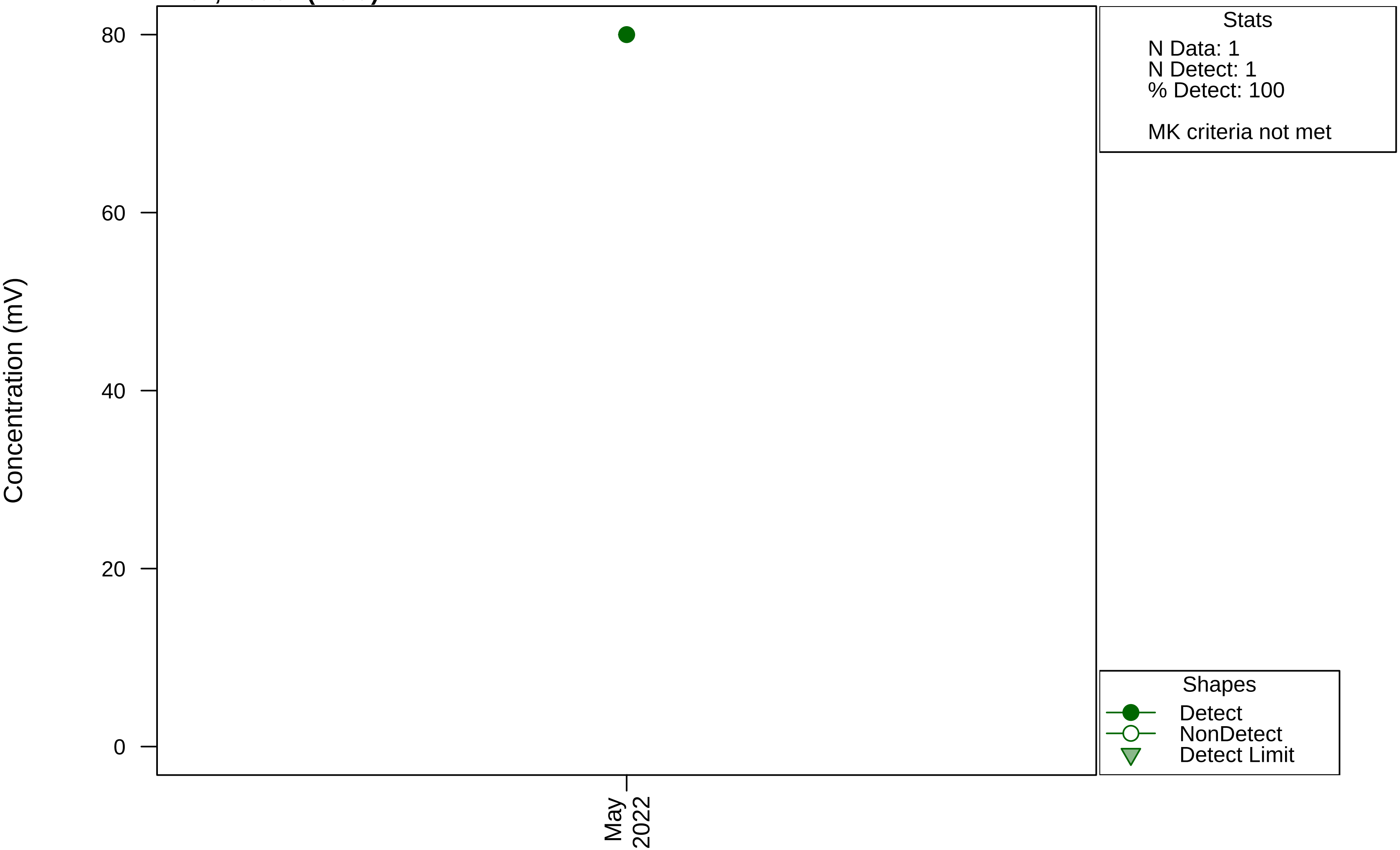
Scatterplots and Trend Analysis
D107, Potassium

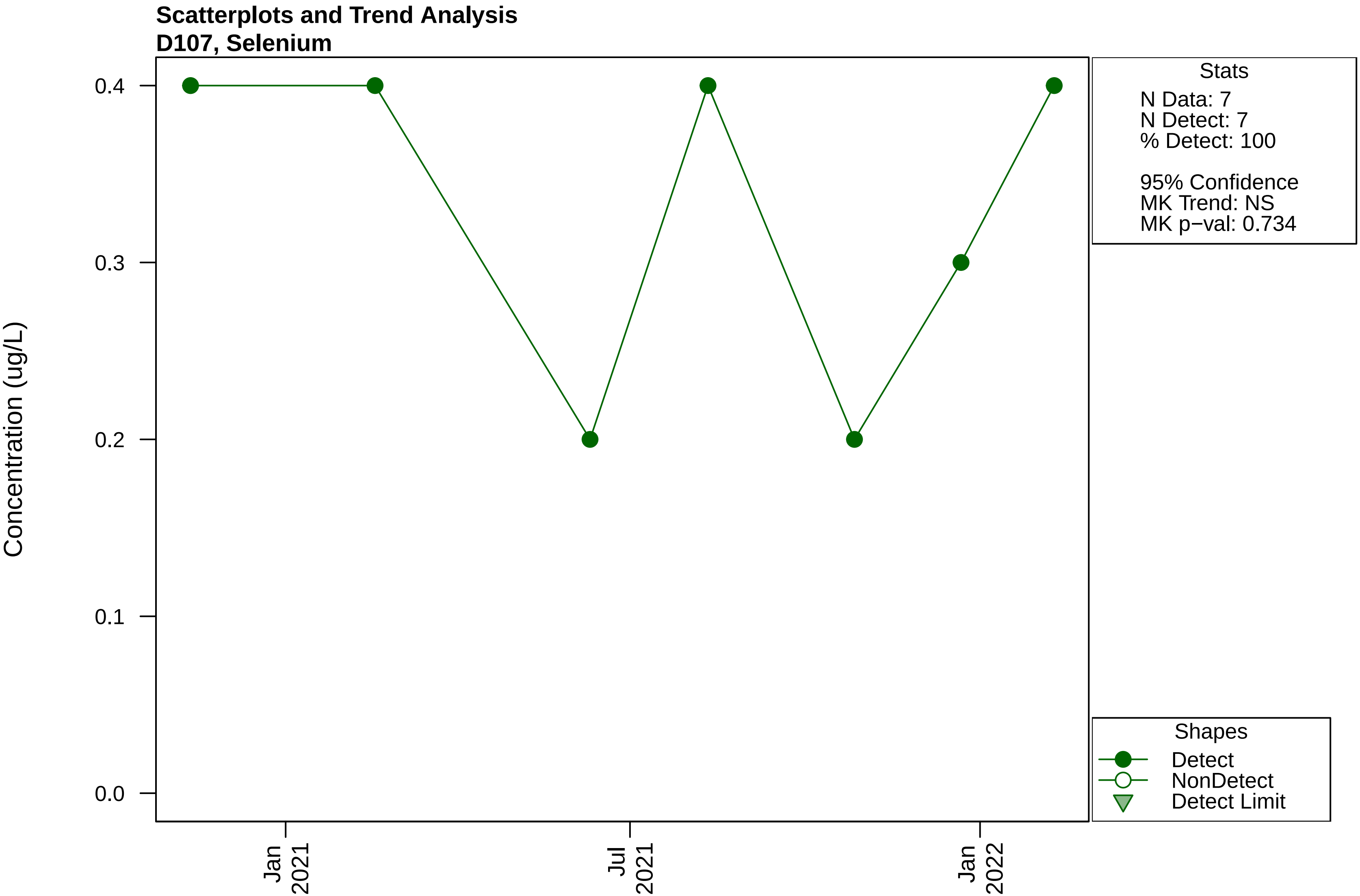


Scatterplots and Trend Analysis
D107, Potassium (Filtered)



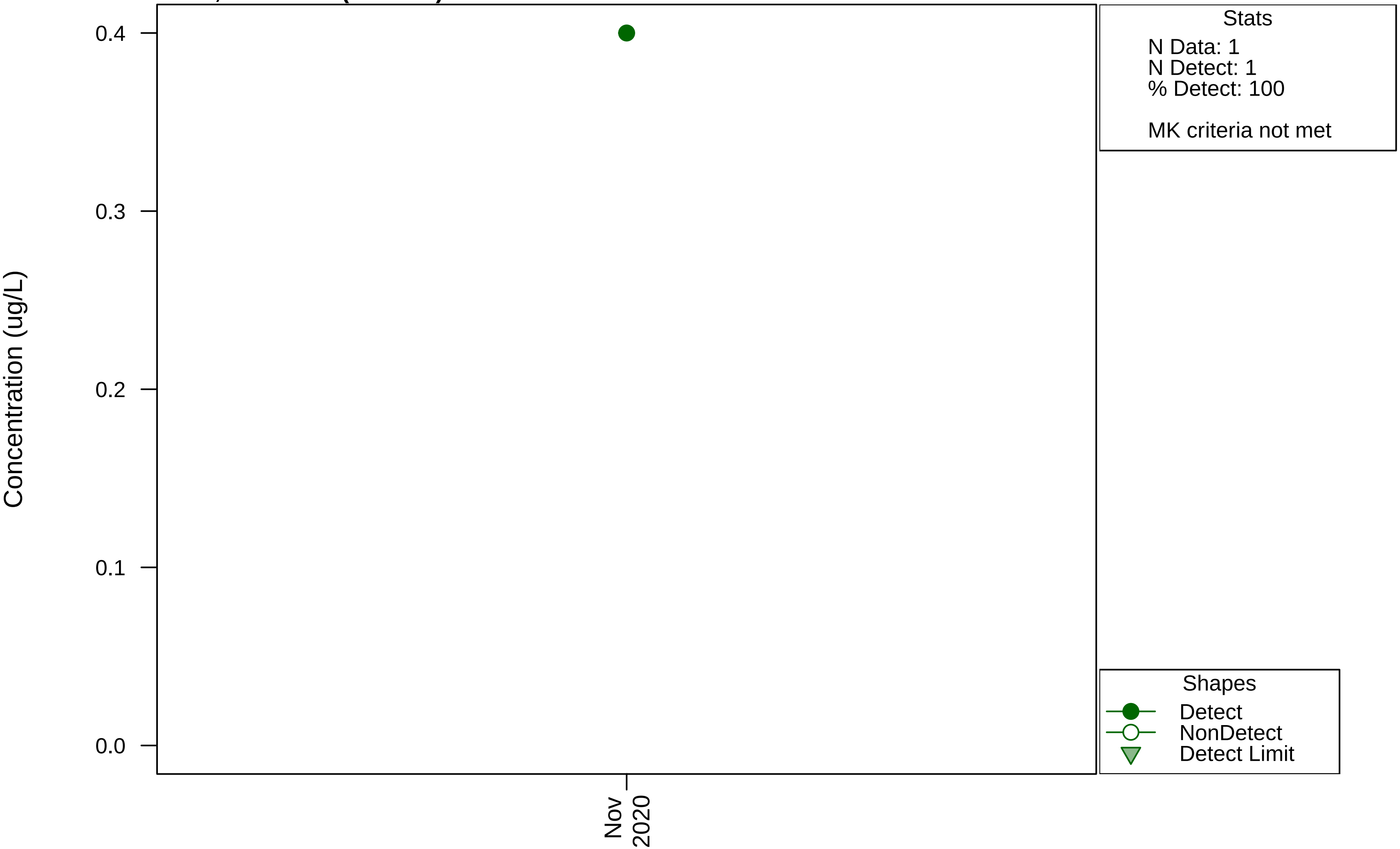
Scatterplots and Trend Analysis
D107, Redox (Field)



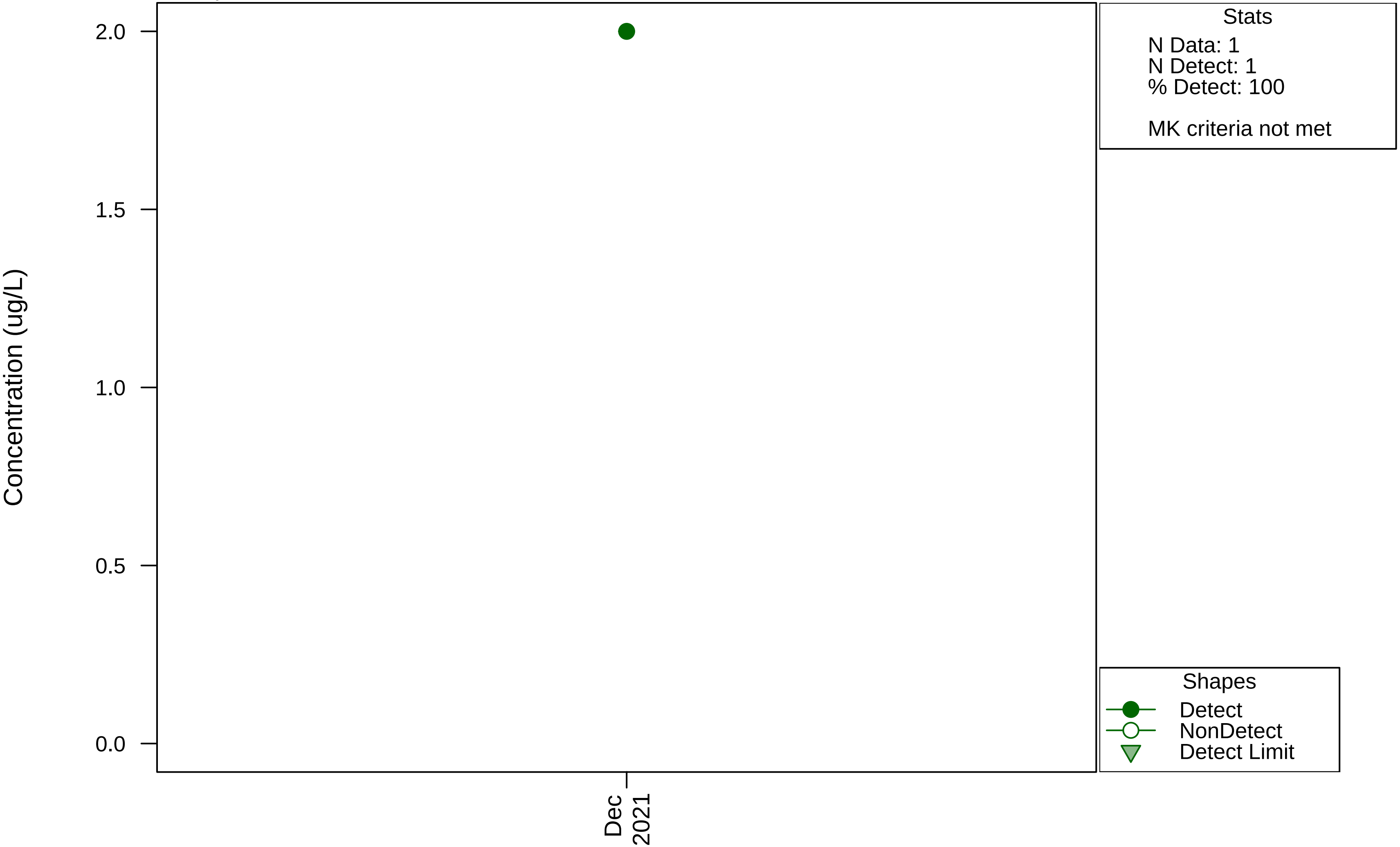


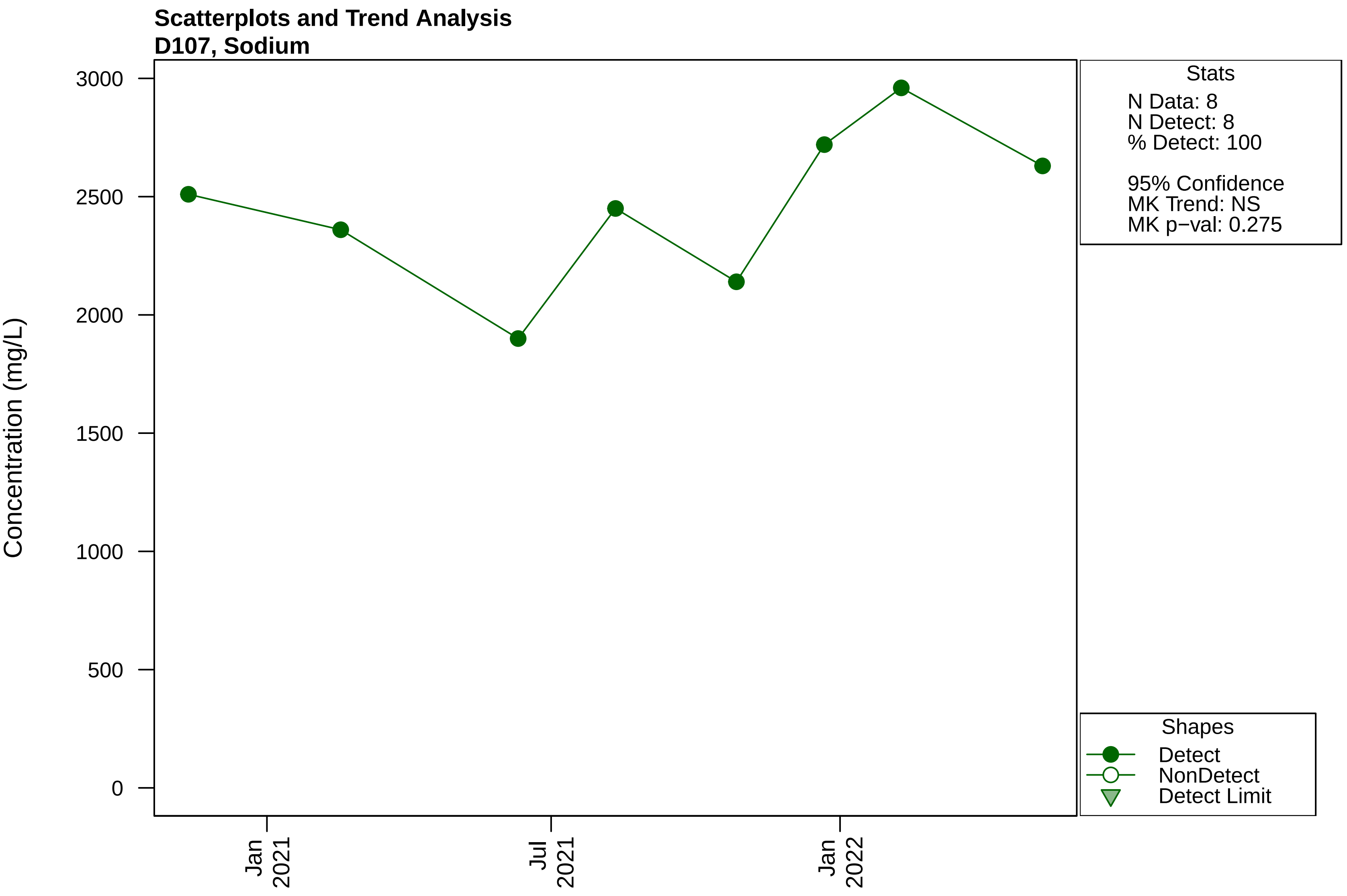
Scatterplots and Trend Analysis
D107, Selenium
Concentration (ug/L)
0.0
0.1
0.2
0.3
0.4
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 7
N Detect: 7
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.734
Shapes
Detect
NonDetect
Detect Limit

Scatterplots and Trend Analysis
D107, Selenium (Filtered)



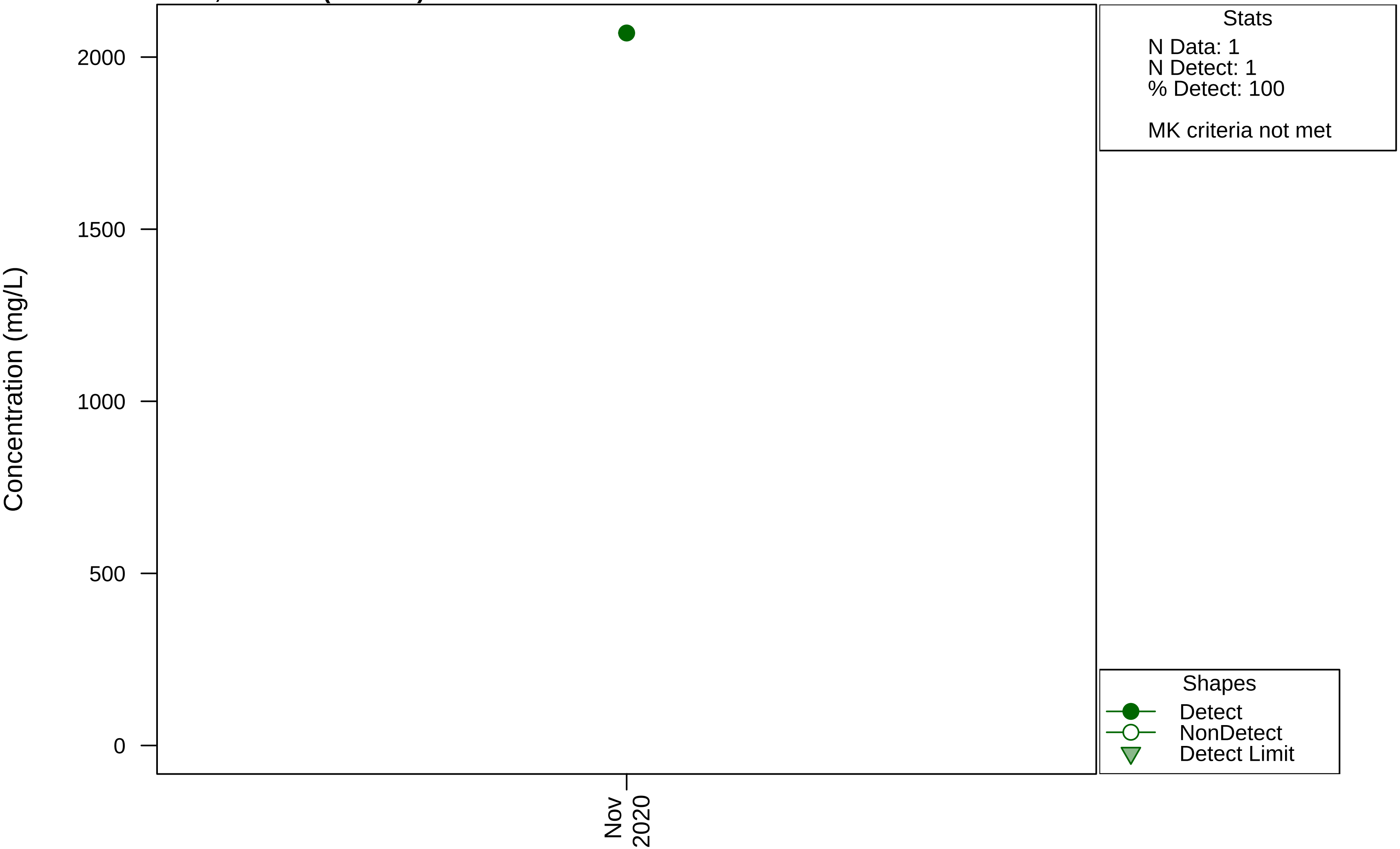
Scatterplots and Trend Analysis
D107, Silver



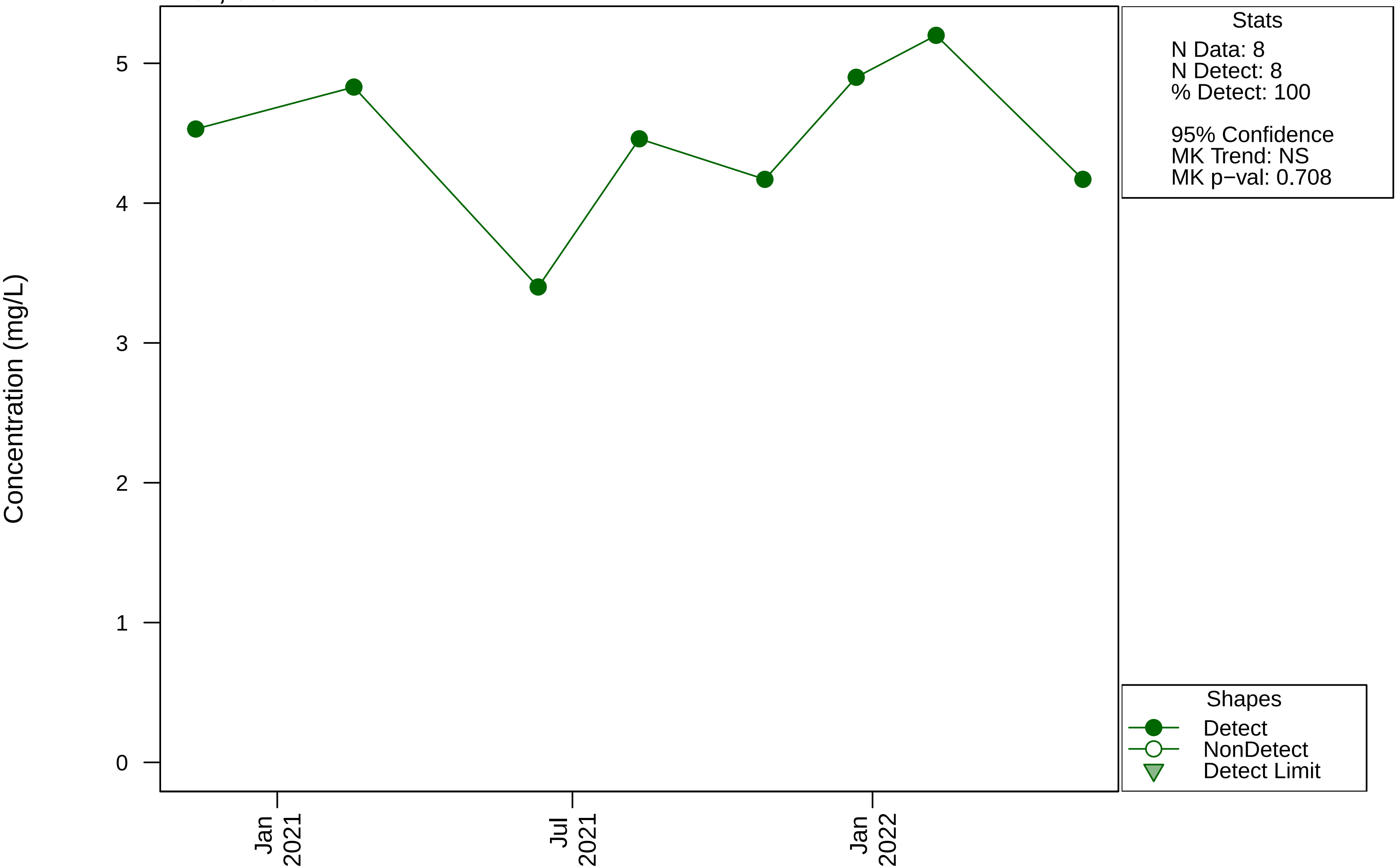


Scatterplots and Trend Analysis
D107, Sodium
Concentration (mg/L)
3000
2500
2000
1500
1000
500
0
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 8
N Detect: 8
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.275
Shapes
Detect
NonDetect
Detect Limit

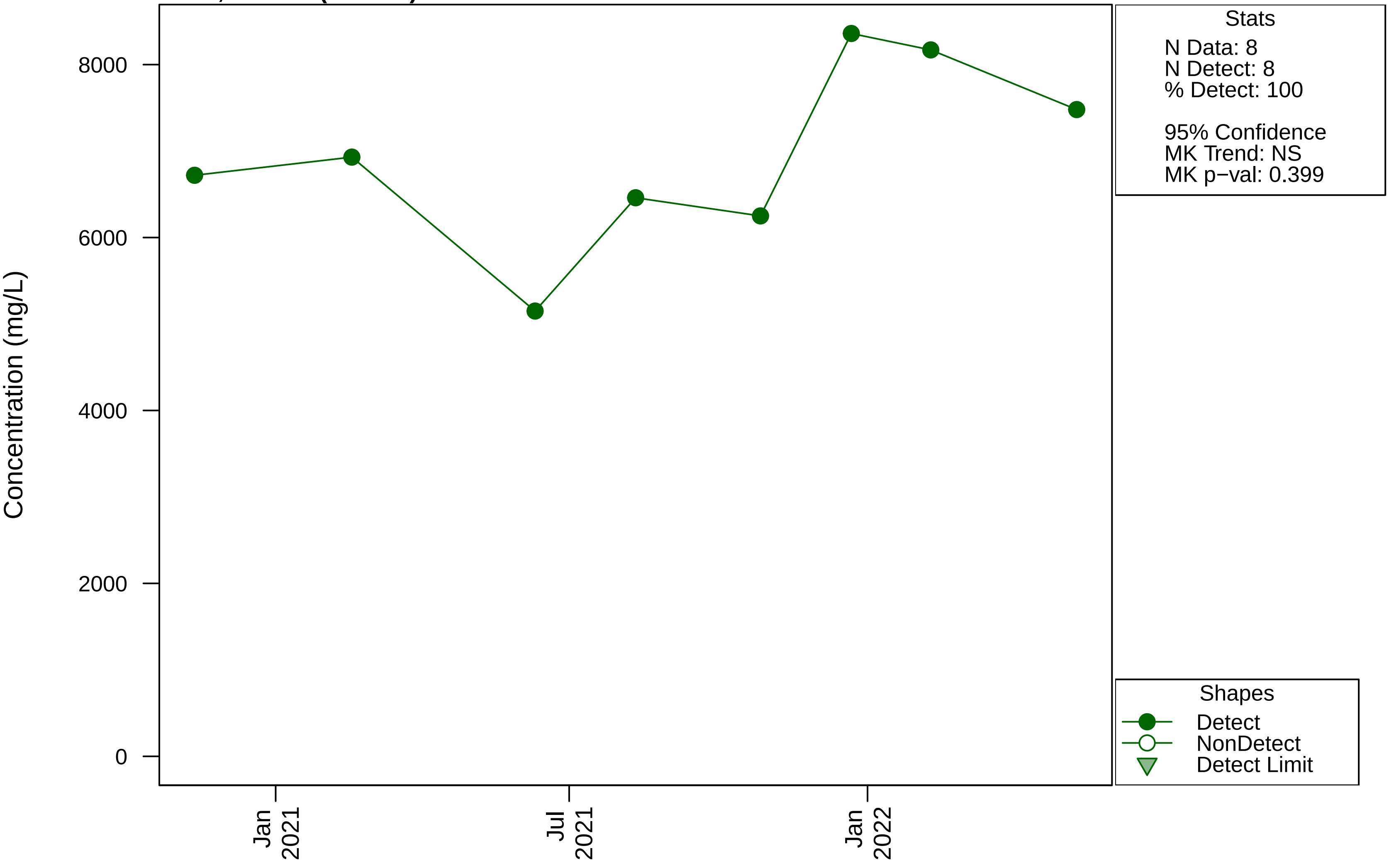
Scatterplots and Trend Analysis
D107, Sodium (Filtered)

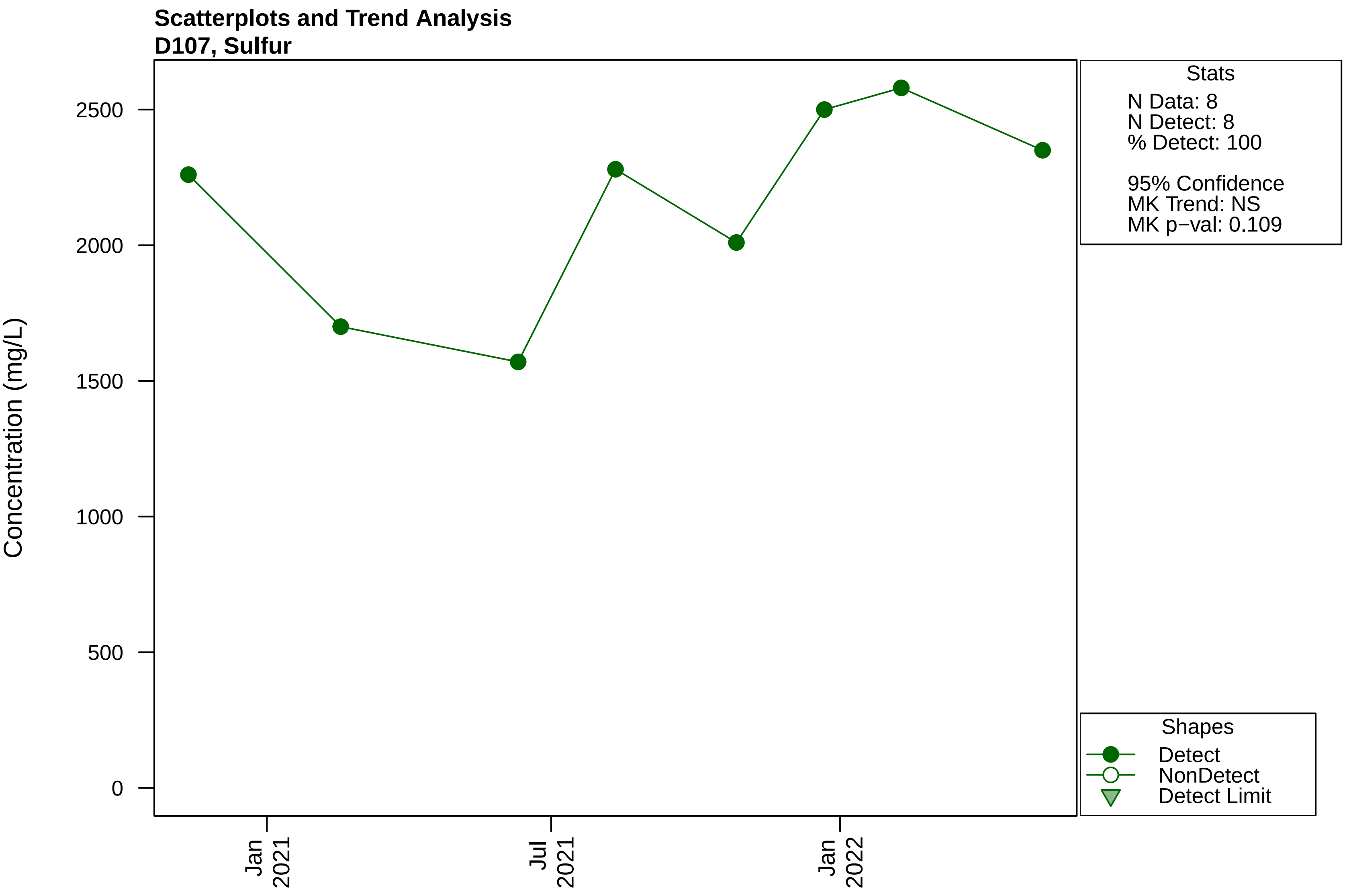


Scatterplots and Trend Analysis
D107, Strontium



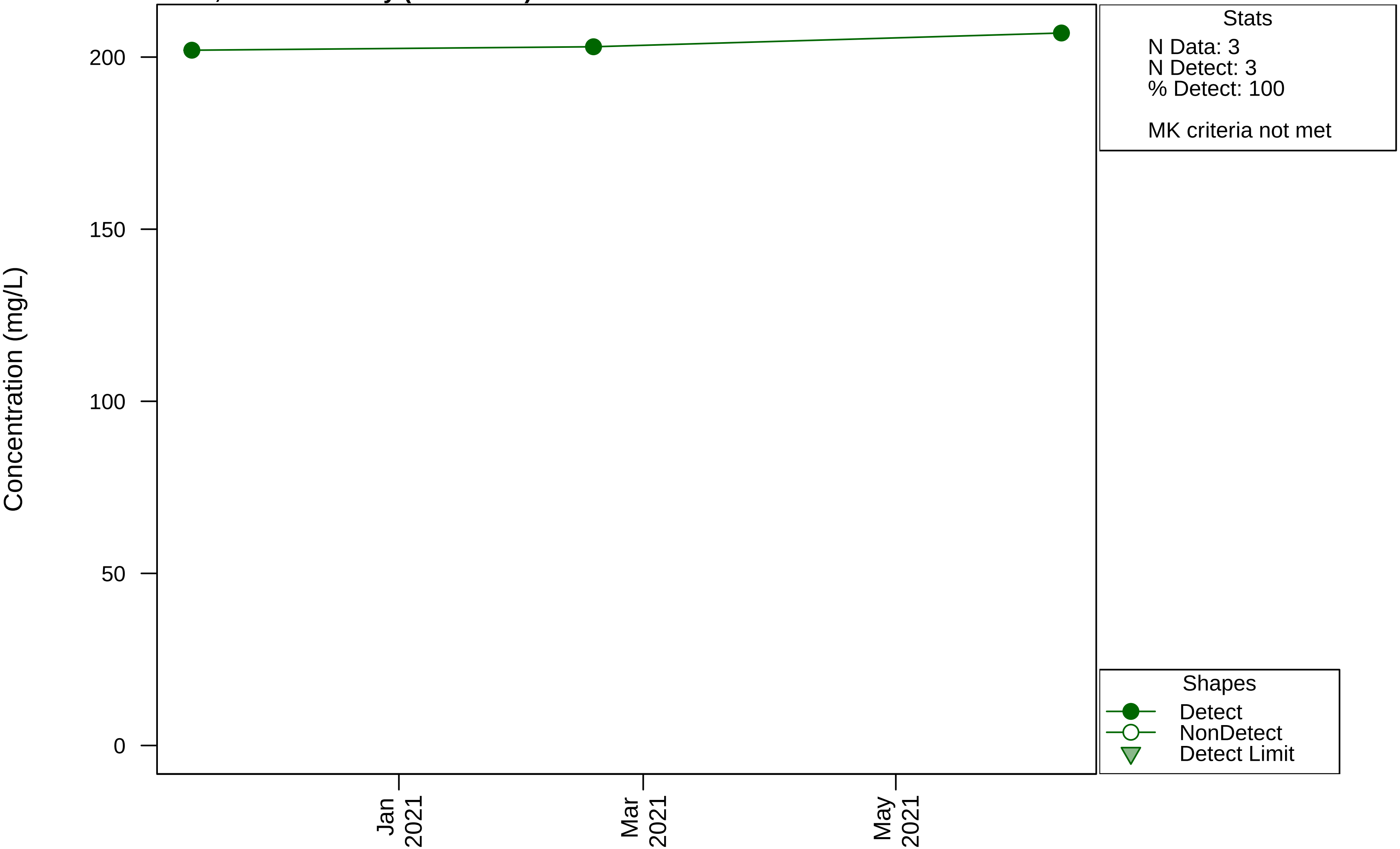
Scatterplots and Trend Analysis
D107, Sulfate (as SO4)

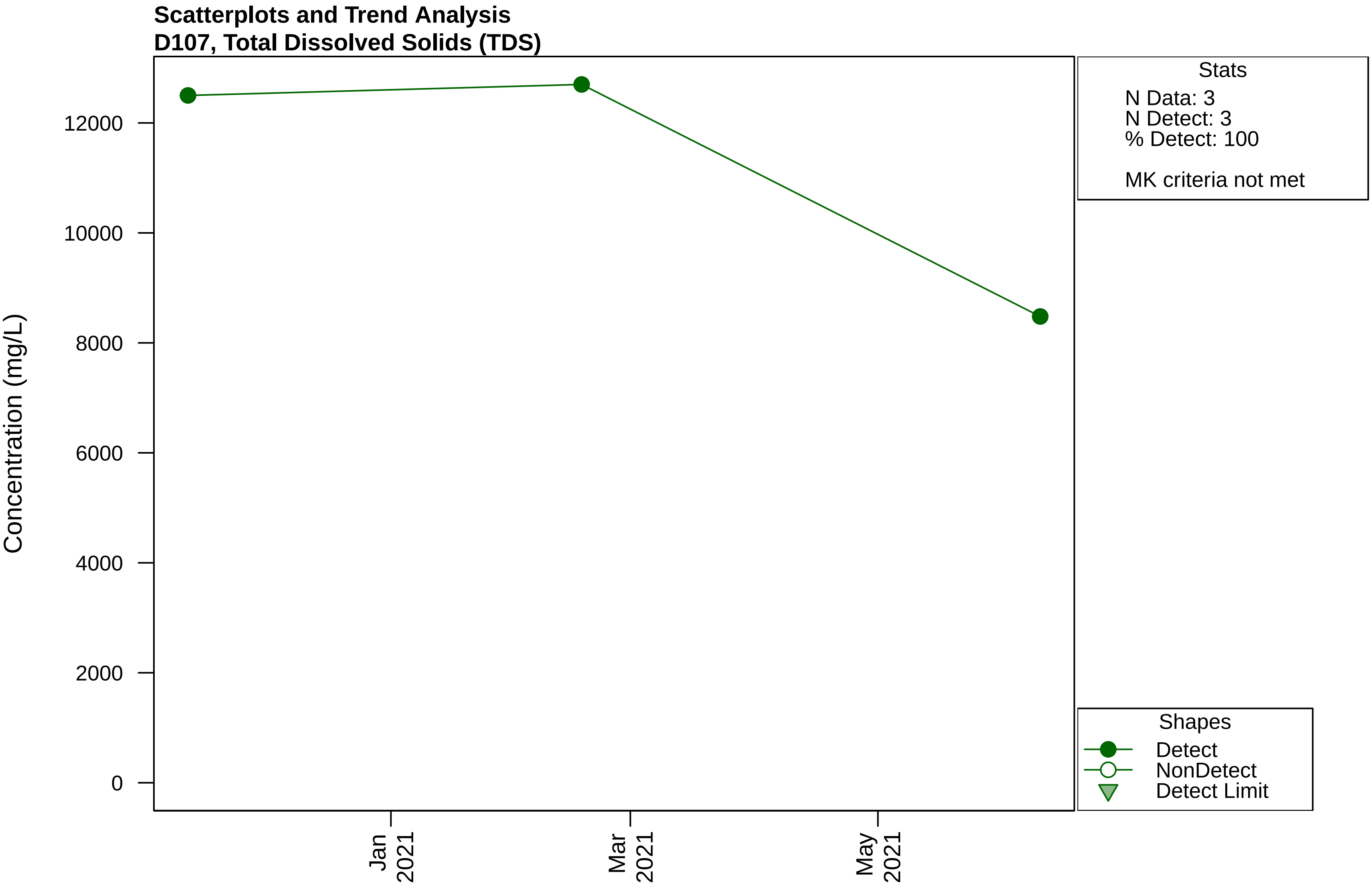


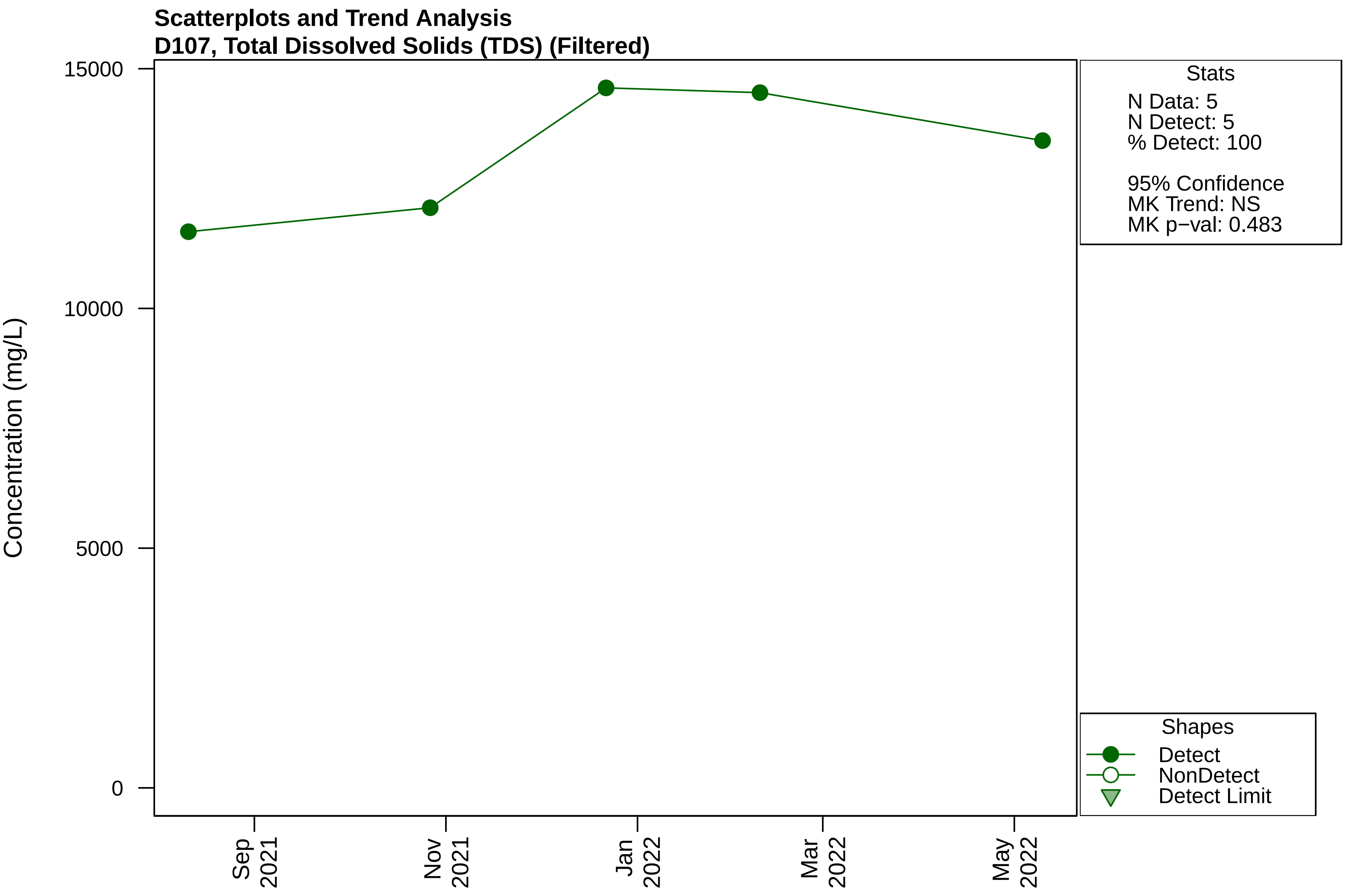


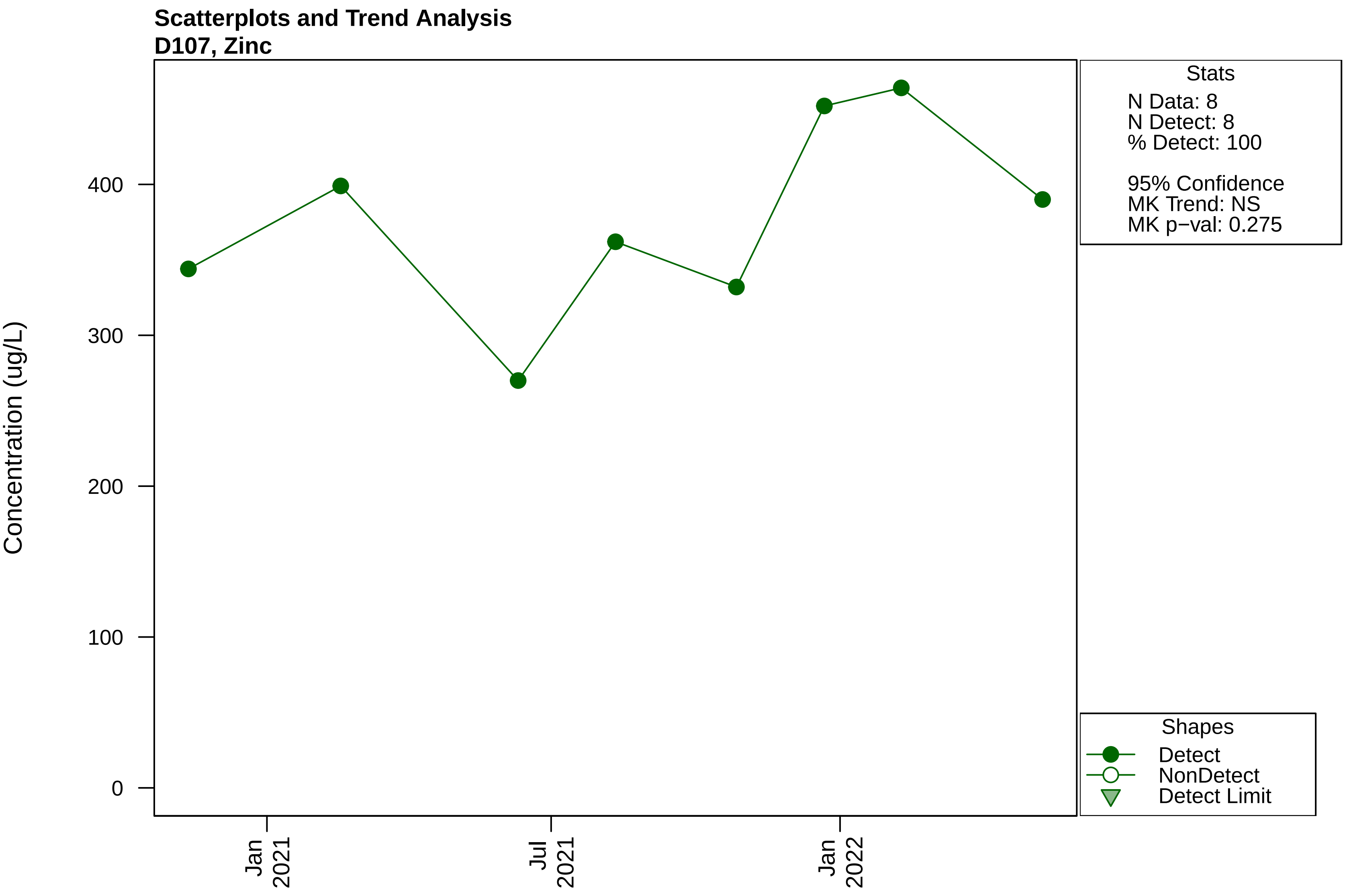
Scatterplots and Trend Analysis
D107, Sulfur
Concentration (mg/L)
0
500
1000
1500
2000
2500
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 8
N Detect: 8
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.109
Shapes
Detect
NonDetect
Detect Limit

Scatterplots and Trend Analysis
D107, Total Alkalinity (as CaCO3)



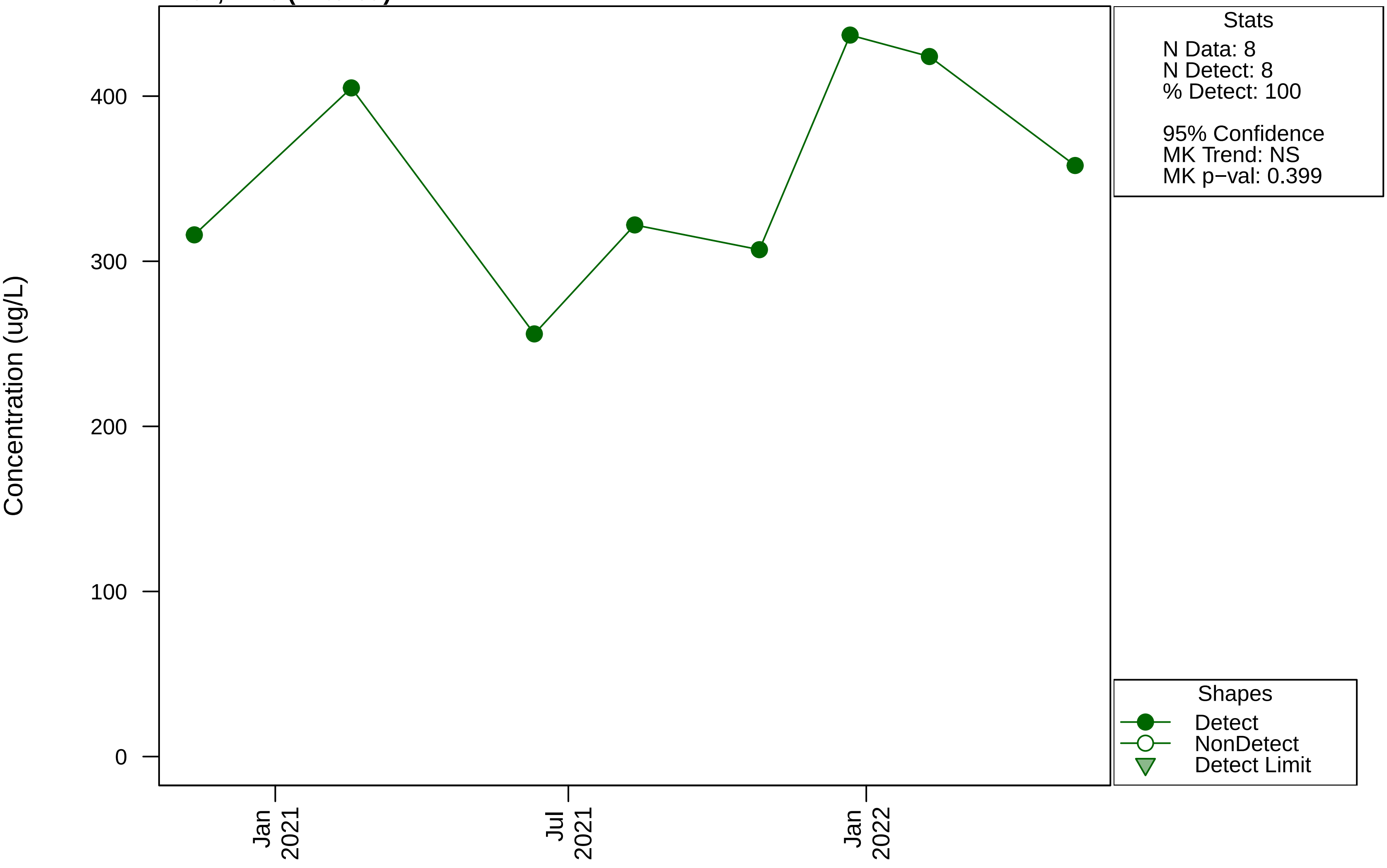

Scatterplots and Trend Analysis
D107, Total Dissolved Solids (TDS)
Concentration (mg/L)
12000
10000
8000
6000
4000
2000
0
Jan 2021
Mar 2021
May 2021
Stats
N Data: 3
N Detect: 3
% Detect: 100
MK criteria not met
Shapes
Detect
NonDetect
Detect Limit

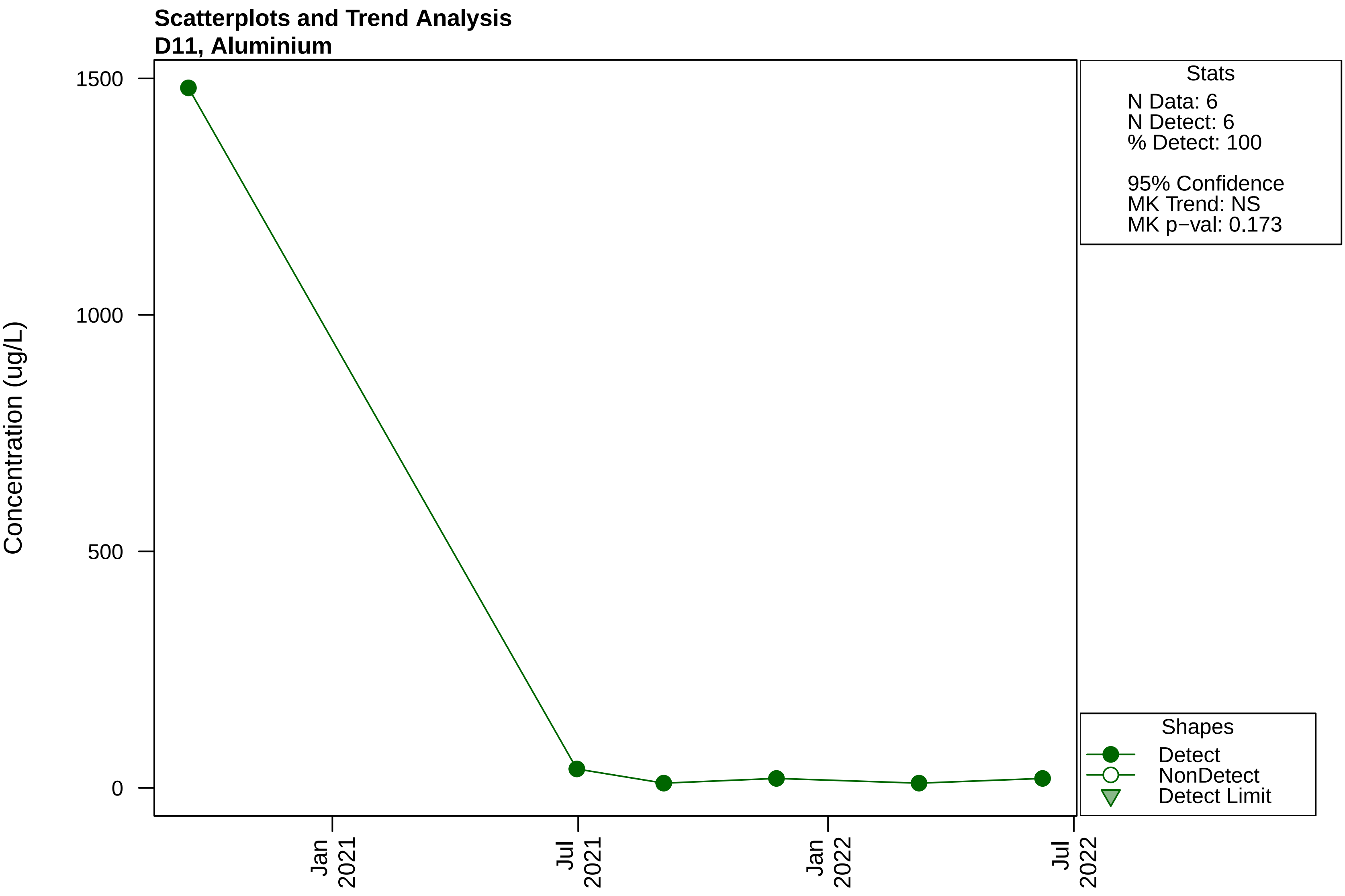

Scatterplots and Trend Analysis
D107, Total Dissolved Solids (TDS) (Filtered)
15000
10000
5000
0
Concentration (mg/L)
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 5
N Detect: 5
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.483
Shapes
Detect
NonDetect
Detect Limit



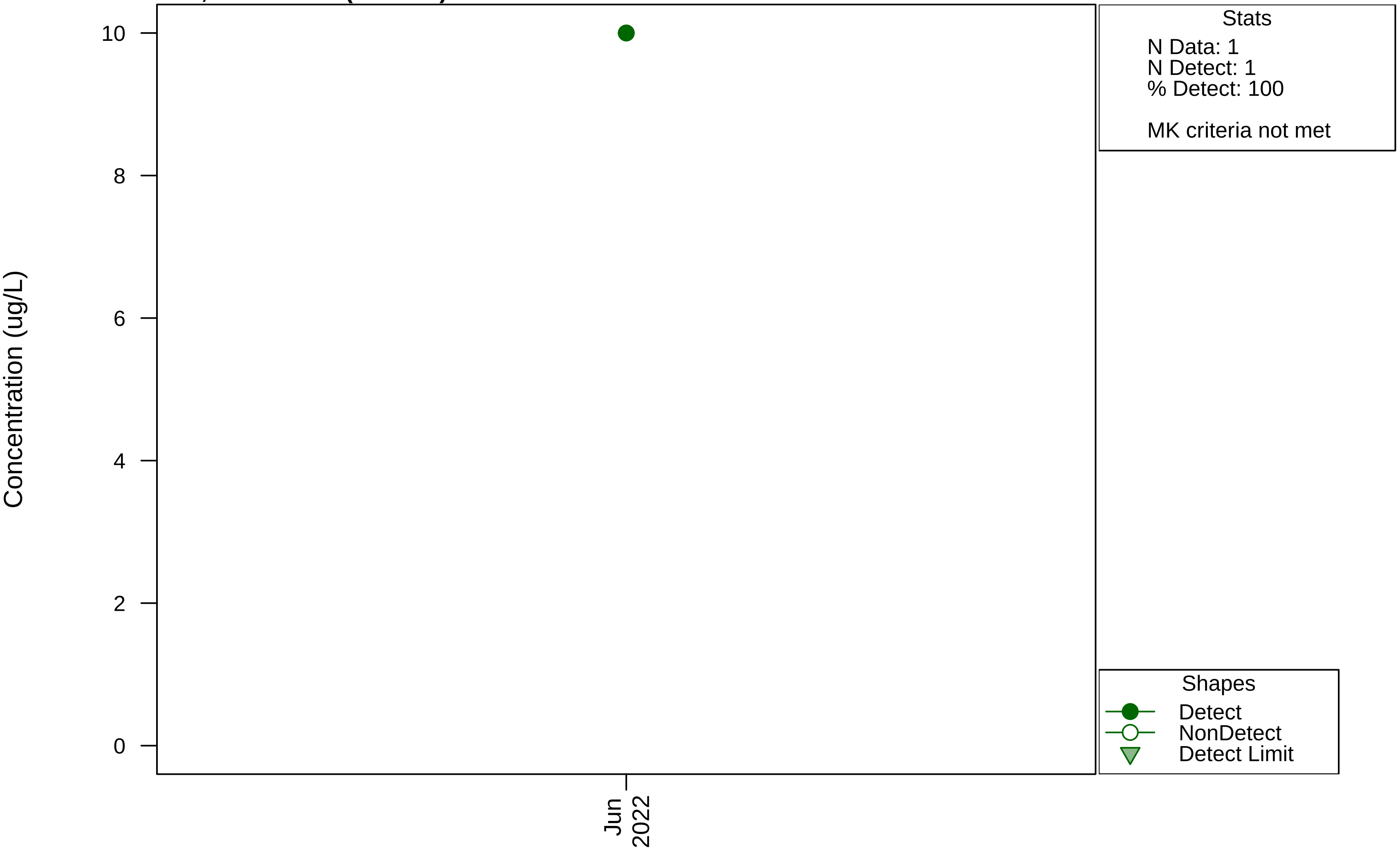
Scatterplots and Trend Analysis
D107, Zinc
Concentration (ug/L)
0
100
200
300
400
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 8
N Detect: 8
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.275
Shapes
Detect
NonDetect
Detect Limit

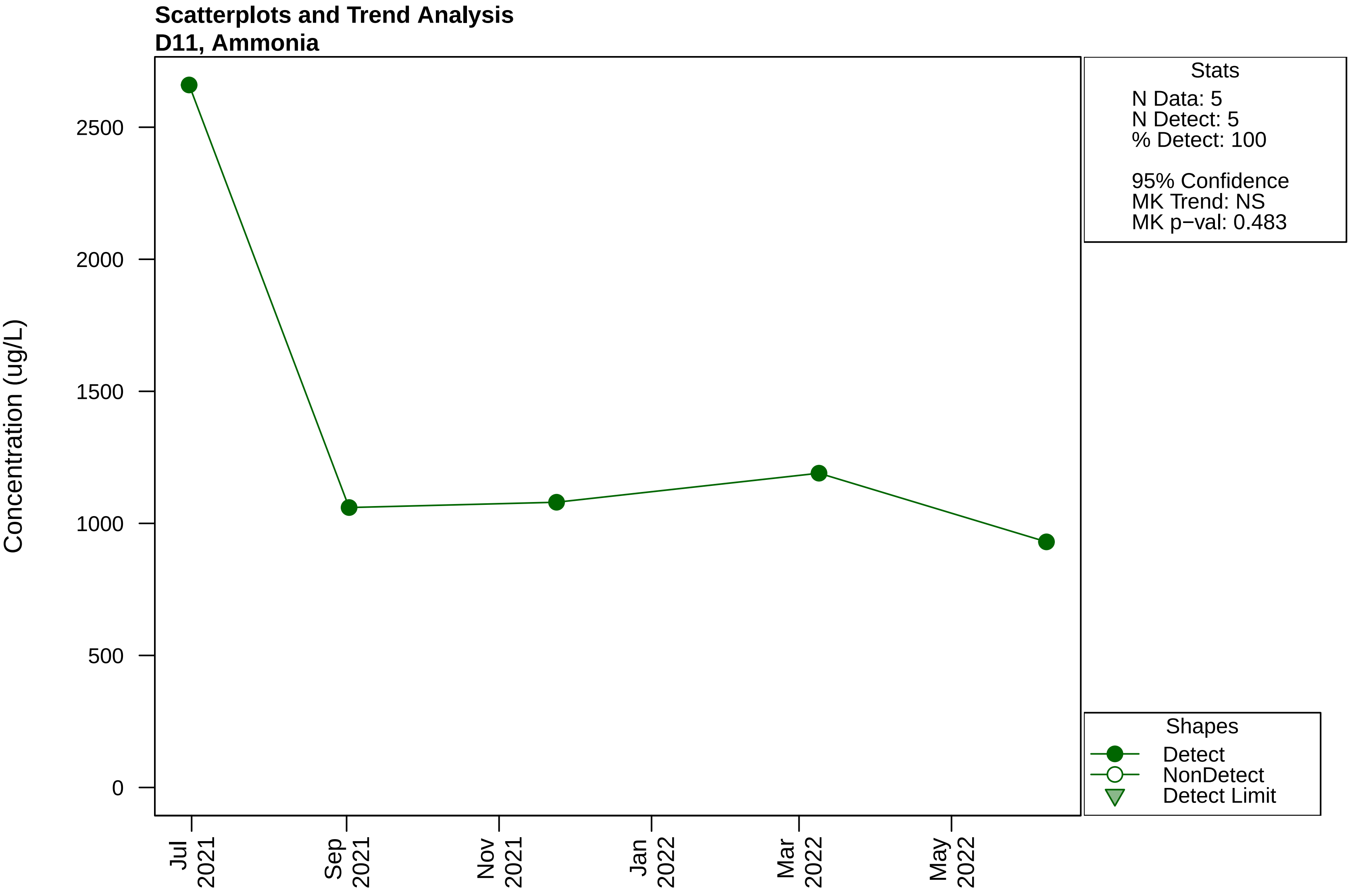
Scatterplots and Trend Analysis
D107, Zinc (Filtered)



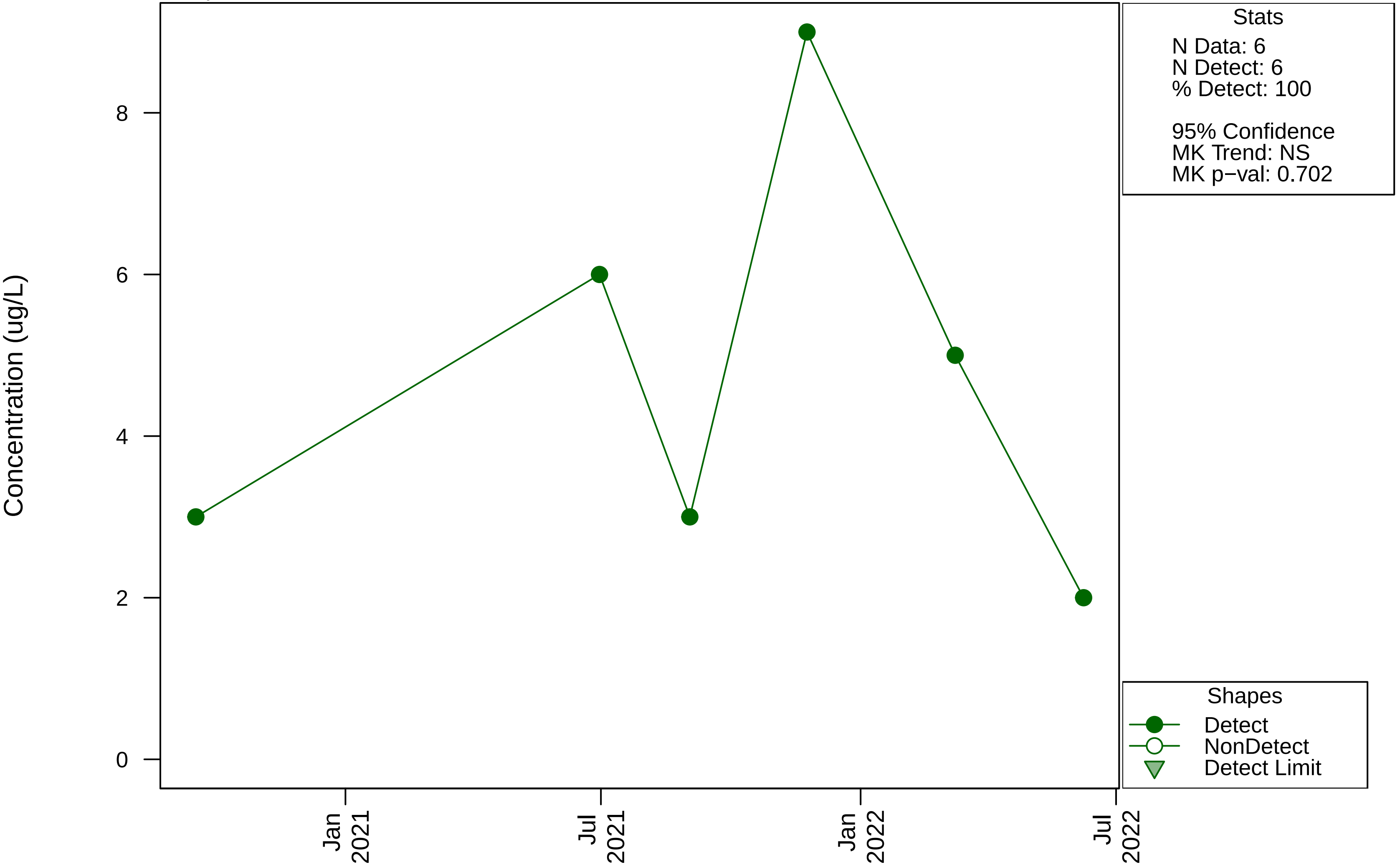

Scatterplots and Trend Analysis
D11, Aluminium
Concentration (ug/L)
1500
1000
500
0
Jan 2021
Jul 2021
Jan 2022
Jul 2022
Stats
N Data: 6
N Detect: 6
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.173
Shapes
Detect
NonDetect
Detect Limit

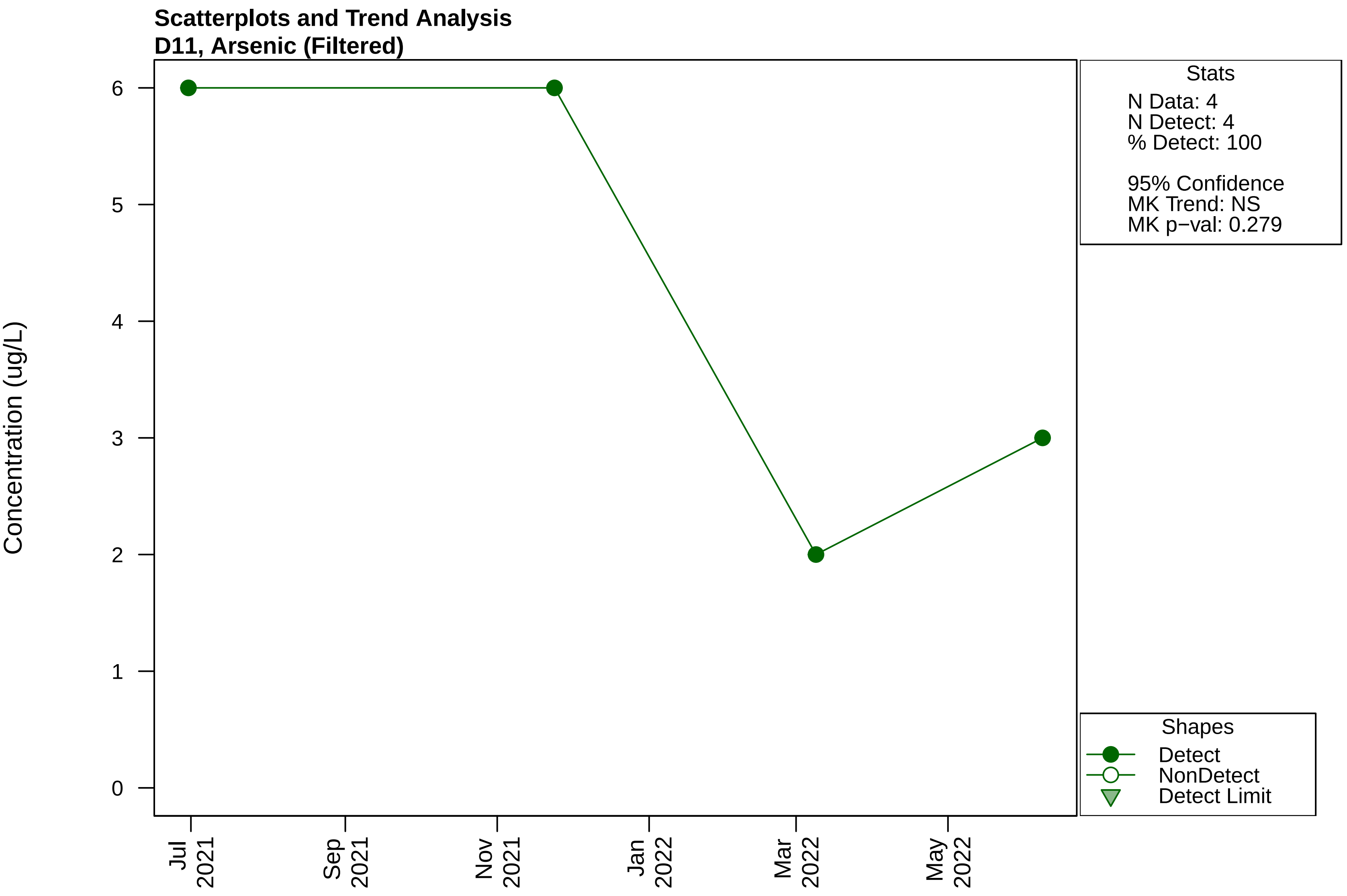
Scatterplots and Trend Analysis
D11, Aluminium (Filtered)




Scatterplots and Trend Analysis
D11, Ammonia
Concentration (ug/L)
0
500
1000
1500
2000
2500
Jul 2021
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 5
N Detect: 5
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.483
Shapes
Detect
NonDetect
Detect Limit

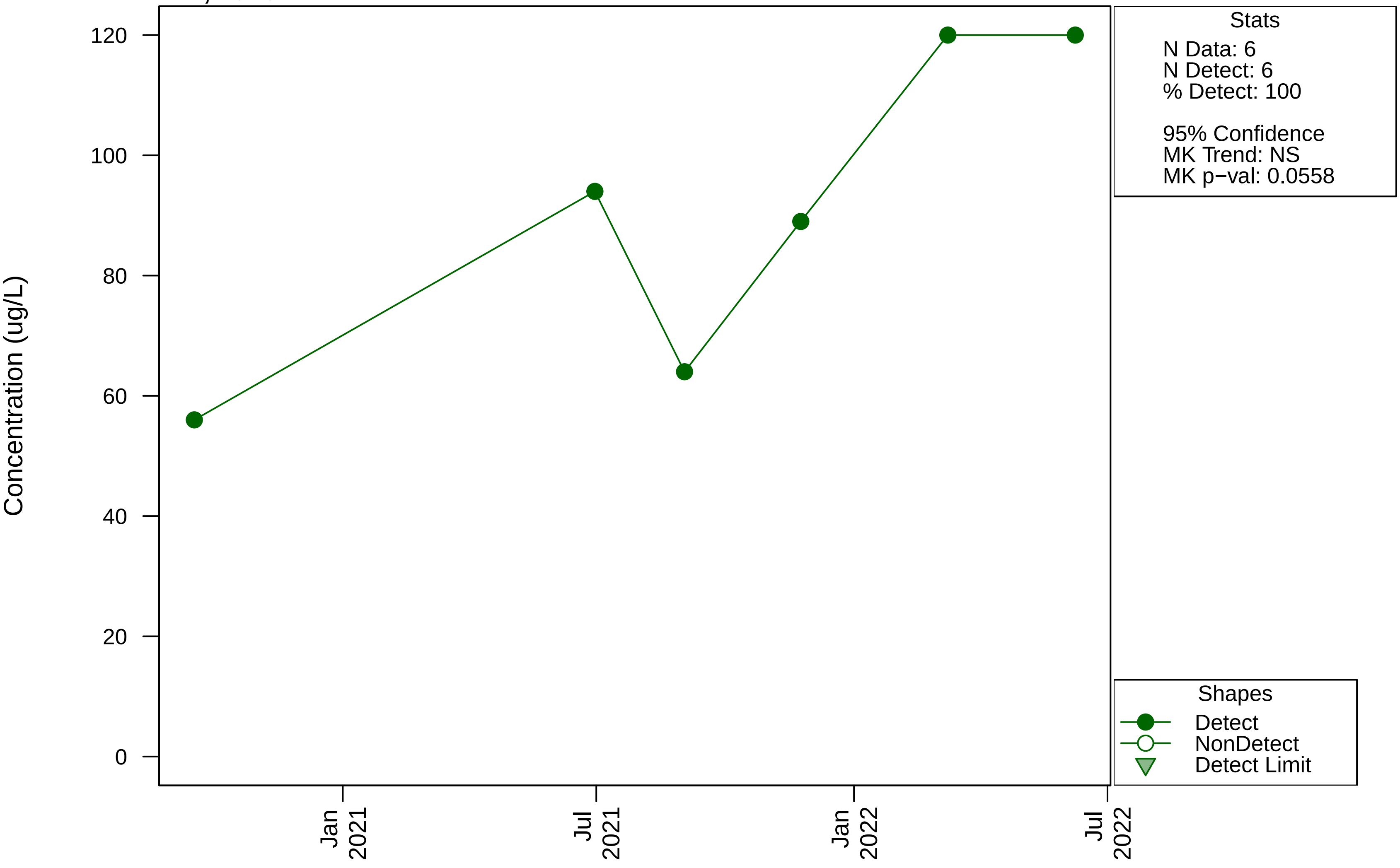
Scatterplots and Trend Analysis
D11, Arsenic

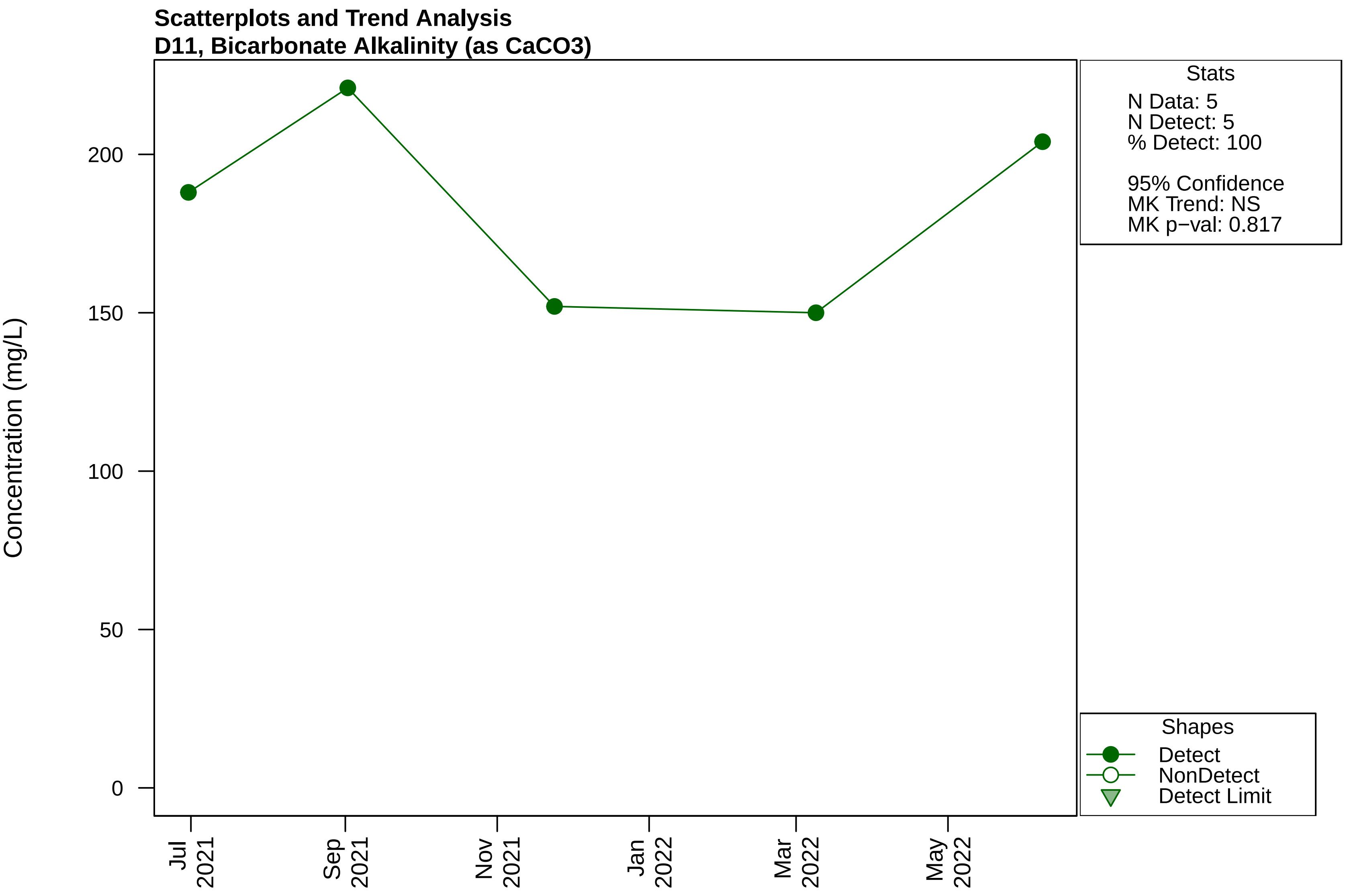




Scatterplots and Trend Analysis
D11, Arsenic (Filtered)
Concentration (ug/L)
0
1
2
3
4
5
6
Jul 2021
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 4
N Detect: 4
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.279
Shapes
Detect
NonDetect
Detect Limit

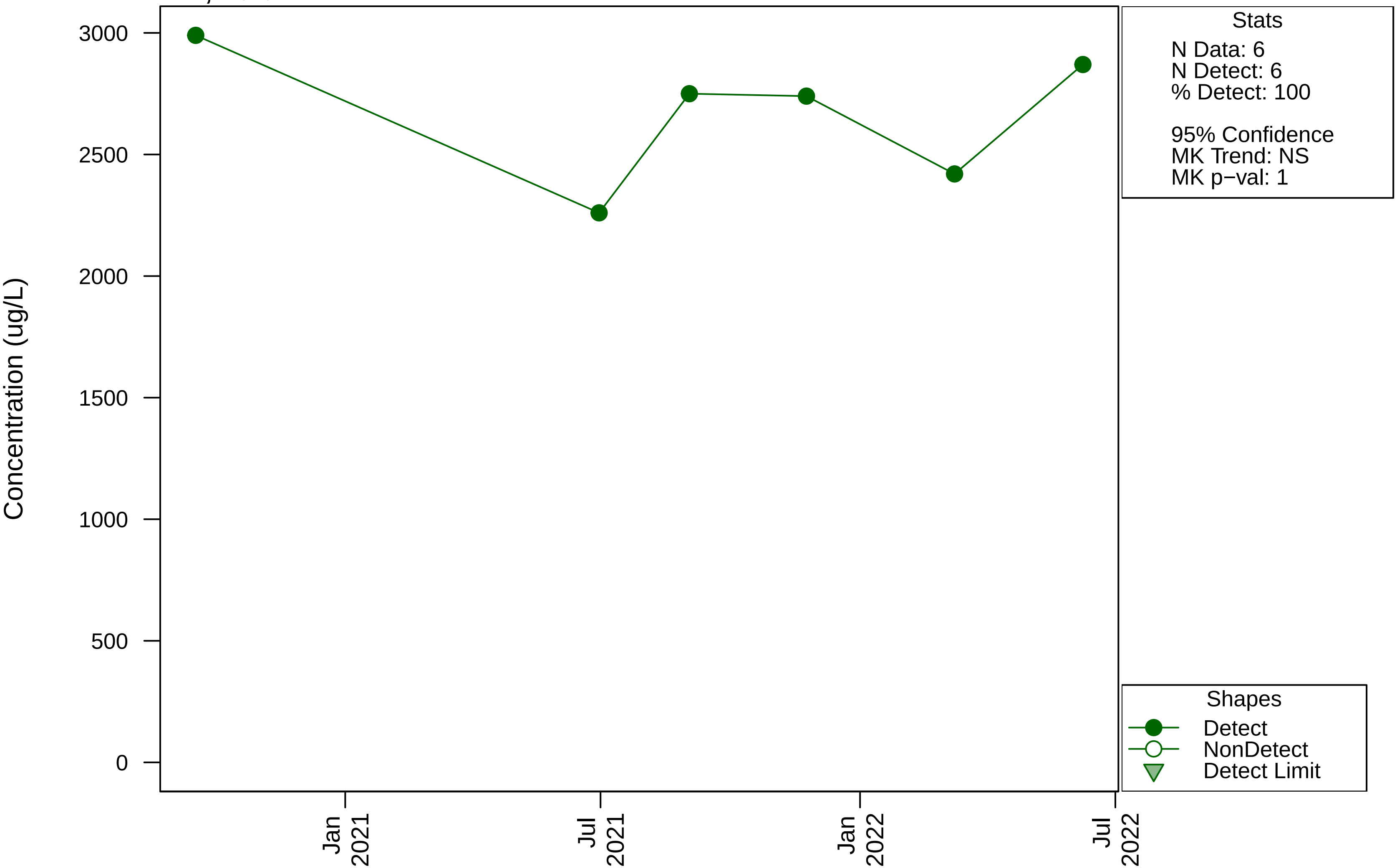
Scatterplots and Trend Analysis
D11, Barium

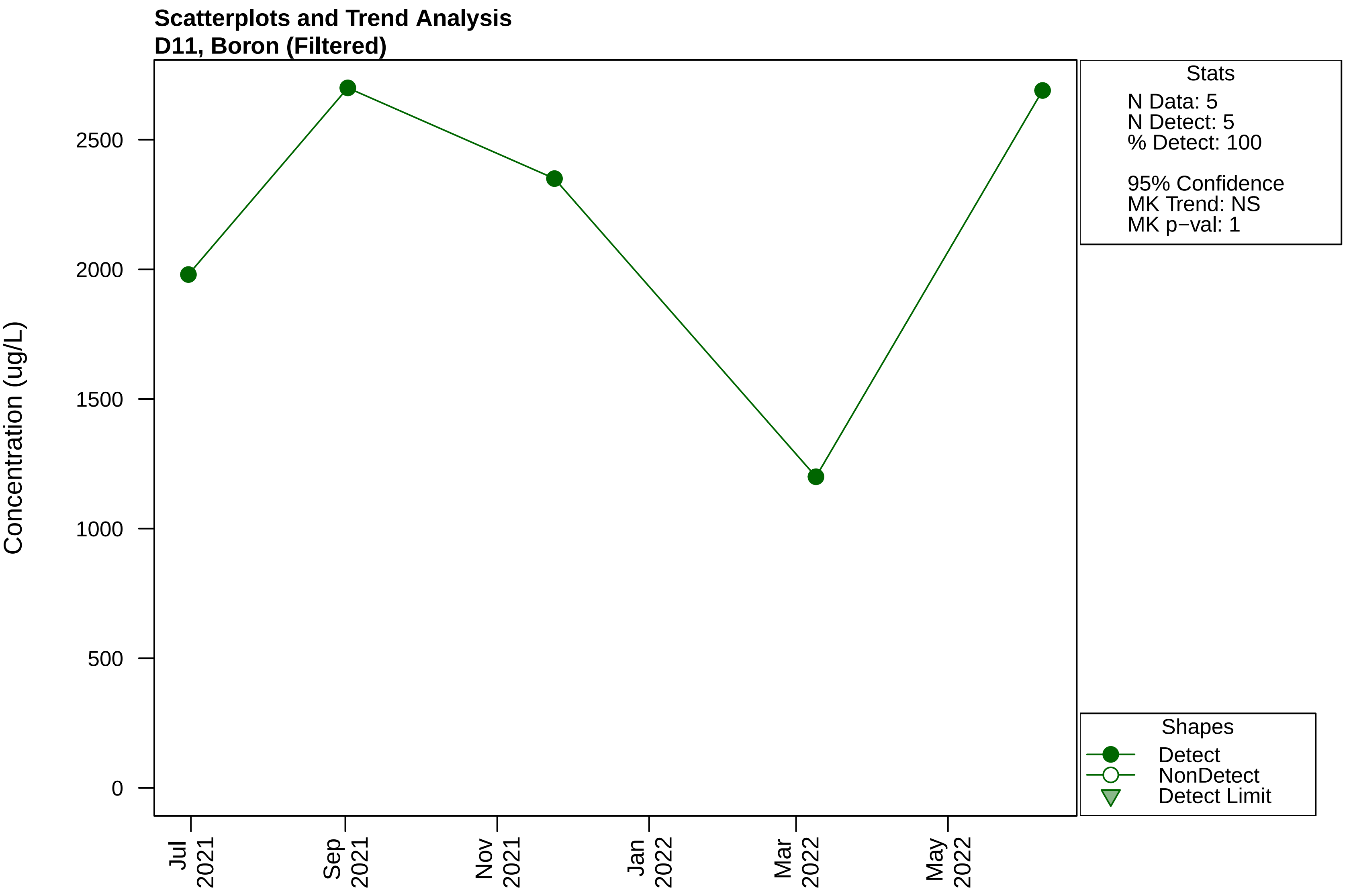


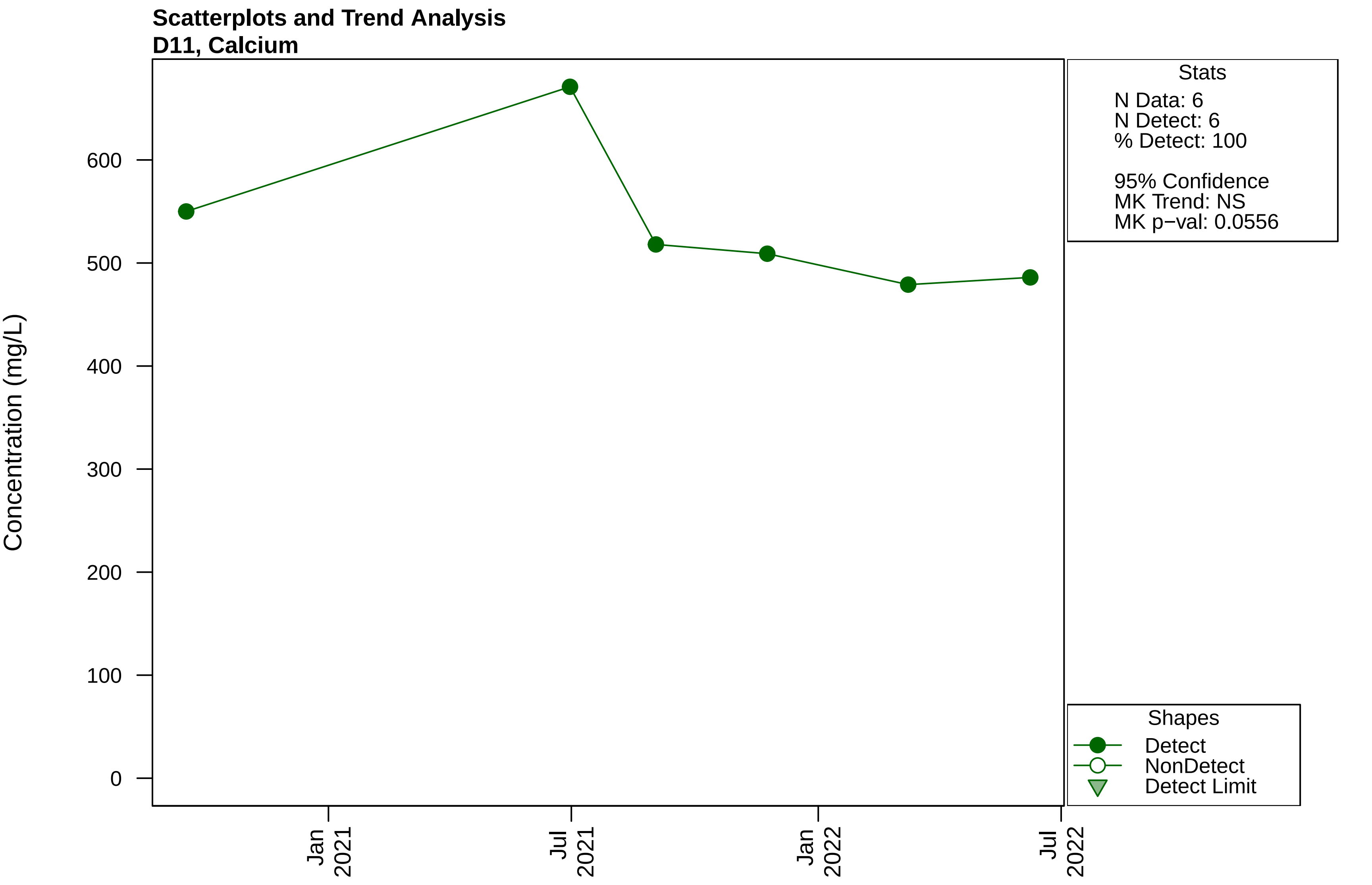


Scatterplots and Trend Analysis
D11, Bicarbonate Alkalinity (as CaCO3)
Concentration (mg/L)
0
50
100
150
200
Jul 2021
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 5
N Detect: 5
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.817
Shapes
Detect
NonDetect
Detect Limit

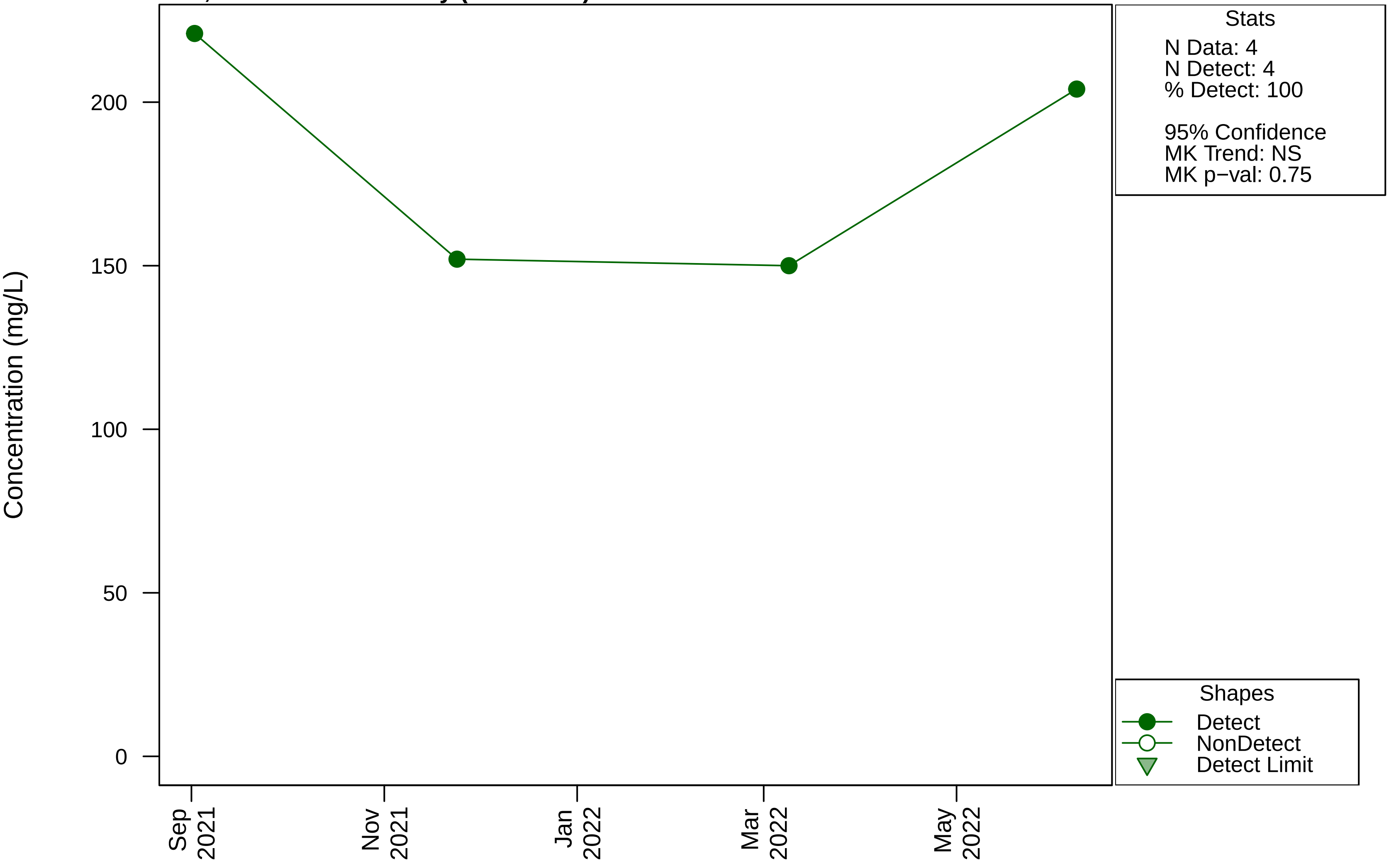
Scatterplots and Trend Analysis
D11, Boron



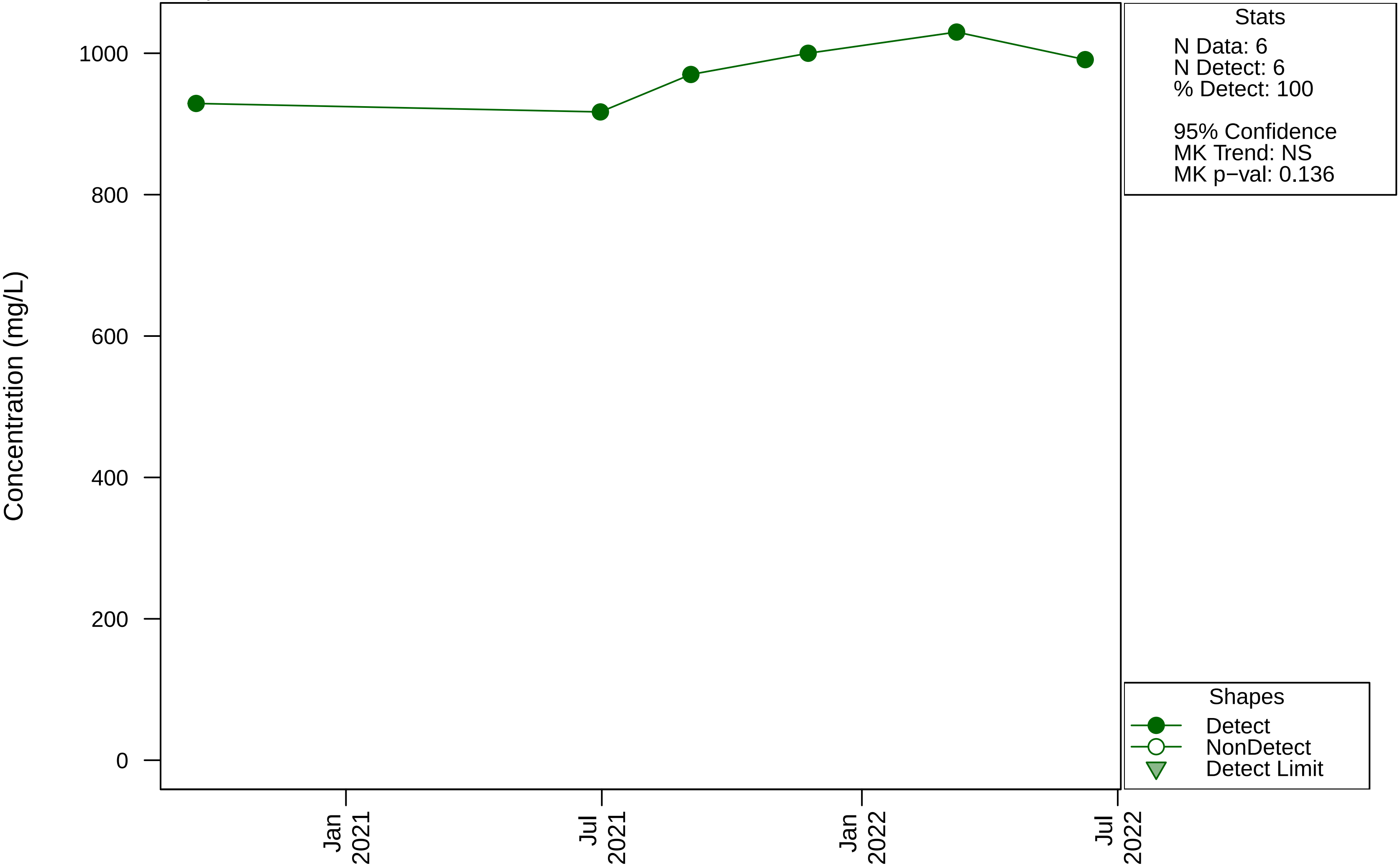

Scatterplots and Trend Analysis
D11, Boron (Filtered)
Concentration (ug/L)
0
500
1000
1500
2000
2500
Jul 2021
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 5
N Detect: 5
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 1
Shapes
Detect
NonDetect
Detect Limit


Scatterplots and Trend Analysis
D11, Calcium
Concentration (mg/L)
0
100
200
300
400
500
600
Jan 2021
Jul 2021
Jan 2022
Jul 2022
Stats
N Data: 6
N Detect: 6
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.0556
Shapes
Detect
NonDetect
Detect Limit

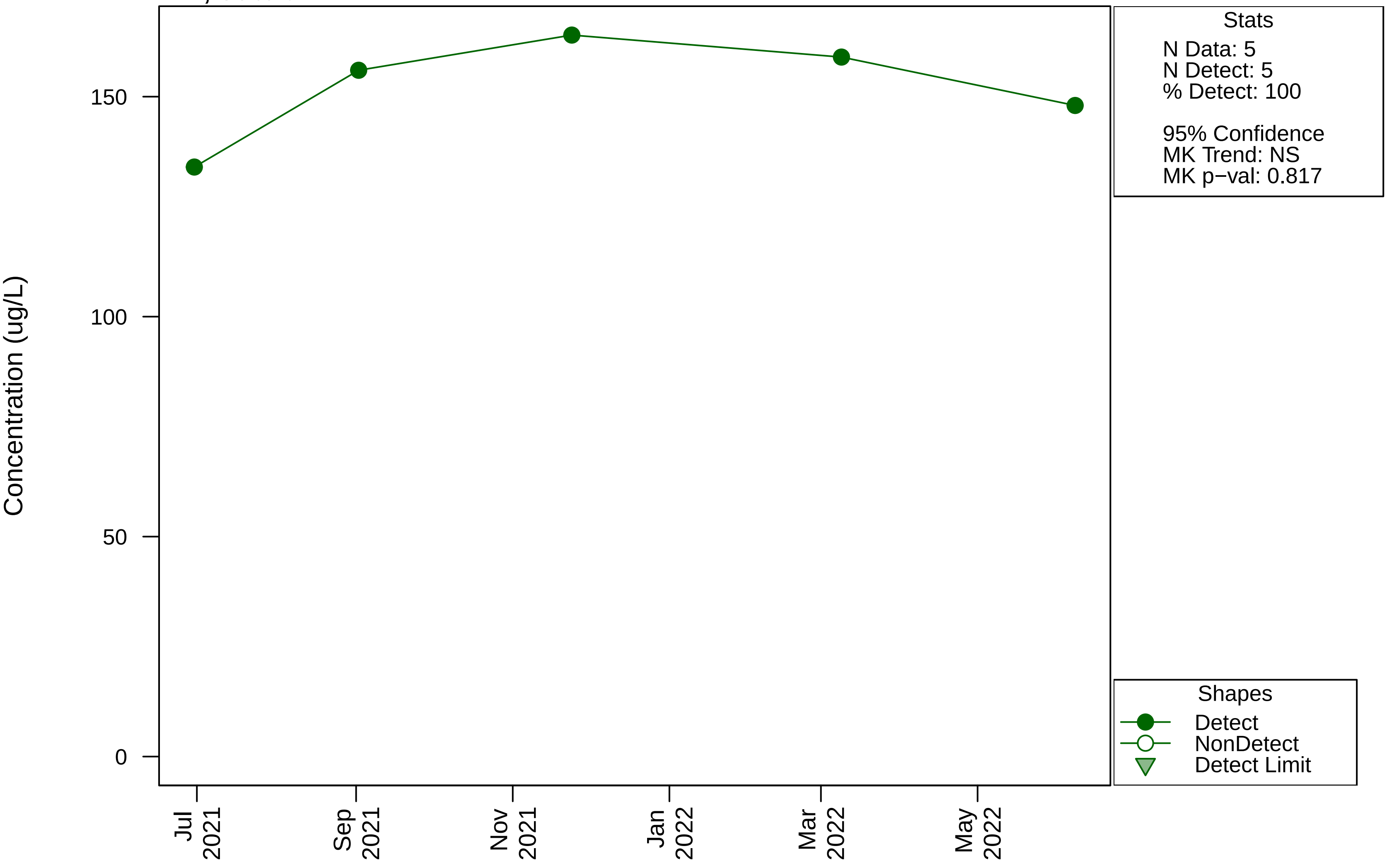
Scatterplots and Trend Analysis
D11, Carbonate Alkalinity (as CaCO3)



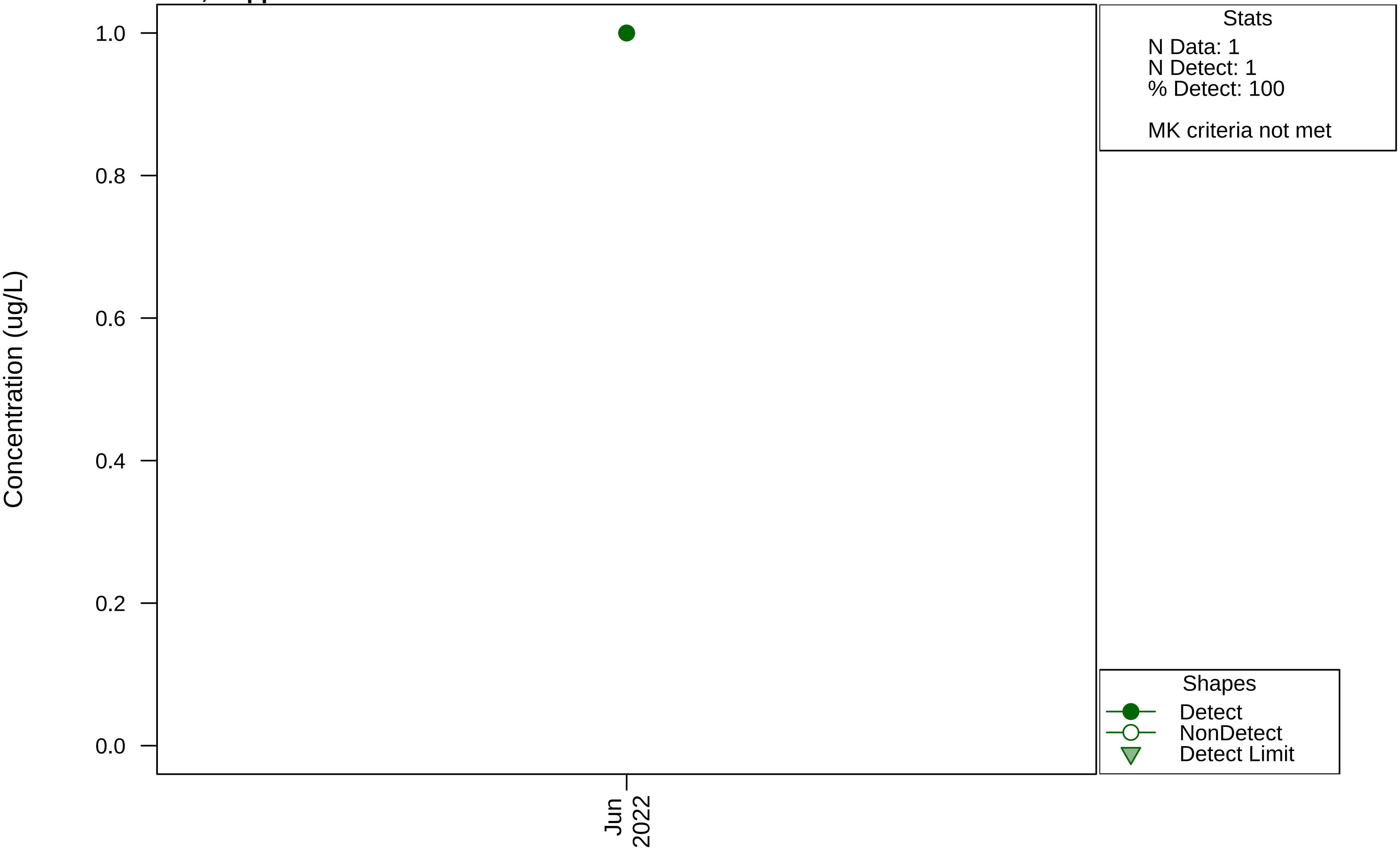
Scatterplots and Trend Analysis
D11, Chloride



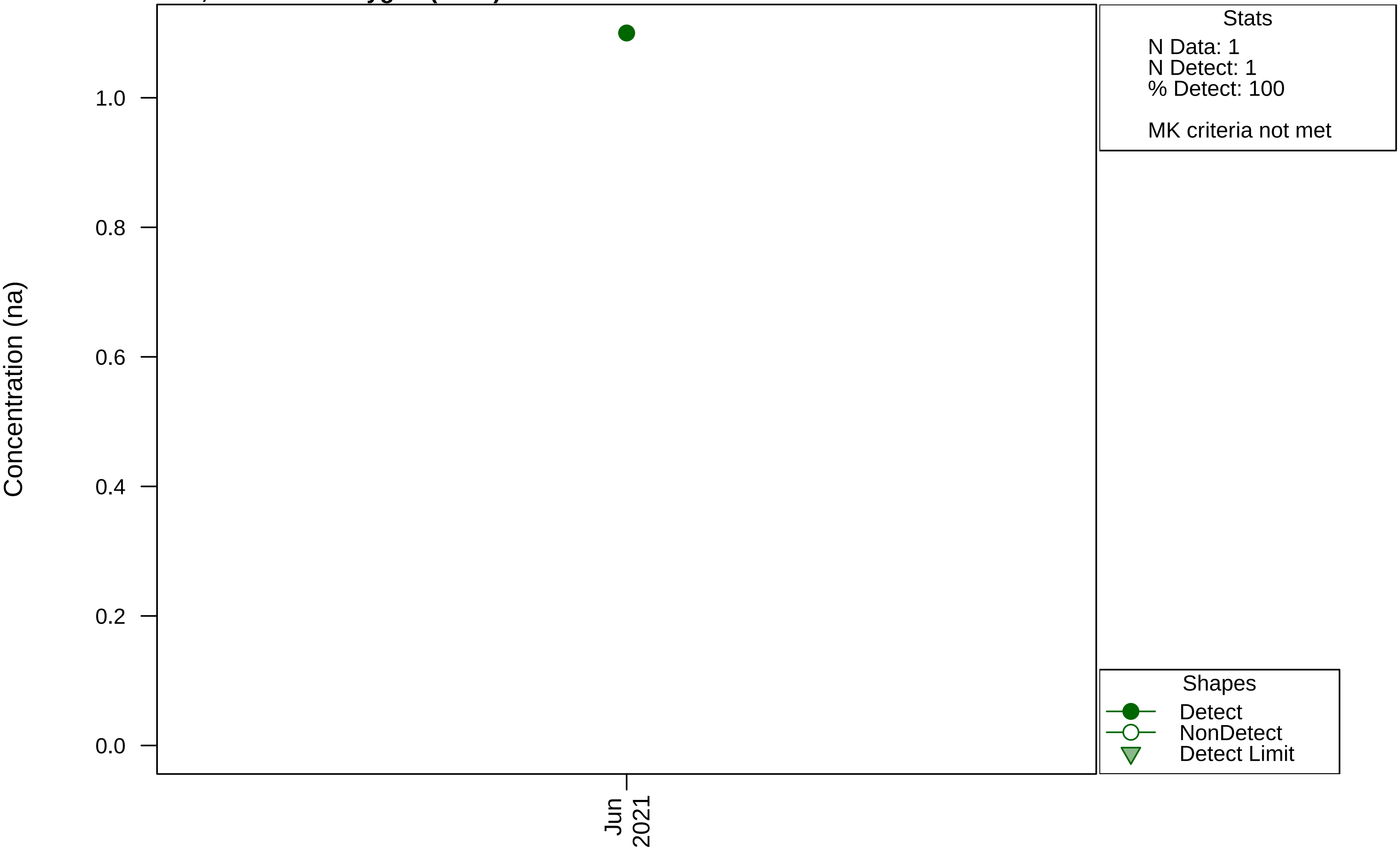
Scatterplots and Trend Analysis
D11, Cobalt



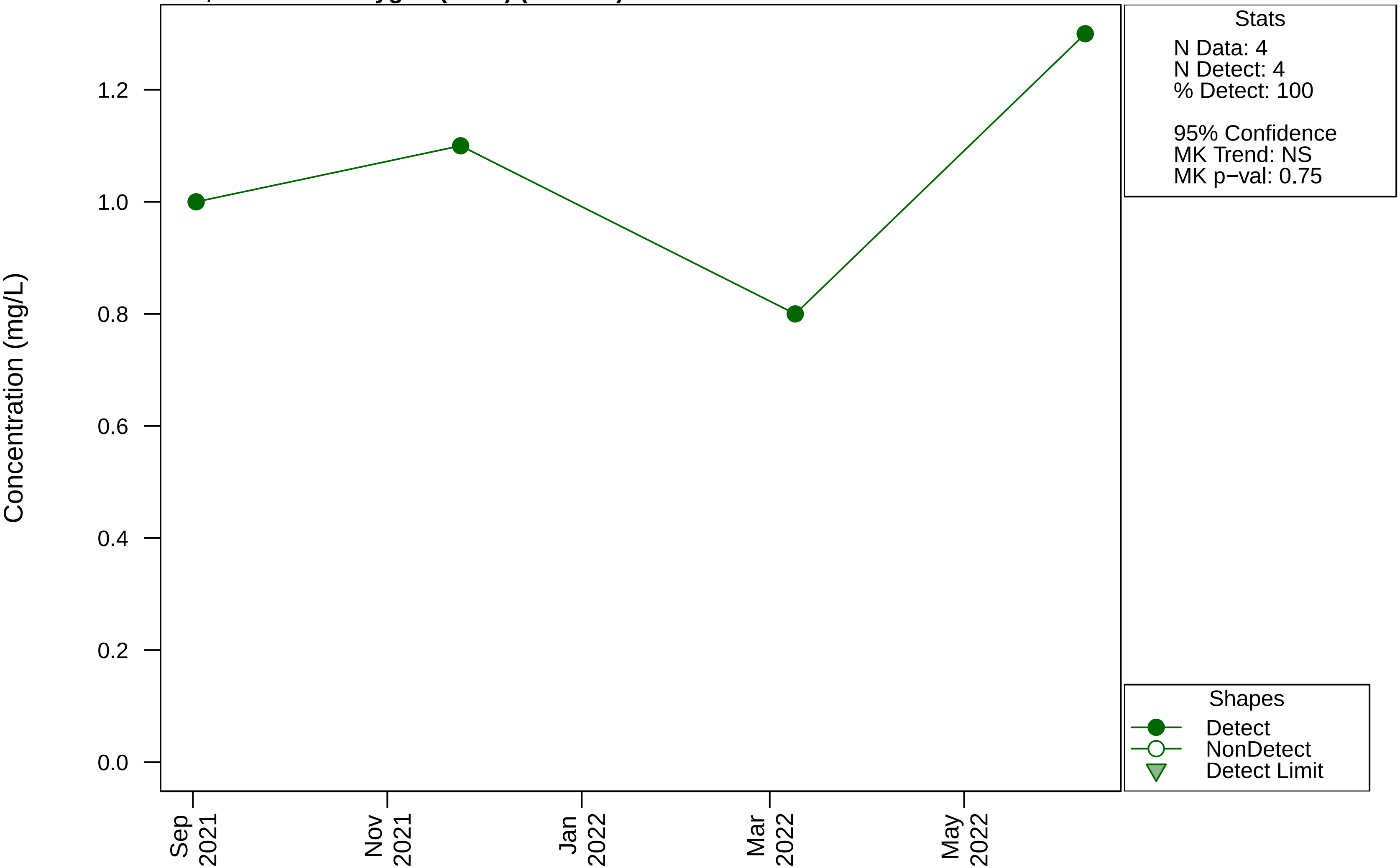
Scatterplots and Trend Analysis
D11, Copper

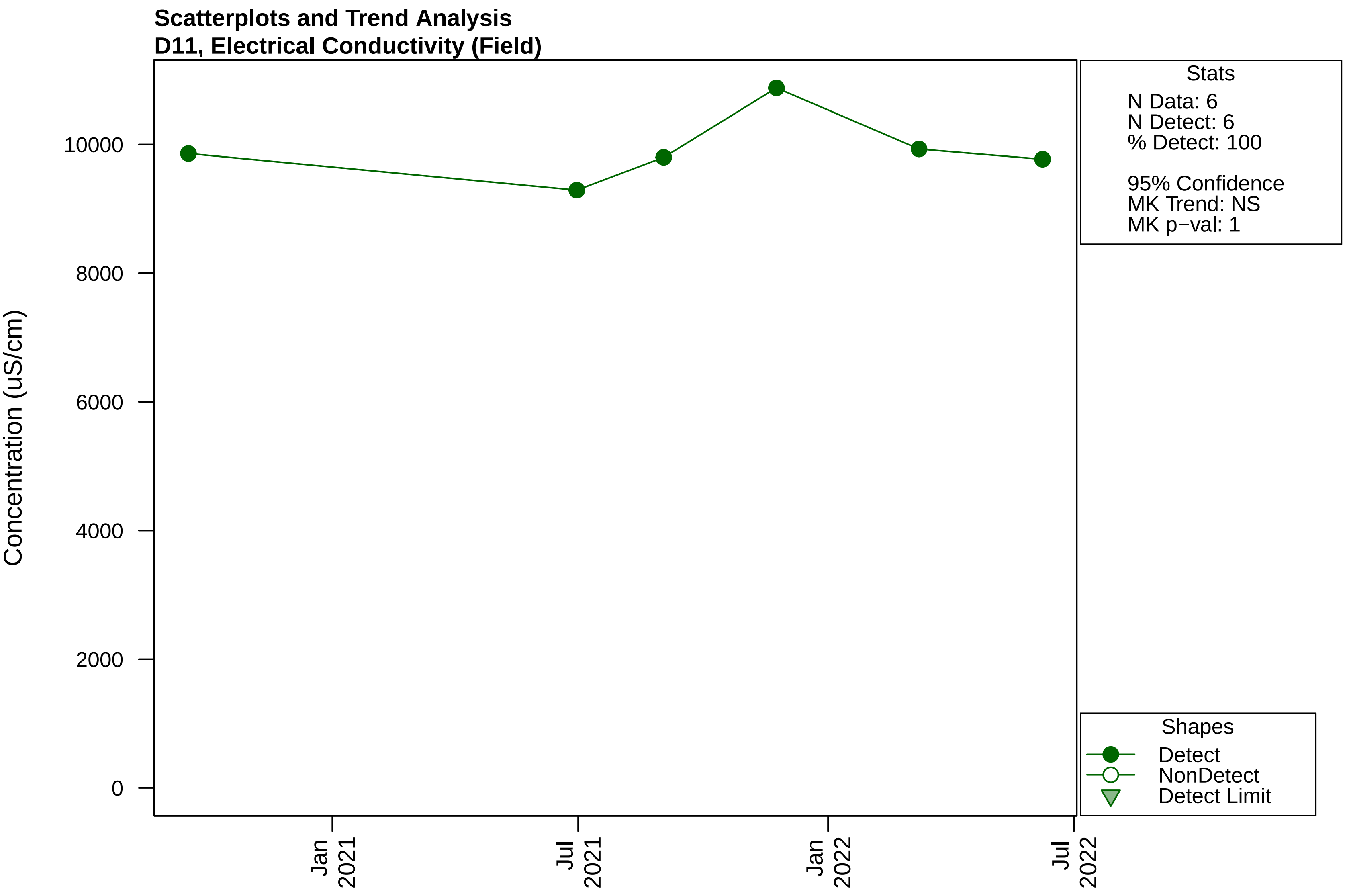


Scatterplots and Trend Analysis
D11, Dissolved Oxygen (Field)



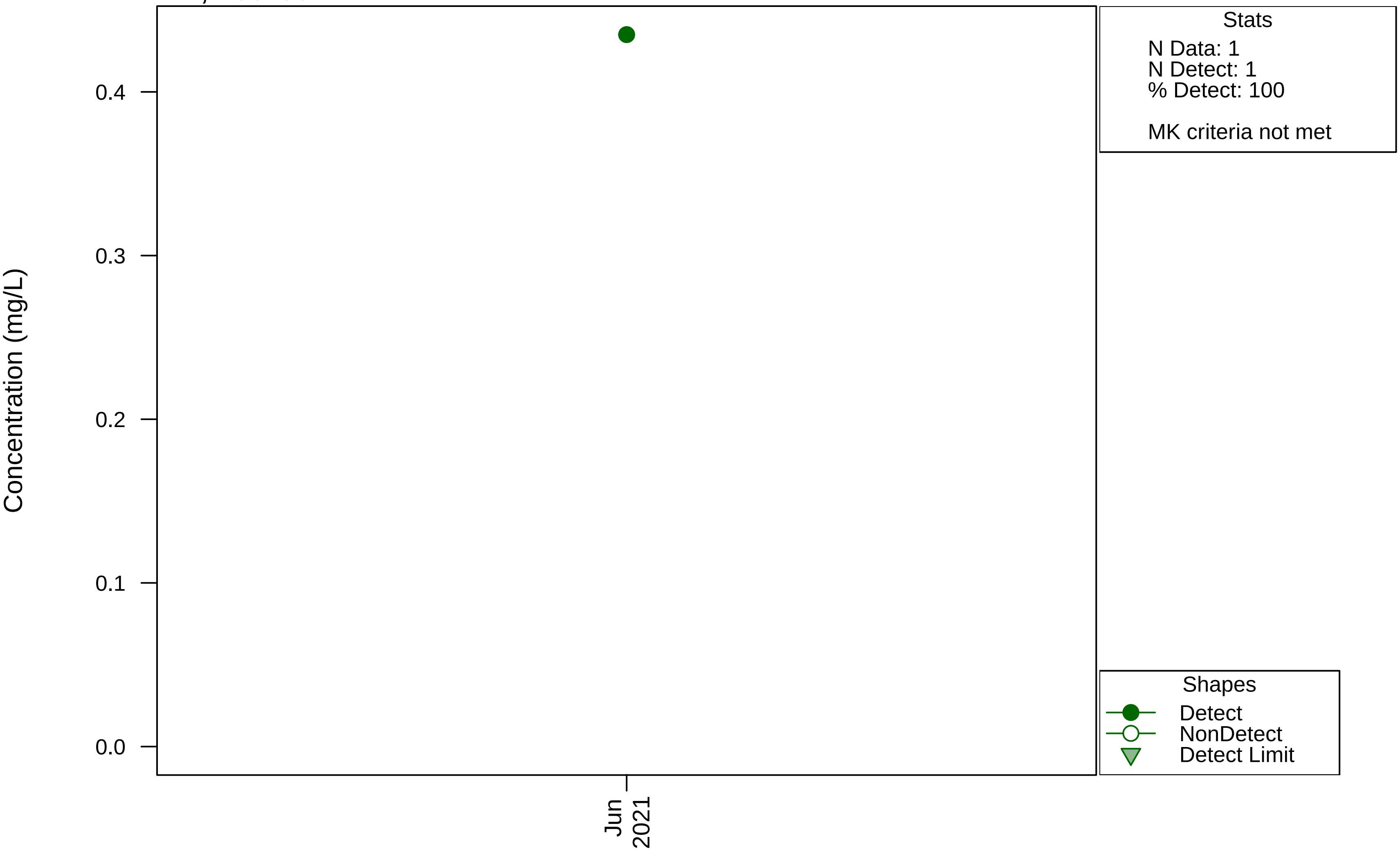
Scatterplots and Trend Analysis
D11, Dissolved Oxygen (Field) (Filtered)



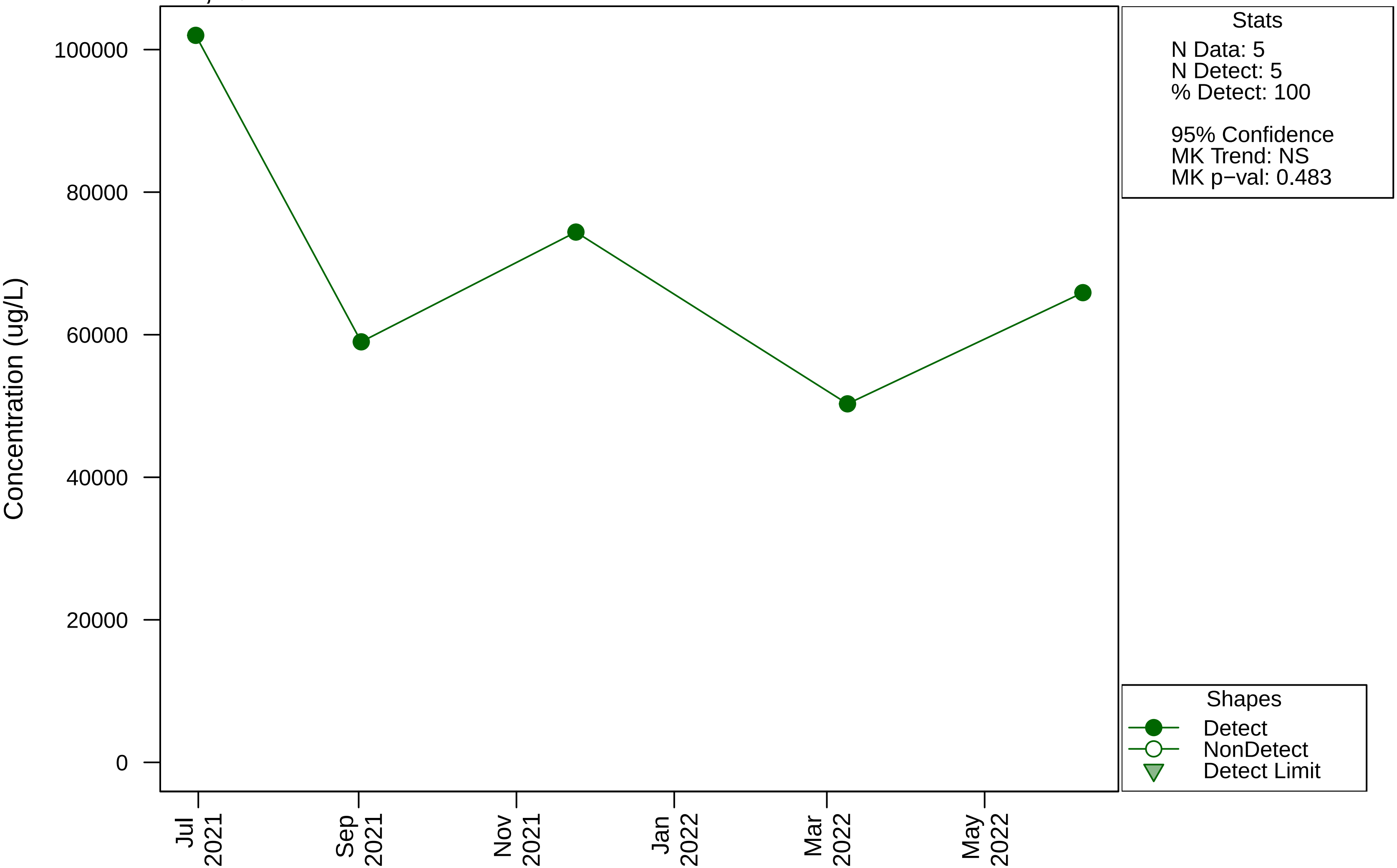


Scatterplots and Trend Analysis
D11, Electrical Conductivity (Field)
Concentration (uS/cm)
0
2000
4000
6000
8000
10000
Jan 2021
Jul 2021
Jan 2022
Jul 2022
Stats
N Data: 6
N Detect: 6
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 1
Shapes
Detect
NonDetect
Detect Limit

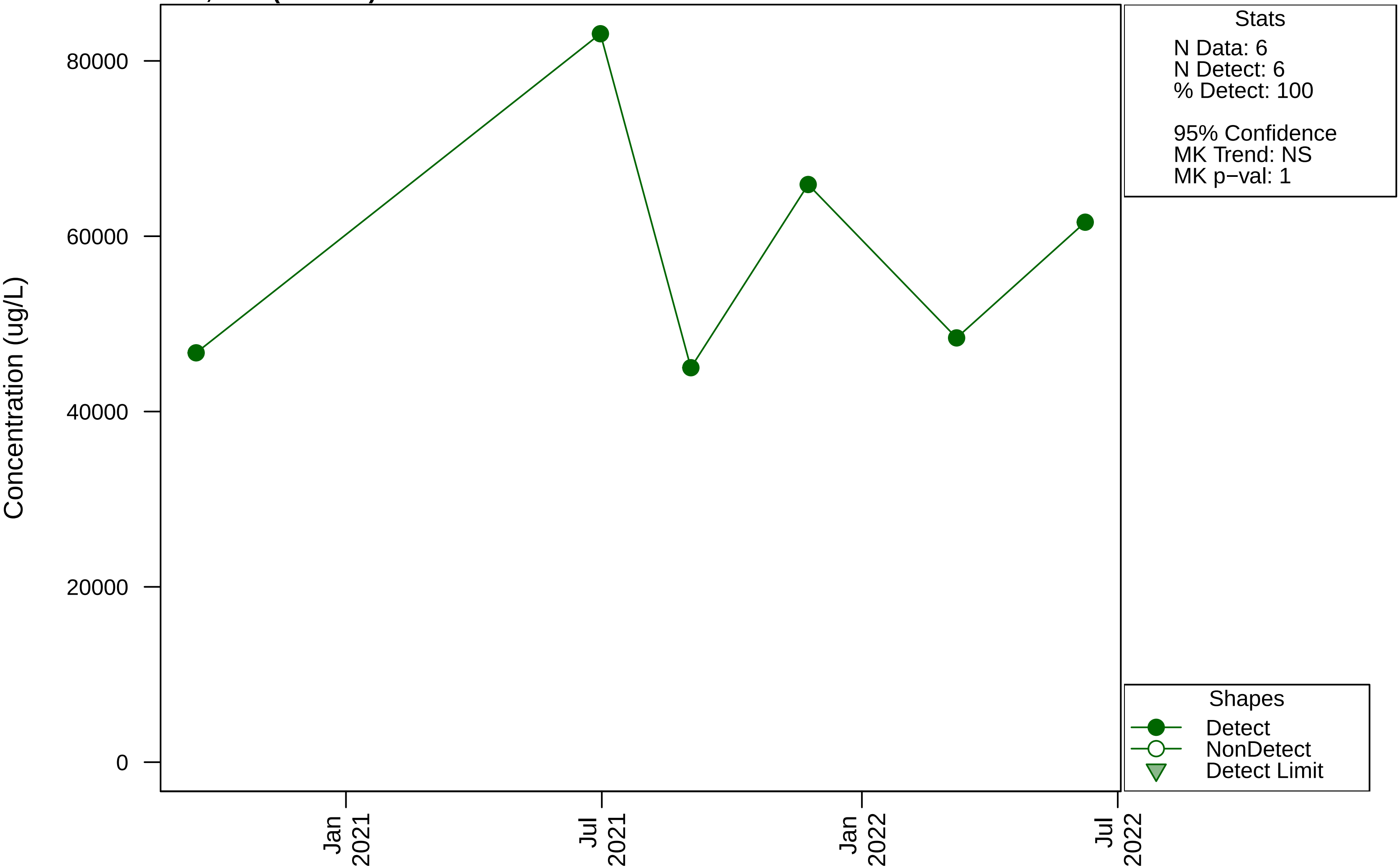
Scatterplots and Trend Analysis
D11, Fluoride

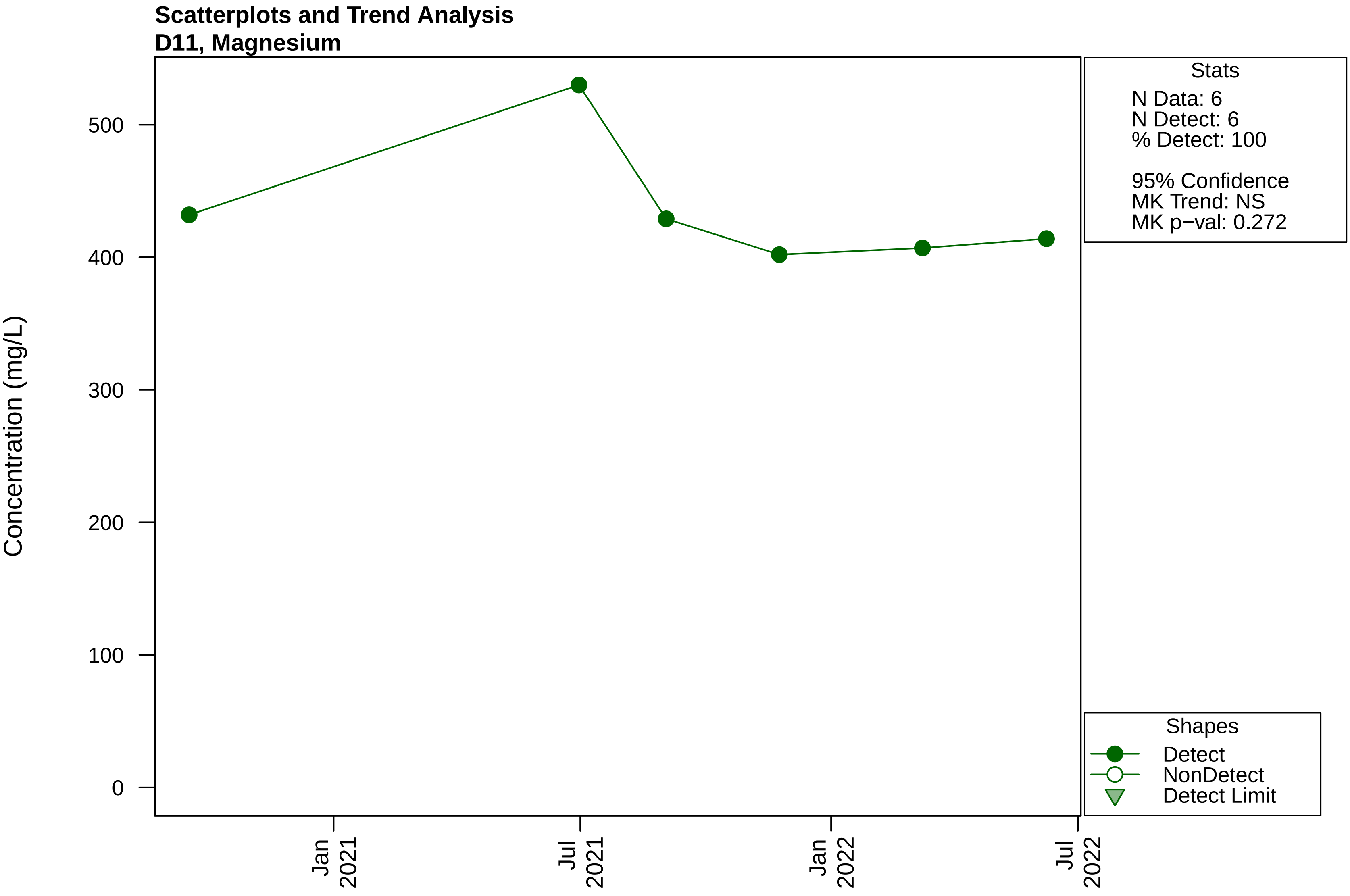


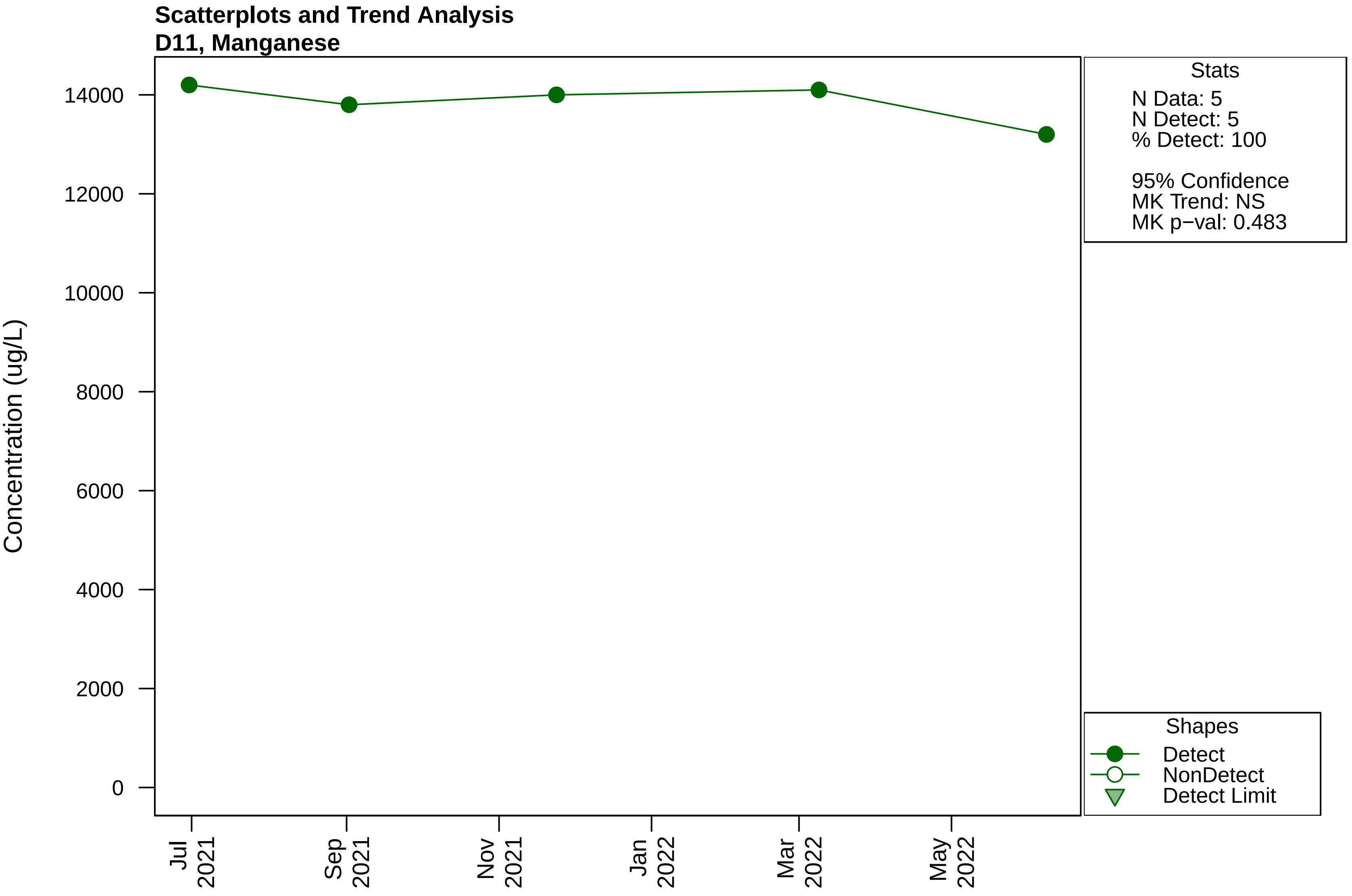
Scatterplots and Trend Analysis
D11, Iron

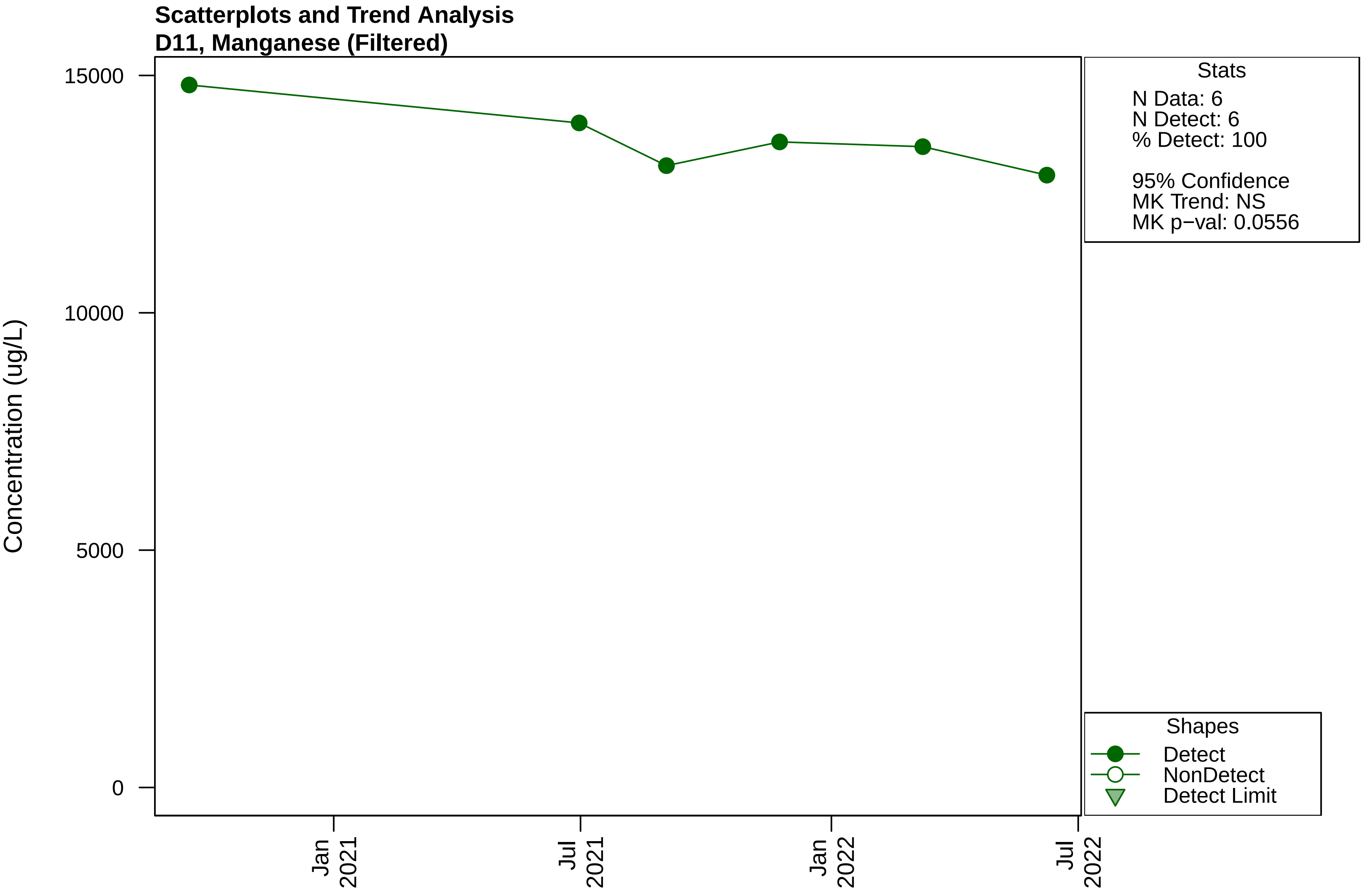


Scatterplots and Trend Analysis
D11, Iron (Filtered)

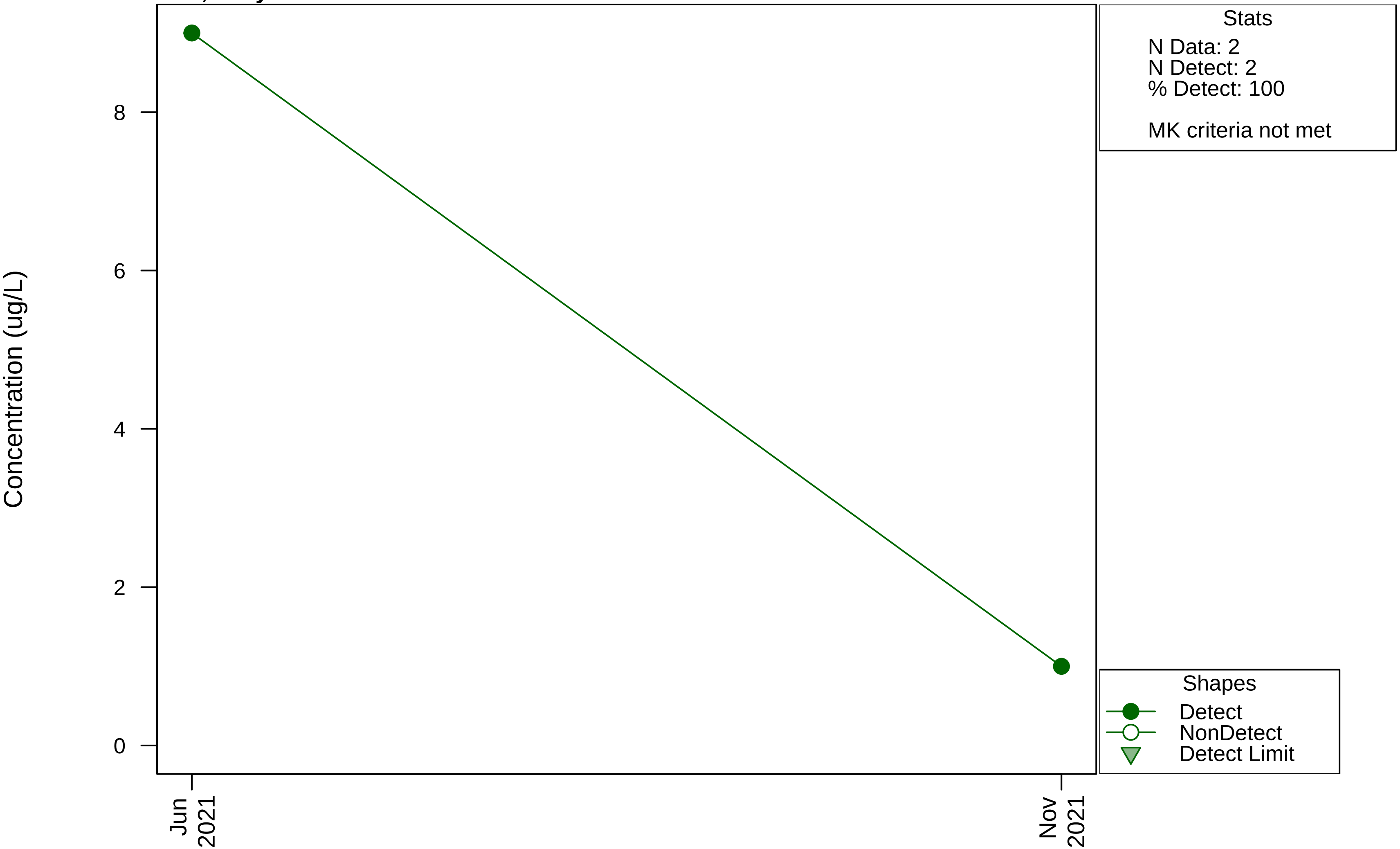


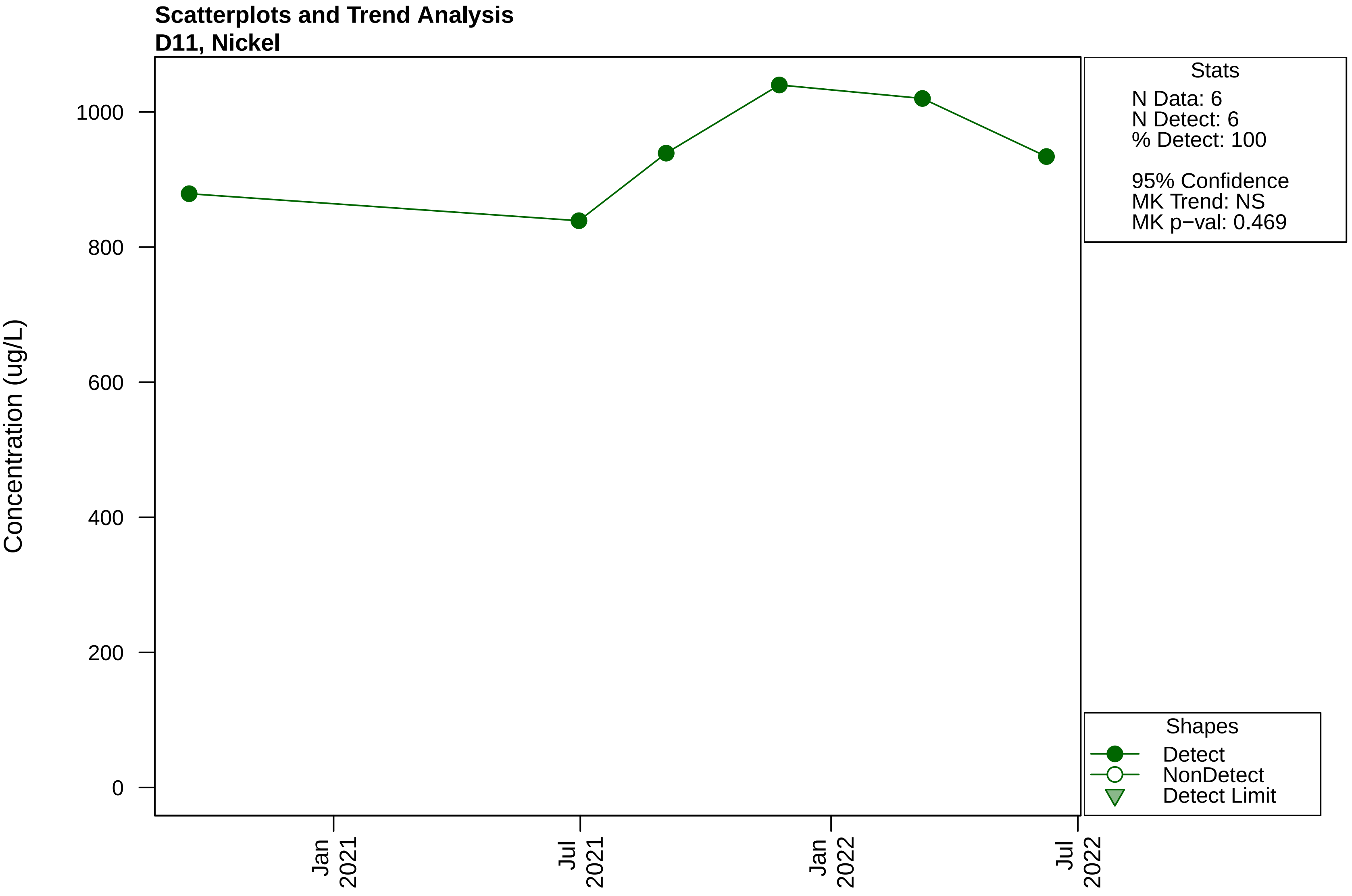

Scatterplots and Trend Analysis
D11, Magnesium
Concentration (mg/L)
0
100
200
300
400
500
Jan 2021
Jul 2021
Jan 2022
Jul 2022
Stats
N Data: 6
N Detect: 6
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.272
Shapes
Detect
NonDetect
Detect Limit


Scatterplots and Trend Analysis
D11, Manganese
Concentration (ug/L)
0
2000
4000
6000
8000
10000
12000
14000
Jul 2021
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 5
N Detect: 5
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.483
Shapes
Detect
NonDetect
Detect Limit

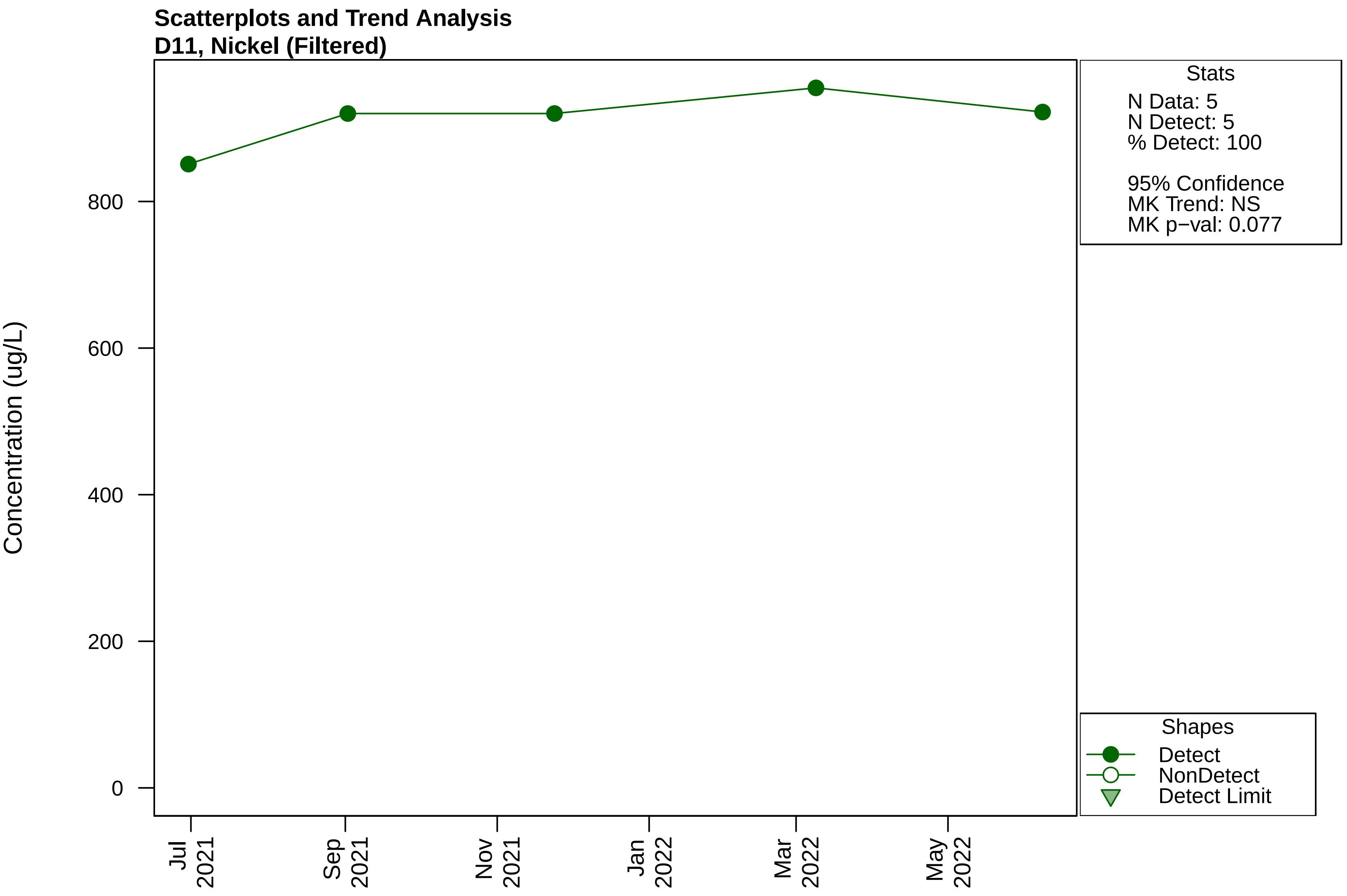

Scatterplots and Trend Analysis
D11, Manganese (Filtered)
Concentration (ug/L)
15000
10000
5000
0
Jan 2021
Jul 2021
Jan 2022
Jul 2022
Stats
N Data: 6
N Detect: 6
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.0556
Shapes
Detect
NonDetect
Detect Limit

Scatterplots and Trend Analysis
D11, Molybdenum

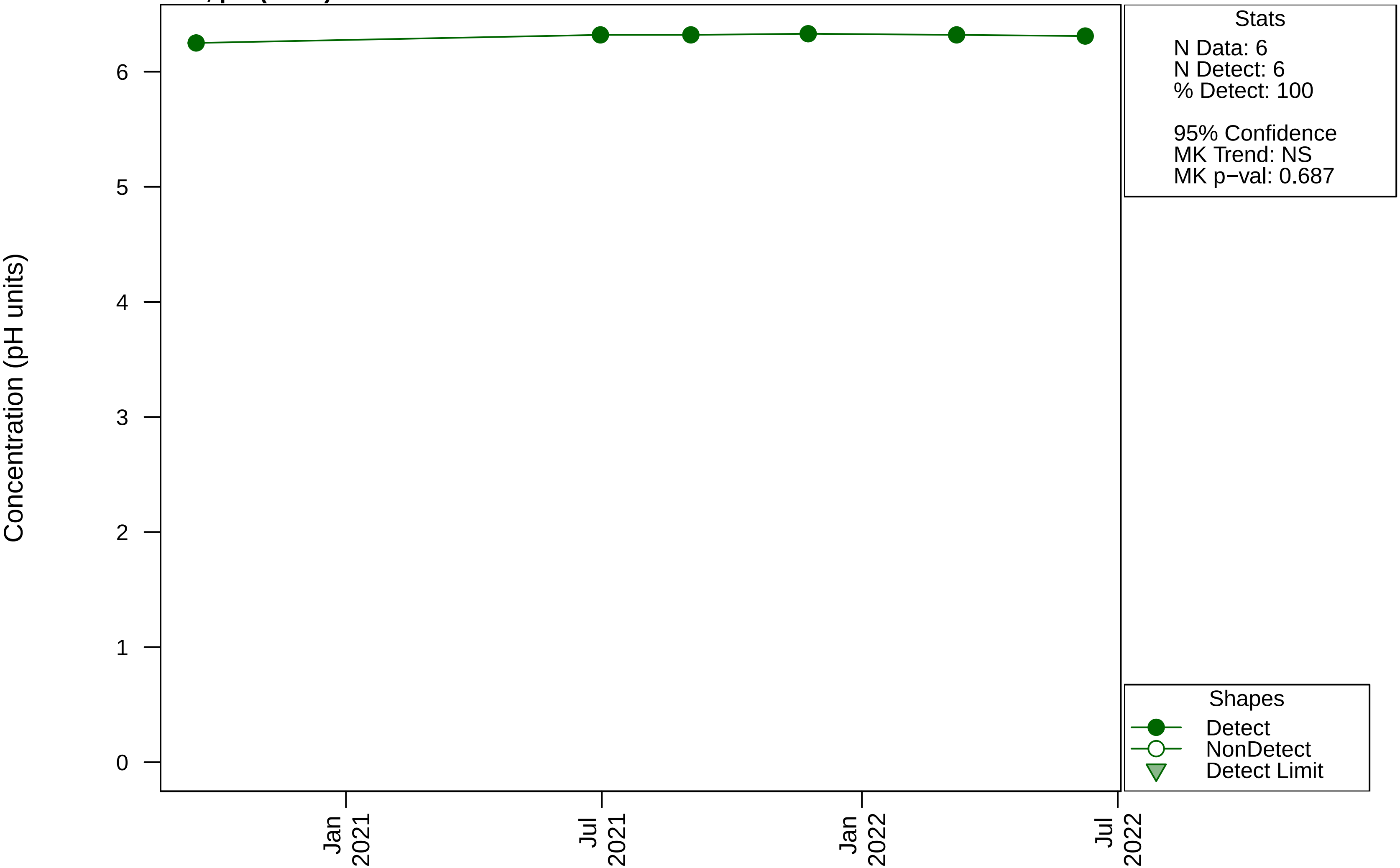




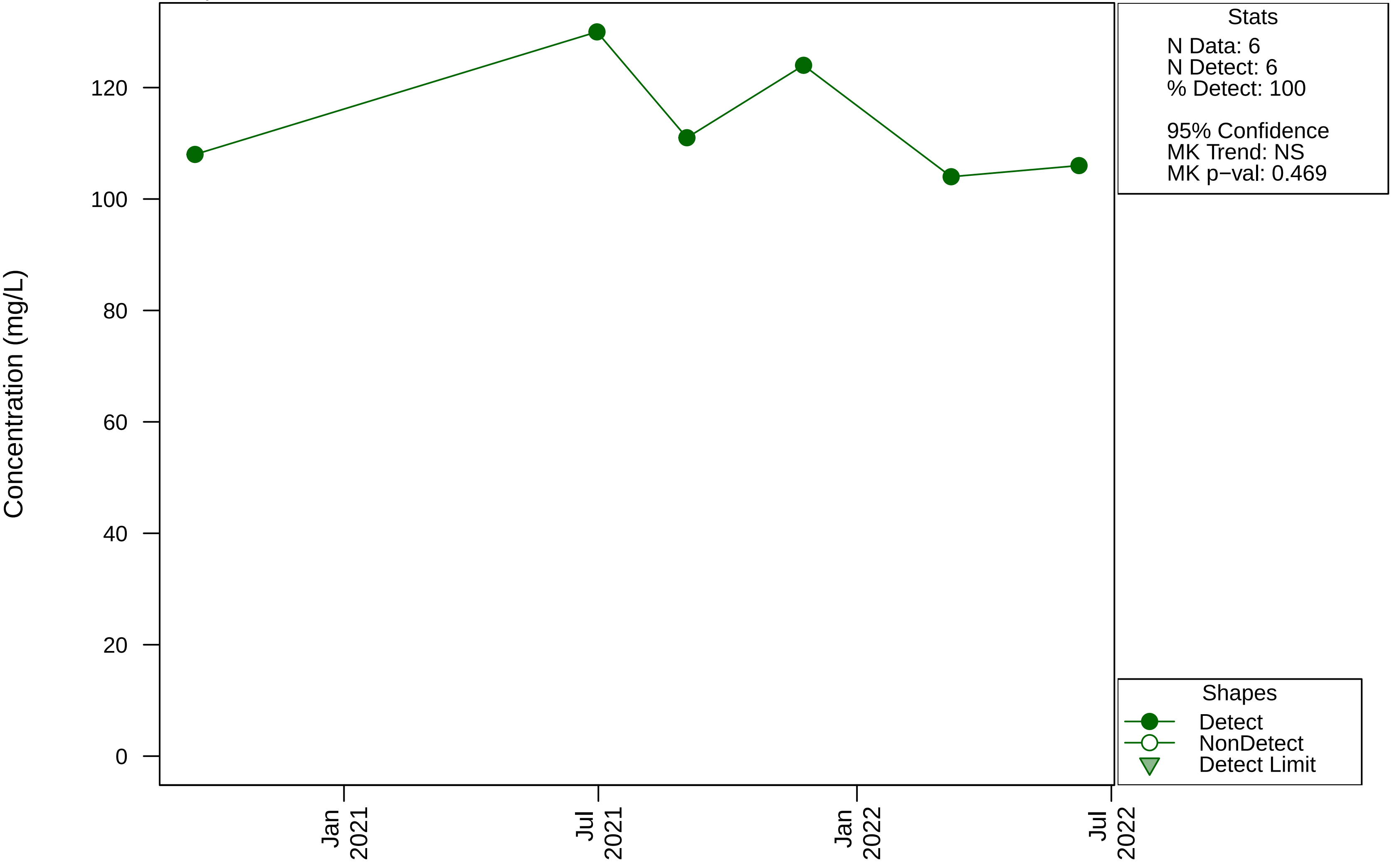
Scatterplots and Trend Analysis
D11, Nickel
Concentration (ug/L)
0
200
400
600
800
1000
Jan 2021
Jul 2021
Jan 2022
Jul 2022
Stats
N Data: 6
N Detect: 6
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.469
Shapes
Detect
NonDetect
Detect Limit

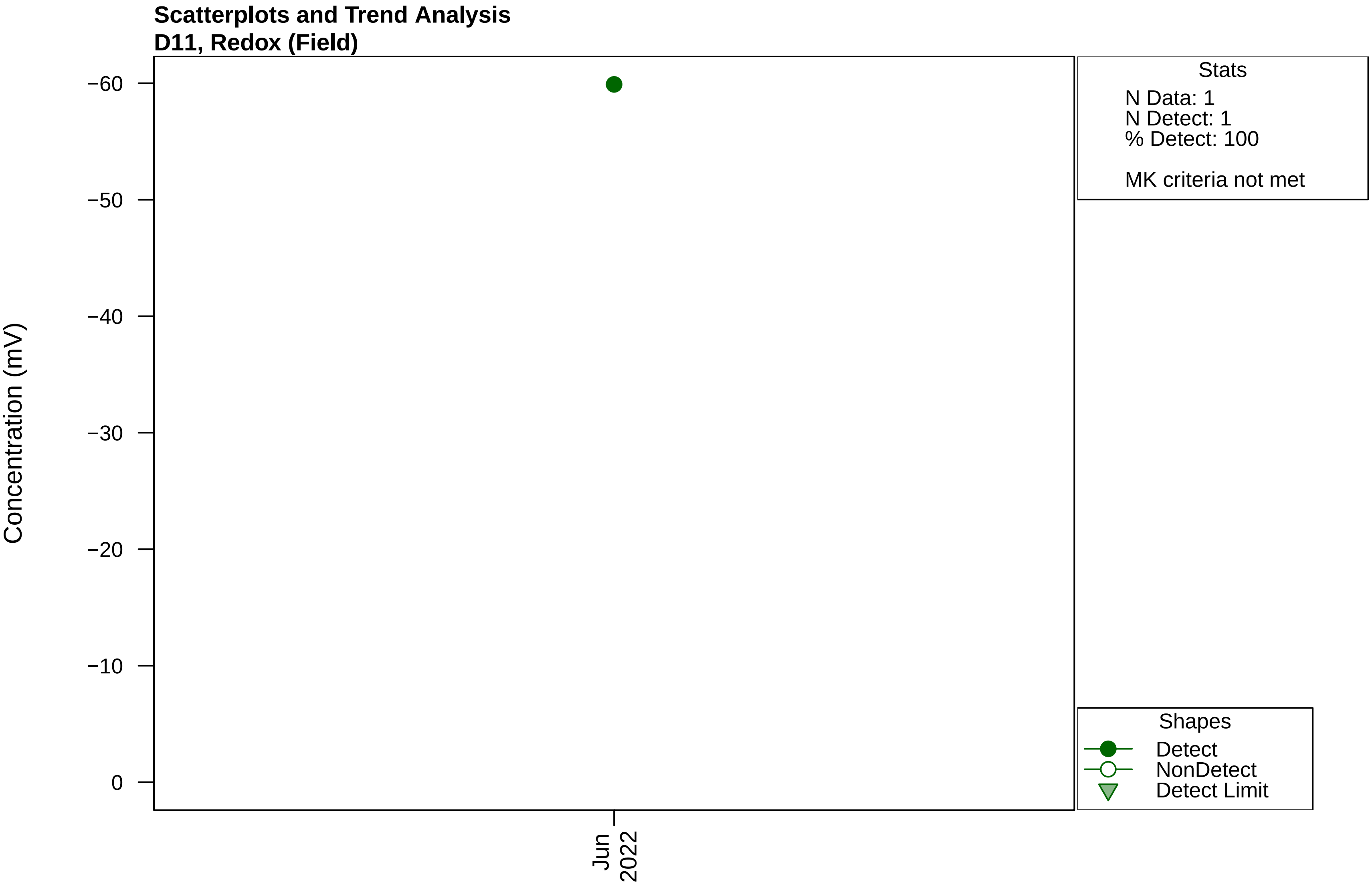

Scatterplots and Trend Analysis
D11, Nickel (Filtered)
Concentration (ug/L)
0
200
400
600
800
Jul 2021
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 5
N Detect: 5
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.077
Shapes
Detect
NonDetect
Detect Limit

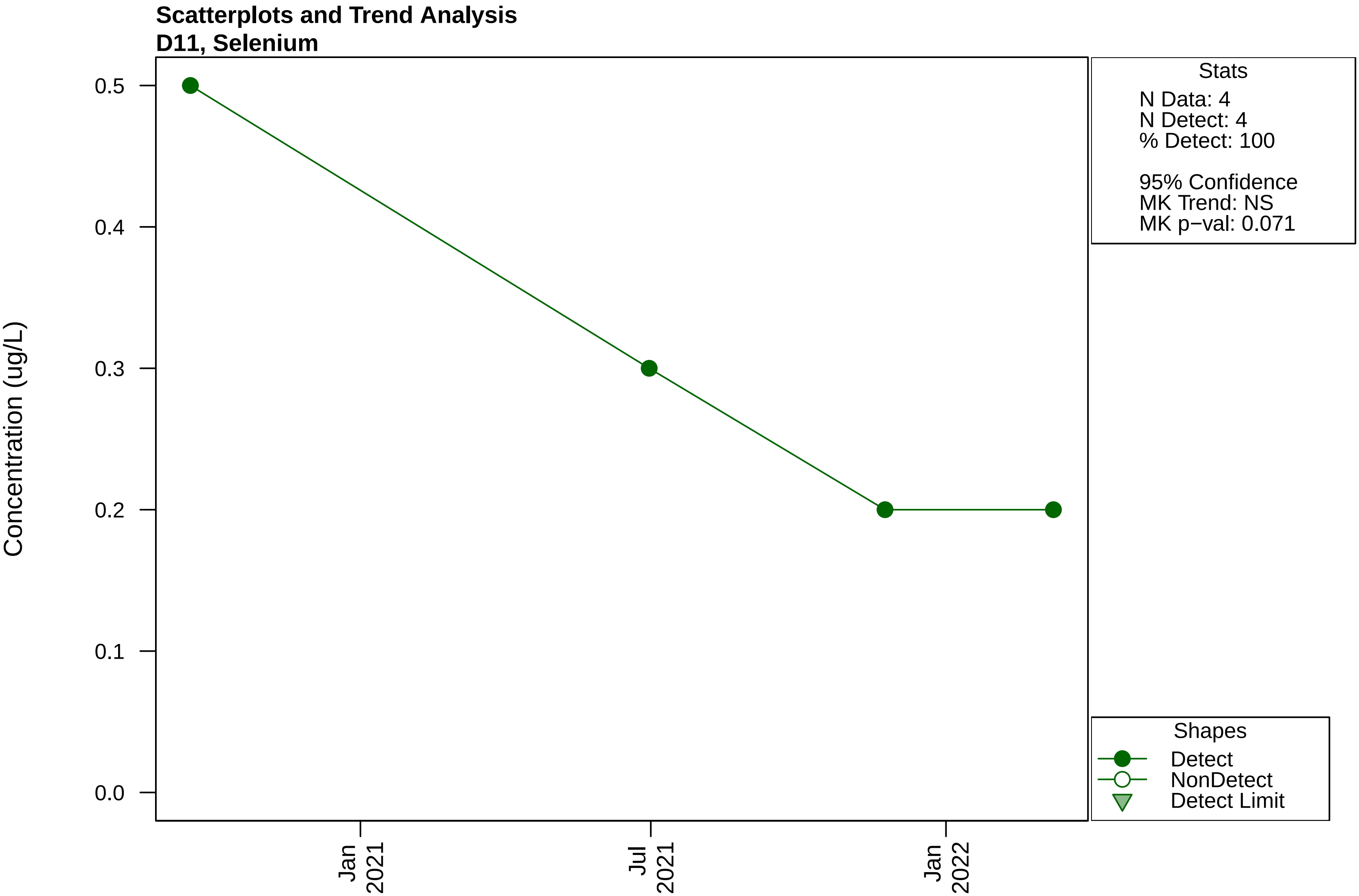
Scatterplots and Trend Analysis
D11, pH (Field)

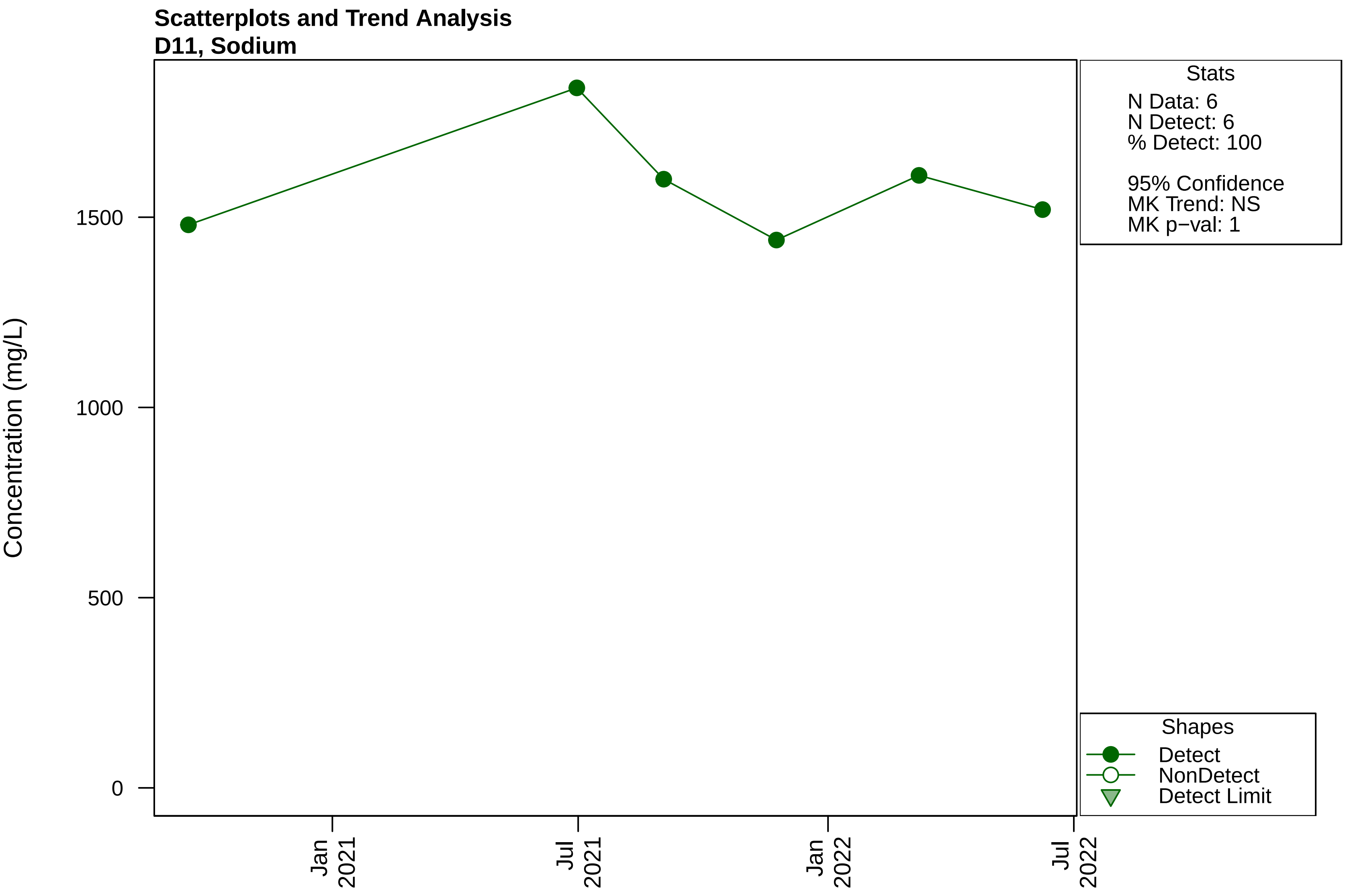


Scatterplots and Trend Analysis
D11, Potassium

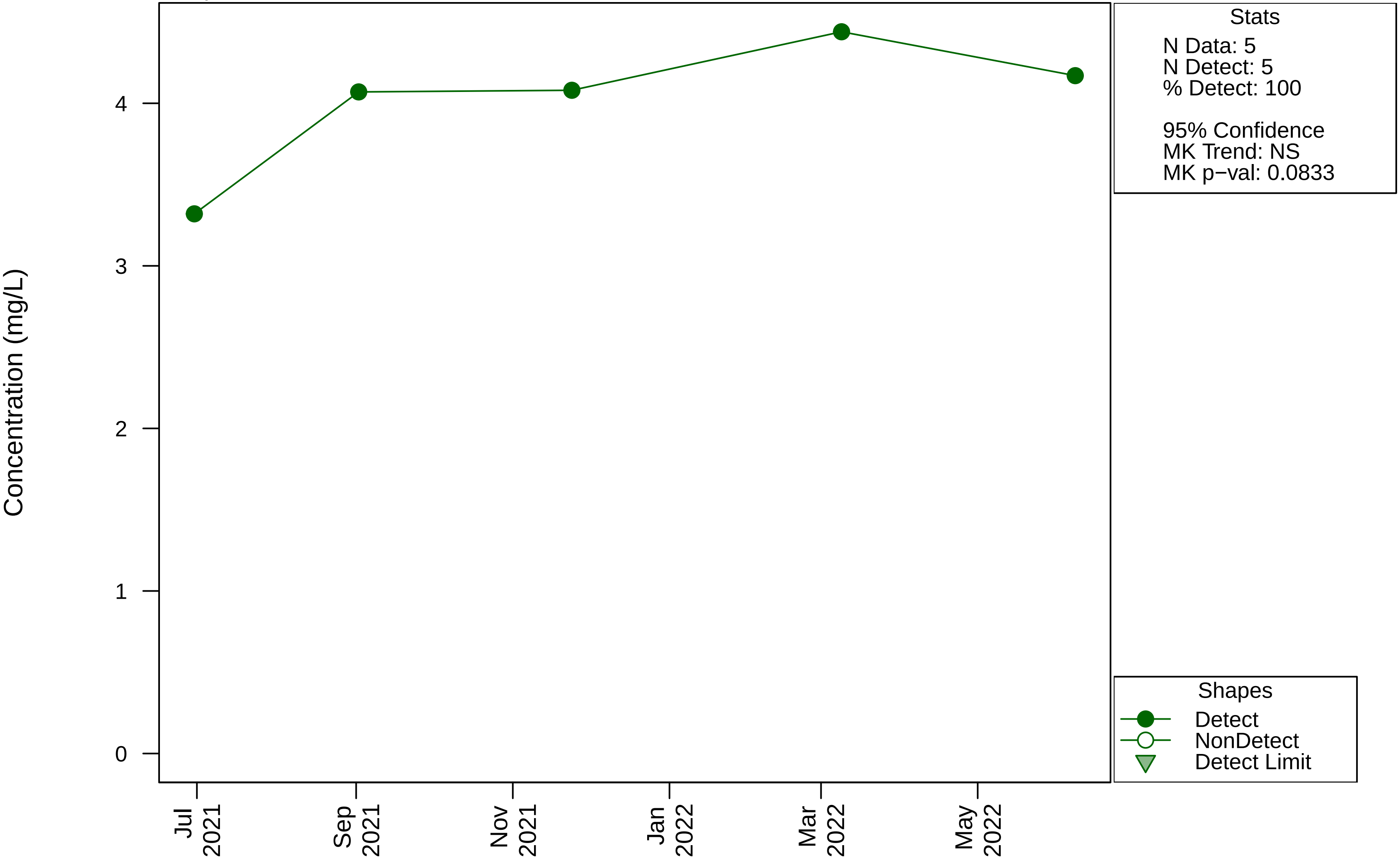


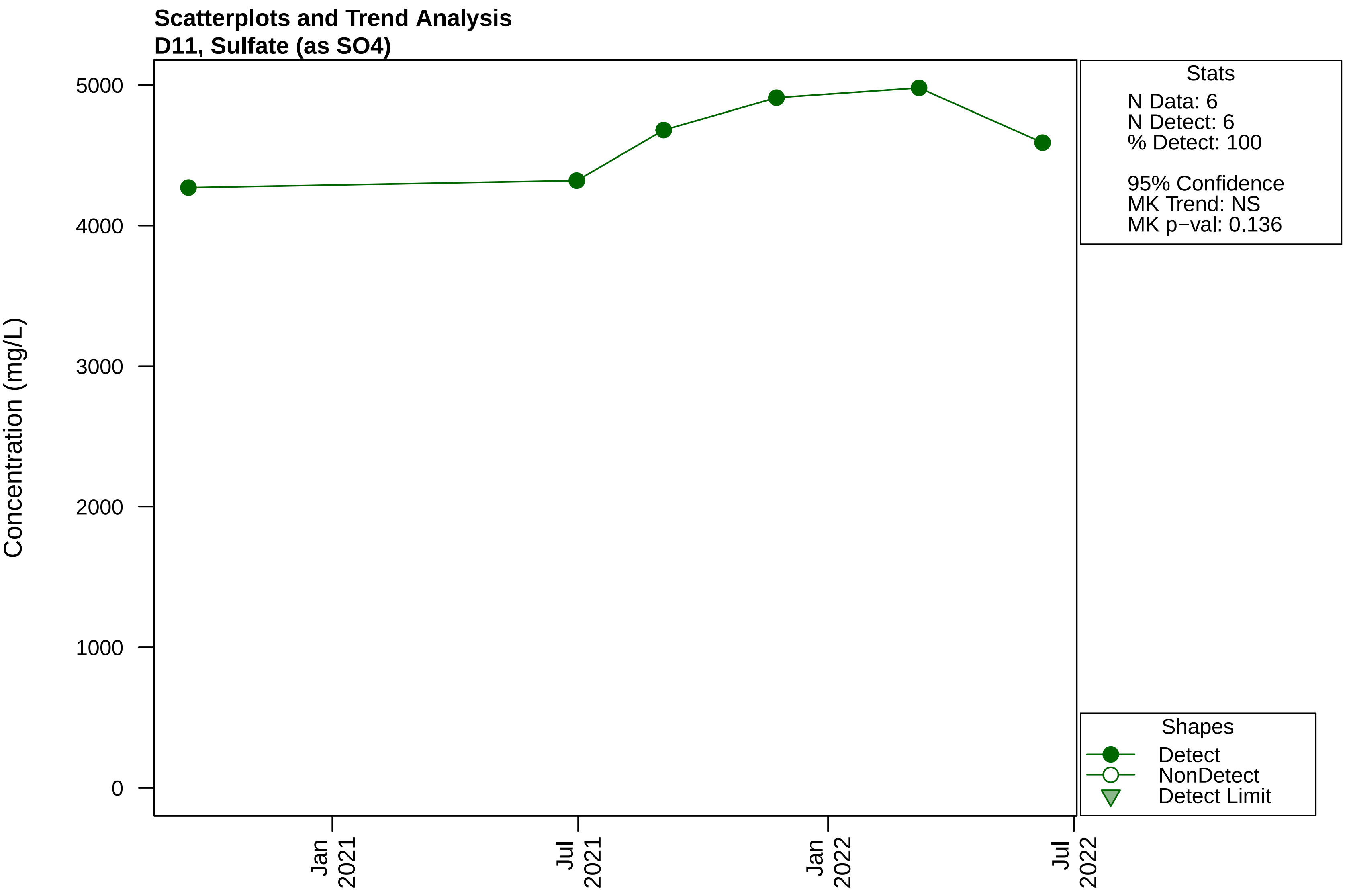

Scatterplots and Trend Analysis
D11, Redox (Field)
Concentration (mV)
−60
−50
−40
−30
−20
−10
0
Jun 2022
Stats
N Data: 1
N Detect: 1
% Detect: 100
MK criteria not met
Shapes
Detect
NonDetect
Detect Limit


Scatterplots and Trend Analysis
D11, Selenium
Concentration (ug/L)
0.5
0.4
0.3
0.2
0.1
0.0
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 4
N Detect: 4
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.071
Shapes
Detect
NonDetect
Detect Limit

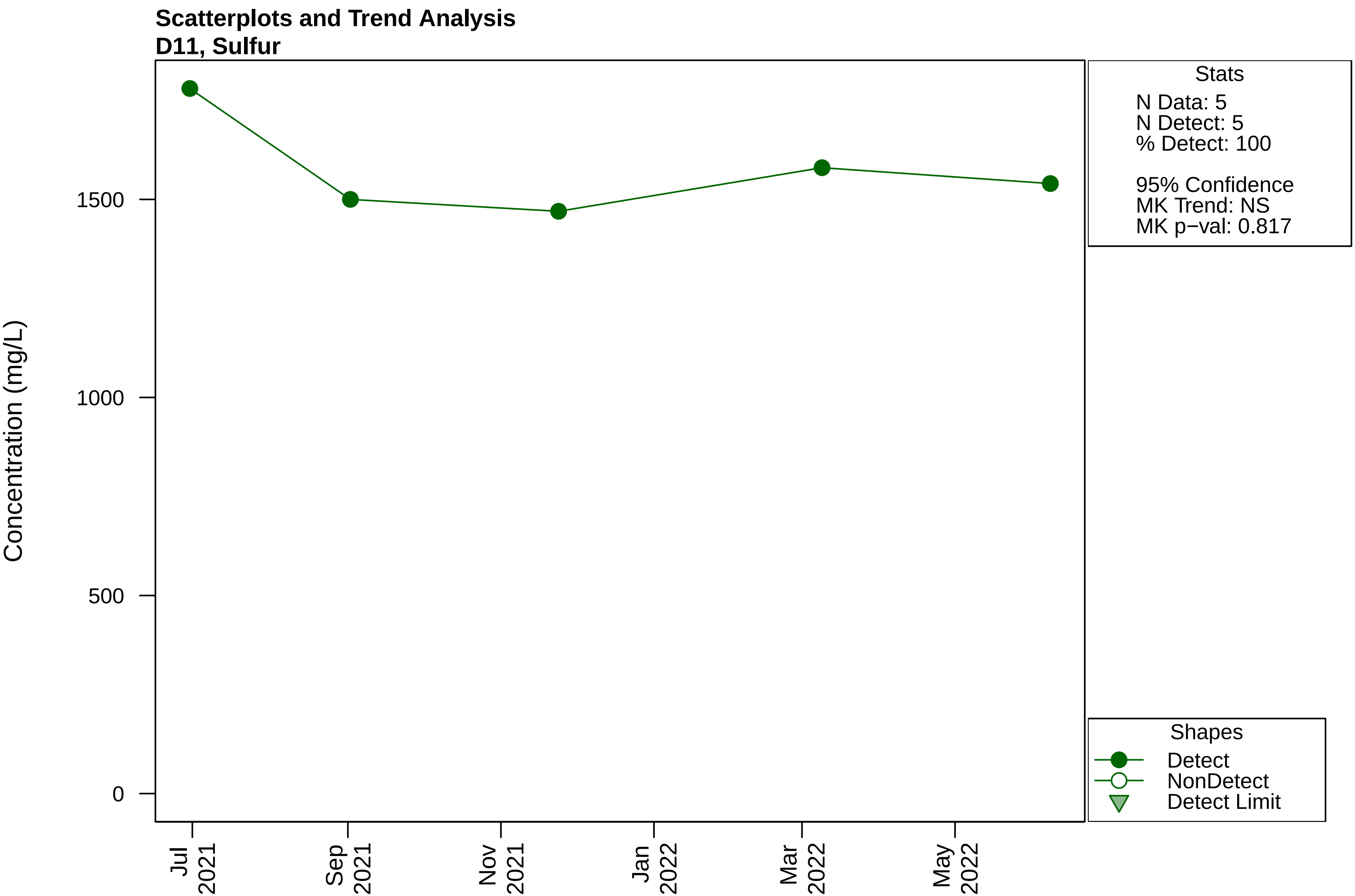

Scatterplots and Trend Analysis
D11, Sodium
Concentration (mg/L)
0
500
1000
1500
Jan 2021
Jul 2021
Jan 2022
Jul 2022
Stats
N Data: 6
N Detect: 6
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 1
Shapes
Detect
NonDetect
Detect Limit

Scatterplots and Trend Analysis
D11, Strontium

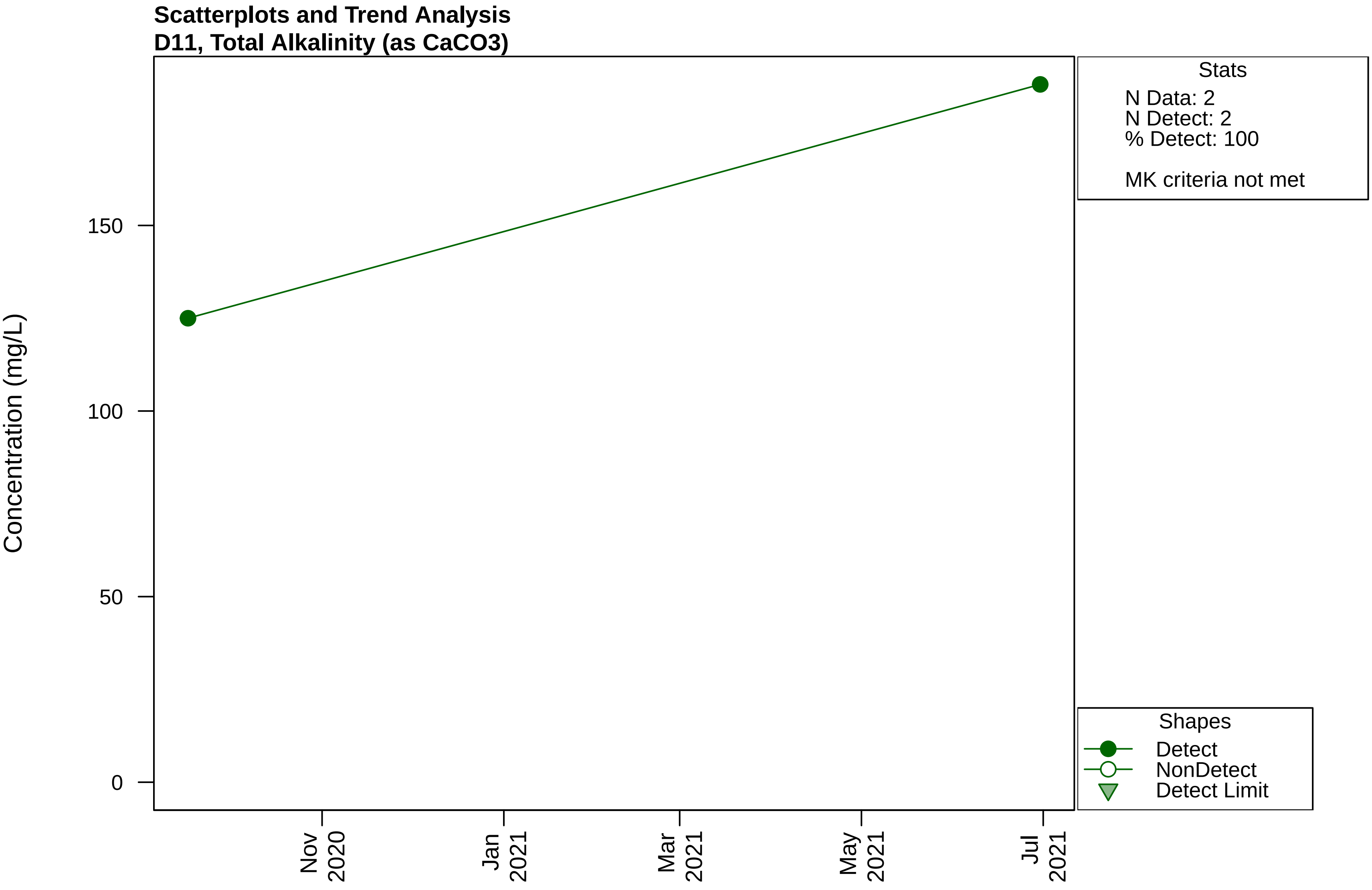




Scatterplots and Trend Analysis
D11, Sulfate (as SO4)
Concentration (mg/L)
5000
4000
3000
2000
1000
0
Jan 2021
Jul 2021
Jan 2022
Jul 2022
Stats
N Data: 6
N Detect: 6
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.136
Shapes
Detect
NonDetect
Detect Limit

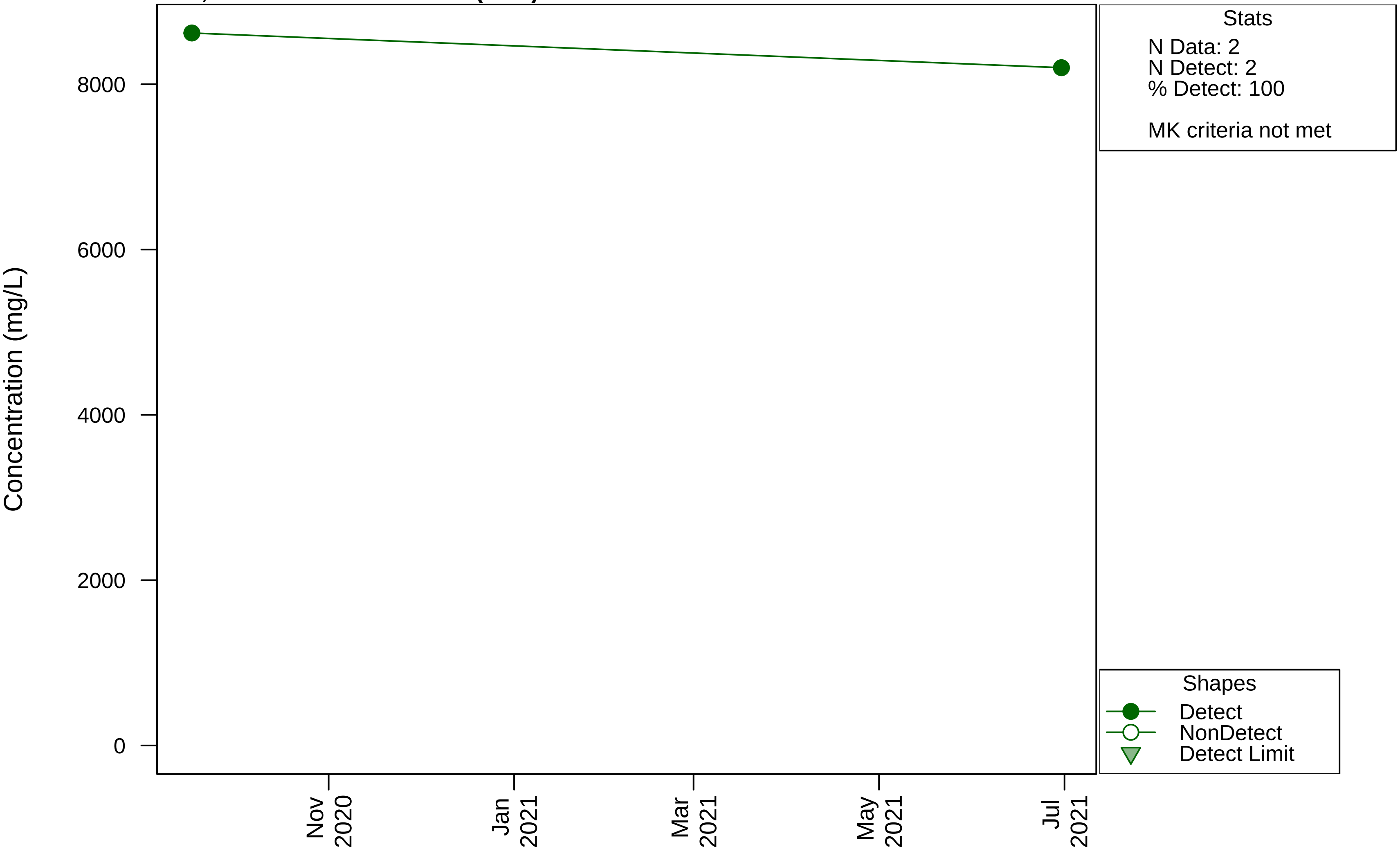


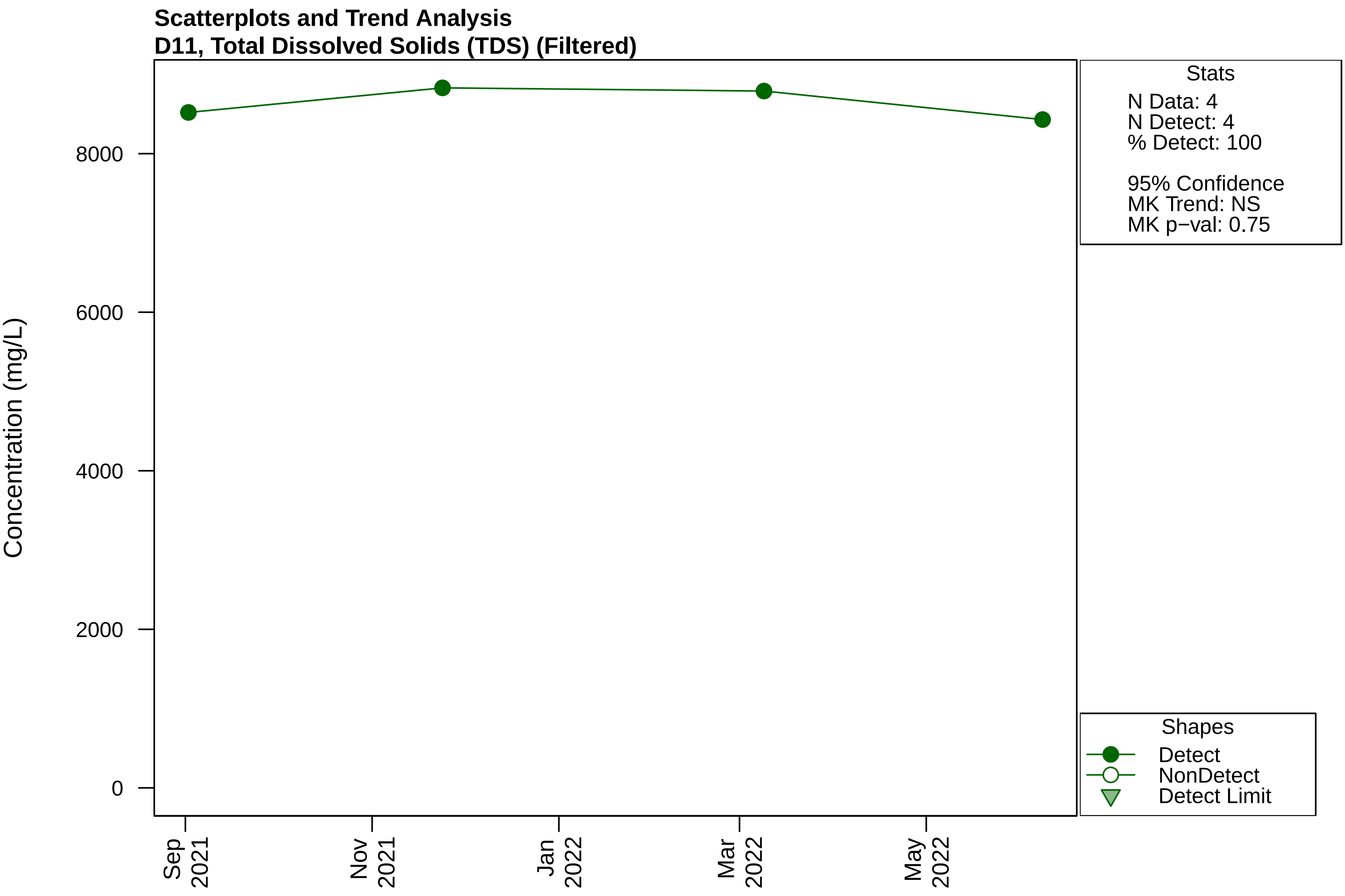
Scatterplots and Trend Analysis
D11, Sulfur
Concentration (mg/L)
0
500
1000
1500
Jul 2021
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 5
N Detect: 5
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.817
Shapes
Detect
NonDetect
Detect Limit



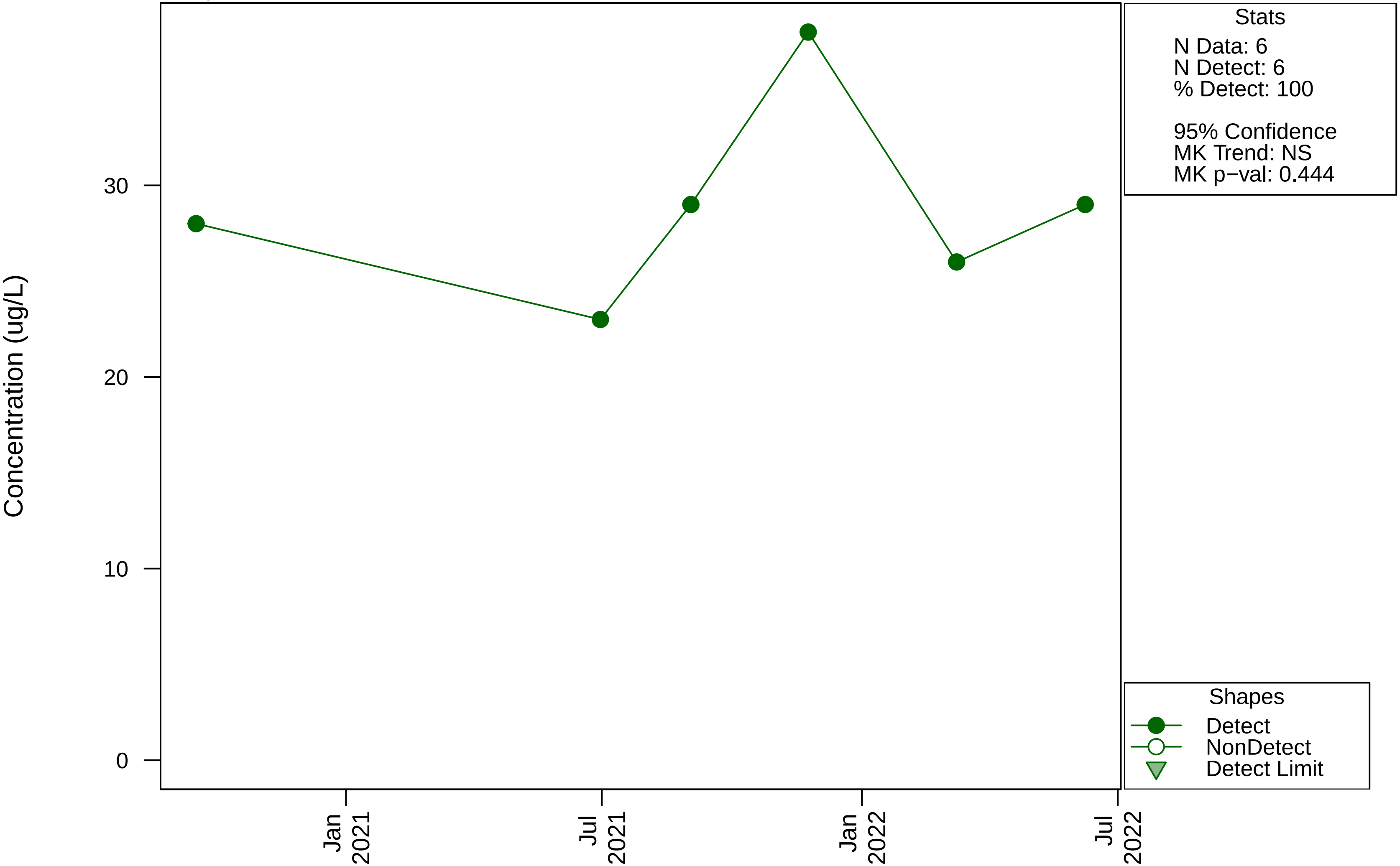
Scatterplots and Trend Analysis
D11, Total Alkalinity (as CaCO3)
Concentration (mg/L)
0
50
100
150
Nov 2020
Jan 2021
Mar 2021
May 2021
Jul 2021
Stats
N Data: 2
N Detect: 2
% Detect: 100
MK criteria not met
Shapes
Detect
NonDetect
Detect Limit

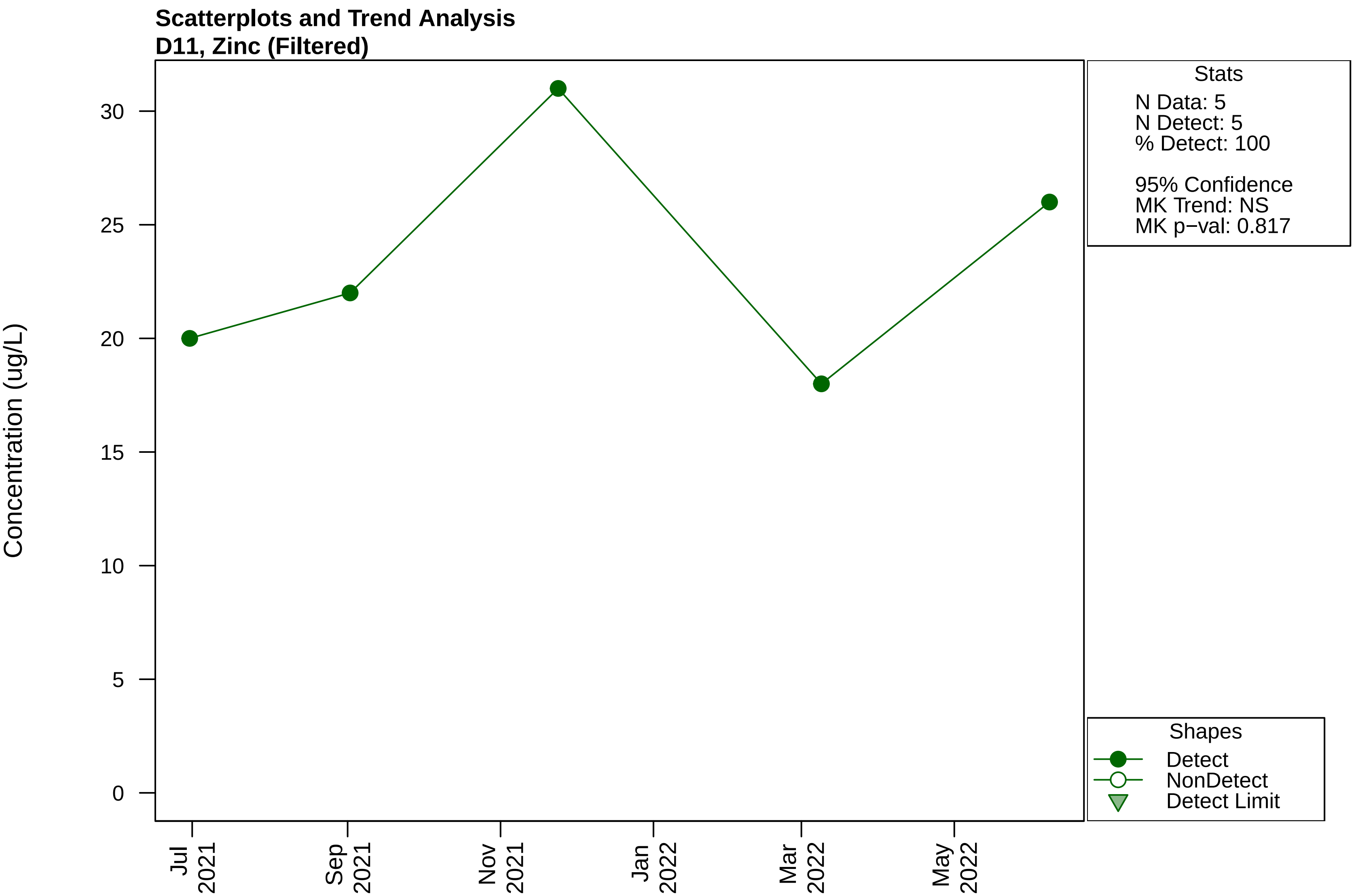
Scatterplots and Trend Analysis
D11, Total Dissolved Solids (TDS)



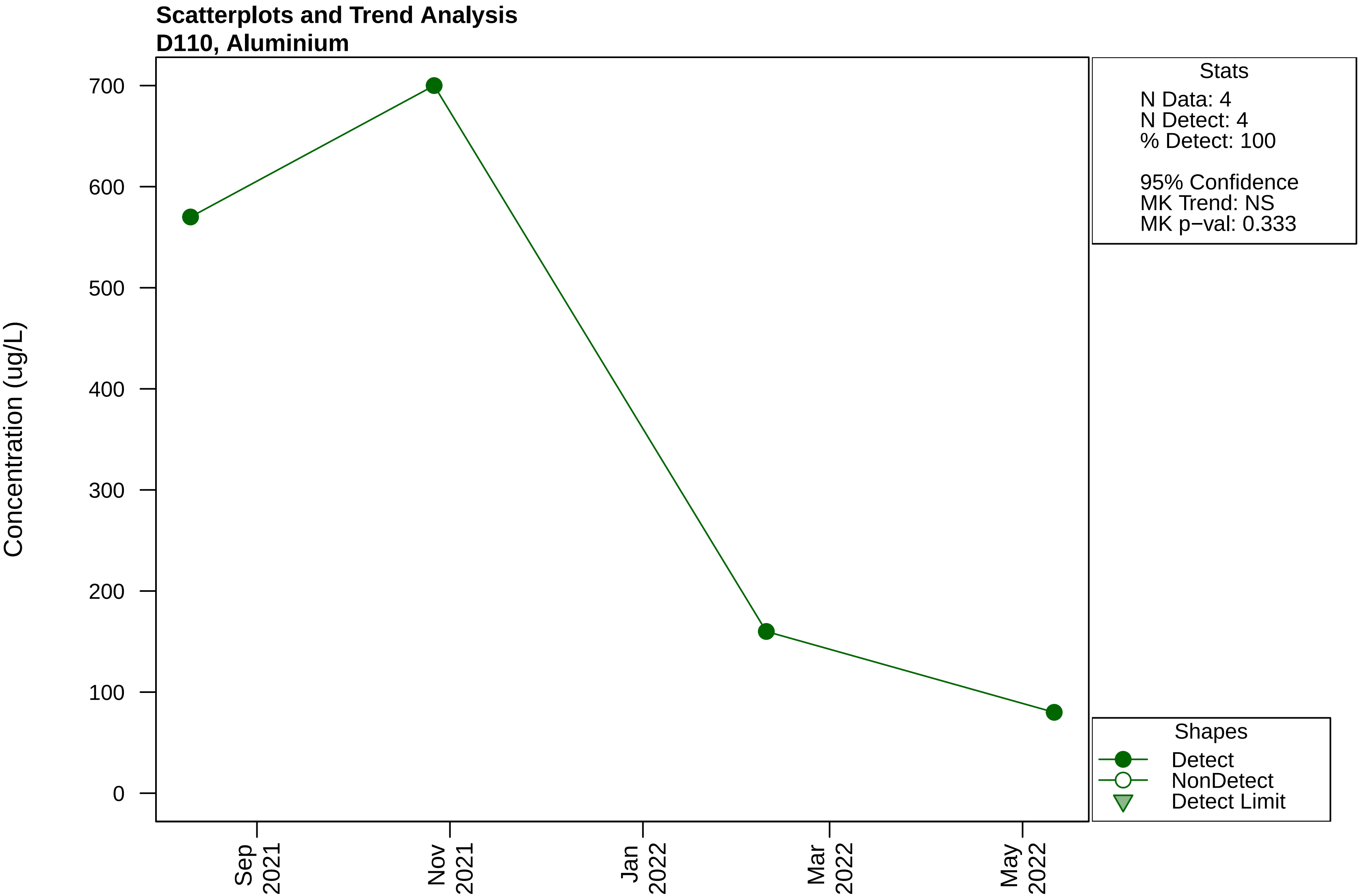

Scatterplots and Trend Analysis
D11, Total Dissolved Solids (TDS) (Filtered)
Concentration (mg/L)
0
2000
4000
6000
8000
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 4
N Detect: 4
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.75
Shapes
Detect
NonDetect
Detect Limit

Scatterplots and Trend Analysis
D11, Zinc

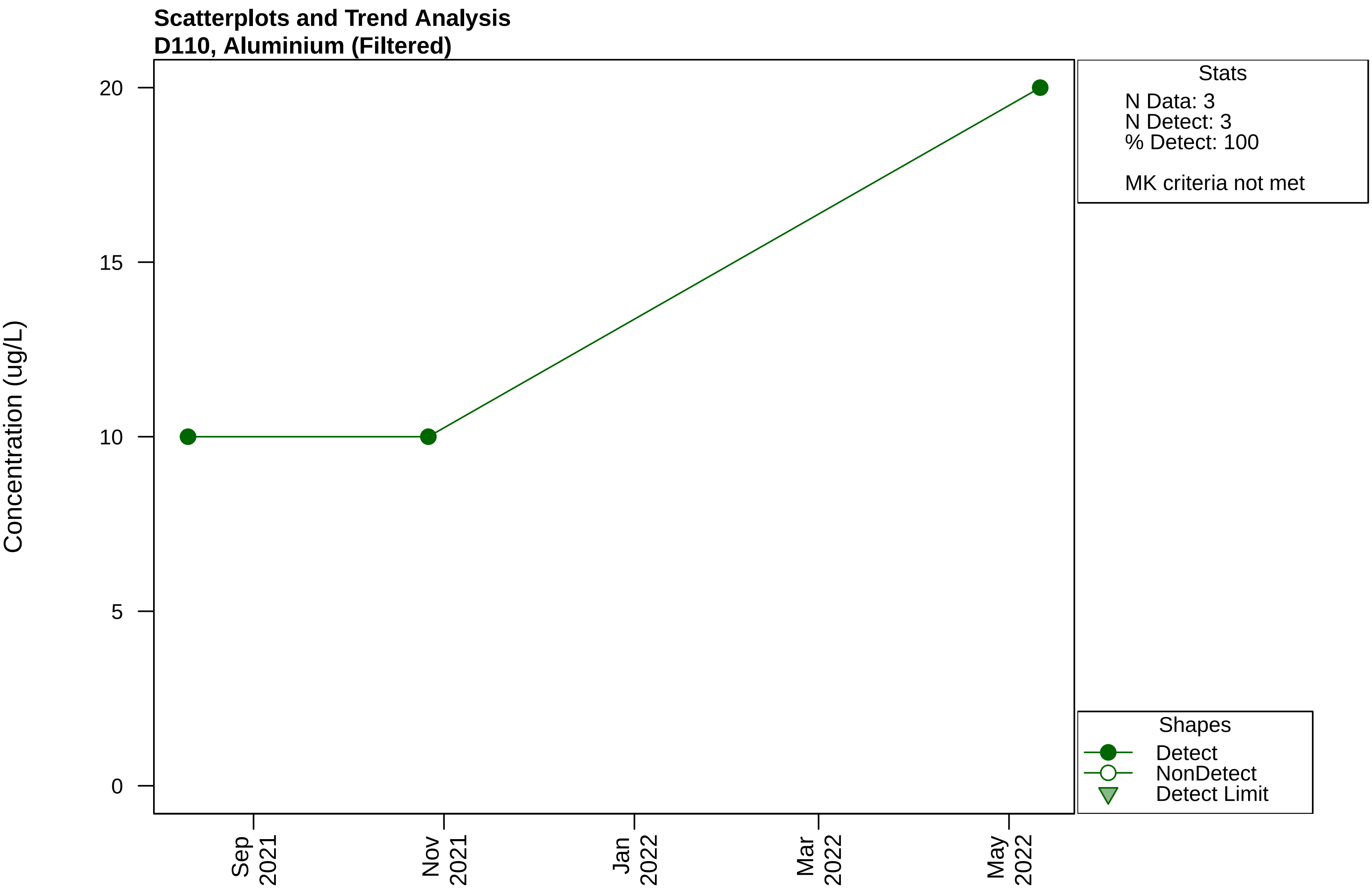




Scatterplots and Trend Analysis
D11, Zinc (Filtered)
Concentration (ug/L)
0
5
10
15
20
25
30
Jul 2021
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 5
N Detect: 5
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.817
Shapes
Detect
NonDetect
Detect Limit

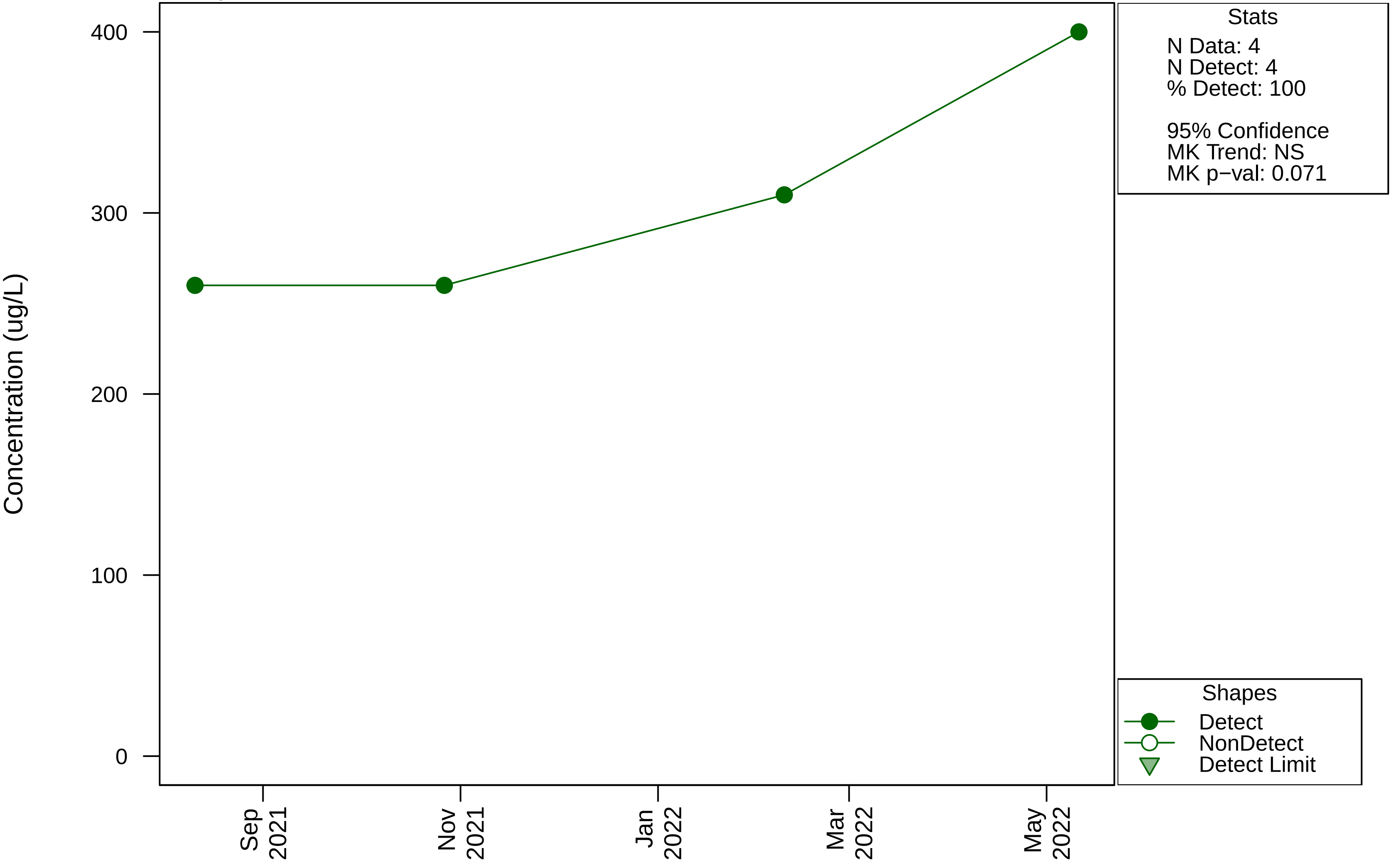


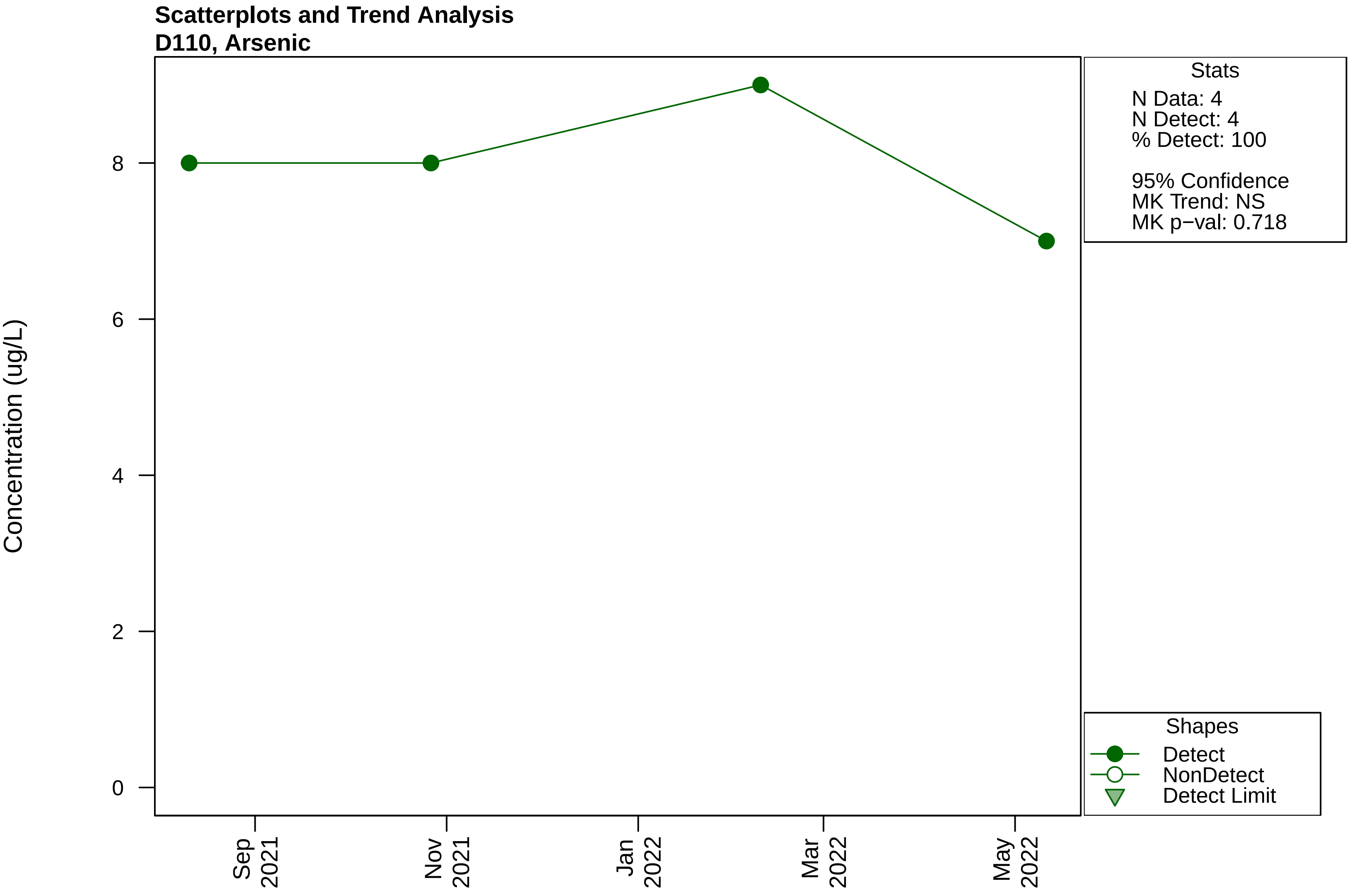
Scatterplots and Trend Analysis
D110, Aluminium
Concentration (ug/L)
0
100
200
300
400
500
600
700
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 4
N Detect: 4
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.333
Shapes
Detect
NonDetect
Detect Limit



Scatterplots and Trend Analysis
D110, Aluminium (Filtered)
Concentration (ug/L)
0
5
10
15
20
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 3
N Detect: 3
% Detect: 100
MK criteria not met
Shapes
Detect
NonDetect
Detect Limit

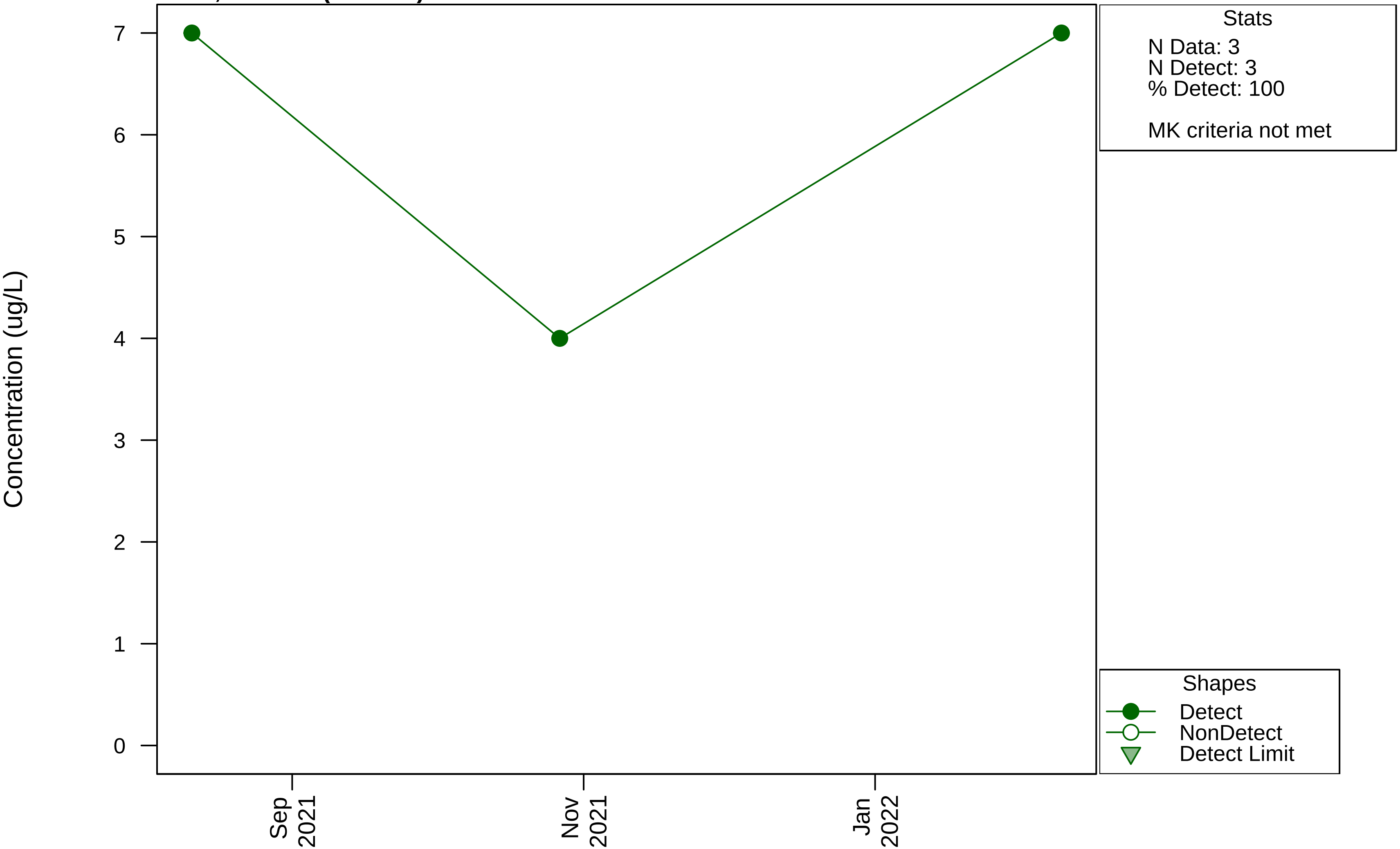
Scatterplots and Trend Analysis
D110, Ammonia



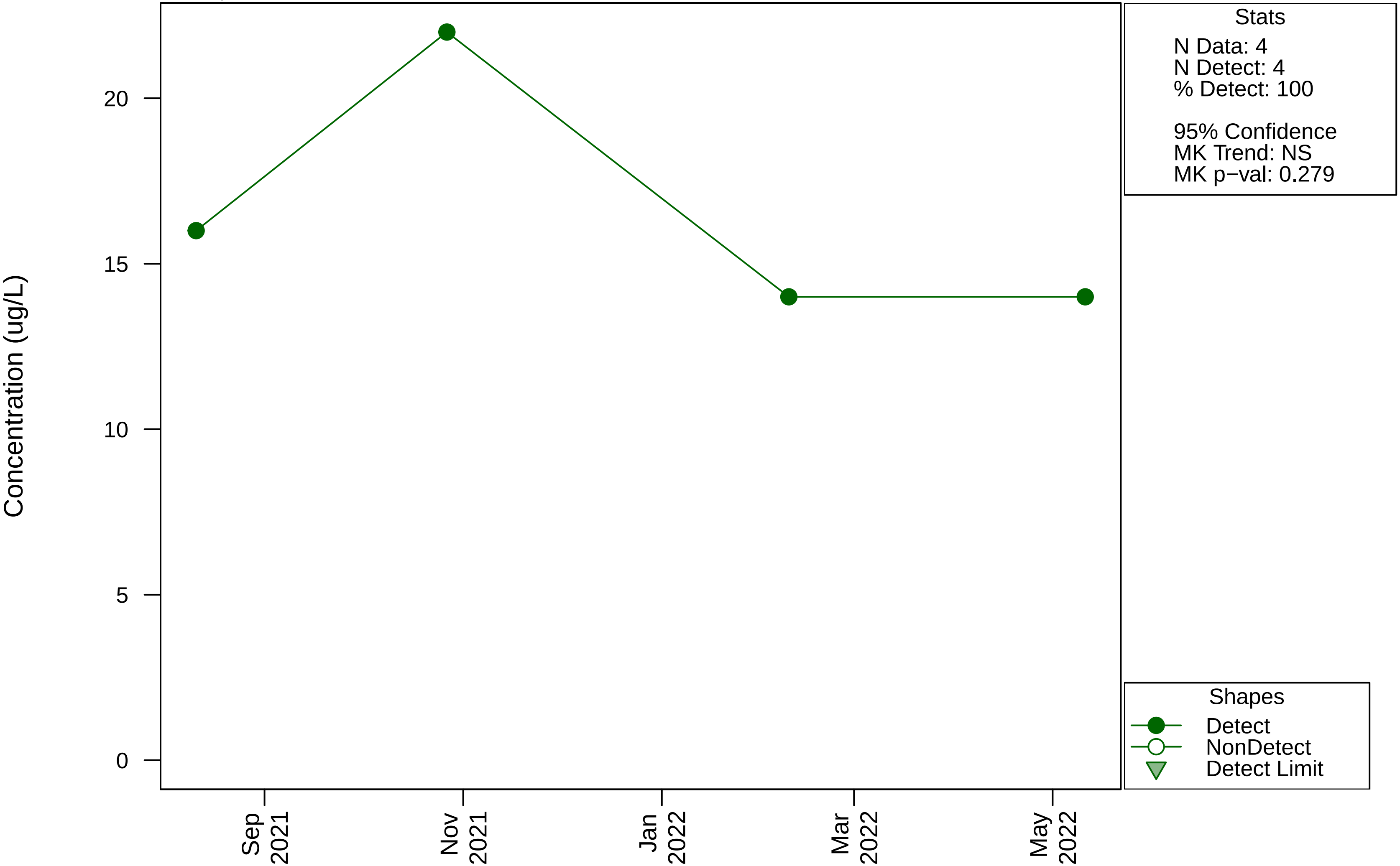


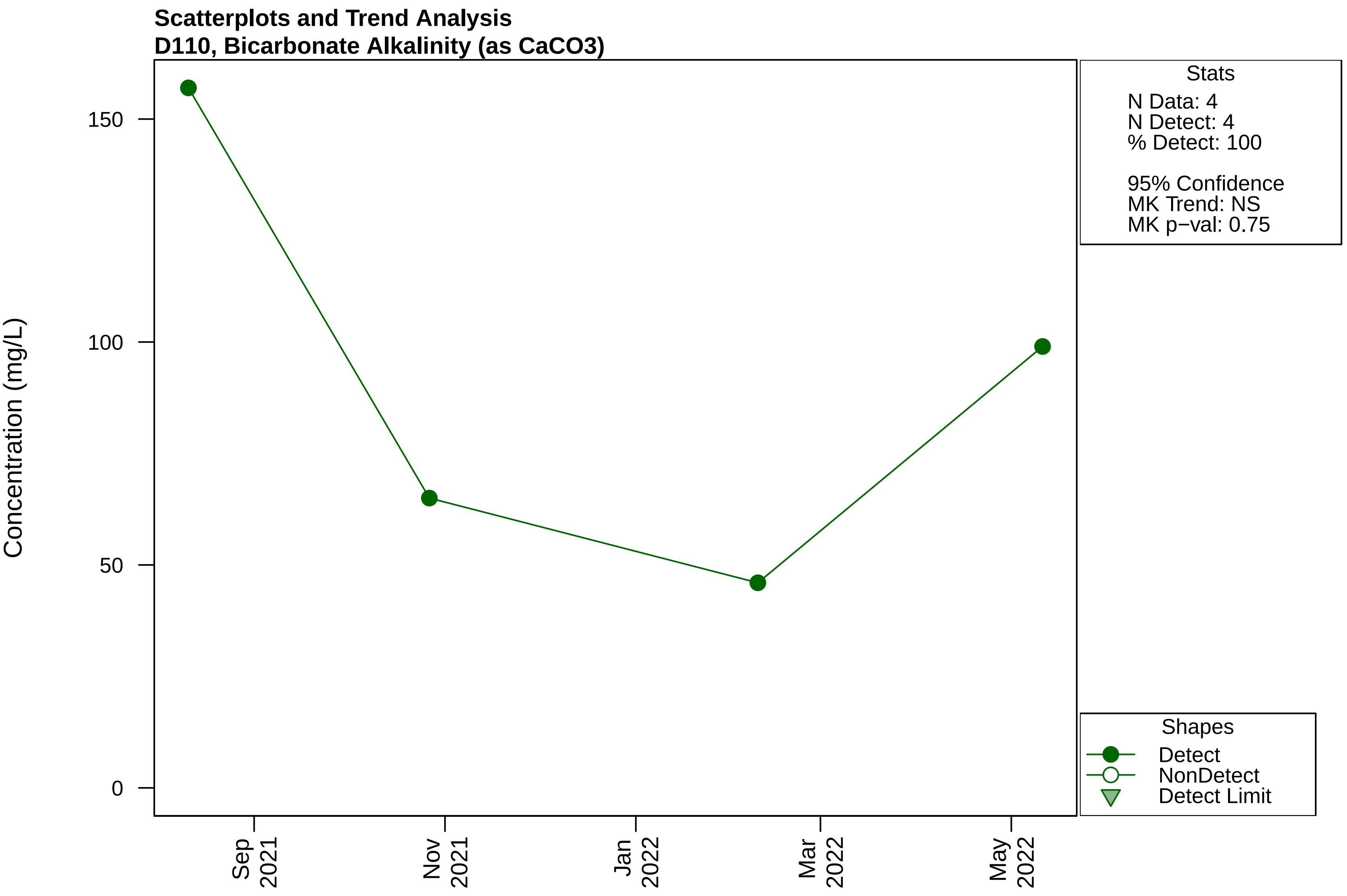
Scatterplots and Trend Analysis
D110, Arsenic
Concentration (ug/L)
0
2
4
6
8
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 4
N Detect: 4
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.718
Shapes
Detect
NonDetect
Detect Limit

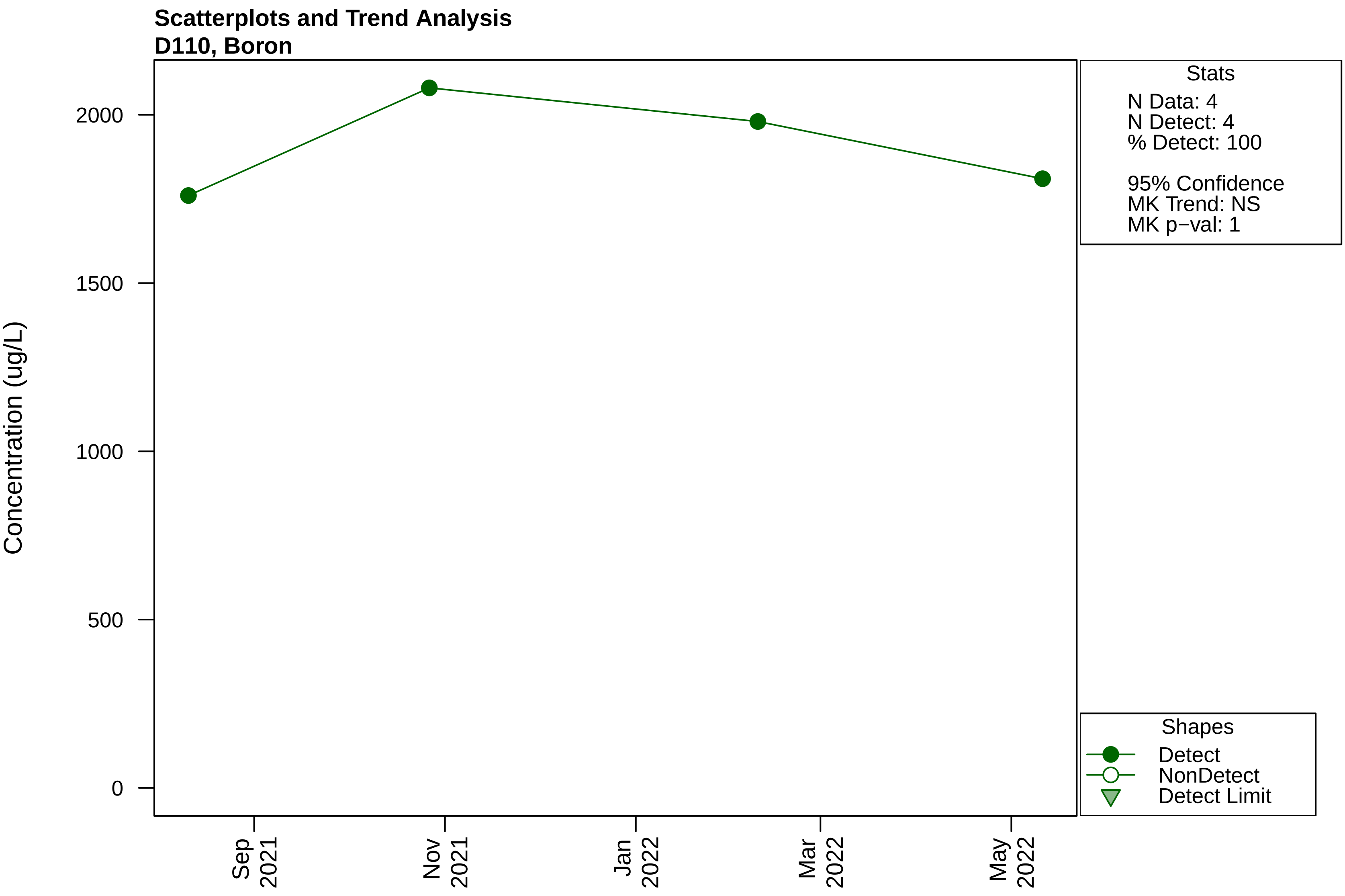
Scatterplots and Trend Analysis
D110, Arsenic (Filtered)



Scatterplots and Trend Analysis
D110, Barium

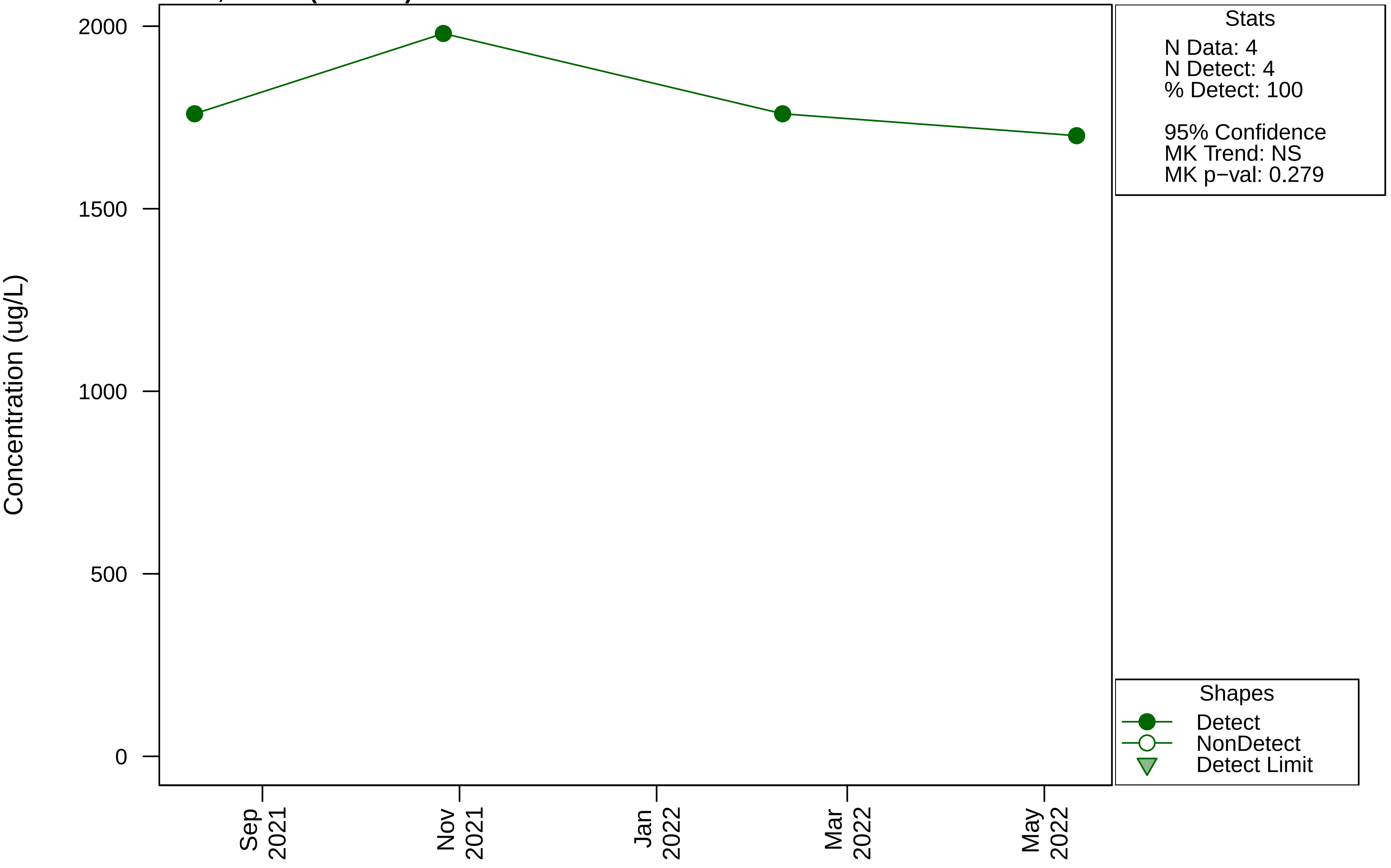



Scatterplots and Trend Analysis
D110, Bicarbonate Alkalinity (as CaCO3)
Concentration (mg/L)
150
100
50
0
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 4
N Detect: 4
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.75
Shapes
Detect
NonDetect
Detect Limit

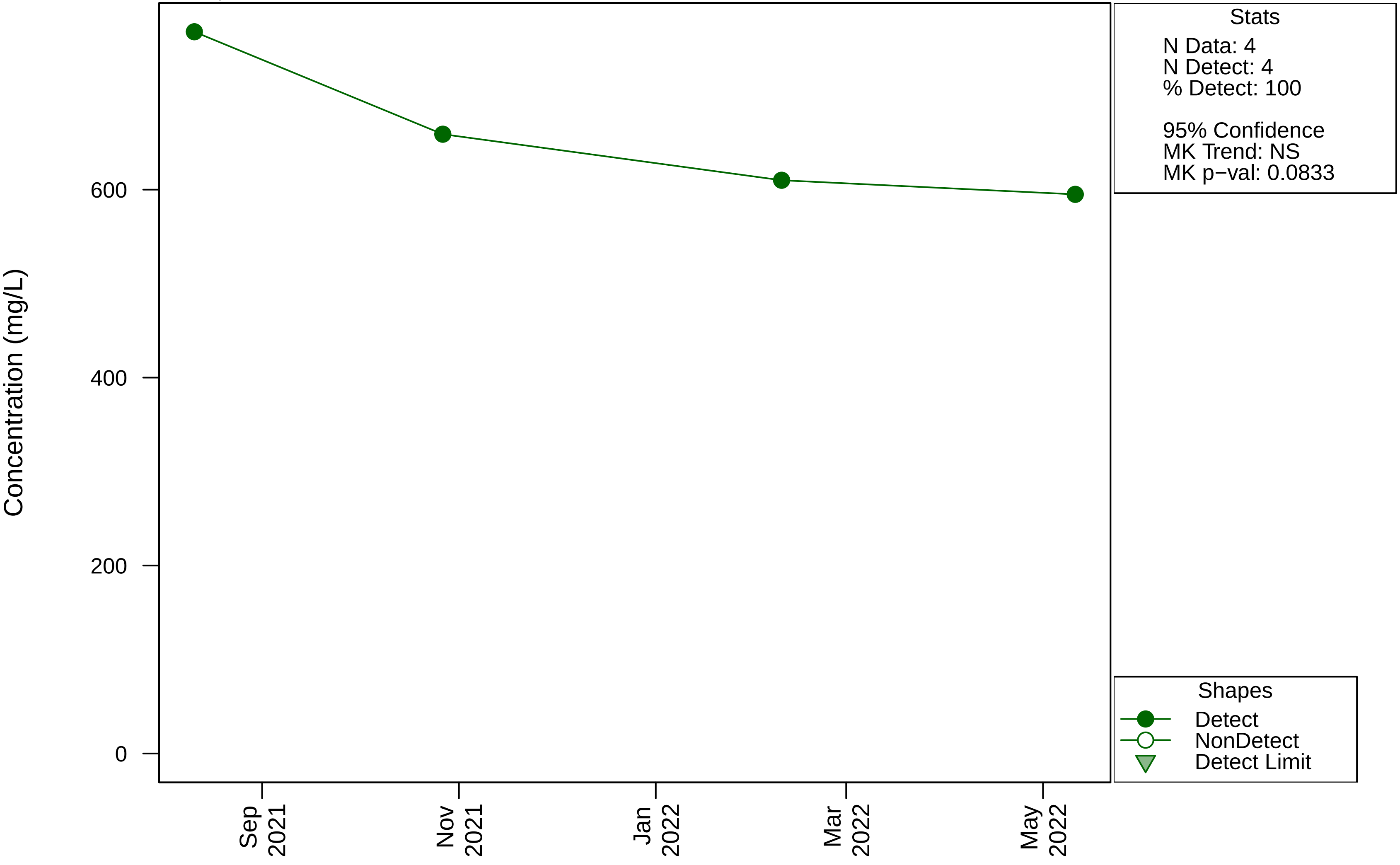


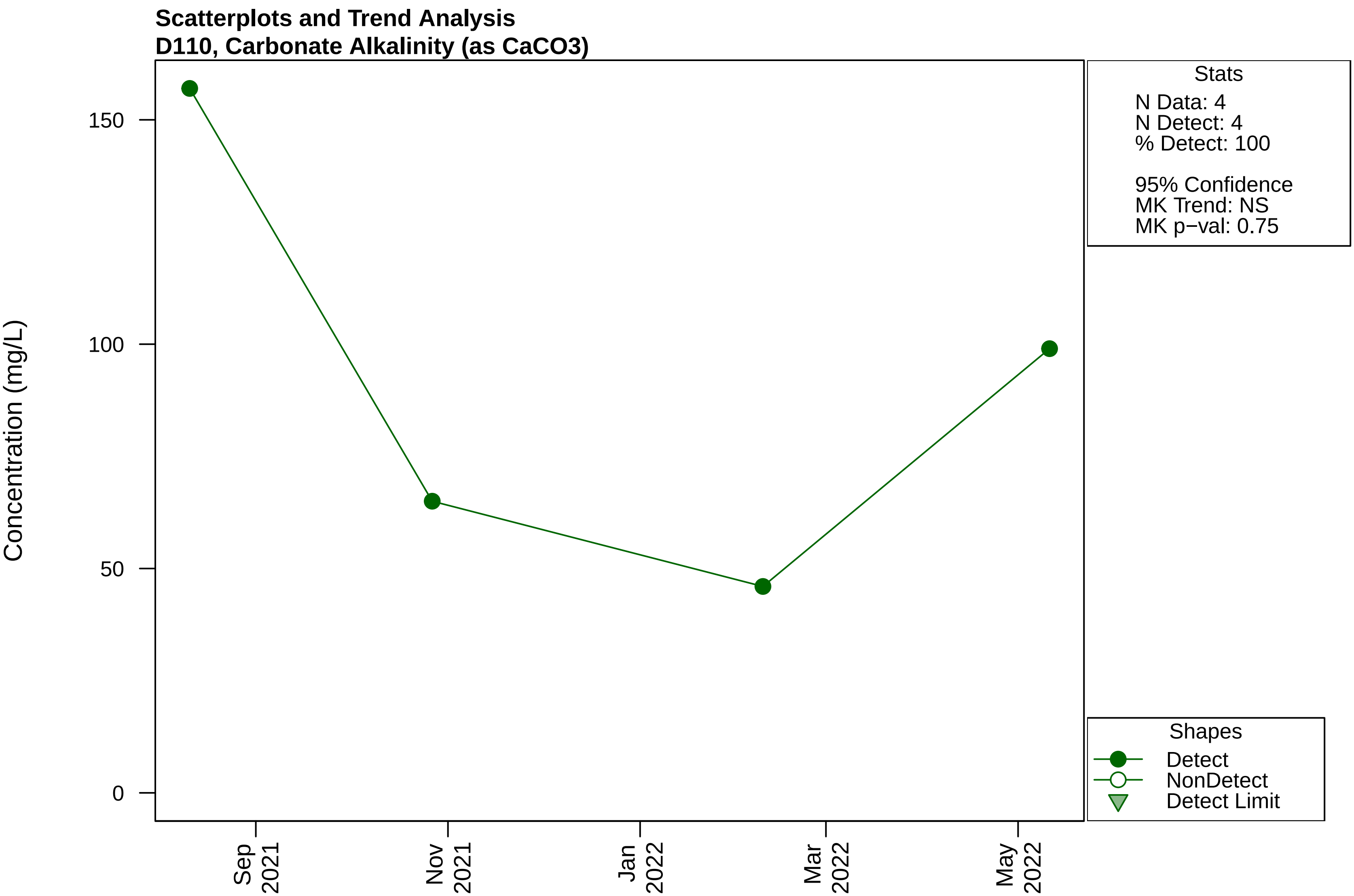
Scatterplots and Trend Analysis
D110, Boron
Concentration (ug/L)
0
500
1000
1500
2000
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 4
N Detect: 4
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 1
Shapes
Detect
NonDetect
Detect Limit

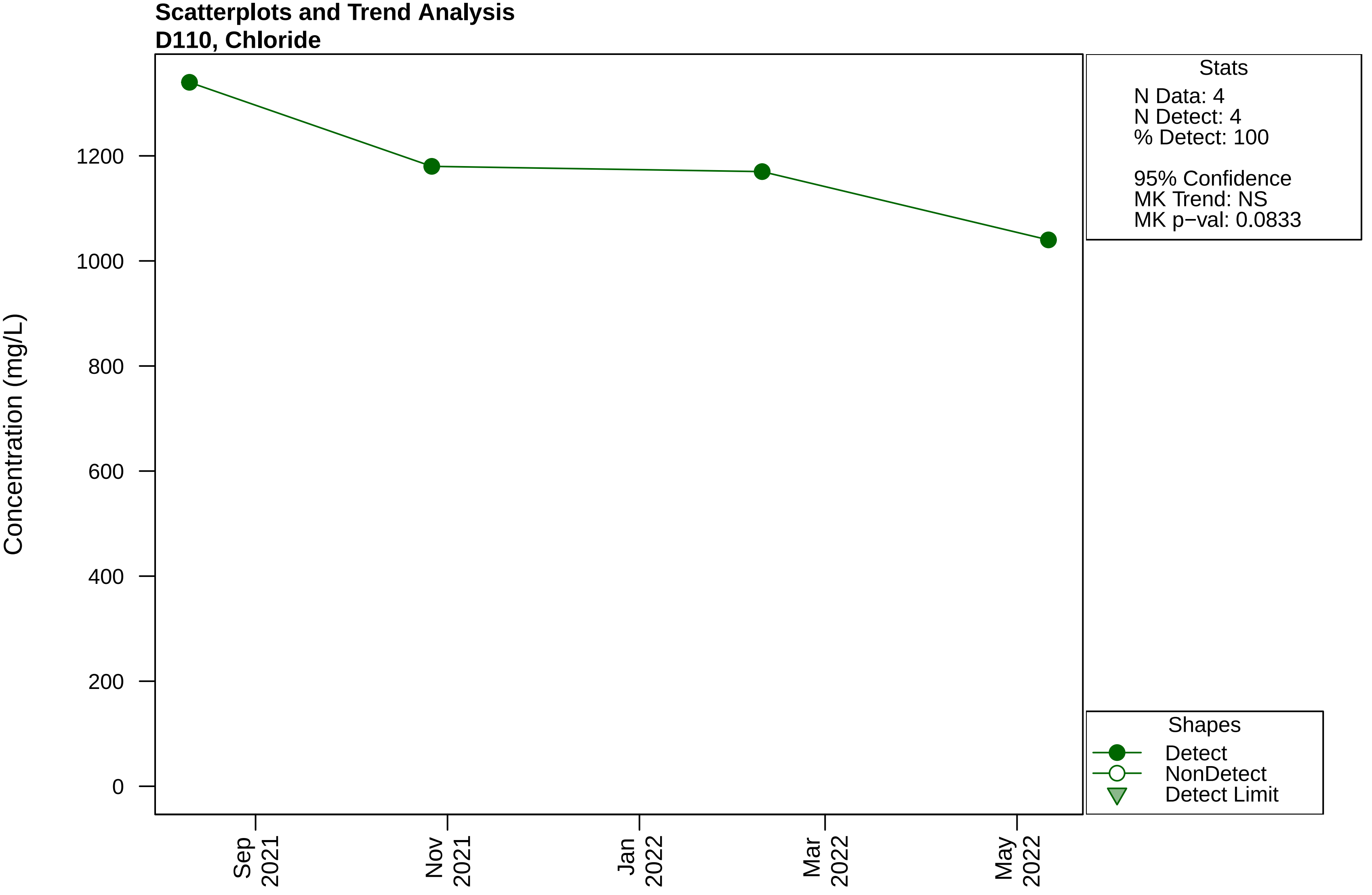
Scatterplots and Trend Analysis
D110, Boron (Filtered)

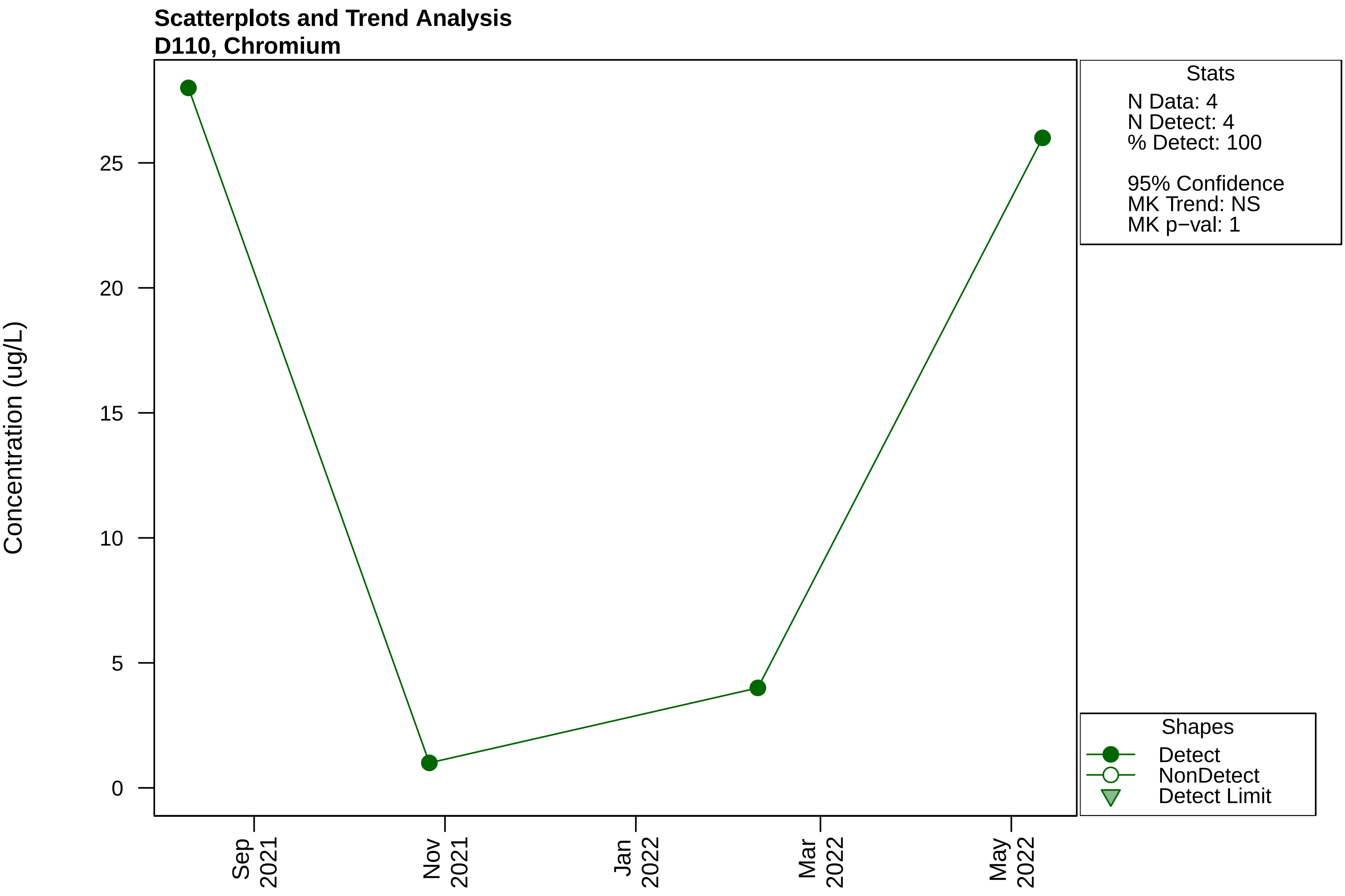


Scatterplots and Trend Analysis
D110, Calcium

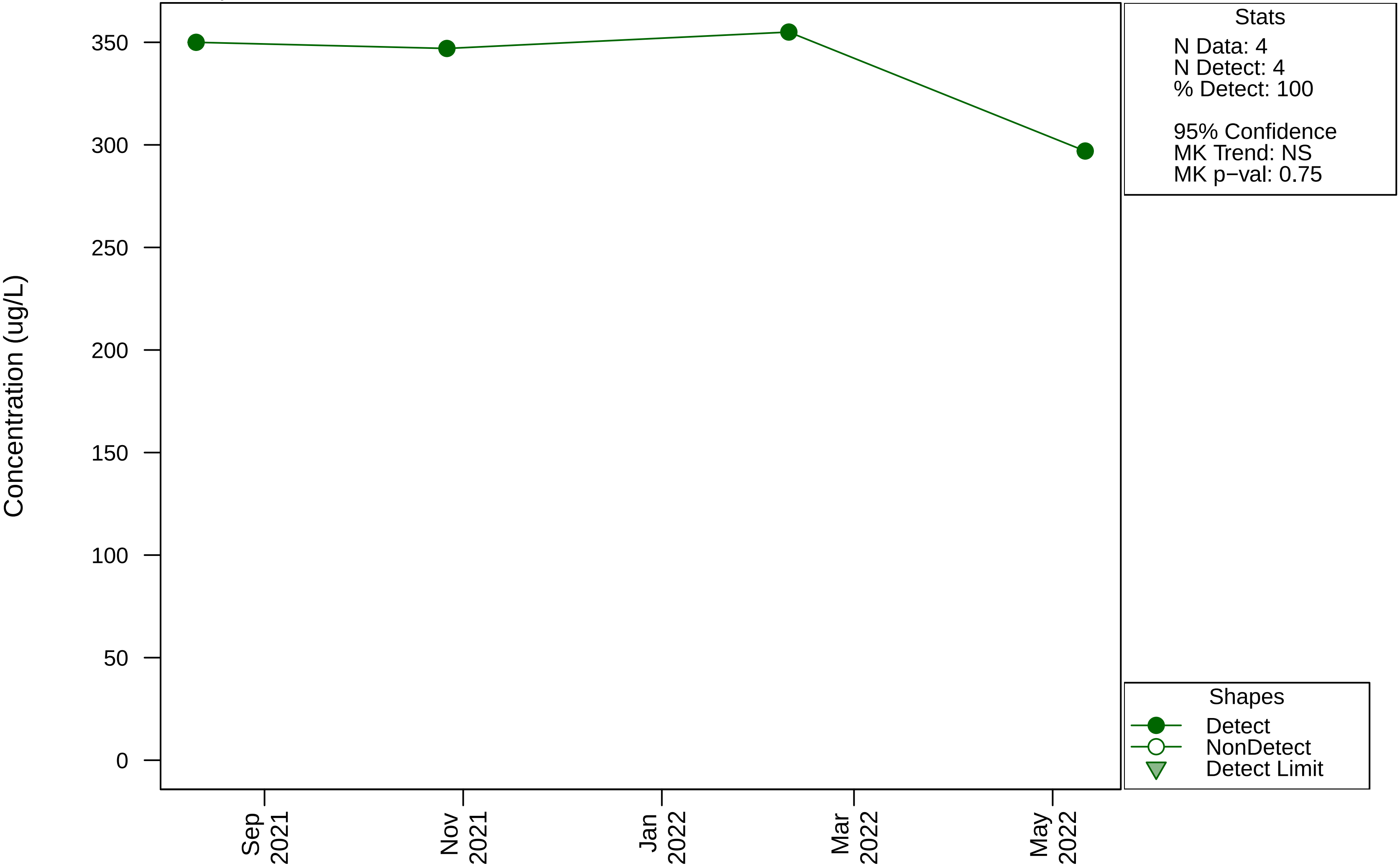



Scatterplots and Trend Analysis
D110, Carbonate Alkalinity (as CaCO3)
Concentration (mg/L)
150
100
50
0
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 4
N Detect: 4
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.75
Shapes
Detect
NonDetect
Detect Limit

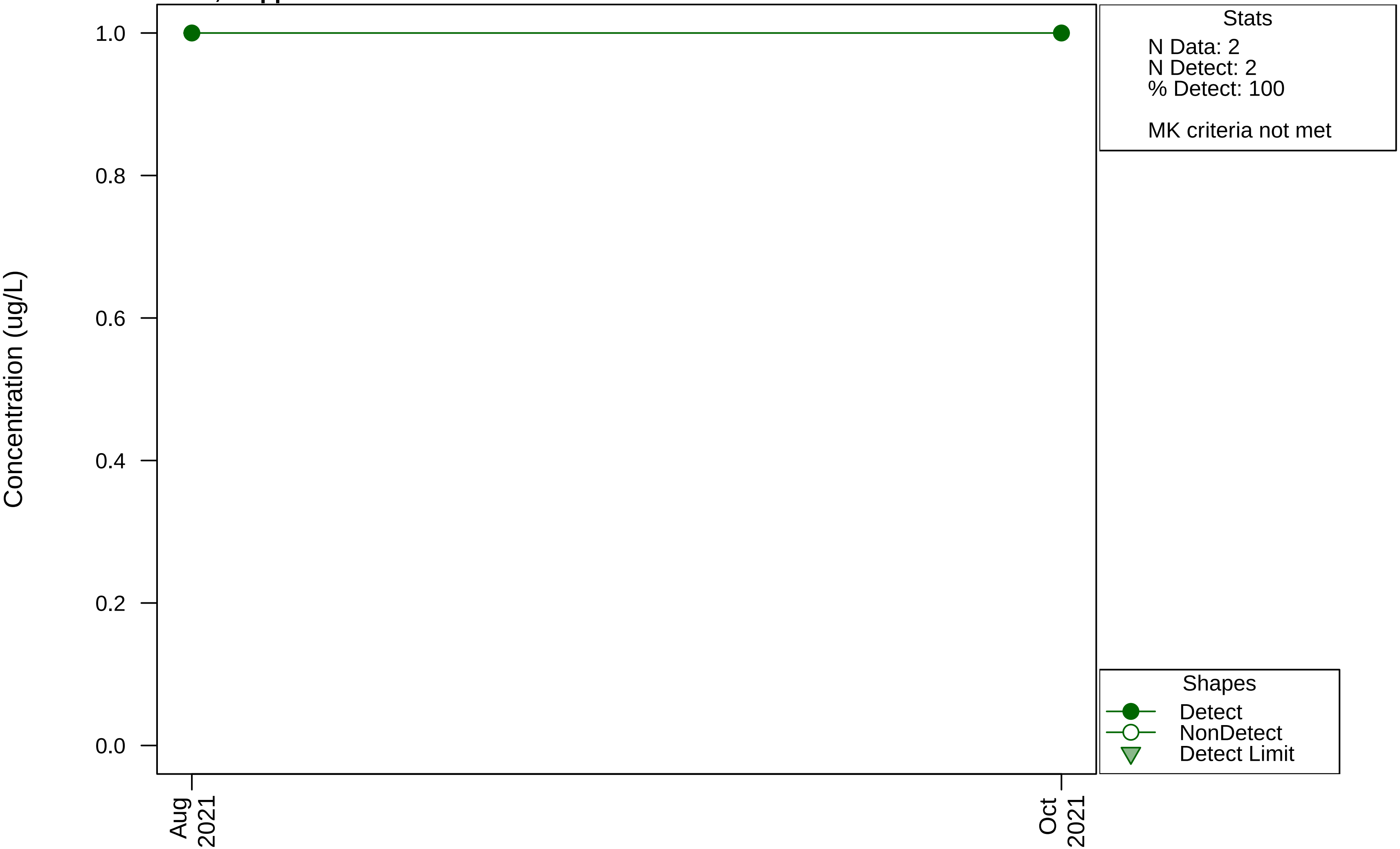

Scatterplots and Trend Analysis
D110, Chloride
Concentration (mg/L)
0
200
400
600
800
1000
1200
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 4
N Detect: 4
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.0833
Shapes
Detect
NonDetect
Detect Limit


Scatterplots and Trend Analysis
D110, Chromium
Concentration (ug/L)
0
5
10
15
20
25
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 4
N Detect: 4
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 1
Shapes
Detect
NonDetect
Detect Limit

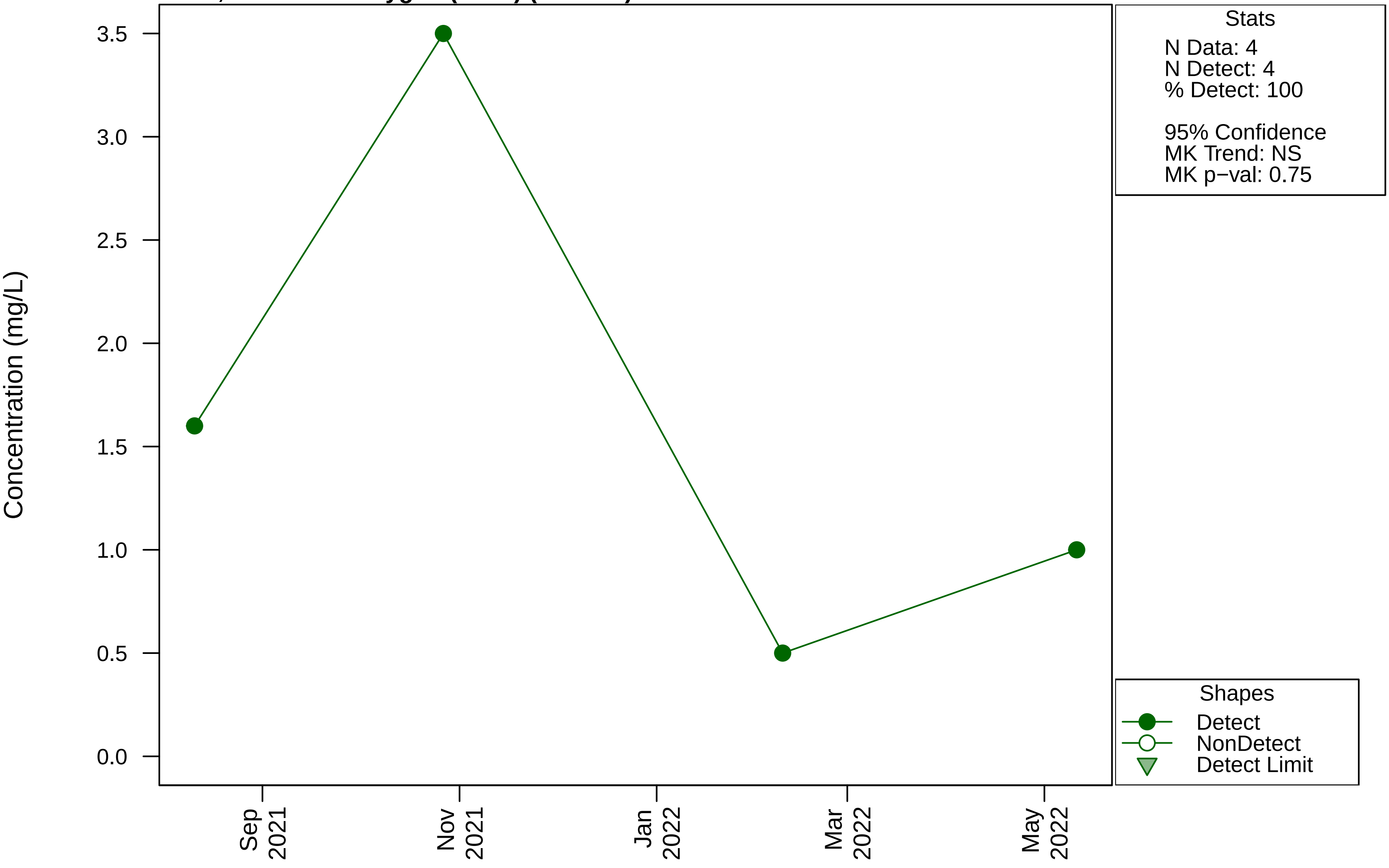
Scatterplots and Trend Analysis
D110, Cobalt

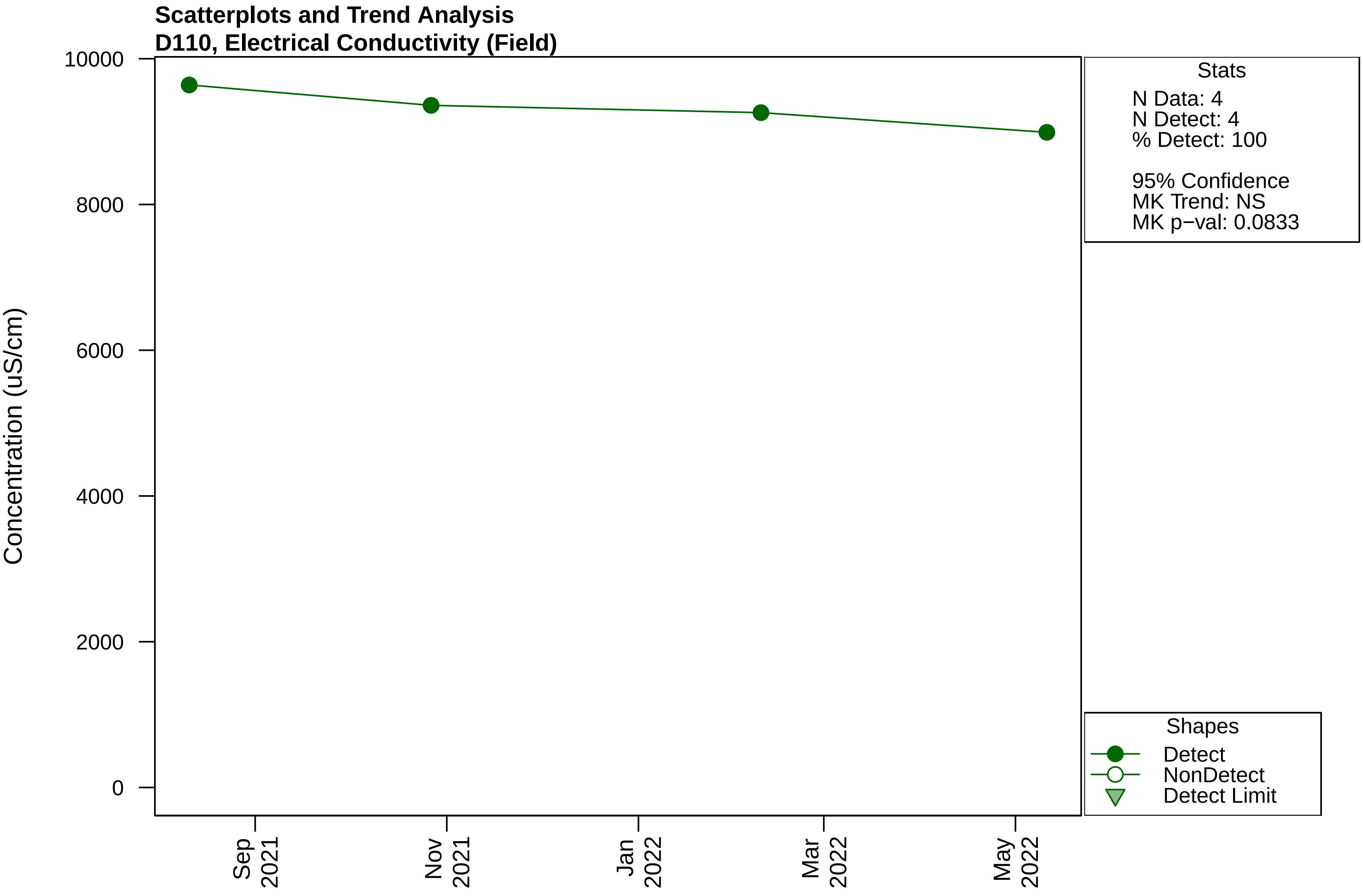


Scatterplots and Trend Analysis
D110, Copper

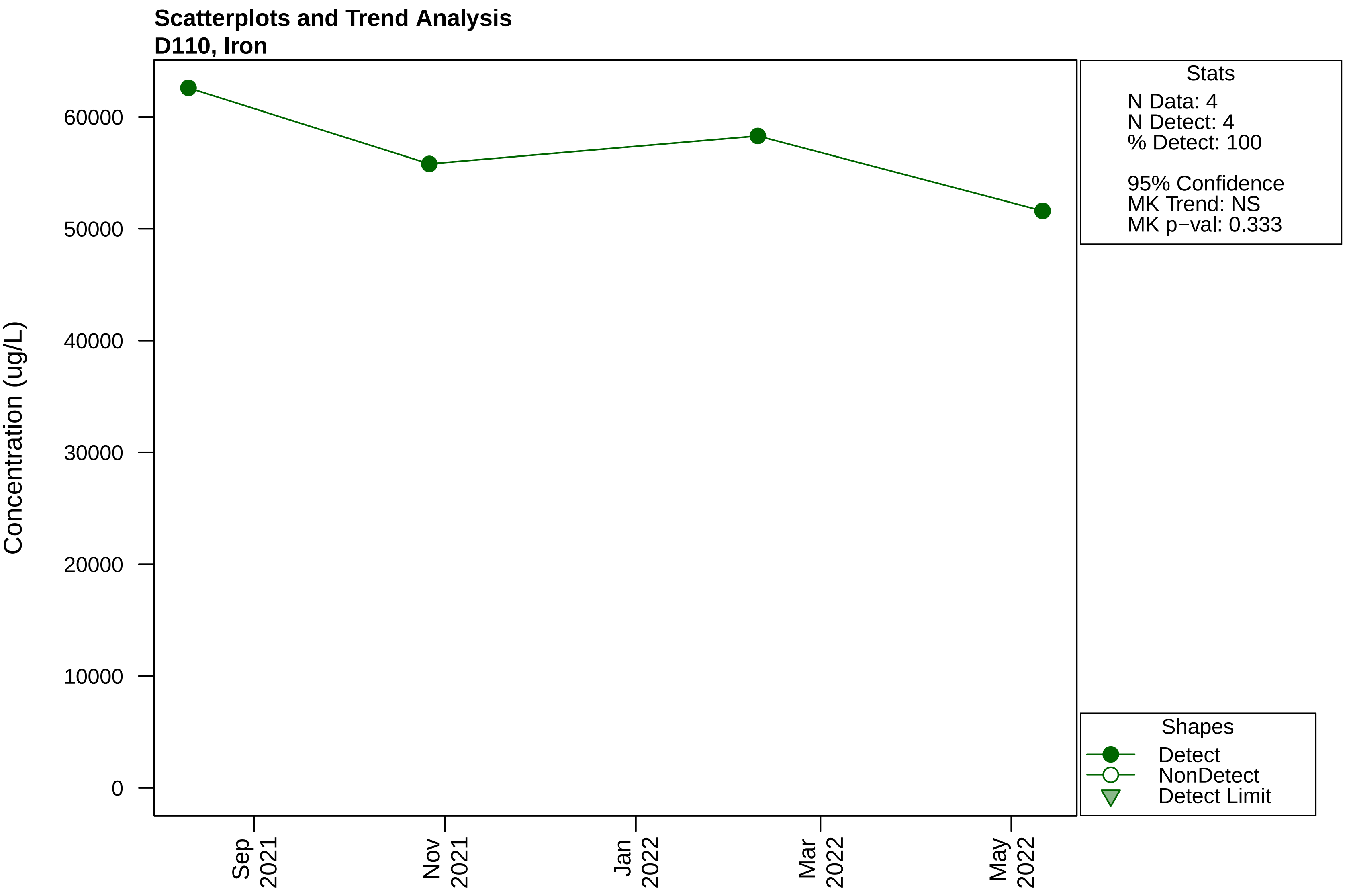


Scatterplots and Trend Analysis
D110, Dissolved Oxygen (Field) (Filtered)



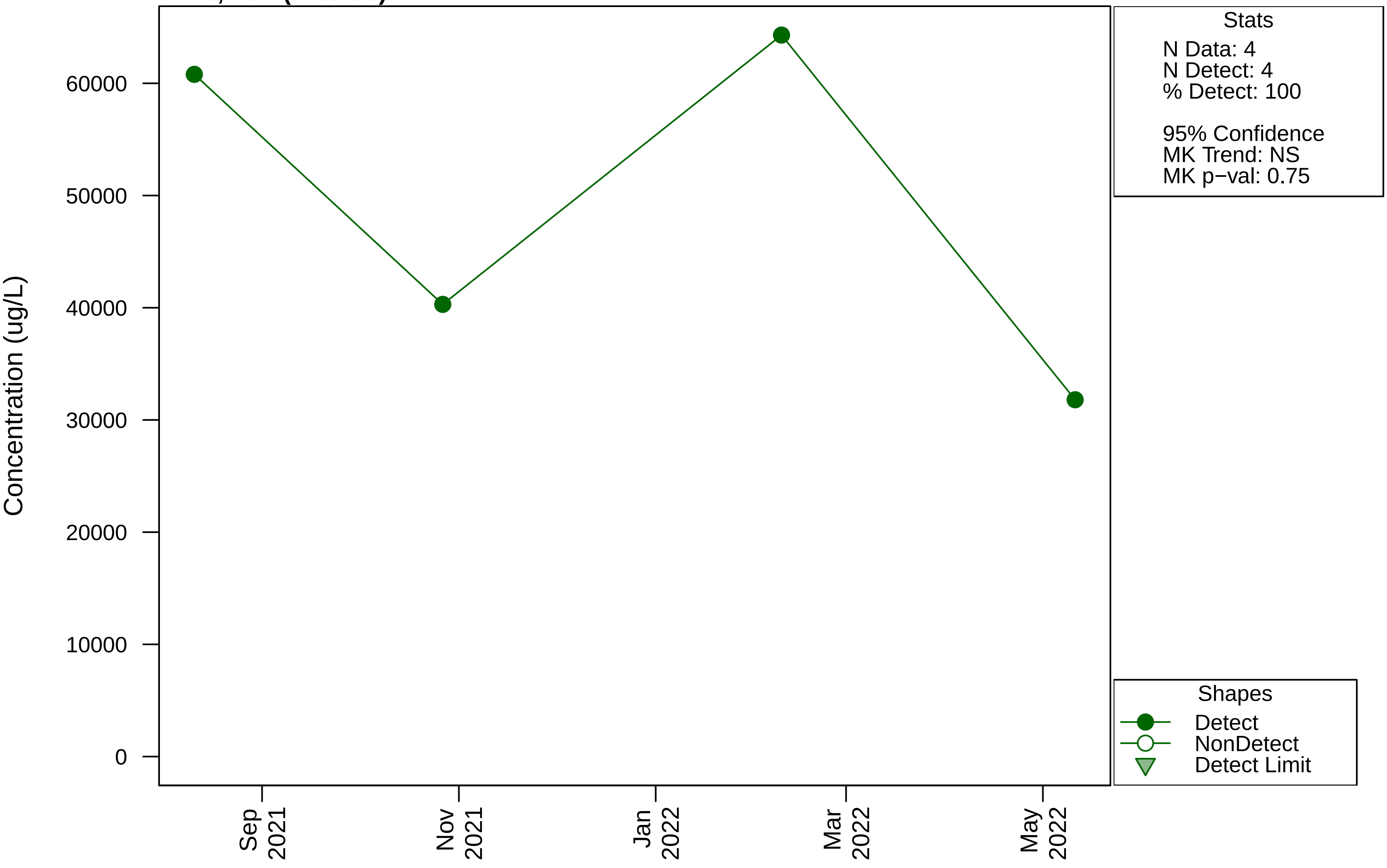


Scatterplots and Trend Analysis
D110, Electrical Conductivity (Field)
Concentration (uS/cm)
10000
8000
6000
4000
2000
0
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 4
N Detect: 4
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.0833
Shapes
Detect
NonDetect
Detect Limit

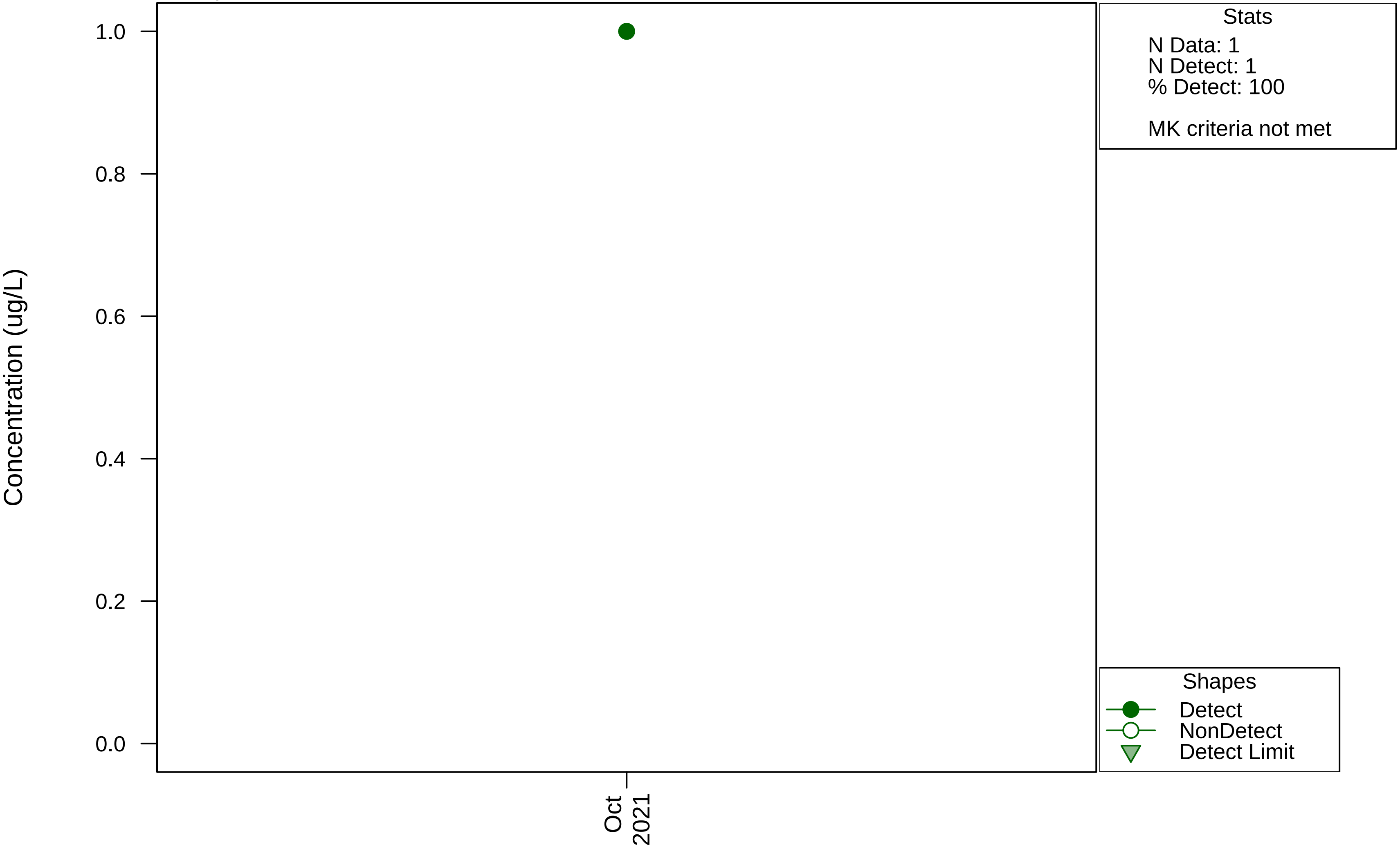


Scatterplots and Trend Analysis
D110, Iron
Concentration (ug/L)
0
10000
20000
30000
40000
50000
60000
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 4
N Detect: 4
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.333
Shapes
Detect
NonDetect
Detect Limit

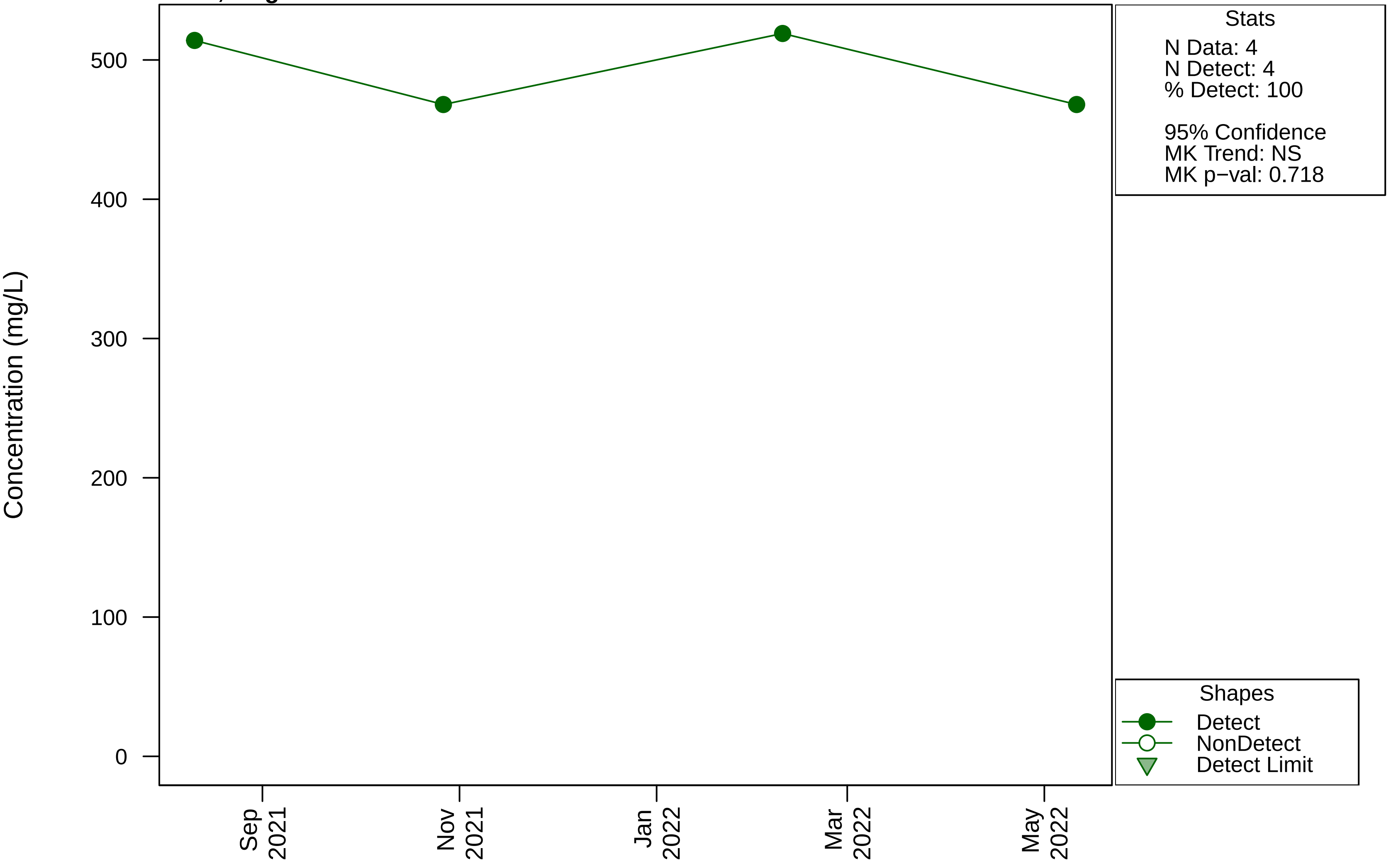
Scatterplots and Trend Analysis
D110, Iron (Filtered)

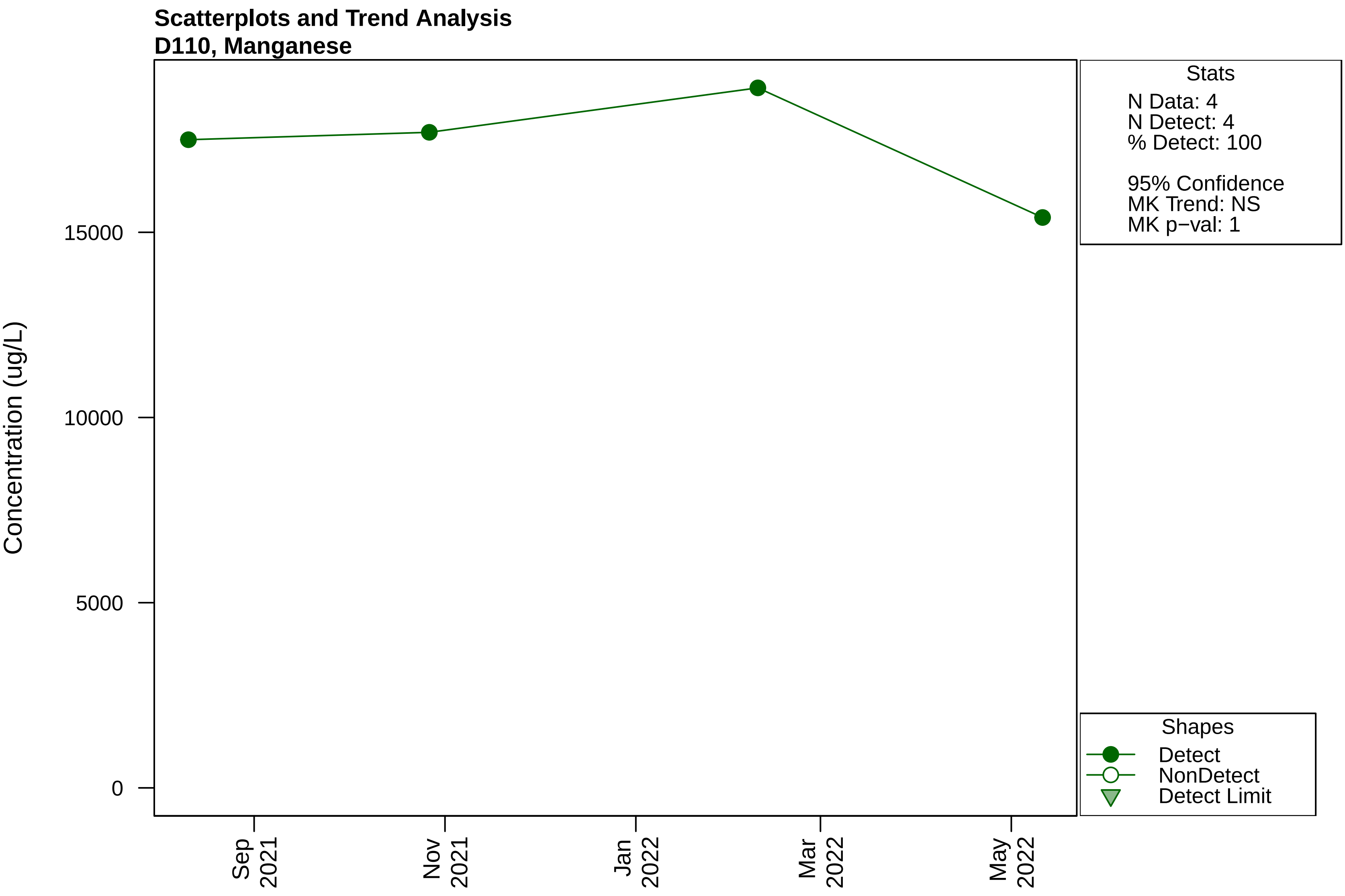


Scatterplots and Trend Analysis
D110, Lead



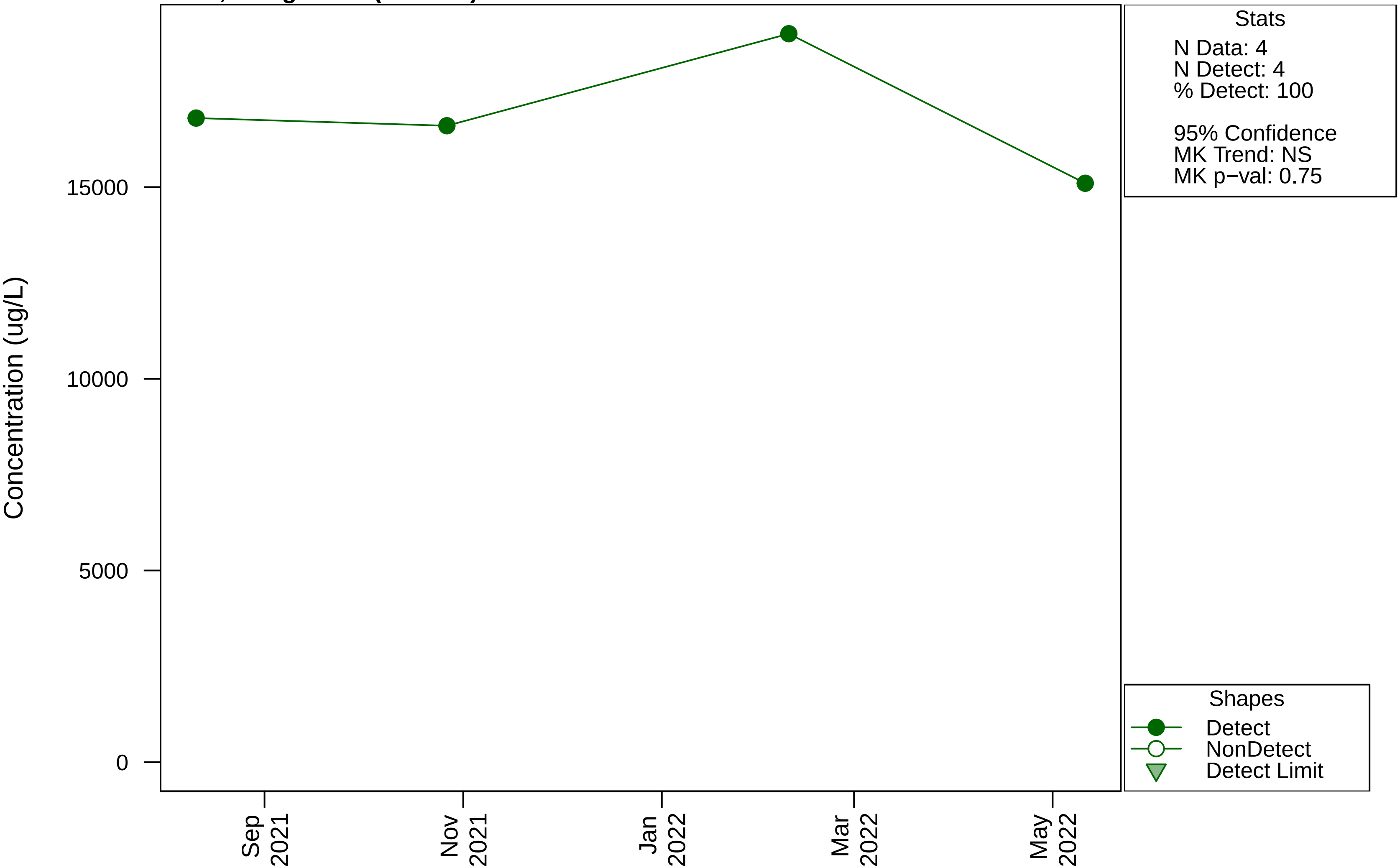
Scatterplots and Trend Analysis
D110, Magnesium



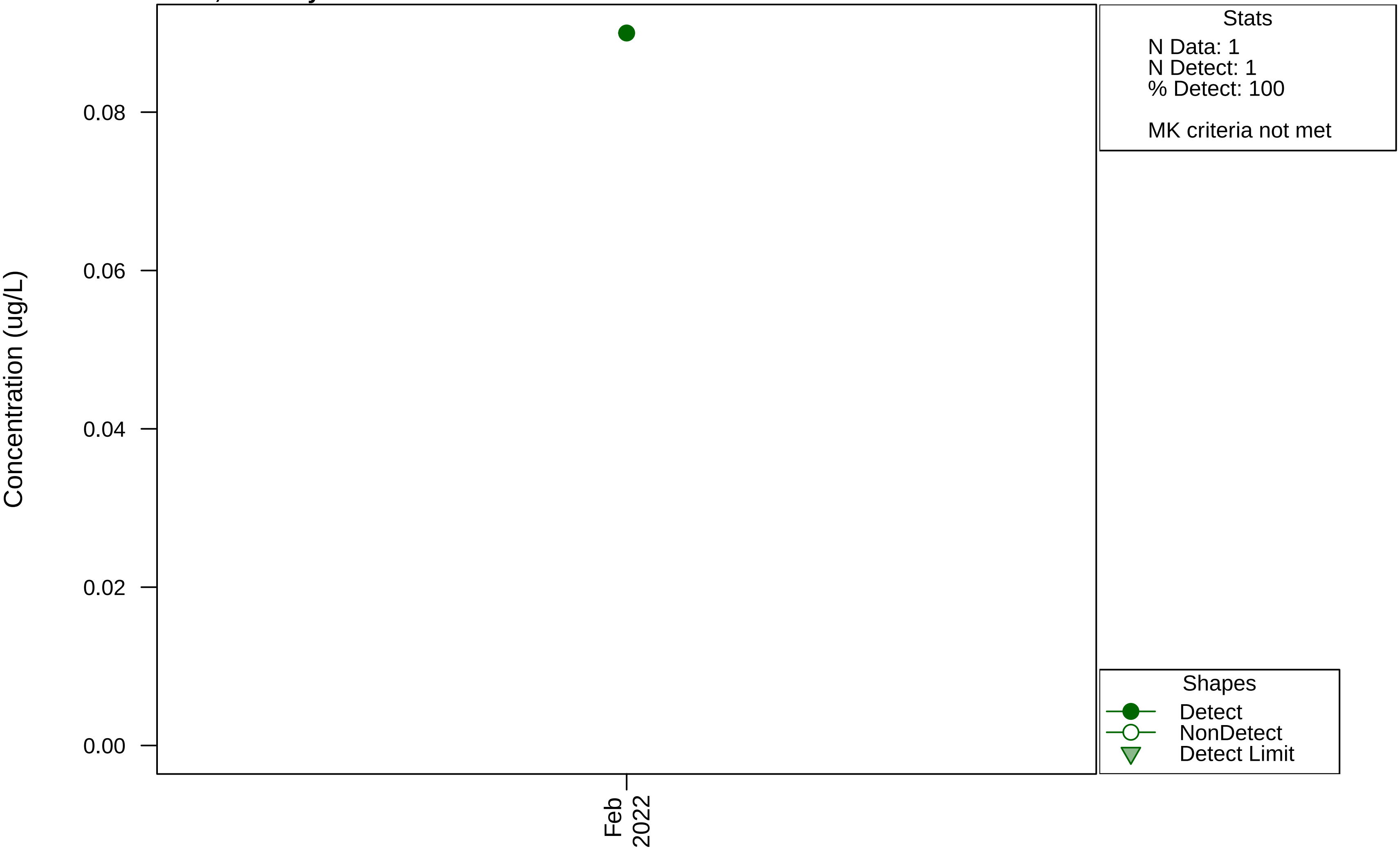


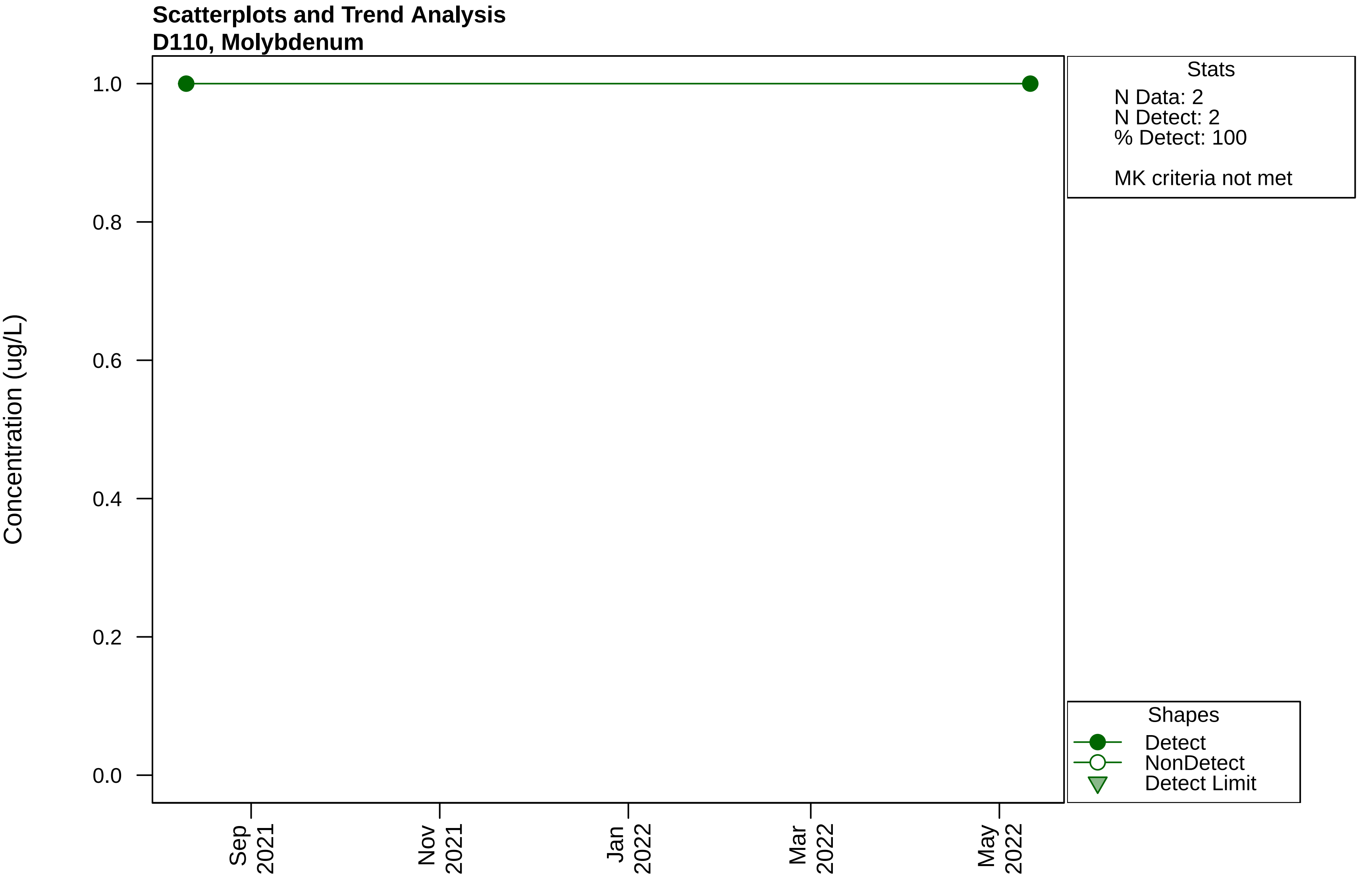
Scatterplots and Trend Analysis
D110, Manganese
Concentration (ug/L)
0
5000
10000
15000
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 4
N Detect: 4
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 1
Shapes
Detect
NonDetect
Detect Limit

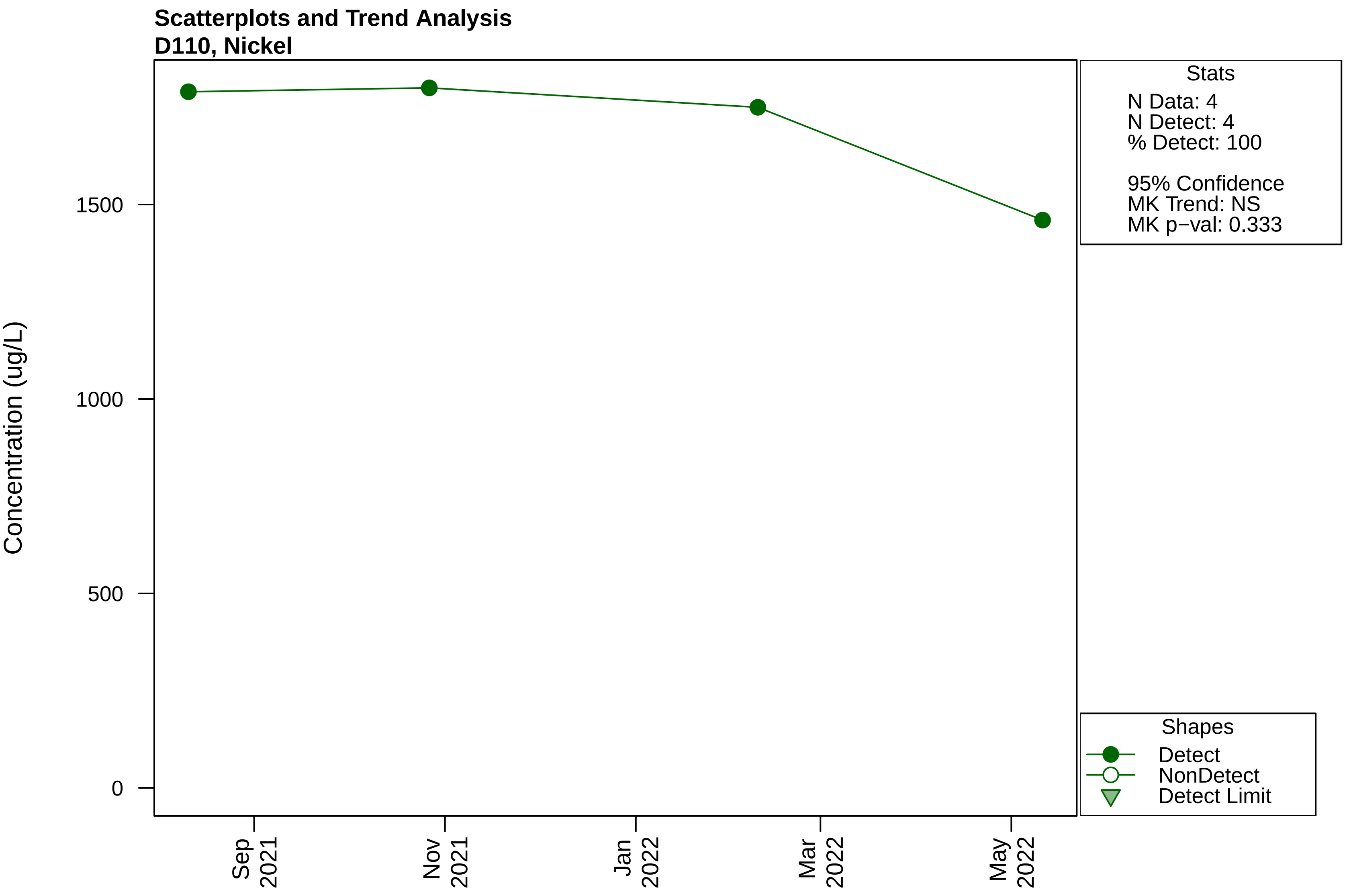
Scatterplots and Trend Analysis
D110, Manganese (Filtered)



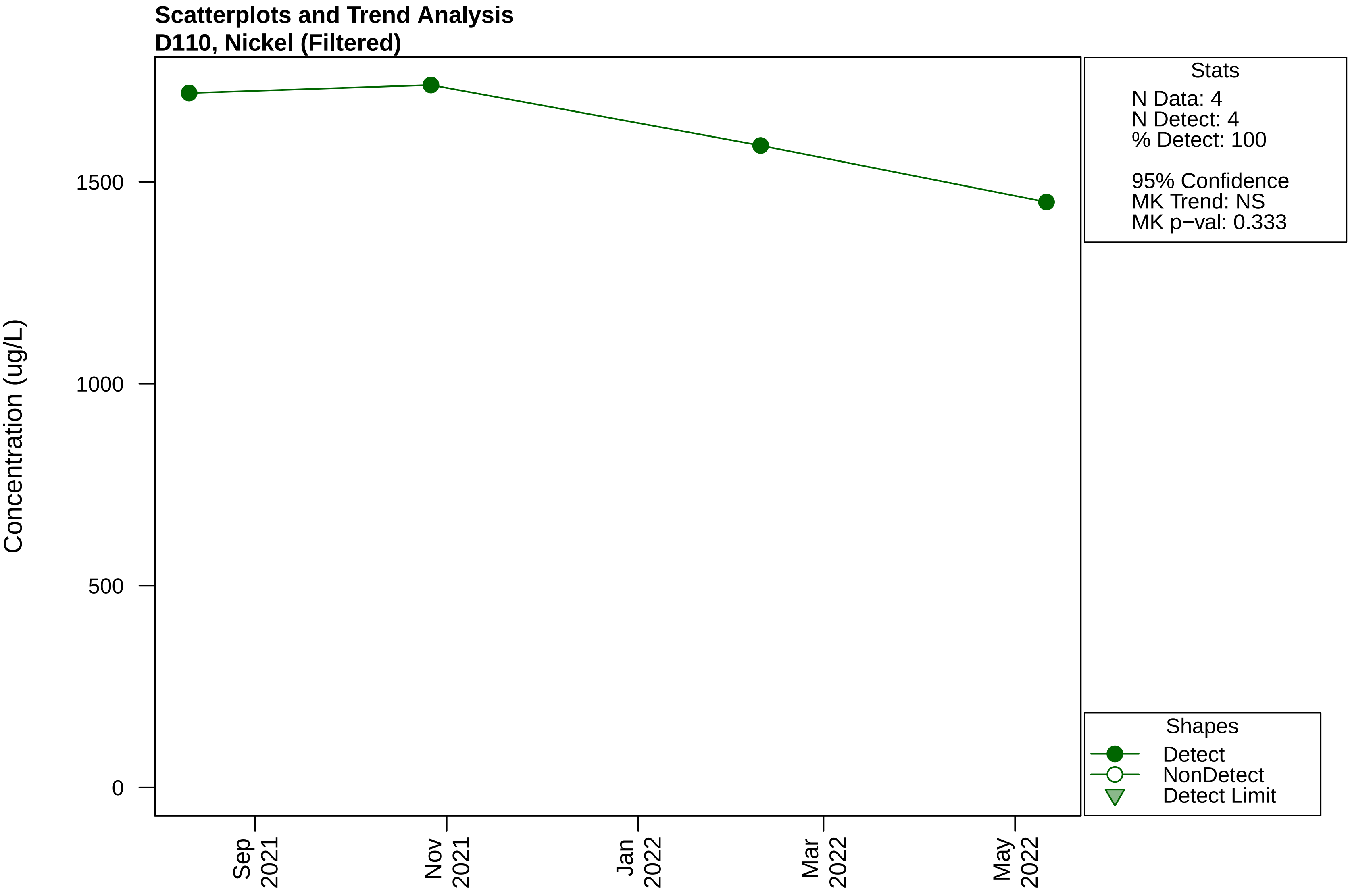
Scatterplots and Trend Analysis
D110, Mercury



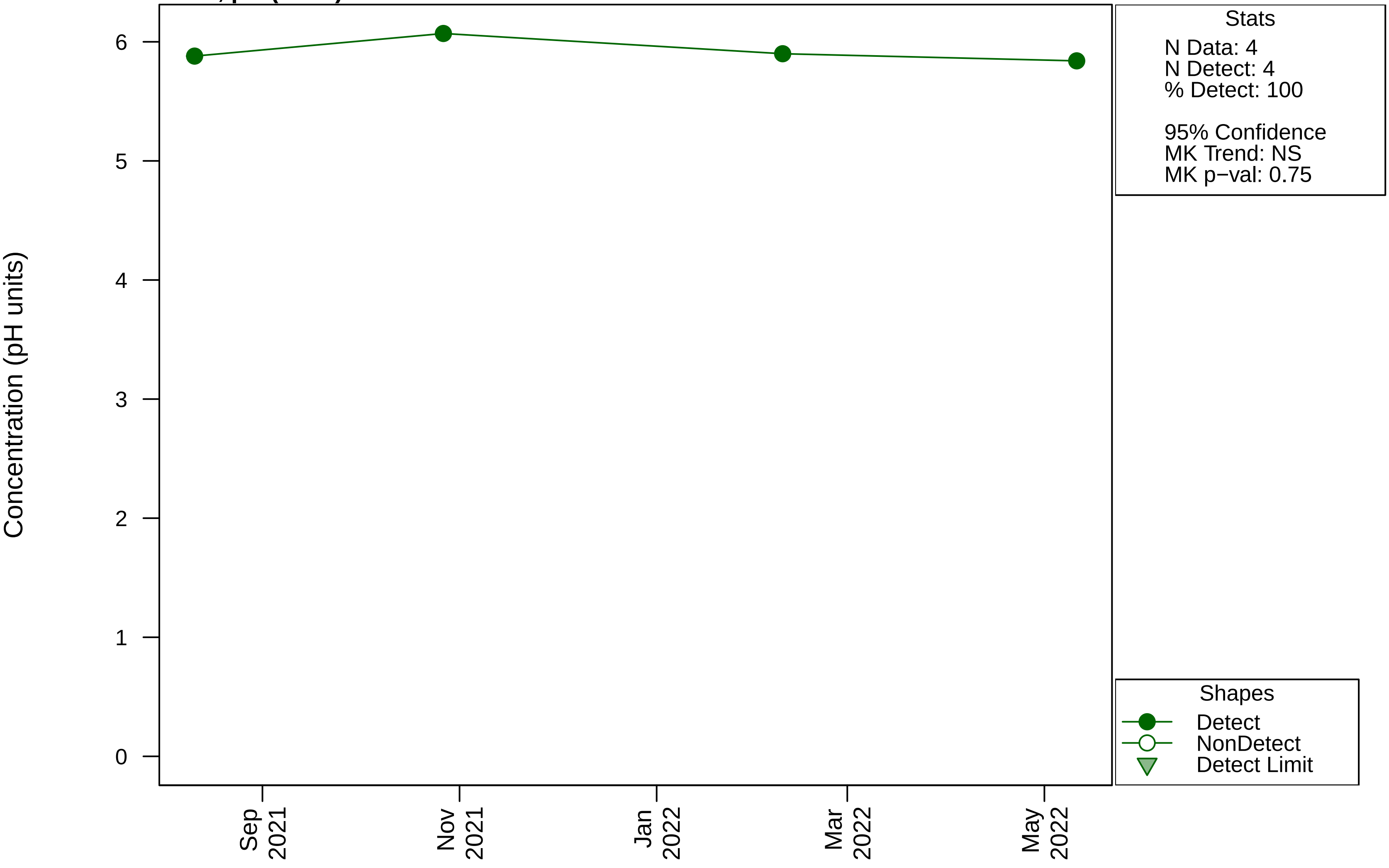

Scatterplots and Trend Analysis
D110, Molybdenum
Concentration (ug/L)
1.0
0.8
0.6
0.4
0.2
0.0
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 2
N Detect: 2
% Detect: 100
MK criteria not met
Shapes
Detect
NonDetect
Detect Limit

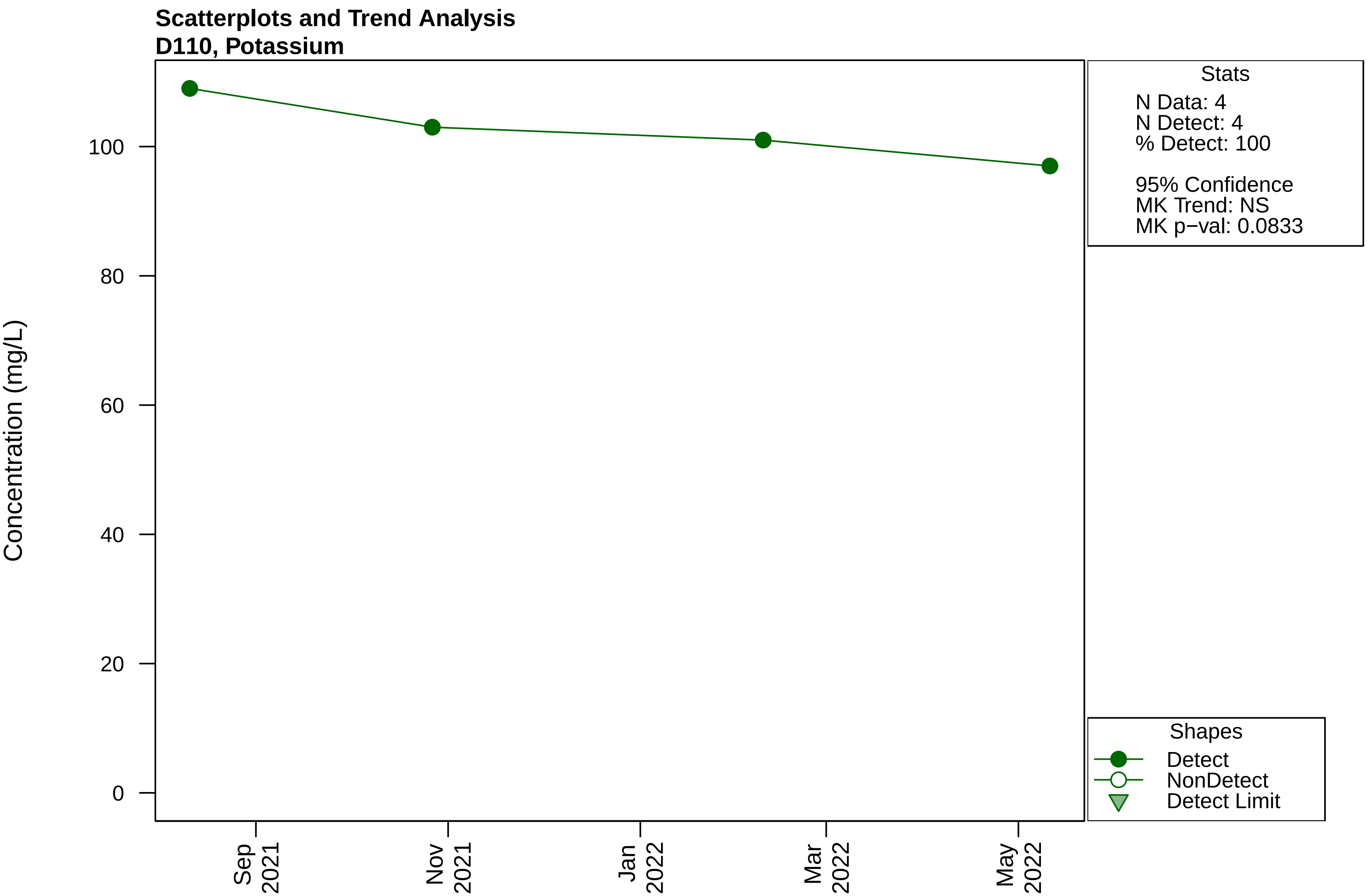


Scatterplots and Trend Analysis
D110, Nickel
Concentration (ug/L)
0
500
1000
1500
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 4
N Detect: 4
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.333
Shapes
Detect
NonDetect
Detect Limit

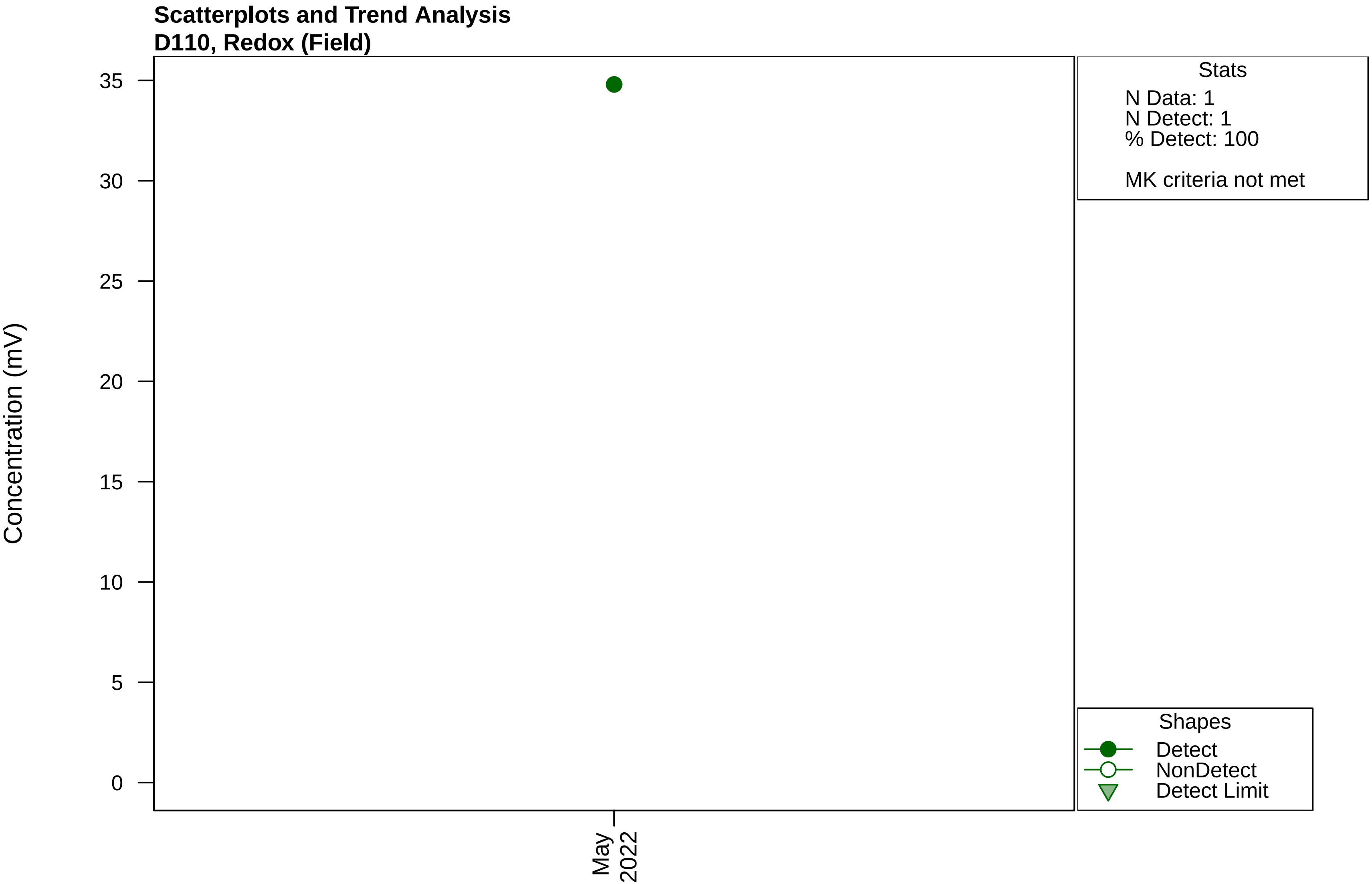

Scatterplots and Trend Analysis
D110, Nickel (Filtered)
Concentration (ug/L)
0
500
1000
1500
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 4
N Detect: 4
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.333
Shapes
Detect
NonDetect
Detect Limit

Scatterplots and Trend Analysis
D110, pH (Field)



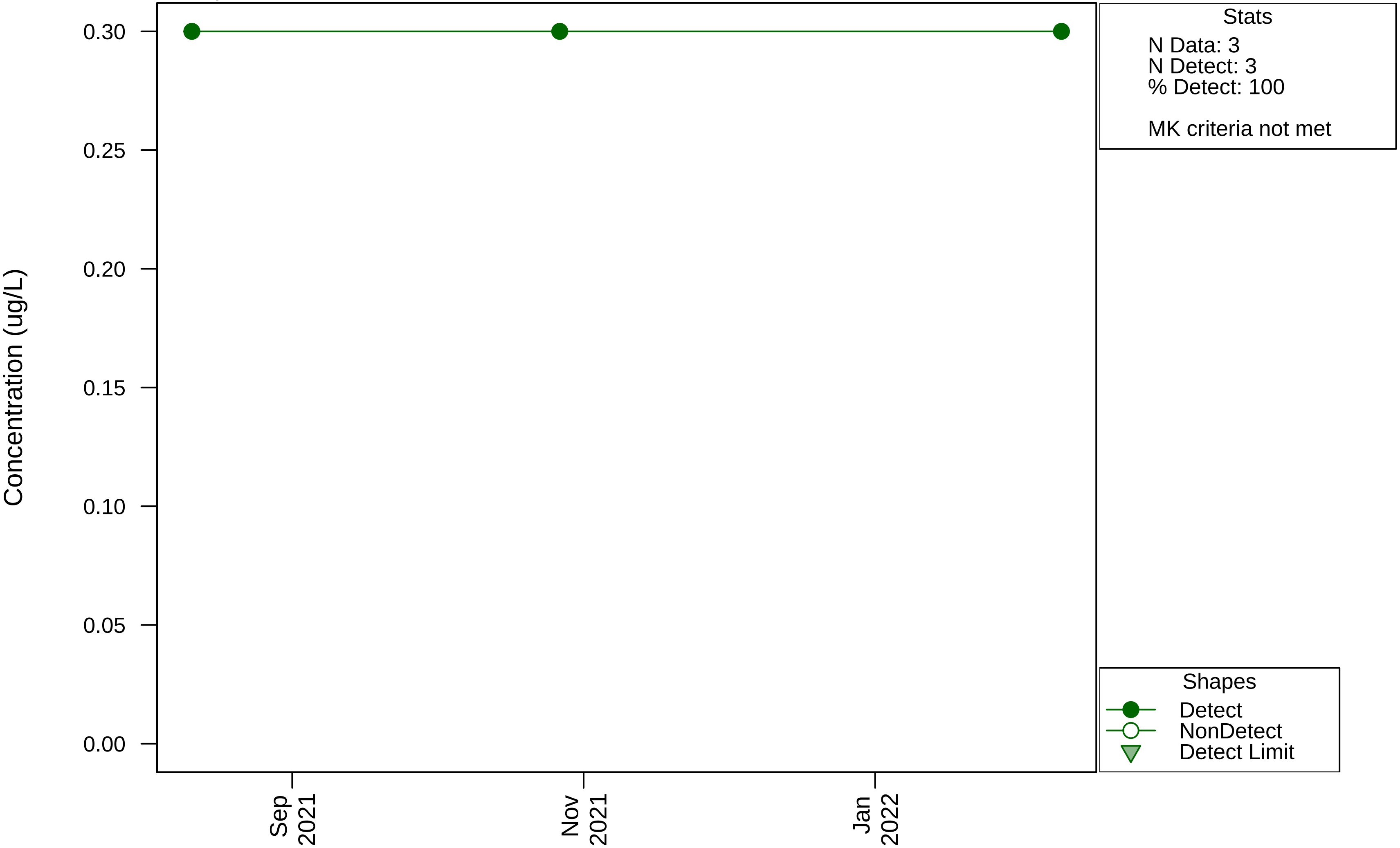


Scatterplots and Trend Analysis
D110, Potassium
Concentration (mg/L)
0
20
40
60
80
100
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 4
N Detect: 4
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.0833
Shapes
Detect
NonDetect
Detect Limit

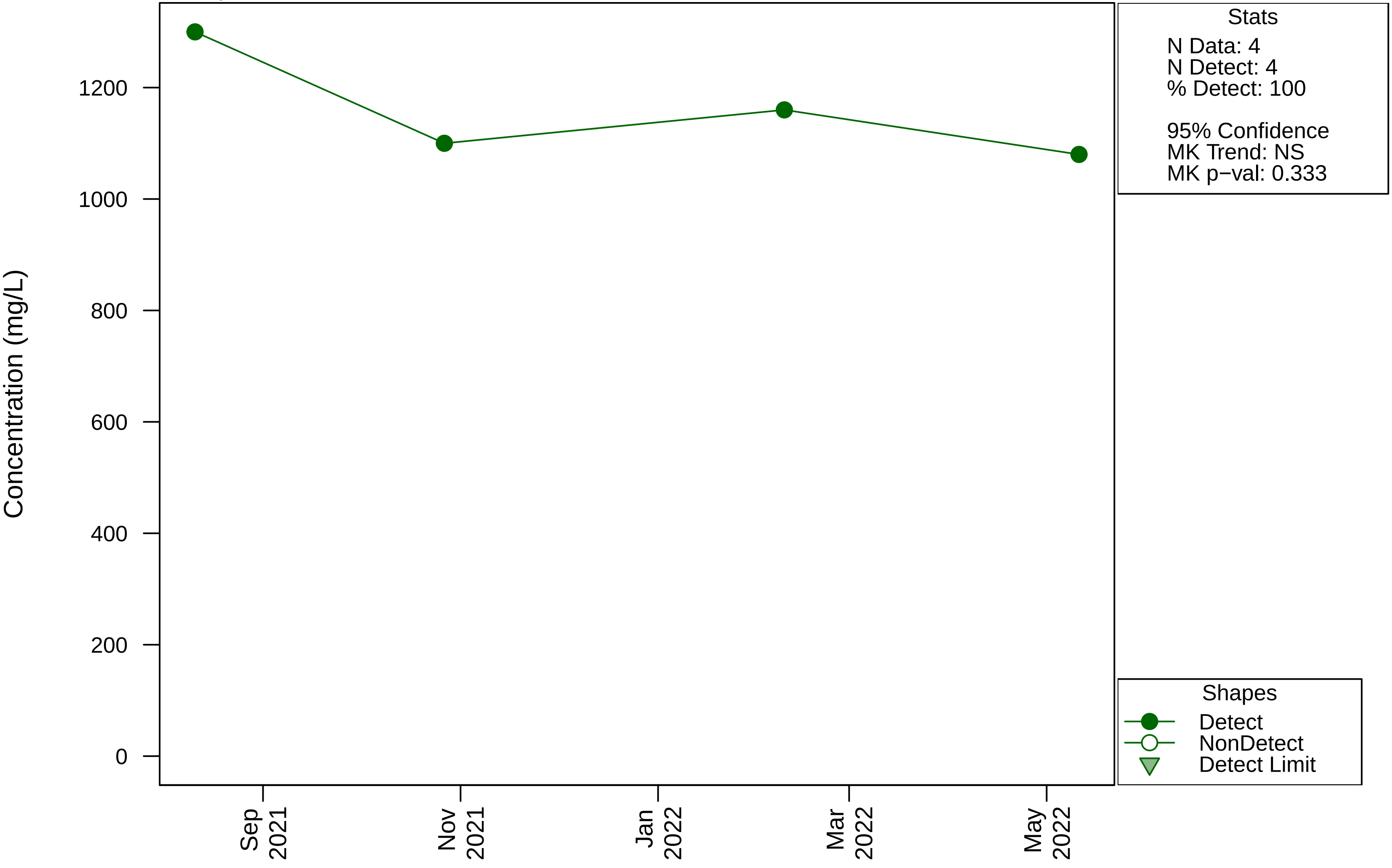


Scatterplots and Trend Analysis
D110, Redox (Field)
Concentration (mV)
0
5
10
15
20
25
30
35
May 2022
Stats
N Data: 1
N Detect: 1
% Detect: 100
MK criteria not met
Shapes
Detect
NonDetect
Detect Limit

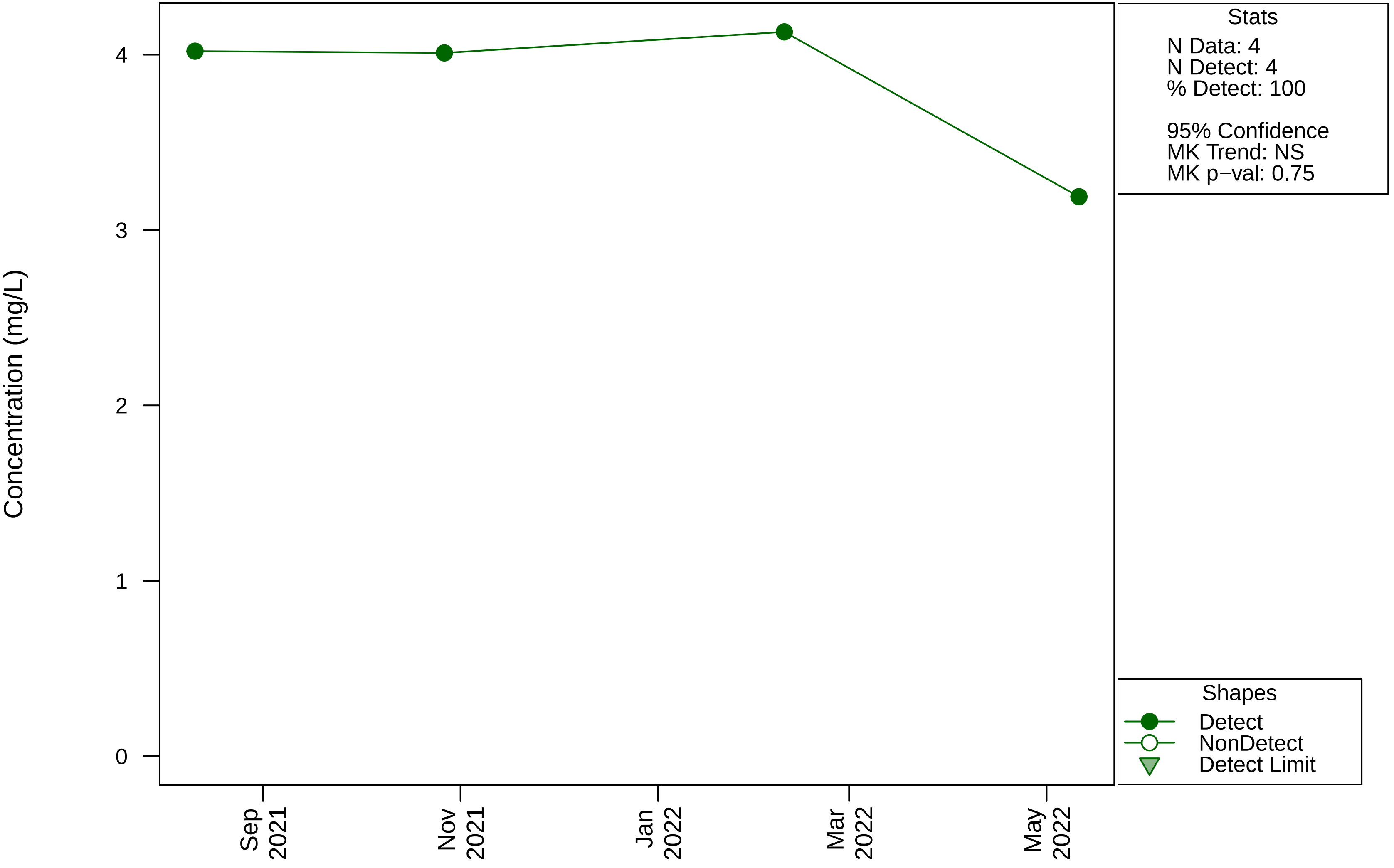
Scatterplots and Trend Analysis
D110, Selenium

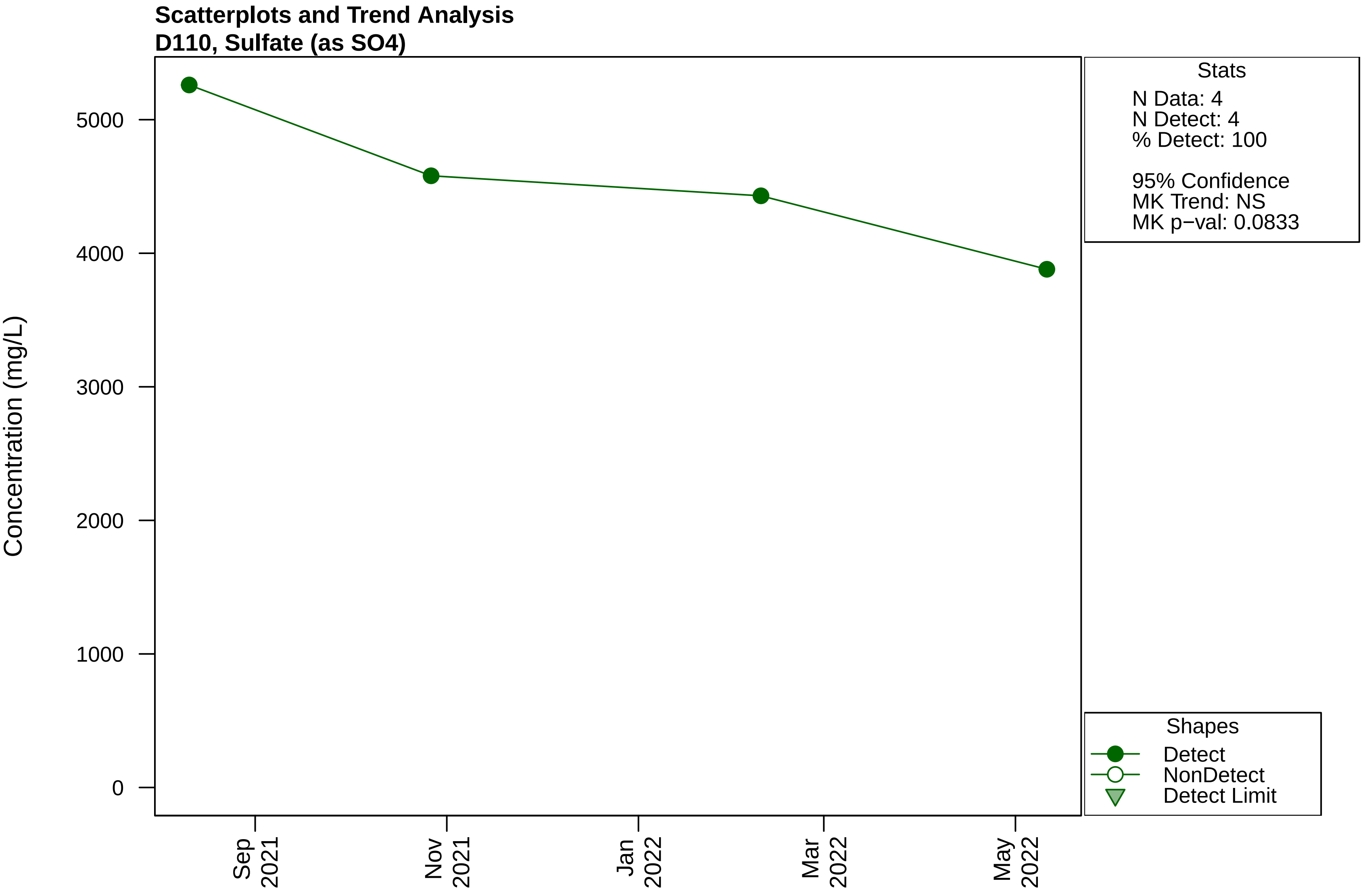


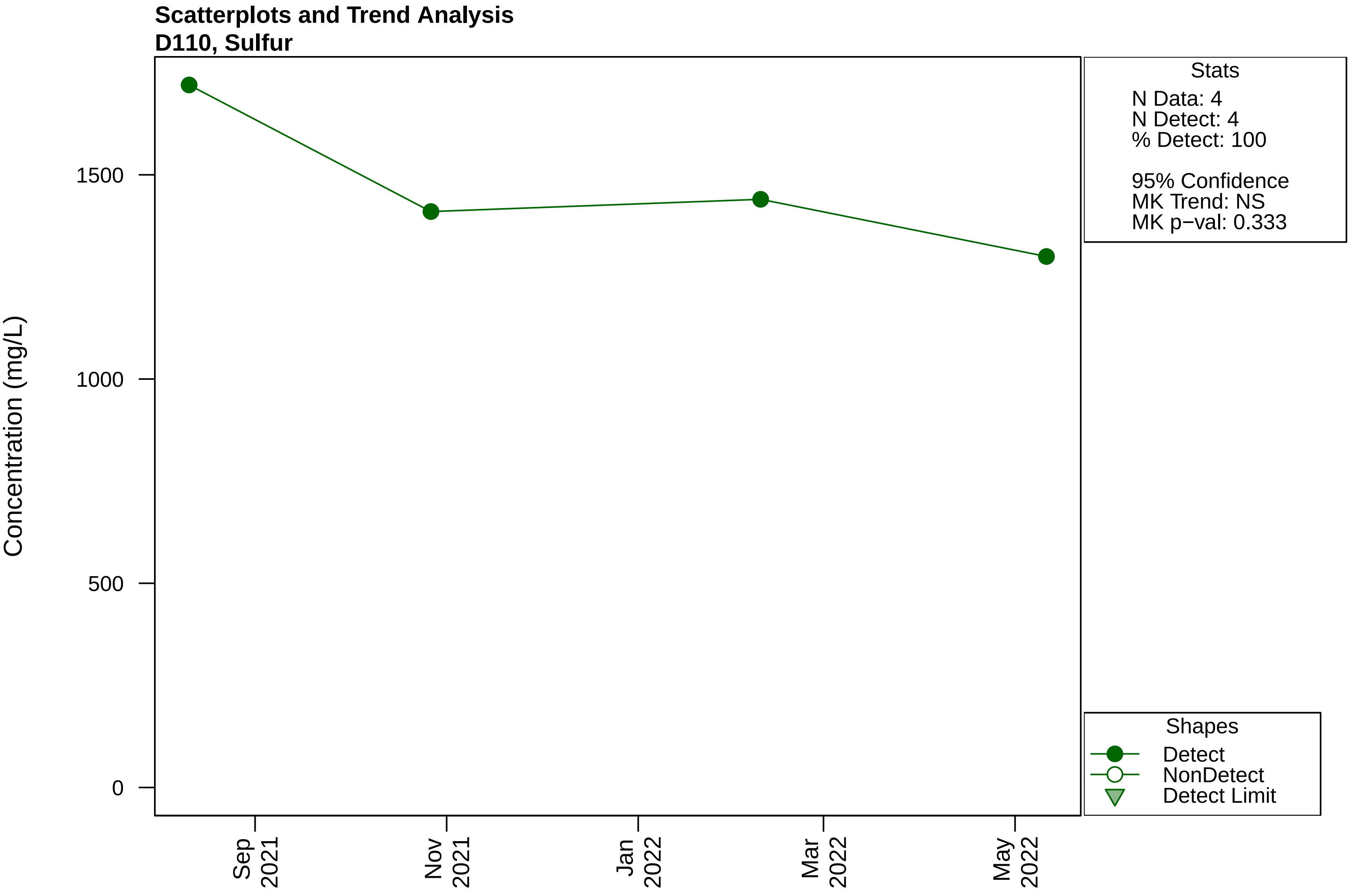
Scatterplots and Trend Analysis
D110, Sodium

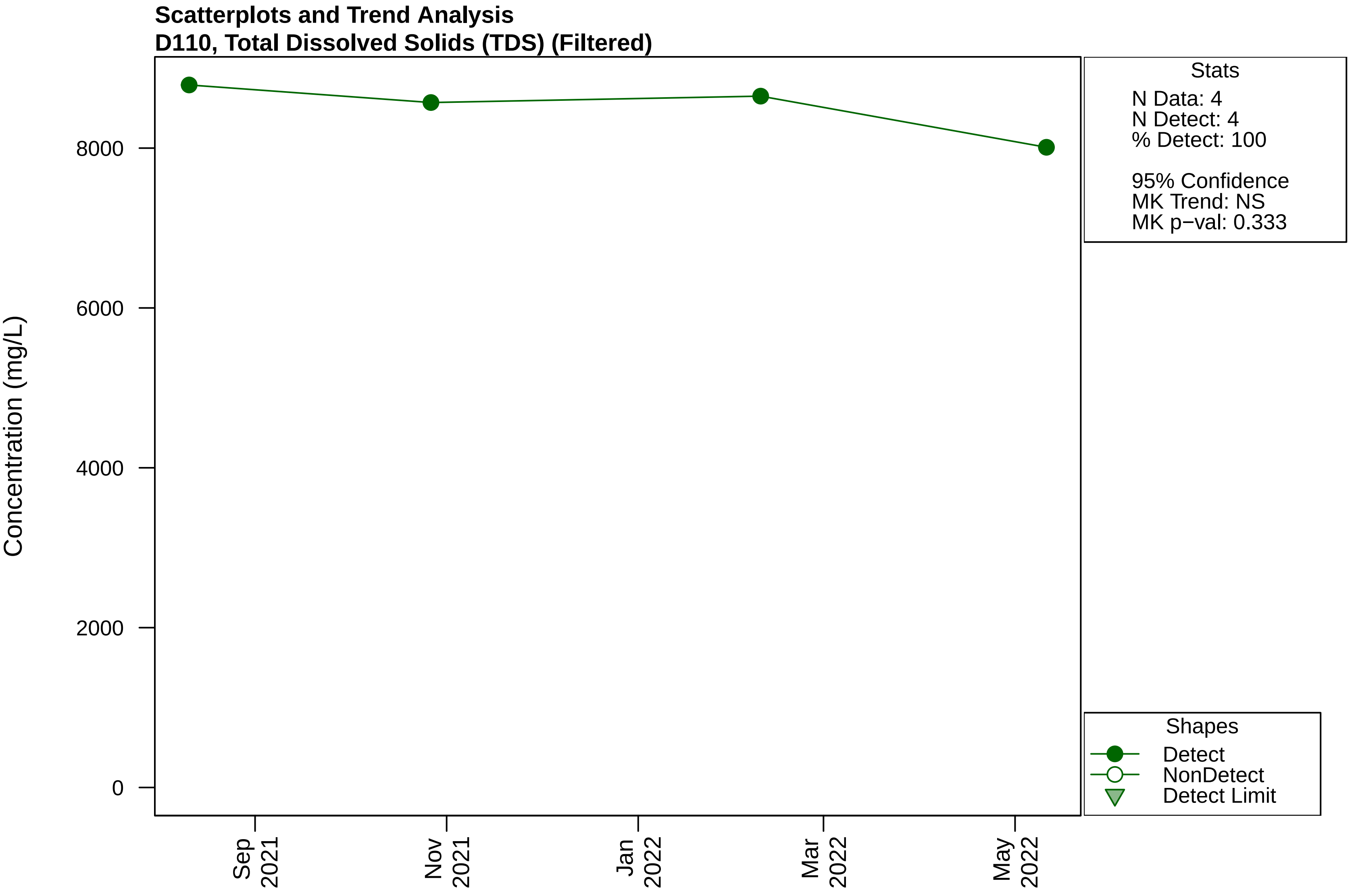


Scatterplots and Trend Analysis
D110, Strontium

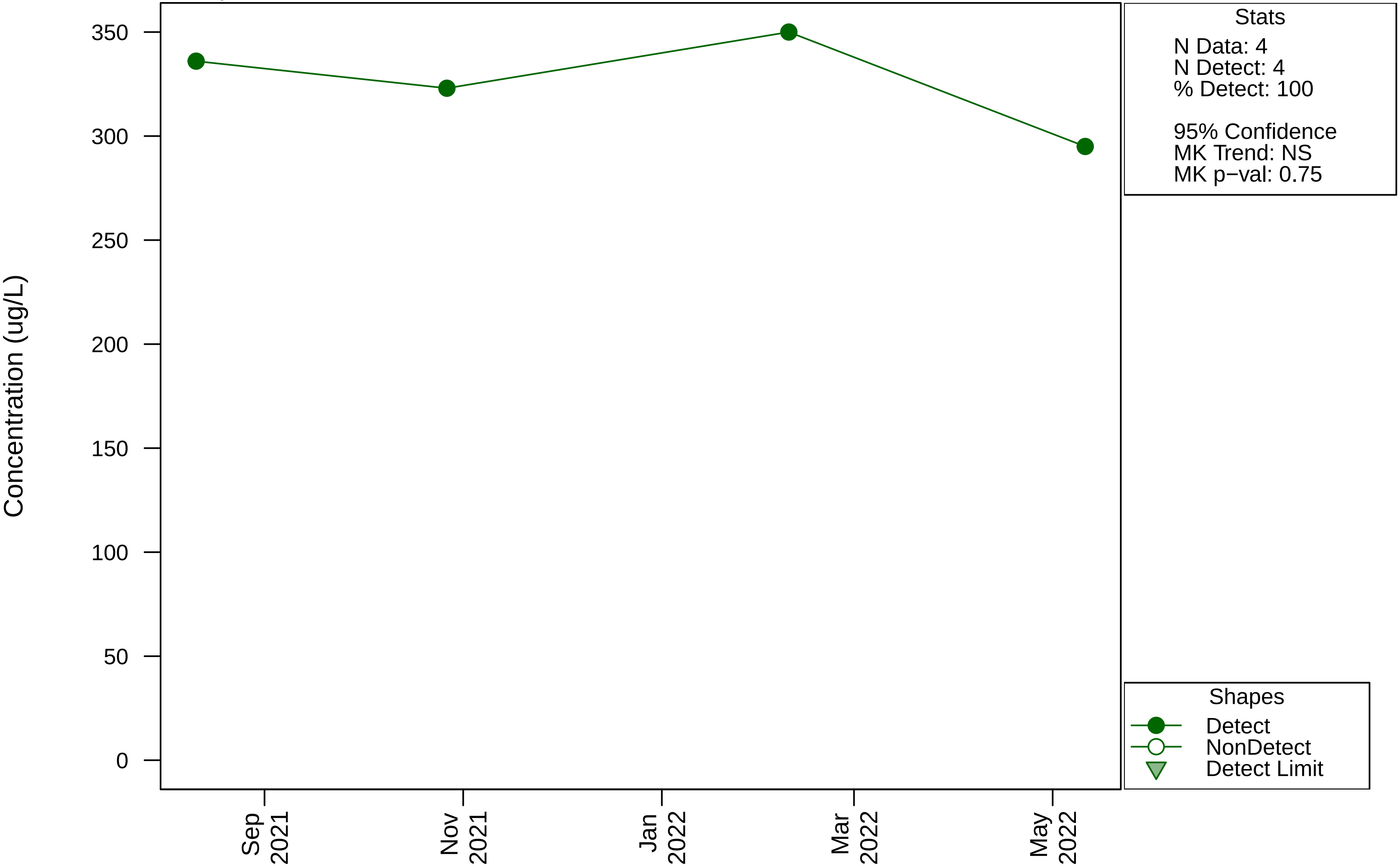


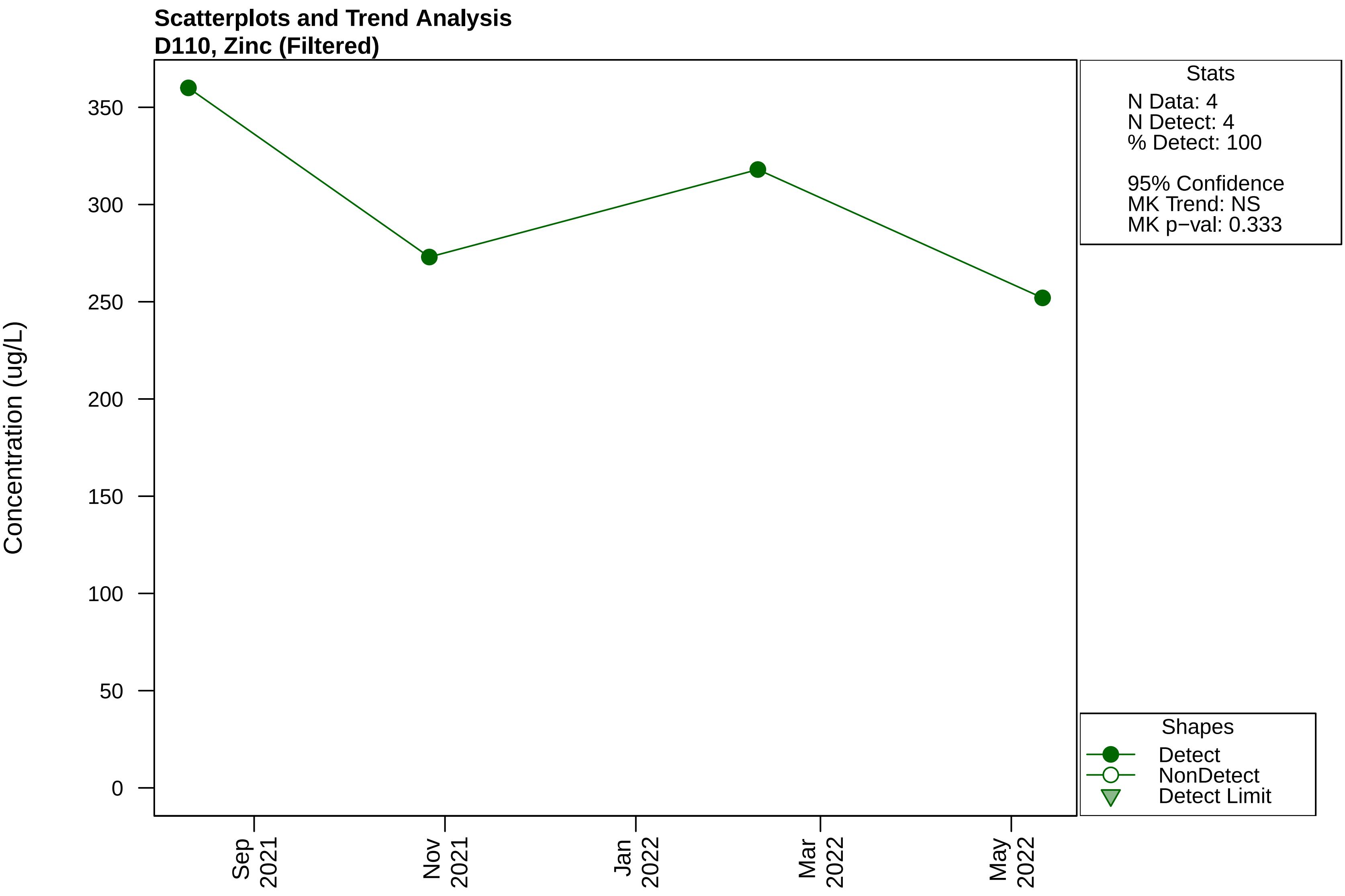

Scatterplots and Trend Analysis
D110, Sulfate (as SO4)
Concentration (mg/L)
0
1000
2000
3000
4000
5000
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 4
N Detect: 4
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.0833
Shapes
Detect
NonDetect
Detect Limit


Scatterplots and Trend Analysis
D110, Sulfur
Concentration (mg/L)
1500
1000
500
0
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 4
N Detect: 4
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.333
Shapes
Detect
NonDetect
Detect Limit


Scatterplots and Trend Analysis
D110, Total Dissolved Solids (TDS) (Filtered)
Concentration (mg/L)
0
2000
4000
6000
8000
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 4
N Detect: 4
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.333
Shapes
Detect
NonDetect
Detect Limit

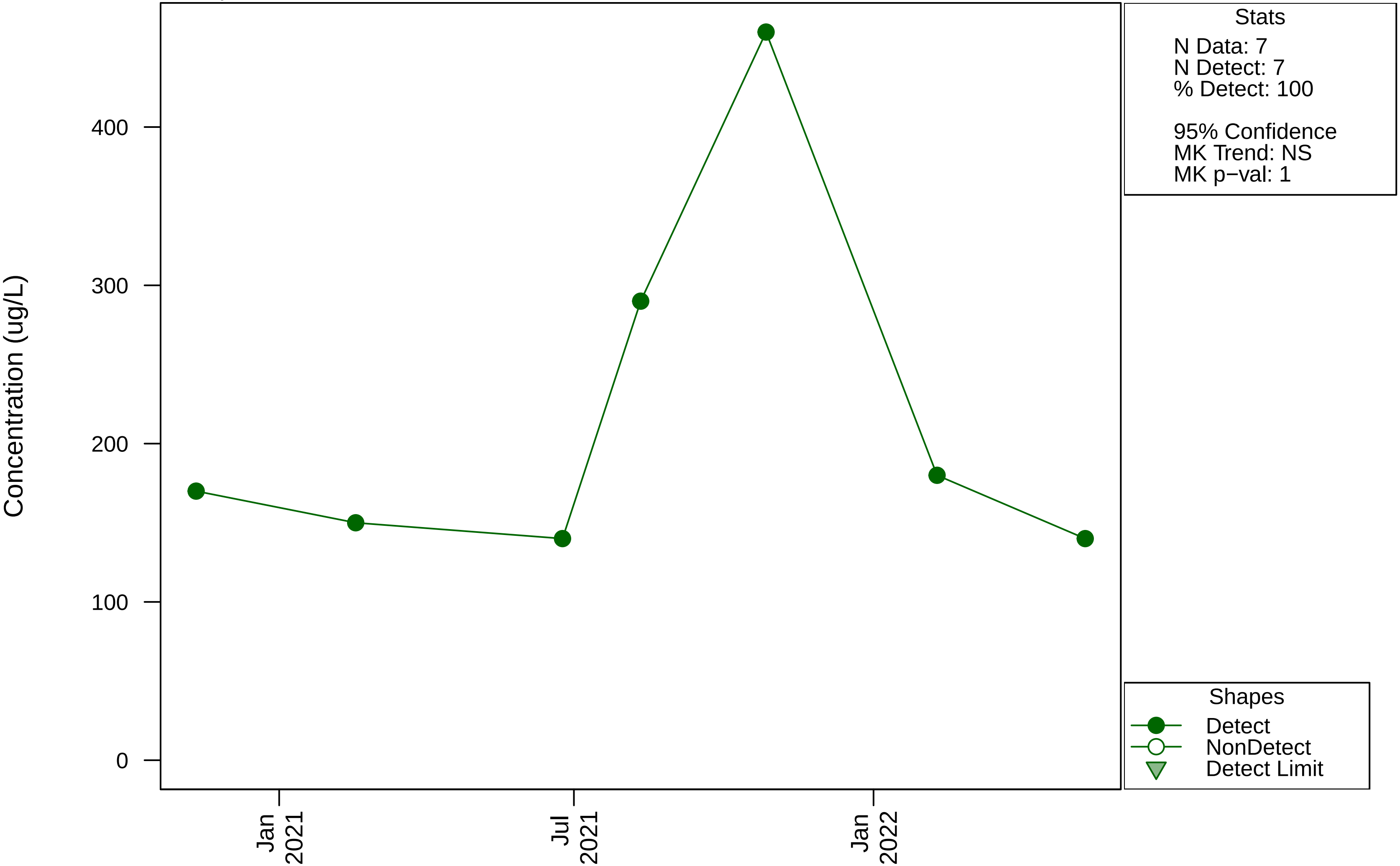
Scatterplots and Trend Analysis
D110, Zinc



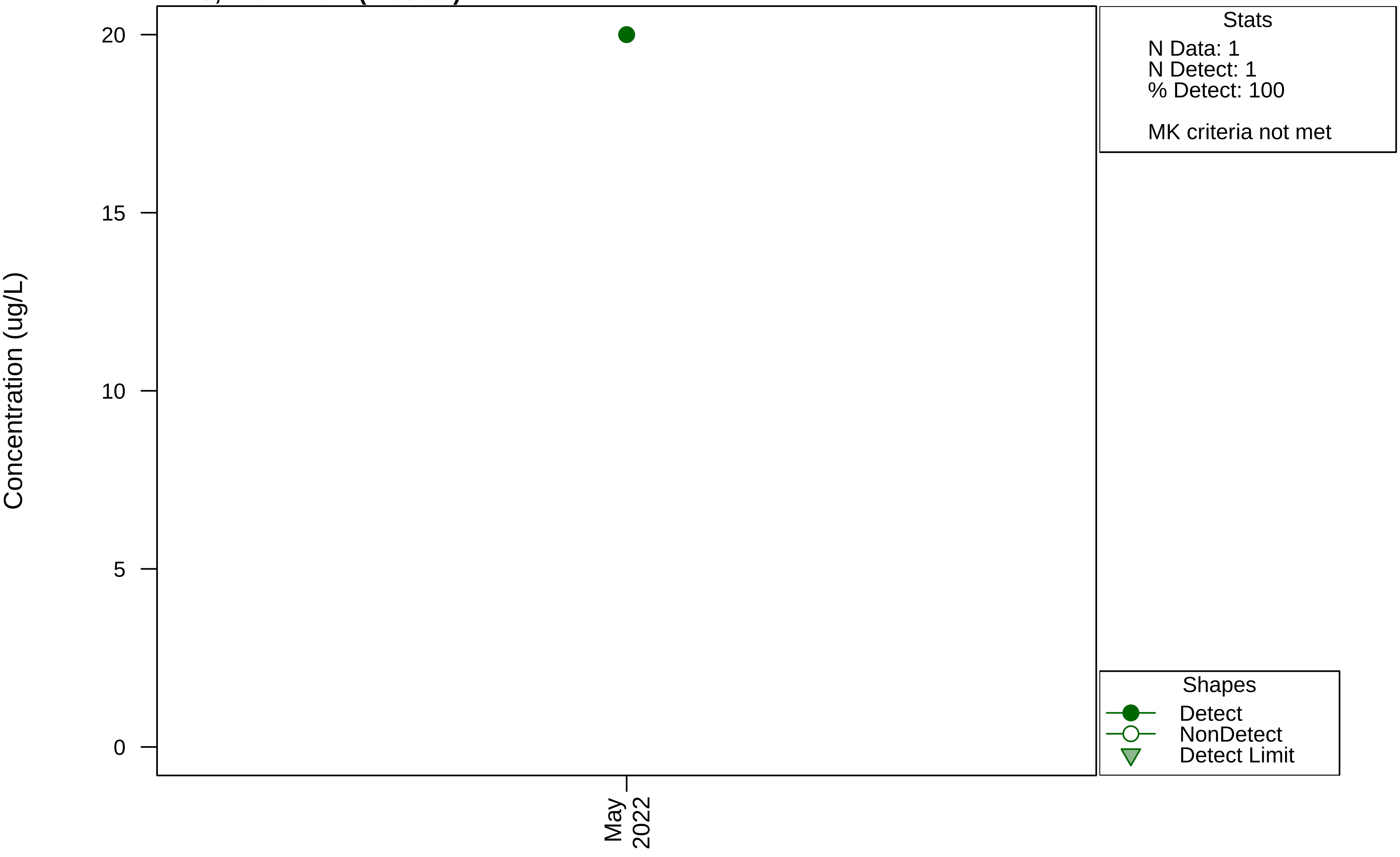


Scatterplots and Trend Analysis
D110, Zinc (Filtered)
Concentration (ug/L)
0
50
100
150
200
250
300
350
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 4
N Detect: 4
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.333
Shapes
Detect
NonDetect
Detect Limit

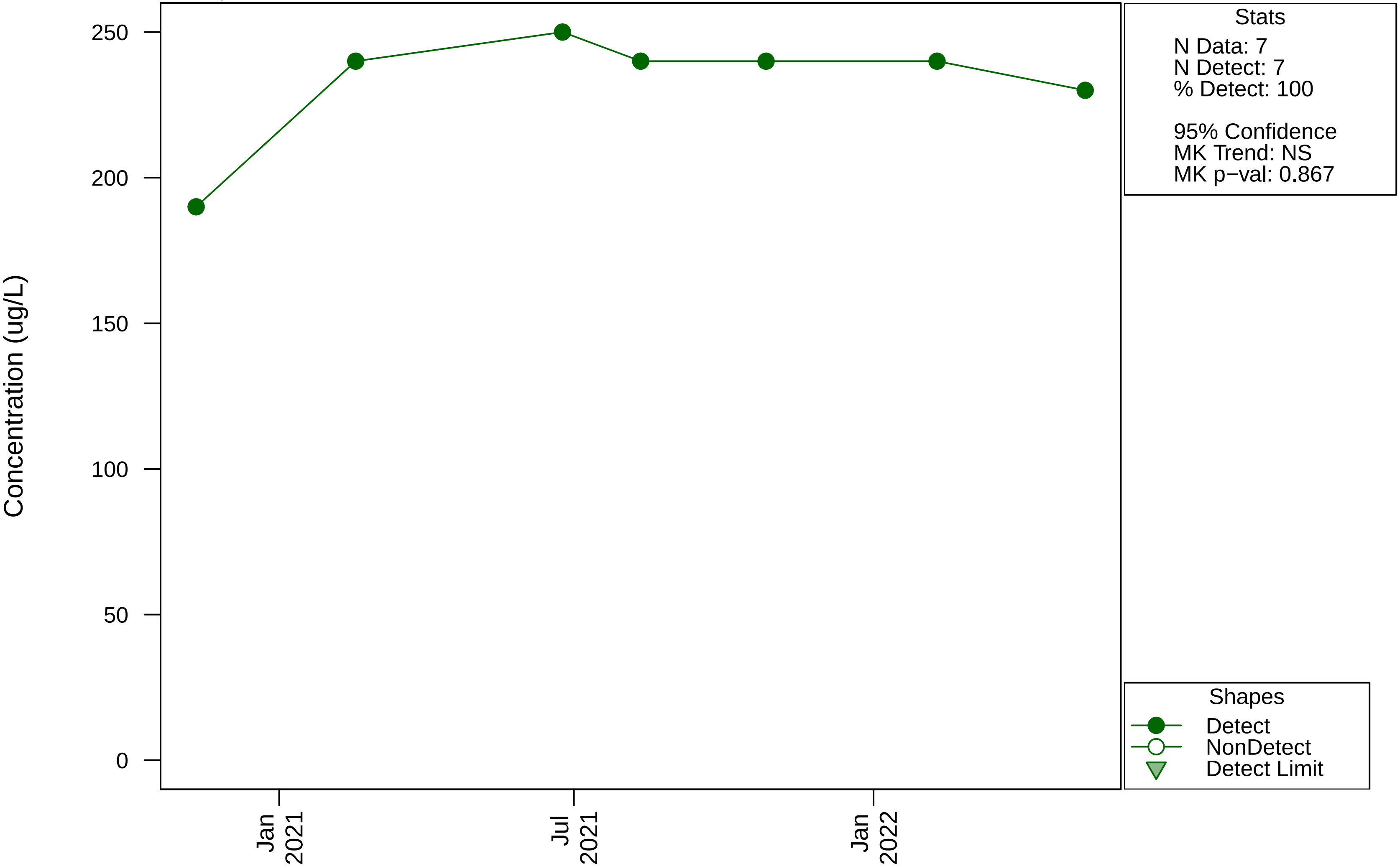
Scatterplots and Trend Analysis
D113, Aluminium

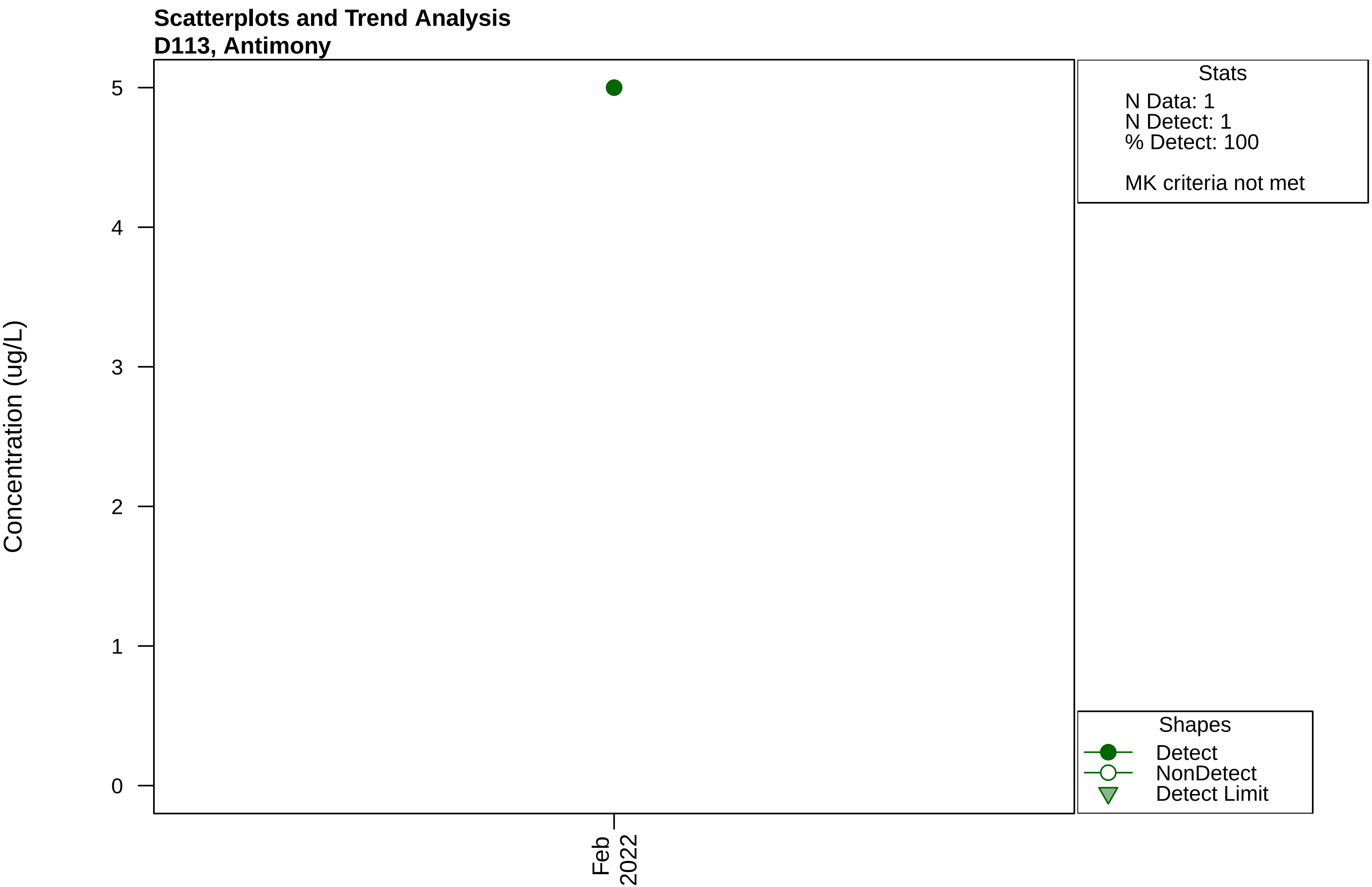


Scatterplots and Trend Analysis
D113, Aluminium (Filtered)



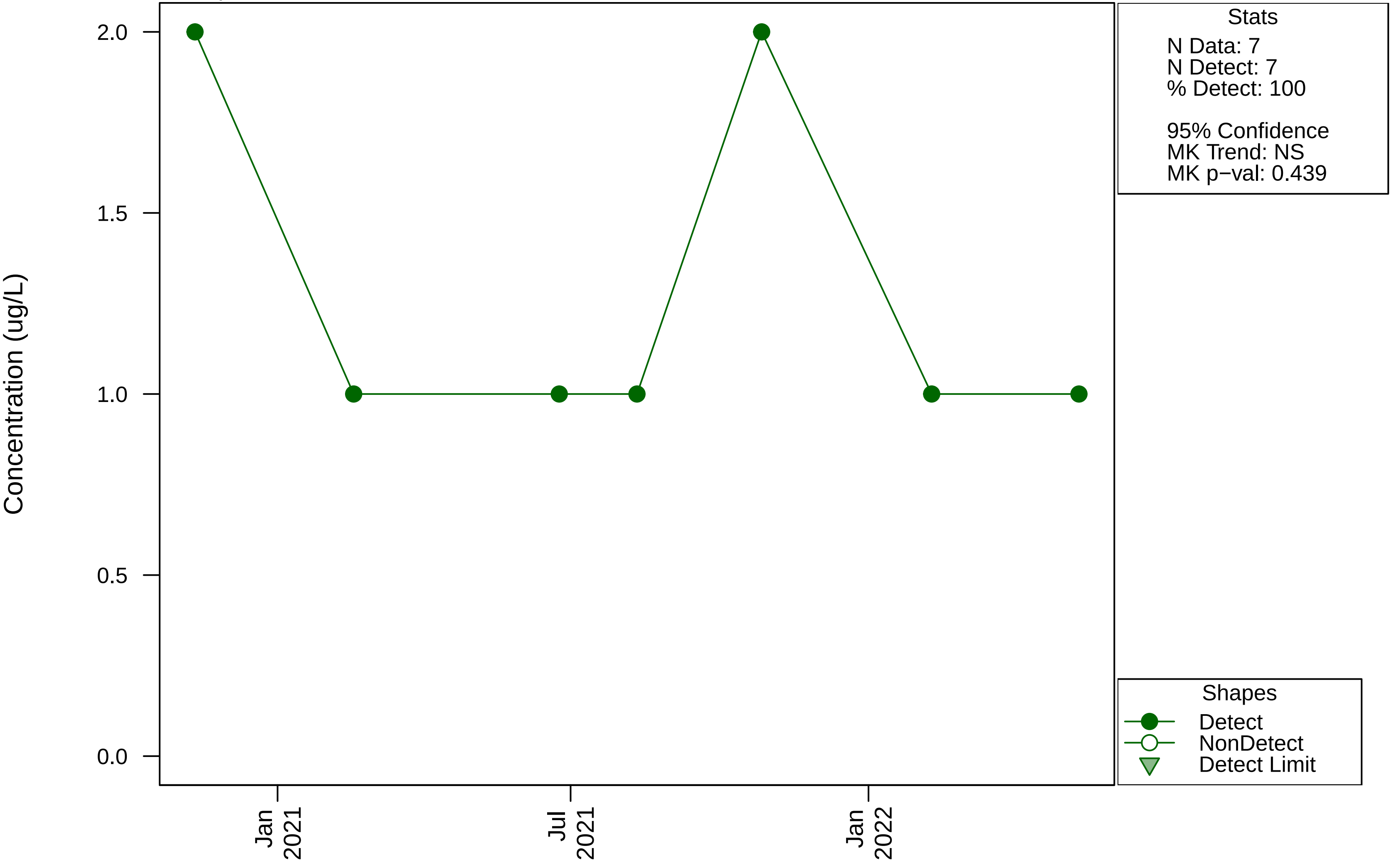
Scatterplots and Trend Analysis
D113, Ammonia



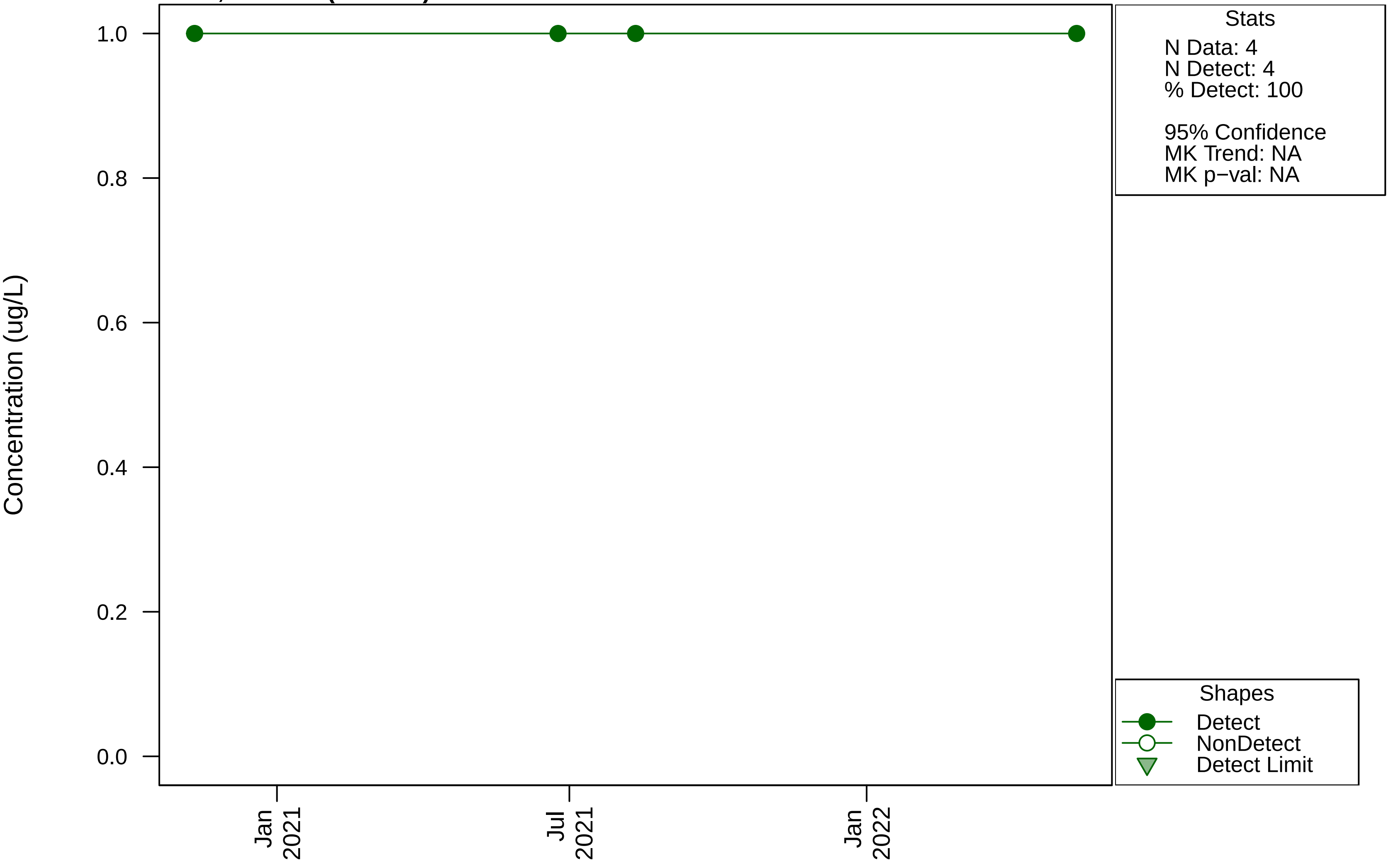


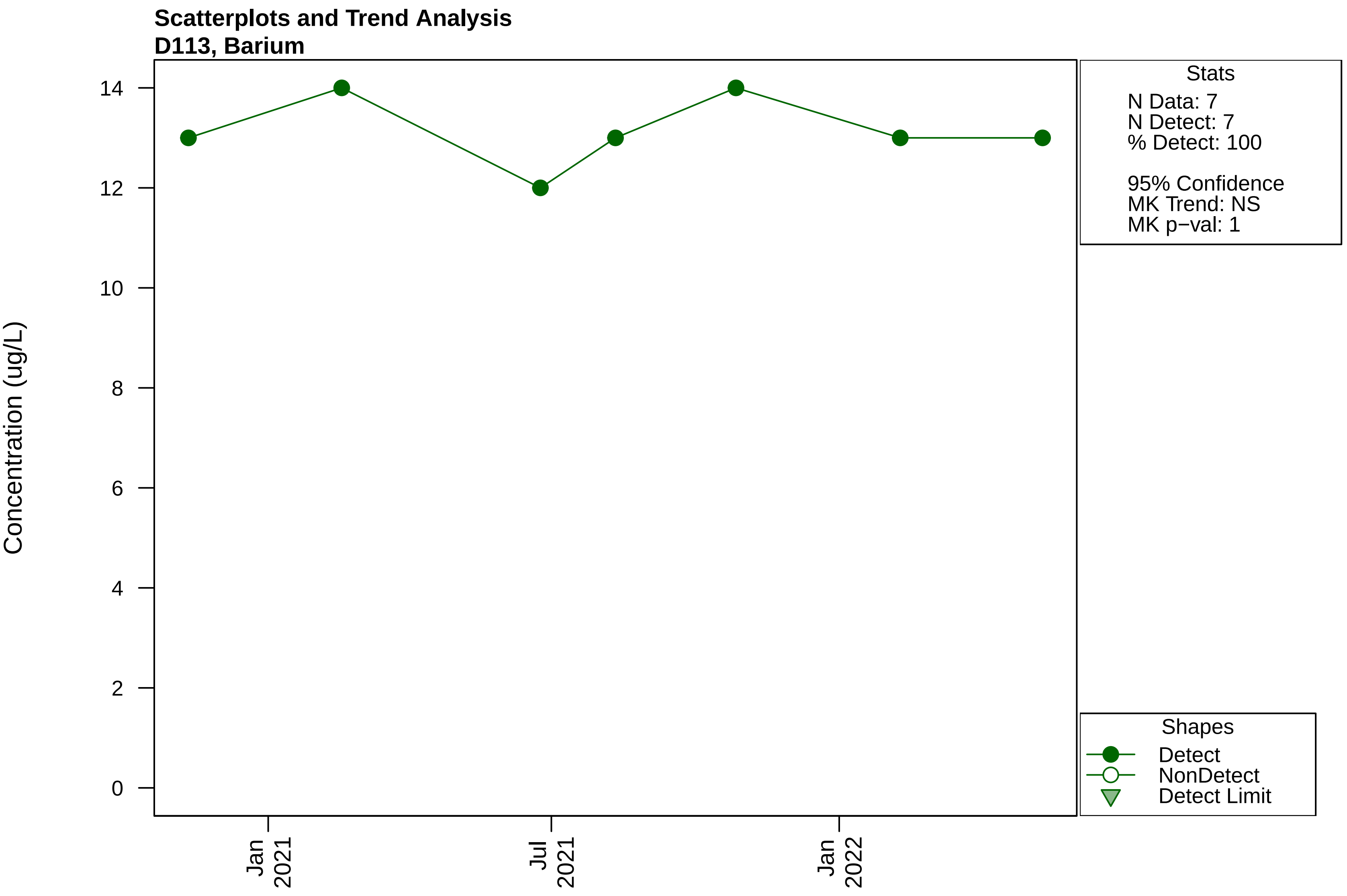
Scatterplots and Trend Analysis
D113, Antimony
Concentration (ug/L)
0
1
2
3
4
5
Feb 2022
Stats
N Data: 1
N Detect: 1
% Detect: 100
MK criteria not met
Shapes
Detect
NonDetect
Detect Limit

Scatterplots and Trend Analysis
D113, Arsenic



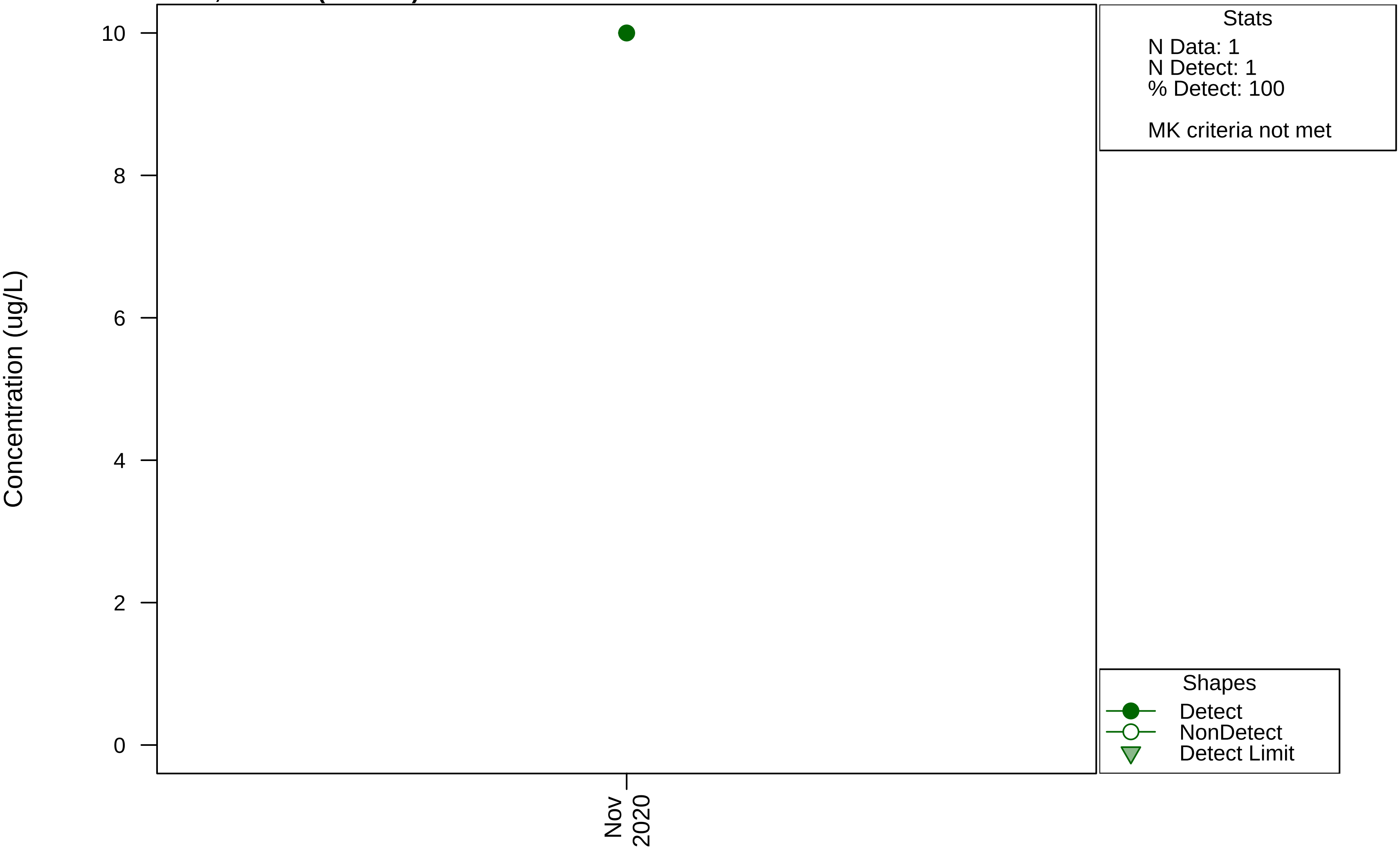
Scatterplots and Trend Analysis
D113, Arsenic (Filtered)



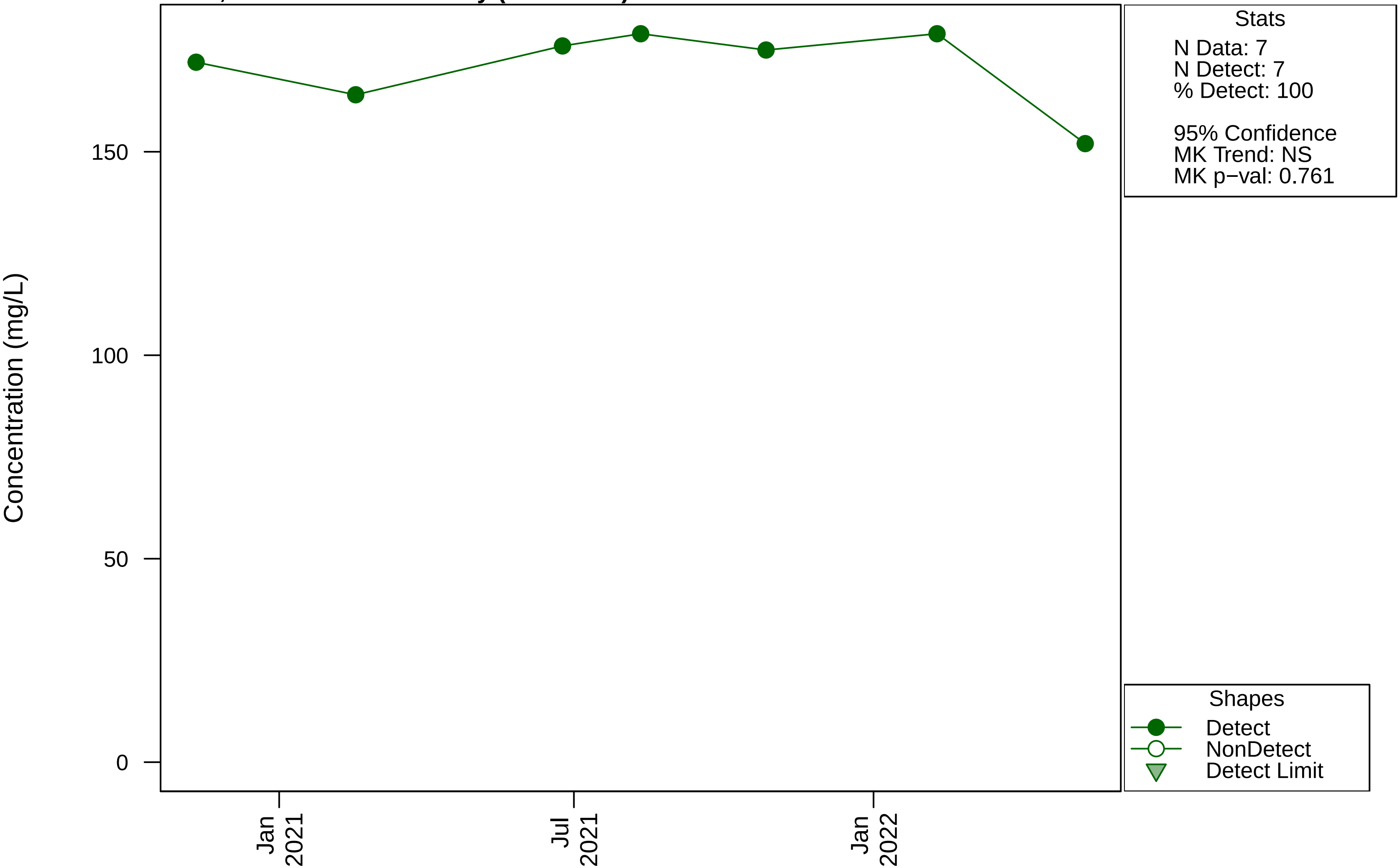


Scatterplots and Trend Analysis
D113, Barium
Concentration (ug/L)
0
2
4
6
8
10
12
14
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 7
N Detect: 7
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 1
Shapes
Detect
NonDetect
Detect Limit

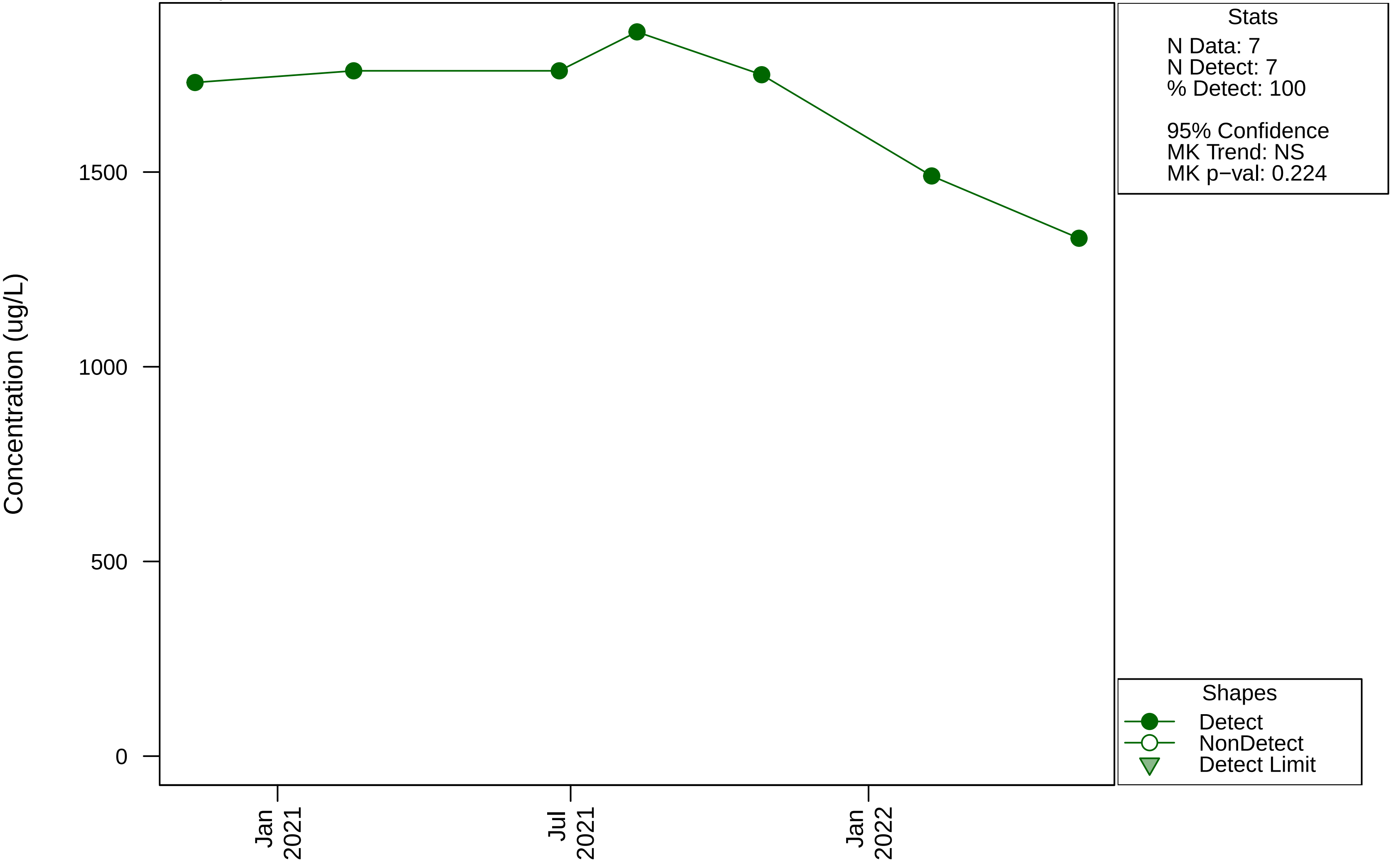
Scatterplots and Trend Analysis
D113, Barium (Filtered)



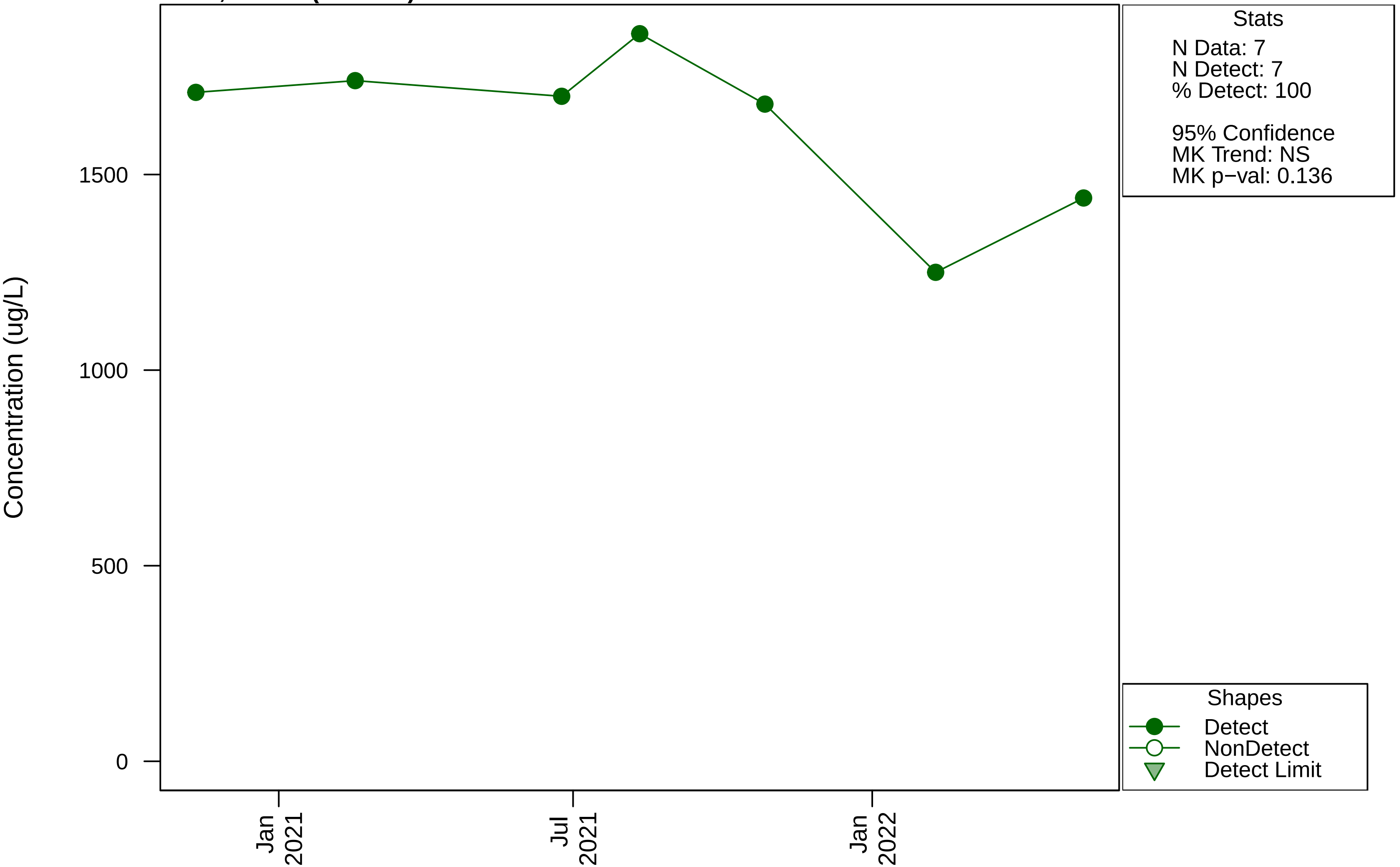
Scatterplots and Trend Analysis
D113, Bicarbonate Alkalinity (as CaCO3)



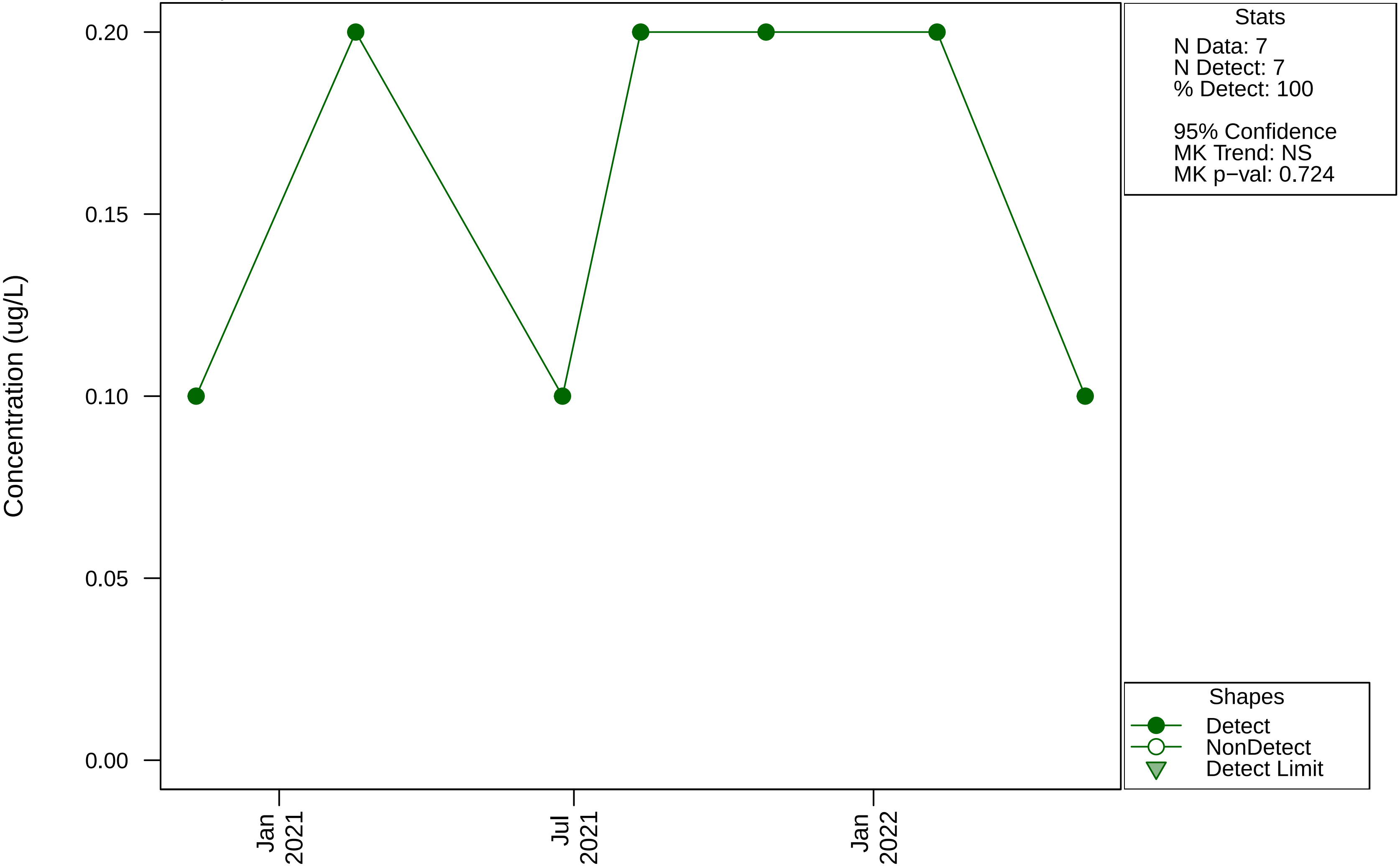
Scatterplots and Trend Analysis
D113, Boron

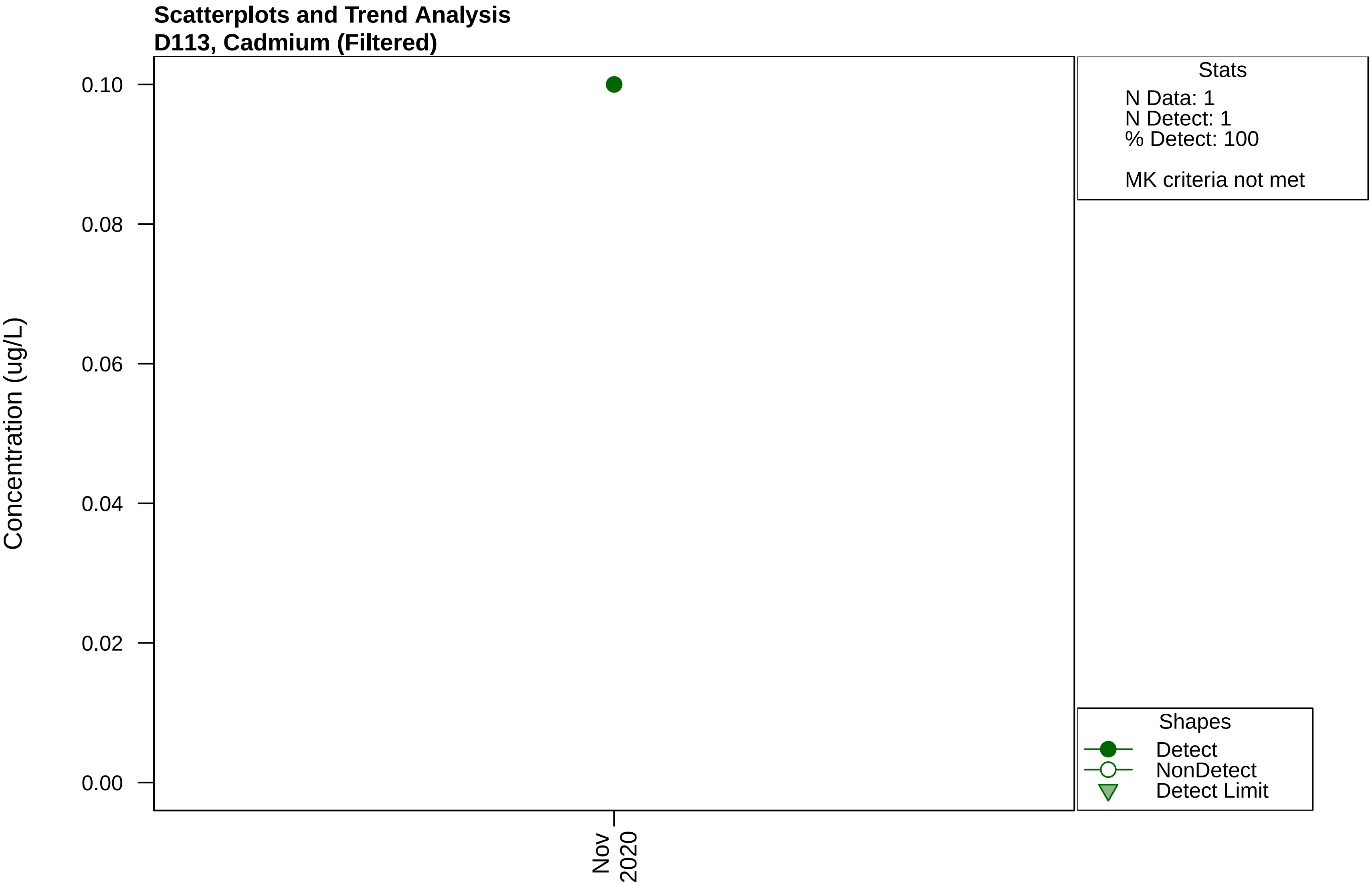


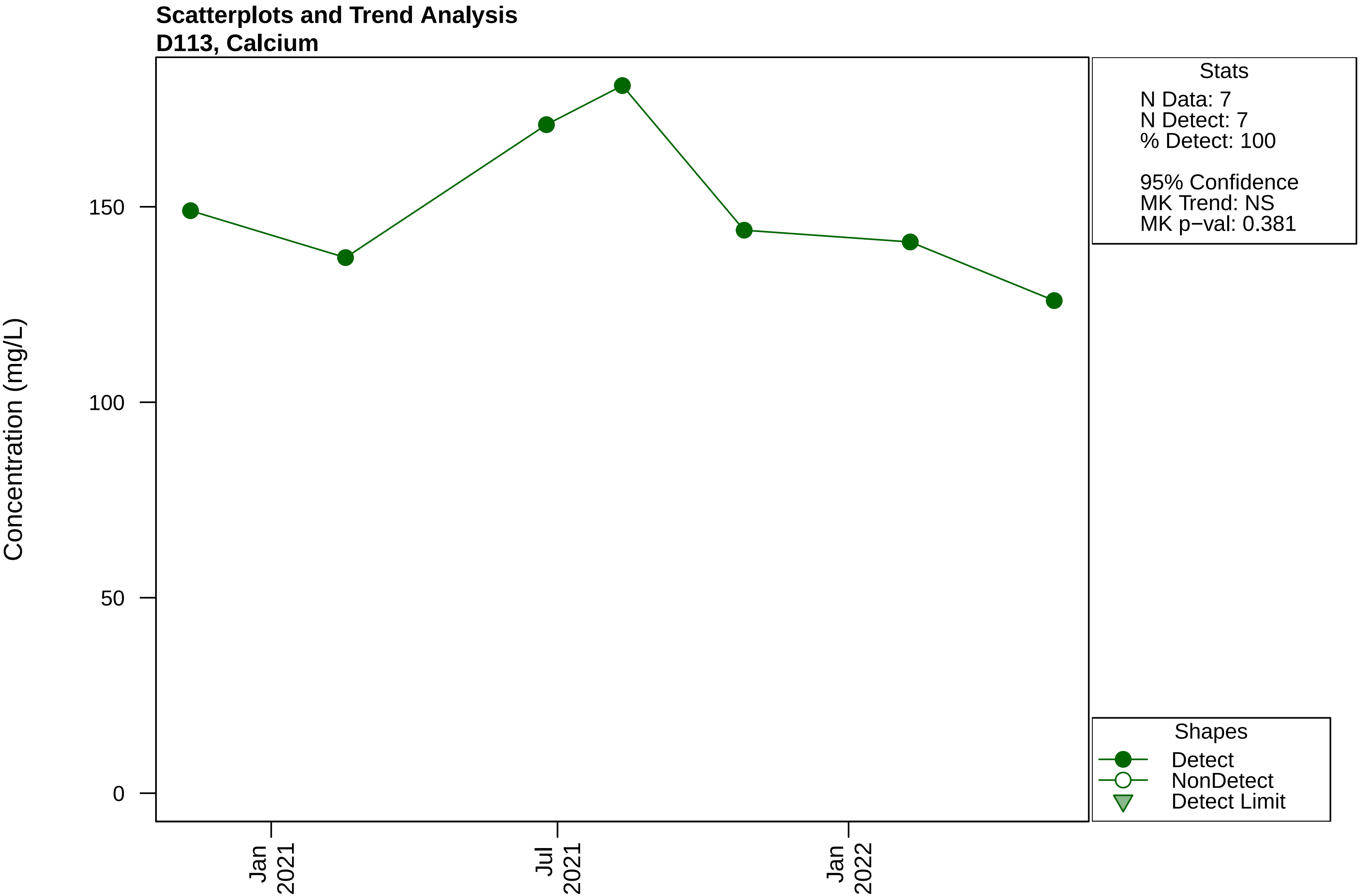
Scatterplots and Trend Analysis
D113, Boron (Filtered)

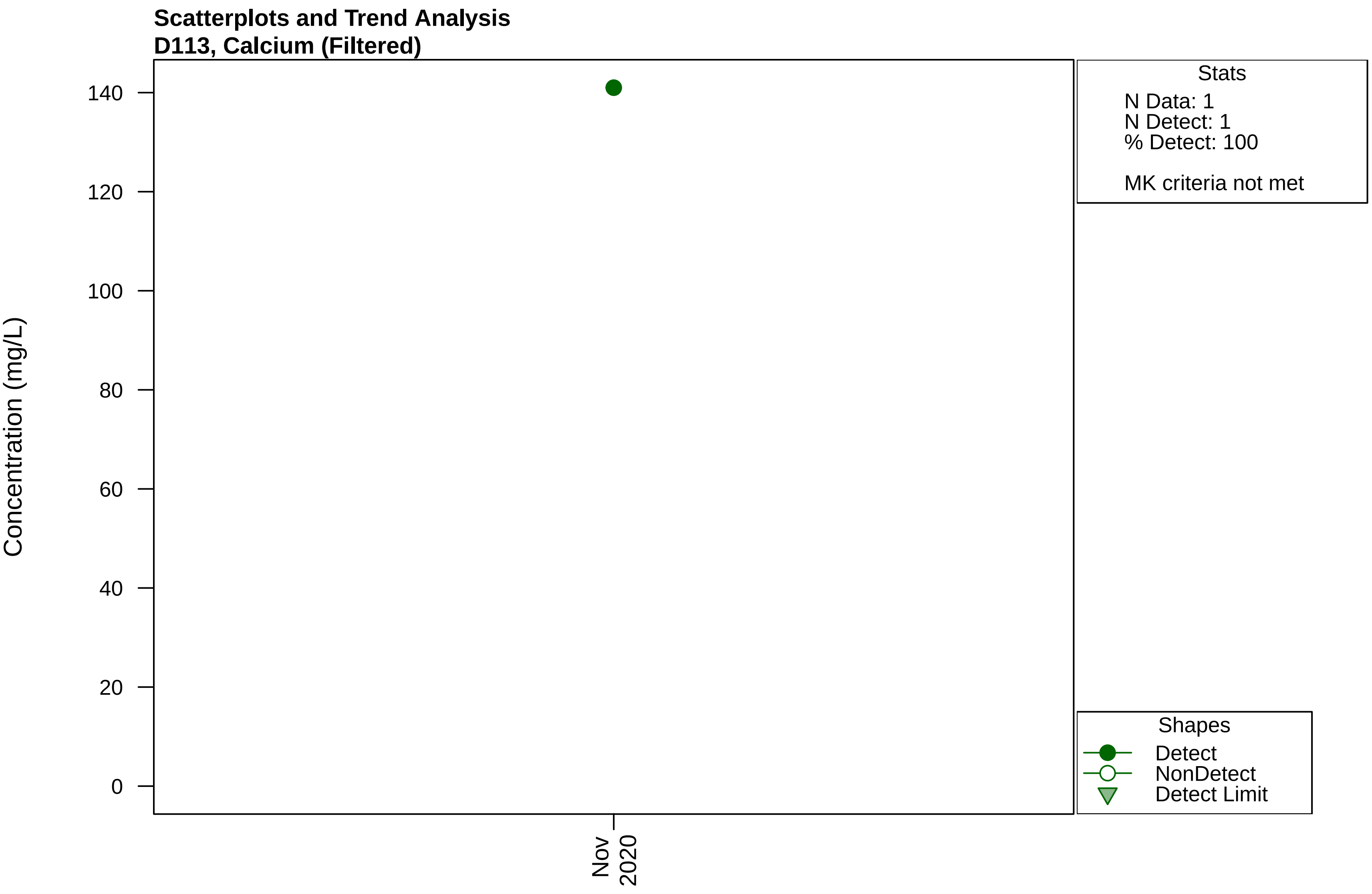


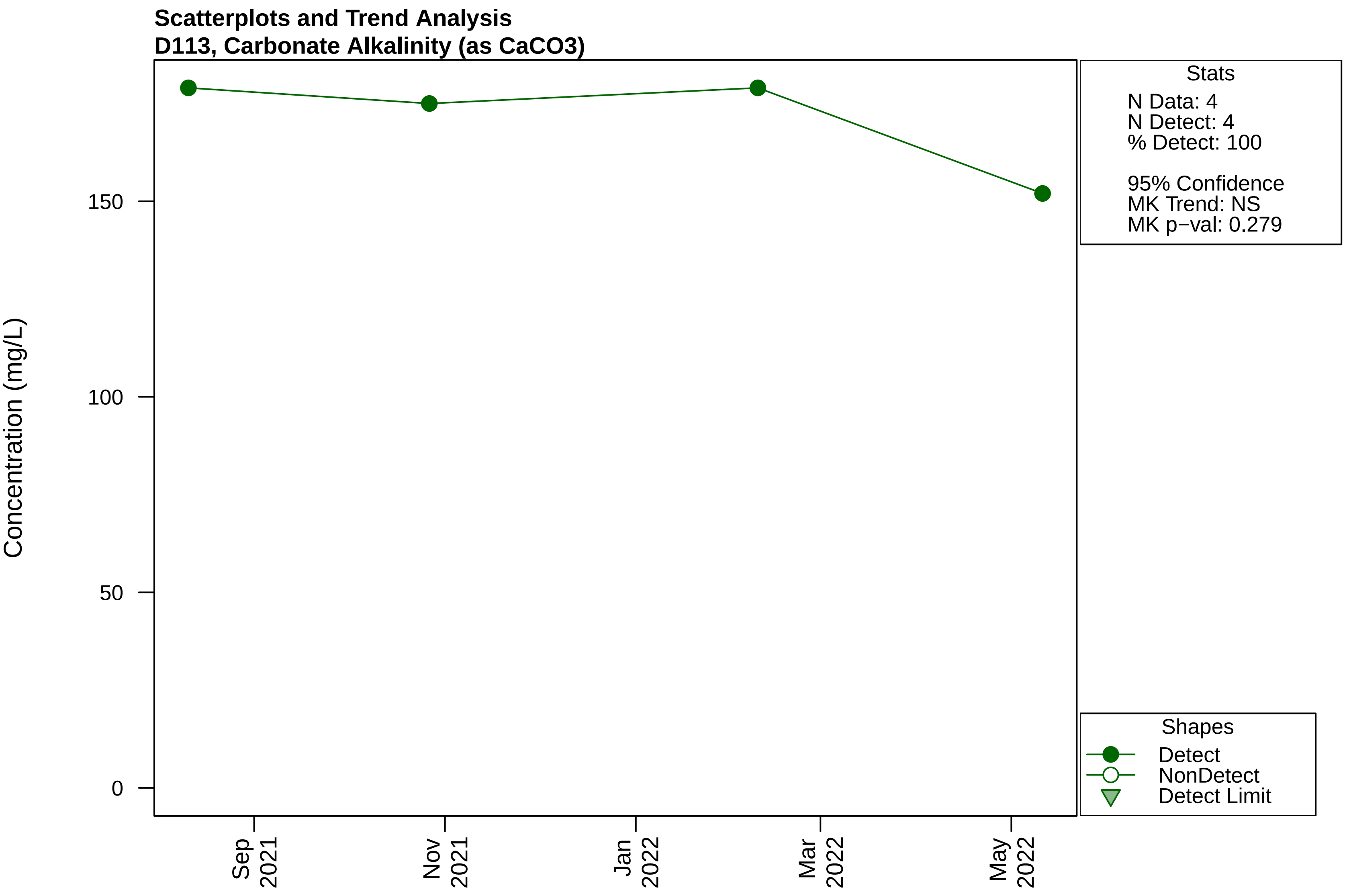
Scatterplots and Trend Analysis
D113, Cadmium



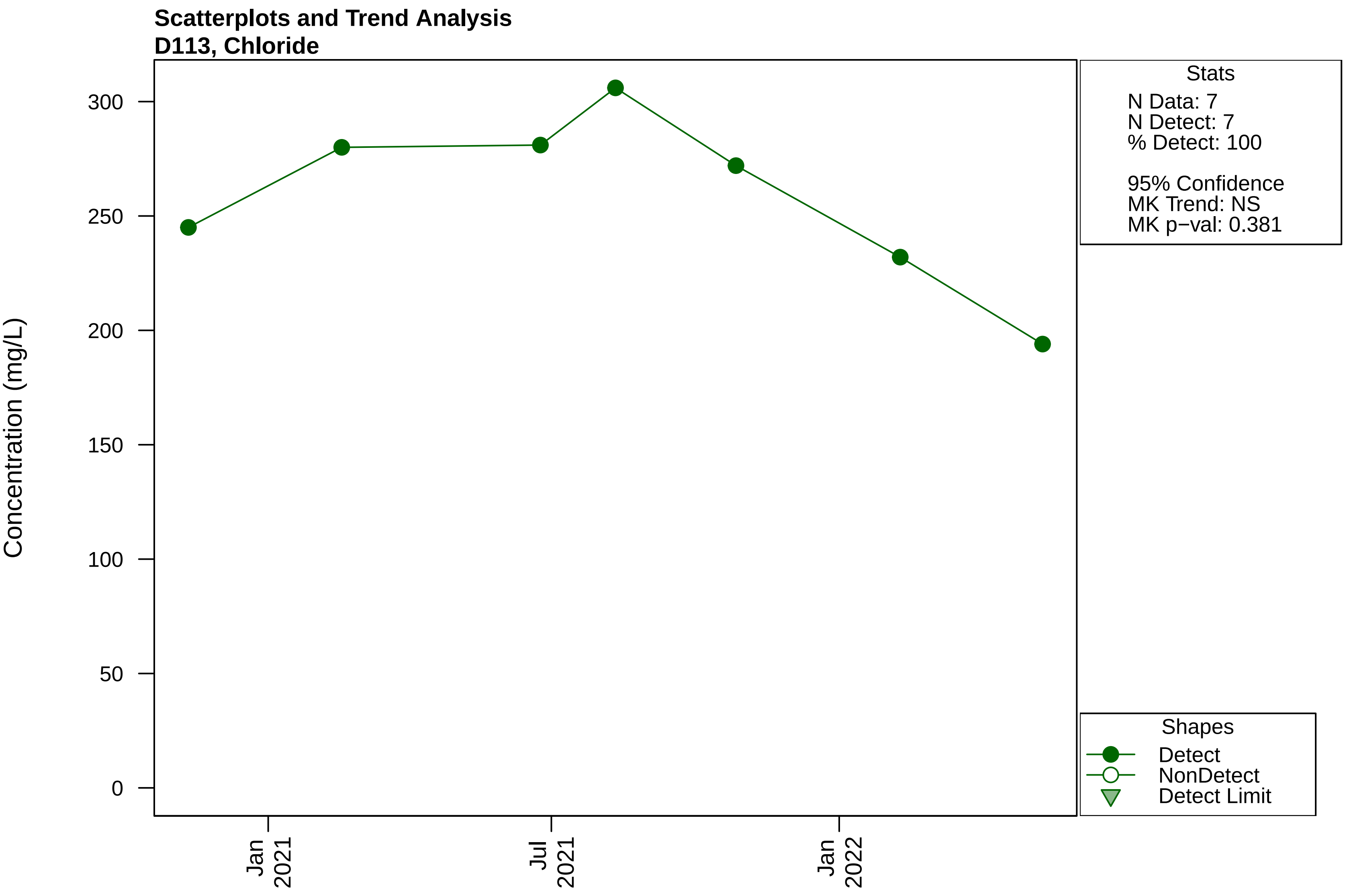

Scatterplots and Trend Analysis
D113, Cadmium (Filtered)
Concentration (ug/L)
0.10
0.08
0.06
0.04
0.02
0.00
Nov 2020
Stats
N Data: 1
N Detect: 1
% Detect: 100
MK criteria not met
Shapes
Detect
NonDetect
Detect Limit


Scatterplots and Trend Analysis
D113, Calcium
Concentration (mg/L)
150
100
50
0
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 7
N Detect: 7
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.381
Shapes
Detect
NonDetect
Detect Limit

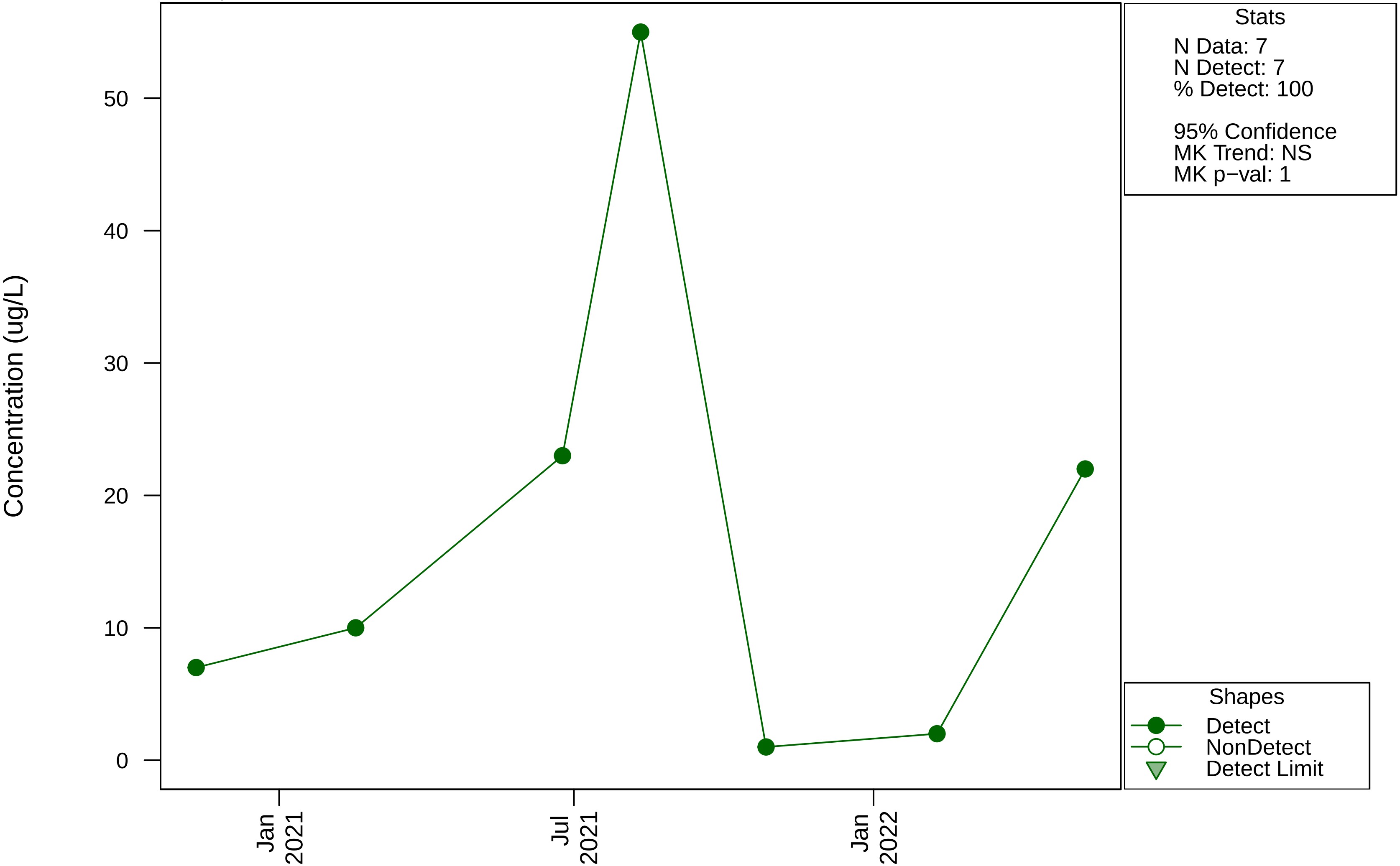

Scatterplots and Trend Analysis
D113, Calcium (Filtered)
Concentration (mg/L)
0
20
40
60
80
100
120
140
Nov 2020
Stats
N Data: 1
N Detect: 1
% Detect: 100
MK criteria not met
Shapes
Detect
NonDetect
Detect Limit



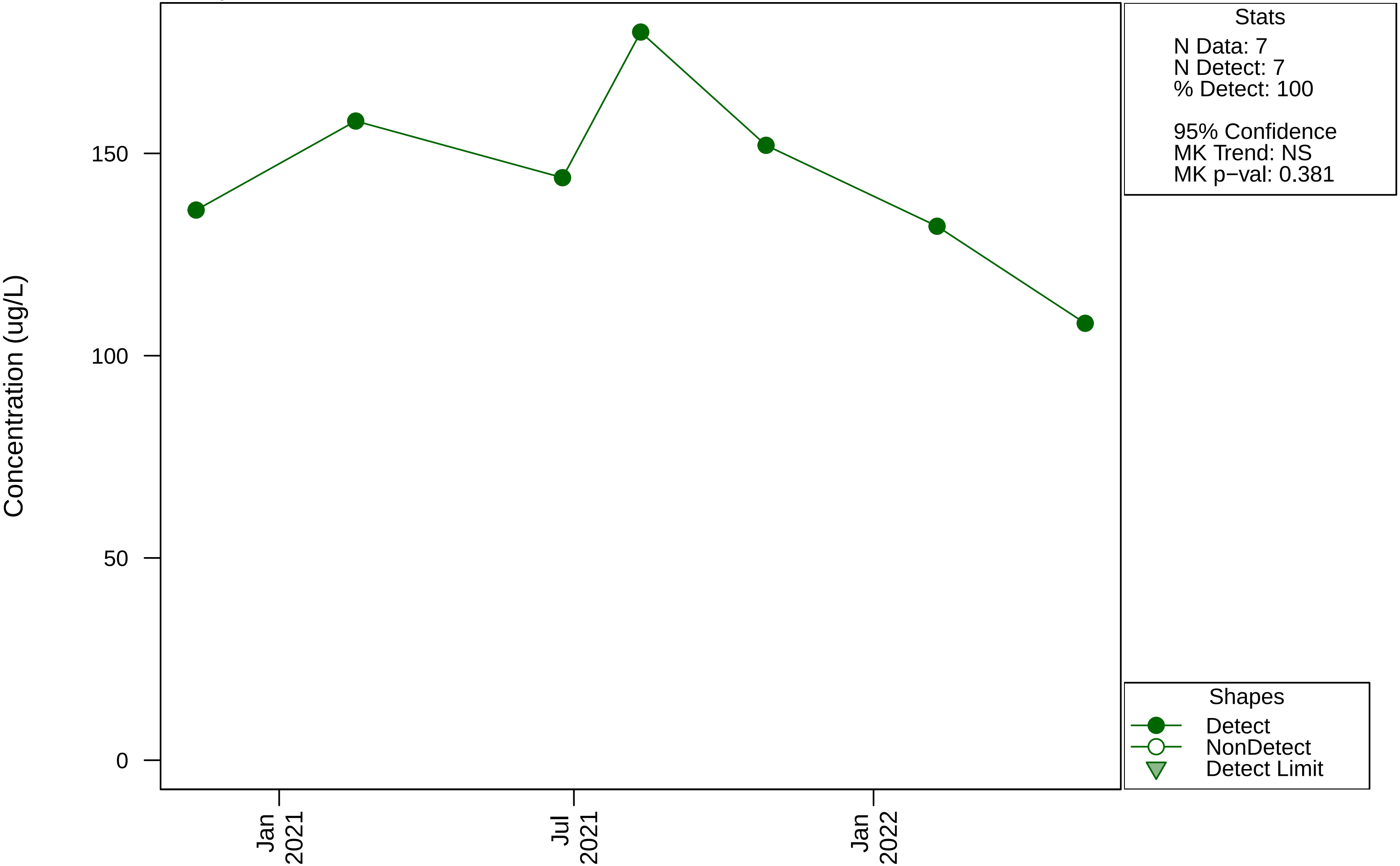
Scatterplots and Trend Analysis
D113, Carbonate Alkalinity (as CaCO3)
Concentration (mg/L)
0
50
100
150
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 4
N Detect: 4
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.279
Shapes
Detect
NonDetect
Detect Limit

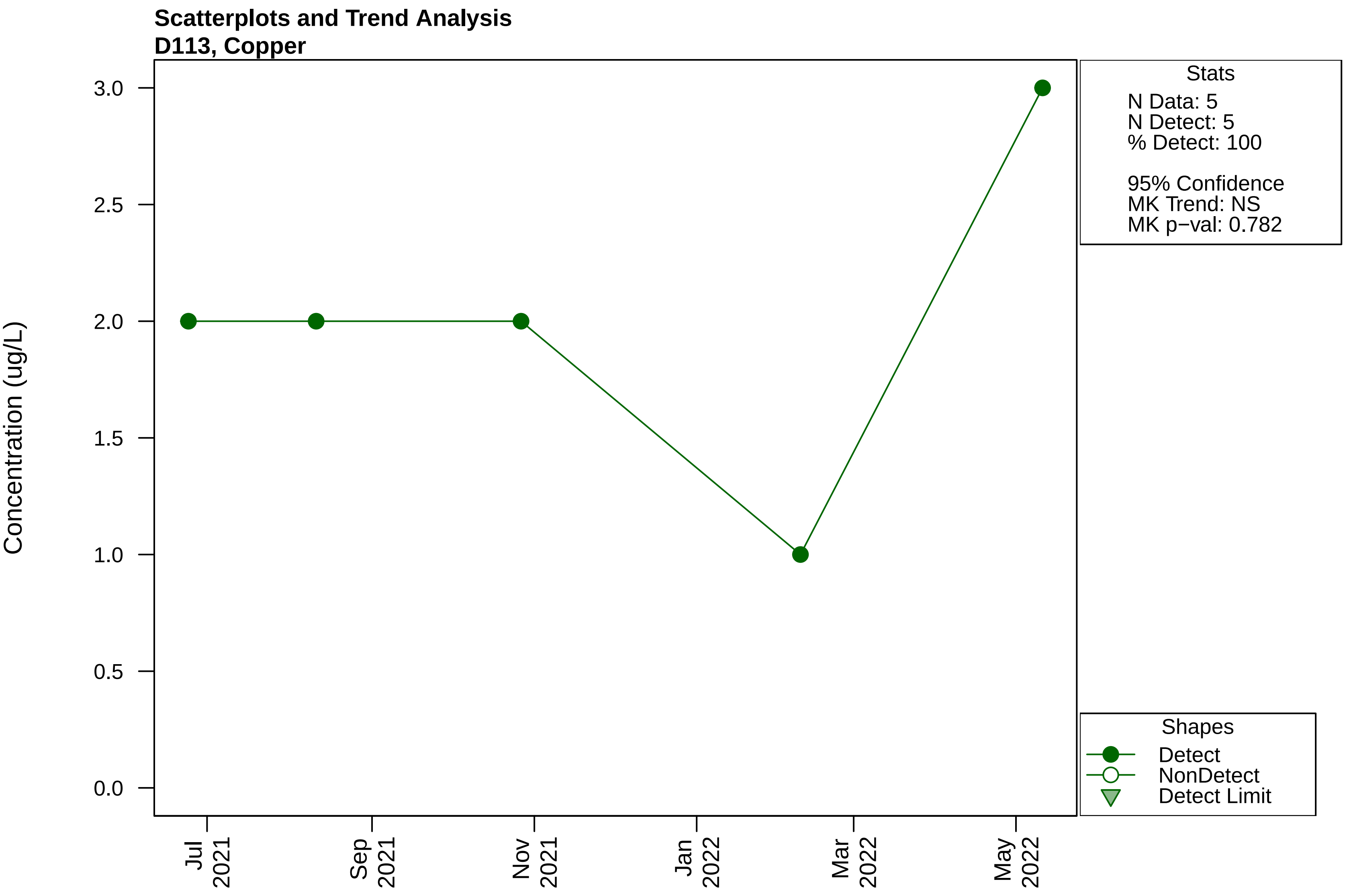

Scatterplots and Trend Analysis
D113, Chloride
Concentration (mg/L)
300
250
200
150
100
50
0
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 7
N Detect: 7
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.381
Shapes
Detect
NonDetect
Detect Limit

Scatterplots and Trend Analysis
D113, Chromium



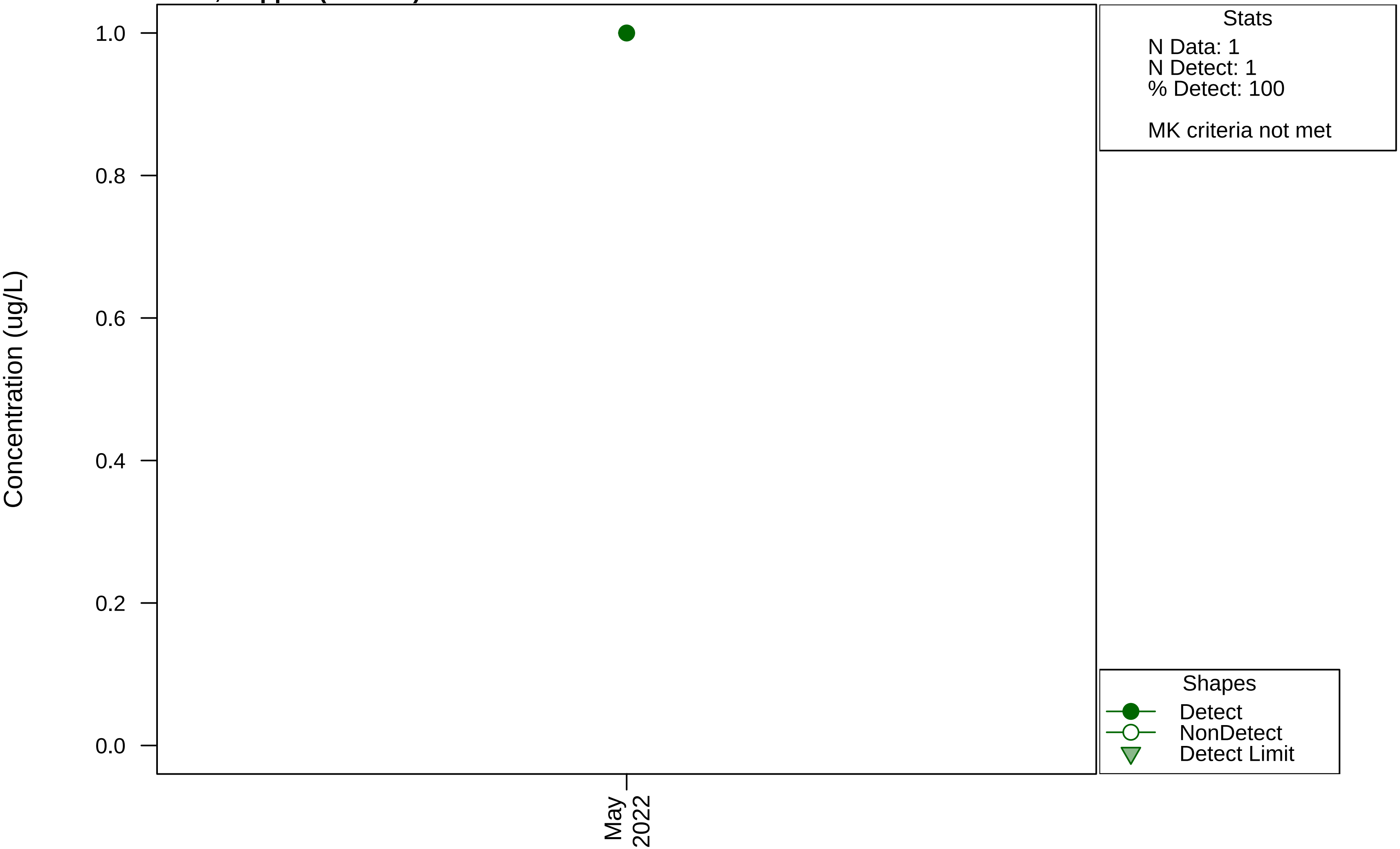
Scatterplots and Trend Analysis
D113, Cobalt

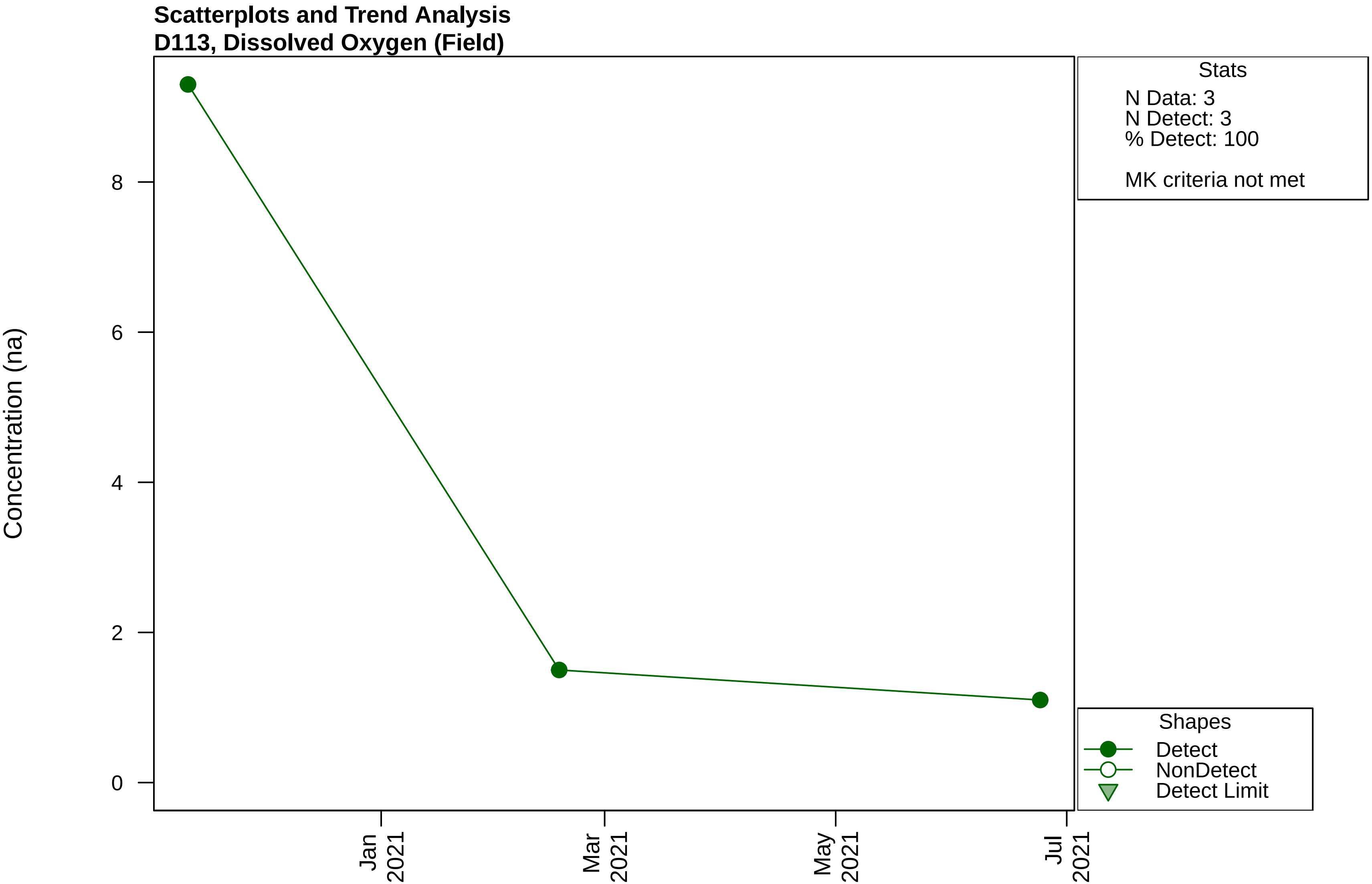




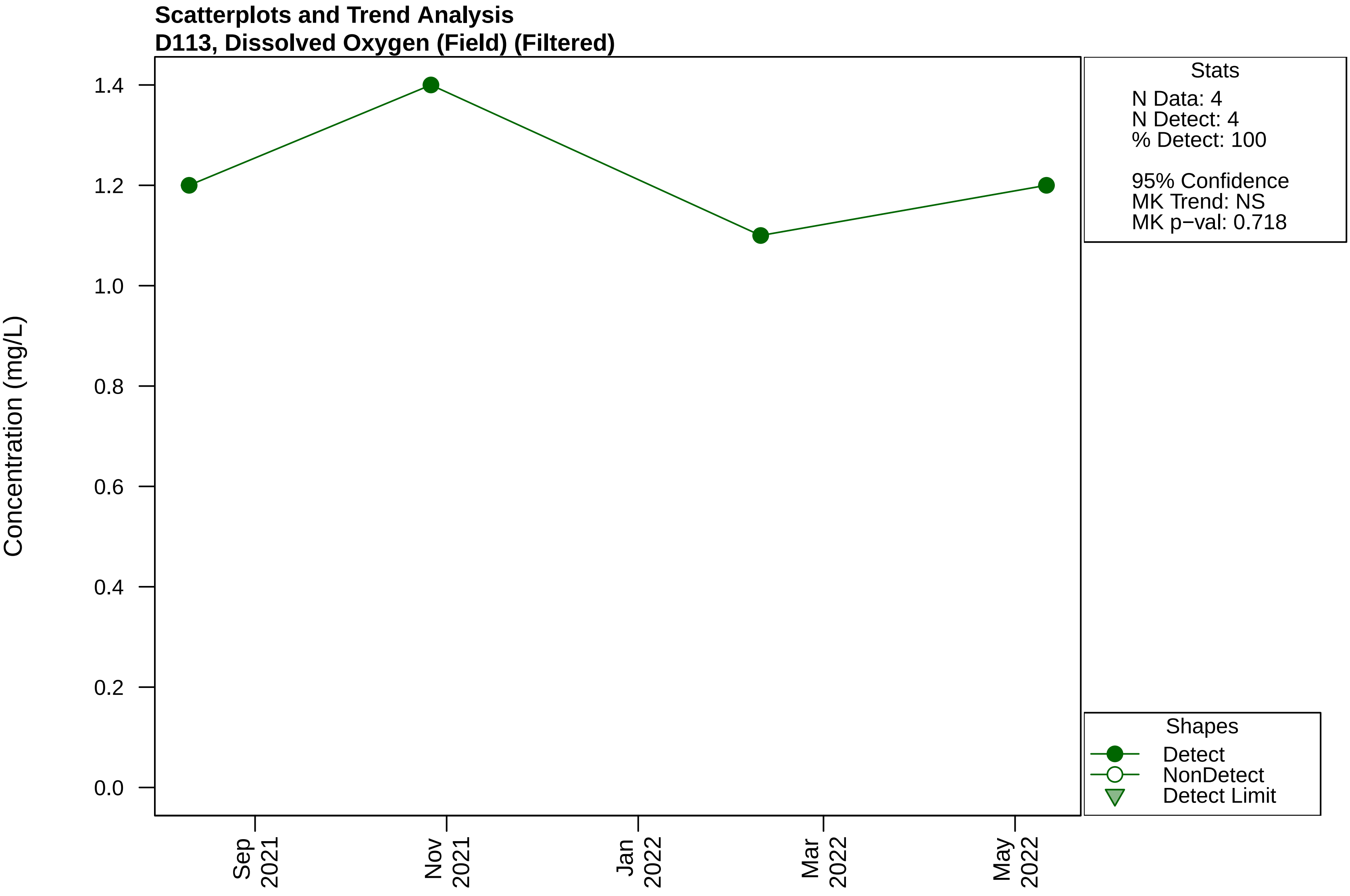
Scatterplots and Trend Analysis
D113, Copper
Concentration (ug/L)
3.0
2.5
2.0
1.5
1.0
0.5
0.0
Jul 2021
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 5
N Detect: 5
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.782
Shapes
Detect
NonDetect
Detect Limit

Scatterplots and Trend Analysis
D113, Copper (Filtered)

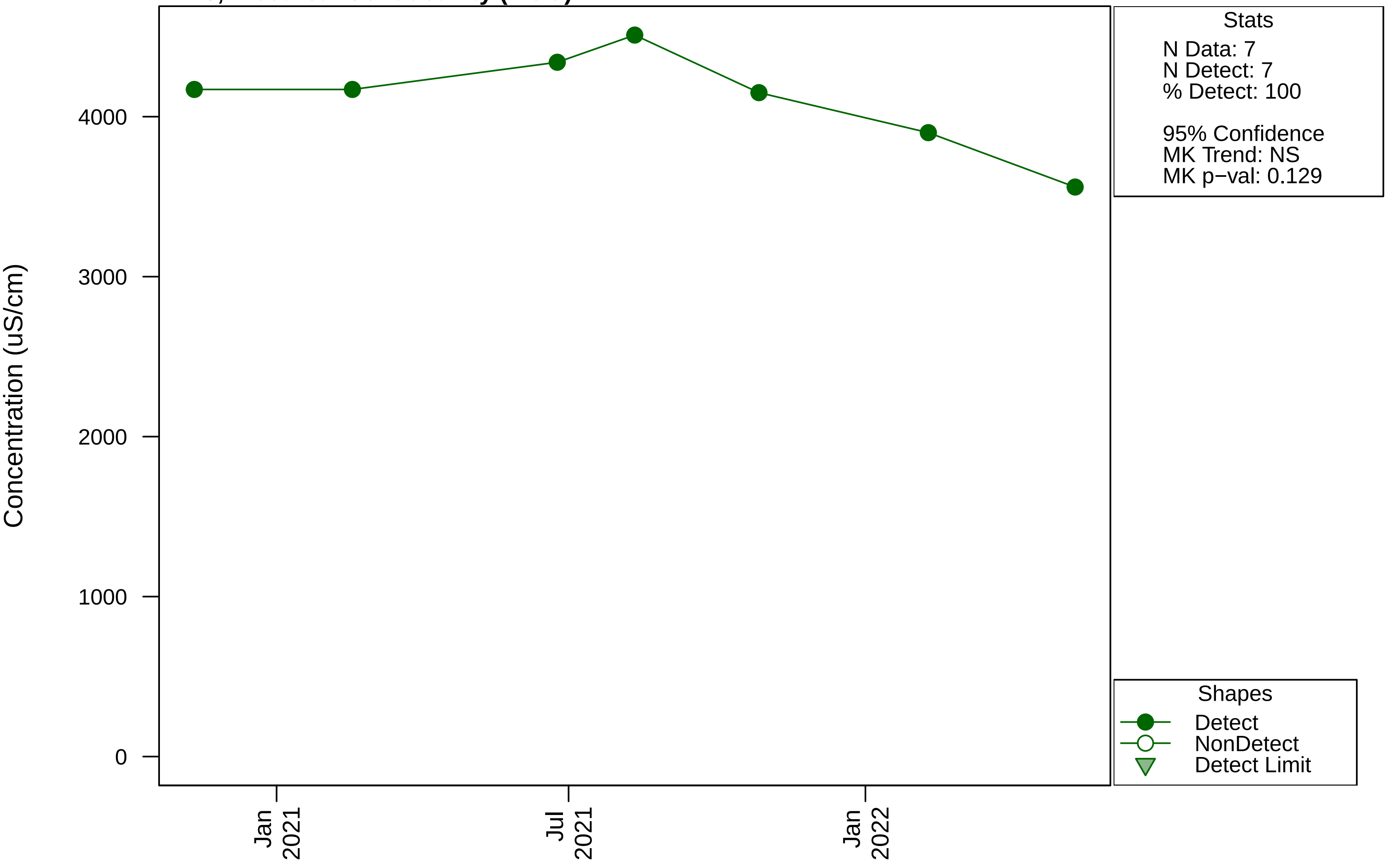


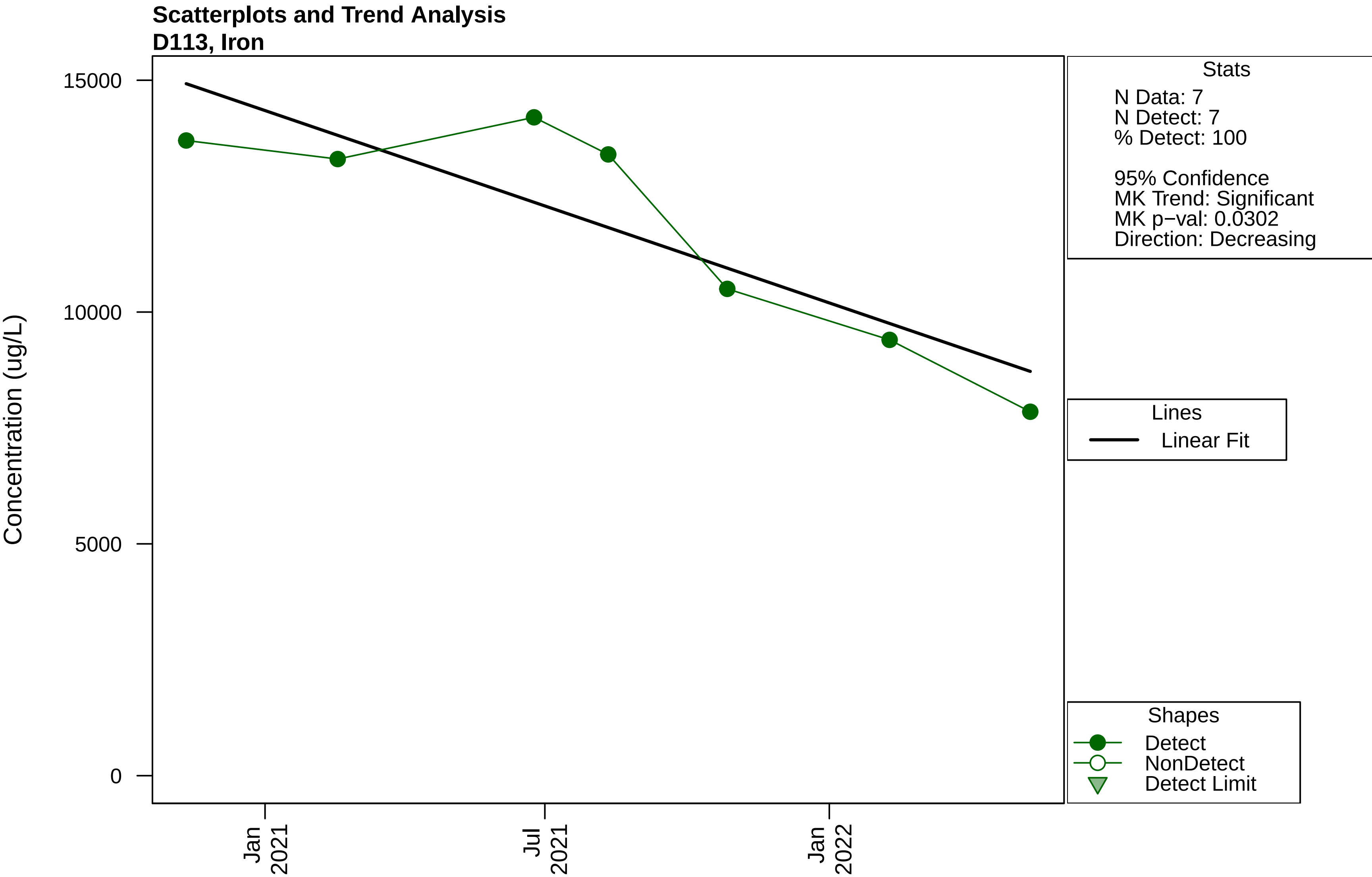


Scatterplots and Trend Analysis
D113, Dissolved Oxygen (Field)
Concentration (na)
0
2
4
6
8
Jan 2021
Mar 2021
May 2021
Jul 2021
Stats
N Data: 3
N Detect: 3
% Detect: 100
MK criteria not met
Shapes
Detect
NonDetect
Detect Limit

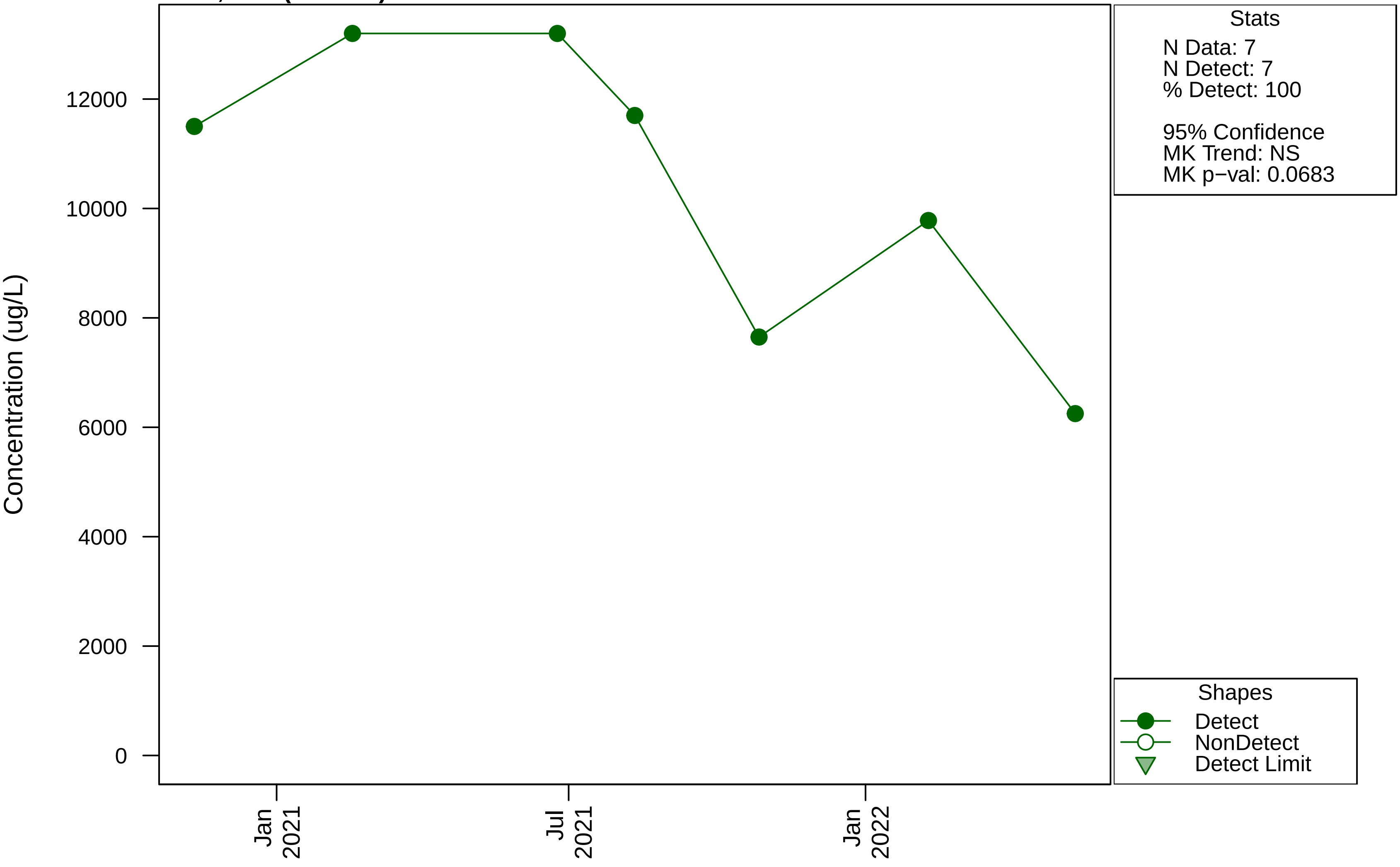

Scatterplots and Trend Analysis
D113, Dissolved Oxygen (Field) (Filtered)
Concentration (mg/L)
1.4
1.2
1.0
0.8
0.6
0.4
0.2
0.0
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 4
N Detect: 4
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.718
Shapes
Detect
NonDetect
Detect Limit

Scatterplots and Trend Analysis
D113, Electrical Conductivity (Field)

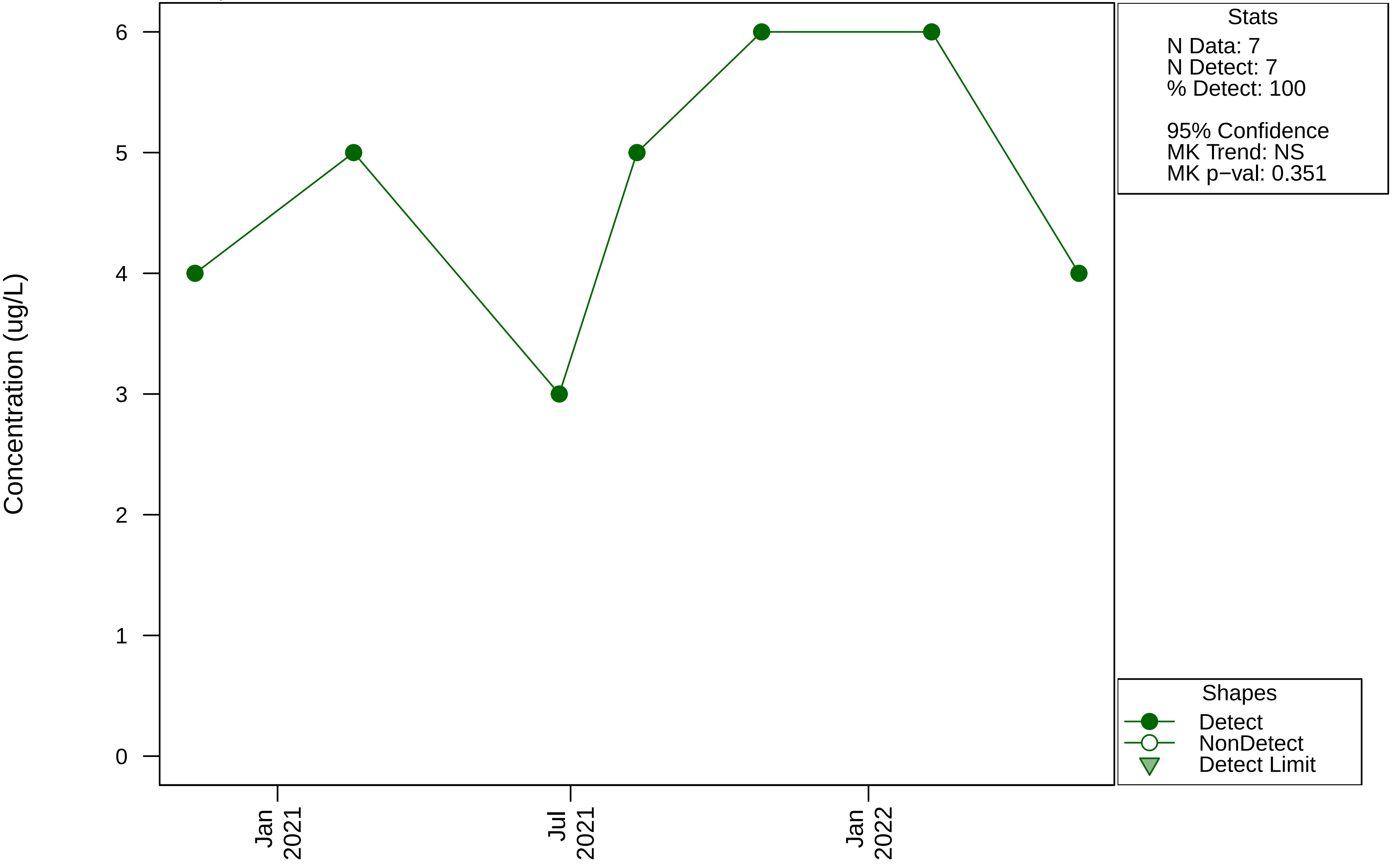


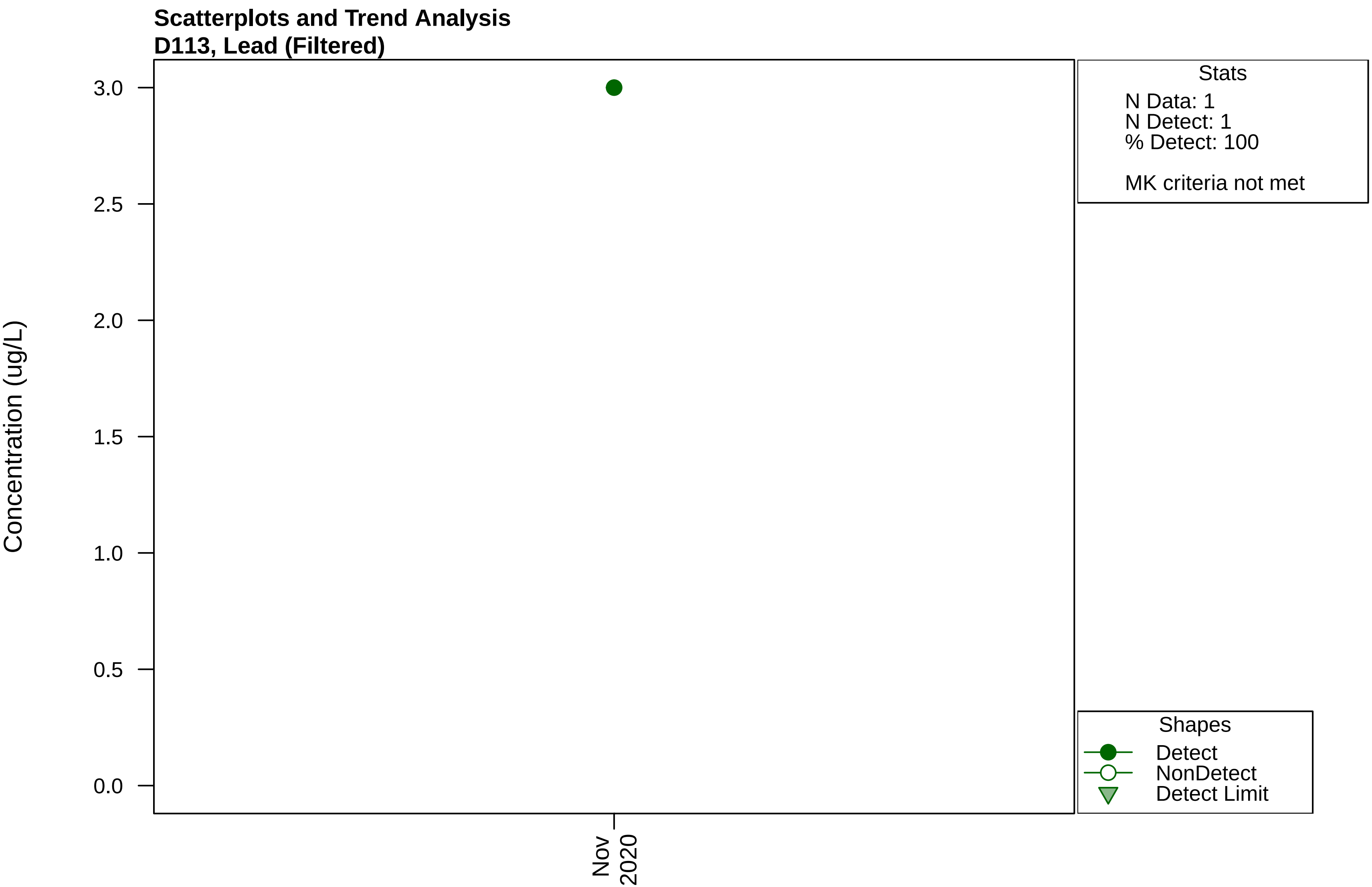

Scatterplots and Trend Analysis
D113, Iron
Concentration (ug/L)
15000
10000
5000
0
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 7
N Detect: 7
% Detect: 100
95% Confidence
MK Trend: Significant
MK p−val: 0.0302
Direction: Decreasing
Lines
Linear Fit
Shapes
Detect
NonDetect
Detect Limit

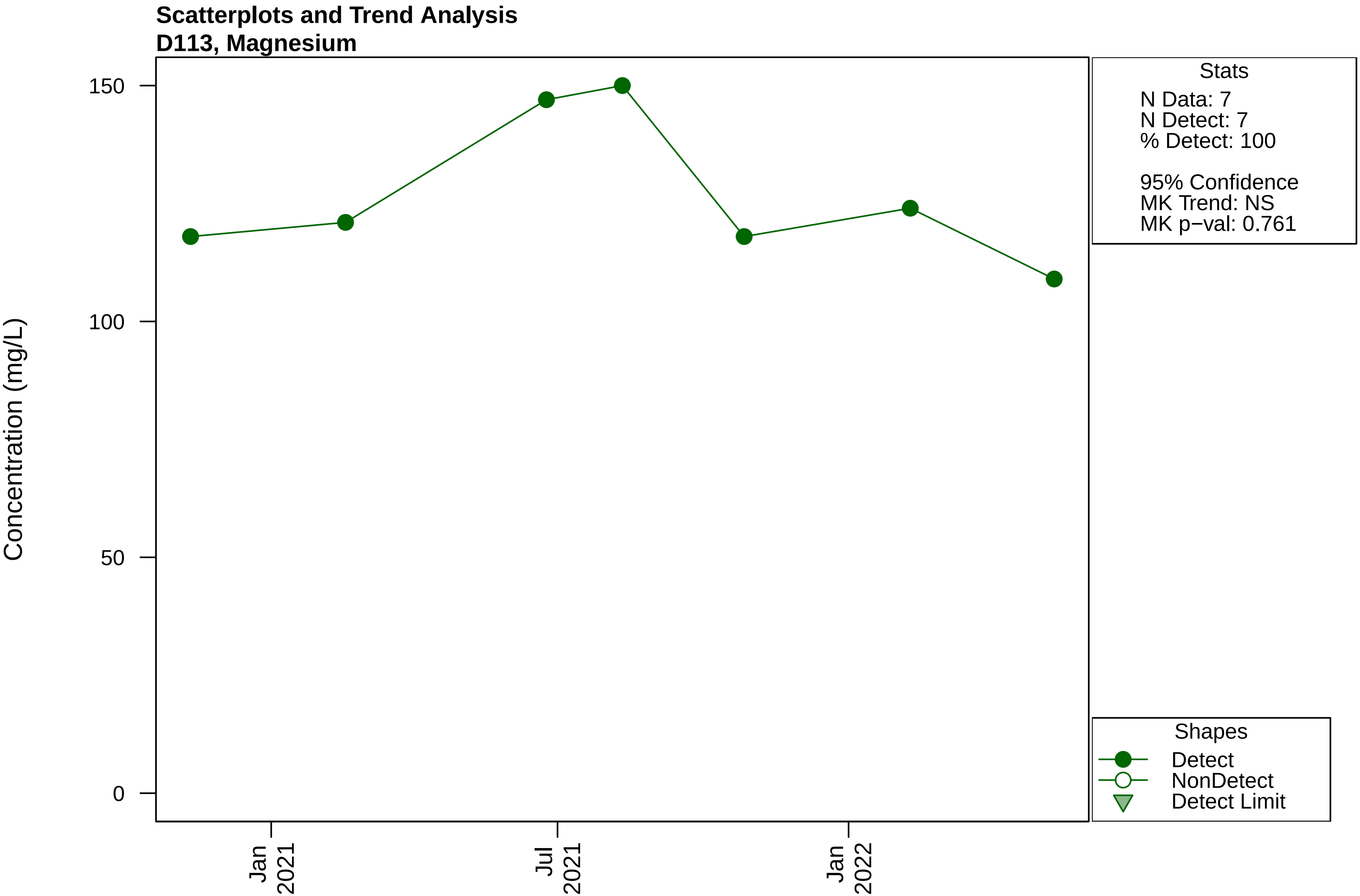
Scatterplots and Trend Analysis
D113, Iron (Filtered)



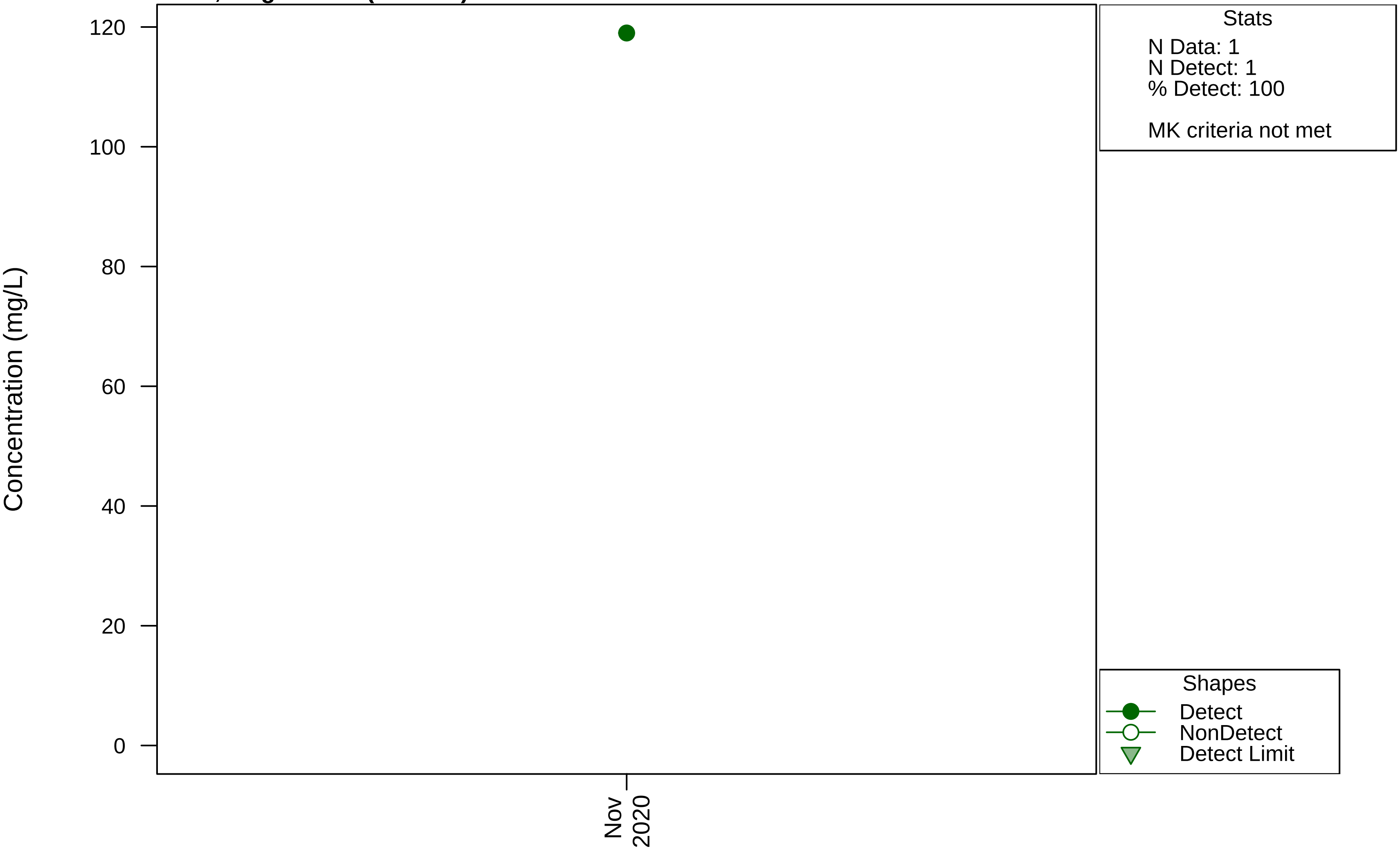
Scatterplots and Trend Analysis
D113, Lead



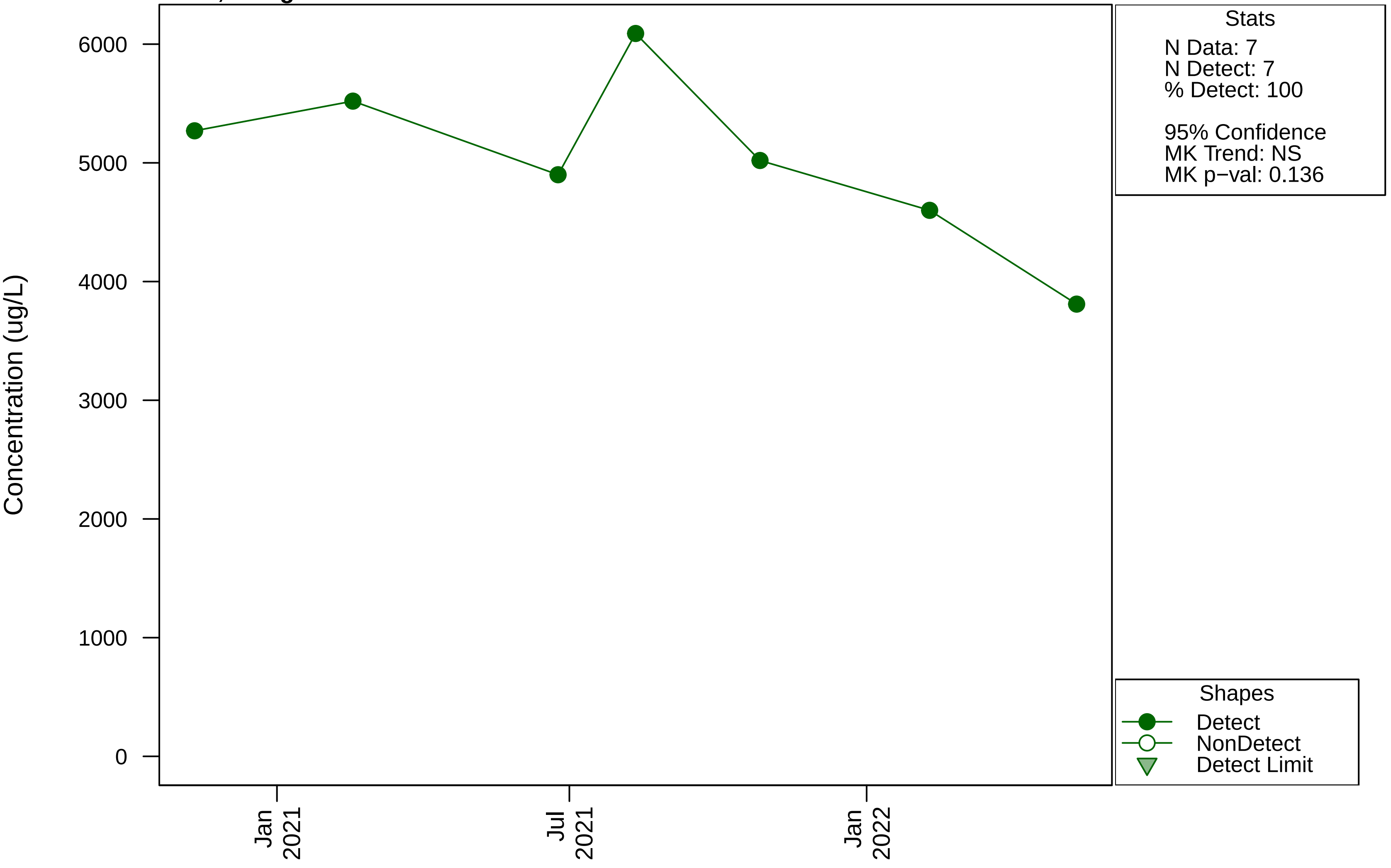

Scatterplots and Trend Analysis
D113, Lead (Filtered)
Concentration (ug/L)
3.0
2.5
2.0
1.5
1.0
0.5
0.0
Nov 2020
Stats
N Data: 1
N Detect: 1
% Detect: 100
MK criteria not met
Shapes
Detect
NonDetect
Detect Limit

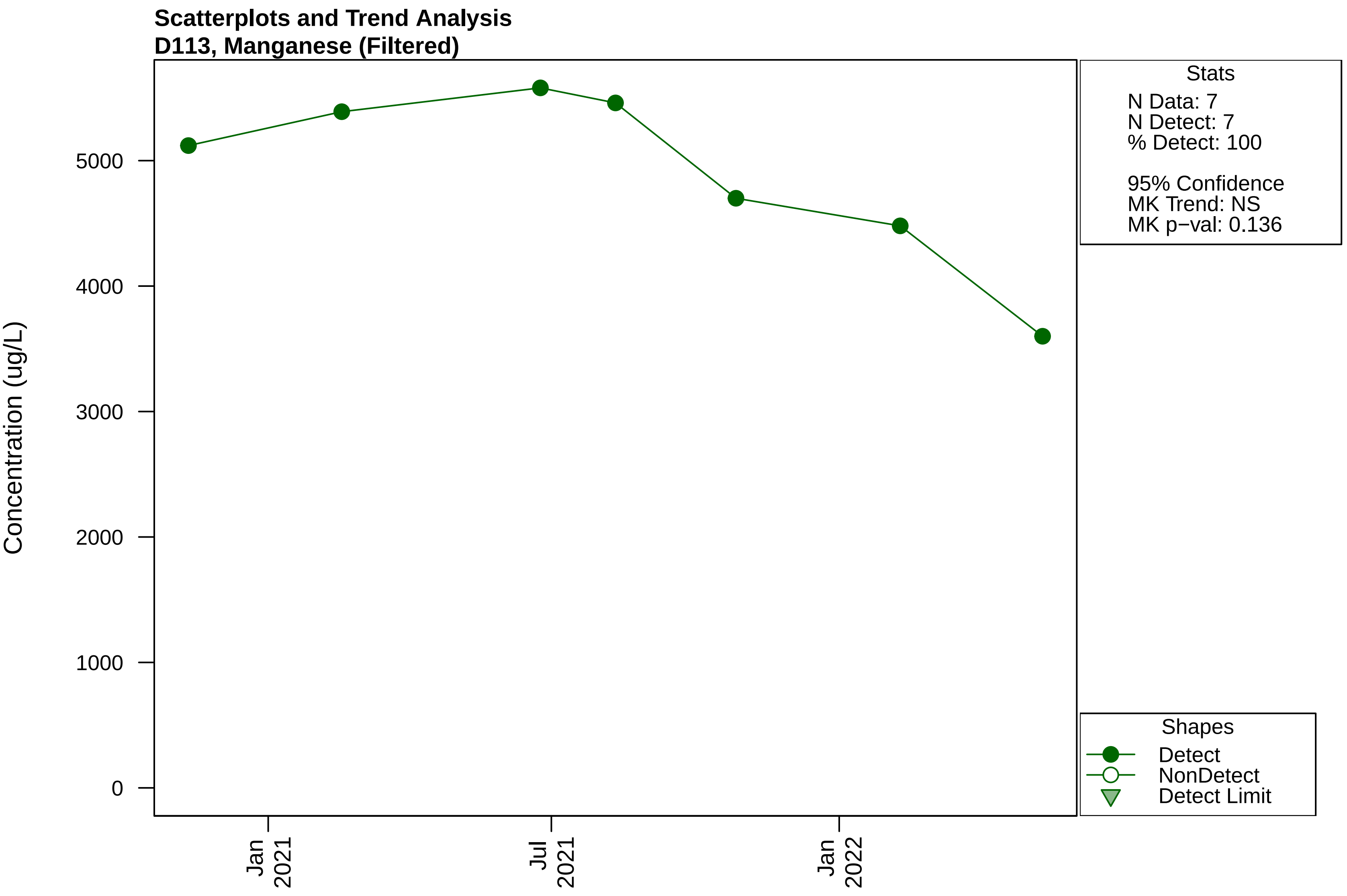

Scatterplots and Trend Analysis
D113, Magnesium
Concentration (mg/L)
150
100
50
0
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 7
N Detect: 7
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.761
Shapes
Detect
NonDetect
Detect Limit

Scatterplots and Trend Analysis
D113, Magnesium (Filtered)

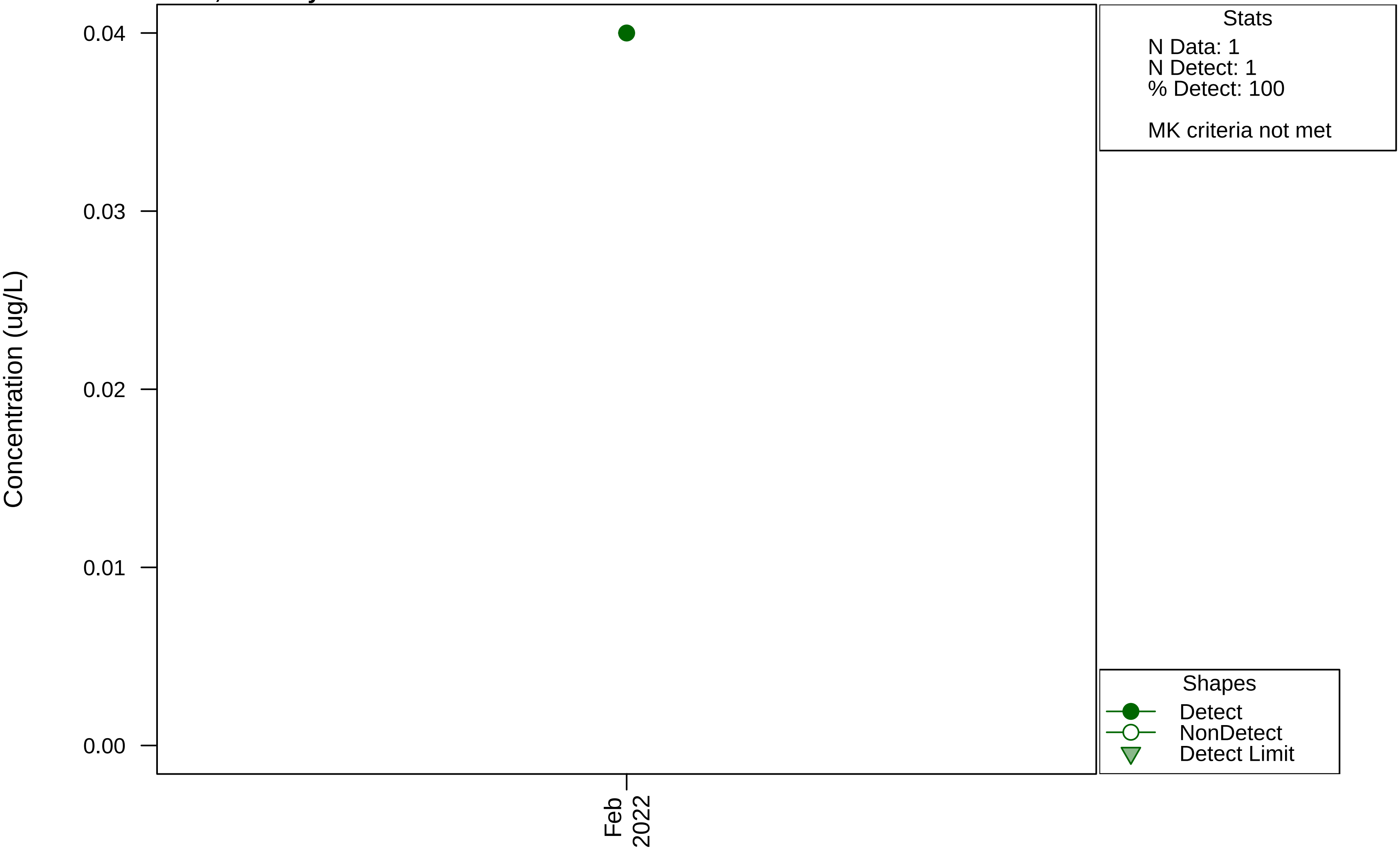


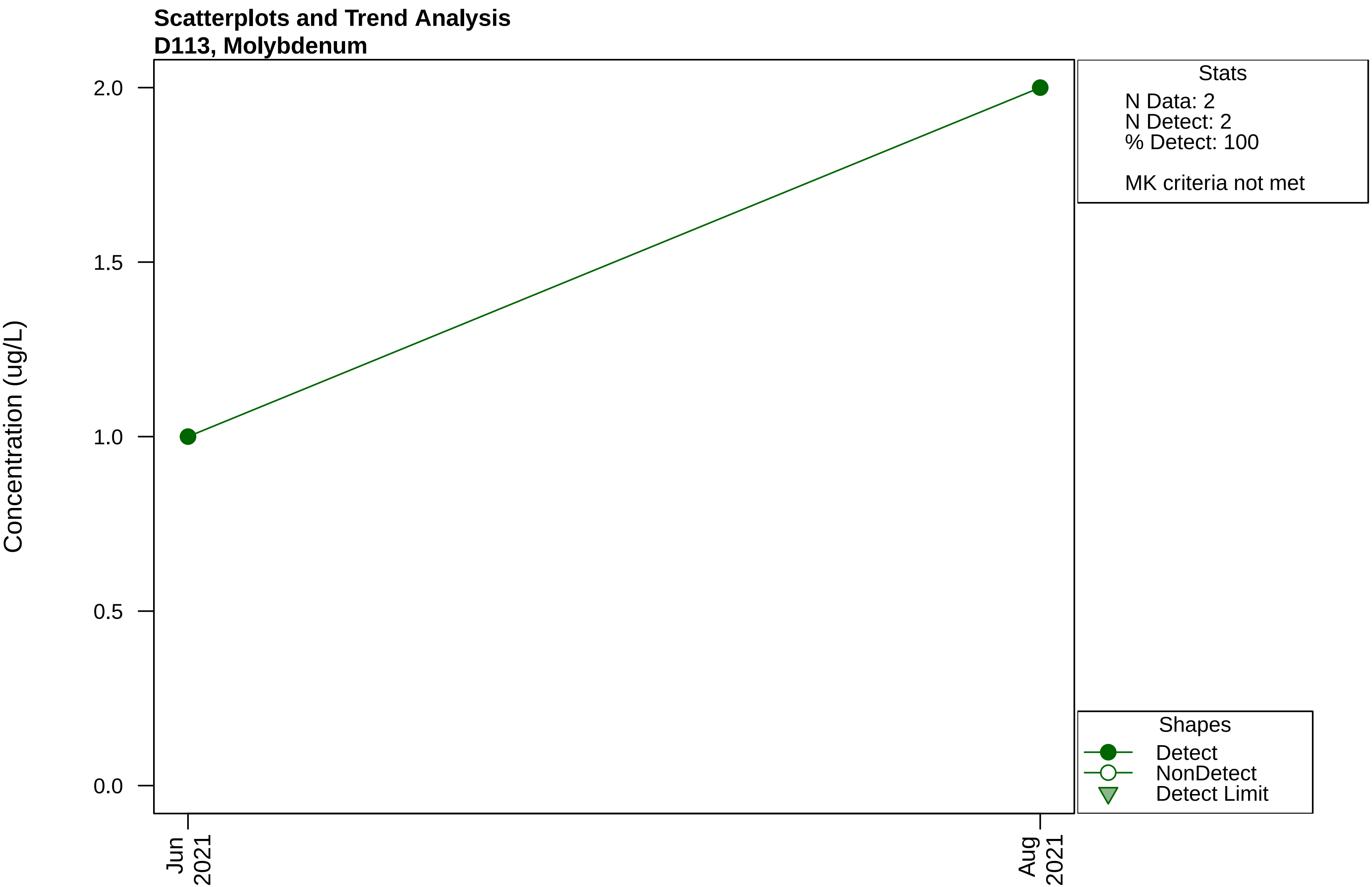
Scatterplots and Trend Analysis
D113, Manganese



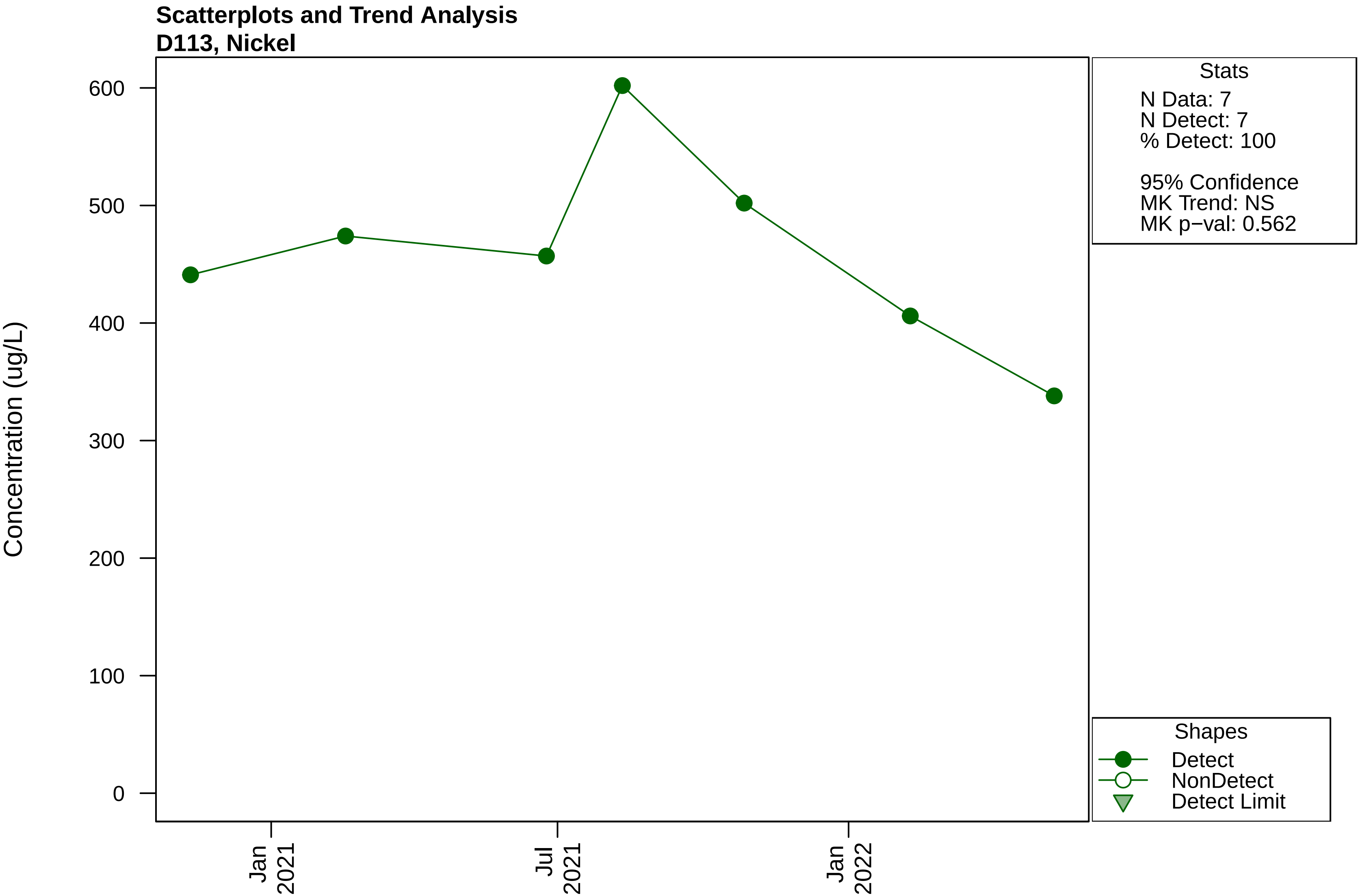

Scatterplots and Trend Analysis
D113, Manganese (Filtered)
Concentration (ug/L)
0
1000
2000
3000
4000
5000
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 7
N Detect: 7
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.136
Shapes
Detect
NonDetect
Detect Limit

Scatterplots and Trend Analysis
D113, Mercury

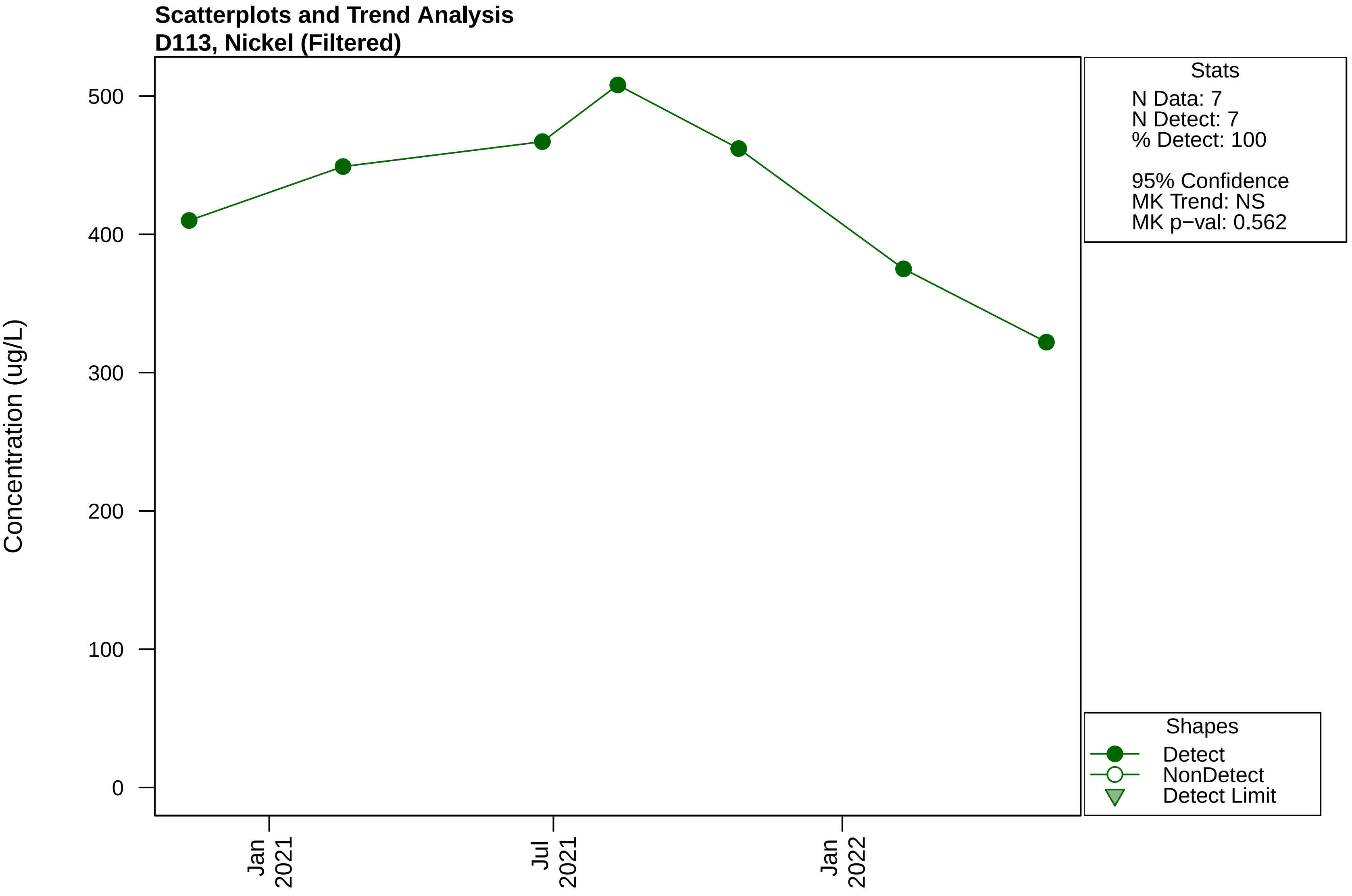




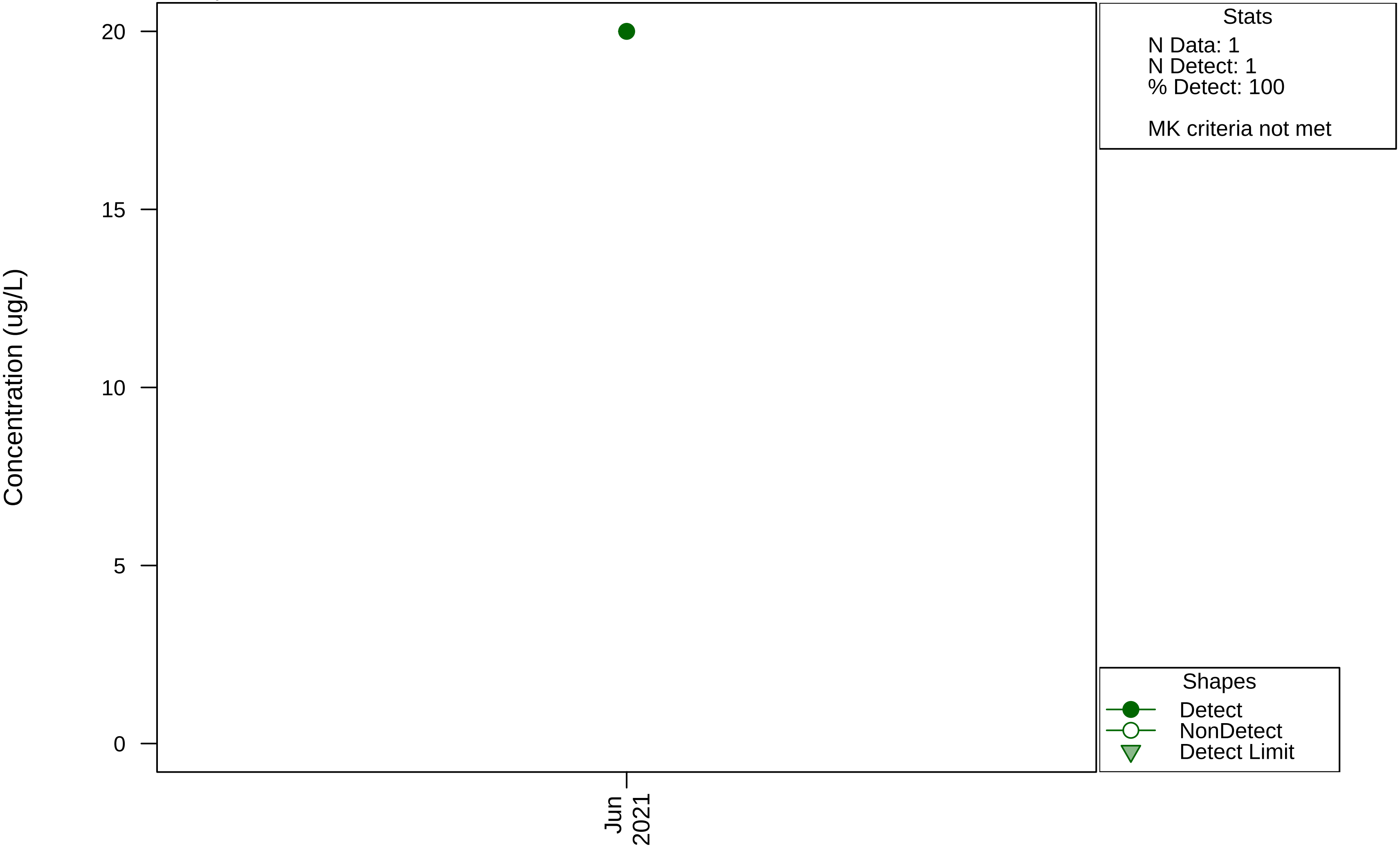
Scatterplots and Trend Analysis
D113, Molybdenum
Concentration (ug/L)
2.0
1.5
1.0
0.5
0.0
Jun 2021
Aug 2021
Stats
N Data: 2
N Detect: 2
% Detect: 100
MK criteria not met
Shapes
Detect
NonDetect
Detect Limit

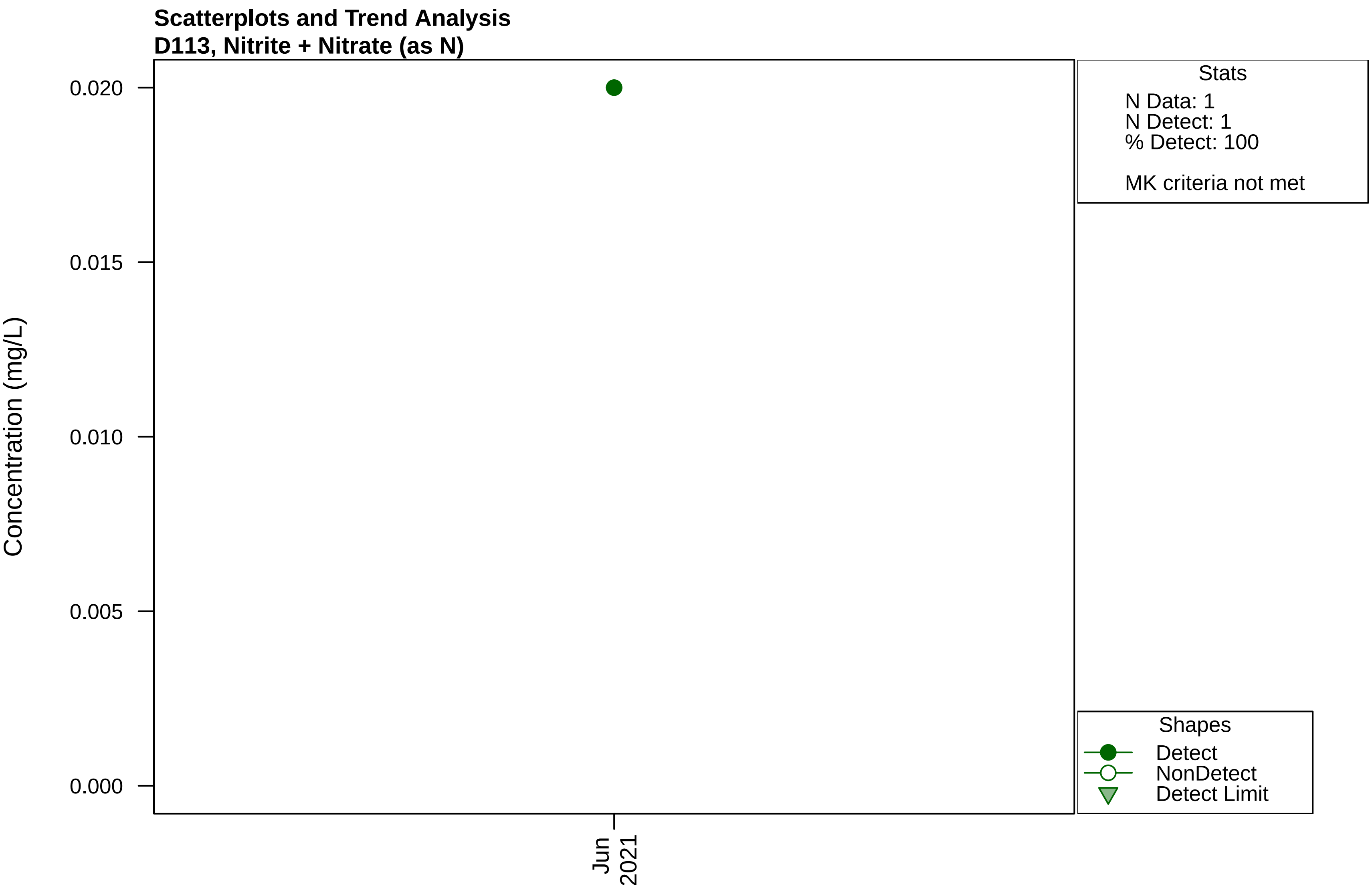


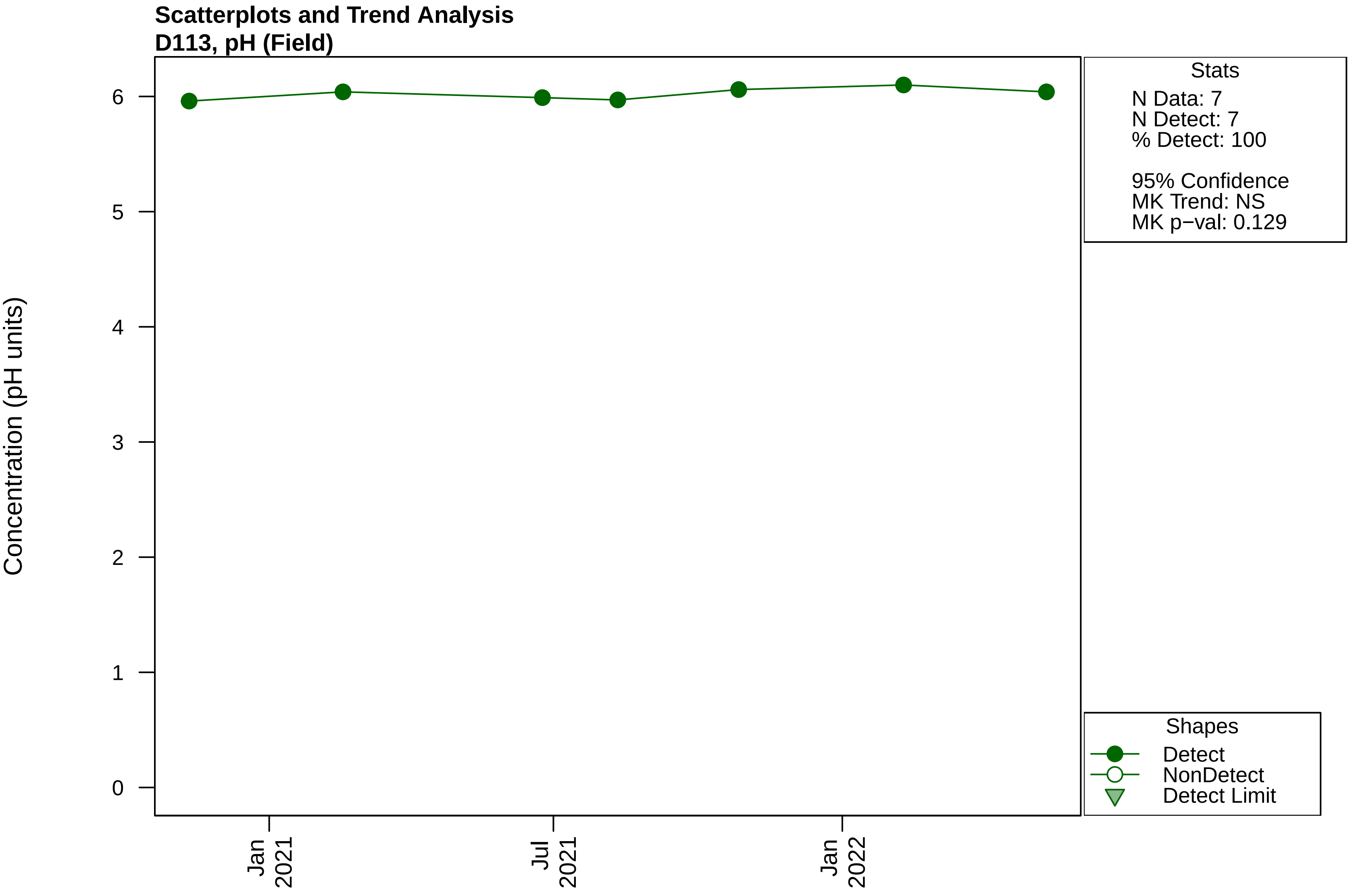
Scatterplots and Trend Analysis
D113, Nickel
Concentration (ug/L)
0
100
200
300
400
500
600
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 7
N Detect: 7
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.562
Shapes
Detect
NonDetect
Detect Limit

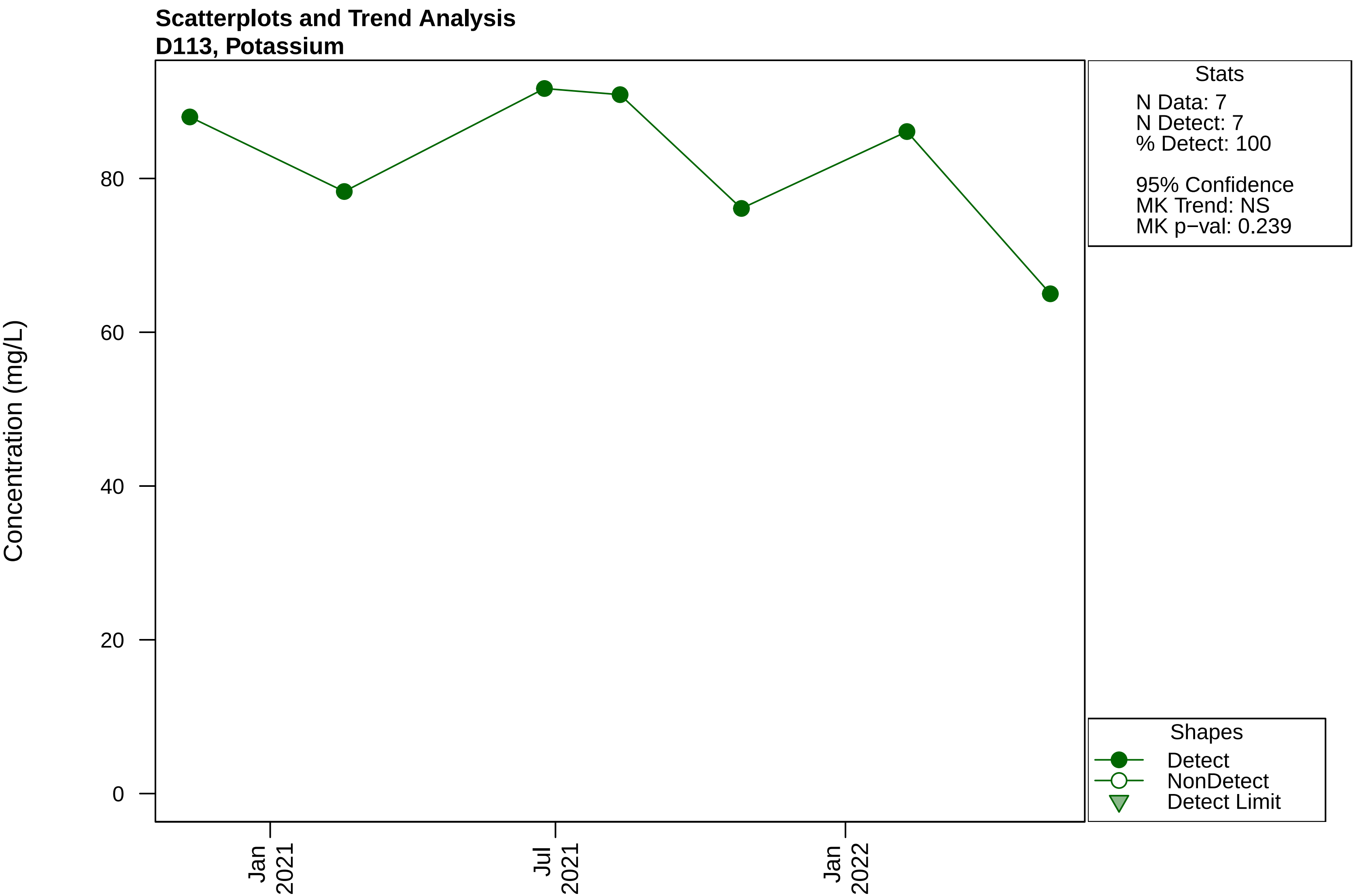

Scatterplots and Trend Analysis
D113, Nickel (Filtered)
Concentration (ug/L)
0
100
200
300
400
500
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 7
N Detect: 7
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.562
Shapes
Detect
NonDetect
Detect Limit

Scatterplots and Trend Analysis
D113, Nitrate



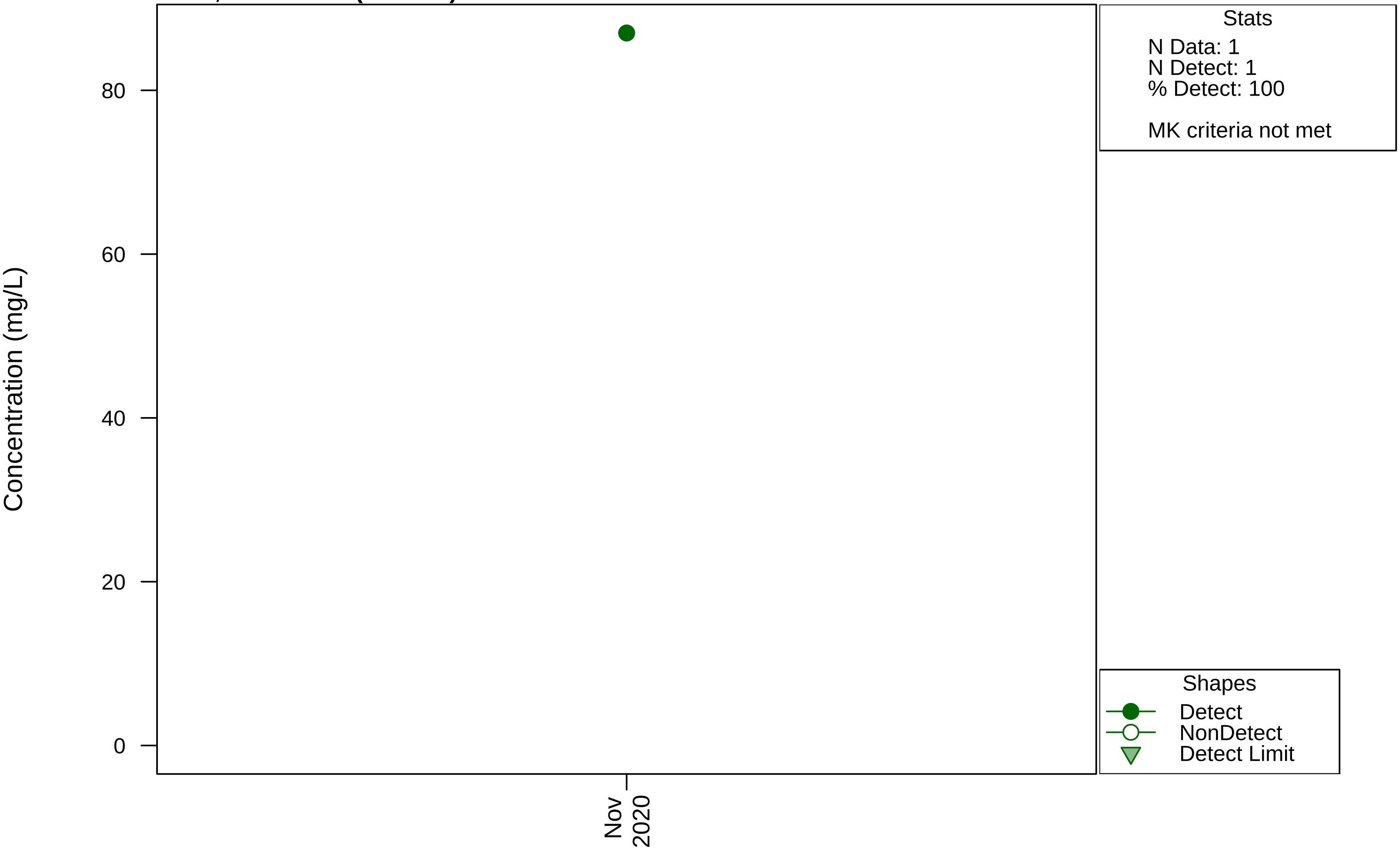

Scatterplots and Trend Analysis
D113, Nitrite + Nitrate (as N)
Concentration (mg/L)
0.020
0.015
0.010
0.005
0.000
Jun
2021
Stats
N Data: 1
N Detect: 1
% Detect: 100
MK criteria not met
Shapes
Detect
NonDetect
Detect Limit

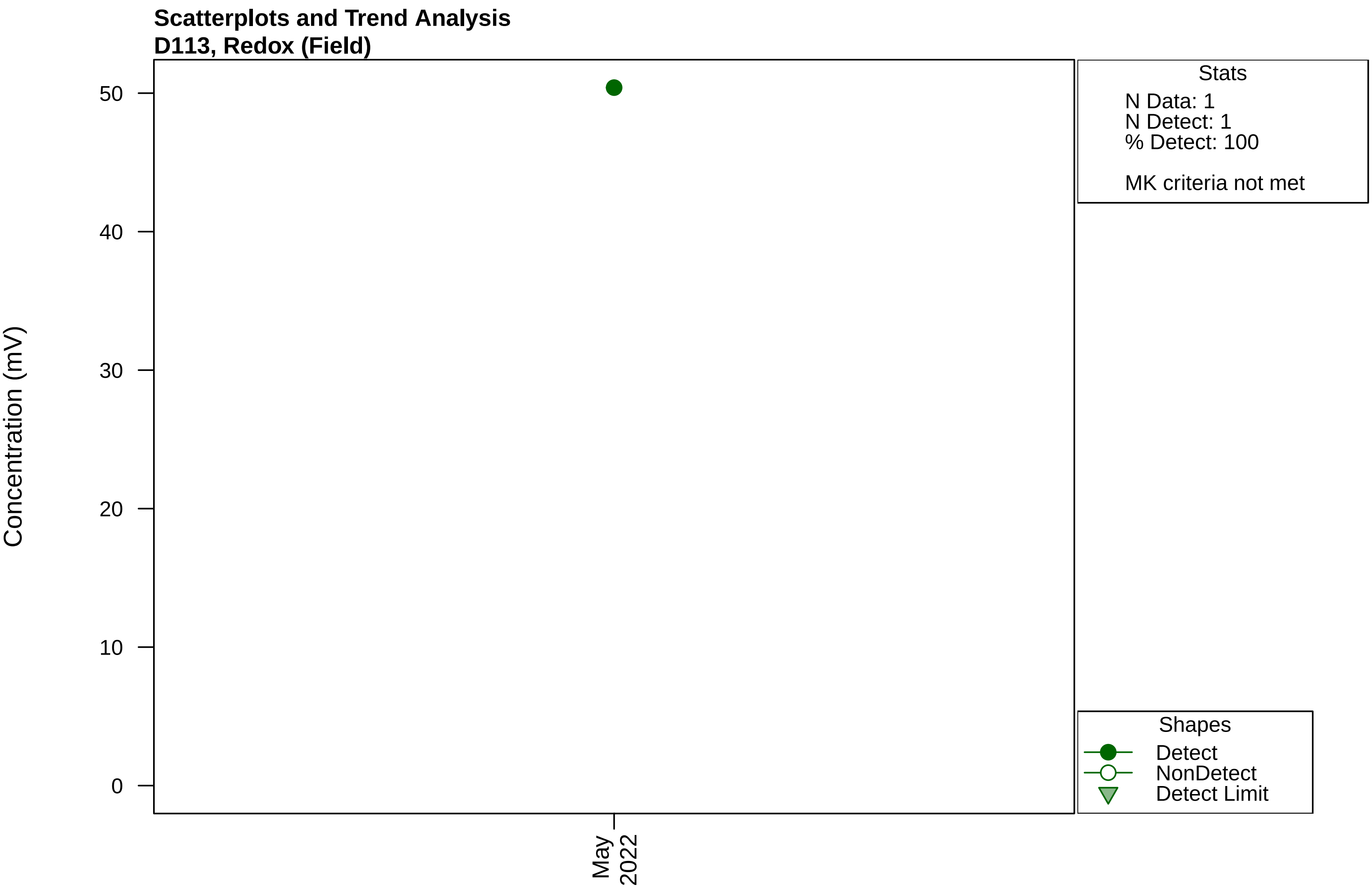

Scatterplots and Trend Analysis
D113, pH (Field)
Concentration (pH units)
0
1
2
3
4
5
6
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 7
N Detect: 7
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.129
Shapes
Detect
NonDetect
Detect Limit



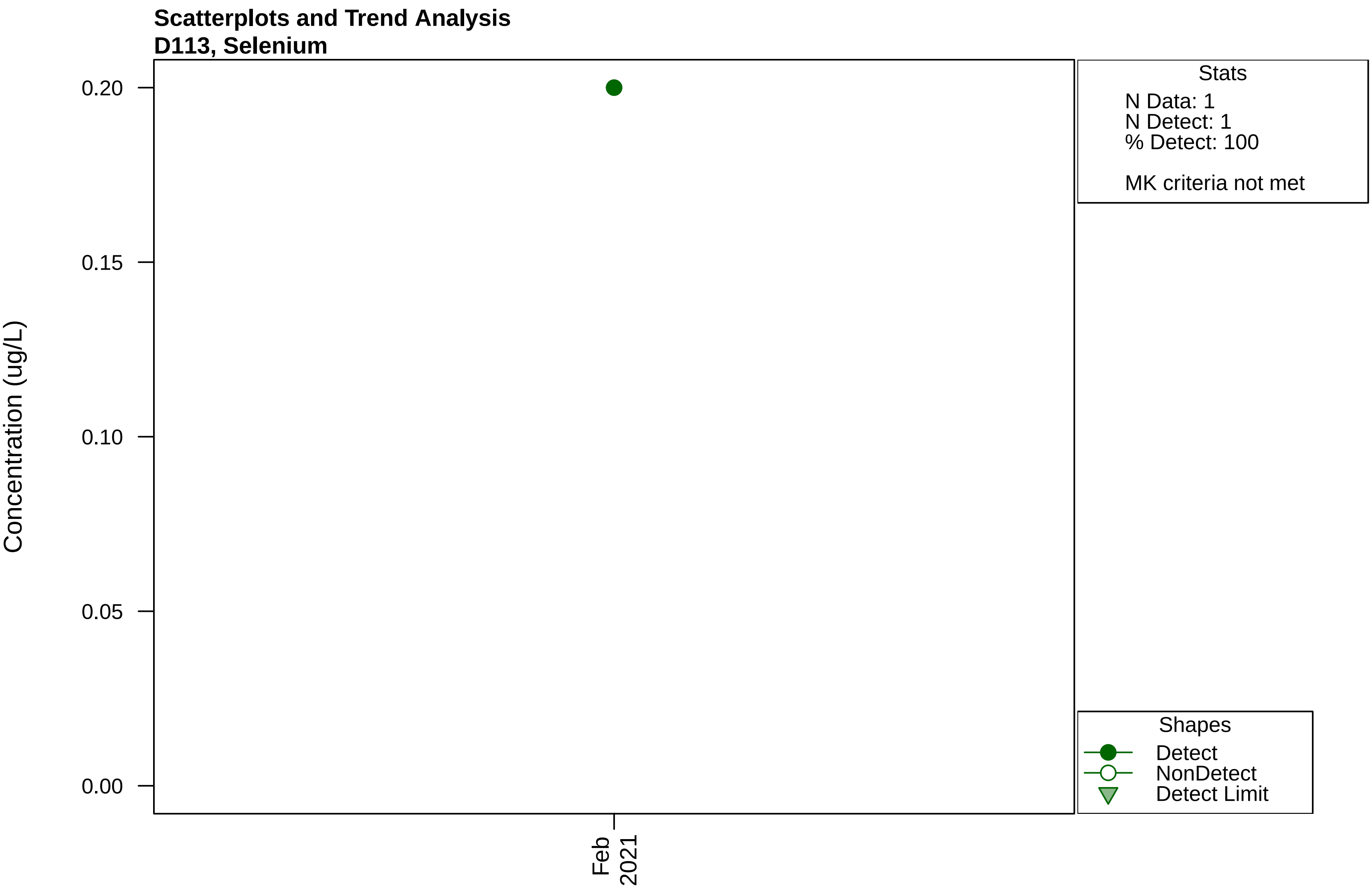
Scatterplots and Trend Analysis
D113, Potassium
Concentration (mg/L)
0
20
40
60
80
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 7
N Detect: 7
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.239
Shapes
Detect
NonDetect
Detect Limit

Scatterplots and Trend Analysis
D113, Potassium (Filtered)

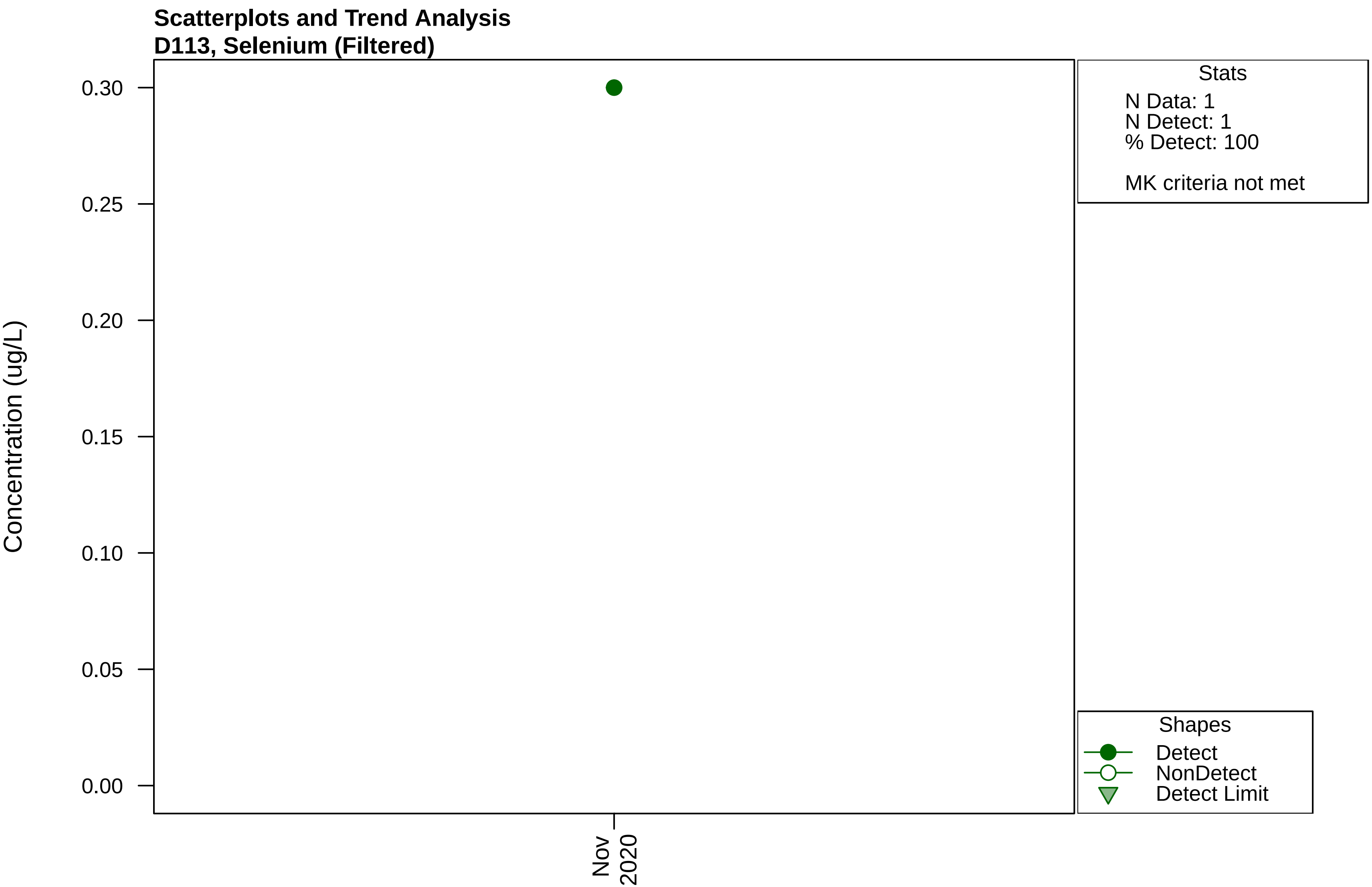


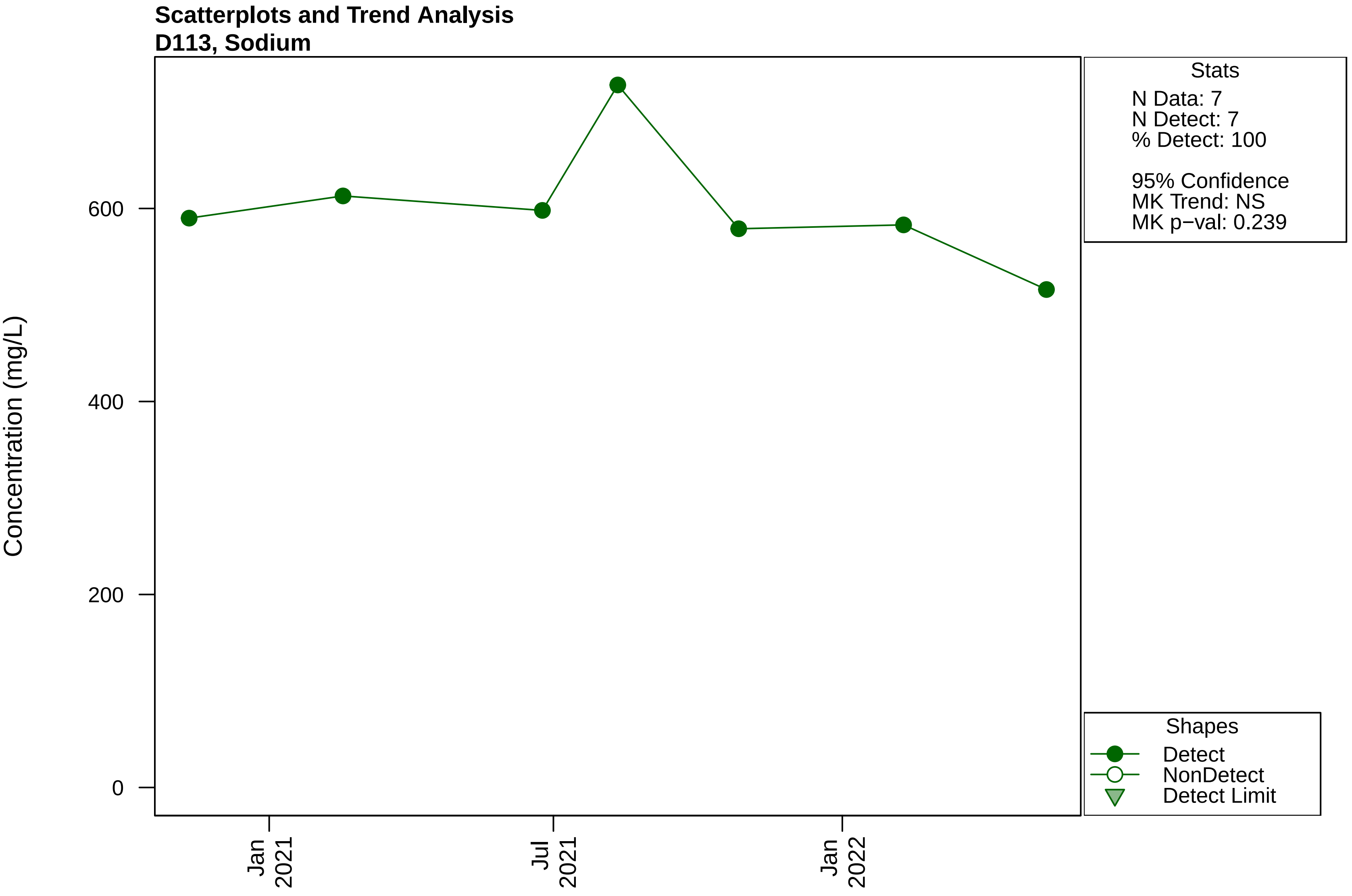


Scatterplots and Trend Analysis
D113, Redox (Field)
Concentration (mV)
50
40
30
20
10
0
May 2022
Stats
N Data: 1
N Detect: 1
% Detect: 100
MK criteria not met
Shapes
Detect
NonDetect
Detect Limit

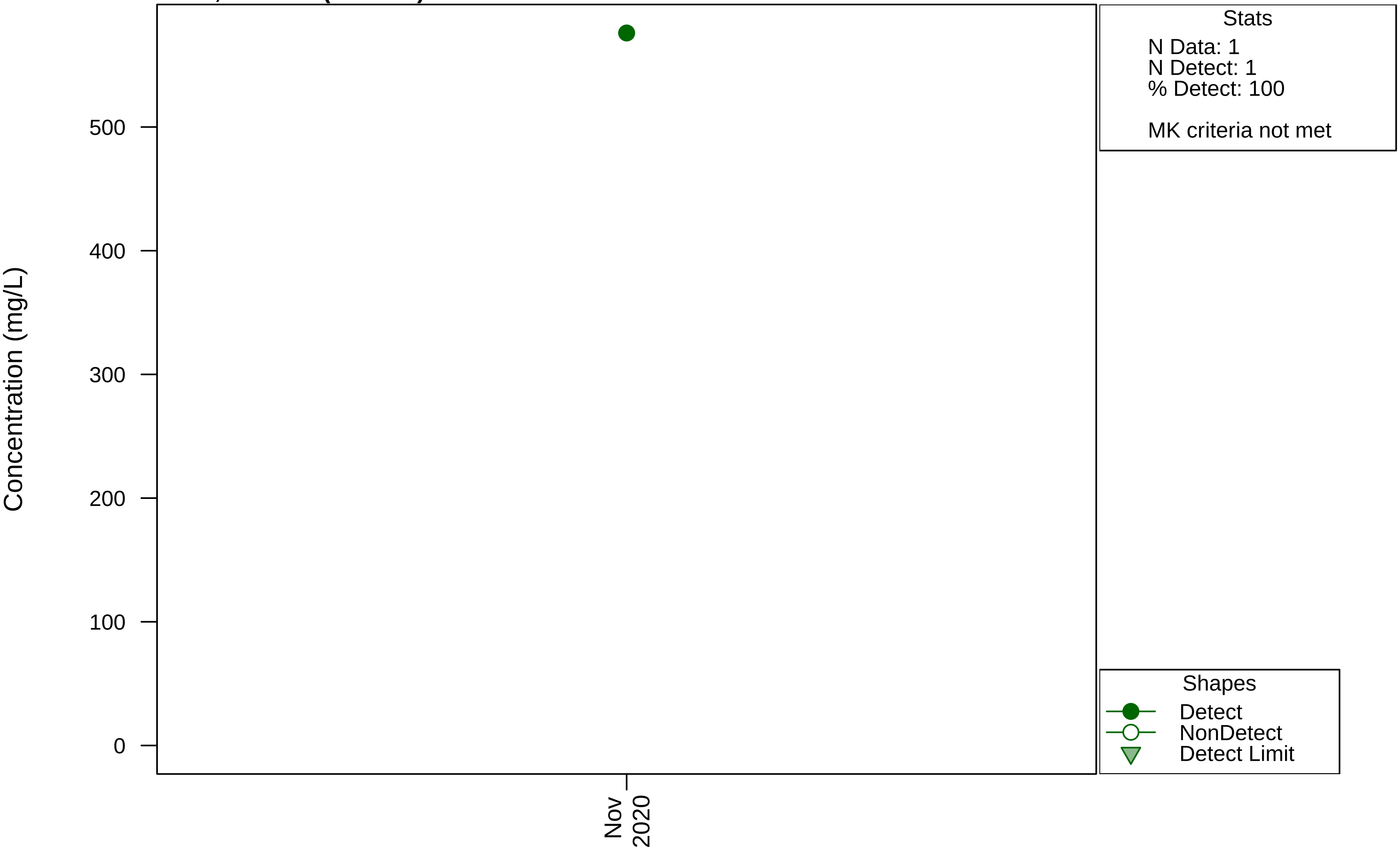


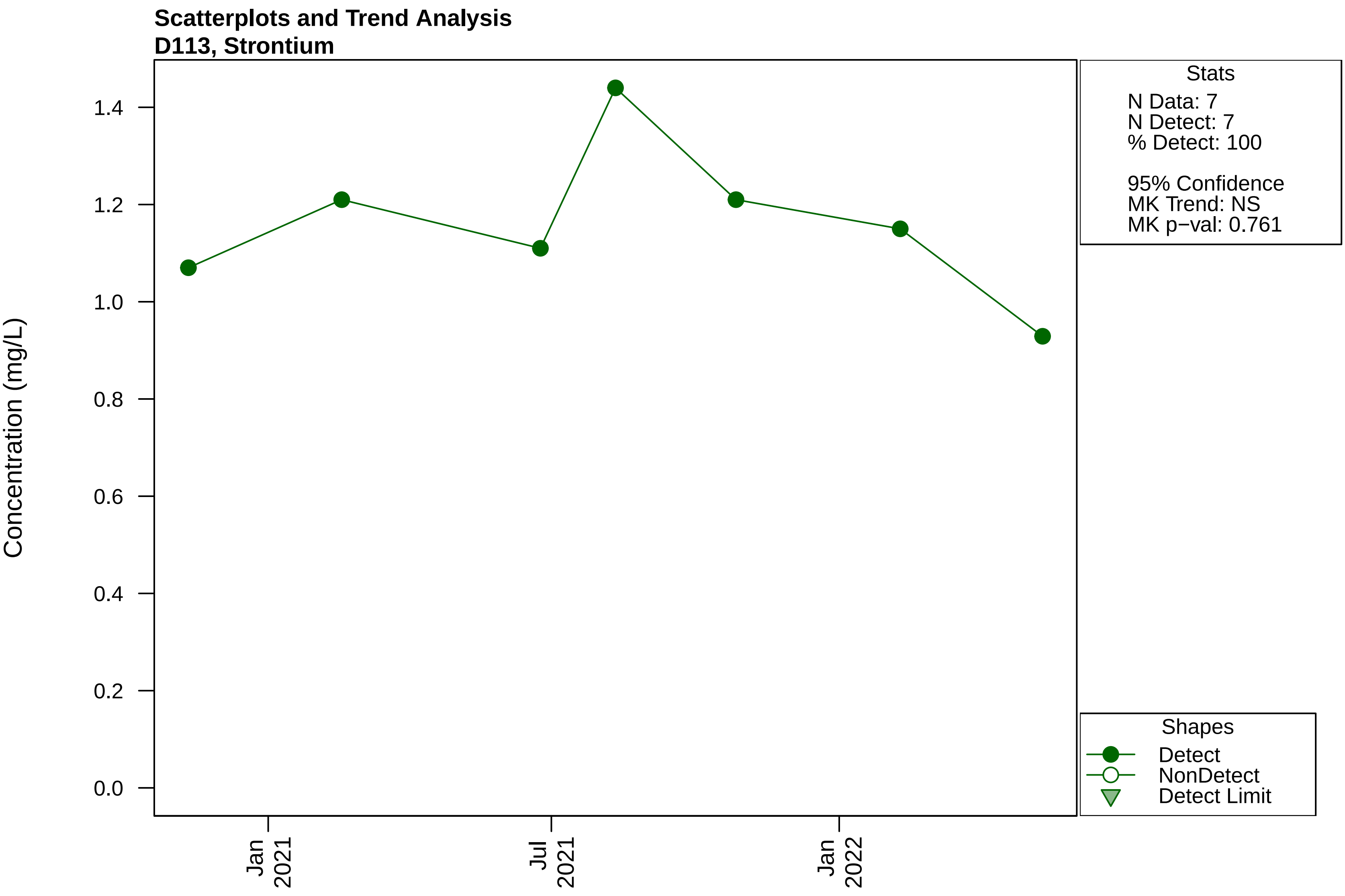
Scatterplots and Trend Analysis
D113, Selenium
Concentration (ug/L)
0.20
0.15
0.10
0.05
0.00
Feb
2021
Stats
N Data: 1
N Detect: 1
% Detect: 100
MK criteria not met
Shapes
Detect
NonDetect
Detect Limit


Scatterplots and Trend Analysis
D113, Selenium (Filtered)
Concentration (ug/L)
0.30
0.25
0.20
0.15
0.10
0.05
0.00
Nov 2020
Stats
N Data: 1
N Detect: 1
% Detect: 100
MK criteria not met
Shapes
Detect
NonDetect
Detect Limit

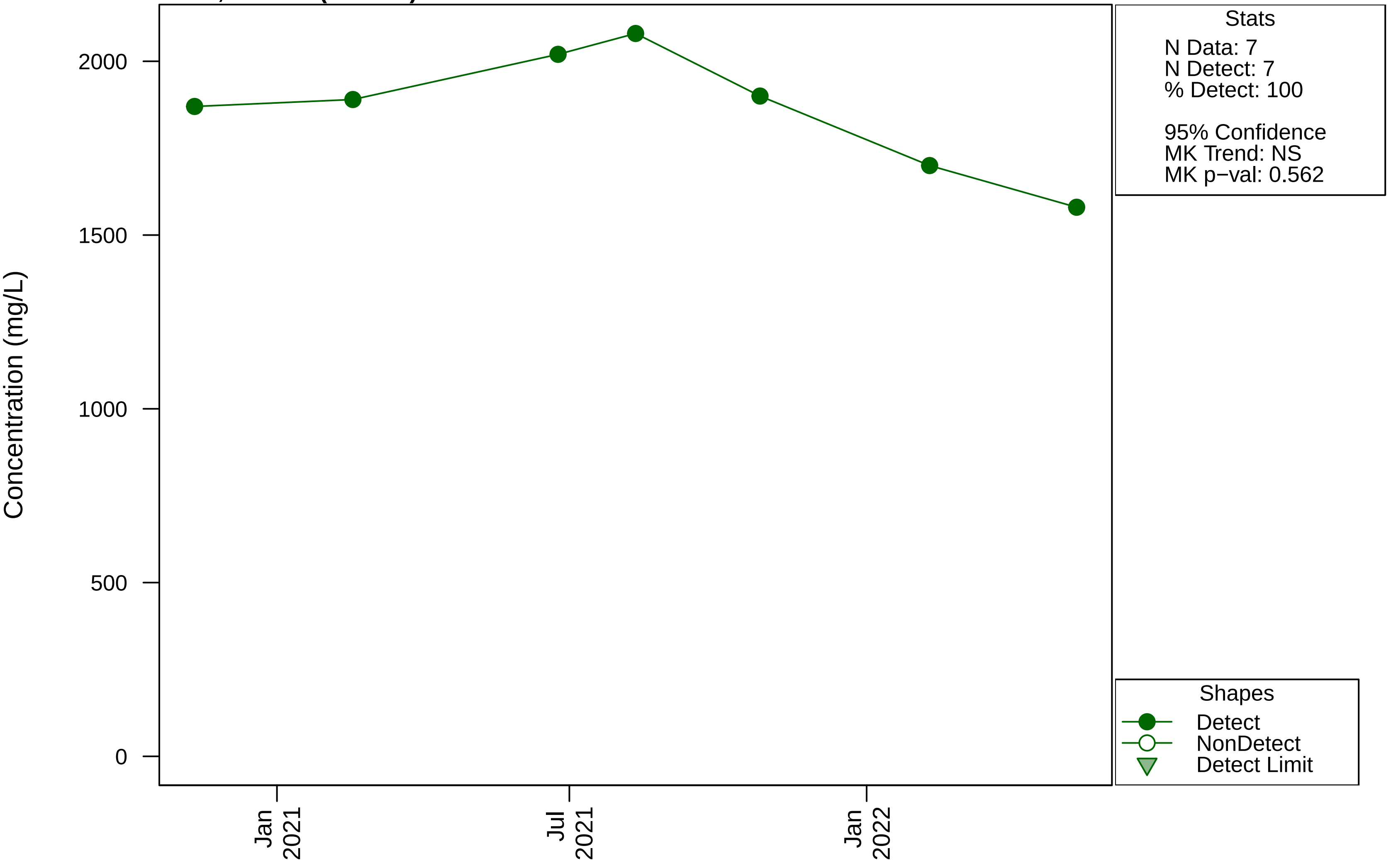

Scatterplots and Trend Analysis
D113, Sodium
Concentration (mg/L)
0
200
400
600
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 7
N Detect: 7
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.239
Shapes
Detect
NonDetect
Detect Limit

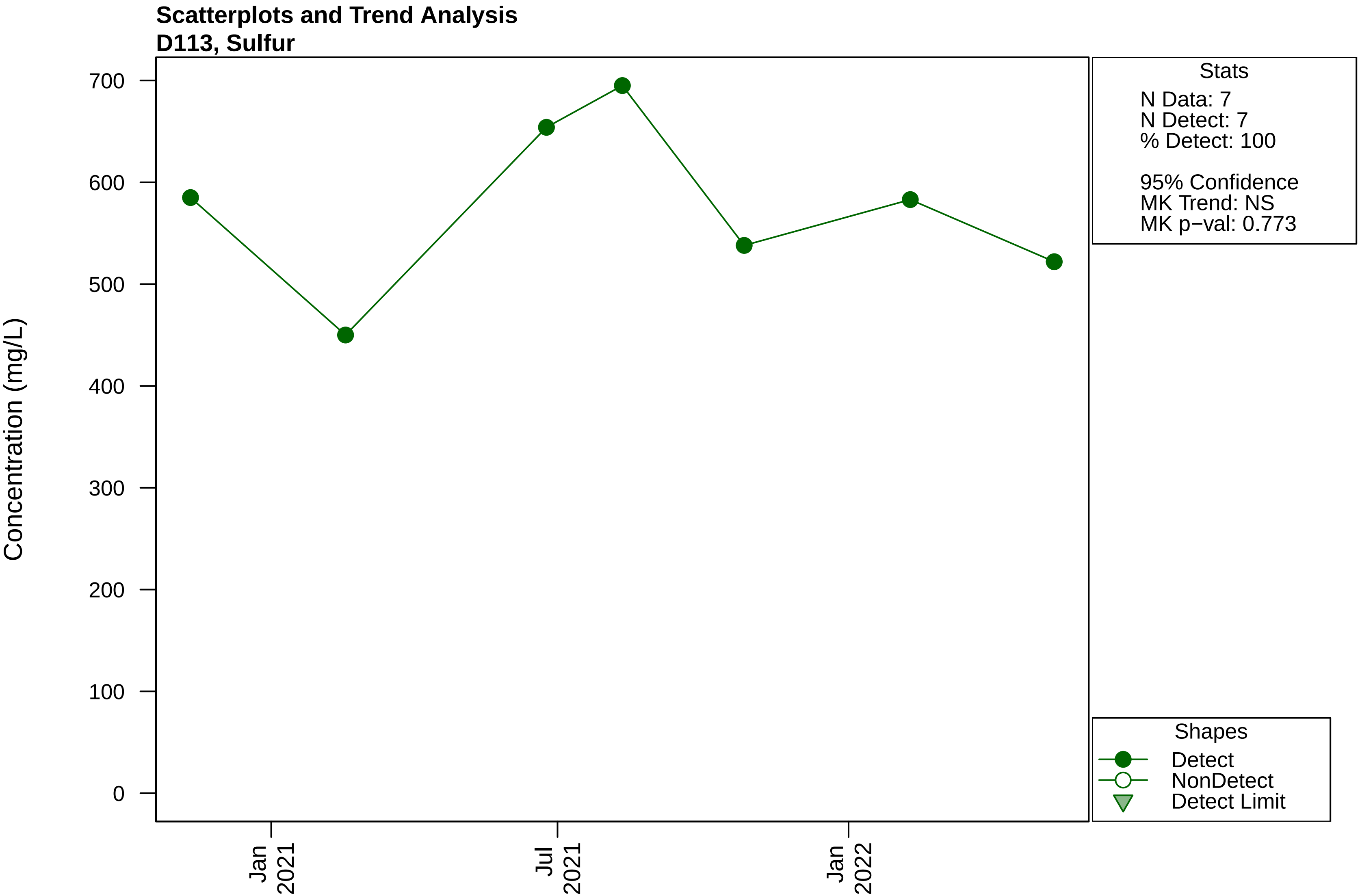
Scatterplots and Trend Analysis
D113, Sodium (Filtered)




Scatterplots and Trend Analysis
D113, Strontium
Concentration (mg/L)
0.0
0.2
0.4
0.6
0.8
1.0
1.2
1.4
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 7
N Detect: 7
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.761
Shapes
Detect
NonDetect
Detect Limit

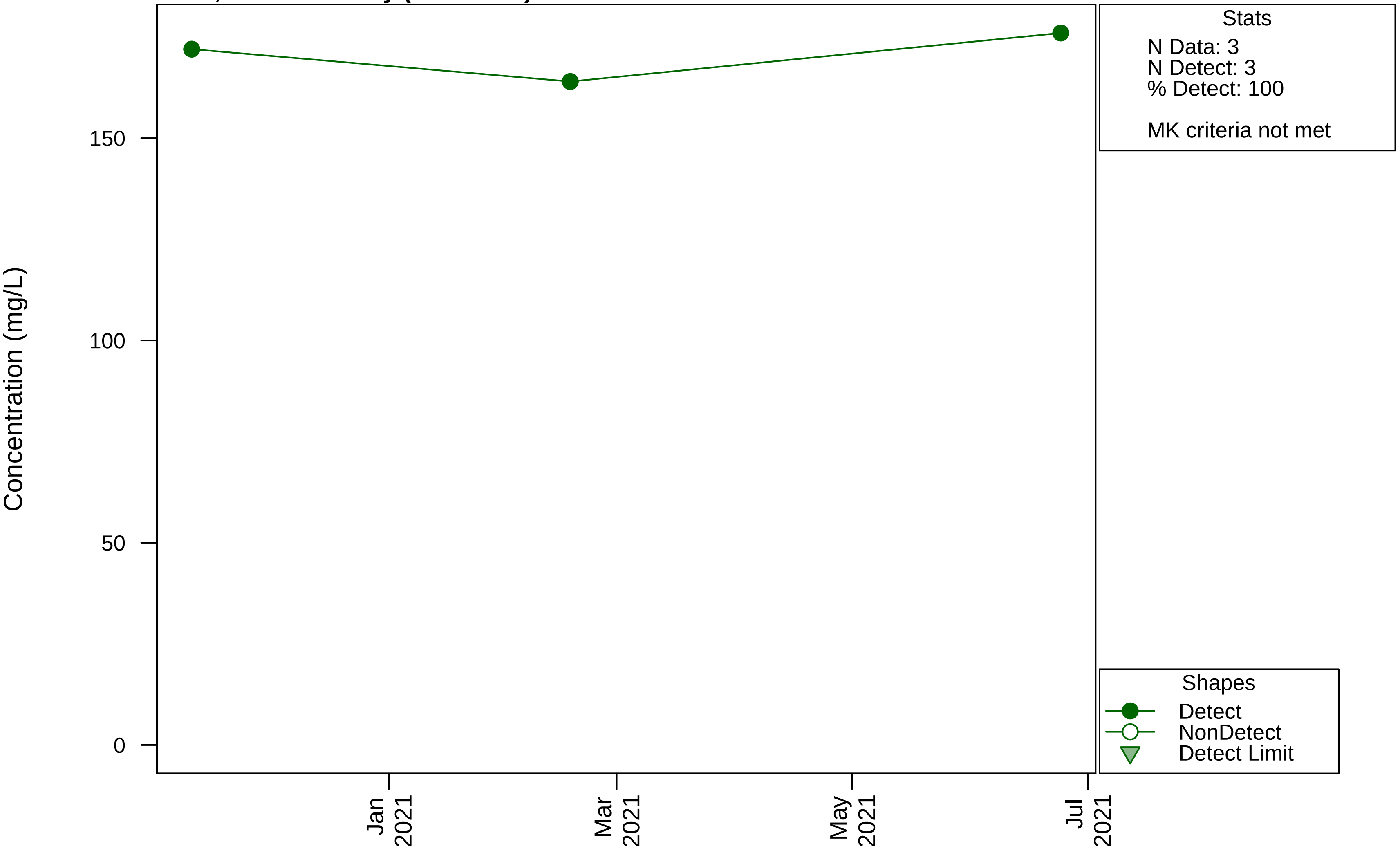
Scatterplots and Trend Analysis
D113, Sulfate (as SO4)

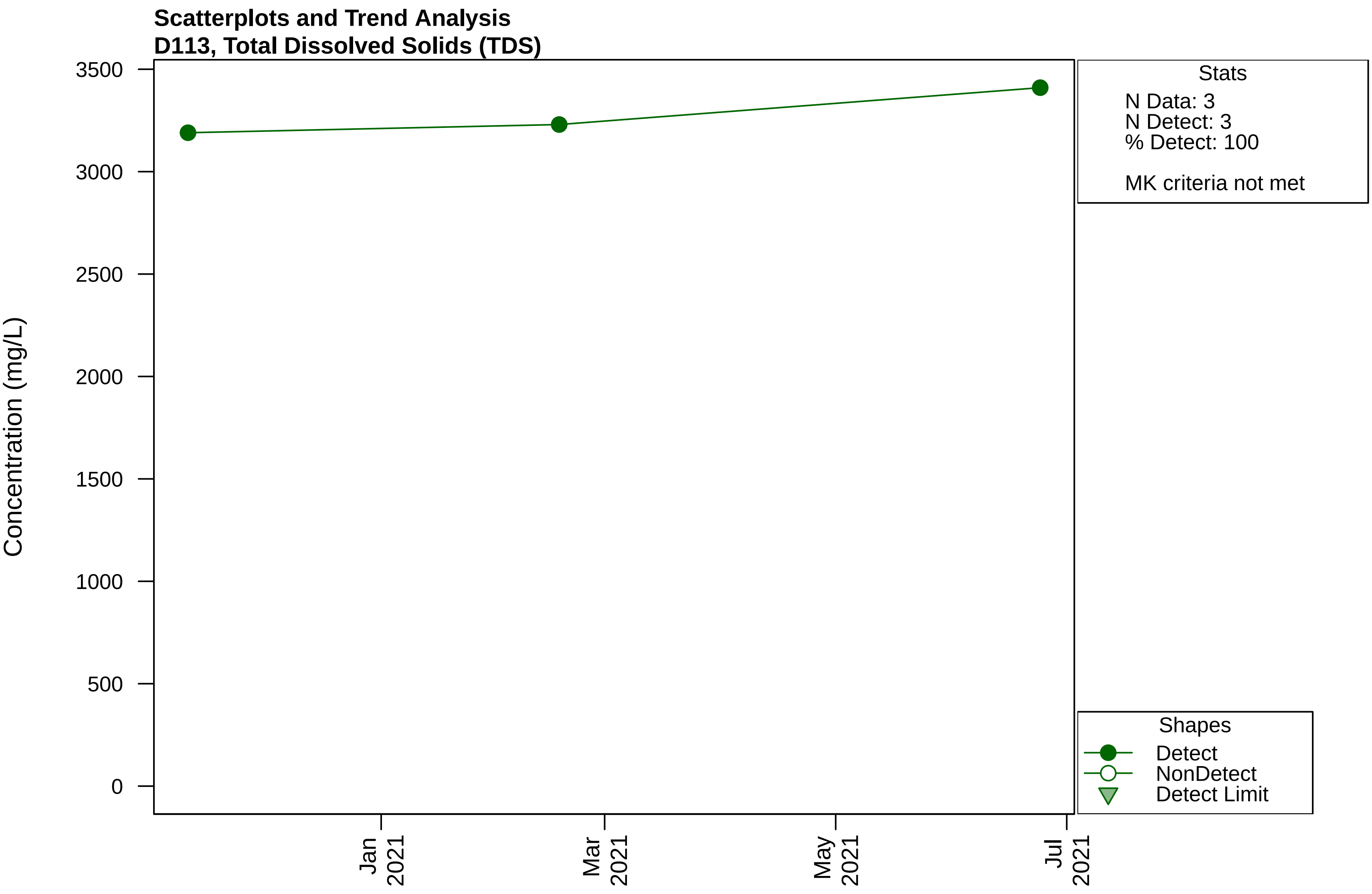




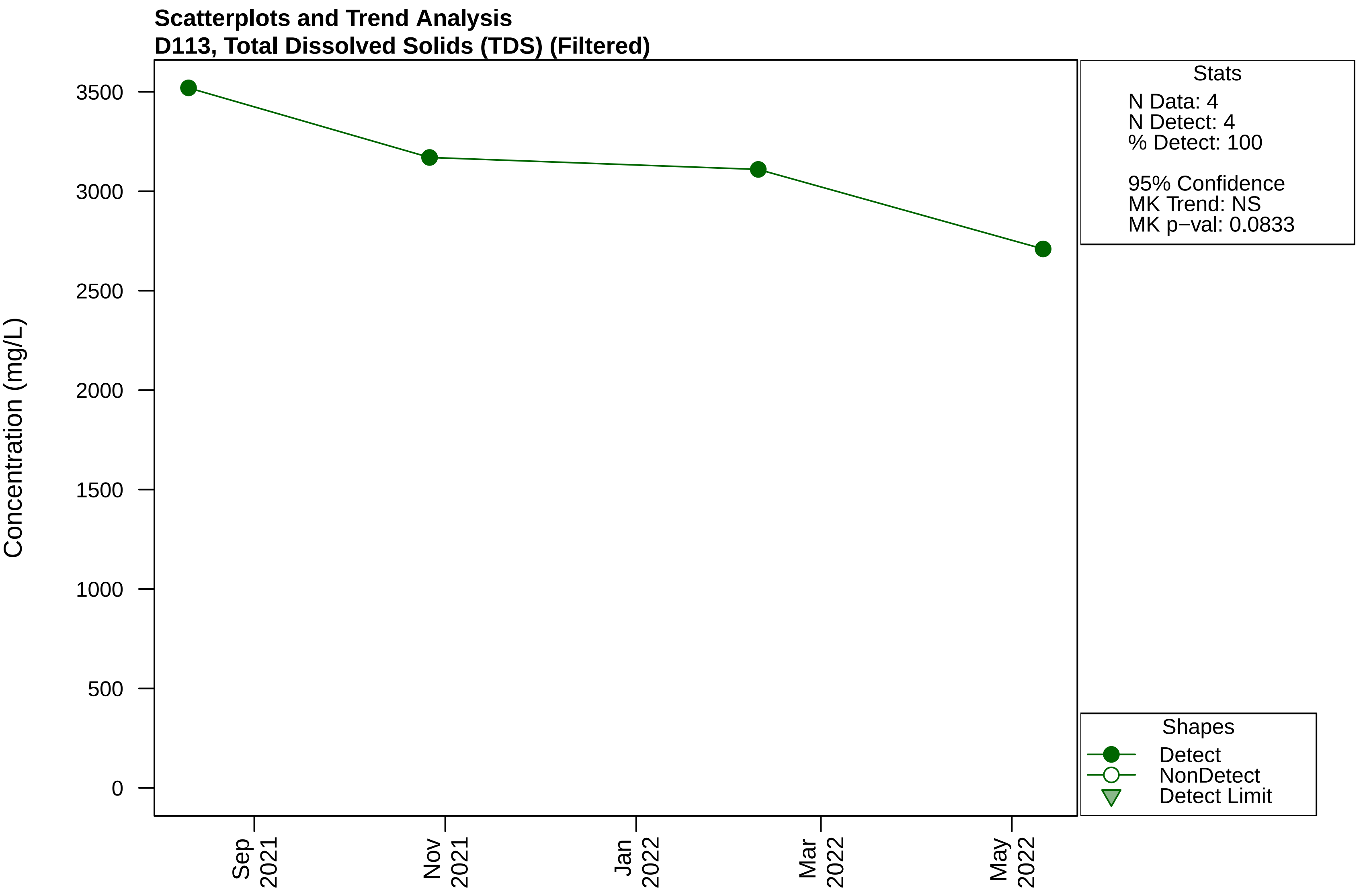
Scatterplots and Trend Analysis
D113, Sulfur
Concentration (mg/L)
0
100
200
300
400
500
600
700
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 7
N Detect: 7
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.773
Shapes
Detect
NonDetect
Detect Limit

Scatterplots and Trend Analysis
D113, Total Alkalinity (as CaCO3)

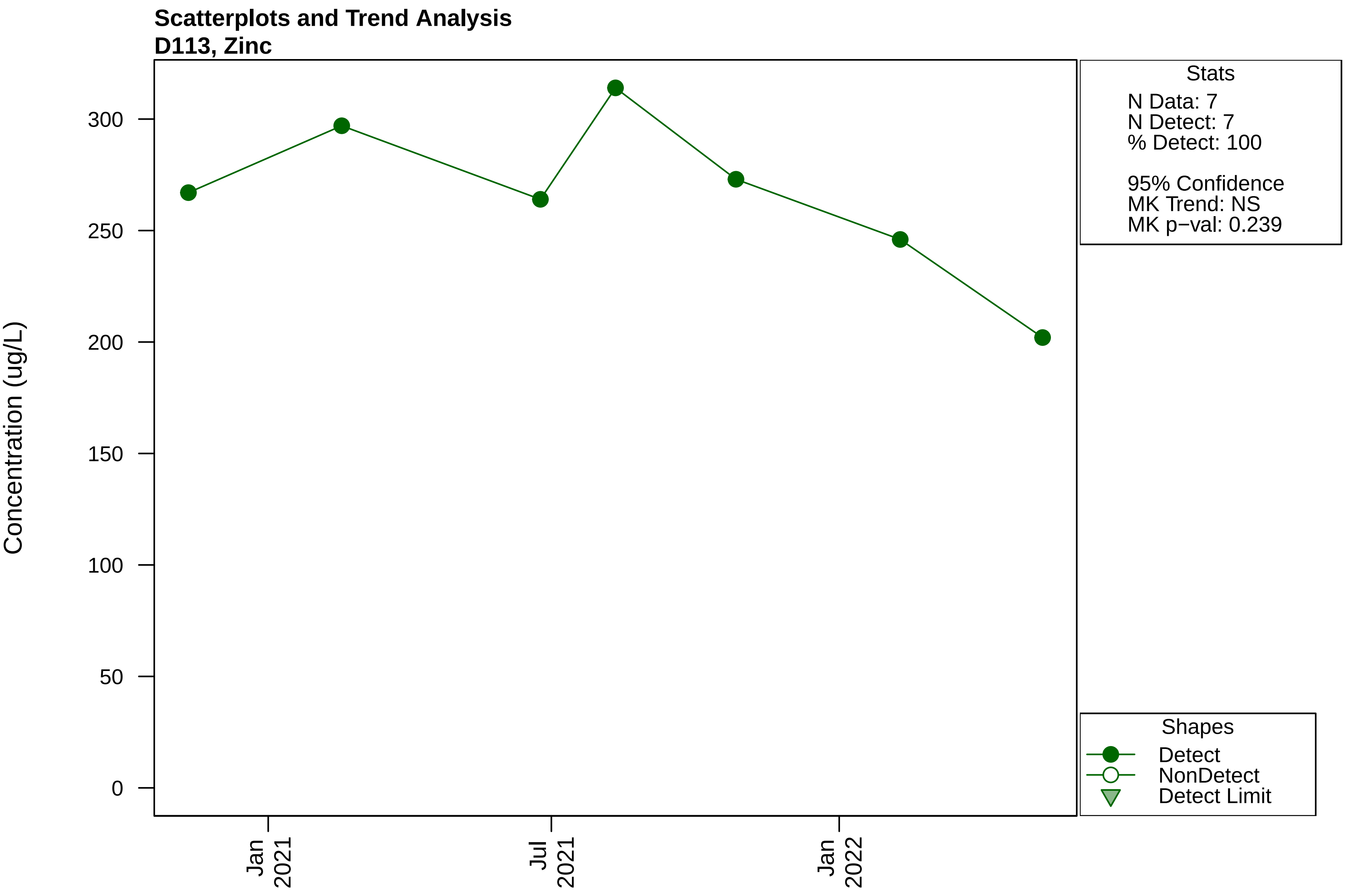


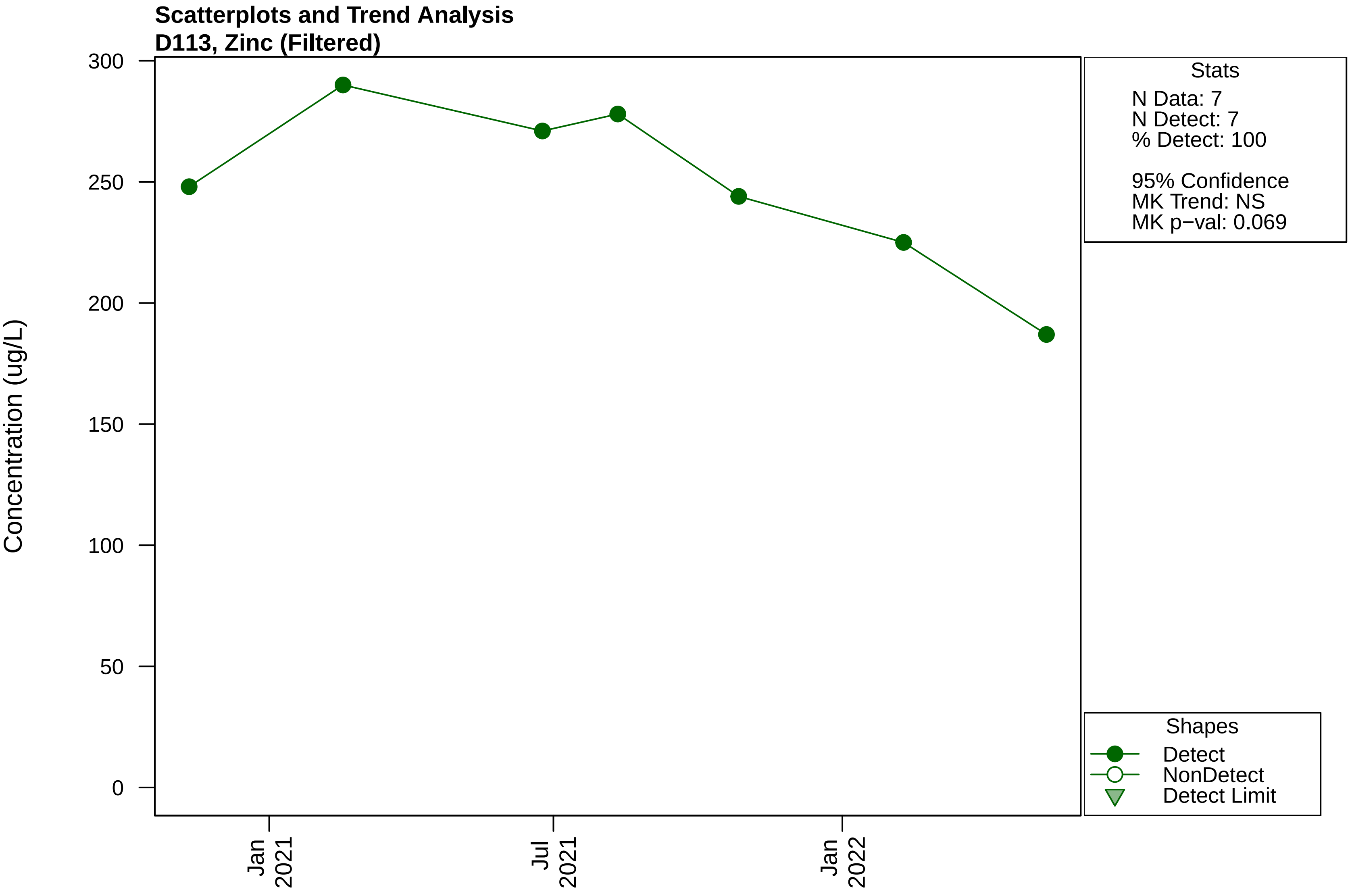


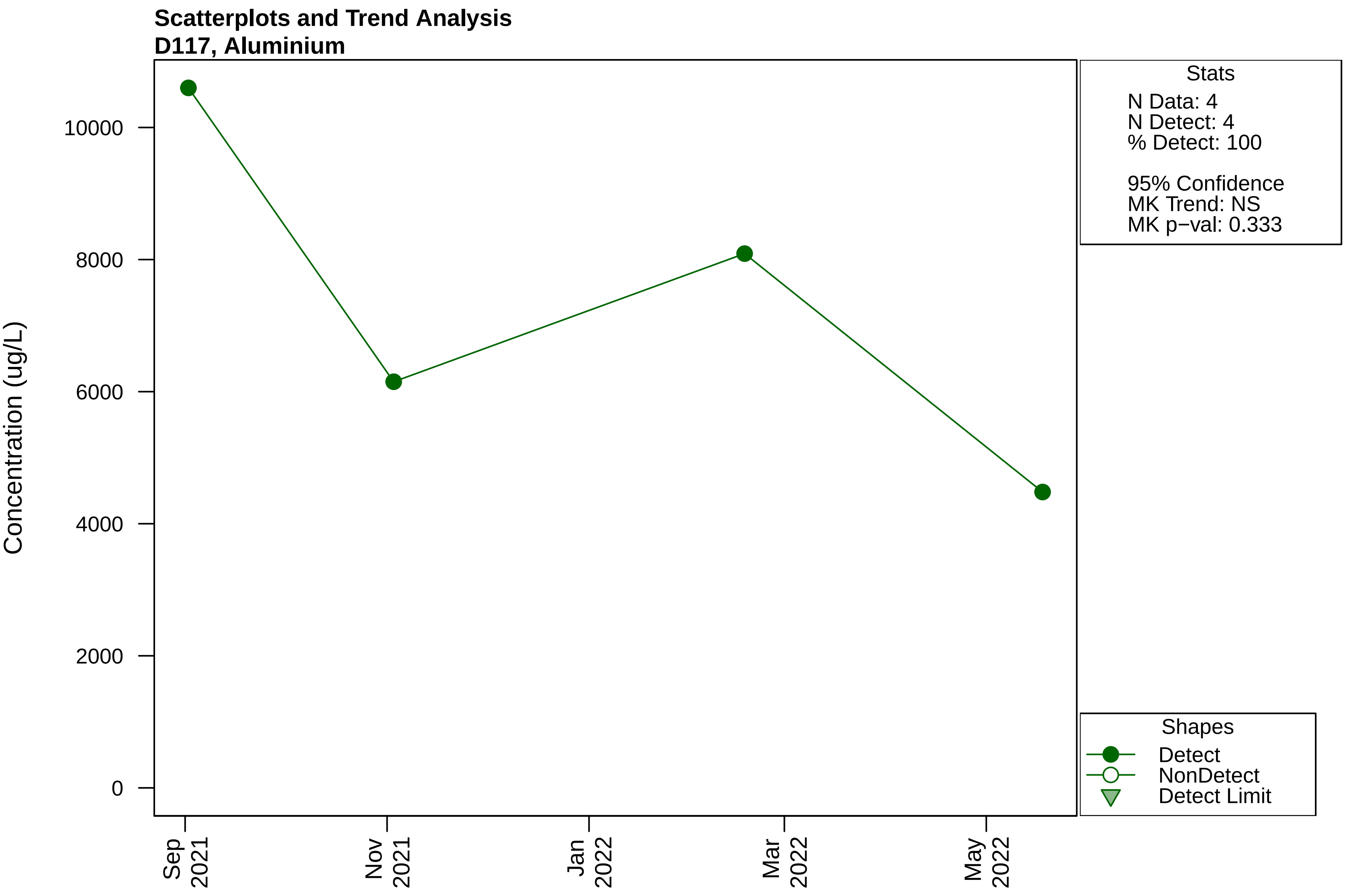
Scatterplots and Trend Analysis
D113, Total Dissolved Solids (TDS)
Concentration (mg/L)
3500
3000
2500
2000
1500
1000
500
0
Jan 2021
Mar 2021
May 2021
Jul 2021
Stats
N Data: 3
N Detect: 3
% Detect: 100
MK criteria not met
Shapes
Detect
NonDetect
Detect Limit

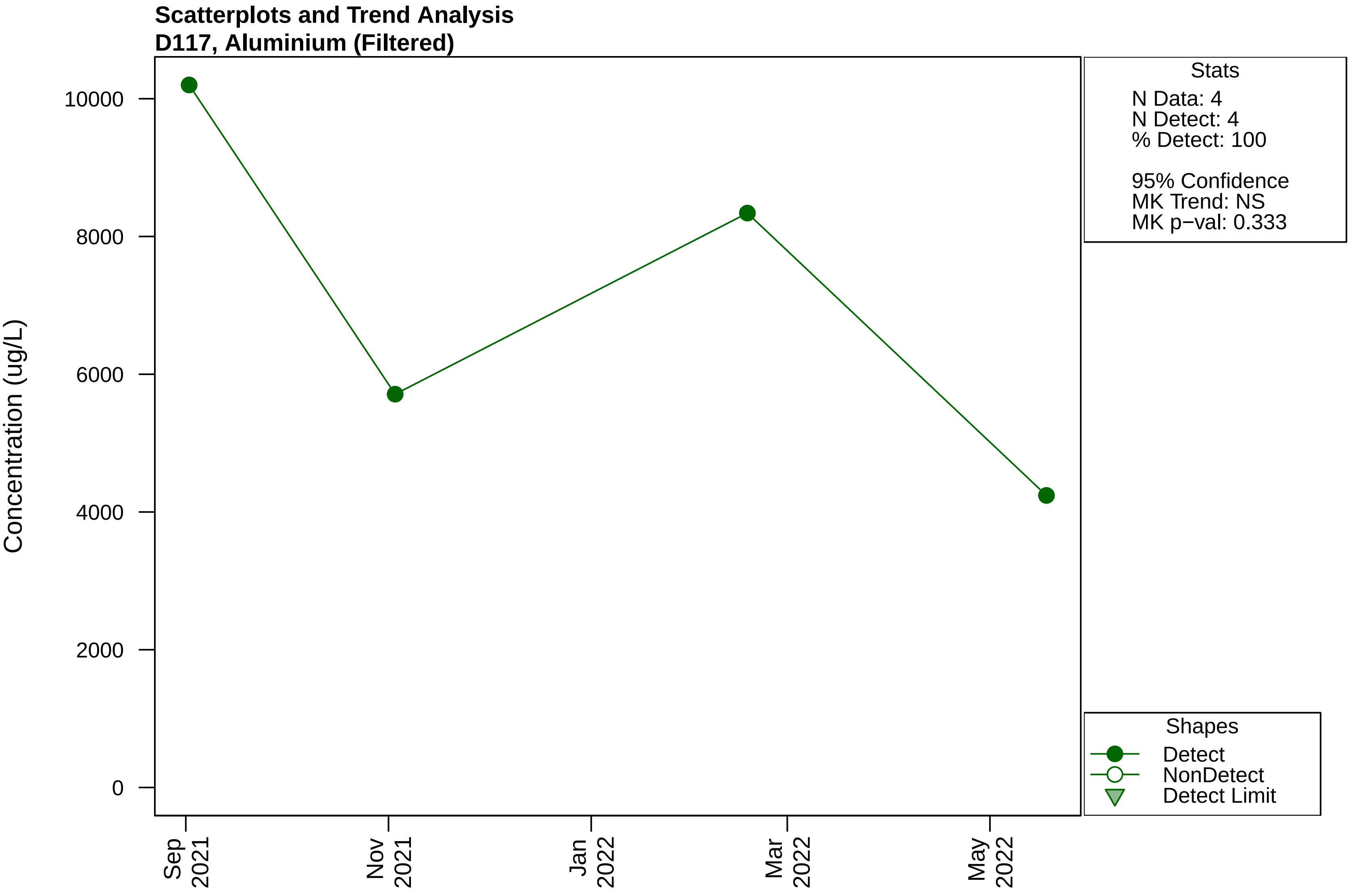


Scatterplots and Trend Analysis
D113, Total Dissolved Solids (TDS) (Filtered)
Concentration (mg/L)
3500
3000
2500
2000
1500
1000
500
0
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 4
N Detect: 4
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.0833
Shapes
Detect
NonDetect
Detect Limit

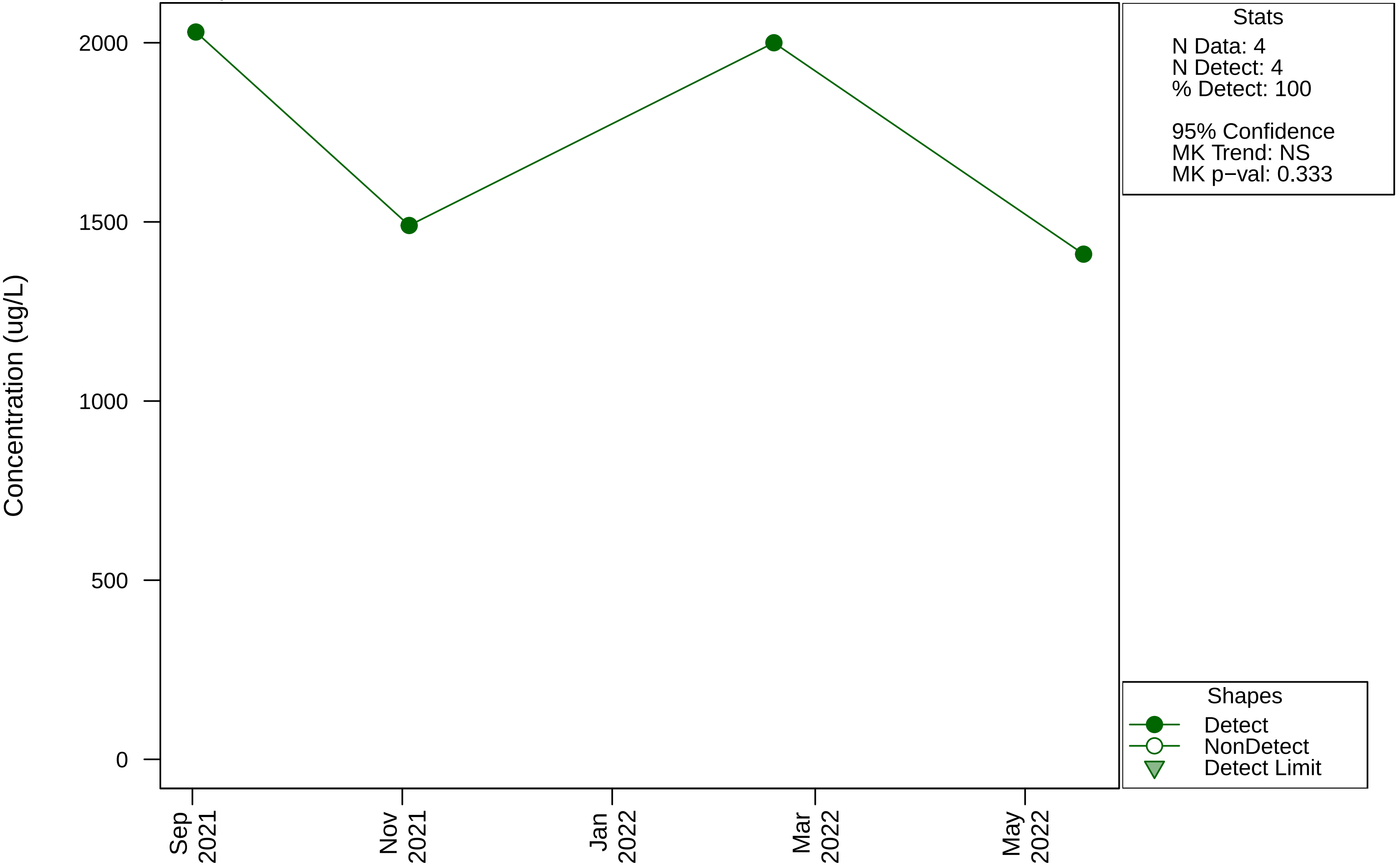

Scatterplots and Trend Analysis
D113, Zinc
Concentration (ug/L)
0
50
100
150
200
250
300
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 7
N Detect: 7
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.239
Shapes
Detect
NonDetect
Detect Limit

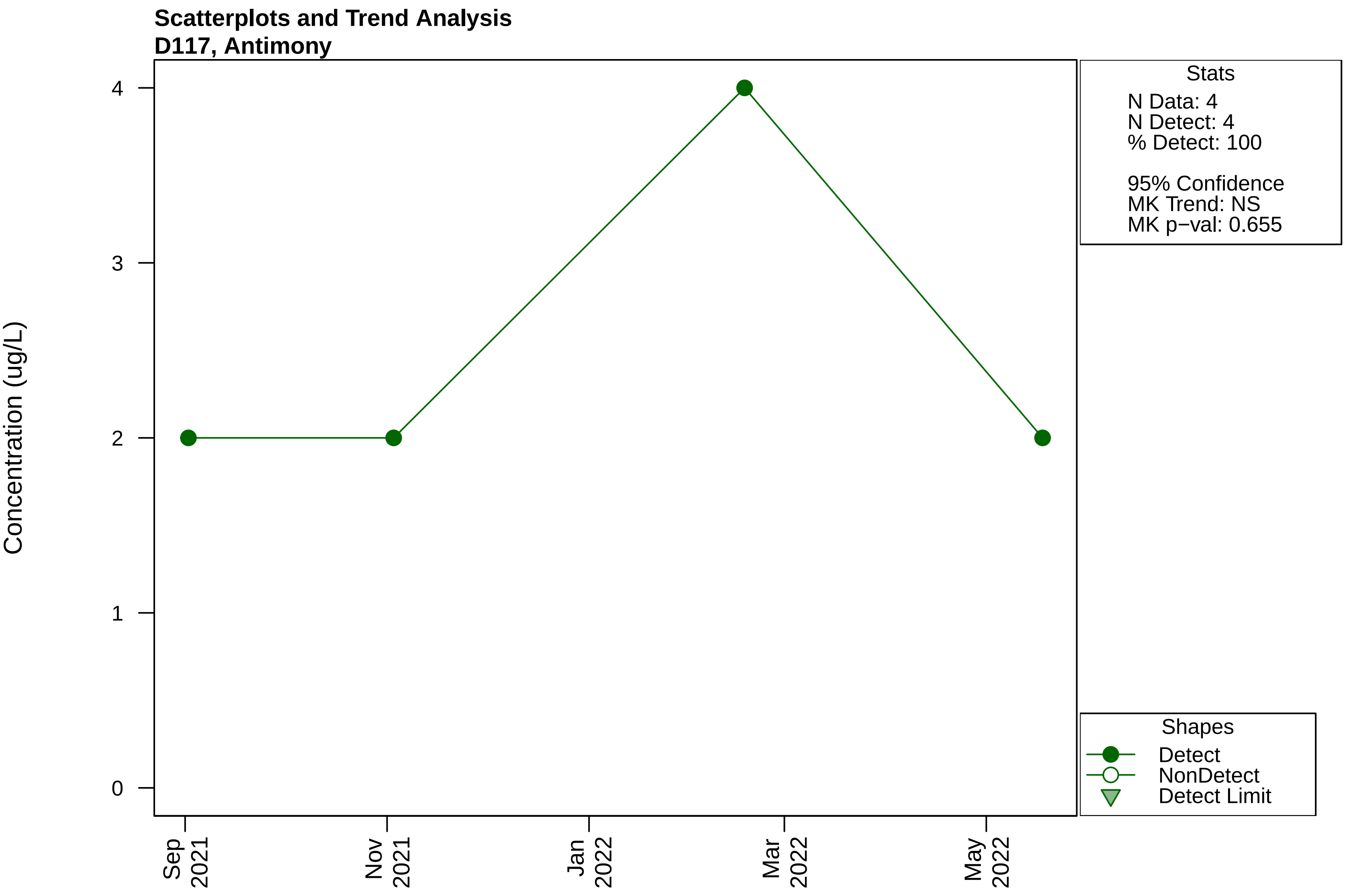

Scatterplots and Trend Analysis
D113, Zinc (Filtered)
Concentration (ug/L)
300
250
200
150
100
50
0
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 7
N Detect: 7
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.069
Shapes
Detect
NonDetect
Detect Limit


Scatterplots and Trend Analysis
D117, Aluminium
Concentration (ug/L)
10000
8000
6000
4000
2000
0
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 4
N Detect: 4
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.333
Shapes
Detect
NonDetect
Detect Limit


Scatterplots and Trend Analysis
D117, Aluminium (Filtered)
Concentration (ug/L)
10000
8000
6000
4000
2000
0
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 4
N Detect: 4
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.333
Shapes
Detect
NonDetect
Detect Limit

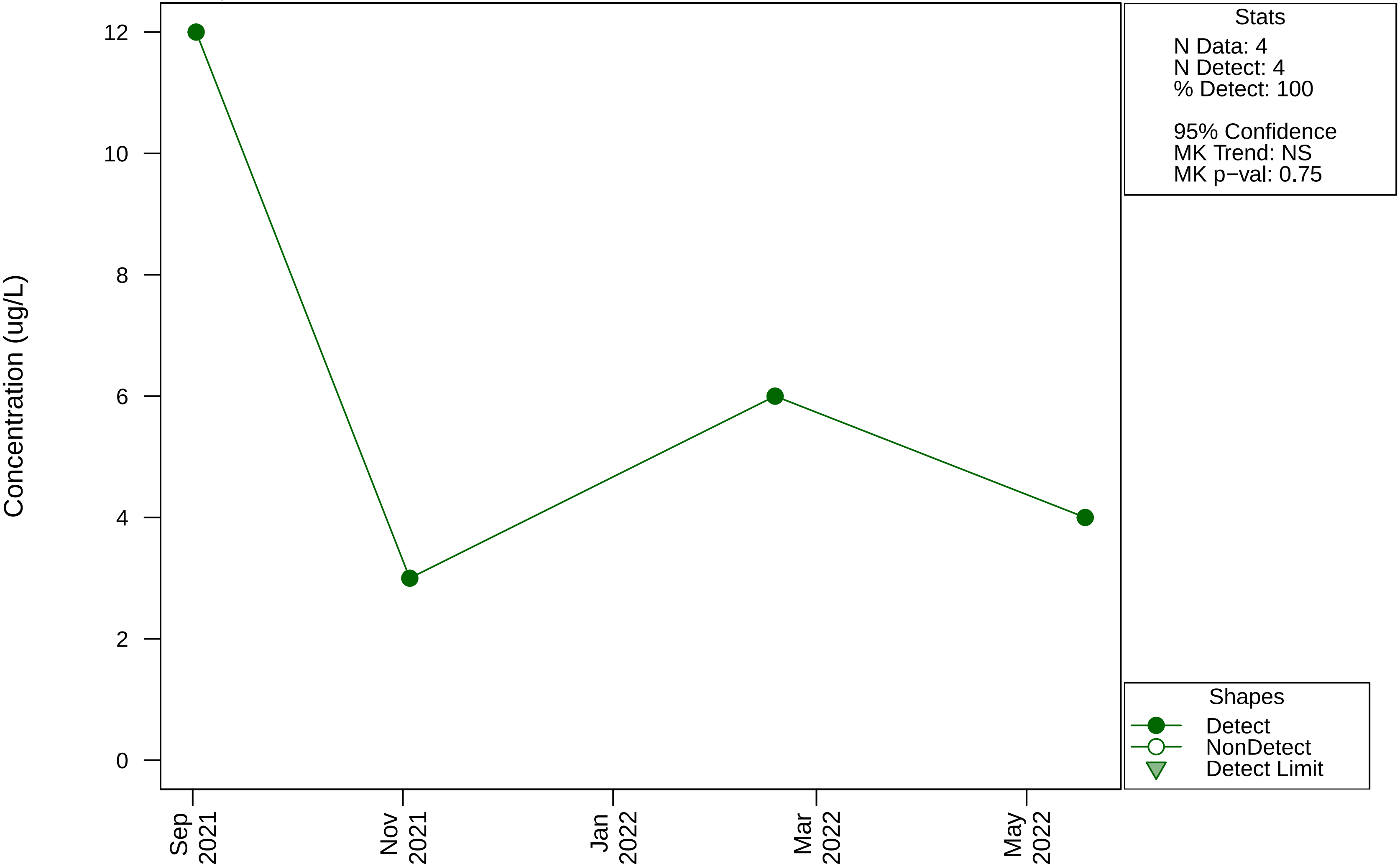
Scatterplots and Trend Analysis
D117, Ammonia



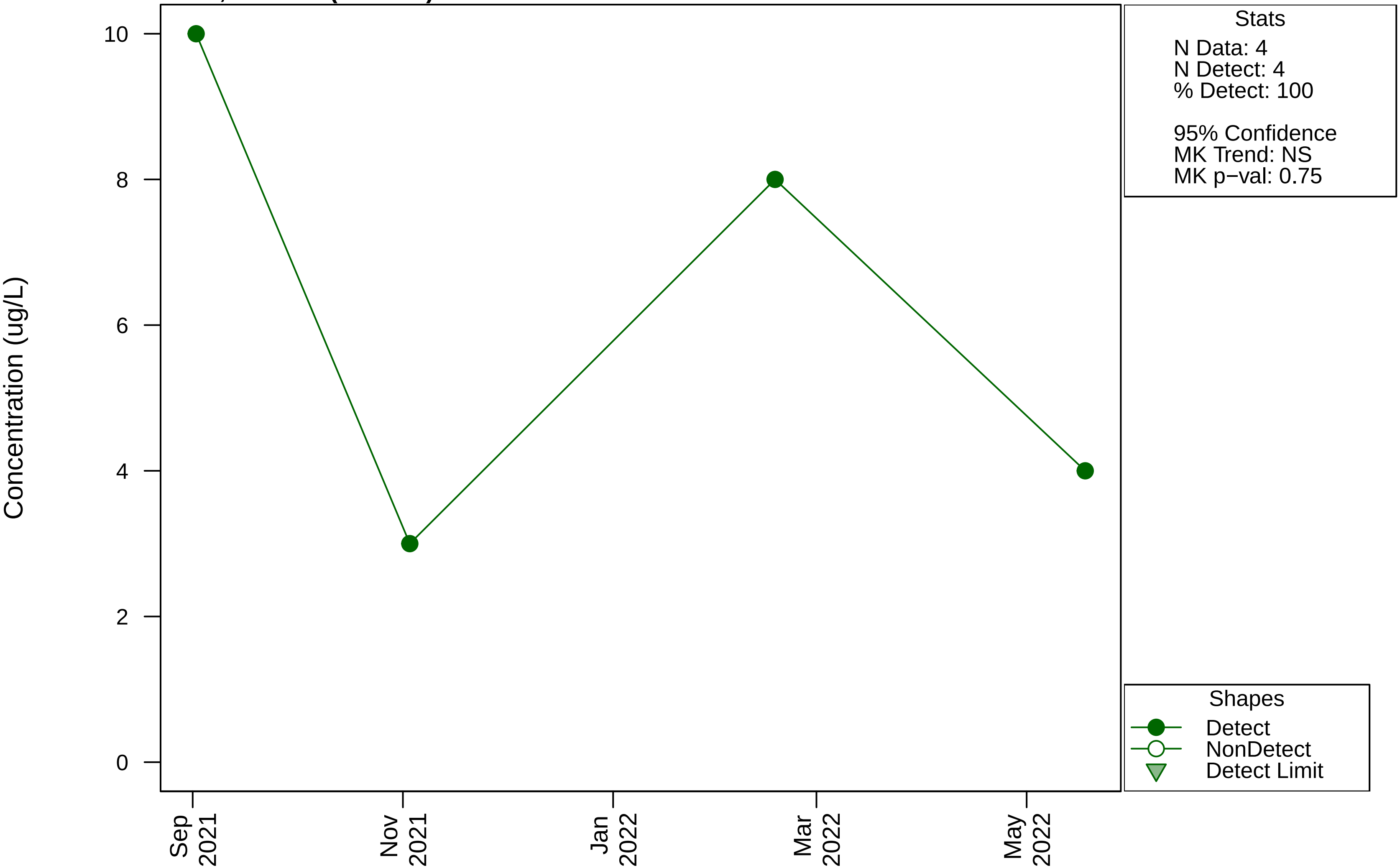


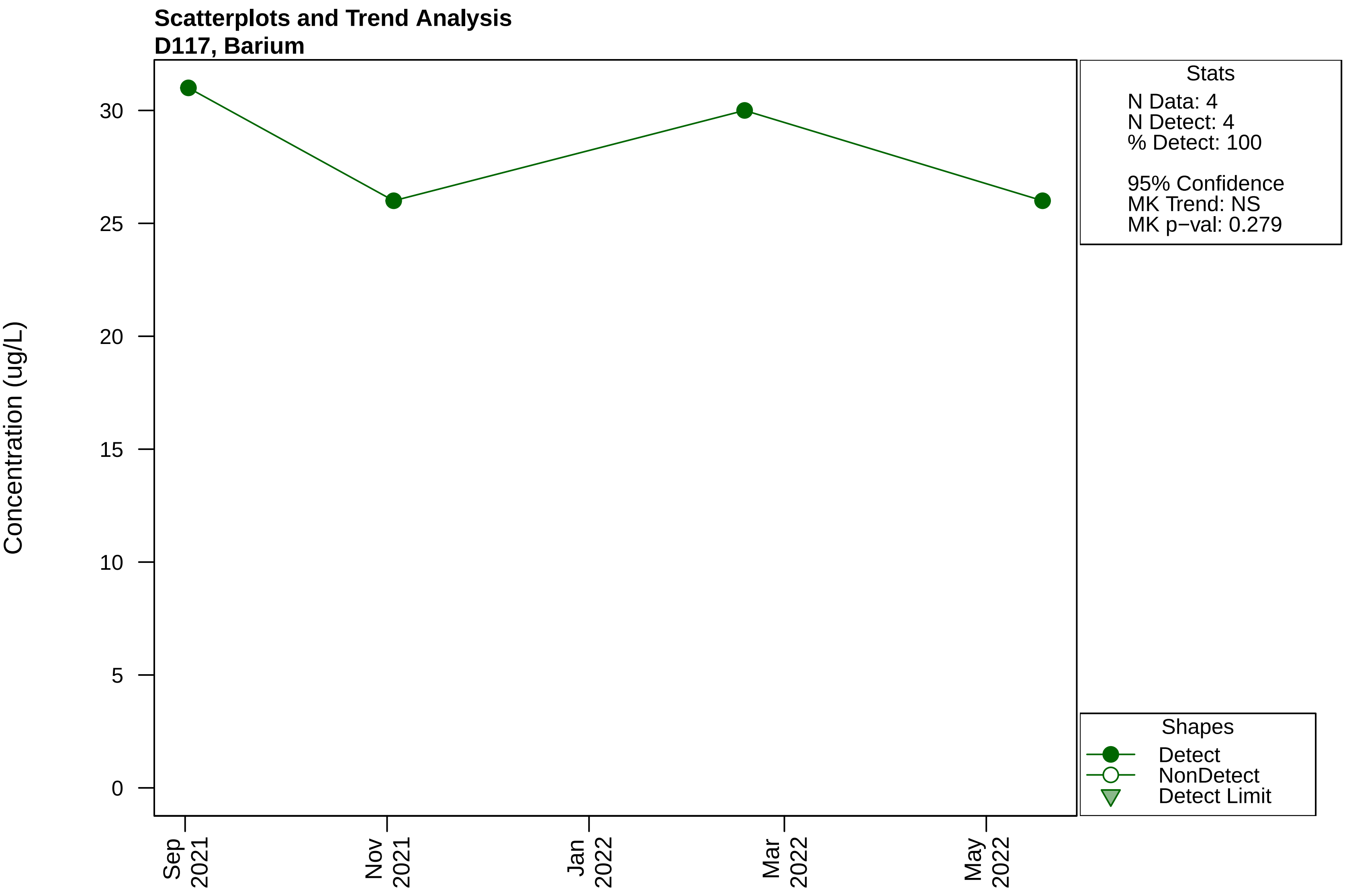
Scatterplots and Trend Analysis
D117, Antimony
Concentration (ug/L)
0
1
2
3
4
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 4
N Detect: 4
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.655
Shapes
Detect
NonDetect
Detect Limit

Scatterplots and Trend Analysis
D117, Arsenic

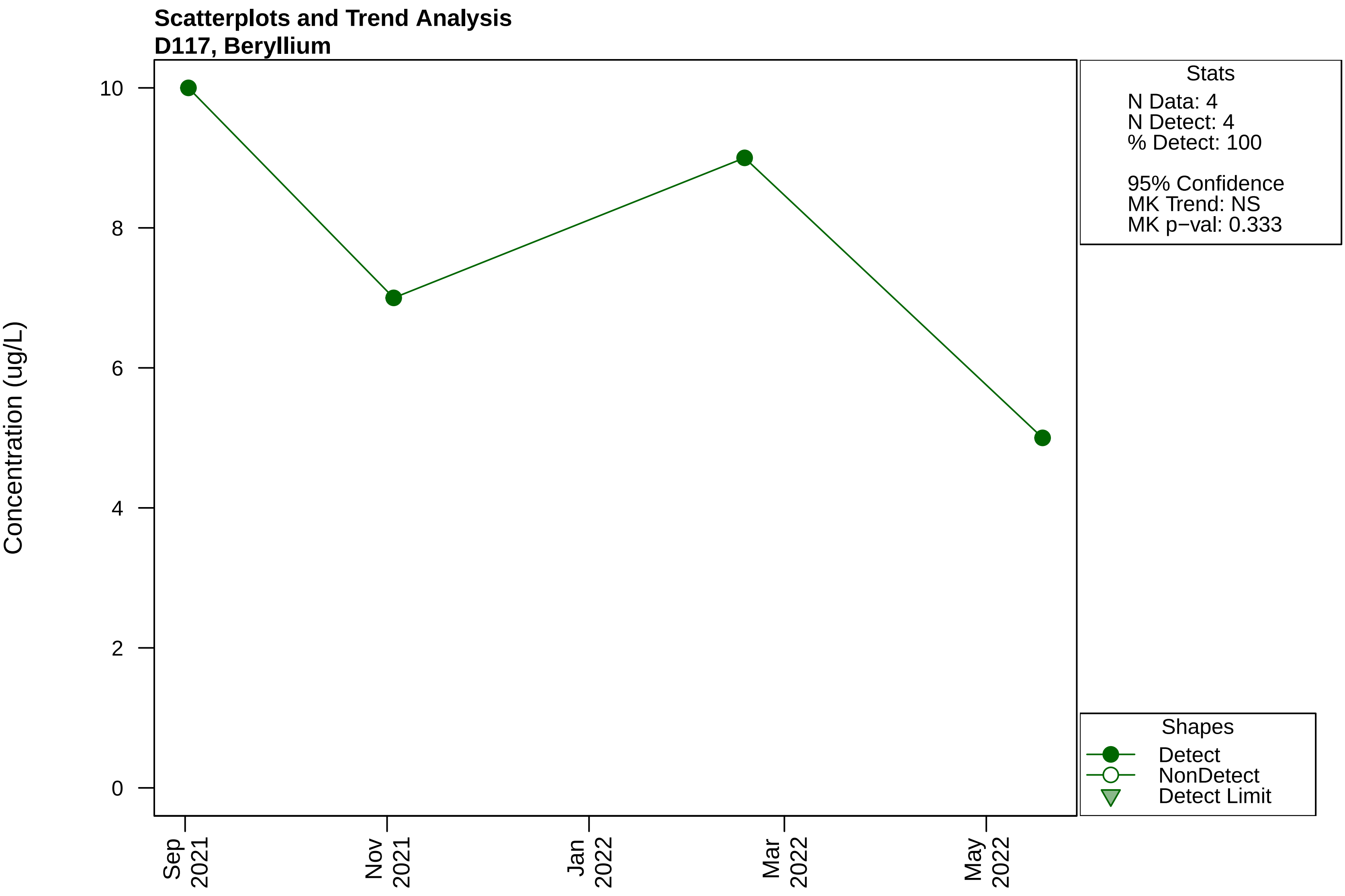


Scatterplots and Trend Analysis
D117, Arsenic (Filtered)

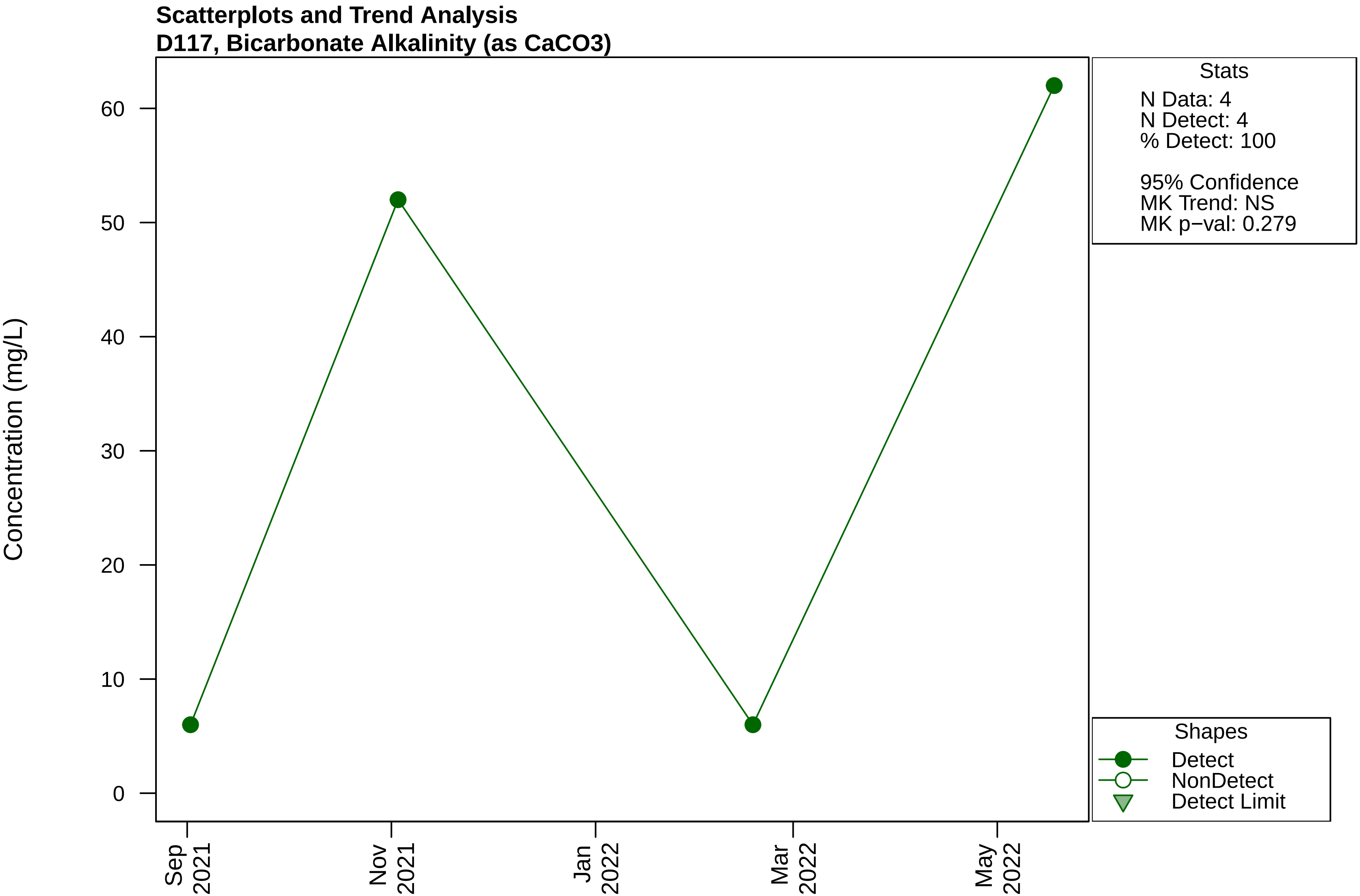




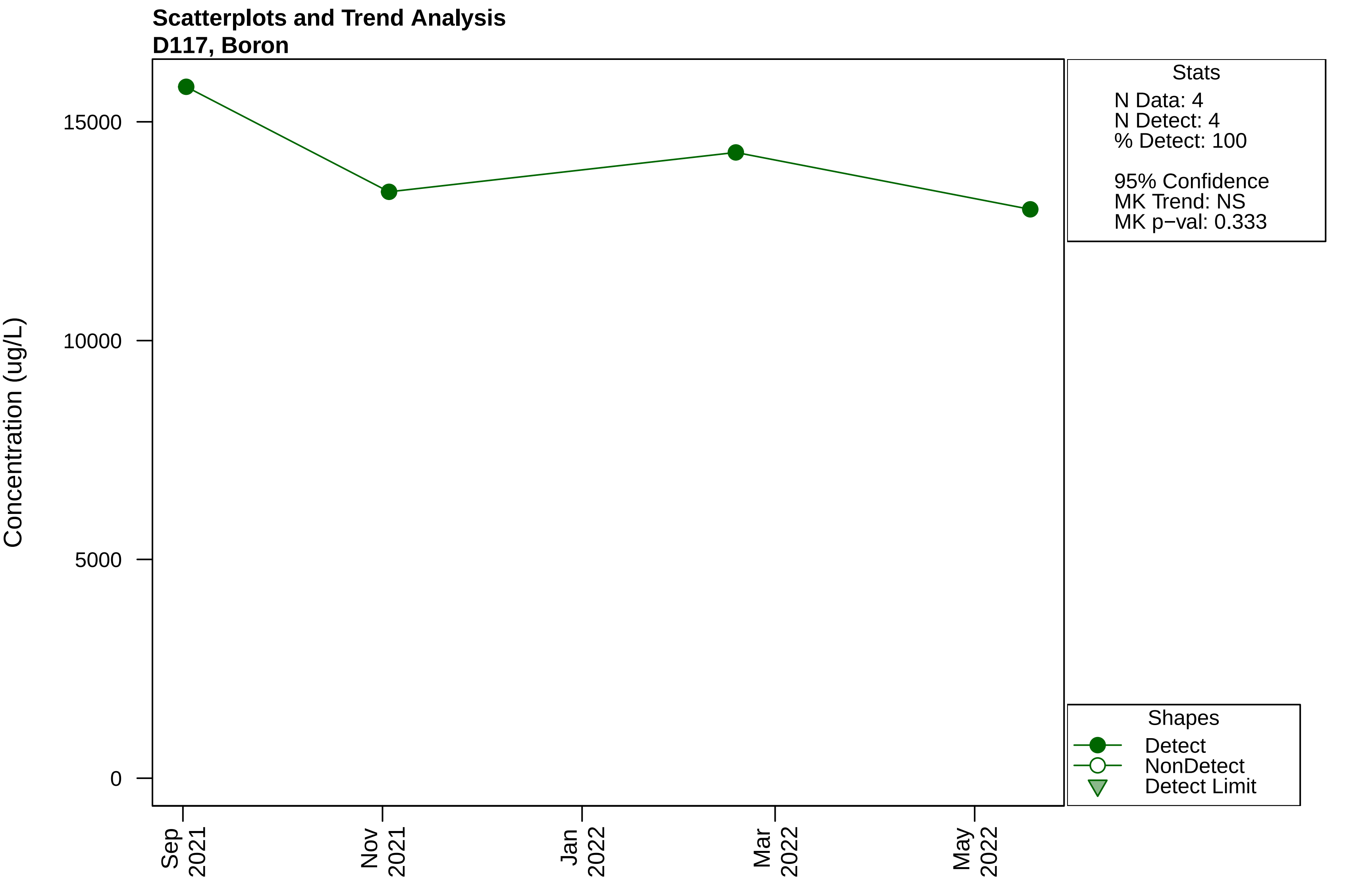
Scatterplots and Trend Analysis
D117, Barium
Concentration (ug/L)
0
5
10
15
20
25
30
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 4
N Detect: 4
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.279
Shapes
Detect
NonDetect
Detect Limit



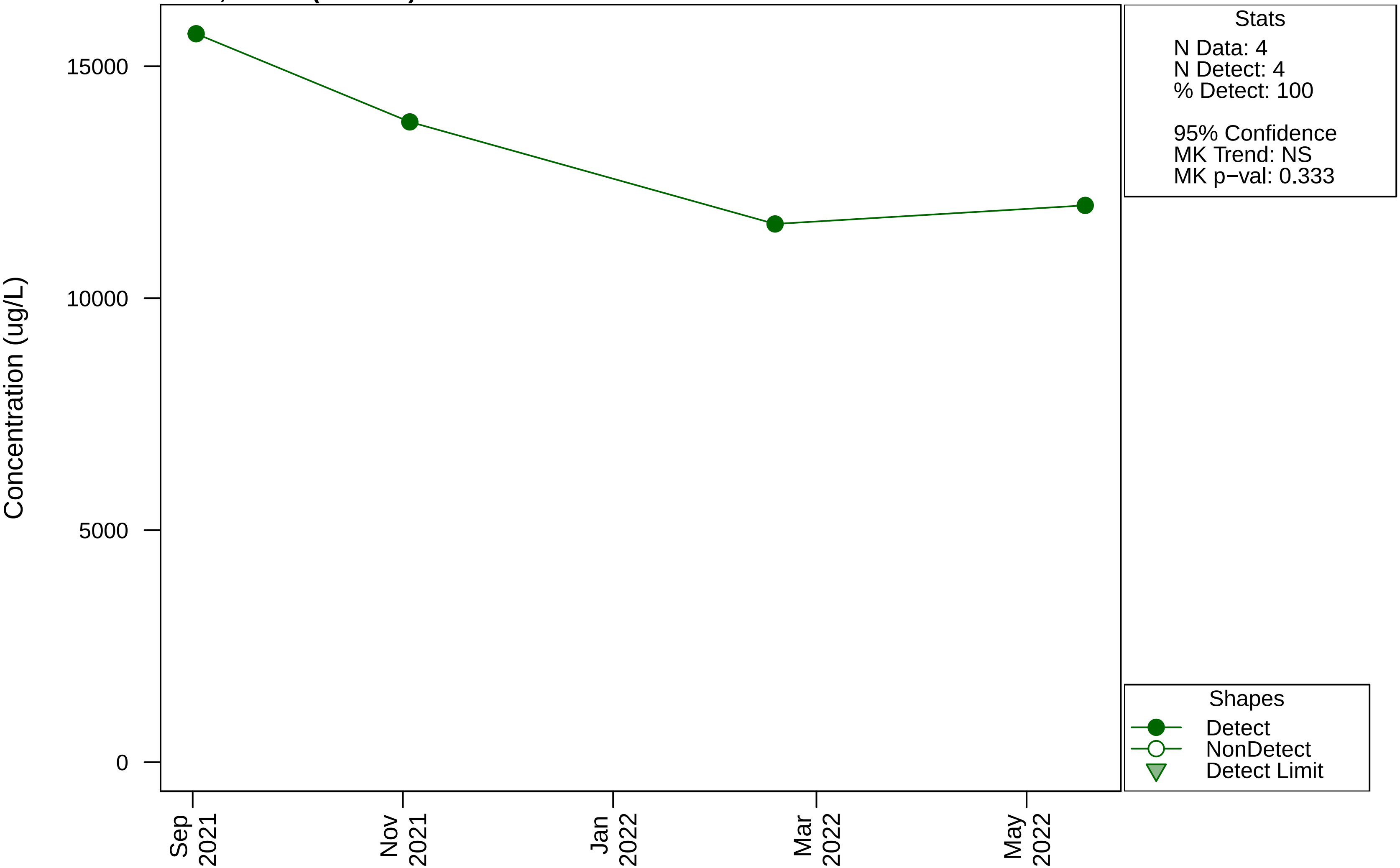
Scatterplots and Trend Analysis
D117, Beryllium
Concentration (ug/L)
0
2
4
6
8
10
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 4
N Detect: 4
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.333
Shapes
Detect
NonDetect
Detect Limit



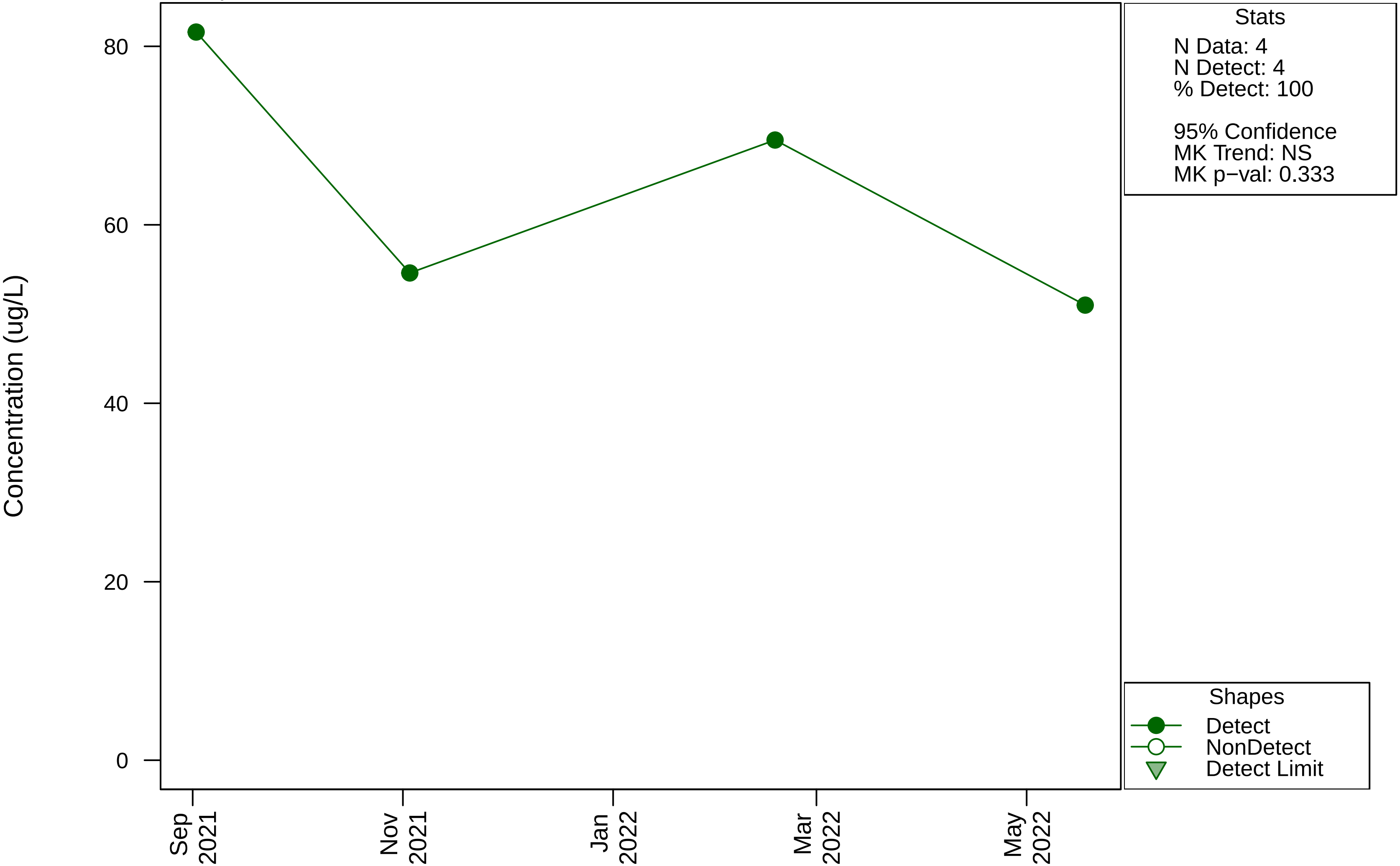
Scatterplots and Trend Analysis
D117, Bicarbonate Alkalinity (as CaCO3)
Concentration (mg/L)
0
10
20
30
40
50
60
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 4
N Detect: 4
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.279
Shapes
Detect
NonDetect
Detect Limit

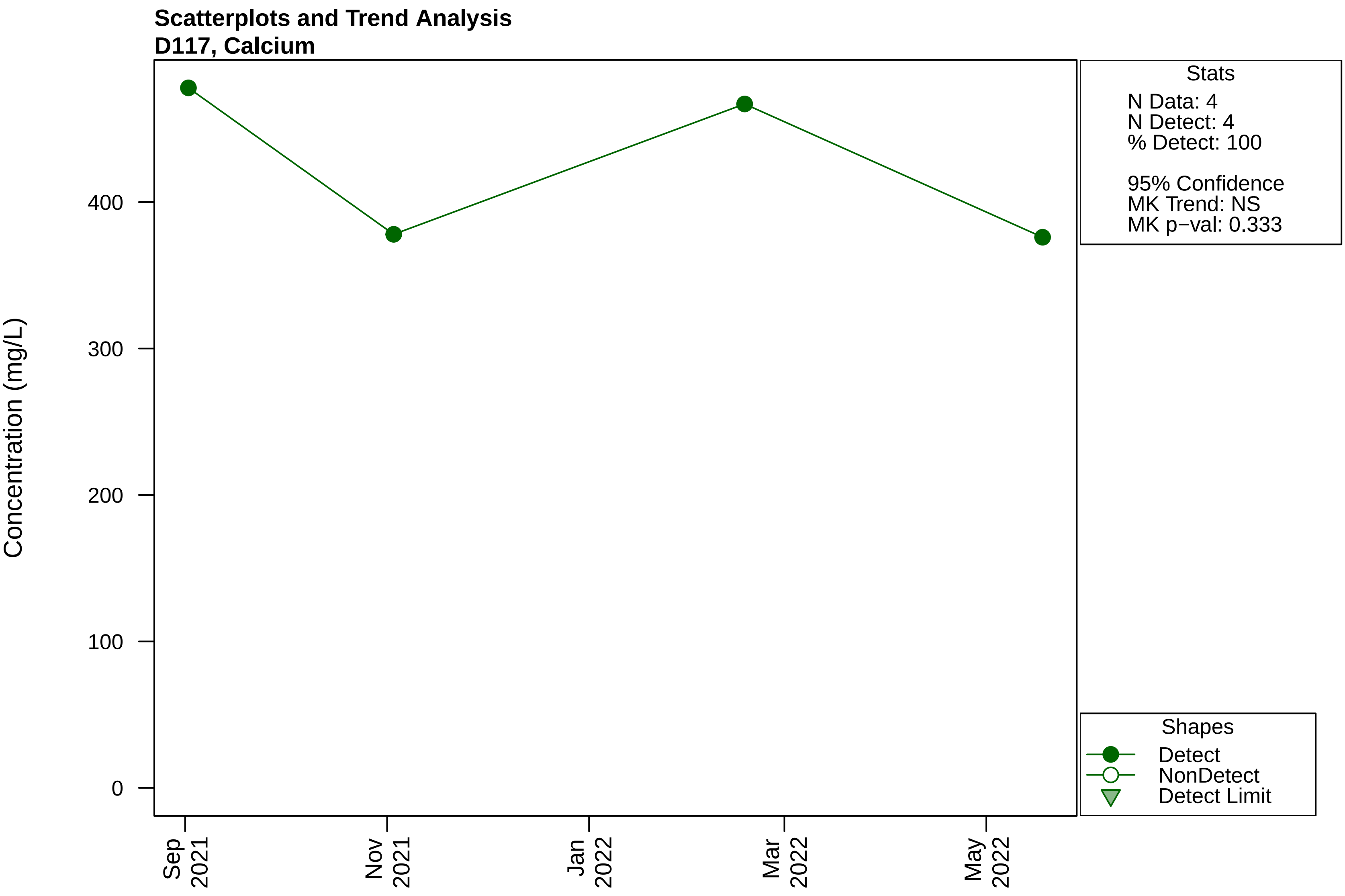

Scatterplots and Trend Analysis
D117, Boron
Concentration (ug/L)
15000
10000
5000
0
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 4
N Detect: 4
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.333
Shapes
Detect
NonDetect
Detect Limit

Scatterplots and Trend Analysis
D117, Boron (Filtered)

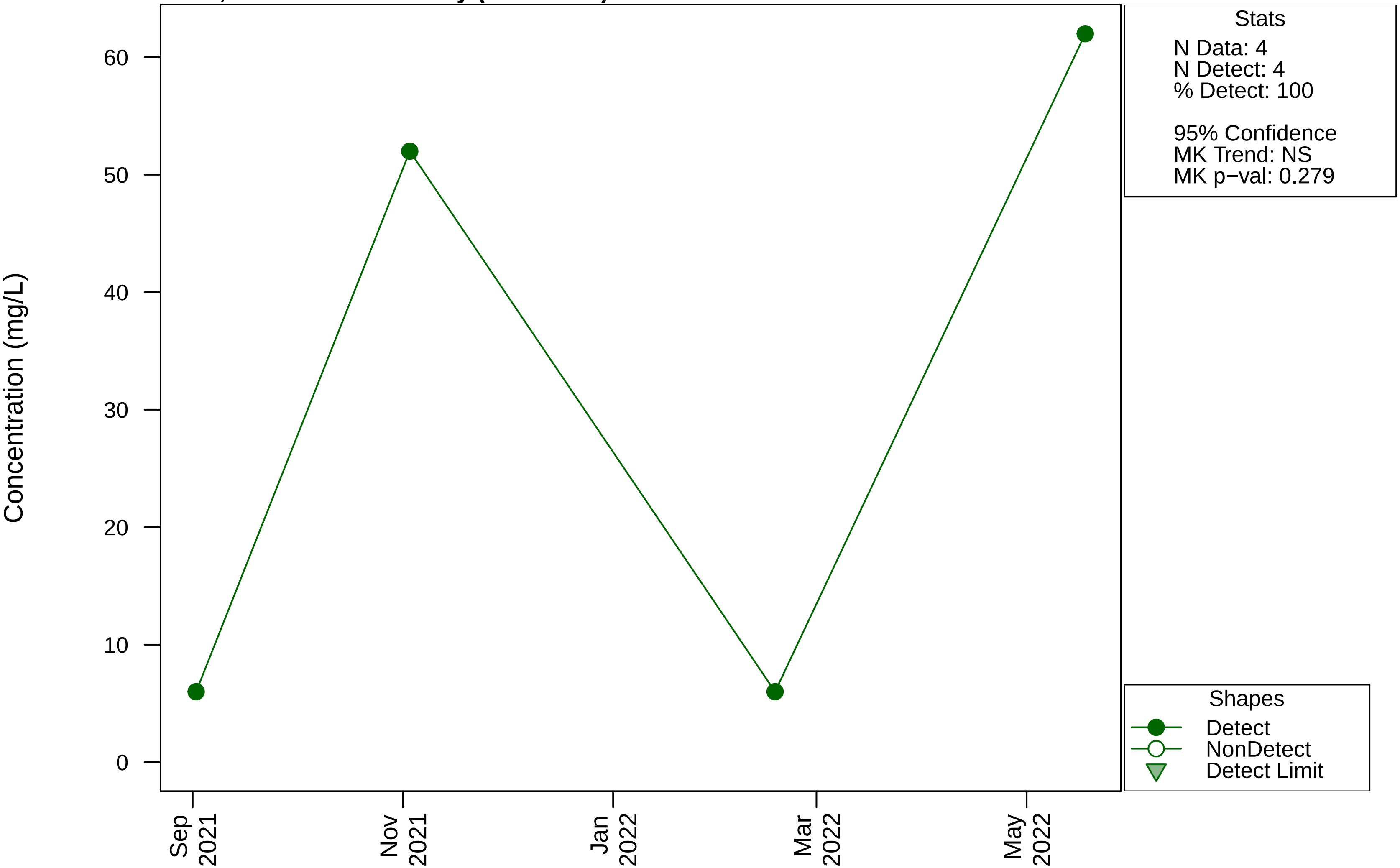


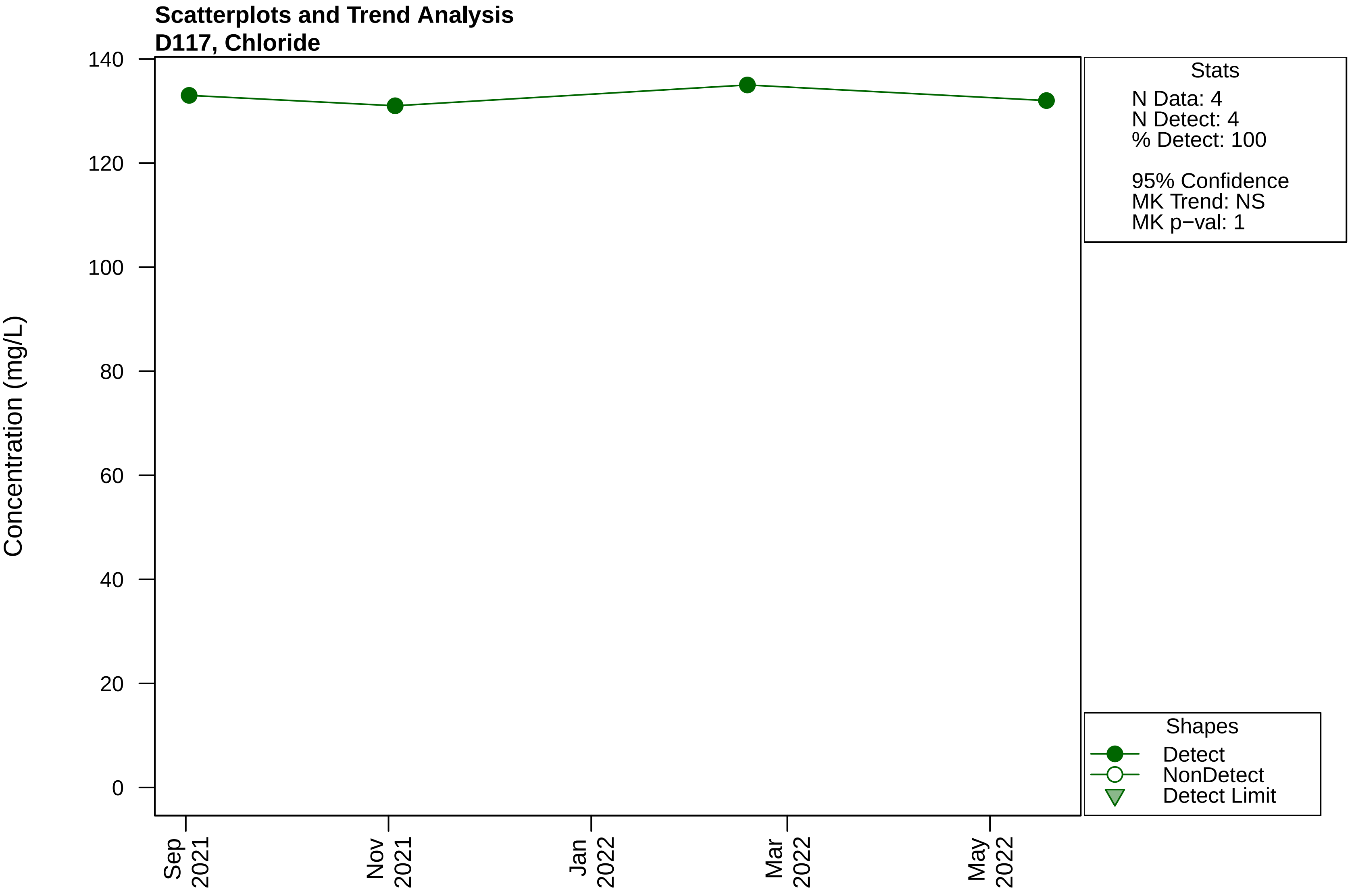
Scatterplots and Trend Analysis
D117, Cadmium




Scatterplots and Trend Analysis
D117, Calcium
Concentration (mg/L)
0
100
200
300
400
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 4
N Detect: 4
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.333
Shapes
Detect
NonDetect
Detect Limit

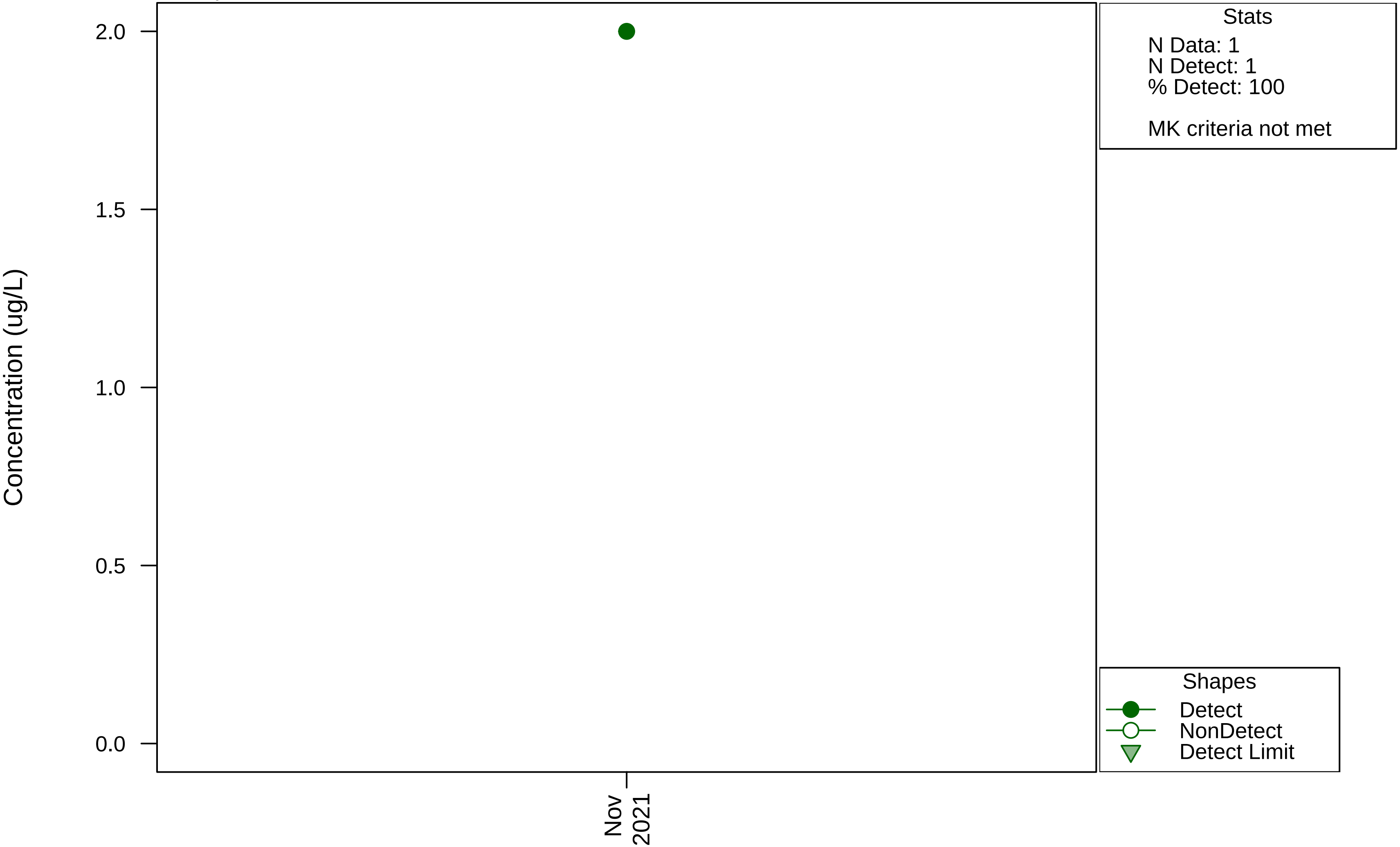
Scatterplots and Trend Analysis
D117, Carbonate Alkalinity (as CaCO3)



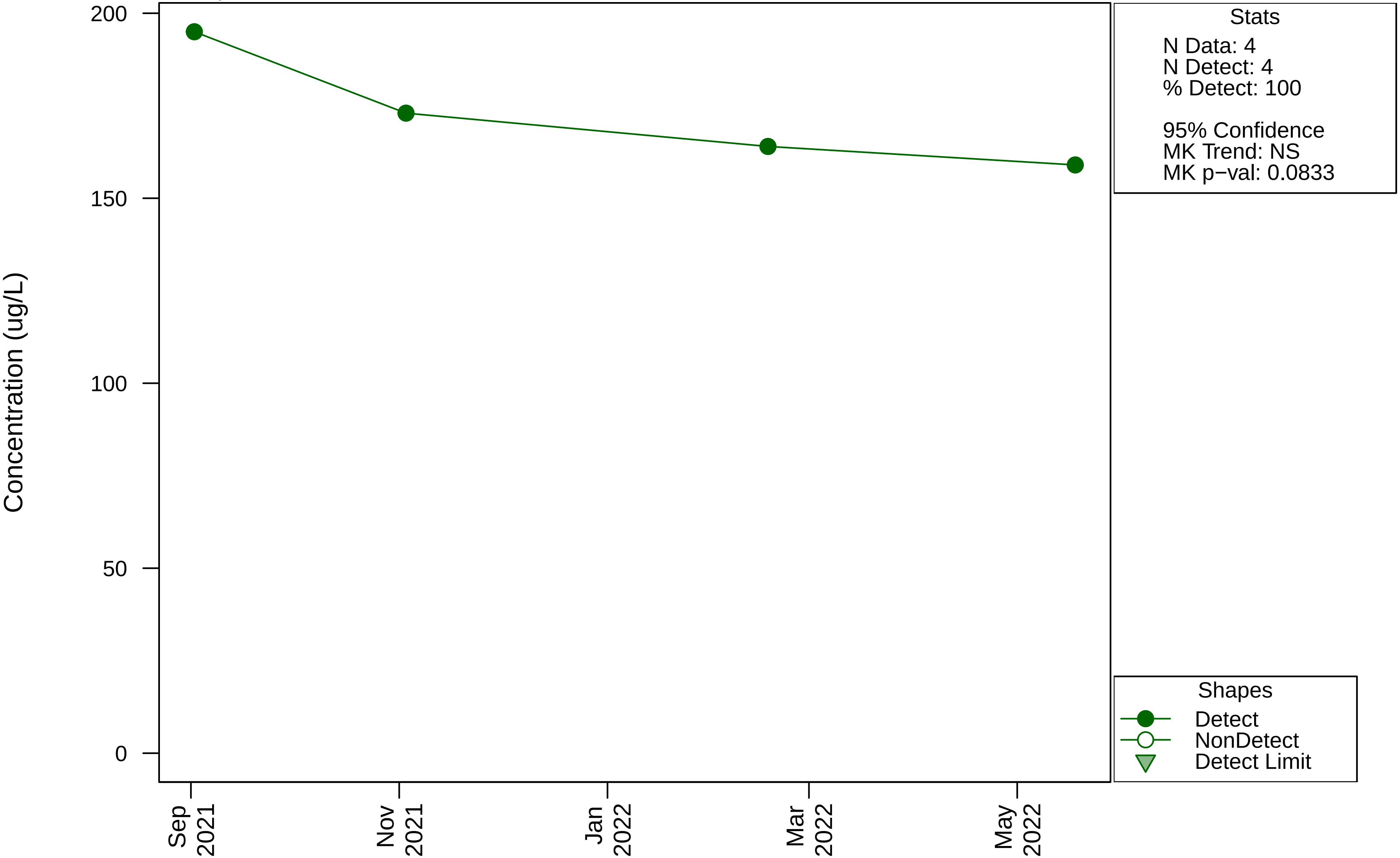


Scatterplots and Trend Analysis
D117, Chloride
Concentration (mg/L)
0
20
40
60
80
100
120
140
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 4
N Detect: 4
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 1
Shapes
Detect
NonDetect
Detect Limit

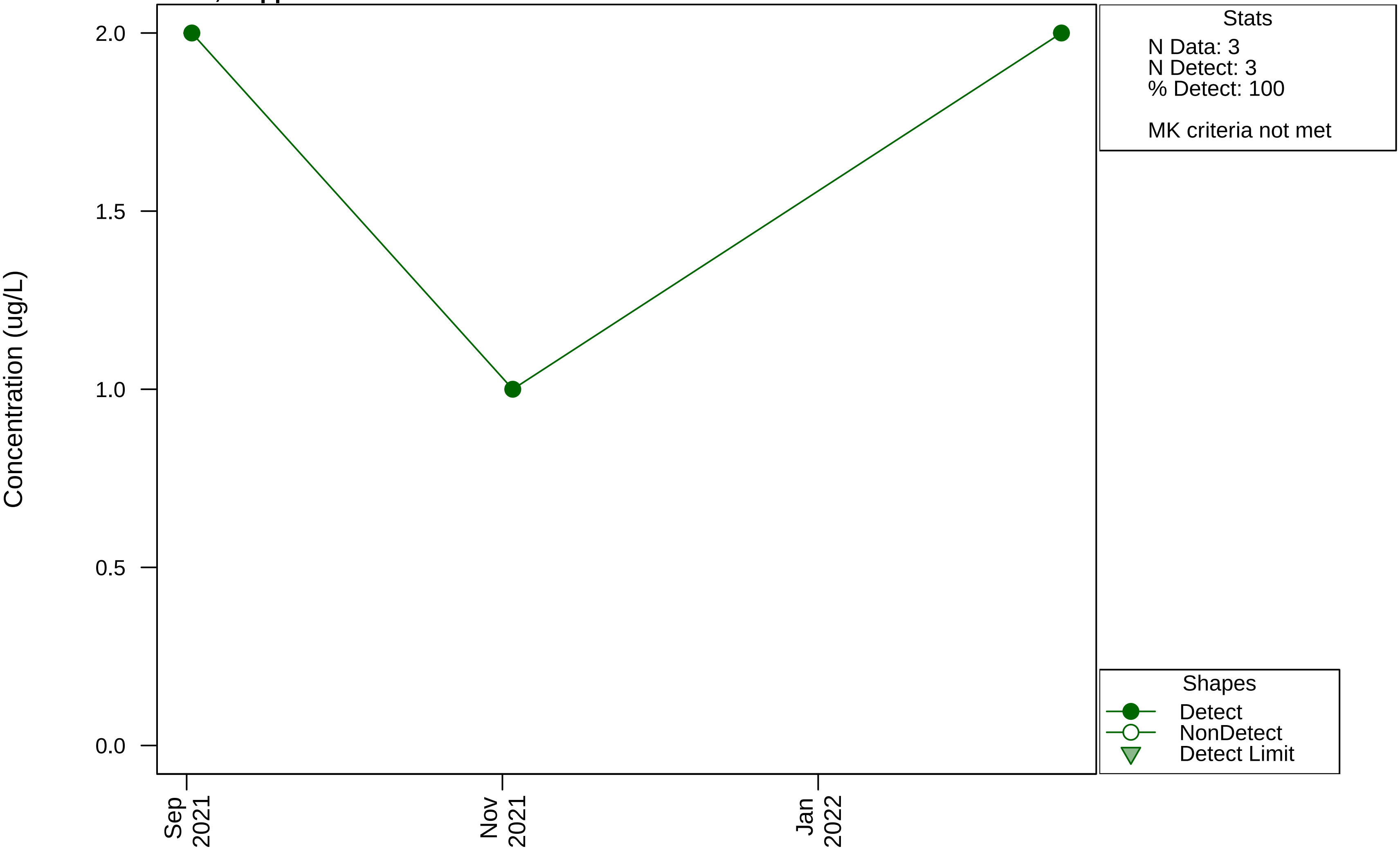
Scatterplots and Trend Analysis
D117, Chromium



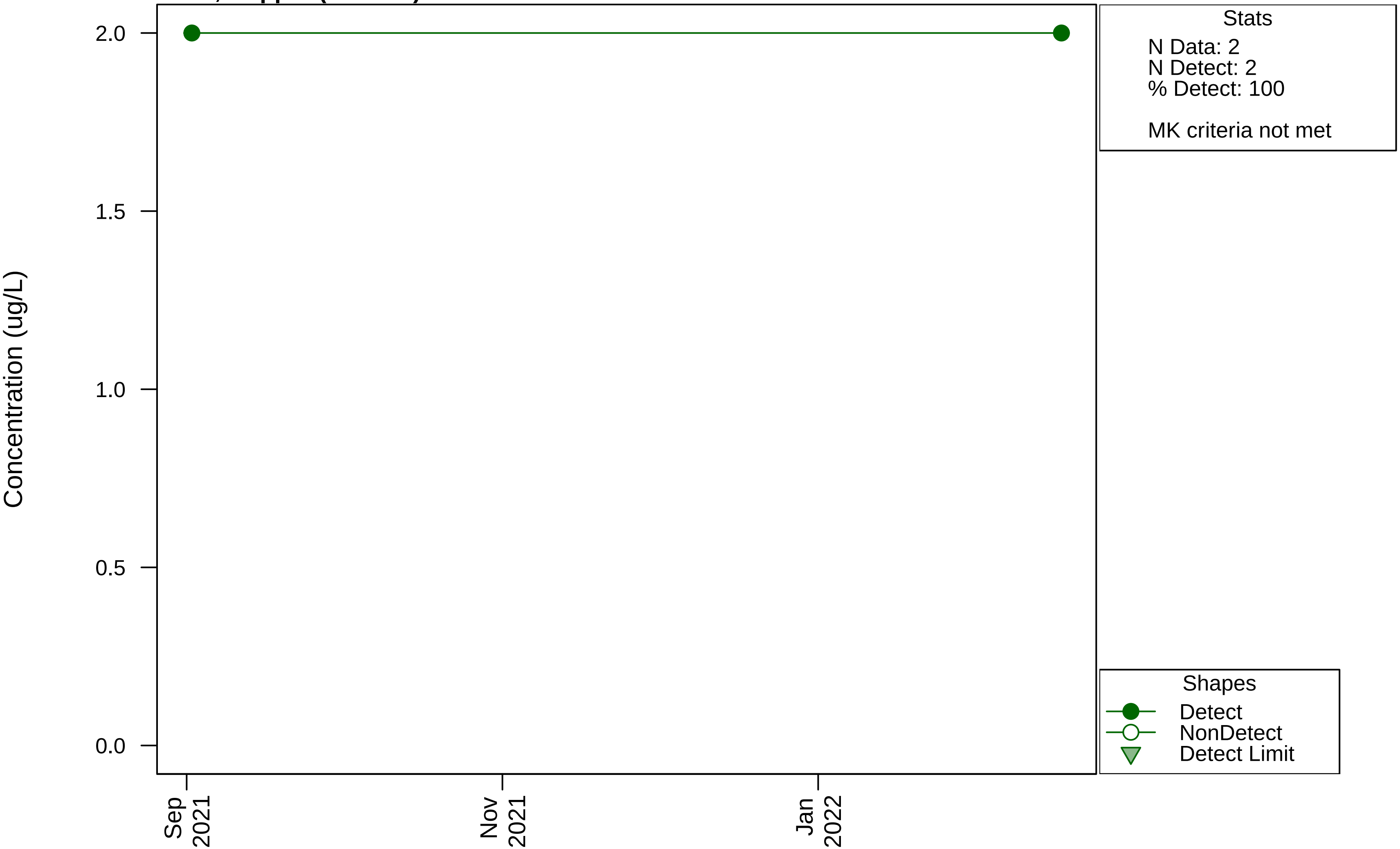
Scatterplots and Trend Analysis
D117, Cobalt

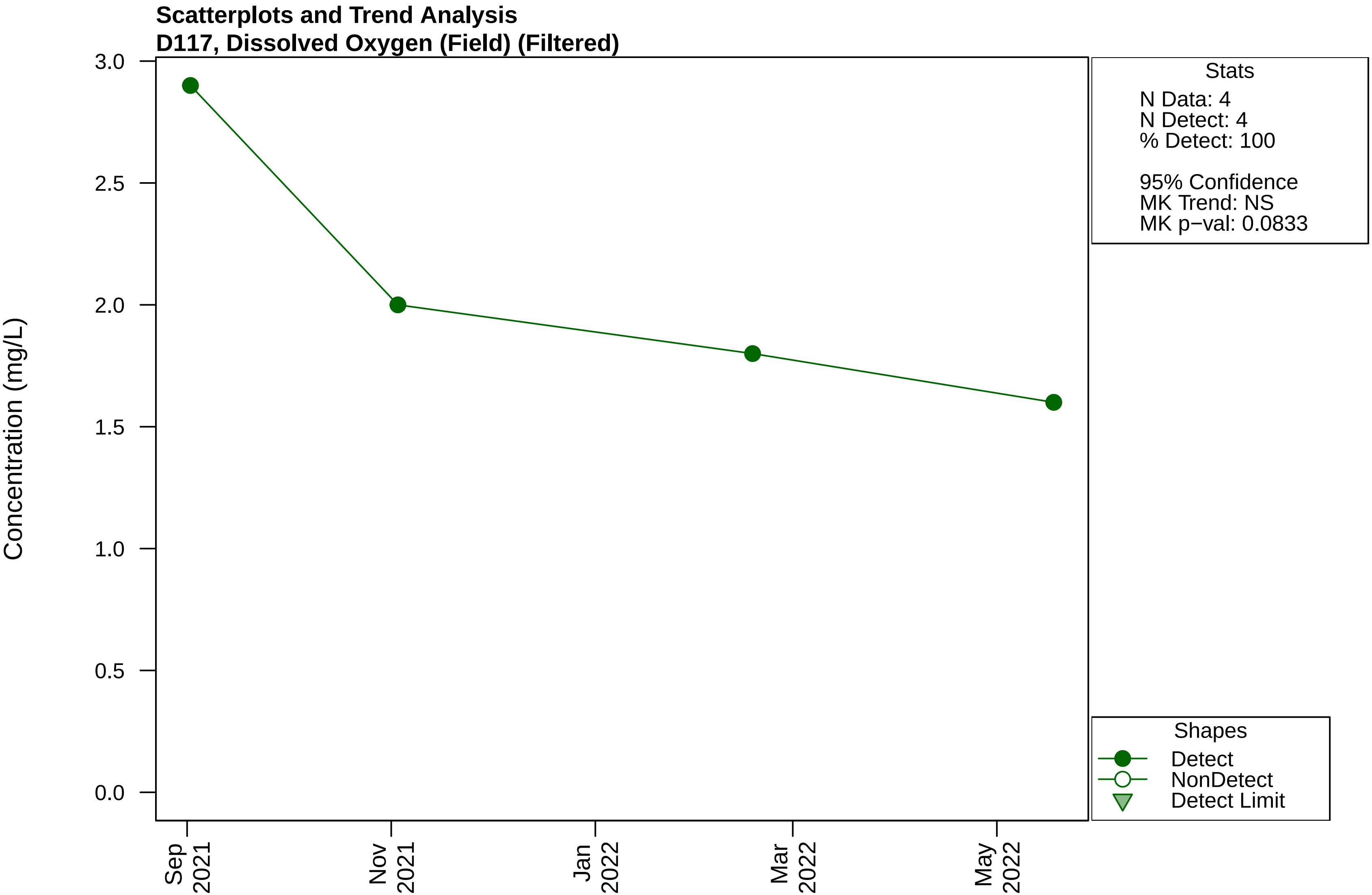


Scatterplots and Trend Analysis
D117, Copper

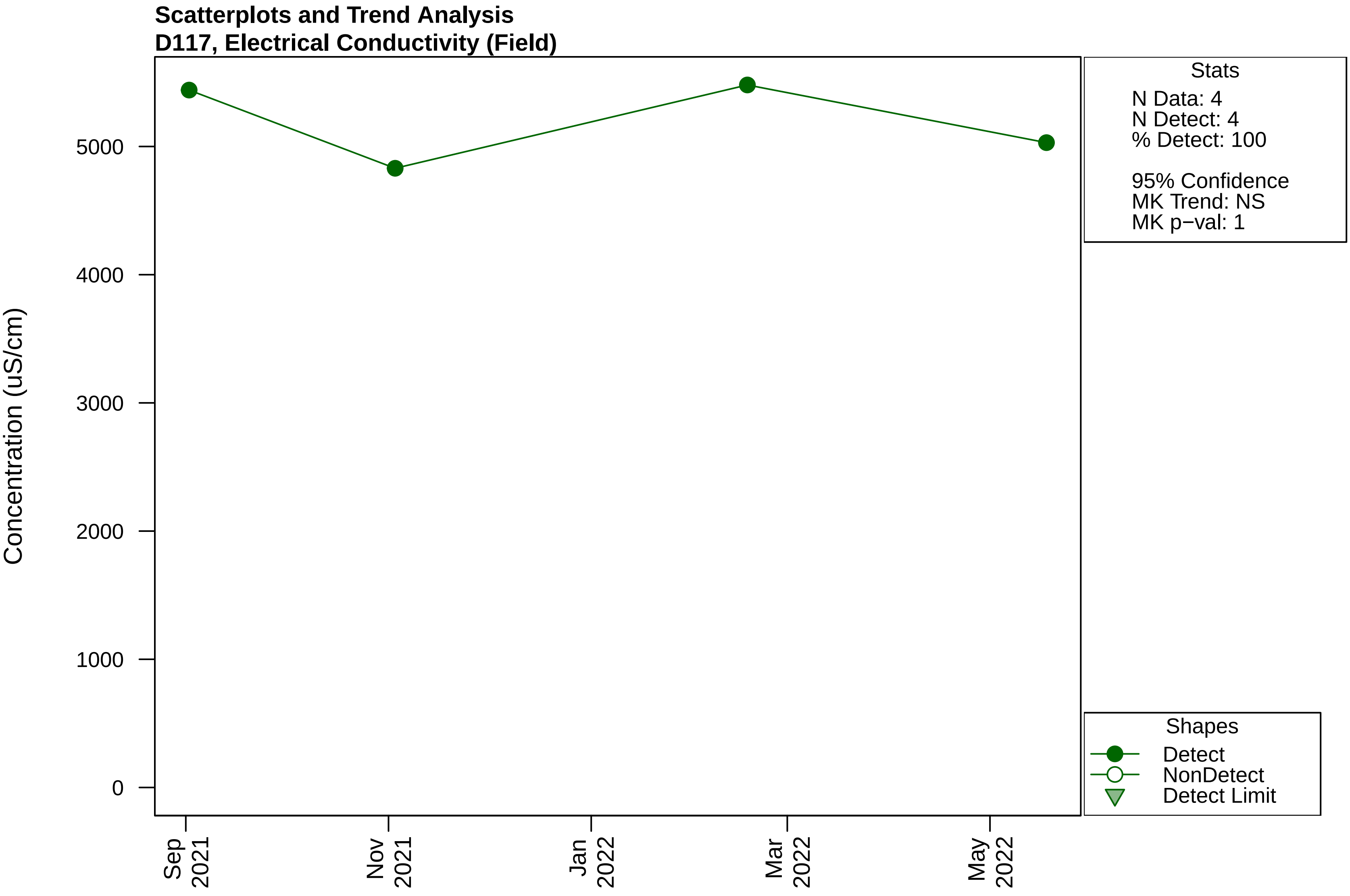


Scatterplots and Trend Analysis
D117, Copper (Filtered)

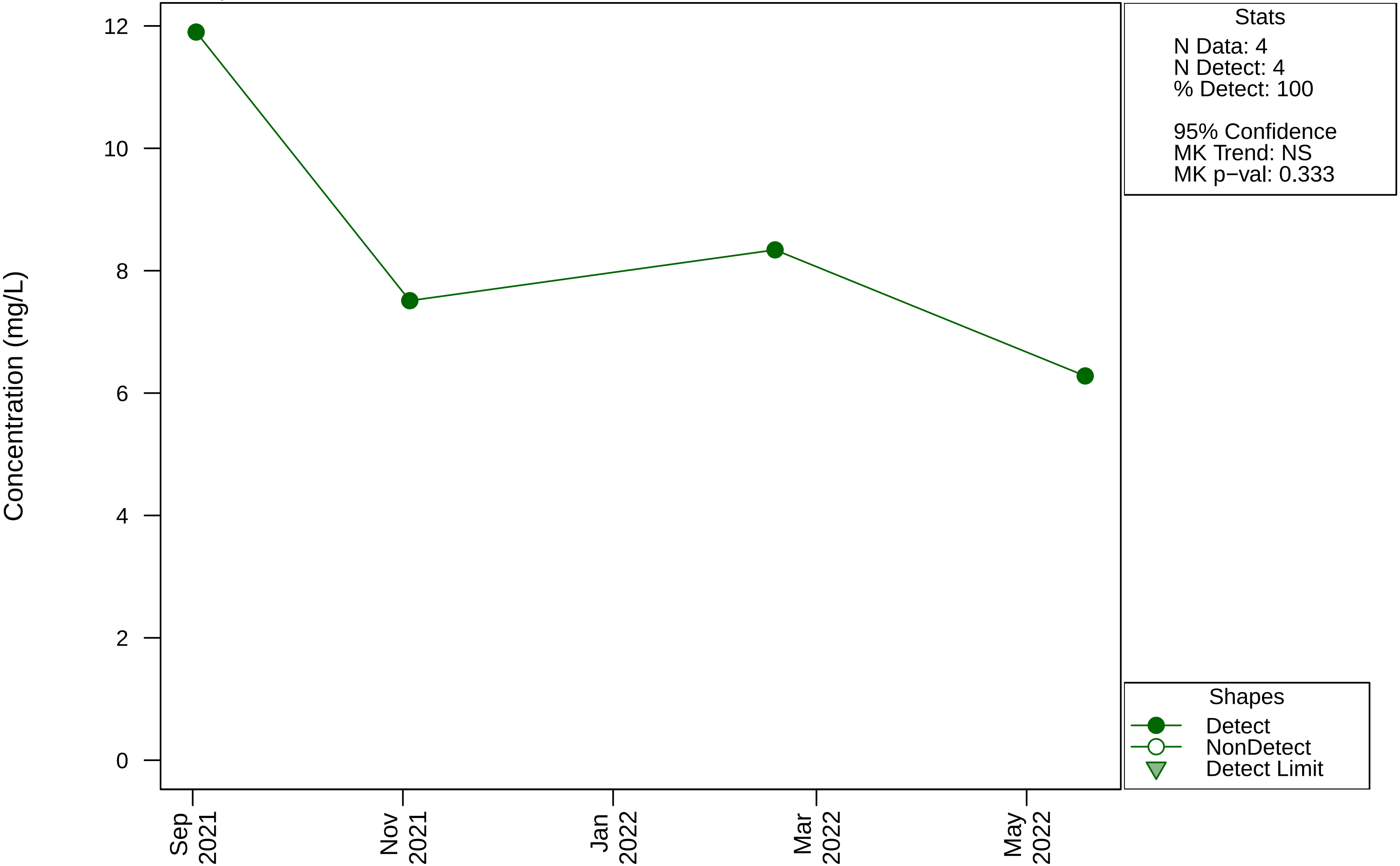




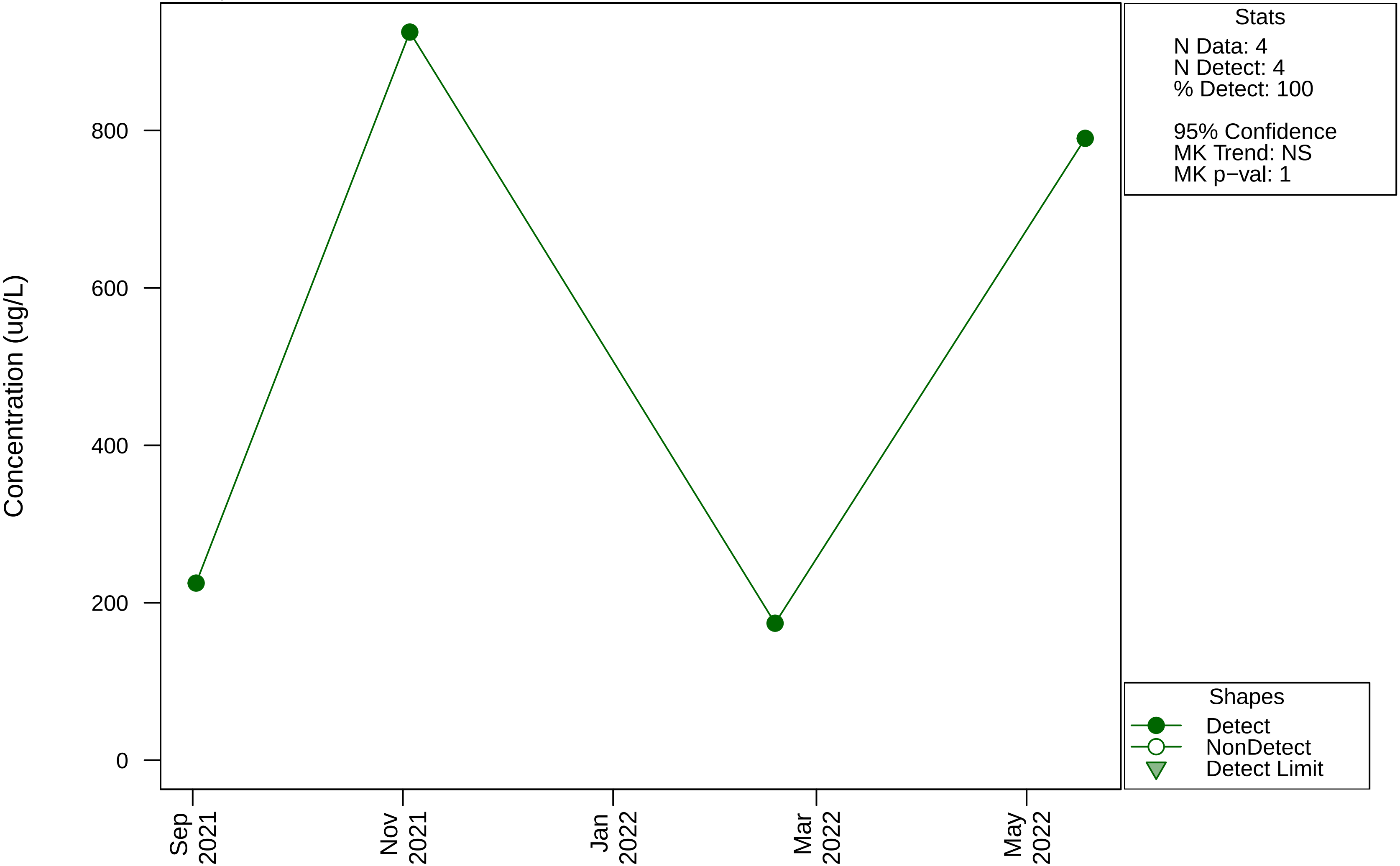
Scatterplots and Trend Analysis
D117, Dissolved Oxygen (Field) (Filtered)
Concentration (mg/L)
3.0
2.5
2.0
1.5
1.0
0.5
0.0
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 4
N Detect: 4
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.0833
Shapes
Detect
NonDetect
Detect Limit


Scatterplots and Trend Analysis
D117, Electrical Conductivity (Field)
Concentration (uS/cm)
0
1000
2000
3000
4000
5000
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 4
N Detect: 4
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 1
Shapes
Detect
NonDetect
Detect Limit

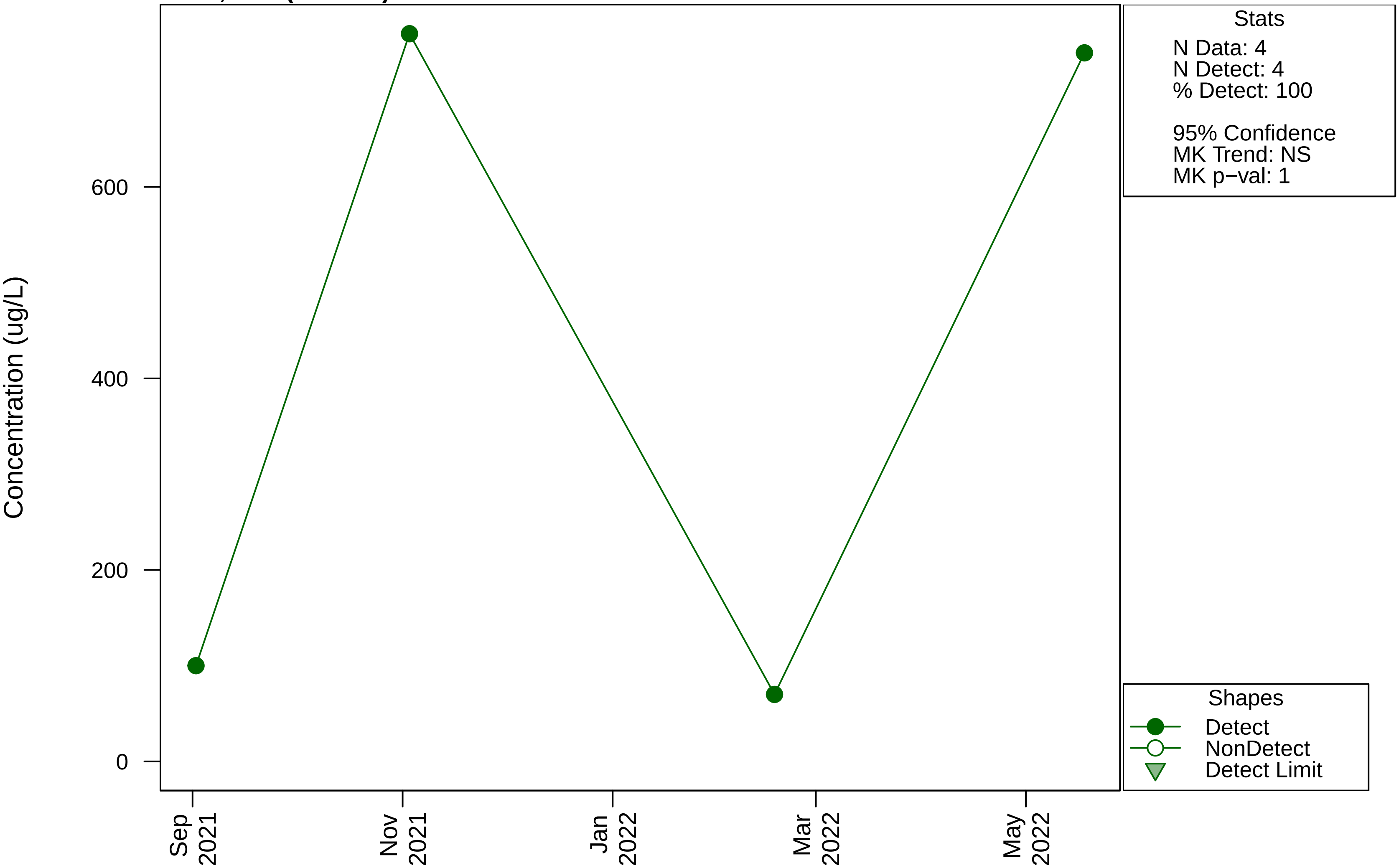
Scatterplots and Trend Analysis
D117, Fluoride



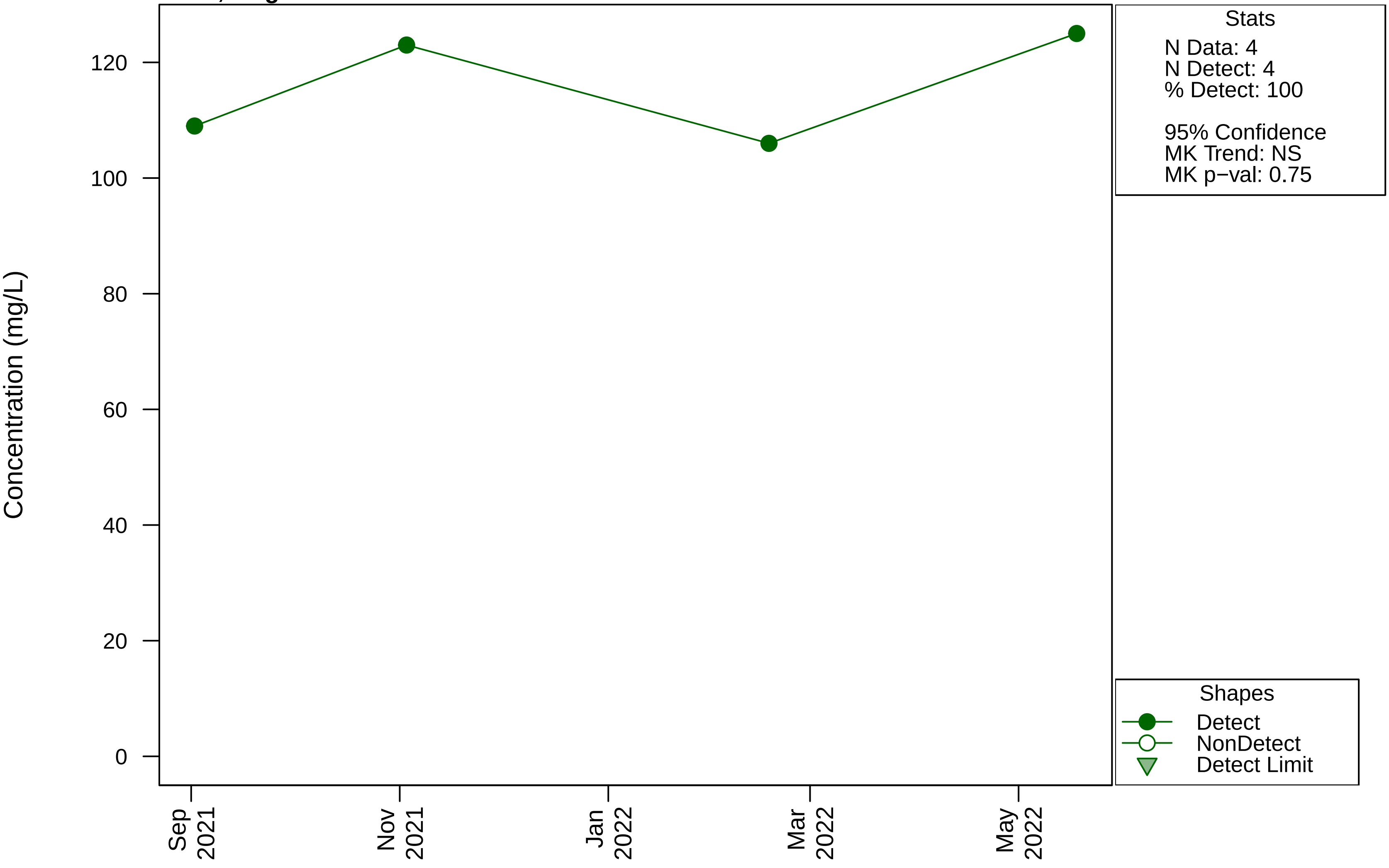
Scatterplots and Trend Analysis
D117, Iron

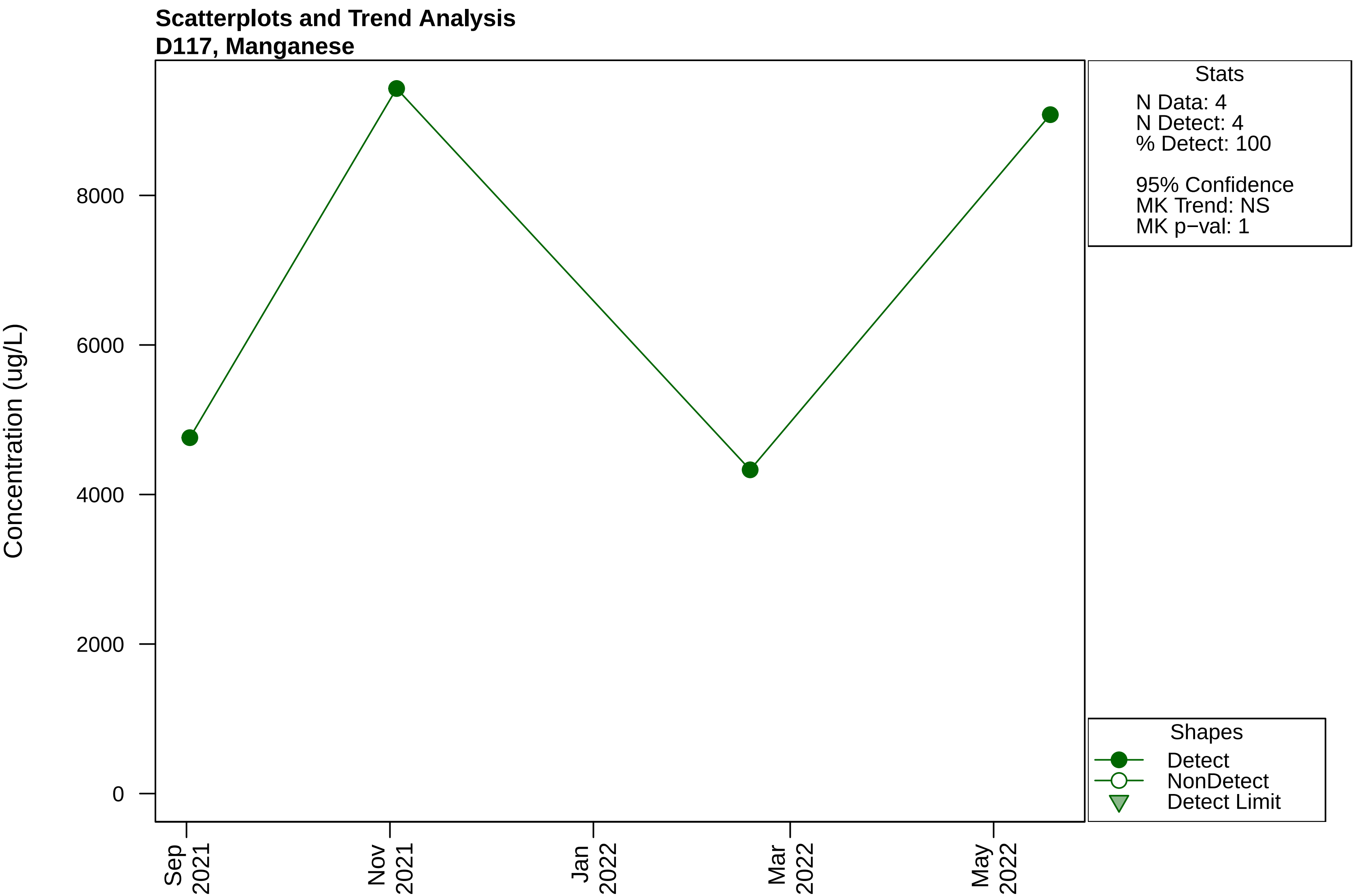


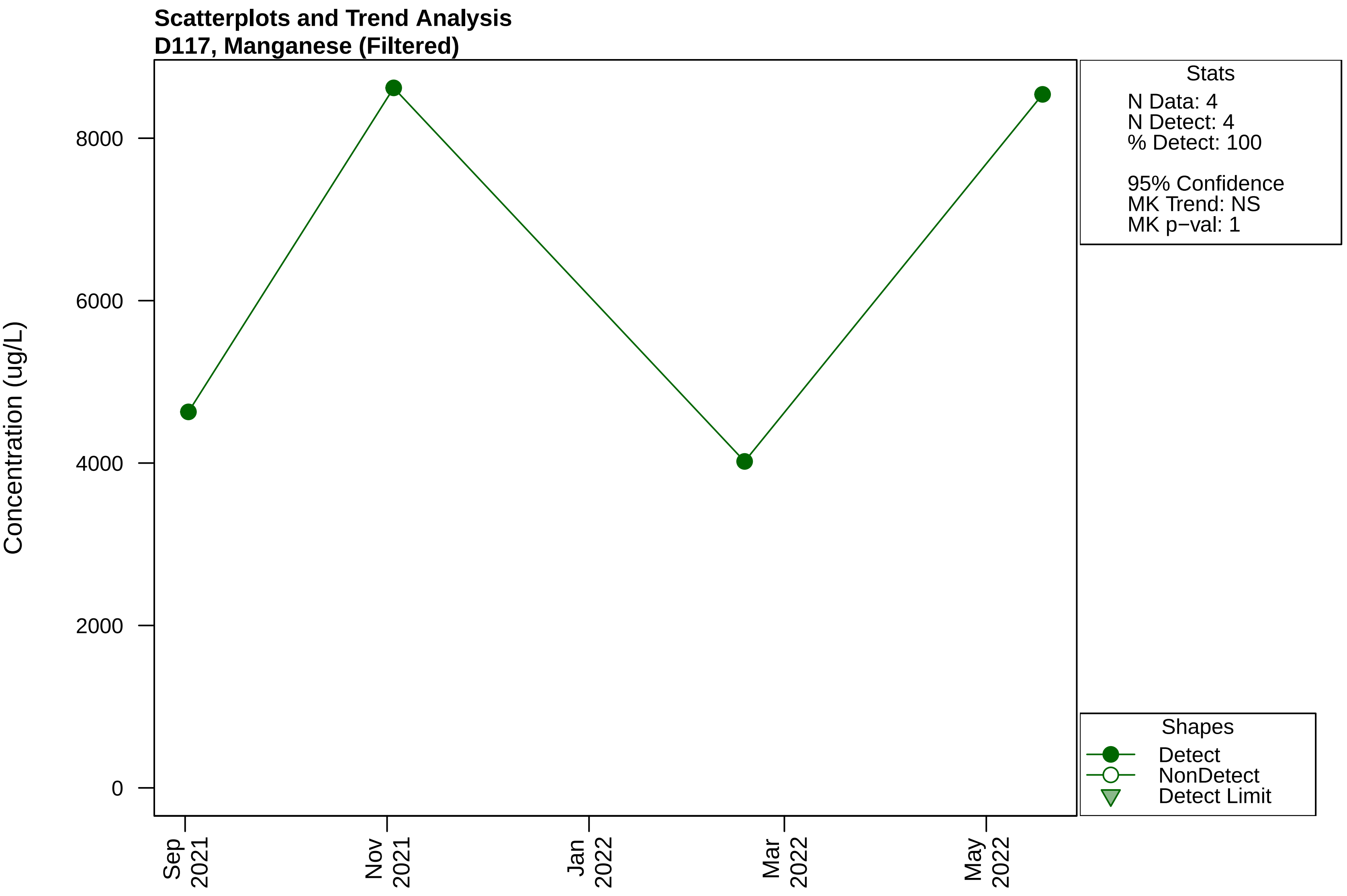
Scatterplots and Trend Analysis
D117, Iron (Filtered)

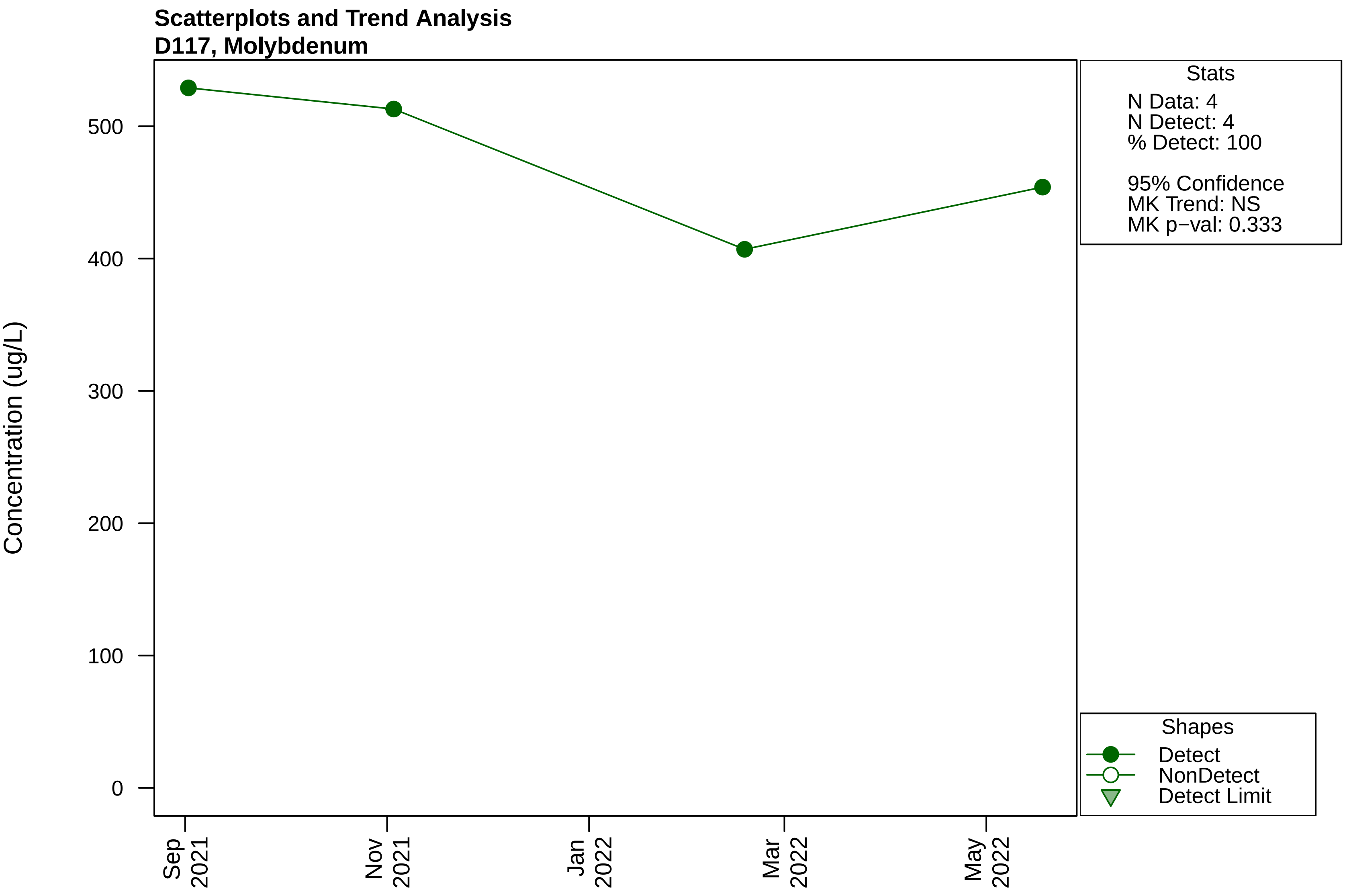


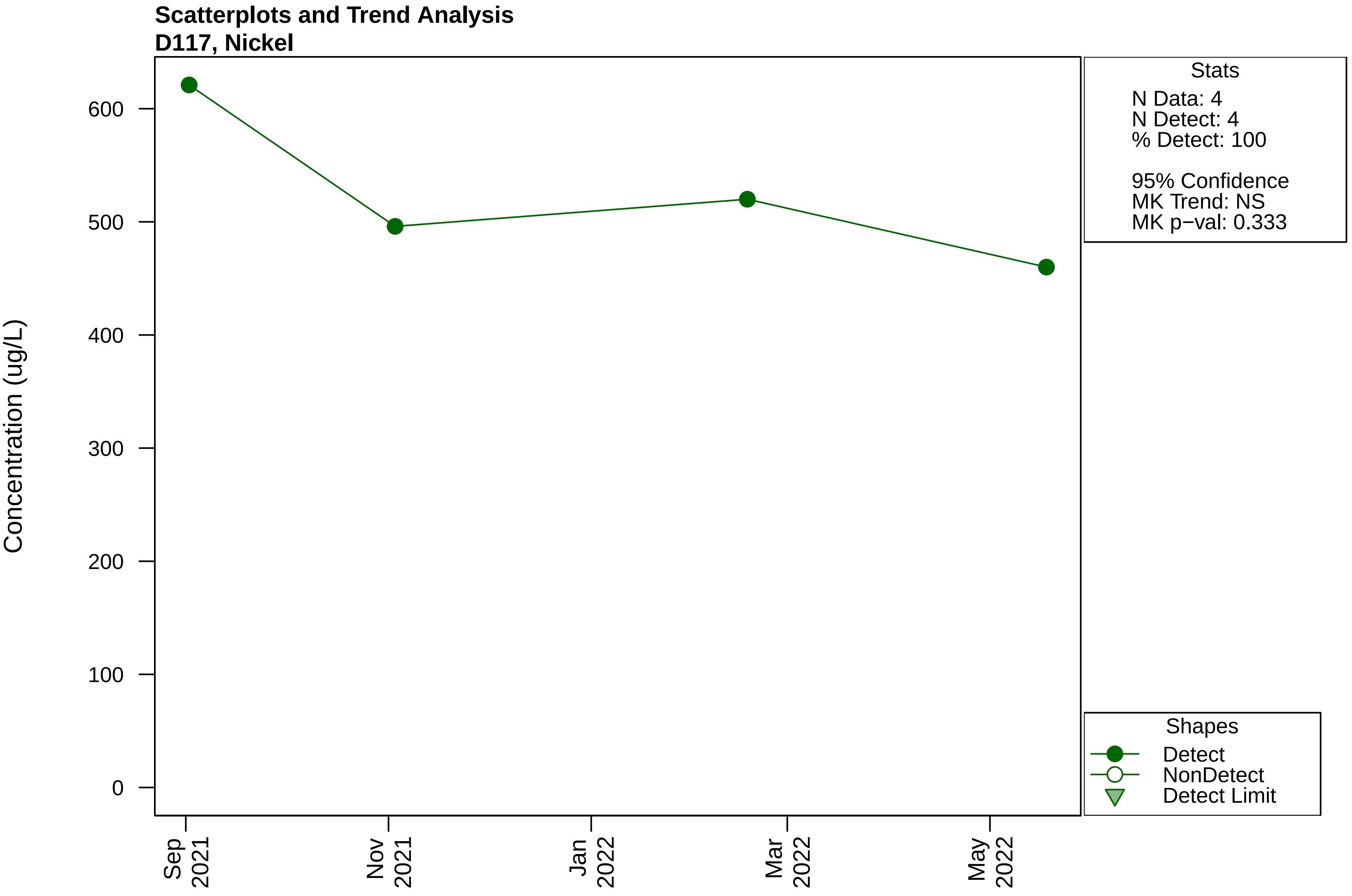
Scatterplots and Trend Analysis
D117, Magnesium

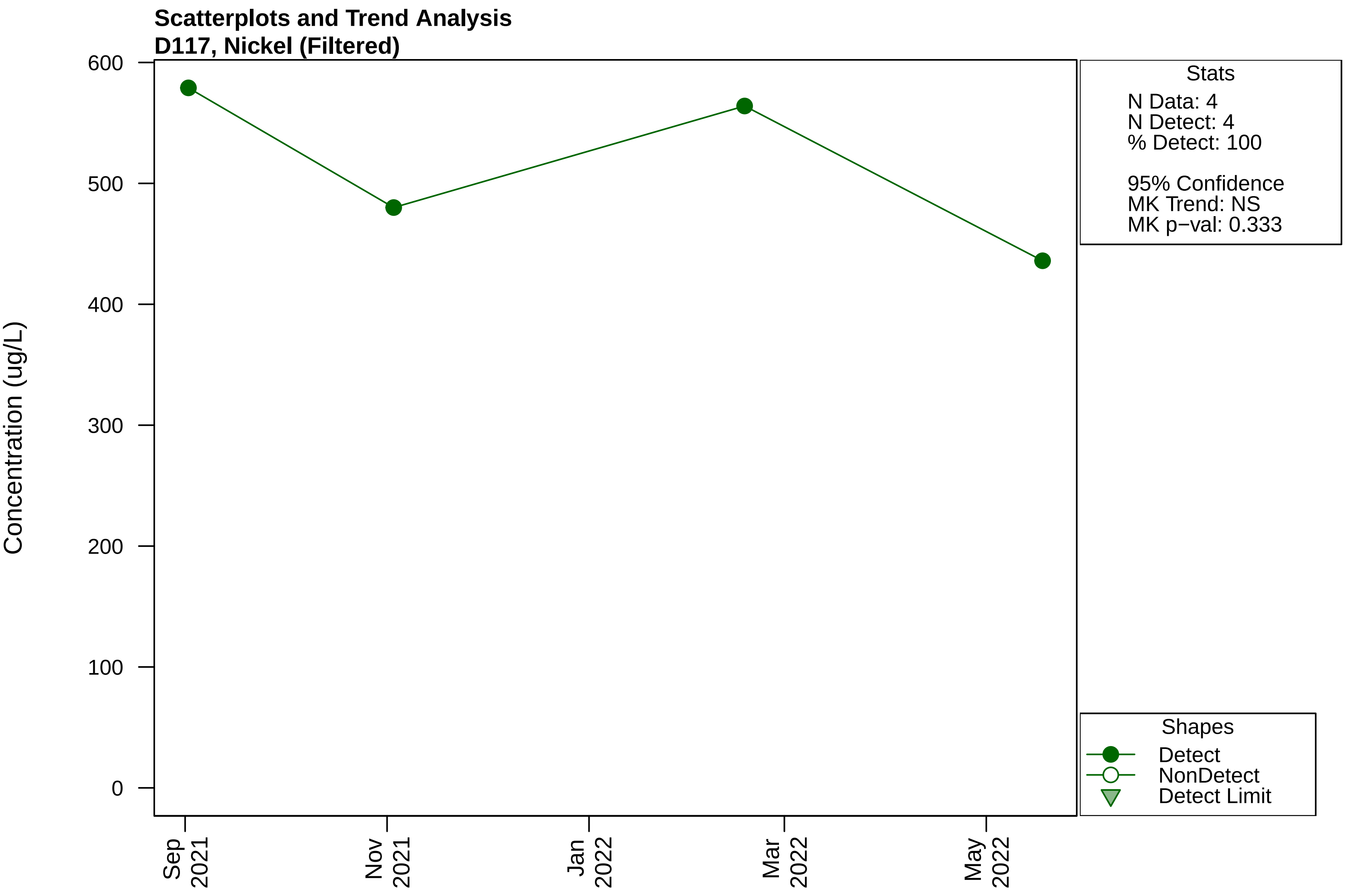



Scatterplots and Trend Analysis
D117, Manganese
Concentration (ug/L)
0
2000
4000
6000
8000
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 4
N Detect: 4
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 1
Shapes
Detect
NonDetect
Detect Limit

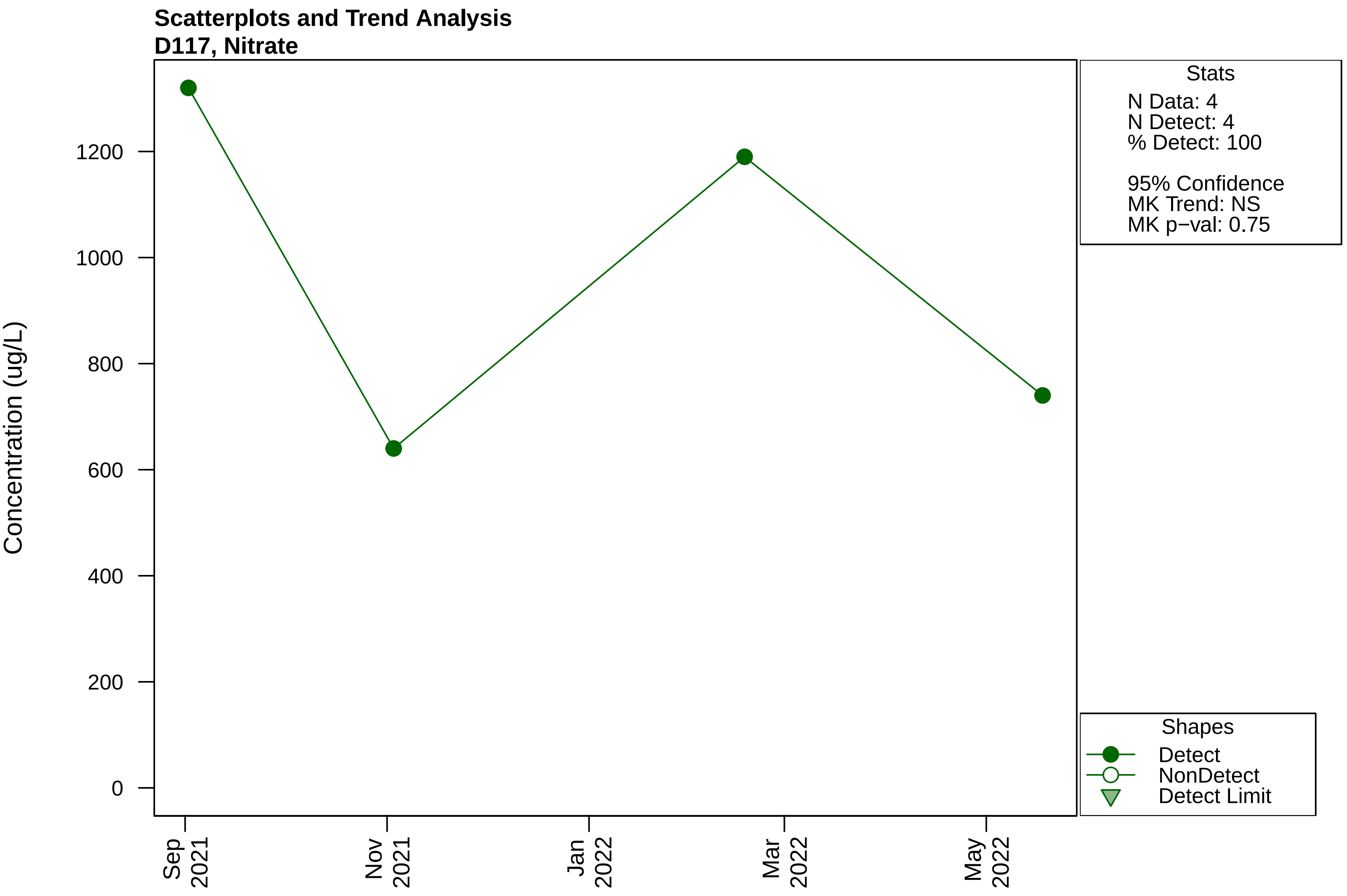

Scatterplots and Trend Analysis
D117, Manganese (Filtered)
Concentration (ug/L)
0
2000
4000
6000
8000
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 4
N Detect: 4
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 1
Shapes
Detect
NonDetect
Detect Limit

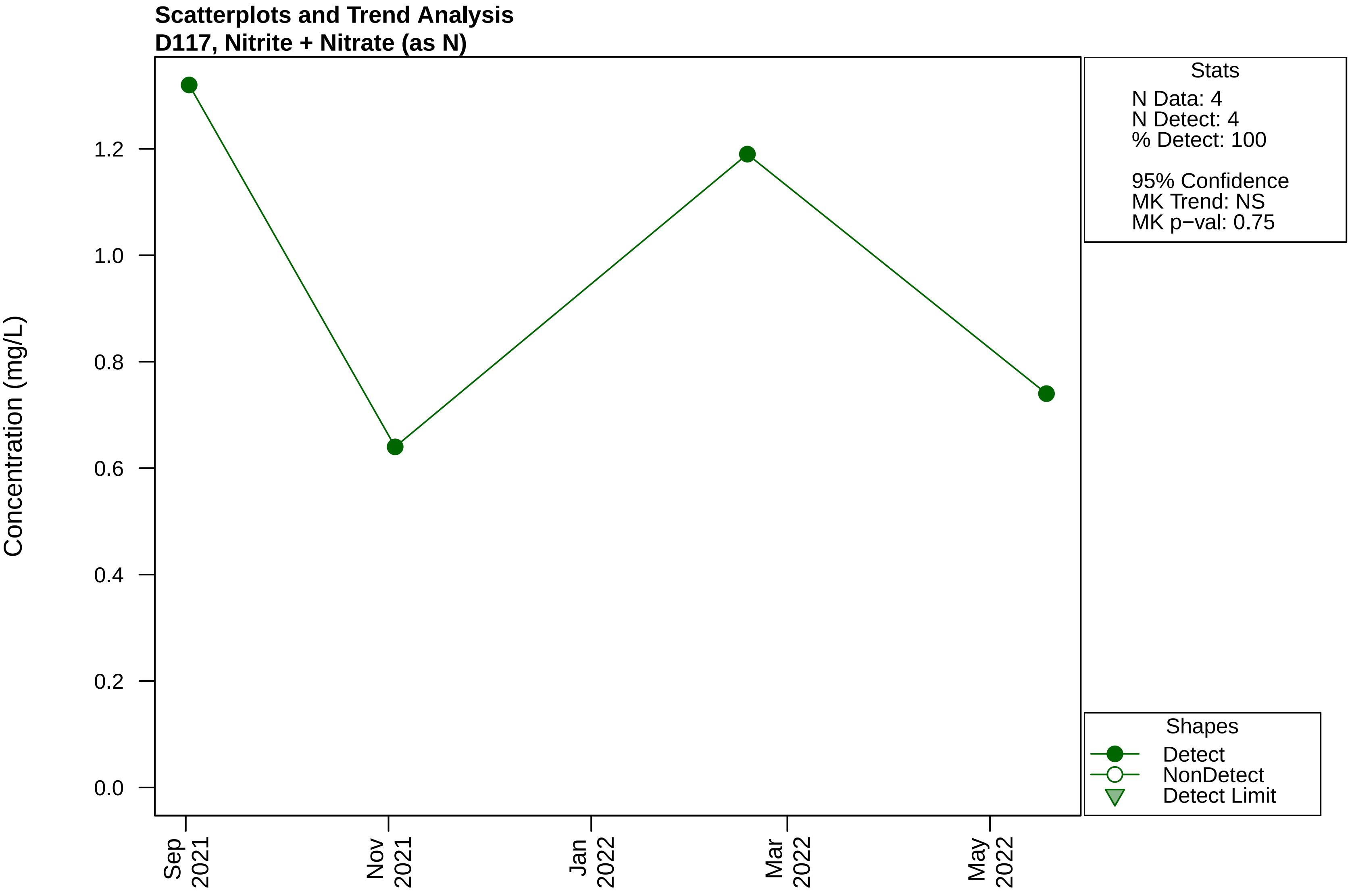

Scatterplots and Trend Analysis
D117, Molybdenum
Concentration (ug/L)
0
100
200
300
400
500
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 4
N Detect: 4
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.333
Shapes
Detect
NonDetect
Detect Limit


Scatterplots and Trend Analysis
D117, Nickel
Concentration (ug/L)
0
100
200
300
400
500
600
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 4
N Detect: 4
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.333
Shapes
Detect
NonDetect
Detect Limit

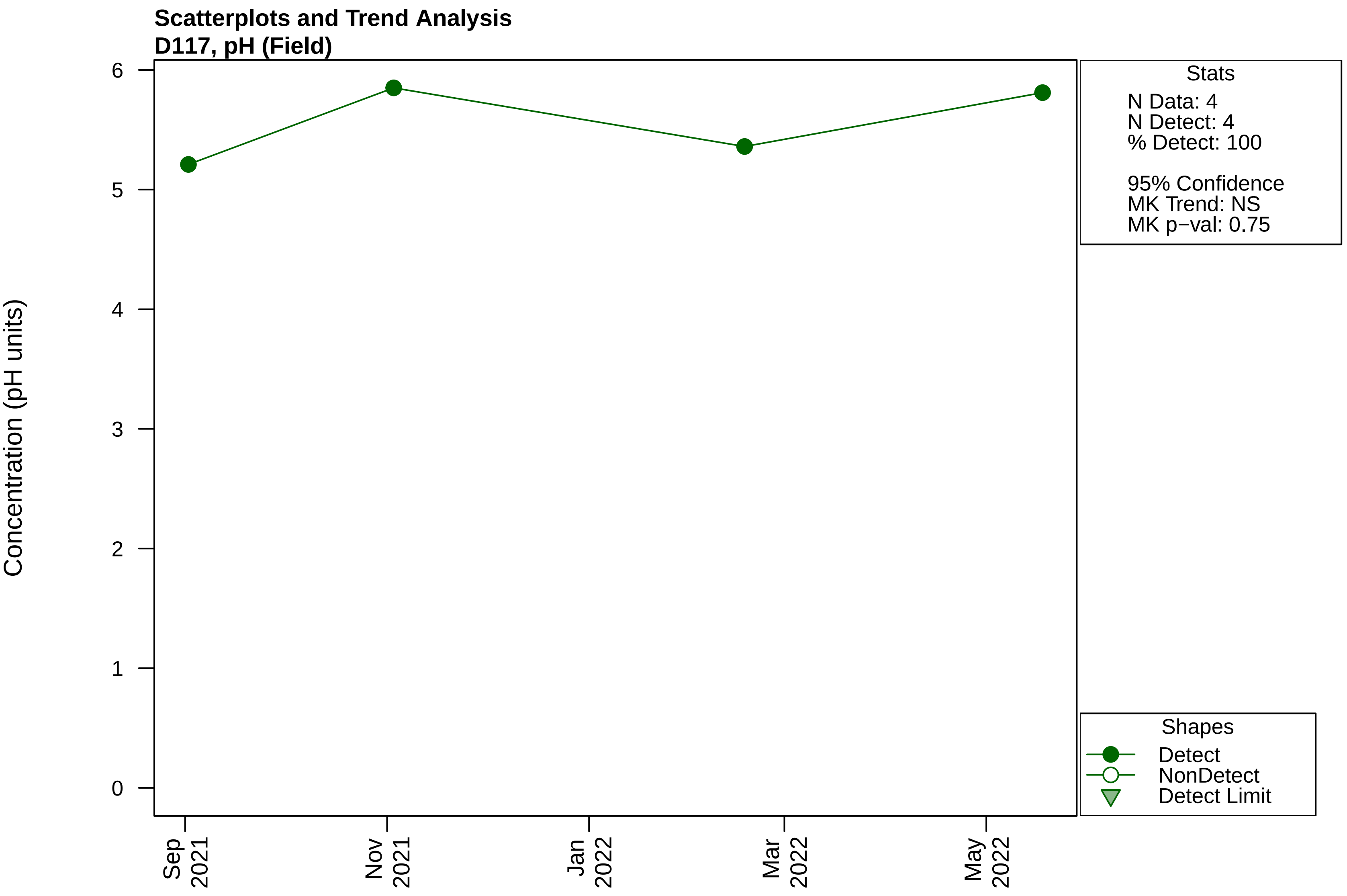


Scatterplots and Trend Analysis
D117, Nickel (Filtered)
Concentration (ug/L)
0
100
200
300
400
500
600
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 4
N Detect: 4
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.333
Shapes
Detect
NonDetect
Detect Limit

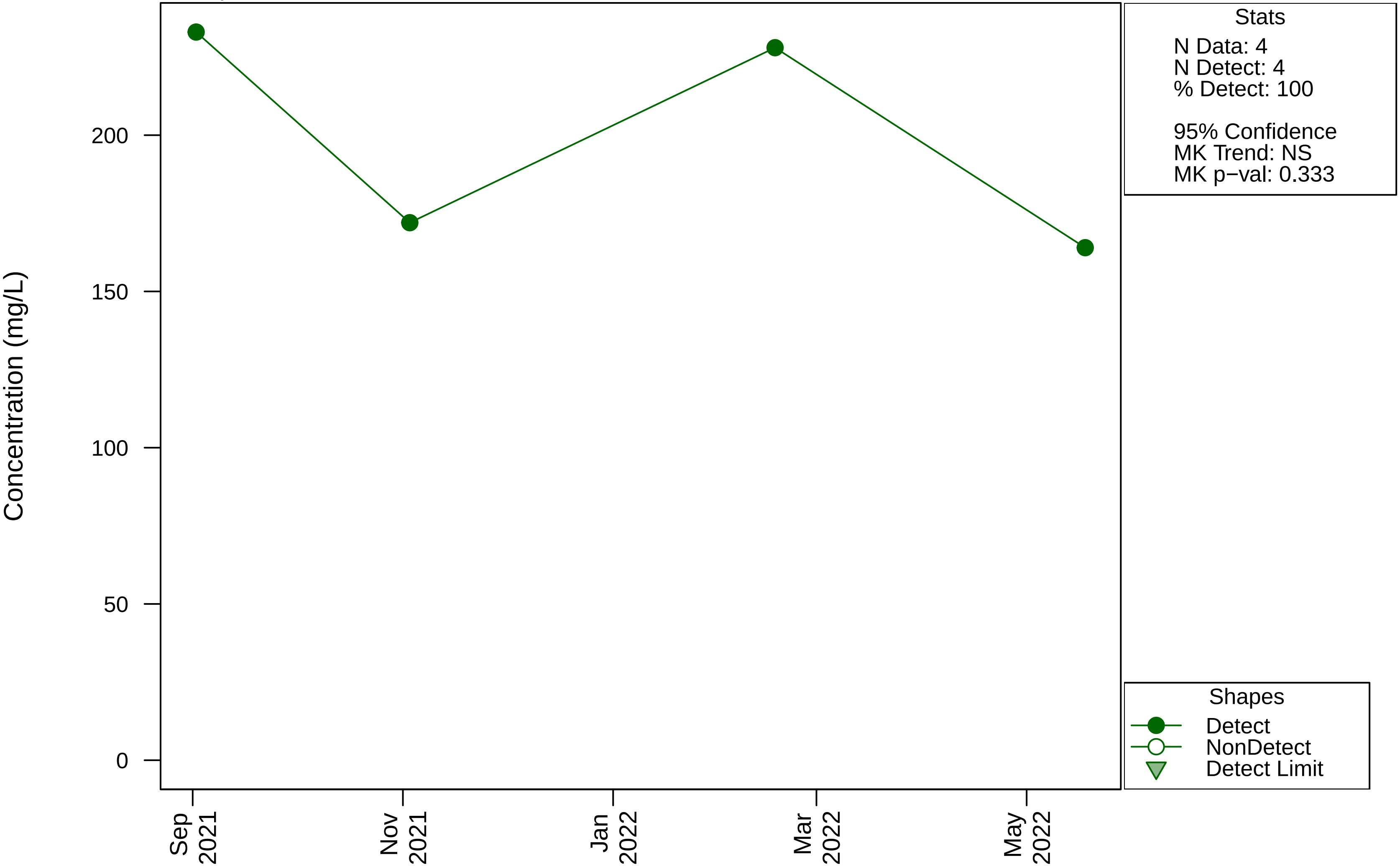

Scatterplots and Trend Analysis
D117, Nitrate
Concentration (ug/L)
0
200
400
600
800
1000
1200
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 4
N Detect: 4
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.75
Shapes
Detect
NonDetect
Detect Limit



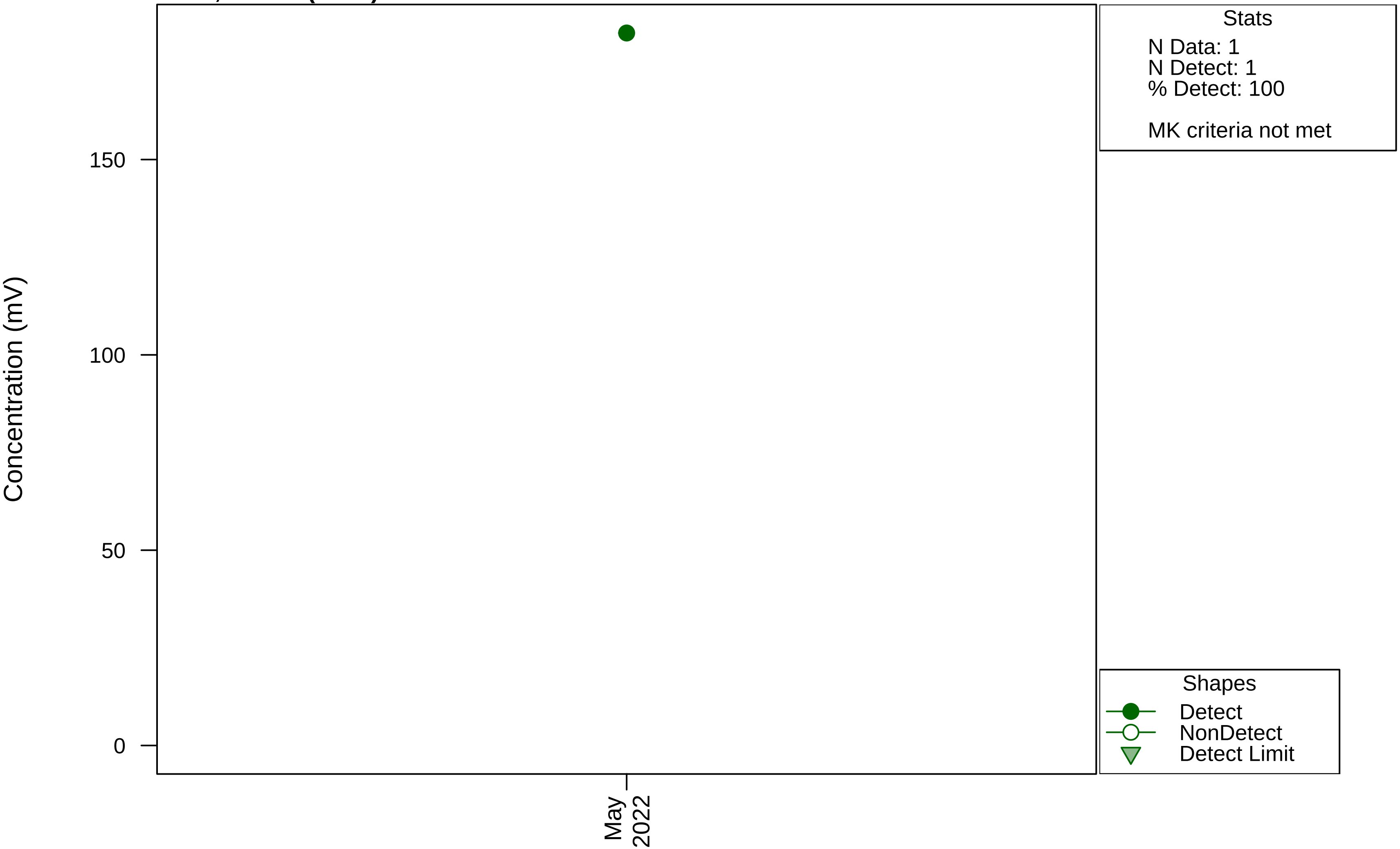
Scatterplots and Trend Analysis
D117, Nitrite + Nitrate (as N)
Concentration (mg/L)
0.0
0.2
0.4
0.6
0.8
1.0
1.2
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 4
N Detect: 4
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.75
Shapes
Detect
NonDetect
Detect Limit

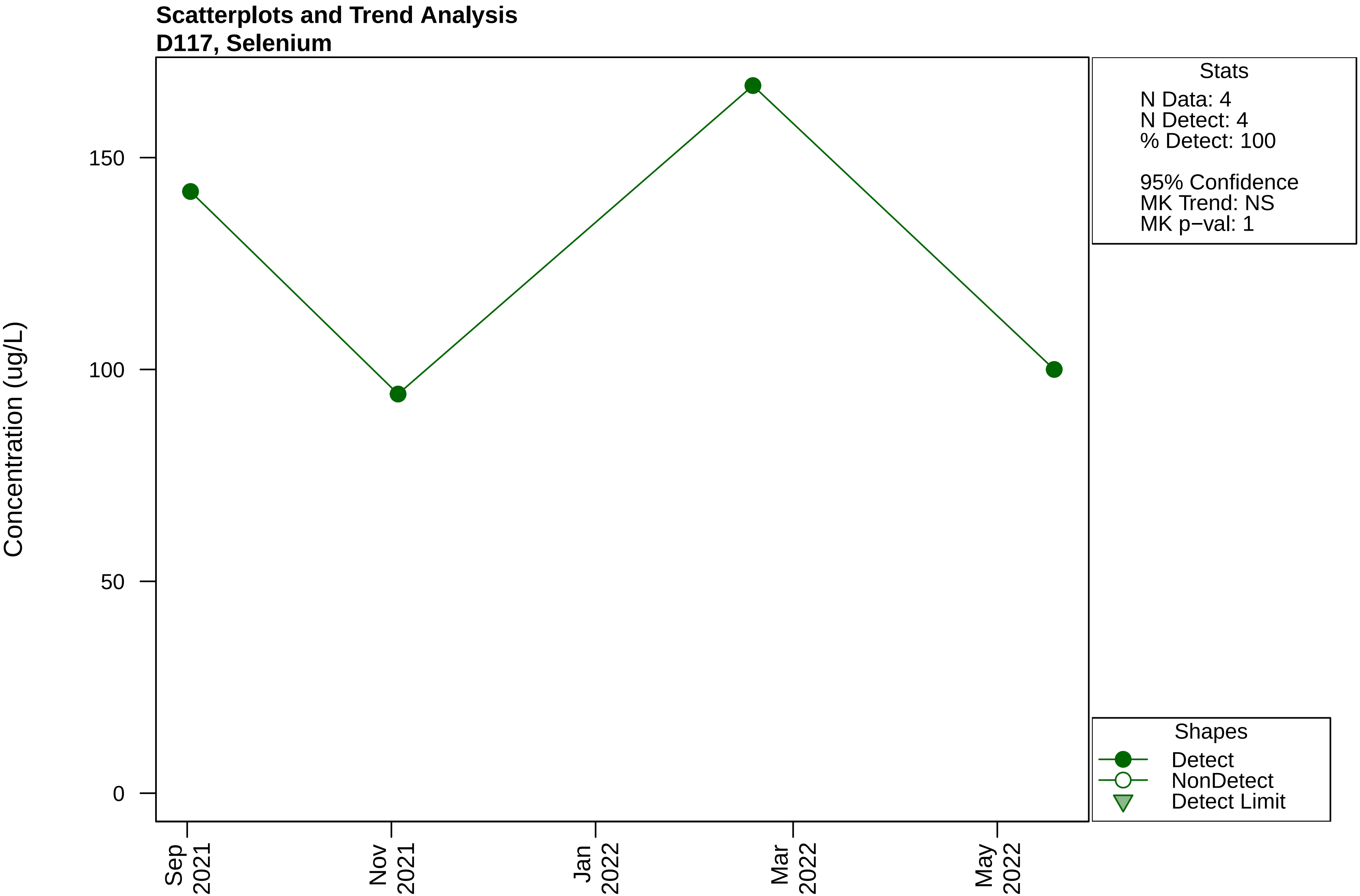

Scatterplots and Trend Analysis
D117, pH (Field)
Concentration (pH units)
0
1
2
3
4
5
6
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 4
N Detect: 4
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.75
Shapes
Detect
NonDetect
Detect Limit

Scatterplots and Trend Analysis
D117, Potassium

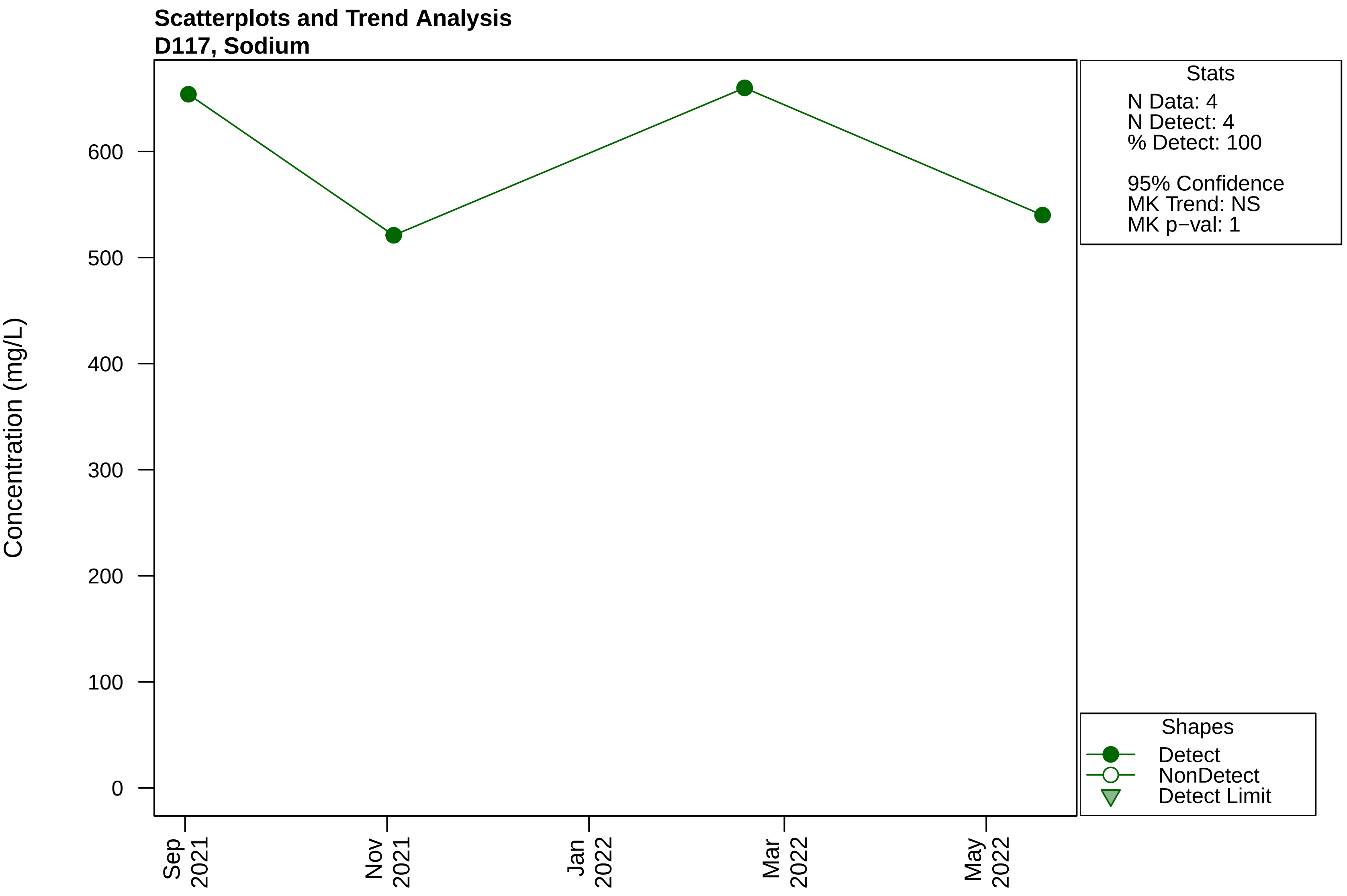


Scatterplots and Trend Analysis
D117, Redox (Field)

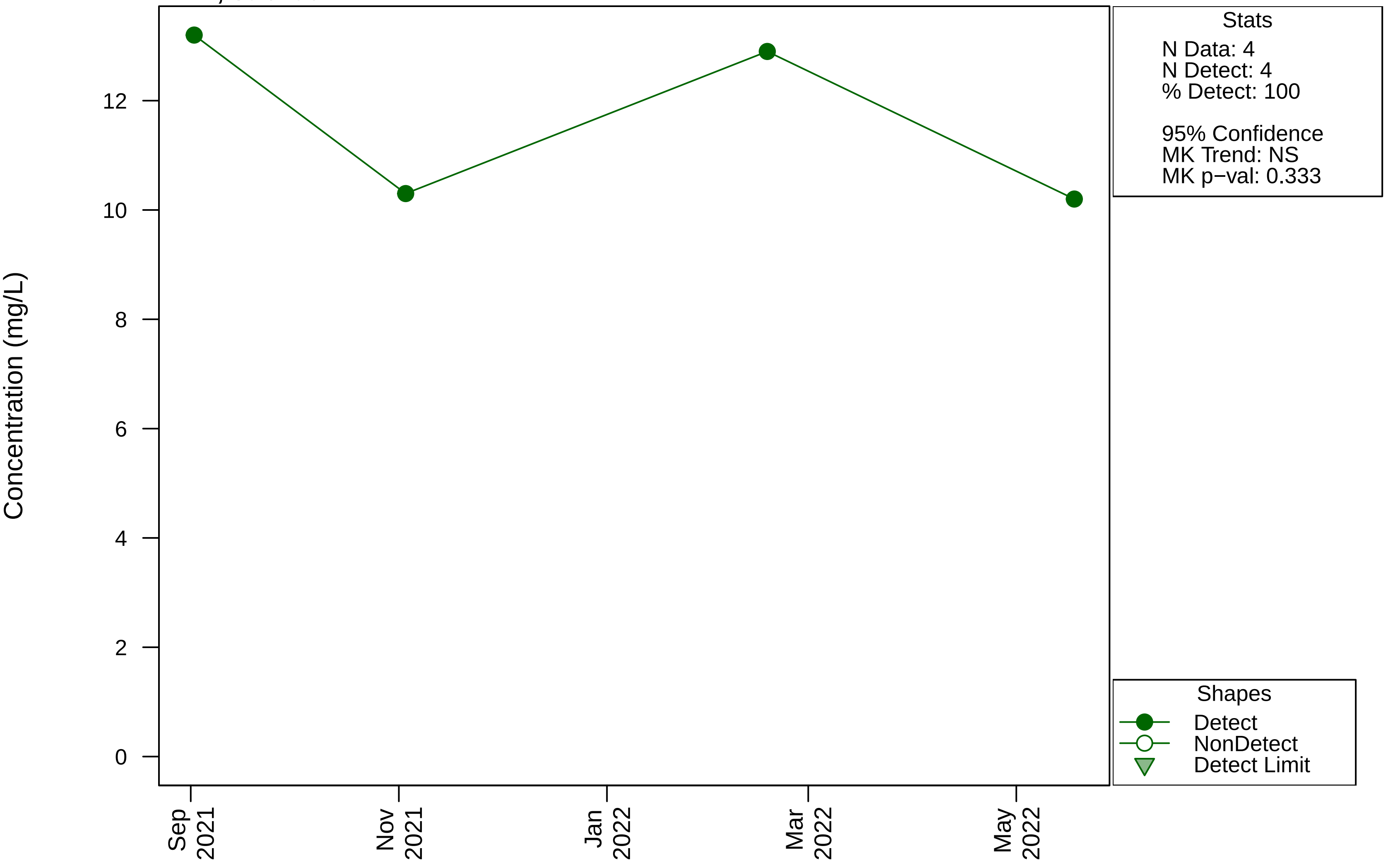


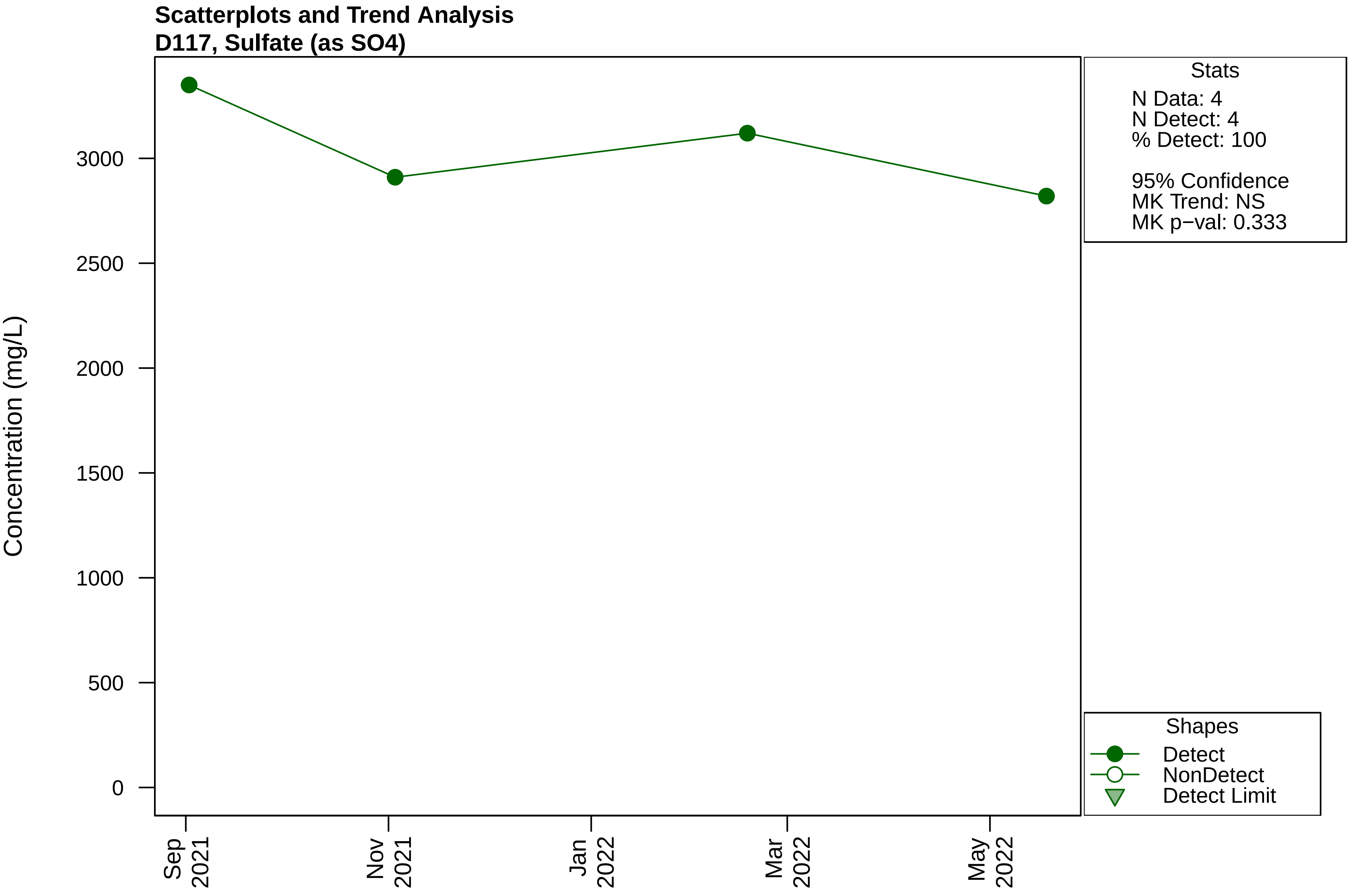


Scatterplots and Trend Analysis
D117, Selenium
Concentration (ug/L)
150
100
50
0
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 4
N Detect: 4
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 1
Shapes
Detect
NonDetect
Detect Limit

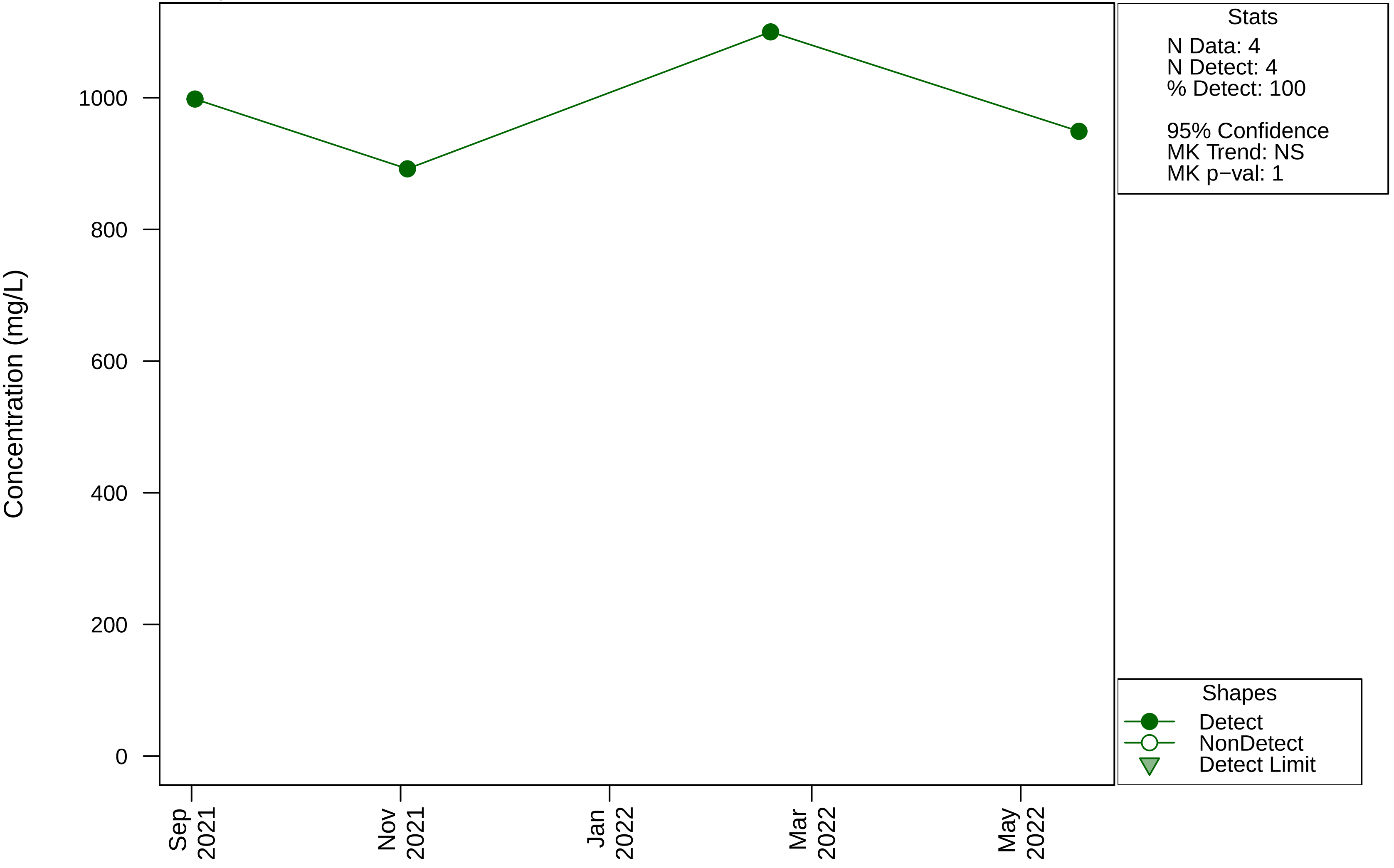

Scatterplots and Trend Analysis
D117, Sodium
Concentration (mg/L)
0
100
200
300
400
500
600
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 4
N Detect: 4
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 1
Shapes
Detect
NonDetect
Detect Limit

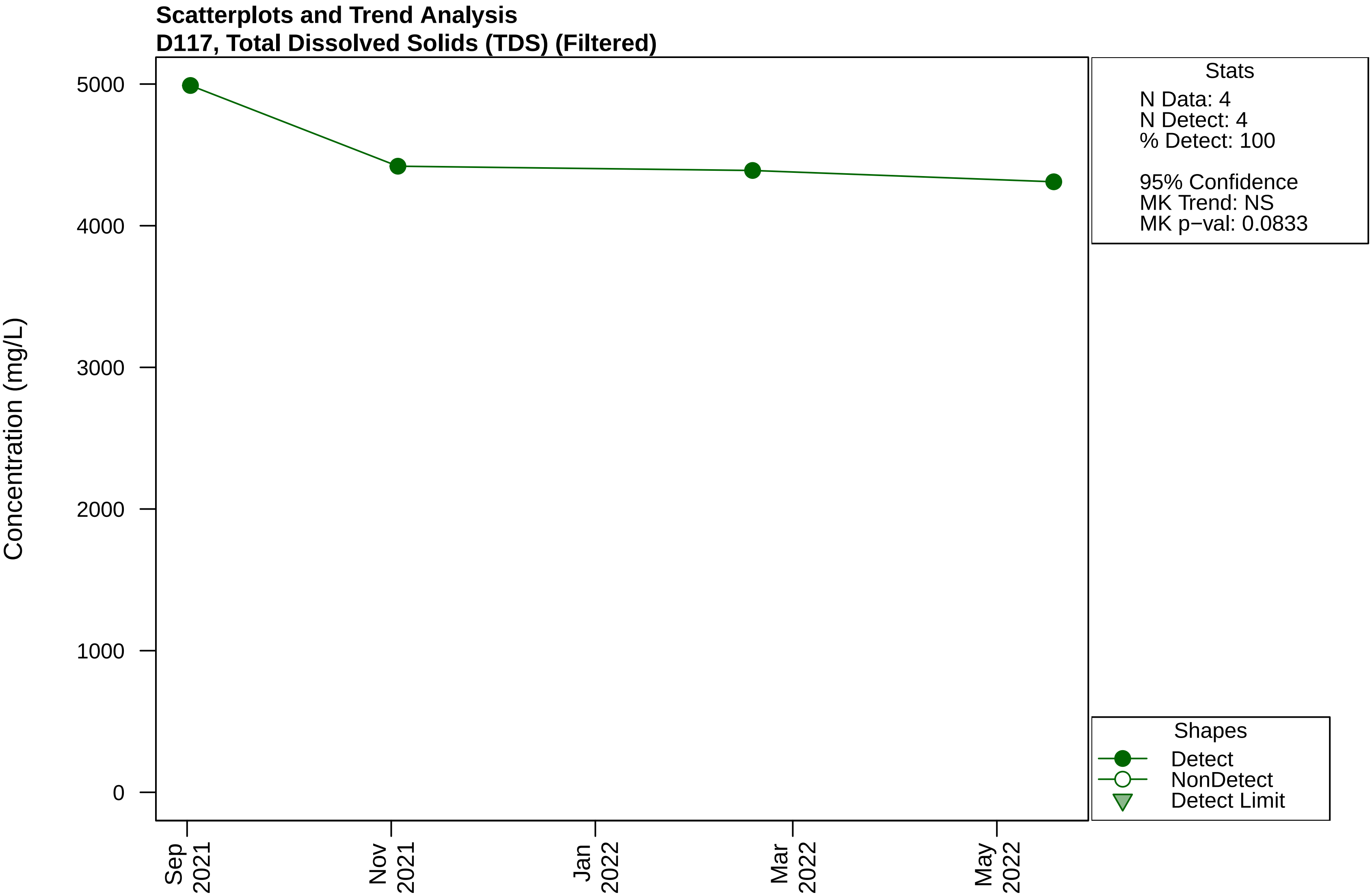
Scatterplots and Trend Analysis
D117, Strontium




Scatterplots and Trend Analysis
D117, Sulfate (as SO4)
Concentration (mg/L)
0
500
1000
1500
2000
2500
3000
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 4
N Detect: 4
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.333
Shapes
Detect
NonDetect
Detect Limit

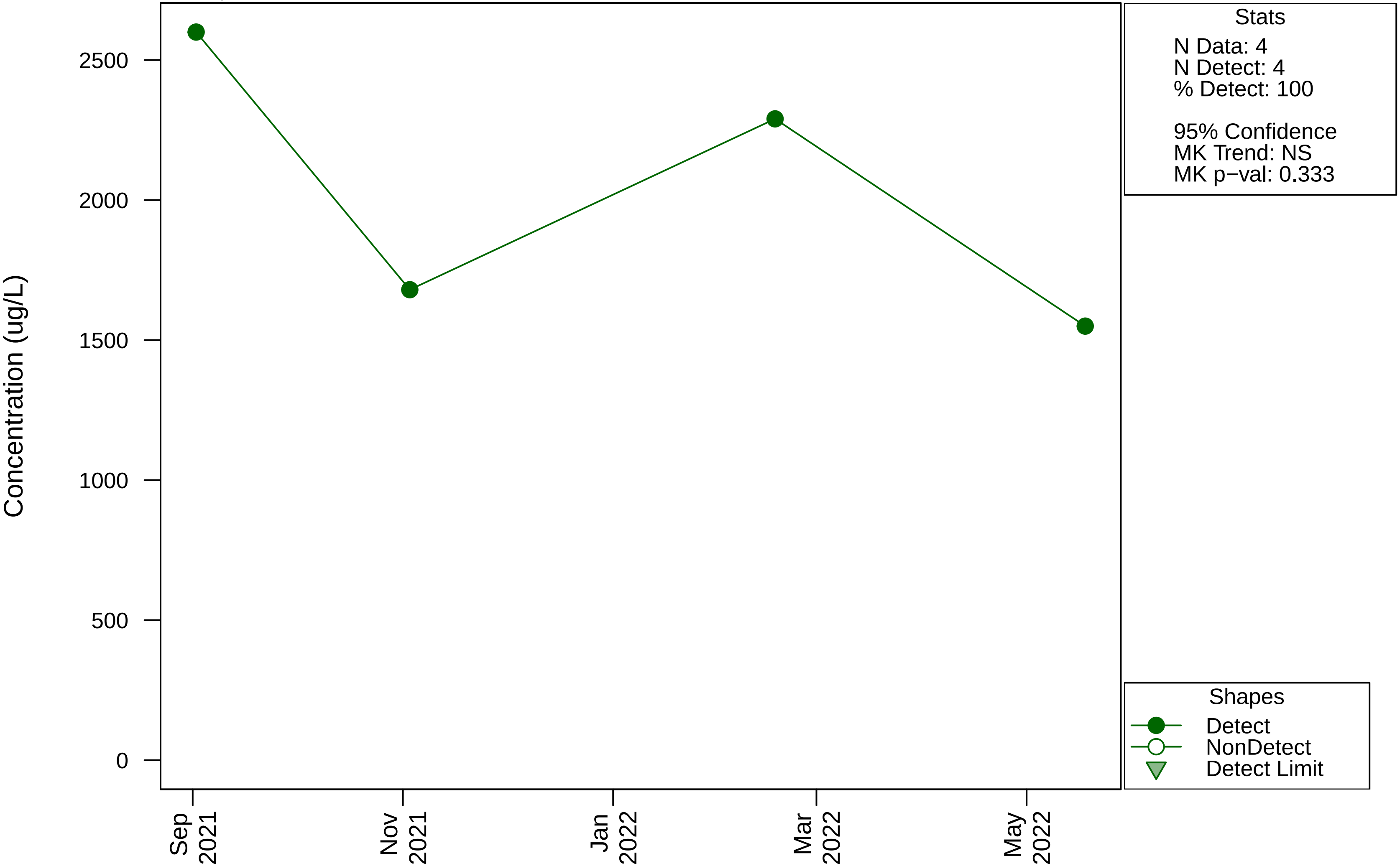
Scatterplots and Trend Analysis
D117, Sulfur

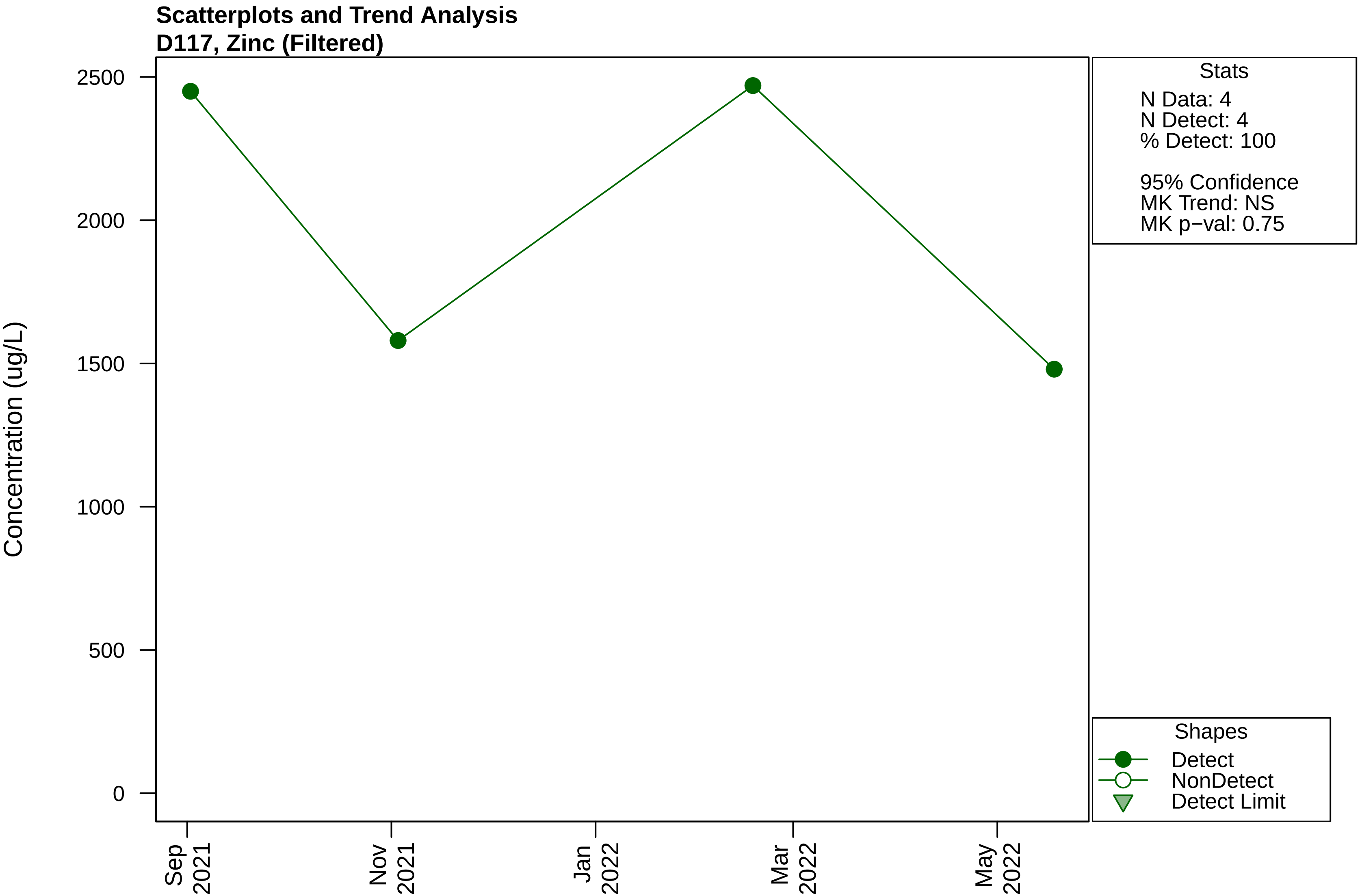


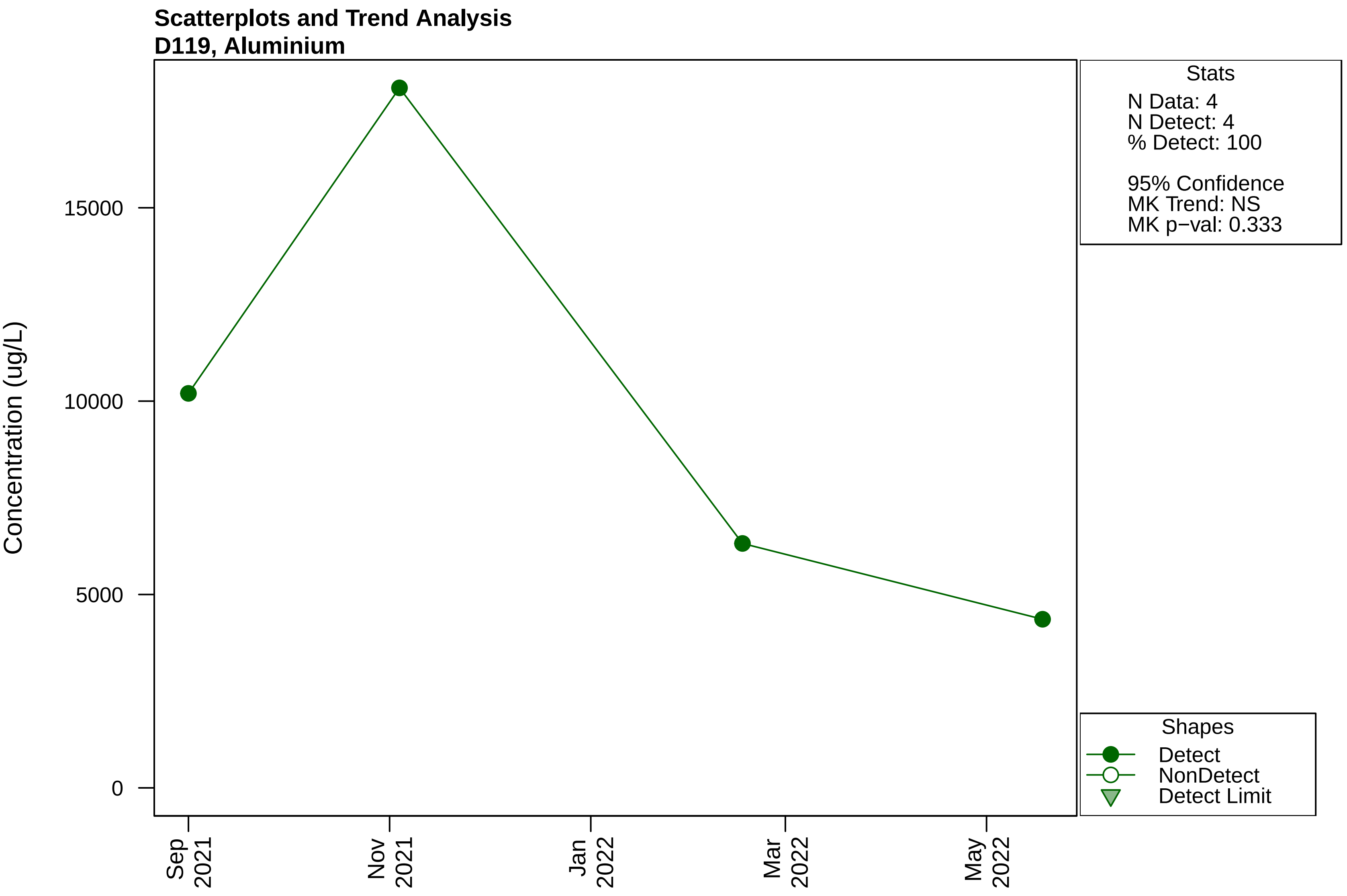


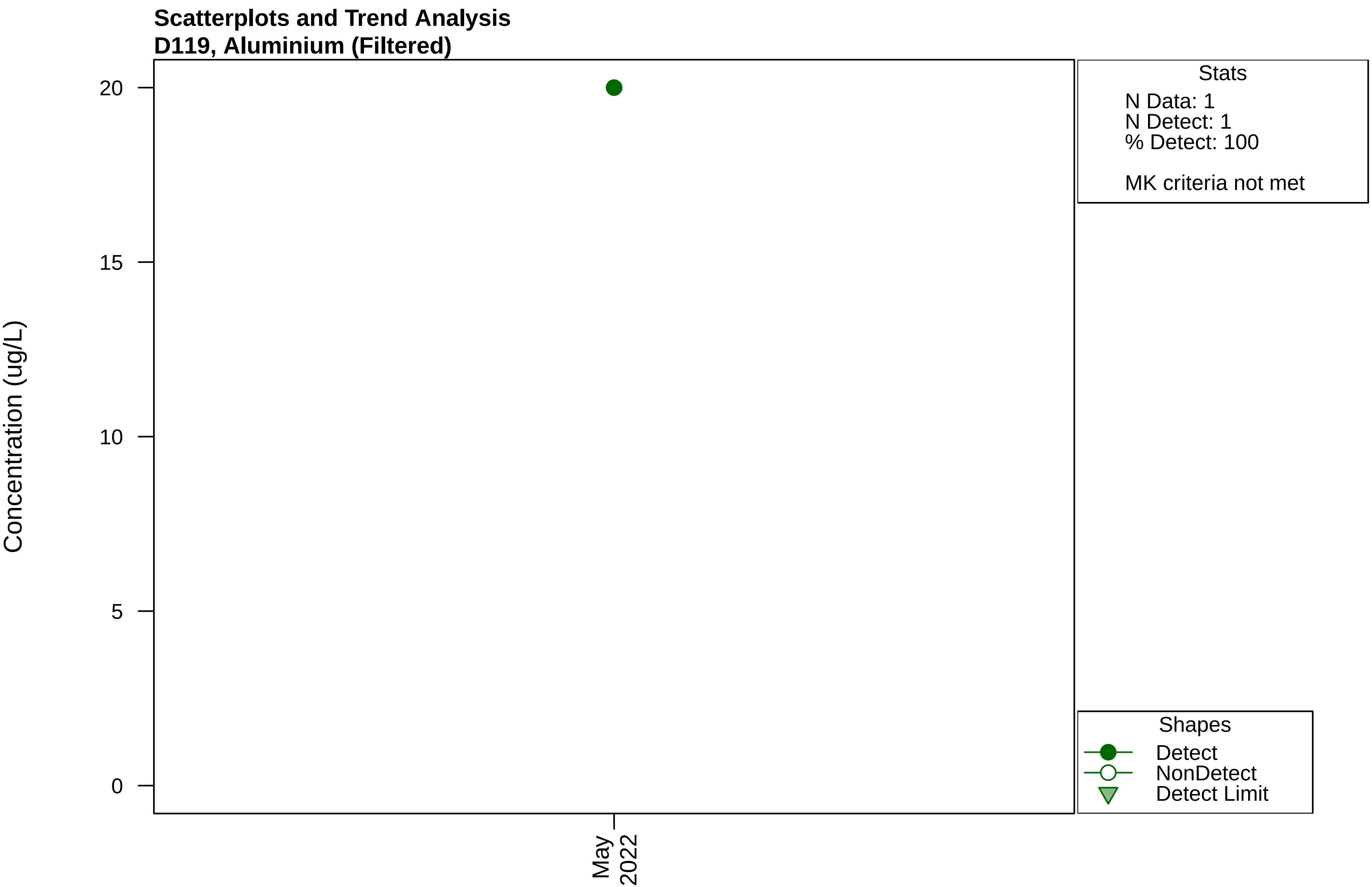
Scatterplots and Trend Analysis
D117, Total Dissolved Solids (TDS) (Filtered)
Concentration (mg/L)
5000
4000
3000
2000
1000
0
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 4
N Detect: 4
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.0833
Shapes
Detect
NonDetect
Detect Limit

Scatterplots and Trend Analysis
D117, Zinc



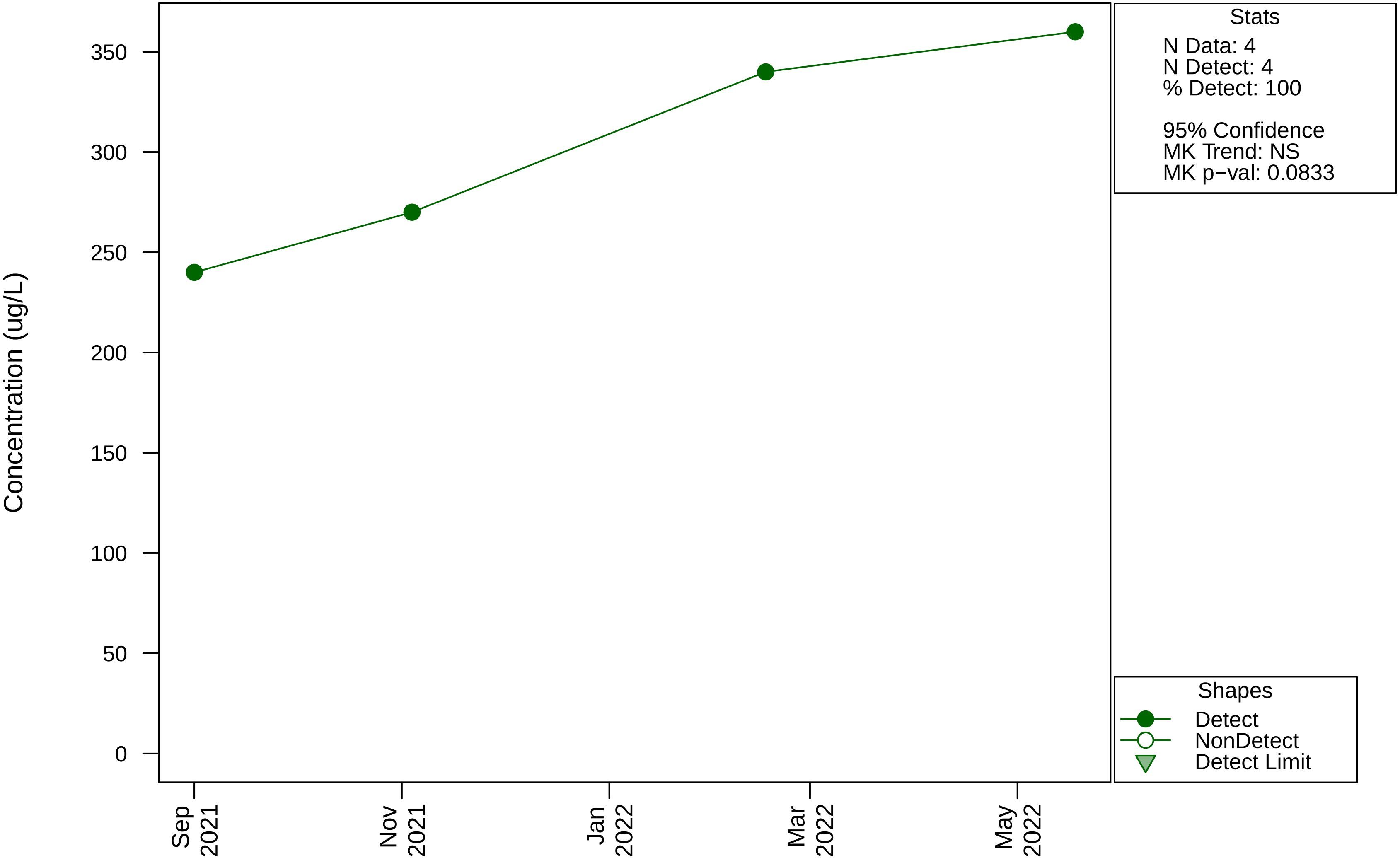

Scatterplots and Trend Analysis
D117, Zinc (Filtered)
Concentration (ug/L)
2500
2000
1500
1000
500
0
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 4
N Detect: 4
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.75
Shapes
Detect
NonDetect
Detect Limit


Scatterplots and Trend Analysis
D119, Aluminium
Concentration (ug/L)
15000
10000
5000
0
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 4
N Detect: 4
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.333
Shapes
Detect
NonDetect
Detect Limit

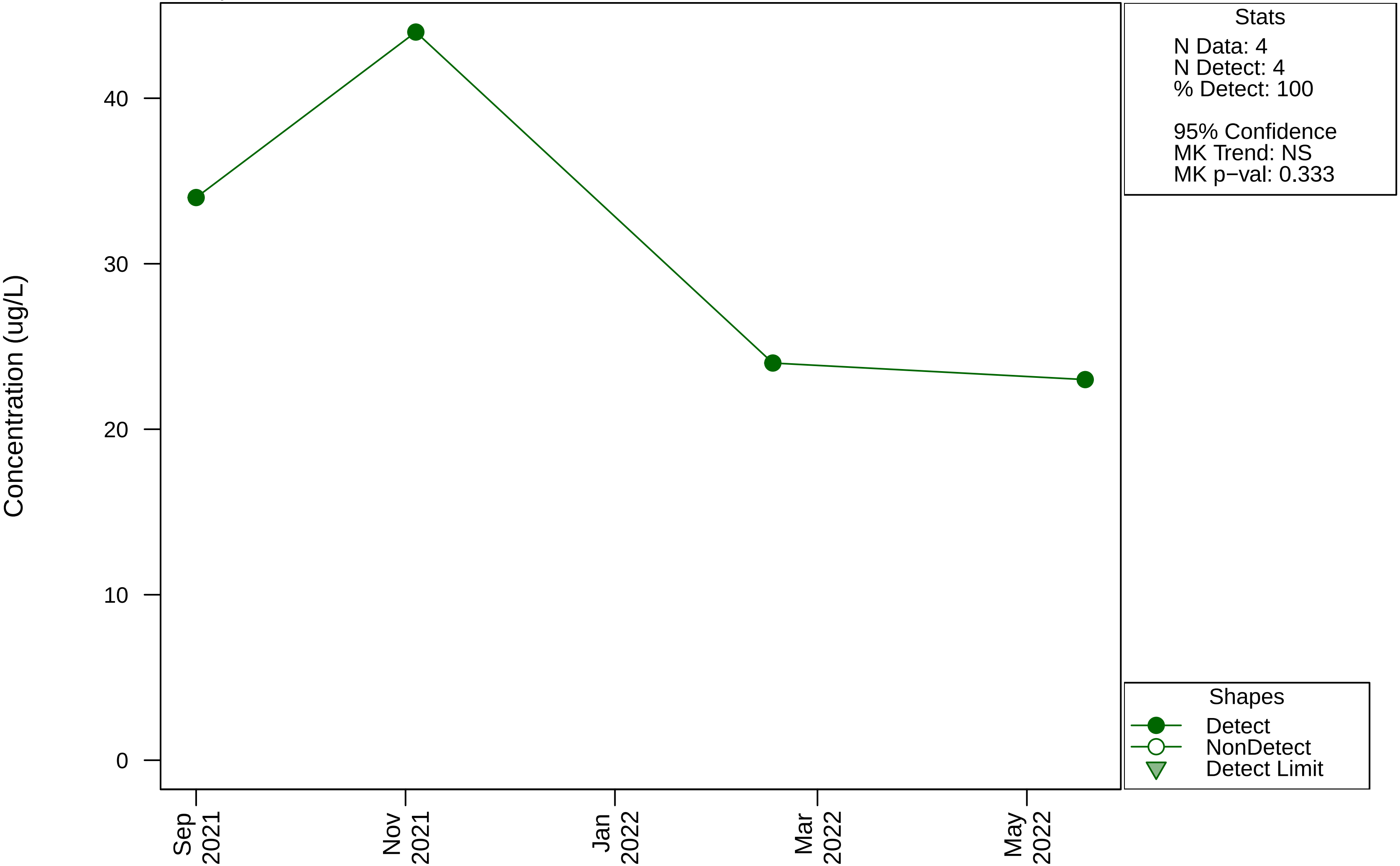


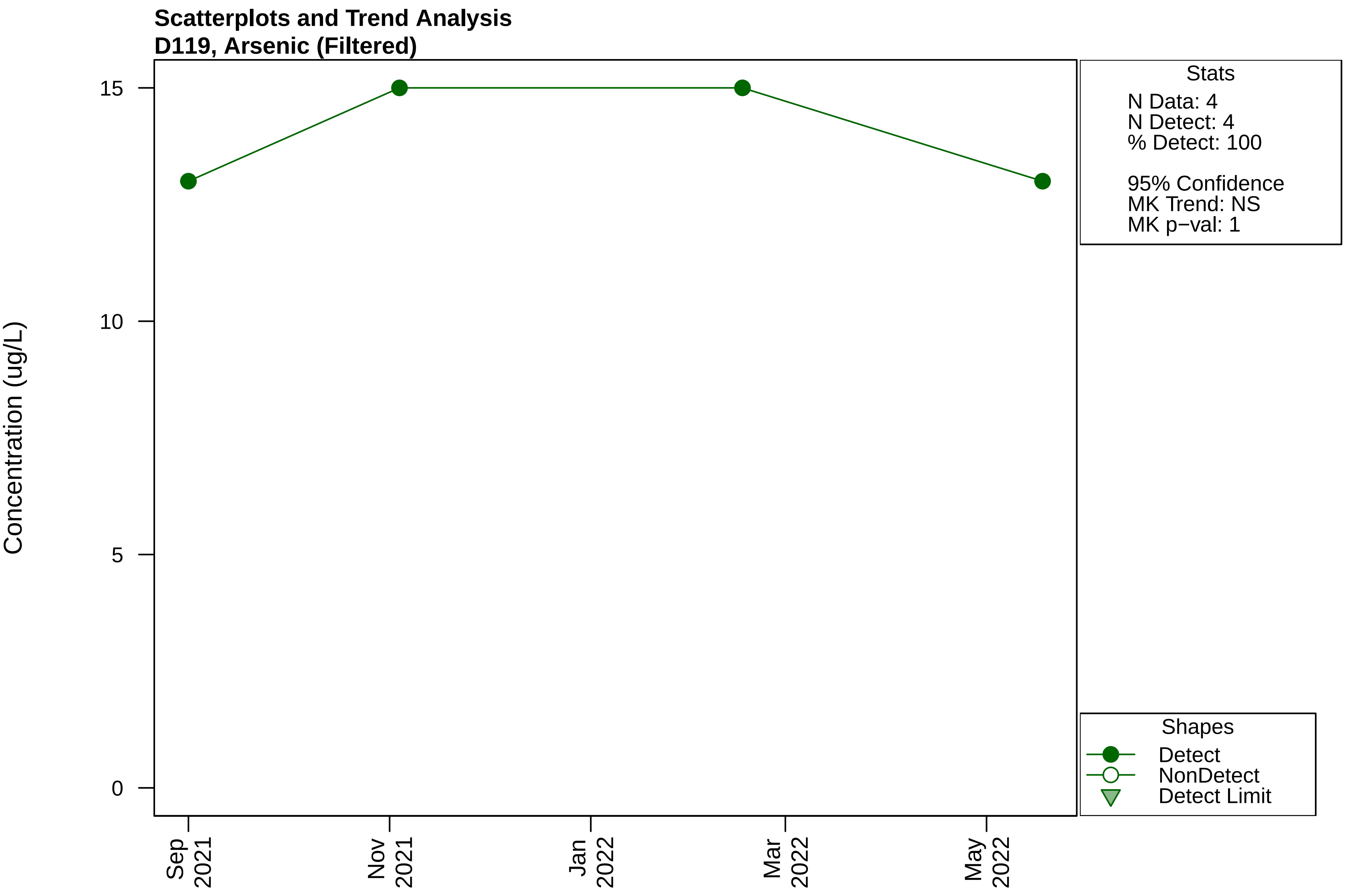
Scatterplots and Trend Analysis
D119, Aluminium (Filtered)
Concentration (ug/L)
20
15
10
5
0
May 2022
Stats
N Data: 1
N Detect: 1
% Detect: 100
MK criteria not met
Shapes
Detect
NonDetect
Detect Limit

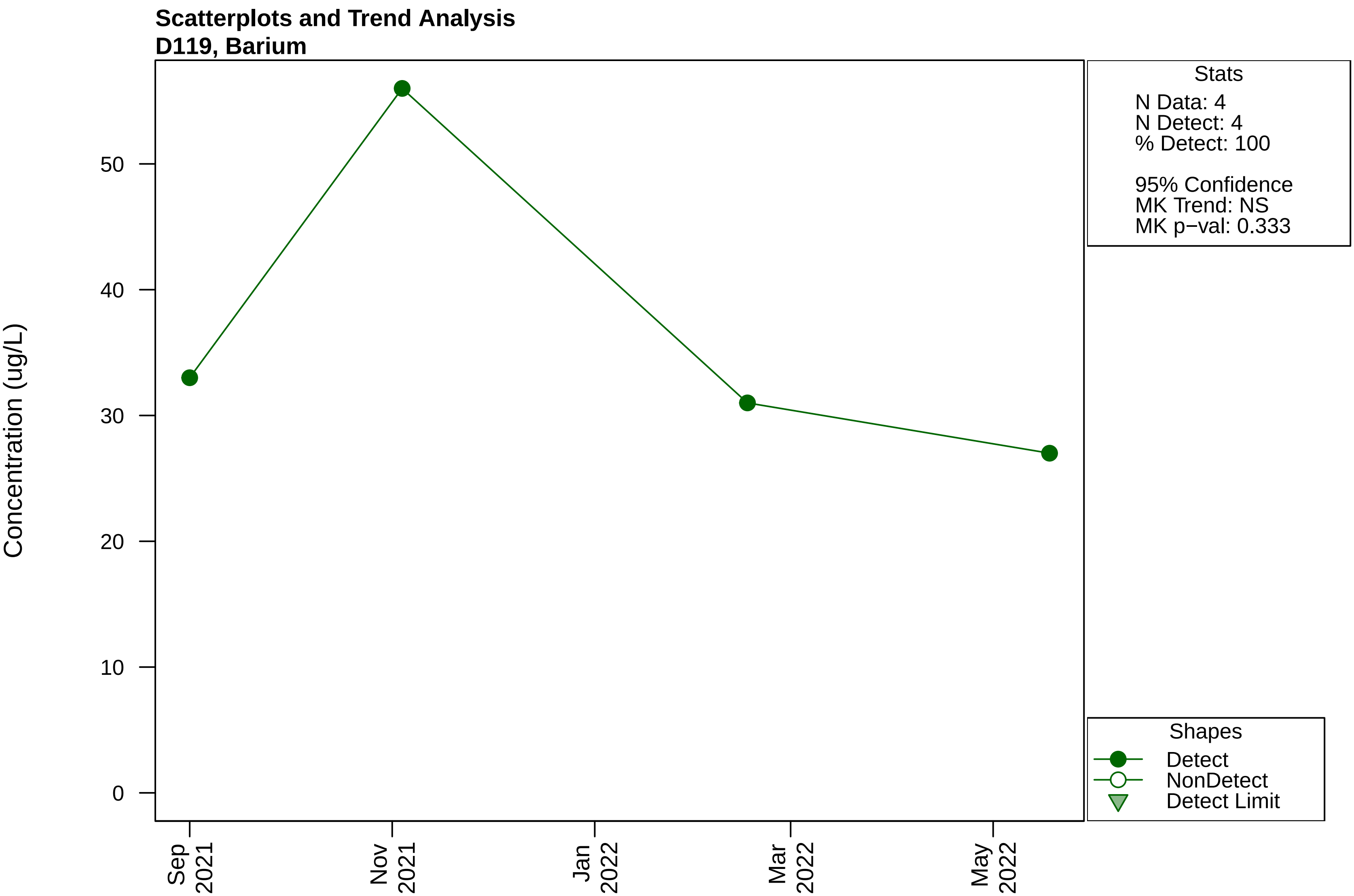
Scatterplots and Trend Analysis
D119, Ammonia



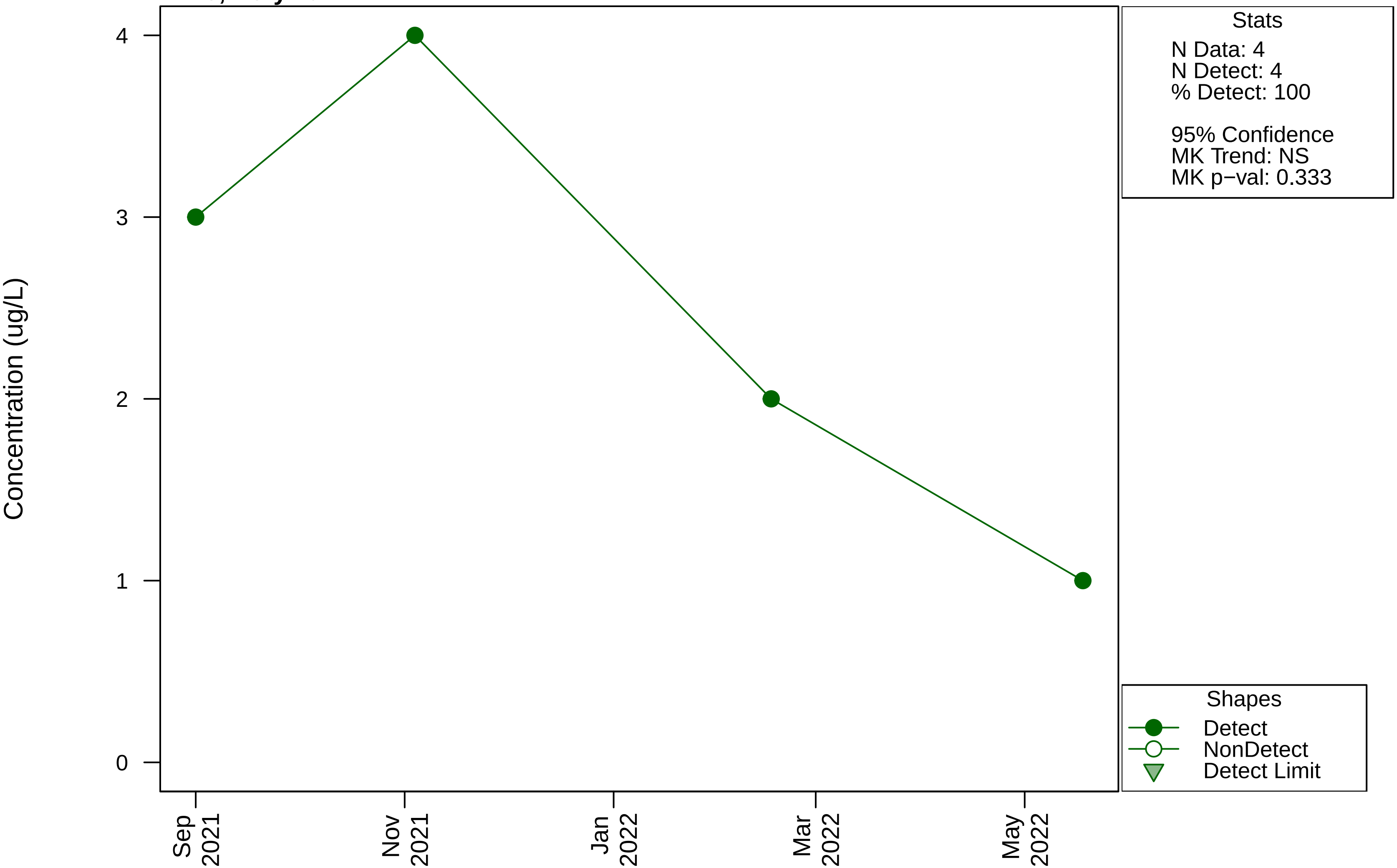
Scatterplots and Trend Analysis
D119, Arsenic

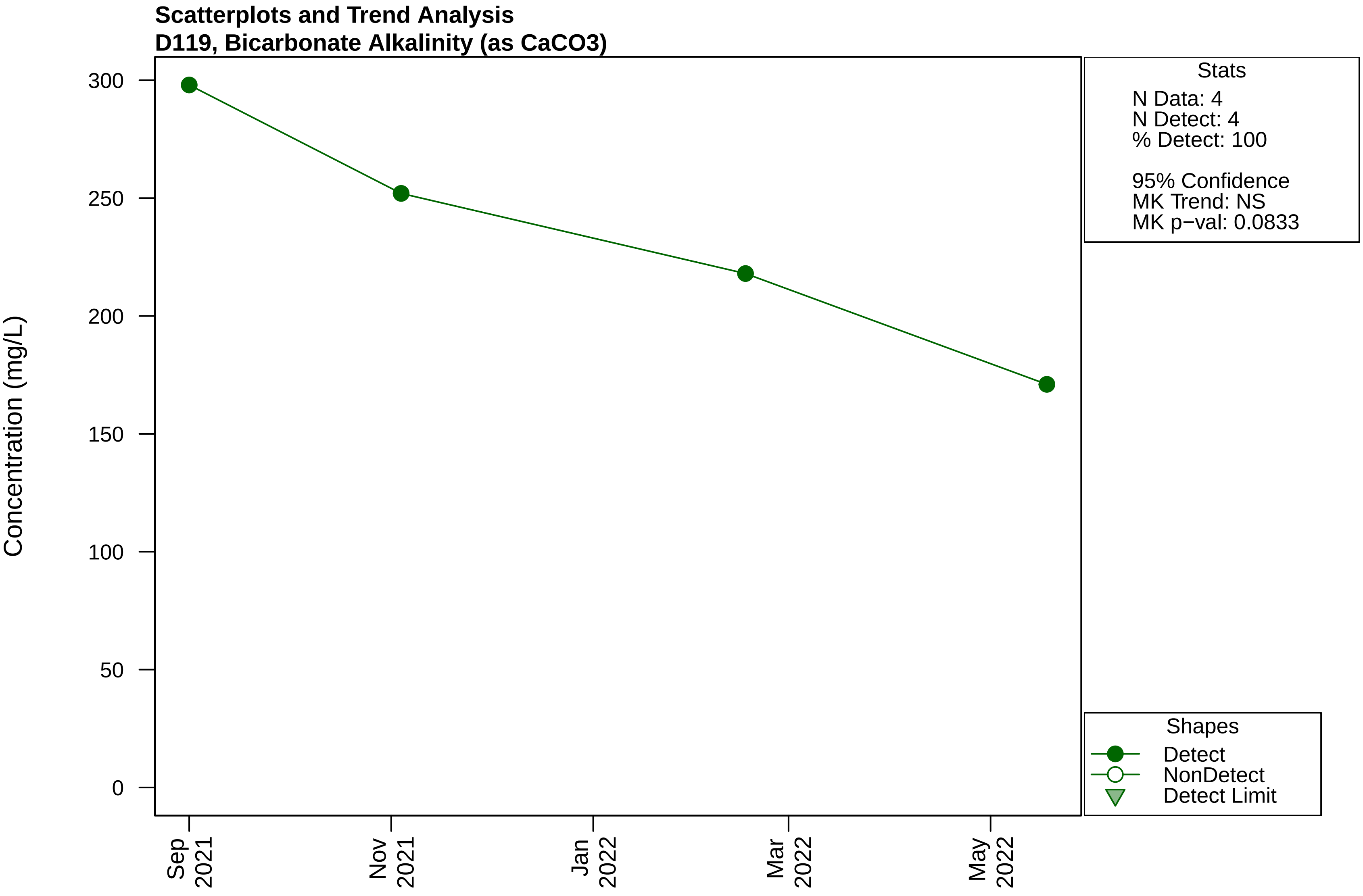



Scatterplots and Trend Analysis
D119, Arsenic (Filtered)
Concentration (ug/L)
15
10
5
0
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 4
N Detect: 4
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 1
Shapes
Detect
NonDetect
Detect Limit

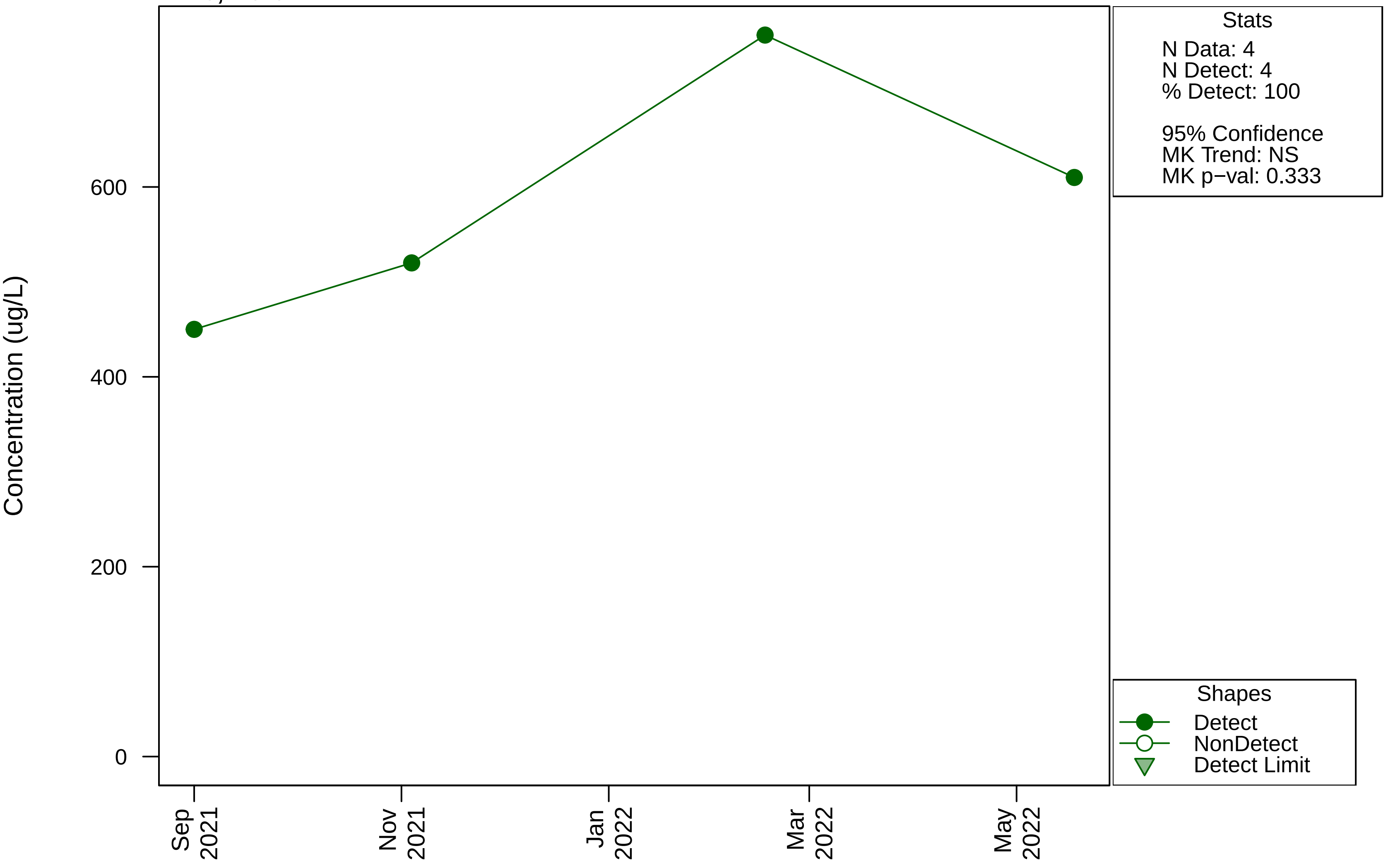

Scatterplots and Trend Analysis
D119, Barium
Concentration (ug/L)
0
10
20
30
40
50
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 4
N Detect: 4
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.333
Shapes
Detect
NonDetect
Detect Limit

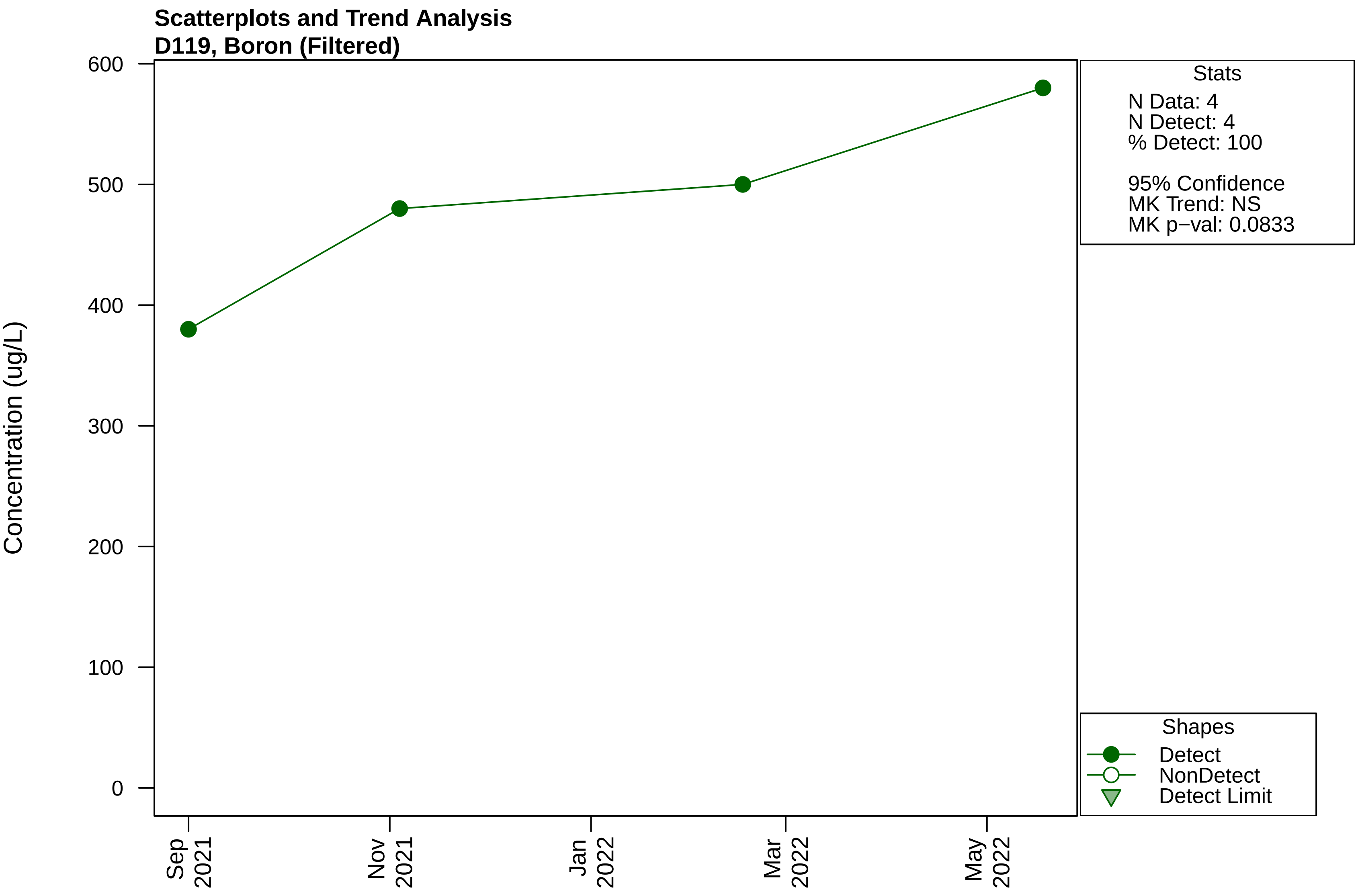
Scatterplots and Trend Analysis
D119, Beryllium



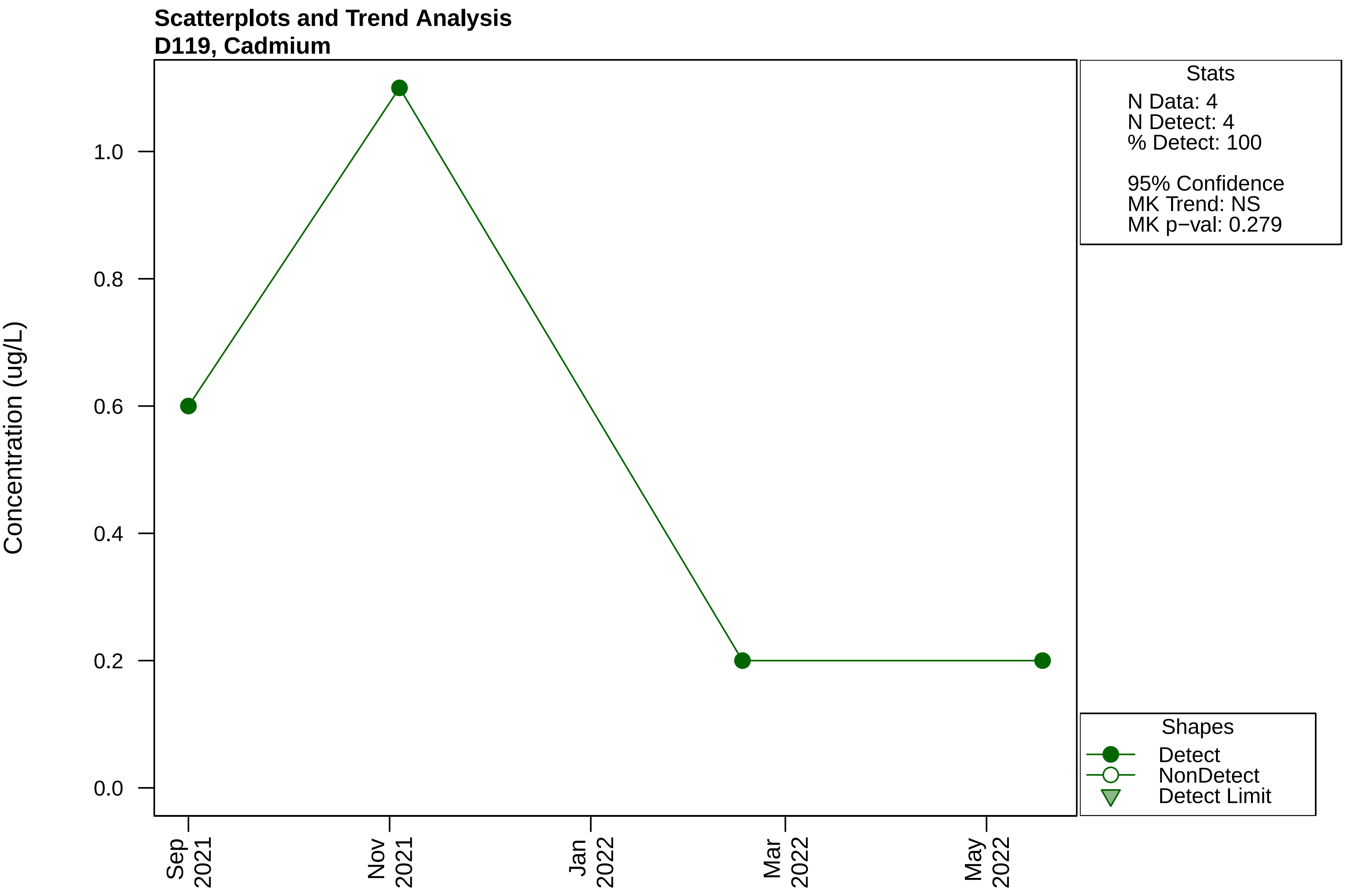

Scatterplots and Trend Analysis
D119, Bicarbonate Alkalinity (as CaCO3)
Concentration (mg/L)
300
250
200
150
100
50
0
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 4
N Detect: 4
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.0833
Shapes
Detect
NonDetect
Detect Limit

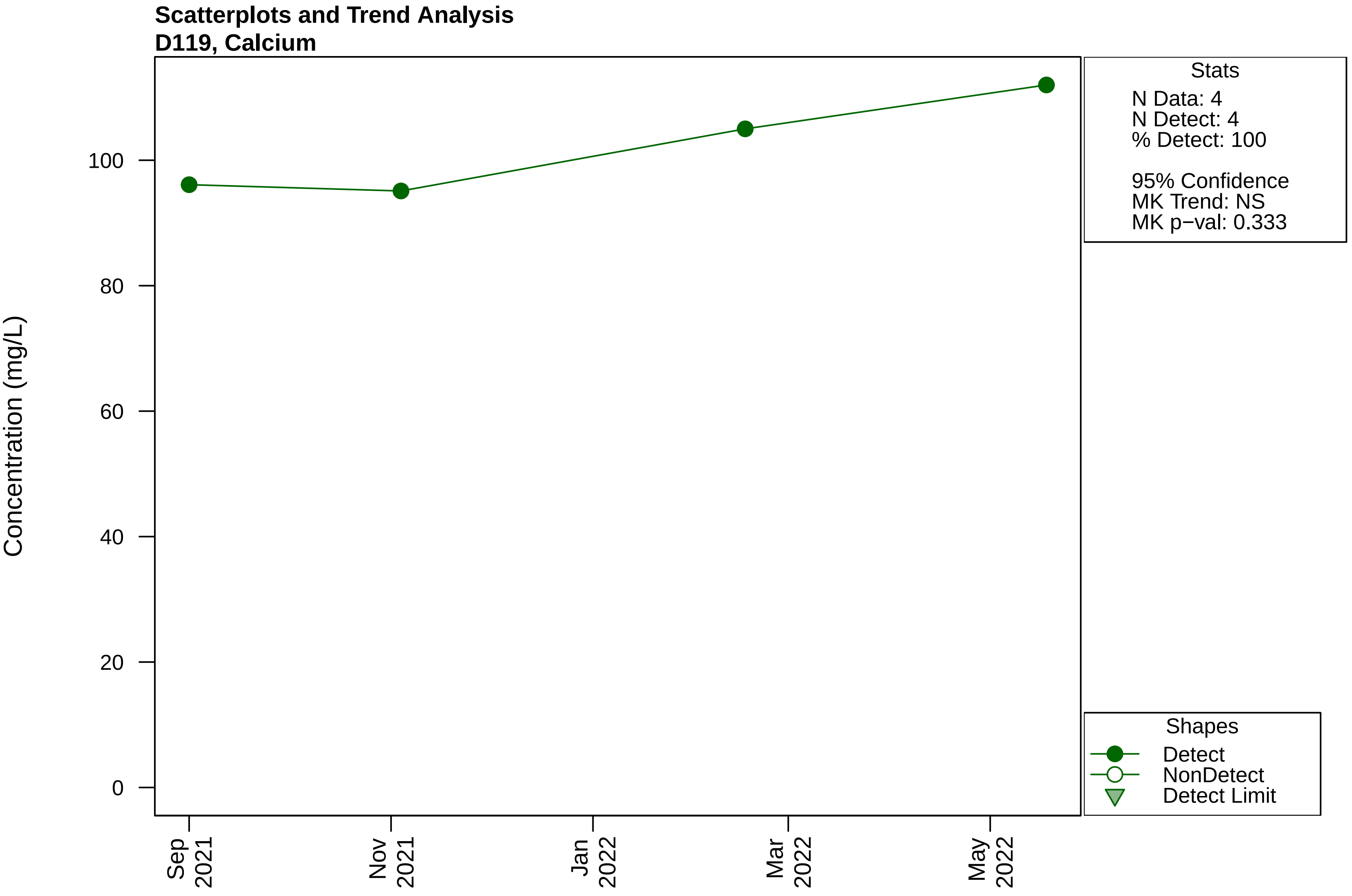
Scatterplots and Trend Analysis
D119, Boron

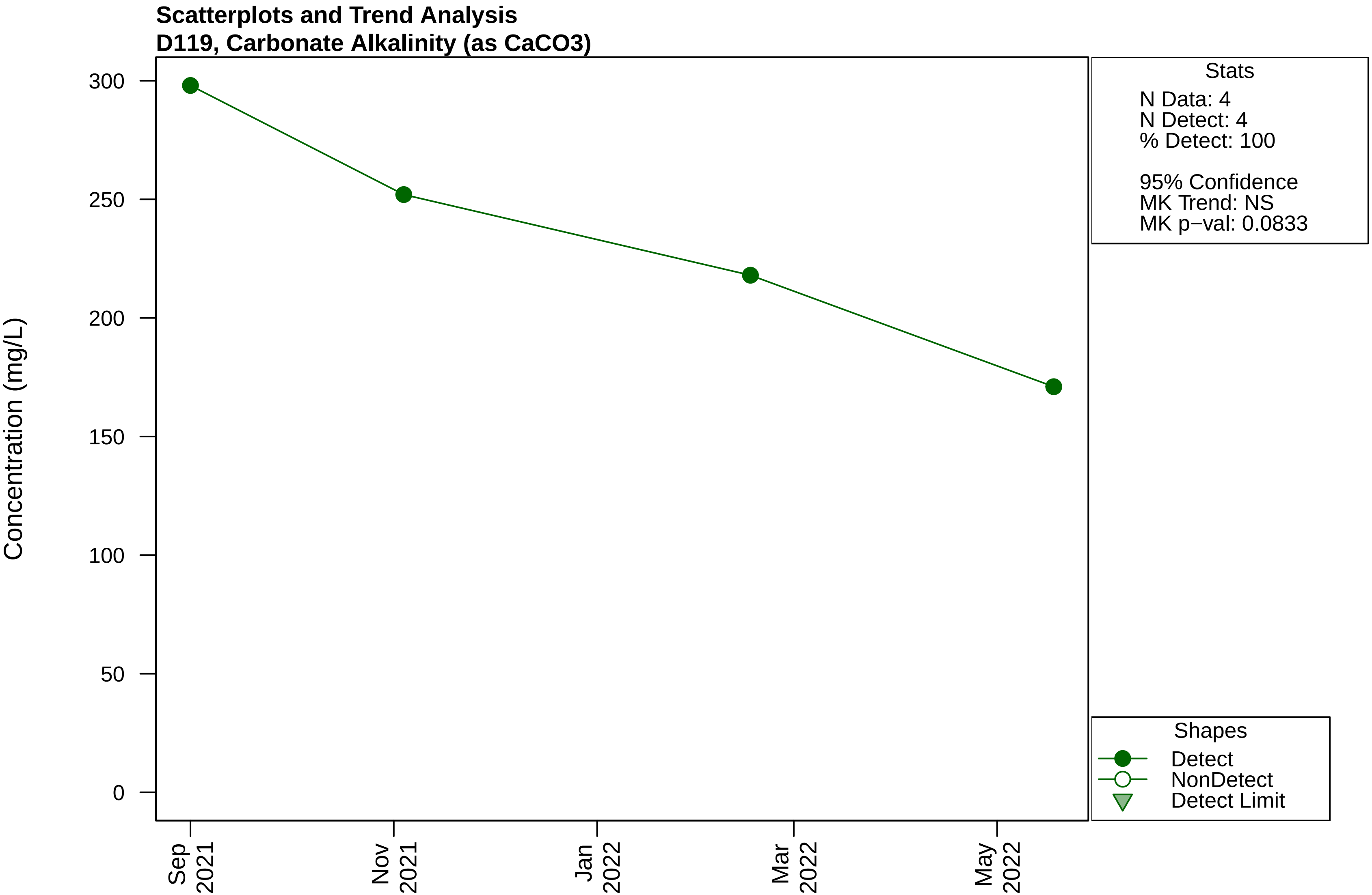




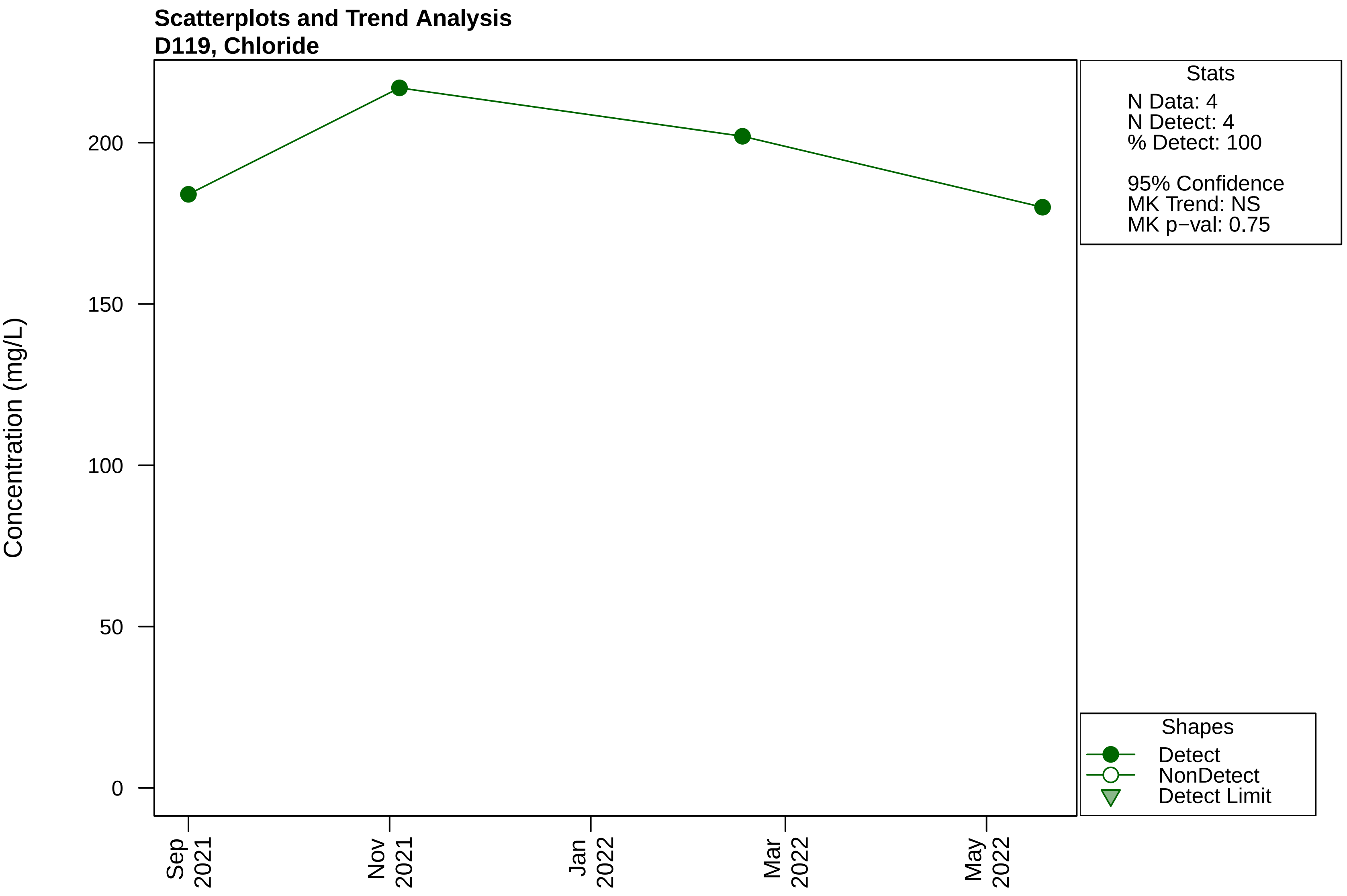
Scatterplots and Trend Analysis
D119, Boron (Filtered)
Concentration (ug/L)
0
100
200
300
400
500
600
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 4
N Detect: 4
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.0833
Shapes
Detect
NonDetect
Detect Limit


Scatterplots and Trend Analysis
D119, Cadmium
Concentration (ug/L)
0.0
0.2
0.4
0.6
0.8
1.0
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 4
N Detect: 4
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.279
Shapes
Detect
NonDetect
Detect Limit


Scatterplots and Trend Analysis
D119, Calcium
Concentration (mg/L)
0
20
40
60
80
100
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 4
N Detect: 4
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.333
Shapes
Detect
NonDetect
Detect Limit

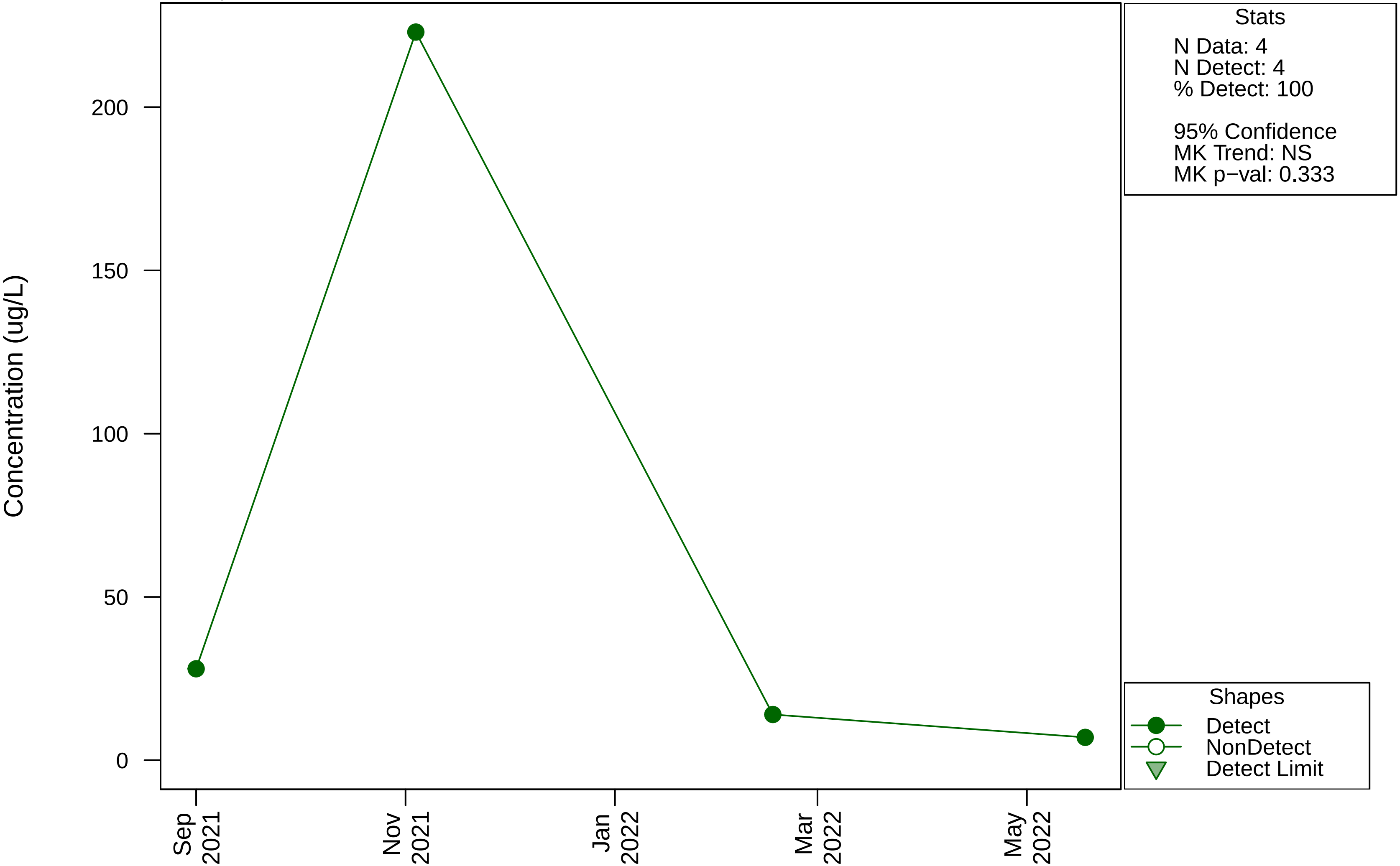


Scatterplots and Trend Analysis
D119, Carbonate Alkalinity (as CaCO3)
Concentration (mg/L)
300
250
200
150
100
50
0
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 4
N Detect: 4
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.0833
Shapes
Detect
NonDetect
Detect Limit

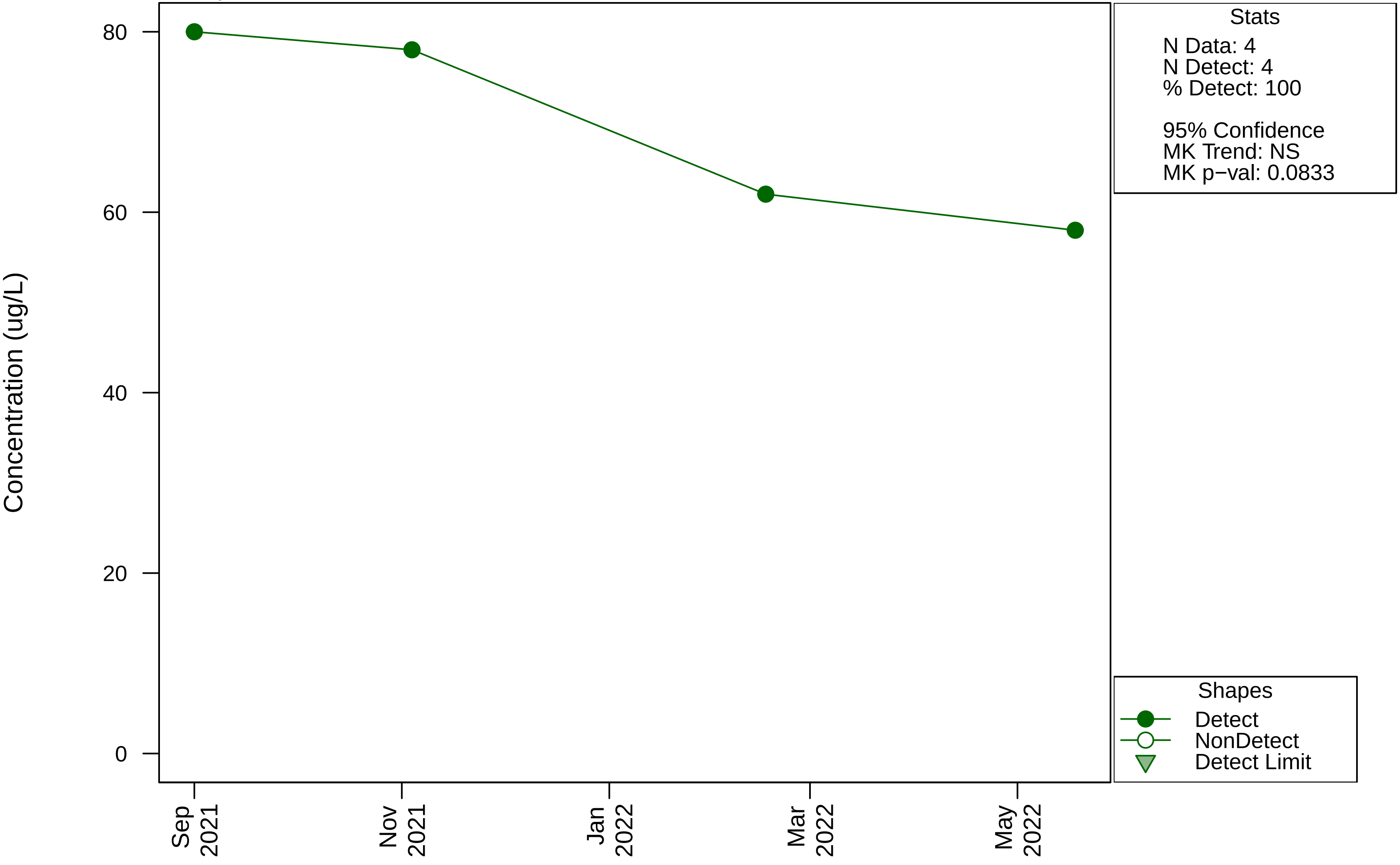


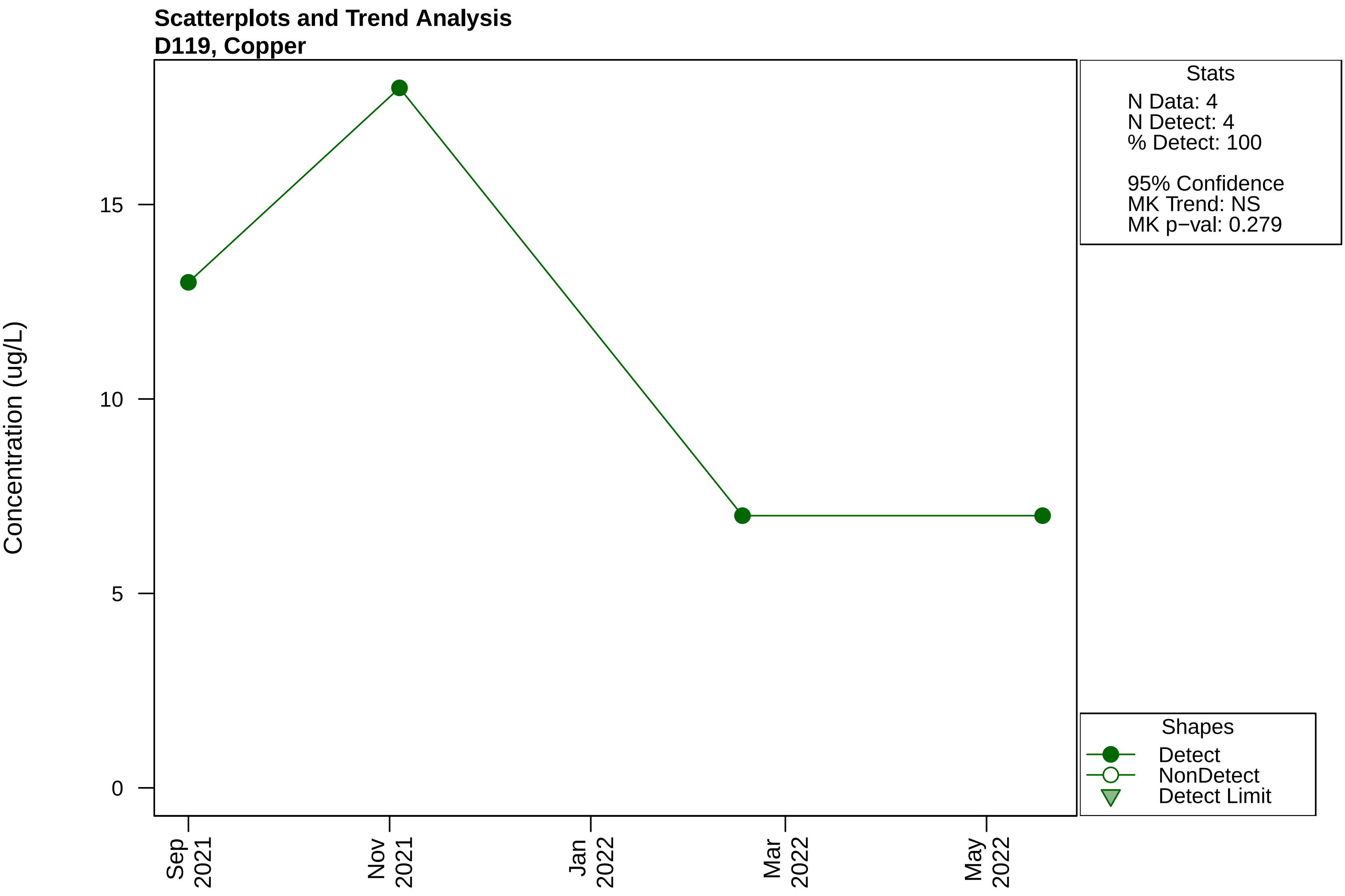
Scatterplots and Trend Analysis
D119, Chloride
Concentration (mg/L)
0
50
100
150
200
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 4
N Detect: 4
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.75
Shapes
Detect
NonDetect
Detect Limit

Scatterplots and Trend Analysis
D119, Chromium

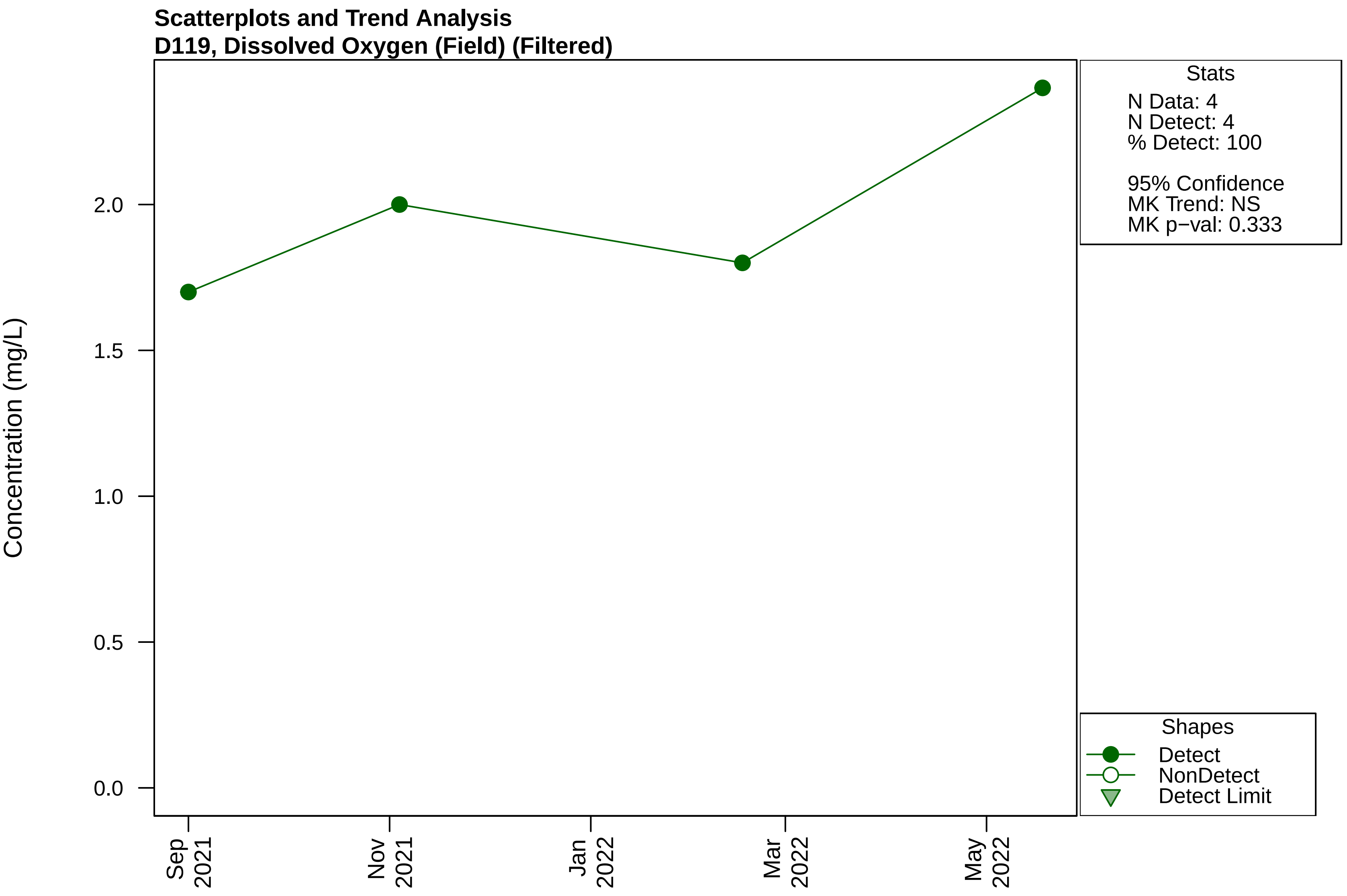


Scatterplots and Trend Analysis
D119, Cobalt



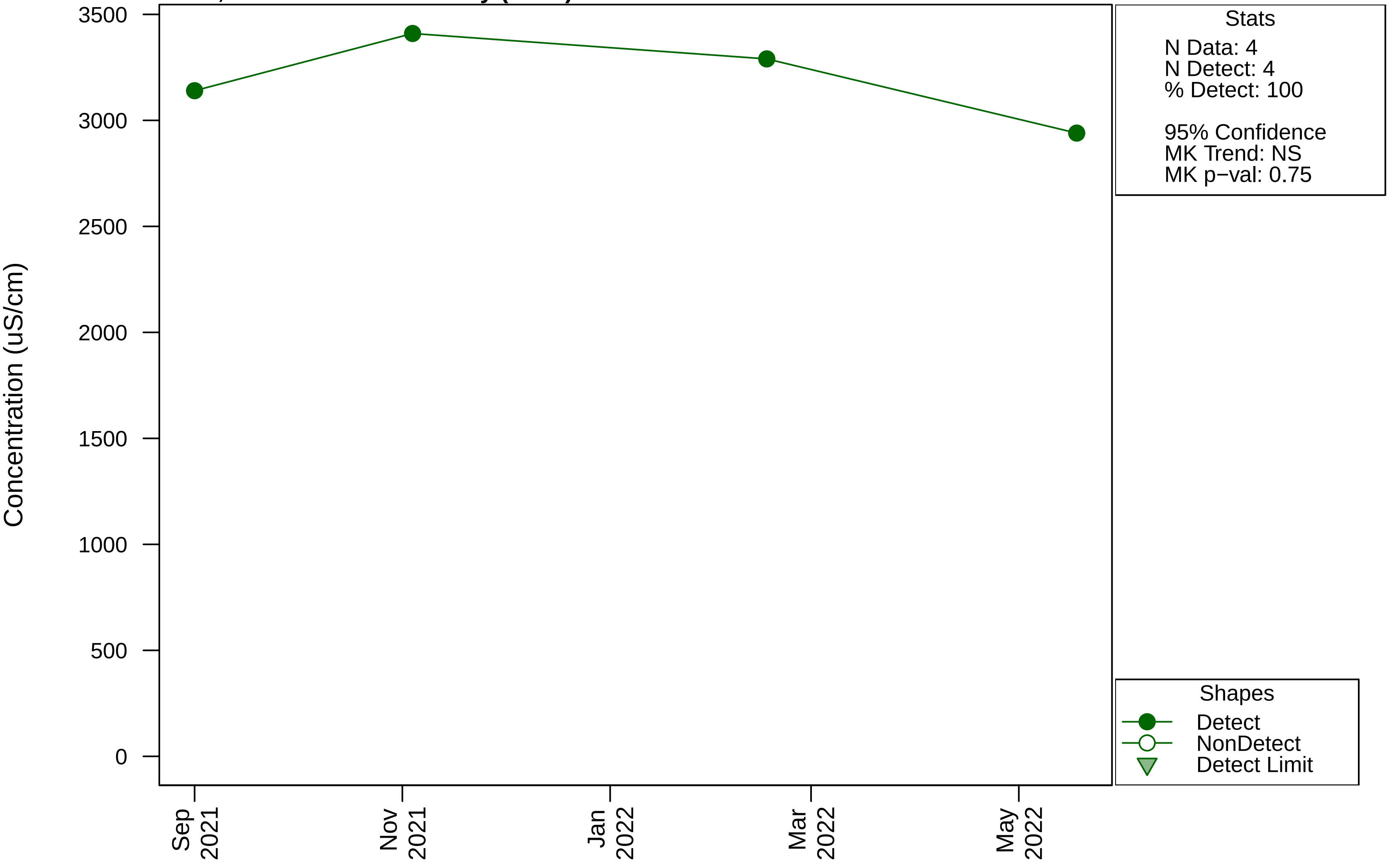


Scatterplots and Trend Analysis
D119, Copper
Concentration (ug/L)
0
5
10
15
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 4
N Detect: 4
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.279
Shapes
Detect
NonDetect
Detect Limit

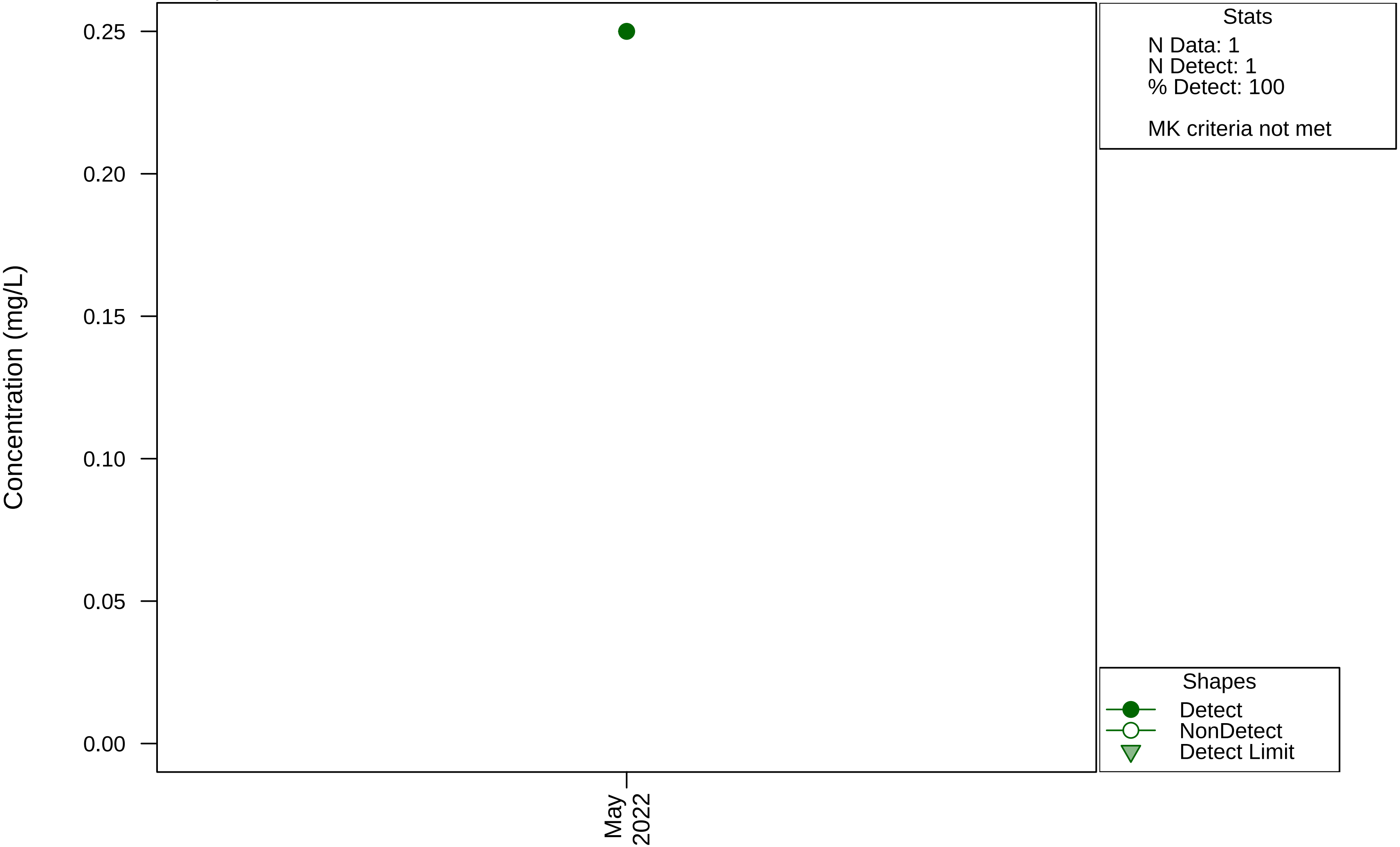


Scatterplots and Trend Analysis
D119, Dissolved Oxygen (Field) (Filtered)
Concentration (mg/L)
0.0
0.5
1.0
1.5
2.0
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 4
N Detect: 4
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.333
Shapes
Detect
NonDetect
Detect Limit

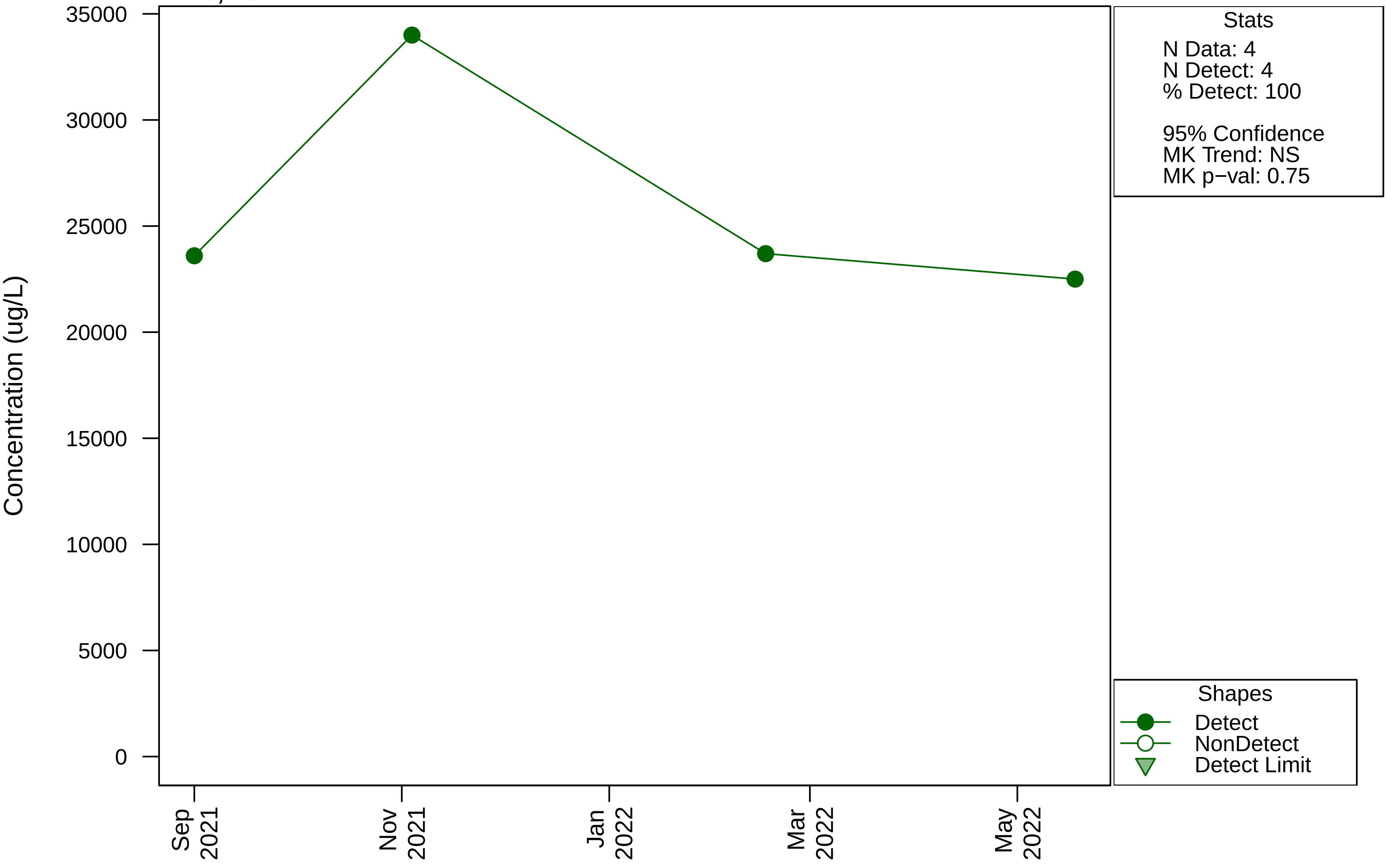
Scatterplots and Trend Analysis
D119, Electrical Conductivity (Field)

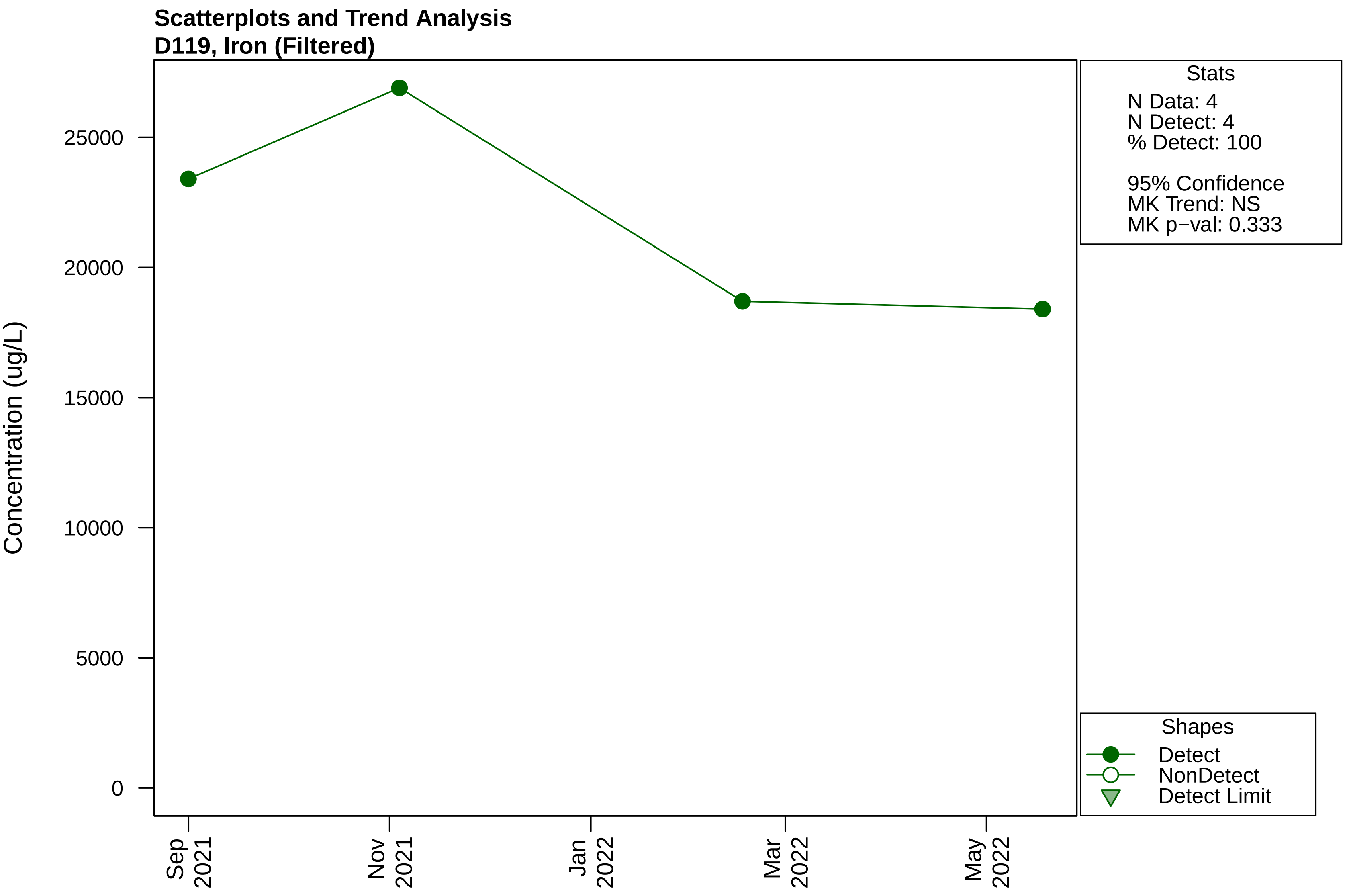


Scatterplots and Trend Analysis
D119, Fluoride



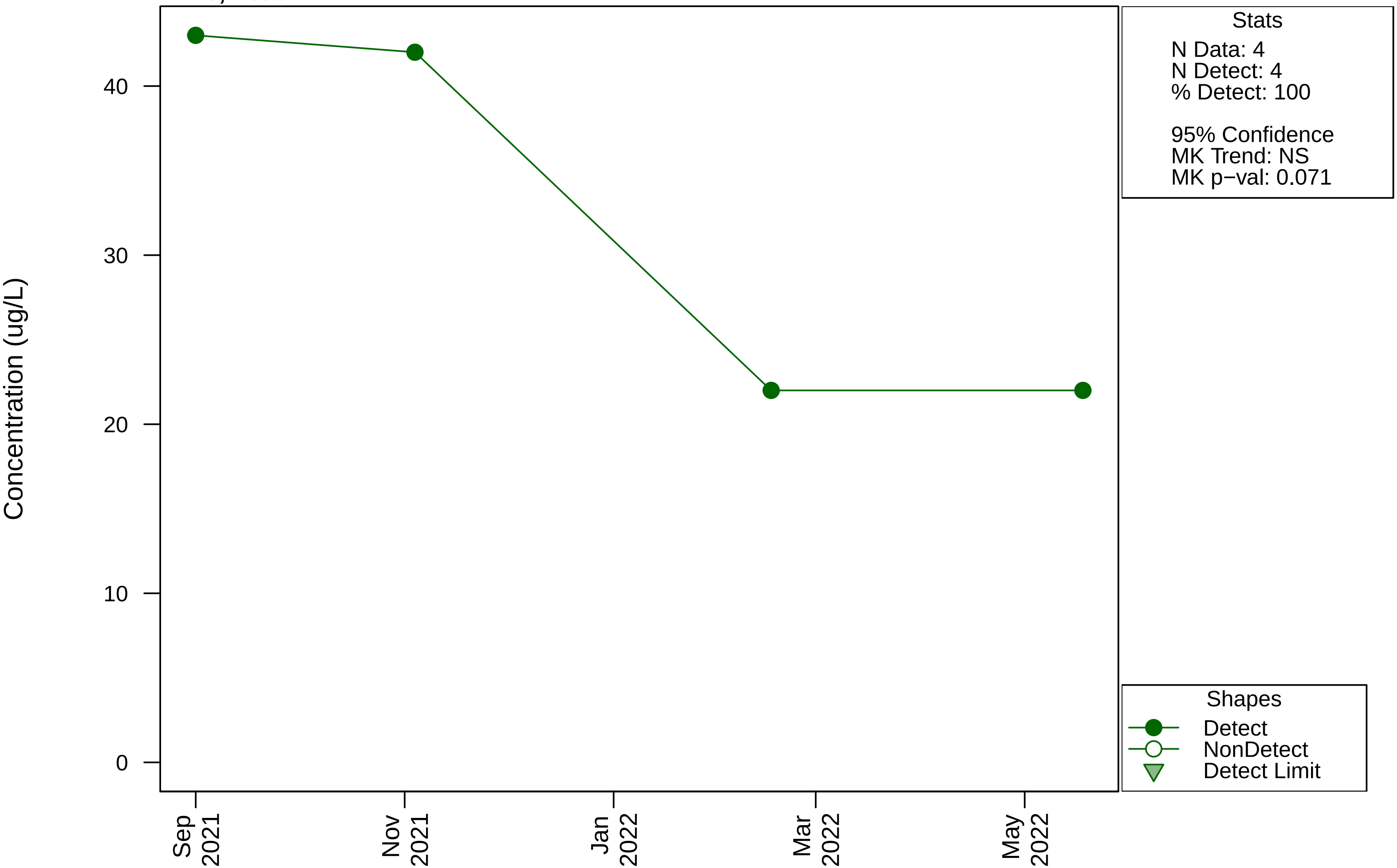
Scatterplots and Trend Analysis
D119, Iron



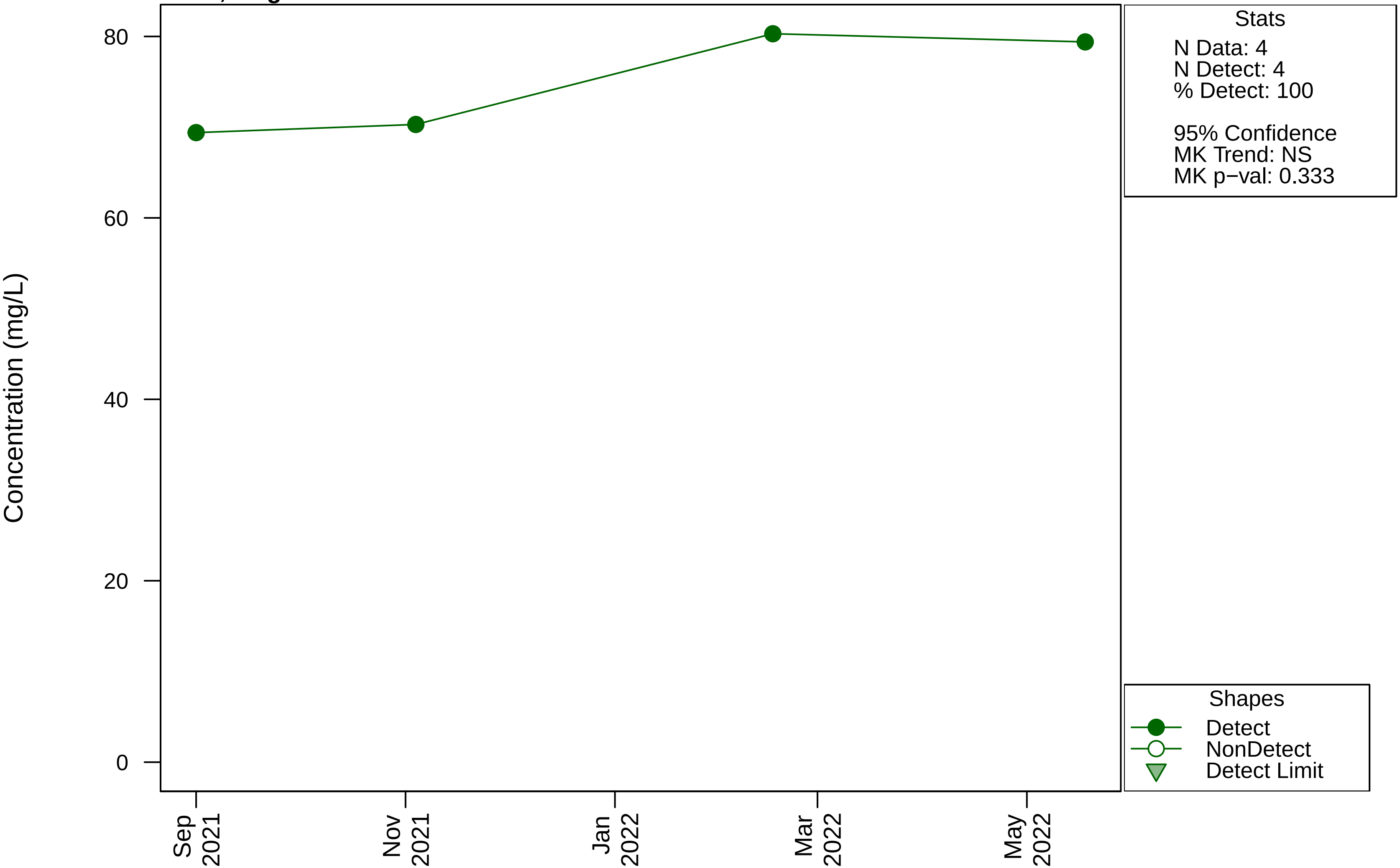


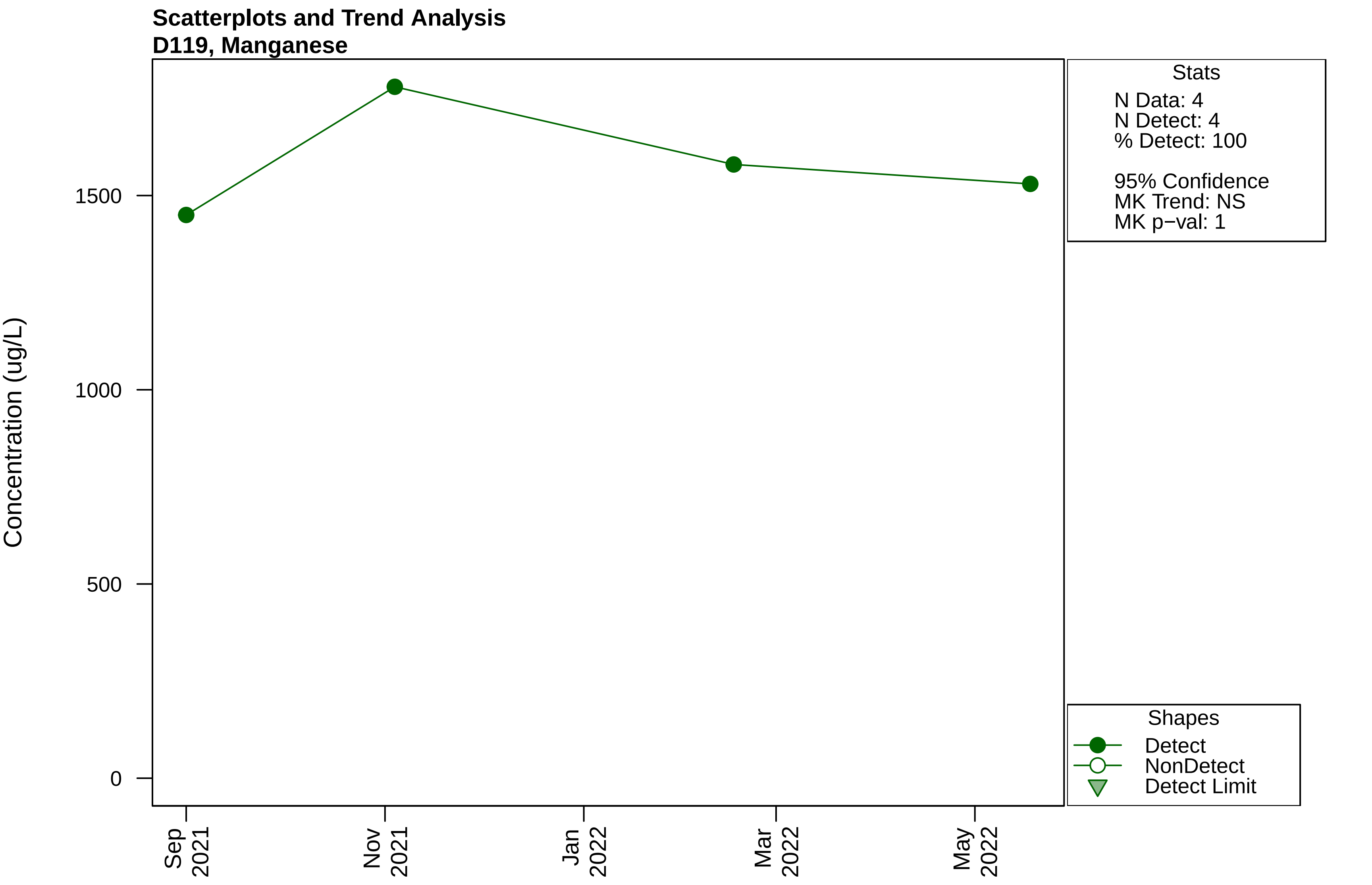
Scatterplots and Trend Analysis
D119, Iron (Filtered)
Concentration (ug/L)
0
5000
10000
15000
20000
25000
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 4
N Detect: 4
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.333
Shapes
Detect
NonDetect
Detect Limit

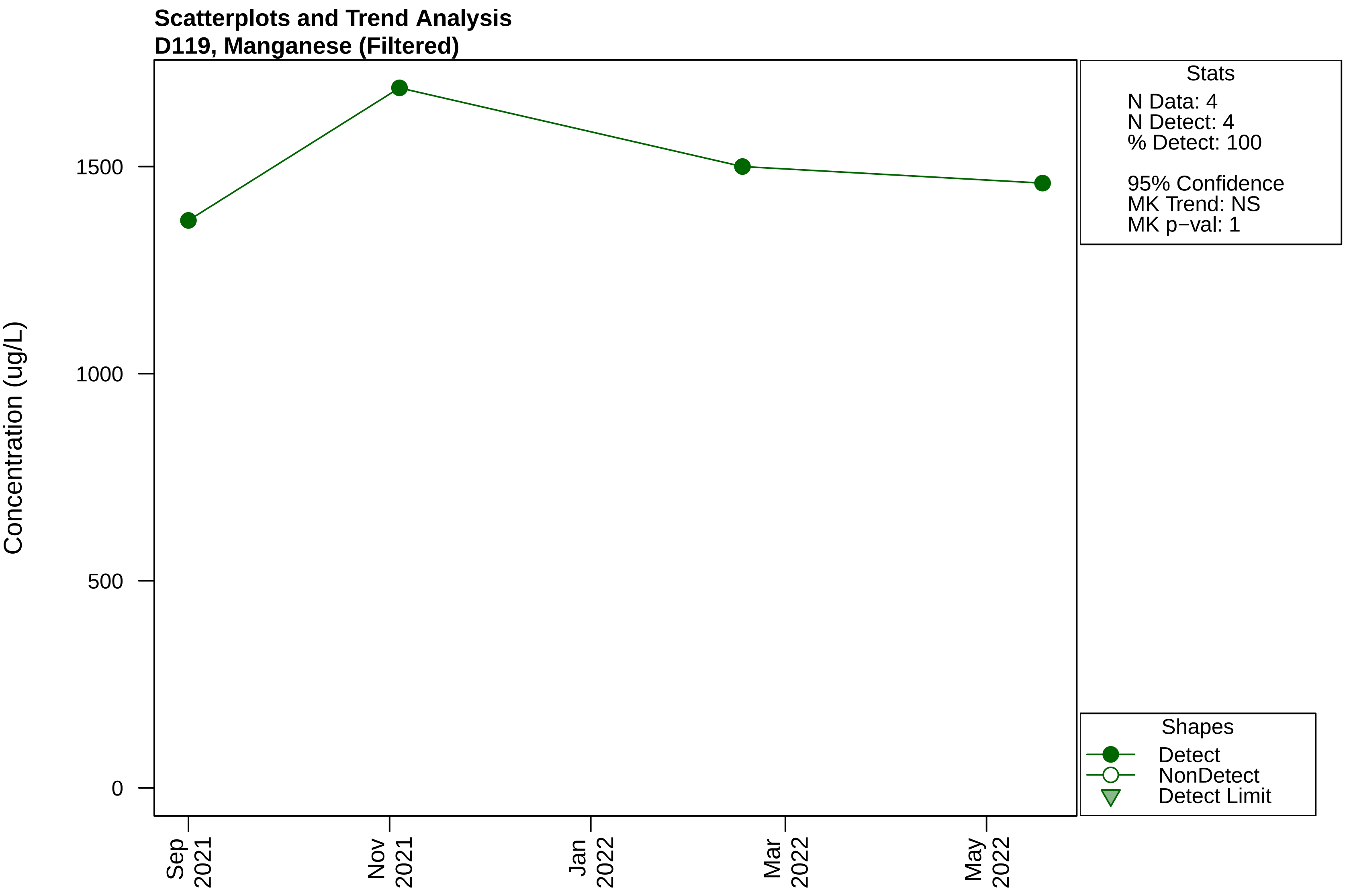
Scatterplots and Trend Analysis
D119, Lead

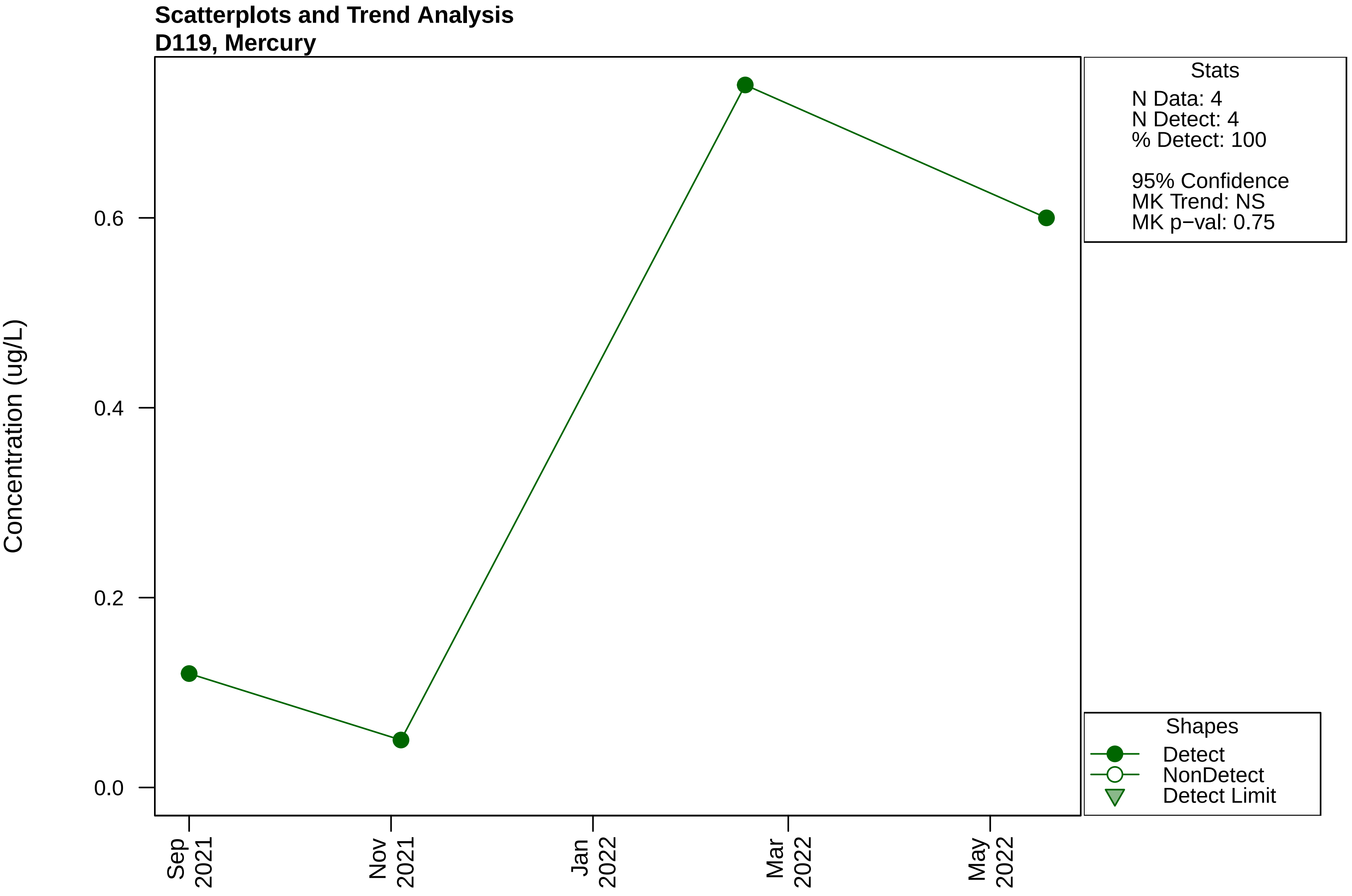


Scatterplots and Trend Analysis
D119, Magnesium

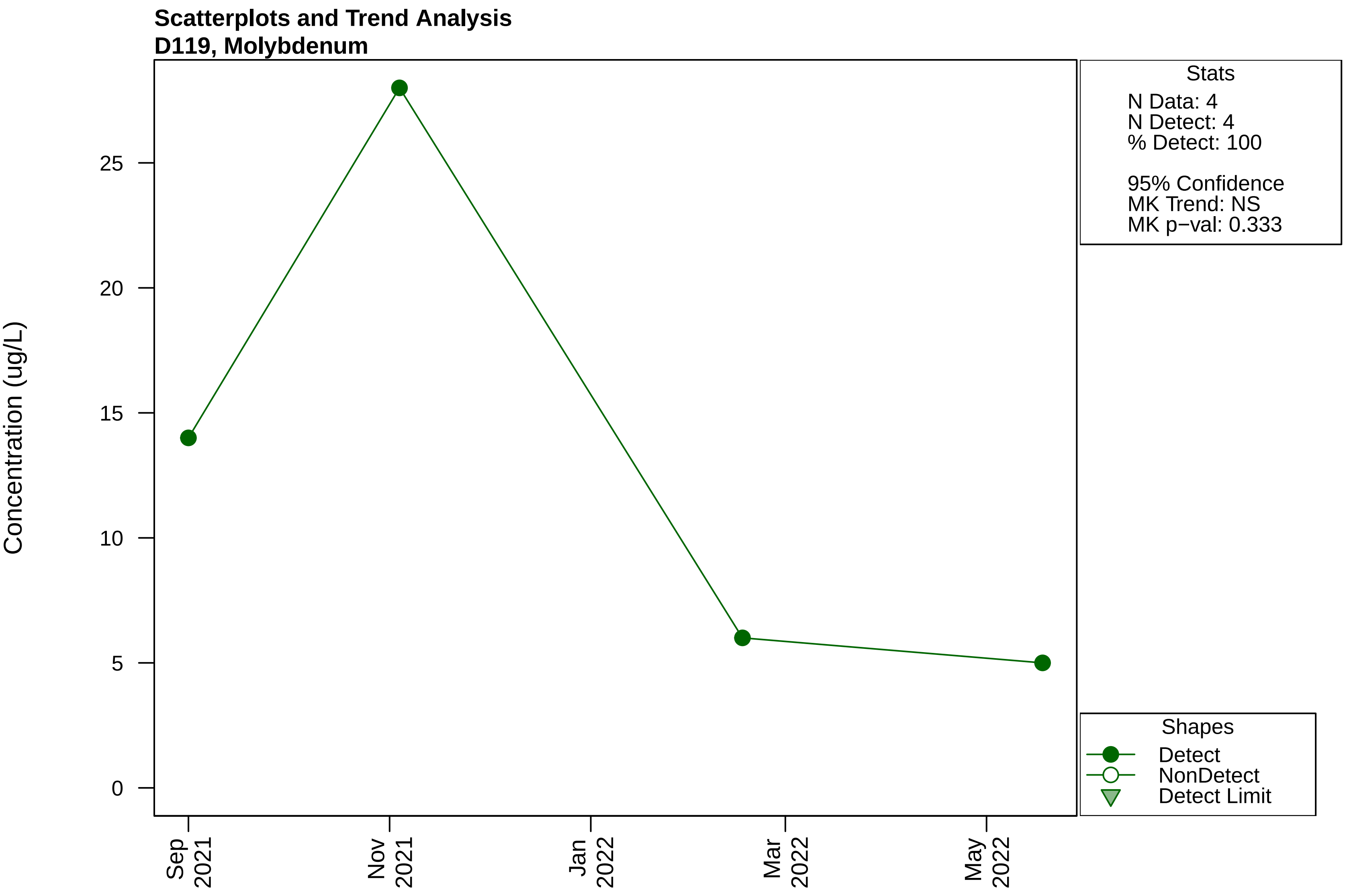



Scatterplots and Trend Analysis
D119, Manganese
Concentration (ug/L)
0
500
1000
1500
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 4
N Detect: 4
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 1
Shapes
Detect
NonDetect
Detect Limit

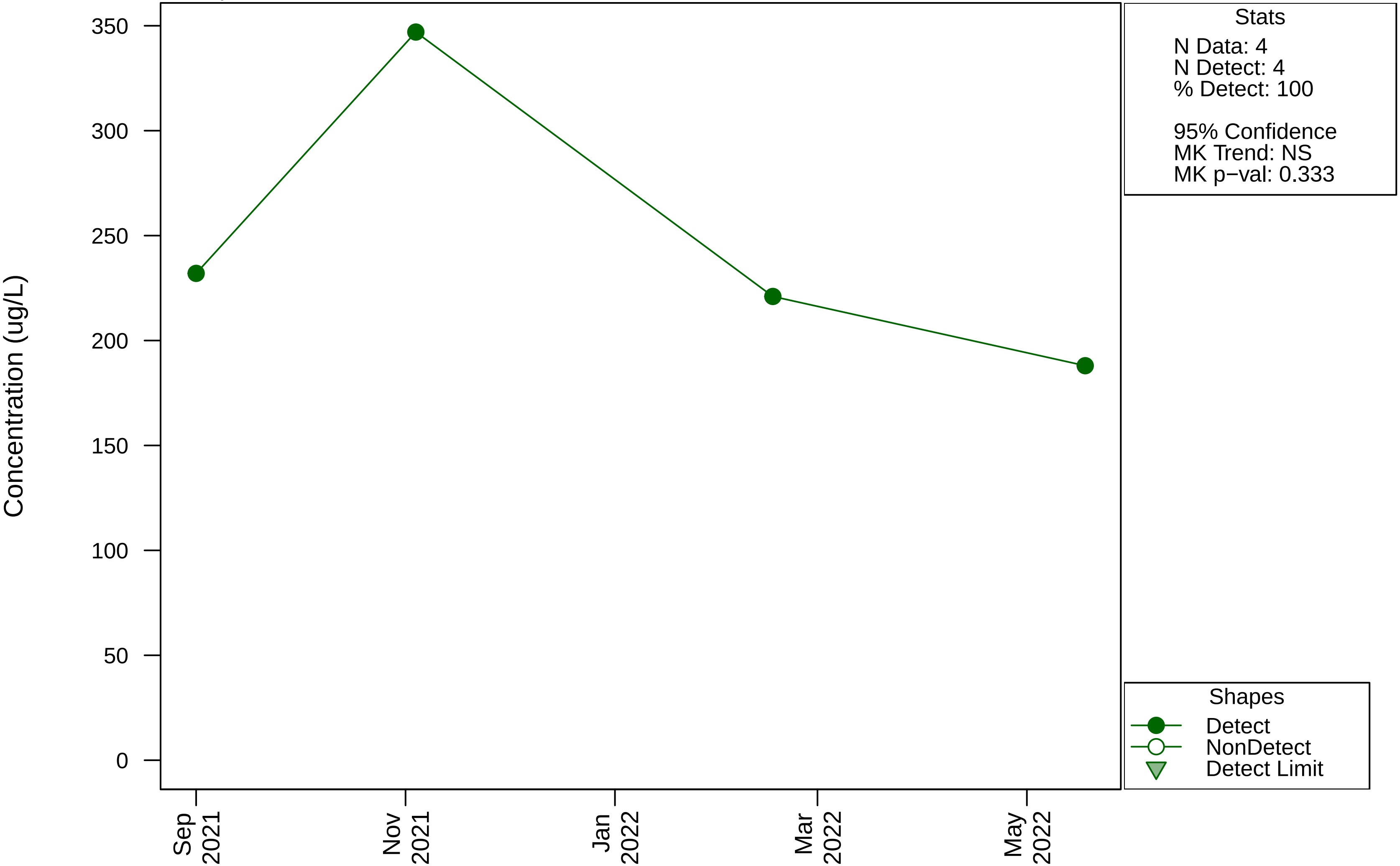

Scatterplots and Trend Analysis
D119, Manganese (Filtered)
Concentration (ug/L)
0
500
1000
1500
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 4
N Detect: 4
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 1
Shapes
Detect
NonDetect
Detect Limit

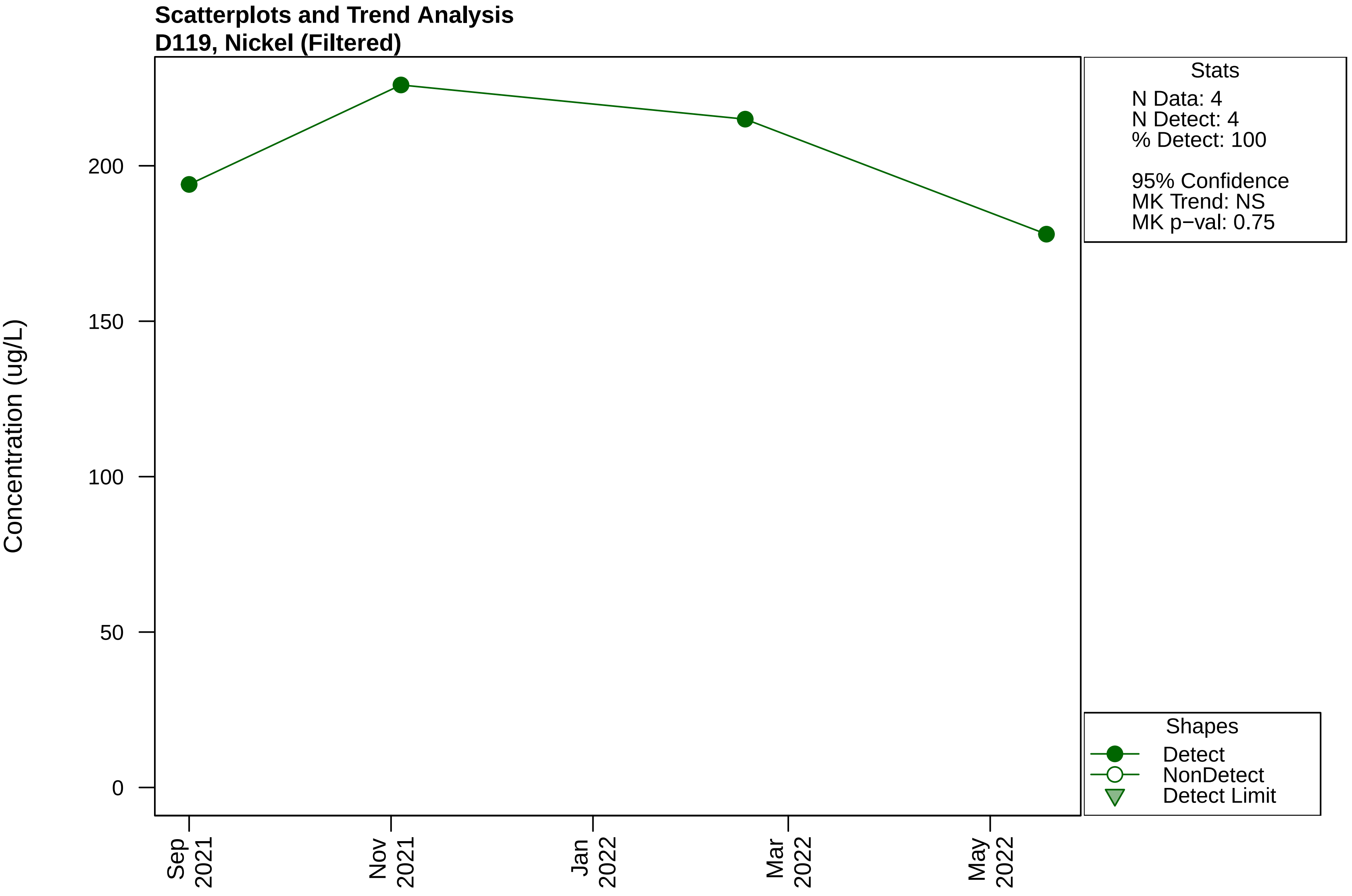


Scatterplots and Trend Analysis
D119, Mercury
Concentration (ug/L)
0.0
0.2
0.4
0.6
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 4
N Detect: 4
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.75
Shapes
Detect
NonDetect
Detect Limit

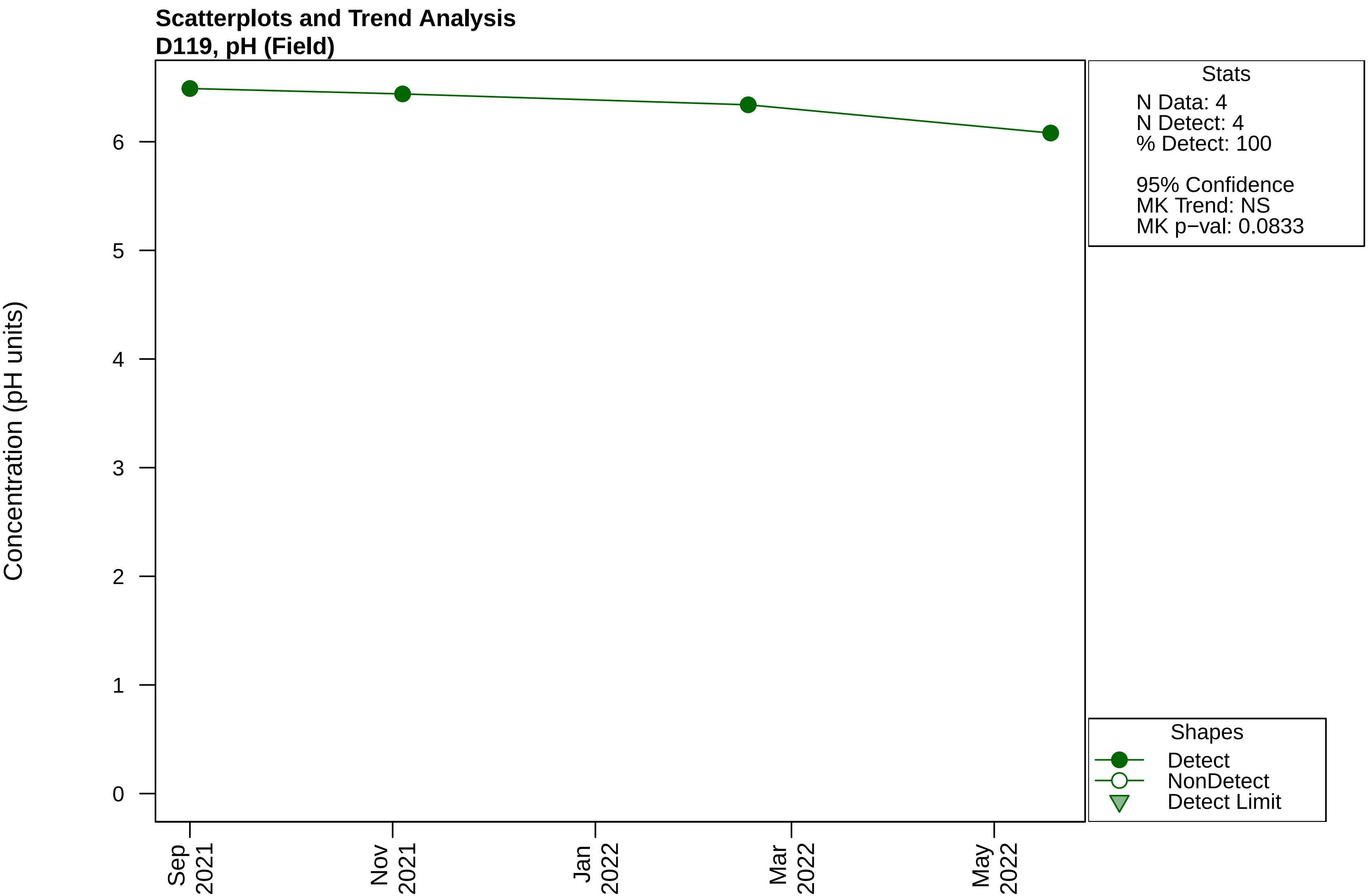

Scatterplots and Trend Analysis
D119, Molybdenum
Concentration (ug/L)
0
5
10
15
20
25
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 4
N Detect: 4
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.333
Shapes
Detect
NonDetect
Detect Limit

Scatterplots and Trend Analysis
D119, Nickel

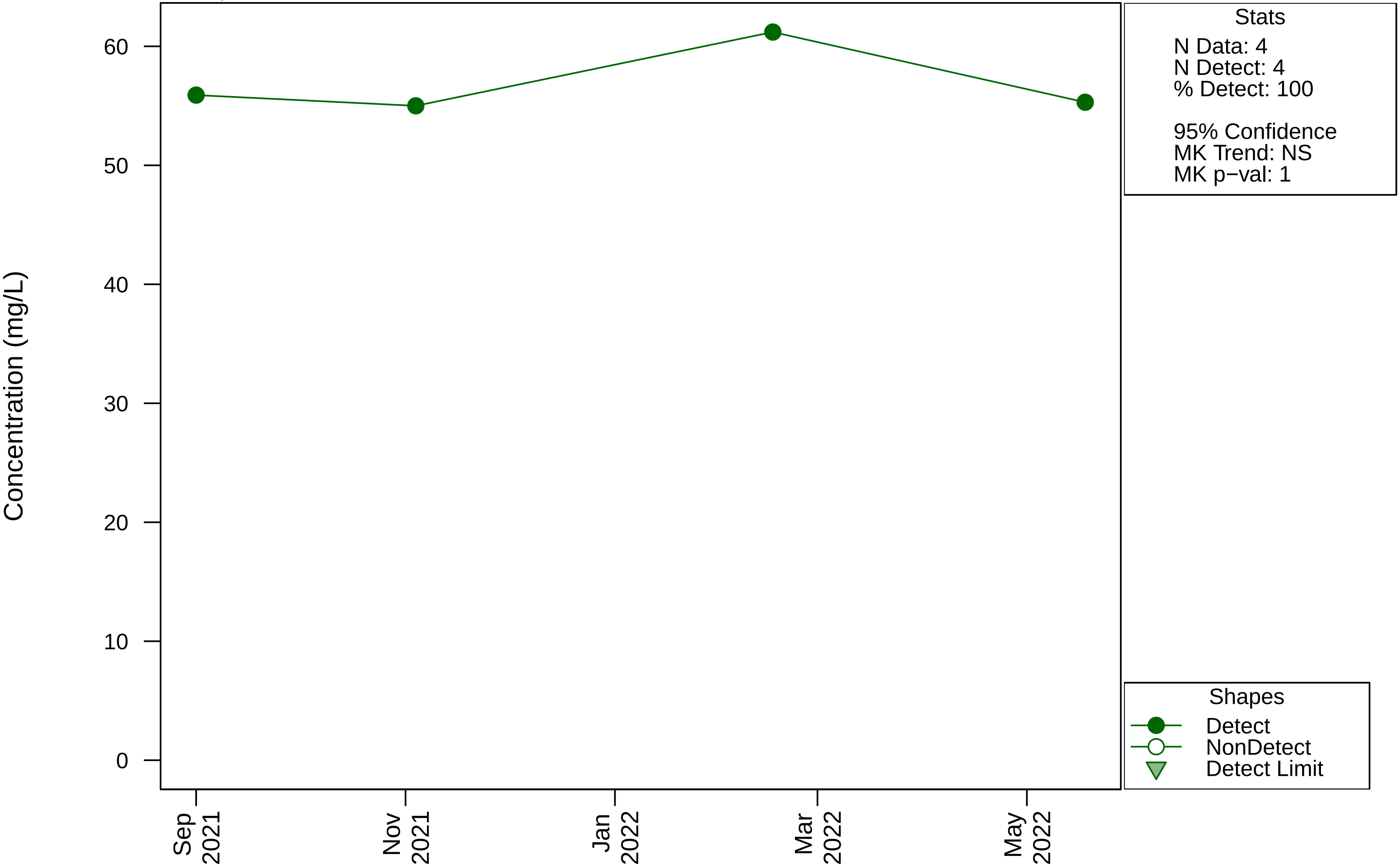




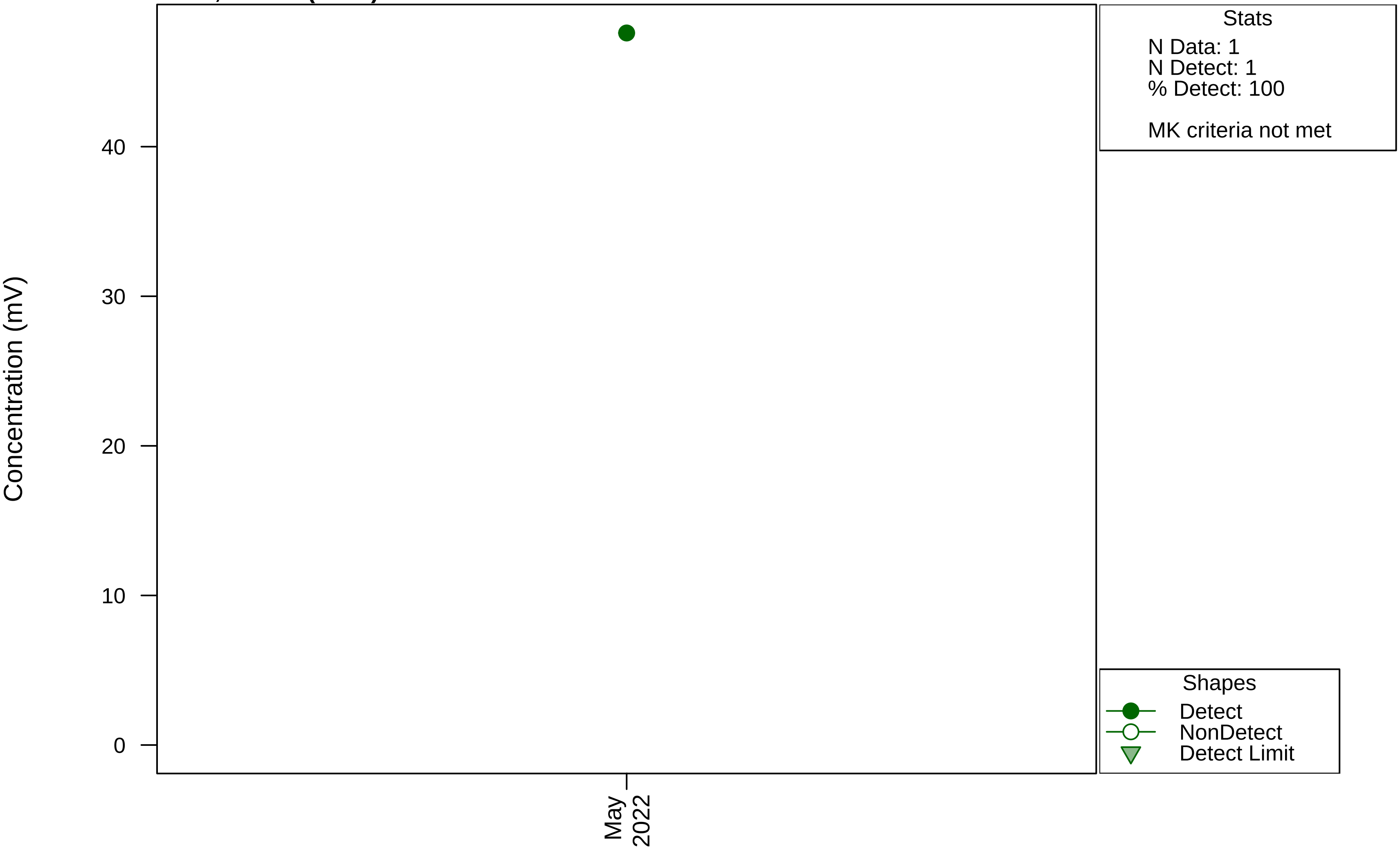
Scatterplots and Trend Analysis
D119, Nickel (Filtered)
Concentration (ug/L)
0
50
100
150
200
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 4
N Detect: 4
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.75
Shapes
Detect
NonDetect
Detect Limit

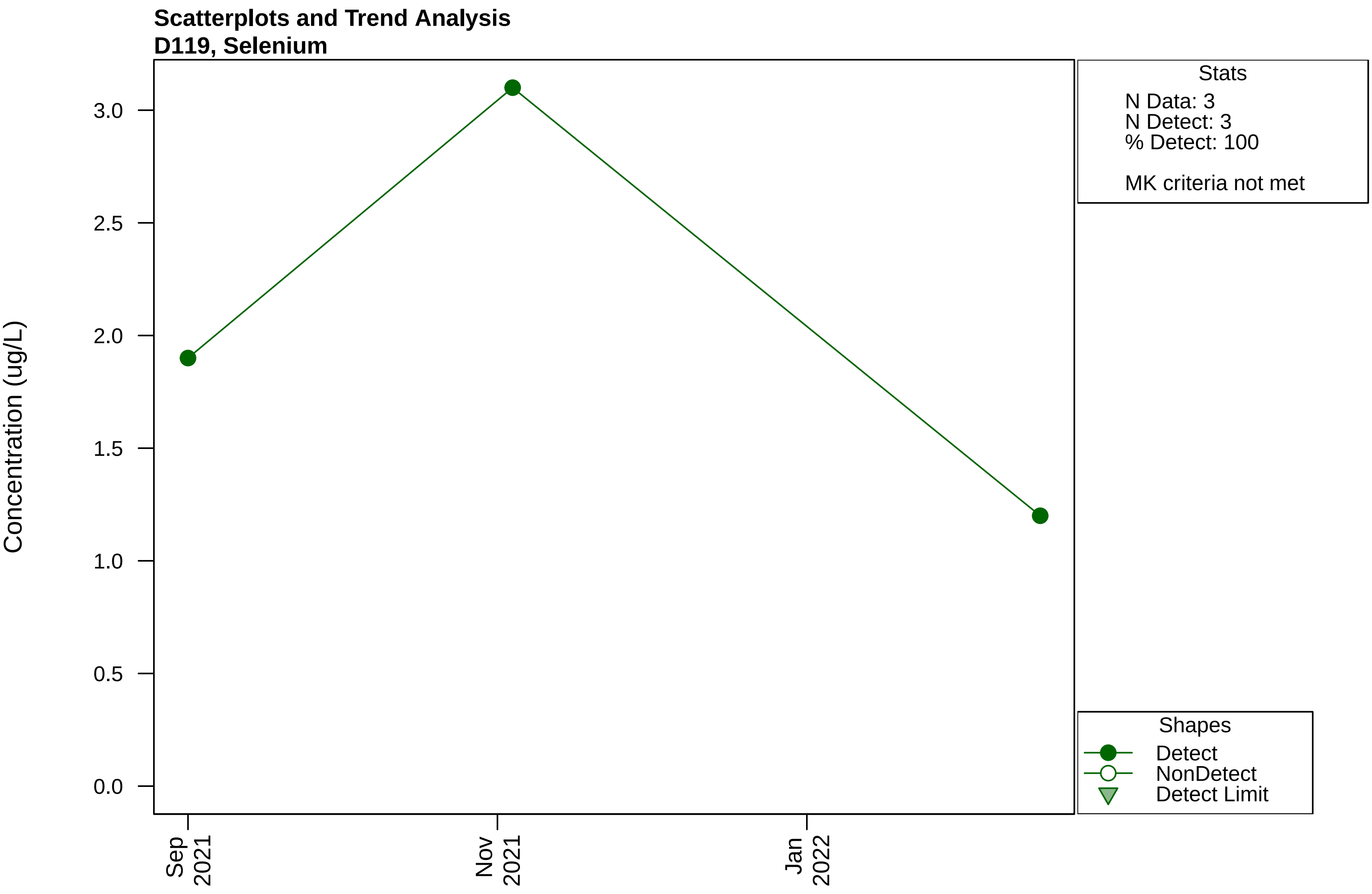

Scatterplots and Trend Analysis
D119, pH (Field)
Concentration (pH units)
0
1
2
3
4
5
6
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 4
N Detect: 4
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.0833
Shapes
Detect
NonDetect
Detect Limit

Scatterplots and Trend Analysis
D119, Potassium



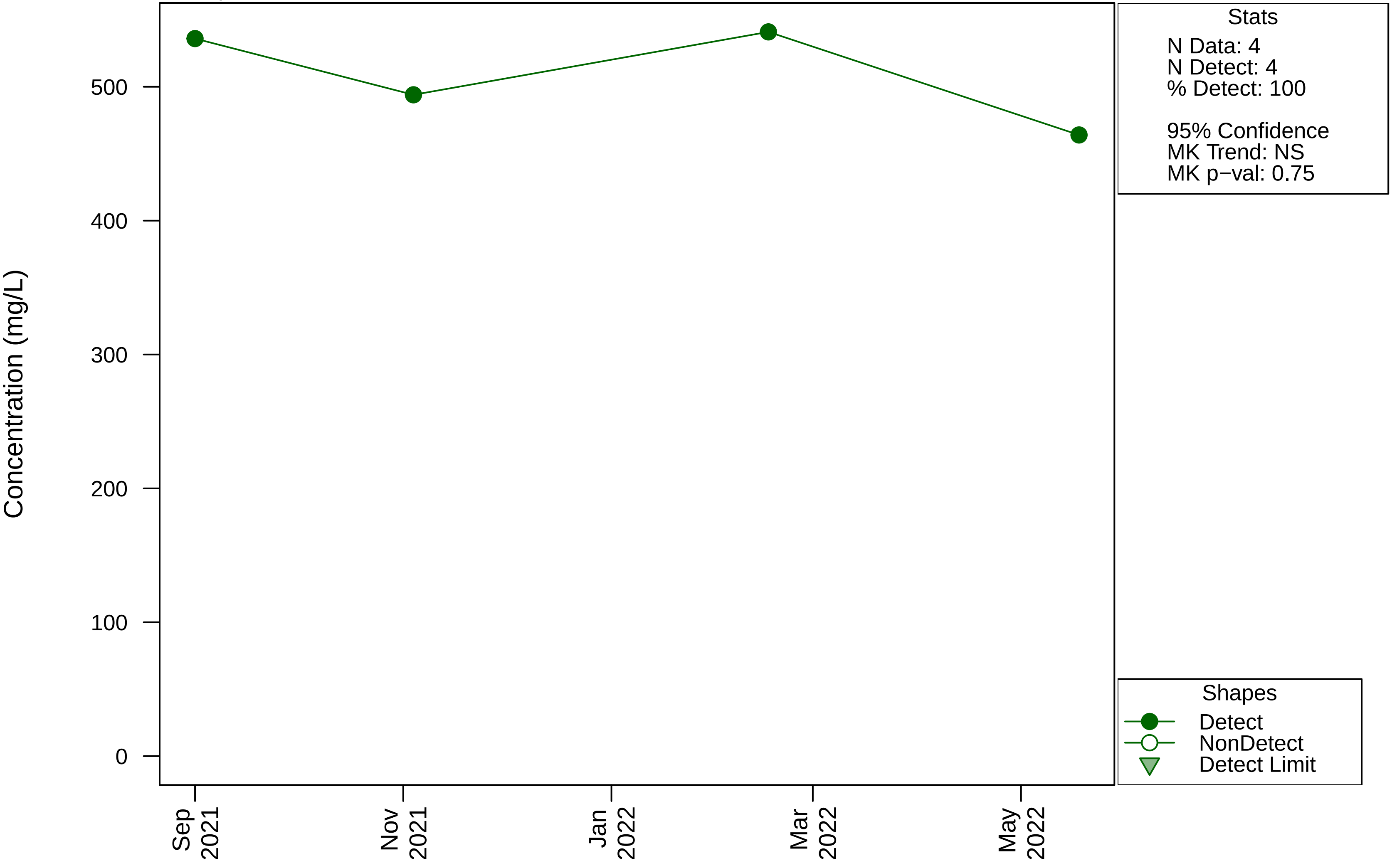
Scatterplots and Trend Analysis
D119, Redox (Field)

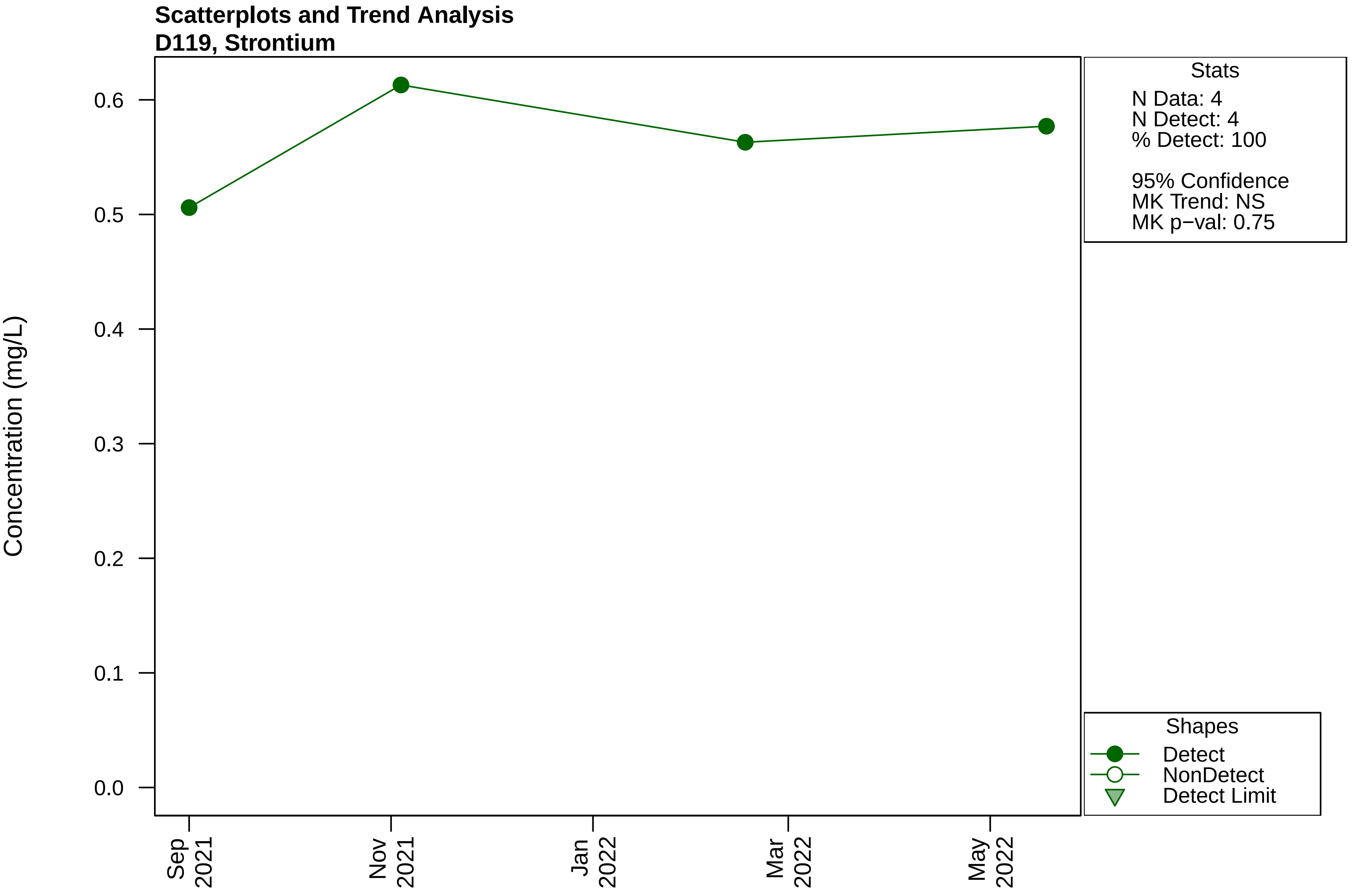




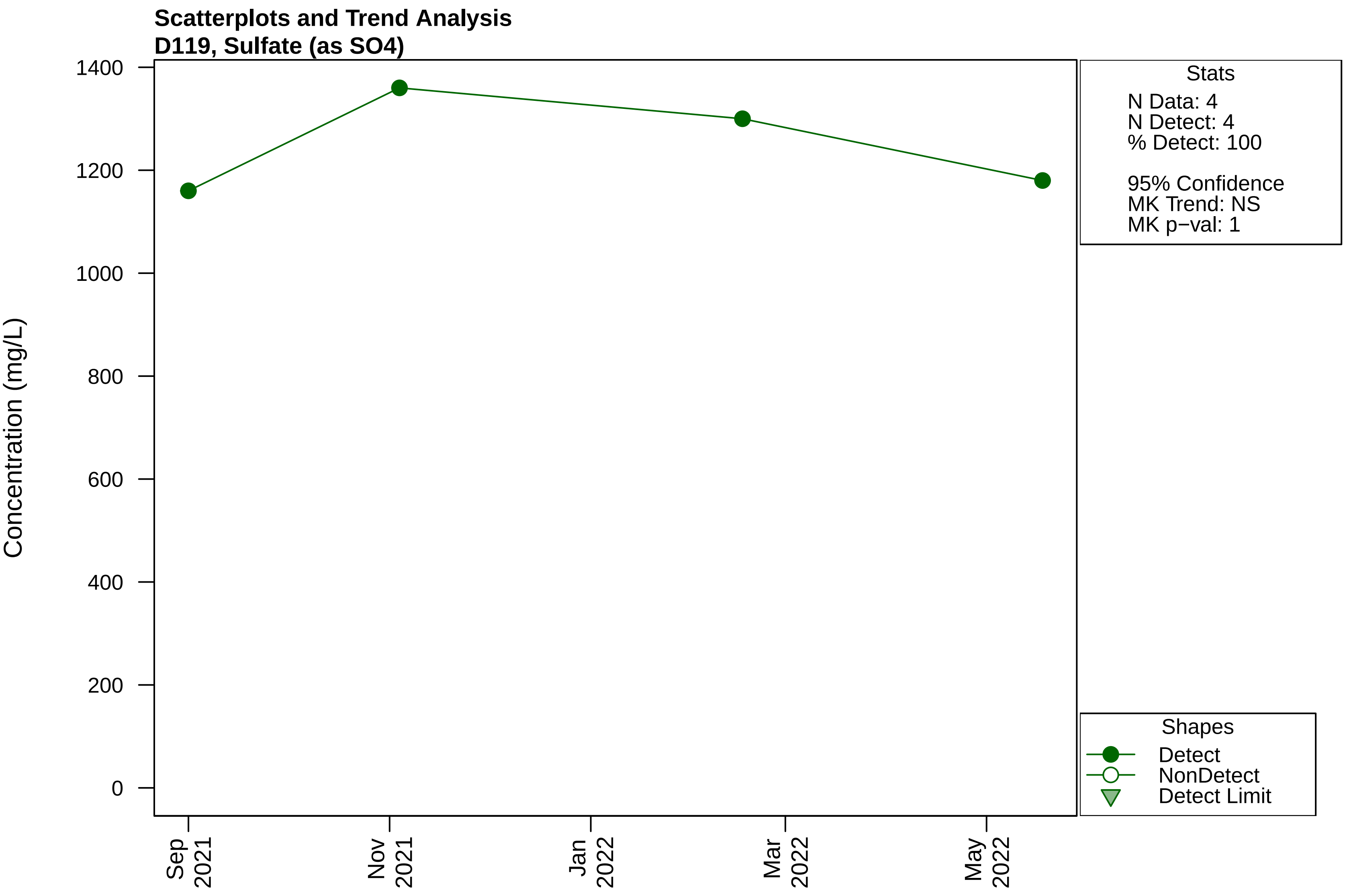
Scatterplots and Trend Analysis
D119, Selenium
Concentration (ug/L)
3.0
2.5
2.0
1.5
1.0
0.5
0.0
Sep 2021
Nov 2021
Jan 2022
Stats
N Data: 3
N Detect: 3
% Detect: 100
MK criteria not met
Shapes
Detect
NonDetect
Detect Limit

Scatterplots and Trend Analysis
D119, Sodium

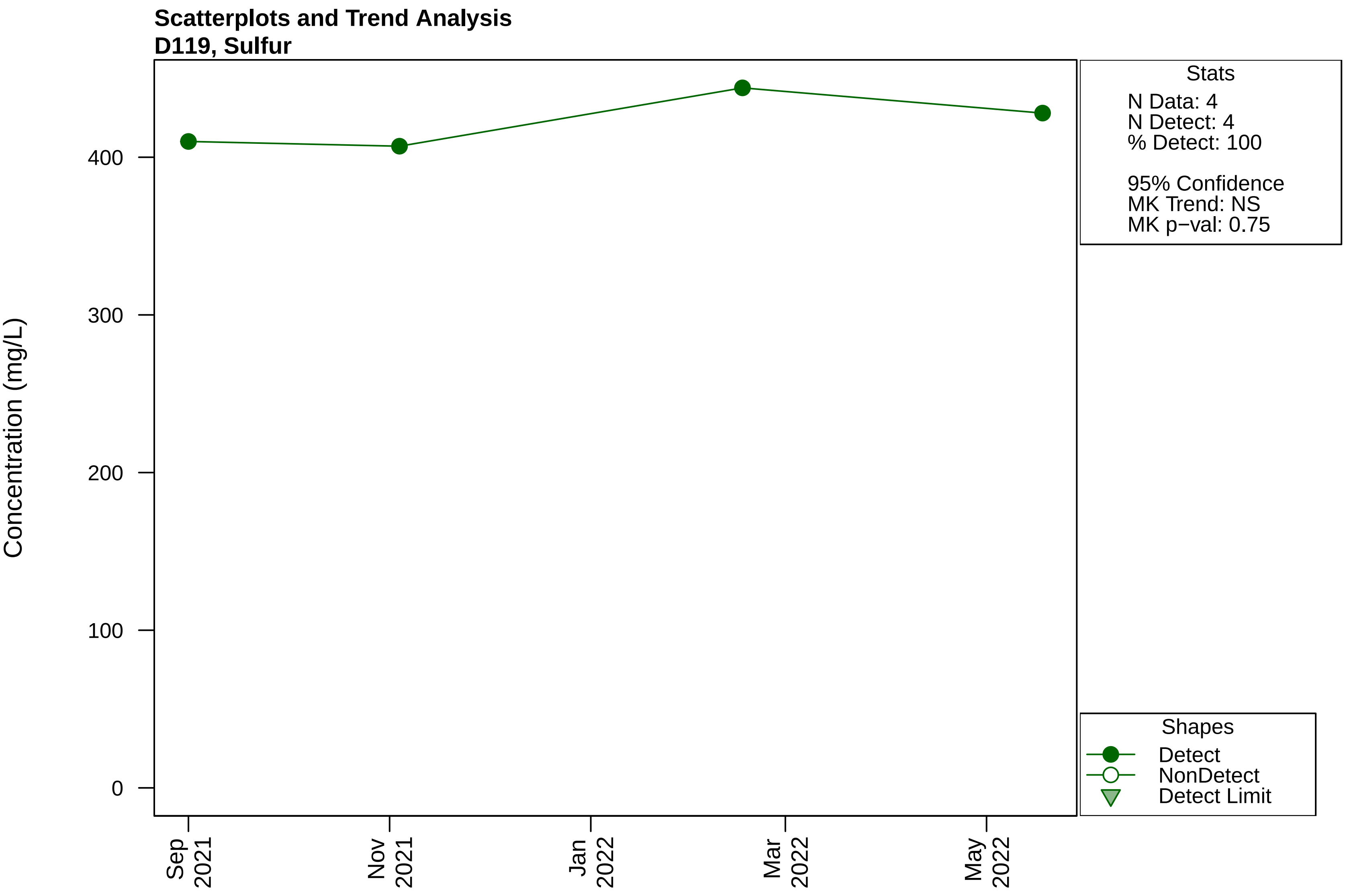


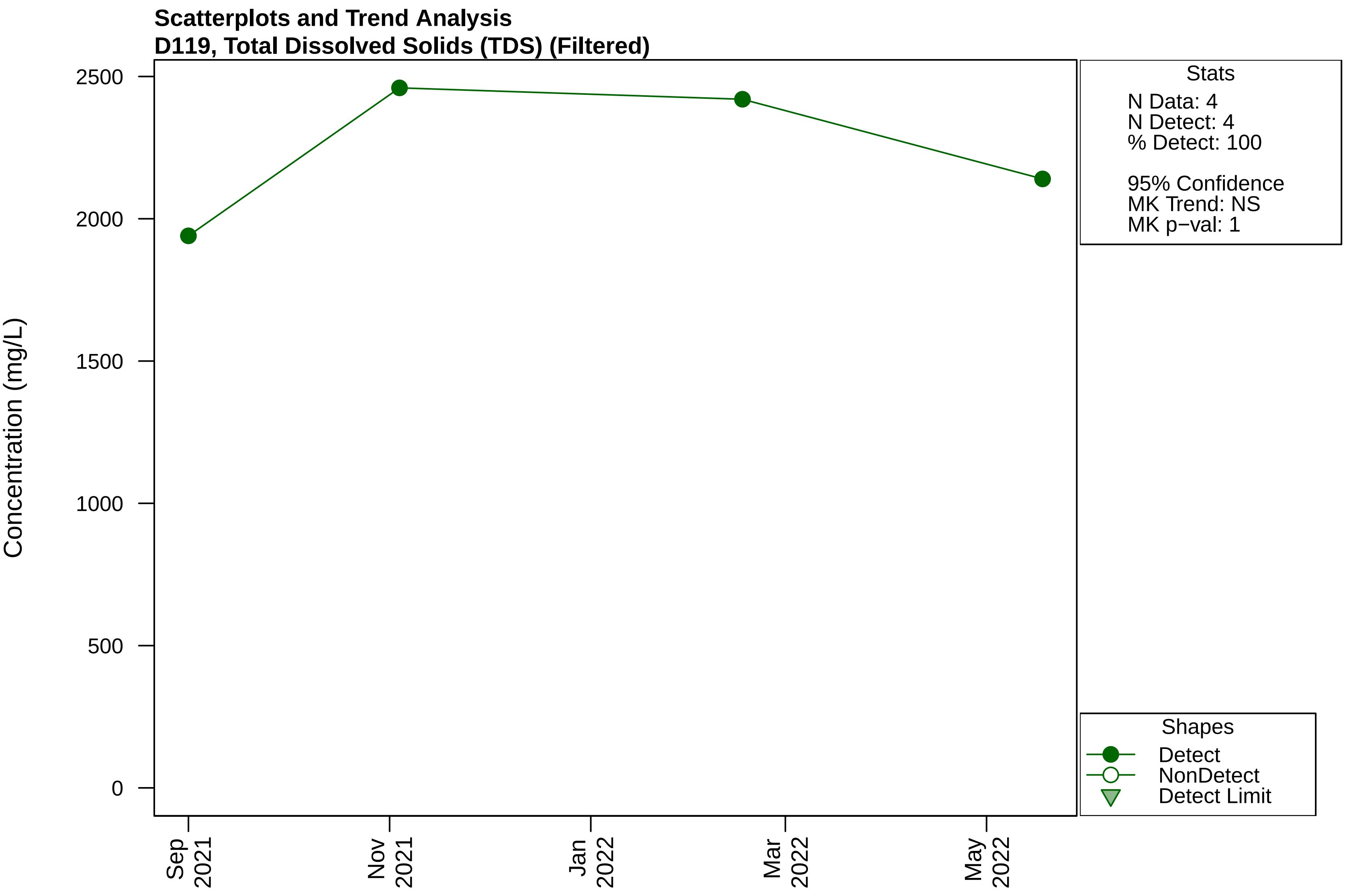


Scatterplots and Trend Analysis
D119, Strontium
Concentration (mg/L)
0.0
0.1
0.2
0.3
0.4
0.5
0.6
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 4
N Detect: 4
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.75
Shapes
Detect
NonDetect
Detect Limit

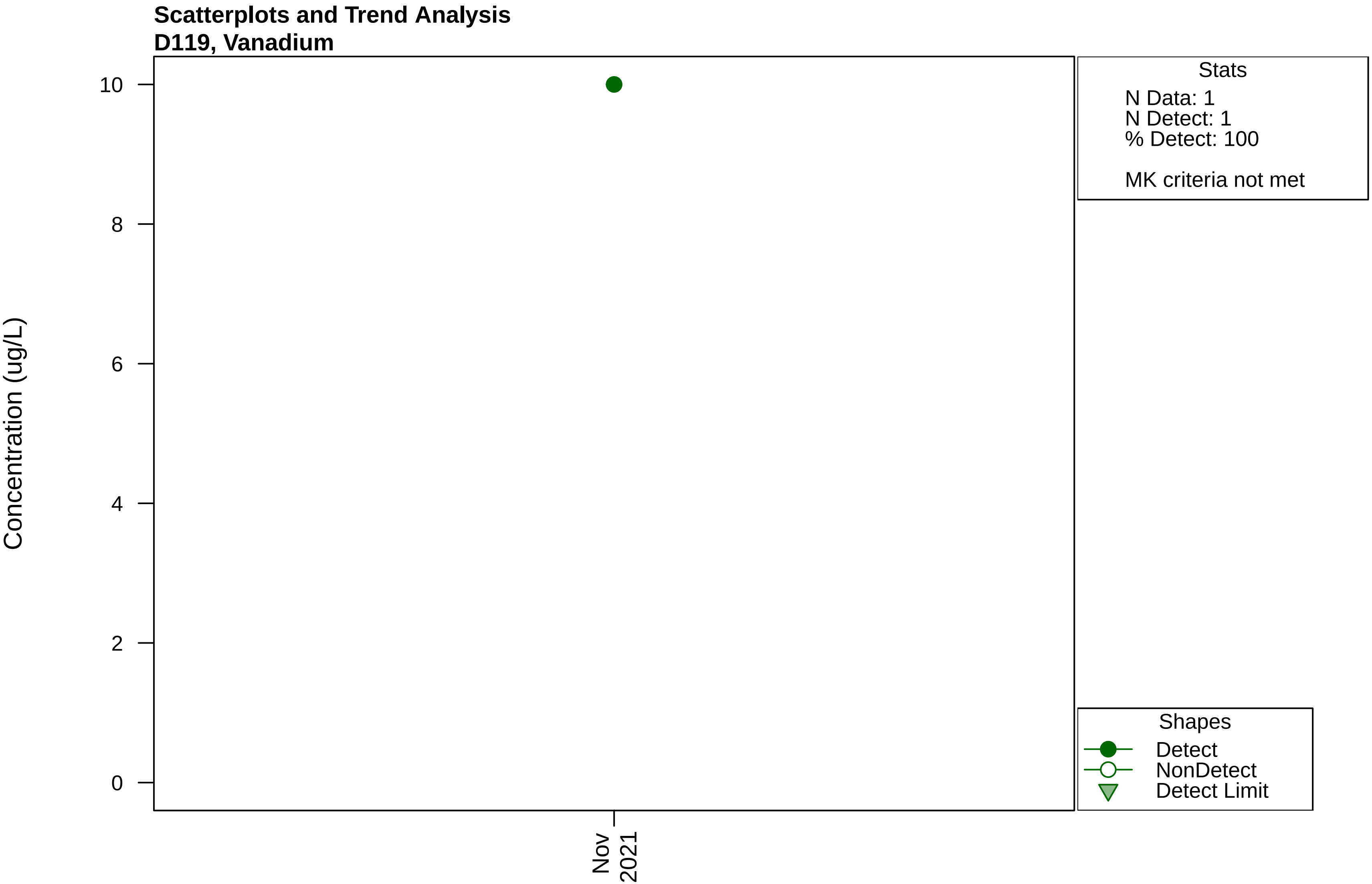


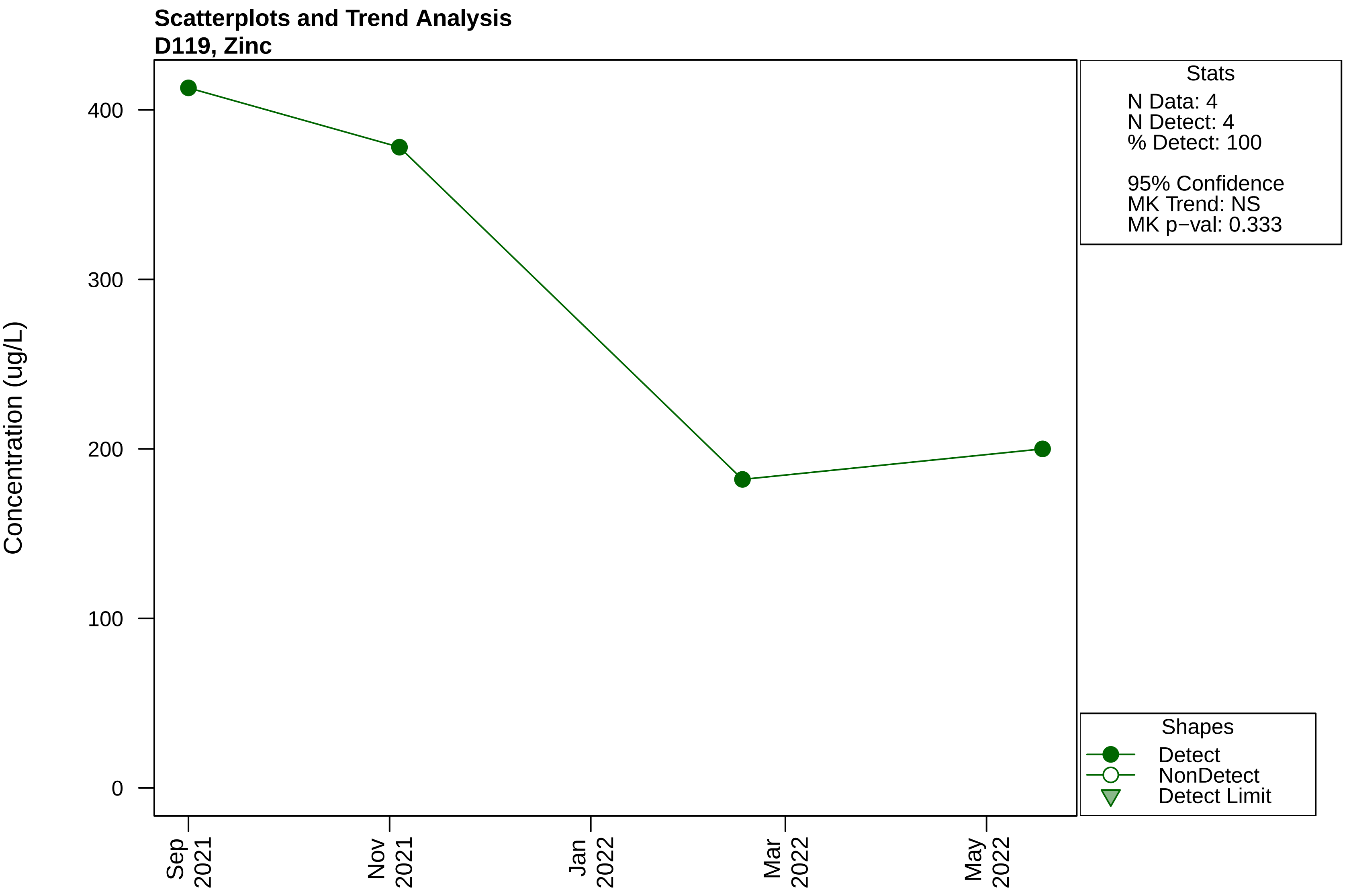
Scatterplots and Trend Analysis
D119, Sulfate (as SO4)
Concentration (mg/L)
1400
1200
1000
800
600
400
200
0
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 4
N Detect: 4
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 1
Shapes
Detect
NonDetect
Detect Limit


Scatterplots and Trend Analysis
D119, Sulfur
Concentration (mg/L)
0
100
200
300
400
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 4
N Detect: 4
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.75
Shapes
Detect
NonDetect
Detect Limit

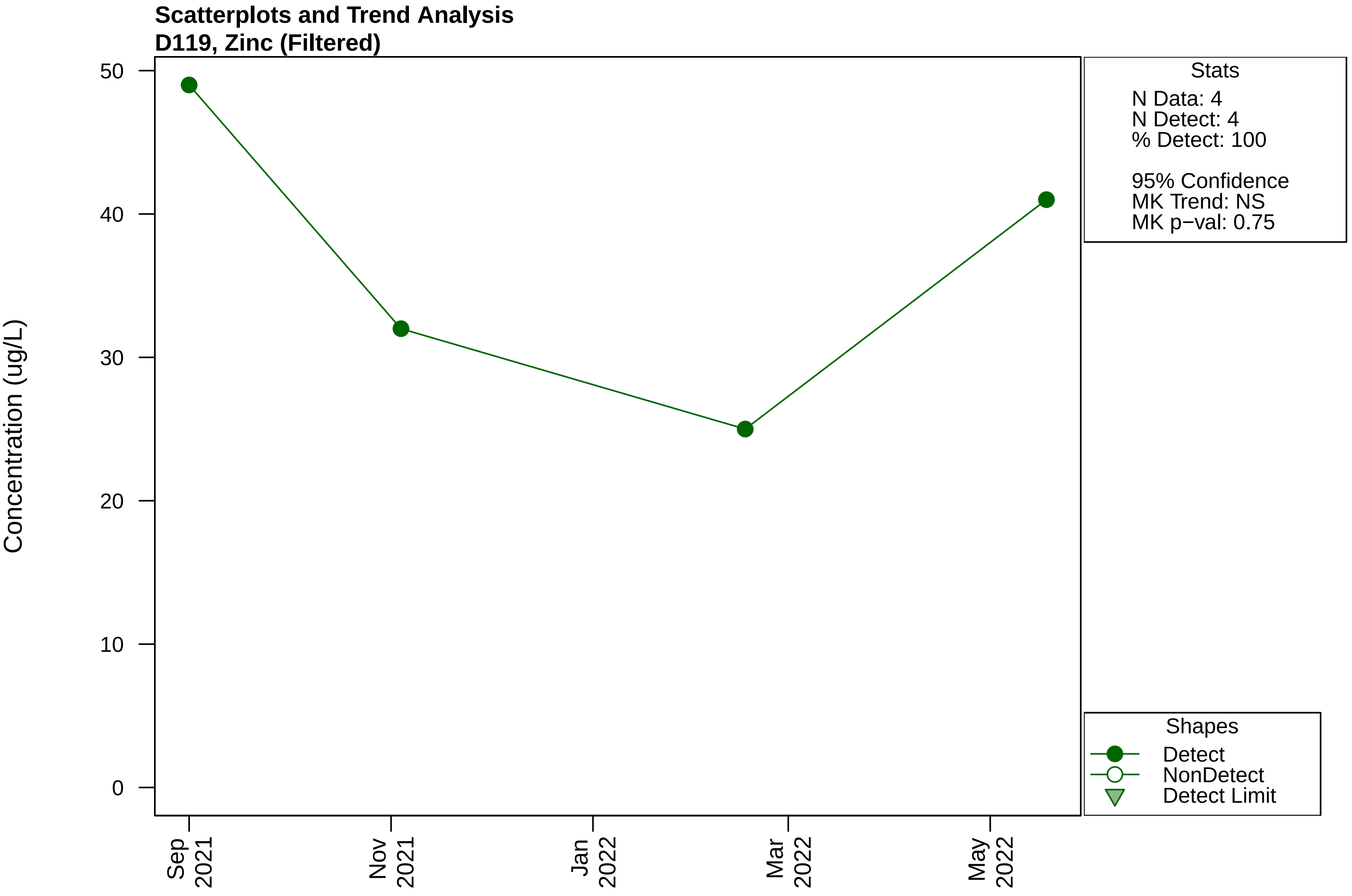


Scatterplots and Trend Analysis
D119, Total Dissolved Solids (TDS) (Filtered)
Concentration (mg/L)
0
500
1000
1500
2000
2500
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 4
N Detect: 4
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 1
Shapes
Detect
NonDetect
Detect Limit

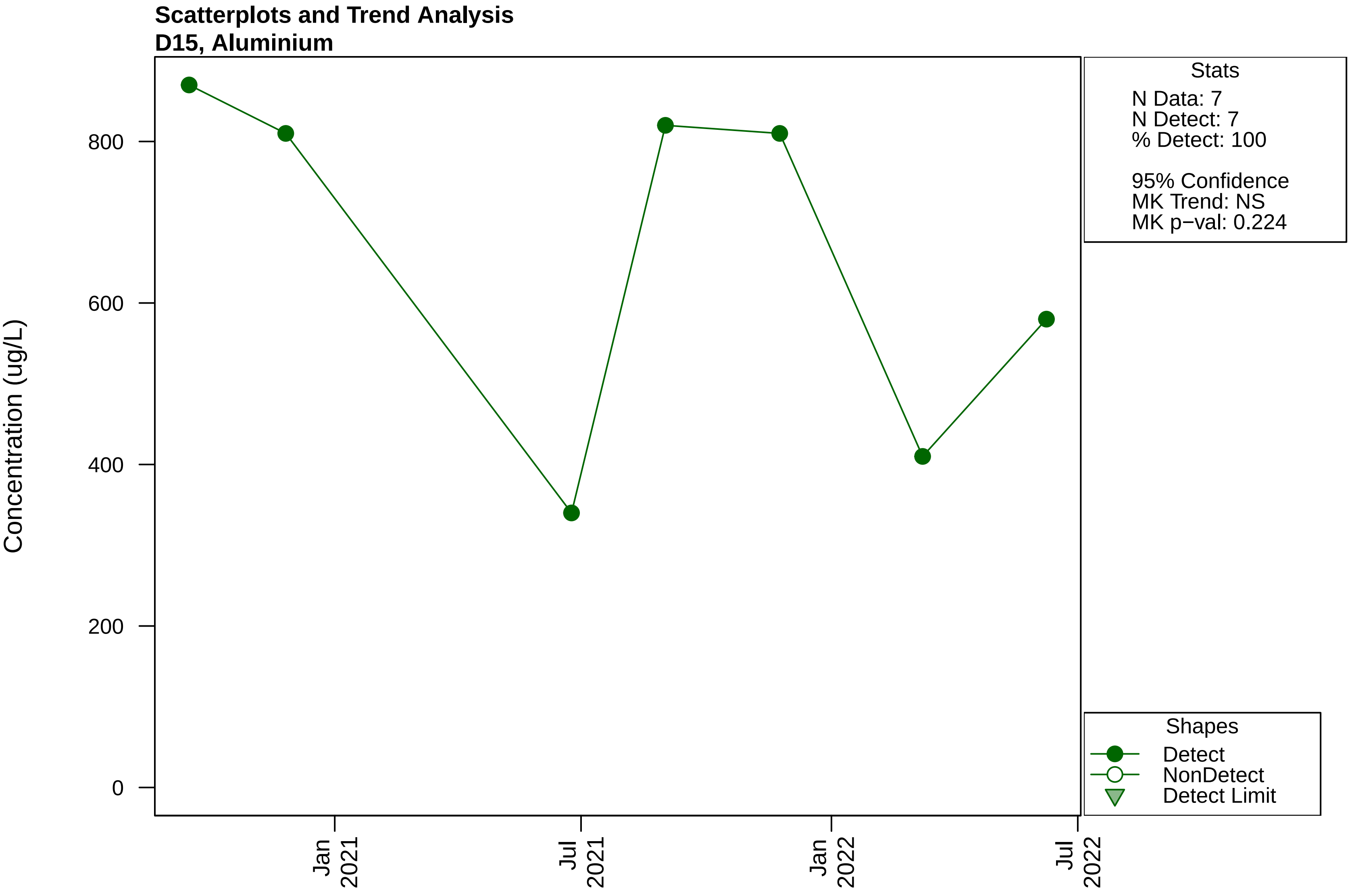

Scatterplots and Trend Analysis
D119, Vanadium
Concentration (ug/L)
10
8
6
4
2
0
Nov 2021
Stats
N Data: 1
N Detect: 1
% Detect: 100
MK criteria not met
Shapes
Detect
NonDetect
Detect Limit



Scatterplots and Trend Analysis
D119, Zinc
Concentration (ug/L)
0
100
200
300
400
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 4
N Detect: 4
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.333
Shapes
Detect
NonDetect
Detect Limit

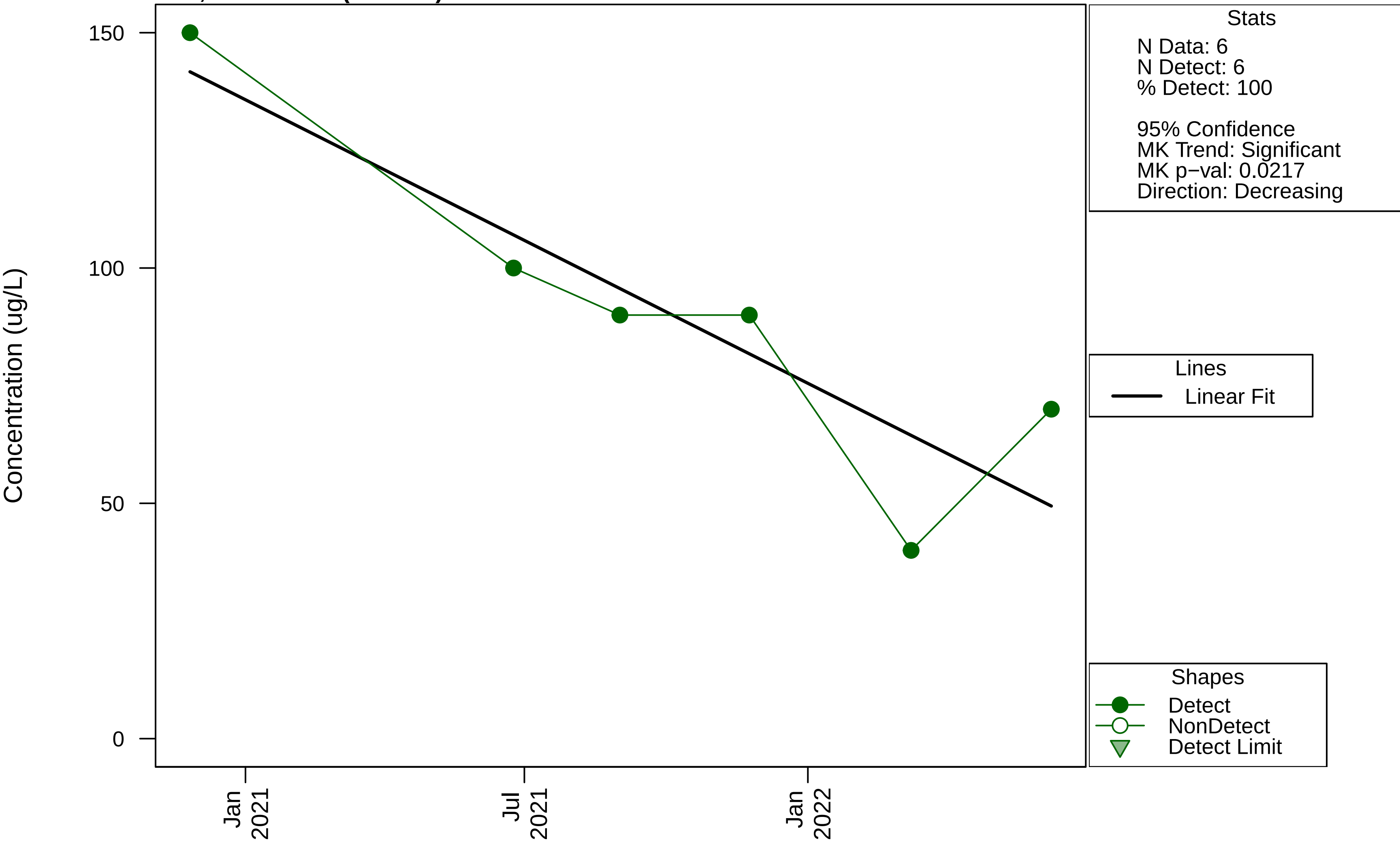


Scatterplots and Trend Analysis
D119, Zinc (Filtered)
Concentration (ug/L)
0
10
20
30
40
50
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 4
N Detect: 4
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.75
Shapes
Detect
NonDetect
Detect Limit

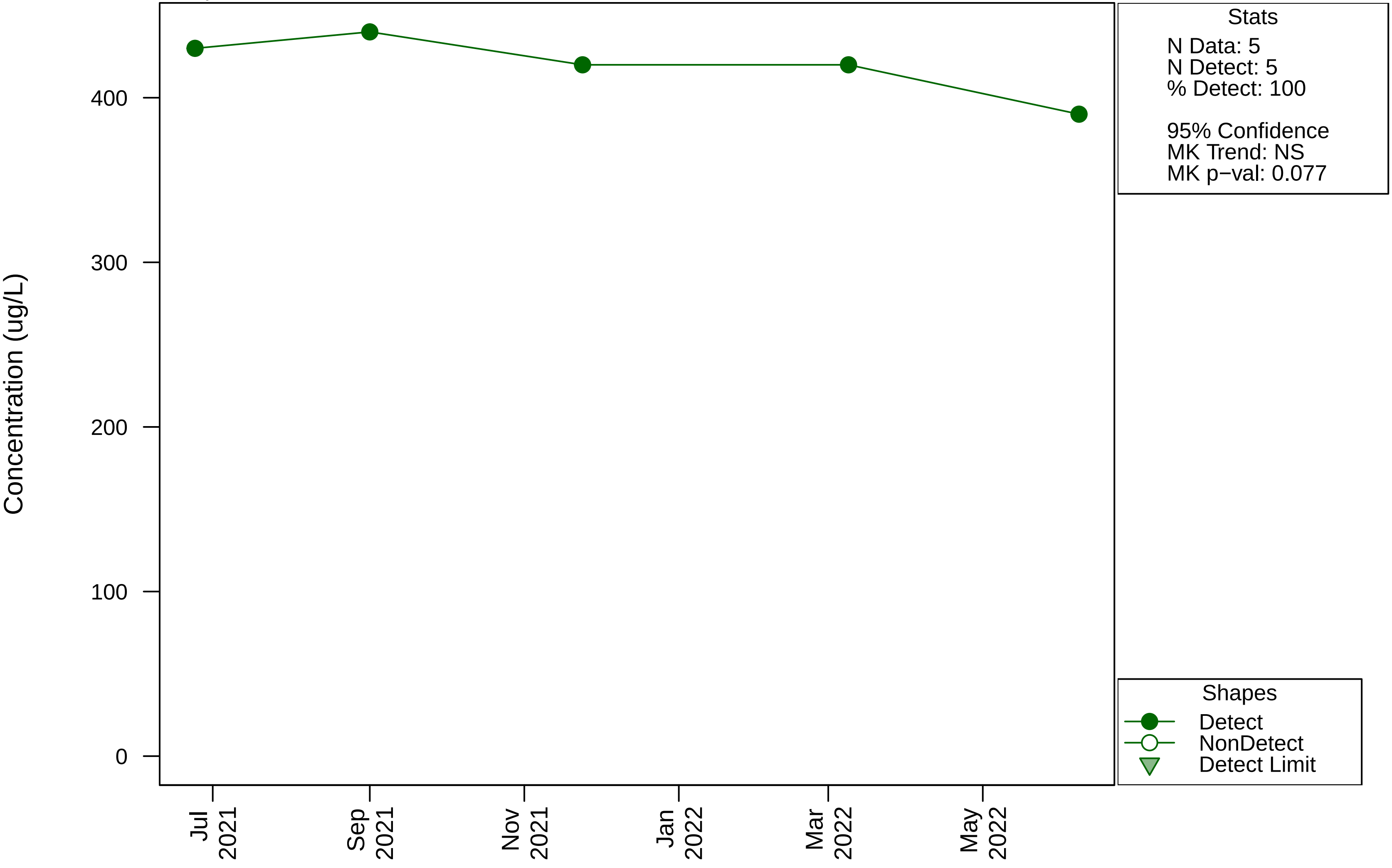


Scatterplots and Trend Analysis
D15, Aluminium
Concentration (ug/L)
0
200
400
600
800
Jan 2021
Jul 2021
Jan 2022
Jul 2022
Stats
N Data: 7
N Detect: 7
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.224
Shapes
Detect
NonDetect
Detect Limit

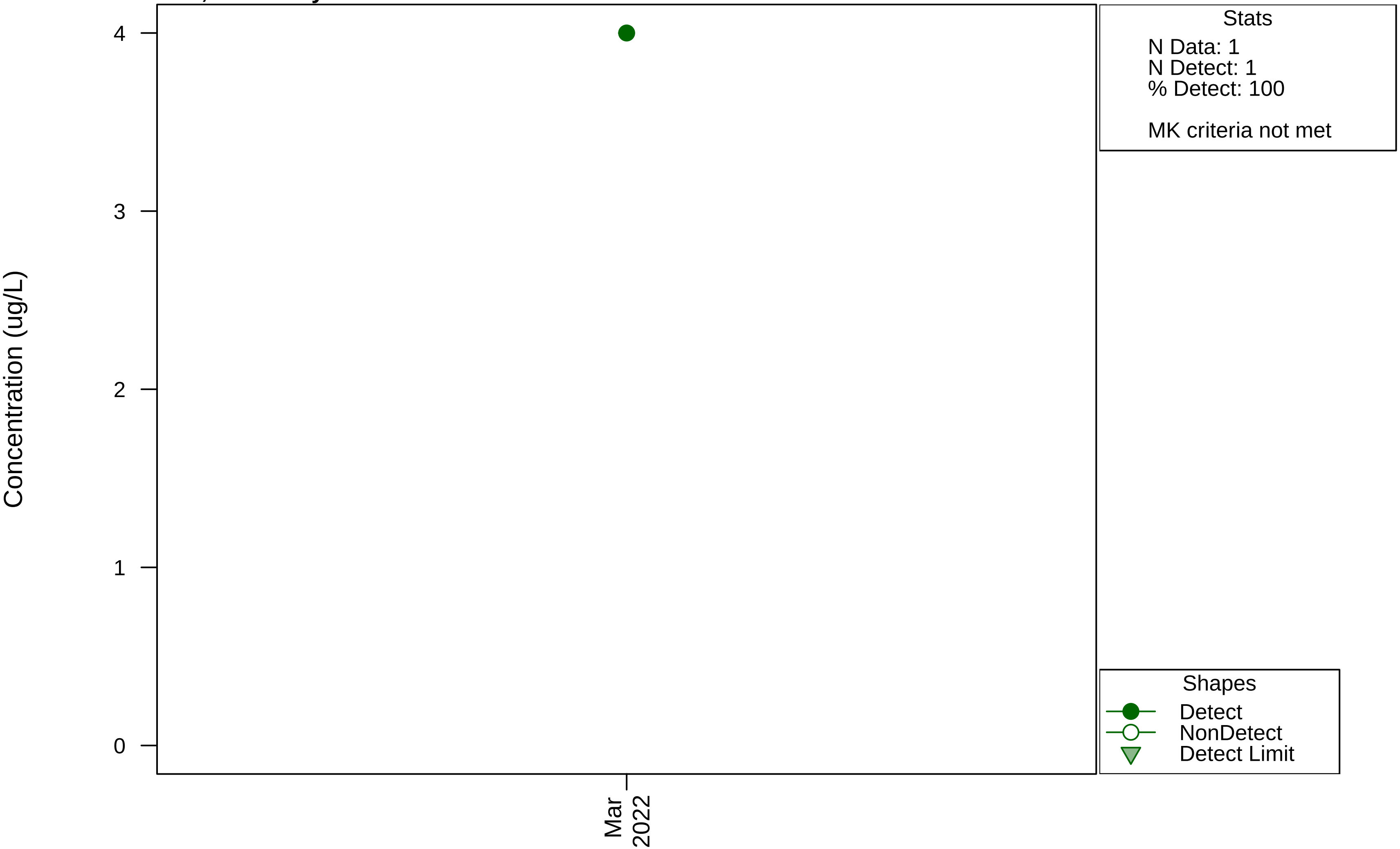
Scatterplots and Trend Analysis
D15, Aluminium (Filtered)



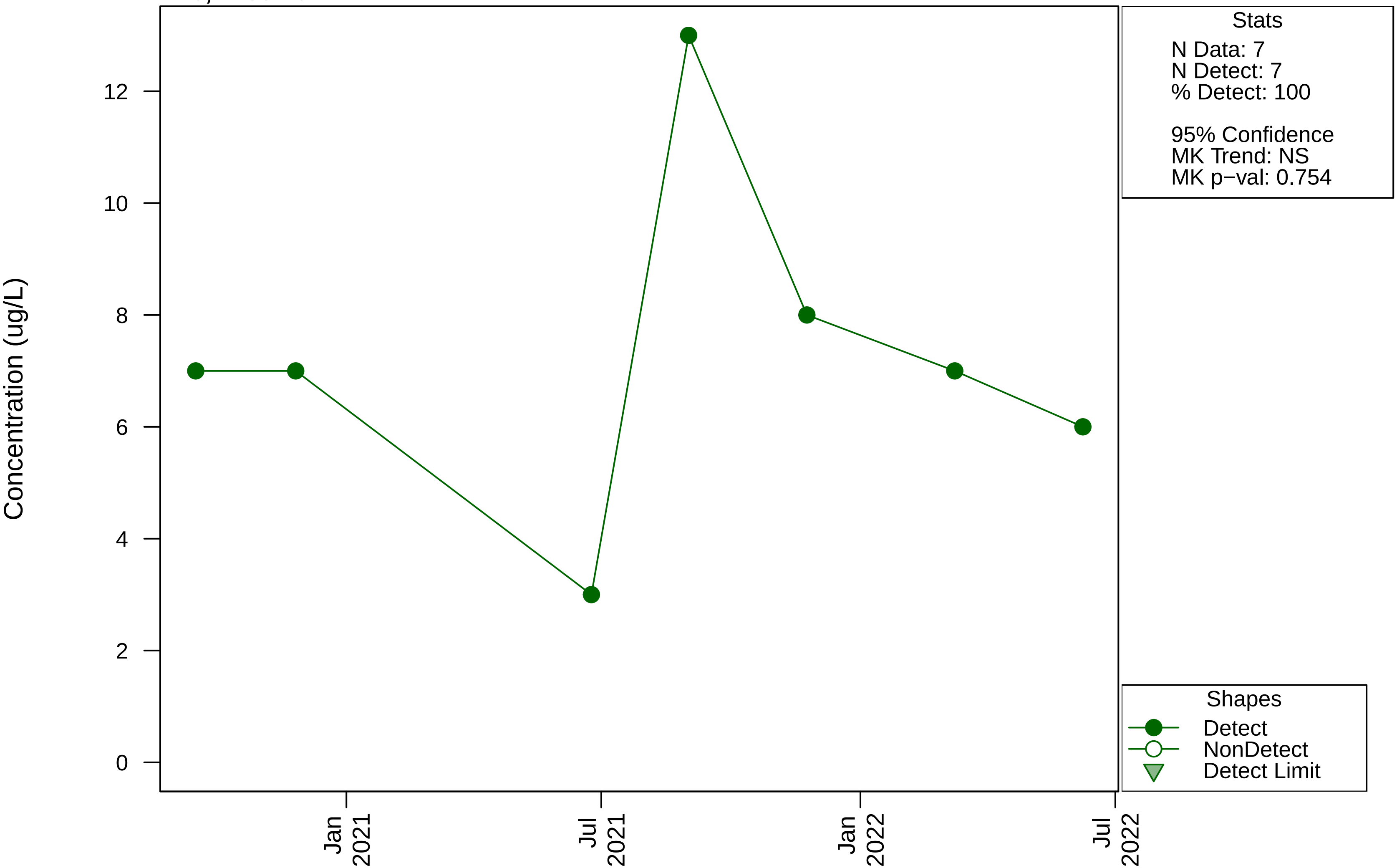
Scatterplots and Trend Analysis
D15, Ammonia

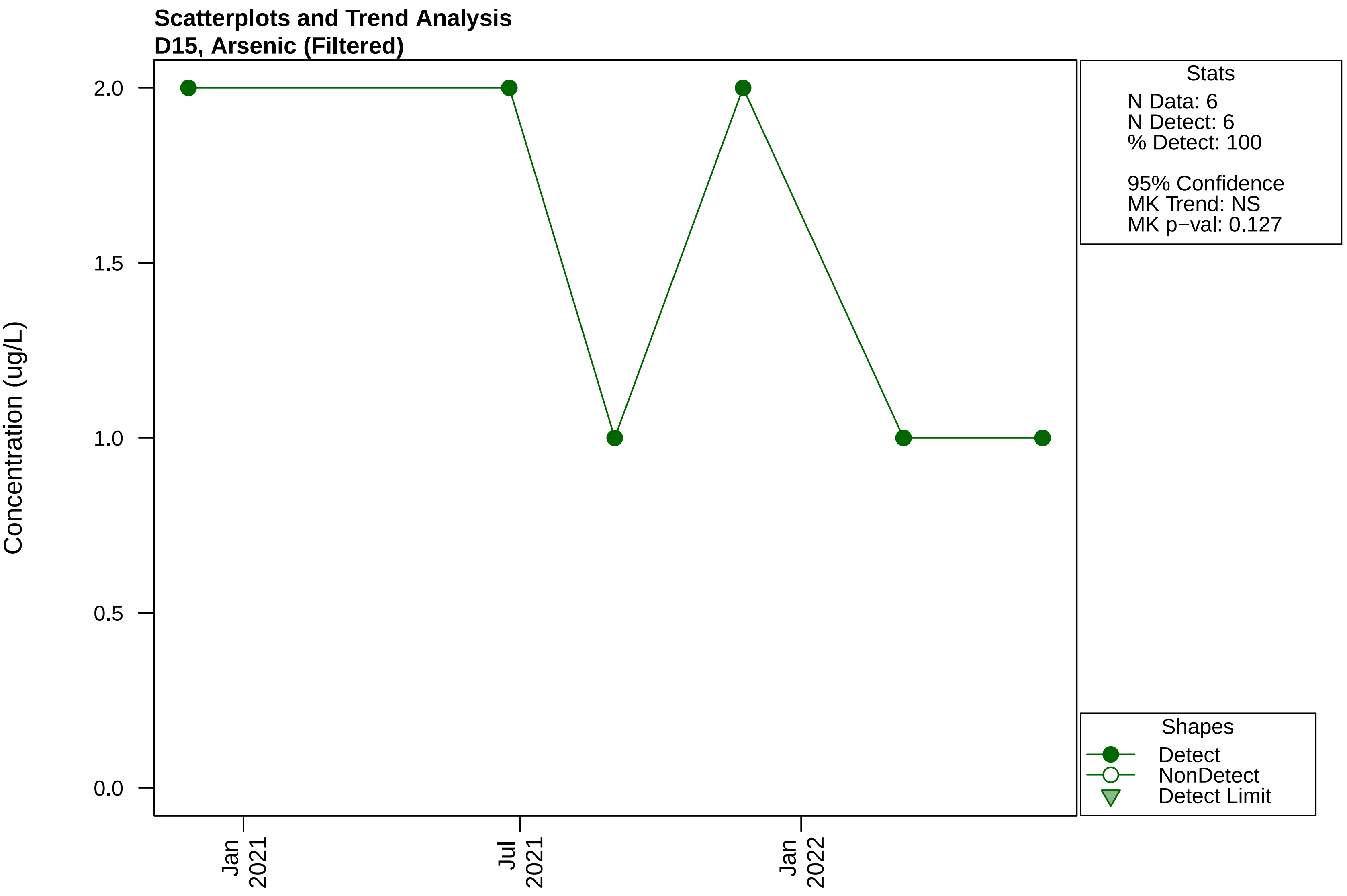


Scatterplots and Trend Analysis
D15, Antimony



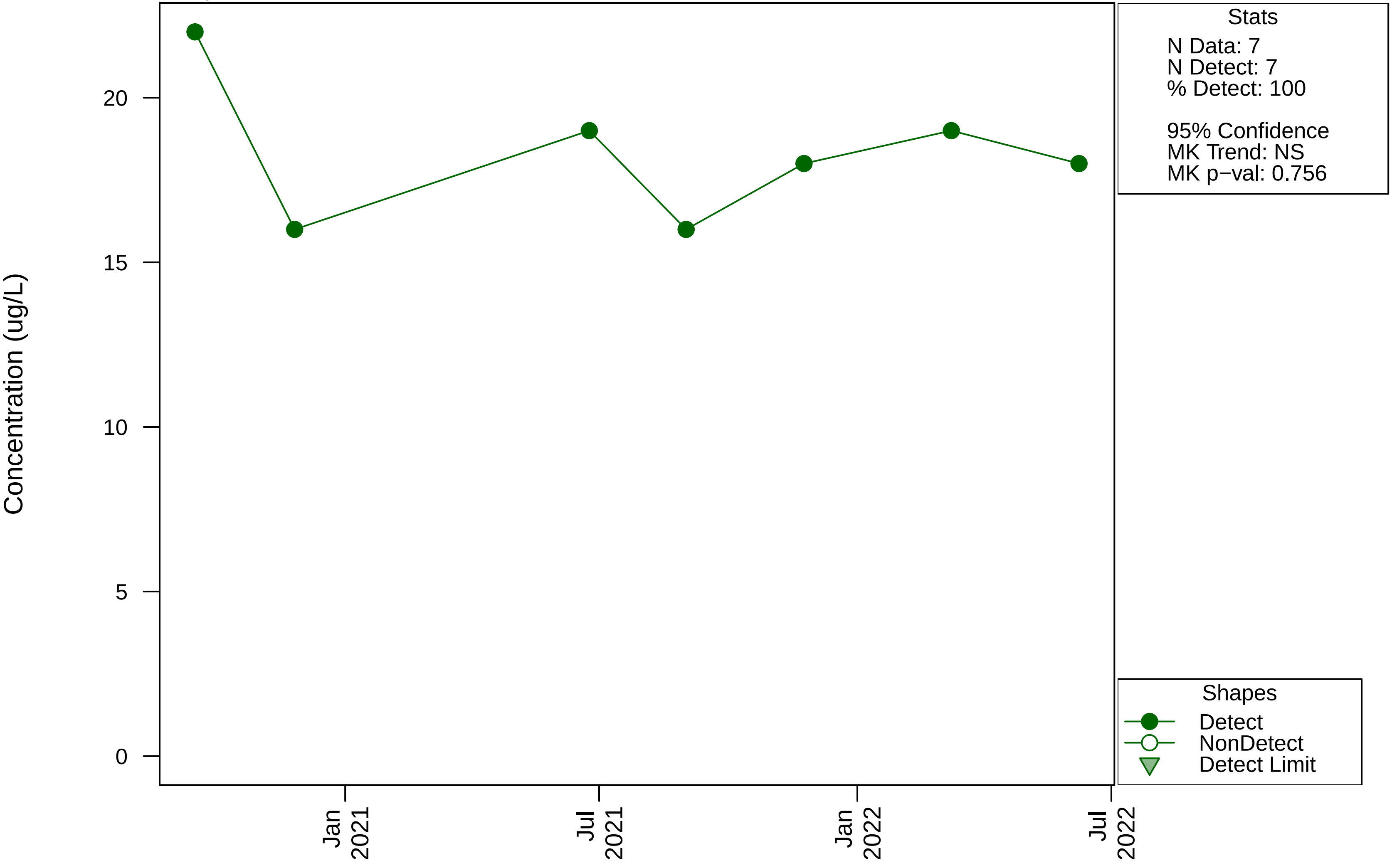
Scatterplots and Trend Analysis
D15, Arsenic

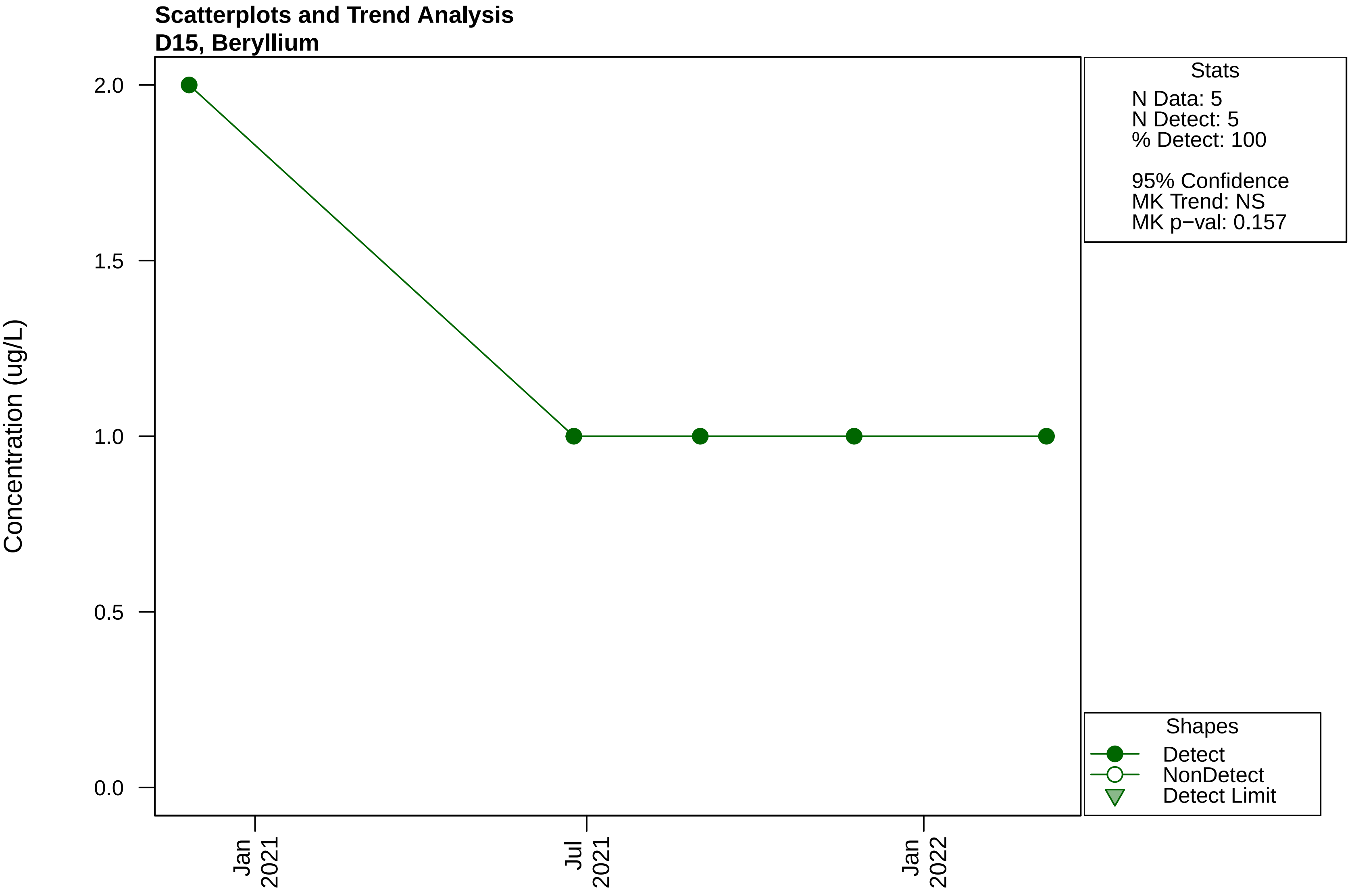


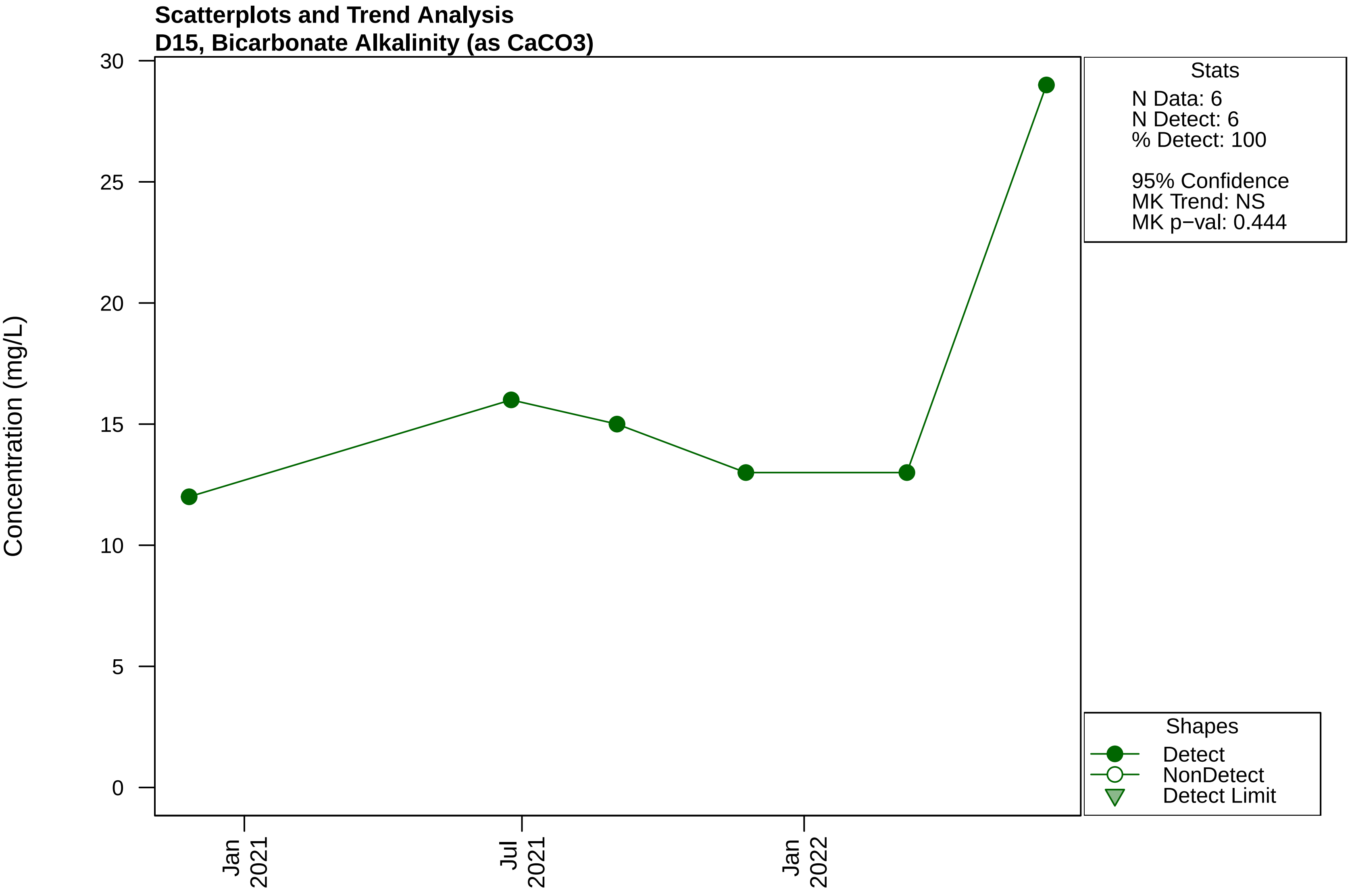


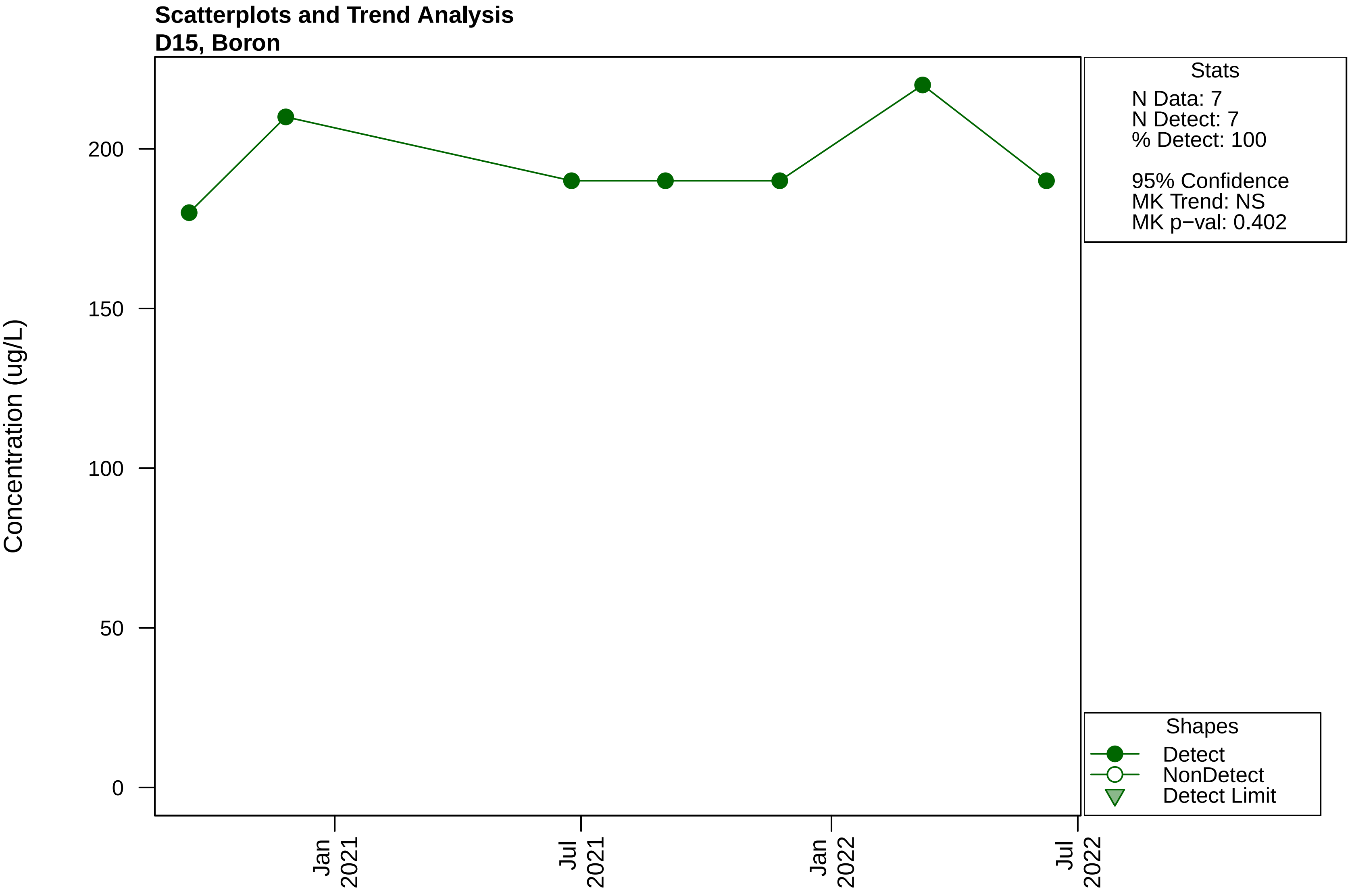
Scatterplots and Trend Analysis
D15, Arsenic (Filtered)
Concentration (ug/L)
2.0
1.5
1.0
0.5
0.0
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 6
N Detect: 6
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.127
Shapes
Detect
NonDetect
Detect Limit

Scatterplots and Trend Analysis
D15, Barium

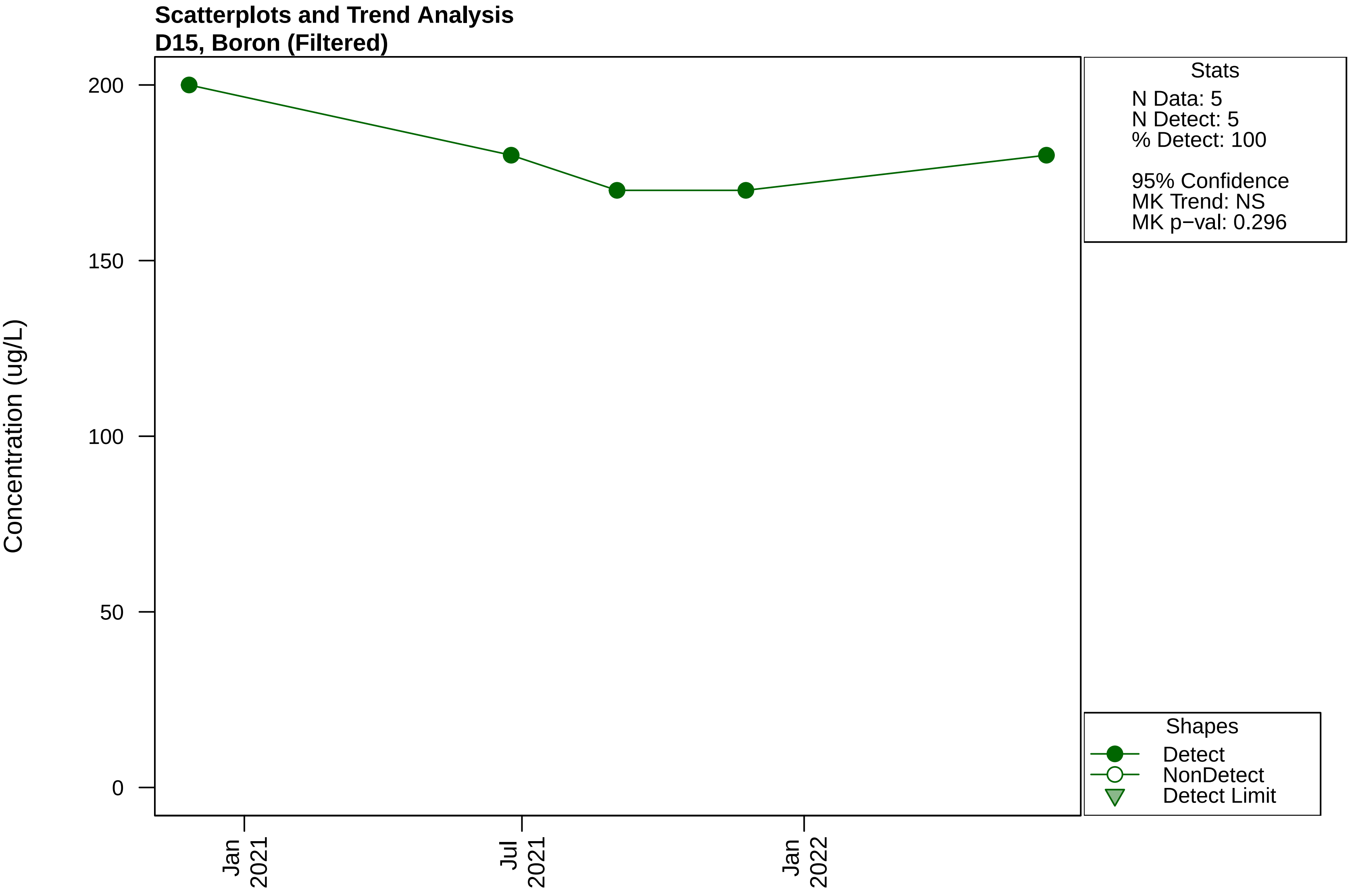


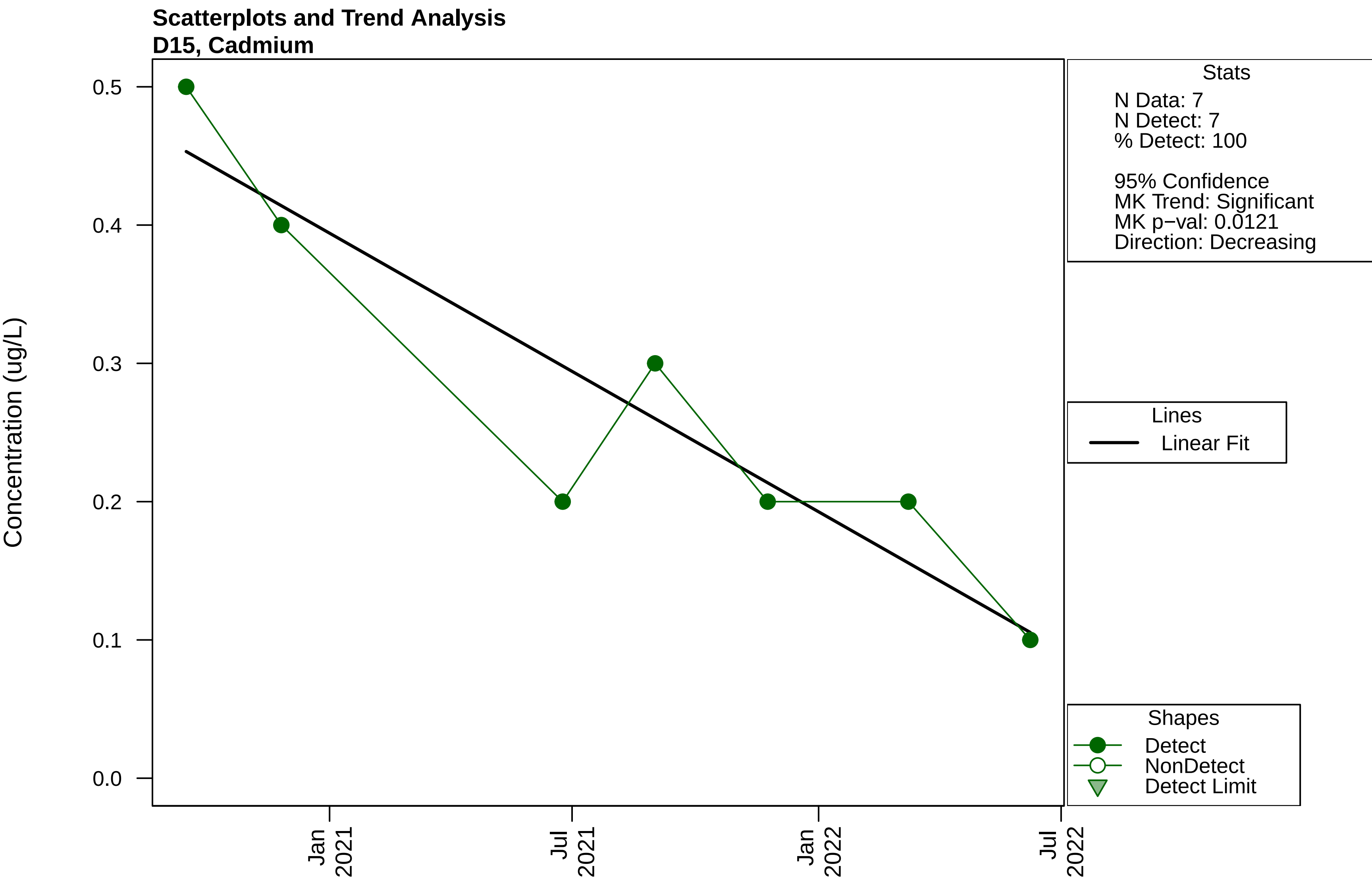

Scatterplots and Trend Analysis
D15, Beryllium
Concentration (ug/L)
2.0
1.5
1.0
0.5
0.0
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 5
N Detect: 5
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.157
Shapes
Detect
NonDetect
Detect Limit


Scatterplots and Trend Analysis
D15, Bicarbonate Alkalinity (as CaCO3)
Concentration (mg/L)
0
5
10
15
20
25
30
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 6
N Detect: 6
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.444
Shapes
Detect
NonDetect
Detect Limit

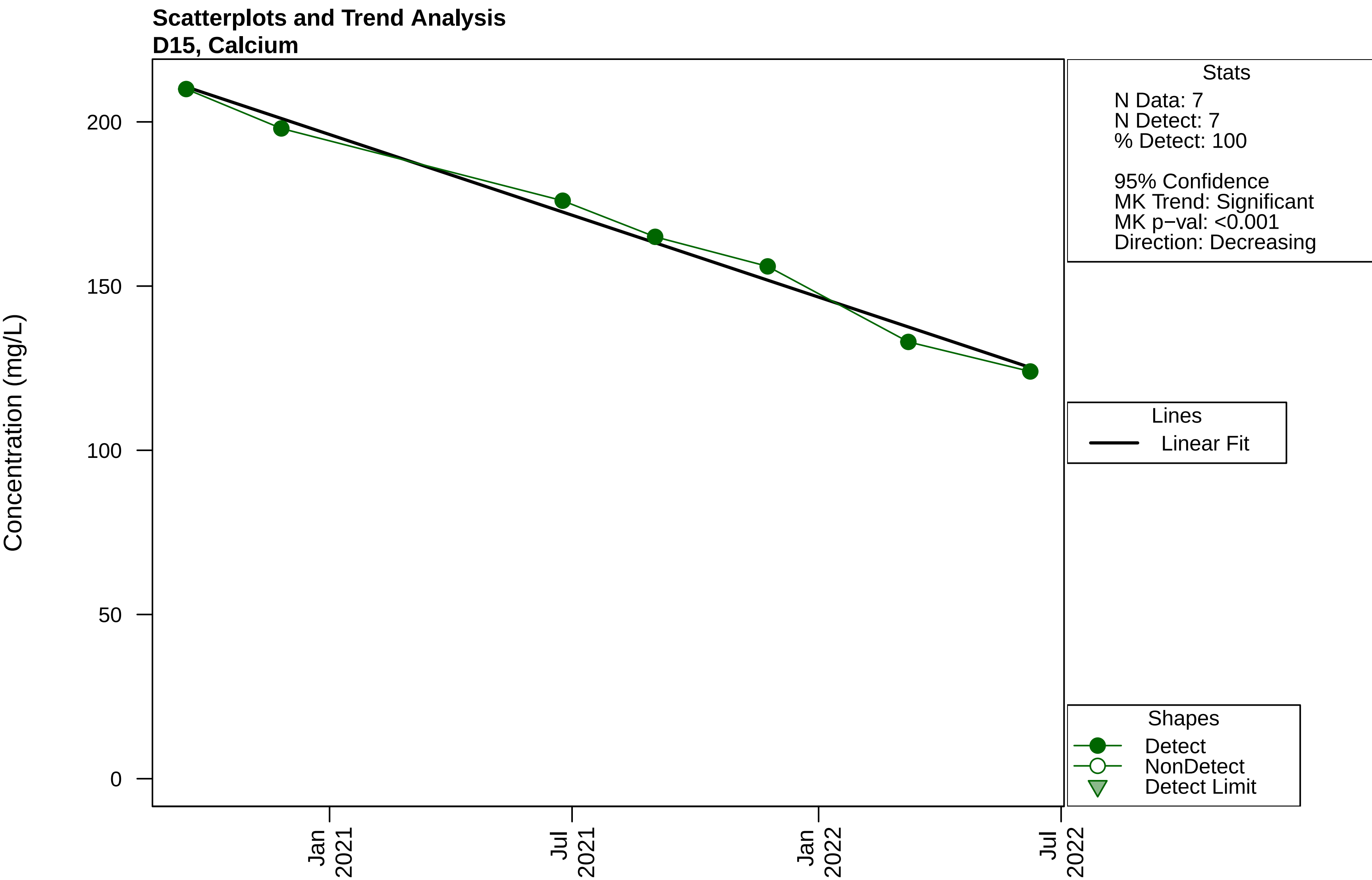


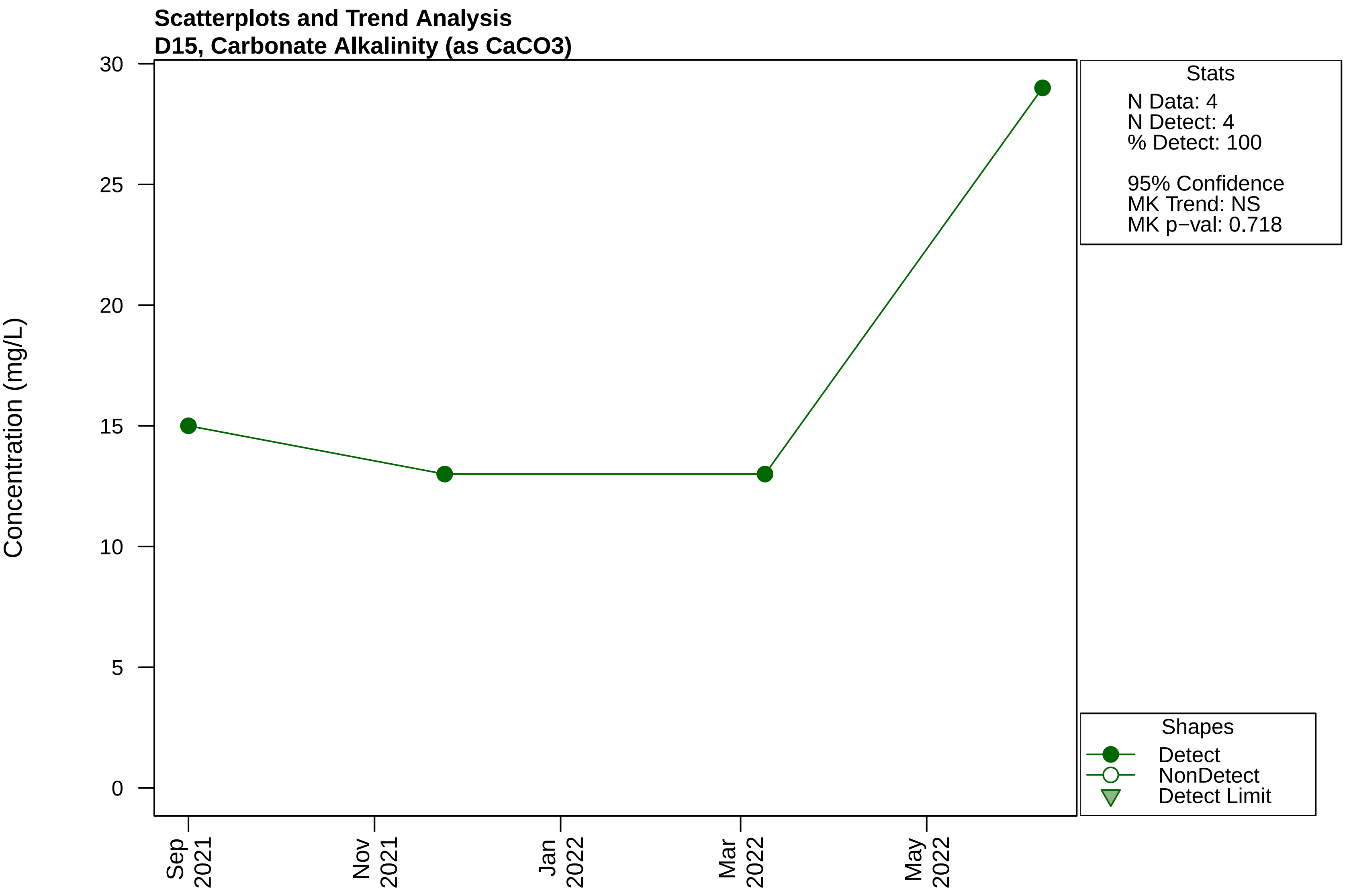
Scatterplots and Trend Analysis
D15, Boron
Concentration (ug/L)
0
50
100
150
200
Jan 2021
Jul 2021
Jan 2022
Jul 2022
Stats
N Data: 7
N Detect: 7
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.402
Shapes
Detect
NonDetect
Detect Limit


Scatterplots and Trend Analysis
D15, Boron (Filtered)
Concentration (ug/L)
0
50
100
150
200
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 5
N Detect: 5
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.296
Shapes
Detect
NonDetect
Detect Limit

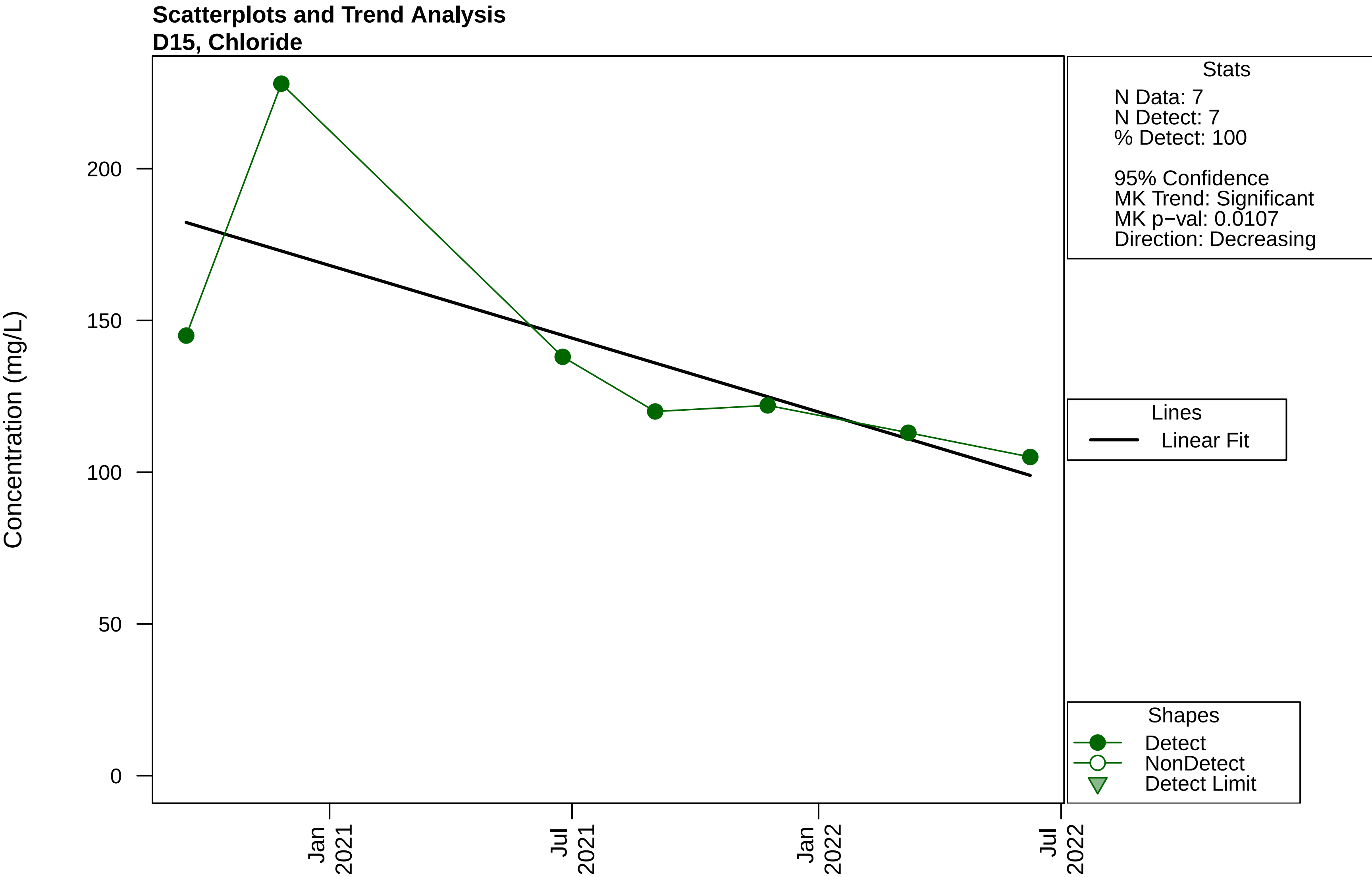


Scatterplots and Trend Analysis
D15, Cadmium
Concentration (ug/L)
0.0
0.1
0.2
0.3
0.4
0.5
Jan 2021
Jul 2021
Jan 2022
Jul 2022
Stats
N Data: 7
N Detect: 7
% Detect: 100
95% Confidence
MK Trend: Significant
MK p−val: 0.0121
Direction: Decreasing
Lines
Linear Fit
Shapes
Detect
NonDetect
Detect Limit

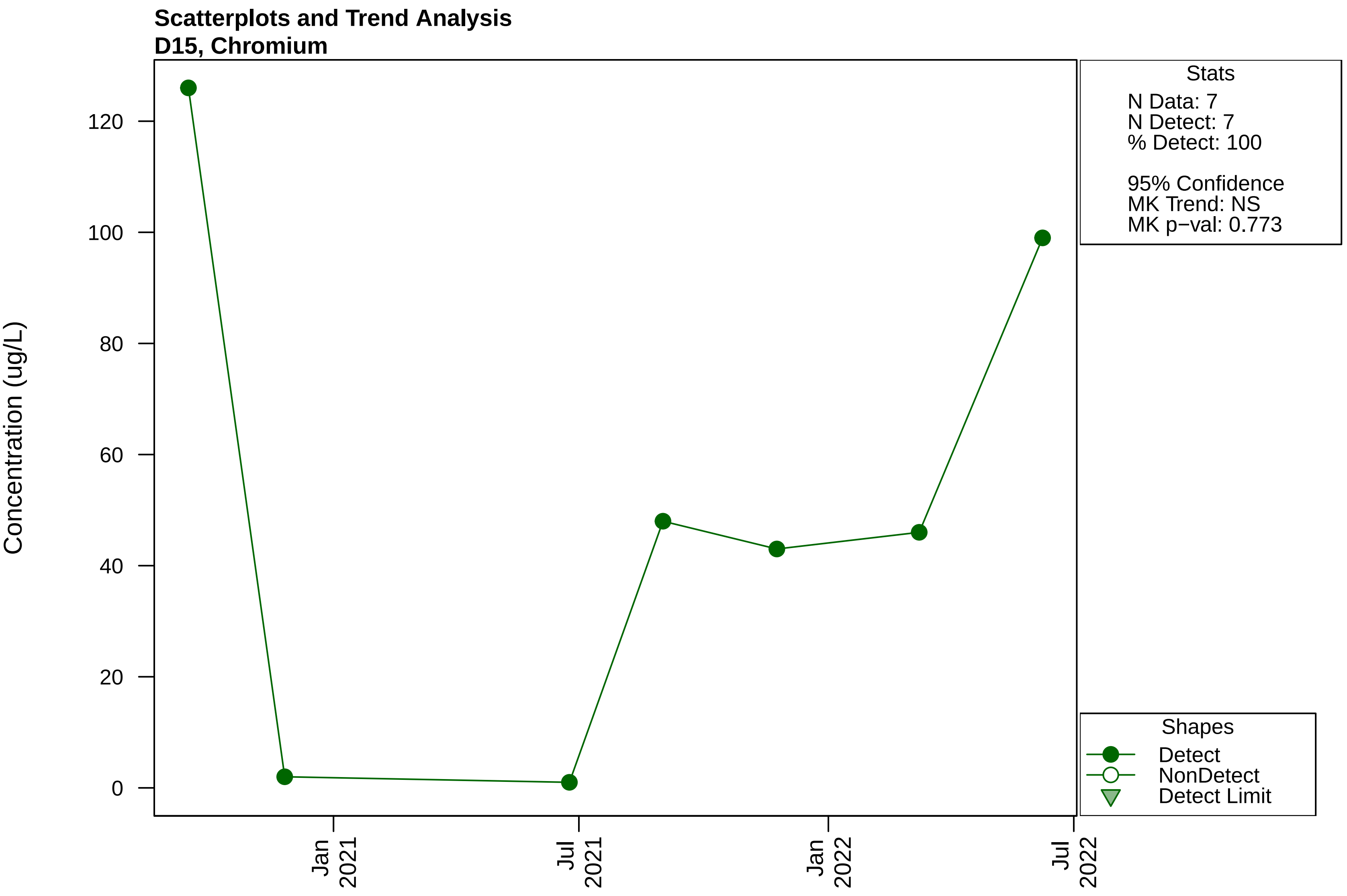

Scatterplots and Trend Analysis
D15, Calcium
Concentration (mg/L)
0
50
100
150
200
Jan 2021
Jul 2021
Jan 2022
Jul 2022
Stats
N Data: 7
N Detect: 7
% Detect: 100
95% Confidence
MK Trend: Significant
MK p−val: <0.001
Direction: Decreasing
Lines
Linear Fit
Shapes
Detect
NonDetect
Detect Limit



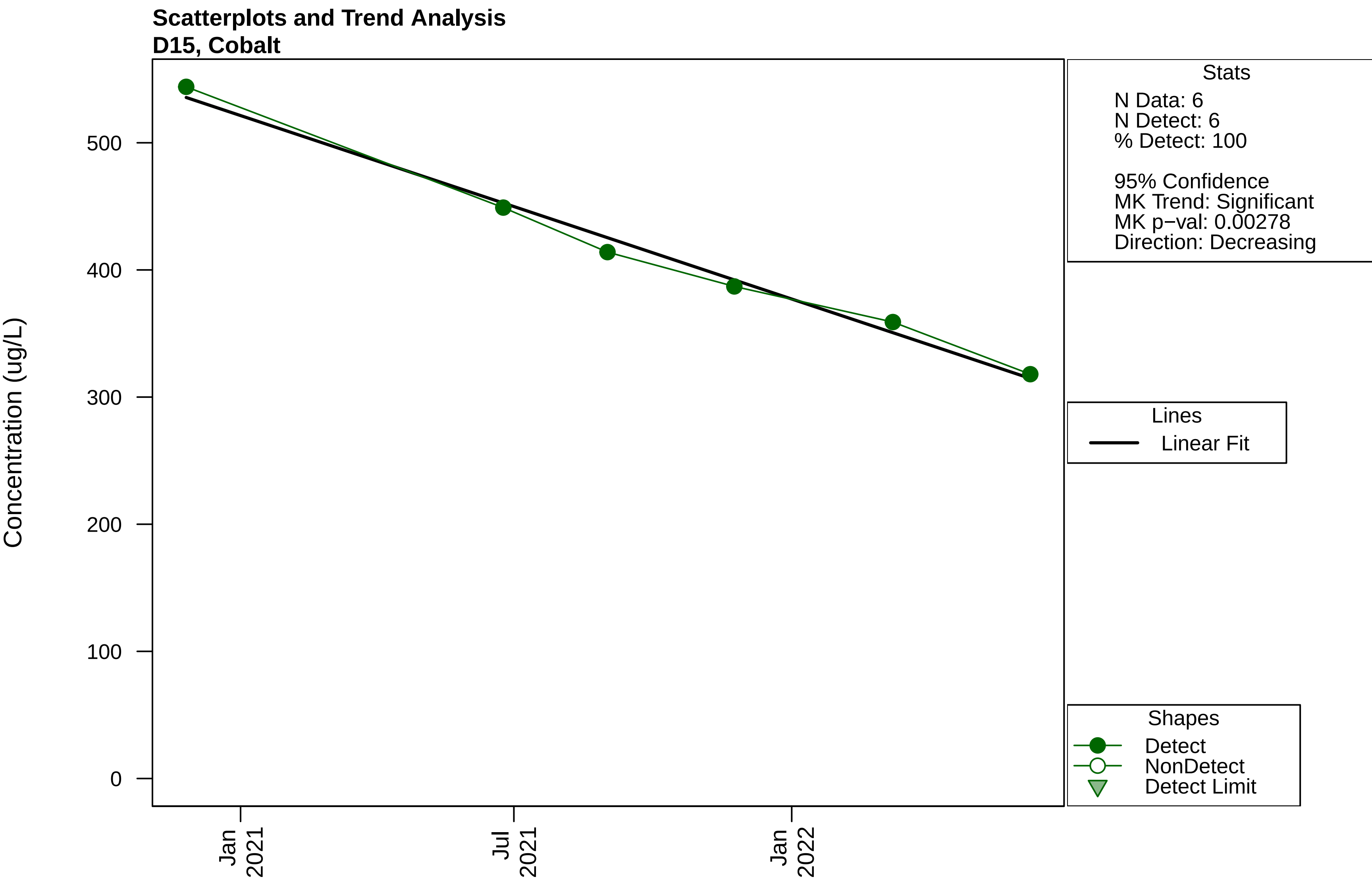
Scatterplots and Trend Analysis
D15, Carbonate Alkalinity (as CaCO3)
Concentration (mg/L)
30
25
20
15
10
5
0
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 4
N Detect: 4
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.718
Shapes
Detect
NonDetect
Detect Limit



Scatterplots and Trend Analysis
D15, Chloride
Concentration (mg/L)
0
50
100
150
200
Jan 2021
Jul 2021
Jan 2022
Jul 2022
Stats
N Data: 7
N Detect: 7
% Detect: 100
95% Confidence
MK Trend: Significant
MK p−val: 0.0107
Direction: Decreasing
Lines
Linear Fit
Shapes
Detect
NonDetect
Detect Limit

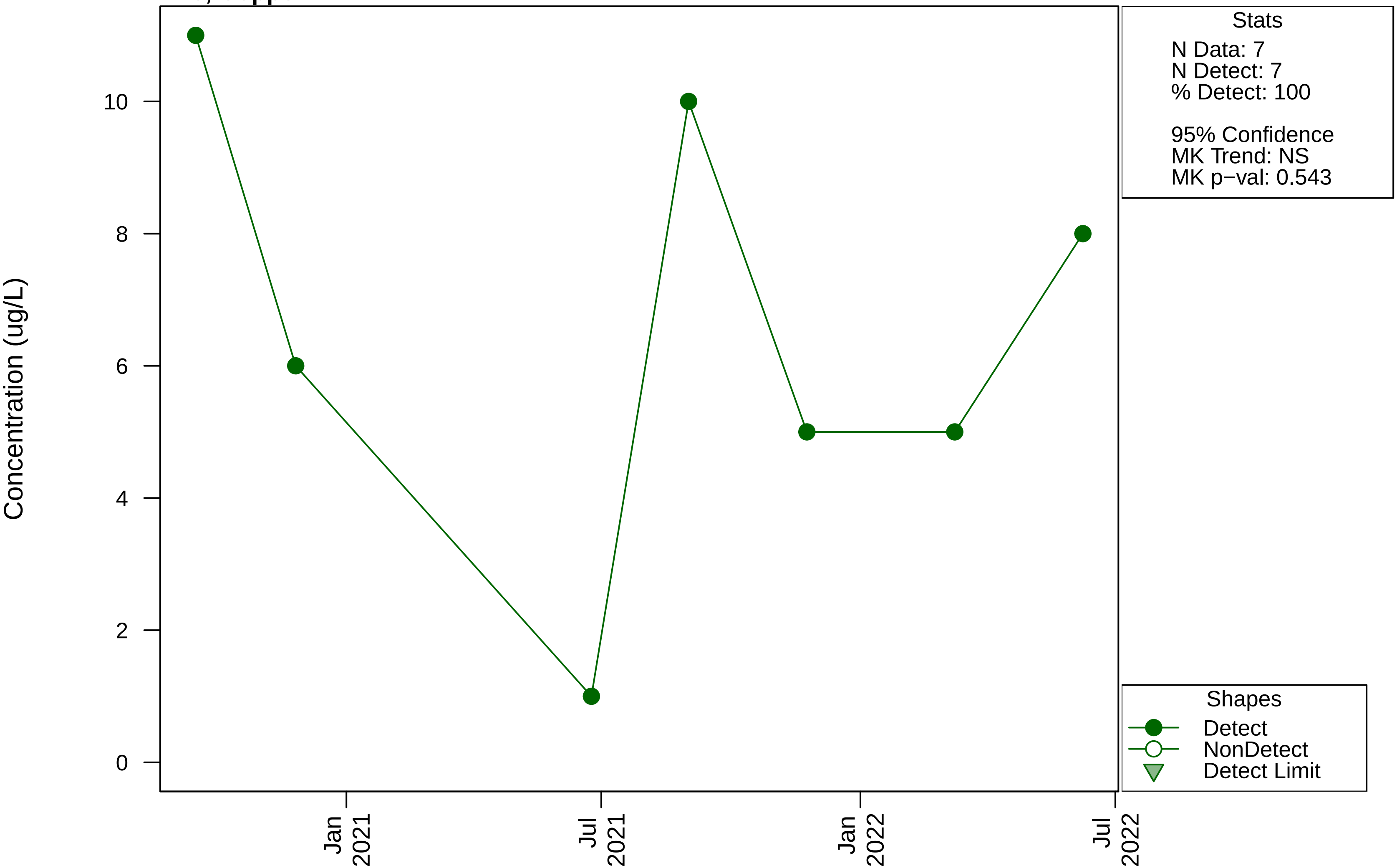


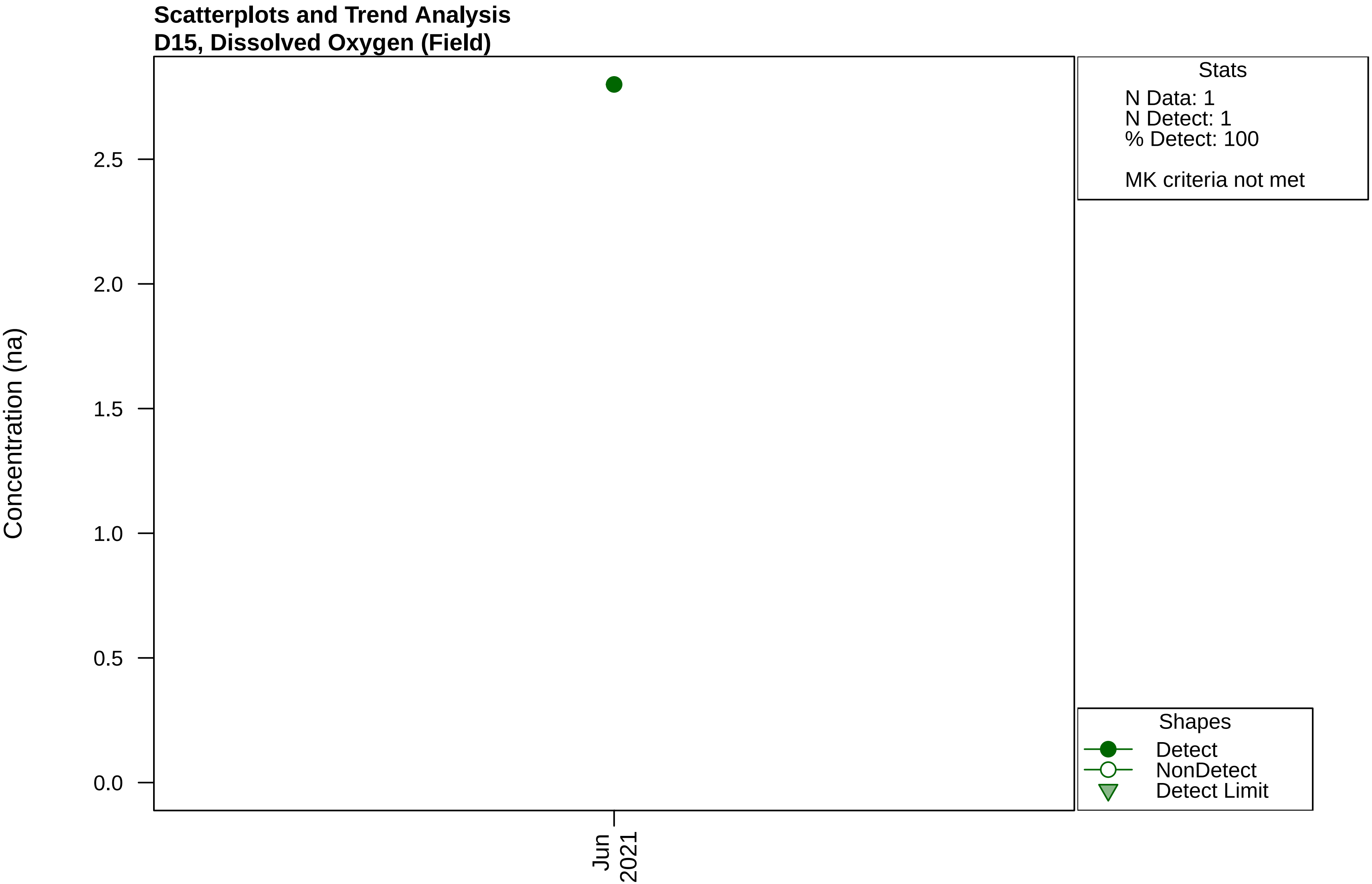
Scatterplots and Trend Analysis
D15, Chromium
Concentration (ug/L)
0
20
40
60
80
100
120
Jan 2021
Jul 2021
Jan 2022
Jul 2022
Stats
N Data: 7
N Detect: 7
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.773
Shapes
Detect
NonDetect
Detect Limit



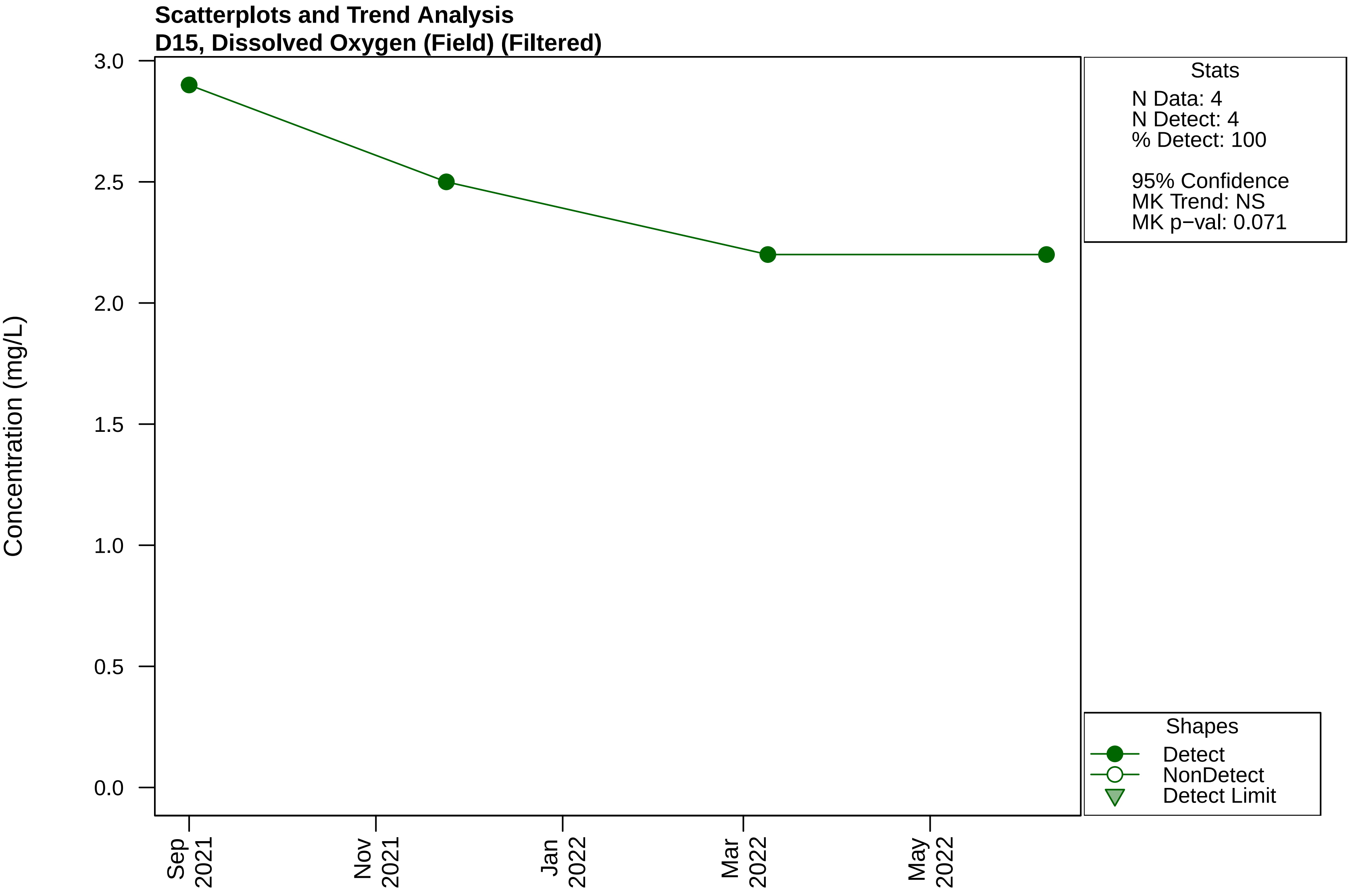
Scatterplots and Trend Analysis
D15, Cobalt
Concentration (ug/L)
0
100
200
300
400
500
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 6
N Detect: 6
% Detect: 100
95% Confidence
MK Trend: Significant
MK p−val: 0.00278
Direction: Decreasing
Lines
Linear Fit
Shapes
Detect
NonDetect
Detect Limit

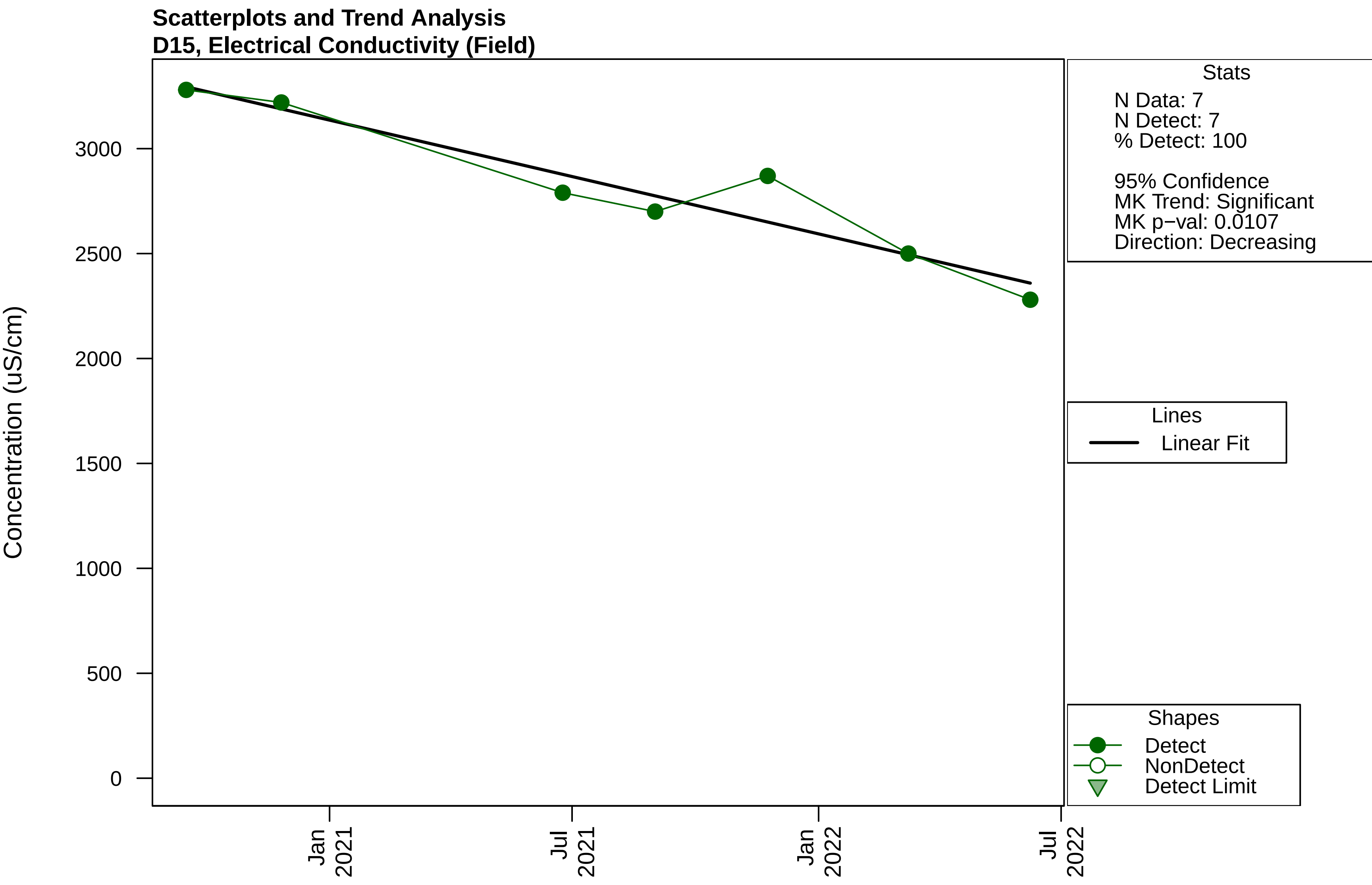
Scatterplots and Trend Analysis
D15, Copper





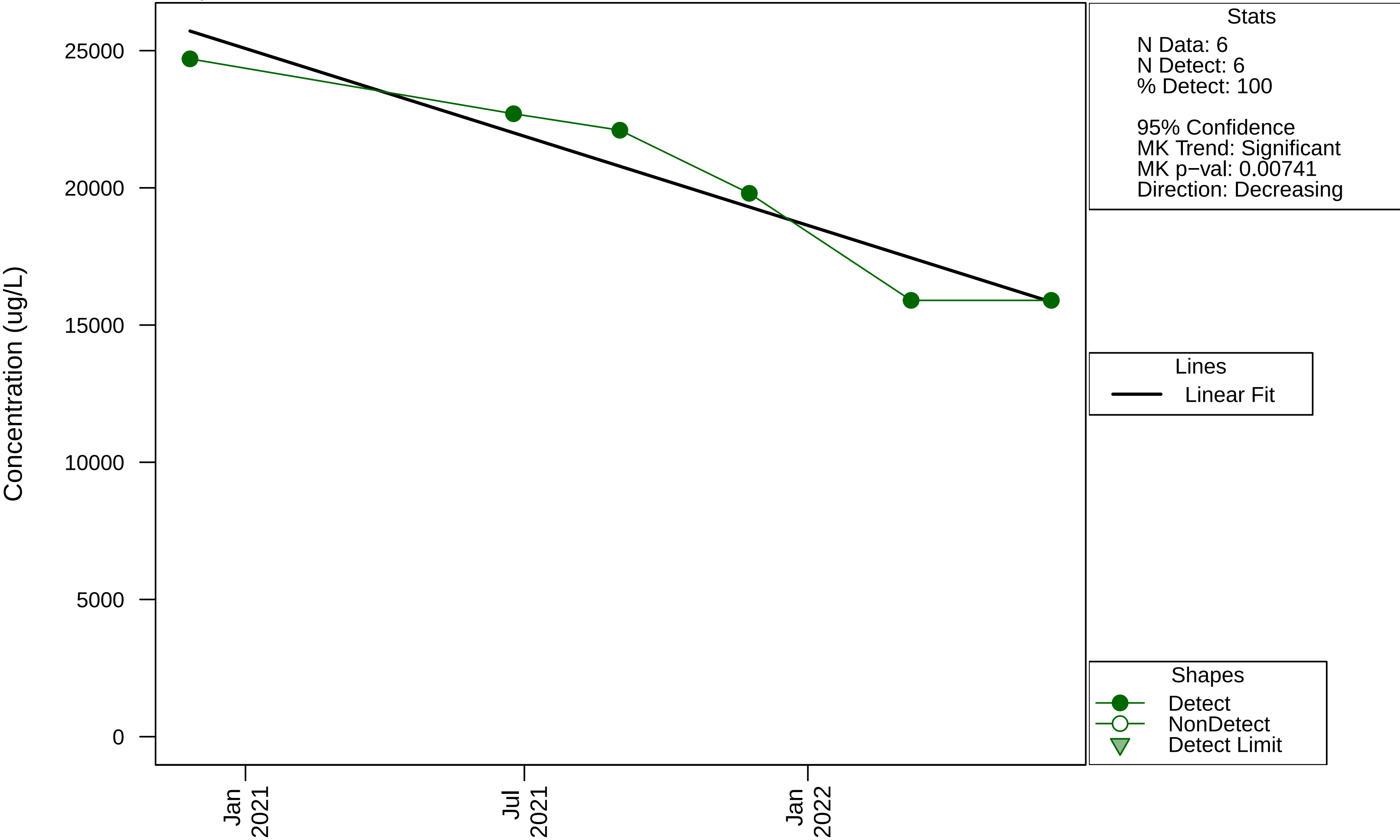
Scatterplots and Trend Analysis
D15, Dissolved Oxygen (Field)
Concentration (na)
0.0
0.5
1.0
1.5
2.0
2.5
Jun
2021
Stats
N Data: 1
N Detect: 1
% Detect: 100
MK criteria not met
Shapes
Detect
NonDetect
Detect Limit

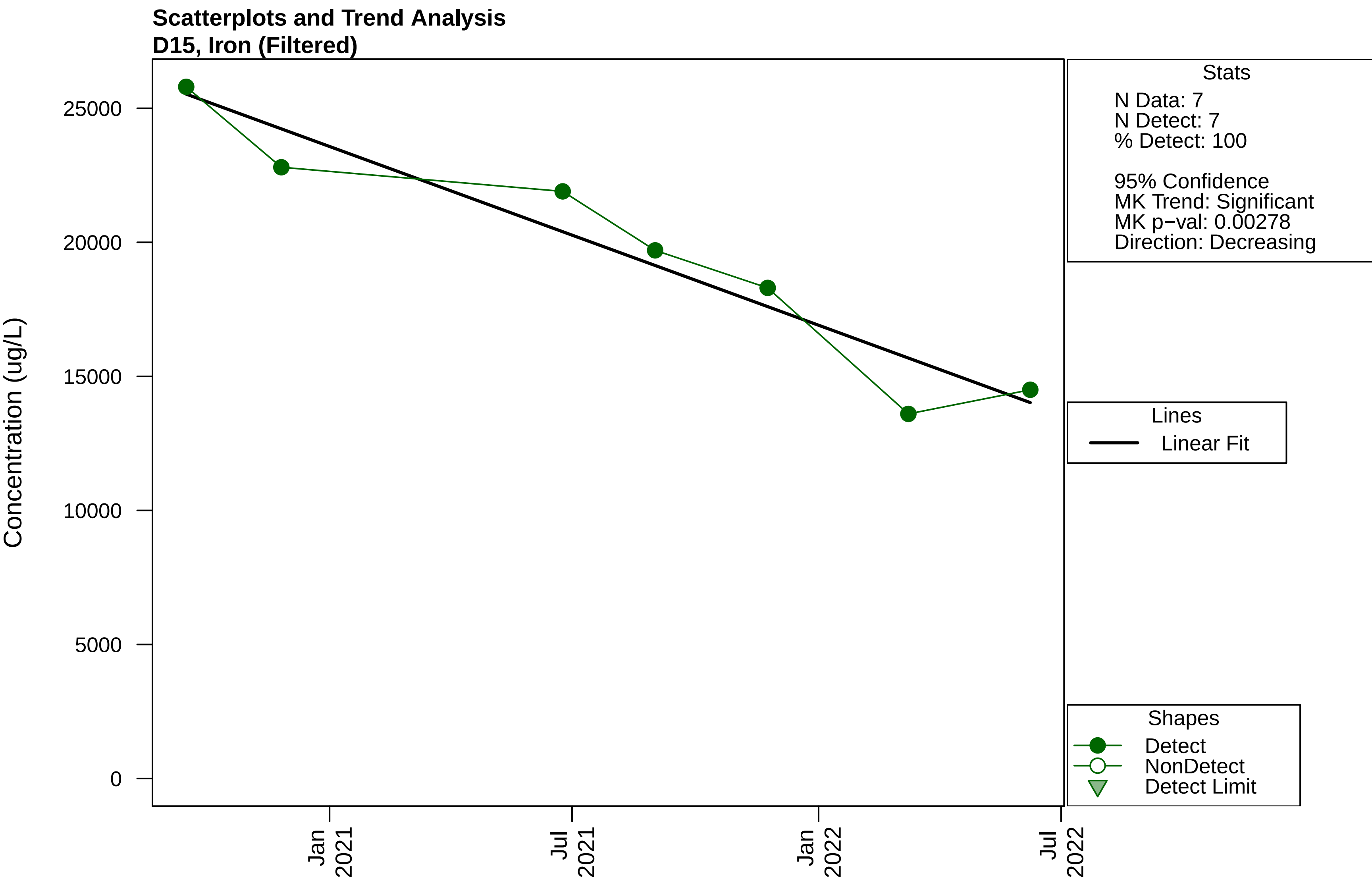

Scatterplots and Trend Analysis
D15, Dissolved Oxygen (Field) (Filtered)
Concentration (mg/L)
3.0
2.5
2.0
1.5
1.0
0.5
0.0
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 4
N Detect: 4
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.071
Shapes
Detect
NonDetect
Detect Limit



Scatterplots and Trend Analysis
D15, Electrical Conductivity (Field)
Concentration (uS/cm)
0
500
1000
1500
2000
2500
3000
Jan 2021
Jul 2021
Jan 2022
Jul 2022
Stats
N Data: 7
N Detect: 7
% Detect: 100
95% Confidence
MK Trend: Significant
MK p−val: 0.0107
Direction: Decreasing
Lines
Linear Fit
Shapes
Detect
NonDetect
Detect Limit

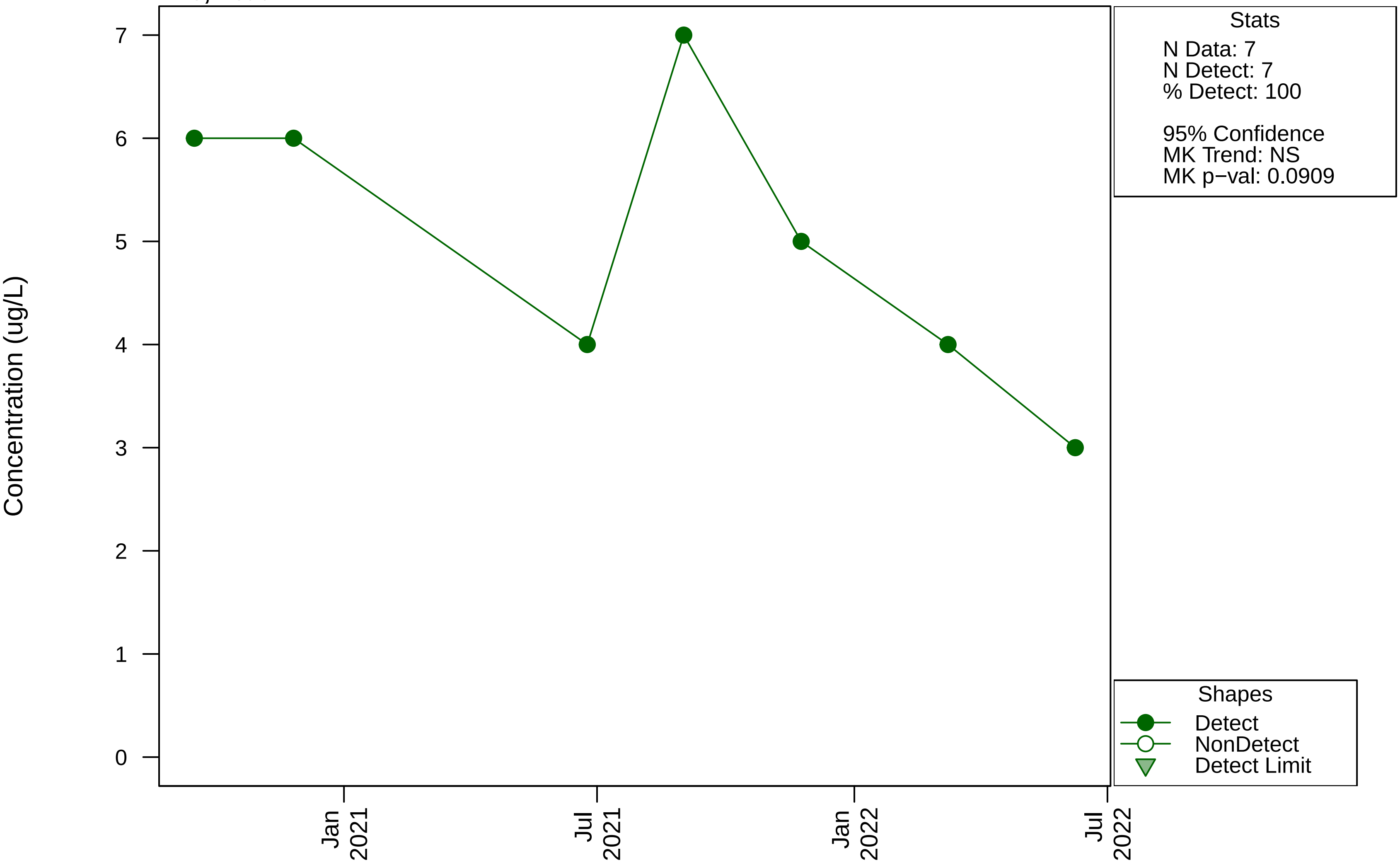
Scatterplots and Trend Analysis
D15, Iron

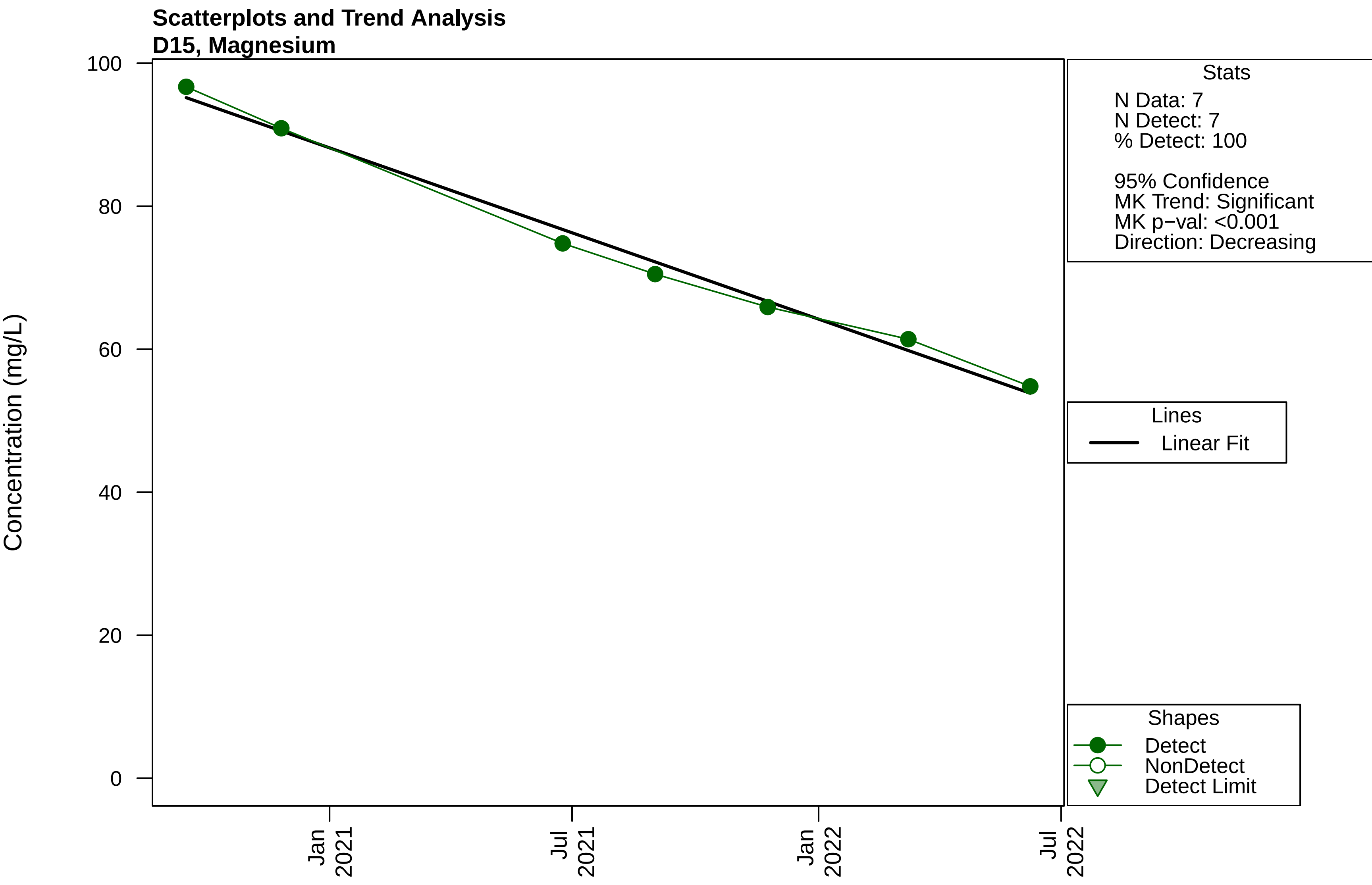




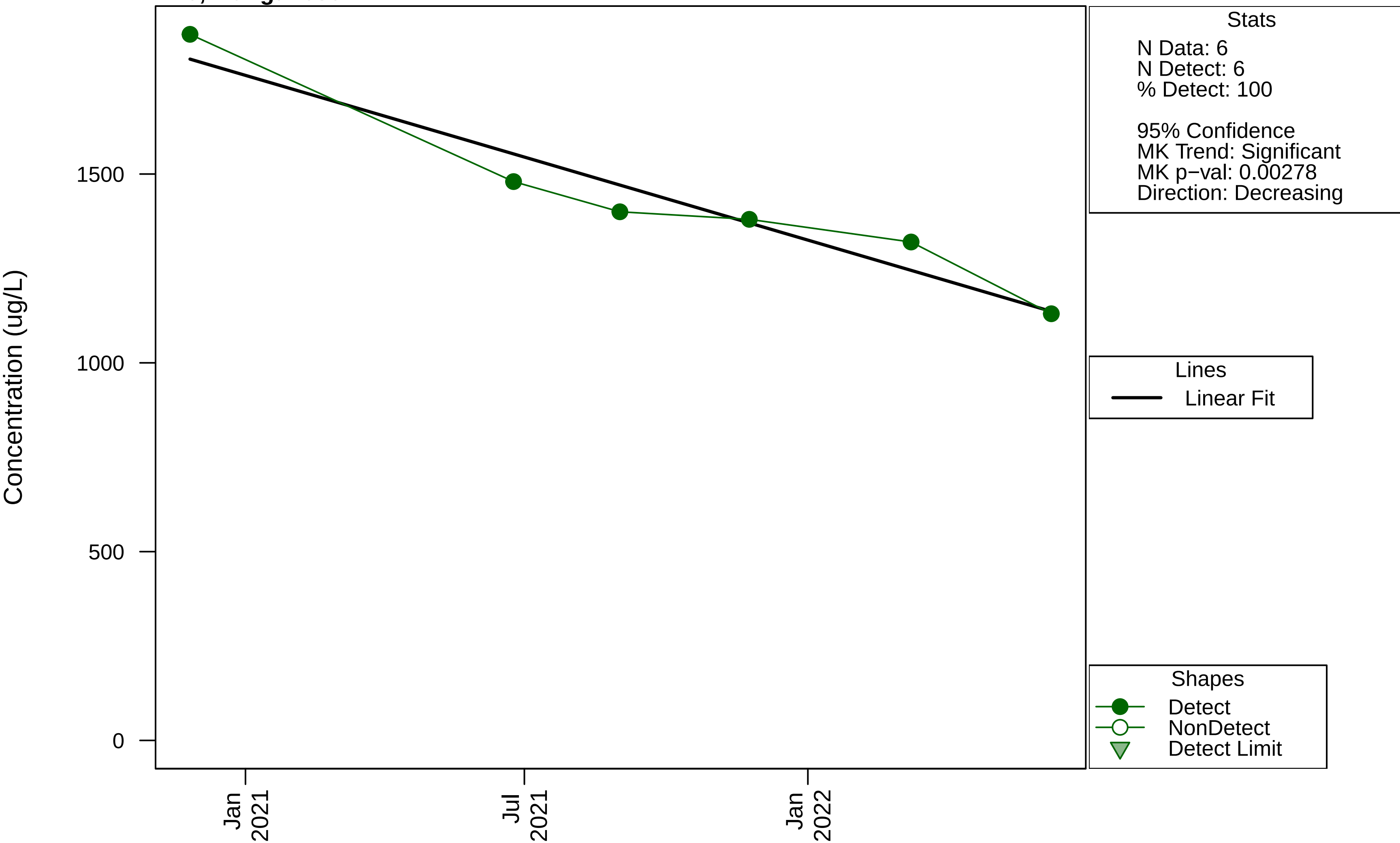
Scatterplots and Trend Analysis
D15, Iron (Filtered)
Concentration (ug/L)
25000
20000
15000
10000
5000
0
Jan 2021
Jul 2021
Jan 2022
Jul 2022
Stats
N Data: 7
N Detect: 7
% Detect: 100
95% Confidence
MK Trend: Significant
MK p−val: 0.00278
Direction: Decreasing
Lines
Linear Fit
Shapes
Detect
NonDetect
Detect Limit

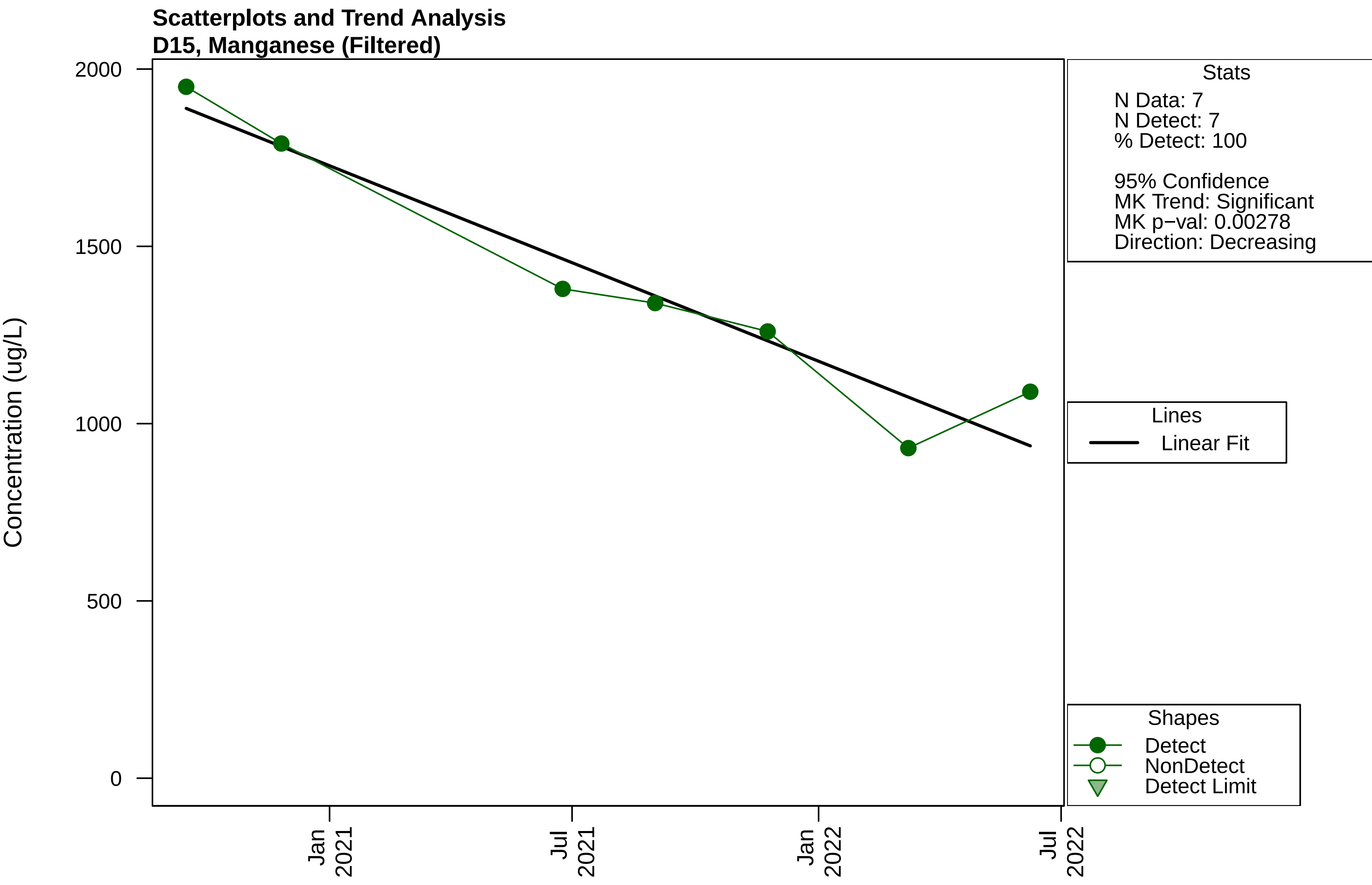
Scatterplots and Trend Analysis
D15, Lead



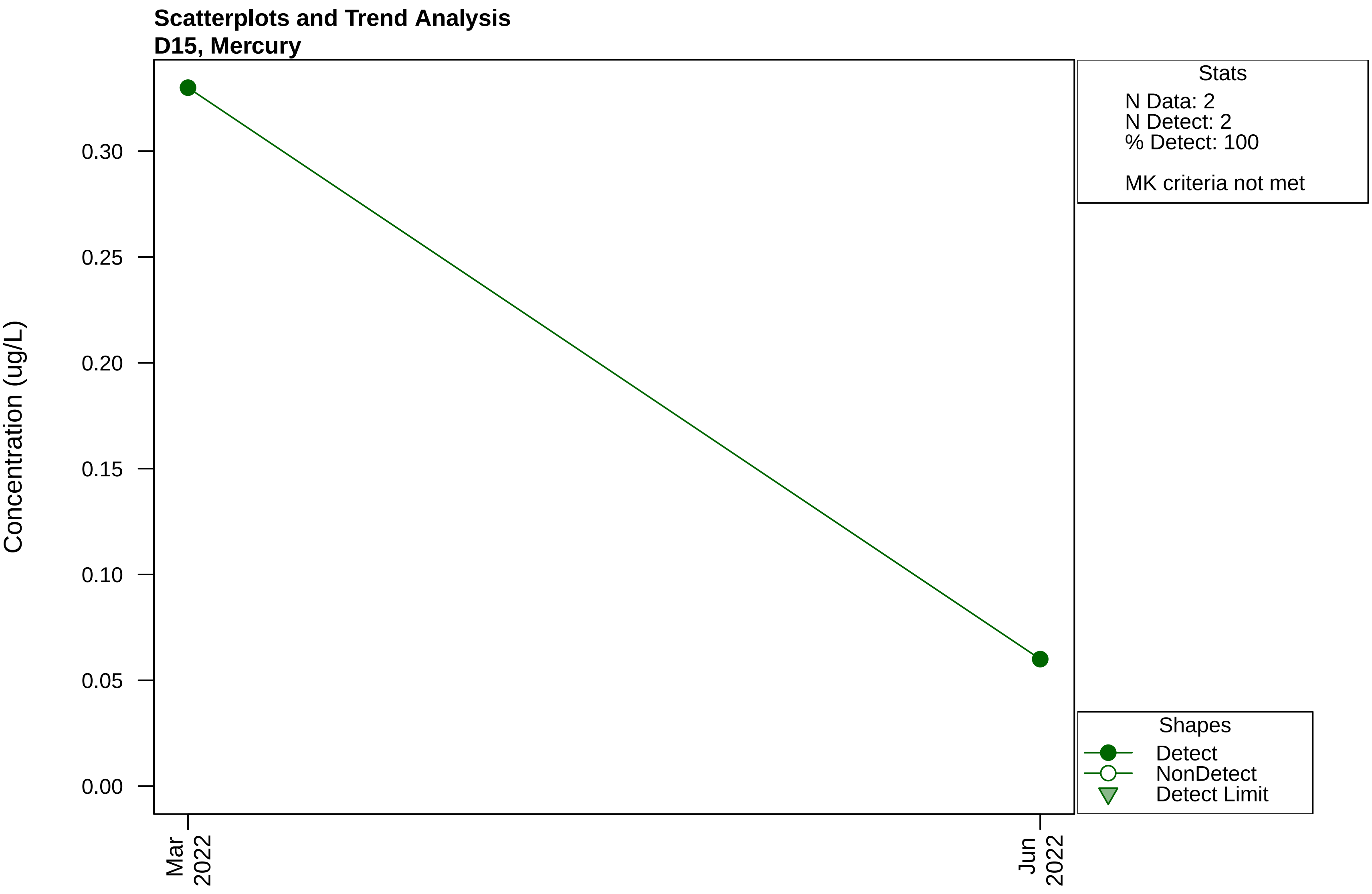

Scatterplots and Trend Analysis
D15, Magnesium
Concentration (mg/L)
100
80
60
40
20
0
Jan 2021
Jul 2021
Jan 2022
Jul 2022
Stats
N Data: 7
N Detect: 7
% Detect: 100
95% Confidence
MK Trend: Significant
MK p−val: <0.001
Direction: Decreasing
Lines
Linear Fit
Shapes
Detect
NonDetect
Detect Limit

Scatterplots and Trend Analysis
D15, Manganese

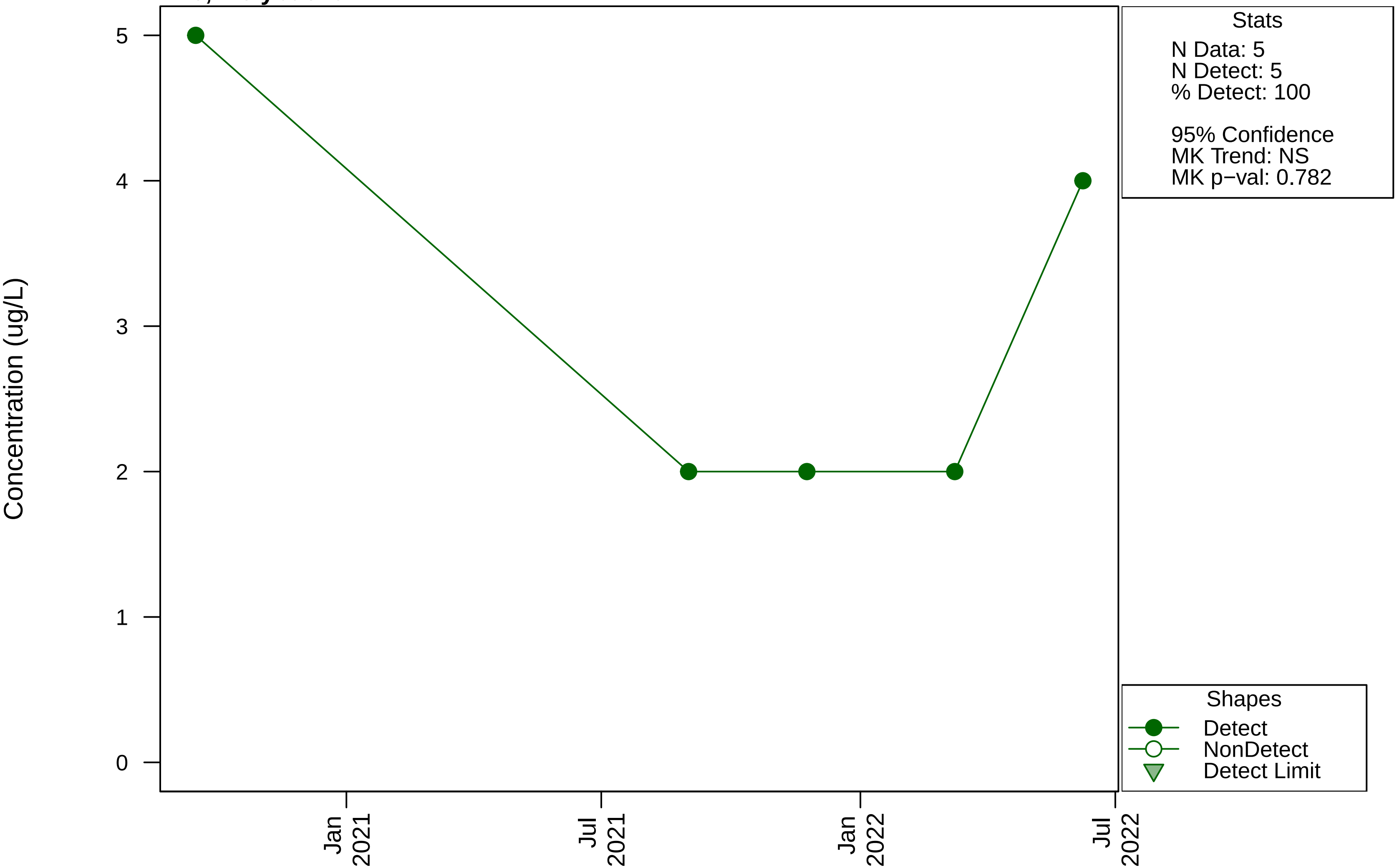




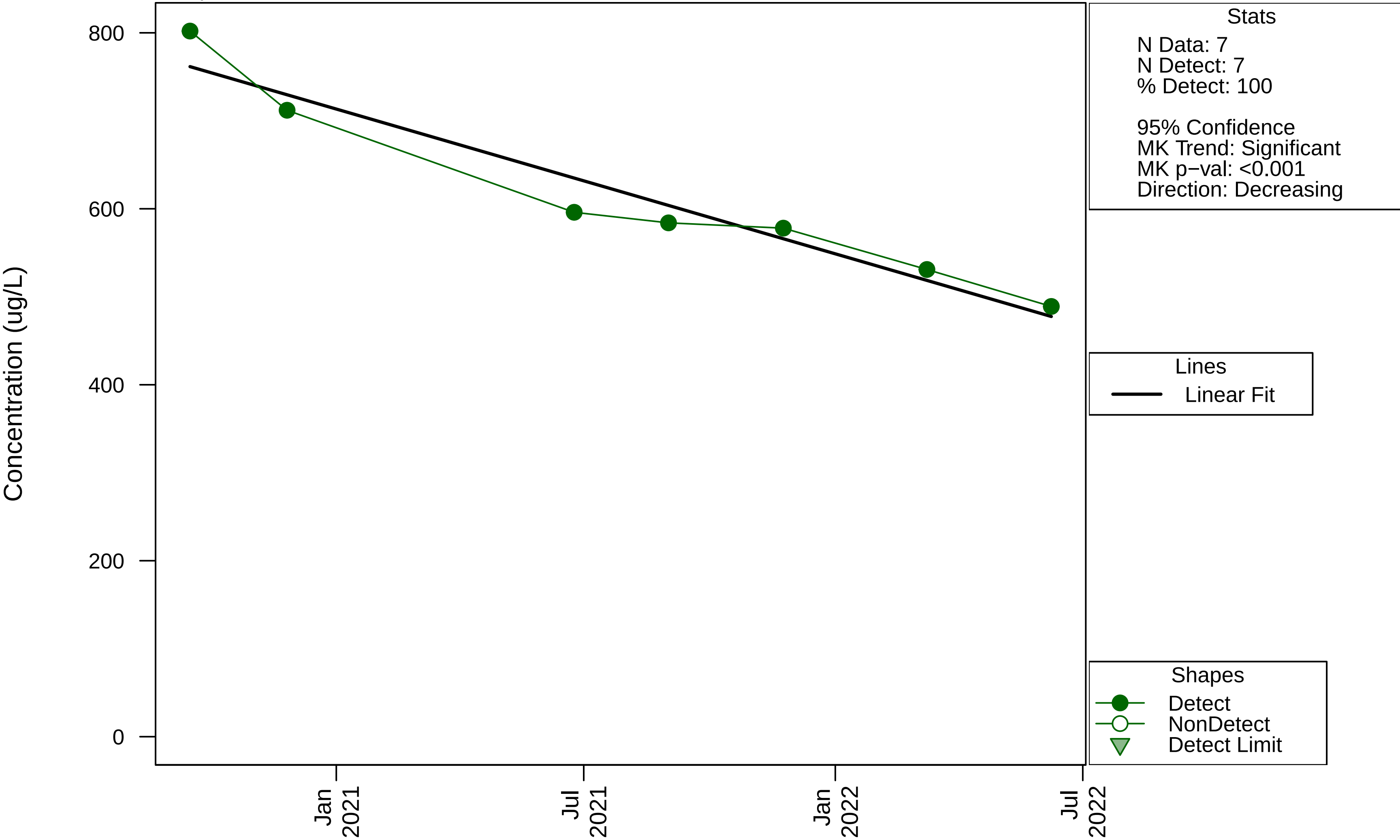
Scatterplots and Trend Analysis
D15, Manganese (Filtered)
Concentration (ug/L)
2000
1500
1000
500
0
Jan 2021
Jul 2021
Jan 2022
Jul 2022
Stats
N Data: 7
N Detect: 7
% Detect: 100
95% Confidence
MK Trend: Significant
MK p−val: 0.00278
Direction: Decreasing
Lines
Linear Fit
Shapes
Detect
NonDetect
Detect Limit

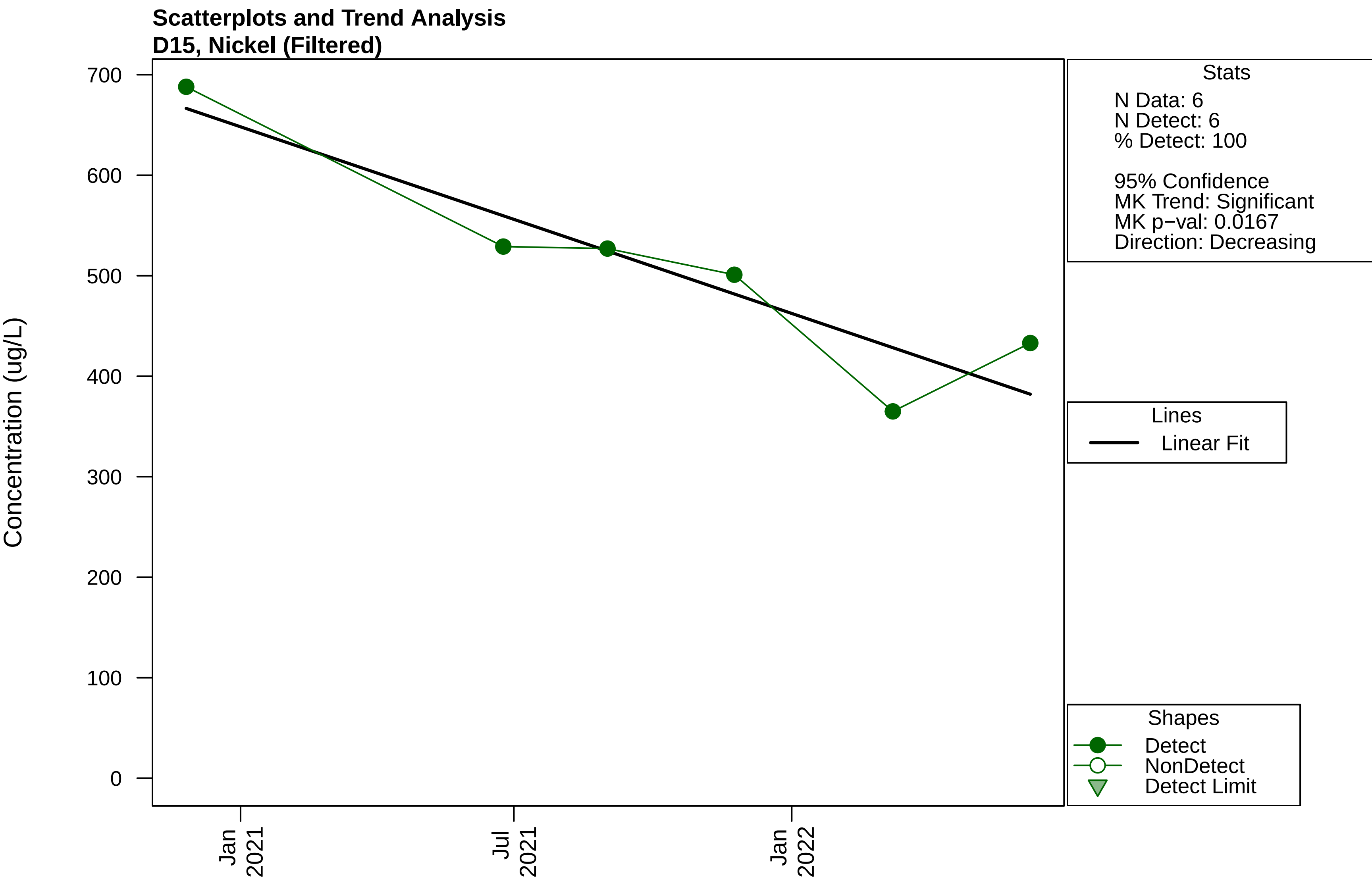

Scatterplots and Trend Analysis
D15, Mercury
Concentration (ug/L)
0.00
0.05
0.10
0.15
0.20
0.25
0.30
Mar 2022
Jun 2022
Stats
N Data: 2
N Detect: 2
% Detect: 100
MK criteria not met
Shapes
Detect
NonDetect
Detect Limit

Scatterplots and Trend Analysis
D15, Molybdenum



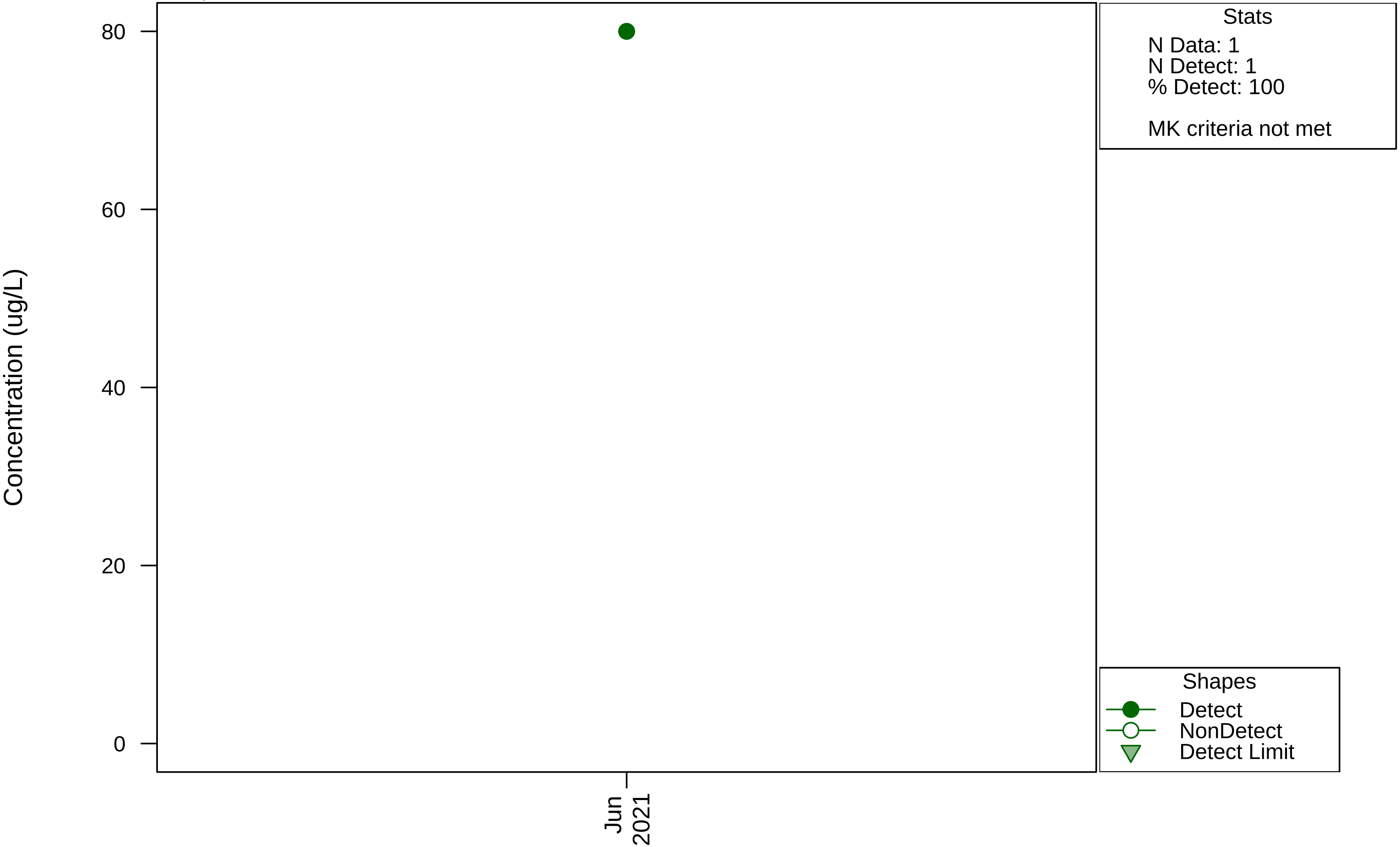
Scatterplots and Trend Analysis
D15, Nickel



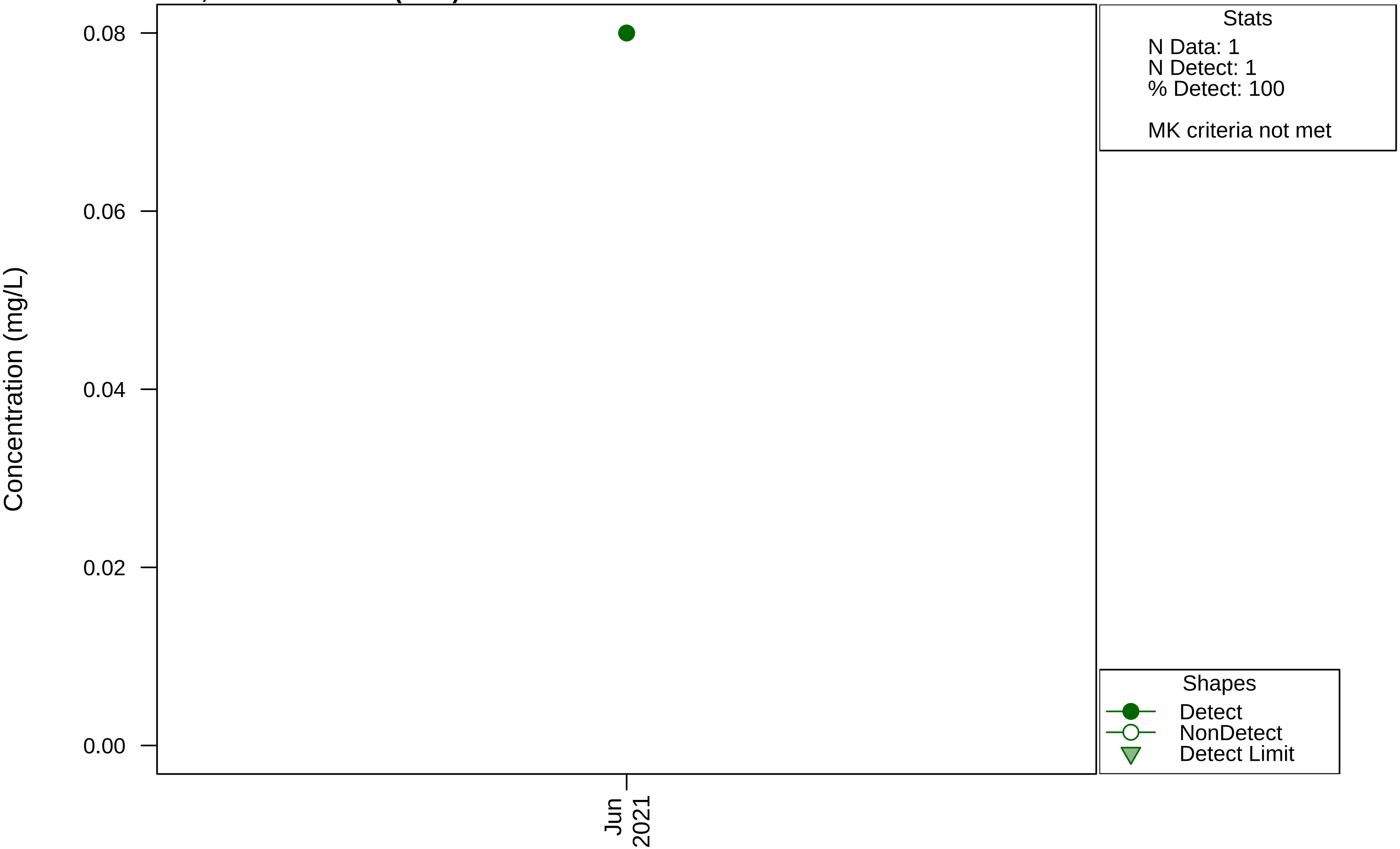


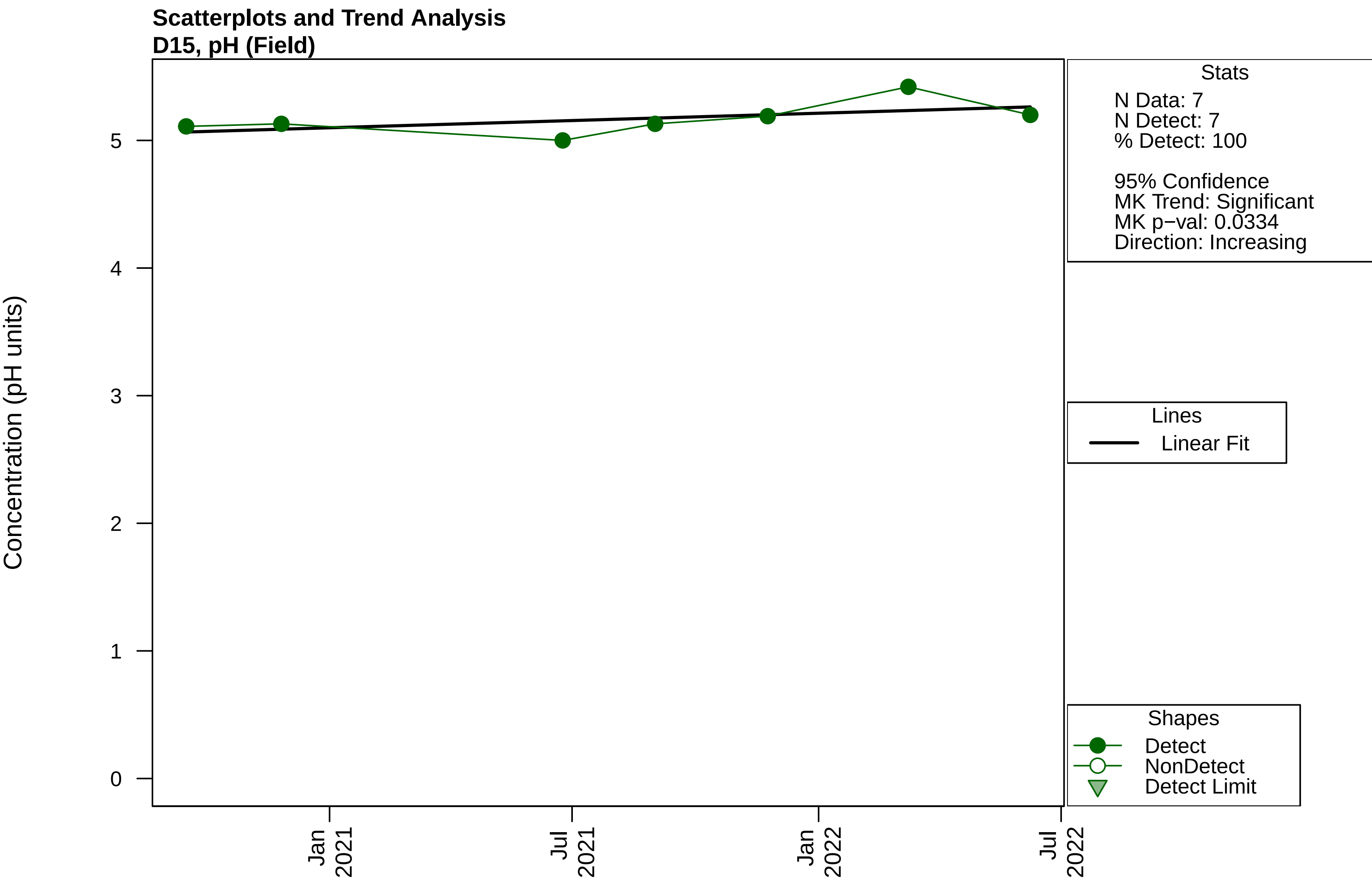
Scatterplots and Trend Analysis
D15, Nickel (Filtered)
Concentration (ug/L)
700
600
500
400
300
200
100
0
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 6
N Detect: 6
% Detect: 100
95% Confidence
MK Trend: Significant
MK p−val: 0.0167
Direction: Decreasing
Lines
Linear Fit
Shapes
Detect
NonDetect
Detect Limit

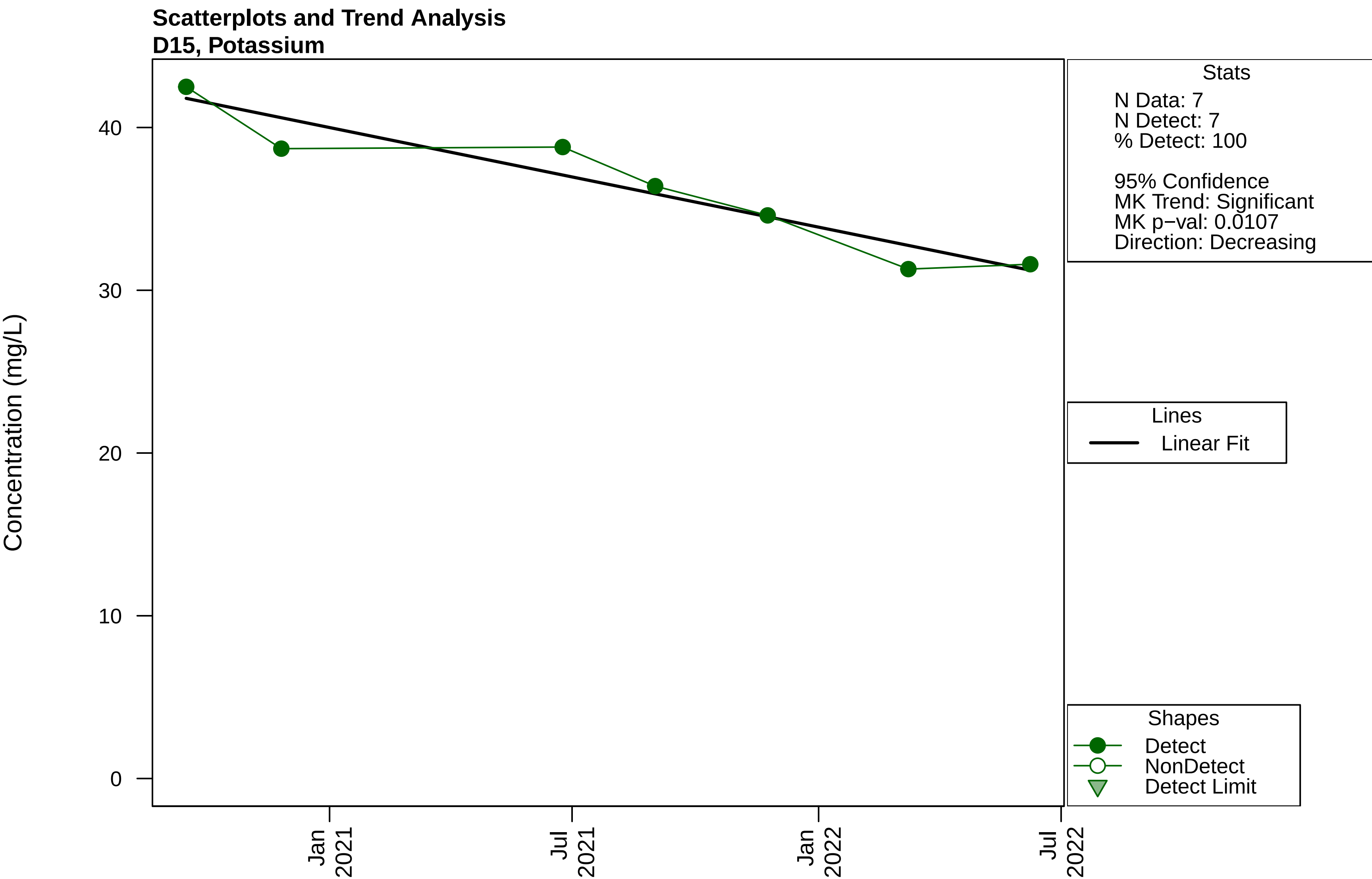
Scatterplots and Trend Analysis
D15, Nitrate



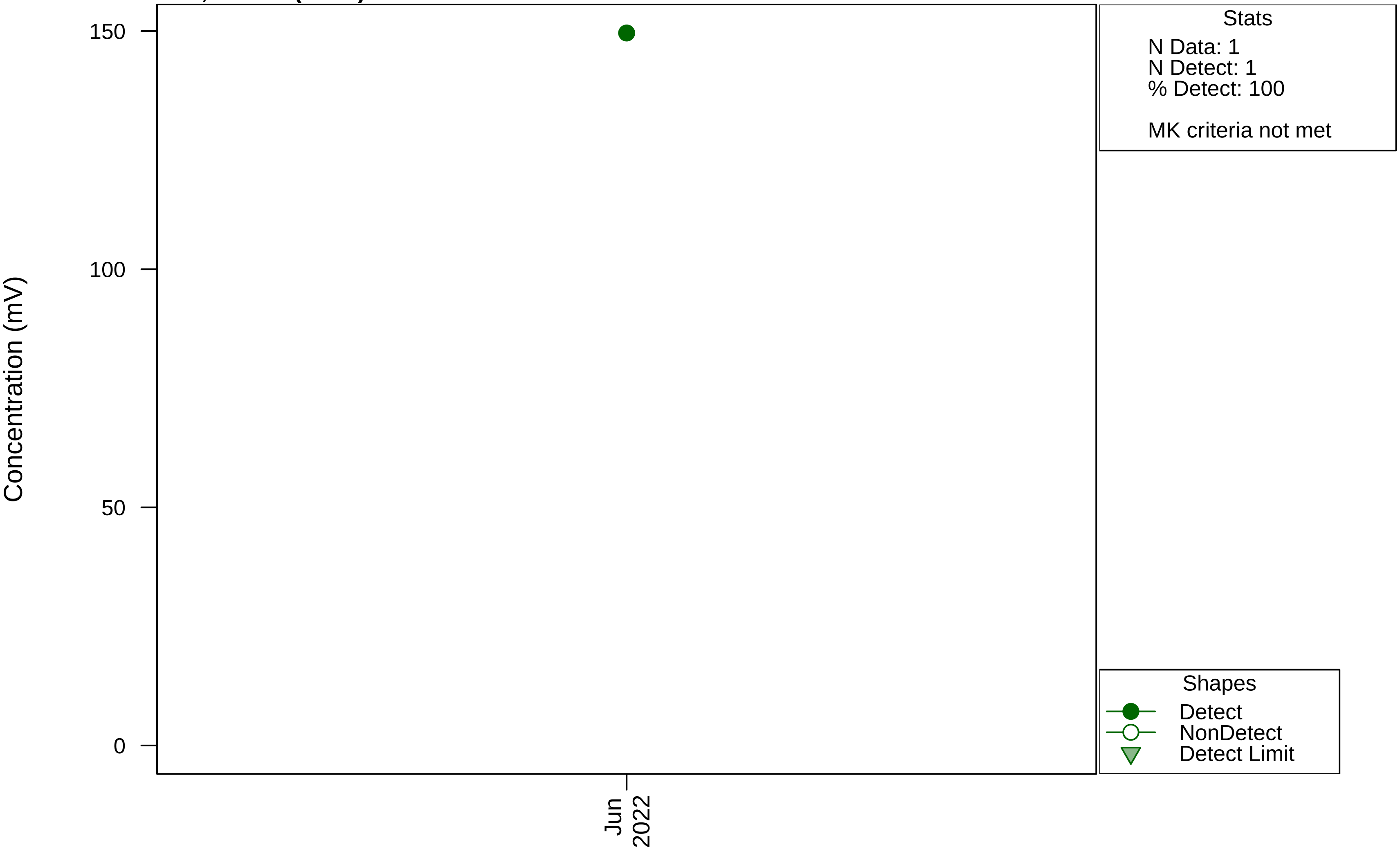
Scatterplots and Trend Analysis
D15, Nitrite + Nitrate (as N)



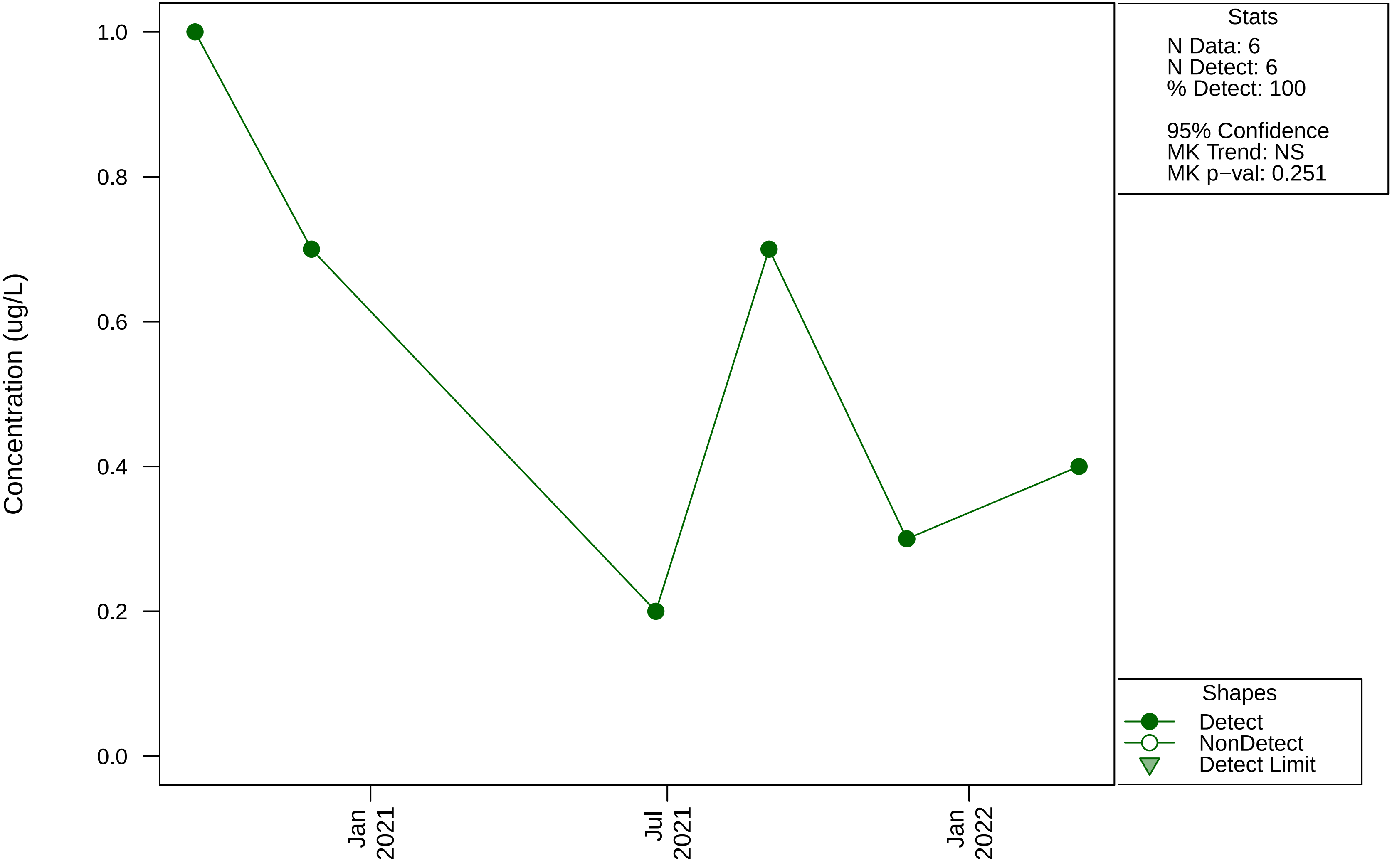

Scatterplots and Trend Analysis
D15, pH (Field)
Concentration (pH units)
0
1
2
3
4
5
Jan 2021
Jul 2021
Jan 2022
Jul 2022
Stats
N Data: 7
N Detect: 7
% Detect: 100
95% Confidence
MK Trend: Significant
MK p−val: 0.0334
Direction: Increasing
Lines
Linear Fit
Shapes
Detect
NonDetect
Detect Limit


Scatterplots and Trend Analysis
D15, Potassium
Concentration (mg/L)
0
10
20
30
40
Jan 2021
Jul 2021
Jan 2022
Jul 2022
Stats
N Data: 7
N Detect: 7
% Detect: 100
95% Confidence
MK Trend: Significant
MK p−val: 0.0107
Direction: Decreasing
Lines
Linear Fit
Shapes
Detect
NonDetect
Detect Limit

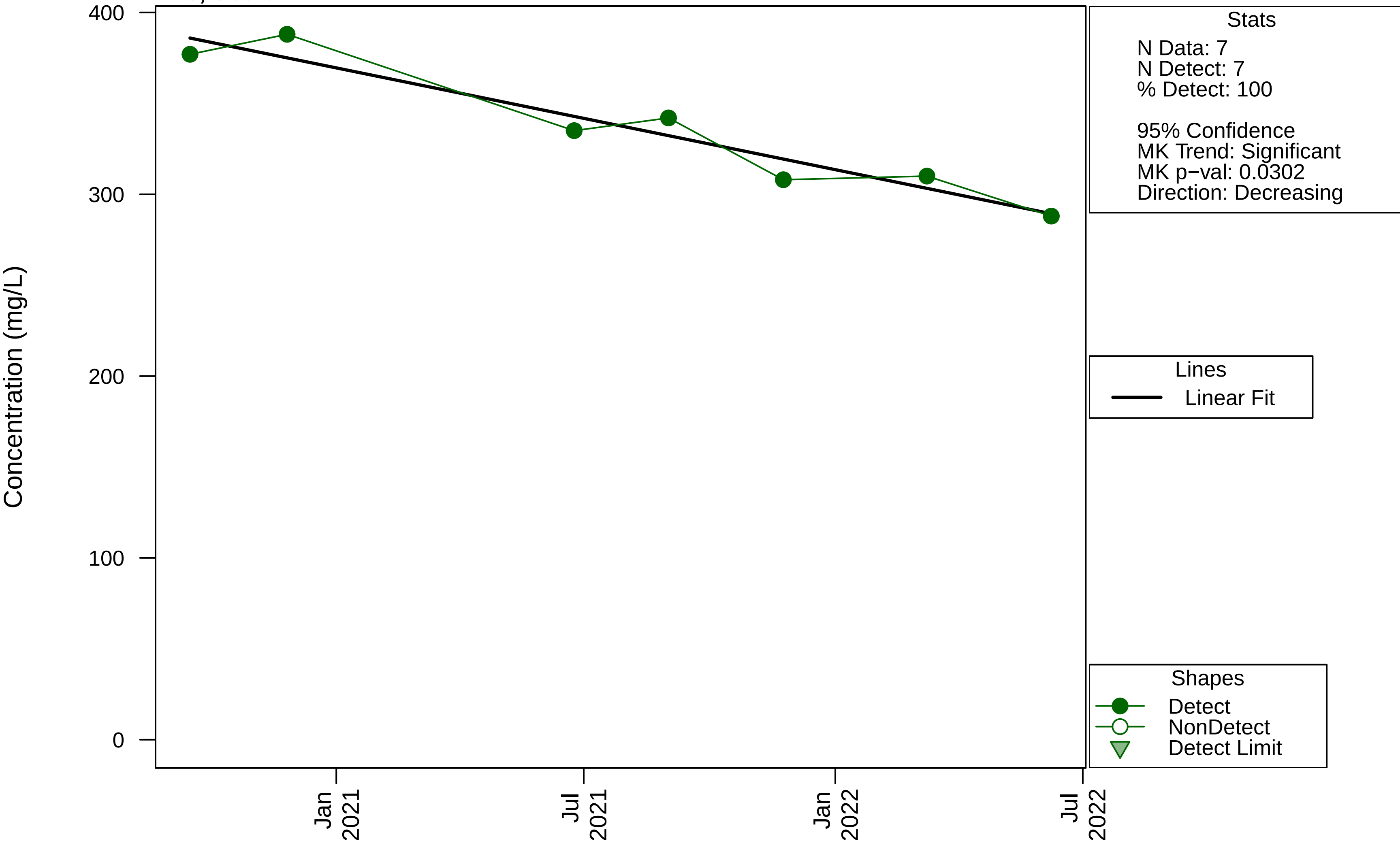
Scatterplots and Trend Analysis
D15, Redox (Field)



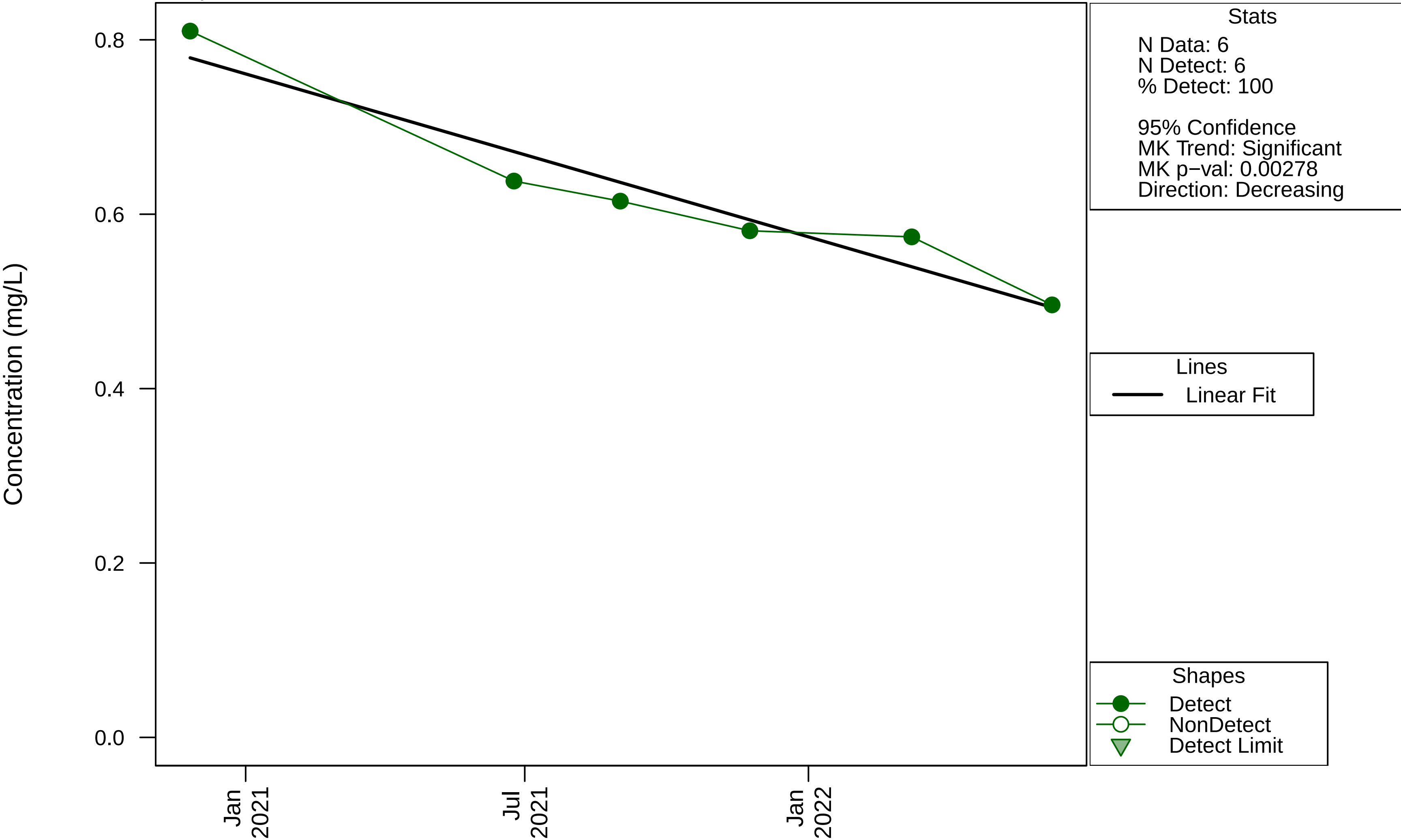
Scatterplots and Trend Analysis
D15, Selenium

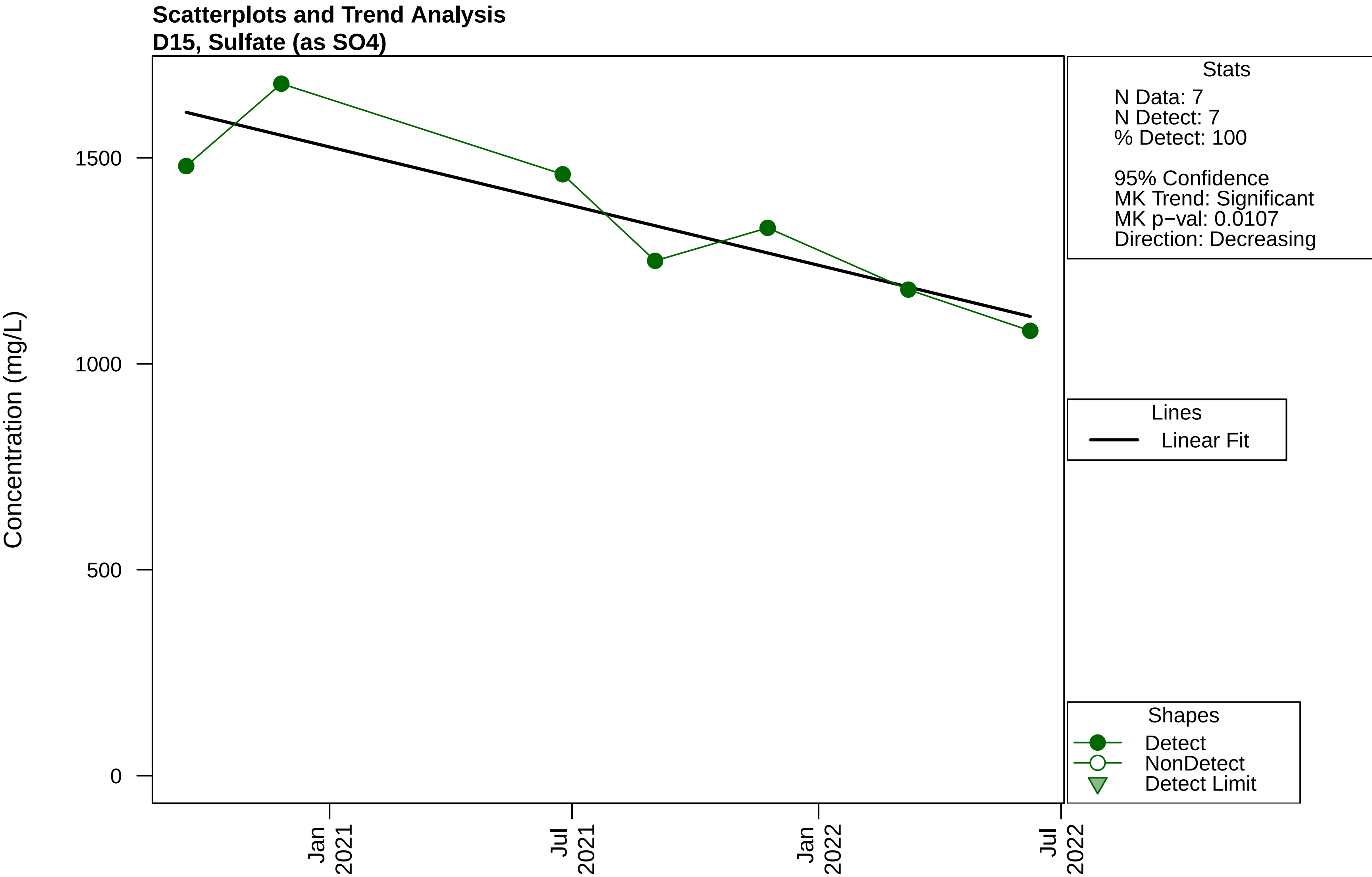


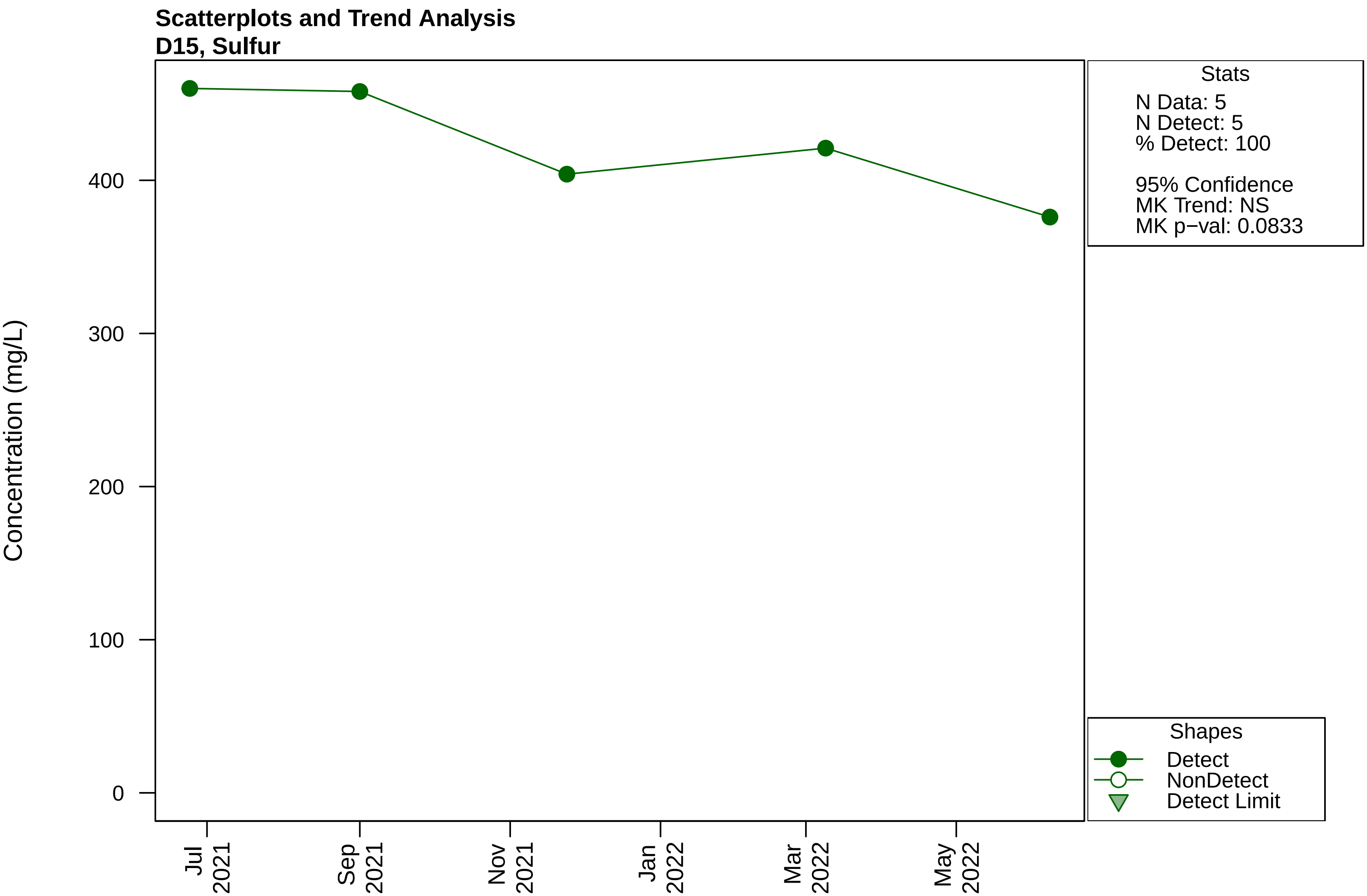
Scatterplots and Trend Analysis
D15, Sodium



Scatterplots and Trend Analysis
D15, Strontium

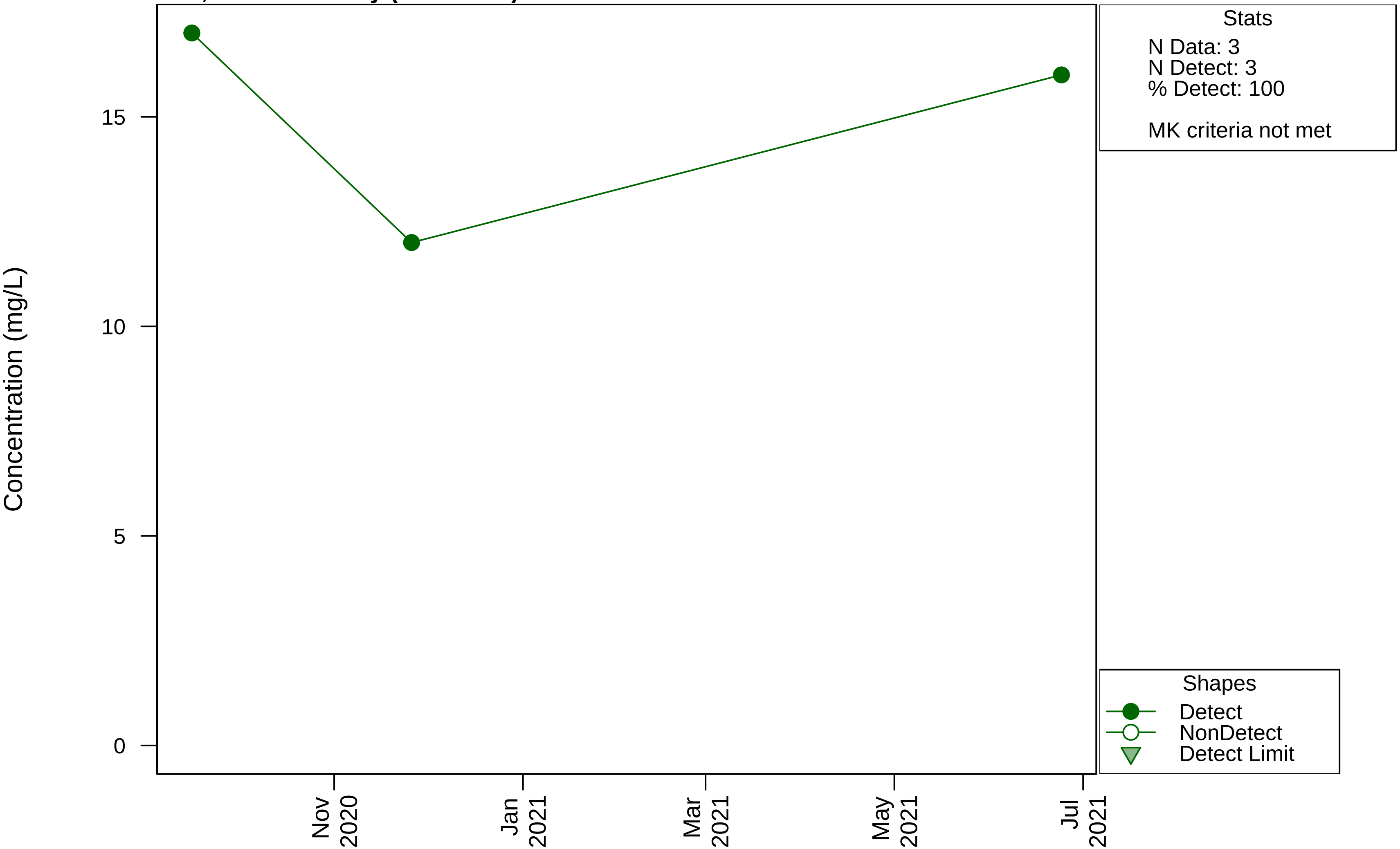


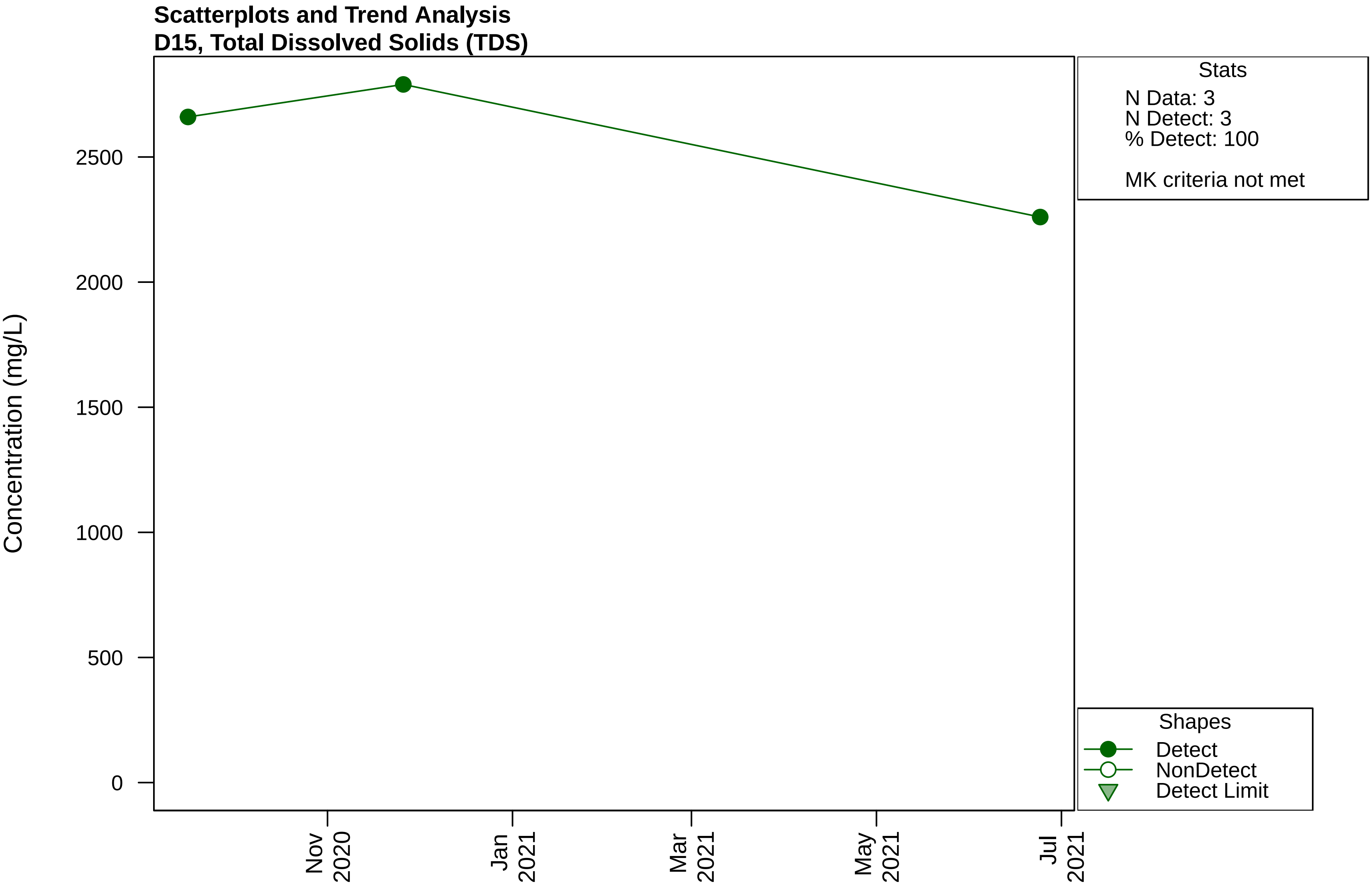

Scatterplots and Trend Analysis
D15, Sulfate (as SO4)
Concentration (mg/L)
1500
1000
500
0
Jan 2021
Jul 2021
Jan 2022
Jul 2022
Stats
N Data: 7
N Detect: 7
% Detect: 100
95% Confidence
MK Trend: Significant
MK p−val: 0.0107
Direction: Decreasing
Lines
Linear Fit
Shapes
Detect
NonDetect
Detect Limit

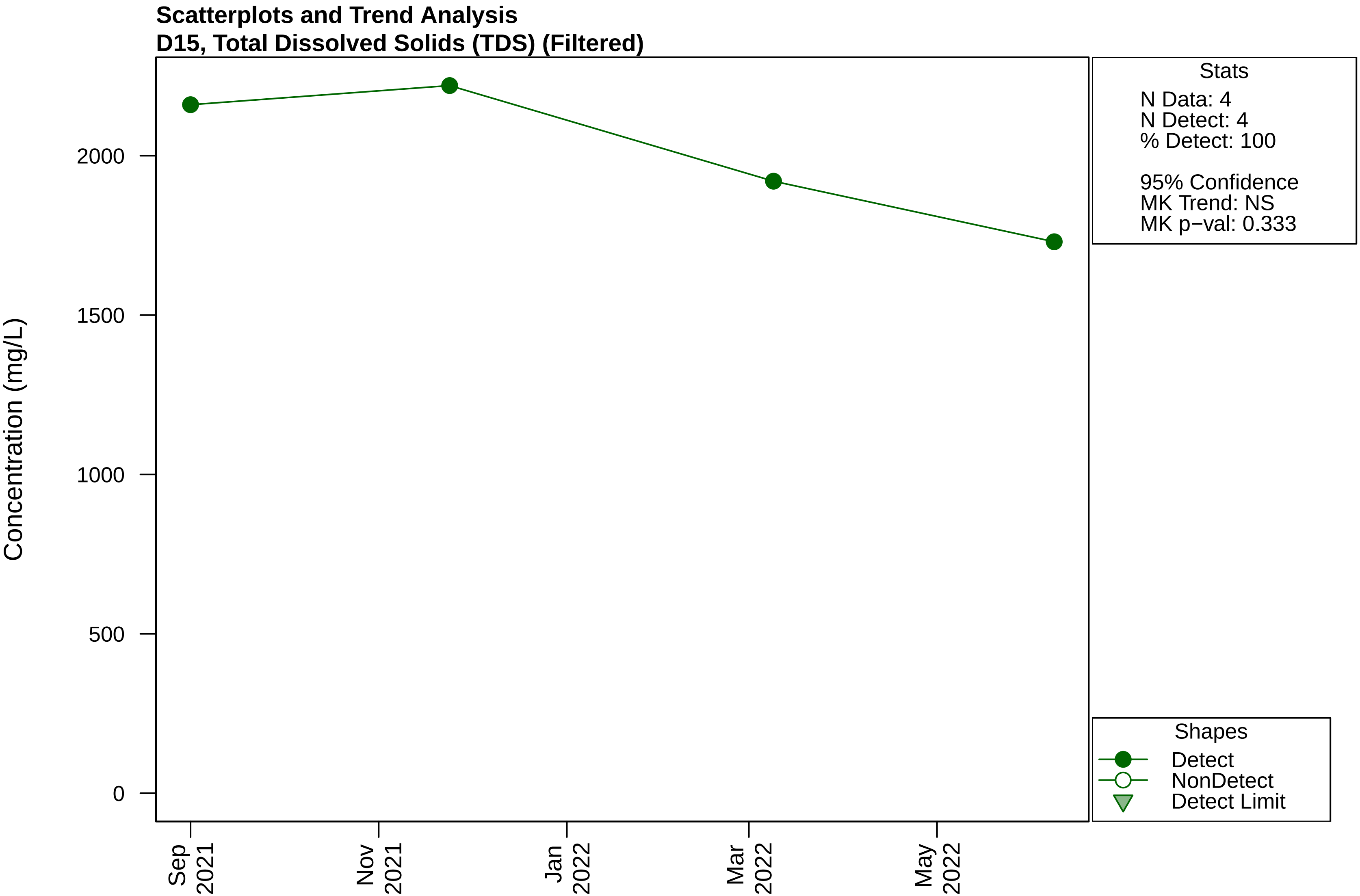


Scatterplots and Trend Analysis
D15, Sulfur
Concentration (mg/L)
0
100
200
300
400
Jul 2021
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 5
N Detect: 5
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.0833
Shapes
Detect
NonDetect
Detect Limit

Scatterplots and Trend Analysis
D15, Total Alkalinity (as CaCO3)

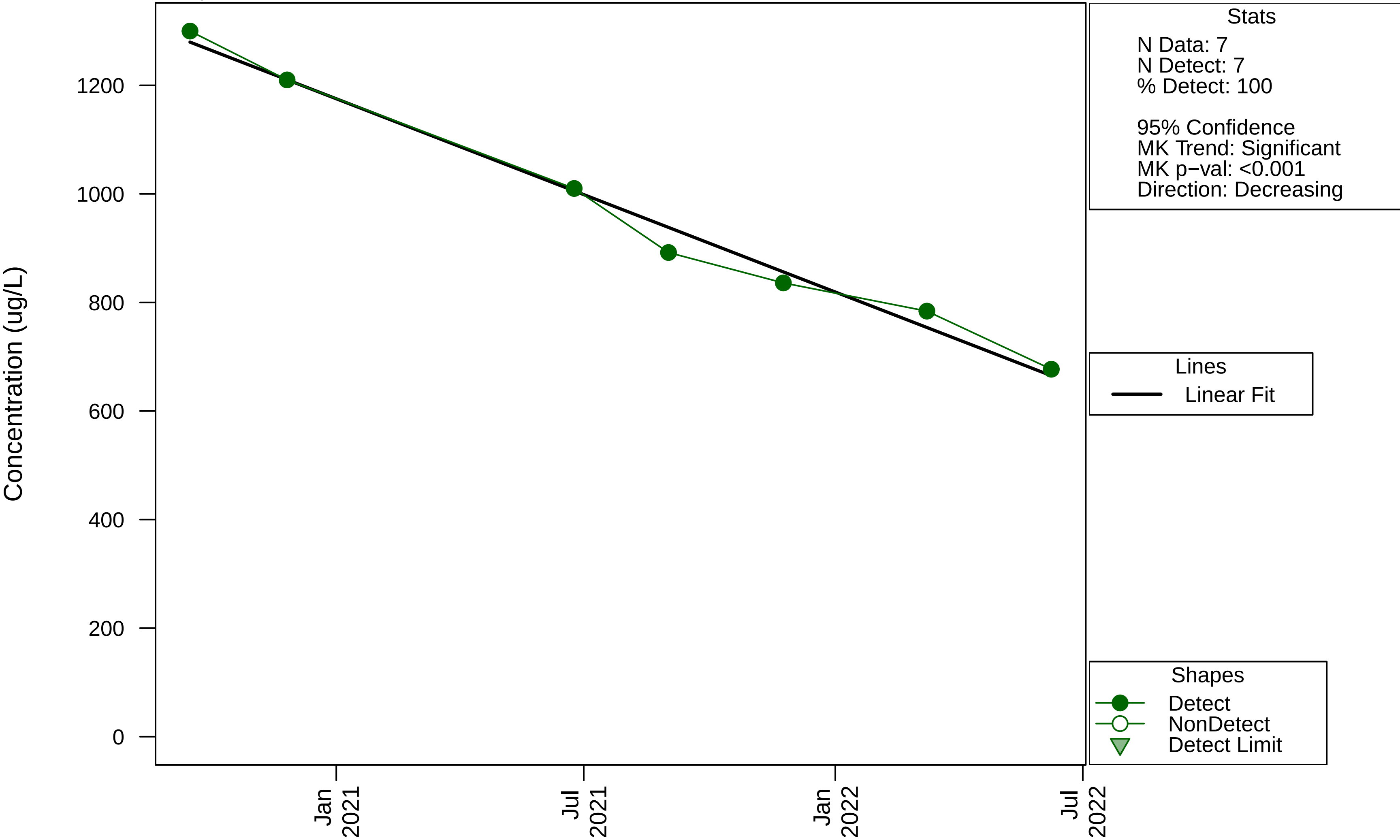



Scatterplots and Trend Analysis
D15, Total Dissolved Solids (TDS)
Concentration (mg/L)
0
500
1000
1500
2000
2500
Nov 2020
Jan 2021
Mar 2021
May 2021
Jul 2021
Stats
N Data: 3
N Detect: 3
% Detect: 100
MK criteria not met
Shapes
Detect
NonDetect
Detect Limit

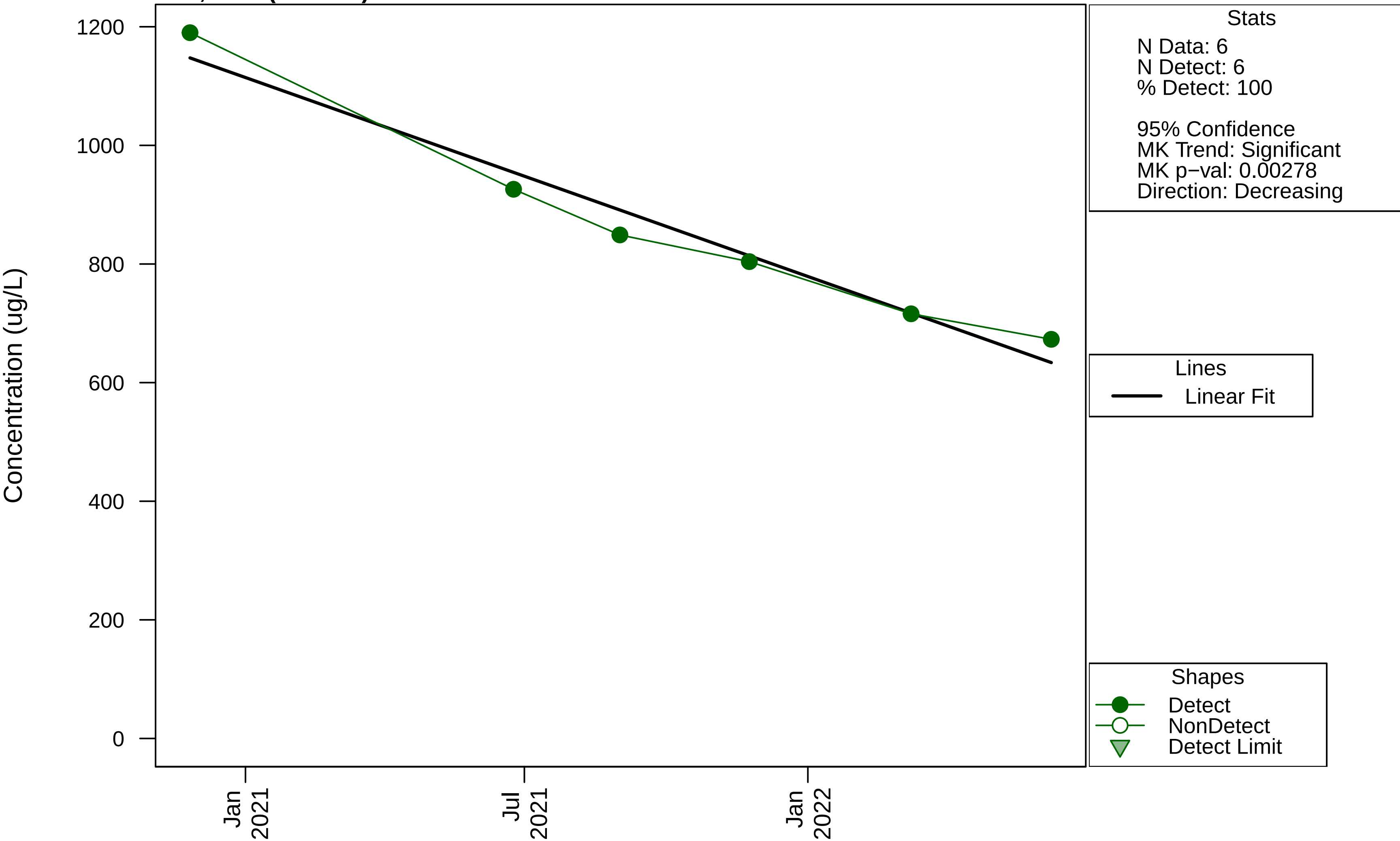


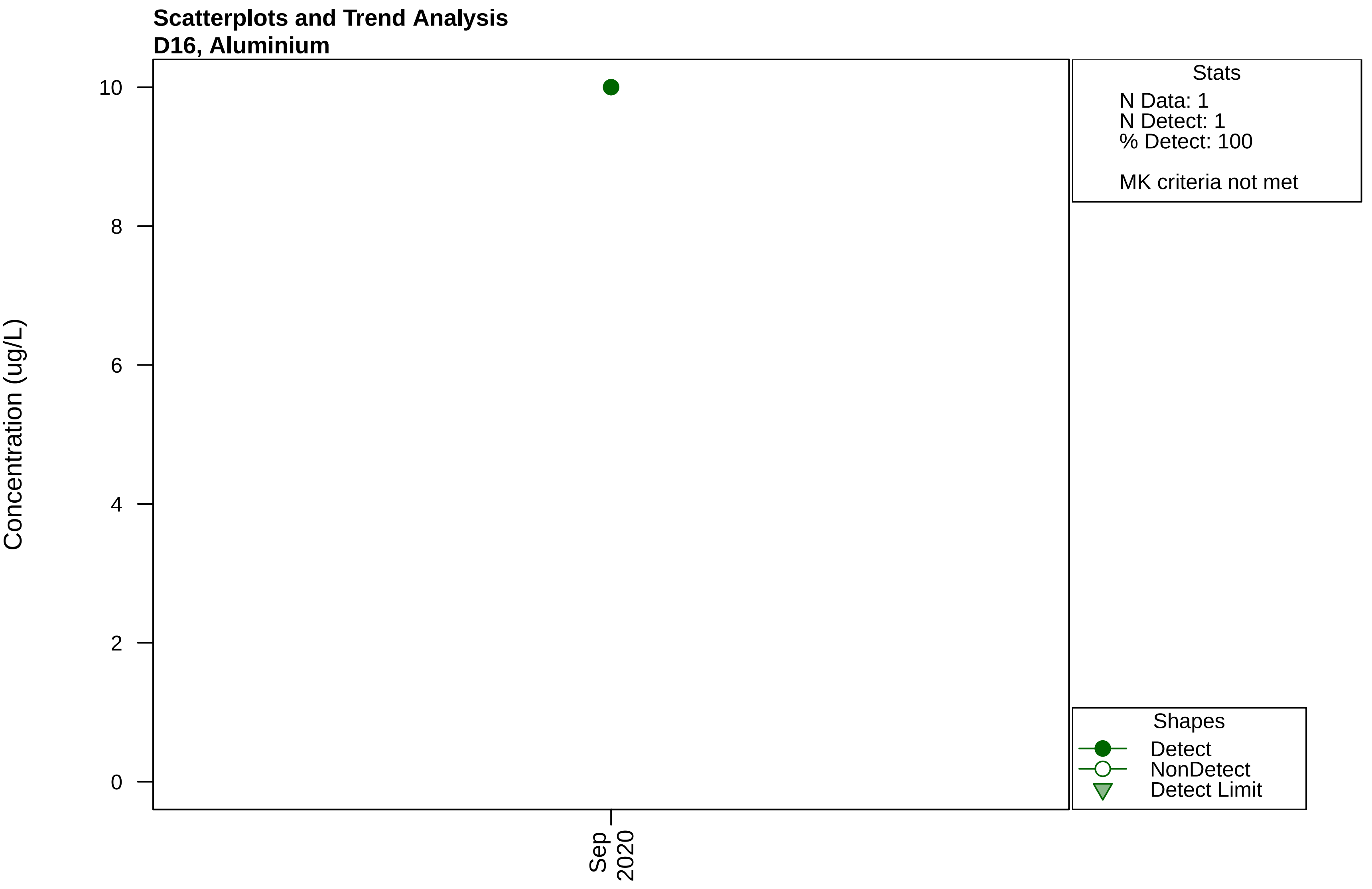
Scatterplots and Trend Analysis
D15, Total Dissolved Solids (TDS) (Filtered)
Concentration (mg/L)
2000
1500
1000
500
0
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 4
N Detect: 4
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.333
Shapes
Detect
NonDetect
Detect Limit

Scatterplots and Trend Analysis
D15, Zinc

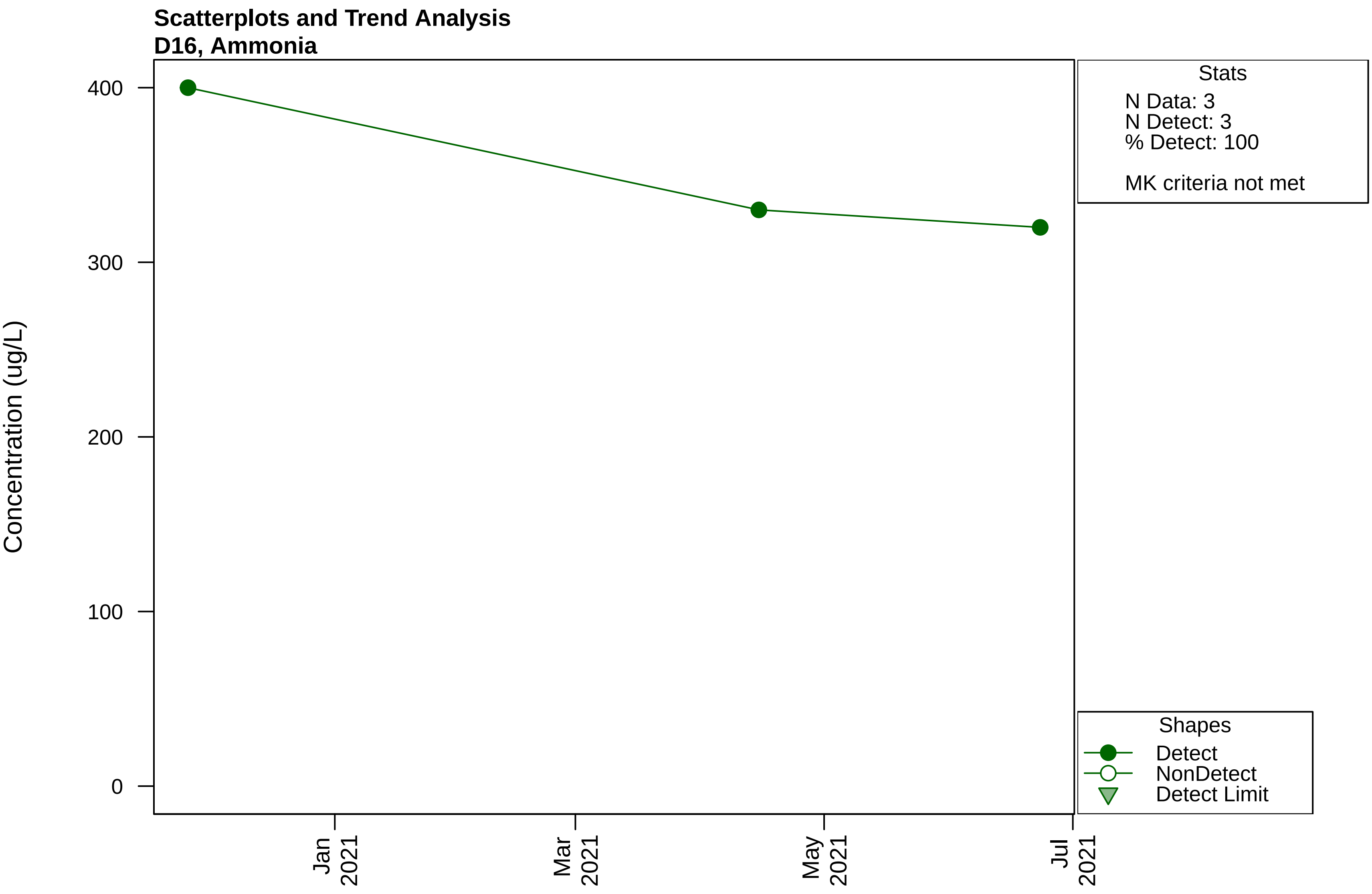


Scatterplots and Trend Analysis
D15, Zinc (Filtered)



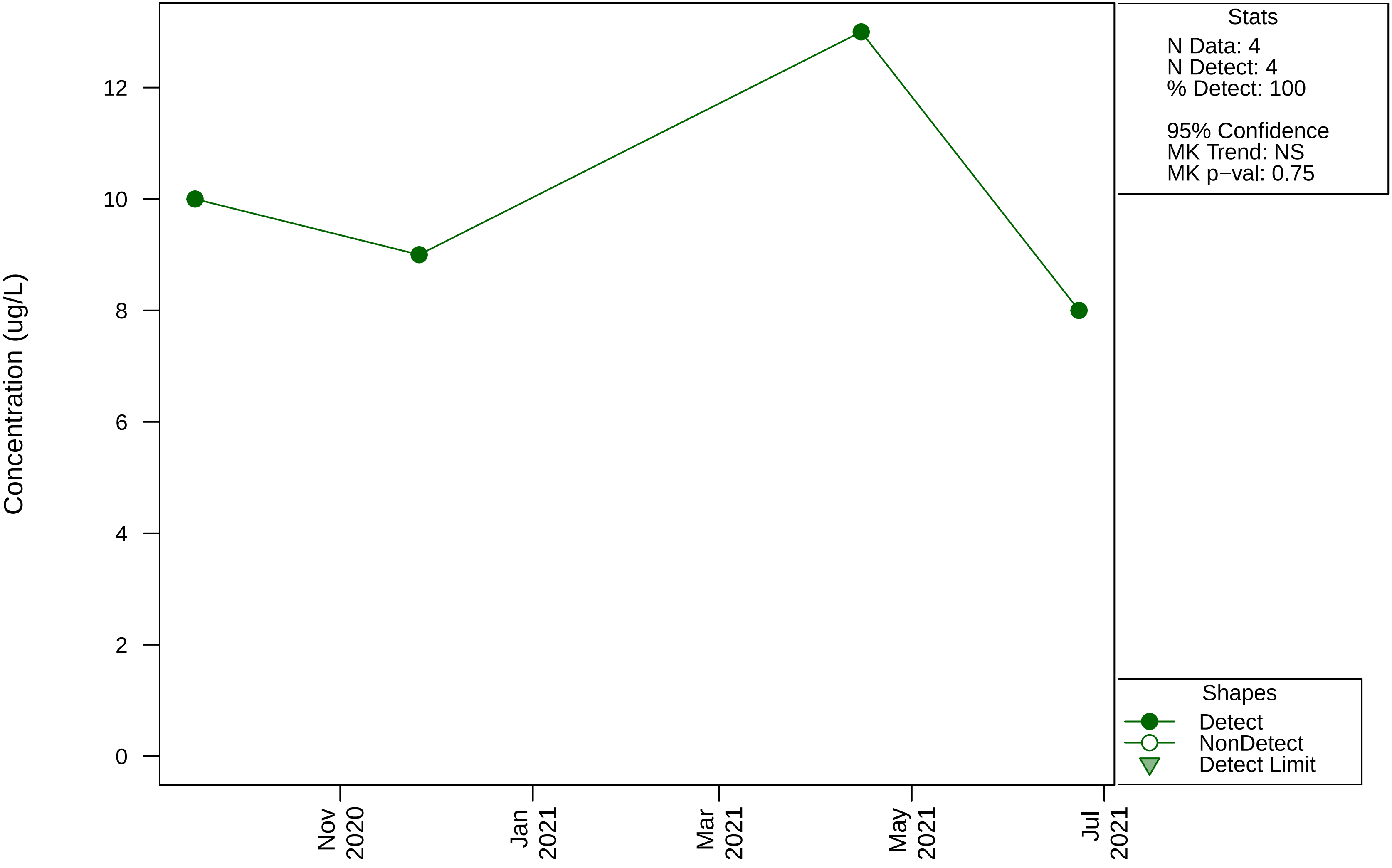


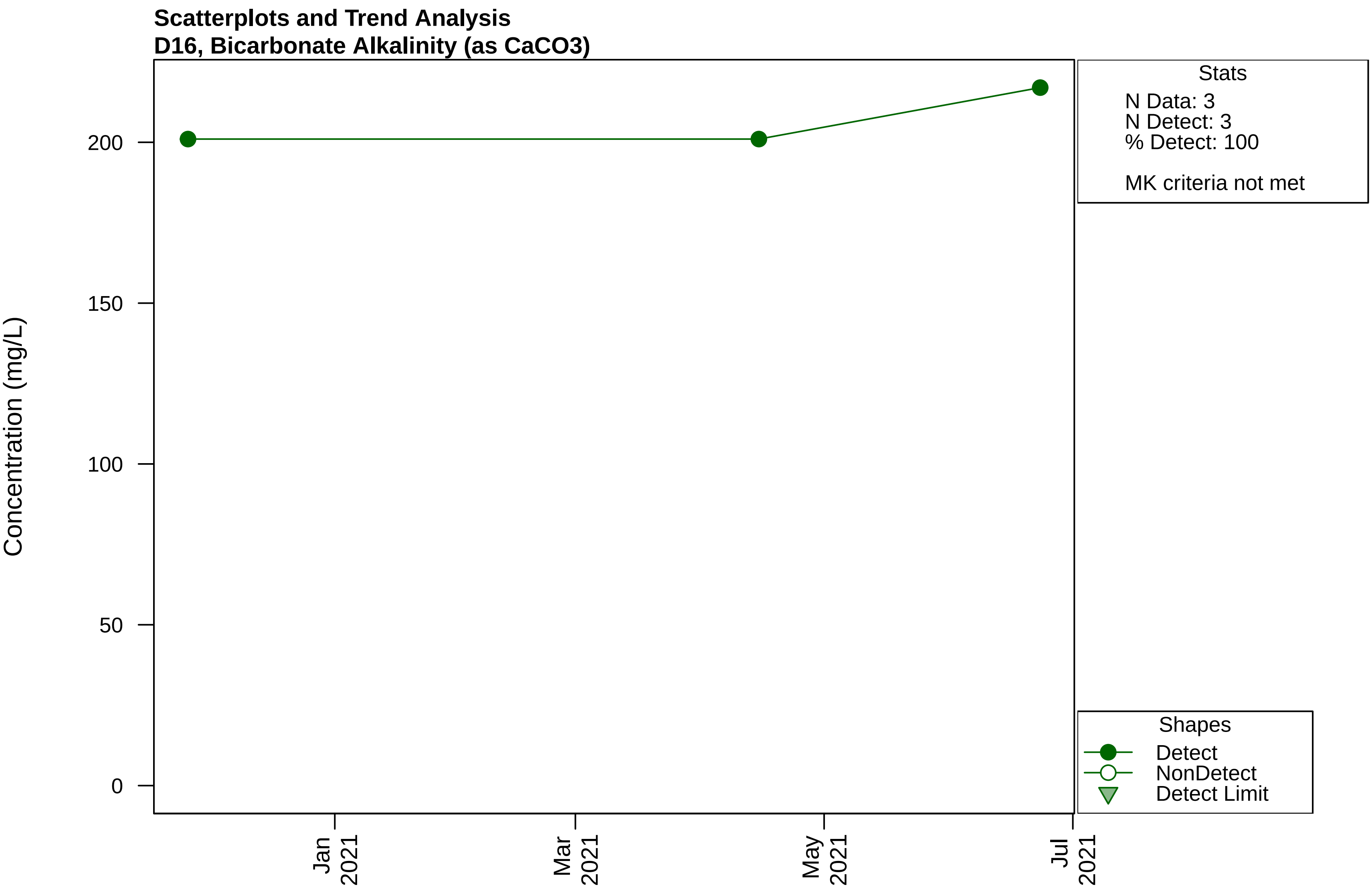
Scatterplots and Trend Analysis
D16, Aluminium
Concentration (ug/L)
0
2
4
6
8
10
Sep
2020
Stats
N Data: 1
N Detect: 1
% Detect: 100
MK criteria not met
Shapes
Detect
NonDetect
Detect Limit



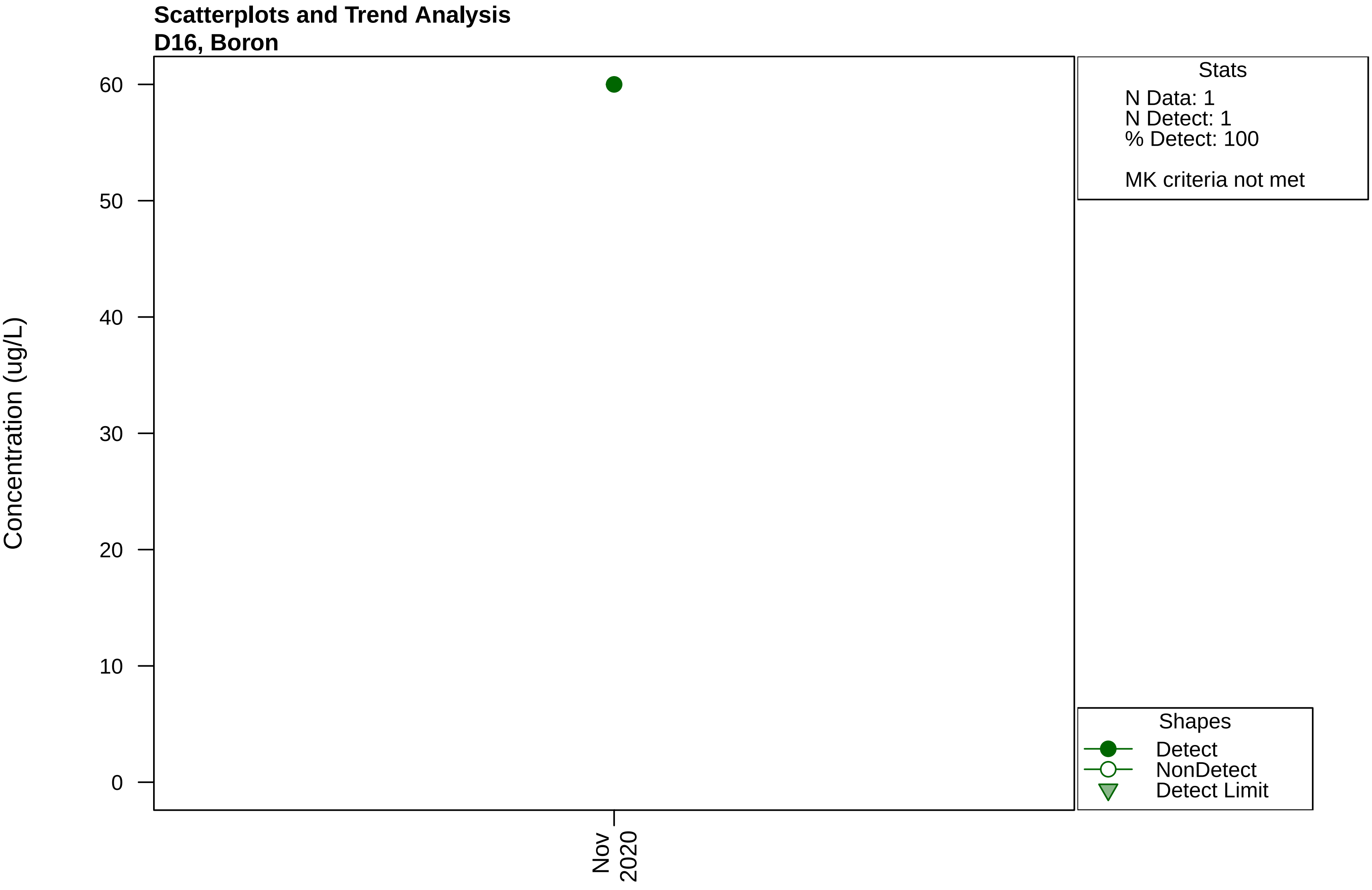
Scatterplots and Trend Analysis
D16, Ammonia
Concentration (ug/L)
400
300
200
100
0
Jan 2021
Mar 2021
May 2021
Jul 2021
Stats
N Data: 3
N Detect: 3
% Detect: 100
MK criteria not met
Shapes
Detect
NonDetect
Detect Limit

Scatterplots and Trend Analysis
D16, Barium

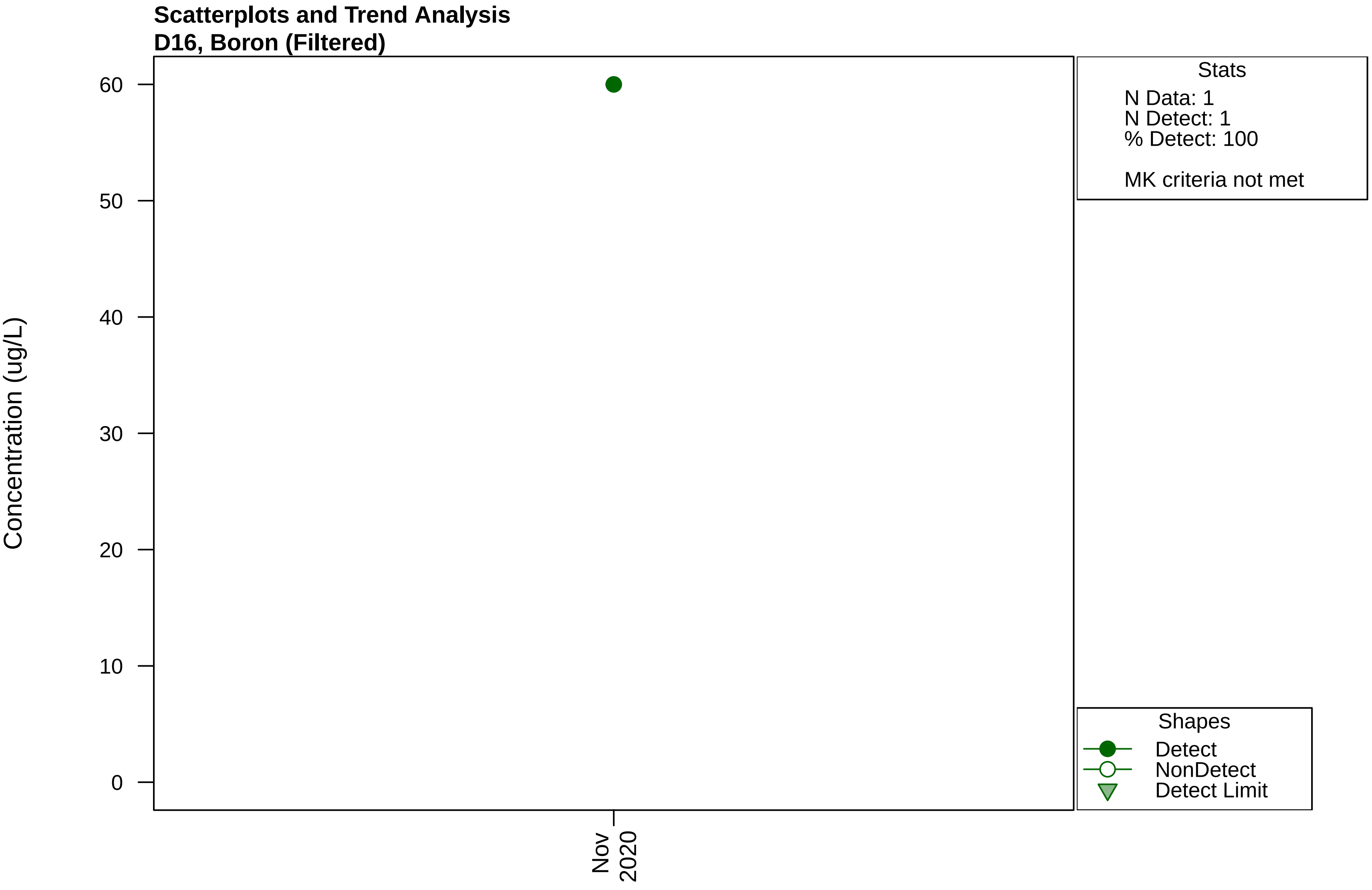




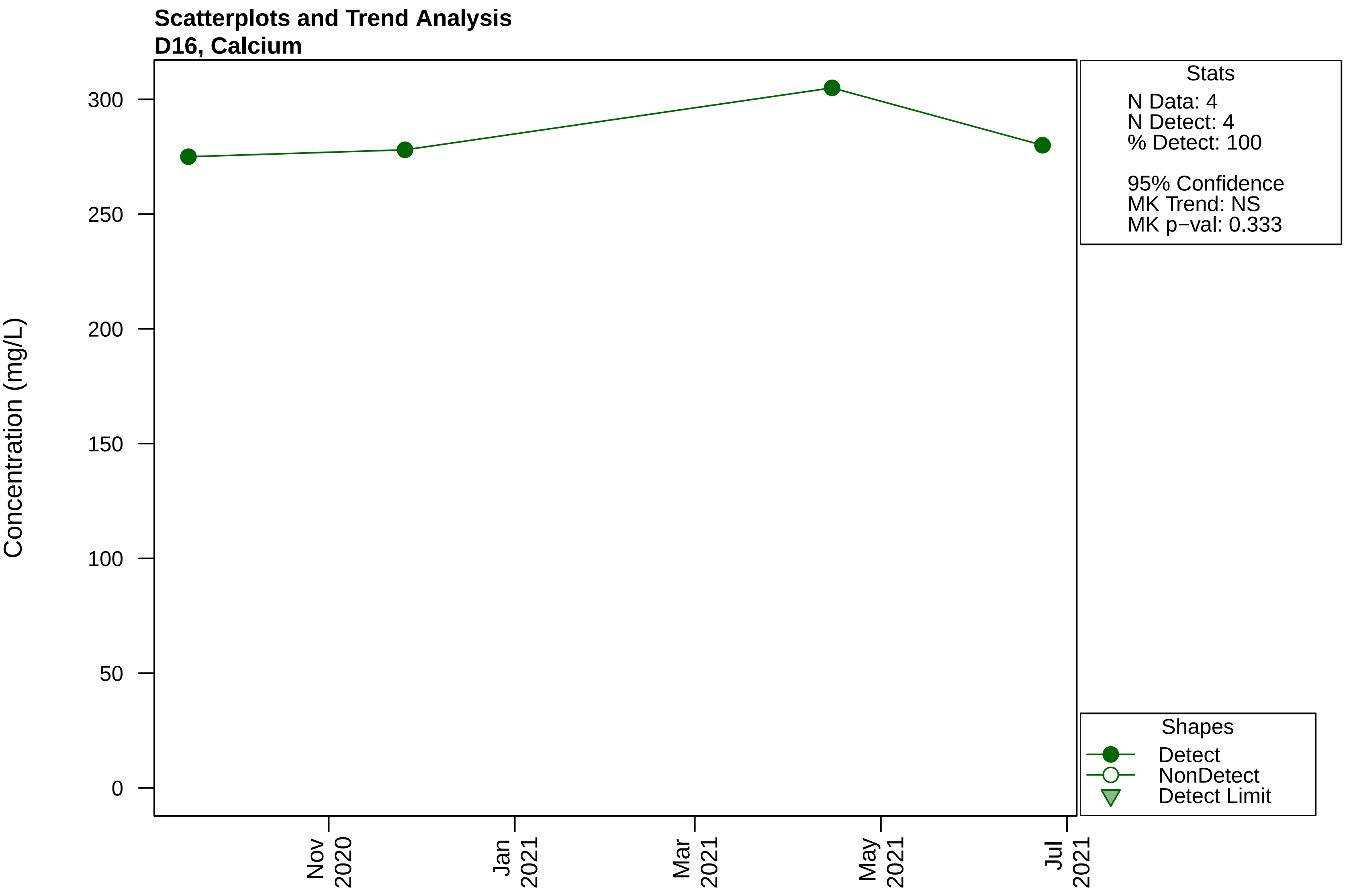
Scatterplots and Trend Analysis
D16, Bicarbonate Alkalinity (as CaCO3)
Concentration (mg/L)
0
50
100
150
200
Jan 2021
Mar 2021
May 2021
Jul 2021
Stats
N Data: 3
N Detect: 3
% Detect: 100
MK criteria not met
Shapes
Detect
NonDetect
Detect Limit



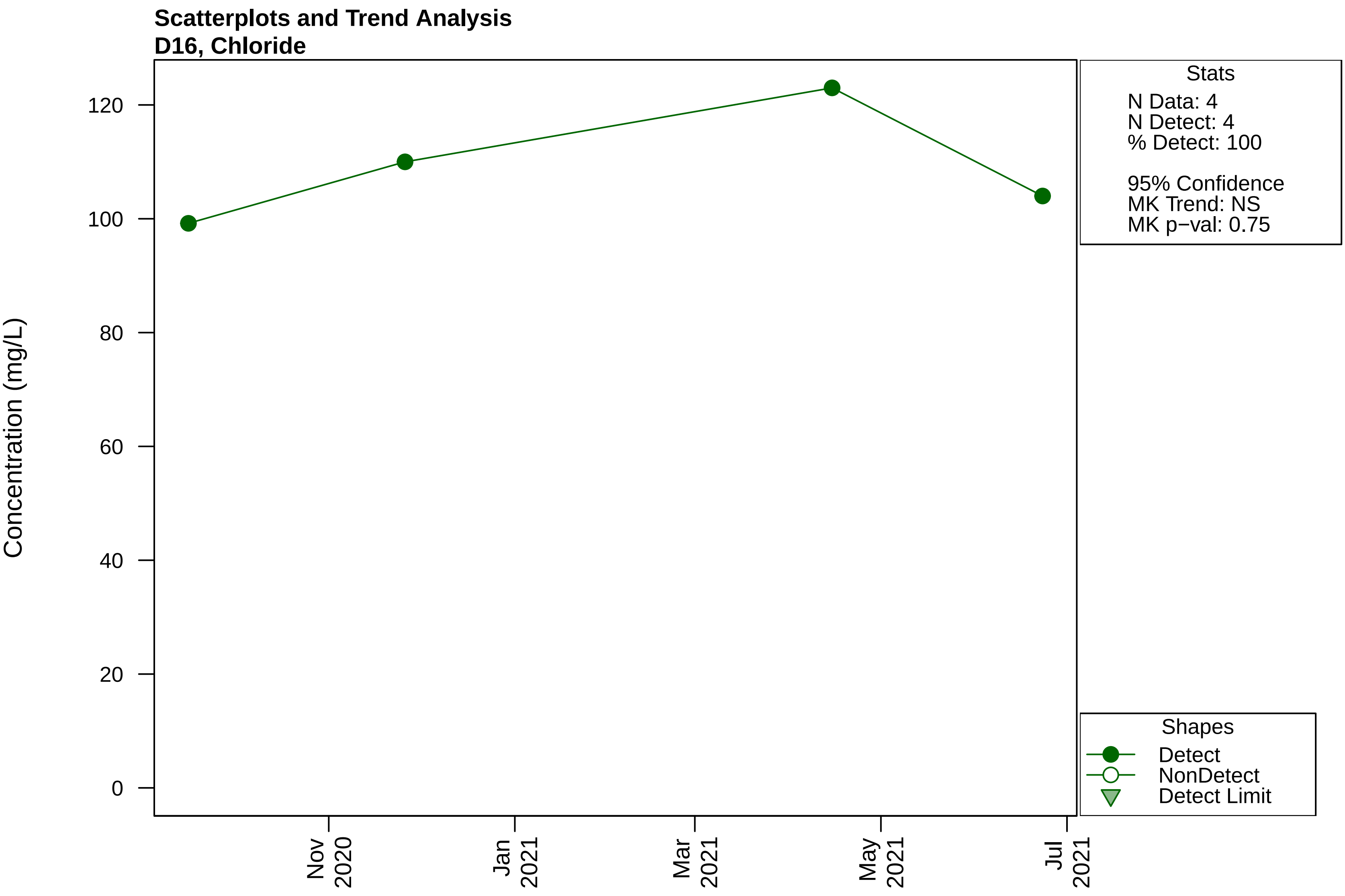
Scatterplots and Trend Analysis
D16, Boron
Concentration (ug/L)
0
10
20
30
40
50
60
Nov 2020
Stats
N Data: 1
N Detect: 1
% Detect: 100
MK criteria not met
Shapes
Detect
NonDetect
Detect Limit



Scatterplots and Trend Analysis
D16, Boron (Filtered)
Concentration (ug/L)
0
10
20
30
40
50
60
Nov 2020
Stats
N Data: 1
N Detect: 1
% Detect: 100
MK criteria not met
Shapes
Detect
NonDetect
Detect Limit

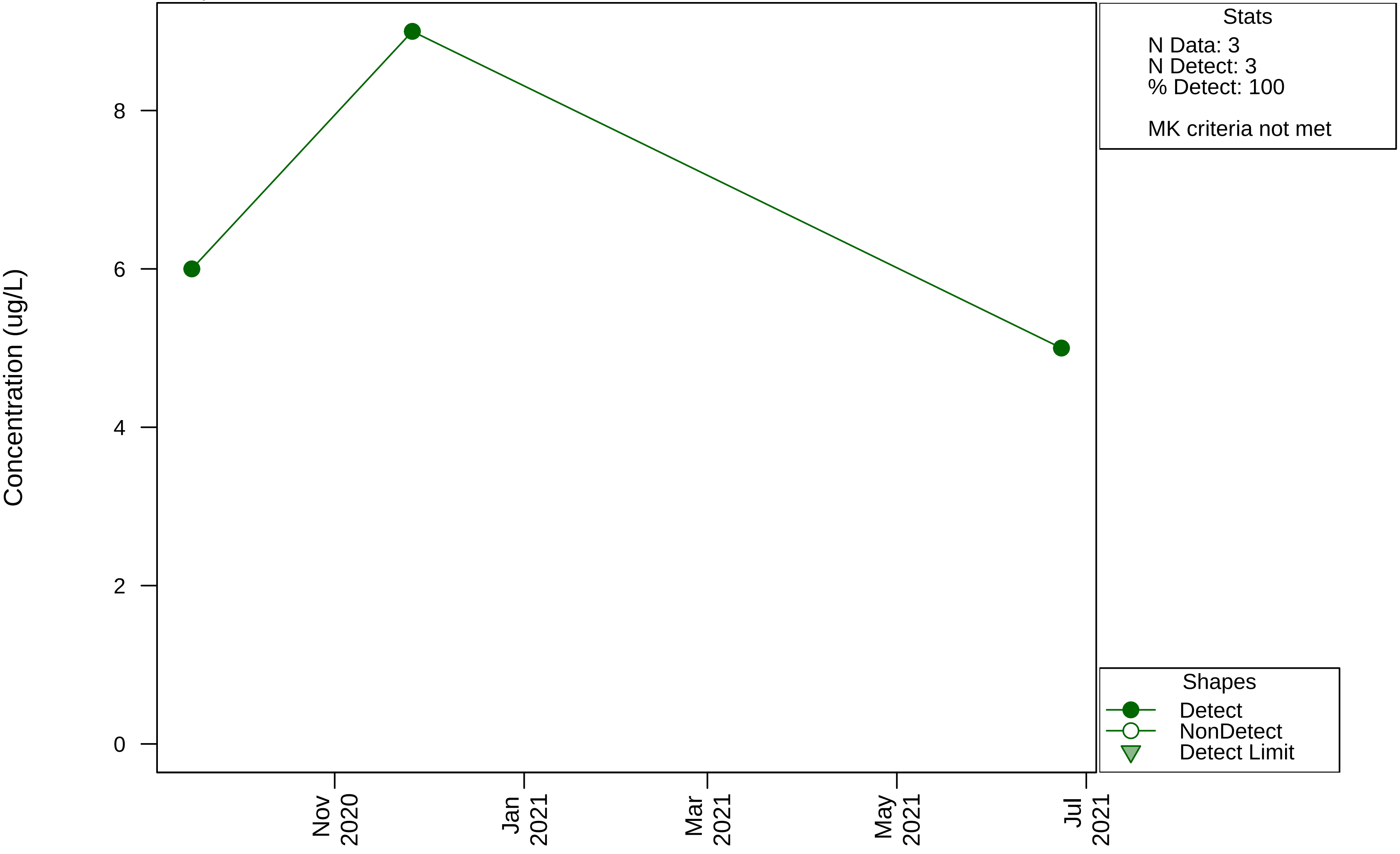


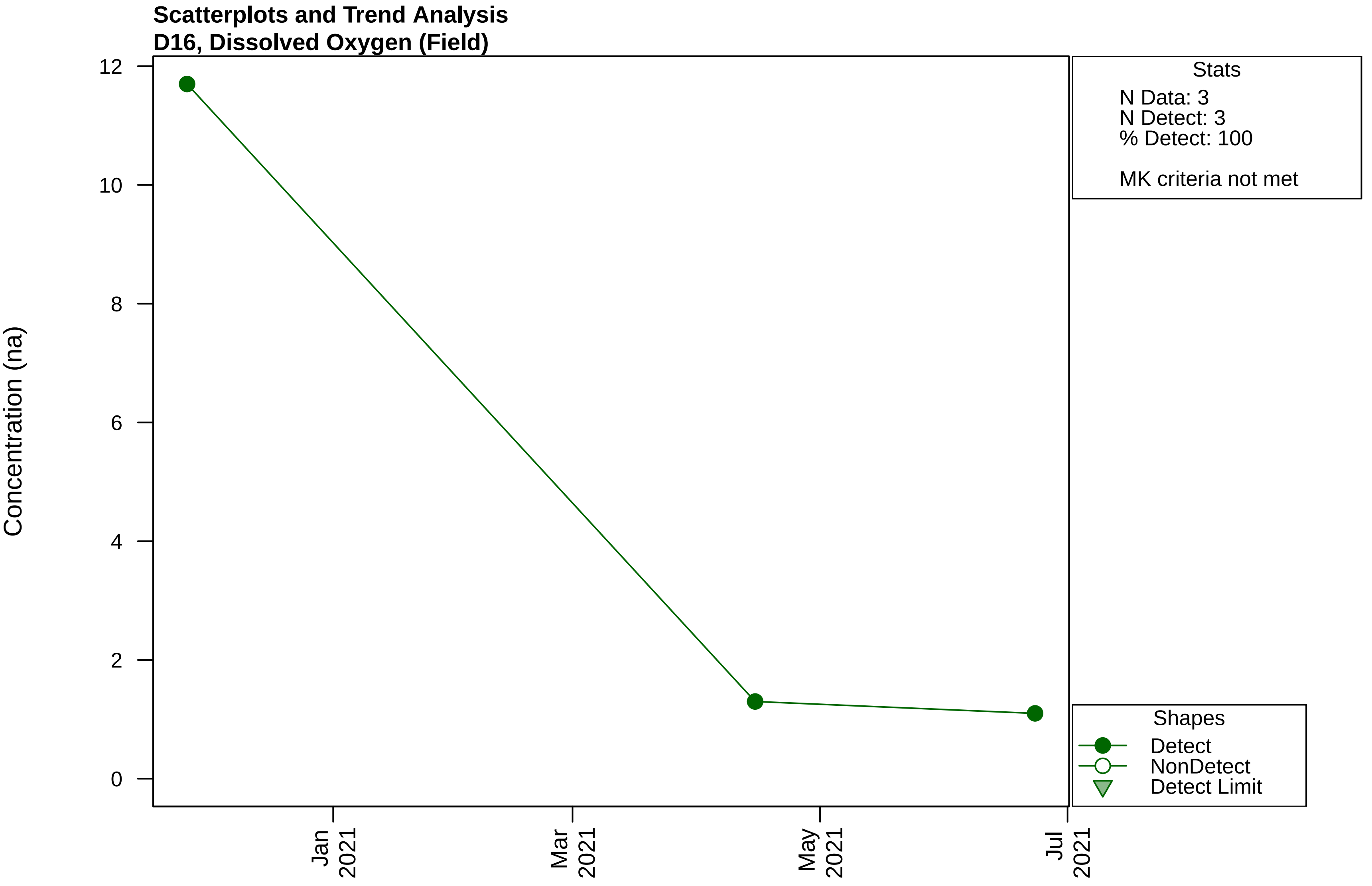
Scatterplots and Trend Analysis
D16, Calcium
Concentration (mg/L)
0
50
100
150
200
250
300
Nov 2020
Jan 2021
Mar 2021
May 2021
Jul 2021
Stats
N Data: 4
N Detect: 4
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.333
Shapes
Detect
NonDetect
Detect Limit



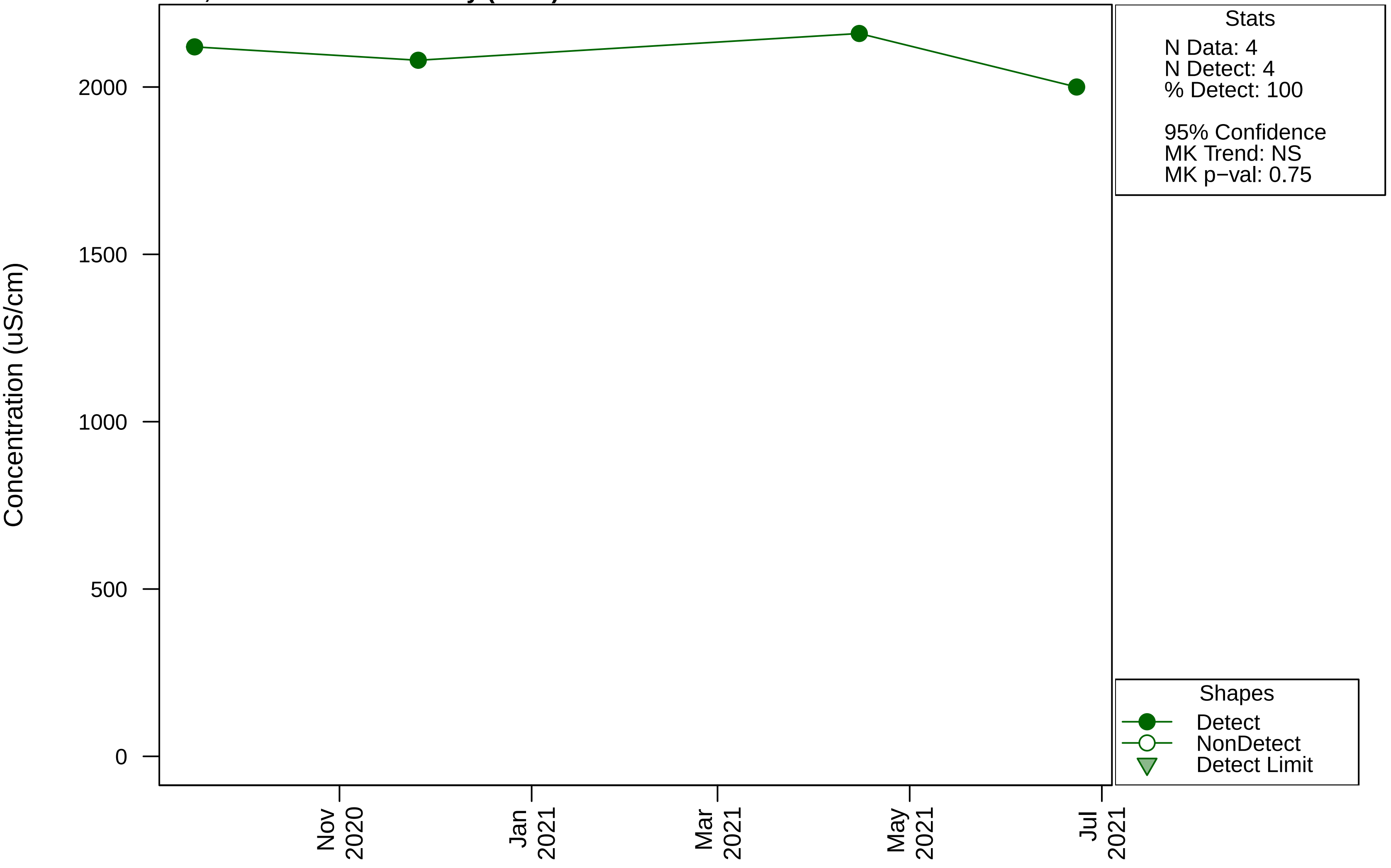
Scatterplots and Trend Analysis
D16, Chloride
Concentration (mg/L)
0
20
40
60
80
100
120
Nov 2020
Jan 2021
Mar 2021
May 2021
Jul 2021
Stats
N Data: 4
N Detect: 4
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.75
Shapes
Detect
NonDetect
Detect Limit

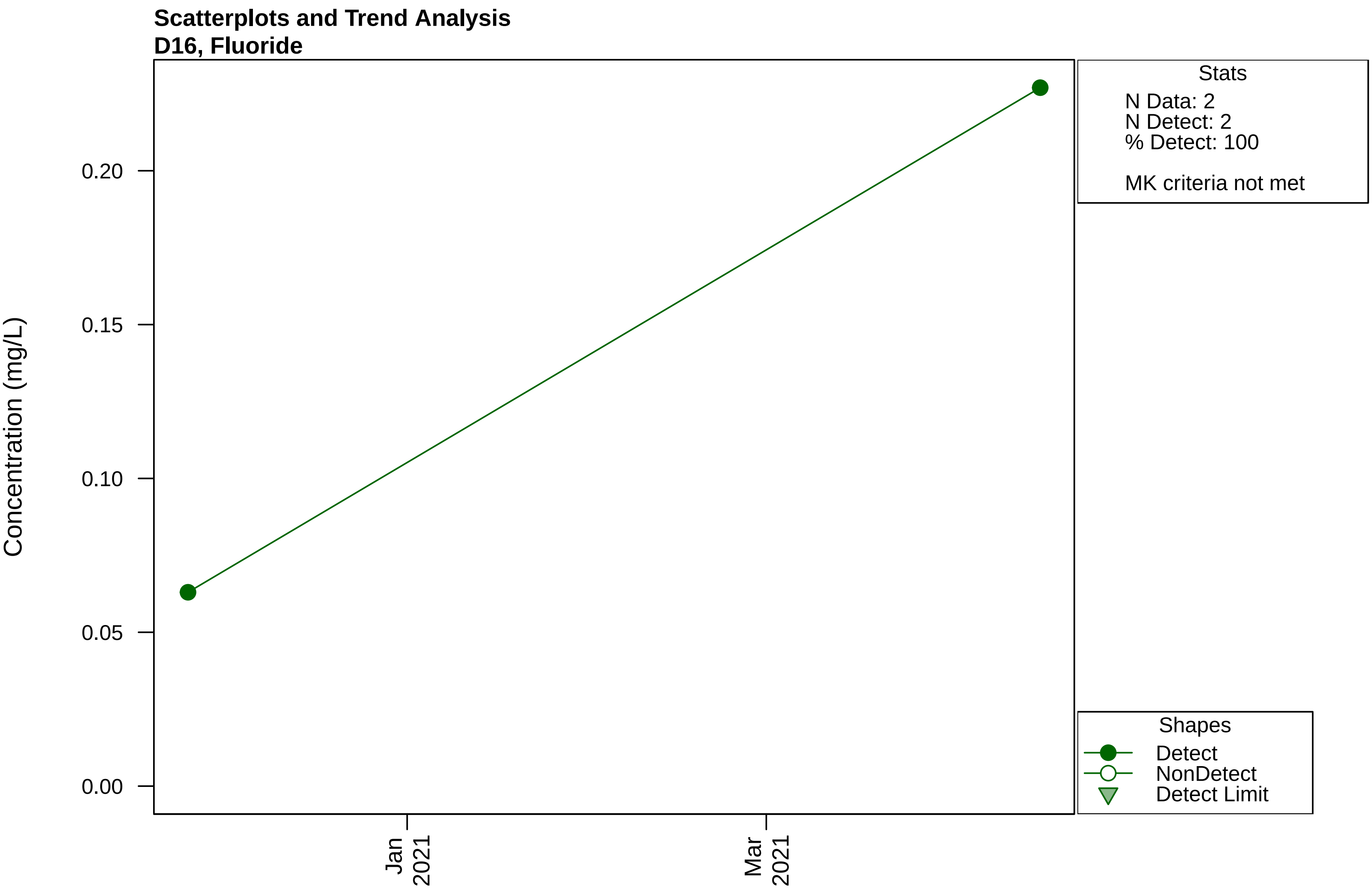
Scatterplots and Trend Analysis
D16, Chromium



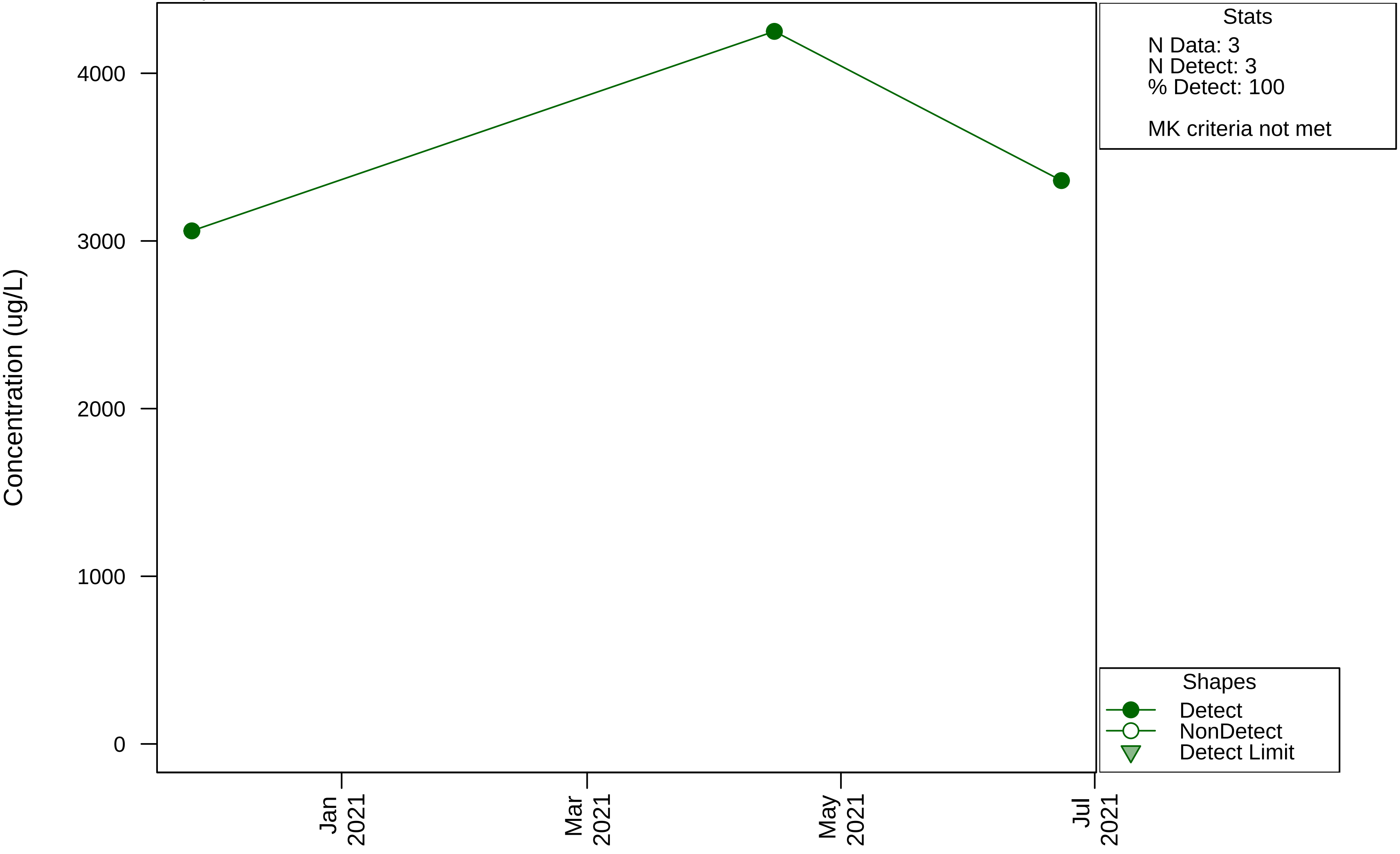

Scatterplots and Trend Analysis
D16, Dissolved Oxygen (Field)
Concentration (na)
0
2
4
6
8
10
12
Jan 2021
Mar 2021
May 2021
Jul 2021
Stats
N Data: 3
N Detect: 3
% Detect: 100
MK criteria not met
Shapes
Detect
NonDetect
Detect Limit

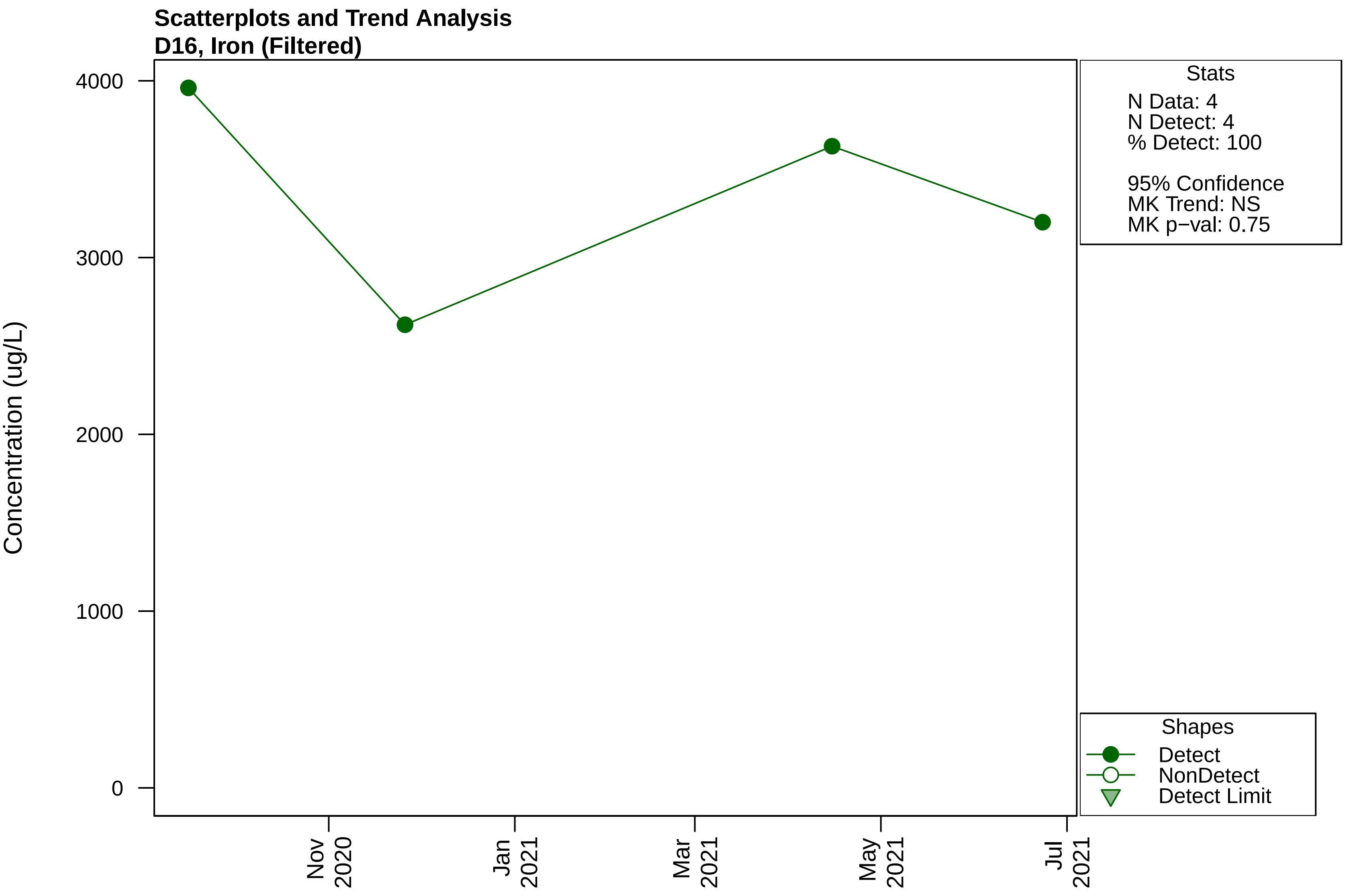
Scatterplots and Trend Analysis
D16, Electrical Conductivity (Field)

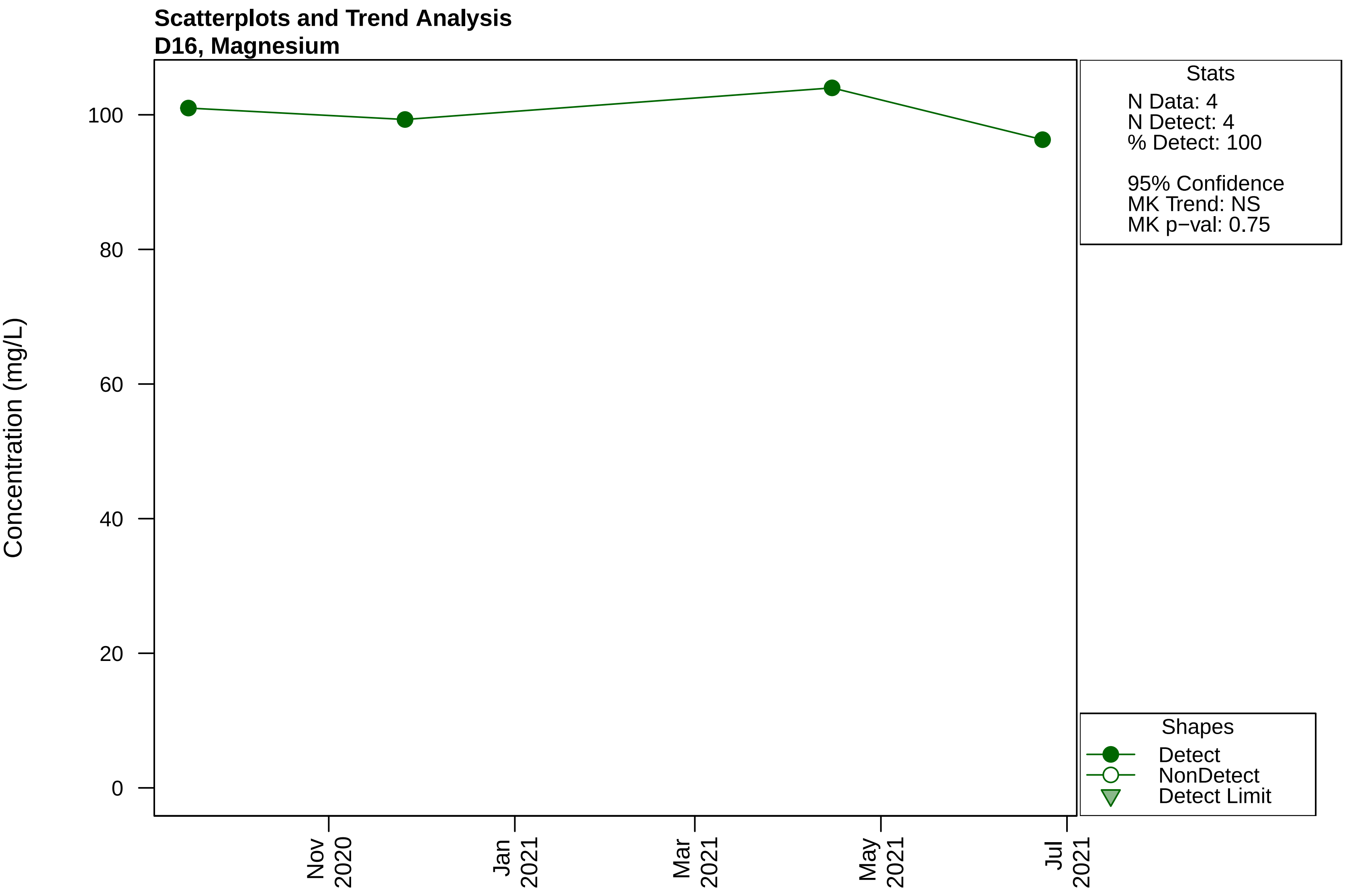


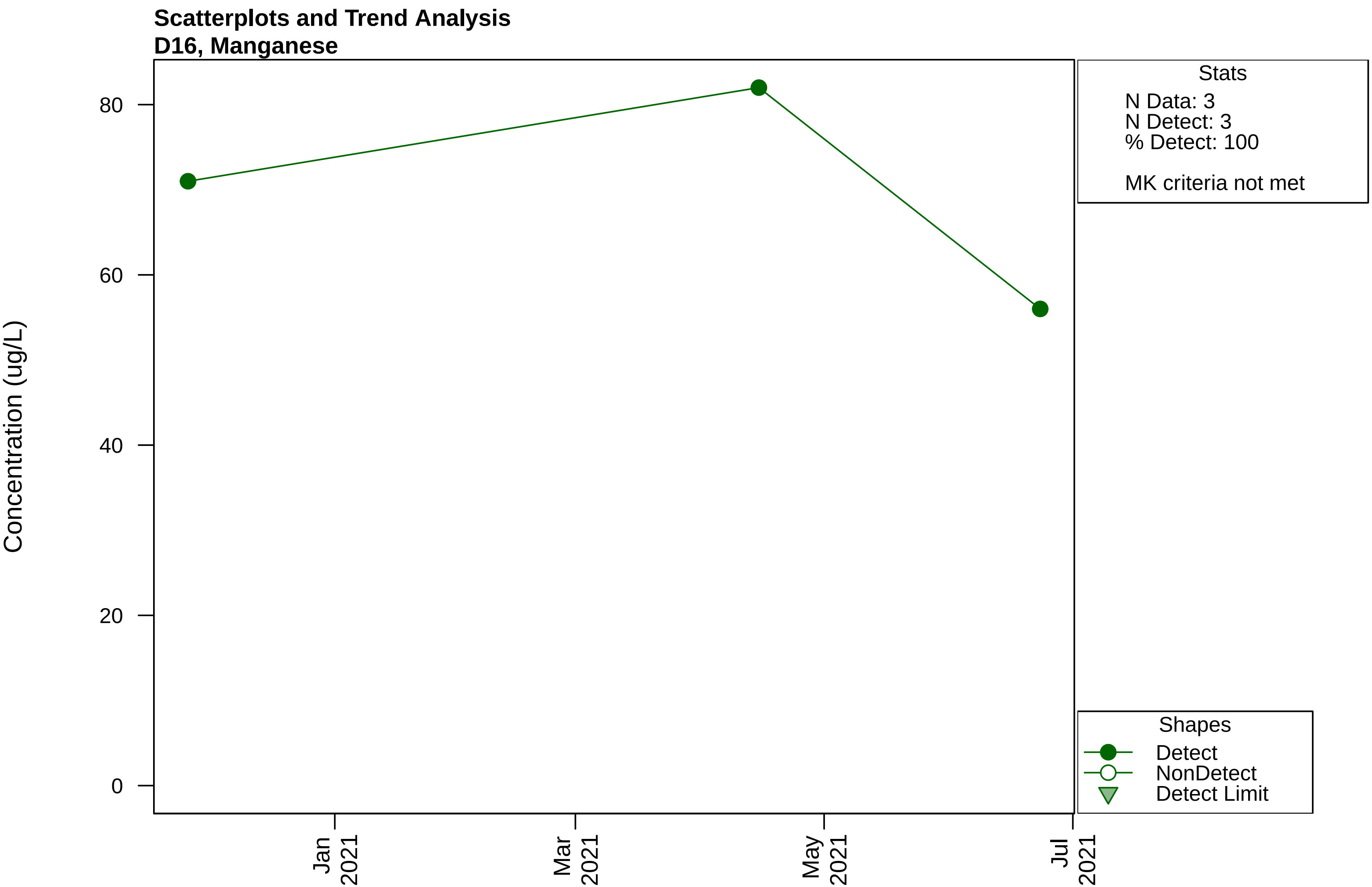

Scatterplots and Trend Analysis
D16, Fluoride
Concentration (mg/L)
0.00
0.05
0.10
0.15
0.20
Jan 2021
Mar 2021
Stats
N Data: 2
N Detect: 2
% Detect: 100
MK criteria not met
Shapes
Detect
NonDetect
Detect Limit

Scatterplots and Trend Analysis
D16, Iron

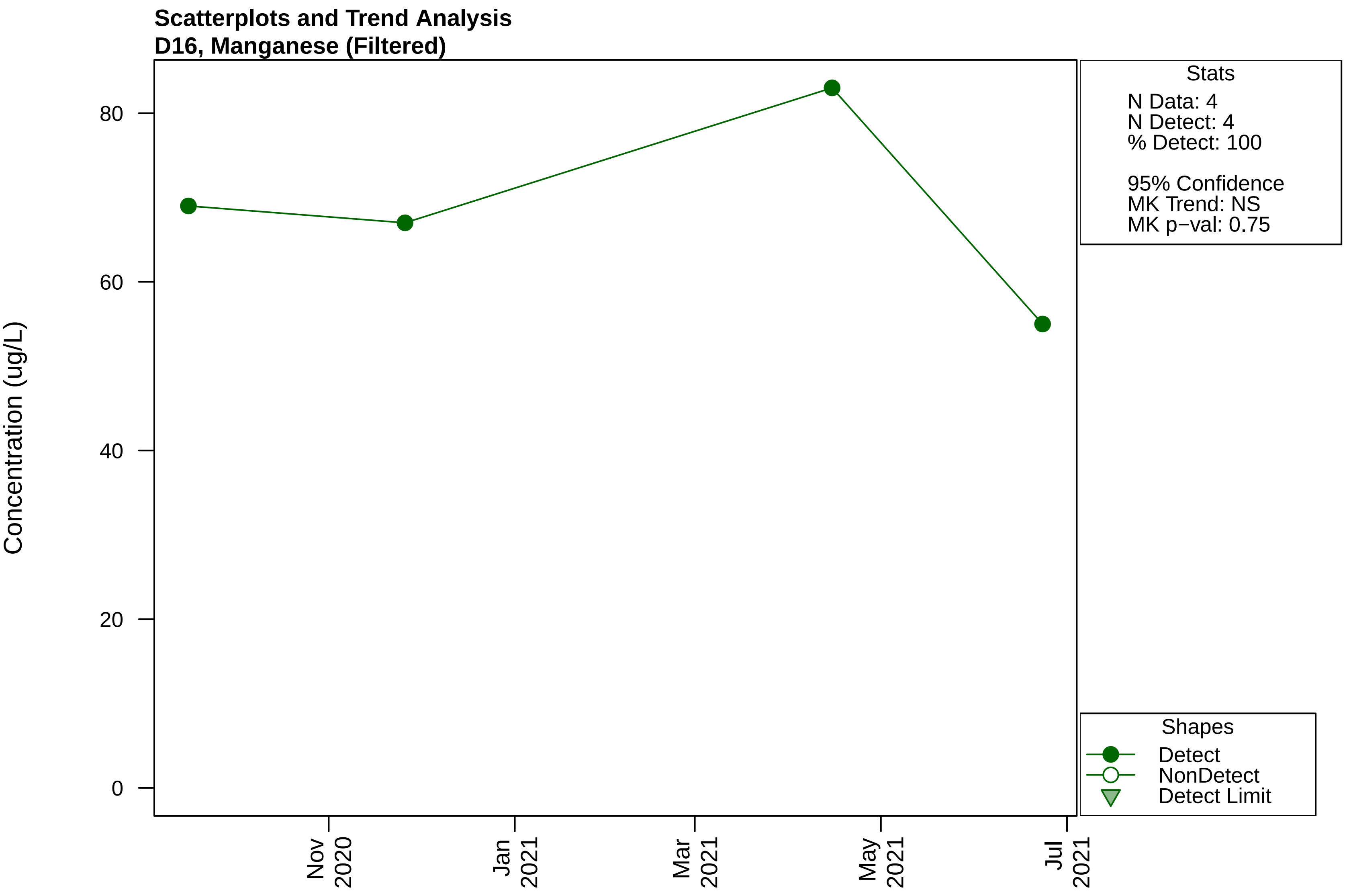


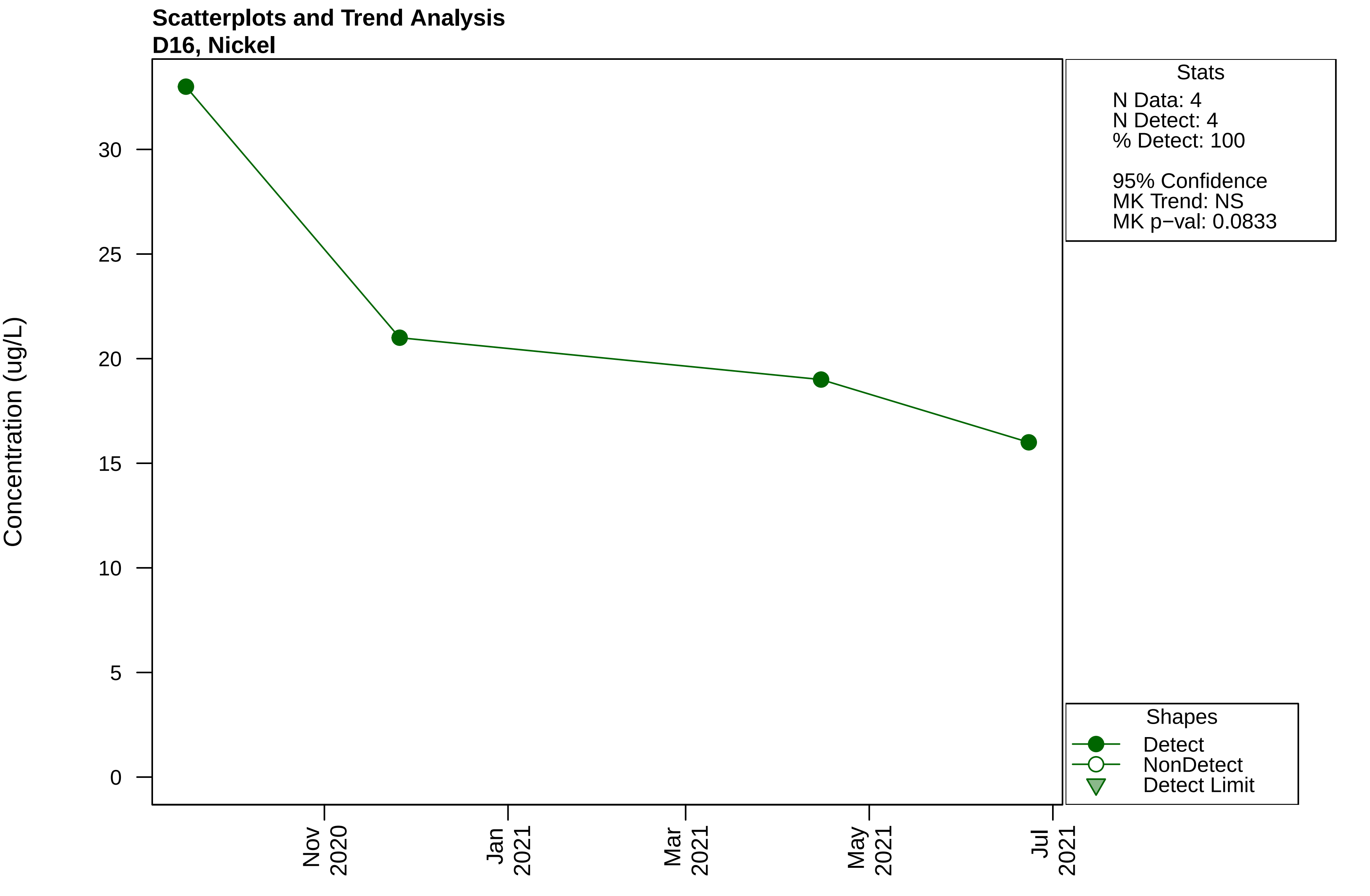

Scatterplots and Trend Analysis
D16, Iron (Filtered)
Concentration (ug/L)
4000
3000
2000
1000
0
Nov 2020
Jan 2021
Mar 2021
May 2021
Jul 2021
Stats
N Data: 4
N Detect: 4
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.75
Shapes
Detect
NonDetect
Detect Limit


Scatterplots and Trend Analysis
D16, Magnesium
Concentration (mg/L)
0
20
40
60
80
100
Nov 2020
Jan 2021
Mar 2021
May 2021
Jul 2021
Stats
N Data: 4
N Detect: 4
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.75
Shapes
Detect
NonDetect
Detect Limit

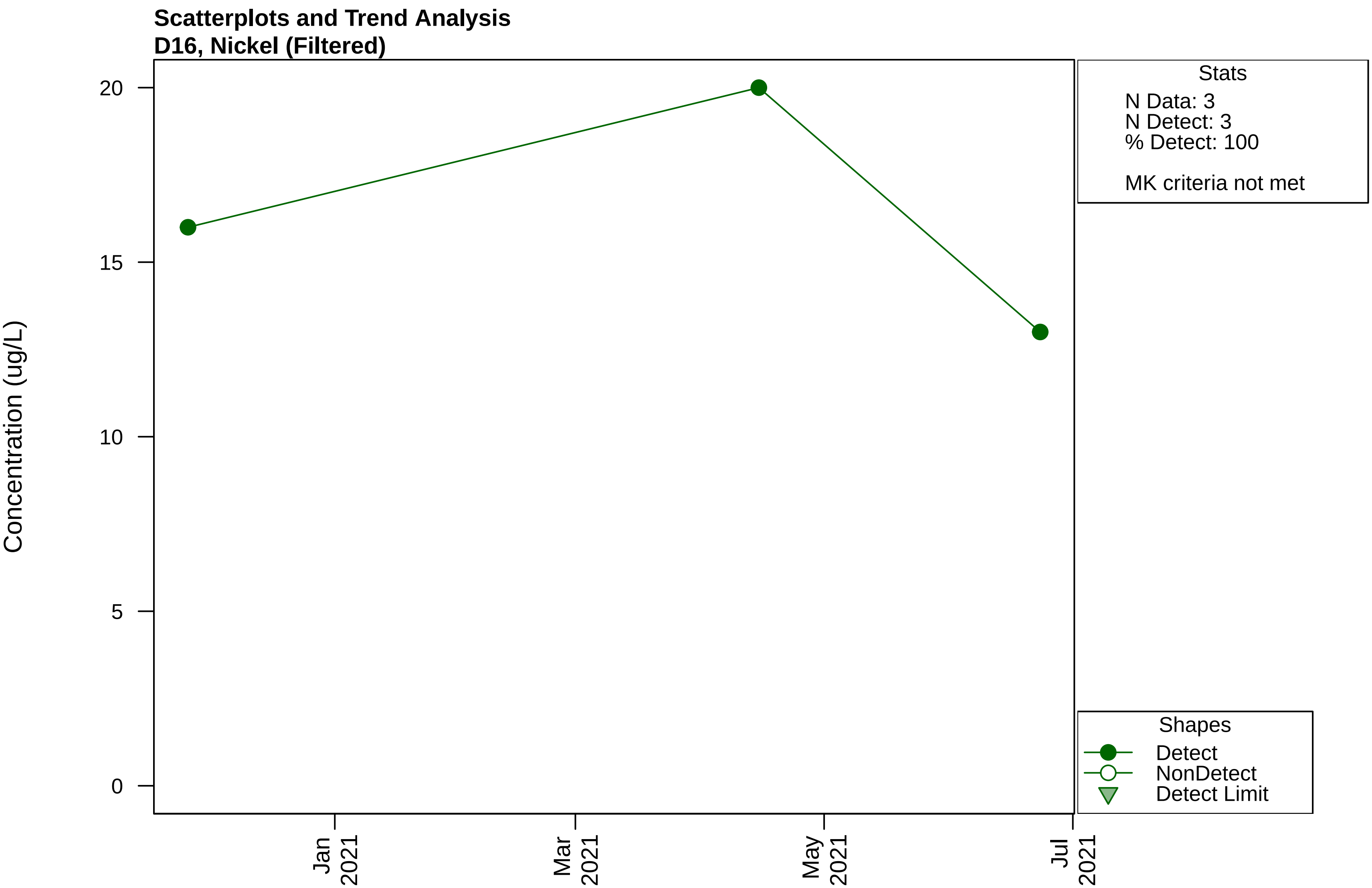


Scatterplots and Trend Analysis
D16, Manganese
Concentration (ug/L)
0
20
40
60
80
Jan 2021
Mar 2021
May 2021
Jul 2021
Stats
N Data: 3
N Detect: 3
% Detect: 100
MK criteria not met
Shapes
Detect
NonDetect
Detect Limit

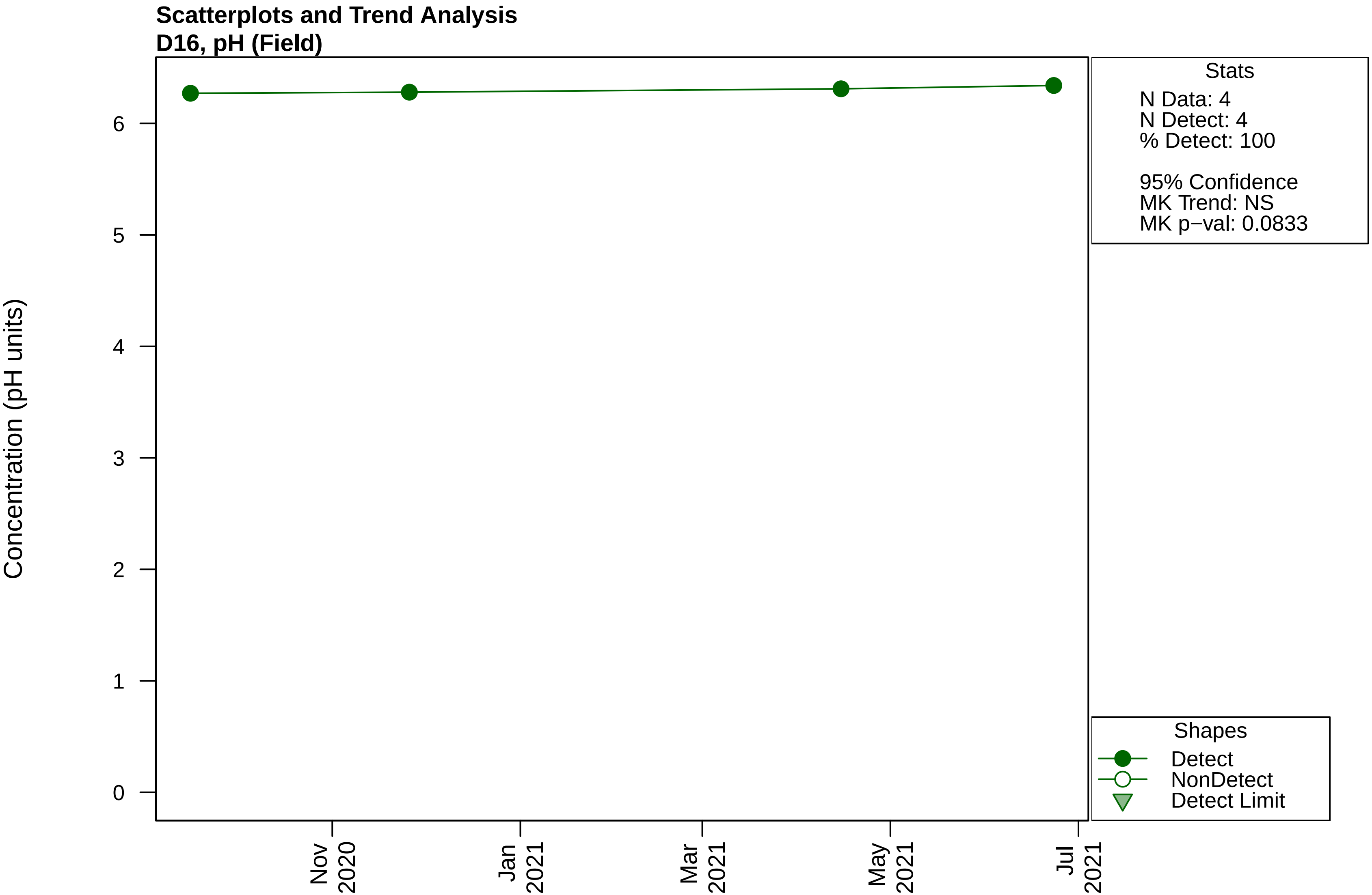

Scatterplots and Trend Analysis
D16, Manganese (Filtered)
Concentration (ug/L)
0
20
40
60
80
Nov 2020
Jan 2021
Mar 2021
May 2021
Jul 2021
Stats
N Data: 4
N Detect: 4
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.75
Shapes
Detect
NonDetect
Detect Limit



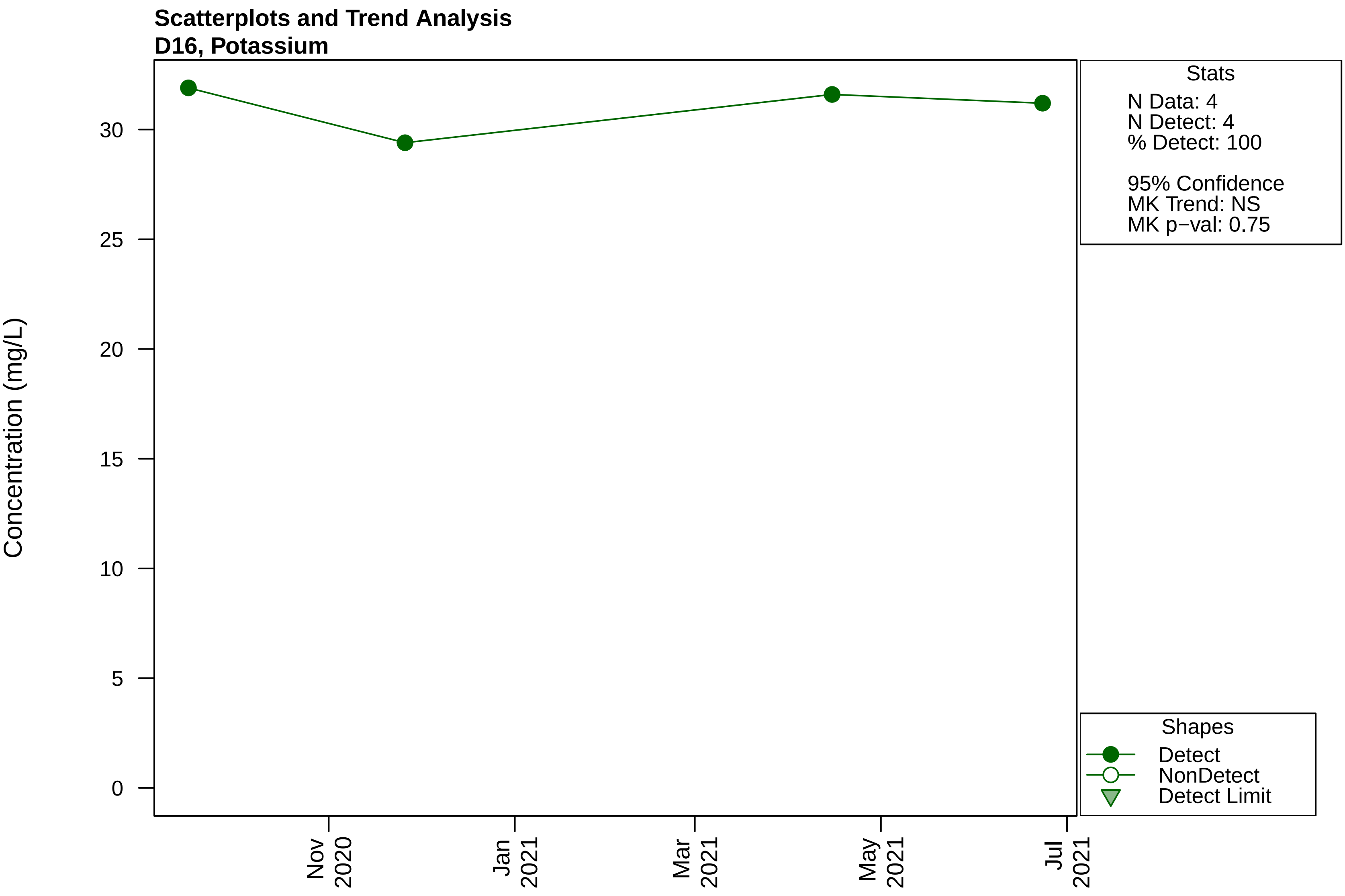
Scatterplots and Trend Analysis
D16, Nickel
Concentration (ug/L)
0
5
10
15
20
25
30
Nov 2020
Jan 2021
Mar 2021
May 2021
Jul 2021
Stats
N Data: 4
N Detect: 4
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.0833
Shapes
Detect
NonDetect
Detect Limit

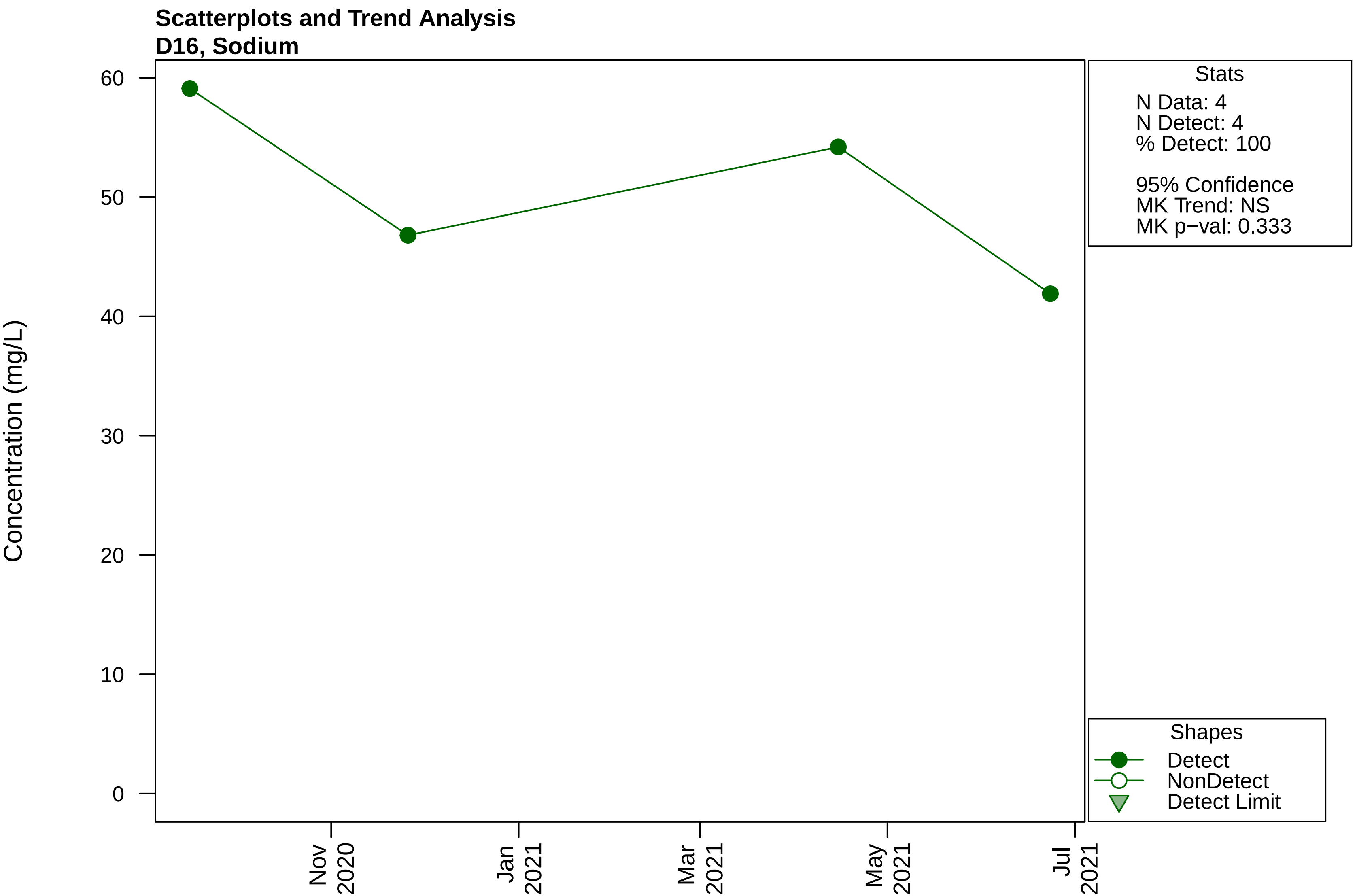


Scatterplots and Trend Analysis
D16, Nickel (Filtered)
Concentration (ug/L)
20
15
10
5
0
Jan 2021
Mar 2021
May 2021
Jul 2021
Stats
N Data: 3
N Detect: 3
% Detect: 100
MK criteria not met
Shapes
Detect
NonDetect
Detect Limit

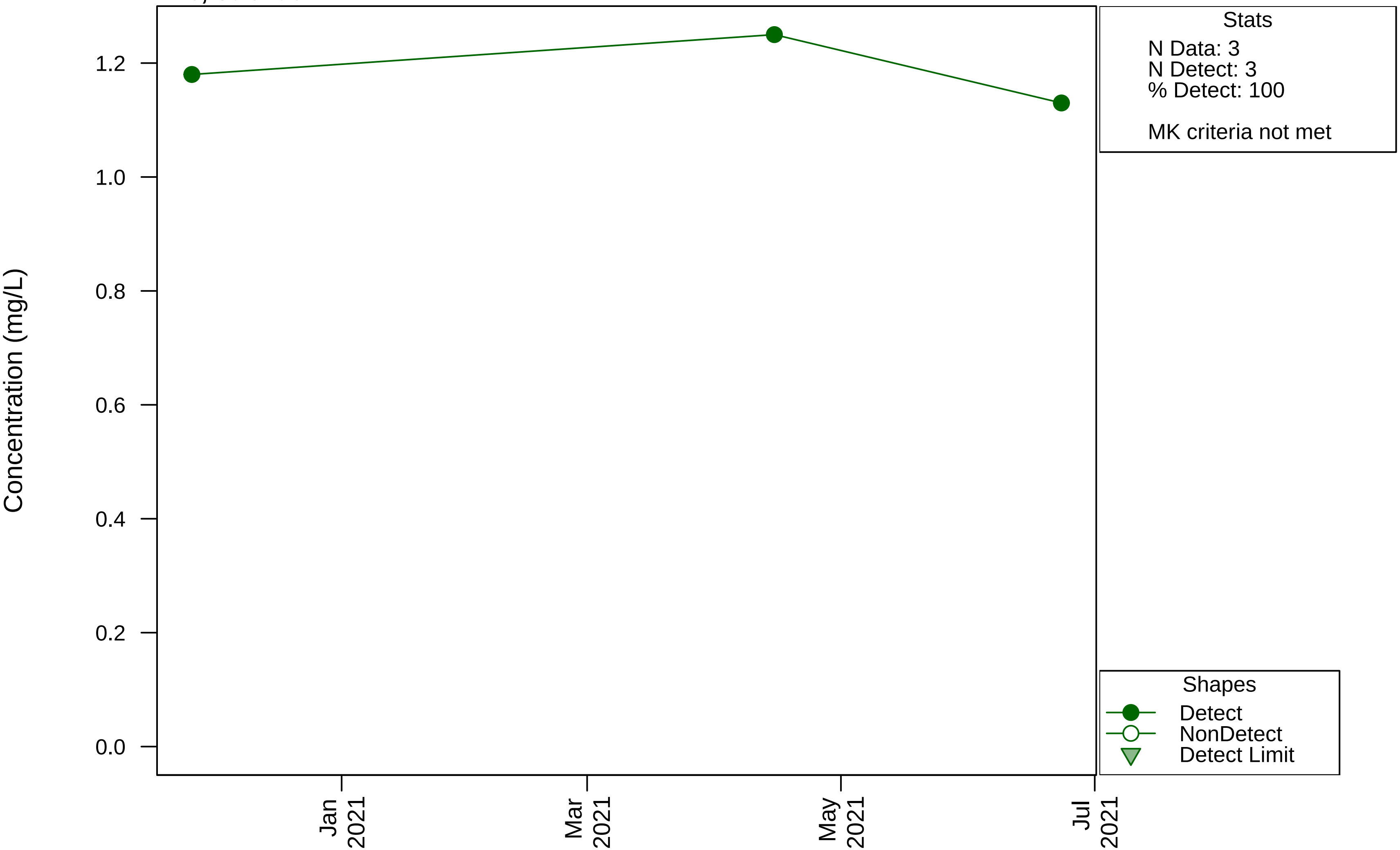


Scatterplots and Trend Analysis
D16, pH (Field)
Concentration (pH units)
0
1
2
3
4
5
6
Nov 2020
Jan 2021
Mar 2021
May 2021
Jul 2021
Stats
N Data: 4
N Detect: 4
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.0833
Shapes
Detect
NonDetect
Detect Limit

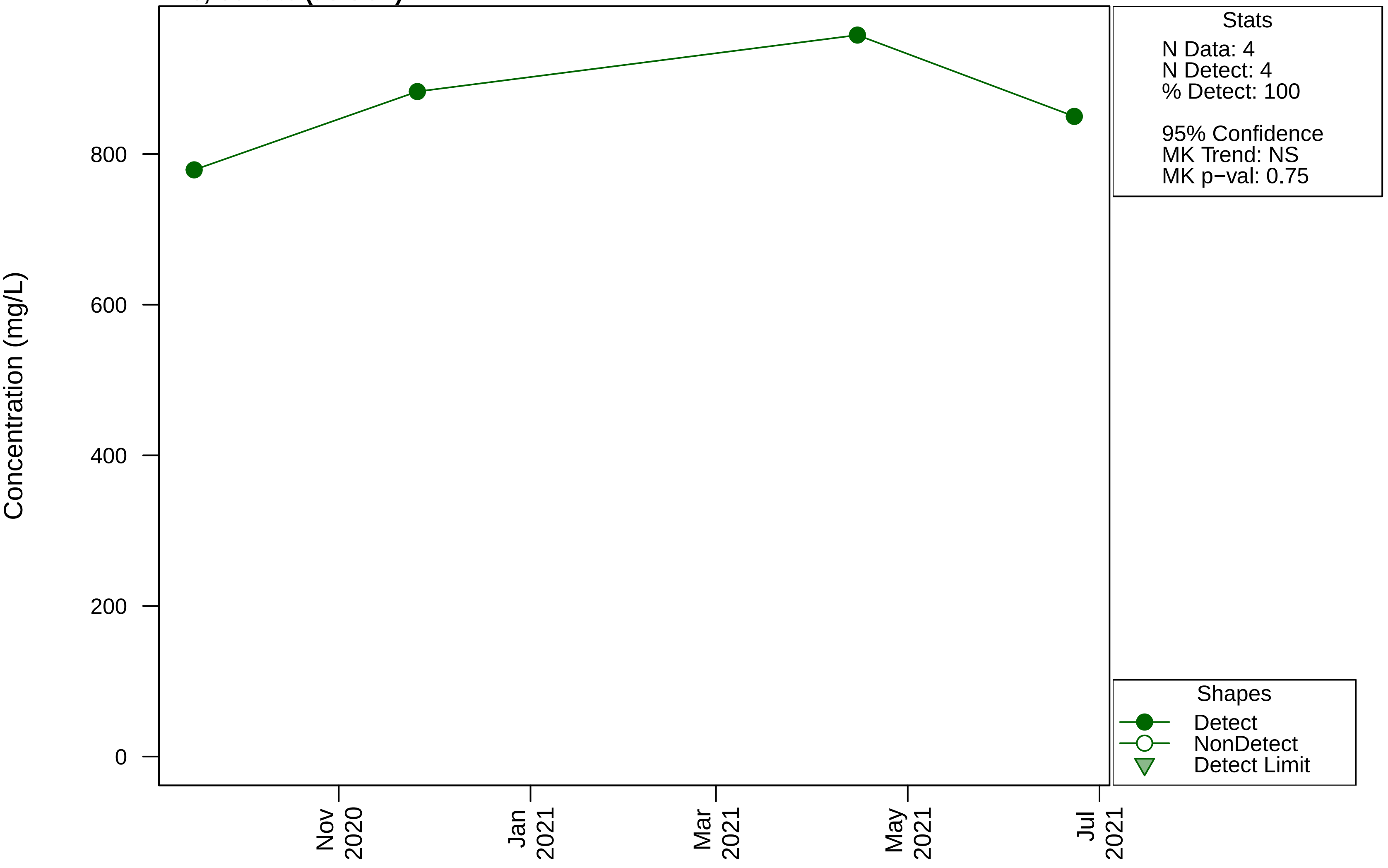

Scatterplots and Trend Analysis
D16, Potassium
Concentration (mg/L)
0
5
10
15
20
25
30
Nov 2020
Jan 2021
Mar 2021
May 2021
Jul 2021
Stats
N Data: 4
N Detect: 4
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.75
Shapes
Detect
NonDetect
Detect Limit

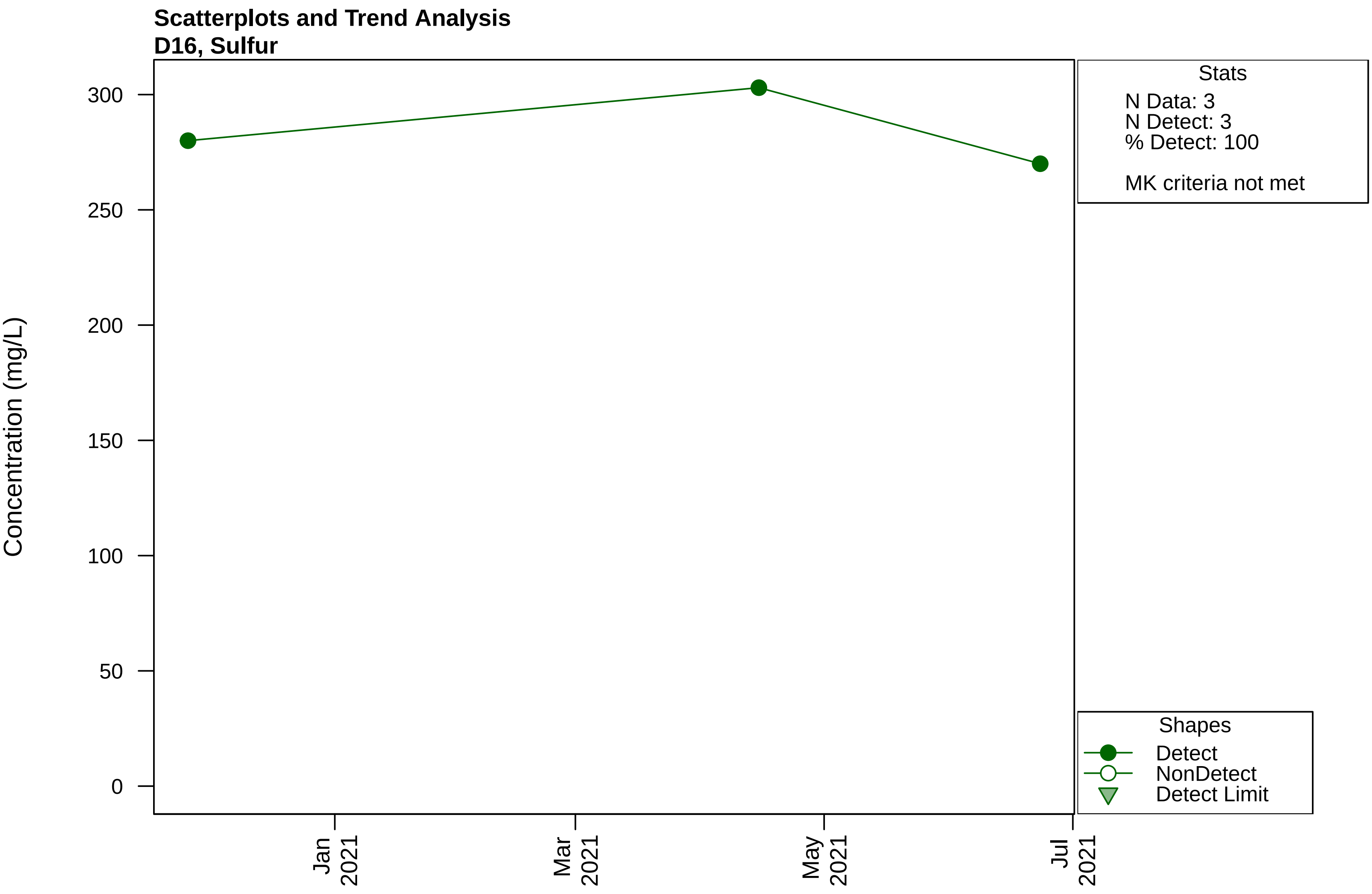

Scatterplots and Trend Analysis
D16, Sodium
Concentration (mg/L)
60
50
40
30
20
10
0
Nov 2020
Jan 2021
Mar 2021
May 2021
Jul 2021
Stats
N Data: 4
N Detect: 4
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.333
Shapes
Detect
NonDetect
Detect Limit

Scatterplots and Trend Analysis
D16, Strontium



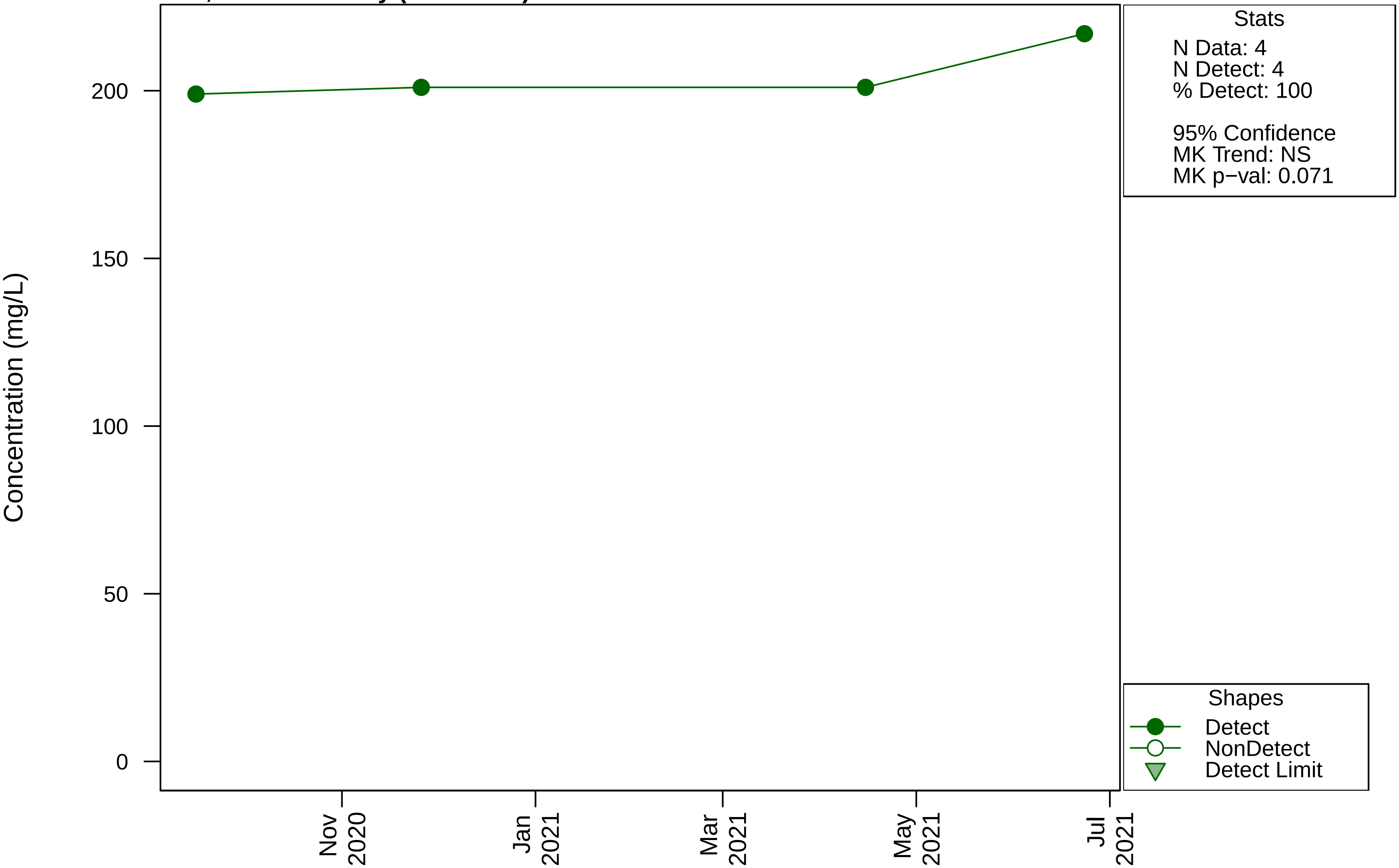
Scatterplots and Trend Analysis
D16, Sulfate (as SO4)



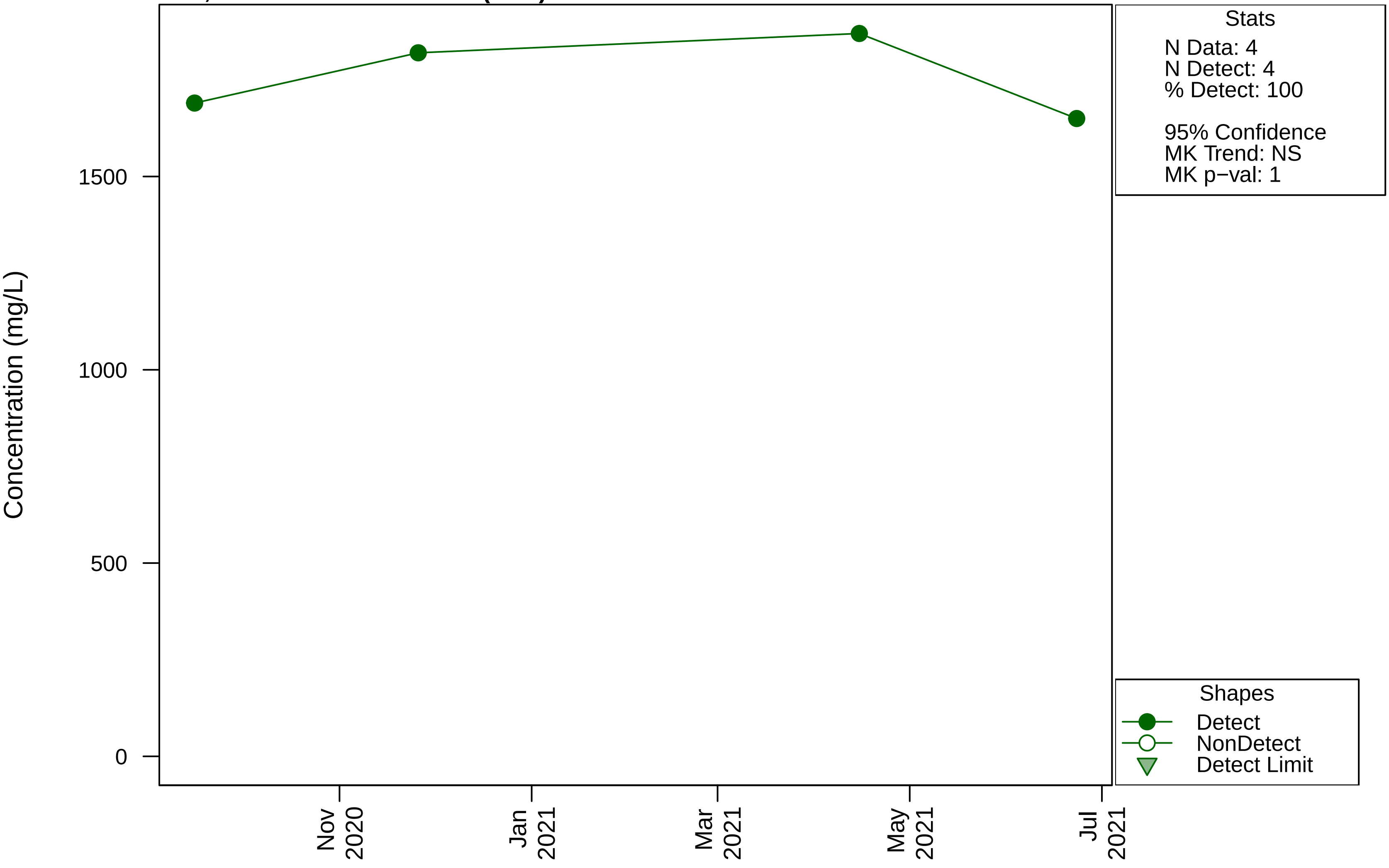


Scatterplots and Trend Analysis
D16, Sulfur
Concentration (mg/L)
0
50
100
150
200
250
300
Jan 2021
Mar 2021
May 2021
Jul 2021
Stats
N Data: 3
N Detect: 3
% Detect: 100
MK criteria not met
Shapes
Detect
NonDetect
Detect Limit

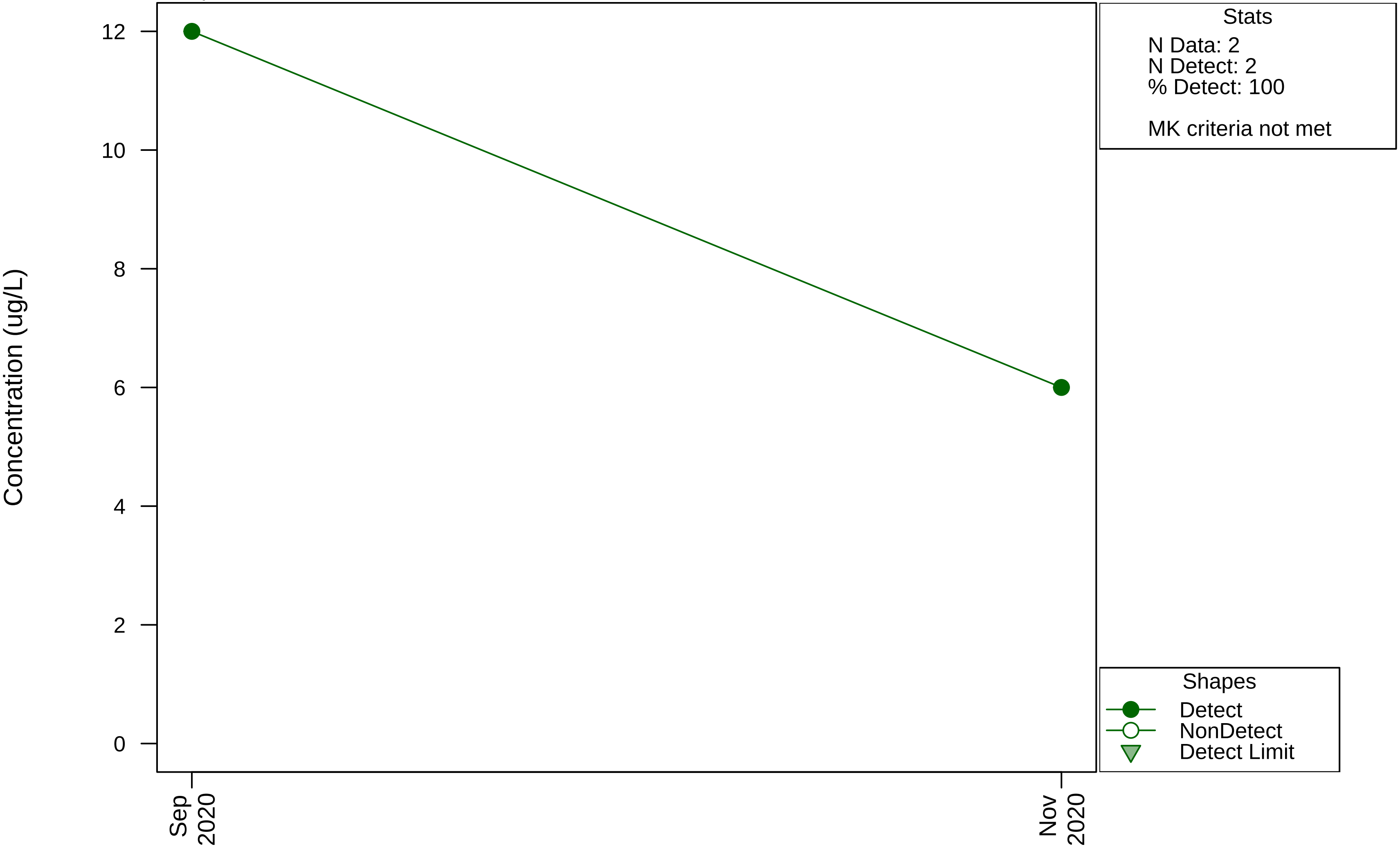
Scatterplots and Trend Analysis
D16, Total Alkalinity (as CaCO3)

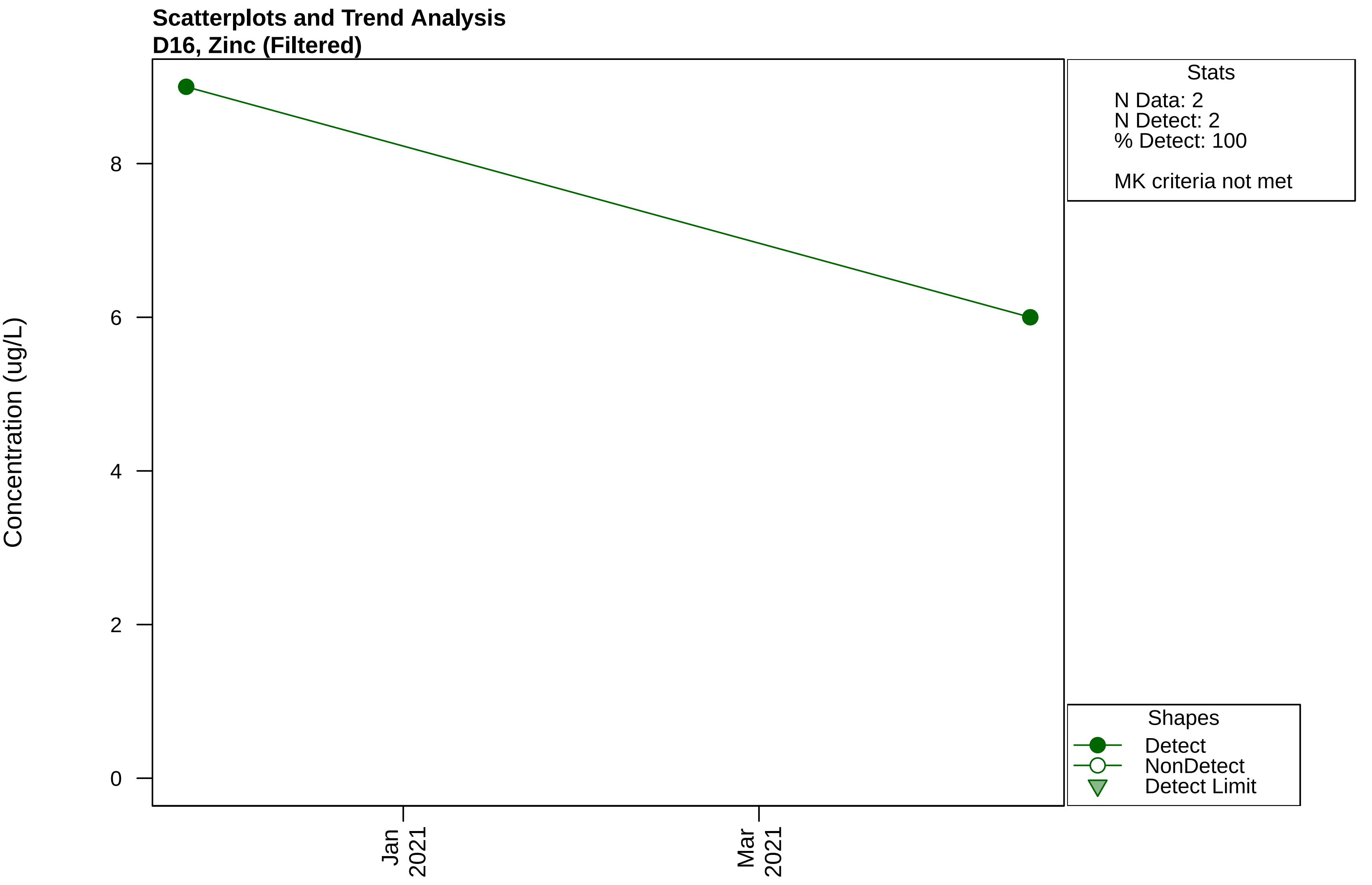


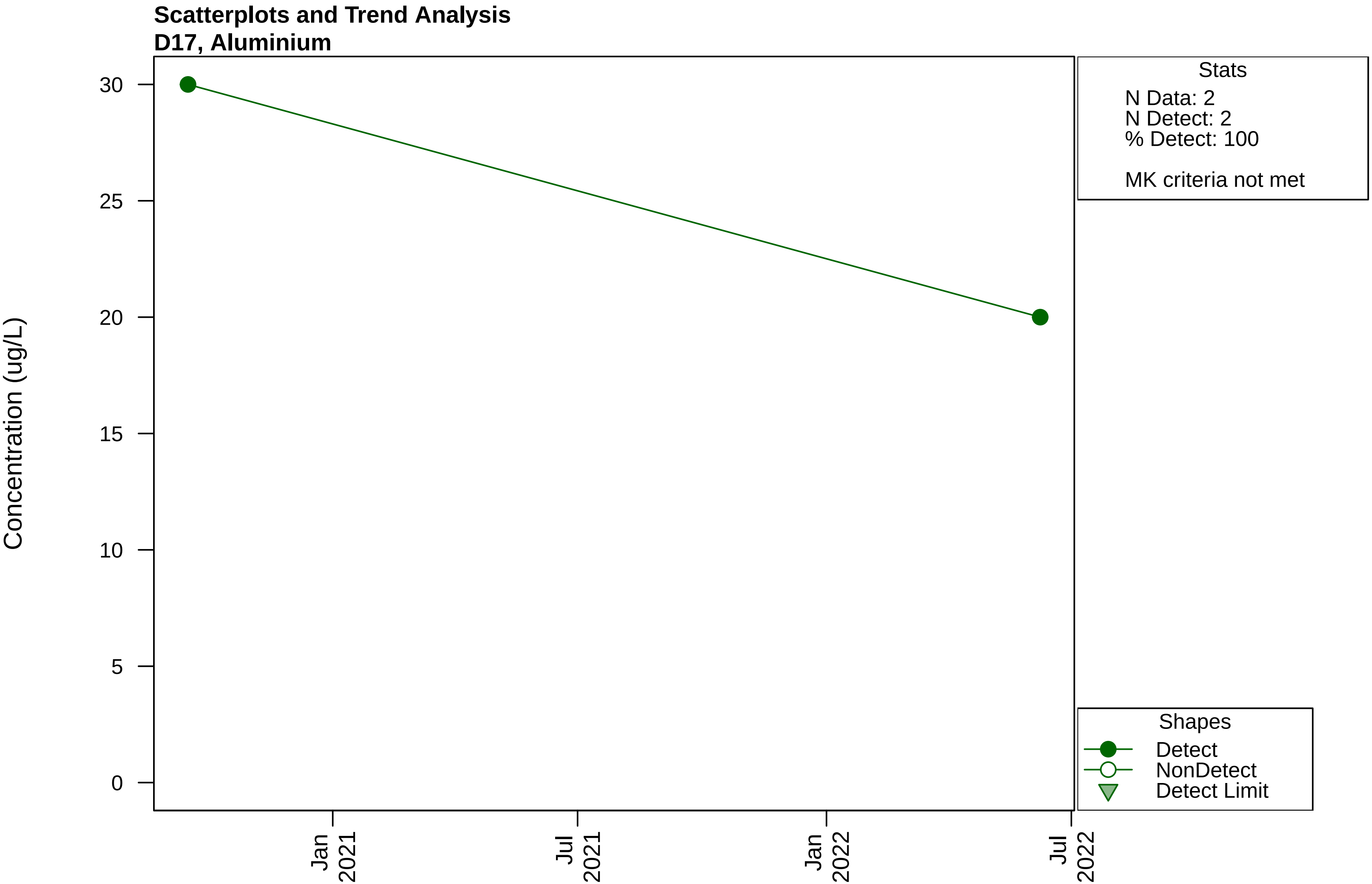
Scatterplots and Trend Analysis
D16, Total Dissolved Solids (TDS)



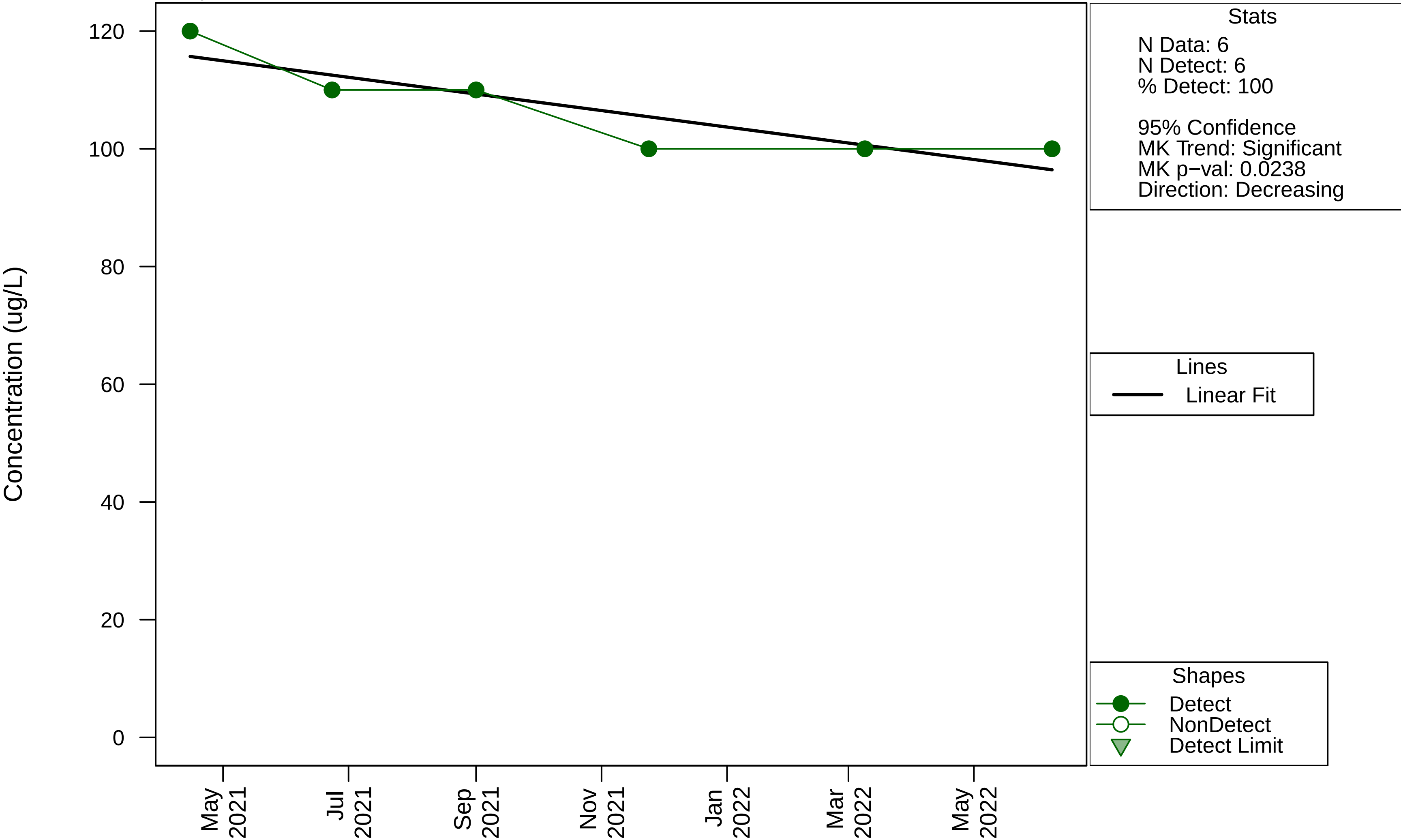
Scatterplots and Trend Analysis
D16, Zinc

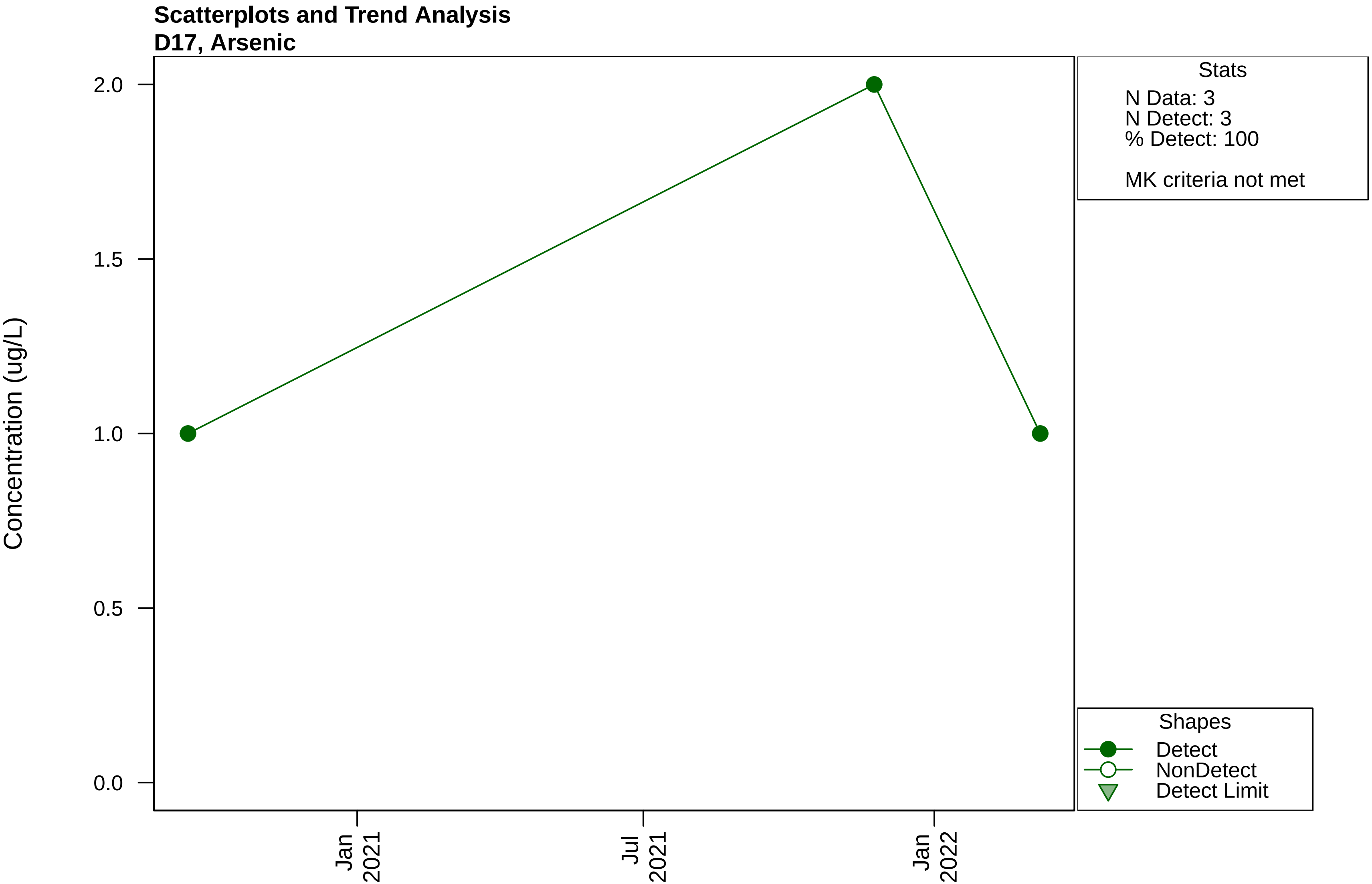



Scatterplots and Trend Analysis
D16, Zinc (Filtered)
Concentration (ug/L)
0
2
4
6
8
Jan 2021
Mar 2021
Stats
N Data: 2
N Detect: 2
% Detect: 100
MK criteria not met
Shapes
Detect
NonDetect
Detect Limit


Scatterplots and Trend Analysis
D17, Aluminium
Concentration (ug/L)
0
5
10
15
20
25
30
Jan 2021
Jul 2021
Jan 2022
Jul 2022
Stats
N Data: 2
N Detect: 2
% Detect: 100
MK criteria not met
Shapes
Detect
NonDetect
Detect Limit

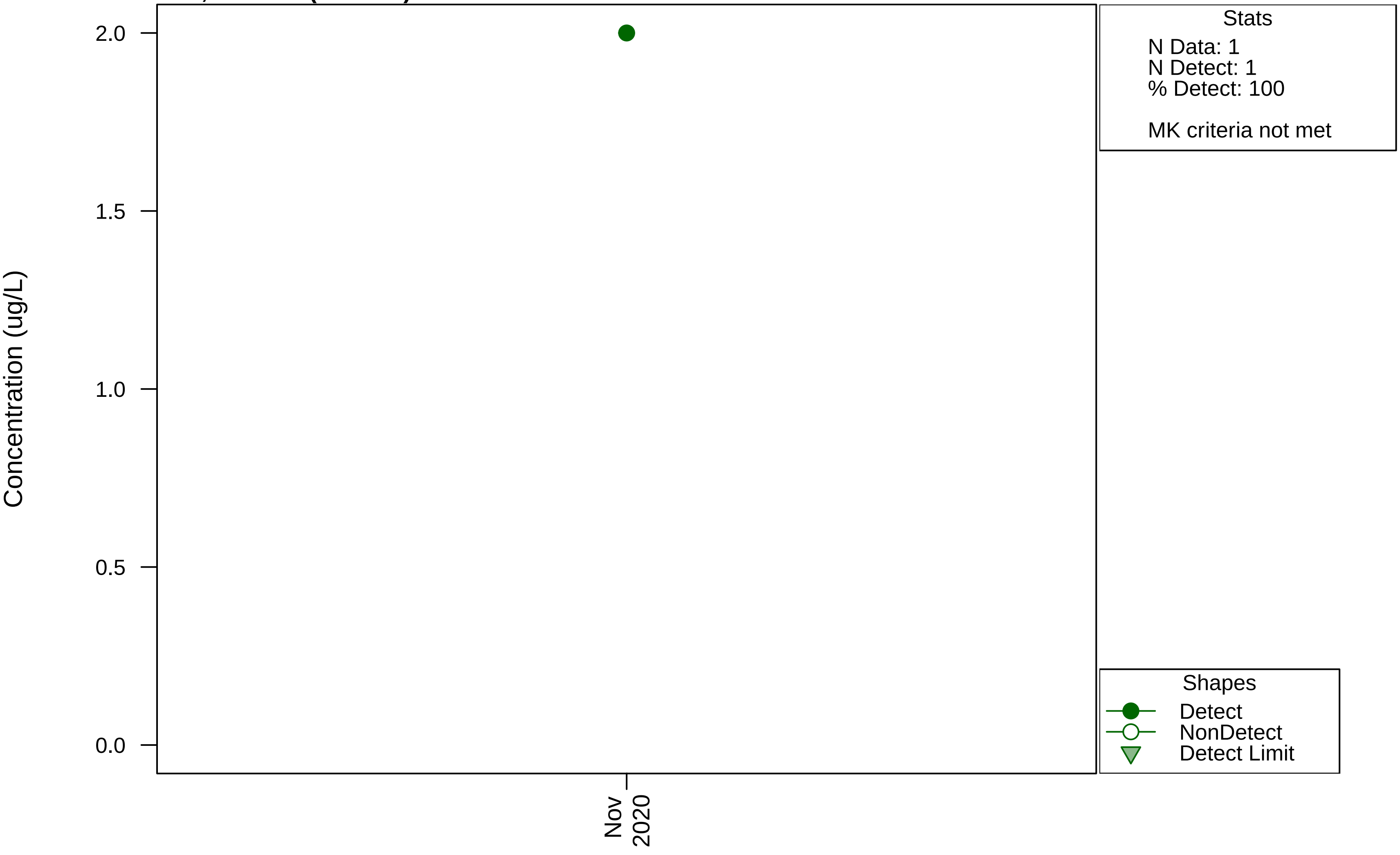
Scatterplots and Trend Analysis
D17, Ammonia

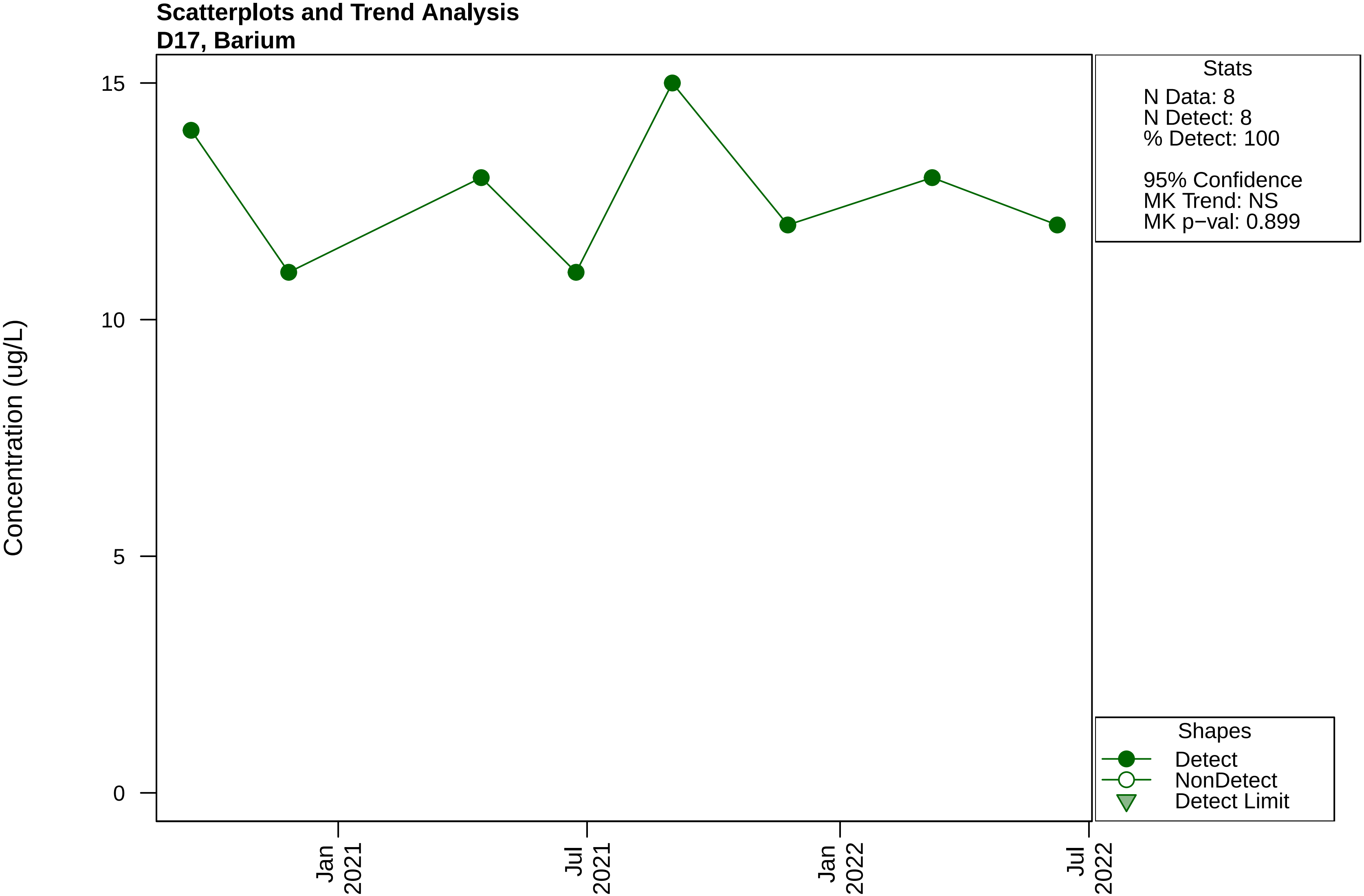




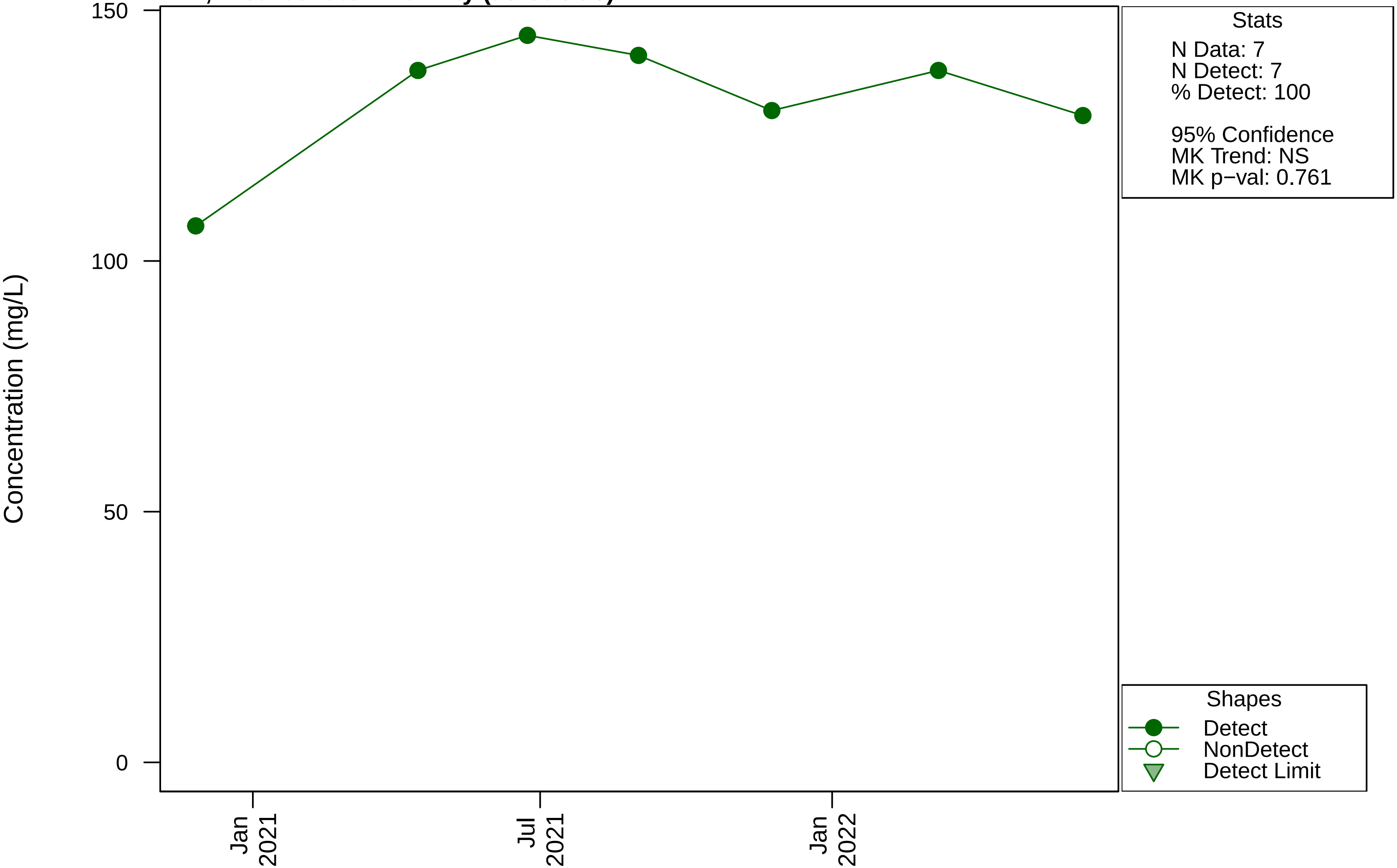
Scatterplots and Trend Analysis
D17, Arsenic
Concentration (ug/L)
2.0
1.5
1.0
0.5
0.0
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 3
N Detect: 3
% Detect: 100
MK criteria not met
Shapes
Detect
NonDetect
Detect Limit

Scatterplots and Trend Analysis
D17, Arsenic (Filtered)

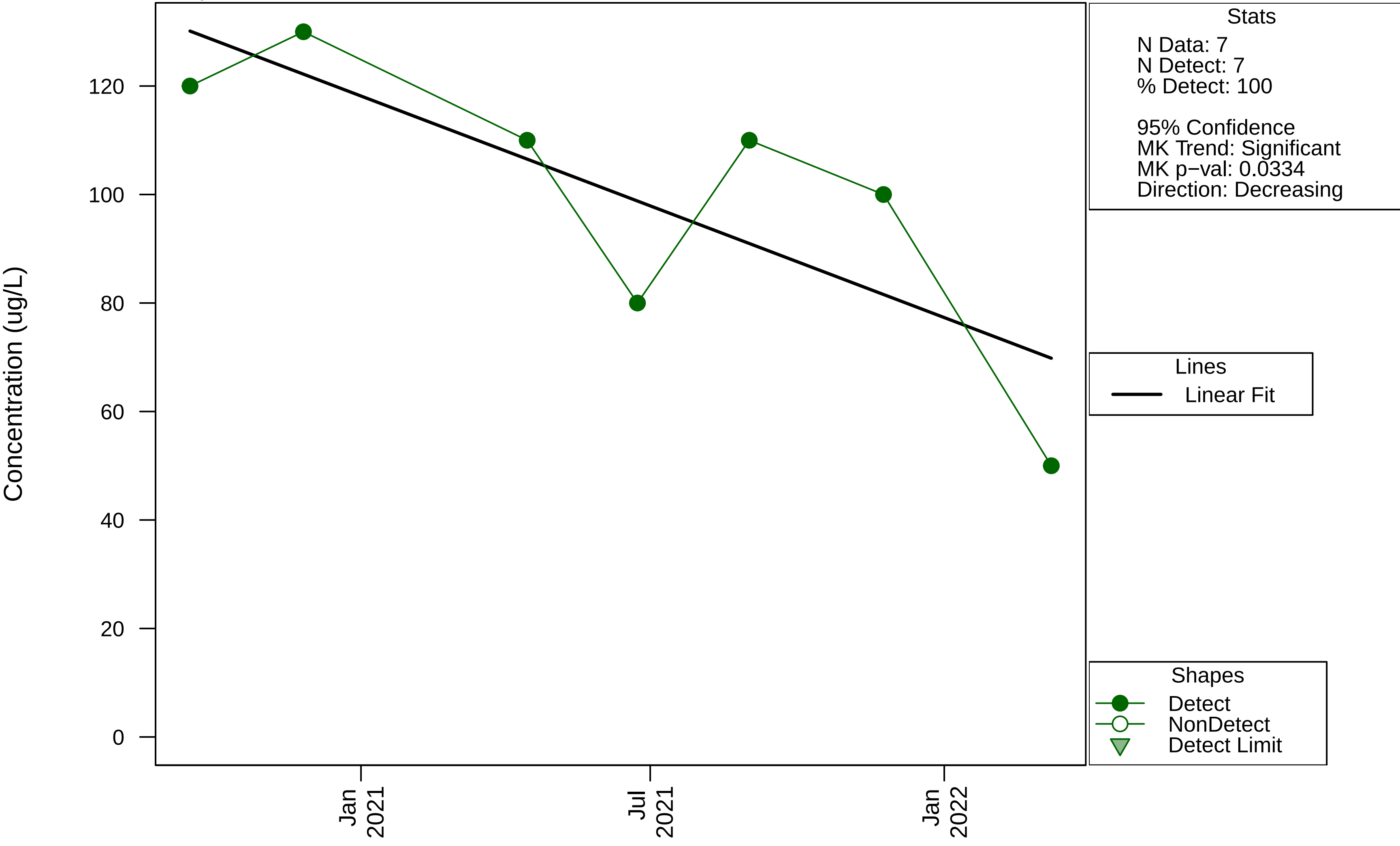



Scatterplots and Trend Analysis
D17, Barium
Concentration (ug/L)
15
10
5
0
Jan 2021
Jul 2021
Jan 2022
Jul 2022
Stats
N Data: 8
N Detect: 8
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.899
Shapes
Detect
NonDetect
Detect Limit

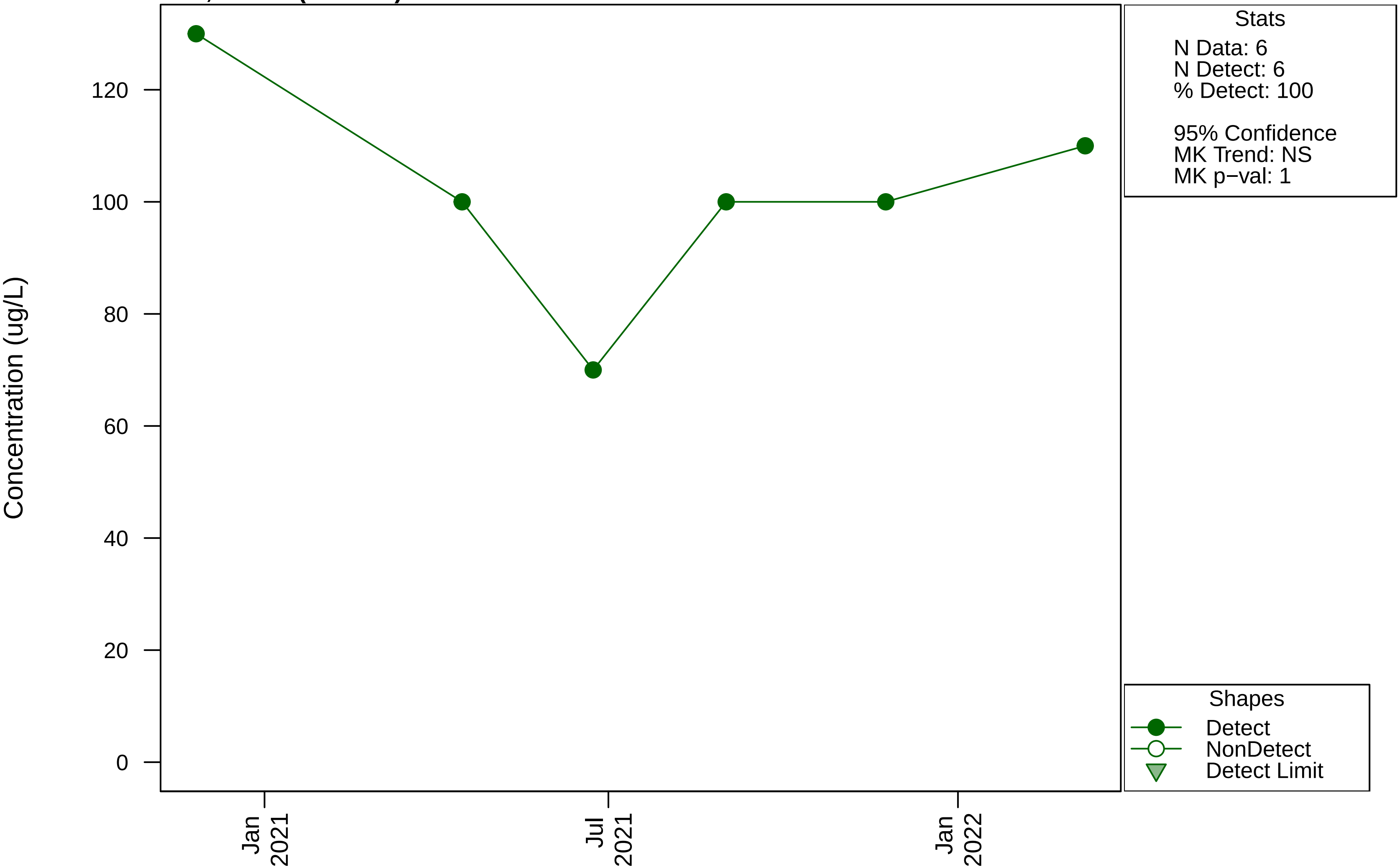
Scatterplots and Trend Analysis
D17, Bicarbonate Alkalinity (as CaCO3)



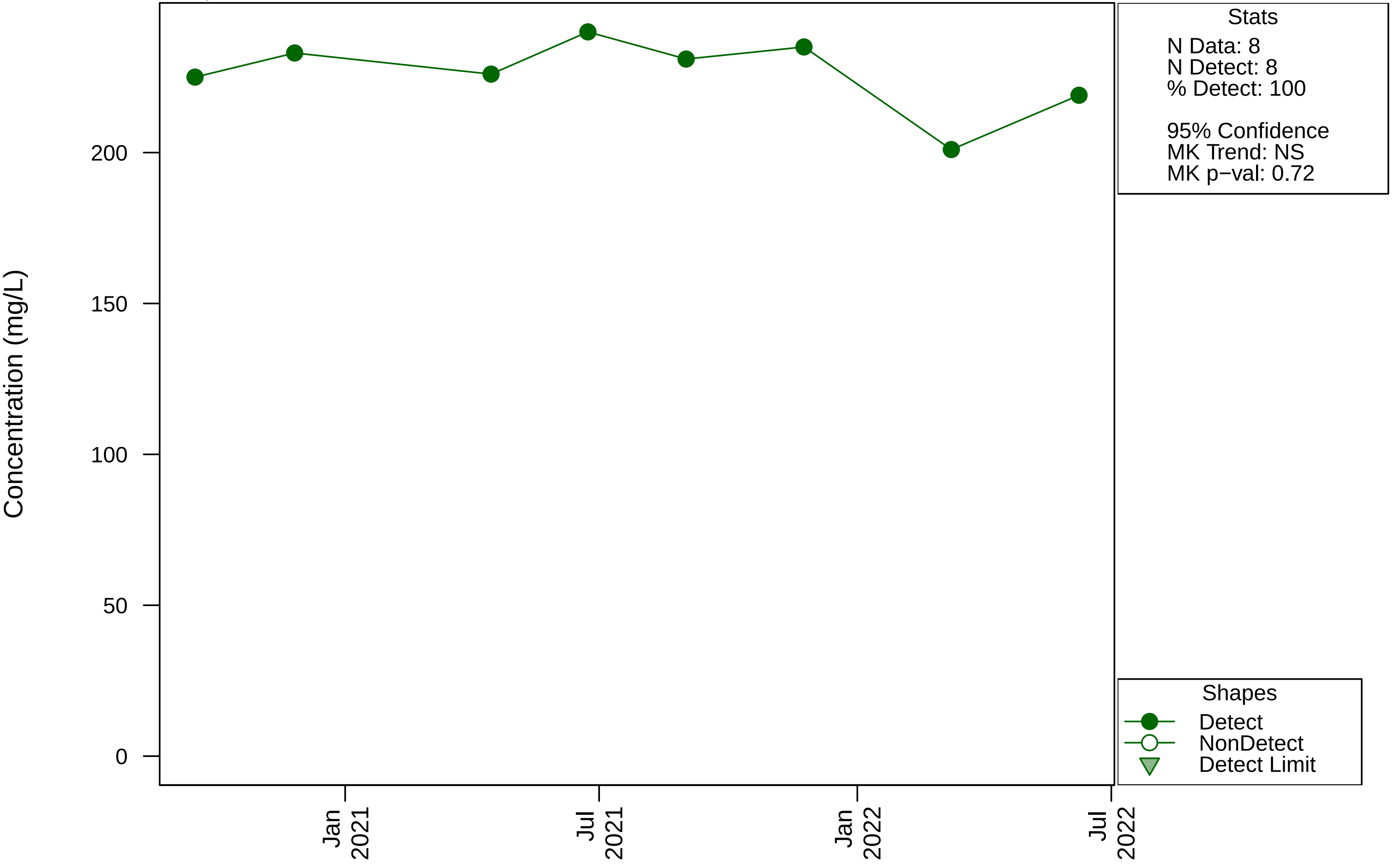
Scatterplots and Trend Analysis
D17, Boron

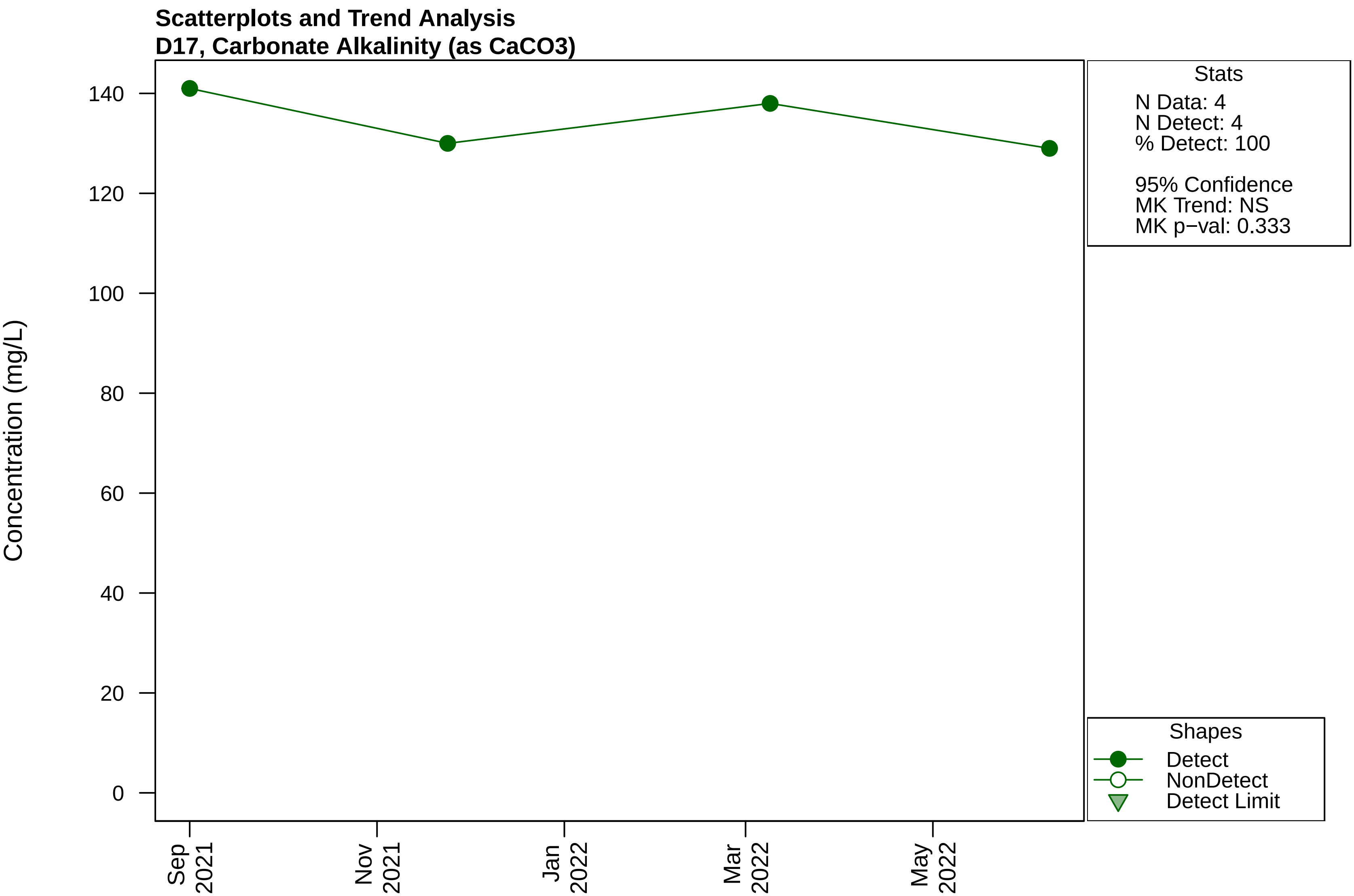


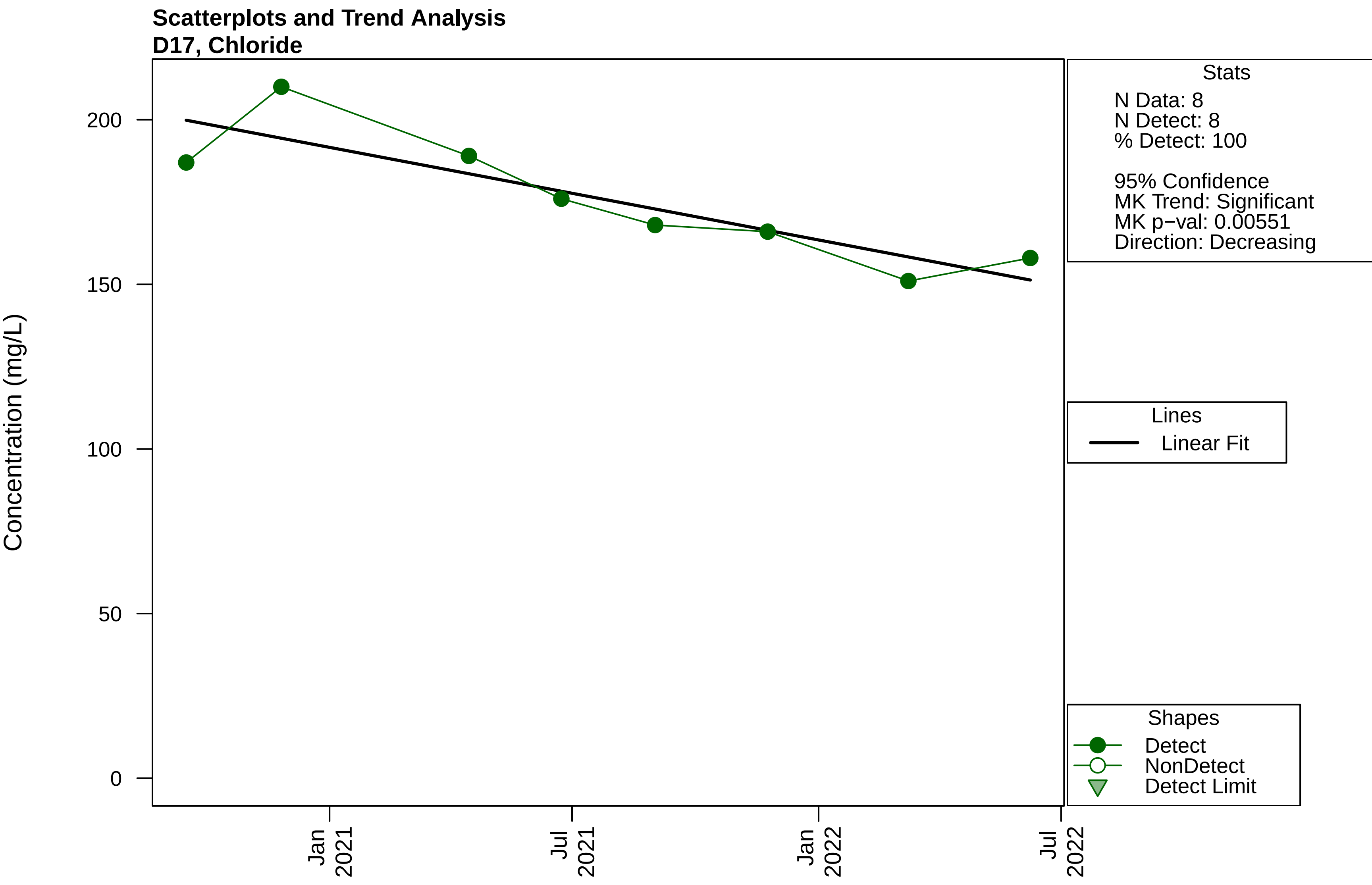
Scatterplots and Trend Analysis
D17, Boron (Filtered)



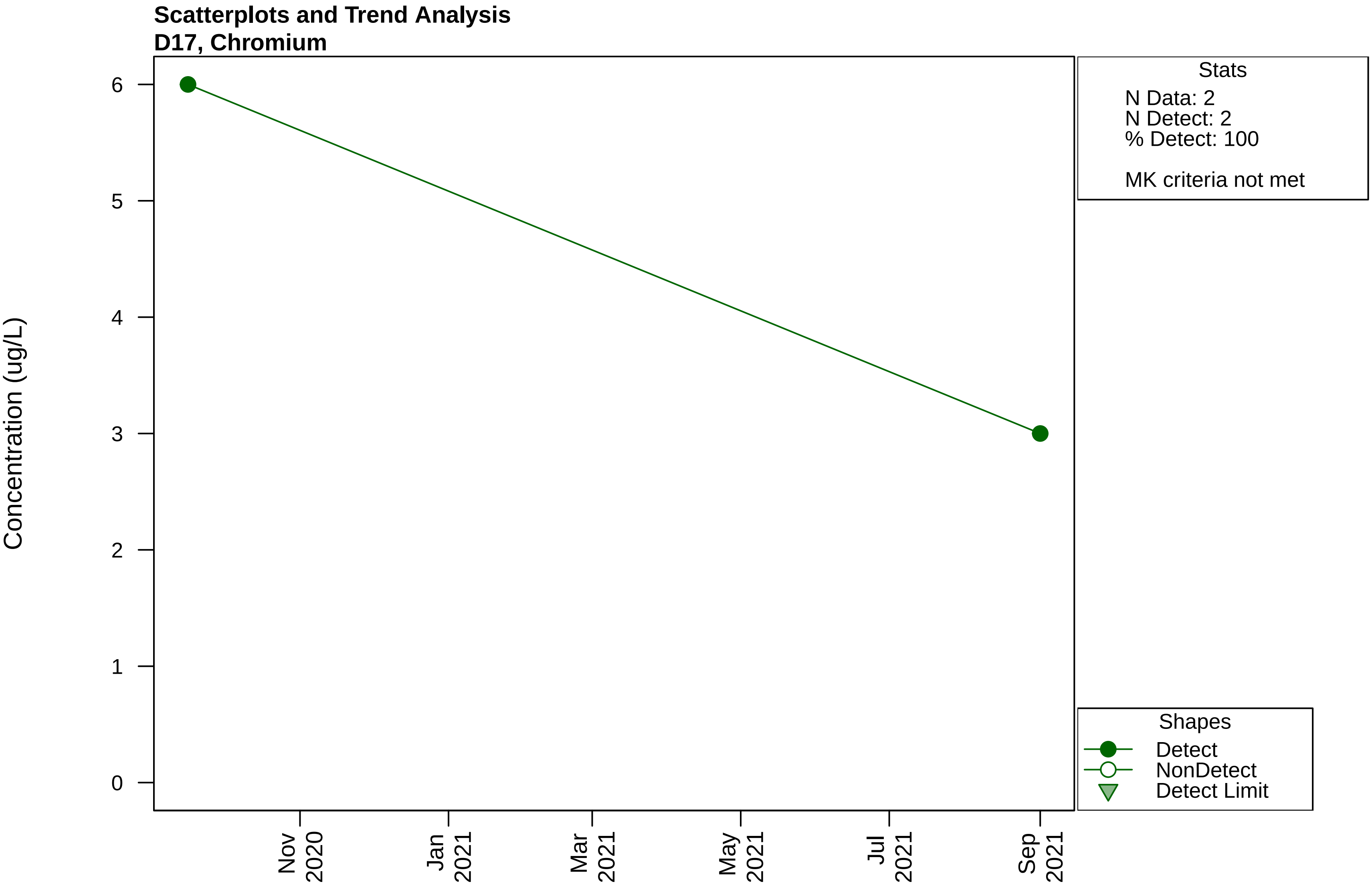
Scatterplots and Trend Analysis
D17, Calcium



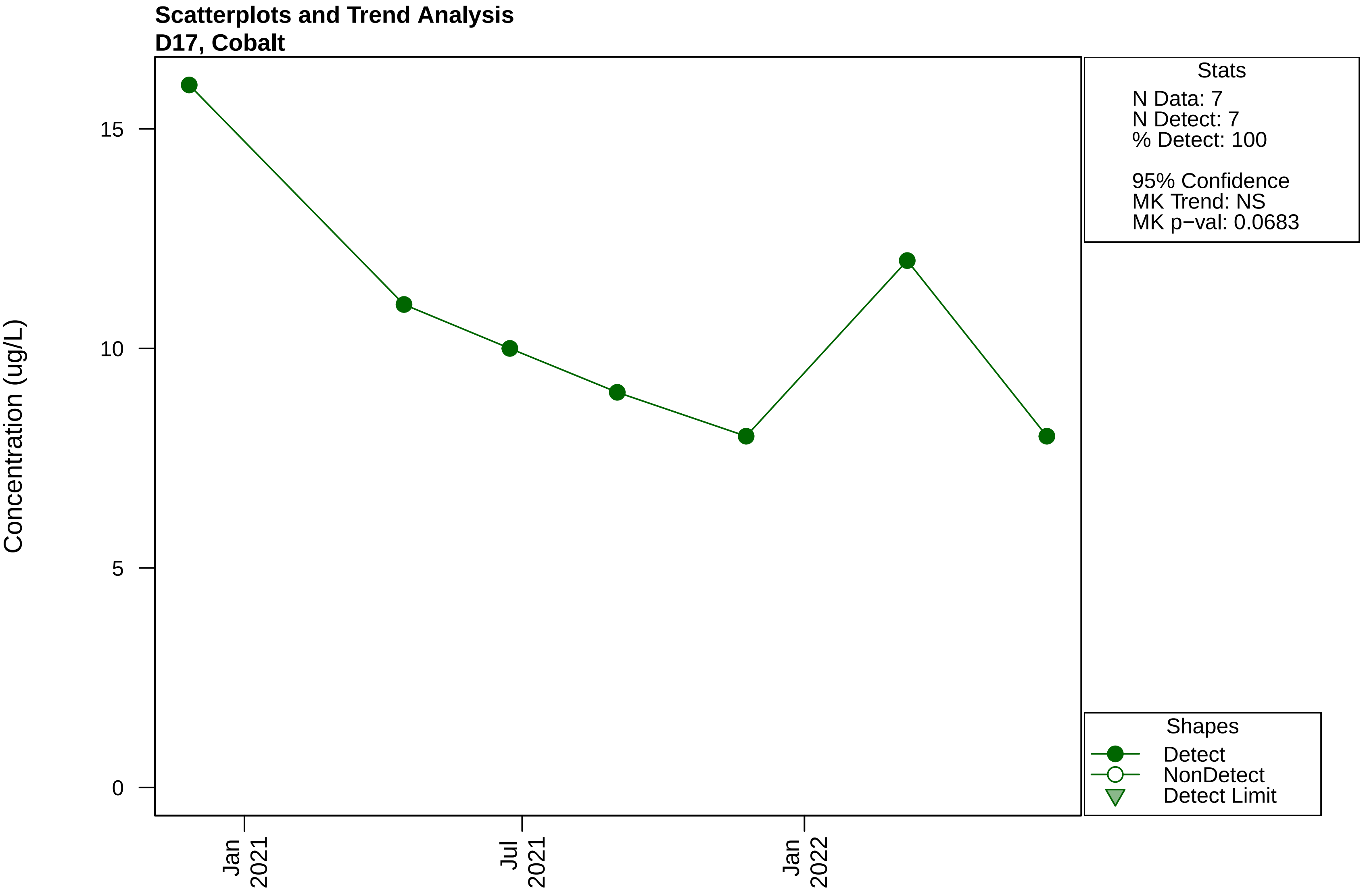

Scatterplots and Trend Analysis
D17, Carbonate Alkalinity (as CaCO3)
Concentration (mg/L)
0
20
40
60
80
100
120
140
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 4
N Detect: 4
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.333
Shapes
Detect
NonDetect
Detect Limit



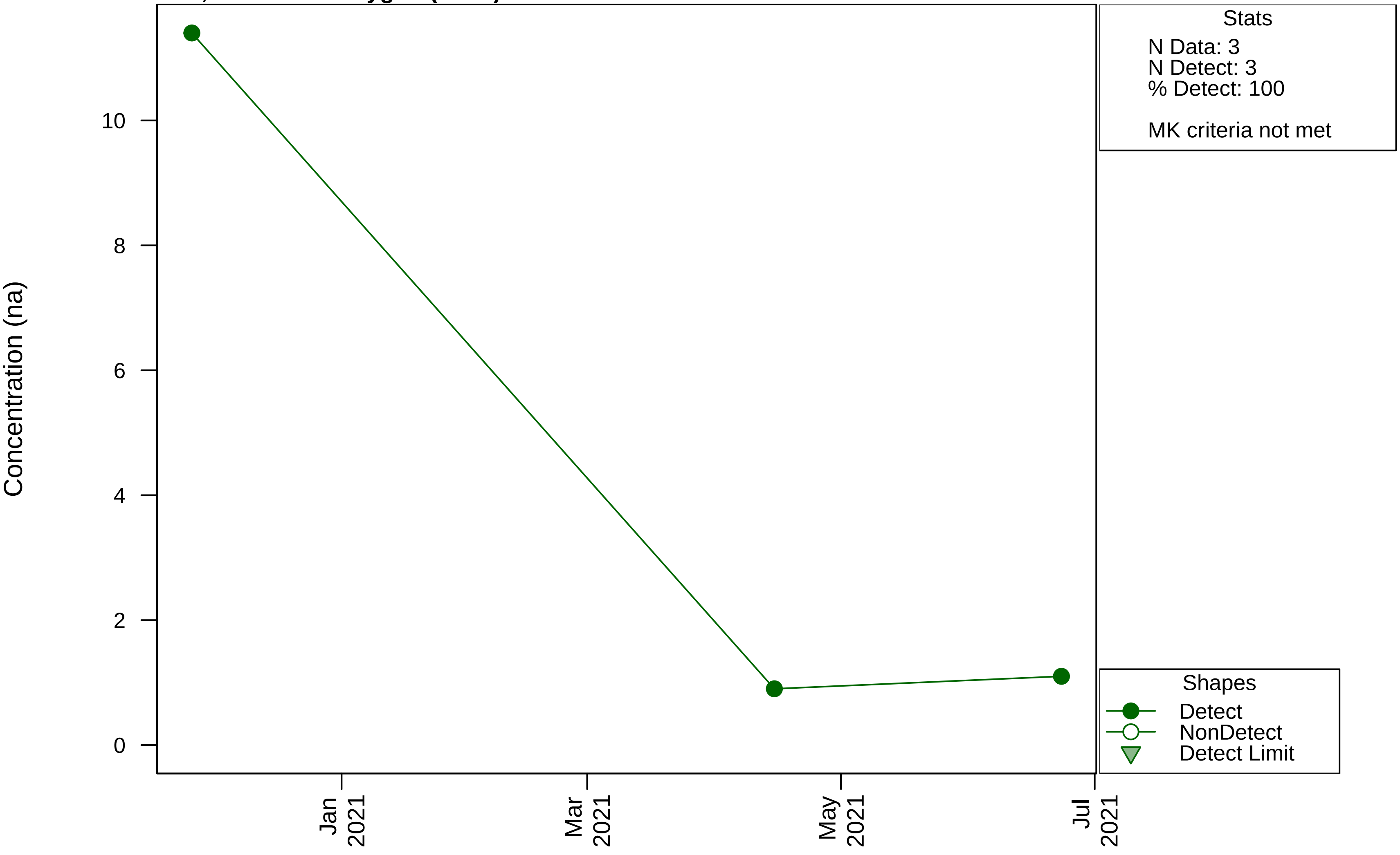
Scatterplots and Trend Analysis
D17, Chloride
Concentration (mg/L)
0
50
100
150
200
Jan 2021
Jul 2021
Jan 2022
Jul 2022
Stats
N Data: 8
N Detect: 8
% Detect: 100
95% Confidence
MK Trend: Significant
MK p−val: 0.00551
Direction: Decreasing
Lines
Linear Fit
Shapes
Detect
NonDetect
Detect Limit

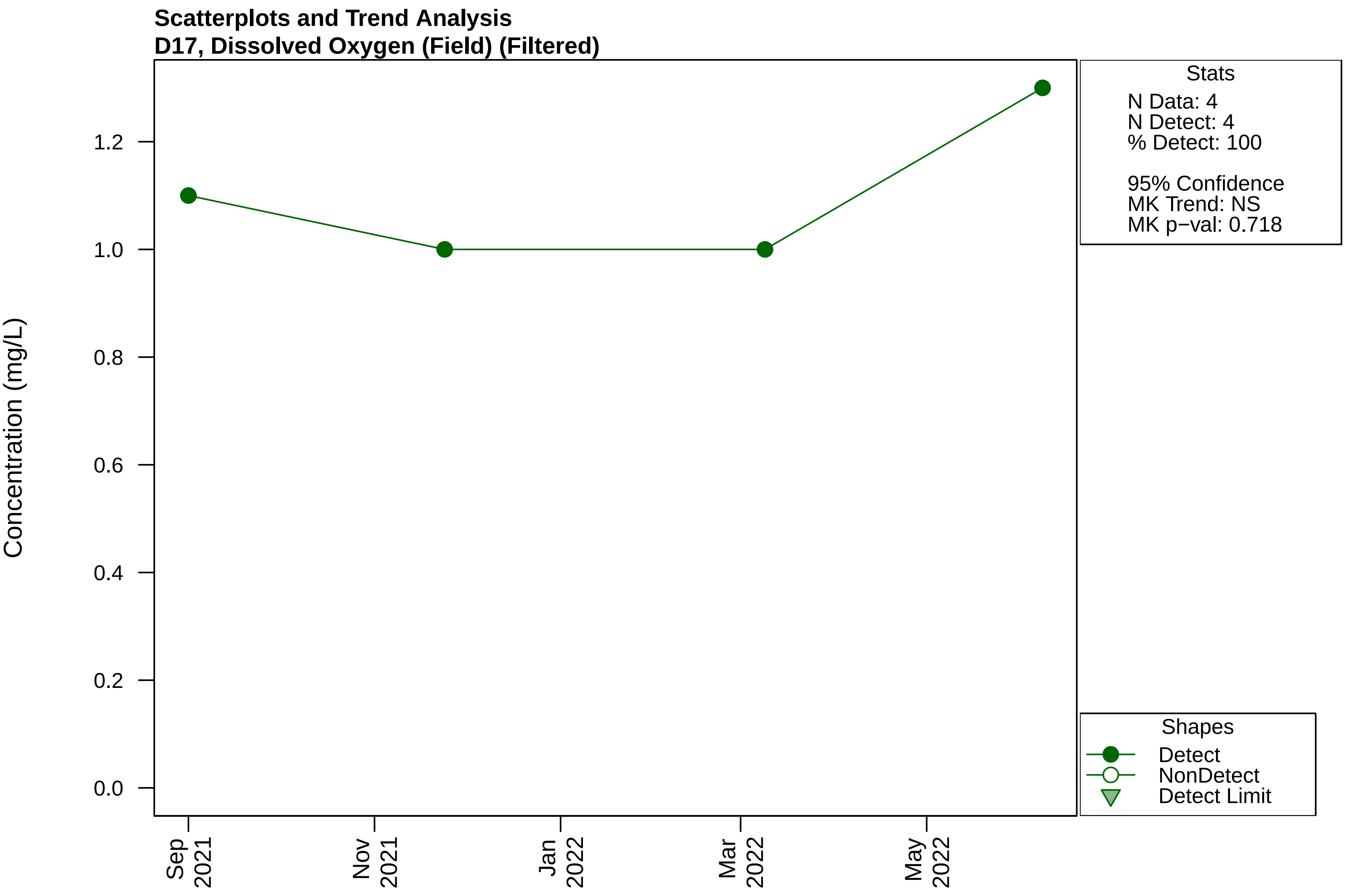


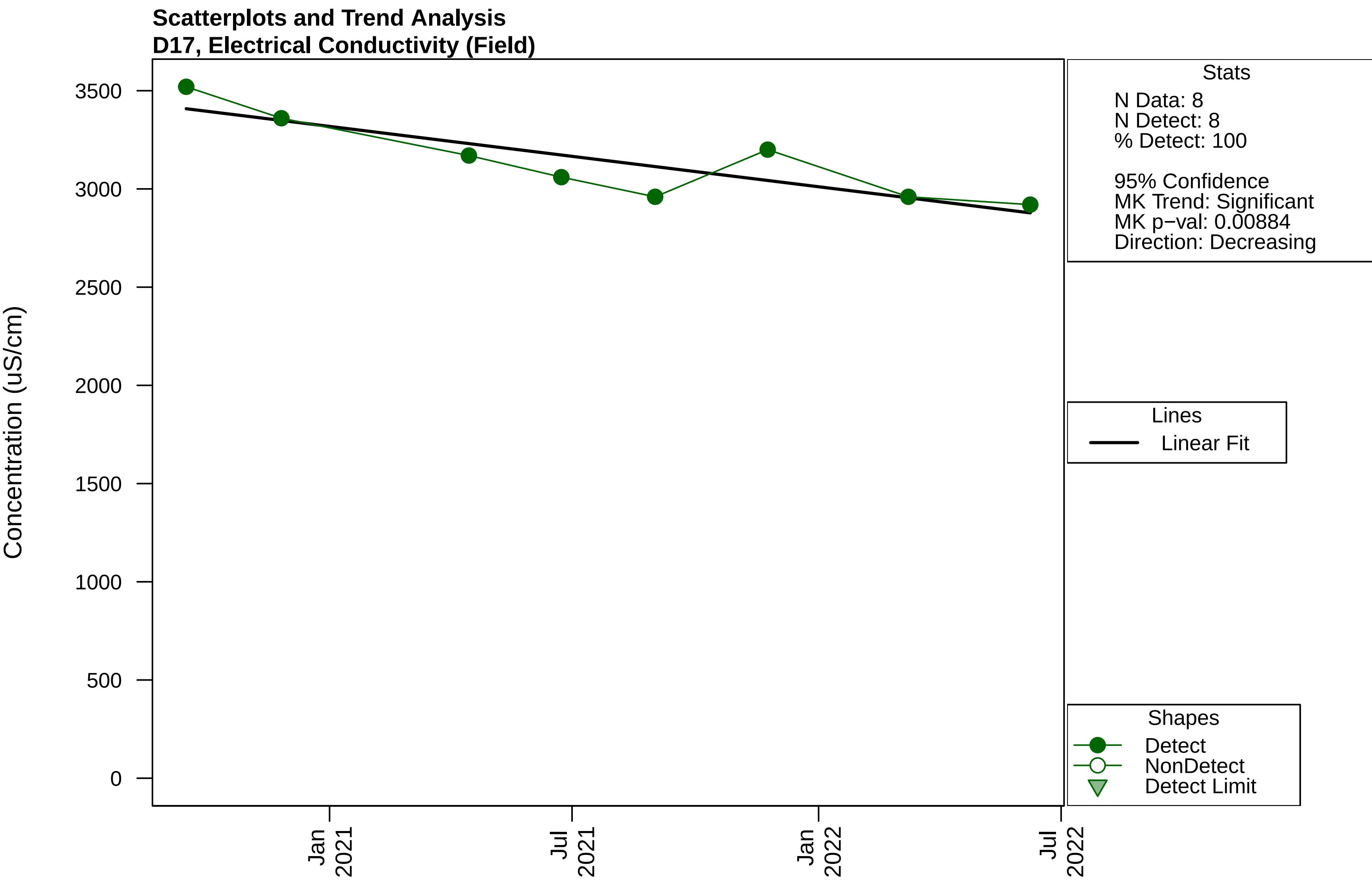
Scatterplots and Trend Analysis
D17, Chromium
Concentration (ug/L)
0
1
2
3
4
5
6
Nov 2020
Jan 2021
Mar 2021
May 2021
Jul 2021
Sep 2021
Stats
N Data: 2
N Detect: 2
% Detect: 100
MK criteria not met
Shapes
Detect
NonDetect
Detect Limit


Scatterplots and Trend Analysis
D17, Cobalt
Concentration (ug/L)
0
5
10
15
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 7
N Detect: 7
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.0683
Shapes
Detect
NonDetect
Detect Limit

Scatterplots and Trend Analysis
D17, Dissolved Oxygen (Field)

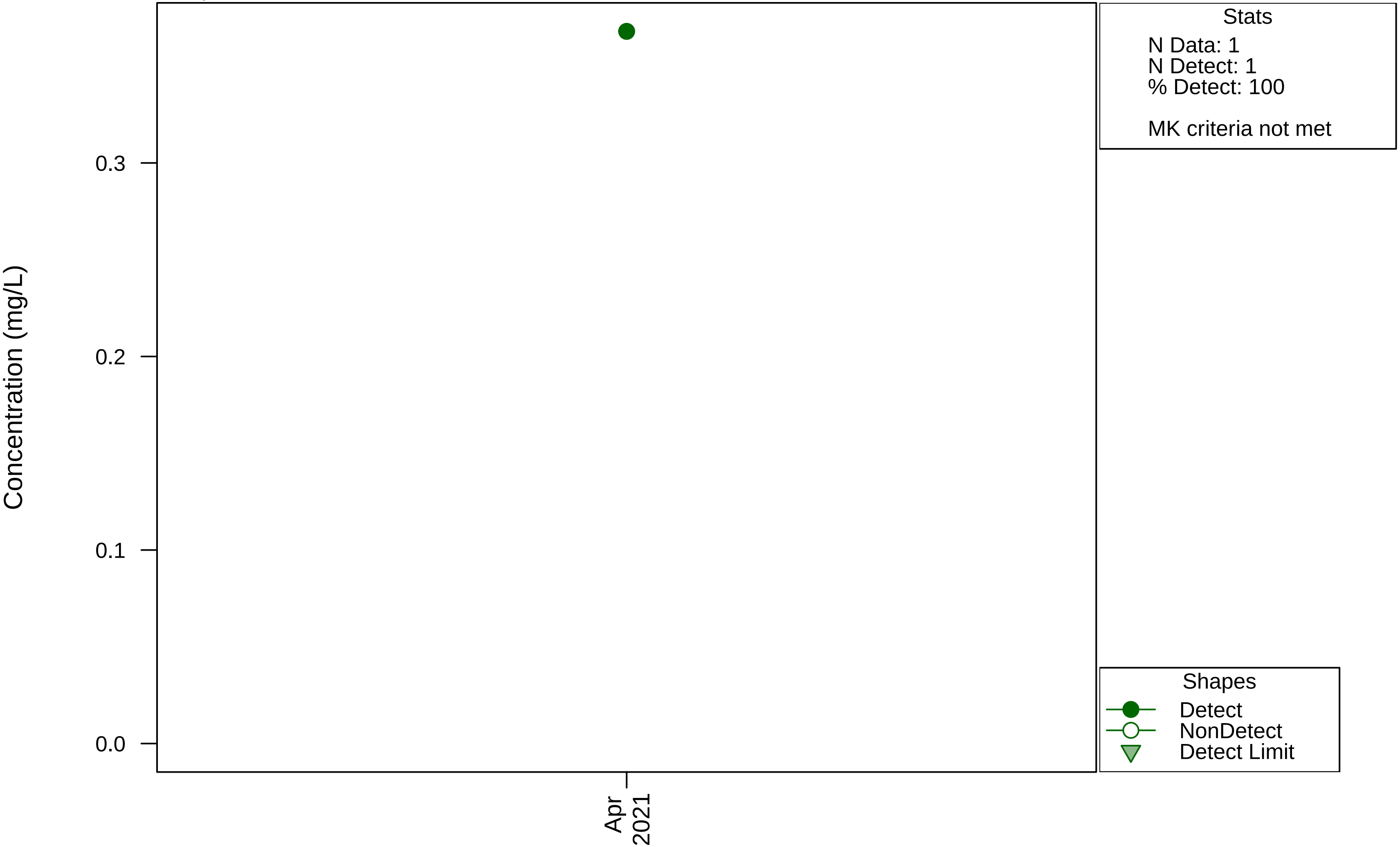


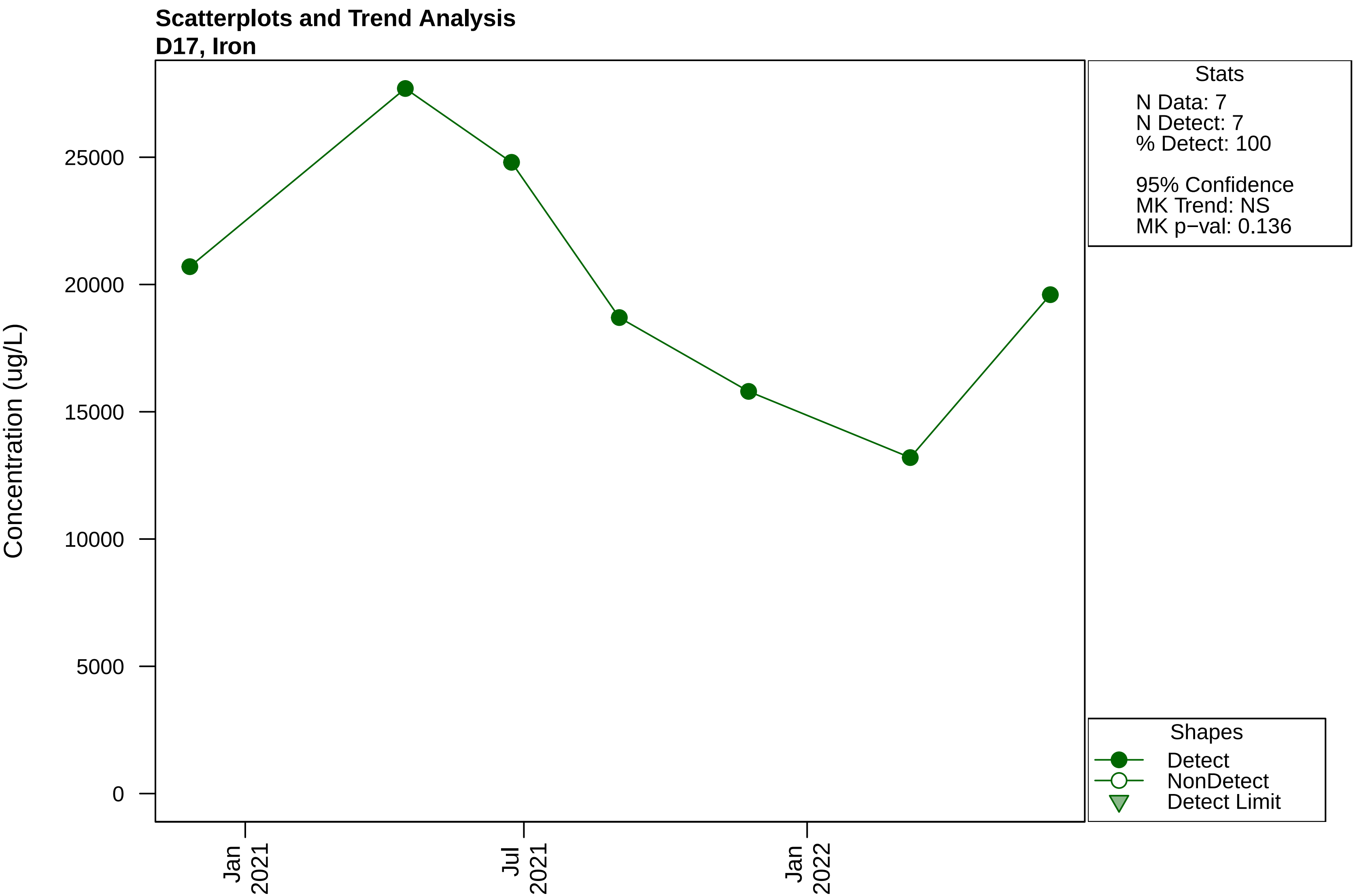

Scatterplots and Trend Analysis
D17, Dissolved Oxygen (Field) (Filtered)
Concentration (mg/L)
0.0
0.2
0.4
0.6
0.8
1.0
1.2
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 4
N Detect: 4
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.718
Shapes
Detect
NonDetect
Detect Limit



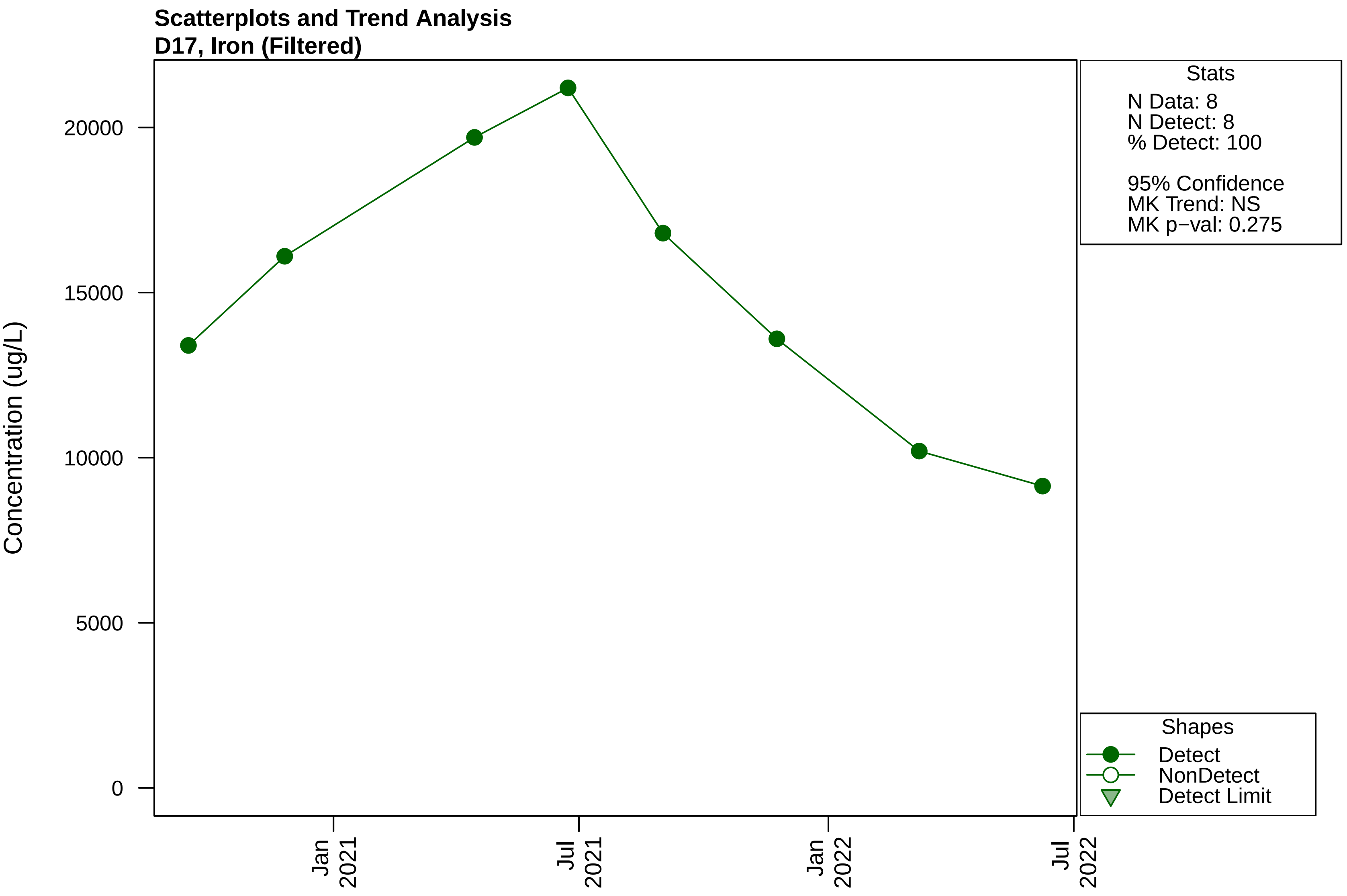
Scatterplots and Trend Analysis
D17, Electrical Conductivity (Field)
Concentration (uS/cm)
3500
3000
2500
2000
1500
1000
500
0
Jan 2021
Jul 2021
Jan 2022
Jul 2022
Stats
N Data: 8
N Detect: 8
% Detect: 100
95% Confidence
MK Trend: Significant
MK p−val: 0.00884
Direction: Decreasing
Lines
Linear Fit
Shapes
Detect
NonDetect
Detect Limit

Scatterplots and Trend Analysis
D17, Fluoride



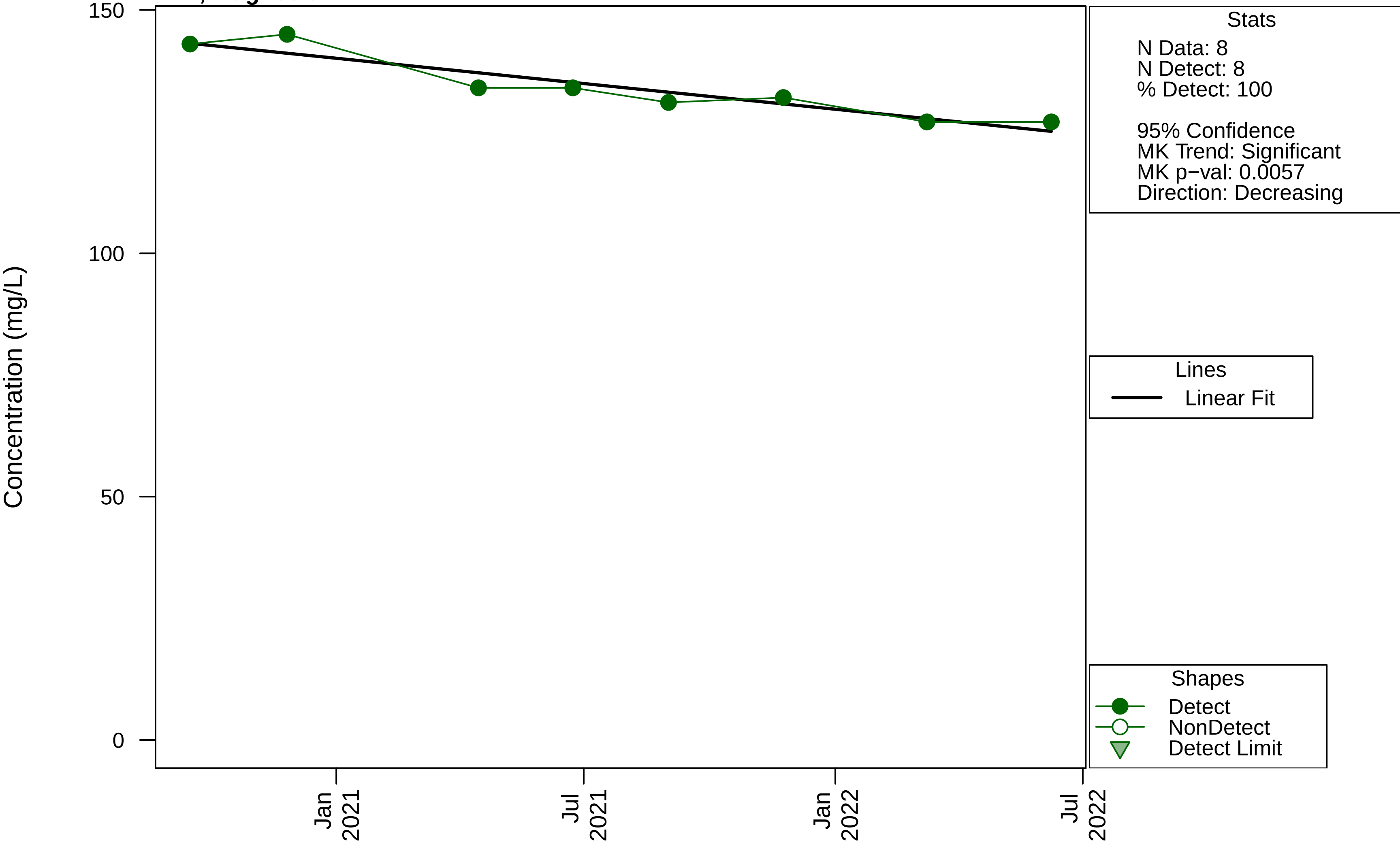


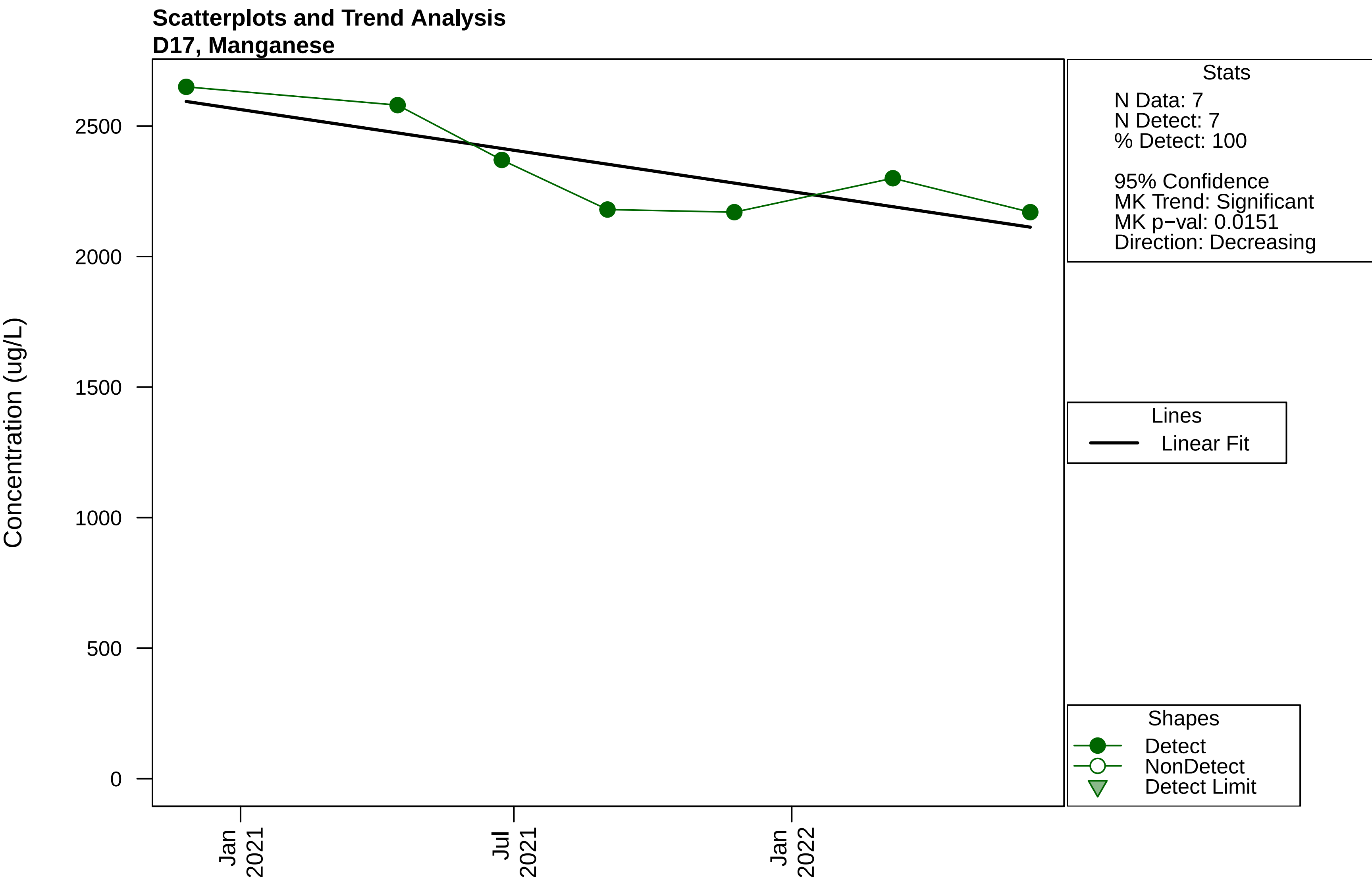
Scatterplots and Trend Analysis
D17, Iron
Concentration (ug/L)
0
5000
10000
15000
20000
25000
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 7
N Detect: 7
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.136
Shapes
Detect
NonDetect
Detect Limit



Scatterplots and Trend Analysis
D17, Iron (Filtered)
Concentration (ug/L)
20000
15000
10000
5000
0
Jan 2021
Jul 2021
Jan 2022
Jul 2022
Stats
N Data: 8
N Detect: 8
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.275
Shapes
Detect
NonDetect
Detect Limit

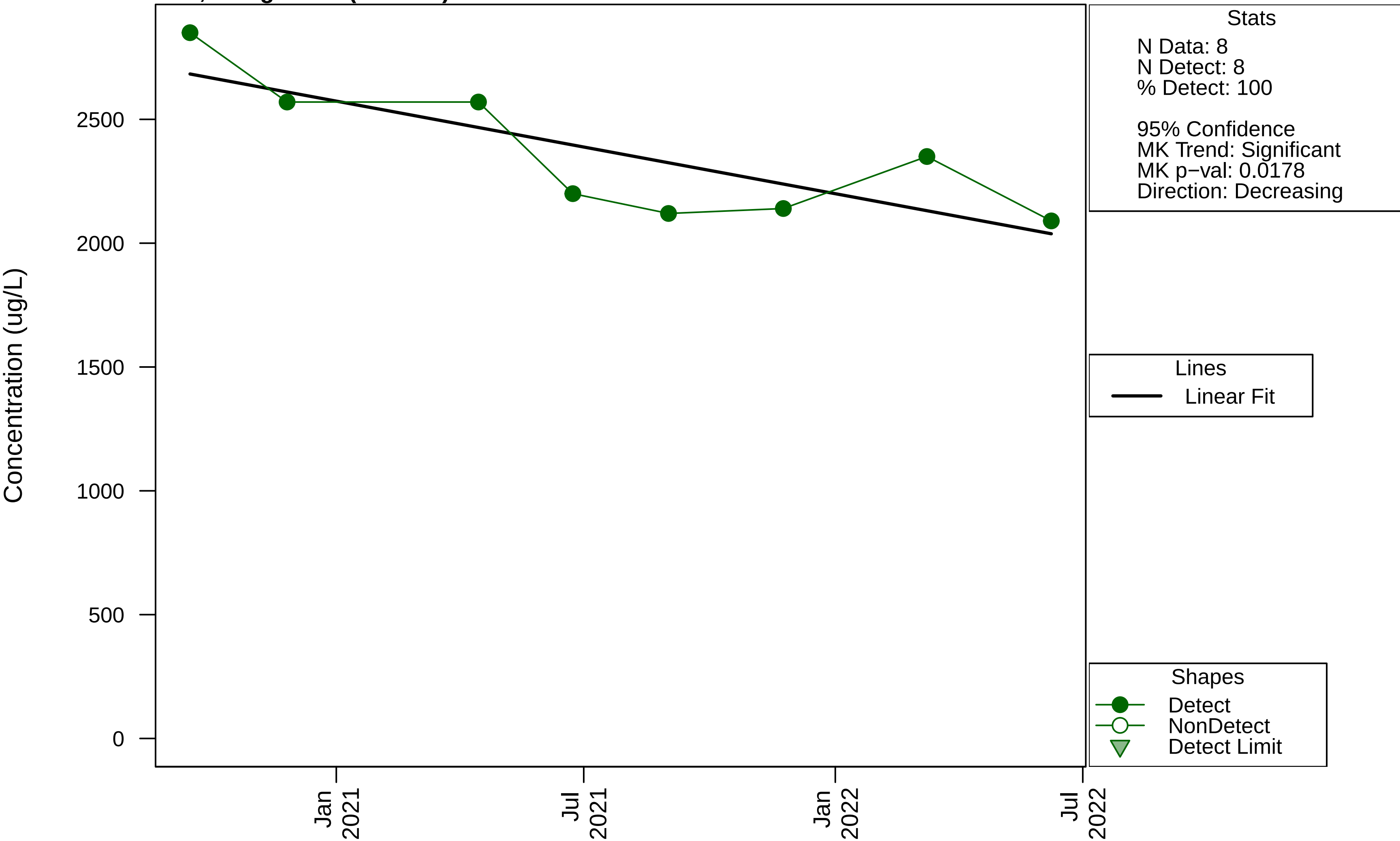
Scatterplots and Trend Analysis
D17, Magnesium

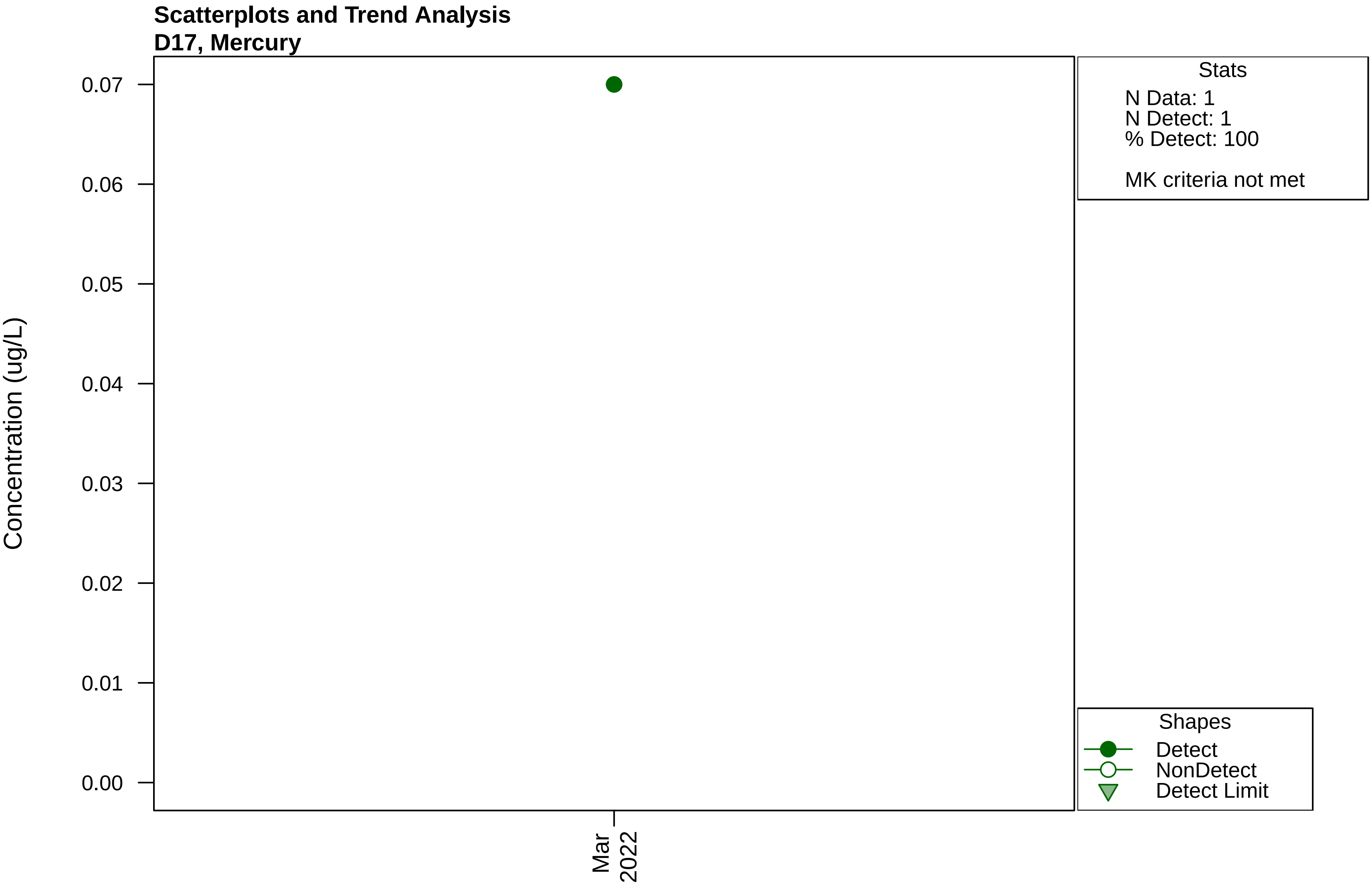




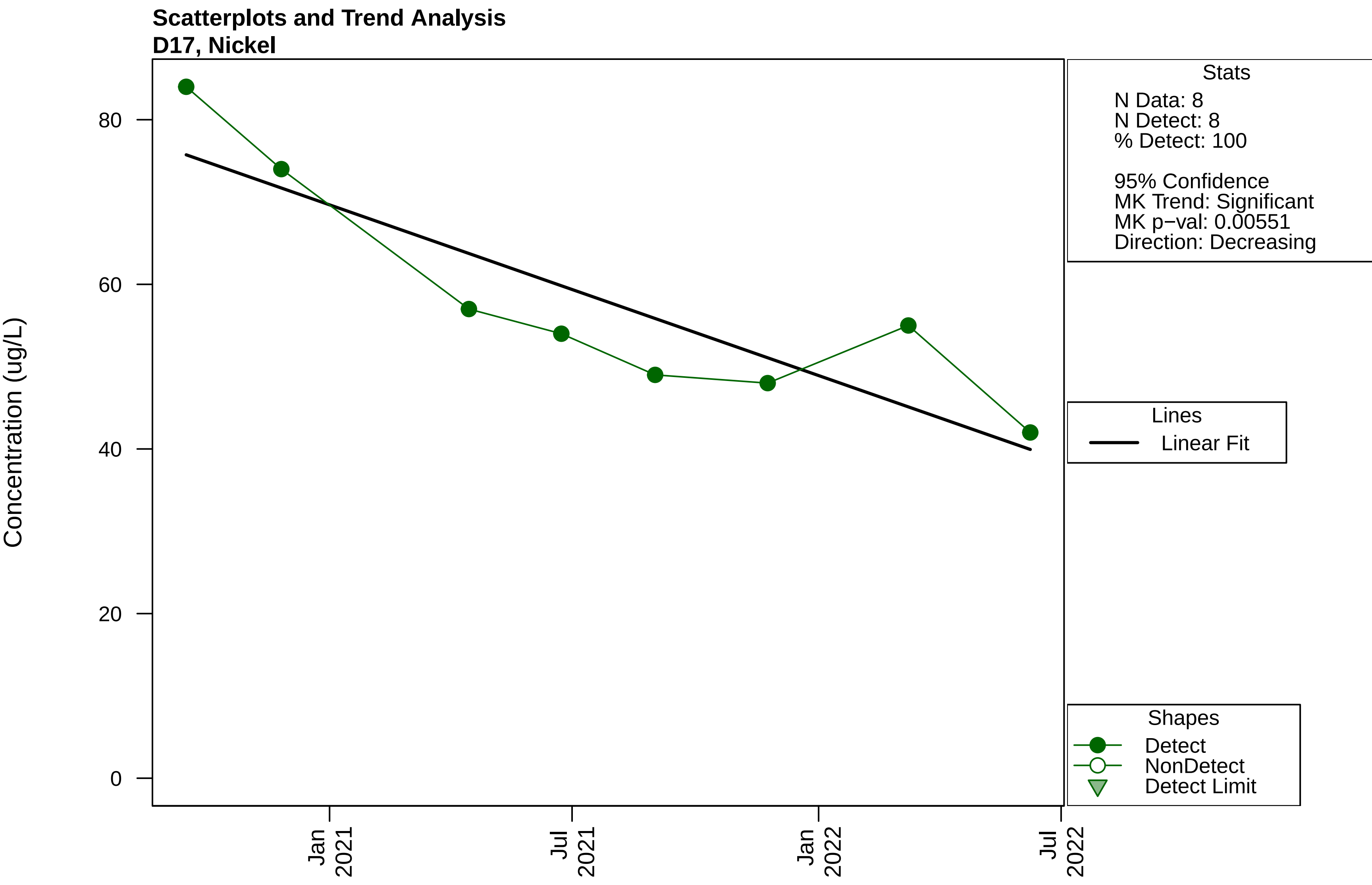
Scatterplots and Trend Analysis
D17, Manganese
Concentration (ug/L)
0
500
1000
1500
2000
2500
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 7
N Detect: 7
% Detect: 100
95% Confidence
MK Trend: Significant
MK p−val: 0.0151
Direction: Decreasing
Lines
Linear Fit
Shapes
Detect
NonDetect
Detect Limit

Scatterplots and Trend Analysis
D17, Manganese (Filtered)

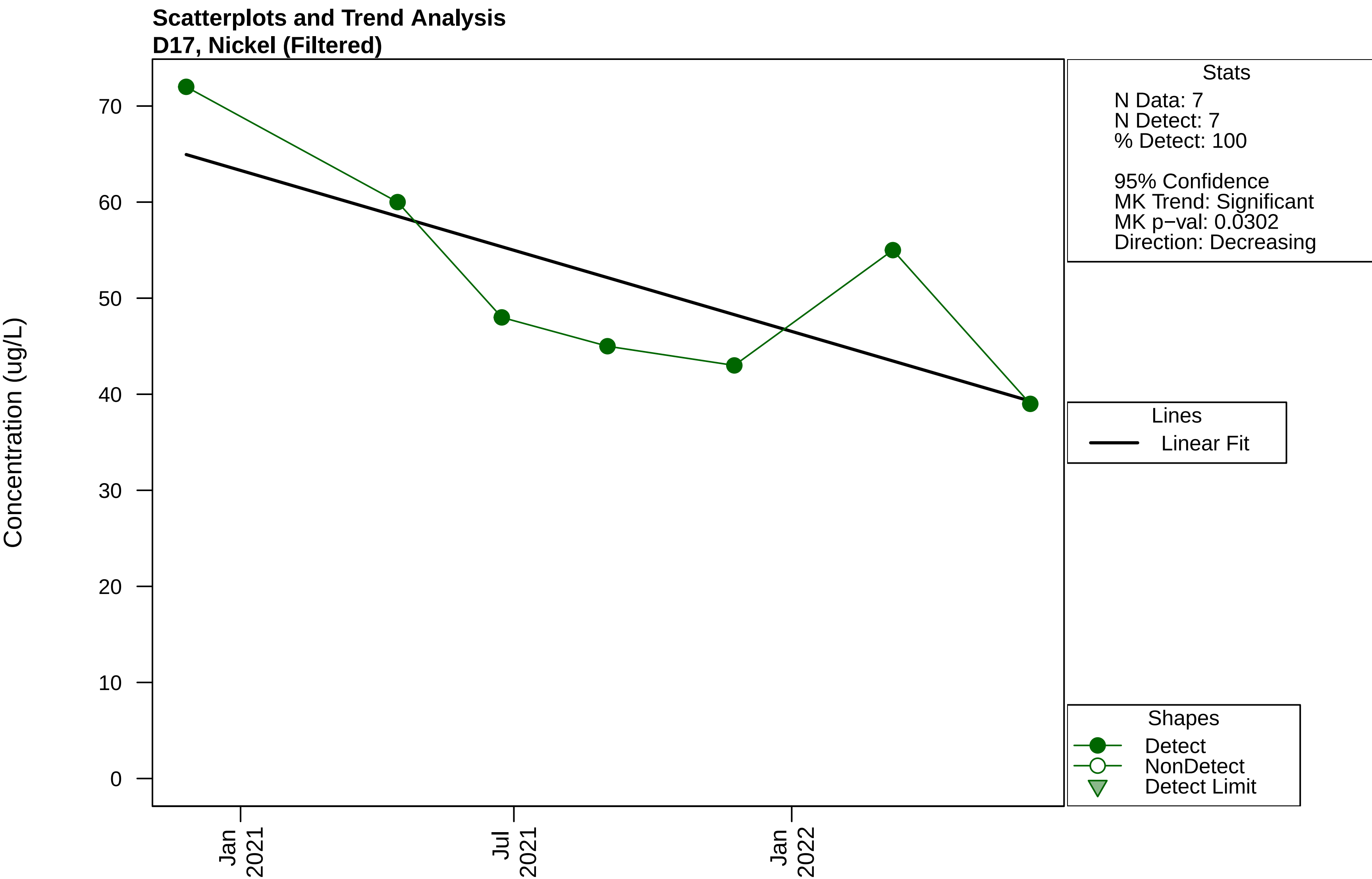




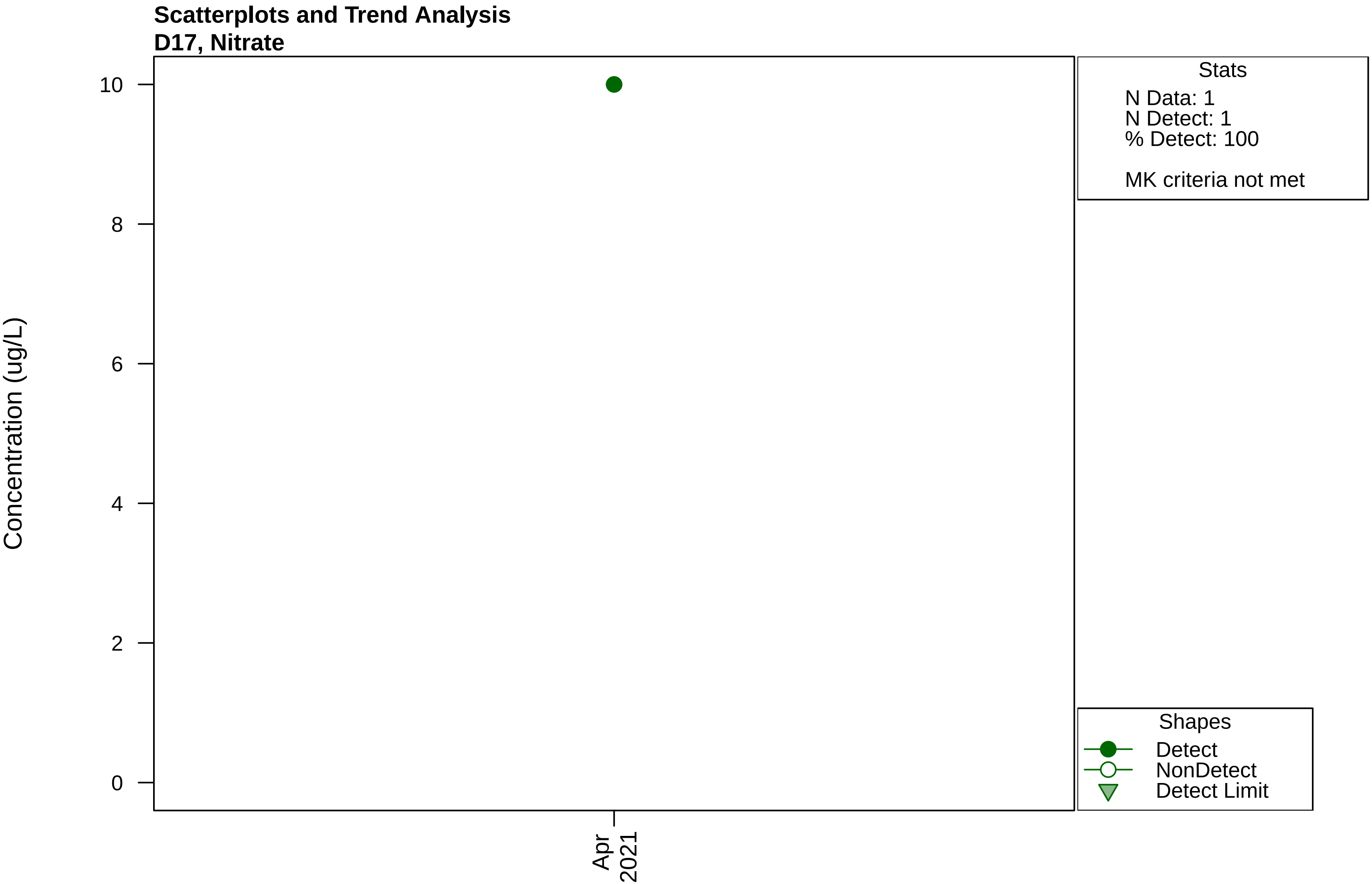
Scatterplots and Trend Analysis
D17, Mercury
Concentration (ug/L)
0.07
0.06
0.05
0.04
0.03
0.02
0.01
0.00
Mar 2022
Stats
N Data: 1
N Detect: 1
% Detect: 100
MK criteria not met
Shapes
Detect
NonDetect
Detect Limit



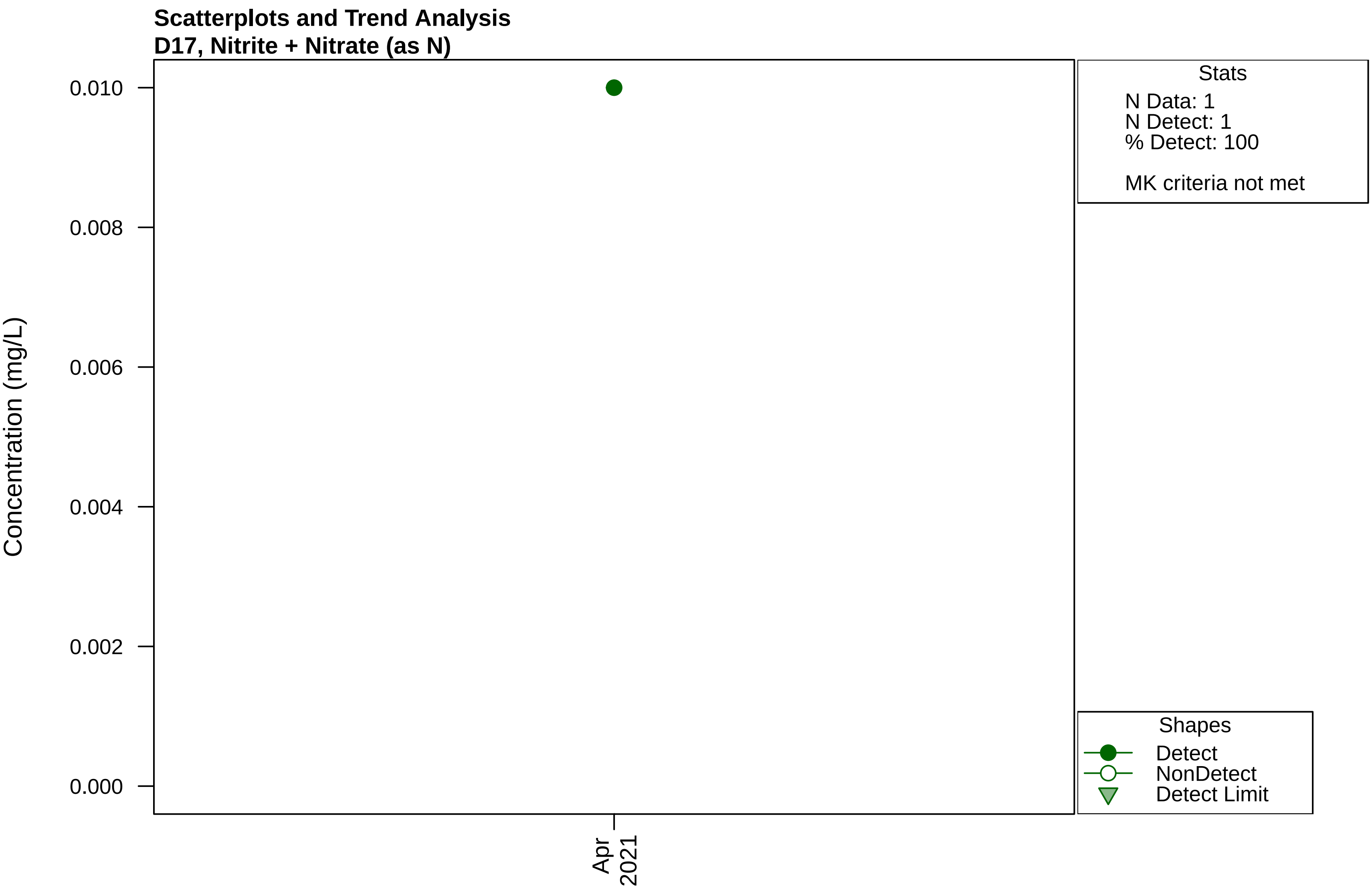
Scatterplots and Trend Analysis
D17, Nickel
Concentration (ug/L)
0
20
40
60
80
Jan 2021
Jul 2021
Jan 2022
Jul 2022
Stats
N Data: 8
N Detect: 8
% Detect: 100
95% Confidence
MK Trend: Significant
MK p−val: 0.00551
Direction: Decreasing
Lines
Linear Fit
Shapes
Detect
NonDetect
Detect Limit



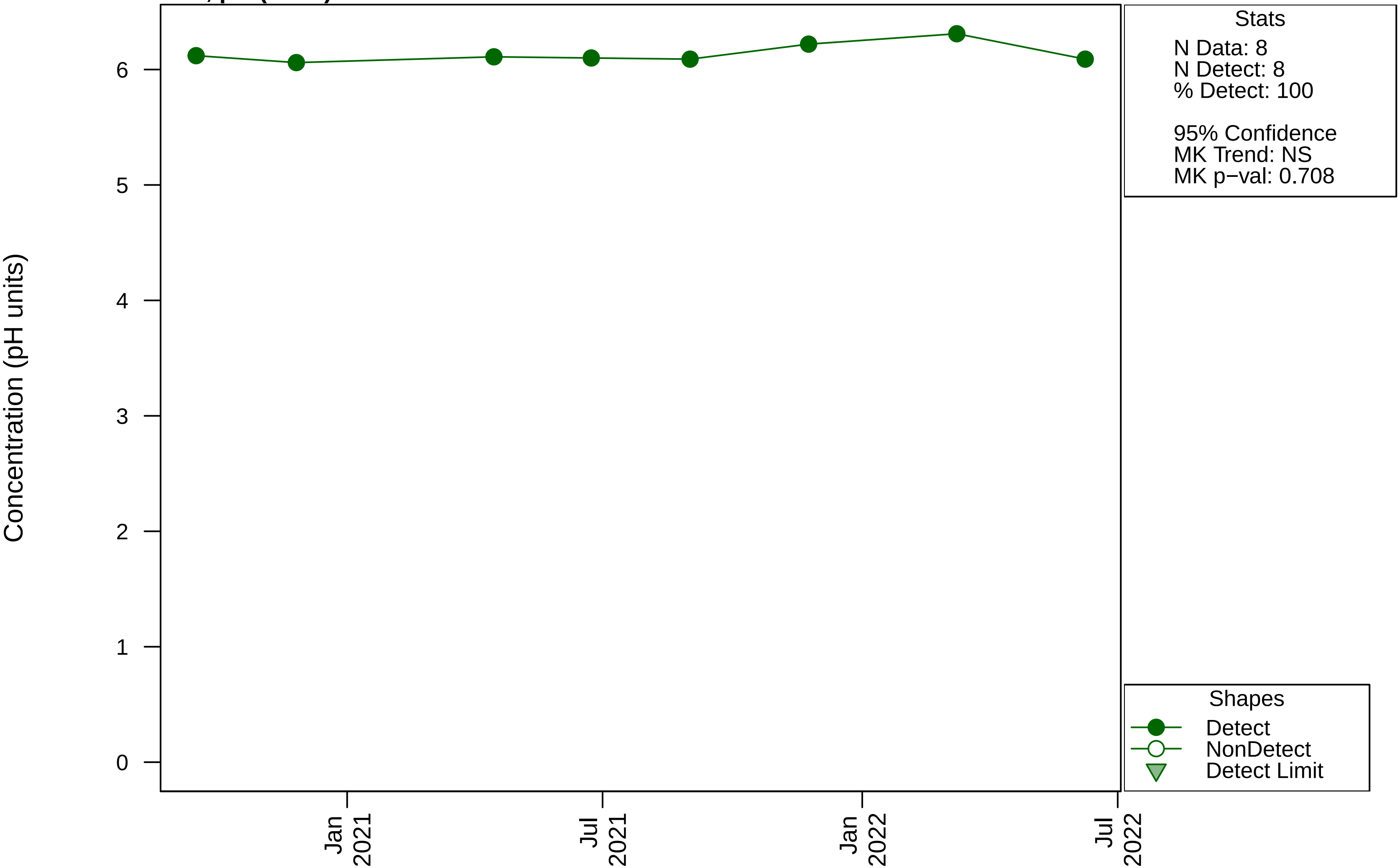
Scatterplots and Trend Analysis
D17, Nickel (Filtered)
Concentration (ug/L)
0
10
20
30
40
50
60
70
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 7
N Detect: 7
% Detect: 100
95% Confidence
MK Trend: Significant
MK p−val: 0.0302
Direction: Decreasing
Lines
Linear Fit
Shapes
Detect
NonDetect
Detect Limit

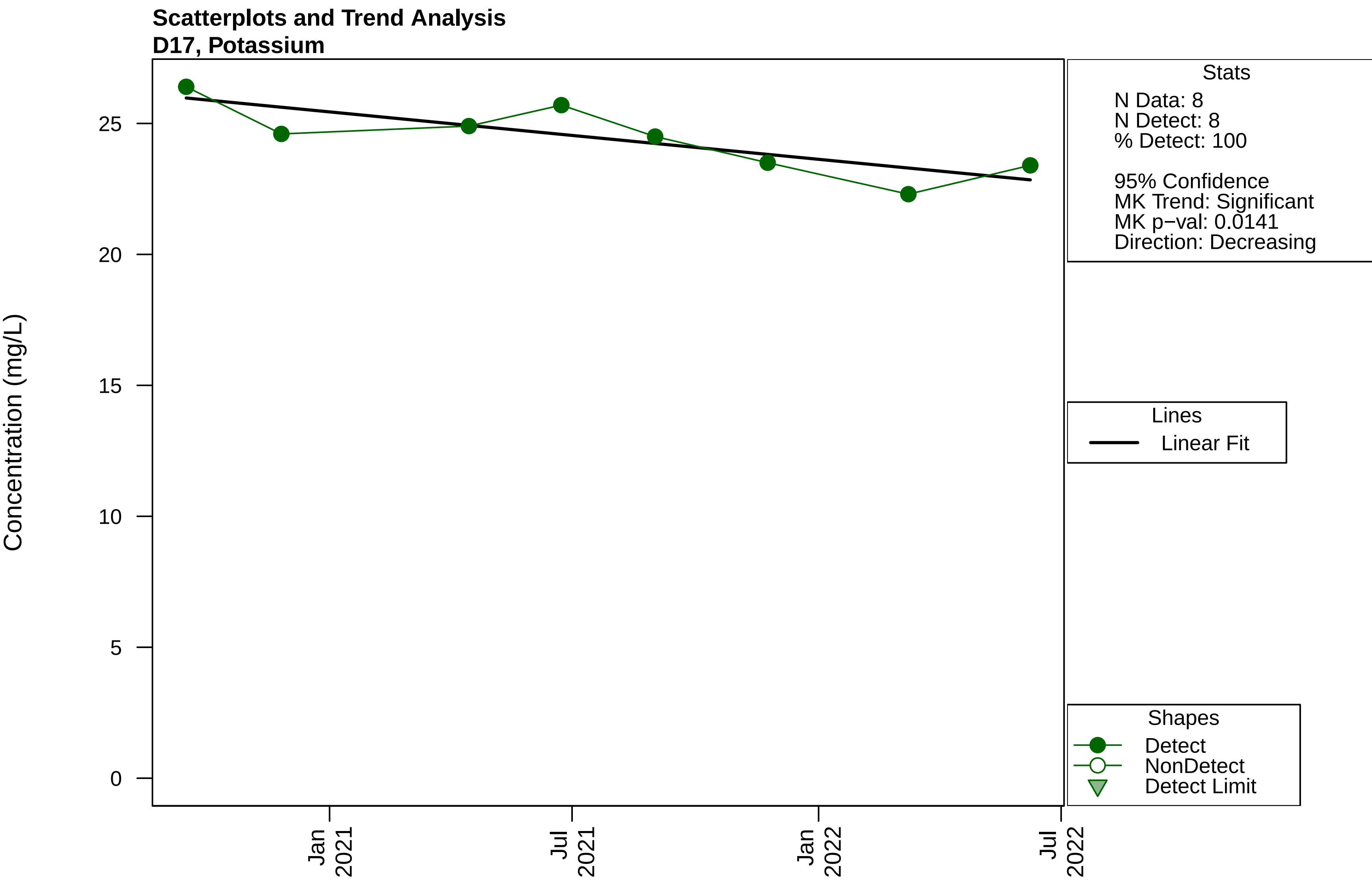


Scatterplots and Trend Analysis
D17, Nitrate
Concentration (ug/L)
0
2
4
6
8
10
Apr
2021
Stats
N Data: 1
N Detect: 1
% Detect: 100
MK criteria not met
Shapes
Detect
NonDetect
Detect Limit


Scatterplots and Trend Analysis
D17, Nitrite + Nitrate (as N)
Concentration (mg/L)
0.010
0.008
0.006
0.004
0.002
0.000
Apr
2021
Stats
N Data: 1
N Detect: 1
% Detect: 100
MK criteria not met
Shapes
Detect
NonDetect
Detect Limit

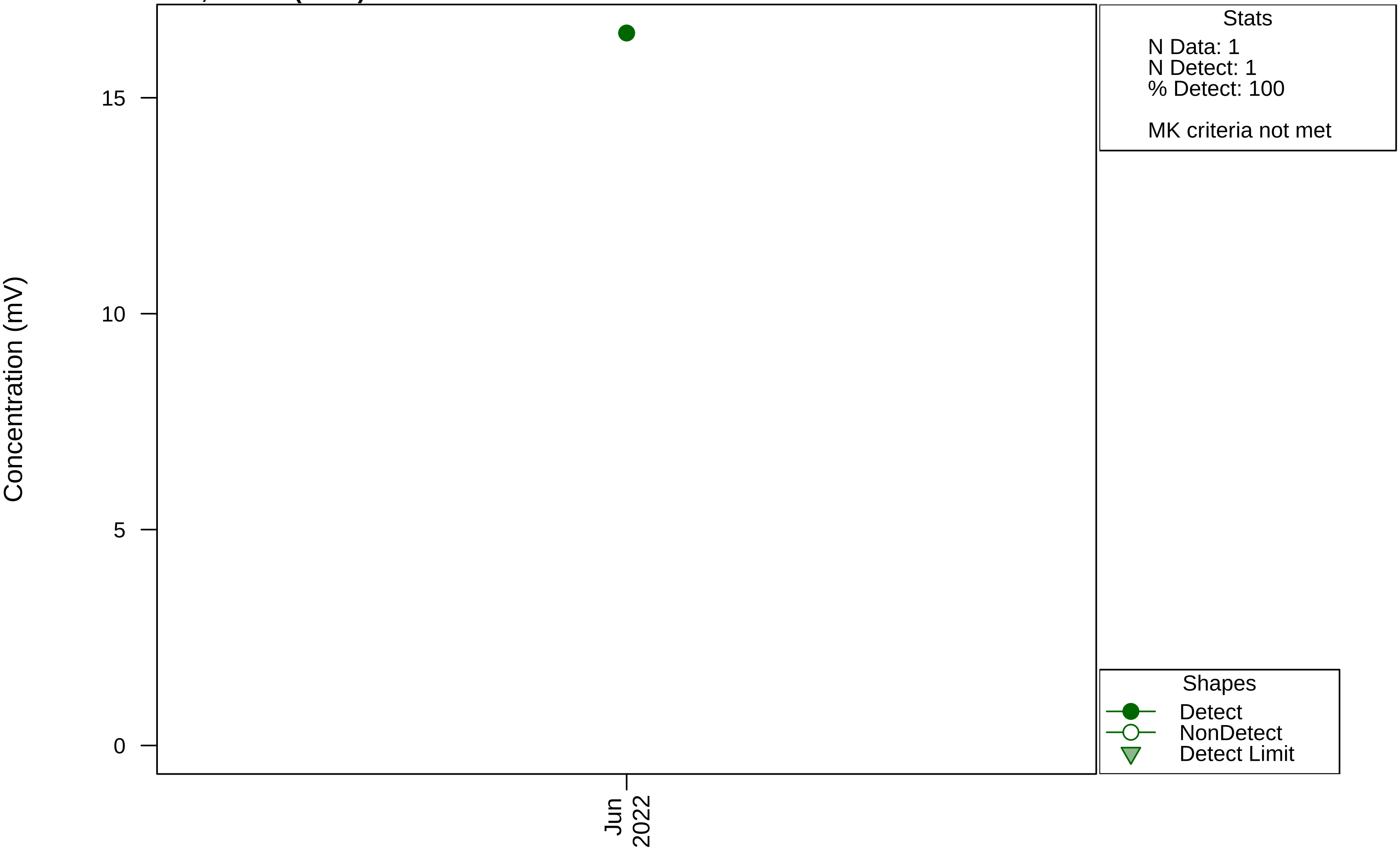
Scatterplots and Trend Analysis
D17, pH (Field)

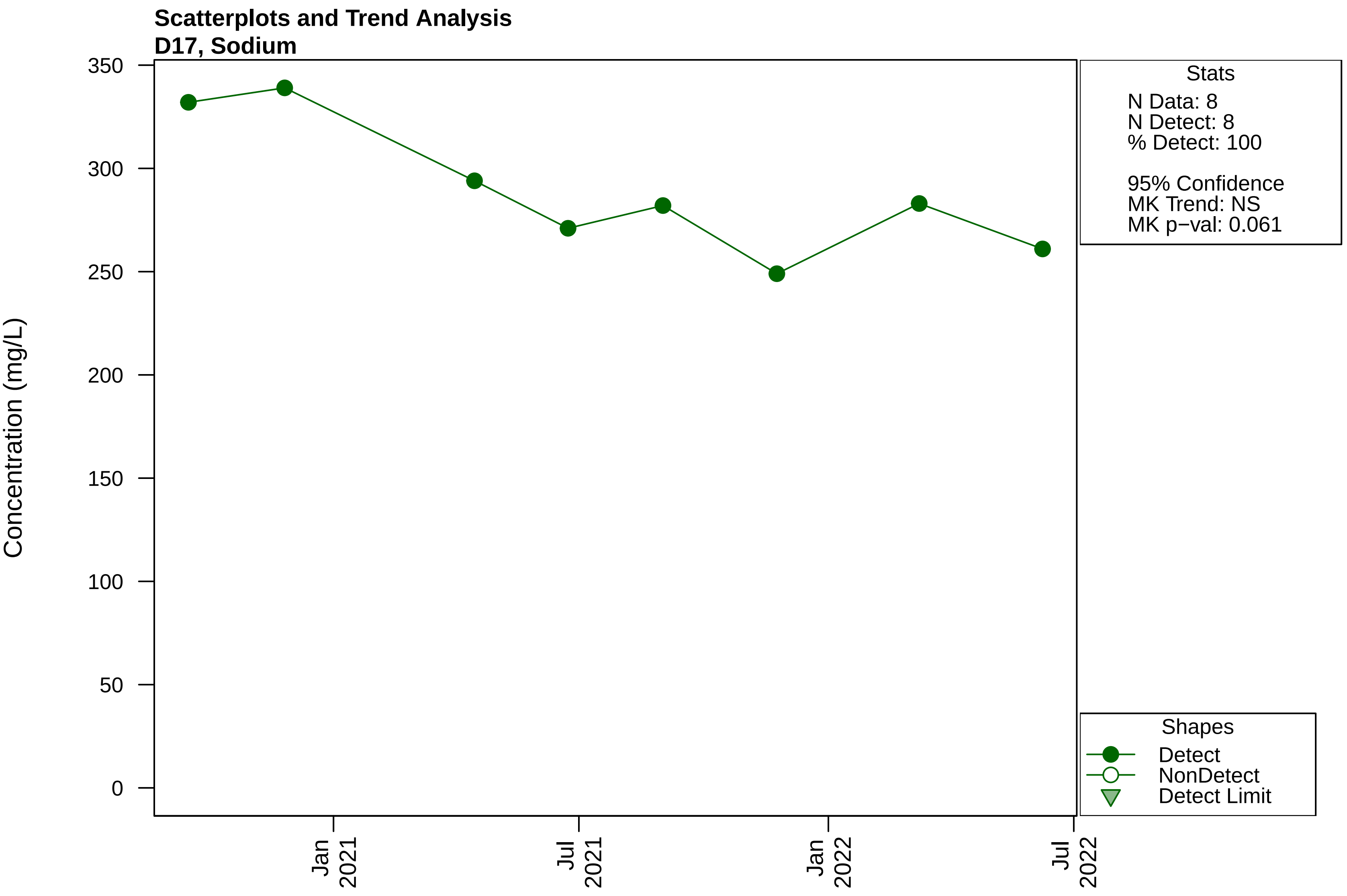




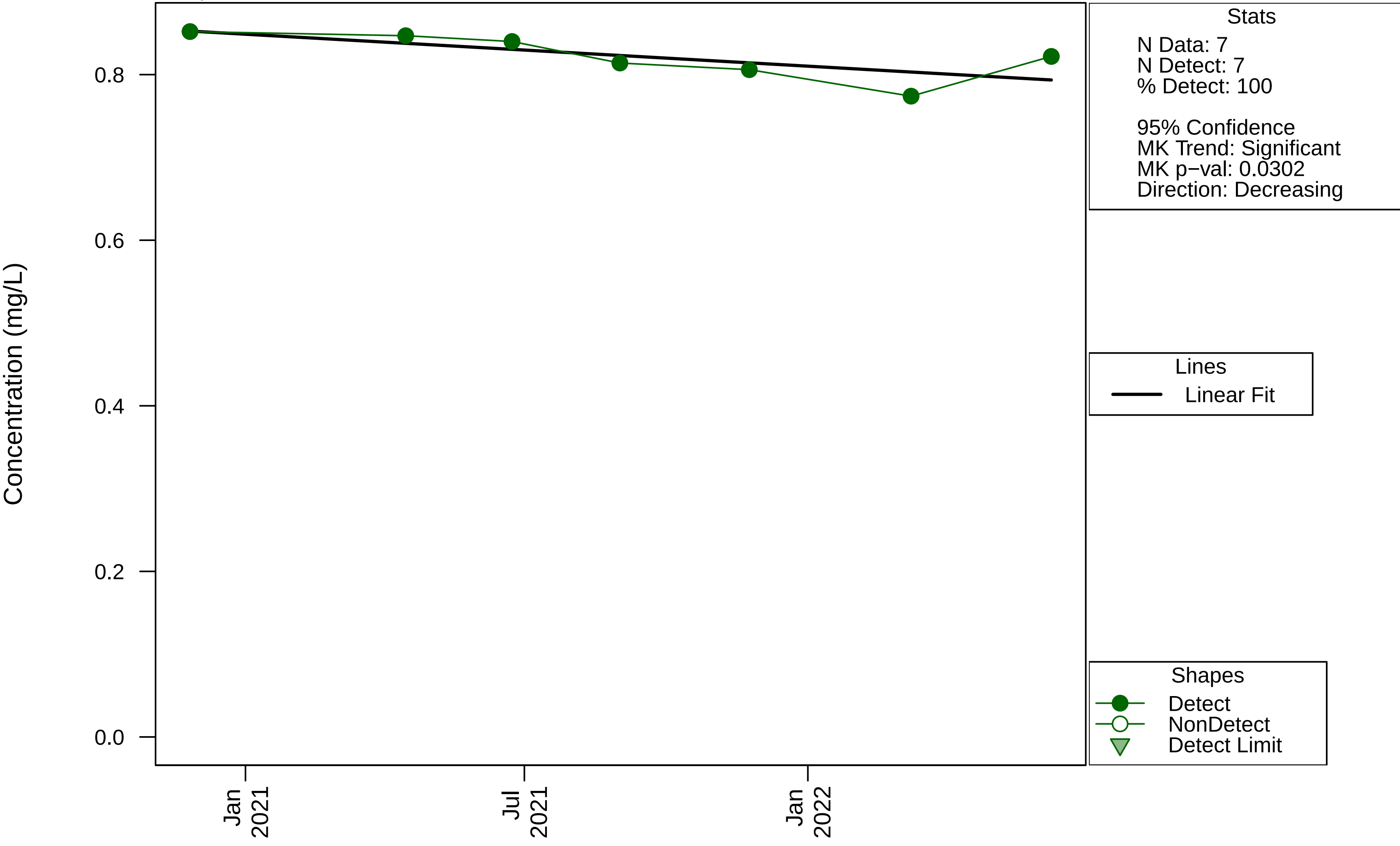
Scatterplots and Trend Analysis
D17, Potassium
Concentration (mg/L)
0
5
10
15
20
25
Jan 2021
Jul 2021
Jan 2022
Jul 2022
Stats
N Data: 8
N Detect: 8
% Detect: 100
95% Confidence
MK Trend: Significant
MK p−val: 0.0141
Direction: Decreasing
Lines
Linear Fit
Shapes
Detect
NonDetect
Detect Limit

Scatterplots and Trend Analysis
D17, Redox (Field)

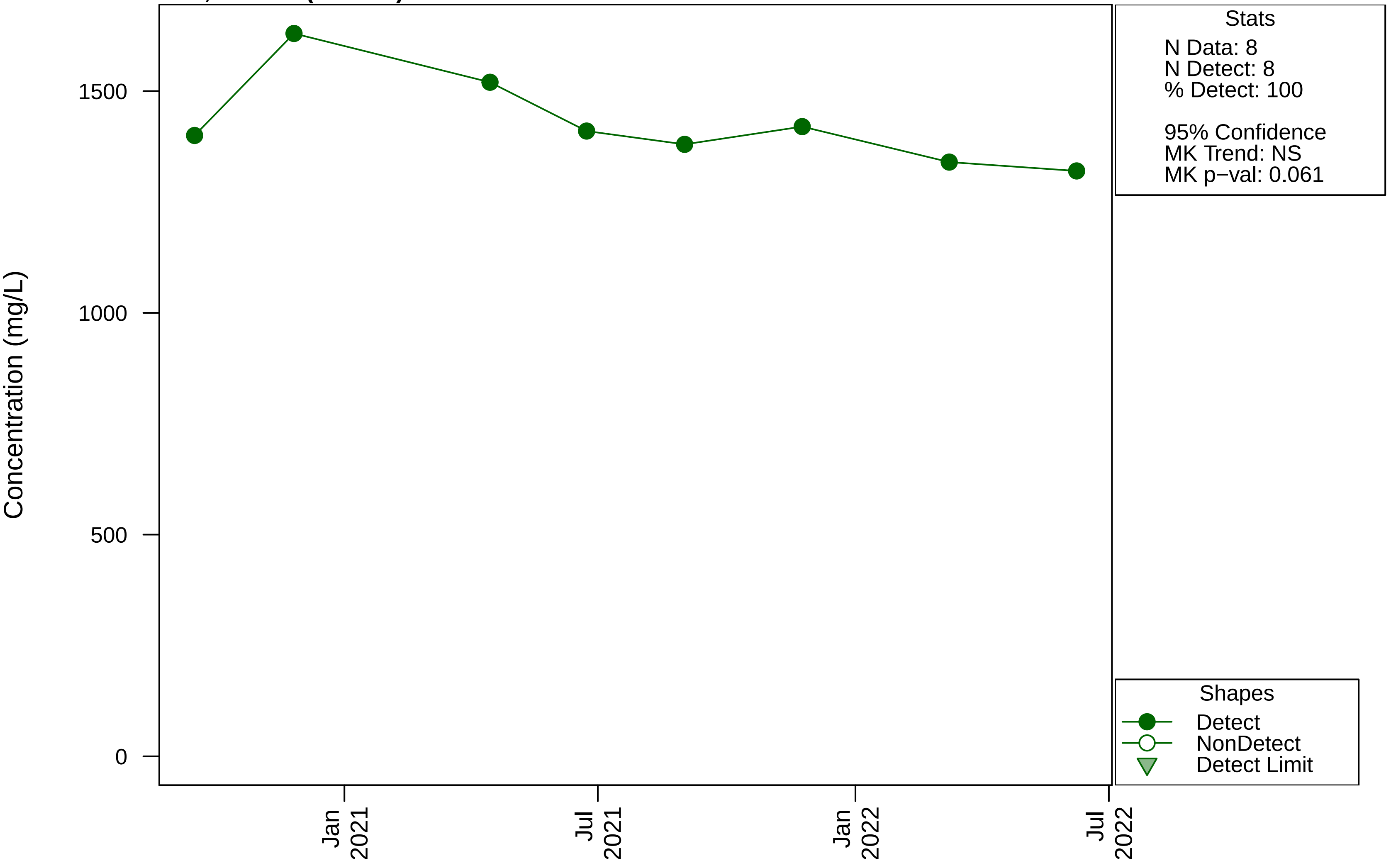


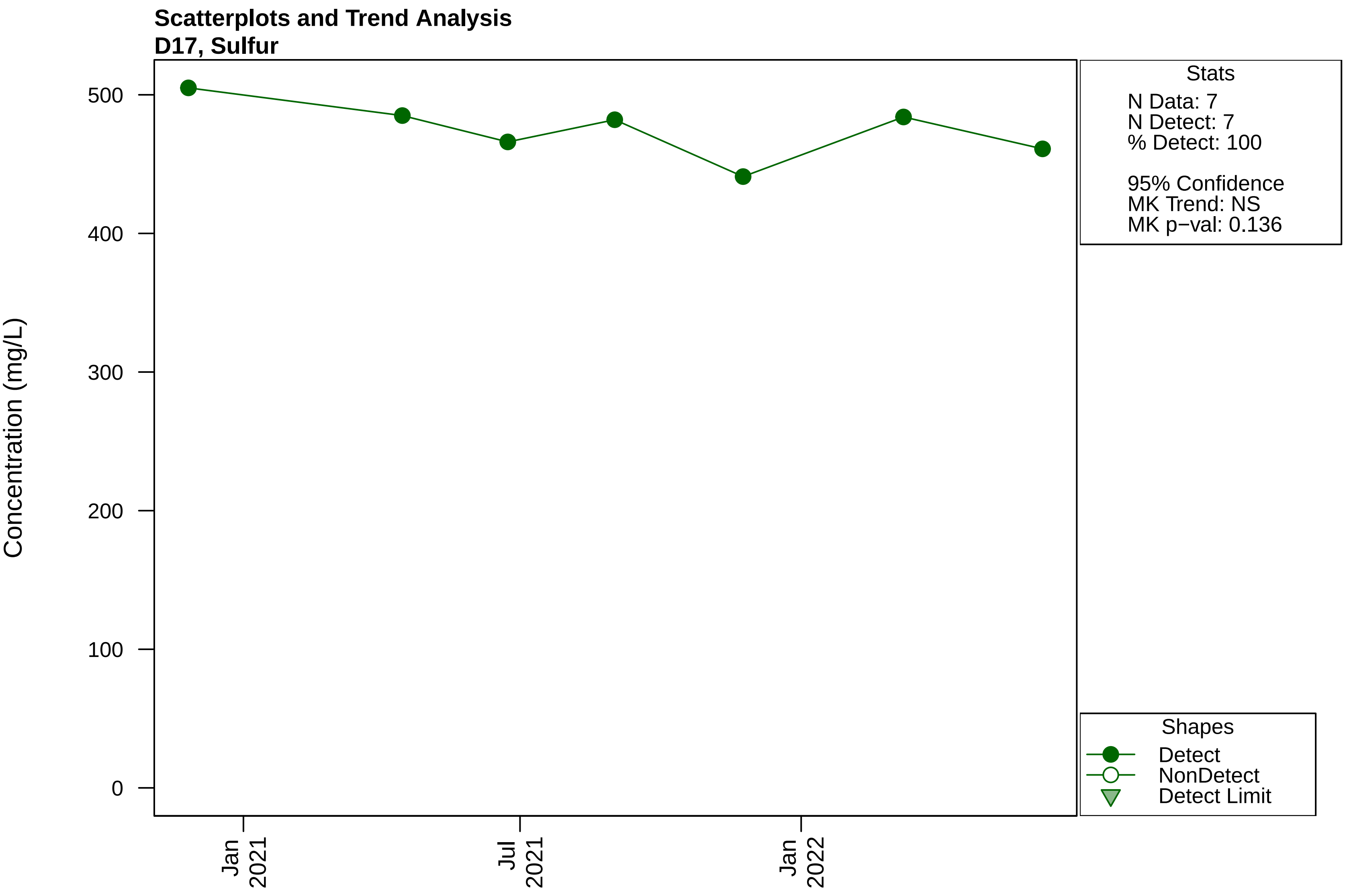

Scatterplots and Trend Analysis
D17, Sodium
Concentration (mg/L)
350
300
250
200
150
100
50
0
Jan 2021
Jul 2021
Jan 2022
Jul 2022
Stats
N Data: 8
N Detect: 8
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.061
Shapes
Detect
NonDetect
Detect Limit

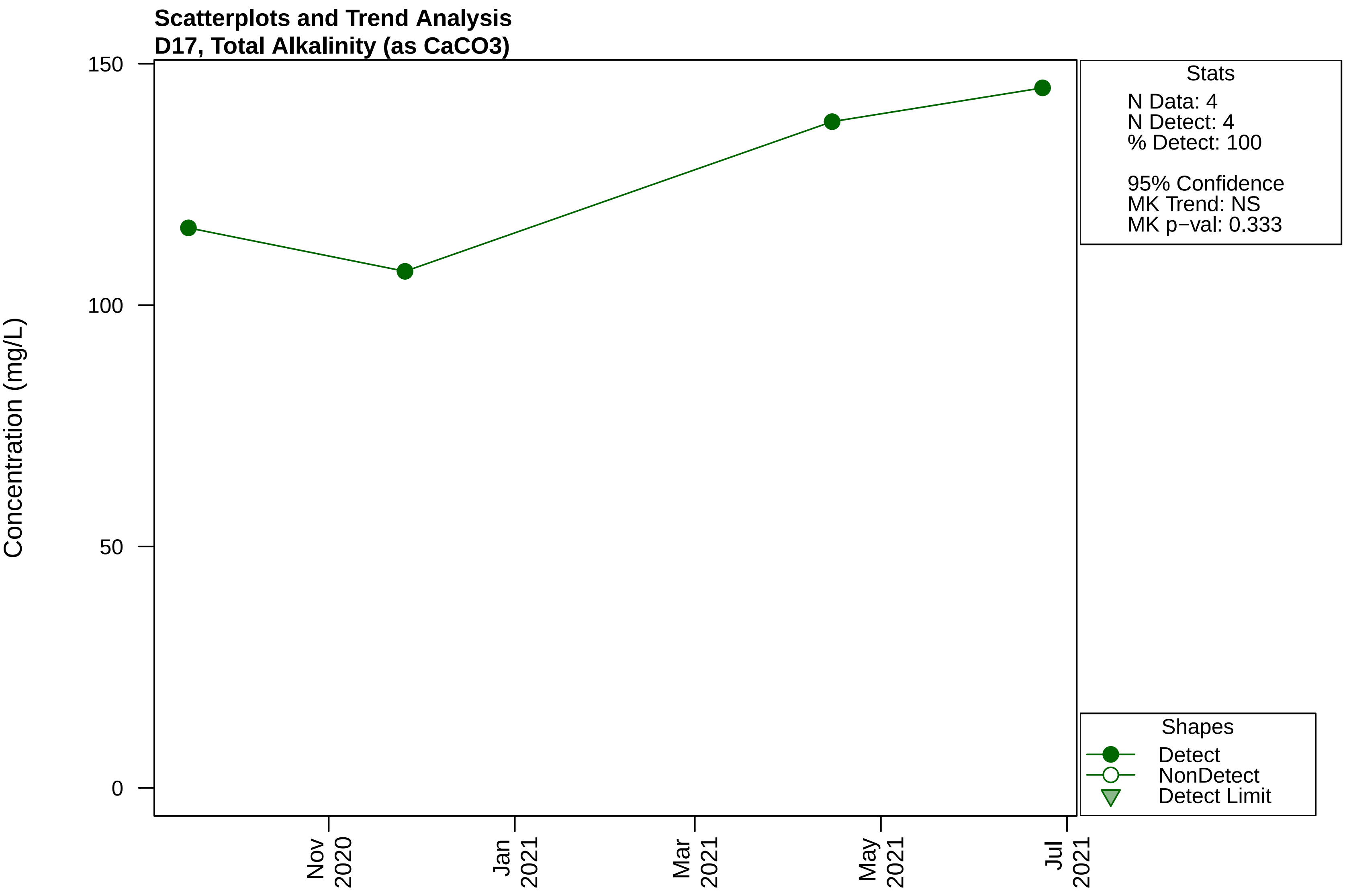
Scatterplots and Trend Analysis
D17, Strontium



Scatterplots and Trend Analysis
D17, Sulfate (as SO4)

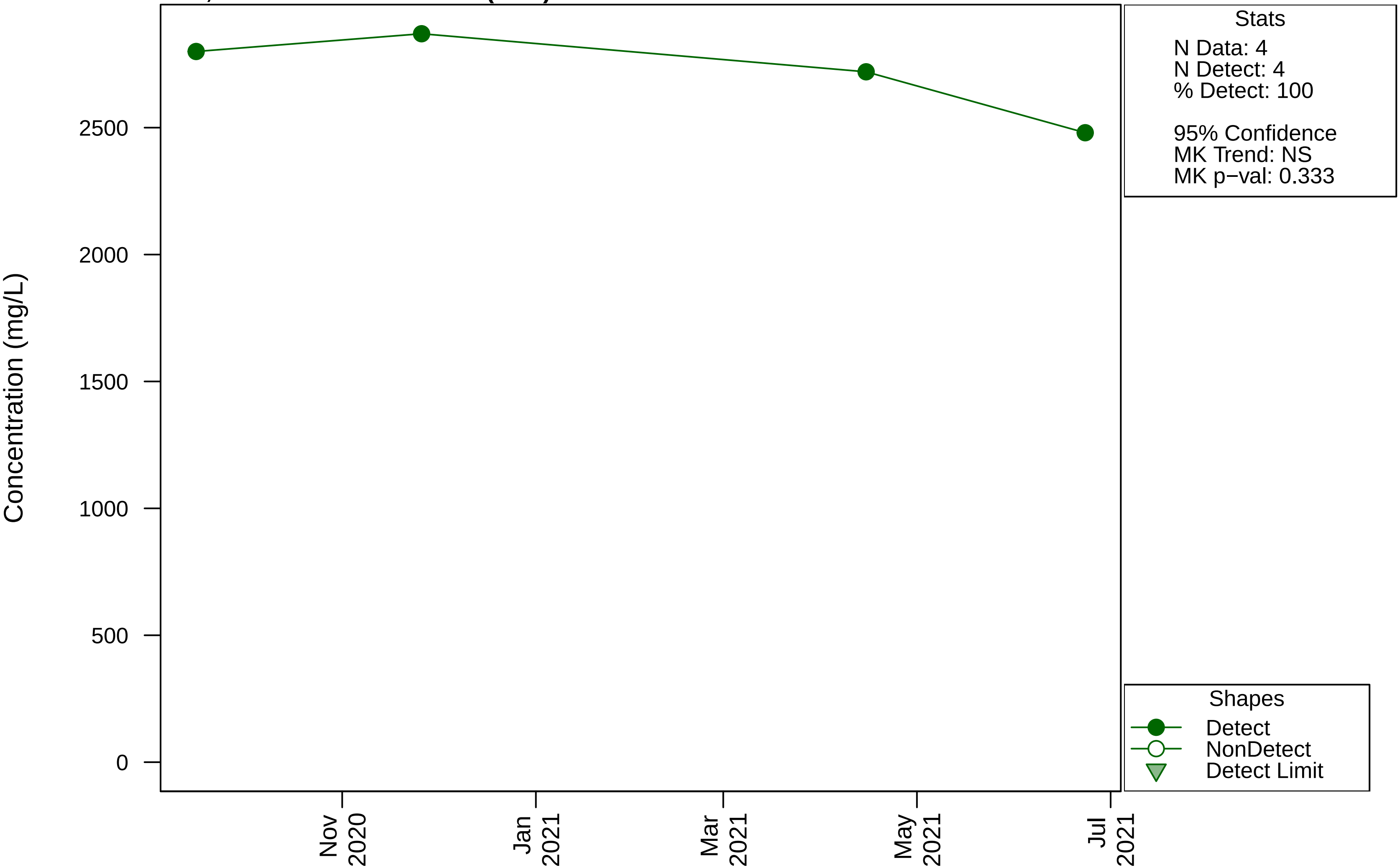


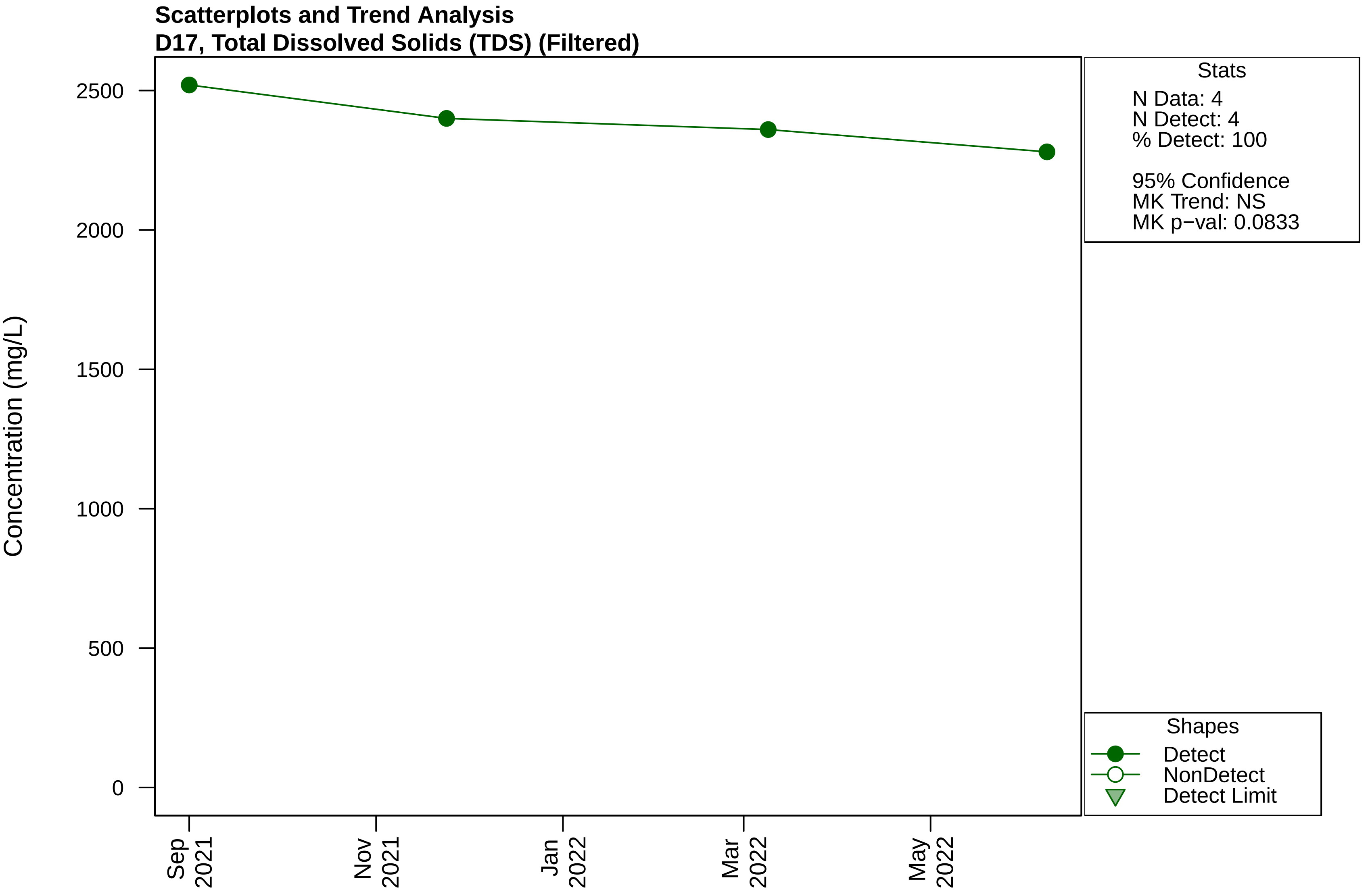

Scatterplots and Trend Analysis
D17, Sulfur
Concentration (mg/L)
0
100
200
300
400
500
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 7
N Detect: 7
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.136
Shapes
Detect
NonDetect
Detect Limit



Scatterplots and Trend Analysis
D17, Total Alkalinity (as CaCO3)
Concentration (mg/L)
150
100
50
0
Nov 2020
Jan 2021
Mar 2021
May 2021
Jul 2021
Stats
N Data: 4
N Detect: 4
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.333
Shapes
Detect
NonDetect
Detect Limit

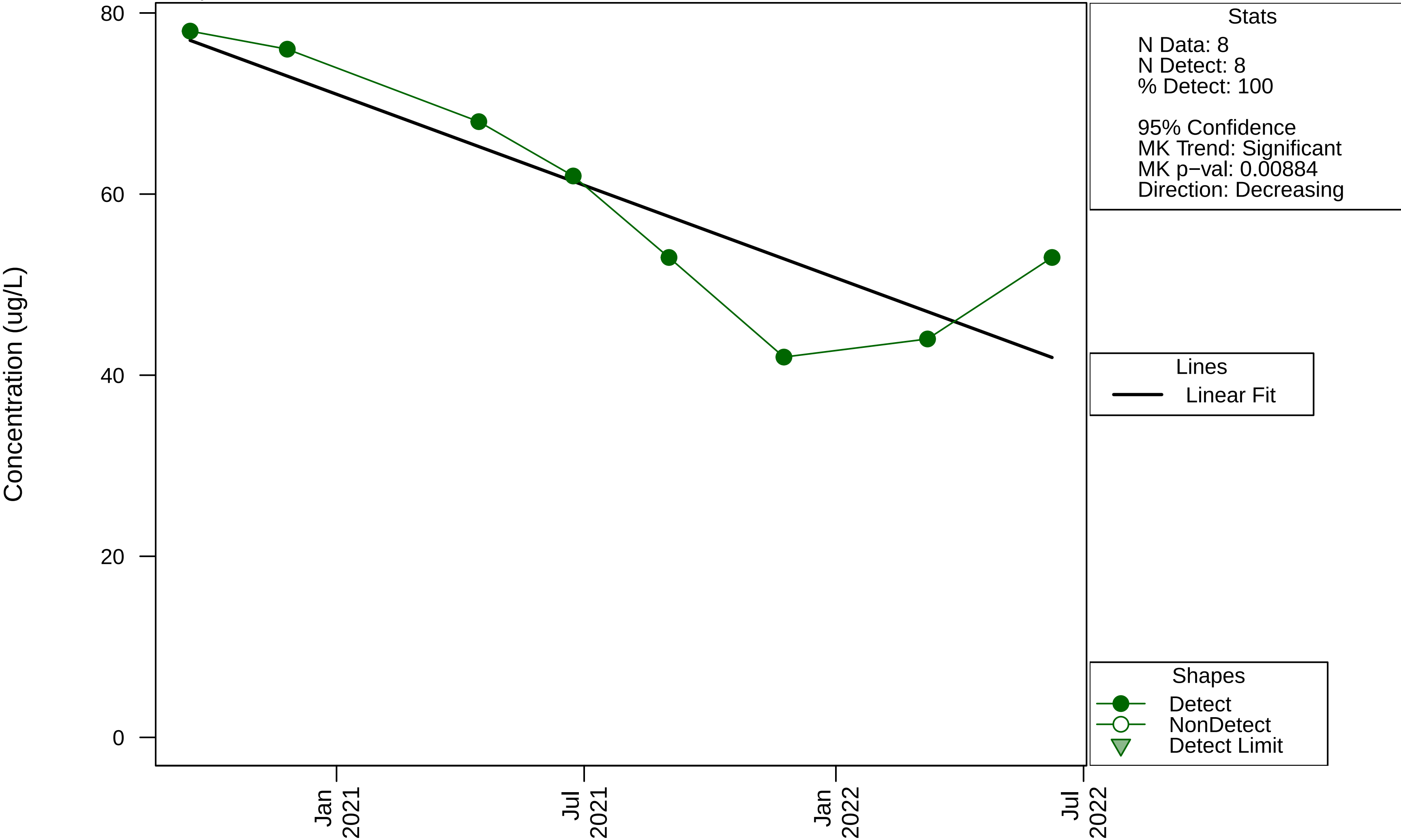
Scatterplots and Trend Analysis
D17, Total Dissolved Solids (TDS)

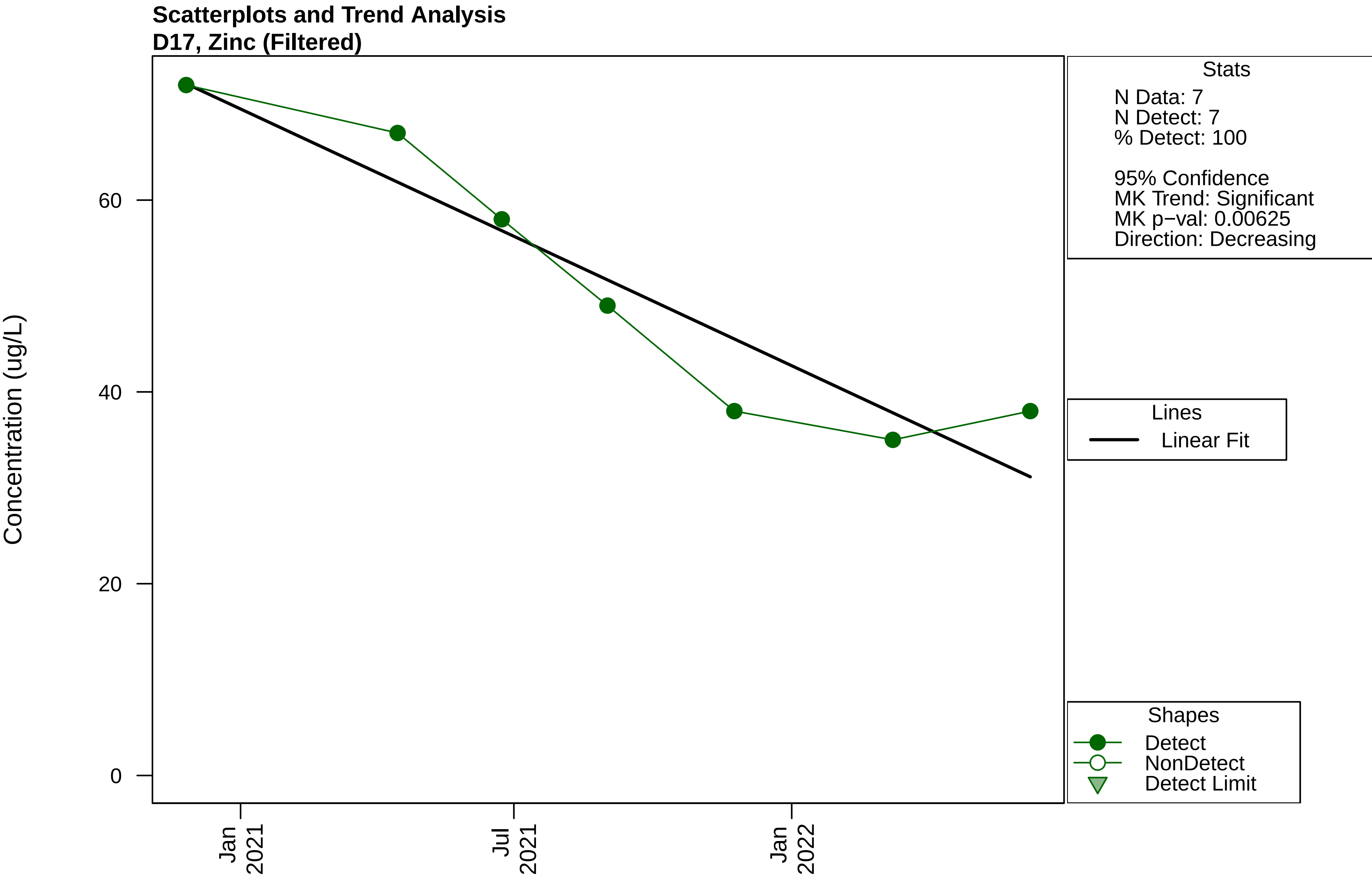




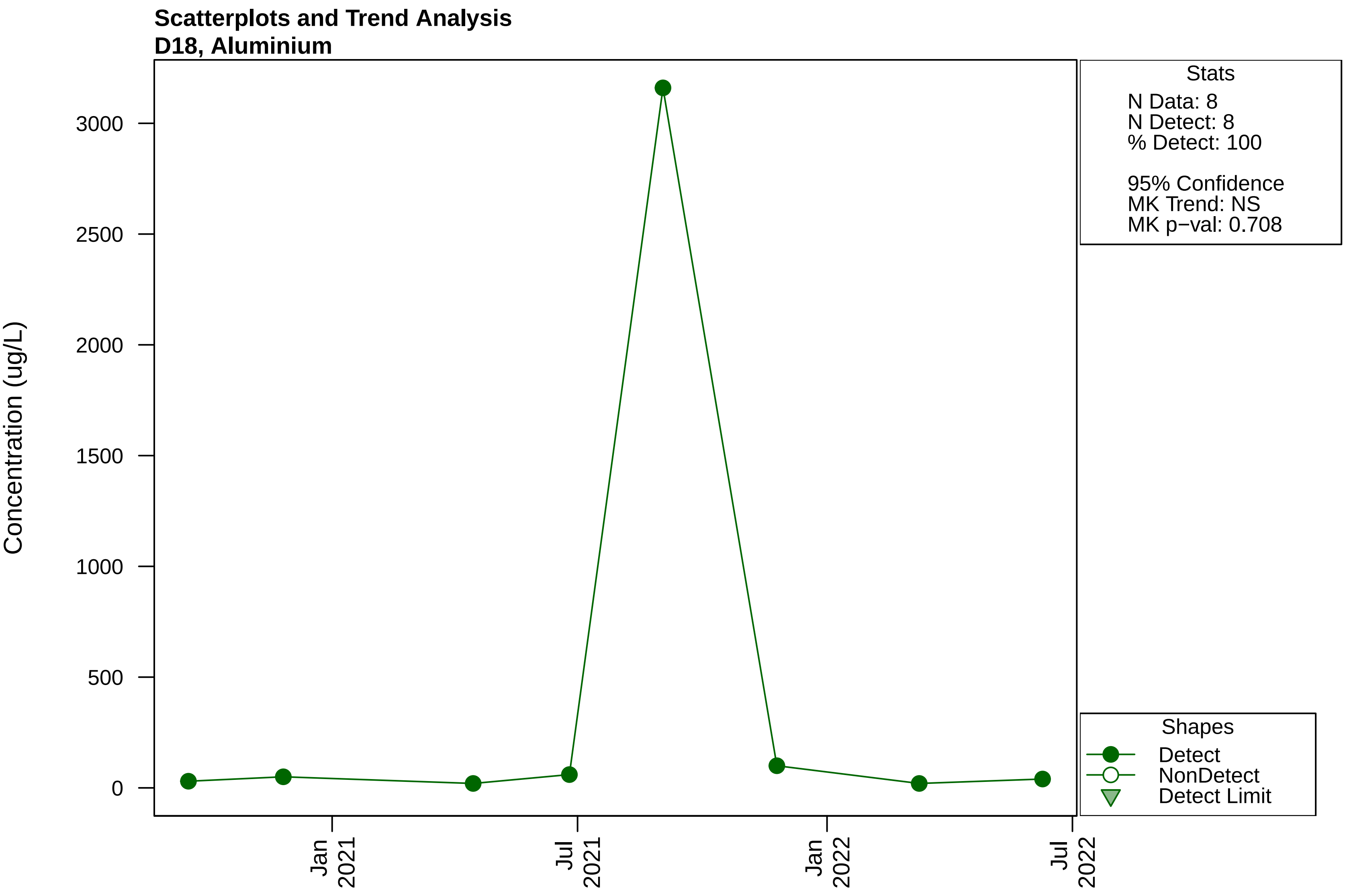
Scatterplots and Trend Analysis
D17, Total Dissolved Solids (TDS) (Filtered)
Concentration (mg/L)
0
500
1000
1500
2000
2500
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 4
N Detect: 4
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.0833
Shapes
Detect
NonDetect
Detect Limit

Scatterplots and Trend Analysis
D17, Zinc

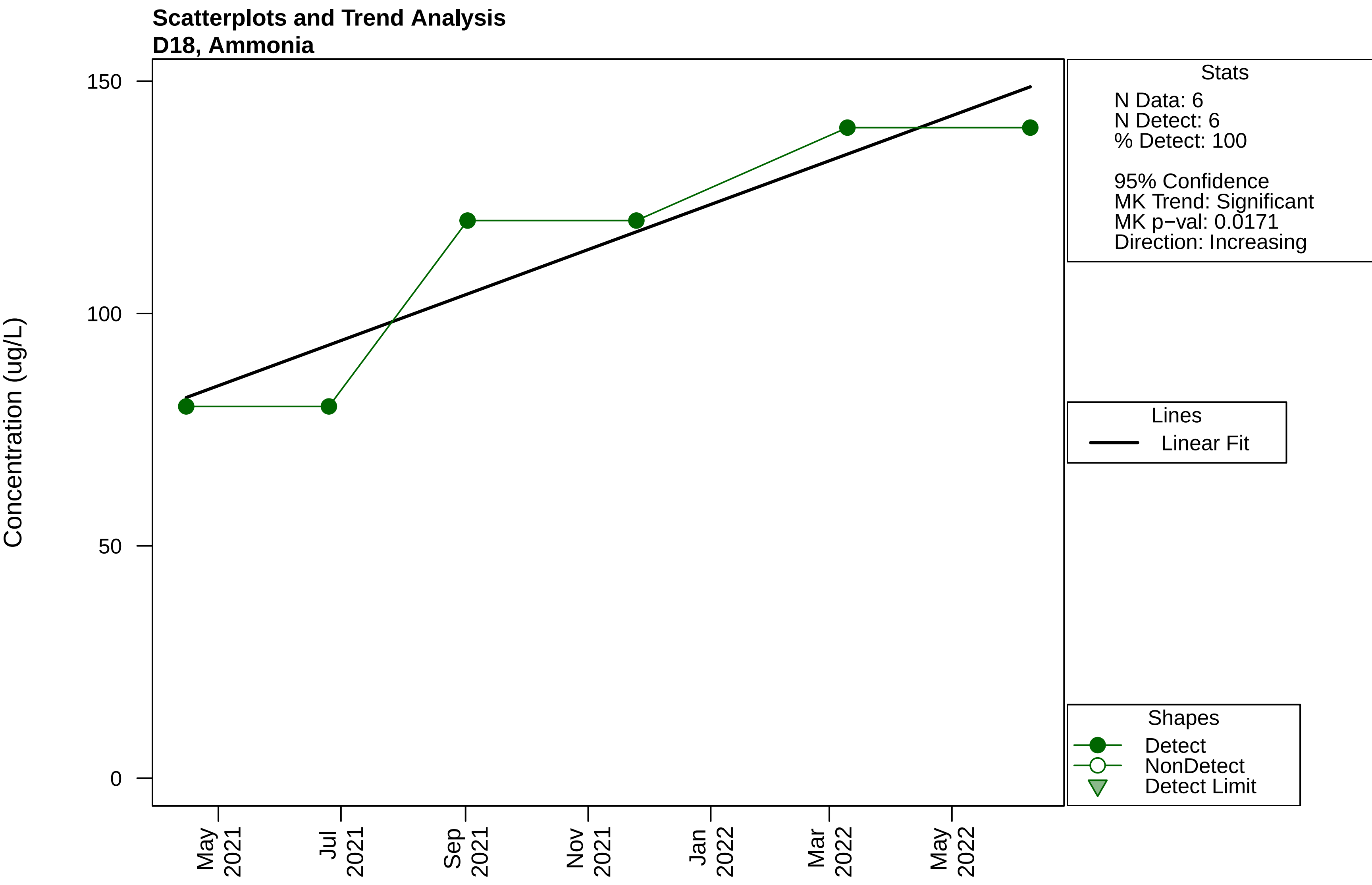




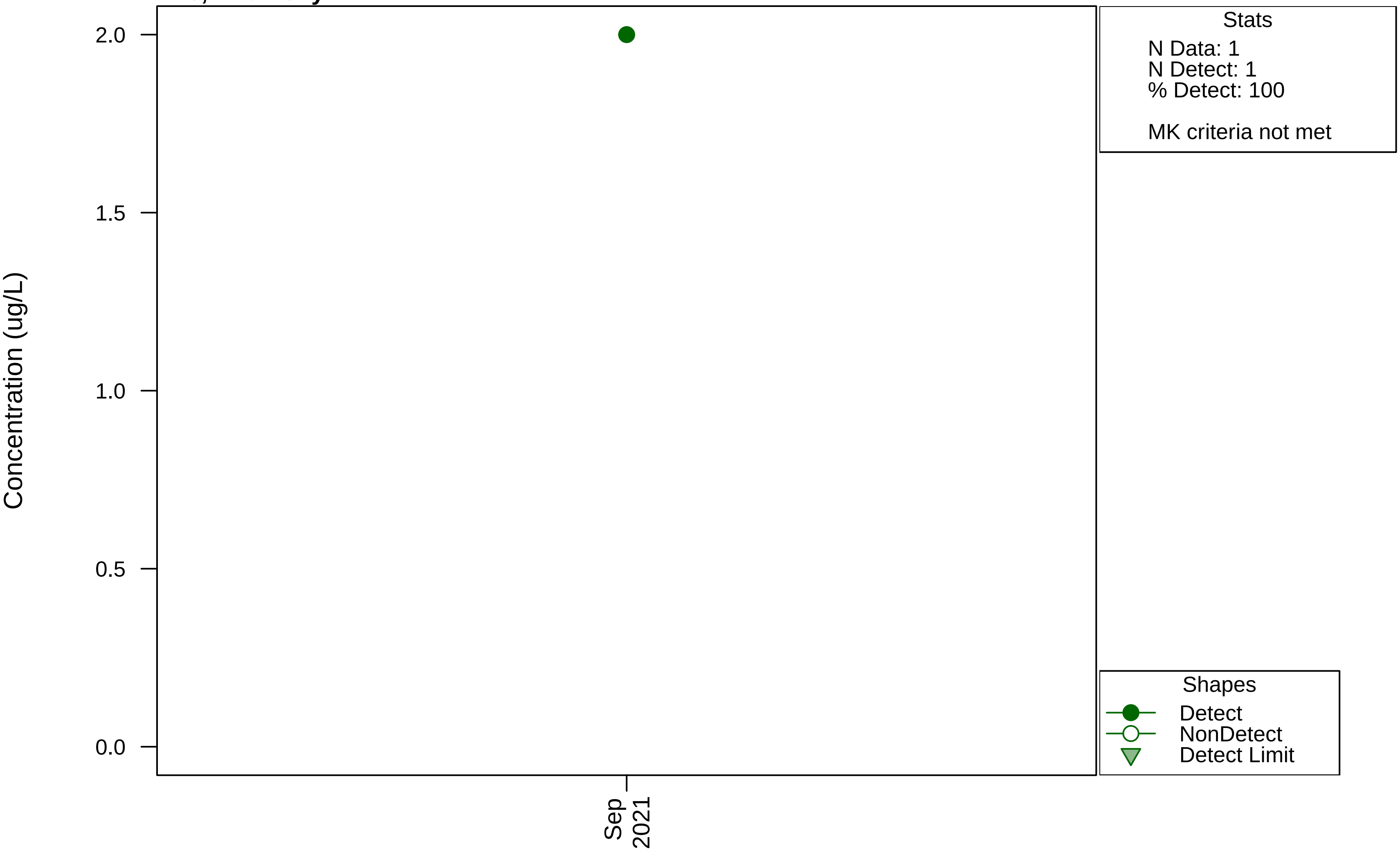
Scatterplots and Trend Analysis
D17, Zinc (Filtered)
Concentration (ug/L)
0
20
40
60
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 7
N Detect: 7
% Detect: 100
95% Confidence
MK Trend: Significant
MK p−val: 0.00625
Direction: Decreasing
Lines
Linear Fit
Shapes
Detect
NonDetect
Detect Limit

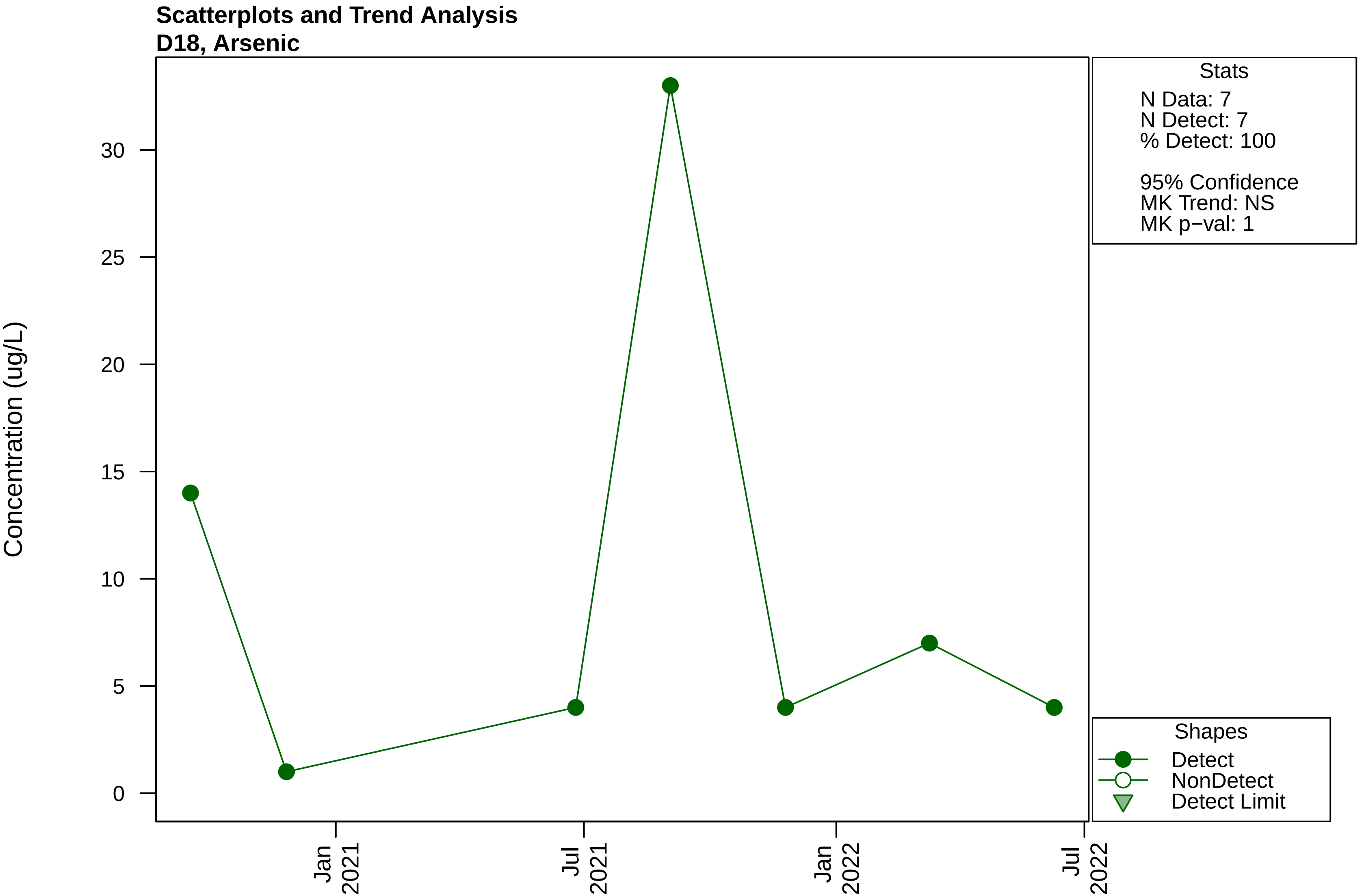


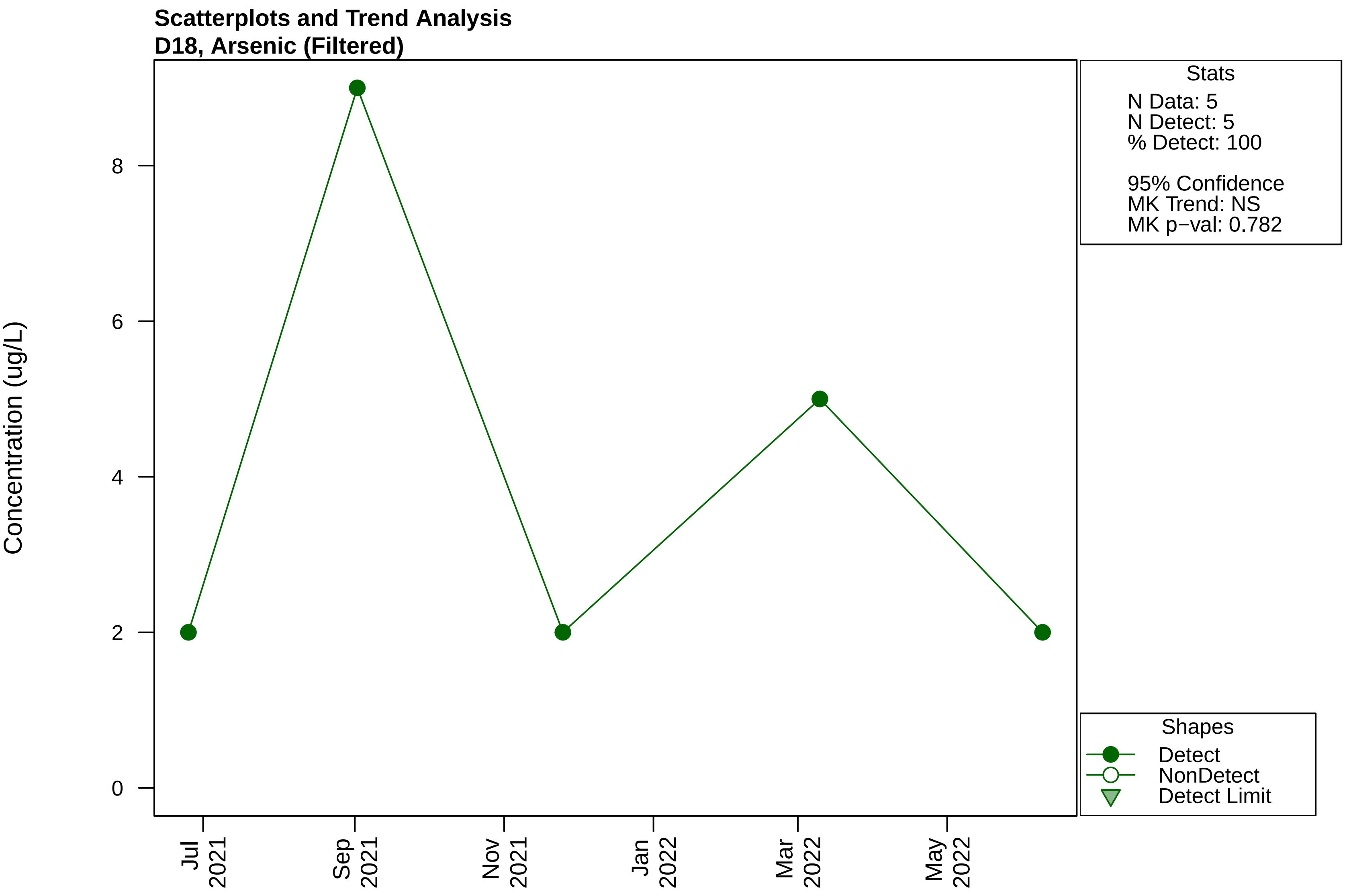
Scatterplots and Trend Analysis
D18, Aluminium
Concentration (ug/L)
3000
2500
2000
1500
1000
500
0
Jan 2021
Jul 2021
Jan 2022
Jul 2022
Stats
N Data: 8
N Detect: 8
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.708
Shapes
Detect
NonDetect
Detect Limit


Scatterplots and Trend Analysis
D18, Ammonia
Concentration (ug/L)
150
100
50
0
May 2021
Jul 2021
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 6
N Detect: 6
% Detect: 100
95% Confidence
MK Trend: Significant
MK p−val: 0.0171
Direction: Increasing
Lines
Linear Fit
Shapes
Detect
NonDetect
Detect Limit

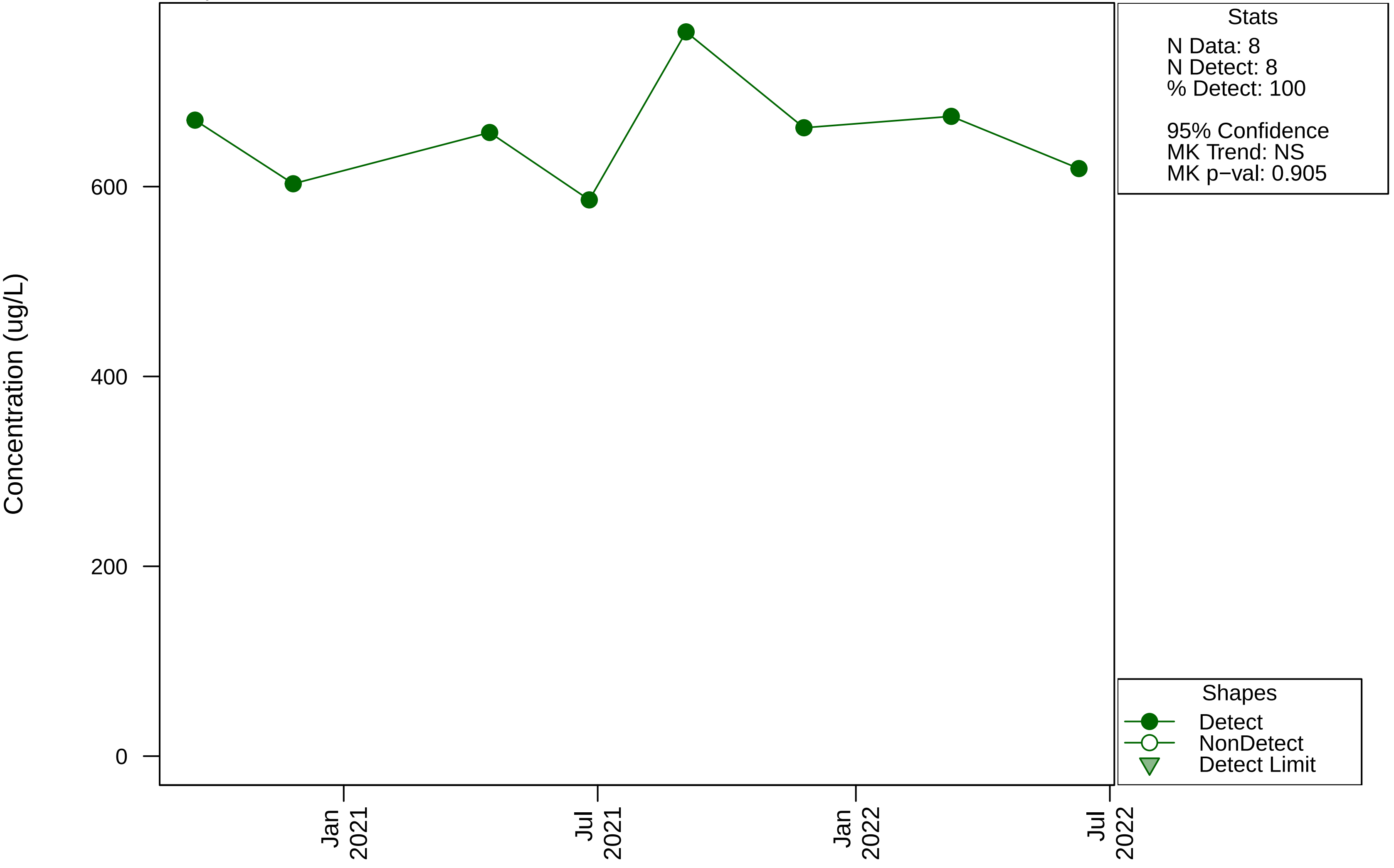
Scatterplots and Trend Analysis
D18, Antimony

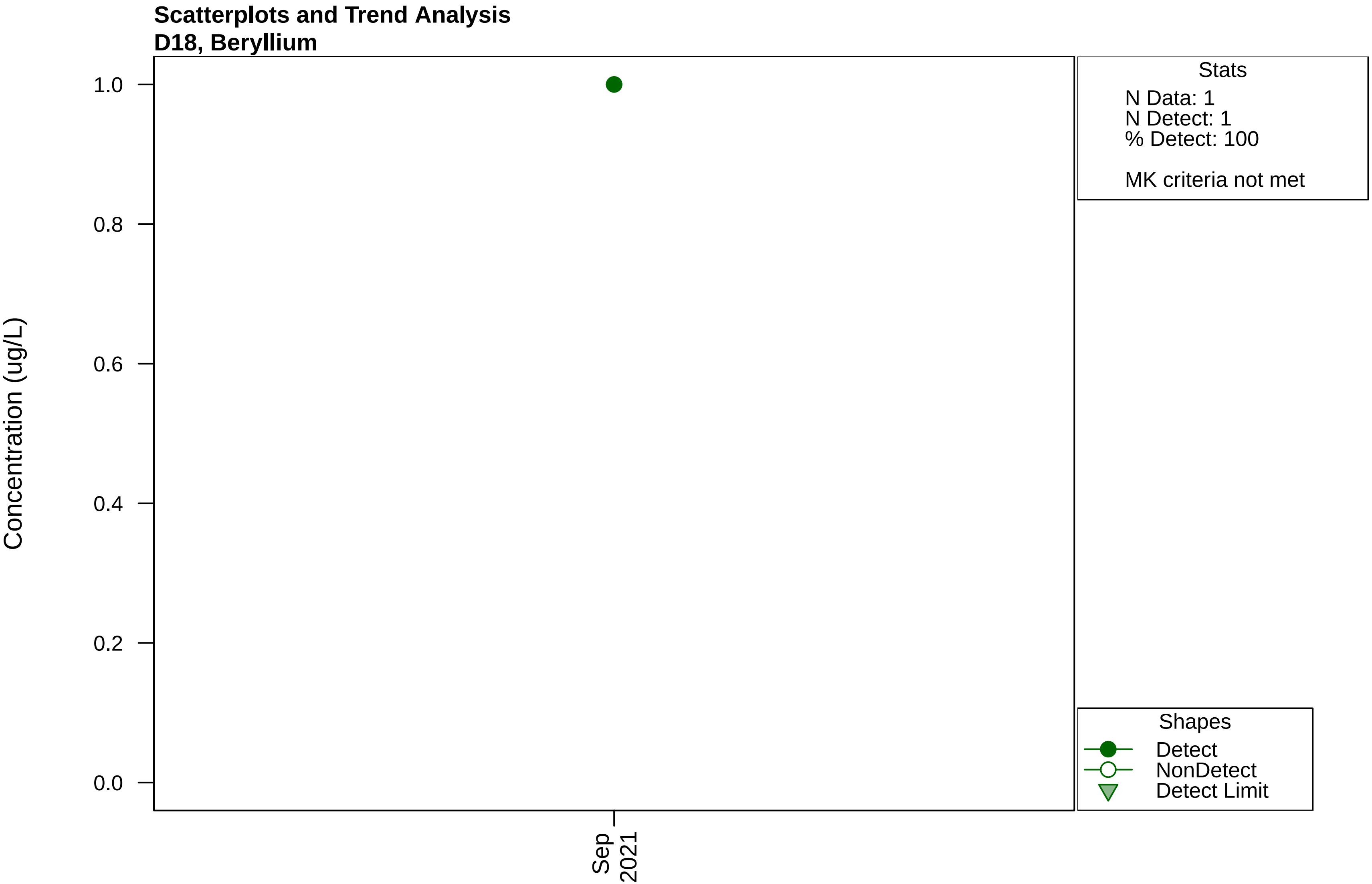


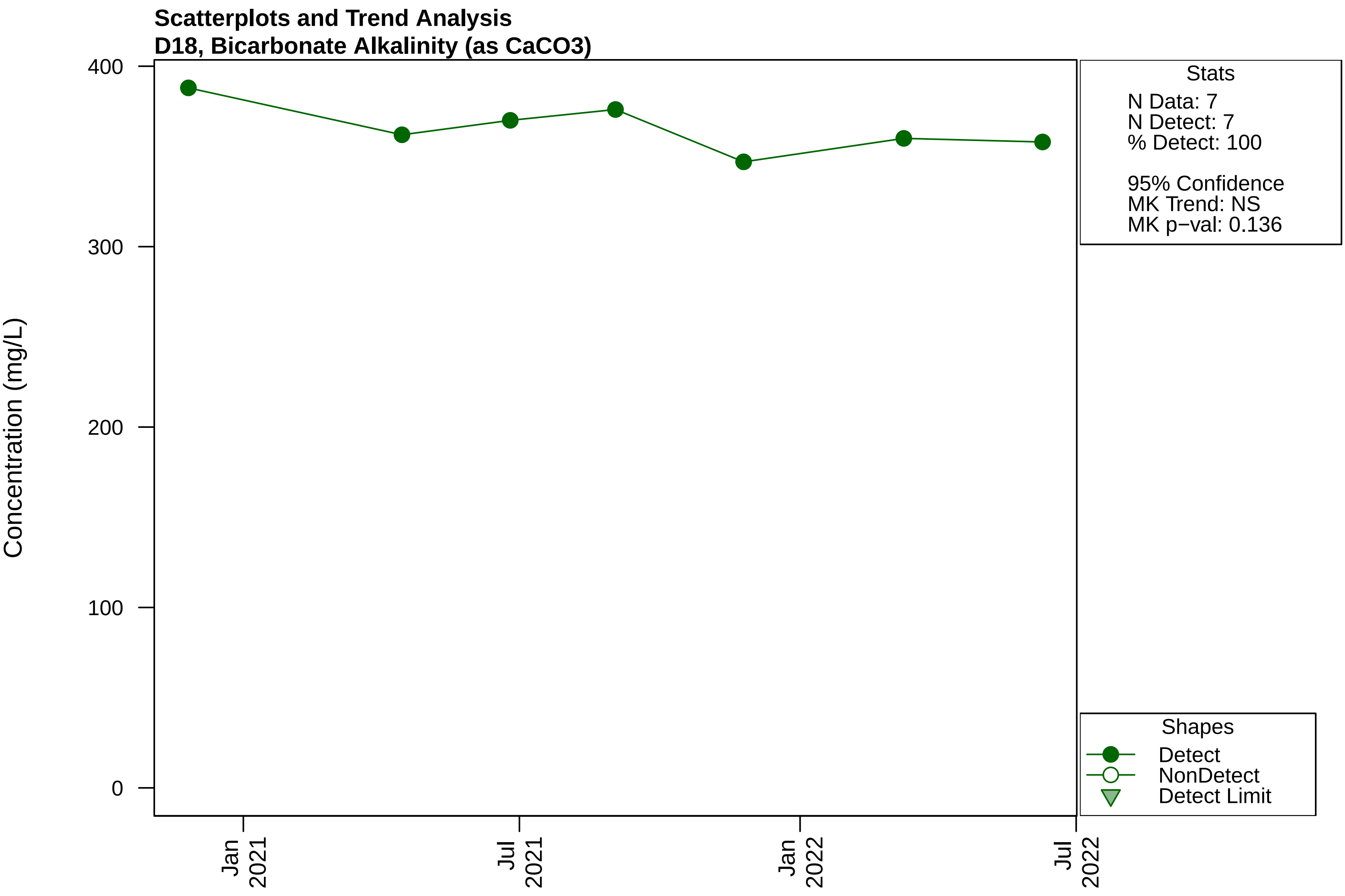

Scatterplots and Trend Analysis
D18, Arsenic
Concentration (ug/L)
0
5
10
15
20
25
30
Jan 2021
Jul 2021
Jan 2022
Jul 2022
Stats
N Data: 7
N Detect: 7
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 1
Shapes
Detect
NonDetect
Detect Limit


Scatterplots and Trend Analysis
D18, Arsenic (Filtered)
Concentration (ug/L)
0
2
4
6
8
Jul 2021
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 5
N Detect: 5
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.782
Shapes
Detect
NonDetect
Detect Limit

Scatterplots and Trend Analysis
D18, Barium

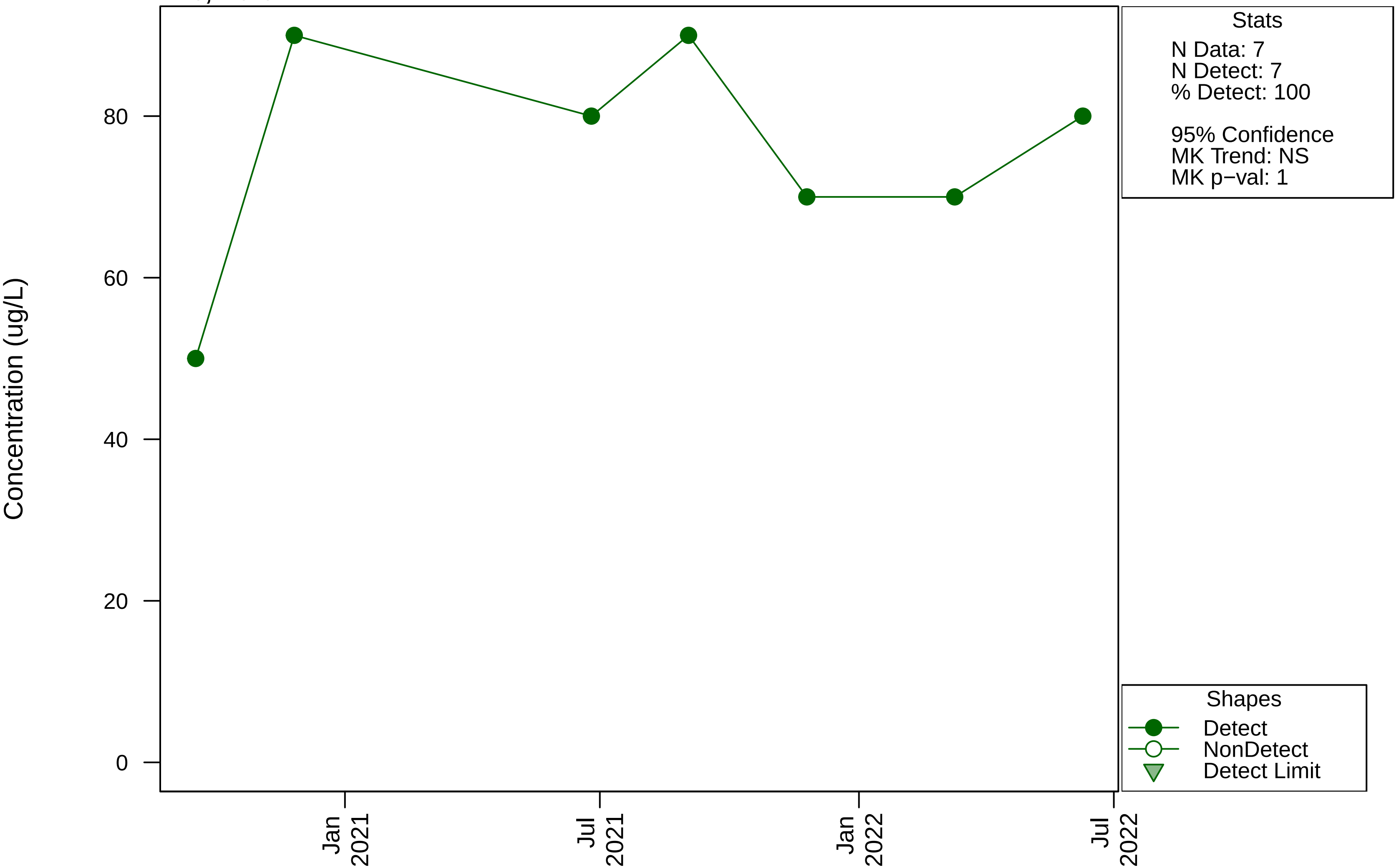


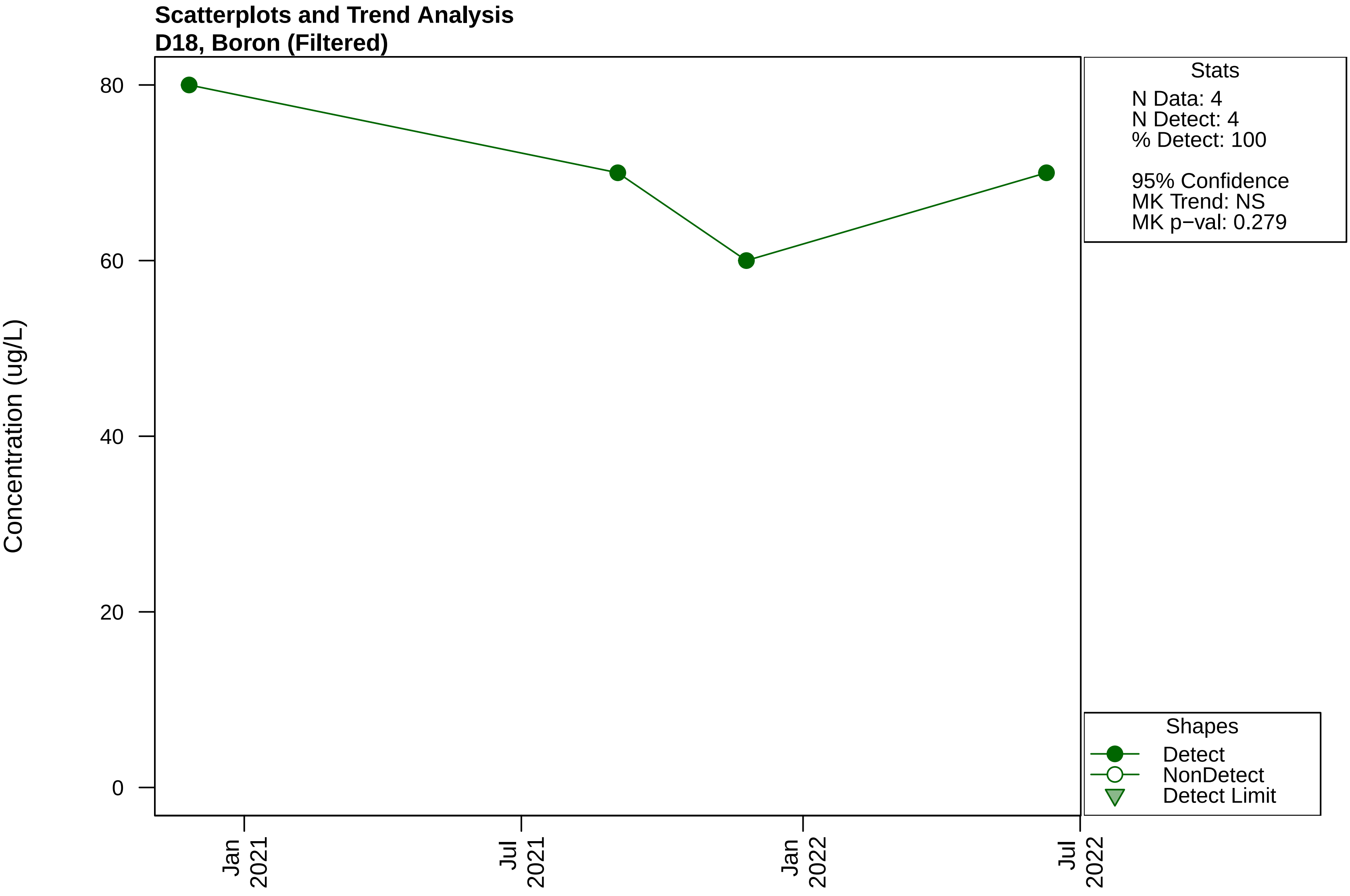

Scatterplots and Trend Analysis
D18, Beryllium
Concentration (ug/L)
1.0
0.8
0.6
0.4
0.2
0.0
Sep 2021
Stats
N Data: 1
N Detect: 1
% Detect: 100
MK criteria not met
Shapes
Detect
NonDetect
Detect Limit



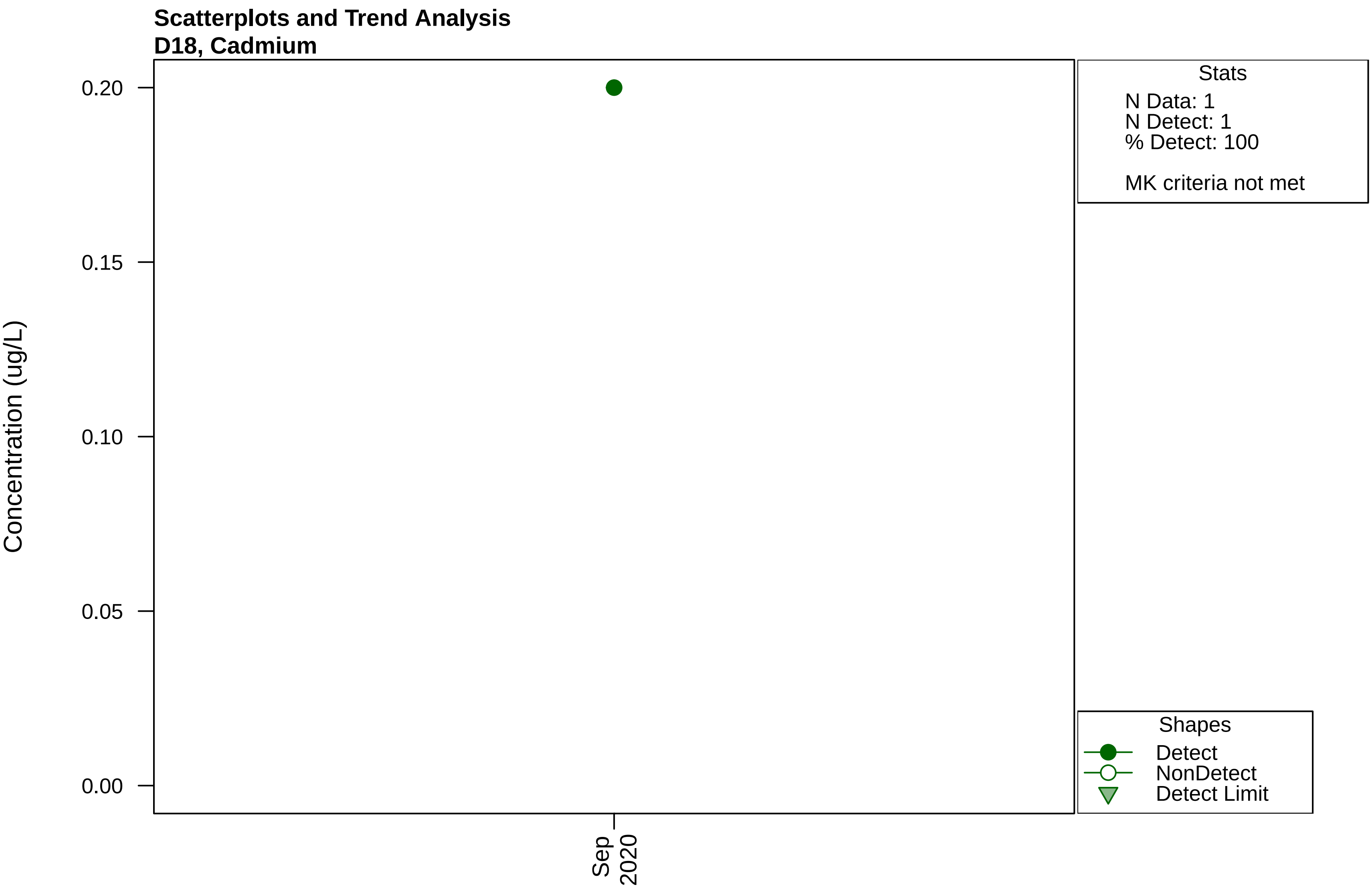
Scatterplots and Trend Analysis
D18, Bicarbonate Alkalinity (as CaCO3)
Concentration (mg/L)
0
100
200
300
400
Jan 2021
Jul 2021
Jan 2022
Jul 2022
Stats
N Data: 7
N Detect: 7
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.136
Shapes
Detect
NonDetect
Detect Limit

Scatterplots and Trend Analysis
D18, Boron

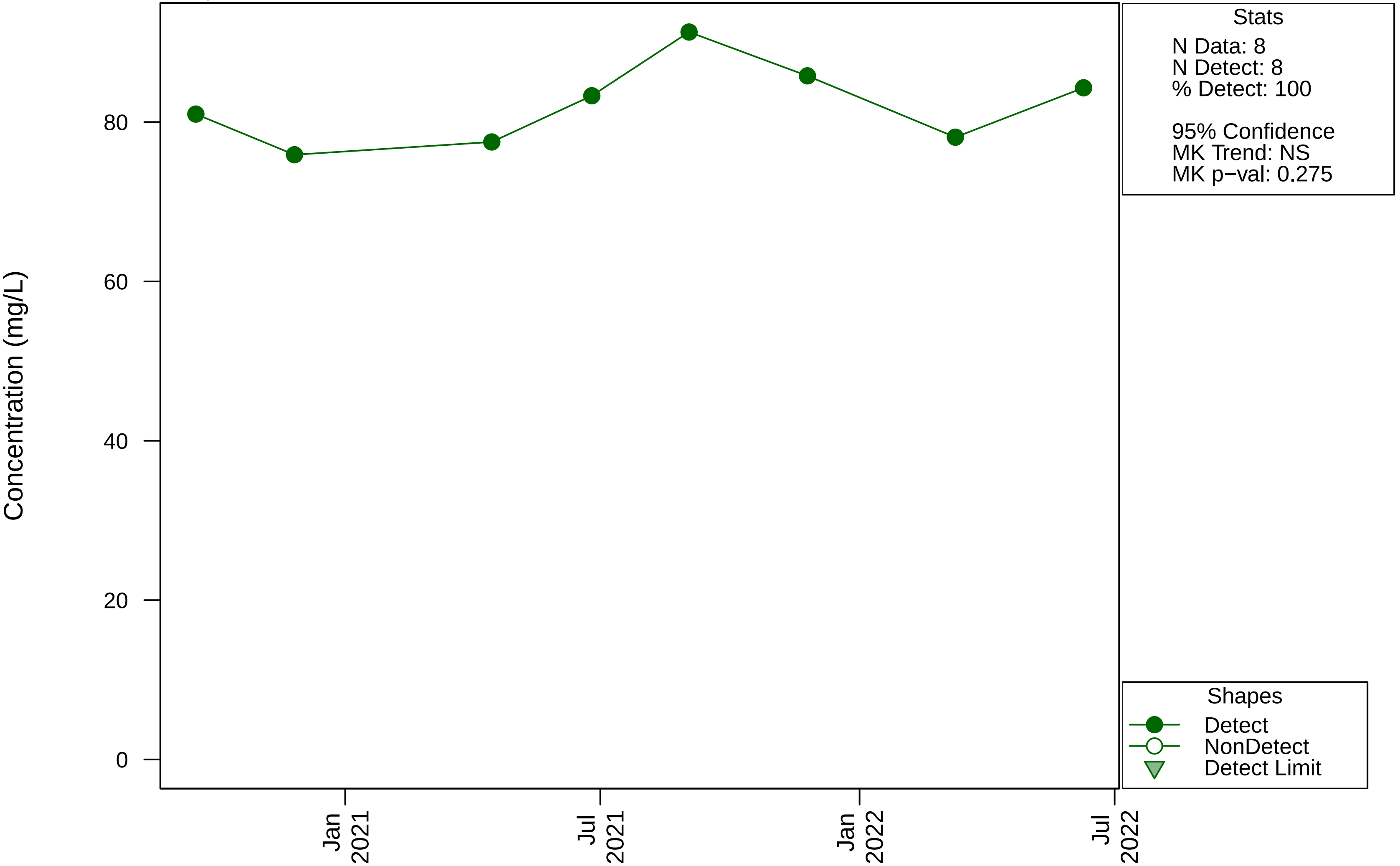




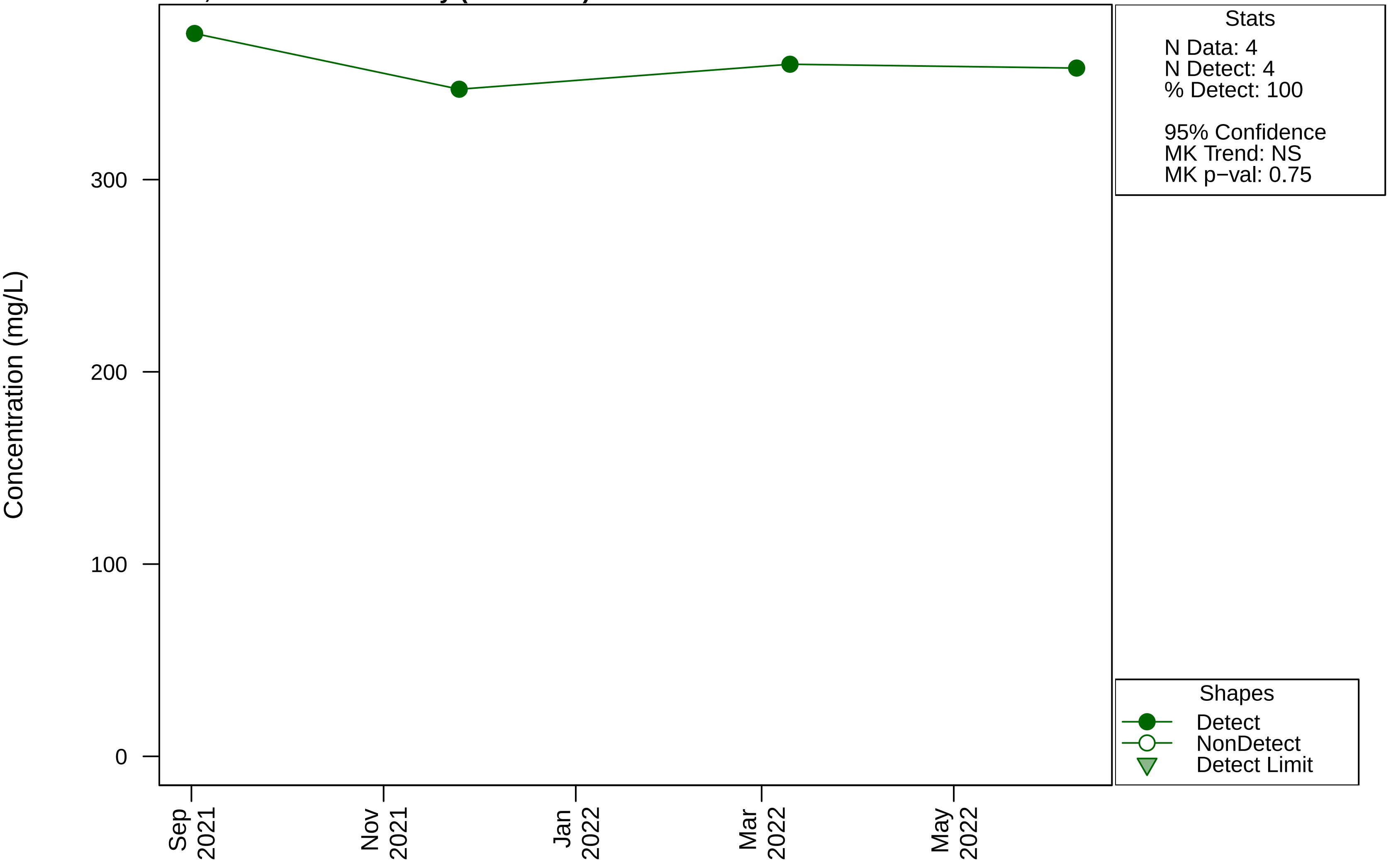
Scatterplots and Trend Analysis
D18, Boron (Filtered)
Concentration (ug/L)
0
20
40
60
80
Jan 2021
Jul 2021
Jan 2022
Jul 2022
Stats
N Data: 4
N Detect: 4
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.279
Shapes
Detect
NonDetect
Detect Limit

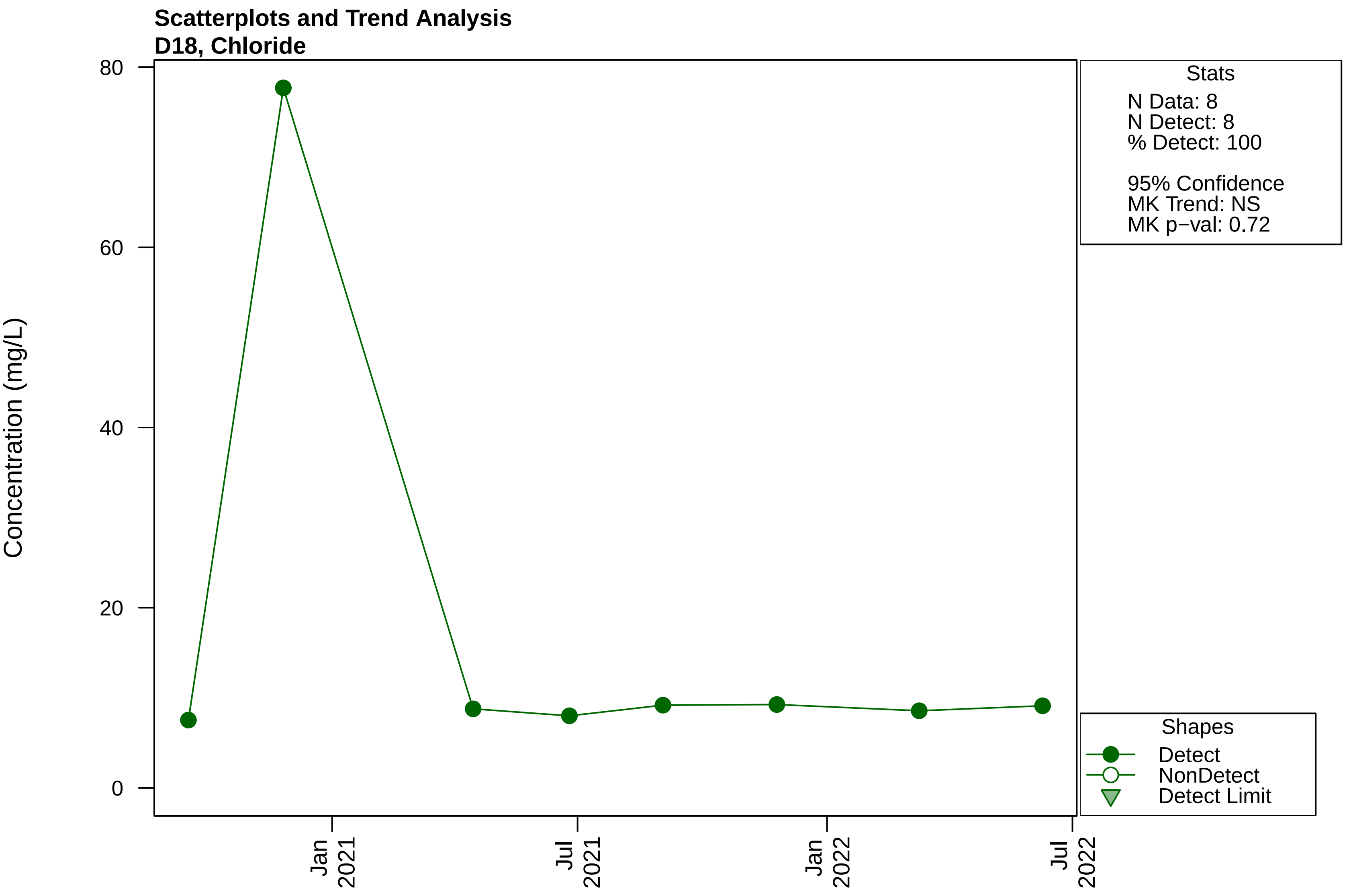

Scatterplots and Trend Analysis
D18, Cadmium
Concentration (ug/L)
0.20
0.15
0.10
0.05
0.00
Sep
2020
Stats
N Data: 1
N Detect: 1
% Detect: 100
MK criteria not met
Shapes
Detect
NonDetect
Detect Limit

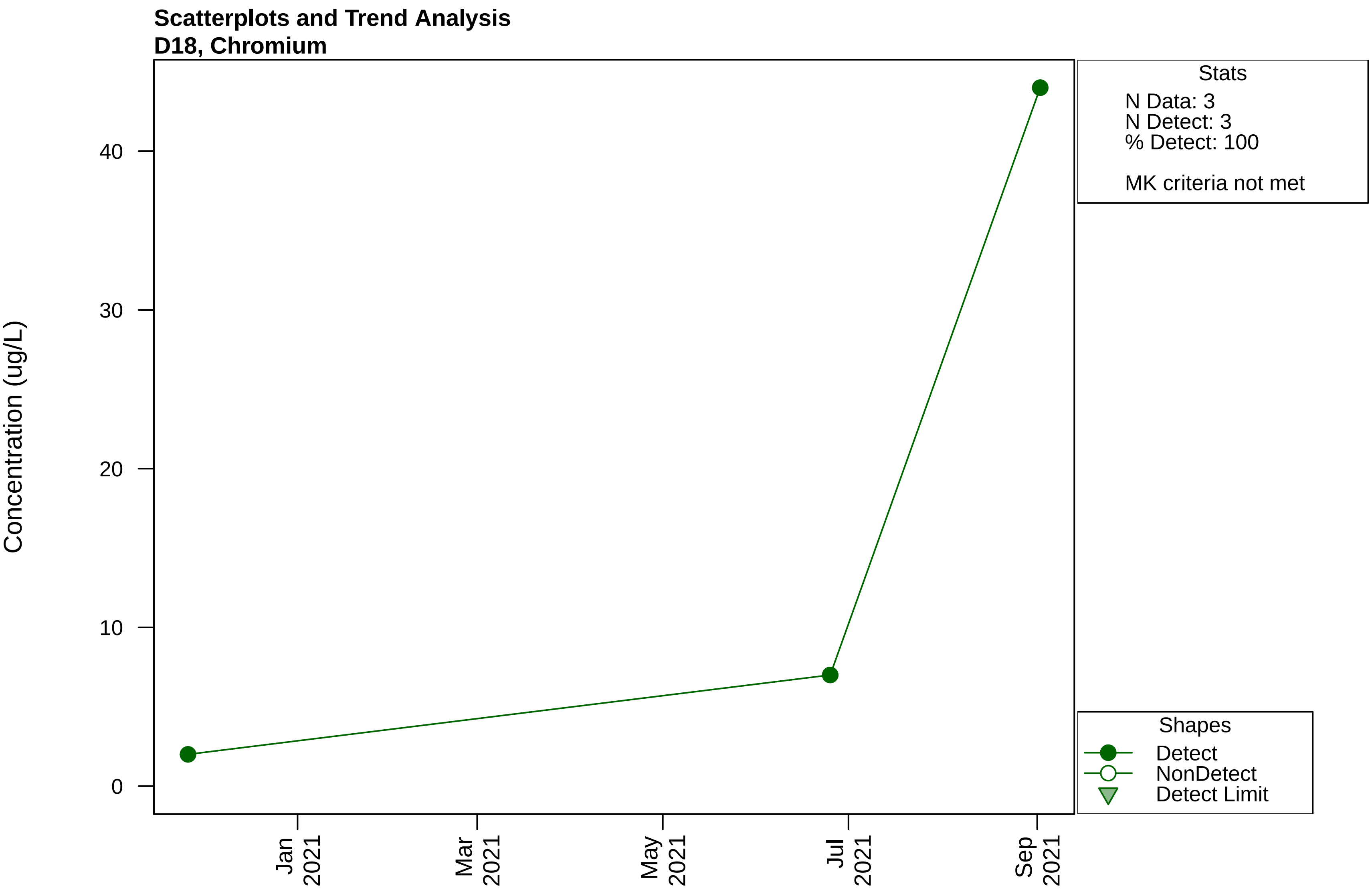
Scatterplots and Trend Analysis
D18, Calcium

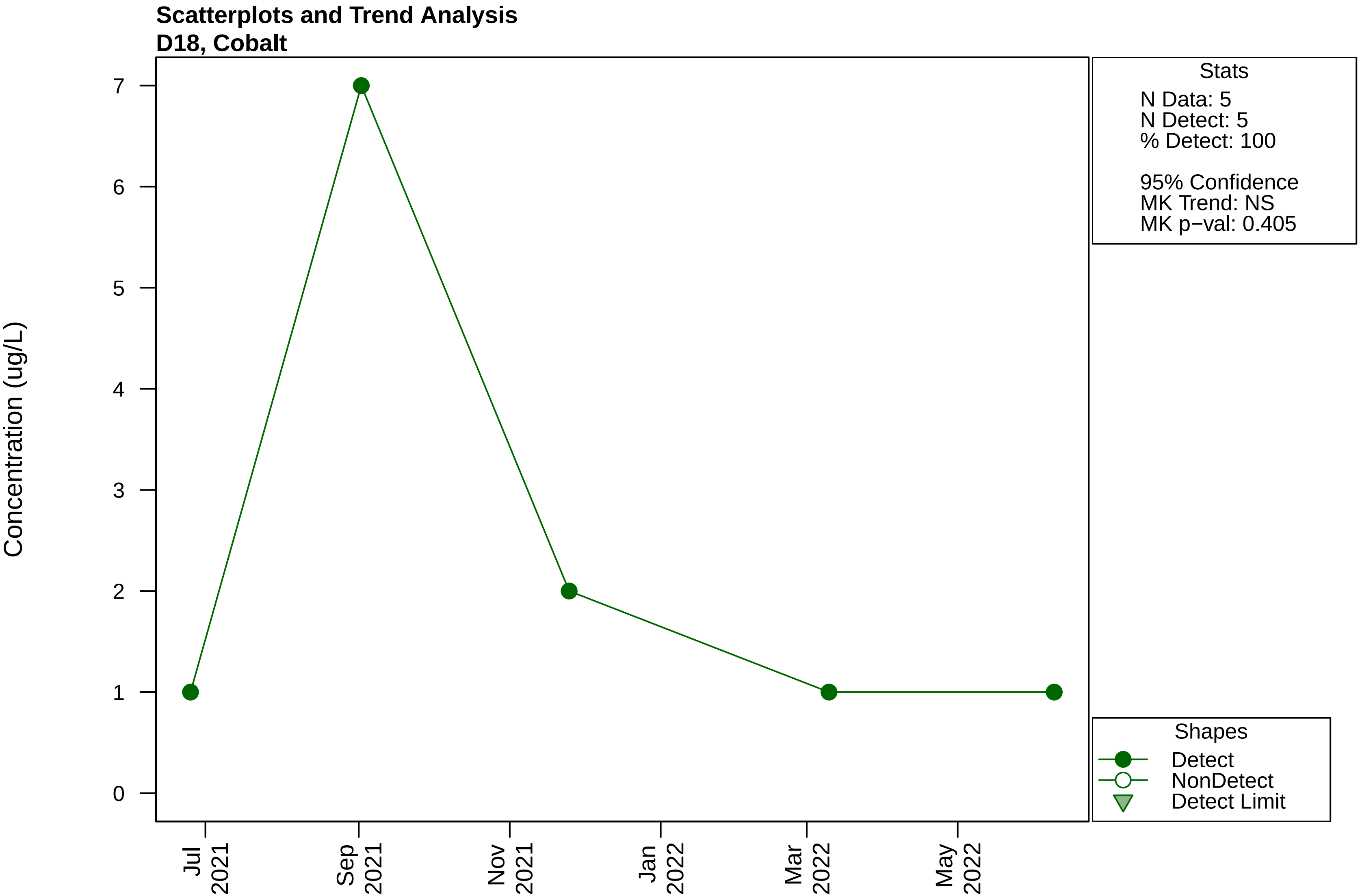


Scatterplots and Trend Analysis
D18, Carbonate Alkalinity (as CaCO3)

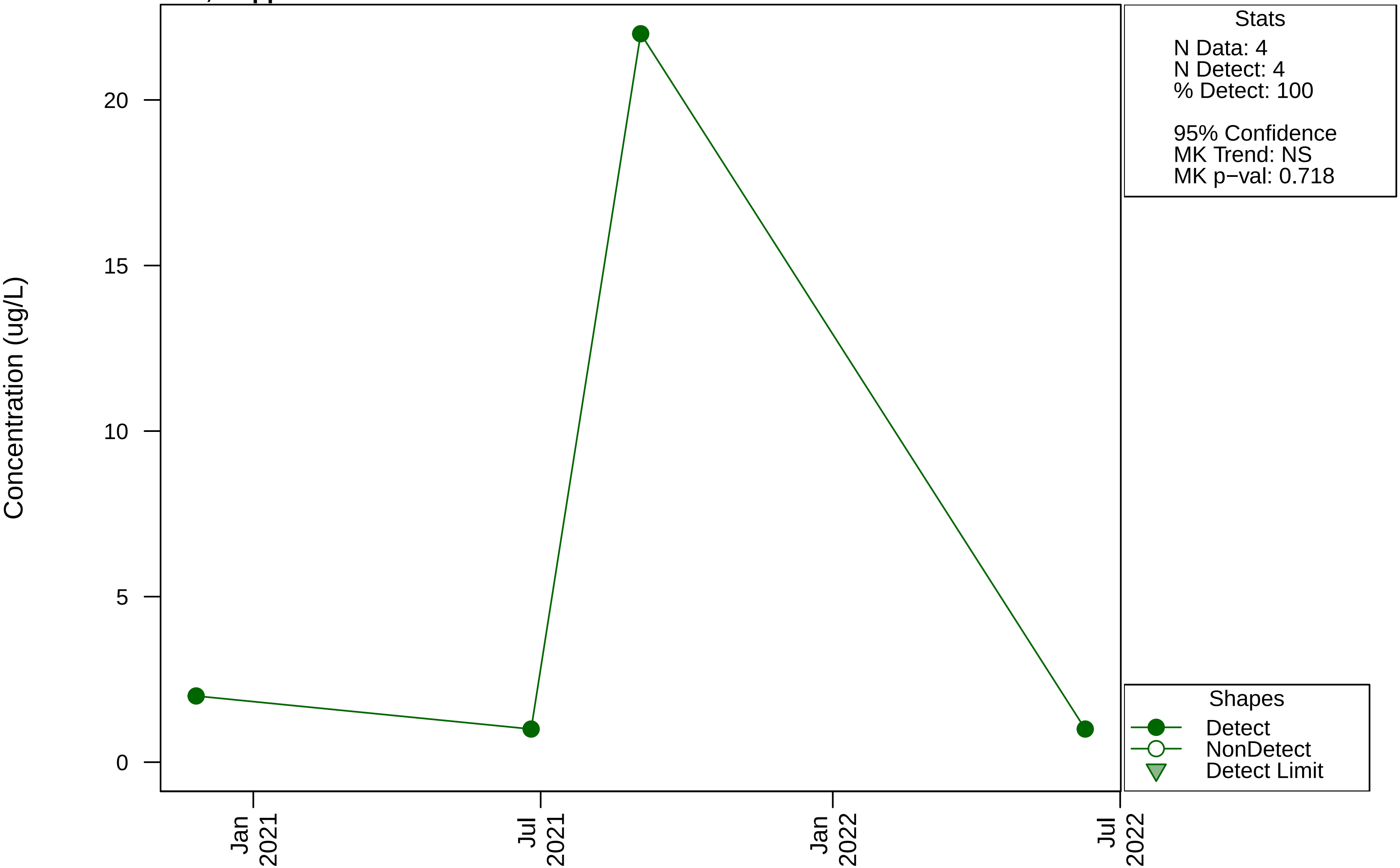


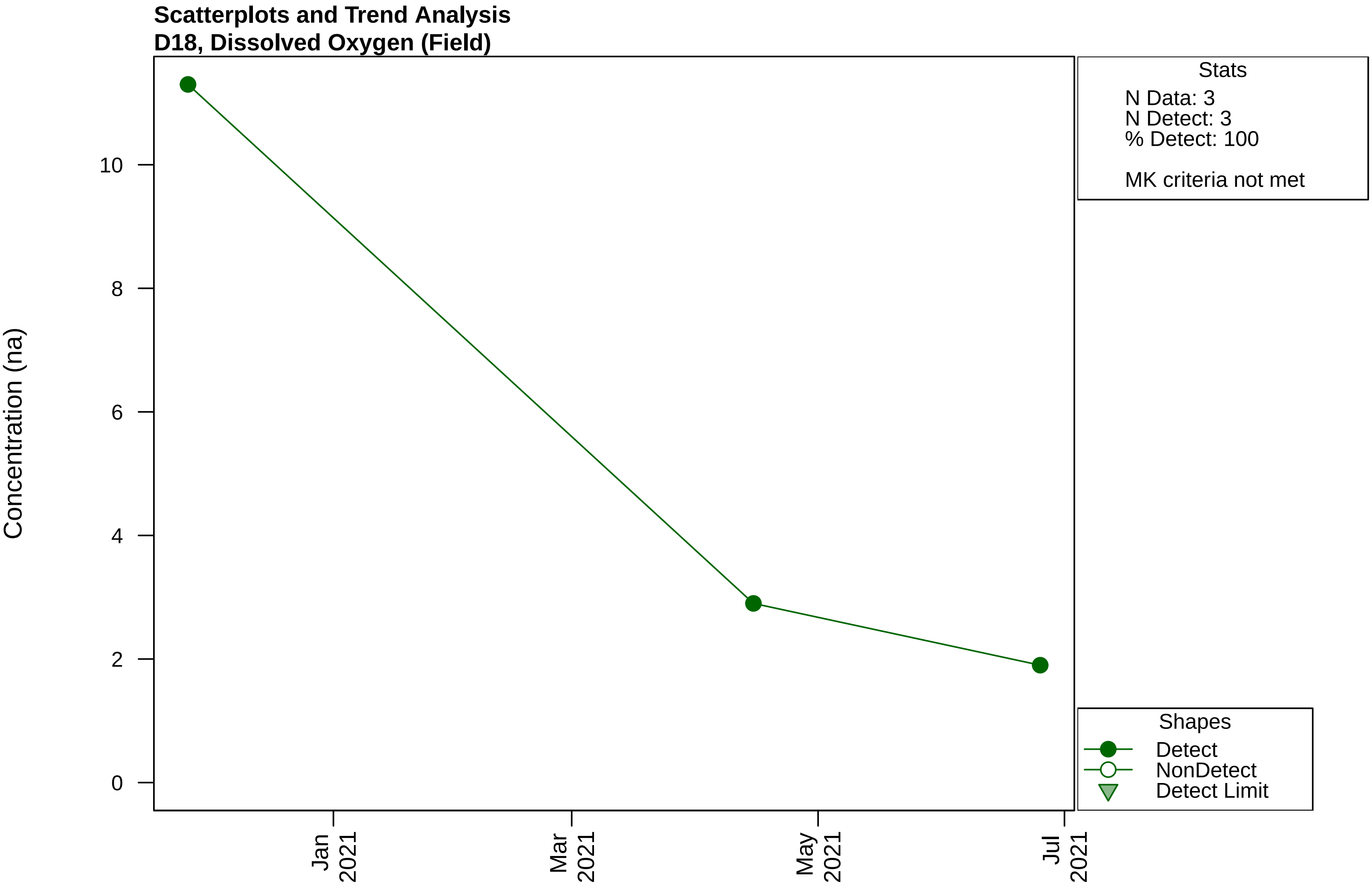

Scatterplots and Trend Analysis
D18, Chloride
Concentration (mg/L)
80
60
40
20
0
Jan 2021
Jul 2021
Jan 2022
Jul 2022
Stats
N Data: 8
N Detect: 8
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.72
Shapes
Detect
NonDetect
Detect Limit


Scatterplots and Trend Analysis
D18, Chromium
Concentration (ug/L)
0
10
20
30
40
Jan 2021
Mar 2021
May 2021
Jul 2021
Sep 2021
Stats
N Data: 3
N Detect: 3
% Detect: 100
MK criteria not met
Shapes
Detect
NonDetect
Detect Limit

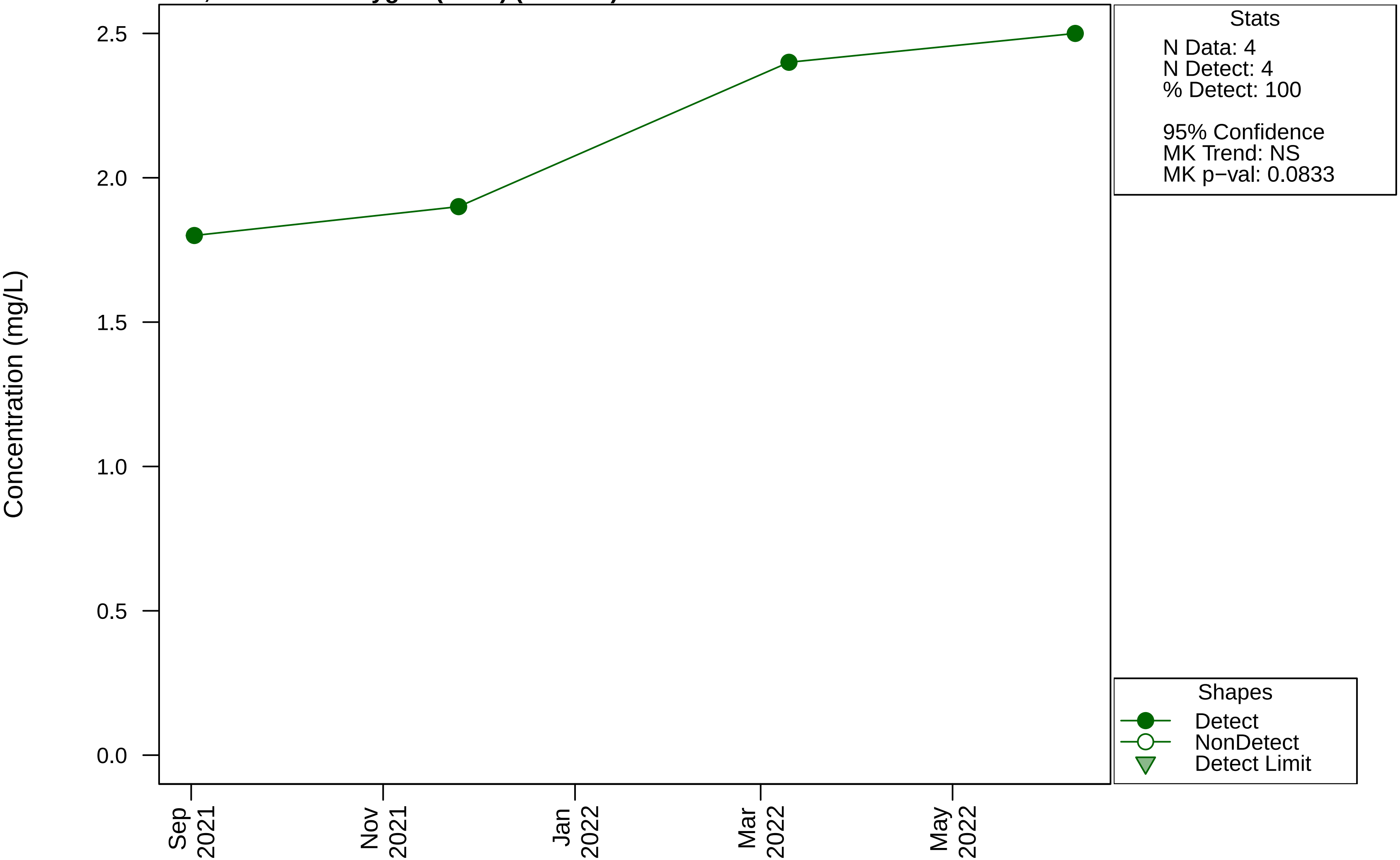

Scatterplots and Trend Analysis
D18, Cobalt
Concentration (ug/L)
0
1
2
3
4
5
6
7
Jul 2021
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 5
N Detect: 5
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.405
Shapes
Detect
NonDetect
Detect Limit

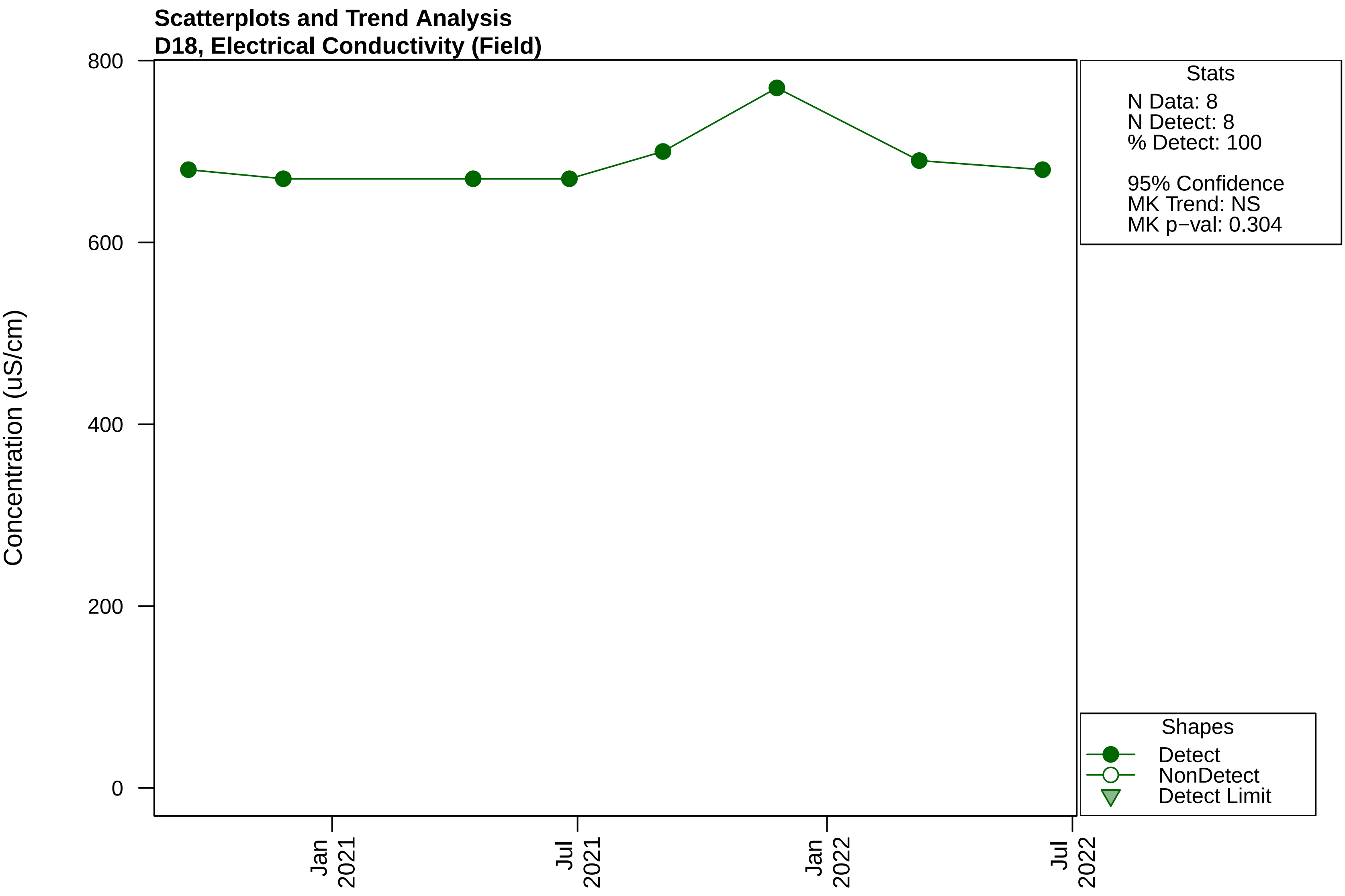
Scatterplots and Trend Analysis
D18, Copper

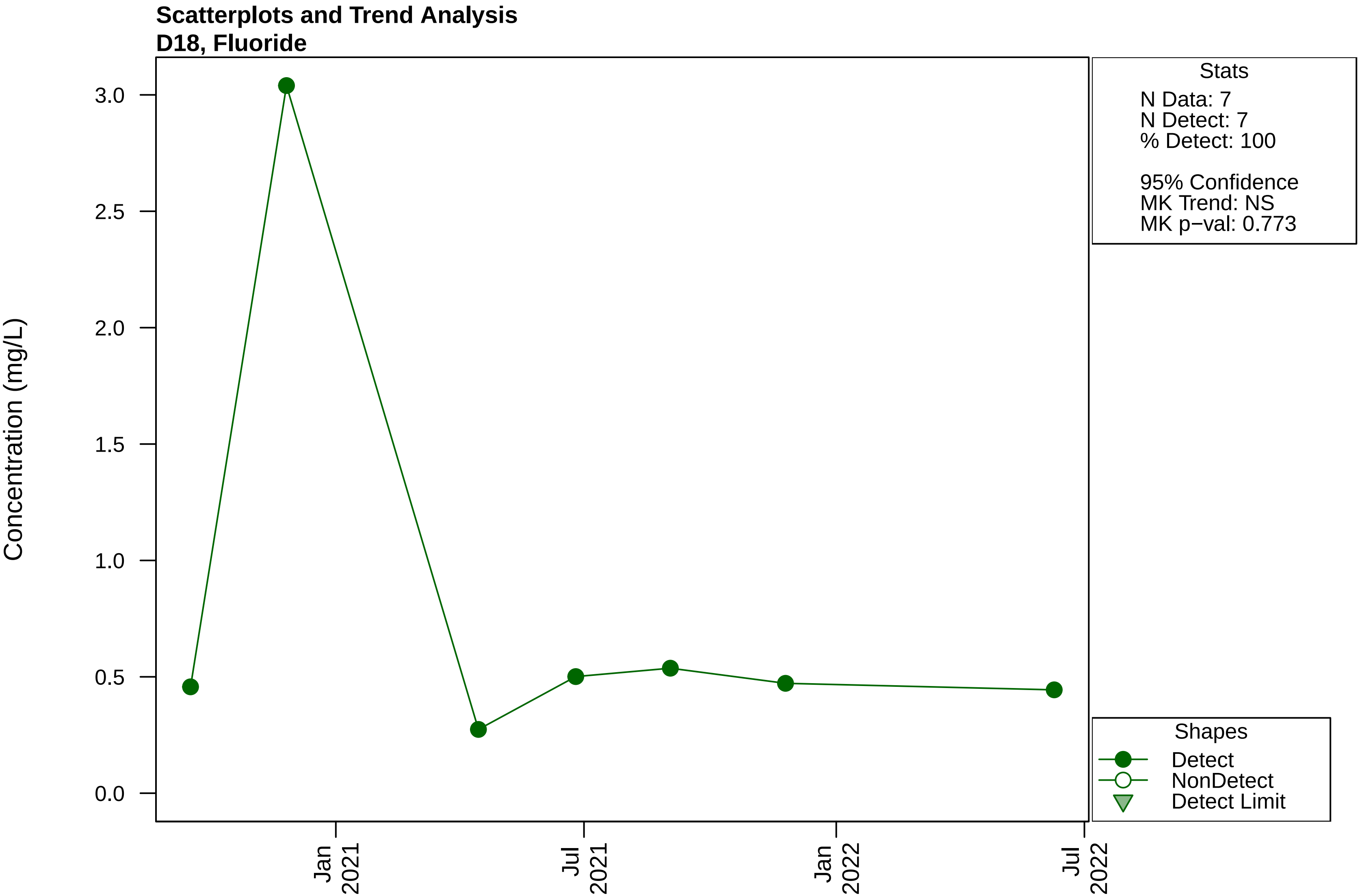


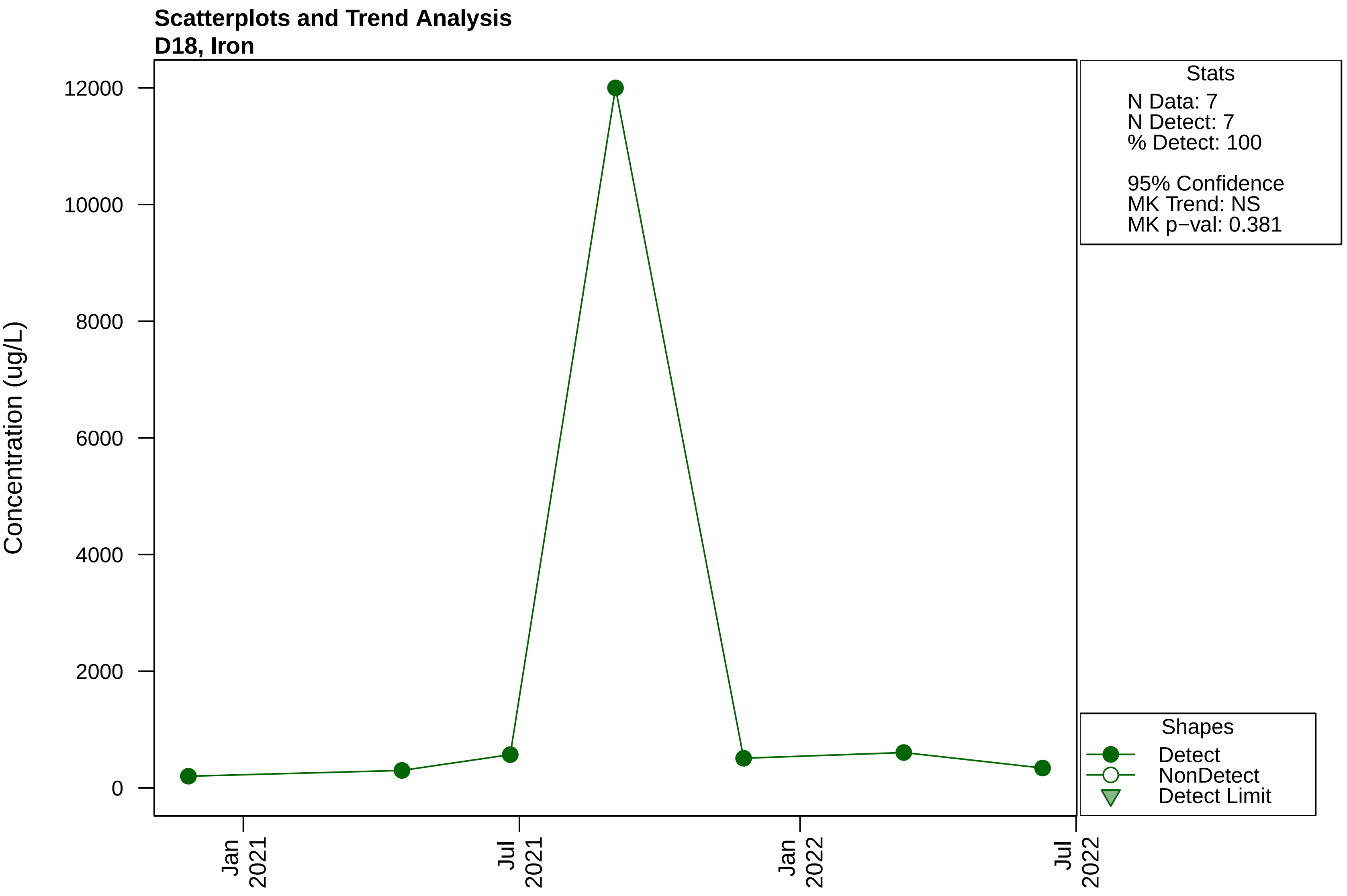

Scatterplots and Trend Analysis
D18, Dissolved Oxygen (Field)
Concentration (na)
0
2
4
6
8
10
Jan 2021
Mar 2021
May 2021
Jul 2021
Stats
N Data: 3
N Detect: 3
% Detect: 100
MK criteria not met
Shapes
Detect
NonDetect
Detect Limit

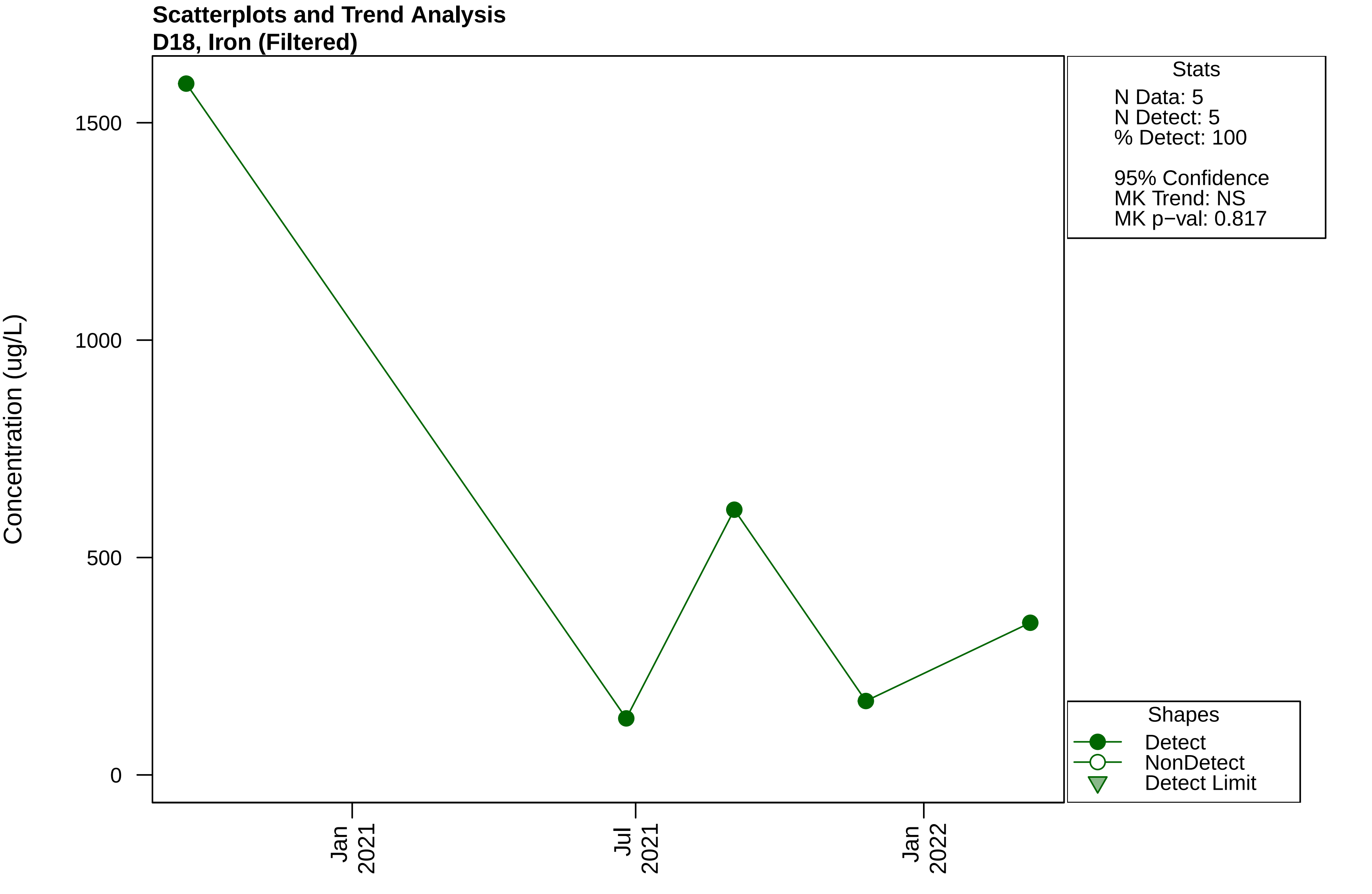
Scatterplots and Trend Analysis
D18, Dissolved Oxygen (Field) (Filtered)




Scatterplots and Trend Analysis
D18, Electrical Conductivity (Field)
Concentration (uS/cm)
800
600
400
200
0
Jan 2021
Jul 2021
Jan 2022
Jul 2022
Stats
N Data: 8
N Detect: 8
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.304
Shapes
Detect
NonDetect
Detect Limit

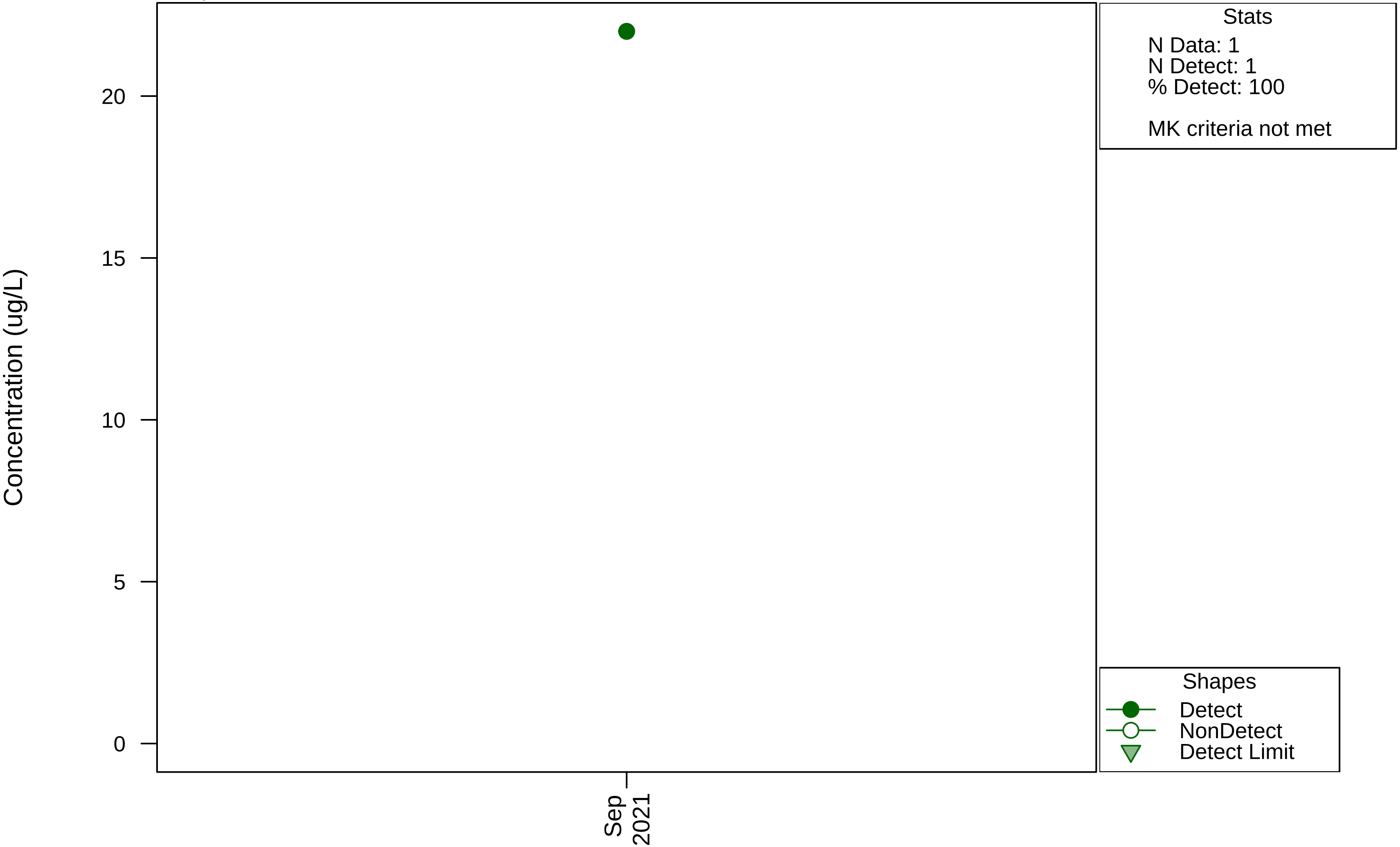

Scatterplots and Trend Analysis
D18, Fluoride
Concentration (mg/L)
3.0
2.5
2.0
1.5
1.0
0.5
0.0
Jan 2021
Jul 2021
Jan 2022
Jul 2022
Stats
N Data: 7
N Detect: 7
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.773
Shapes
Detect
NonDetect
Detect Limit

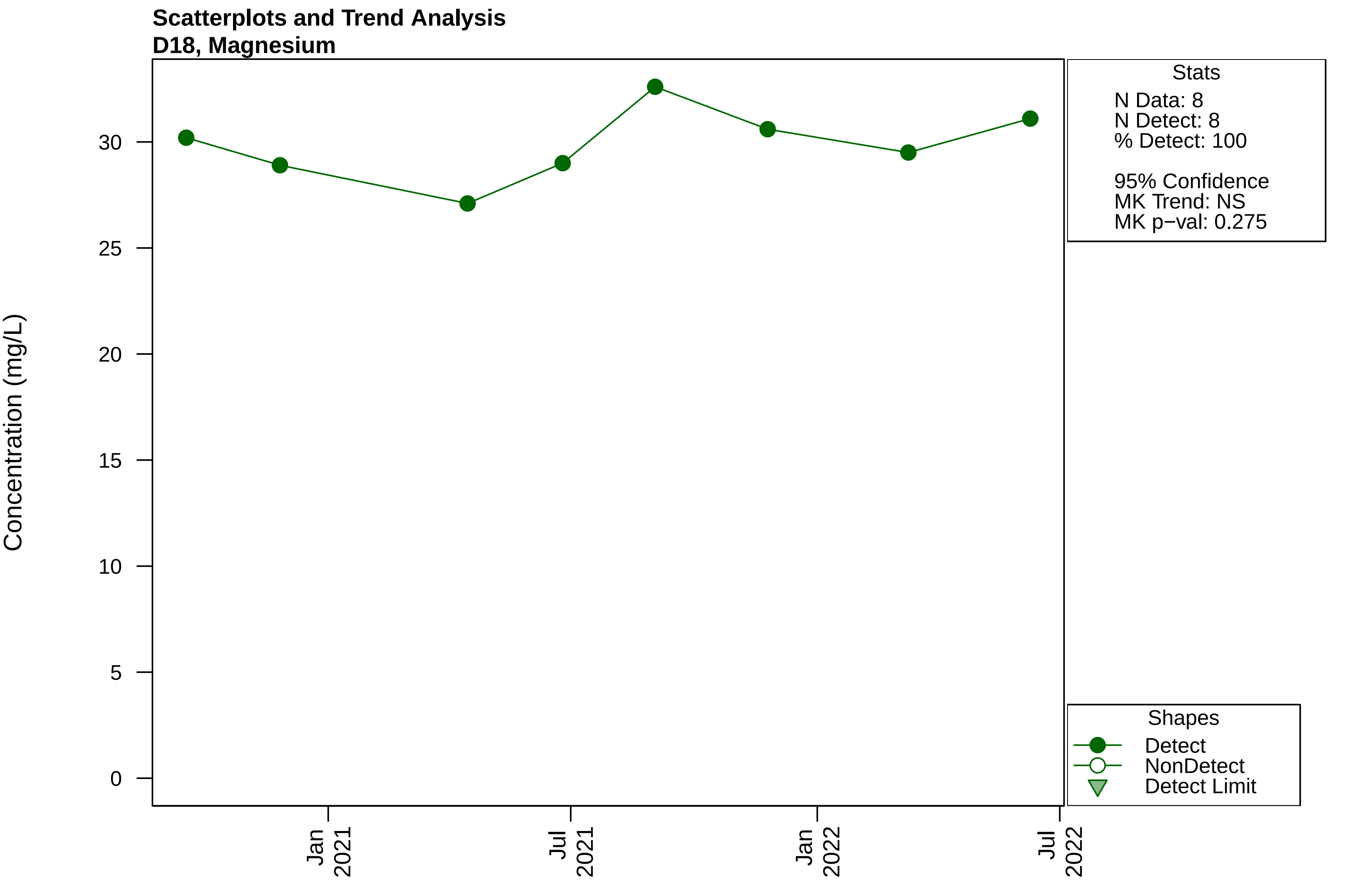

Scatterplots and Trend Analysis
D18, Iron
Concentration (ug/L)
0
2000
4000
6000
8000
10000
12000
Jan 2021
Jul 2021
Jan 2022
Jul 2022
Stats
N Data: 7
N Detect: 7
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.381
Shapes
Detect
NonDetect
Detect Limit

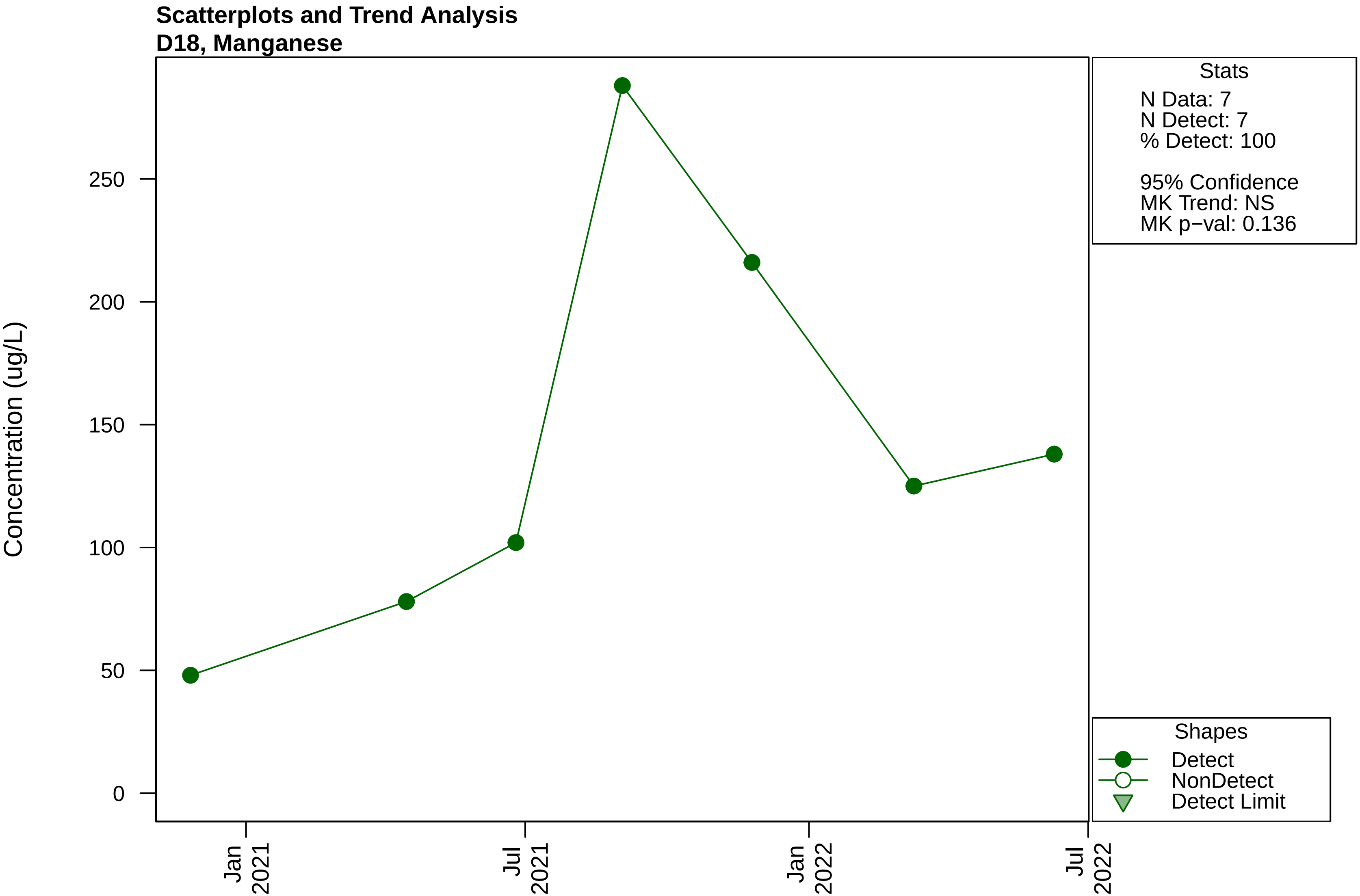


Scatterplots and Trend Analysis
D18, Iron (Filtered)
Concentration (ug/L)
0
500
1000
1500
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 5
N Detect: 5
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.817
Shapes
Detect
NonDetect
Detect Limit

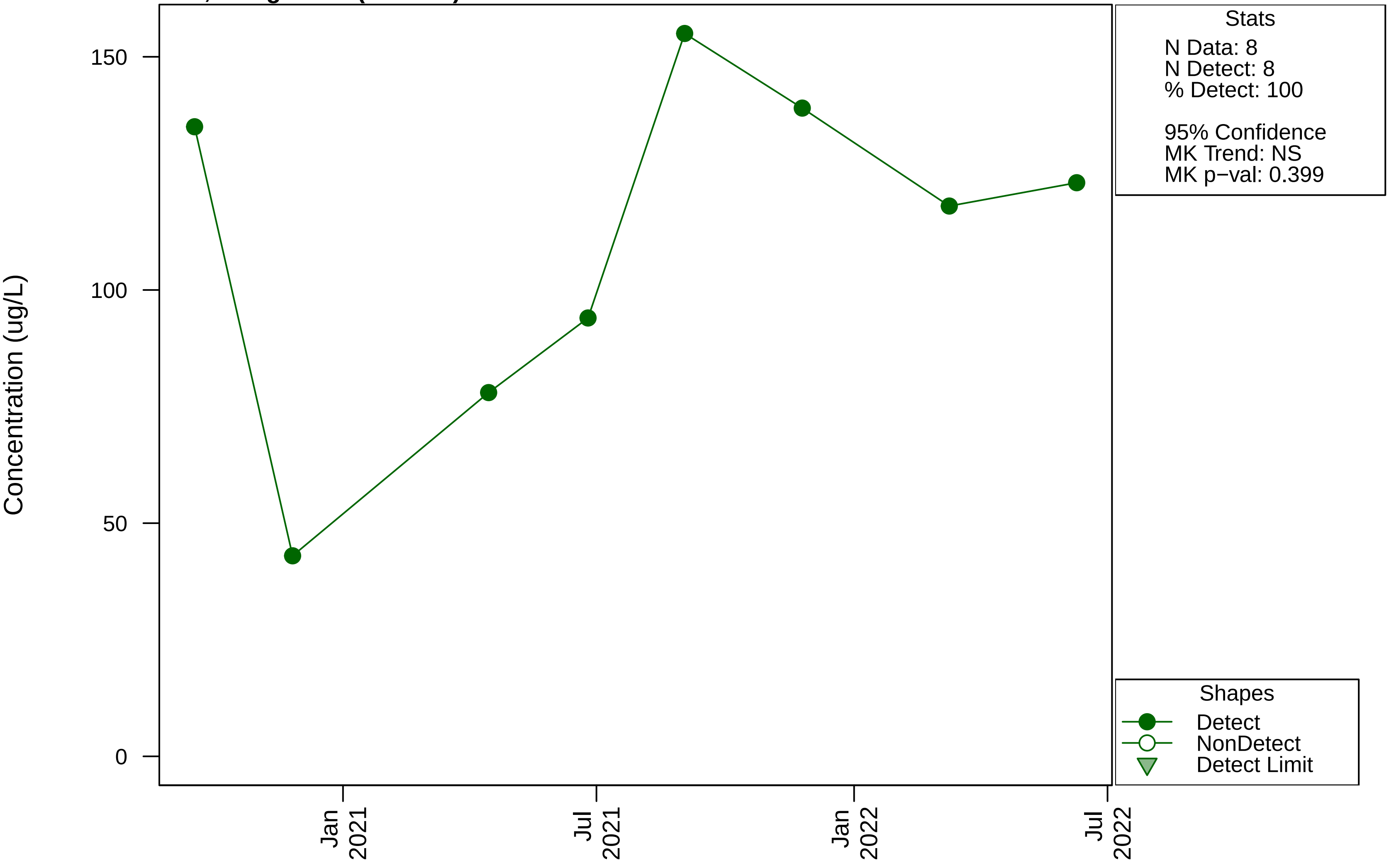
Scatterplots and Trend Analysis
D18, Lead

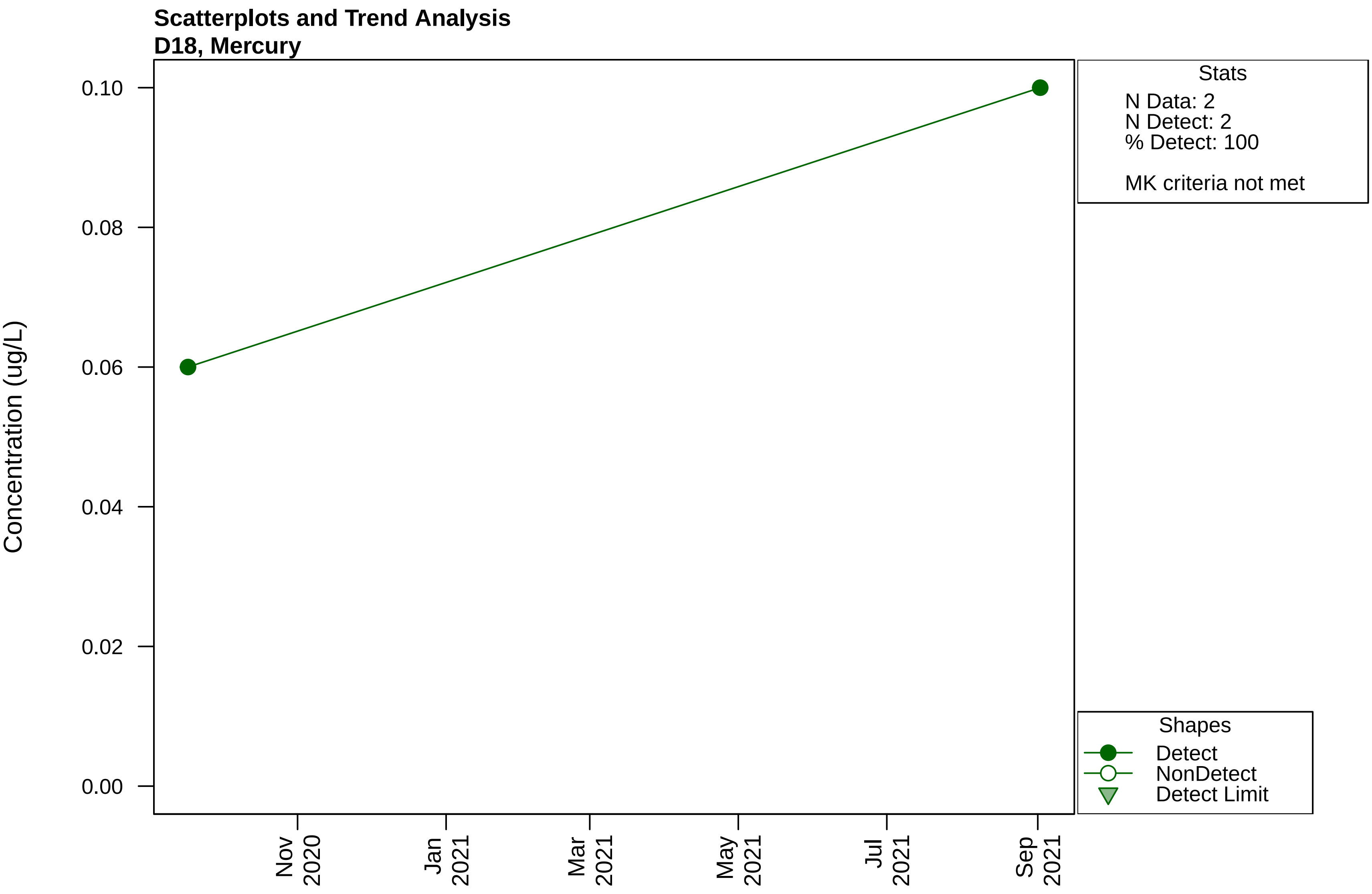


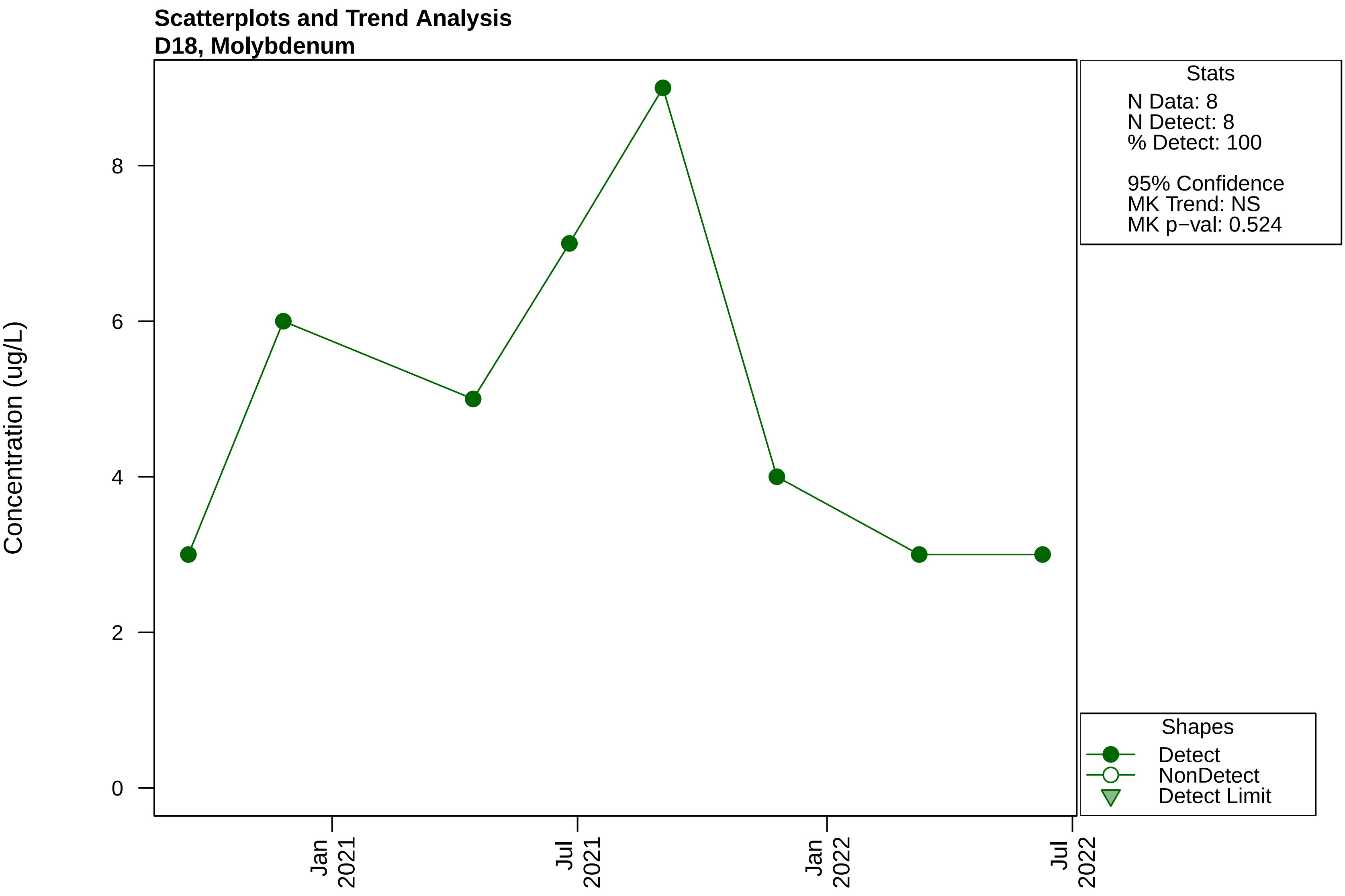

Scatterplots and Trend Analysis
D18, Magnesium
Concentration (mg/L)
0
5
10
15
20
25
30
Jan 2021
Jul 2021
Jan 2022
Jul 2022
Stats
N Data: 8
N Detect: 8
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.275
Shapes
Detect
NonDetect
Detect Limit


Scatterplots and Trend Analysis
D18, Manganese
Concentration (ug/L)
0
50
100
150
200
250
Jan 2021
Jul 2021
Jan 2022
Jul 2022
Stats
N Data: 7
N Detect: 7
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.136
Shapes
Detect
NonDetect
Detect Limit

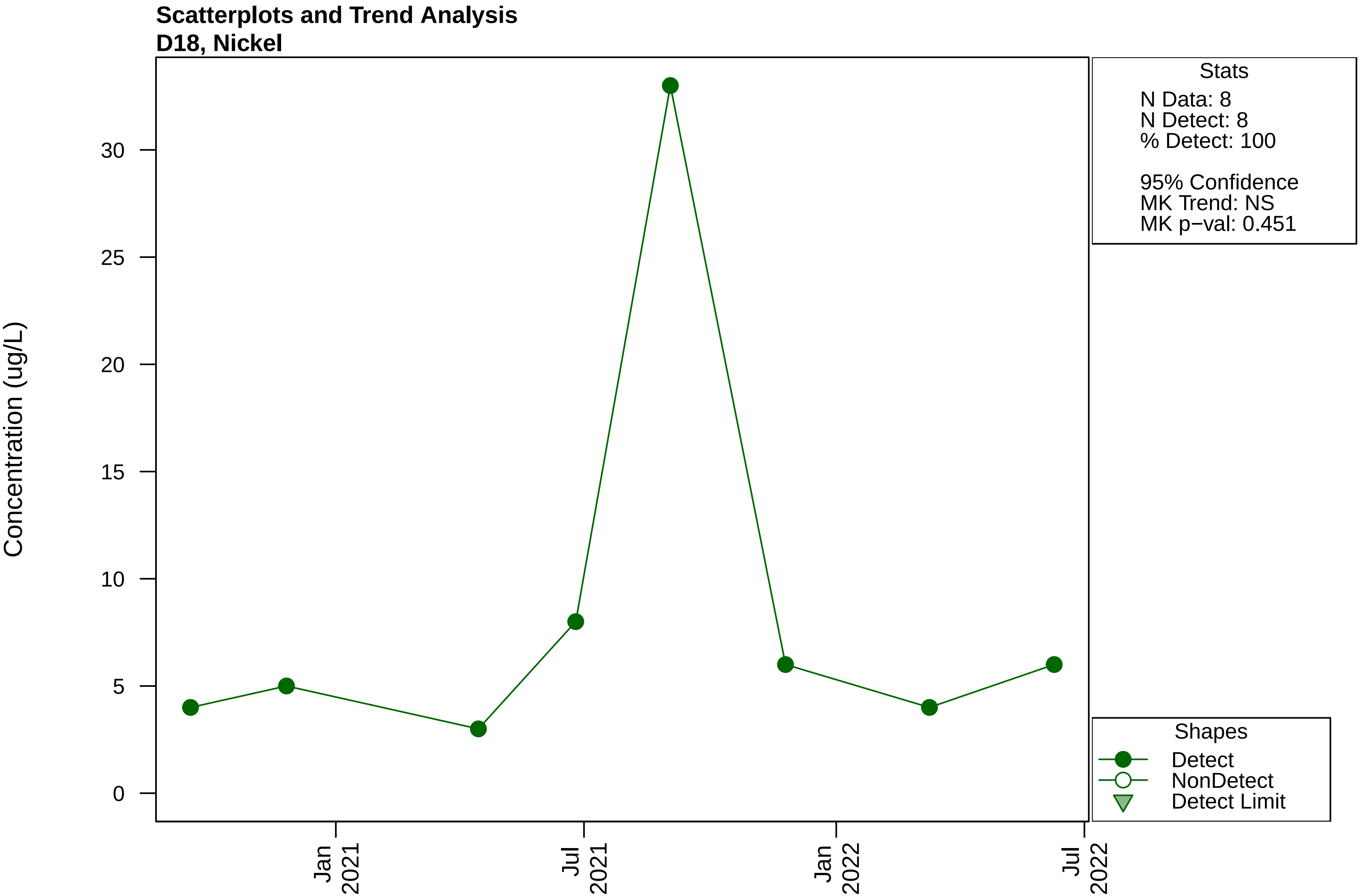
Scatterplots and Trend Analysis
D18, Manganese (Filtered)

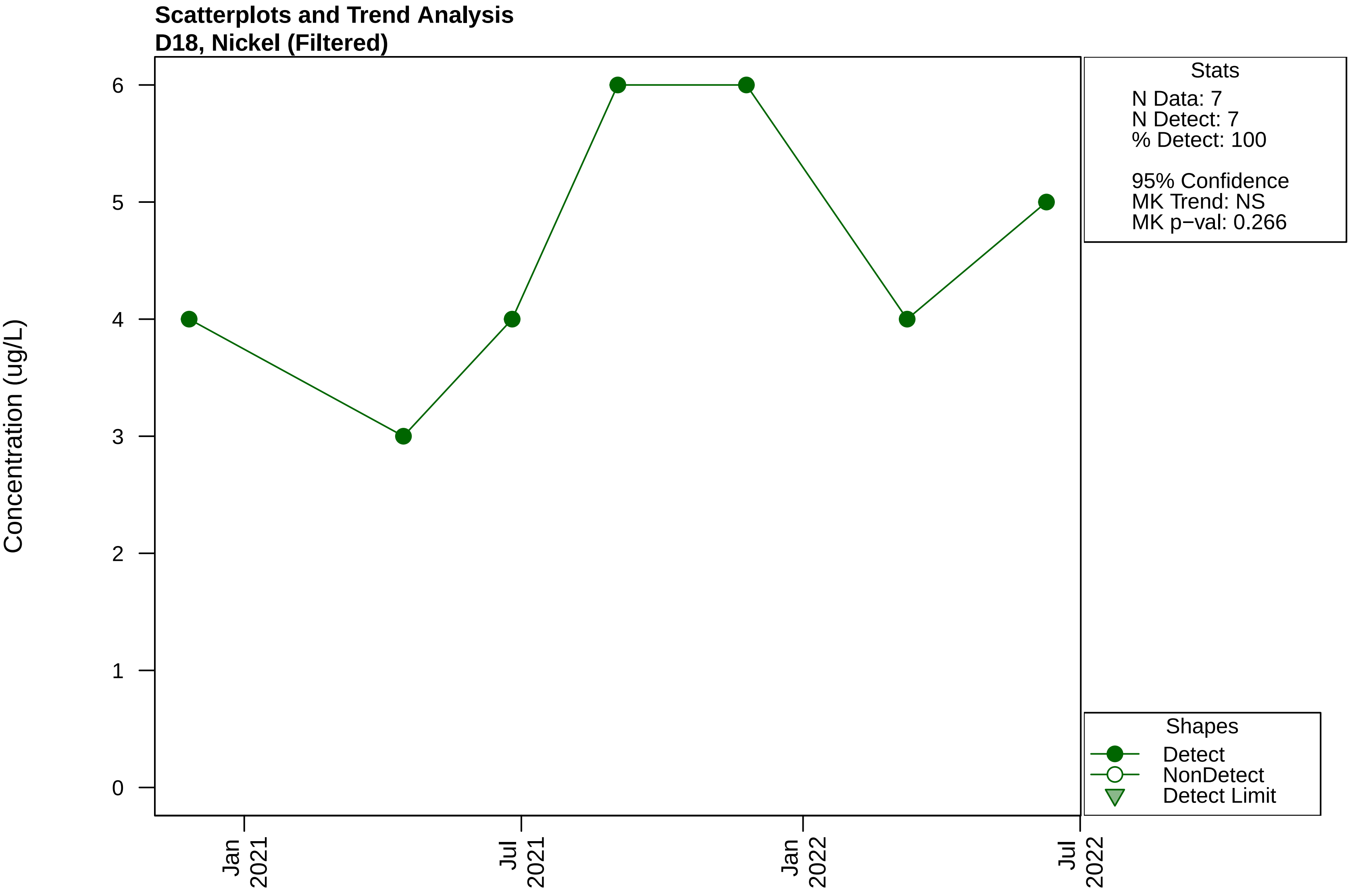


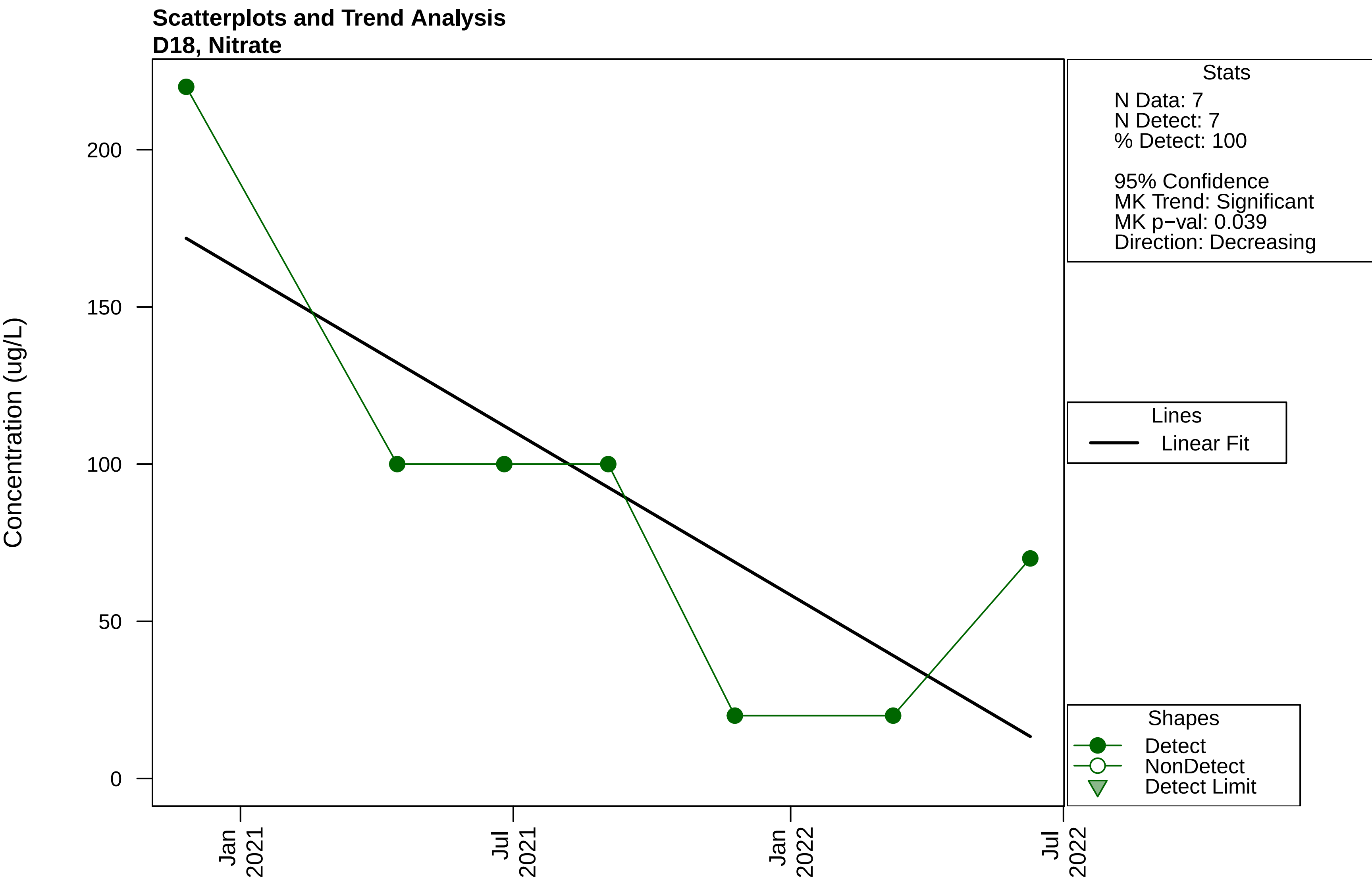

Scatterplots and Trend Analysis
D18, Mercury
Concentration (ug/L)
0.10
0.08
0.06
0.04
0.02
0.00
Nov 2020
Jan 2021
Mar 2021
May 2021
Jul 2021
Sep 2021
Stats
N Data: 2
N Detect: 2
% Detect: 100
MK criteria not met
Shapes
Detect
NonDetect
Detect Limit



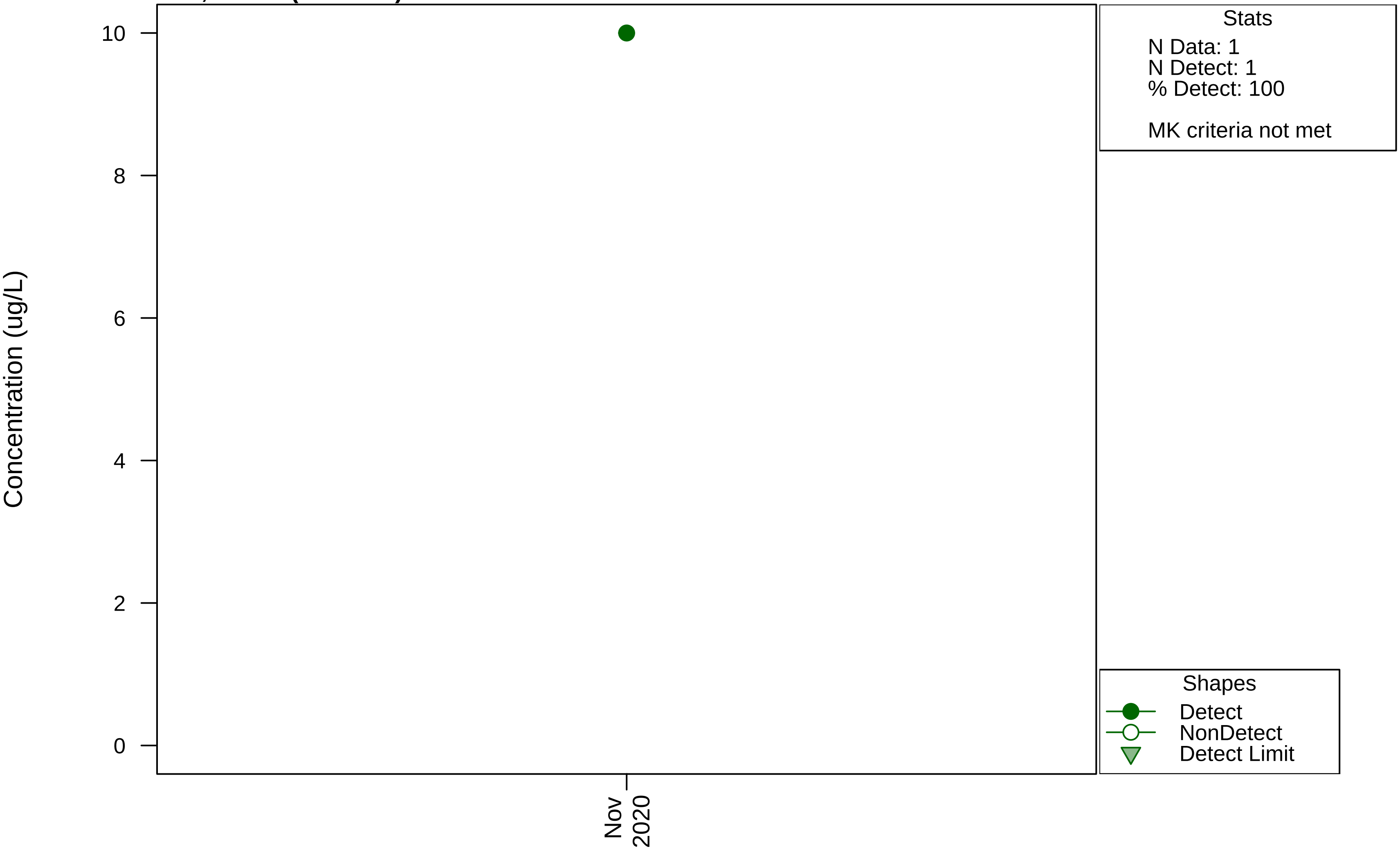
Scatterplots and Trend Analysis
D18, Molybdenum
Concentration (ug/L)
0
2
4
6
8
Jan 2021
Jul 2021
Jan 2022
Jul 2022
Stats
N Data: 8
N Detect: 8
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.524
Shapes
Detect
NonDetect
Detect Limit

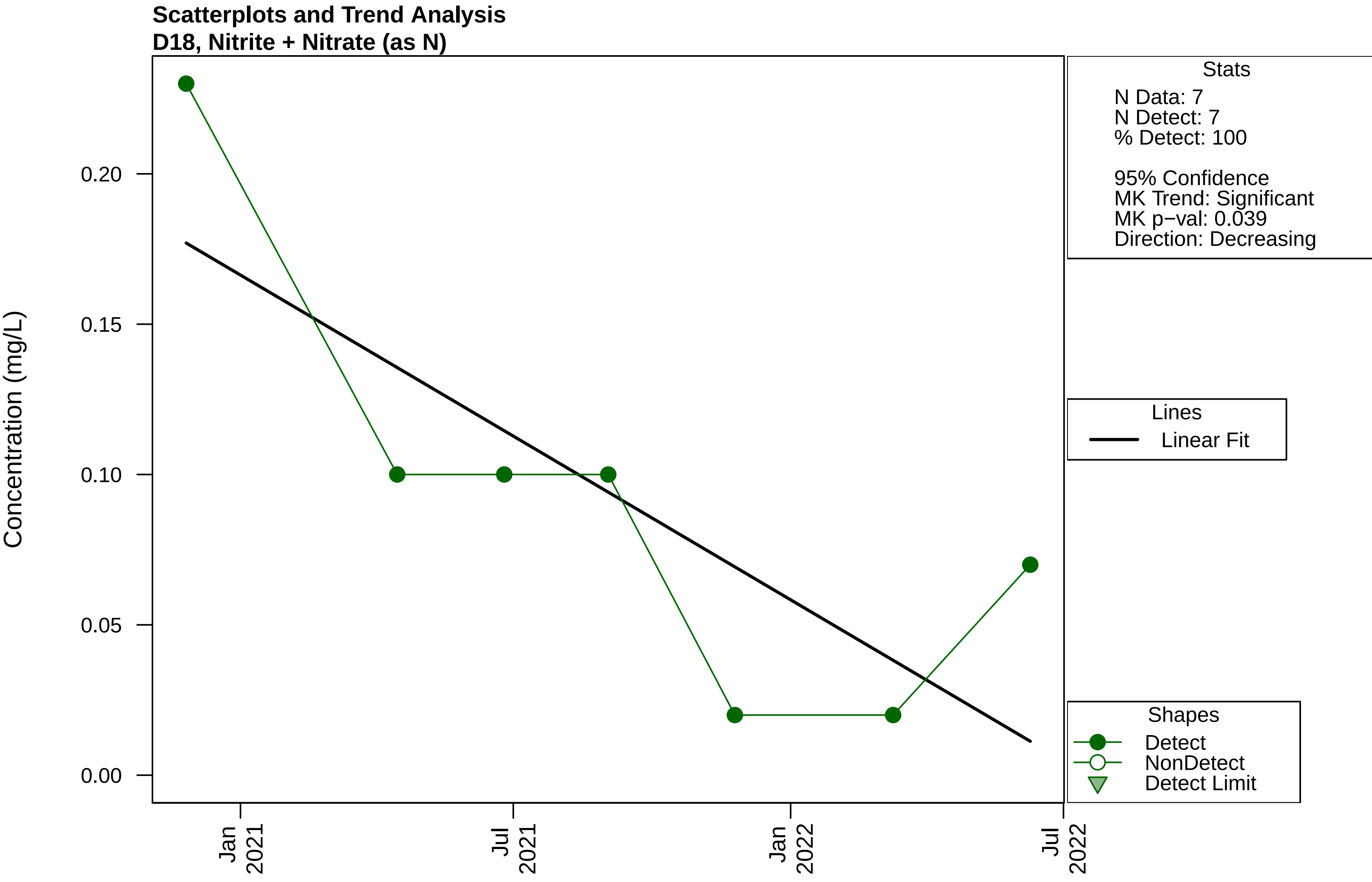

Scatterplots and Trend Analysis
D18, Nickel
Concentration (ug/L)
0
5
10
15
20
25
30
Jan 2021
Jul 2021
Jan 2022
Jul 2022
Stats
N Data: 8
N Detect: 8
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.451
Shapes
Detect
NonDetect
Detect Limit


Scatterplots and Trend Analysis
D18, Nickel (Filtered)
Concentration (ug/L)
0
1
2
3
4
5
6
Jan 2021
Jul 2021
Jan 2022
Jul 2022
Stats
N Data: 7
N Detect: 7
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.266
Shapes
Detect
NonDetect
Detect Limit

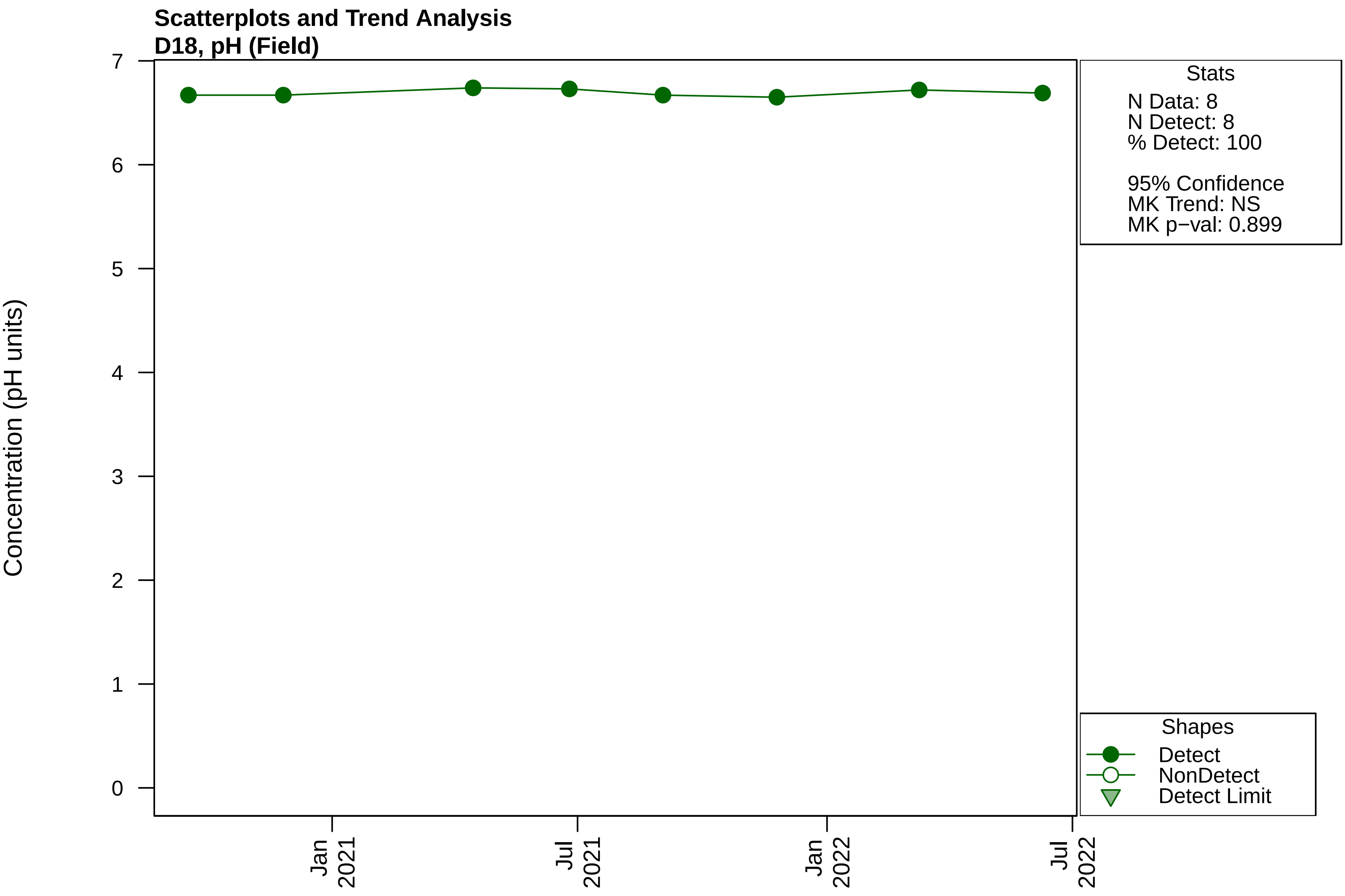

Scatterplots and Trend Analysis
D18, Nitrate
Concentration (ug/L)
0
50
100
150
200
Jan 2021
Jul 2021
Jan 2022
Jul 2022
Stats
N Data: 7
N Detect: 7
% Detect: 100
95% Confidence
MK Trend: Significant
MK p−val: 0.039
Direction: Decreasing
Lines
Linear Fit
Shapes
Detect
NonDetect
Detect Limit

Scatterplots and Trend Analysis
D18, Nitrite (as NO2−)

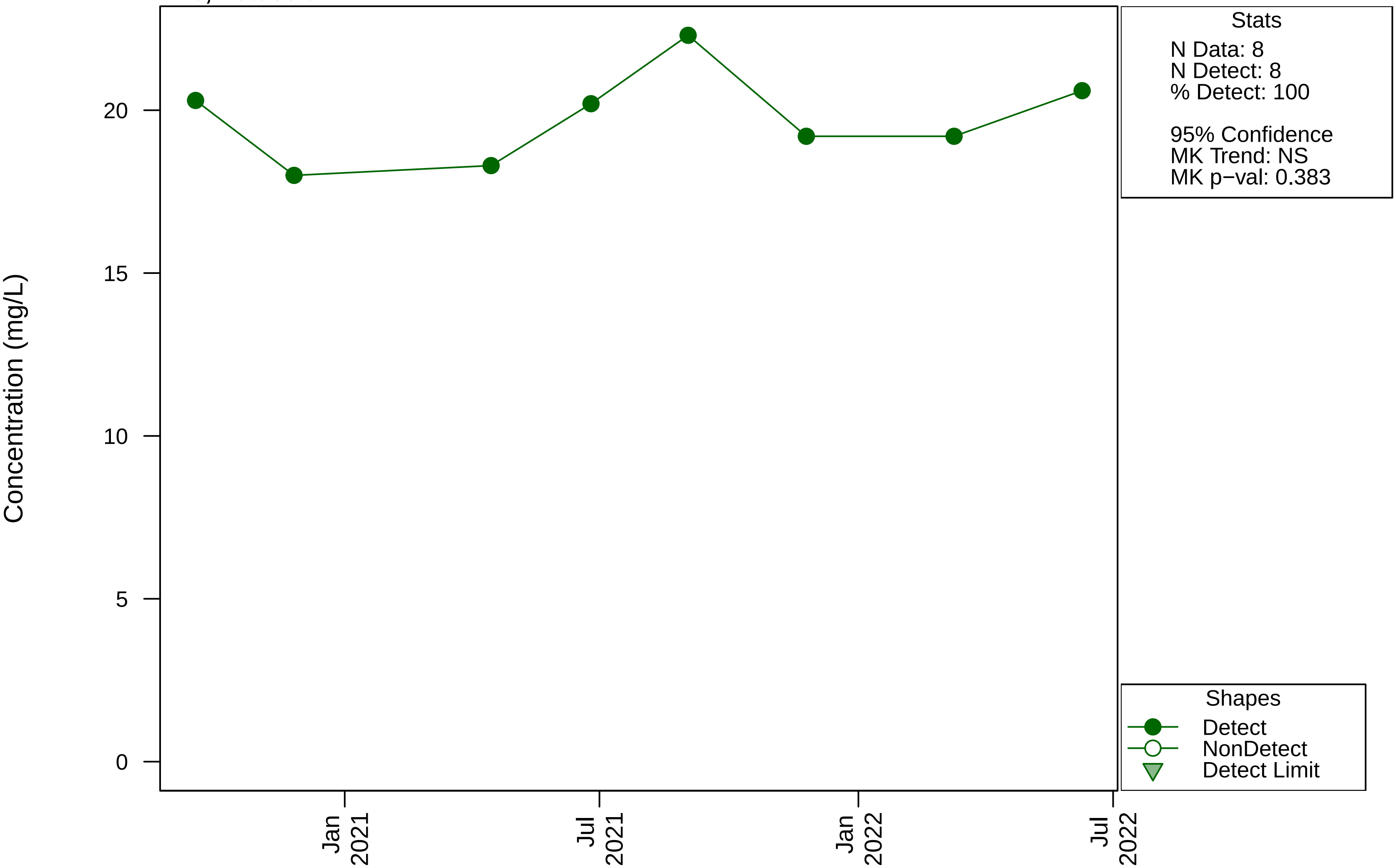




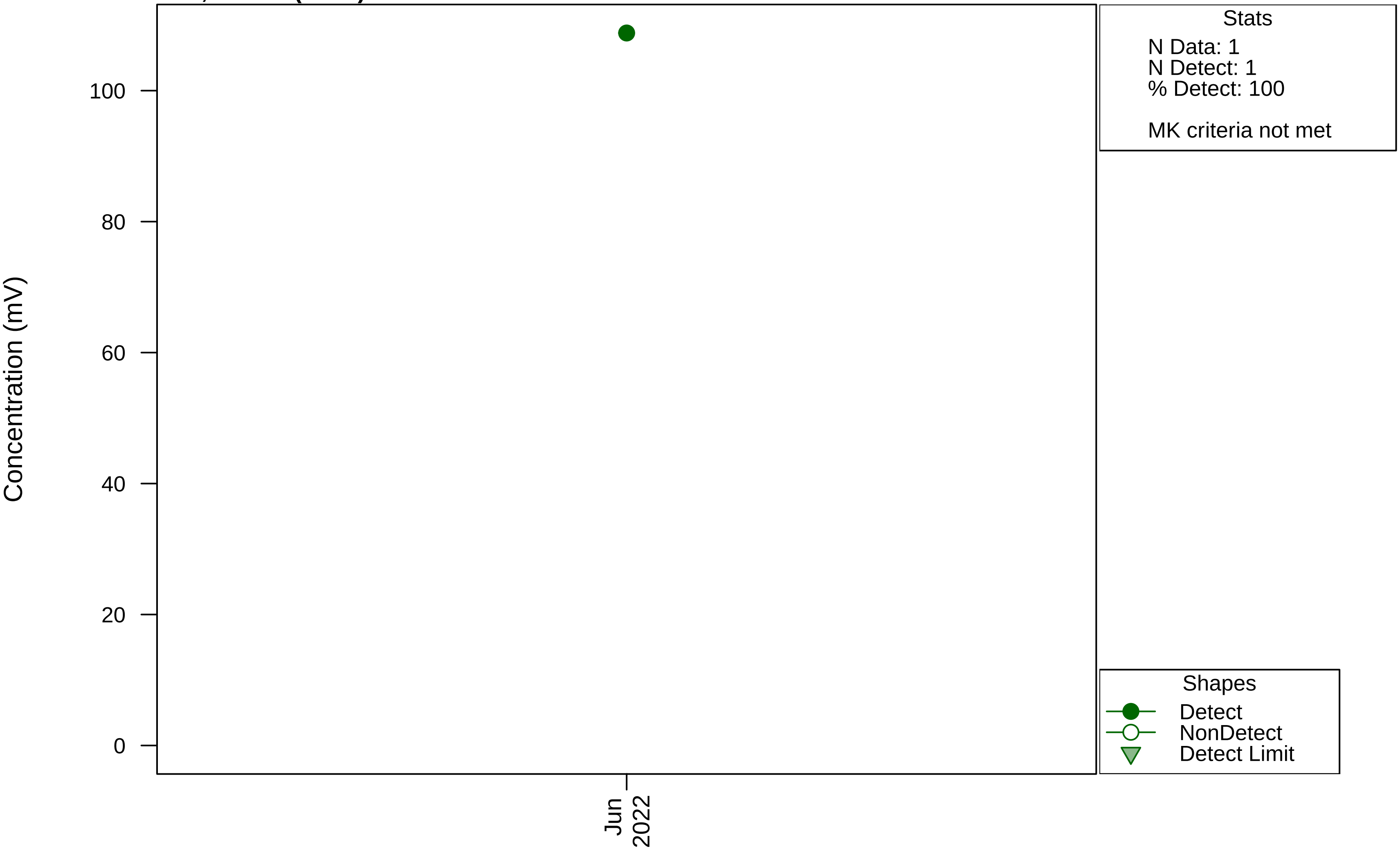
Scatterplots and Trend Analysis
D18, Nitrite + Nitrate (as N)
Concentration (mg/L)
0.00
0.05
0.10
0.15
0.20
Jan 2021
Jul 2021
Jan 2022
Jul 2022
Stats
N Data: 7
N Detect: 7
% Detect: 100
95% Confidence
MK Trend: Significant
MK p−val: 0.039
Direction: Decreasing
Lines
Linear Fit
Shapes
Detect
NonDetect
Detect Limit


Scatterplots and Trend Analysis
D18, pH (Field)
Concentration (pH units)
0
1
2
3
4
5
6
7
Jan 2021
Jul 2021
Jan 2022
Jul 2022
Stats
N Data: 8
N Detect: 8
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.899
Shapes
Detect
NonDetect
Detect Limit

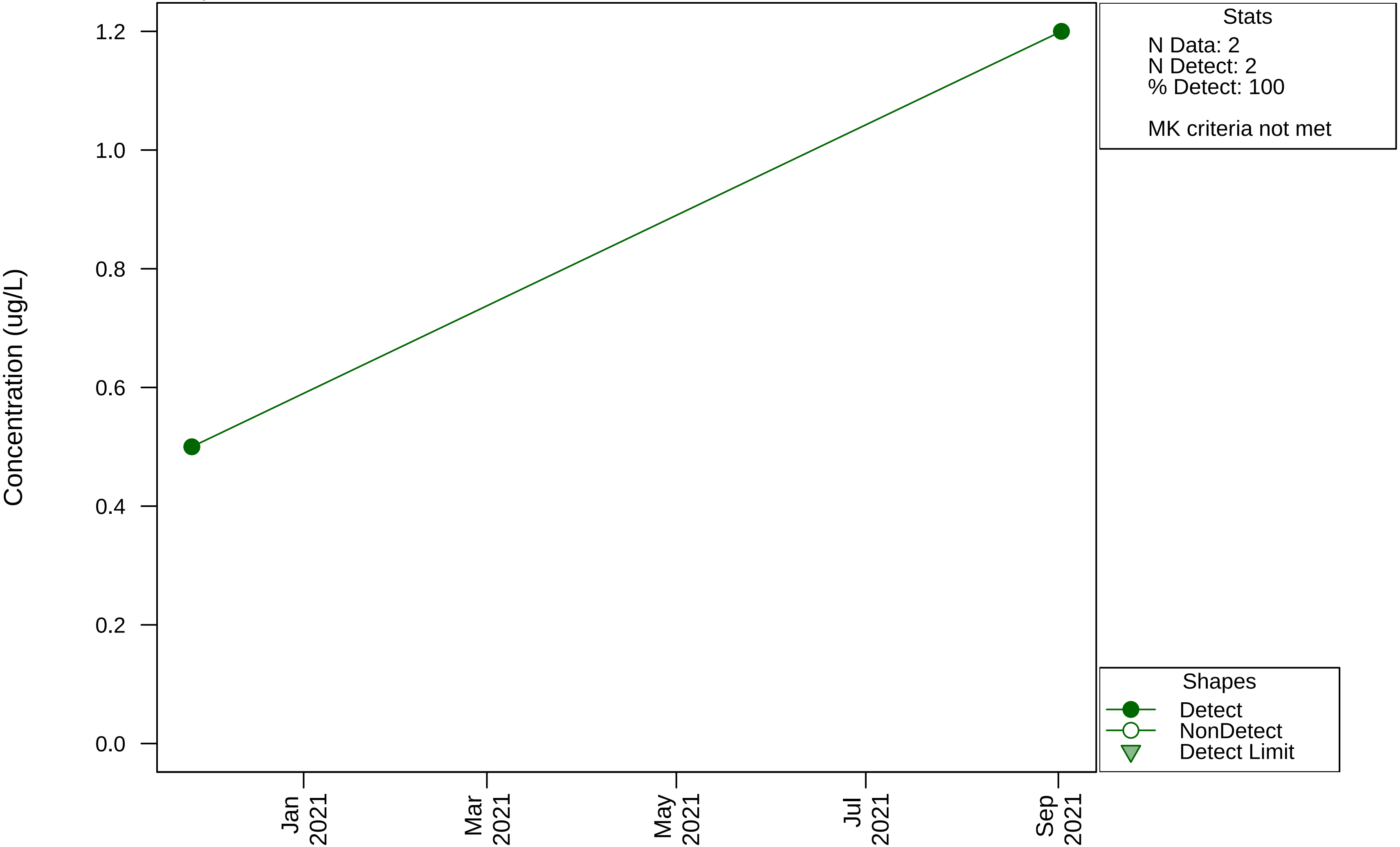
Scatterplots and Trend Analysis
D18, Potassium

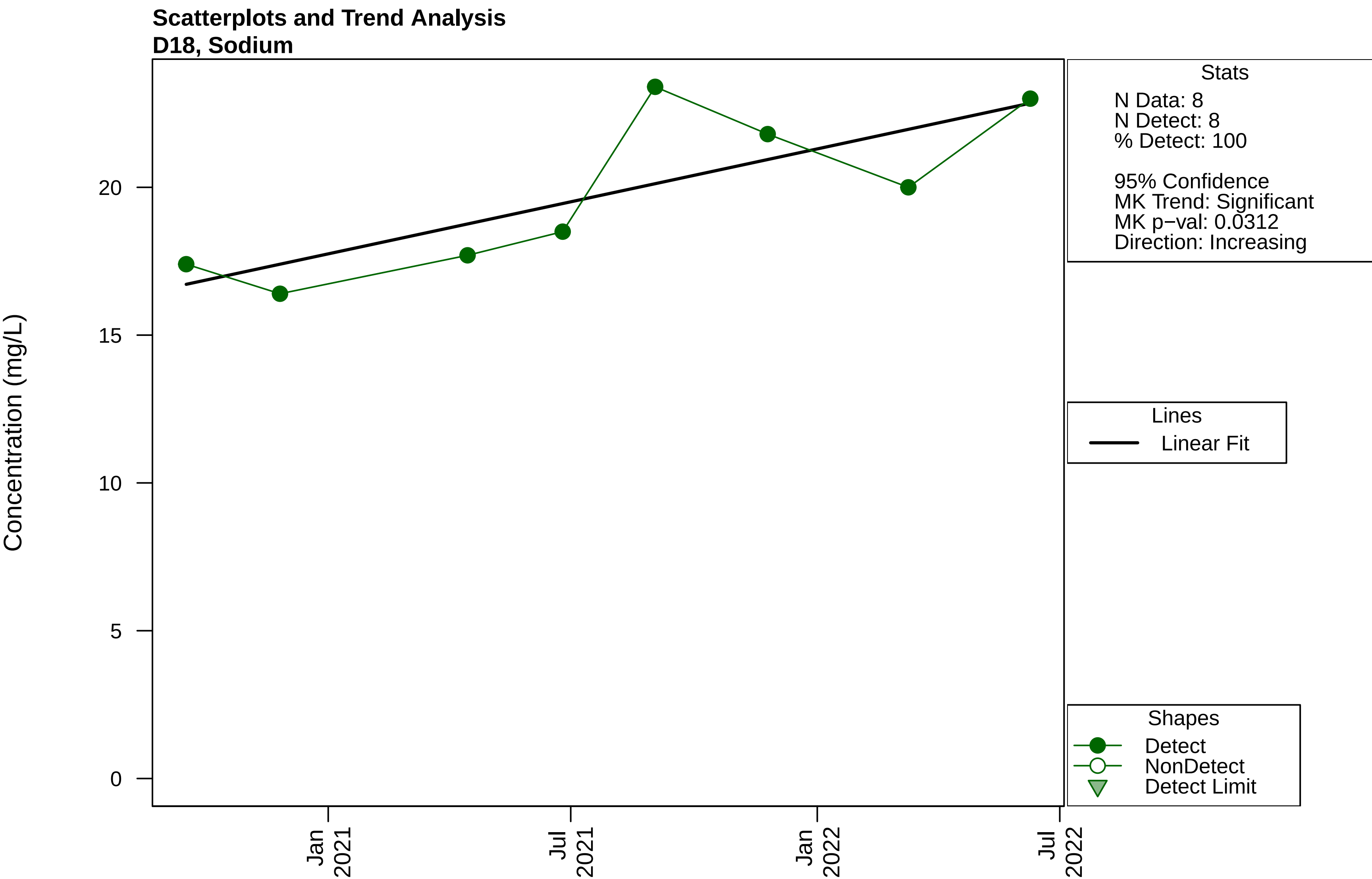


Scatterplots and Trend Analysis
D18, Redox (Field)

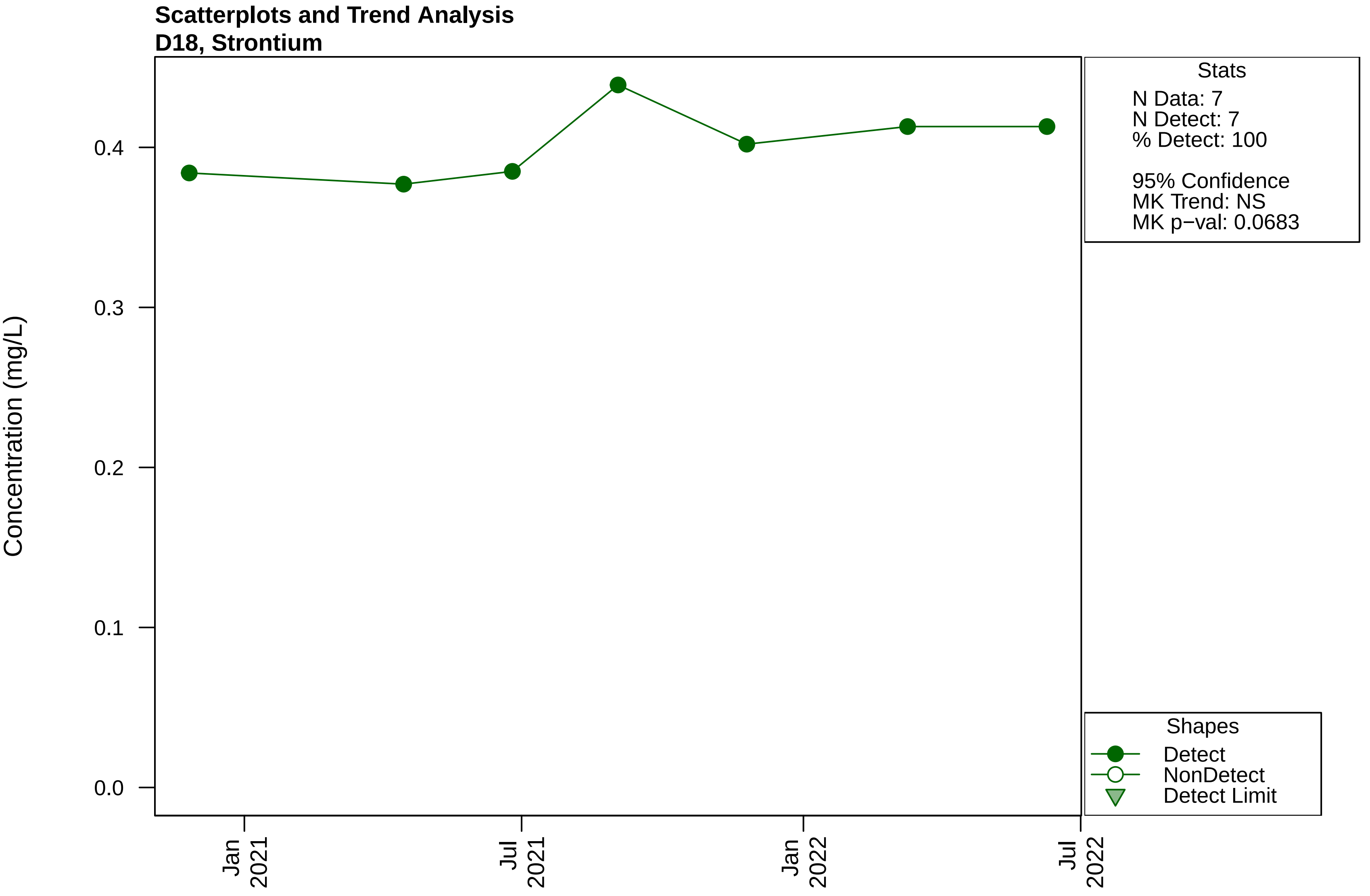


Scatterplots and Trend Analysis
D18, Selenium



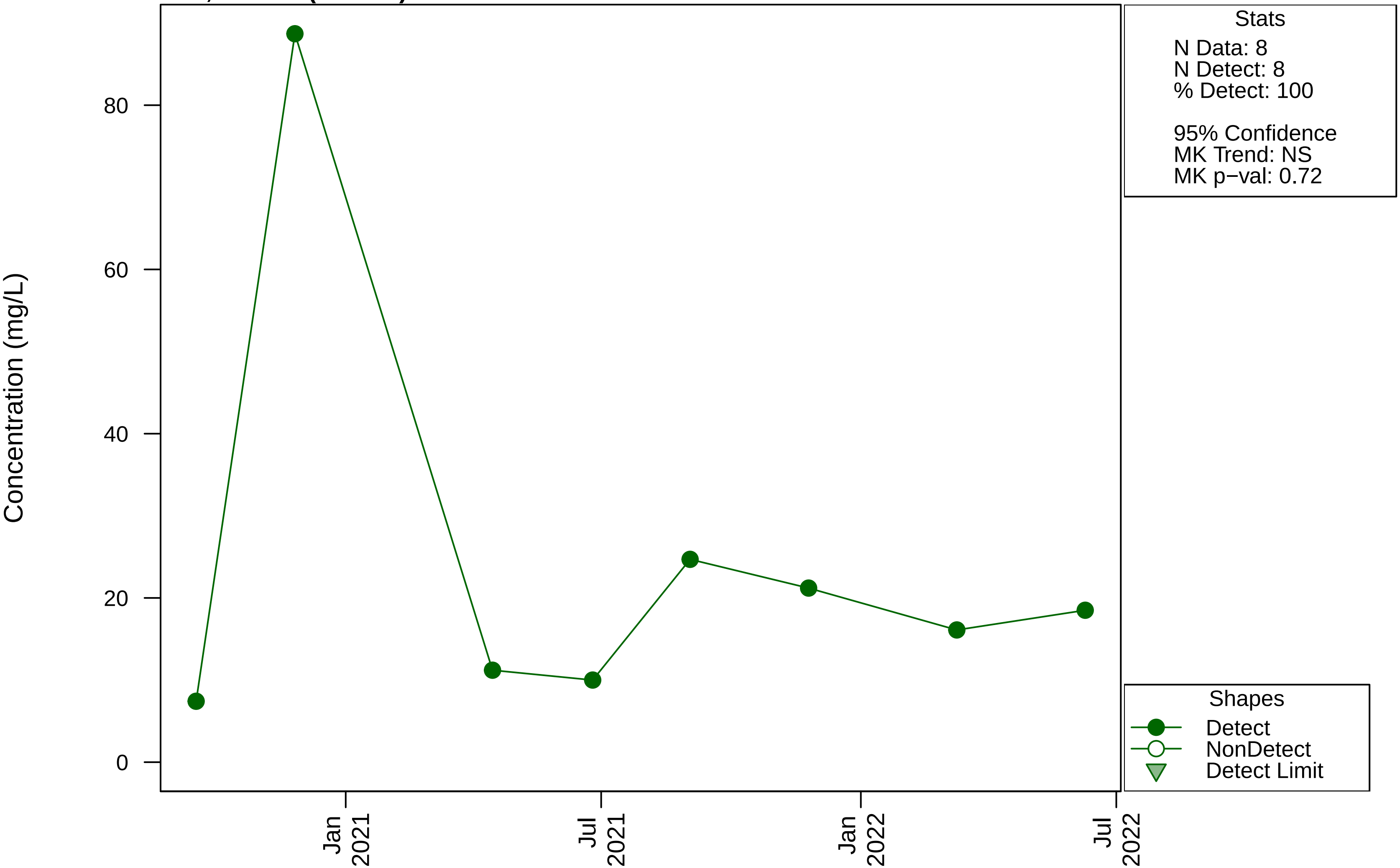


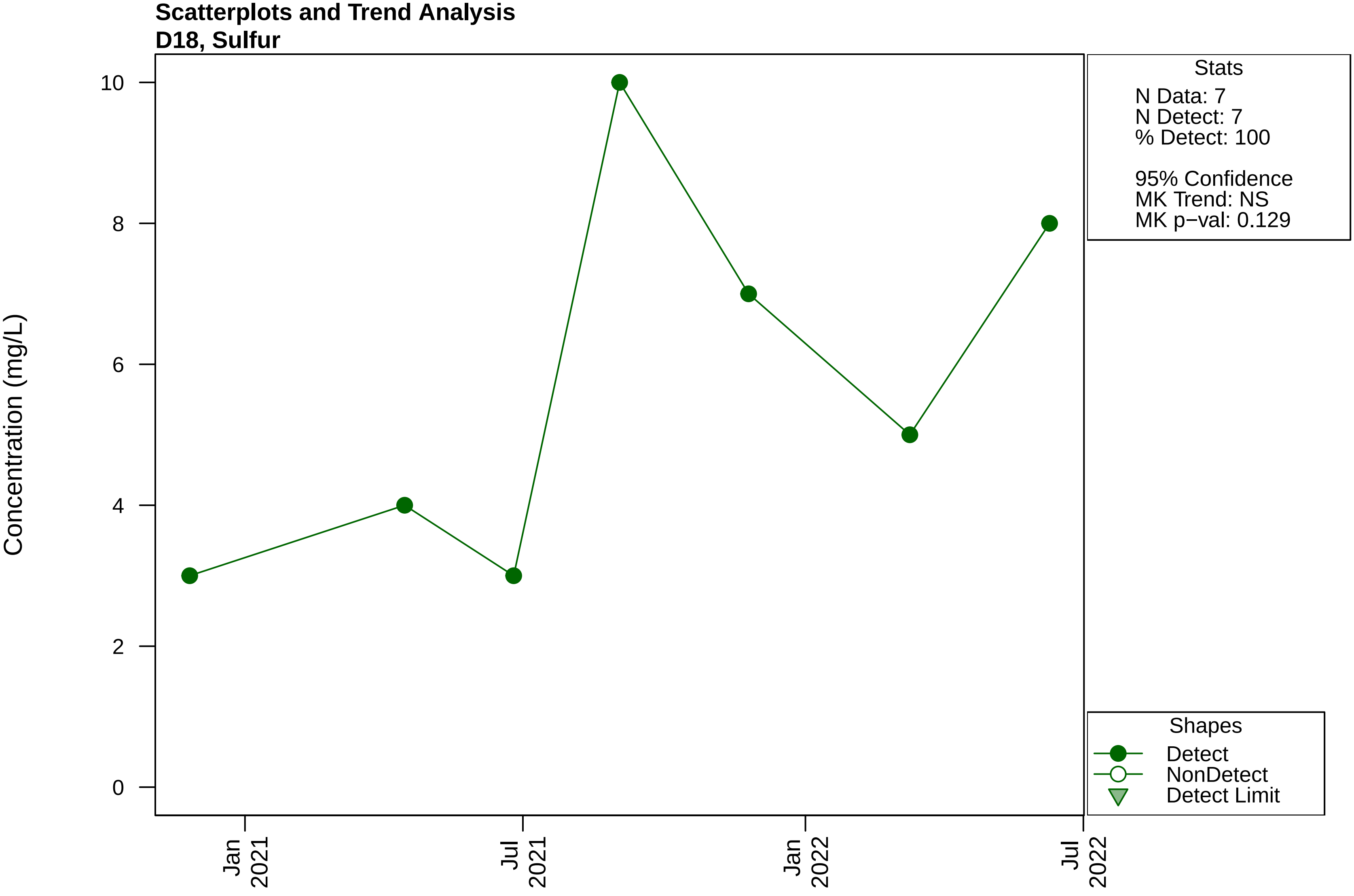
Scatterplots and Trend Analysis
D18, Sodium
Concentration (mg/L)
0
5
10
15
20
Jan 2021
Jul 2021
Jan 2022
Jul 2022
Stats
N Data: 8
N Detect: 8
% Detect: 100
95% Confidence
MK Trend: Significant
MK p−val: 0.0312
Direction: Increasing
Lines
Linear Fit
Shapes
Detect
NonDetect
Detect Limit



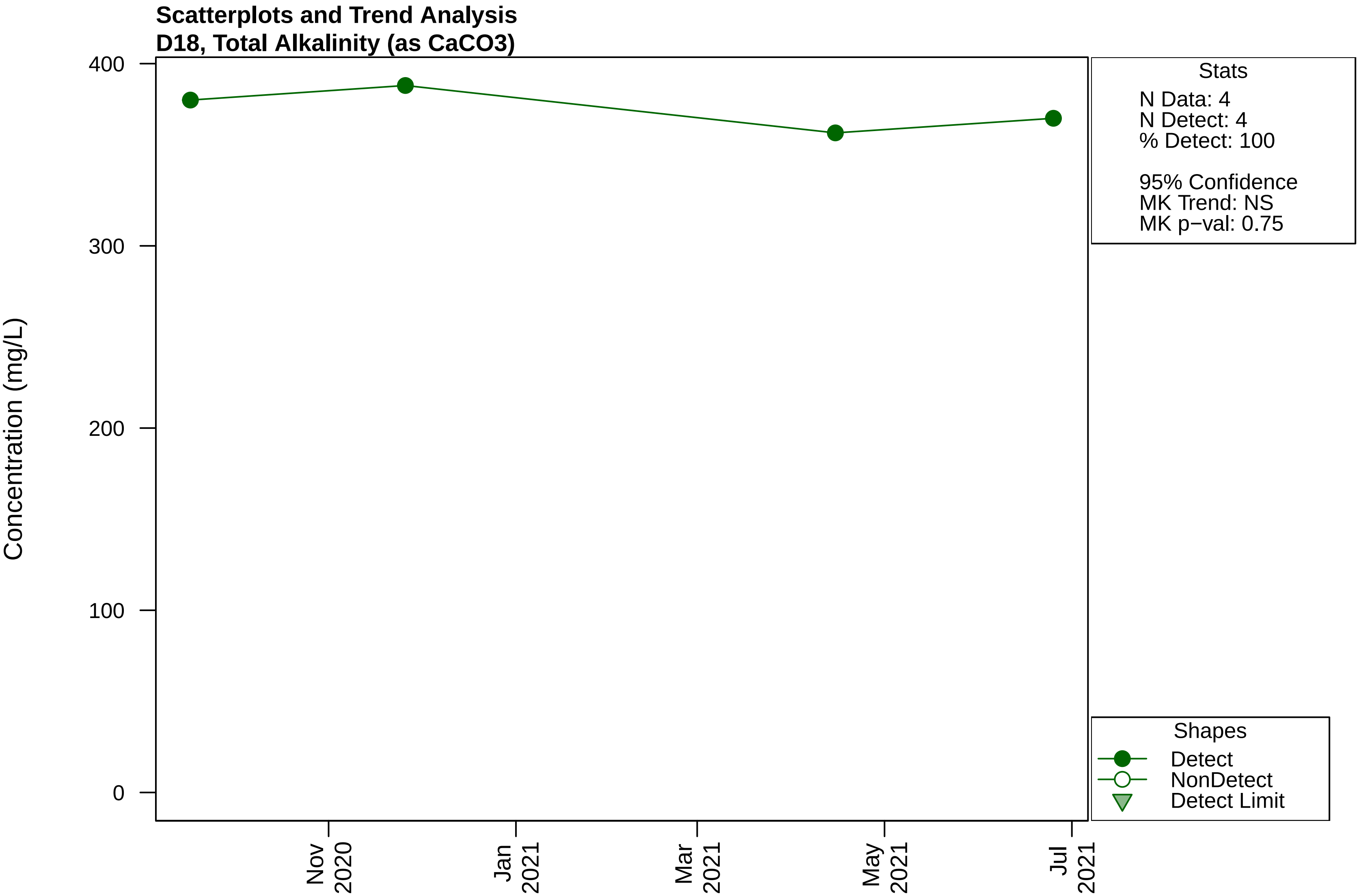
Scatterplots and Trend Analysis
D18, Strontium
Concentration (mg/L)
0.0
0.1
0.2
0.3
0.4
Jan 2021
Jul 2021
Jan 2022
Jul 2022
Stats
N Data: 7
N Detect: 7
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.0683
Shapes
Detect
NonDetect
Detect Limit

Scatterplots and Trend Analysis
D18, Sulfate (as SO4)



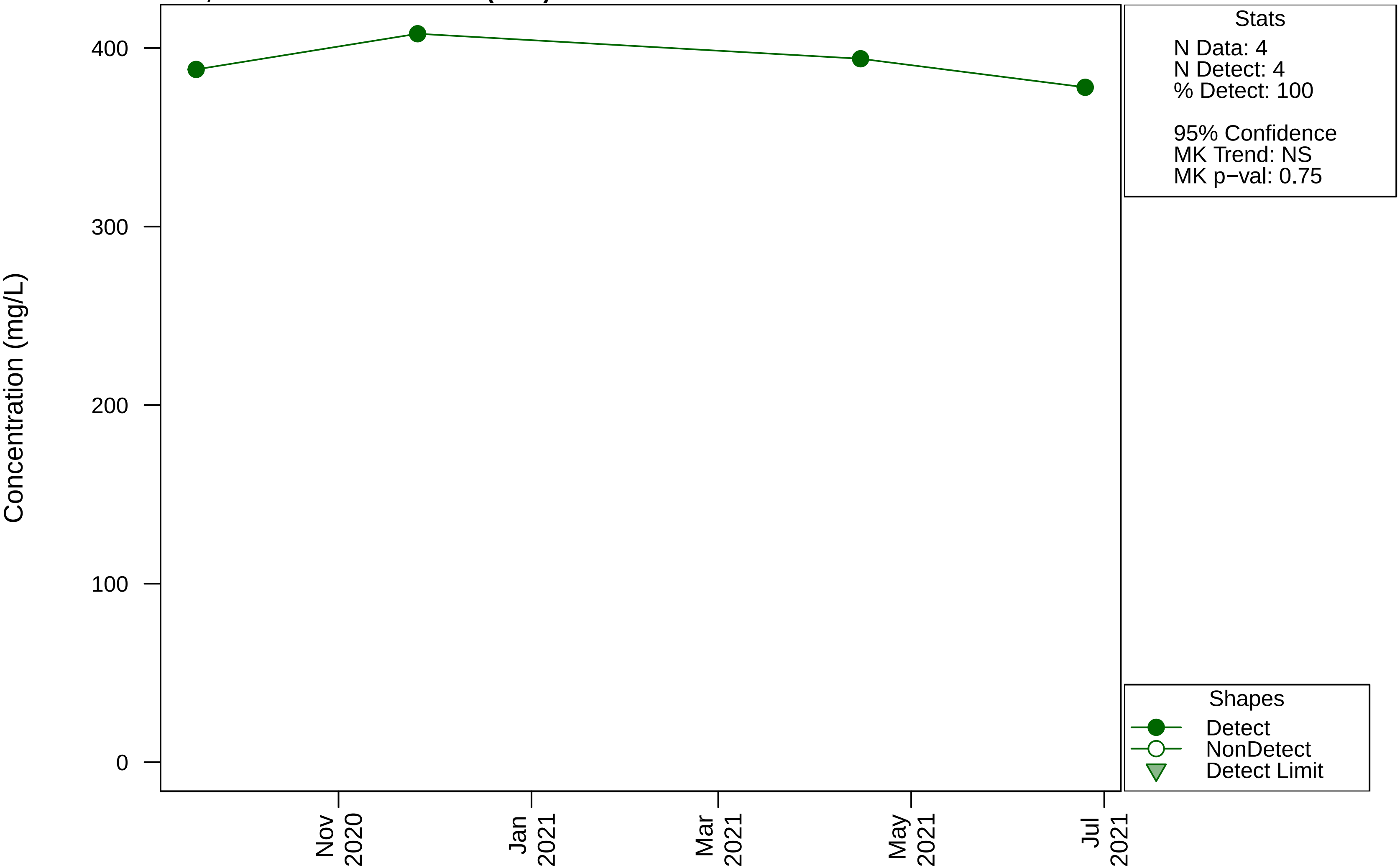


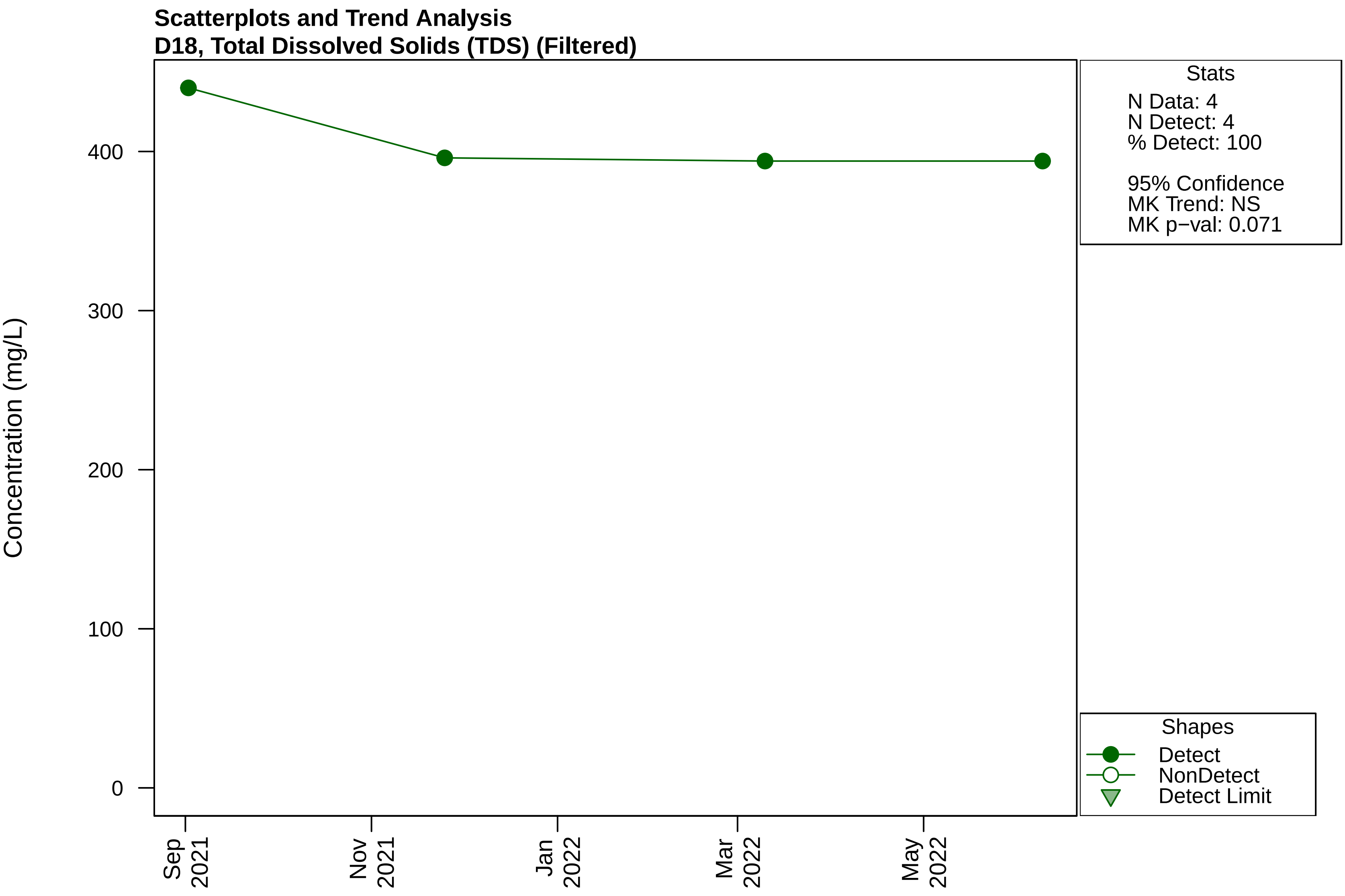
Scatterplots and Trend Analysis
D18, Sulfur
Concentration (mg/L)
0
2
4
6
8
10
Jan 2021
Jul 2021
Jan 2022
Jul 2022
Stats
N Data: 7
N Detect: 7
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.129
Shapes
Detect
NonDetect
Detect Limit



Scatterplots and Trend Analysis
D18, Total Alkalinity (as CaCO3)
Concentration (mg/L)
0
100
200
300
400
Nov 2020
Jan 2021
Mar 2021
May 2021
Jul 2021
Stats
N Data: 4
N Detect: 4
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.75
Shapes
Detect
NonDetect
Detect Limit

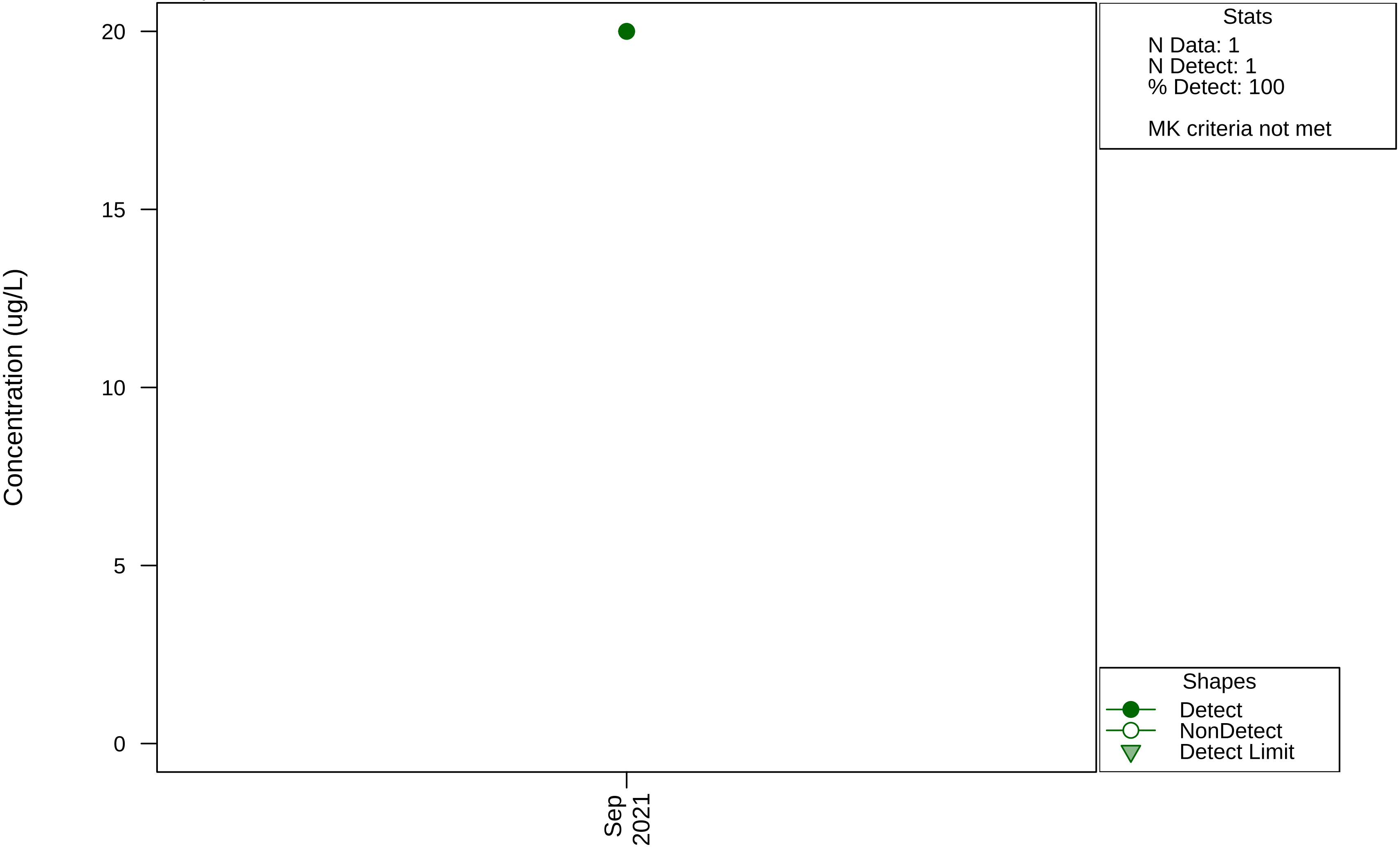
Scatterplots and Trend Analysis
D18, Total Dissolved Solids (TDS)



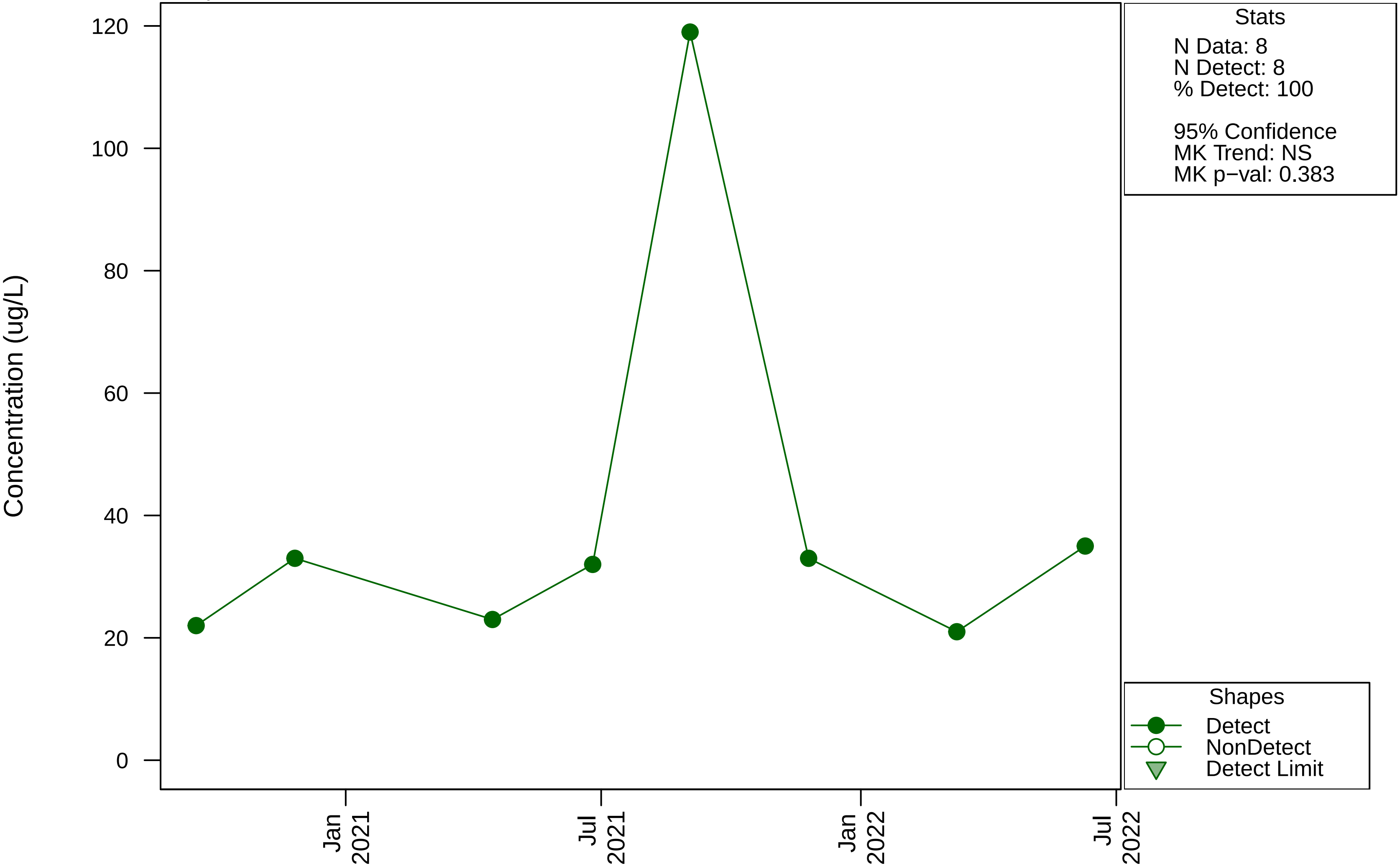


Scatterplots and Trend Analysis
D18, Total Dissolved Solids (TDS) (Filtered)
Concentration (mg/L)
0
100
200
300
400
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 4
N Detect: 4
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.071
Shapes
Detect
NonDetect
Detect Limit

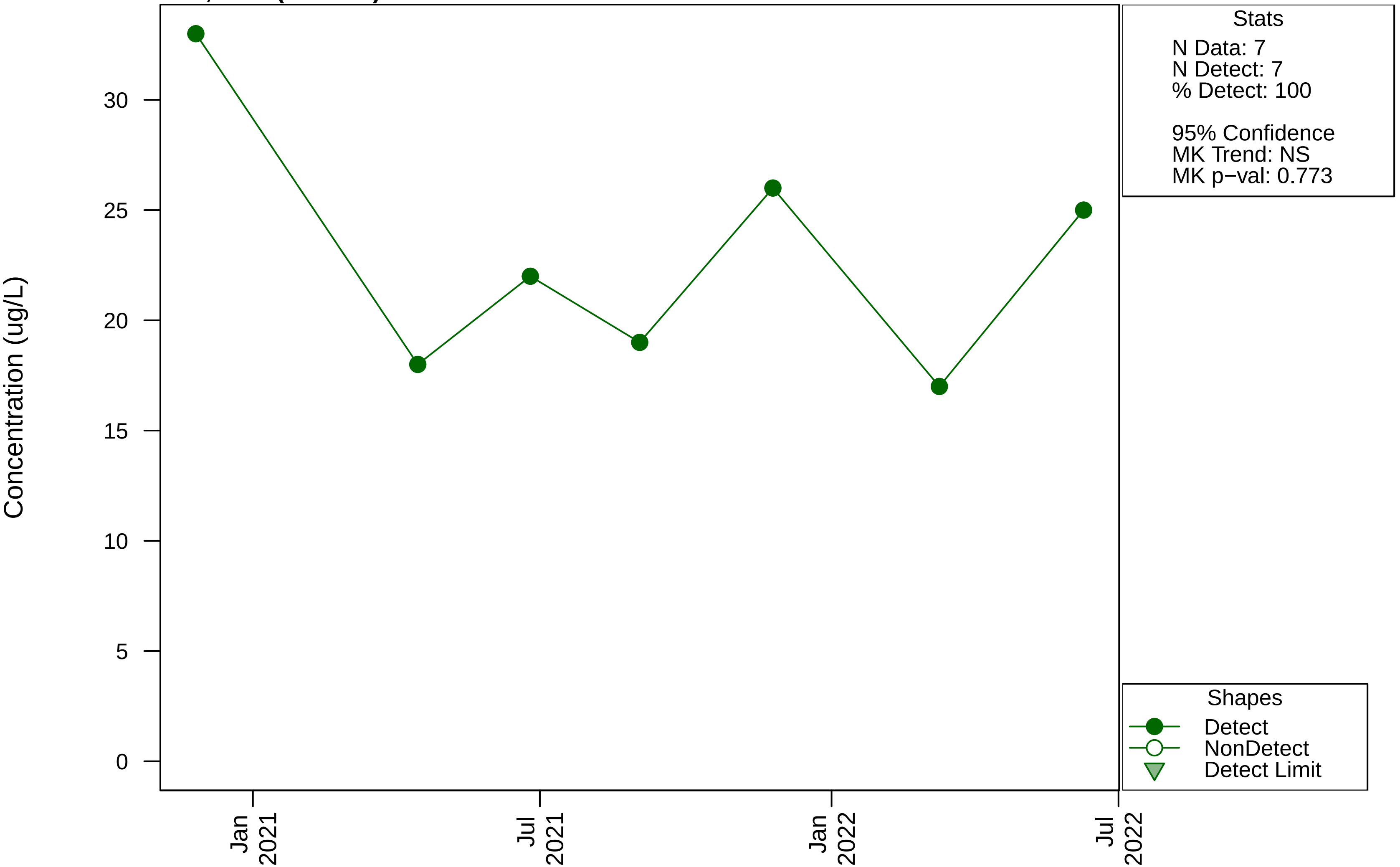
Scatterplots and Trend Analysis
D18, Vanadium

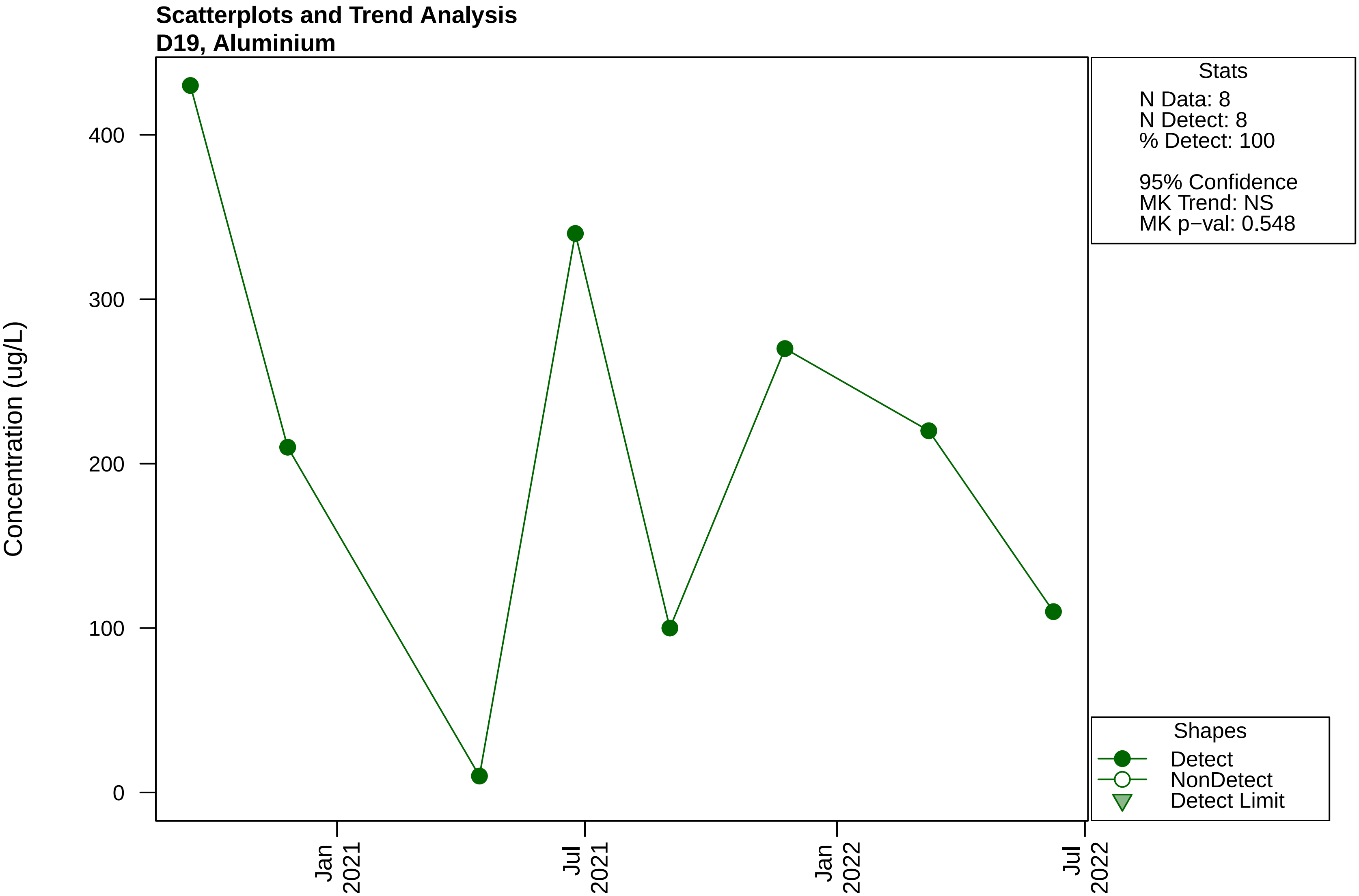


Scatterplots and Trend Analysis
D18, Zinc



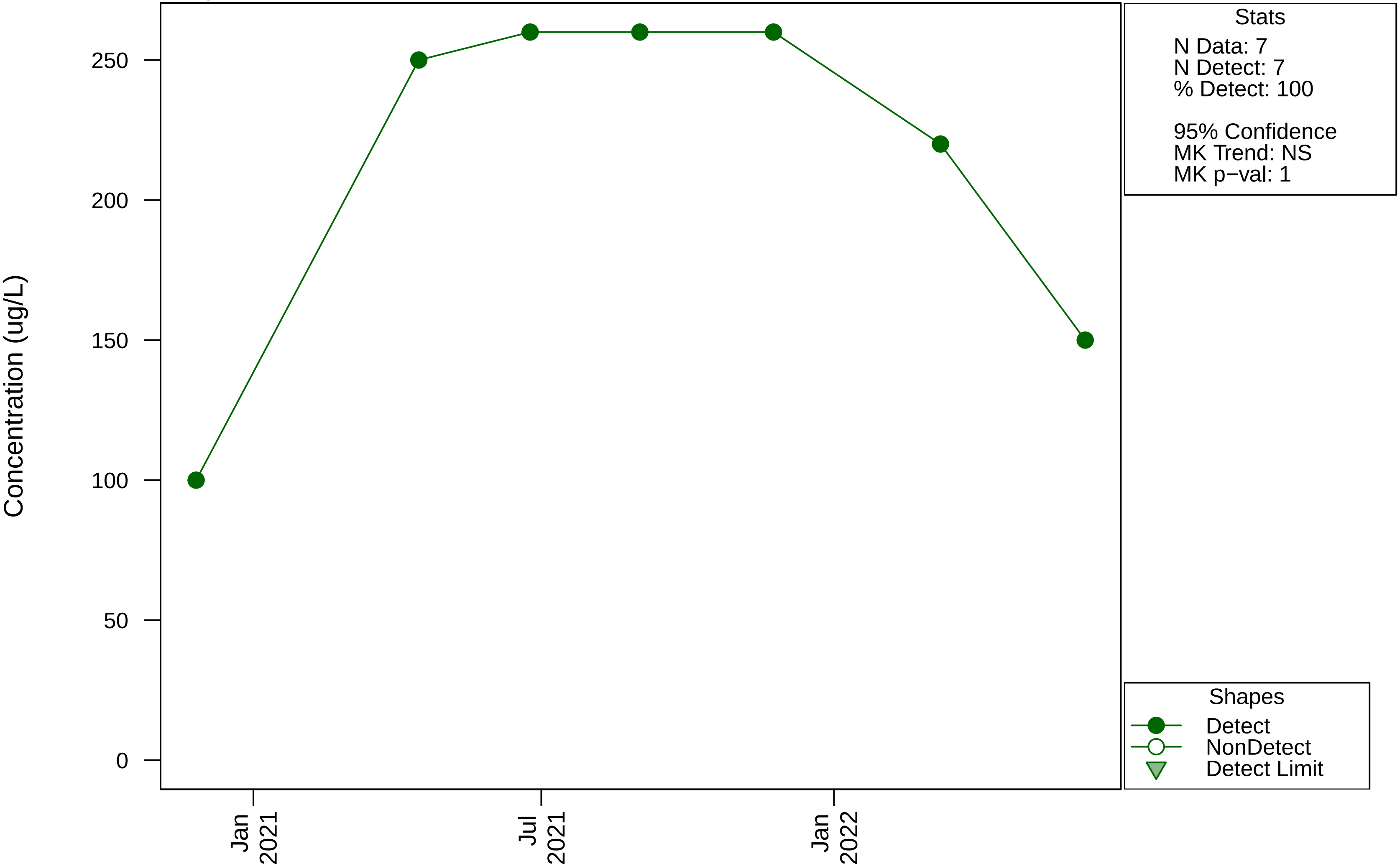
Scatterplots and Trend Analysis
D18, Zinc (Filtered)



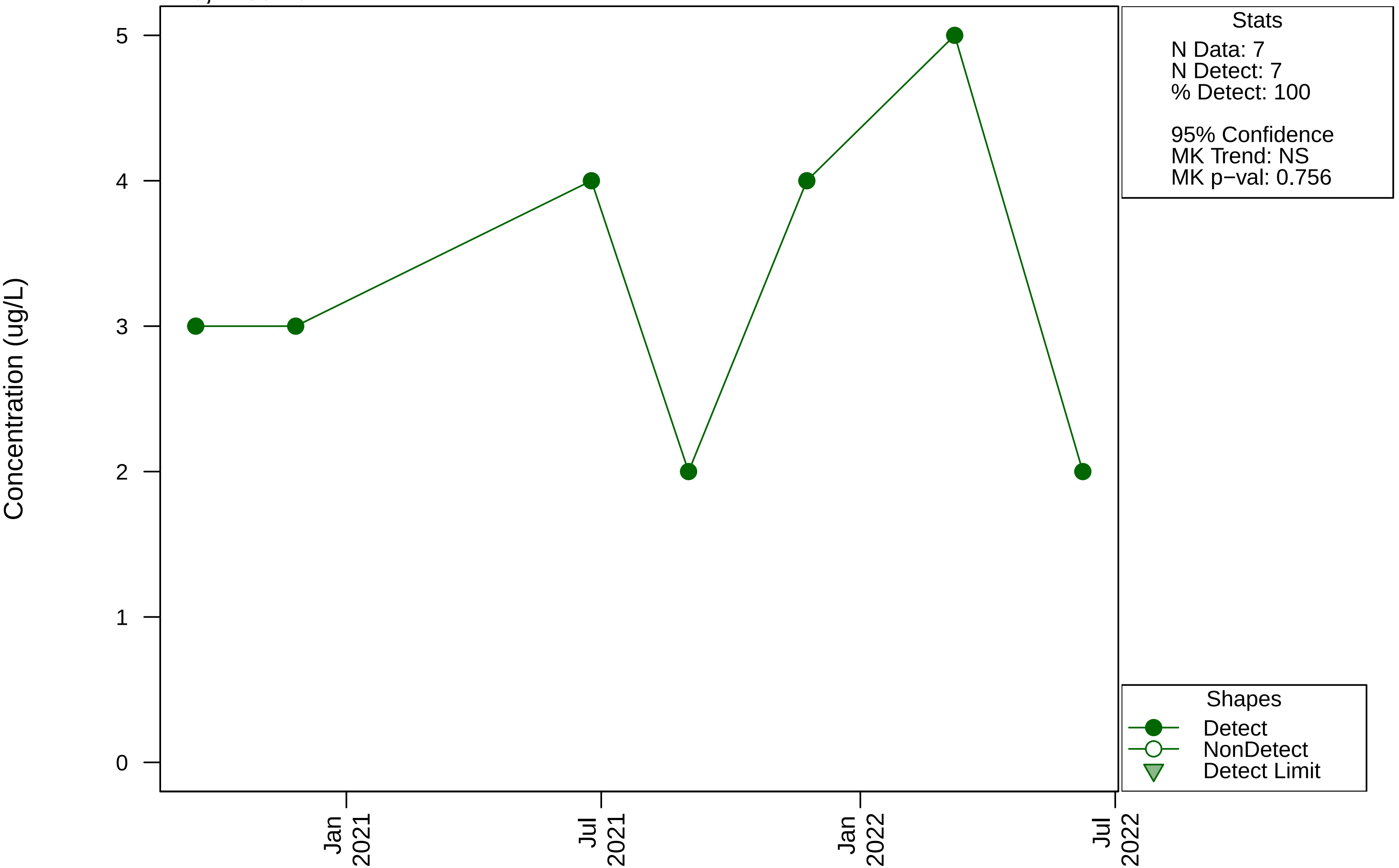


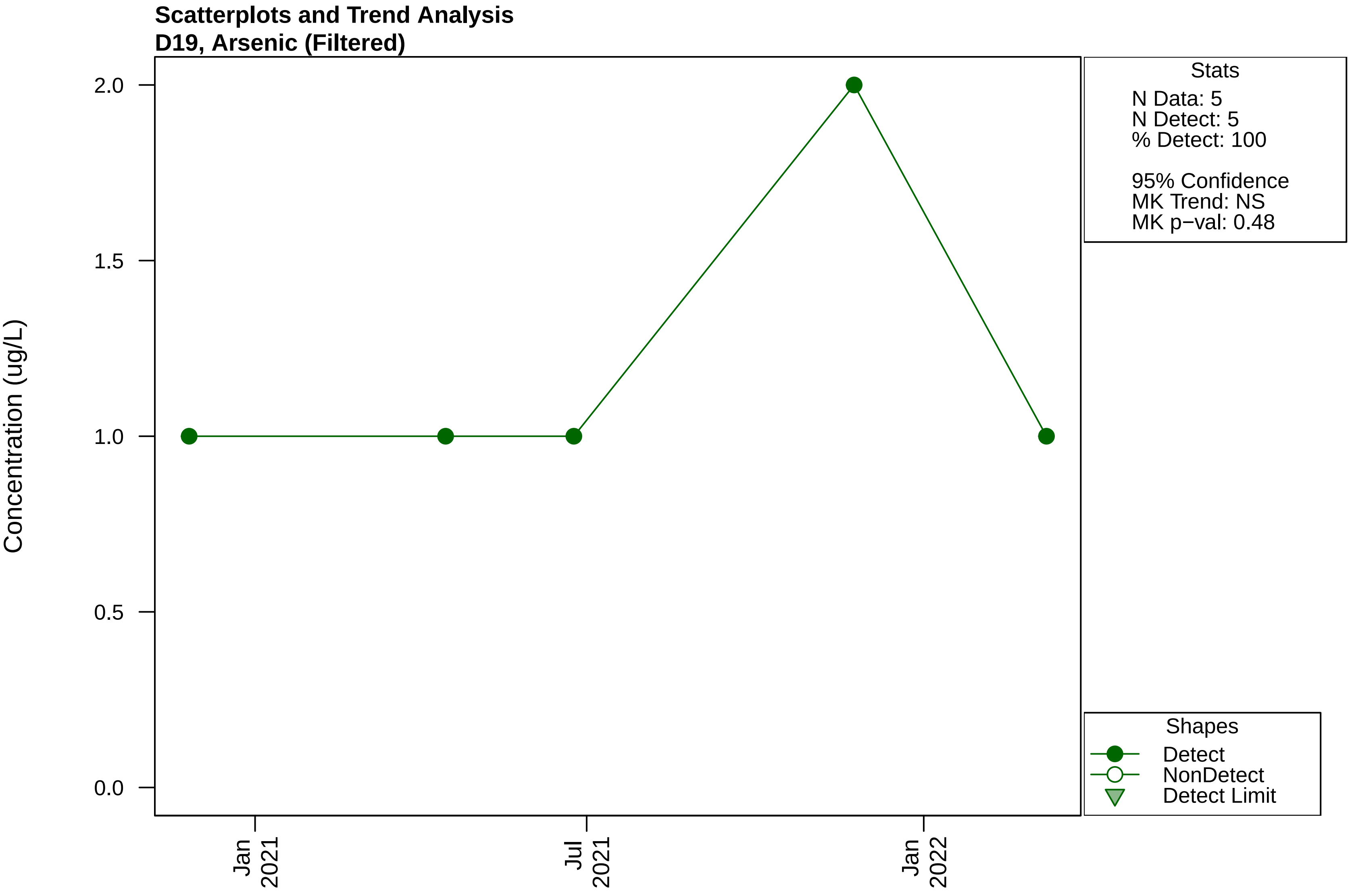
Scatterplots and Trend Analysis
D19, Aluminium
Concentration (ug/L)
0
100
200
300
400
Jan 2021
Jul 2021
Jan 2022
Jul 2022
Stats
N Data: 8
N Detect: 8
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.548
Shapes
Detect
NonDetect
Detect Limit

Scatterplots and Trend Analysis
D19, Ammonia

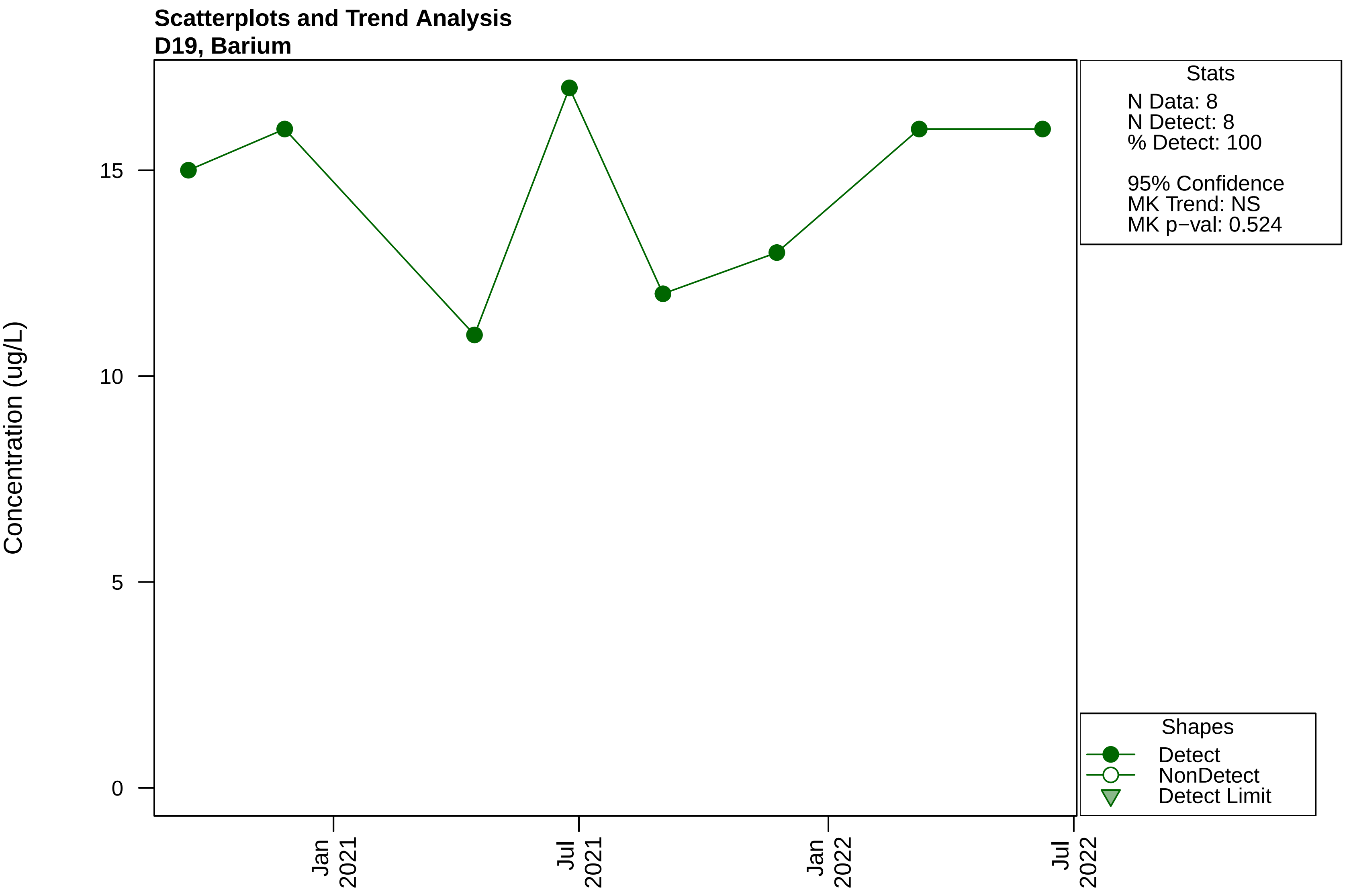


Scatterplots and Trend Analysis
D19, Arsenic



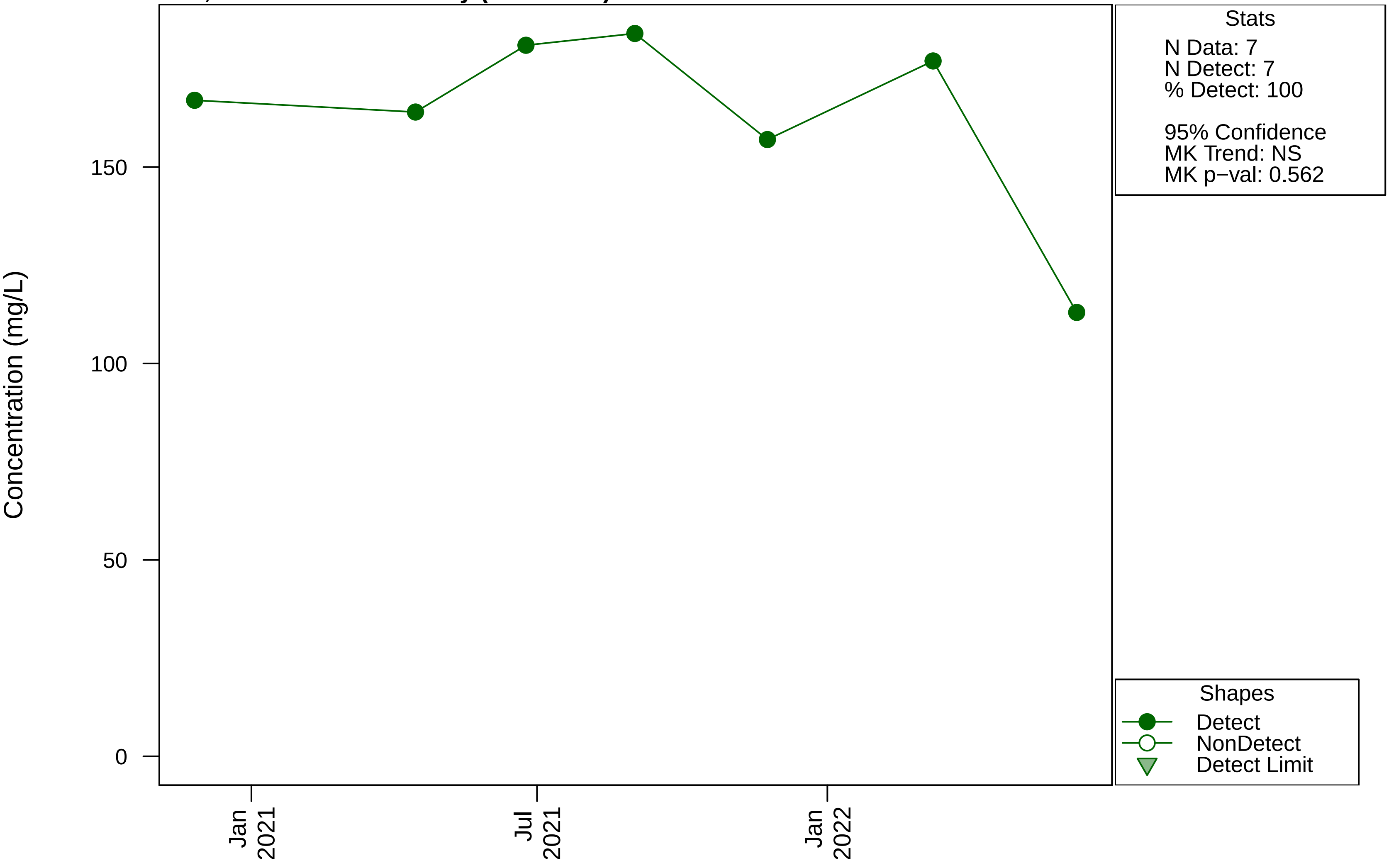


Scatterplots and Trend Analysis
D19, Arsenic (Filtered)
Concentration (ug/L)
2.0
1.5
1.0
0.5
0.0
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 5
N Detect: 5
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.48
Shapes
Detect
NonDetect
Detect Limit

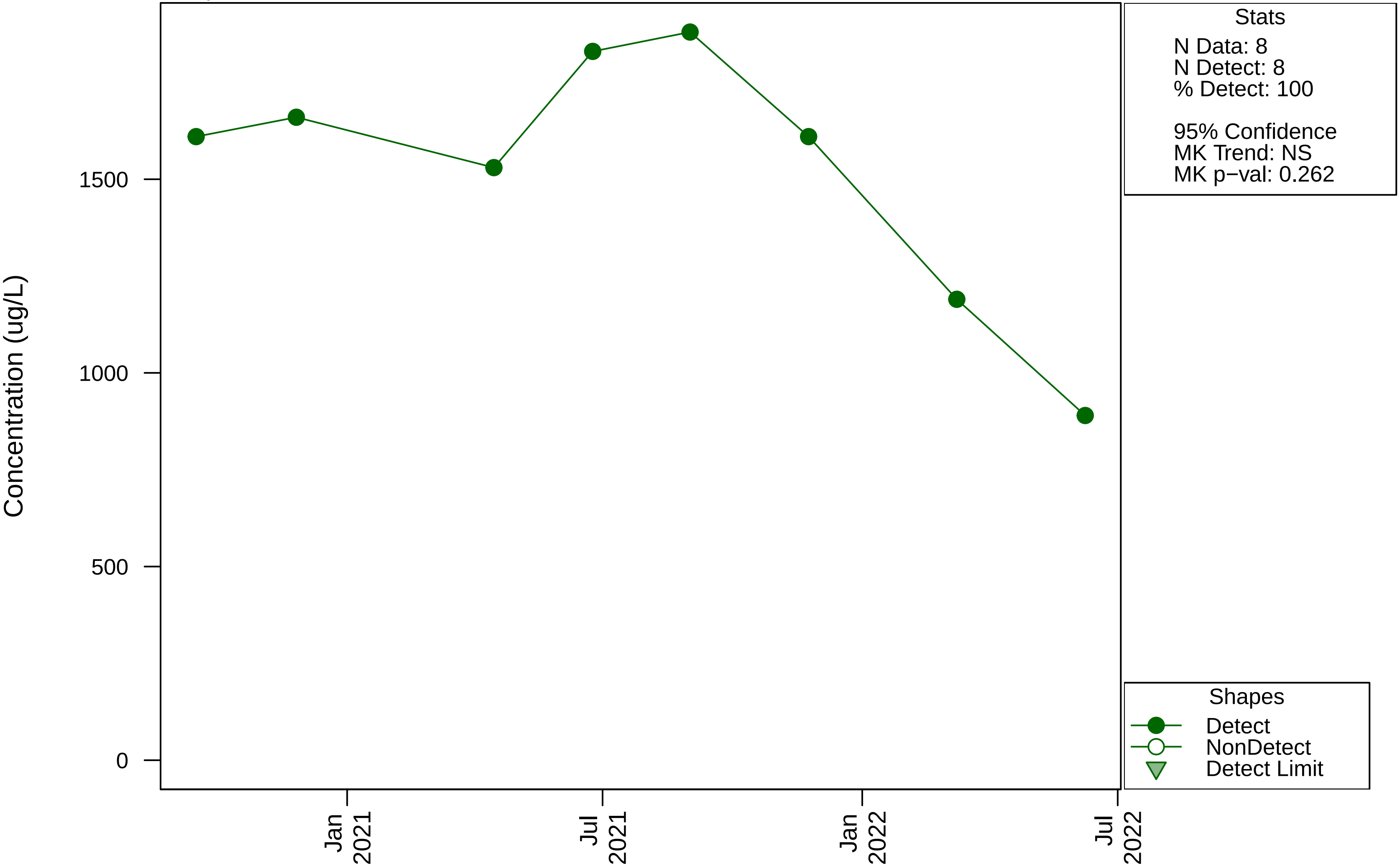


Scatterplots and Trend Analysis
D19, Barium
Concentration (ug/L)
0
5
10
15
Jan 2021
Jul 2021
Jan 2022
Jul 2022
Stats
N Data: 8
N Detect: 8
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.524
Shapes
Detect
NonDetect
Detect Limit

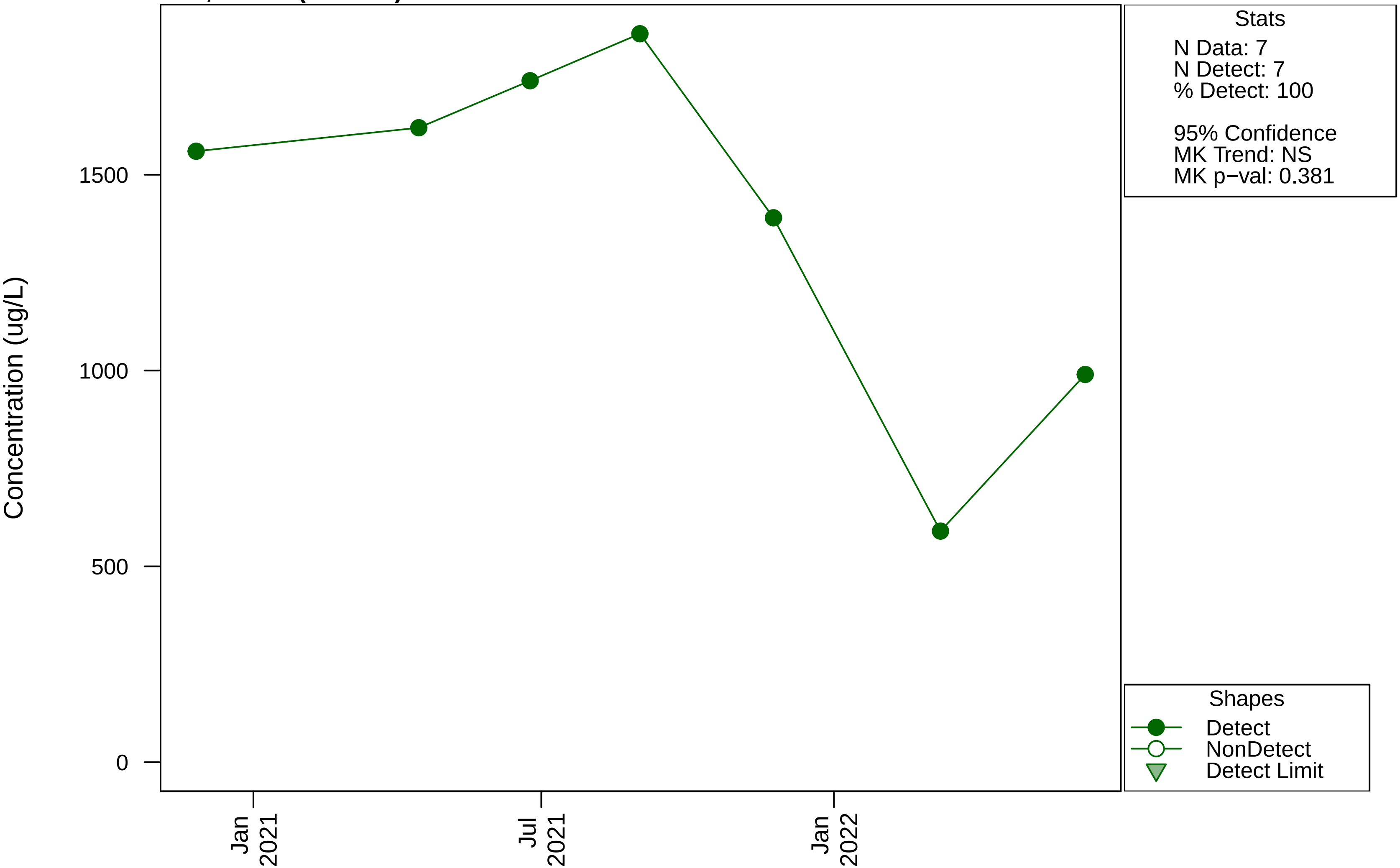
Scatterplots and Trend Analysis
D19, Bicarbonate Alkalinity (as CaCO3)

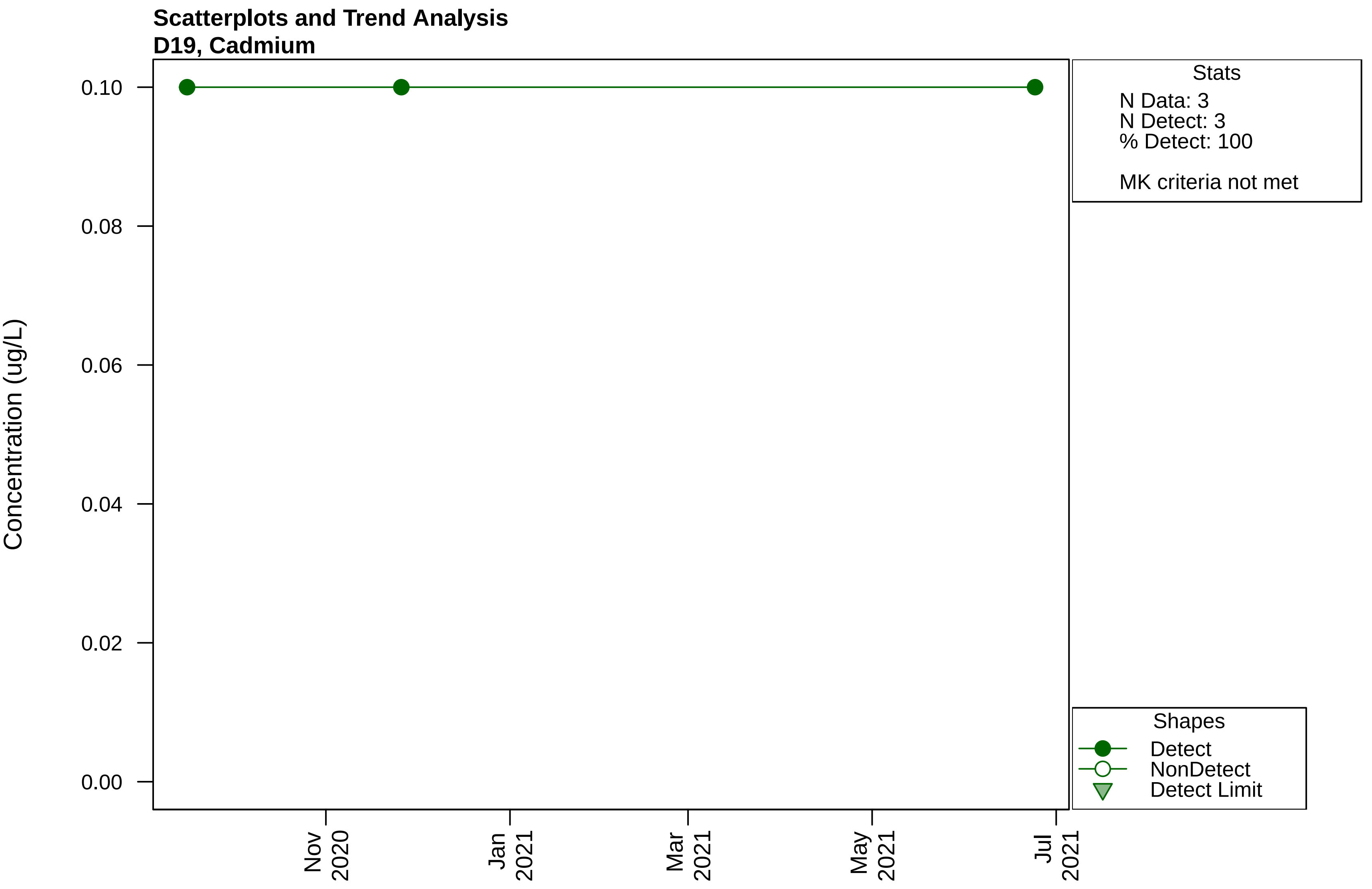


Scatterplots and Trend Analysis
D19, Boron

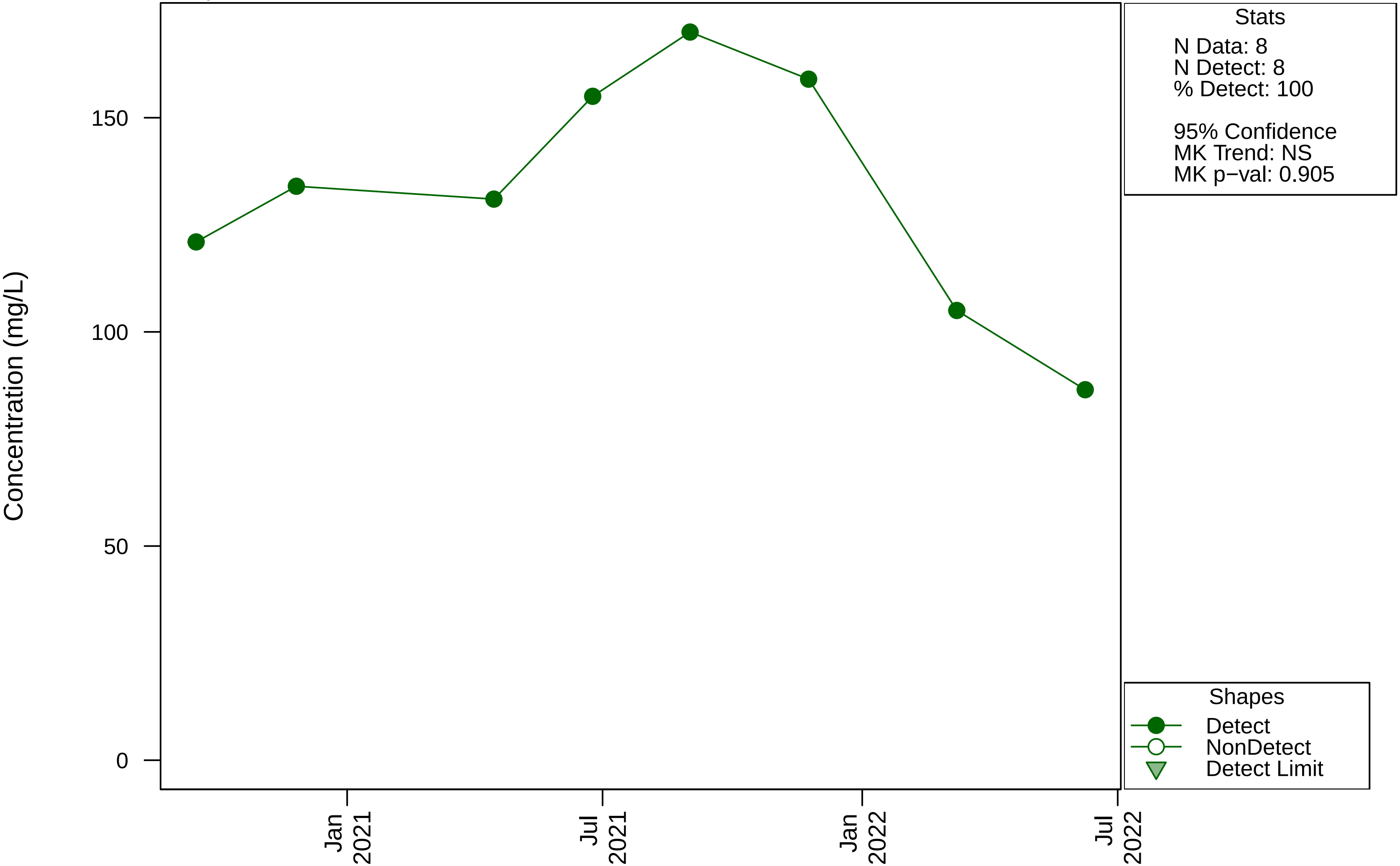


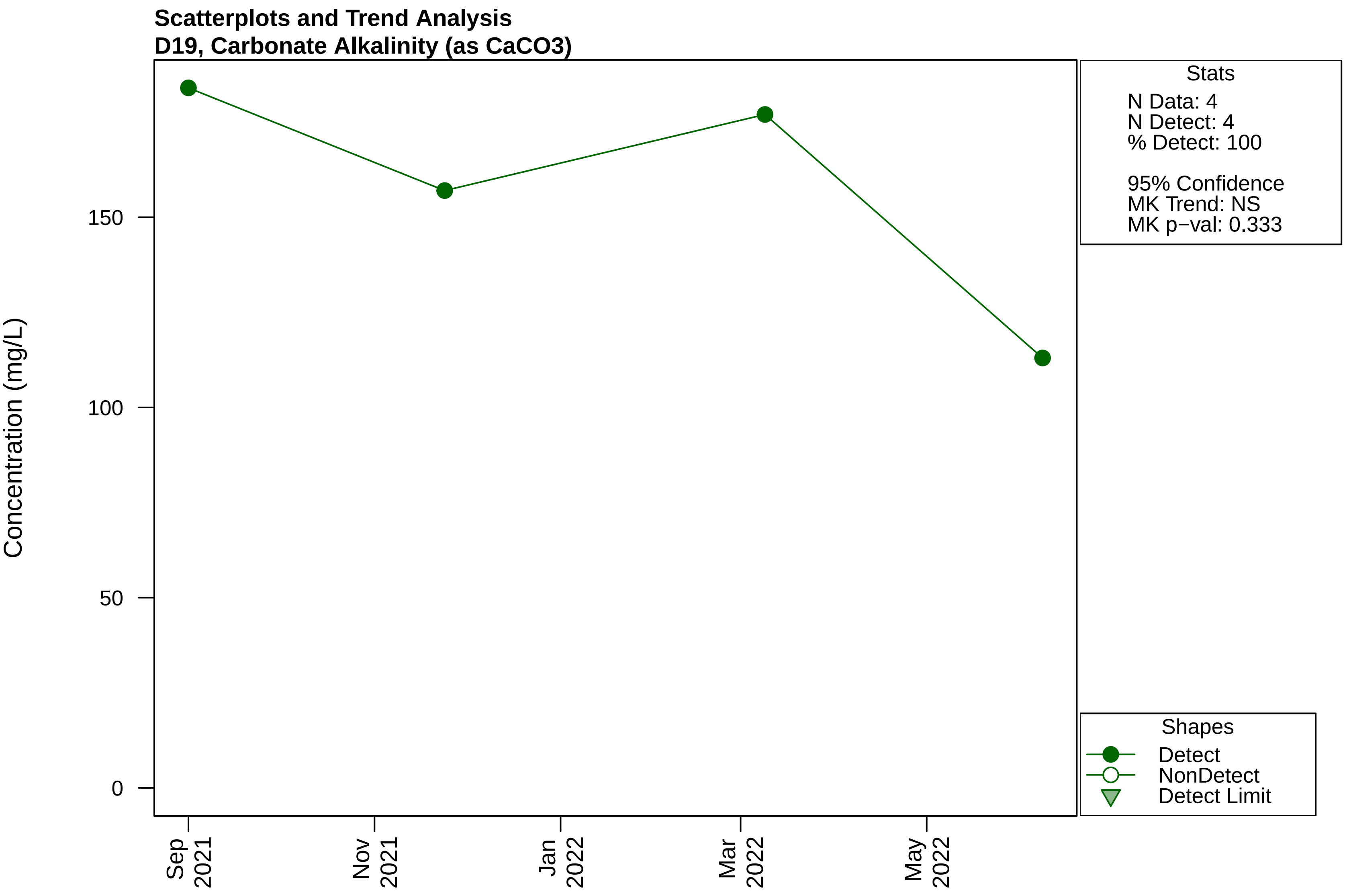
Scatterplots and Trend Analysis
D19, Boron (Filtered)

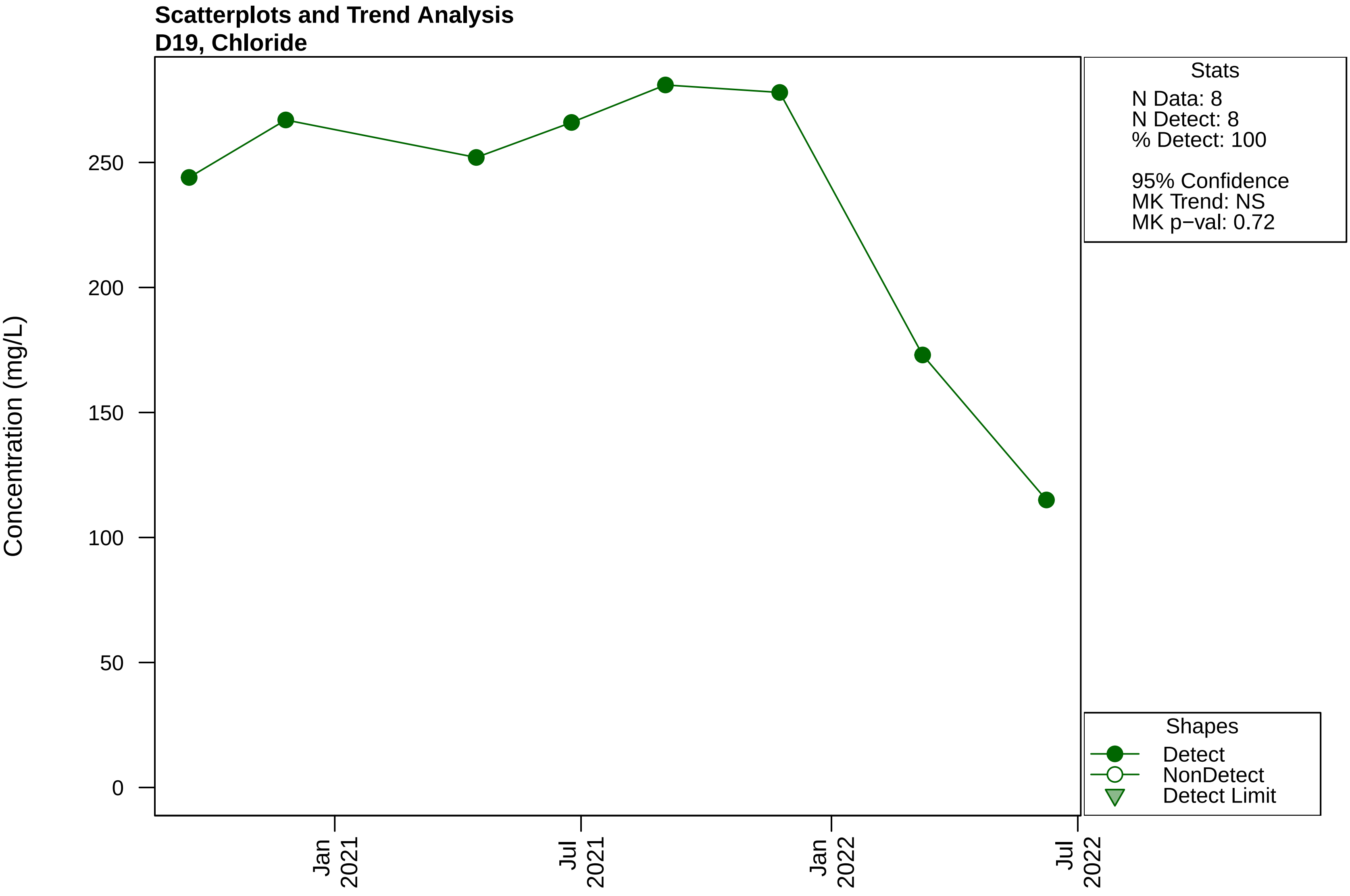


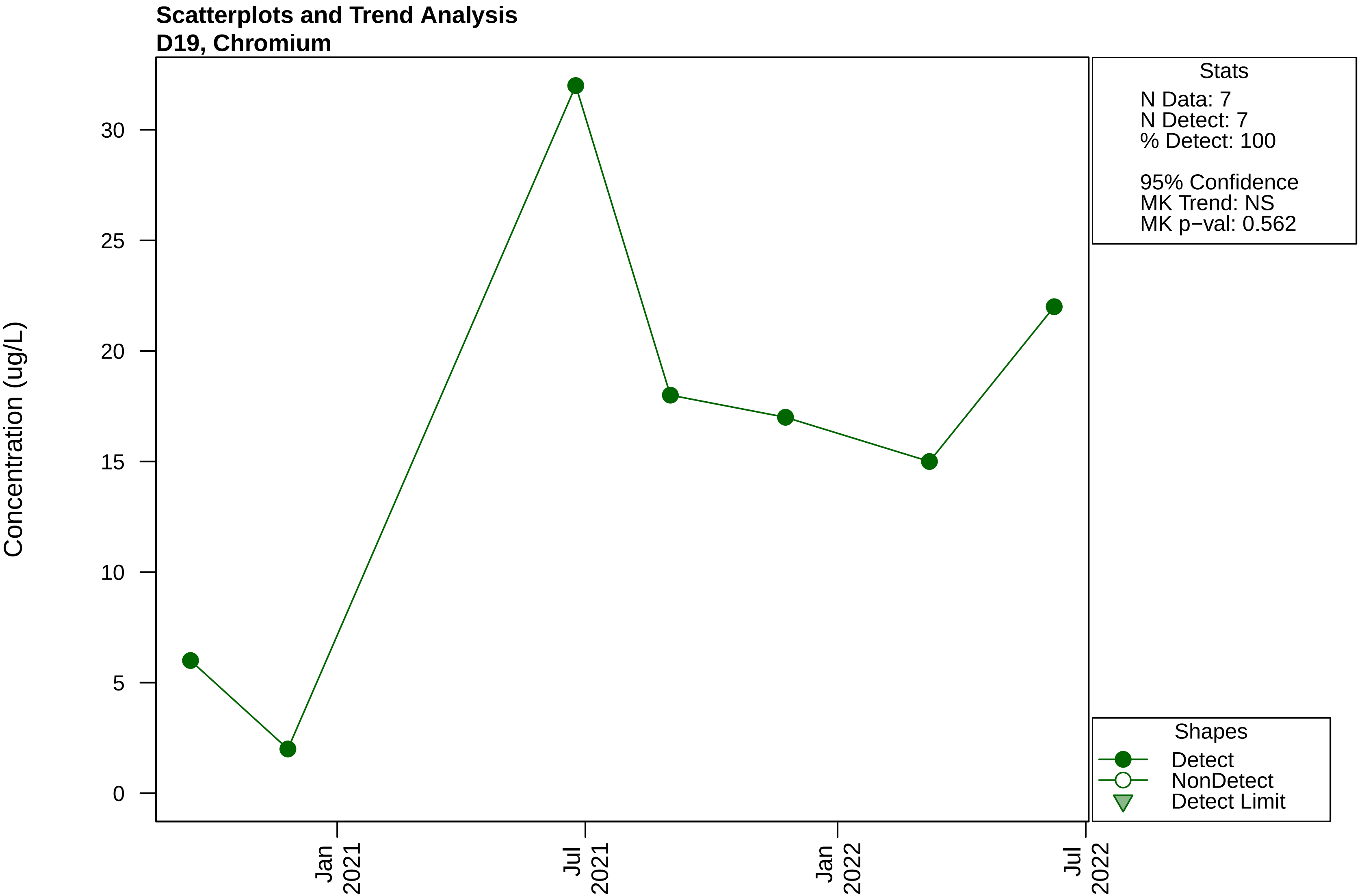

Scatterplots and Trend Analysis
D19, Cadmium
Concentration (ug/L)
0.10
0.08
0.06
0.04
0.02
0.00
Nov 2020
Jan 2021
Mar 2021
May 2021
Jul 2021
Stats
N Data: 3
N Detect: 3
% Detect: 100
MK criteria not met
Shapes
Detect
NonDetect
Detect Limit

Scatterplots and Trend Analysis
D19, Calcium

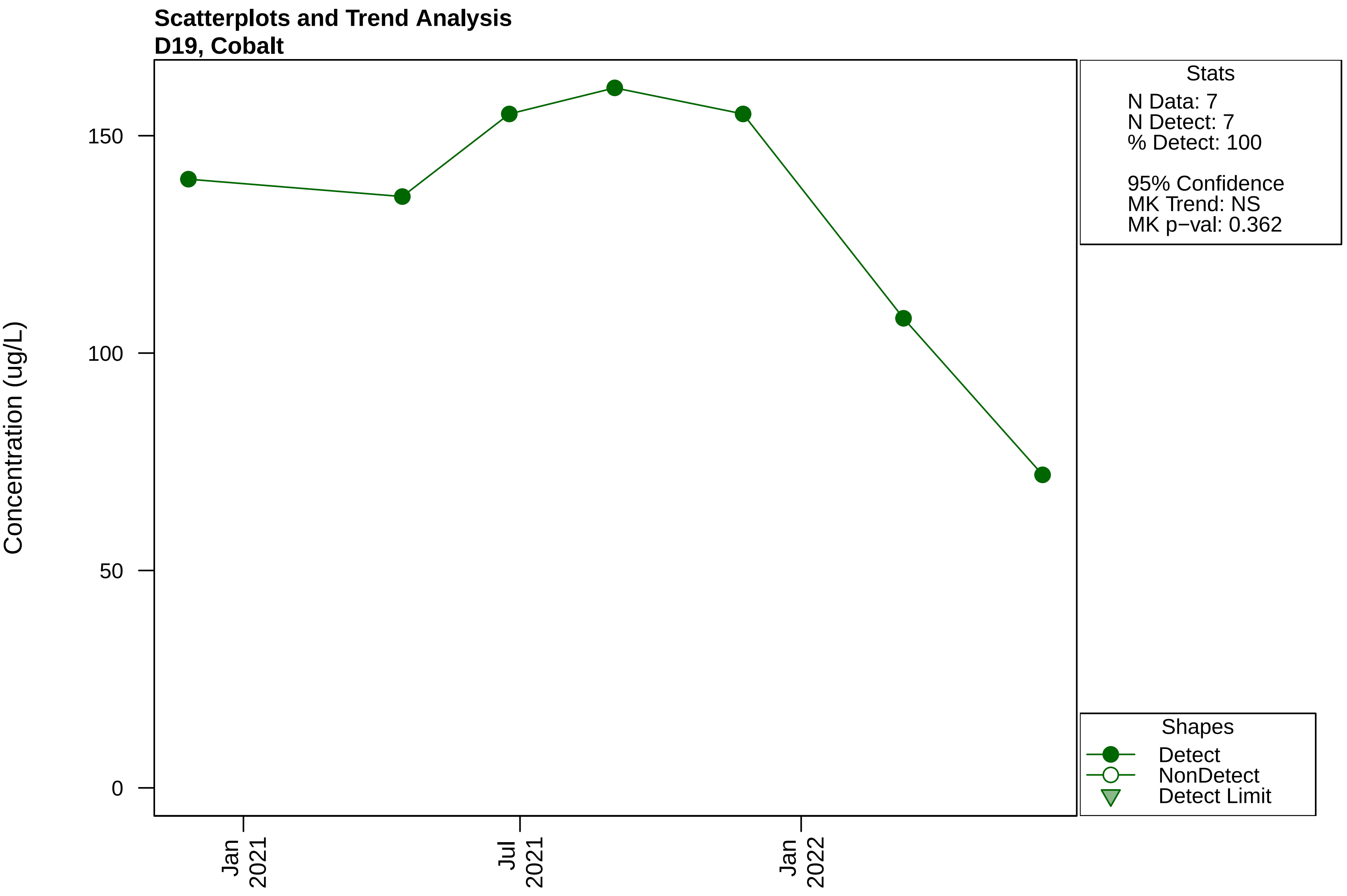



Scatterplots and Trend Analysis
D19, Carbonate Alkalinity (as CaCO3)
Concentration (mg/L)
0
50
100
150
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 4
N Detect: 4
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.333
Shapes
Detect
NonDetect
Detect Limit

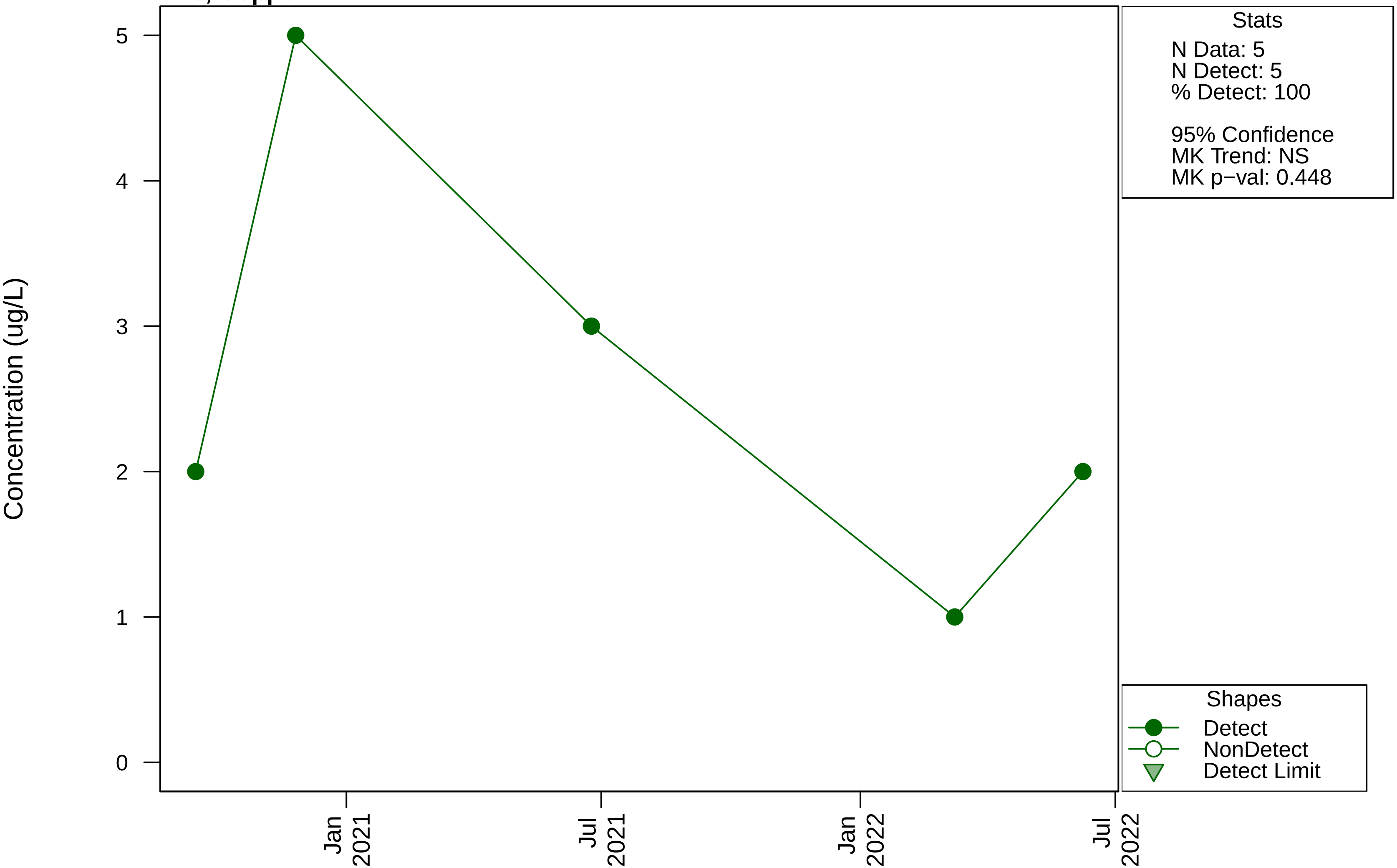

Scatterplots and Trend Analysis
D19, Chloride
Concentration (mg/L)
0
50
100
150
200
250
Jan 2021
Jul 2021
Jan 2022
Jul 2022
Stats
N Data: 8
N Detect: 8
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.72
Shapes
Detect
NonDetect
Detect Limit



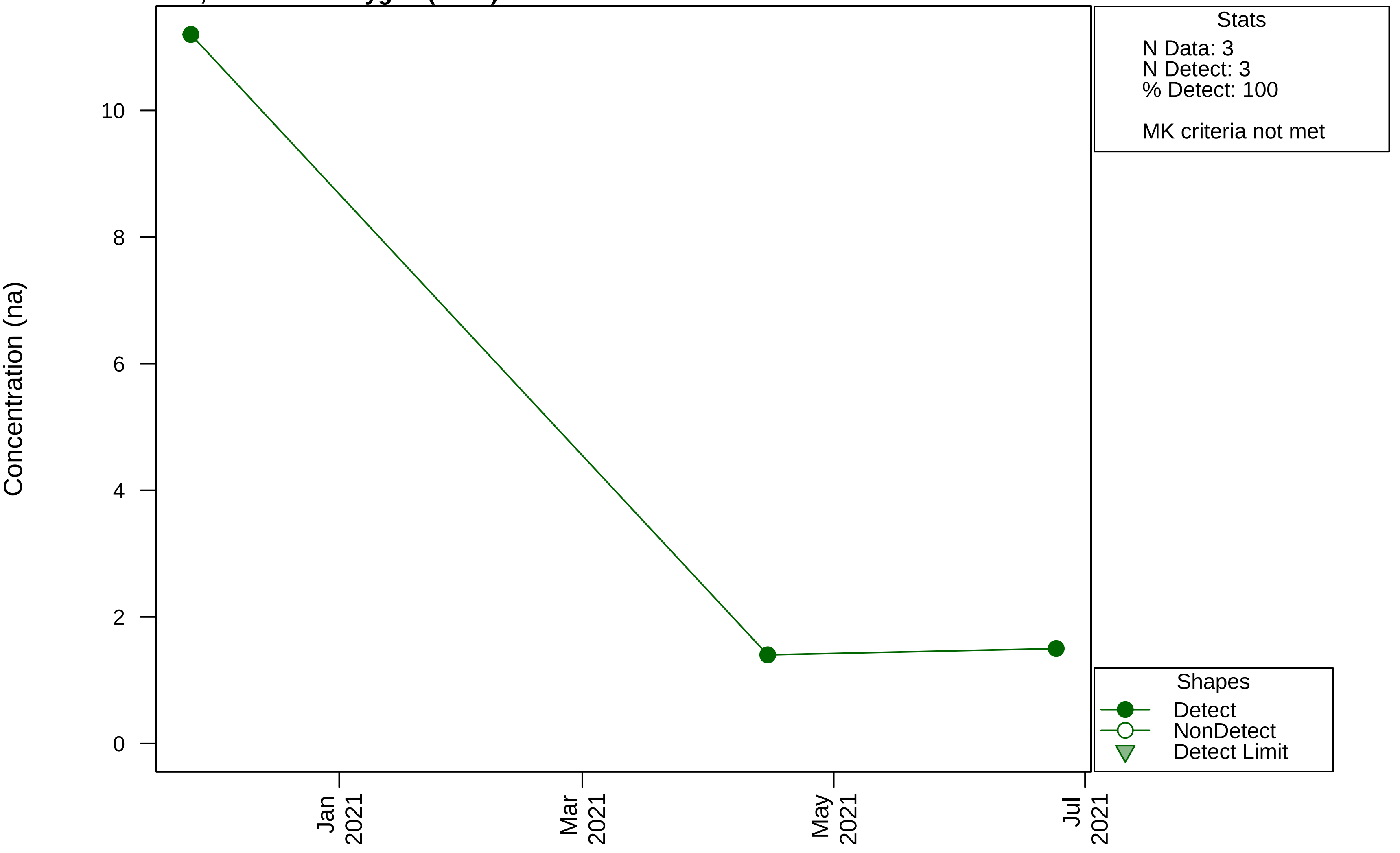
Scatterplots and Trend Analysis
D19, Chromium
Concentration (ug/L)
0
5
10
15
20
25
30
Jan 2021
Jul 2021
Jan 2022
Jul 2022
Stats
N Data: 7
N Detect: 7
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.562
Shapes
Detect
NonDetect
Detect Limit

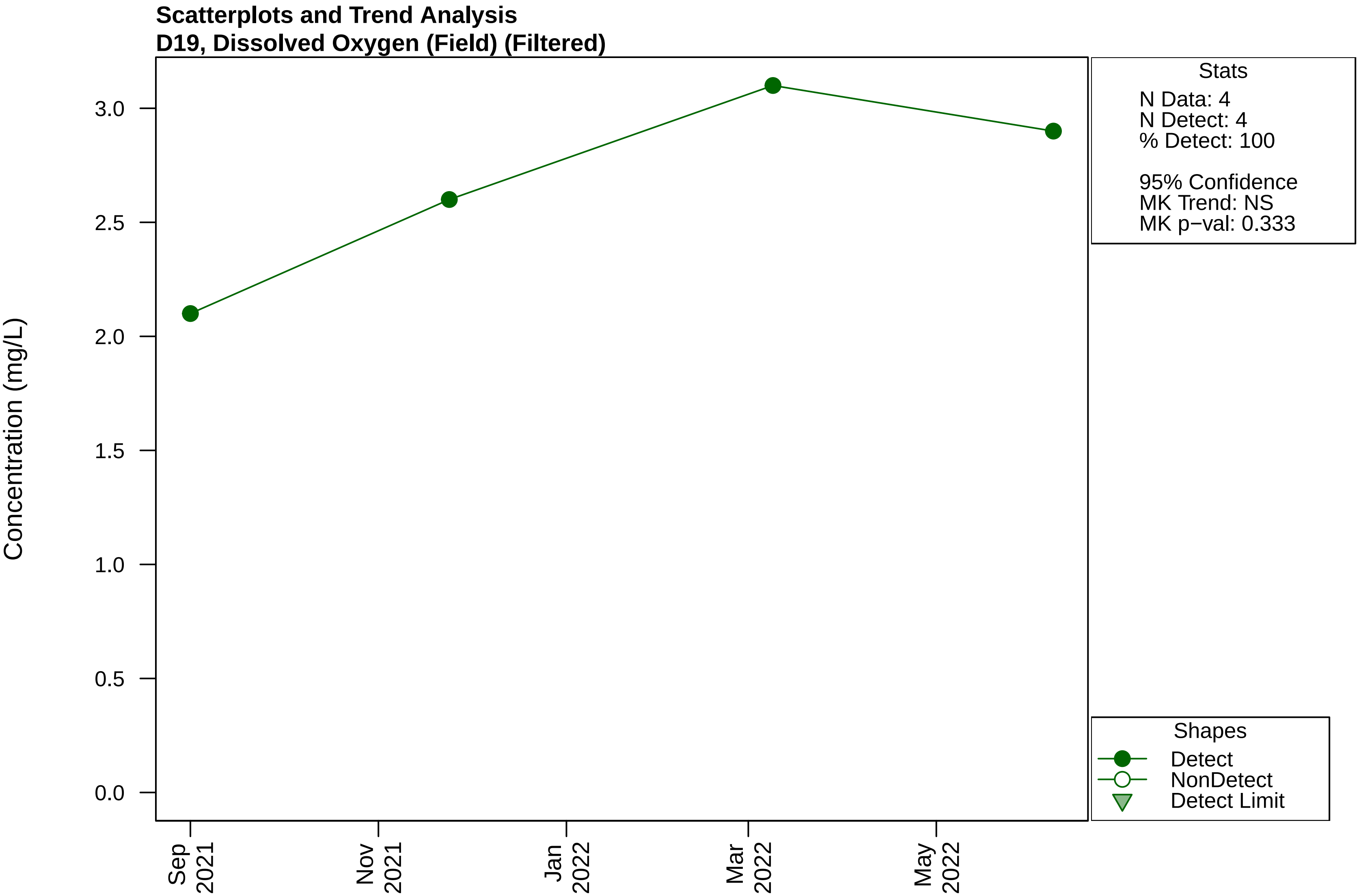

Scatterplots and Trend Analysis
D19, Cobalt
Concentration (ug/L)
0
50
100
150
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 7
N Detect: 7
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.362
Shapes
Detect
NonDetect
Detect Limit

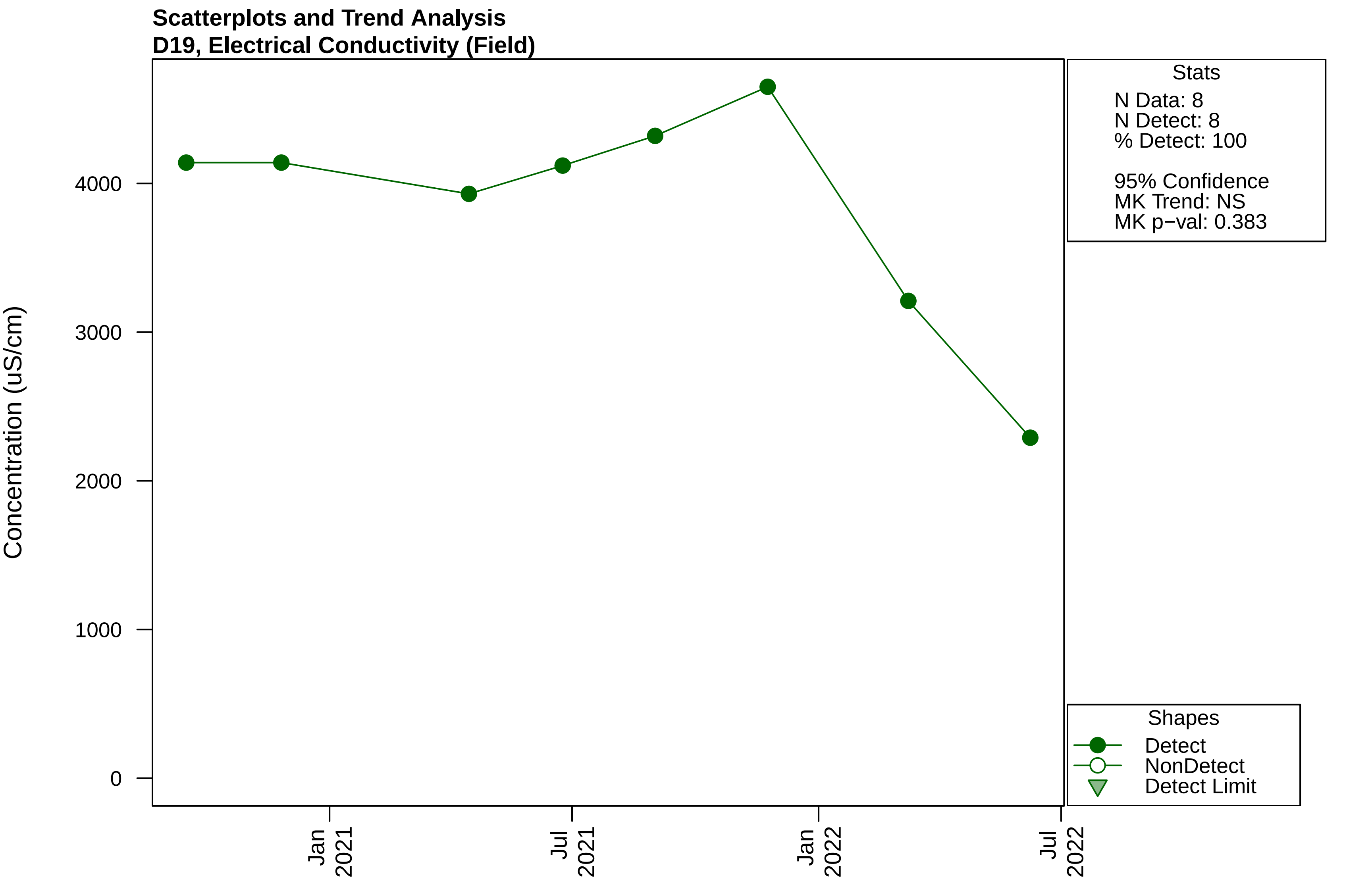
Scatterplots and Trend Analysis
D19, Copper

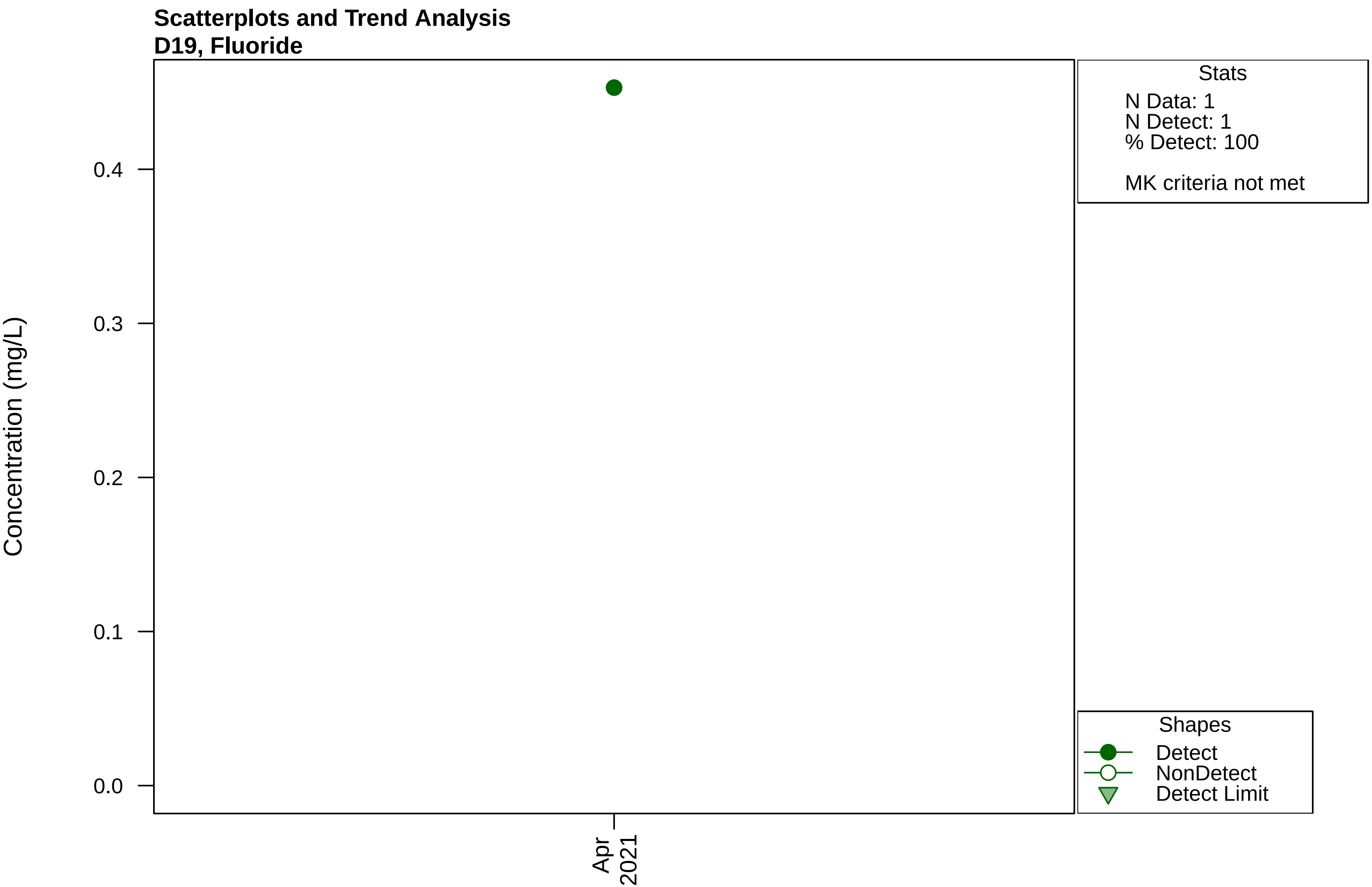


Scatterplots and Trend Analysis
D19, Dissolved Oxygen (Field)

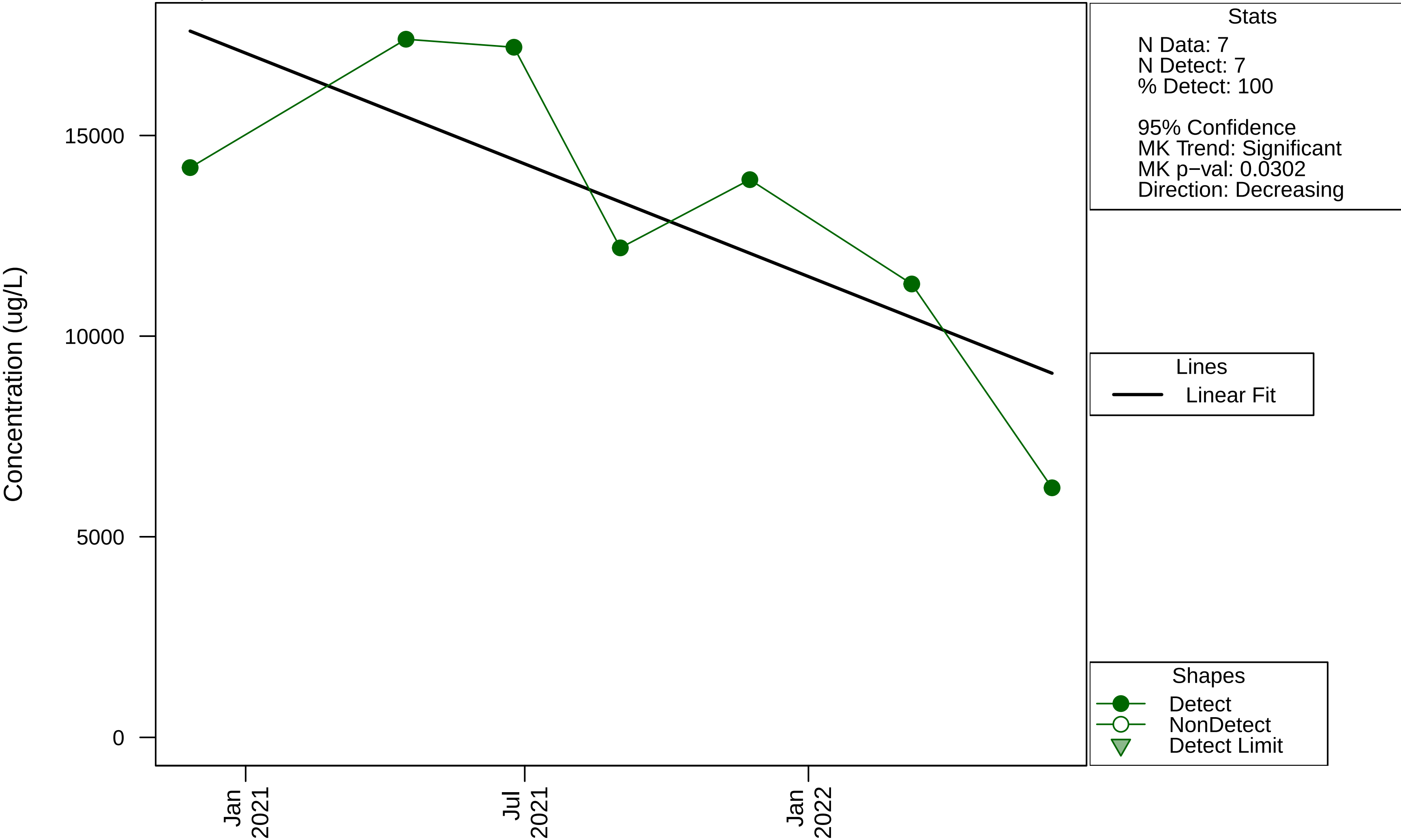


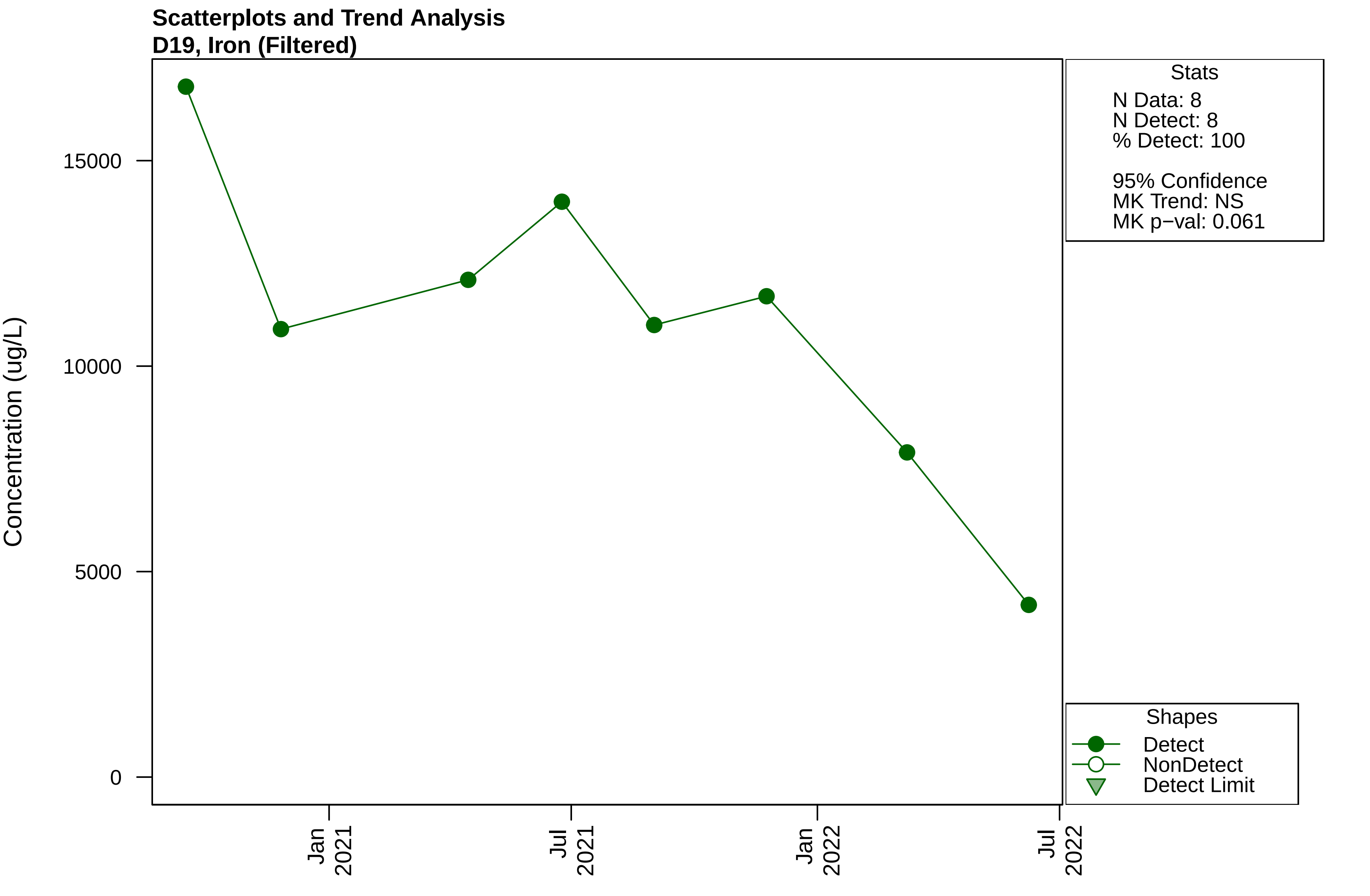

Scatterplots and Trend Analysis
D19, Dissolved Oxygen (Field) (Filtered)
Concentration (mg/L)
3.0
2.5
2.0
1.5
1.0
0.5
0.0
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 4
N Detect: 4
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.333
Shapes
Detect
NonDetect
Detect Limit


Scatterplots and Trend Analysis
D19, Electrical Conductivity (Field)
Concentration (uS/cm)
0
1000
2000
3000
4000
Jan 2021
Jul 2021
Jan 2022
Jul 2022
Stats
N Data: 8
N Detect: 8
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.383
Shapes
Detect
NonDetect
Detect Limit

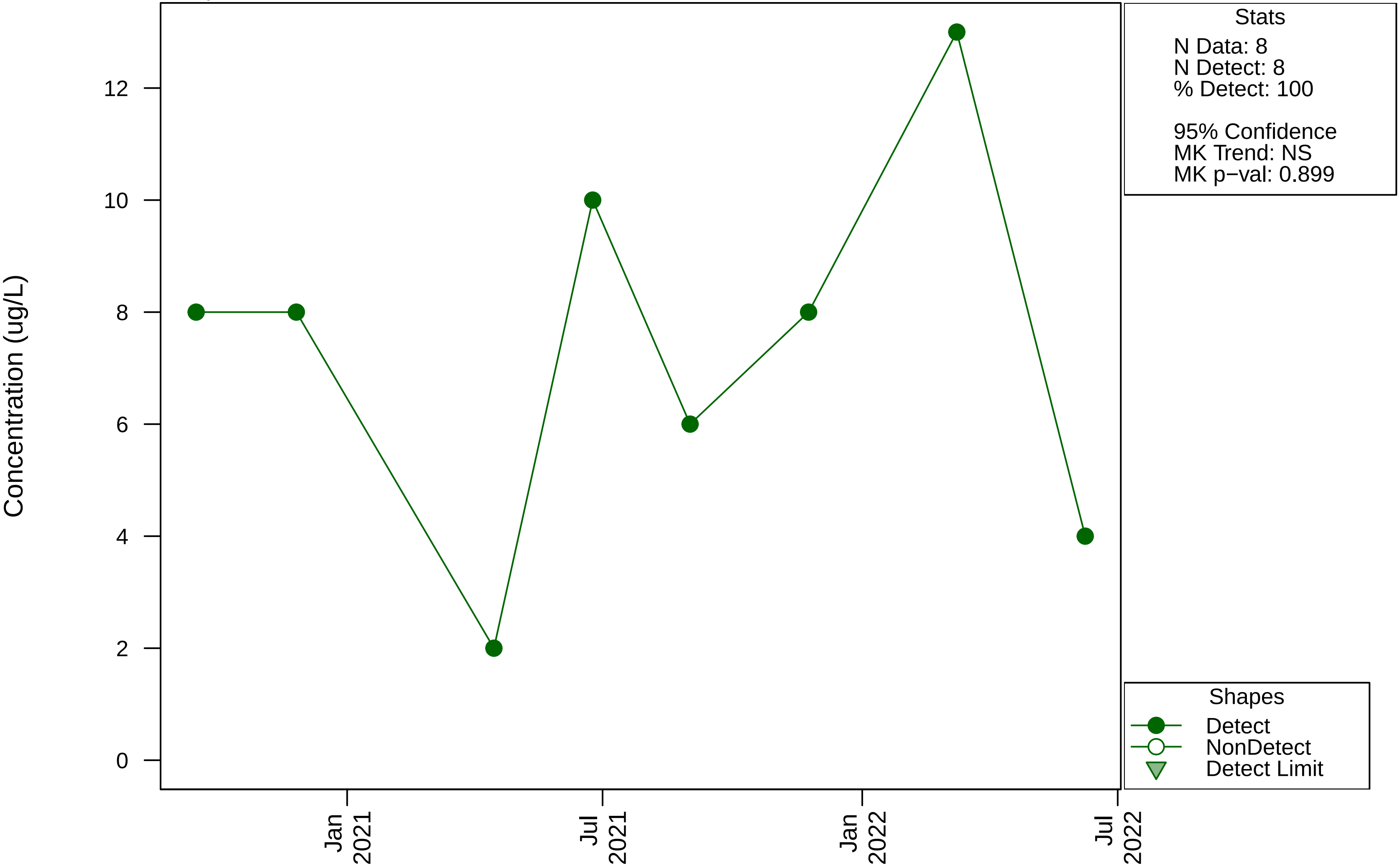

Scatterplots and Trend Analysis
D19, Fluoride
Concentration (mg/L)
0.0
0.1
0.2
0.3
0.4
Apr 2021
Stats
N Data: 1
N Detect: 1
% Detect: 100
MK criteria not met
Shapes
Detect
NonDetect
Detect Limit

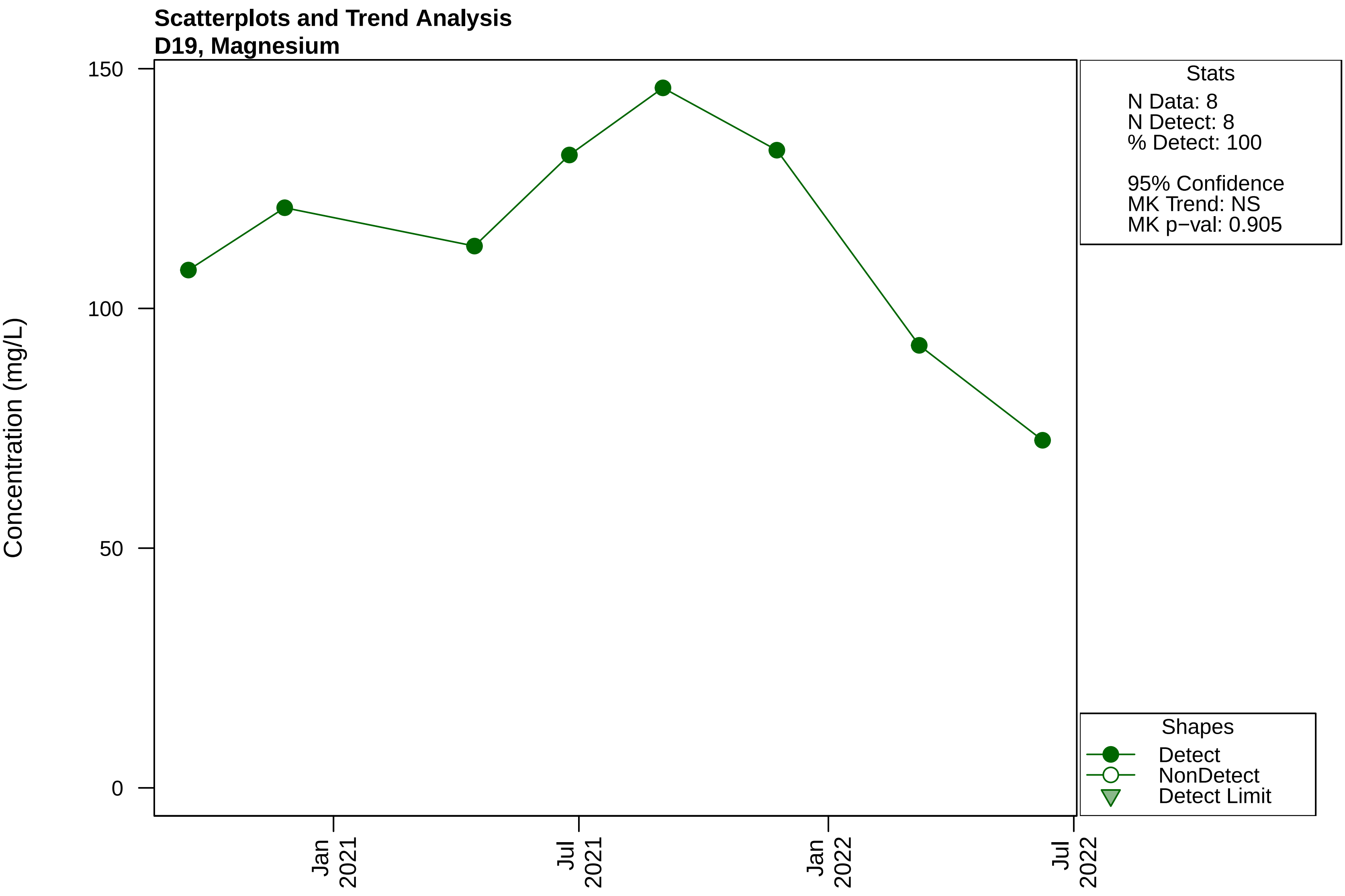
Scatterplots and Trend Analysis
D19, Iron



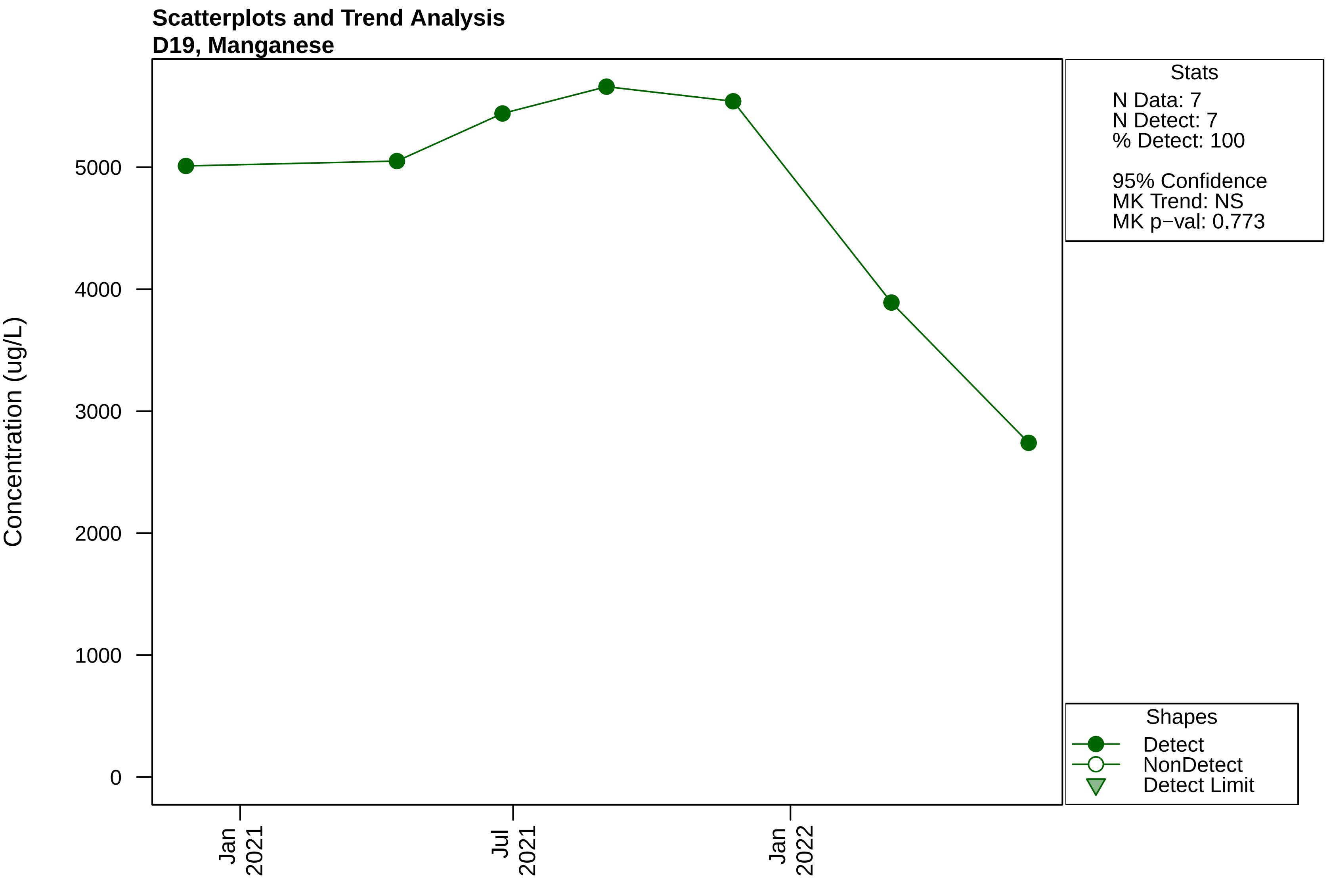

Scatterplots and Trend Analysis
D19, Iron (Filtered)
Stats
N Data: 8
N Detect: 8
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.061
Concentration (ug/L)
15000
10000
5000
0
Jan 2021
Jul 2021
Jan 2022
Jul 2022
Shapes
Detect
NonDetect
Detect Limit

Scatterplots and Trend Analysis
D19, Lead



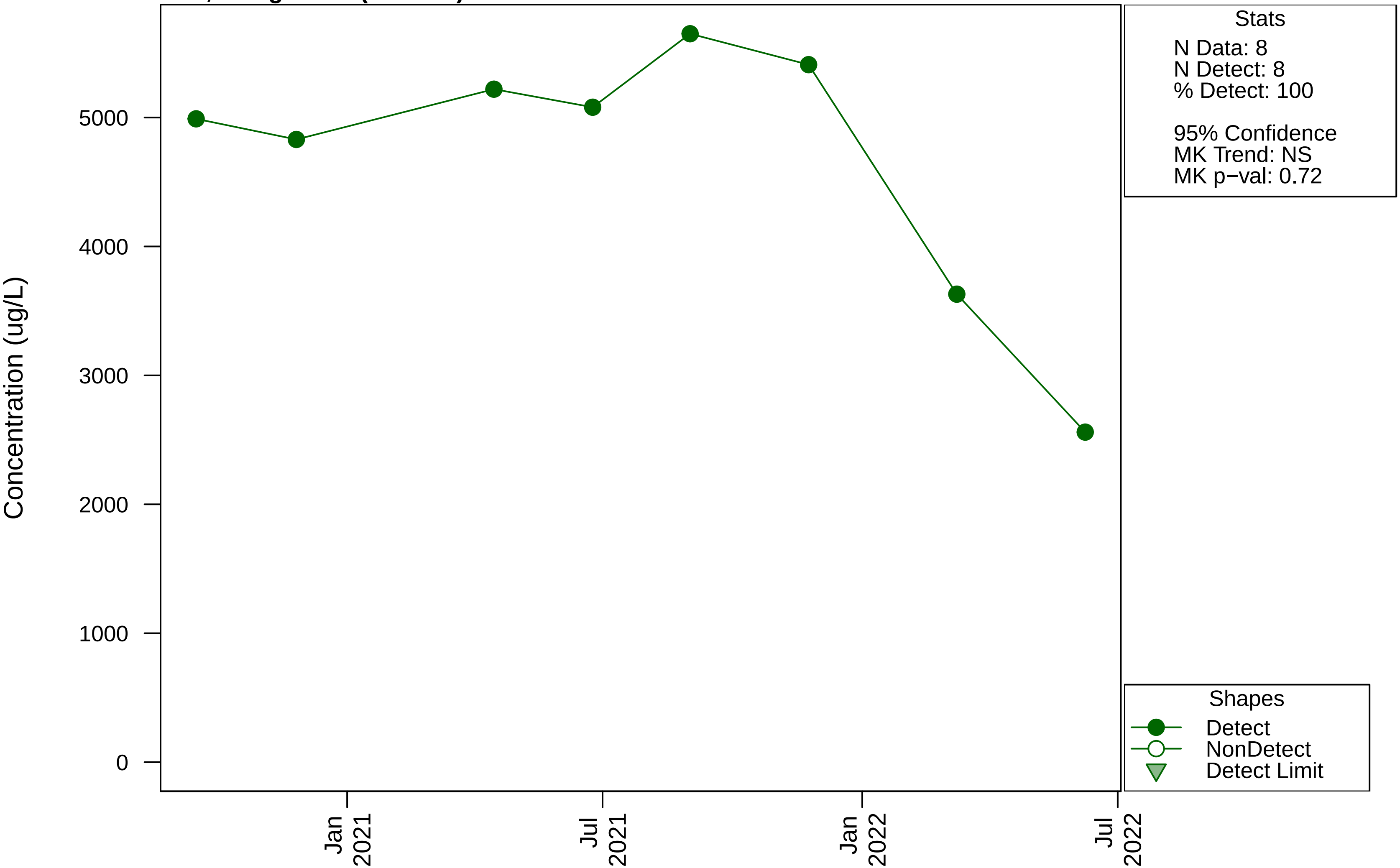


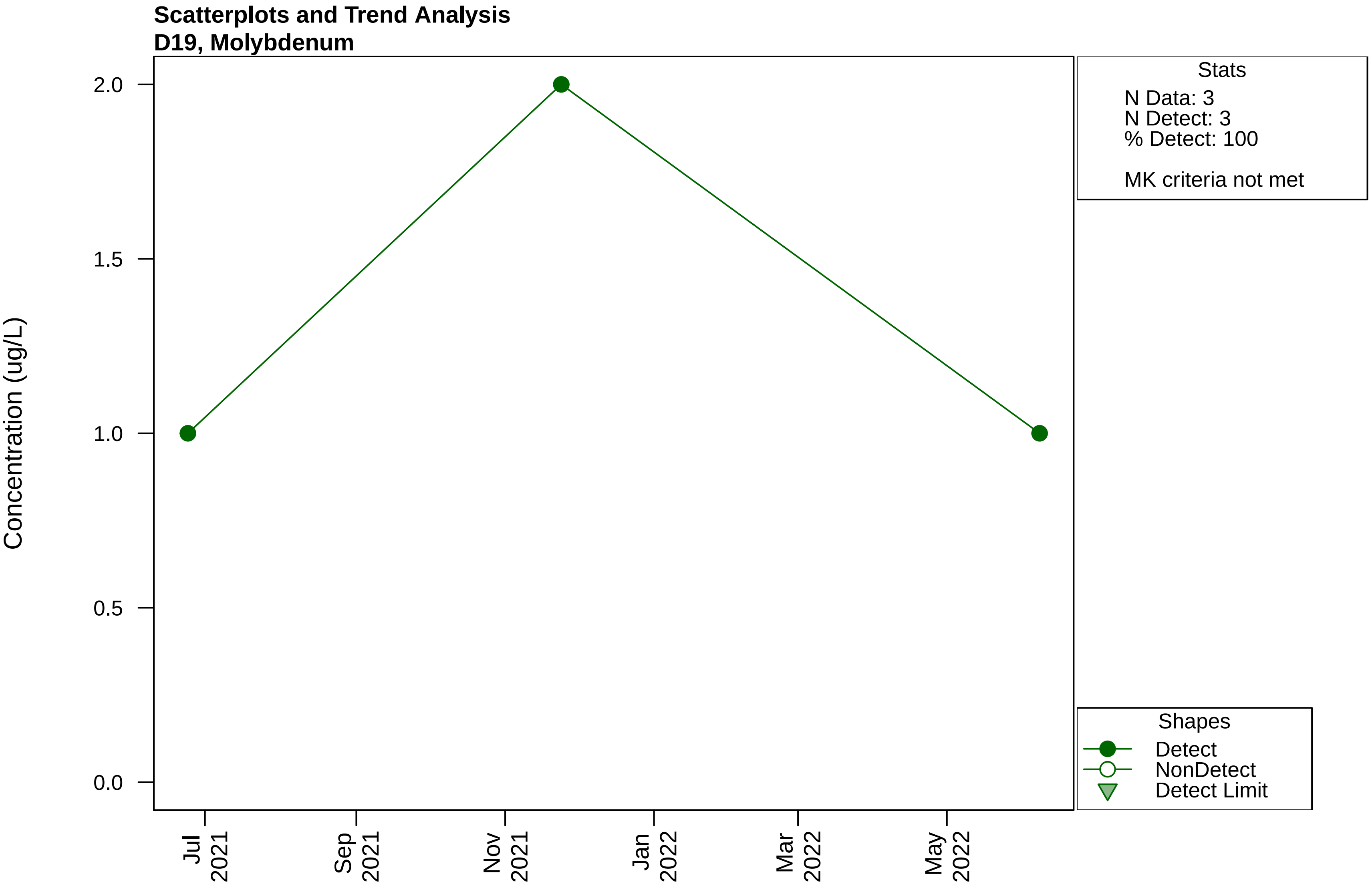
Scatterplots and Trend Analysis
D19, Magnesium
Concentration (mg/L)
150
100
50
0
Jan 2021
Jul 2021
Jan 2022
Jul 2022
Stats
N Data: 8
N Detect: 8
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.905
Shapes
Detect
NonDetect
Detect Limit

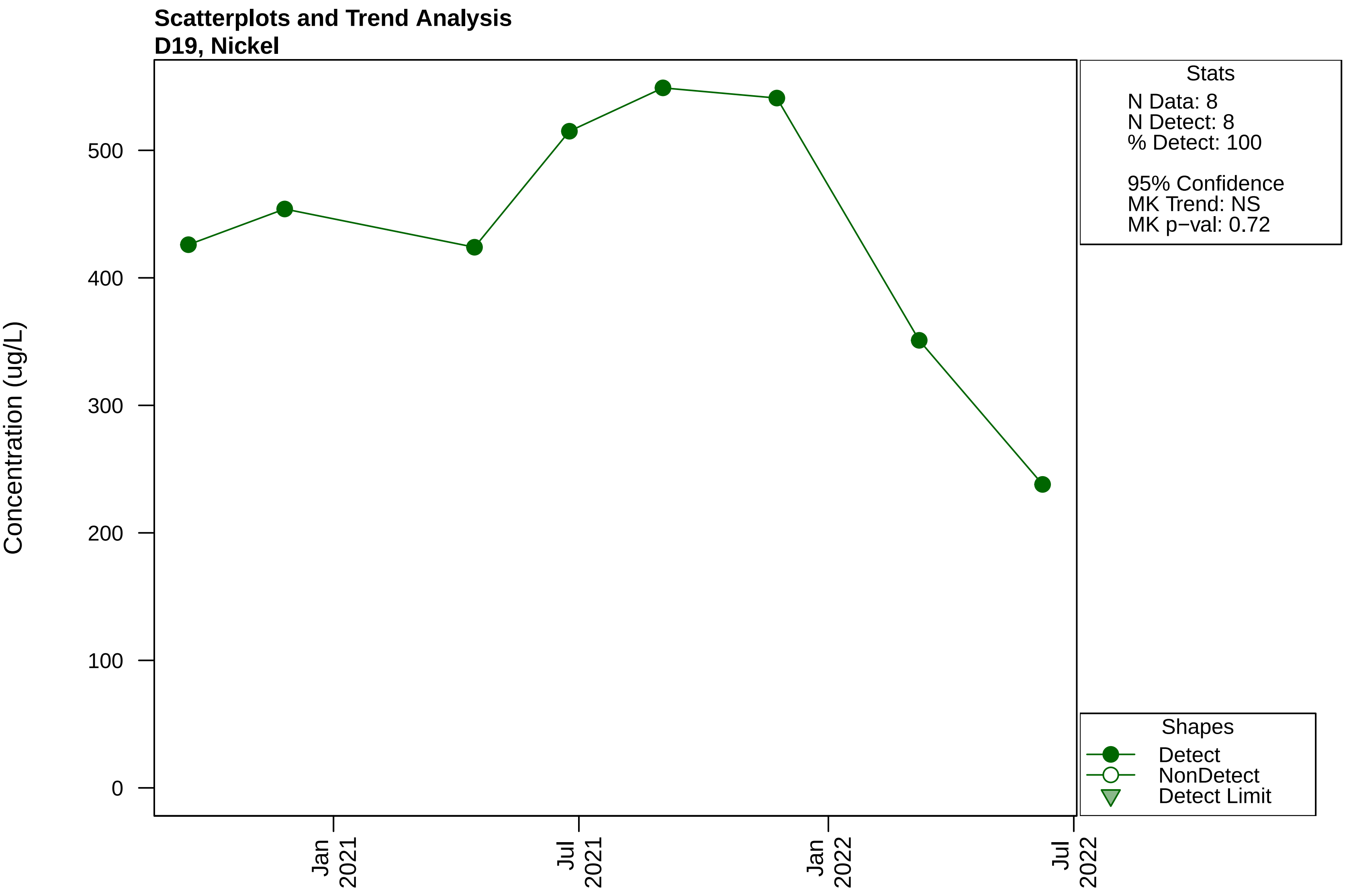


Scatterplots and Trend Analysis
D19, Manganese
Concentration (ug/L)
0
1000
2000
3000
4000
5000
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 7
N Detect: 7
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.773
Shapes
Detect
NonDetect
Detect Limit

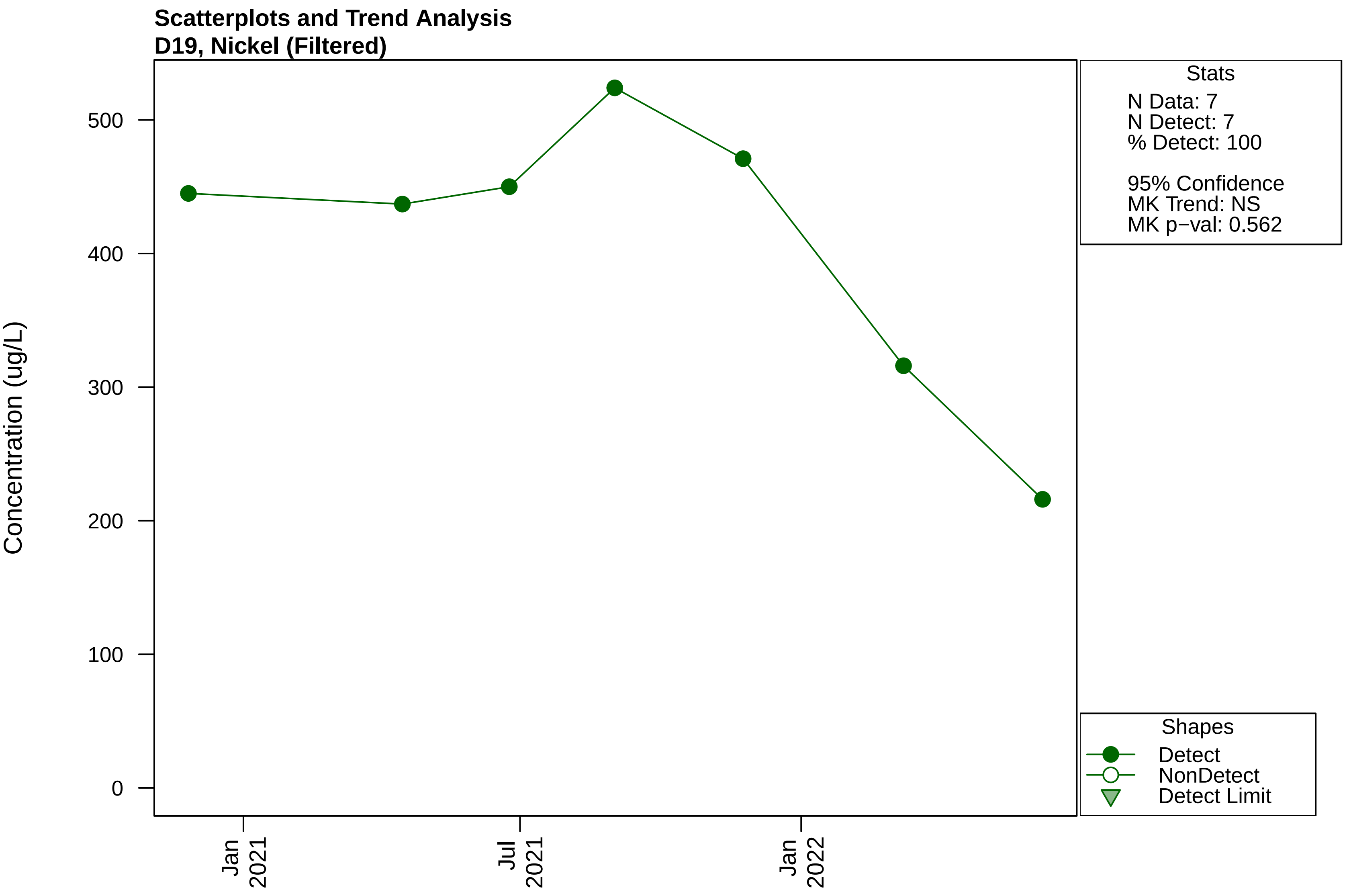
Scatterplots and Trend Analysis
D19, Manganese (Filtered)



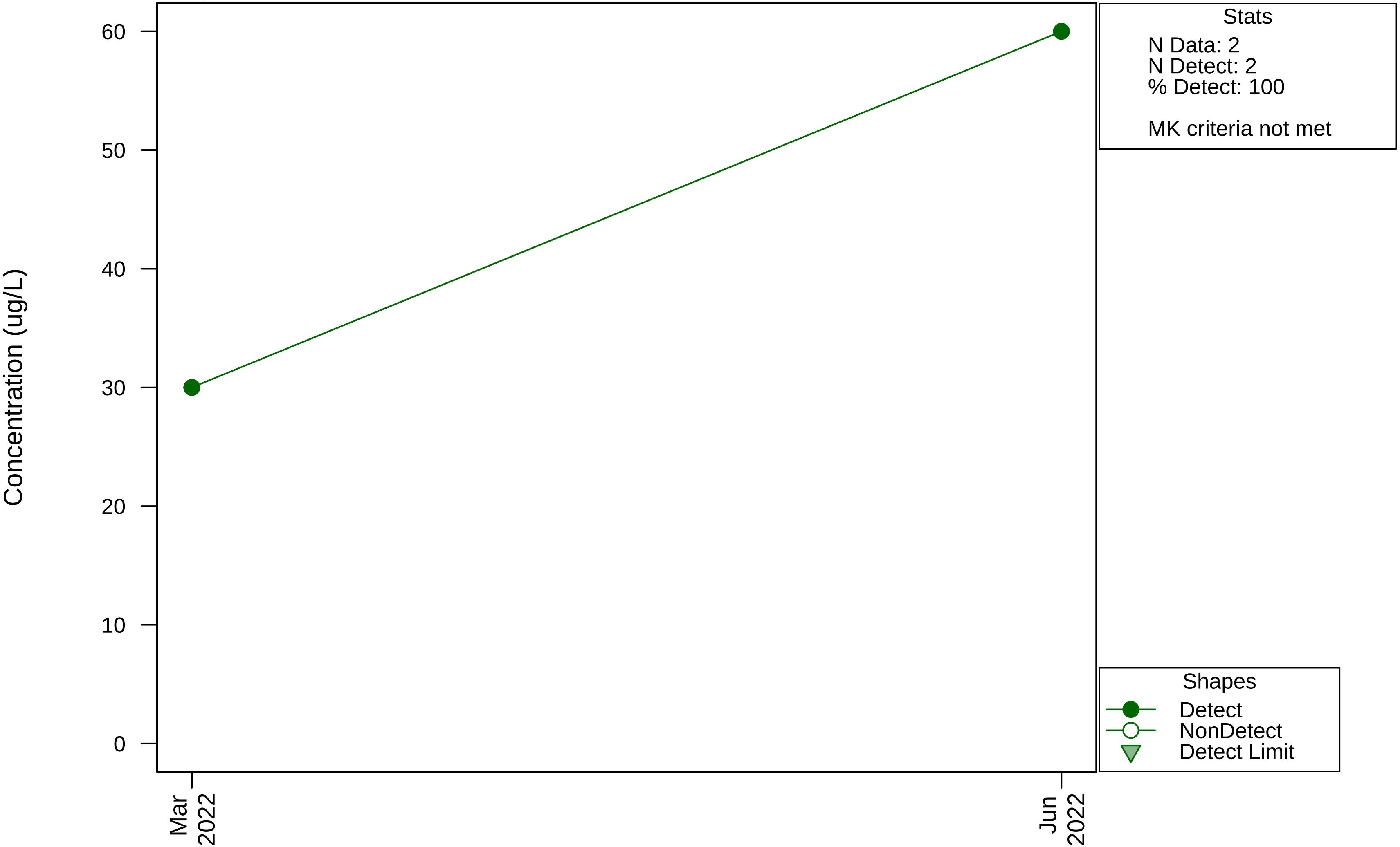

Scatterplots and Trend Analysis
D19, Molybdenum
Concentration (ug/L)
2.0
1.5
1.0
0.5
0.0
Jul 2021
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 3
N Detect: 3
% Detect: 100
MK criteria not met
Shapes
Detect
NonDetect
Detect Limit

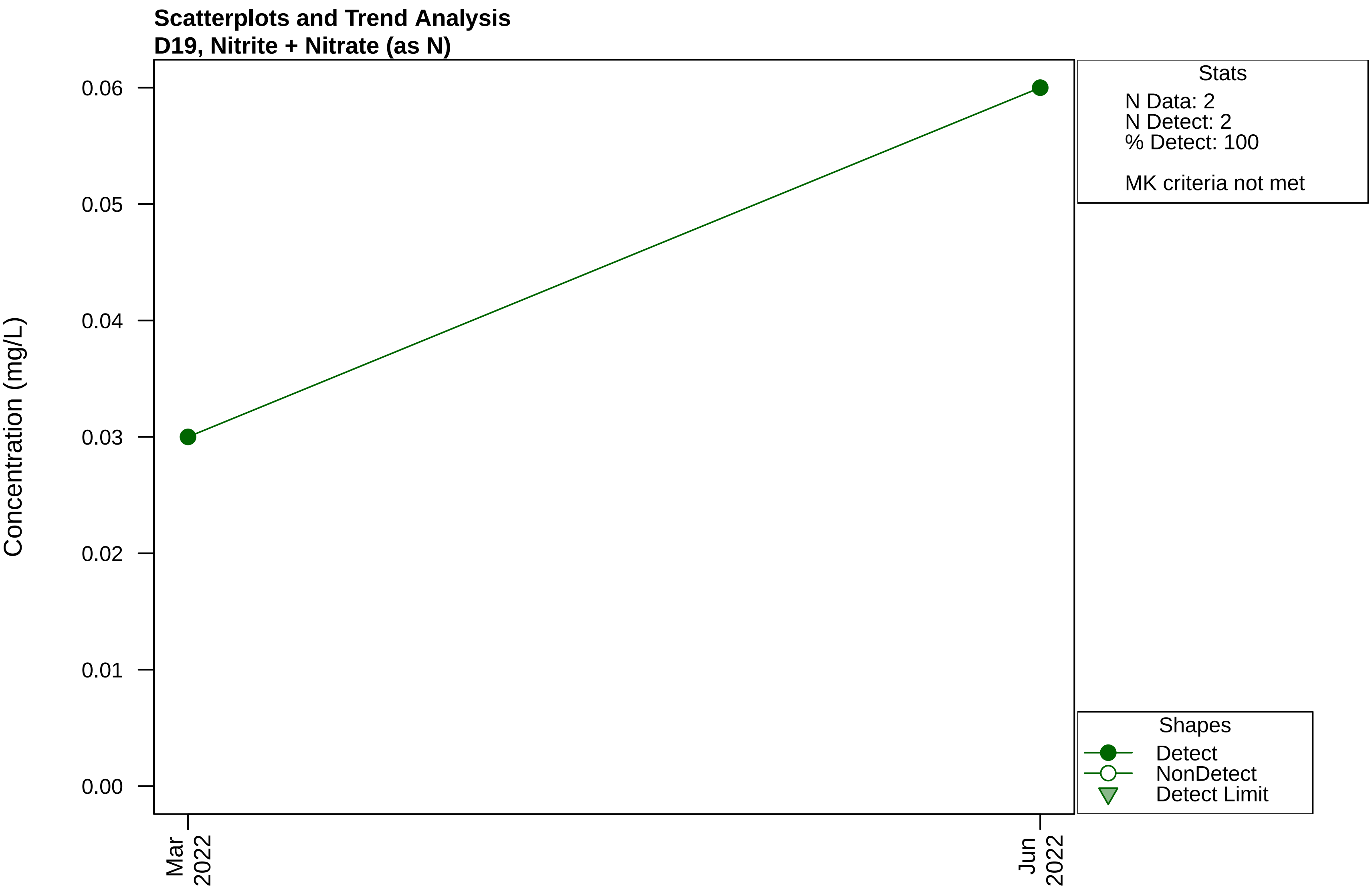


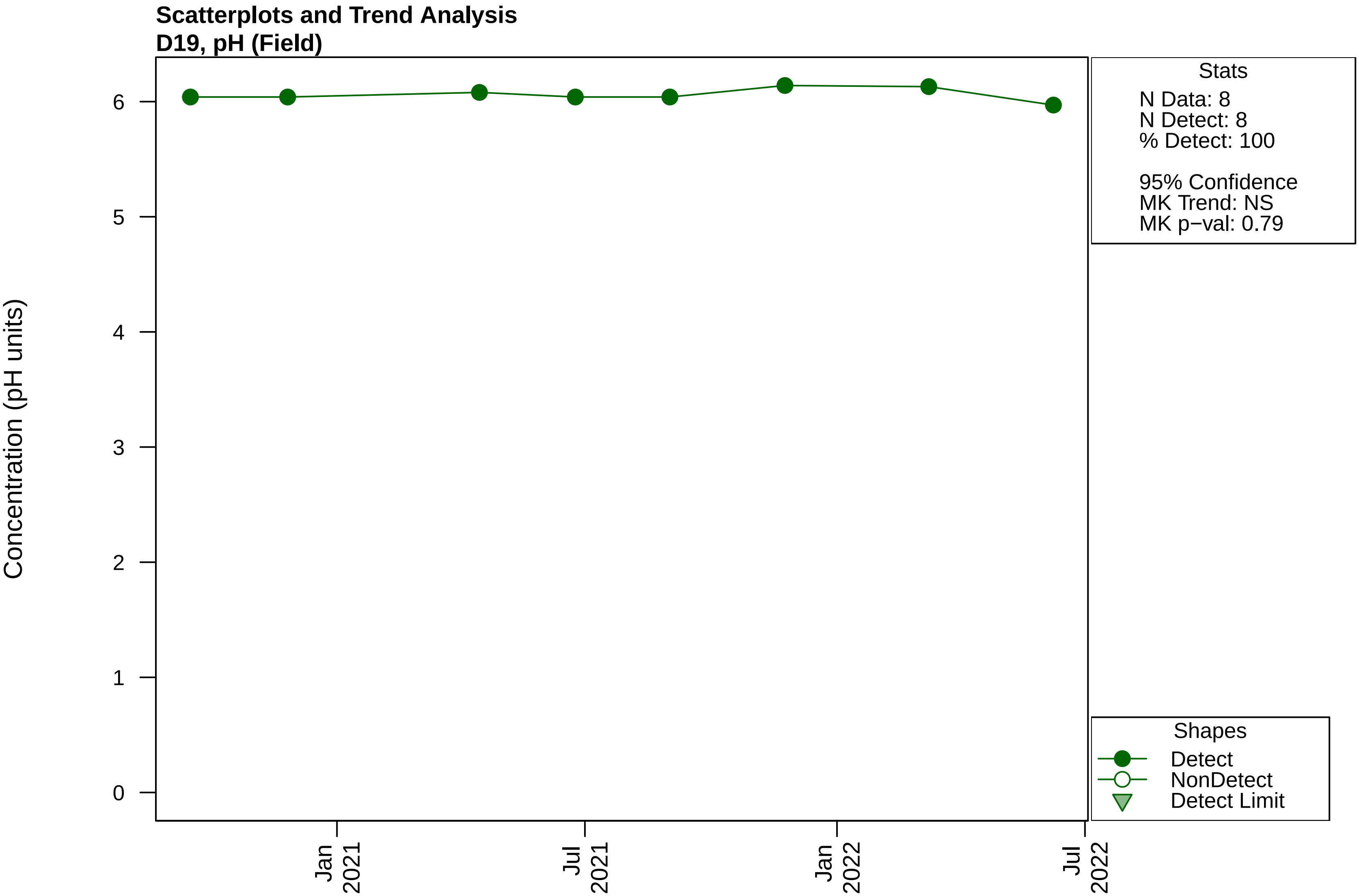
Scatterplots and Trend Analysis
D19, Nickel
Concentration (ug/L)
0
100
200
300
400
500
Jan 2021
Jul 2021
Jan 2022
Jul 2022
Stats
N Data: 8
N Detect: 8
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.72
Shapes
Detect
NonDetect
Detect Limit


Scatterplots and Trend Analysis
D19, Nickel (Filtered)
Concentration (ug/L)
0
100
200
300
400
500
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 7
N Detect: 7
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.562
Shapes
Detect
NonDetect
Detect Limit

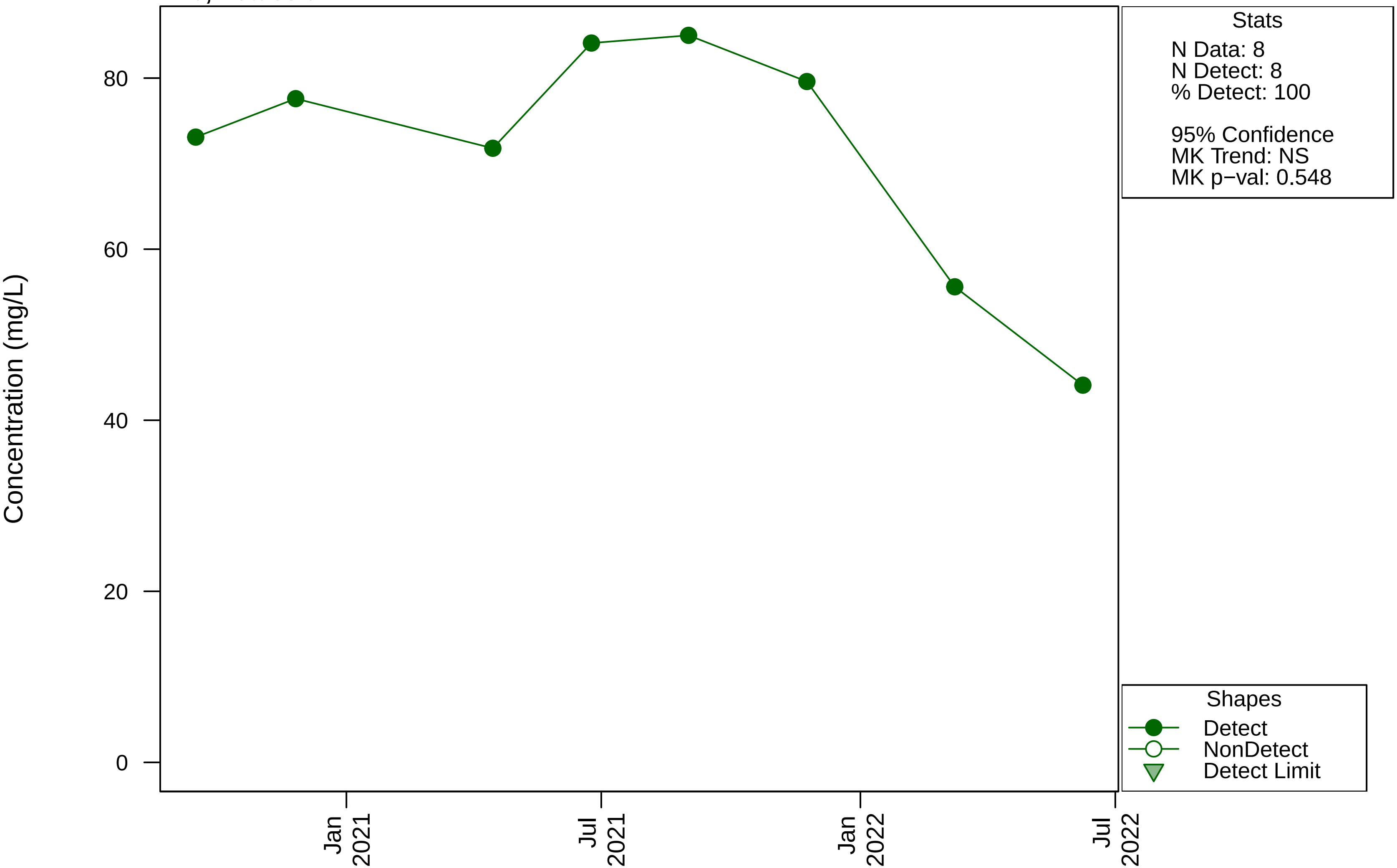
Scatterplots and Trend Analysis
D19, Nitrate

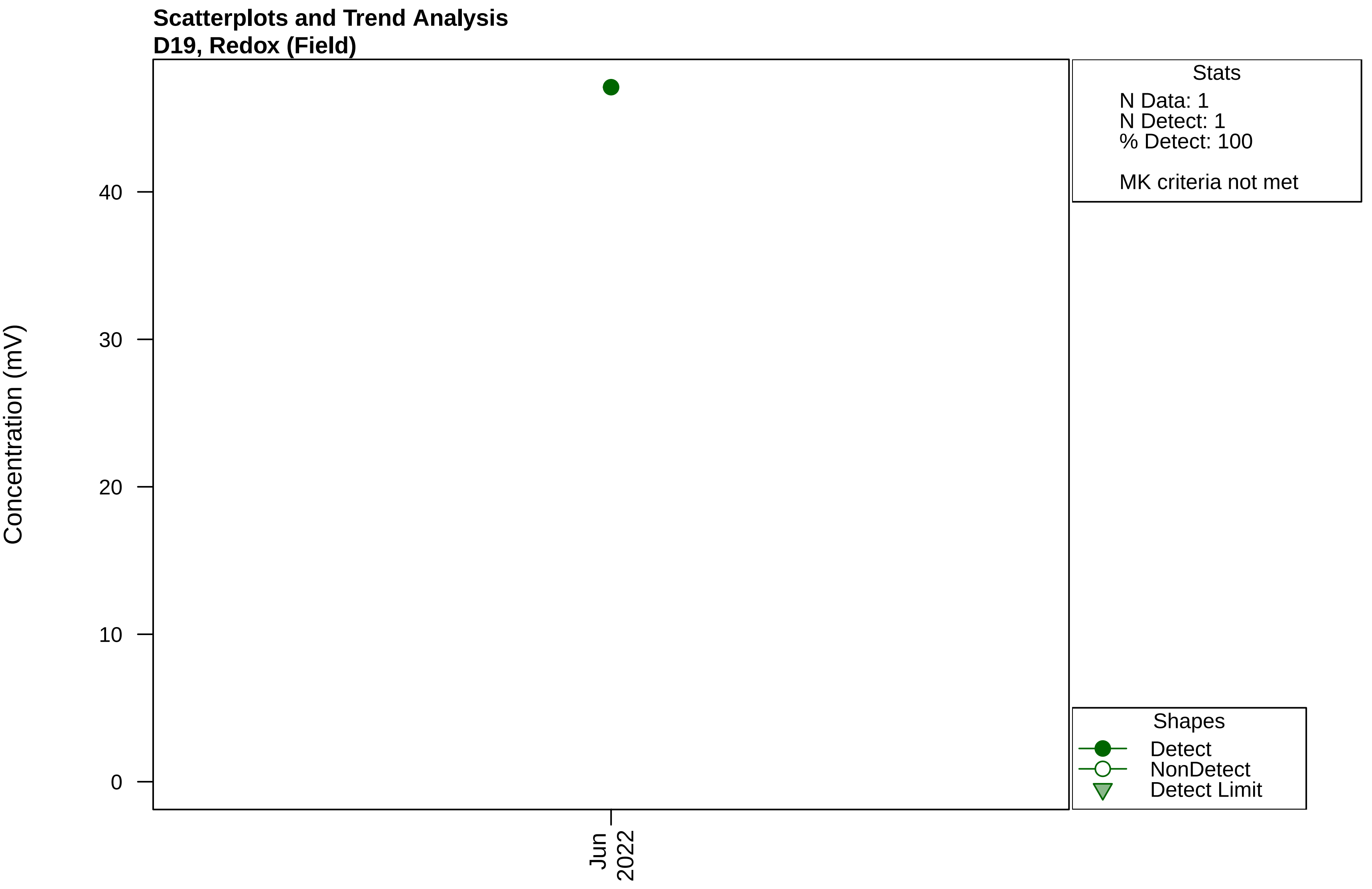



Scatterplots and Trend Analysis
D19, Nitrite + Nitrate (as N)
Concentration (mg/L)
0.06
0.05
0.04
0.03
0.02
0.01
0.00
Mar 2022
Jun 2022
Stats
N Data: 2
N Detect: 2
% Detect: 100
MK criteria not met
Shapes
Detect
NonDetect
Detect Limit

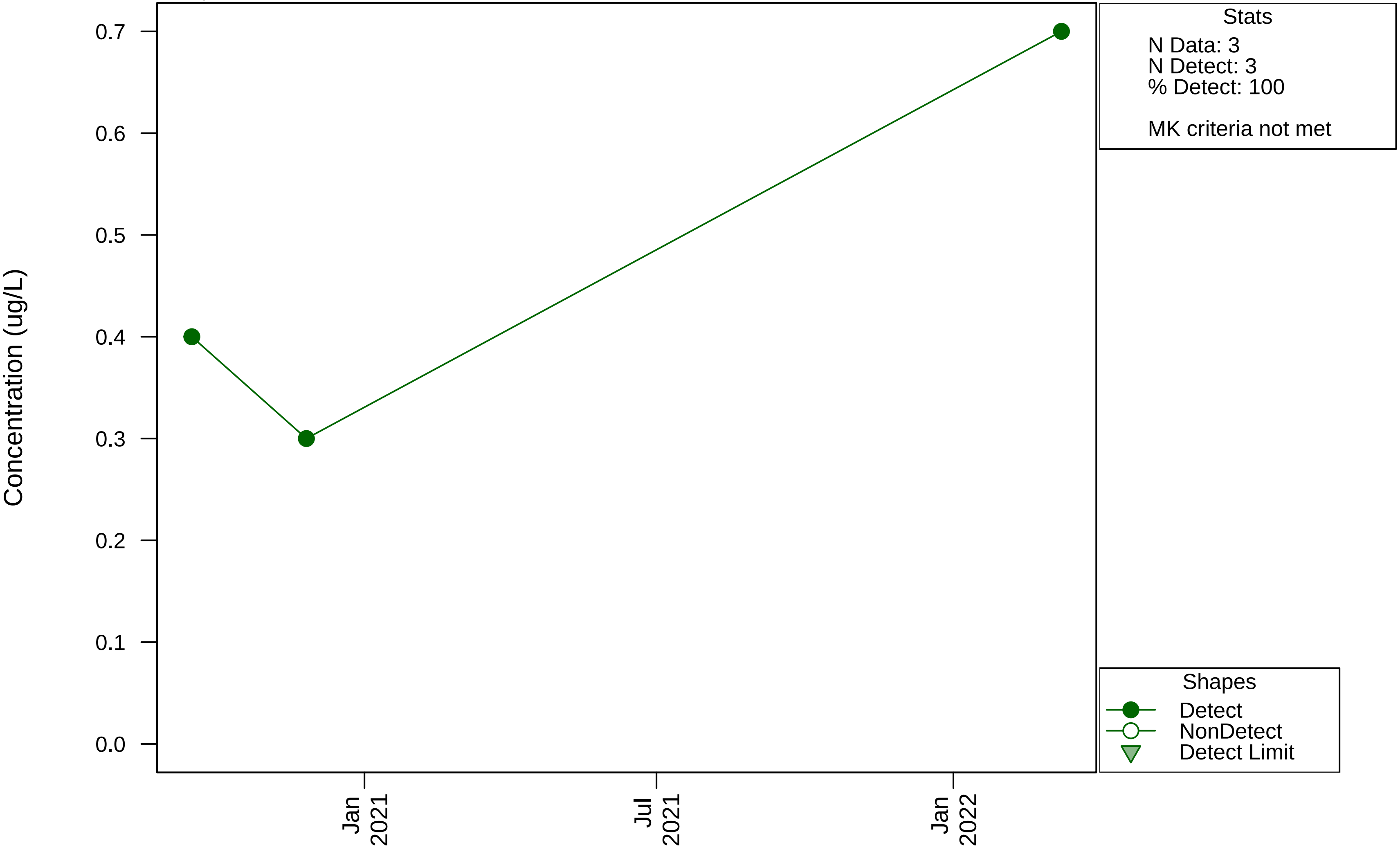

Scatterplots and Trend Analysis
D19, pH (Field)
Concentration (pH units)
0
1
2
3
4
5
6
Jan 2021
Jul 2021
Jan 2022
Jul 2022
Stats
N Data: 8
N Detect: 8
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.79
Shapes
Detect
NonDetect
Detect Limit

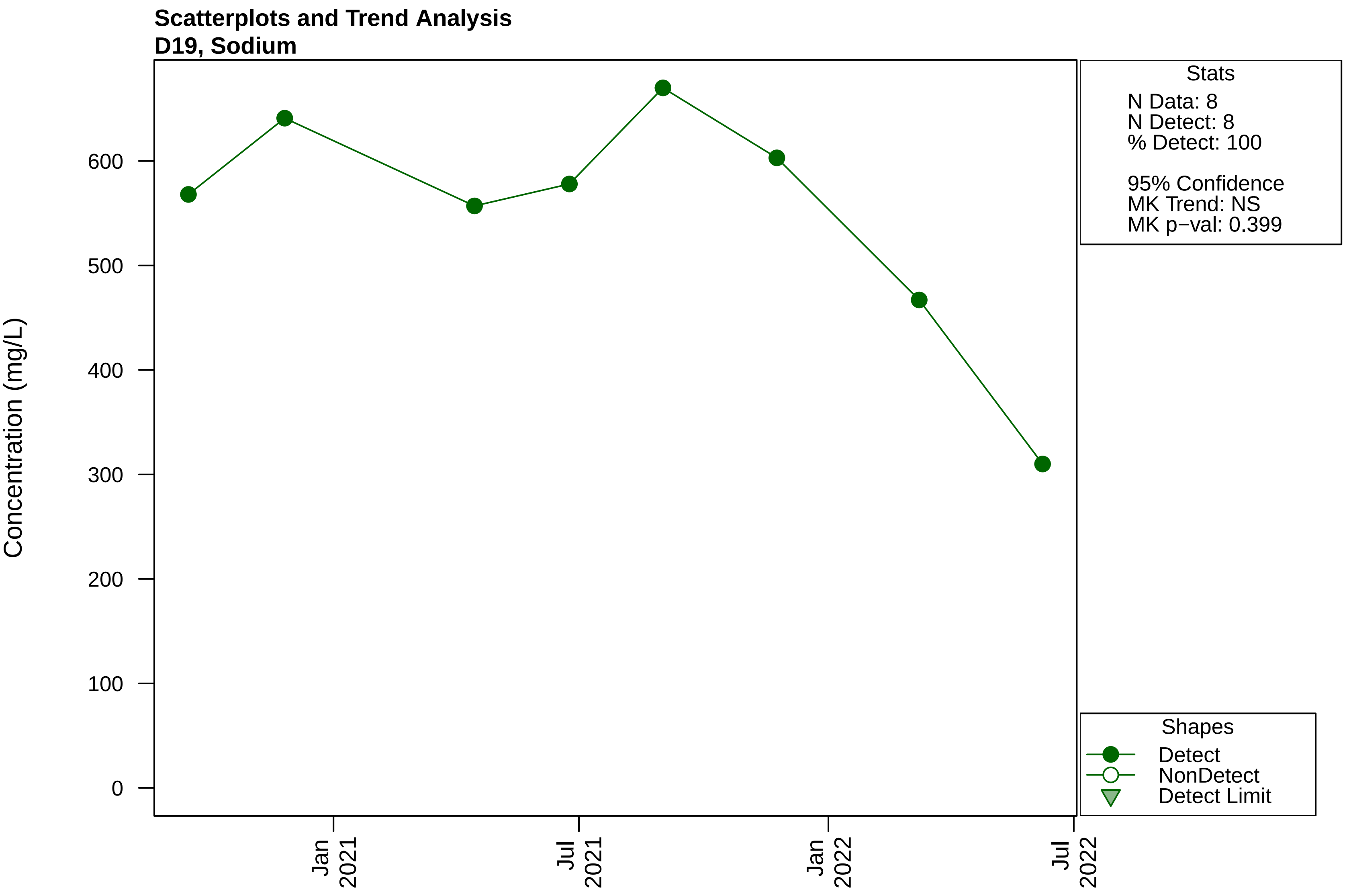
Scatterplots and Trend Analysis
D19, Potassium



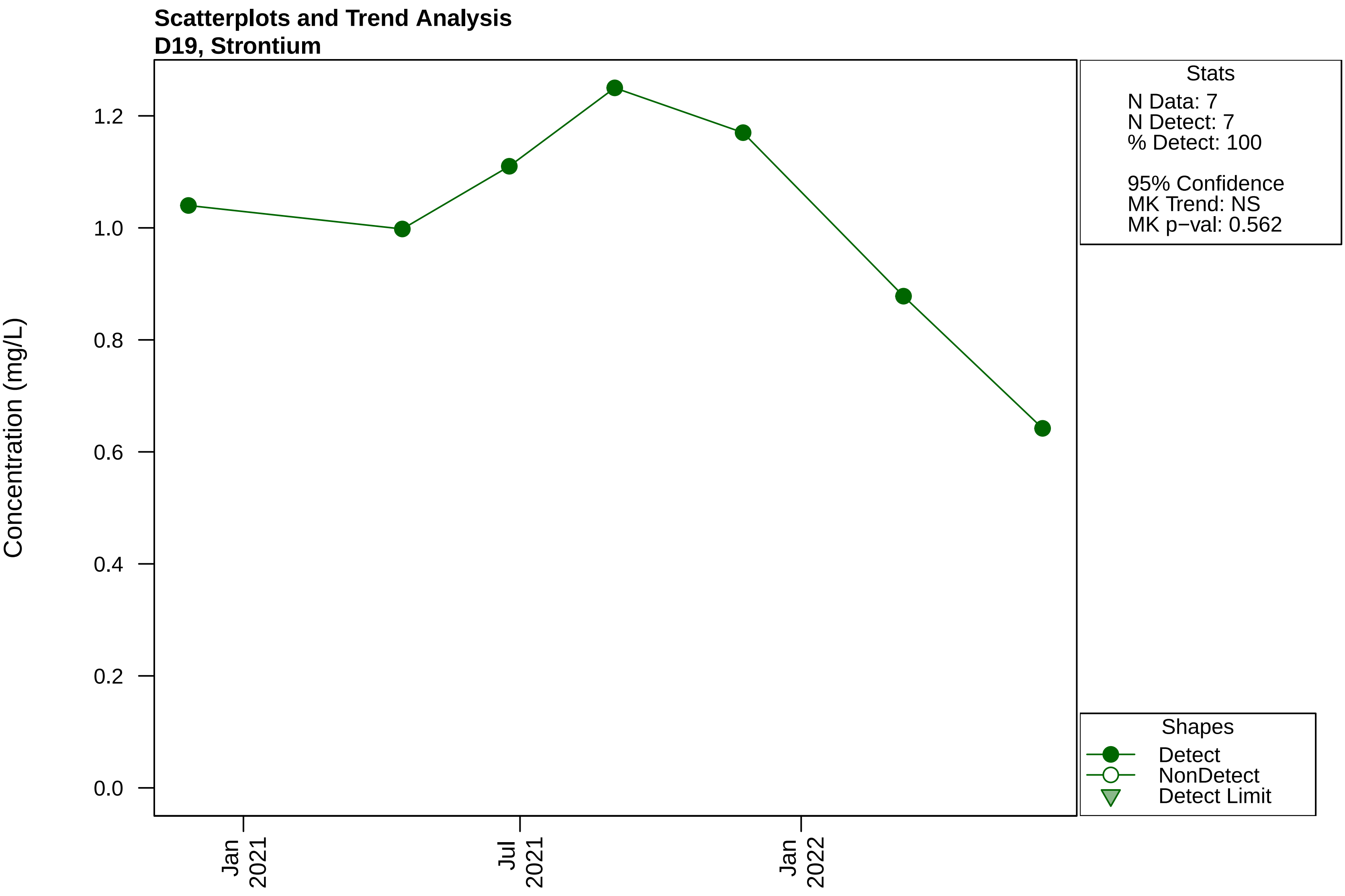

Scatterplots and Trend Analysis
D19, Redox (Field)
Concentration (mV)
0
10
20
30
40
Jun
2022
Stats
N Data: 1
N Detect: 1
% Detect: 100
MK criteria not met
Shapes
Detect
NonDetect
Detect Limit

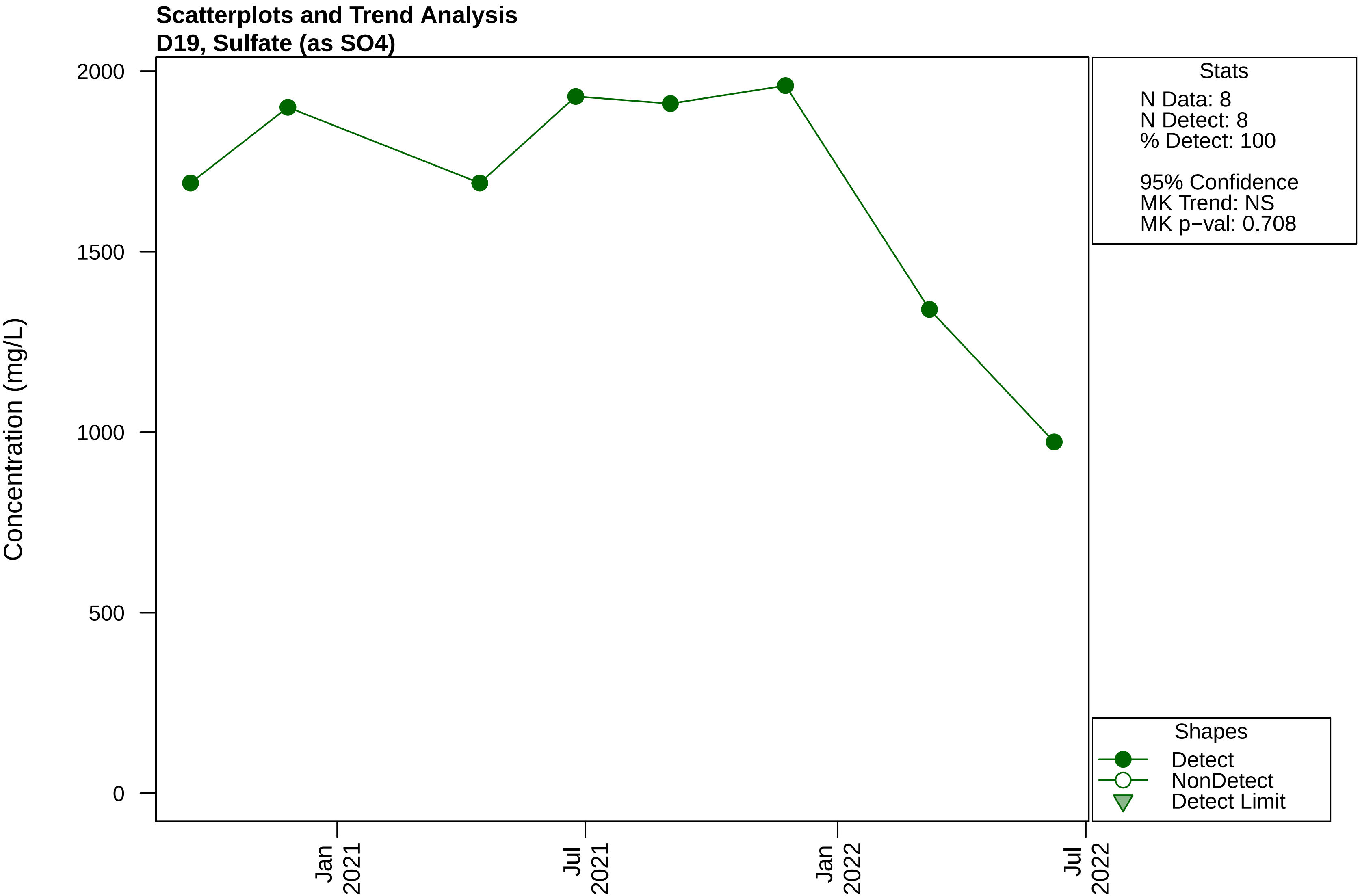
Scatterplots and Trend Analysis
D19, Selenium



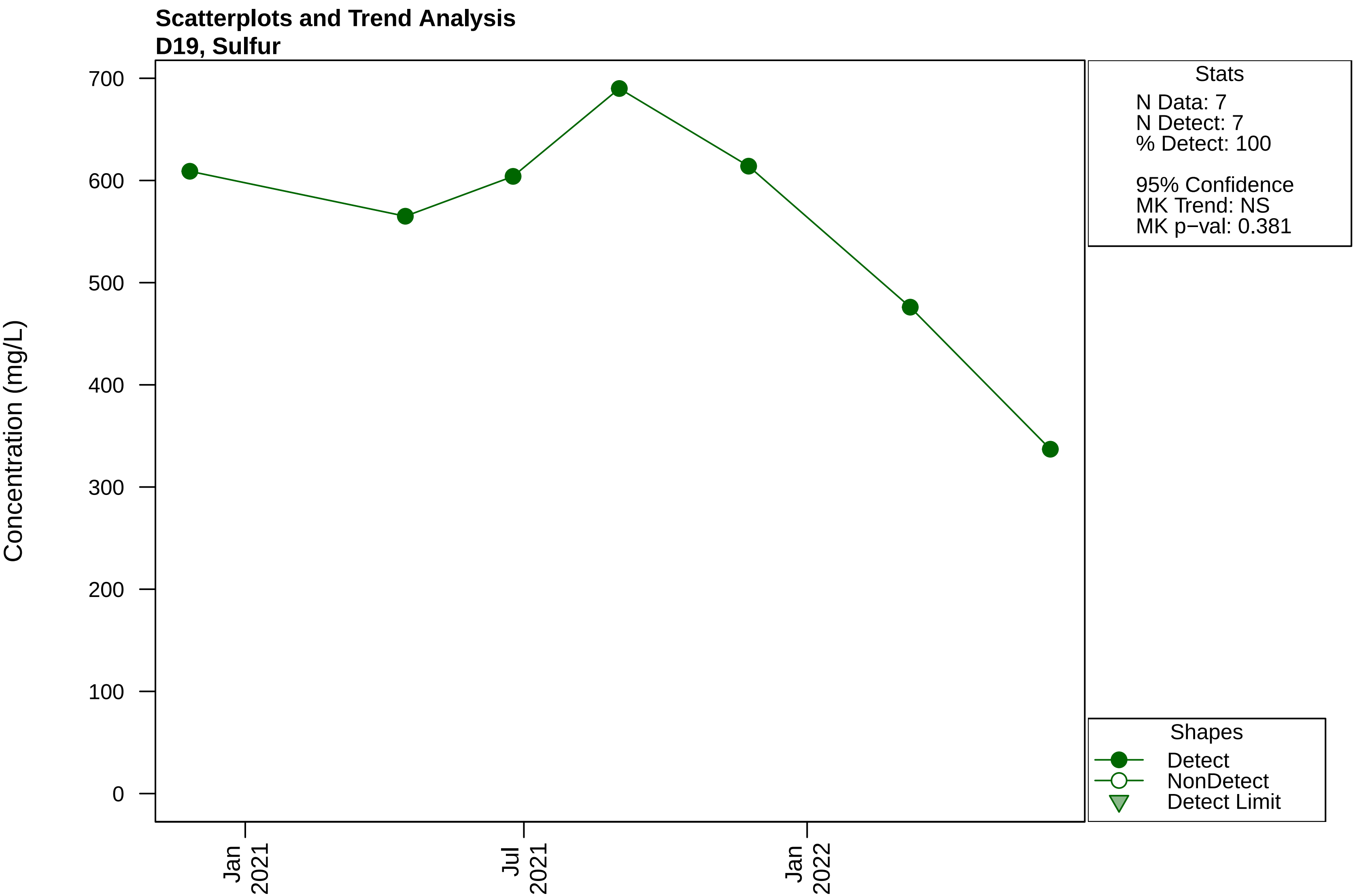


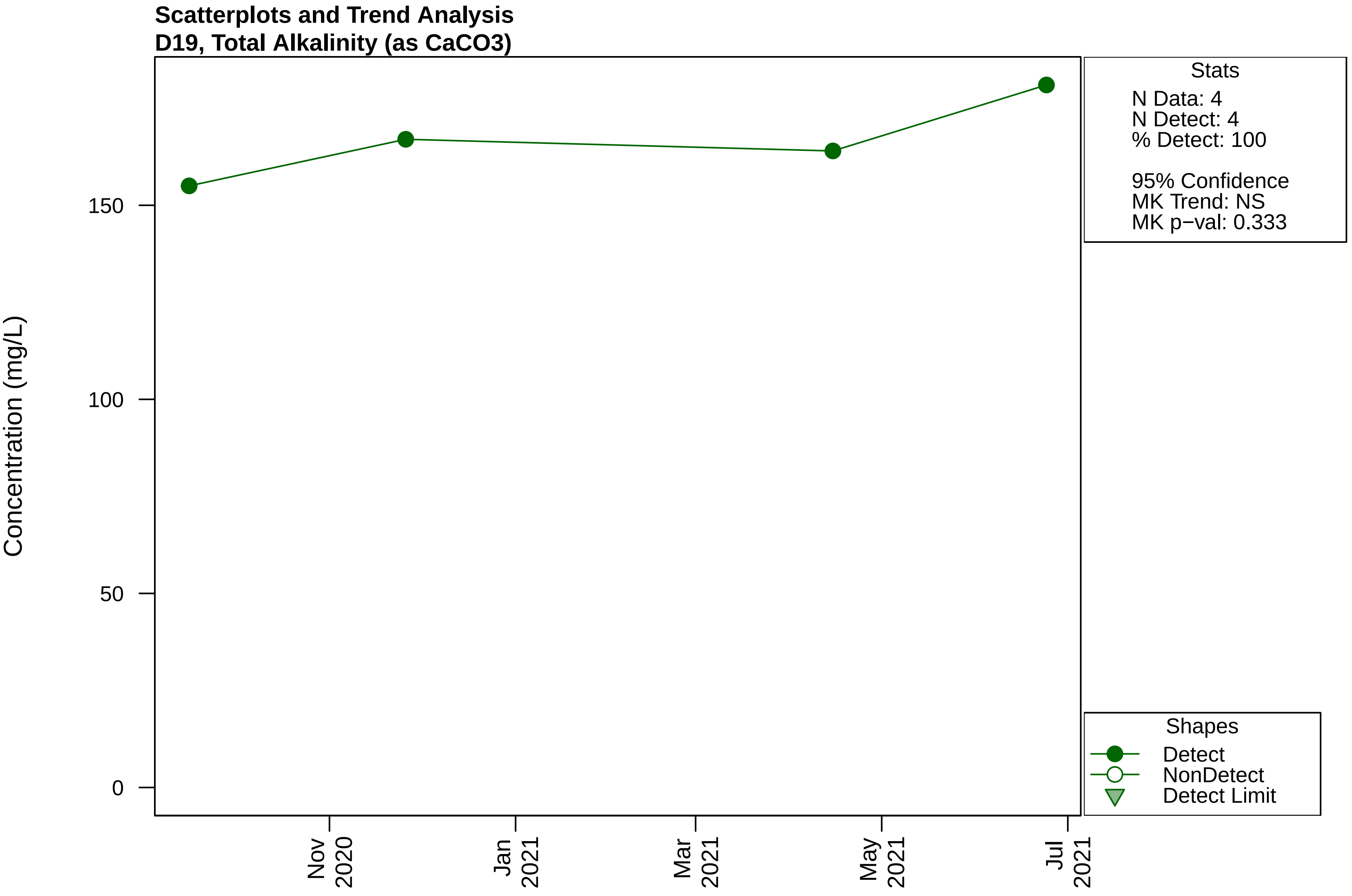
Scatterplots and Trend Analysis
D19, Sodium
Stats
N Data: 8
N Detect: 8
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.399
Shapes
Detect
NonDetect
Detect Limit
Concentration (mg/L)
0
100
200
300
400
500
600
Jan 2021
Jul 2021
Jan 2022
Jul 2022


Scatterplots and Trend Analysis
D19, Strontium
Concentration (mg/L)
0.0
0.2
0.4
0.6
0.8
1.0
1.2
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 7
N Detect: 7
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.562
Shapes
Detect
NonDetect
Detect Limit

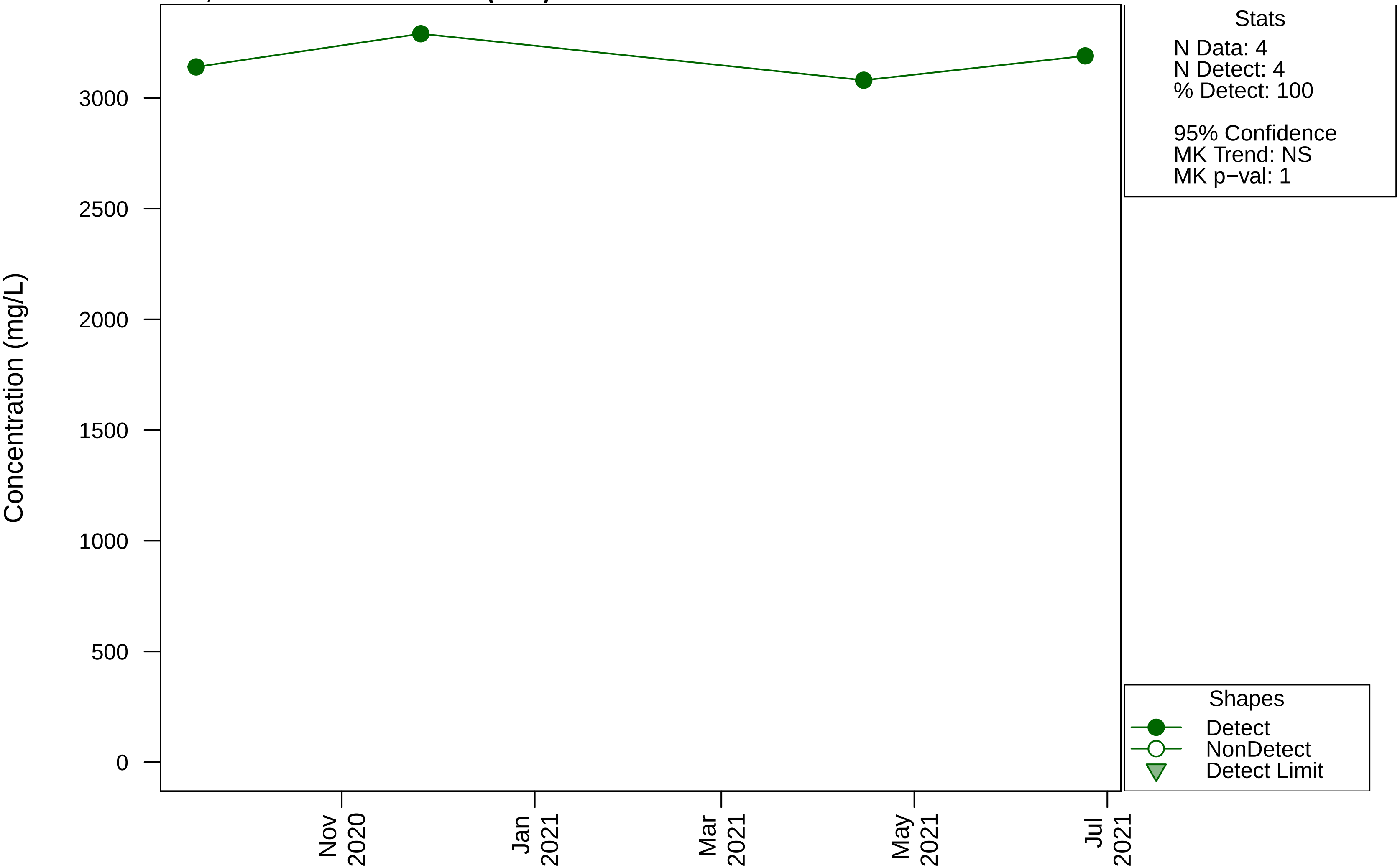


Scatterplots and Trend Analysis
D19, Sulfate (as SO4)
Concentration (mg/L)
2000
1500
1000
500
0
Jan 2021
Jul 2021
Jan 2022
Jul 2022
Stats
N Data: 8
N Detect: 8
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.708
Shapes
Detect
NonDetect
Detect Limit

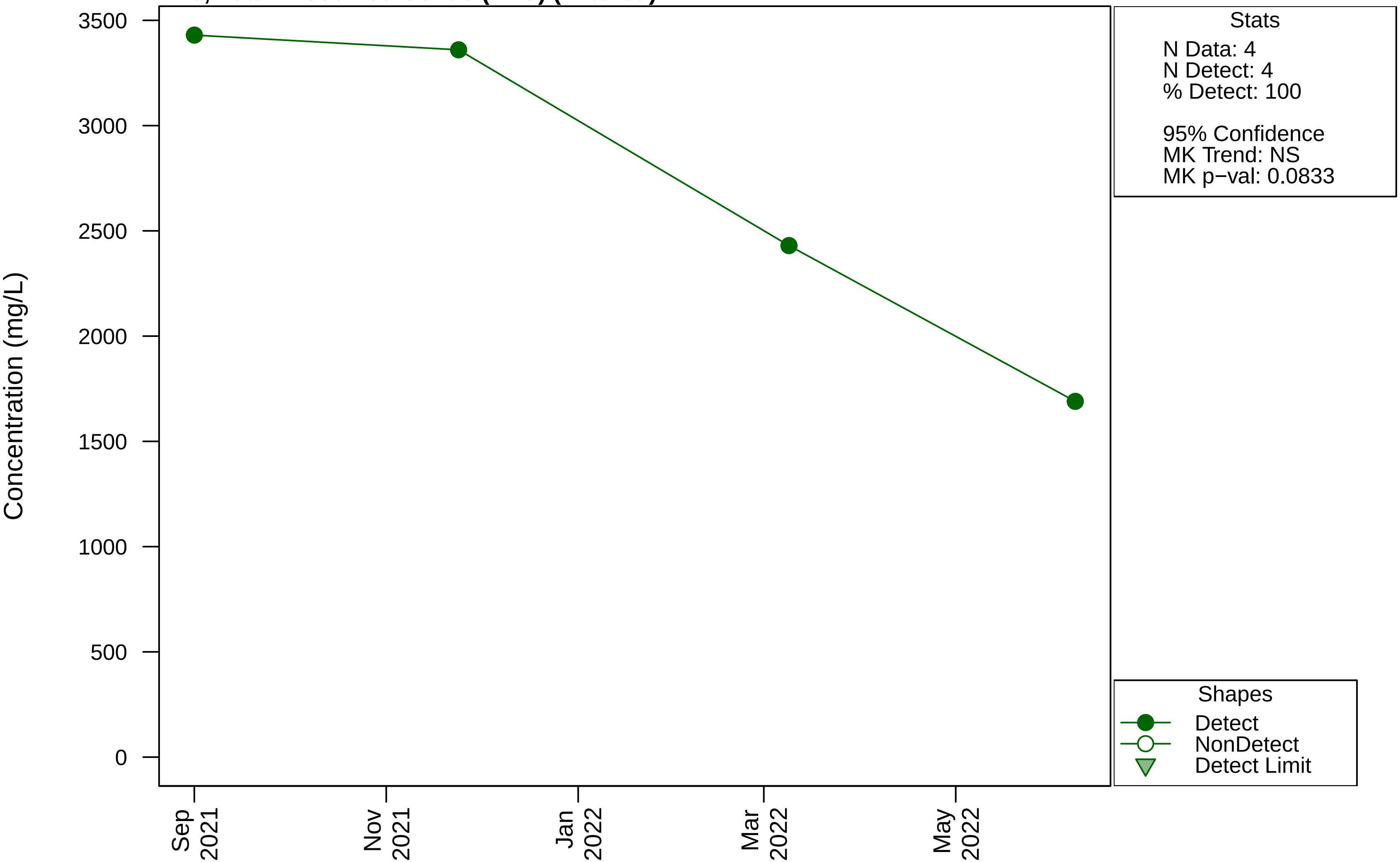

Scatterplots and Trend Analysis
D19, Sulfur
Concentration (mg/L)
0
100
200
300
400
500
600
700
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 7
N Detect: 7
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.381
Shapes
Detect
NonDetect
Detect Limit


Scatterplots and Trend Analysis
D19, Total Alkalinity (as CaCO3)
Concentration (mg/L)
0
50
100
150
Nov 2020
Jan 2021
Mar 2021
May 2021
Jul 2021
Stats
N Data: 4
N Detect: 4
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.333
Shapes
Detect
NonDetect
Detect Limit

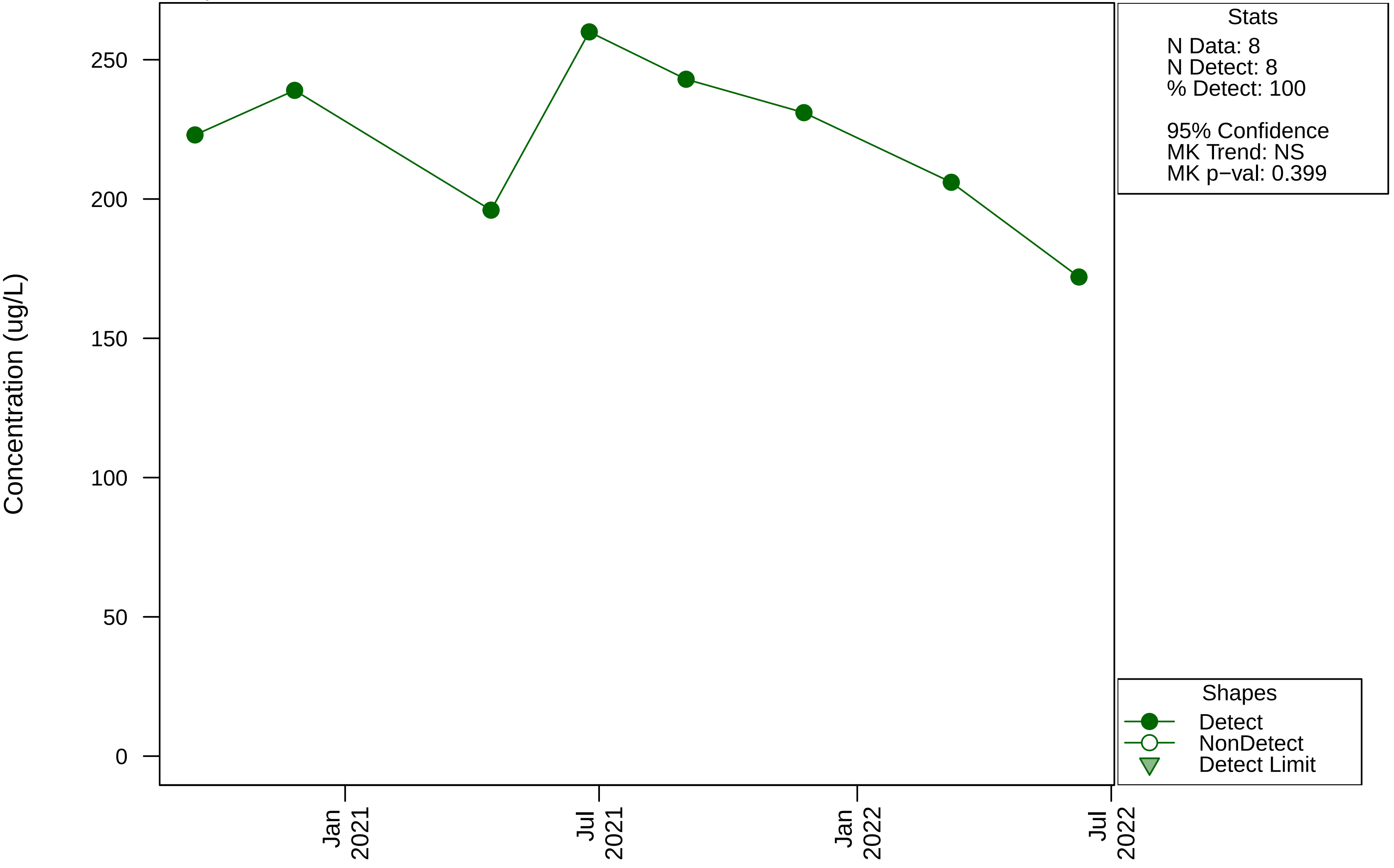
Scatterplots and Trend Analysis
D19, Total Dissolved Solids (TDS)



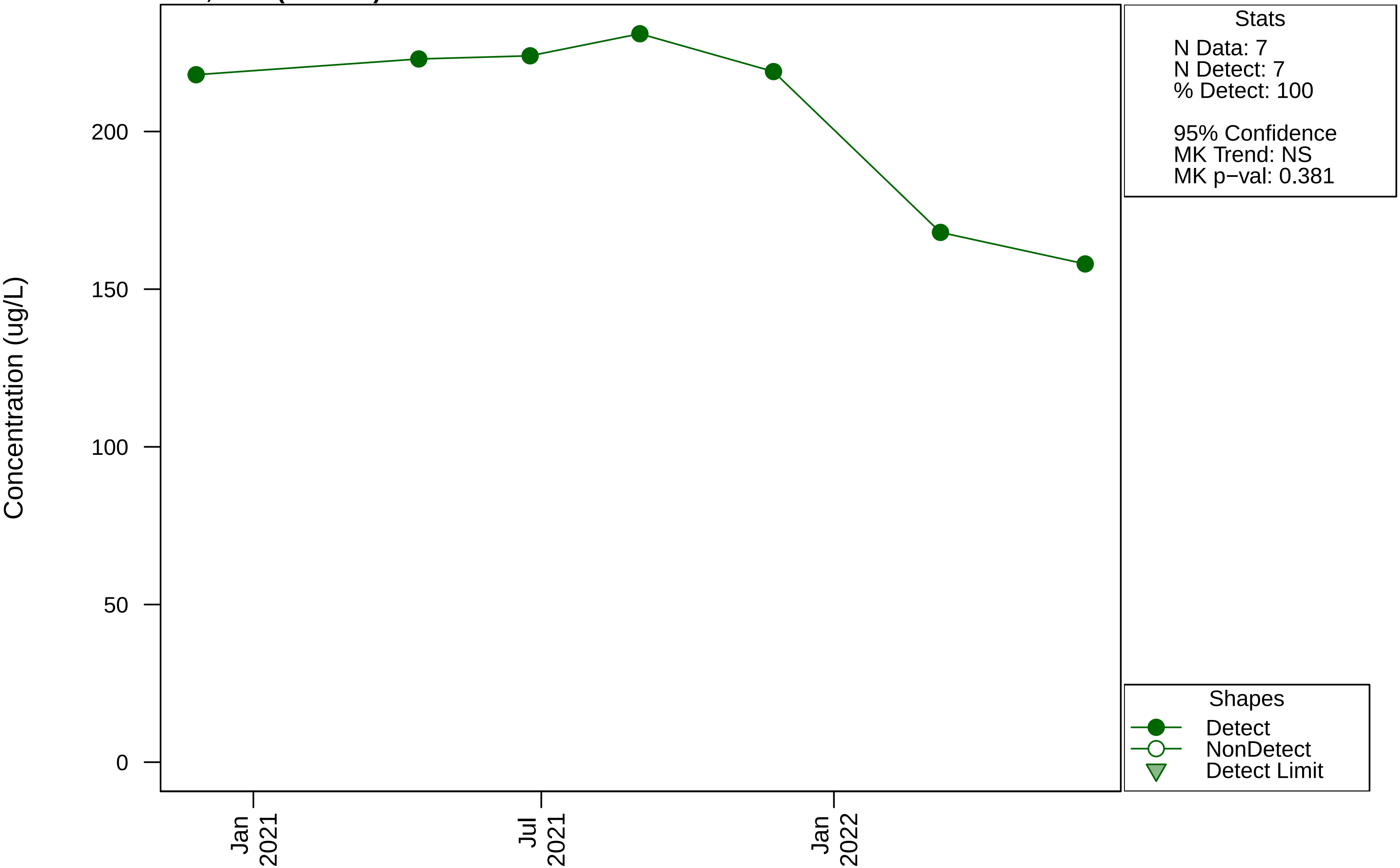
Scatterplots and Trend Analysis
D19, Total Dissolved Solids (TDS) (Filtered)



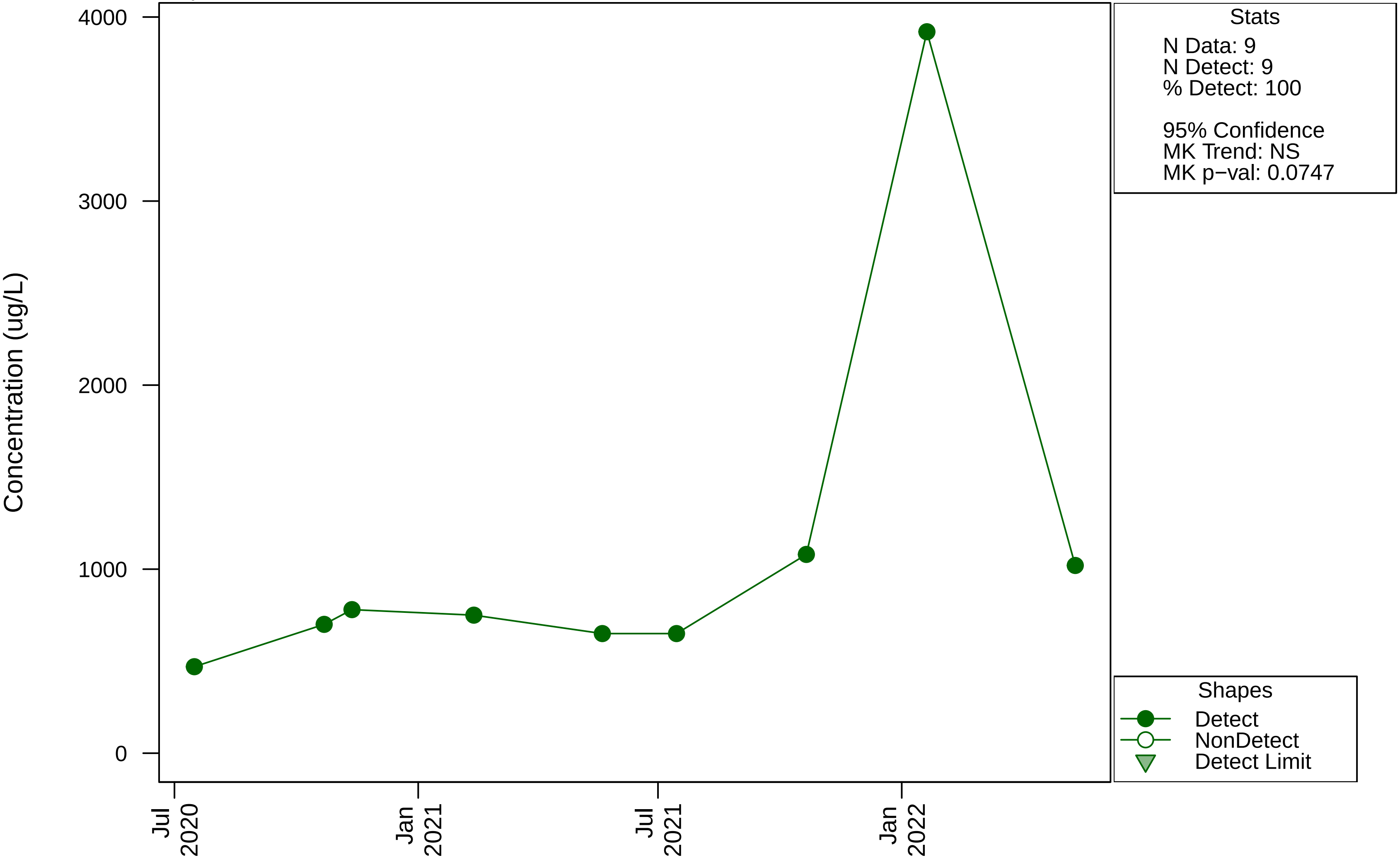
Scatterplots and Trend Analysis
D19, Zinc

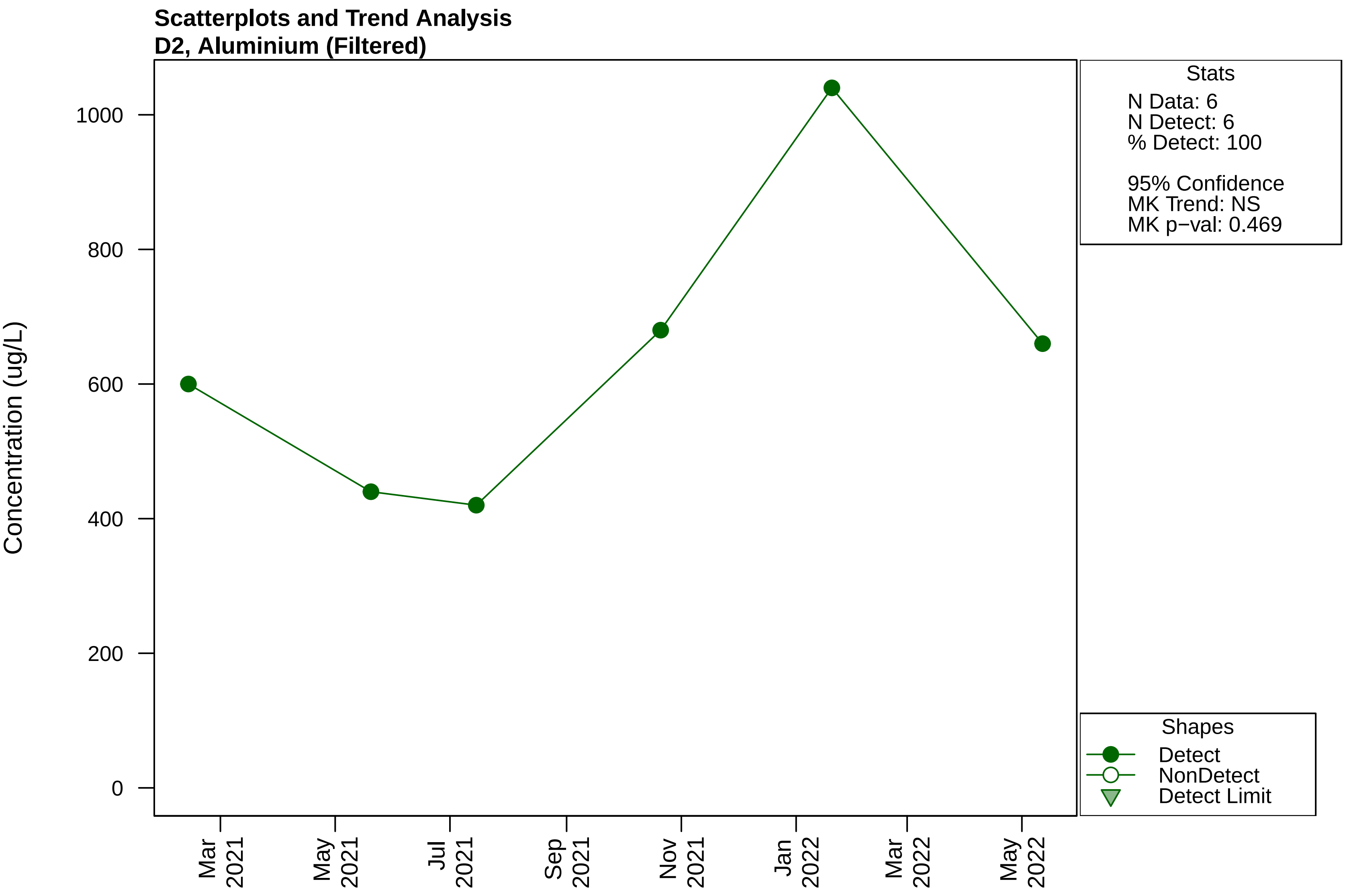


Scatterplots and Trend Analysis
D19, Zinc (Filtered)



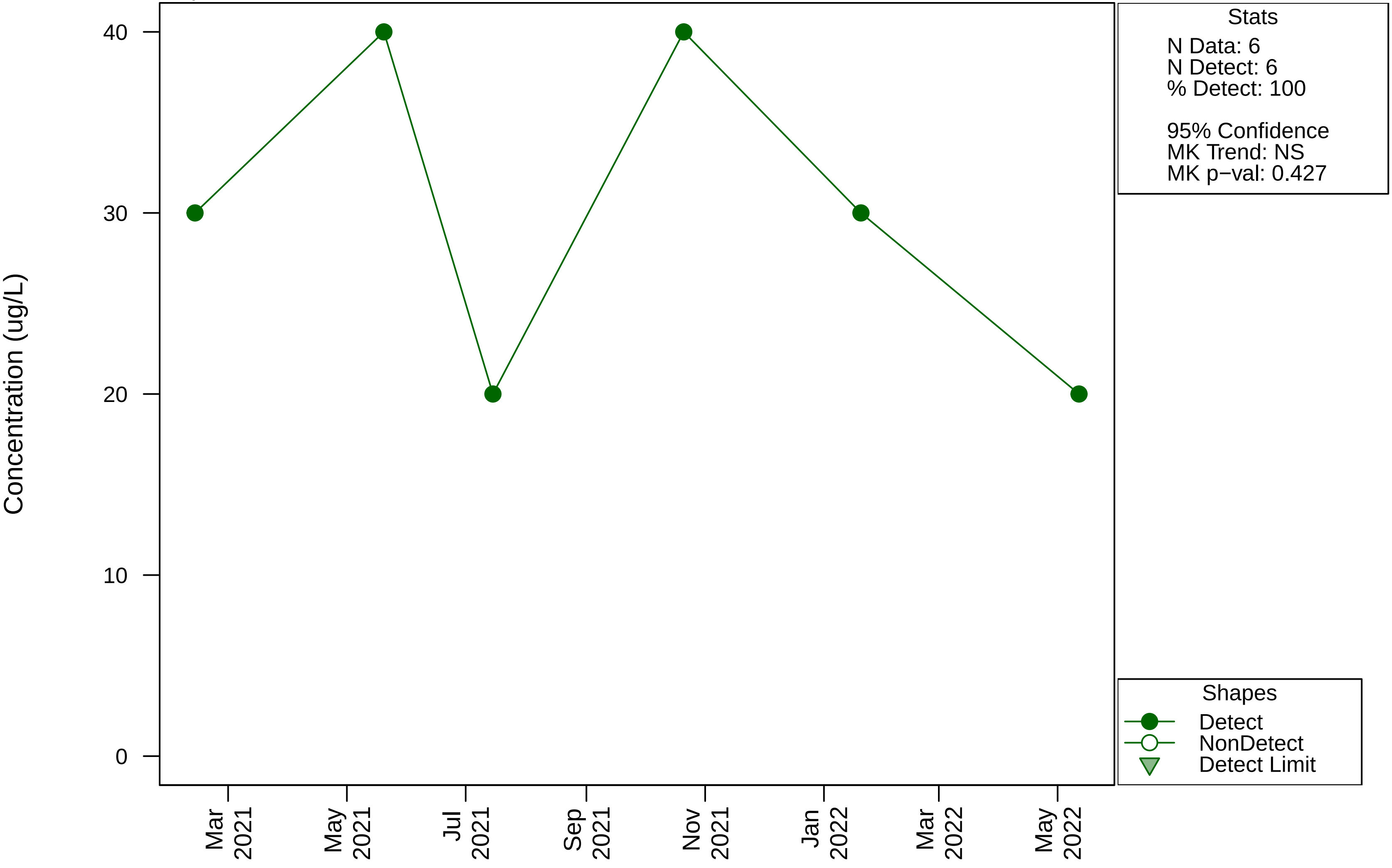
Scatterplots and Trend Analysis
D2, Aluminium

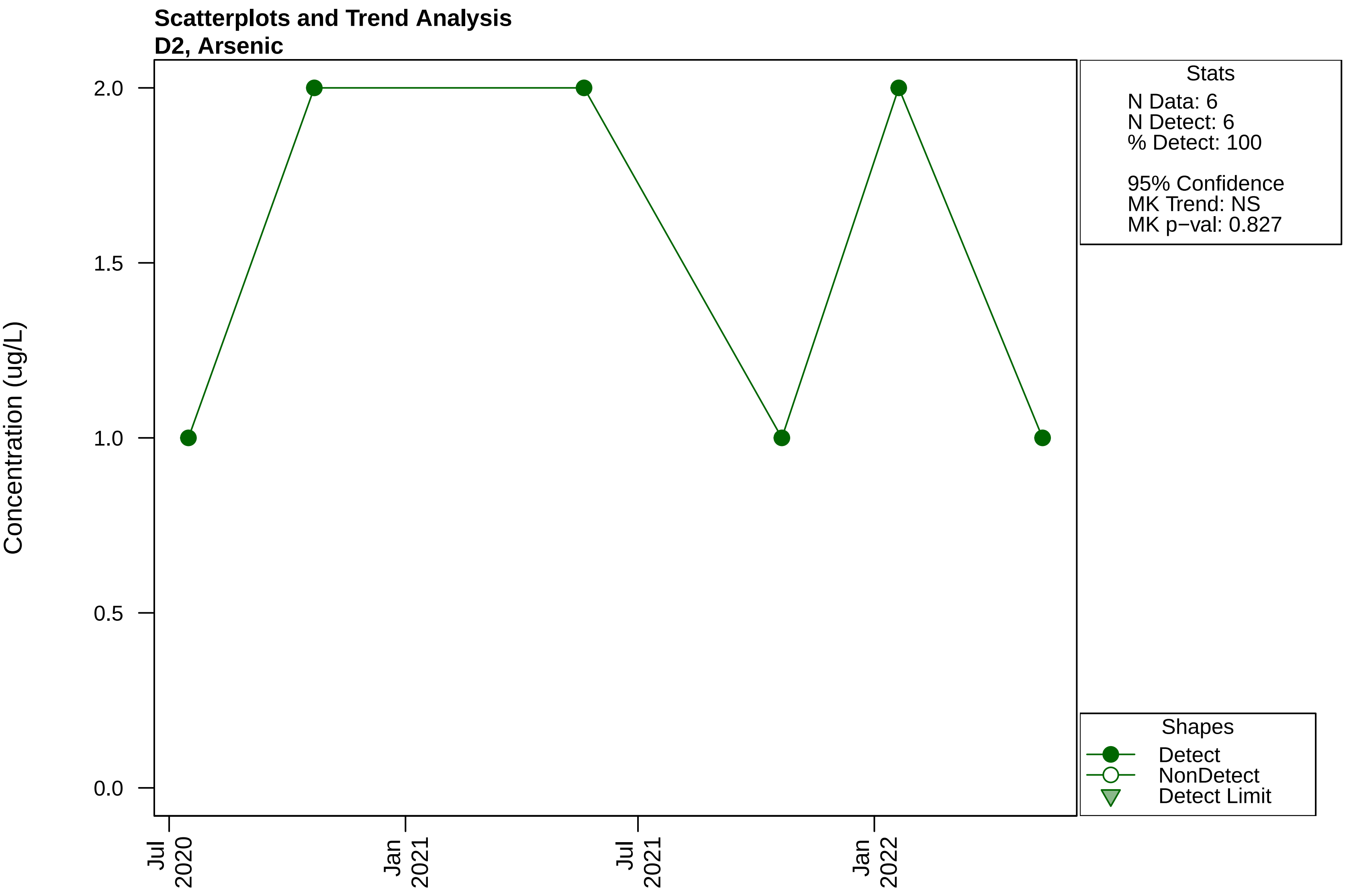




Scatterplots and Trend Analysis
D2, Aluminium (Filtered)
Concentration (ug/L)
0
200
400
600
800
1000
Mar 2021
May 2021
Jul 2021
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 6
N Detect: 6
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.469
Shapes
Detect
NonDetect
Detect Limit

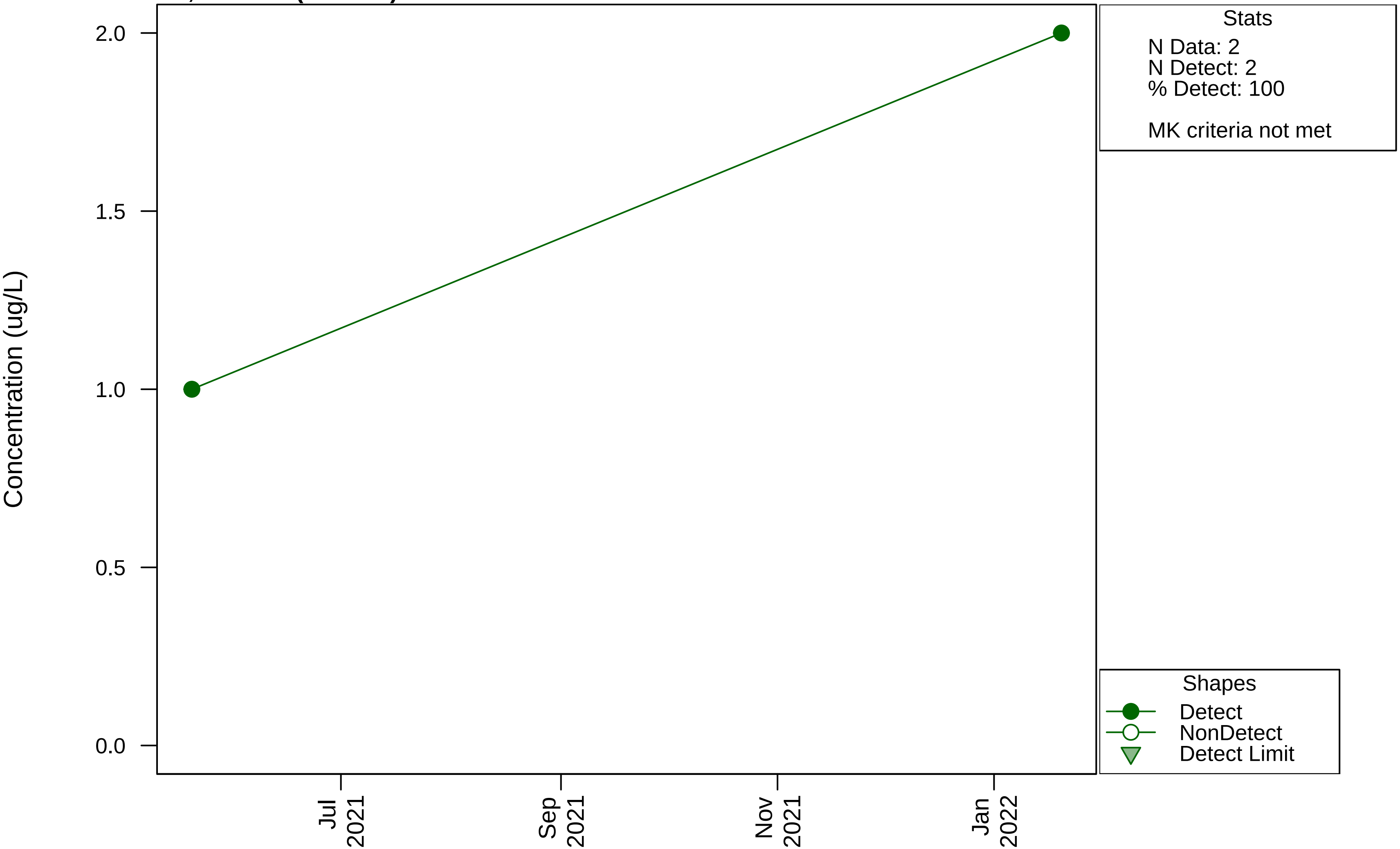
Scatterplots and Trend Analysis
D2, Ammonia



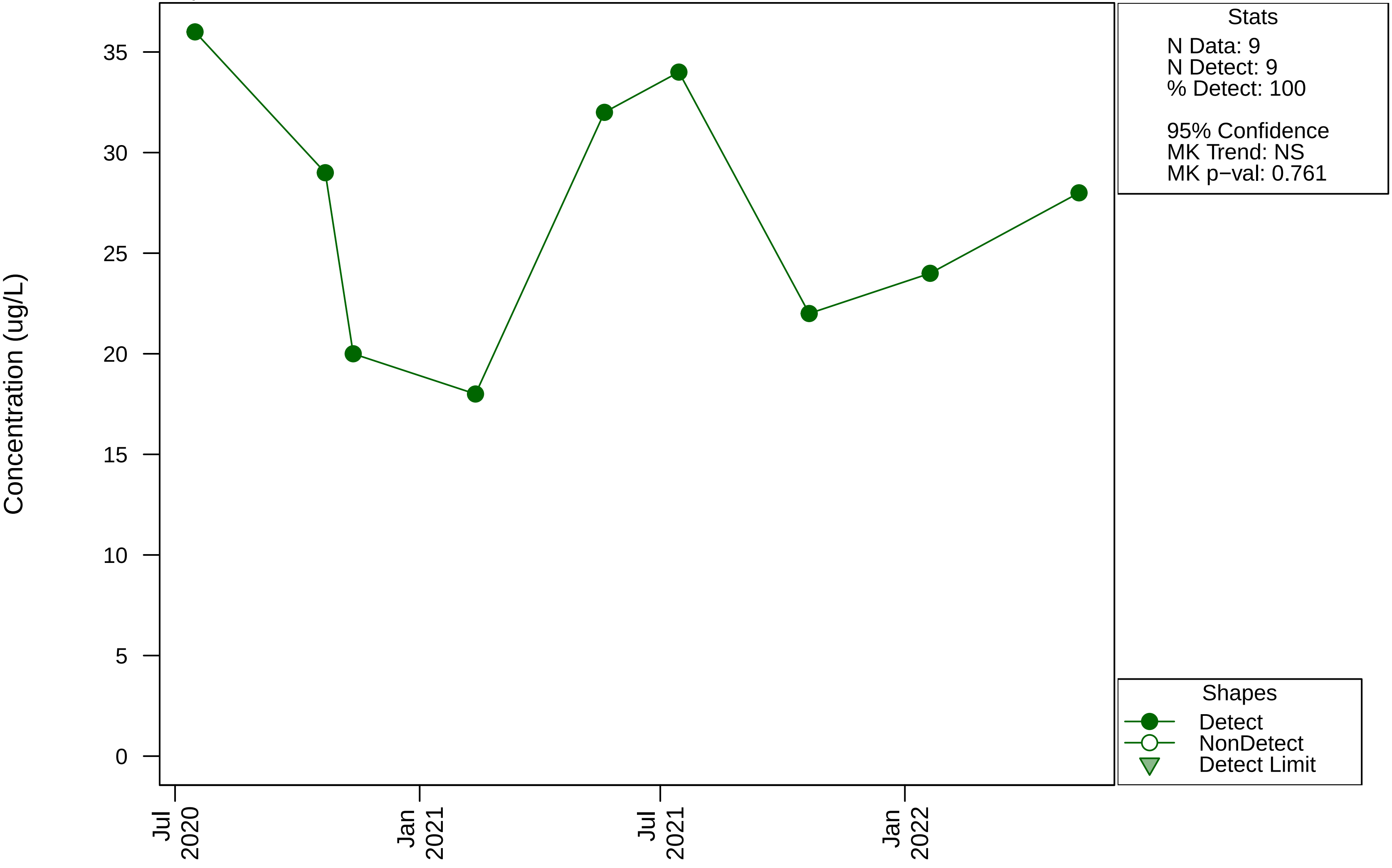


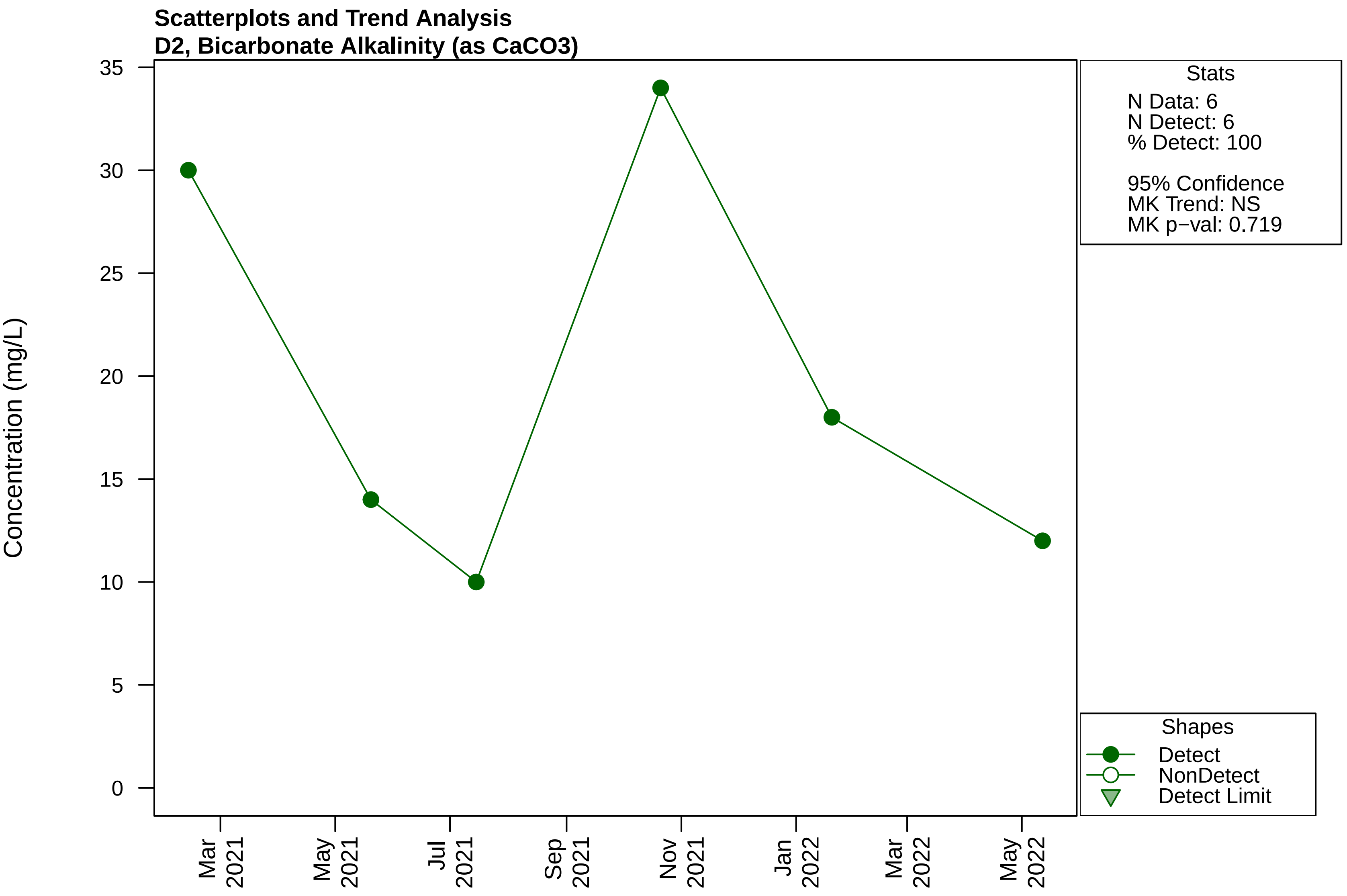
Scatterplots and Trend Analysis
D2, Arsenic
Concentration (ug/L)
2.0
1.5
1.0
0.5
0.0
Jul 2020
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 6
N Detect: 6
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.827
Shapes
Detect
NonDetect
Detect Limit

Scatterplots and Trend Analysis
D2, Arsenic (Filtered)

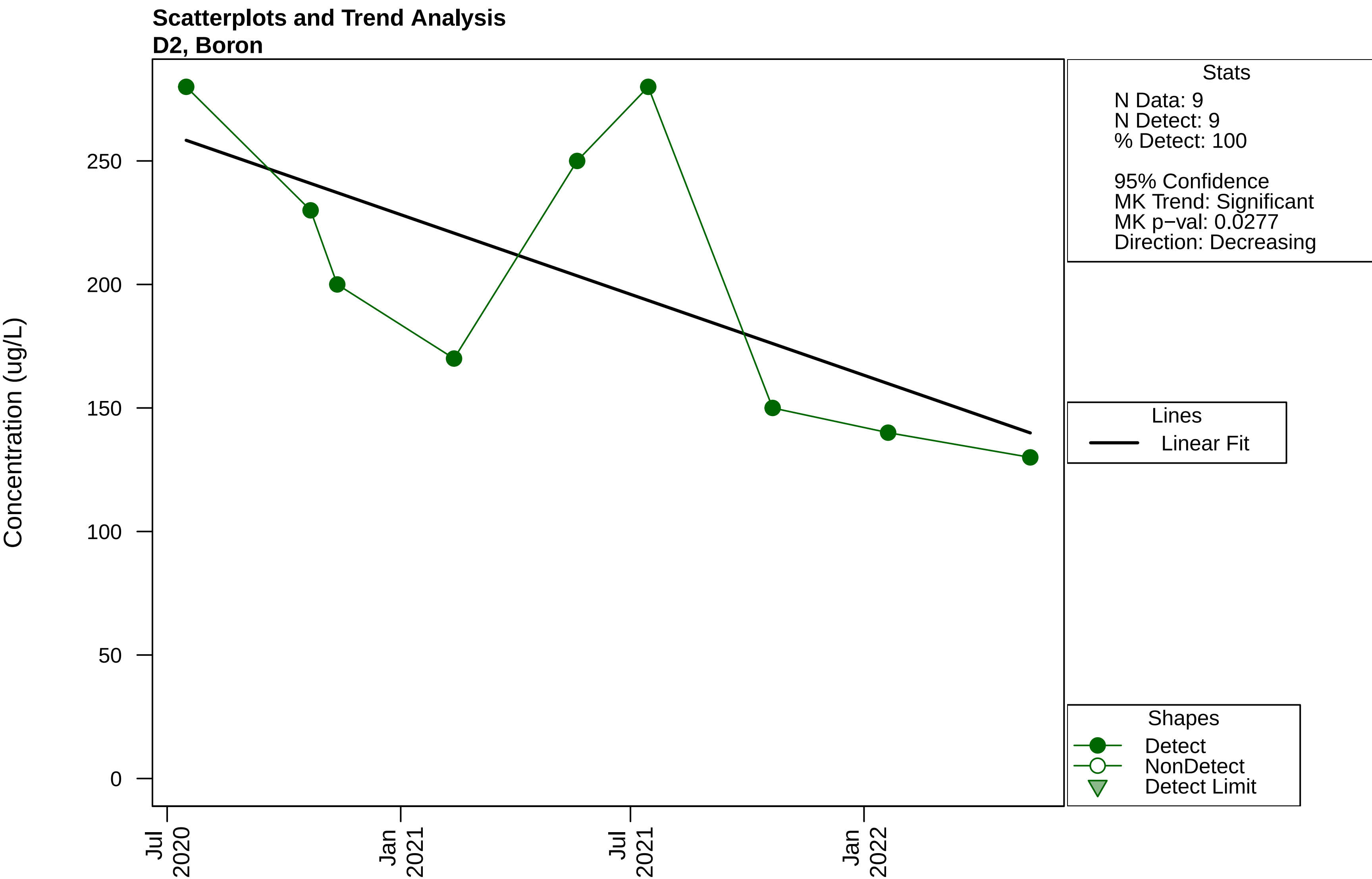


Scatterplots and Trend Analysis
D2, Barium



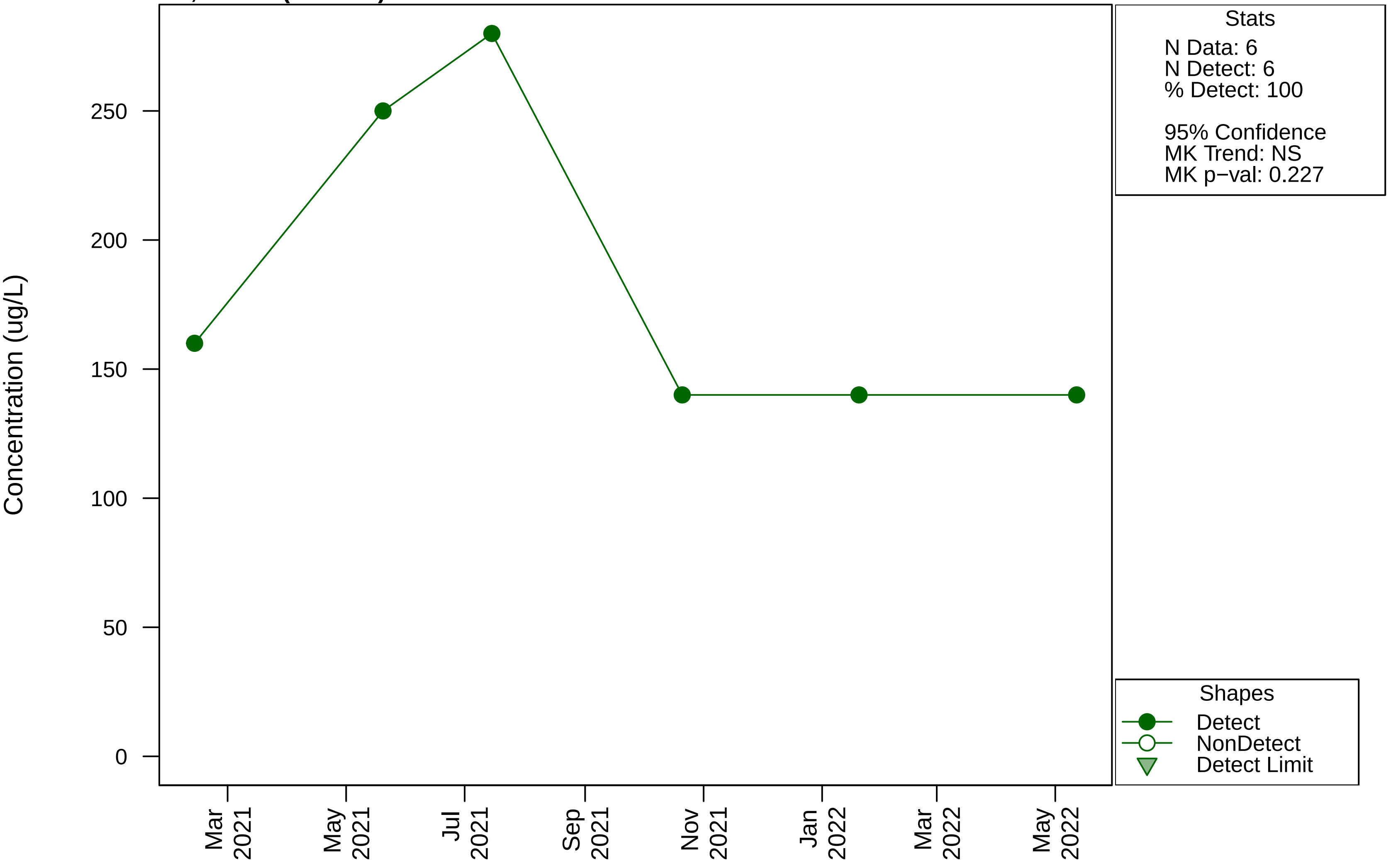


Scatterplots and Trend Analysis
D2, Bicarbonate Alkalinity (as CaCO3)
Concentration (mg/L)
0
5
10
15
20
25
30
35
Mar 2021
May 2021
Jul 2021
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 6
N Detect: 6
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.719
Shapes
Detect
NonDetect
Detect Limit

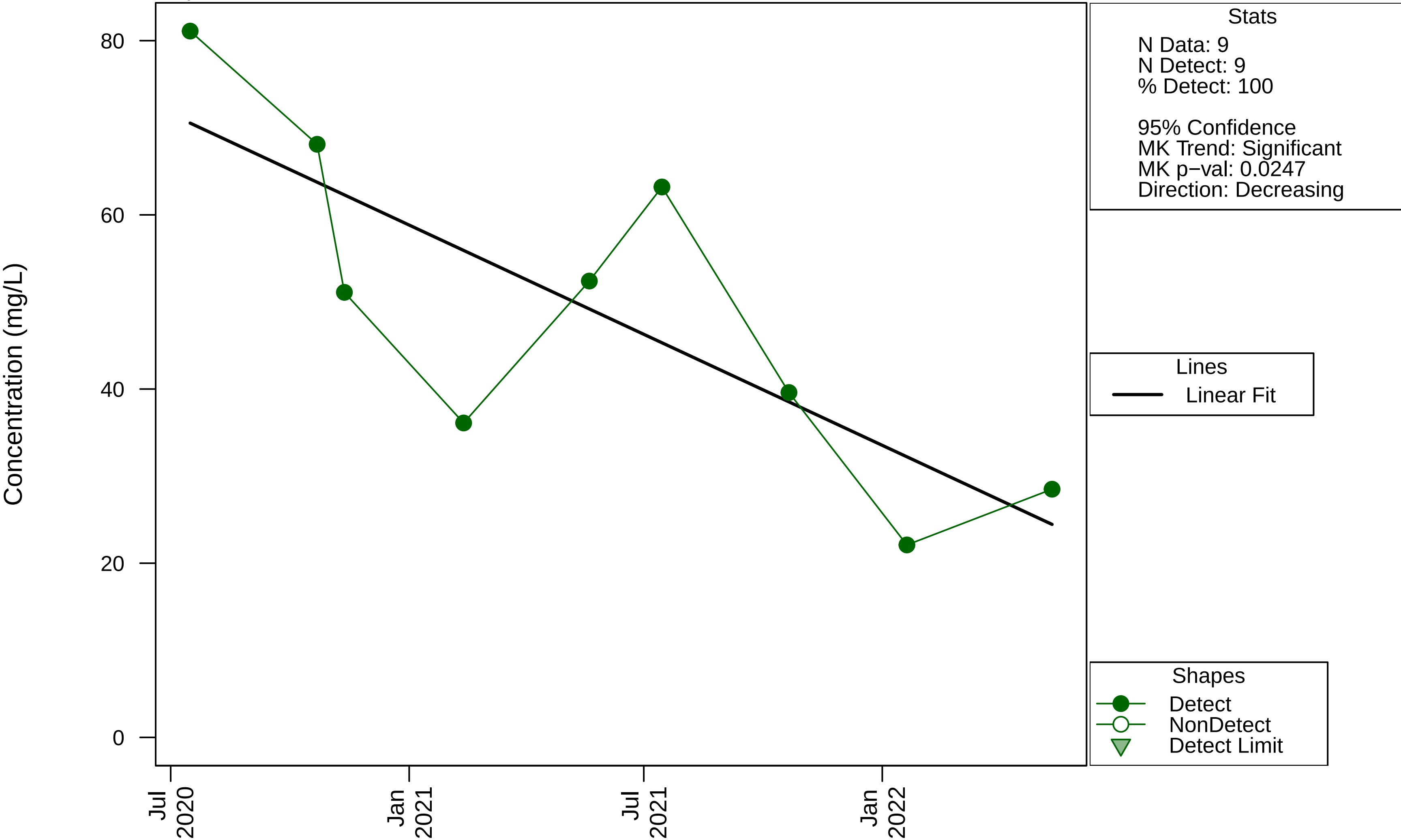


Scatterplots and Trend Analysis
D2, Boron
Concentration (ug/L)
0
50
100
150
200
250
Jul 2020
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 9
N Detect: 9
% Detect: 100
95% Confidence
MK Trend: Significant
MK p−val: 0.0277
Direction: Decreasing
Lines
Linear Fit
Shapes
Detect
NonDetect
Detect Limit

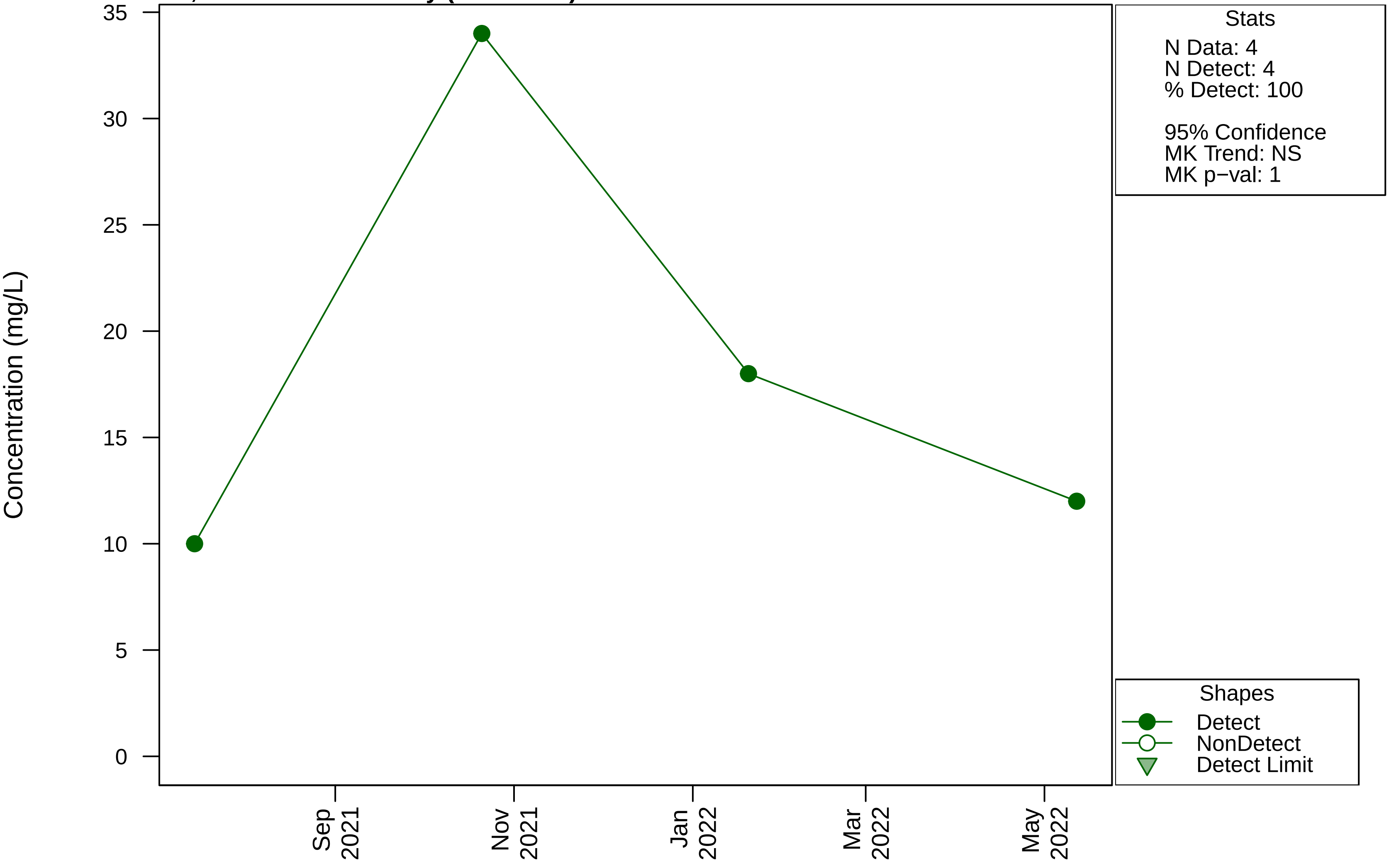
Scatterplots and Trend Analysis
D2, Boron (Filtered)



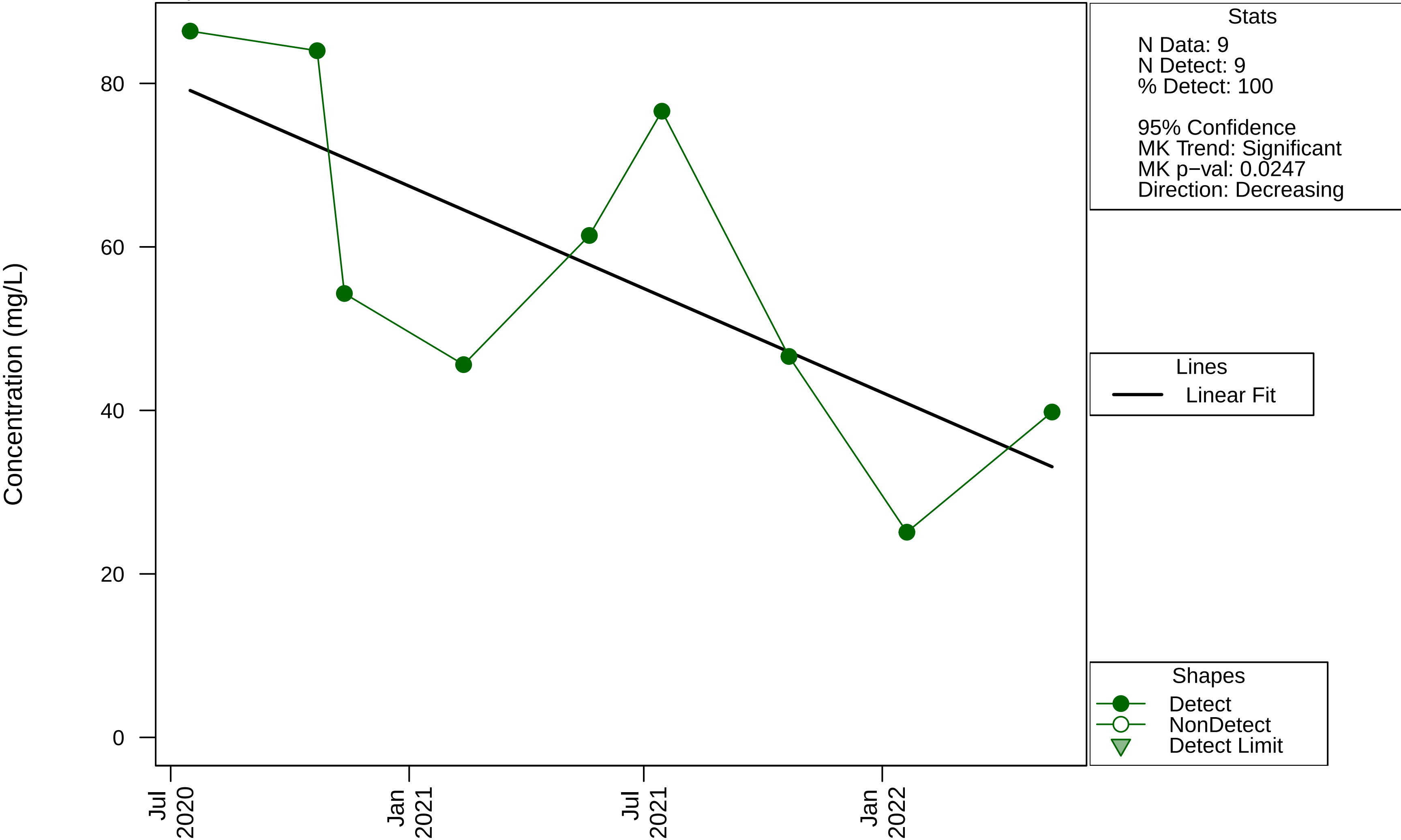
Scatterplots and Trend Analysis
D2, Calcium



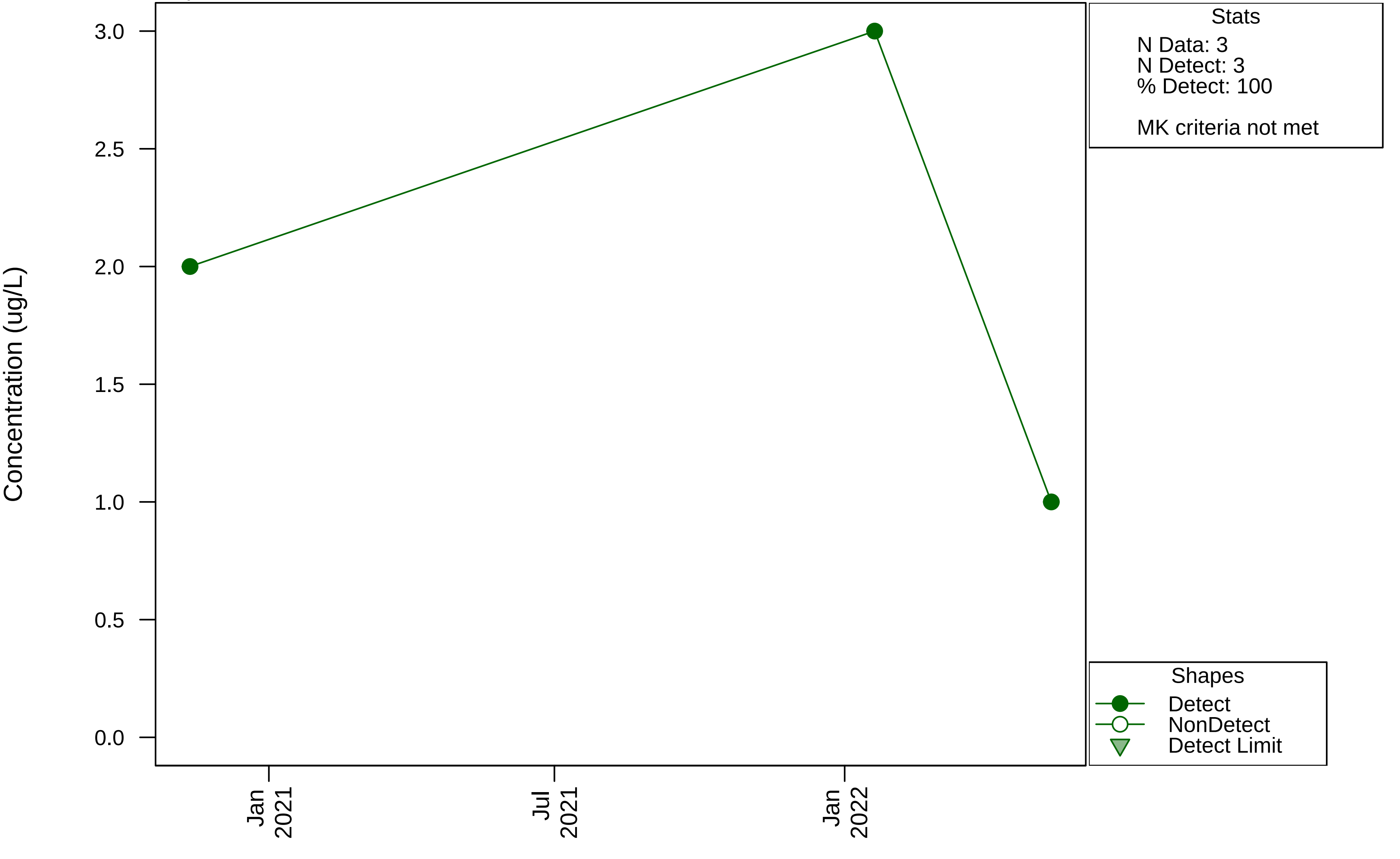
Scatterplots and Trend Analysis
D2, Carbonate Alkalinity (as CaCO3)

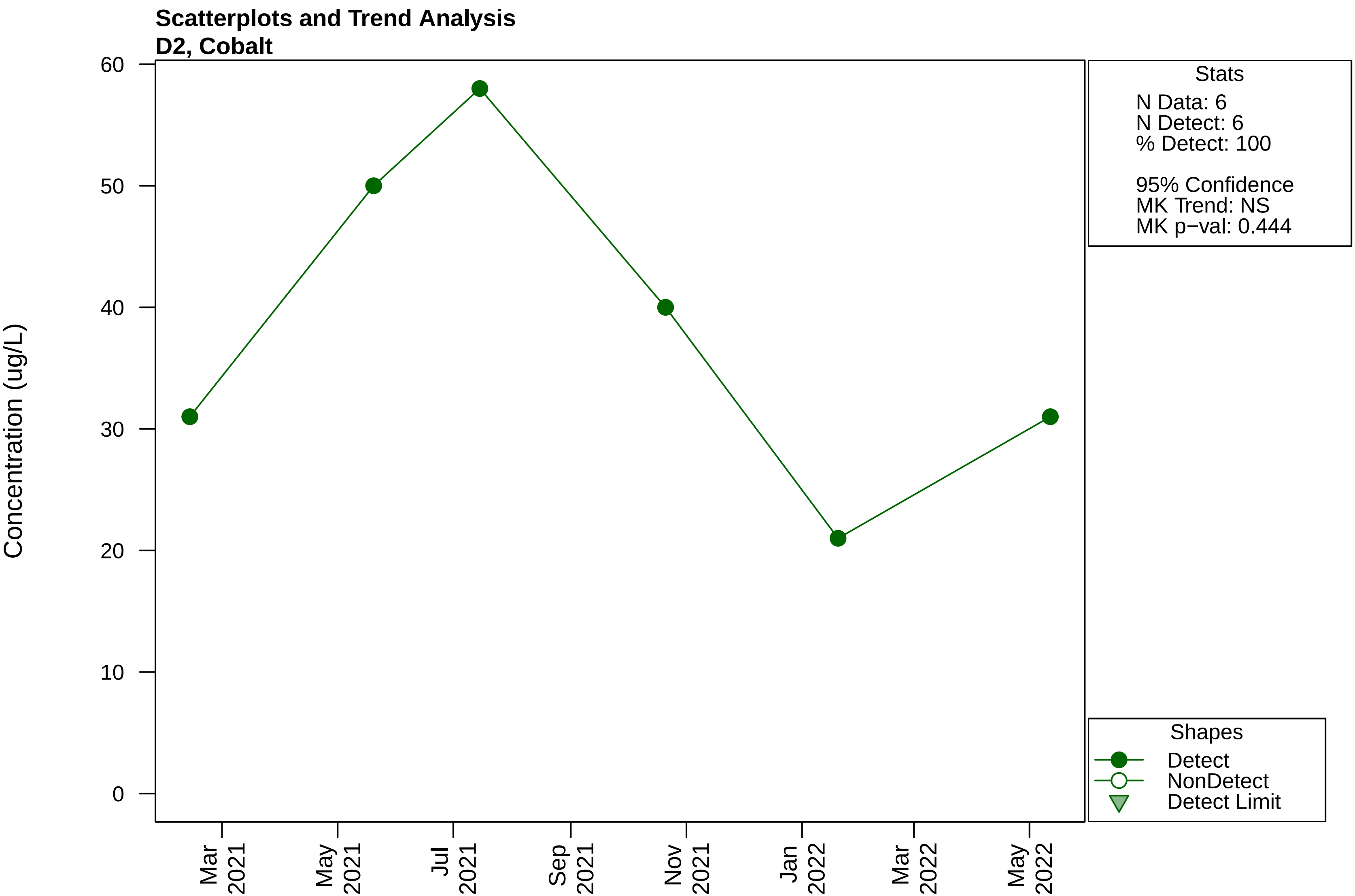


Scatterplots and Trend Analysis
D2, Chloride

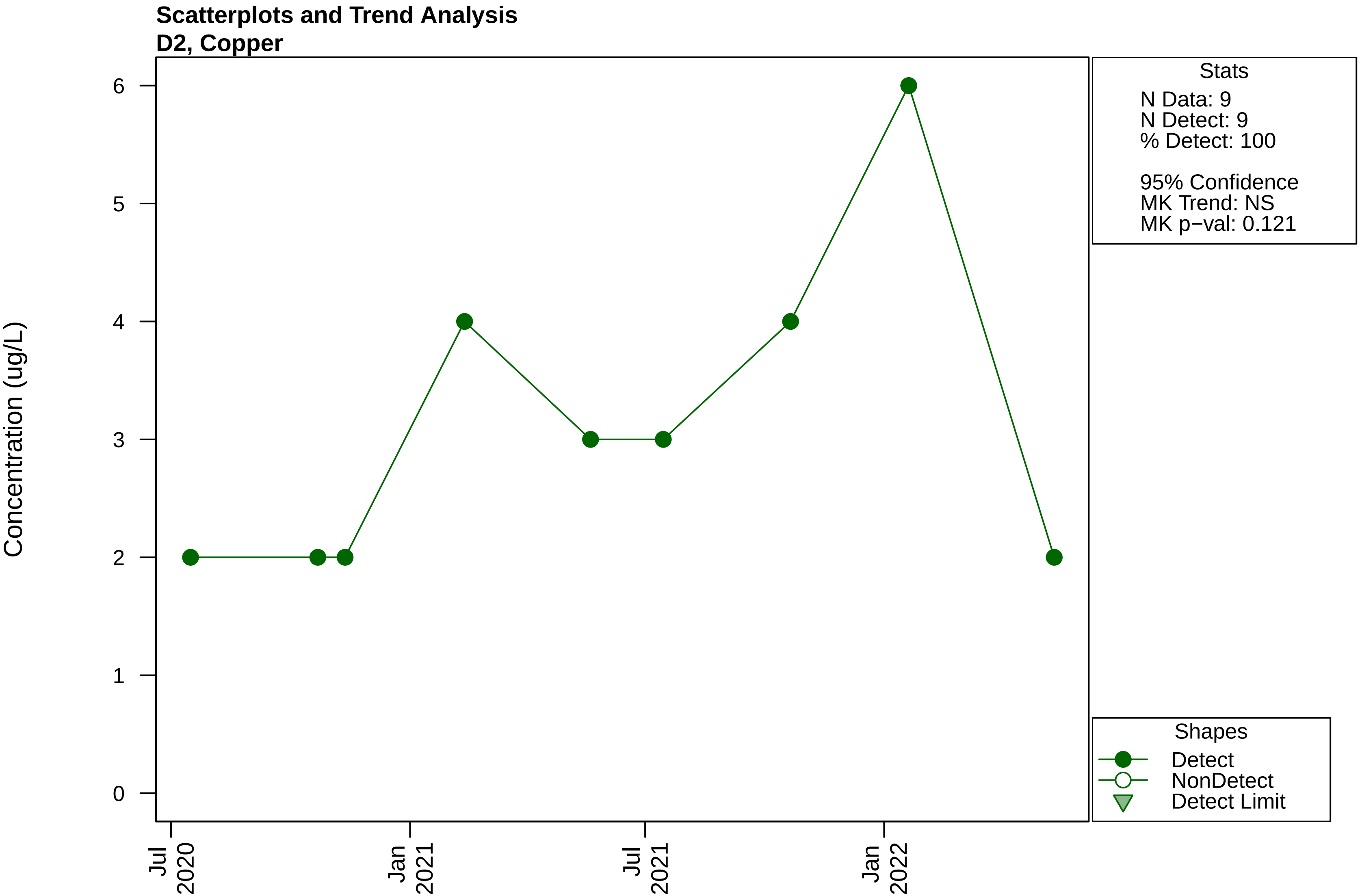


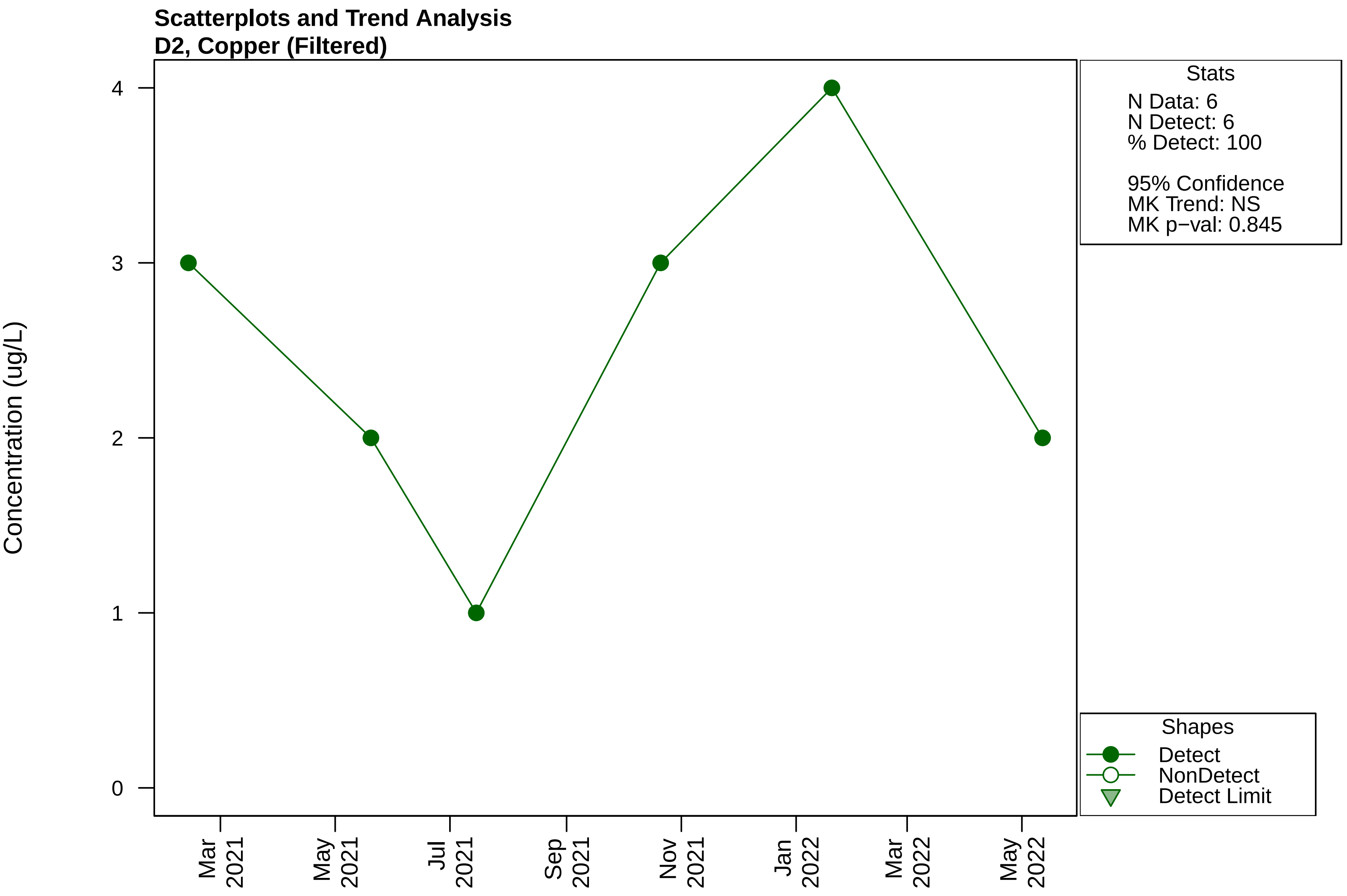
Scatterplots and Trend Analysis
D2, Chromium



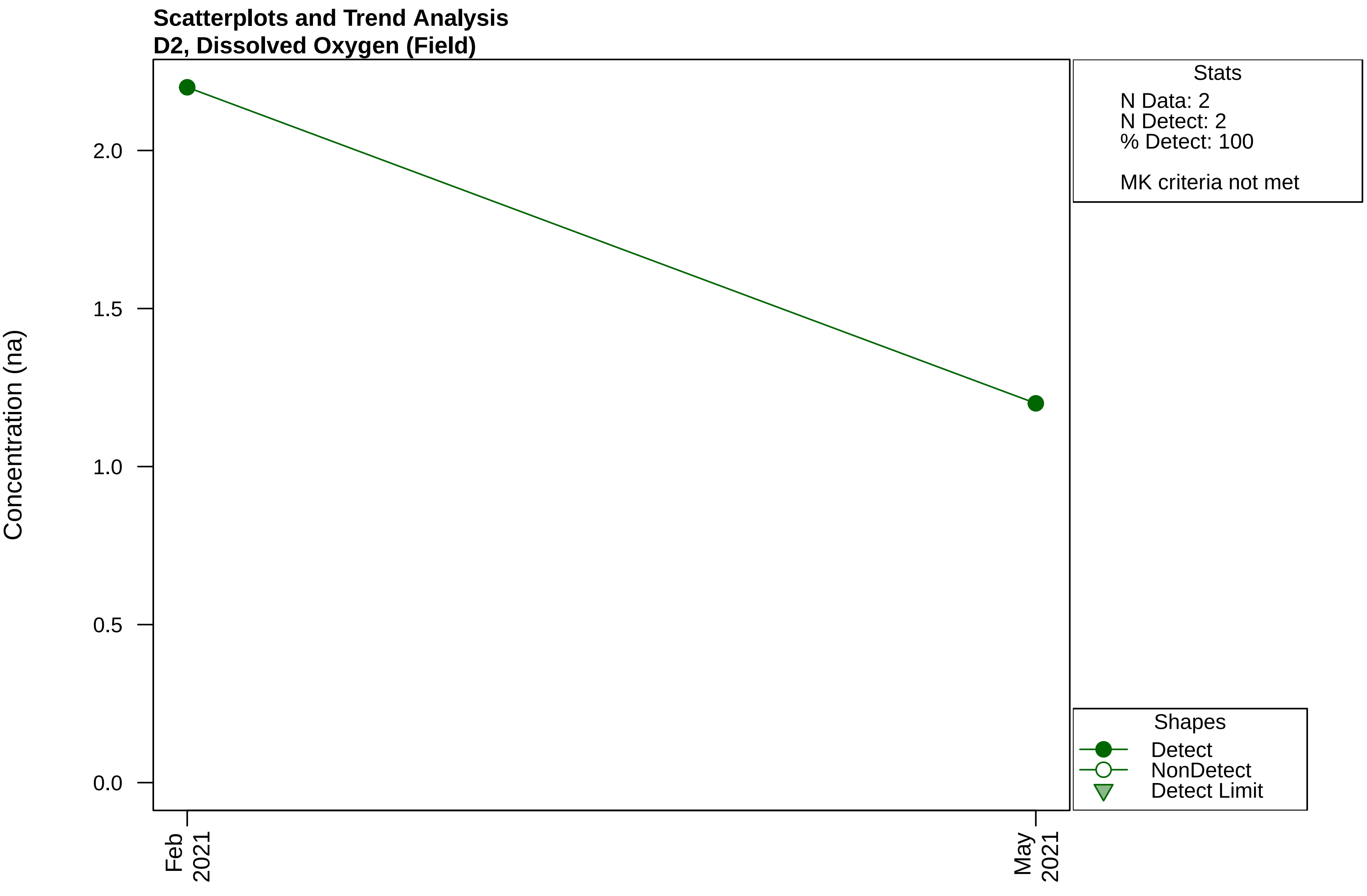


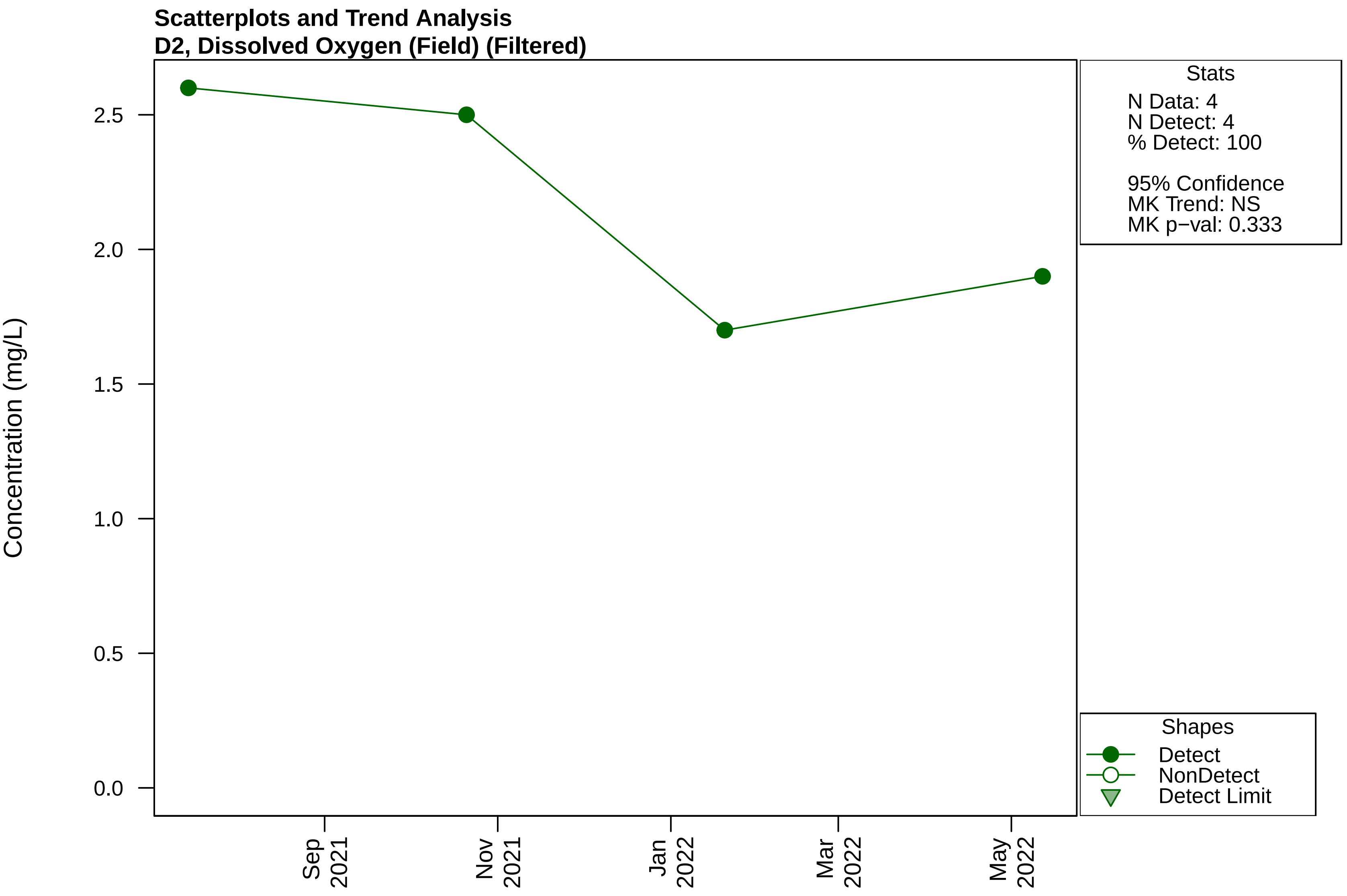
Scatterplots and Trend Analysis
D2, Cobalt
Concentration (ug/L)
0
10
20
30
40
50
60
Mar 2021
May 2021
Jul 2021
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 6
N Detect: 6
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.444
Shapes
Detect
NonDetect
Detect Limit


Scatterplots and Trend Analysis
D2, Copper
Concentration (ug/L)
0
1
2
3
4
5
6
Jul 2020
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 9
N Detect: 9
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.121
Shapes
Detect
NonDetect
Detect Limit

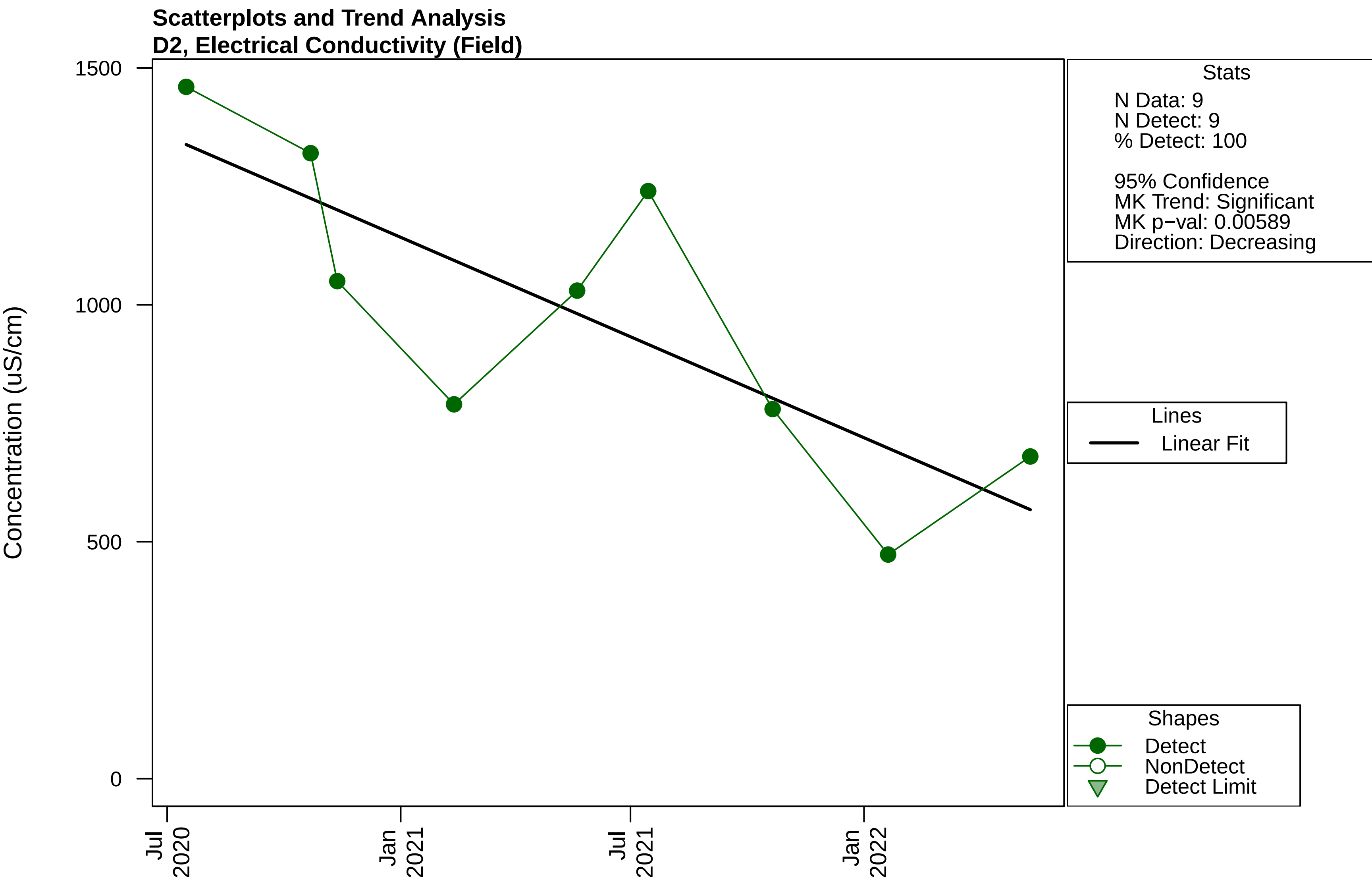


Scatterplots and Trend Analysis
D2, Copper (Filtered)
Concentration (ug/L)
0
1
2
3
4
Mar 2021
May 2021
Jul 2021
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 6
N Detect: 6
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.845
Shapes
Detect
NonDetect
Detect Limit

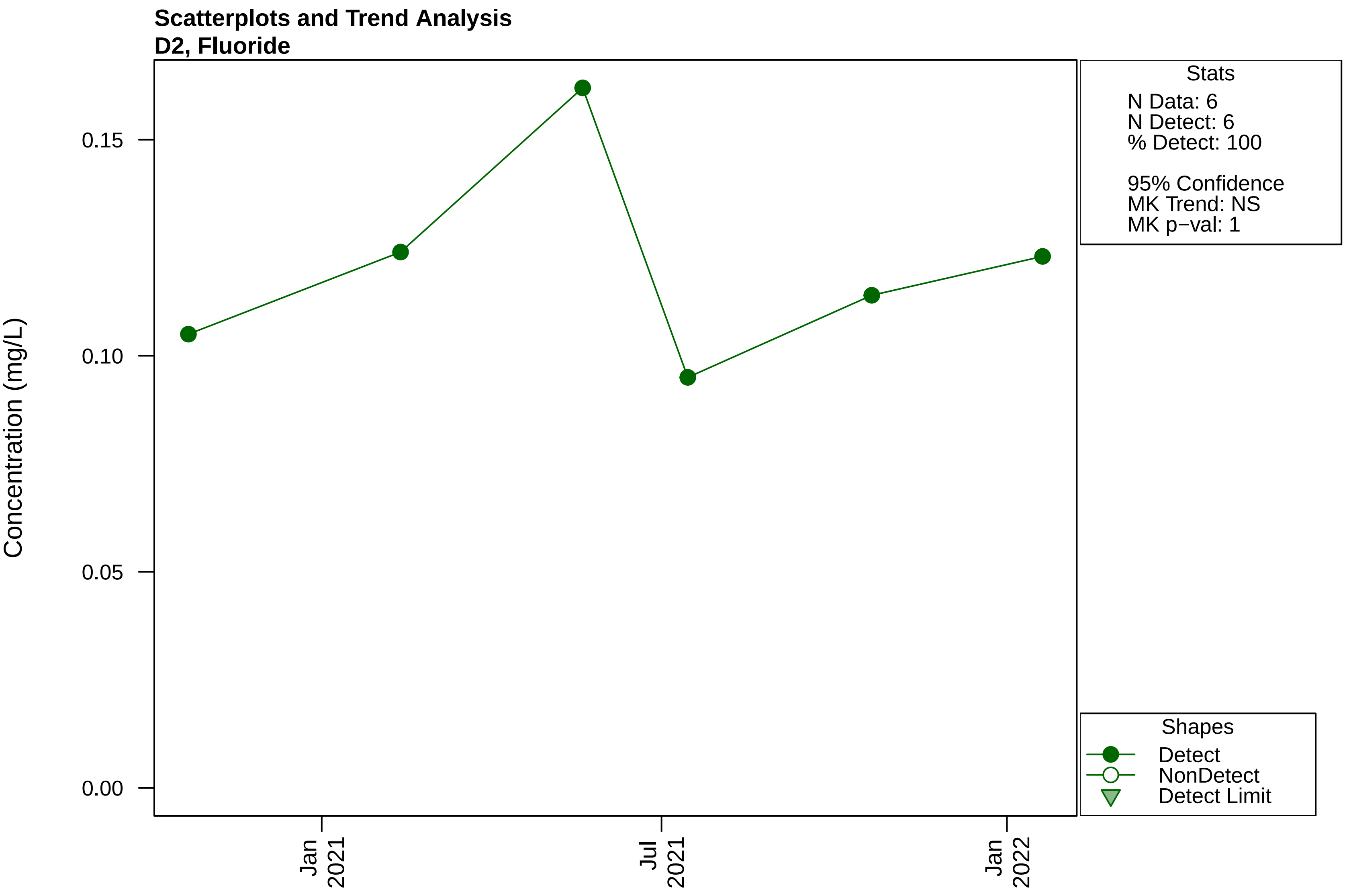

Scatterplots and Trend Analysis
D2, Dissolved Oxygen (Field)
Concentration (na)
2.0
1.5
1.0
0.5
0.0
Feb 2021
May 2021
Stats
N Data: 2
N Detect: 2
% Detect: 100
MK criteria not met
Shapes
Detect
NonDetect
Detect Limit



Scatterplots and Trend Analysis
D2, Dissolved Oxygen (Field) (Filtered)
Concentration (mg/L)
0.0
0.5
1.0
1.5
2.0
2.5
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 4
N Detect: 4
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.333
Shapes
Detect
NonDetect
Detect Limit

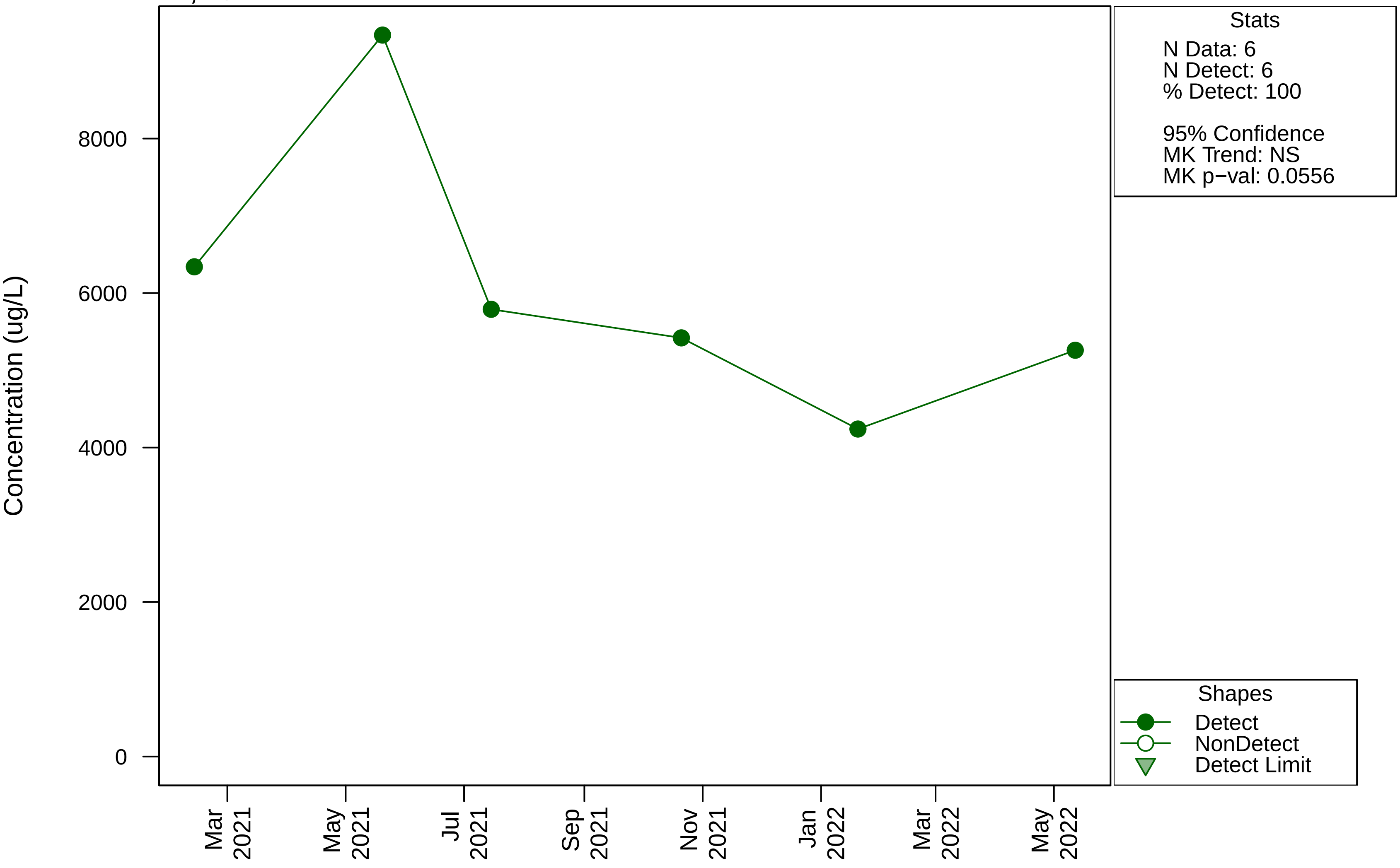


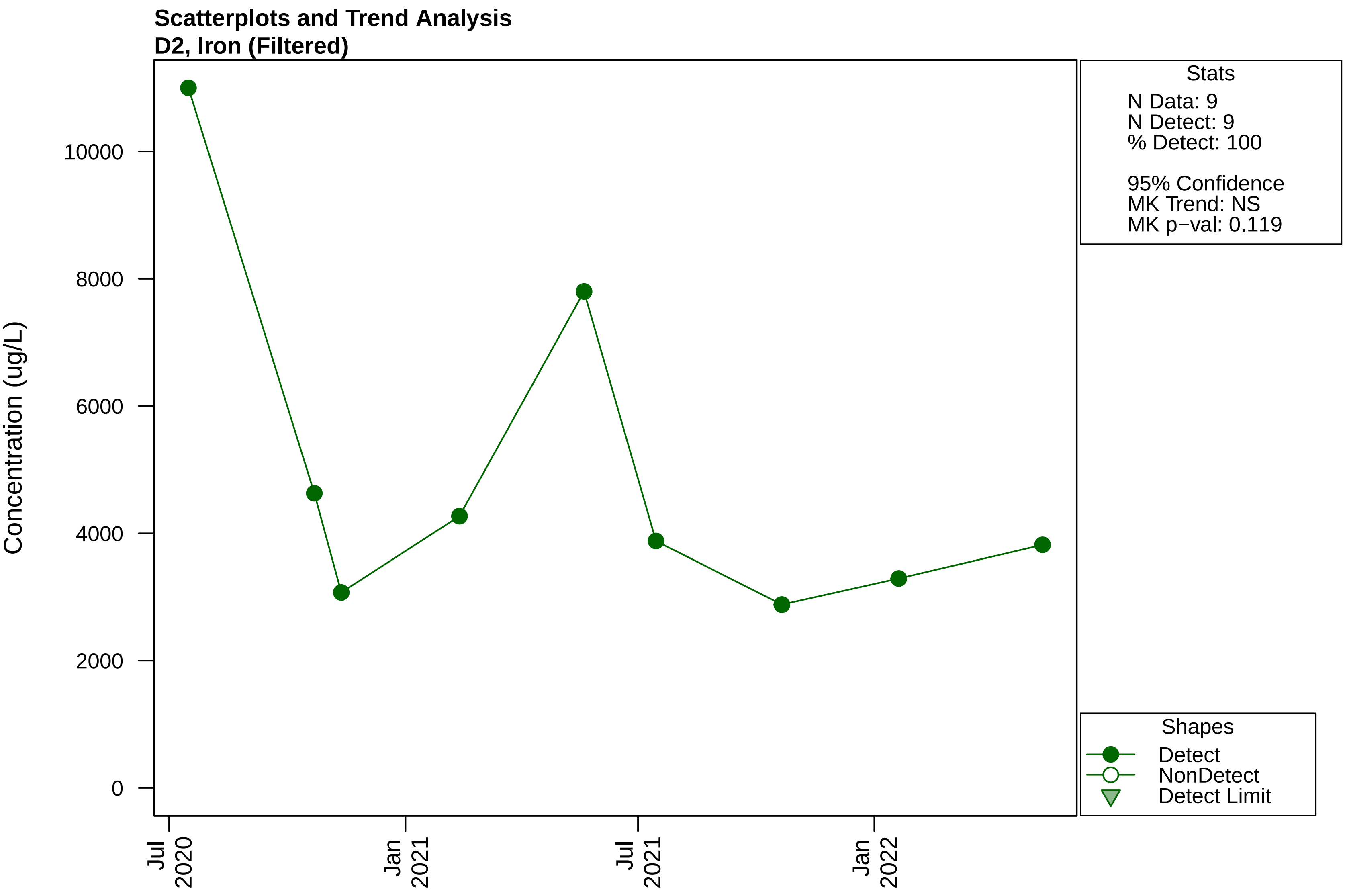
Scatterplots and Trend Analysis
D2, Electrical Conductivity (Field)
Concentration (uS/cm)
1500
1000
500
0
Jul 2020
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 9
N Detect: 9
% Detect: 100
95% Confidence
MK Trend: Significant
MK p−val: 0.00589
Direction: Decreasing
Lines
Linear Fit
Shapes
Detect
NonDetect
Detect Limit



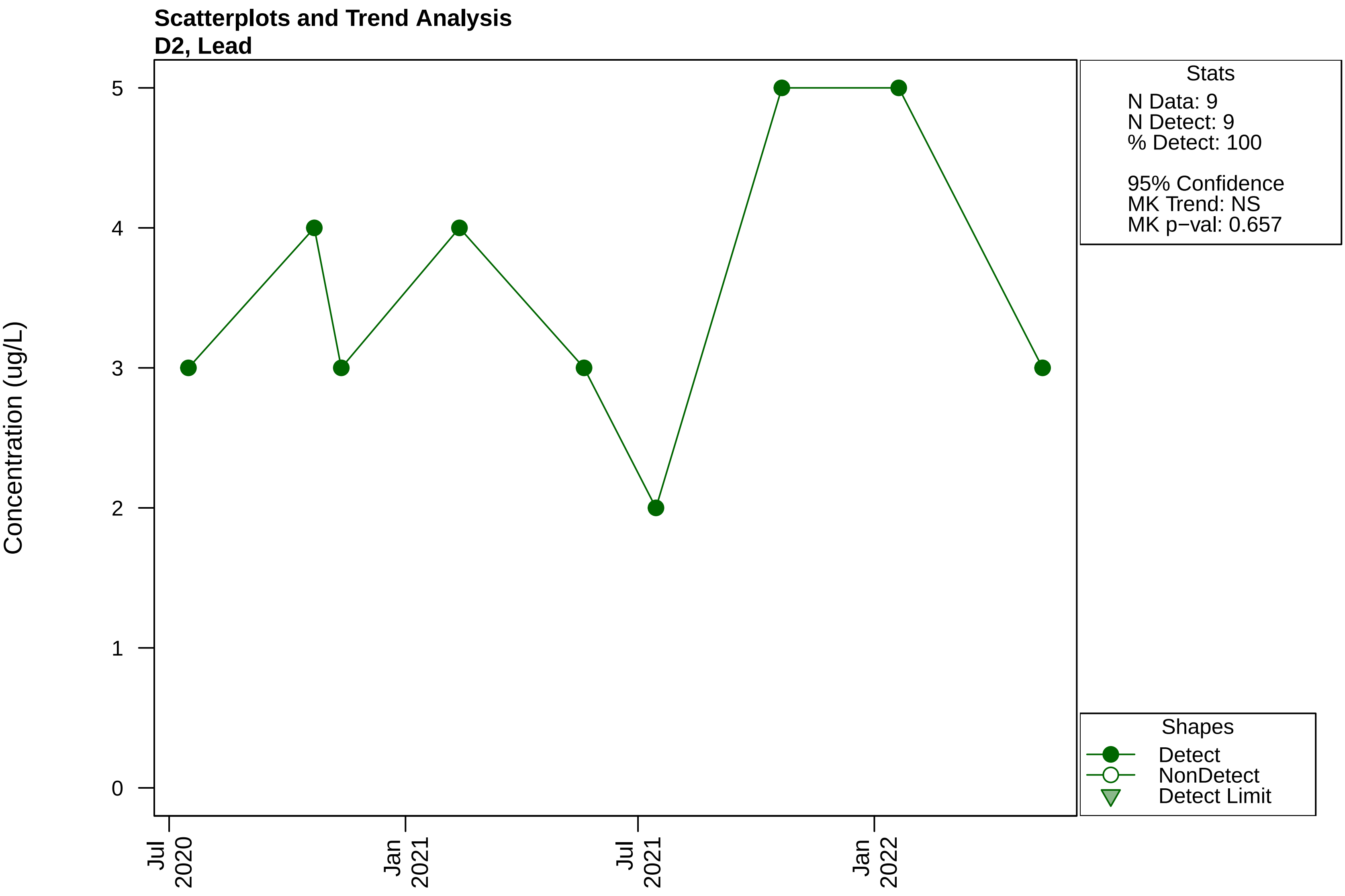
Scatterplots and Trend Analysis
D2, Fluoride
Concentration (mg/L)
0.15
0.10
0.05
0.00
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 6
N Detect: 6
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 1
Shapes
Detect
NonDetect
Detect Limit

Scatterplots and Trend Analysis
D2, Iron



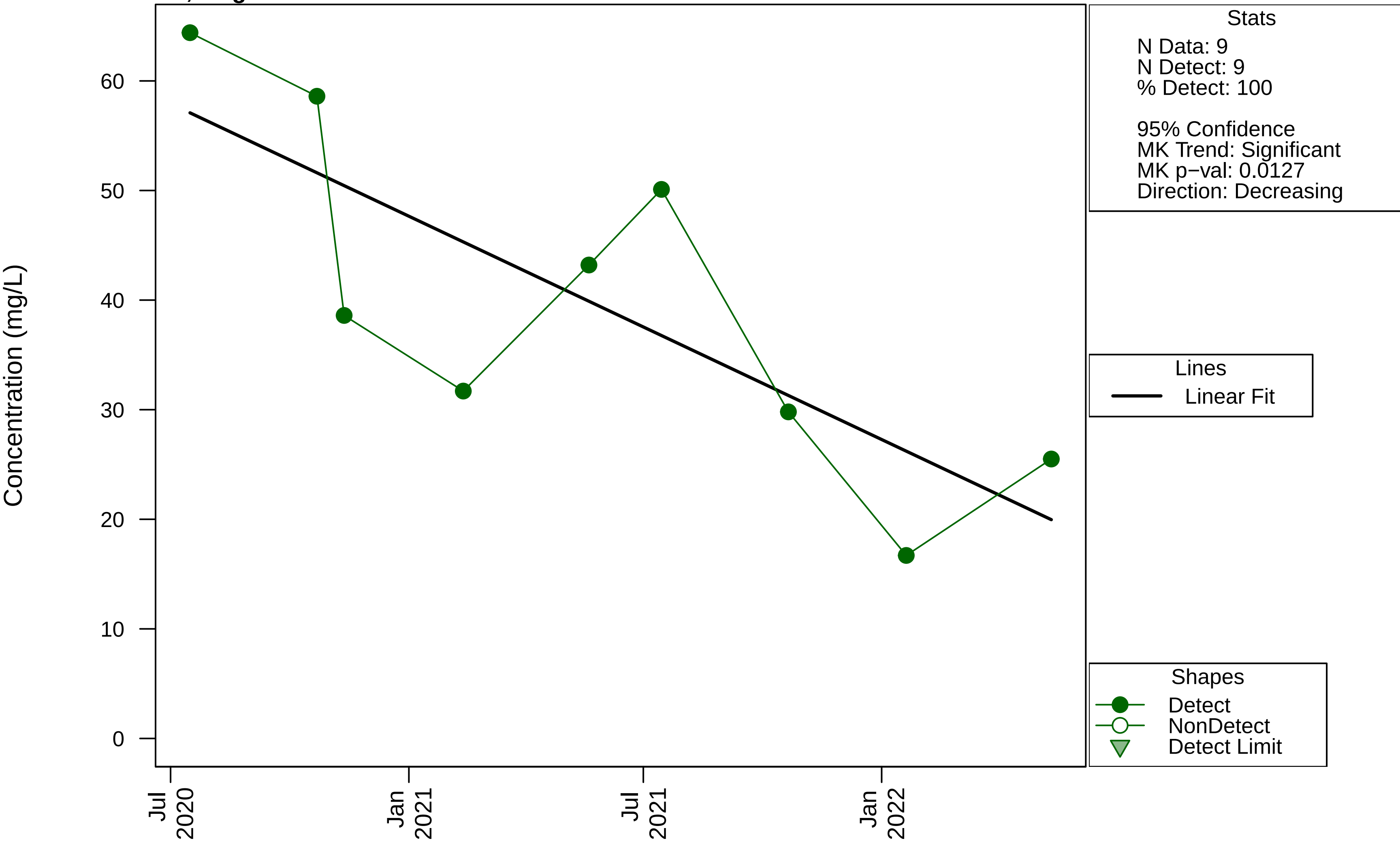


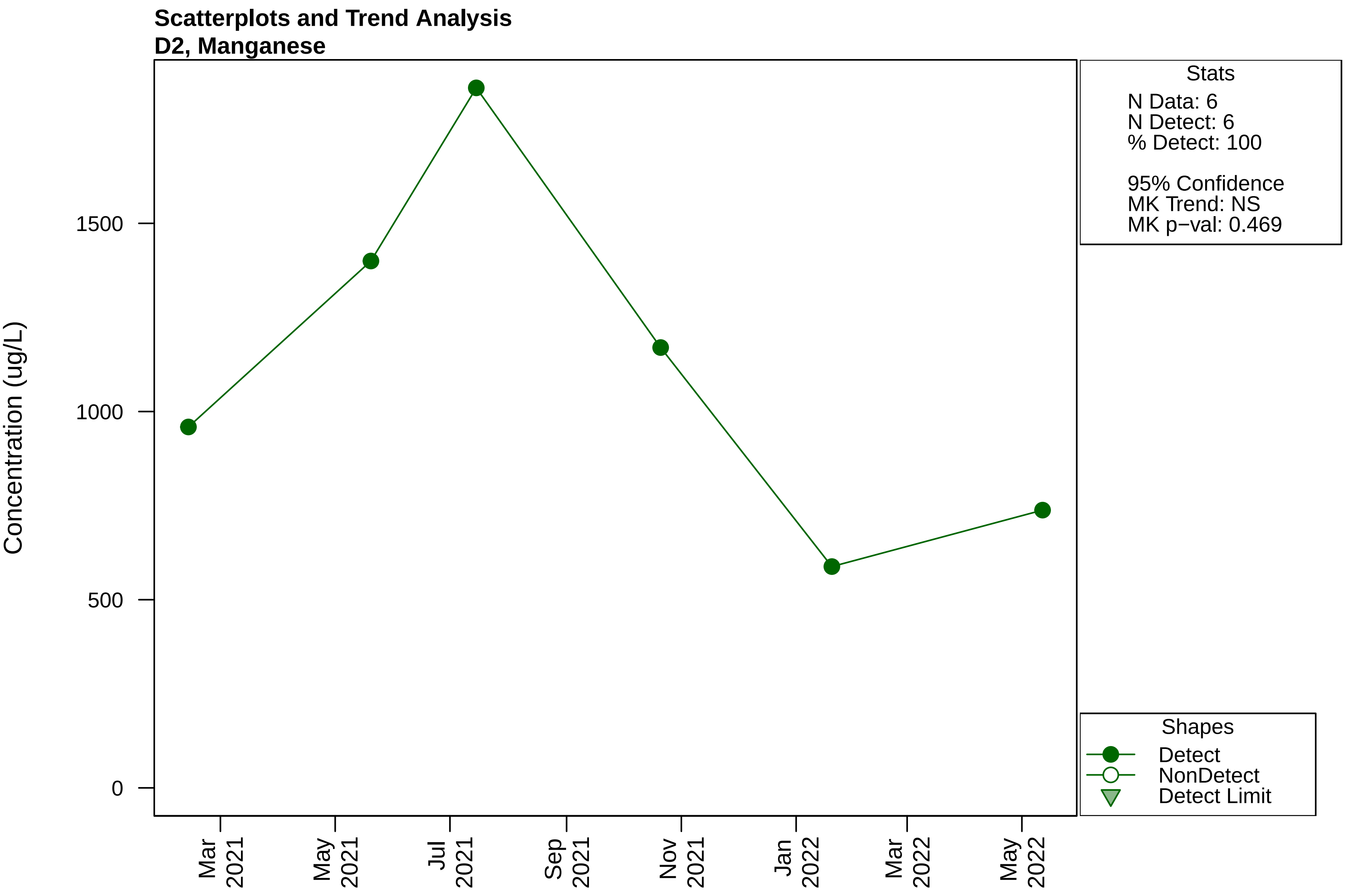
Scatterplots and Trend Analysis
D2, Iron (Filtered)
Concentration (ug/L)
0
2000
4000
6000
8000
10000
Jul 2020
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 9
N Detect: 9
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.119
Shapes
Detect
NonDetect
Detect Limit



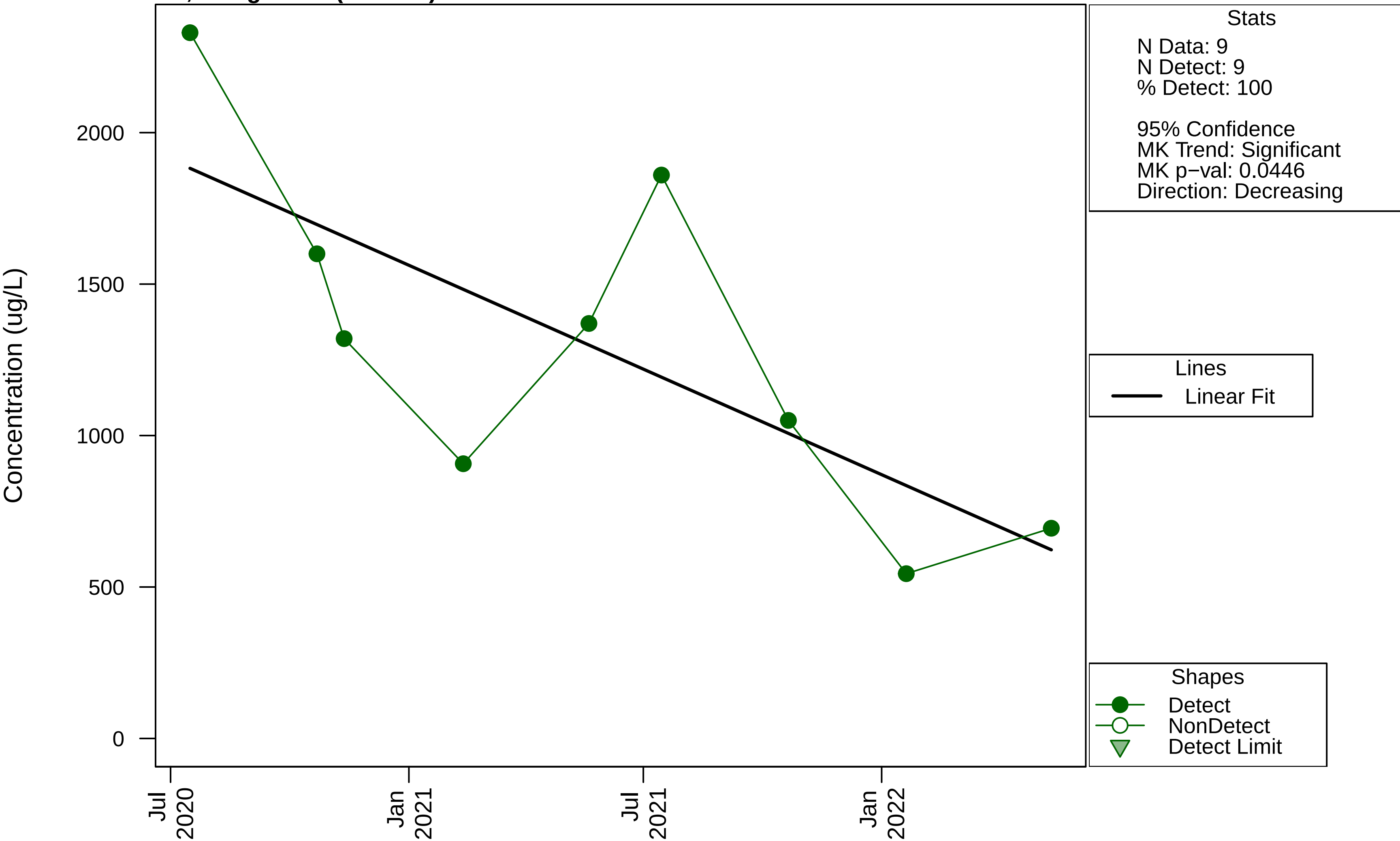
Scatterplots and Trend Analysis
D2, Lead
Concentration (ug/L)
0
1
2
3
4
5
Jul 2020
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 9
N Detect: 9
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.657
Shapes
Detect
NonDetect
Detect Limit

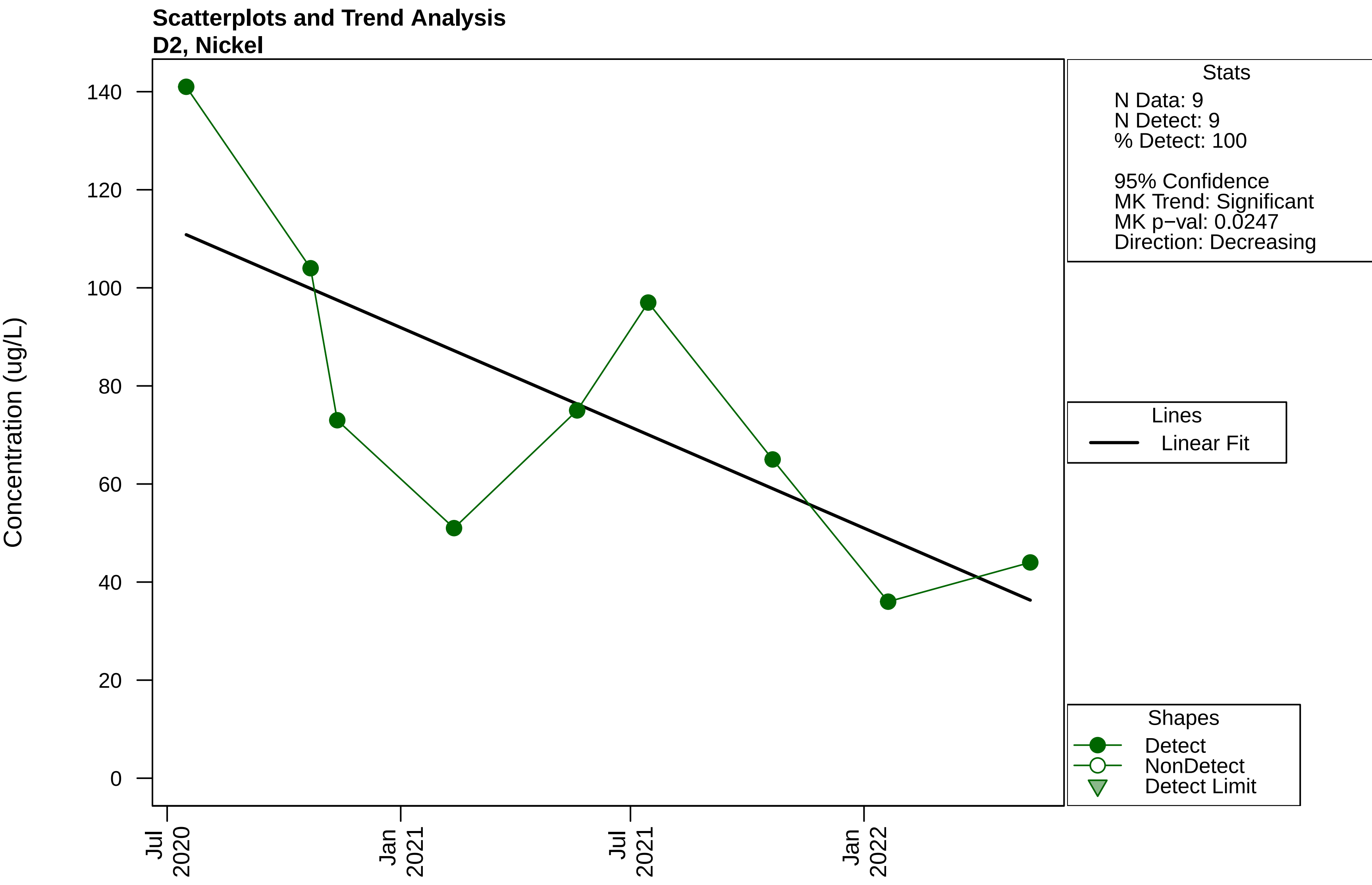
Scatterplots and Trend Analysis
D2, Magnesium

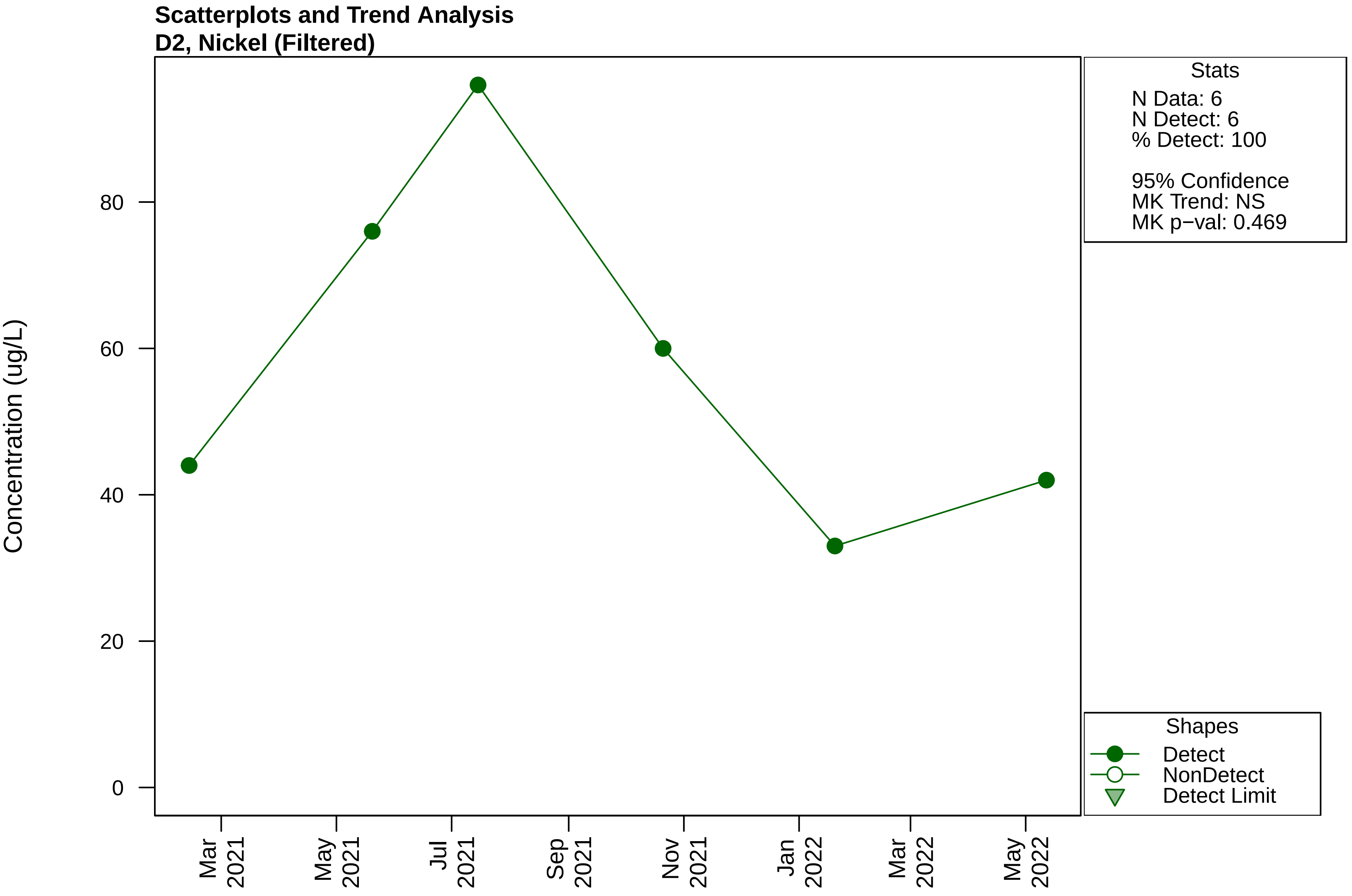



Scatterplots and Trend Analysis
D2, Manganese
Concentration (ug/L)
0
500
1000
1500
Mar 2021
May 2021
Jul 2021
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 6
N Detect: 6
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.469
Shapes
Detect
NonDetect
Detect Limit

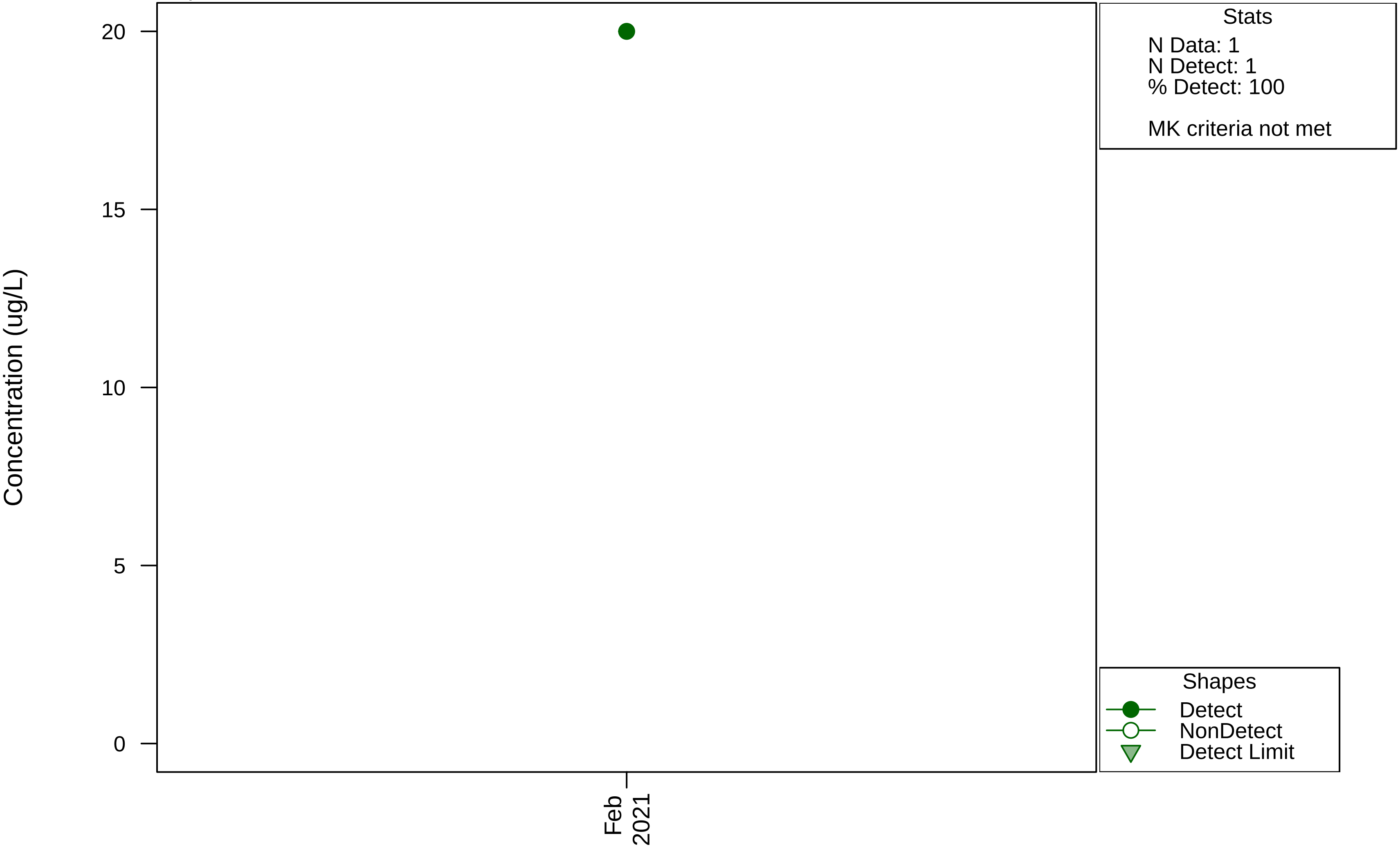
Scatterplots and Trend Analysis
D2, Manganese (Filtered)

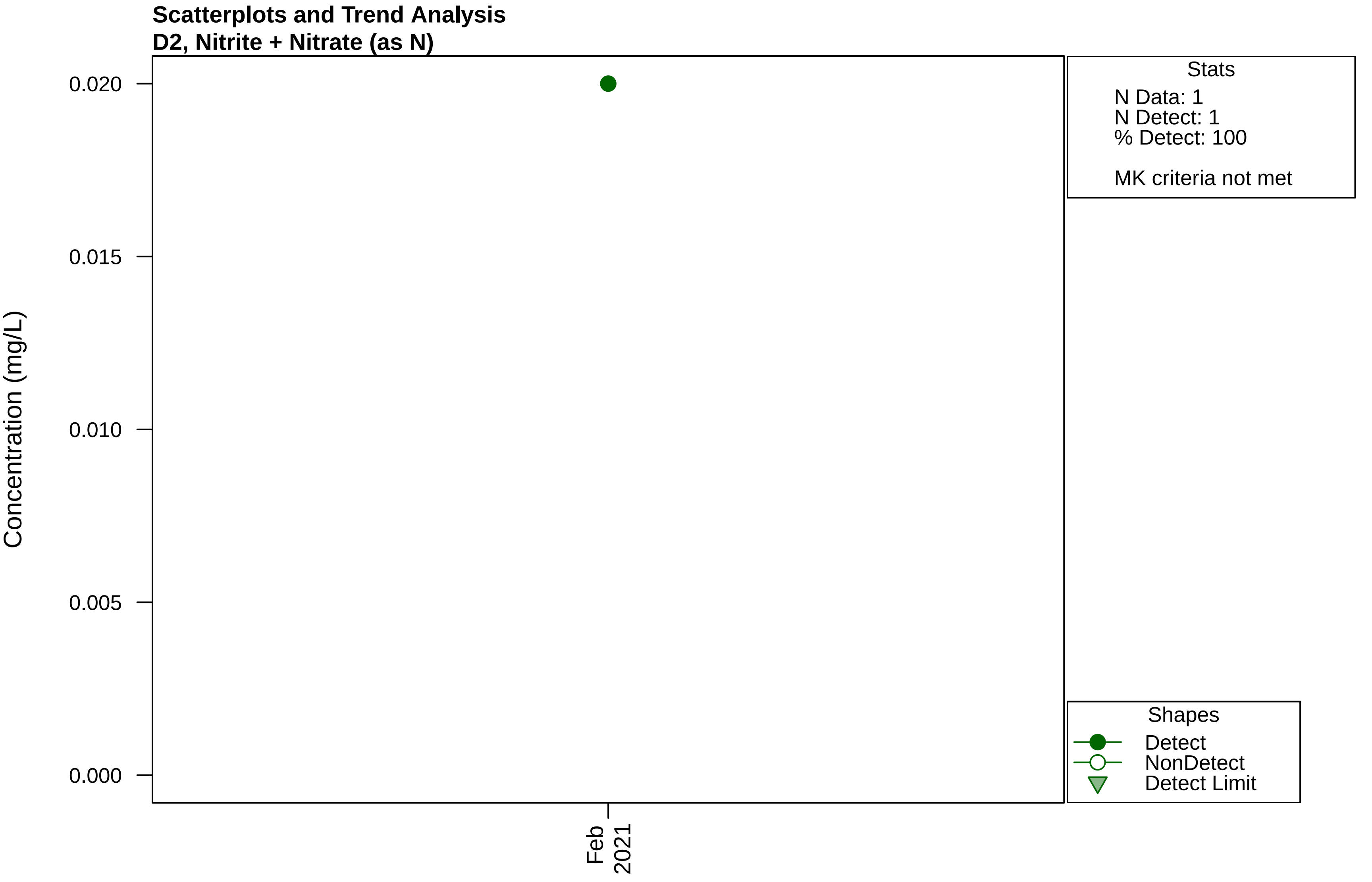



Scatterplots and Trend Analysis
D2, Nickel
Concentration (ug/L)
0
20
40
60
80
100
120
140
Jul 2020
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 9
N Detect: 9
% Detect: 100
95% Confidence
MK Trend: Significant
MK p−val: 0.0247
Direction: Decreasing
Lines
Linear Fit
Shapes
Detect
NonDetect
Detect Limit

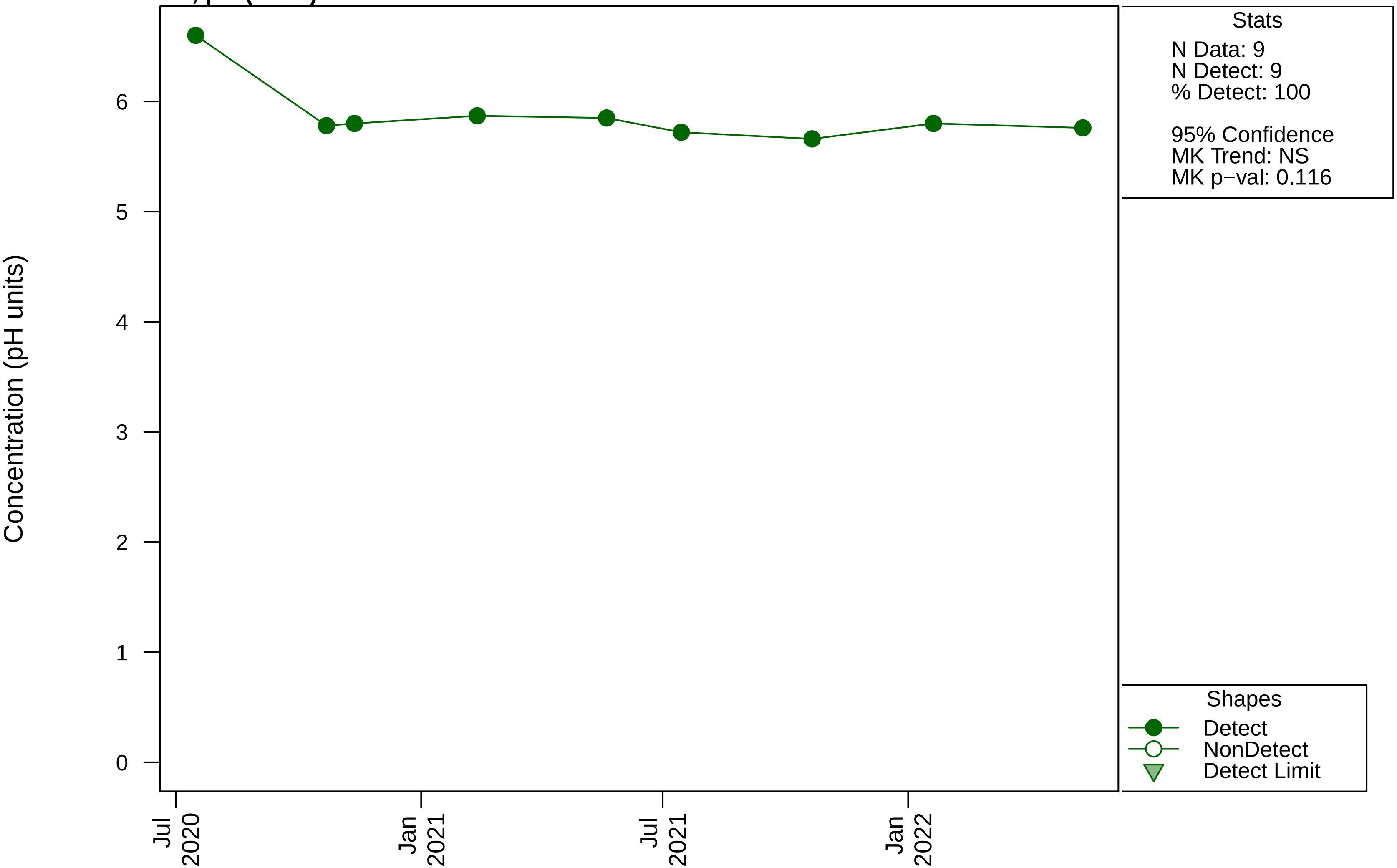

Scatterplots and Trend Analysis
D2, Nickel (Filtered)
Concentration (ug/L)
0
20
40
60
80
Mar 2021
May 2021
Jul 2021
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 6
N Detect: 6
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.469
Shapes
Detect
NonDetect
Detect Limit

Scatterplots and Trend Analysis
D2, Nitrate

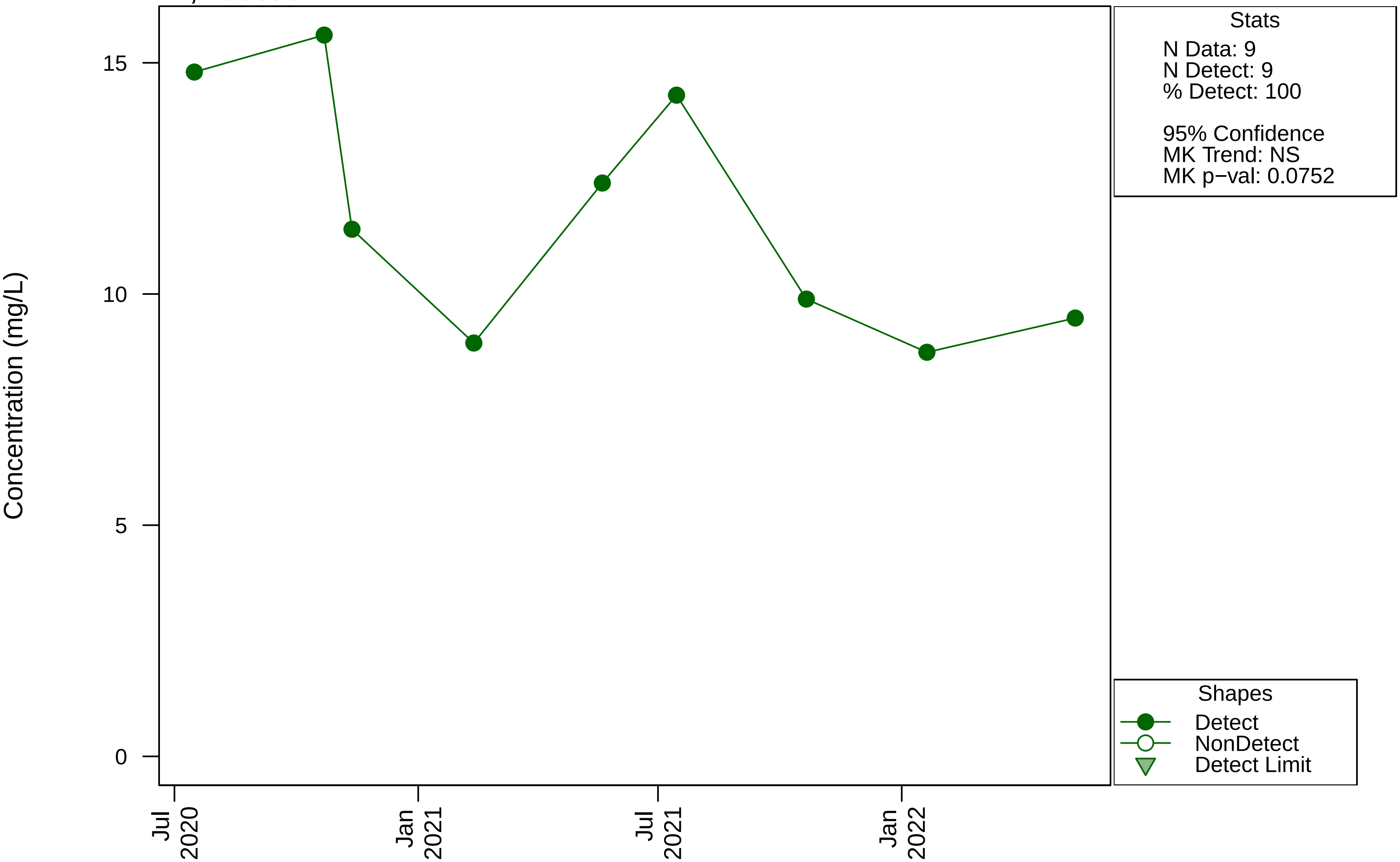


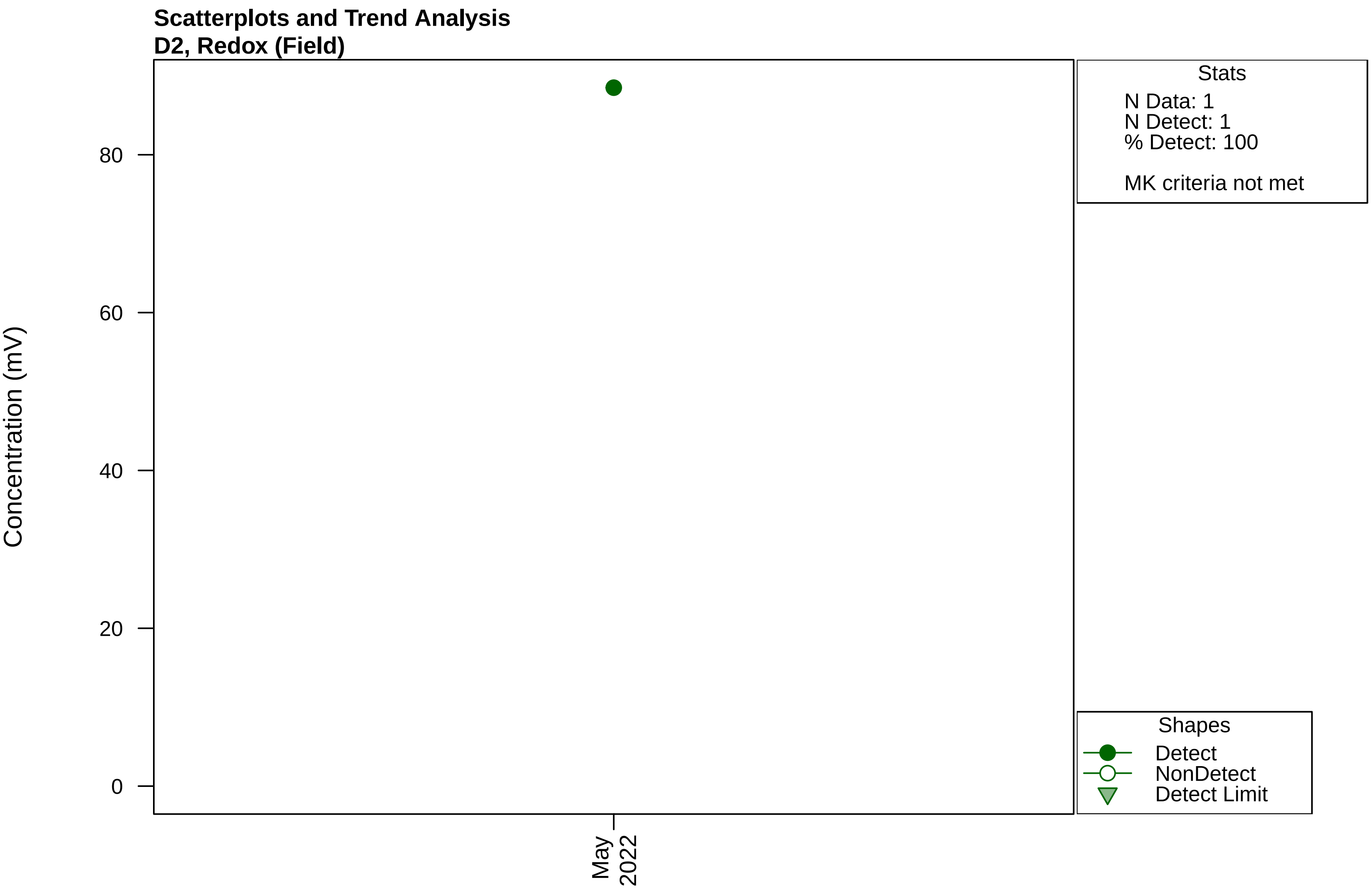

Scatterplots and Trend Analysis
D2, Nitrite + Nitrate (as N)
Concentration (mg/L)
0.020
0.015
0.010
0.005
0.000
Feb 2021
Stats
N Data: 1
N Detect: 1
% Detect: 100
MK criteria not met
Shapes
Detect
NonDetect
Detect Limit

Scatterplots and Trend Analysis
D2, pH (Field)



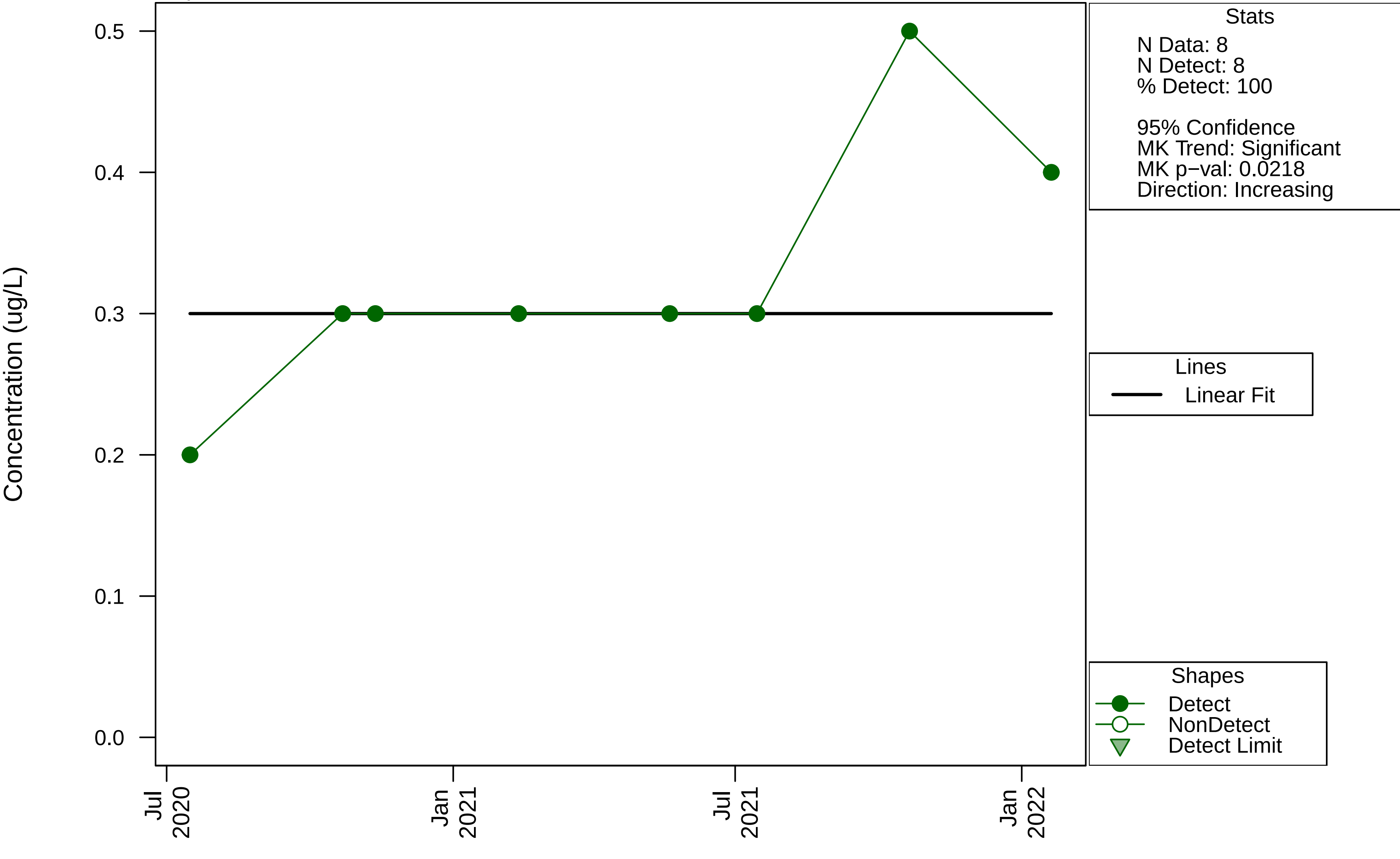
Scatterplots and Trend Analysis
D2, Potassium

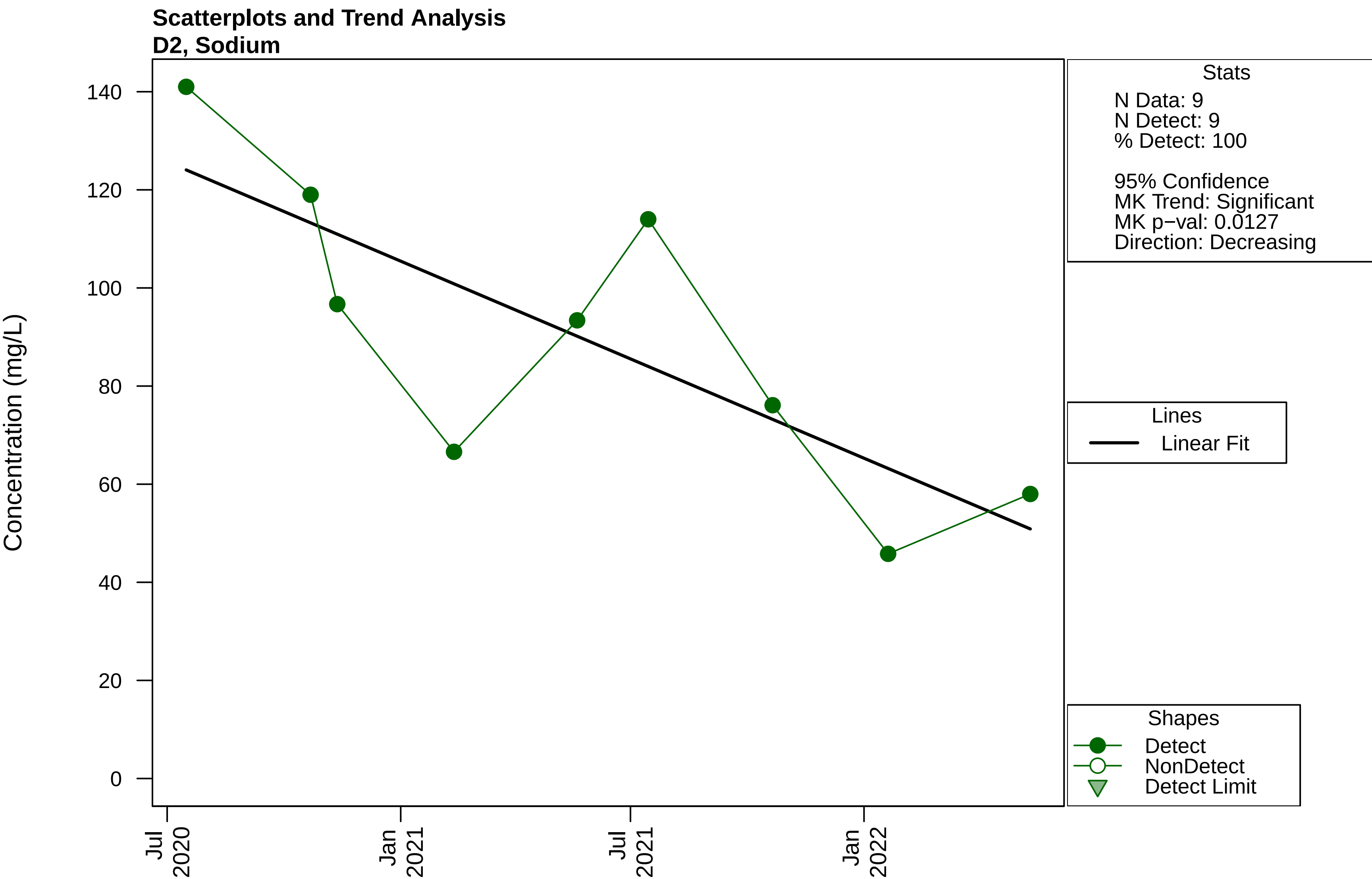




Scatterplots and Trend Analysis
D2, Redox (Field)
Concentration (mV)
0
20
40
60
80
May 2022
Stats
N Data: 1
N Detect: 1
% Detect: 100
MK criteria not met
Shapes
Detect
NonDetect
Detect Limit

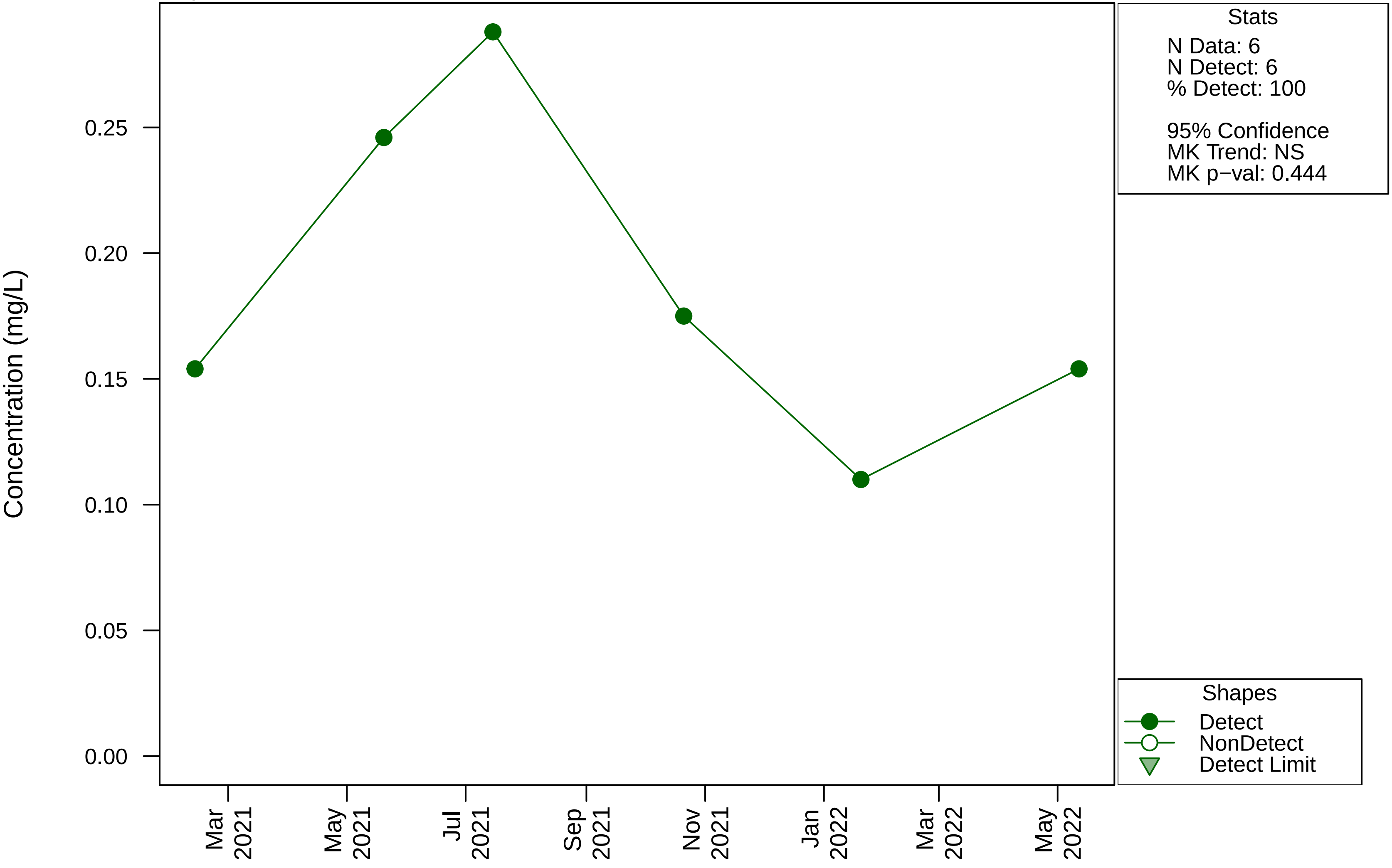
Scatterplots and Trend Analysis
D2, Selenium

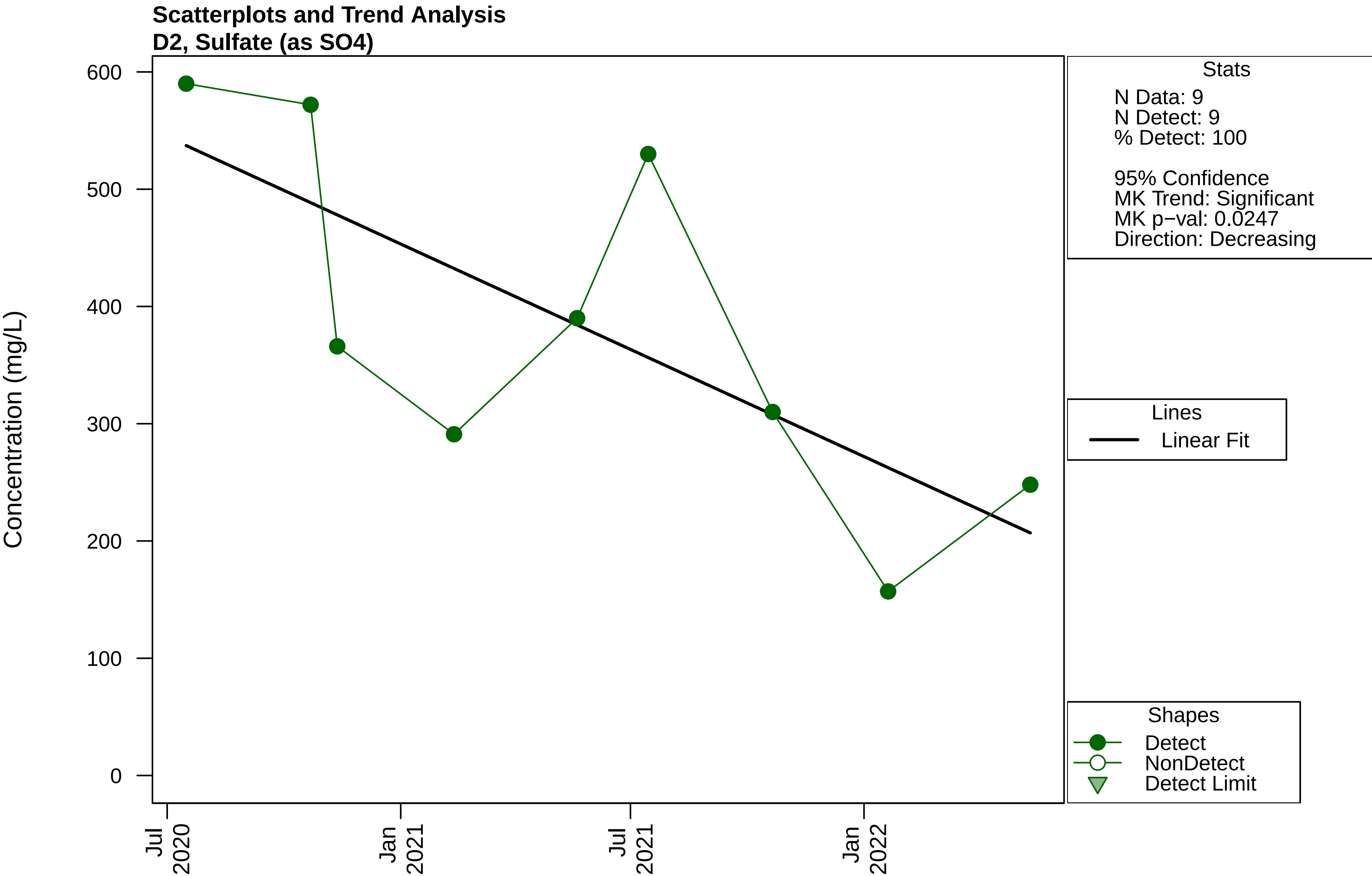




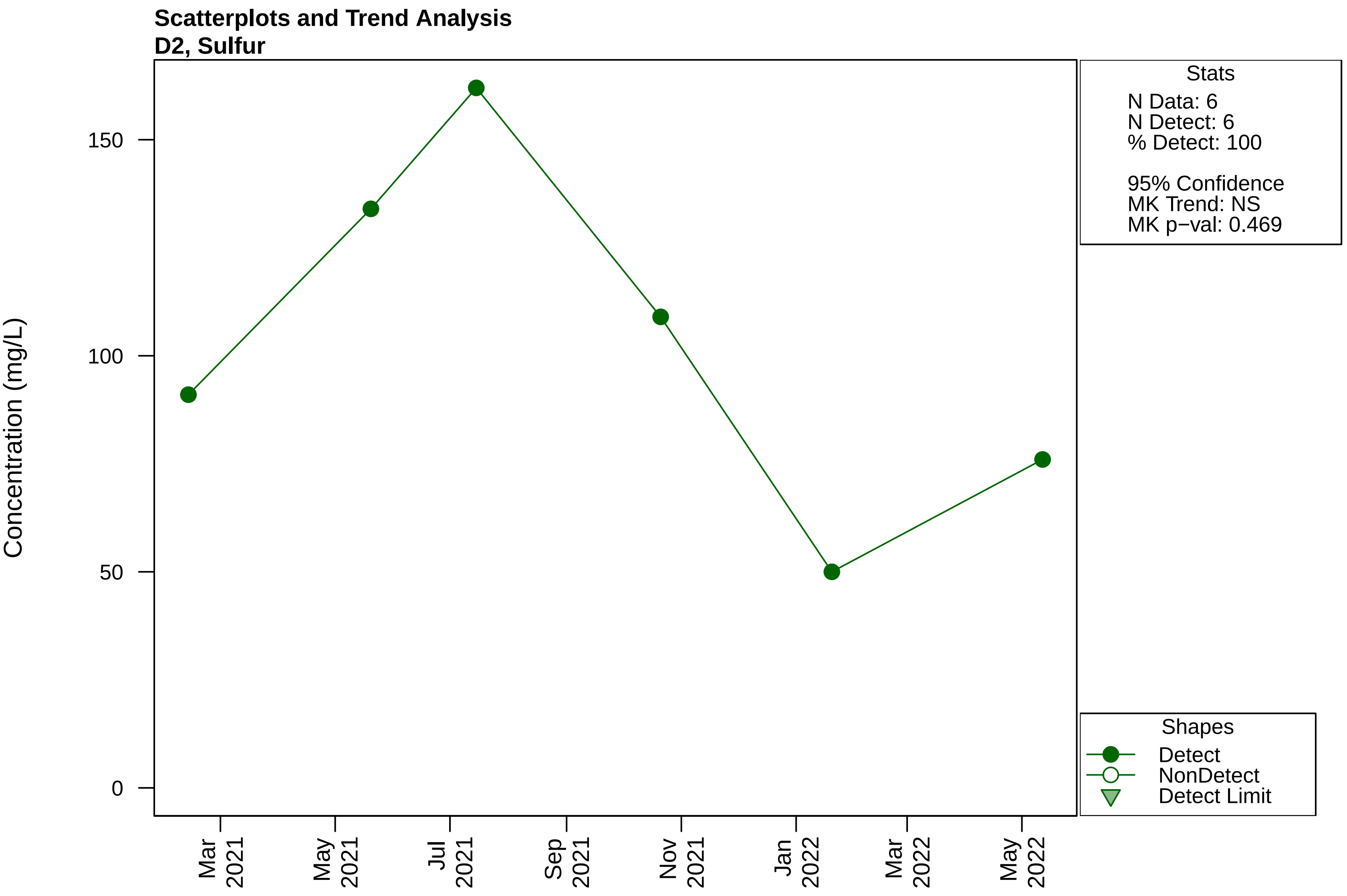
Scatterplots and Trend Analysis
D2, Sodium
Concentration (mg/L)
0
20
40
60
80
100
120
140
Jul 2020
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 9
N Detect: 9
% Detect: 100
95% Confidence
MK Trend: Significant
MK p−val: 0.0127
Direction: Decreasing
Lines
Linear Fit
Shapes
Detect
NonDetect
Detect Limit

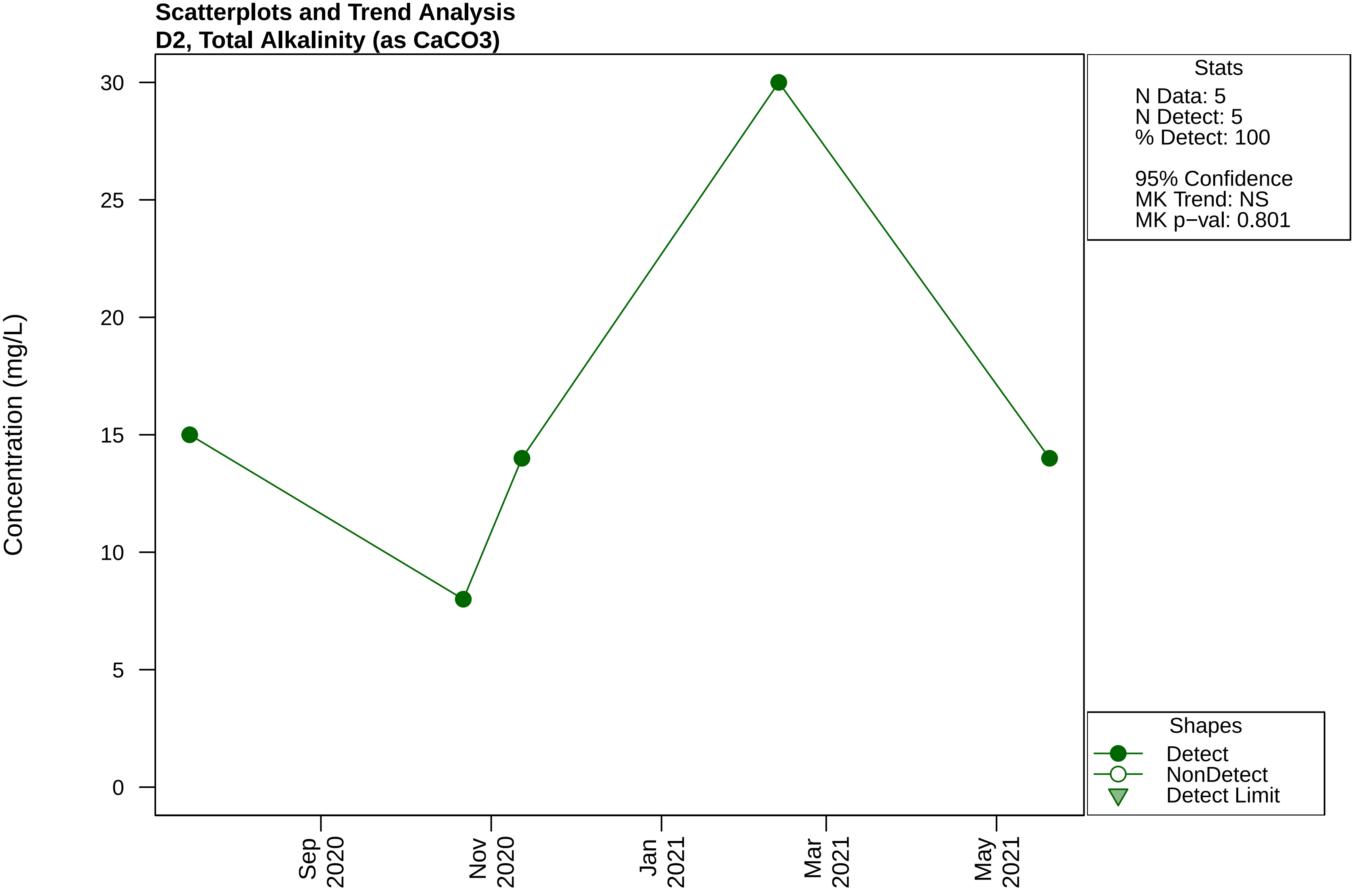
Scatterplots and Trend Analysis
D2, Strontium



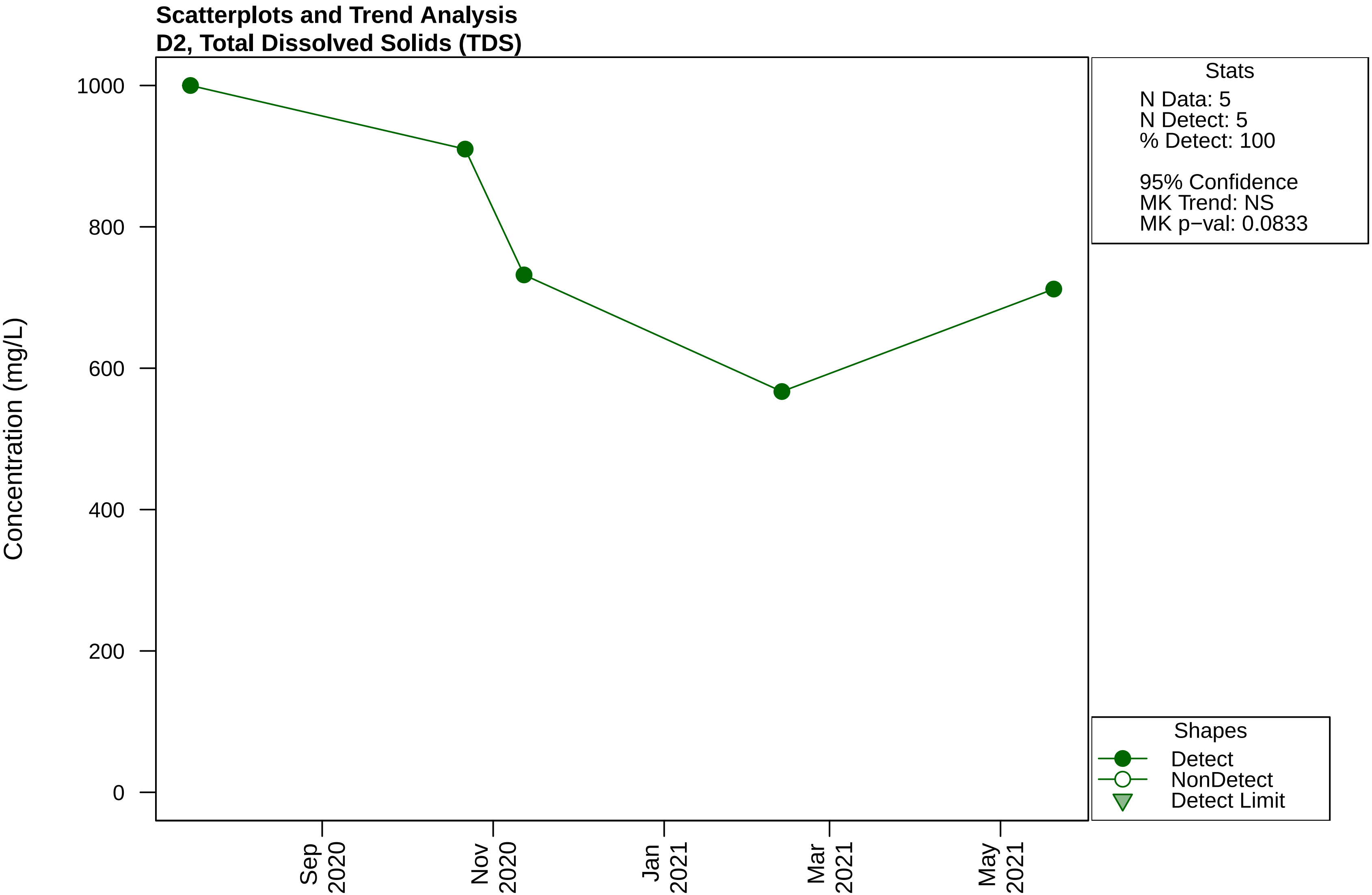


Scatterplots and Trend Analysis
D2, Sulfate (as SO4)
Concentration (mg/L)
0
100
200
300
400
500
600
Jul 2020
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 9
N Detect: 9
% Detect: 100
95% Confidence
MK Trend: Significant
MK p−val: 0.0247
Direction: Decreasing
Lines
Linear Fit
Shapes
Detect
NonDetect
Detect Limit

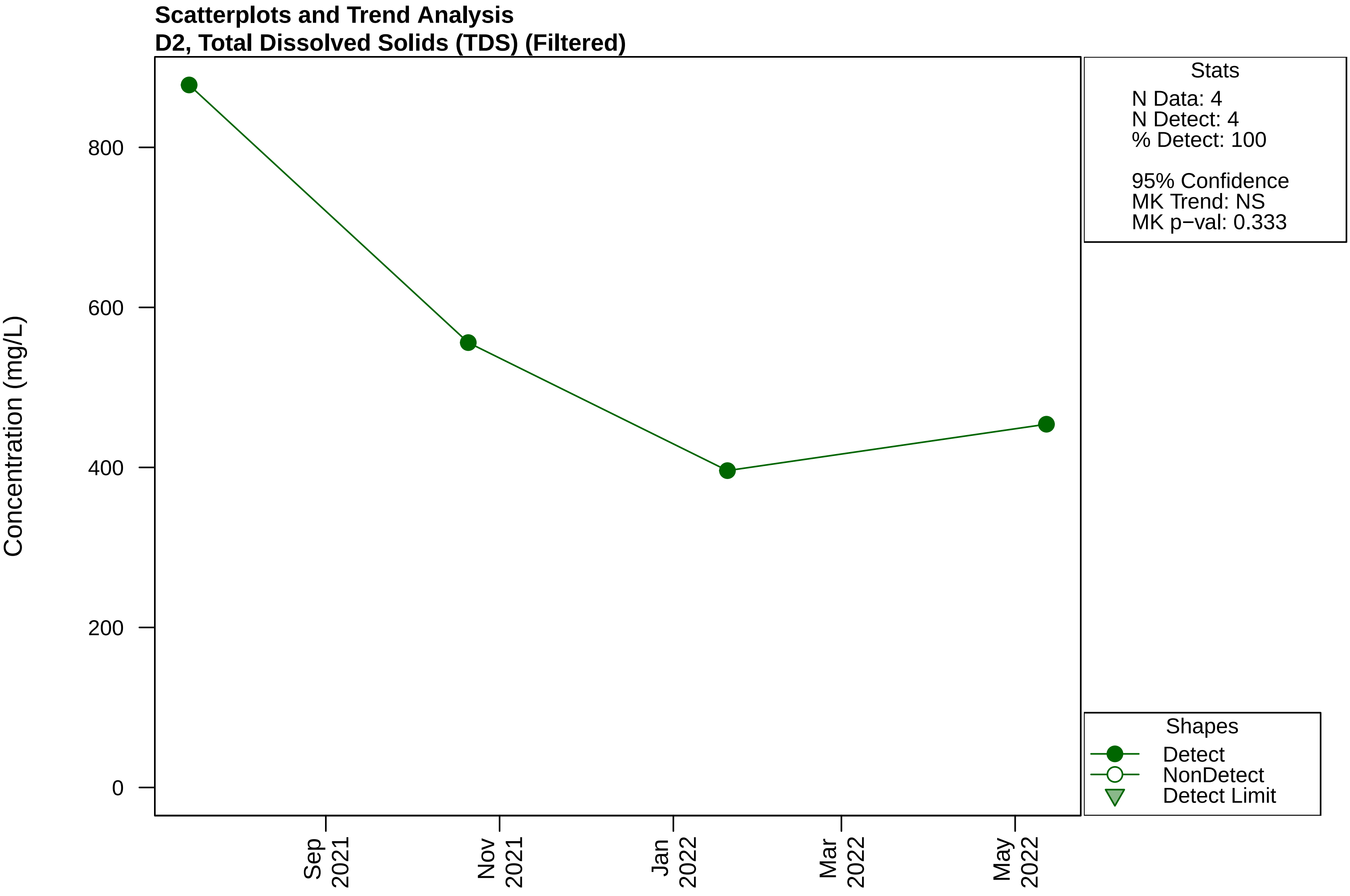

Scatterplots and Trend Analysis
D2, Sulfur
Concentration (mg/L)
150
100
50
0
Mar 2021
May 2021
Jul 2021
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 6
N Detect: 6
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.469
Shapes
Detect
NonDetect
Detect Limit

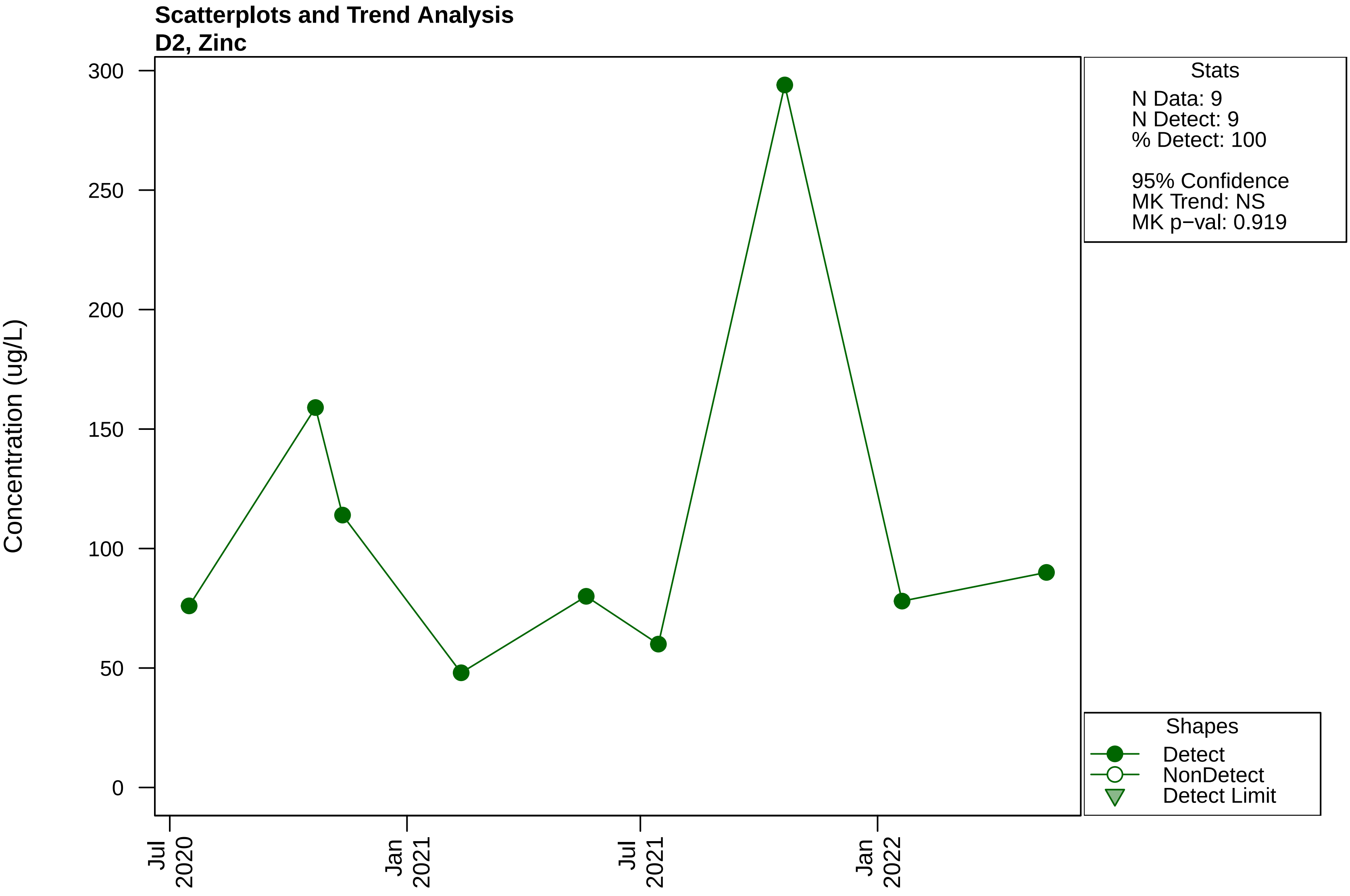


Scatterplots and Trend Analysis
D2, Total Alkalinity (as CaCO3)
Concentration (mg/L)
0
5
10
15
20
25
30
Sep 2020
Nov 2020
Jan 2021
Mar 2021
May 2021
Stats
N Data: 5
N Detect: 5
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.801
Shapes
Detect
NonDetect
Detect Limit



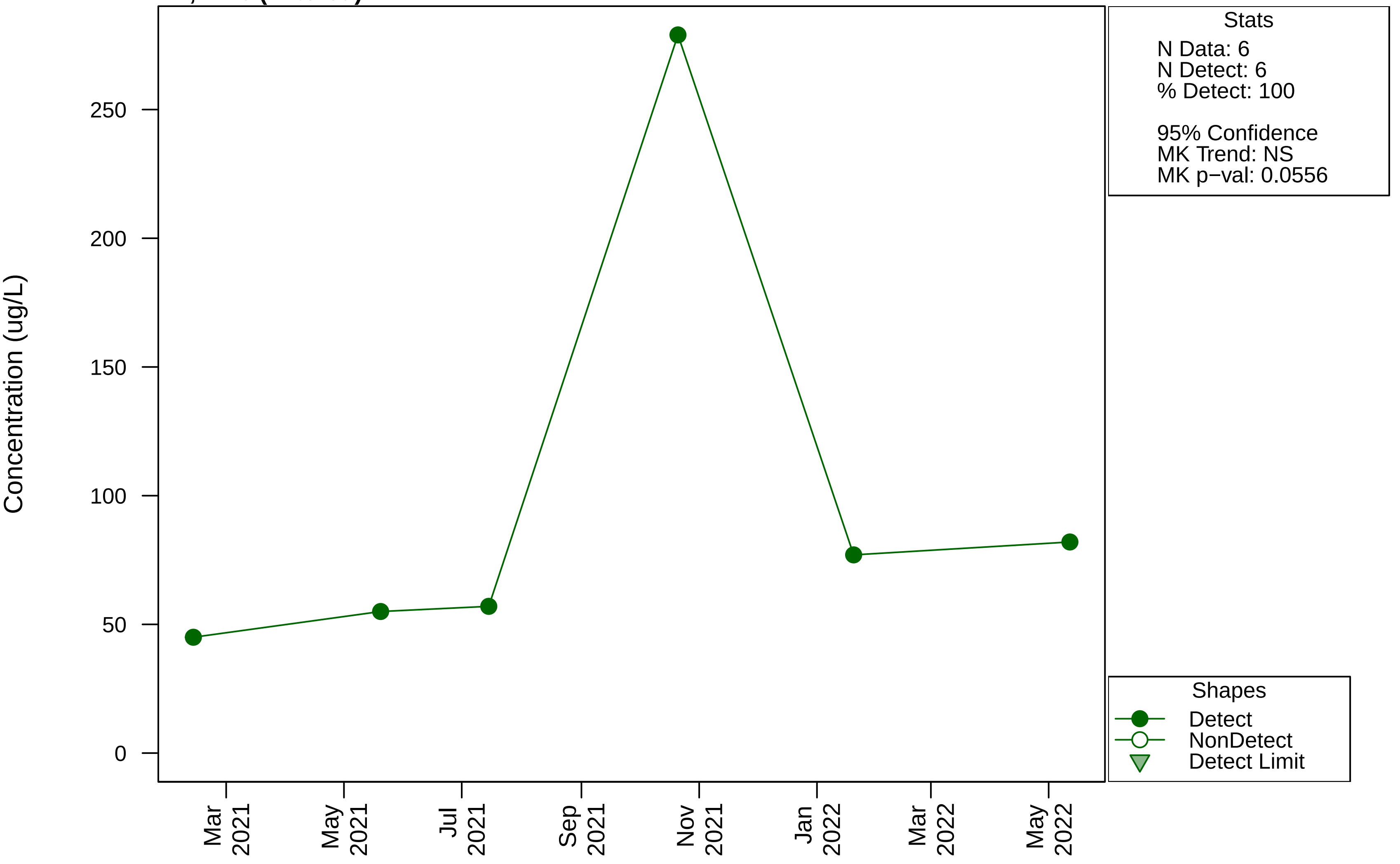
Scatterplots and Trend Analysis
D2, Total Dissolved Solids (TDS)
Concentration (mg/L)
1000
800
600
400
200
0
Sep 2020
Nov 2020
Jan 2021
Mar 2021
May 2021
Stats
N Data: 5
N Detect: 5
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.0833
Shapes
Detect
NonDetect
Detect Limit

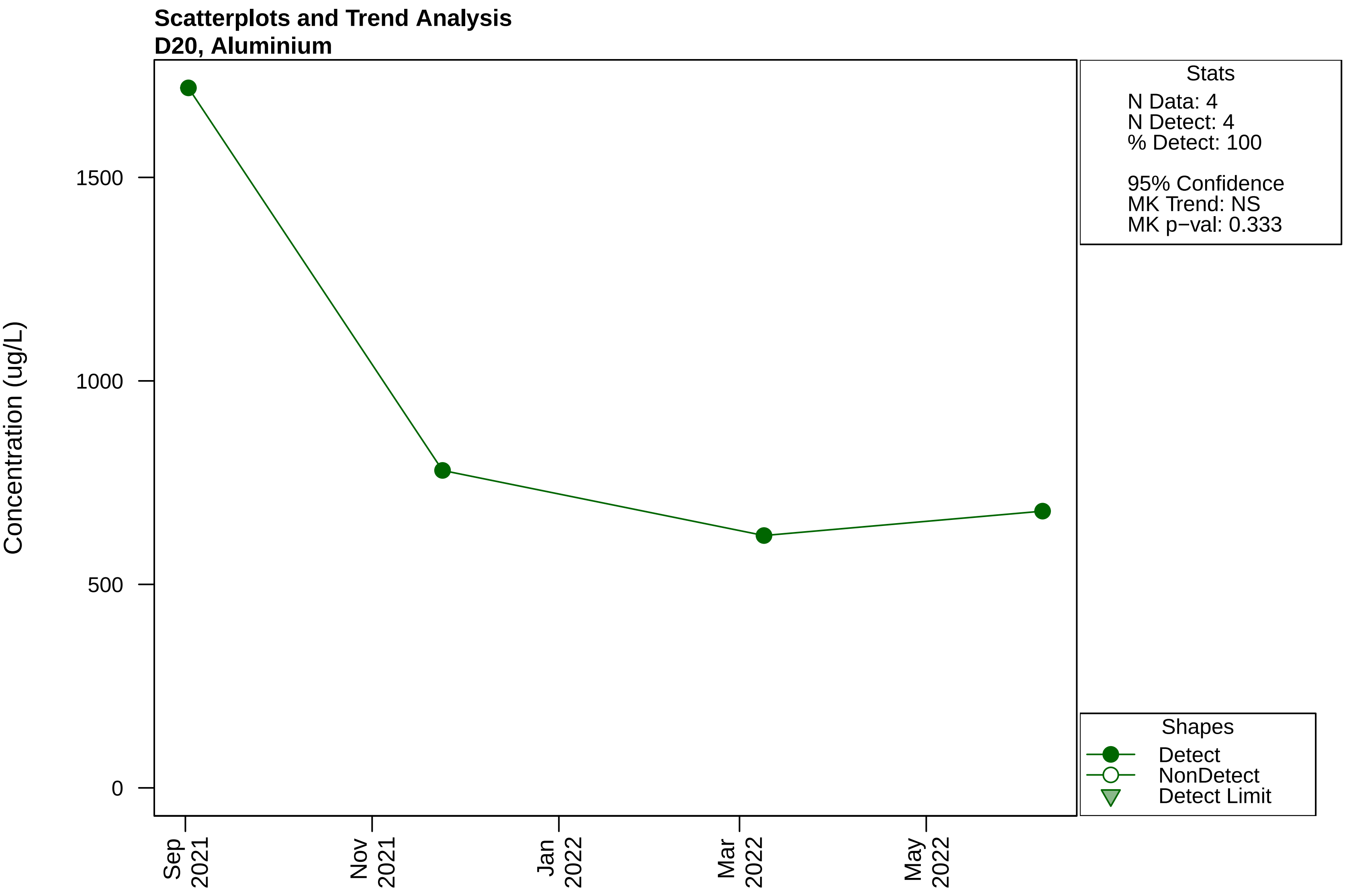

Scatterplots and Trend Analysis
D2, Total Dissolved Solids (TDS) (Filtered)
Concentration (mg/L)
800
600
400
200
0
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 4
N Detect: 4
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.333
Shapes
Detect
NonDetect
Detect Limit

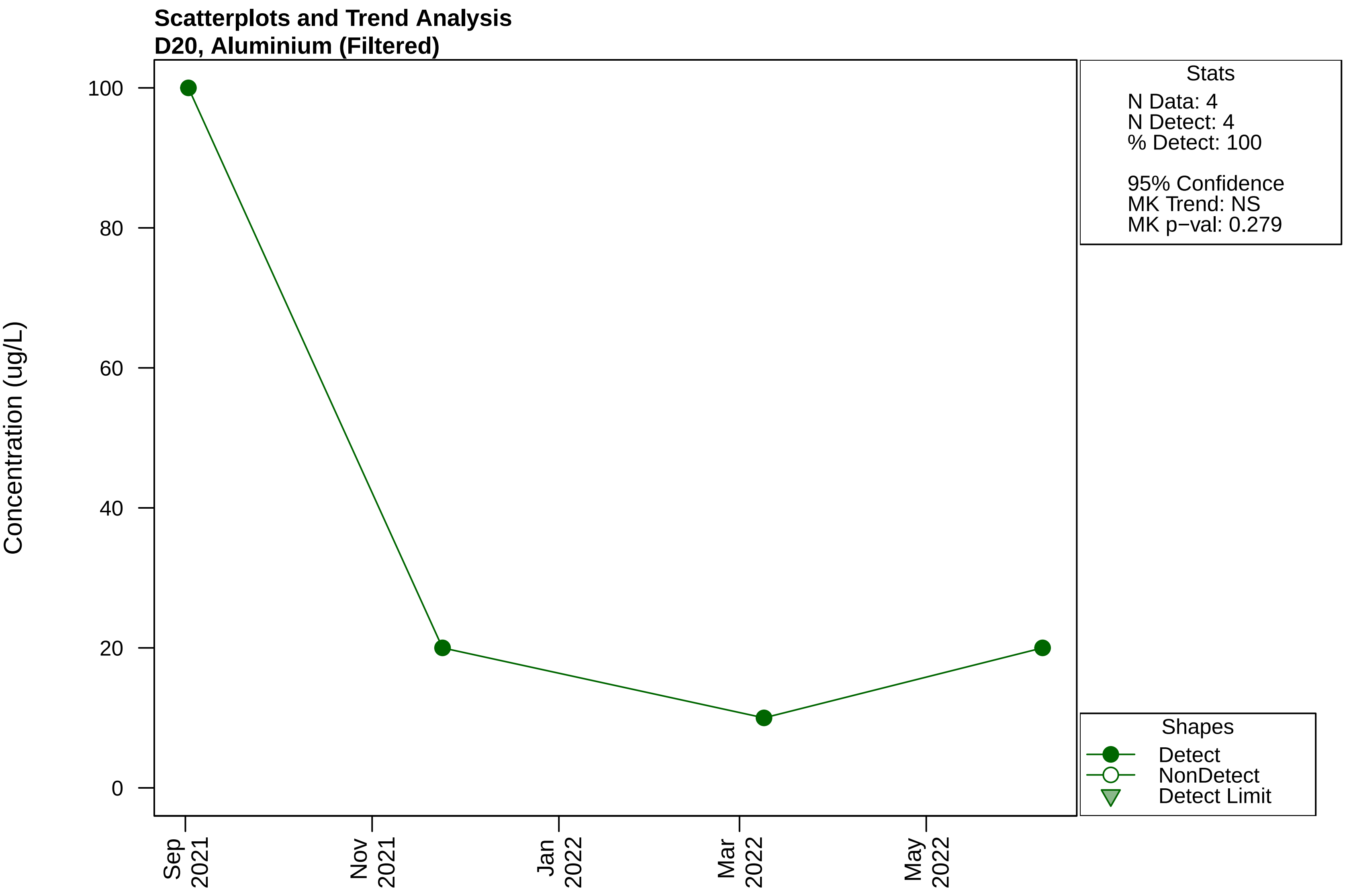


Scatterplots and Trend Analysis
D2, Zinc
Concentration (ug/L)
0
50
100
150
200
250
300
Jul 2020
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 9
N Detect: 9
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.919
Shapes
Detect
NonDetect
Detect Limit

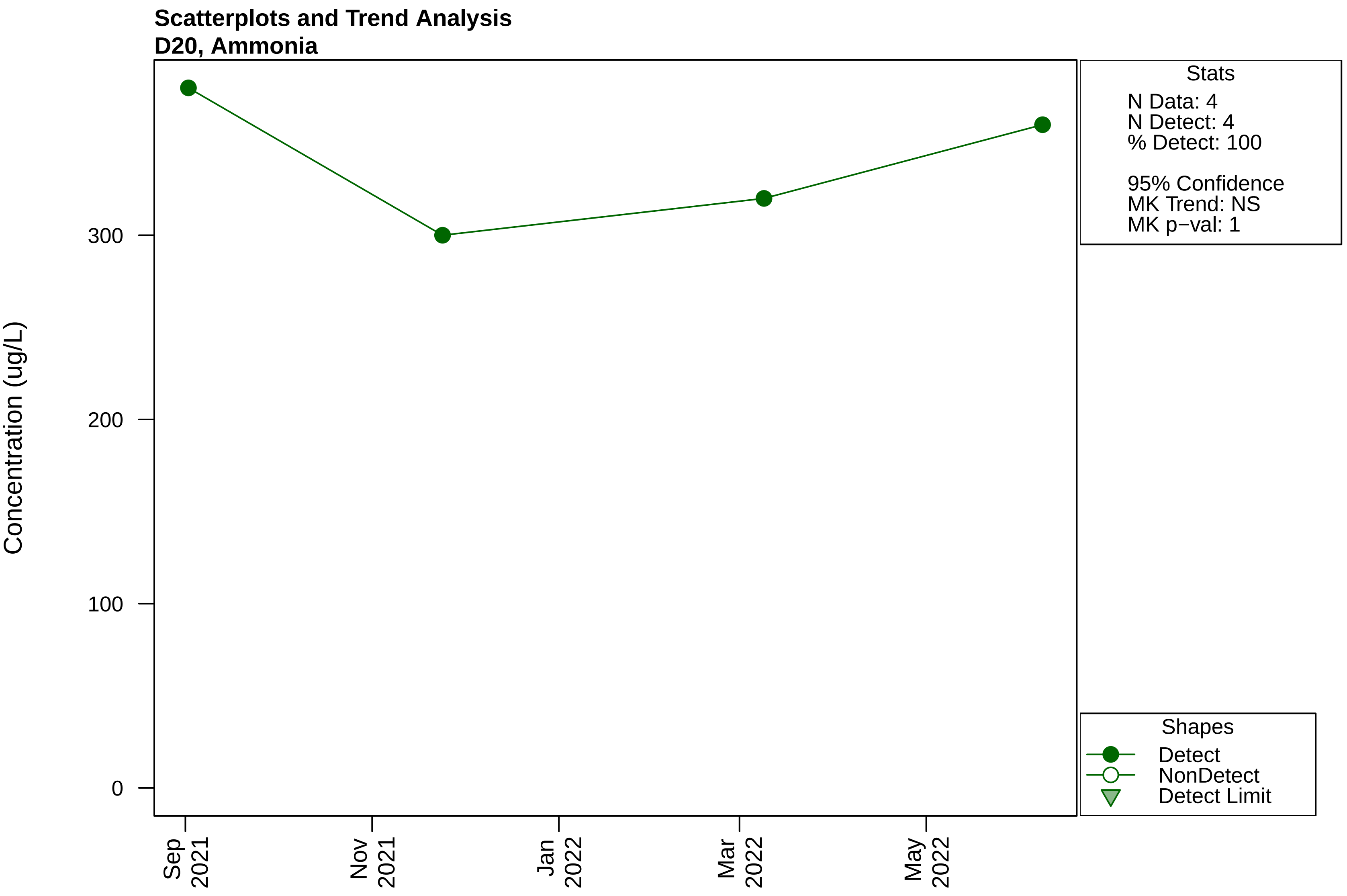
Scatterplots and Trend Analysis
D2, Zinc (Filtered)




Scatterplots and Trend Analysis
D20, Aluminium
Concentration (ug/L)
0
500
1000
1500
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 4
N Detect: 4
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.333
Shapes
Detect
NonDetect
Detect Limit

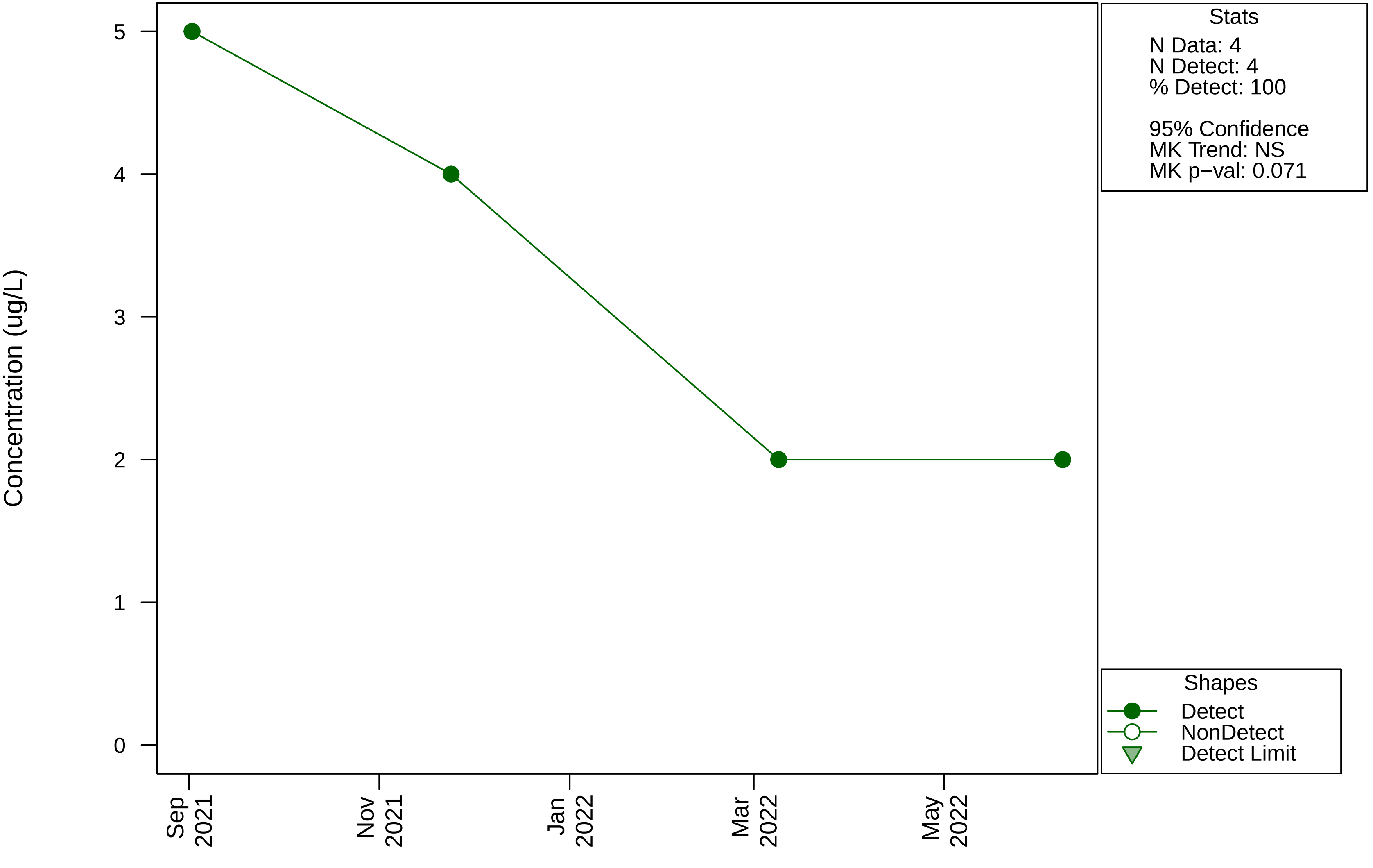


Scatterplots and Trend Analysis
D20, Aluminium (Filtered)
Concentration (ug/L)
100
80
60
40
20
0
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 4
N Detect: 4
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.279
Shapes
Detect
NonDetect
Detect Limit

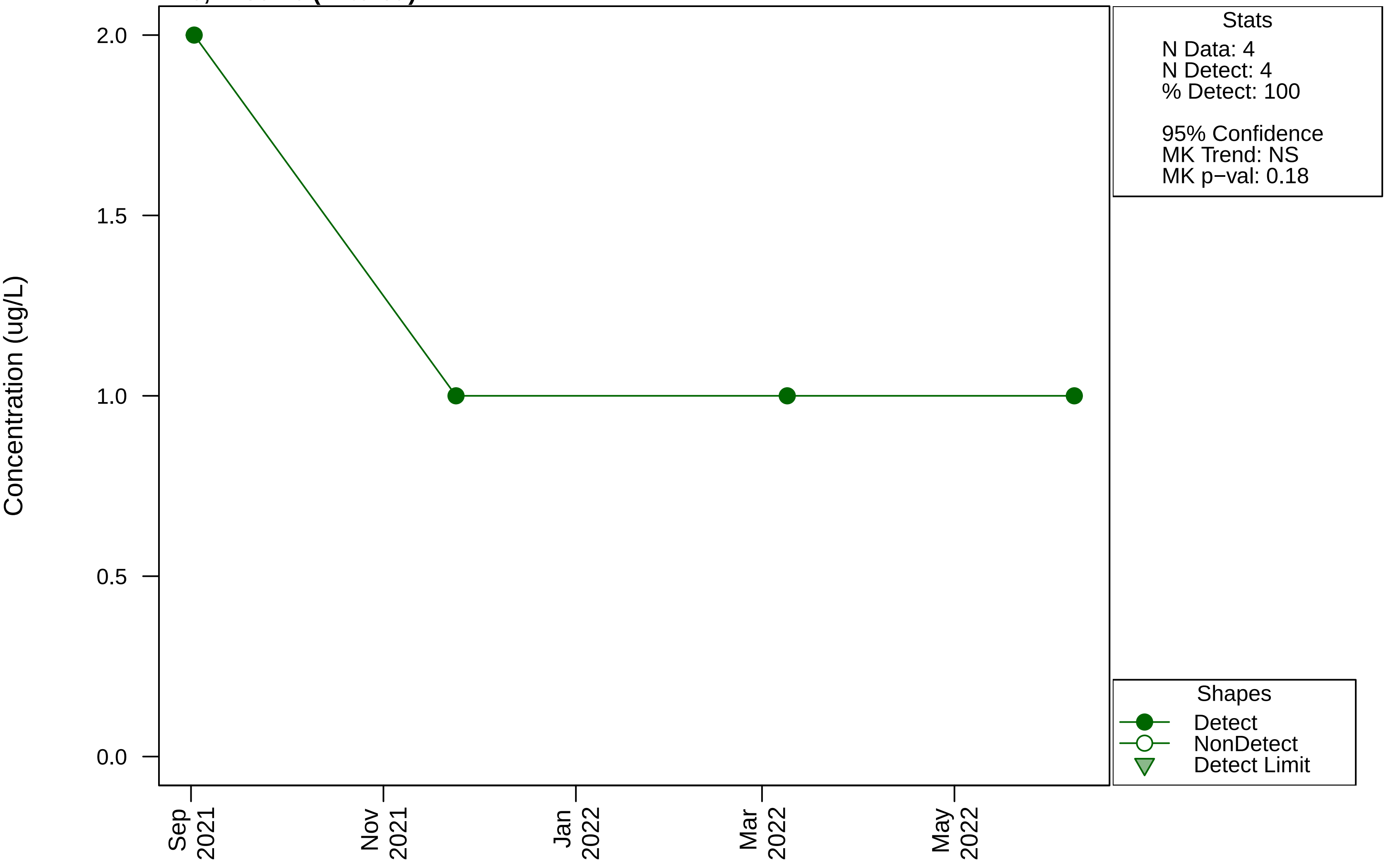


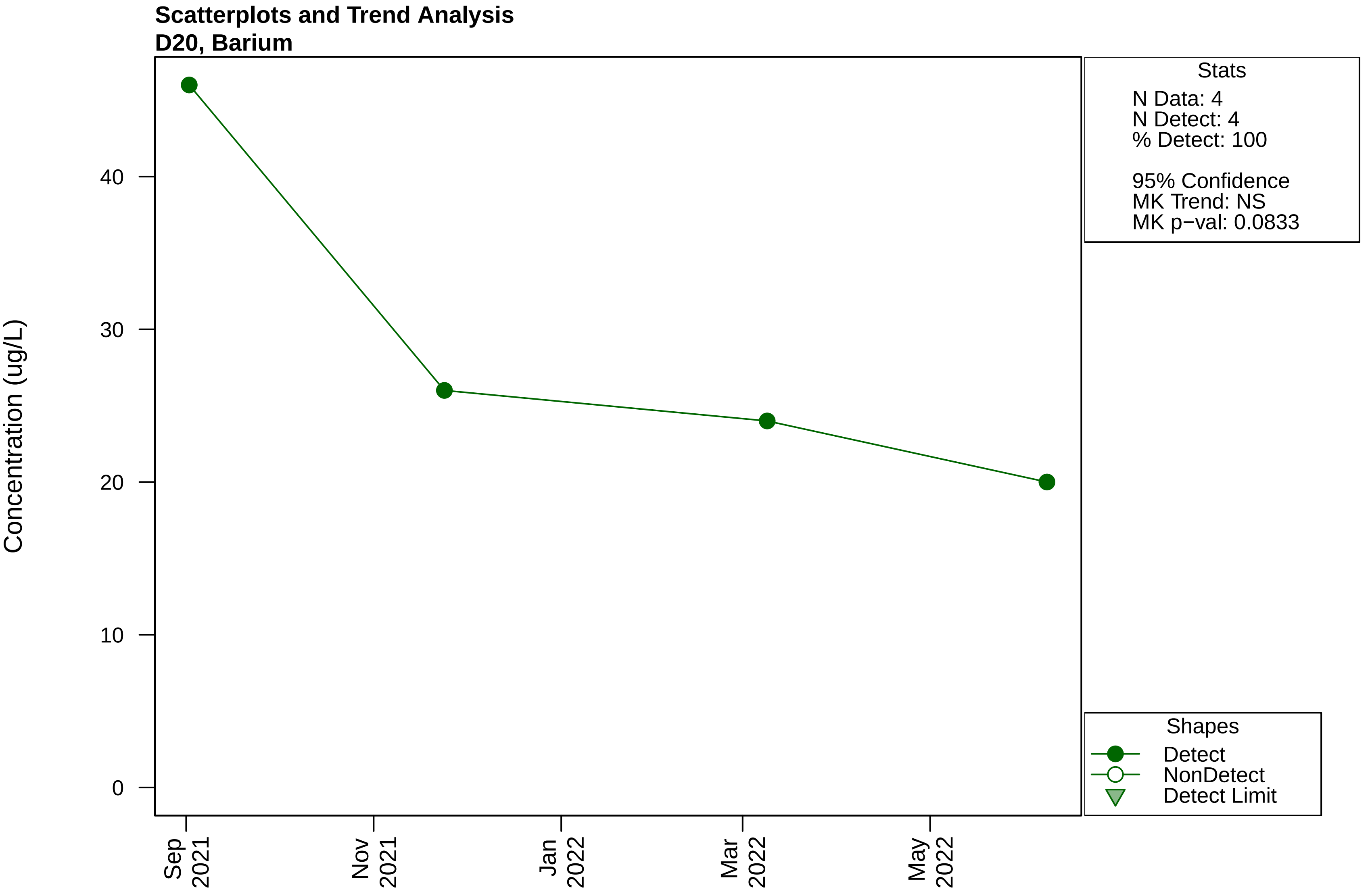
Scatterplots and Trend Analysis
D20, Ammonia
Concentration (ug/L)
0
100
200
300
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 4
N Detect: 4
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 1
Shapes
Detect
NonDetect
Detect Limit

Scatterplots and Trend Analysis
D20, Arsenic



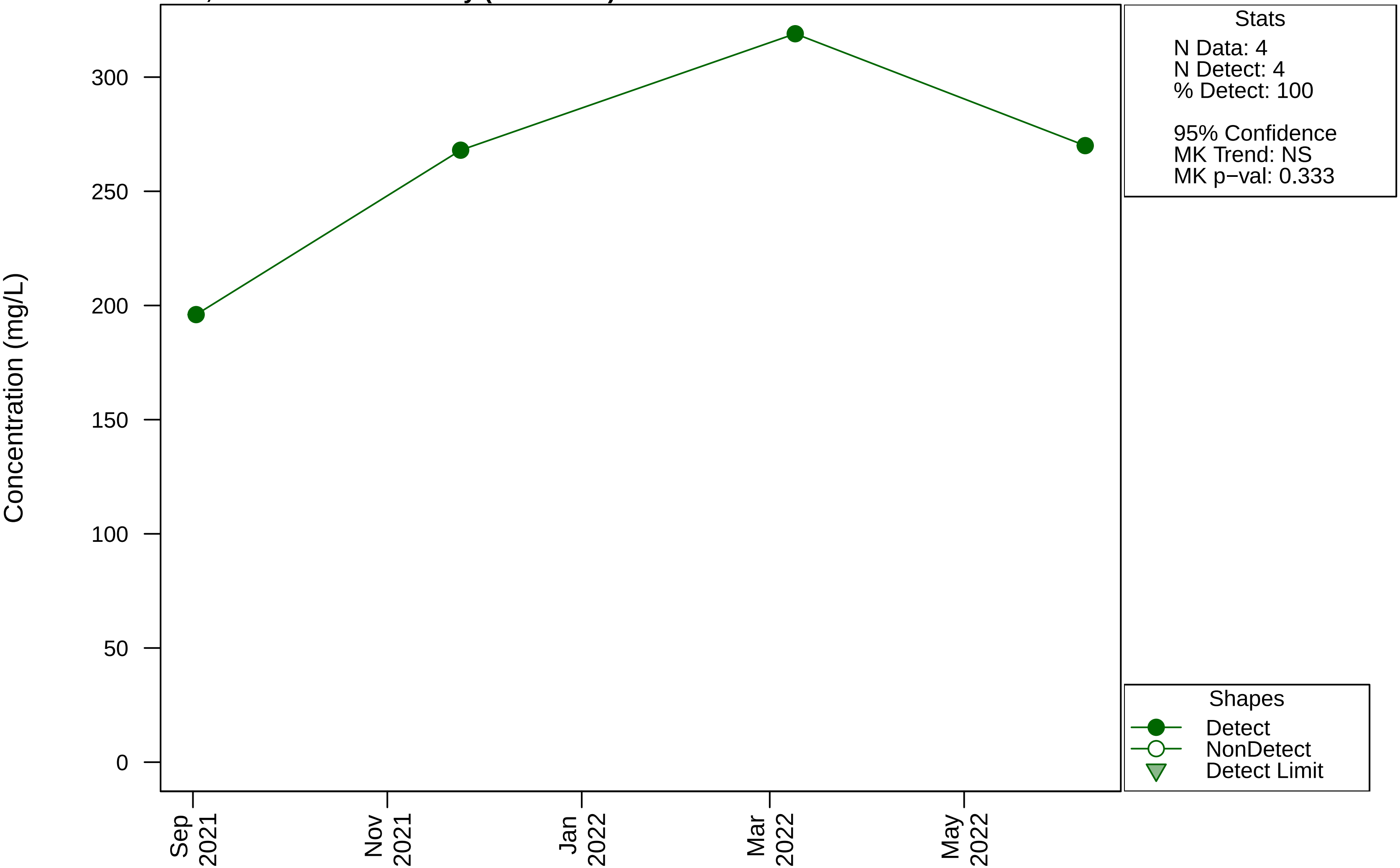
Scatterplots and Trend Analysis
D20, Arsenic (Filtered)

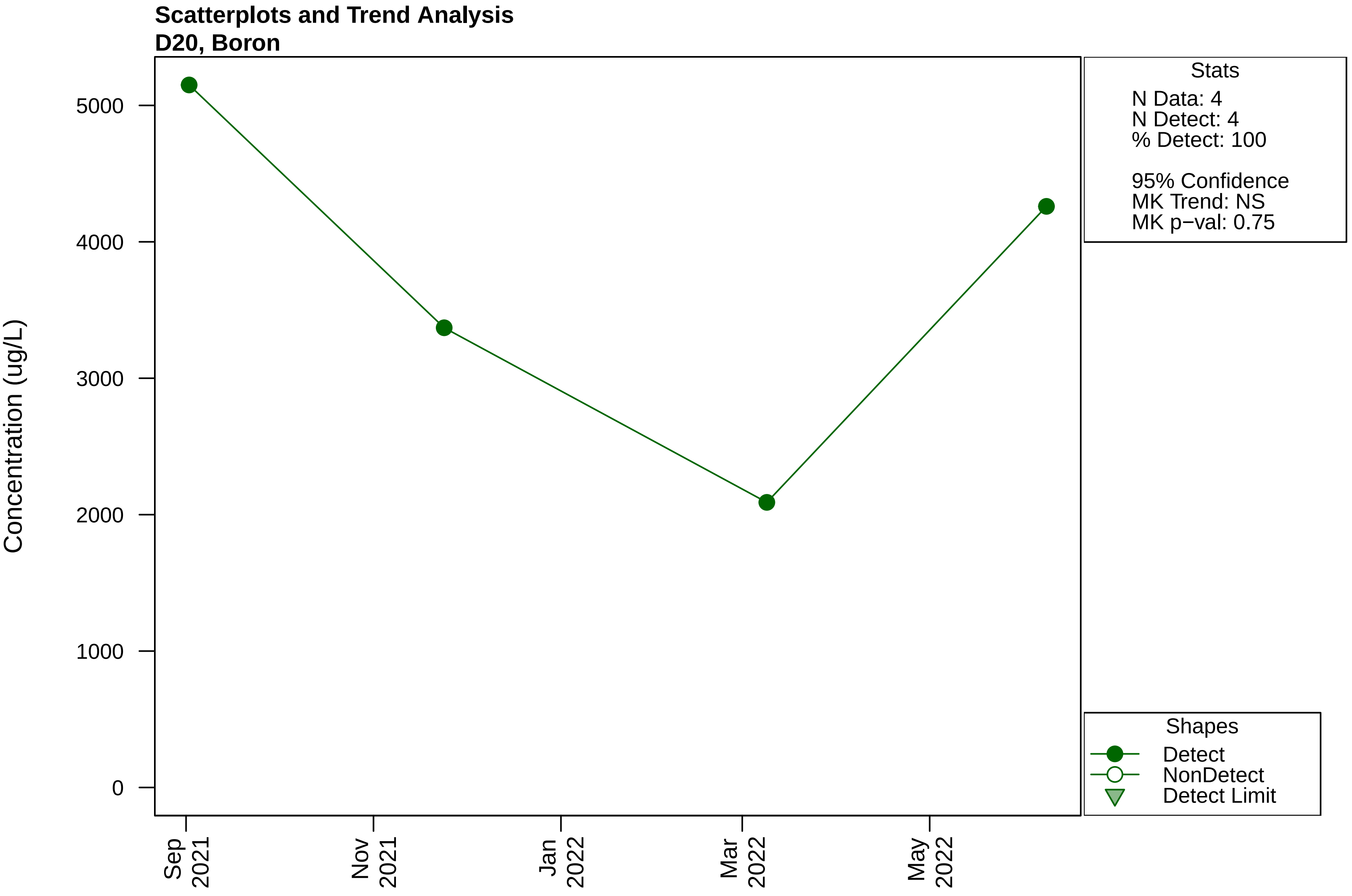




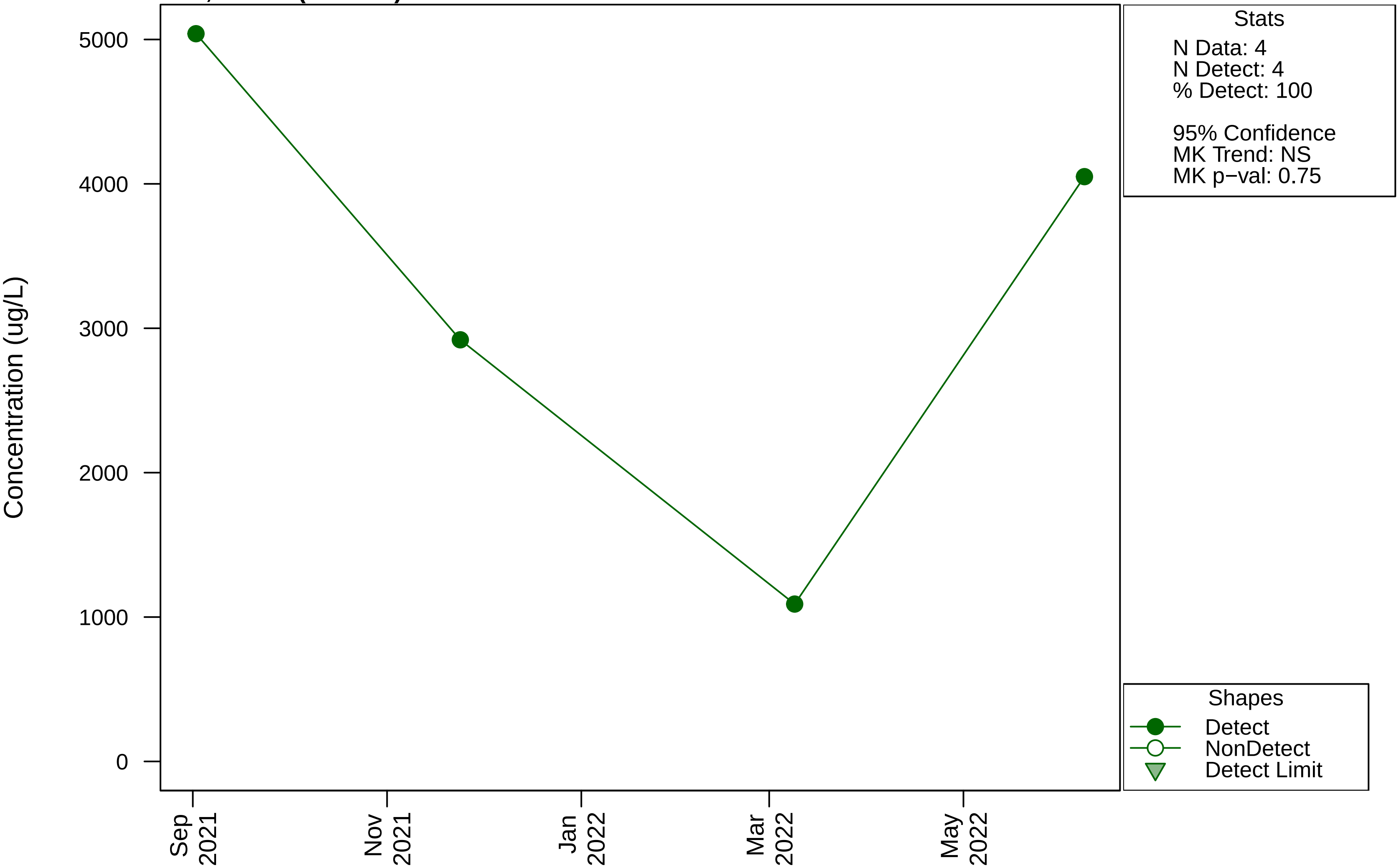
Scatterplots and Trend Analysis
D20, Barium
Concentration (ug/L)
0
10
20
30
40
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 4
N Detect: 4
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.0833
Shapes
Detect
NonDetect
Detect Limit

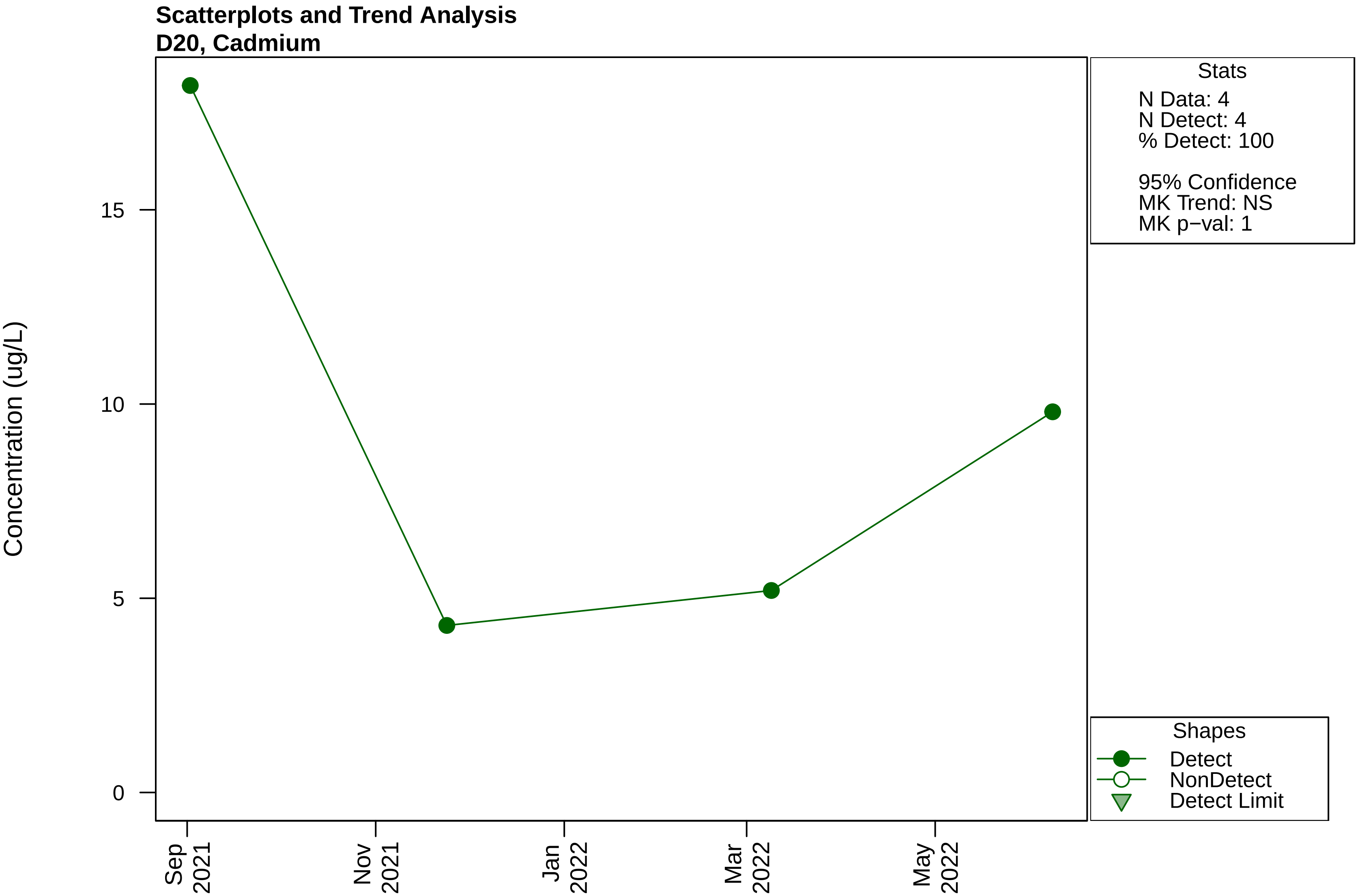
Scatterplots and Trend Analysis
D20, Bicarbonate Alkalinity (as CaCO3)



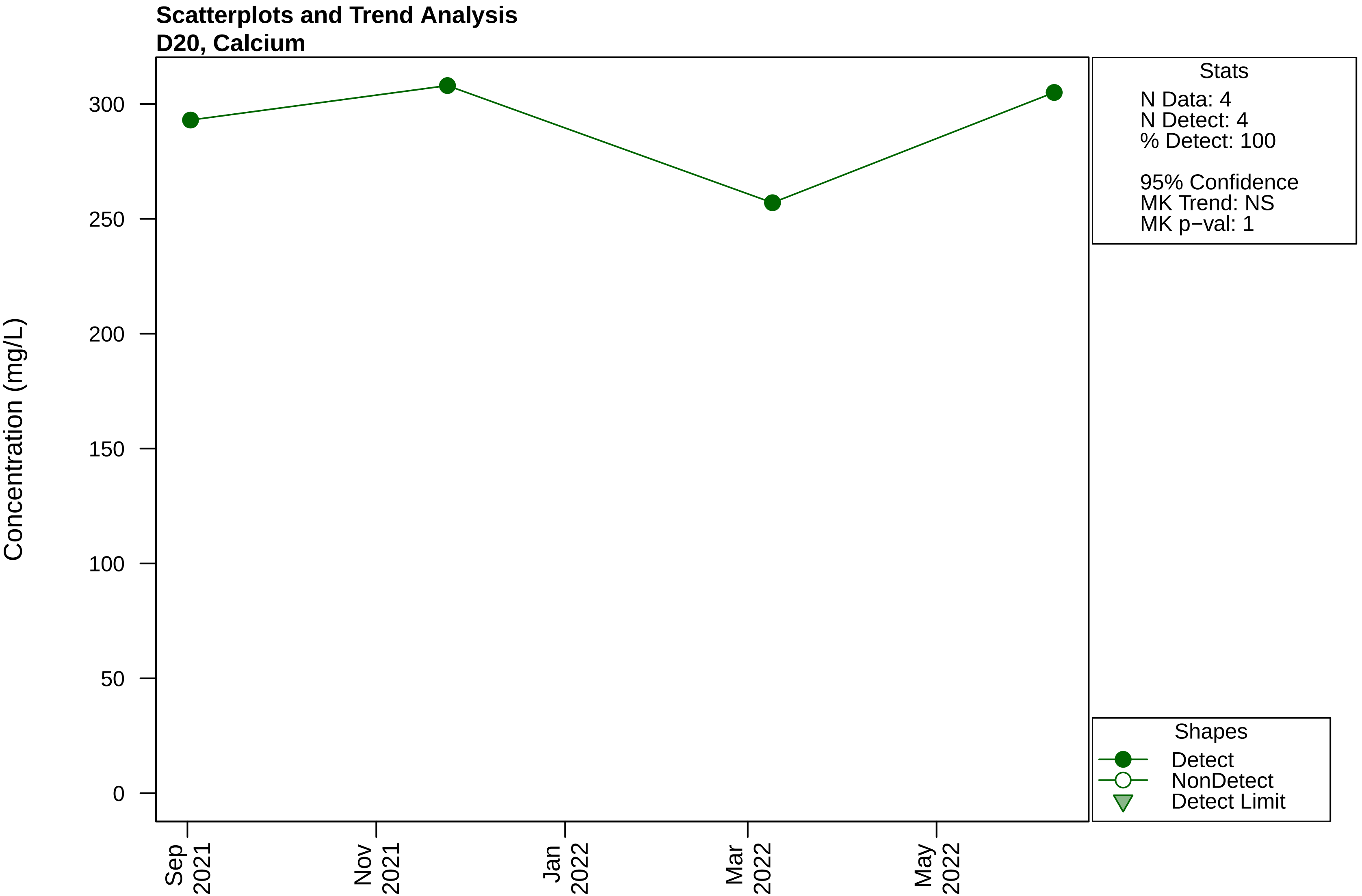

Scatterplots and Trend Analysis
D20, Boron
Concentration (ug/L)
0
1000
2000
3000
4000
5000
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 4
N Detect: 4
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.75
Shapes
Detect
NonDetect
Detect Limit

Scatterplots and Trend Analysis
D20, Boron (Filtered)



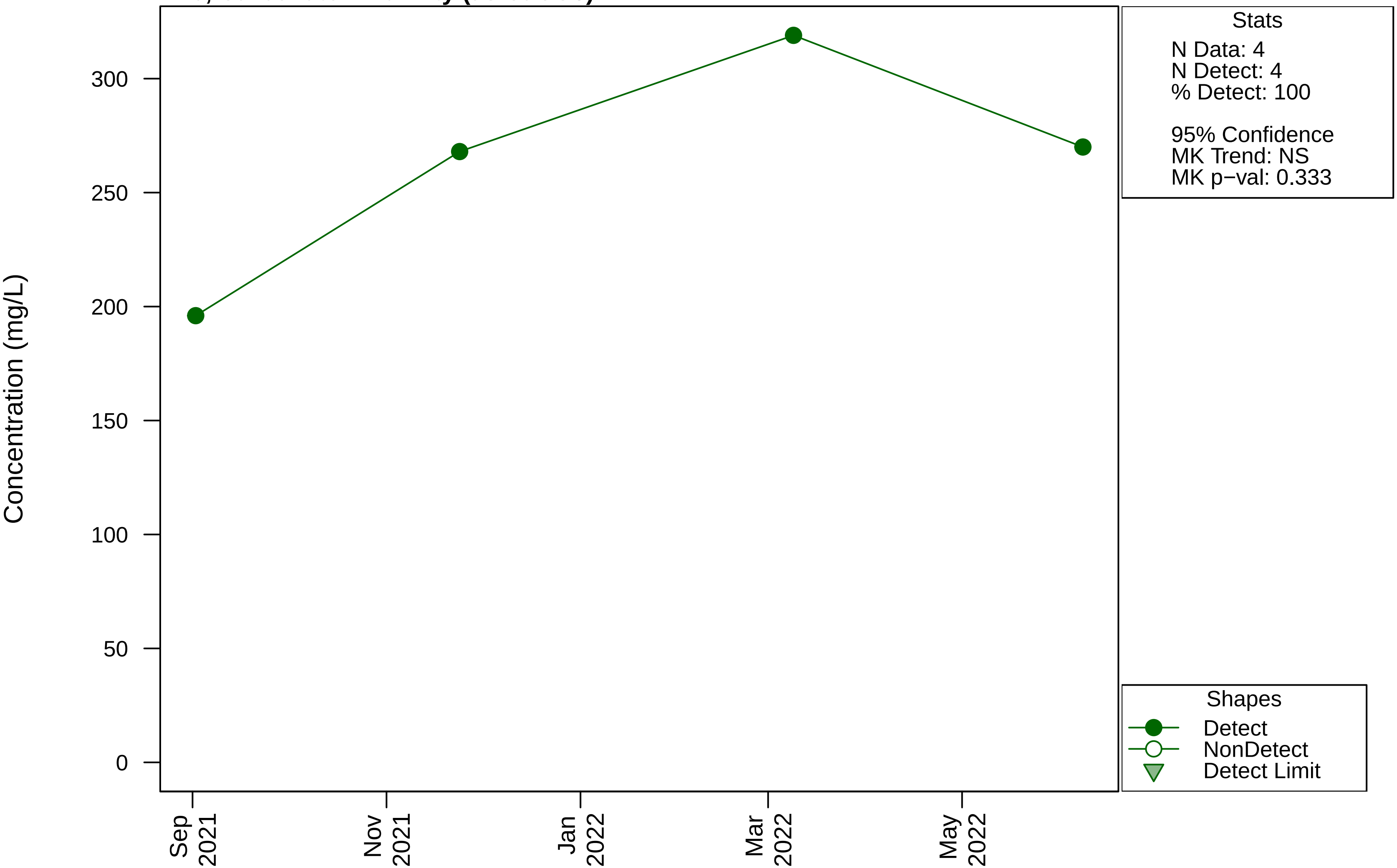


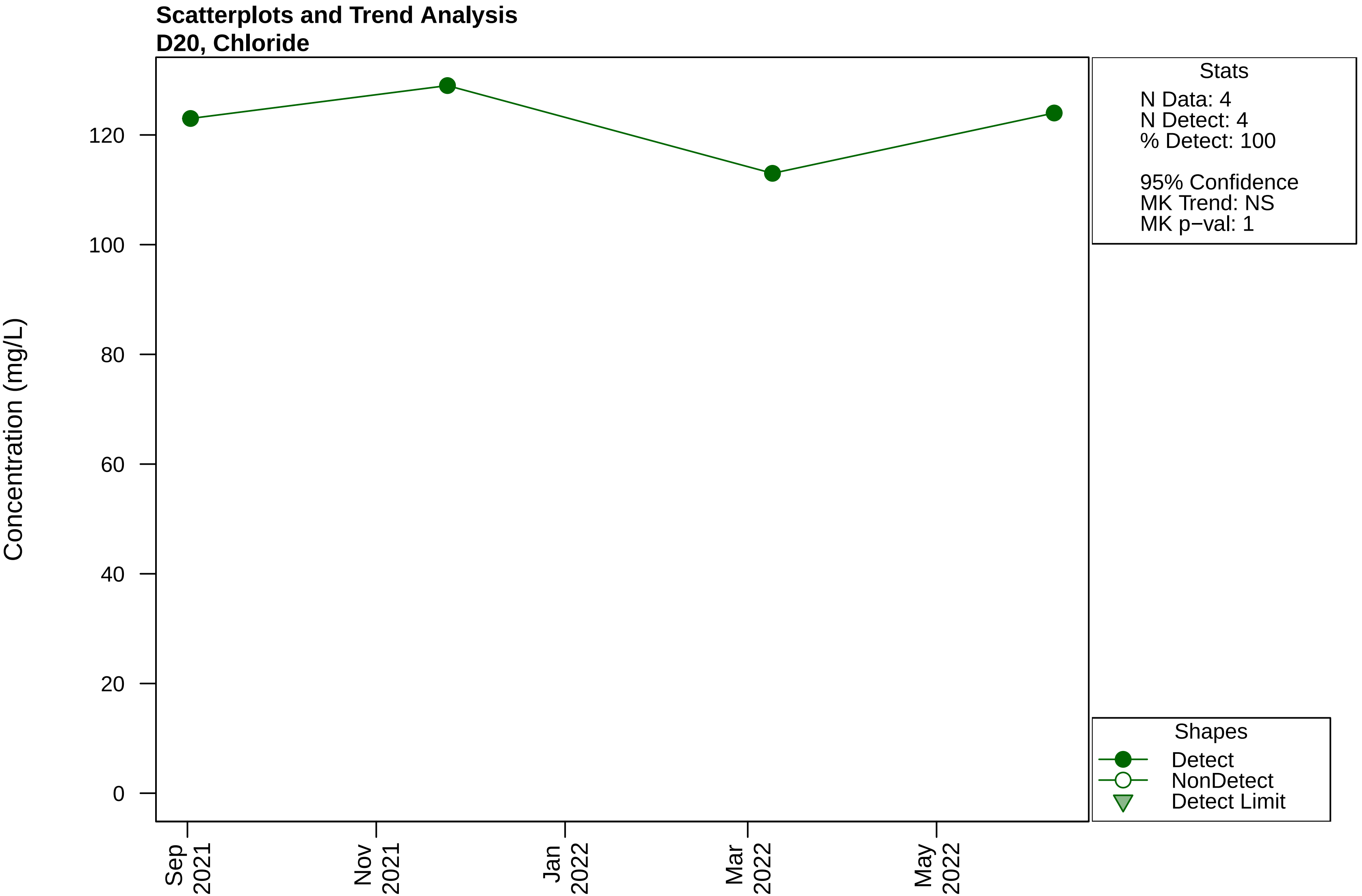
Scatterplots and Trend Analysis
D20, Cadmium
Concentration (ug/L)
0
5
10
15
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 4
N Detect: 4
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 1
Shapes
Detect
NonDetect
Detect Limit



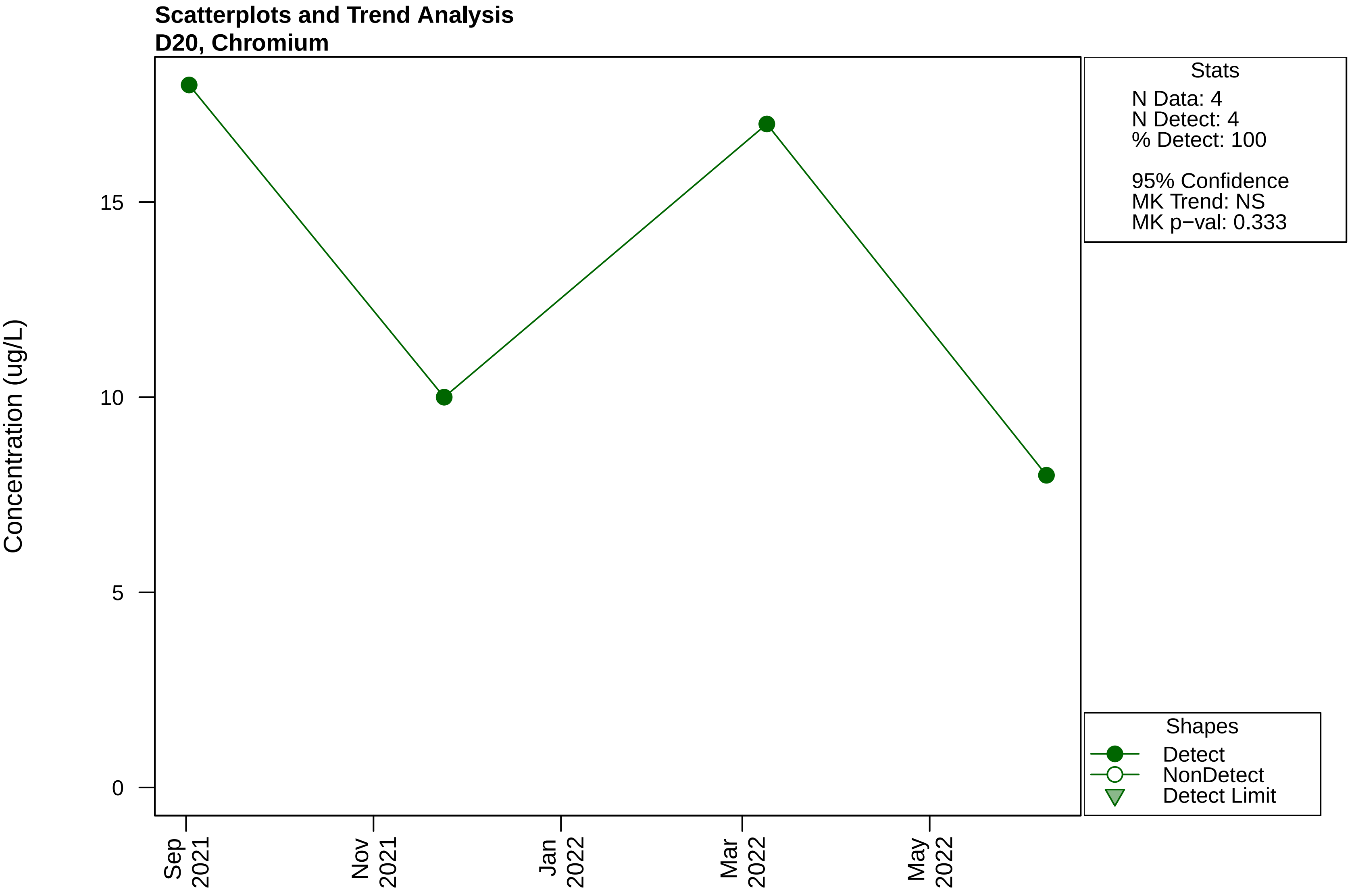
Scatterplots and Trend Analysis
D20, Calcium
Concentration (mg/L)
0
50
100
150
200
250
300
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 4
N Detect: 4
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 1
Shapes
Detect
NonDetect
Detect Limit

Scatterplots and Trend Analysis
D20, Carbonate Alkalinity (as CaCO3)

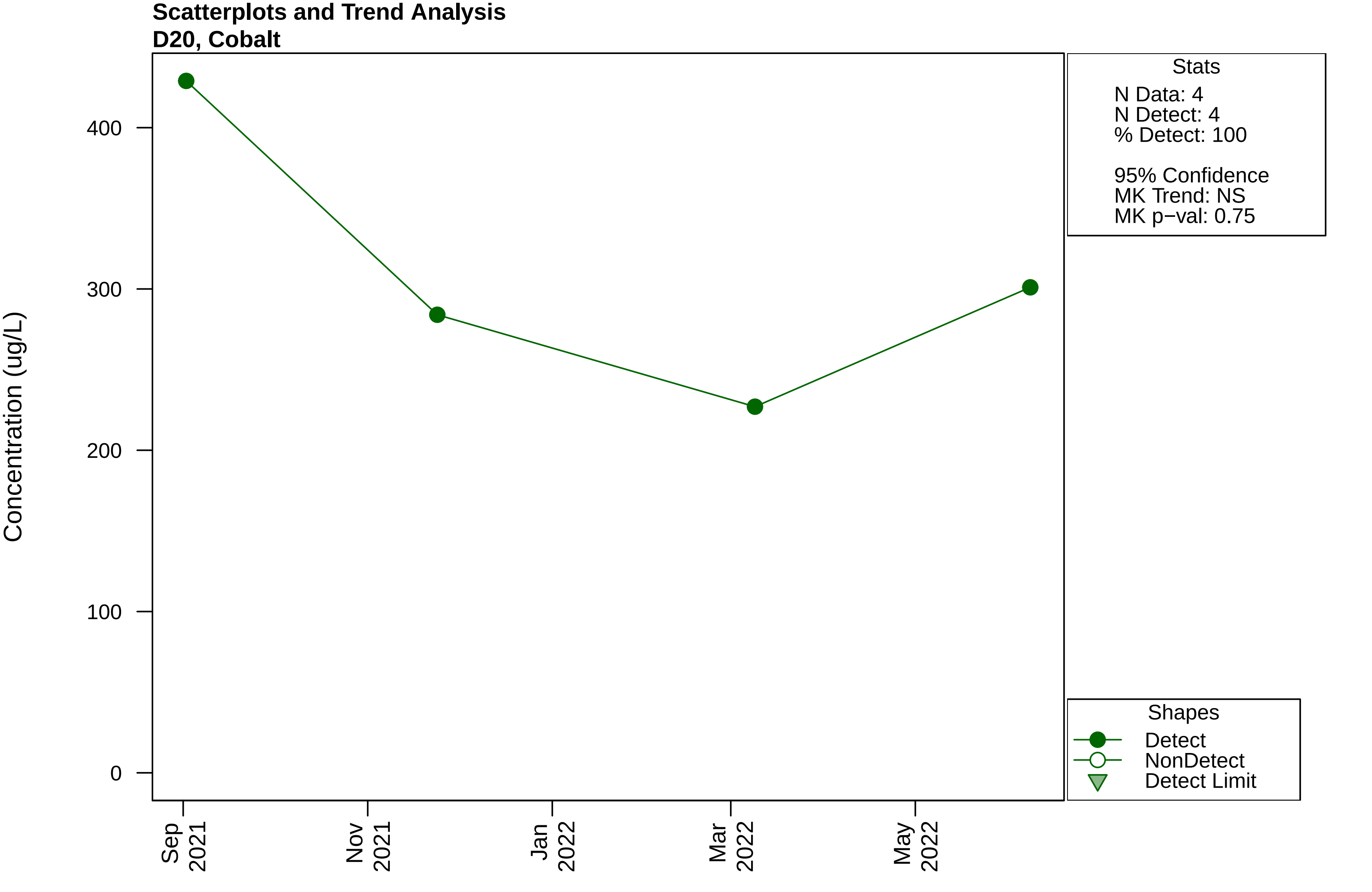




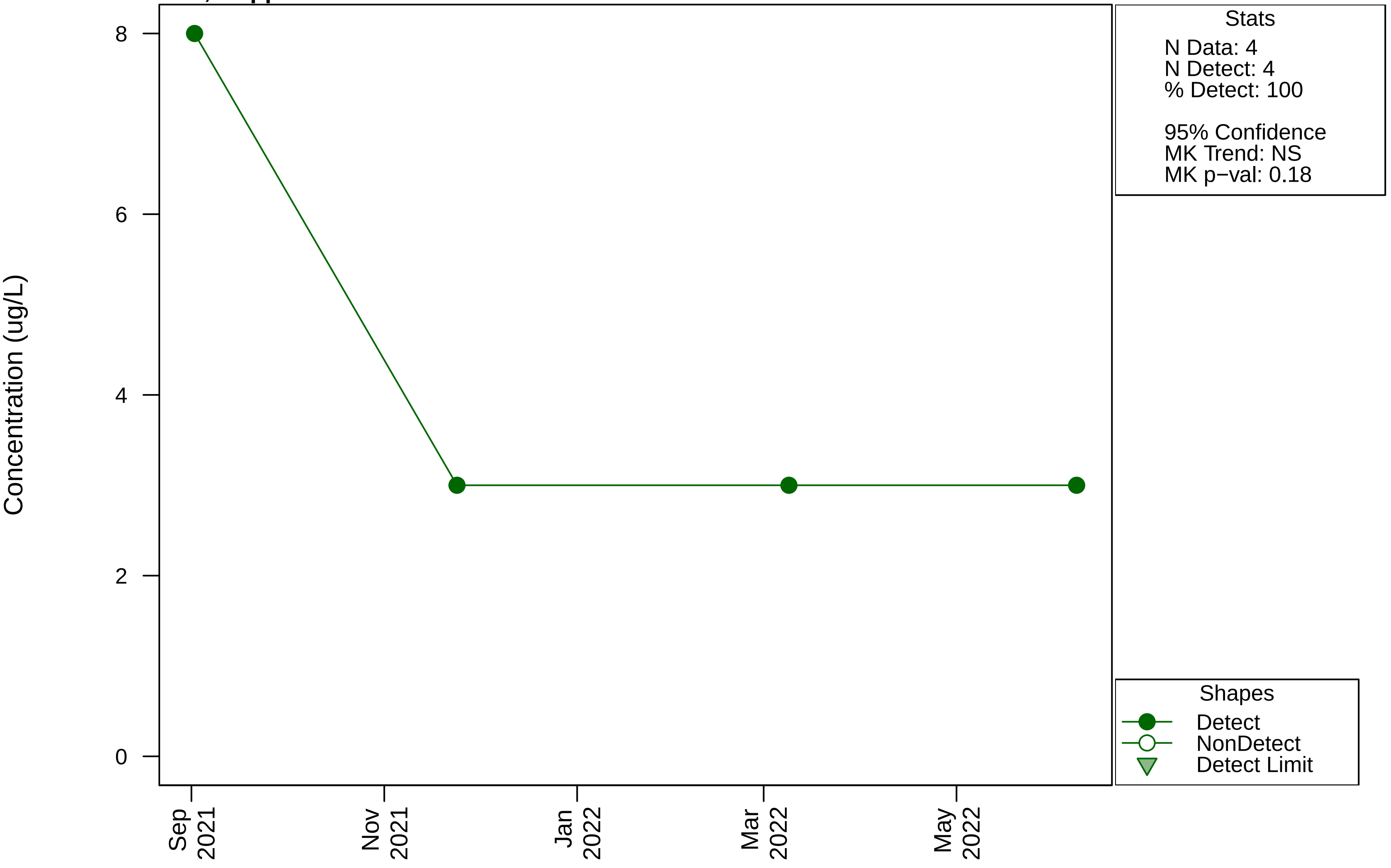
Scatterplots and Trend Analysis
D20, Chloride
Concentration (mg/L)
0
20
40
60
80
100
120
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 4
N Detect: 4
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 1
Shapes
Detect
NonDetect
Detect Limit



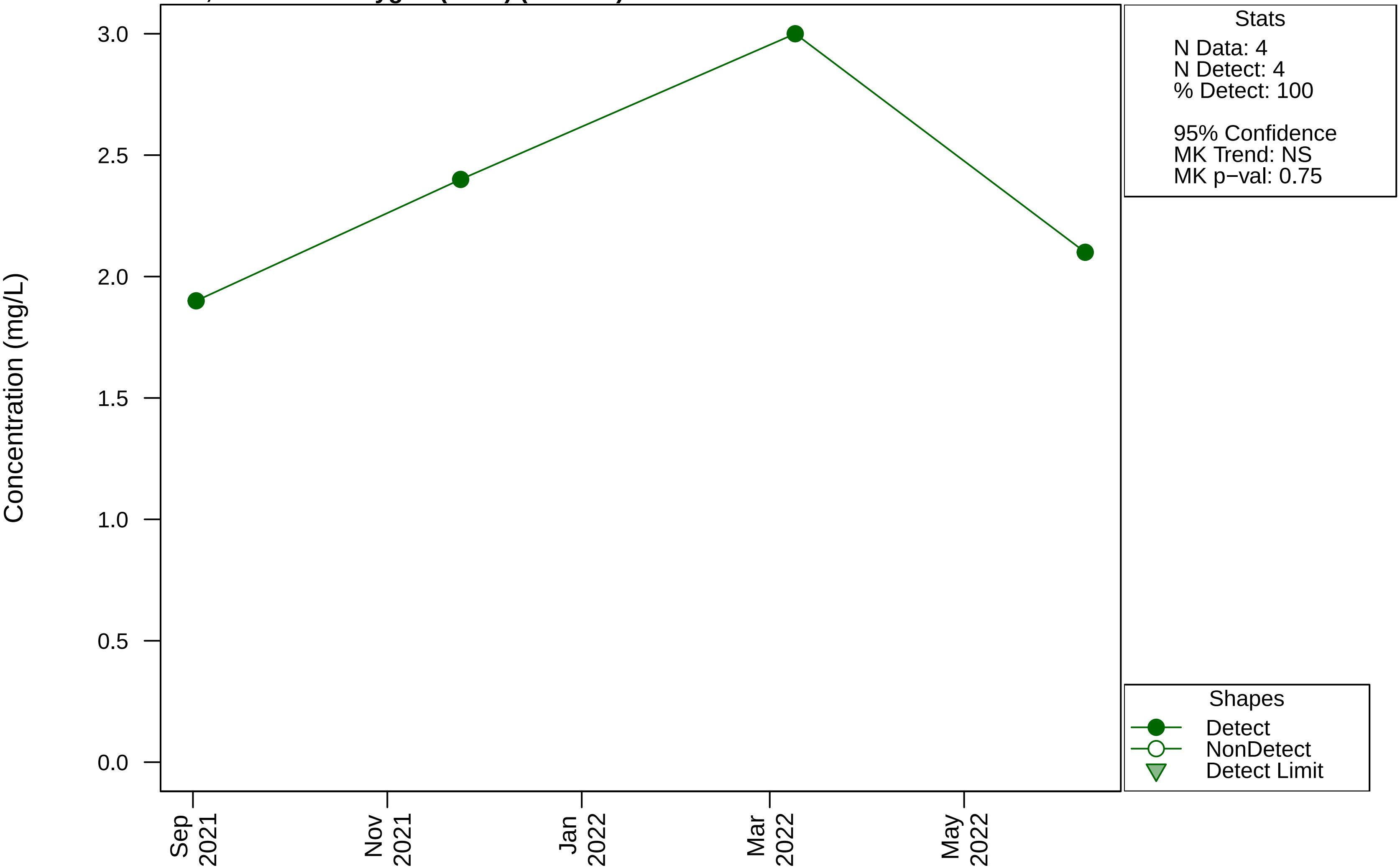
Scatterplots and Trend Analysis
D20, Chromium
Stats
N Data: 4
N Detect: 4
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.333
Shapes
Detect
NonDetect
Detect Limit
Concentration (ug/L)
0
5
10
15
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022

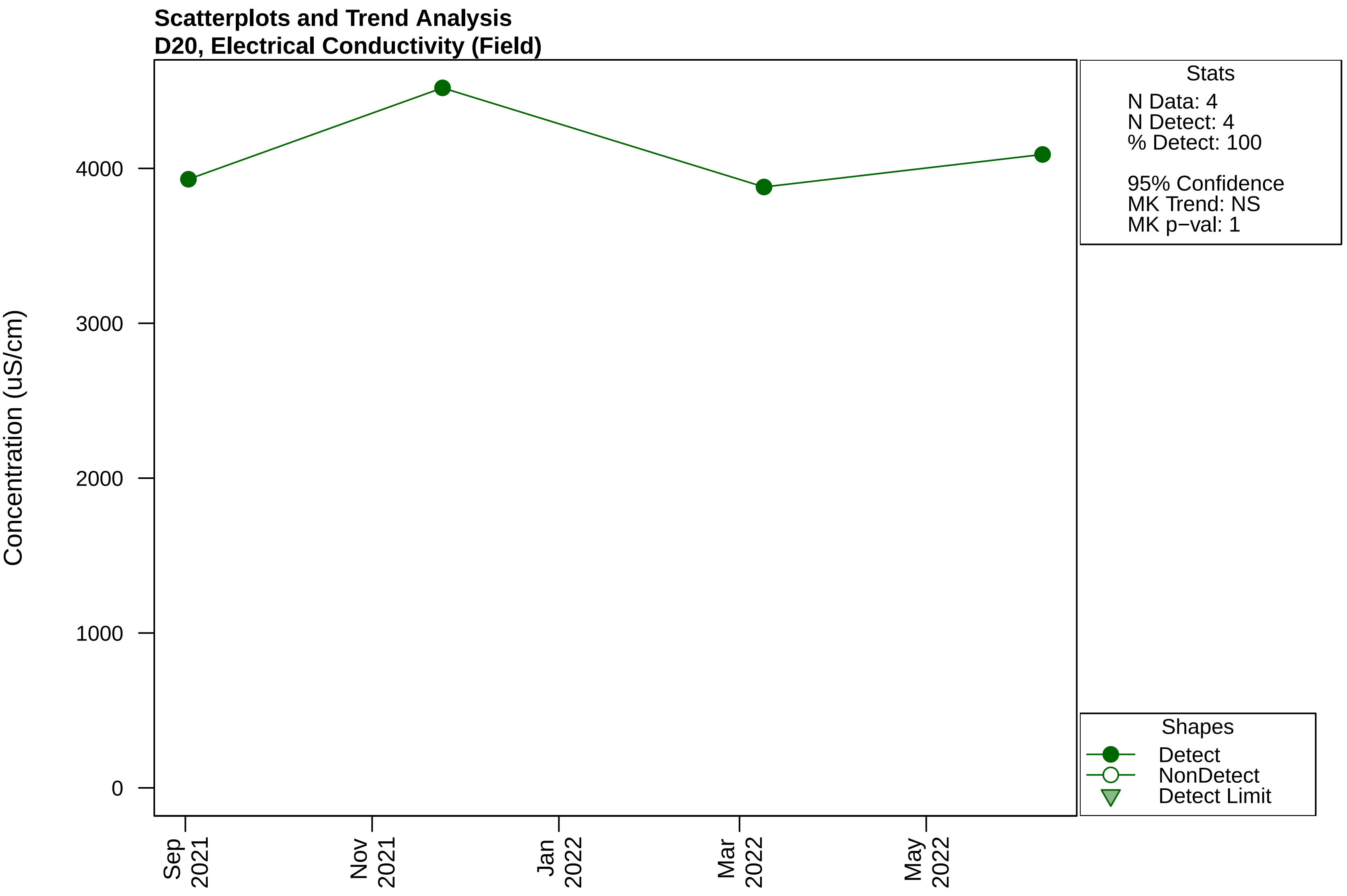

Scatterplots and Trend Analysis
D20, Cobalt
Concentration (ug/L)
0
100
200
300
400
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 4
N Detect: 4
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.75
Shapes
Detect
NonDetect
Detect Limit

Scatterplots and Trend Analysis
D20, Copper

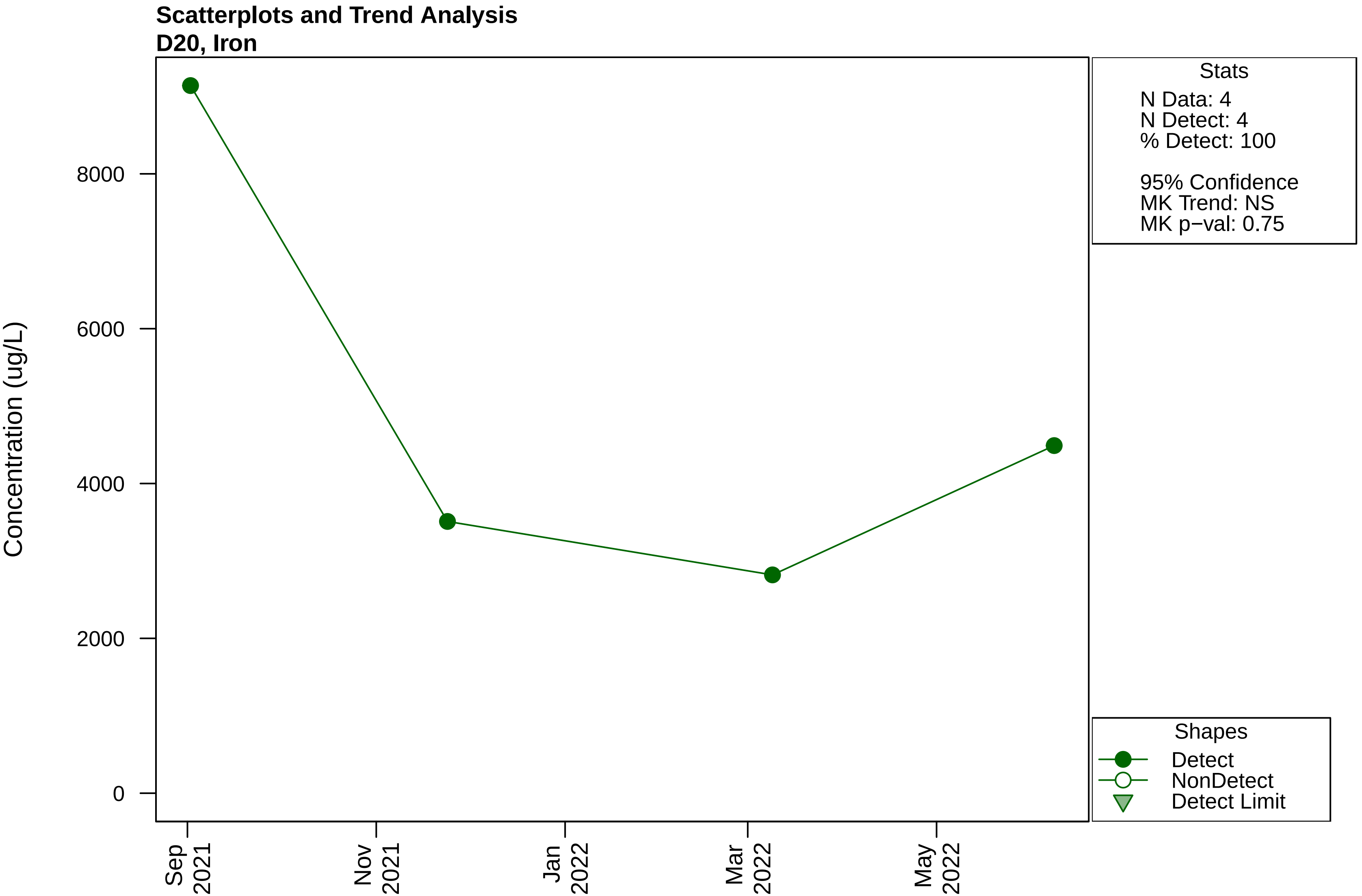


Scatterplots and Trend Analysis
D20, Dissolved Oxygen (Field) (Filtered)



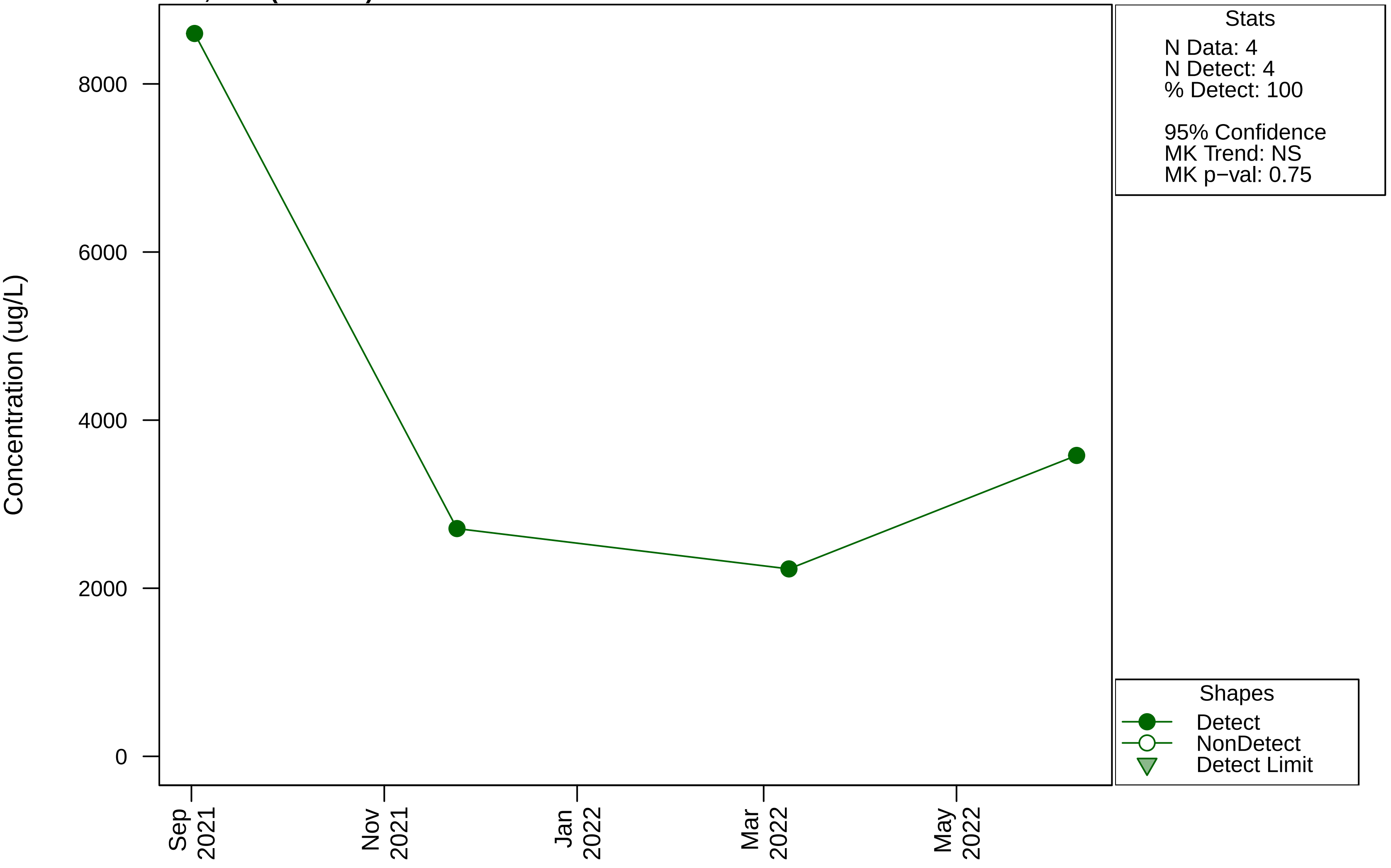


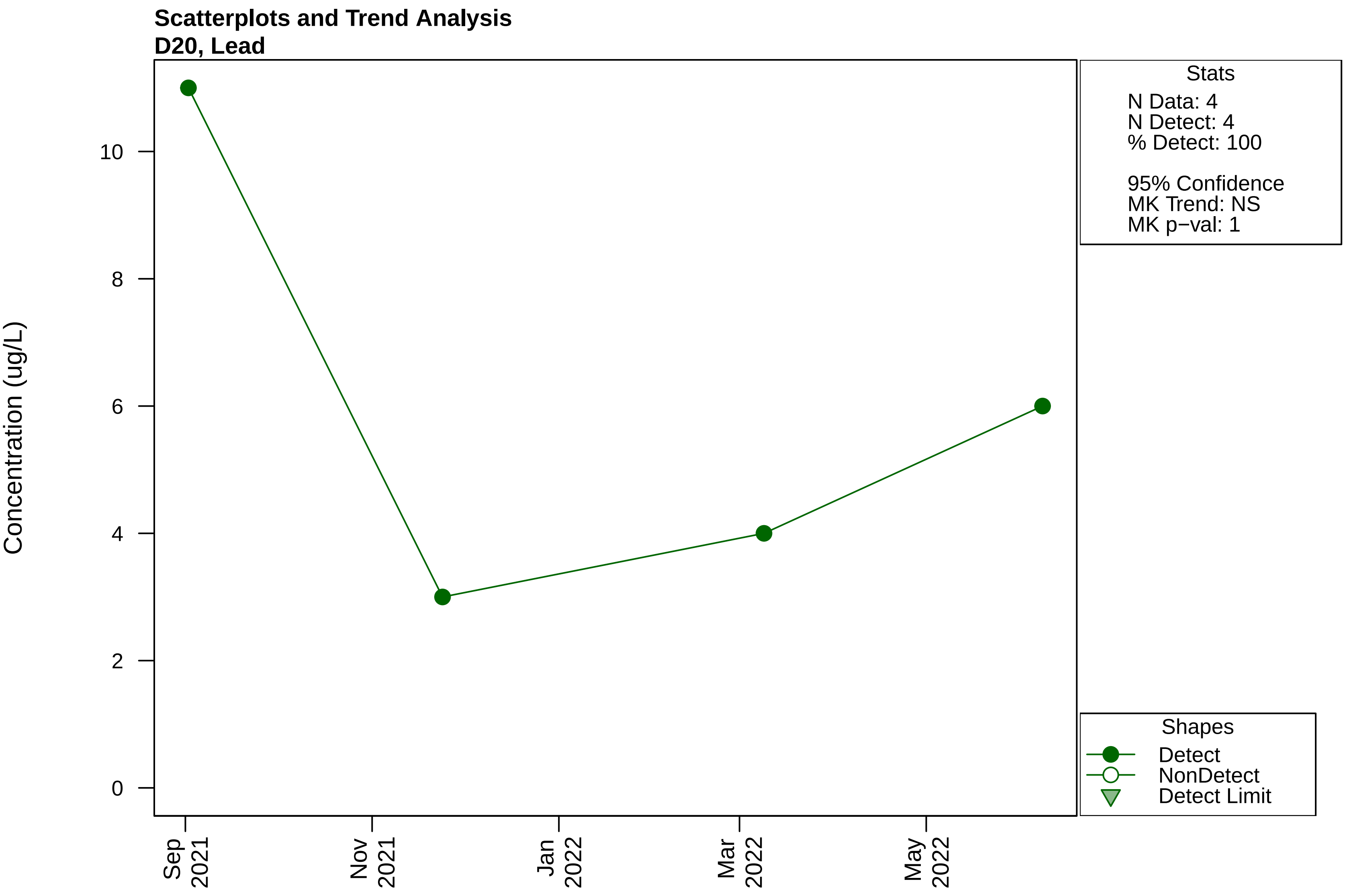
Scatterplots and Trend Analysis
D20, Electrical Conductivity (Field)
Concentration (uS/cm)
0
1000
2000
3000
4000
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 4
N Detect: 4
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 1
Shapes
Detect
NonDetect
Detect Limit

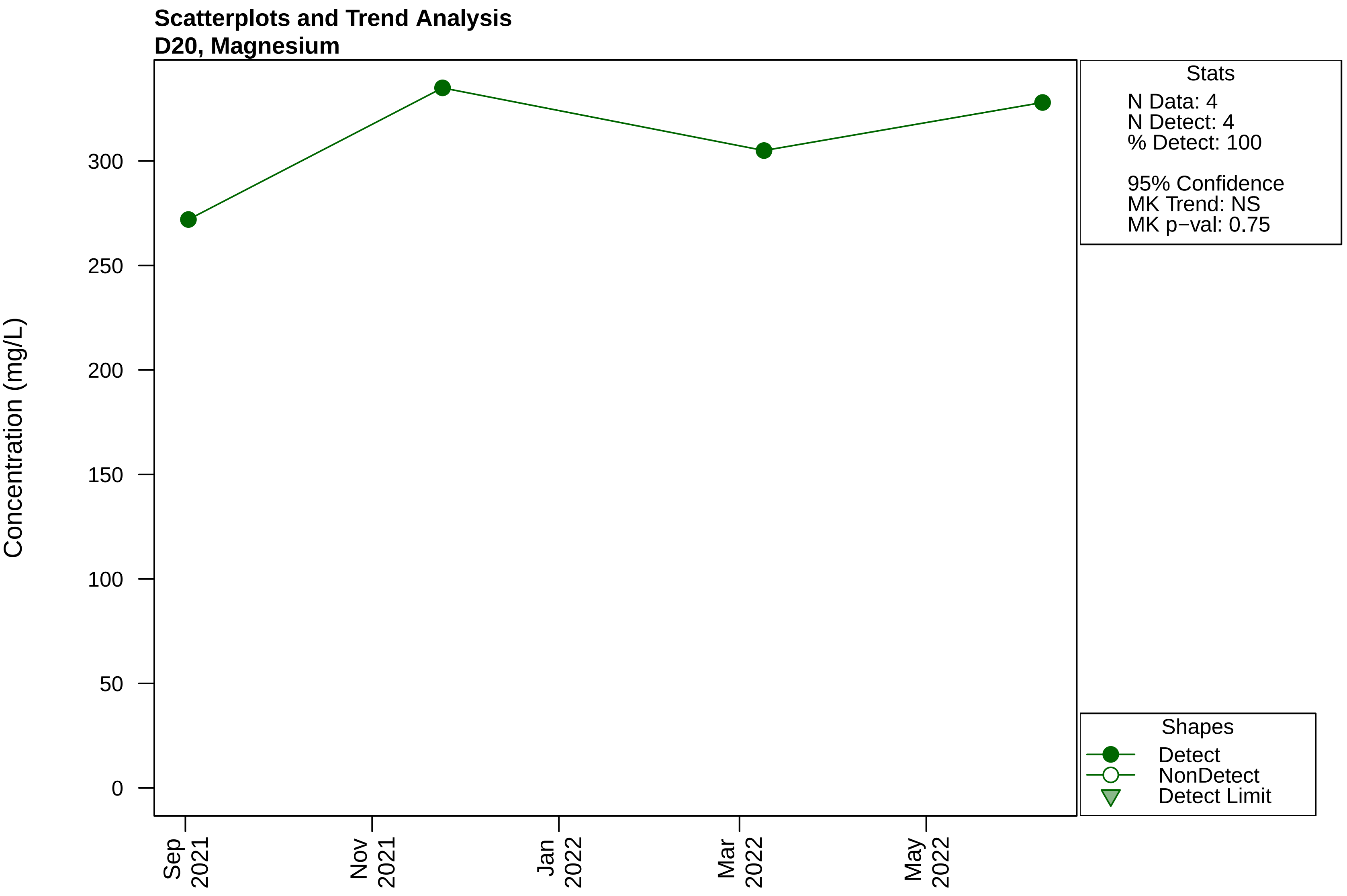


Scatterplots and Trend Analysis
D20, Iron
Concentration (ug/L)
0
2000
4000
6000
8000
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 4
N Detect: 4
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.75
Shapes
Detect
NonDetect
Detect Limit

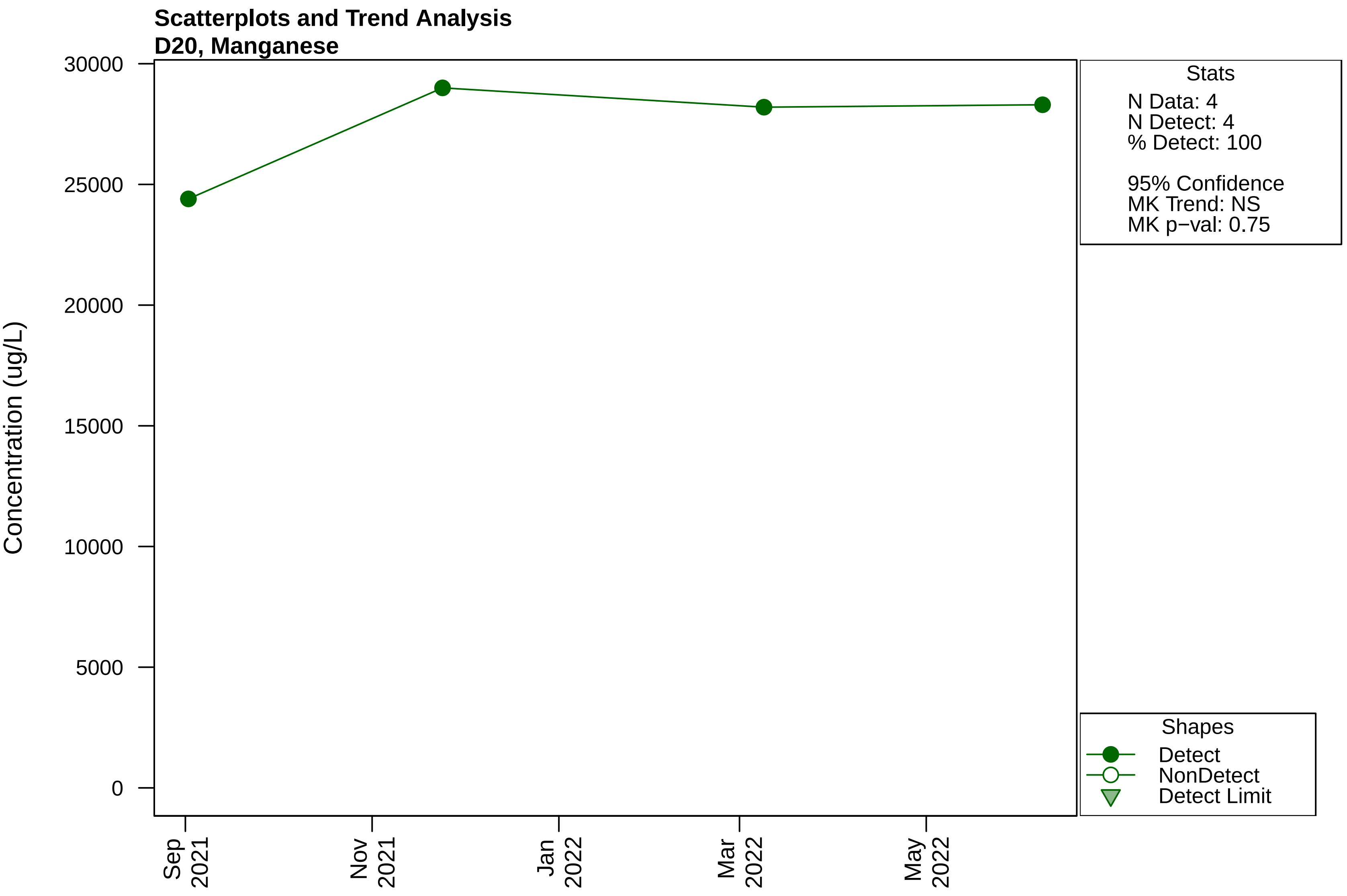
Scatterplots and Trend Analysis
D20, Iron (Filtered)




Scatterplots and Trend Analysis
D20, Lead
Concentration (ug/L)
0
2
4
6
8
10
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 4
N Detect: 4
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 1
Shapes
Detect
NonDetect
Detect Limit

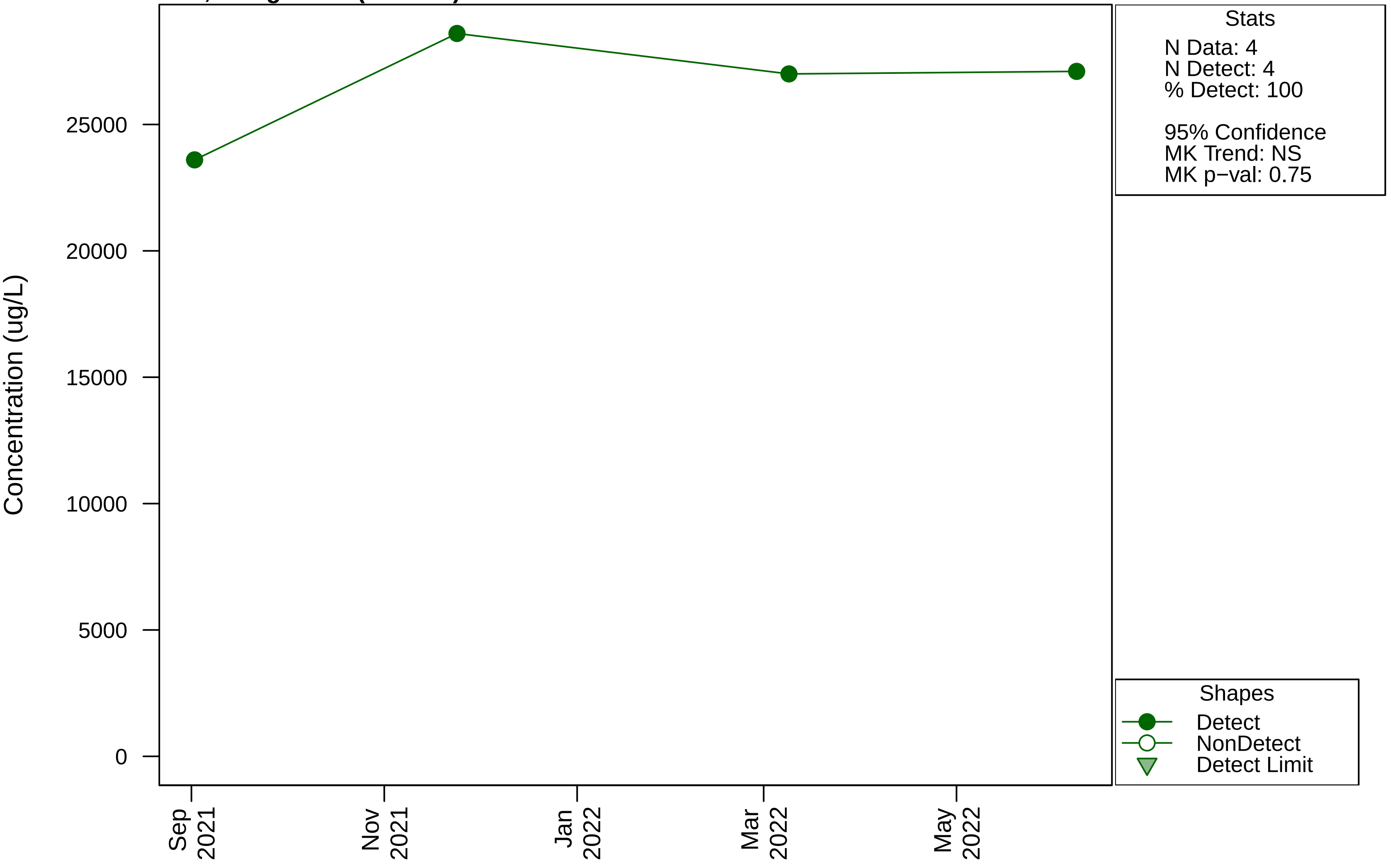


Scatterplots and Trend Analysis
D20, Magnesium
Concentration (mg/L)
0
50
100
150
200
250
300
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 4
N Detect: 4
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.75
Shapes
Detect
NonDetect
Detect Limit

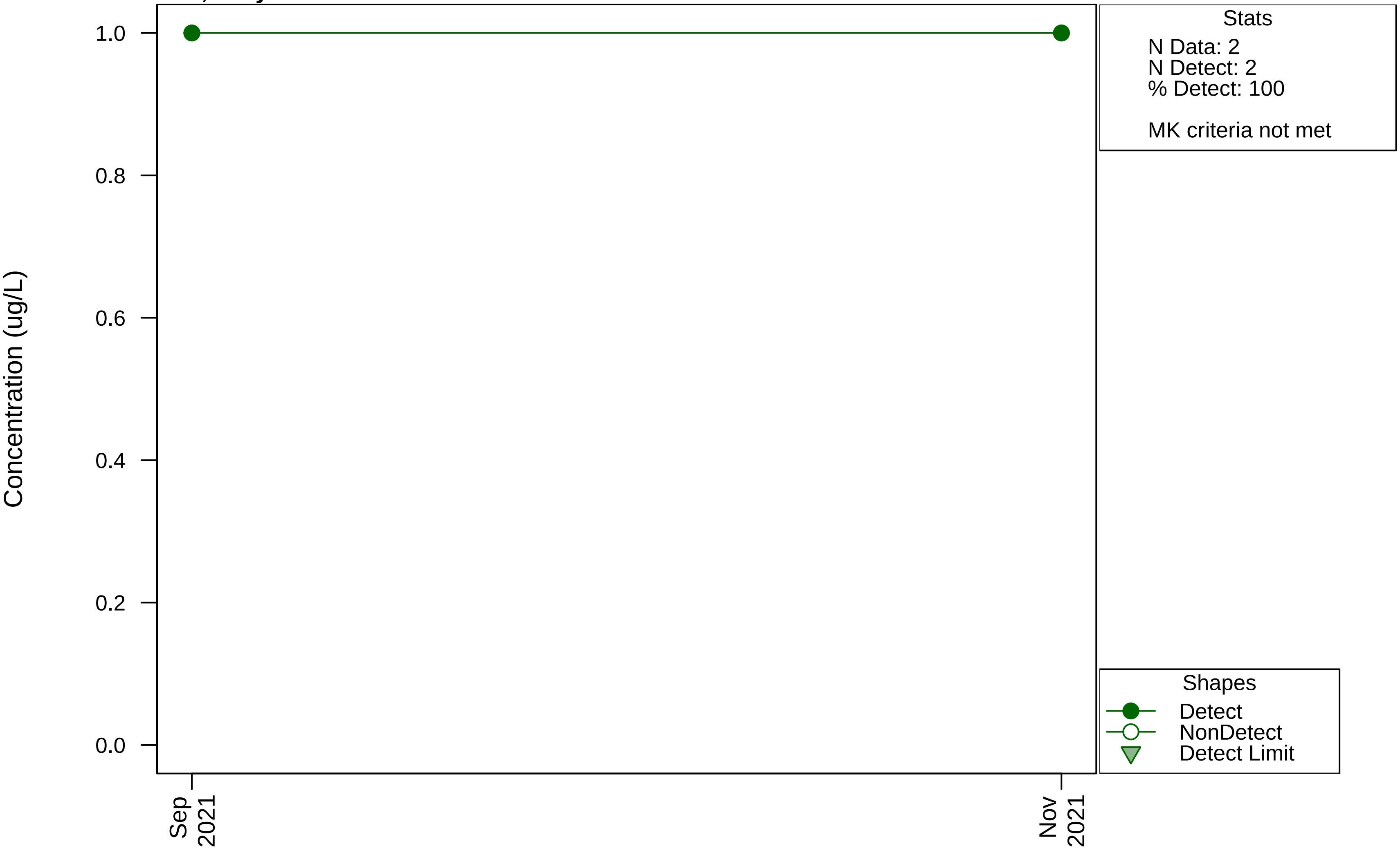


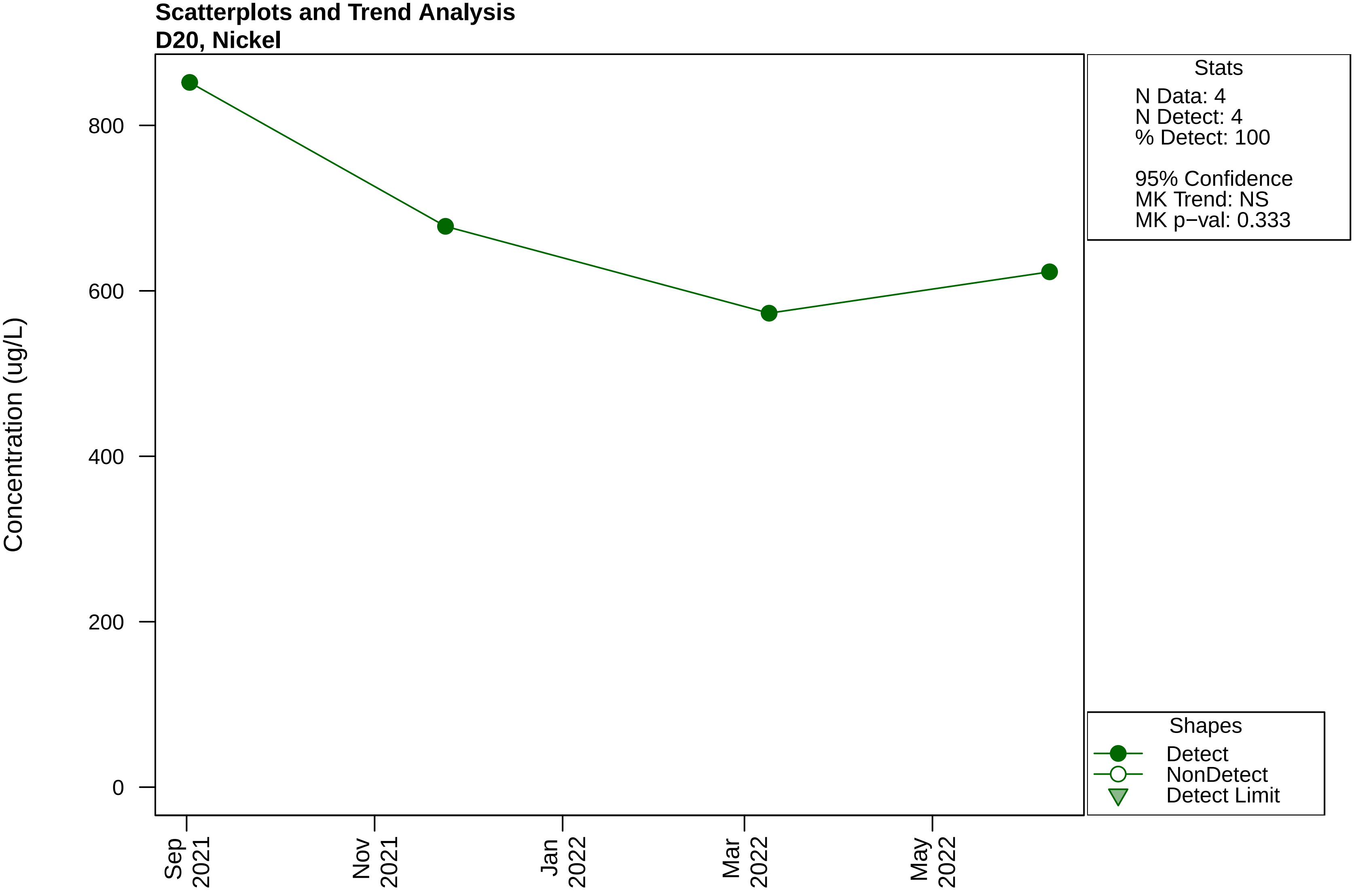
Scatterplots and Trend Analysis
D20, Manganese
Concentration (ug/L)
30000
25000
20000
15000
10000
5000
0
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 4
N Detect: 4
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.75
Shapes
Detect
NonDetect
Detect Limit

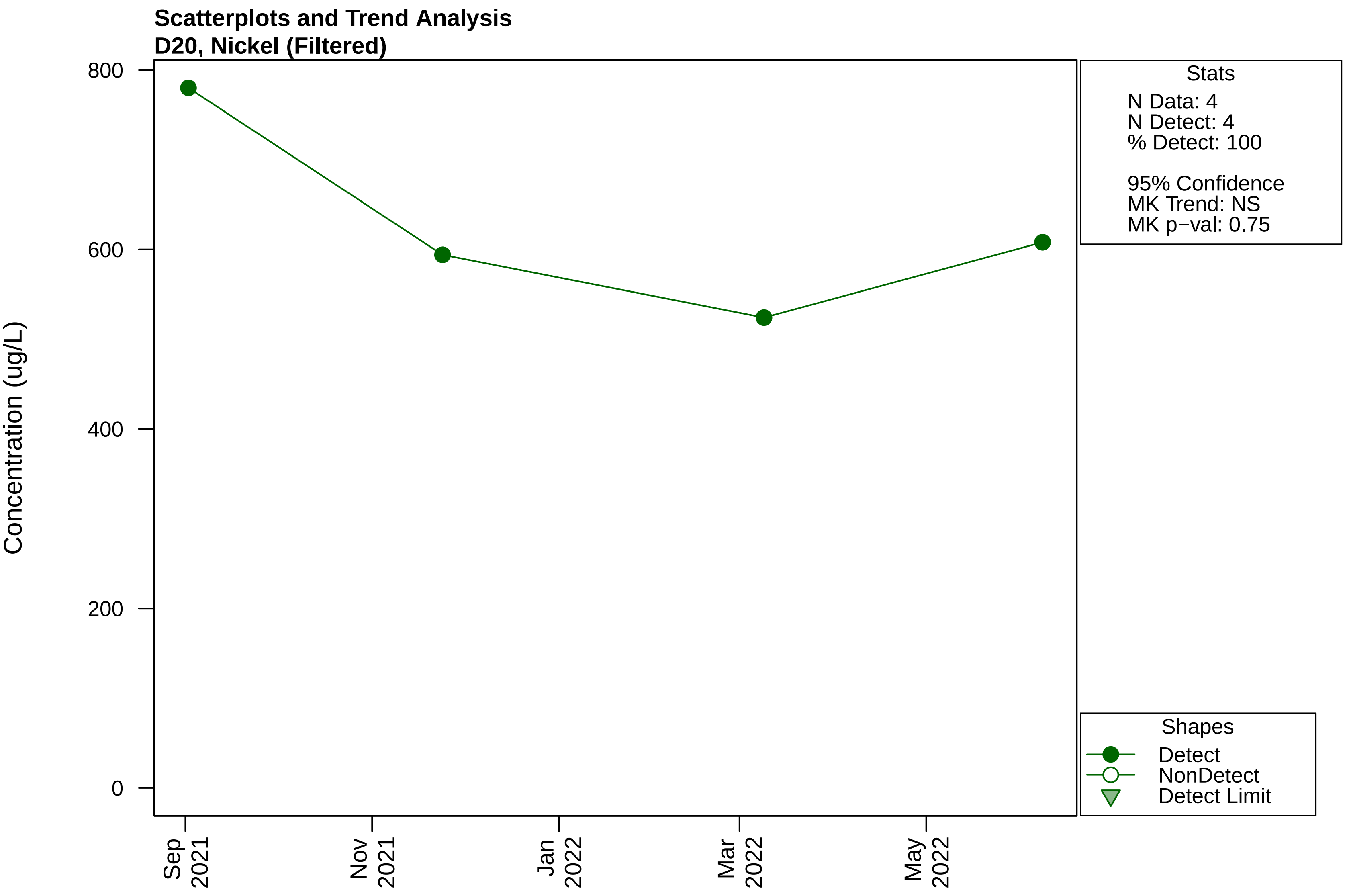
Scatterplots and Trend Analysis
D20, Manganese (Filtered)



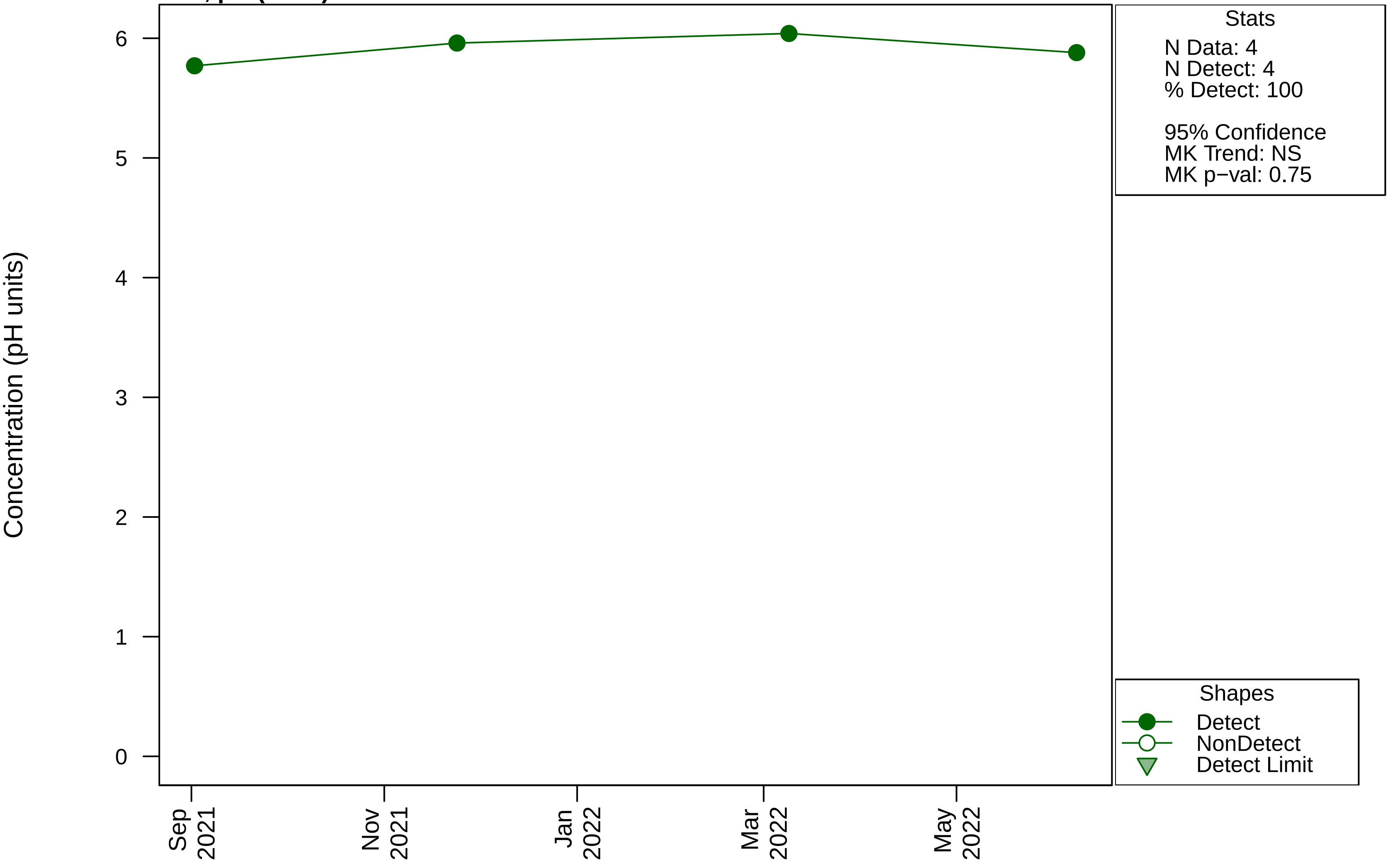
Scatterplots and Trend Analysis
D20, Molybdenum

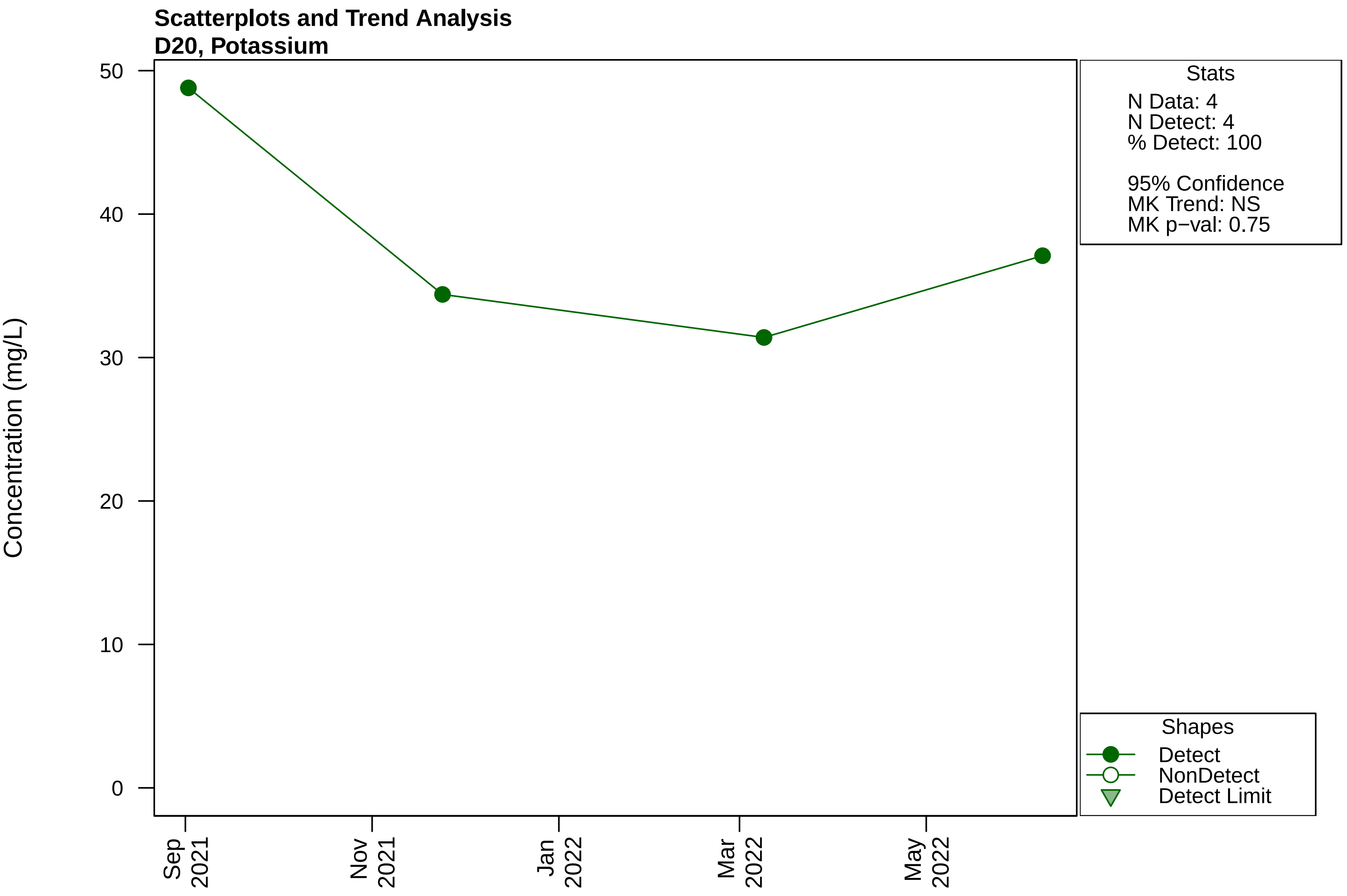



Scatterplots and Trend Analysis
D20, Nickel
Concentration (ug/L)
0
200
400
600
800
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 4
N Detect: 4
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.333
Shapes
Detect
NonDetect
Detect Limit

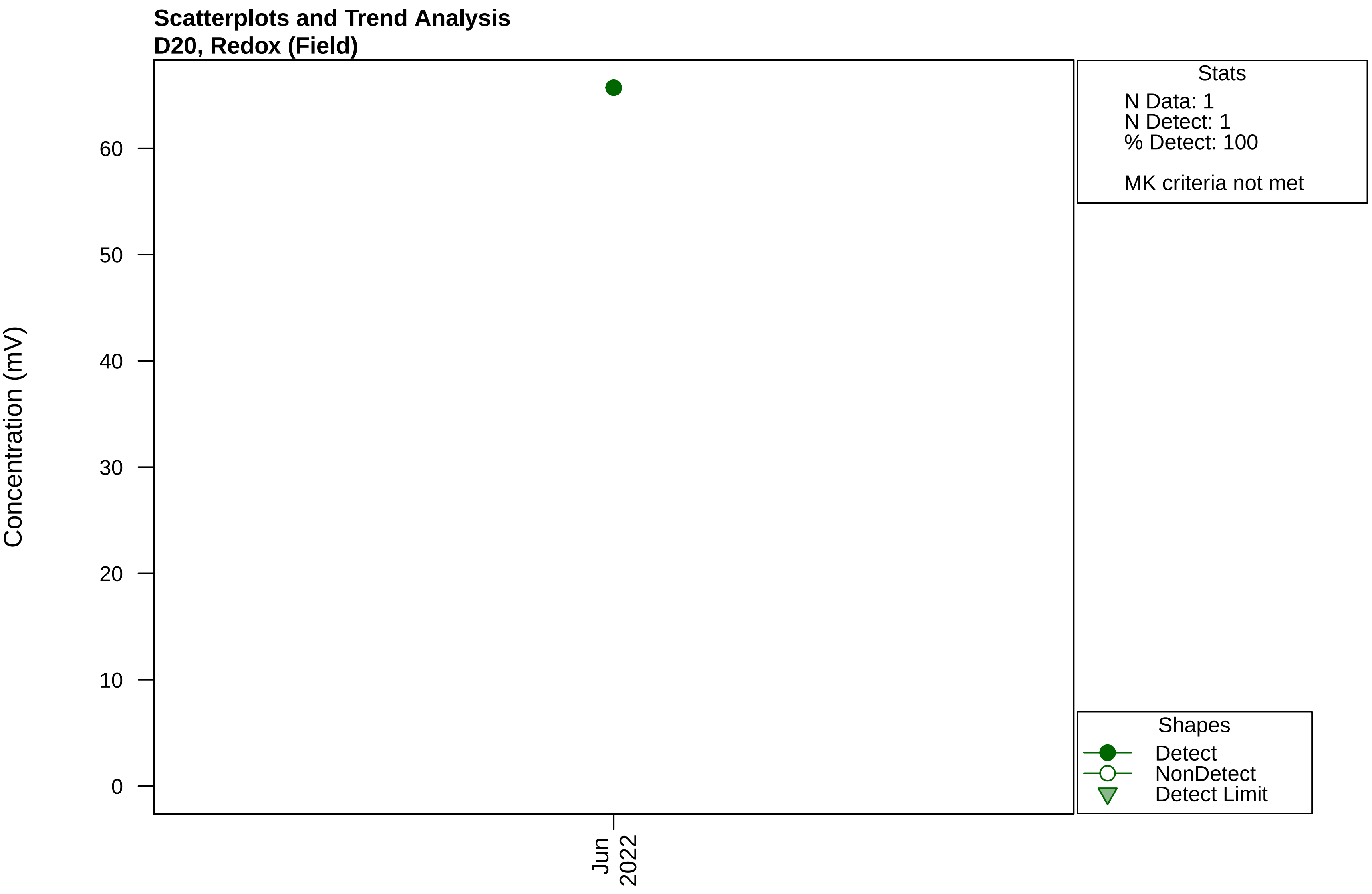

Scatterplots and Trend Analysis
D20, Nickel (Filtered)
Concentration (ug/L)
800
600
400
200
0
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 4
N Detect: 4
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.75
Shapes
Detect
NonDetect
Detect Limit

Scatterplots and Trend Analysis
D20, pH (Field)

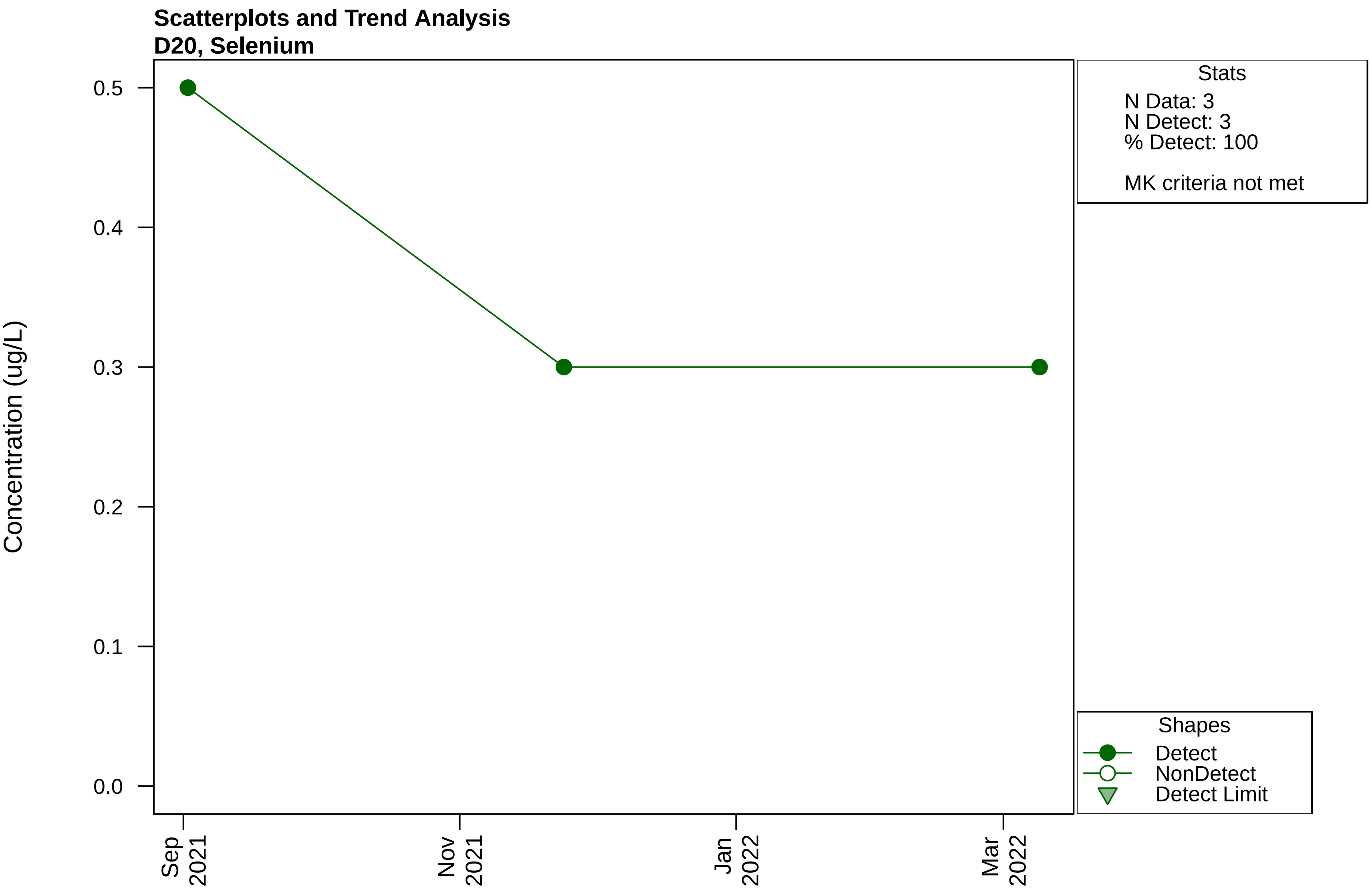




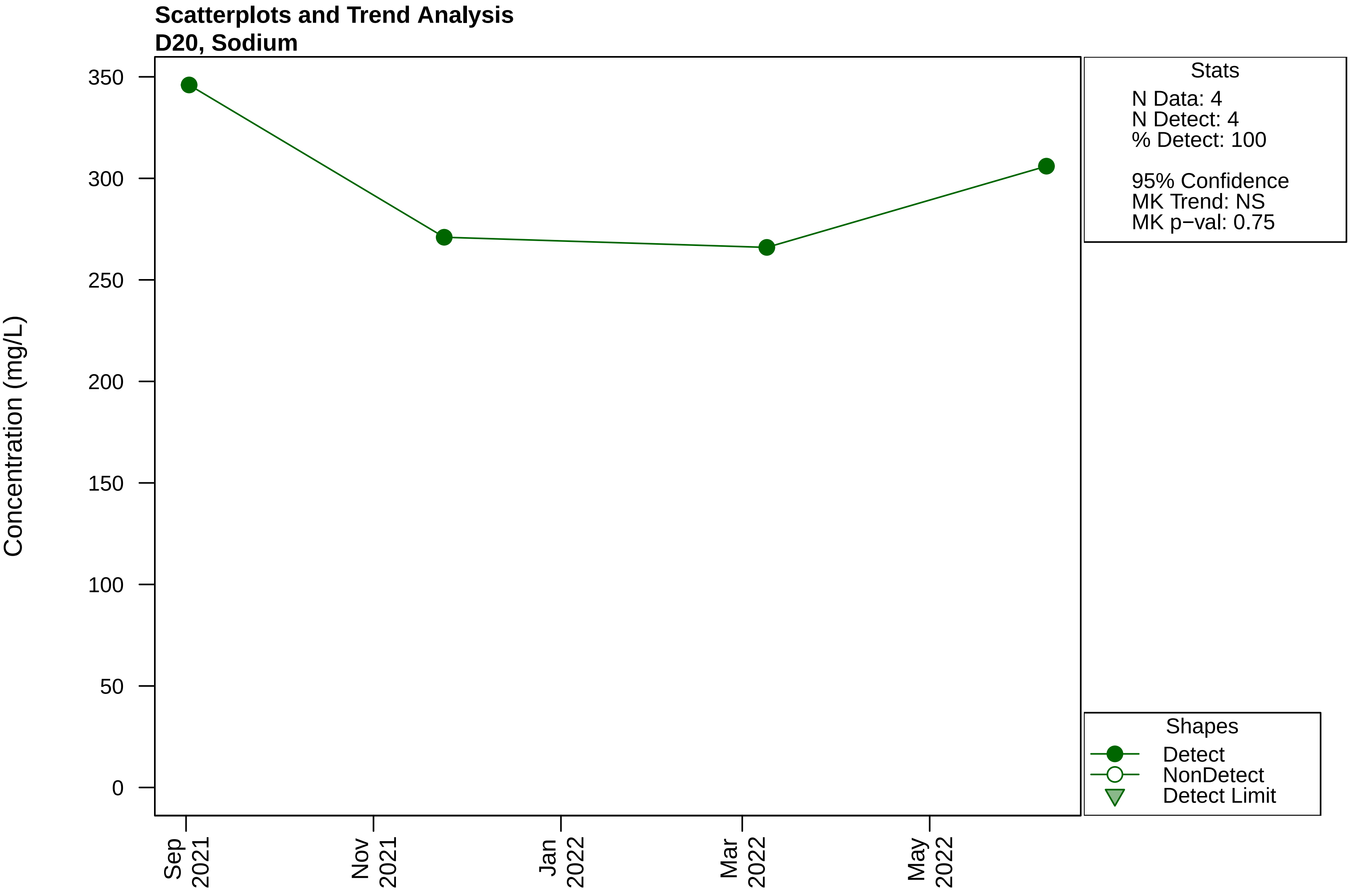
Scatterplots and Trend Analysis
D20, Potassium
Concentration (mg/L)
0
10
20
30
40
50
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 4
N Detect: 4
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.75
Shapes
Detect
NonDetect
Detect Limit



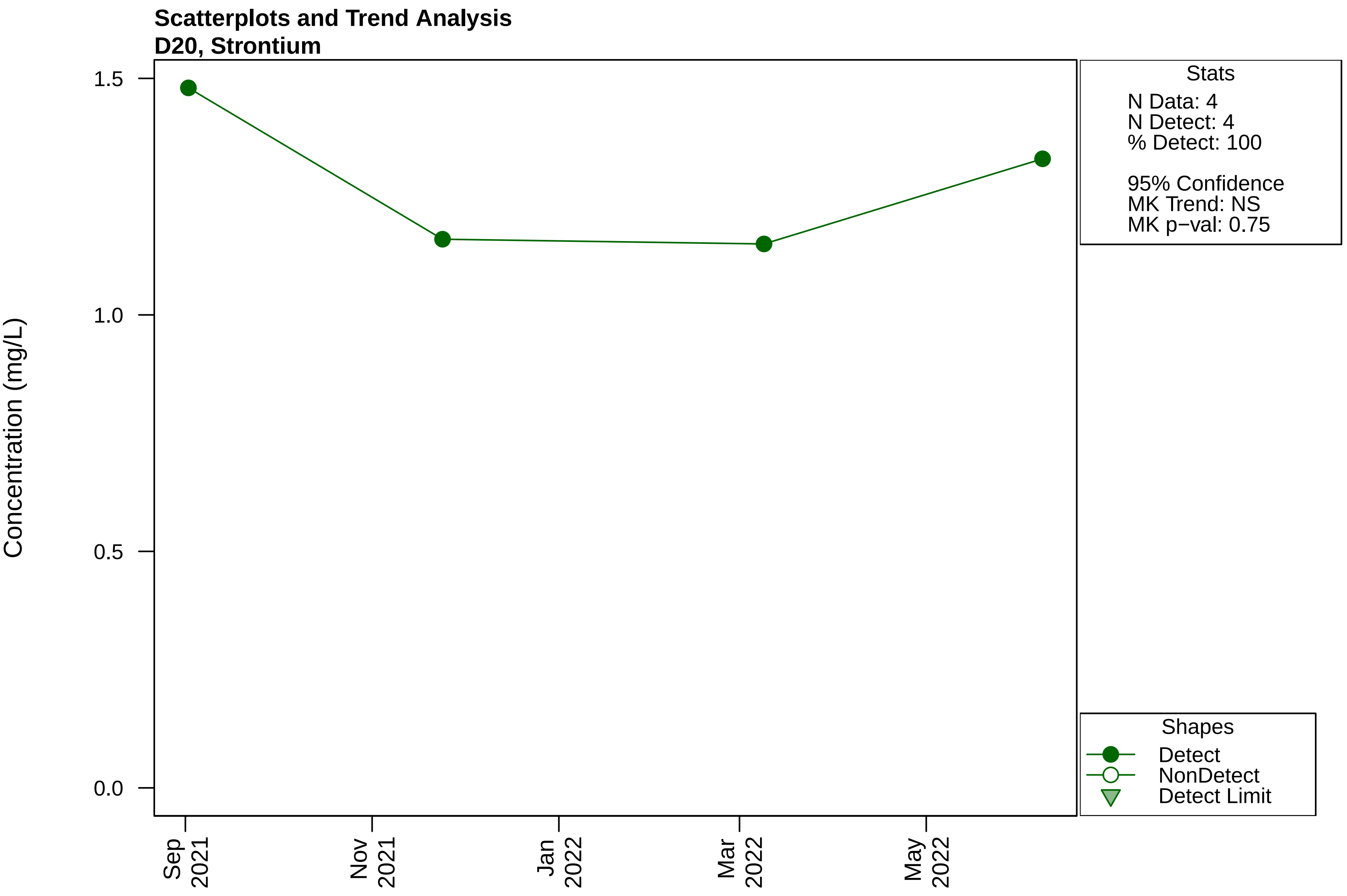
Scatterplots and Trend Analysis
D20, Redox (Field)
Concentration (mV)
0
10
20
30
40
50
60
Jun 2022
Stats
N Data: 1
N Detect: 1
% Detect: 100
MK criteria not met
Shapes
Detect
NonDetect
Detect Limit



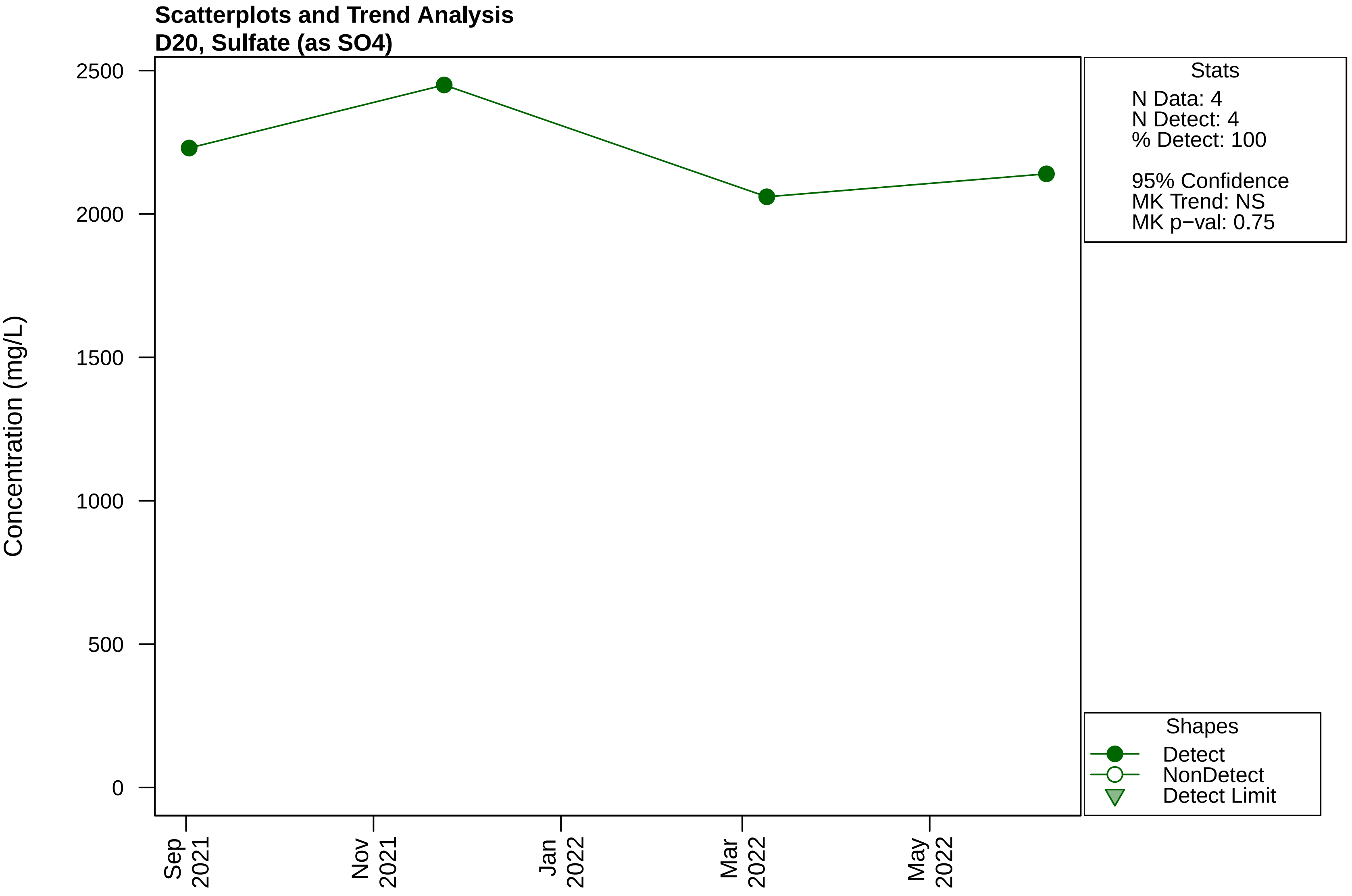
Scatterplots and Trend Analysis
D20, Selenium
Concentration (ug/L)
0.5
0.4
0.3
0.2
0.1
0.0
Sep 2021
Nov 2021
Jan 2022
Mar 2022
Stats
N Data: 3
N Detect: 3
% Detect: 100
MK criteria not met
Shapes
Detect
NonDetect
Detect Limit



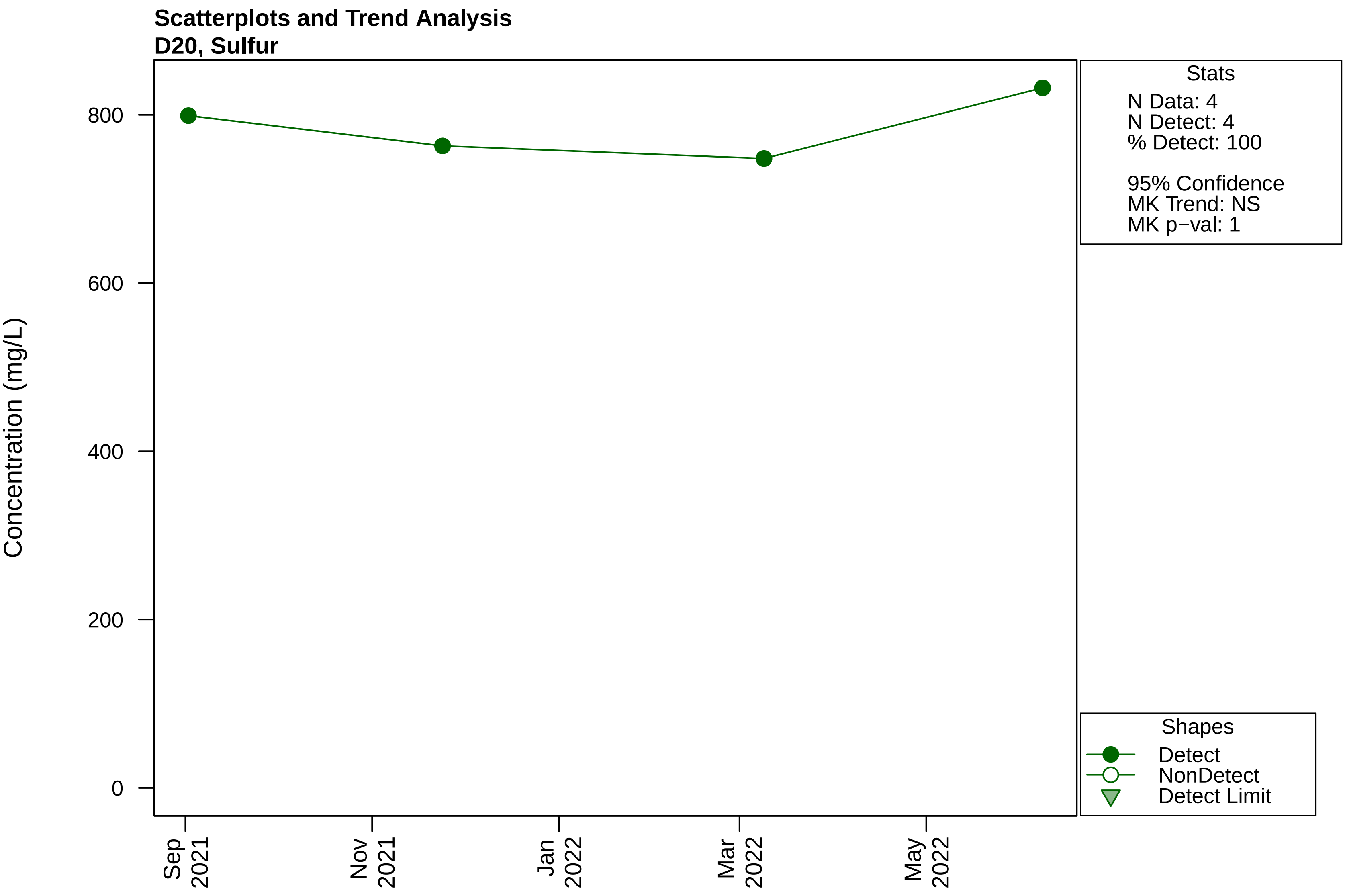
Scatterplots and Trend Analysis
D20, Sodium
Concentration (mg/L)
0
50
100
150
200
250
300
350
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 4
N Detect: 4
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.75
Shapes
Detect
NonDetect
Detect Limit



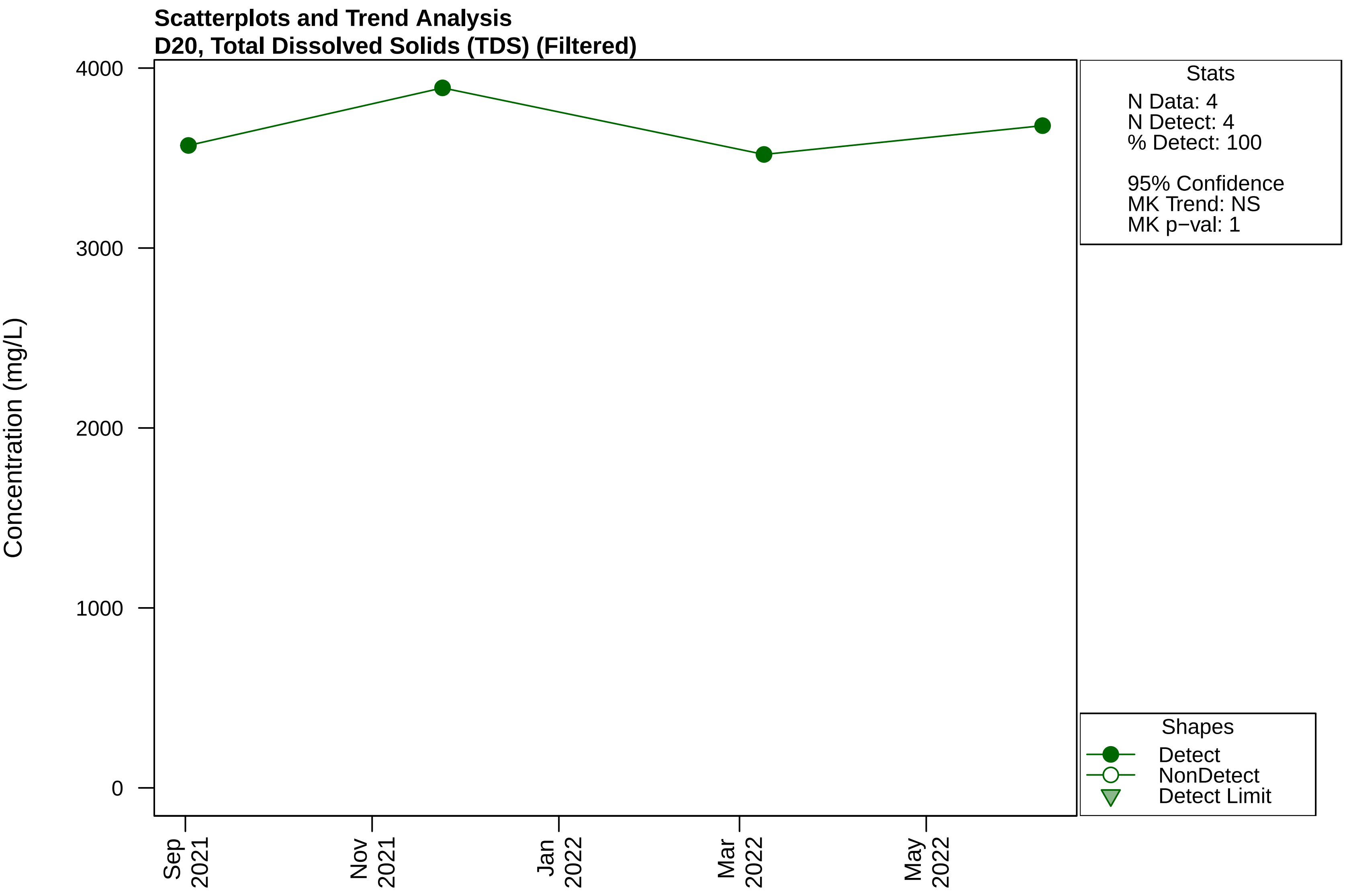
Scatterplots and Trend Analysis
D20, Strontium
Concentration (mg/L)
0.0
0.5
1.0
1.5
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 4
N Detect: 4
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.75
Shapes
Detect
NonDetect
Detect Limit

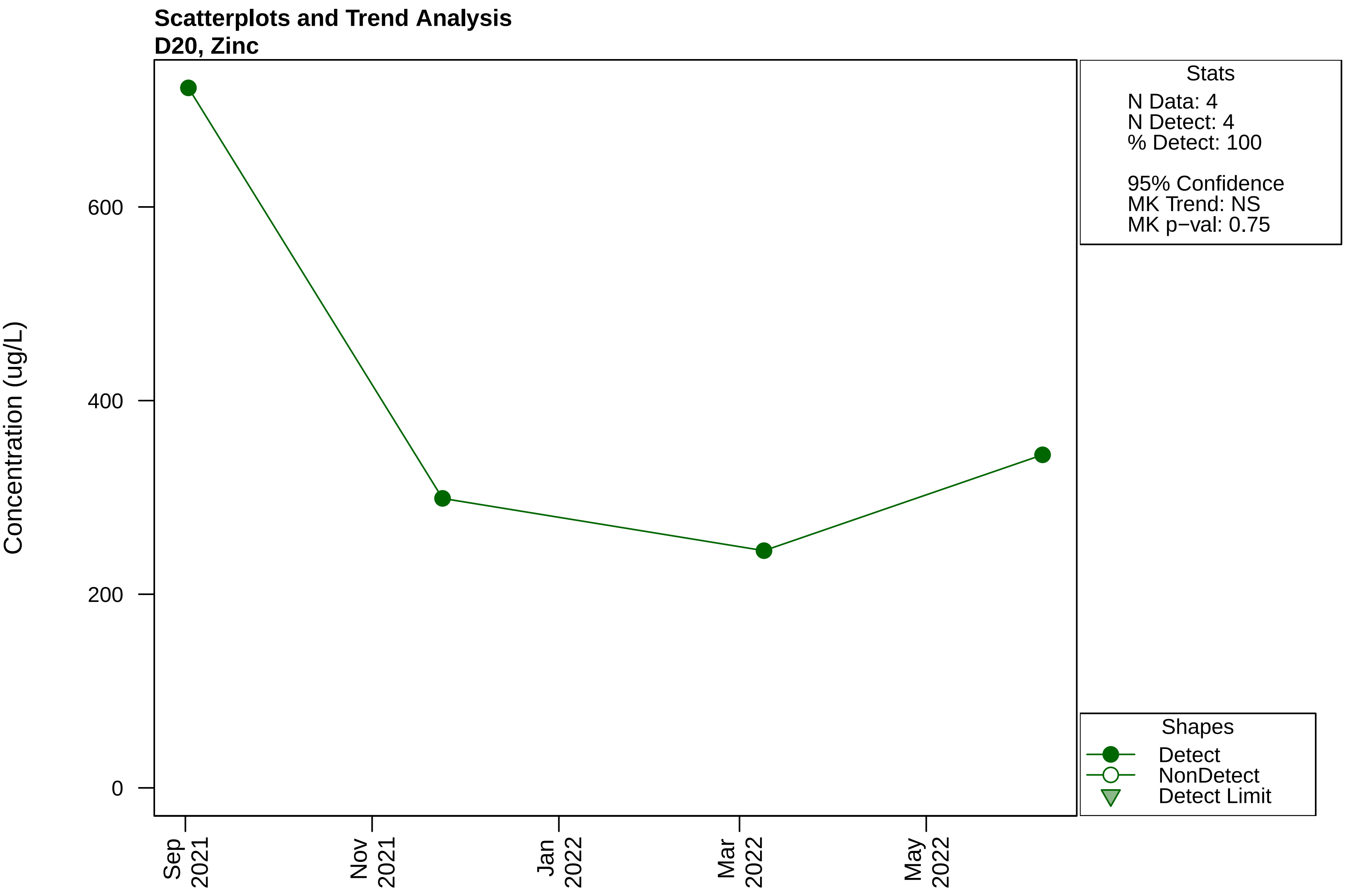


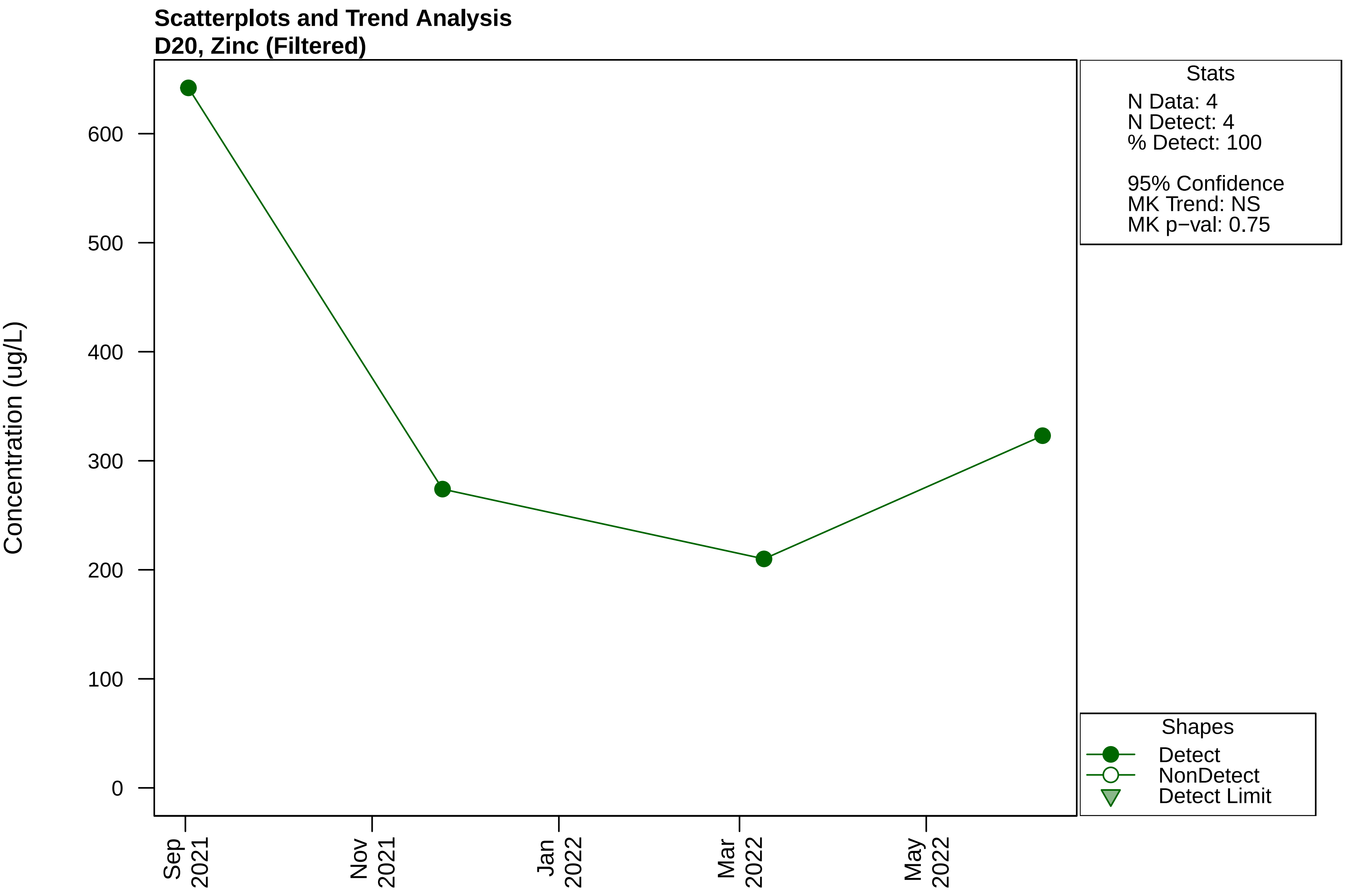
Scatterplots and Trend Analysis
D20, Sulfate (as SO4)
Concentration (mg/L)
2500
2000
1500
1000
500
0
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 4
N Detect: 4
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.75
Shapes
Detect
NonDetect
Detect Limit

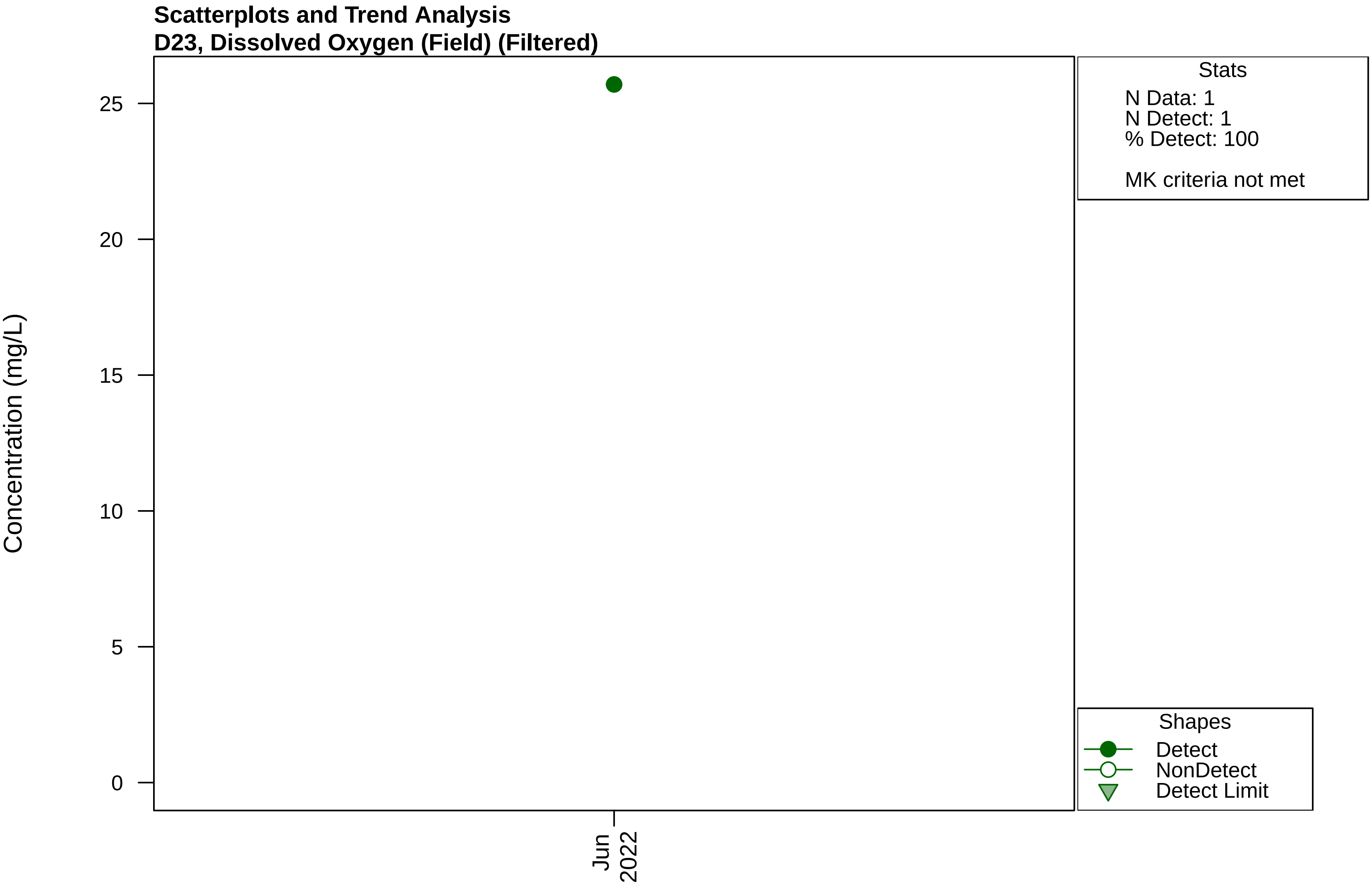


Scatterplots and Trend Analysis
D20, Sulfur
Concentration (mg/L)
800
600
400
200
0
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 4
N Detect: 4
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 1
Shapes
Detect
NonDetect
Detect Limit

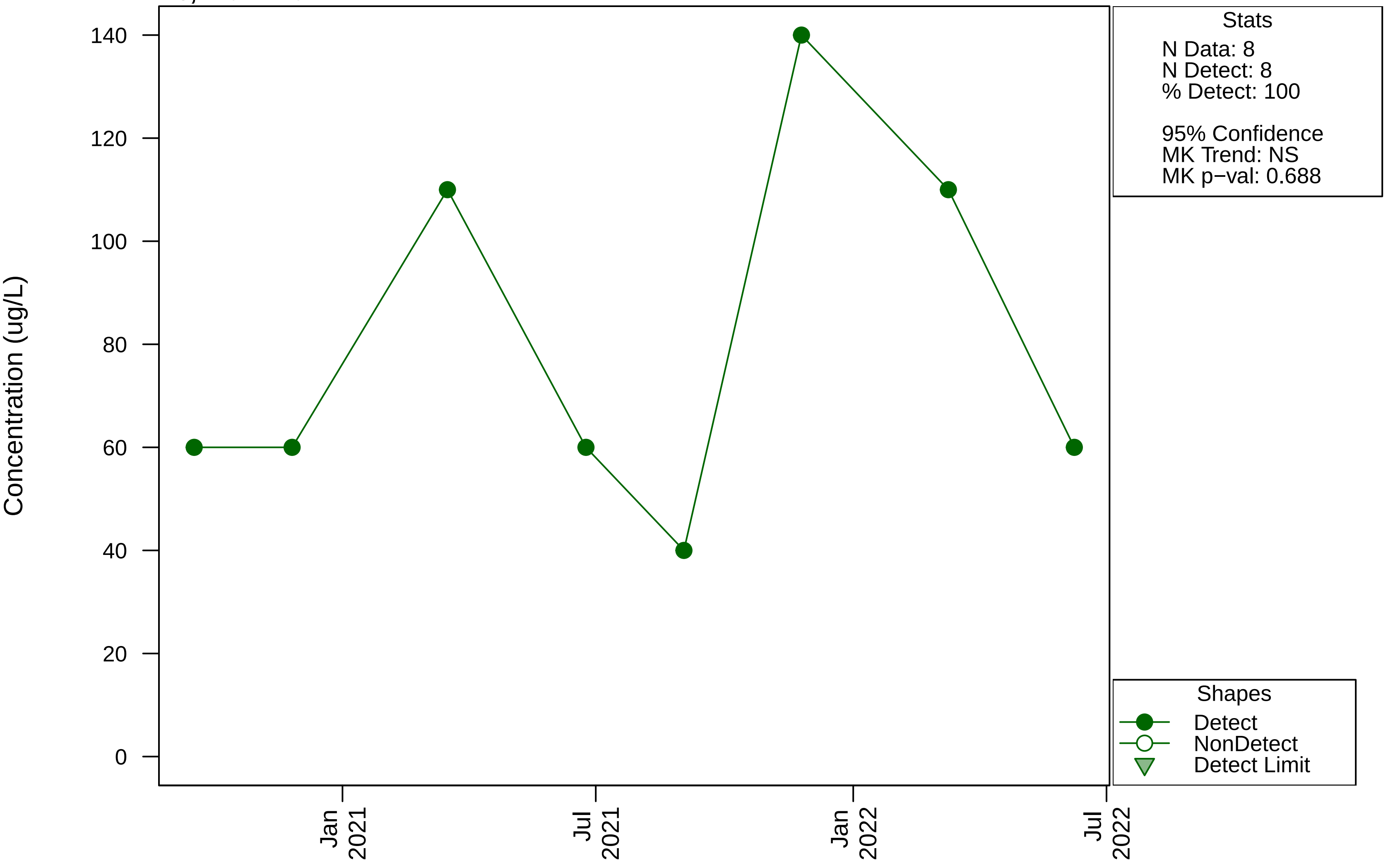

Scatterplots and Trend Analysis
D20, Total Dissolved Solids (TDS) (Filtered)
Concentration (mg/L)
4000
3000
2000
1000
0
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 4
N Detect: 4
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 1
Shapes
Detect
NonDetect
Detect Limit

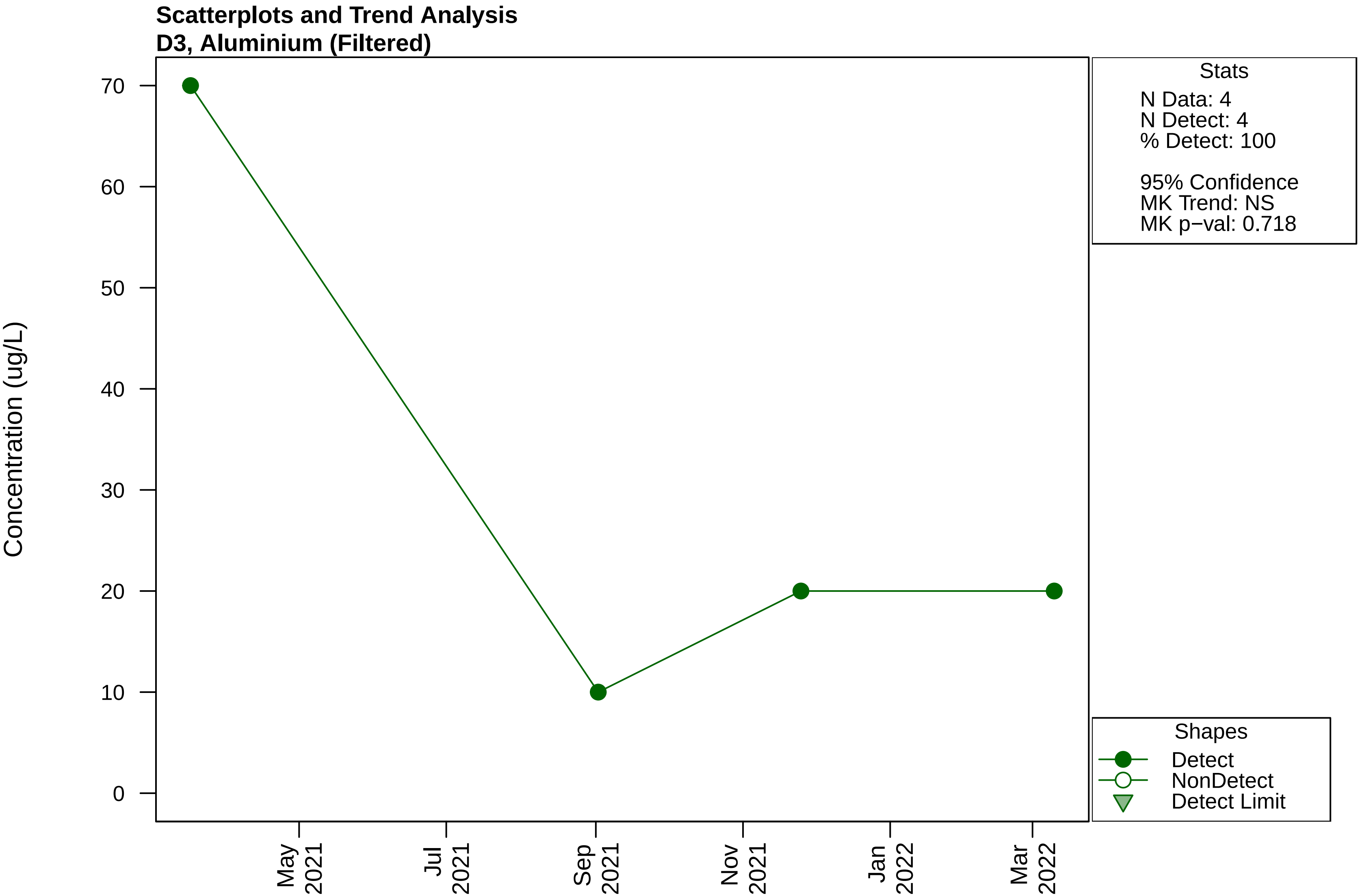

Scatterplots and Trend Analysis
D20, Zinc
Concentration (ug/L)
0
200
400
600
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 4
N Detect: 4
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.75
Shapes
Detect
NonDetect
Detect Limit

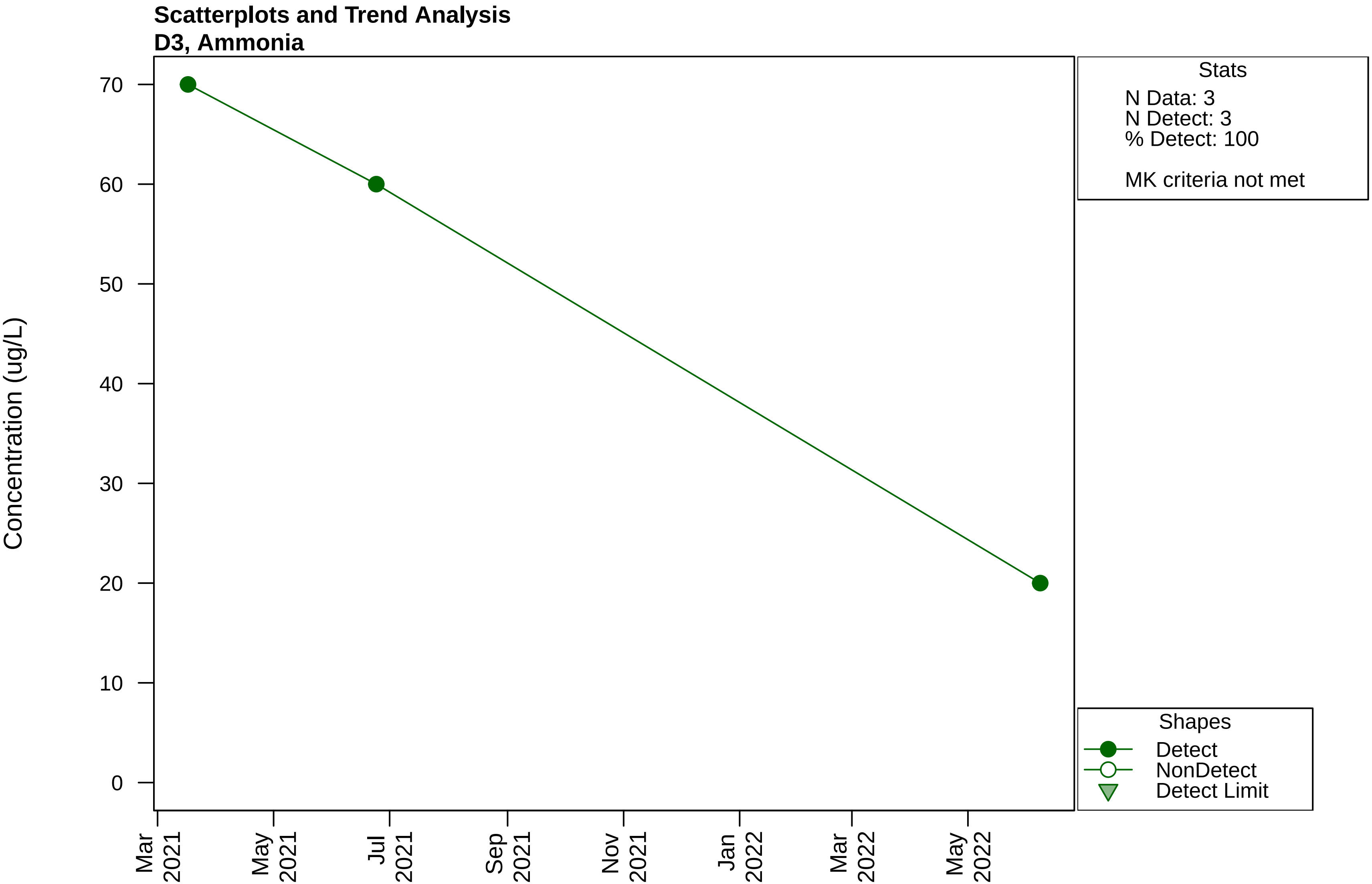

Scatterplots and Trend Analysis
D20, Zinc (Filtered)
Concentration (ug/L)
0
100
200
300
400
500
600
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 4
N Detect: 4
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.75
Shapes
Detect
NonDetect
Detect Limit


Scatterplots and Trend Analysis
D23, Dissolved Oxygen (Field) (Filtered)
Concentration (mg/L)
0
5
10
15
20
25
Jun
2022
Stats
N Data: 1
N Detect: 1
% Detect: 100
MK criteria not met
Shapes
Detect
NonDetect
Detect Limit

Scatterplots and Trend Analysis
D3, Aluminium

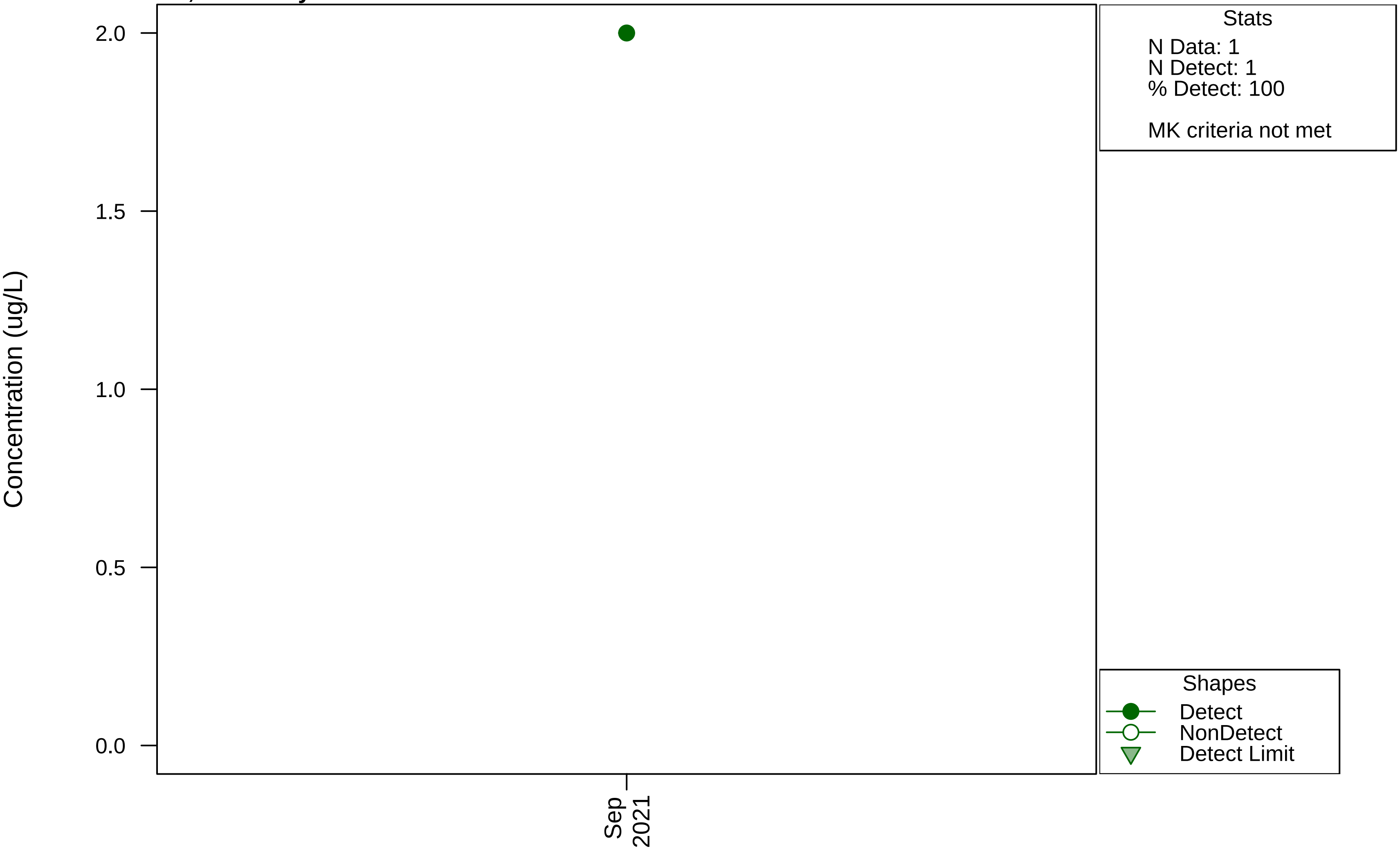


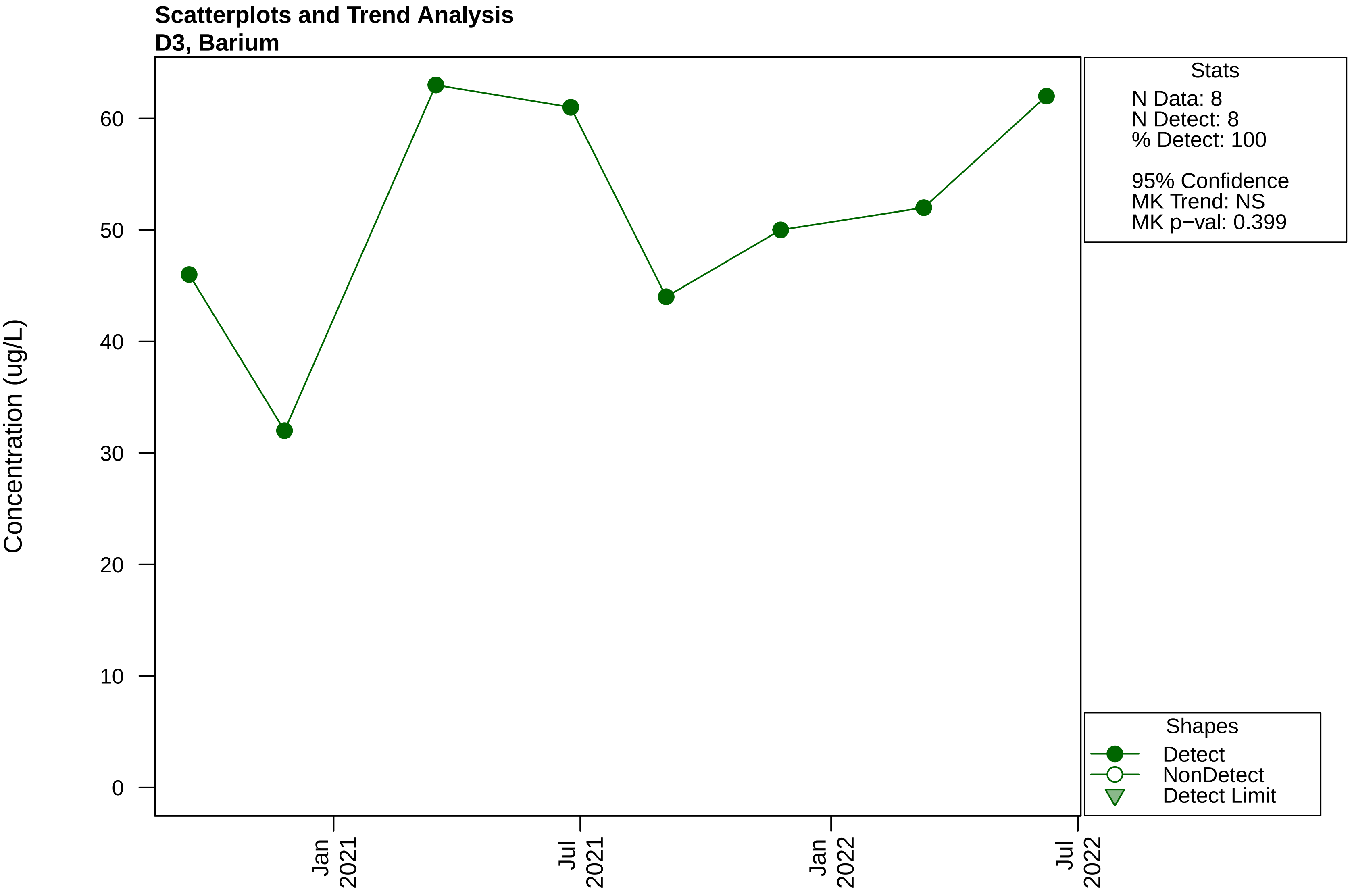

Scatterplots and Trend Analysis
D3, Aluminium (Filtered)
Concentration (ug/L)
0
10
20
30
40
50
60
70
May 2021
Jul 2021
Sep 2021
Nov 2021
Jan 2022
Mar 2022
Stats
N Data: 4
N Detect: 4
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.718
Shapes
Detect
NonDetect
Detect Limit



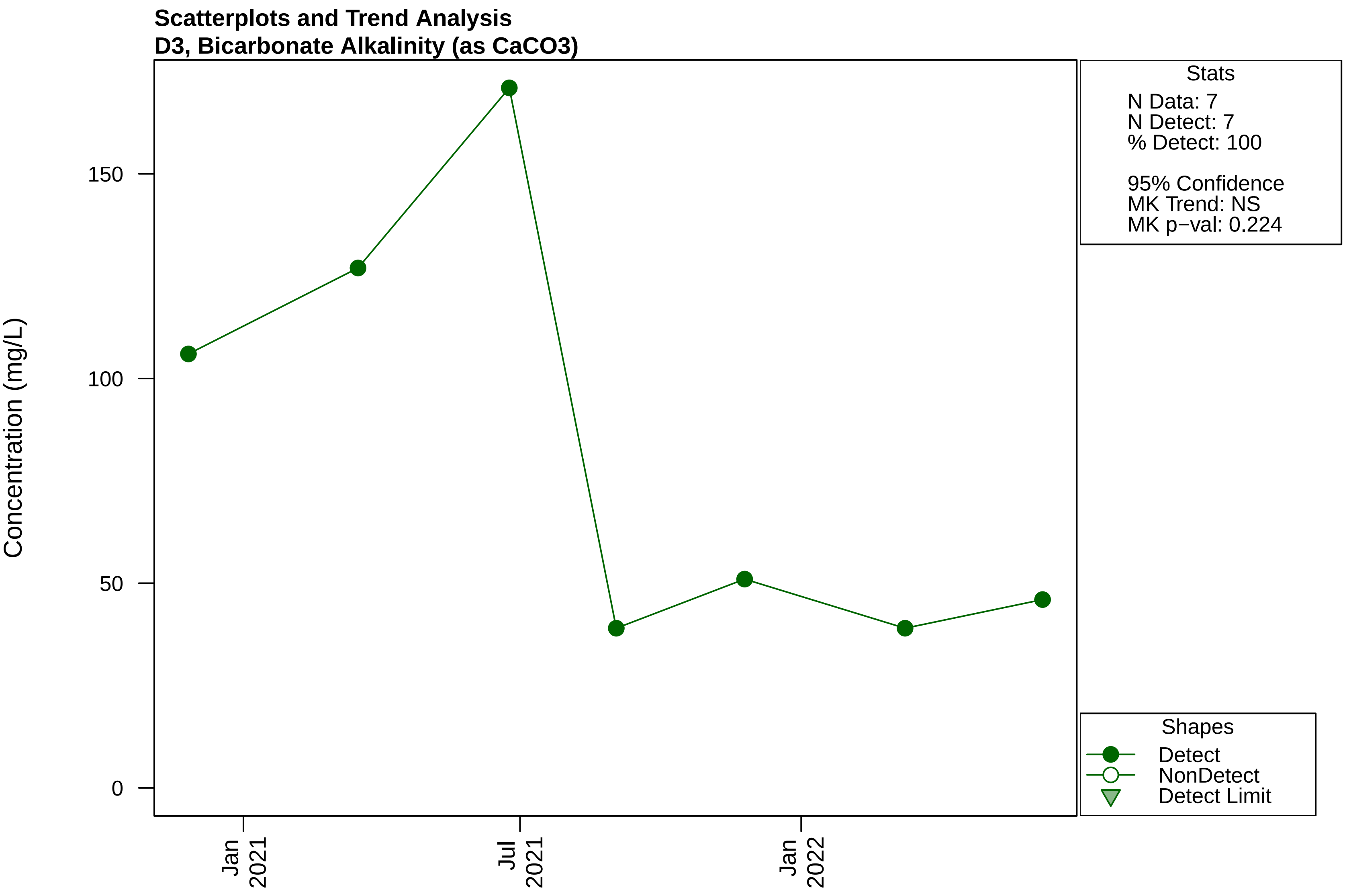
Scatterplots and Trend Analysis
D3, Ammonia
Concentration (ug/L)
70
60
50
40
30
20
10
0
Mar 2021
May 2021
Jul 2021
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 3
N Detect: 3
% Detect: 100
MK criteria not met
Shapes
Detect
NonDetect
Detect Limit

Scatterplots and Trend Analysis
D3, Antimony

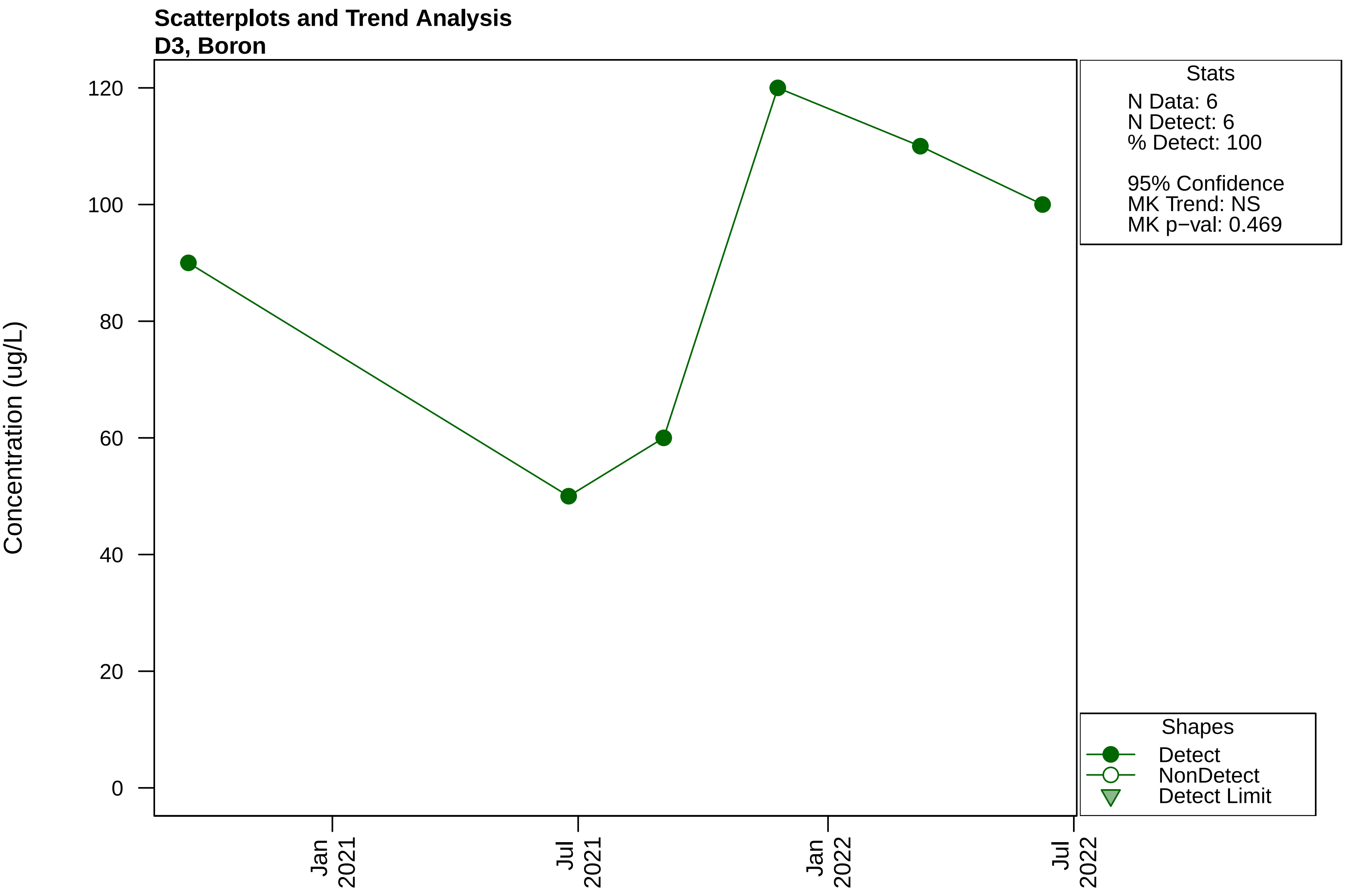




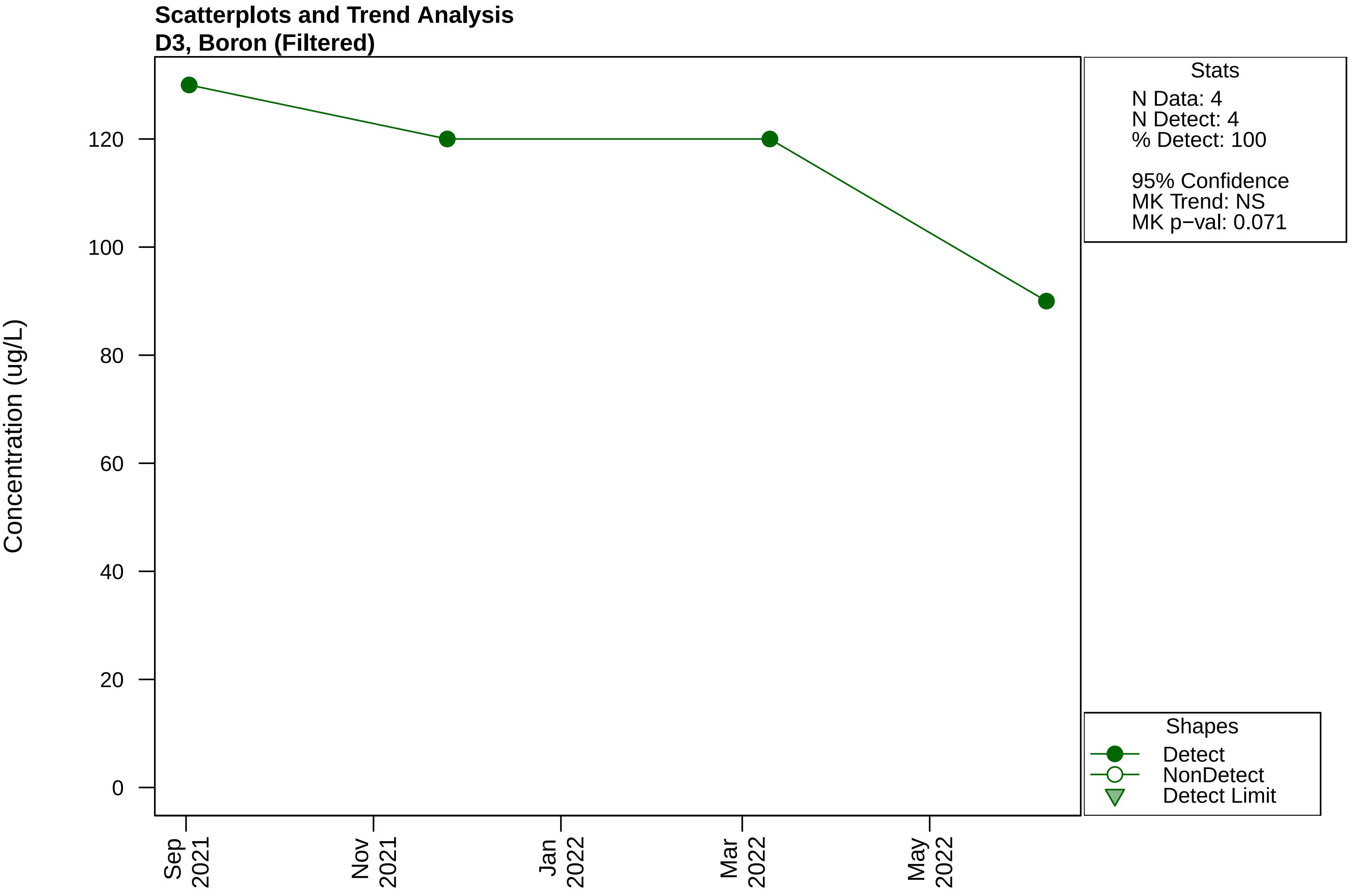
Scatterplots and Trend Analysis
D3, Barium
Concentration (ug/L)
0
10
20
30
40
50
60
Jan 2021
Jul 2021
Jan 2022
Jul 2022
Stats
N Data: 8
N Detect: 8
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.399
Shapes
Detect
NonDetect
Detect Limit

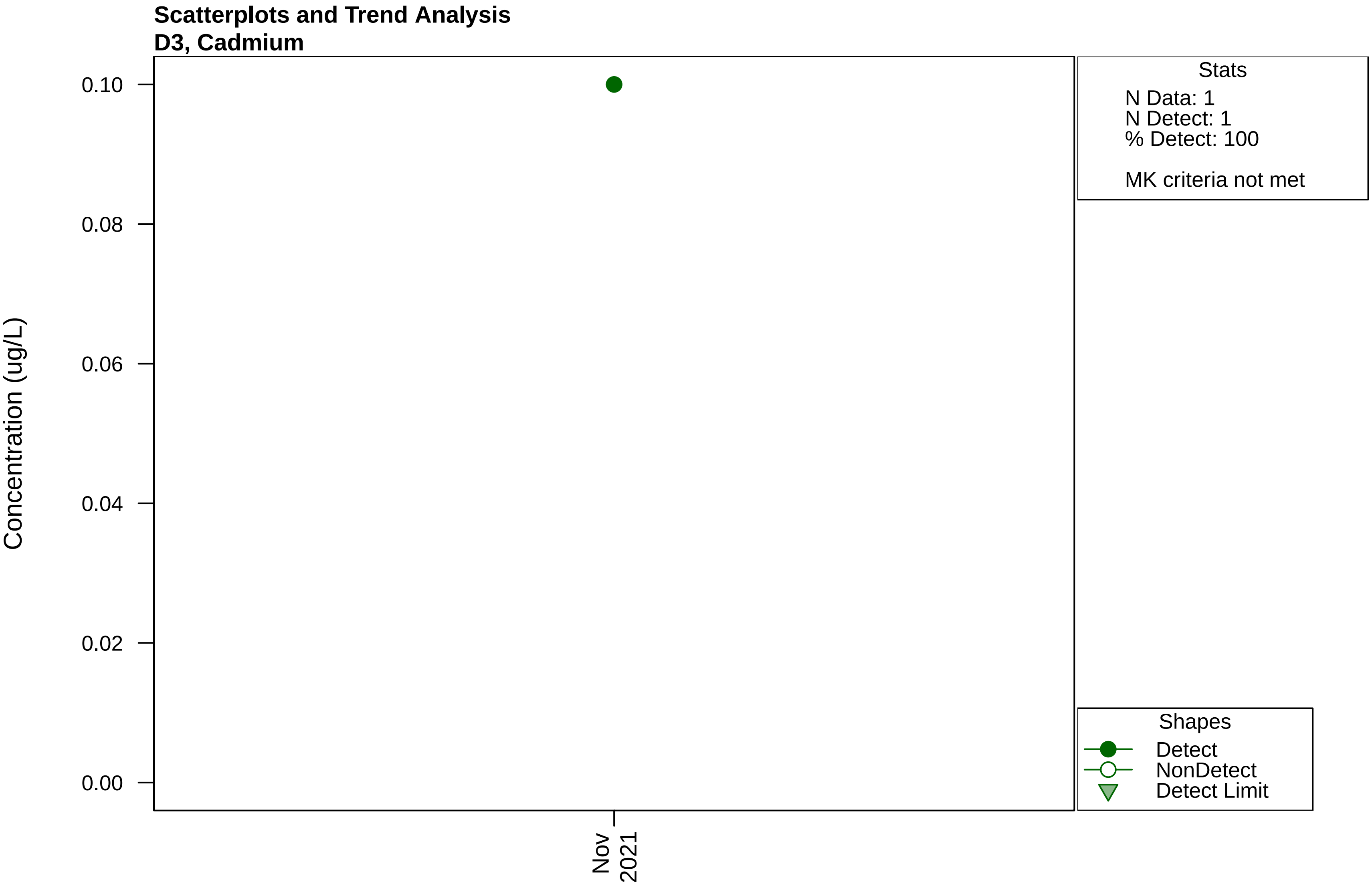


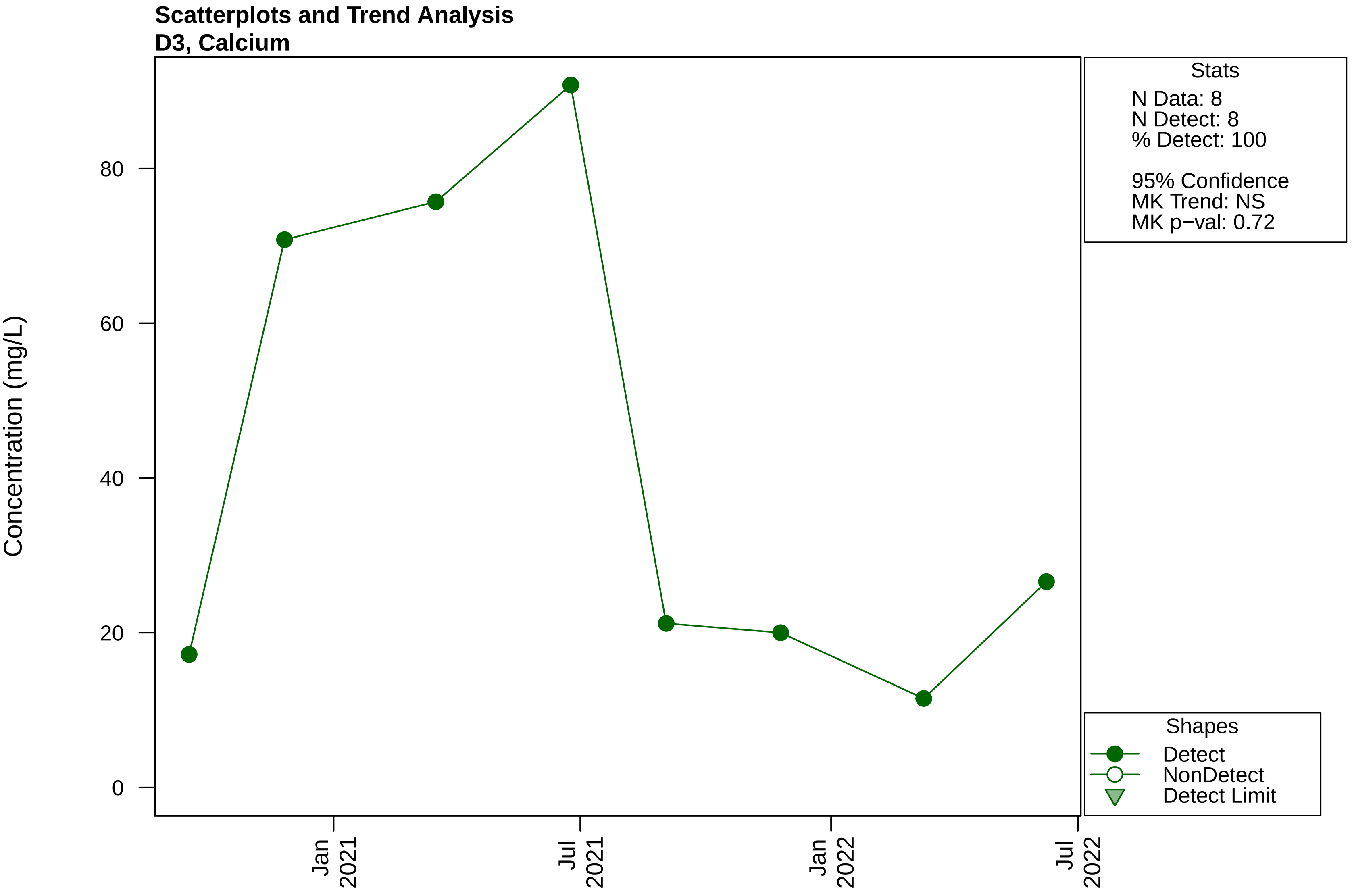
Scatterplots and Trend Analysis
D3, Bicarbonate Alkalinity (as CaCO3)
Concentration (mg/L)
0
50
100
150
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 7
N Detect: 7
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.224
Shapes
Detect
NonDetect
Detect Limit



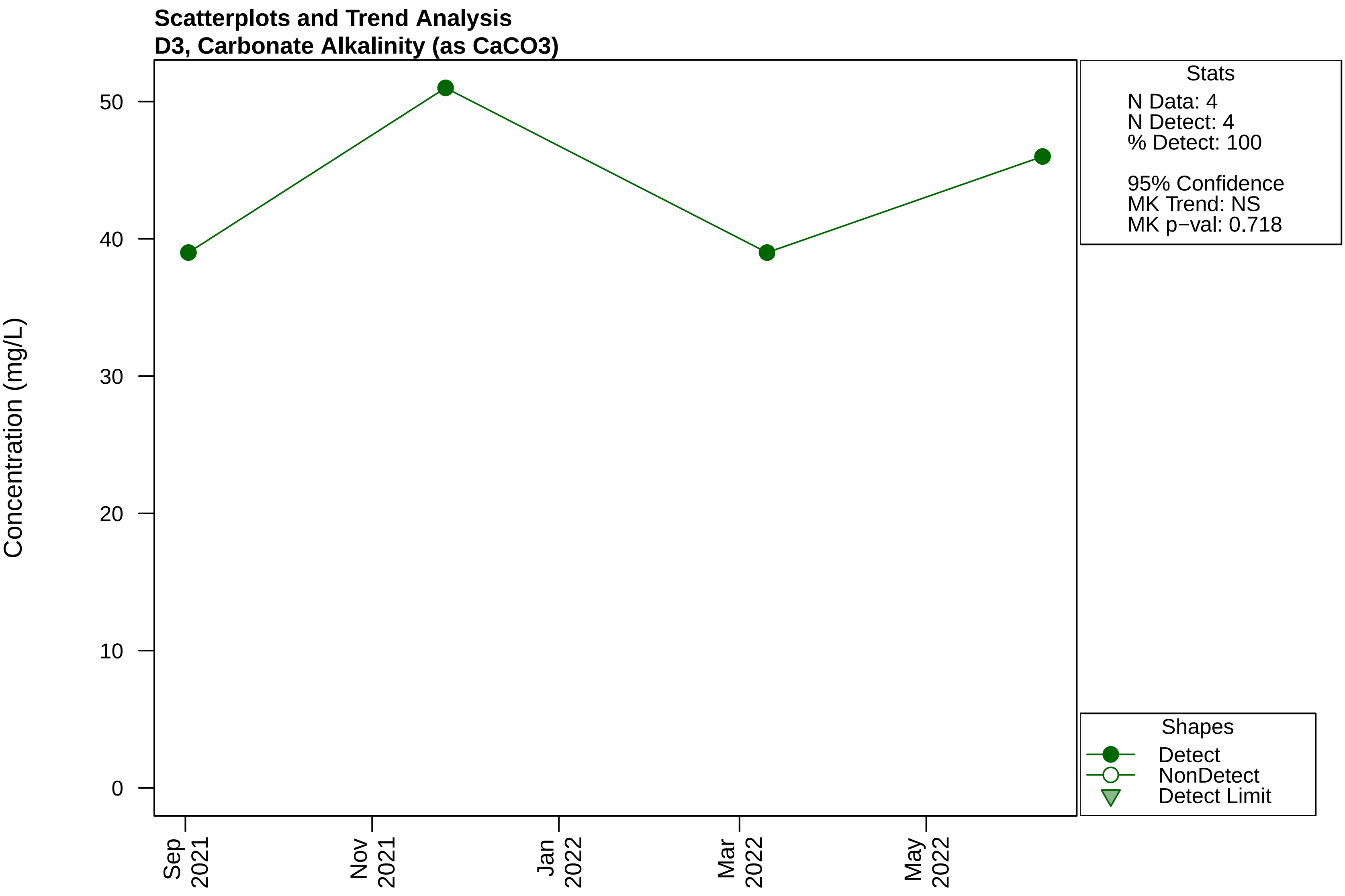
Scatterplots and Trend Analysis
D3, Boron
Concentration (ug/L)
0
20
40
60
80
100
120
Jan 2021
Jul 2021
Jan 2022
Jul 2022
Stats
N Data: 6
N Detect: 6
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.469
Shapes
Detect
NonDetect
Detect Limit


Scatterplots and Trend Analysis
D3, Boron (Filtered)
Concentration (ug/L)
0
20
40
60
80
100
120
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 4
N Detect: 4
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.071
Shapes
Detect
NonDetect
Detect Limit

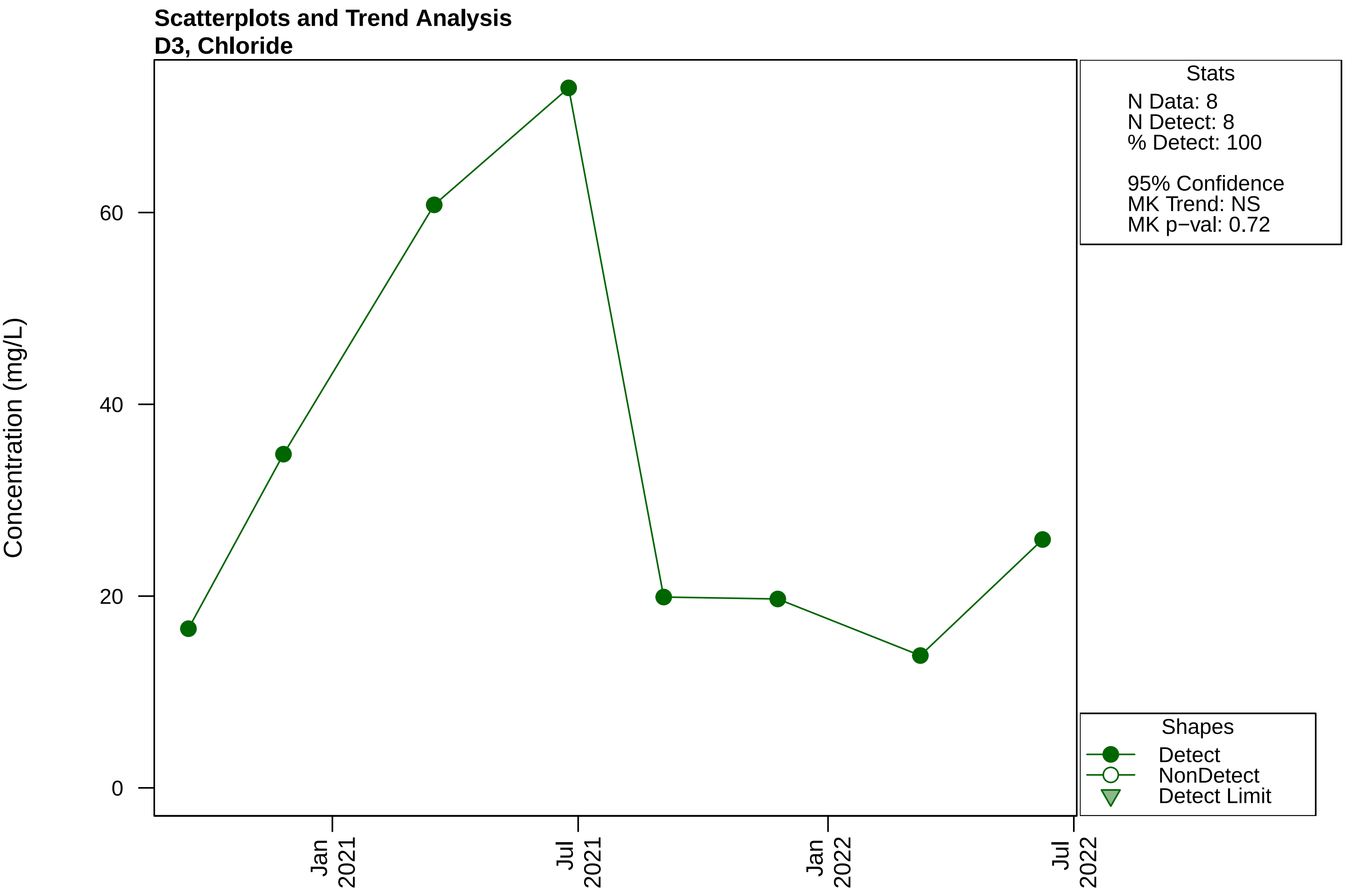

Scatterplots and Trend Analysis
D3, Cadmium
Concentration (ug/L)
0.10
0.08
0.06
0.04
0.02
0.00
Nov 2021
Stats
N Data: 1
N Detect: 1
% Detect: 100
MK criteria not met
Shapes
Detect
NonDetect
Detect Limit



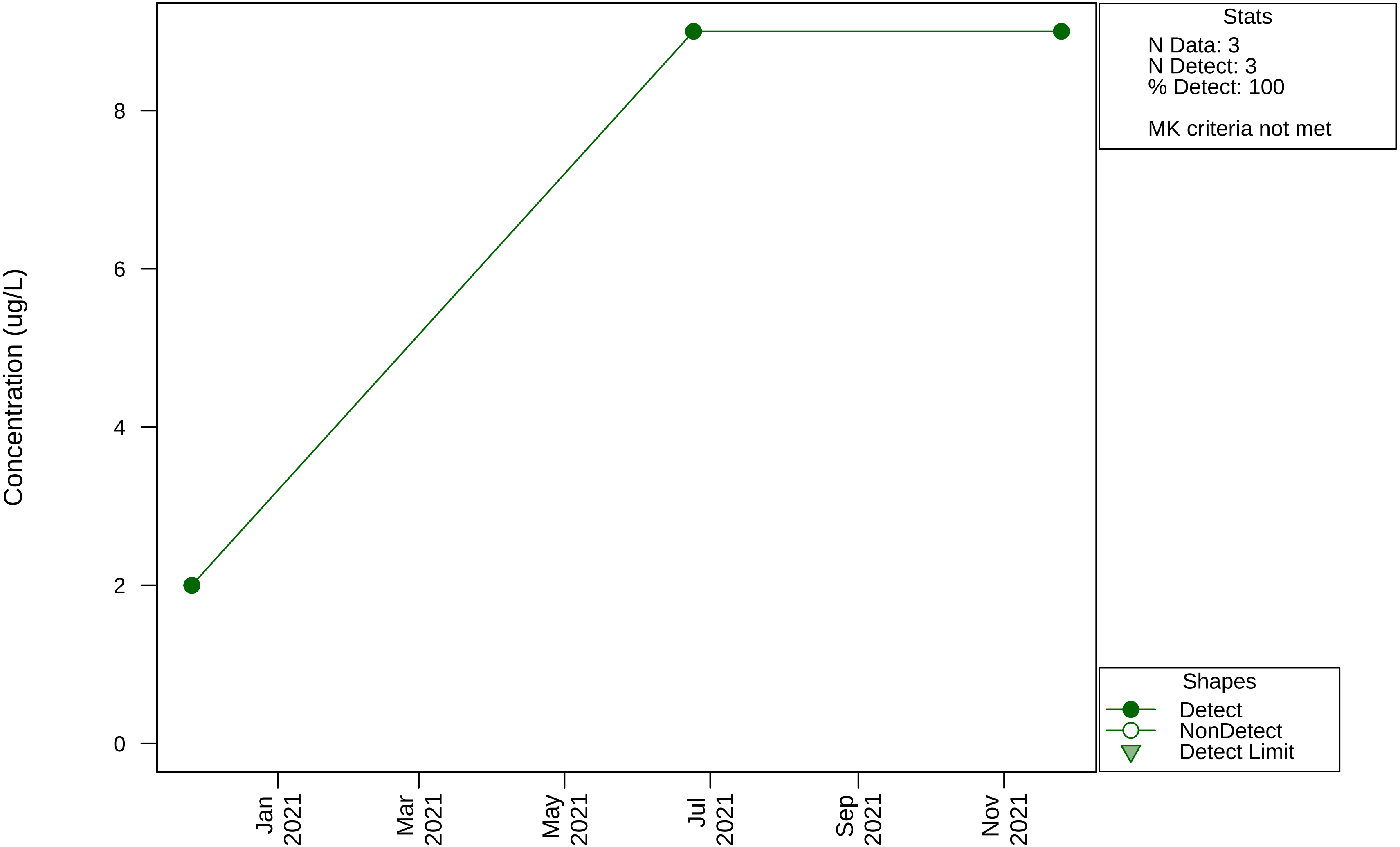
Scatterplots and Trend Analysis
D3, Calcium
Concentration (mg/L)
0
20
40
60
80
Jan 2021
Jul 2021
Jan 2022
Jul 2022
Stats
N Data: 8
N Detect: 8
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.72
Shapes
Detect
NonDetect
Detect Limit

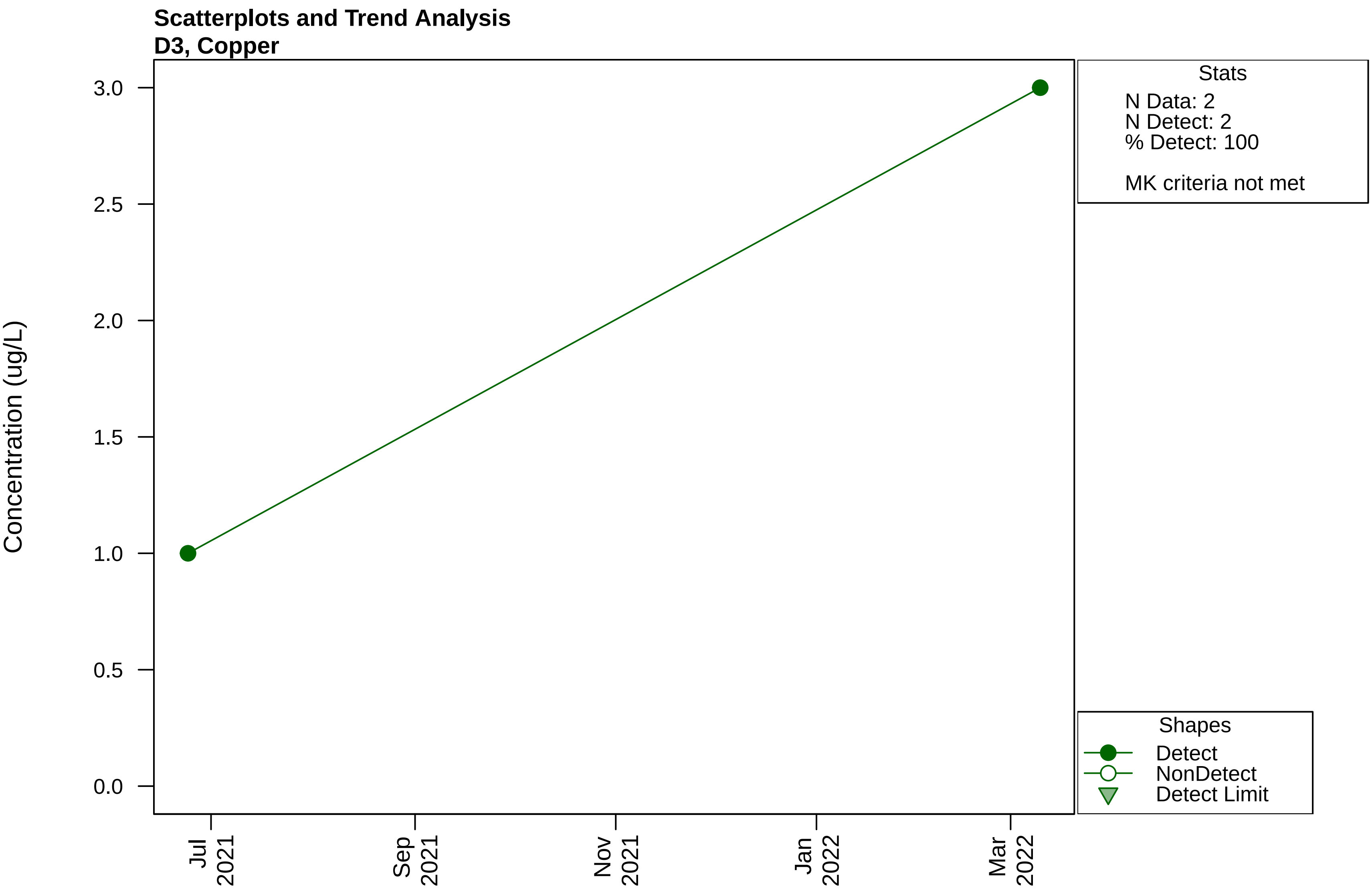


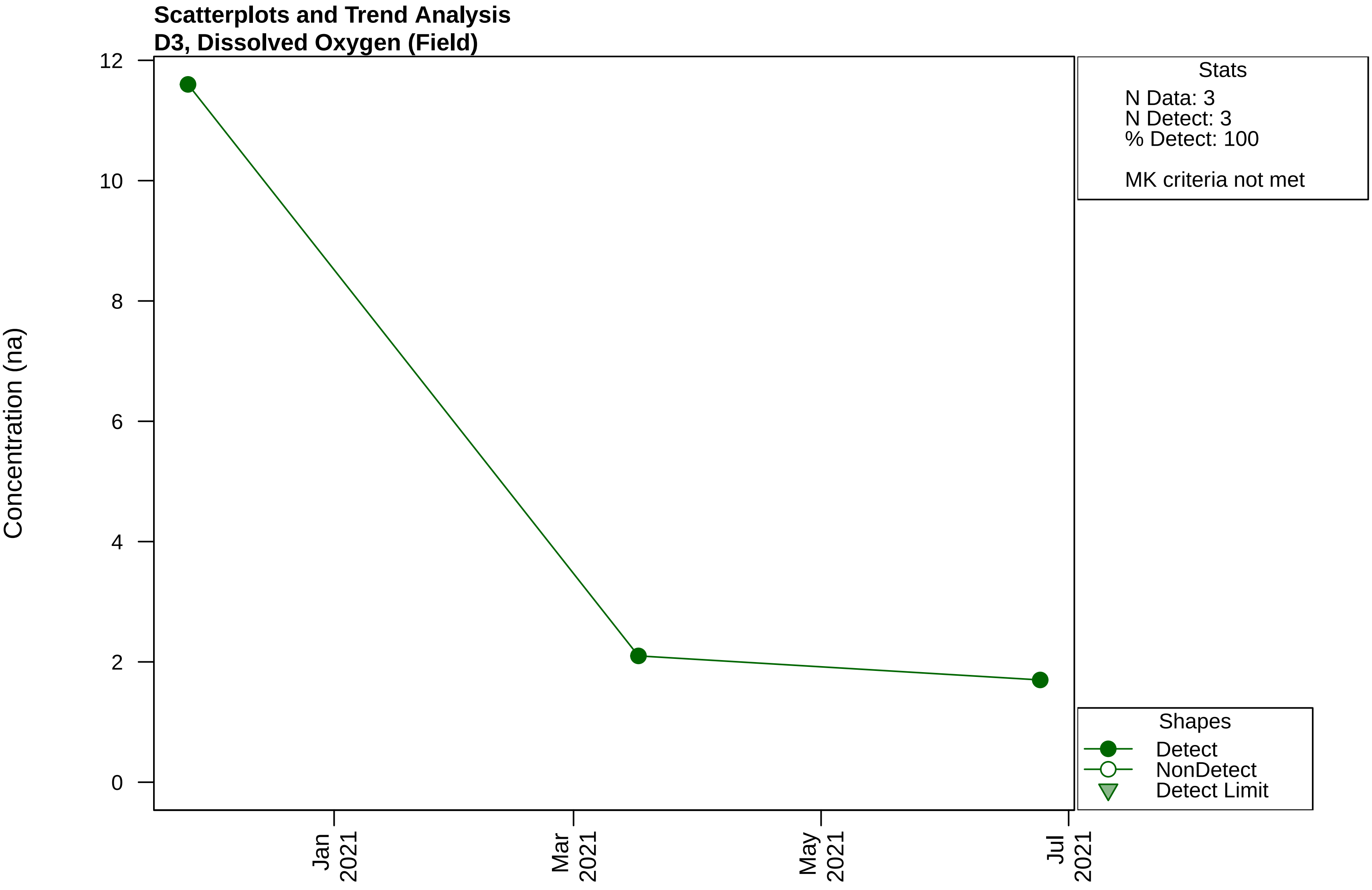
Scatterplots and Trend Analysis
D3, Carbonate Alkalinity (as CaCO3)
Concentration (mg/L)
0
10
20
30
40
50
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 4
N Detect: 4
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.718
Shapes
Detect
NonDetect
Detect Limit


Scatterplots and Trend Analysis
D3, Chloride
Concentration (mg/L)
0
20
40
60
Jan 2021
Jul 2021
Jan 2022
Jul 2022
Stats
N Data: 8
N Detect: 8
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.72
Shapes
Detect
NonDetect
Detect Limit

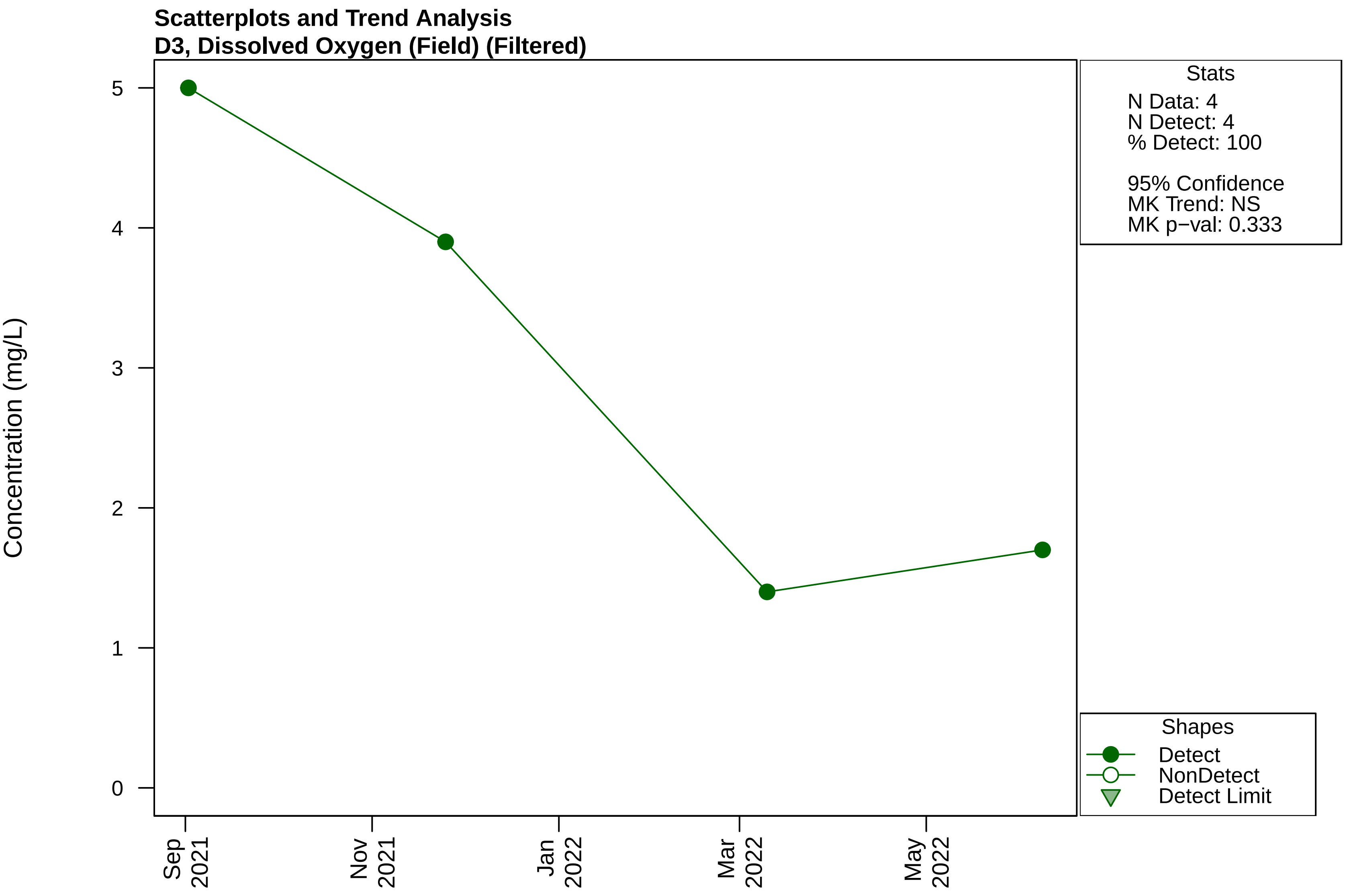
Scatterplots and Trend Analysis
D3, Chromium



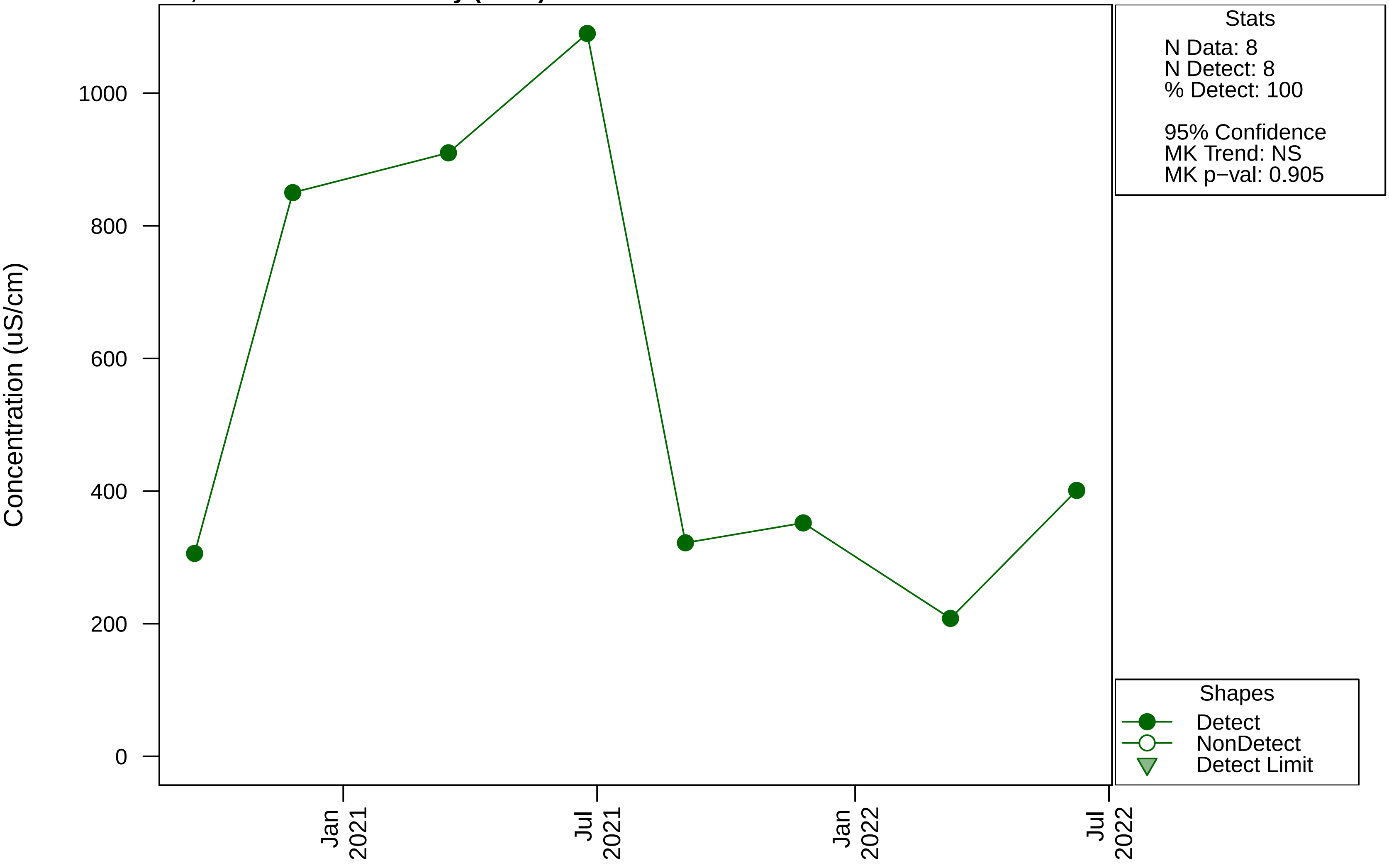

Scatterplots and Trend Analysis
D3, Copper
Concentration (ug/L)
3.0
2.5
2.0
1.5
1.0
0.5
0.0
Jul 2021
Sep 2021
Nov 2021
Jan 2022
Mar 2022
Stats
N Data: 2
N Detect: 2
% Detect: 100
MK criteria not met
Shapes
Detect
NonDetect
Detect Limit



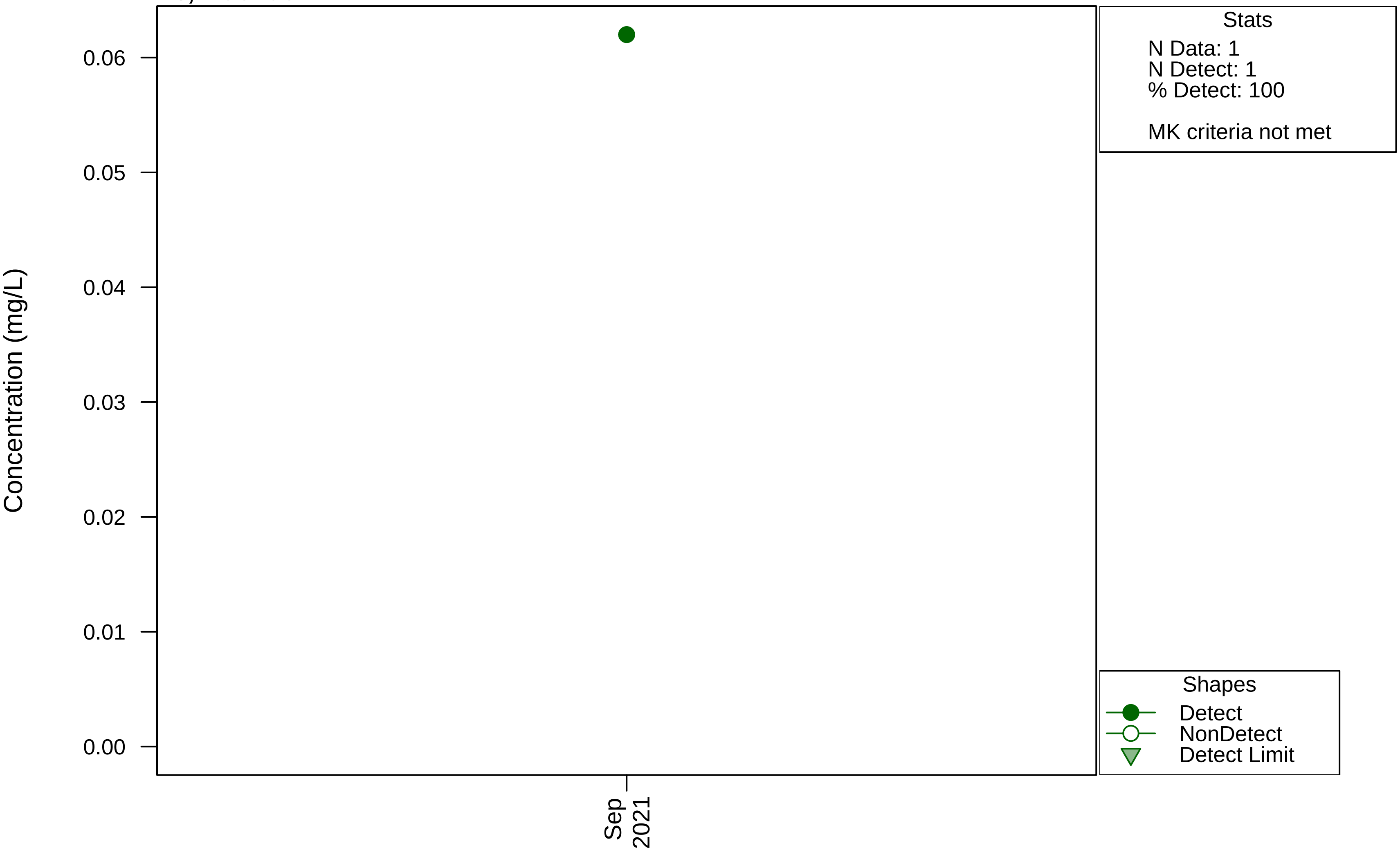
Scatterplots and Trend Analysis
D3, Dissolved Oxygen (Field)
Concentration (na)
0
2
4
6
8
10
12
Jan 2021
Mar 2021
May 2021
Jul 2021
Stats
N Data: 3
N Detect: 3
% Detect: 100
MK criteria not met
Shapes
Detect
NonDetect
Detect Limit


Scatterplots and Trend Analysis
D3, Dissolved Oxygen (Field) (Filtered)
Concentration (mg/L)
5
4
3
2
1
0
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 4
N Detect: 4
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.333
Shapes
Detect
NonDetect
Detect Limit

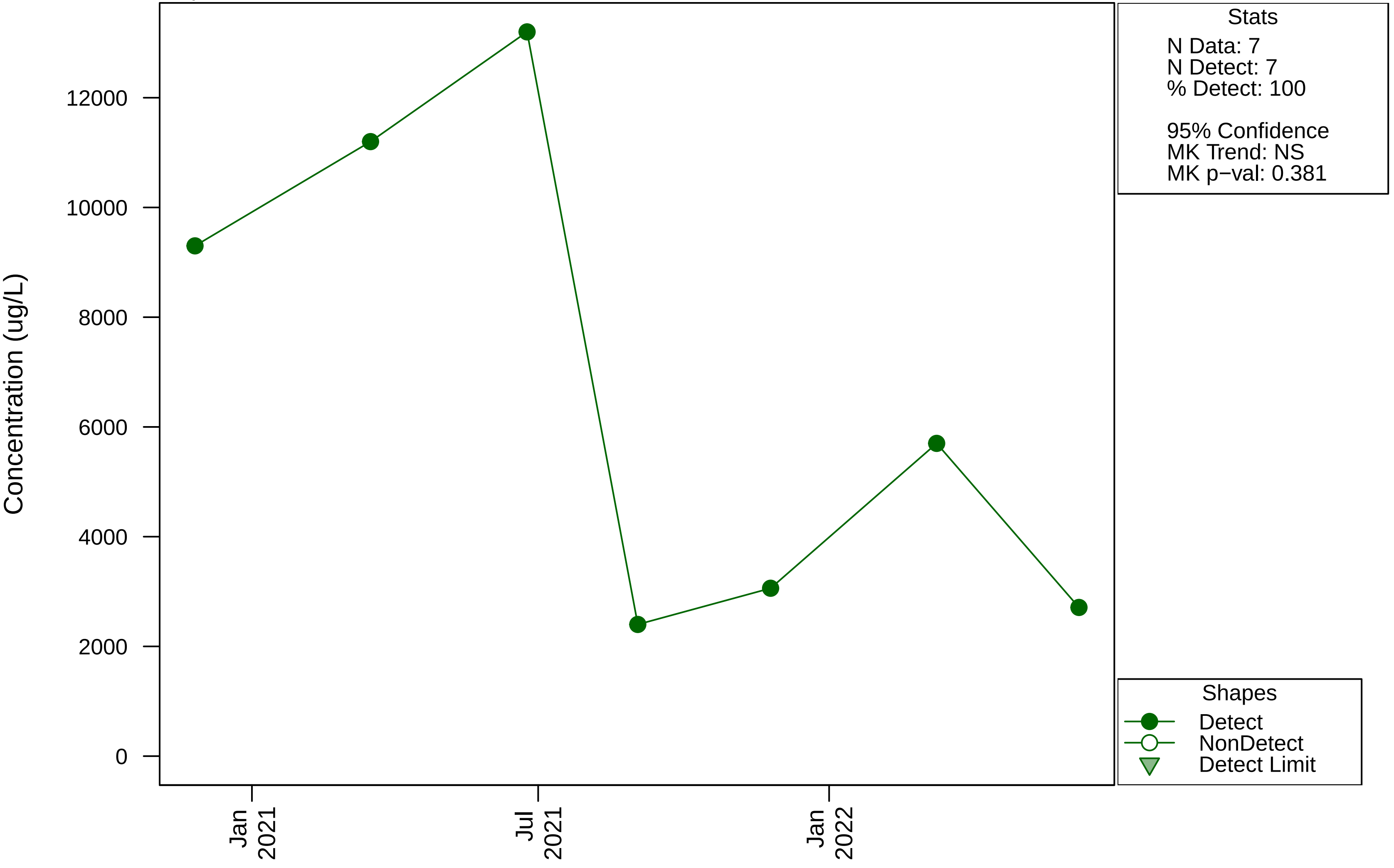
Scatterplots and Trend Analysis
D3, Electrical Conductivity (Field)

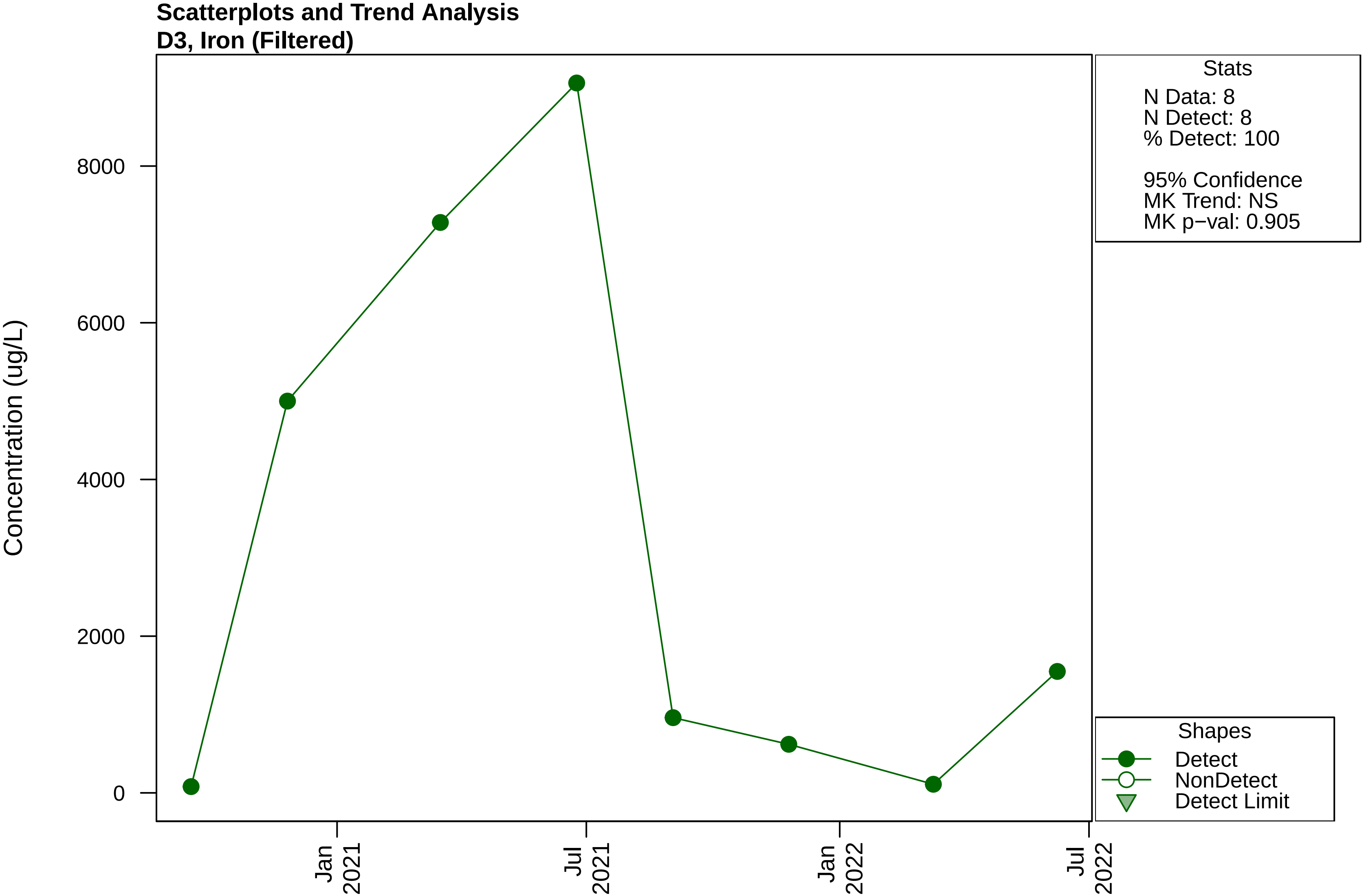


Scatterplots and Trend Analysis
D3, Fluoride

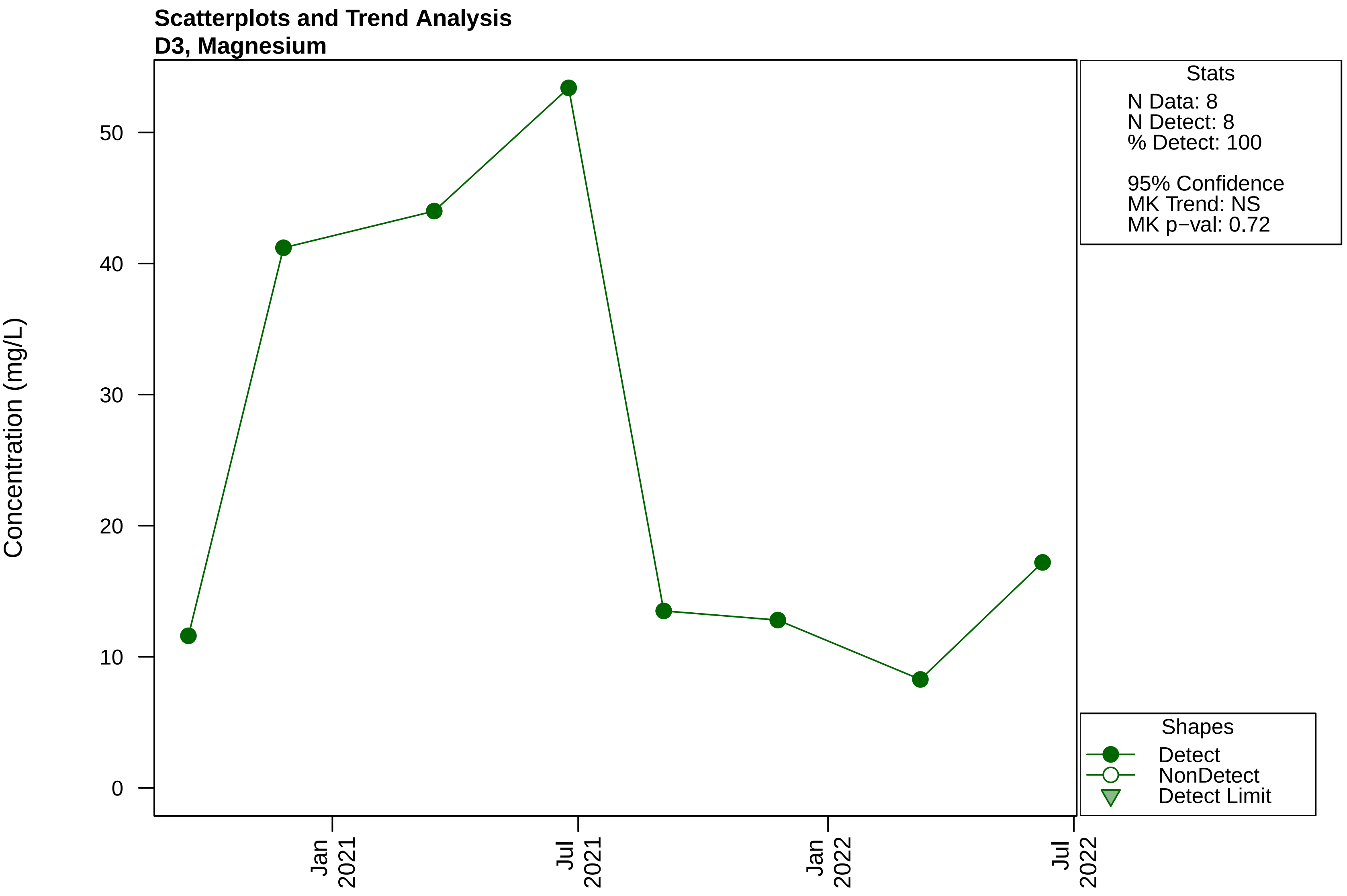


Scatterplots and Trend Analysis
D3, Iron

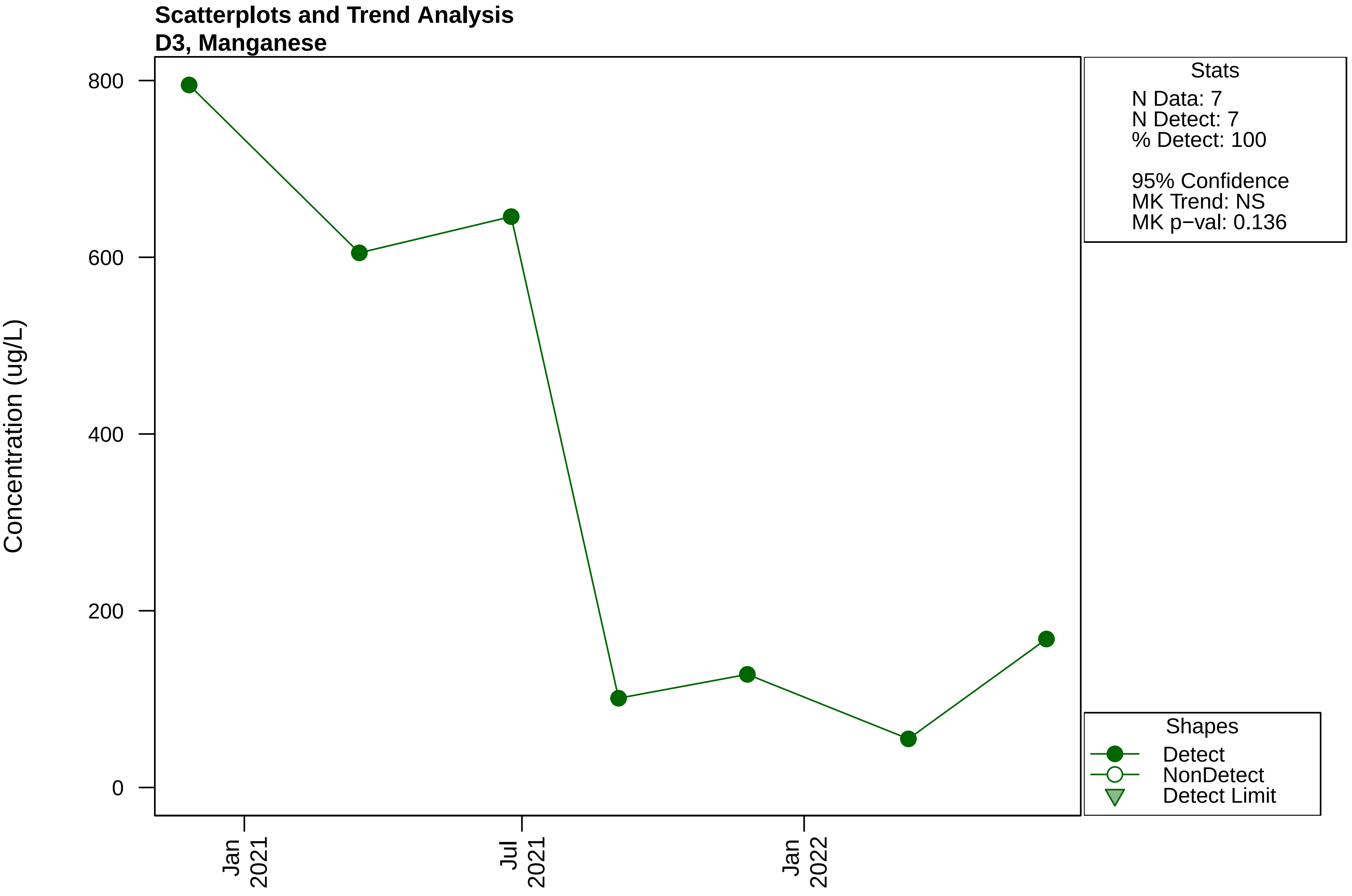




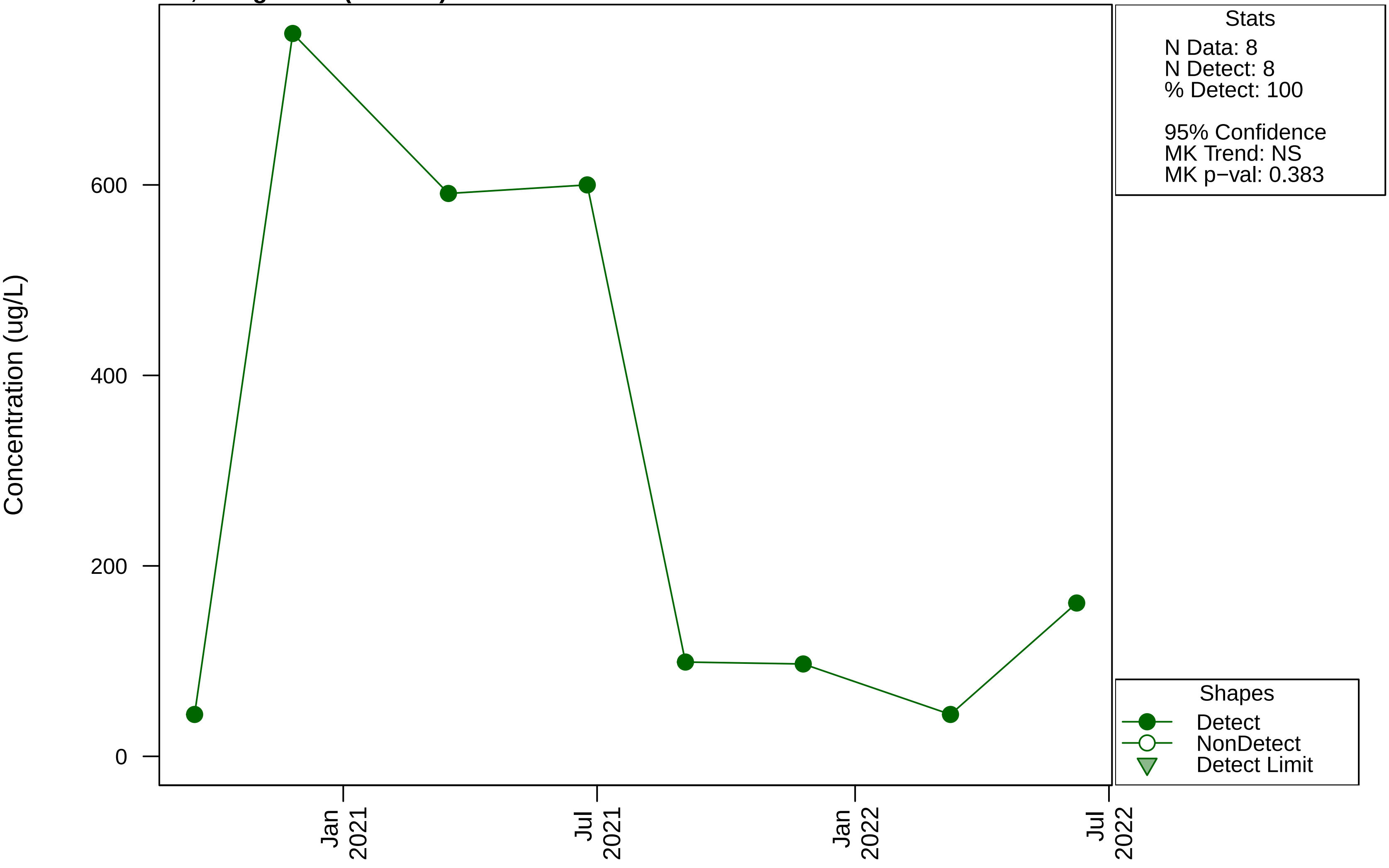
Scatterplots and Trend Analysis
D3, Iron (Filtered)
Concentration (ug/L)
8000
6000
4000
2000
0
Jan 2021
Jul 2021
Jan 2022
Jul 2022
Stats
N Data: 8
N Detect: 8
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.905
Shapes
Detect
NonDetect
Detect Limit



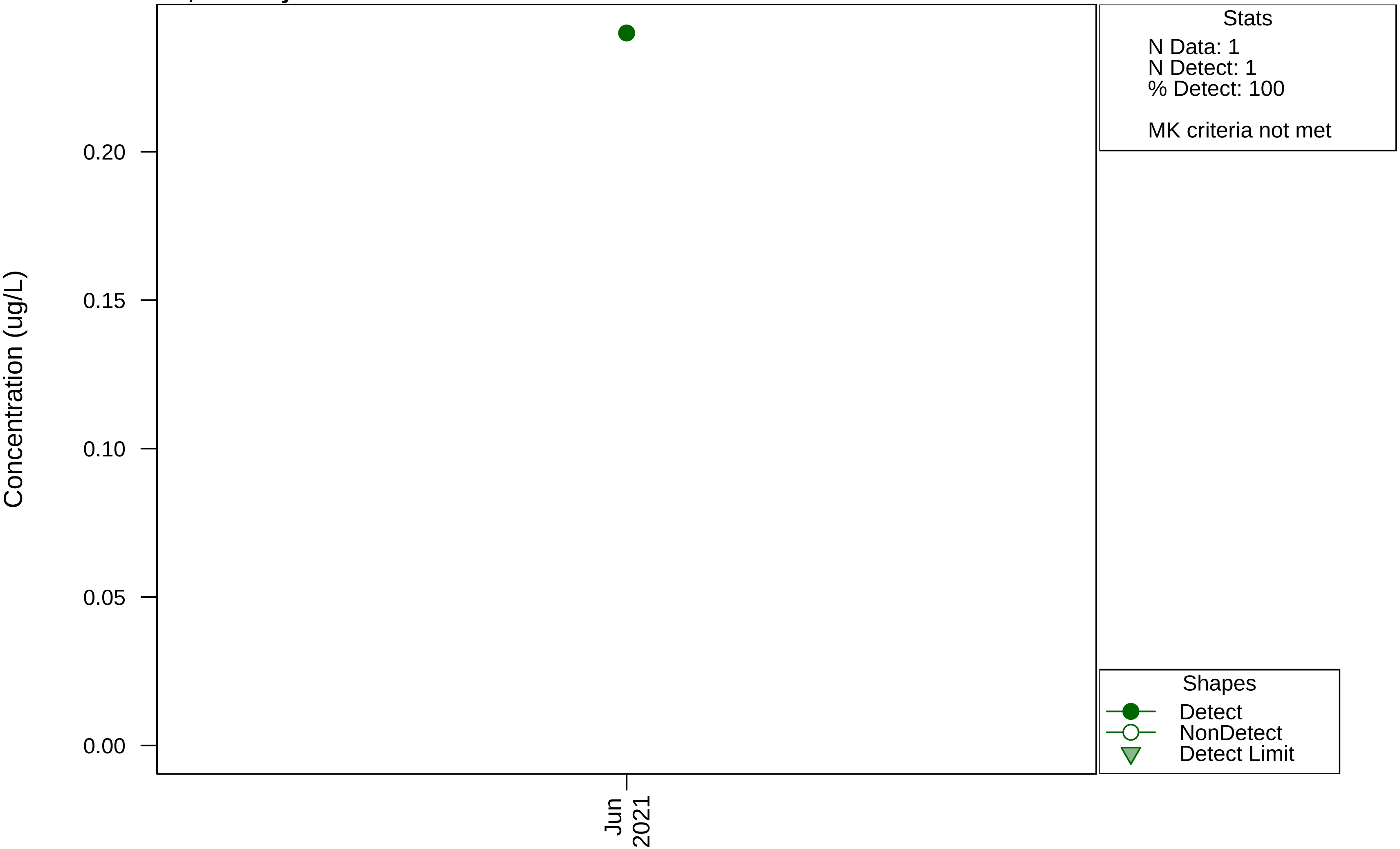
Scatterplots and Trend Analysis
D3, Magnesium
Concentration (mg/L)
0
10
20
30
40
50
Jan 2021
Jul 2021
Jan 2022
Jul 2022
Stats
N Data: 8
N Detect: 8
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.72
Shapes
Detect
NonDetect
Detect Limit


Scatterplots and Trend Analysis
D3, Manganese
Concentration (ug/L)
800
600
400
200
0
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 7
N Detect: 7
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.136
Shapes
Detect
NonDetect
Detect Limit

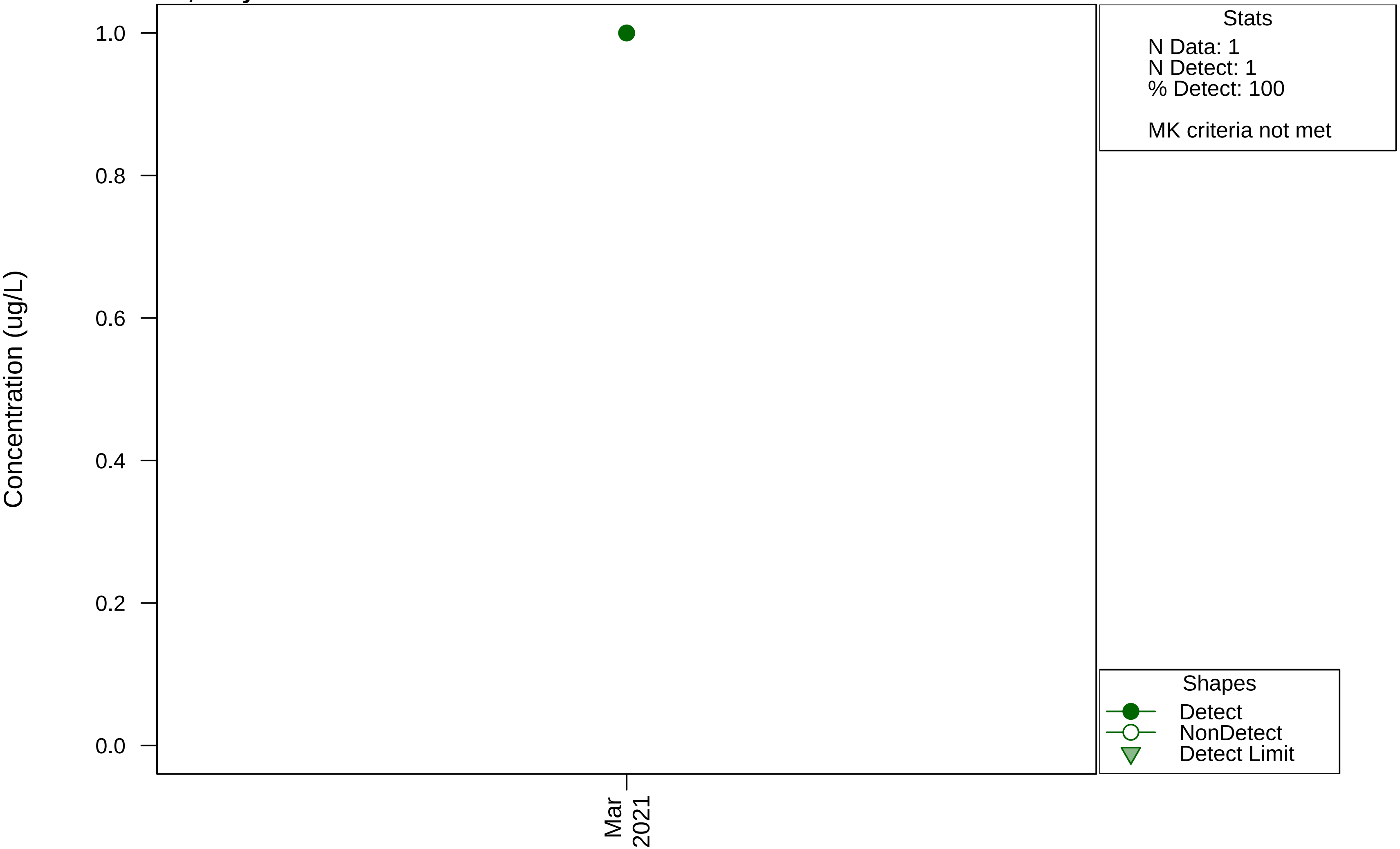
Scatterplots and Trend Analysis
D3, Manganese (Filtered)



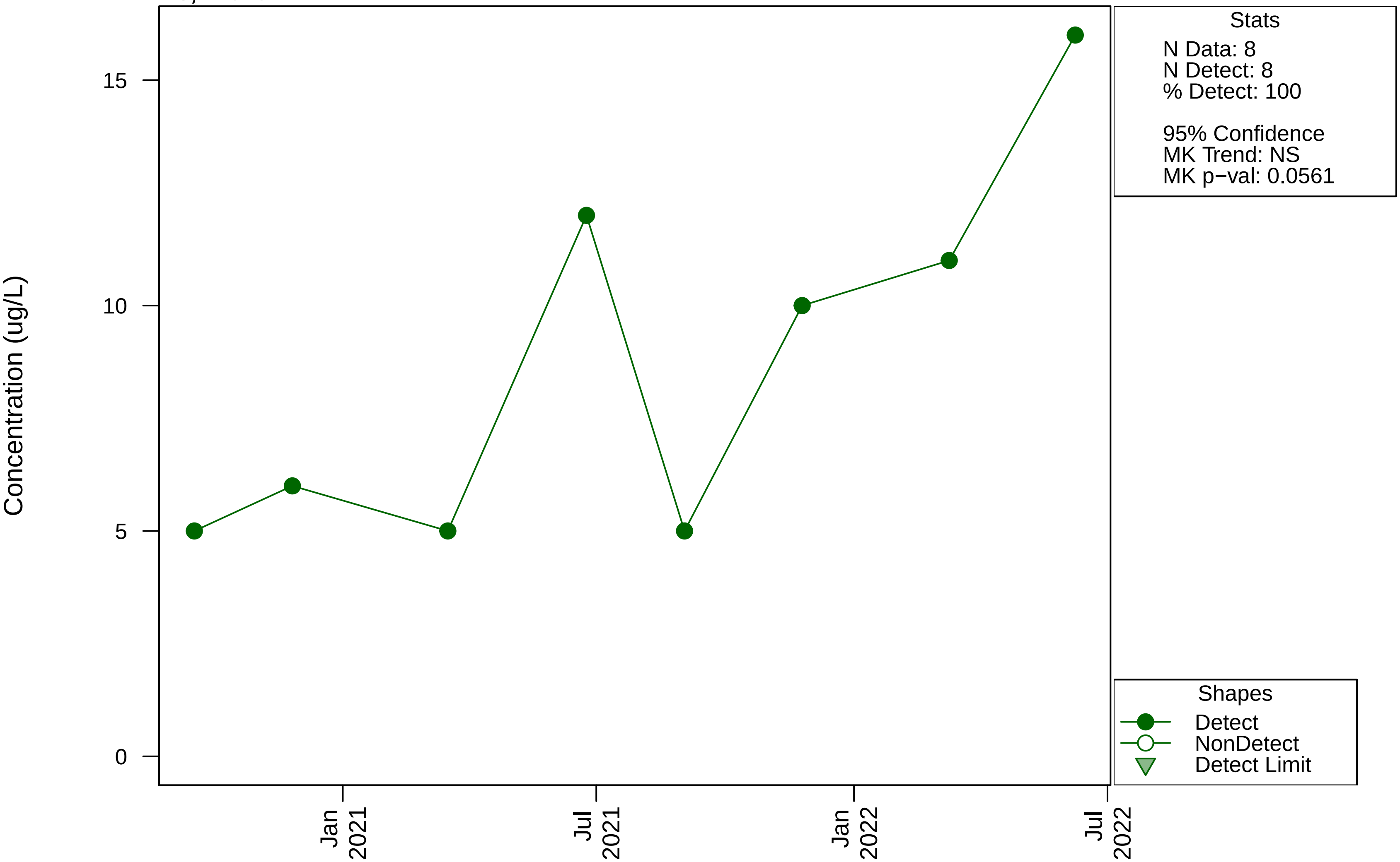
Scatterplots and Trend Analysis
D3, Mercury



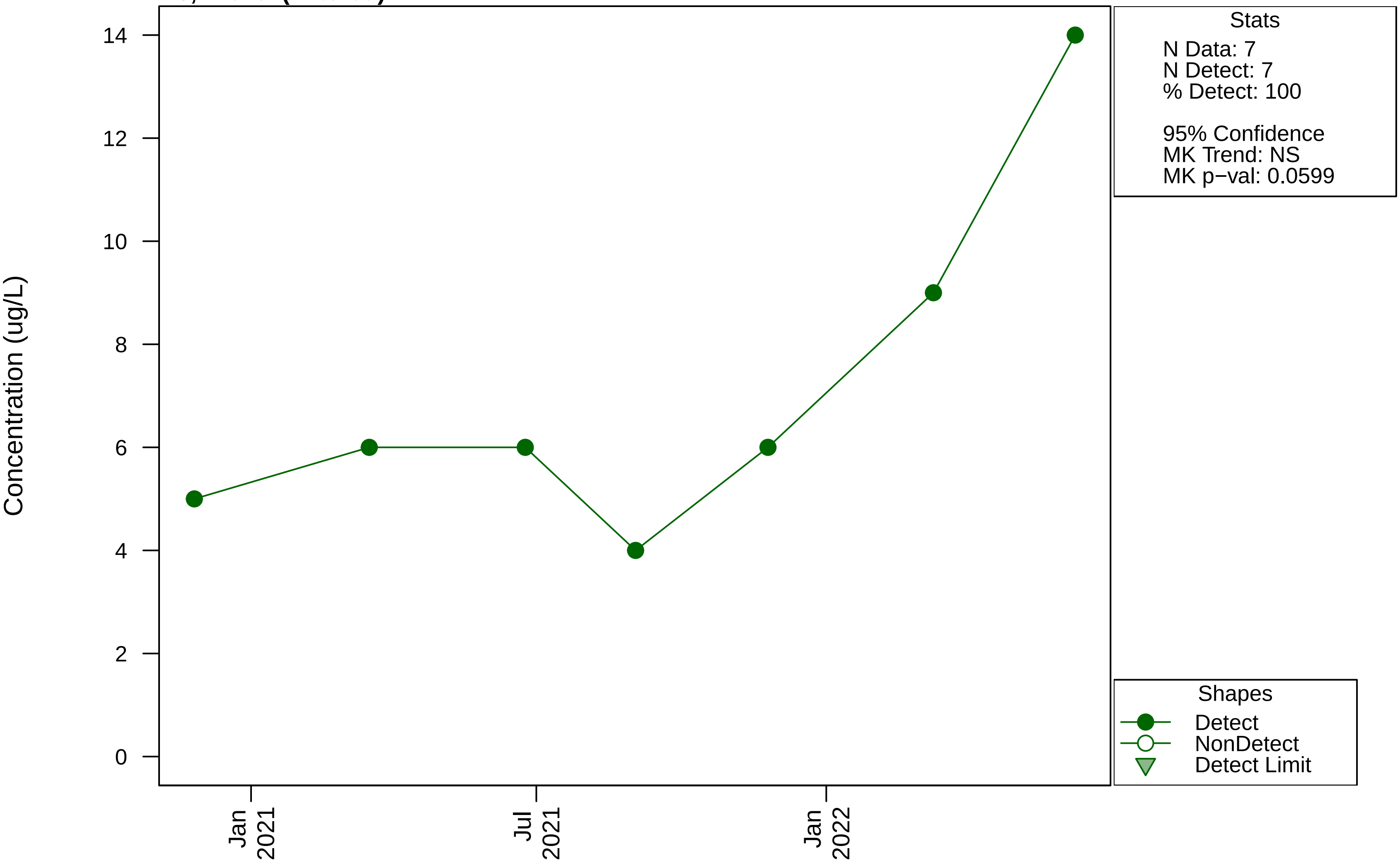
Scatterplots and Trend Analysis
D3, Molybdenum

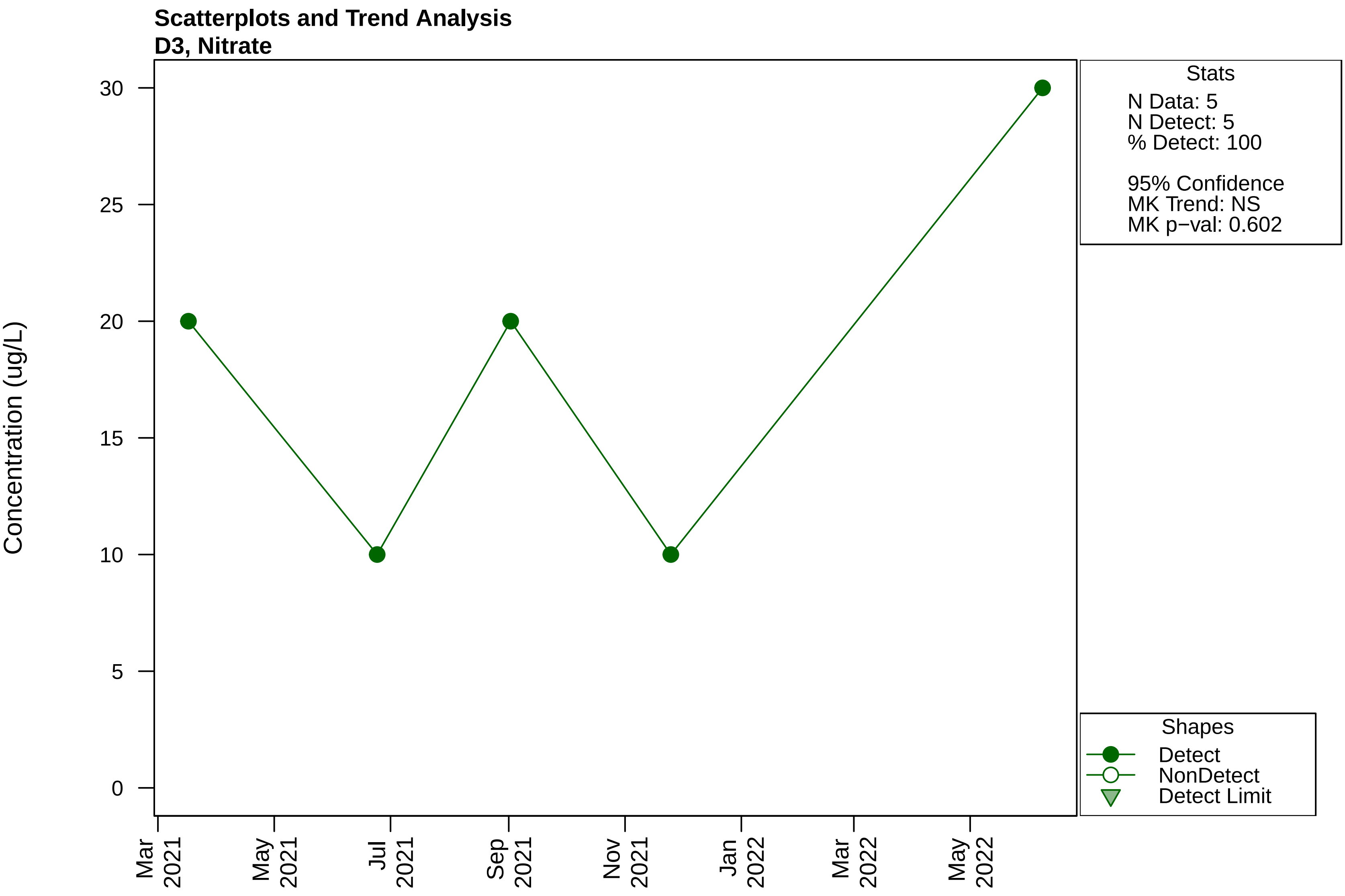


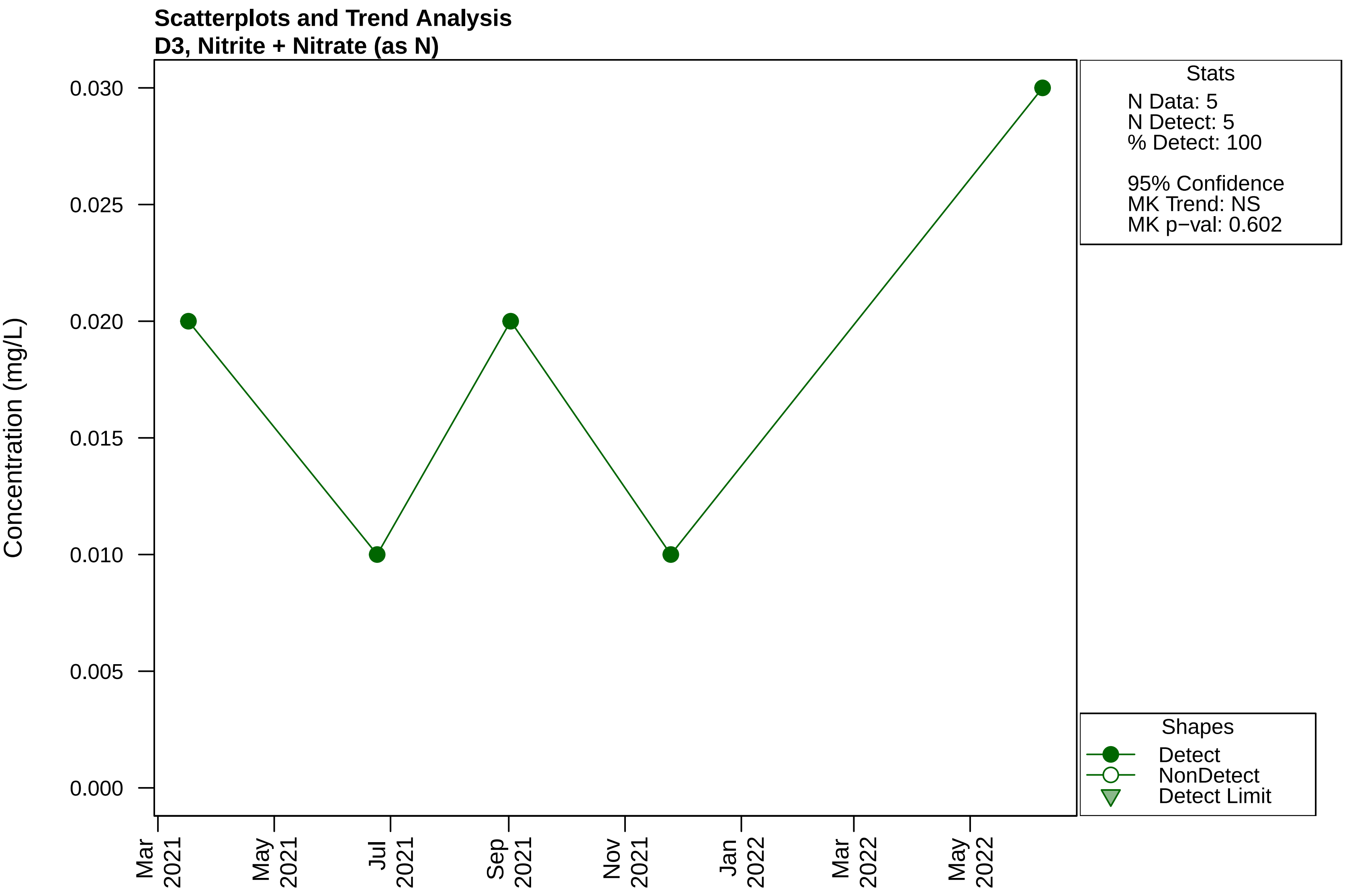
Scatterplots and Trend Analysis
D3, Nickel



Scatterplots and Trend Analysis
D3, Nickel (Filtered)

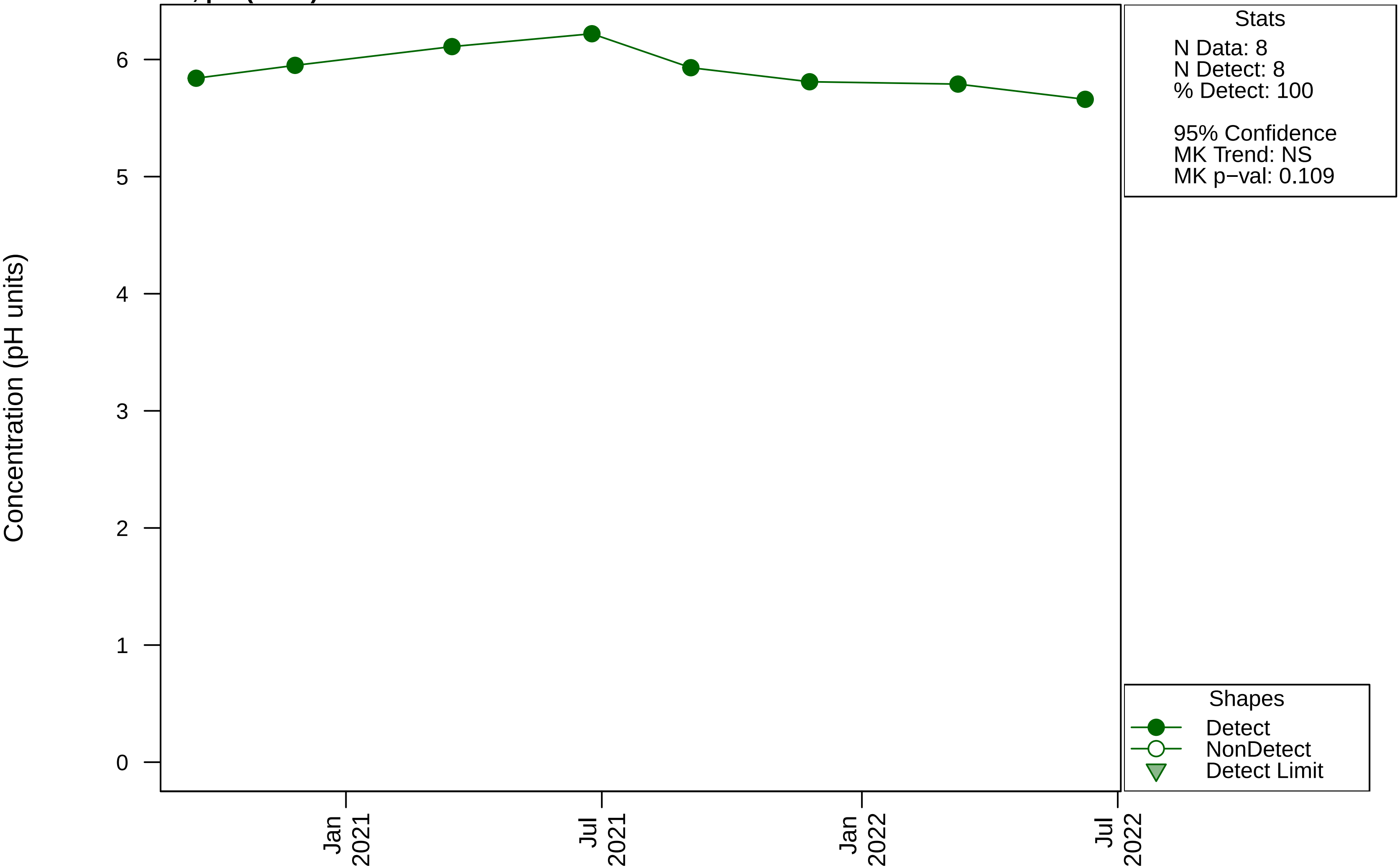


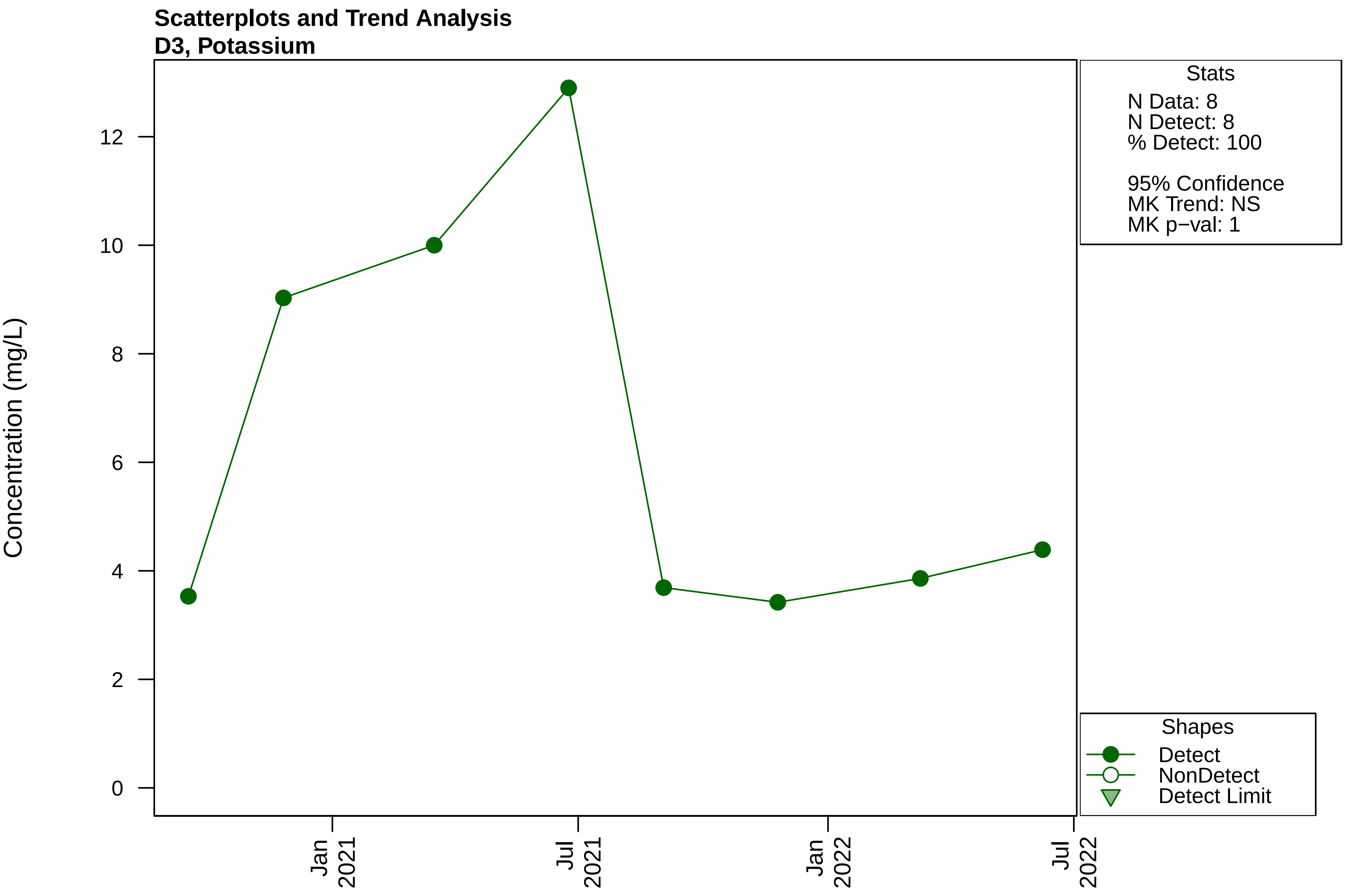

Scatterplots and Trend Analysis
D3, Nitrate
Concentration (ug/L)
0
5
10
15
20
25
30
Mar 2021
May 2021
Jul 2021
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 5
N Detect: 5
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.602
Shapes
Detect
NonDetect
Detect Limit



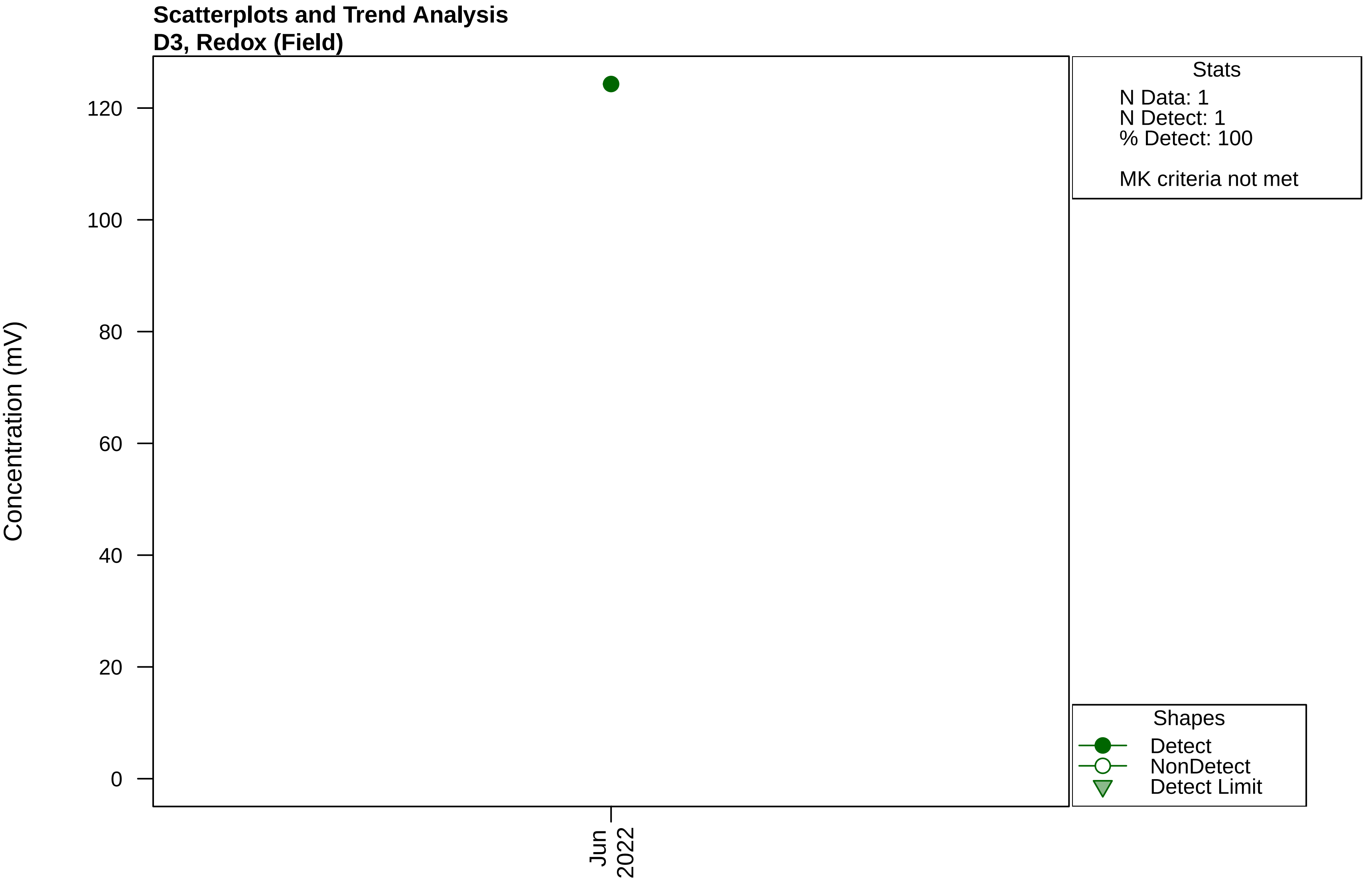
Scatterplots and Trend Analysis
D3, Nitrite + Nitrate (as N)
Concentration (mg/L)
0.030
0.025
0.020
0.015
0.010
0.005
0.000
Mar 2021
May 2021
Jul 2021
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 5
N Detect: 5
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.602
Shapes
Detect
NonDetect
Detect Limit

Scatterplots and Trend Analysis
D3, pH (Field)

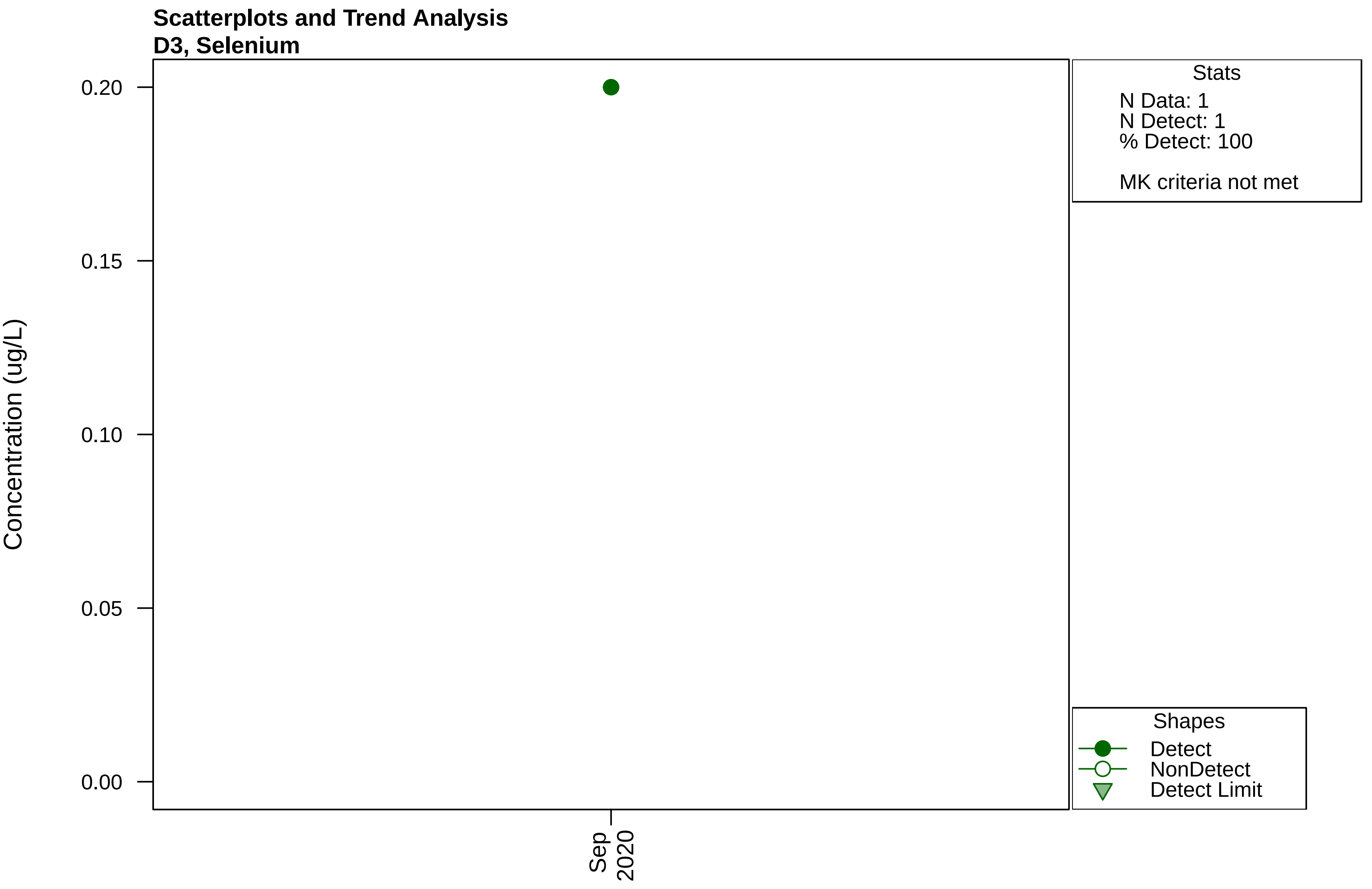


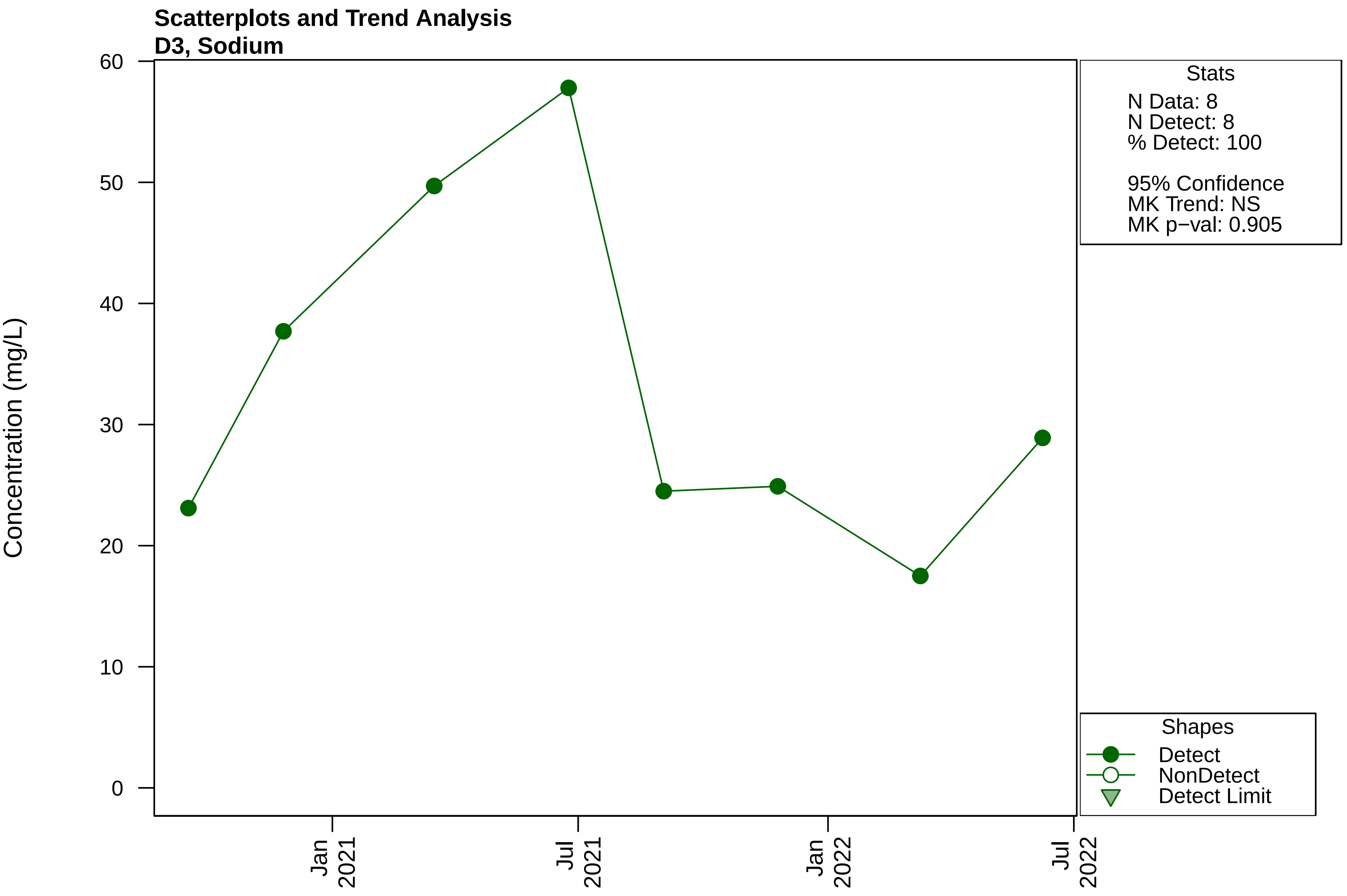


Scatterplots and Trend Analysis
D3, Potassium
Concentration (mg/L)
0
2
4
6
8
10
12
Jan 2021
Jul 2021
Jan 2022
Jul 2022
Stats
N Data: 8
N Detect: 8
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 1
Shapes
Detect
NonDetect
Detect Limit

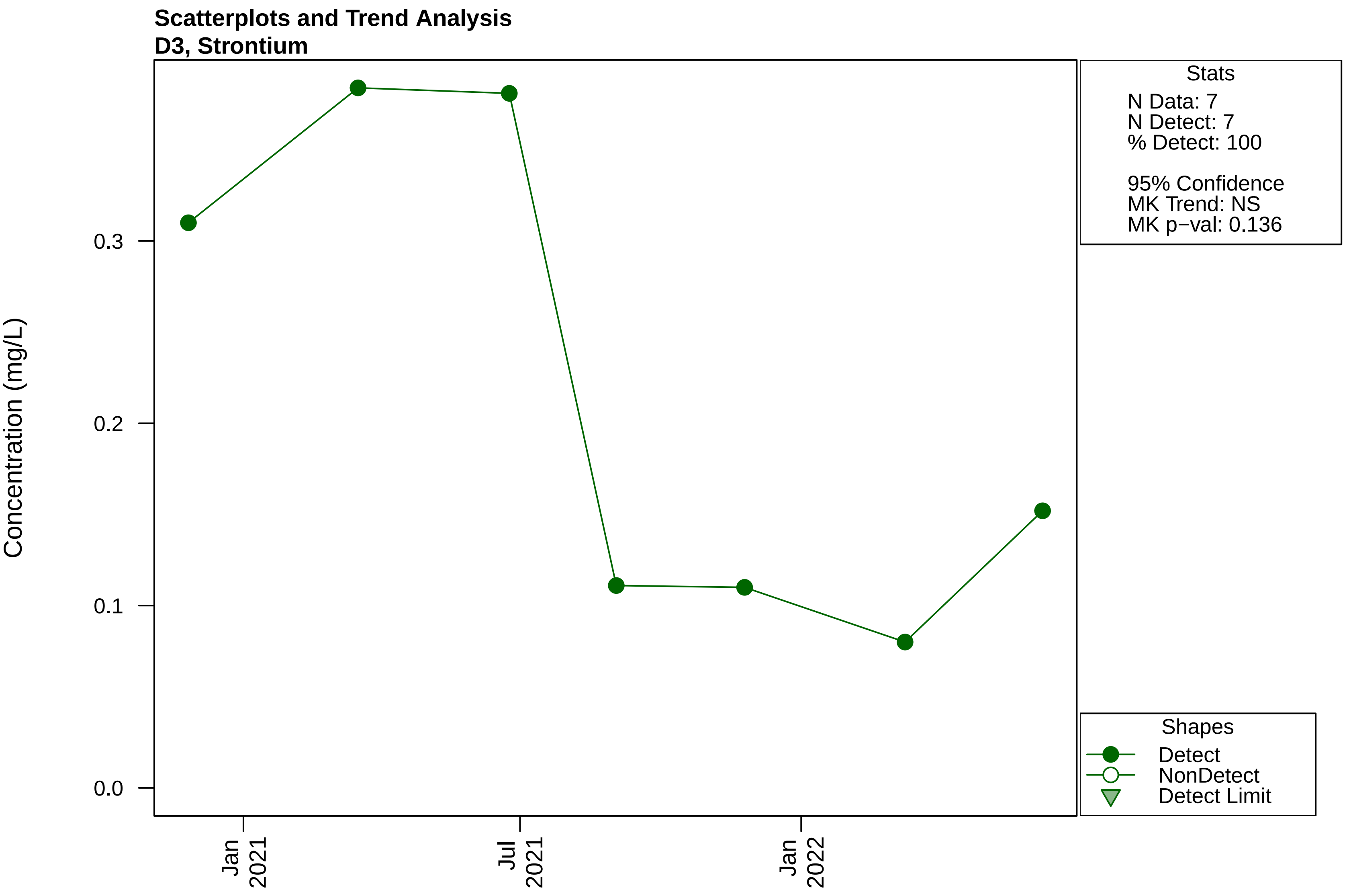


Scatterplots and Trend Analysis
D3, Redox (Field)
Concentration (mV)
0
20
40
60
80
100
120
Jun 2022
Stats
N Data: 1
N Detect: 1
% Detect: 100
MK criteria not met
Shapes
Detect
NonDetect
Detect Limit

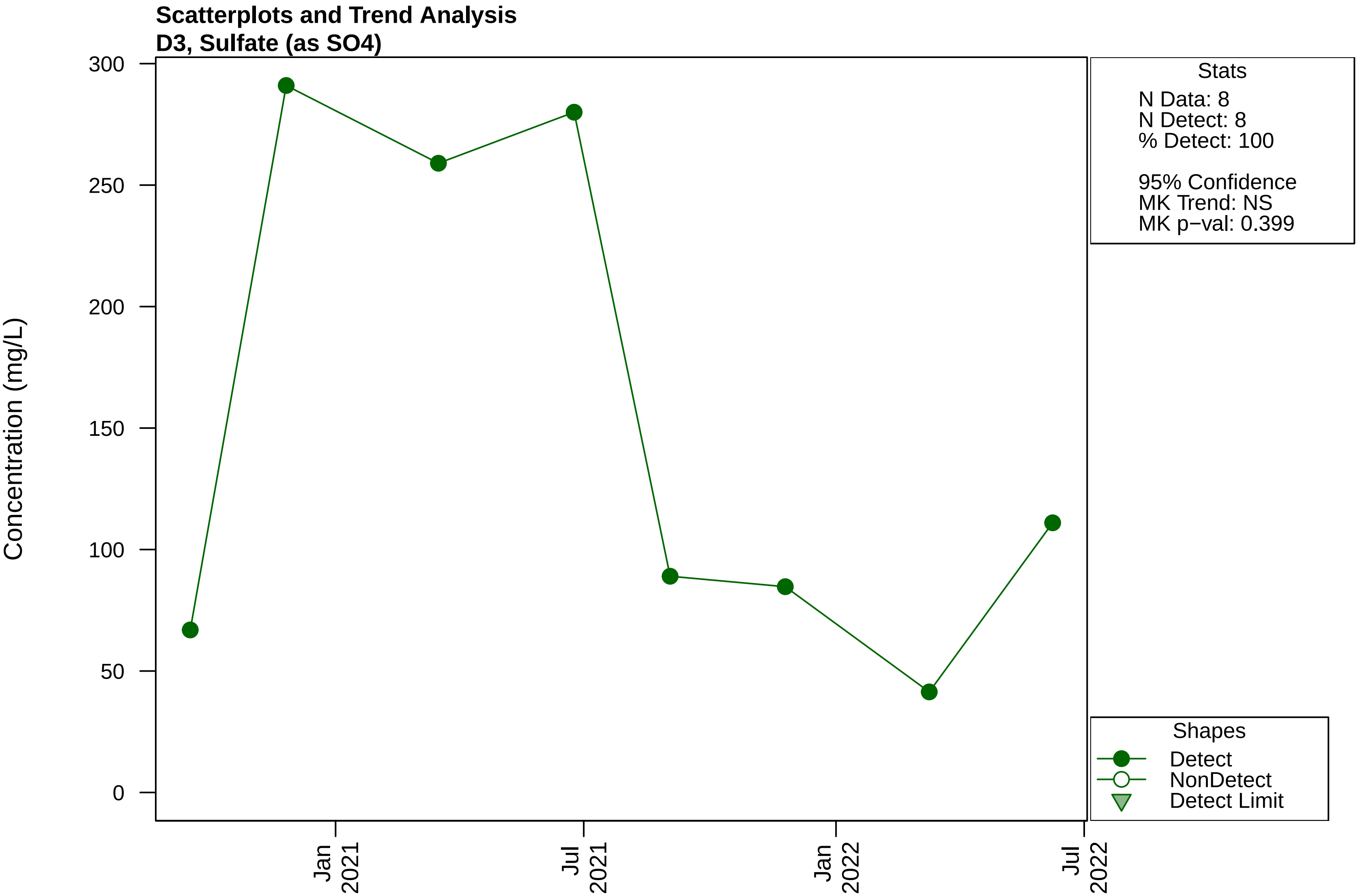

Scatterplots and Trend Analysis
D3, Selenium
Concentration (ug/L)
0.20
0.15
0.10
0.05
0.00
Sep 2020
Stats
N Data: 1
N Detect: 1
% Detect: 100
MK criteria not met
Shapes
Detect
NonDetect
Detect Limit



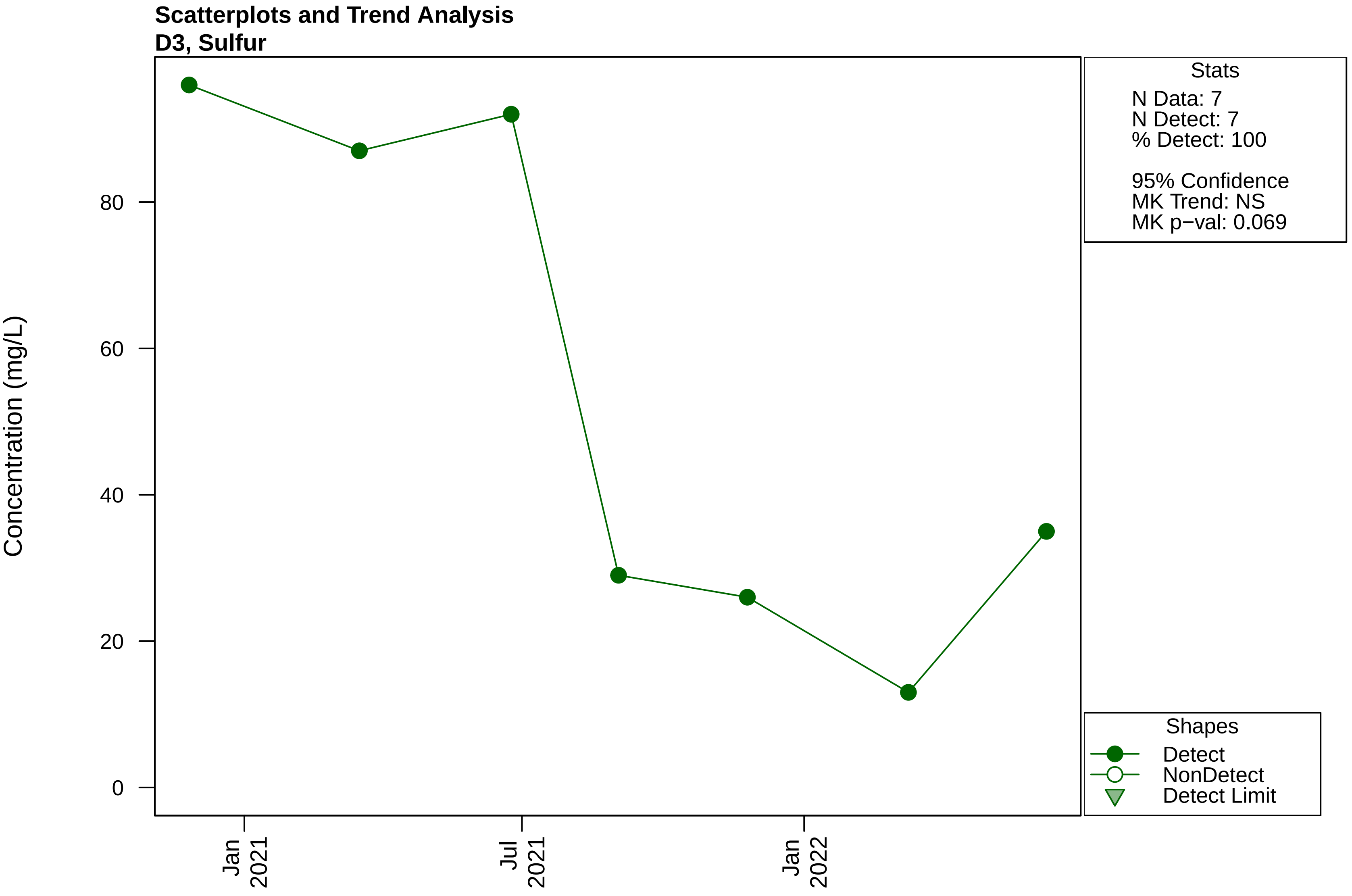
Scatterplots and Trend Analysis
D3, Sodium
Concentration (mg/L)
0
10
20
30
40
50
60
Jan 2021
Jul 2021
Jan 2022
Jul 2022
Stats
N Data: 8
N Detect: 8
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.905
Shapes
Detect
NonDetect
Detect Limit



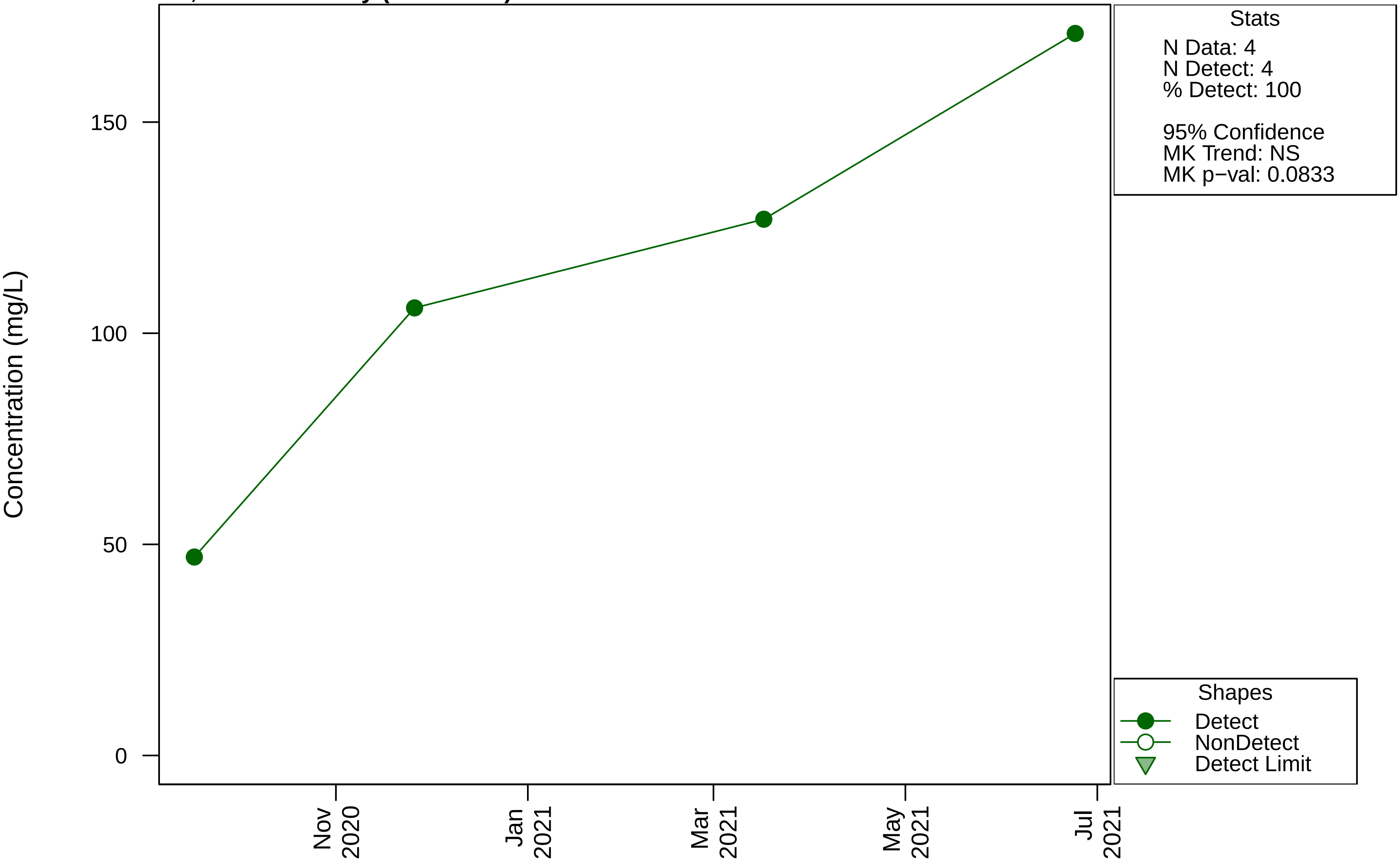
Scatterplots and Trend Analysis
D3, Strontium
Concentration (mg/L)
0.0
0.1
0.2
0.3
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 7
N Detect: 7
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.136
Shapes
Detect
NonDetect
Detect Limit

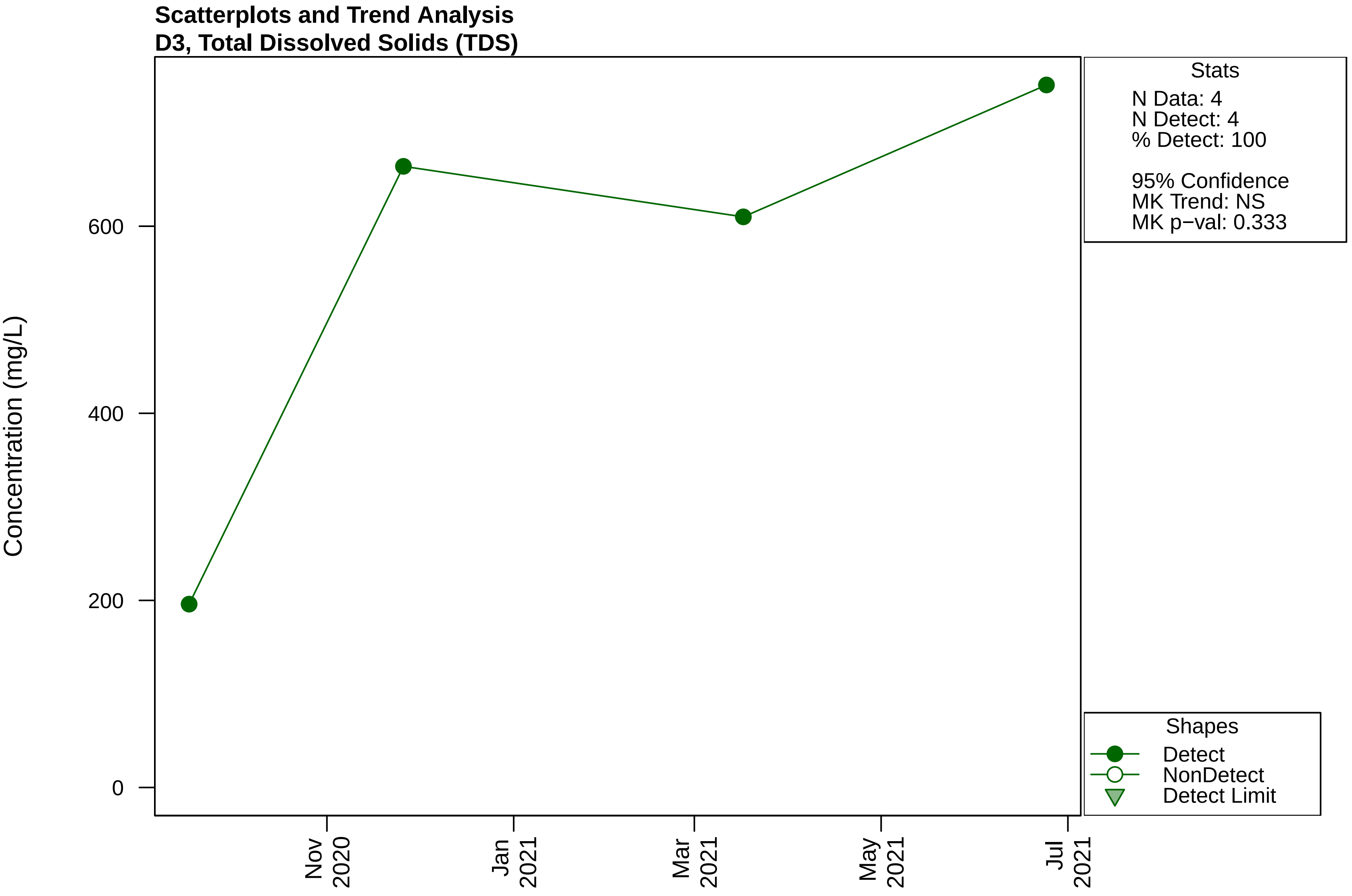


Scatterplots and Trend Analysis
D3, Sulfate (as SO4)
Concentration (mg/L)
300
250
200
150
100
50
0
Jan 2021
Jul 2021
Jan 2022
Jul 2022
Stats
N Data: 8
N Detect: 8
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.399
Shapes
Detect
NonDetect
Detect Limit

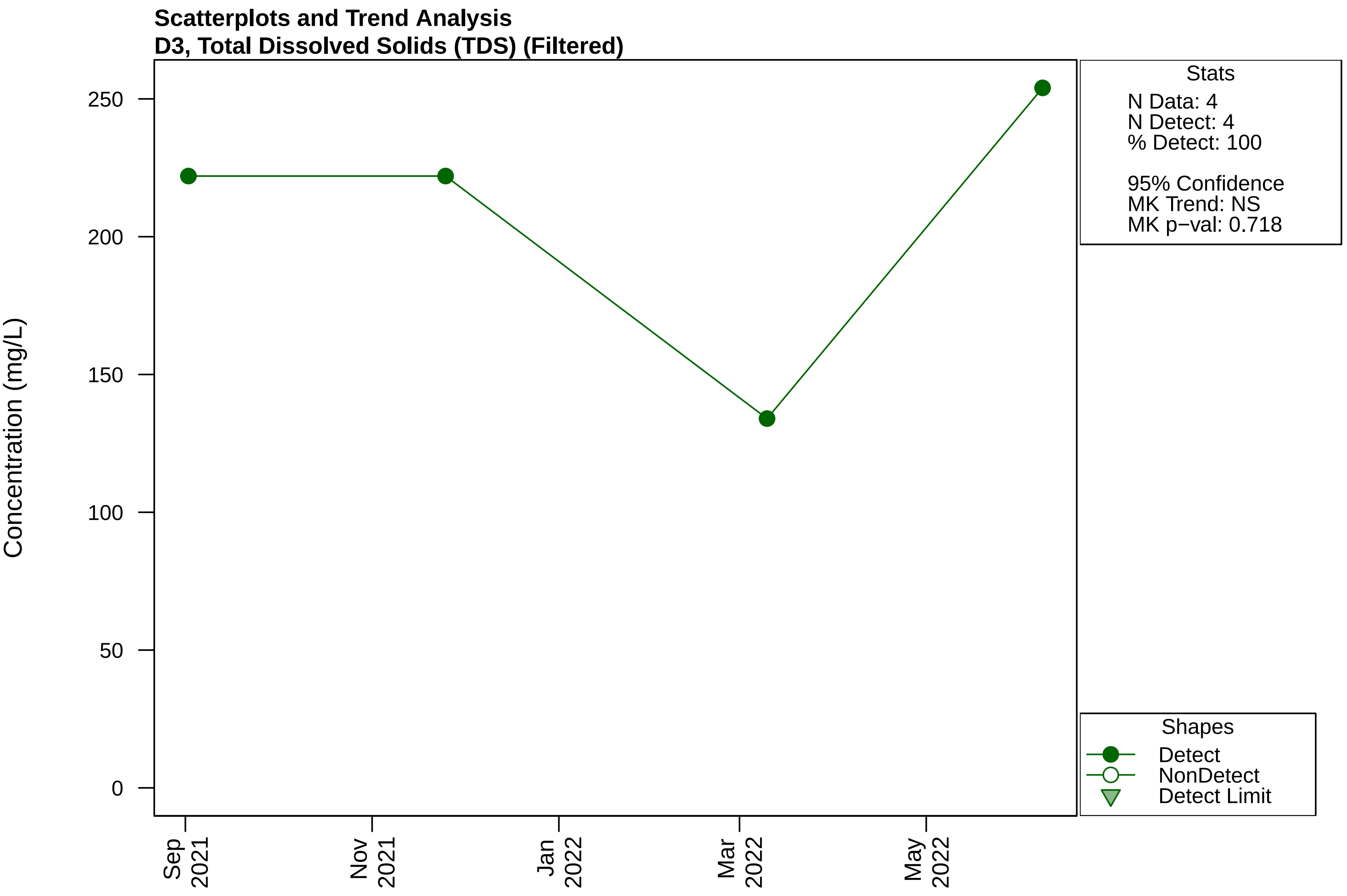

Scatterplots and Trend Analysis
D3, Sulfur
Concentration (mg/L)
0
20
40
60
80
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 7
N Detect: 7
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.069
Shapes
Detect
NonDetect
Detect Limit

Scatterplots and Trend Analysis
D3, Total Alkalinity (as CaCO3)

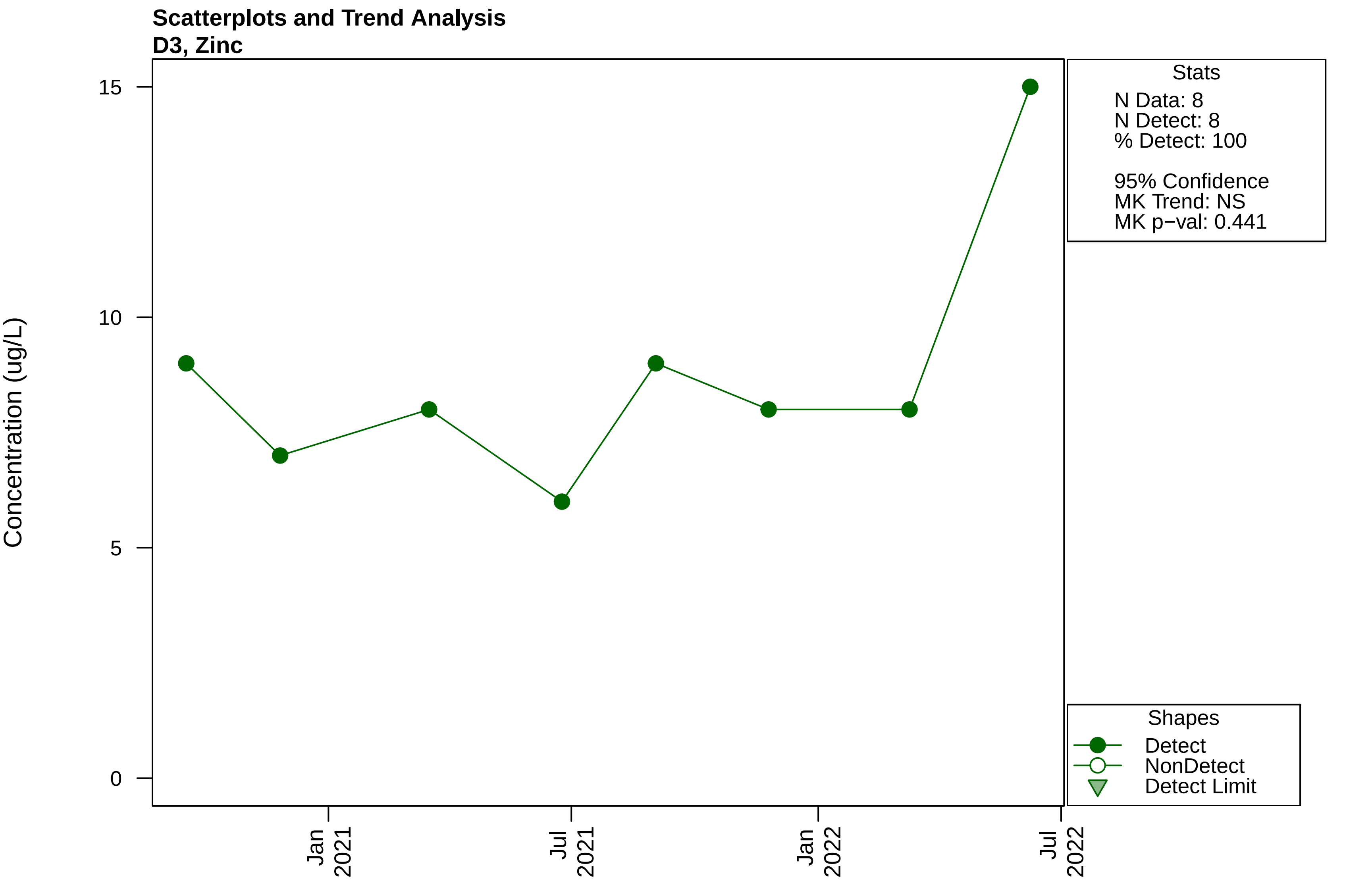




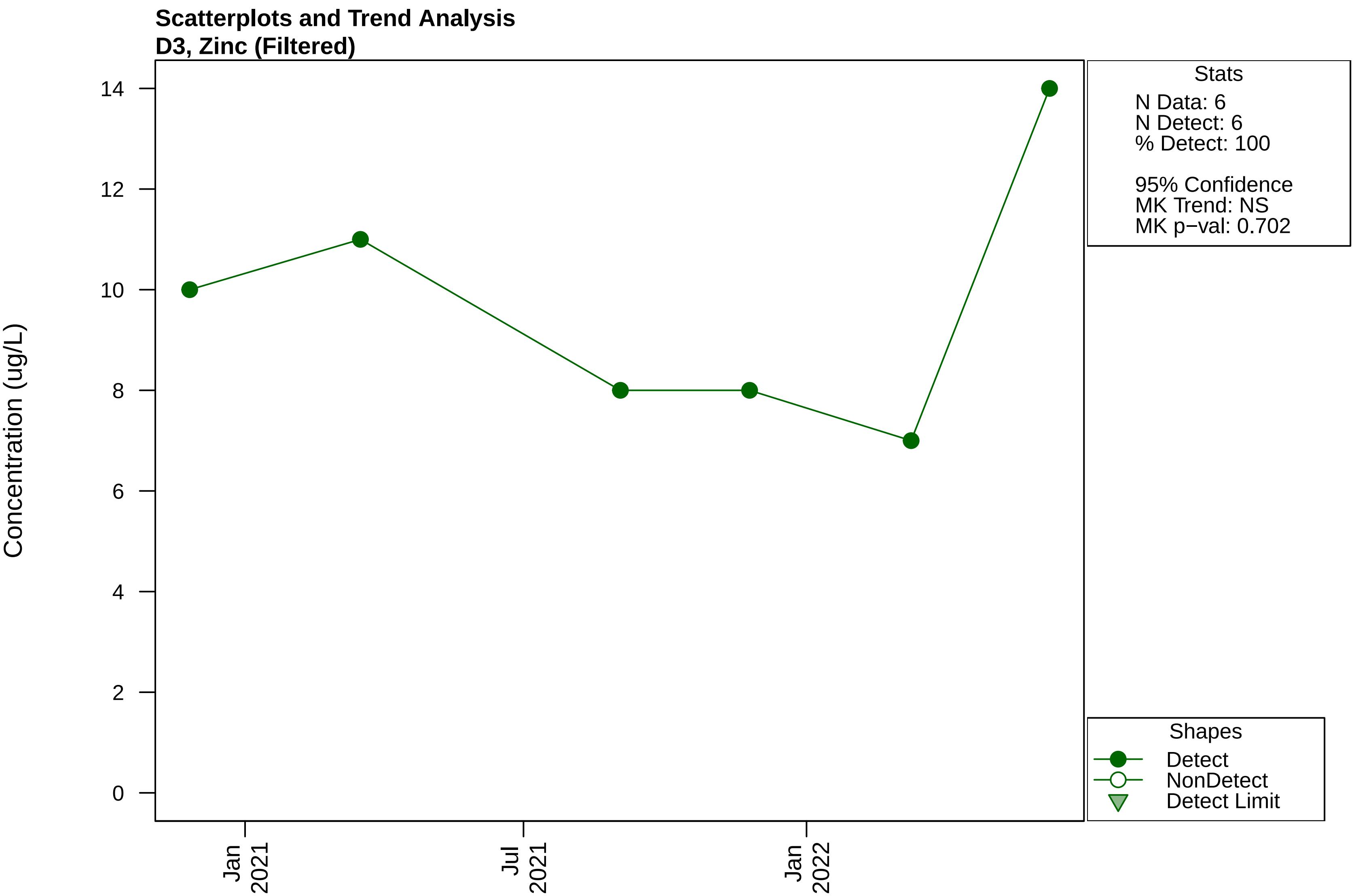
Scatterplots and Trend Analysis
D3, Total Dissolved Solids (TDS)
Concentration (mg/L)
0
200
400
600
Nov 2020
Jan 2021
Mar 2021
May 2021
Jul 2021
Stats
N Data: 4
N Detect: 4
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.333
Shapes
Detect
NonDetect
Detect Limit



Scatterplots and Trend Analysis
D3, Total Dissolved Solids (TDS) (Filtered)
Concentration (mg/L)
0
50
100
150
200
250
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 4
N Detect: 4
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.718
Shapes
Detect
NonDetect
Detect Limit

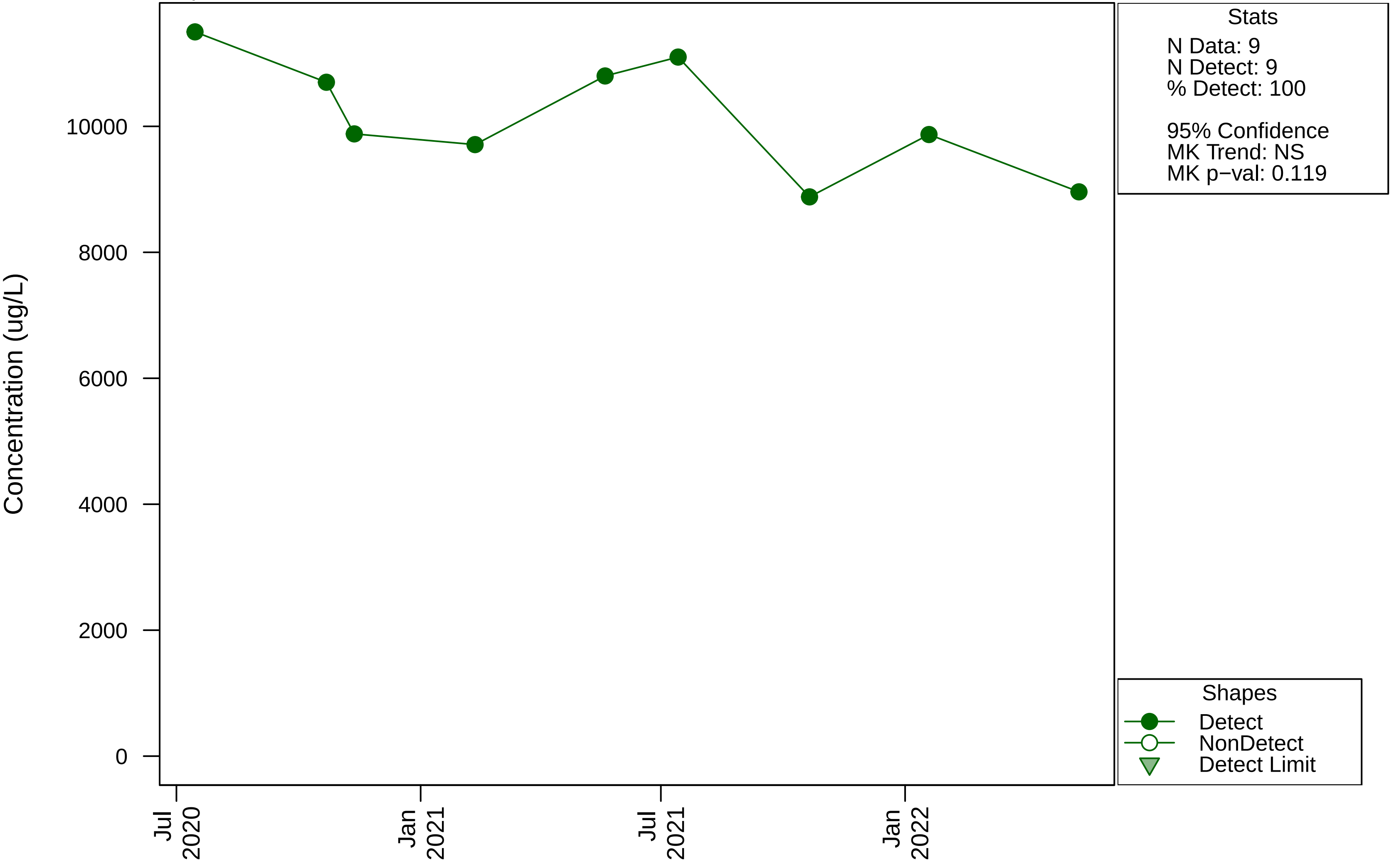


Scatterplots and Trend Analysis
D3, Zinc
Concentration (ug/L)
0
5
10
15
Jan 2021
Jul 2021
Jan 2022
Jul 2022
Stats
N Data: 8
N Detect: 8
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.441
Shapes
Detect
NonDetect
Detect Limit

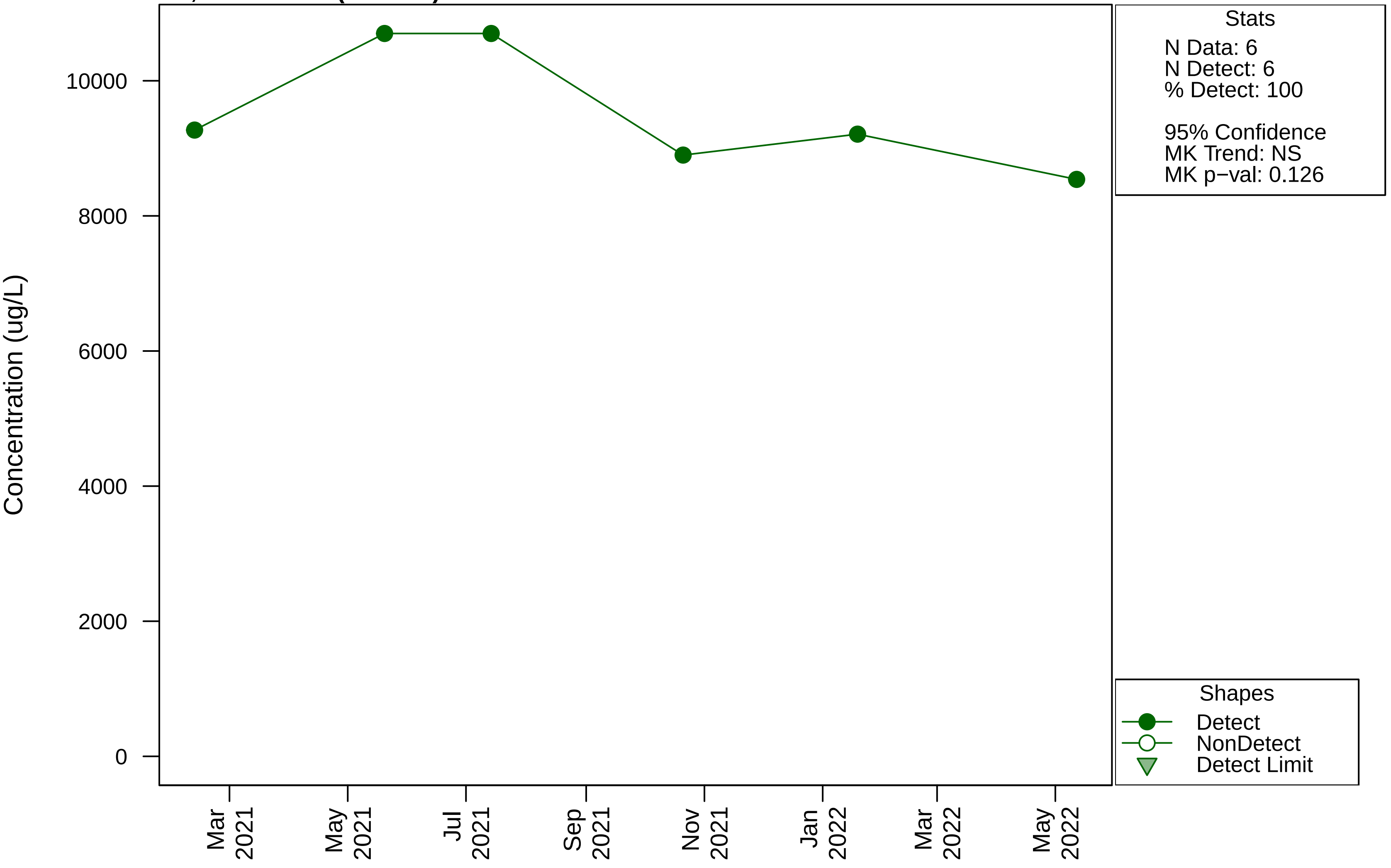


Scatterplots and Trend Analysis
D3, Zinc (Filtered)
Concentration (ug/L)
0
2
4
6
8
10
12
14
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 6
N Detect: 6
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.702
Shapes
Detect
NonDetect
Detect Limit

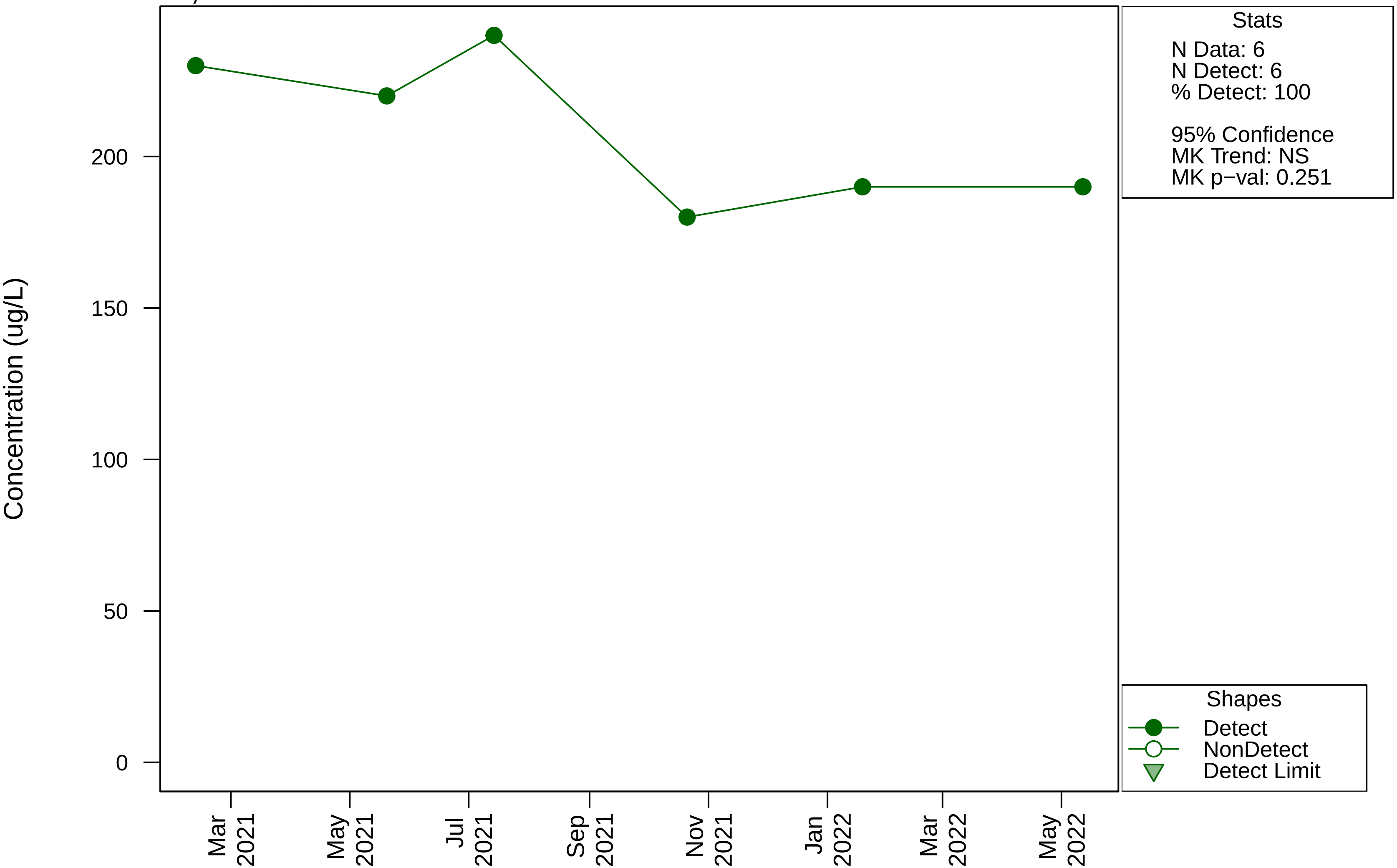
Scatterplots and Trend Analysis
D4, Aluminium

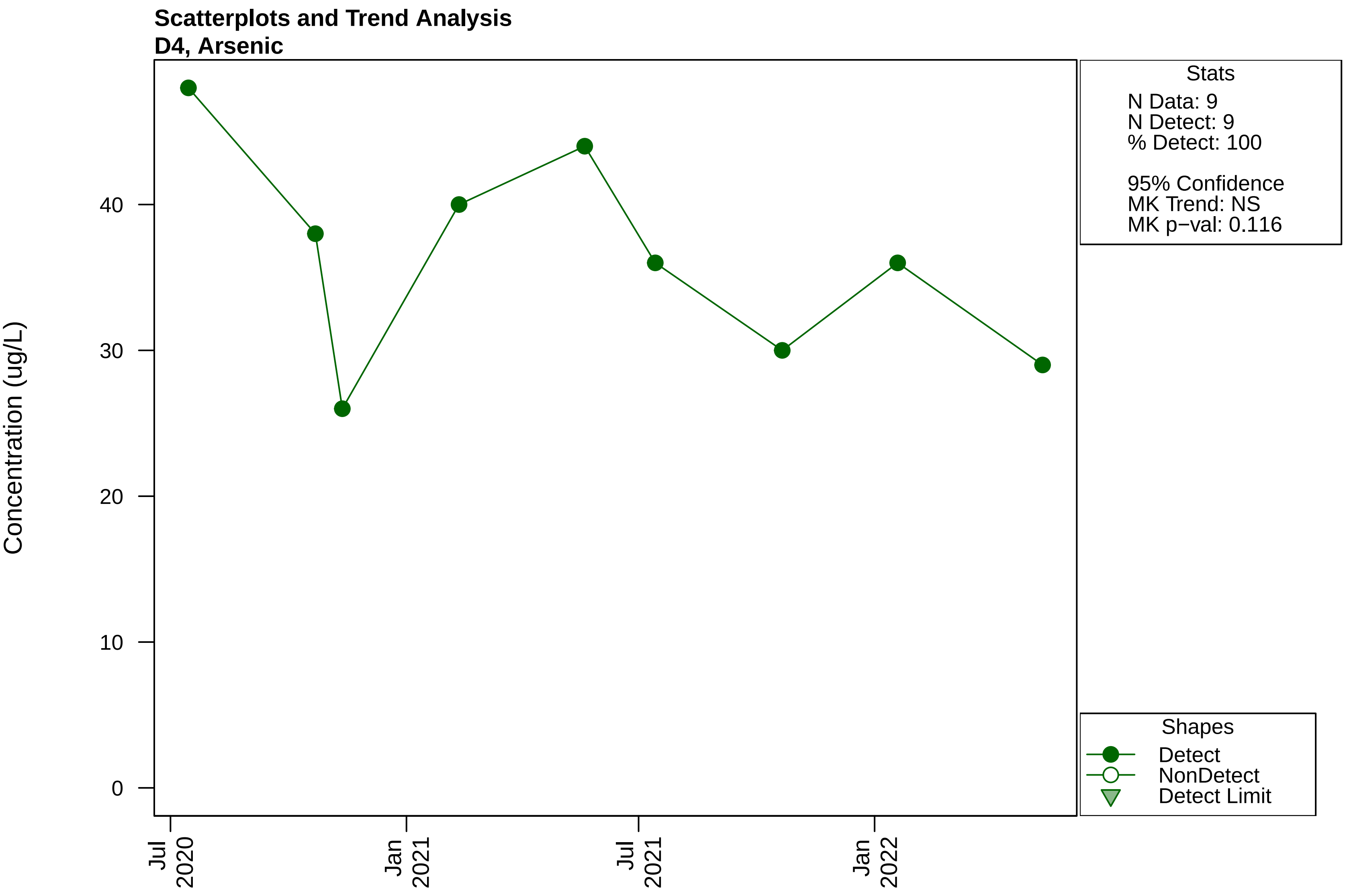


Scatterplots and Trend Analysis
D4, Aluminium (Filtered)



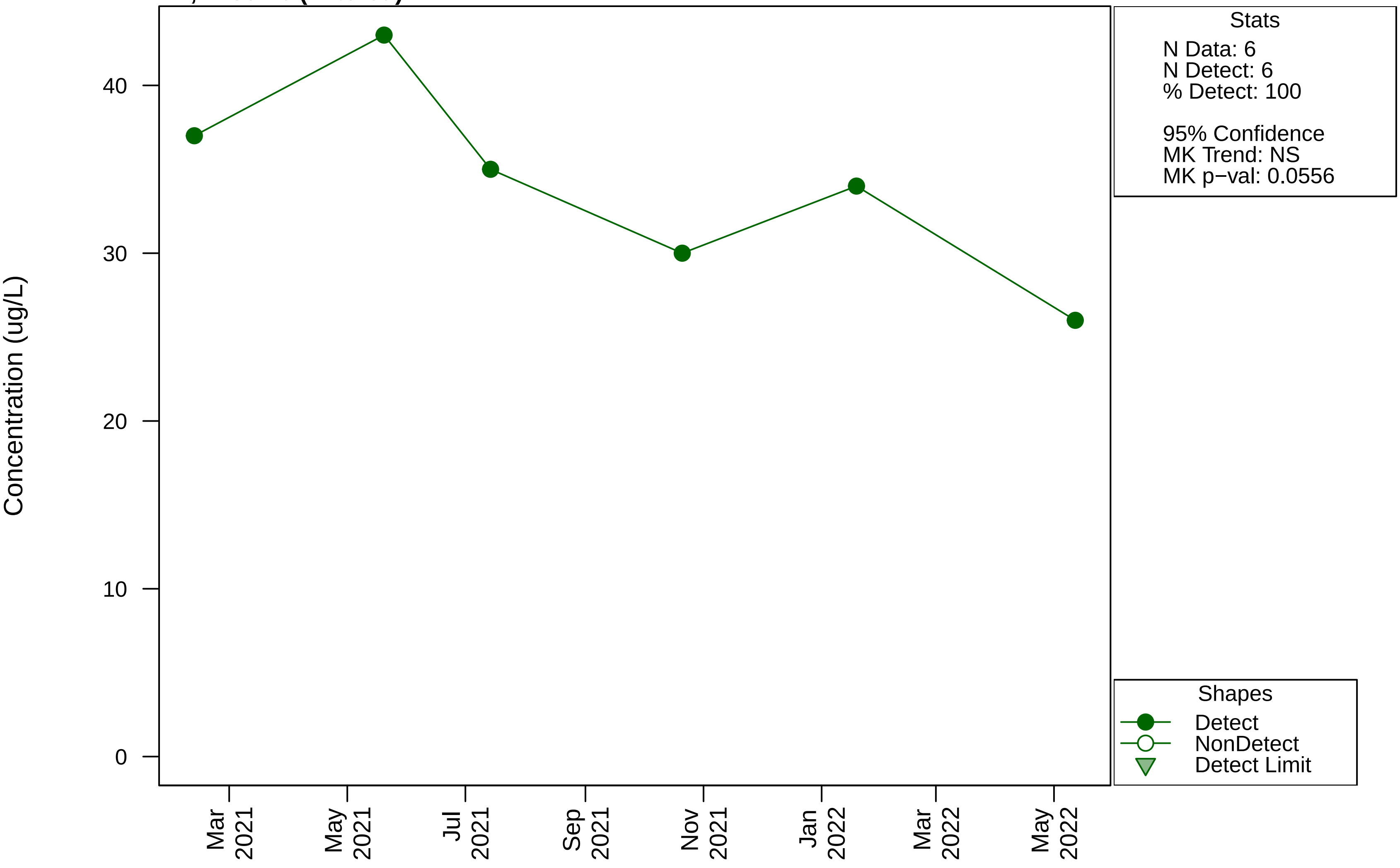
Scatterplots and Trend Analysis
D4, Ammonia

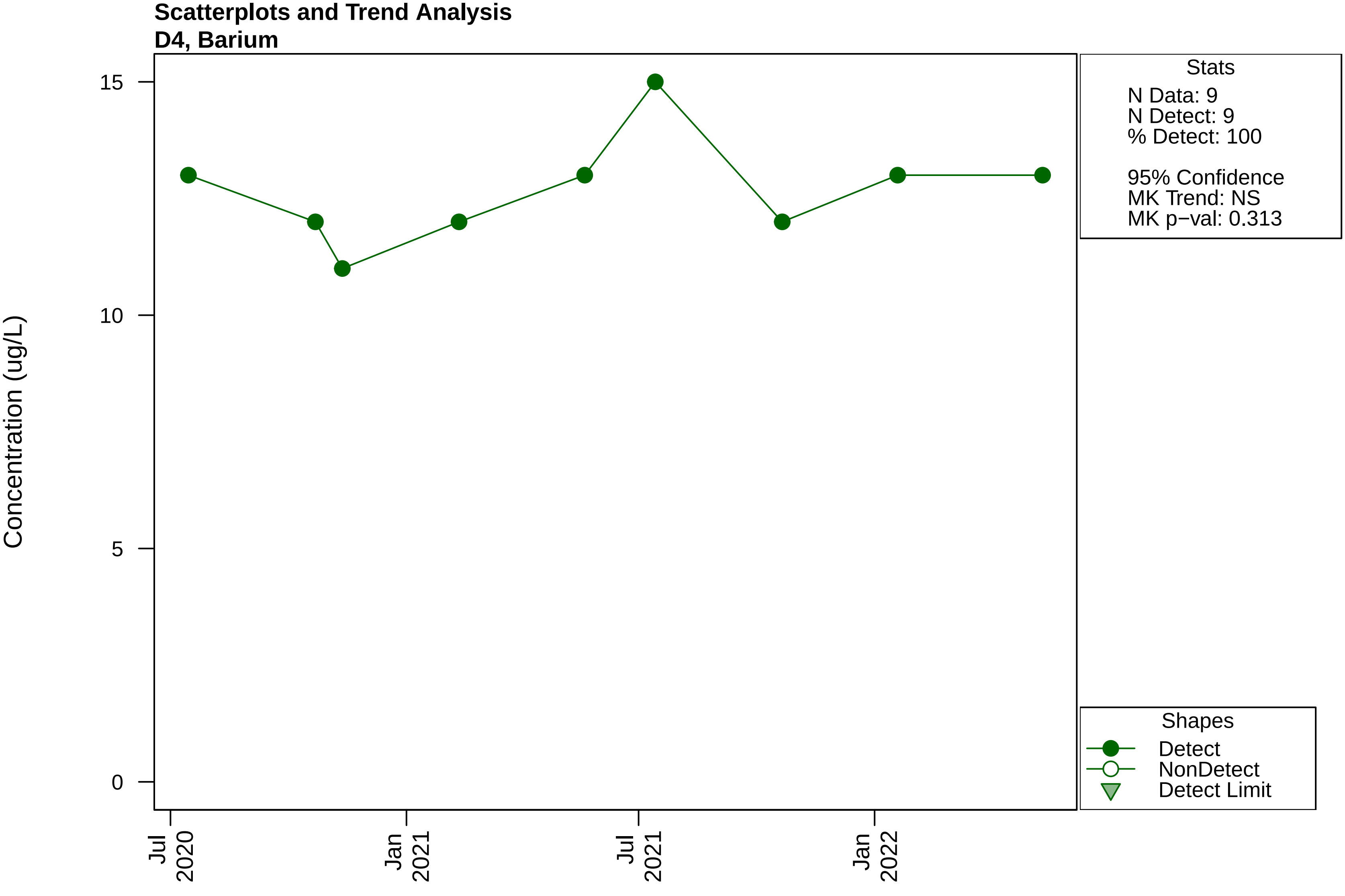




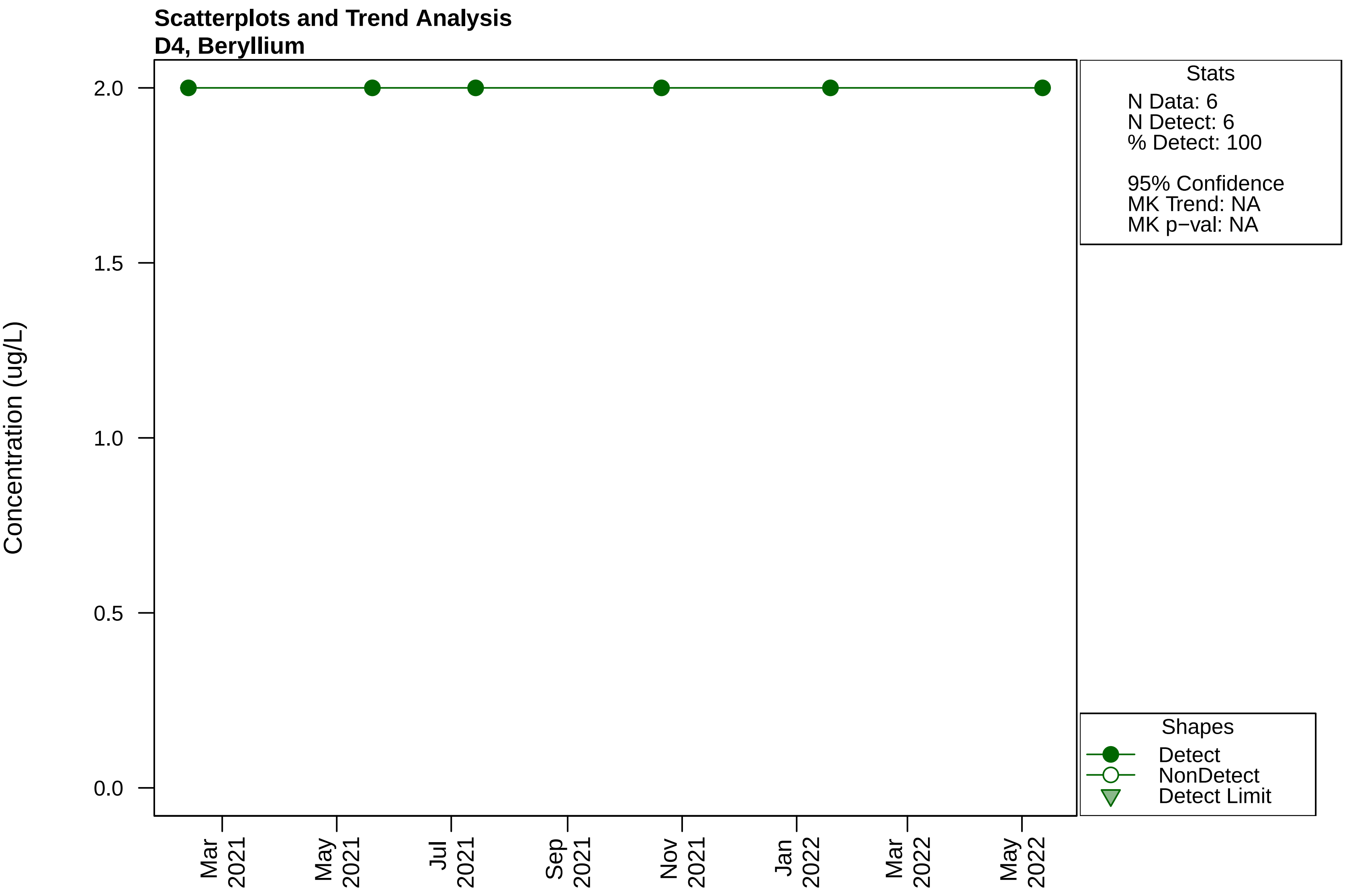
Scatterplots and Trend Analysis
D4, Arsenic
Concentration (ug/L)
0
10
20
30
40
Jul 2020
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 9
N Detect: 9
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.116
Shapes
Detect
NonDetect
Detect Limit

Scatterplots and Trend Analysis
D4, Arsenic (Filtered)

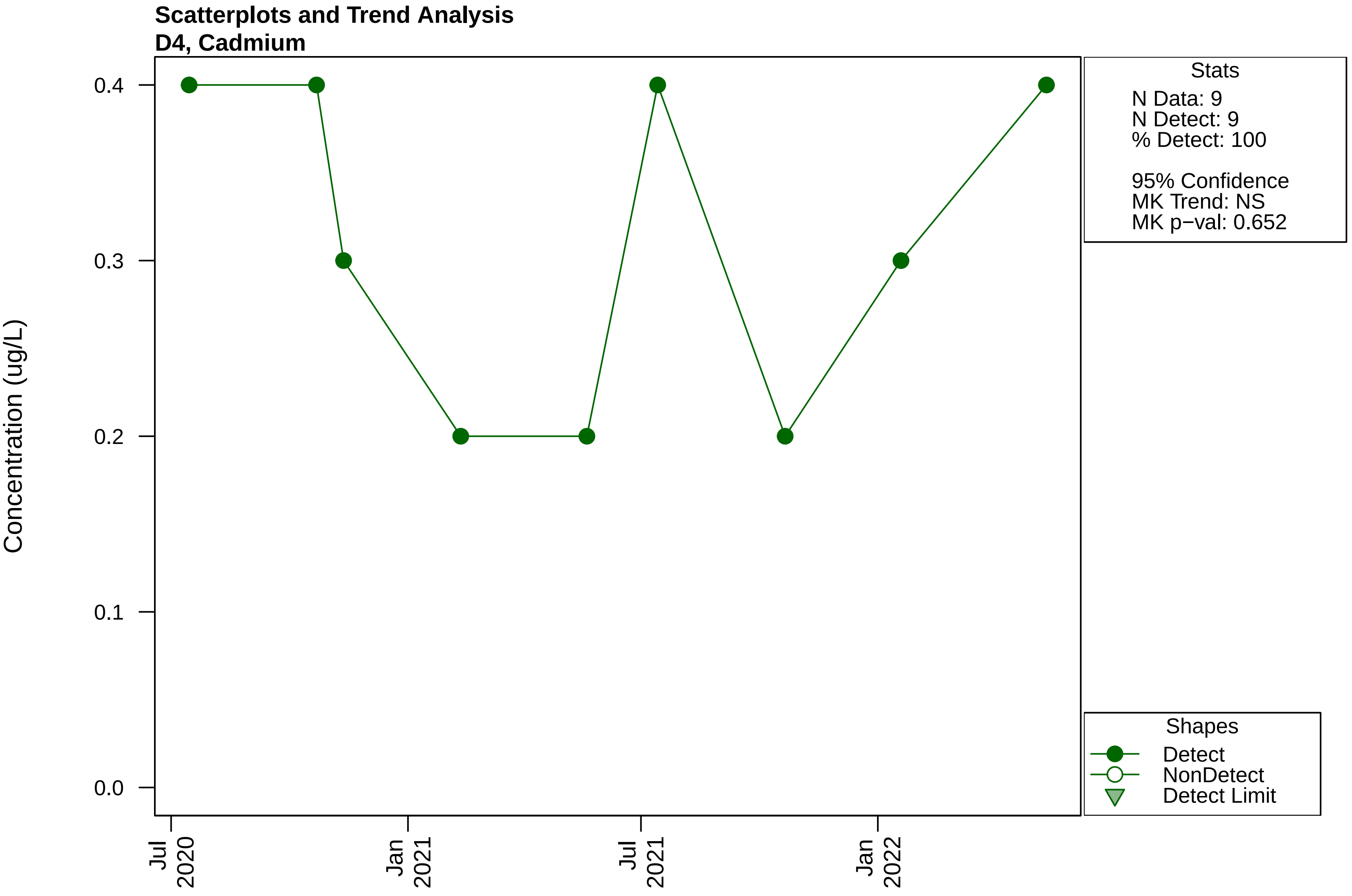




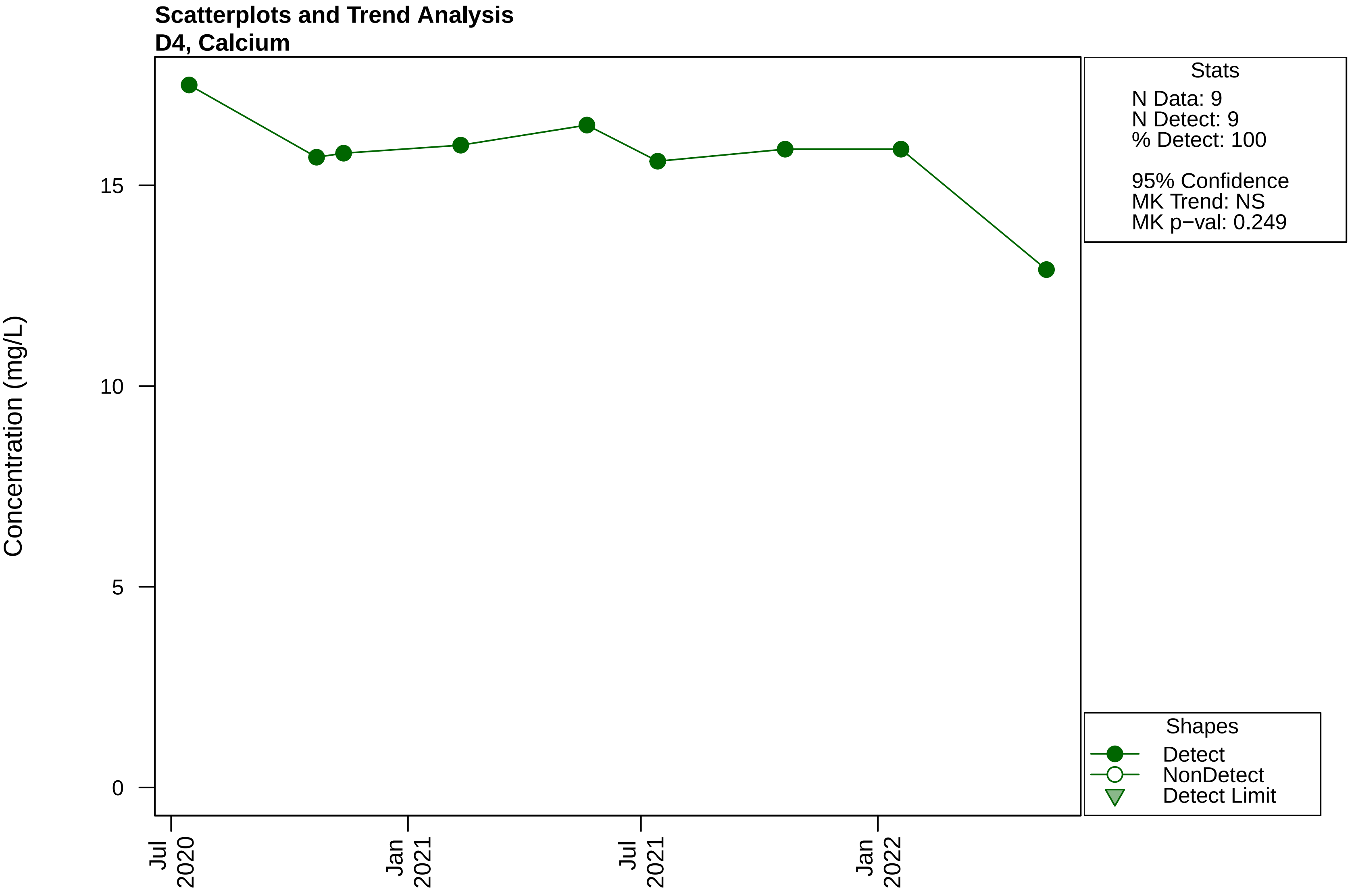
Scatterplots and Trend Analysis
D4, Barium
Concentration (ug/L)
15
10
5
0
Jul 2020
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 9
N Detect: 9
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.313
Shapes
Detect
NonDetect
Detect Limit



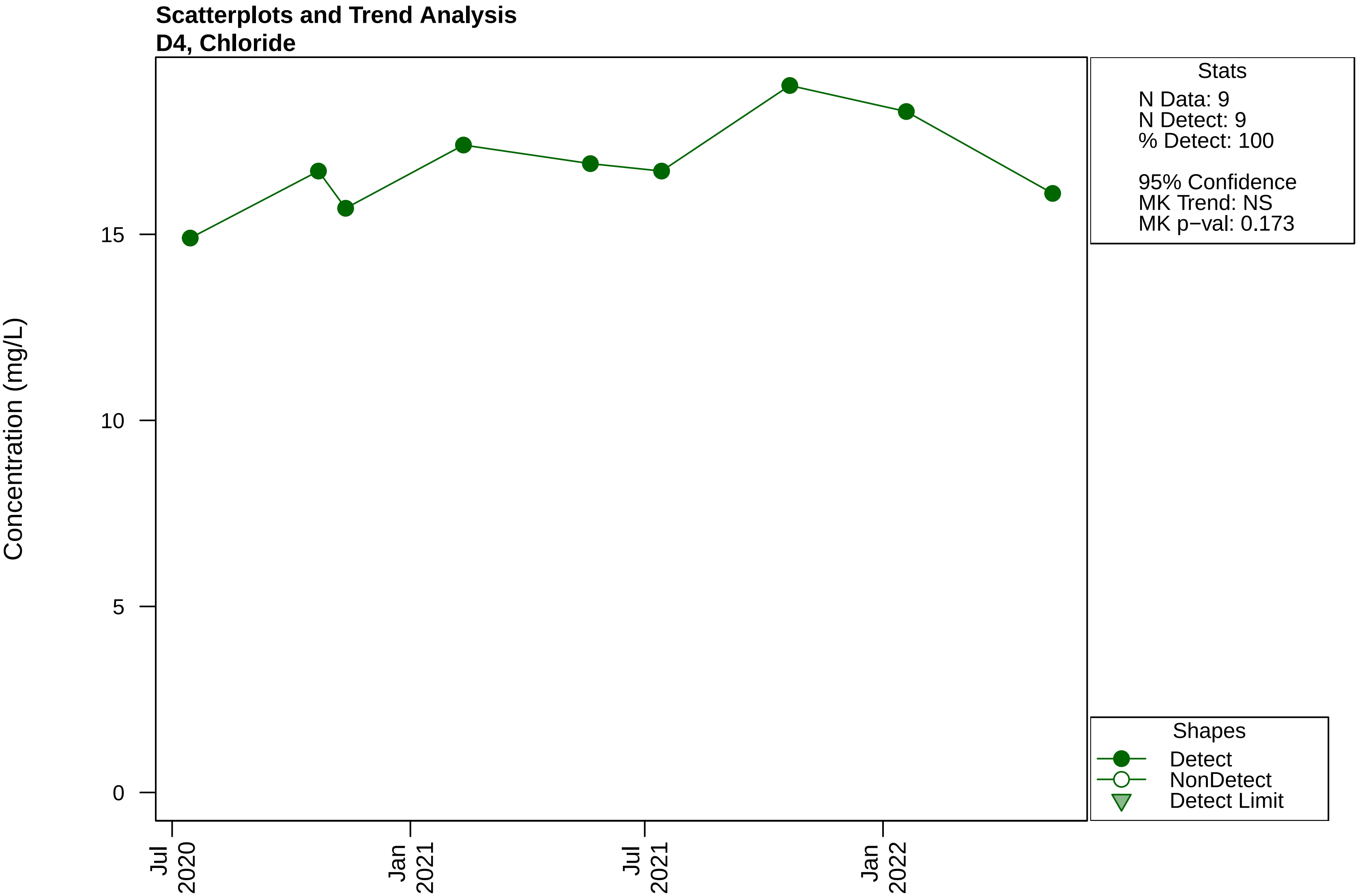
Scatterplots and Trend Analysis
D4, Beryllium
Concentration (ug/L)
2.0
1.5
1.0
0.5
0.0
Mar 2021
May 2021
Jul 2021
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 6
N Detect: 6
% Detect: 100
95% Confidence
MK Trend: NA
MK p−val: NA
Shapes
Detect
NonDetect
Detect Limit

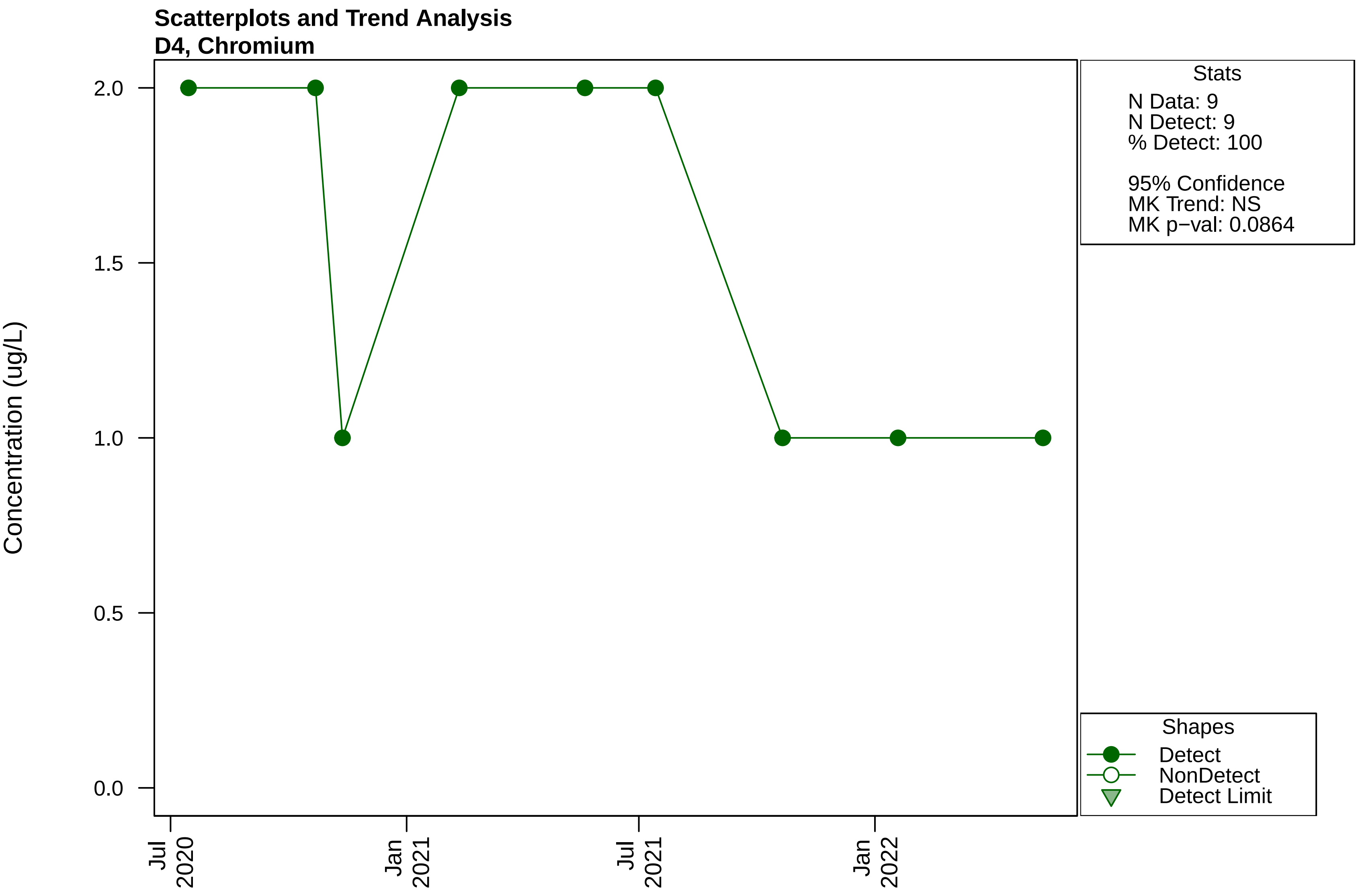


Scatterplots and Trend Analysis
D4, Cadmium
Concentration (ug/L)
0.0
0.1
0.2
0.3
0.4
Jul 2020
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 9
N Detect: 9
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.652
Shapes
Detect
NonDetect
Detect Limit



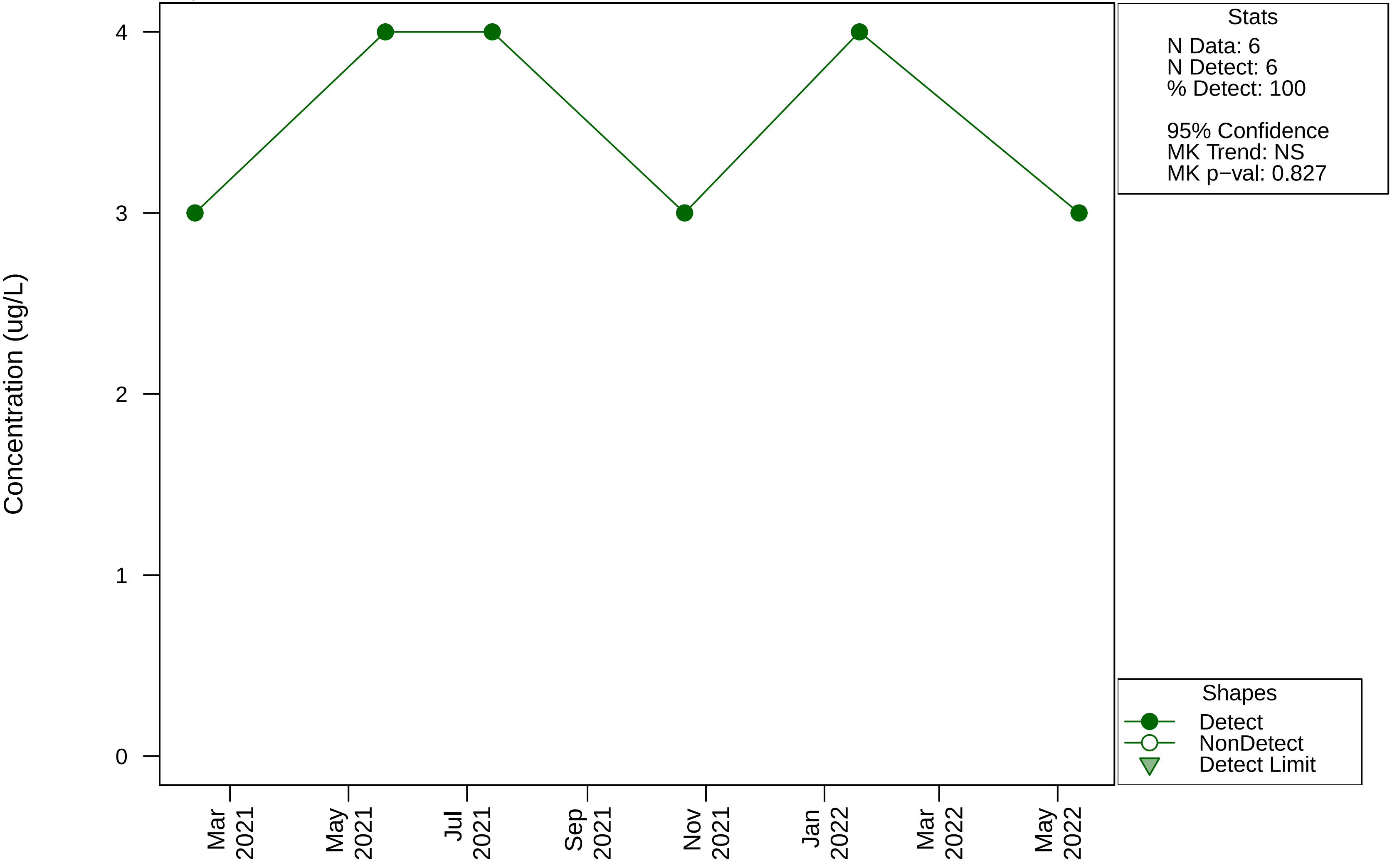
Scatterplots and Trend Analysis
D4, Calcium
Concentration (mg/L)
0
5
10
15
Jul 2020
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 9
N Detect: 9
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.249
Shapes
Detect
NonDetect
Detect Limit

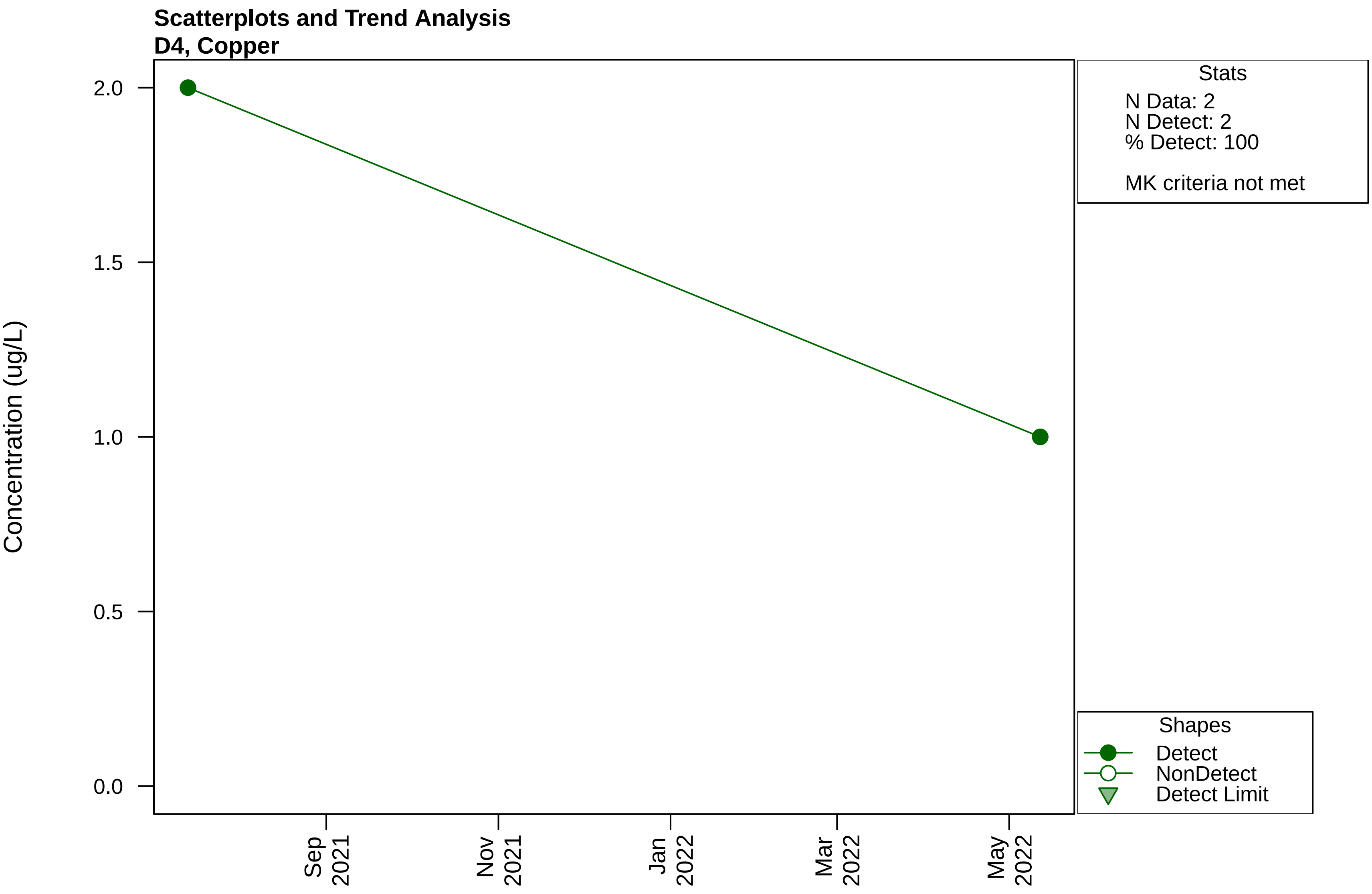

Scatterplots and Trend Analysis
D4, Chloride
Concentration (mg/L)
0
5
10
15
Jul 2020
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 9
N Detect: 9
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.173
Shapes
Detect
NonDetect
Detect Limit



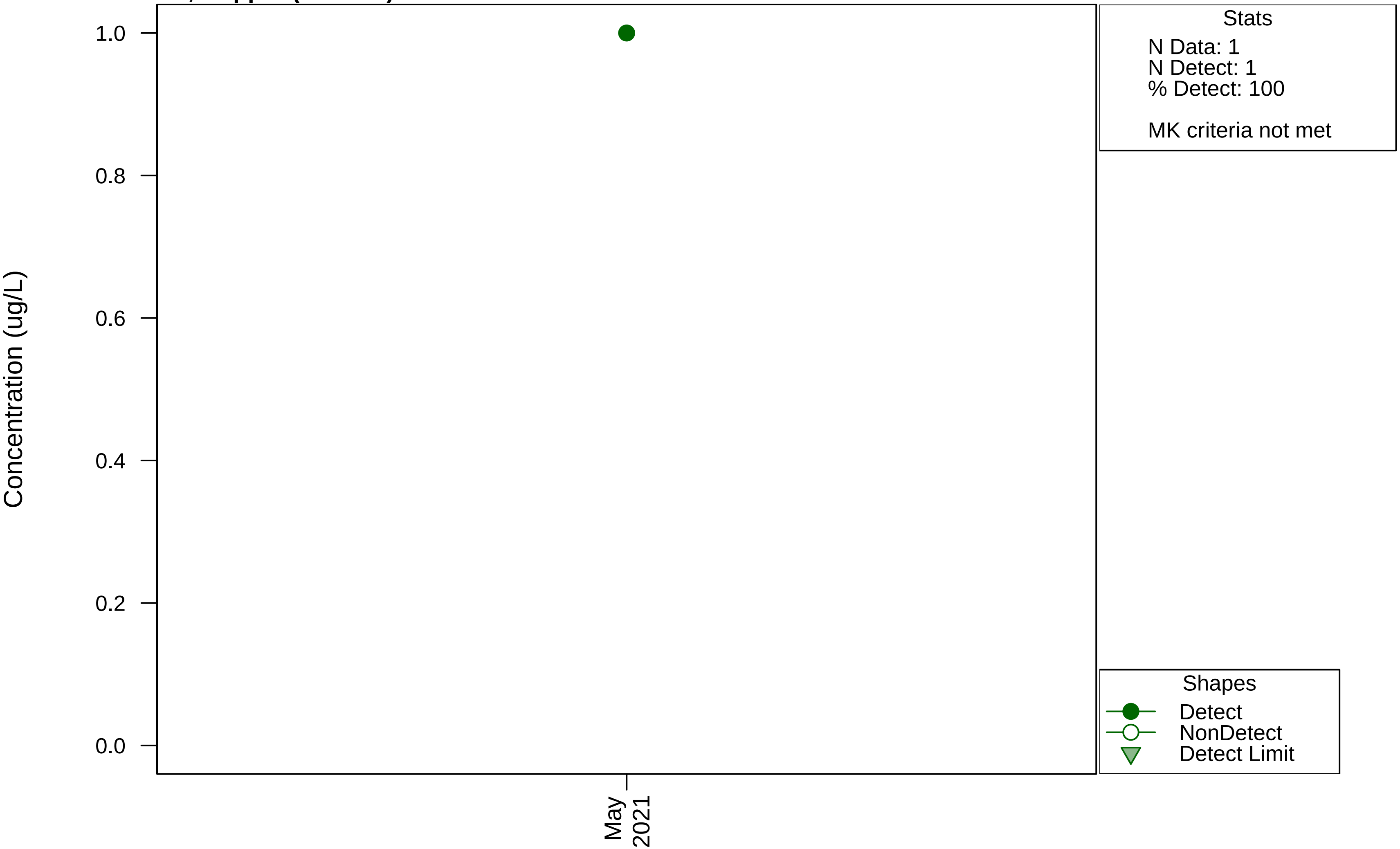
Scatterplots and Trend Analysis
D4, Chromium
Concentration (ug/L)
2.0
1.5
1.0
0.5
0.0
Jul 2020
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 9
N Detect: 9
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.0864
Shapes
Detect
NonDetect
Detect Limit

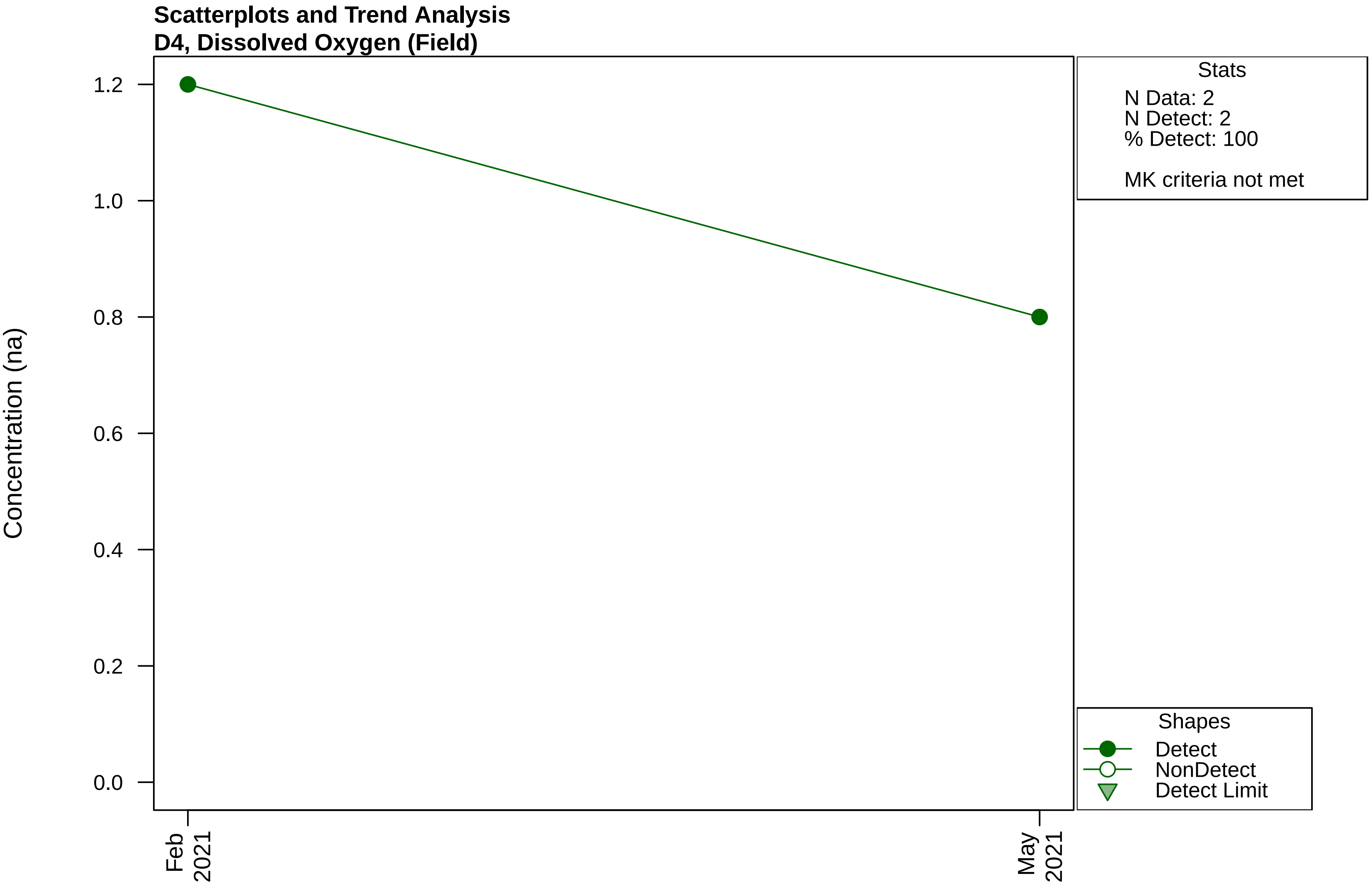
Scatterplots and Trend Analysis
D4, Cobalt

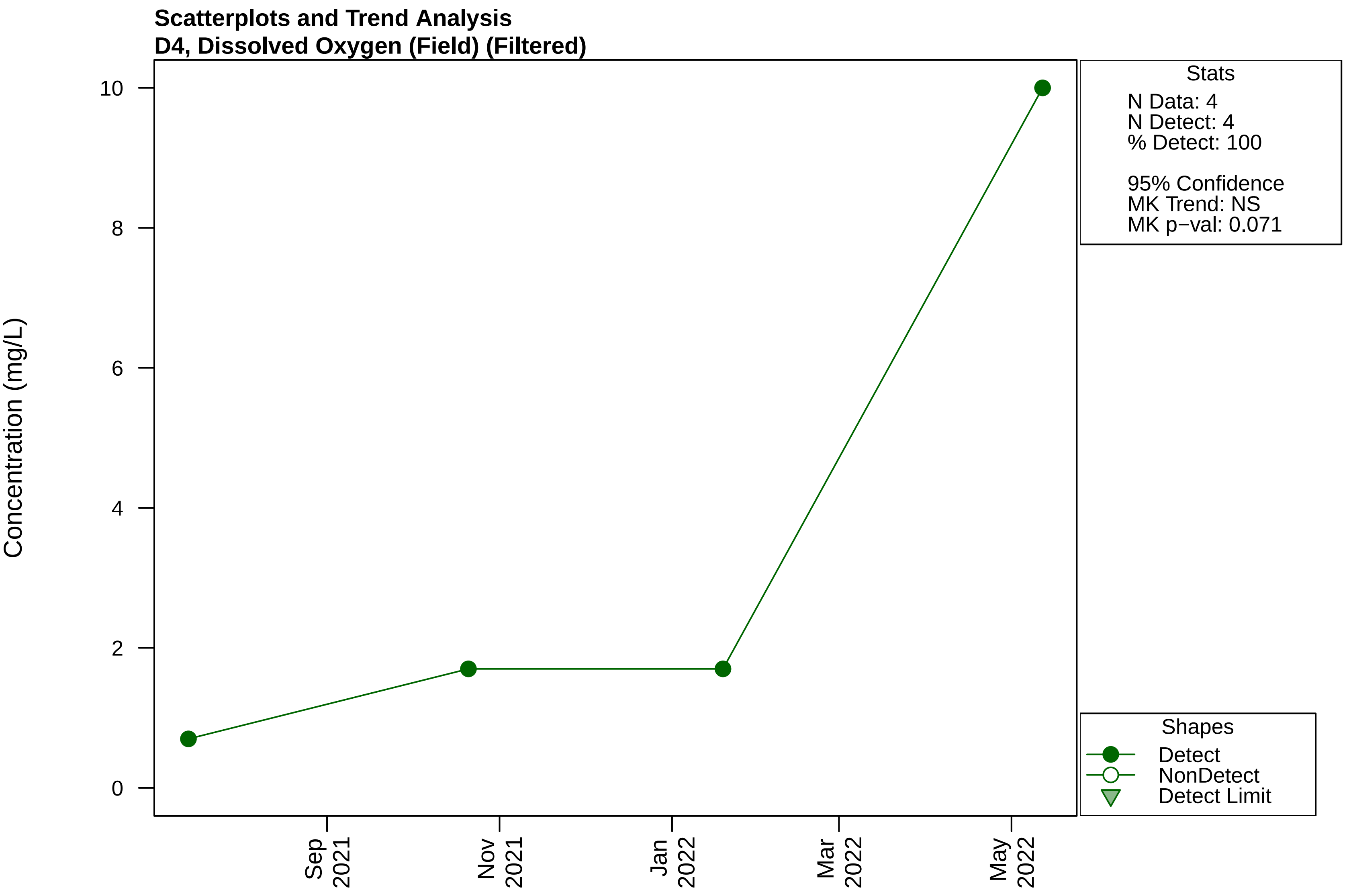



Scatterplots and Trend Analysis
D4, Copper
Concentration (ug/L)
2.0
1.5
1.0
0.5
0.0
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 2
N Detect: 2
% Detect: 100
MK criteria not met
Shapes
Detect
NonDetect
Detect Limit

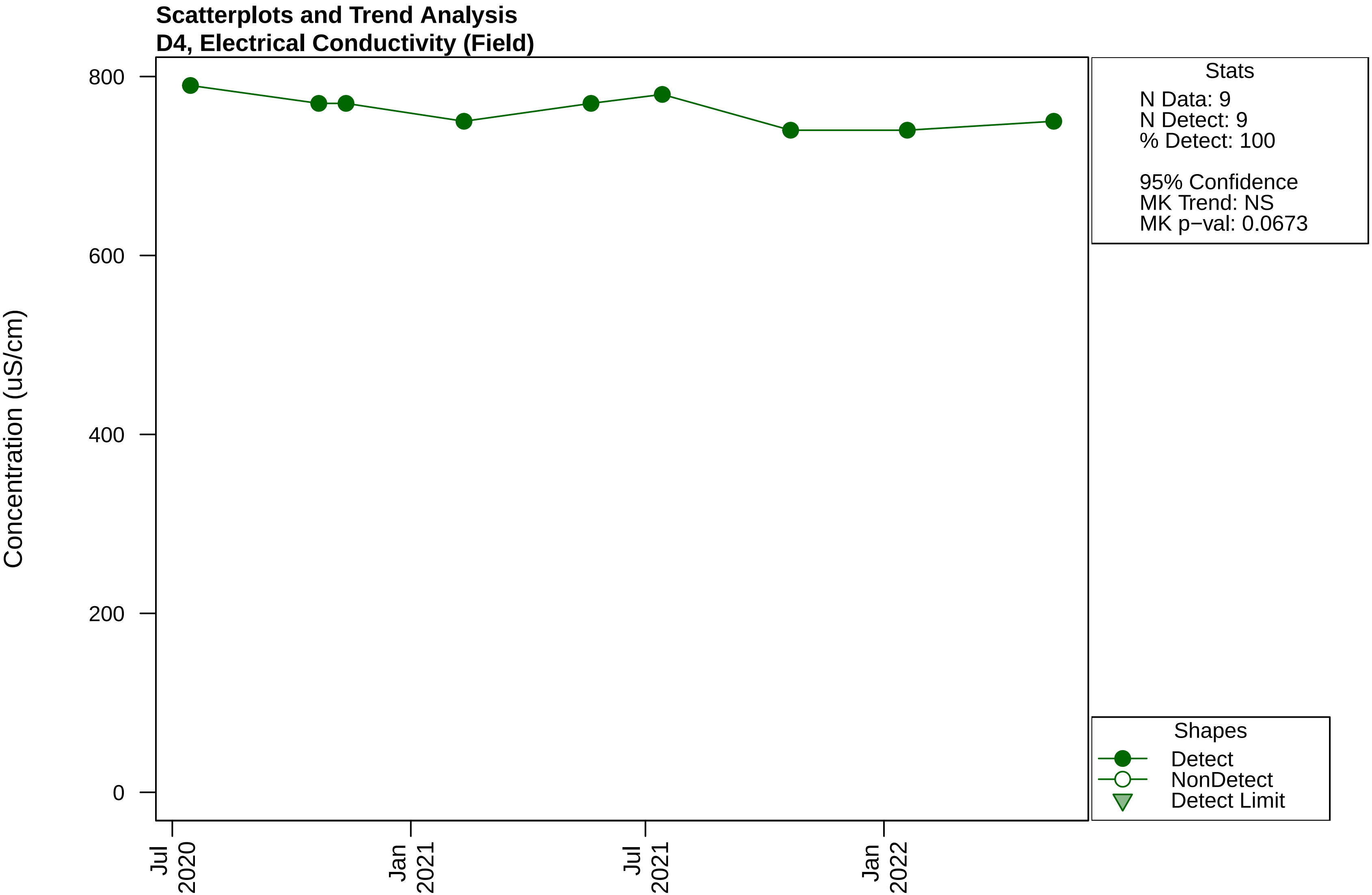
Scatterplots and Trend Analysis
D4, Copper (Filtered)



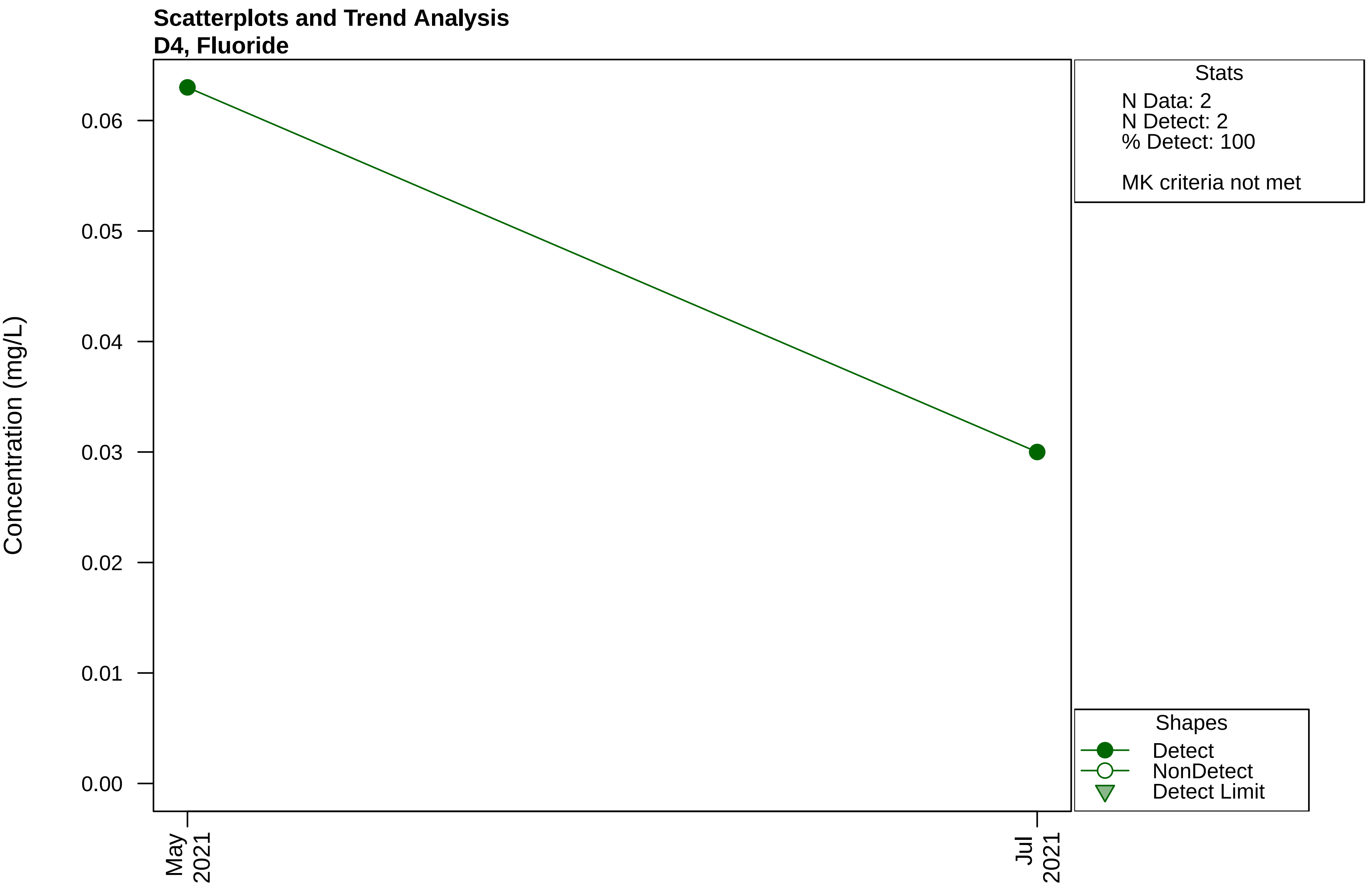

Scatterplots and Trend Analysis
D4, Dissolved Oxygen (Field)
Concentration (na)
1.2
1.0
0.8
0.6
0.4
0.2
0.0
Feb 2021
May 2021
Stats
N Data: 2
N Detect: 2
% Detect: 100
MK criteria not met
Shapes
Detect
NonDetect
Detect Limit



Scatterplots and Trend Analysis
D4, Dissolved Oxygen (Field) (Filtered)
Concentration (mg/L)
10
8
6
4
2
0
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 4
N Detect: 4
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.071
Shapes
Detect
NonDetect
Detect Limit

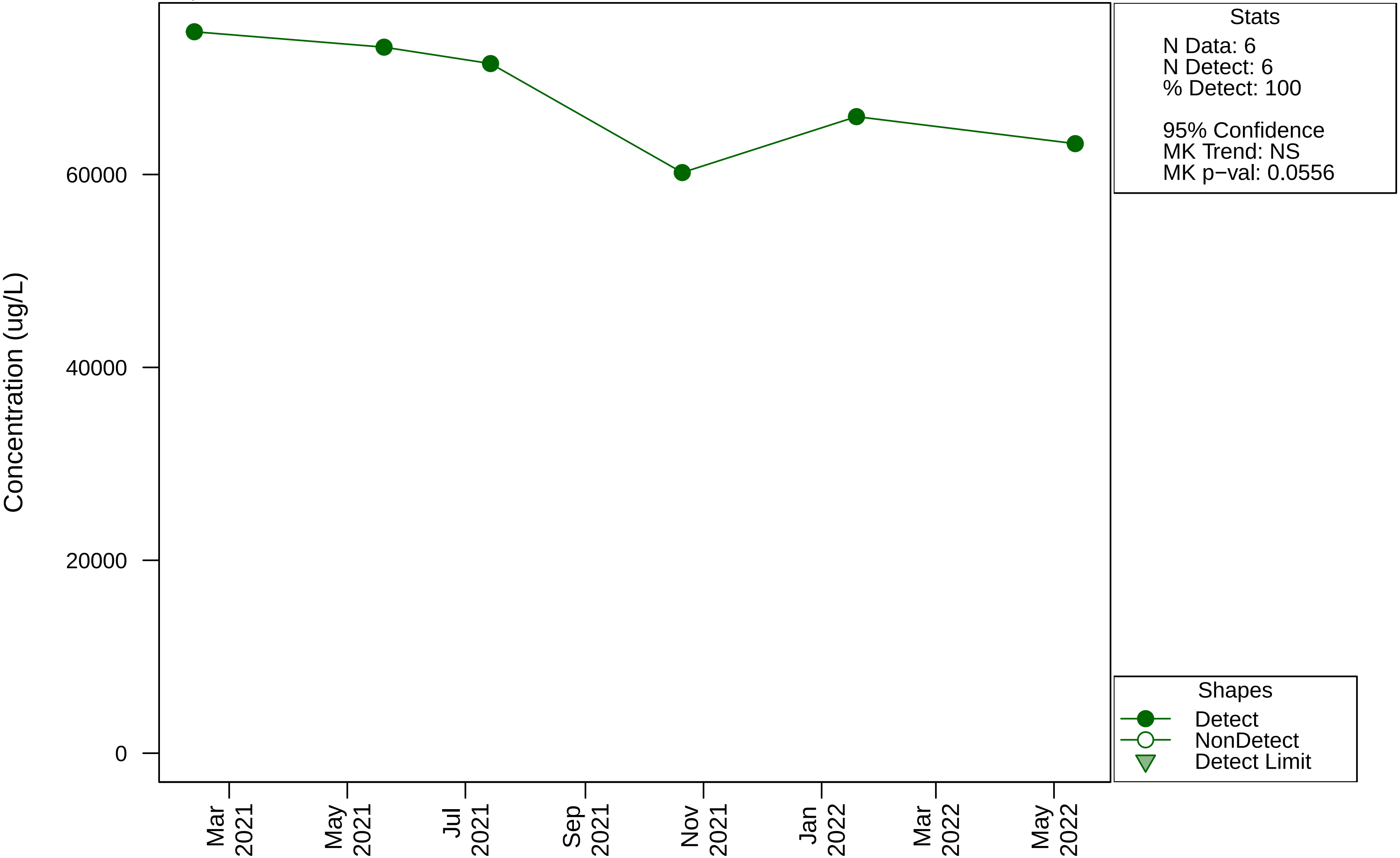


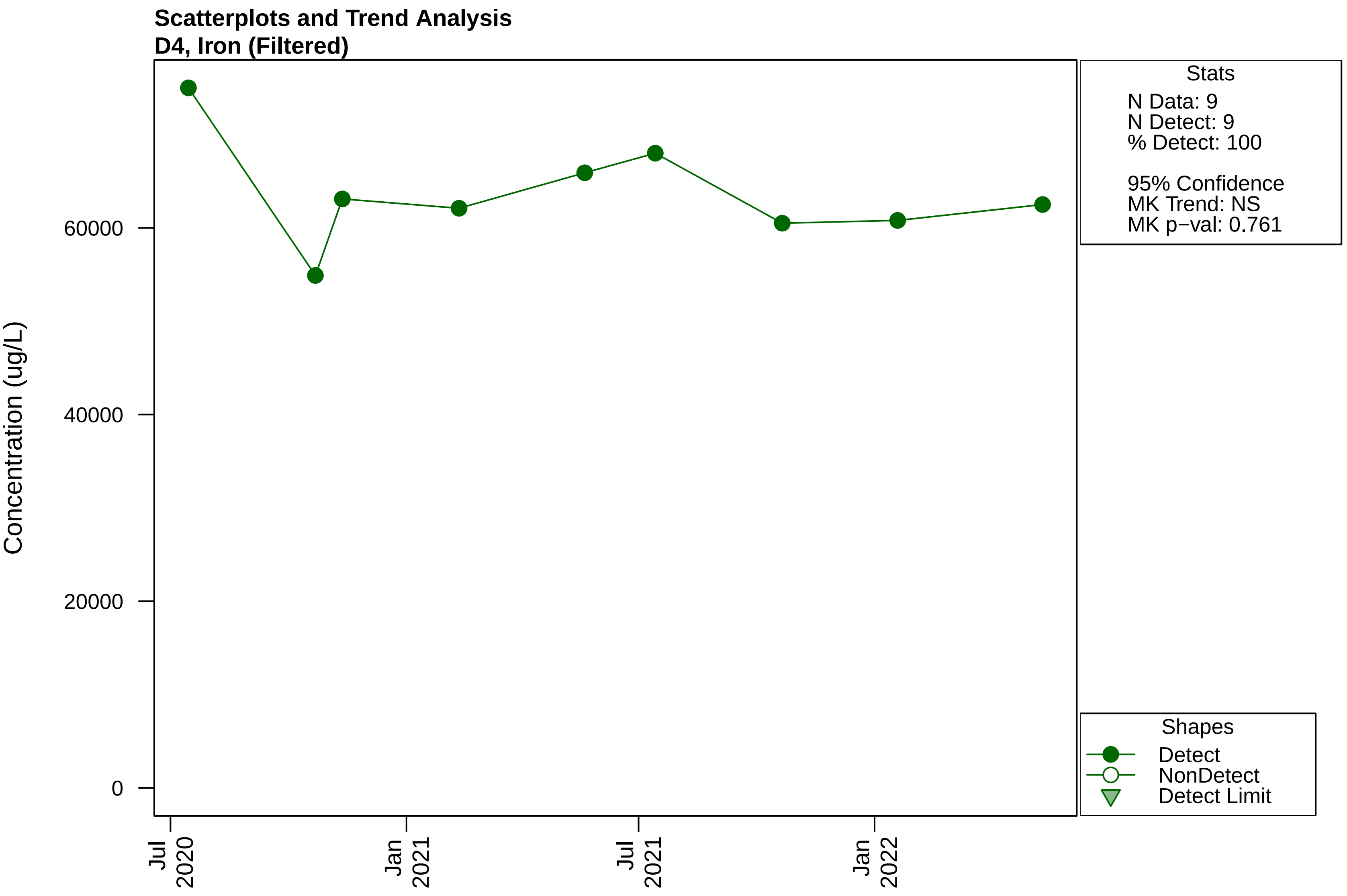
Scatterplots and Trend Analysis
D4, Electrical Conductivity (Field)
Concentration (uS/cm)
800
600
400
200
0
Jul 2020
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 9
N Detect: 9
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.0673
Shapes
Detect
NonDetect
Detect Limit

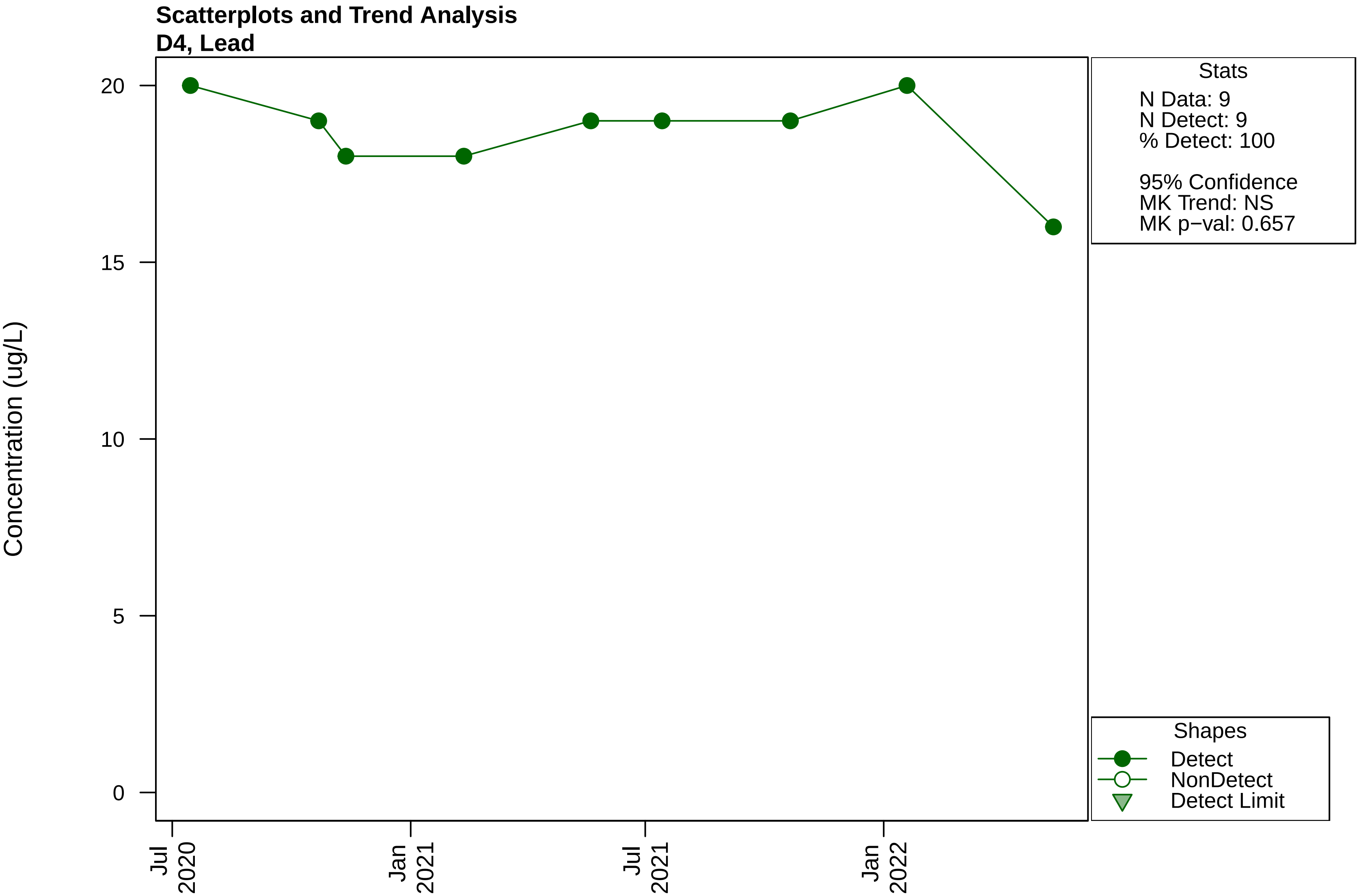


Scatterplots and Trend Analysis
D4, Fluoride
Concentration (mg/L)
0.06
0.05
0.04
0.03
0.02
0.01
0.00
May 2021
Jul 2021
Stats
N Data: 2
N Detect: 2
% Detect: 100
MK criteria not met
Shapes
Detect
NonDetect
Detect Limit

Scatterplots and Trend Analysis
D4, Iron

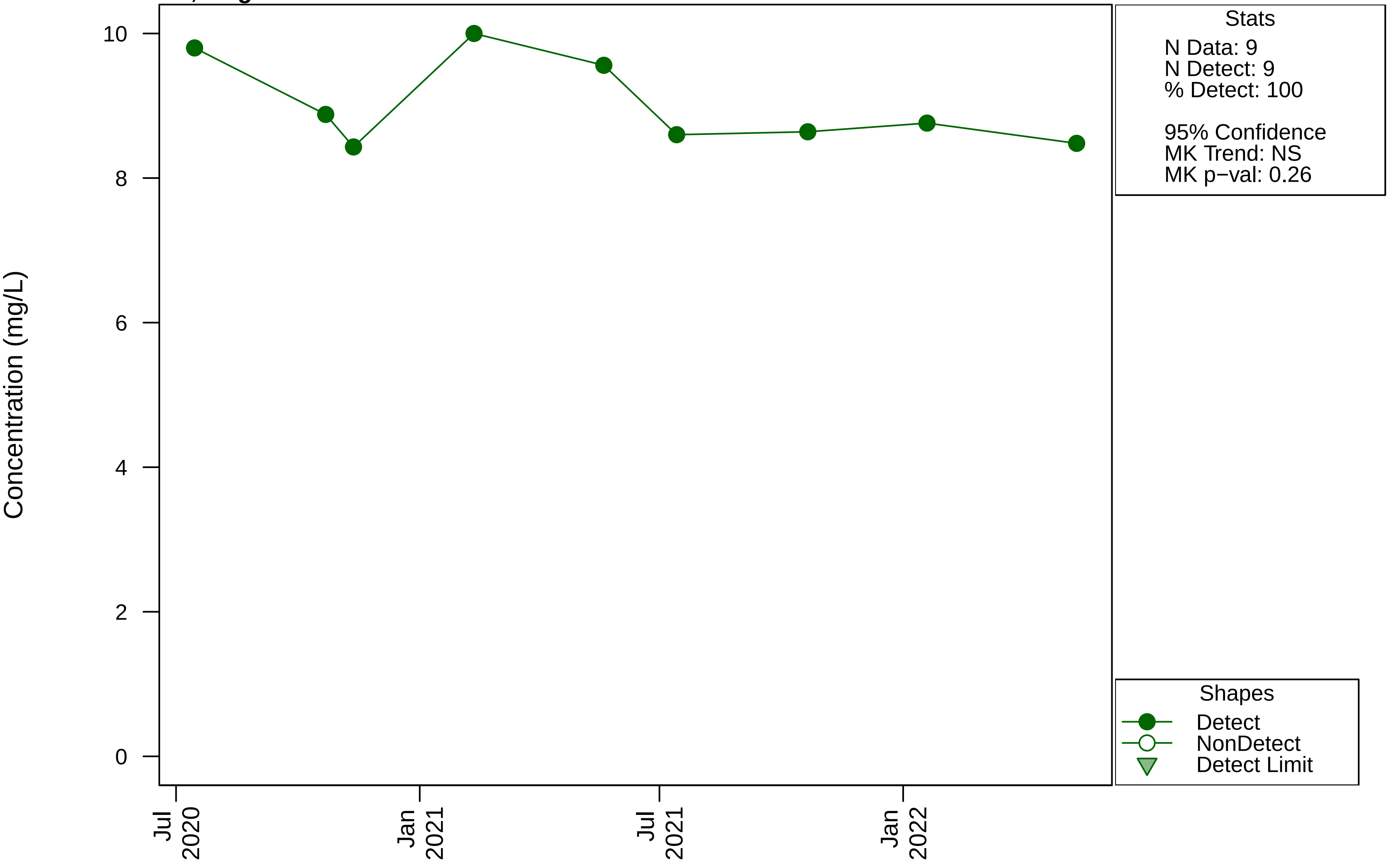


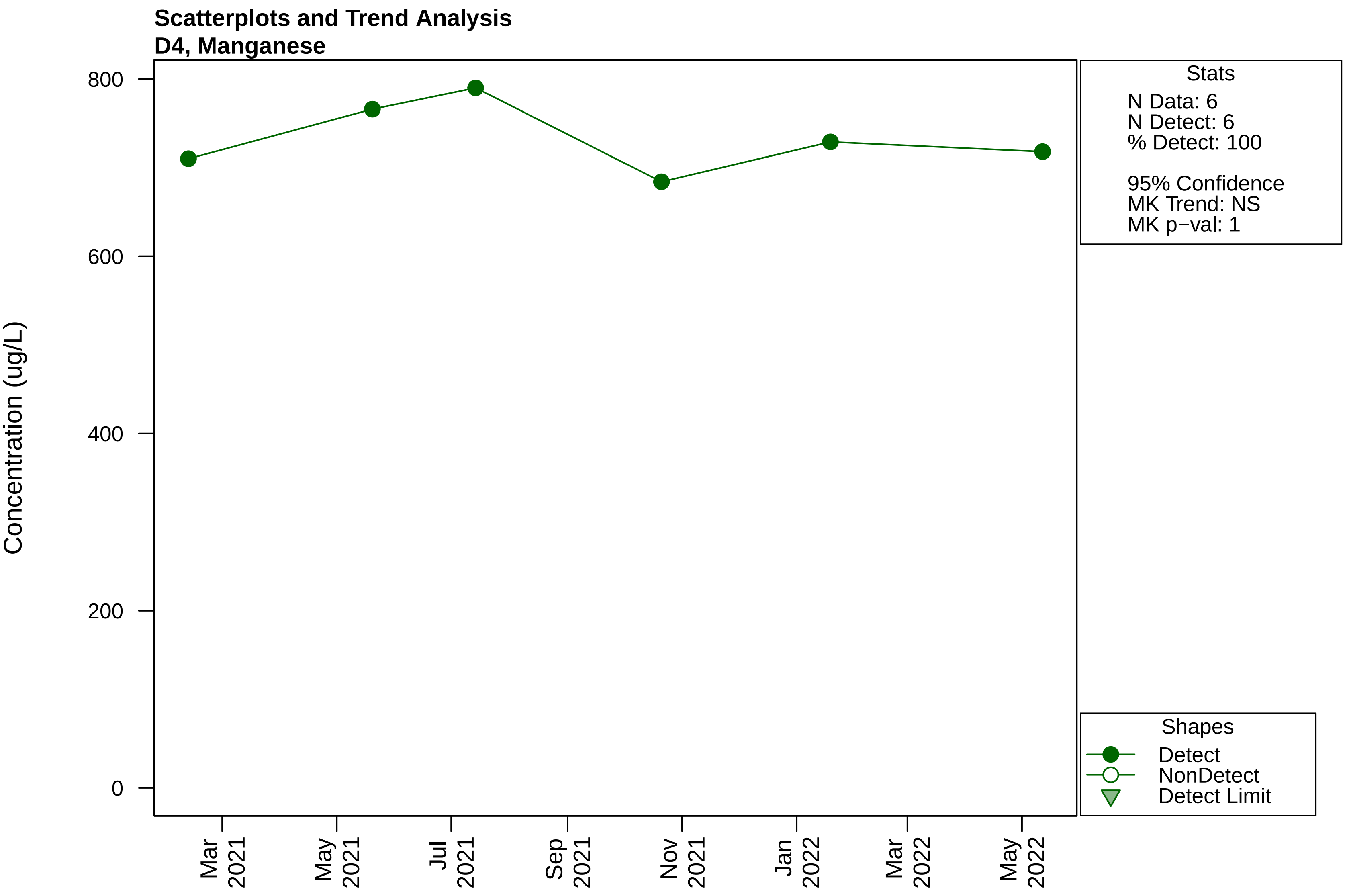

Scatterplots and Trend Analysis
D4, Iron (Filtered)
Stats
N Data: 9
N Detect: 9
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.761
Shapes
Detect
NonDetect
Detect Limit
Concentration (ug/L)
0
20000
40000
60000
Jul 2020
Jan 2021
Jul 2021
Jan 2022



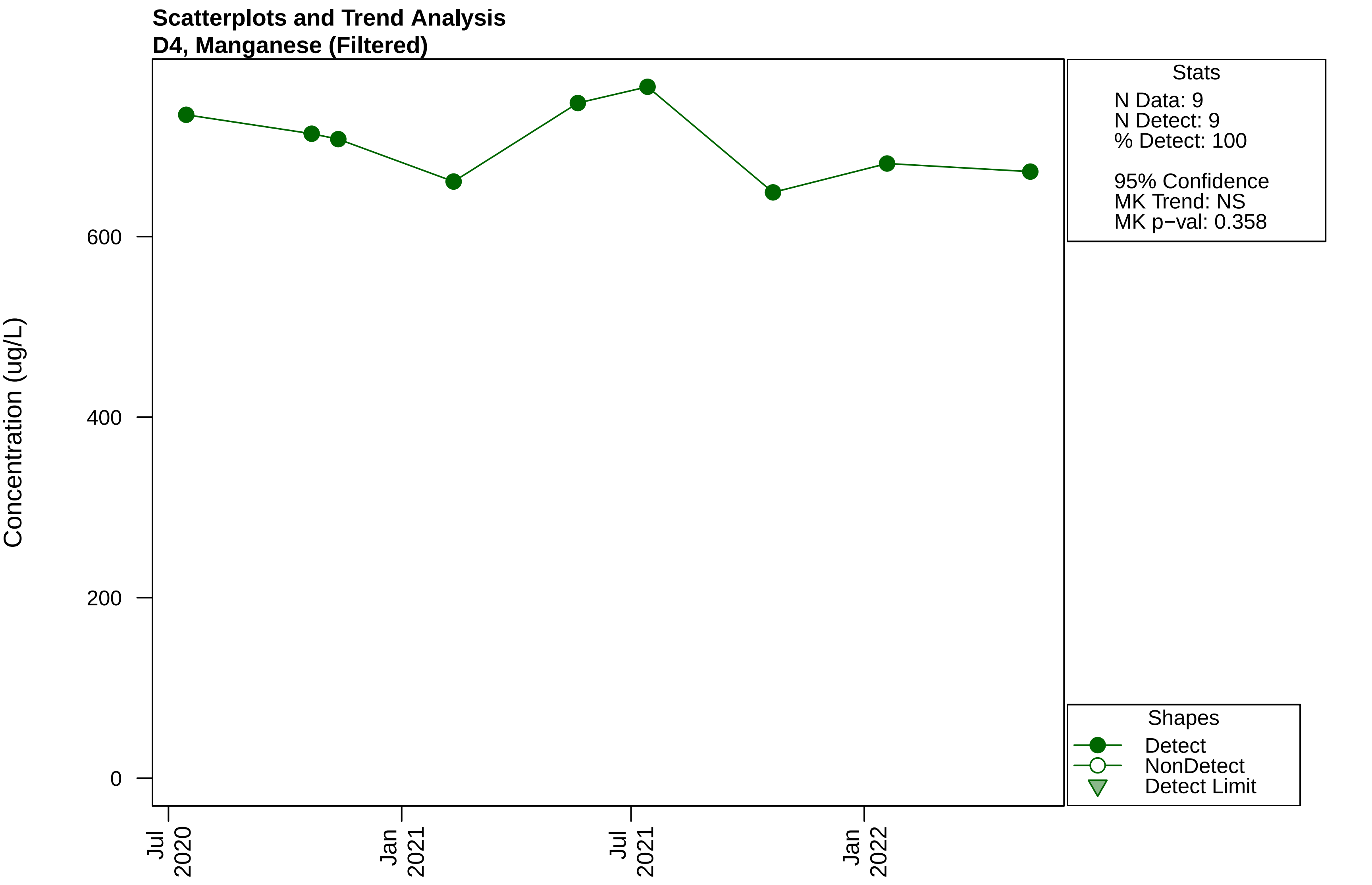
Scatterplots and Trend Analysis
D4, Lead
Concentration (ug/L)
20
15
10
5
0
Jul 2020
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 9
N Detect: 9
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.657
Shapes
Detect
NonDetect
Detect Limit

Scatterplots and Trend Analysis
D4, Magnesium



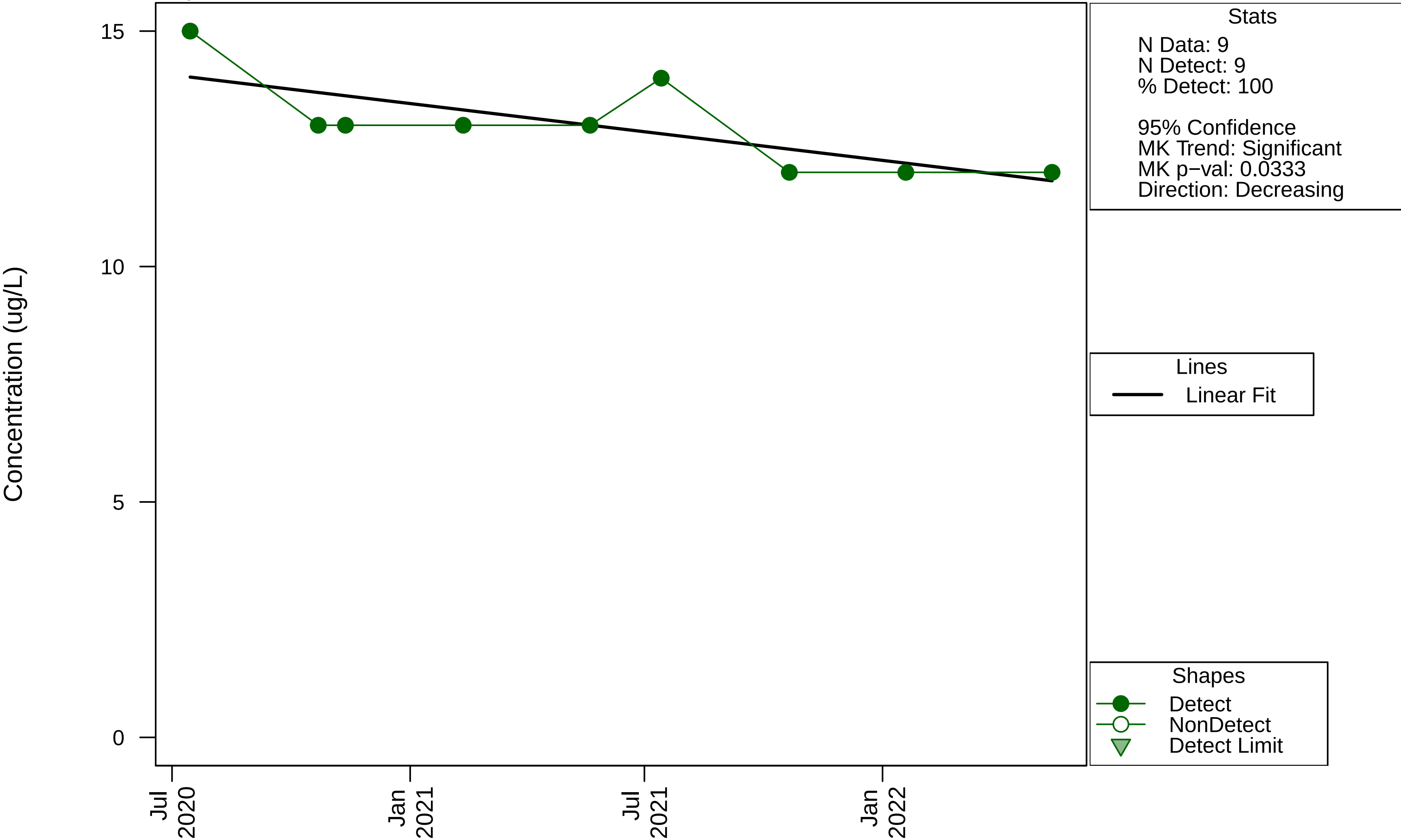


Scatterplots and Trend Analysis
D4, Manganese
Concentration (ug/L)
0
200
400
600
800
Mar 2021
May 2021
Jul 2021
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 6
N Detect: 6
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 1
Shapes
Detect
NonDetect
Detect Limit

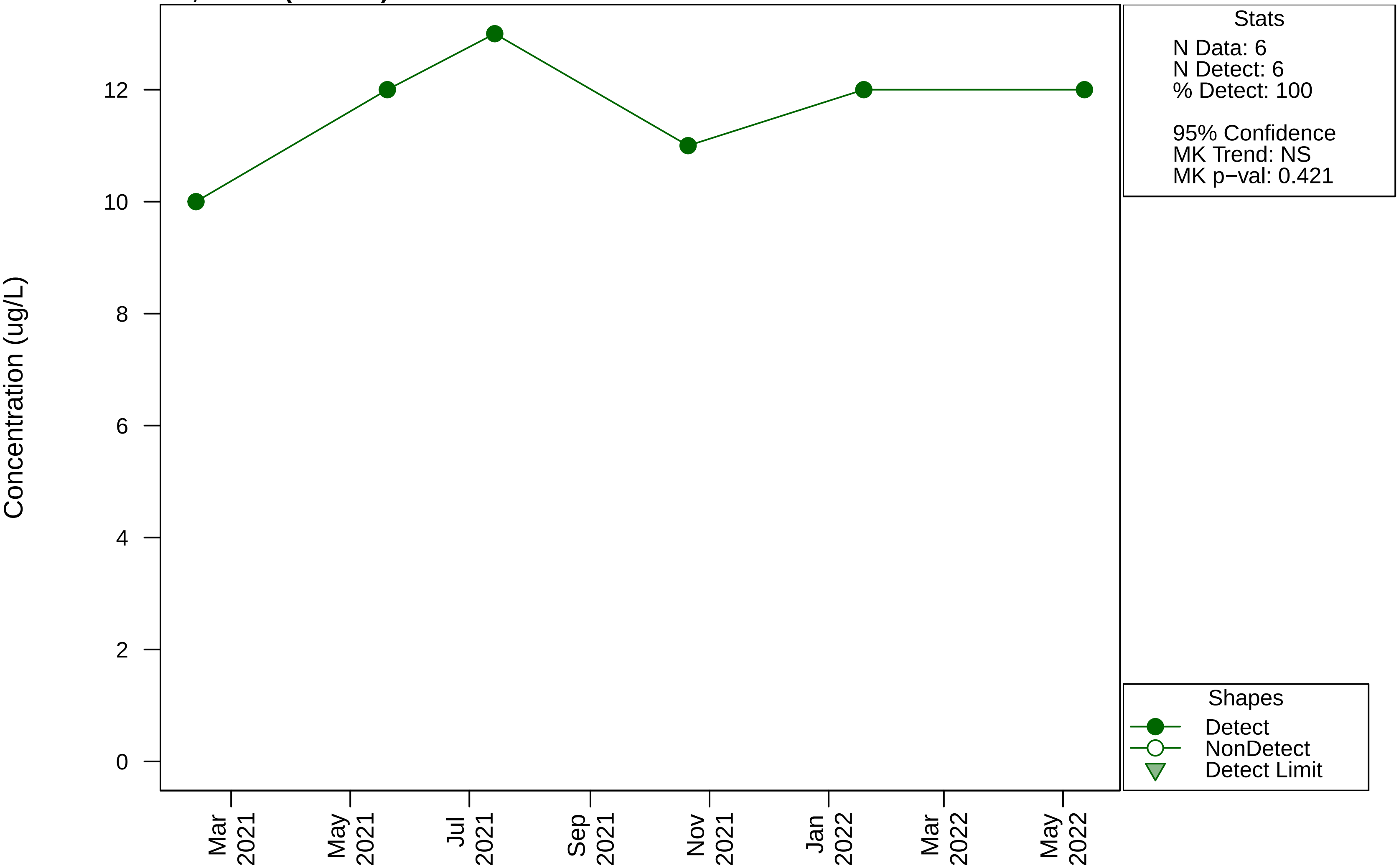


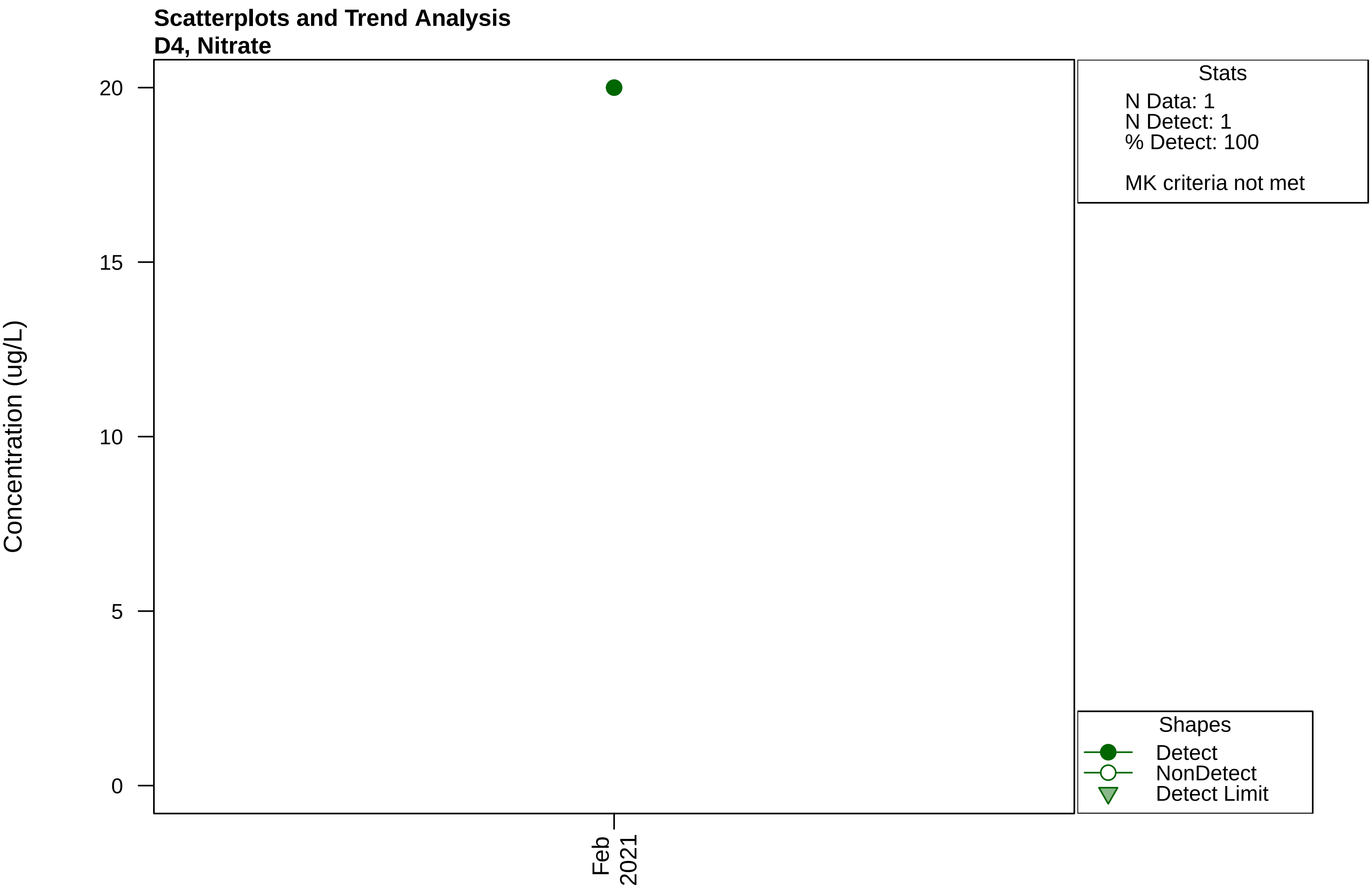
Scatterplots and Trend Analysis
D4, Manganese (Filtered)
Concentration (ug/L)
0
200
400
600
Jul 2020
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 9
N Detect: 9
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.358
Shapes
Detect
NonDetect
Detect Limit

Scatterplots and Trend Analysis
D4, Nickel

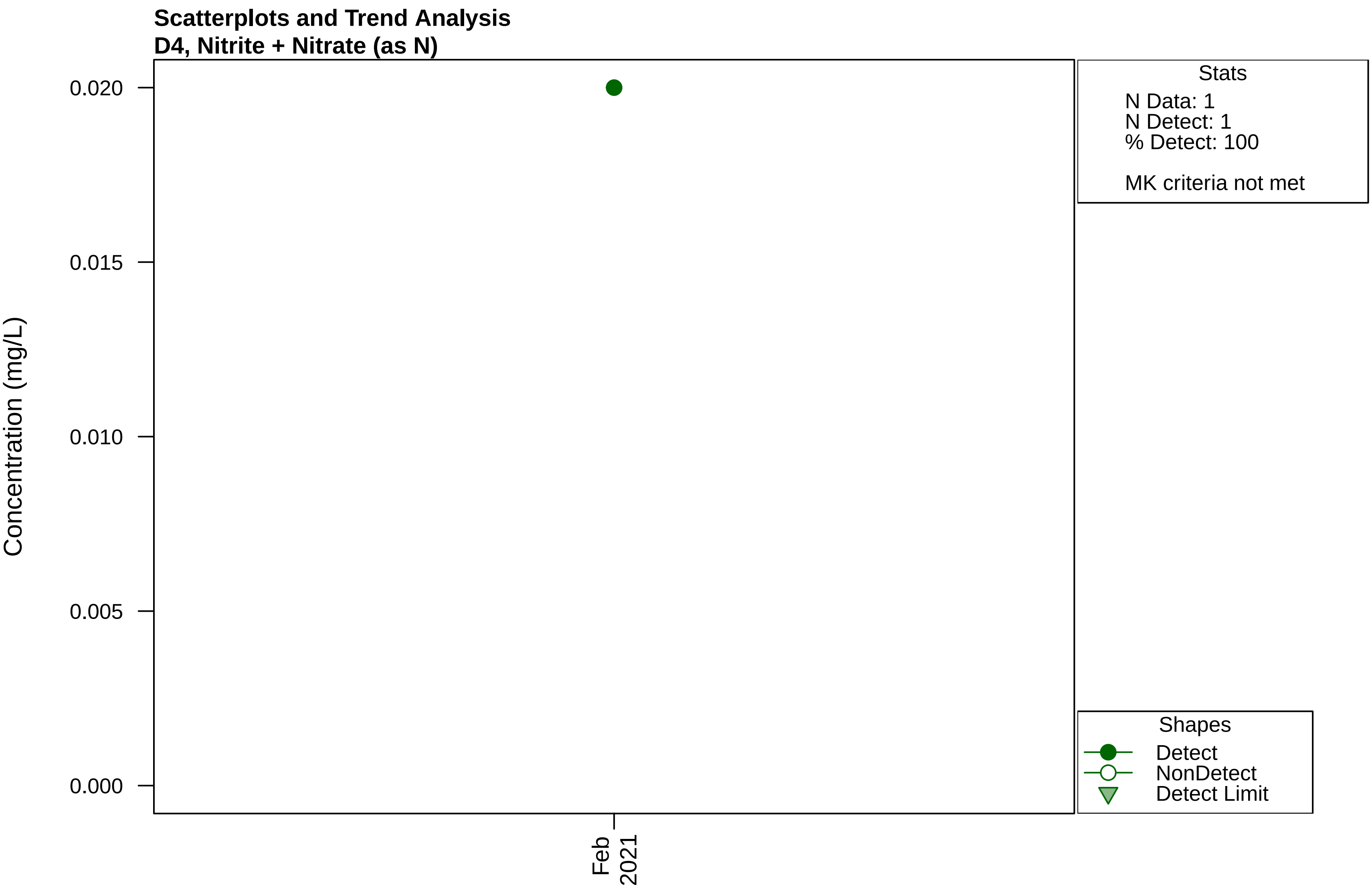


Scatterplots and Trend Analysis
D4, Nickel (Filtered)

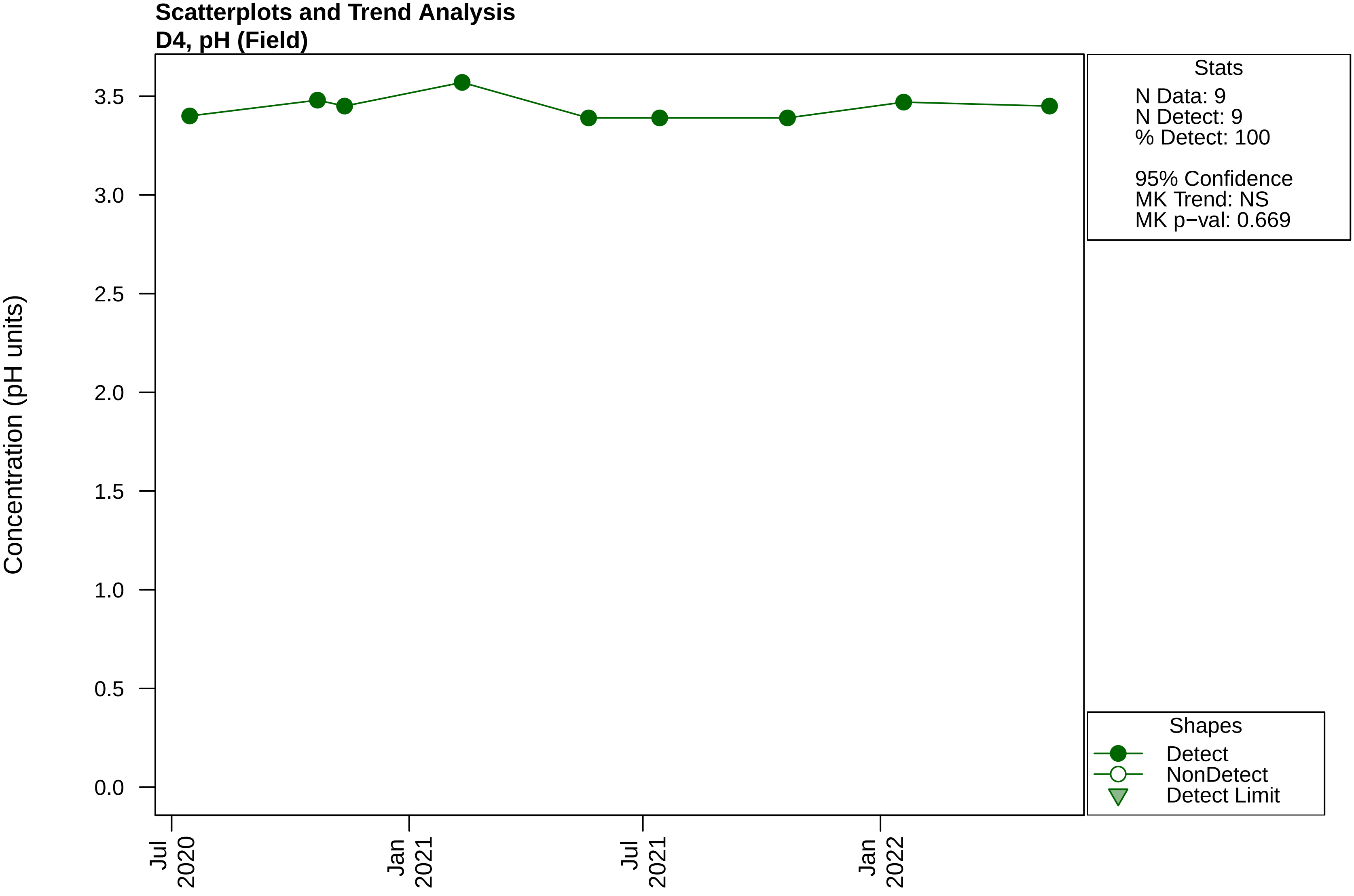




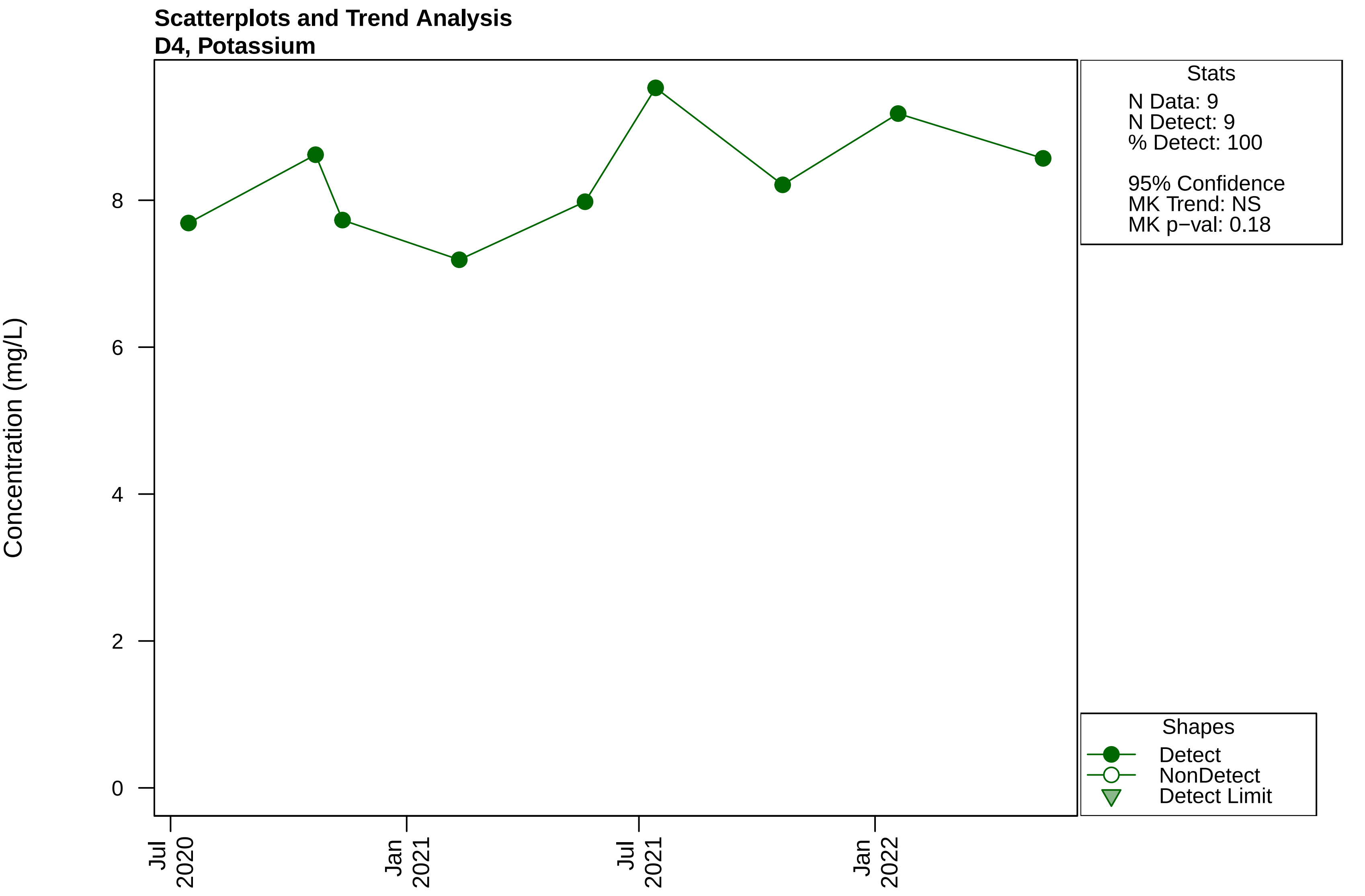
Scatterplots and Trend Analysis
D4, Nitrate
Concentration (ug/L)
0
5
10
15
20
Feb 2021
Stats
N Data: 1
N Detect: 1
% Detect: 100
MK criteria not met
Shapes
Detect
NonDetect
Detect Limit



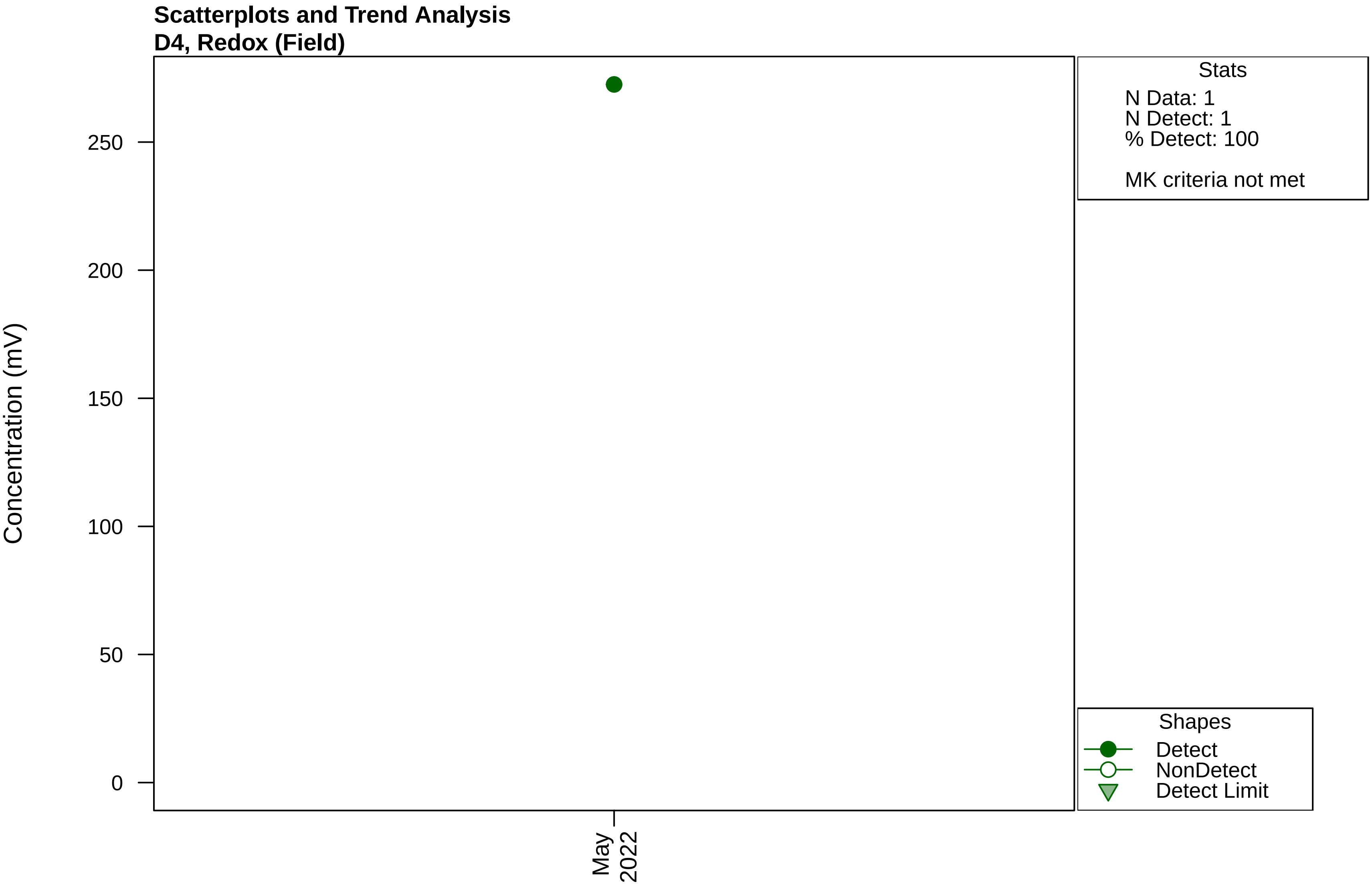
Scatterplots and Trend Analysis
D4, Nitrite + Nitrate (as N)
Concentration (mg/L)
0.020
0.015
0.010
0.005
0.000
Feb 2021
Stats
N Data: 1
N Detect: 1
% Detect: 100
MK criteria not met
Shapes
Detect
NonDetect
Detect Limit

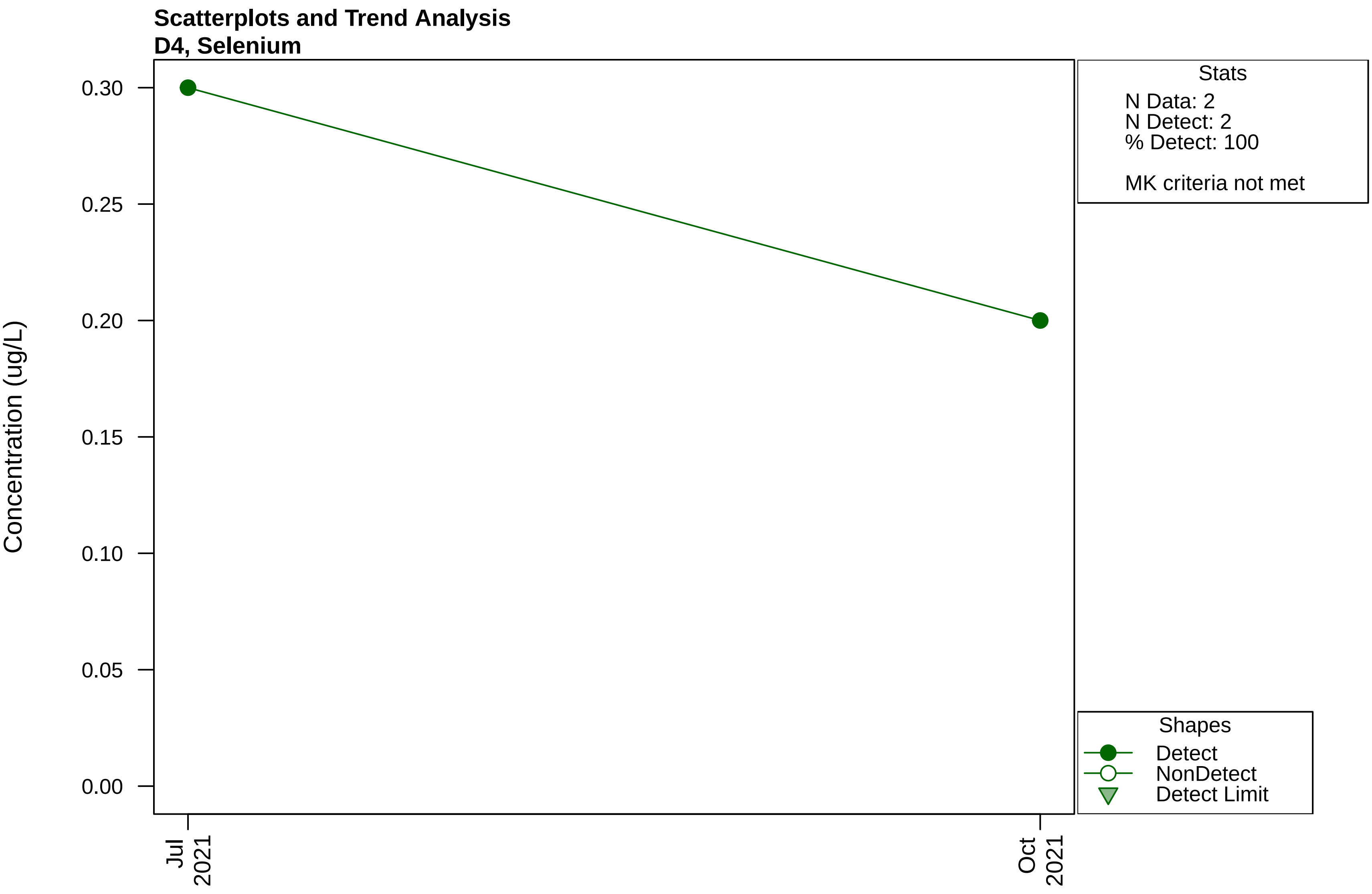


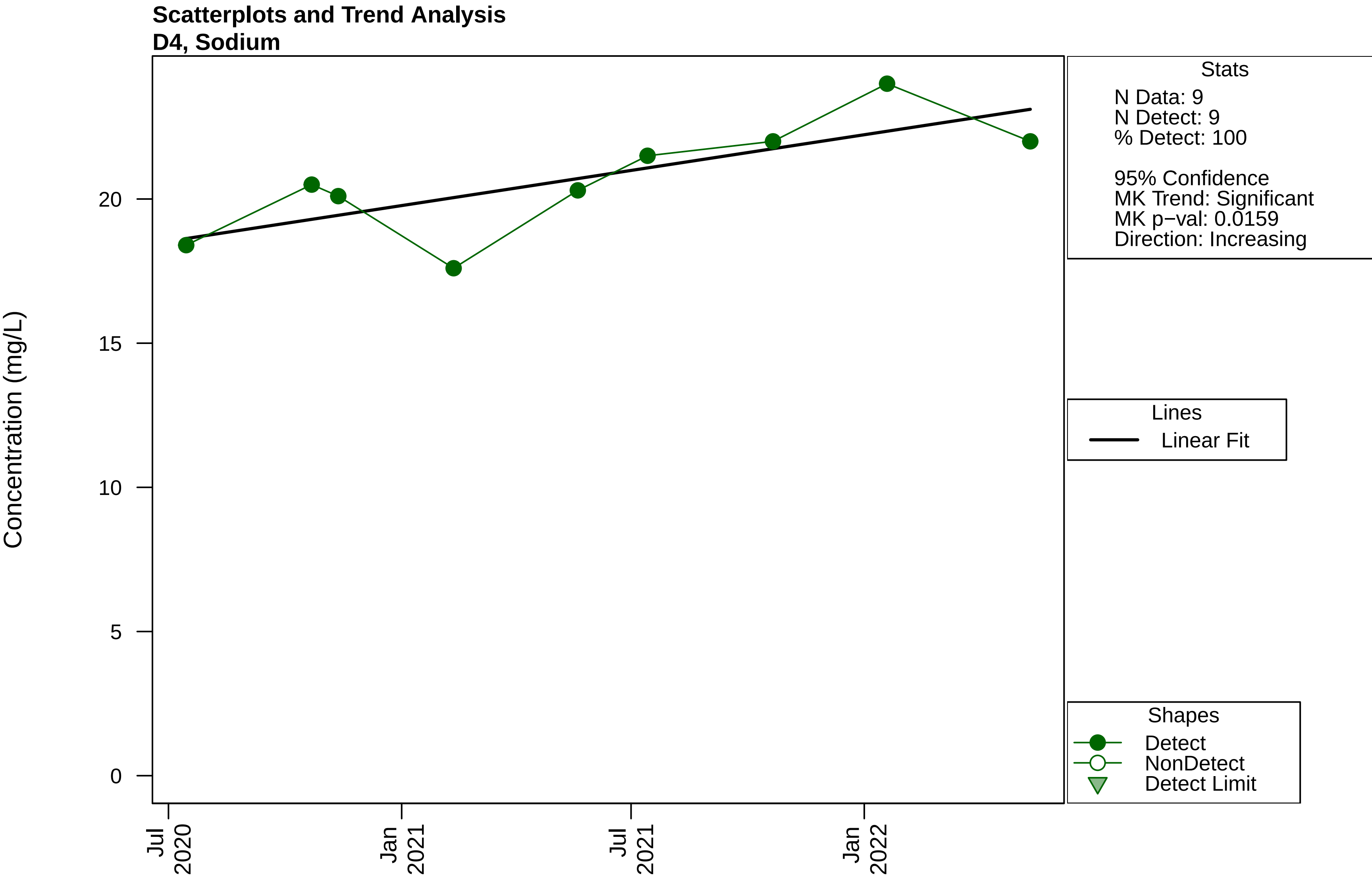
Scatterplots and Trend Analysis
D4, pH (Field)
Concentration (pH units)
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
Jul 2020
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 9
N Detect: 9
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.669
Shapes
Detect
NonDetect
Detect Limit



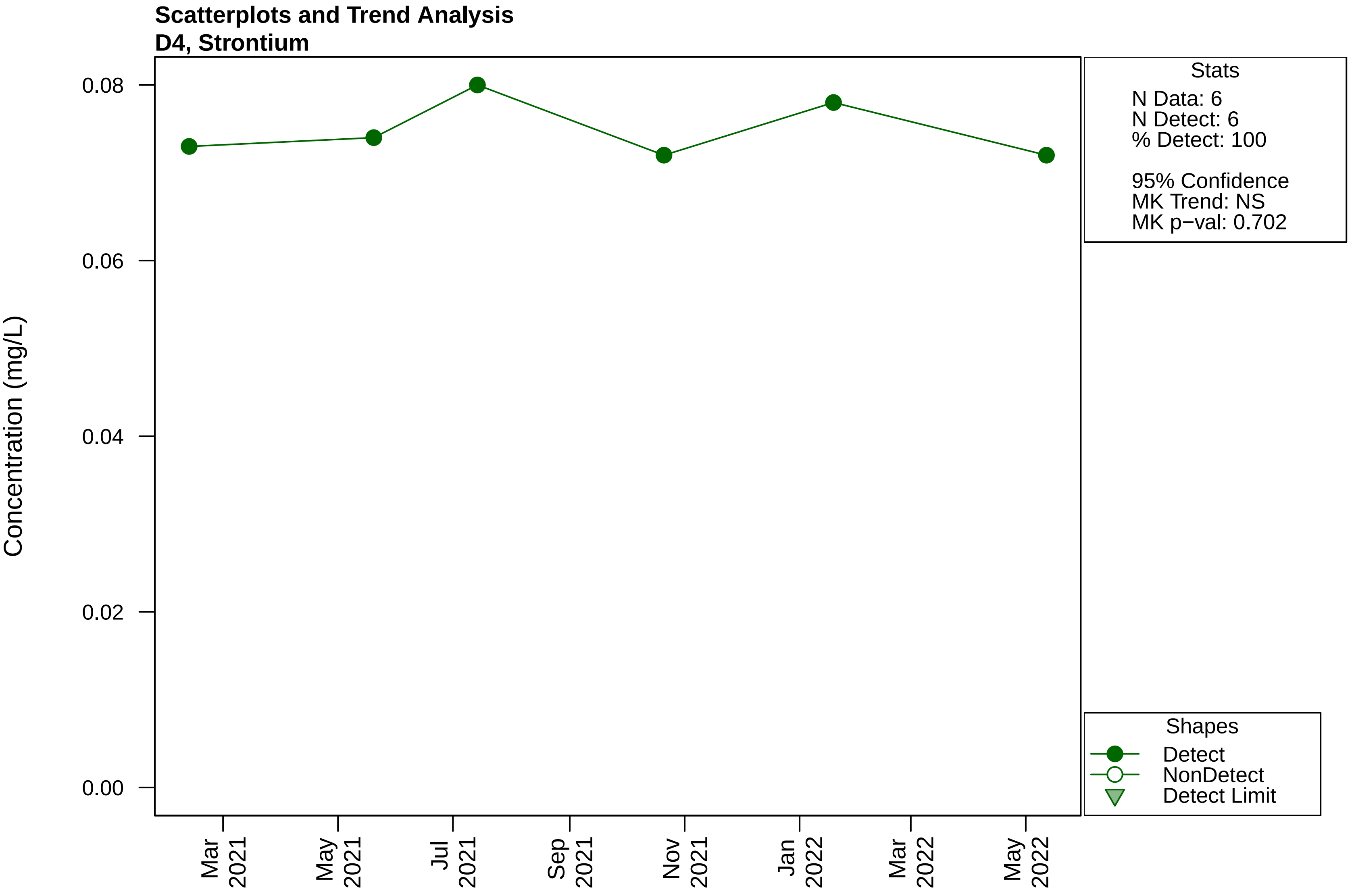
Scatterplots and Trend Analysis
D4, Potassium
Concentration (mg/L)
0
2
4
6
8
Jul 2020
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 9
N Detect: 9
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.18
Shapes
Detect
NonDetect
Detect Limit

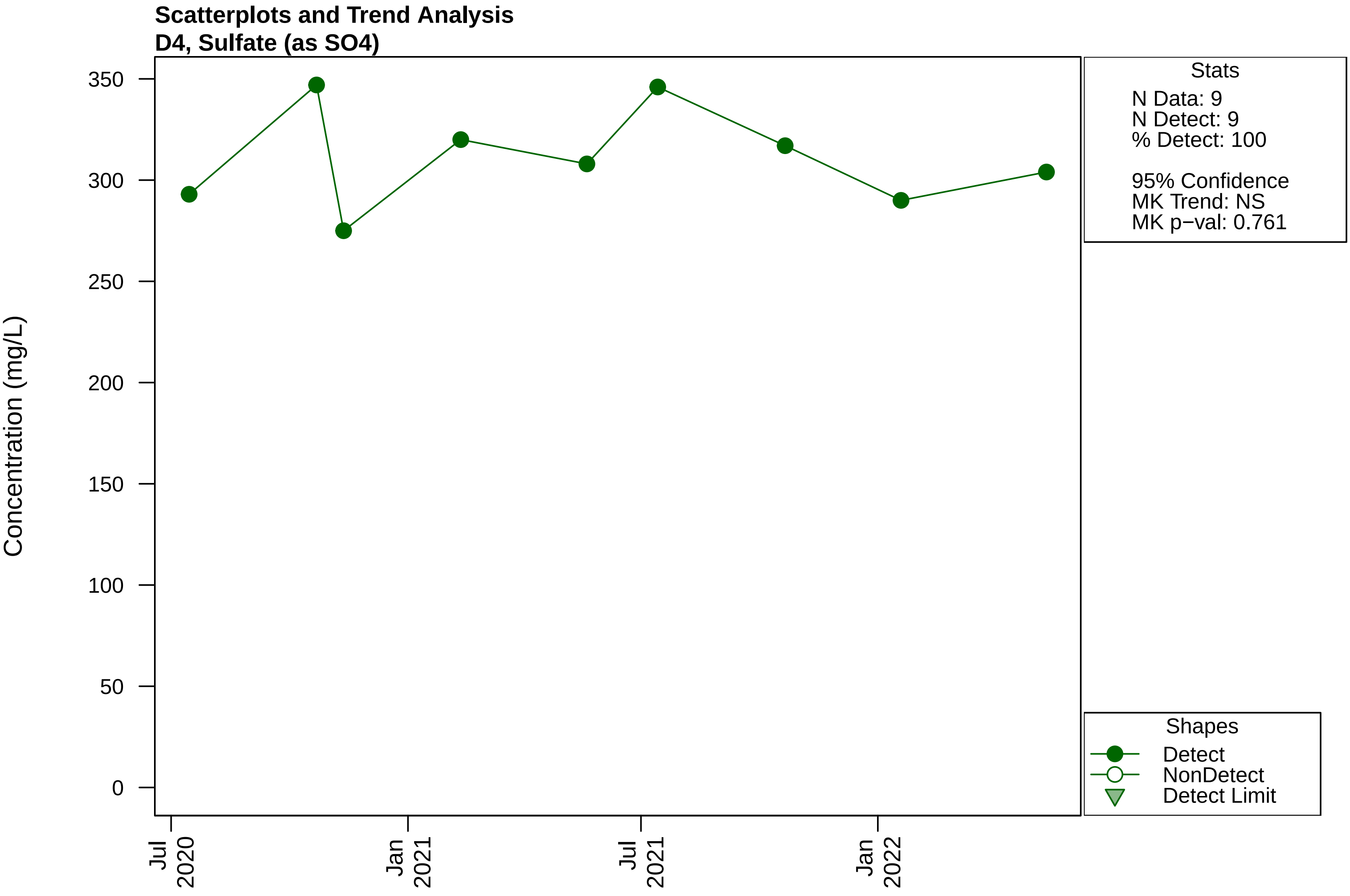

Scatterplots and Trend Analysis
D4, Redox (Field)
Concentration (mV)
0
50
100
150
200
250
May
2022
Stats
N Data: 1
N Detect: 1
% Detect: 100
MK criteria not met
Shapes
Detect
NonDetect
Detect Limit


Scatterplots and Trend Analysis
D4, Selenium
Concentration (ug/L)
0.30
0.25
0.20
0.15
0.10
0.05
0.00
Jul 2021
Oct 2021
Stats
N Data: 2
N Detect: 2
% Detect: 100
MK criteria not met
Shapes
Detect
NonDetect
Detect Limit

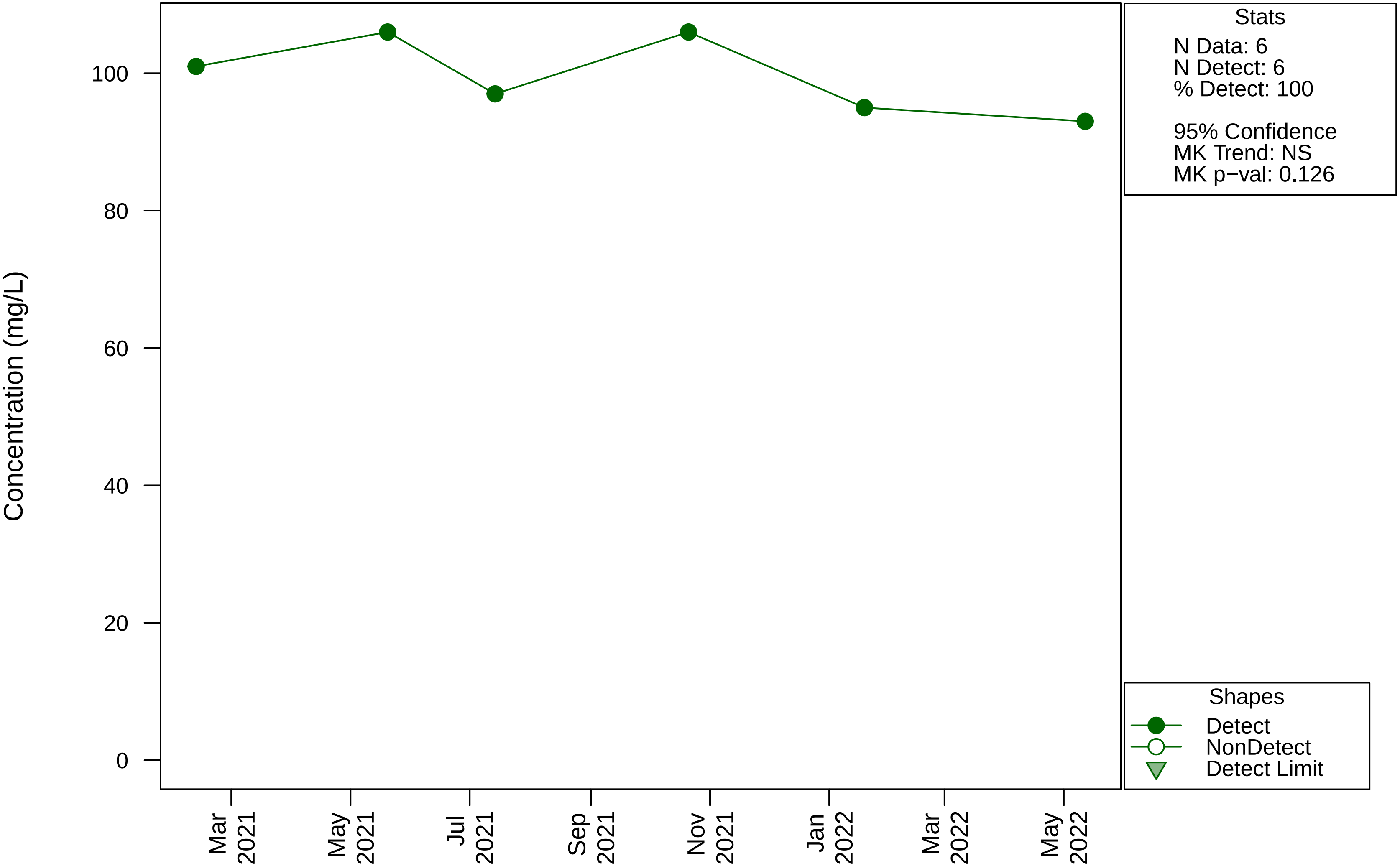


Scatterplots and Trend Analysis
D4, Sodium
Concentration (mg/L)
0
5
10
15
20
Jul 2020
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 9
N Detect: 9
% Detect: 100
95% Confidence
MK Trend: Significant
MK p−val: 0.0159
Direction: Increasing
Lines
Linear Fit
Shapes
Detect
NonDetect
Detect Limit

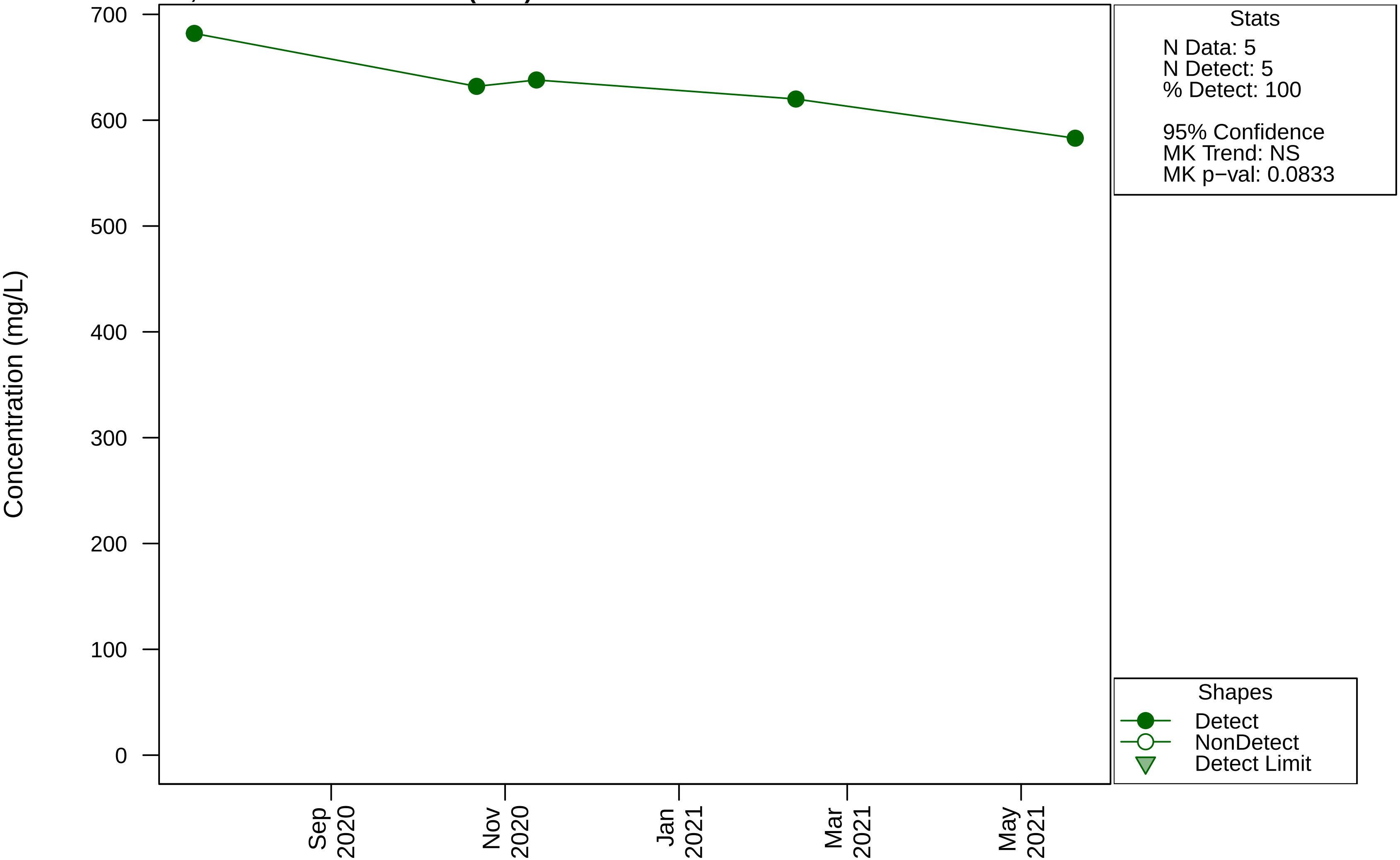

Scatterplots and Trend Analysis
D4, Strontium
Concentration (mg/L)
0.08
0.06
0.04
0.02
0.00
Mar 2021
May 2021
Jul 2021
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 6
N Detect: 6
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.702
Shapes
Detect
NonDetect
Detect Limit

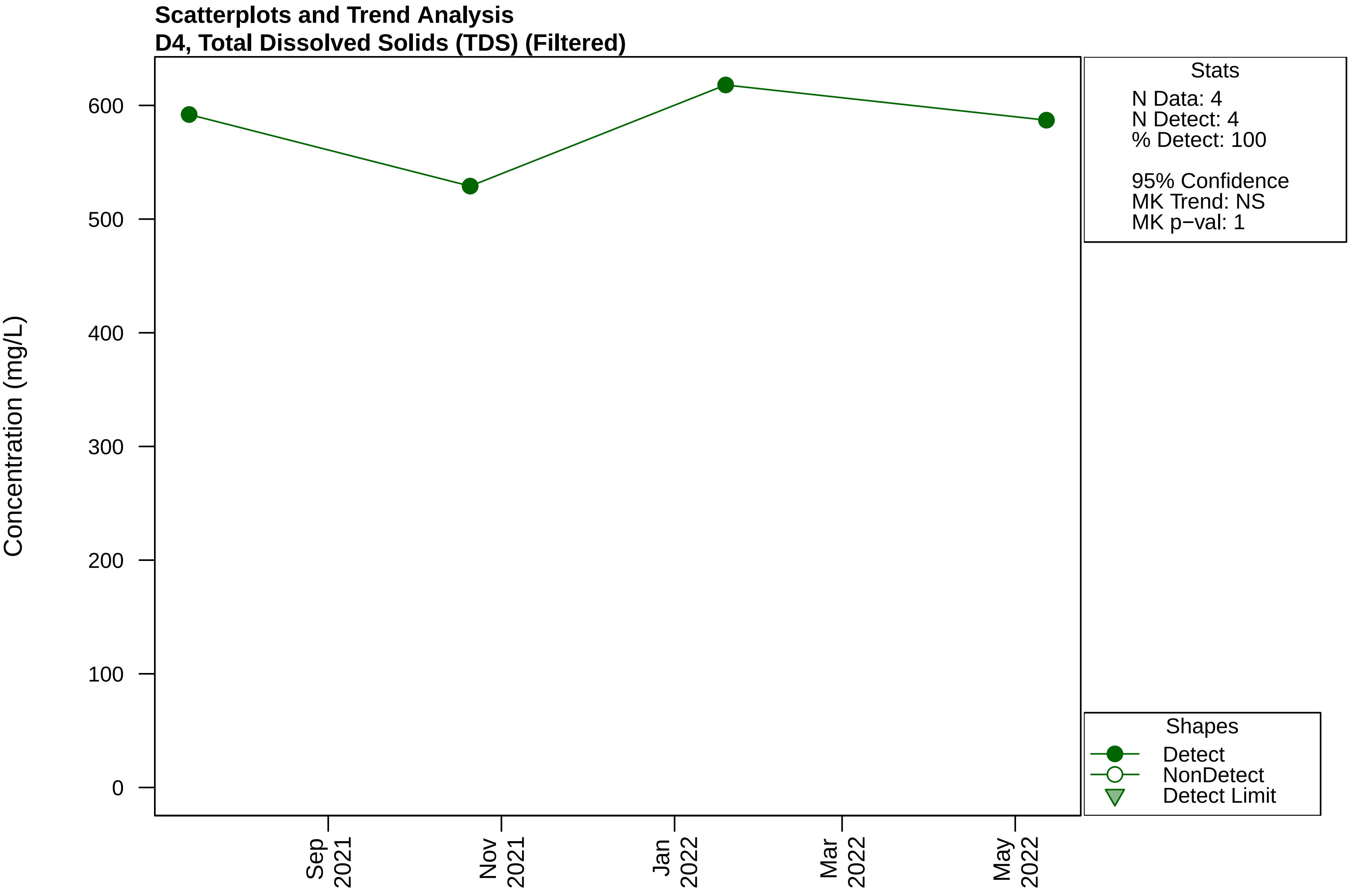

Scatterplots and Trend Analysis
D4, Sulfate (as SO4)
Concentration (mg/L)
350
300
250
200
150
100
50
0
Jul 2020
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 9
N Detect: 9
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.761
Shapes
Detect
NonDetect
Detect Limit

Scatterplots and Trend Analysis
D4, Sulfur

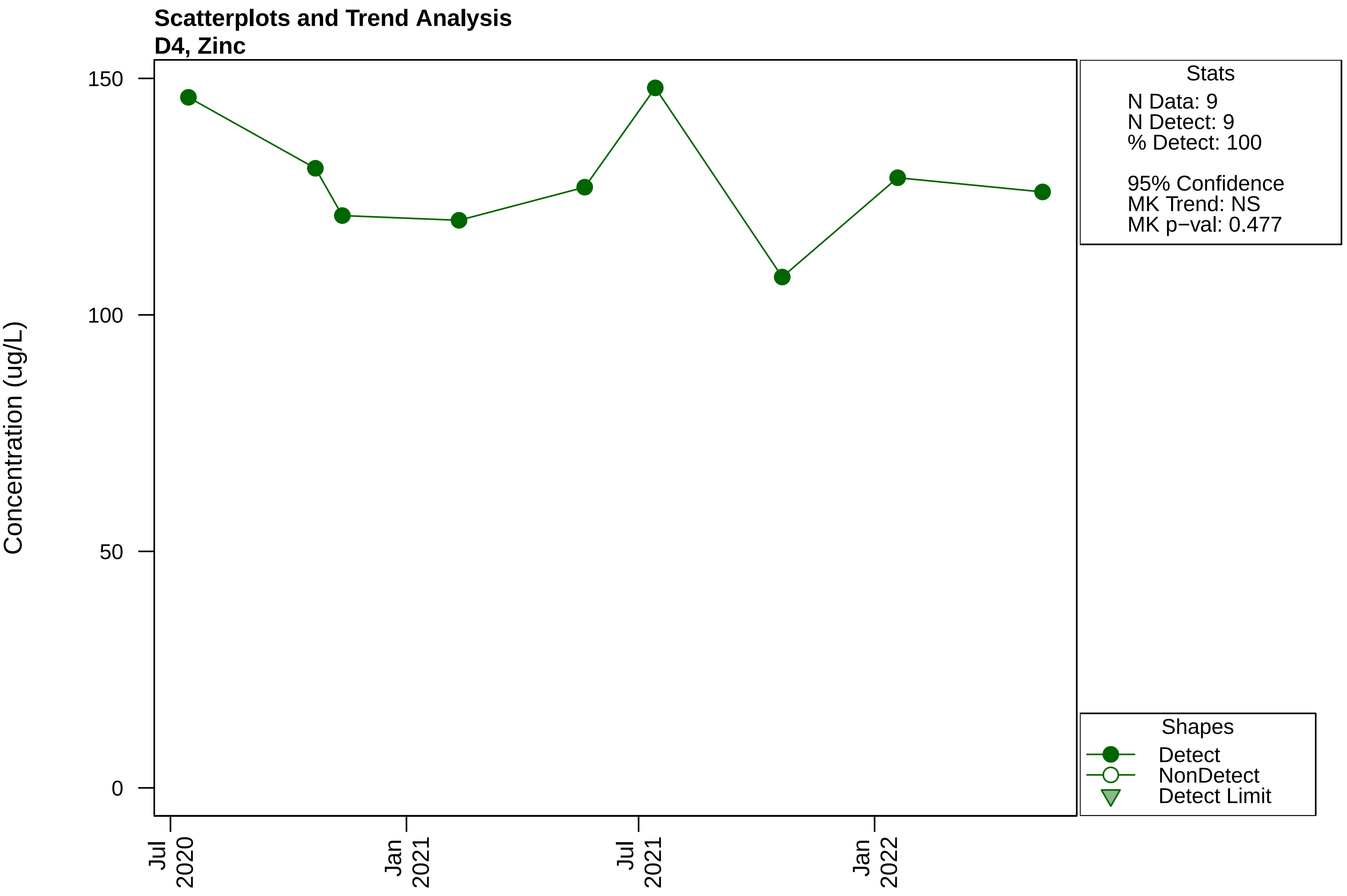


Scatterplots and Trend Analysis
D4, Total Dissolved Solids (TDS)

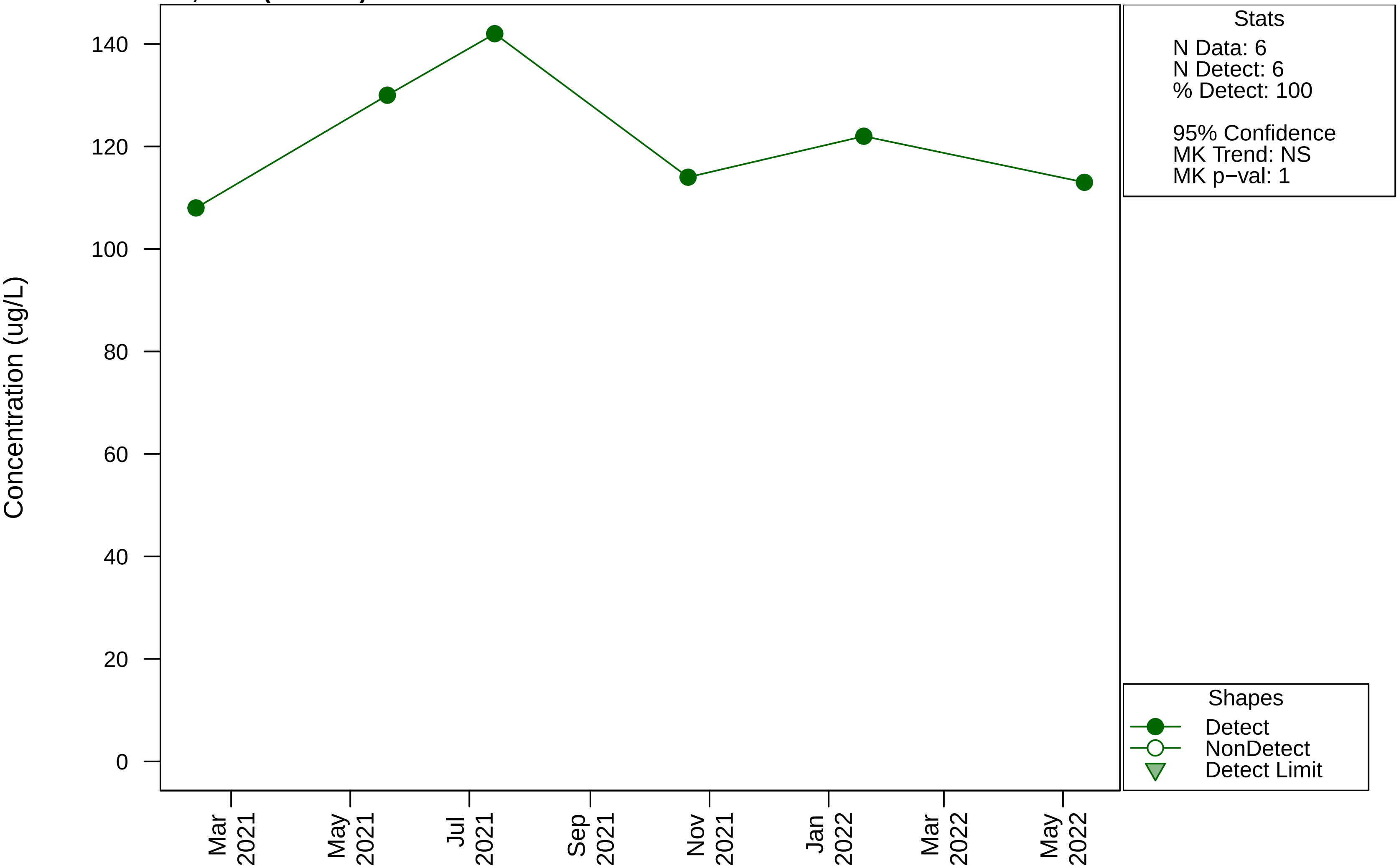


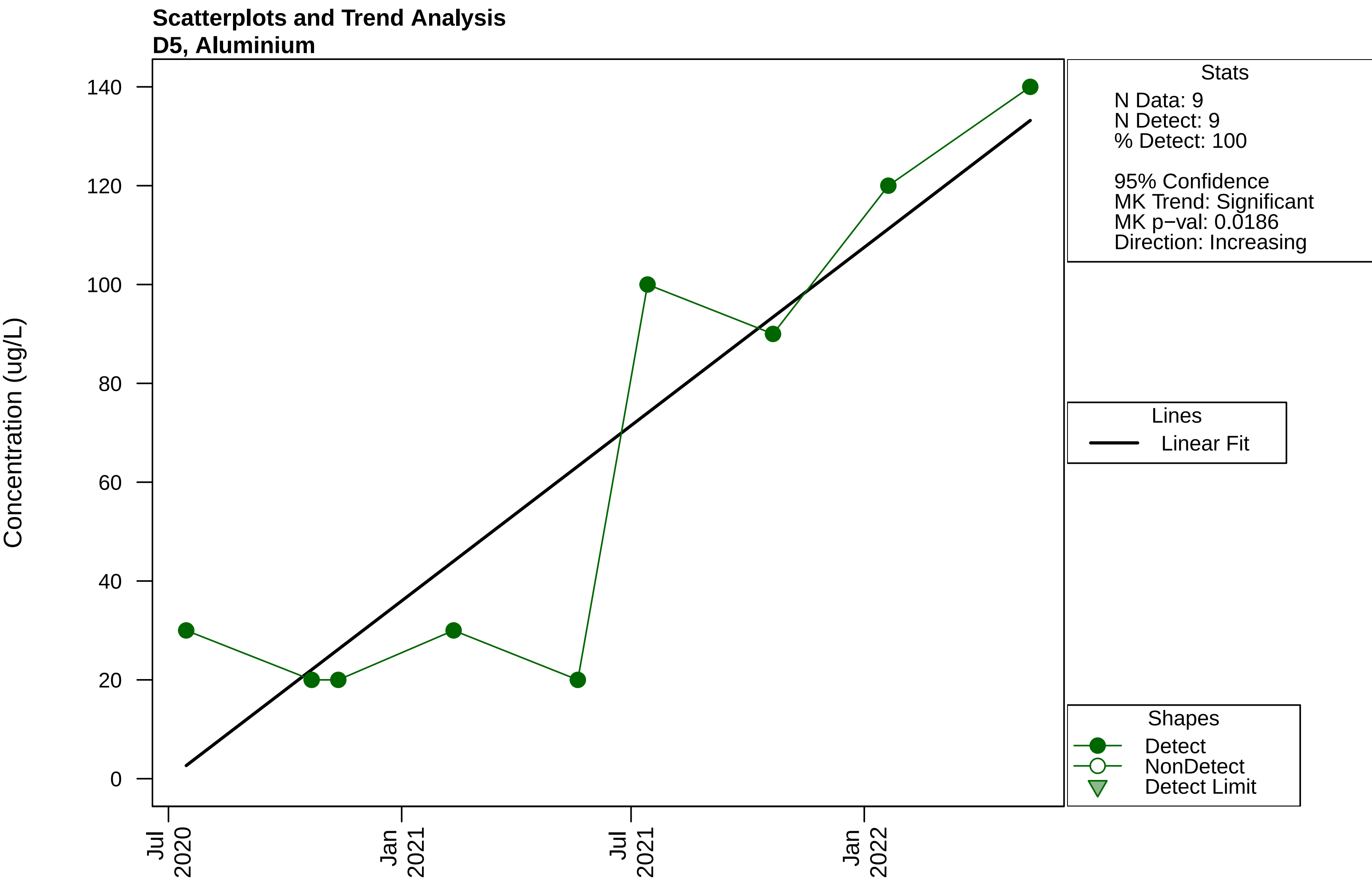


Scatterplots and Trend Analysis
D4, Total Dissolved Solids (TDS) (Filtered)
Concentration (mg/L)
0
100
200
300
400
500
600
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 4
N Detect: 4
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 1
Shapes
Detect
NonDetect
Detect Limit

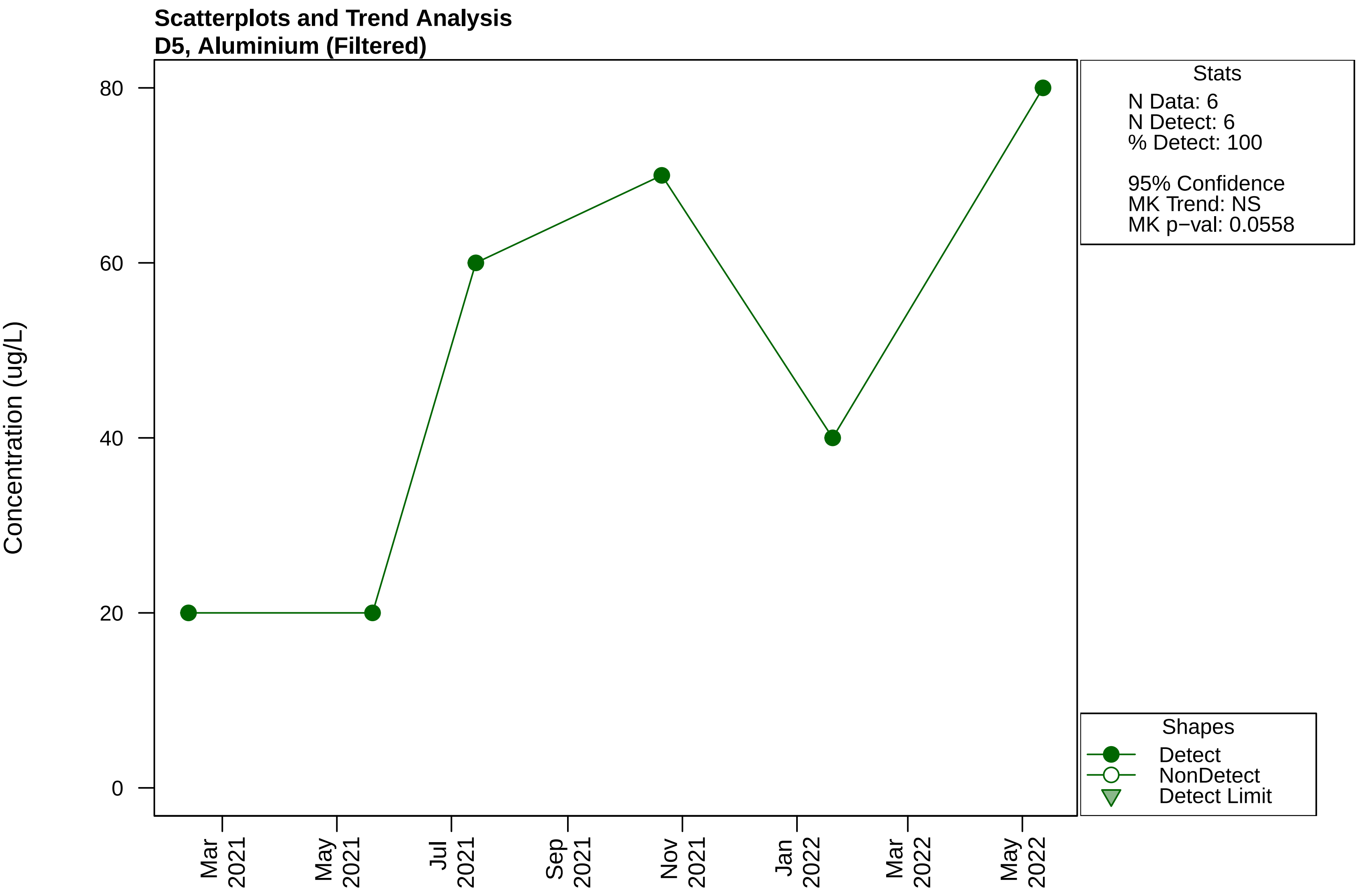

Scatterplots and Trend Analysis
D4, Zinc
Concentration (ug/L)
150
100
50
0
Jul 2020
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 9
N Detect: 9
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.477
Shapes
Detect
NonDetect
Detect Limit

Scatterplots and Trend Analysis
D4, Zinc (Filtered)



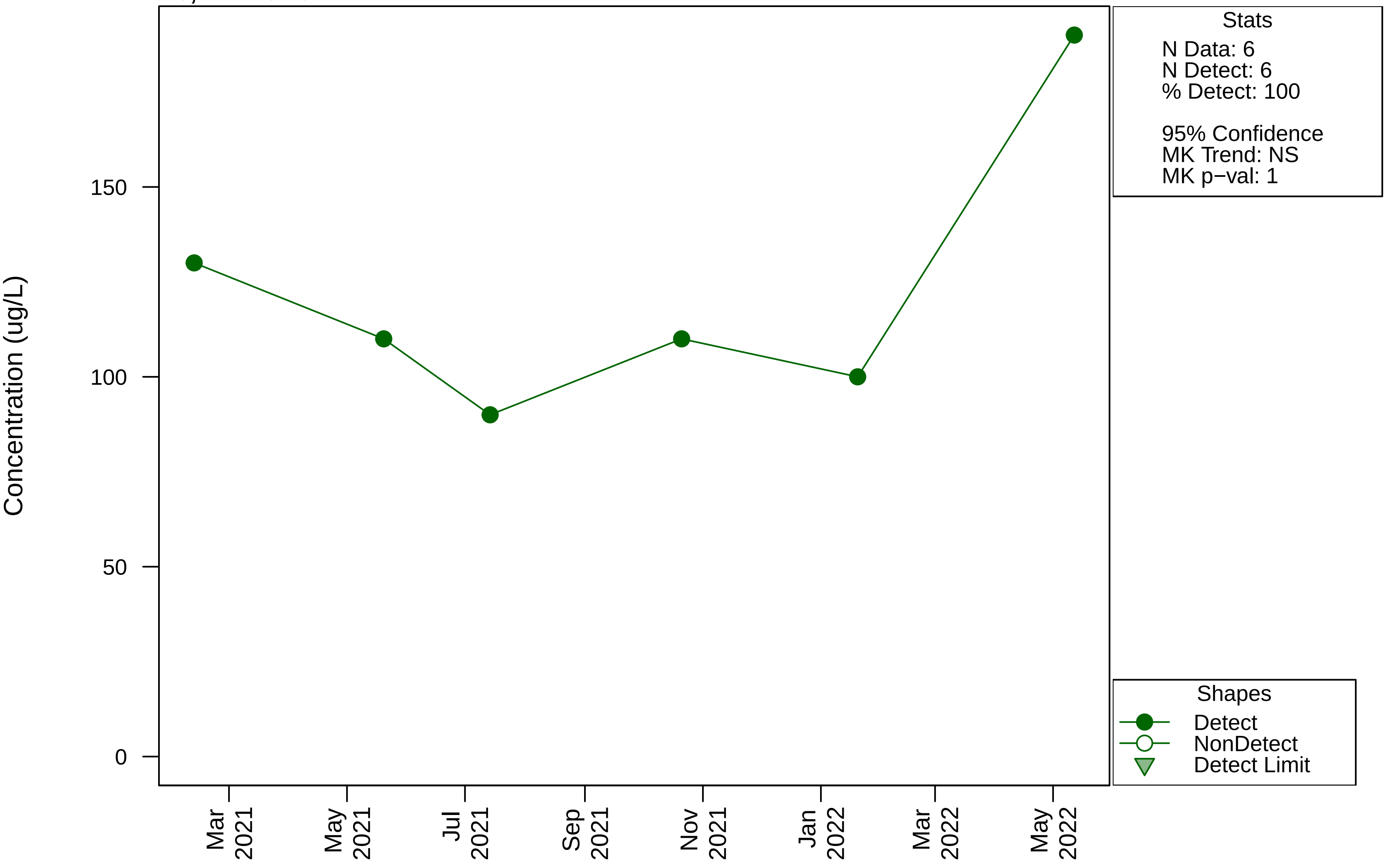


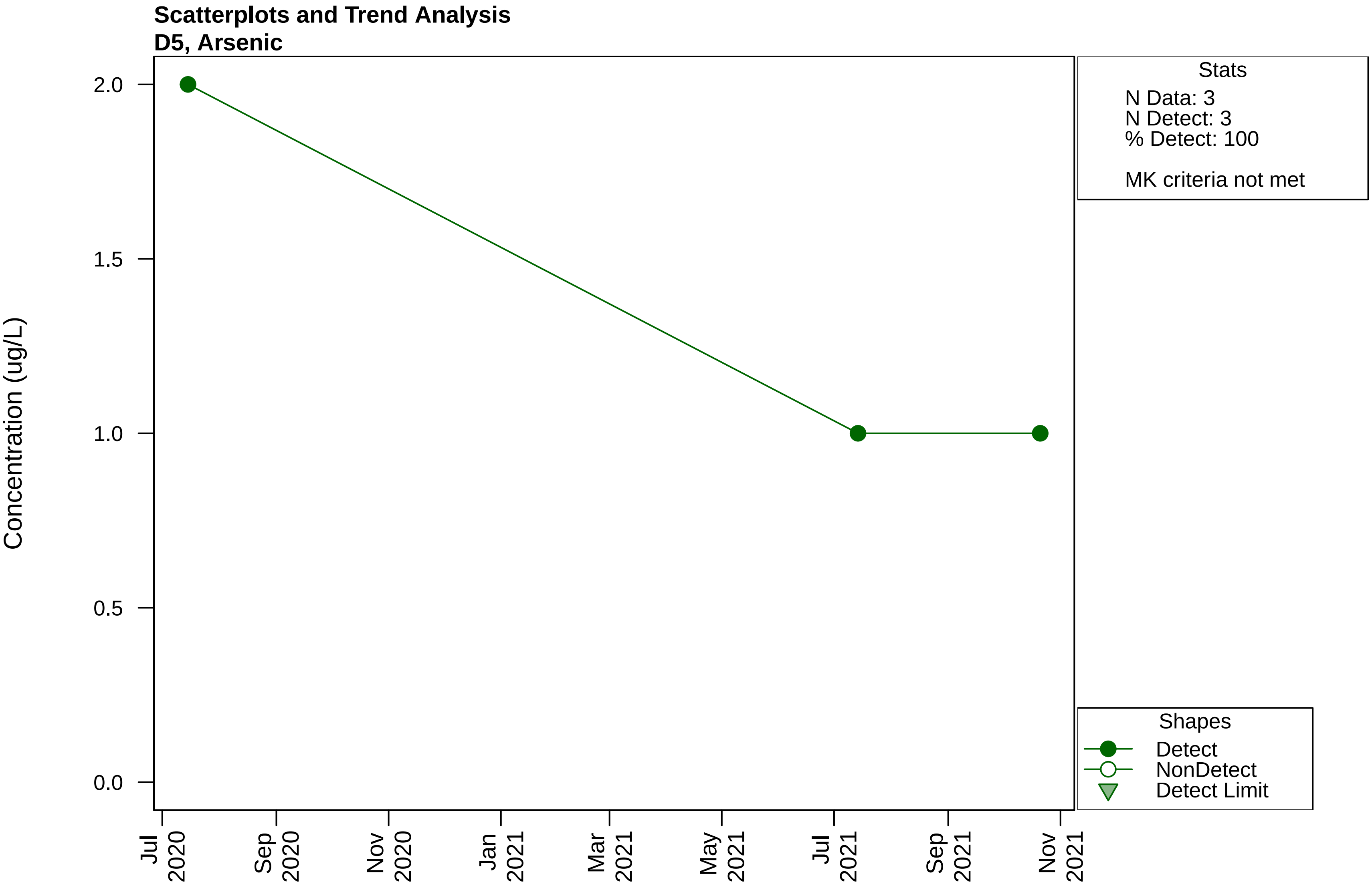
Scatterplots and Trend Analysis
D5, Aluminium
Concentration (ug/L)
0
20
40
60
80
100
120
140
Jul 2020
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 9
N Detect: 9
% Detect: 100
95% Confidence
MK Trend: Significant
MK p−val: 0.0186
Direction: Increasing
Lines
Linear Fit
Shapes
Detect
NonDetect
Detect Limit

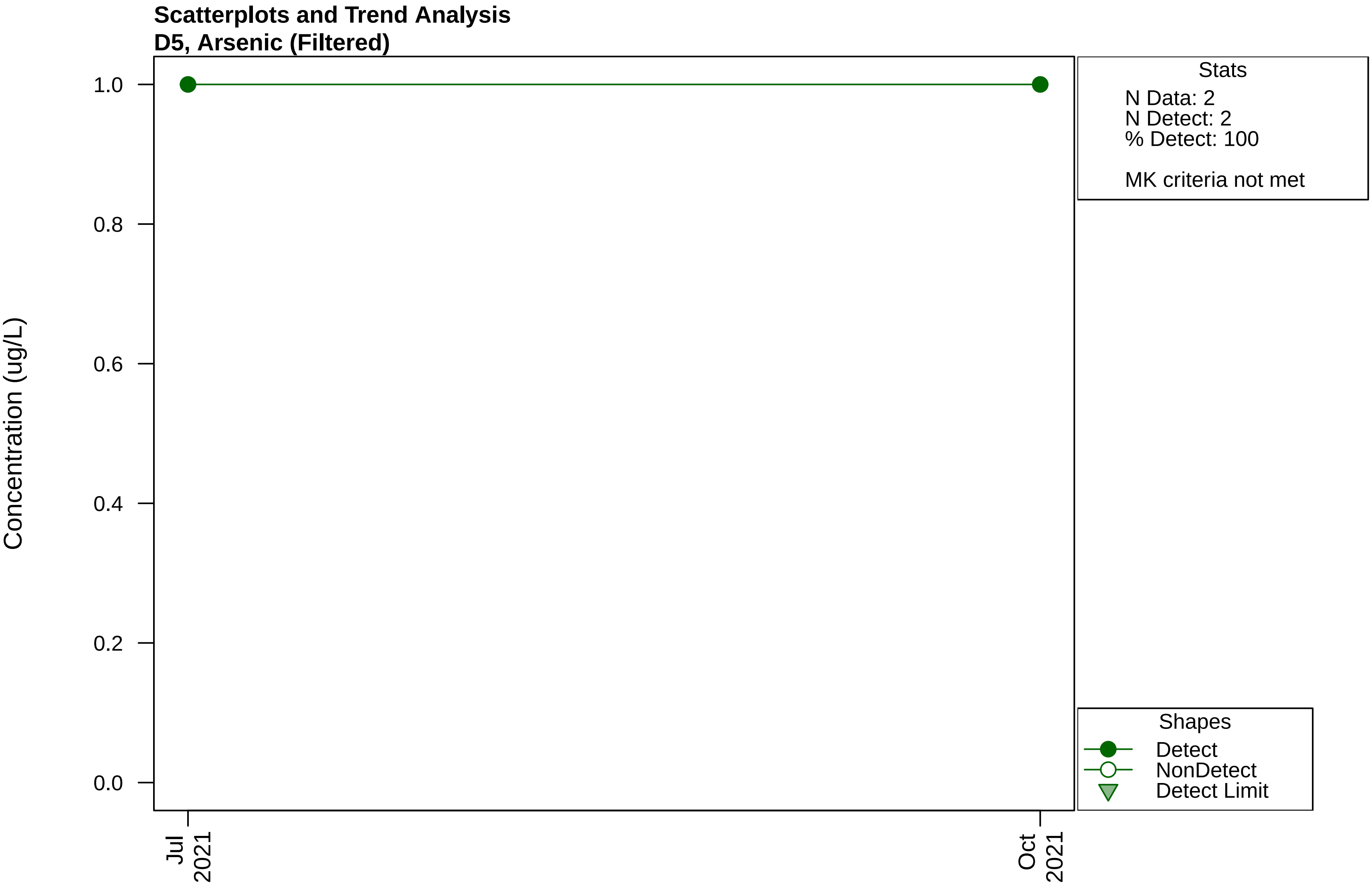


Scatterplots and Trend Analysis
D5, Aluminium (Filtered)
Concentration (ug/L)
0
20
40
60
80
Mar 2021
May 2021
Jul 2021
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 6
N Detect: 6
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.0558
Shapes
Detect
NonDetect
Detect Limit

Scatterplots and Trend Analysis
D5, Ammonia

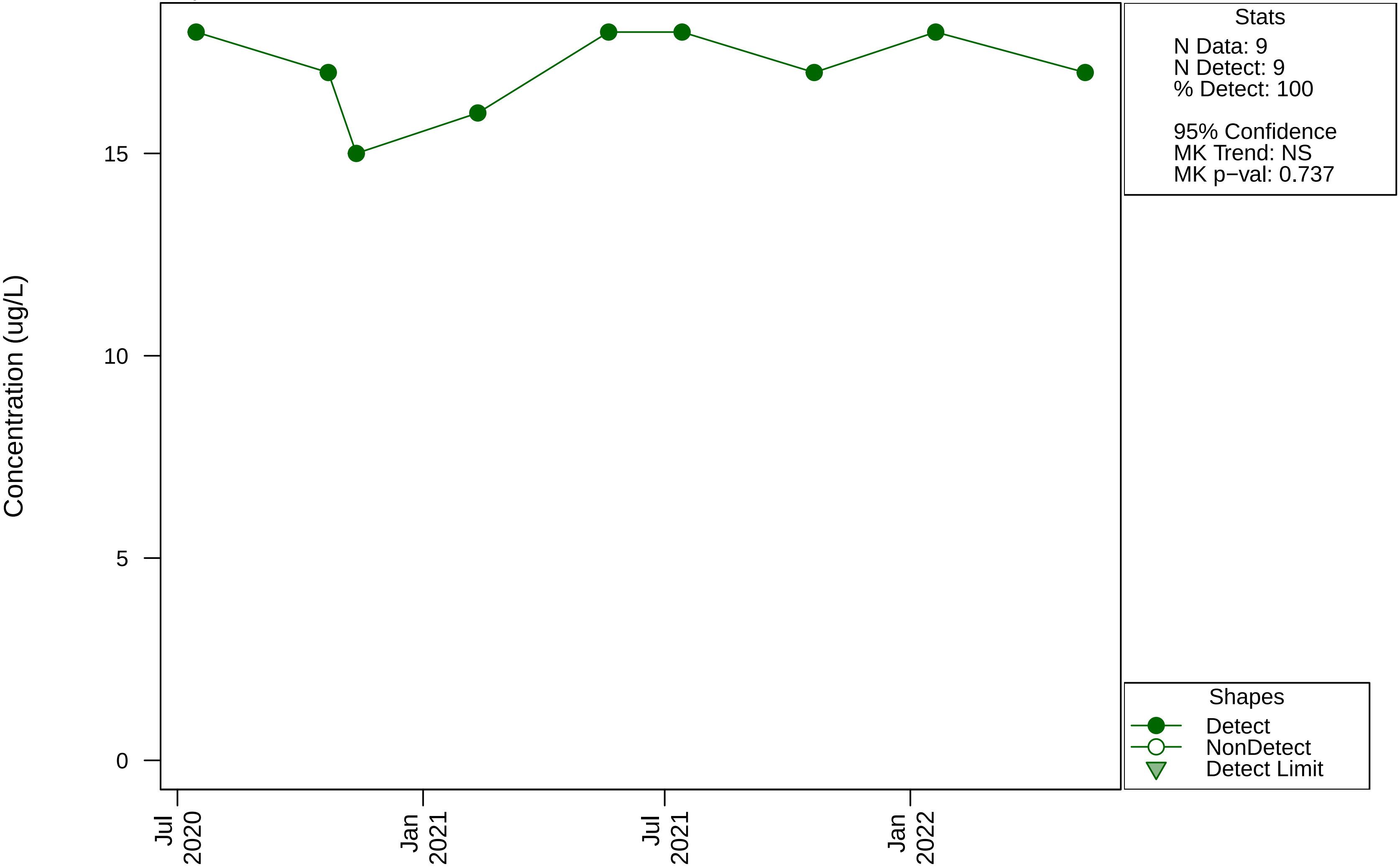


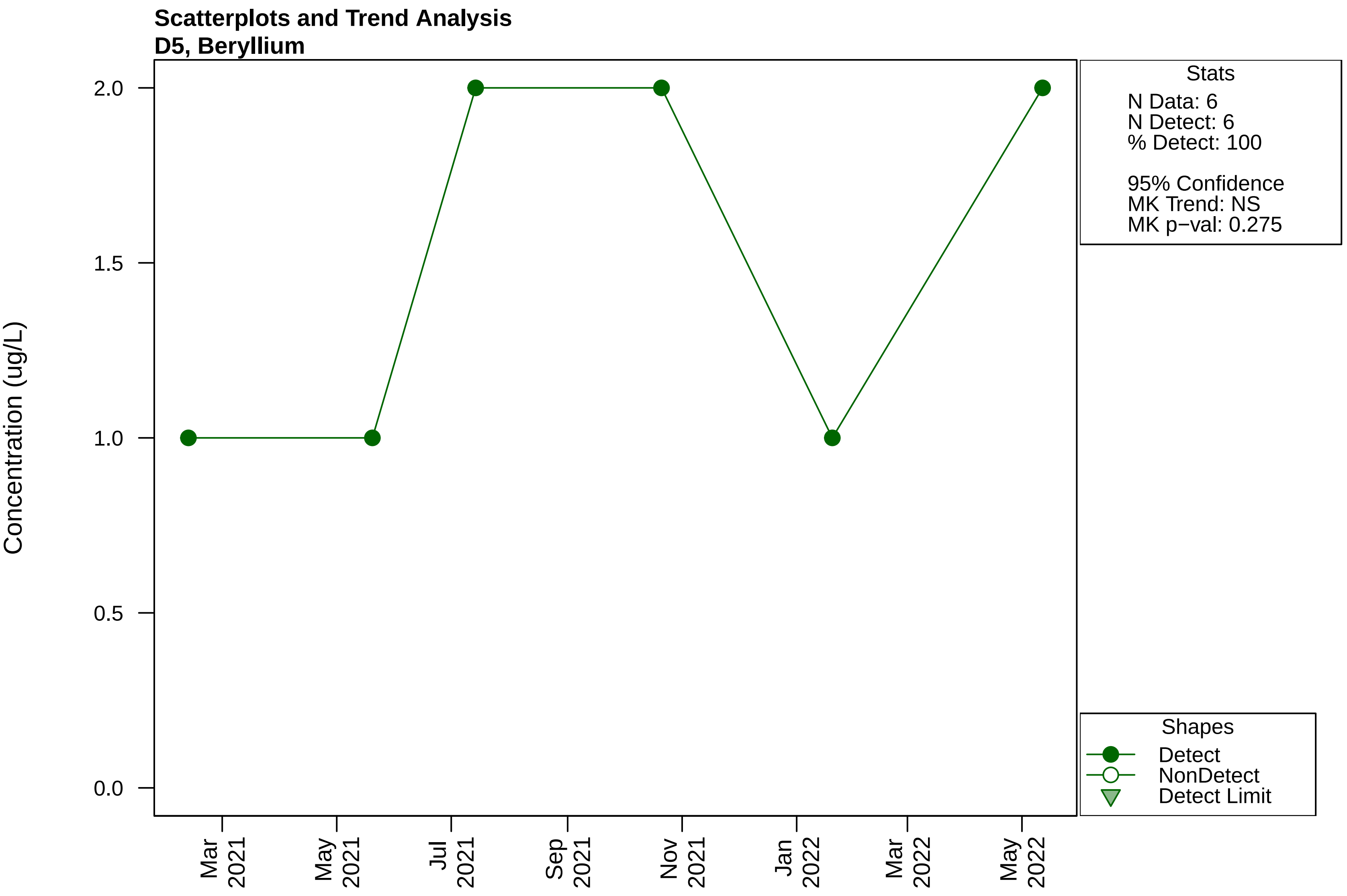

Scatterplots and Trend Analysis
D5, Arsenic
Concentration (ug/L)
2.0
1.5
1.0
0.5
0.0
Jul 2020
Sep 2020
Nov 2020
Jan 2021
Mar 2021
May 2021
Jul 2021
Sep 2021
Nov 2021
Stats
N Data: 3
N Detect: 3
% Detect: 100
MK criteria not met
Shapes
Detect
NonDetect
Detect Limit

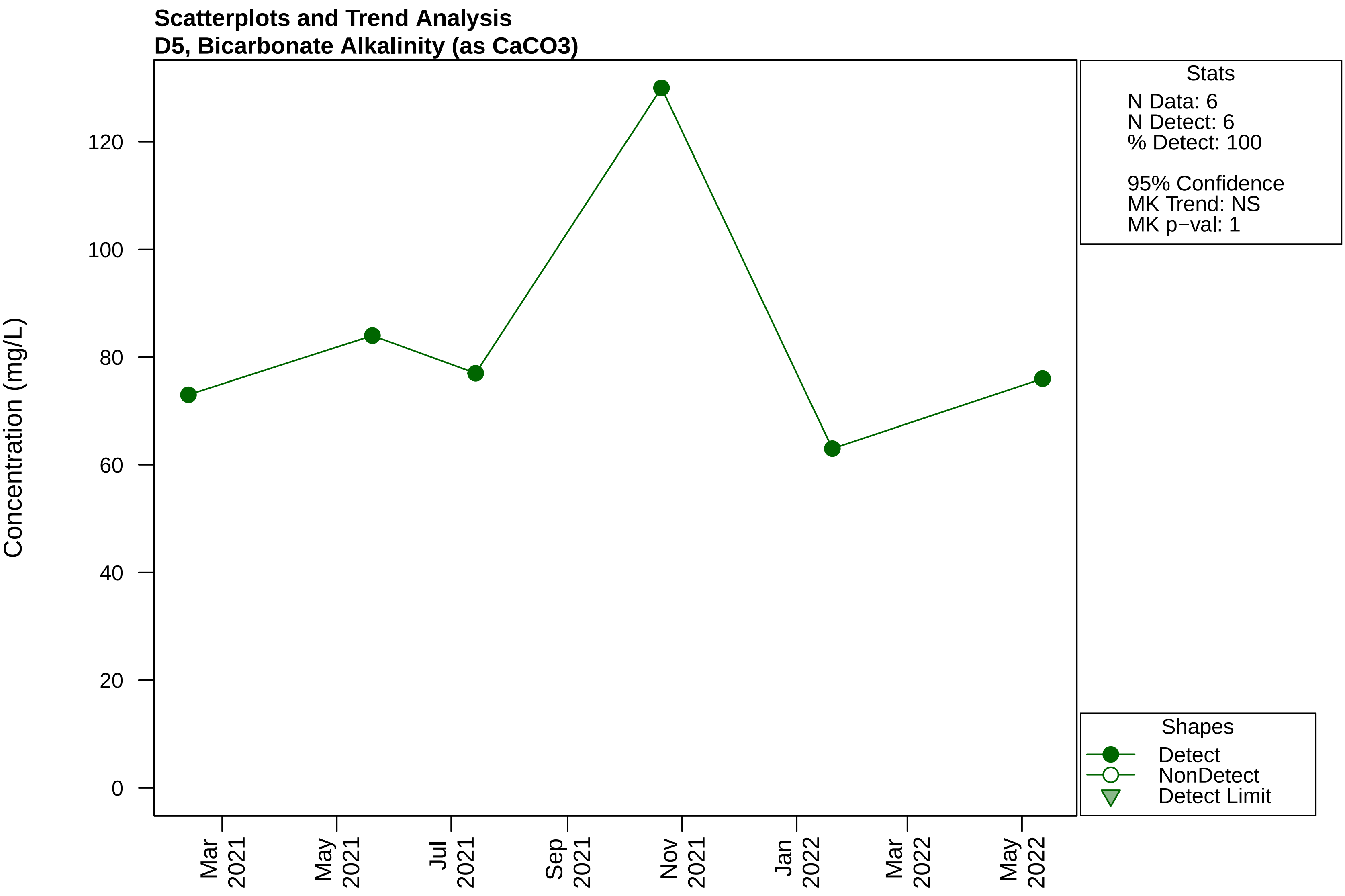


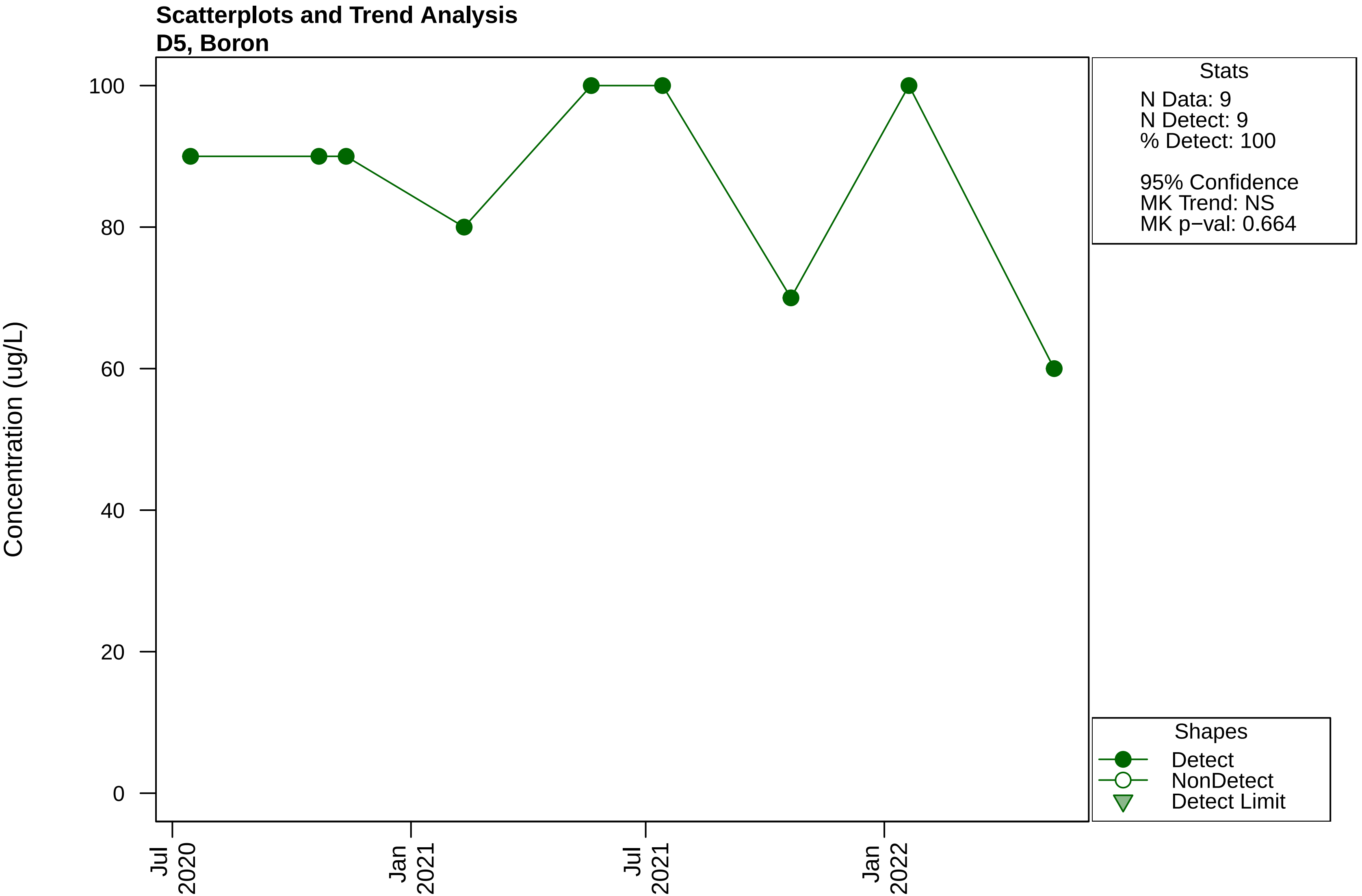
Scatterplots and Trend Analysis
D5, Arsenic (Filtered)
Concentration (ug/L)
1.0
0.8
0.6
0.4
0.2
0.0
Jul 2021
Oct 2021
Stats
N Data: 2
N Detect: 2
% Detect: 100
MK criteria not met
Shapes
Detect
NonDetect
Detect Limit

Scatterplots and Trend Analysis
D5, Barium

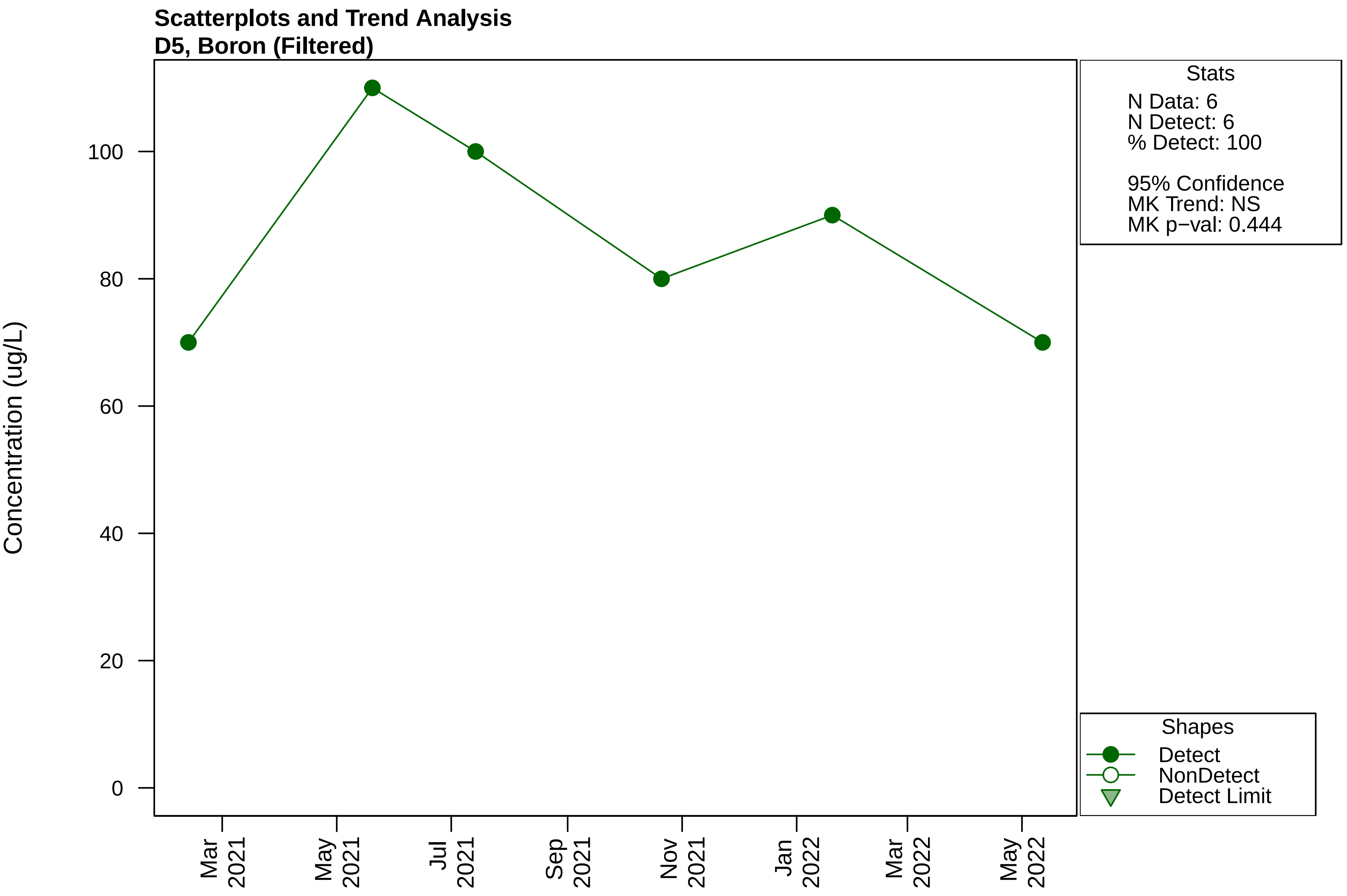



Scatterplots and Trend Analysis
D5, Beryllium
Concentration (ug/L)
2.0
1.5
1.0
0.5
0.0
Mar 2021
May 2021
Jul 2021
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 6
N Detect: 6
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.275
Shapes
Detect
NonDetect
Detect Limit

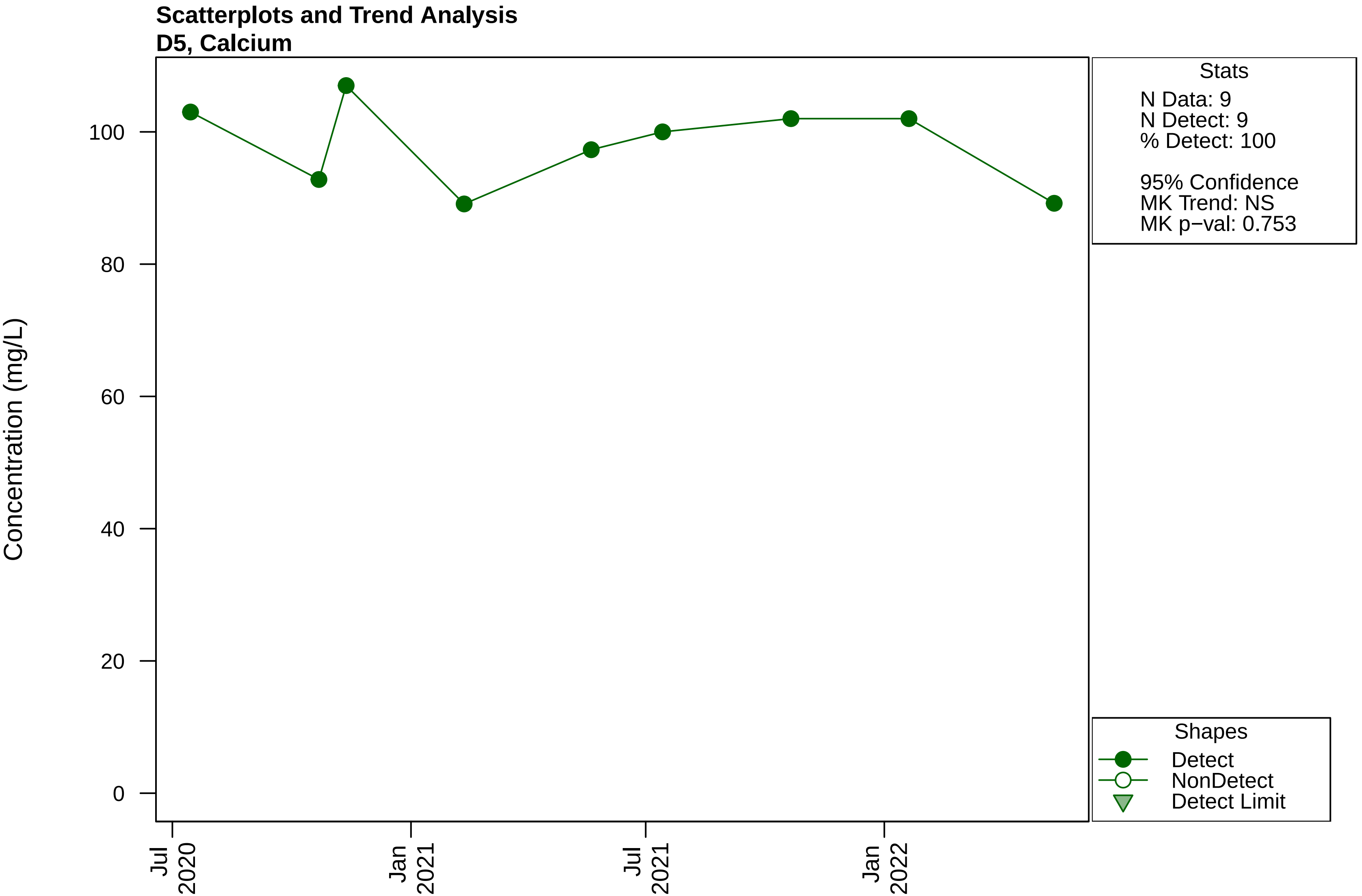

Scatterplots and Trend Analysis
D5, Bicarbonate Alkalinity (as CaCO3)
Concentration (mg/L)
0
20
40
60
80
100
120
Mar 2021
May 2021
Jul 2021
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 6
N Detect: 6
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 1
Shapes
Detect
NonDetect
Detect Limit



Scatterplots and Trend Analysis
D5, Boron
Concentration (ug/L)
100
80
60
40
20
0
Jul 2020
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 9
N Detect: 9
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.664
Shapes
Detect
NonDetect
Detect Limit

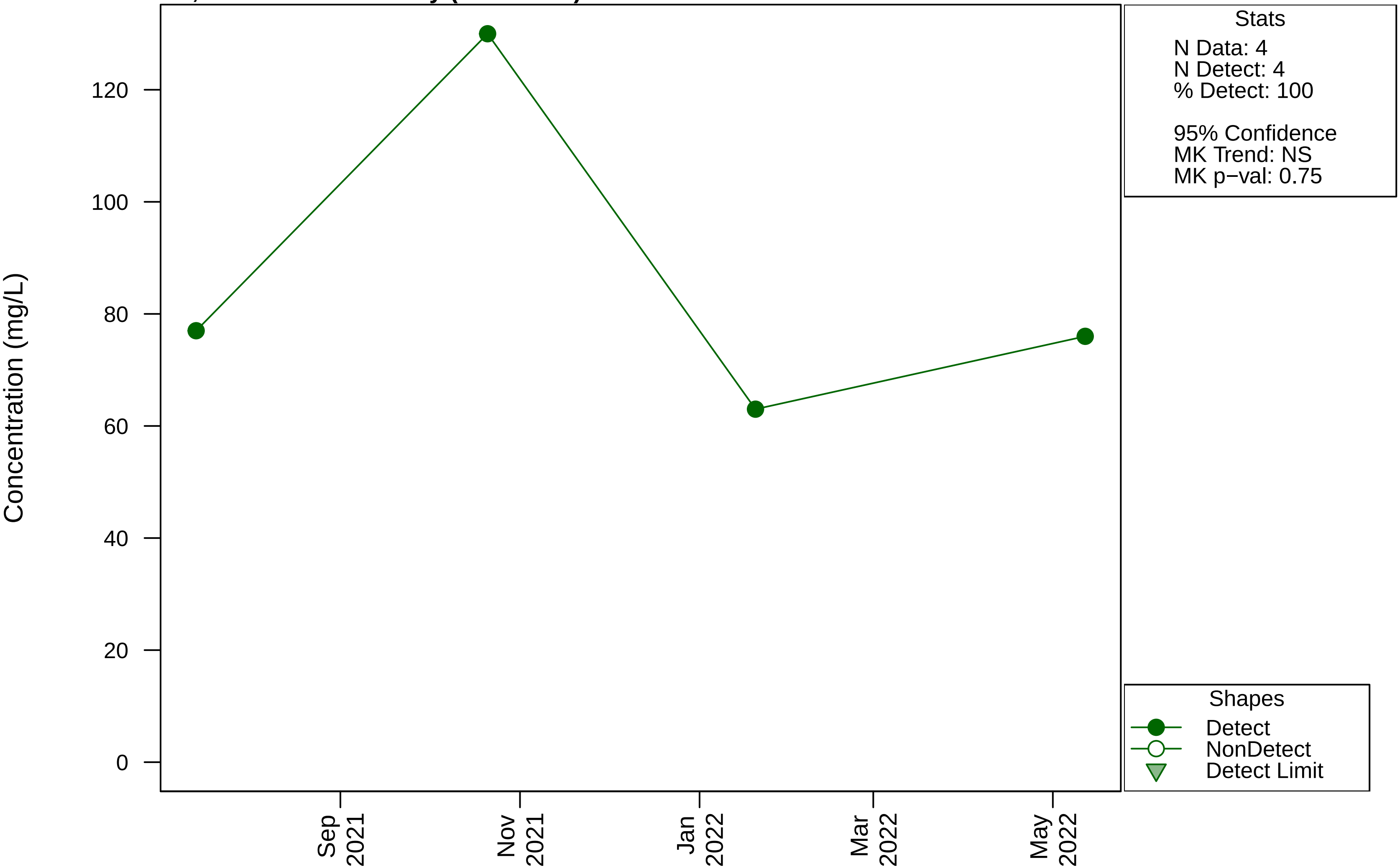


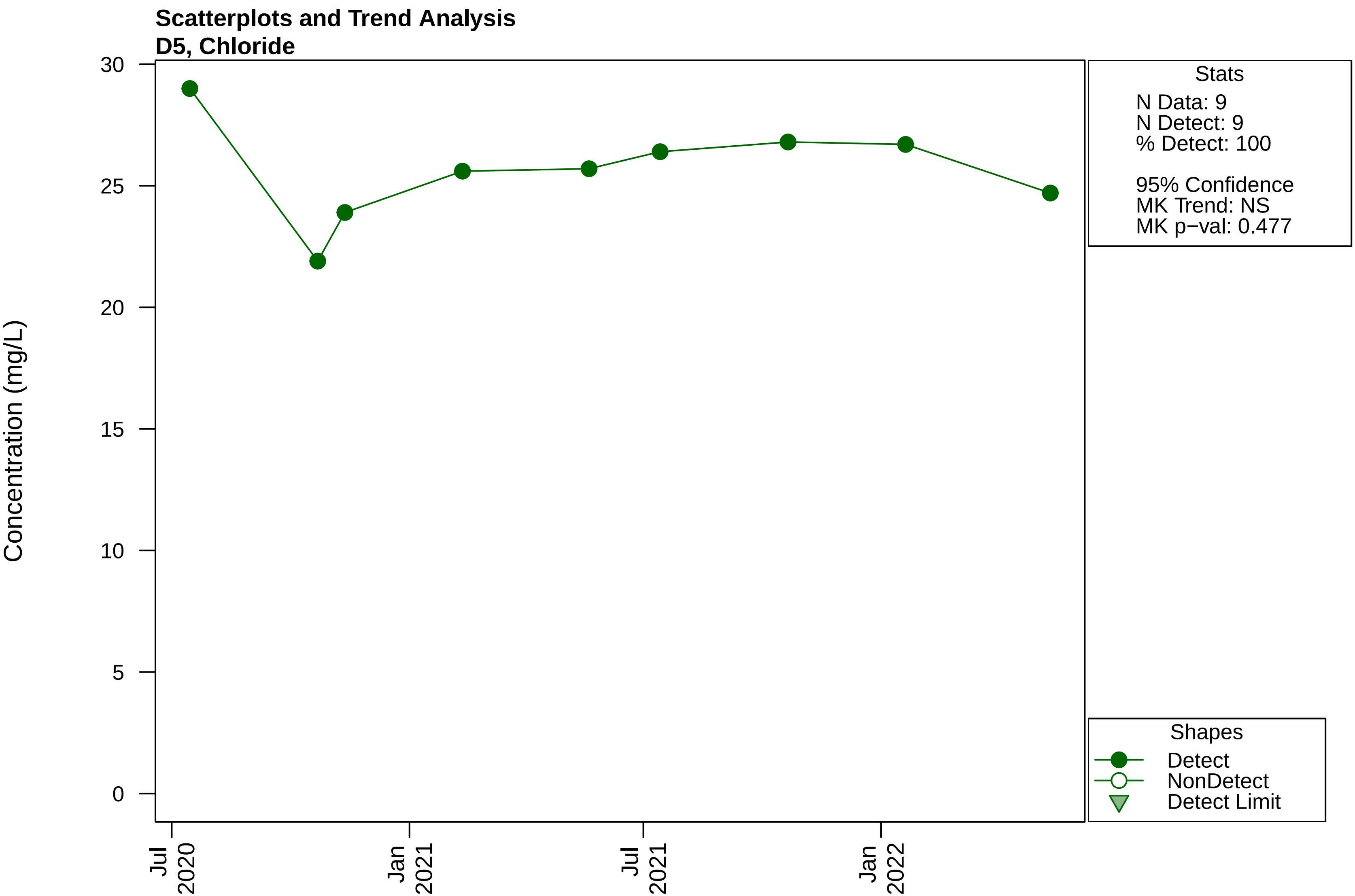
Scatterplots and Trend Analysis
D5, Boron (Filtered)
Concentration (ug/L)
0
20
40
60
80
100
Mar 2021
May 2021
Jul 2021
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 6
N Detect: 6
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.444
Shapes
Detect
NonDetect
Detect Limit



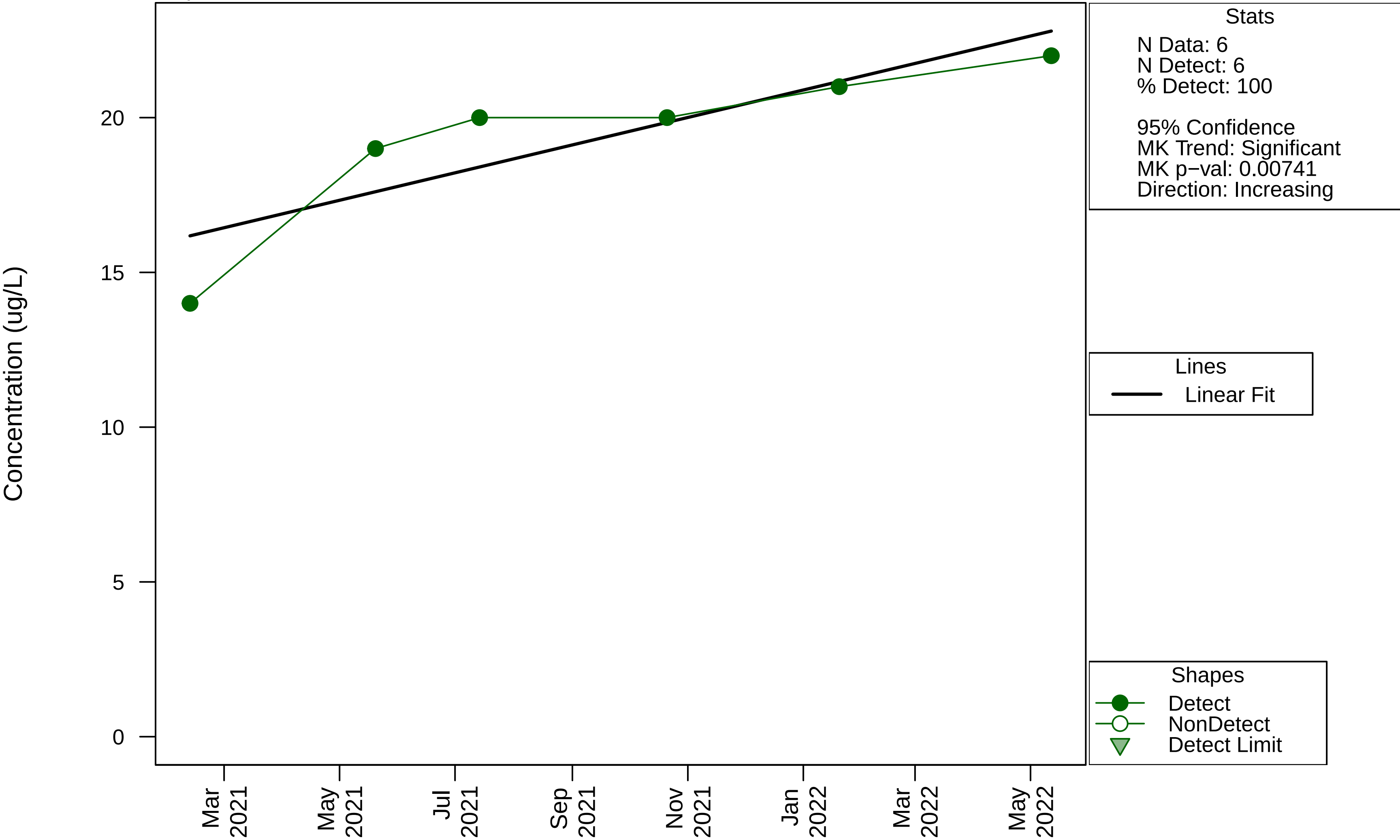
Scatterplots and Trend Analysis
D5, Calcium
Concentration (mg/L)
0
20
40
60
80
100
Jul 2020
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 9
N Detect: 9
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.753
Shapes
Detect
NonDetect
Detect Limit

Scatterplots and Trend Analysis
D5, Carbonate Alkalinity (as CaCO3)

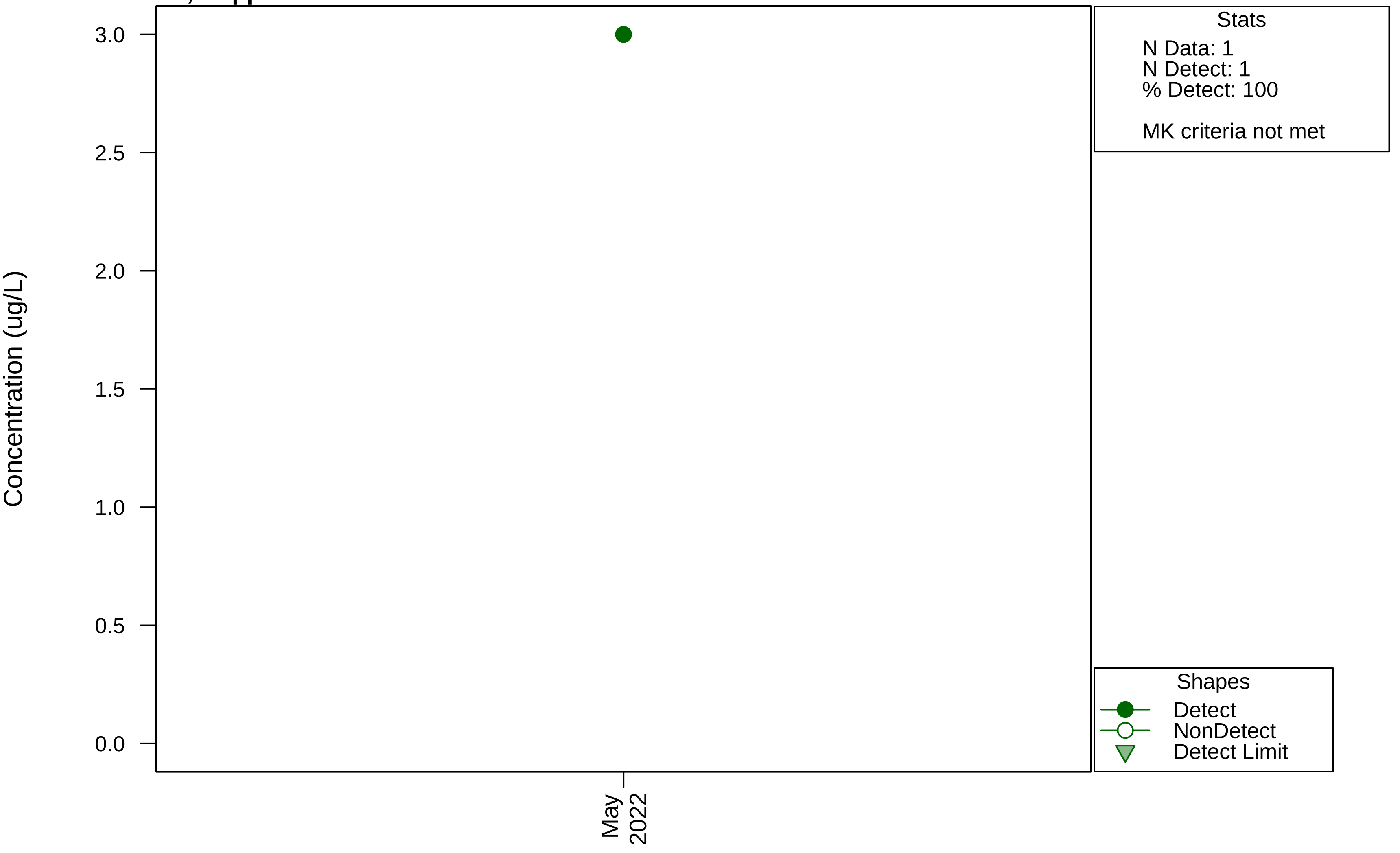


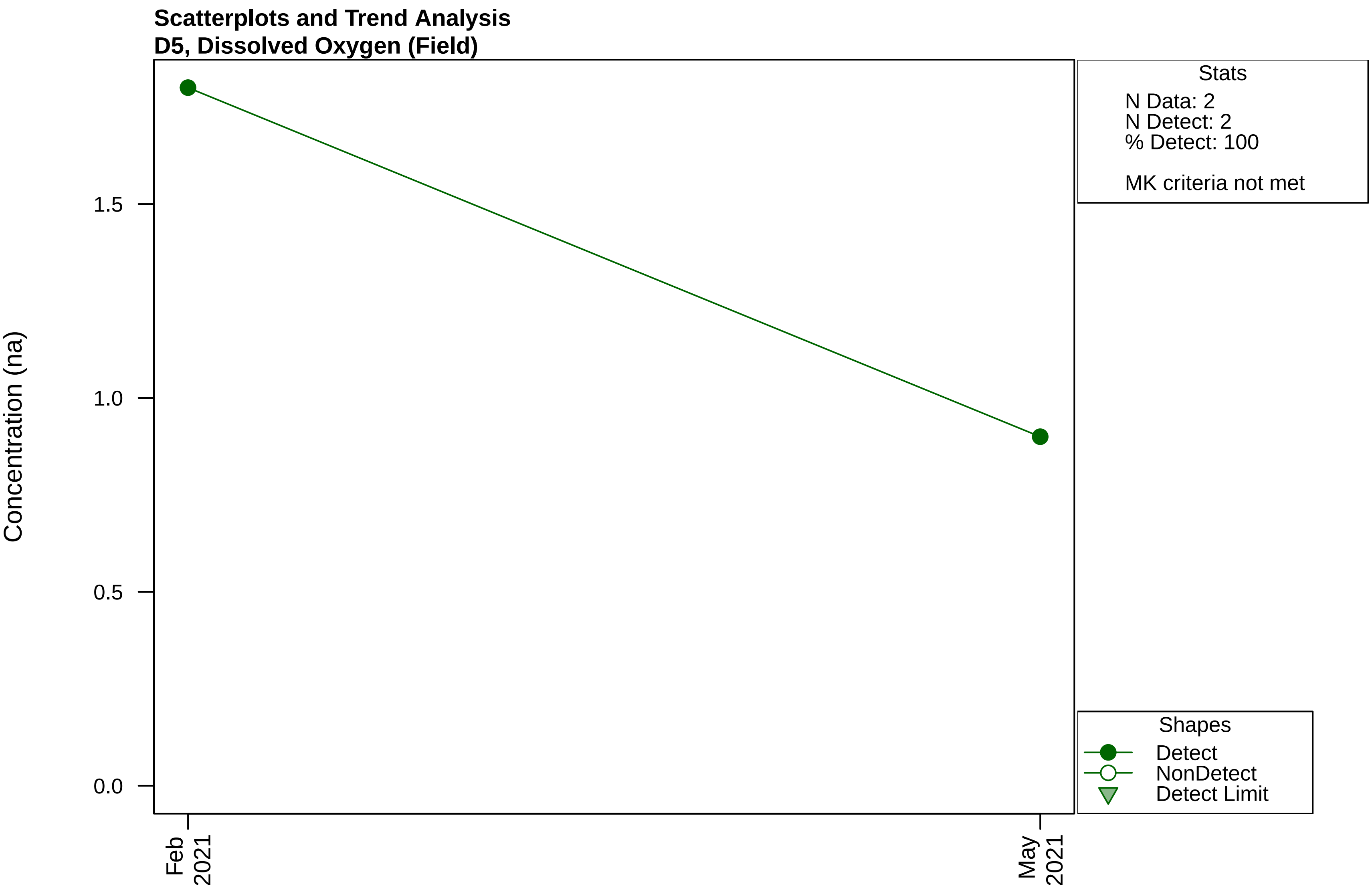

Scatterplots and Trend Analysis
D5, Chloride
Concentration (mg/L)
30
25
20
15
10
5
0
Jul 2020
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 9
N Detect: 9
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.477
Shapes
Detect
NonDetect
Detect Limit

Scatterplots and Trend Analysis
D5, Cobalt

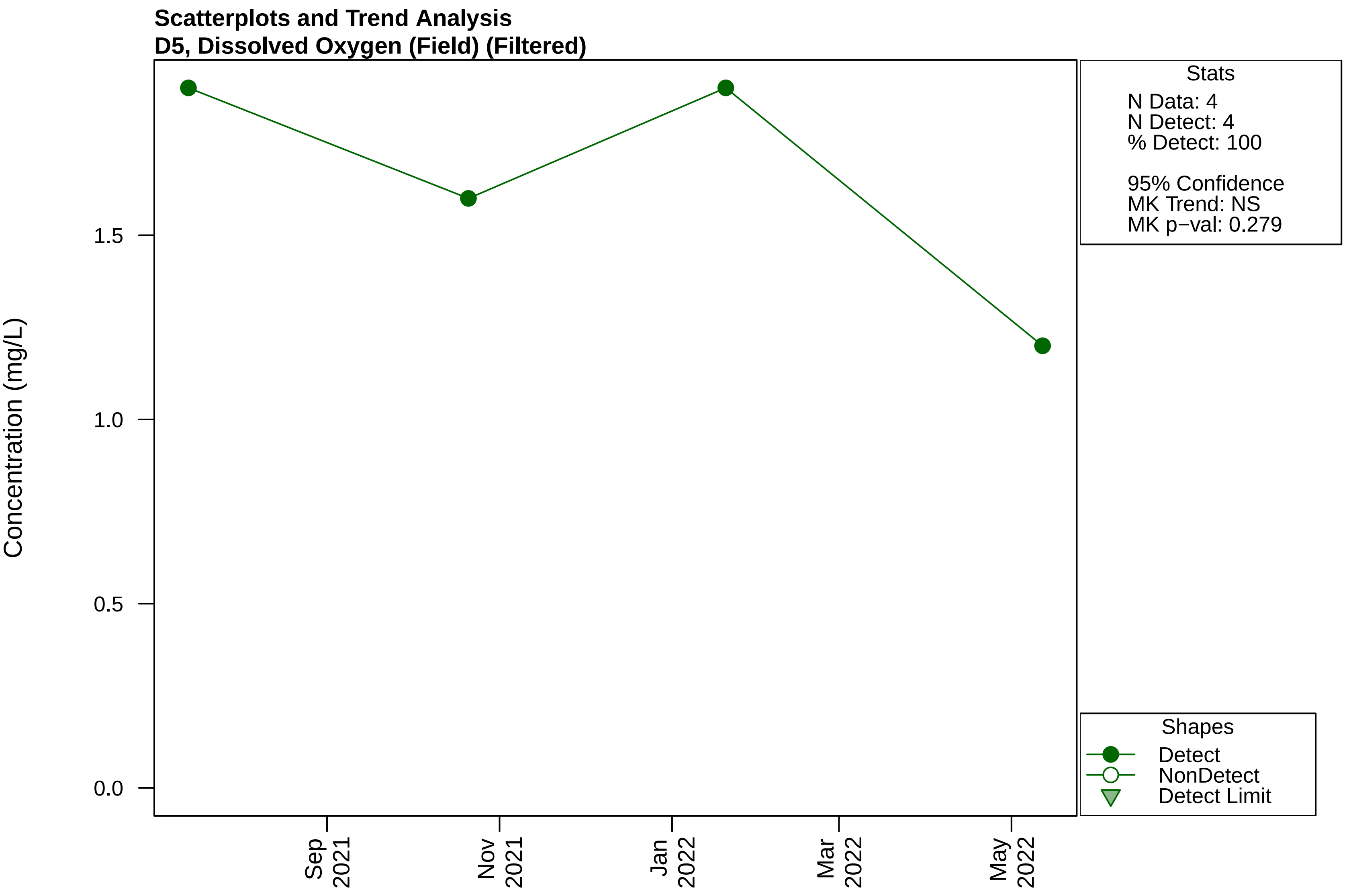


Scatterplots and Trend Analysis
D5, Copper

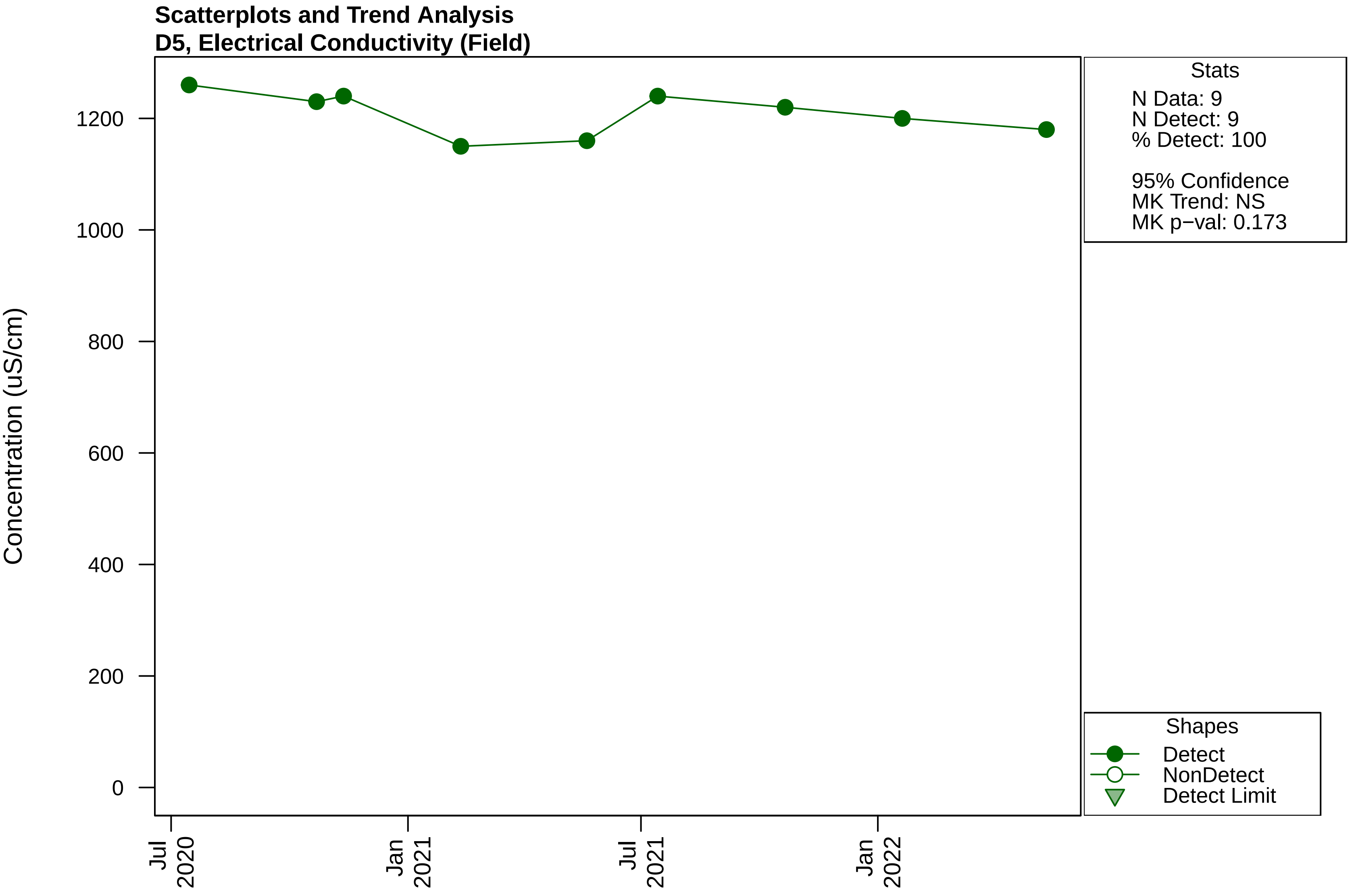


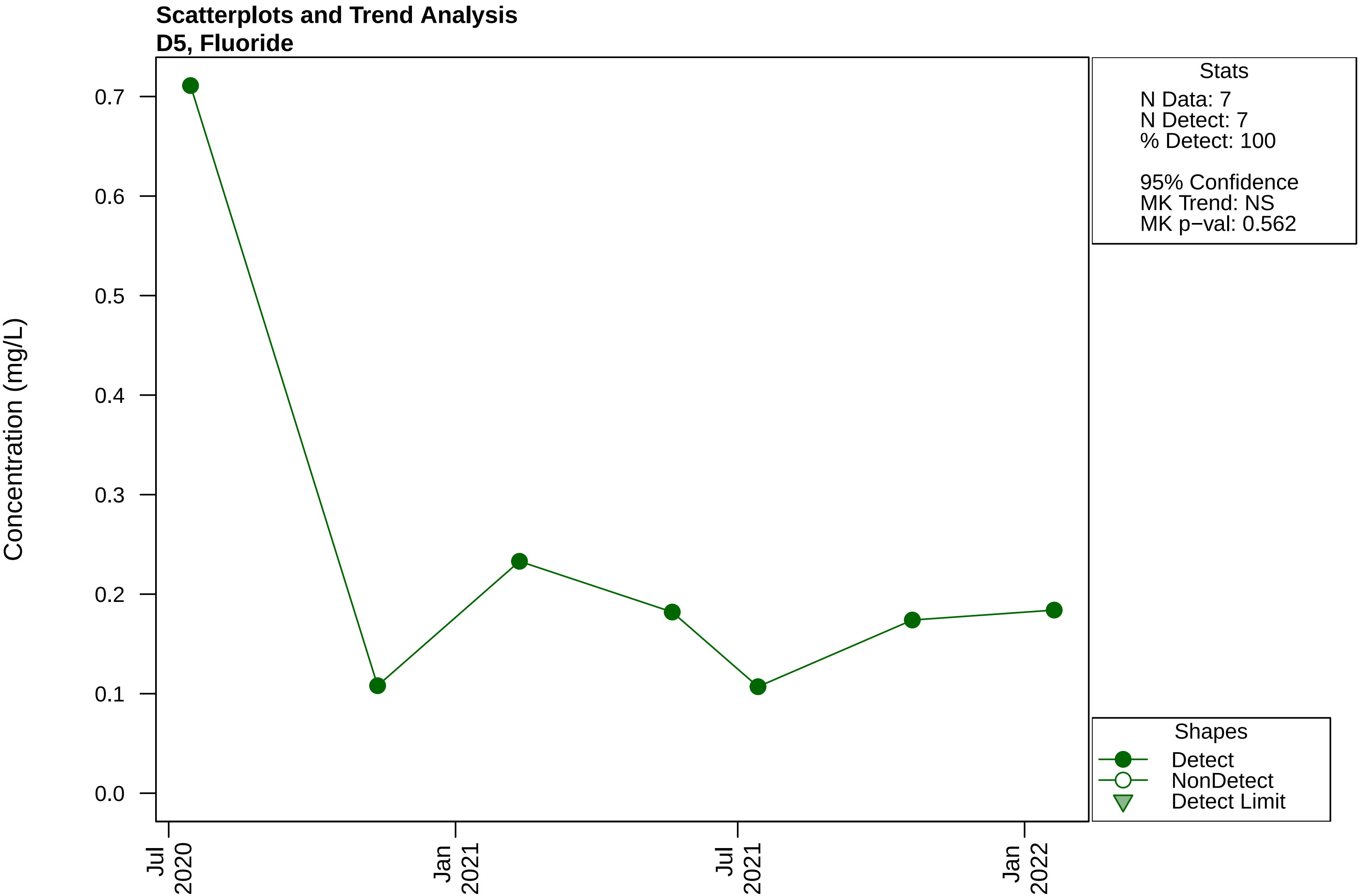


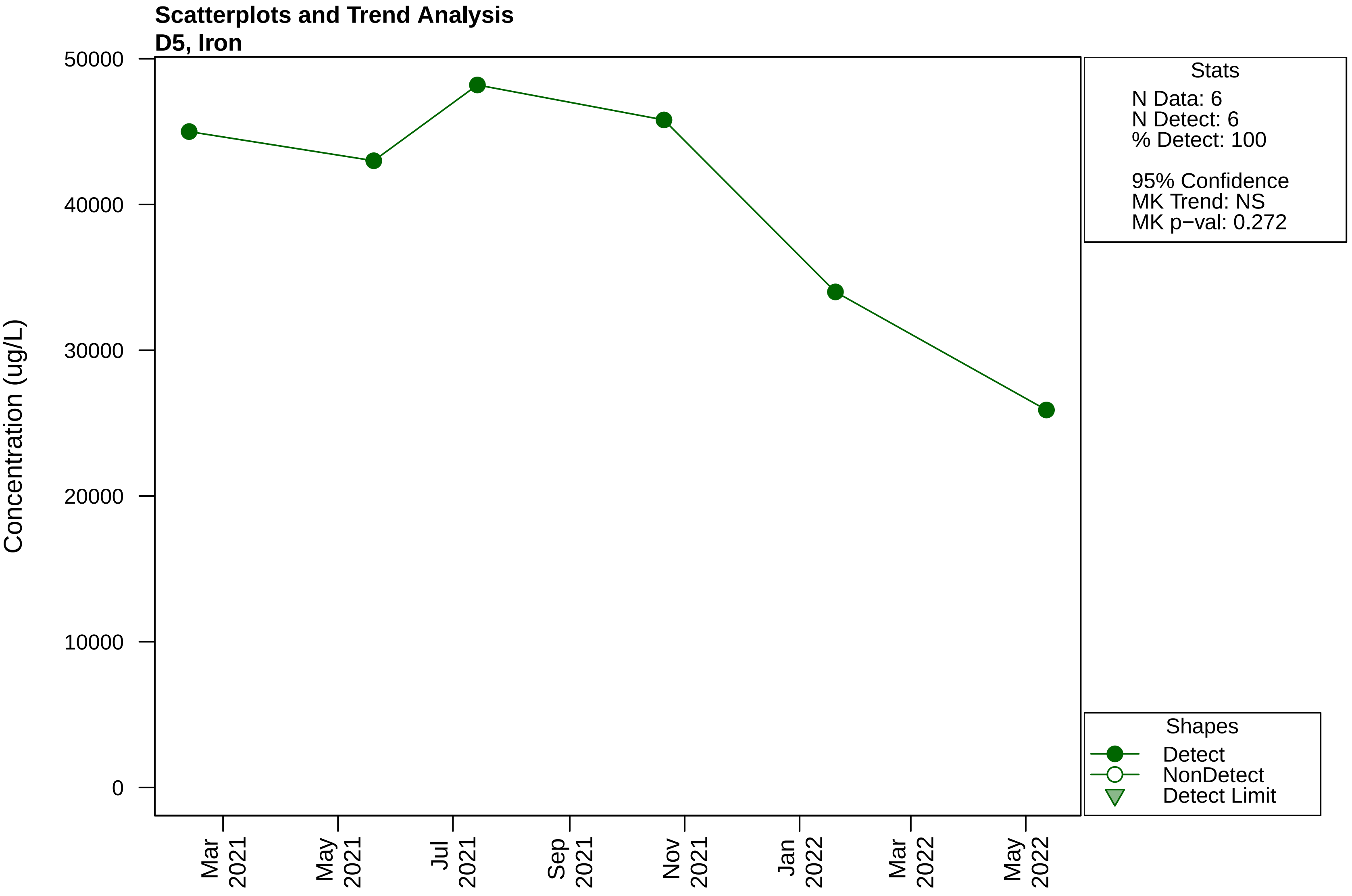
Scatterplots and Trend Analysis
D5, Dissolved Oxygen (Field)
Concentration (na)
1.5
1.0
0.5
0.0
Feb 2021
May 2021
Stats
N Data: 2
N Detect: 2
% Detect: 100
MK criteria not met
Shapes
Detect
NonDetect
Detect Limit

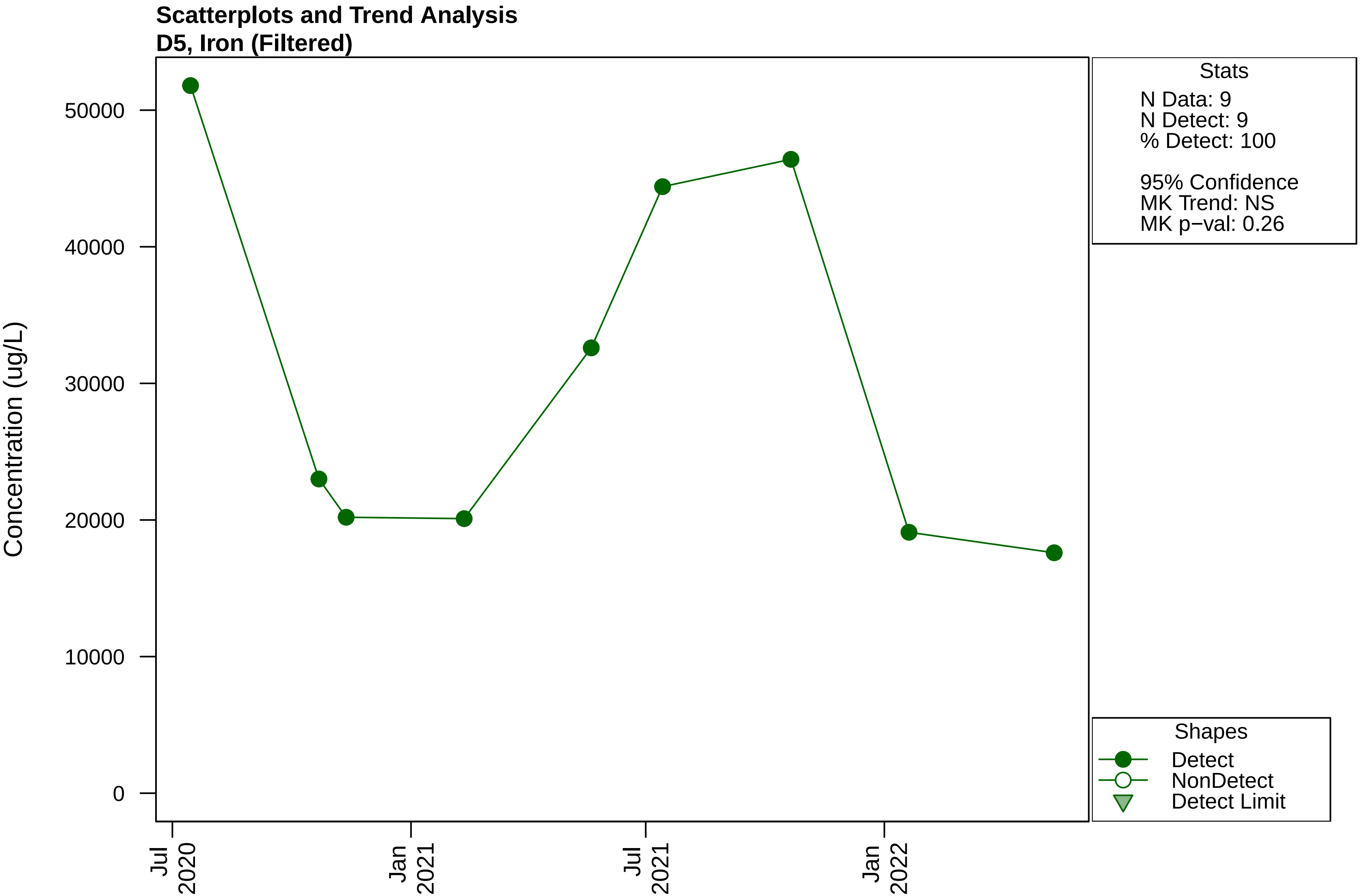


Scatterplots and Trend Analysis
D5, Dissolved Oxygen (Field) (Filtered)
Concentration (mg/L)
0.0
0.5
1.0
1.5
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 4
N Detect: 4
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.279
Shapes
Detect
NonDetect
Detect Limit

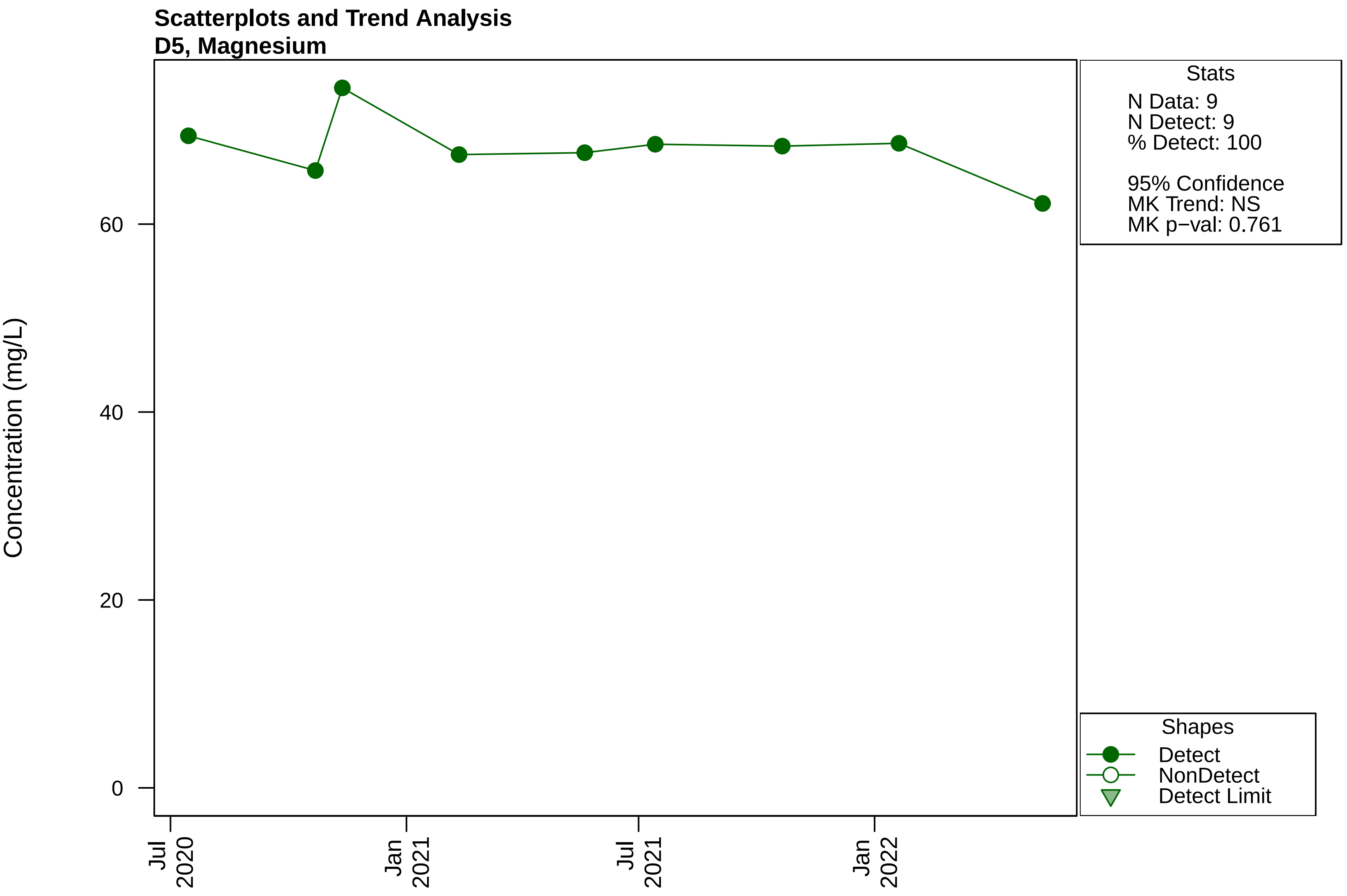

Scatterplots and Trend Analysis
D5, Electrical Conductivity (Field)
Concentration (uS/cm)
0
200
400
600
800
1000
1200
Jul 2020
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 9
N Detect: 9
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.173
Shapes
Detect
NonDetect
Detect Limit


Scatterplots and Trend Analysis
D5, Fluoride
Concentration (mg/L)
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
Jul 2020
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 7
N Detect: 7
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.562
Shapes
Detect
NonDetect
Detect Limit

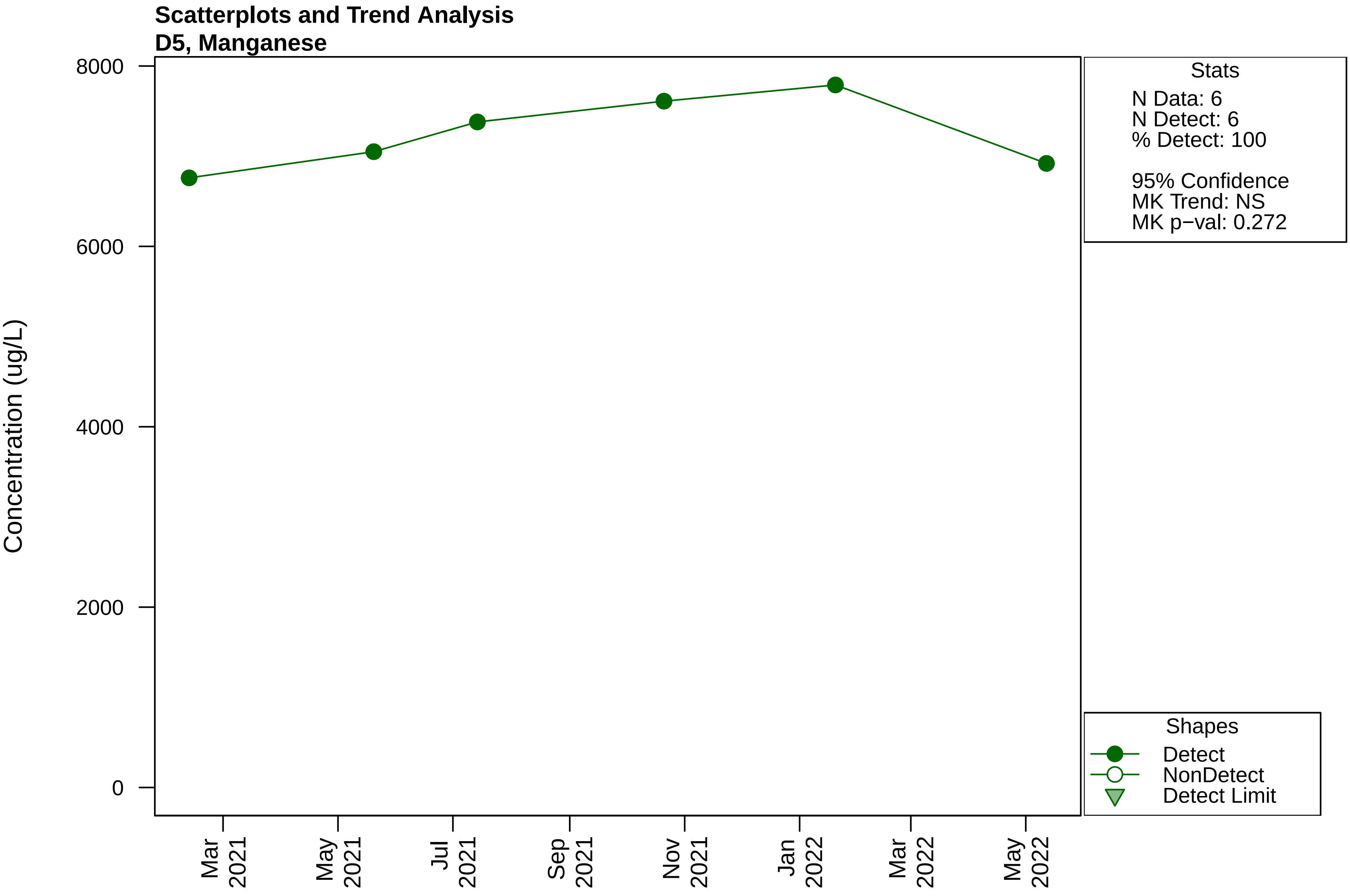

Scatterplots and Trend Analysis
D5, Iron
Concentration (ug/L)
50000
40000
30000
20000
10000
0
Mar 2021
May 2021
Jul 2021
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 6
N Detect: 6
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.272
Shapes
Detect
NonDetect
Detect Limit



Scatterplots and Trend Analysis
D5, Iron (Filtered)
Concentration (ug/L)
50000
40000
30000
20000
10000
0
Jul 2020
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 9
N Detect: 9
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.26
Shapes
Detect
NonDetect
Detect Limit

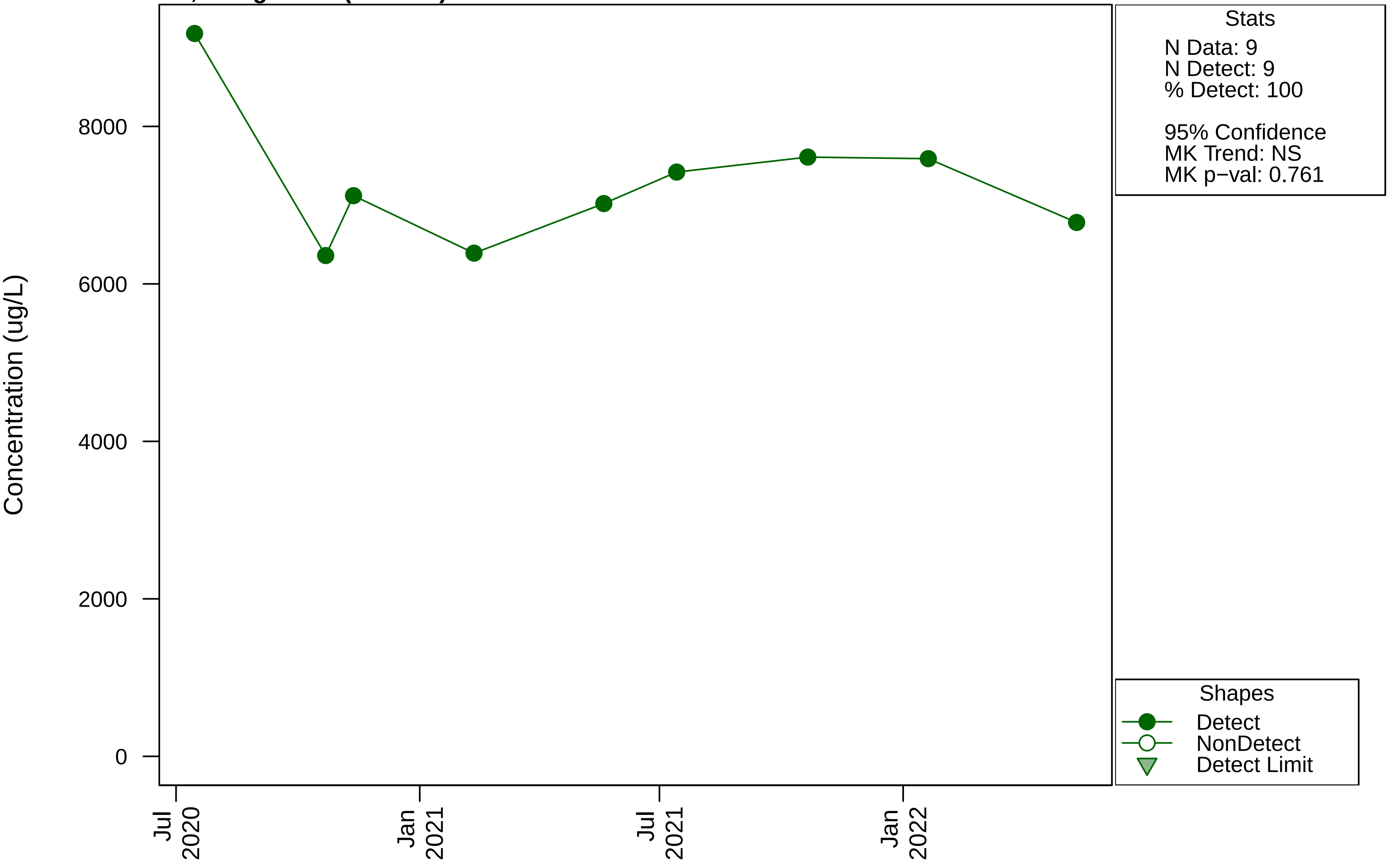


Scatterplots and Trend Analysis
D5, Magnesium
Concentration (mg/L)
0
20
40
60
Jul 2020
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 9
N Detect: 9
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.761
Shapes
Detect
NonDetect
Detect Limit

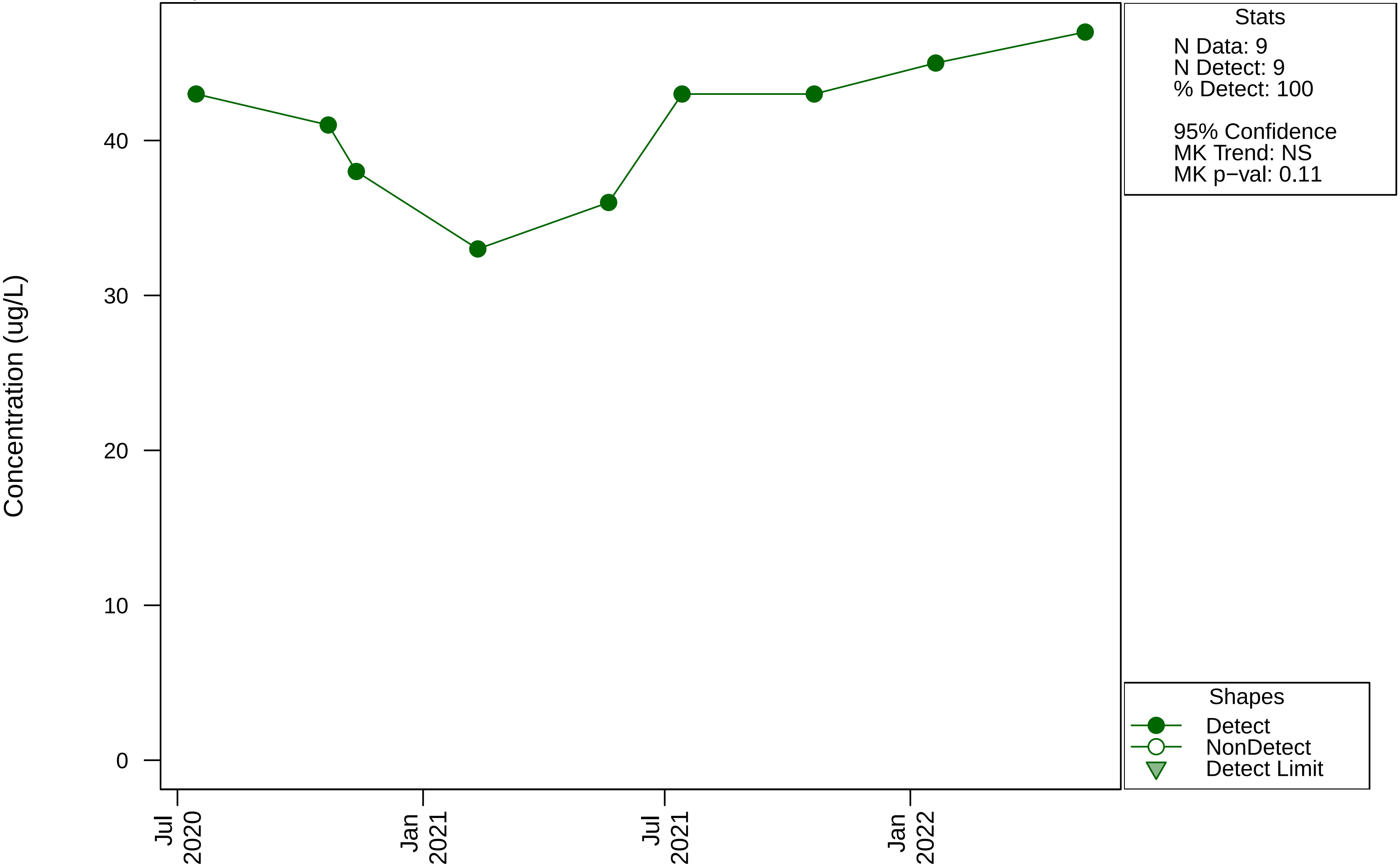


Scatterplots and Trend Analysis
D5, Manganese
Concentration (ug/L)
8000
6000
4000
2000
0
Mar 2021
May 2021
Jul 2021
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 6
N Detect: 6
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.272
Shapes
Detect
NonDetect
Detect Limit

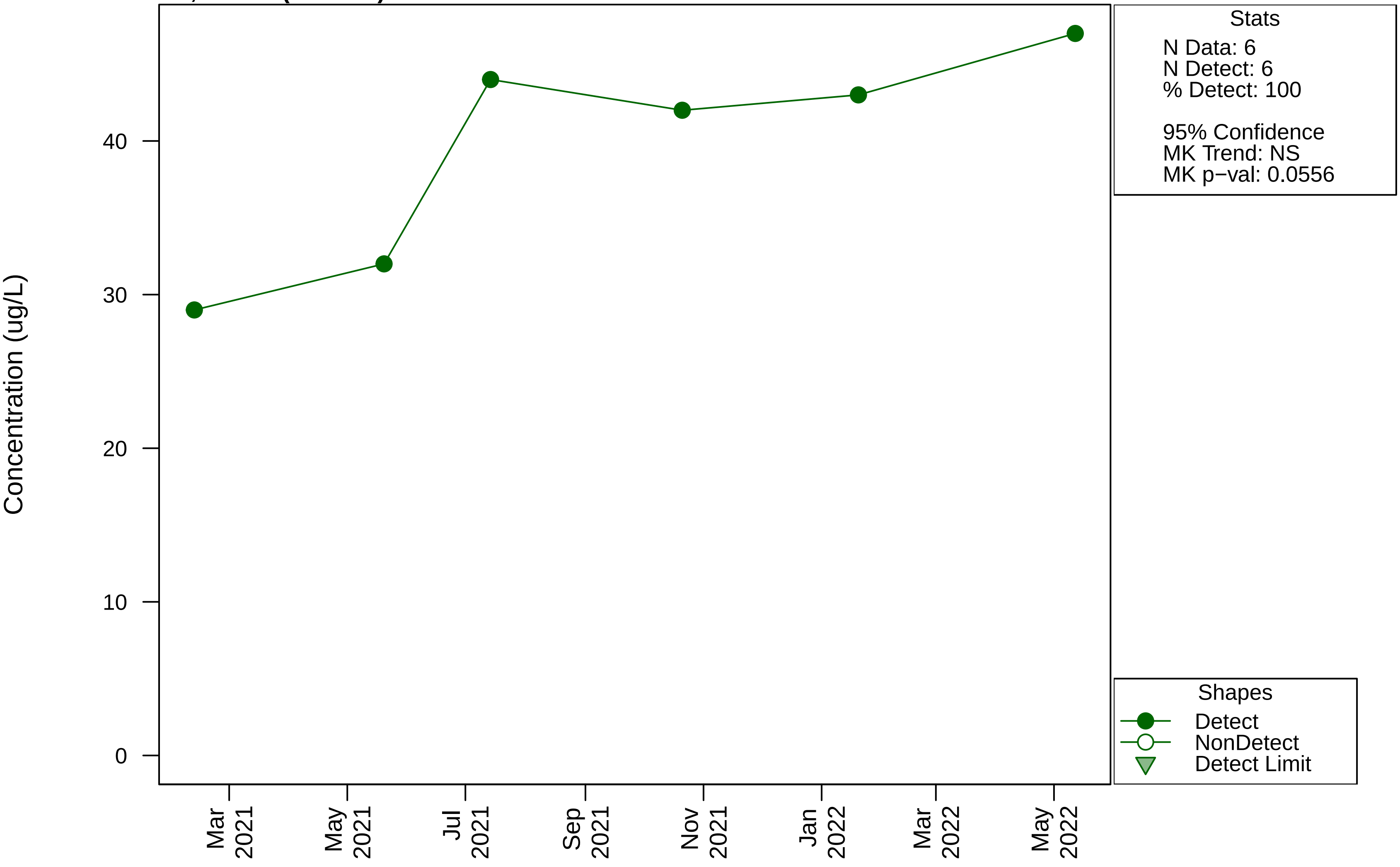
Scatterplots and Trend Analysis
D5, Manganese (Filtered)



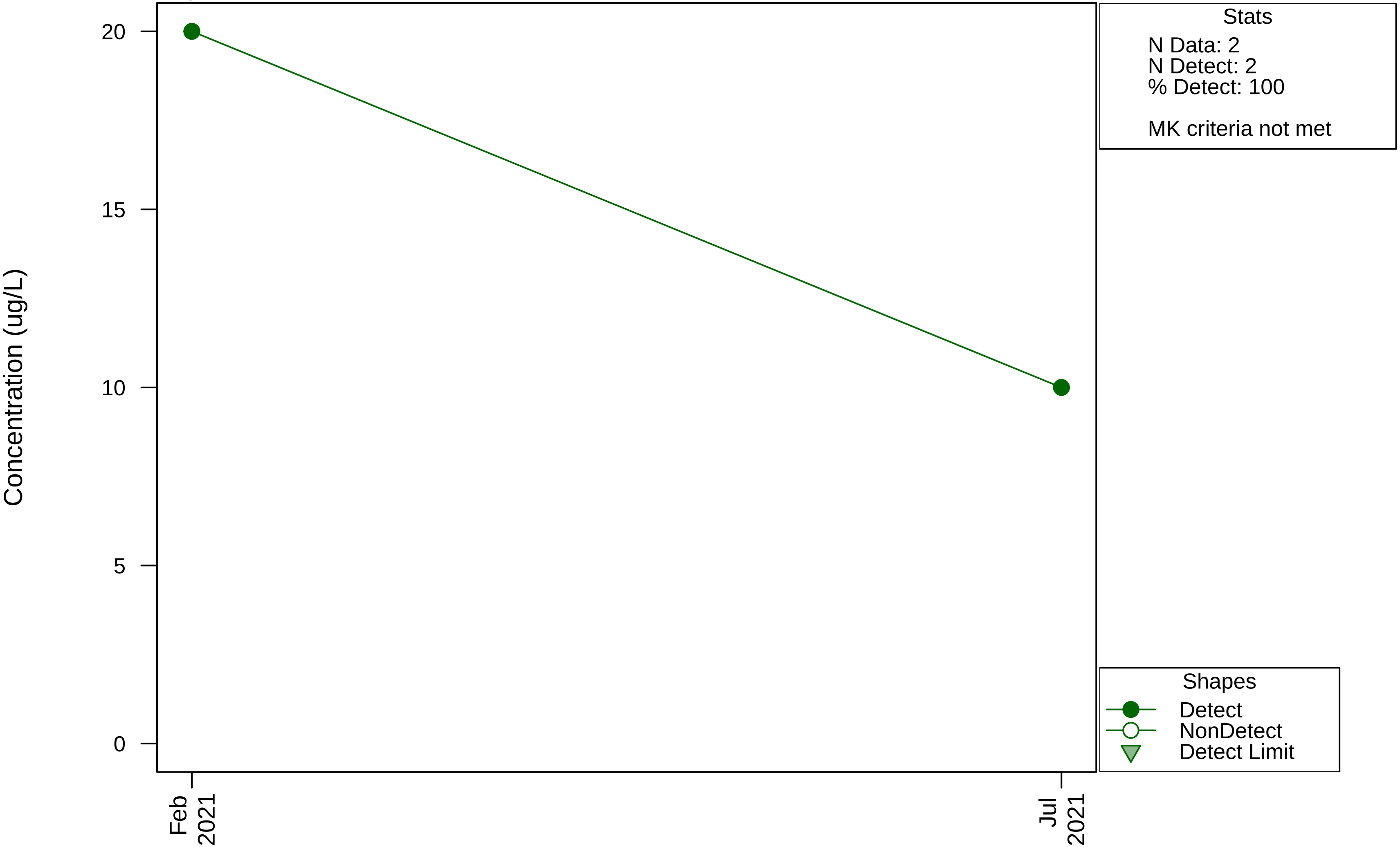
Scatterplots and Trend Analysis
D5, Nickel

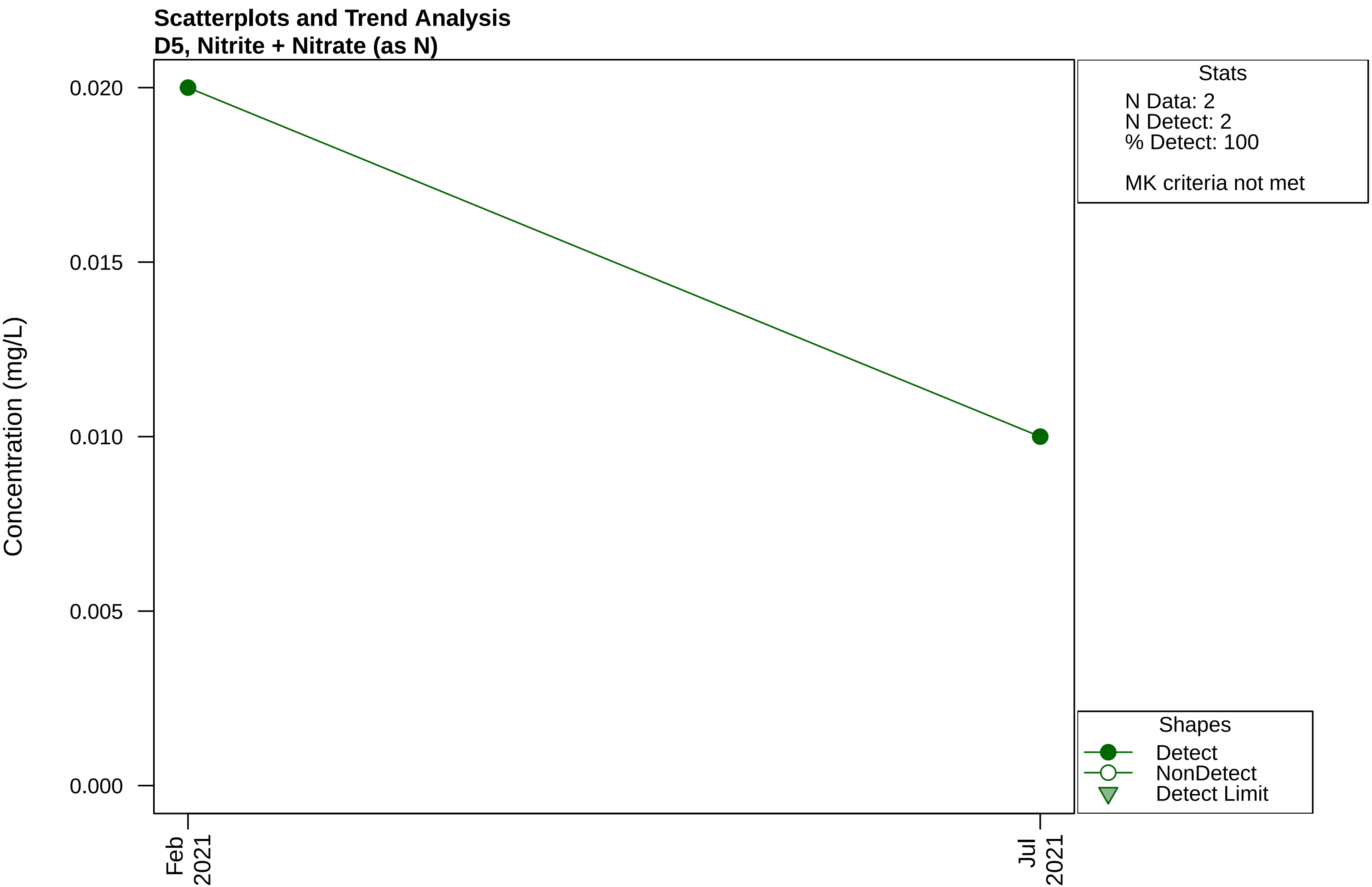


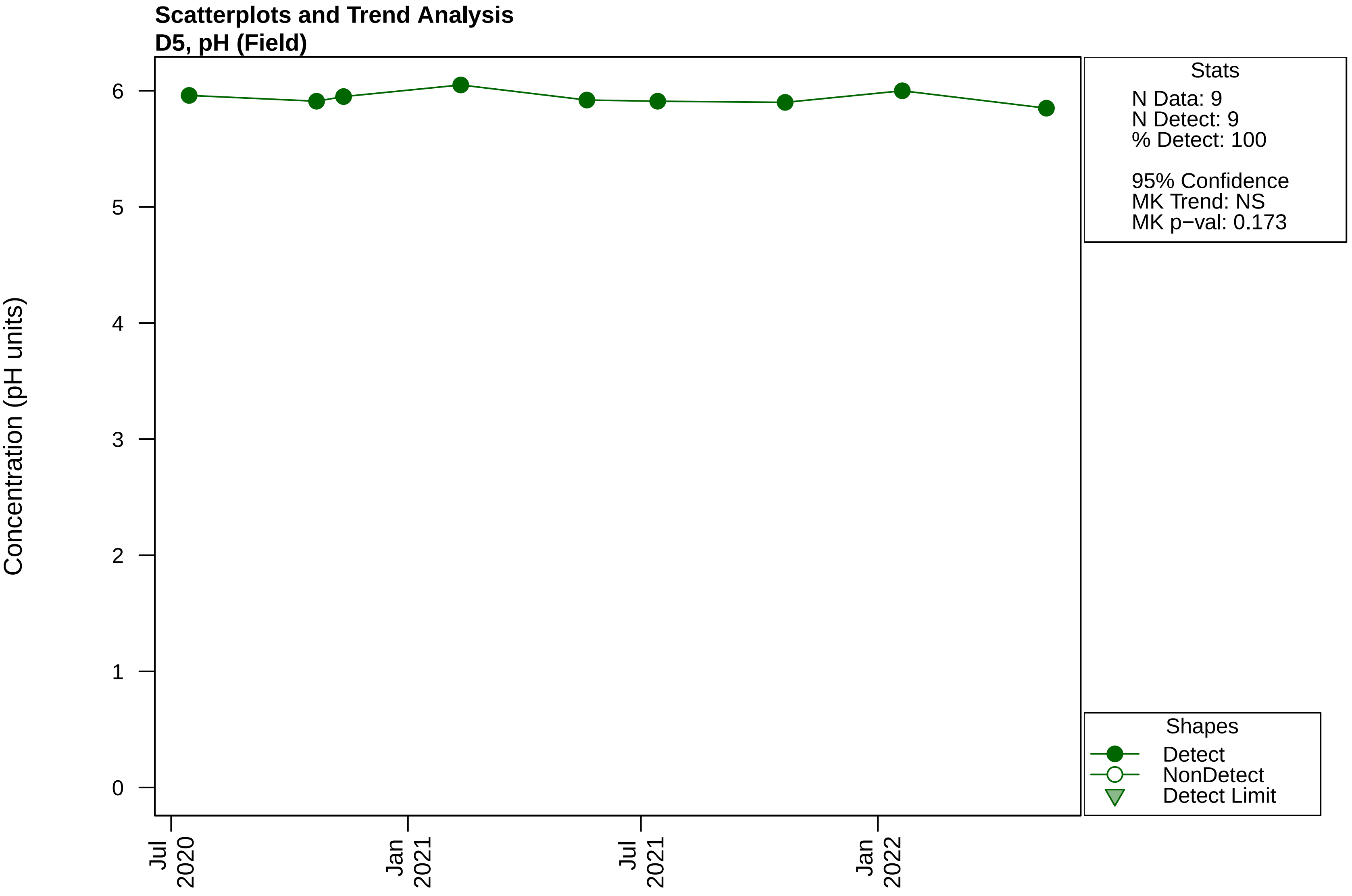
Scatterplots and Trend Analysis
D5, Nickel (Filtered)



Scatterplots and Trend Analysis
D5, Nitrate

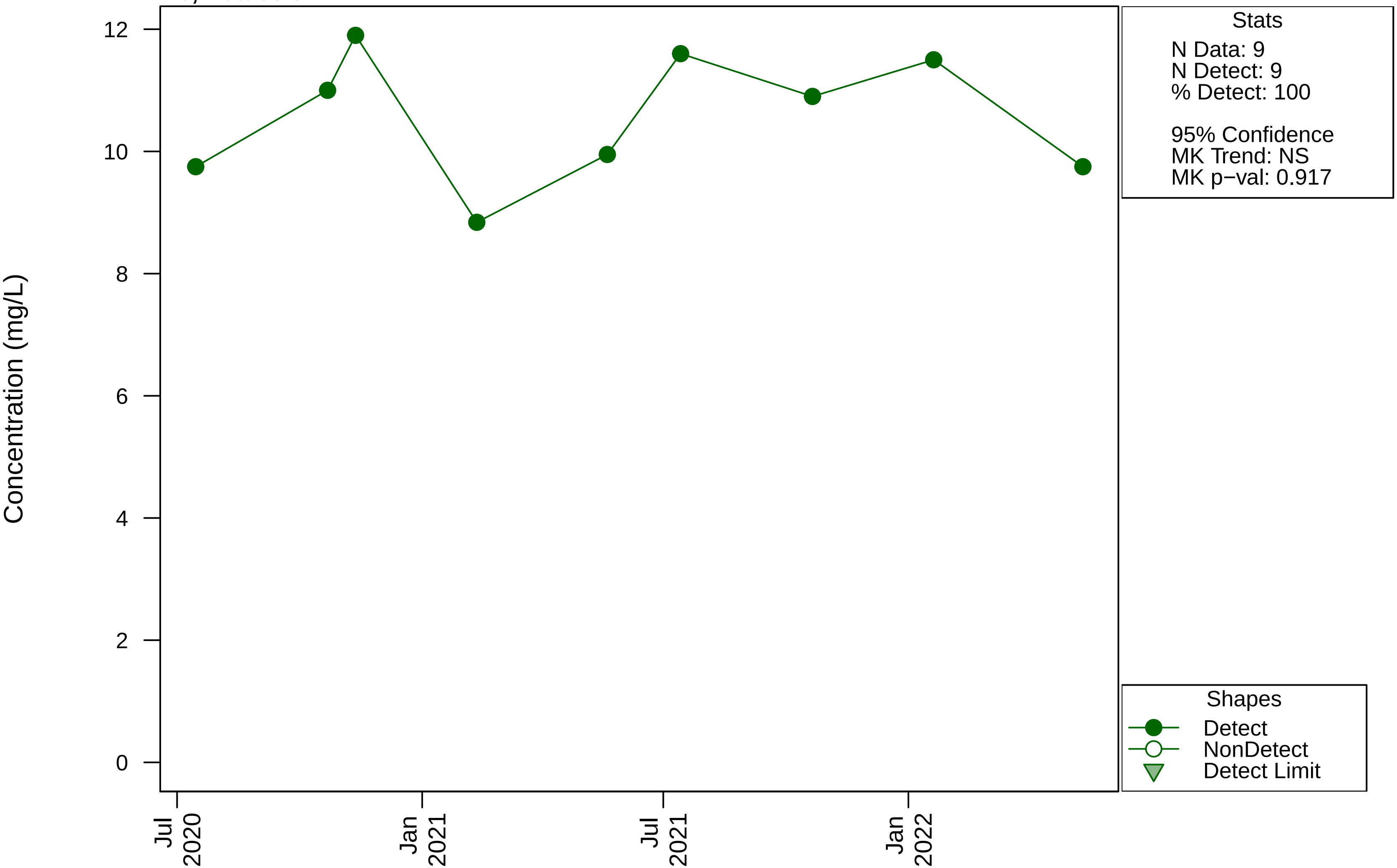



Scatterplots and Trend Analysis
D5, Nitrite + Nitrate (as N)
Concentration (mg/L)
0.020
0.015
0.010
0.005
0.000
Feb 2021
Jul 2021
Stats
N Data: 2
N Detect: 2
% Detect: 100
MK criteria not met
Shapes
Detect
NonDetect
Detect Limit

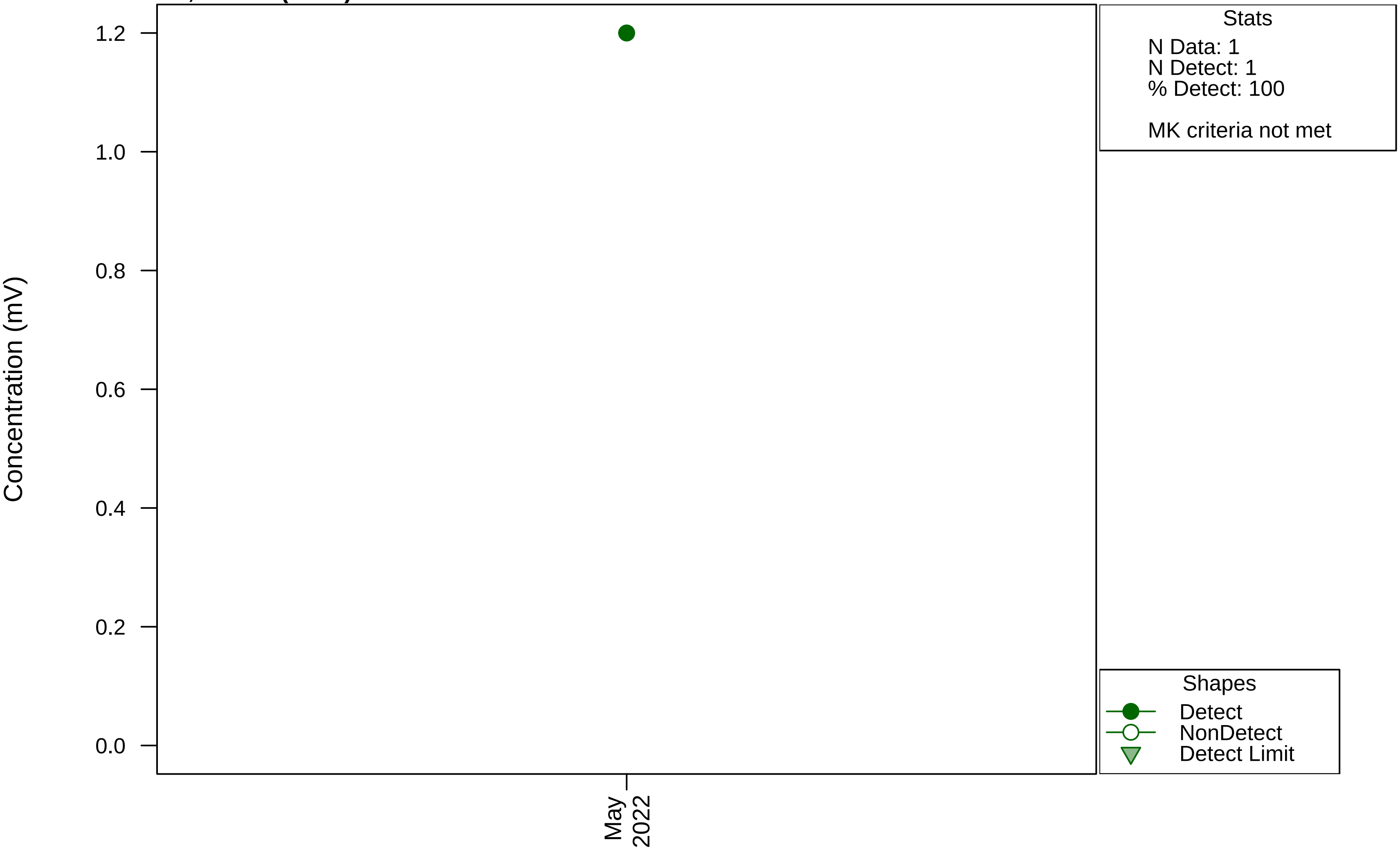


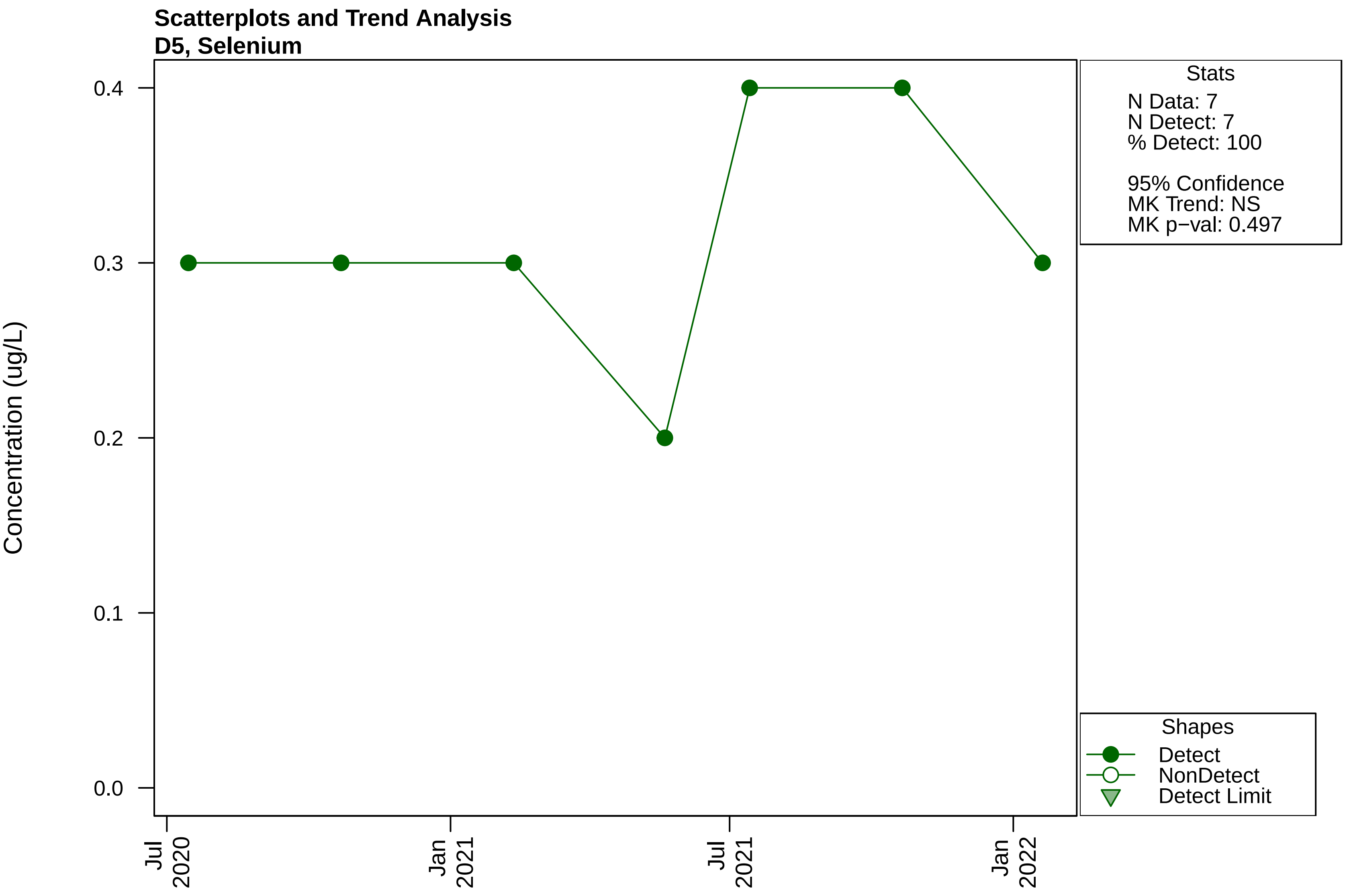
Scatterplots and Trend Analysis
D5, pH (Field)
Concentration (pH units)
0
1
2
3
4
5
6
Jul 2020
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 9
N Detect: 9
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.173
Shapes
Detect
NonDetect
Detect Limit

Scatterplots and Trend Analysis
D5, Potassium



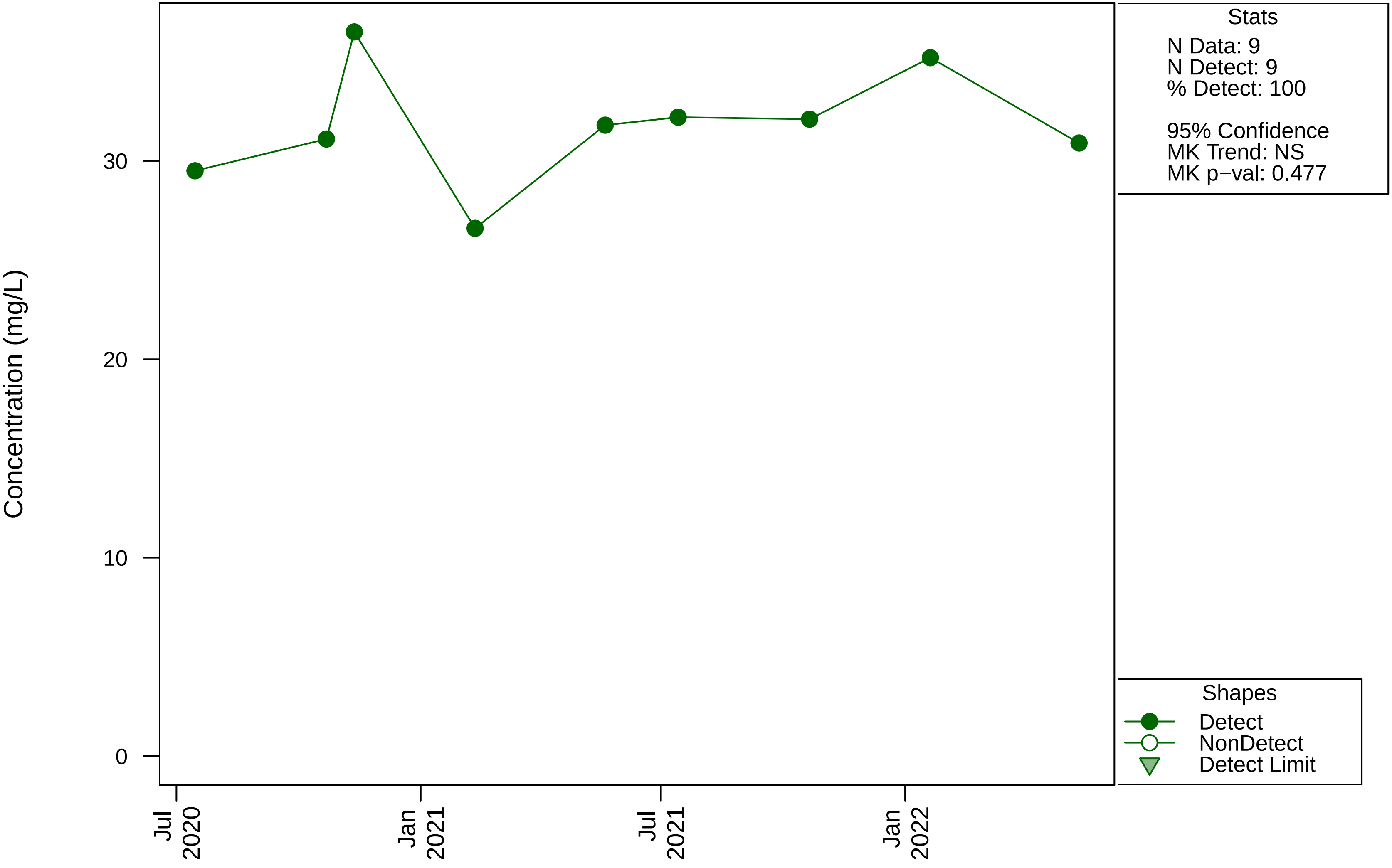
Scatterplots and Trend Analysis
D5, Redox (Field)

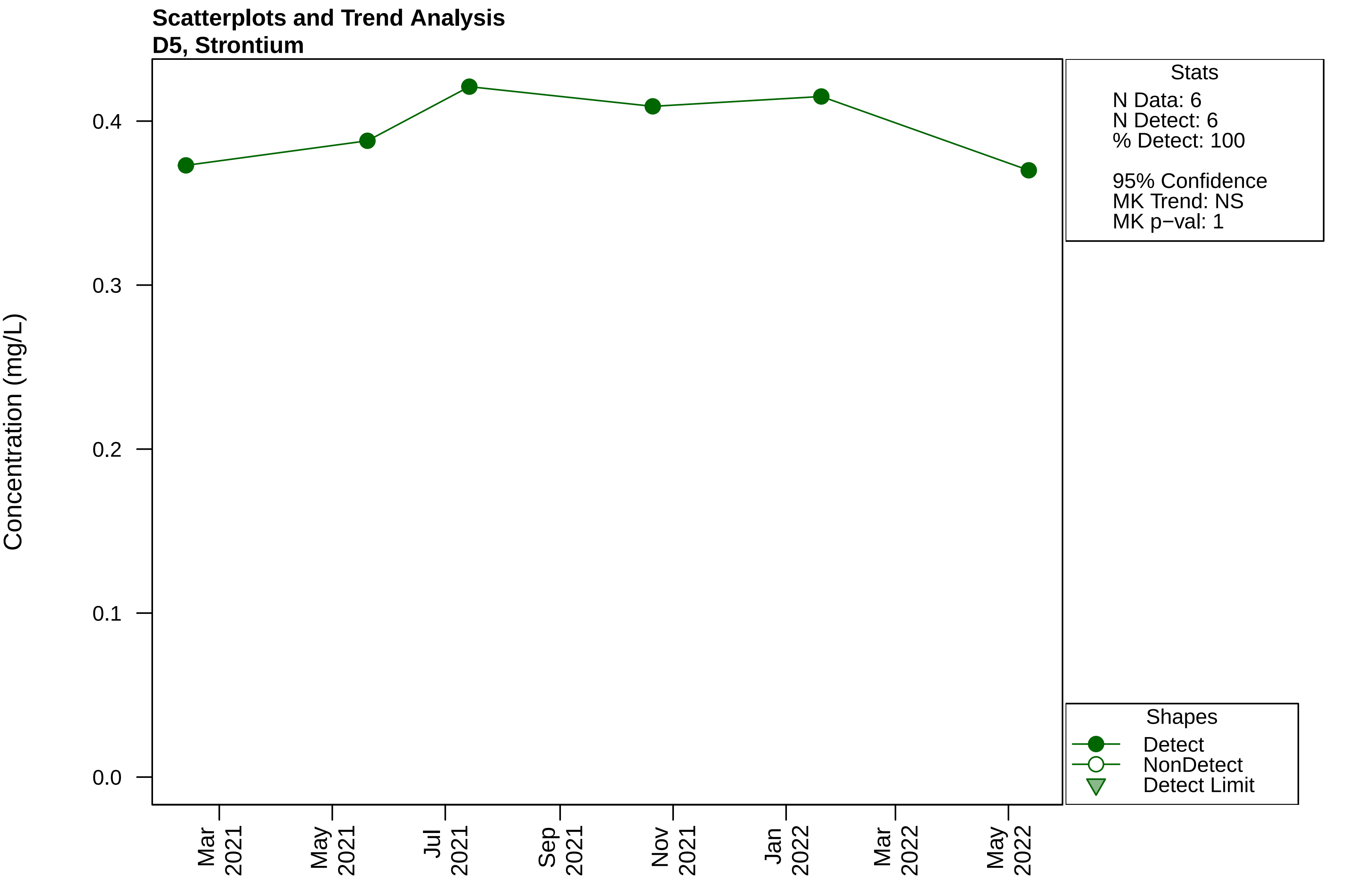




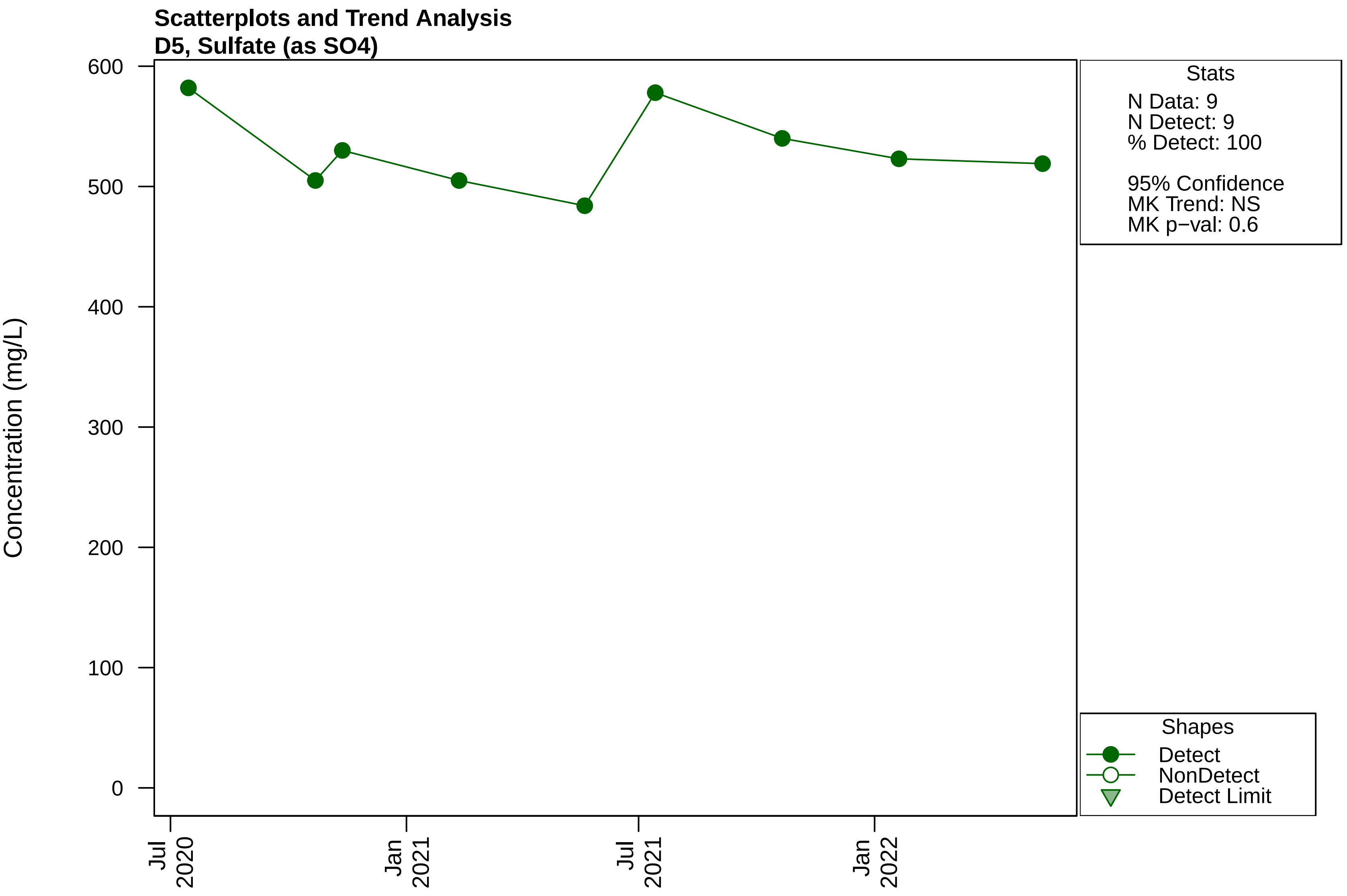
Scatterplots and Trend Analysis
D5, Selenium
Concentration (ug/L)
0.4
0.3
0.2
0.1
0.0
Jul 2020
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 7
N Detect: 7
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.497
Shapes
Detect
NonDetect
Detect Limit

Scatterplots and Trend Analysis
D5, Sodium

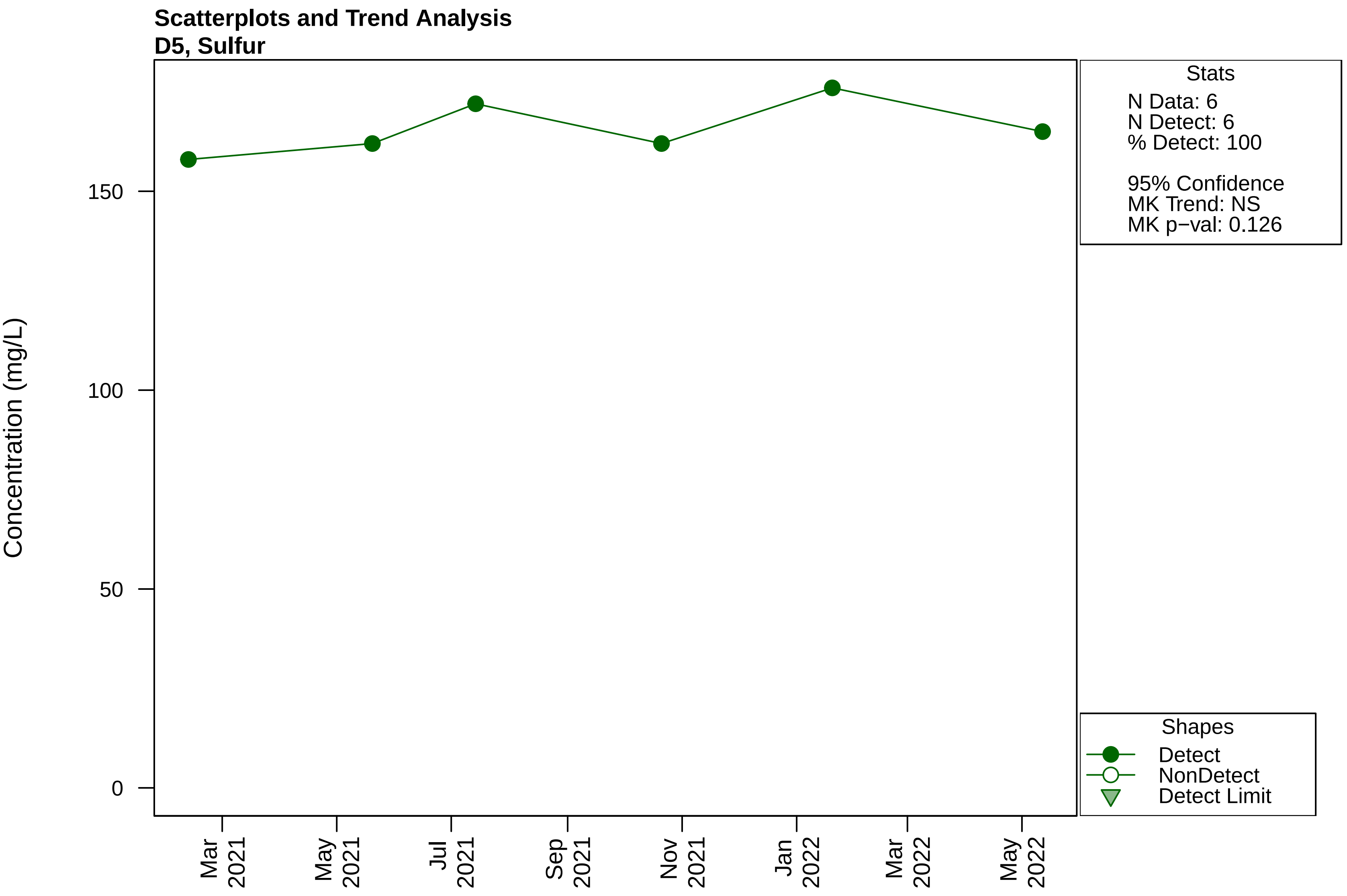


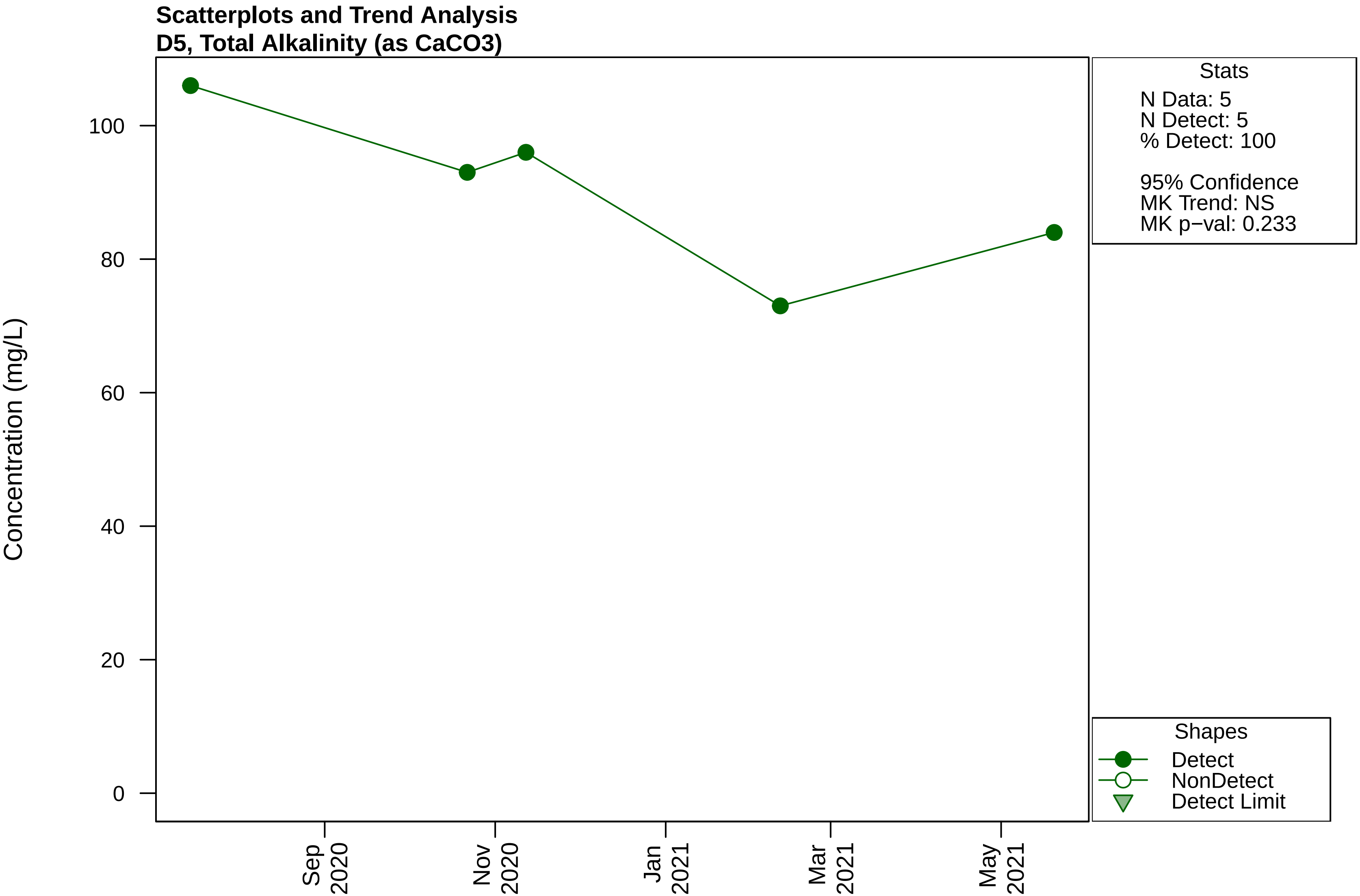


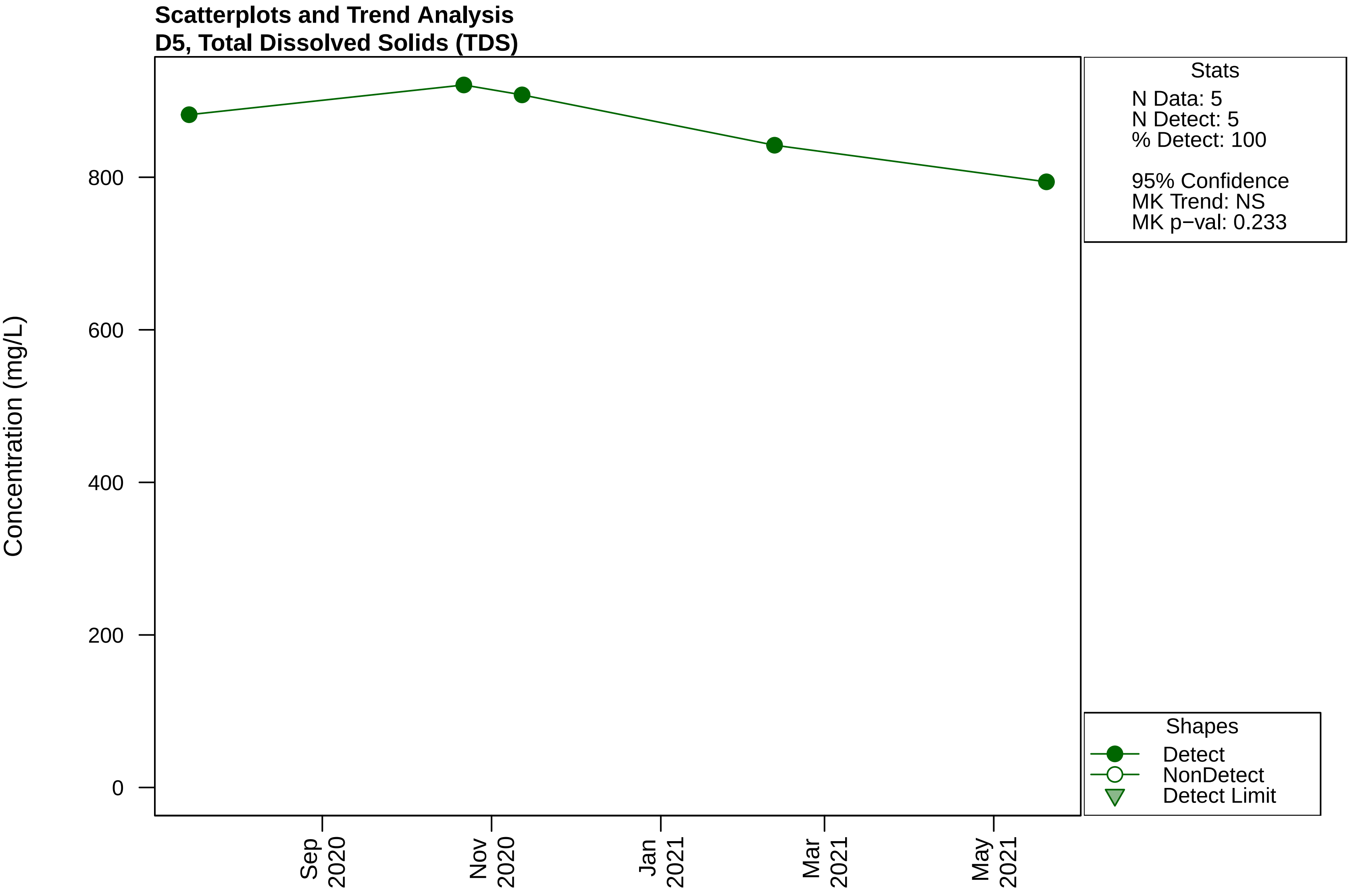
Scatterplots and Trend Analysis
D5, Strontium
Concentration (mg/L)
0.0
0.1
0.2
0.3
0.4
Mar 2021
May 2021
Jul 2021
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 6
N Detect: 6
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 1
Shapes
Detect
NonDetect
Detect Limit



Scatterplots and Trend Analysis
D5, Sulfate (as SO4)
Concentration (mg/L)
0
100
200
300
400
500
600
Jul 2020
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 9
N Detect: 9
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.6
Shapes
Detect
NonDetect
Detect Limit

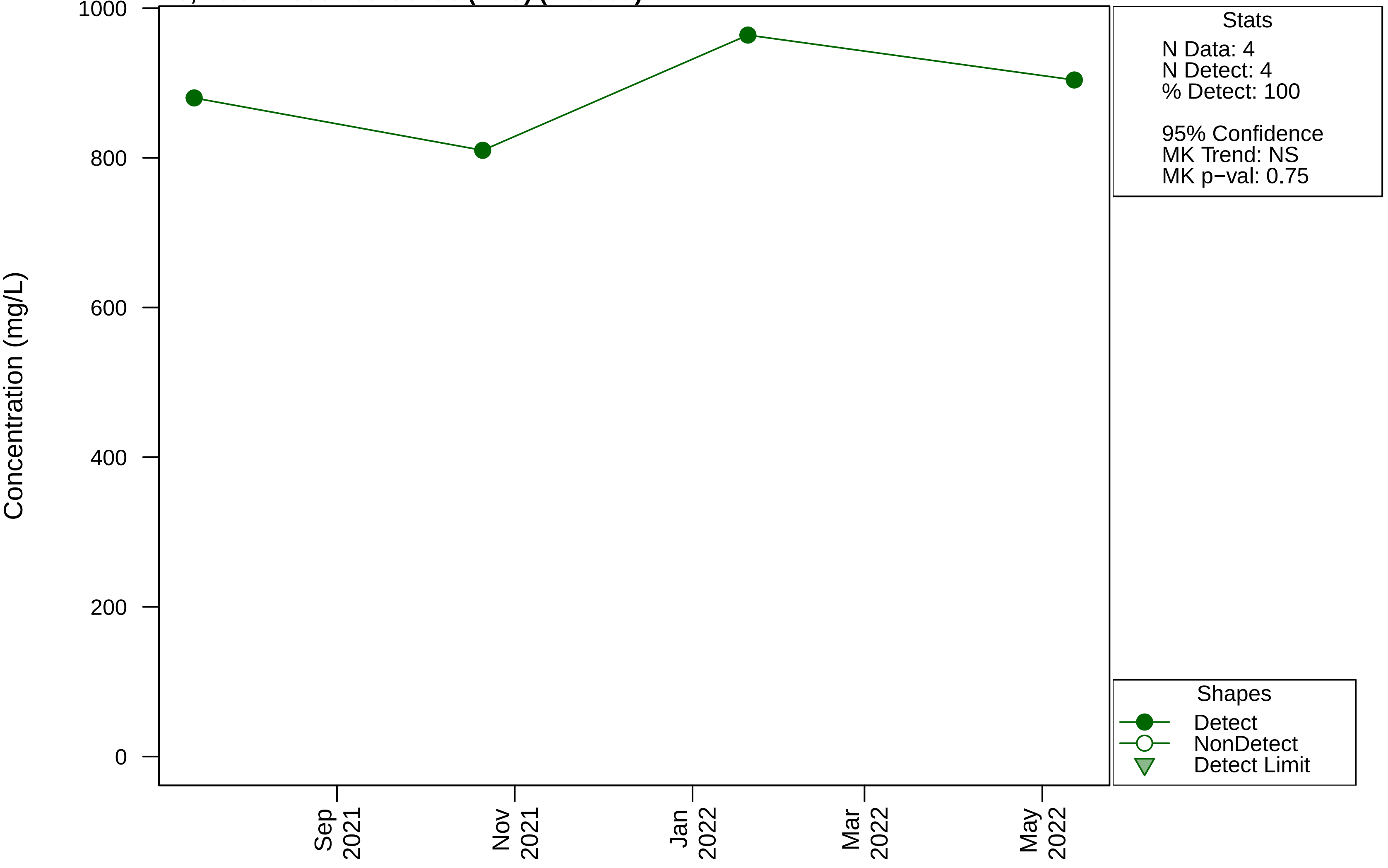

Scatterplots and Trend Analysis
D5, Sulfur
Concentration (mg/L)
0
50
100
150
Mar 2021
May 2021
Jul 2021
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 6
N Detect: 6
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.126
Shapes
Detect
NonDetect
Detect Limit

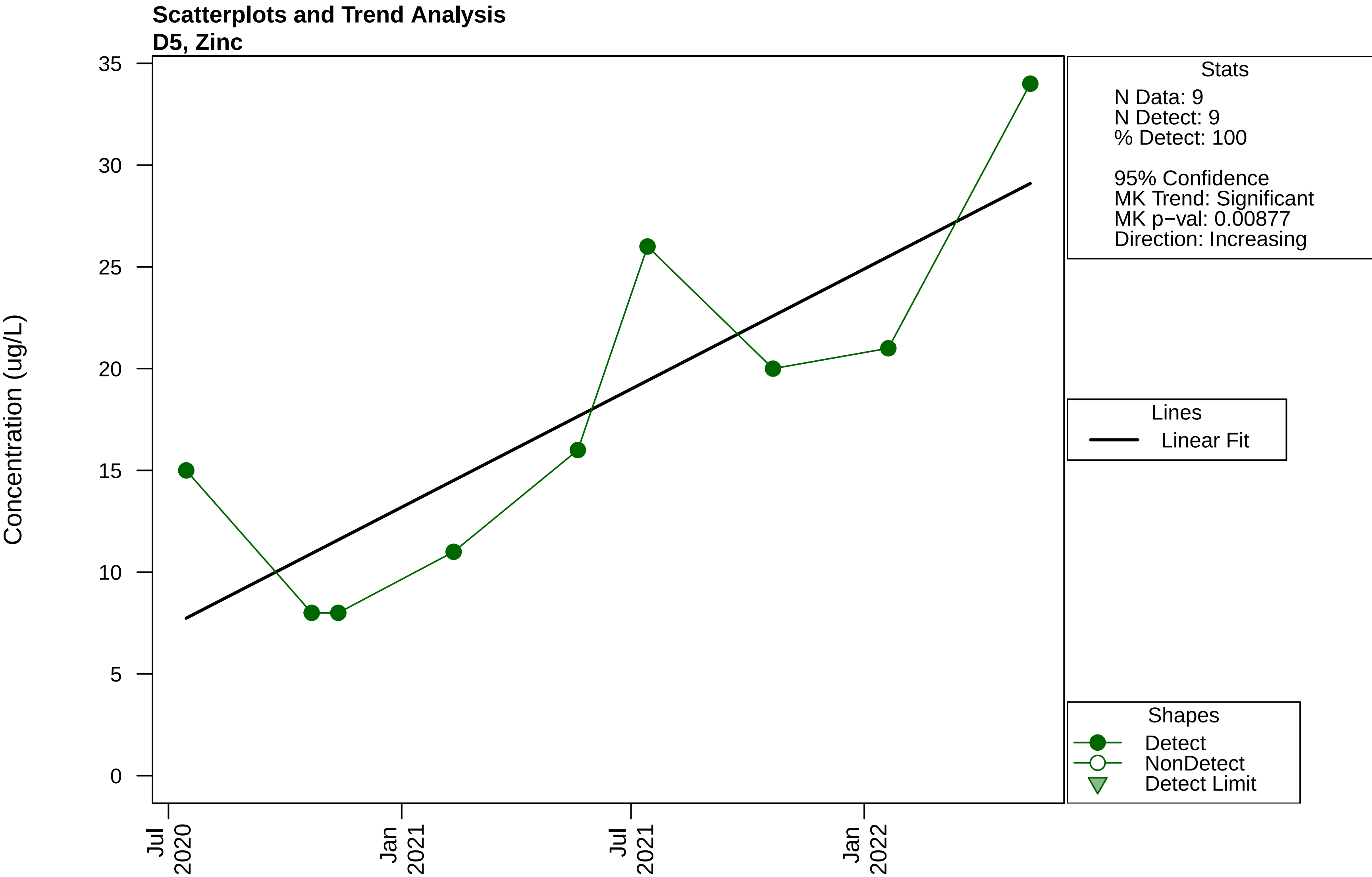

Scatterplots and Trend Analysis
D5, Total Alkalinity (as CaCO3)
Concentration (mg/L)
100
80
60
40
20
0
Sep 2020
Nov 2020
Jan 2021
Mar 2021
May 2021
Stats
N Data: 5
N Detect: 5
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.233
Shapes
Detect
NonDetect
Detect Limit



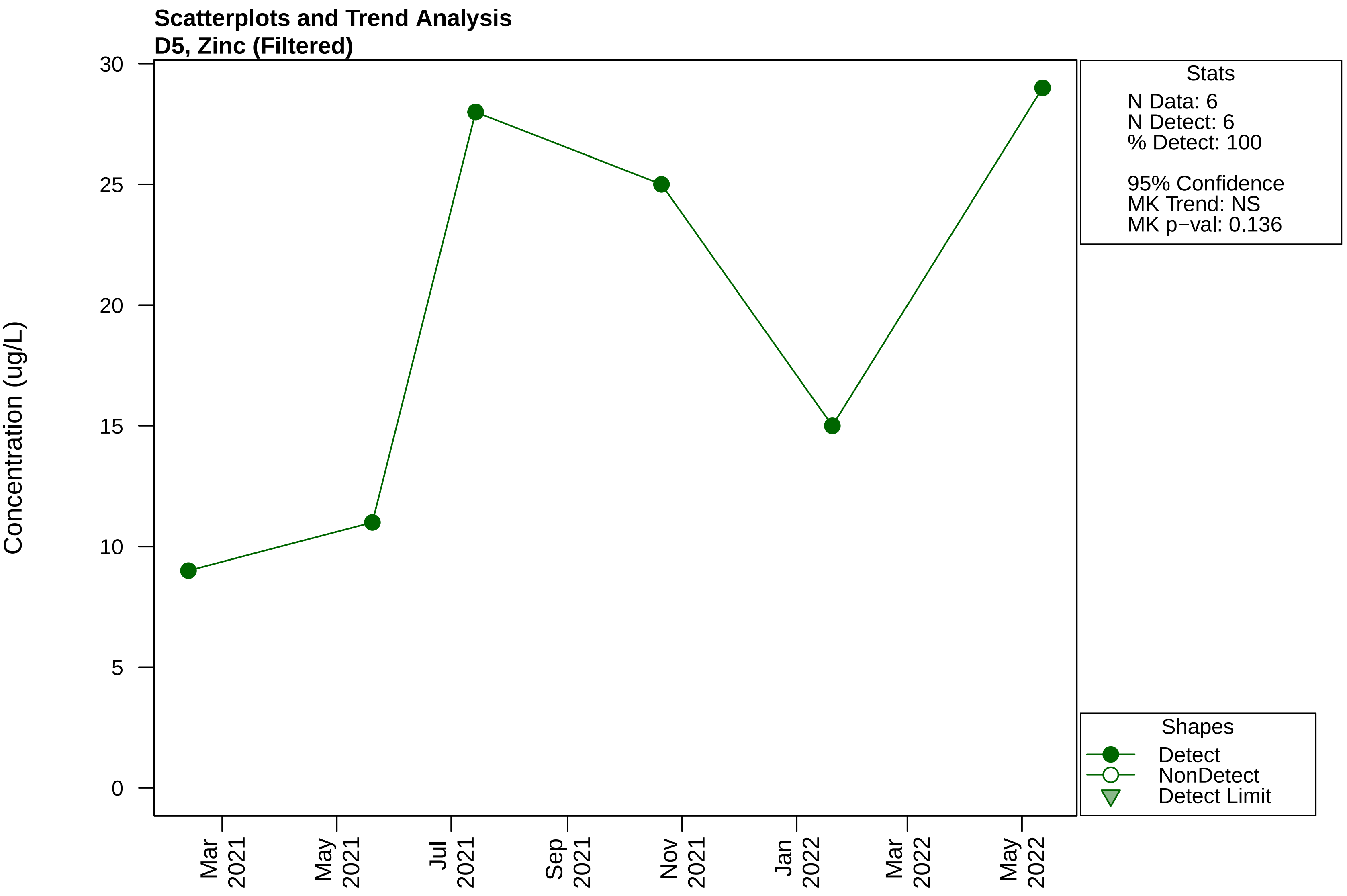
Scatterplots and Trend Analysis
D5, Total Dissolved Solids (TDS)
Concentration (mg/L)
0
200
400
600
800
Sep 2020
Nov 2020
Jan 2021
Mar 2021
May 2021
Stats
N Data: 5
N Detect: 5
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.233
Shapes
Detect
NonDetect
Detect Limit

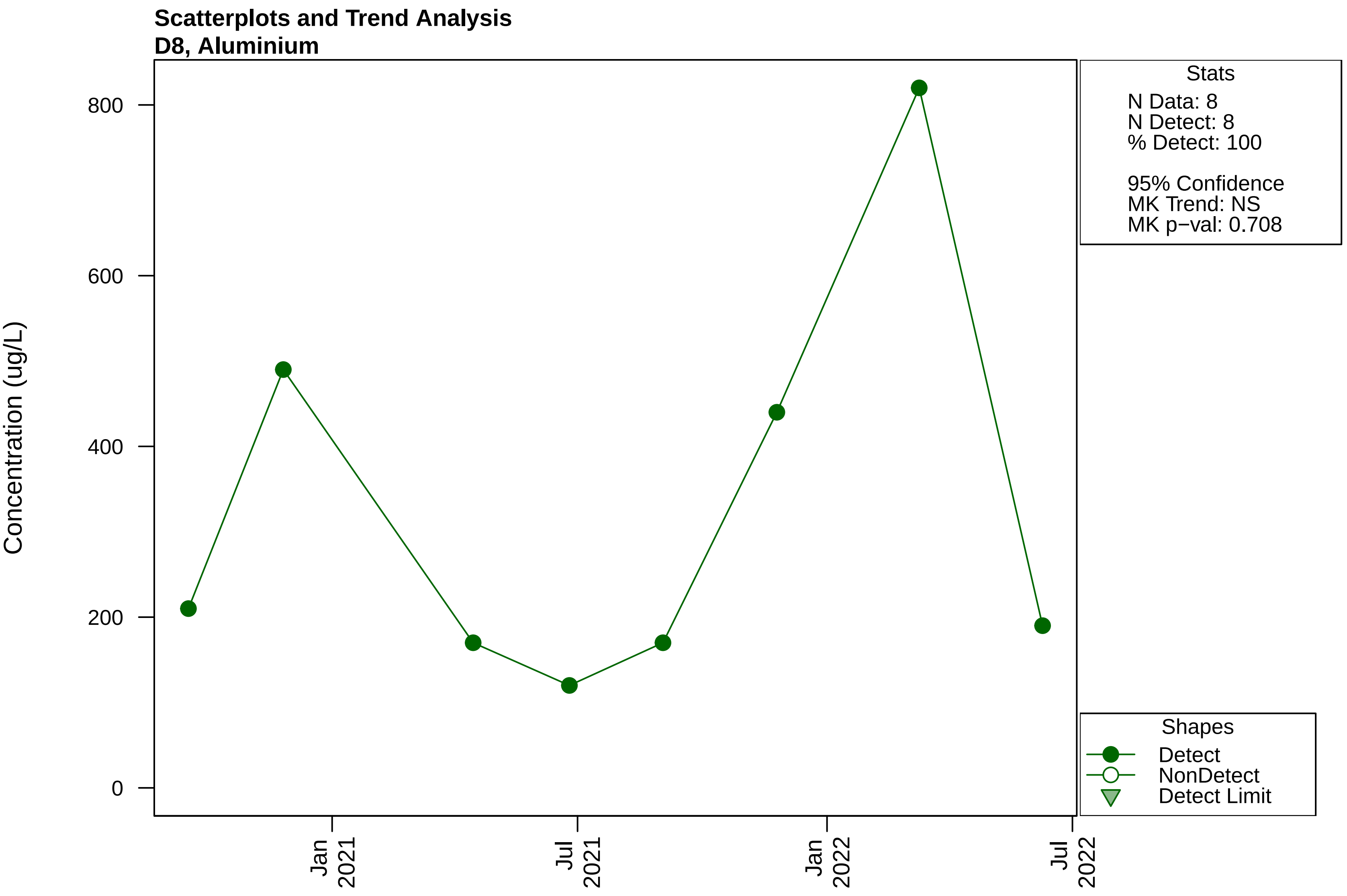
Scatterplots and Trend Analysis
D5, Total Dissolved Solids (TDS) (Filtered)



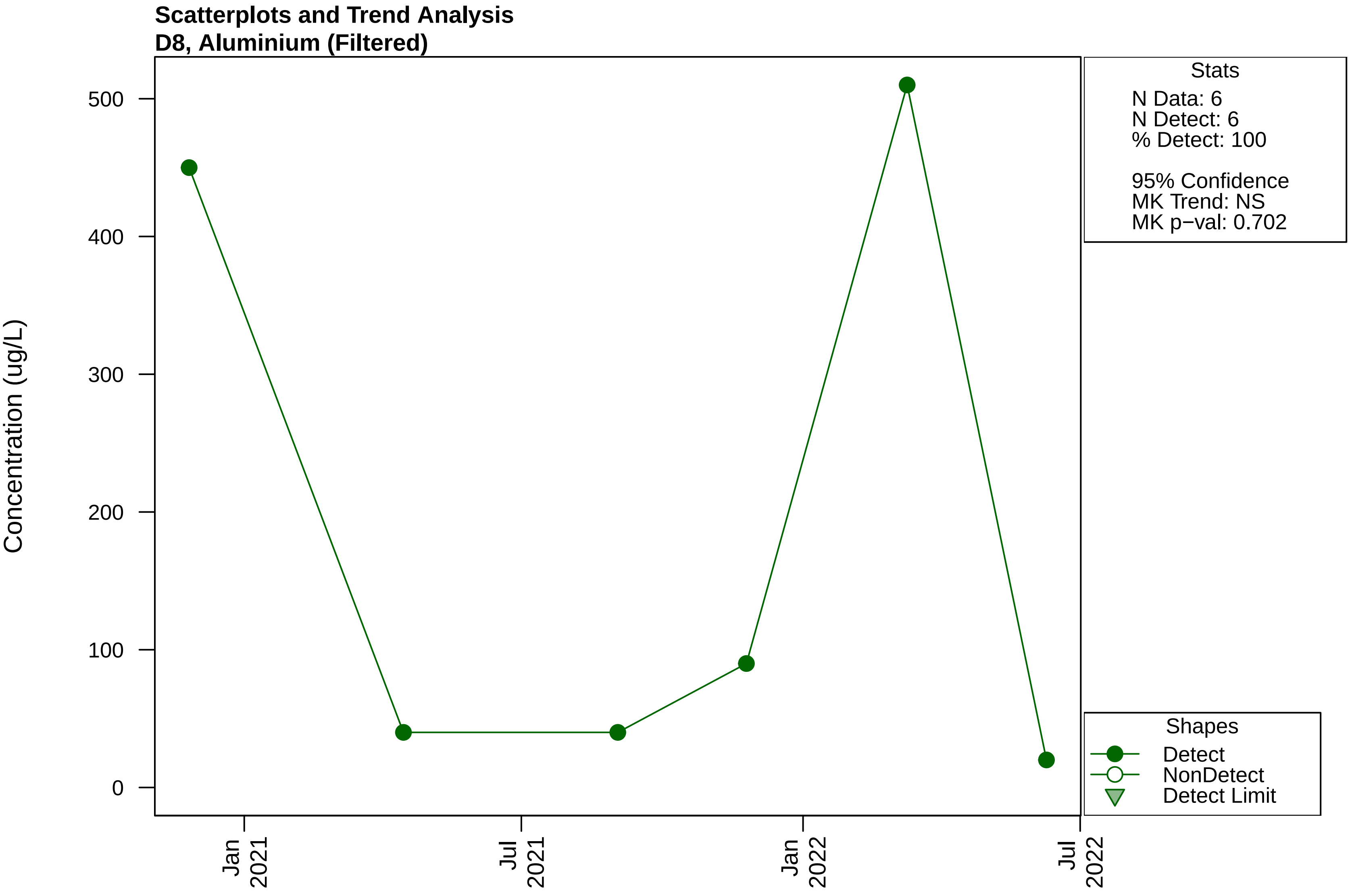


Scatterplots and Trend Analysis
D5, Zinc
Concentration (ug/L)
0
5
10
15
20
25
30
35
Jul 2020
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 9
N Detect: 9
% Detect: 100
95% Confidence
MK Trend: Significant
MK p−val: 0.00877
Direction: Increasing
Lines
Linear Fit
Shapes
Detect
NonDetect
Detect Limit


Scatterplots and Trend Analysis
D5, Zinc (Filtered)
Concentration (ug/L)
30
25
20
15
10
5
0
Mar 2021
May 2021
Jul 2021
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 6
N Detect: 6
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.136
Shapes
Detect
NonDetect
Detect Limit

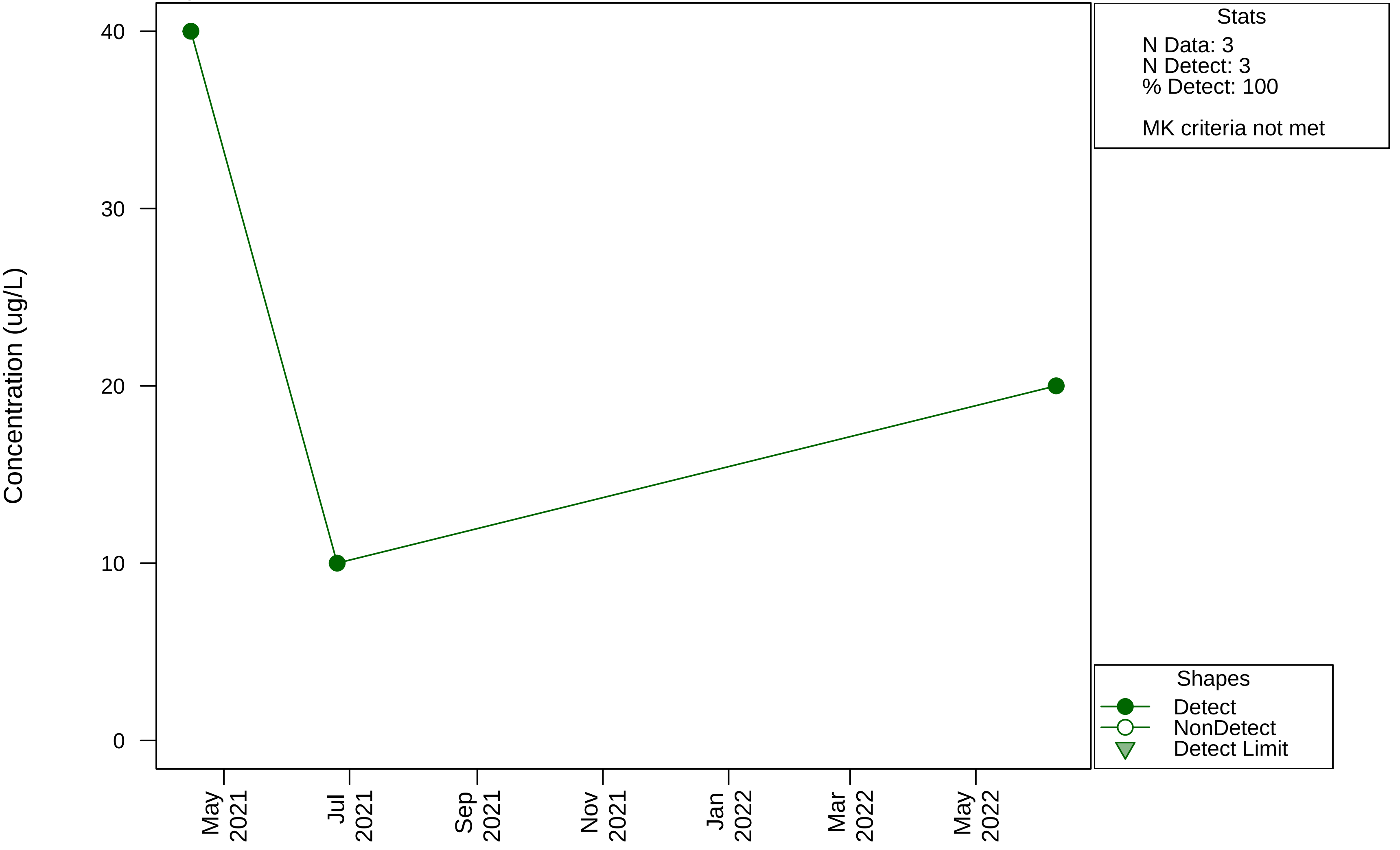


Scatterplots and Trend Analysis
D8, Aluminium
Concentration (ug/L)
0
200
400
600
800
Jan 2021
Jul 2021
Jan 2022
Jul 2022
Stats
N Data: 8
N Detect: 8
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.708
Shapes
Detect
NonDetect
Detect Limit

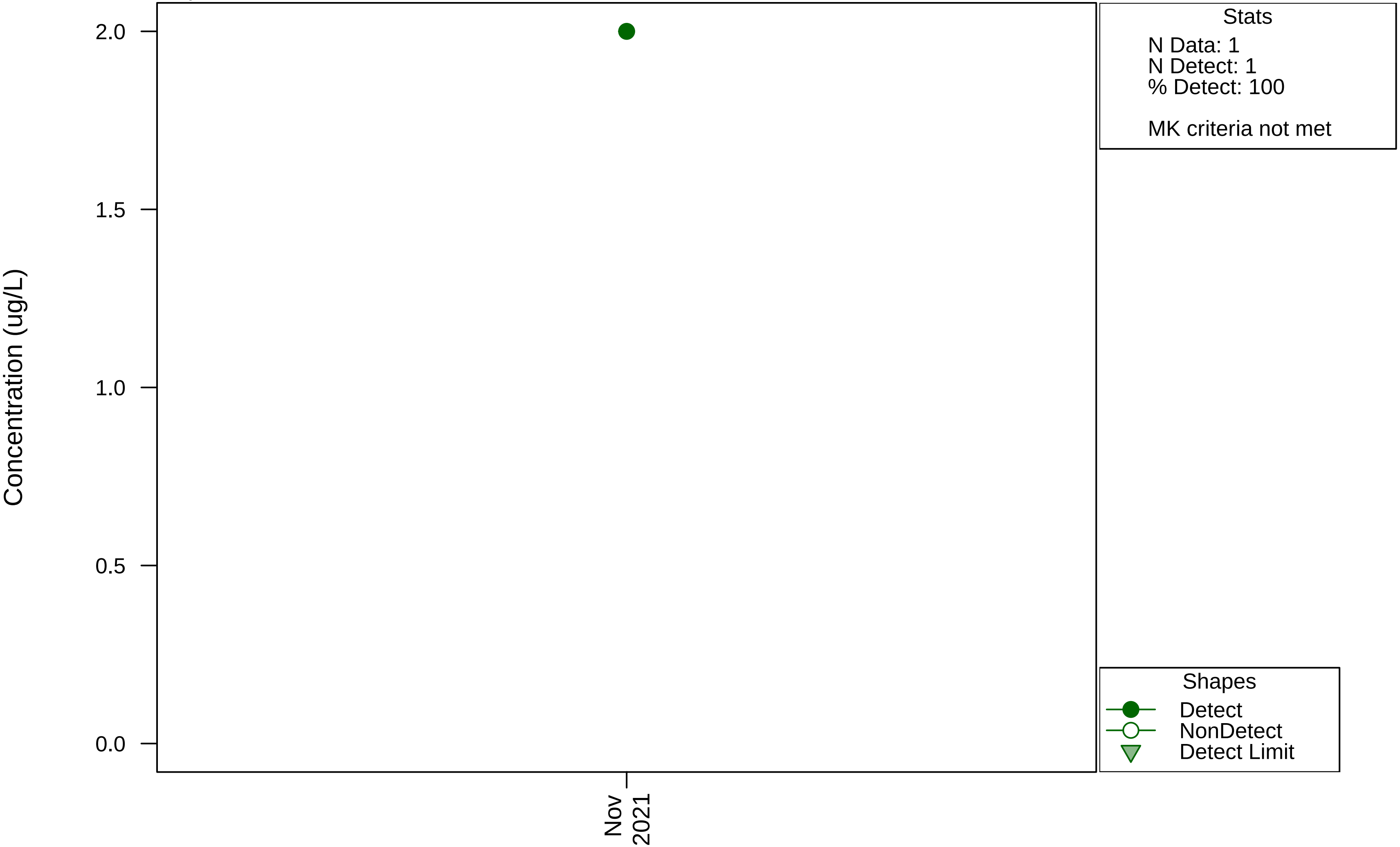


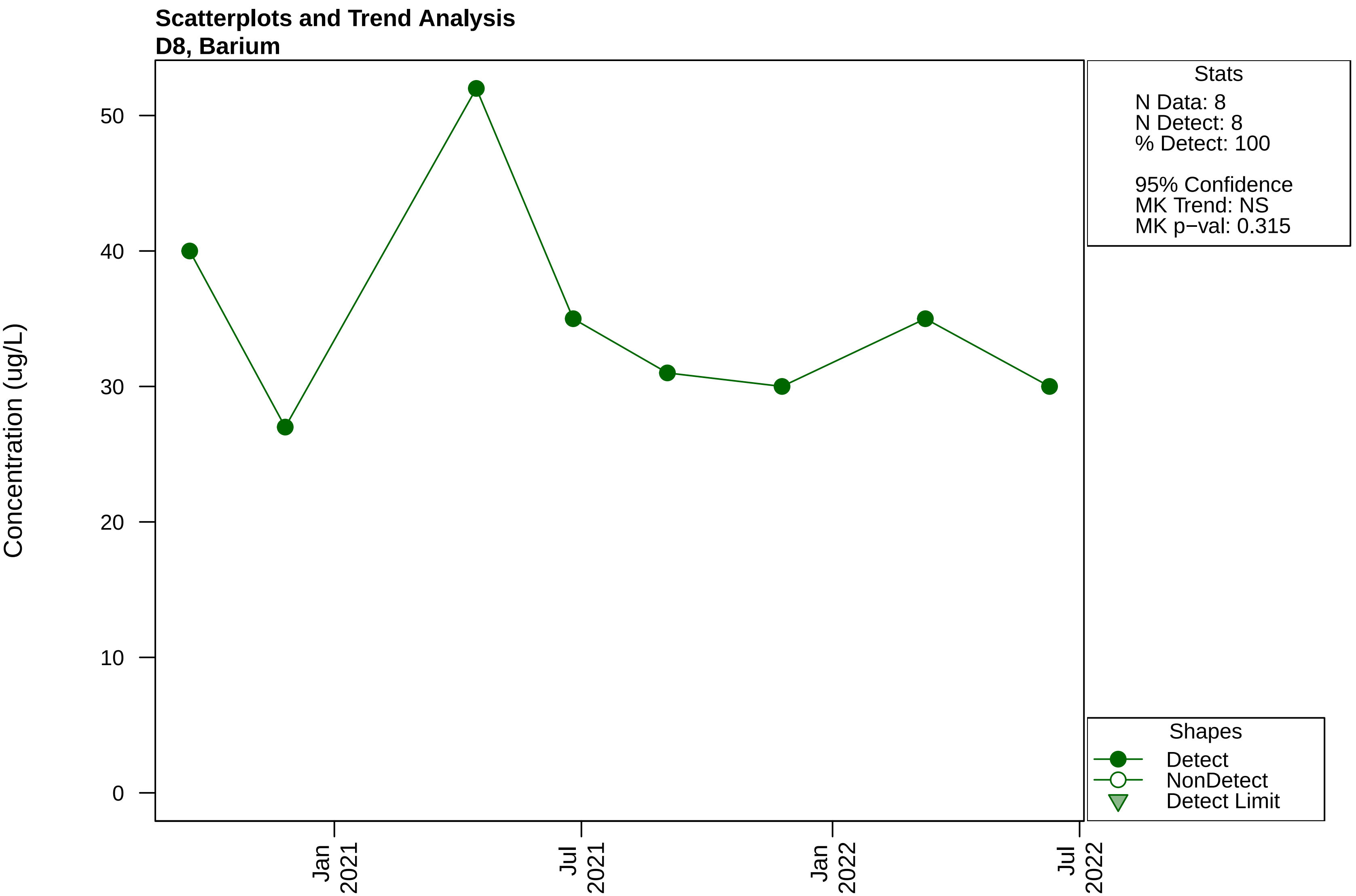
Scatterplots and Trend Analysis
D8, Aluminium (Filtered)
Concentration (ug/L)
0
100
200
300
400
500
Jan 2021
Jul 2021
Jan 2022
Jul 2022
Stats
N Data: 6
N Detect: 6
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.702
Shapes
Detect
NonDetect
Detect Limit

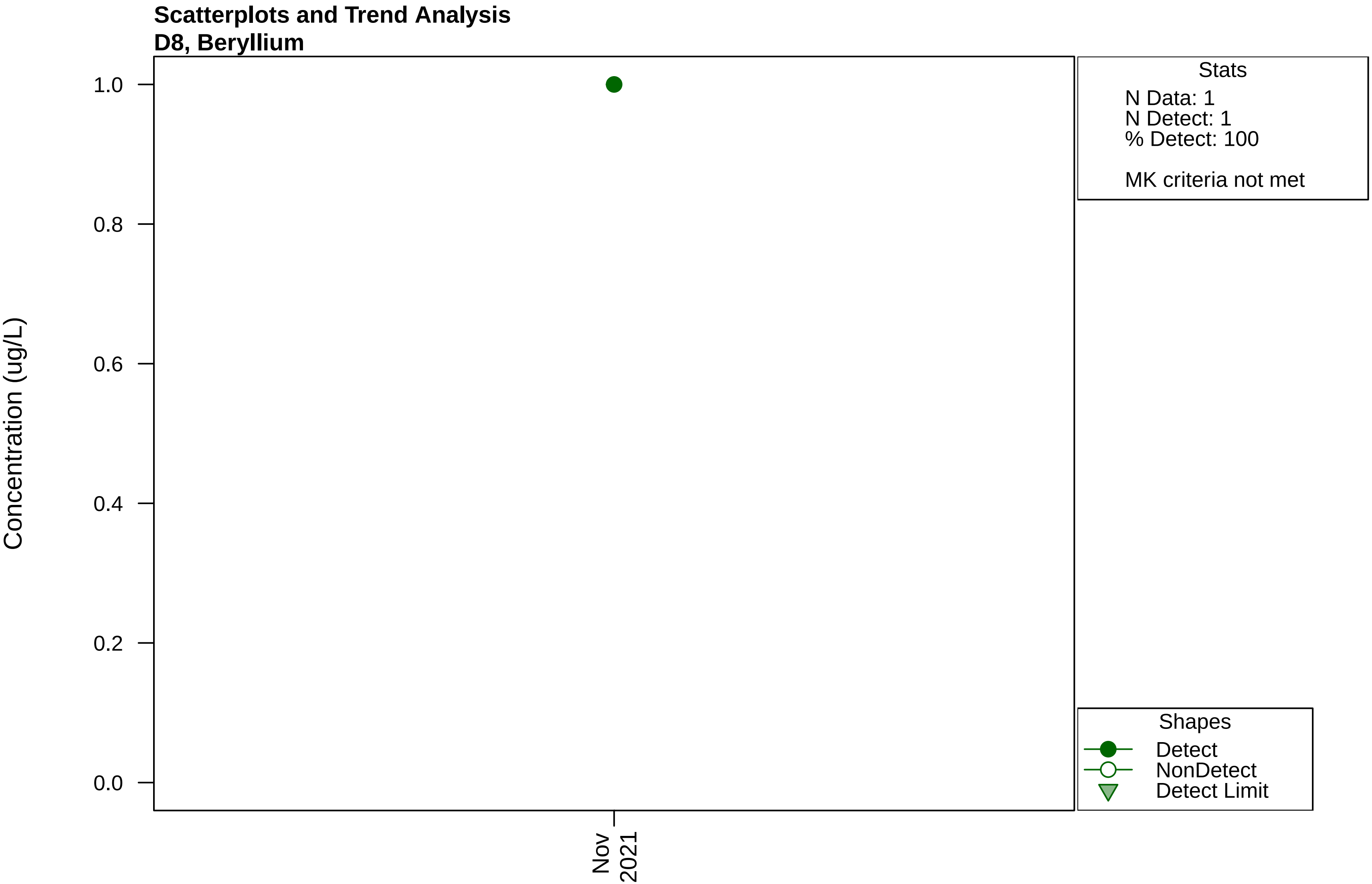
Scatterplots and Trend Analysis
D8, Ammonia



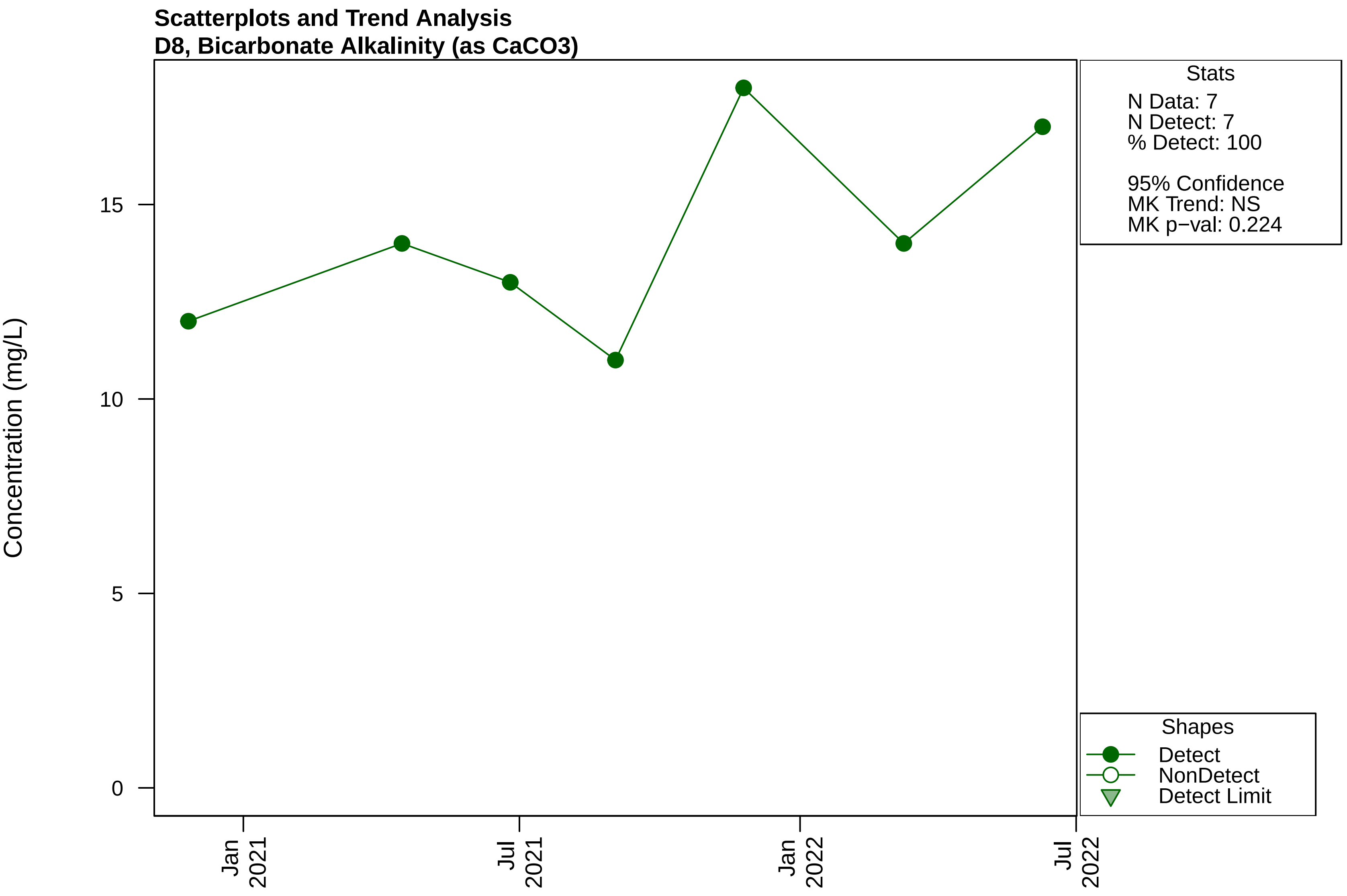
Scatterplots and Trend Analysis
D8, Arsenic



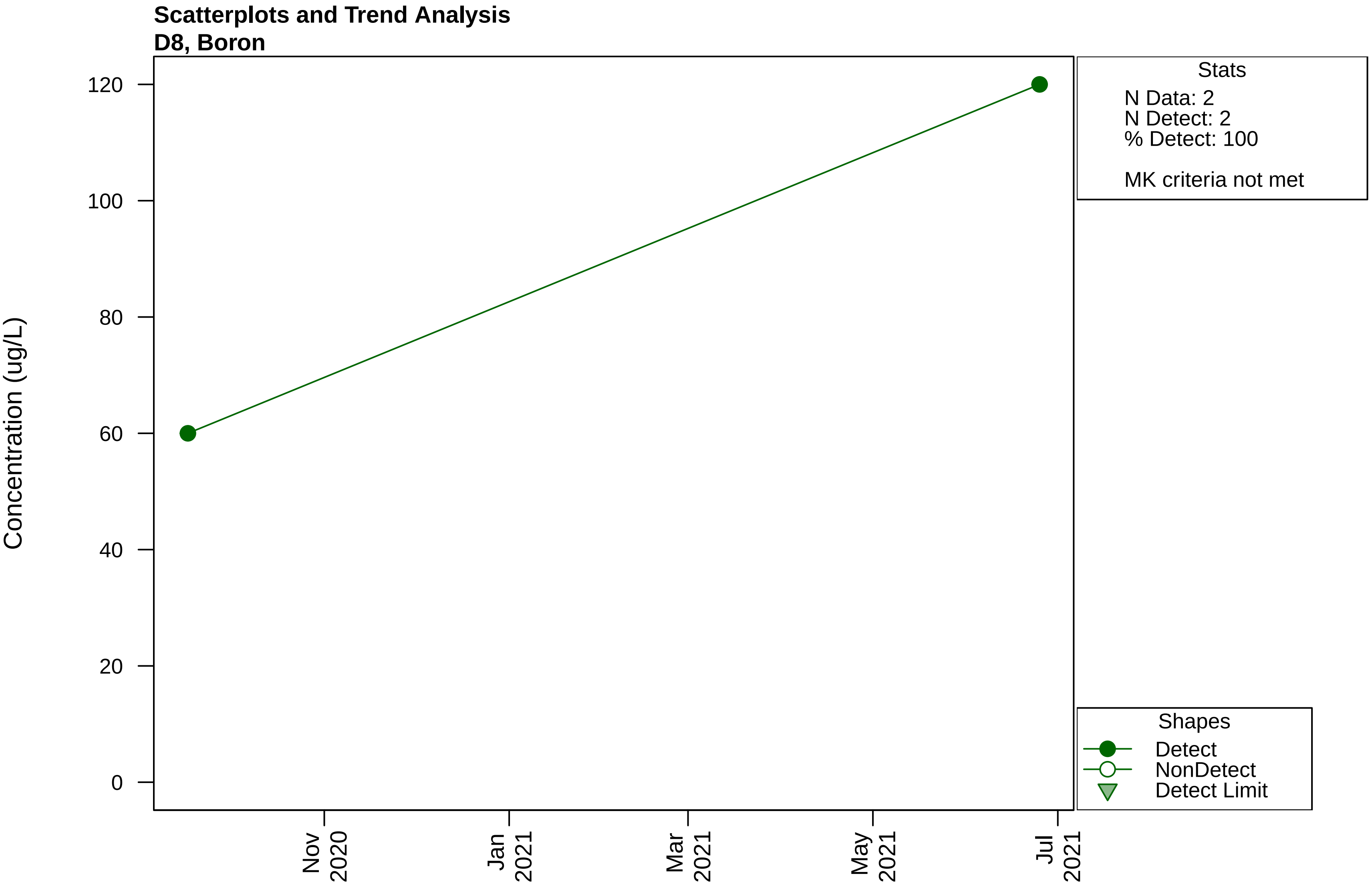

Scatterplots and Trend Analysis
D8, Barium
Concentration (ug/L)
0
10
20
30
40
50
Jan 2021
Jul 2021
Jan 2022
Jul 2022
Stats
N Data: 8
N Detect: 8
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.315
Shapes
Detect
NonDetect
Detect Limit



Scatterplots and Trend Analysis
D8, Beryllium
Concentration (ug/L)
1.0
0.8
0.6
0.4
0.2
0.0
Nov 2021
Stats
N Data: 1
N Detect: 1
% Detect: 100
MK criteria not met
Shapes
Detect
NonDetect
Detect Limit

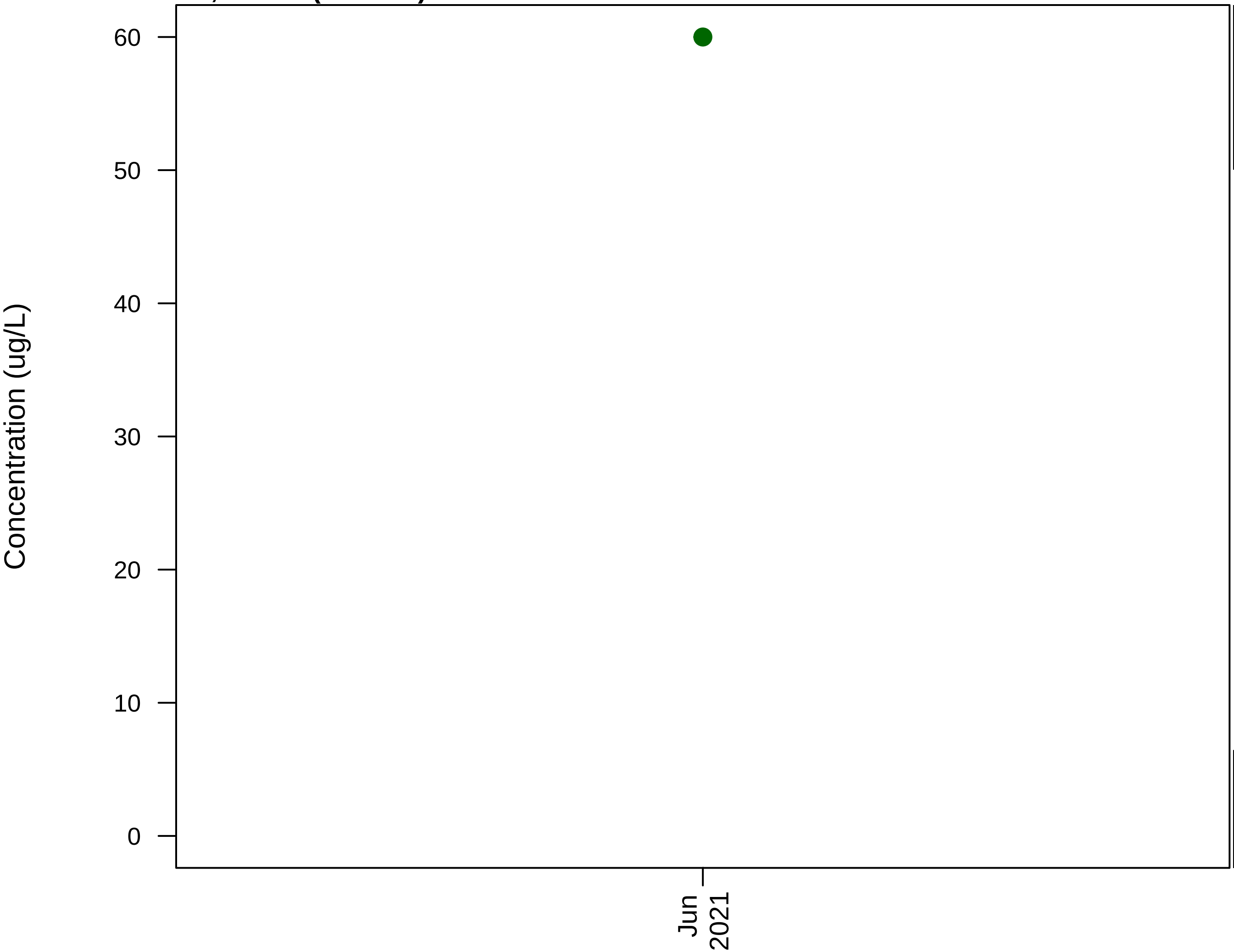


Scatterplots and Trend Analysis
D8, Bicarbonate Alkalinity (as CaCO3)
Stats
N Data: 7
N Detect: 7
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.224
Shapes
Detect
NonDetect
Detect Limit
Concentration (mg/L)
0
5
10
15
Jan 2021
Jul 2021
Jan 2022
Jul 2022

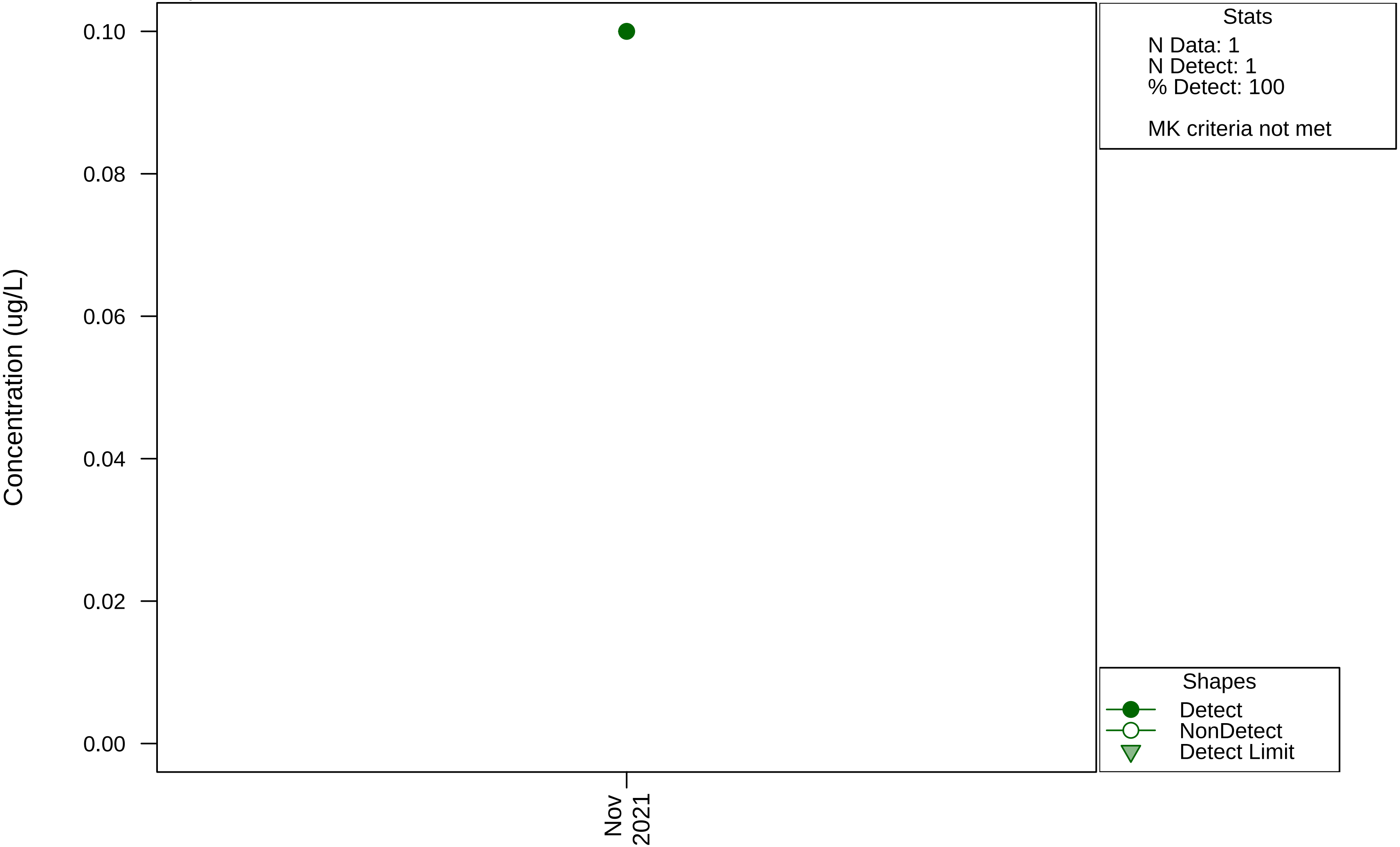


Scatterplots and Trend Analysis
D8, Boron
Concentration (ug/L)
0
20
40
60
80
100
120
Nov 2020
Jan 2021
Mar 2021
May 2021
Jul 2021
Stats
N Data: 2
N Detect: 2
% Detect: 100
MK criteria not met
Shapes
Detect
NonDetect
Detect Limit

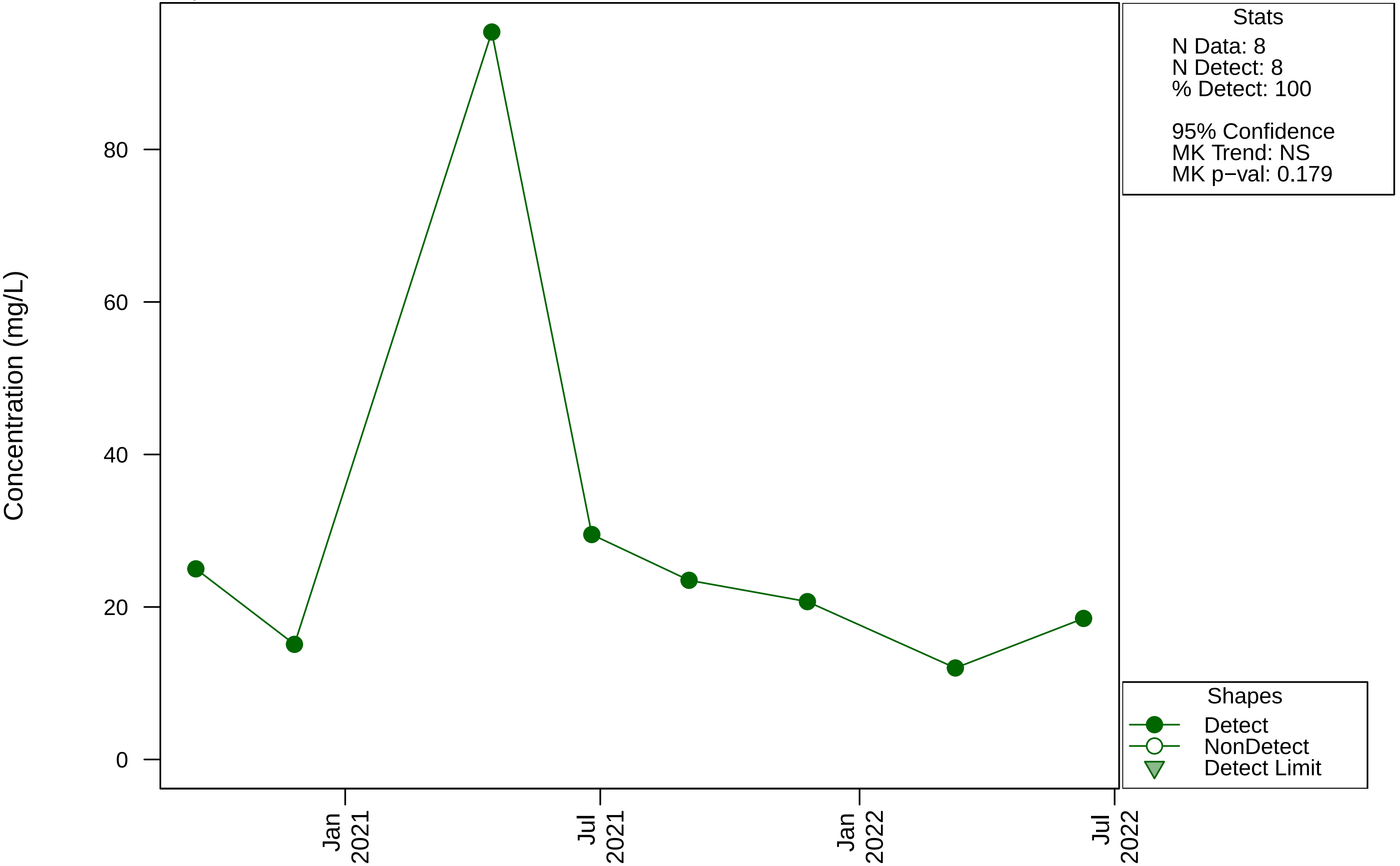
Scatterplots and Trend Analysis
D8, Boron (Filtered)



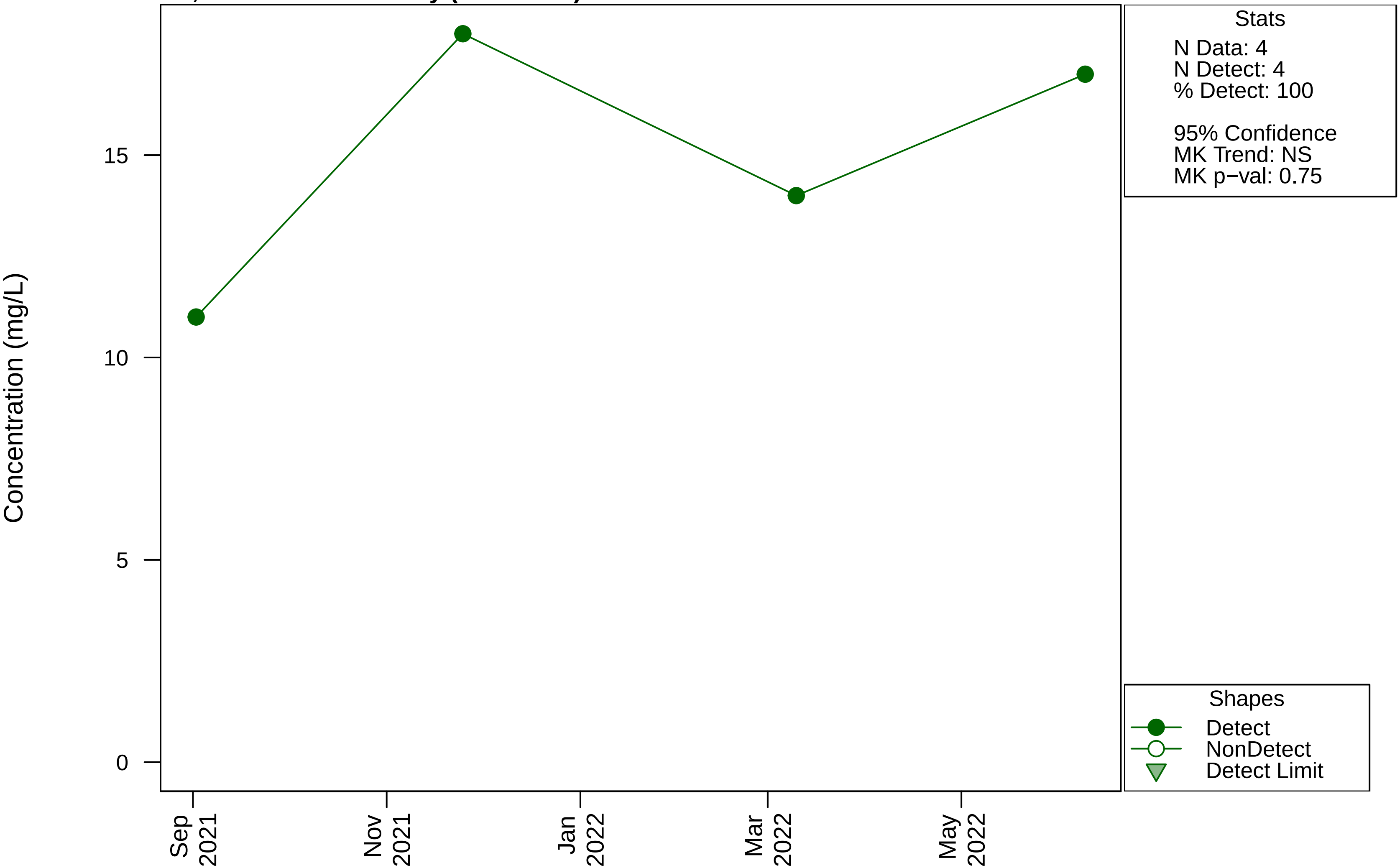
Scatterplots and Trend Analysis
D8, Cadmium



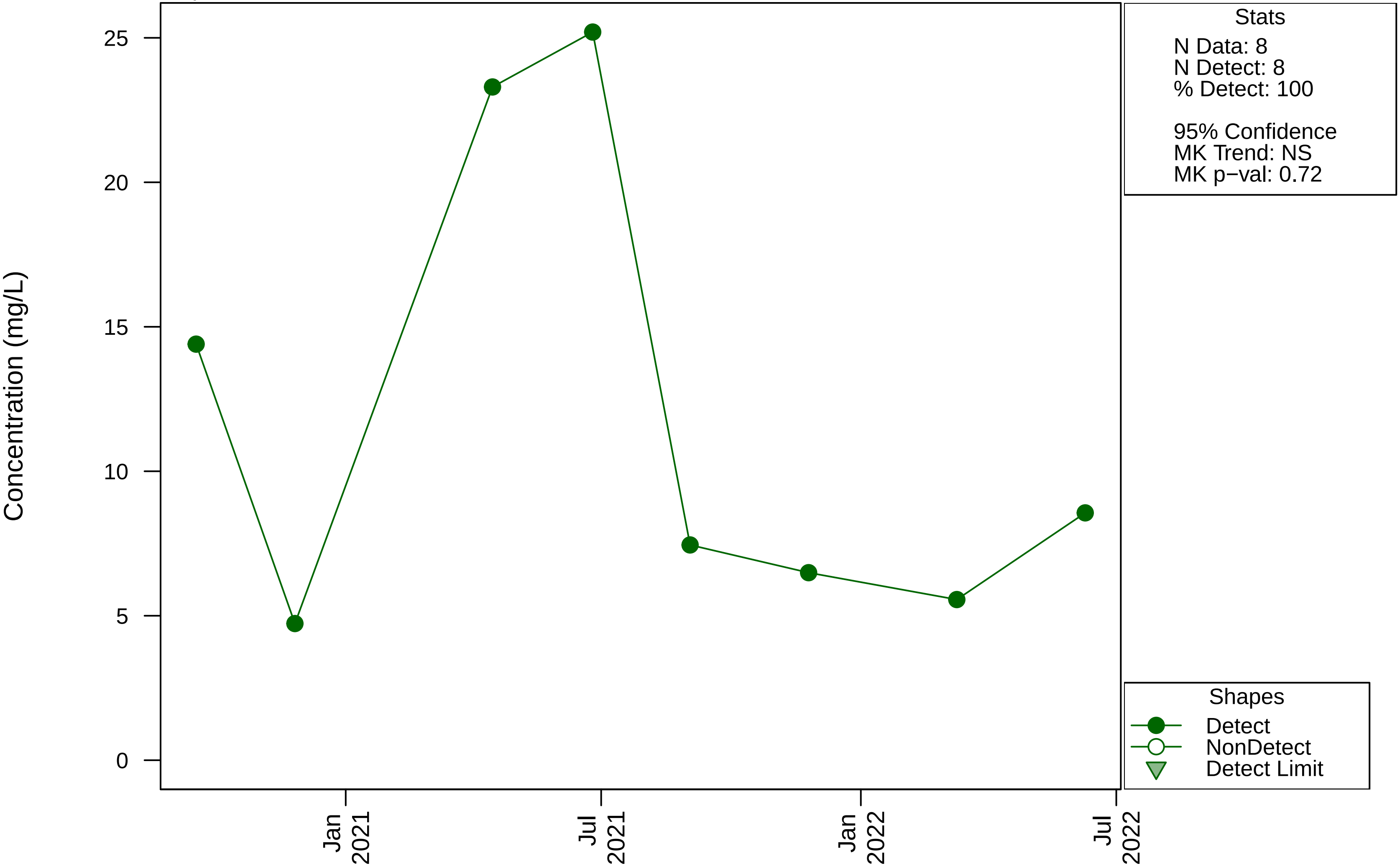
Scatterplots and Trend Analysis
D8, Calcium

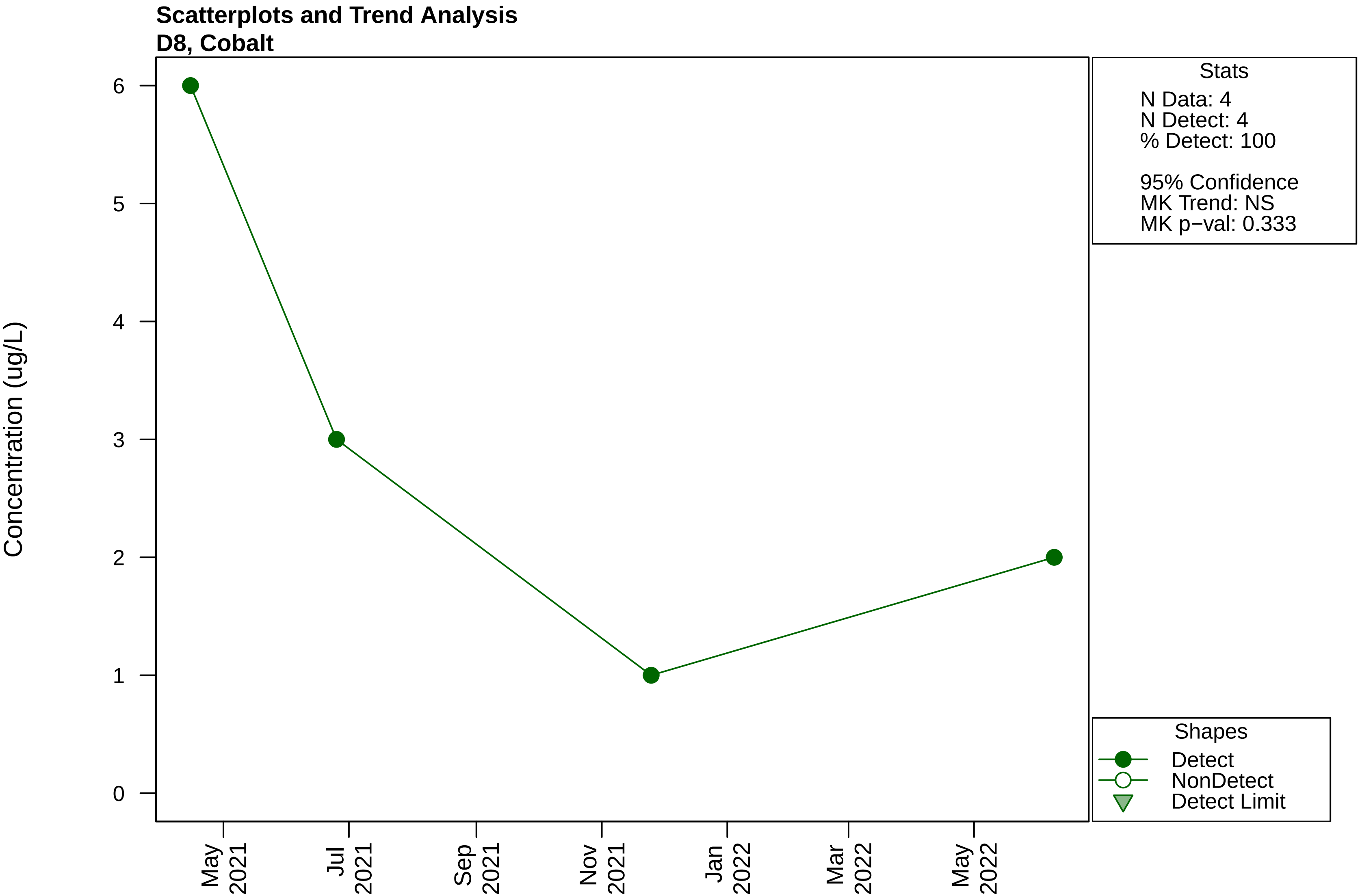


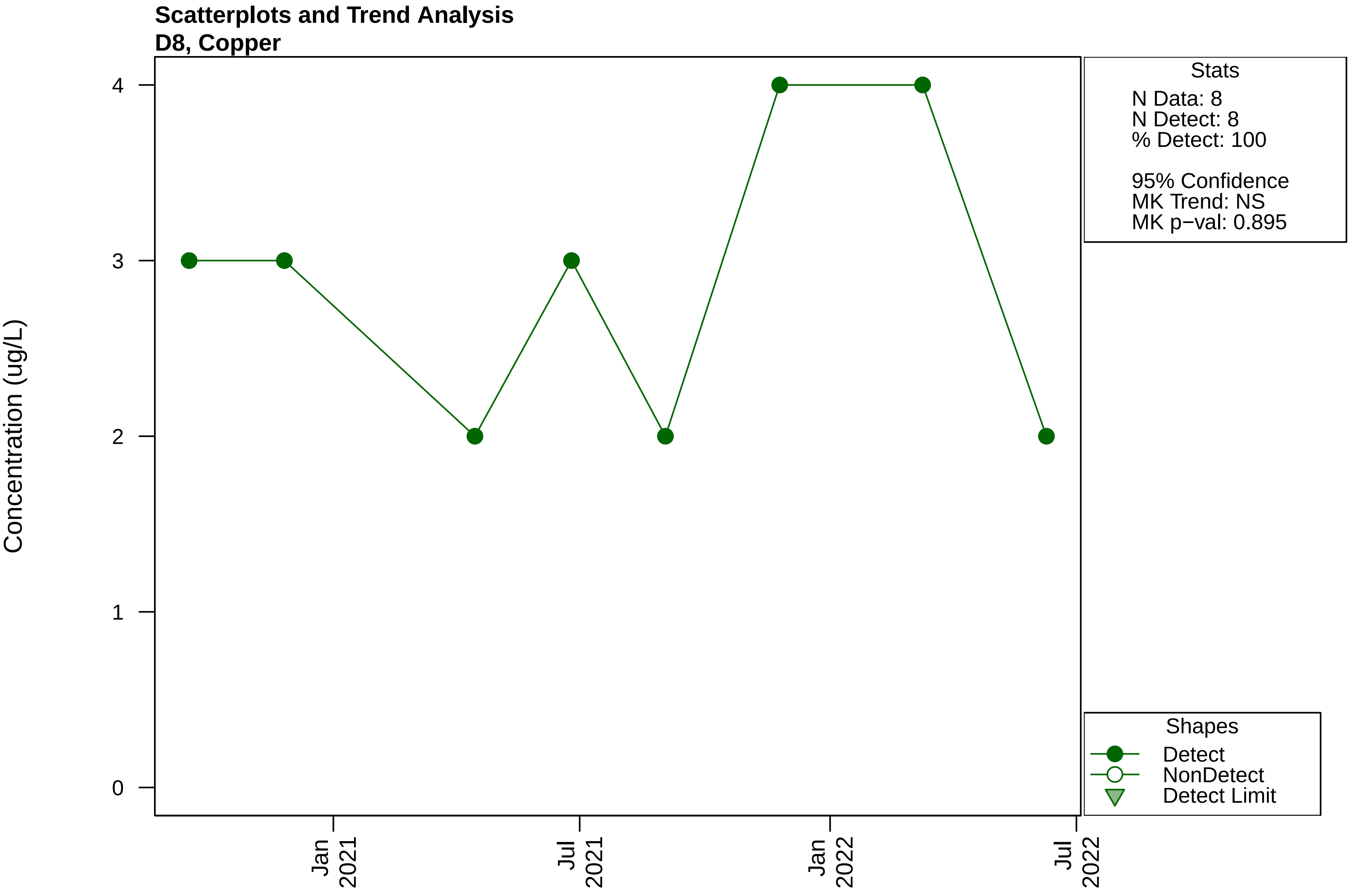
Scatterplots and Trend Analysis
D8, Carbonate Alkalinity (as CaCO3)

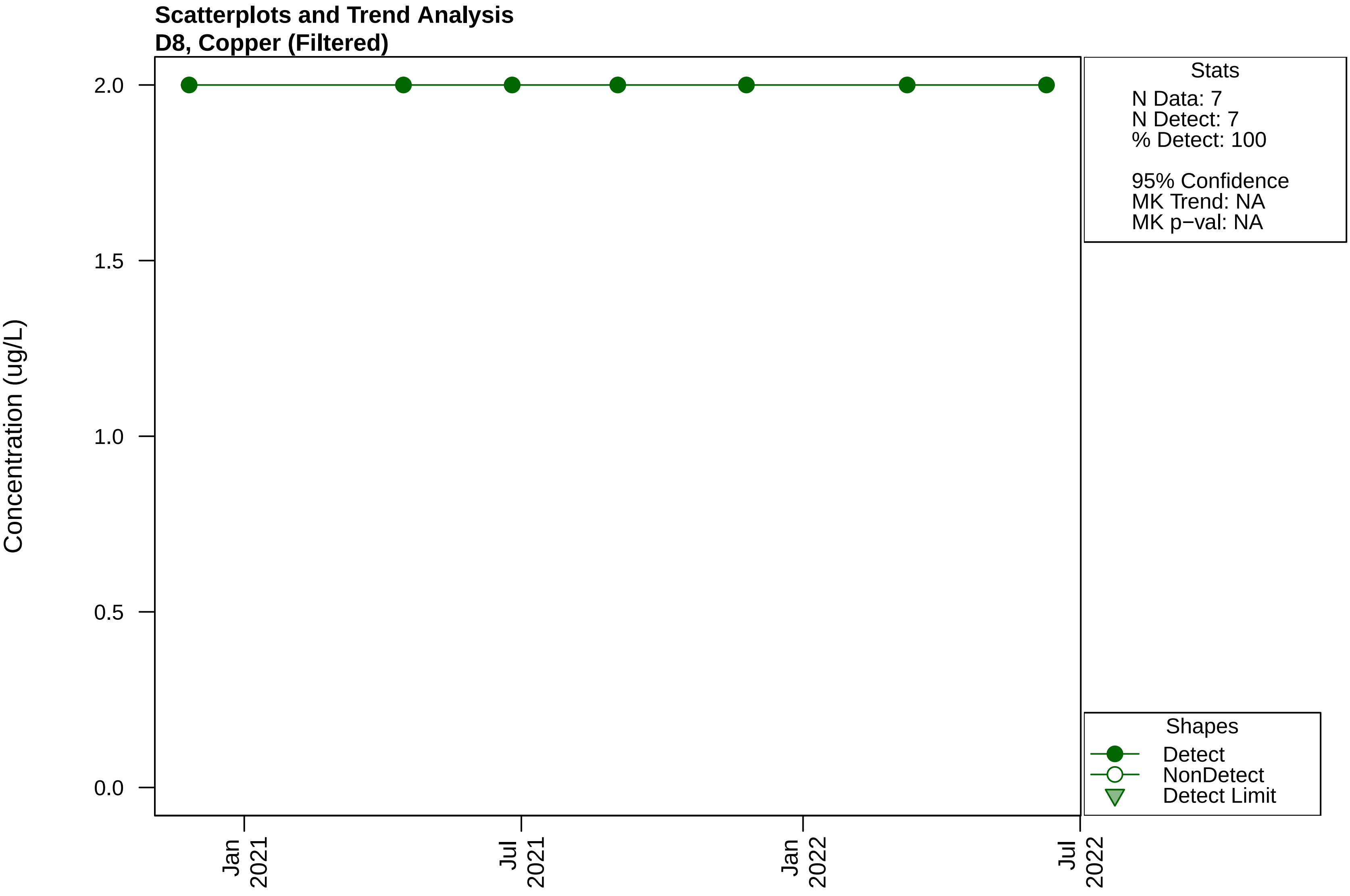


Scatterplots and Trend Analysis
D8, Chloride

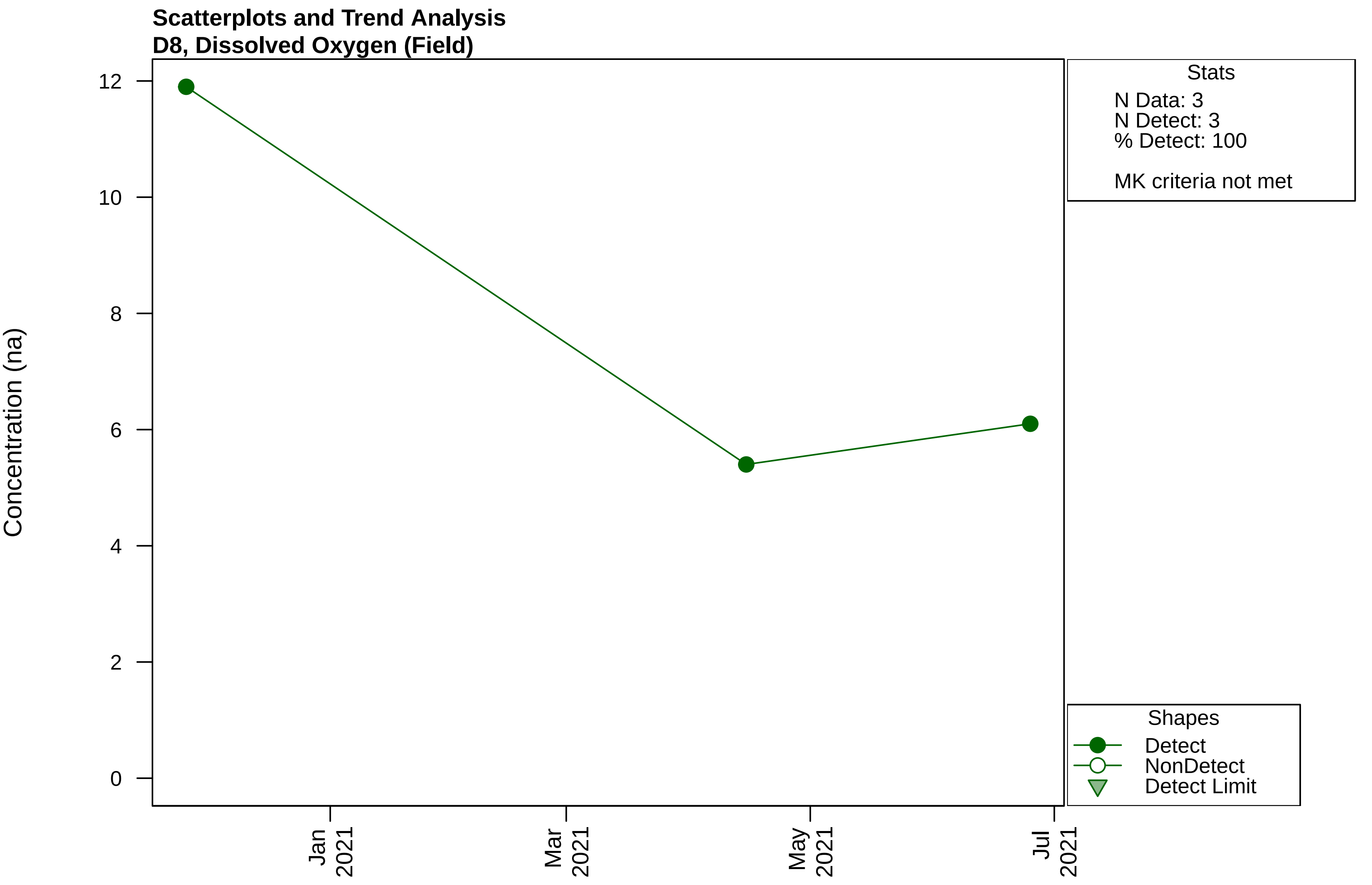



Scatterplots and Trend Analysis
D8, Cobalt
Concentration (ug/L)
0
1
2
3
4
5
6
May 2021
Jul 2021
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 4
N Detect: 4
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.333
Shapes
Detect
NonDetect
Detect Limit

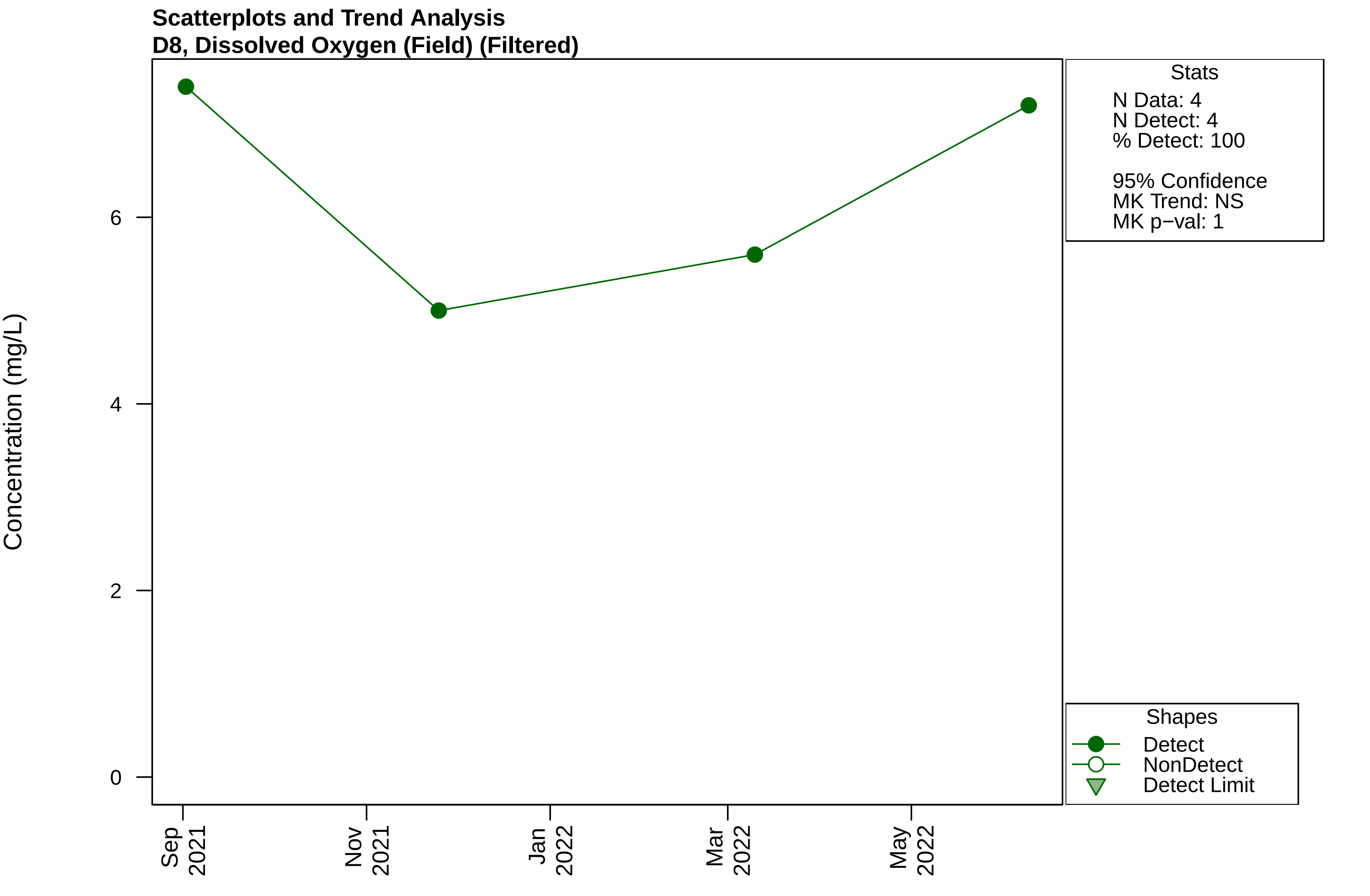

Scatterplots and Trend Analysis
D8, Copper
Concentration (ug/L)
0
1
2
3
4
Jan 2021
Jul 2021
Jan 2022
Jul 2022
Stats
N Data: 8
N Detect: 8
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.895
Shapes
Detect
NonDetect
Detect Limit



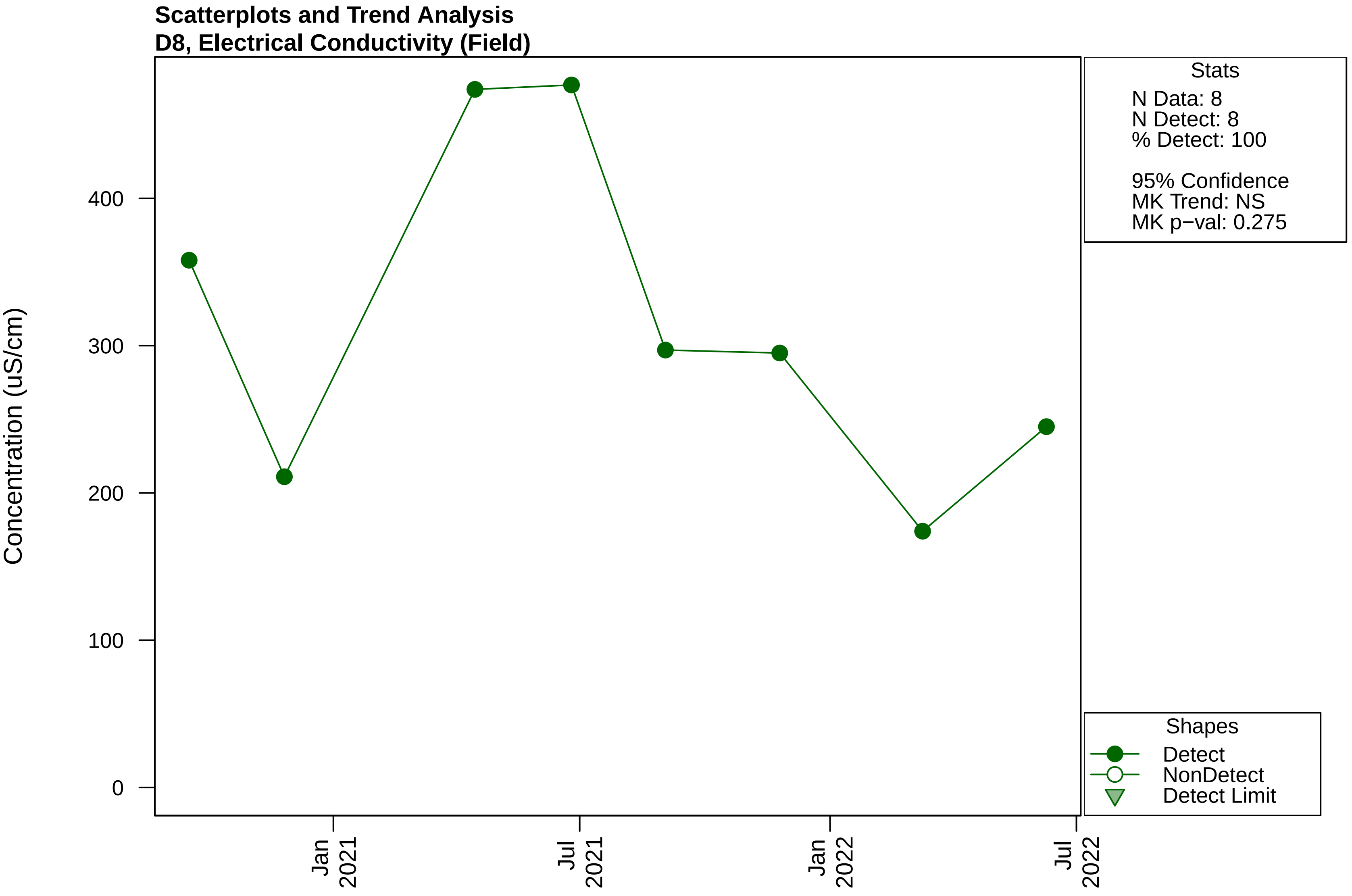
Scatterplots and Trend Analysis
D8, Copper (Filtered)
Concentration (ug/L)
2.0
1.5
1.0
0.5
0.0
Jan 2021
Jul 2021
Jan 2022
Jul 2022
Stats
N Data: 7
N Detect: 7
% Detect: 100
95% Confidence
MK Trend: NA
MK p−val: NA
Shapes
Detect
NonDetect
Detect Limit



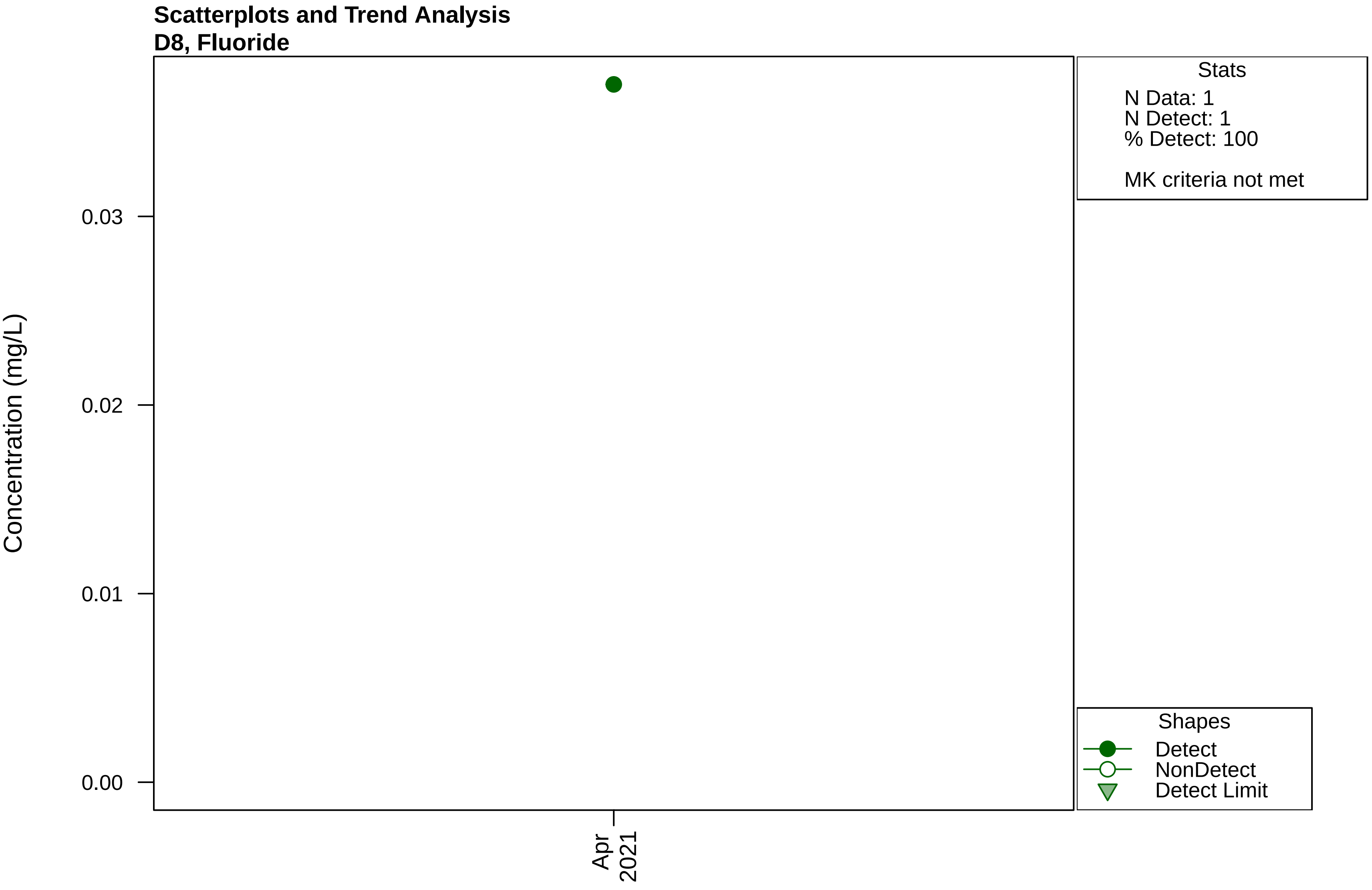
Scatterplots and Trend Analysis
D8, Dissolved Oxygen (Field)
Concentration (na)
0
2
4
6
8
10
12
Jan 2021
Mar 2021
May 2021
Jul 2021
Stats
N Data: 3
N Detect: 3
% Detect: 100
MK criteria not met
Shapes
Detect
NonDetect
Detect Limit



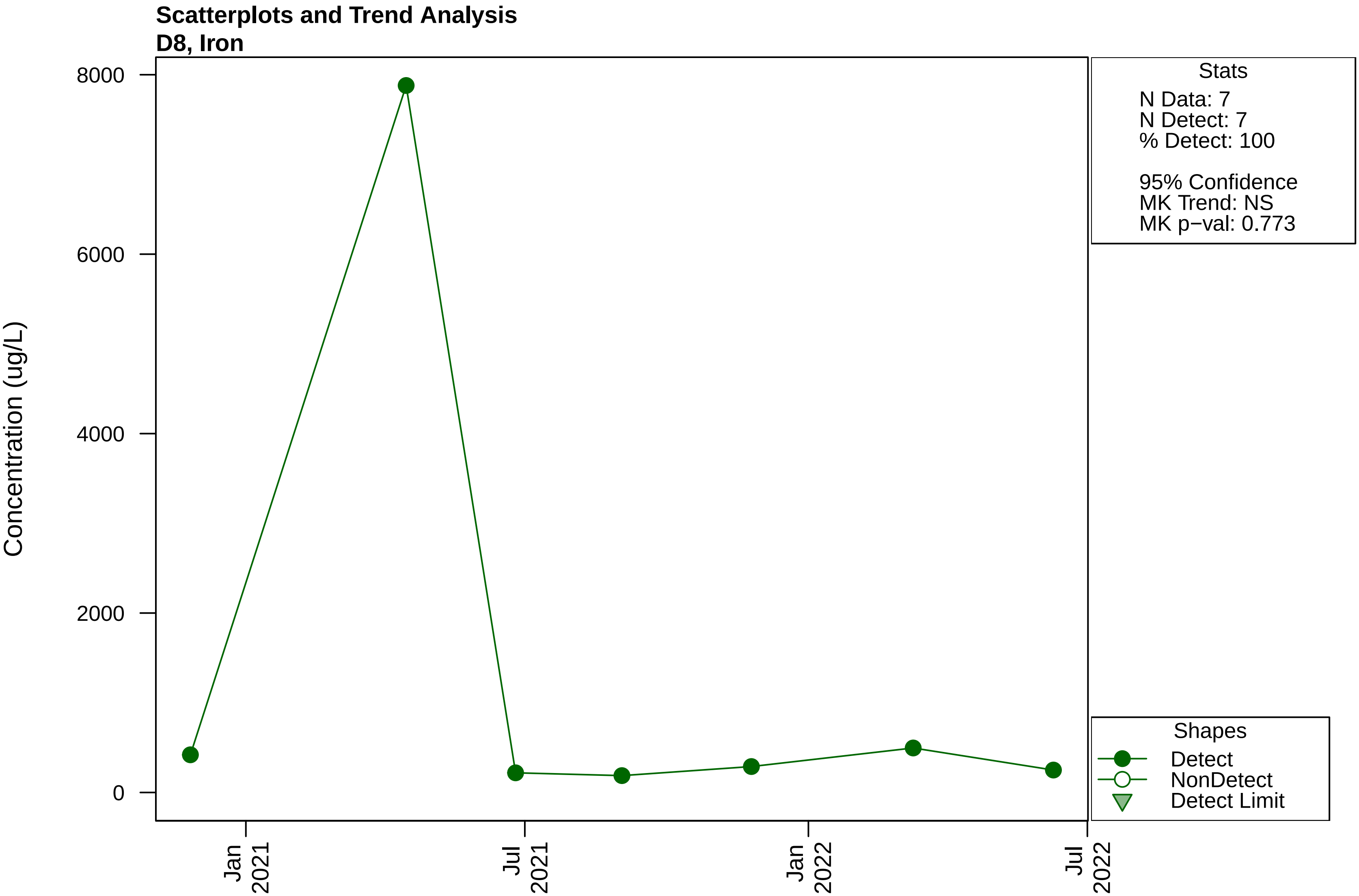
Scatterplots and Trend Analysis
D8, Dissolved Oxygen (Field) (Filtered)
Concentration (mg/L)
0
2
4
6
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 4
N Detect: 4
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 1
Shapes
Detect
NonDetect
Detect Limit



Scatterplots and Trend Analysis
D8, Electrical Conductivity (Field)
Concentration (uS/cm)
0
100
200
300
400
Jan 2021
Jul 2021
Jan 2022
Jul 2022
Stats
N Data: 8
N Detect: 8
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.275
Shapes
Detect
NonDetect
Detect Limit

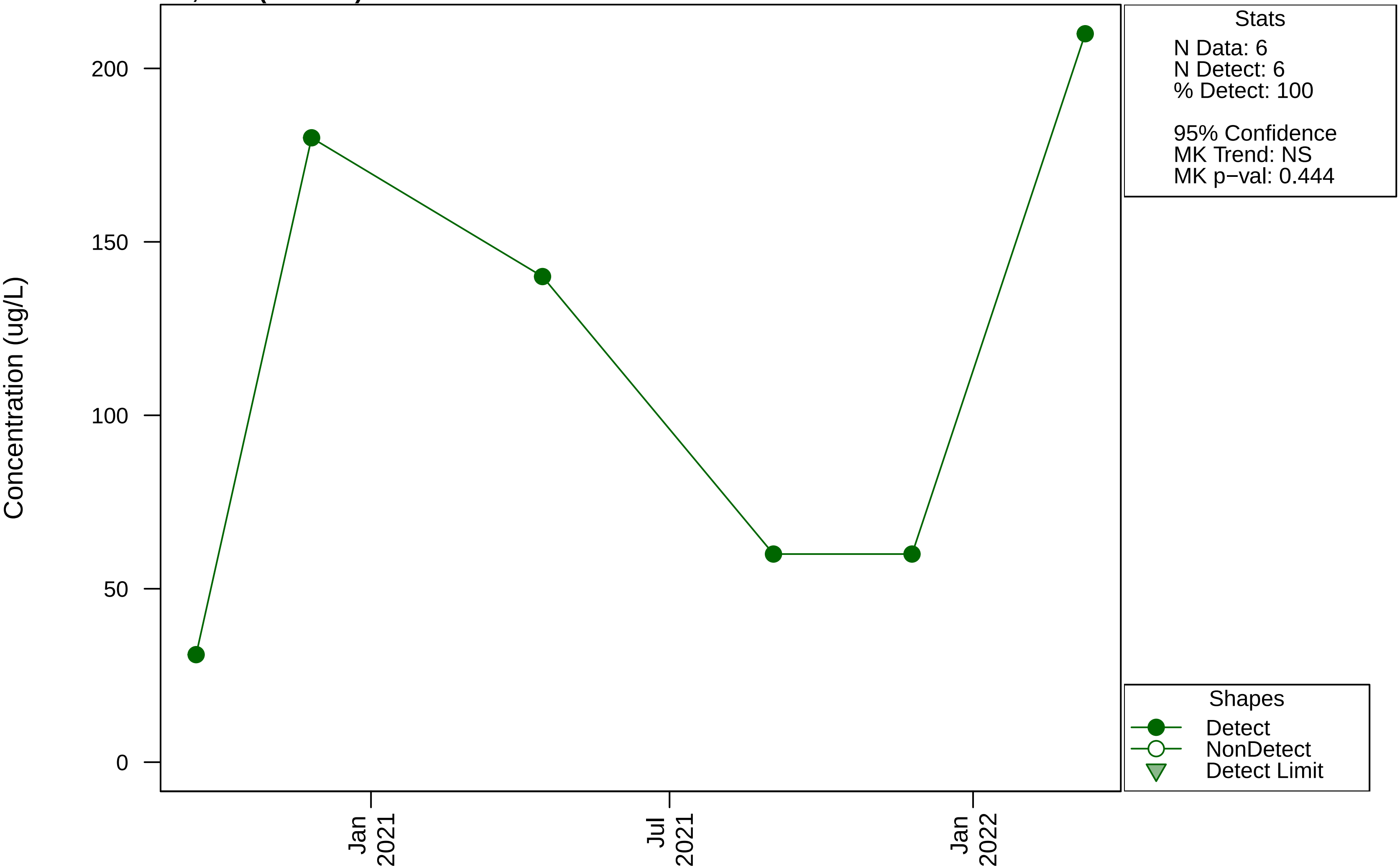


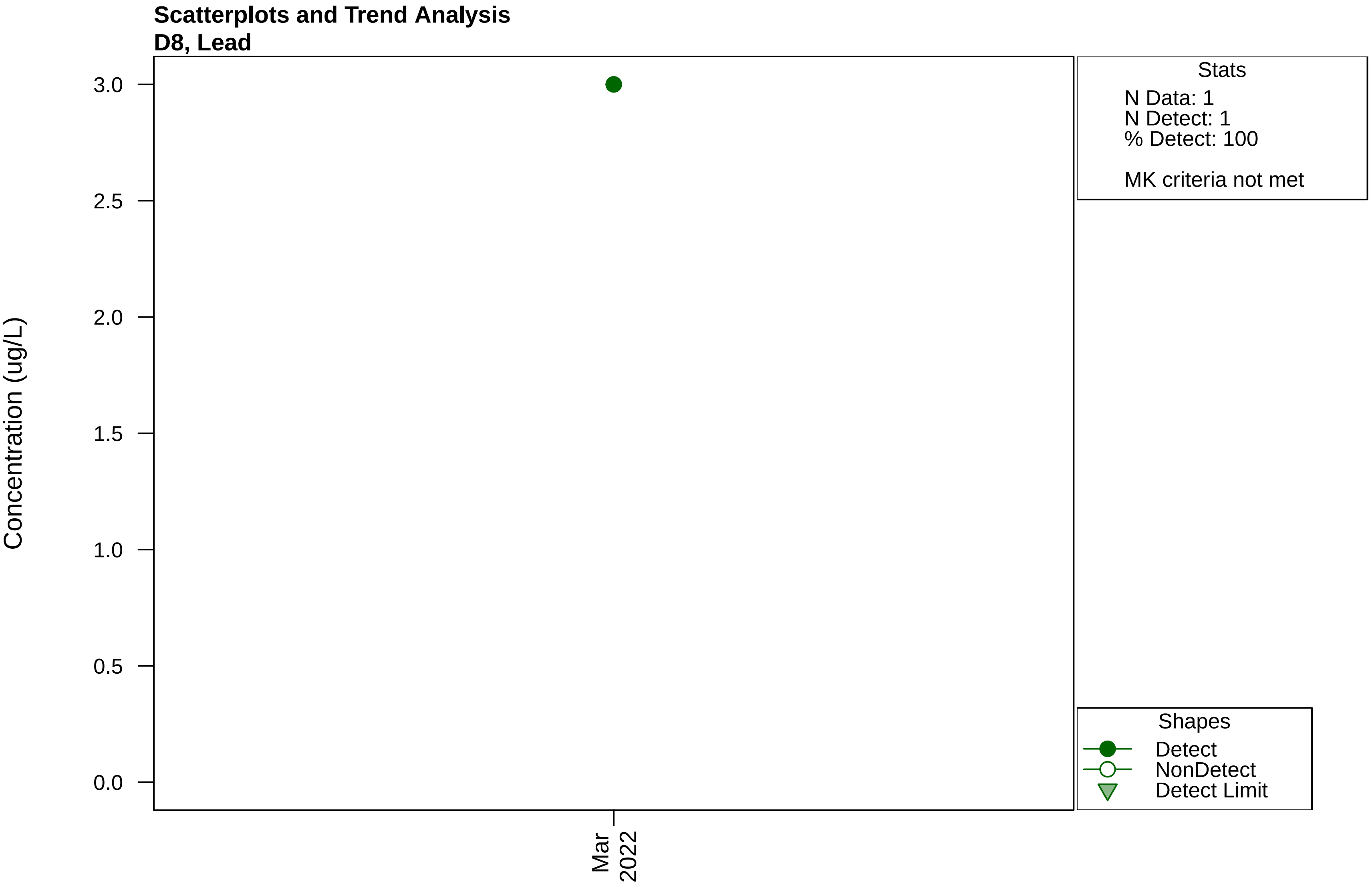
Scatterplots and Trend Analysis
D8, Fluoride
Concentration (mg/L)
0.03
0.02
0.01
0.00
Apr 2021
Stats
N Data: 1
N Detect: 1
% Detect: 100
MK criteria not met
Shapes
Detect
NonDetect
Detect Limit



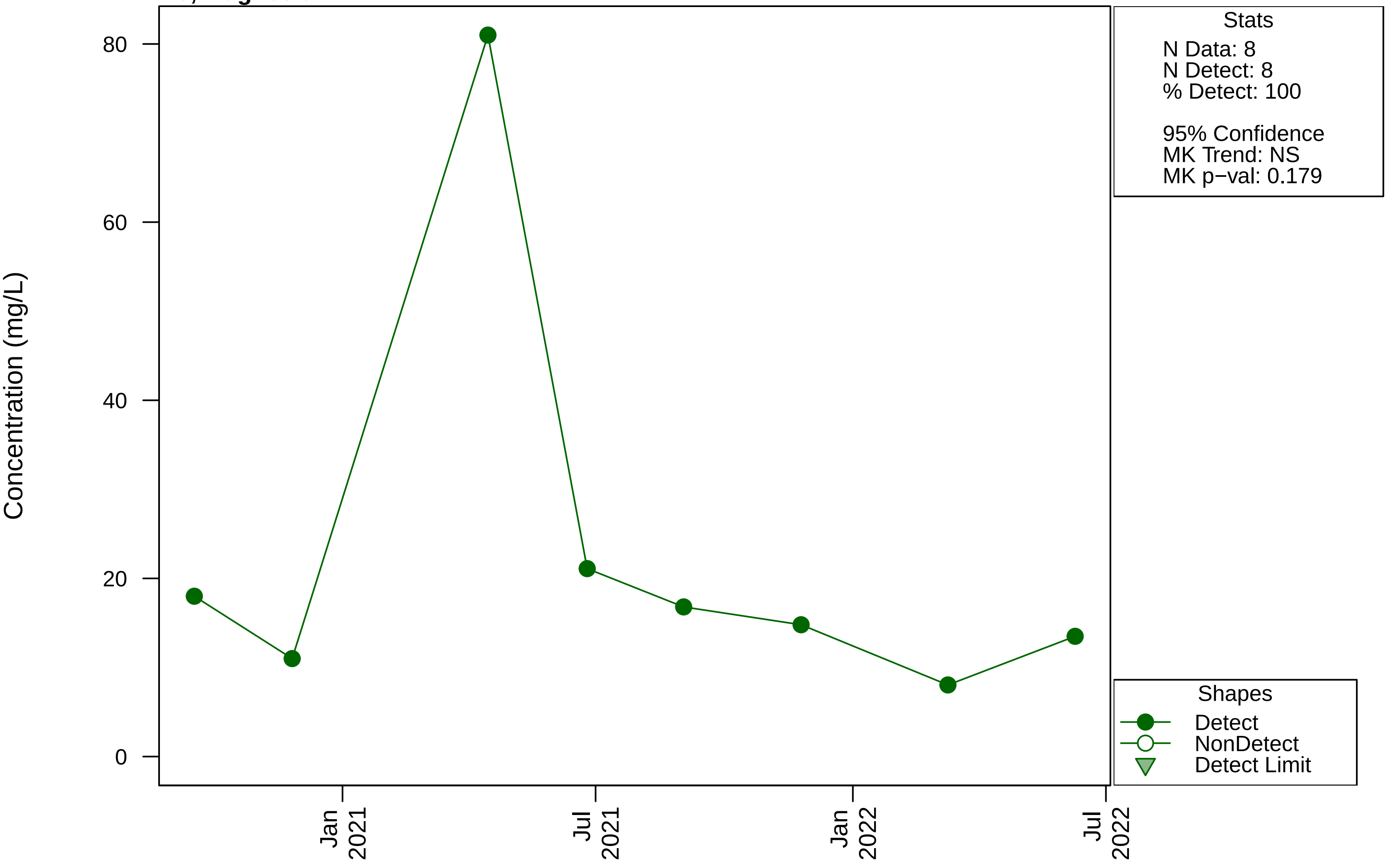
Scatterplots and Trend Analysis
D8, Iron
Concentration (ug/L)
0
2000
4000
6000
8000
Jan 2021
Jul 2021
Jan 2022
Jul 2022
Stats
N Data: 7
N Detect: 7
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.773
Shapes
Detect
NonDetect
Detect Limit

Scatterplots and Trend Analysis
D8, Iron (Filtered)

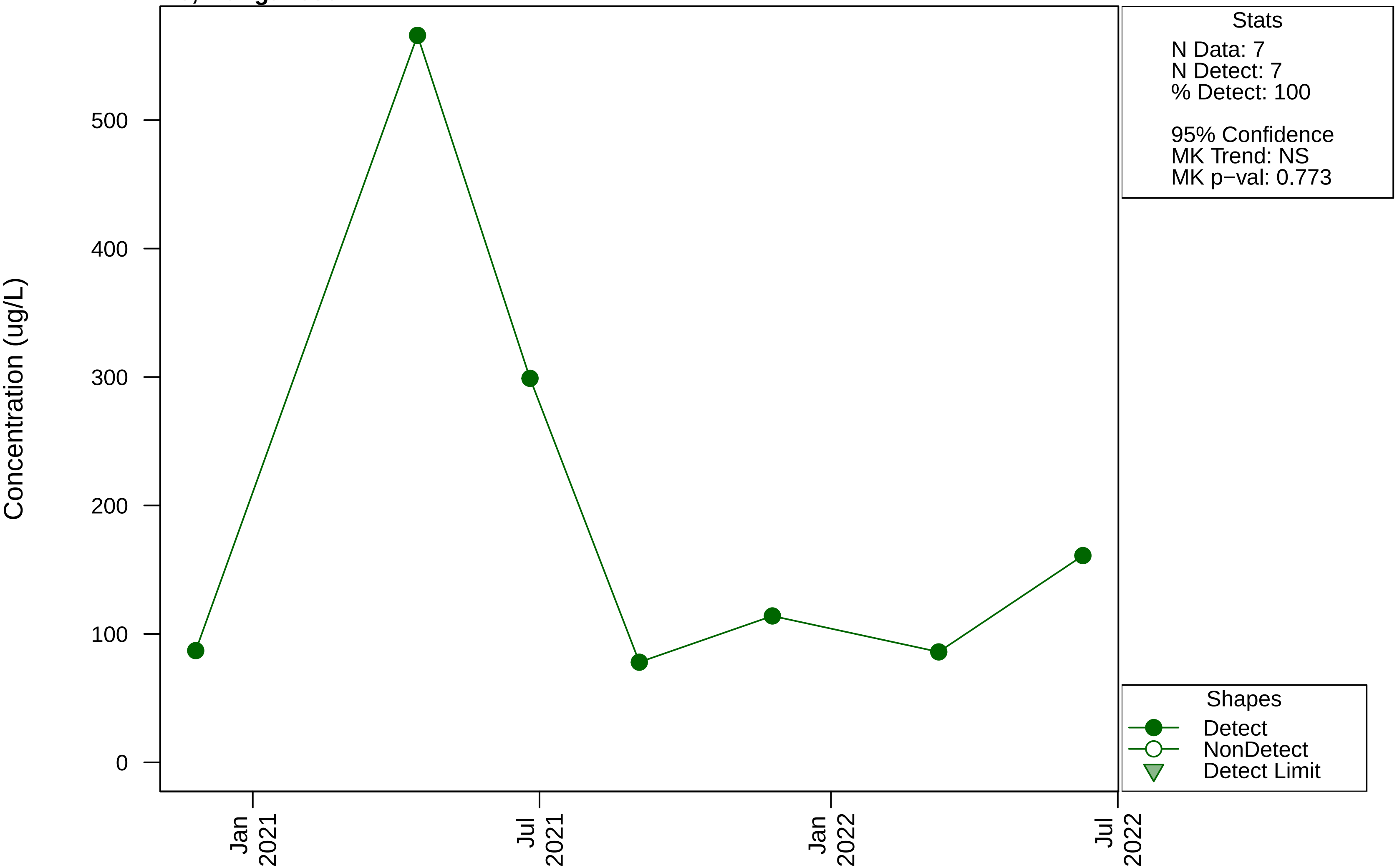


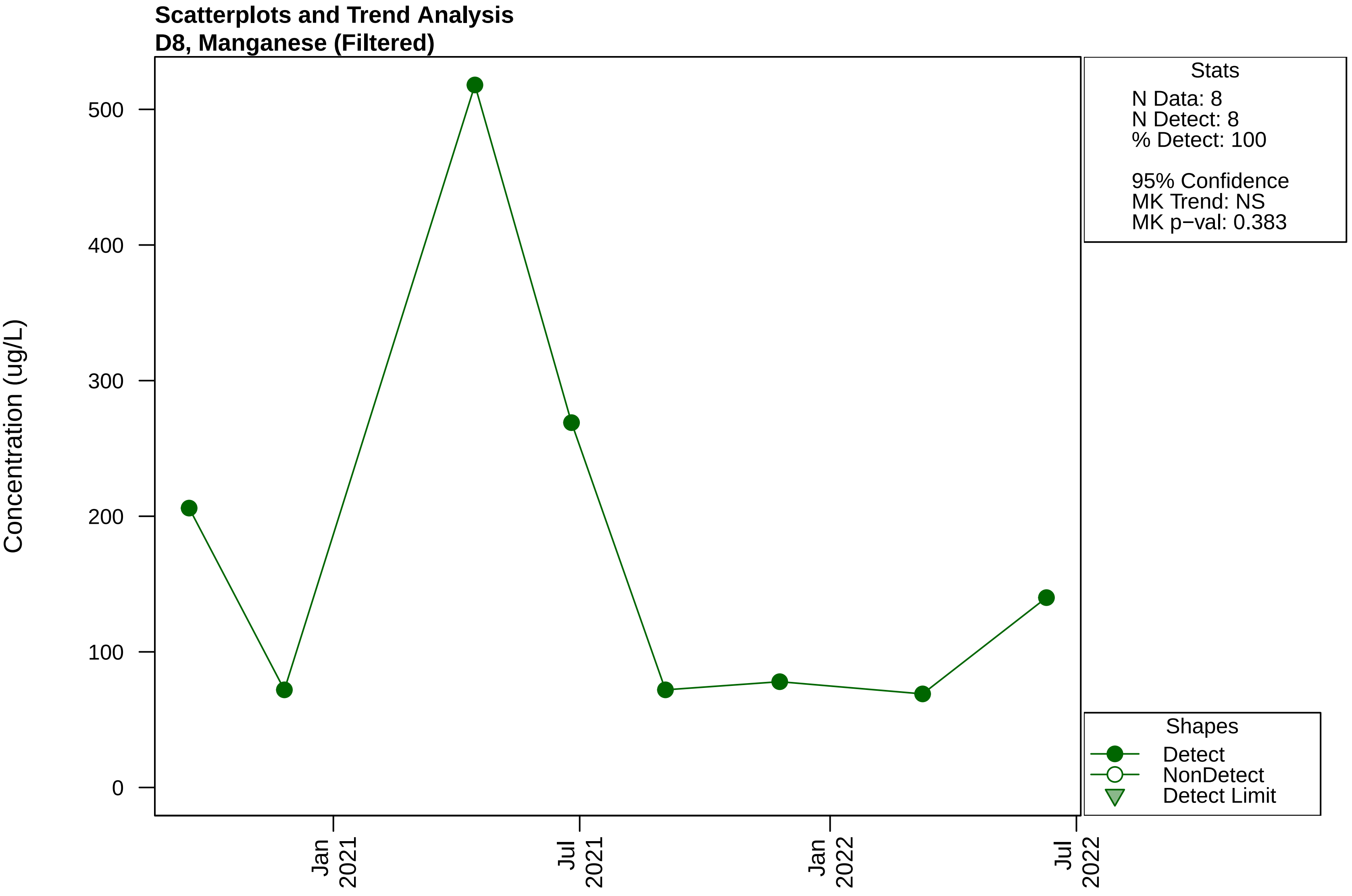

Scatterplots and Trend Analysis
D8, Lead
Concentration (ug/L)
3.0
2.5
2.0
1.5
1.0
0.5
0.0
Mar 2022
Stats
N Data: 1
N Detect: 1
% Detect: 100
MK criteria not met
Shapes
Detect
NonDetect
Detect Limit

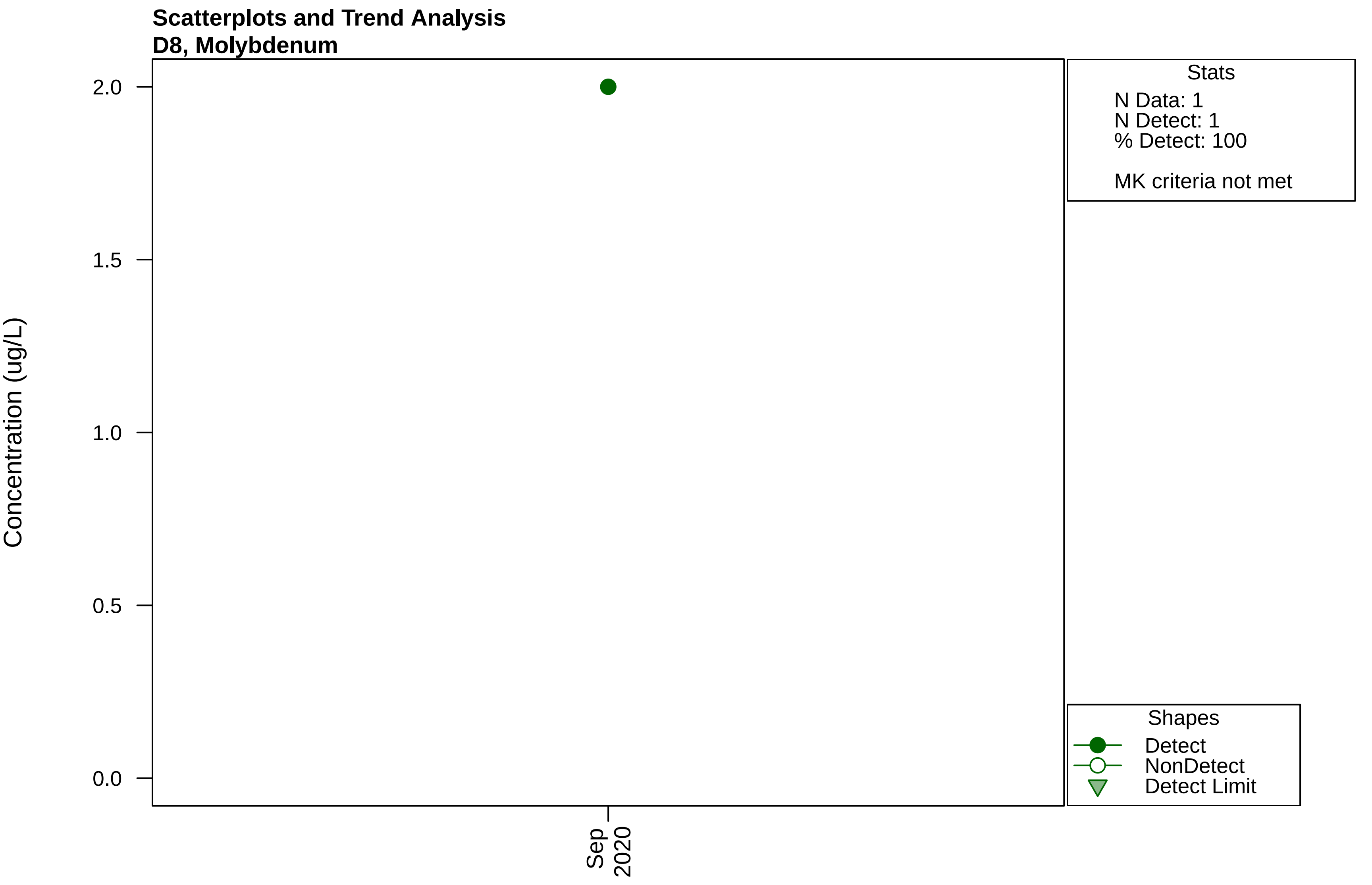
Scatterplots and Trend Analysis
D8, Magnesium

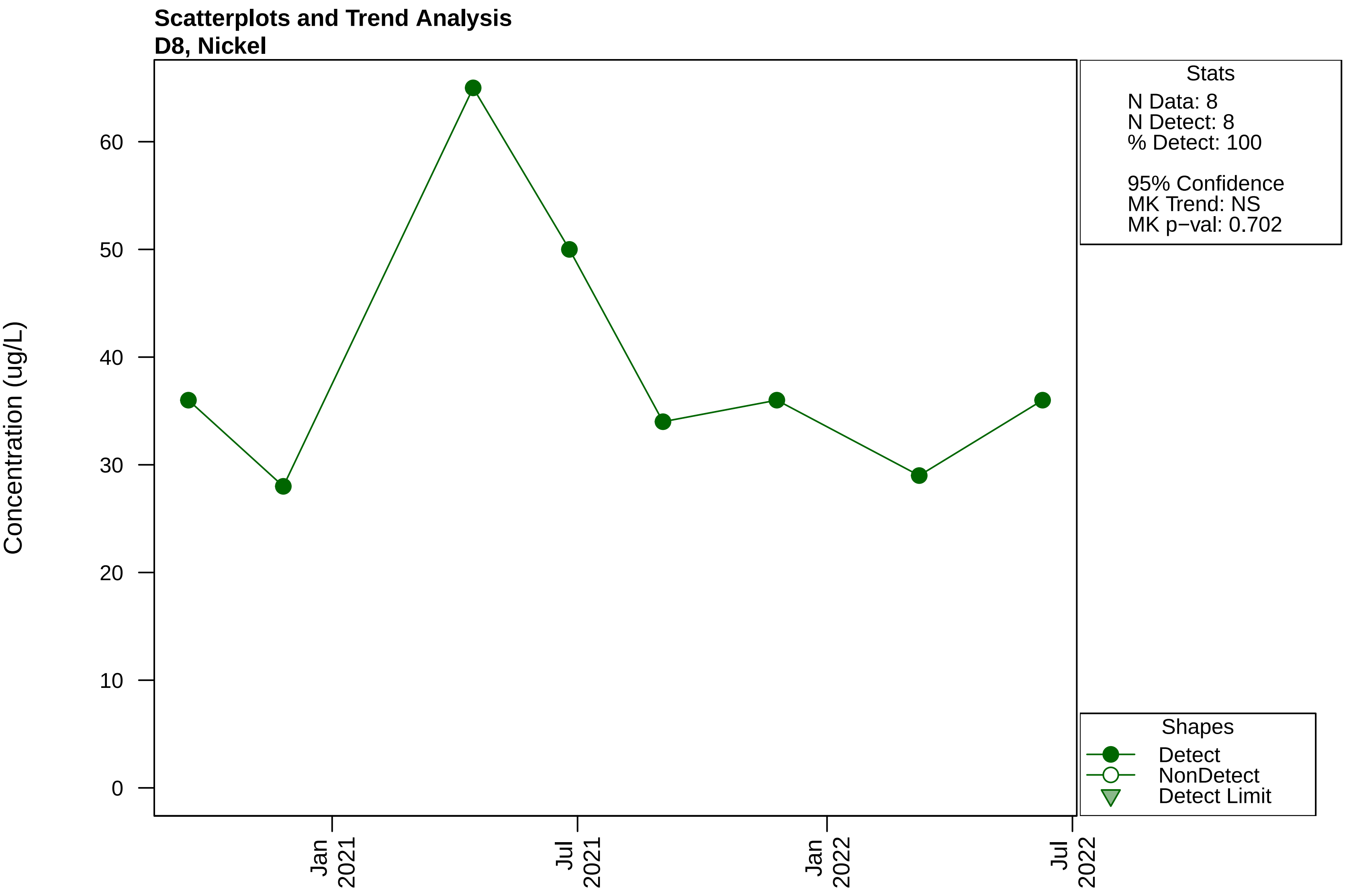


Scatterplots and Trend Analysis
D8, Manganese

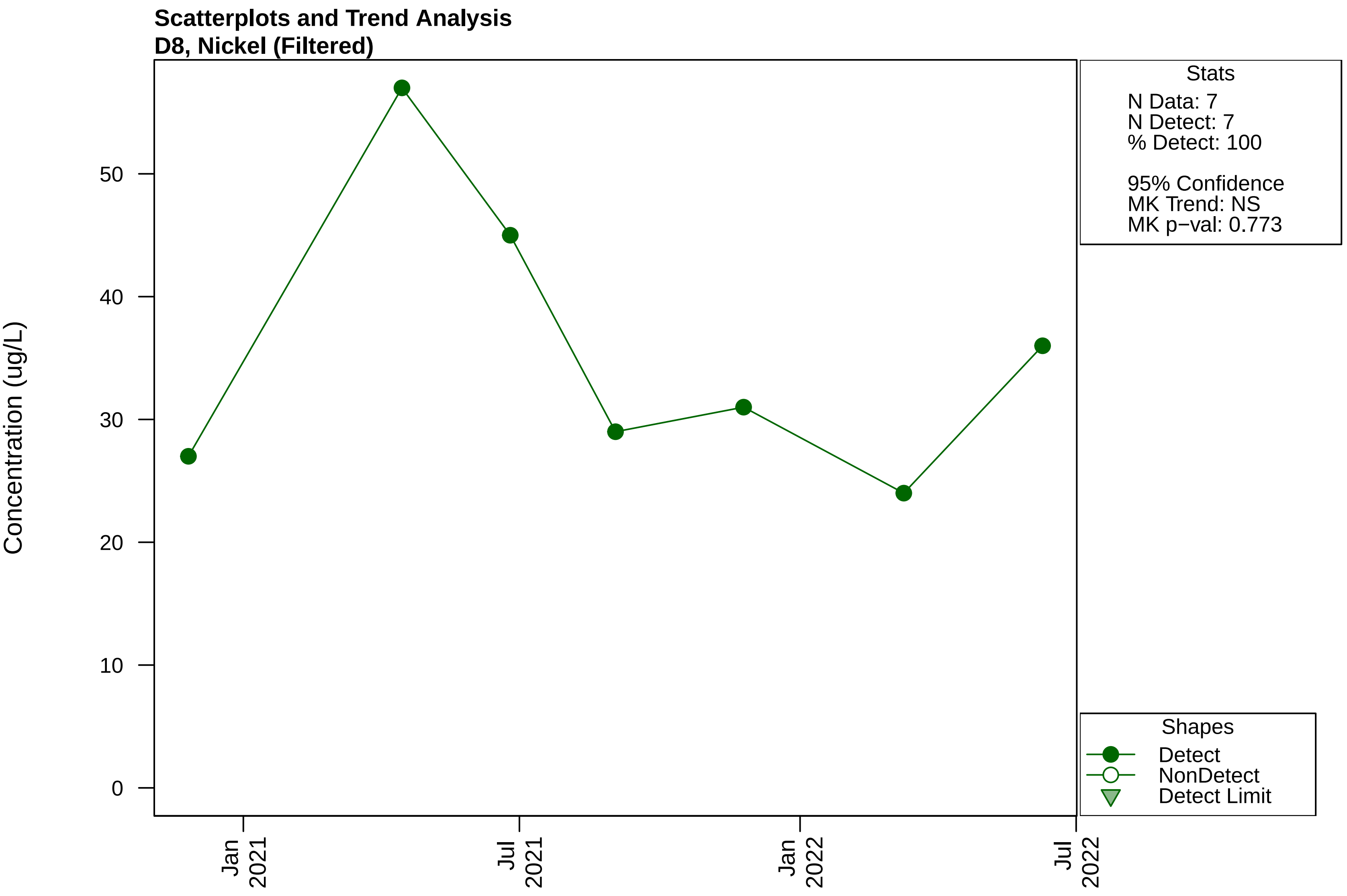



Scatterplots and Trend Analysis
D8, Manganese (Filtered)
Concentration (ug/L)
0
100
200
300
400
500
Jan 2021
Jul 2021
Jan 2022
Jul 2022
Stats
N Data: 8
N Detect: 8
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.383
Shapes
Detect
NonDetect
Detect Limit

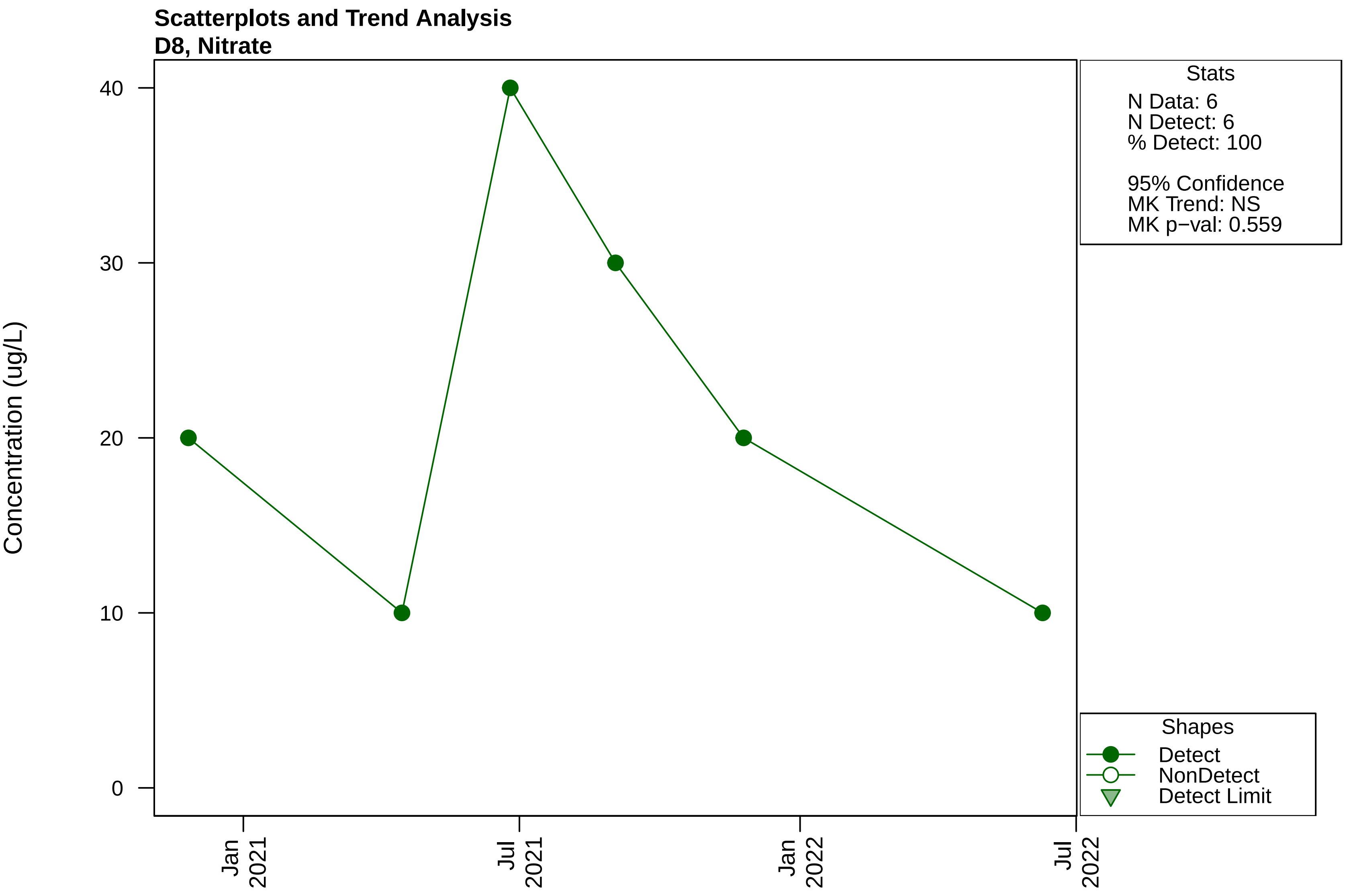

Scatterplots and Trend Analysis
D8, Molybdenum
Concentration (ug/L)
2.0
1.5
1.0
0.5
0.0
Sep
2020
Stats
N Data: 1
N Detect: 1
% Detect: 100
MK criteria not met
Shapes
Detect
NonDetect
Detect Limit



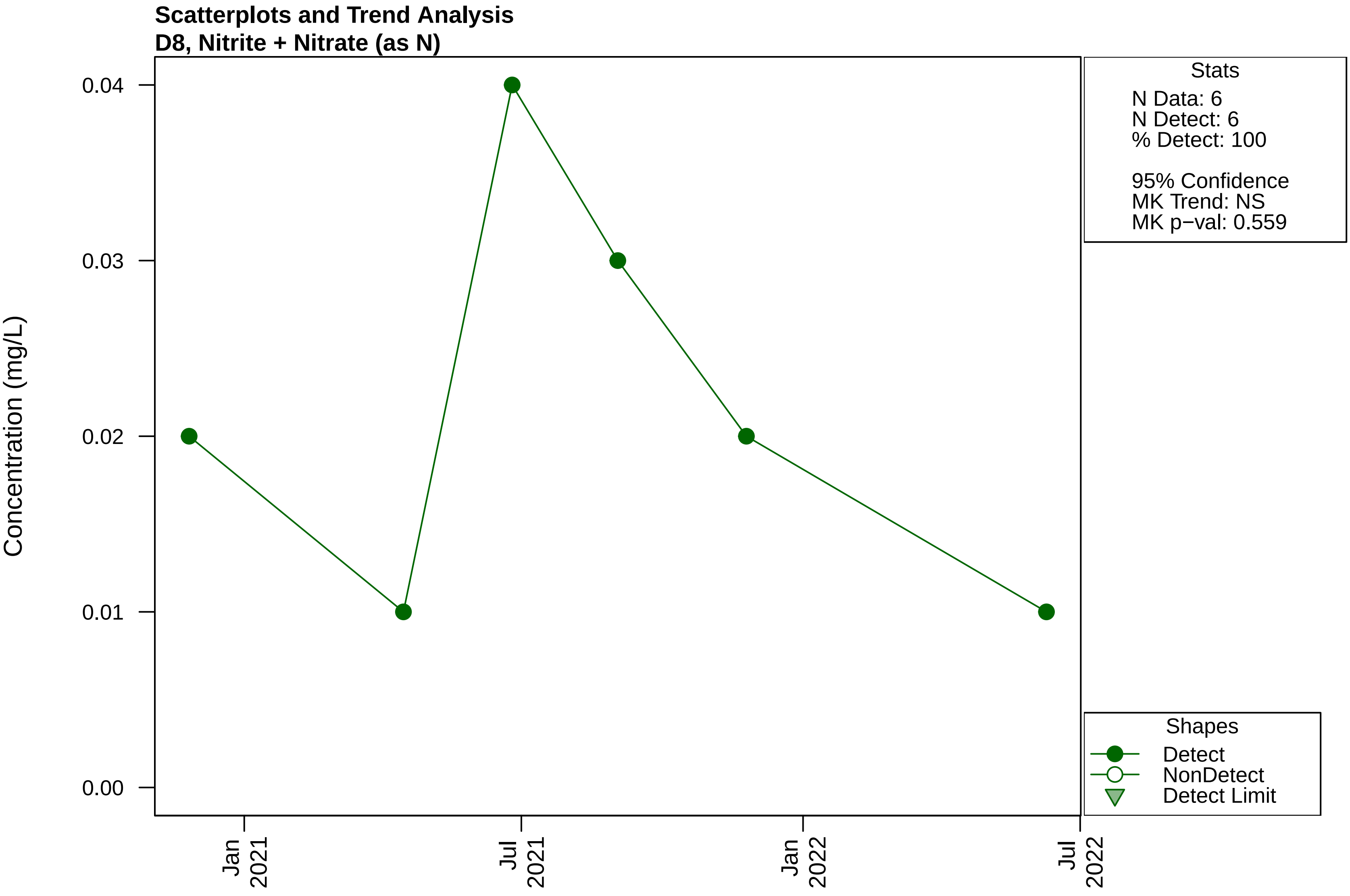
Scatterplots and Trend Analysis
D8, Nickel
Concentration (ug/L)
0
10
20
30
40
50
60
Jan 2021
Jul 2021
Jan 2022
Jul 2022
Stats
N Data: 8
N Detect: 8
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.702
Shapes
Detect
NonDetect
Detect Limit



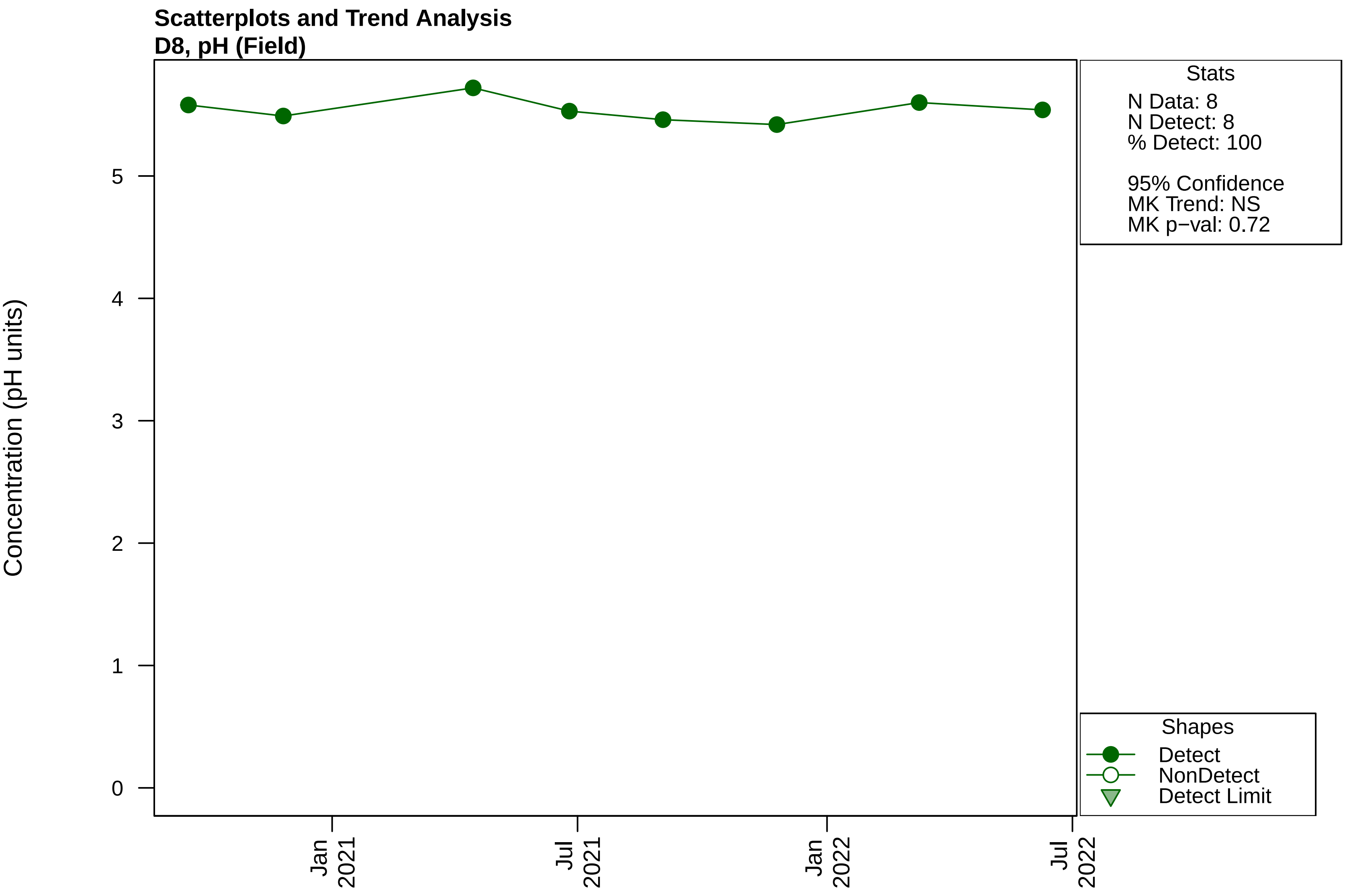
Scatterplots and Trend Analysis
D8, Nickel (Filtered)
Concentration (ug/L)
0
10
20
30
40
50
Jan 2021
Jul 2021
Jan 2022
Jul 2022
Stats
N Data: 7
N Detect: 7
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.773
Shapes
Detect
NonDetect
Detect Limit



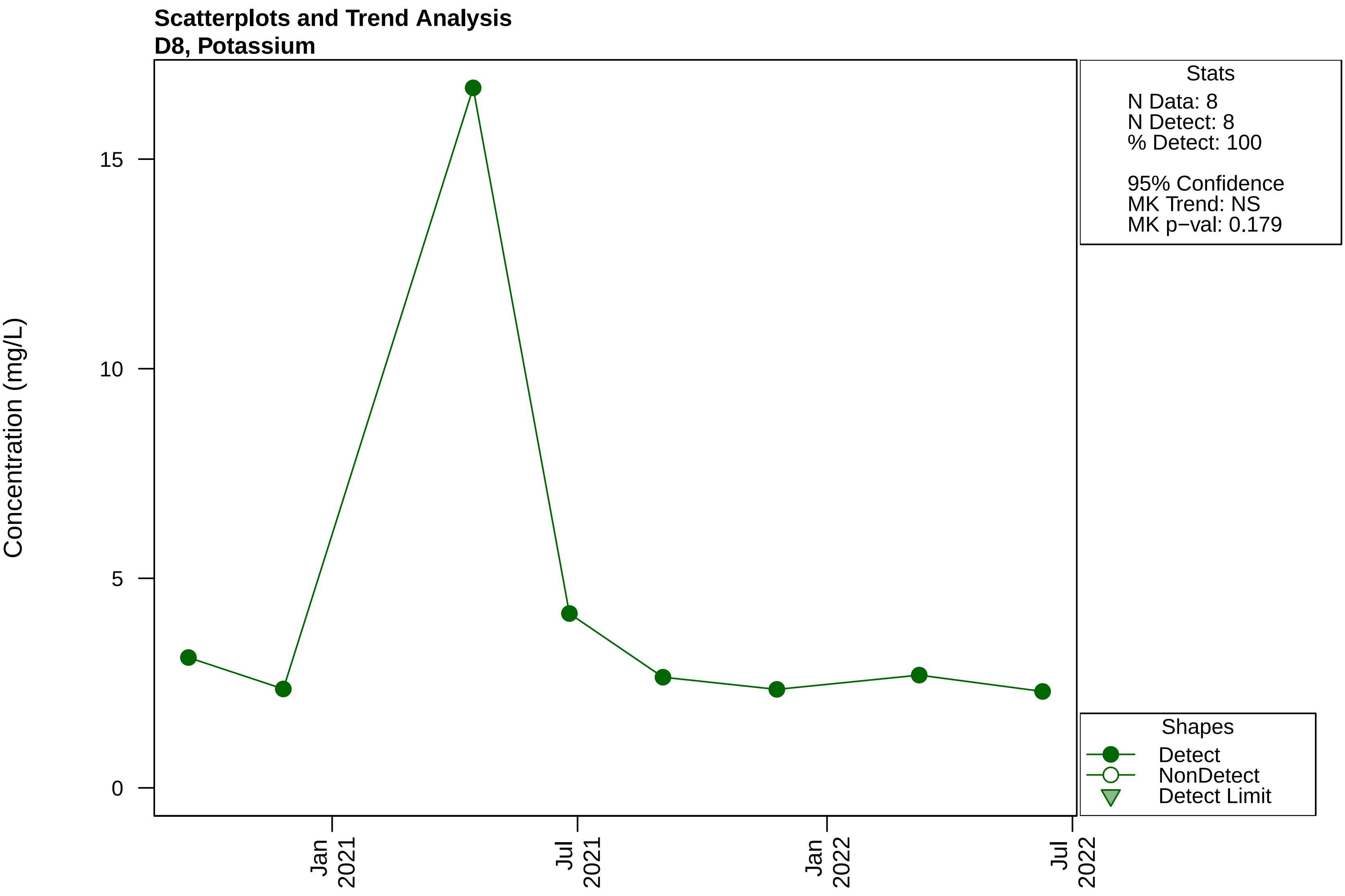
Scatterplots and Trend Analysis
D8, Nitrate
Concentration (ug/L)
0
10
20
30
40
Jan 2021
Jul 2021
Jan 2022
Jul 2022
Stats
N Data: 6
N Detect: 6
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.559
Shapes
Detect
NonDetect
Detect Limit



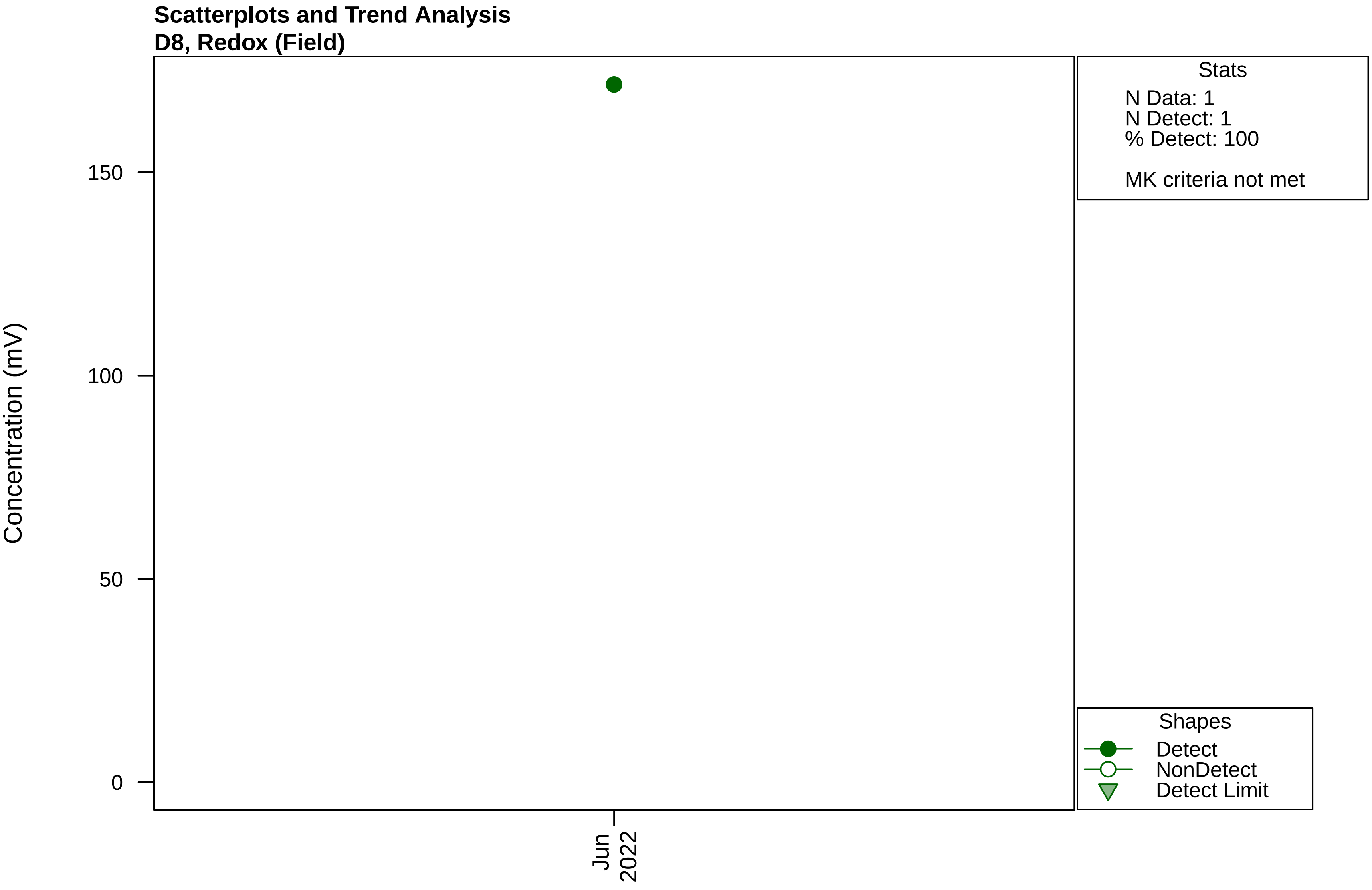
Scatterplots and Trend Analysis
D8, Nitrite + Nitrate (as N)
Concentration (mg/L)
0.00
0.01
0.02
0.03
0.04
Jan 2021
Jul 2021
Jan 2022
Jul 2022
Stats
N Data: 6
N Detect: 6
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.559
Shapes
Detect
NonDetect
Detect Limit



Scatterplots and Trend Analysis
D8, pH (Field)
Concentration (pH units)
0
1
2
3
4
5
Jan 2021
Jul 2021
Jan 2022
Jul 2022
Stats
N Data: 8
N Detect: 8
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.72
Shapes
Detect
NonDetect
Detect Limit

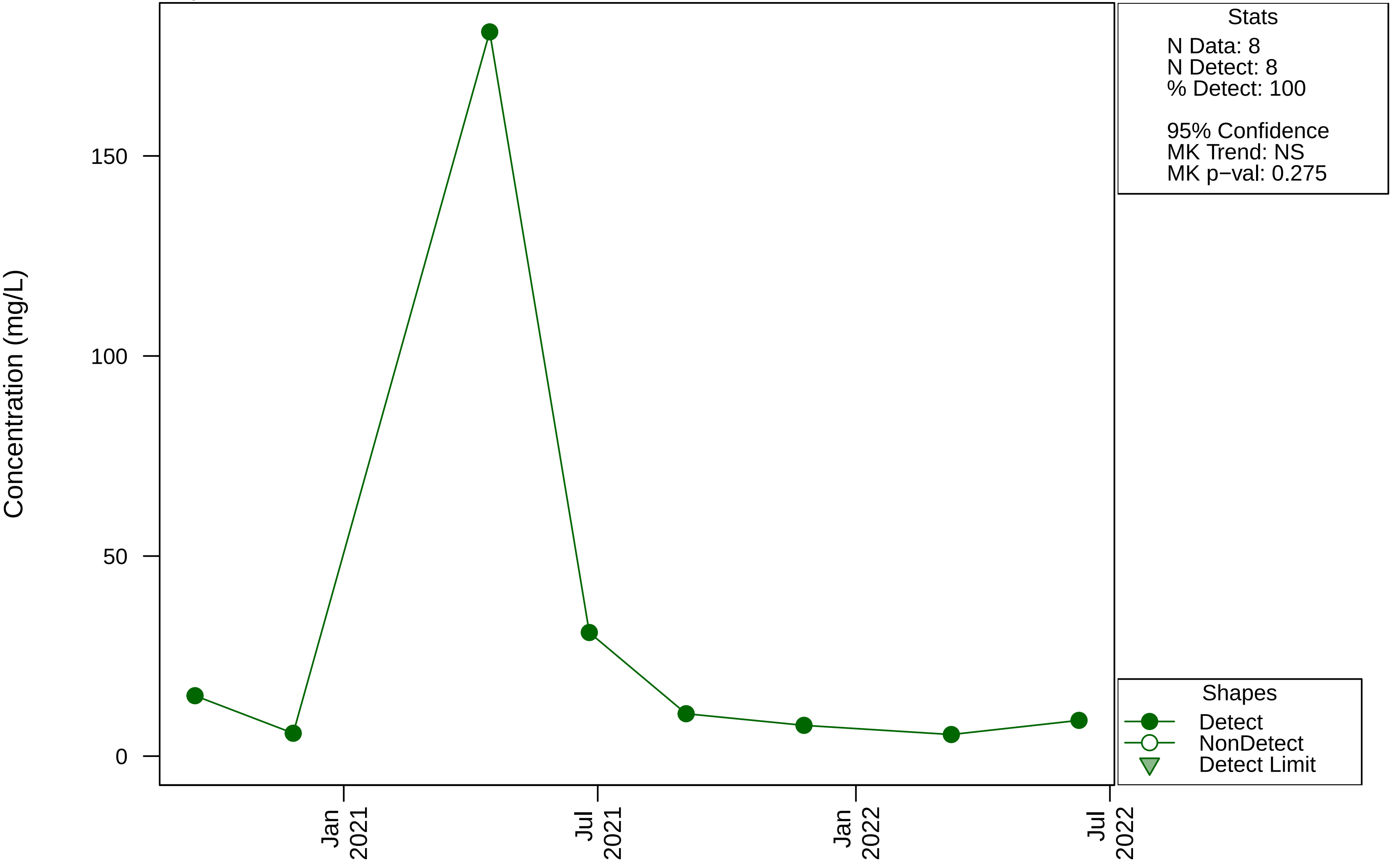


Scatterplots and Trend Analysis
D8, Potassium
Concentration (mg/L)
0
5
10
15
Jan 2021
Jul 2021
Jan 2022
Jul 2022
Stats
N Data: 8
N Detect: 8
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.179
Shapes
Detect
NonDetect
Detect Limit

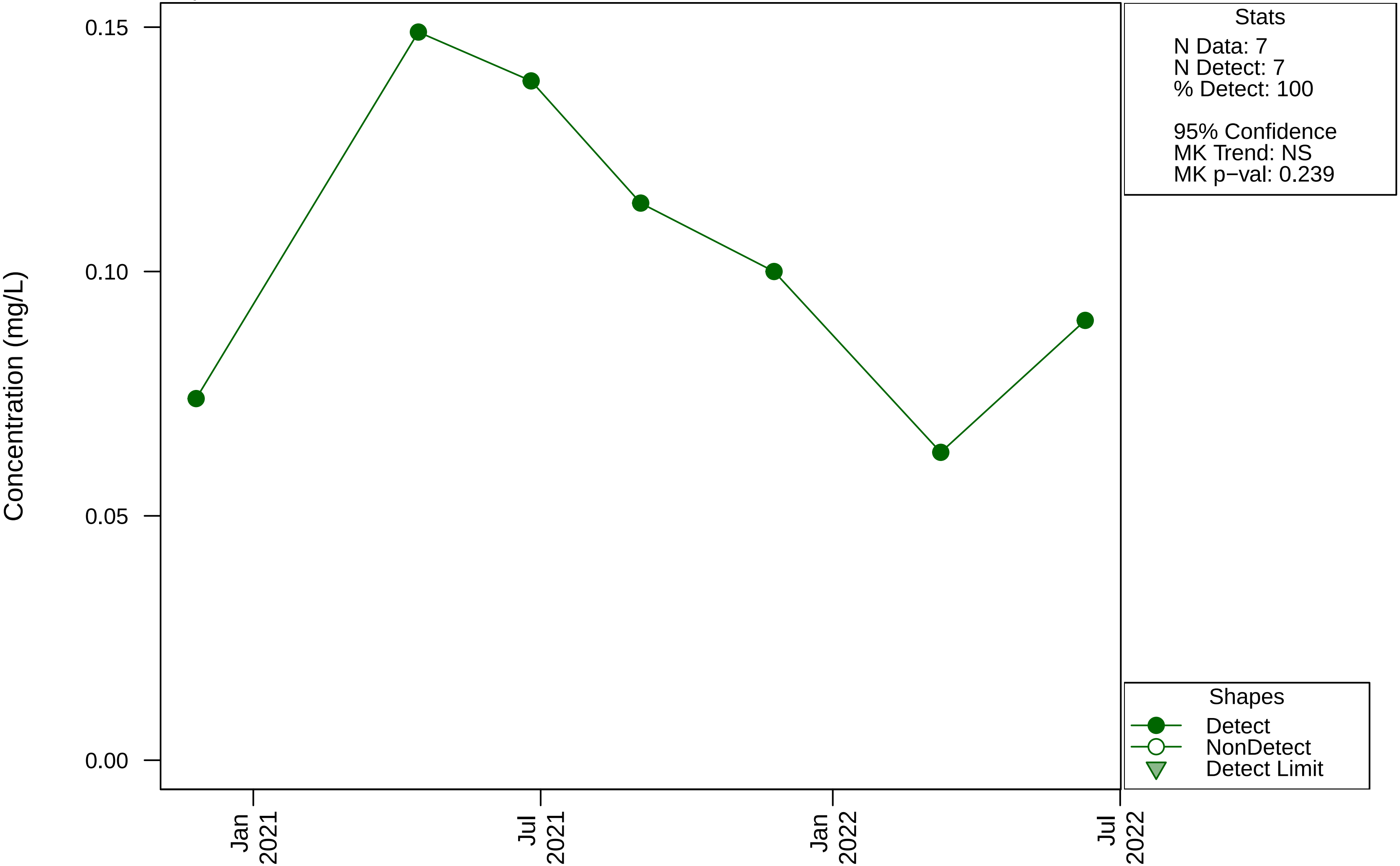


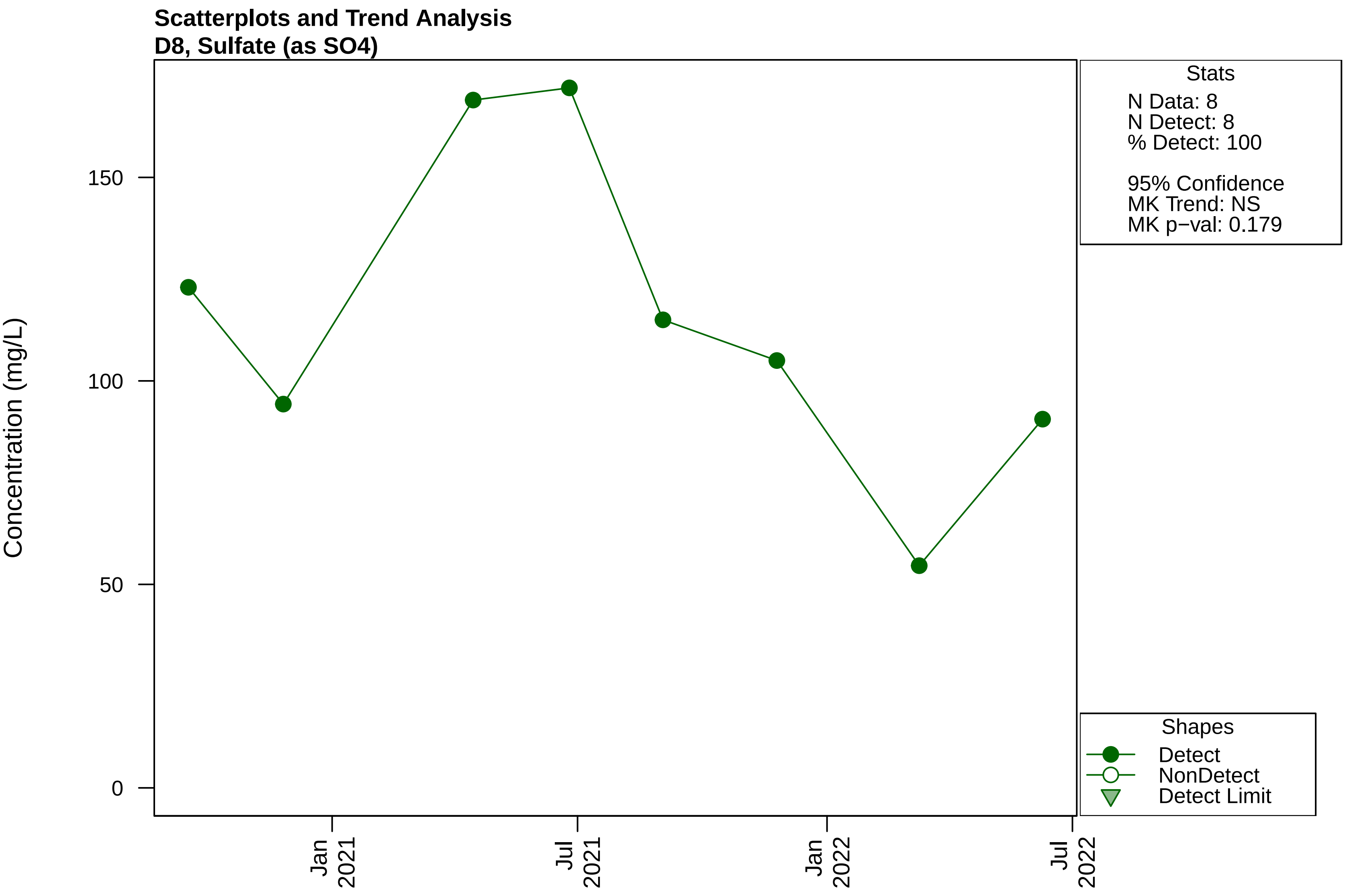
Scatterplots and Trend Analysis
D8, Redox (Field)
Concentration (mV)
150
100
50
0
Jun 2022
Stats
N Data: 1
N Detect: 1
% Detect: 100
MK criteria not met
Shapes
Detect
NonDetect
Detect Limit

Scatterplots and Trend Analysis
D8, Sodium

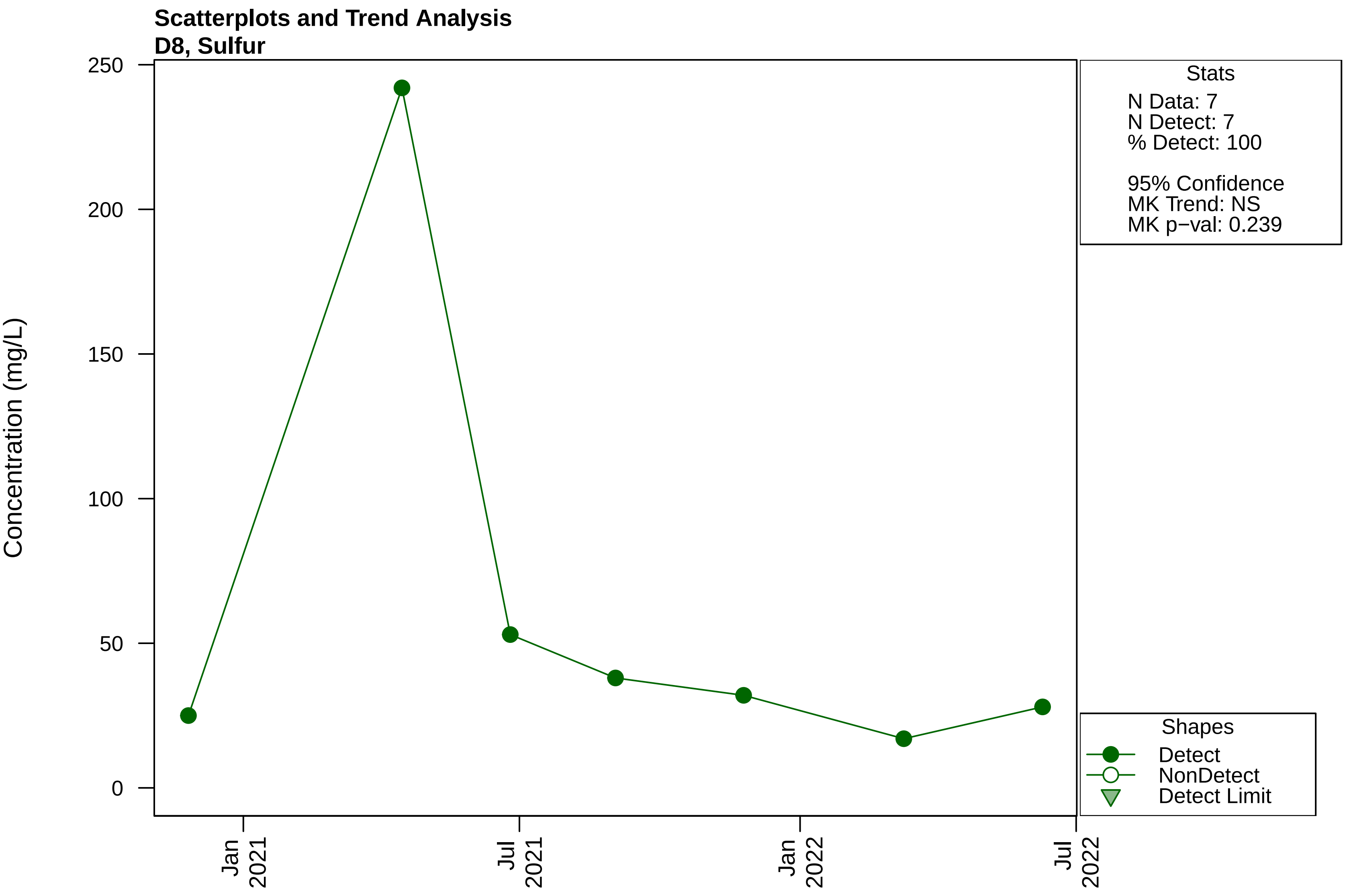


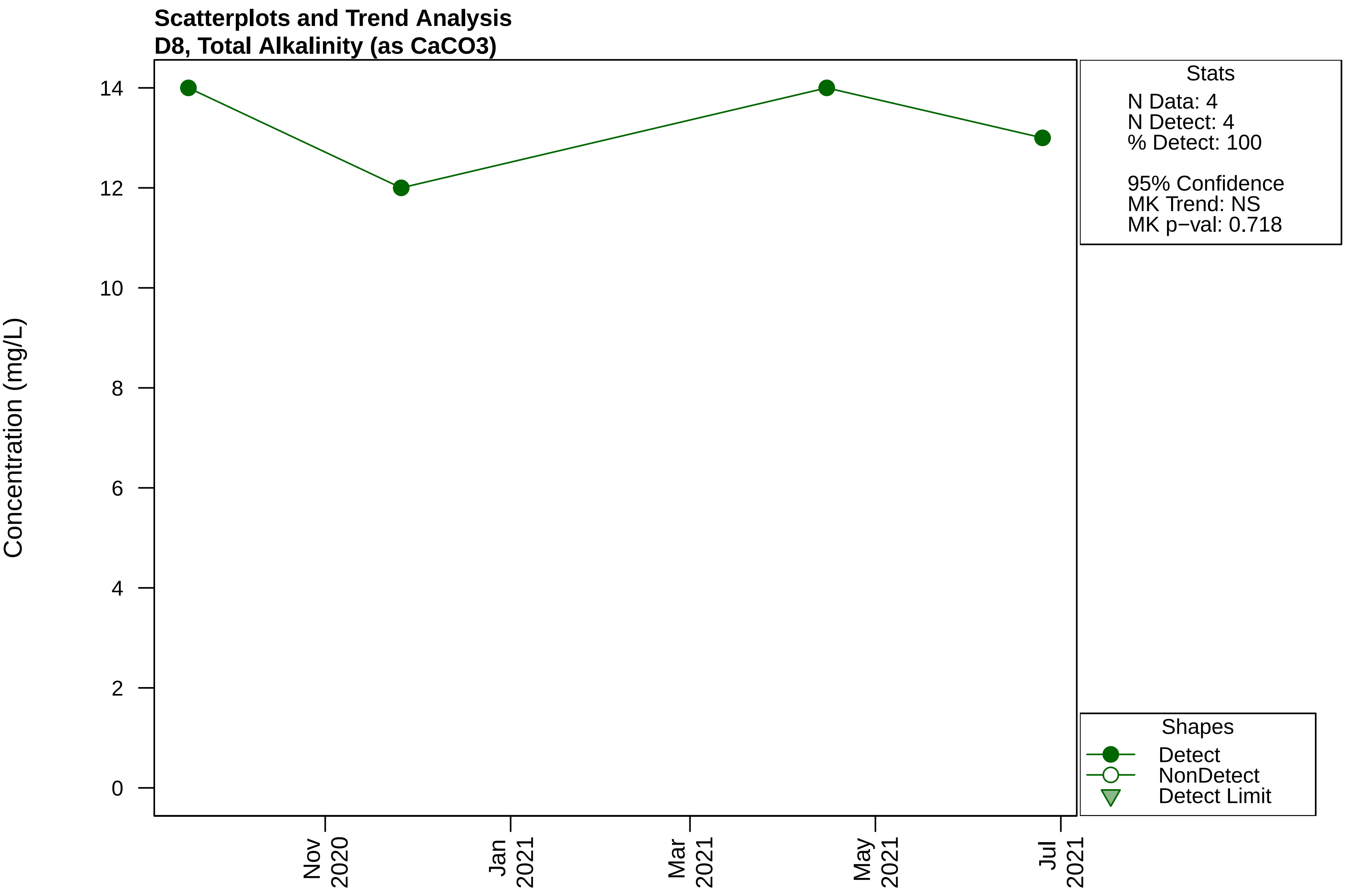
Scatterplots and Trend Analysis
D8, Strontium



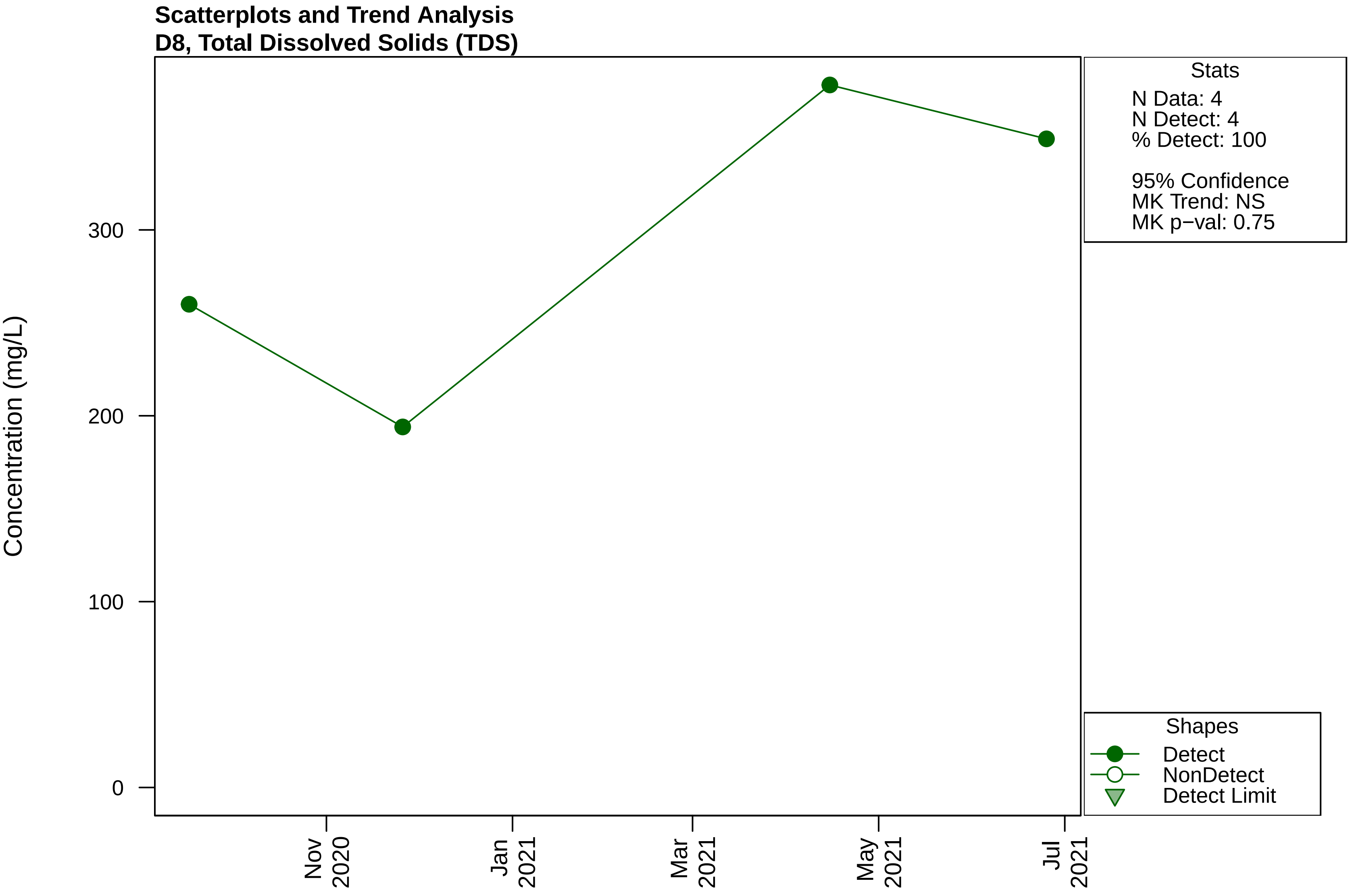


Scatterplots and Trend Analysis
D8, Sulfate (as SO4)
Concentration (mg/L)
0
50
100
150
Jan 2021
Jul 2021
Jan 2022
Jul 2022
Stats
N Data: 8
N Detect: 8
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.179
Shapes
Detect
NonDetect
Detect Limit

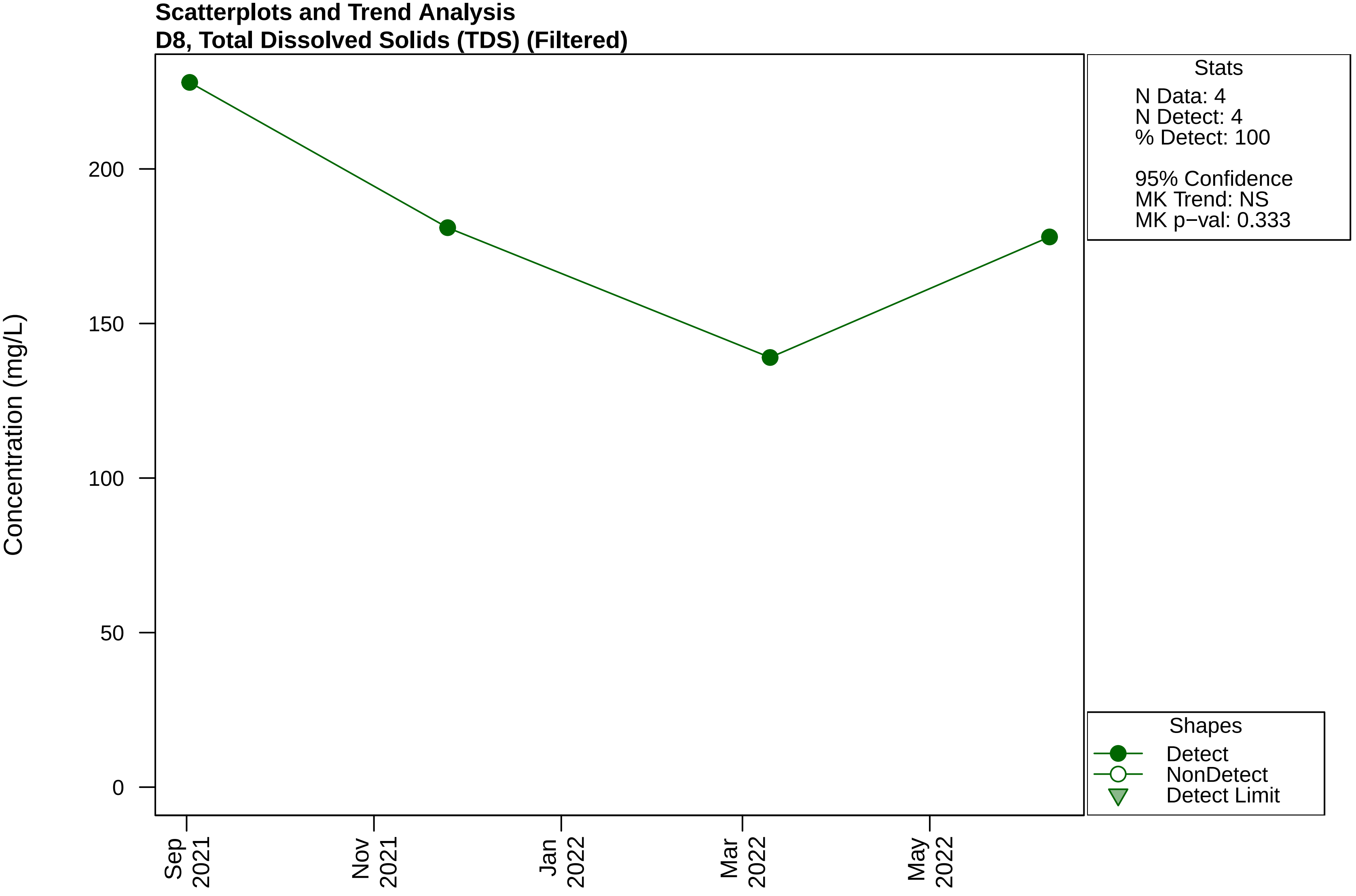

Scatterplots and Trend Analysis
D8, Sulfur
Concentration (mg/L)
250
200
150
100
50
0
Jan 2021
Jul 2021
Jan 2022
Jul 2022
Stats
N Data: 7
N Detect: 7
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.239
Shapes
Detect
NonDetect
Detect Limit



Scatterplots and Trend Analysis
D8, Total Alkalinity (as CaCO3)
Concentration (mg/L)
0
2
4
6
8
10
12
14
Nov 2020
Jan 2021
Mar 2021
May 2021
Jul 2021
Stats
N Data: 4
N Detect: 4
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.718
Shapes
Detect
NonDetect
Detect Limit

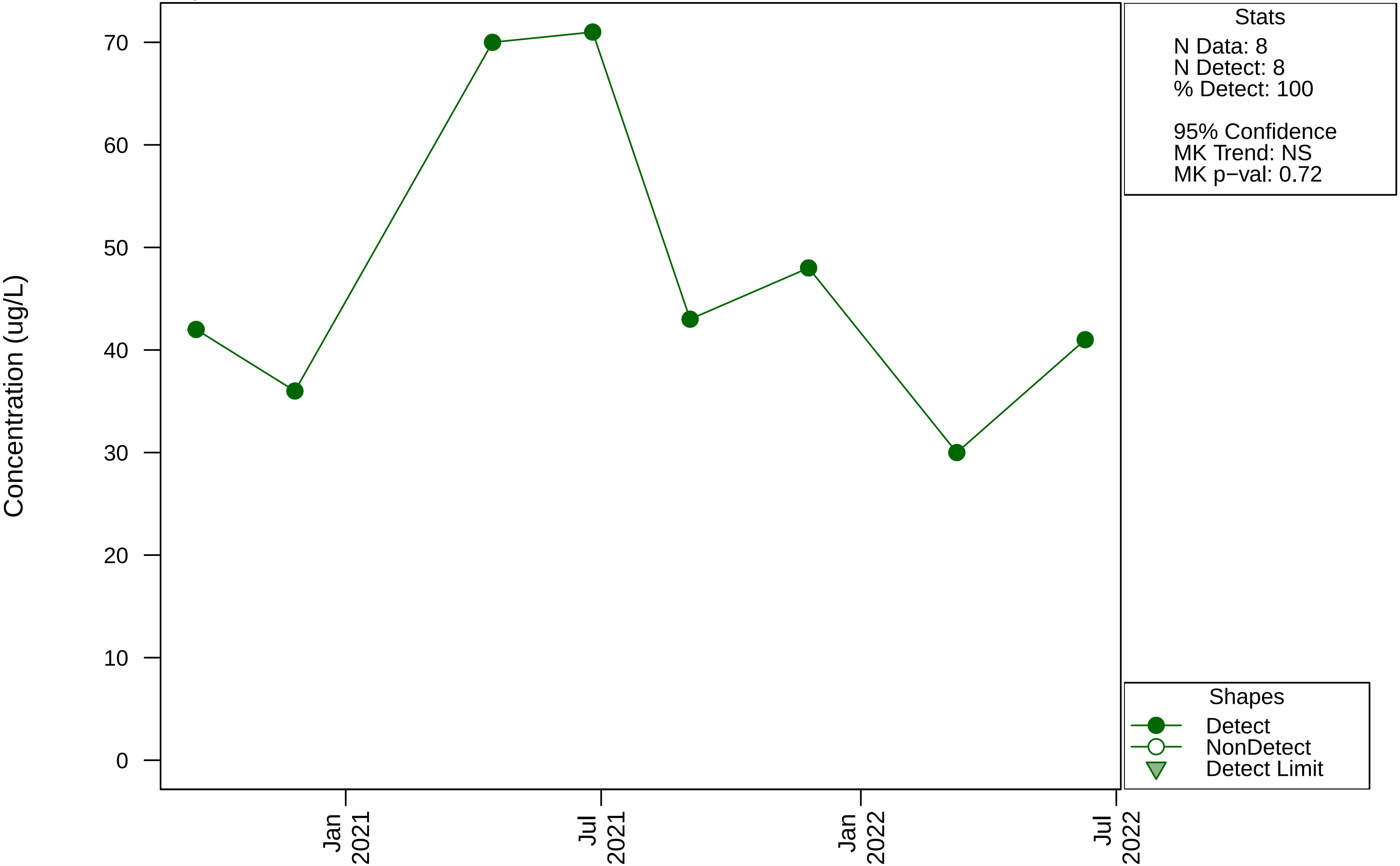


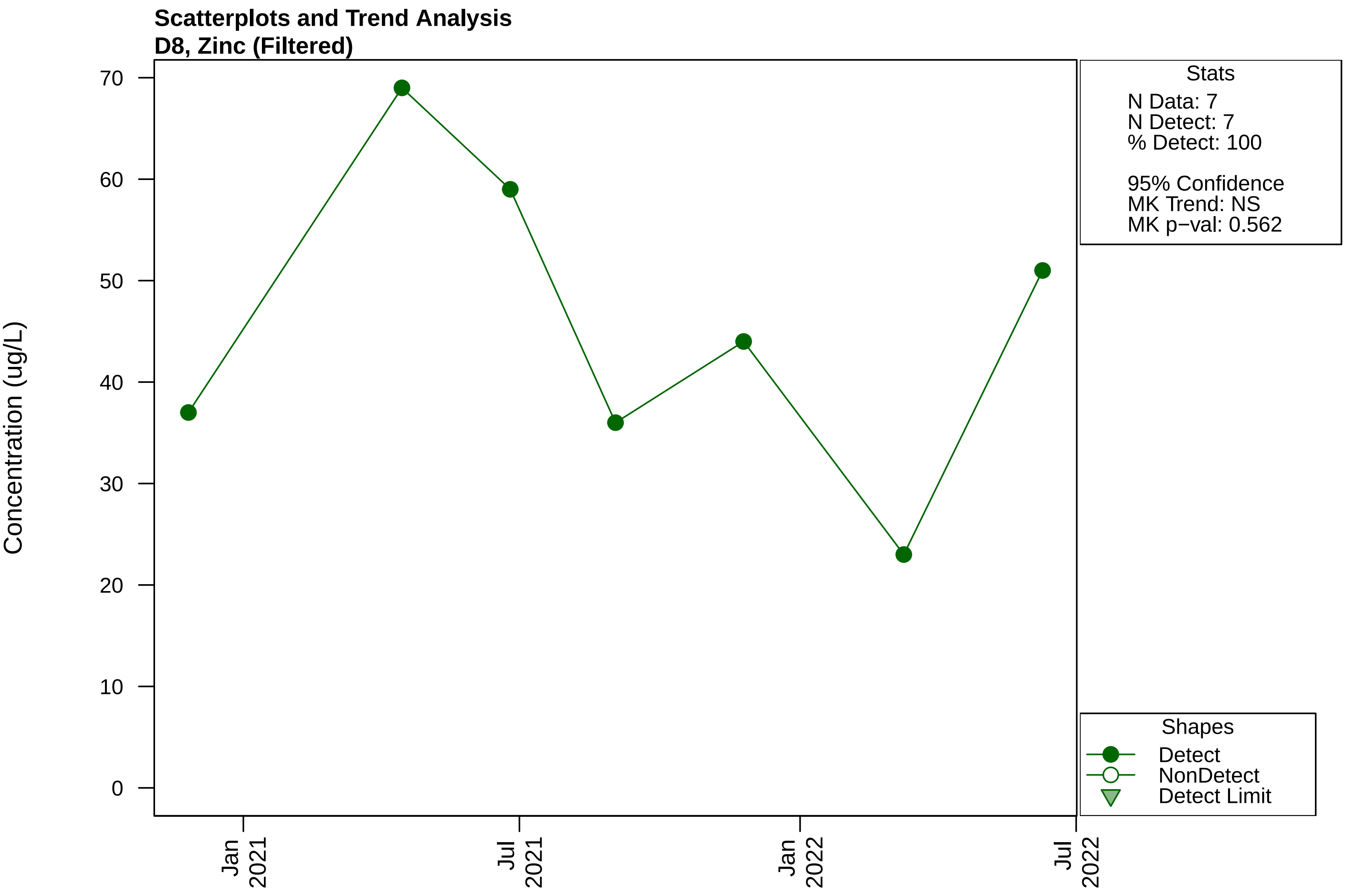
Scatterplots and Trend Analysis
D8, Total Dissolved Solids (TDS)
Concentration (mg/L)
0
100
200
300
Nov 2020
Jan 2021
Mar 2021
May 2021
Jul 2021
Stats
N Data: 4
N Detect: 4
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.75
Shapes
Detect
NonDetect
Detect Limit



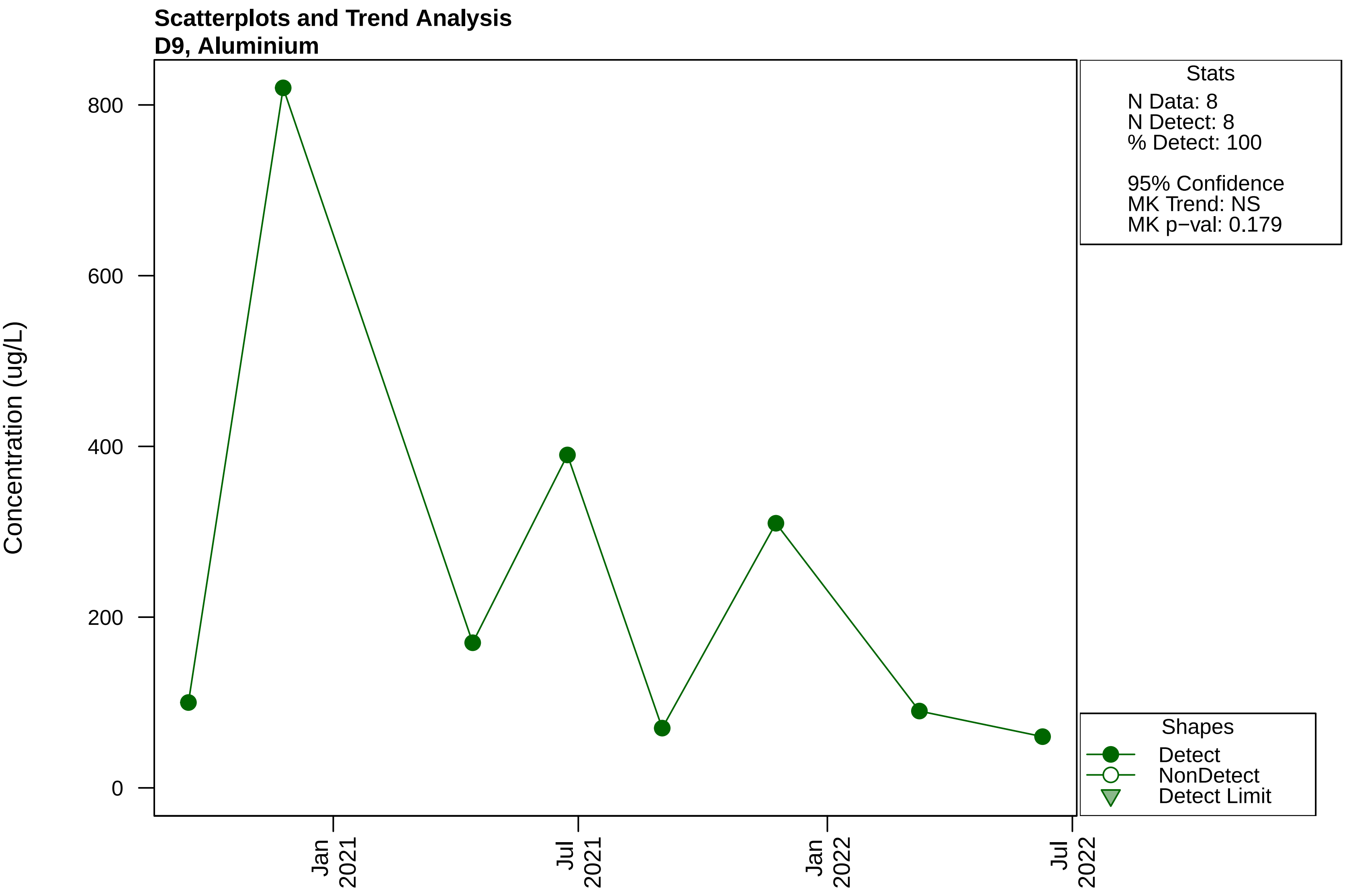
Scatterplots and Trend Analysis
D8, Total Dissolved Solids (TDS) (Filtered)
Concentration (mg/L)
0
50
100
150
200
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 4
N Detect: 4
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.333
Shapes
Detect
NonDetect
Detect Limit

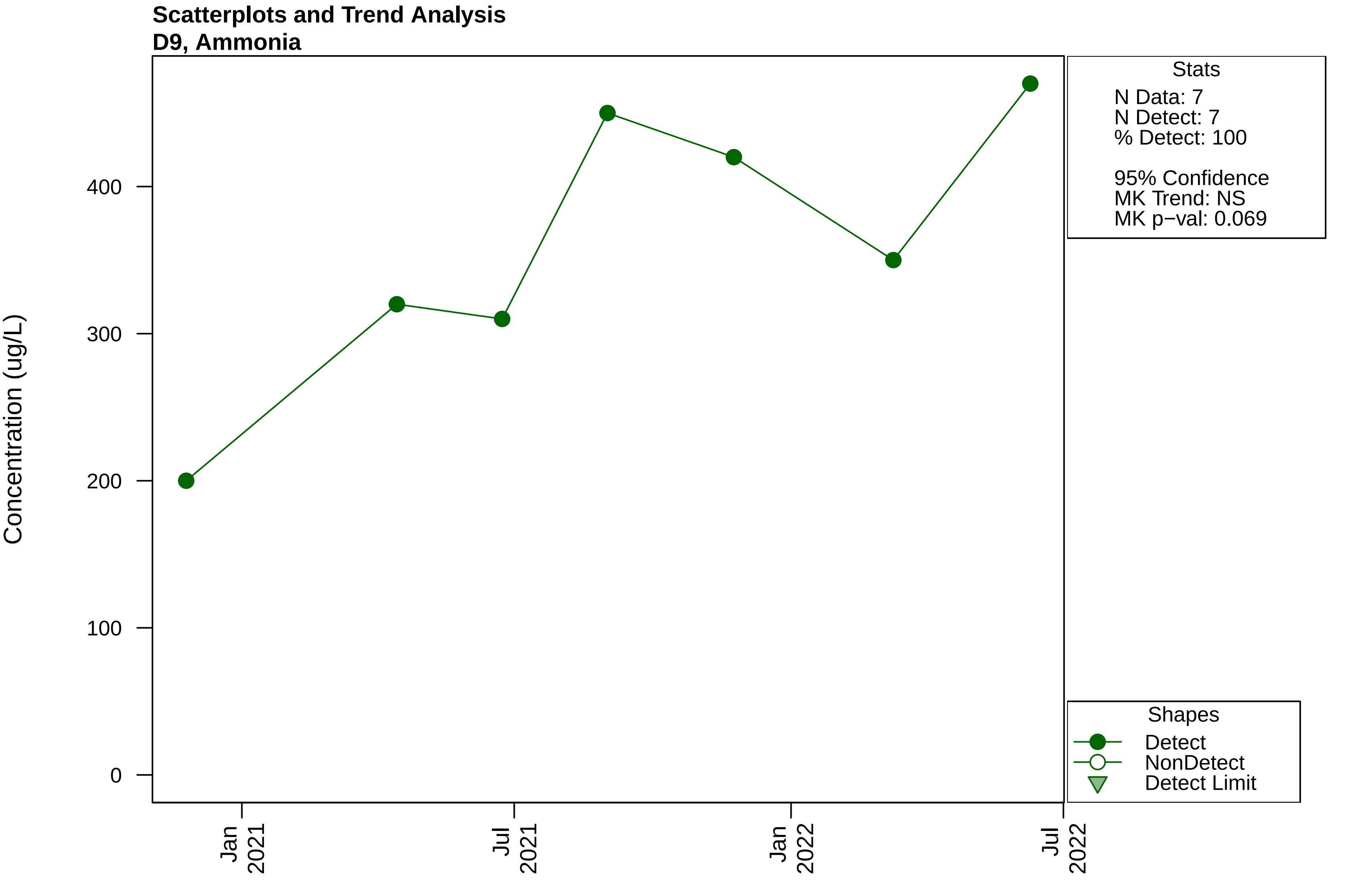
Scatterplots and Trend Analysis
D8, Zinc





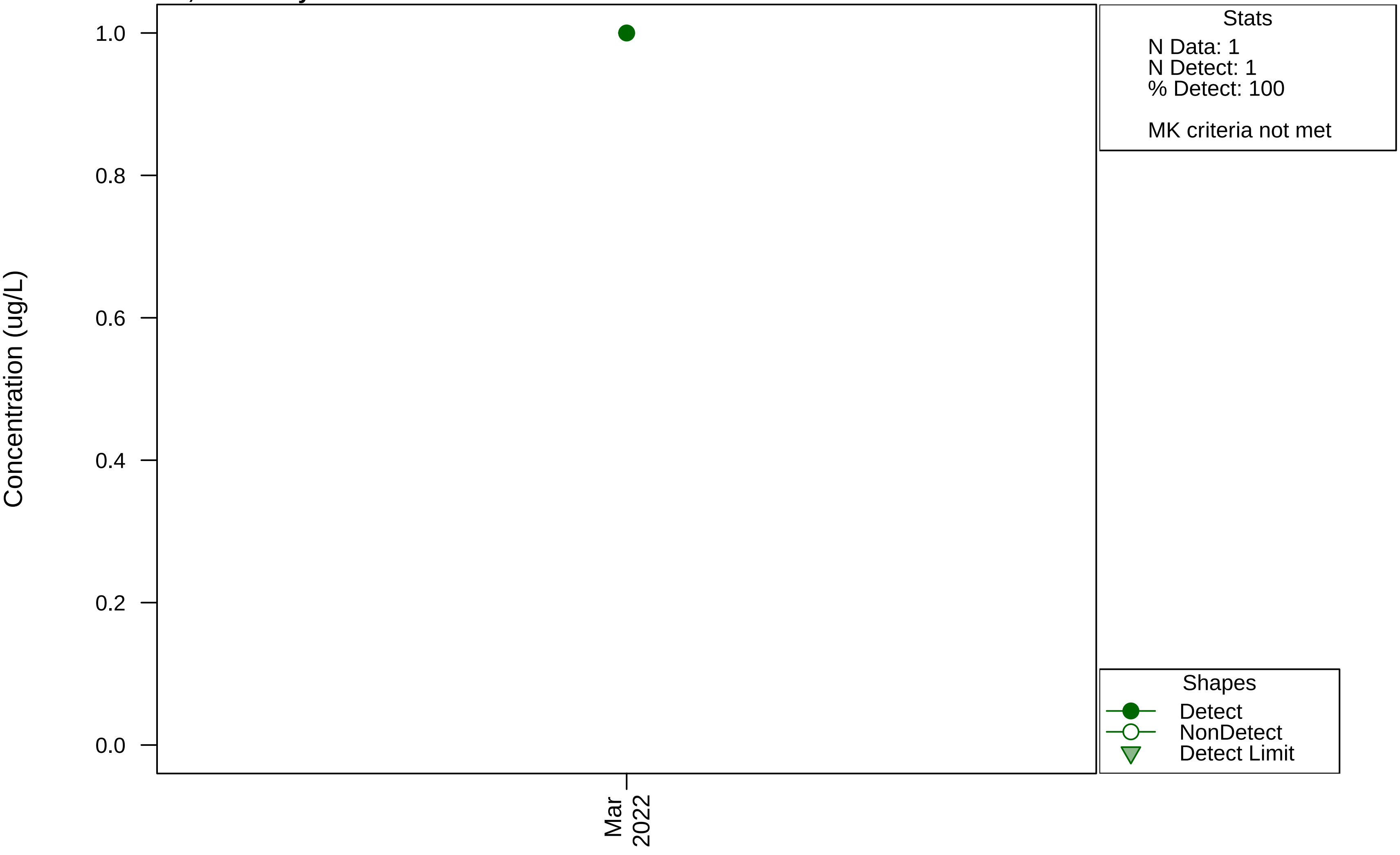
Scatterplots and Trend Analysis
D8, Zinc (Filtered)
Concentration (ug/L)
0
10
20
30
40
50
60
70
Jan 2021
Jul 2021
Jan 2022
Jul 2022
Stats
N Data: 7
N Detect: 7
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.562
Shapes
Detect
NonDetect
Detect Limit


Scatterplots and Trend Analysis
D9, Aluminium
Concentration (ug/L)
0
200
400
600
800
Jan 2021
Jul 2021
Jan 2022
Jul 2022
Stats
N Data: 8
N Detect: 8
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.179
Shapes
Detect
NonDetect
Detect Limit

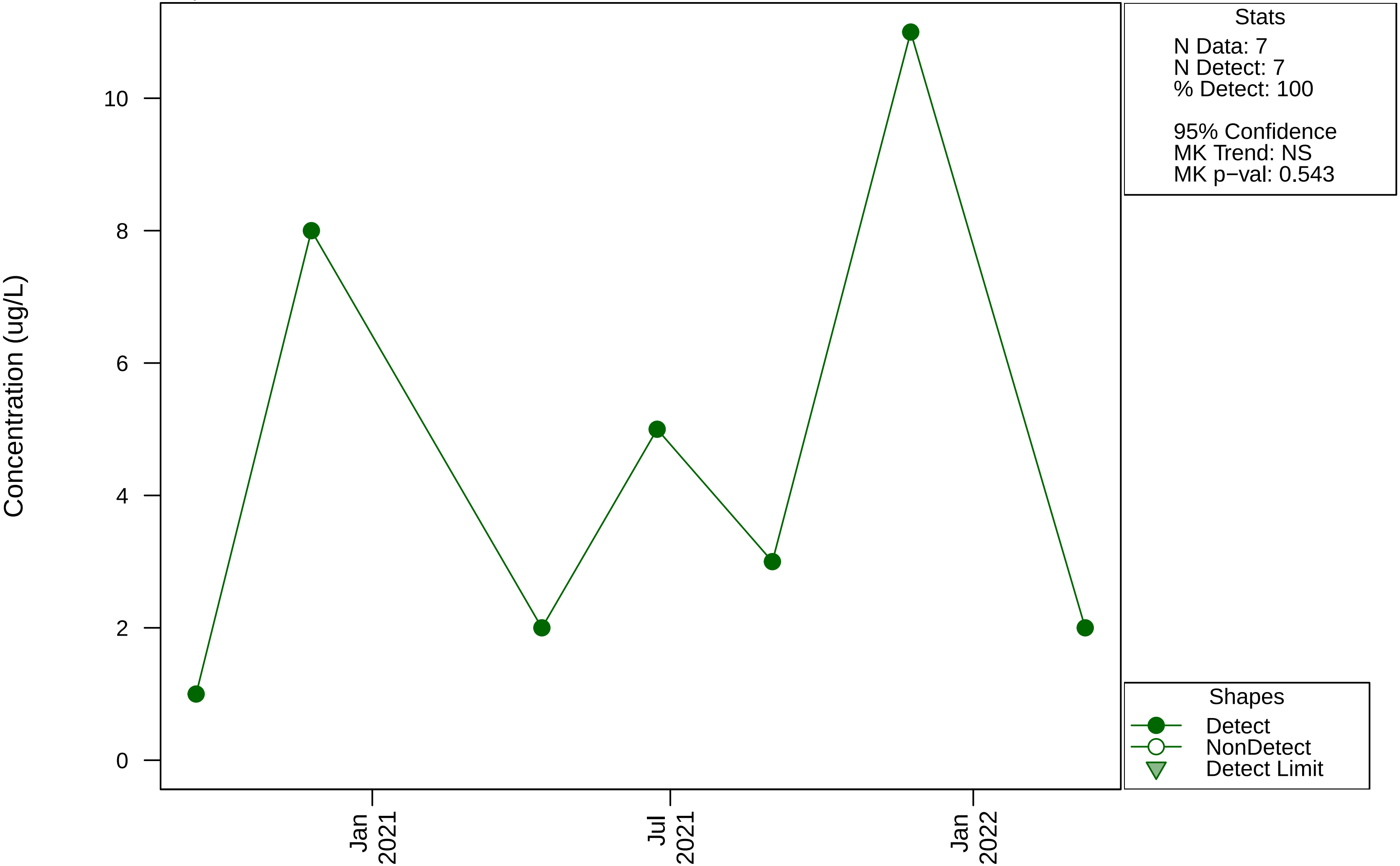


Scatterplots and Trend Analysis
D9, Ammonia
Concentration (ug/L)
0
100
200
300
400
Jan 2021
Jul 2021
Jan 2022
Jul 2022
Stats
N Data: 7
N Detect: 7
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.069
Shapes
Detect
NonDetect
Detect Limit

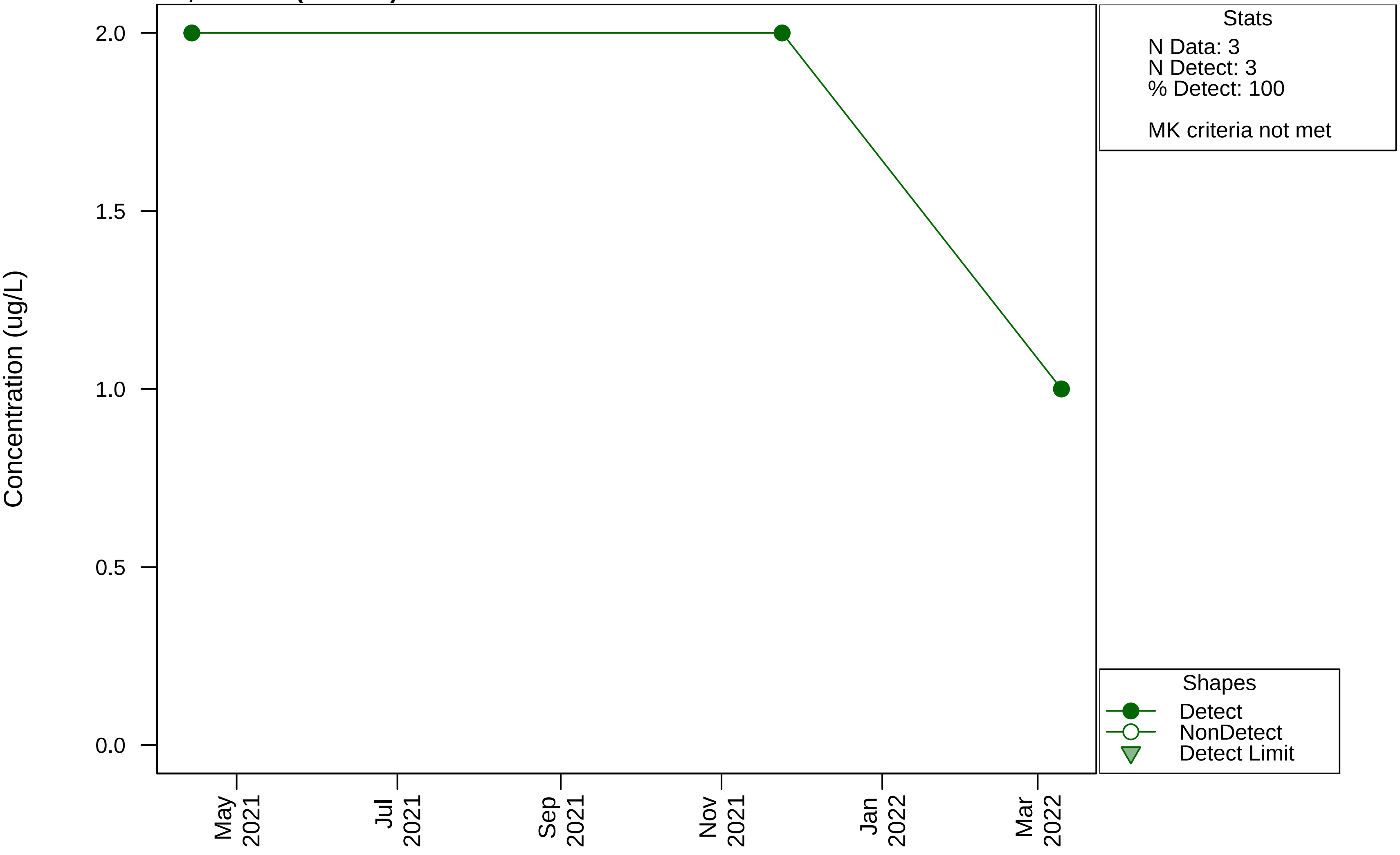
Scatterplots and Trend Analysis
D9, Antimony



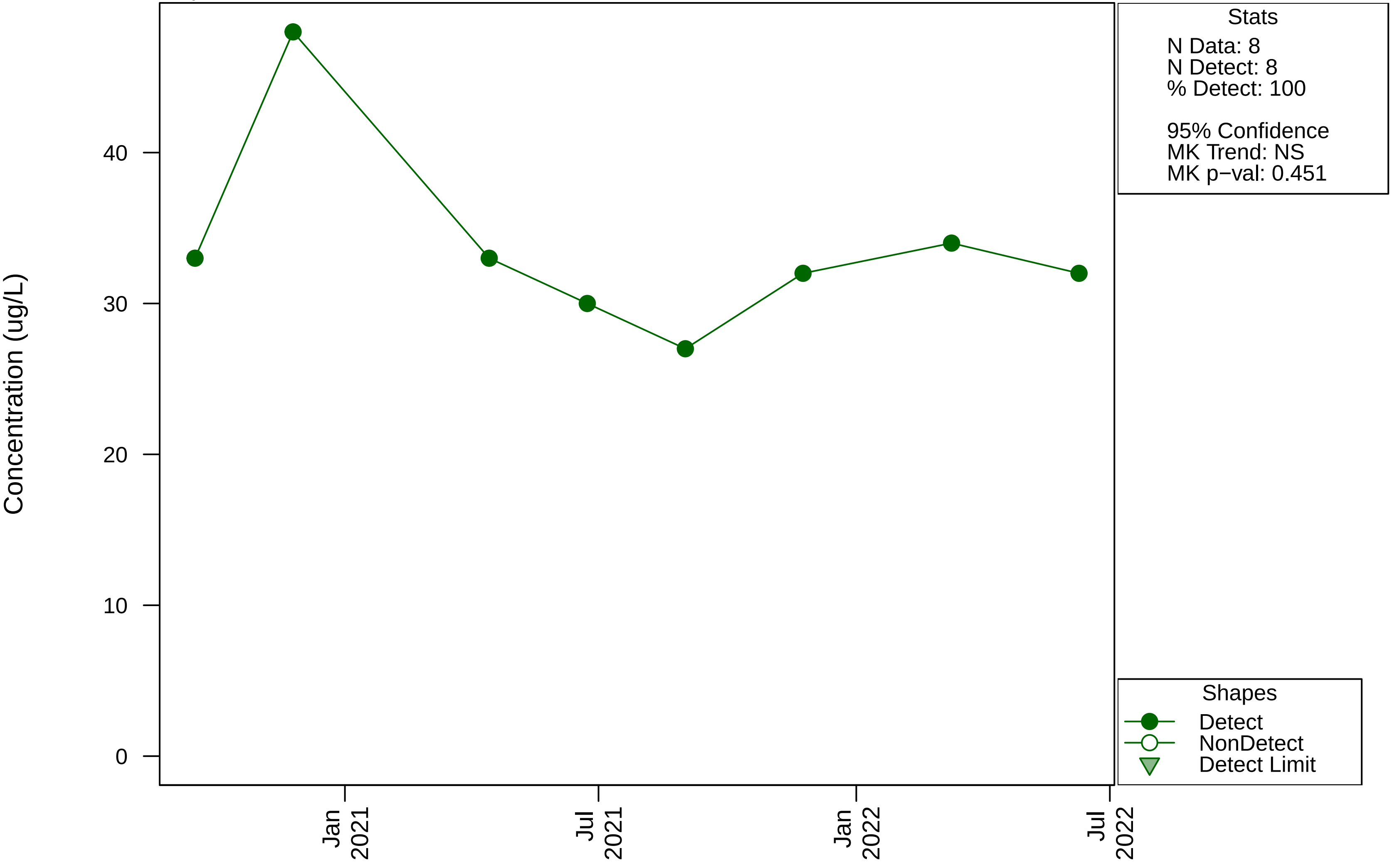
Scatterplots and Trend Analysis
D9, Arsenic



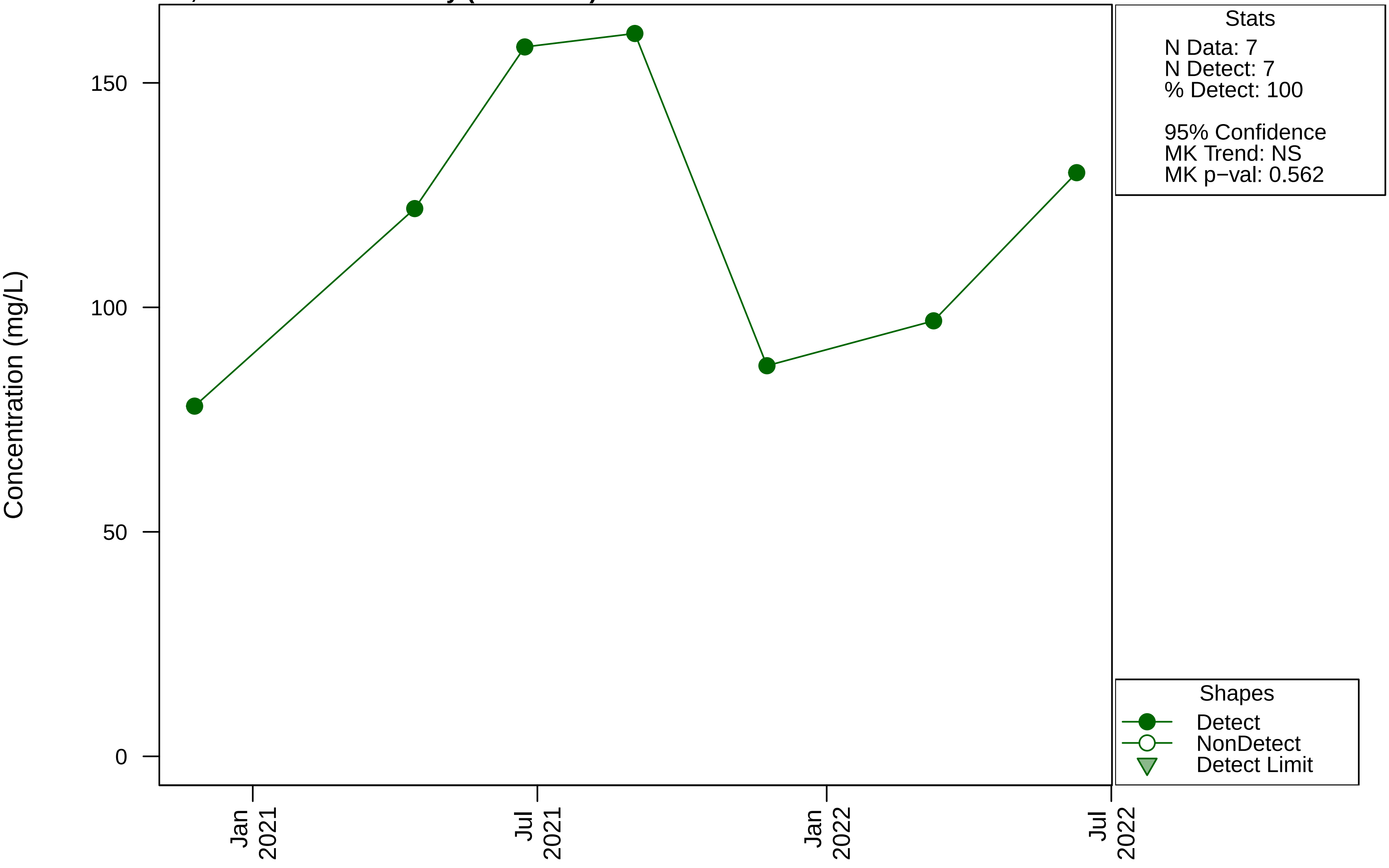
Scatterplots and Trend Analysis
D9, Arsenic (Filtered)



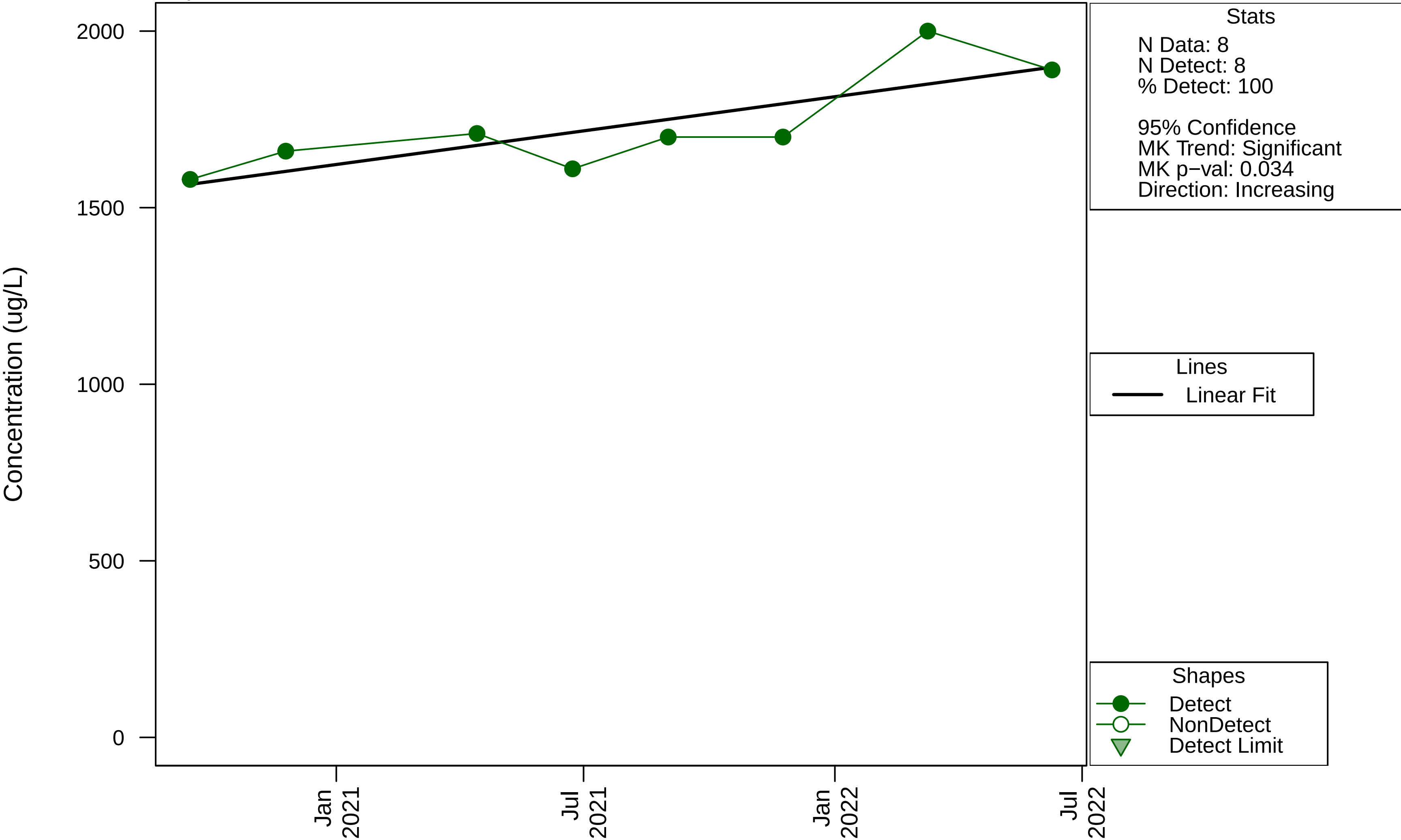
Scatterplots and Trend Analysis
D9, Barium

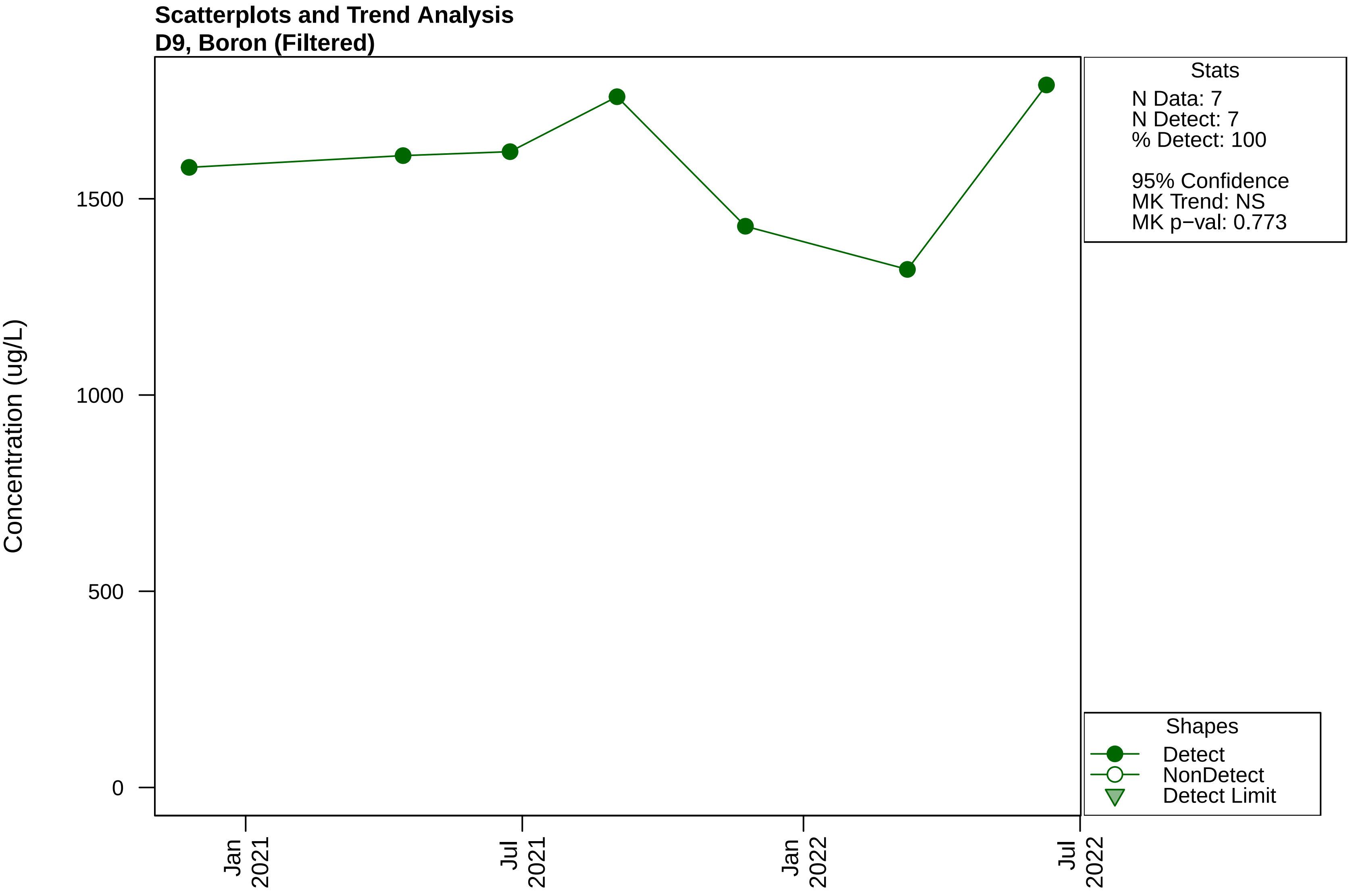


Scatterplots and Trend Analysis
D9, Bicarbonate Alkalinity (as CaCO3)

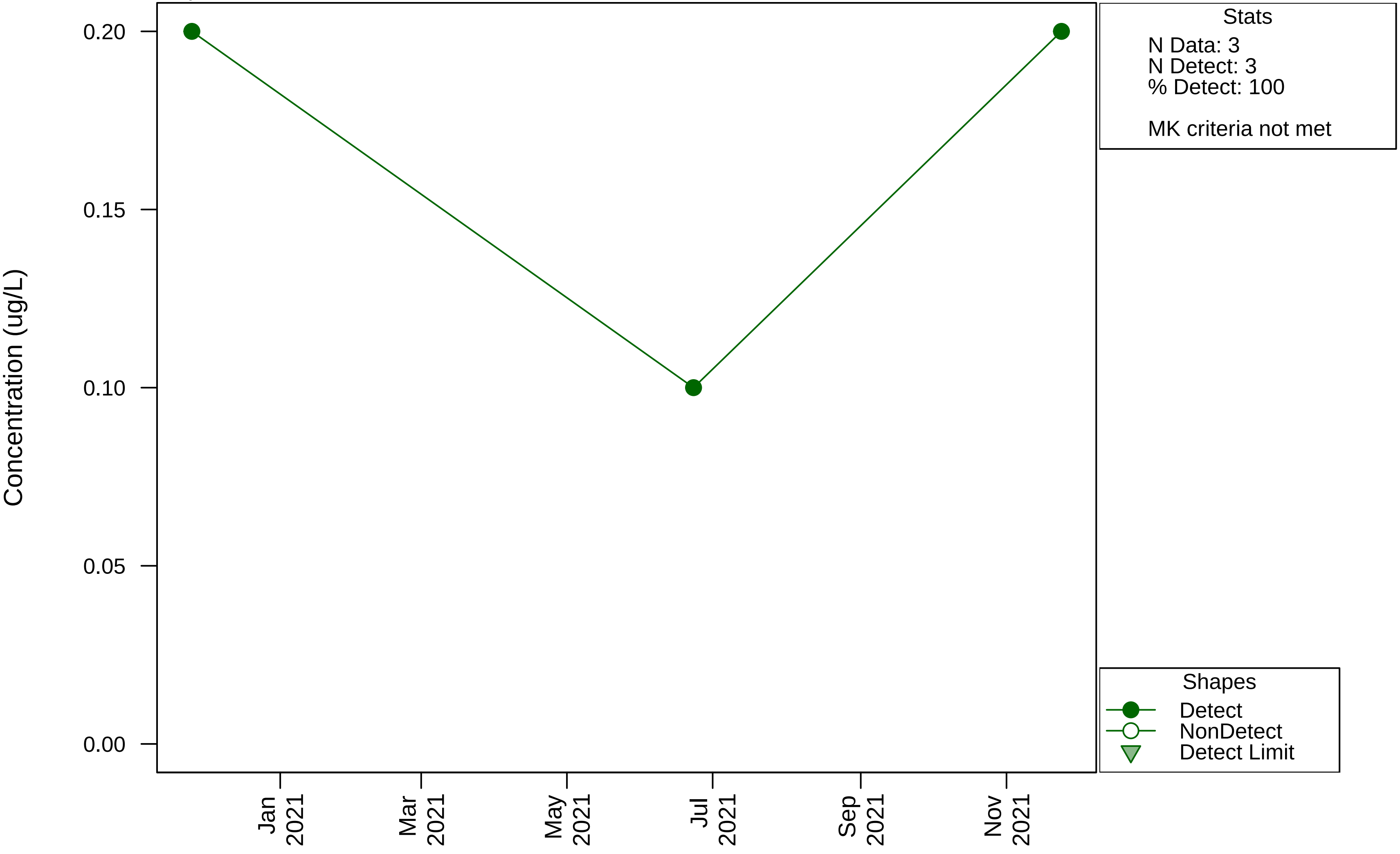


Scatterplots and Trend Analysis
D9, Boron

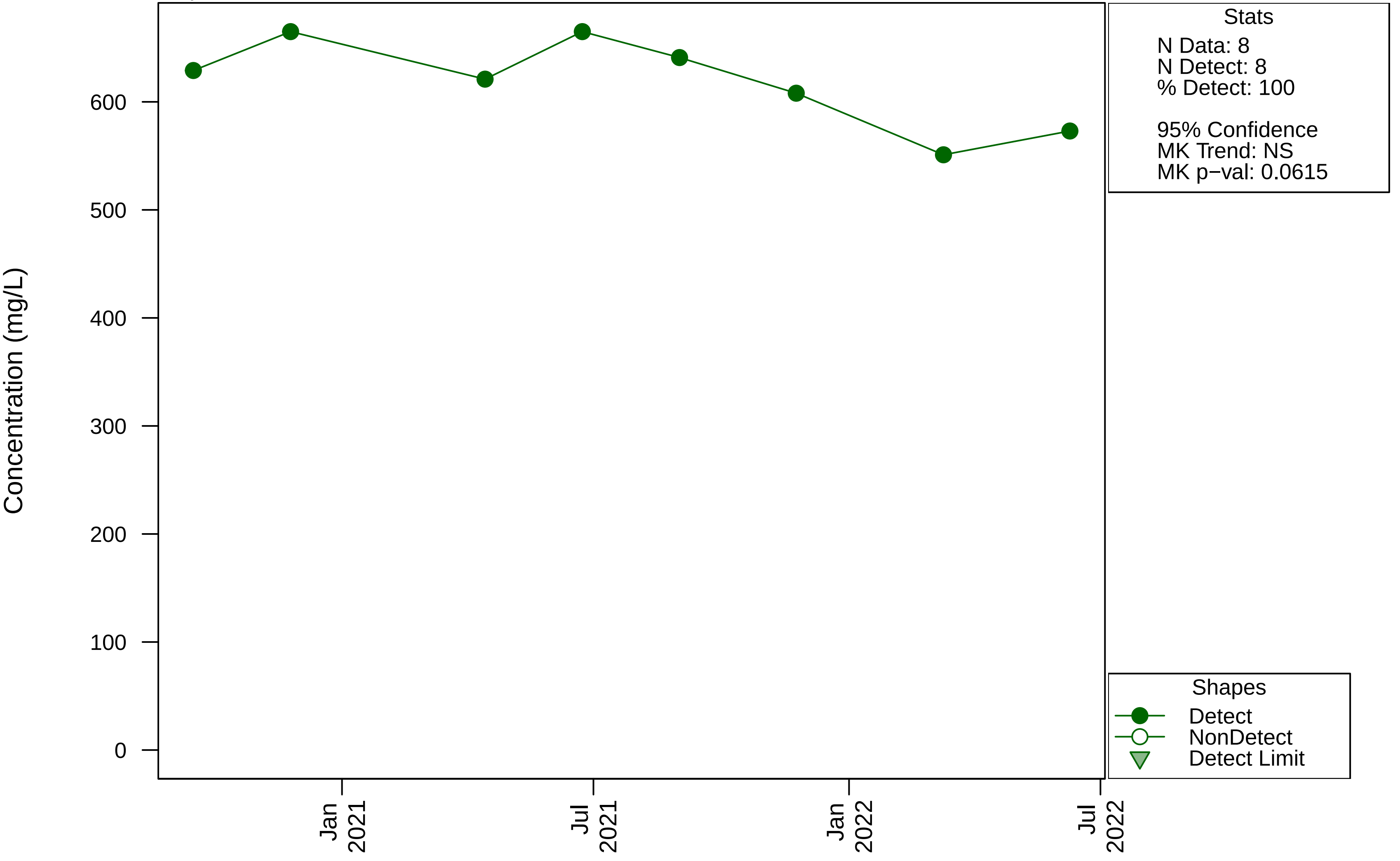



Scatterplots and Trend Analysis
D9, Boron (Filtered)
Concentration (ug/L)
0
500
1000
1500
Jan 2021
Jul 2021
Jan 2022
Jul 2022
Stats
N Data: 7
N Detect: 7
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.773
Shapes
Detect
NonDetect
Detect Limit

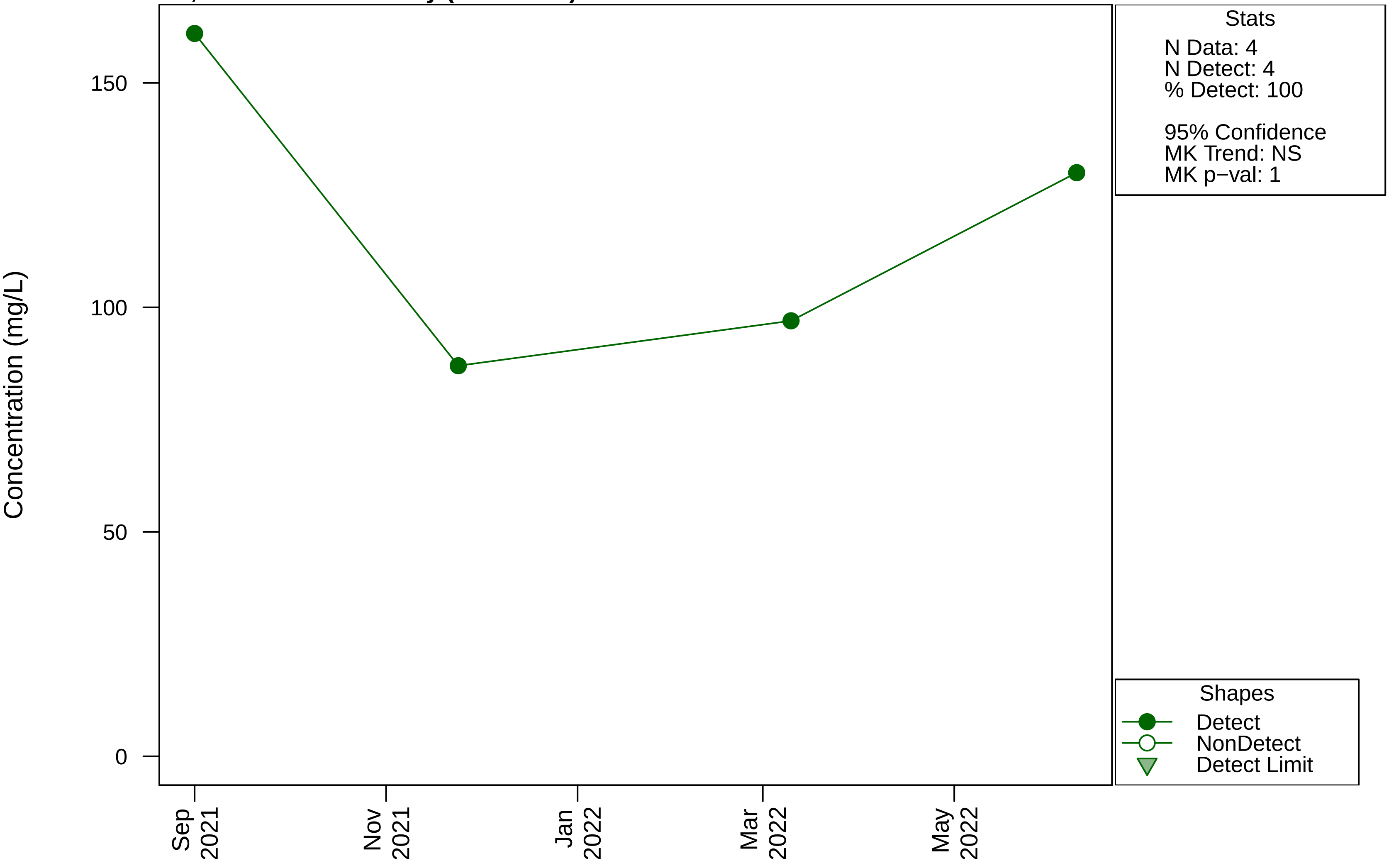
Scatterplots and Trend Analysis
D9, Cadmium



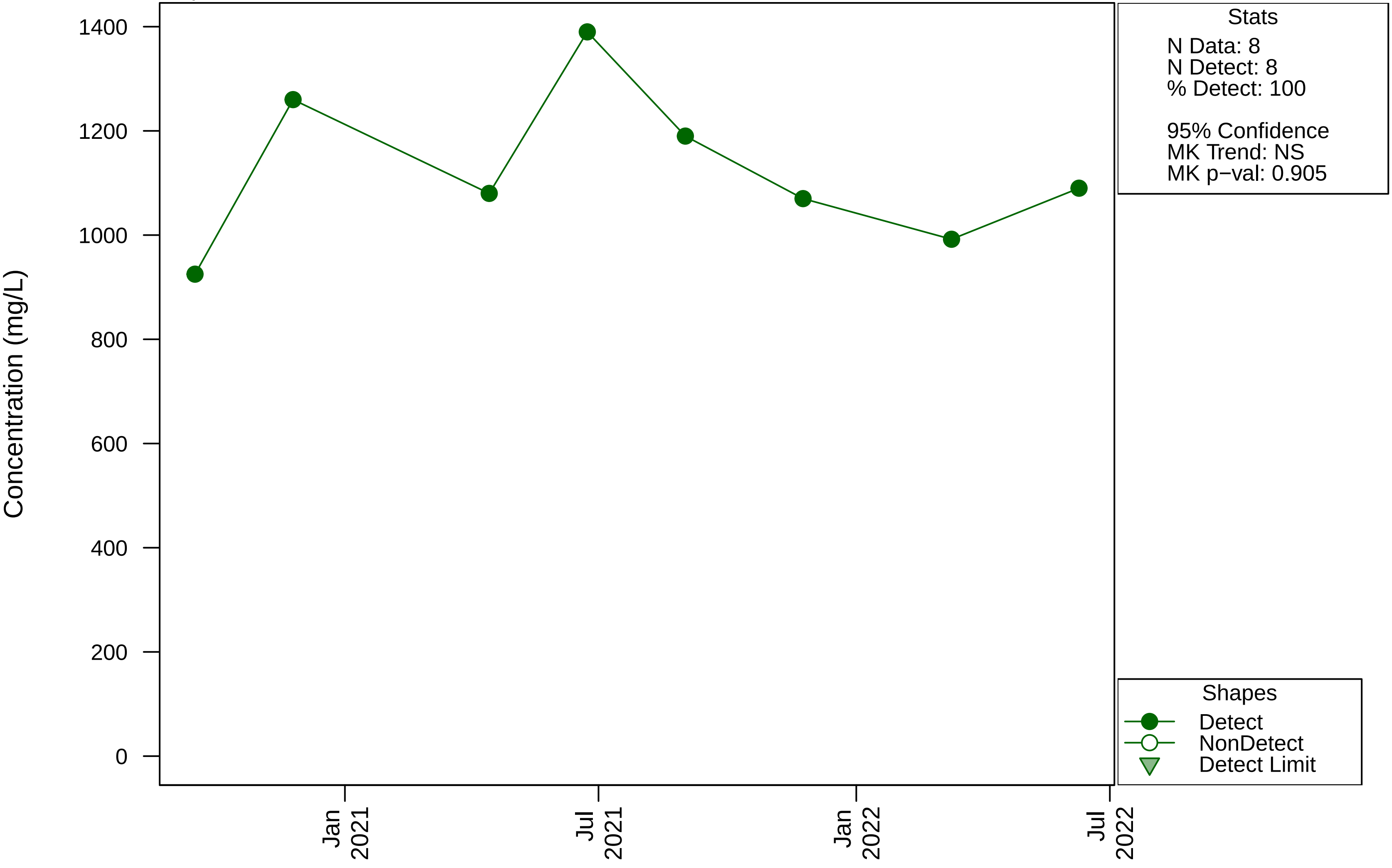
Scatterplots and Trend Analysis
D9, Calcium

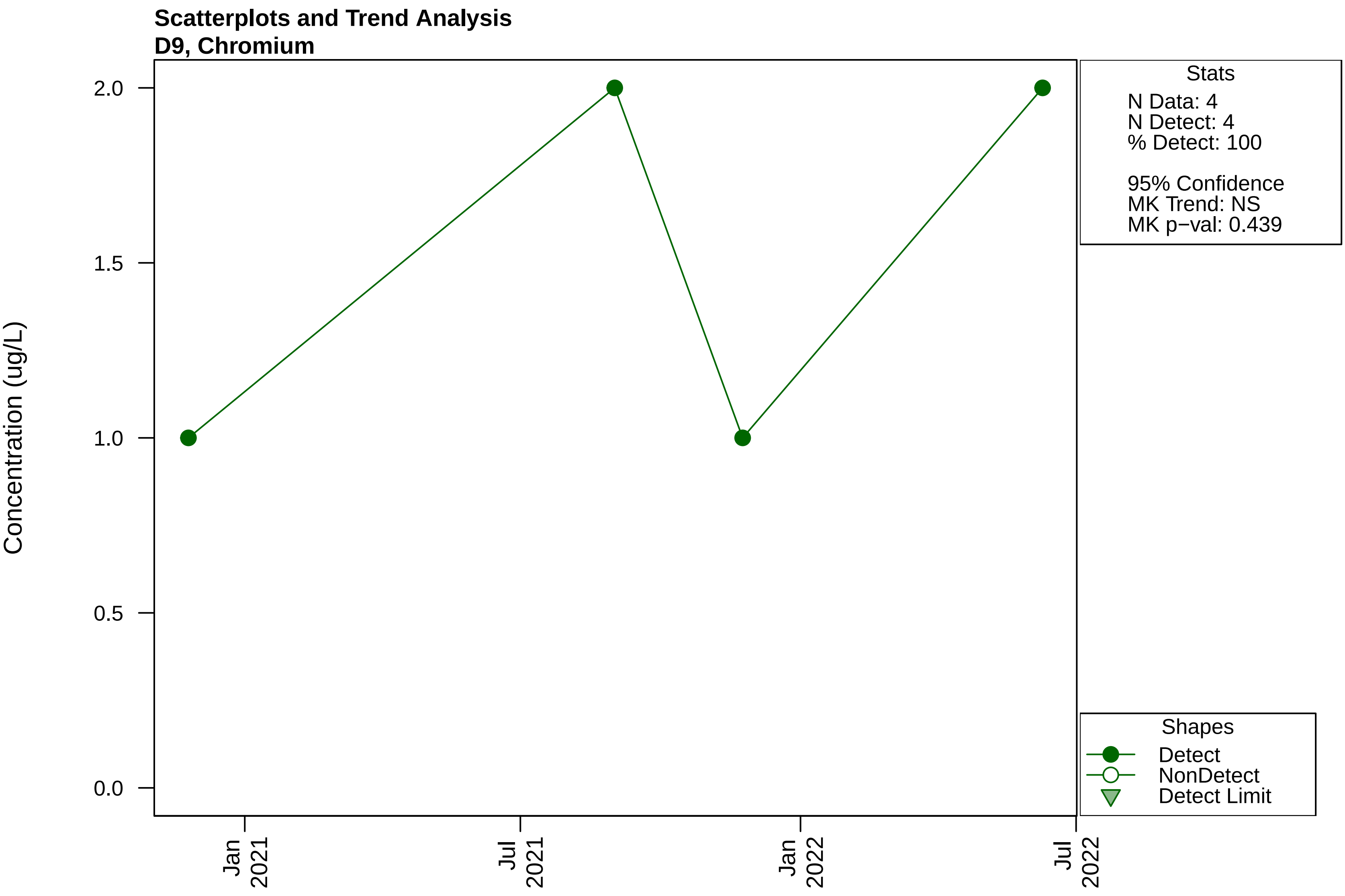


Scatterplots and Trend Analysis
D9, Carbonate Alkalinity (as CaCO3)

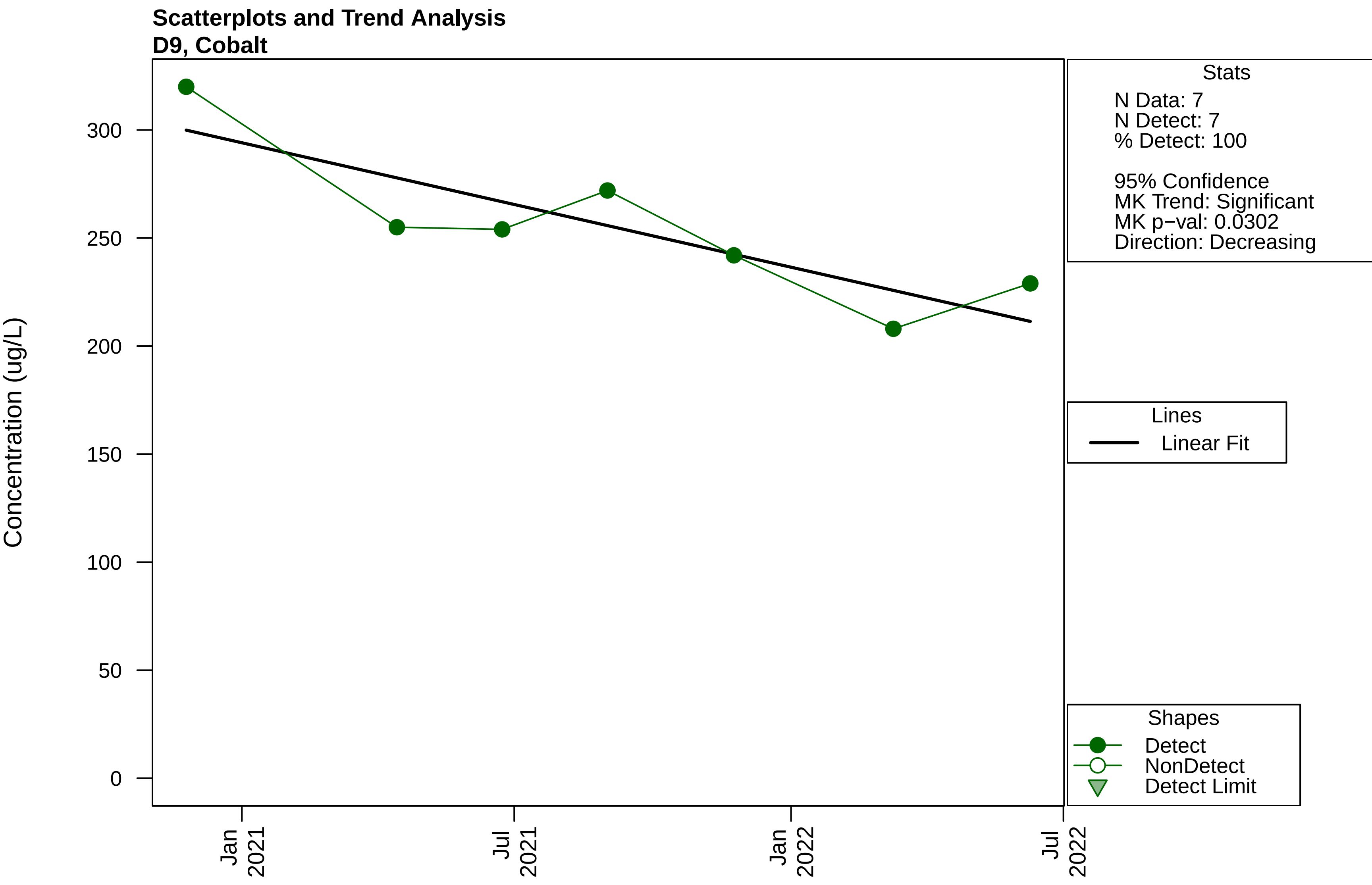


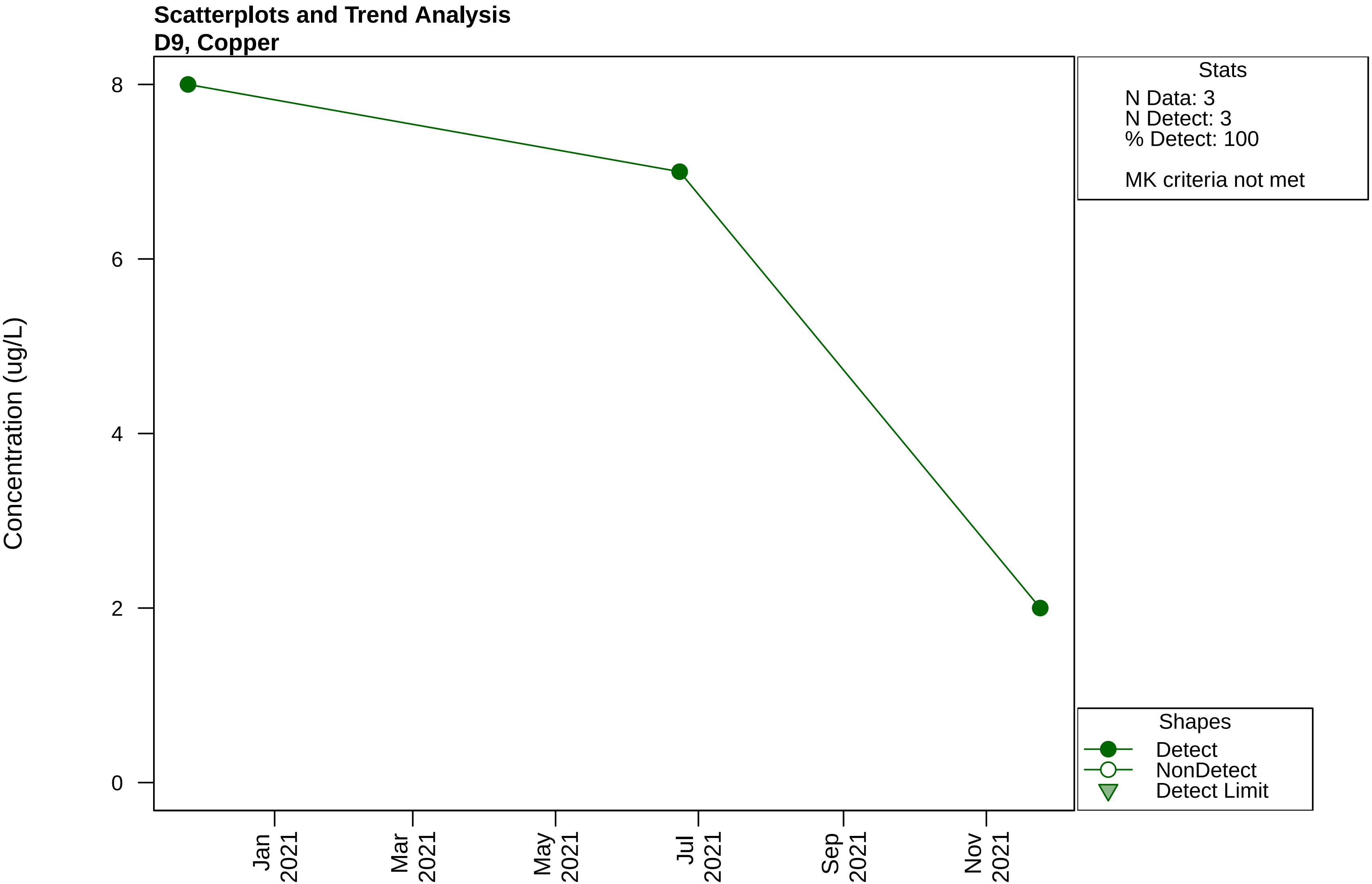
Scatterplots and Trend Analysis
D9, Chloride





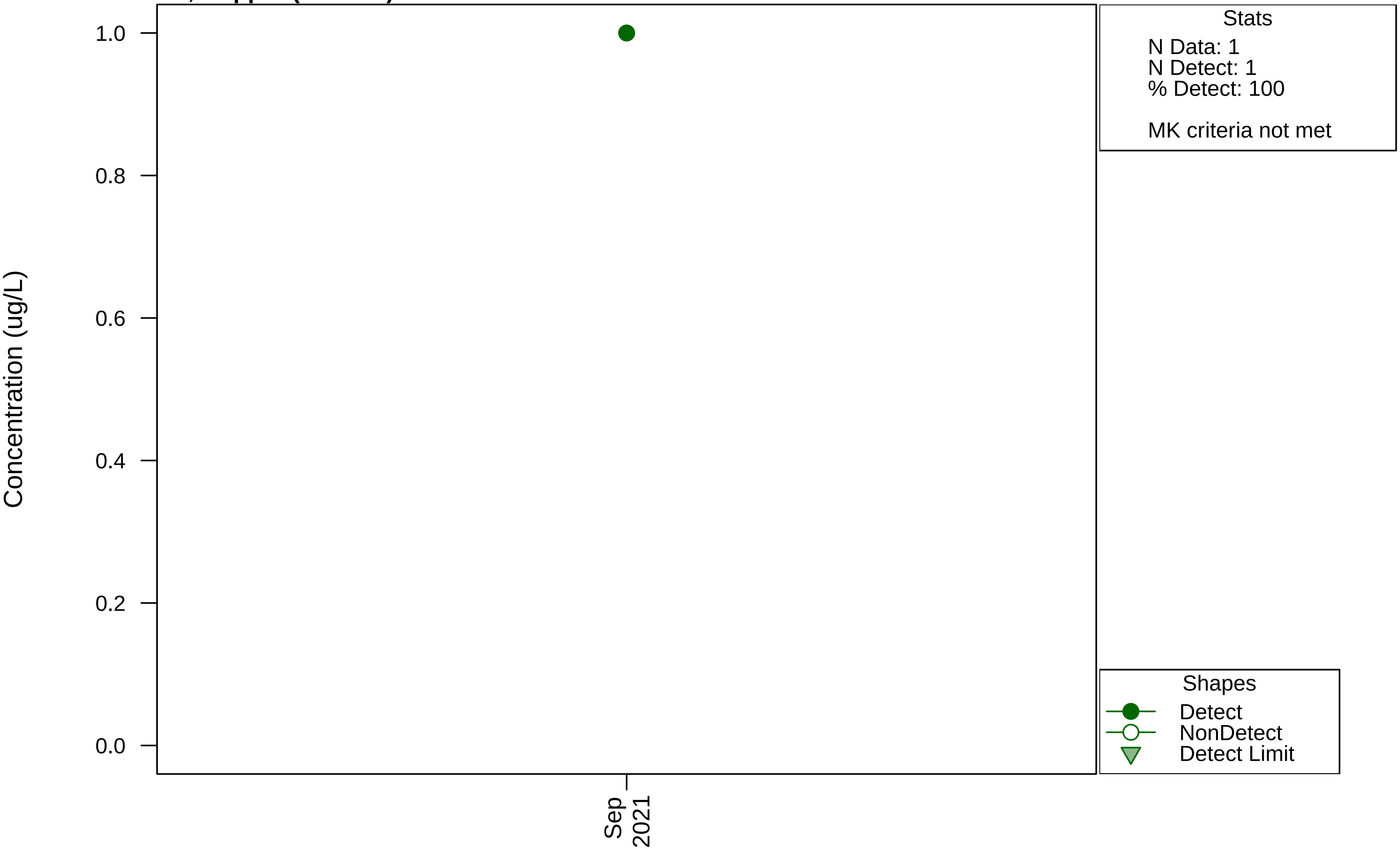
Scatterplots and Trend Analysis
D9, Chromium
Concentration (ug/L)
2.0
1.5
1.0
0.5
0.0
Jan 2021
Jul 2021
Jan 2022
Jul 2022
Stats
N Data: 4
N Detect: 4
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.439
Shapes
Detect
NonDetect
Detect Limit

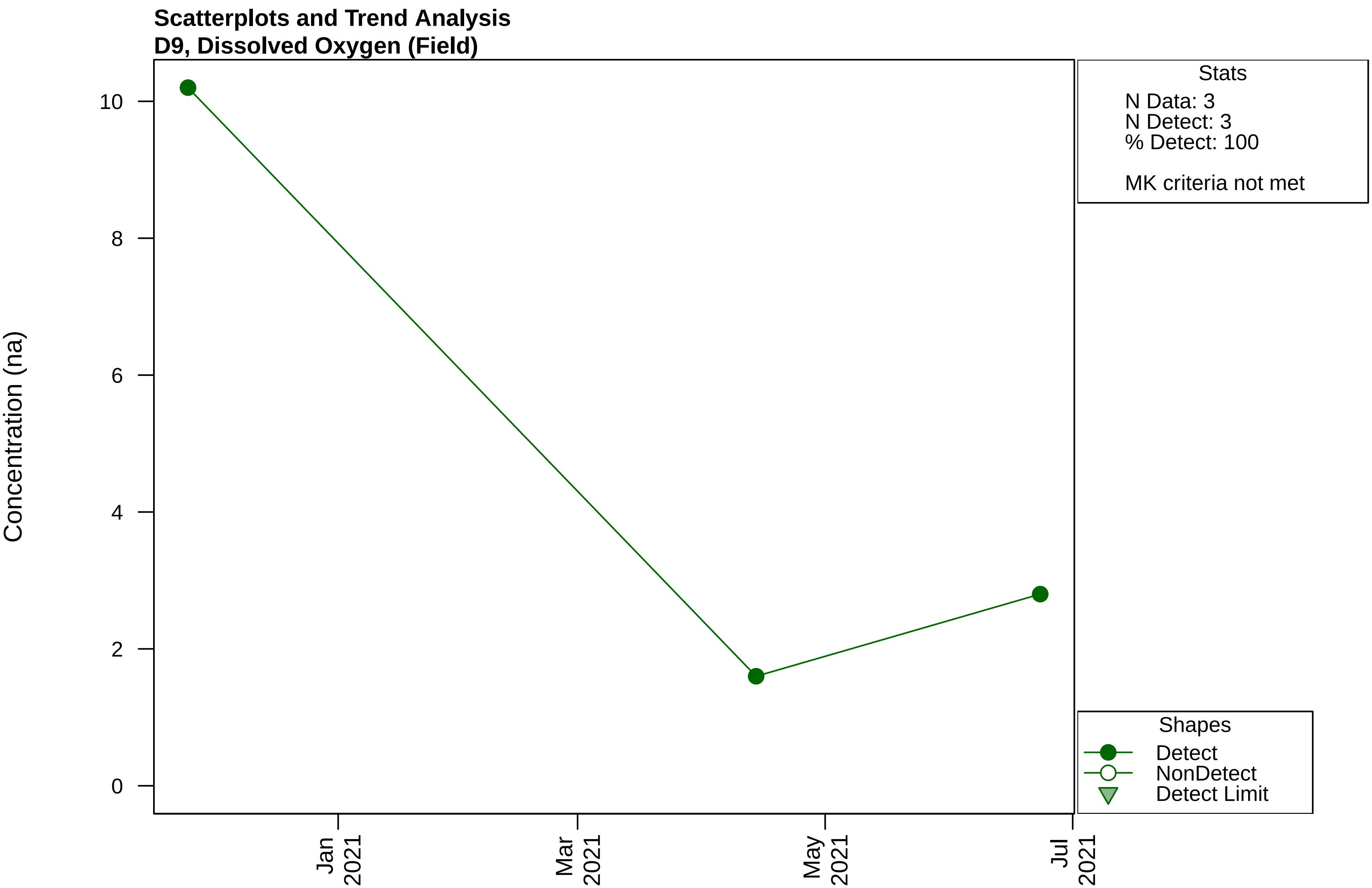

Scatterplots and Trend Analysis
D9, Cobalt
Concentration (ug/L)
0
50
100
150
200
250
300
Jan 2021
Jul 2021
Jan 2022
Jul 2022
Stats
N Data: 7
N Detect: 7
% Detect: 100
95% Confidence
MK Trend: Significant
MK p−val: 0.0302
Direction: Decreasing
Lines
Linear Fit
Shapes
Detect
NonDetect
Detect Limit



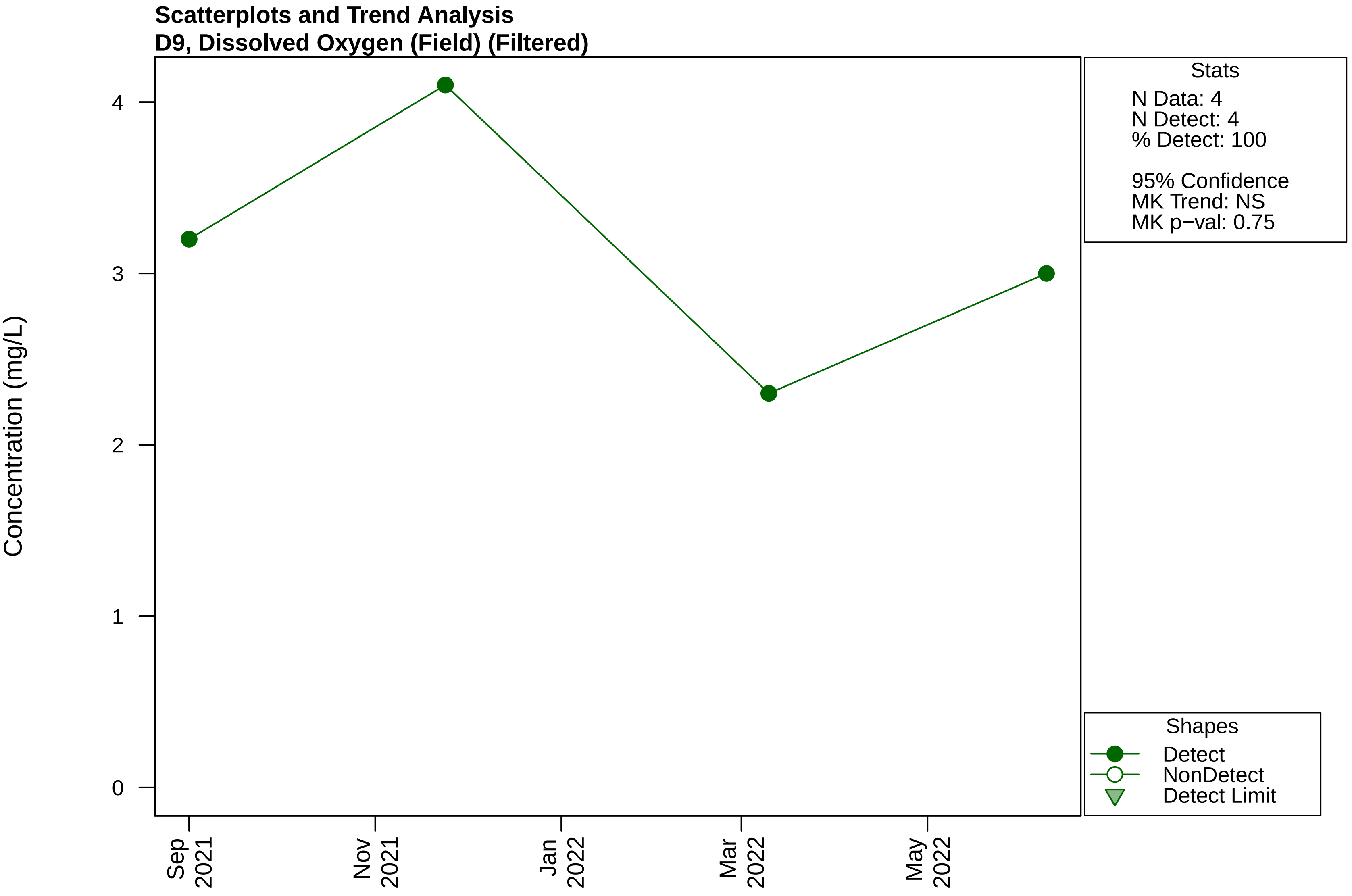
Scatterplots and Trend Analysis
D9, Copper
Concentration (ug/L)
0
2
4
6
8
Jan 2021
Mar 2021
May 2021
Jul 2021
Sep 2021
Nov 2021
Stats
N Data: 3
N Detect: 3
% Detect: 100
MK criteria not met
Shapes
Detect
NonDetect
Detect Limit

Scatterplots and Trend Analysis
D9, Copper (Filtered)

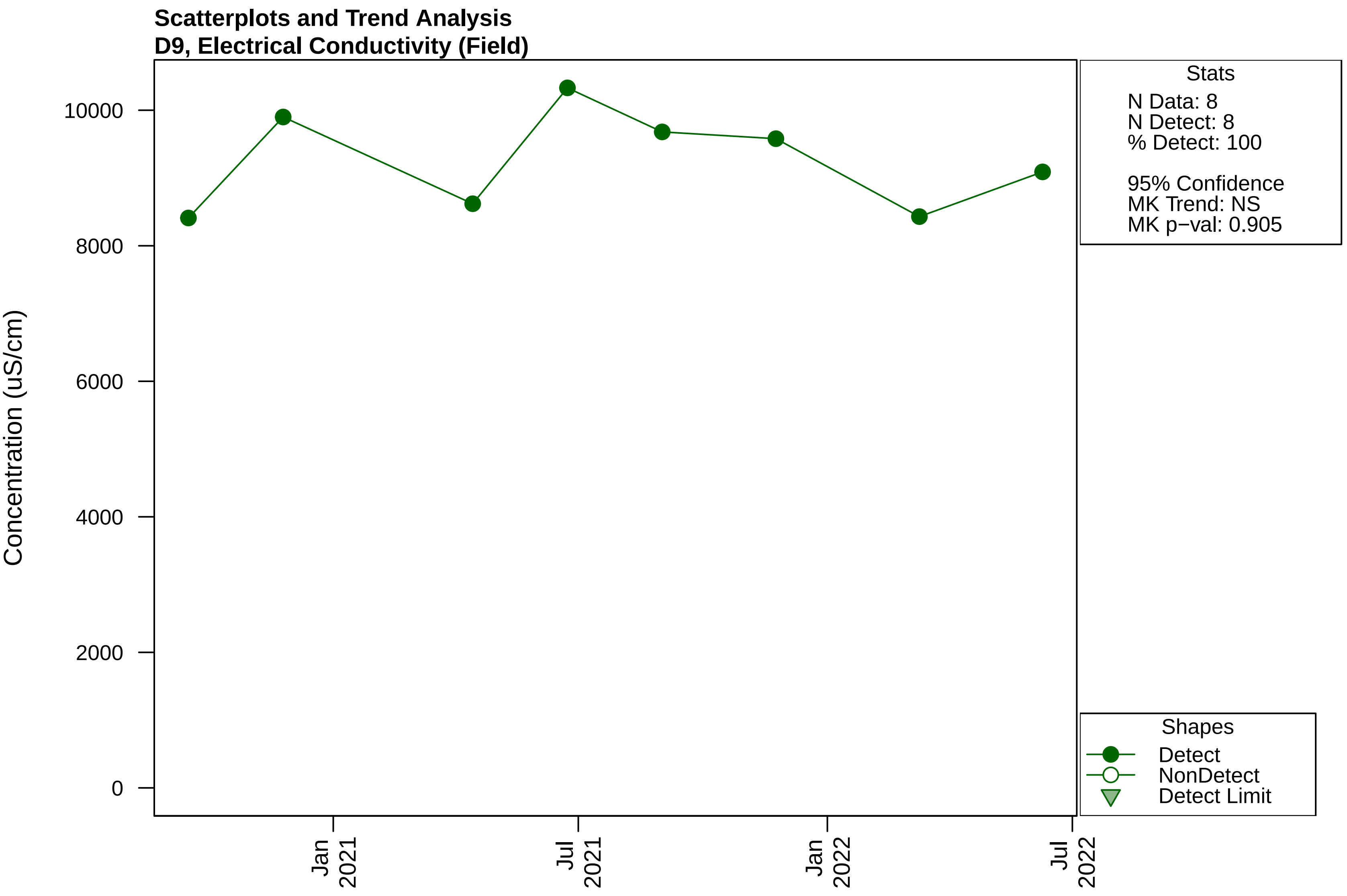


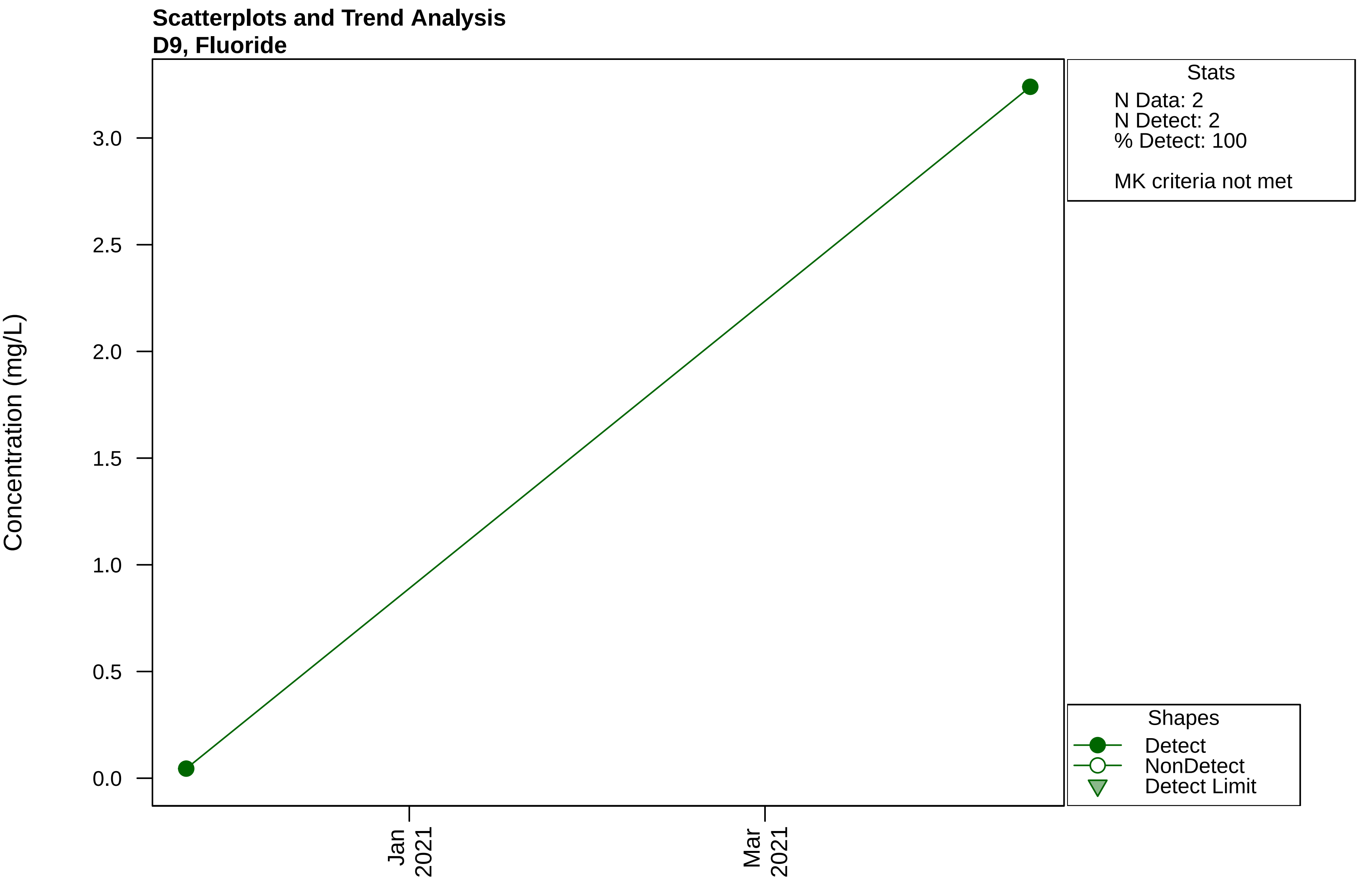


Scatterplots and Trend Analysis
D9, Dissolved Oxygen (Field)
Concentration (na)
0
2
4
6
8
10
Jan 2021
Mar 2021
May 2021
Jul 2021
Stats
N Data: 3
N Detect: 3
% Detect: 100
MK criteria not met
Shapes
Detect
NonDetect
Detect Limit

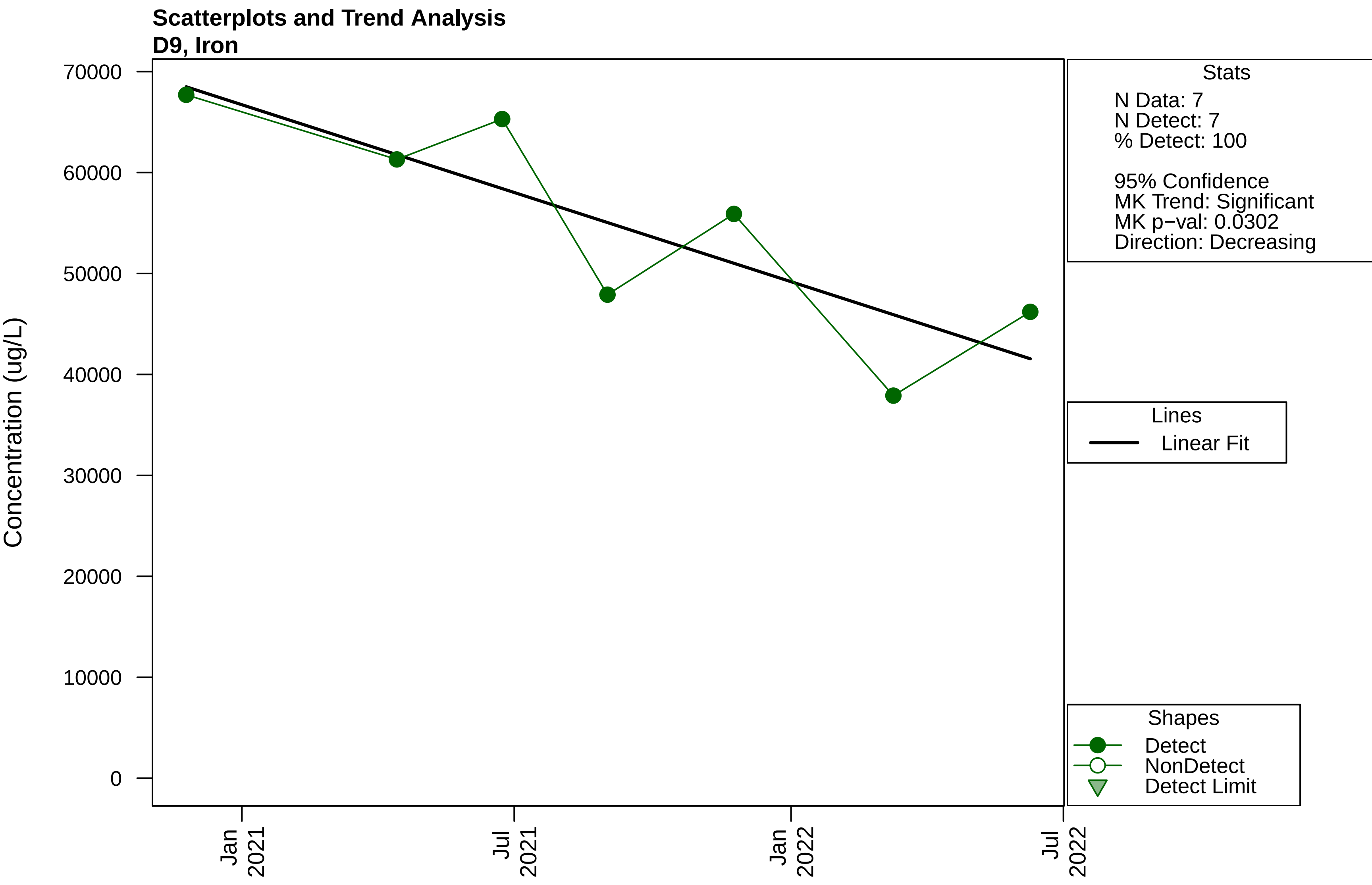


Scatterplots and Trend Analysis
D9, Dissolved Oxygen (Field) (Filtered)
Concentration (mg/L)
0
1
2
3
4
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 4
N Detect: 4
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.75
Shapes
Detect
NonDetect
Detect Limit

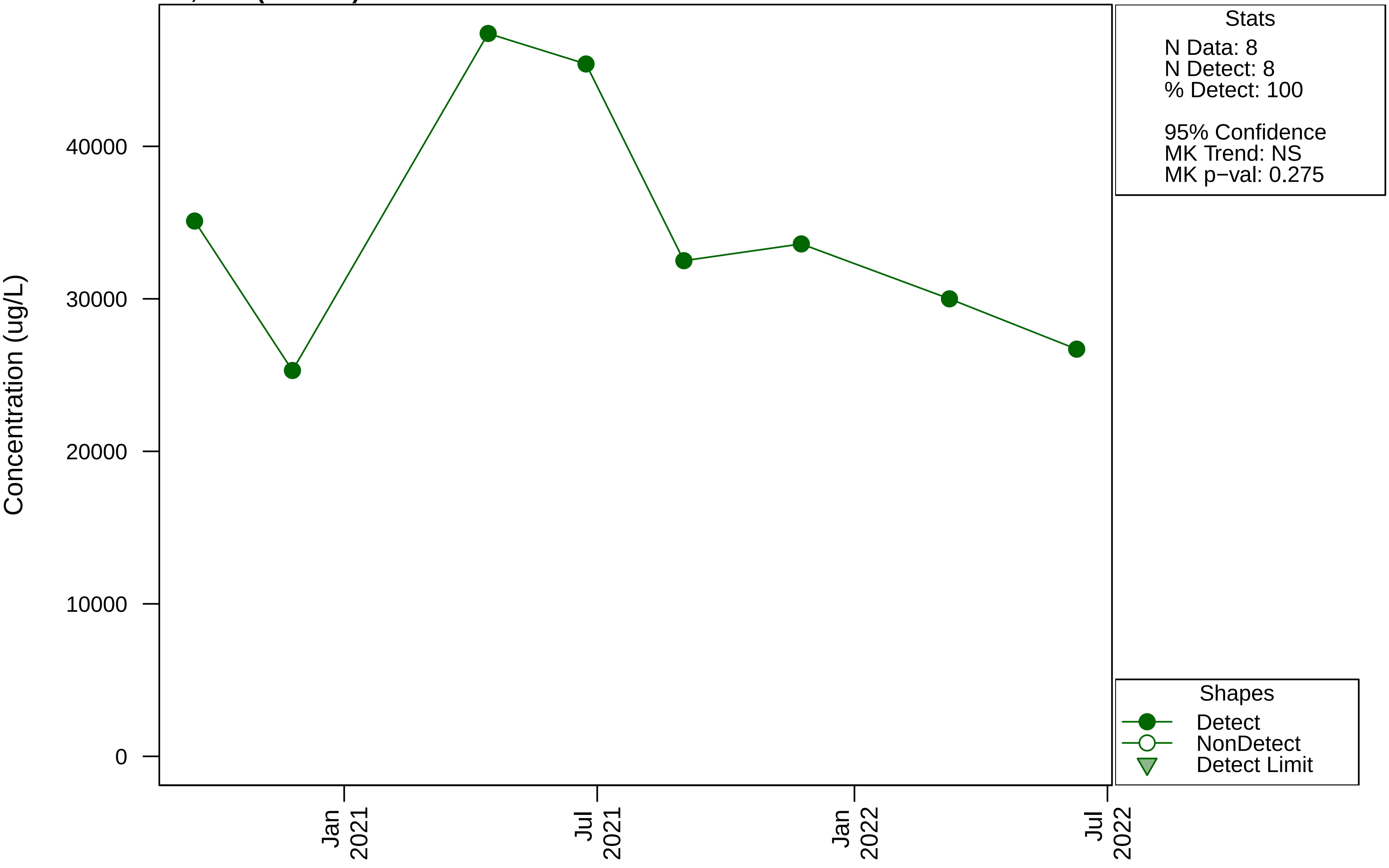

Scatterplots and Trend Analysis
D9, Electrical Conductivity (Field)
Concentration (uS/cm)
0
2000
4000
6000
8000
10000
Jan 2021
Jul 2021
Jan 2022
Jul 2022
Stats
N Data: 8
N Detect: 8
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.905
Shapes
Detect
NonDetect
Detect Limit

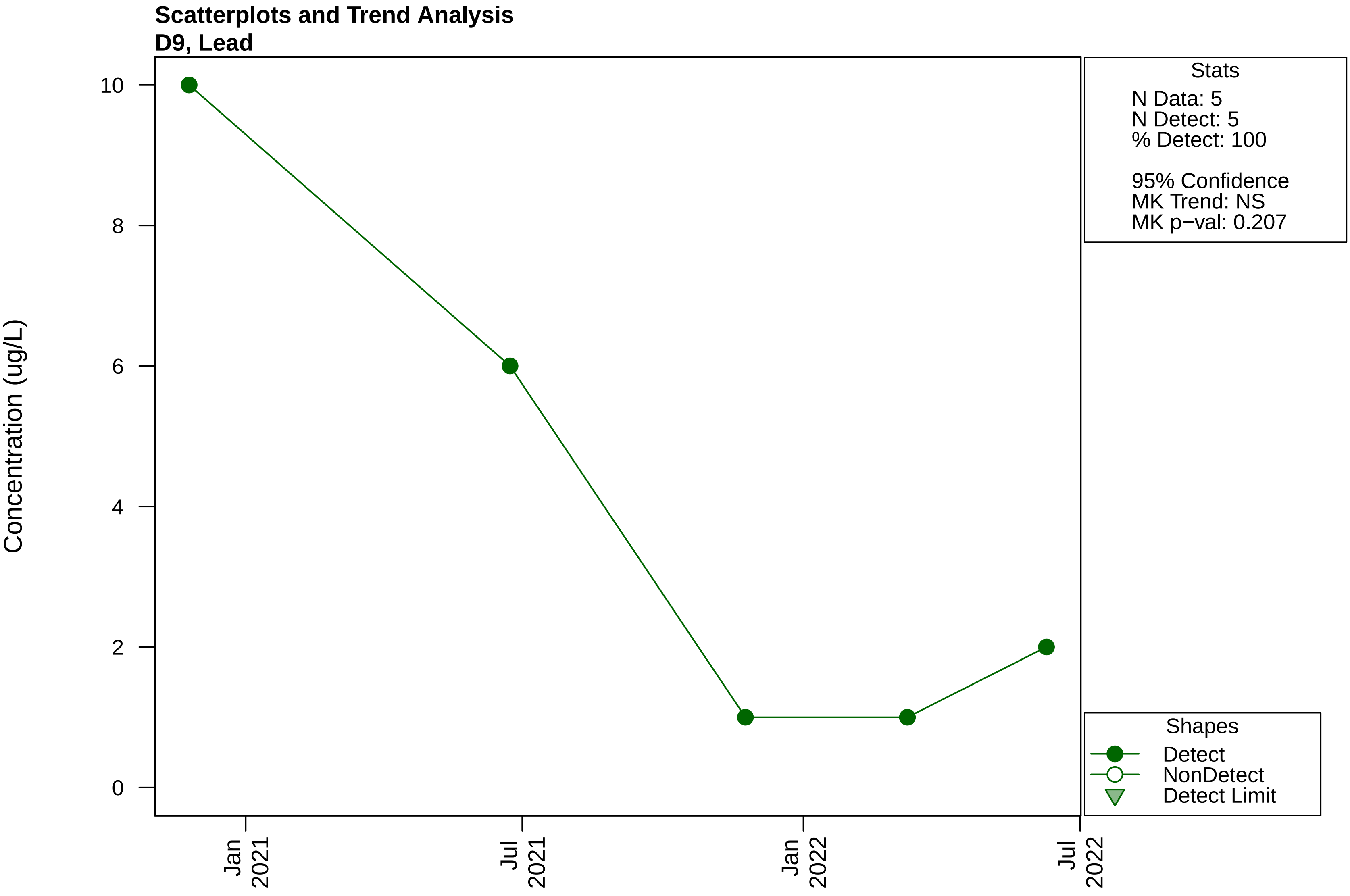


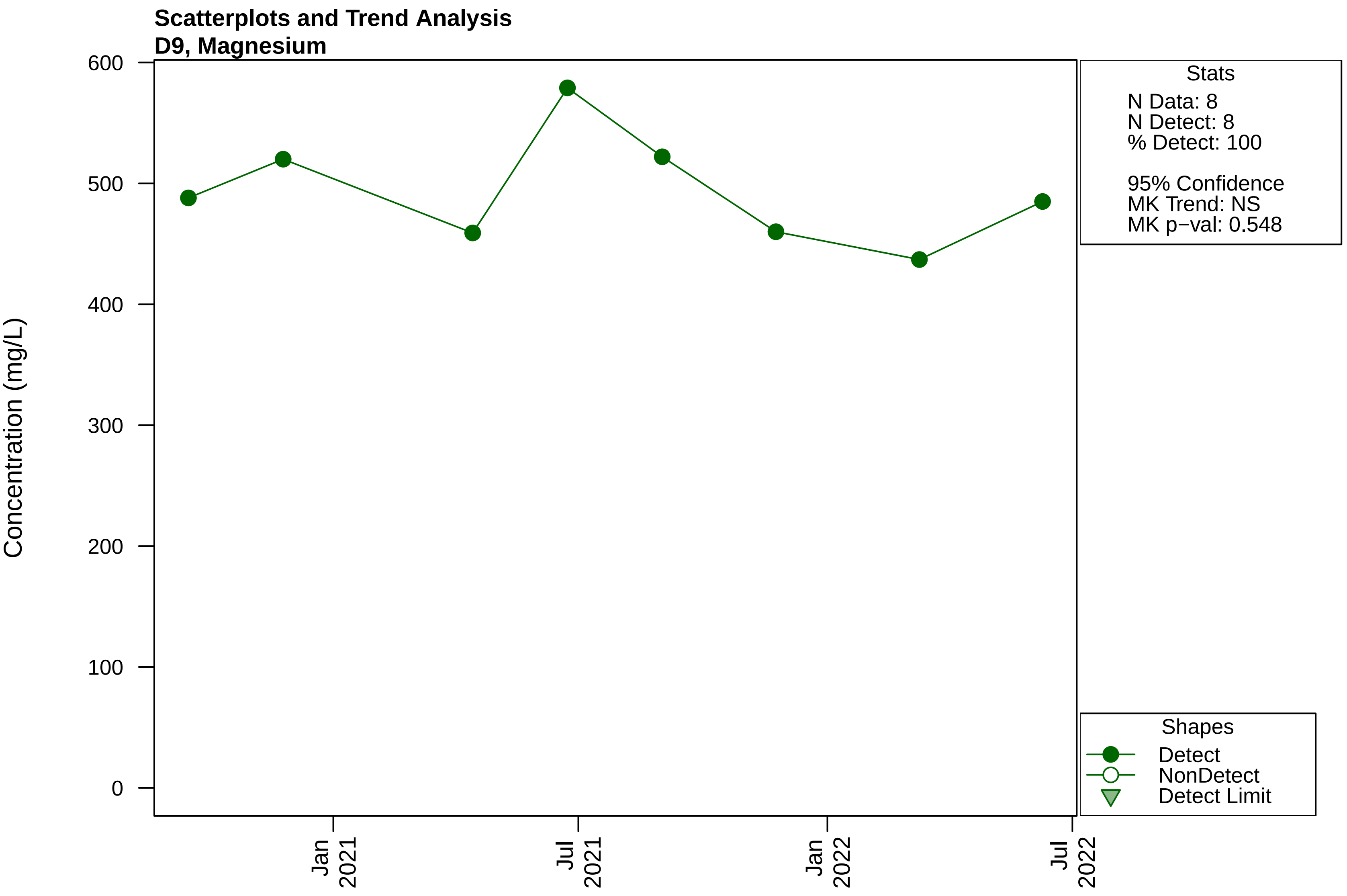
Scatterplots and Trend Analysis
D9, Fluoride
Concentration (mg/L)
0.0
0.5
1.0
1.5
2.0
2.5
3.0
Jan 2021
Mar 2021
Stats
N Data: 2
N Detect: 2
% Detect: 100
MK criteria not met
Shapes
Detect
NonDetect
Detect Limit


Scatterplots and Trend Analysis
D9, Iron
Concentration (ug/L)
70000
60000
50000
40000
30000
20000
10000
0
Jan 2021
Jul 2021
Jan 2022
Jul 2022
Stats
N Data: 7
N Detect: 7
% Detect: 100
95% Confidence
MK Trend: Significant
MK p−val: 0.0302
Direction: Decreasing
Lines
Linear Fit
Shapes
Detect
NonDetect
Detect Limit

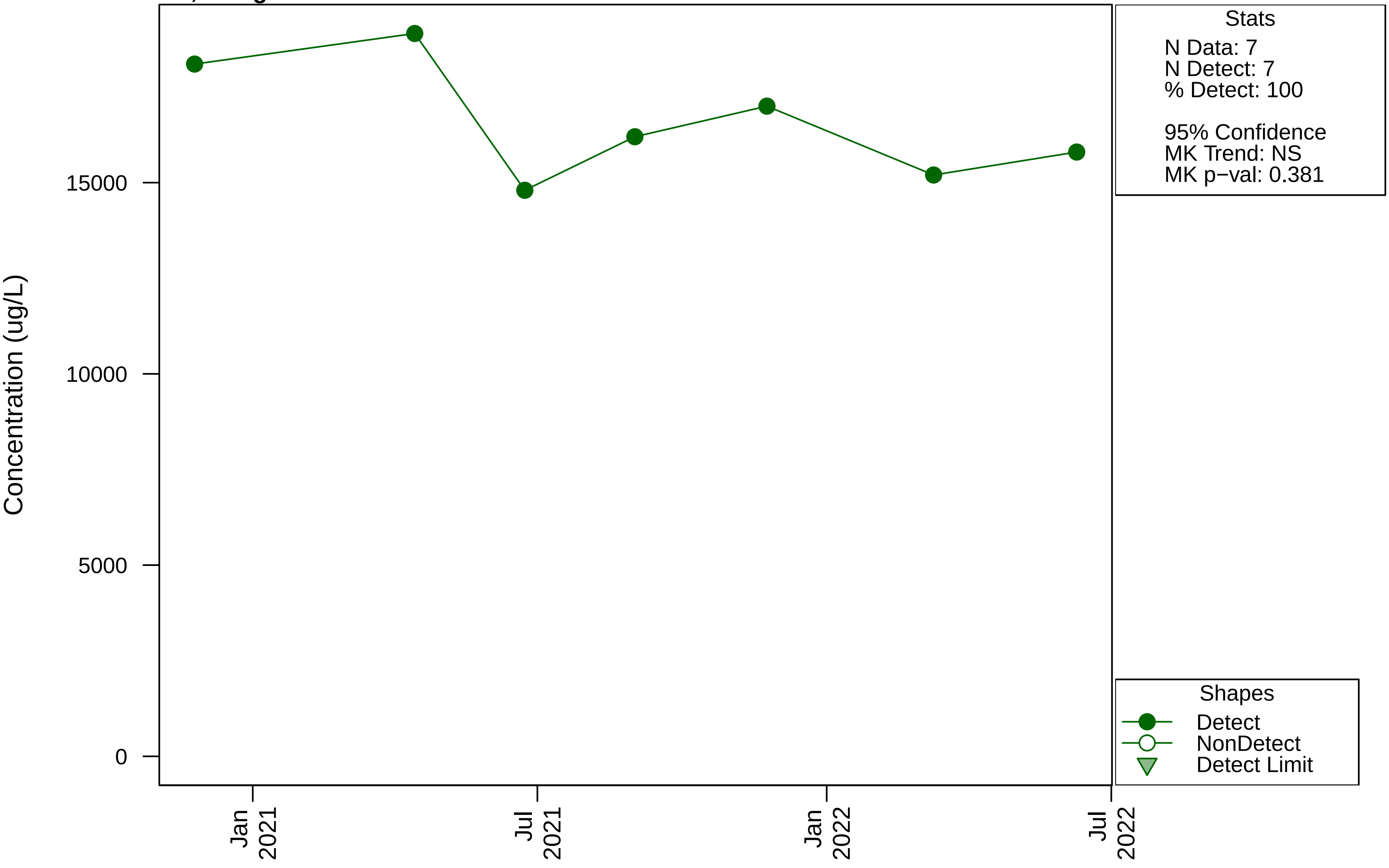
Scatterplots and Trend Analysis
D9, Iron (Filtered)

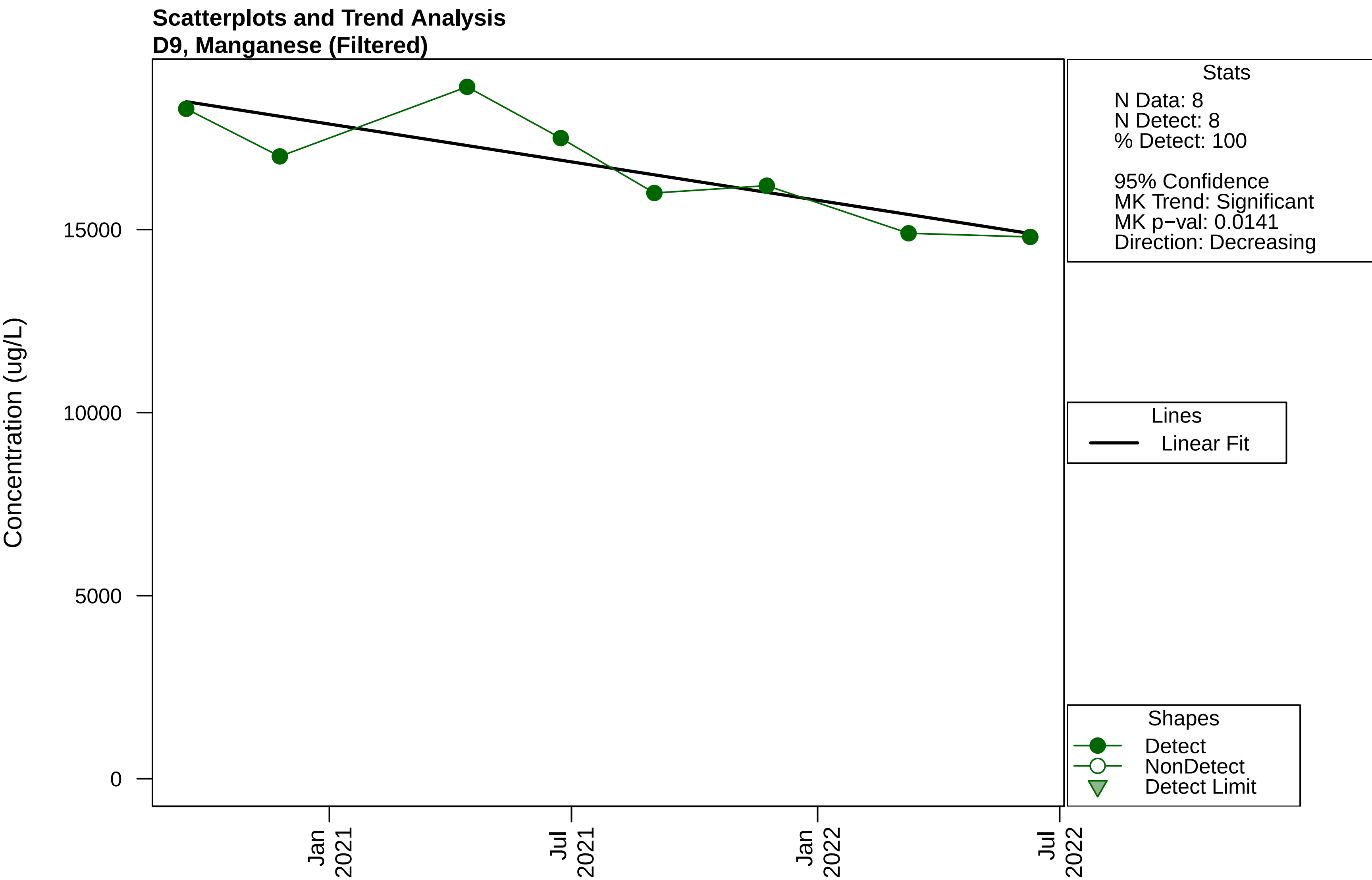



Scatterplots and Trend Analysis
D9, Lead
Concentration (ug/L)
0
2
4
6
8
10
Jan 2021
Jul 2021
Jan 2022
Jul 2022
Stats
N Data: 5
N Detect: 5
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.207
Shapes
Detect
NonDetect
Detect Limit

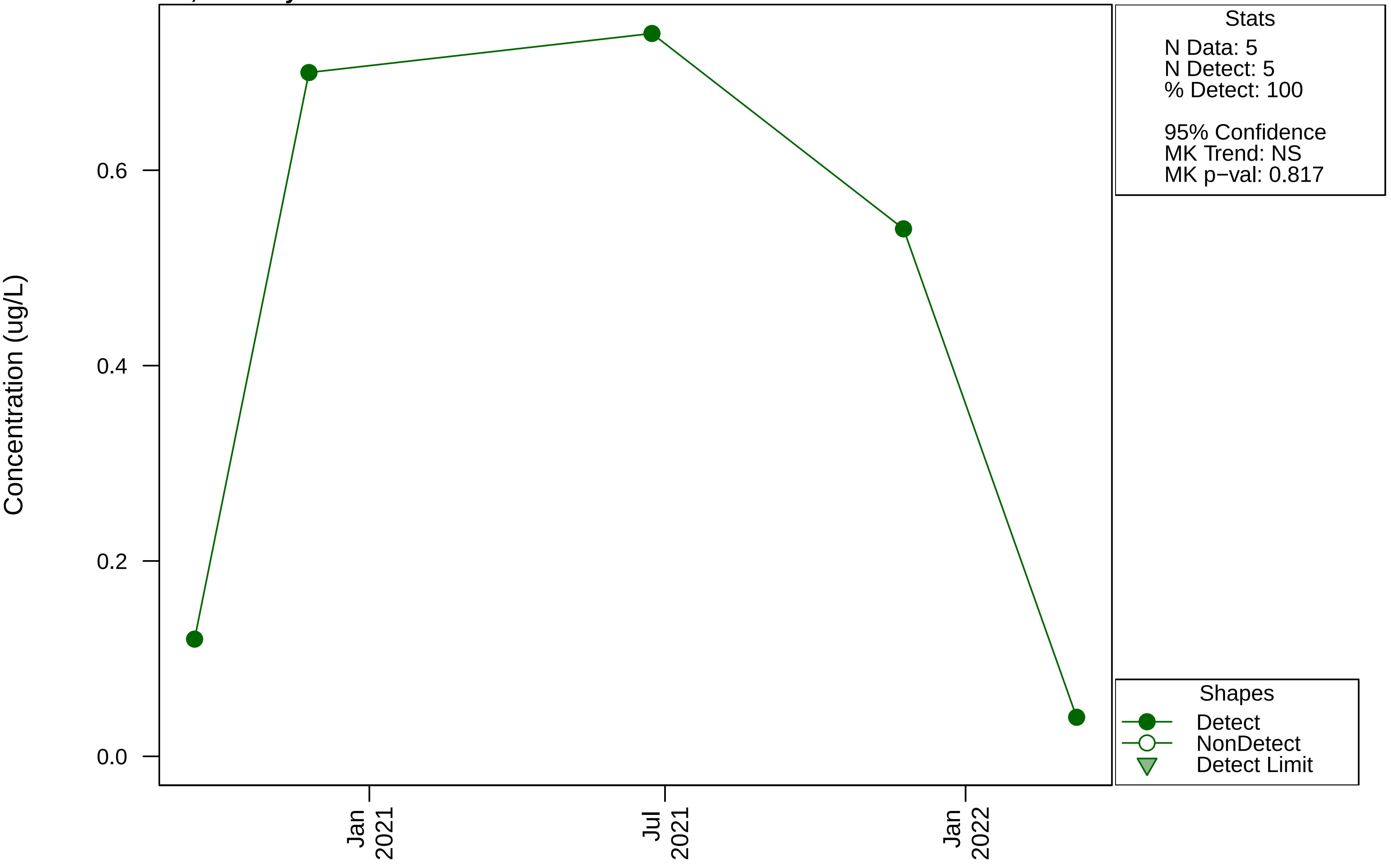

Scatterplots and Trend Analysis
D9, Magnesium
Concentration (mg/L)
0
100
200
300
400
500
600
Jan 2021
Jul 2021
Jan 2022
Jul 2022
Stats
N Data: 8
N Detect: 8
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.548
Shapes
Detect
NonDetect
Detect Limit

Scatterplots and Trend Analysis
D9, Manganese

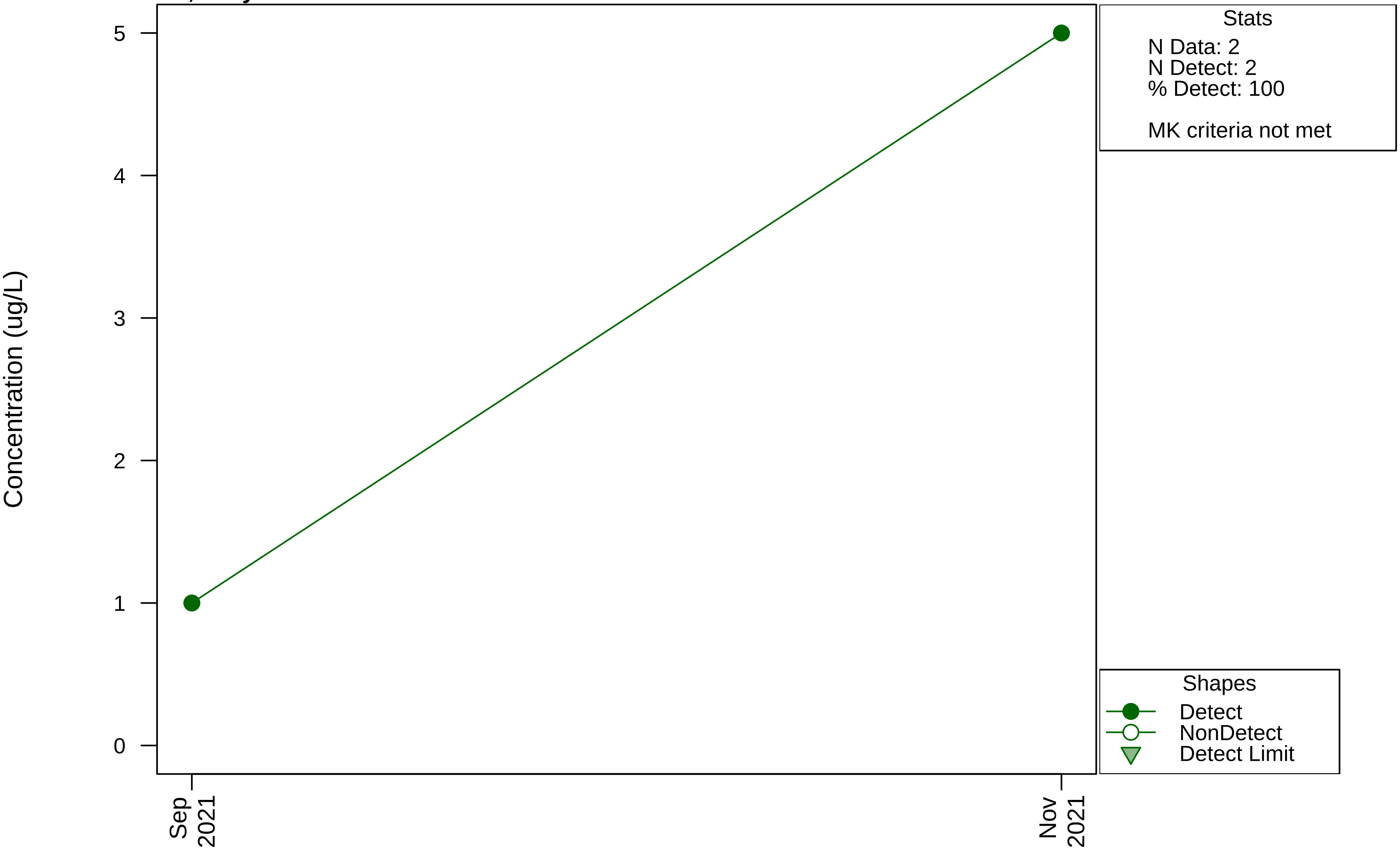



Scatterplots and Trend Analysis
D9, Manganese (Filtered)
Concentration (ug/L)
0
5000
10000
15000
Jan 2021
Jul 2021
Jan 2022
Jul 2022
Stats
N Data: 8
N Detect: 8
% Detect: 100
95% Confidence
MK Trend: Significant
MK p−val: 0.0141
Direction: Decreasing
Lines
Linear Fit
Shapes
Detect
NonDetect
Detect Limit

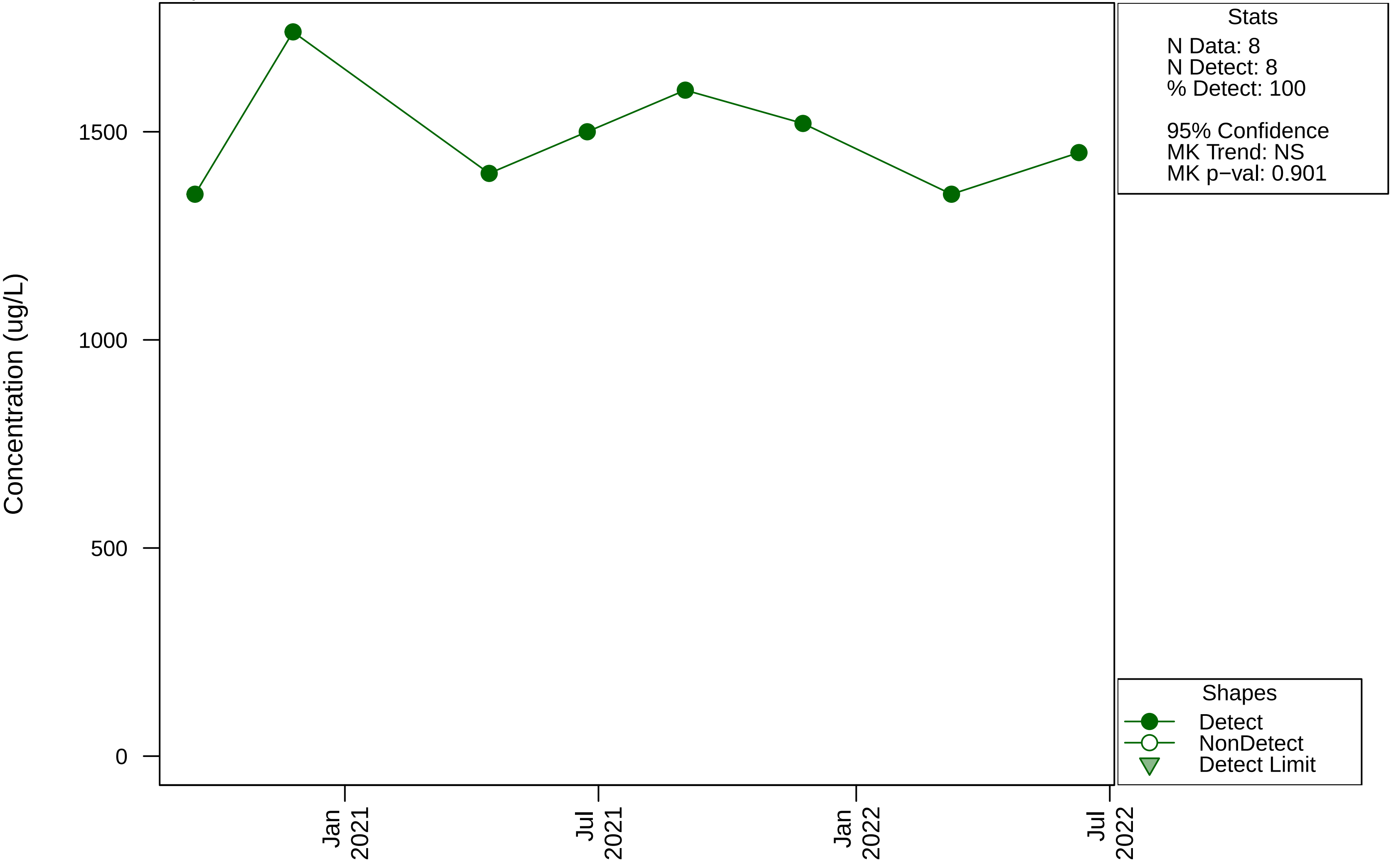
Scatterplots and Trend Analysis
D9, Mercury



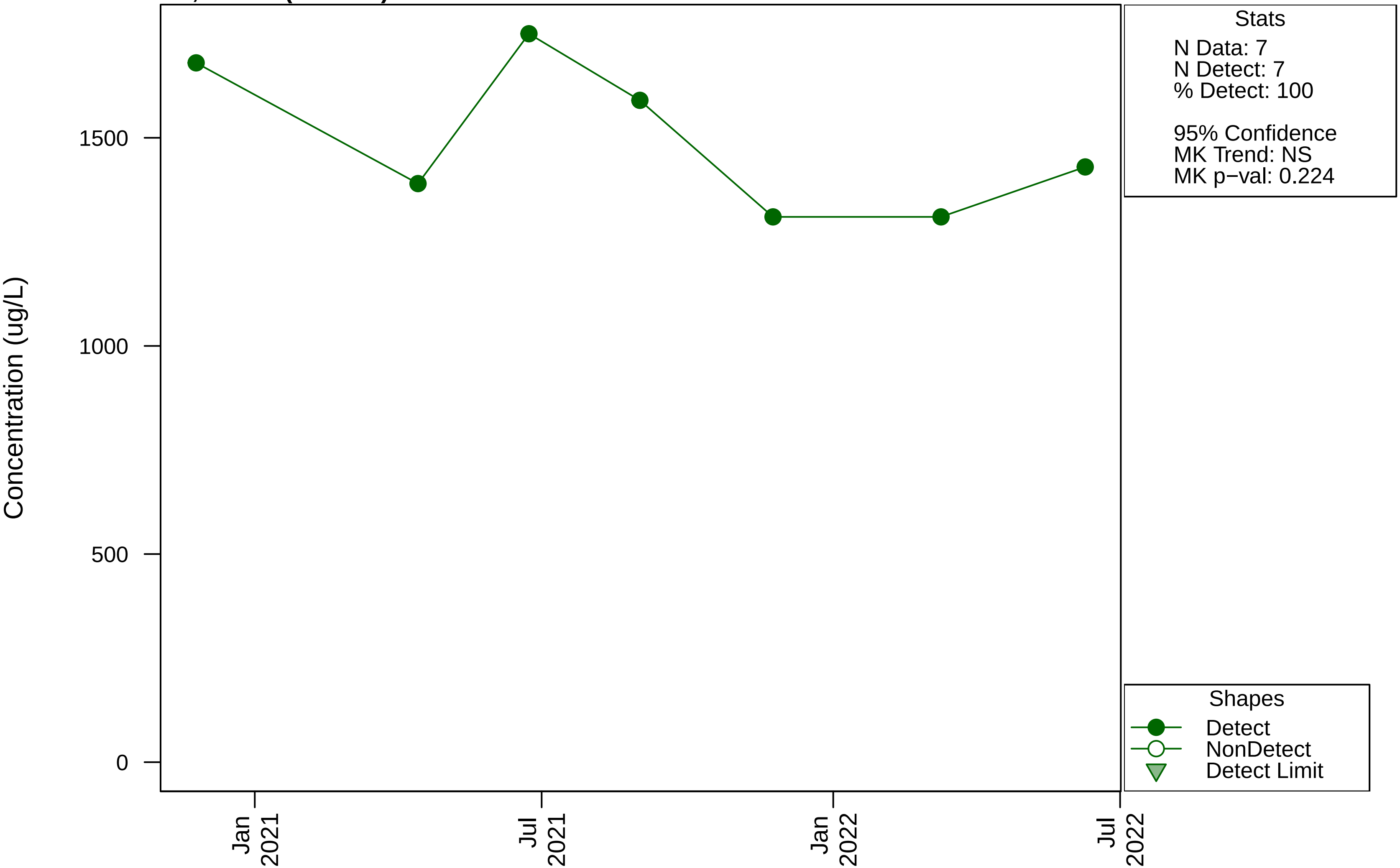
Scatterplots and Trend Analysis
D9, Molybdenum

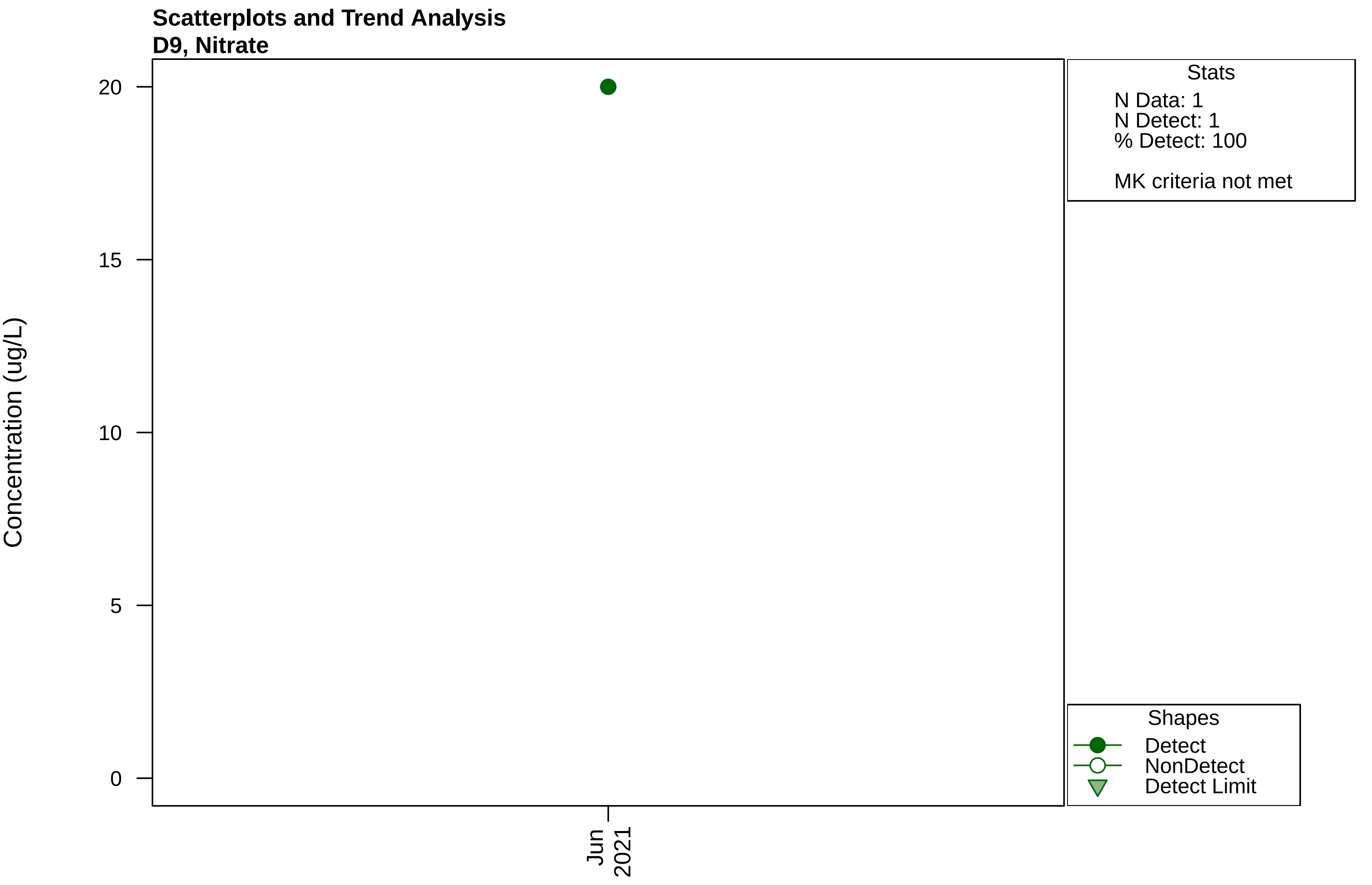


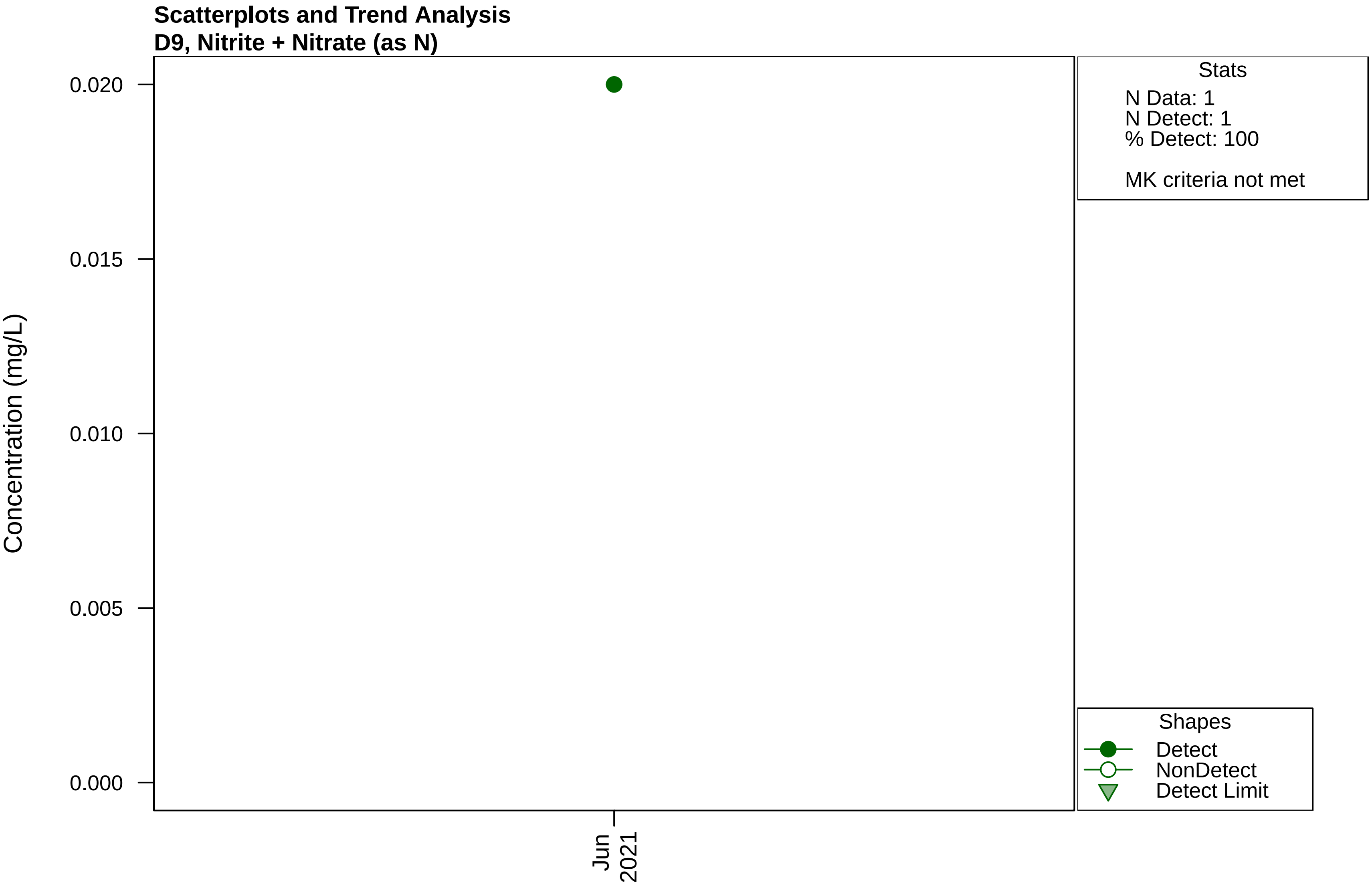
Scatterplots and Trend Analysis
D9, Nickel



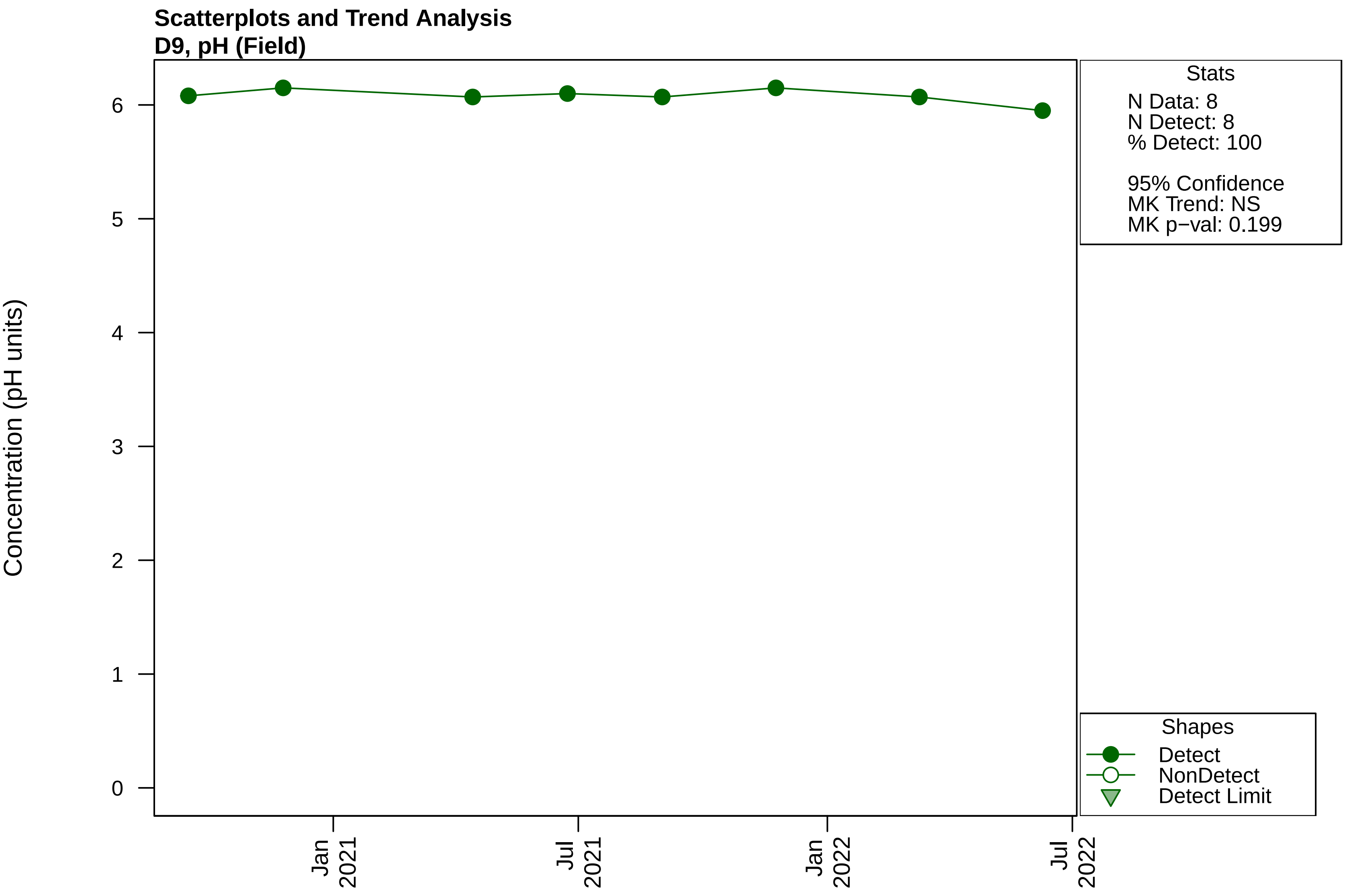
Scatterplots and Trend Analysis
D9, Nickel (Filtered)




Scatterplots and Trend Analysis
D9, Nitrate
Concentration (ug/L)
0
5
10
15
20
Jun
2021
Stats
N Data: 1
N Detect: 1
% Detect: 100
MK criteria not met
Shapes
Detect
NonDetect
Detect Limit

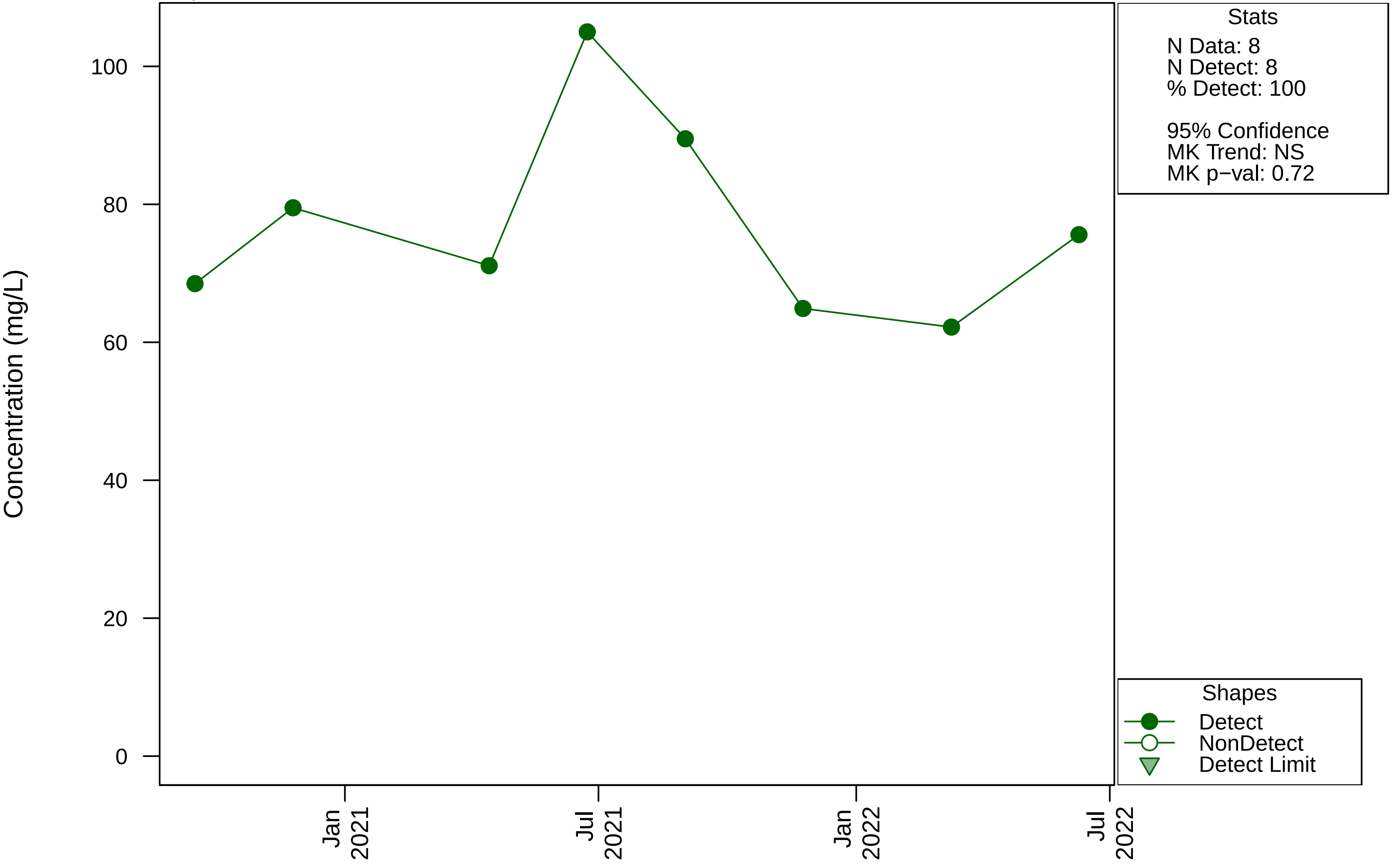


Scatterplots and Trend Analysis
D9, Nitrite + Nitrate (as N)
Concentration (mg/L)
0.020
0.015
0.010
0.005
0.000
Jun 2021
Stats
N Data: 1
N Detect: 1
% Detect: 100
MK criteria not met
Shapes
Detect
NonDetect
Detect Limit

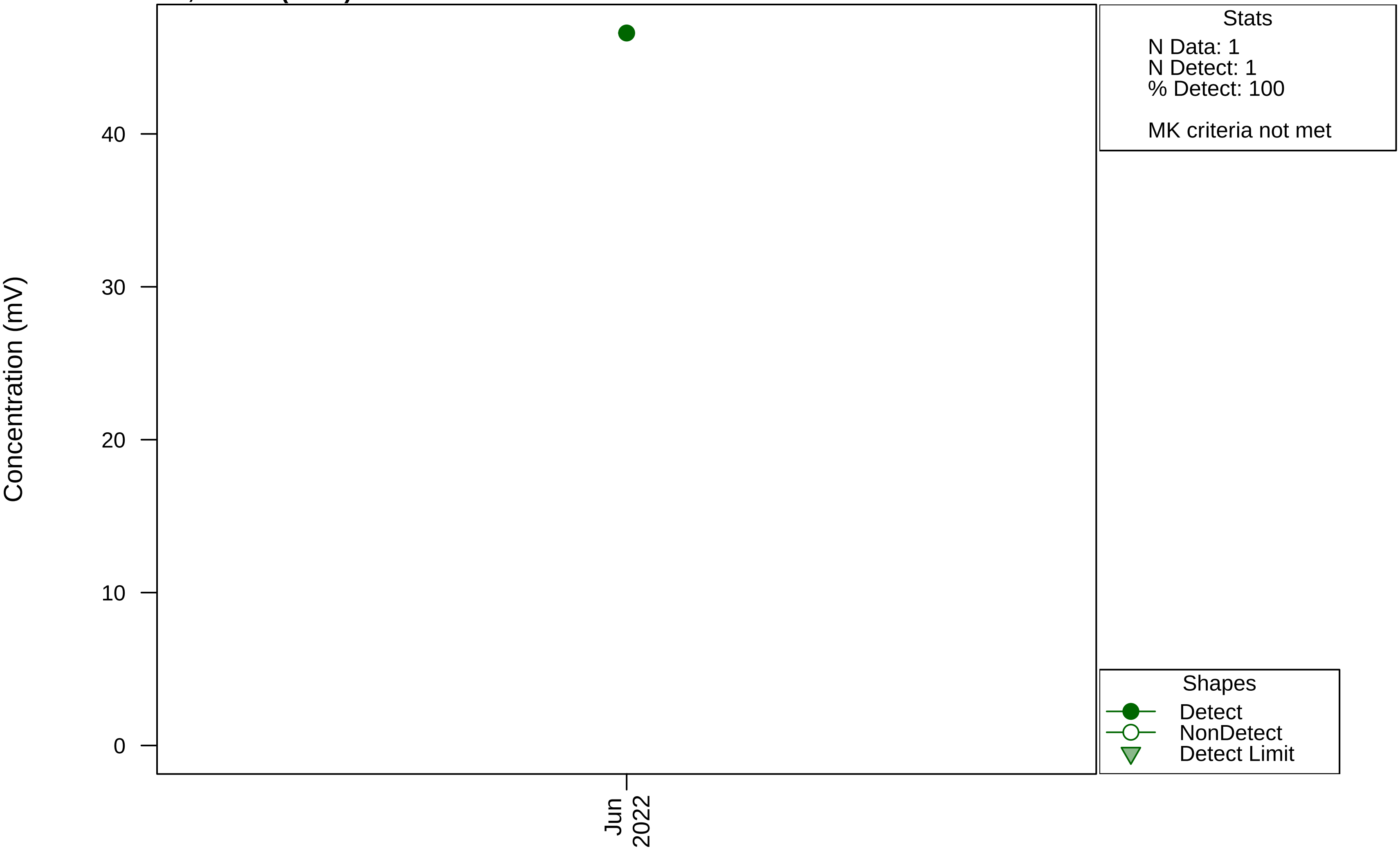


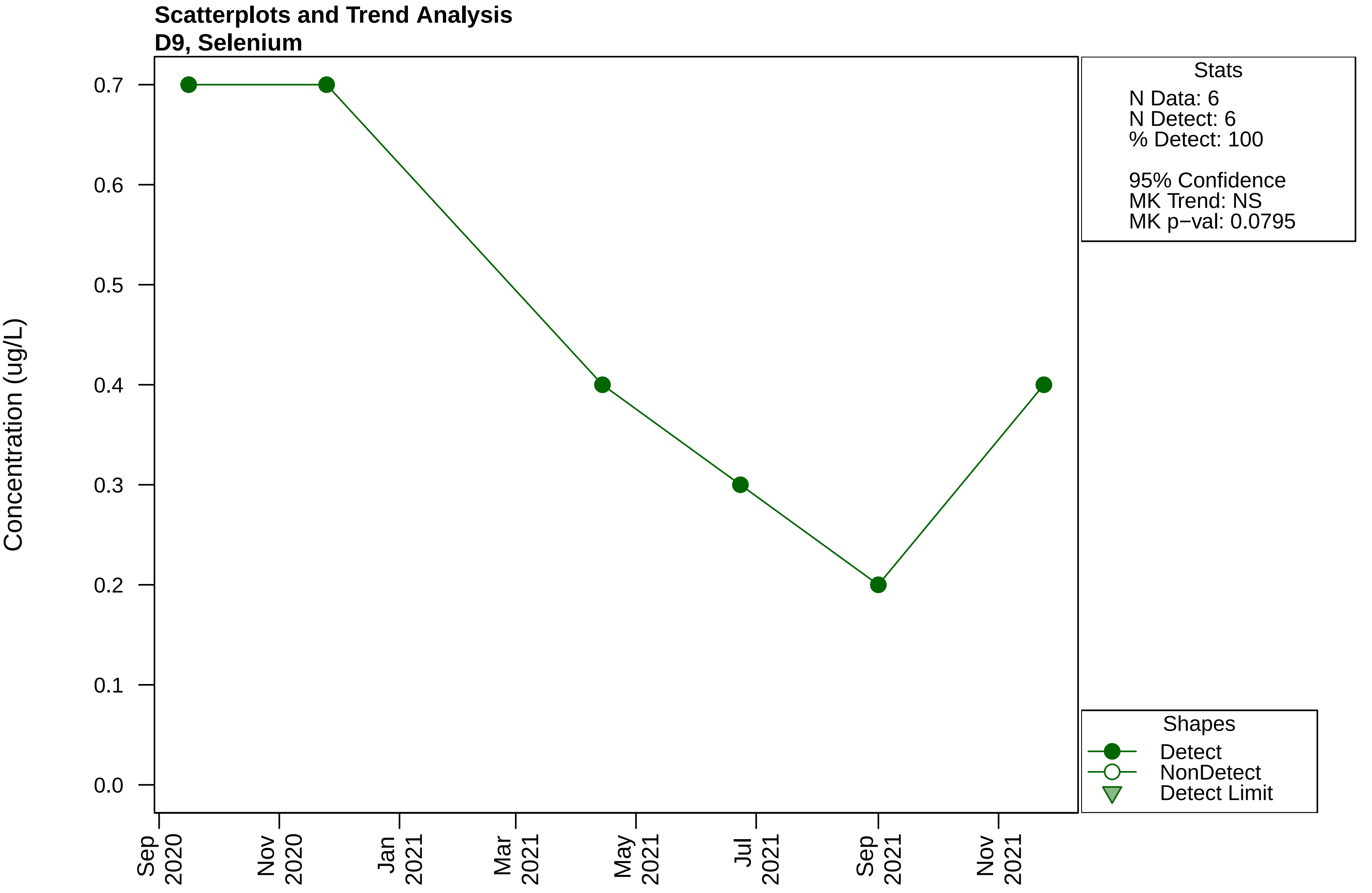
Scatterplots and Trend Analysis
D9, pH (Field)
Concentration (pH units)
0
1
2
3
4
5
6
Jan 2021
Jul 2021
Jan 2022
Jul 2022
Stats
N Data: 8
N Detect: 8
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.199
Shapes
Detect
NonDetect
Detect Limit

Scatterplots and Trend Analysis
D9, Potassium

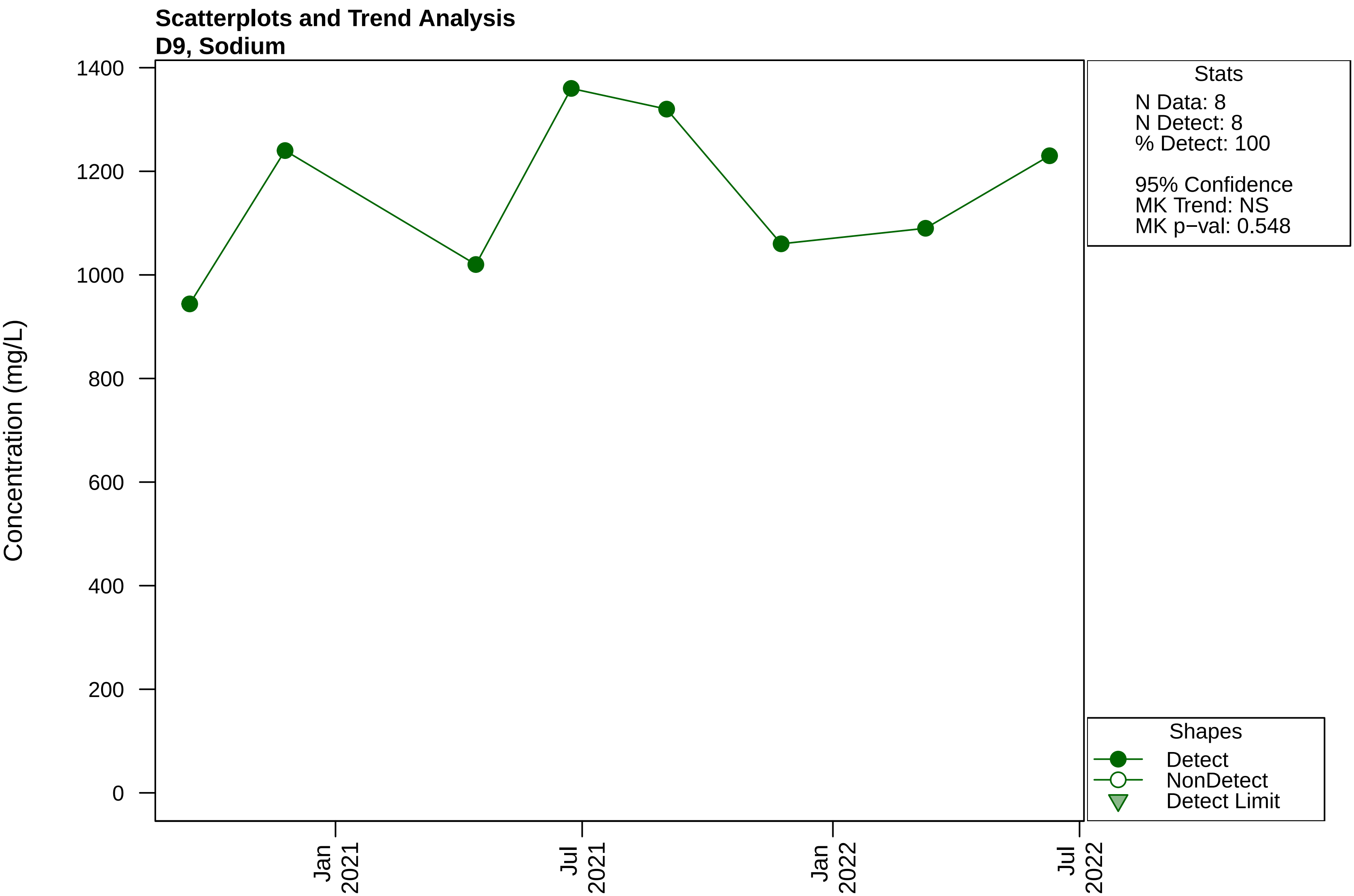


Scatterplots and Trend Analysis
D9, Redox (Field)



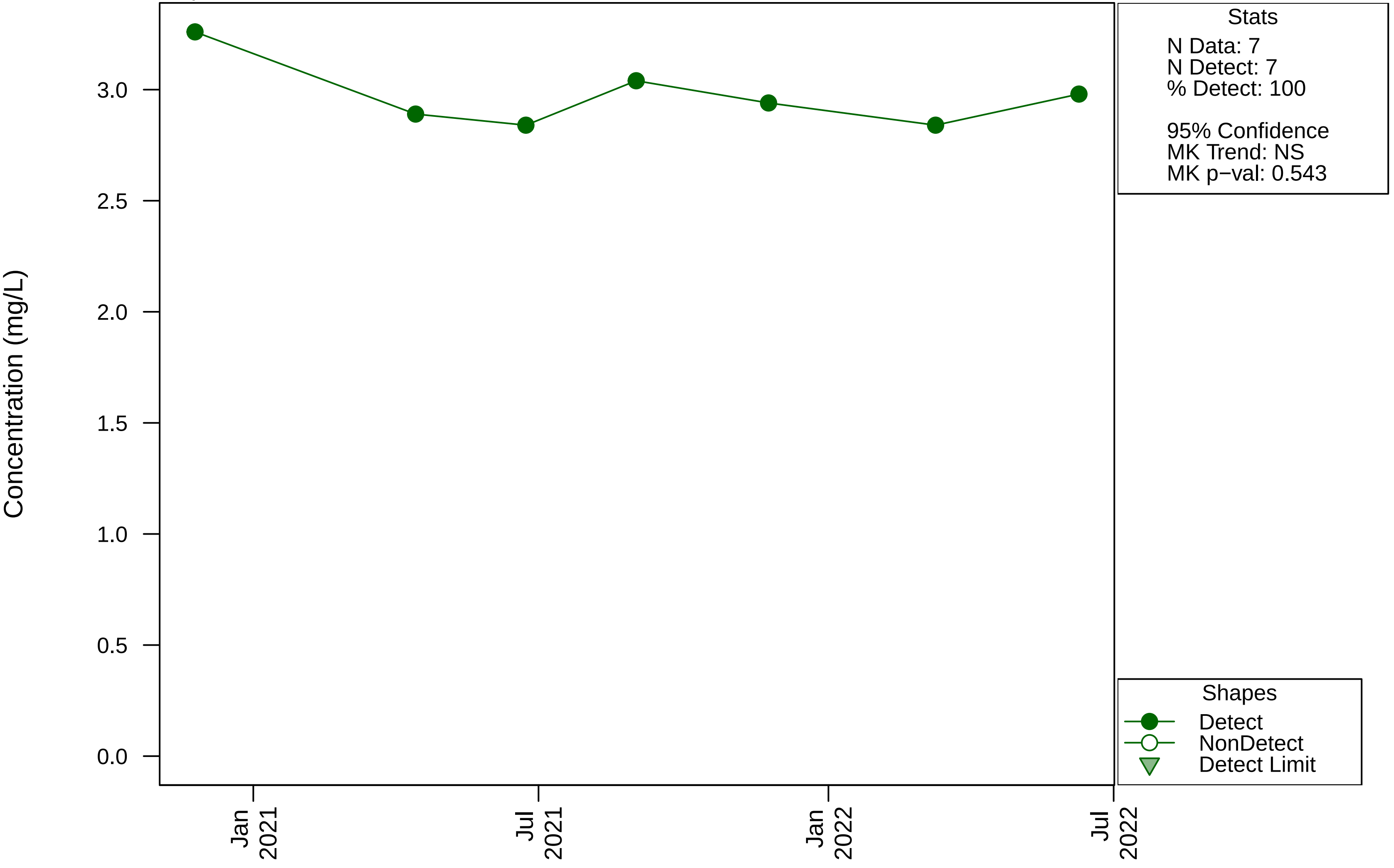


Scatterplots and Trend Analysis
D9, Selenium
Concentration (ug/L)
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
Sep 2020
Nov 2020
Jan 2021
Mar 2021
May 2021
Jul 2021
Sep 2021
Nov 2021
Stats
N Data: 6
N Detect: 6
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.0795
Shapes
Detect
NonDetect
Detect Limit

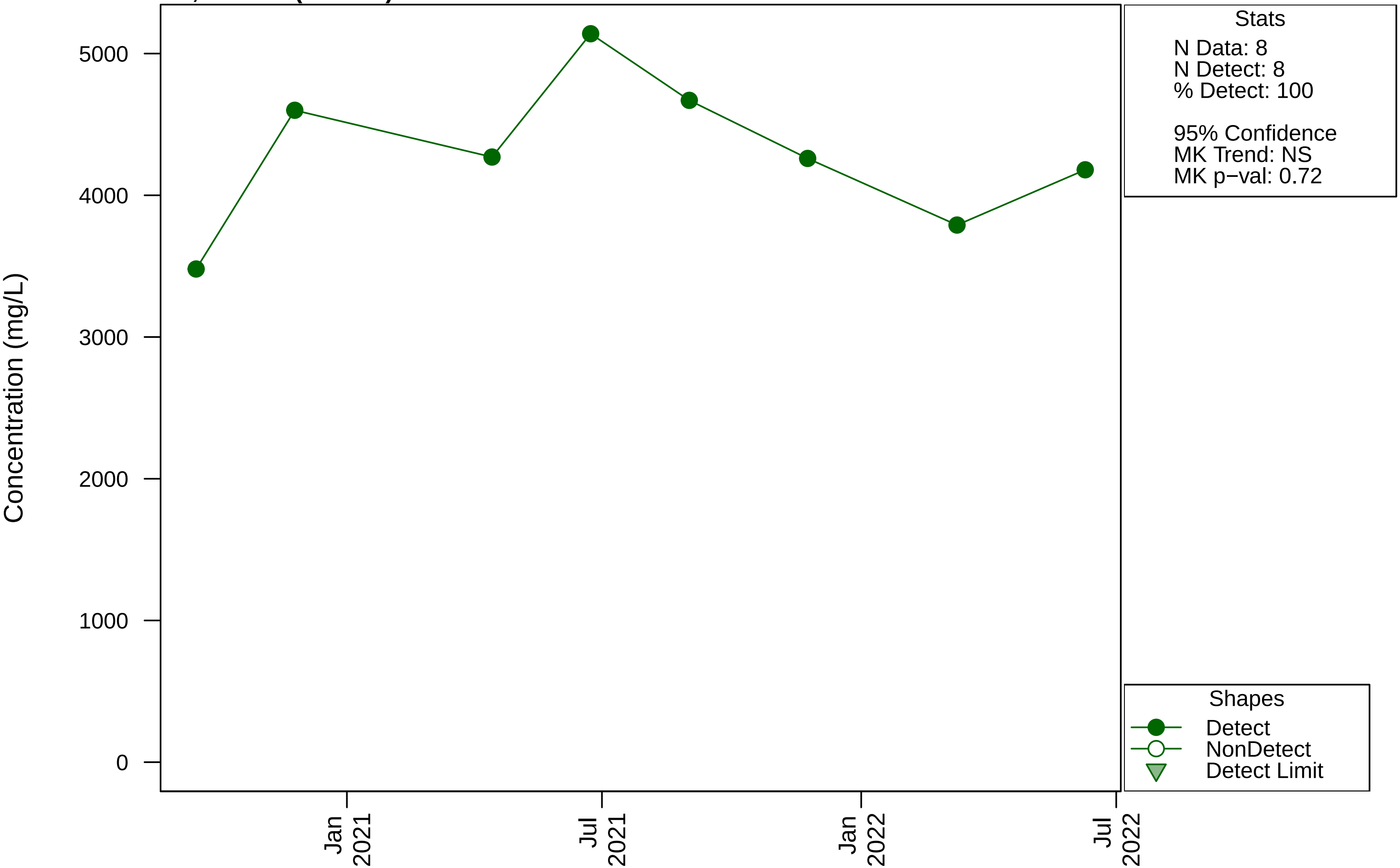


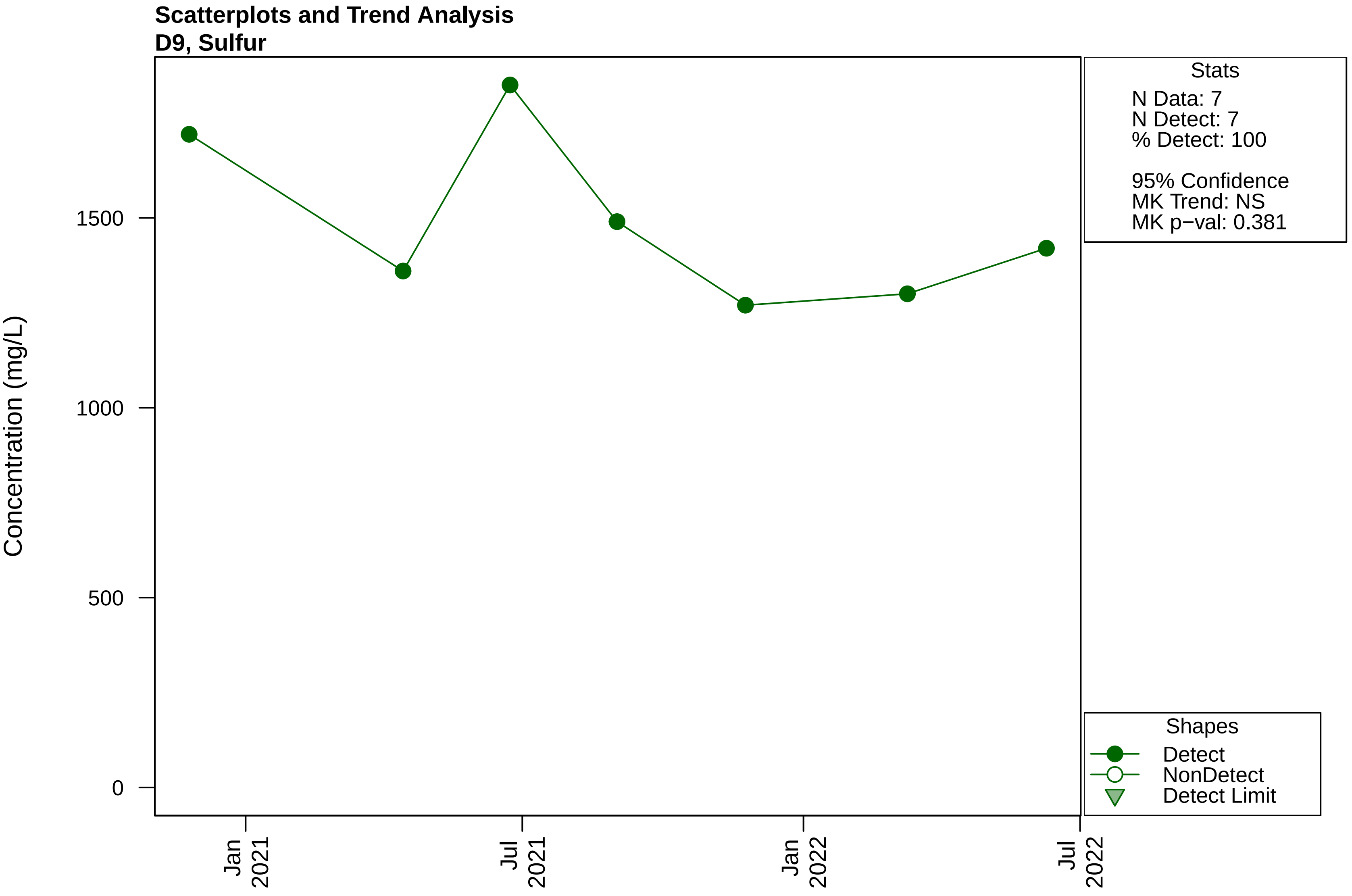
Scatterplots and Trend Analysis
D9, Sodium
Concentration (mg/L)
0
200
400
600
800
1000
1200
1400
Jan 2021
Jul 2021
Jan 2022
Jul 2022
Stats
N Data: 8
N Detect: 8
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.548
Shapes
Detect
NonDetect
Detect Limit

Scatterplots and Trend Analysis
D9, Strontium

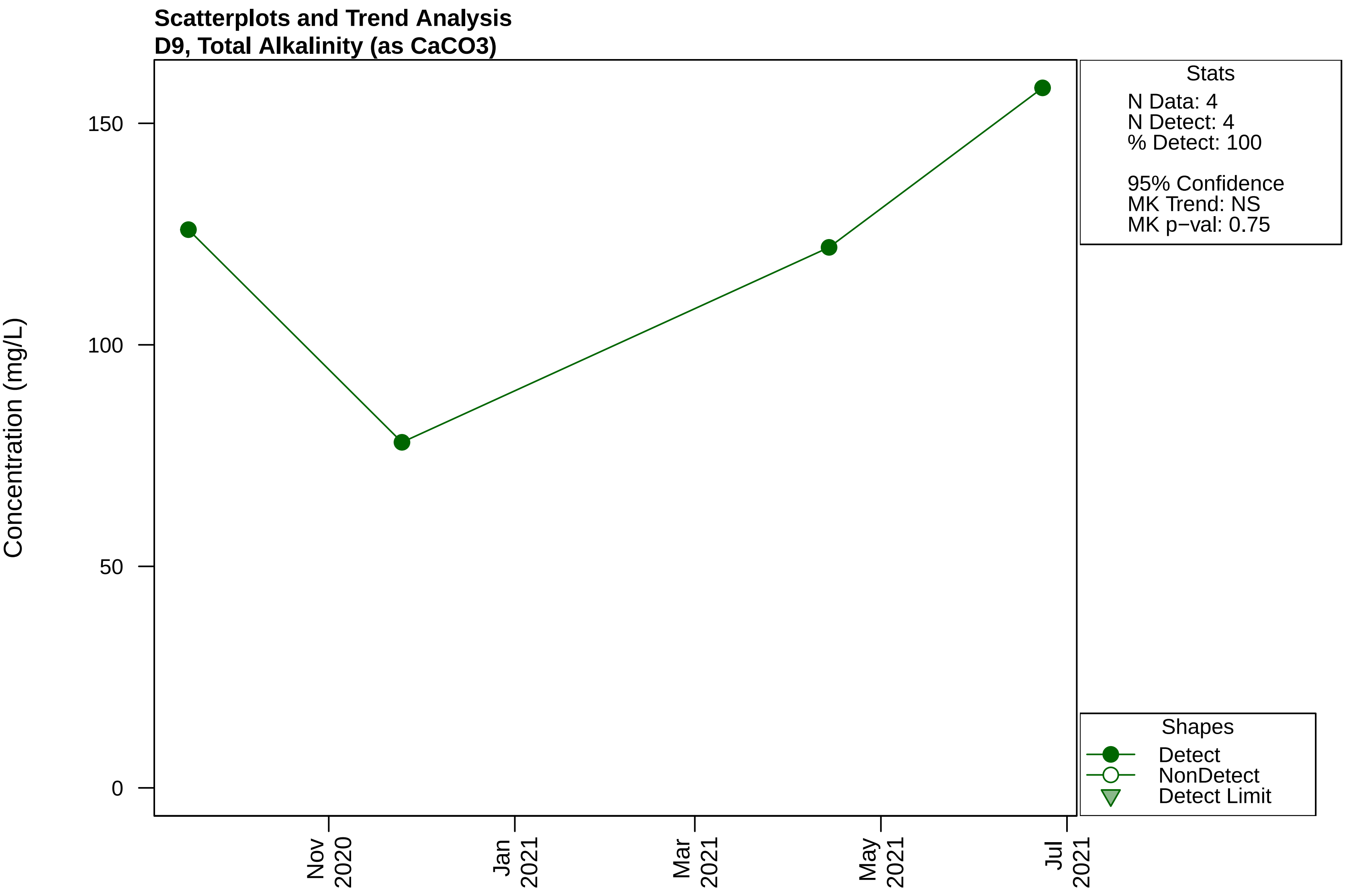


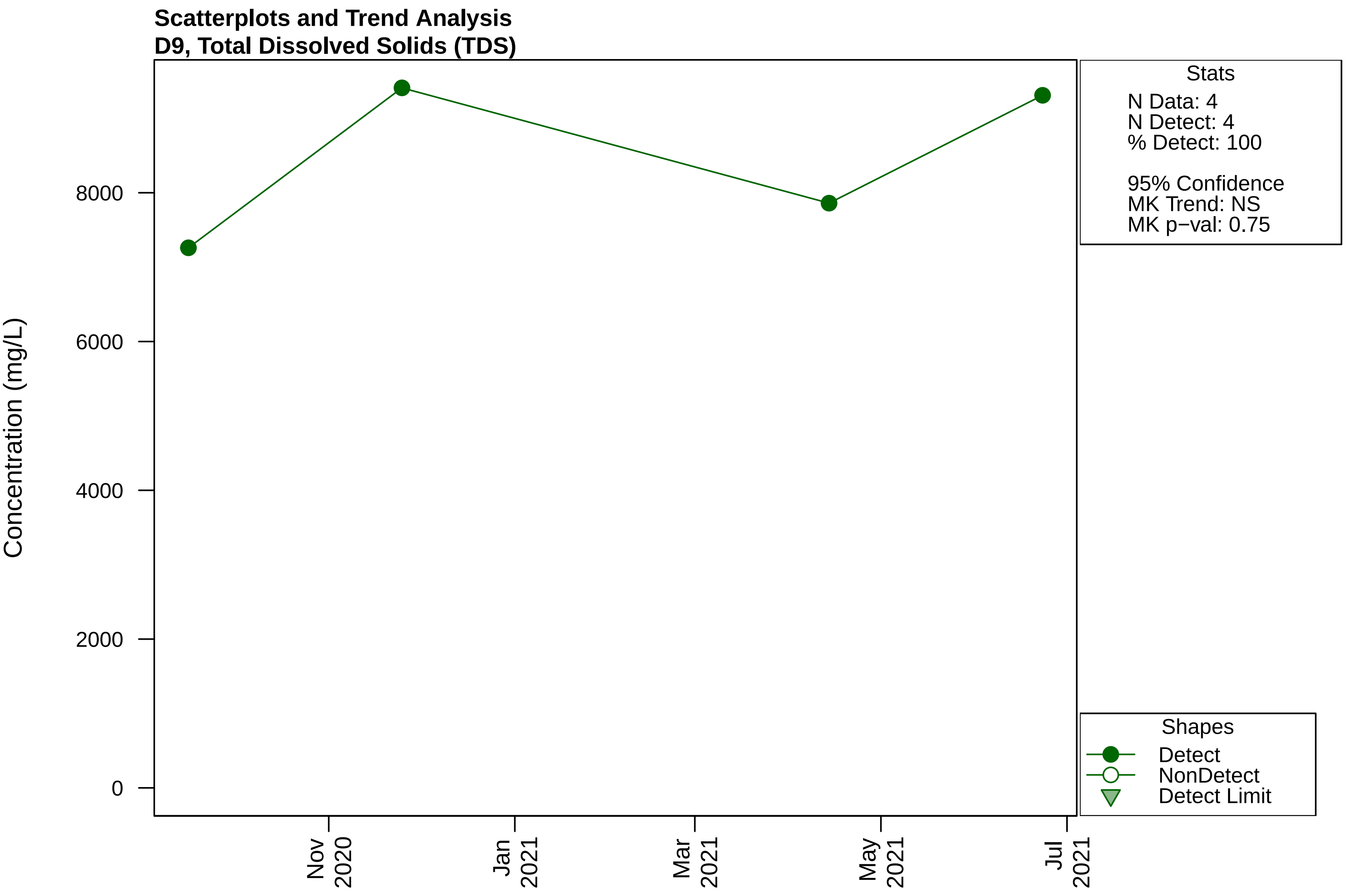
Scatterplots and Trend Analysis
D9, Sulfate (as SO4)

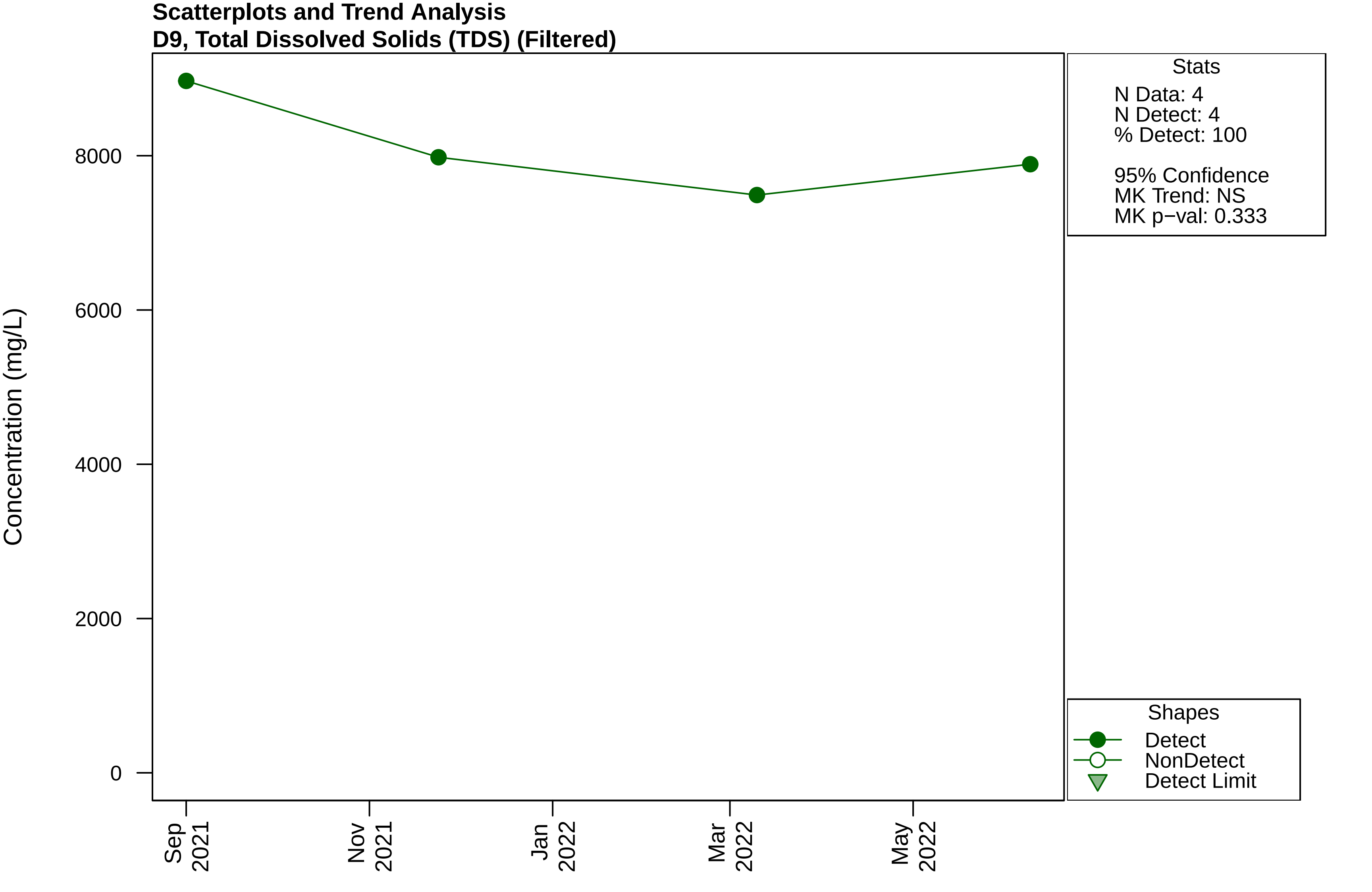




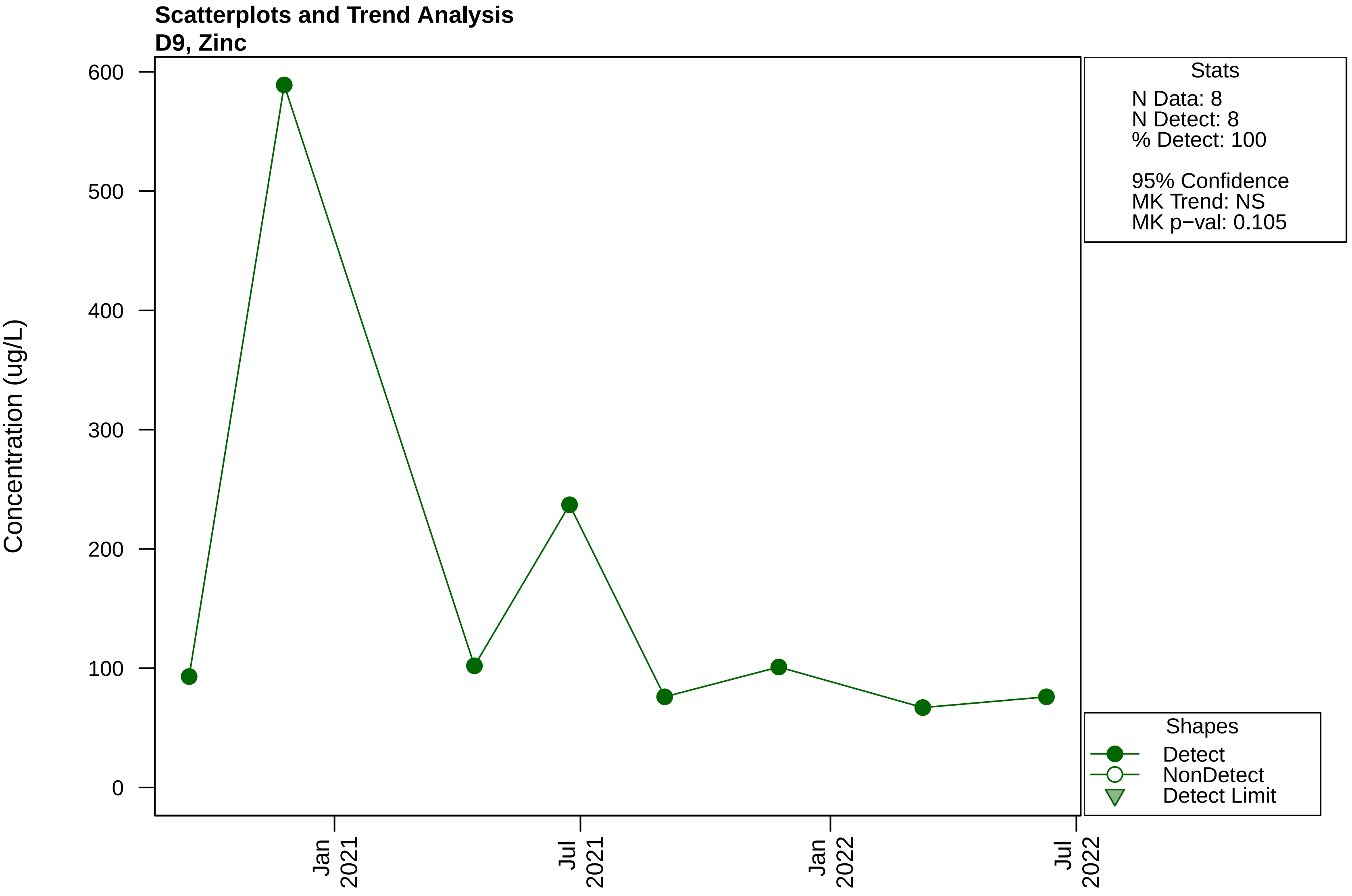
Scatterplots and Trend Analysis
D9, Sulfur
Concentration (mg/L)
0
500
1000
1500
Jan 2021
Jul 2021
Jan 2022
Jul 2022
Stats
N Data: 7
N Detect: 7
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.381
Shapes
Detect
NonDetect
Detect Limit


Scatterplots and Trend Analysis
D9, Total Alkalinity (as CaCO3)
Concentration (mg/L)
0
50
100
150
Nov 2020
Jan 2021
Mar 2021
May 2021
Jul 2021
Stats
N Data: 4
N Detect: 4
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.75
Shapes
Detect
NonDetect
Detect Limit

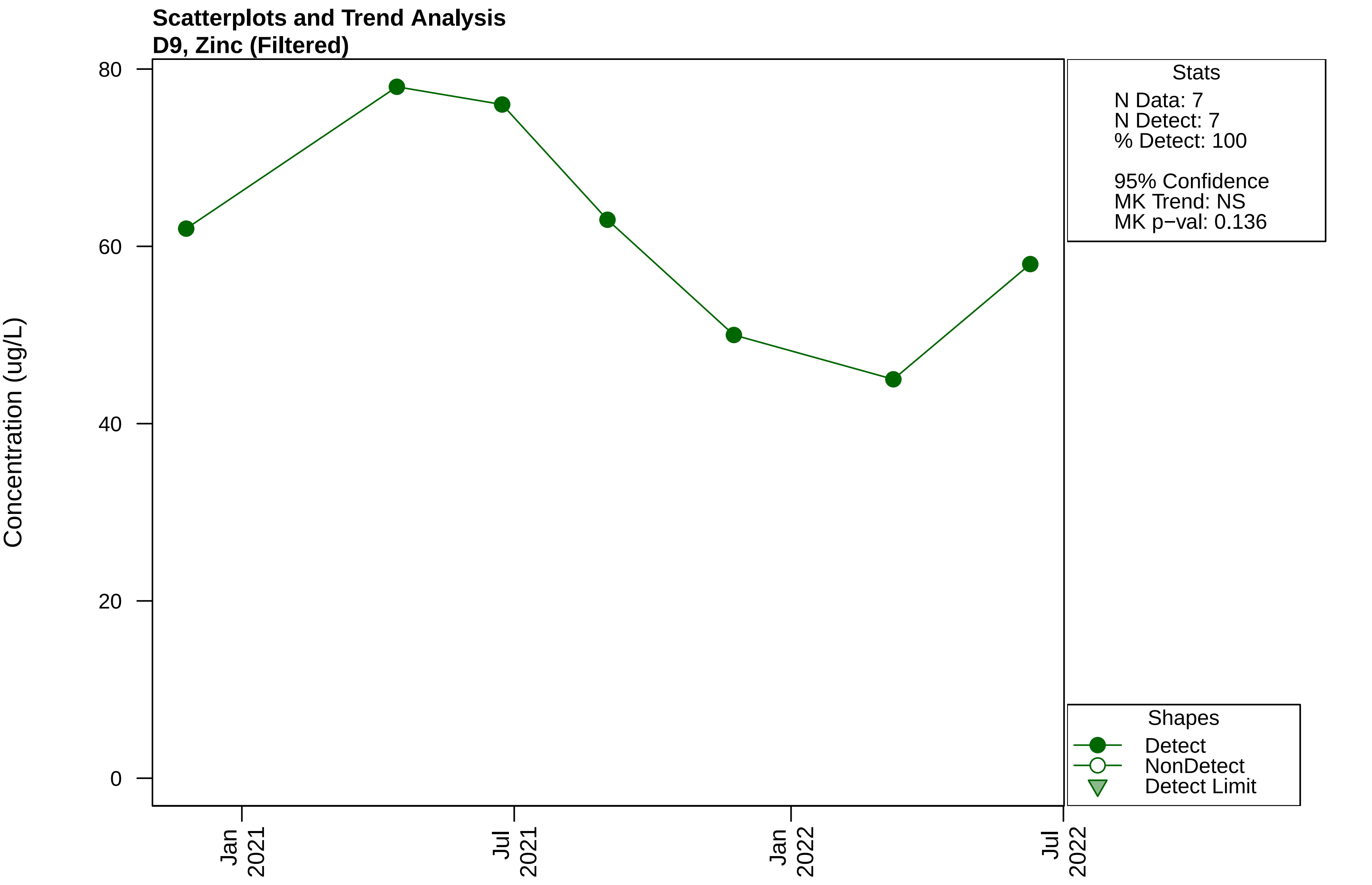

Scatterplots and Trend Analysis
D9, Total Dissolved Solids (TDS)
Concentration (mg/L)
0
2000
4000
6000
8000
Nov 2020
Jan 2021
Mar 2021
May 2021
Jul 2021
Stats
N Data: 4
N Detect: 4
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.75
Shapes
Detect
NonDetect
Detect Limit



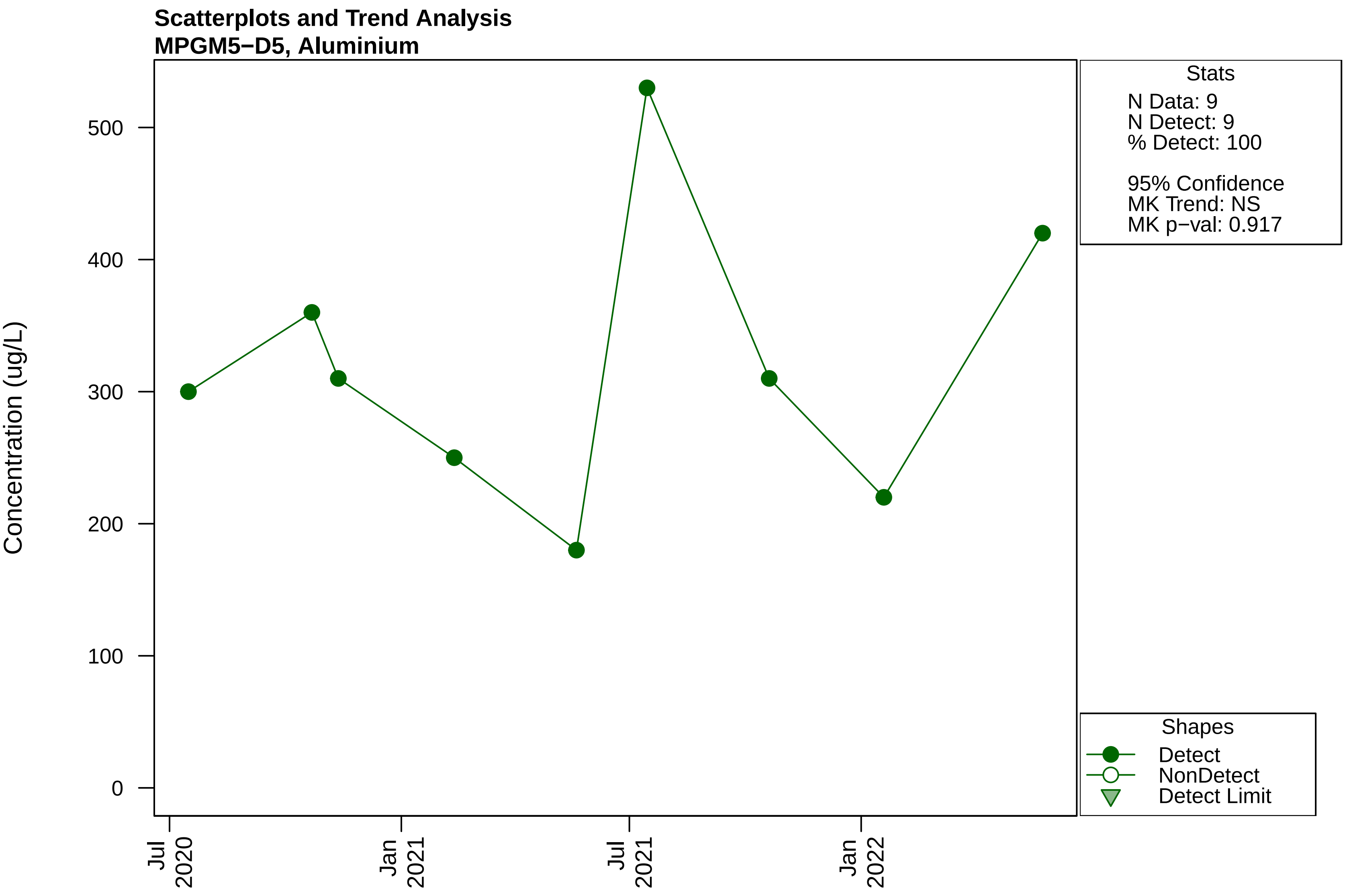
Scatterplots and Trend Analysis
D9, Total Dissolved Solids (TDS) (Filtered)
Concentration (mg/L)
0
2000
4000
6000
8000
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 4
N Detect: 4
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.333
Shapes
Detect
NonDetect
Detect Limit

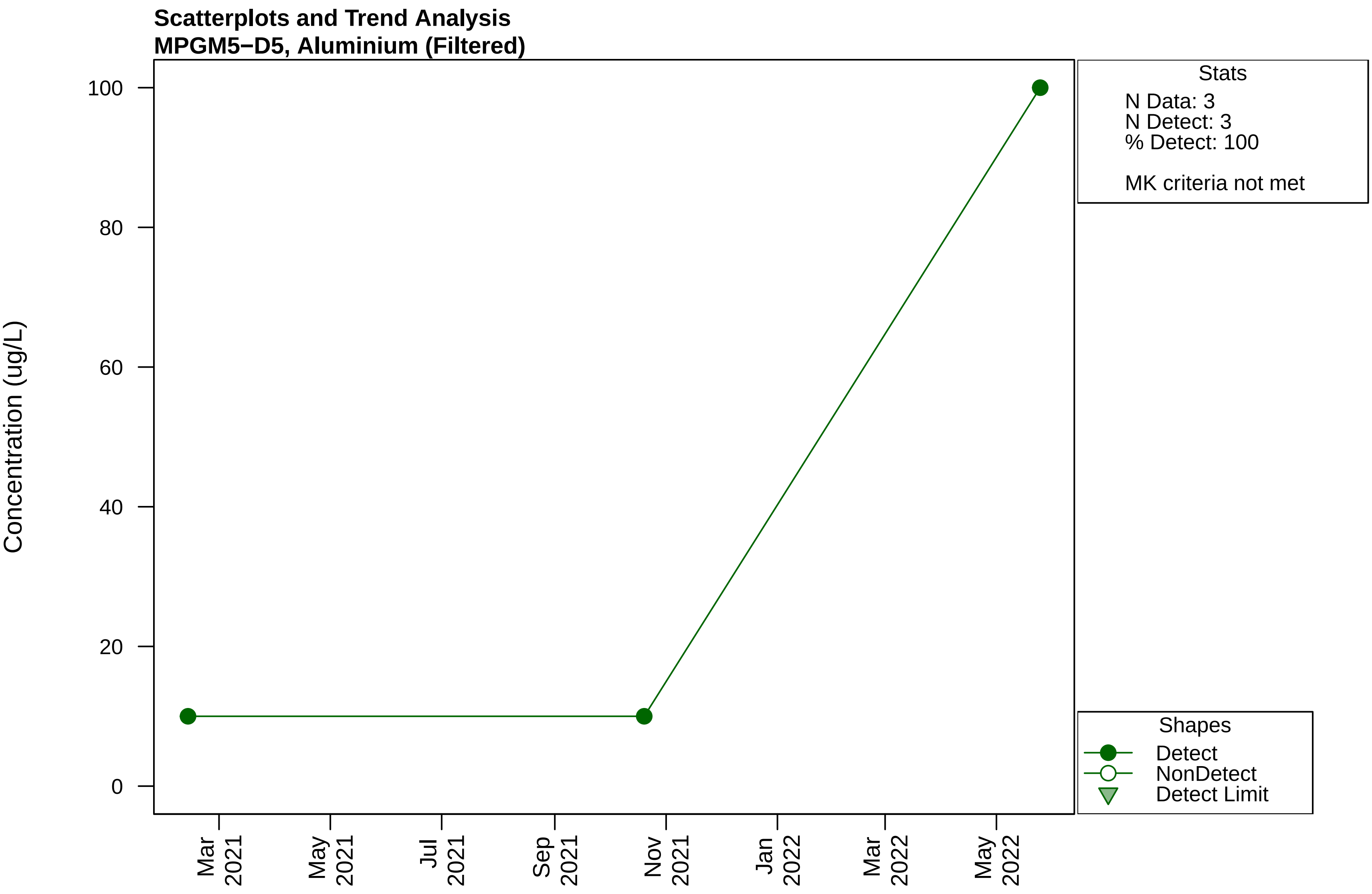


Scatterplots and Trend Analysis
D9, Zinc
Concentration (ug/L)
0
100
200
300
400
500
600
Jan 2021
Jul 2021
Jan 2022
Jul 2022
Stats
N Data: 8
N Detect: 8
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.105
Shapes
Detect
NonDetect
Detect Limit

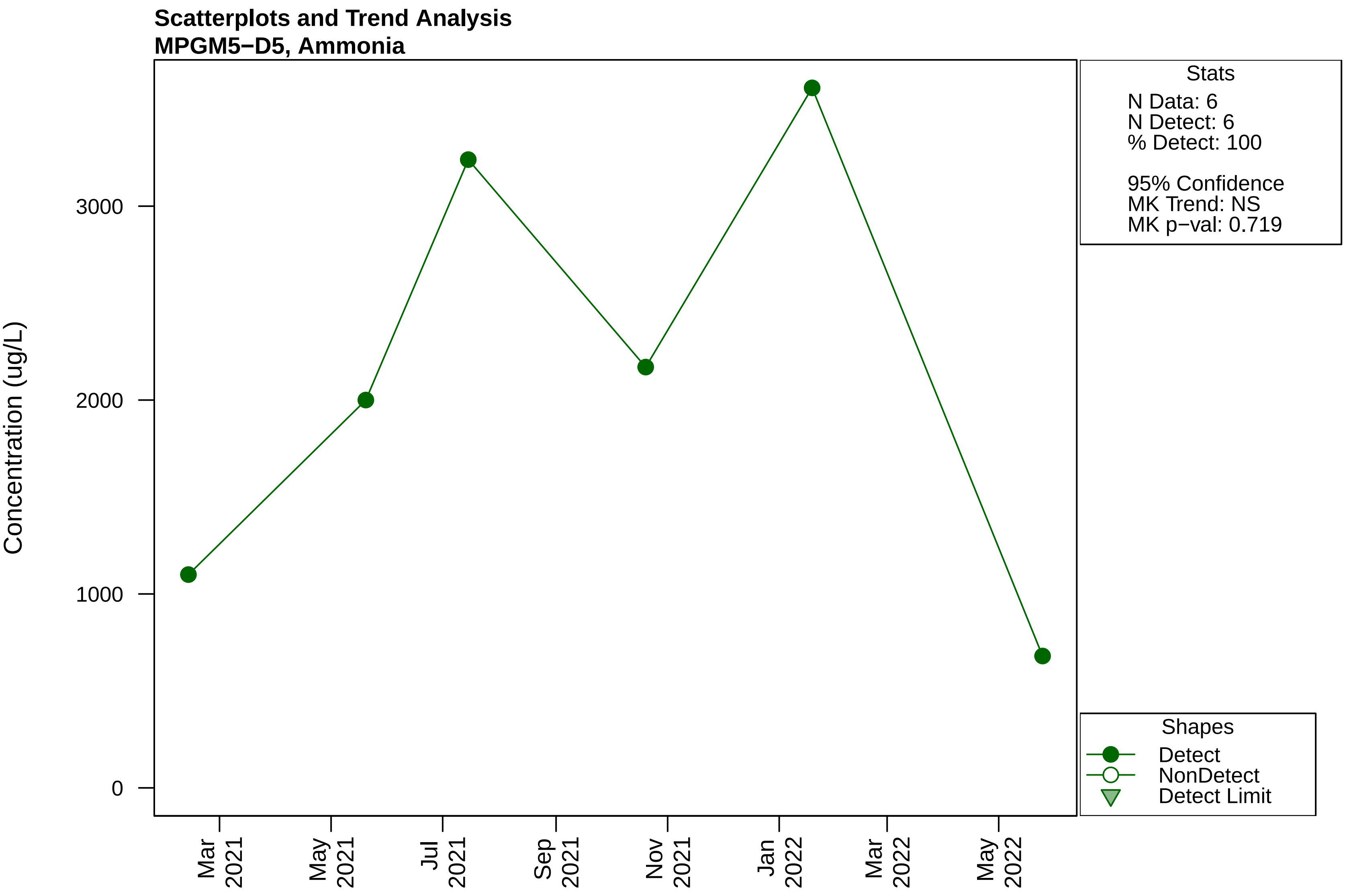


Scatterplots and Trend Analysis
D9, Zinc (Filtered)
Concentration (ug/L)
0
20
40
60
80
Jan 2021
Jul 2021
Jan 2022
Jul 2022
Stats
N Data: 7
N Detect: 7
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.136
Shapes
Detect
NonDetect
Detect Limit


Scatterplots and Trend Analysis
MPGM5−D5, Aluminium
Stats
N Data: 9
N Detect: 9
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.917
Concentration (ug/L)
0
100
200
300
400
500
Jul 2020
Jan 2021
Jul 2021
Jan 2022
Shapes
Detect
NonDetect
Detect Limit

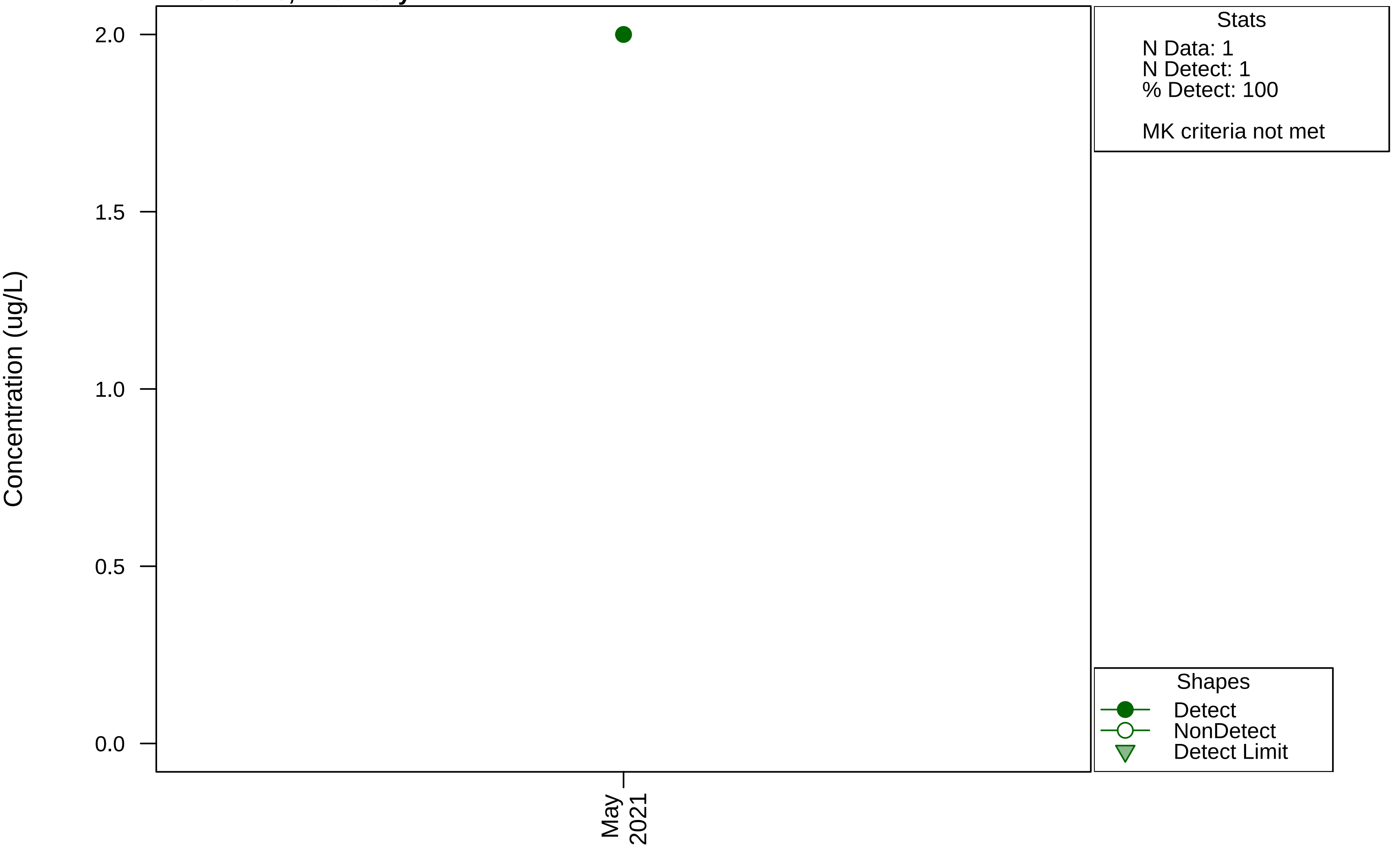


Scatterplots and Trend Analysis
MPGM5−D5, Aluminium (Filtered)
Concentration (ug/L)
0
20
40
60
80
100
Mar 2021
May 2021
Jul 2021
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 3
N Detect: 3
% Detect: 100
MK criteria not met
Shapes
Detect
NonDetect
Detect Limit

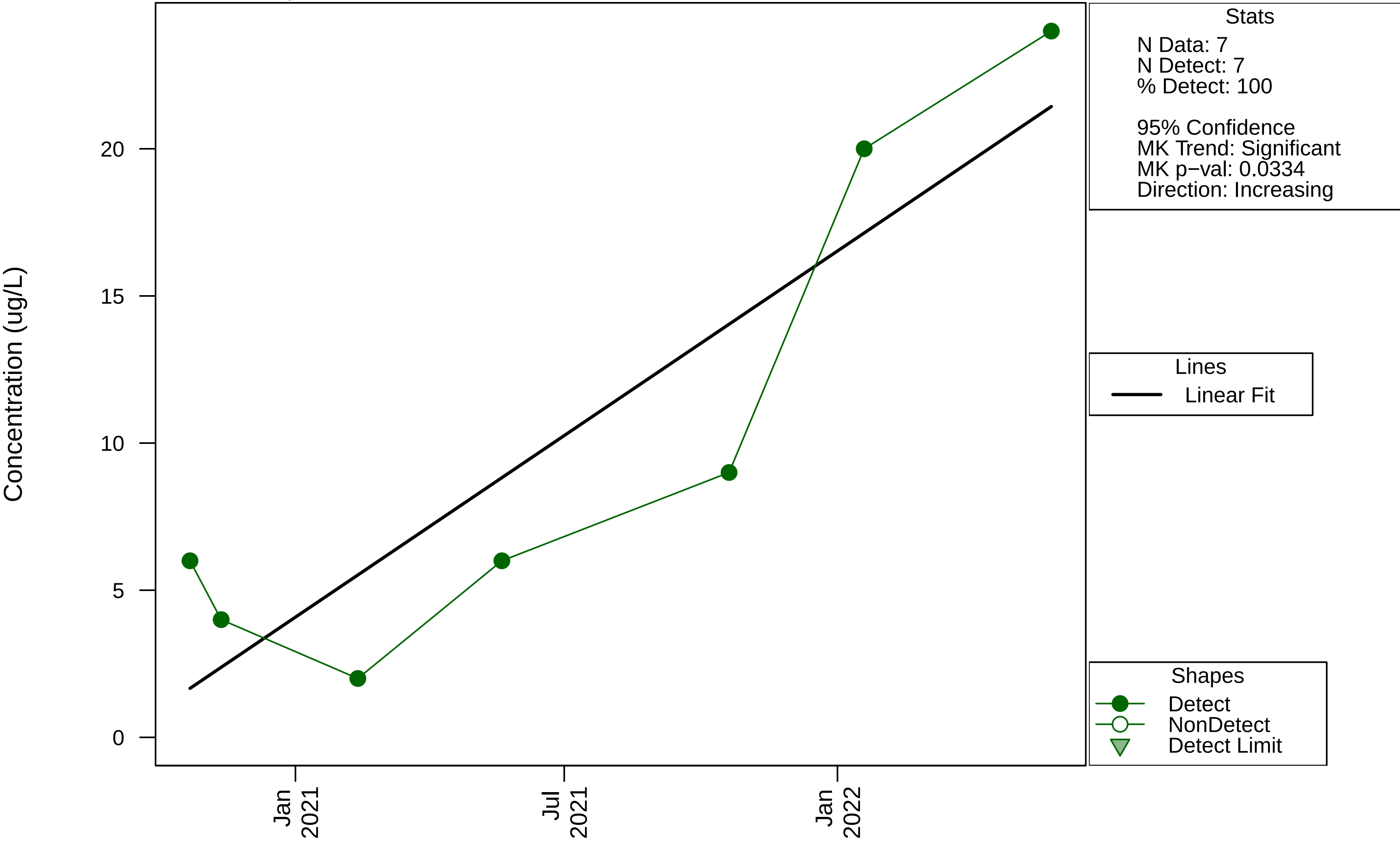


Scatterplots and Trend Analysis
MPGM5−D5, Ammonia
Concentration (ug/L)
0
1000
2000
3000
Mar 2021
May 2021
Jul 2021
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 6
N Detect: 6
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.719
Shapes
Detect
NonDetect
Detect Limit

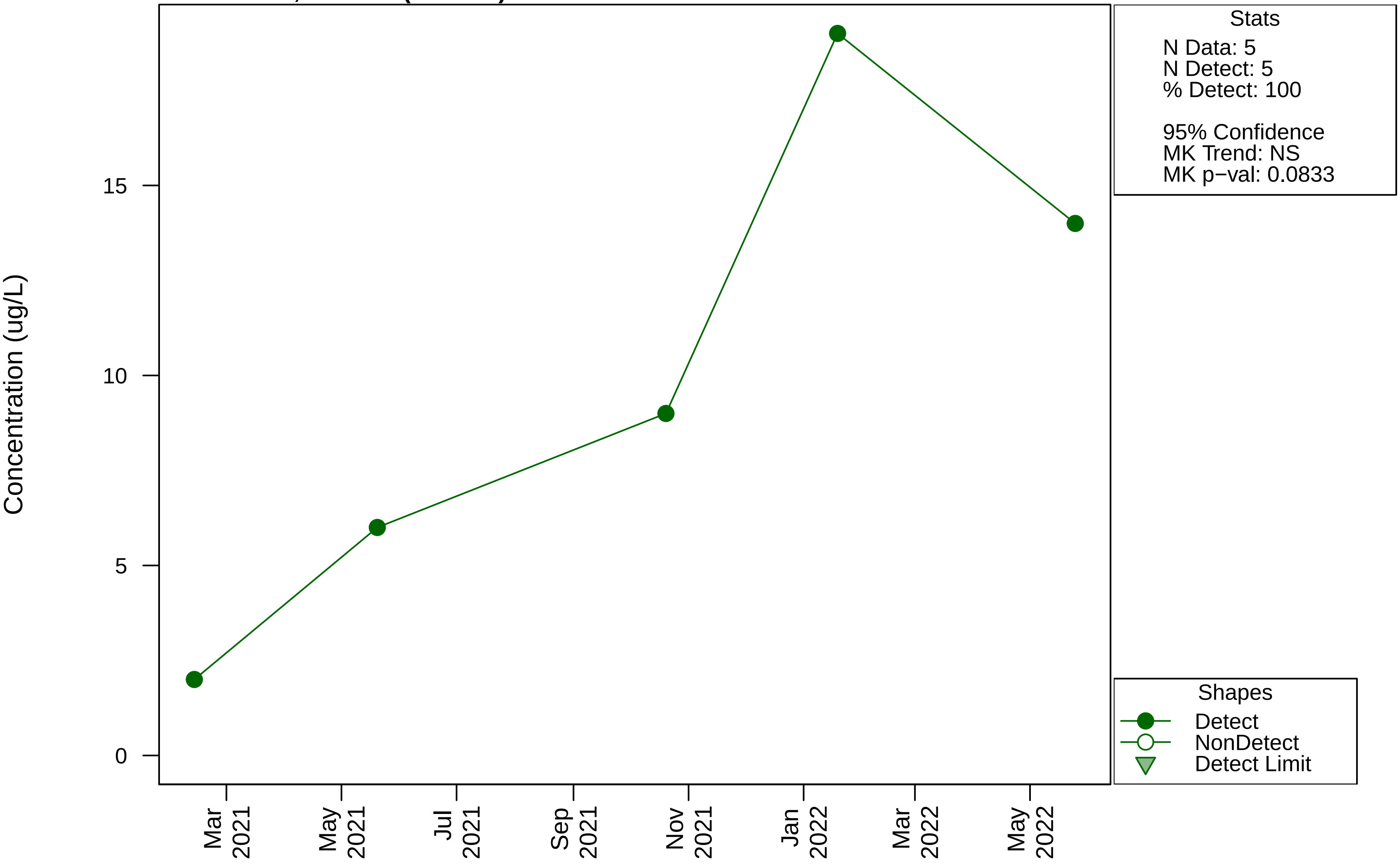
Scatterplots and Trend Analysis
MPGM5−D5, Antimony

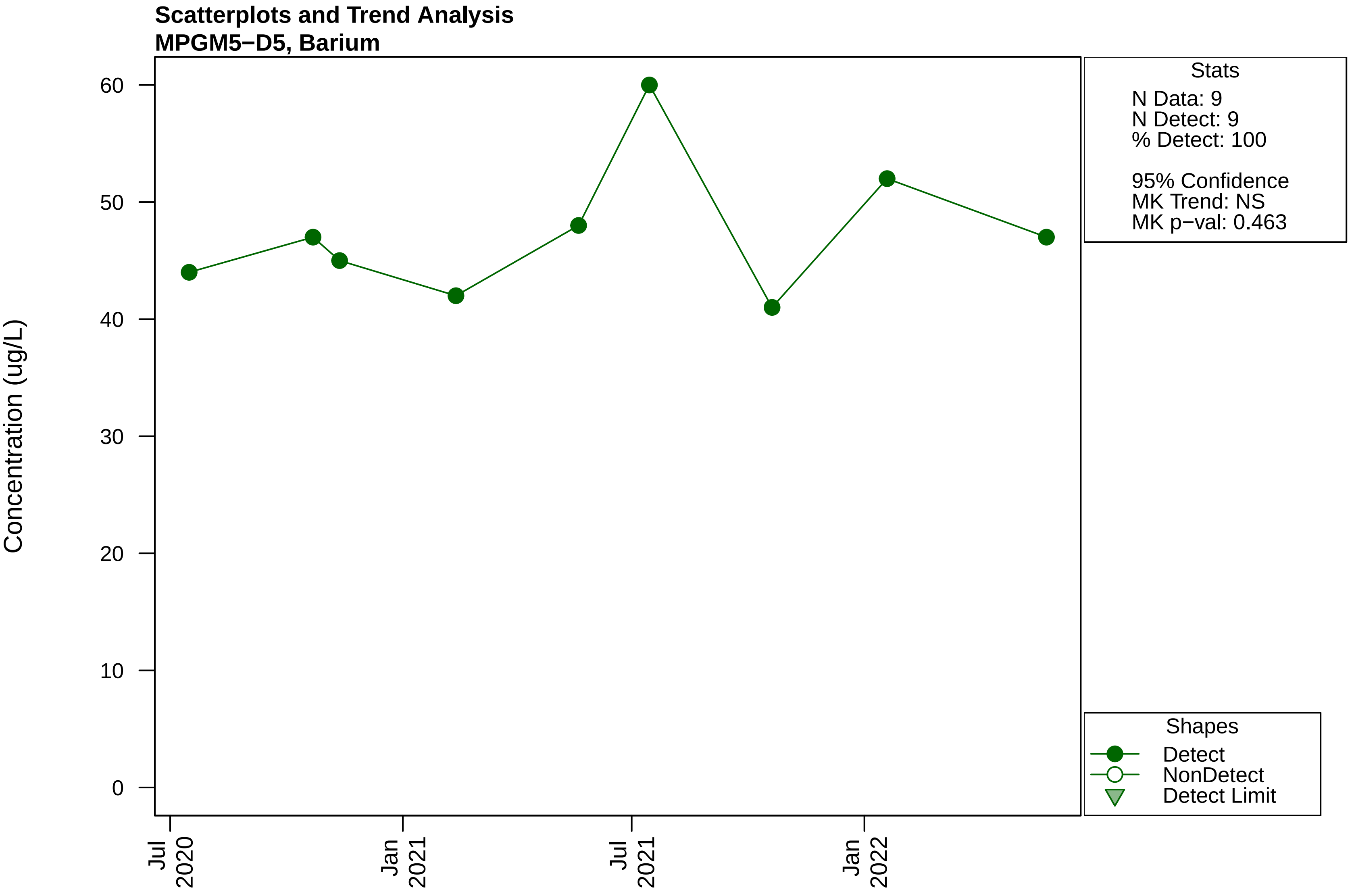


Scatterplots and Trend Analysis
MPGM5−D5, Arsenic

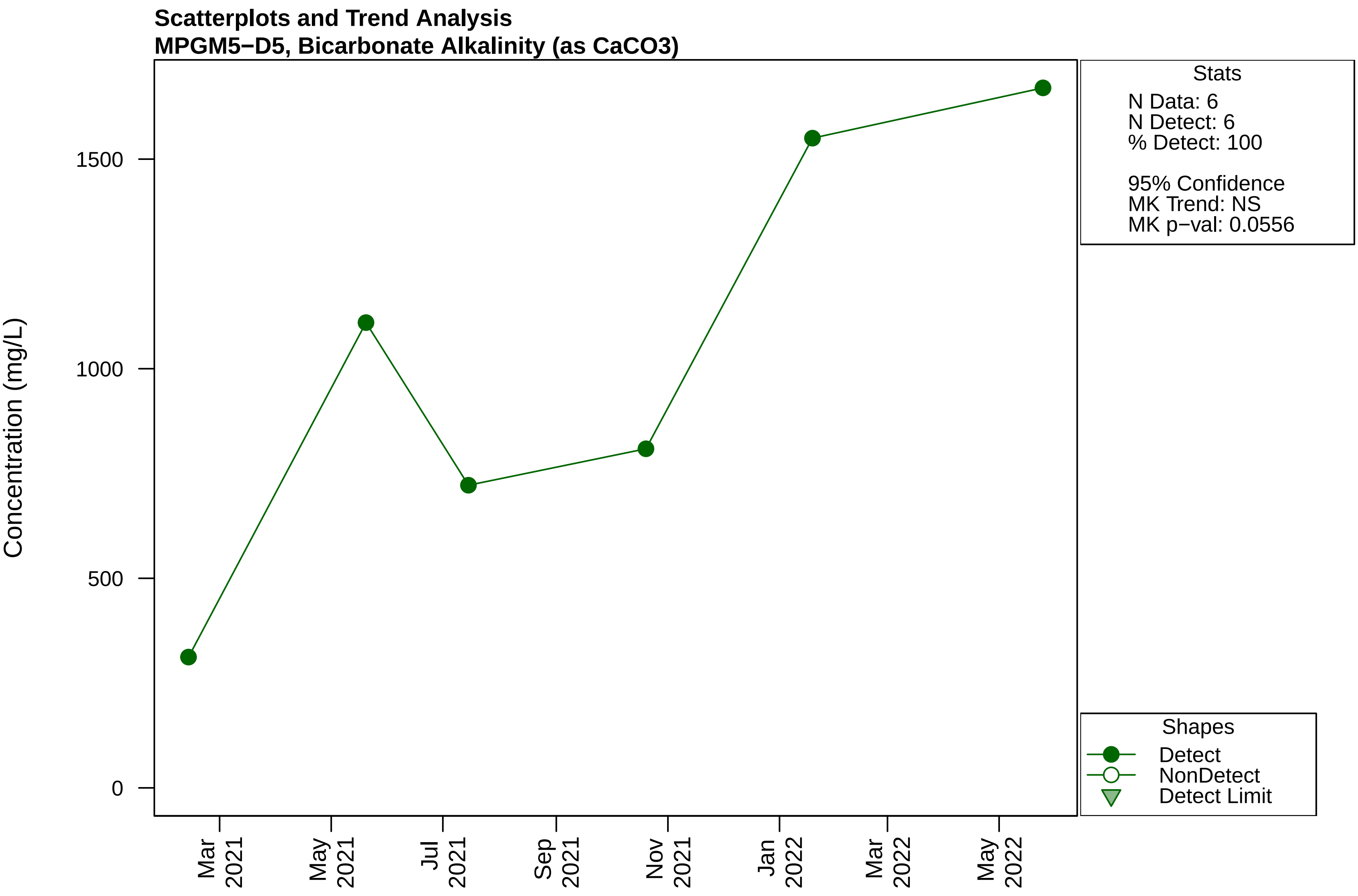


Scatterplots and Trend Analysis
MPGM5−D5, Arsenic (Filtered)

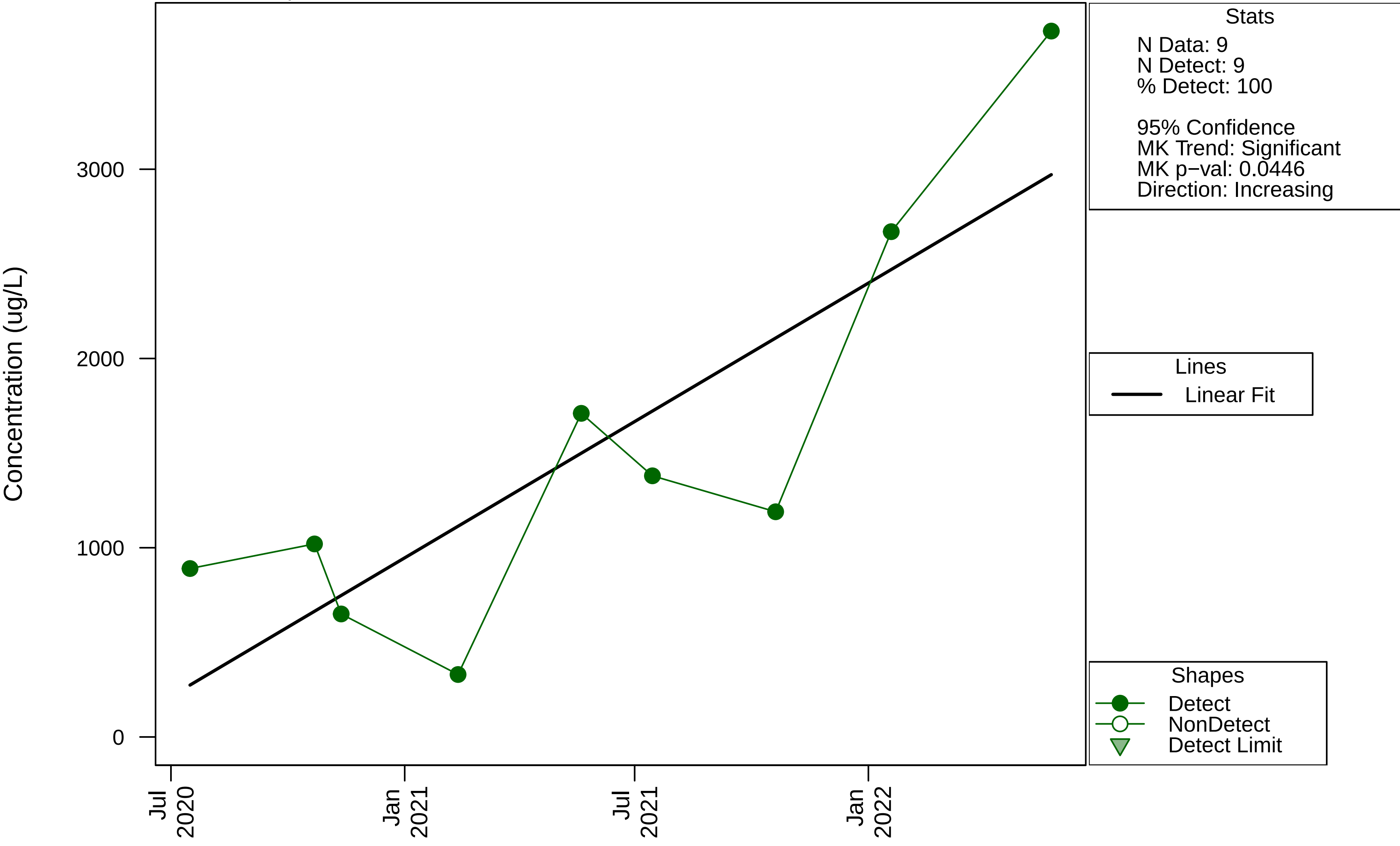




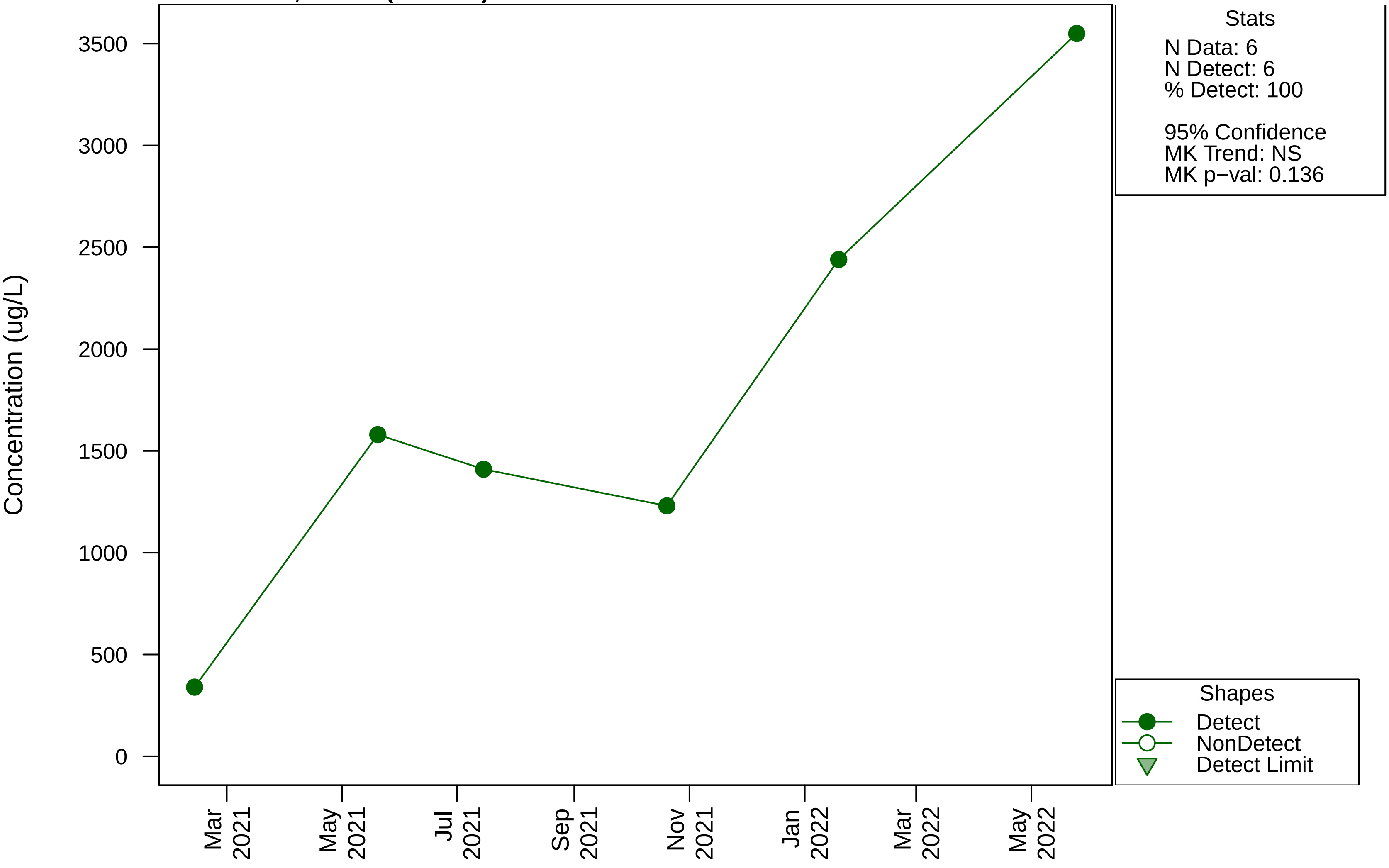
Scatterplots and Trend Analysis
MPGM5−D5, Barium
Concentration (ug/L)
60
50
40
30
20
10
0
Jul 2020
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 9
N Detect: 9
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.463
Shapes
Detect
NonDetect
Detect Limit

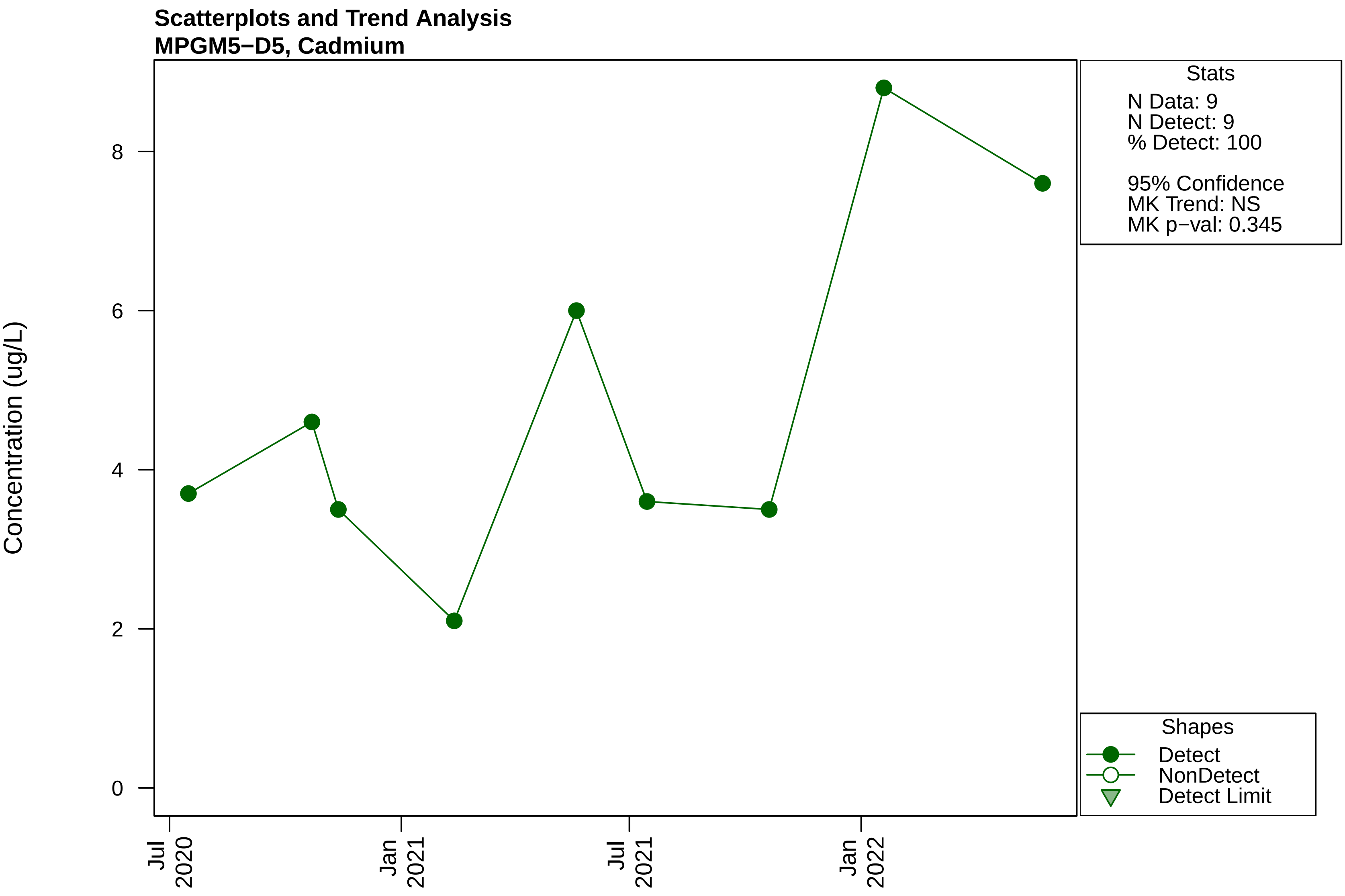

Scatterplots and Trend Analysis
MPGM5−D5, Bicarbonate Alkalinity (as CaCO3)
Concentration (mg/L)
0
500
1000
1500
Mar 2021
May 2021
Jul 2021
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 6
N Detect: 6
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.0556
Shapes
Detect
NonDetect
Detect Limit

Scatterplots and Trend Analysis
MPGM5−D5, Boron



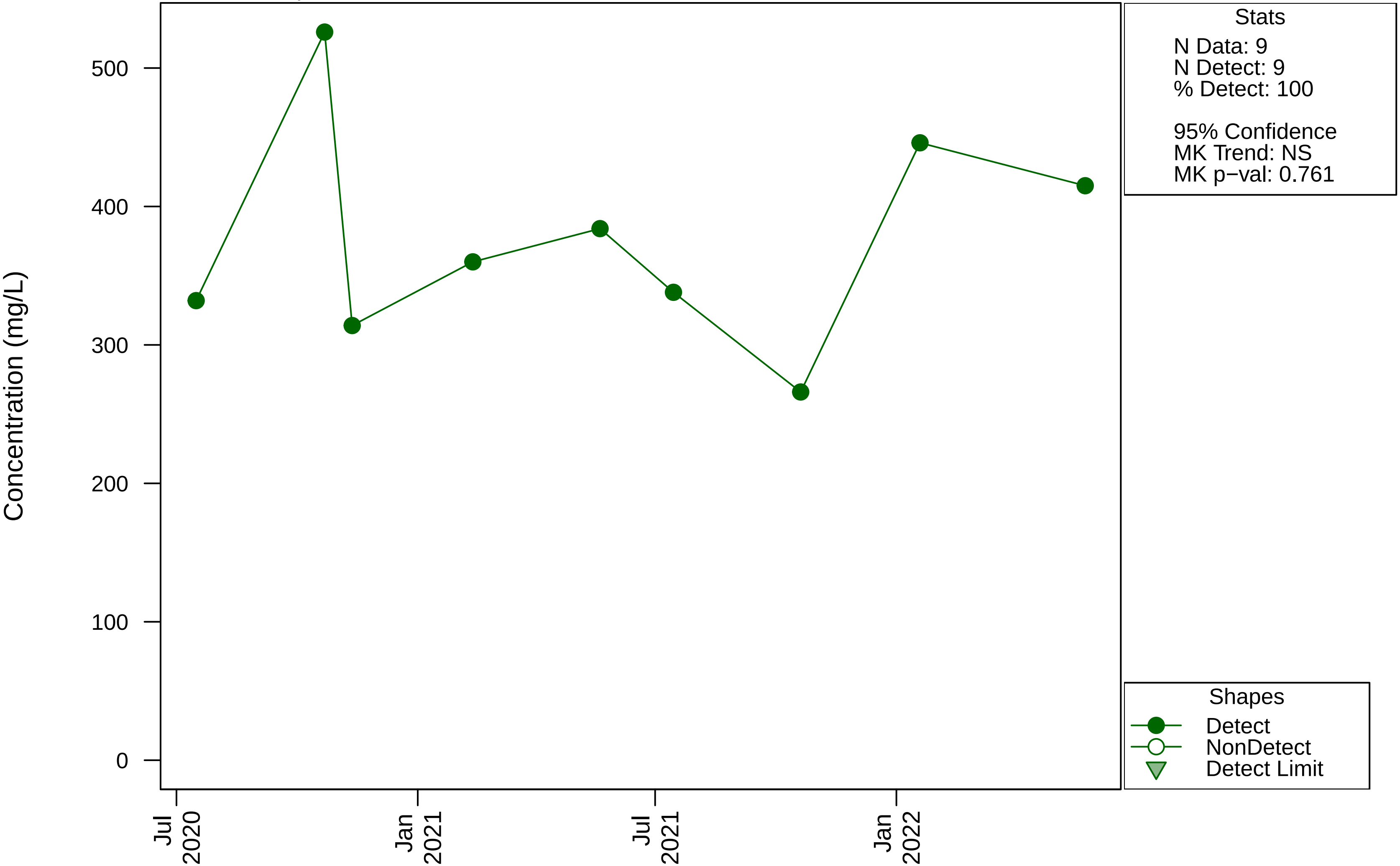
Scatterplots and Trend Analysis
MPGM5−D5, Boron (Filtered)

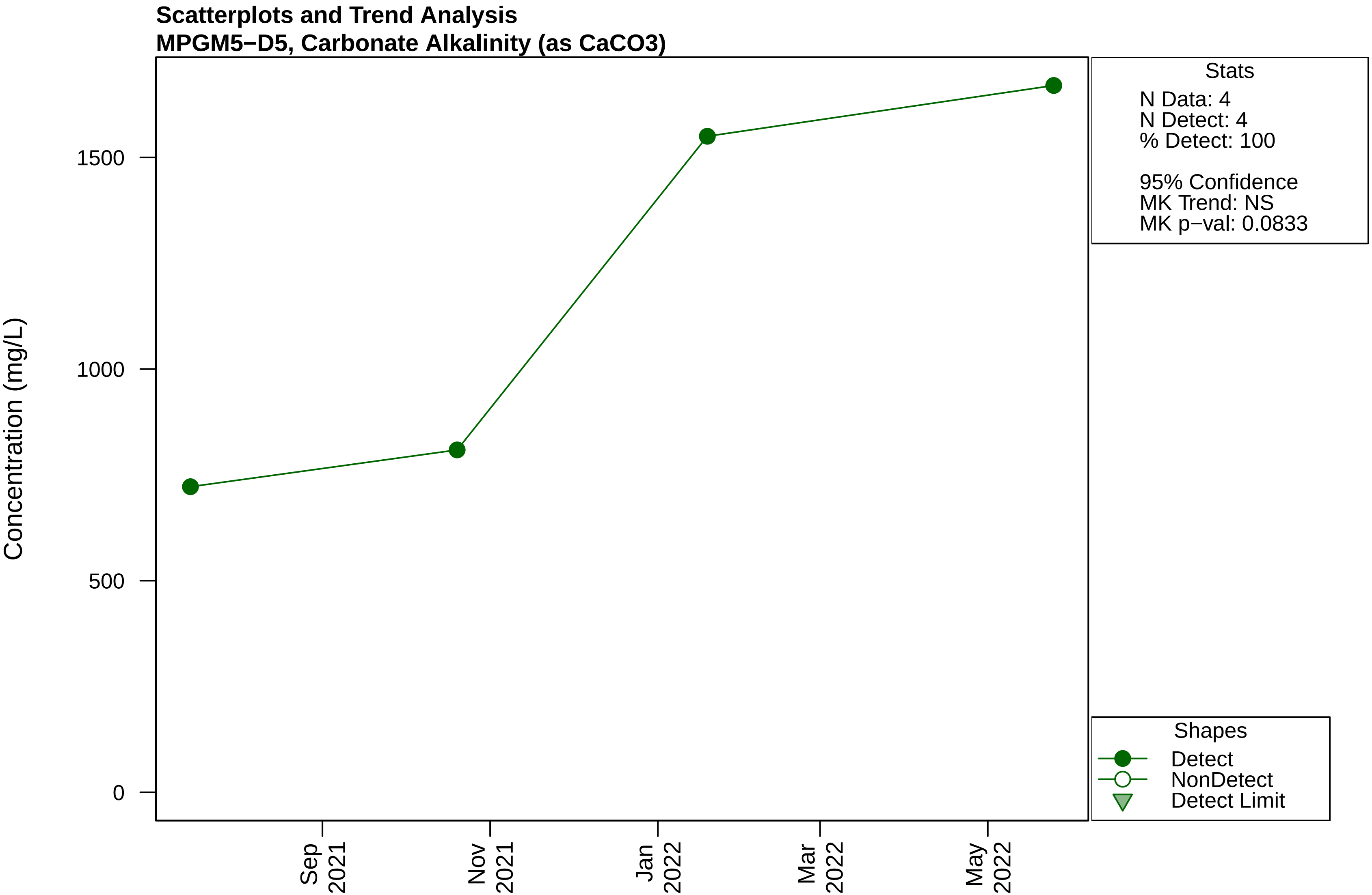




Scatterplots and Trend Analysis
MPGM5−D5, Cadmium
Concentration (ug/L)
0
2
4
6
8
Jul 2020
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 9
N Detect: 9
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.345
Shapes
Detect
NonDetect
Detect Limit

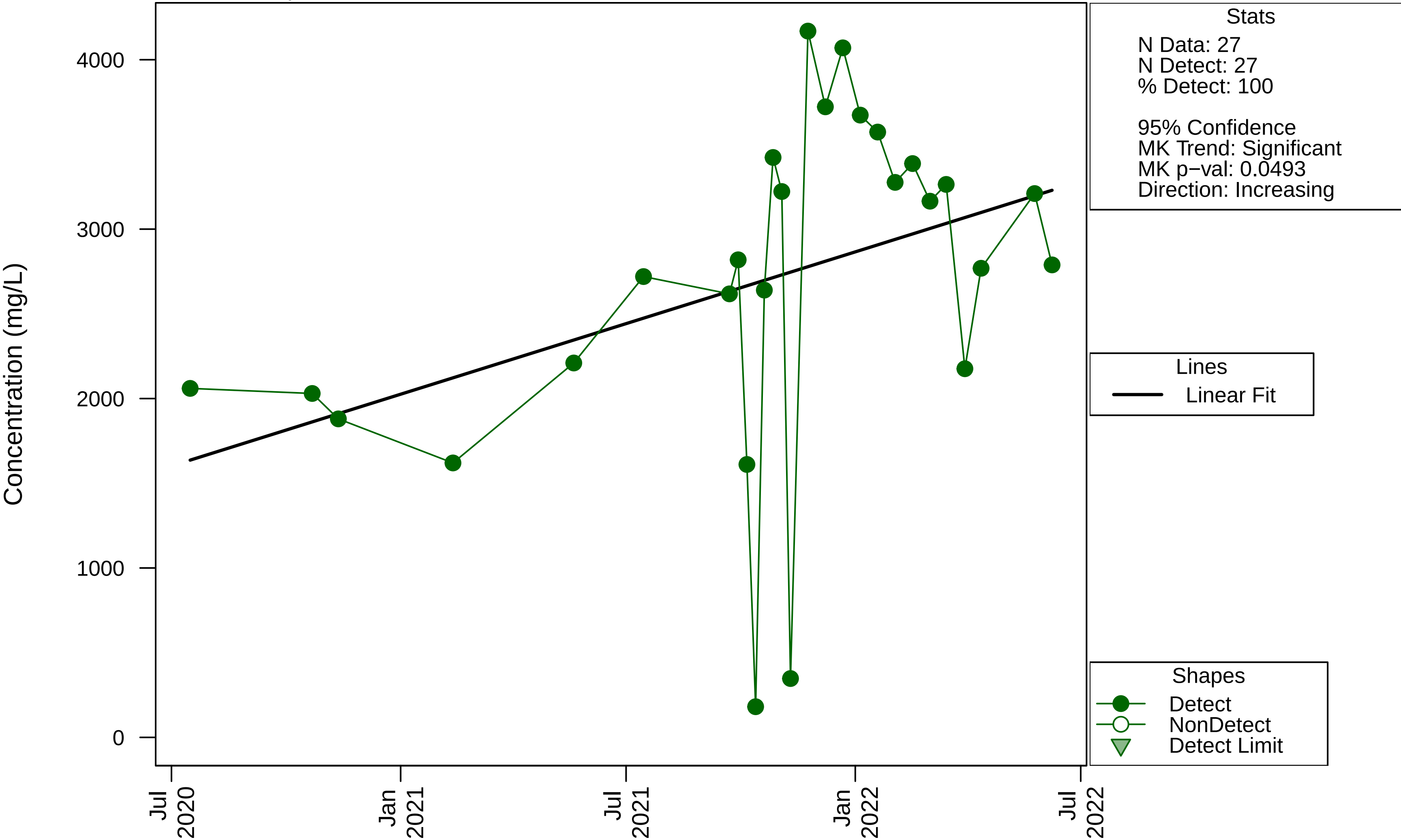
Scatterplots and Trend Analysis
MPGM5−D5, Calcium

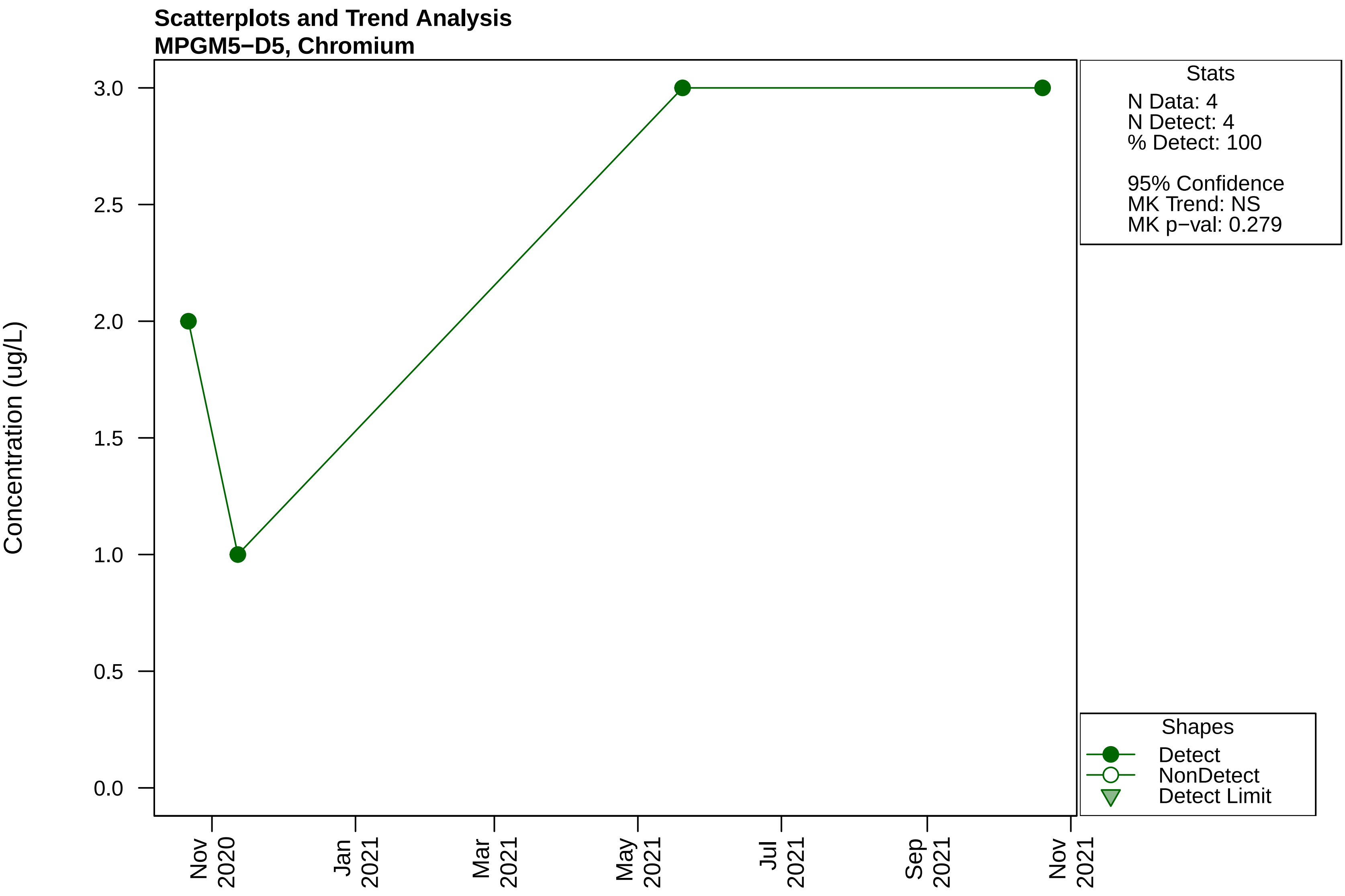




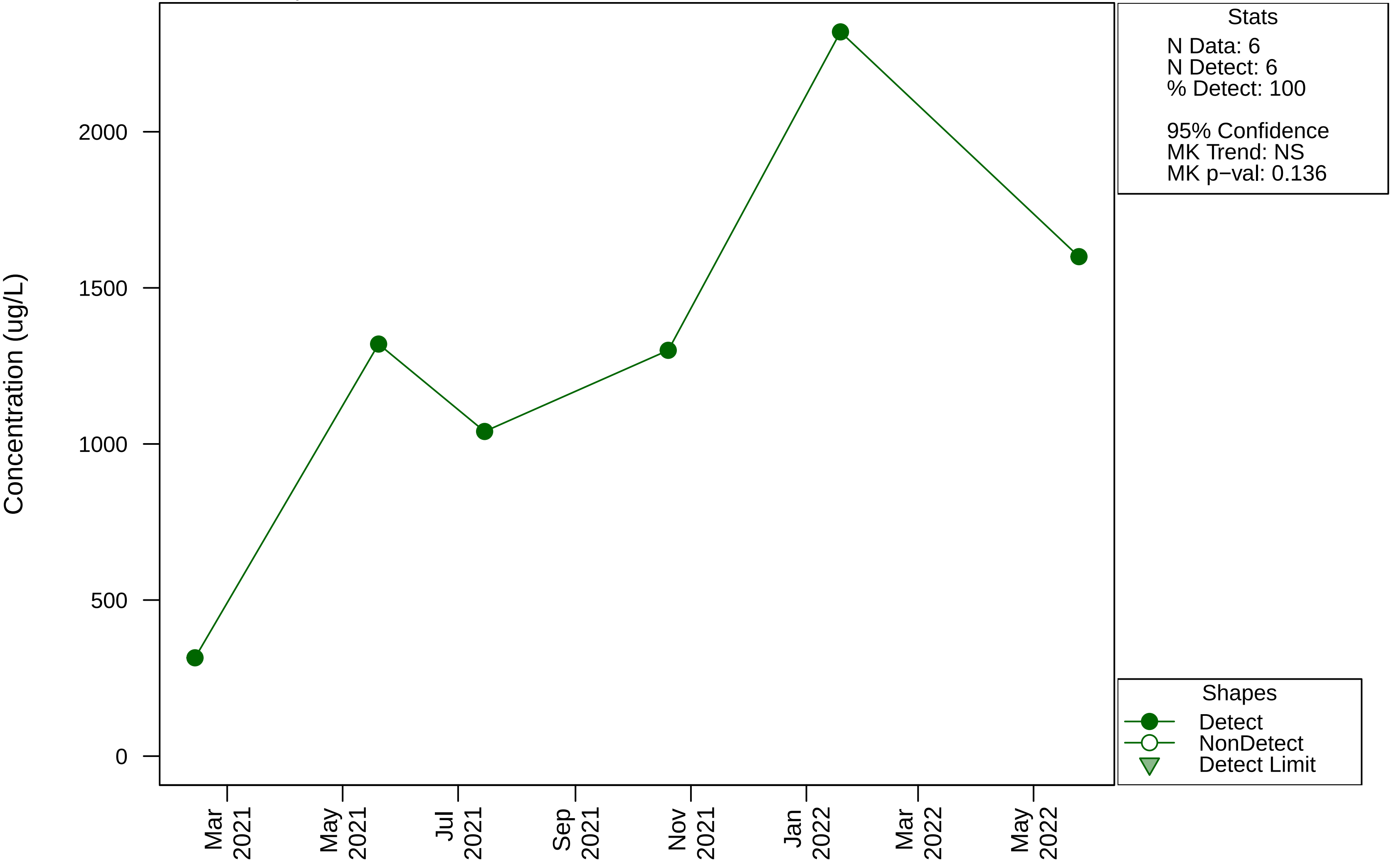
Scatterplots and Trend Analysis
MPGM5−D5, Carbonate Alkalinity (as CaCO3)
Concentration (mg/L)
0
500
1000
1500
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 4
N Detect: 4
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.0833
Shapes
Detect
NonDetect
Detect Limit

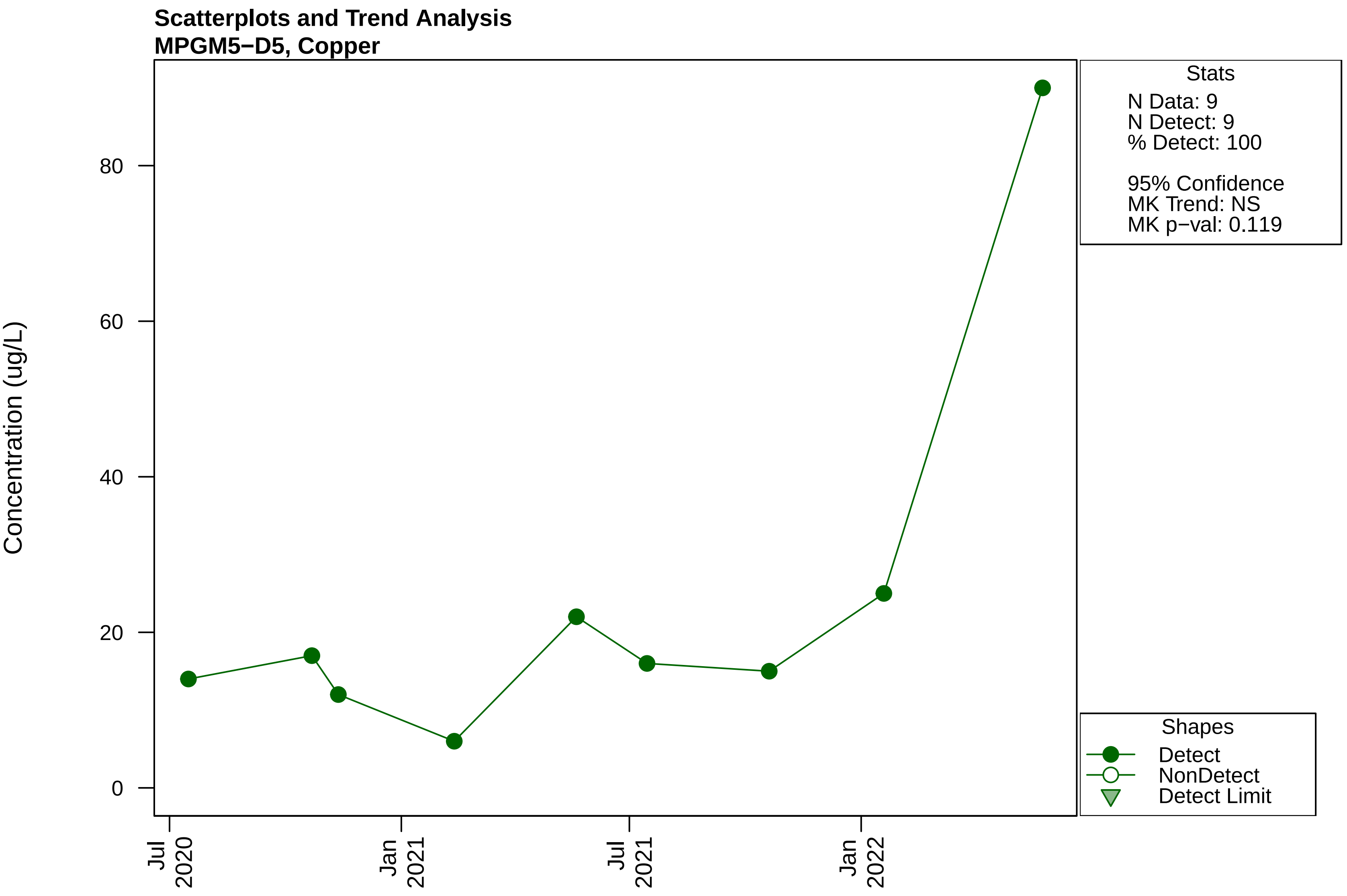
Scatterplots and Trend Analysis
MPGM5−D5, Chloride



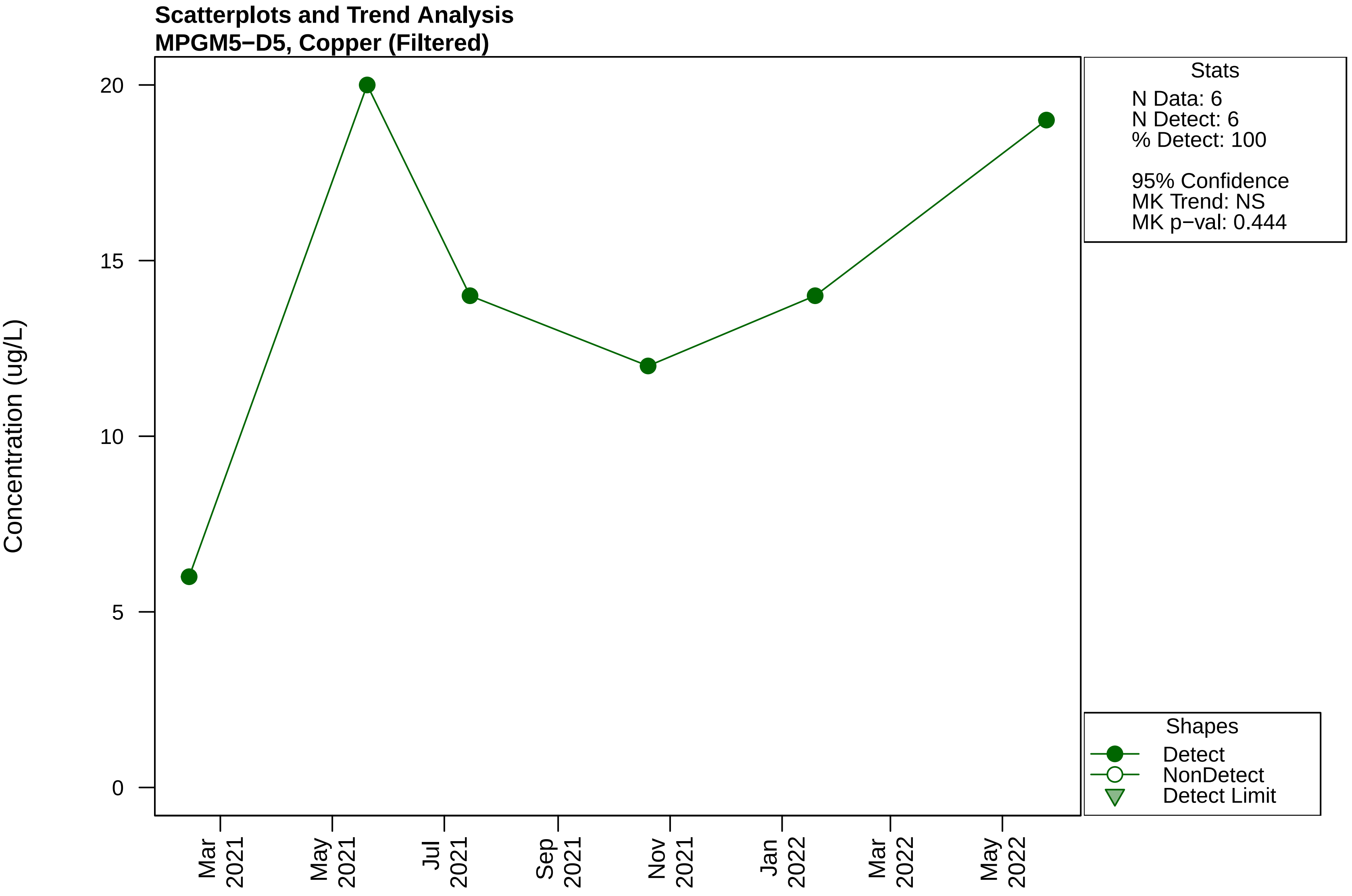

Scatterplots and Trend Analysis
MPGM5−D5, Chromium
Concentration (ug/L)
0.0
0.5
1.0
1.5
2.0
2.5
3.0
Nov 2020
Jan 2021
Mar 2021
May 2021
Jul 2021
Sep 2021
Nov 2021
Stats
N Data: 4
N Detect: 4
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.279
Shapes
Detect
NonDetect
Detect Limit

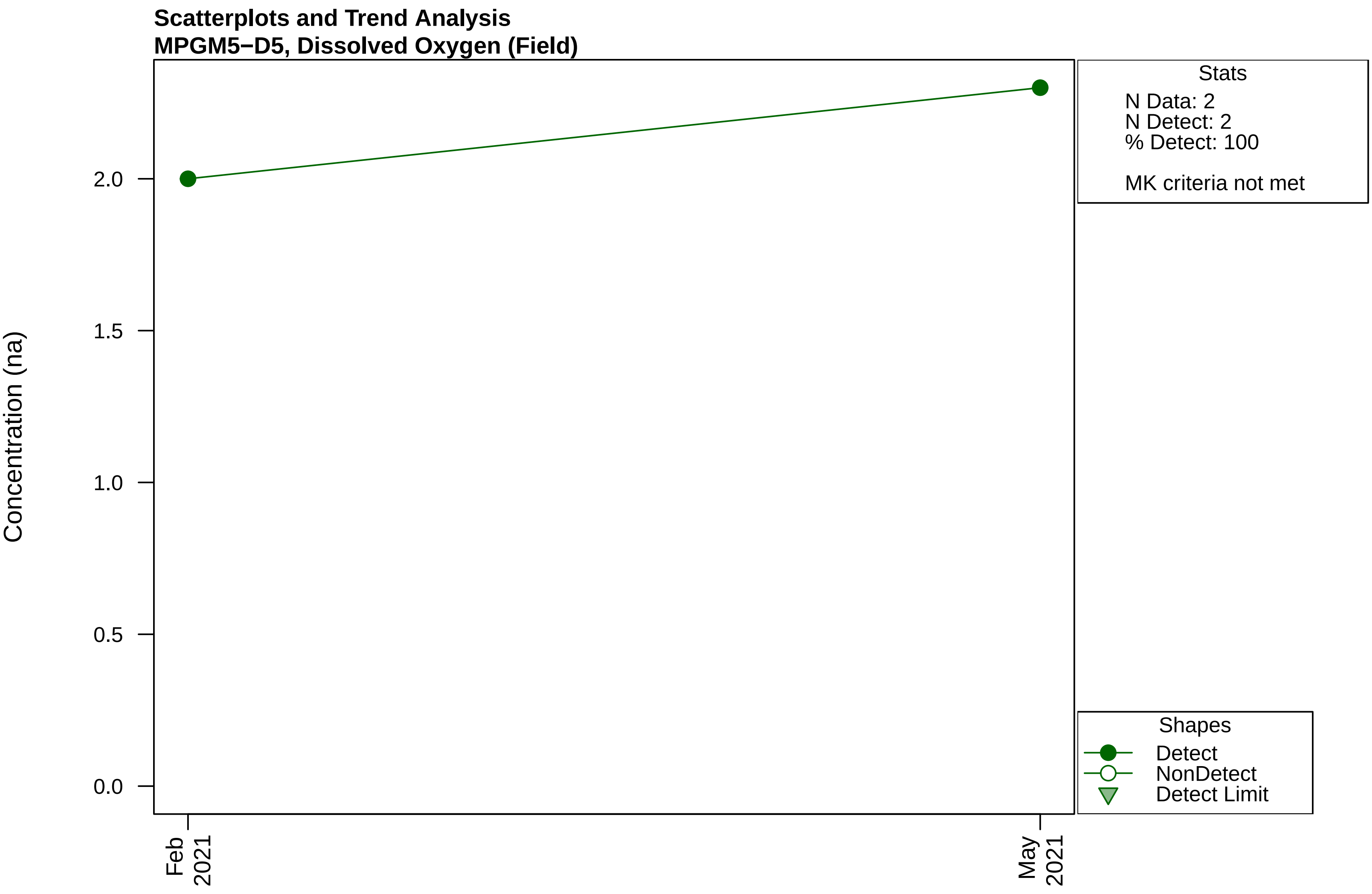
Scatterplots and Trend Analysis
MPGM5−D5, Cobalt



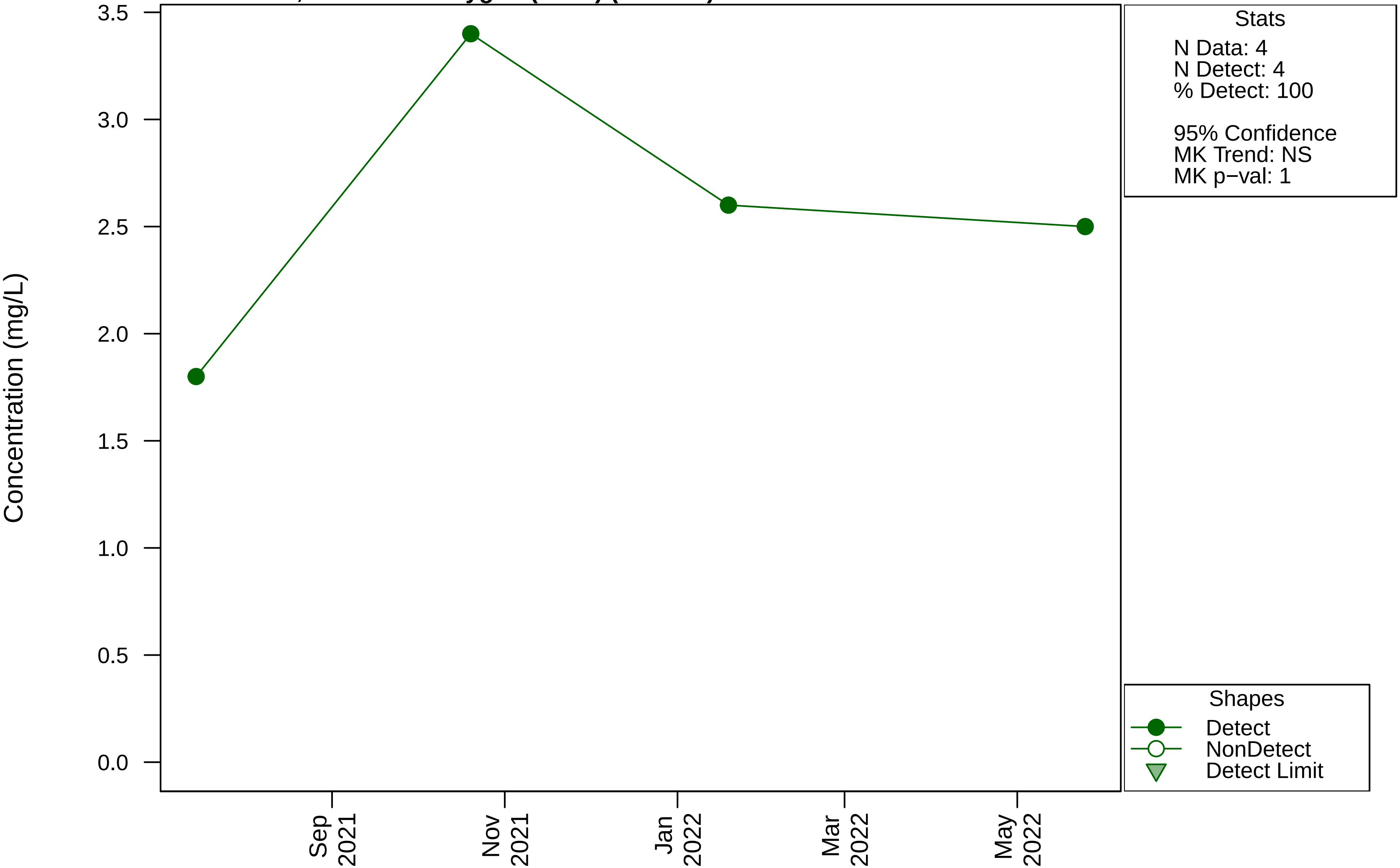


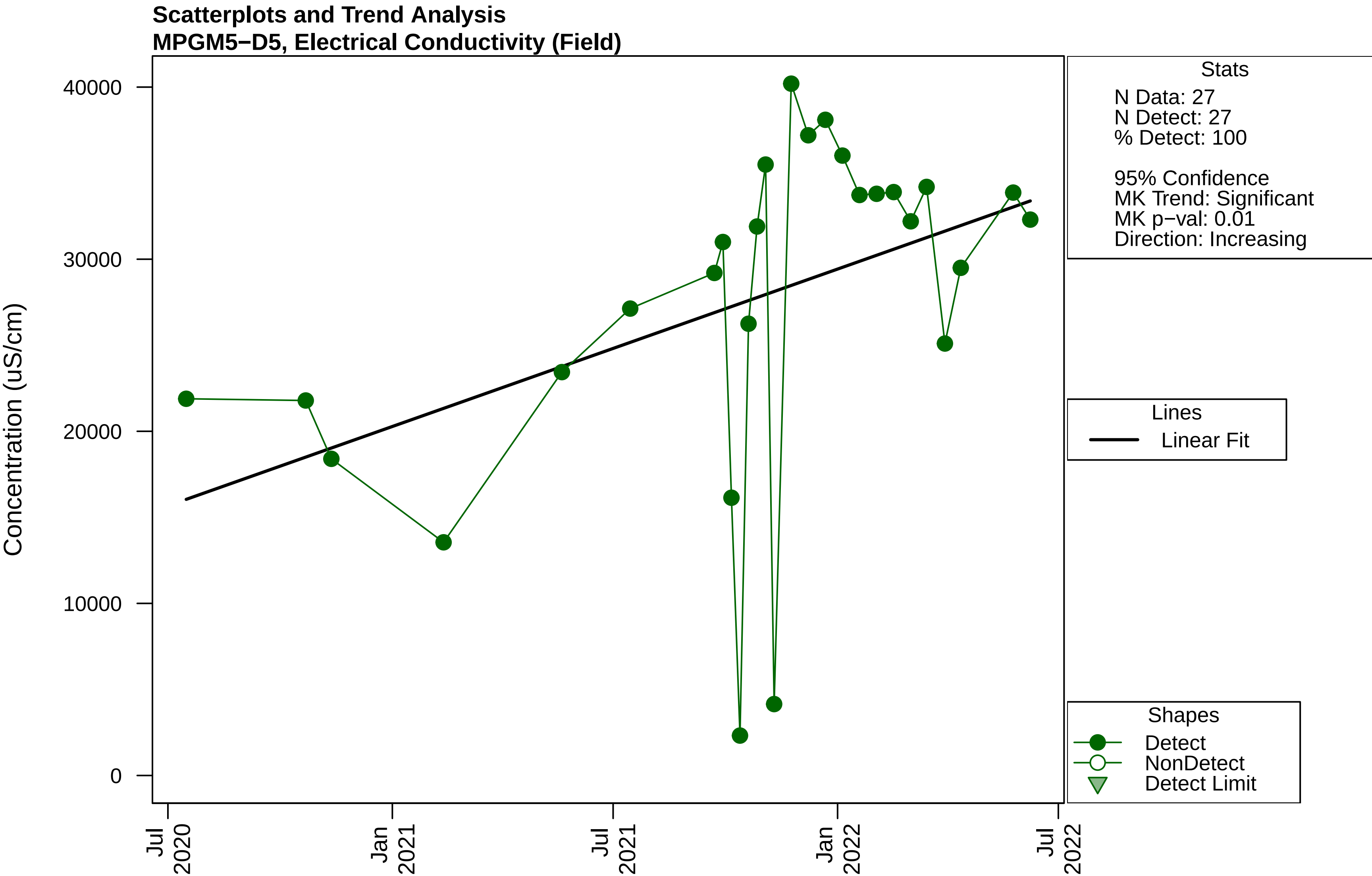
Scatterplots and Trend Analysis
MPGM5−D5, Copper
Concentration (ug/L)
0
20
40
60
80
Jul 2020
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 9
N Detect: 9
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.119
Shapes
Detect
NonDetect
Detect Limit


Scatterplots and Trend Analysis
MPGM5−D5, Copper (Filtered)
Concentration (ug/L)
0
5
10
15
20
Mar 2021
May 2021
Jul 2021
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 6
N Detect: 6
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.444
Shapes
Detect
NonDetect
Detect Limit

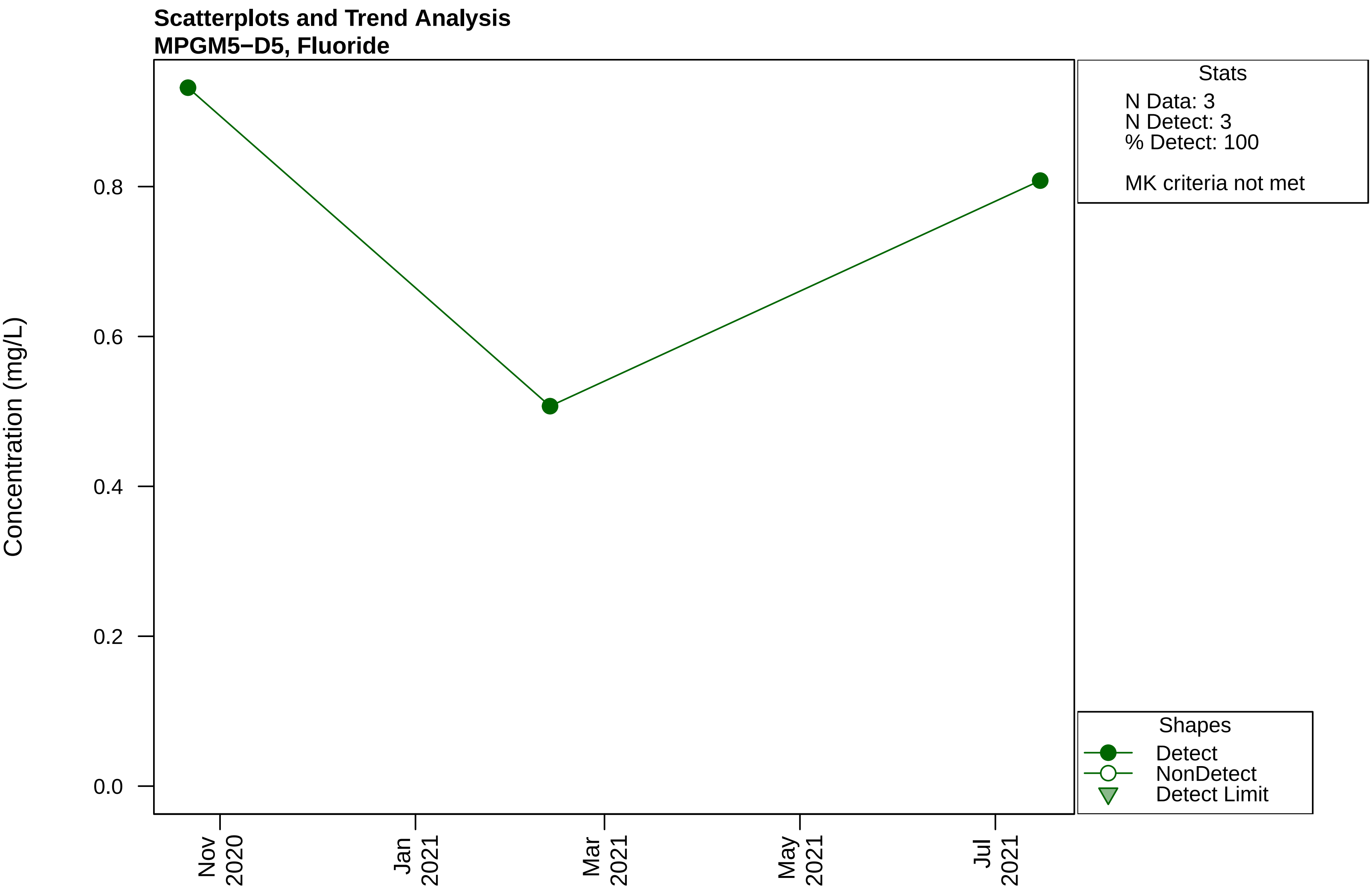

Scatterplots and Trend Analysis
MPGM5−D5, Dissolved Oxygen (Field)
Concentration (na)
0.0
0.5
1.0
1.5
2.0
Feb 2021
May 2021
Stats
N Data: 2
N Detect: 2
% Detect: 100
MK criteria not met
Shapes
Detect
NonDetect
Detect Limit

Scatterplots and Trend Analysis
MPGM5−D5, Dissolved Oxygen (Field) (Filtered)

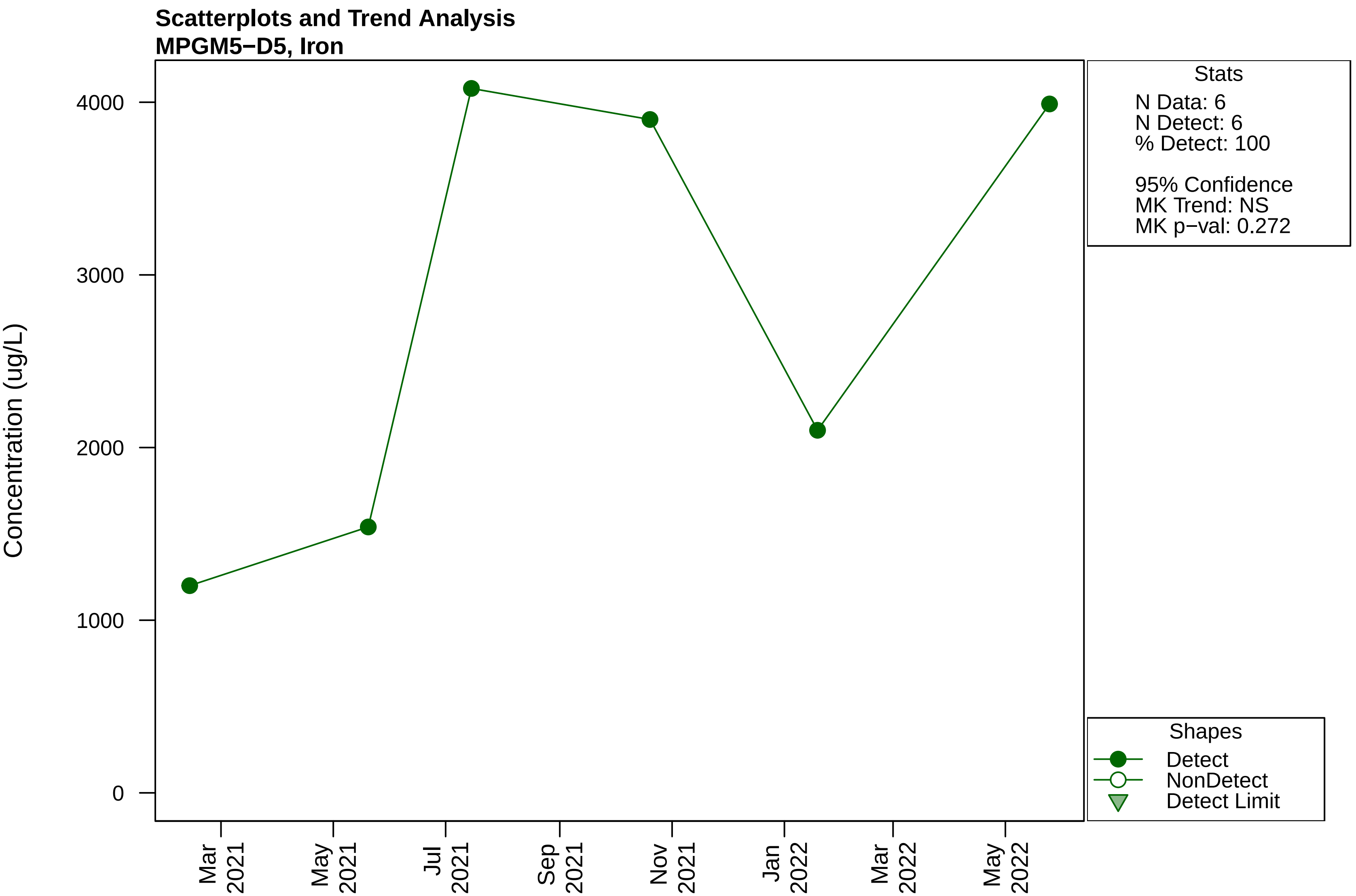




Scatterplots and Trend Analysis
MPGM5−D5, Electrical Conductivity (Field)
Concentration (uS/cm)
40000
30000
20000
10000
0
Jul 2020
Jan 2021
Jul 2021
Jan 2022
Jul 2022
Stats
N Data: 27
N Detect: 27
% Detect: 100
95% Confidence
MK Trend: Significant
MK p−val: 0.01
Direction: Increasing
Lines
Linear Fit
Shapes
Detect
NonDetect
Detect Limit

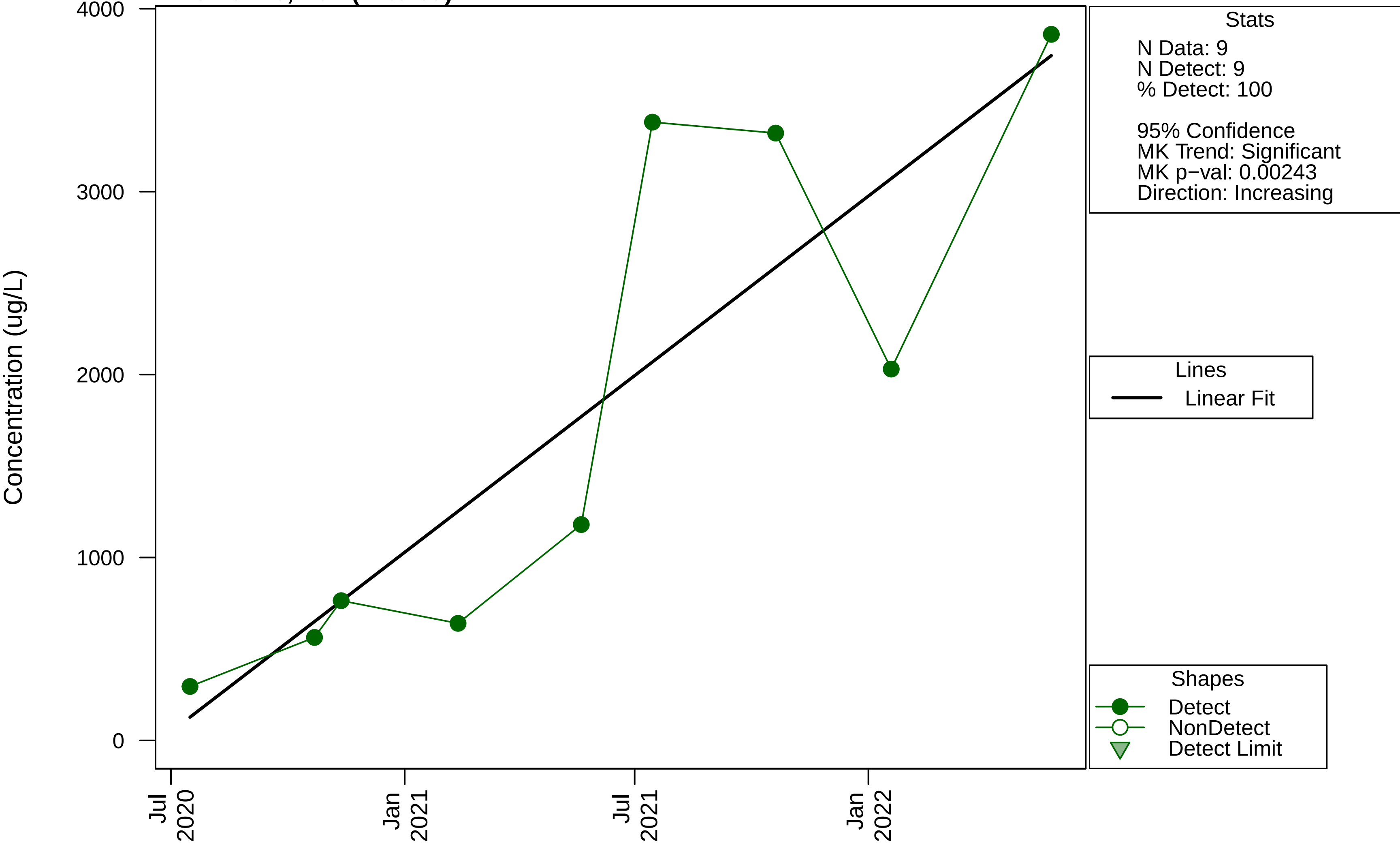


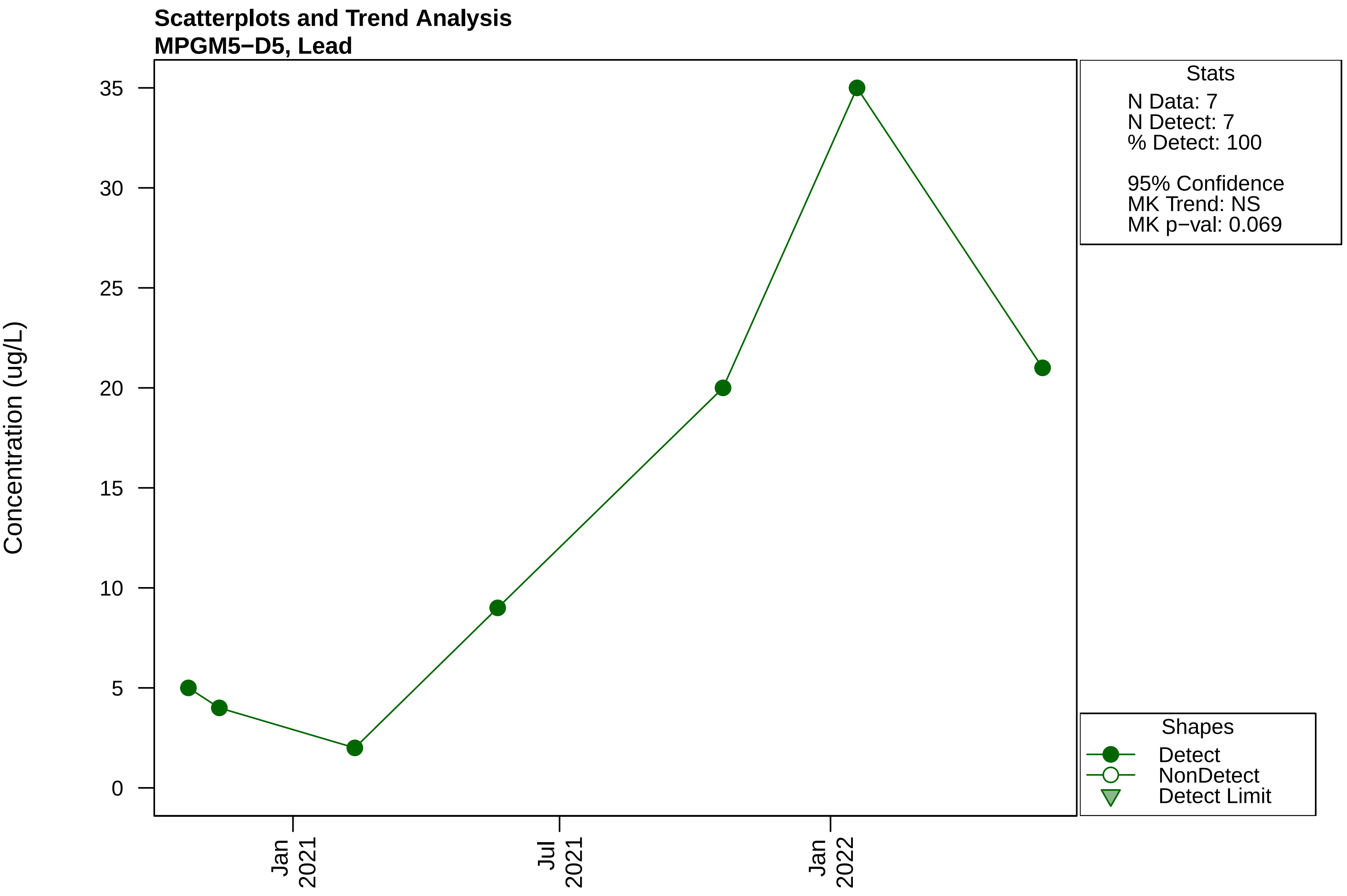
Scatterplots and Trend Analysis
MPGM5−D5, Fluoride
Concentration (mg/L)
0.0
0.2
0.4
0.6
0.8
Nov 2020
Jan 2021
Mar 2021
May 2021
Jul 2021
Stats
N Data: 3
N Detect: 3
% Detect: 100
MK criteria not met
Shapes
Detect
NonDetect
Detect Limit



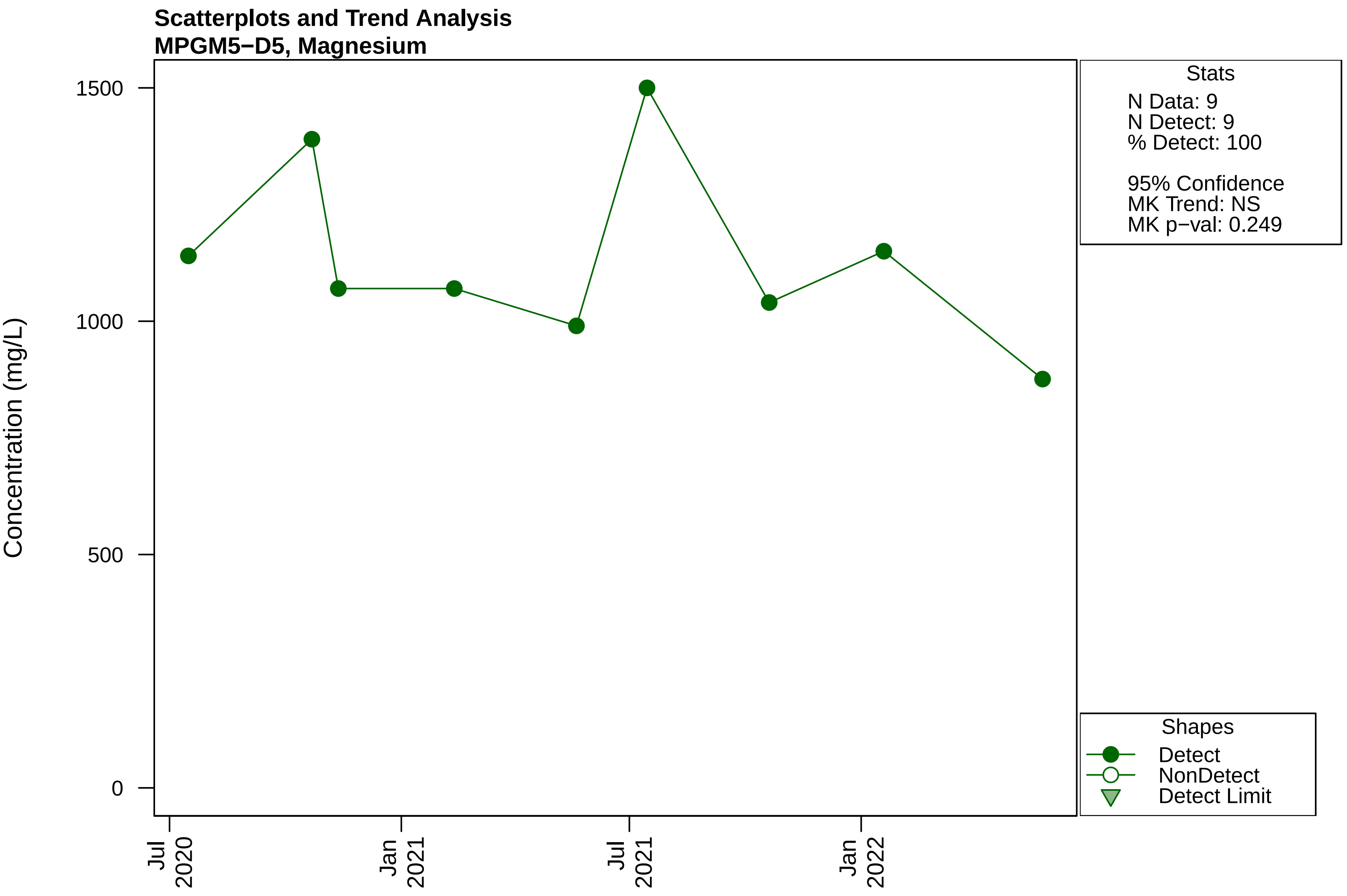
Scatterplots and Trend Analysis
MPGM5−D5, Iron
Concentration (ug/L)
0
1000
2000
3000
4000
Mar 2021
May 2021
Jul 2021
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 6
N Detect: 6
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.272
Shapes
Detect
NonDetect
Detect Limit

Scatterplots and Trend Analysis
MPGM5−D5, Iron (Filtered)

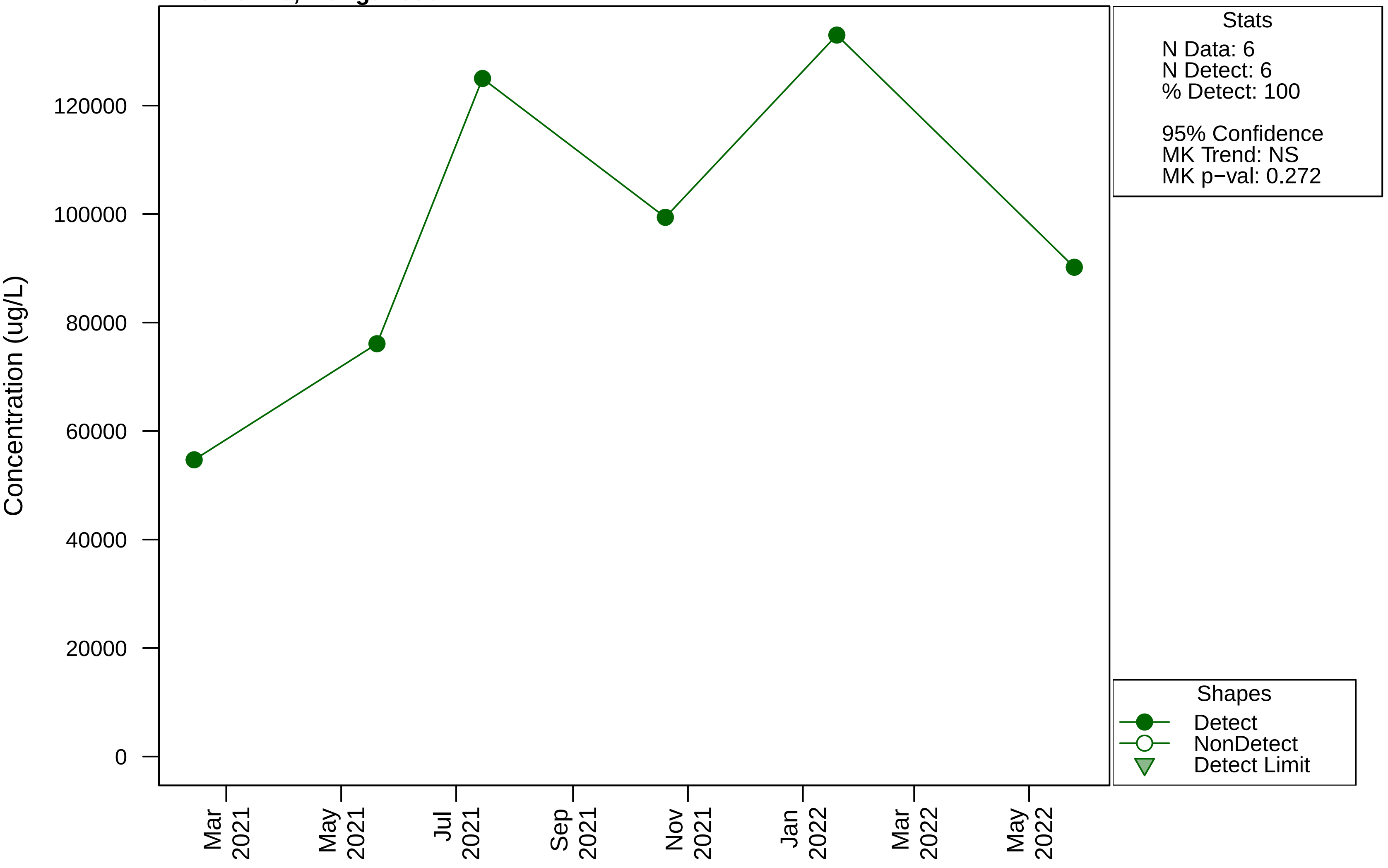


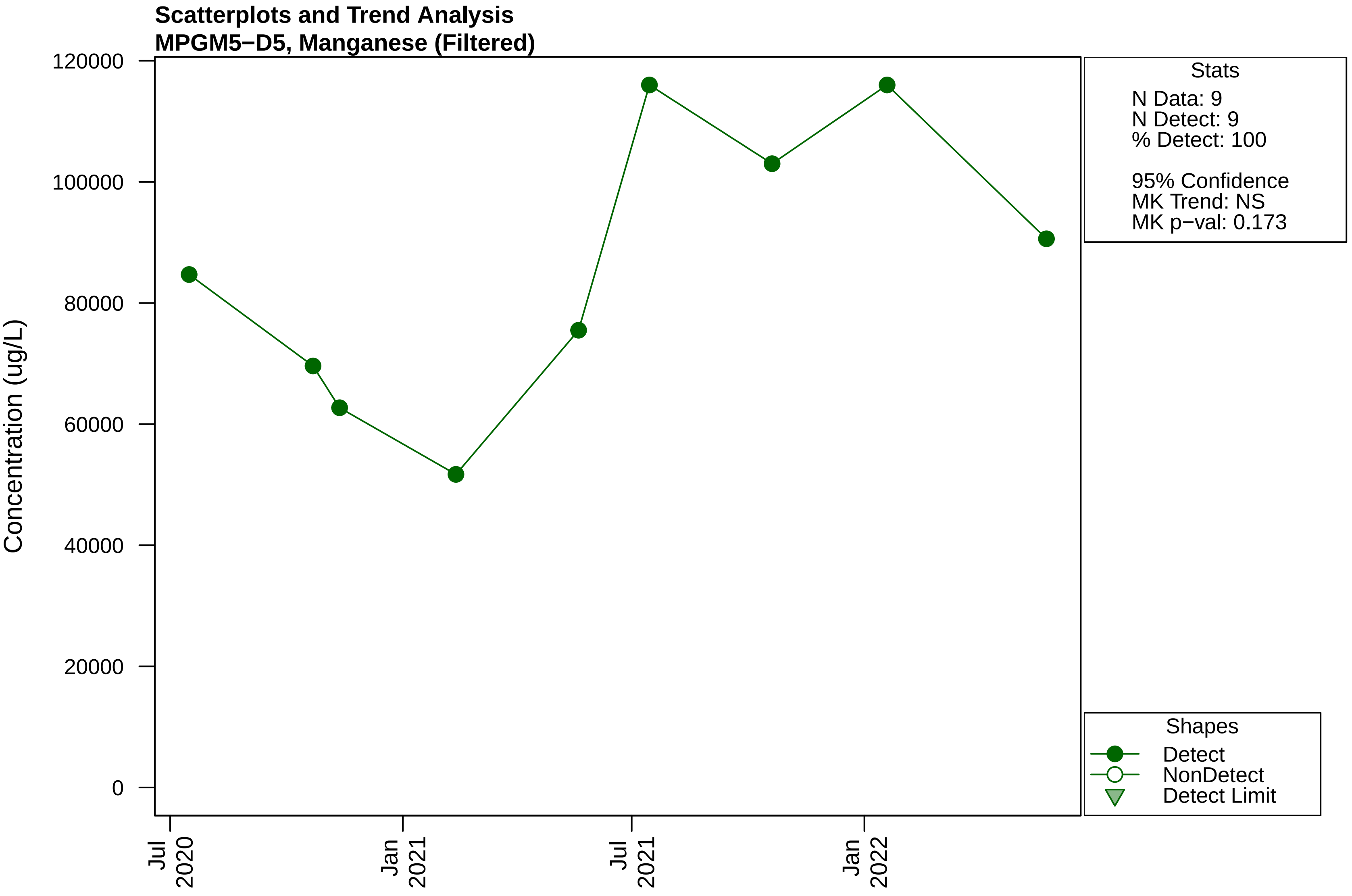


Scatterplots and Trend Analysis
MPGM5−D5, Lead
Concentration (ug/L)
0
5
10
15
20
25
30
35
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 7
N Detect: 7
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.069
Shapes
Detect
NonDetect
Detect Limit

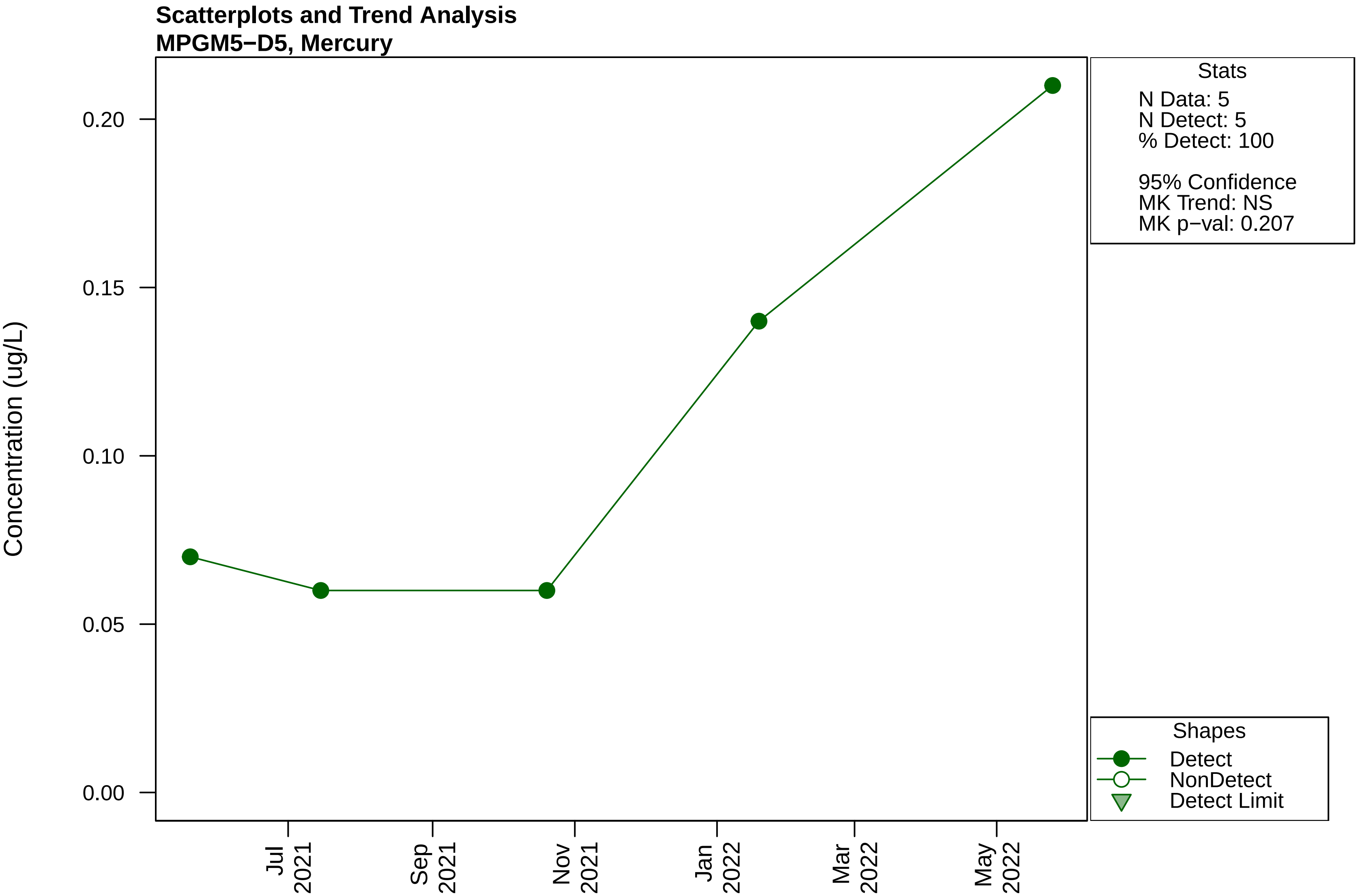

Scatterplots and Trend Analysis
MPGM5−D5, Magnesium
Concentration (mg/L)
1500
1000
500
0
Jul 2020
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 9
N Detect: 9
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.249
Shapes
Detect
NonDetect
Detect Limit

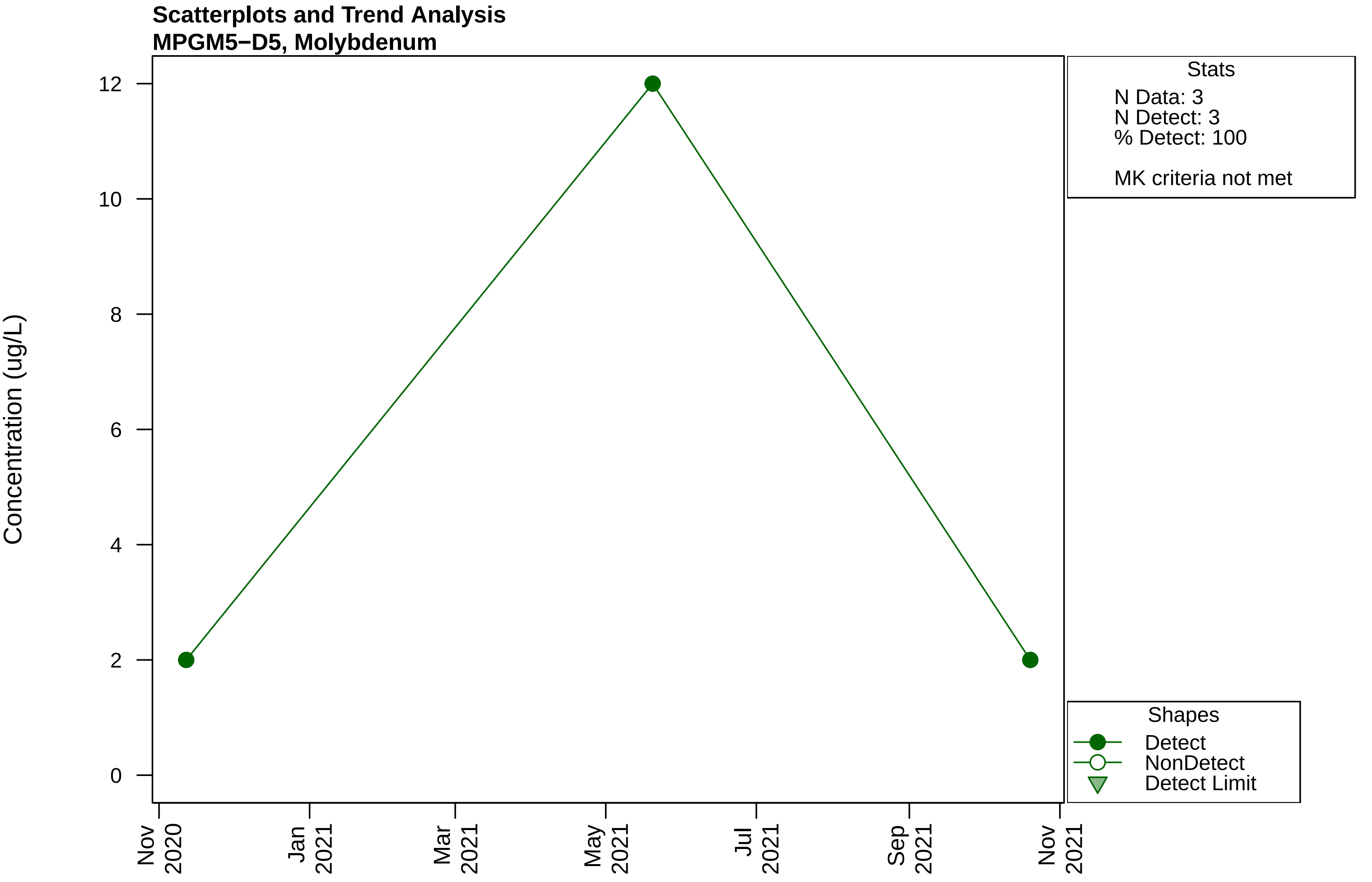
Scatterplots and Trend Analysis
MPGM5−D5, Manganese



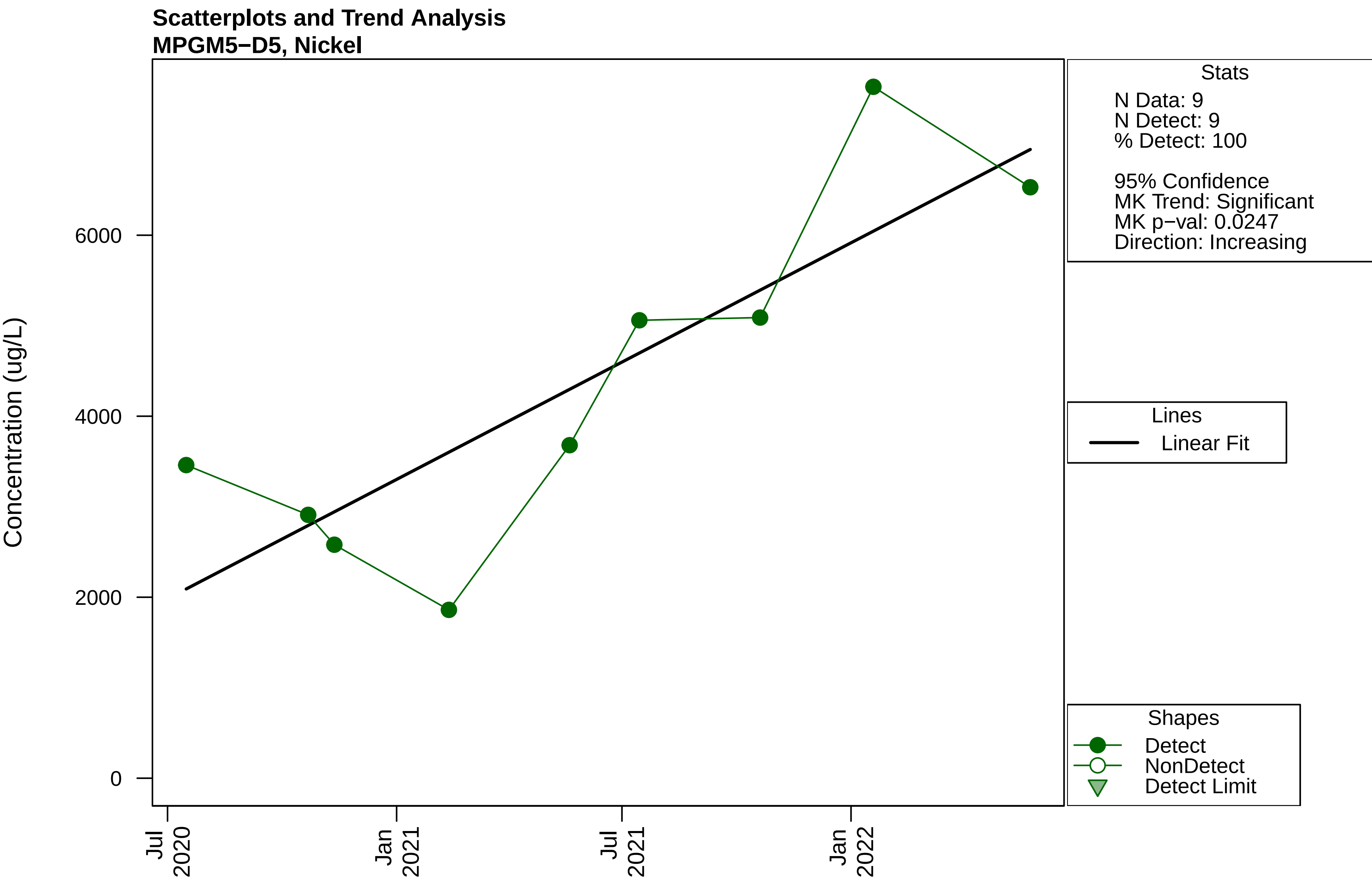


Scatterplots and Trend Analysis
MPGM5−D5, Manganese (Filtered)
Concentration (ug/L)
120000
100000
80000
60000
40000
20000
0
Jul 2020
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 9
N Detect: 9
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.173
Shapes
Detect
NonDetect
Detect Limit

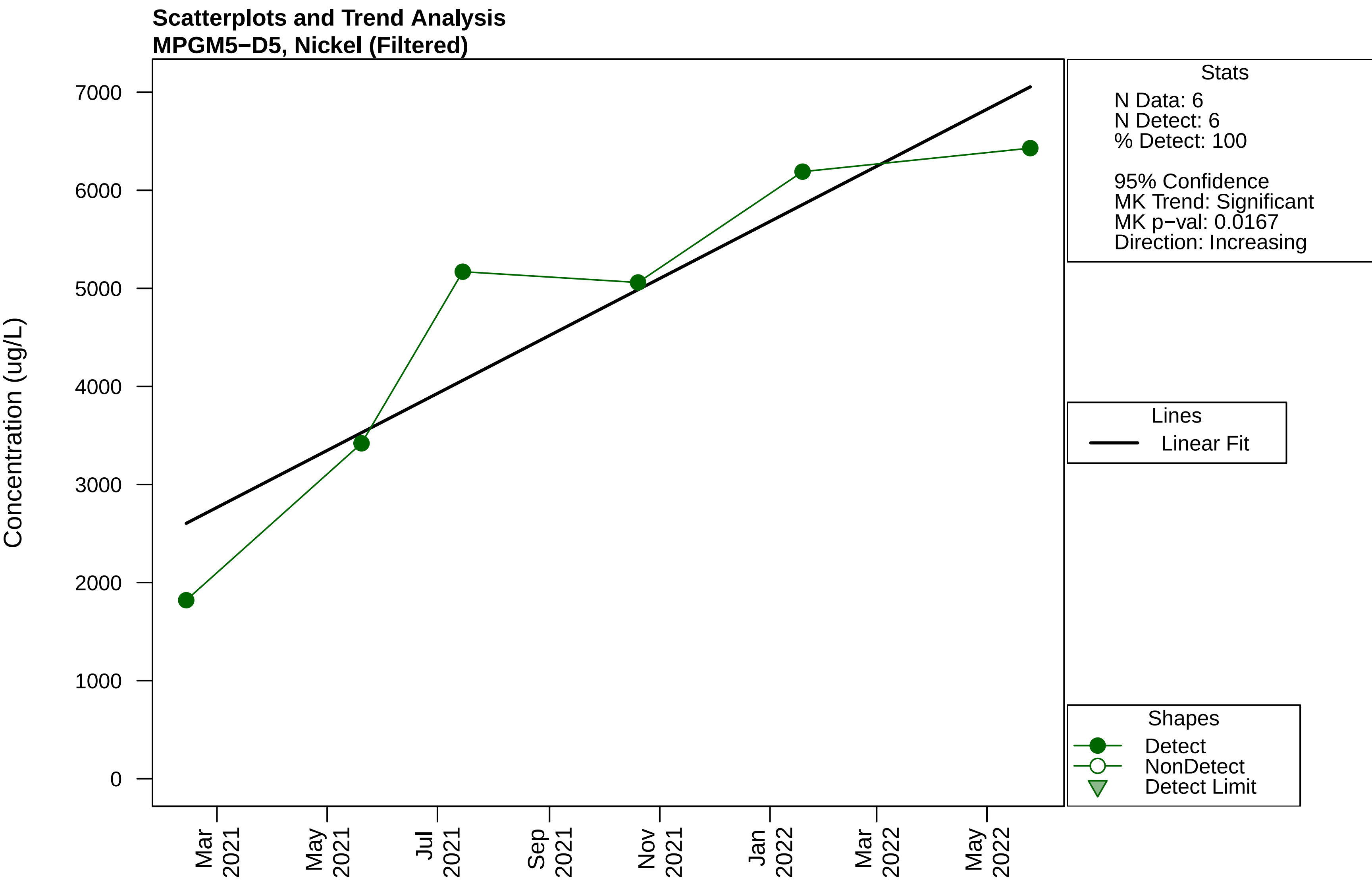

Scatterplots and Trend Analysis
MPGM5−D5, Mercury
Concentration (ug/L)
0.00
0.05
0.10
0.15
0.20
Jul 2021
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 5
N Detect: 5
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.207
Shapes
Detect
NonDetect
Detect Limit



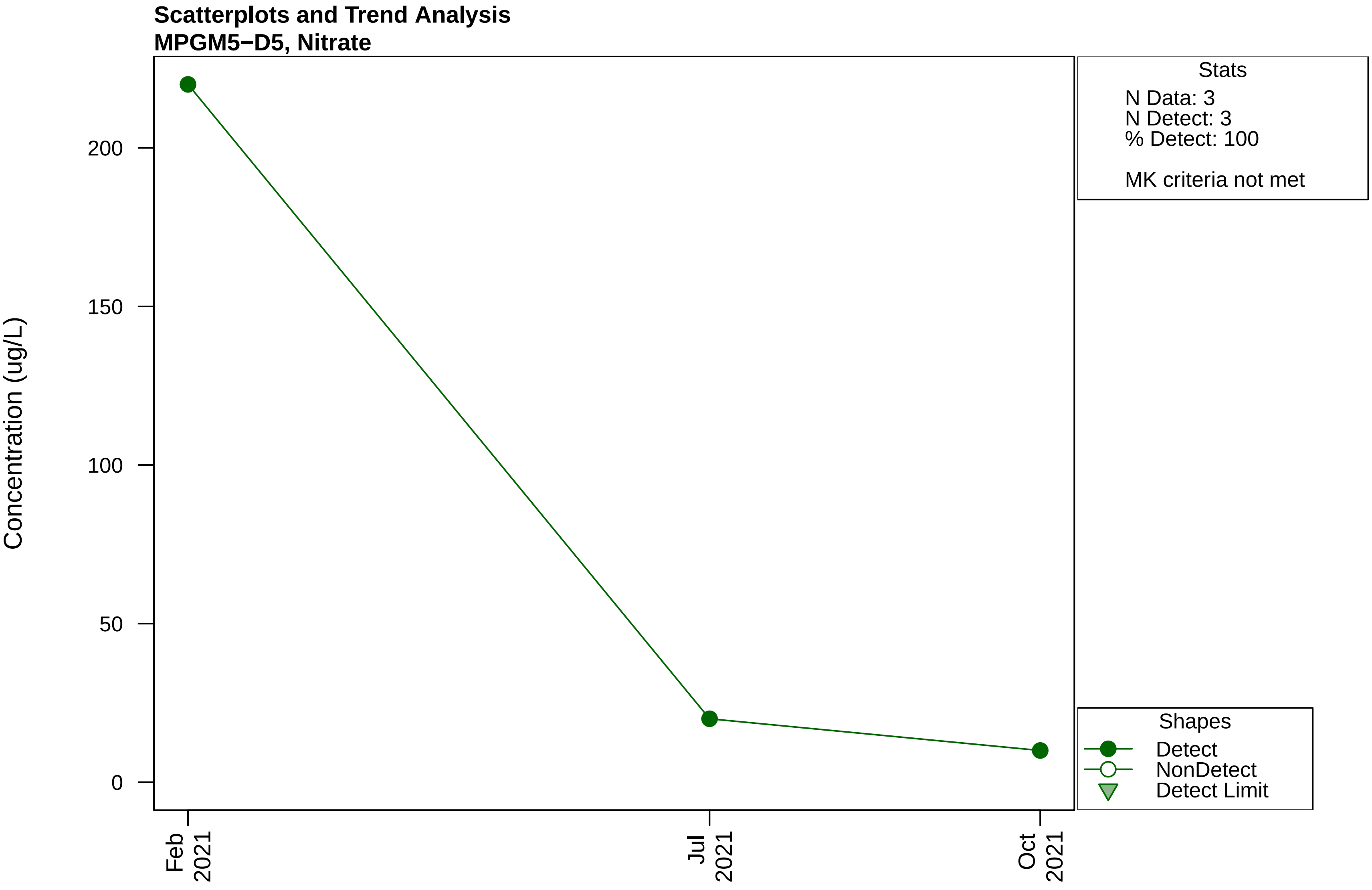
Scatterplots and Trend Analysis
MPGM5−D5, Molybdenum
Concentration (ug/L)
0
2
4
6
8
10
12
Nov 2020
Jan 2021
Mar 2021
May 2021
Jul 2021
Sep 2021
Nov 2021
Stats
N Data: 3
N Detect: 3
% Detect: 100
MK criteria not met
Shapes
Detect
NonDetect
Detect Limit

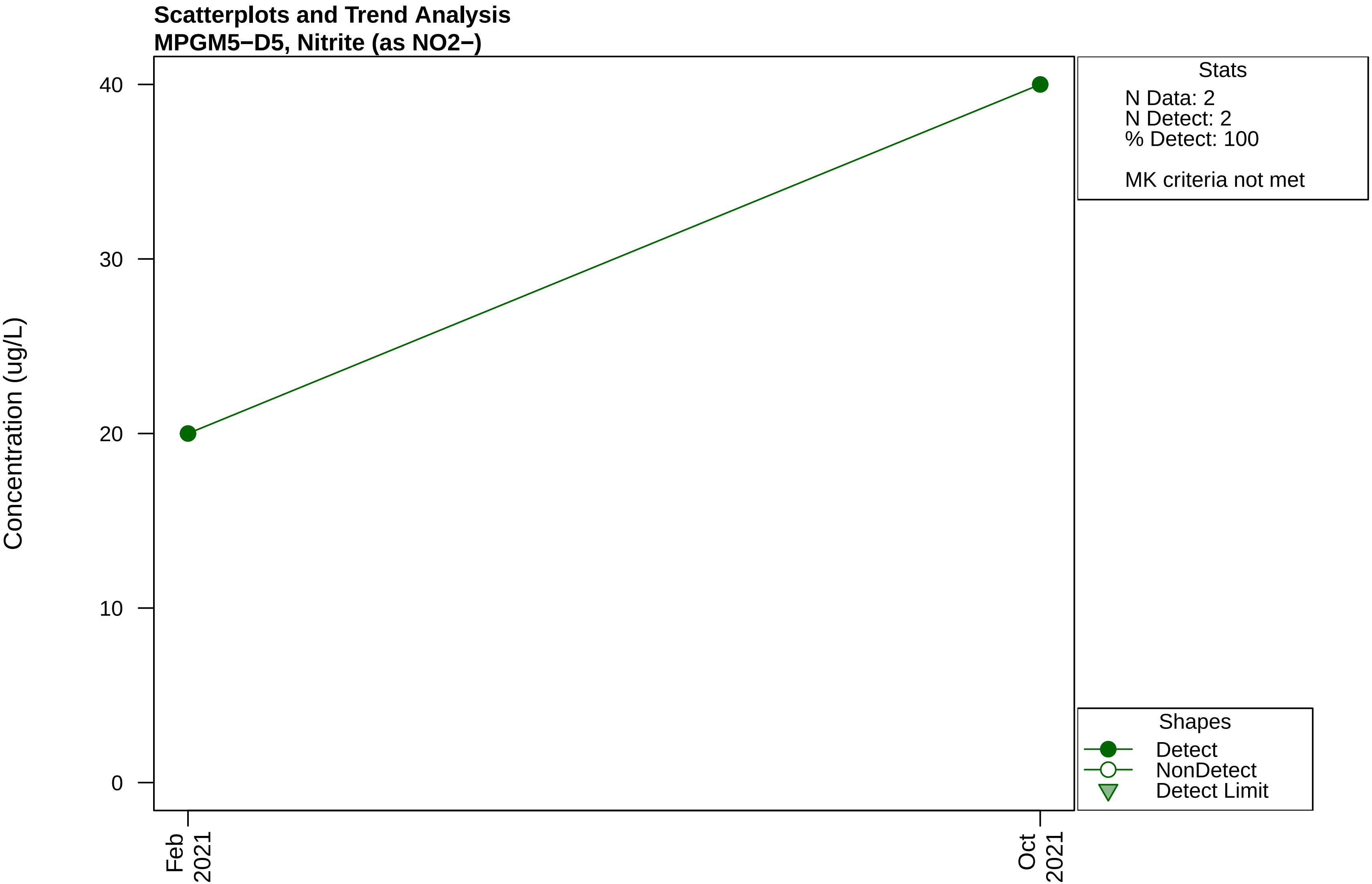


Scatterplots and Trend Analysis
MPGM5−D5, Nickel
Concentration (ug/L)
0
2000
4000
6000
Jul 2020
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 9
N Detect: 9
% Detect: 100
95% Confidence
MK Trend: Significant
MK p−val: 0.0247
Direction: Increasing
Lines
Linear Fit
Shapes
Detect
NonDetect
Detect Limit



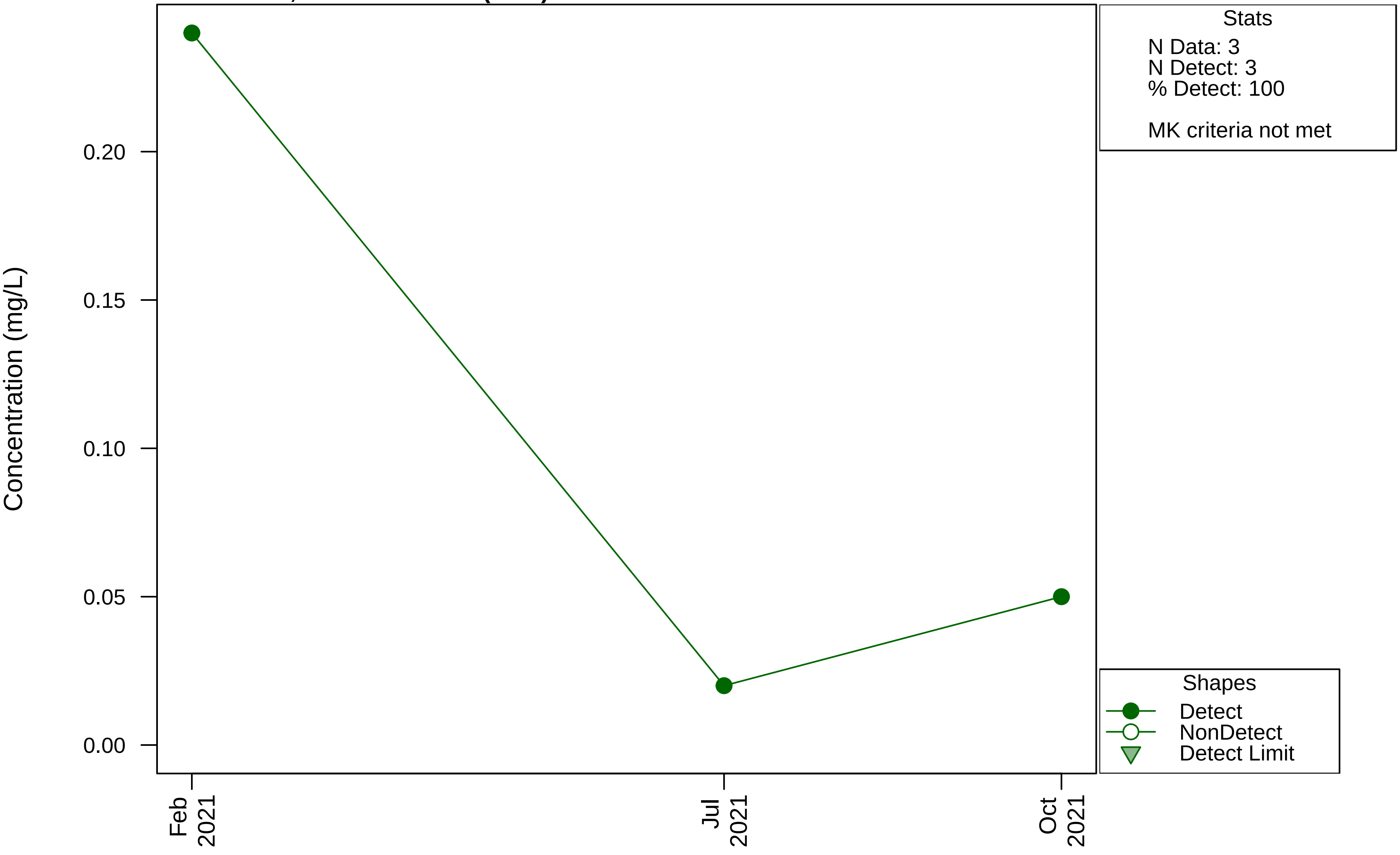
Scatterplots and Trend Analysis
MPGM5−D5, Nickel (Filtered)
Concentration (ug/L)
7000
6000
5000
4000
3000
2000
1000
0
Mar 2021
May 2021
Jul 2021
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 6
N Detect: 6
% Detect: 100
95% Confidence
MK Trend: Significant
MK p−val: 0.0167
Direction: Increasing
Lines
Linear Fit
Shapes
Detect
NonDetect
Detect Limit


Scatterplots and Trend Analysis
MPGM5−D5, Nitrate
Concentration (ug/L)
200
150
100
50
0
Feb 2021
Jul 2021
Oct 2021
Stats
N Data: 3
N Detect: 3
% Detect: 100
MK criteria not met
Shapes
Detect
NonDetect
Detect Limit

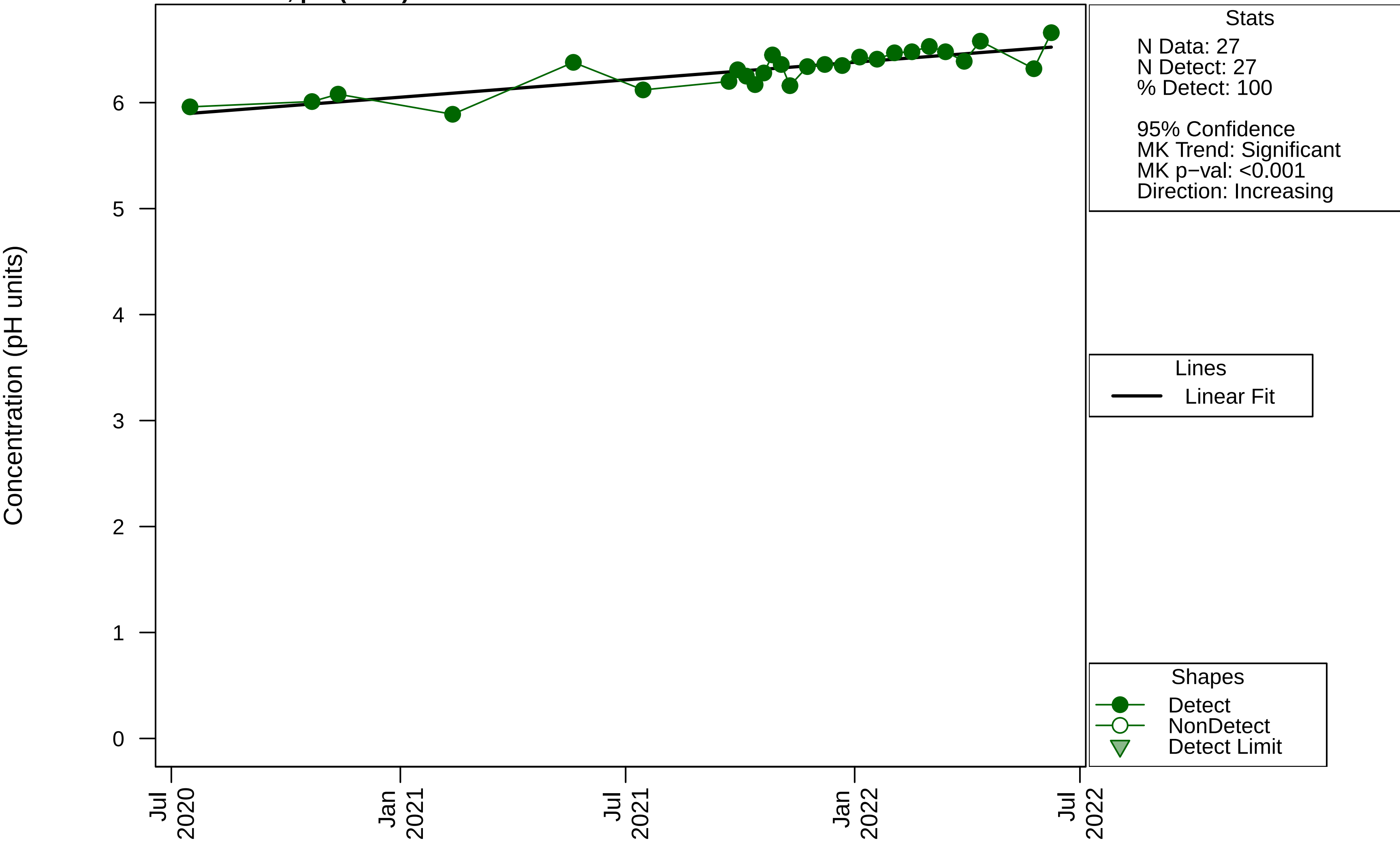


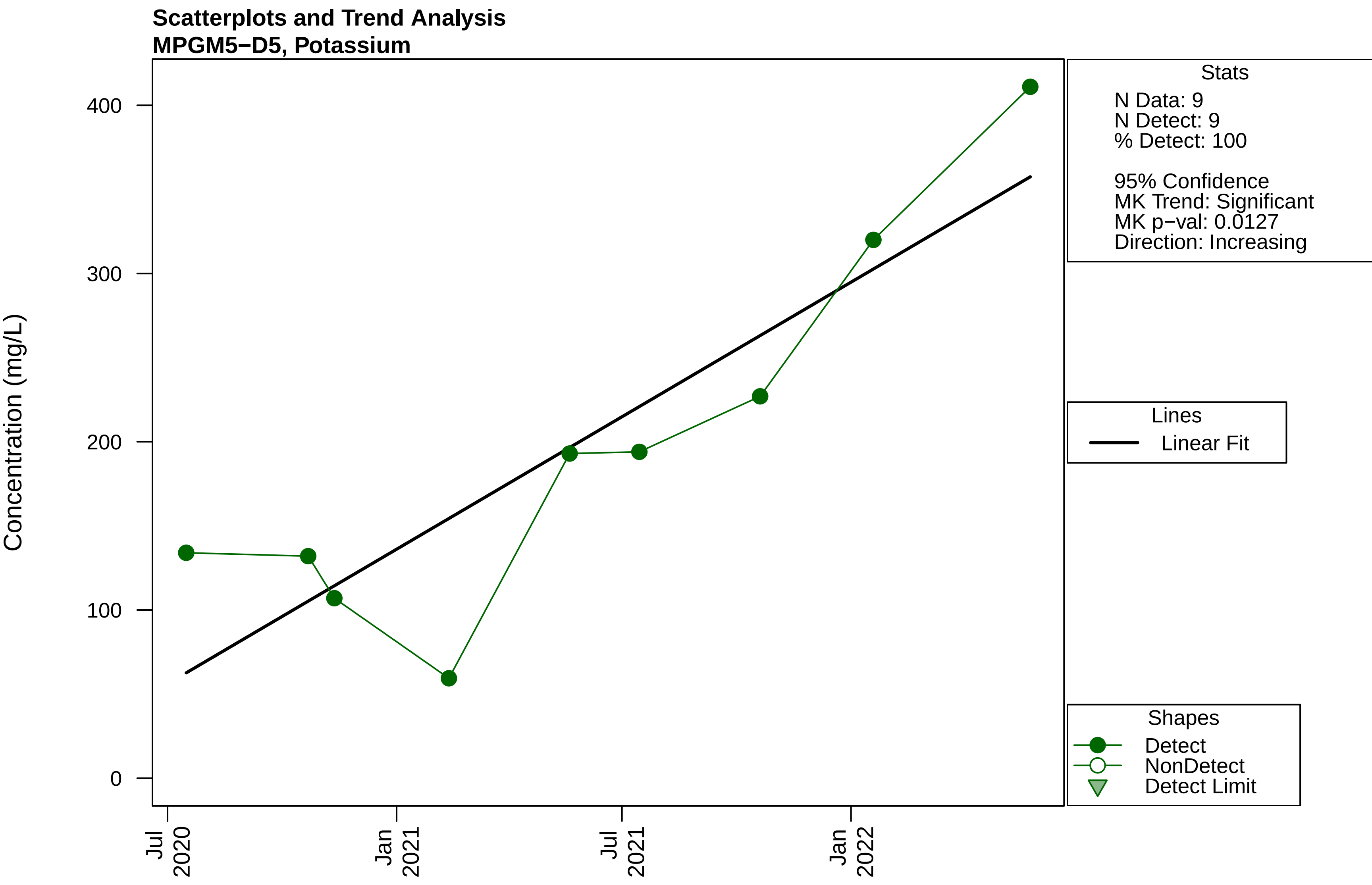
Scatterplots and Trend Analysis
MPGM5−D5, Nitrite (as NO2−)
Concentration (ug/L)
0
10
20
30
40
Feb 2021
Oct 2021
Stats
N Data: 2
N Detect: 2
% Detect: 100
MK criteria not met
Shapes
Detect
NonDetect
Detect Limit

Scatterplots and Trend Analysis
MPGM5−D5, Nitrite + Nitrate (as N)

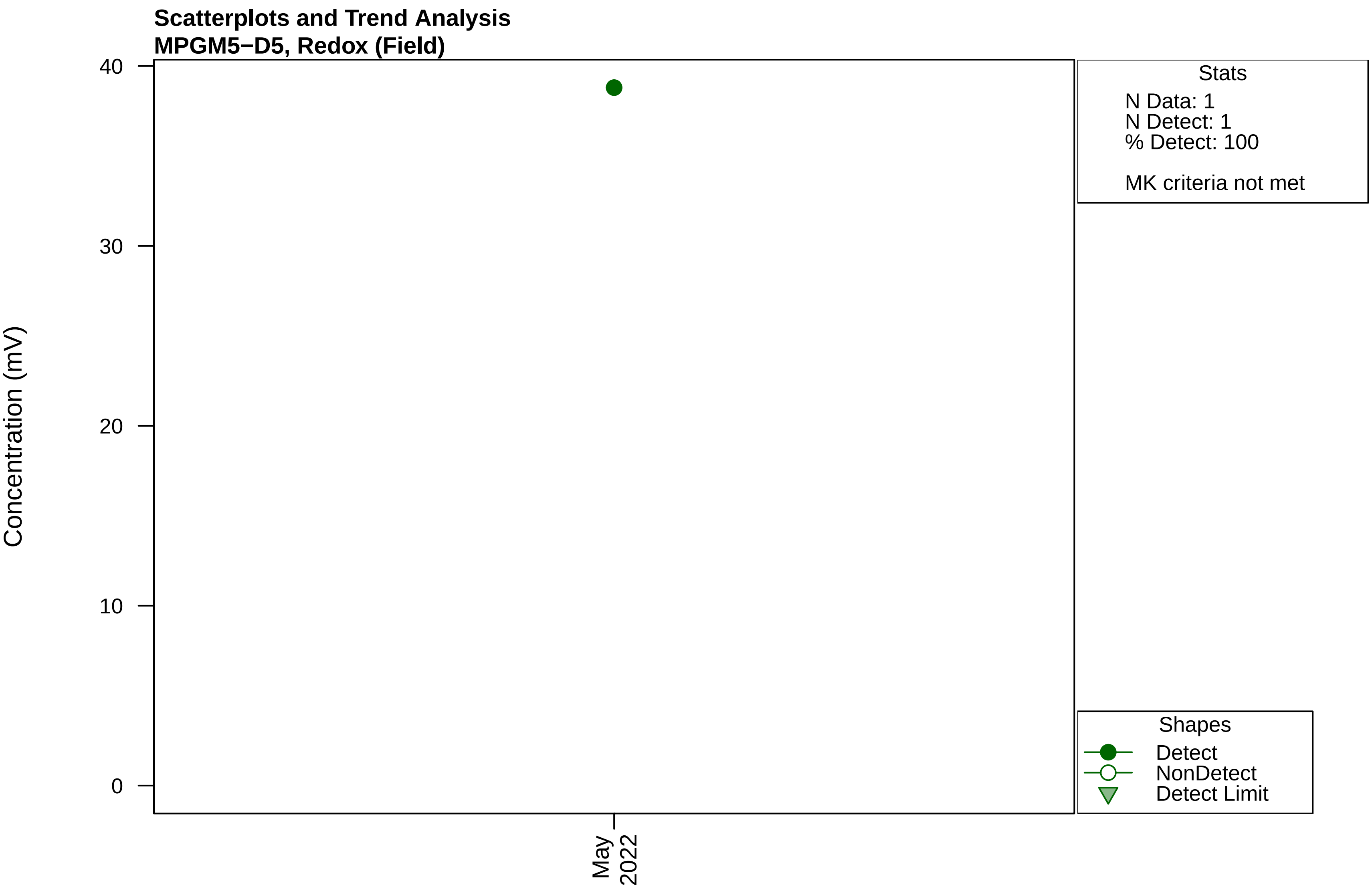


Scatterplots and Trend Analysis
MPGM5−D5, pH (Field)

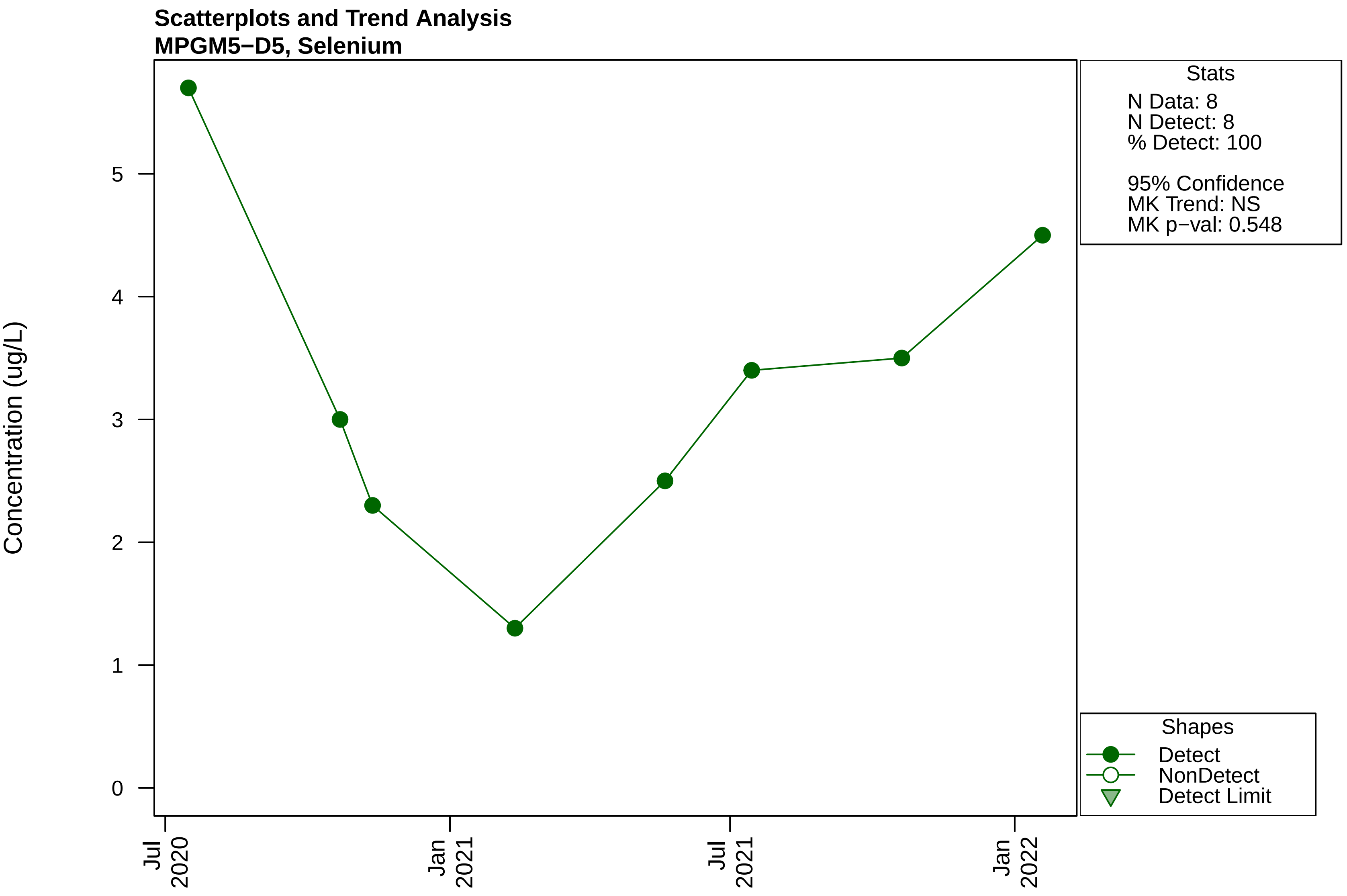


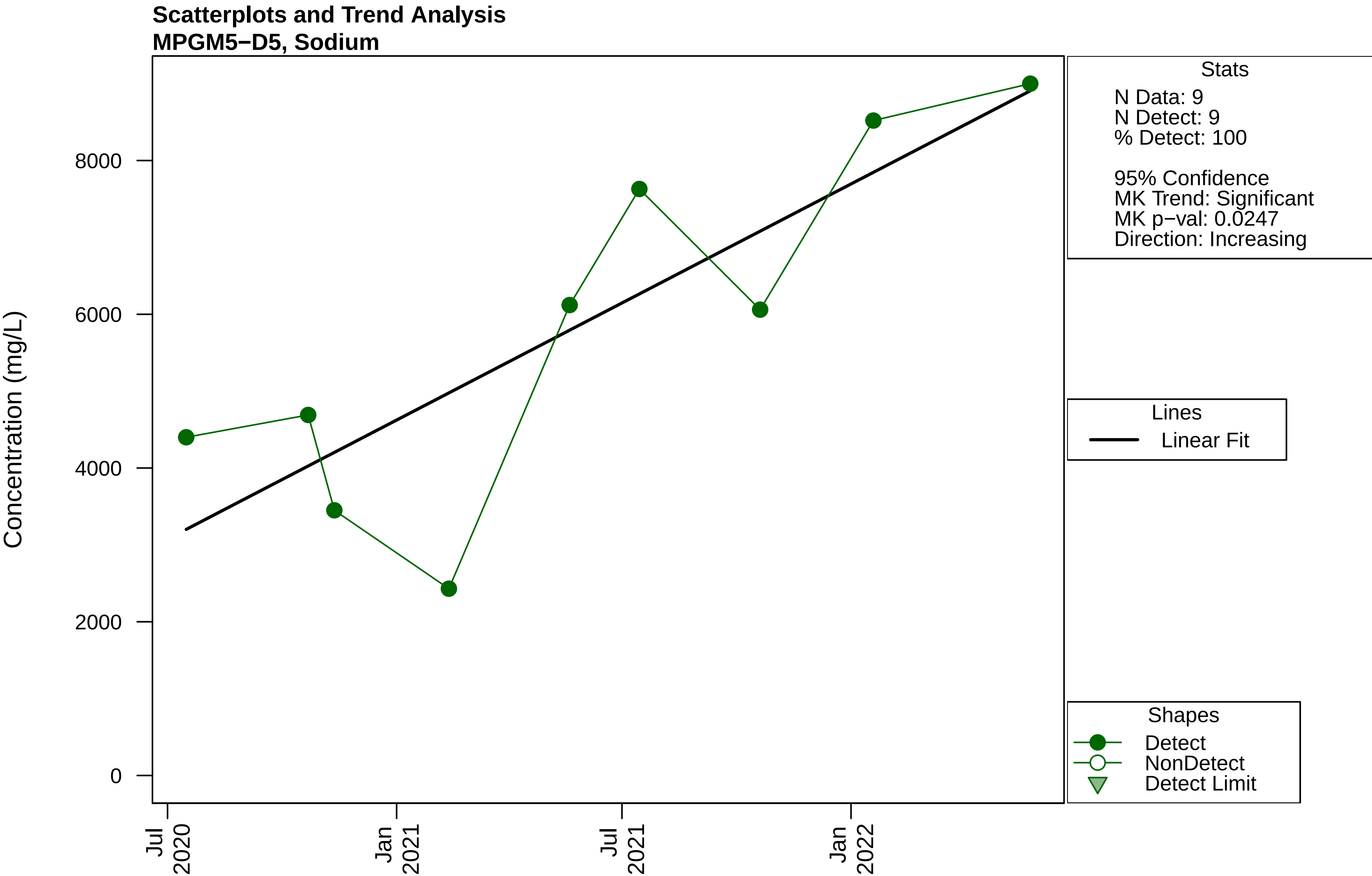


Scatterplots and Trend Analysis
MPGM5−D5, Potassium
Concentration (mg/L)
0
100
200
300
400
Jul 2020
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 9
N Detect: 9
% Detect: 100
95% Confidence
MK Trend: Significant
MK p−val: 0.0127
Direction: Increasing
Lines
Linear Fit
Shapes
Detect
NonDetect
Detect Limit



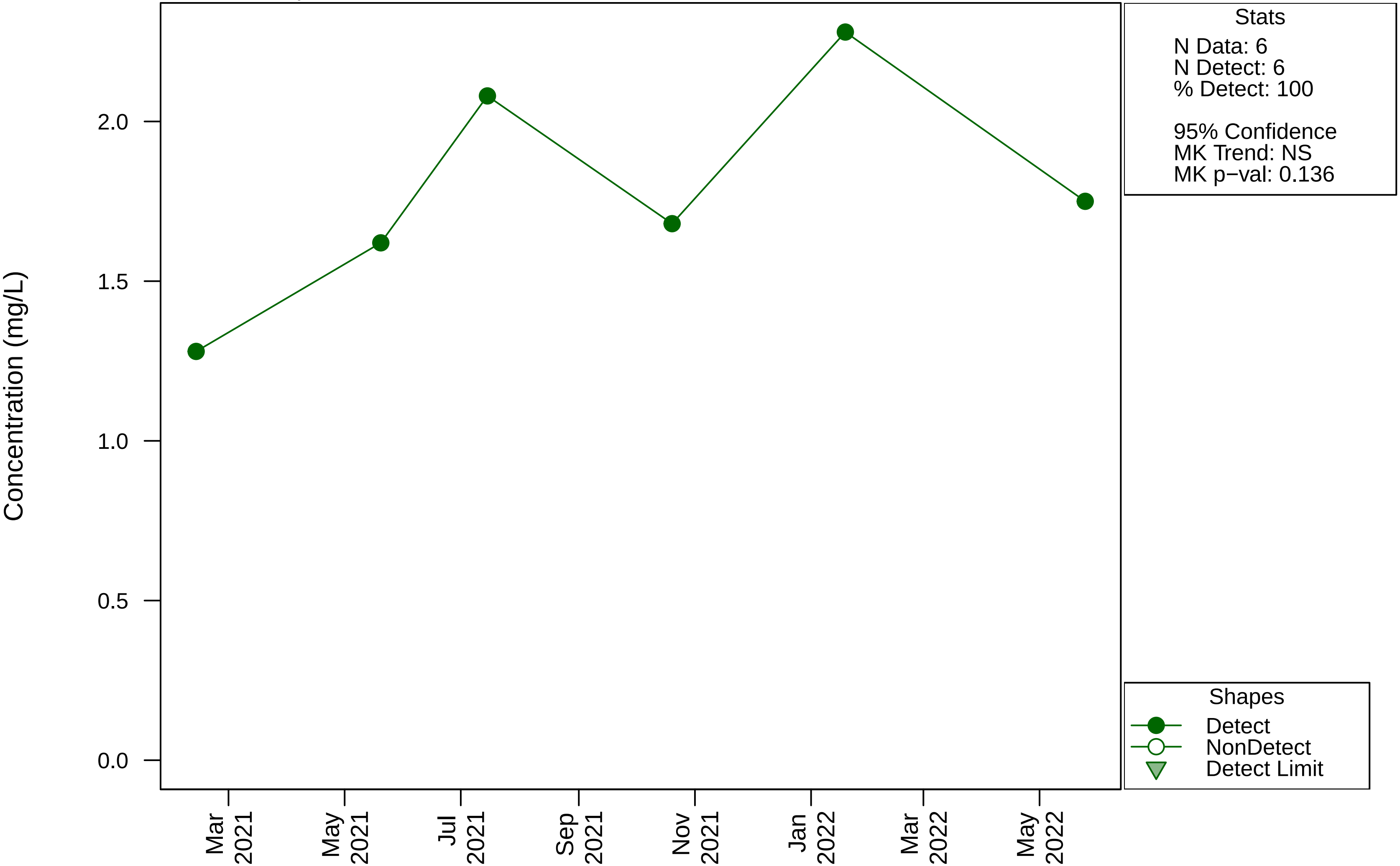
Scatterplots and Trend Analysis
MPGM5−D5, Redox (Field)
Concentration (mV)
0
10
20
30
40
May 2022
Stats
N Data: 1
N Detect: 1
% Detect: 100
MK criteria not met
Shapes
Detect
NonDetect
Detect Limit

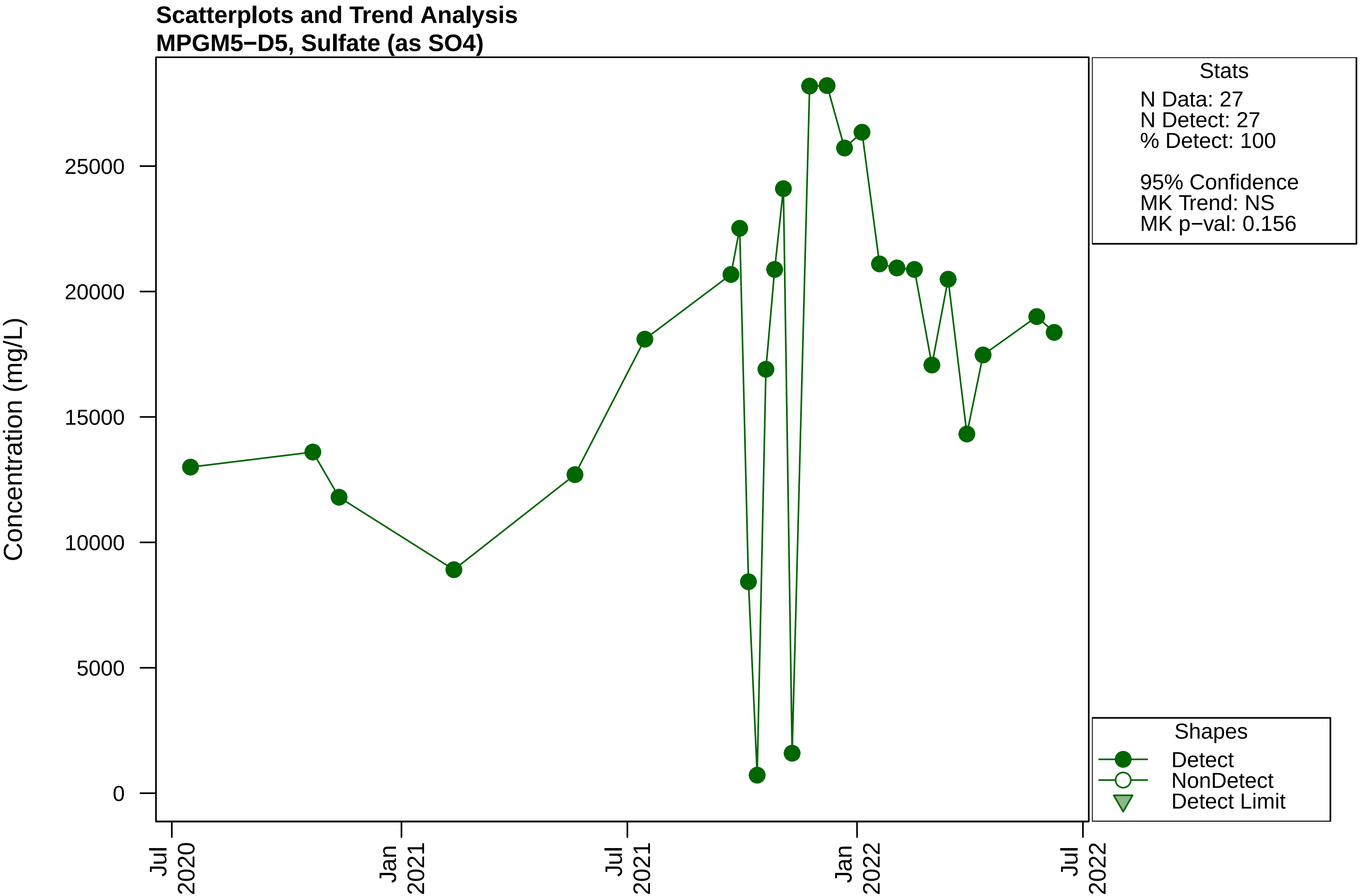

Scatterplots and Trend Analysis
MPGM5−D5, Selenium
Concentration (ug/L)
0
1
2
3
4
5
Jul 2020
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 8
N Detect: 8
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.548
Shapes
Detect
NonDetect
Detect Limit



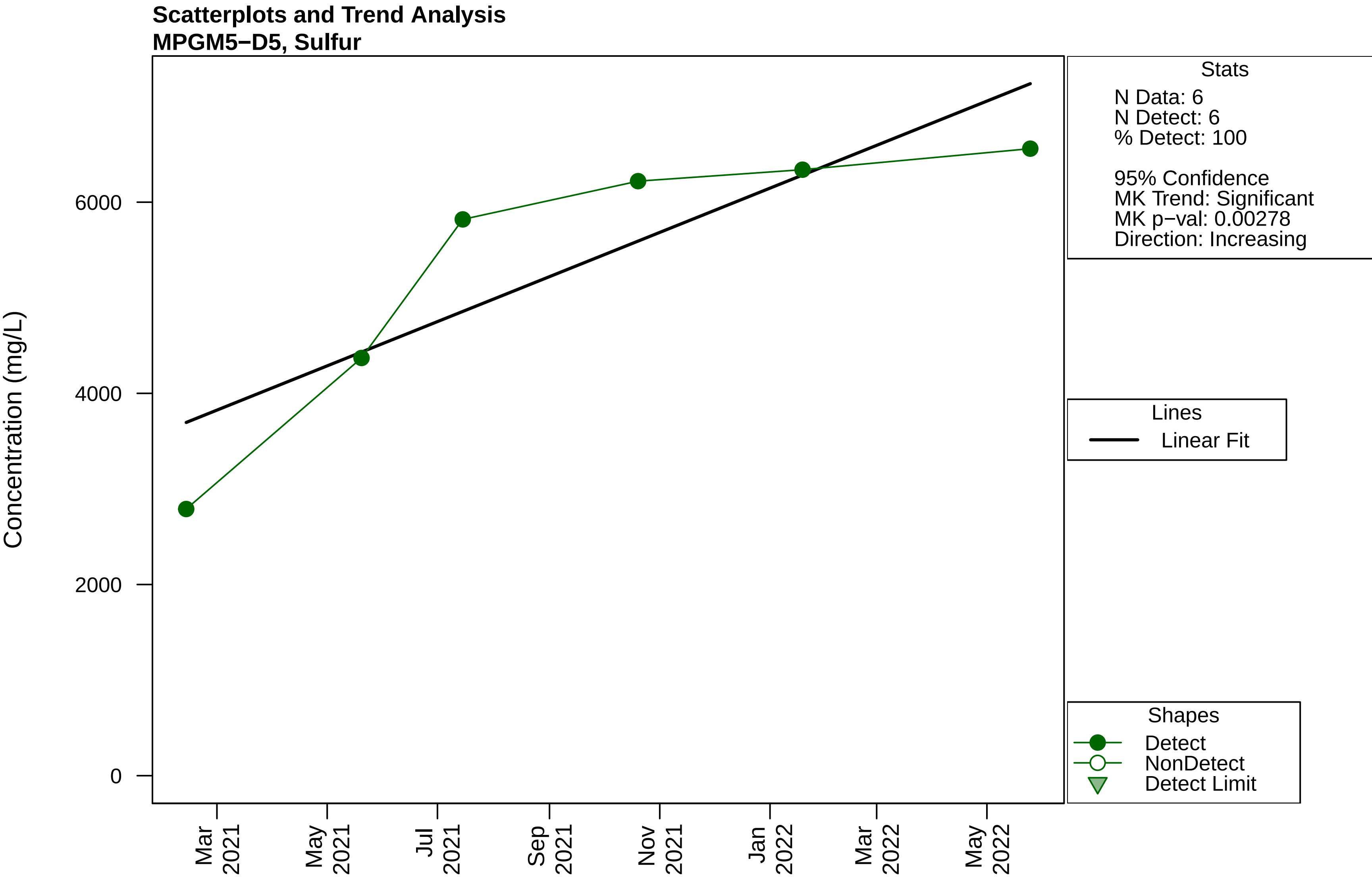
Scatterplots and Trend Analysis
MPGM5−D5, Sodium
Concentration (mg/L)
0
2000
4000
6000
8000
Jul 2020
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 9
N Detect: 9
% Detect: 100
95% Confidence
MK Trend: Significant
MK p−val: 0.0247
Direction: Increasing
Lines
Linear Fit
Shapes
Detect
NonDetect
Detect Limit

Scatterplots and Trend Analysis
MPGM5−D5, Strontium

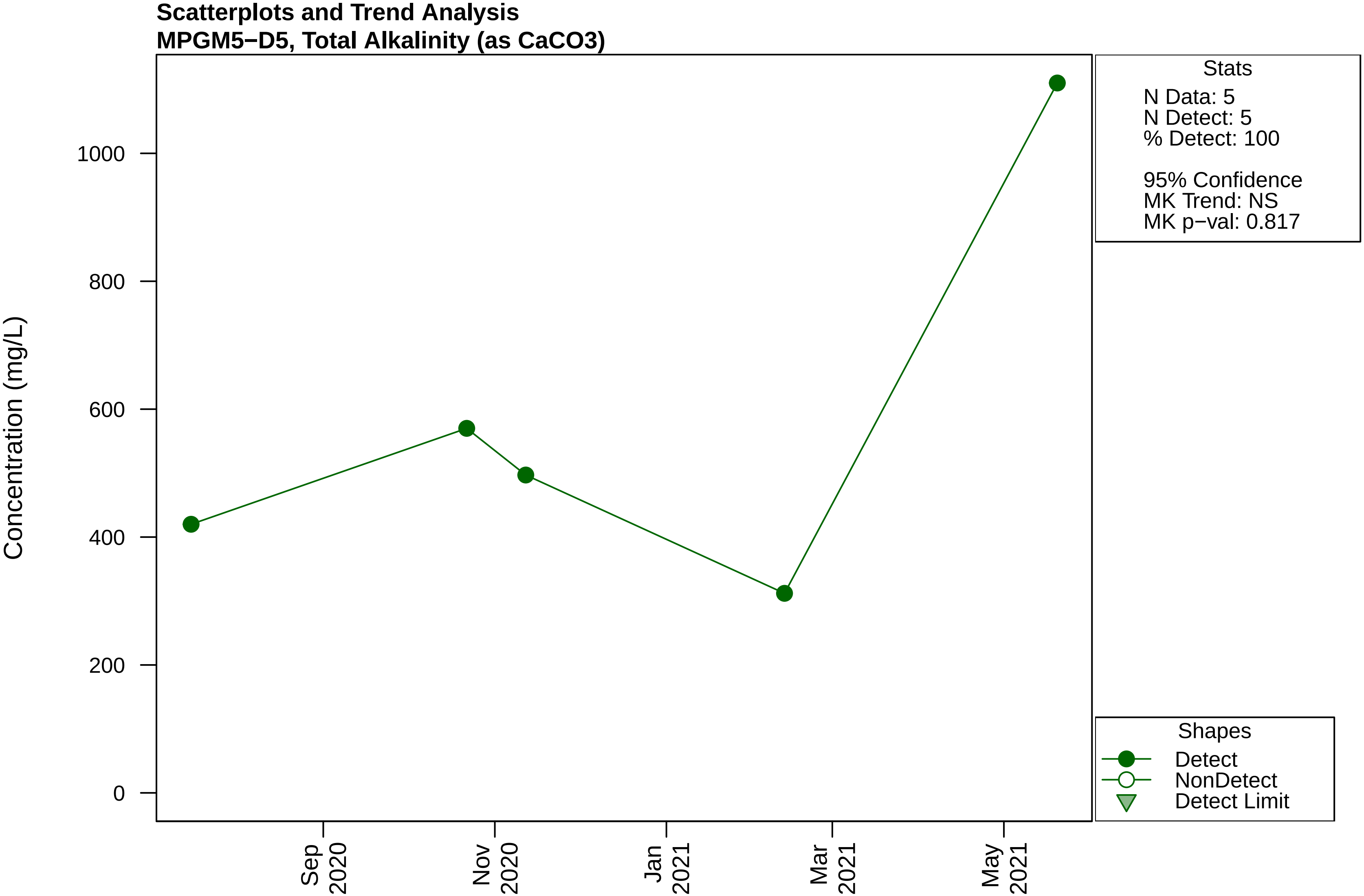




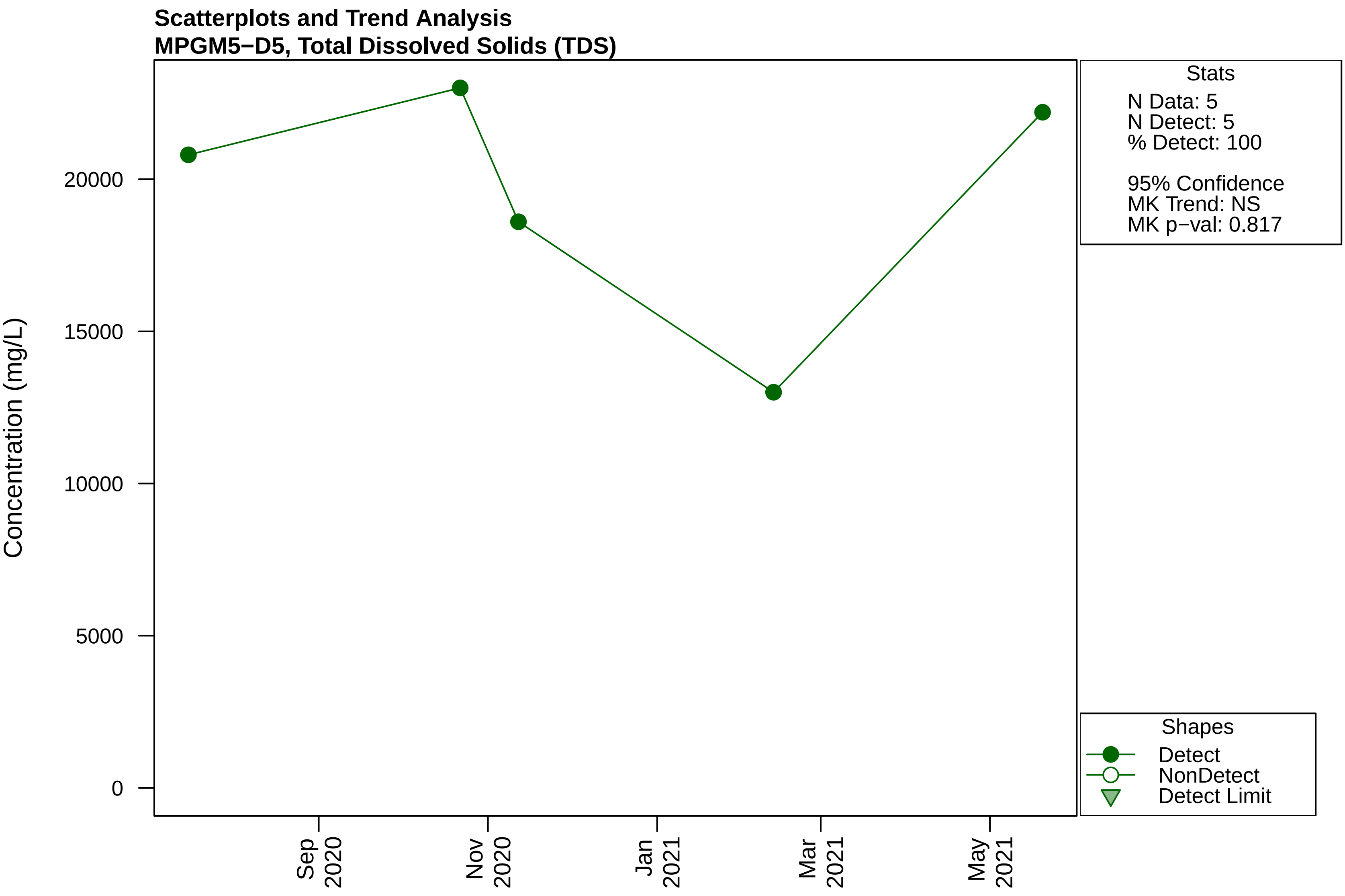
Scatterplots and Trend Analysis
MPGM5−D5, Sulfate (as SO4)
Concentration (mg/L)
0
5000
10000
15000
20000
25000
Jul 2020
Jan 2021
Jul 2021
Jan 2022
Jul 2022
Stats
N Data: 27
N Detect: 27
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.156
Shapes
Detect
NonDetect
Detect Limit

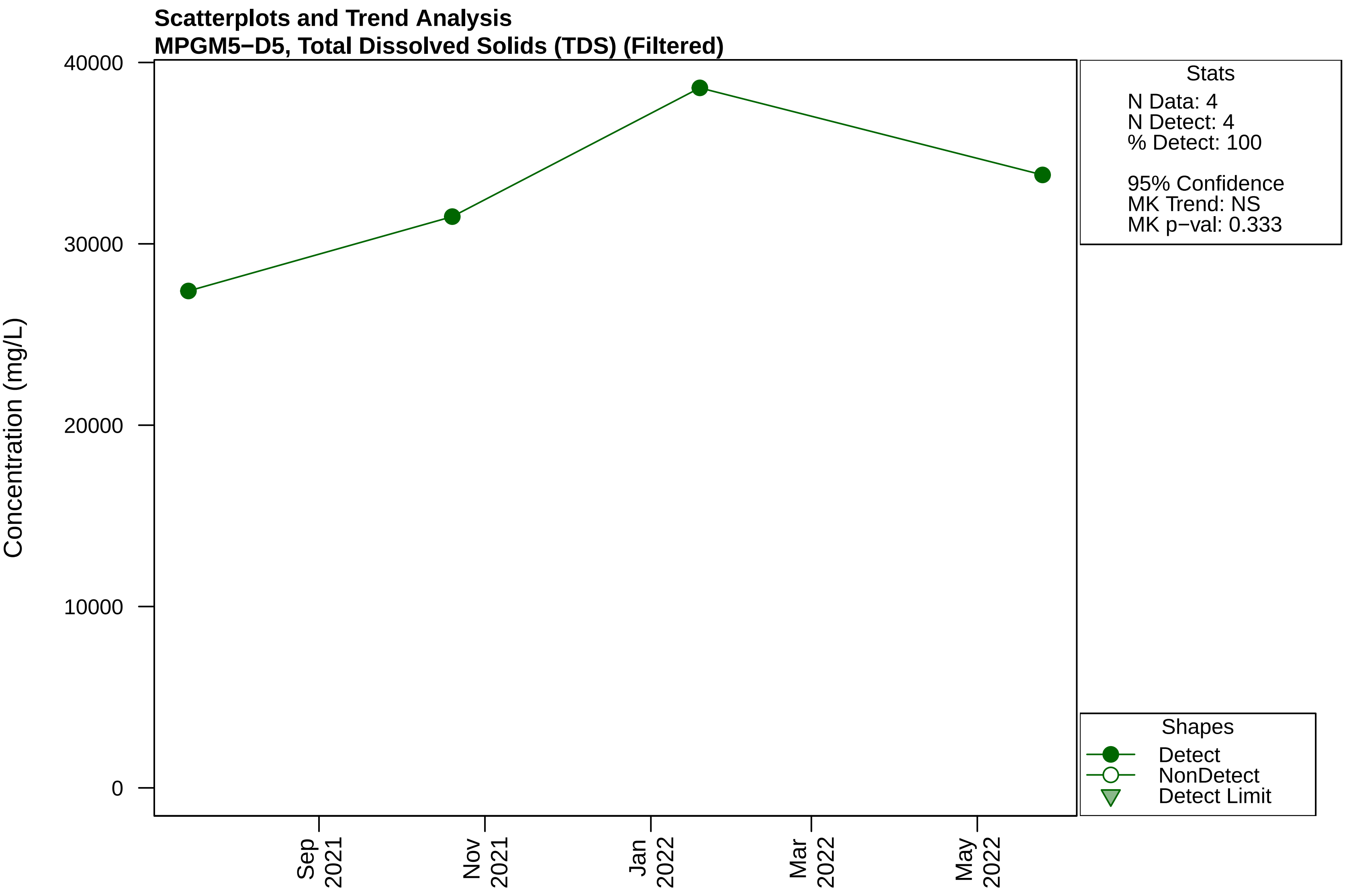


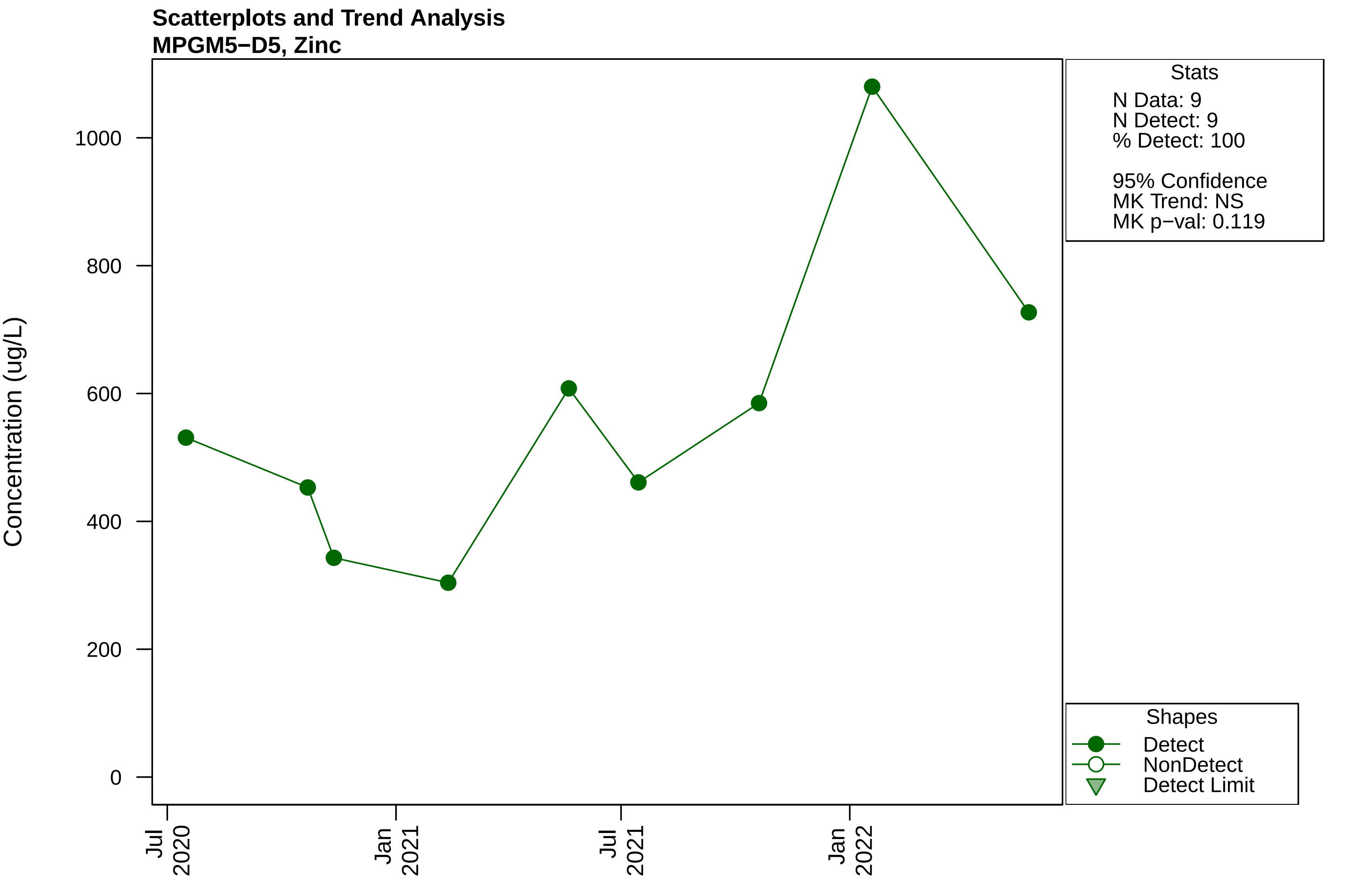
Scatterplots and Trend Analysis
MPGM5−D5, Sulfur
Concentration (mg/L)
0
2000
4000
6000
Mar 2021
May 2021
Jul 2021
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 6
N Detect: 6
% Detect: 100
95% Confidence
MK Trend: Significant
MK p−val: 0.00278
Direction: Increasing
Lines
Linear Fit
Shapes
Detect
NonDetect
Detect Limit



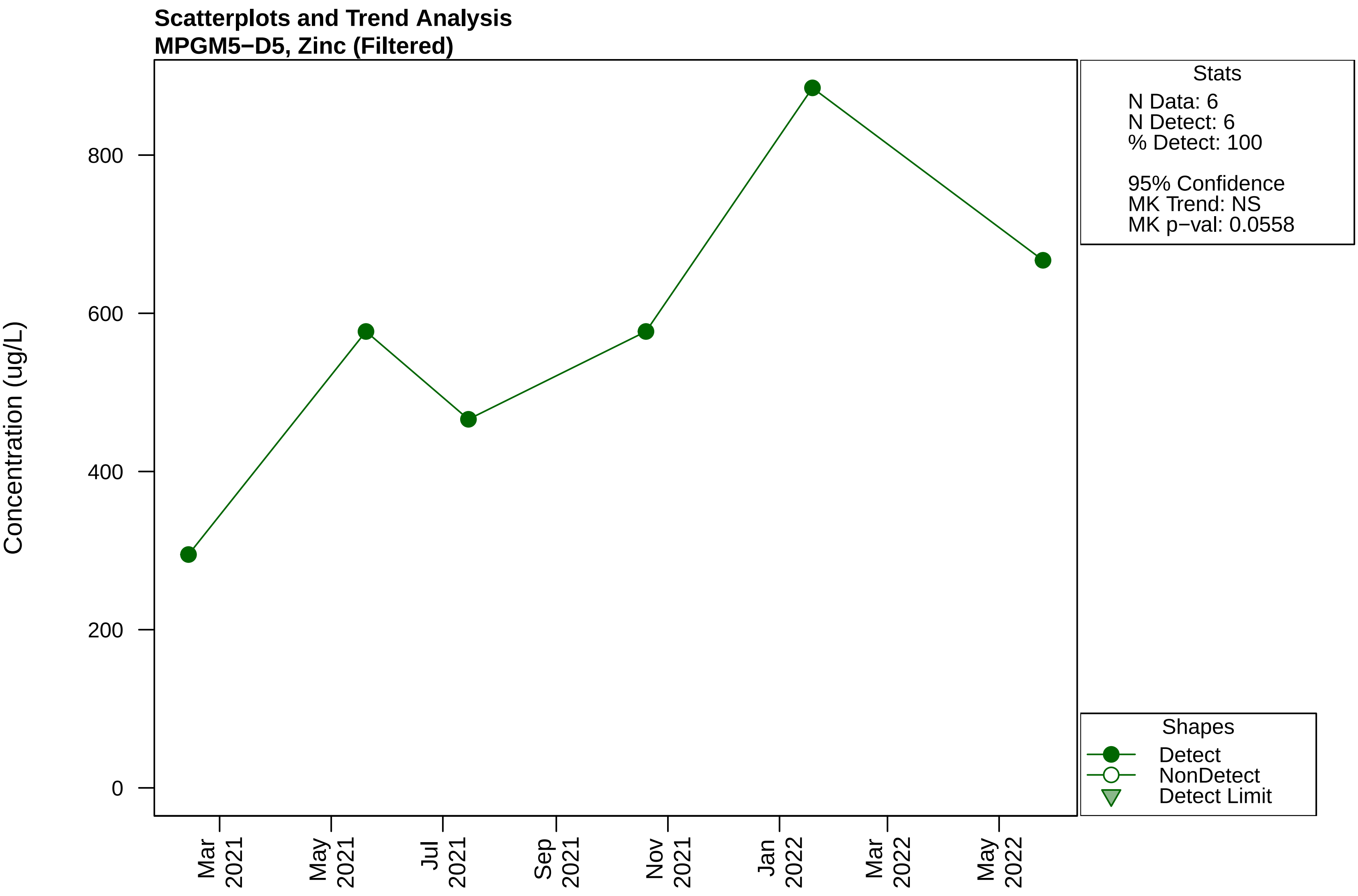
Scatterplots and Trend Analysis
MPGM5−D5, Total Alkalinity (as CaCO3)
Concentration (mg/L)
0
200
400
600
800
1000
Sep 2020
Nov 2020
Jan 2021
Mar 2021
May 2021
Stats
N Data: 5
N Detect: 5
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.817
Shapes
Detect
NonDetect
Detect Limit


Scatterplots and Trend Analysis
MPGM5−D5, Total Dissolved Solids (TDS)
Concentration (mg/L)
0
5000
10000
15000
20000
Sep 2020
Nov 2020
Jan 2021
Mar 2021
May 2021
Stats
N Data: 5
N Detect: 5
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.817
Shapes
Detect
NonDetect
Detect Limit


Scatterplots and Trend Analysis
MPGM5−D5, Total Dissolved Solids (TDS) (Filtered)
Concentration (mg/L)
40000
30000
20000
10000
0
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 4
N Detect: 4
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.333
Shapes
Detect
NonDetect
Detect Limit

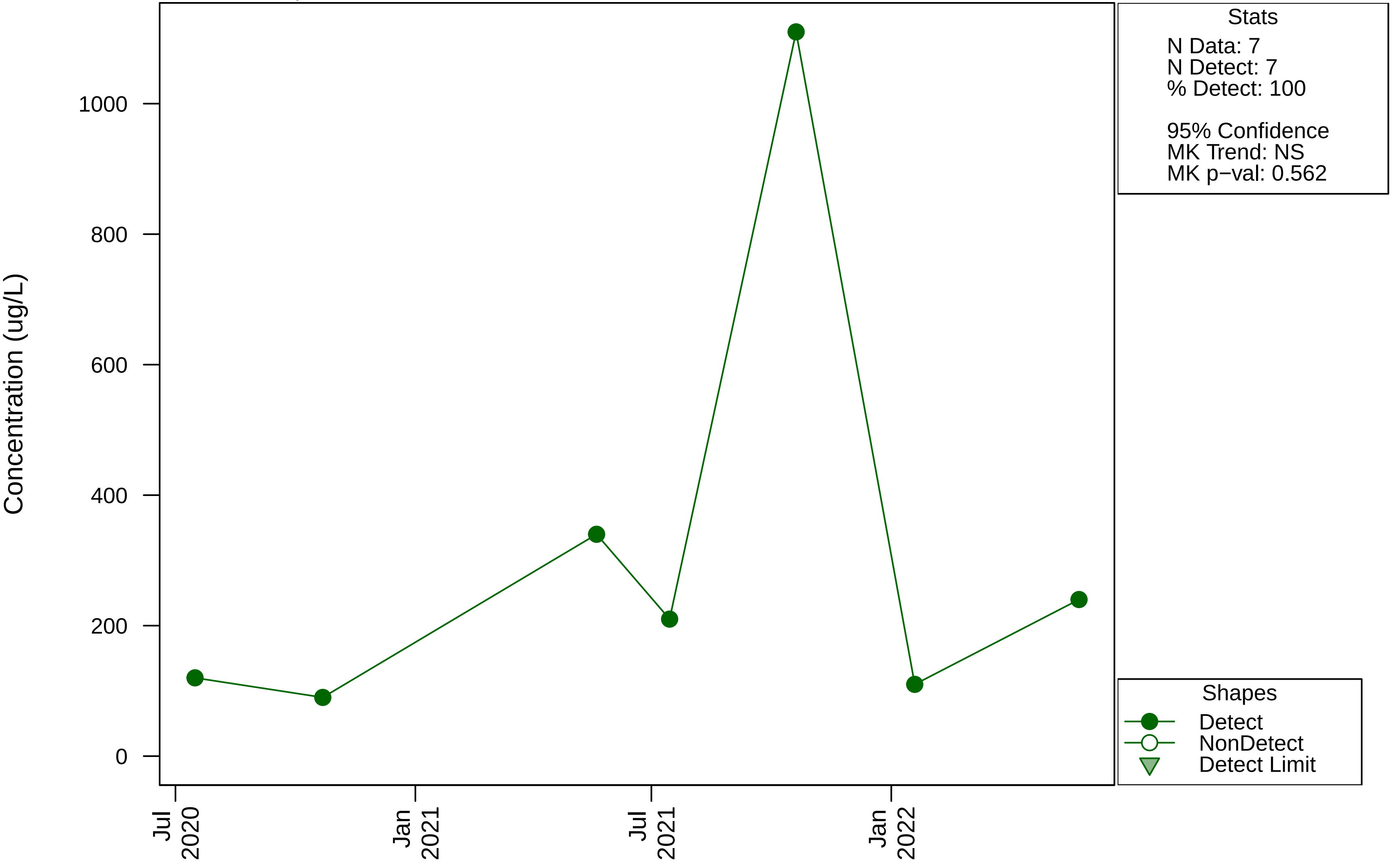


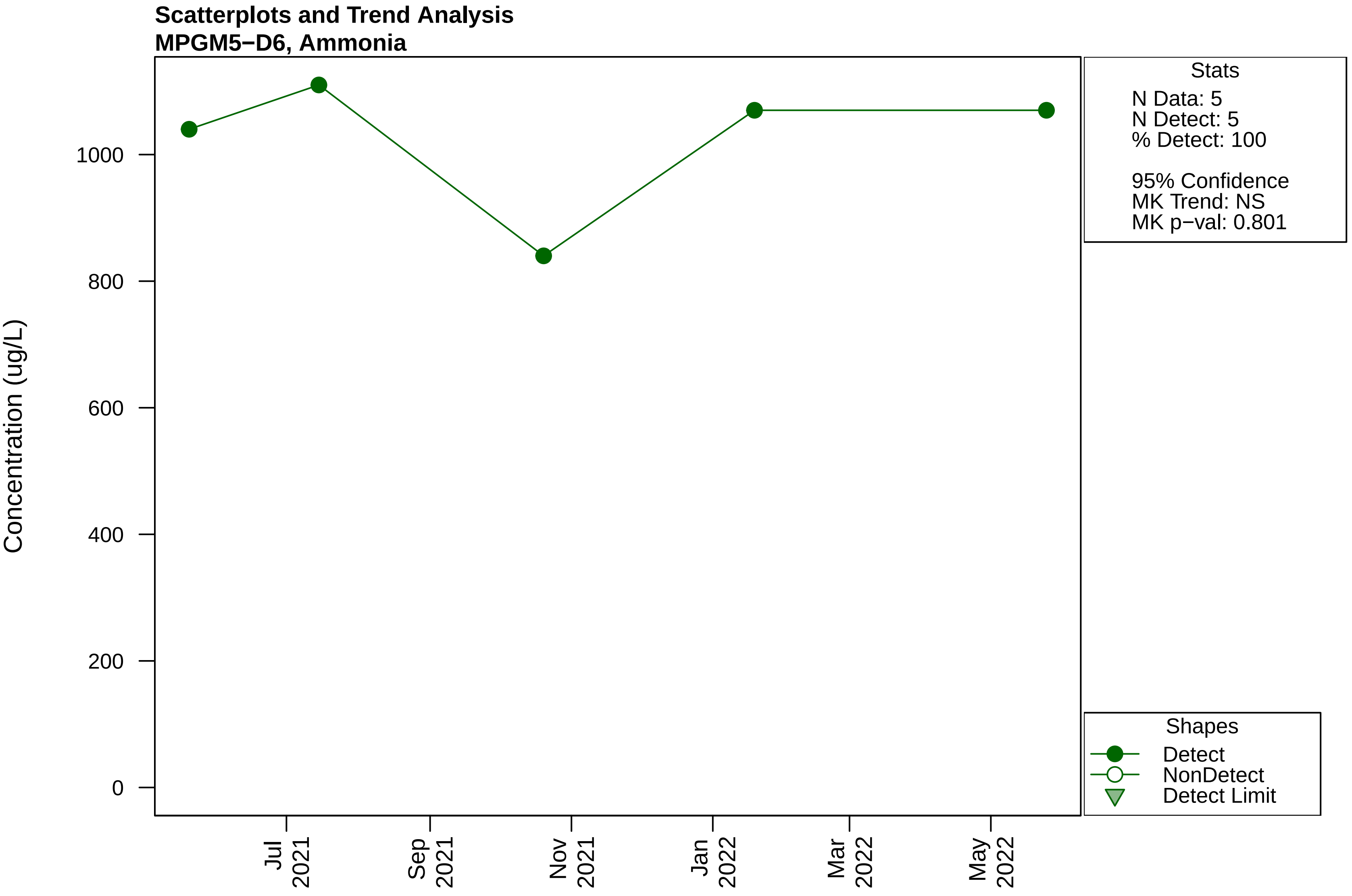
Scatterplots and Trend Analysis
MPGM5−D5, Zinc
Concentration (ug/L)
0
200
400
600
800
1000
Jul 2020
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 9
N Detect: 9
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.119
Shapes
Detect
NonDetect
Detect Limit



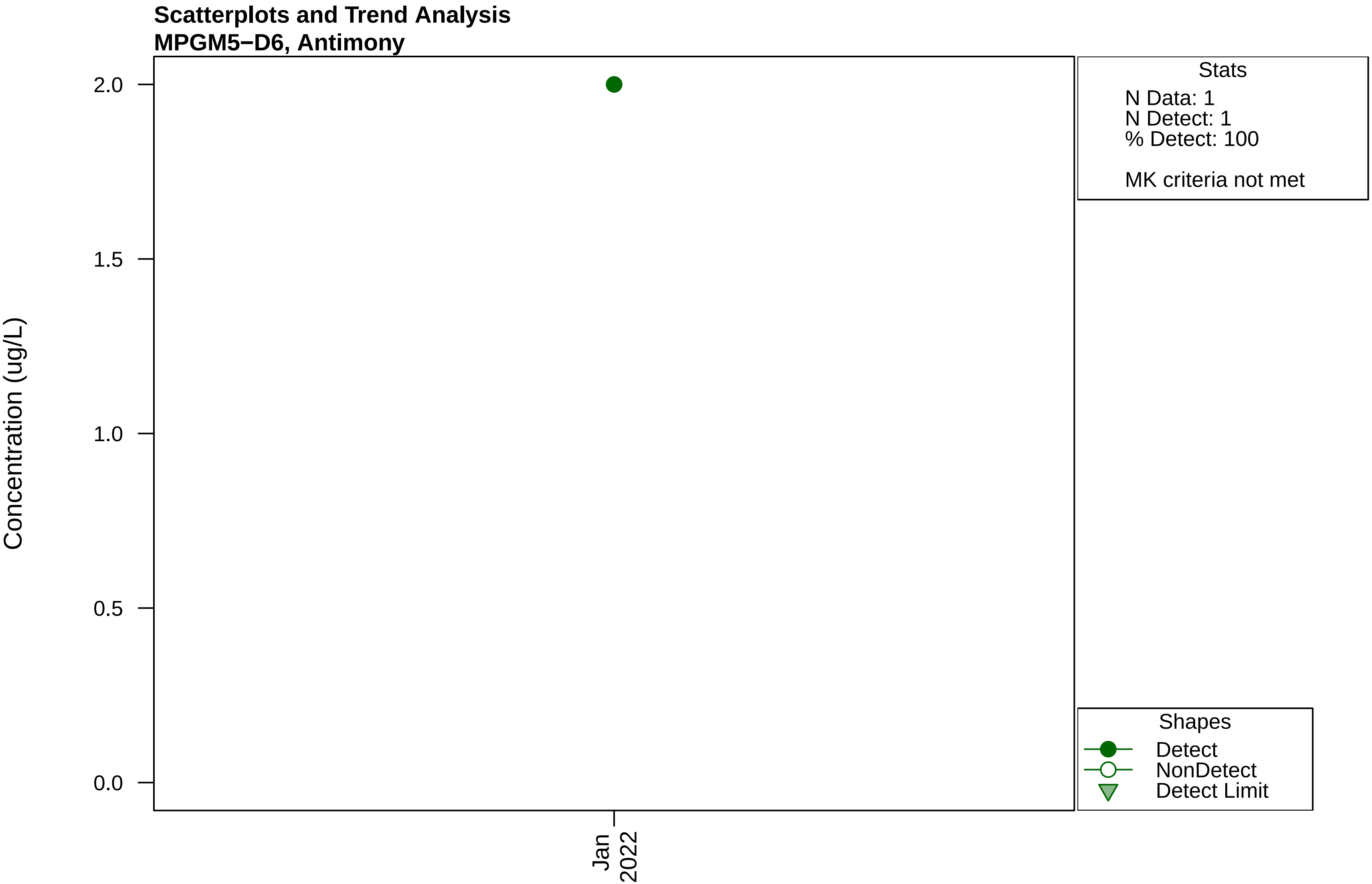
Scatterplots and Trend Analysis
MPGM5−D5, Zinc (Filtered)
Concentration (ug/L)
0
200
400
600
800
Mar 2021
May 2021
Jul 2021
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 6
N Detect: 6
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.0558
Shapes
Detect
NonDetect
Detect Limit

Scatterplots and Trend Analysis
MPGM5−D6, Aluminium

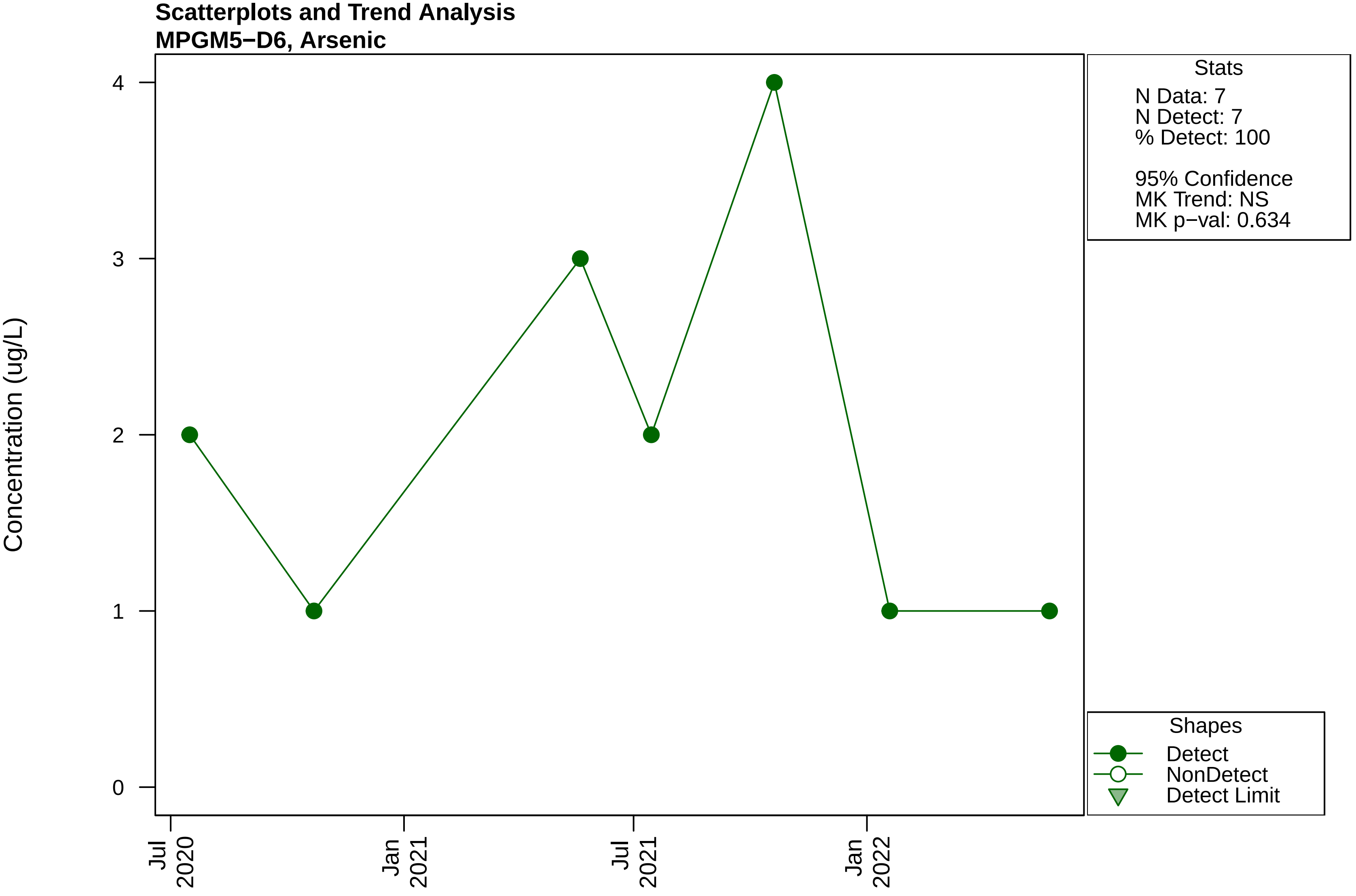




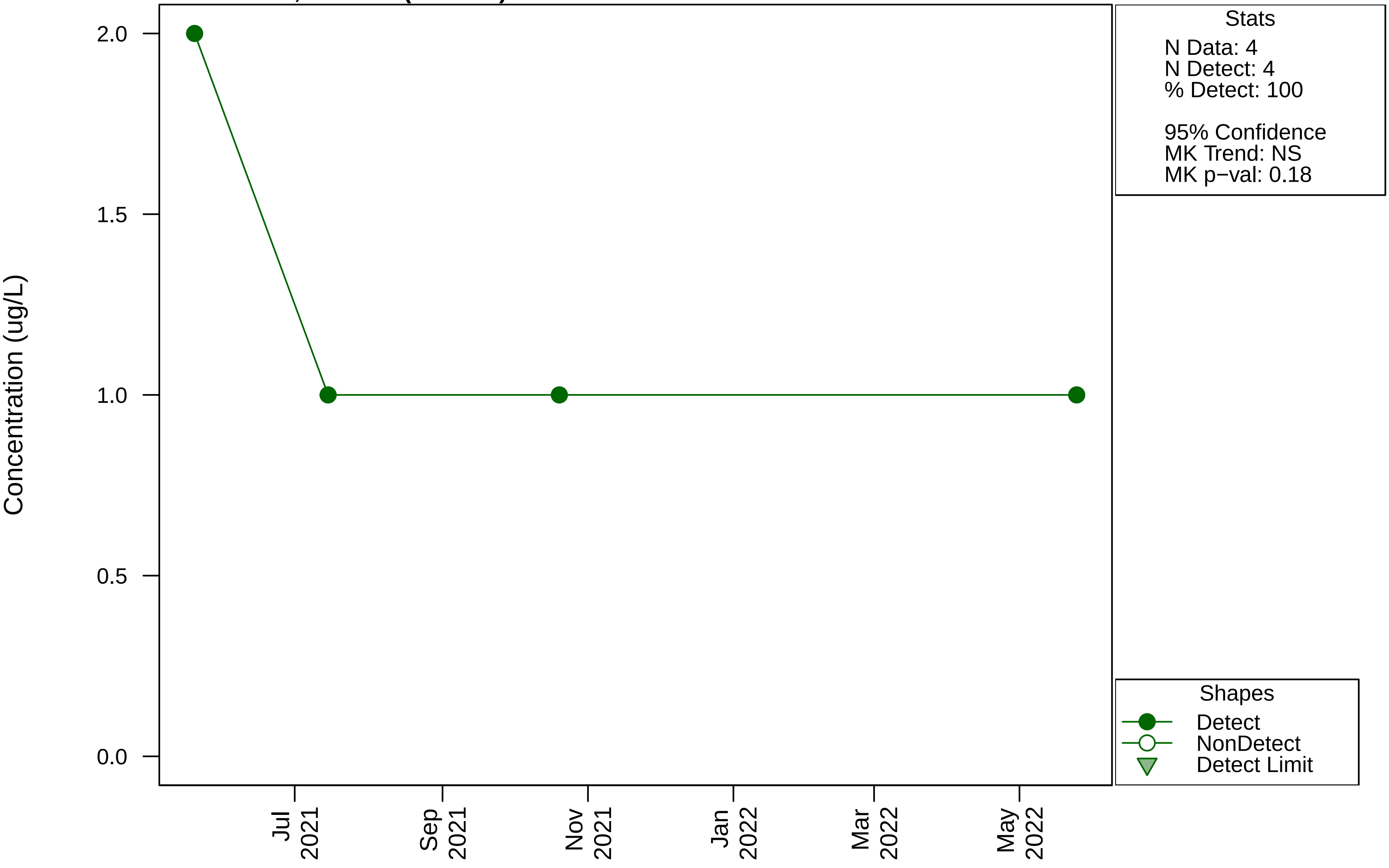
Scatterplots and Trend Analysis
MPGM5−D6, Ammonia
Concentration (ug/L)
0
200
400
600
800
1000
Jul 2021
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 5
N Detect: 5
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.801
Shapes
Detect
NonDetect
Detect Limit

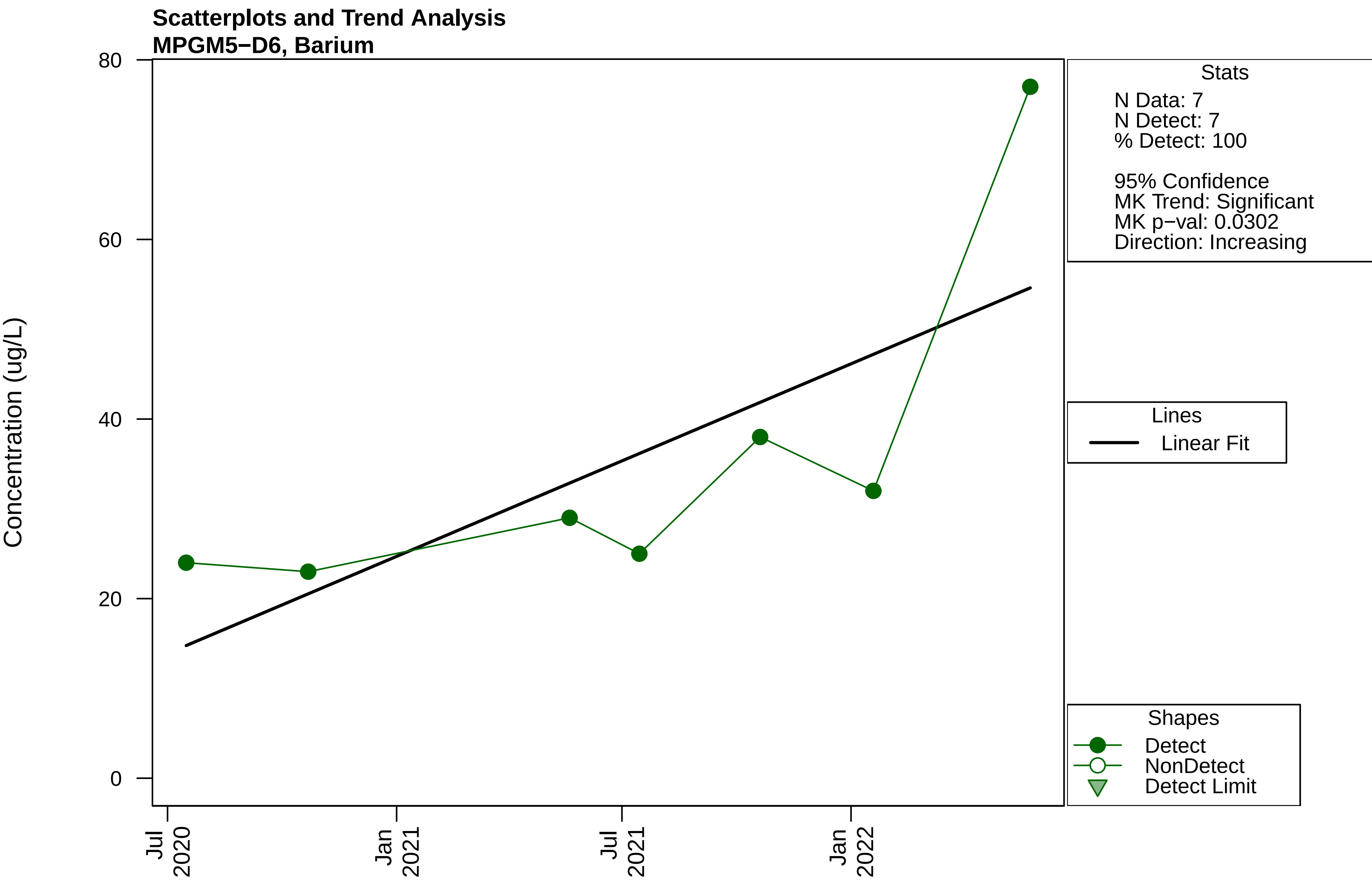


Scatterplots and Trend Analysis
MPGM5−D6, Antimony
Concentration (ug/L)
2.0
1.5
1.0
0.5
0.0
Jan
2022
Stats
N Data: 1
N Detect: 1
% Detect: 100
MK criteria not met
Shapes
Detect
NonDetect
Detect Limit

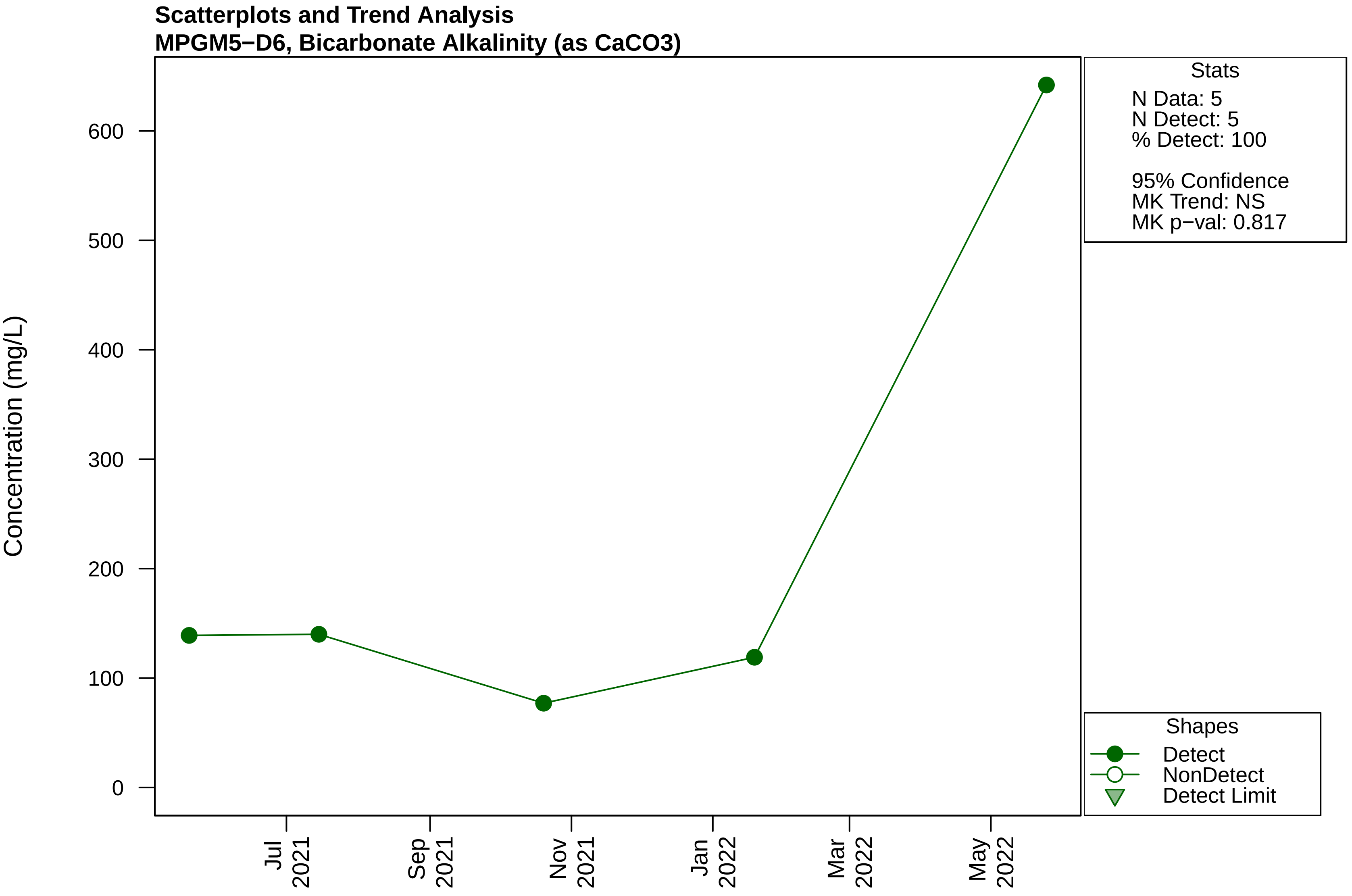

Scatterplots and Trend Analysis
MPGM5−D6, Arsenic
Concentration (ug/L)
0
1
2
3
4
Jul 2020
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 7
N Detect: 7
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.634
Shapes
Detect
NonDetect
Detect Limit

Scatterplots and Trend Analysis
MPGM5−D6, Arsenic (Filtered)

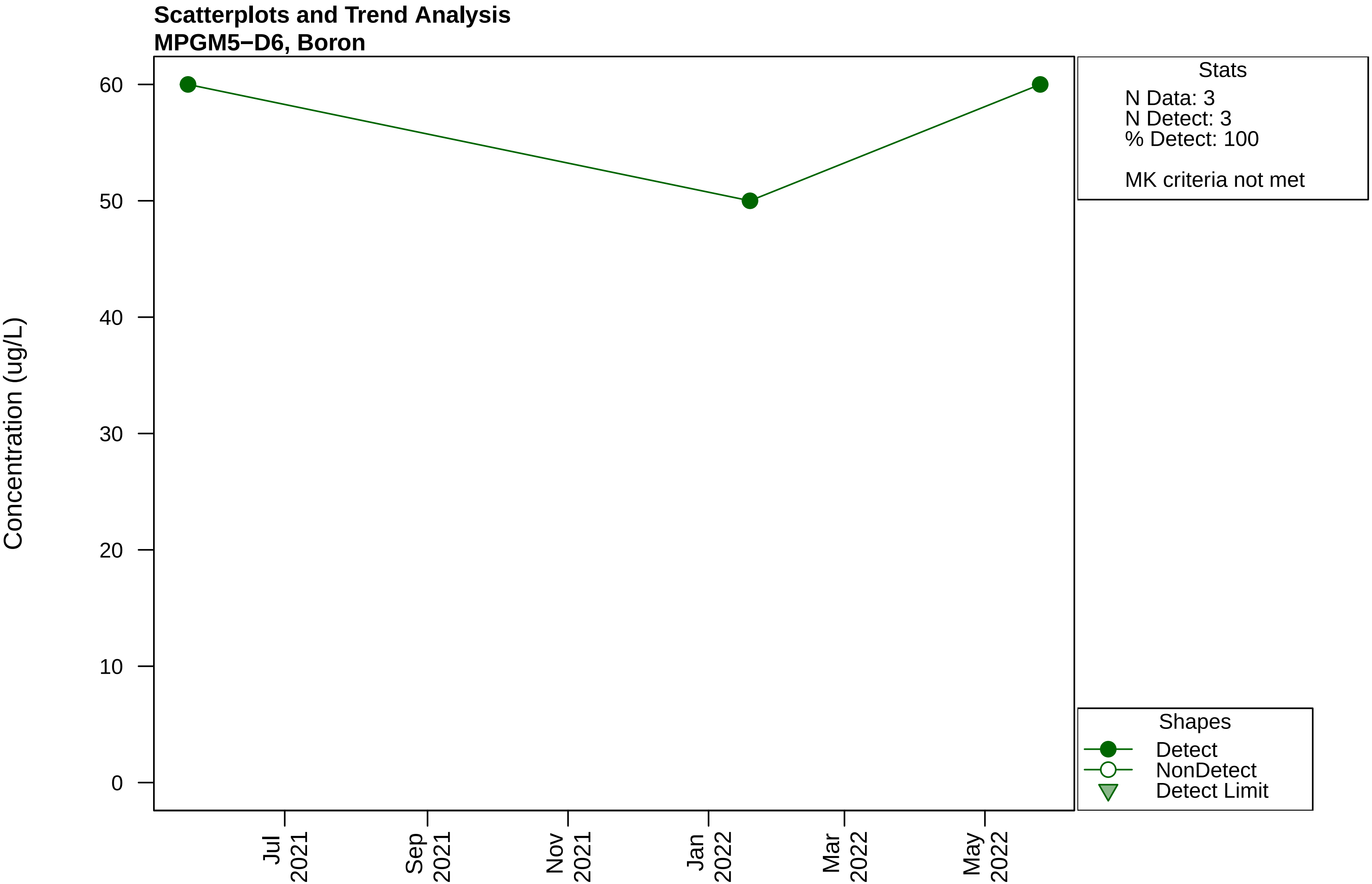


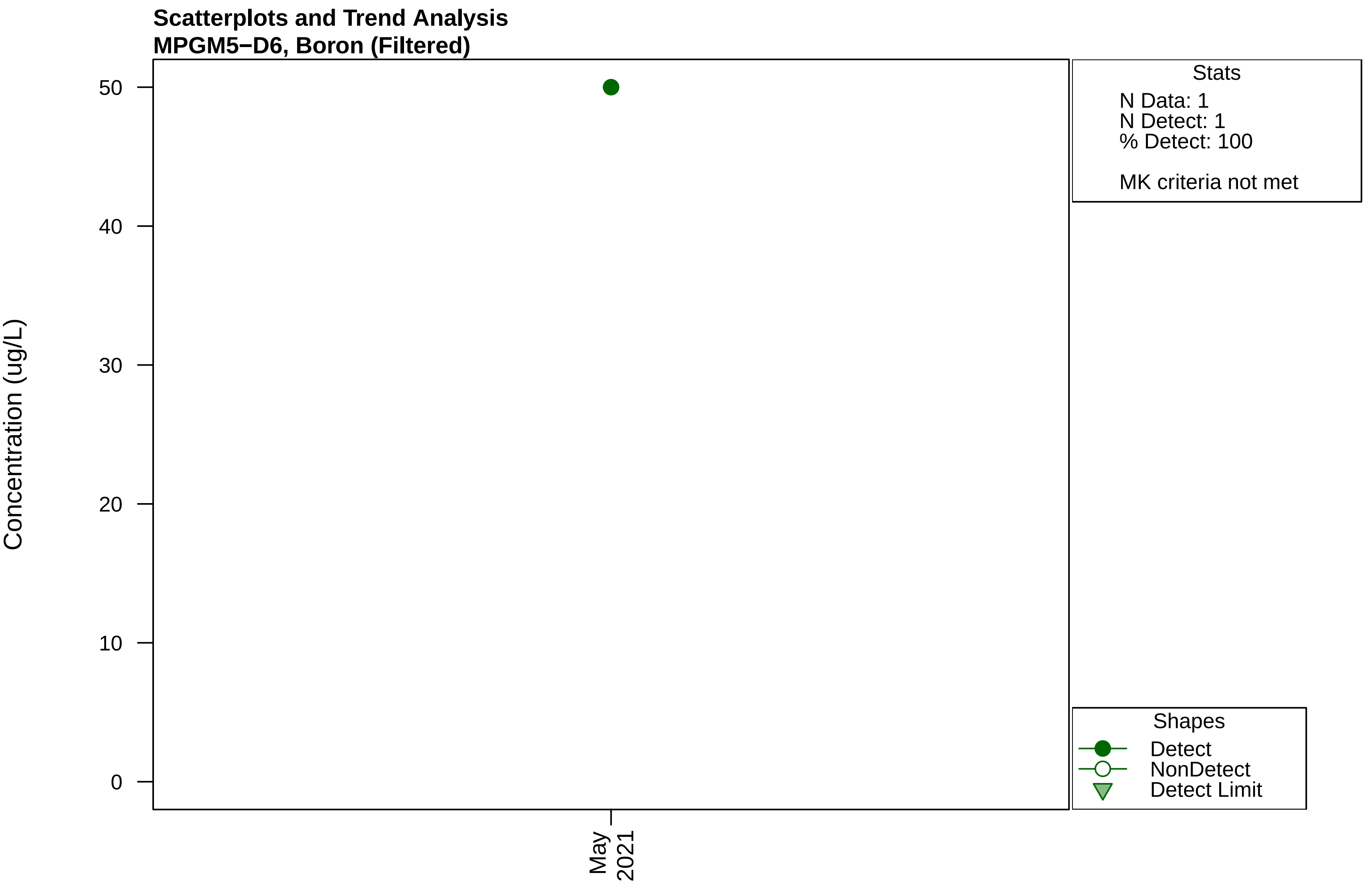


Scatterplots and Trend Analysis
MPGM5−D6, Barium
Concentration (ug/L)
0
20
40
60
80
Jul 2020
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 7
N Detect: 7
% Detect: 100
95% Confidence
MK Trend: Significant
MK p−val: 0.0302
Direction: Increasing
Lines
Linear Fit
Shapes
Detect
NonDetect
Detect Limit



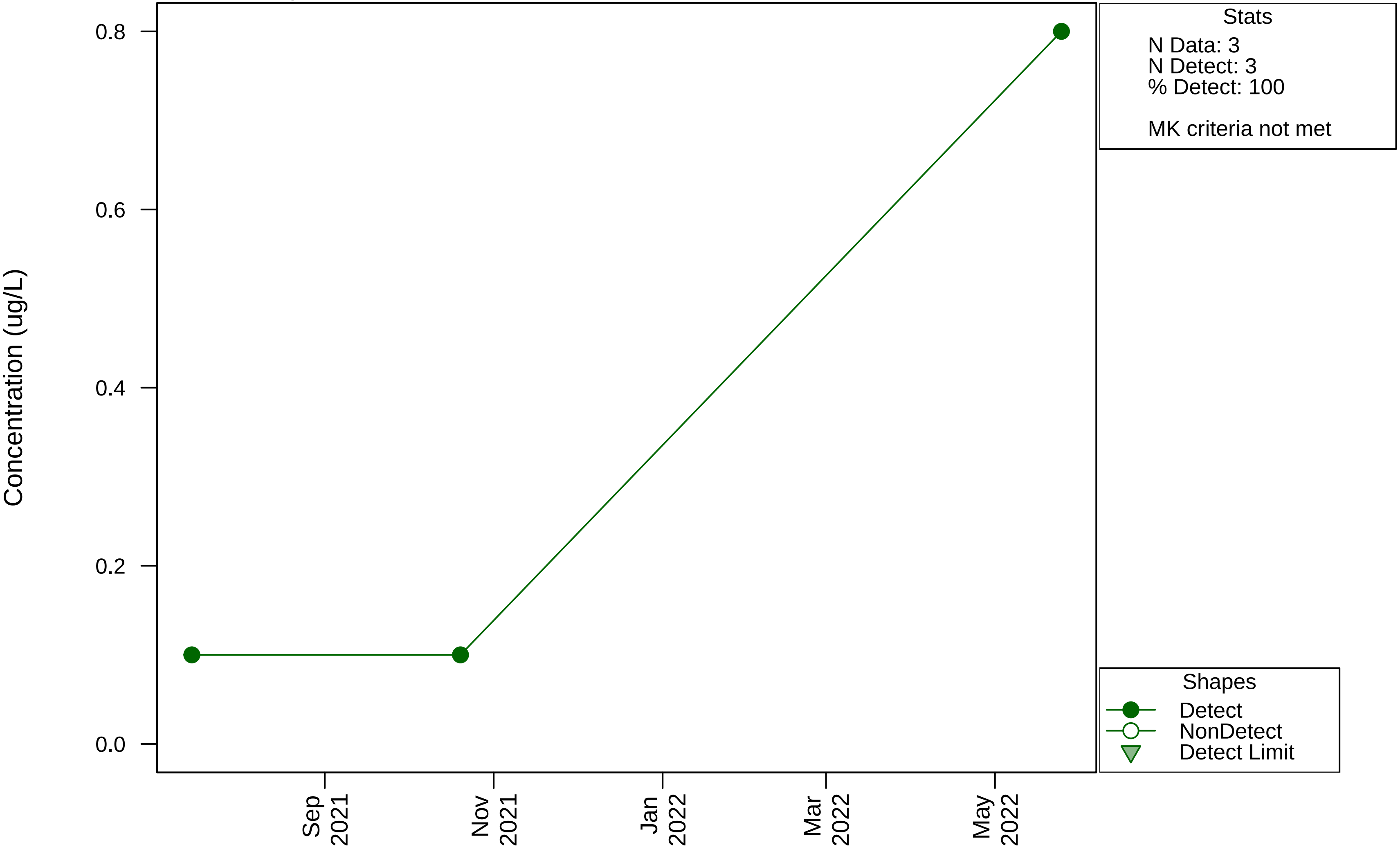
Scatterplots and Trend Analysis
MPGM5−D6, Bicarbonate Alkalinity (as CaCO3)
Concentration (mg/L)
0
100
200
300
400
500
600
Jul 2021
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 5
N Detect: 5
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.817
Shapes
Detect
NonDetect
Detect Limit


Scatterplots and Trend Analysis
MPGM5−D6, Boron
Concentration (ug/L)
0
10
20
30
40
50
60
Jul 2021
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 3
N Detect: 3
% Detect: 100
MK criteria not met
Shapes
Detect
NonDetect
Detect Limit

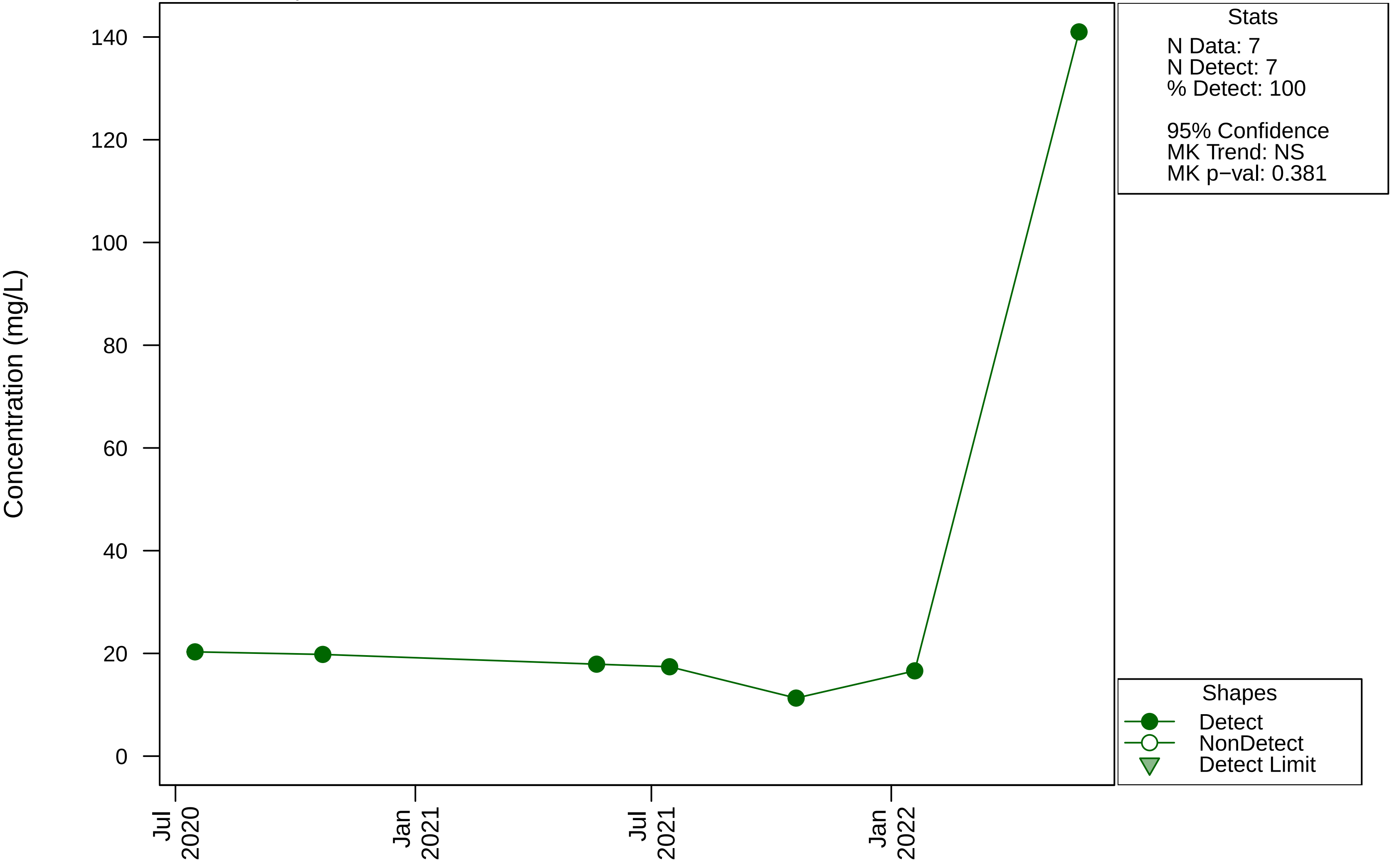


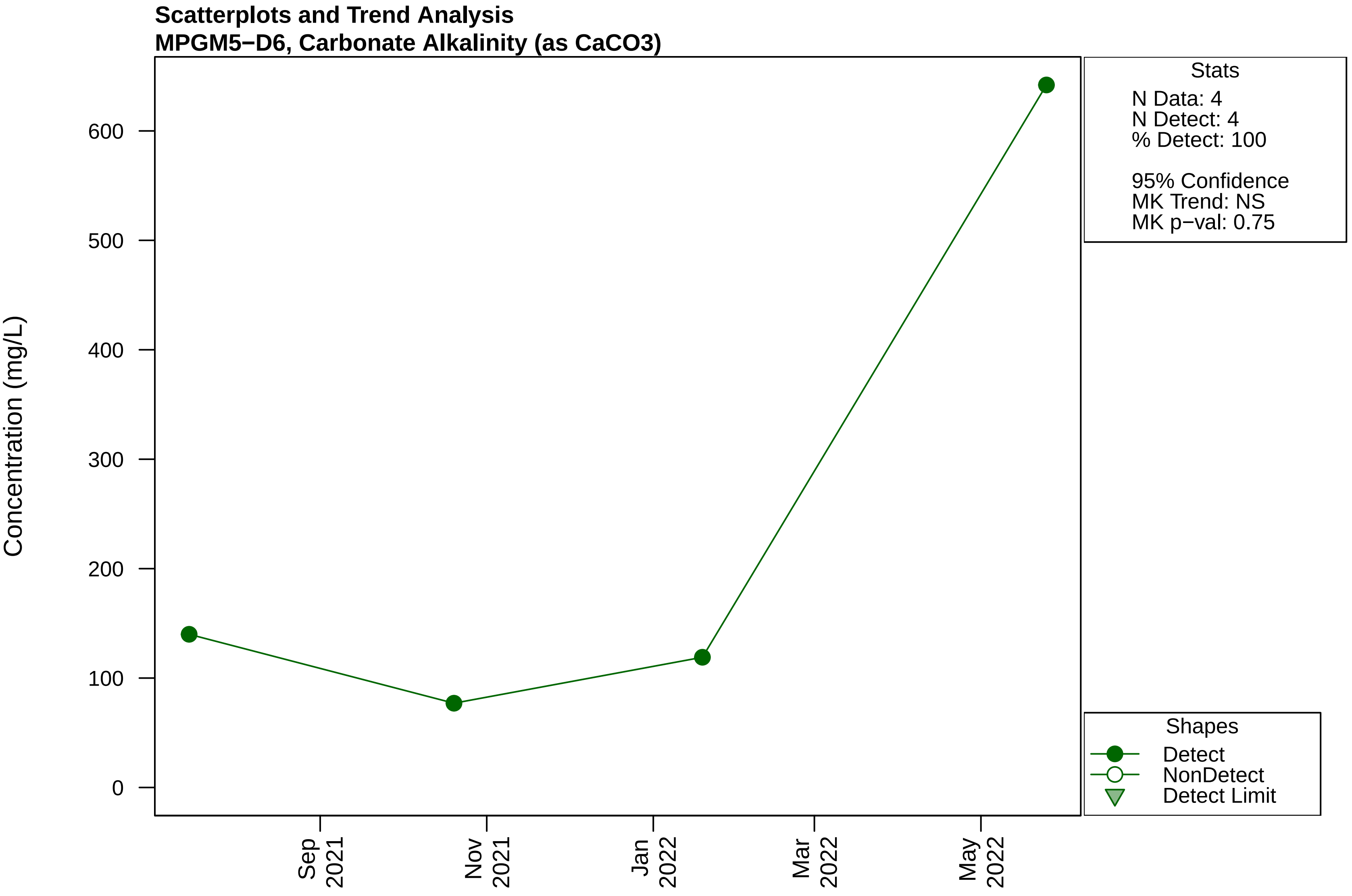
Scatterplots and Trend Analysis
MPGM5−D6, Boron (Filtered)
Concentration (ug/L)
0
10
20
30
40
50
May 2021
Stats
N Data: 1
N Detect: 1
% Detect: 100
MK criteria not met
Shapes
Detect
NonDetect
Detect Limit

Scatterplots and Trend Analysis
MPGM5−D6, Cadmium

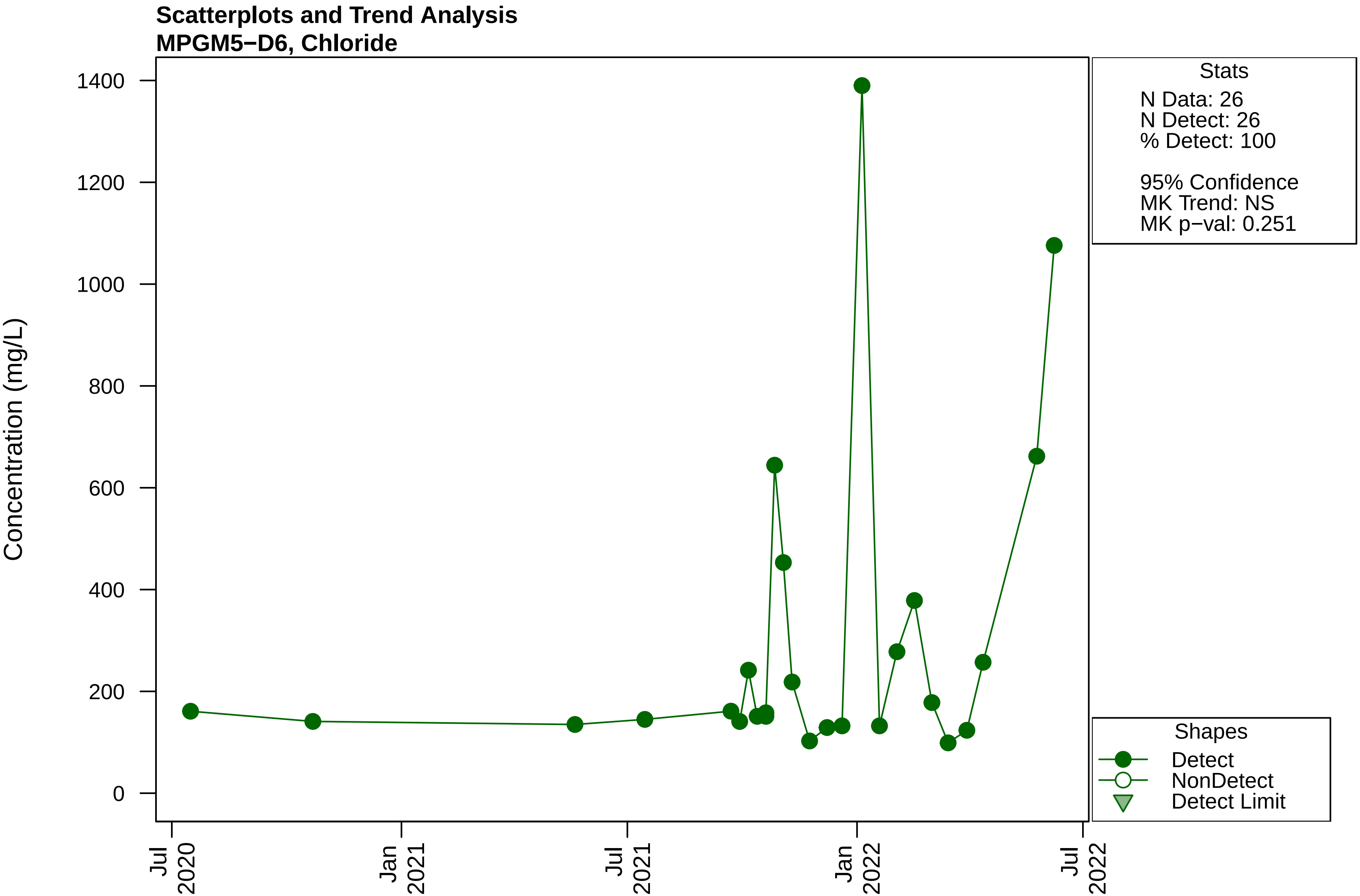


Scatterplots and Trend Analysis
MPGM5−D6, Calcium

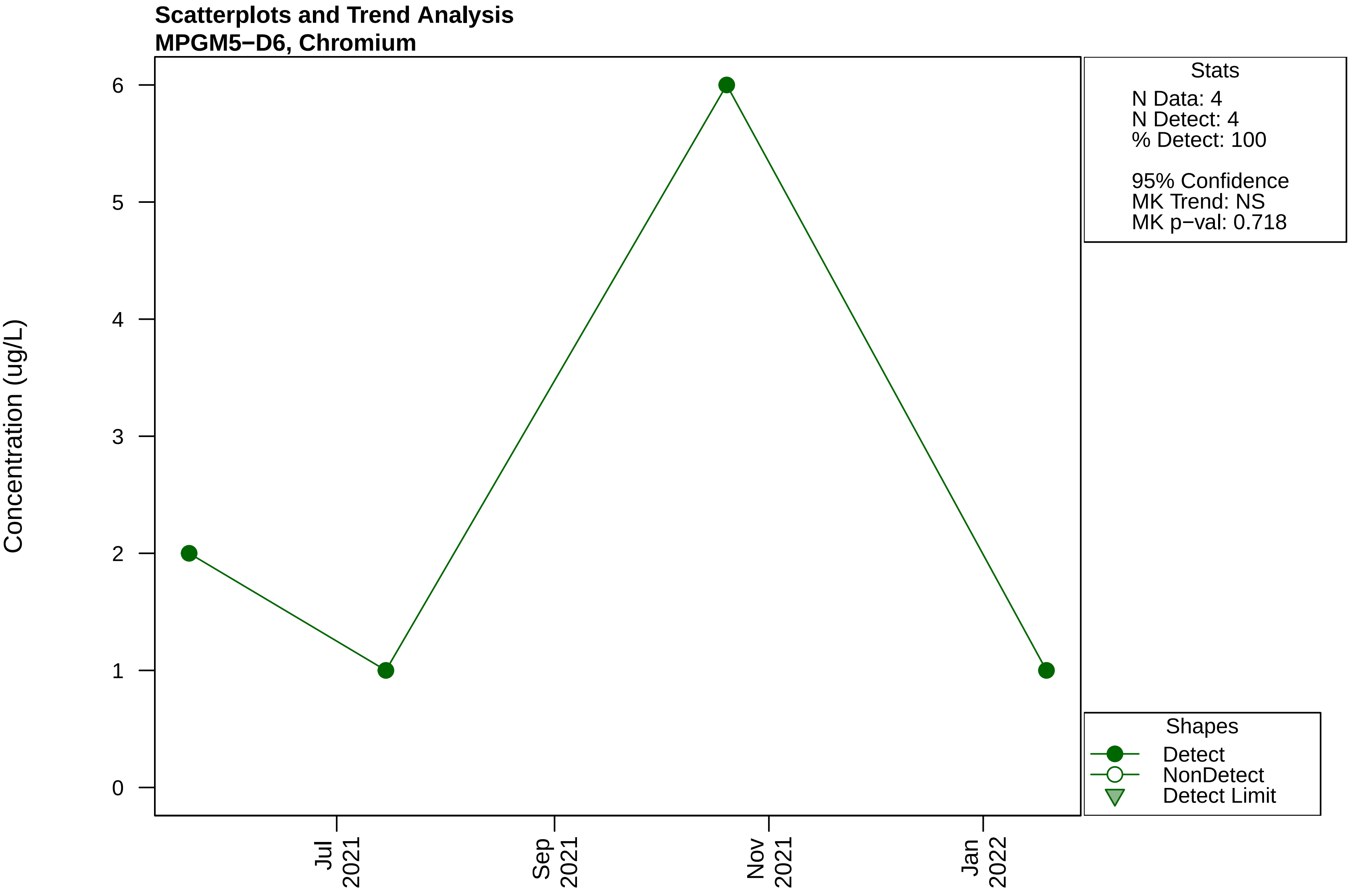




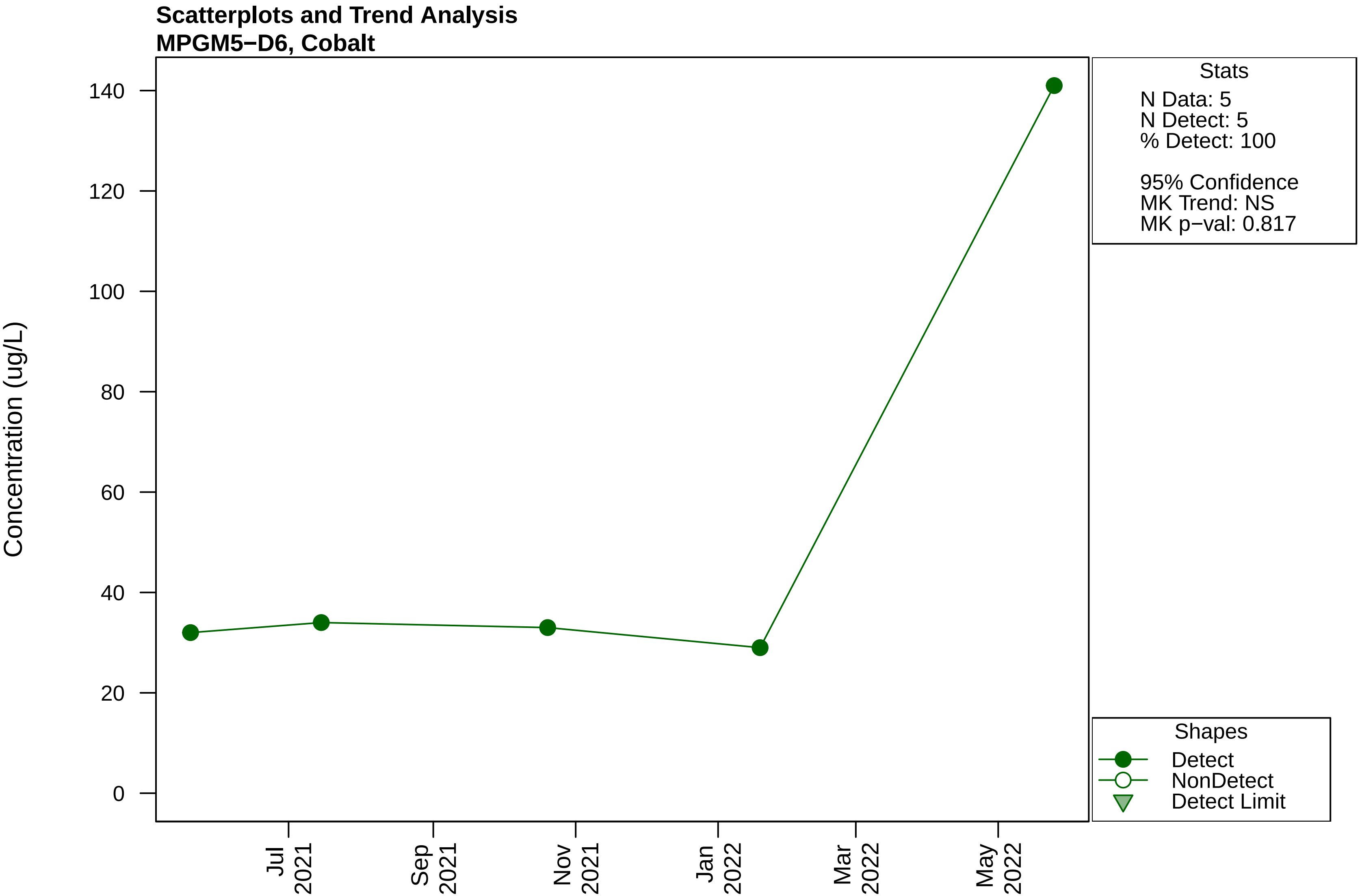
Scatterplots and Trend Analysis
MPGM5−D6, Carbonate Alkalinity (as CaCO3)
Concentration (mg/L)
0
100
200
300
400
500
600
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 4
N Detect: 4
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.75
Shapes
Detect
NonDetect
Detect Limit



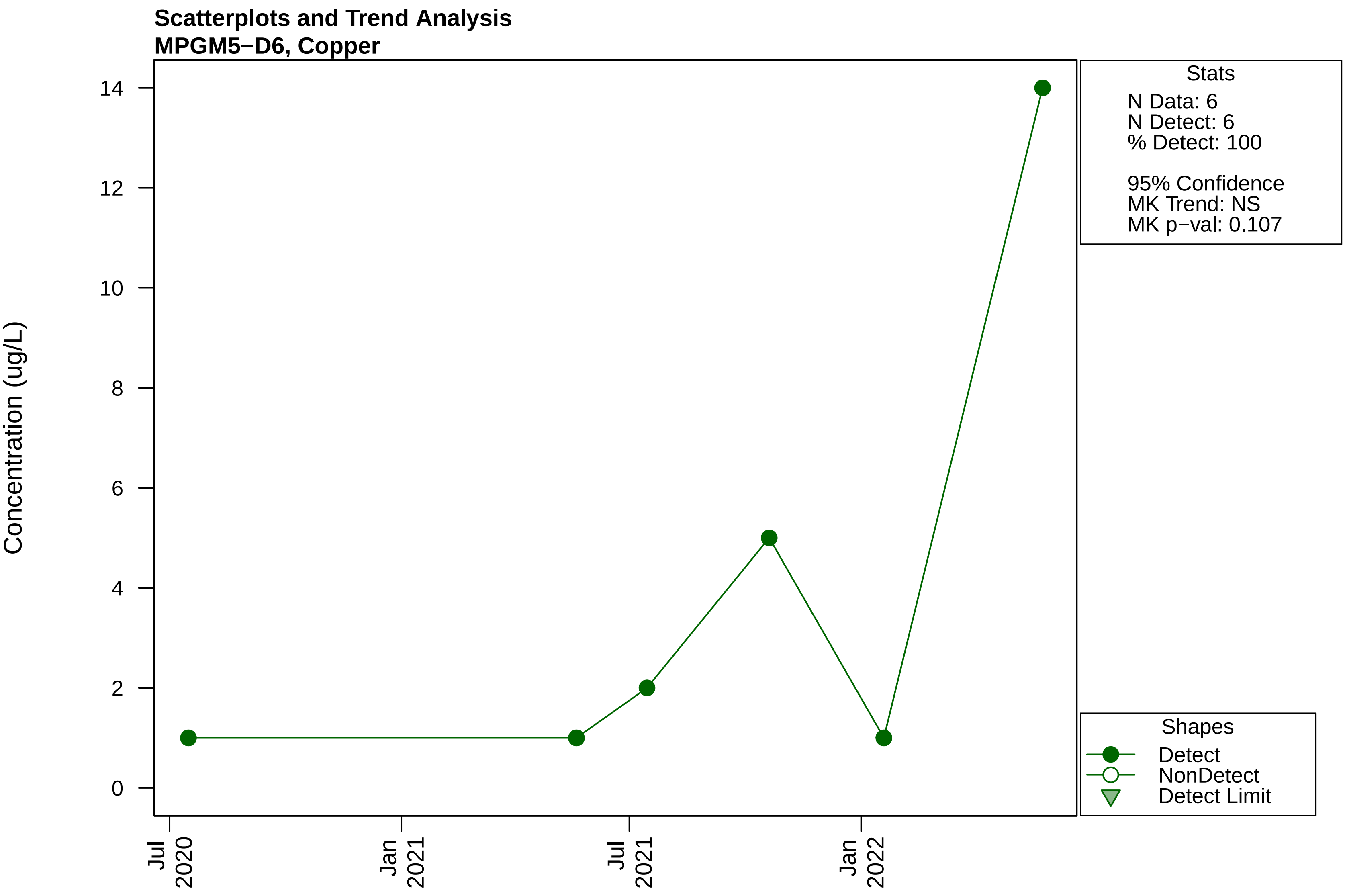
Scatterplots and Trend Analysis
MPGM5−D6, Chloride
Concentration (mg/L)
1400
1200
1000
800
600
400
200
0
Jul 2020
Jan 2021
Jul 2021
Jan 2022
Jul 2022
Stats
N Data: 26
N Detect: 26
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.251
Shapes
Detect
NonDetect
Detect Limit



Scatterplots and Trend Analysis
MPGM5−D6, Chromium
Concentration (ug/L)
0
1
2
3
4
5
6
Jul 2021
Sep 2021
Nov 2021
Jan 2022
Stats
N Data: 4
N Detect: 4
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.718
Shapes
Detect
NonDetect
Detect Limit

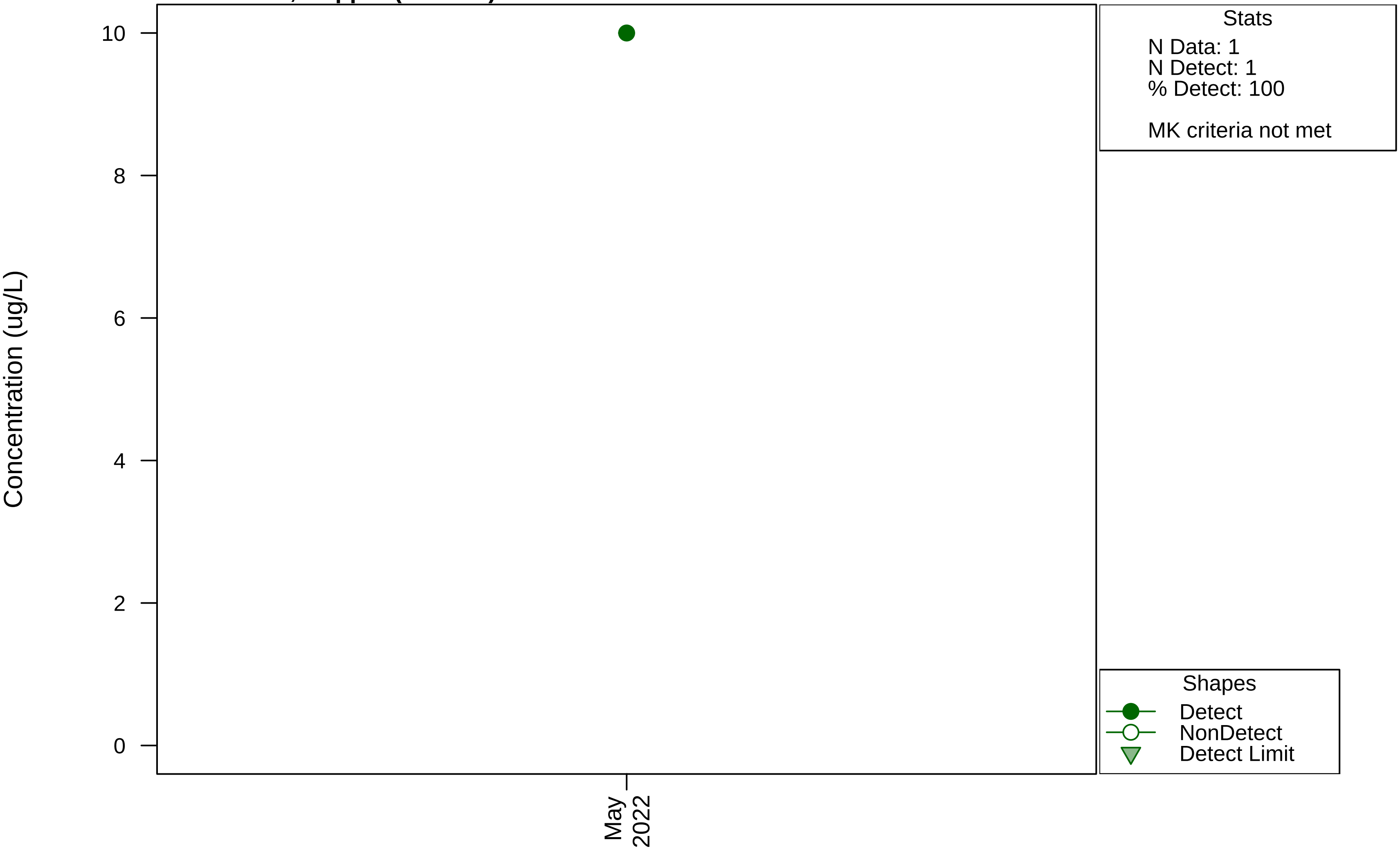


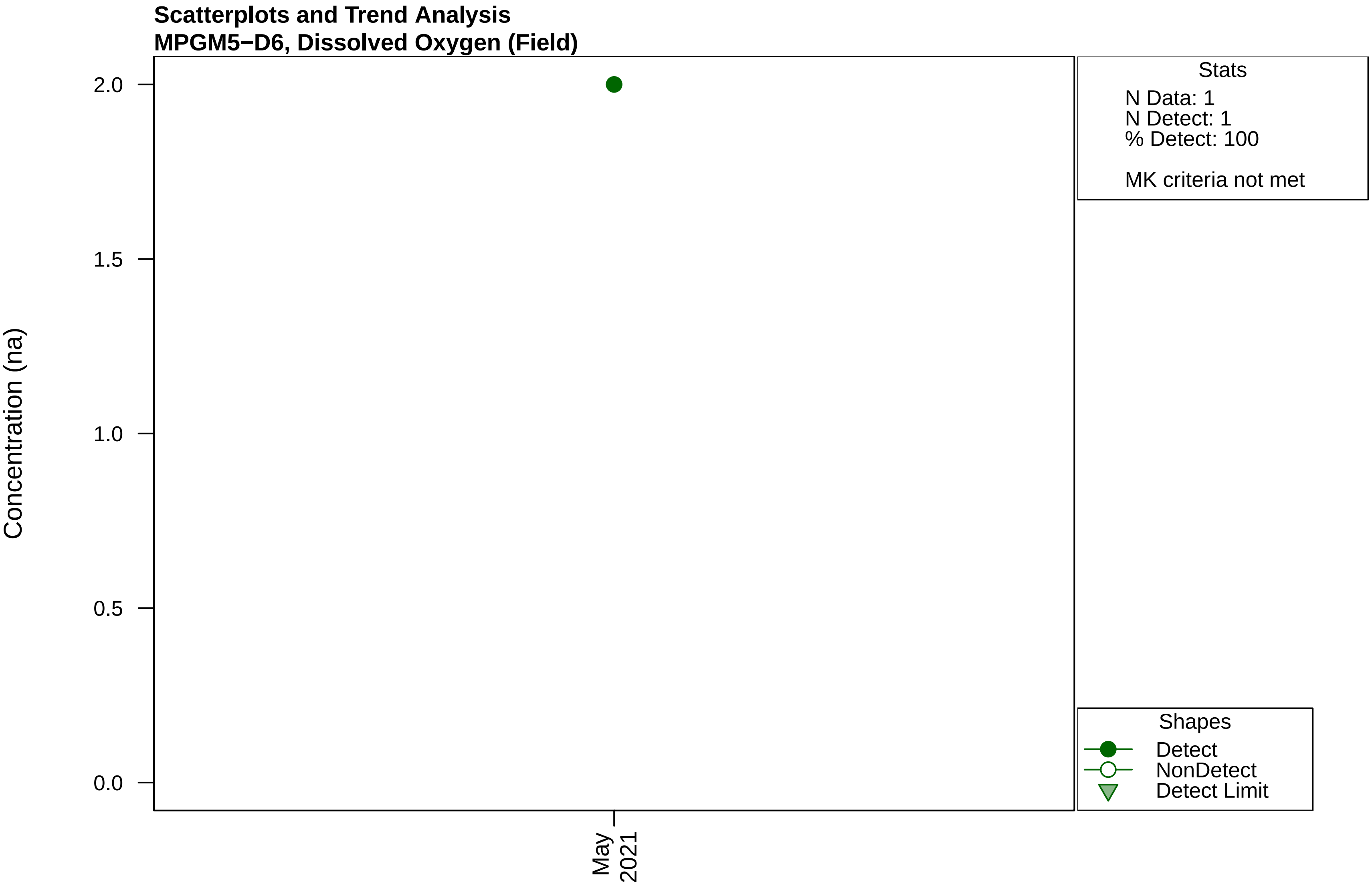
Scatterplots and Trend Analysis
MPGM5−D6, Cobalt
Concentration (ug/L)
0
20
40
60
80
100
120
140
Jul 2021
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 5
N Detect: 5
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.817
Shapes
Detect
NonDetect
Detect Limit



Scatterplots and Trend Analysis
MPGM5−D6, Copper
Concentration (ug/L)
0
2
4
6
8
10
12
14
Jul 2020
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 6
N Detect: 6
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.107
Shapes
Detect
NonDetect
Detect Limit

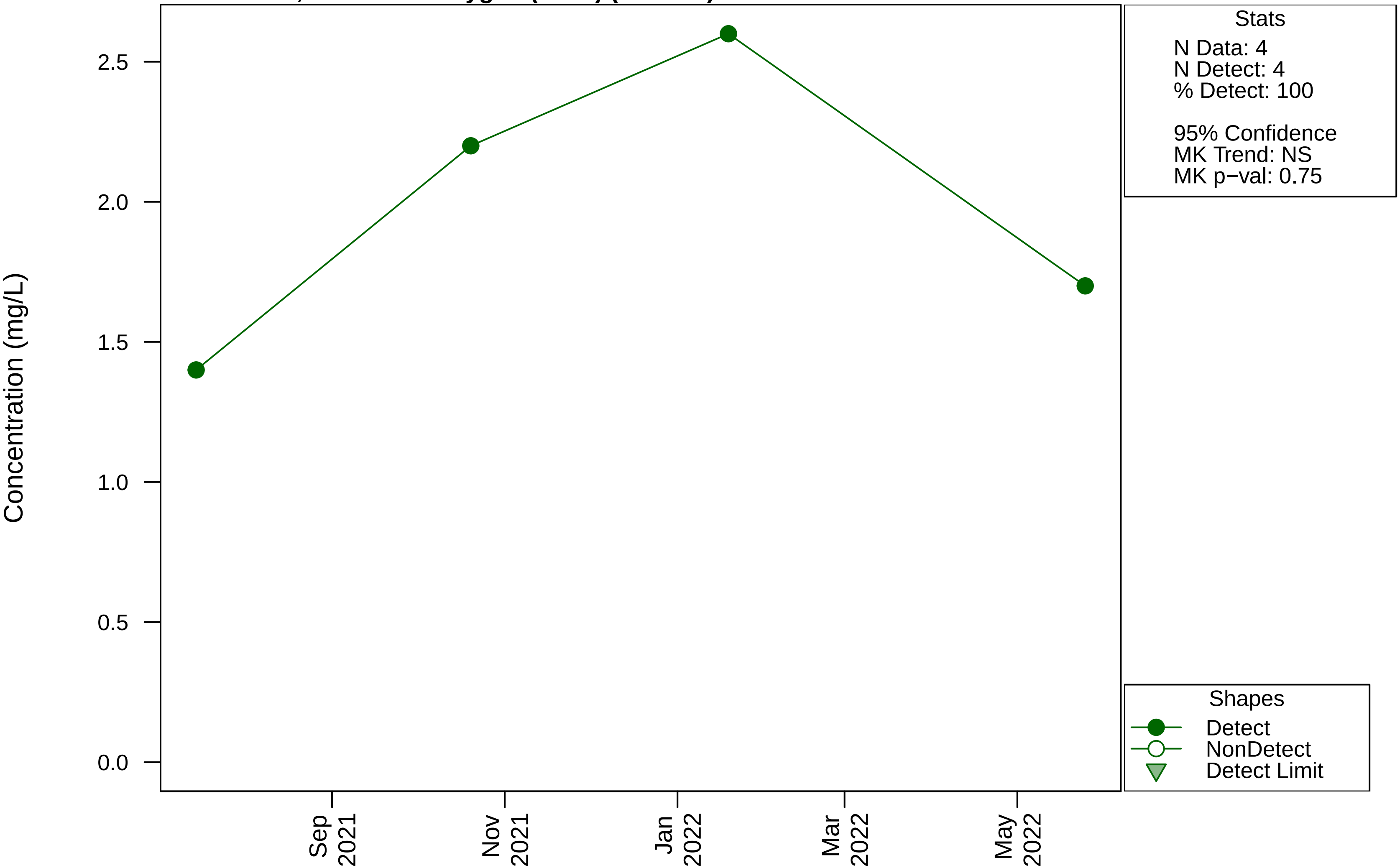
Scatterplots and Trend Analysis
MPGM5−D6, Copper (Filtered)

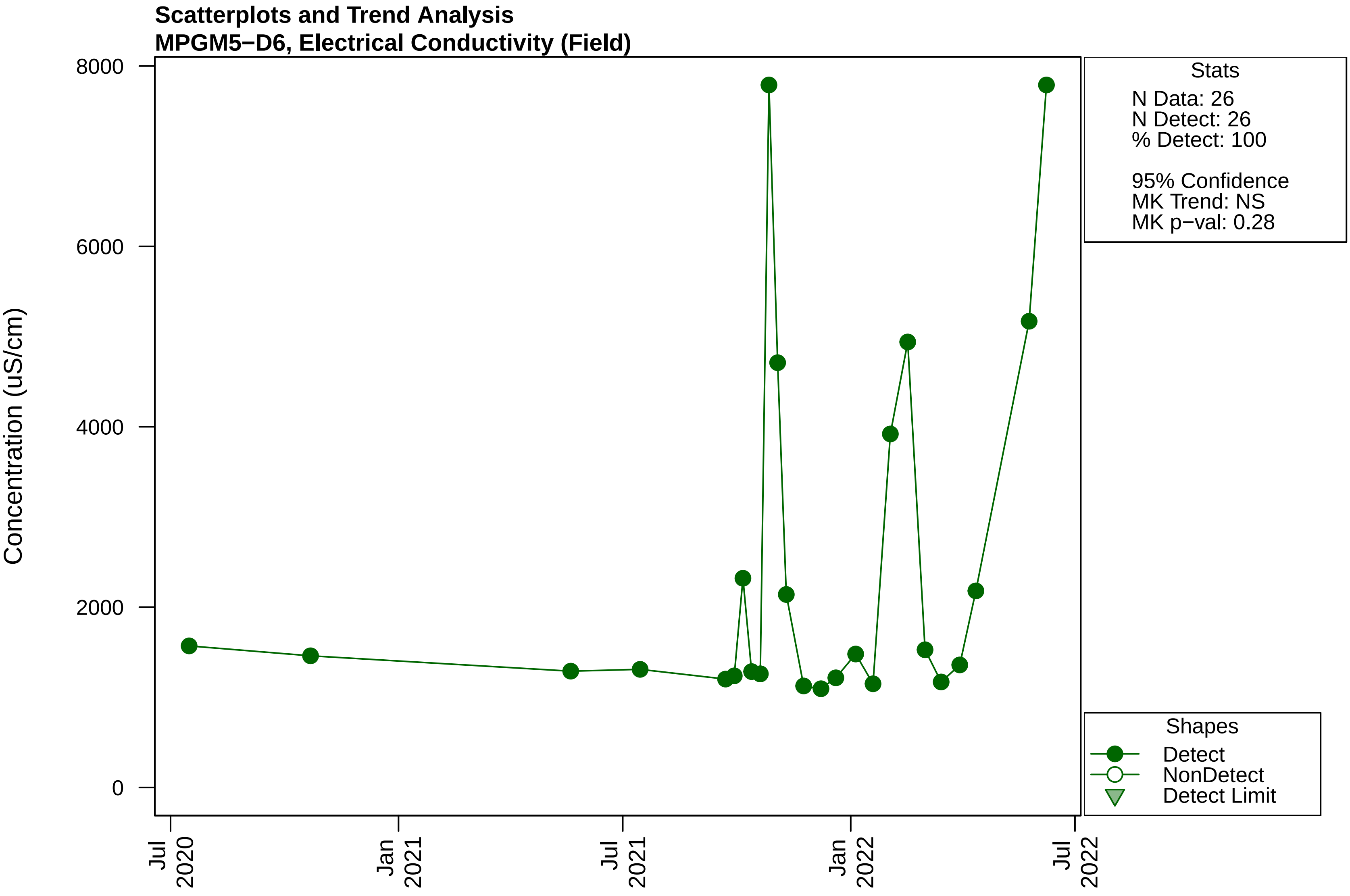




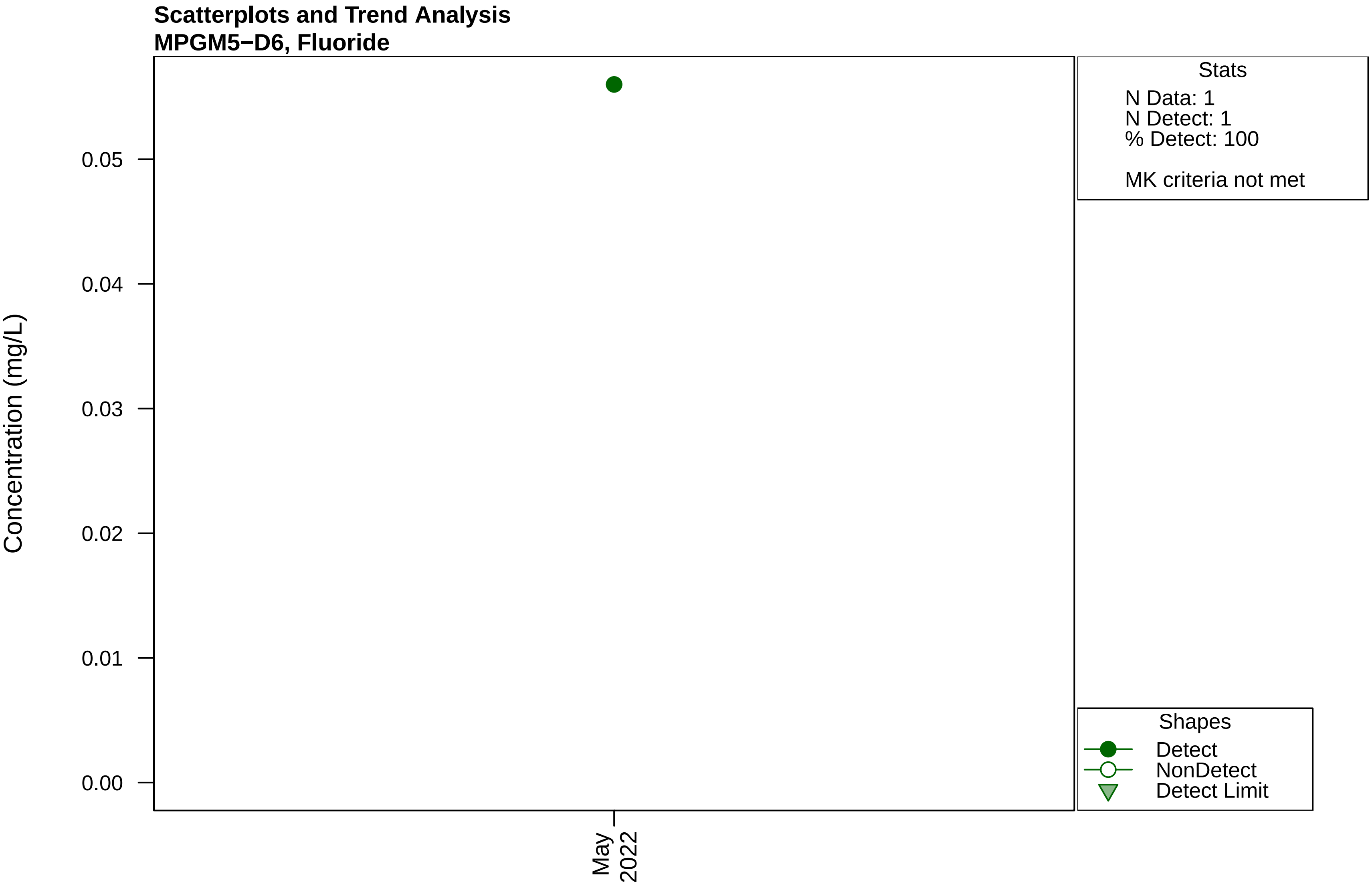
Scatterplots and Trend Analysis
MPGM5−D6, Dissolved Oxygen (Field)
Concentration (na)
2.0
1.5
1.0
0.5
0.0
May 2021
Stats
N Data: 1
N Detect: 1
% Detect: 100
MK criteria not met
Shapes
Detect
NonDetect
Detect Limit

Scatterplots and Trend Analysis
MPGM5−D6, Dissolved Oxygen (Field) (Filtered)

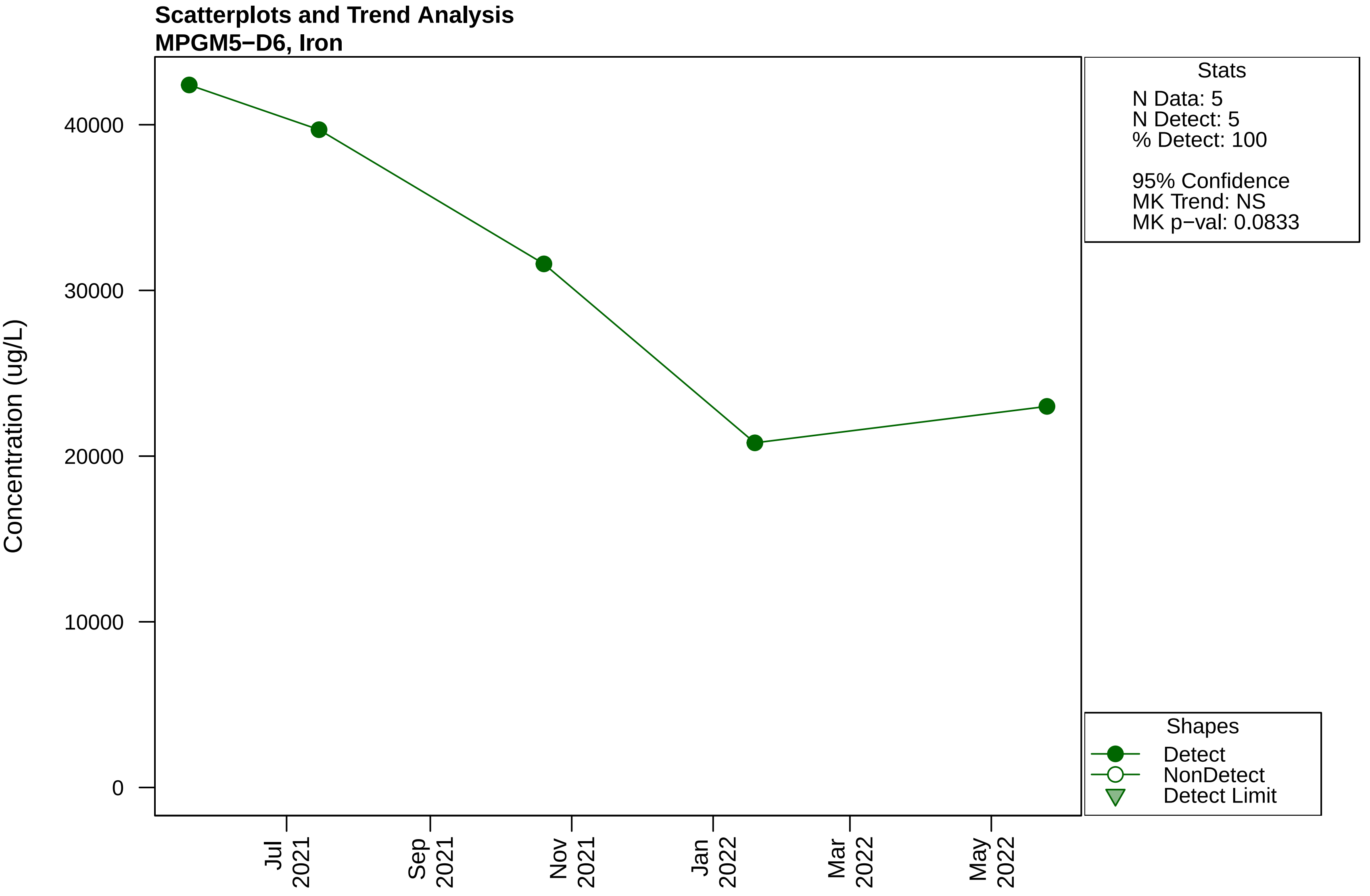




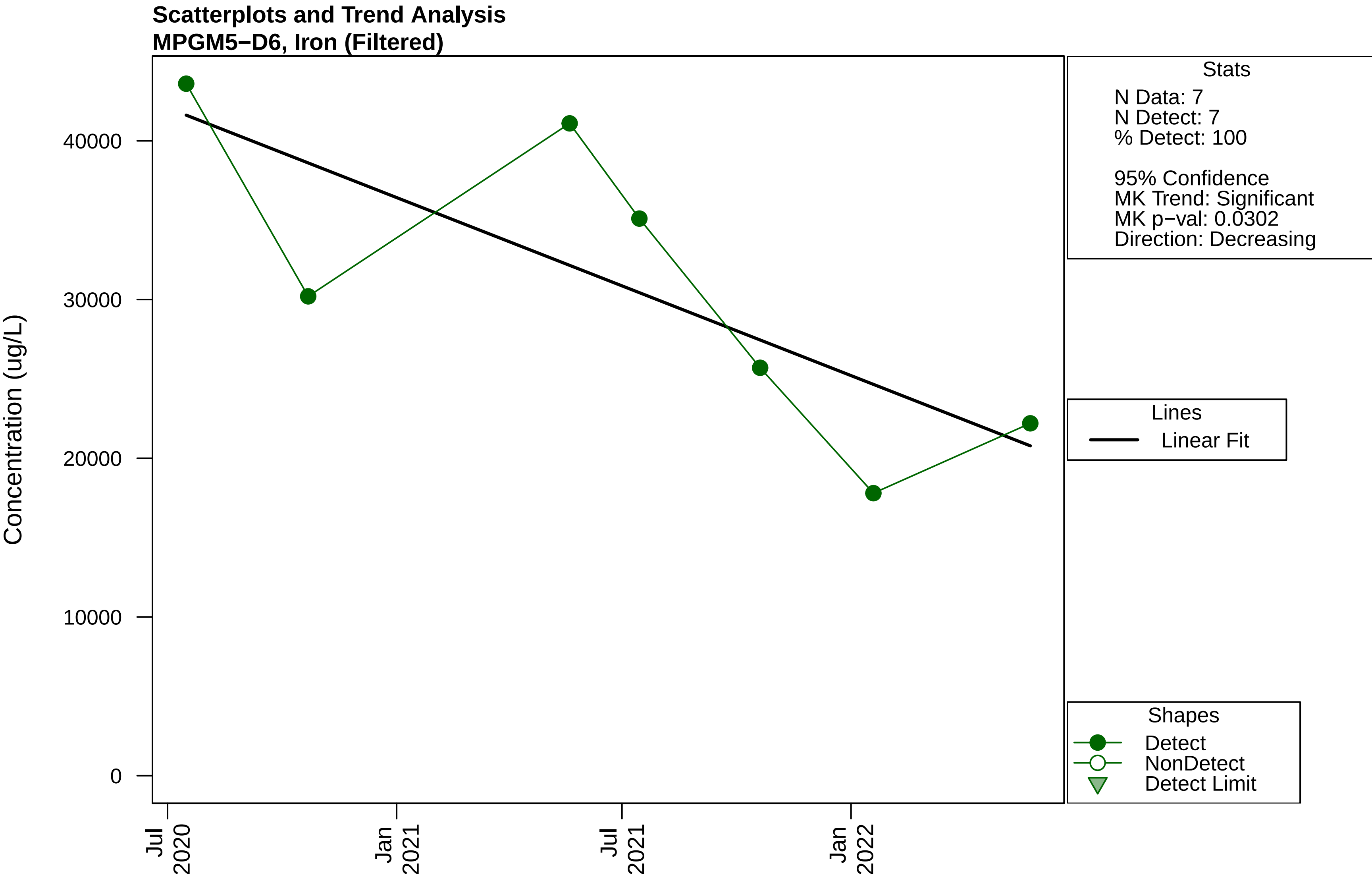
Scatterplots and Trend Analysis
MPGM5−D6, Electrical Conductivity (Field)
Concentration (uS/cm)
8000
6000
4000
2000
0
Jul 2020
Jan 2021
Jul 2021
Jan 2022
Jul 2022
Stats
N Data: 26
N Detect: 26
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.28
Shapes
Detect
NonDetect
Detect Limit



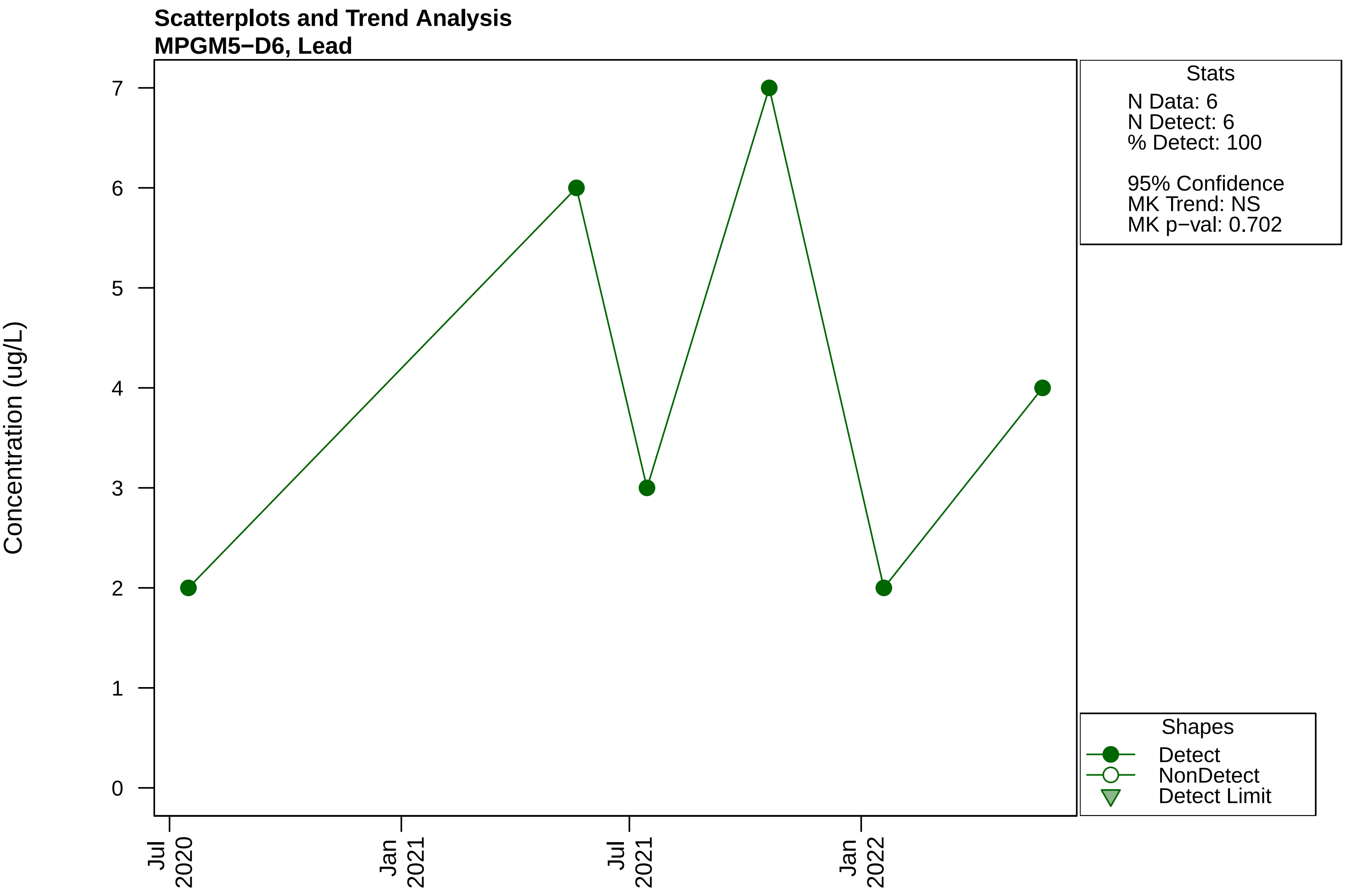
Scatterplots and Trend Analysis
MPGM5−D6, Fluoride
Concentration (mg/L)
0.00
0.01
0.02
0.03
0.04
0.05
May 2022
Stats
N Data: 1
N Detect: 1
% Detect: 100
MK criteria not met
Shapes
Detect
NonDetect
Detect Limit

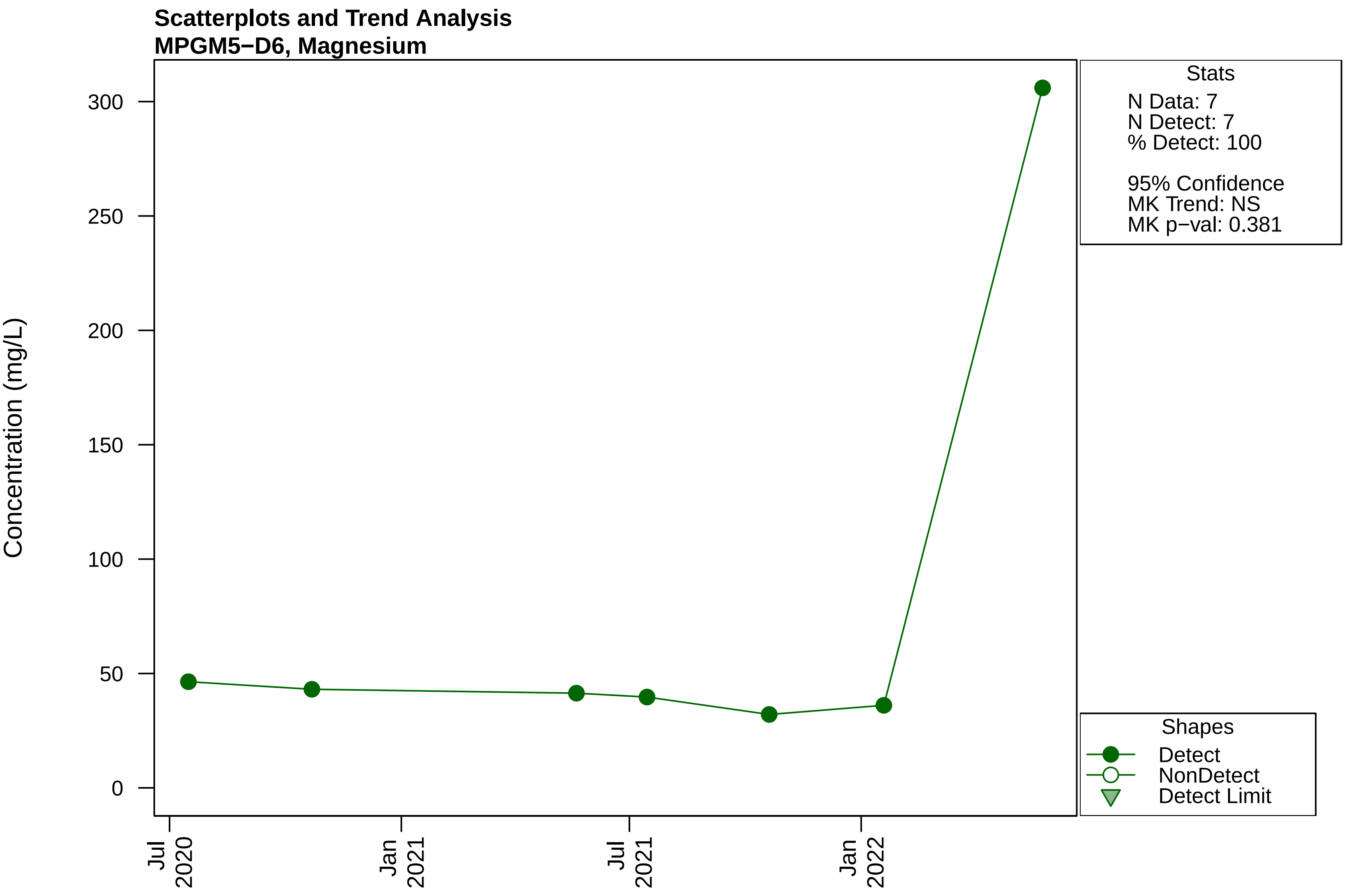


Scatterplots and Trend Analysis
MPGM5−D6, Iron
Concentration (ug/L)
40000
30000
20000
10000
0
Jul 2021
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 5
N Detect: 5
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.0833
Shapes
Detect
NonDetect
Detect Limit



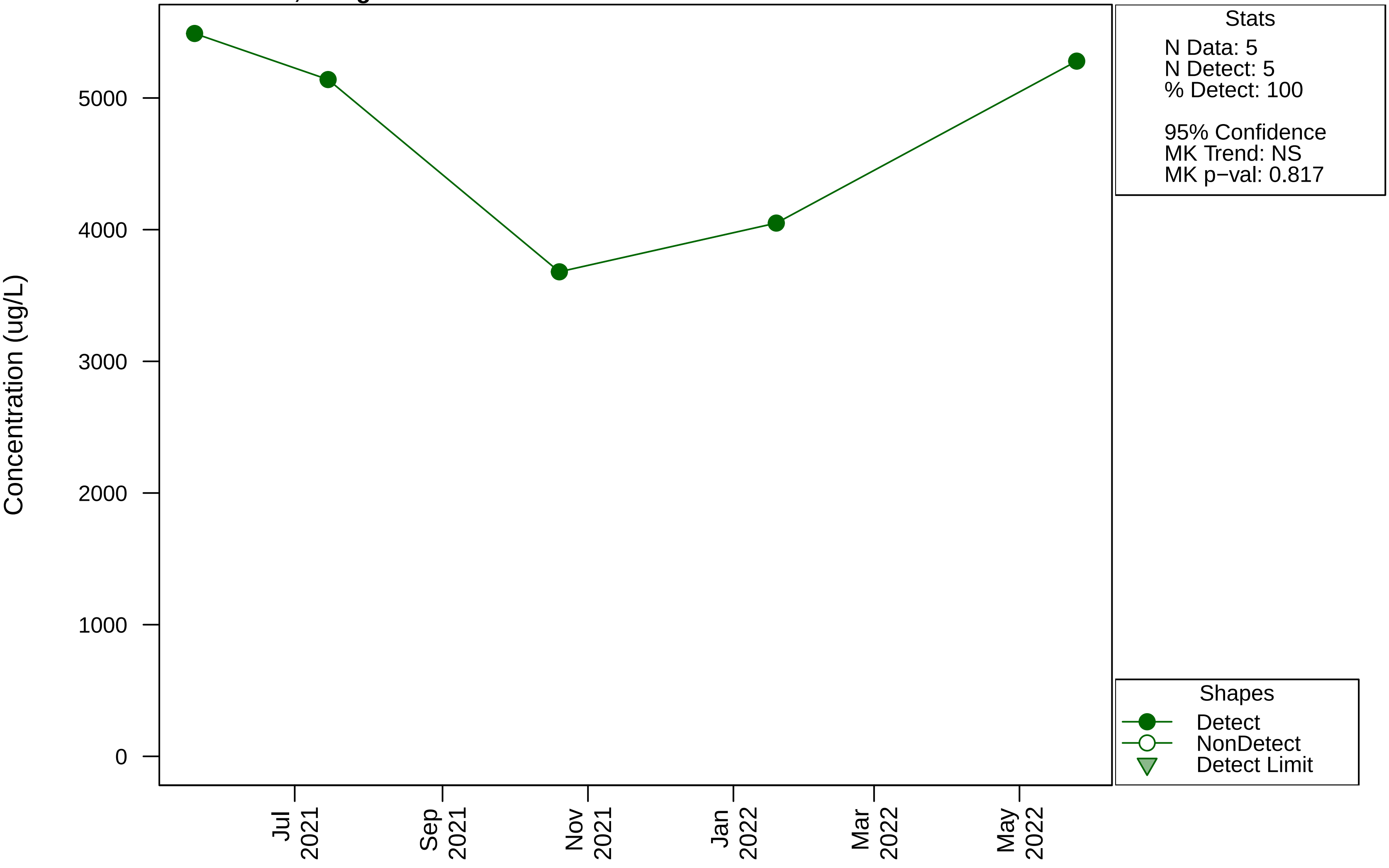
Scatterplots and Trend Analysis
MPGM5−D6, Iron (Filtered)
Concentration (ug/L)
0
10000
20000
30000
40000
Jul 2020
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 7
N Detect: 7
% Detect: 100
95% Confidence
MK Trend: Significant
MK p−val: 0.0302
Direction: Decreasing
Lines
Linear Fit
Shapes
Detect
NonDetect
Detect Limit

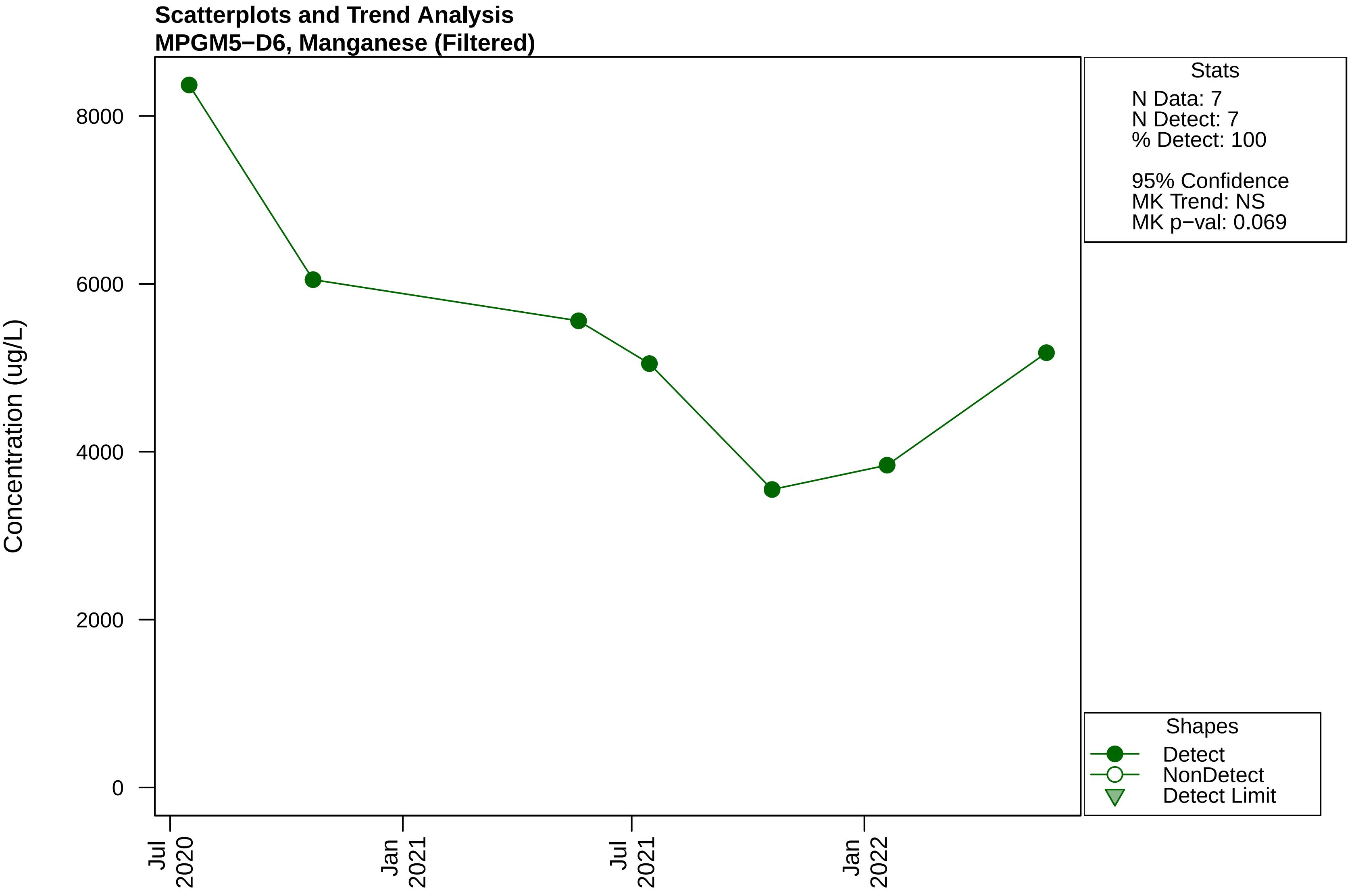

Scatterplots and Trend Analysis
MPGM5−D6, Lead
Concentration (ug/L)
0
1
2
3
4
5
6
7
Jul 2020
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 6
N Detect: 6
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.702
Shapes
Detect
NonDetect
Detect Limit

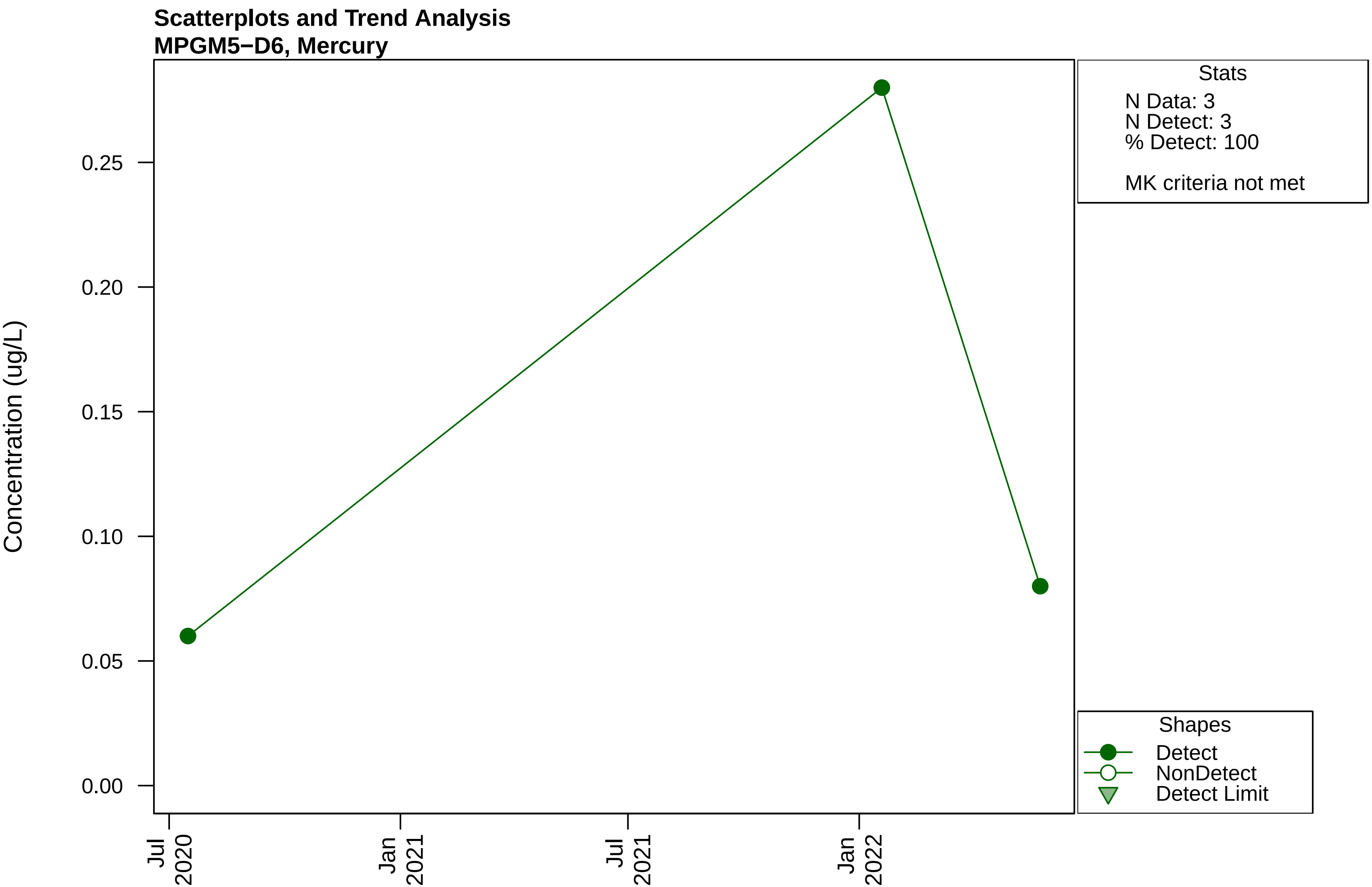


Scatterplots and Trend Analysis
MPGM5−D6, Magnesium
Concentration (mg/L)
0
50
100
150
200
250
300
Jul 2020
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 7
N Detect: 7
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.381
Shapes
Detect
NonDetect
Detect Limit

Scatterplots and Trend Analysis
MPGM5−D6, Manganese

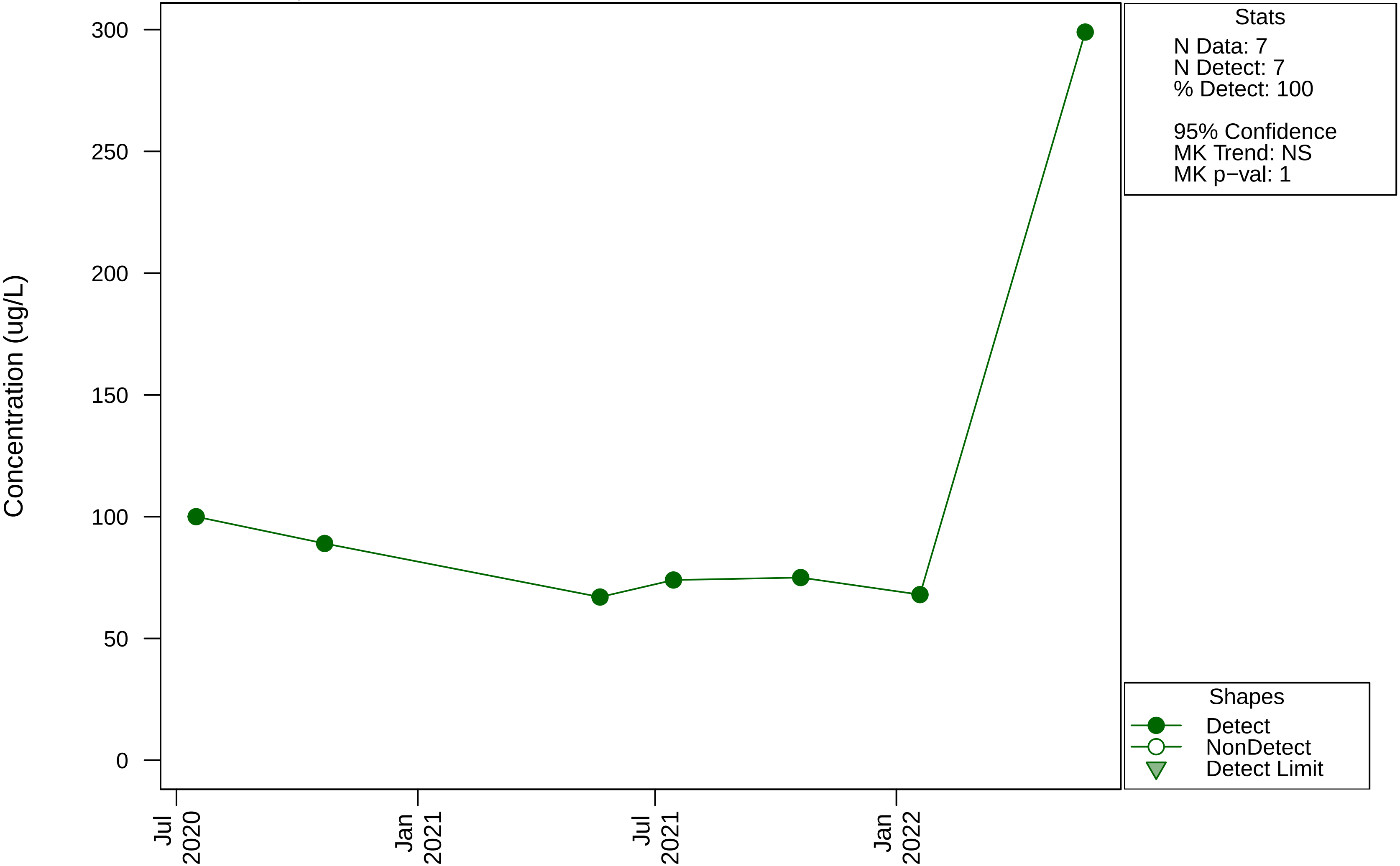


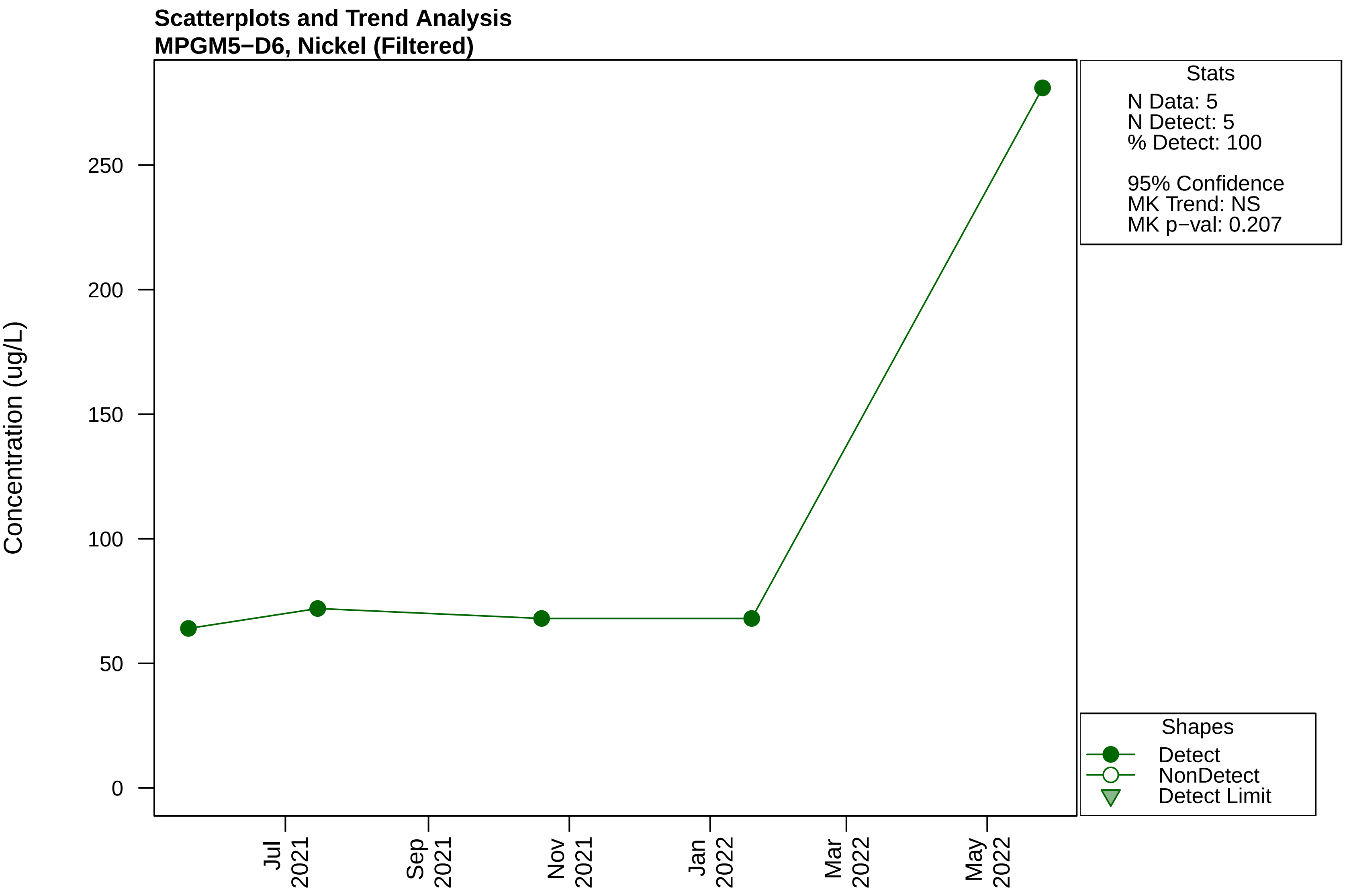

Scatterplots and Trend Analysis
MPGM5−D6, Manganese (Filtered)
Concentration (ug/L)
0
2000
4000
6000
8000
Jul 2020
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 7
N Detect: 7
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.069
Shapes
Detect
NonDetect
Detect Limit



Scatterplots and Trend Analysis
MPGM5−D6, Mercury
Concentration (ug/L)
0.00
0.05
0.10
0.15
0.20
0.25
Jul 2020
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 3
N Detect: 3
% Detect: 100
MK criteria not met
Shapes
Detect
NonDetect
Detect Limit

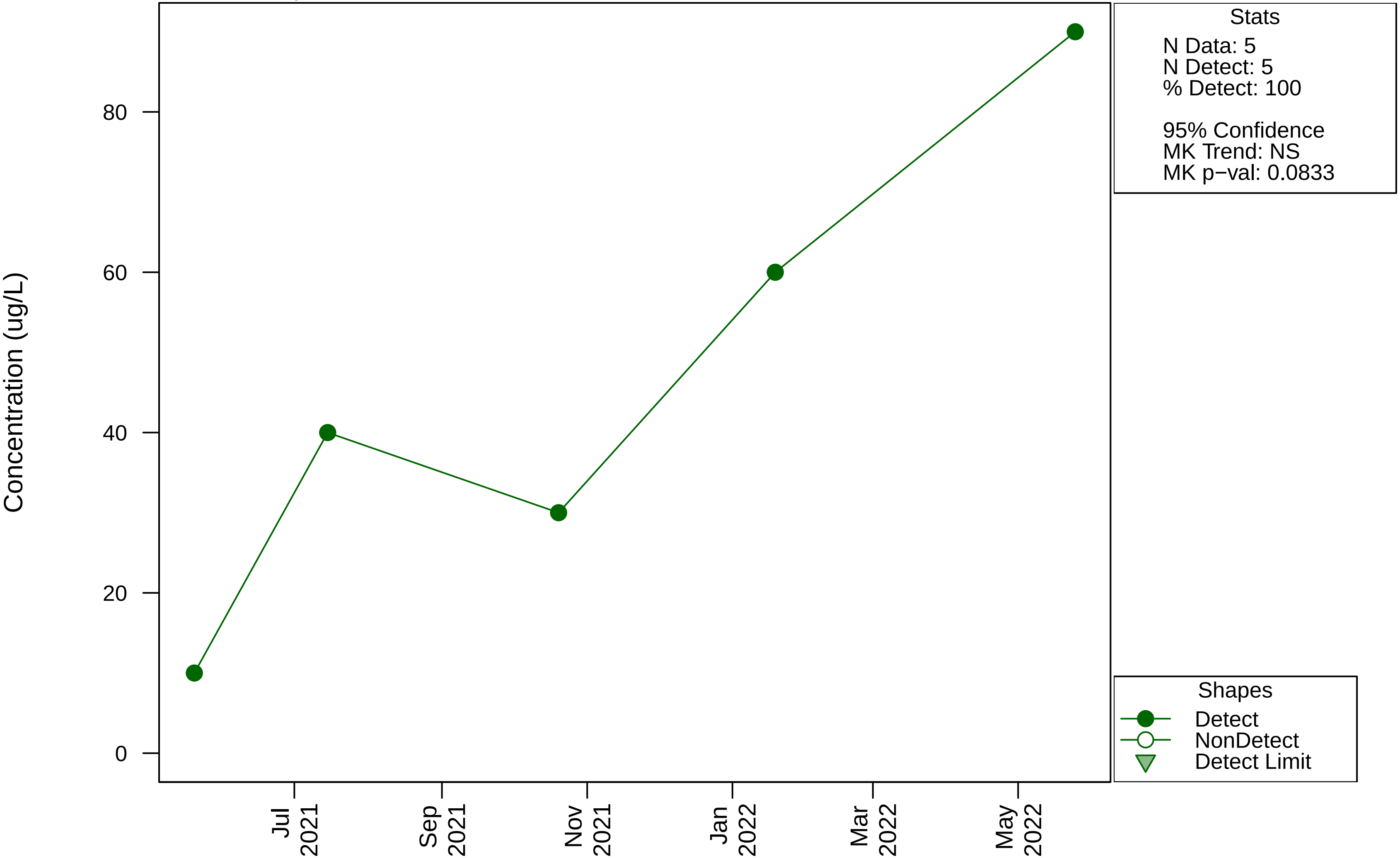
Scatterplots and Trend Analysis
MPGM5−D6, Nickel



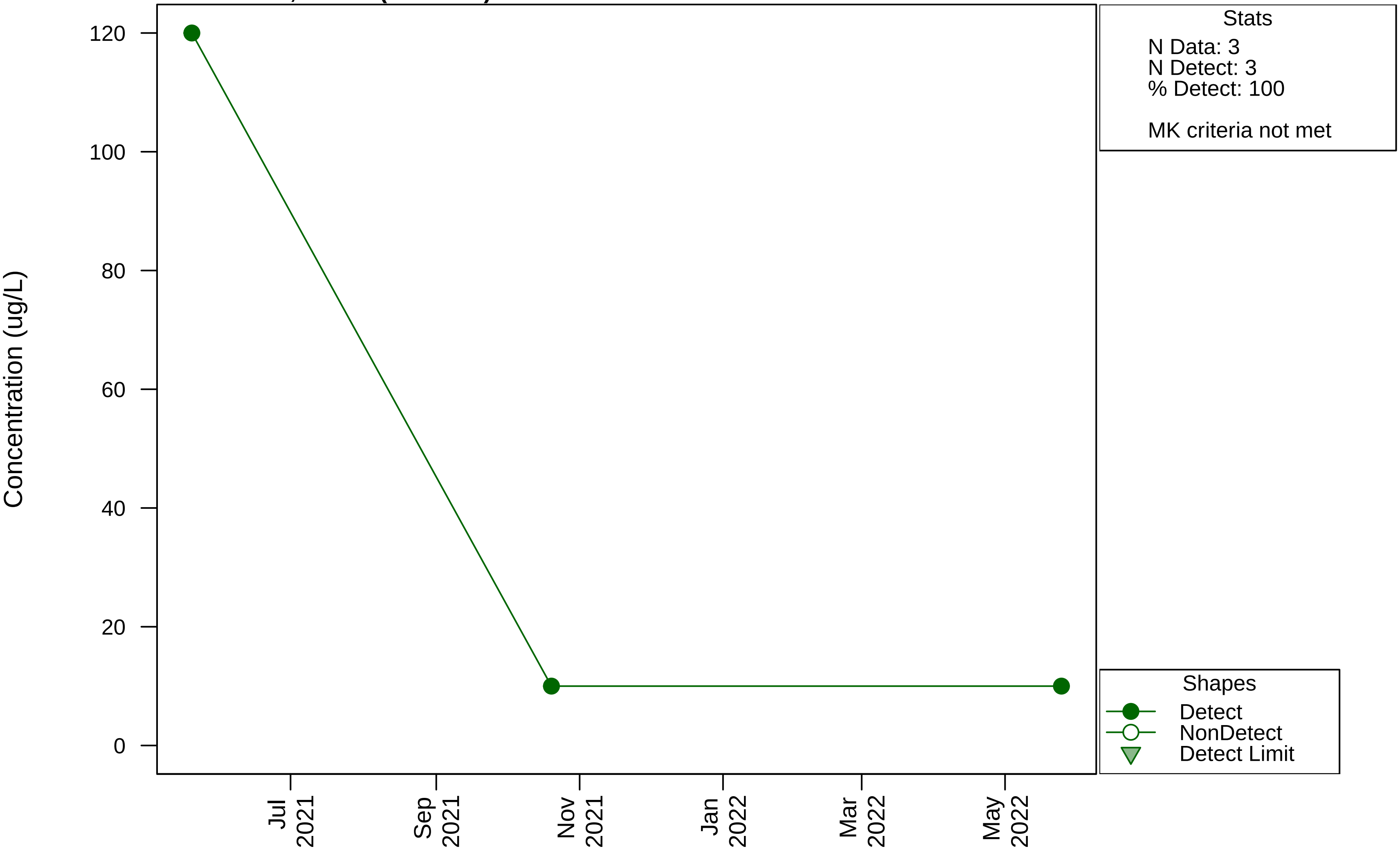


Scatterplots and Trend Analysis
MPGM5−D6, Nickel (Filtered)
Concentration (ug/L)
0
50
100
150
200
250
Jul 2021
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 5
N Detect: 5
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.207
Shapes
Detect
NonDetect
Detect Limit

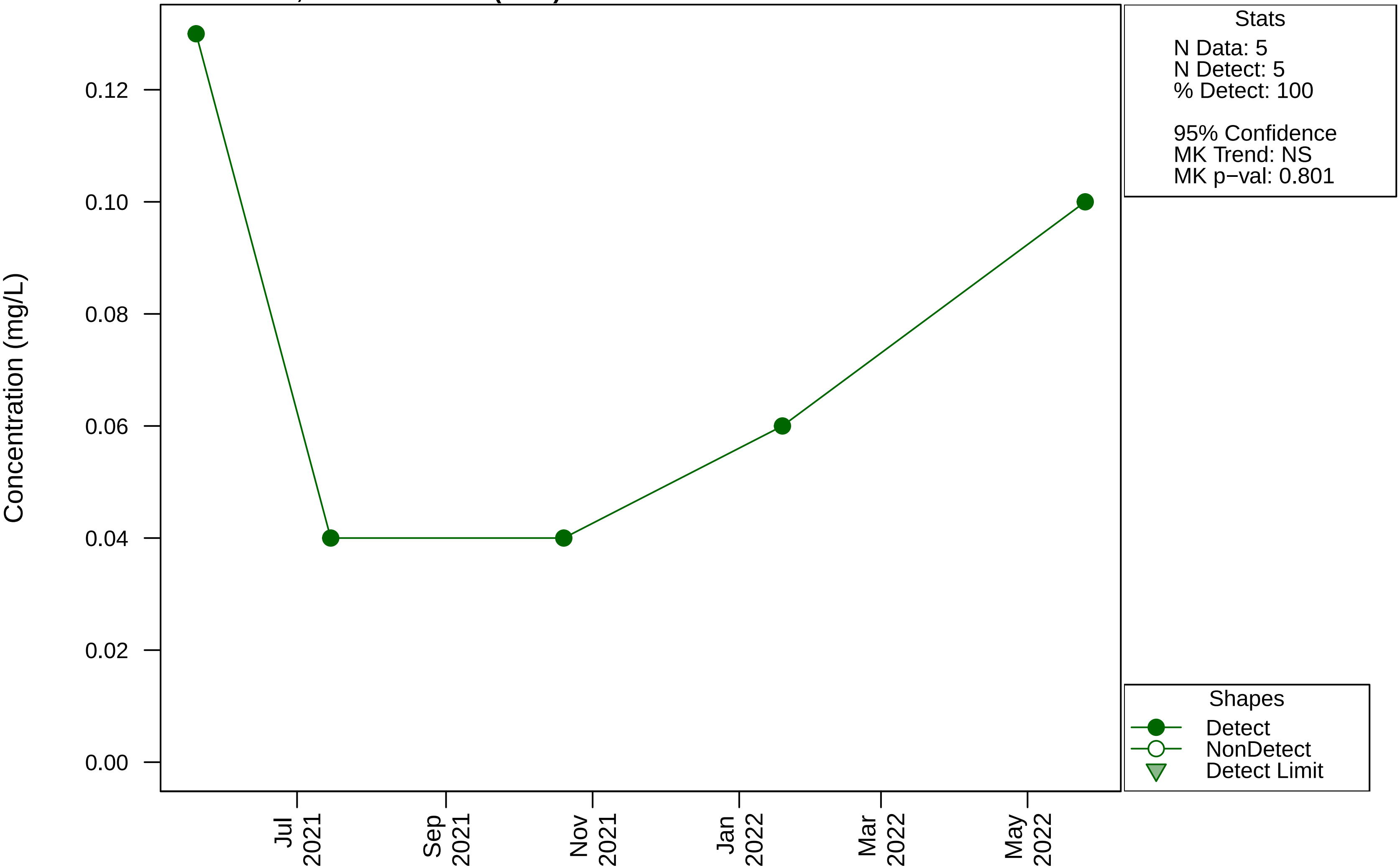
Scatterplots and Trend Analysis
MPGM5−D6, Nitrate

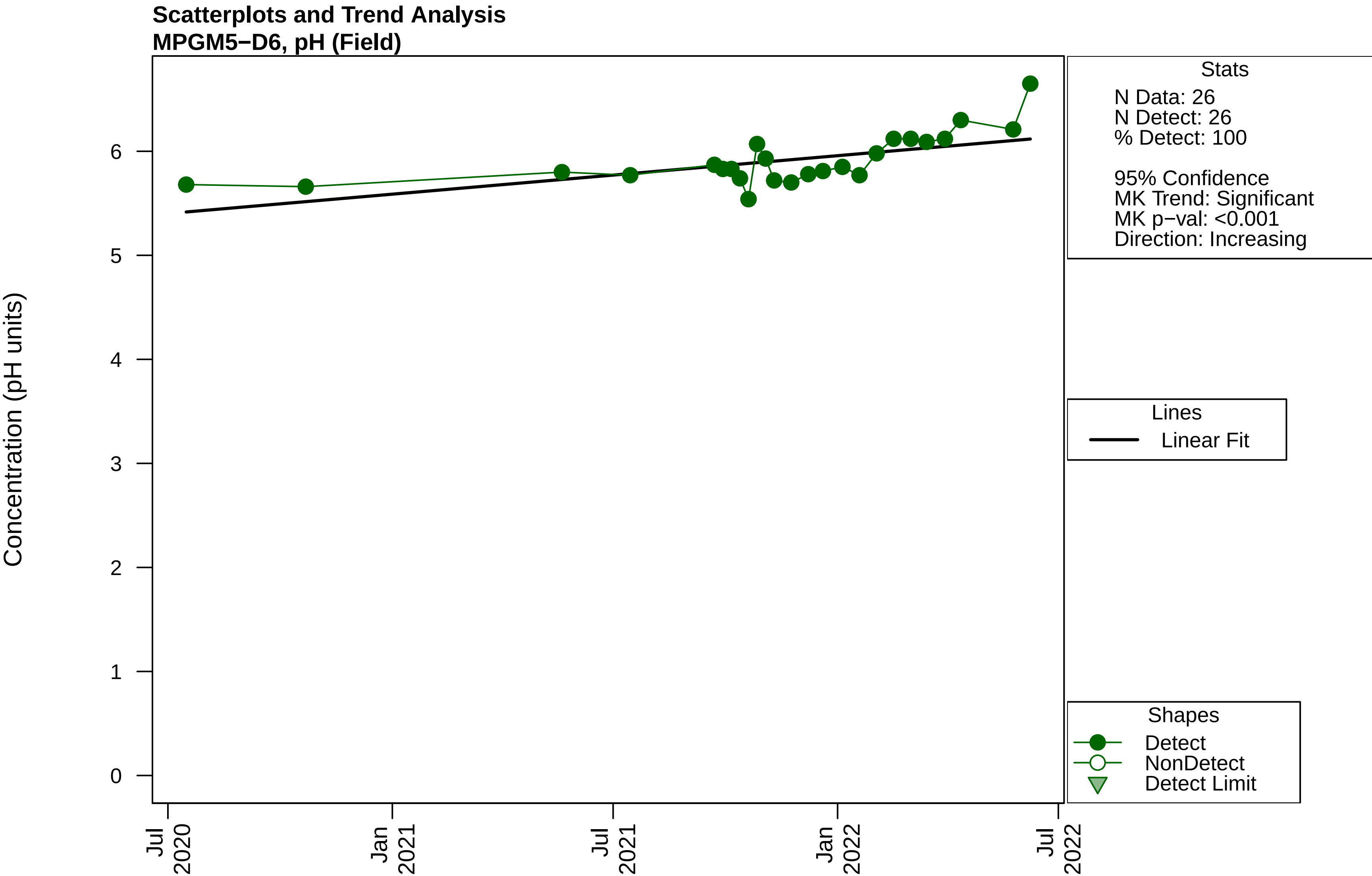


Scatterplots and Trend Analysis
MPGM5−D6, Nitrite (as NO2−)

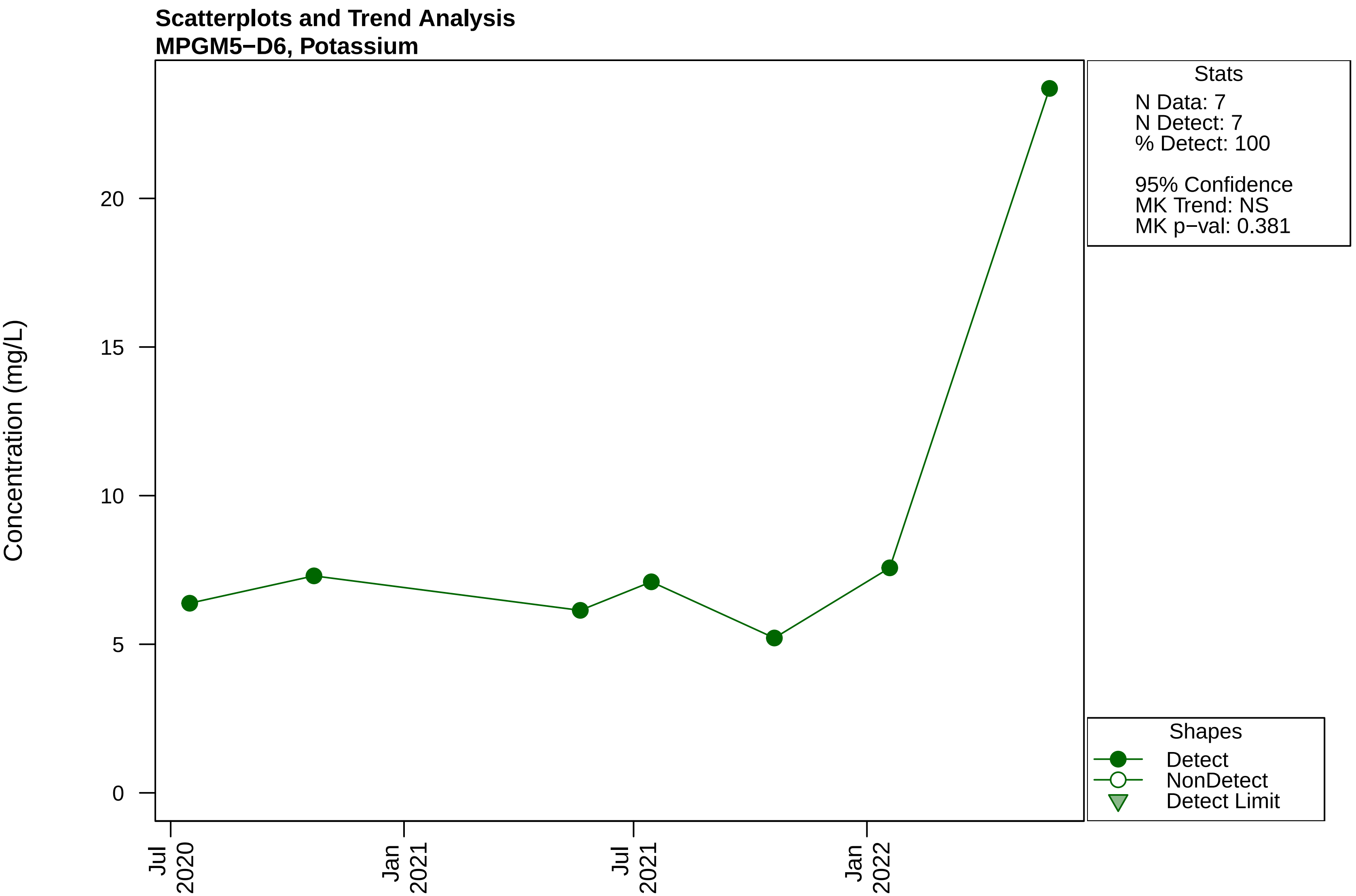


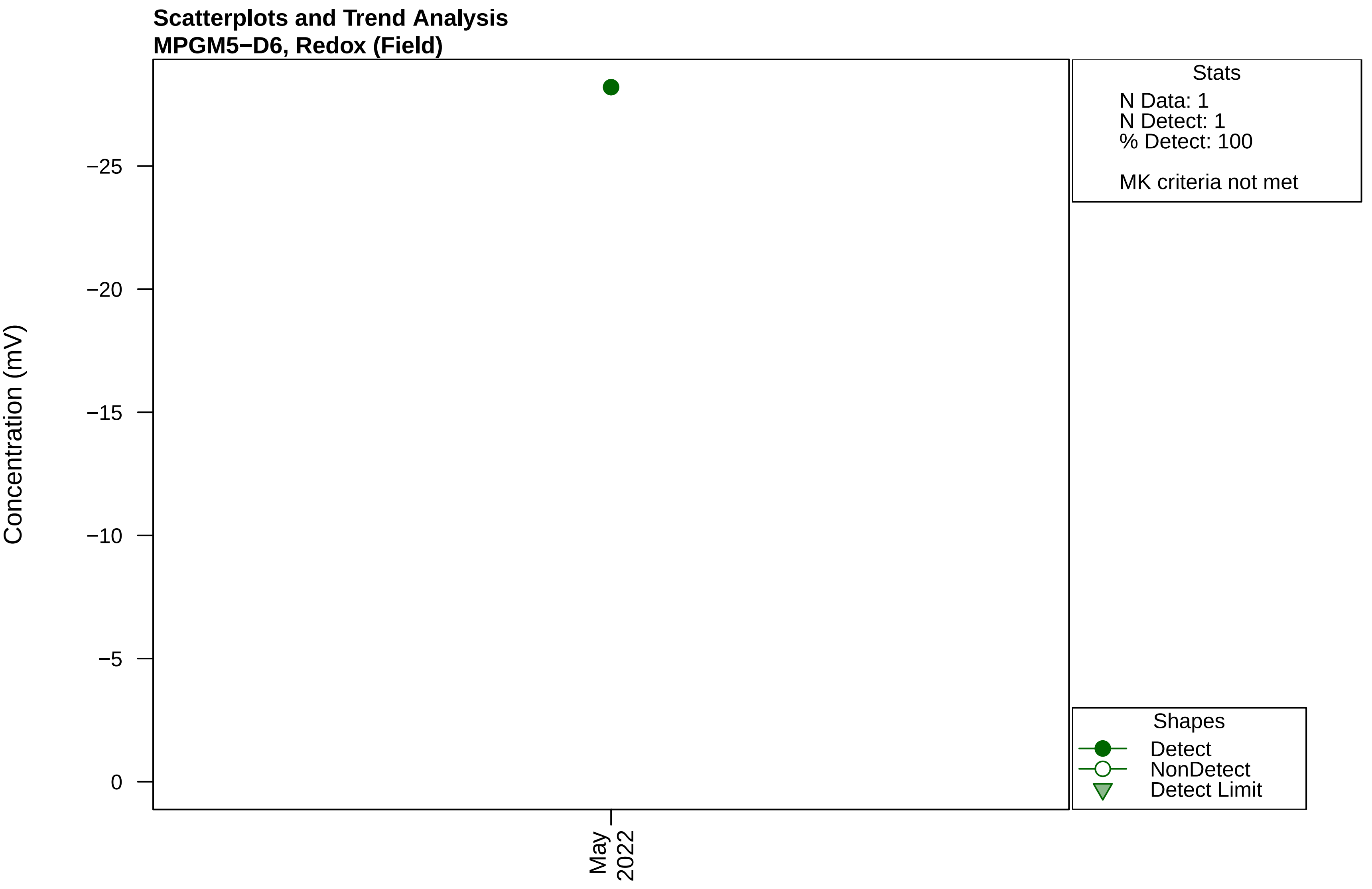
Scatterplots and Trend Analysis
MPGM5−D6, Nitrite + Nitrate (as N)



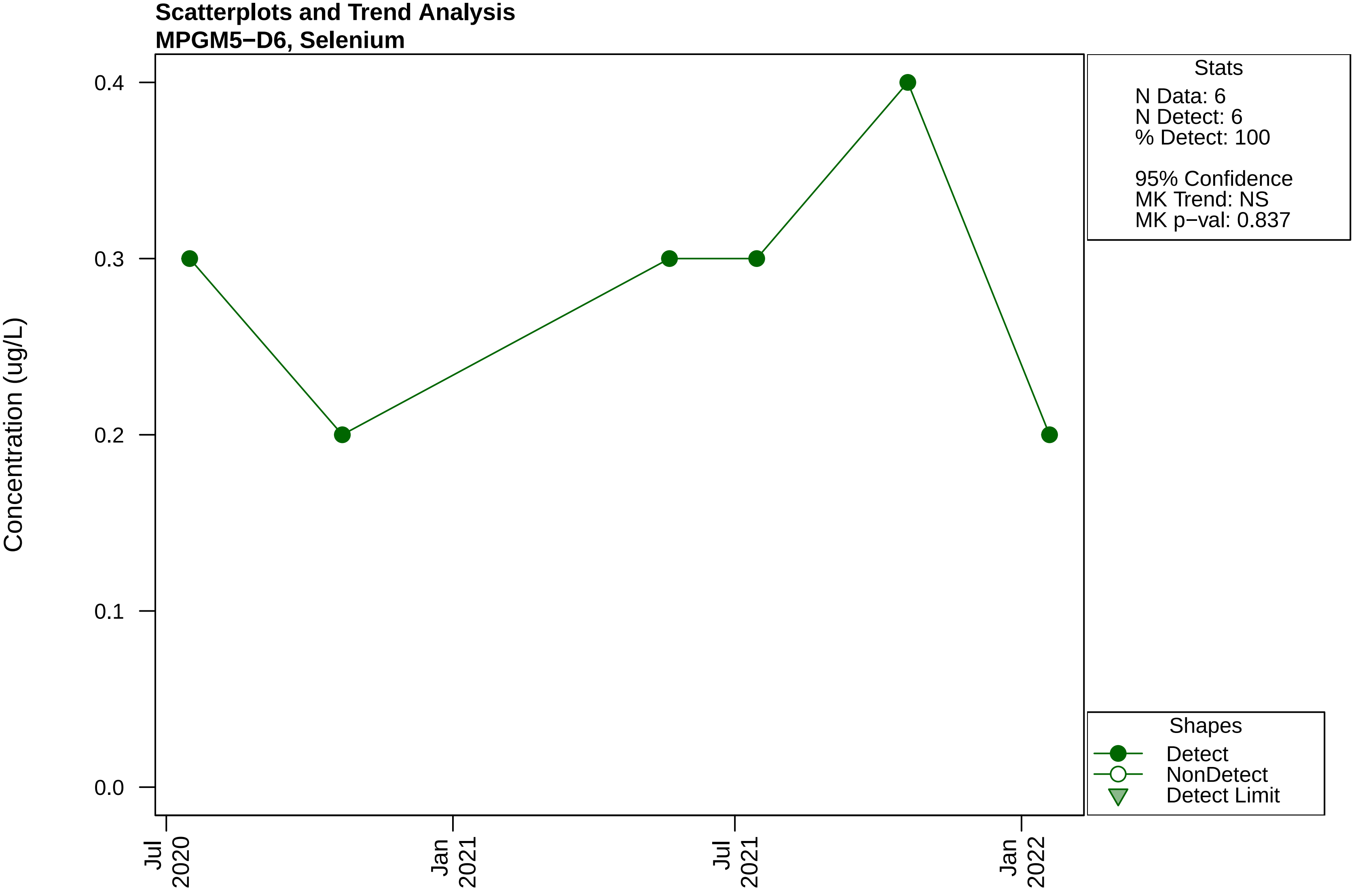


Scatterplots and Trend Analysis
MPGM5−D6, pH (Field)
Concentration (pH units)
0
1
2
3
4
5
6
Jul 2020
Jan 2021
Jul 2021
Jan 2022
Jul 2022
Stats
N Data: 26
N Detect: 26
% Detect: 100
95% Confidence
MK Trend: Significant
MK p−val: <0.001
Direction: Increasing
Lines
Linear Fit
Shapes
Detect
NonDetect
Detect Limit

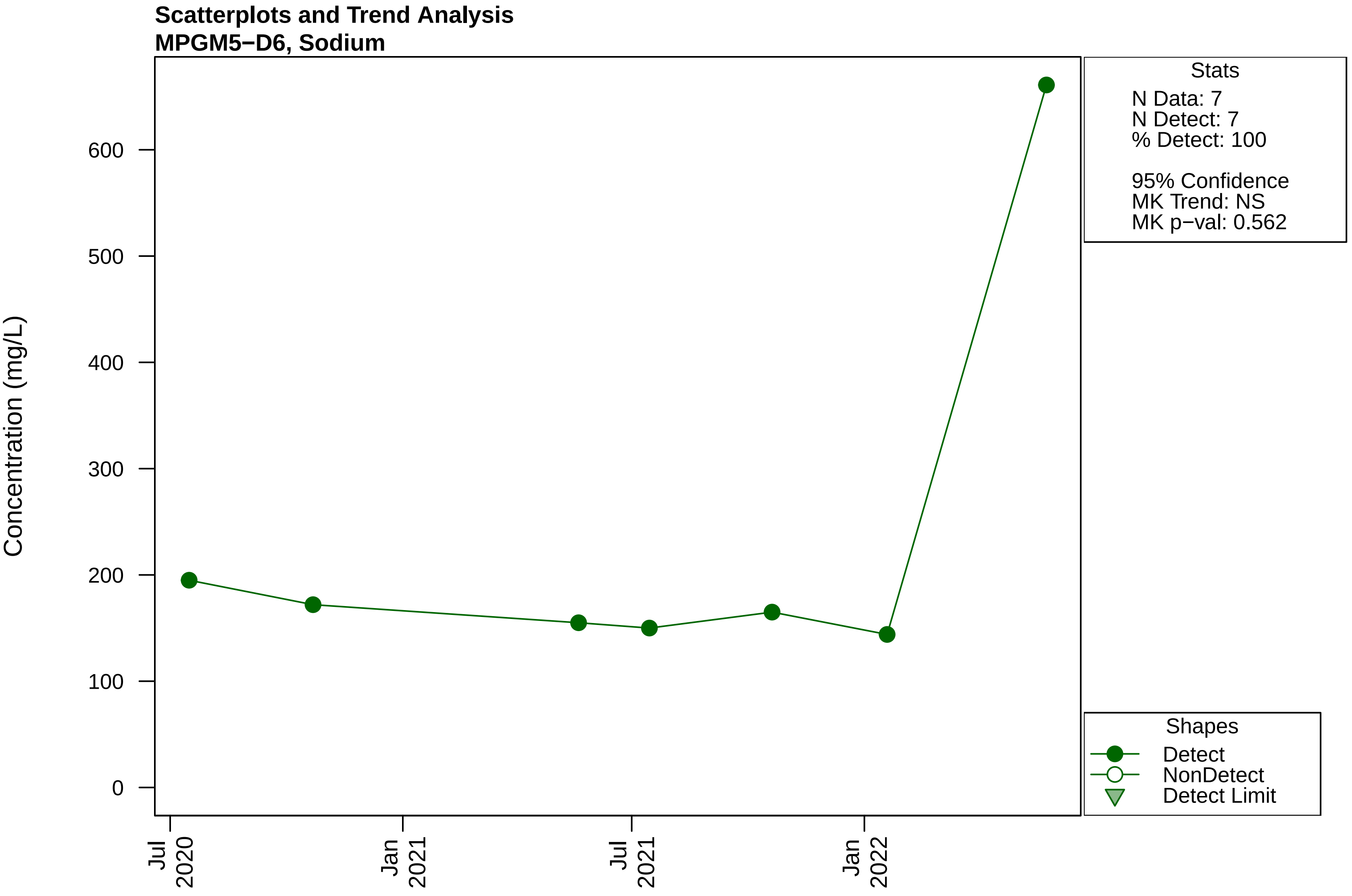

Scatterplots and Trend Analysis
MPGM5−D6, Potassium
Concentration (mg/L)
0
5
10
15
20
Jul 2020
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 7
N Detect: 7
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.381
Shapes
Detect
NonDetect
Detect Limit

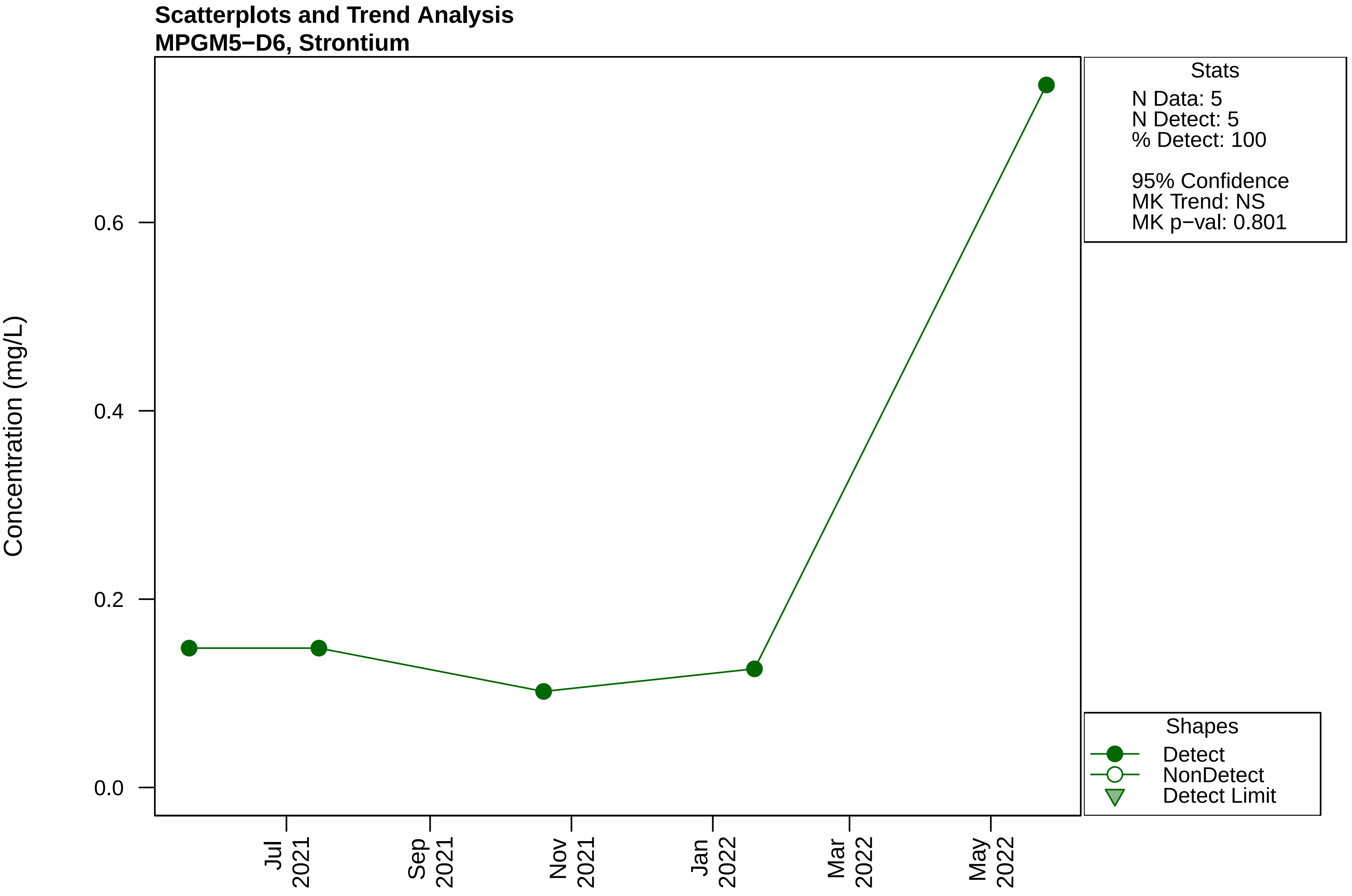


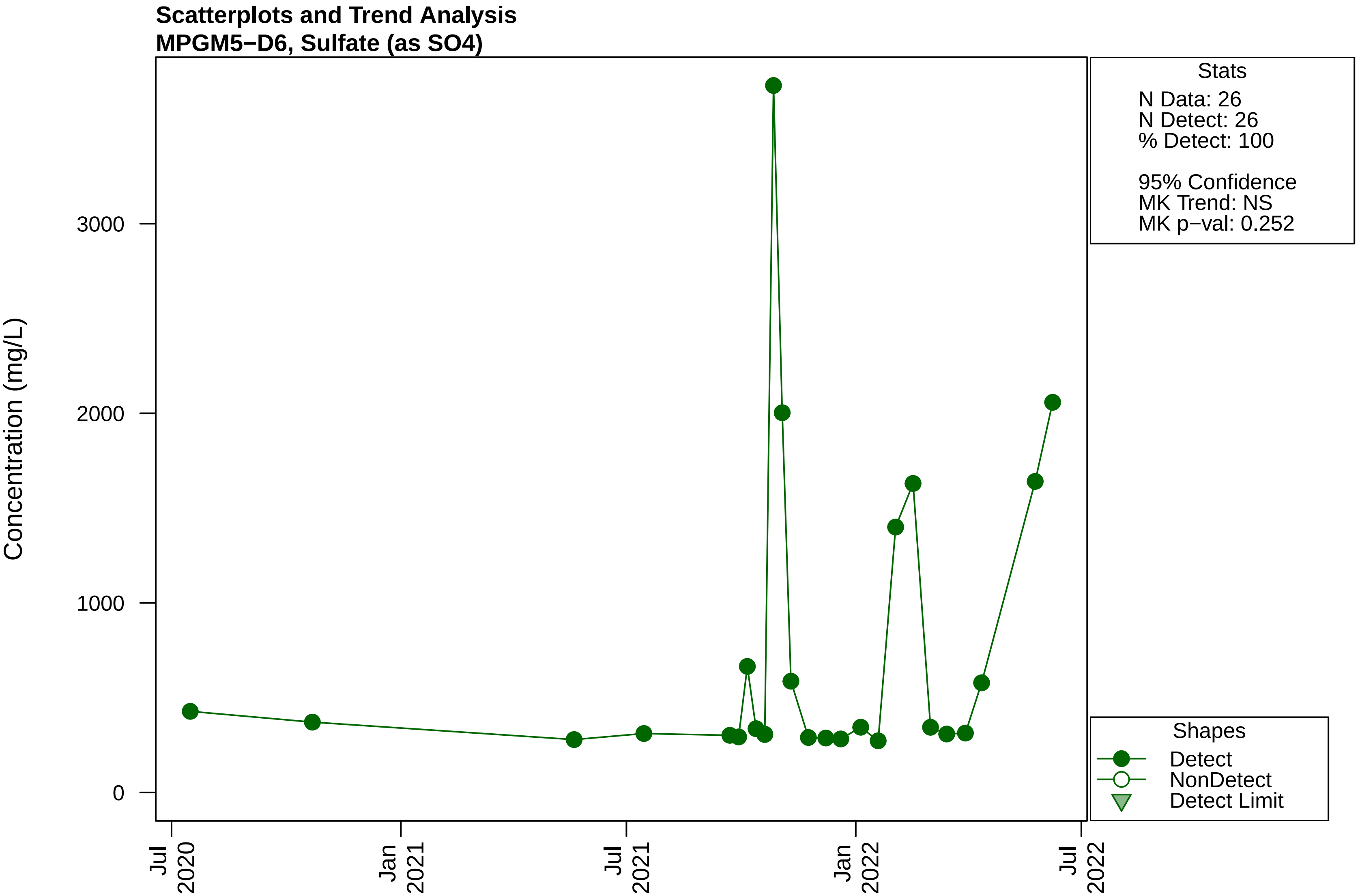
Scatterplots and Trend Analysis
MPGM5−D6, Redox (Field)
Concentration (mV)
−25
−20
−15
−10
−5
0
May 2022
Stats
N Data: 1
N Detect: 1
% Detect: 100
MK criteria not met
Shapes
Detect
NonDetect
Detect Limit



Scatterplots and Trend Analysis
MPGM5−D6, Selenium
Concentration (ug/L)
0.0
0.1
0.2
0.3
0.4
Jul 2020
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 6
N Detect: 6
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.837
Shapes
Detect
NonDetect
Detect Limit

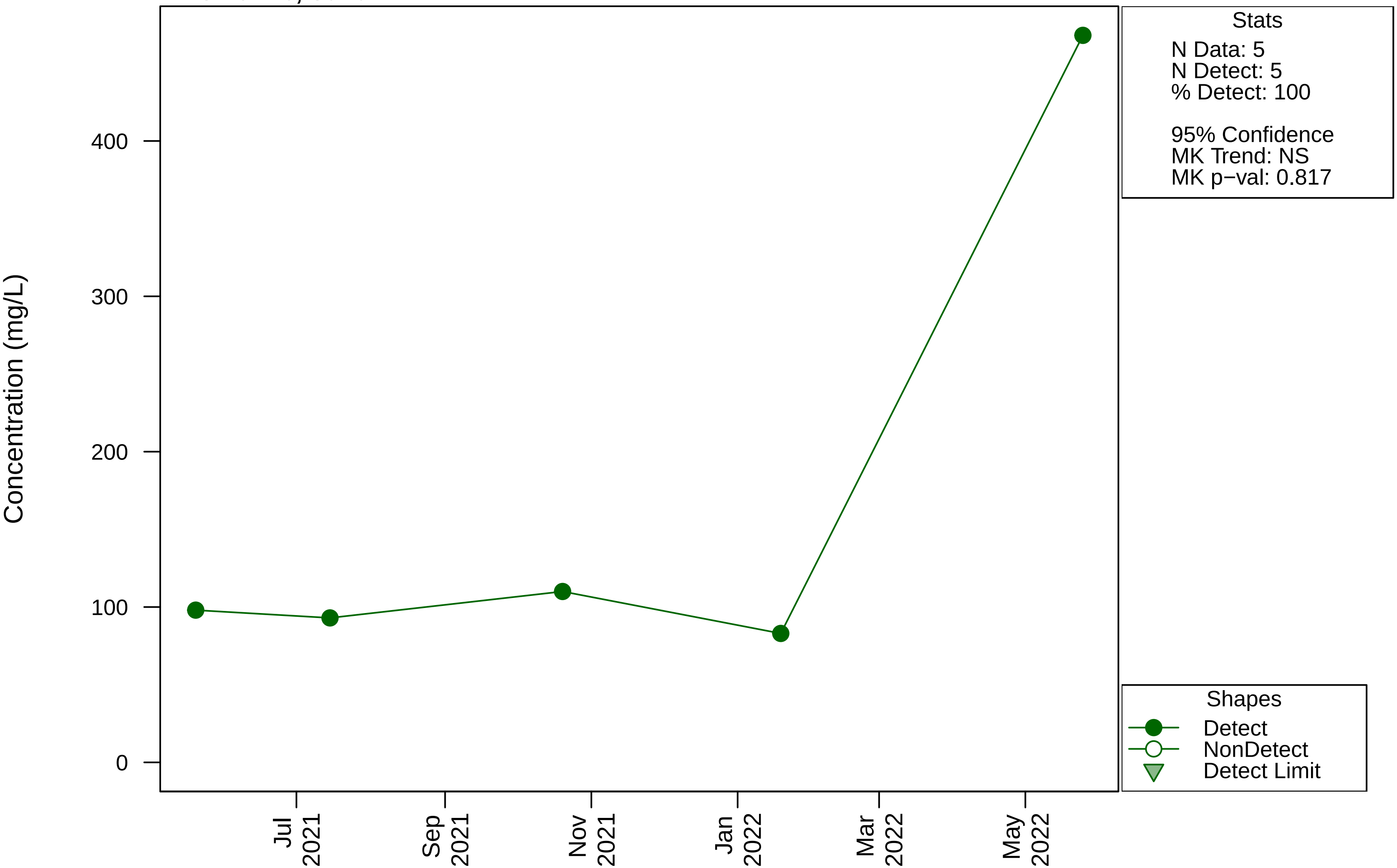

Scatterplots and Trend Analysis
MPGM5−D6, Sodium
Concentration (mg/L)
0
100
200
300
400
500
600
Jul 2020
Jan 2021
Jul 2021
Jan 2022
Stats
N Data: 7
N Detect: 7
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.562
Shapes
Detect
NonDetect
Detect Limit

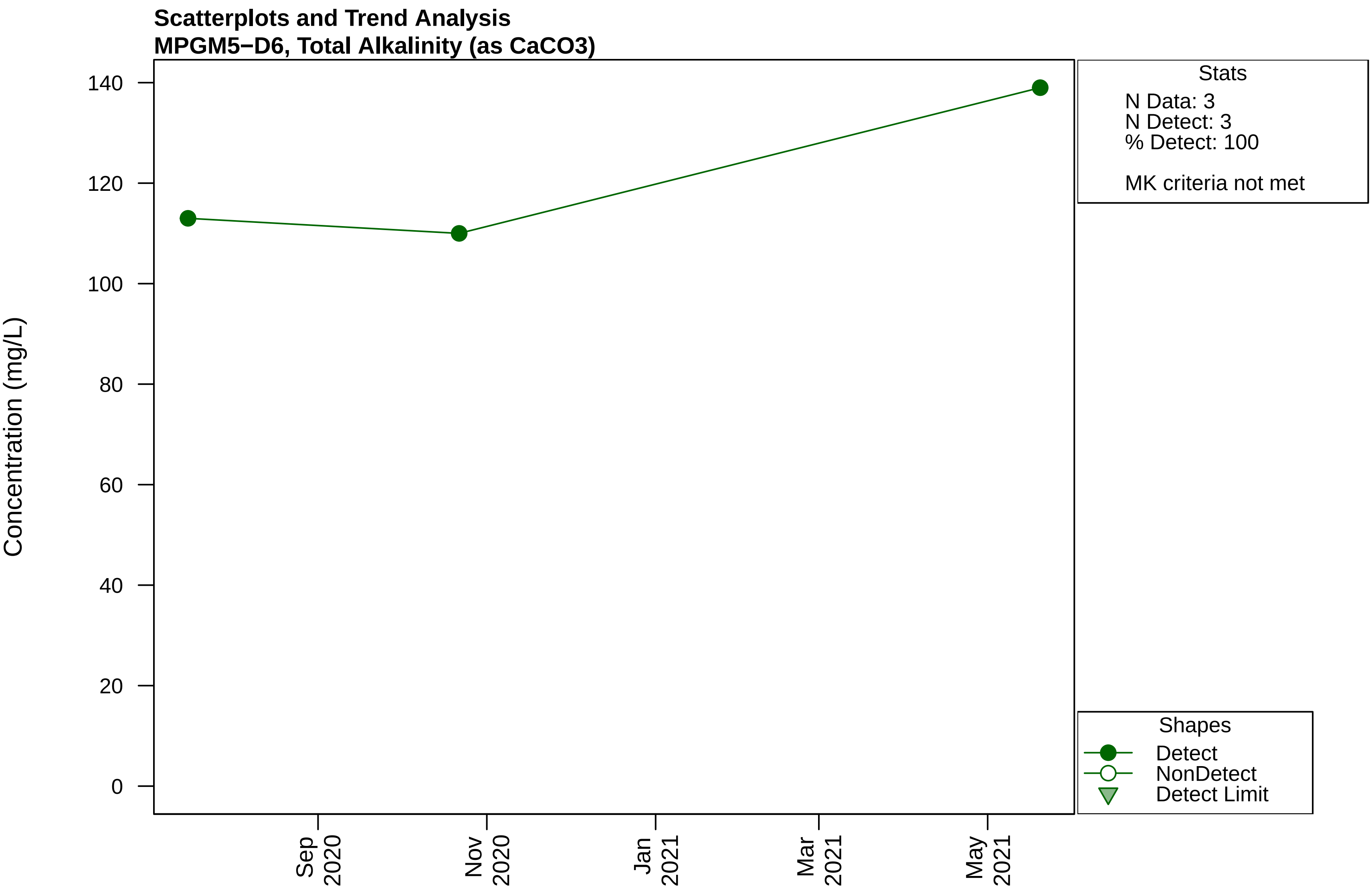

Scatterplots and Trend Analysis
MPGM5−D6, Strontium
Concentration (mg/L)
0.0
0.2
0.4
0.6
Jul 2021
Sep 2021
Nov 2021
Jan 2022
Mar 2022
May 2022
Stats
N Data: 5
N Detect: 5
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.801
Shapes
Detect
NonDetect
Detect Limit



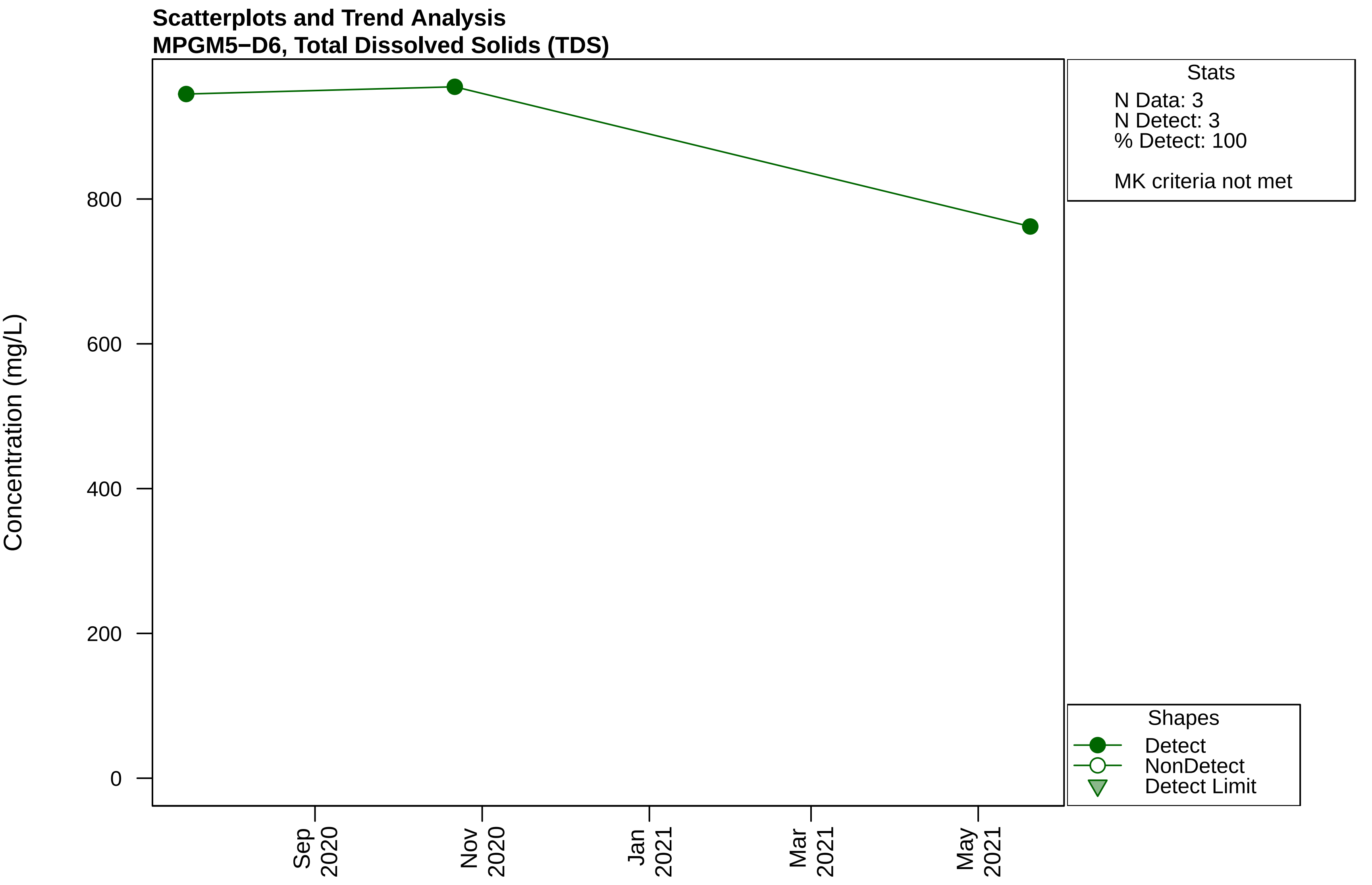
Scatterplots and Trend Analysis
MPGM5−D6, Sulfate (as SO4)
Concentration (mg/L)
0
1000
2000
3000
Jul 2020
Jan 2021
Jul 2021
Jan 2022
Jul 2022
Stats
N Data: 26
N Detect: 26
% Detect: 100
95% Confidence
MK Trend: NS
MK p−val: 0.252
Shapes
Detect
NonDetect
Detect Limit

Scatterplots and Trend Analysis
MPGM5−D6, Sulfur



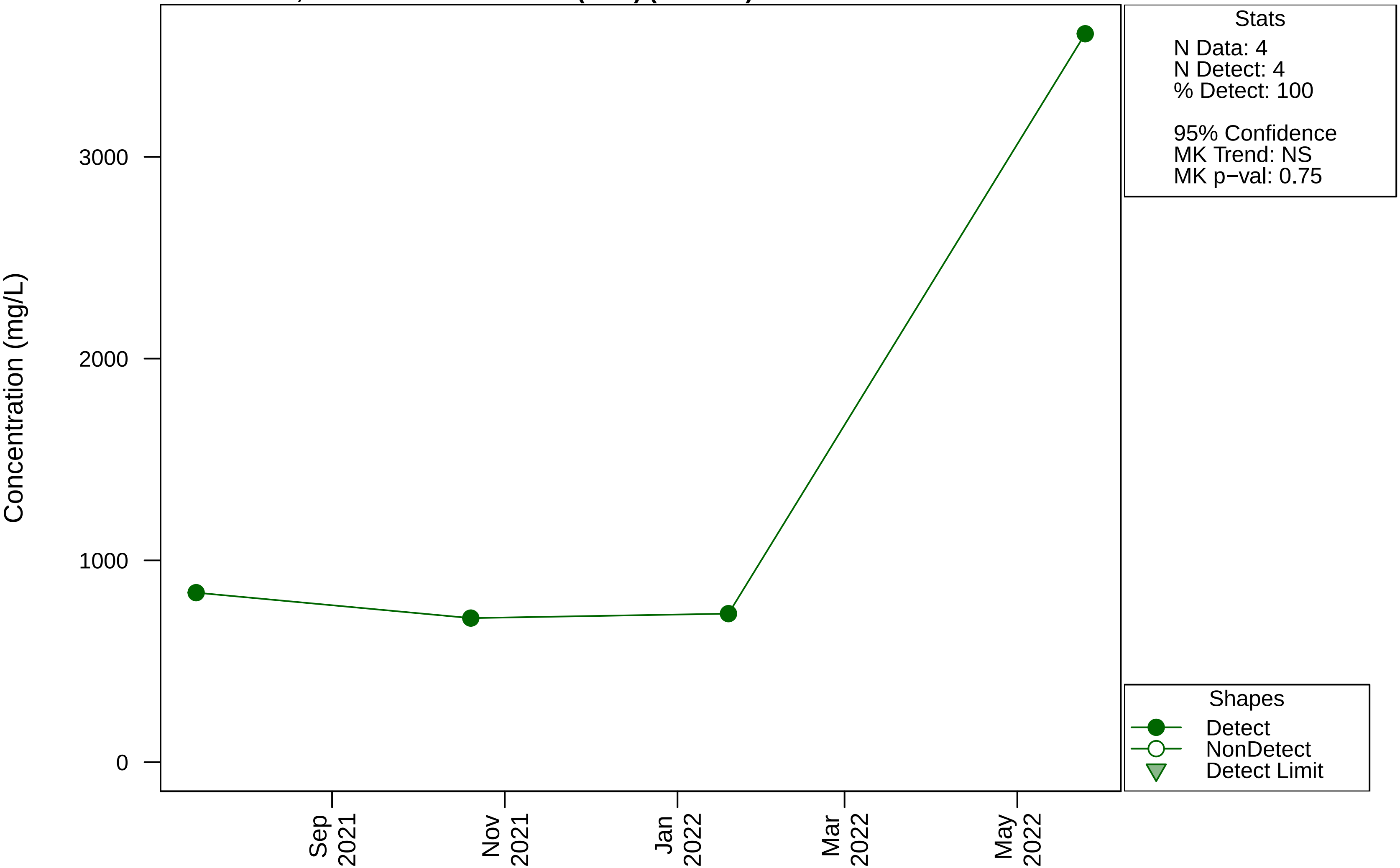


Scatterplots and Trend Analysis
MPGM5−D6, Total Alkalinity (as CaCO3)
Concentration (mg/L)
0
20
40
60
80
100
120
140
Sep 2020
Nov 2020
Jan 2021
Mar 2021
May 2021
Stats
N Data: 3
N Detect: 3
% Detect: 100
MK criteria not met
Shapes
Detect
NonDetect
Detect Limit

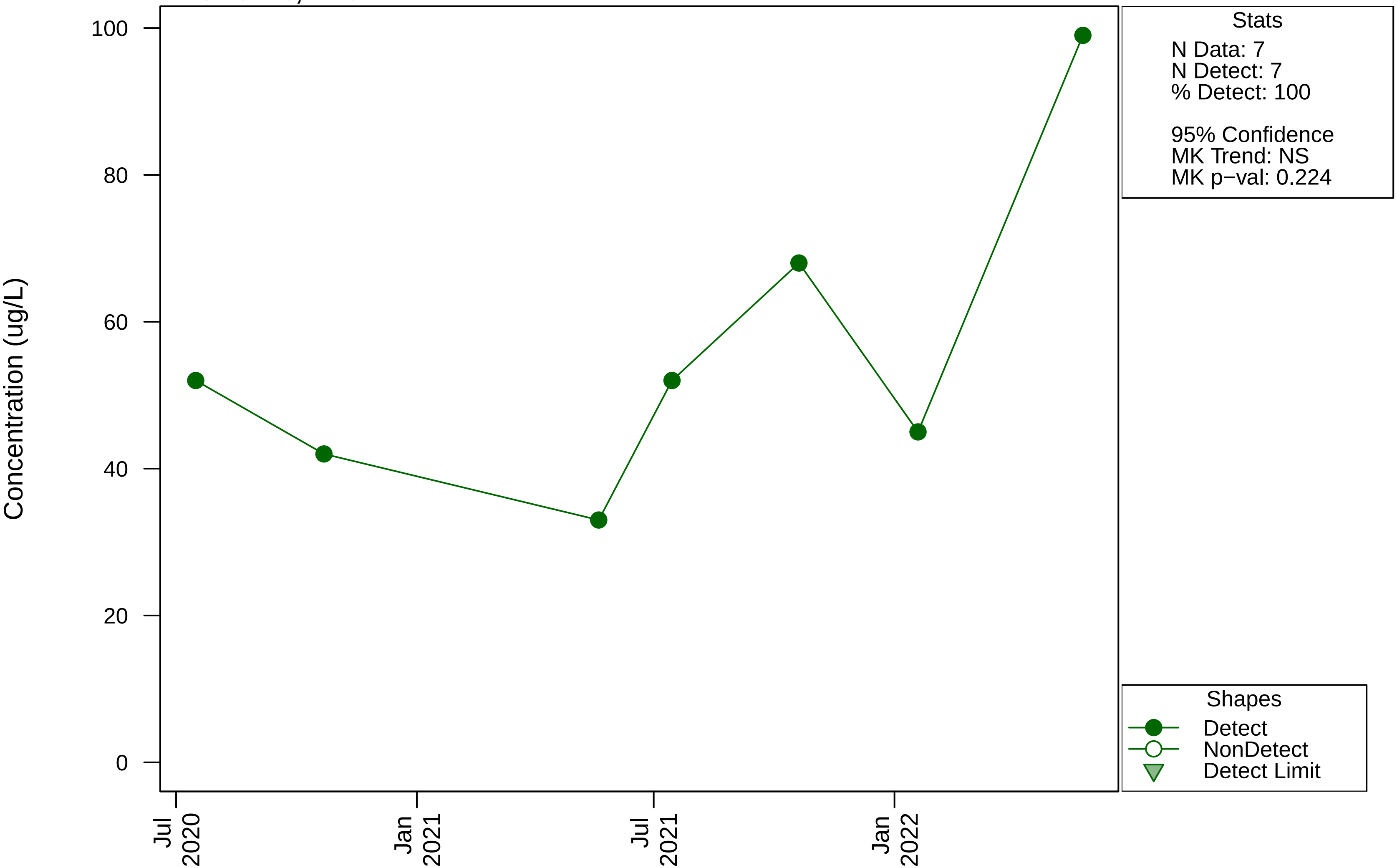


Scatterplots and Trend Analysis
MPGM5−D6, Total Dissolved Solids (TDS)
Concentration (mg/L)
0
200
400
600
800
Sep 2020
Nov 2020
Jan 2021
Mar 2021
May 2021
Stats
N Data: 3
N Detect: 3
% Detect: 100
MK criteria not met
Shapes
Detect
NonDetect
Detect Limit

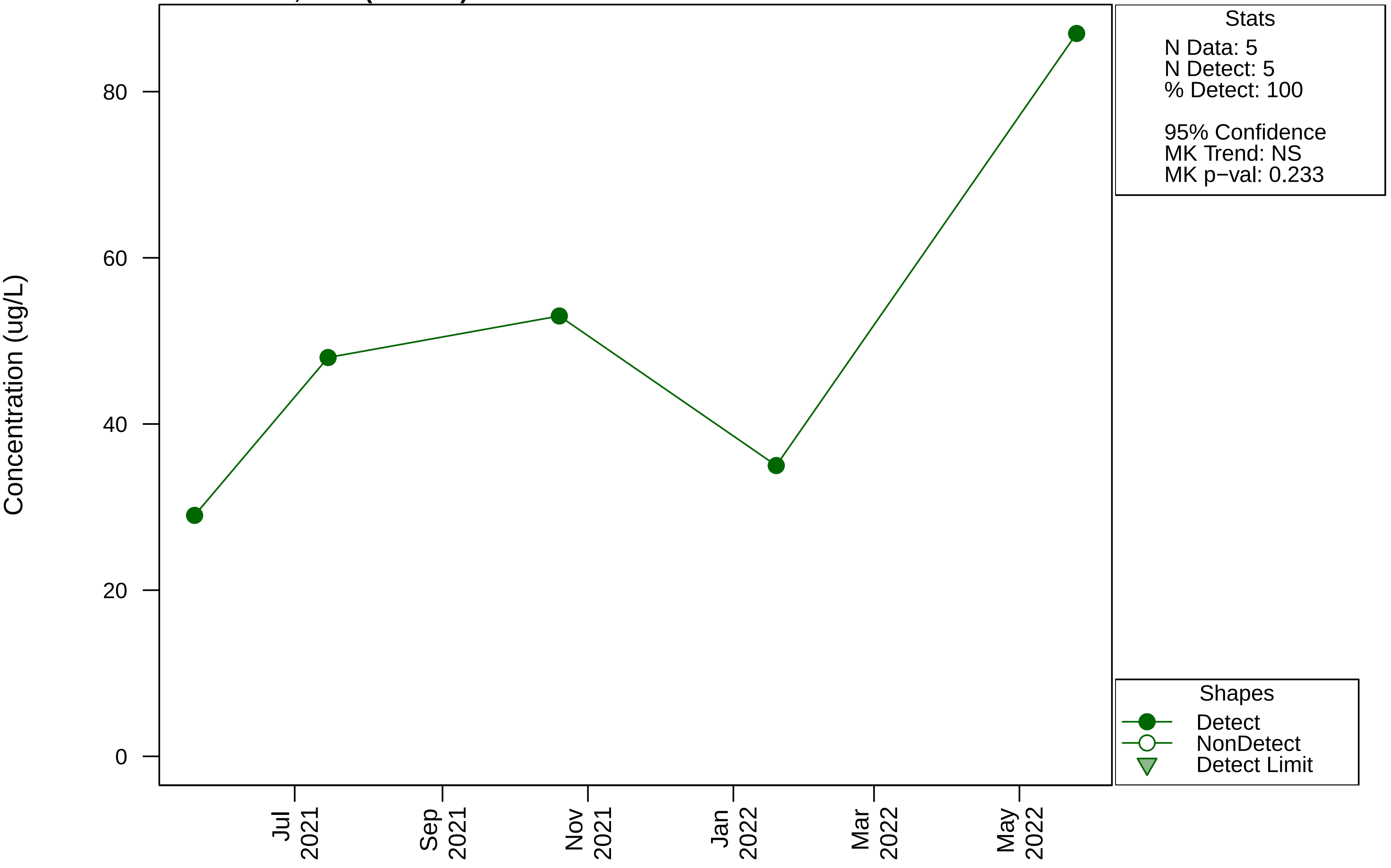
Scatterplots and Trend Analysis
MPGM5−D6, Total Dissolved Solids (TDS) (Filtered)



Scatterplots and Trend Analysis
MPGM5−D6, Zinc

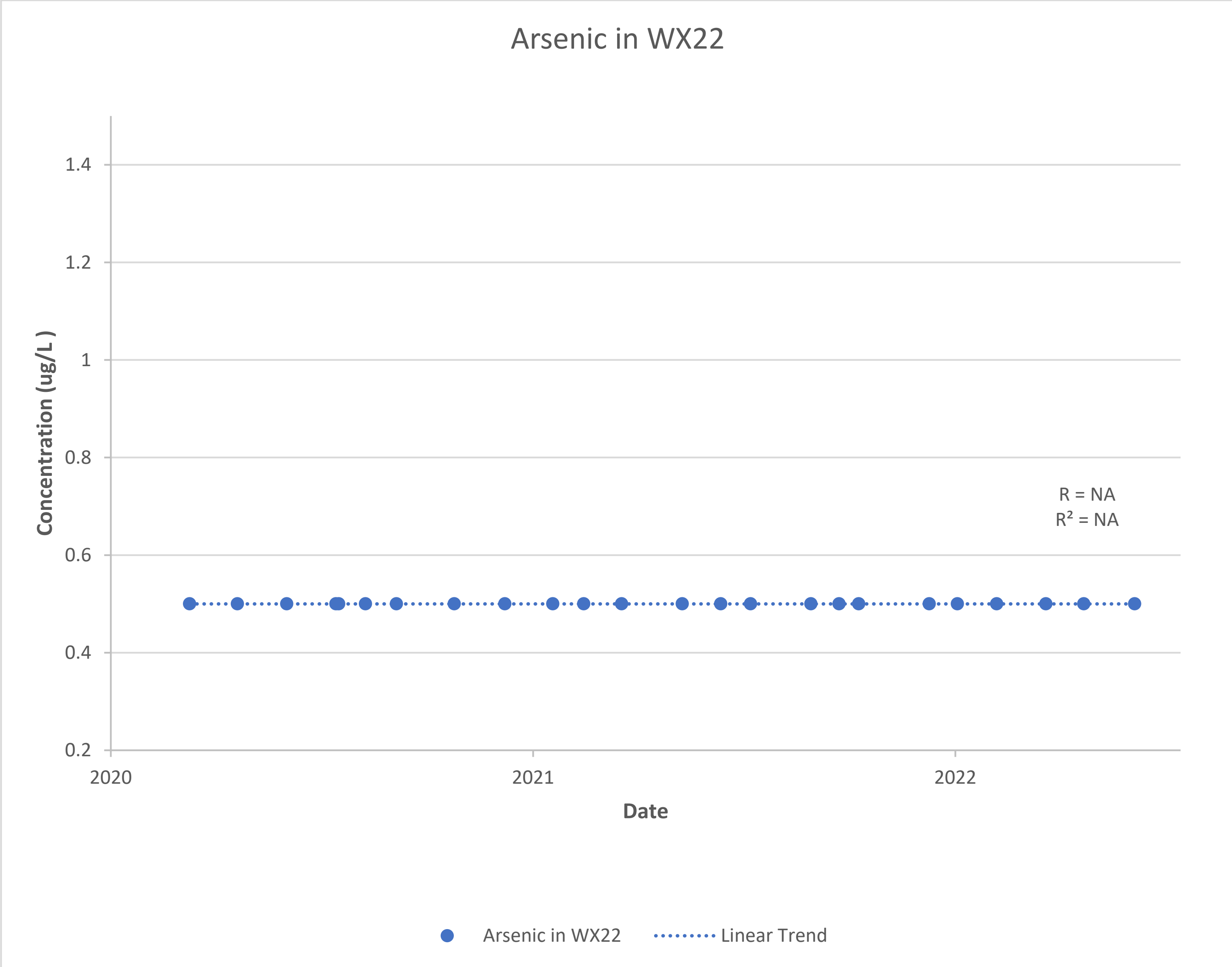


Scatterplots and Trend Analysis
MPGM5−D6, Zinc (Filtered)

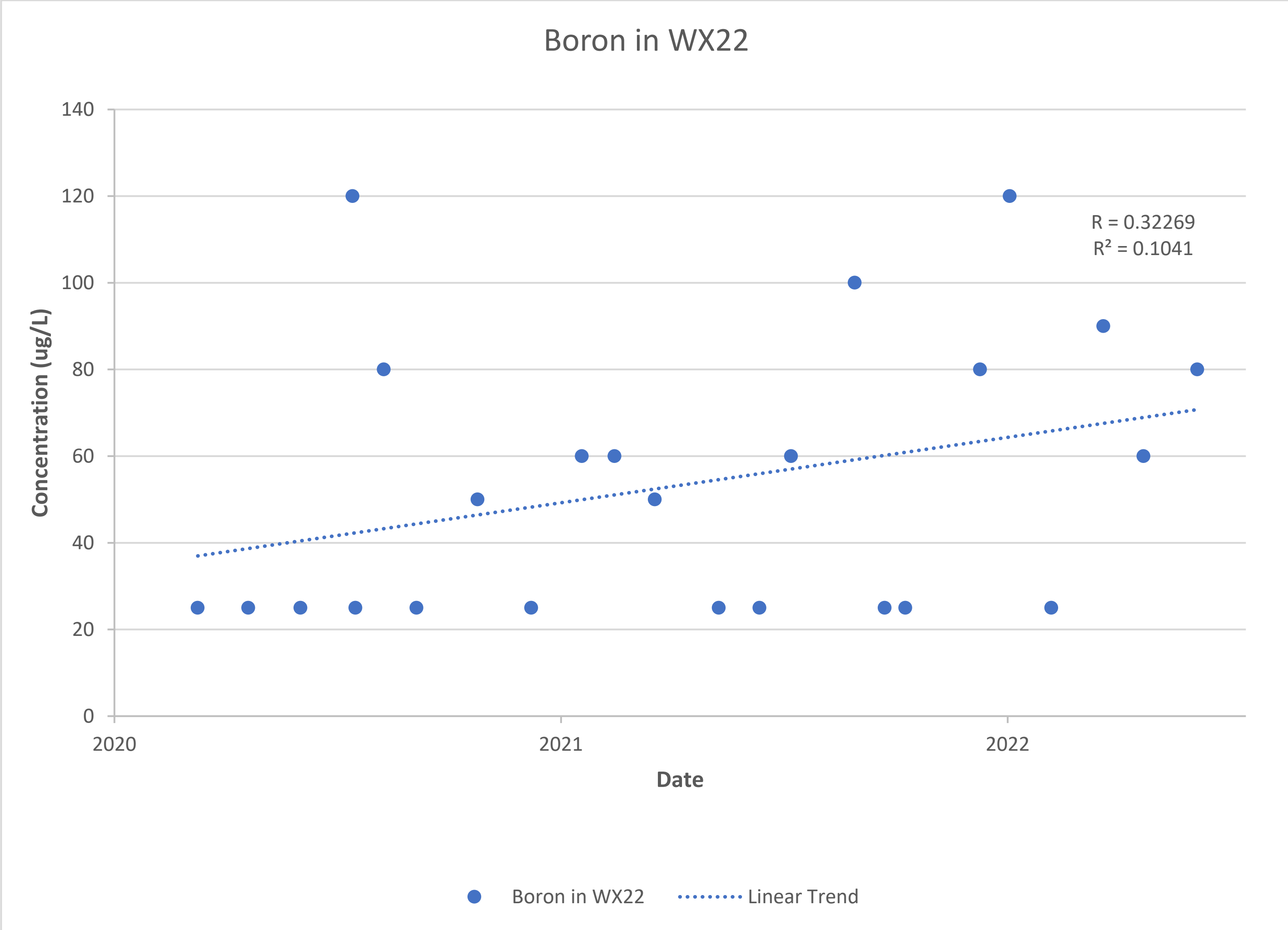


APPENDIX M SURFACE WATER STATISTICAL ANALYSIS

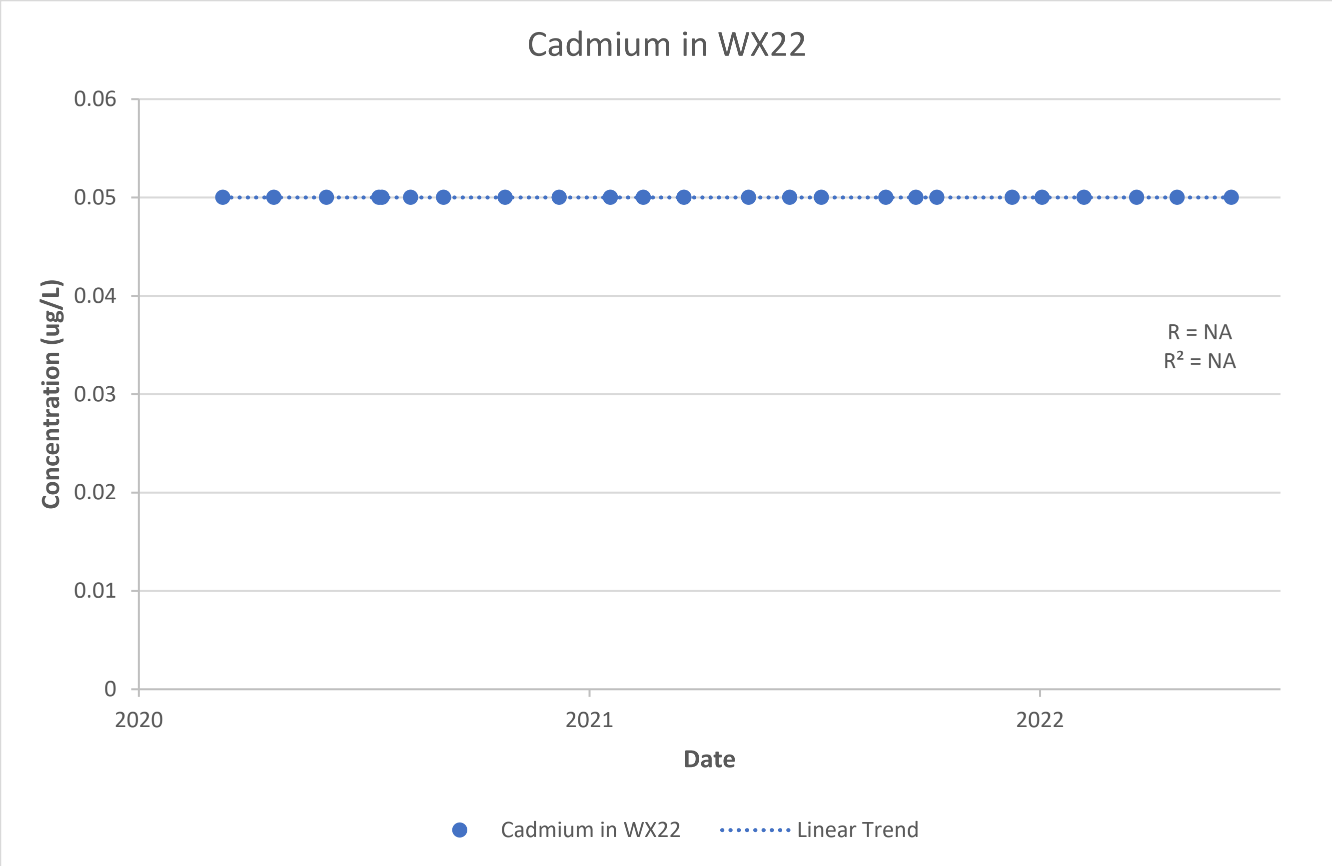
Surface Water Linear Trend Graphs



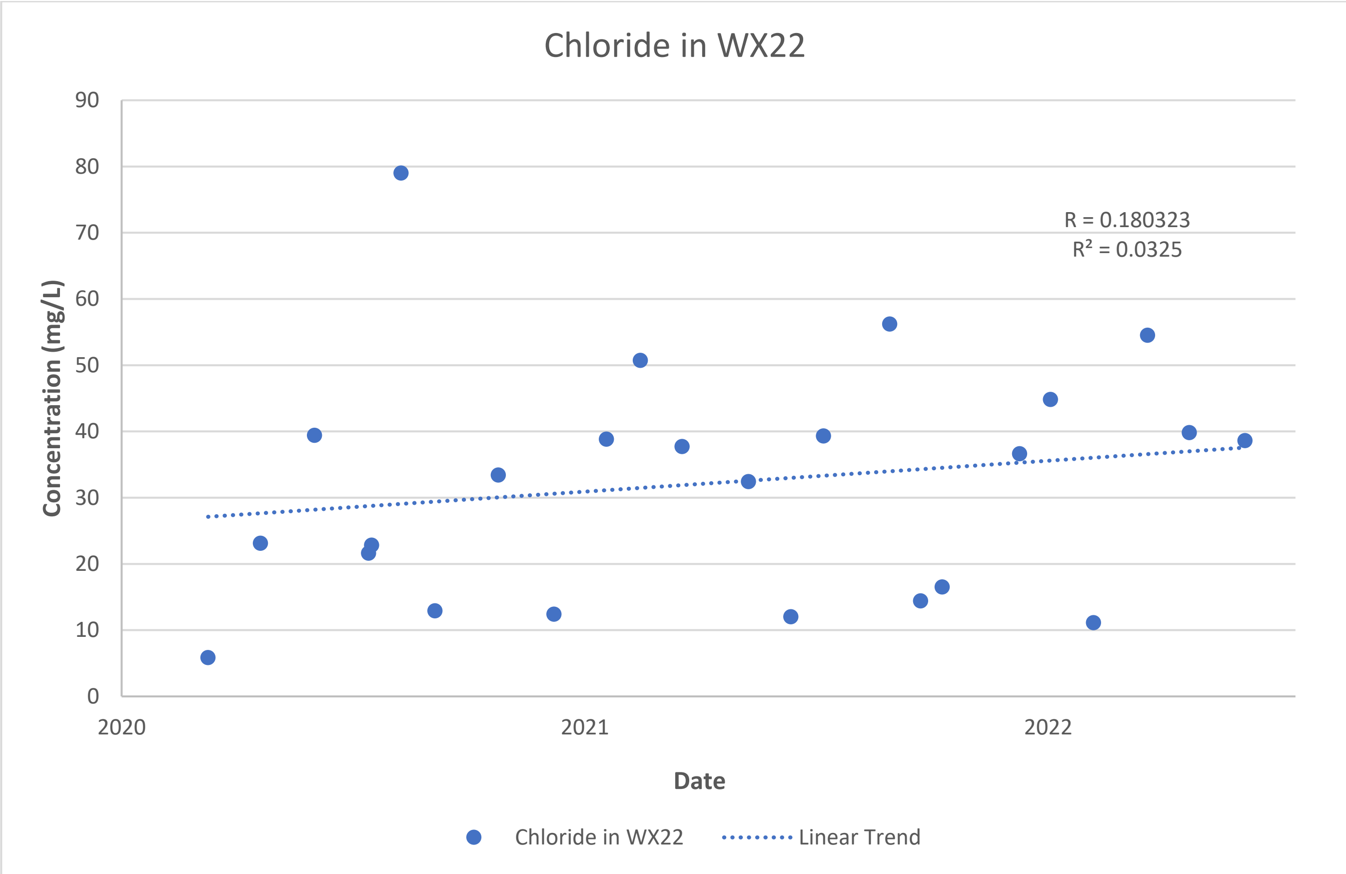
Surface Water Linear Trend Graphs



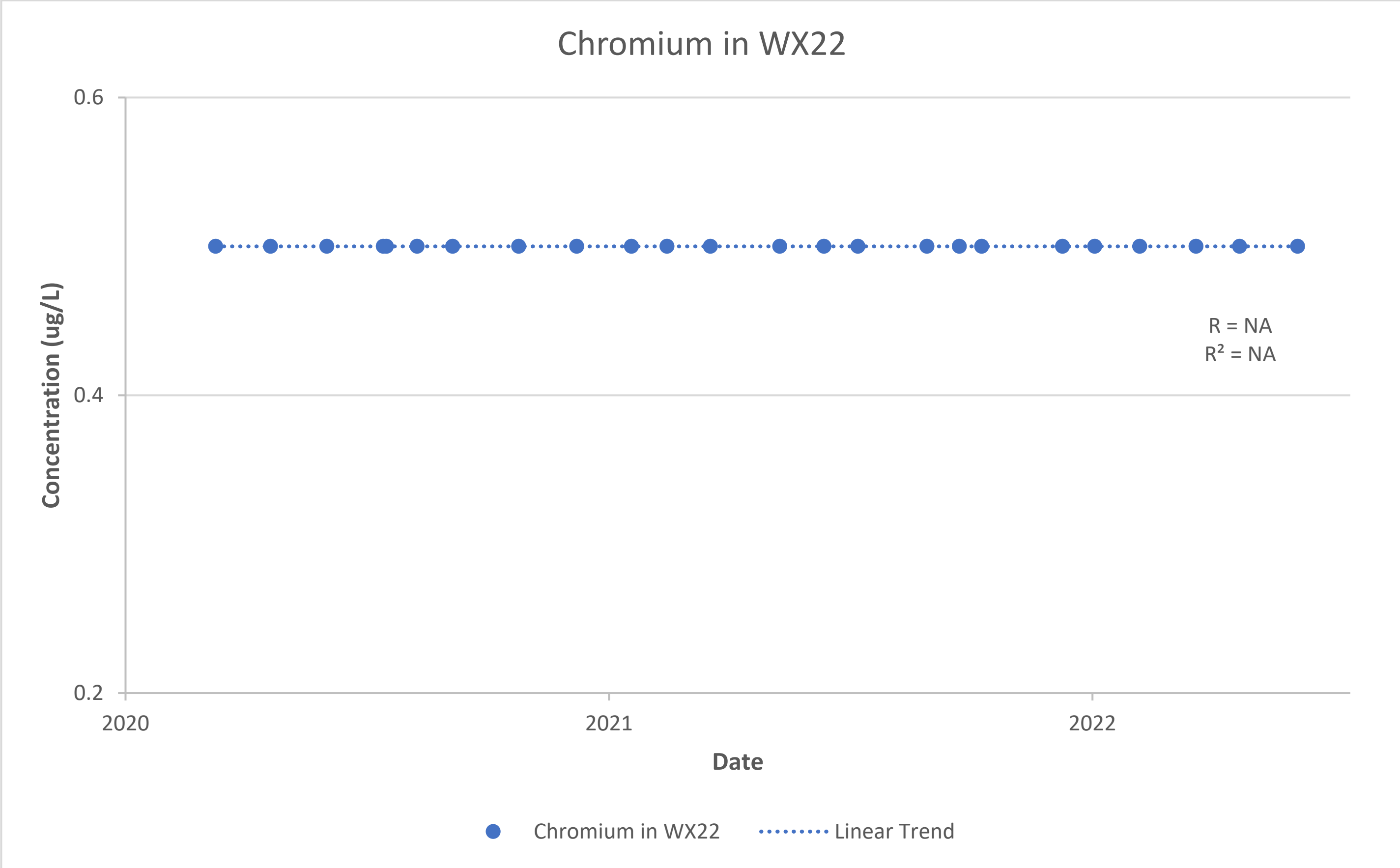
Surface Water Linear Trend Graphs



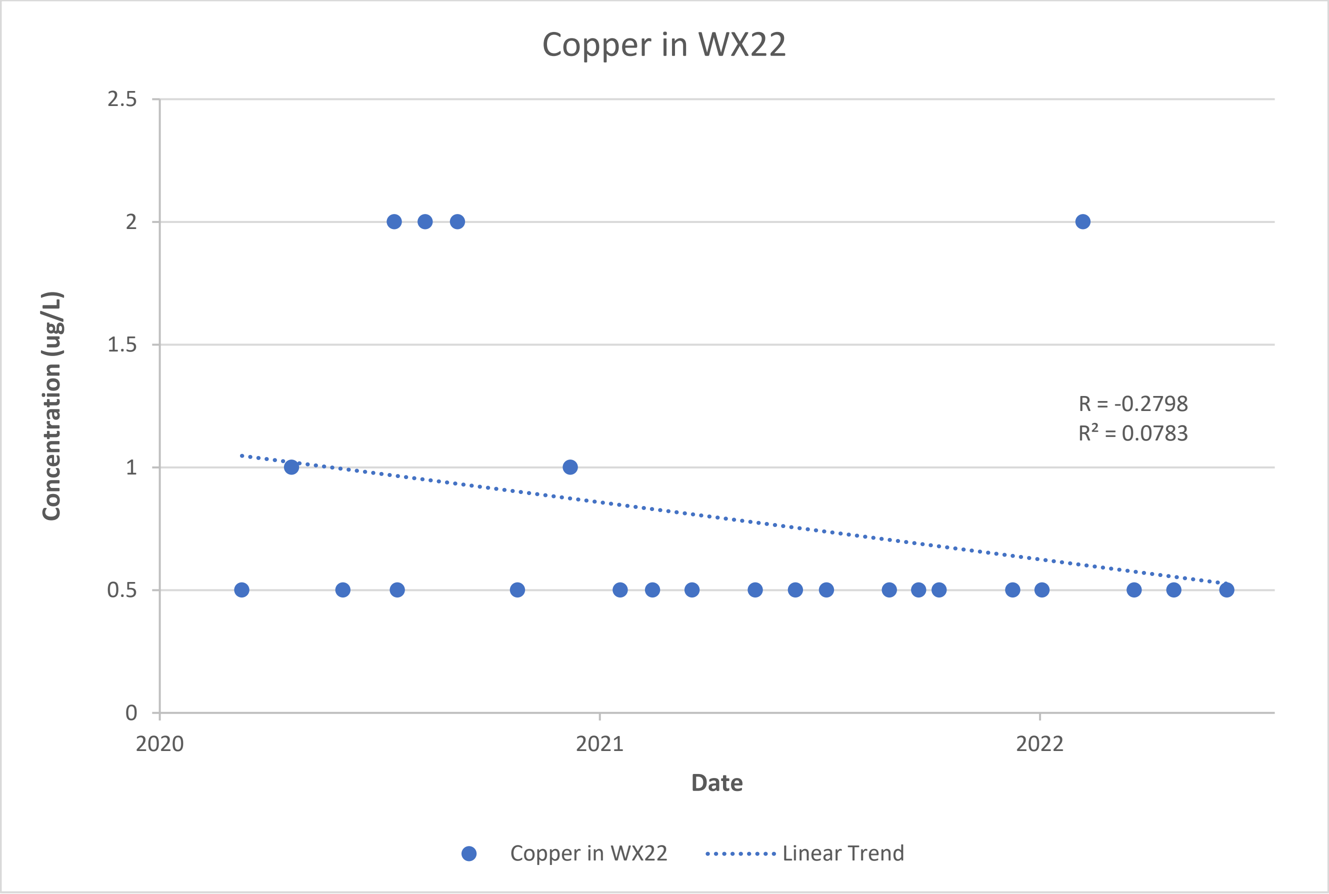
Surface Water Linear Trend Graphs



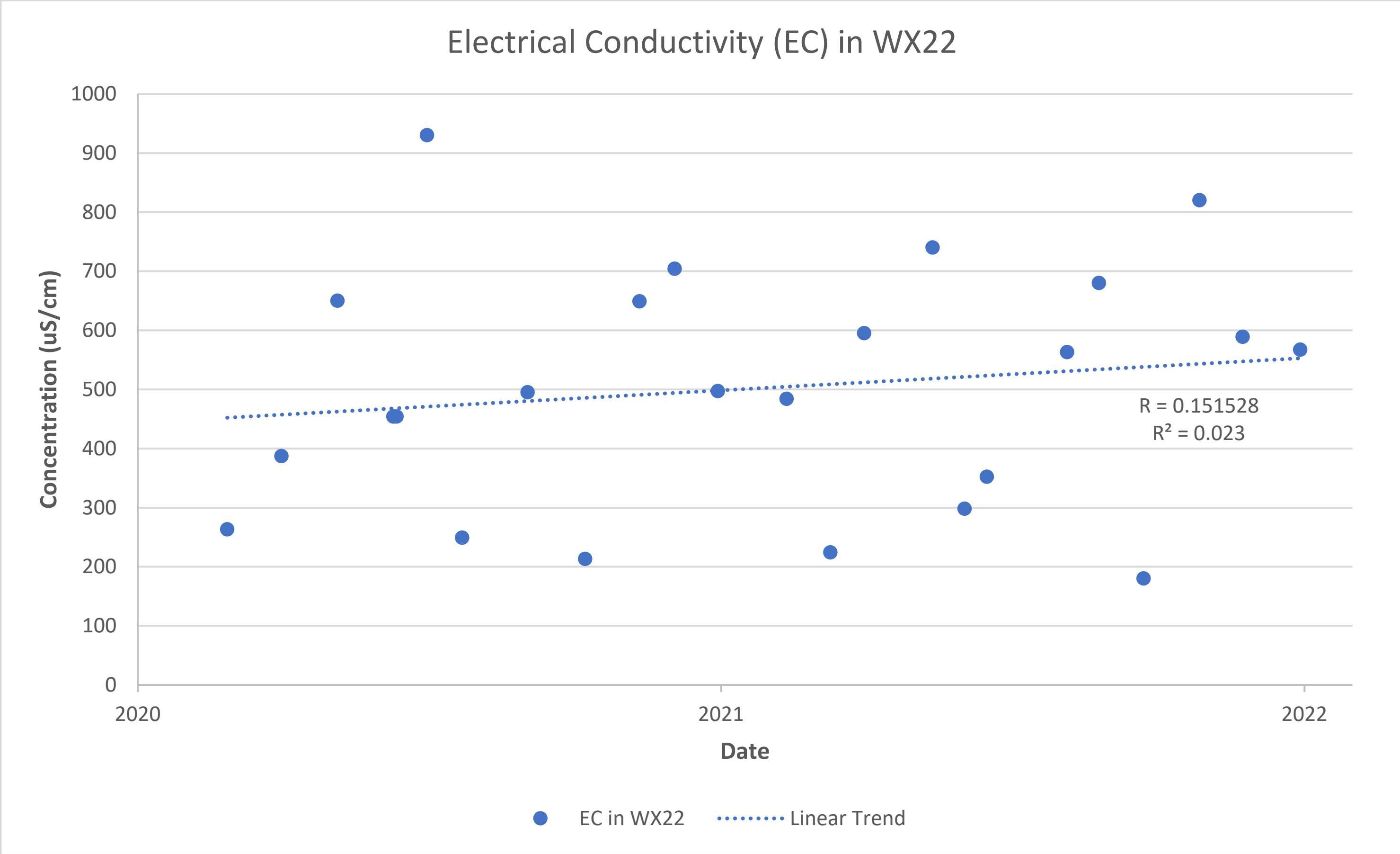
Surface Water Linear Trend Graphs



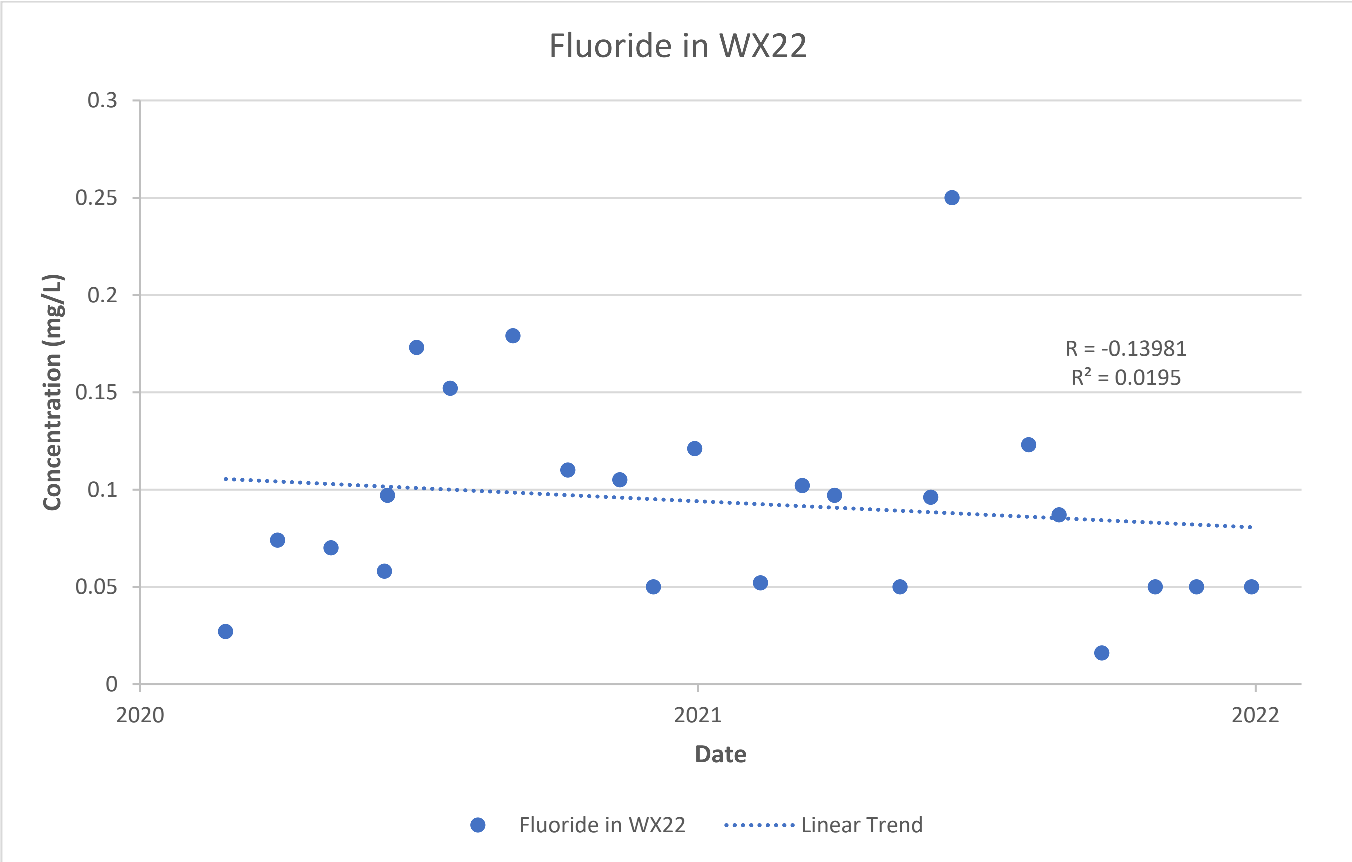
Surface Water Linear Trend Graphs



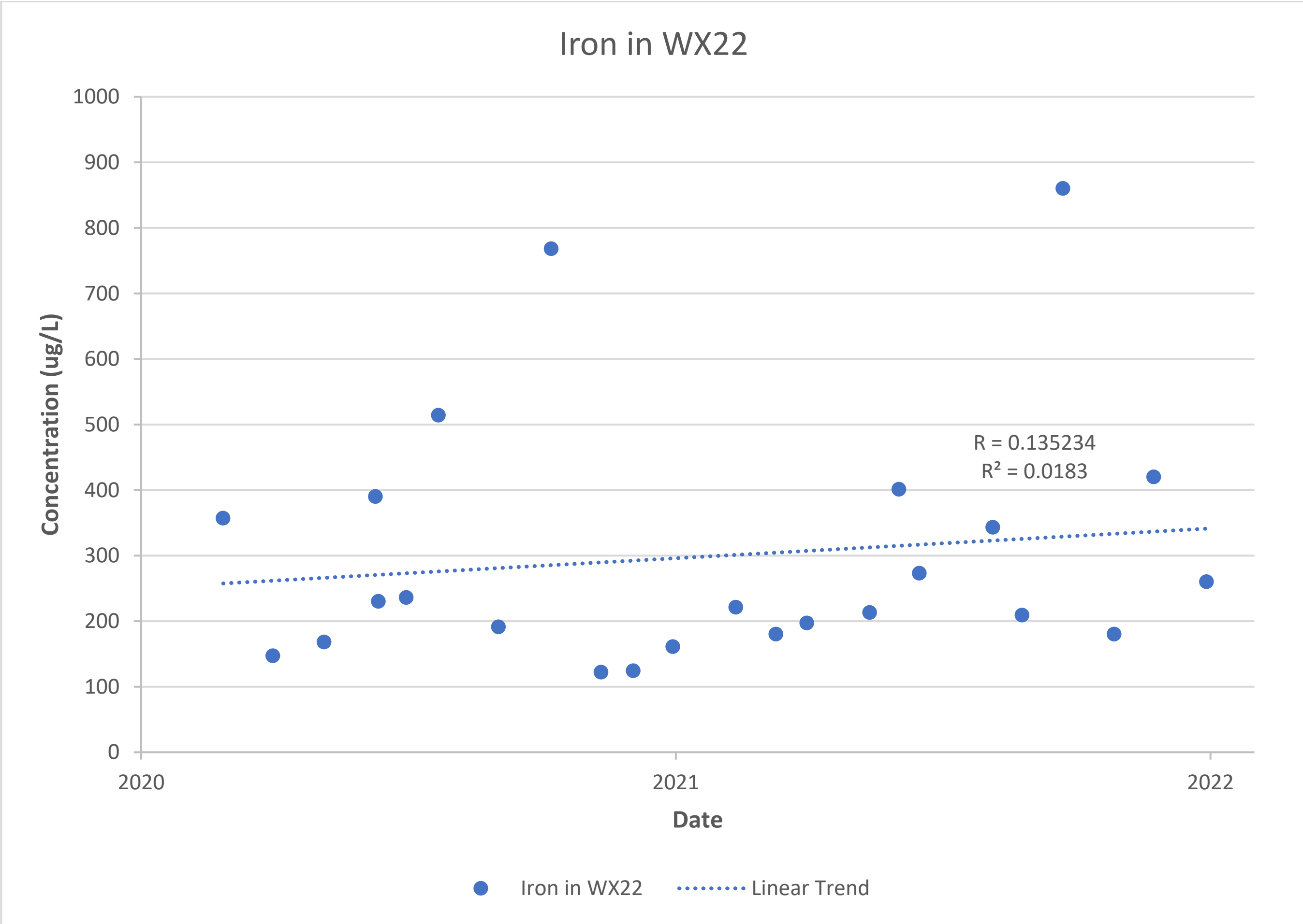
Surface Water Linear Trend Graphs

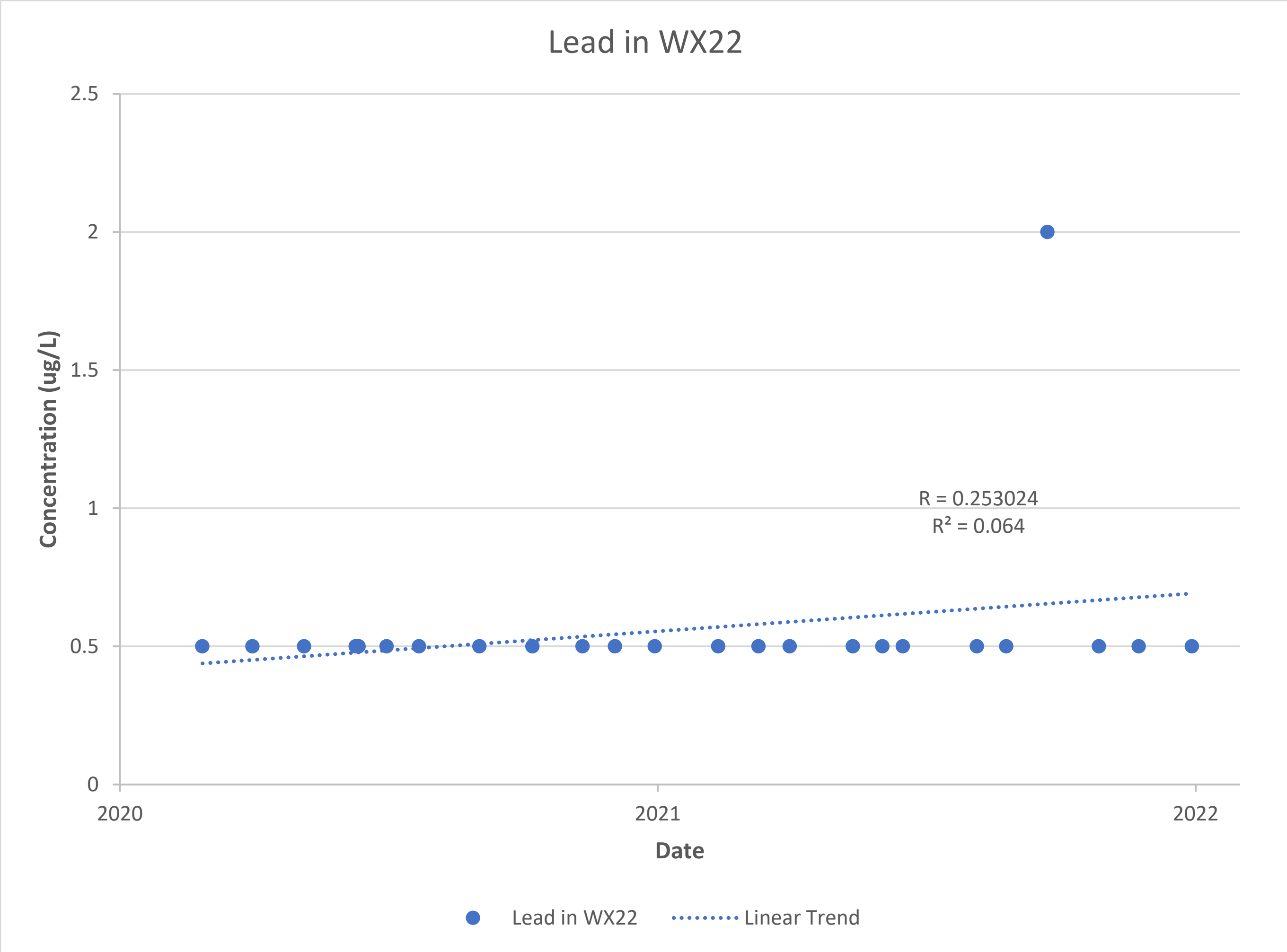


Surface Water Linear Trend Graphs

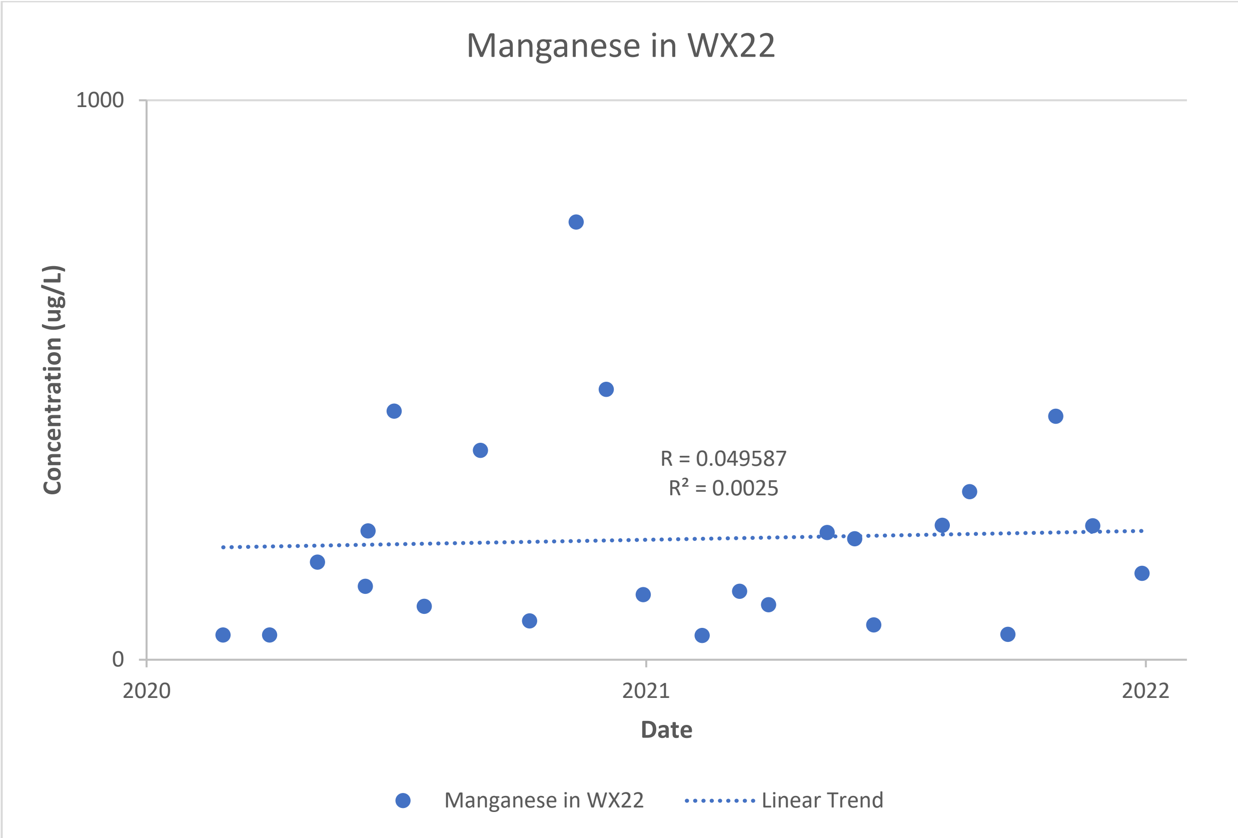


Surface Water Linear Trend Graphs

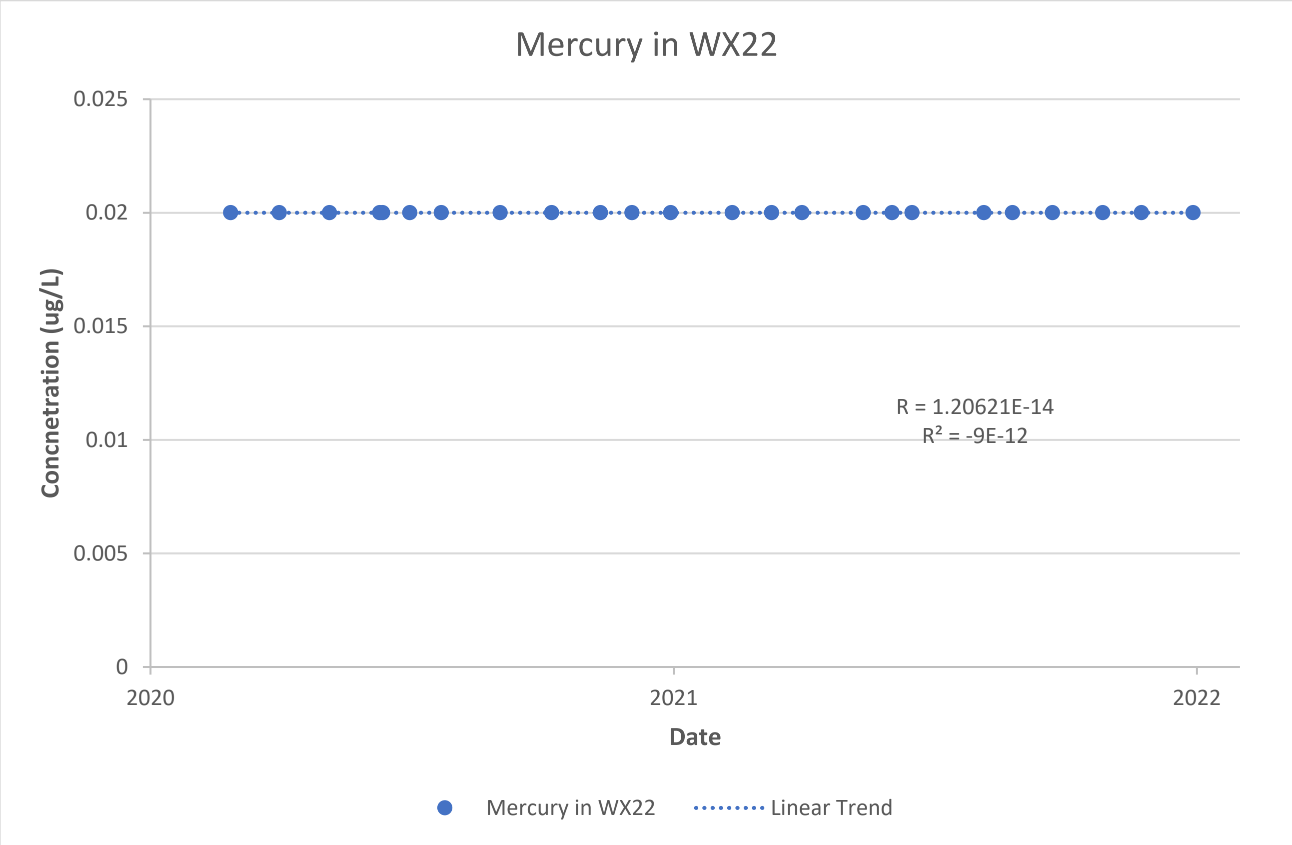


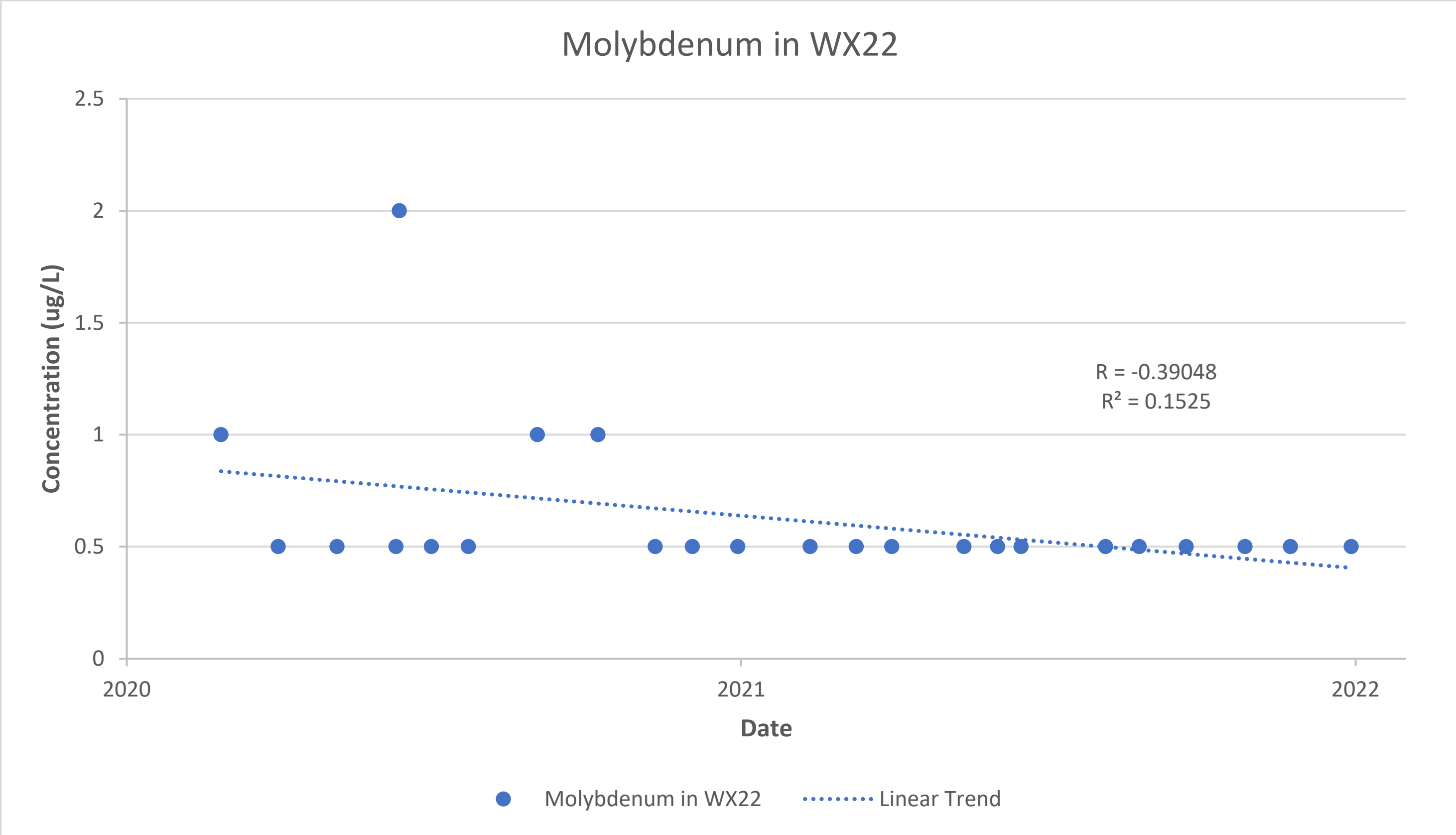

Lead in WX22
2.5
2
1.5
1
0.5
0
Concentration (ug/L)
R = 0.253024
R² = 0.064
2020
2021
2022
Date
Lead in WX22
Linear Trend

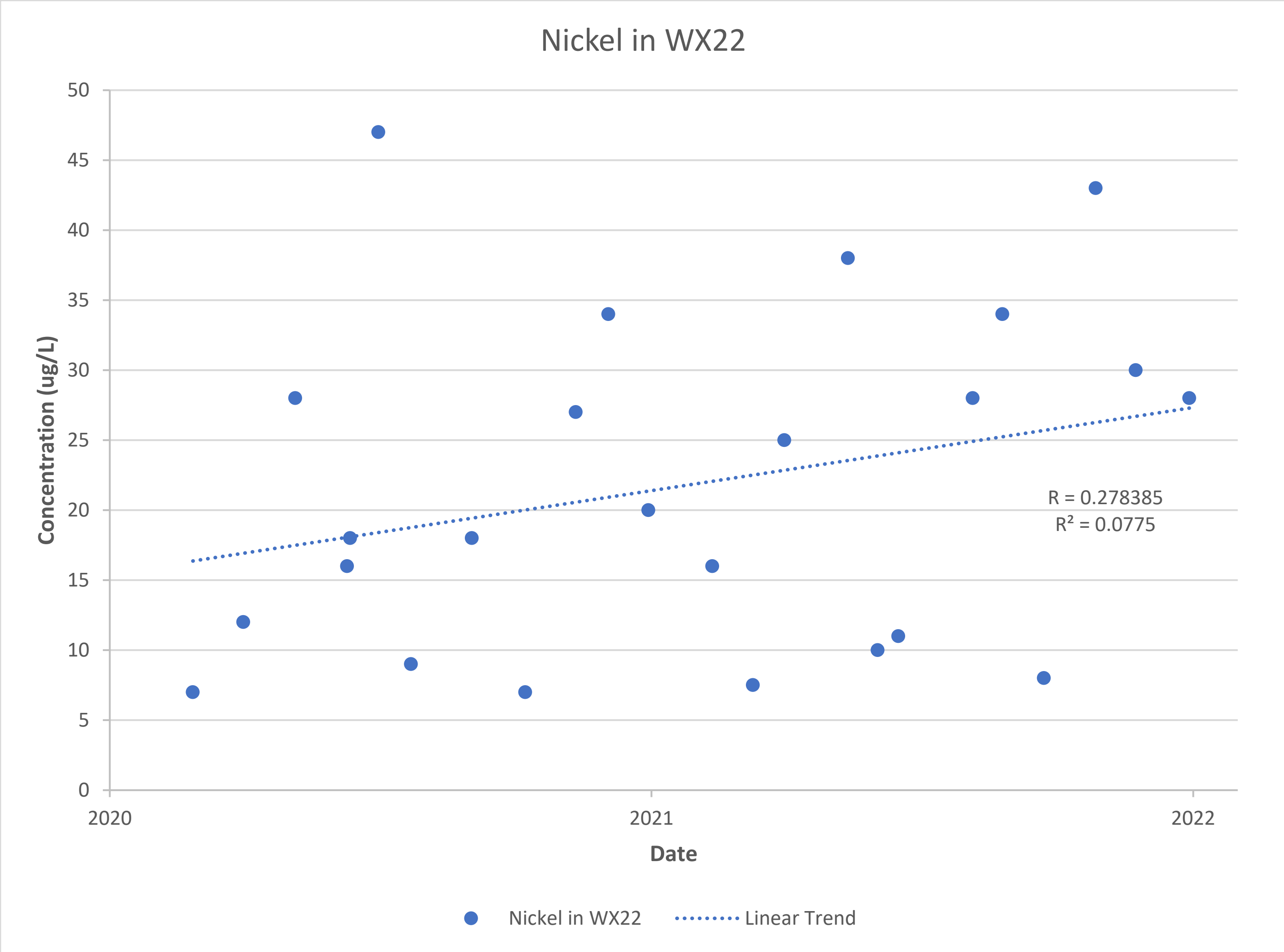
Surface Water Linear Trend Graphs



Surface Water Linear Trend Graphs

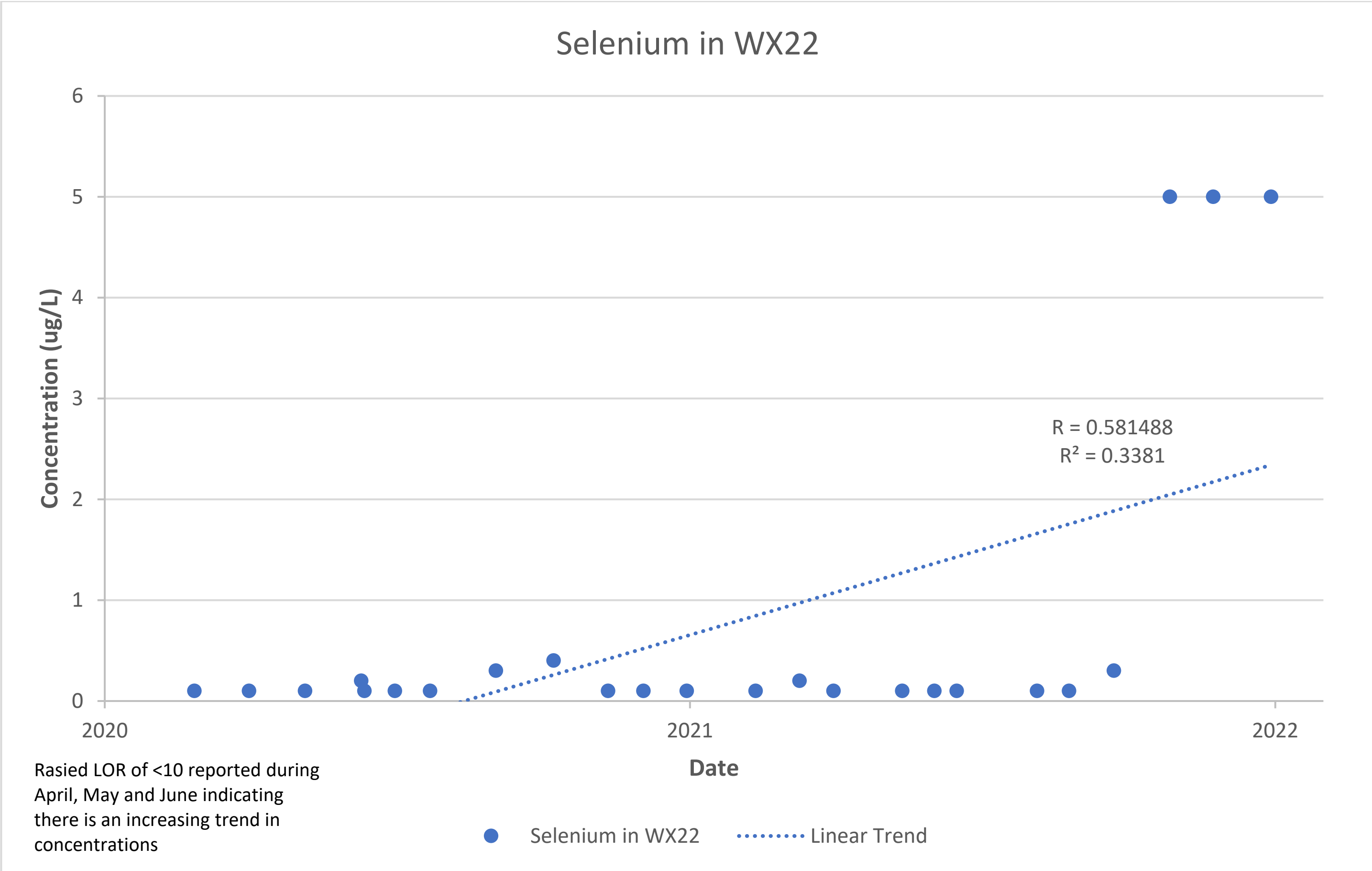



Molybdenum in WX22
2.5
2
1.5
1
0.5
0
Concentration (ug/L)
R = -0.39048
R² = 0.1525
2020
2021
2022
Date
Molybdenum in WX22
Linear Trend

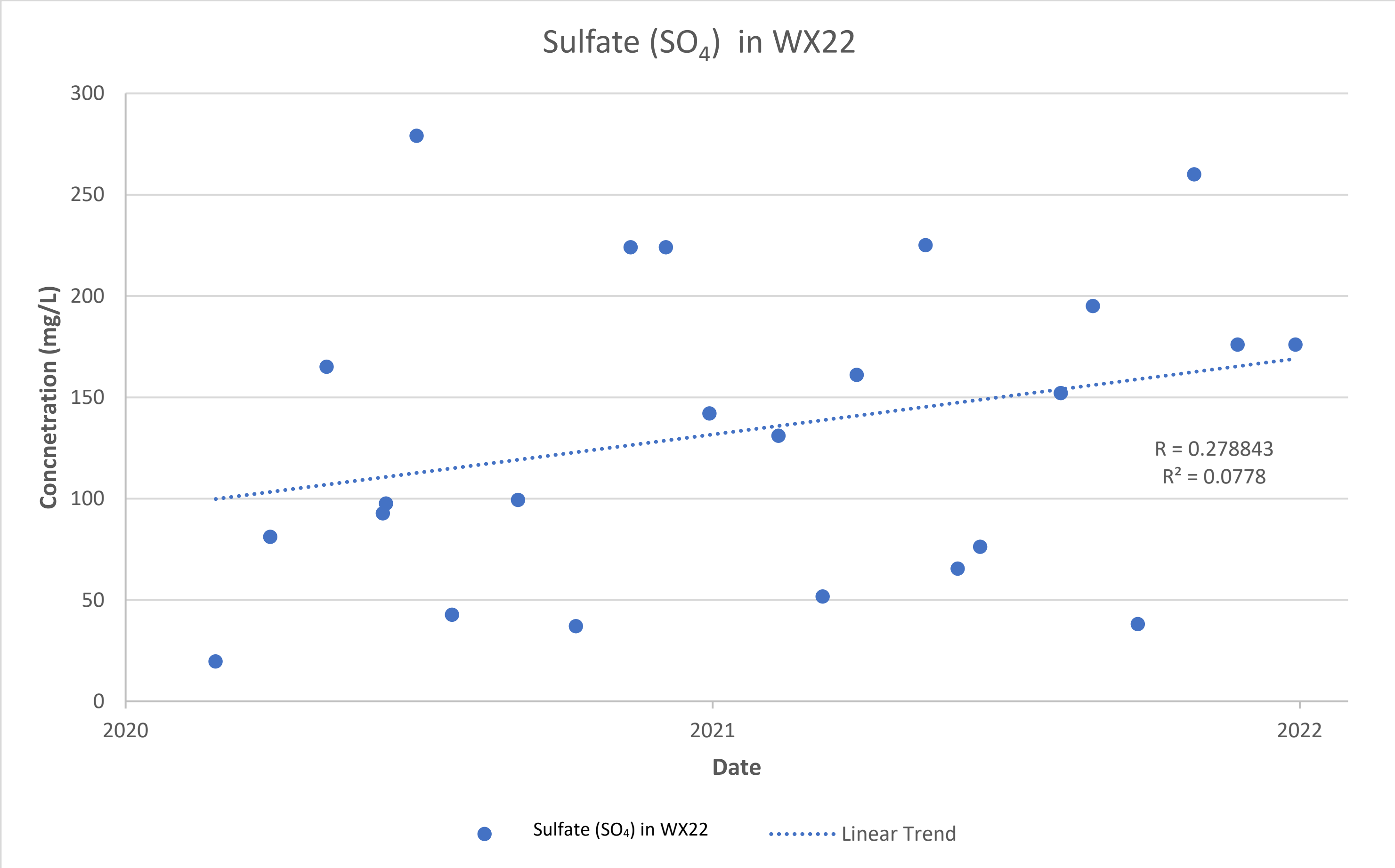


Nickel in WX22
Concentration (ug/L)
50
45
40
35
30
25
20
15
10
5
0
2020
2021
2022
Date
R = 0.278385
R² = 0.0775
Nickel in WX22
Linear Trend

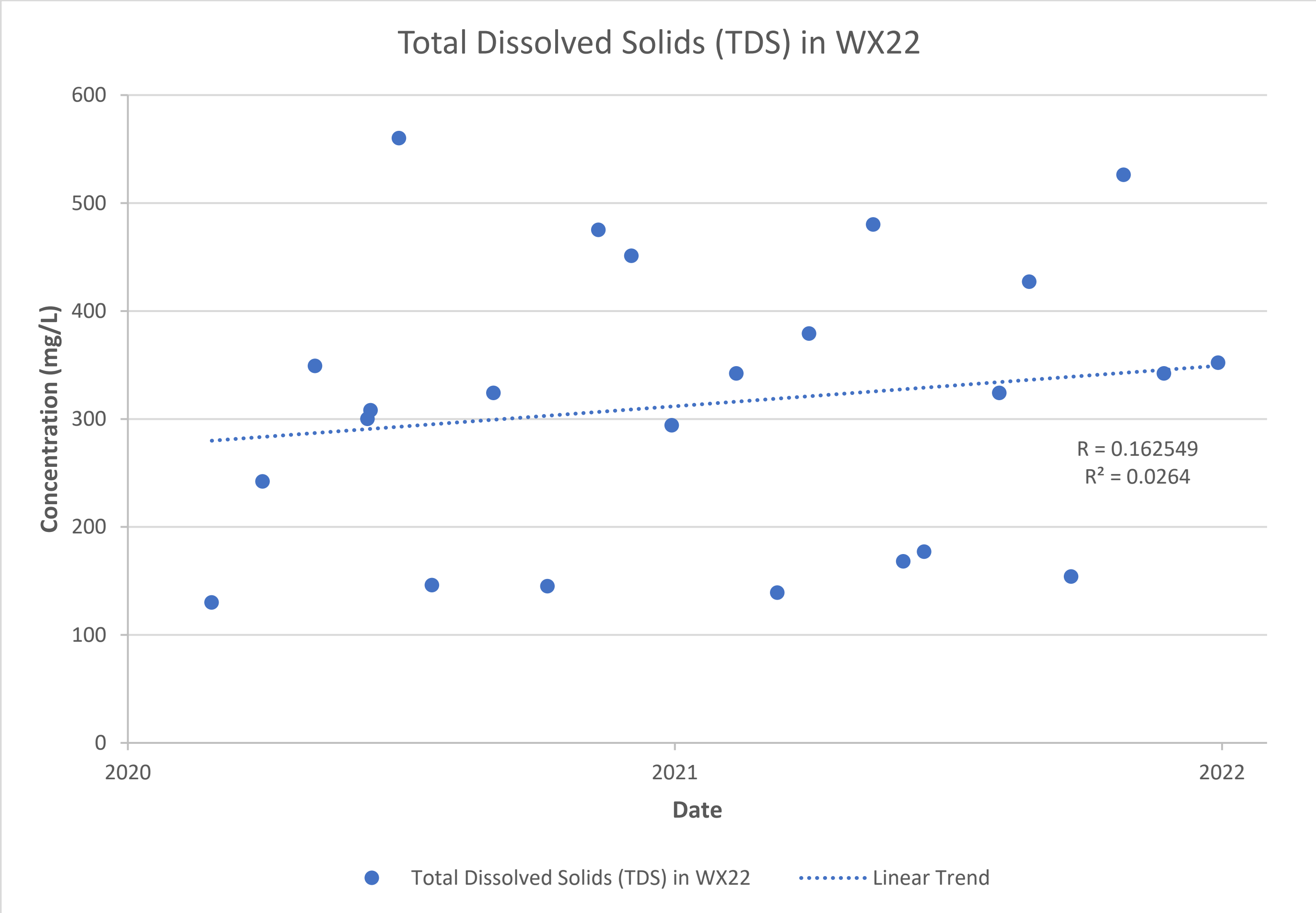
Surface Water Linear Trend Graphs



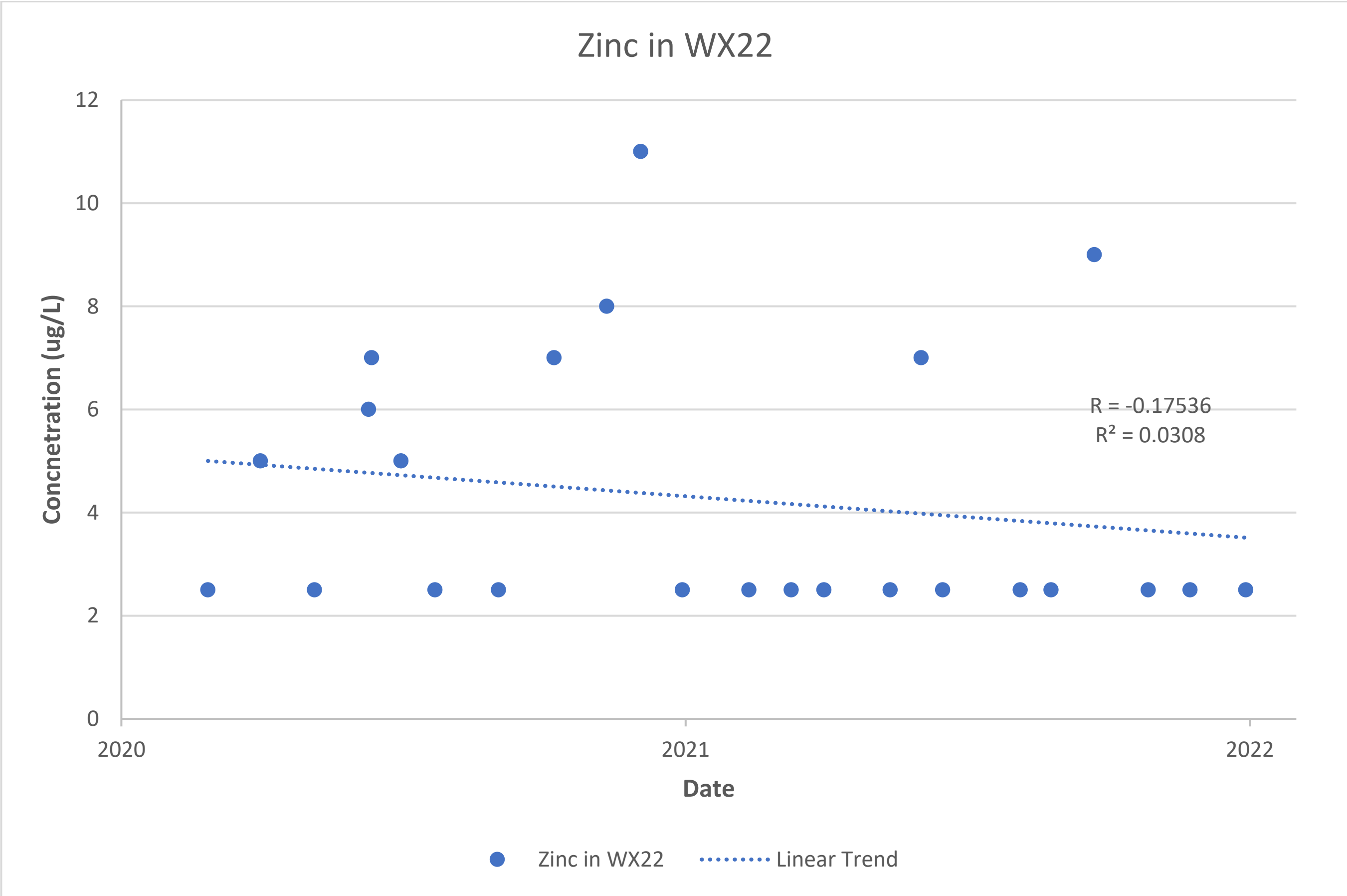
Surface Water Linear Trend Graphs



Surface Water Linear Trend Graphs

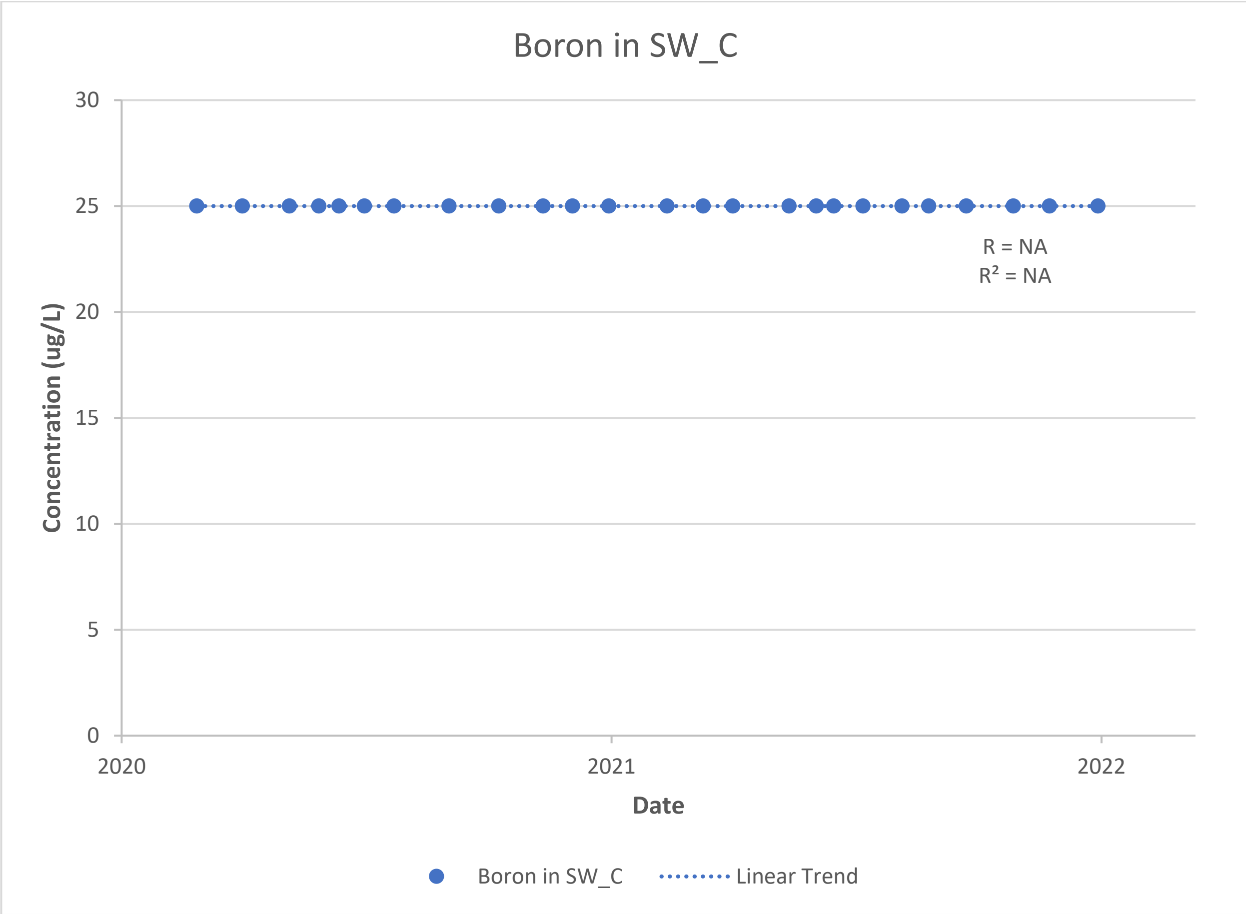


Surface Water Linear Trend Graphs

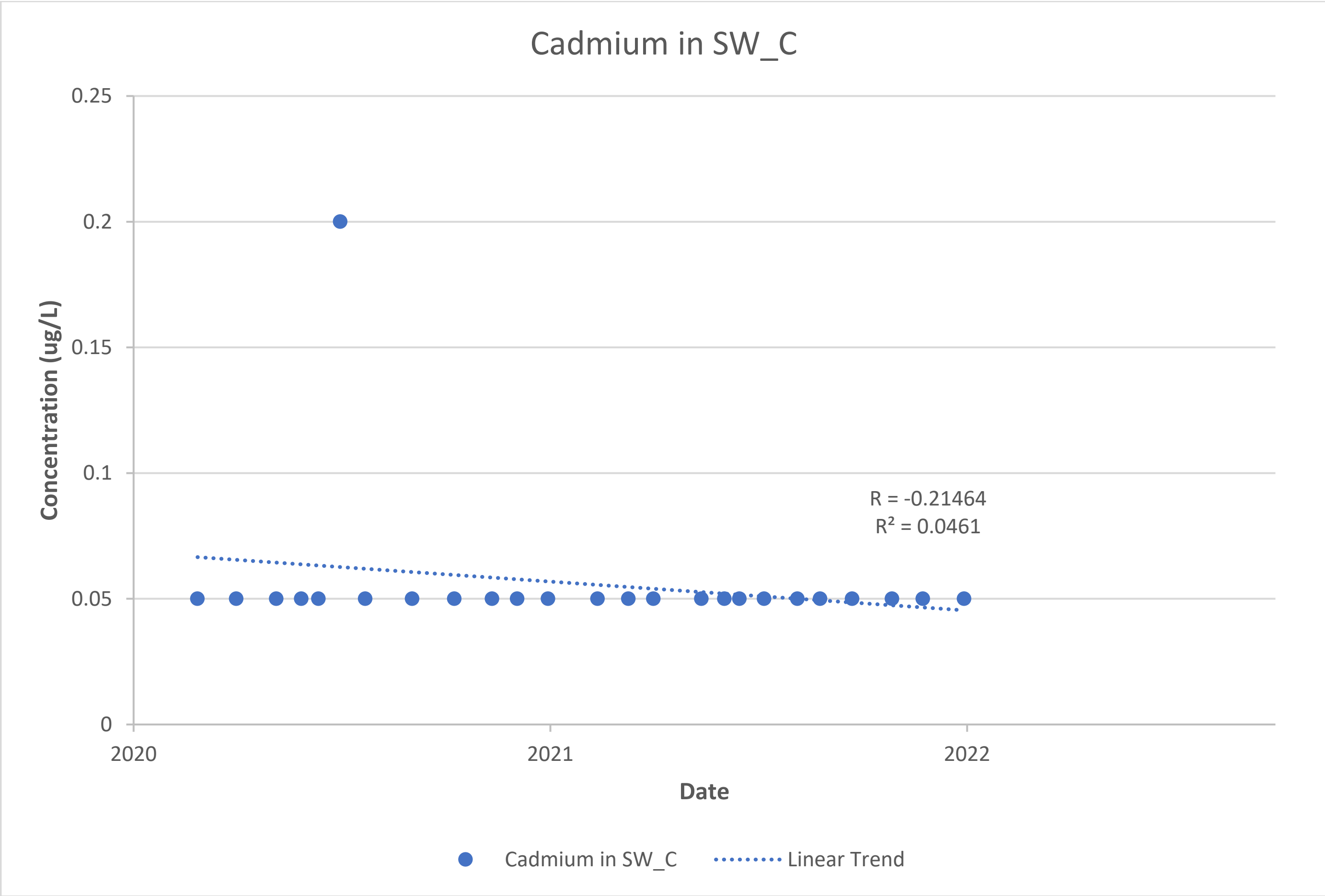


Surface Water Linear Trend Graphs

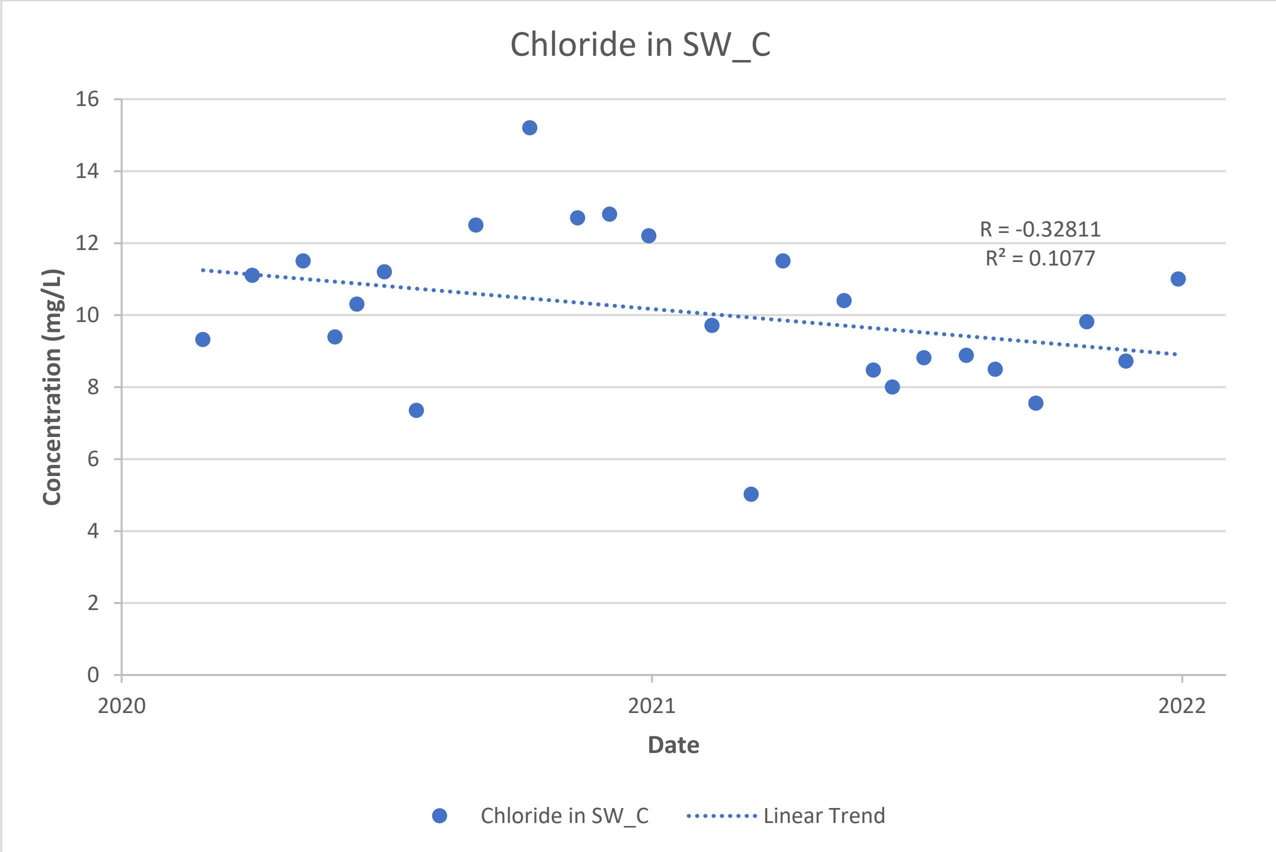
Surface Water Linear Trend Graphs



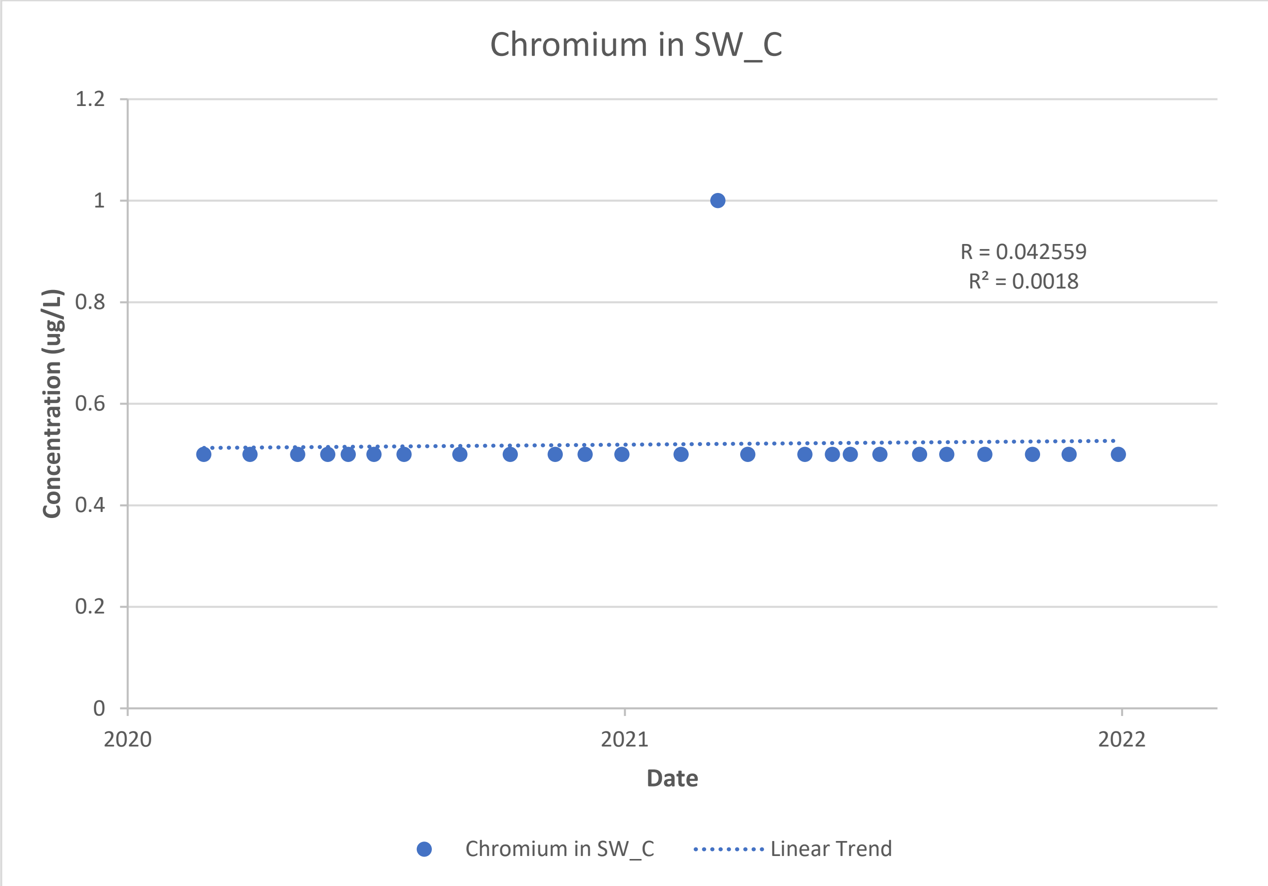
Surface Water Linear Trend Graphs



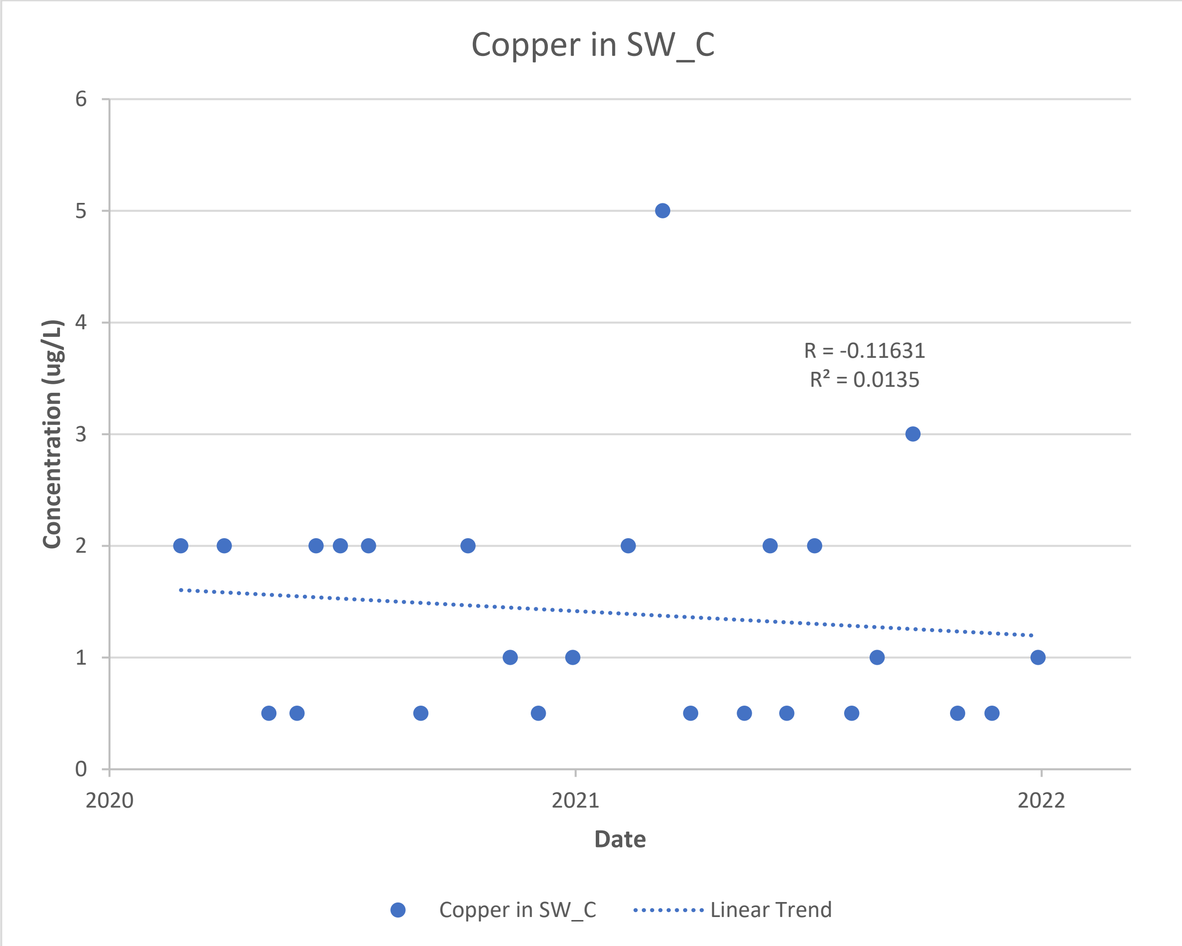
Surface Water Linear Trend Graphs



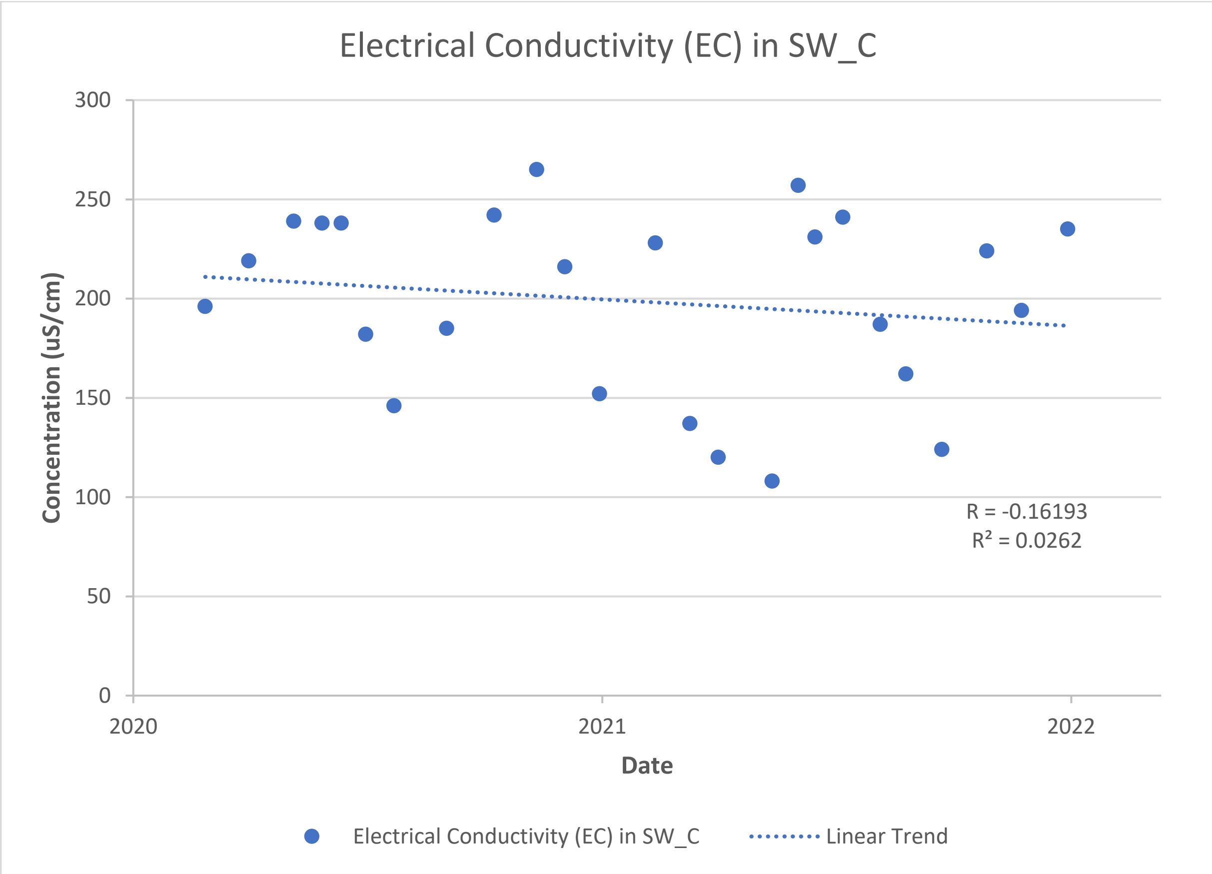
Surface Water Linear Trend Graphs



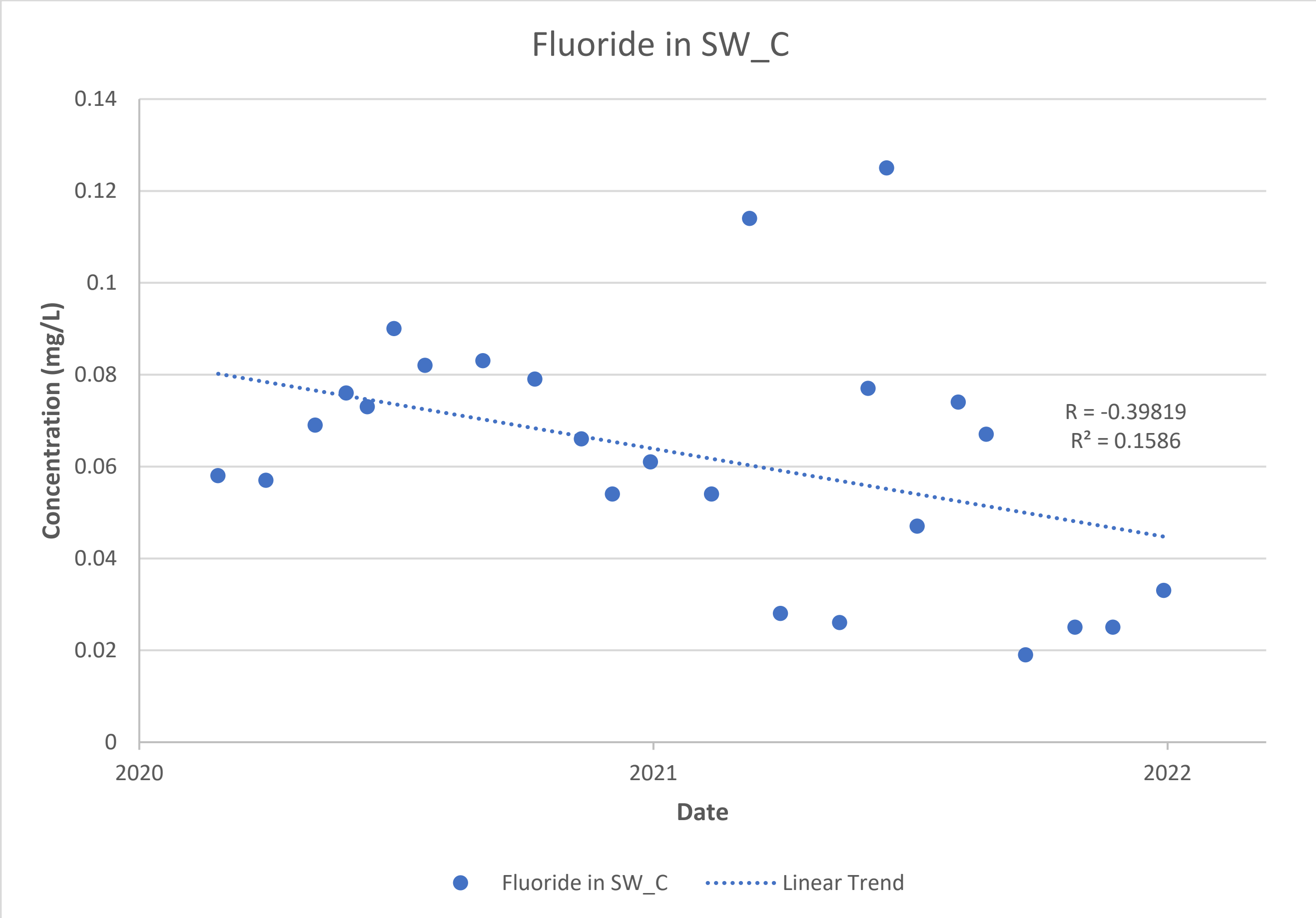
Surface Water Linear Trend Graphs



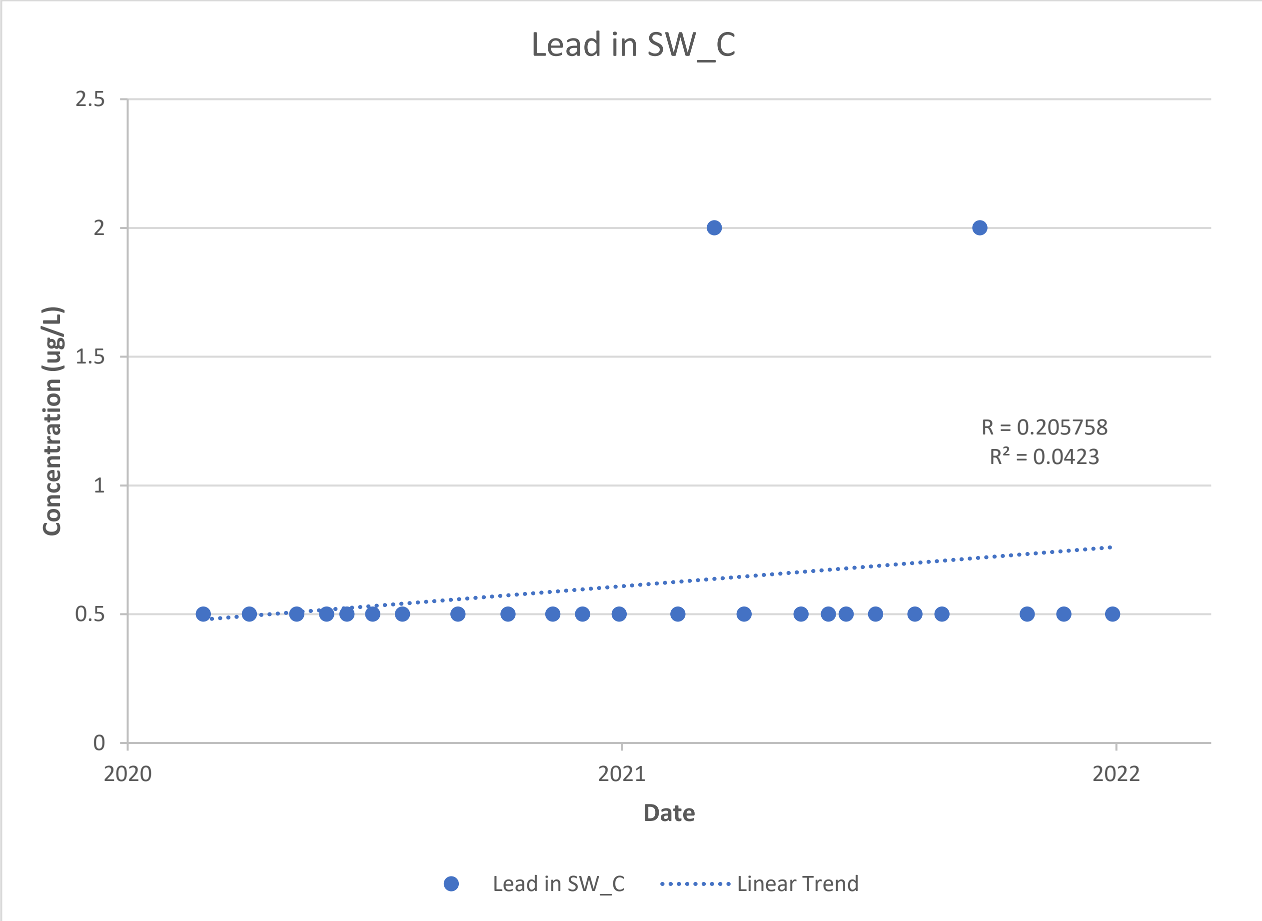
Surface Water Linear Trend Graphs



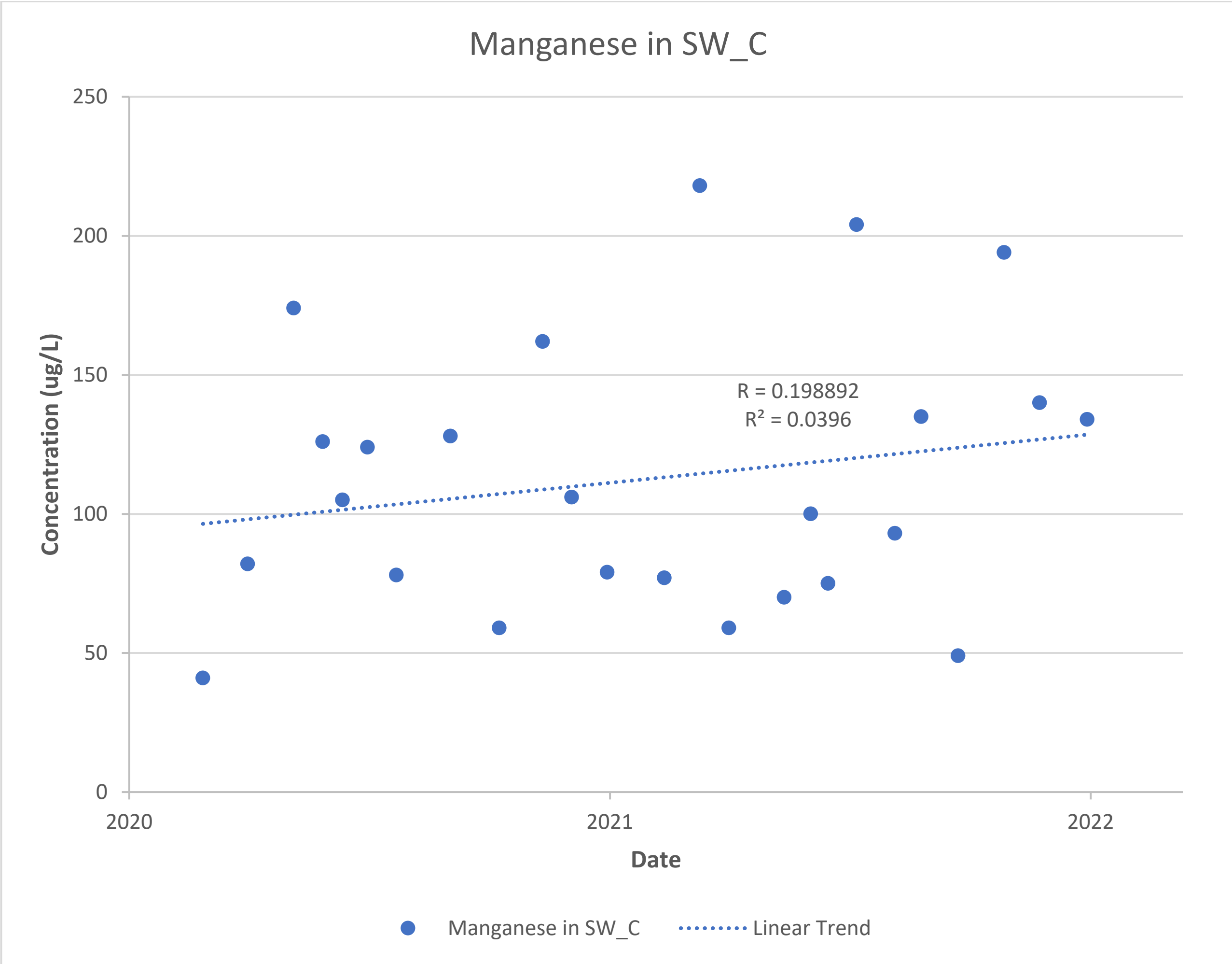
Surface Water Linear Trend Graphs



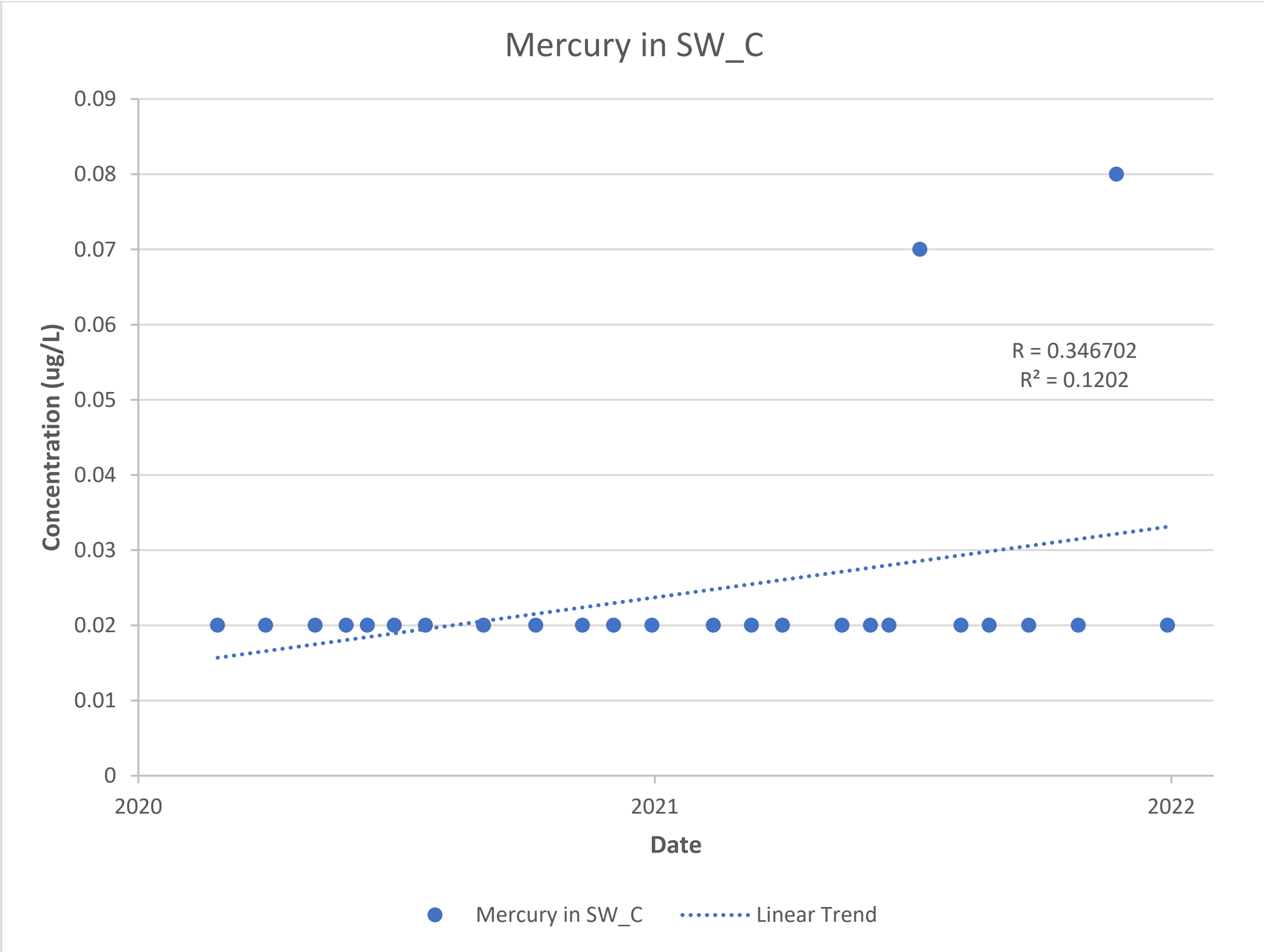
Surface Water Linear Trend Graphs



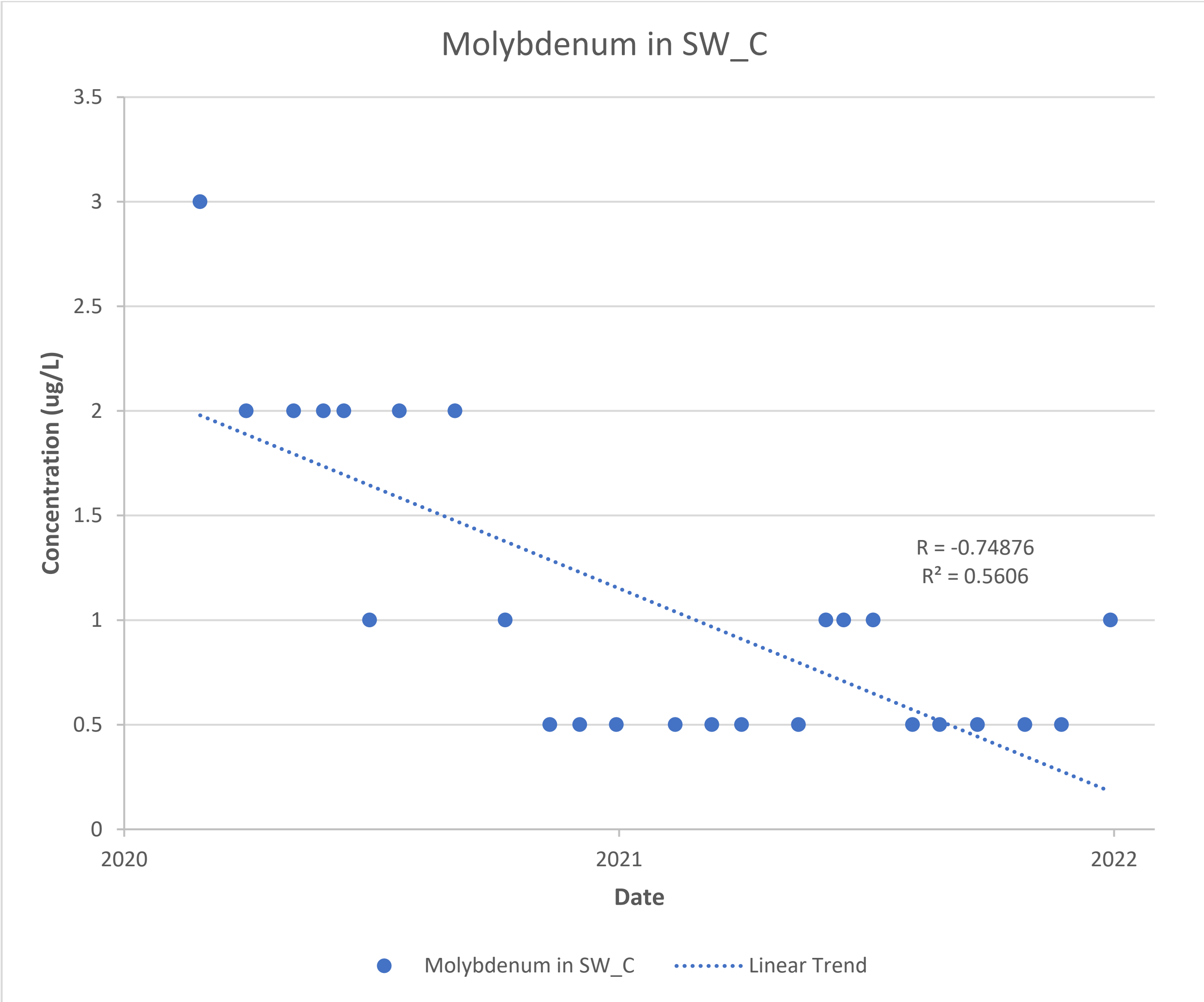
Surface Water Linear Trend Graphs



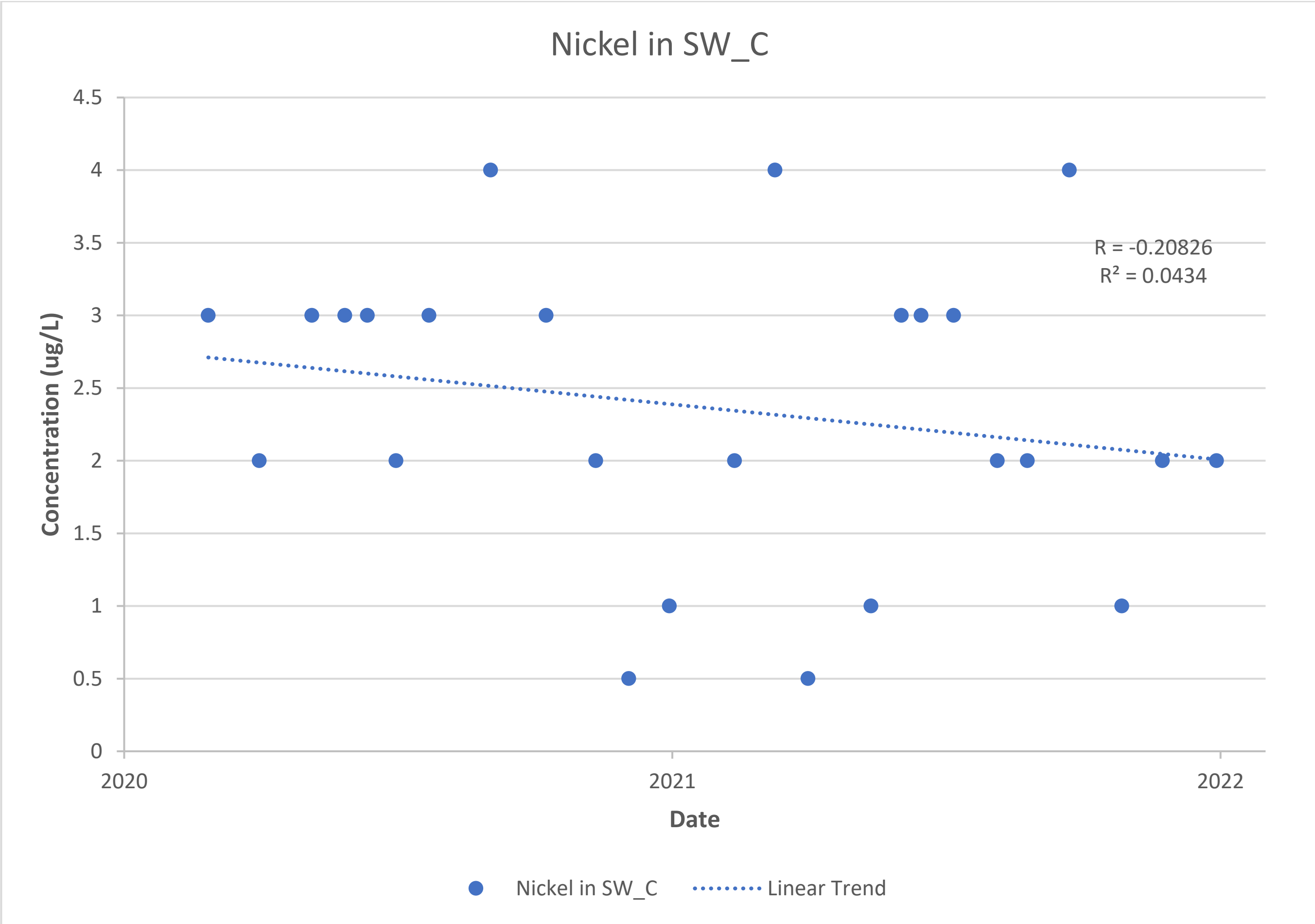
Surface Water Linear Trend Graphs



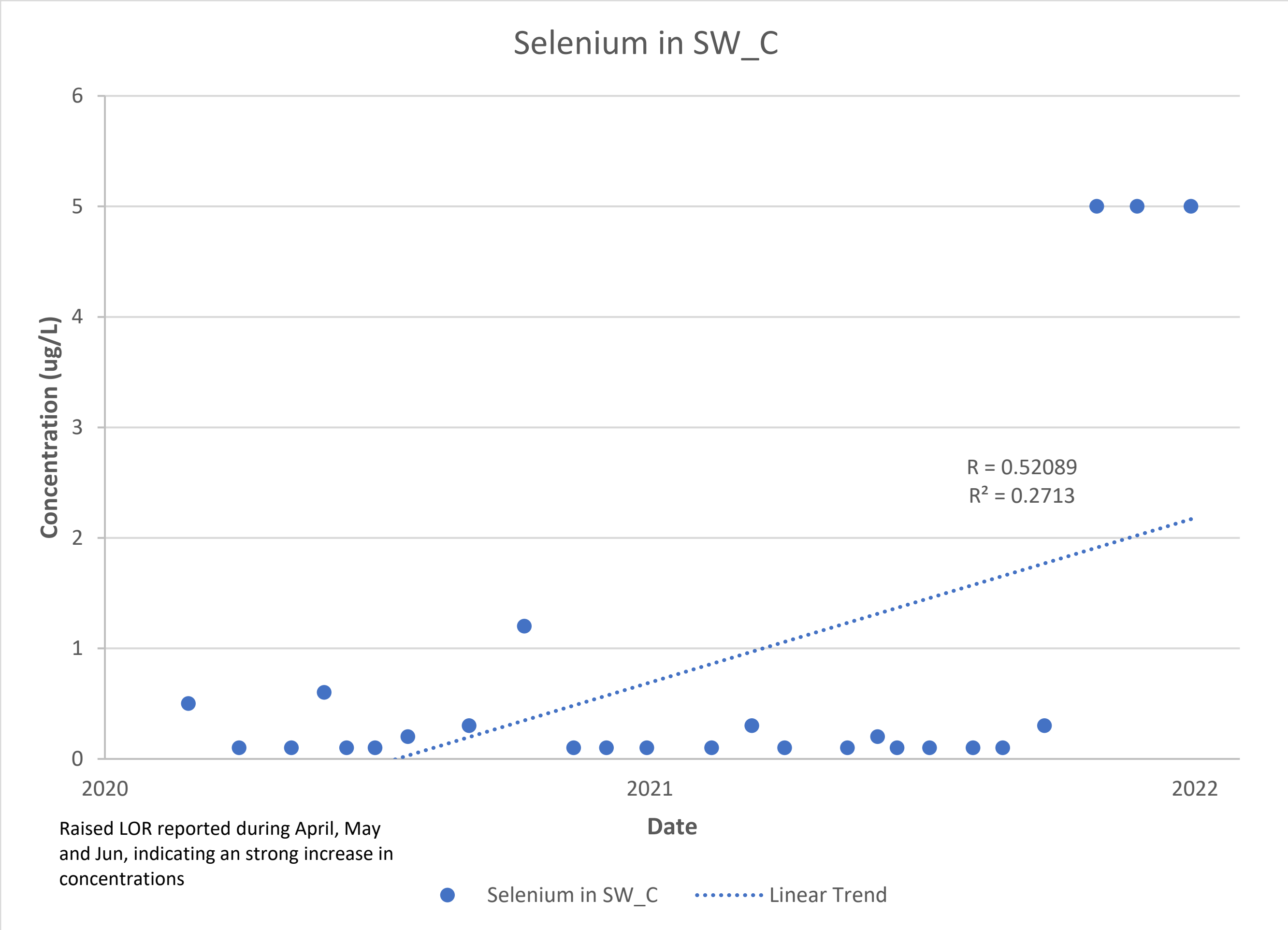
Surface Water Linear Trend Graphs



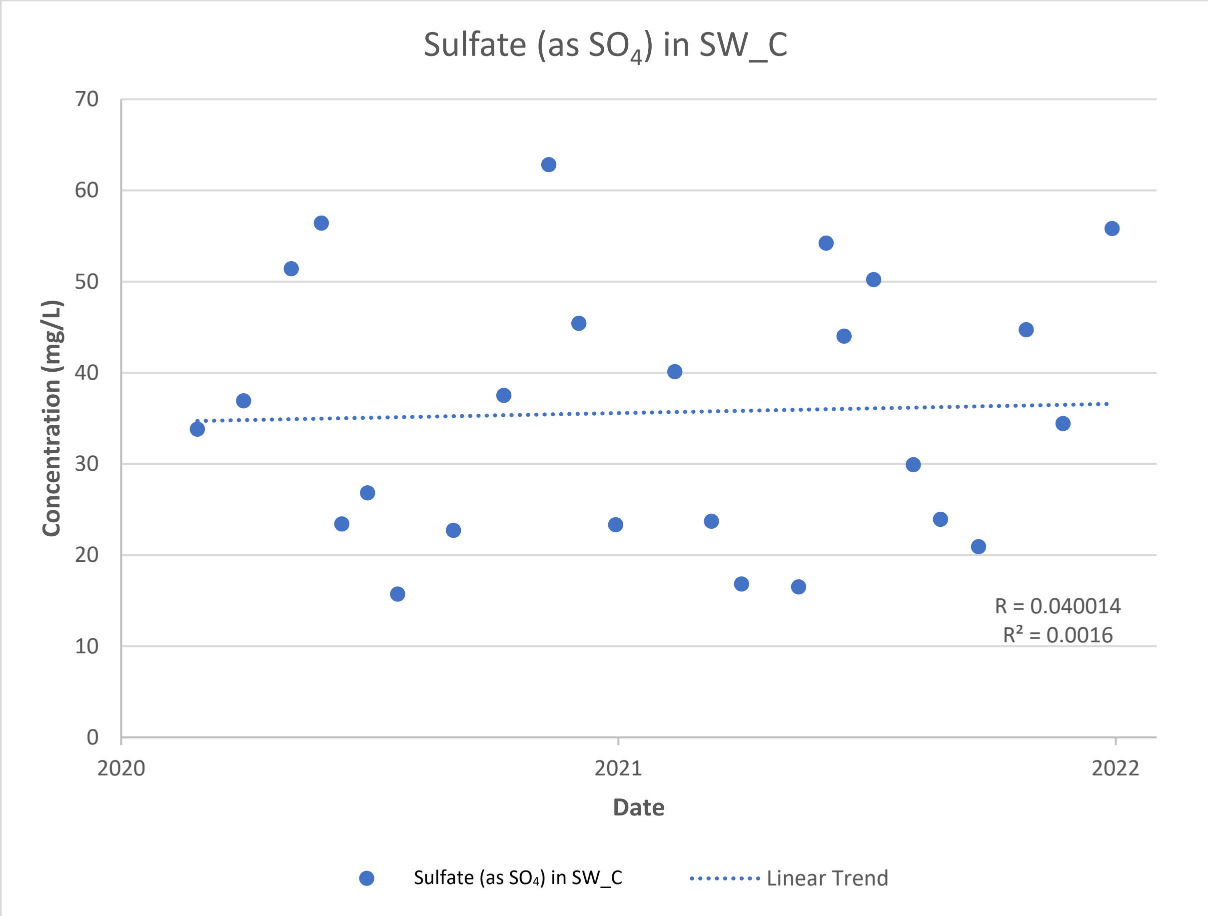
Surface Water Linear Trend Graphs



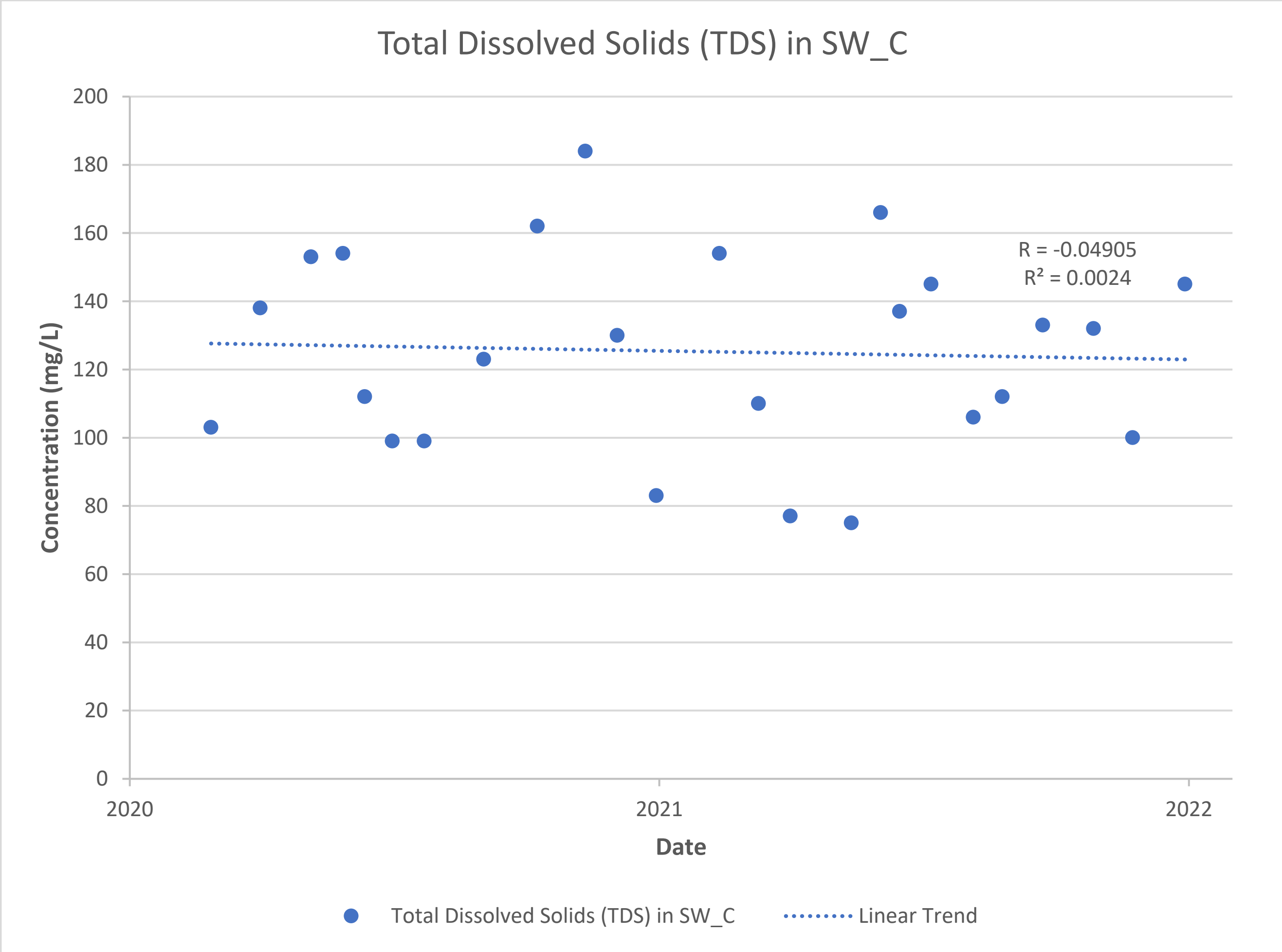
Surface Water Linear Trend Graphs



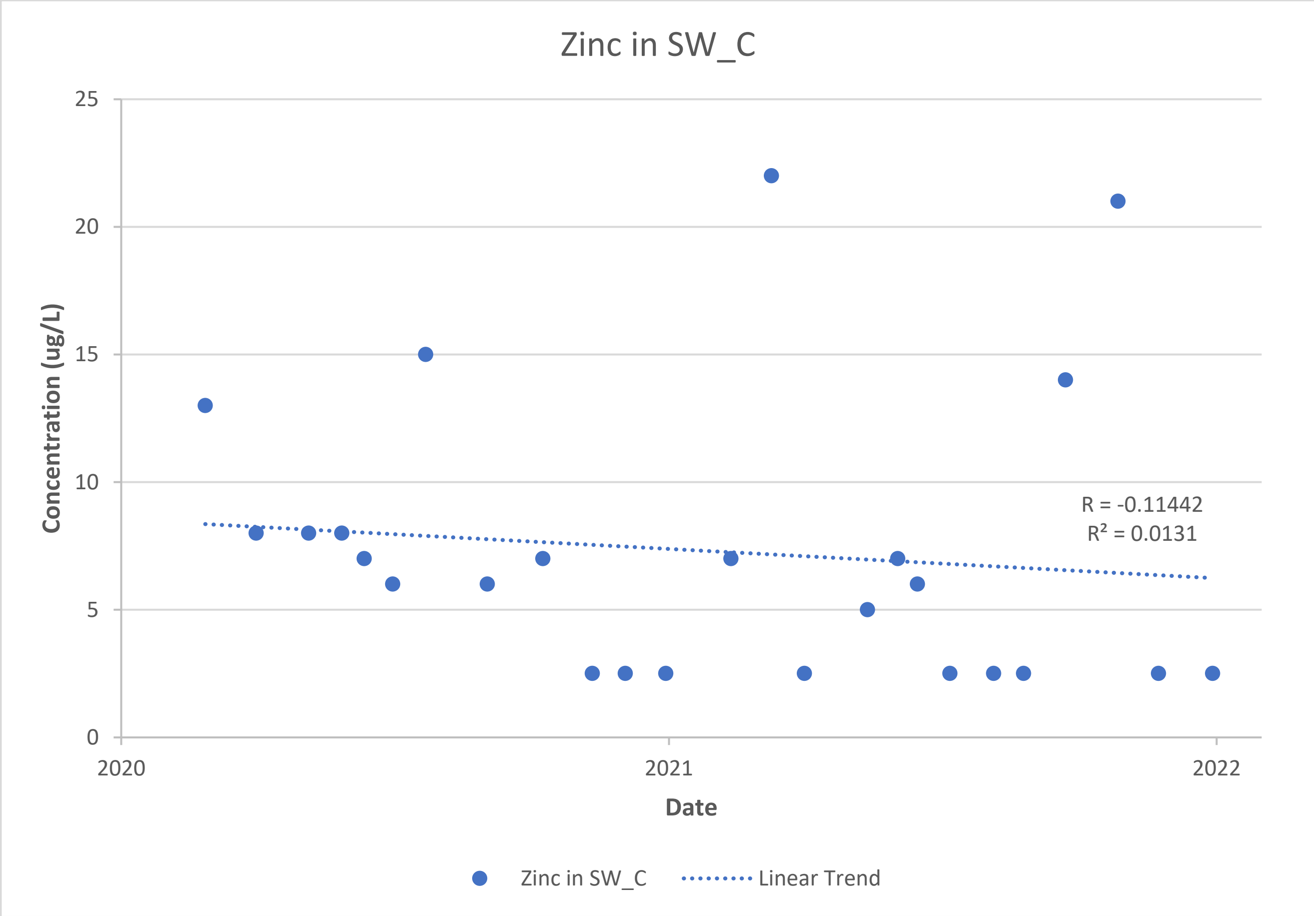
Surface Water Linear Trend Graphs



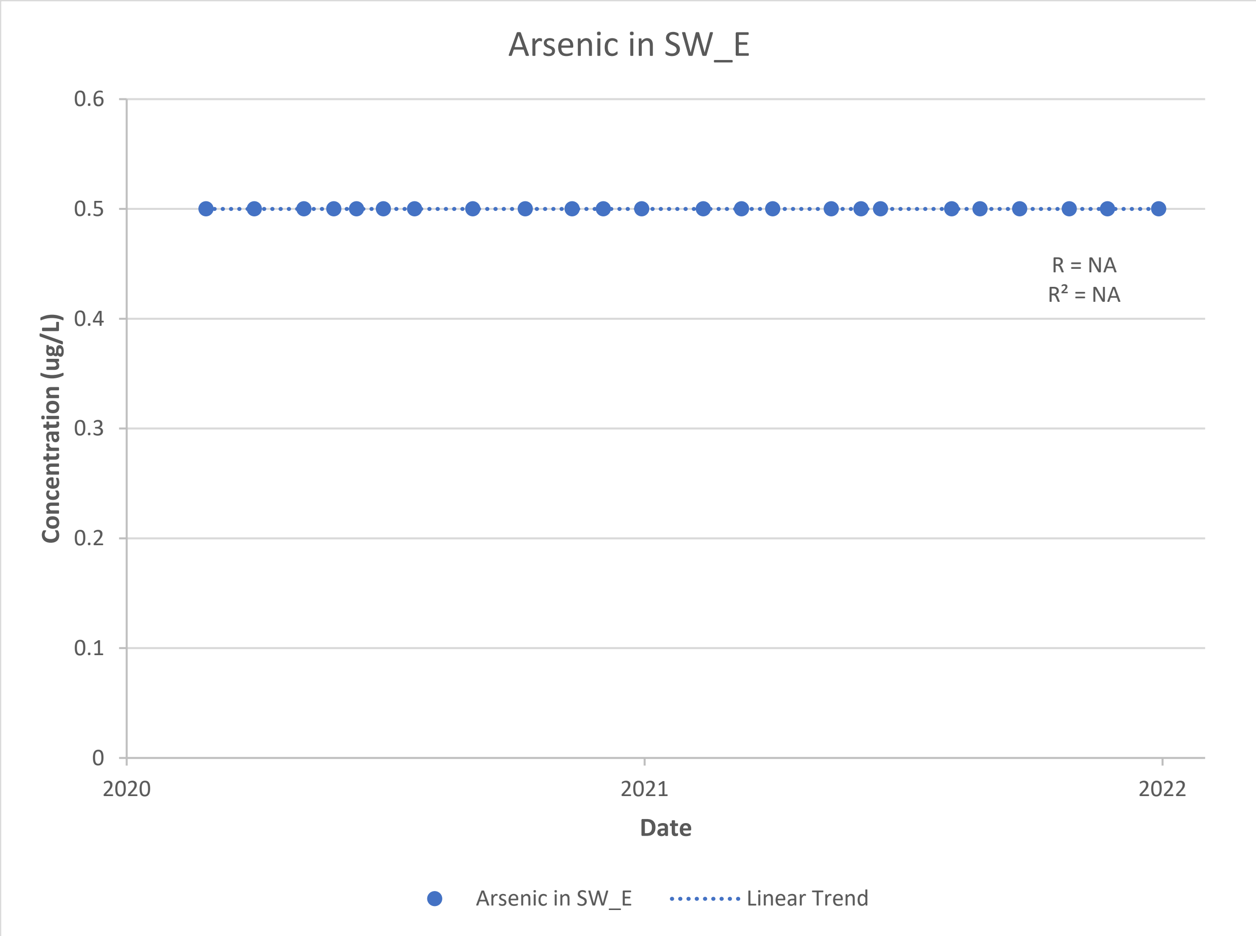
Surface Water Linear Trend Graphs



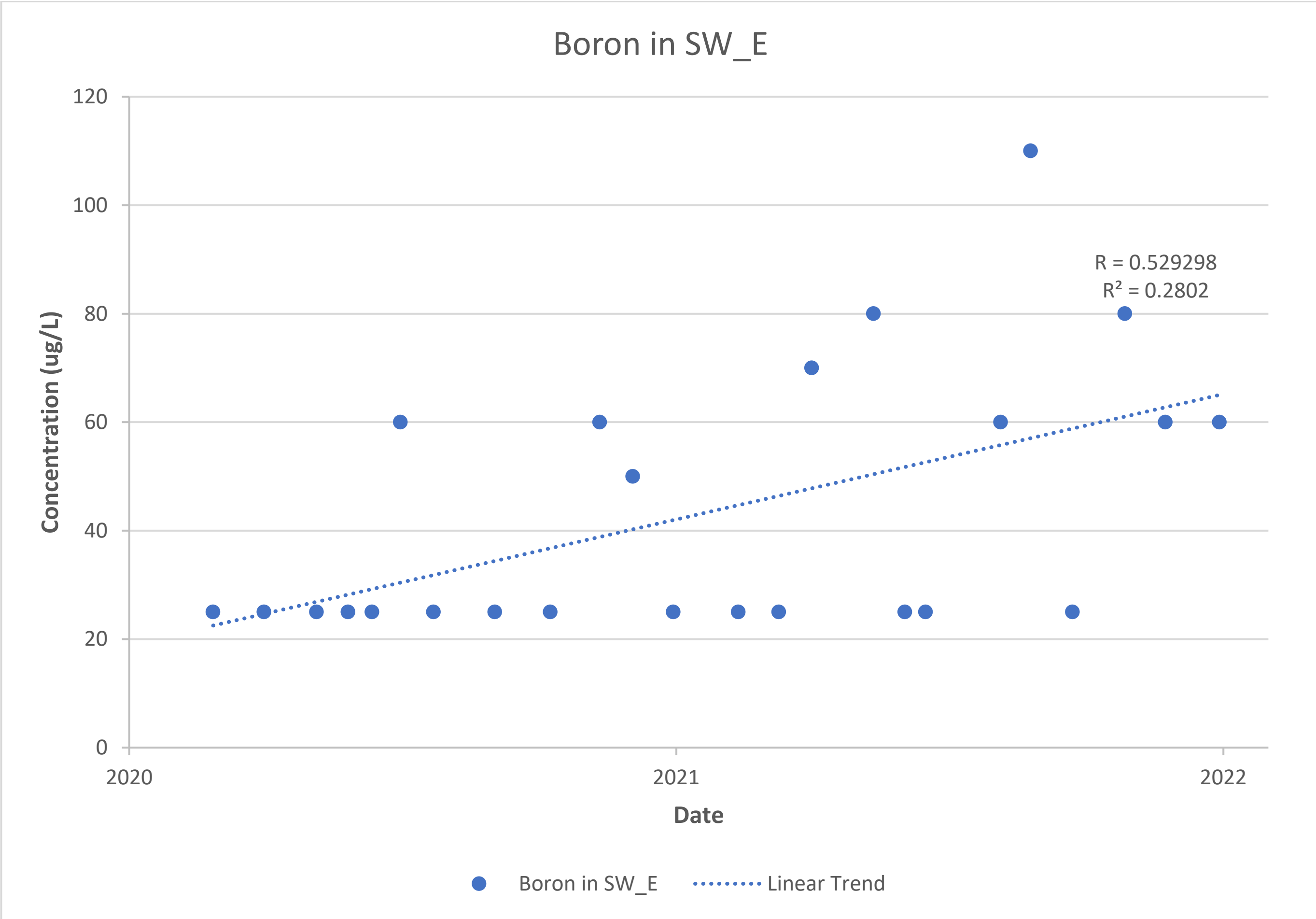
Surface Water Linear Trend Graphs



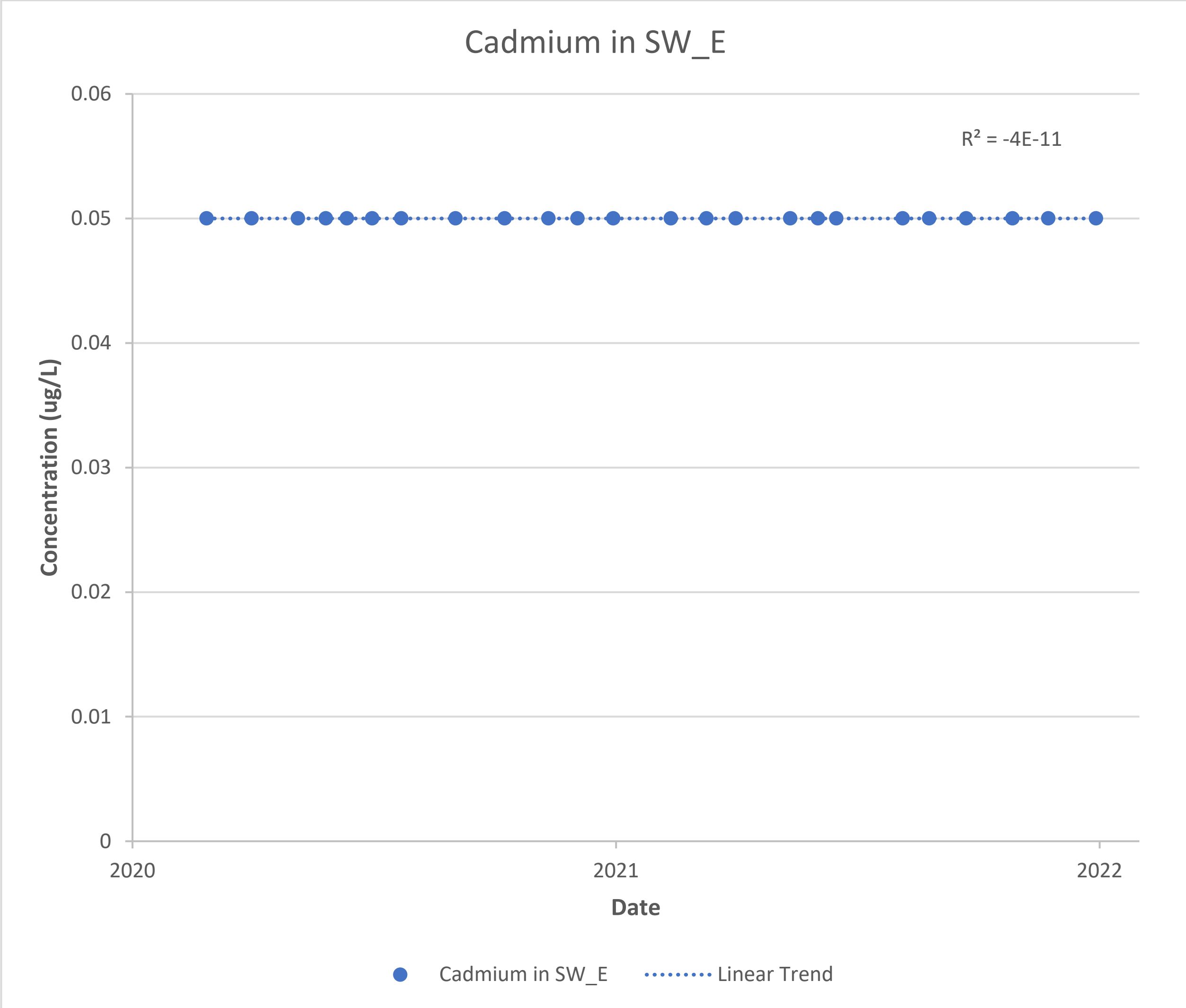
Surface Water Linear Trend Graphs



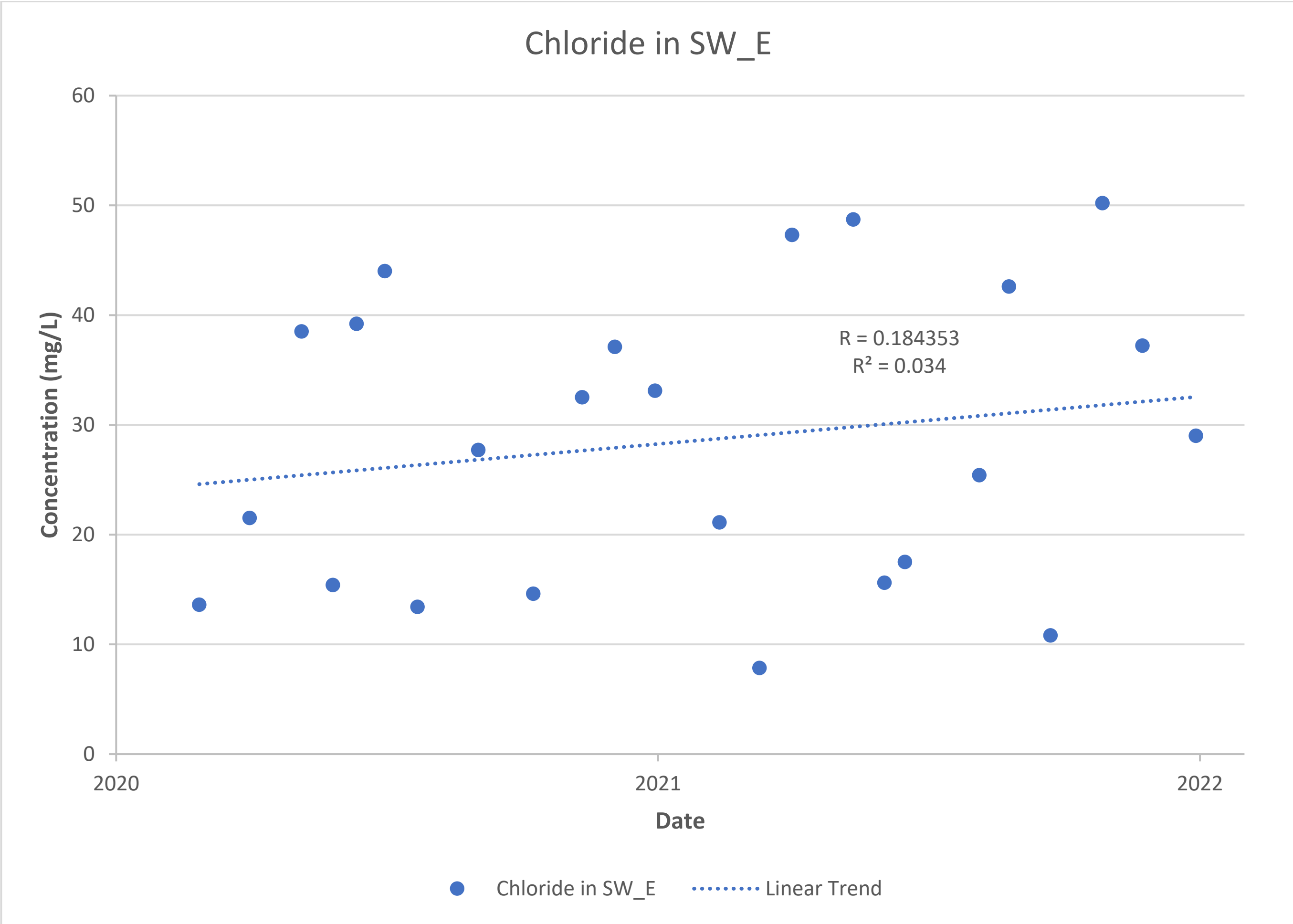
Surface Water Linear Trend Graphs



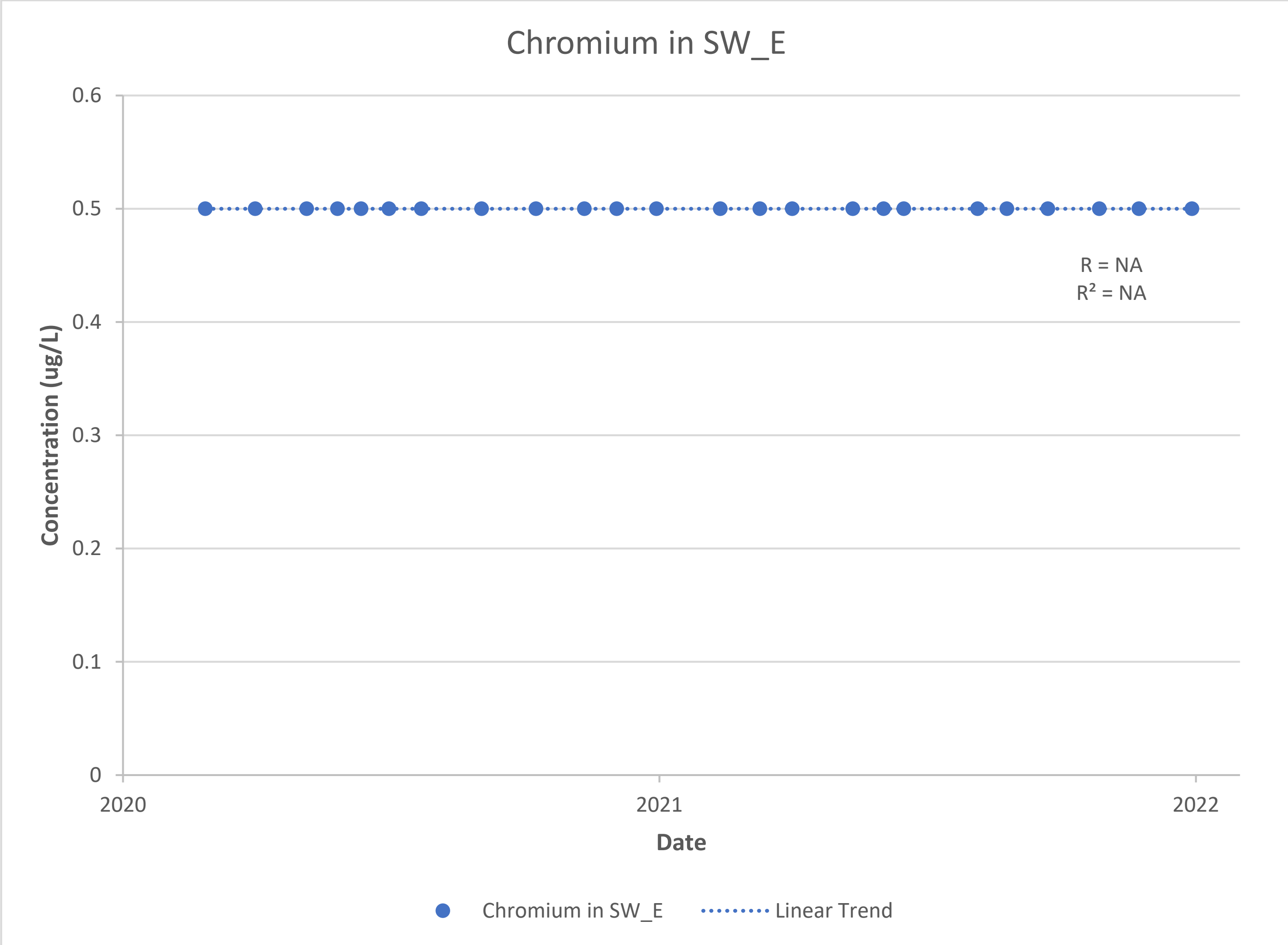
Surface Water Linear Trend Graphs



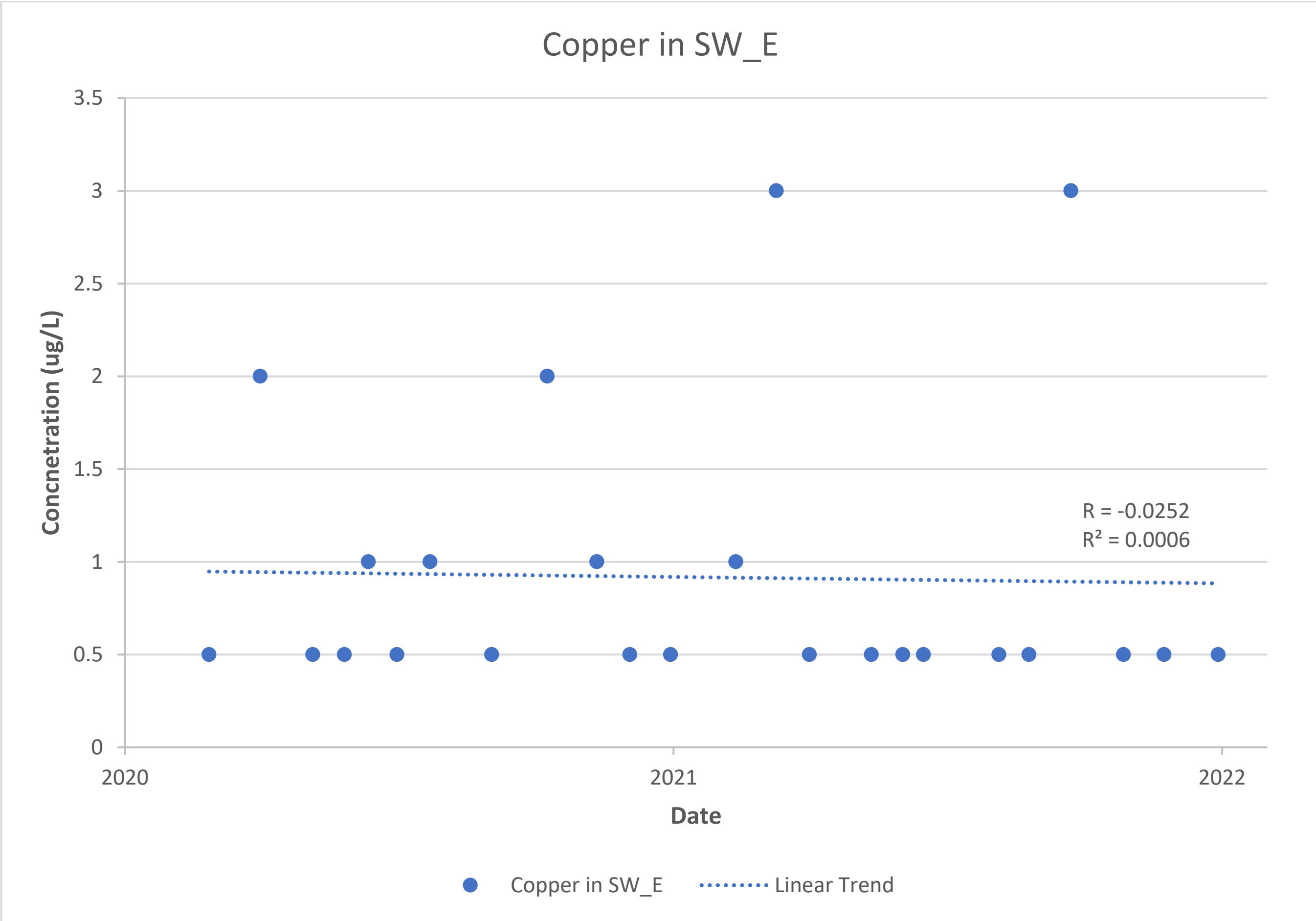
Surface Water Linear Trend Graphs



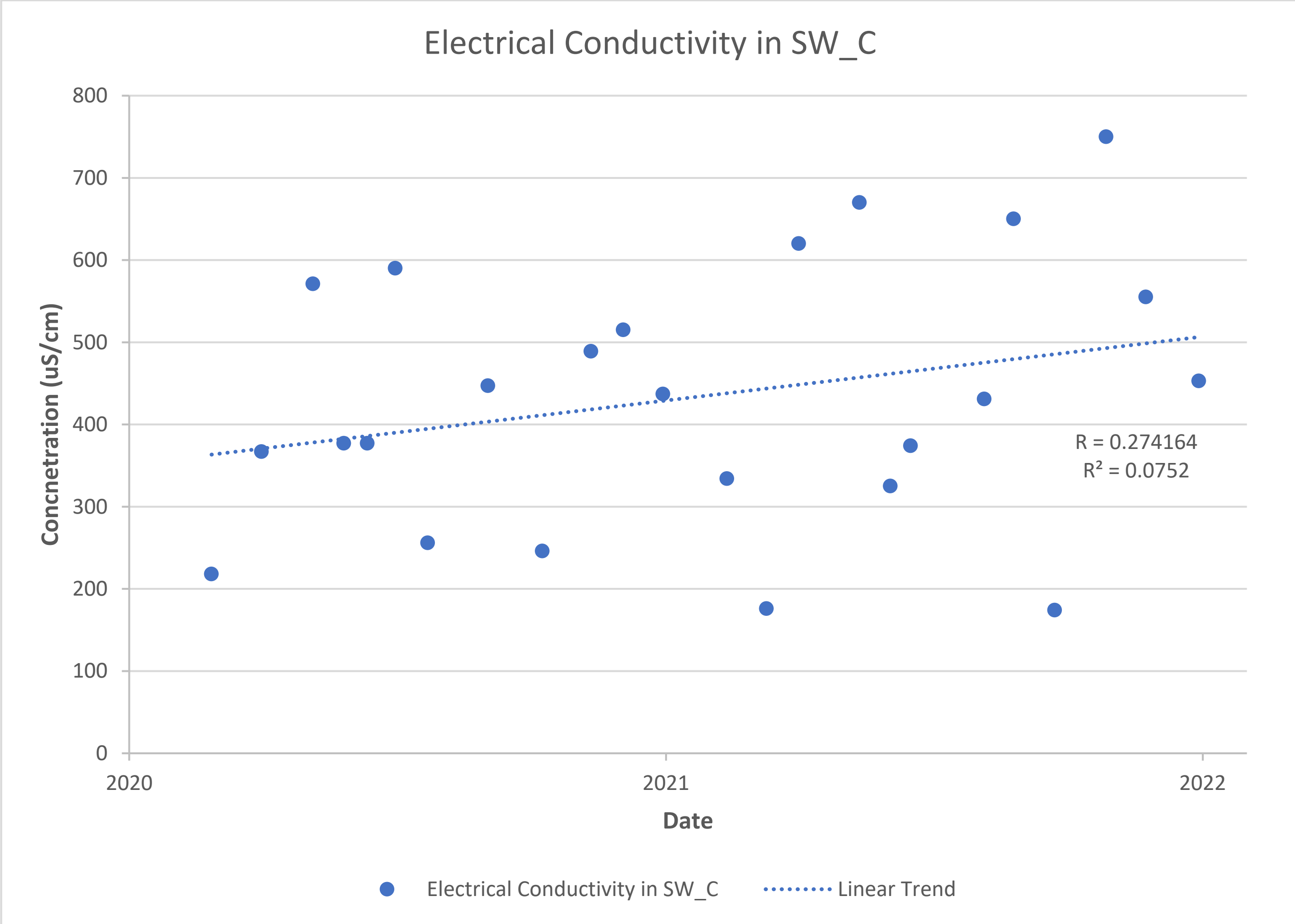
Surface Water Linear Trend Graphs



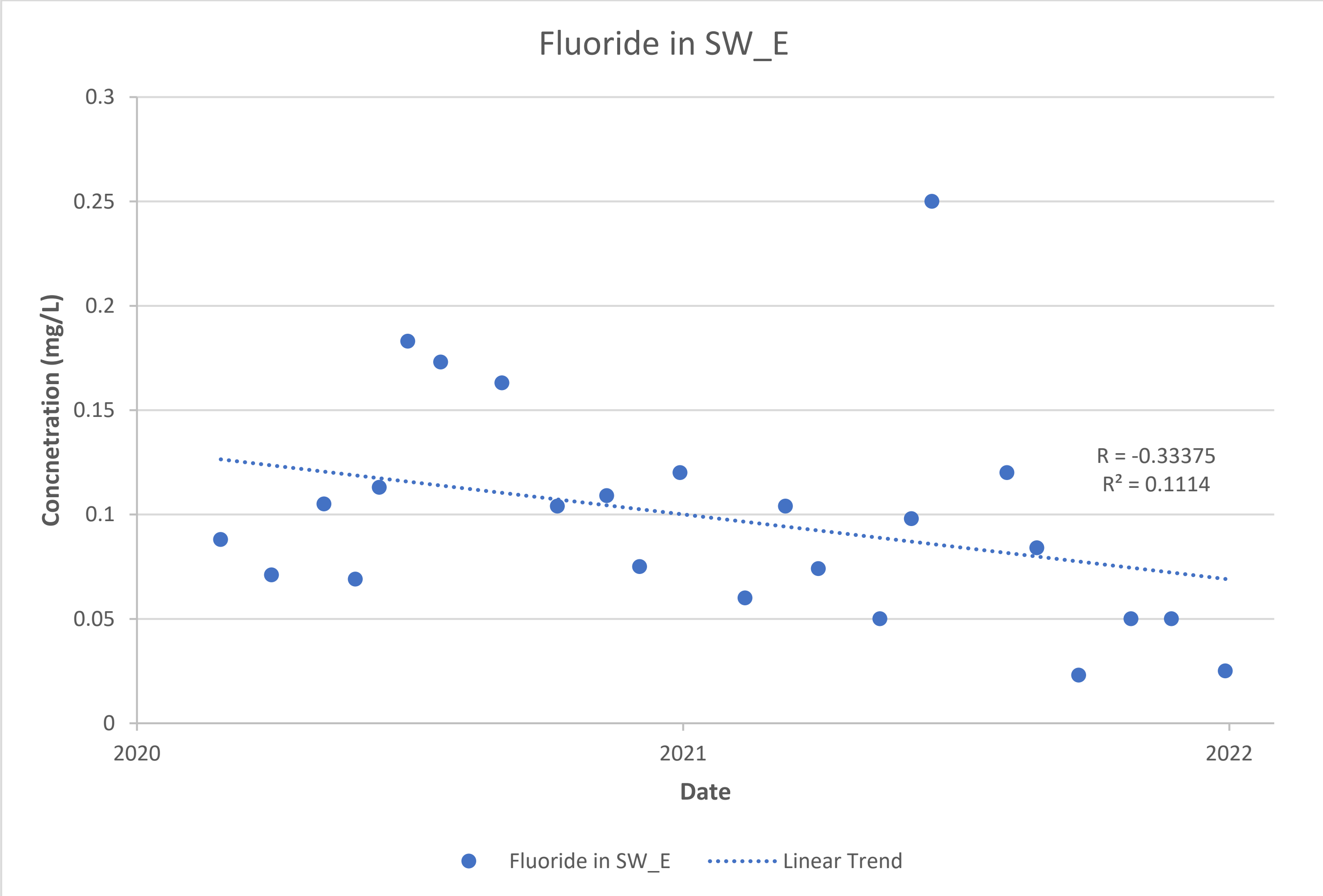
Surface Water Linear Trend Graphs



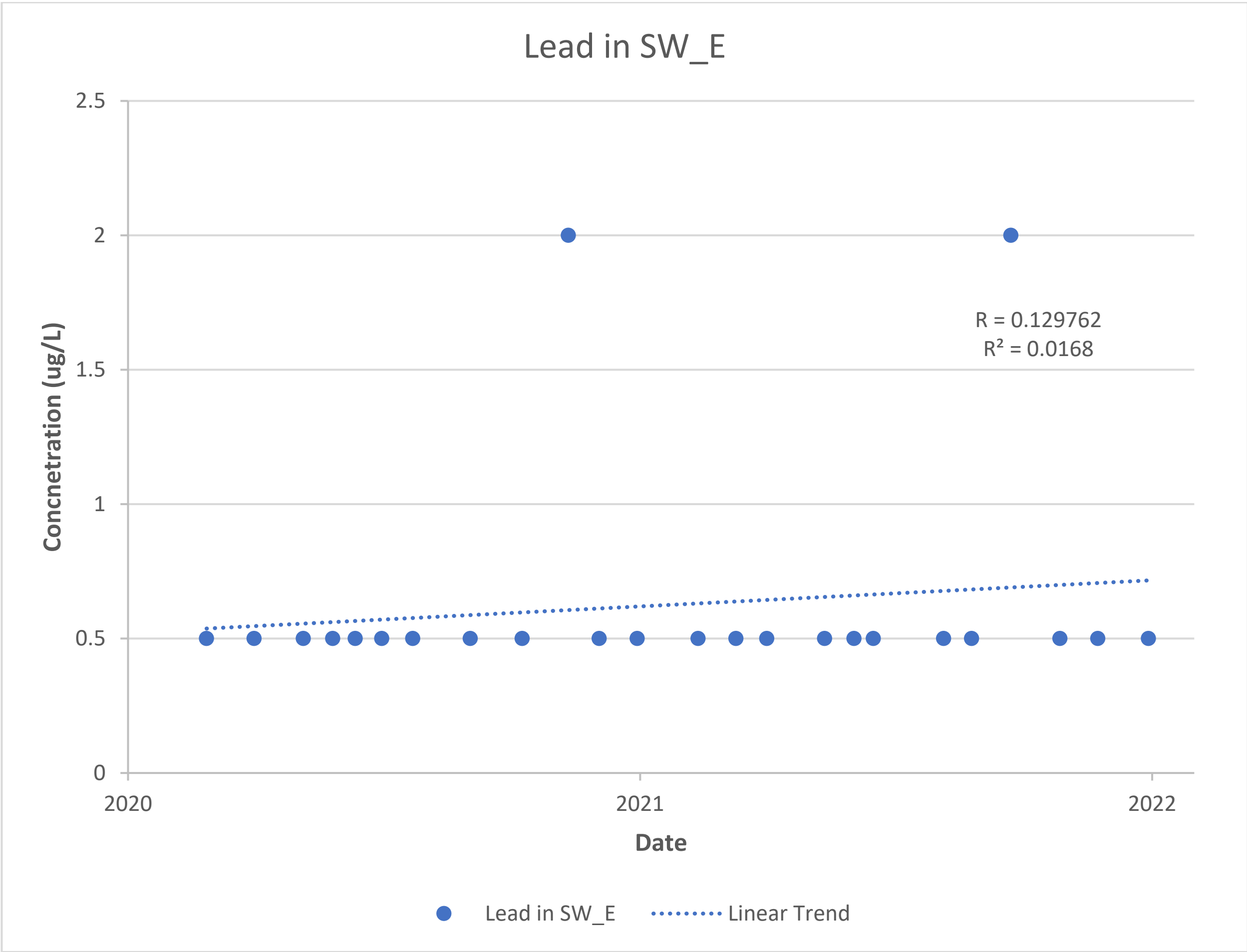
Surface Water Linear Trend Graphs



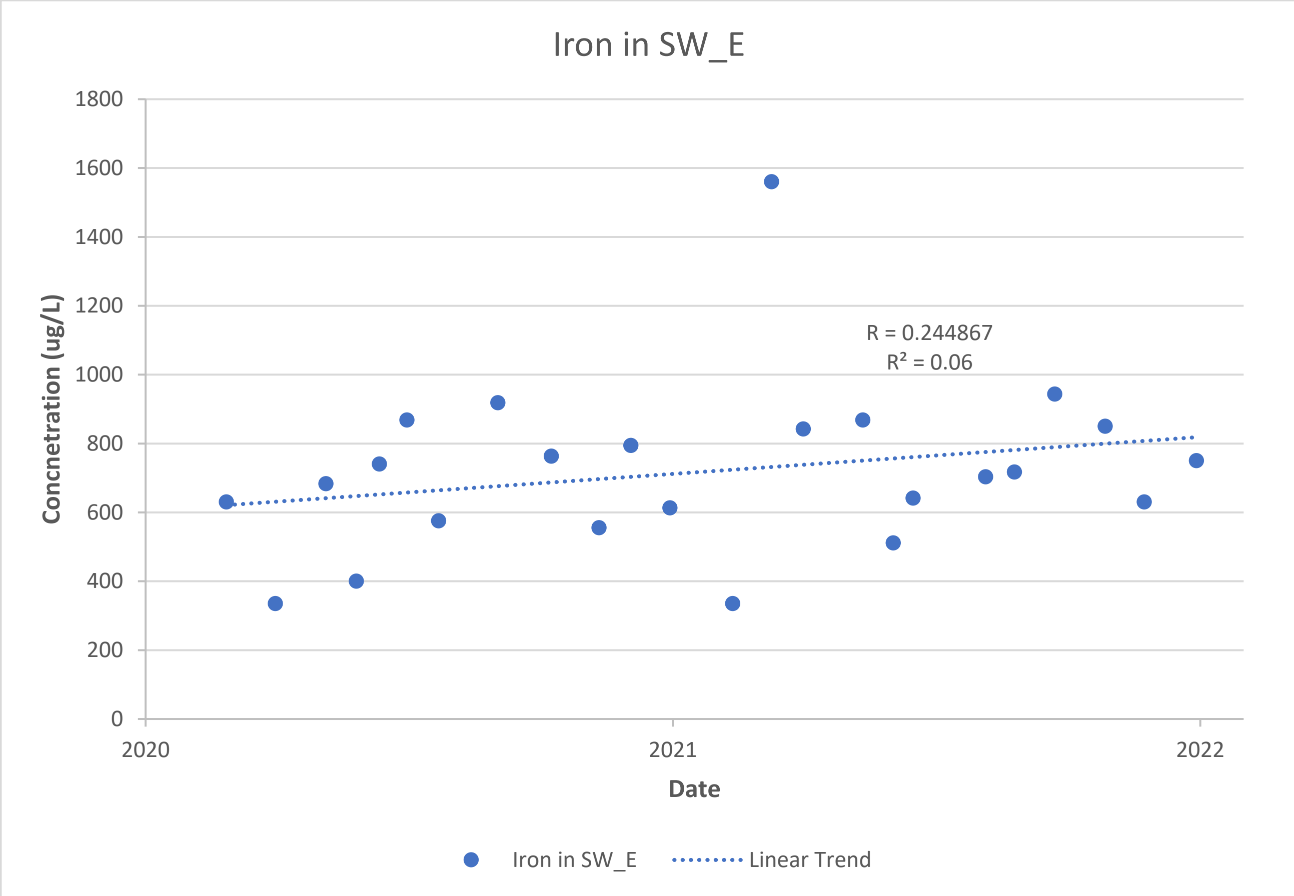
Surface Water Linear Trend Graphs



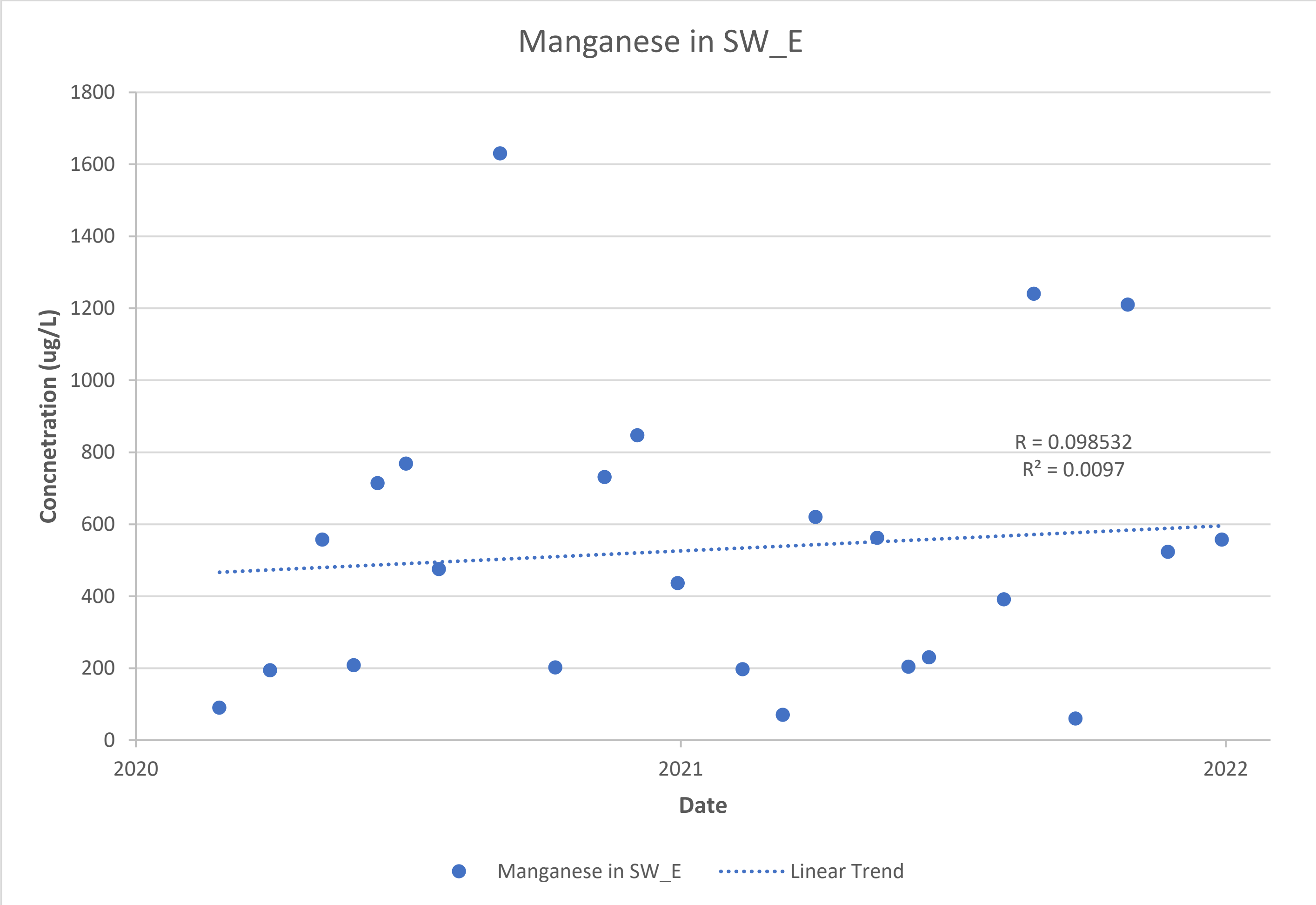
Surface Water Linear Trend Graphs



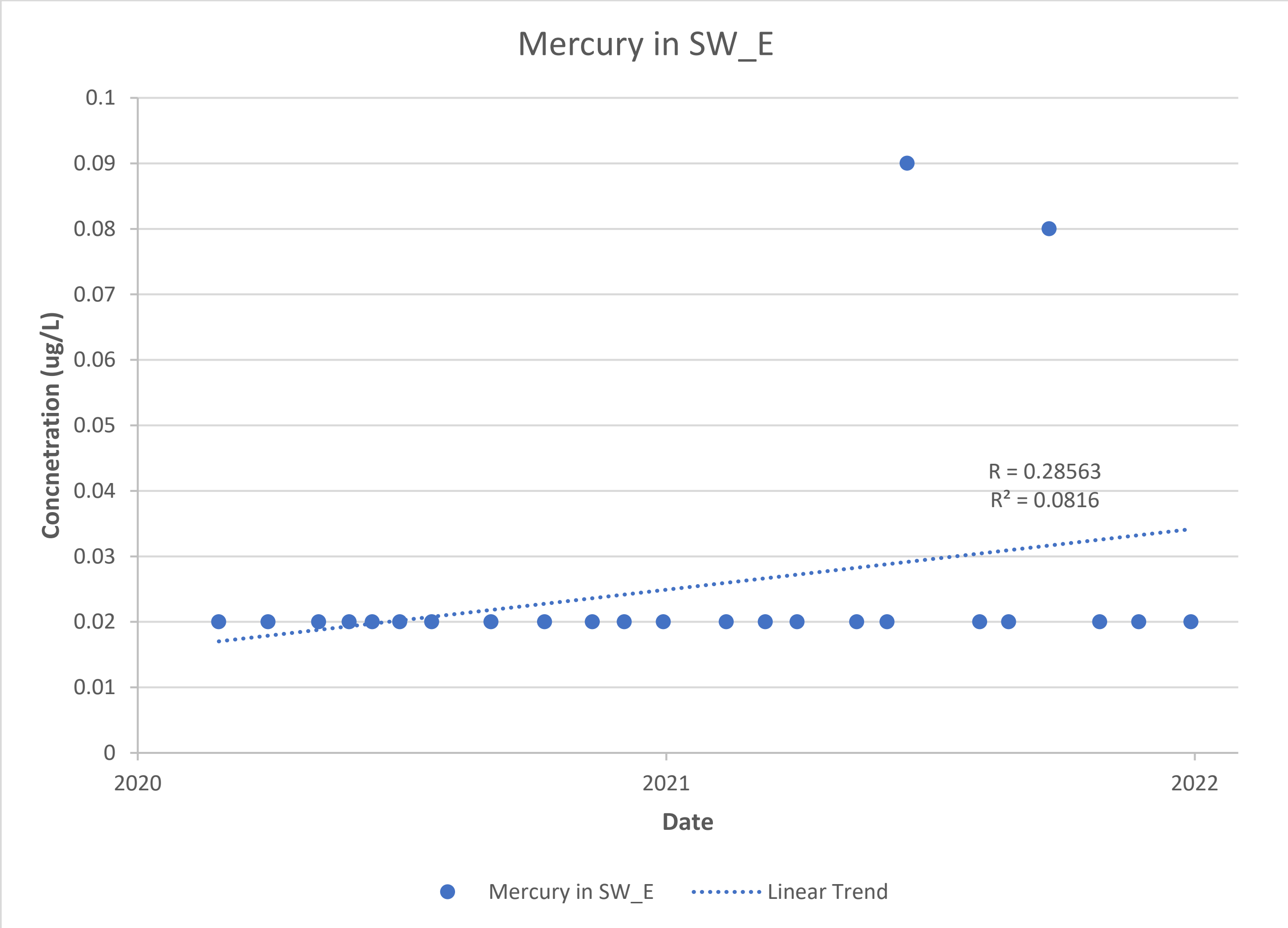
Surface Water Linear Trend Graphs



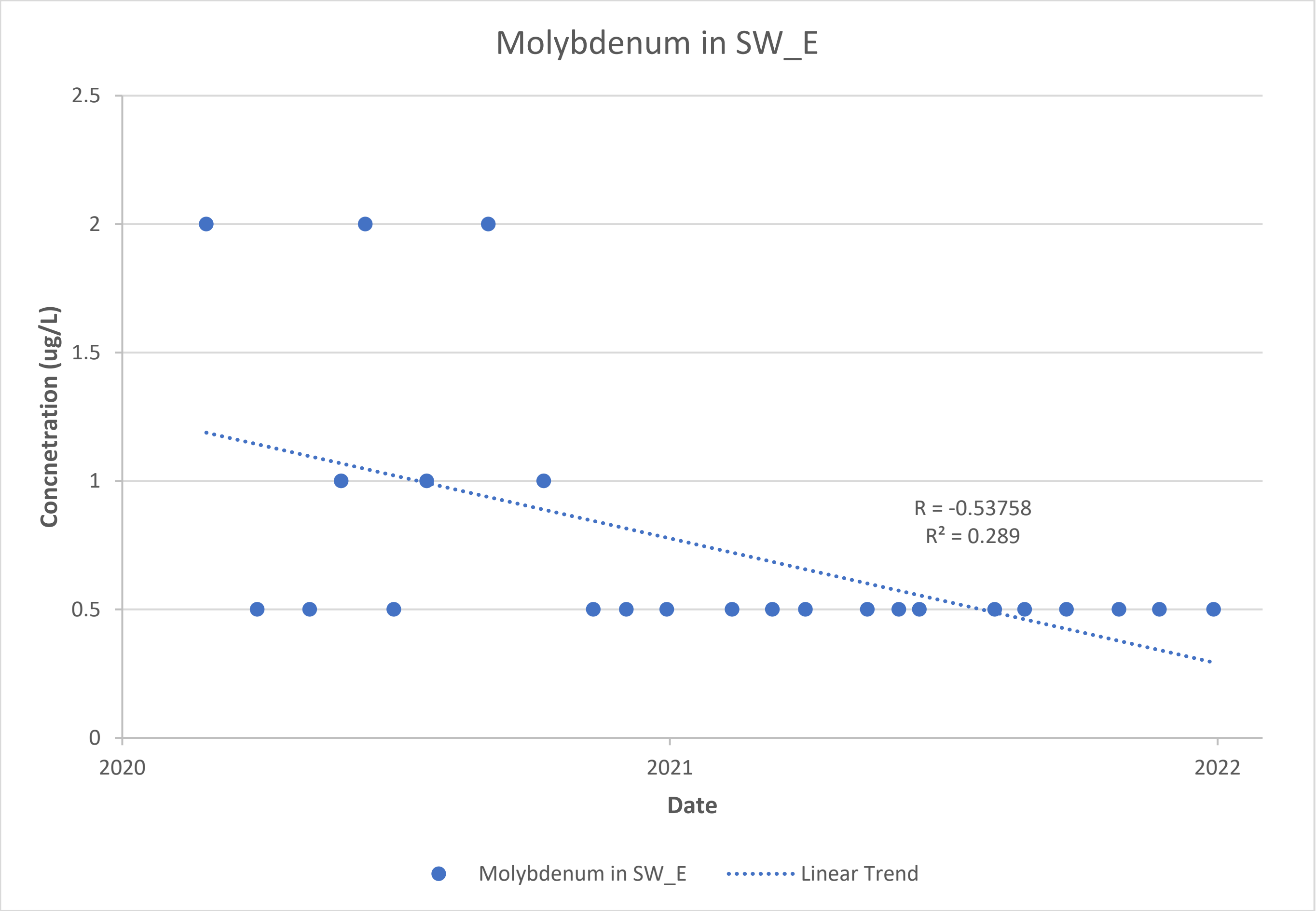
Surface Water Linear Trend Graphs

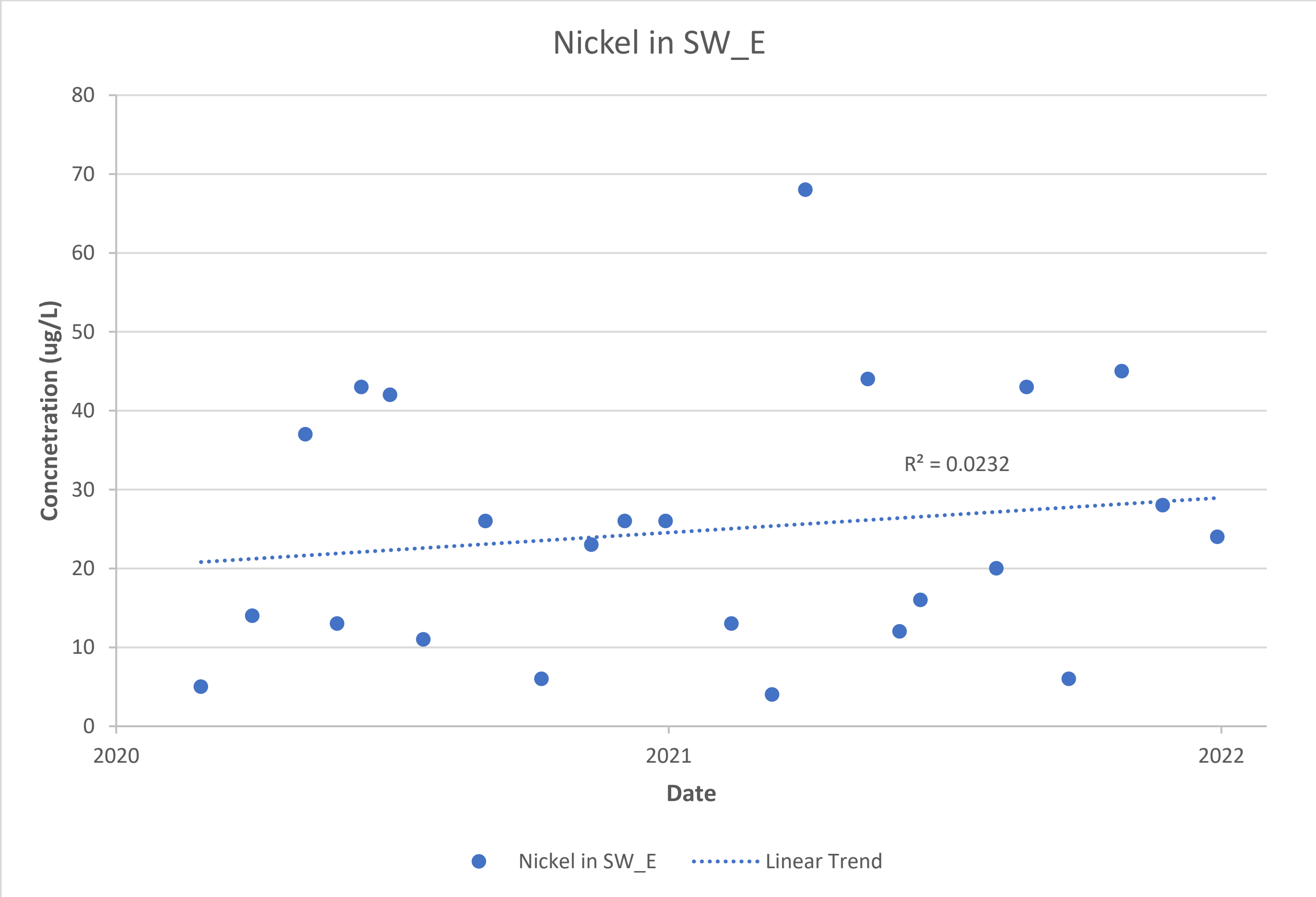


Surface Water Linear Trend Graphs

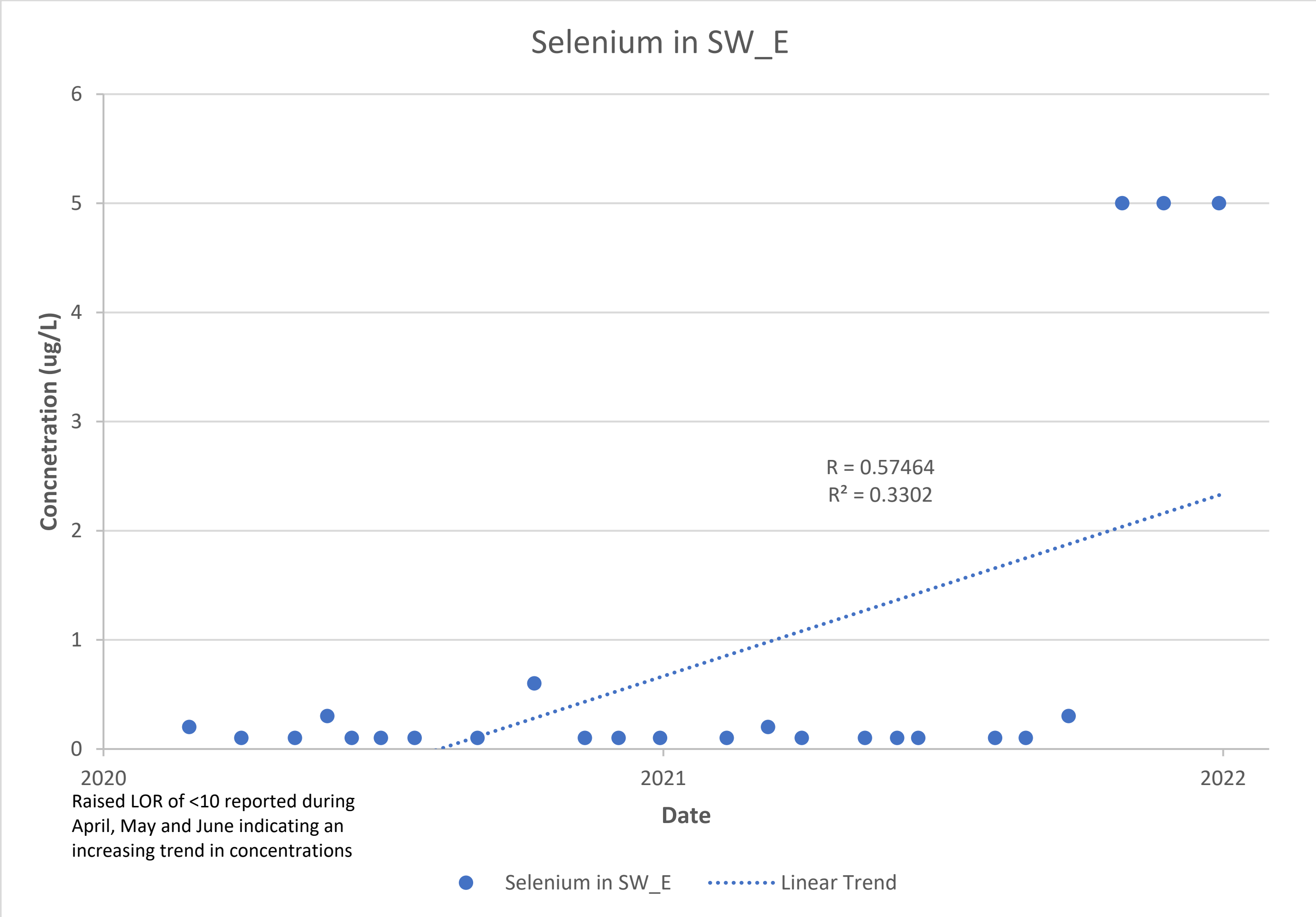


Surface Water Linear Trend Graphs

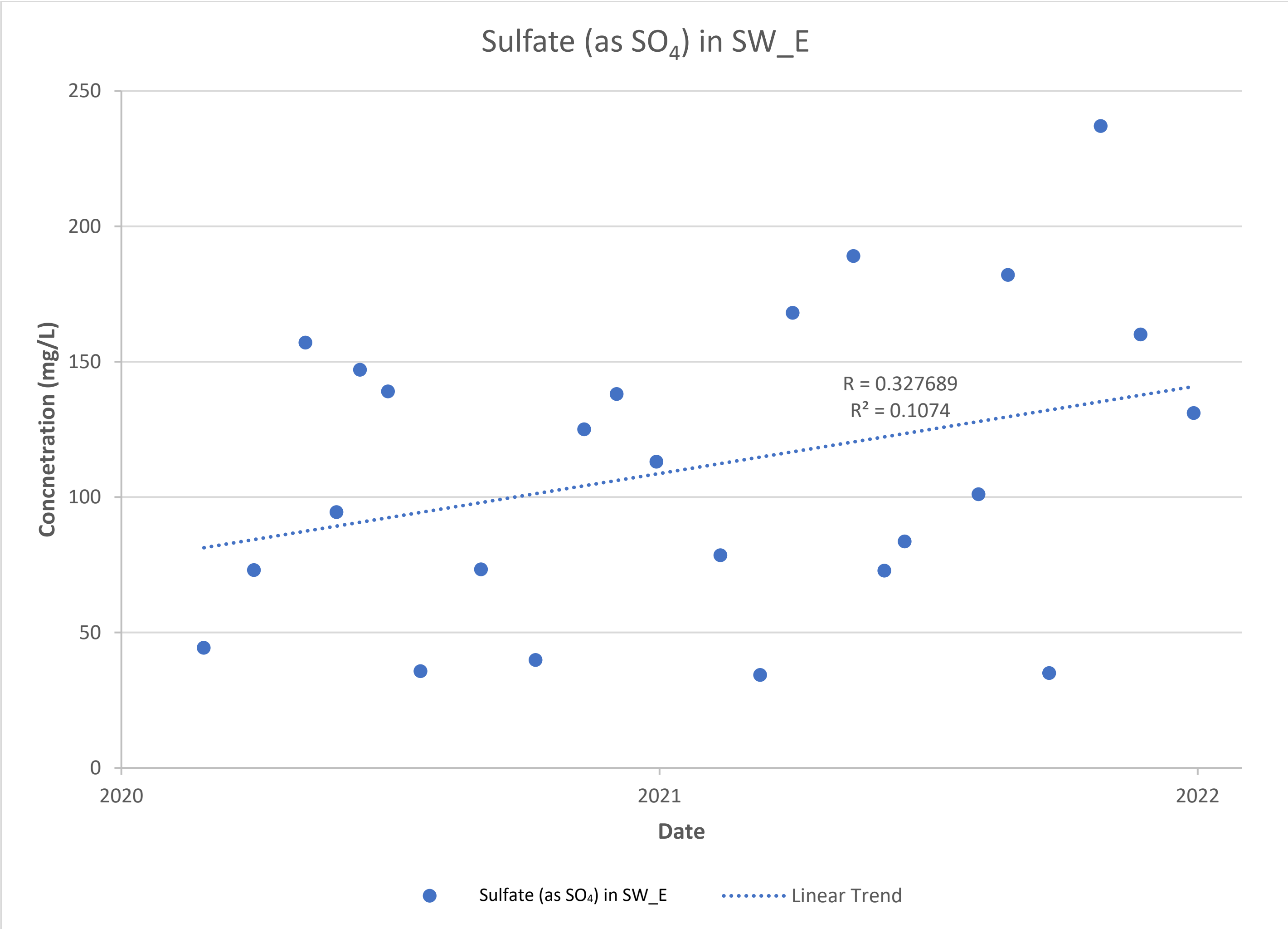



Nickel in SW_E
80
70
60
50
40
30
20
10
0
Concnetration (ug/L)
R² = 0.0232
2020
2021
2022
Date
Nickel in SW_E
Linear Trend

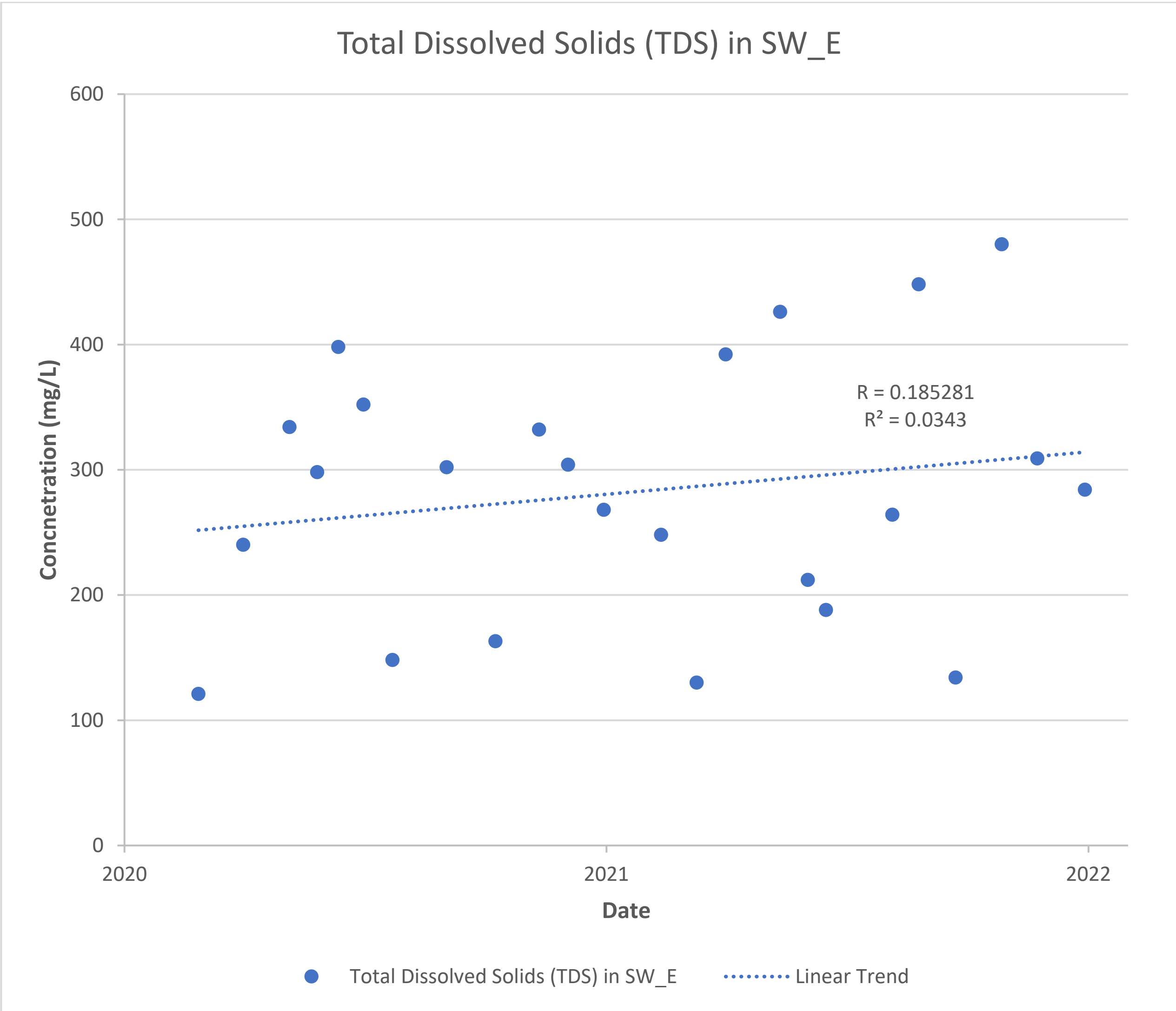
Surface Water Linear Trend Graphs



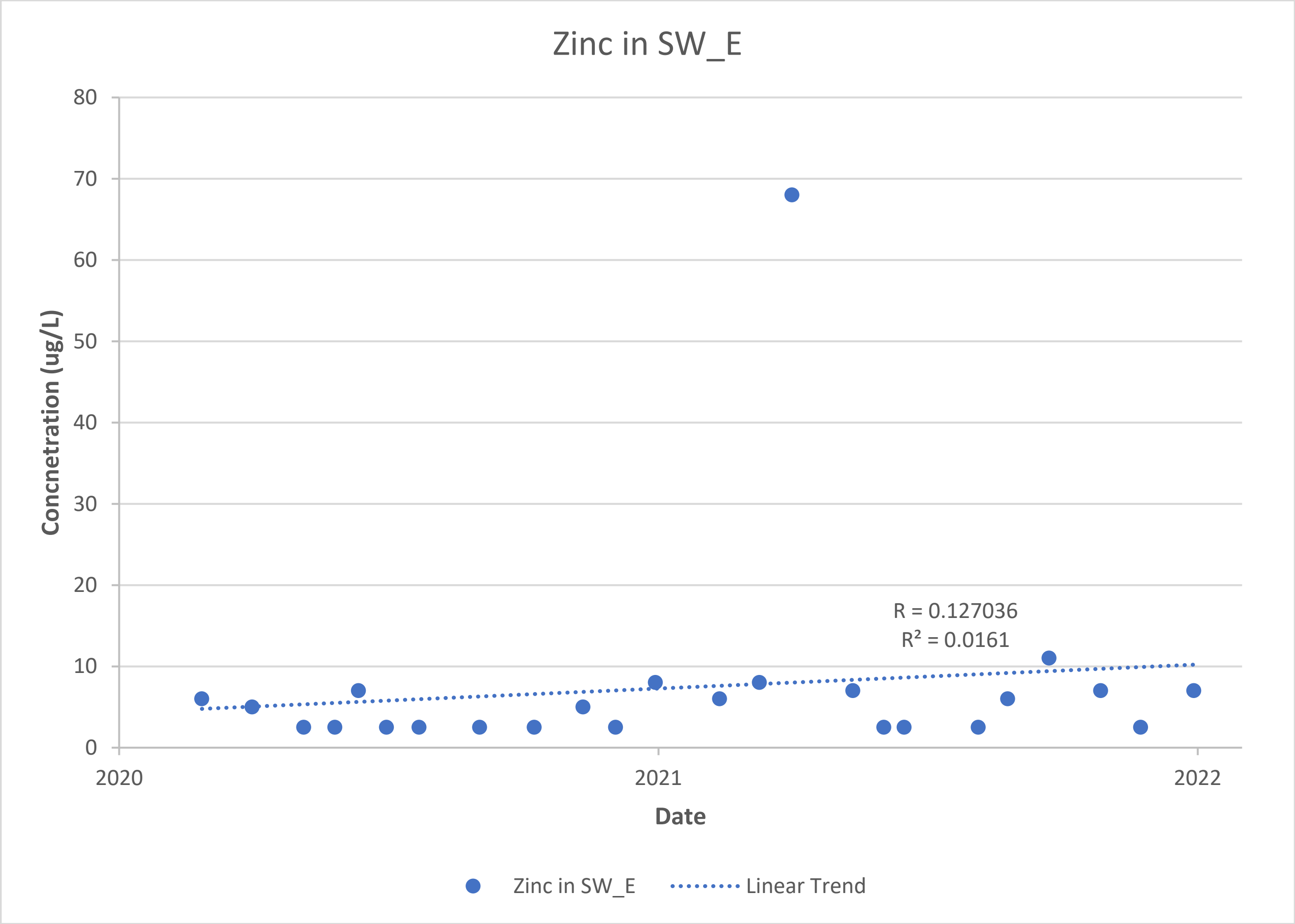
Surface Water Linear Trend Graphs



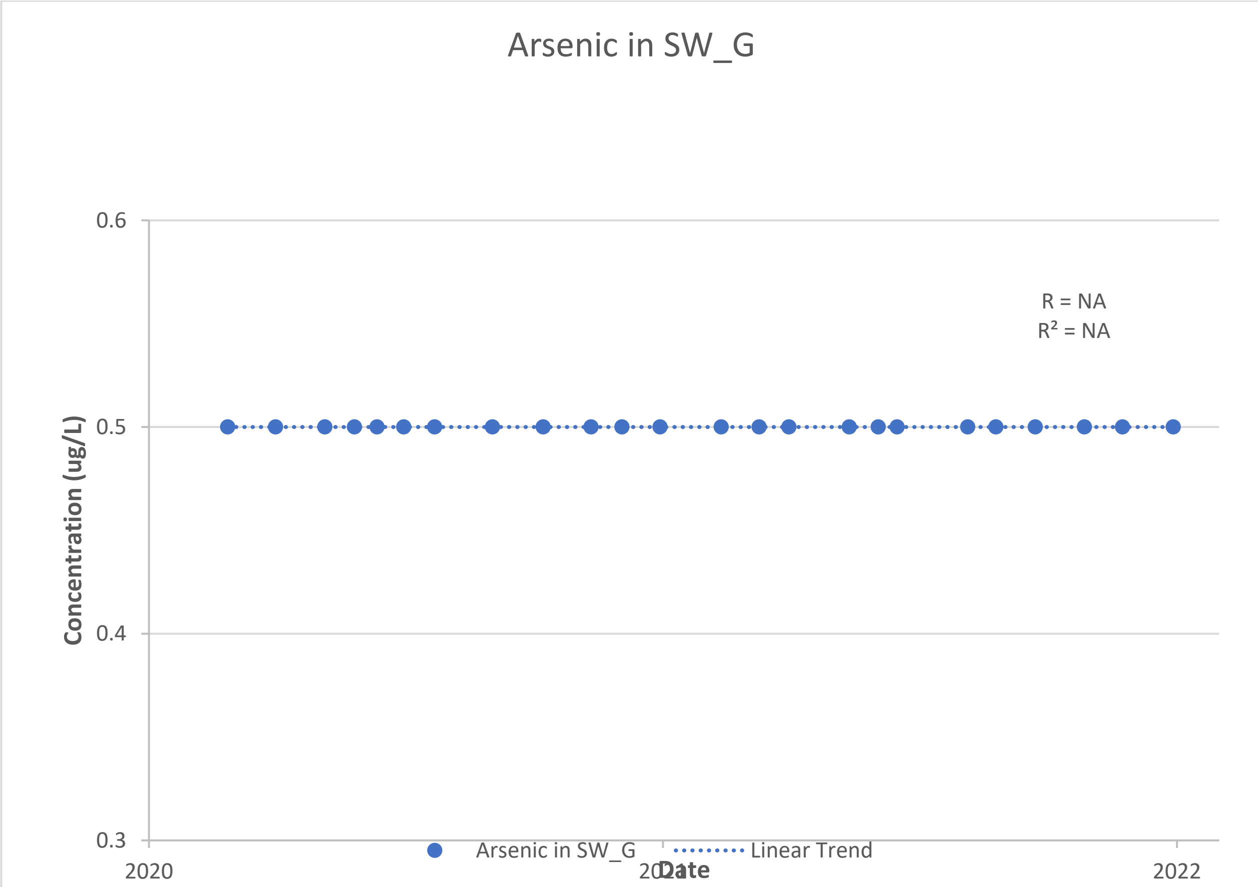
Surface Water Linear Trend Graphs



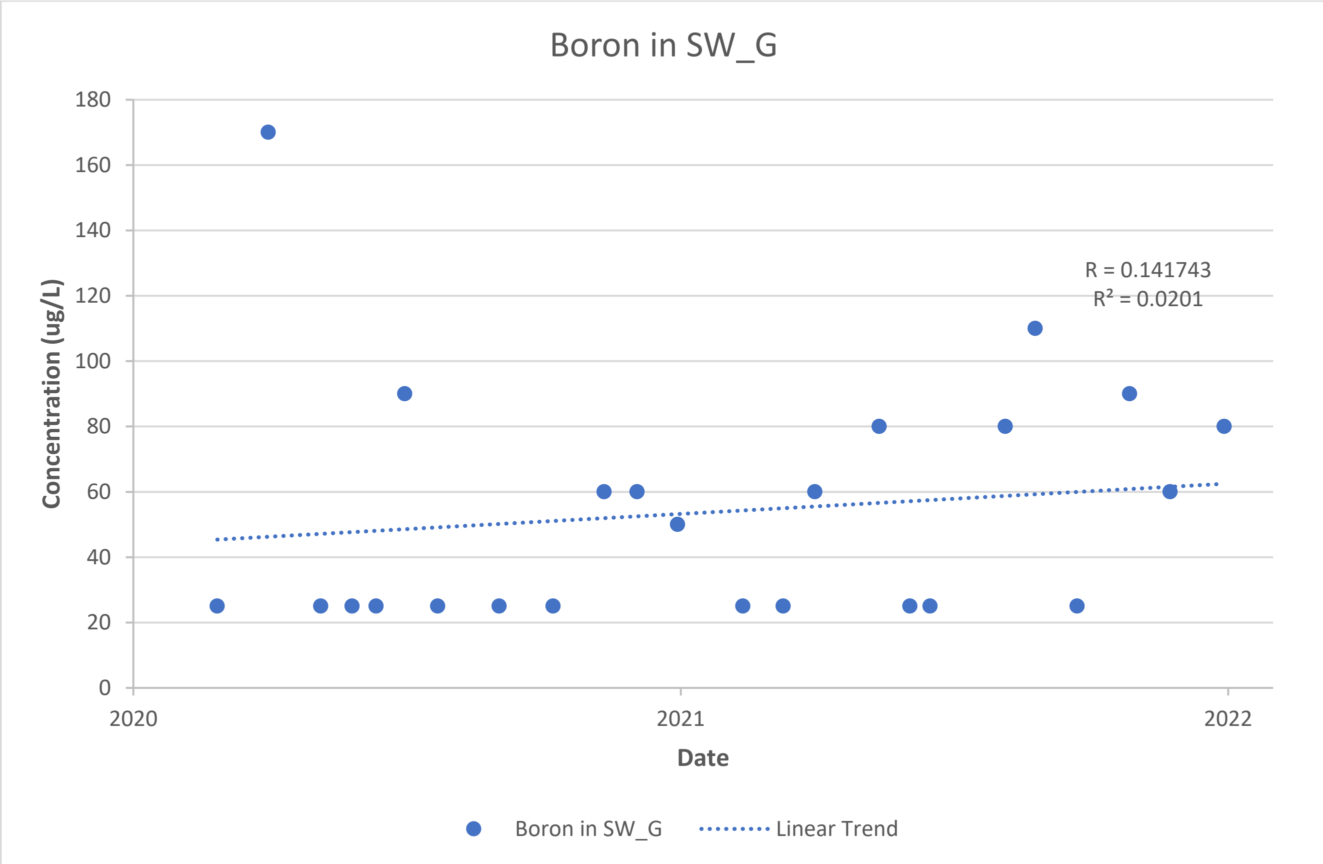
Surface Water Linear Trend Graphs

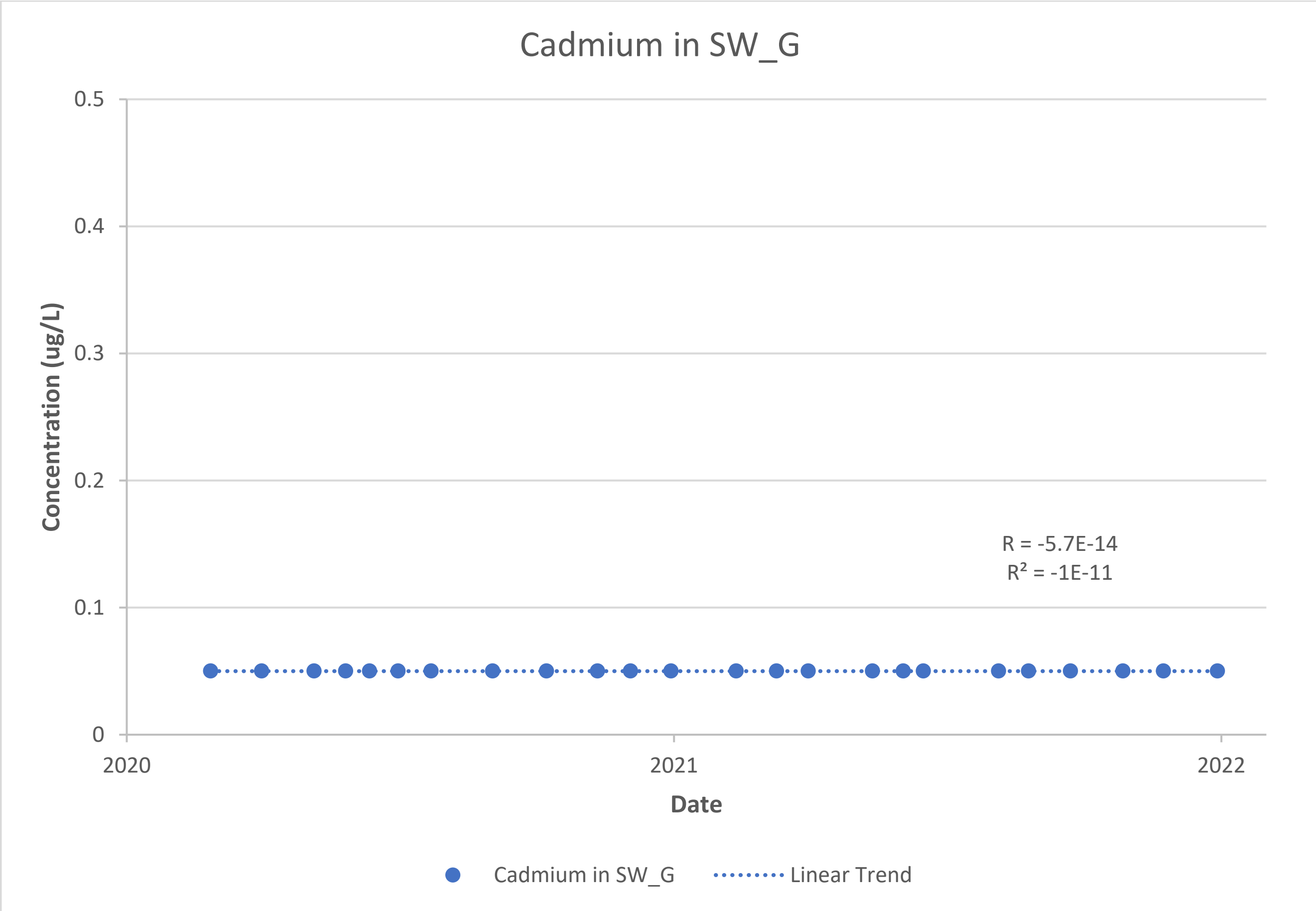


Surface Water Linear Trend Graphs

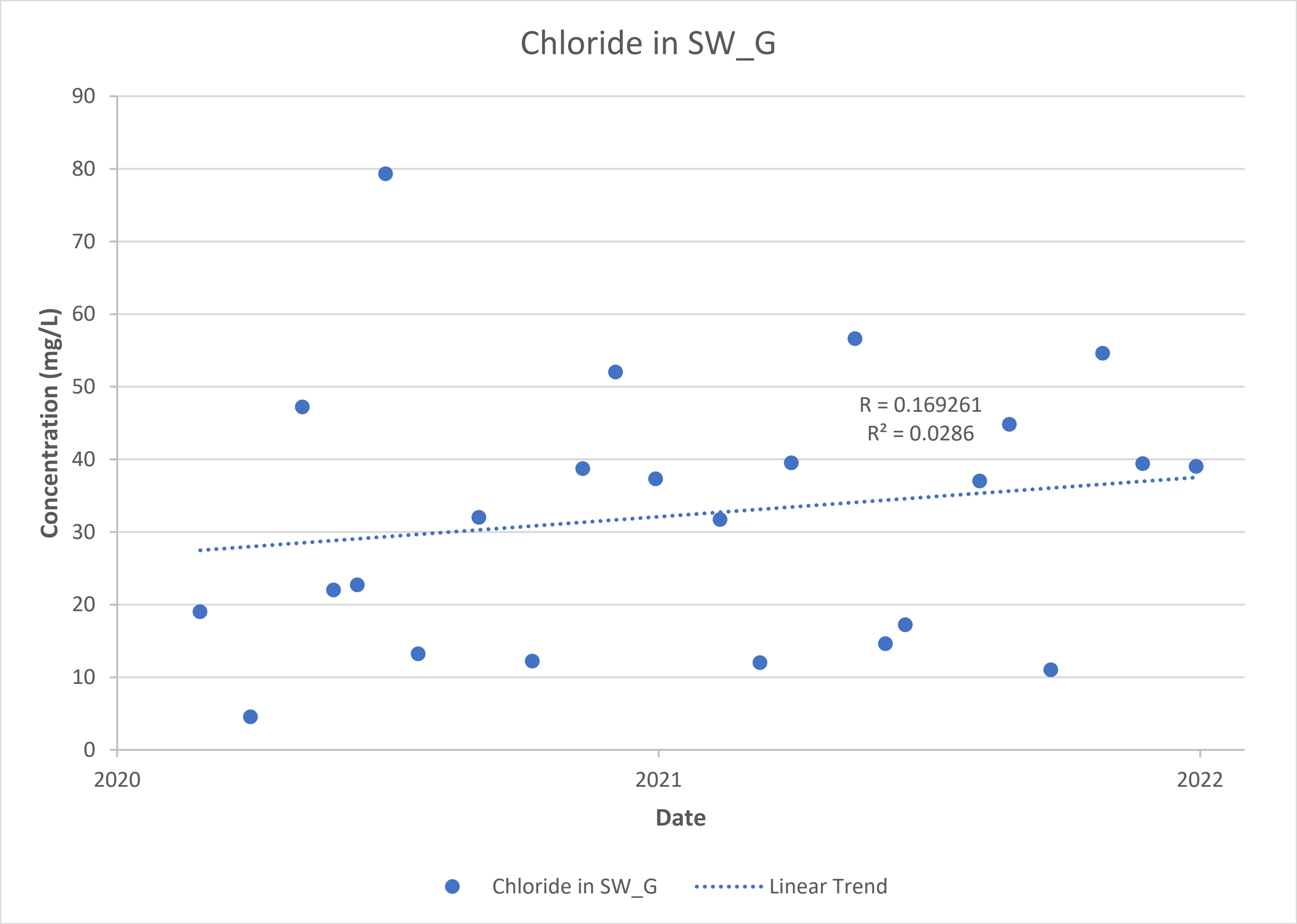


Surface Water Linear Trend Graphs

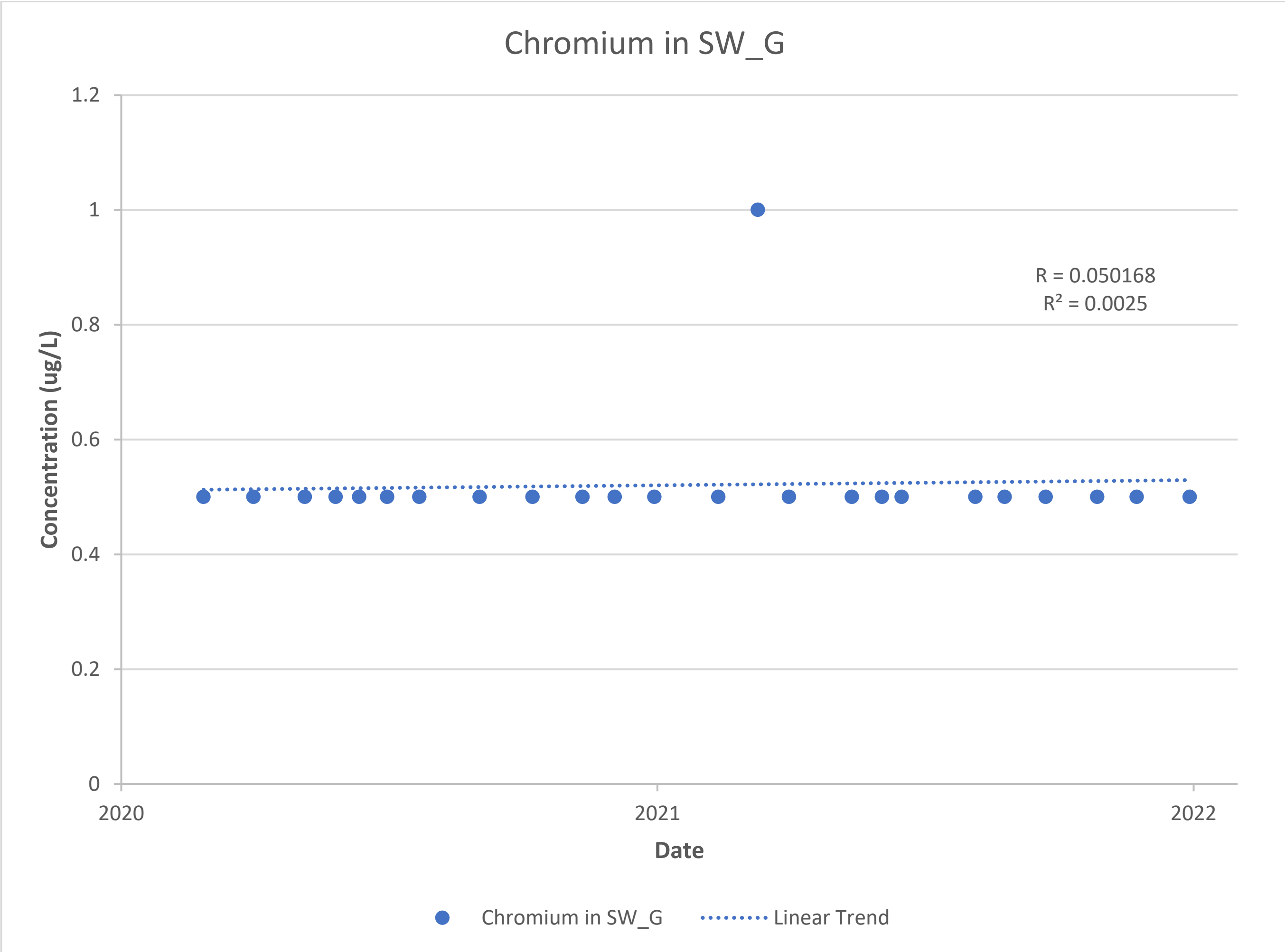



Cadmium in SW_G
Concentration (ug/L)
0.5
0.4
0.3
0.2
0.1
0
2020
2021
2022
Date
R = -5.7E-14
R² = -1E-11
Cadmium in SW_G
Linear Trend

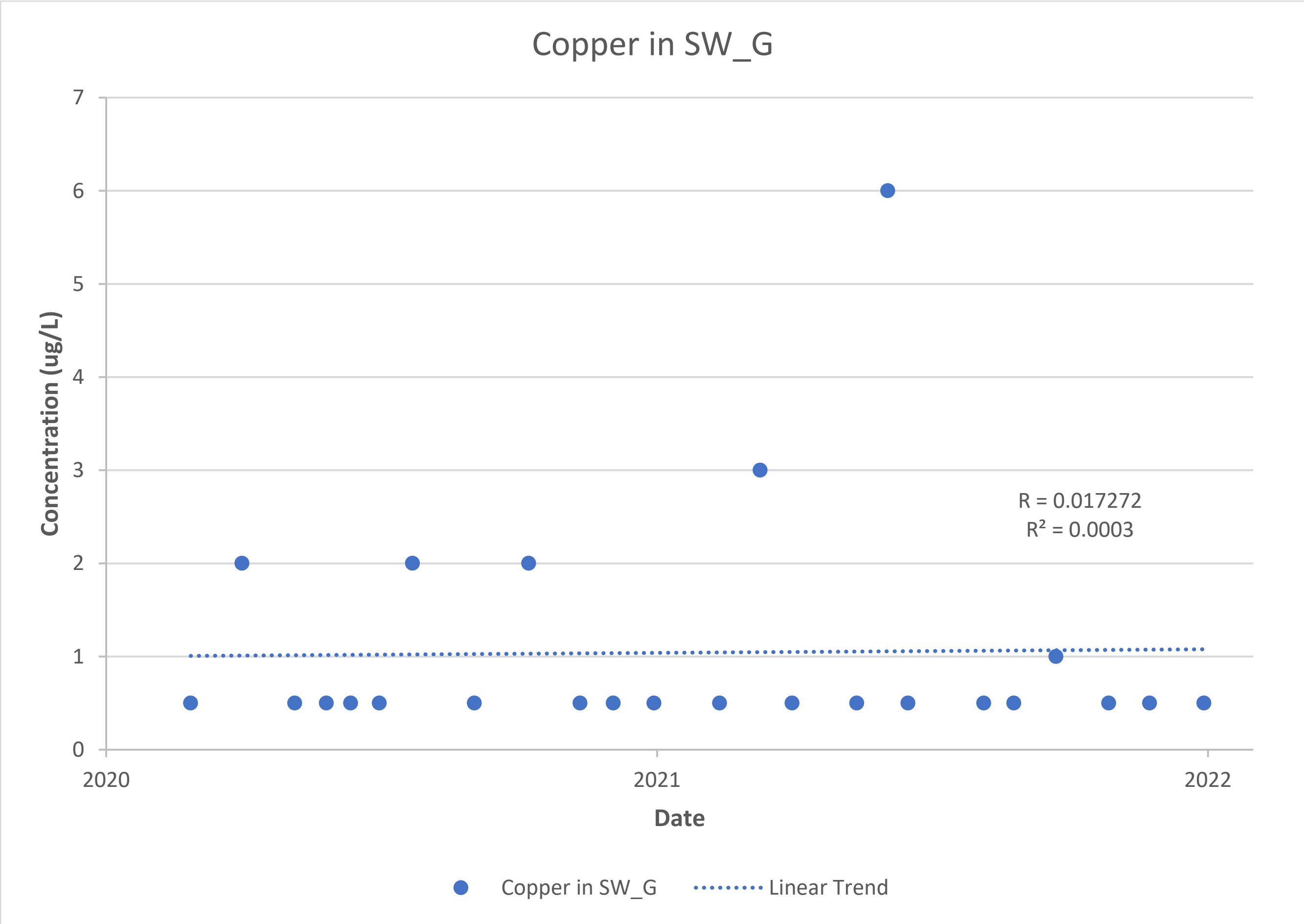
Surface Water Linear Trend Graphs



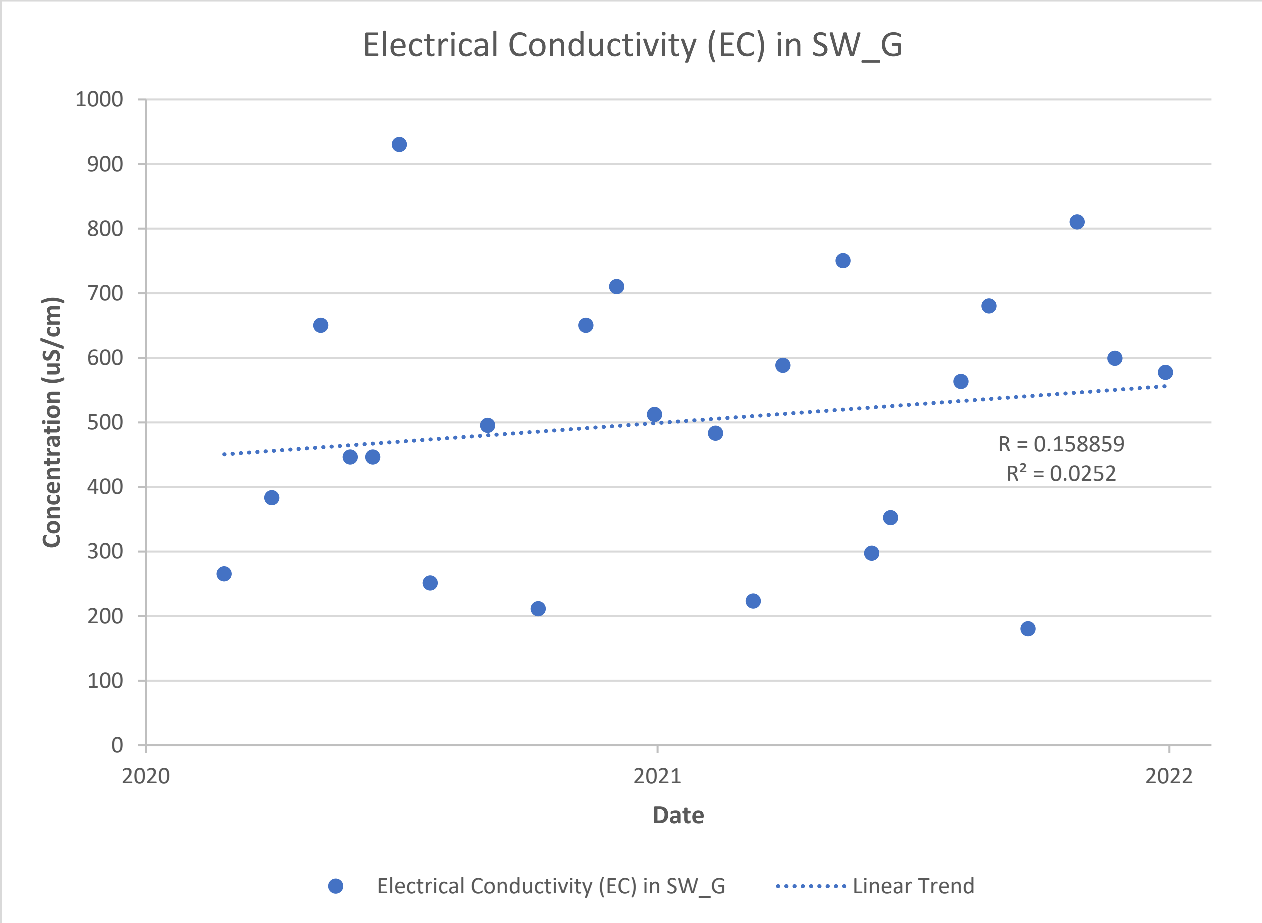
Surface Water Linear Trend Graphs



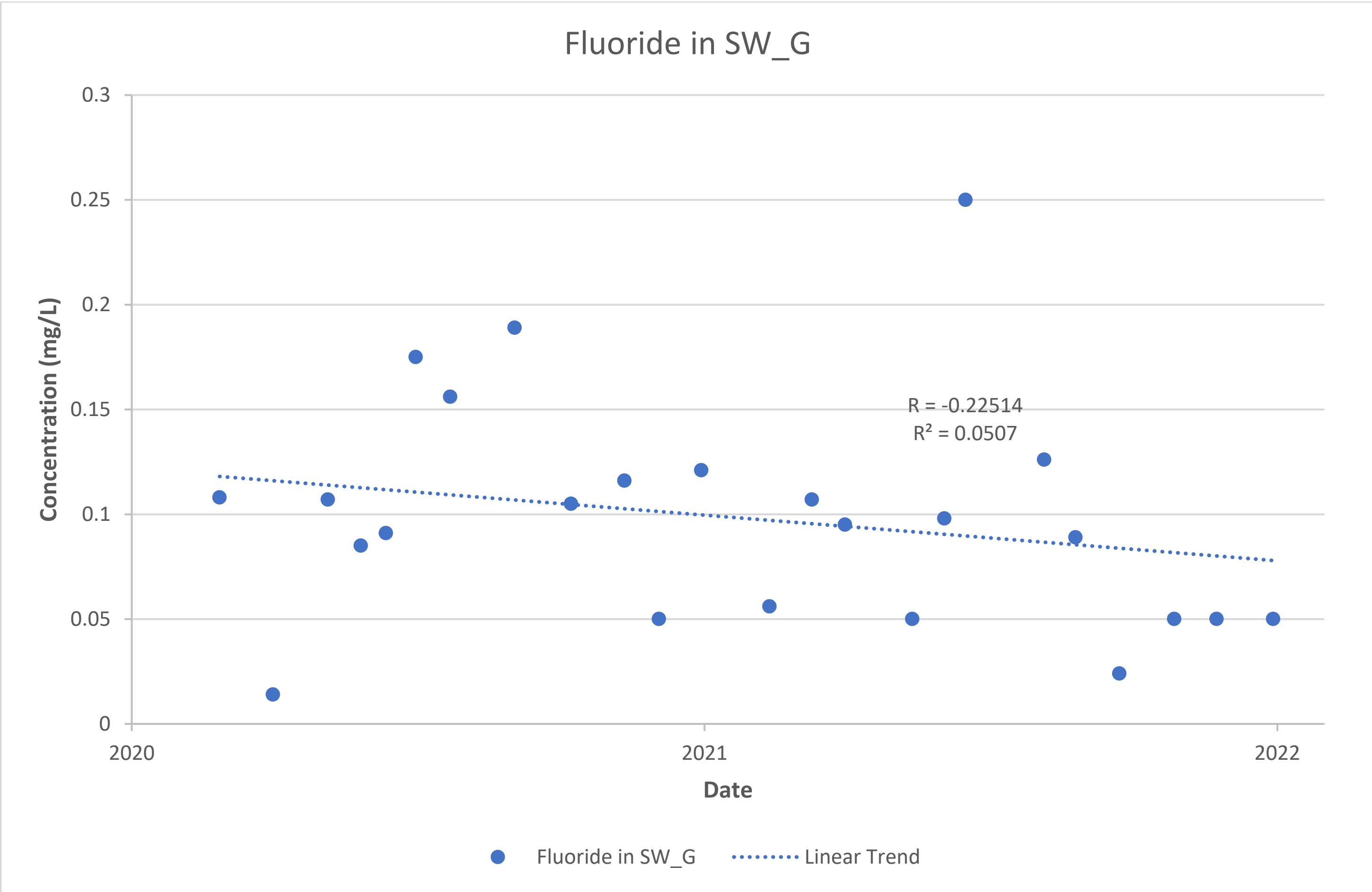
Surface Water Linear Trend Graphs



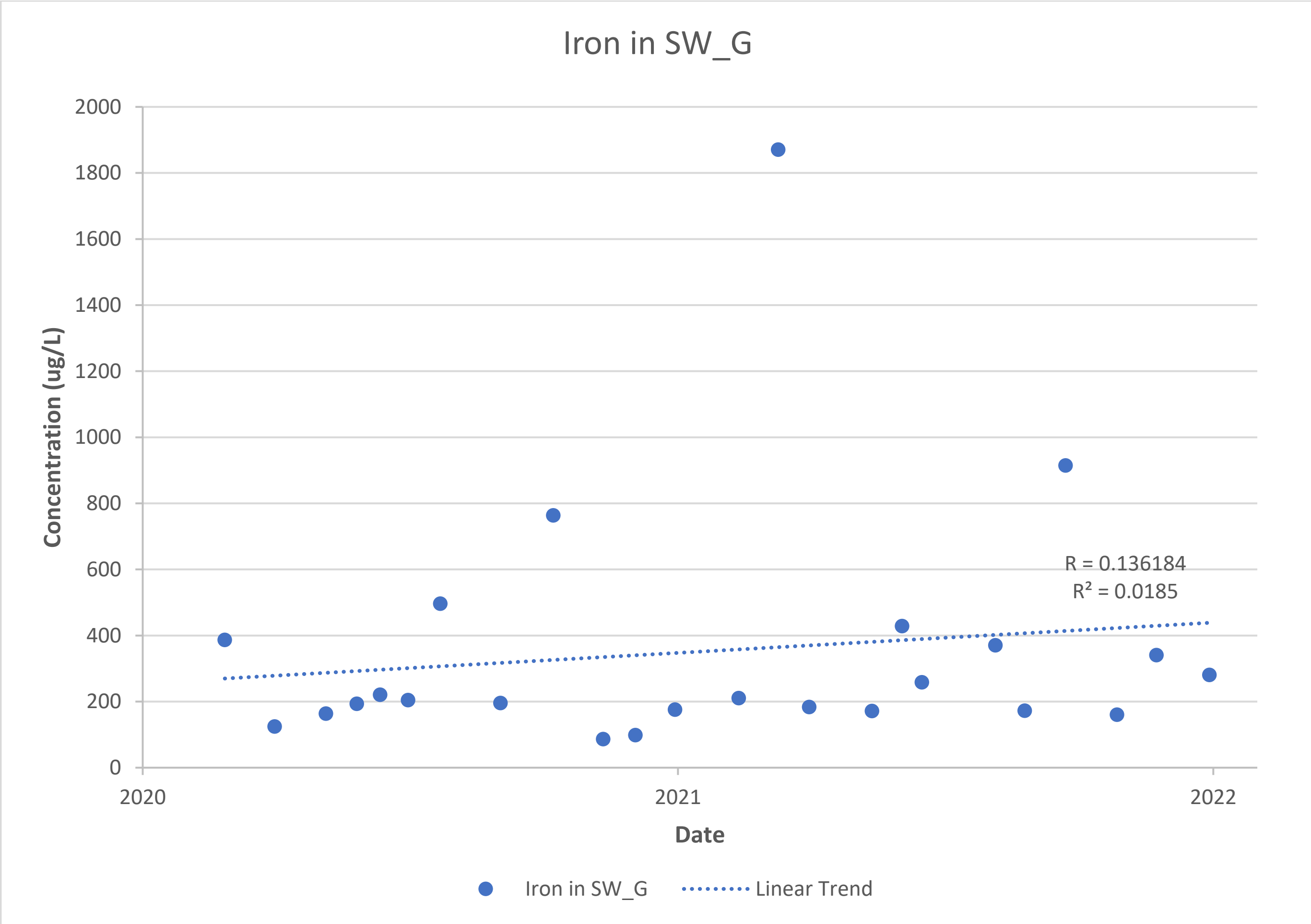
Surface Water Linear Trend Graphs



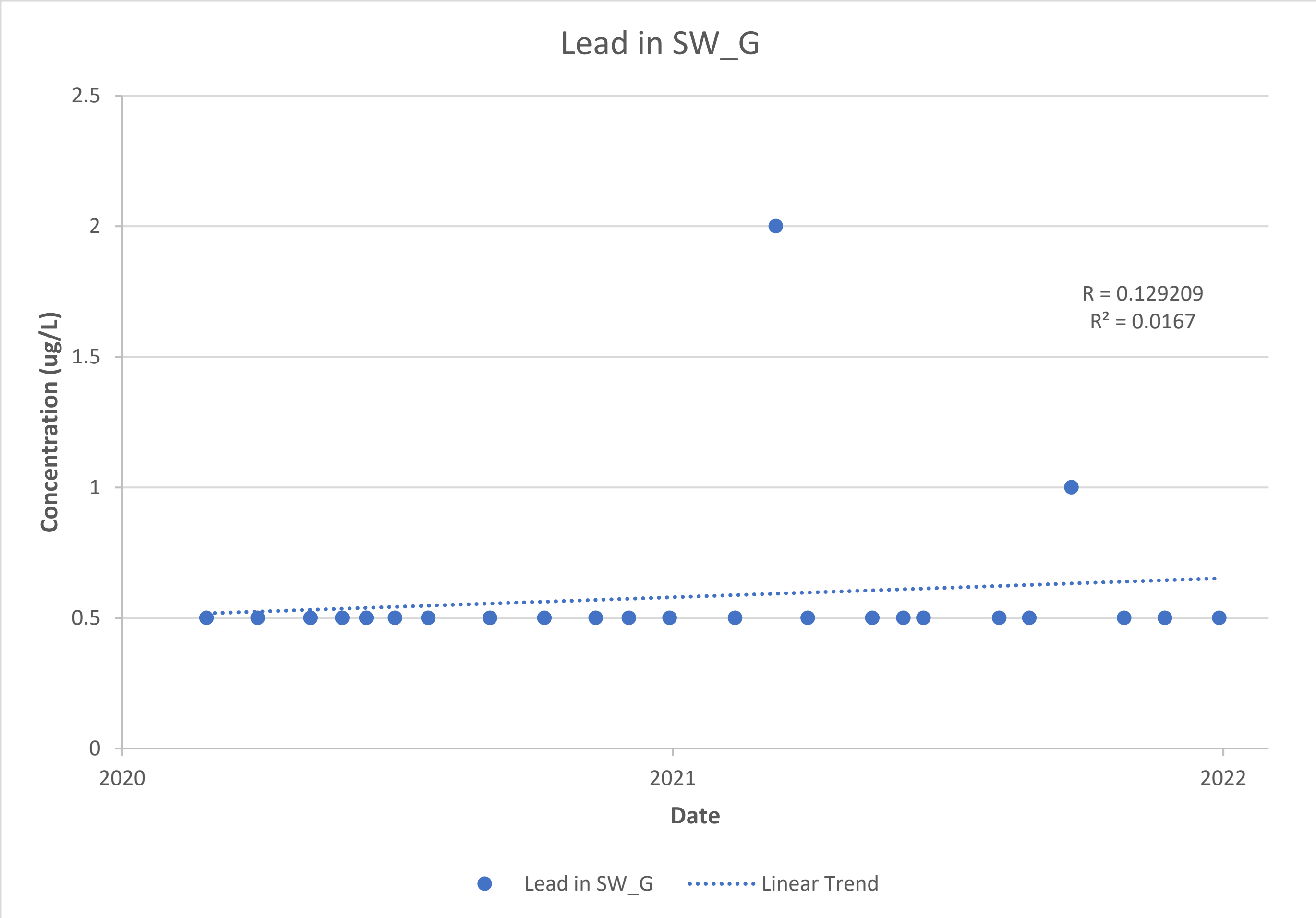
Surface Water Linear Trend Graphs



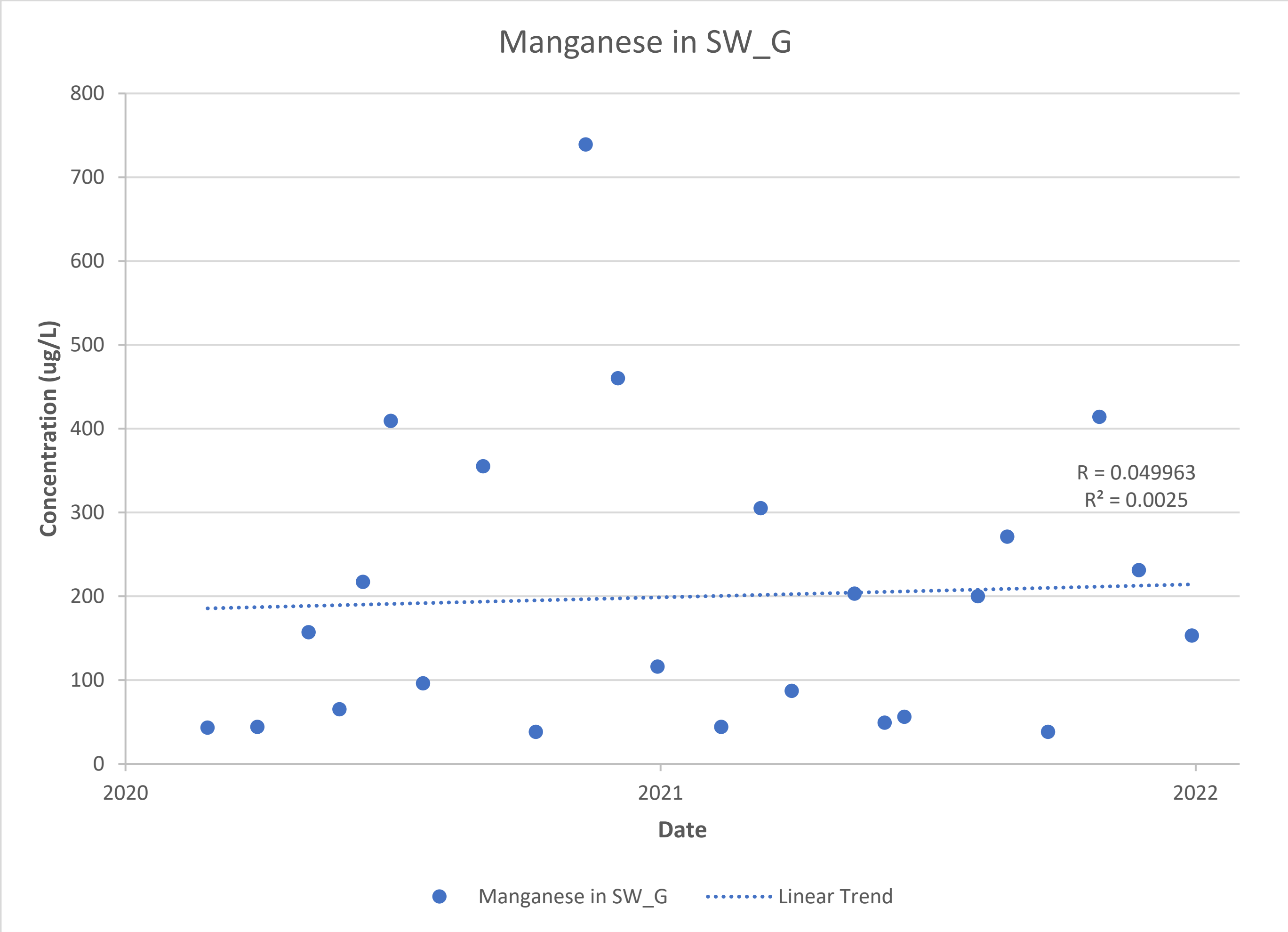
Surface Water Linear Trend Graphs



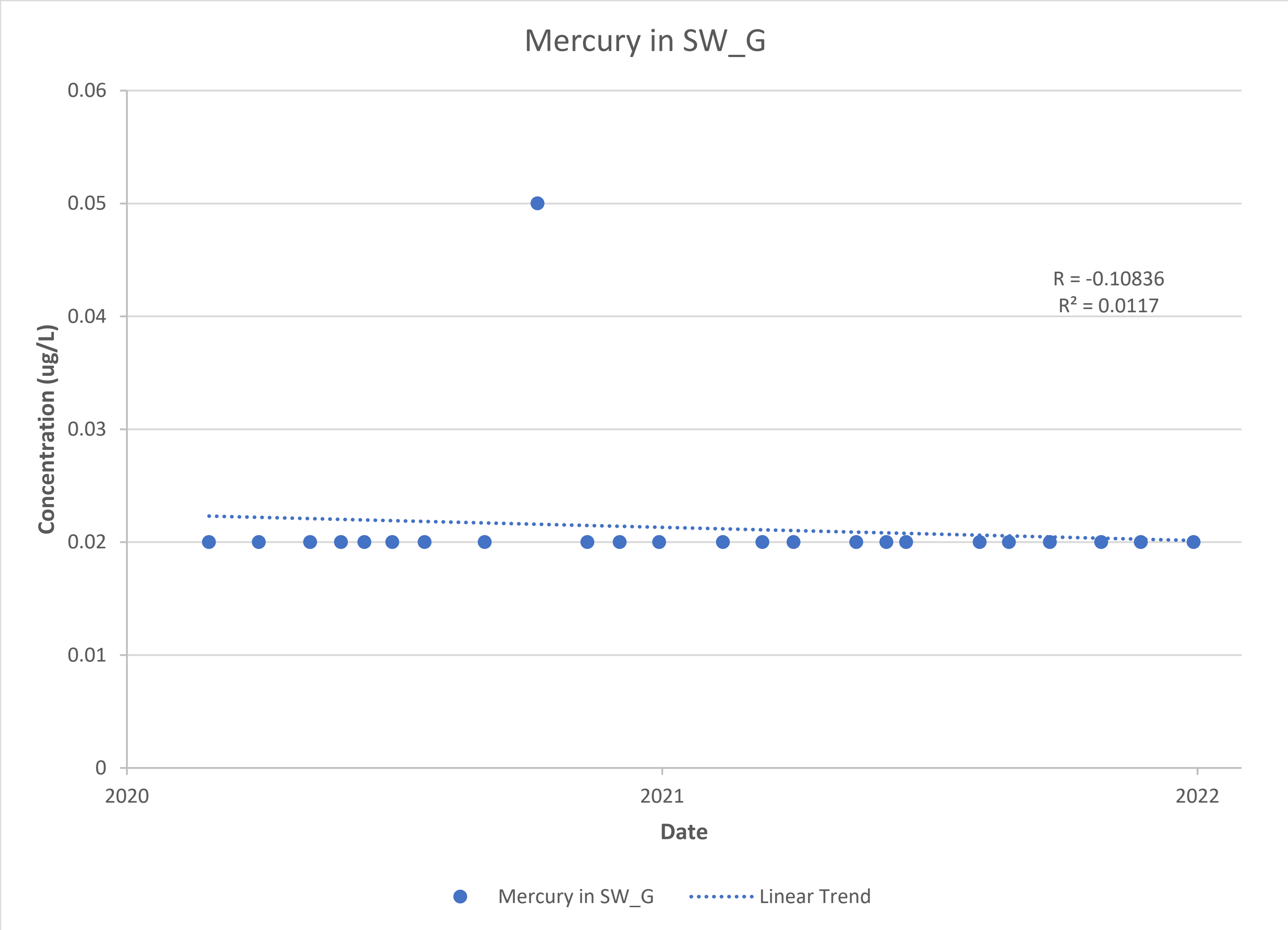
Surface Water Linear Trend Graphs

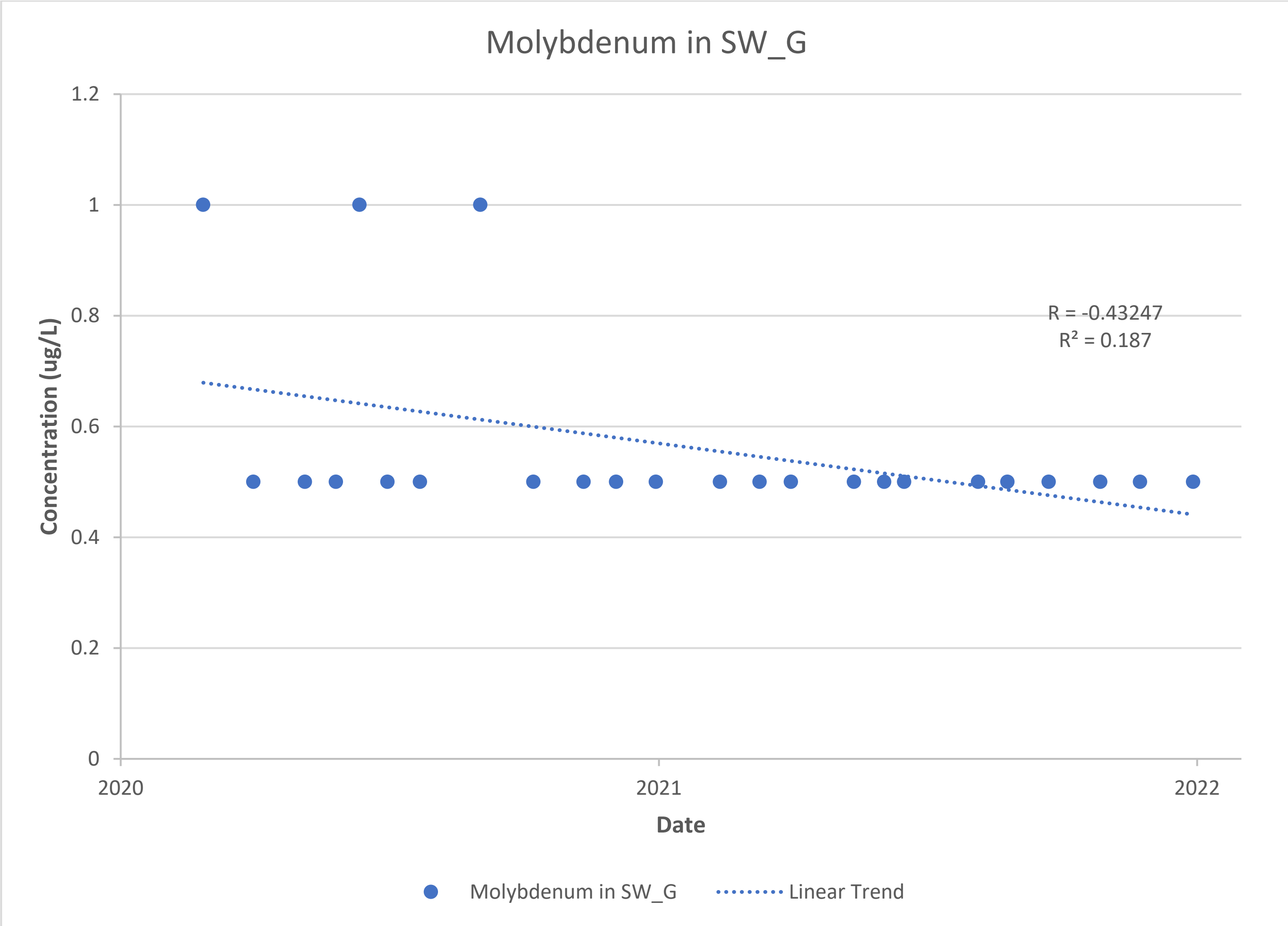


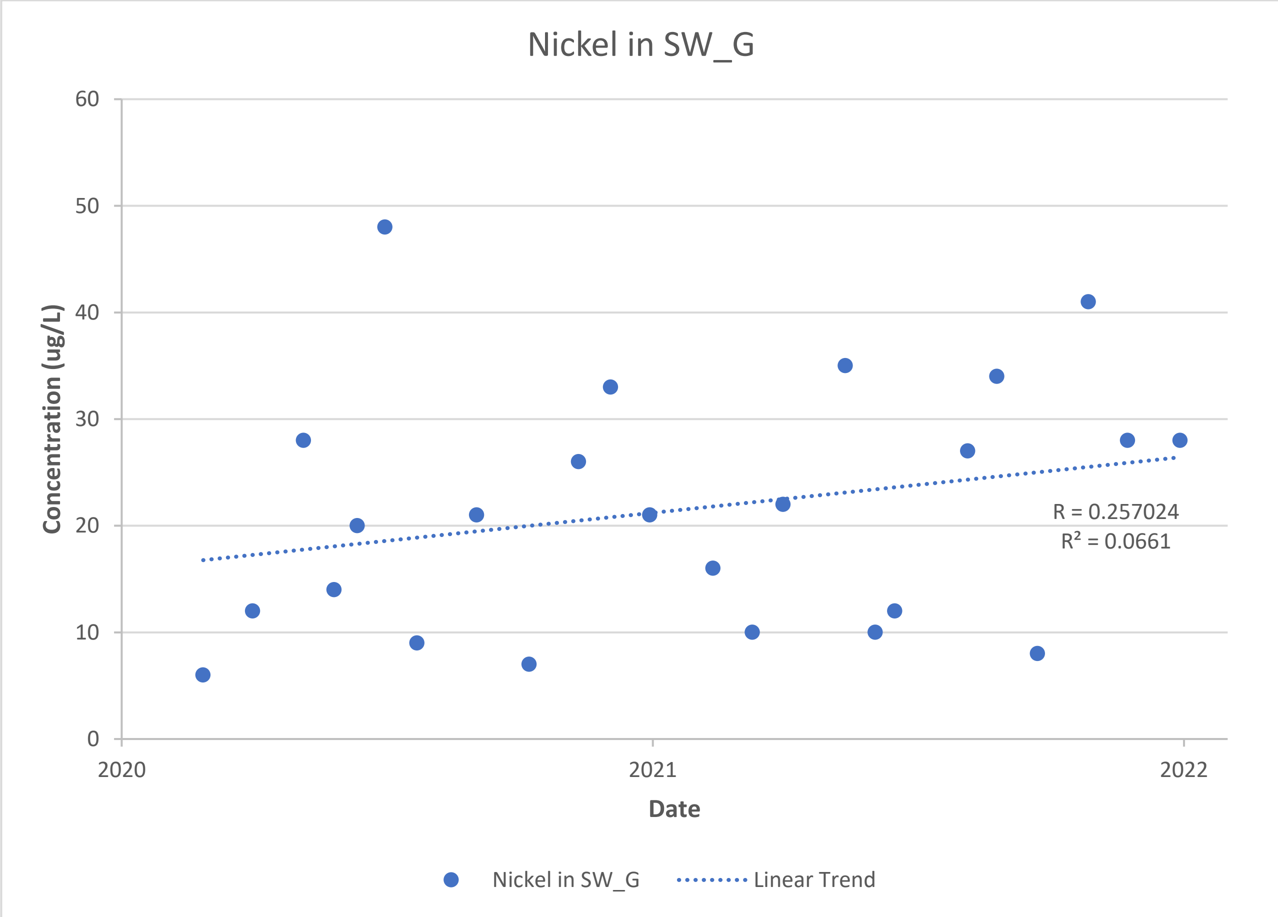
Surface Water Linear Trend Graphs



Surface Water Linear Trend Graphs

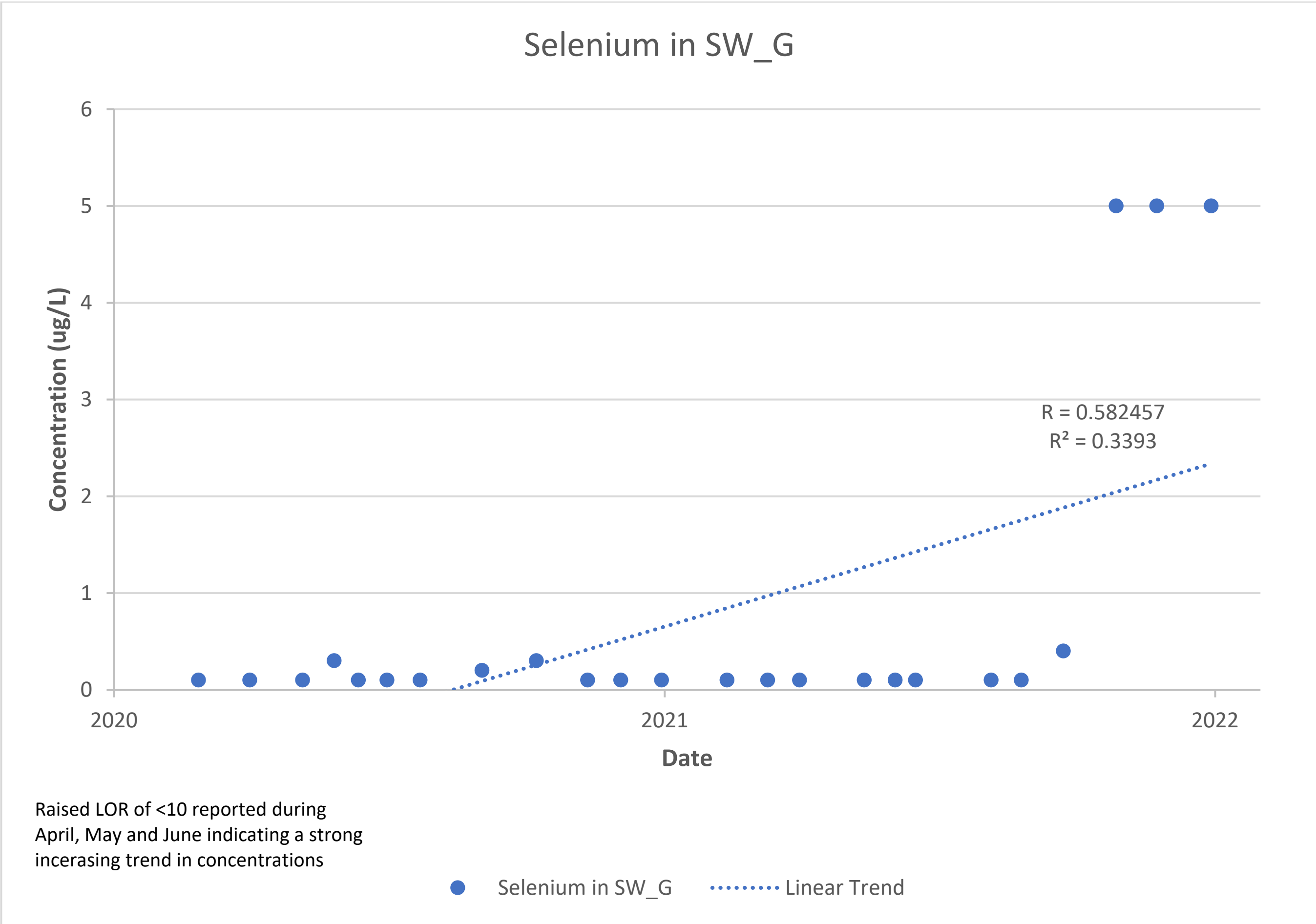


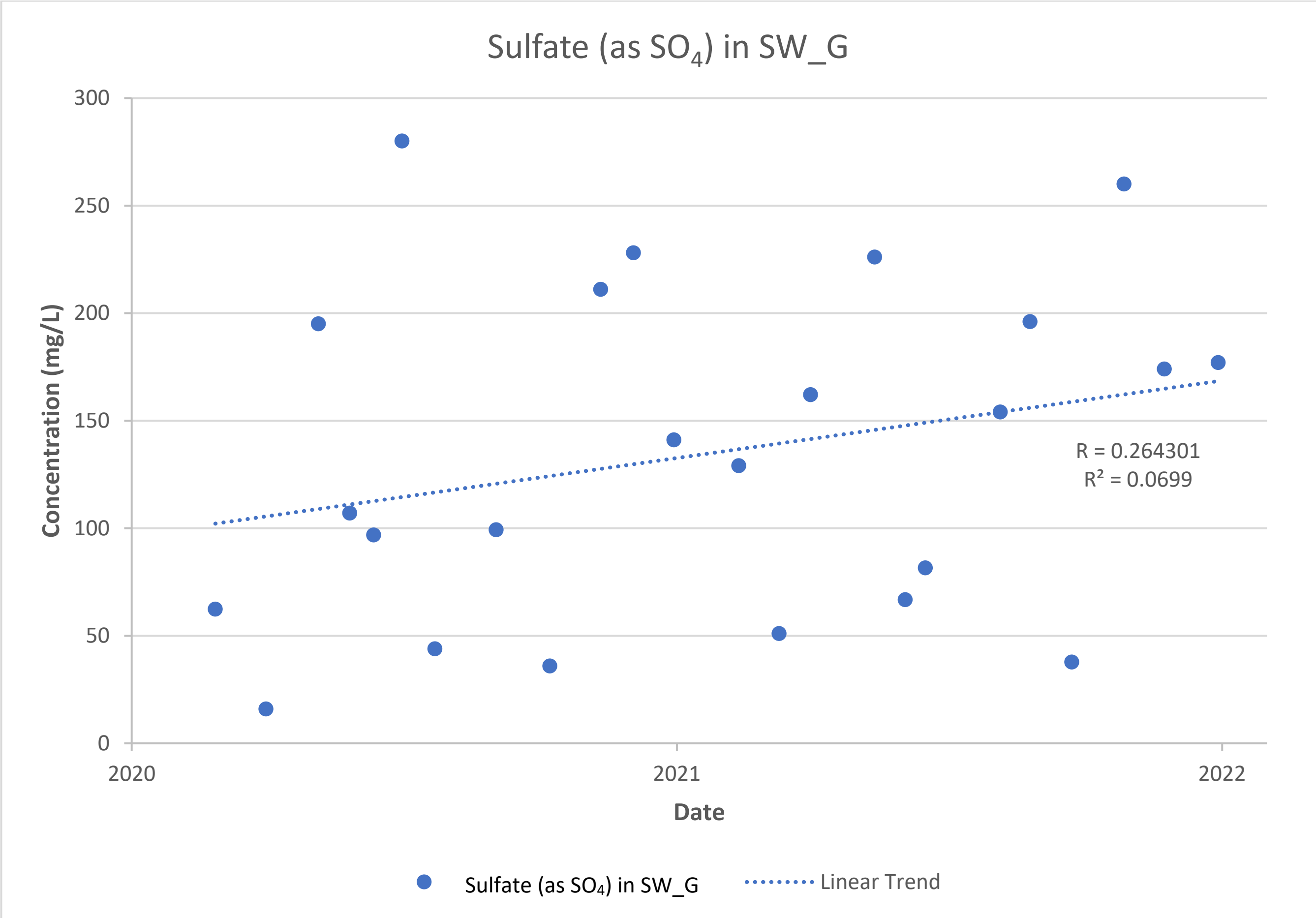

Molybdenum in SW_G
1.2
1
0.8
0.6
0.4
0.2
0
Concentration (ug/L)
R = -0.43247
R² = 0.187
2020
2021
2022
Date
Molybdenum in SW_G
Linear Trend



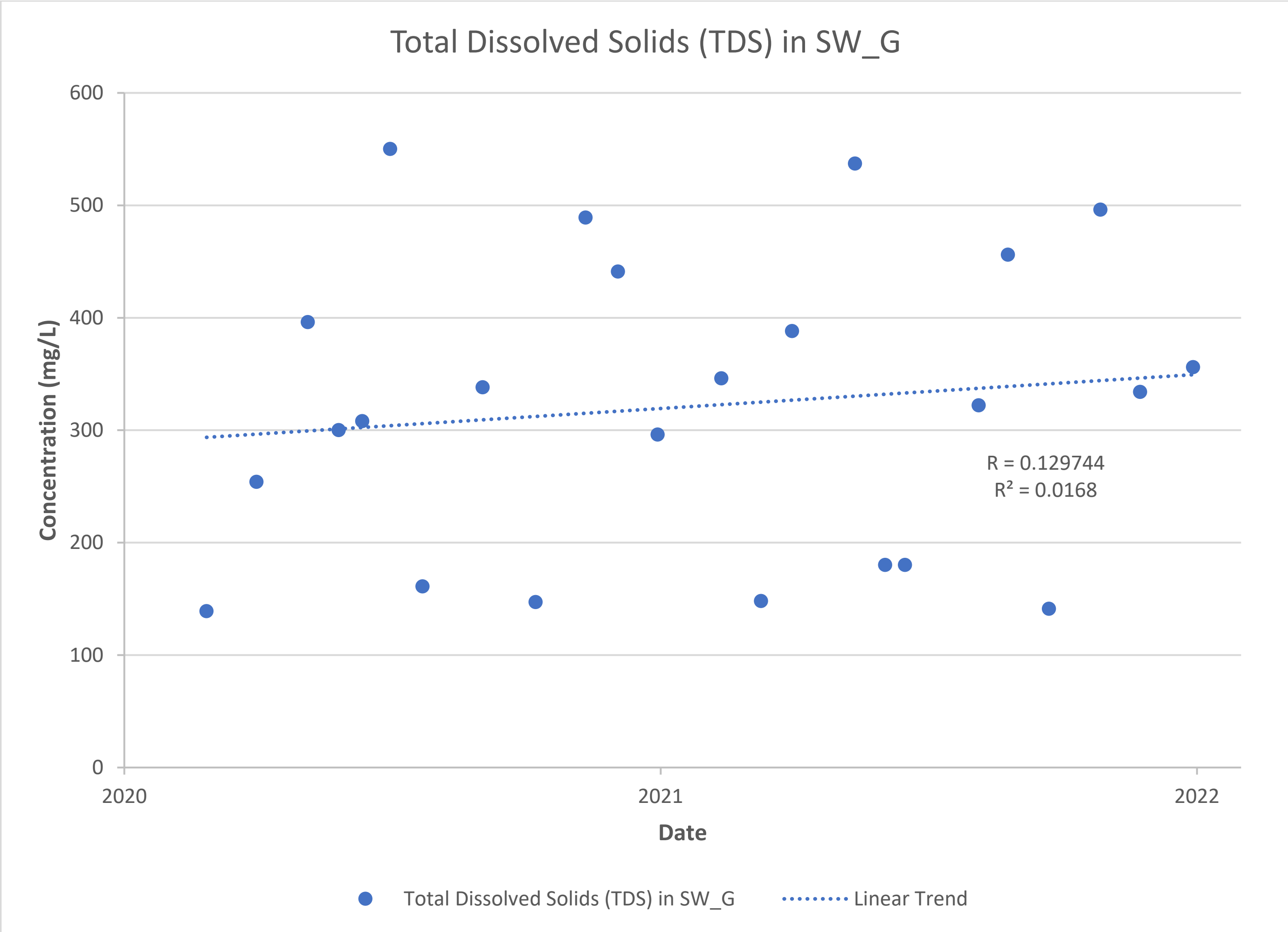
Nickel in SW_G
Concentration (ug/L)
60
50
40
30
20
10
0
2020
2021
2022
Date
R = 0.257024
R² = 0.0661
Nickel in SW_G
Linear Trend

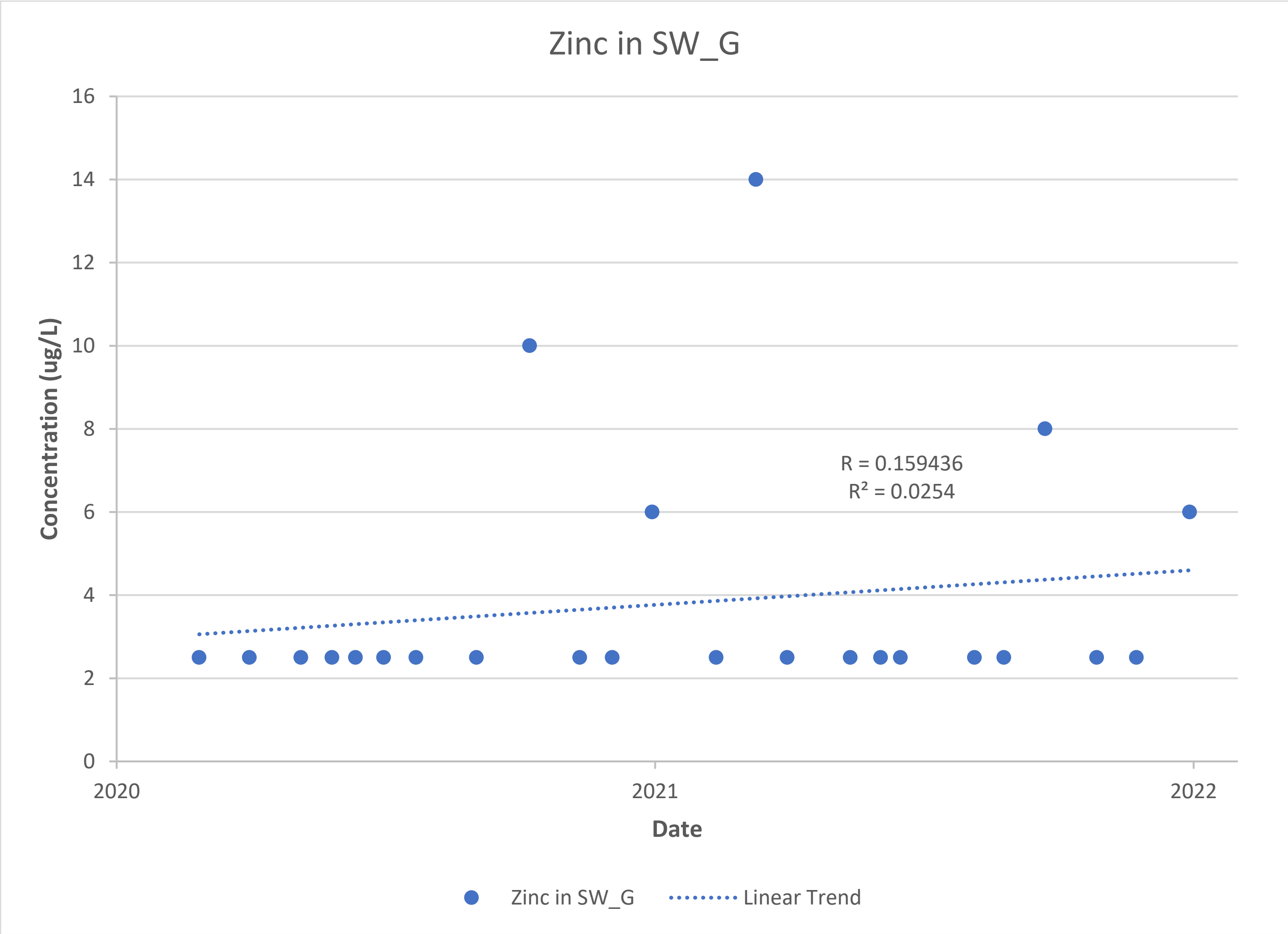
Surface Water Linear Trend Graphs



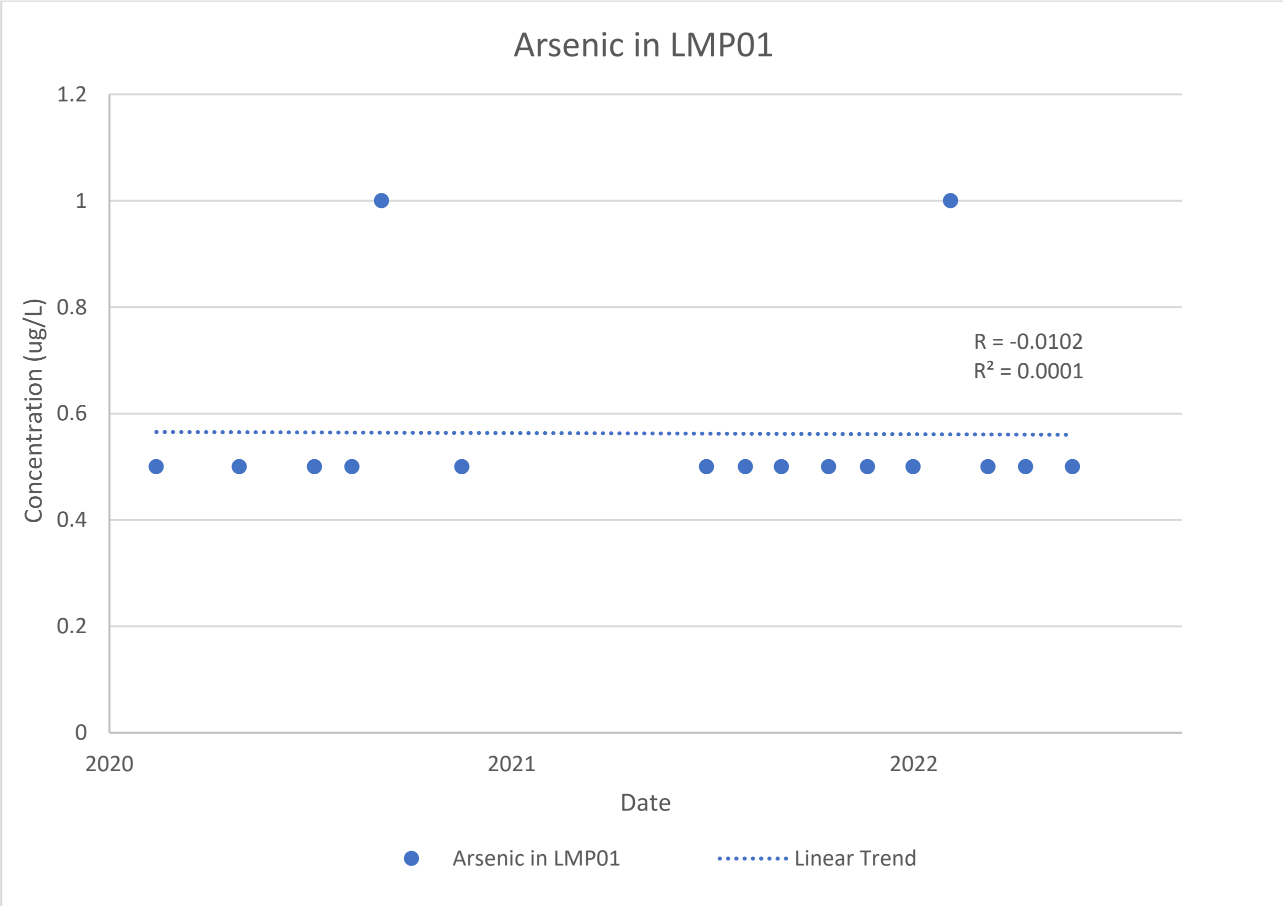

Sulfate (as SO_4) in SW_G
Concentration (mg/L)
300
250
200
150
100
50
0
2020
2021
2022
Date
R = 0.264301
R^2 = 0.0699
Sulfate (as SO_4) in SW_G
Linear Trend

Surface Water Linear Trend Graphs

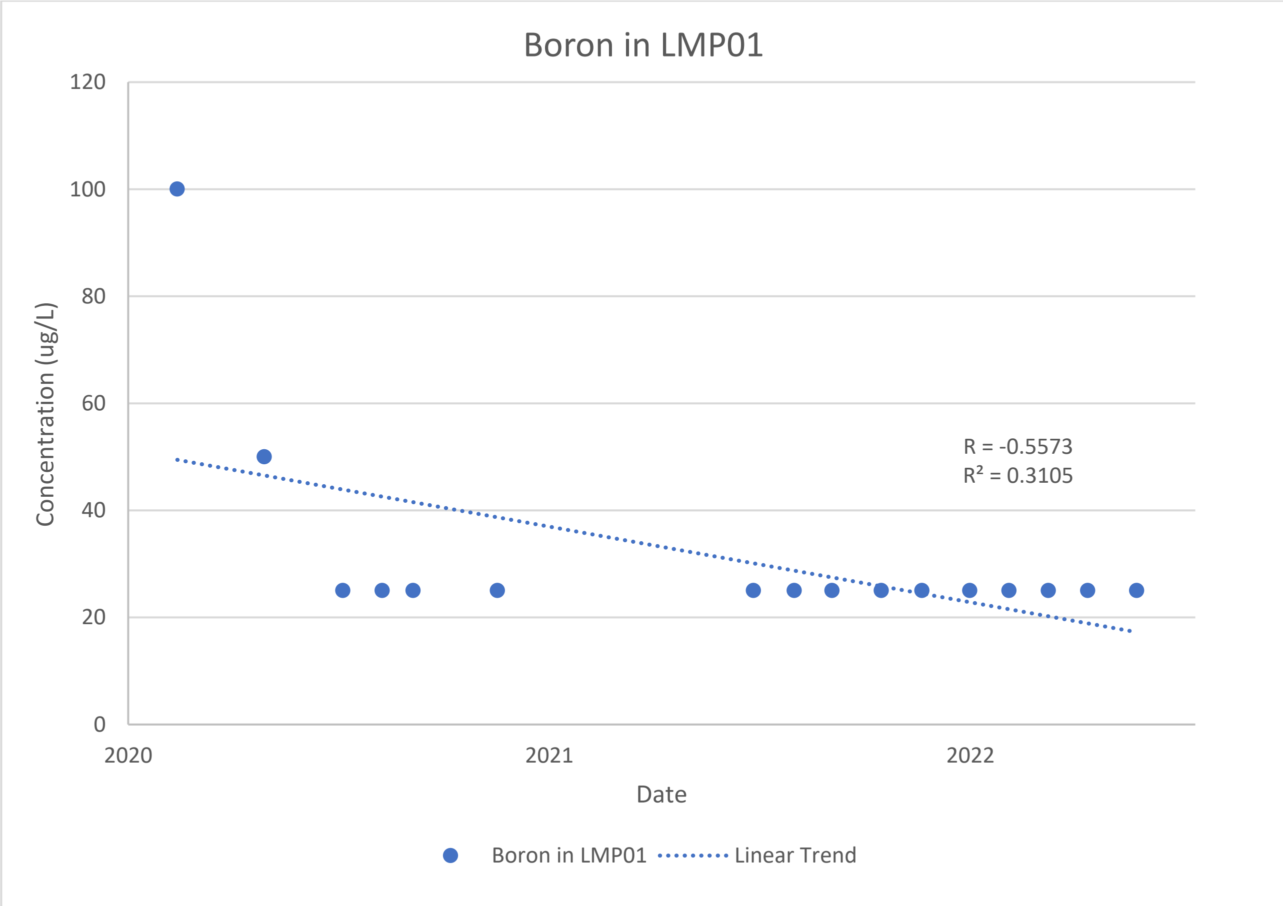



Zinc in SW_G
16
14
12
10
8
6
4
2
0
Concentration (ug/L)
2020
2021
2022
Date
R = 0.159436
R² = 0.0254
Zinc in SW_G
Linear Trend

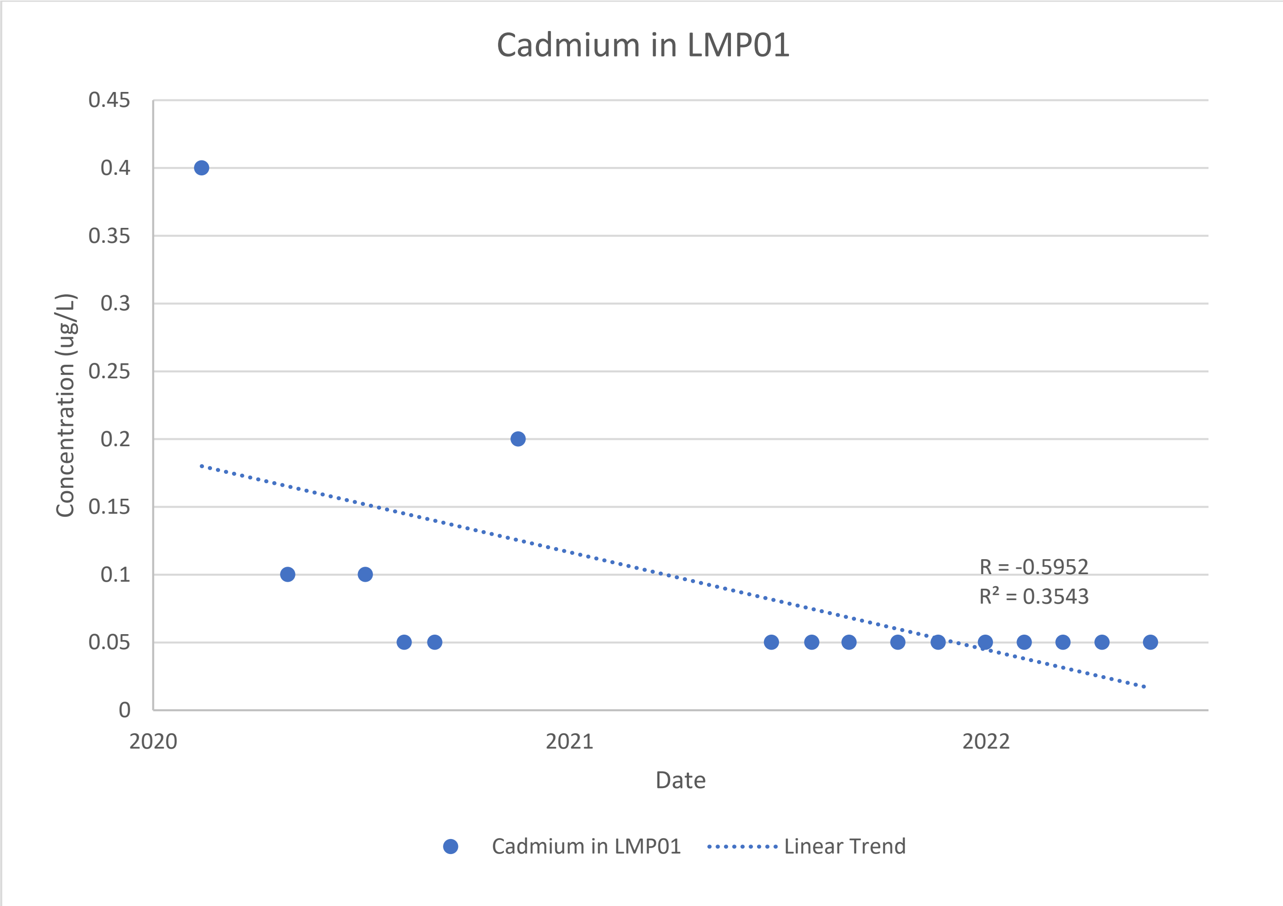
Surface Water Linear Trend Graphs



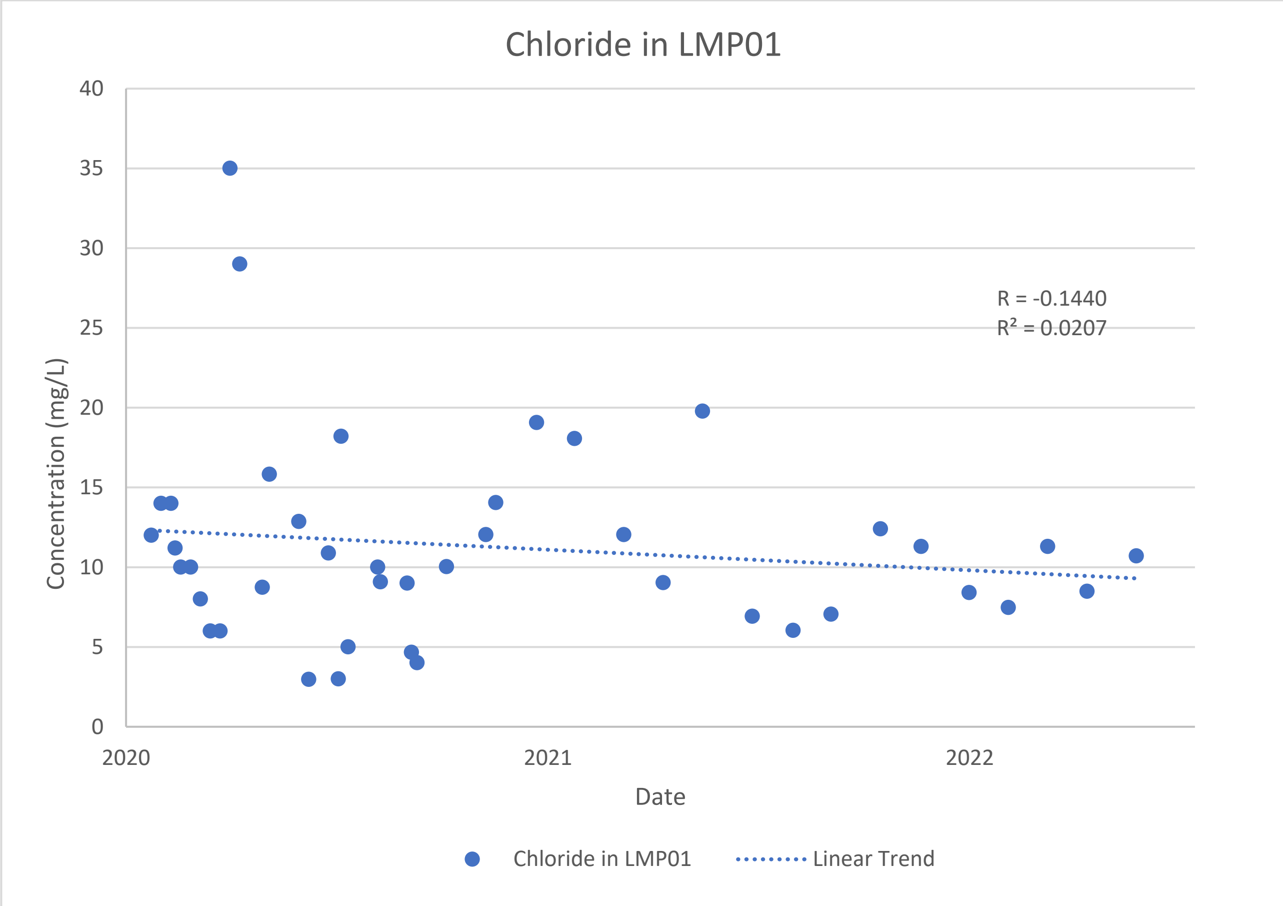
Surface Water Linear Trend Graphs



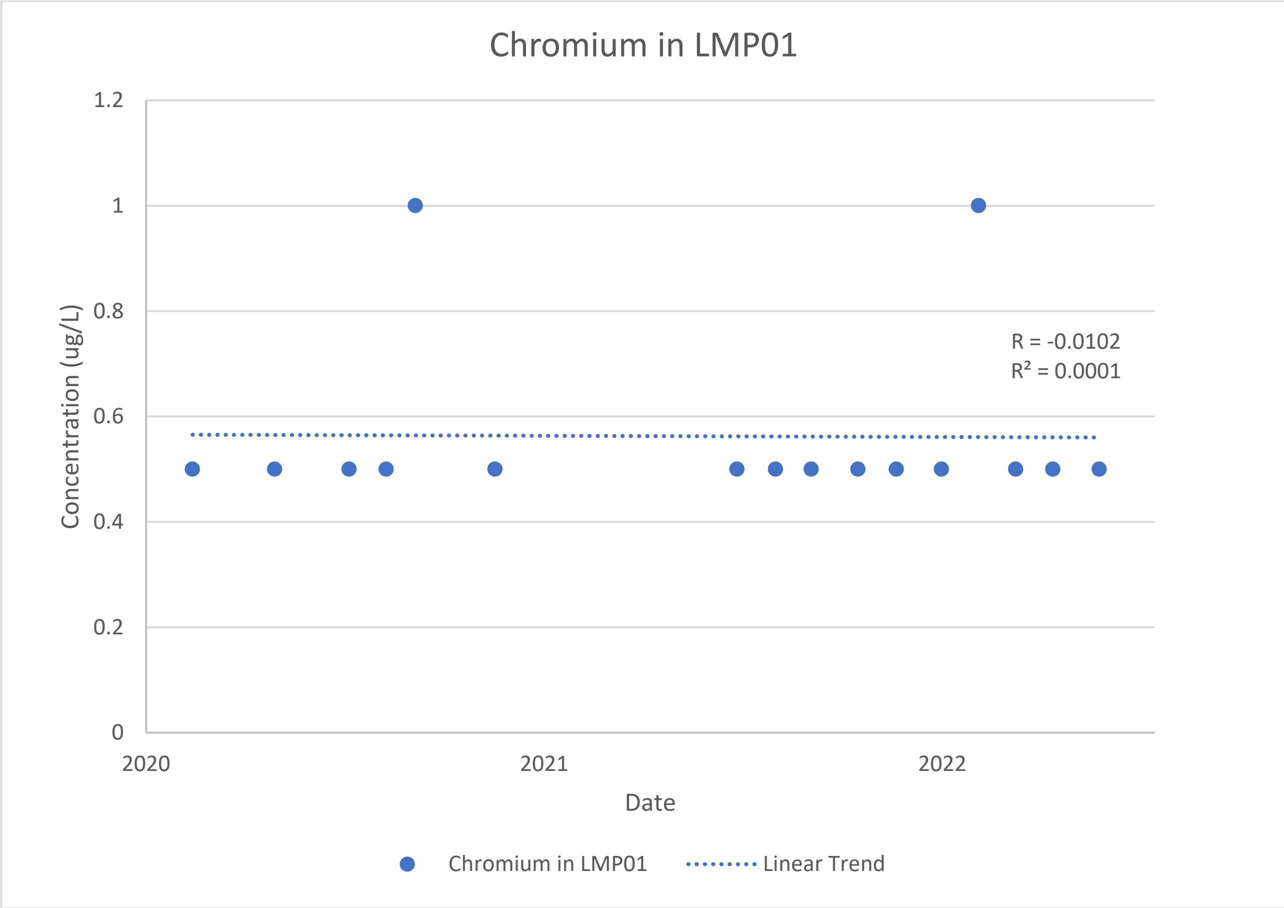
Surface Water Linear Trend Graphs

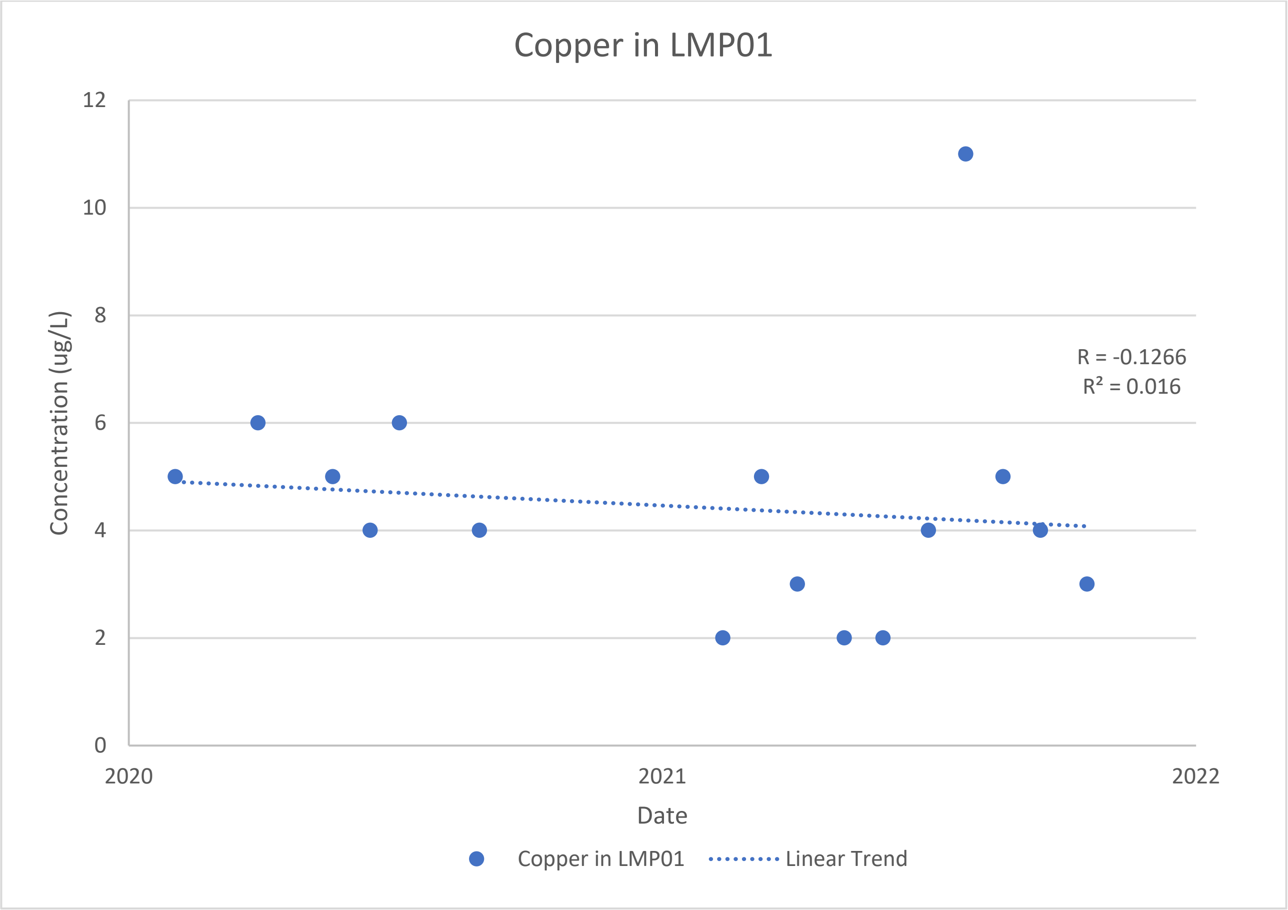


Surface Water Linear Trend Graphs

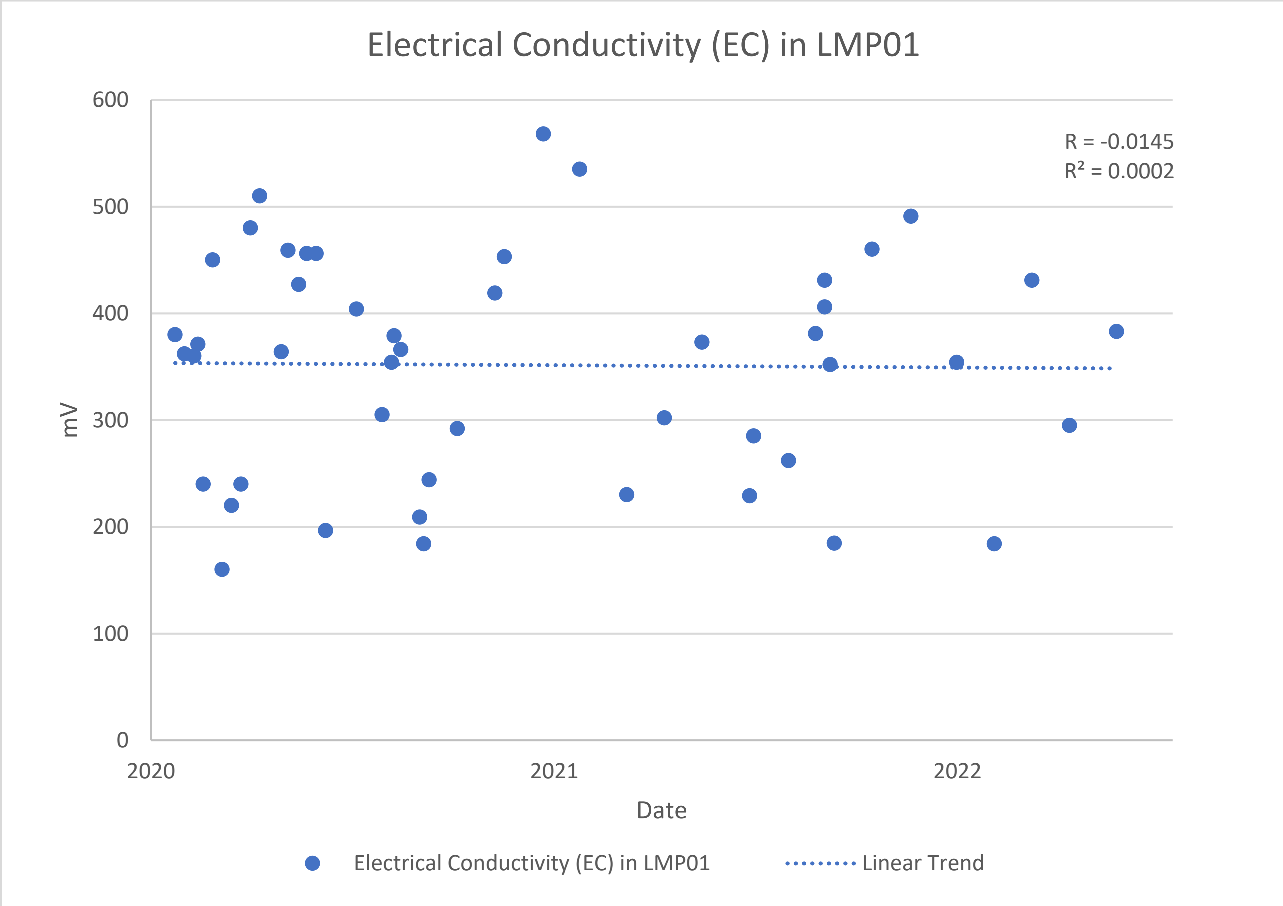


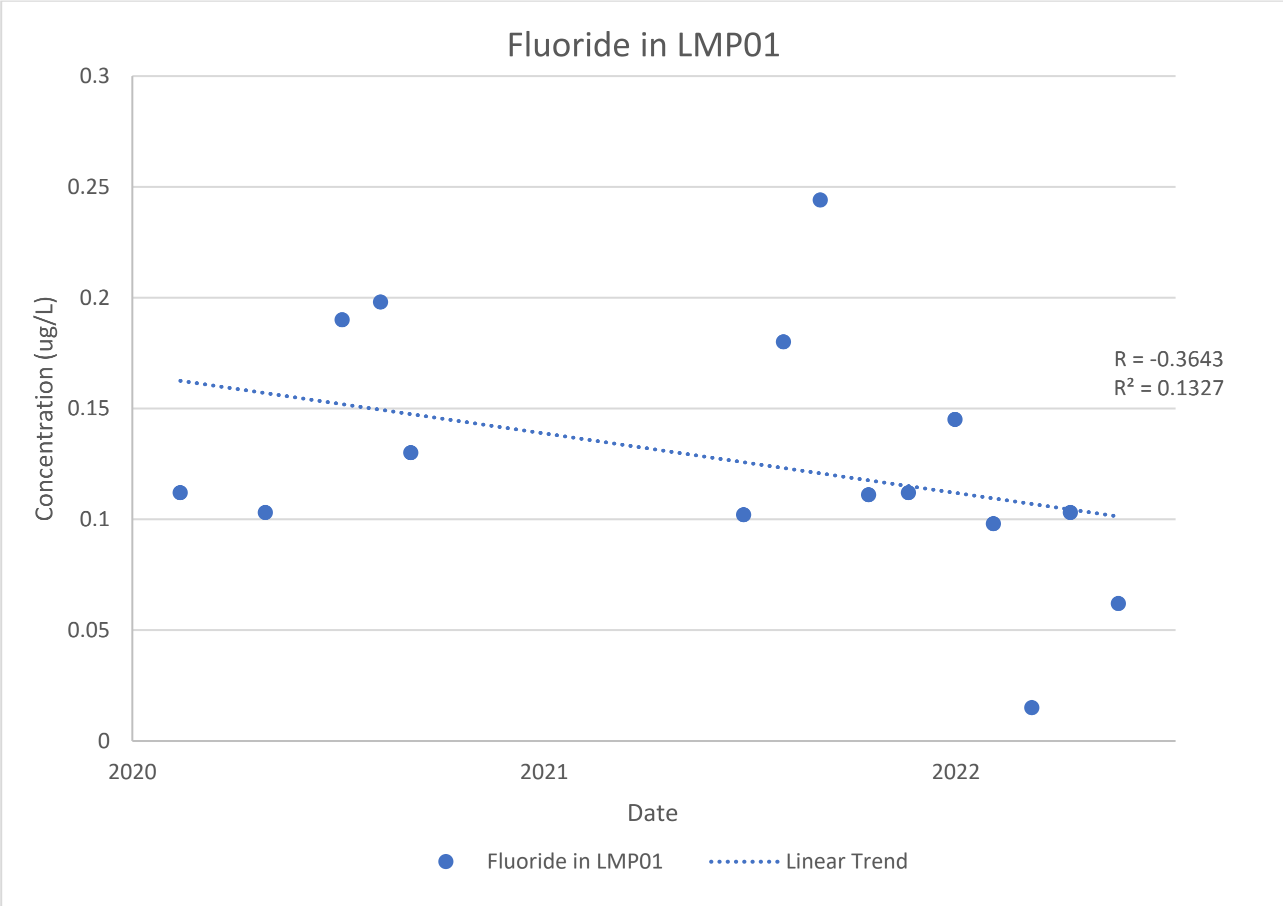
Surface Water Linear Trend Graphs



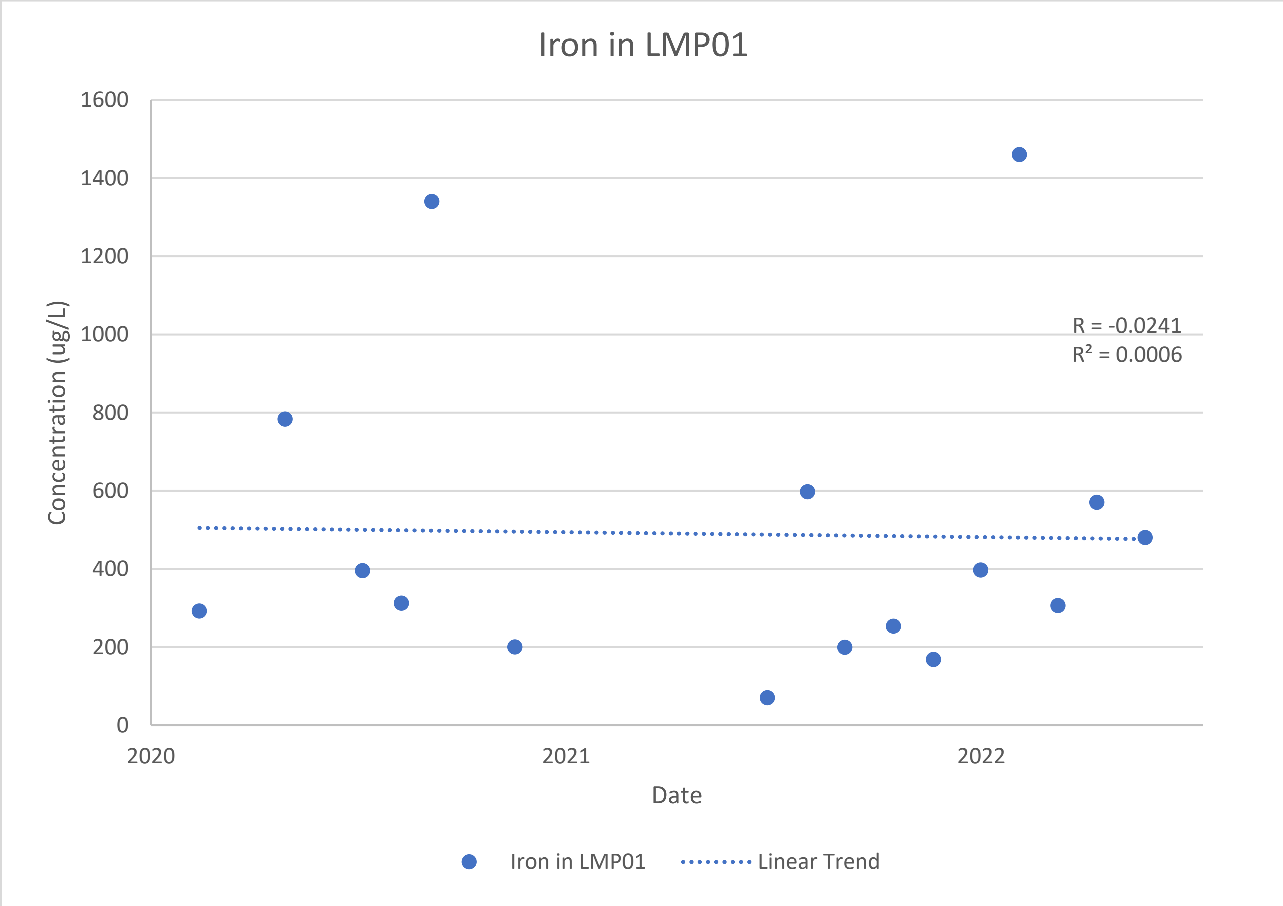

Copper in LMP01
12
10
8
6
4
2
0
Concentration (ug/L)
R = -0.1266
R² = 0.016
2020
2021
2022
Date
Copper in LMP01
Linear Trend

Surface Water Linear Trend Graphs

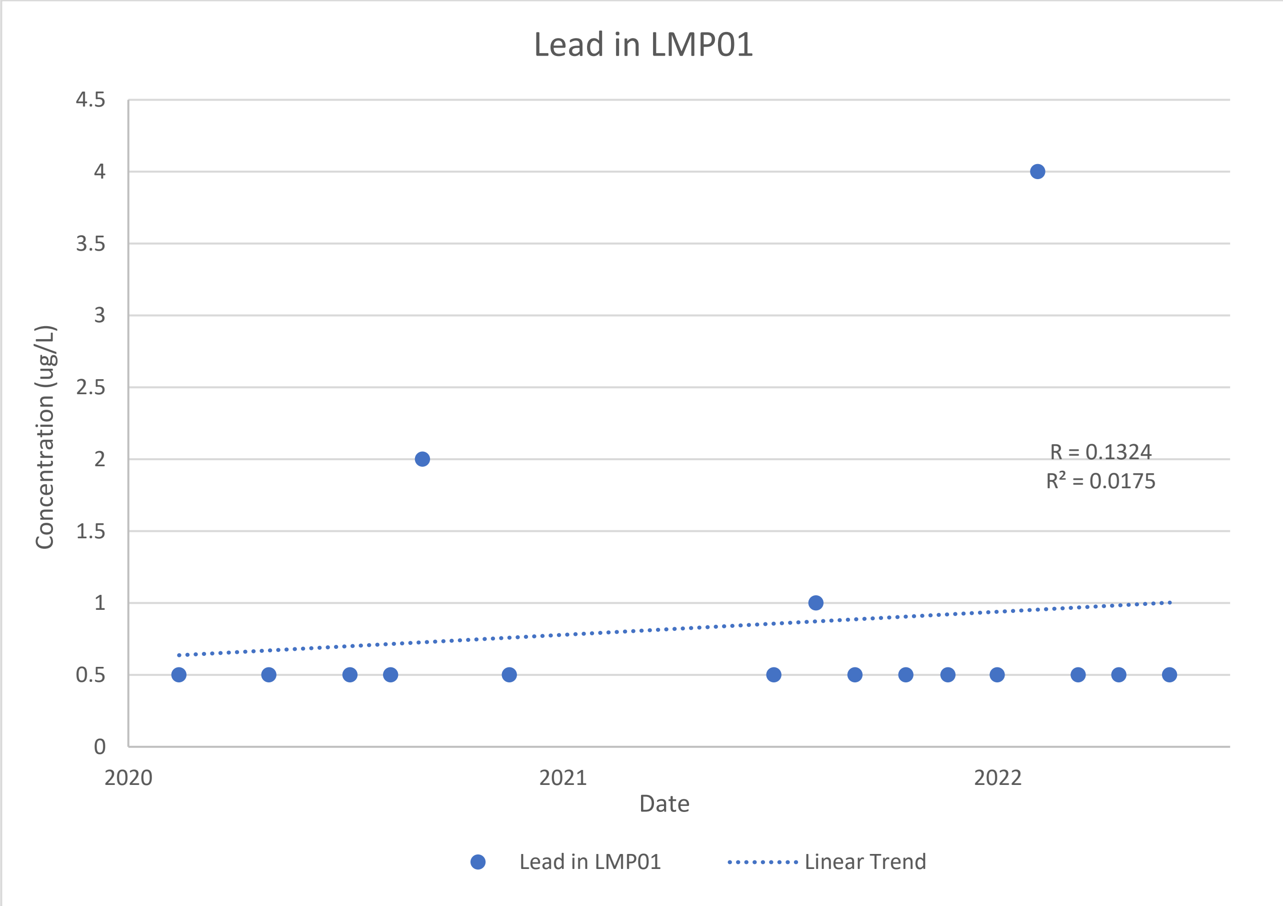


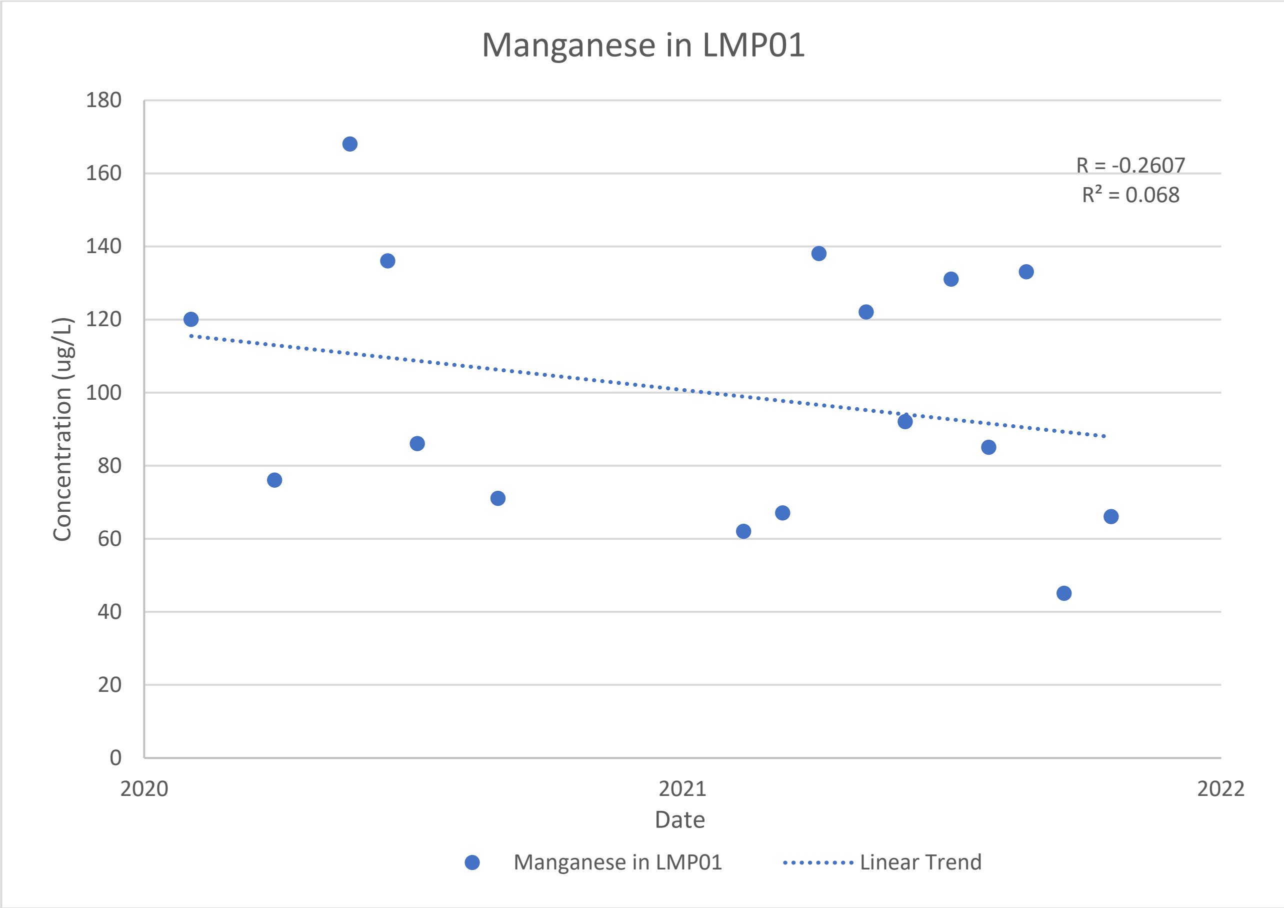

Fluoride in LMP01
0.3
0.25
0.2
0.15
0.1
0.05
0
Concentration (ug/L)
2020
2021
2022
Date
R = -0.3643
R² = 0.1327
Fluoride in LMP01
Linear Trend

Surface Water Linear Trend Graphs

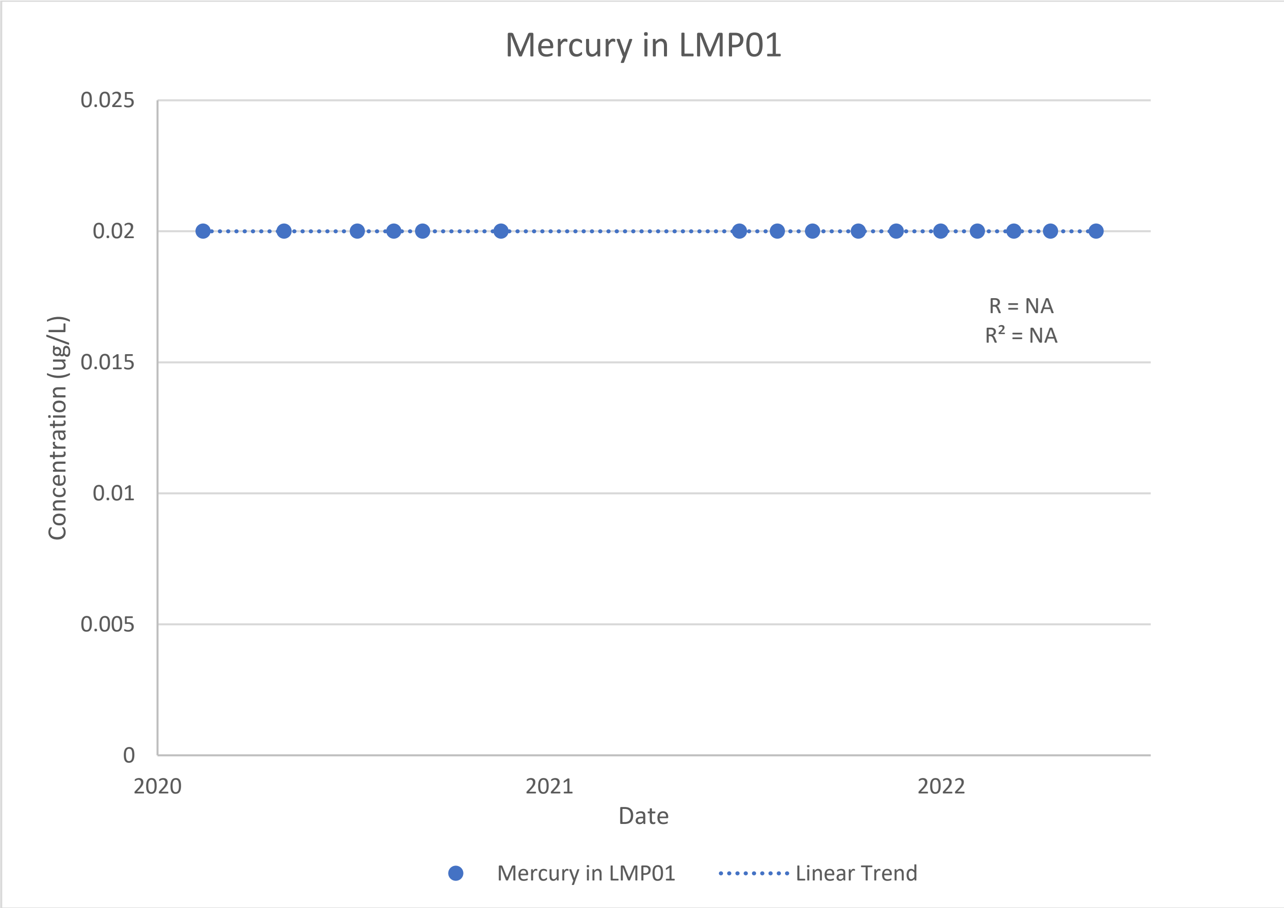


Surface Water Linear Trend Graphs

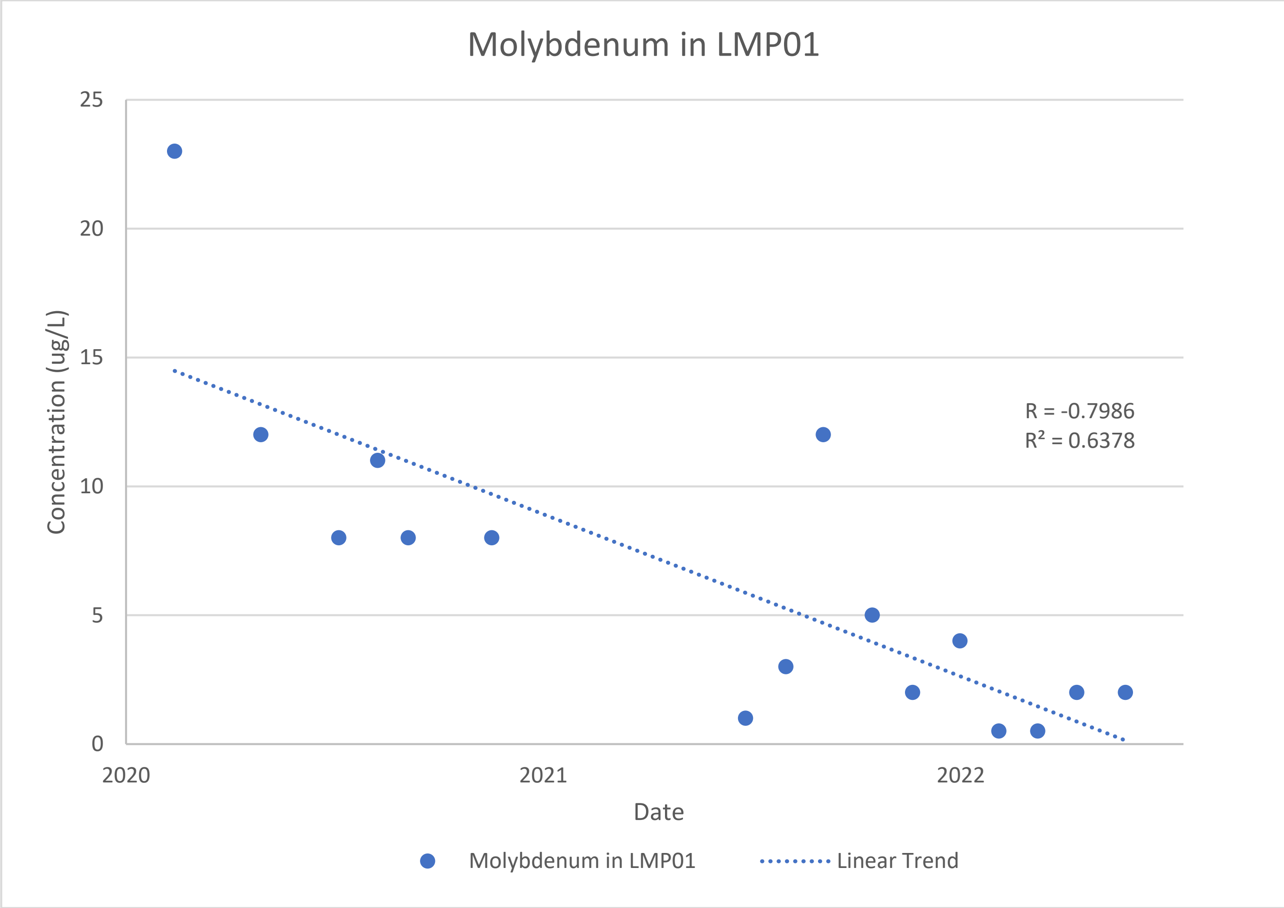



Manganese in LMP01
180
160
140
120
100
80
60
40
20
0
Concentration (ug/L)
R = -0.2607
R² = 0.068
2020
2021
2022
Date
Manganese in LMP01
Linear Trend

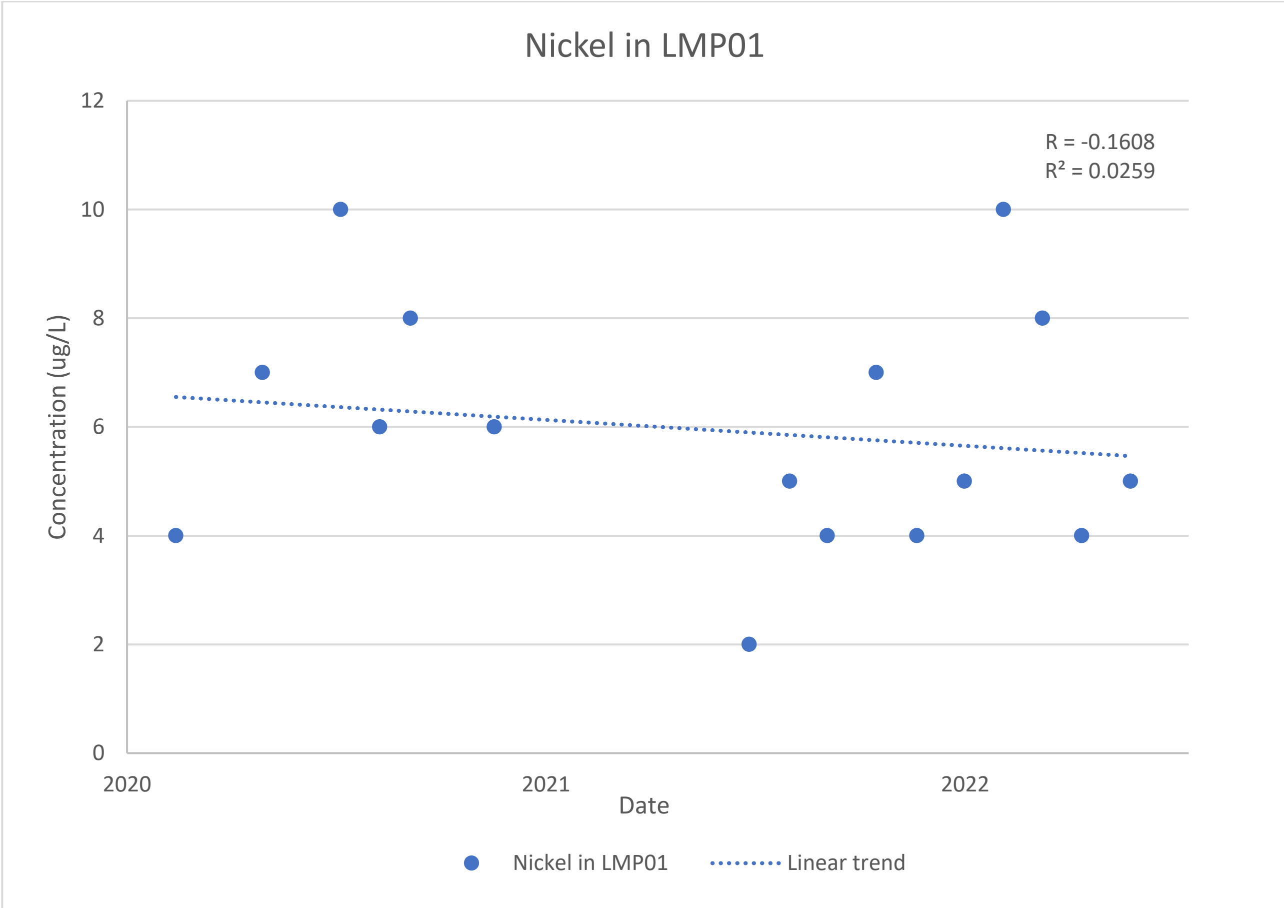
Surface Water Linear Trend Graphs



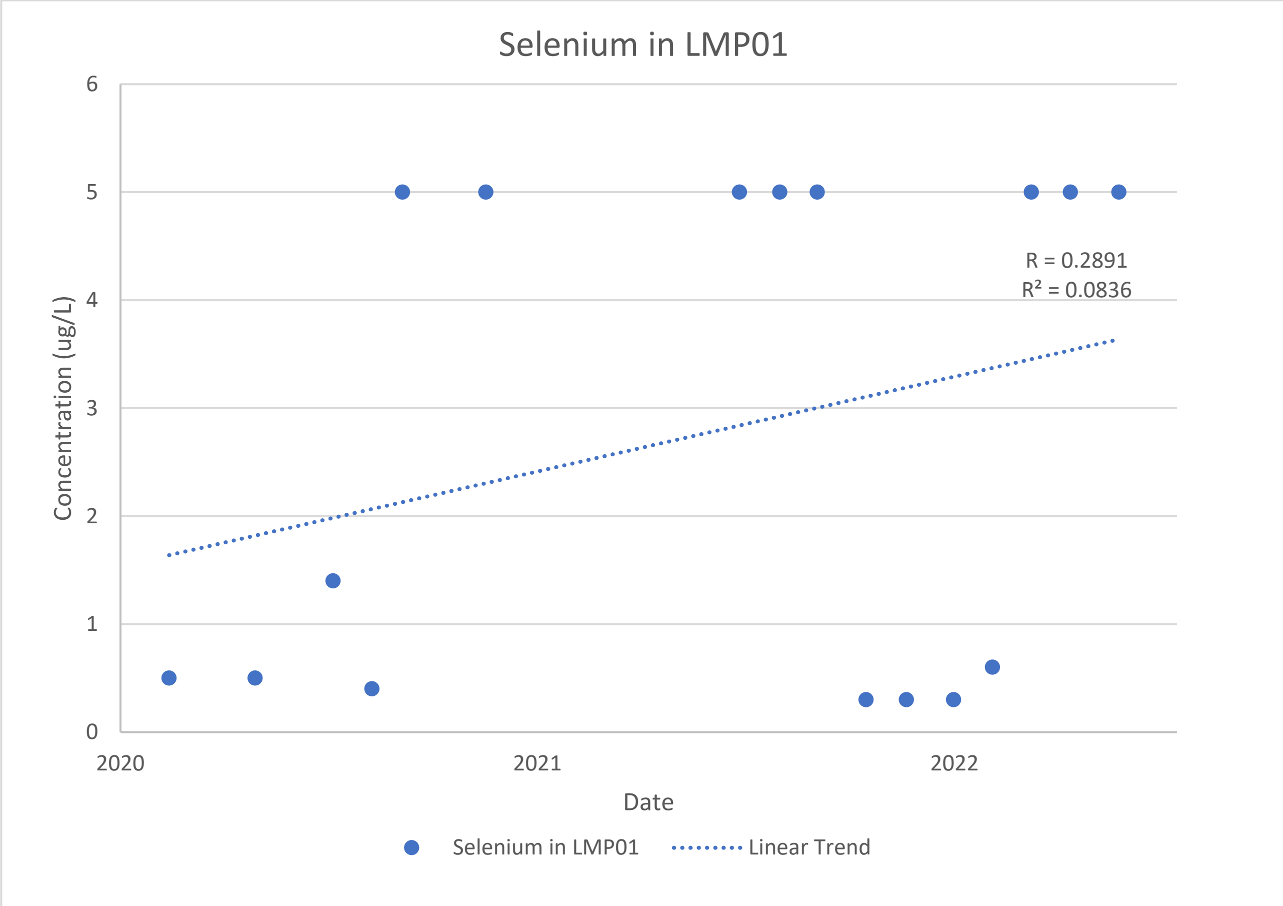
Surface Water Linear Trend Graphs



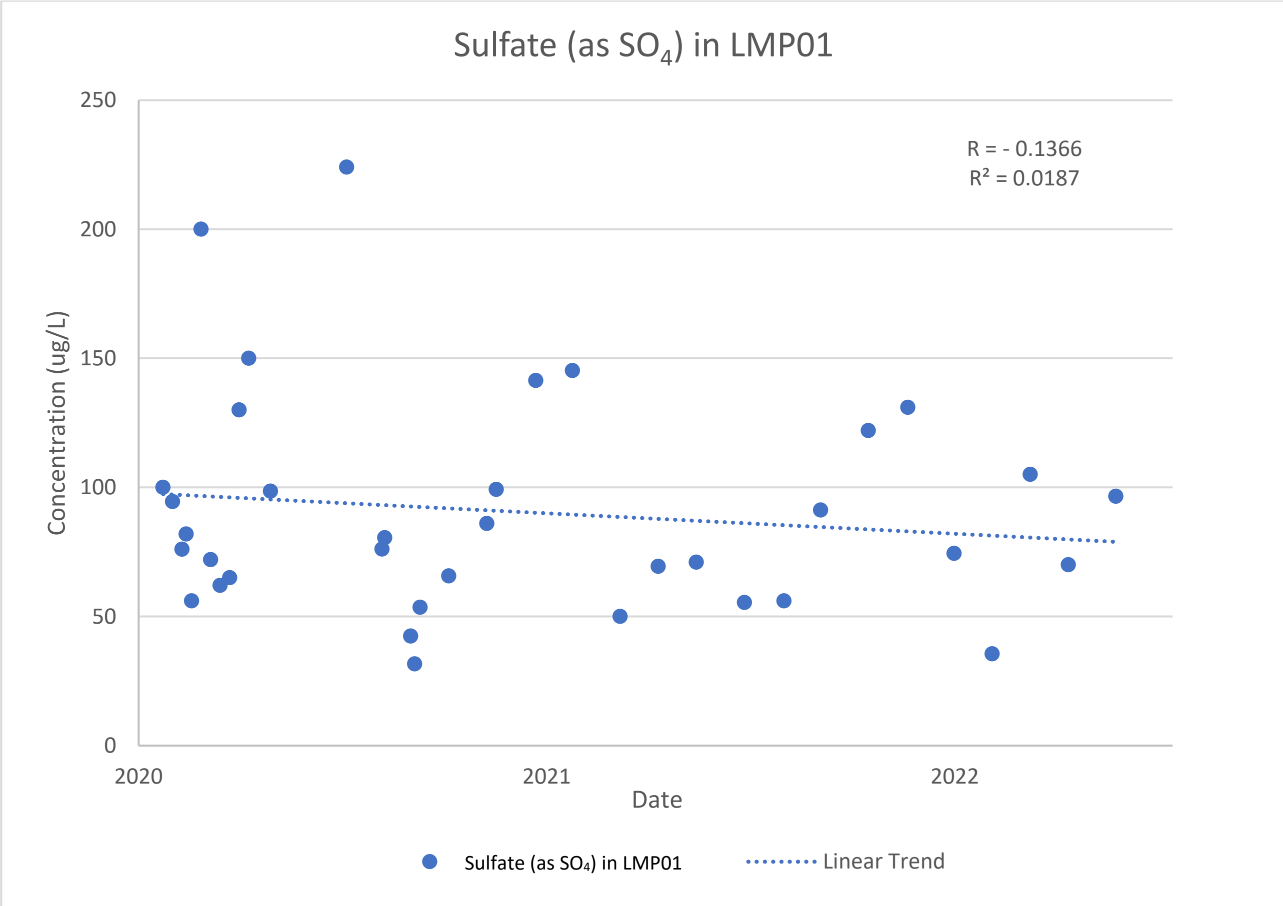
Surface Water Linear Trend Graphs

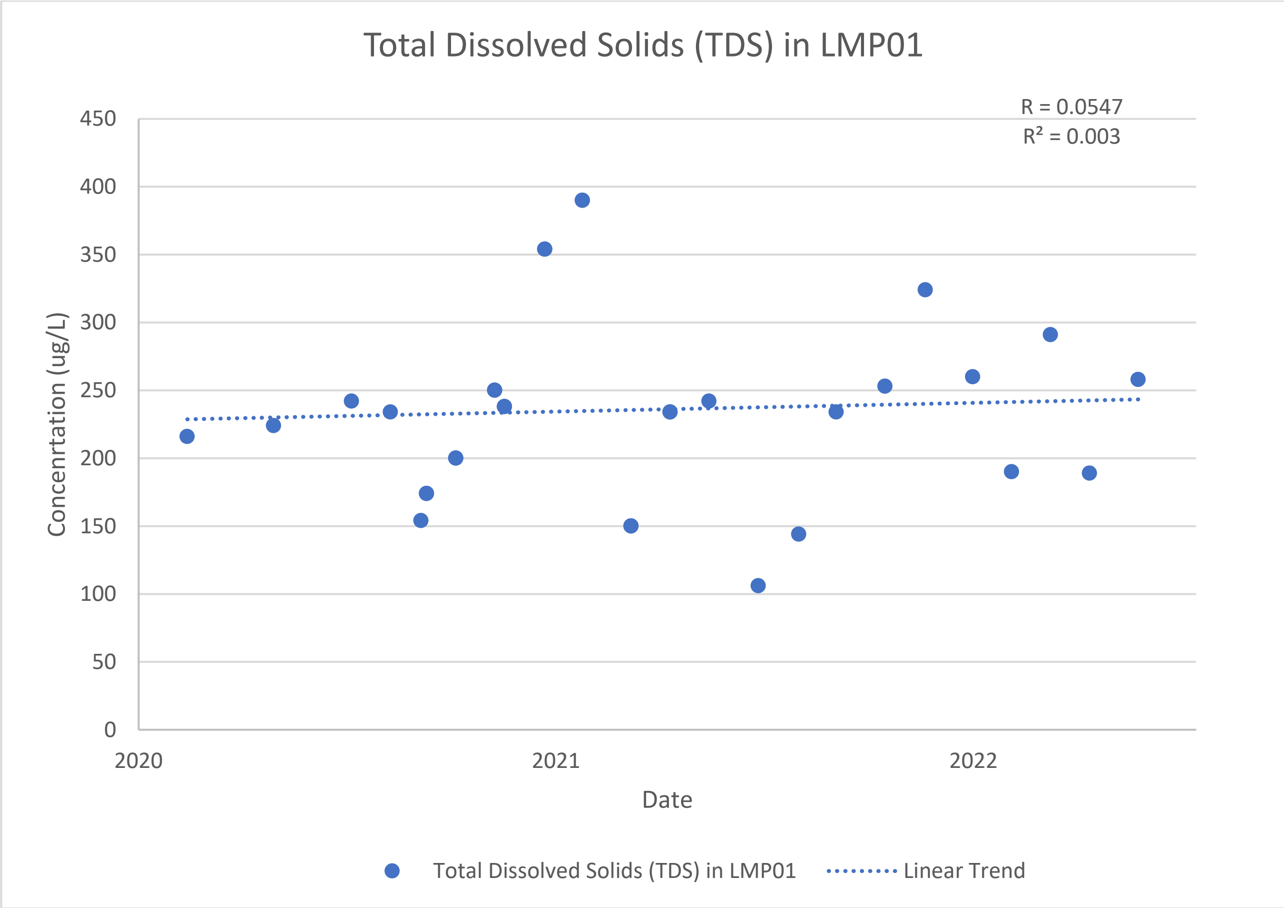


Surface Water Linear Trend Graphs

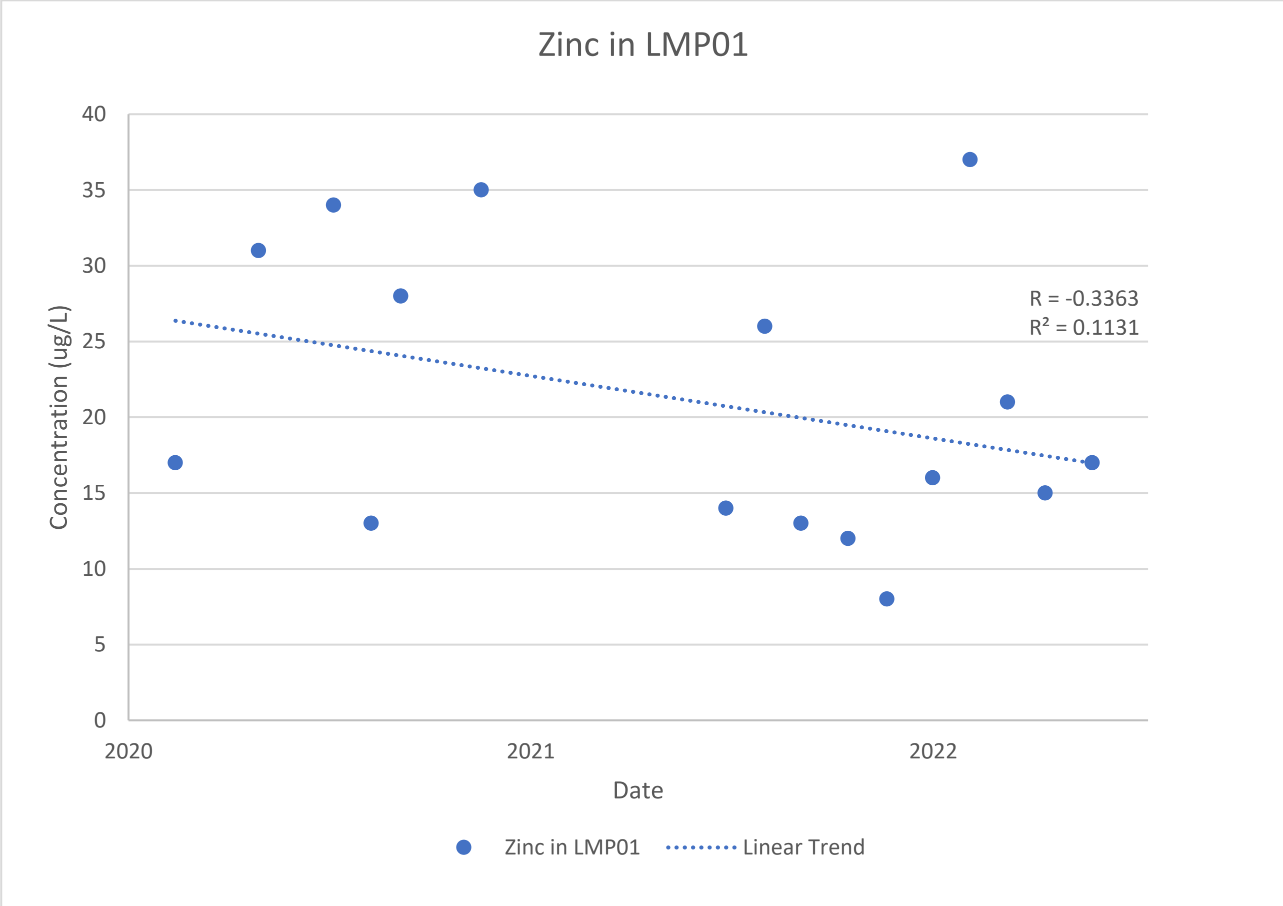


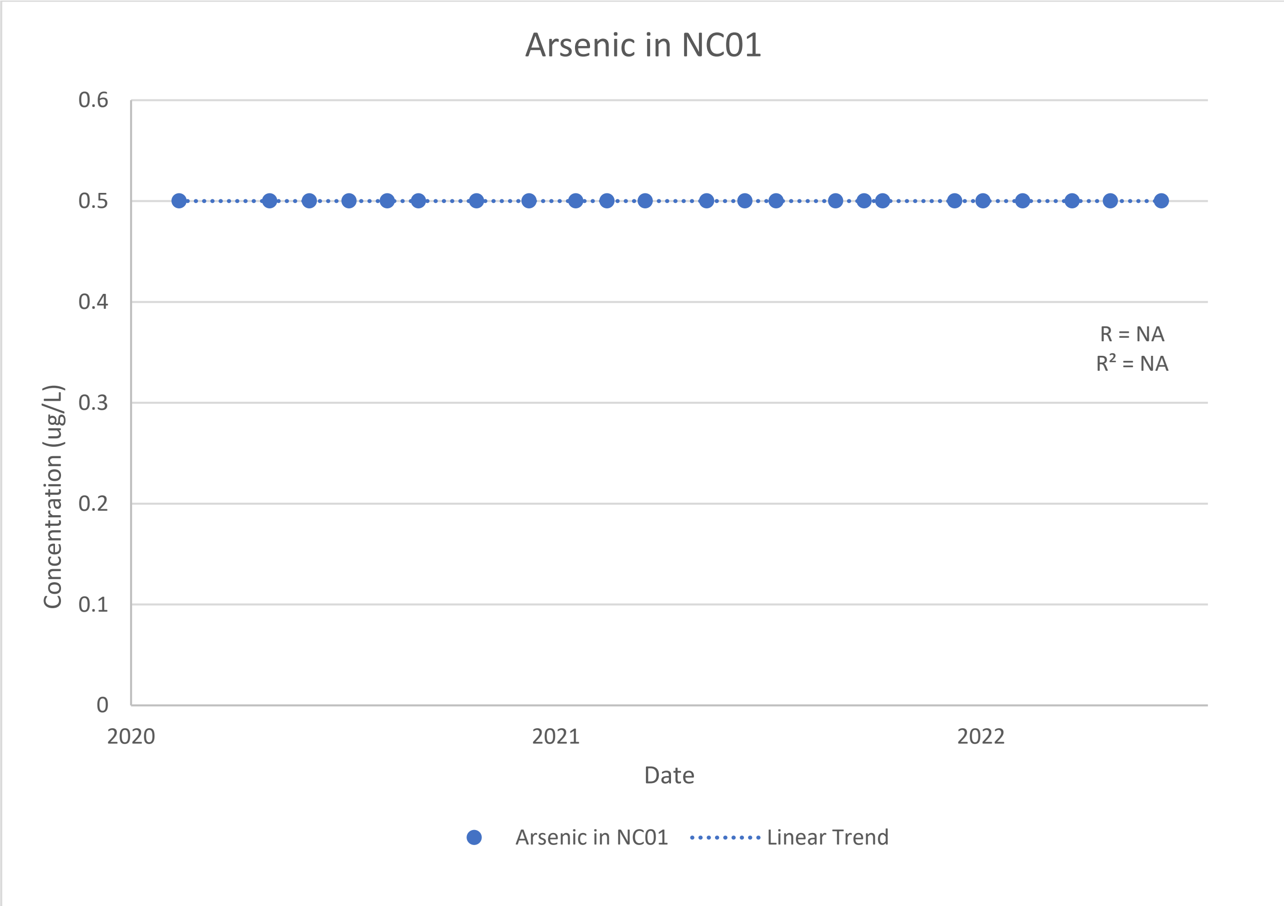
Surface Water Linear Trend Graphs

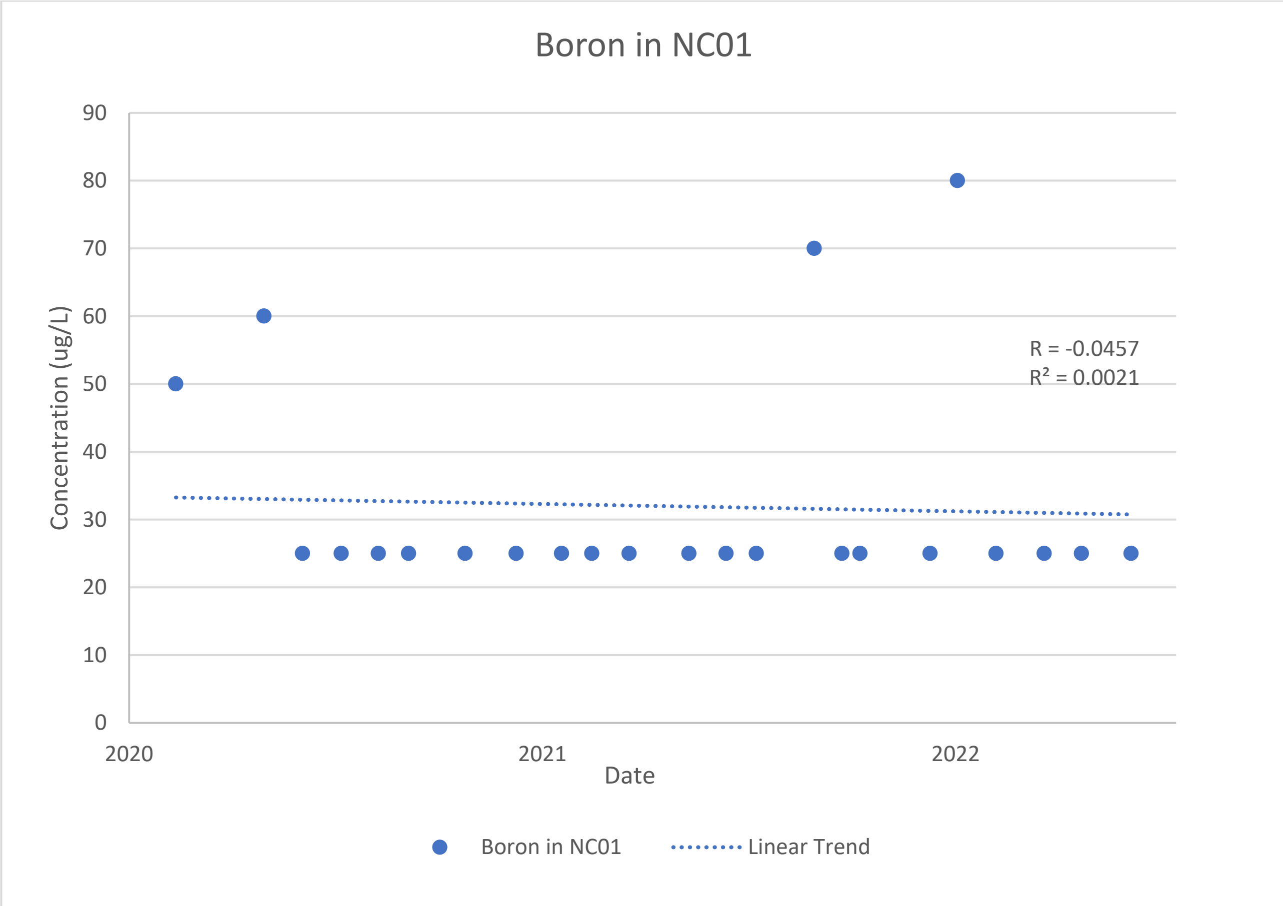


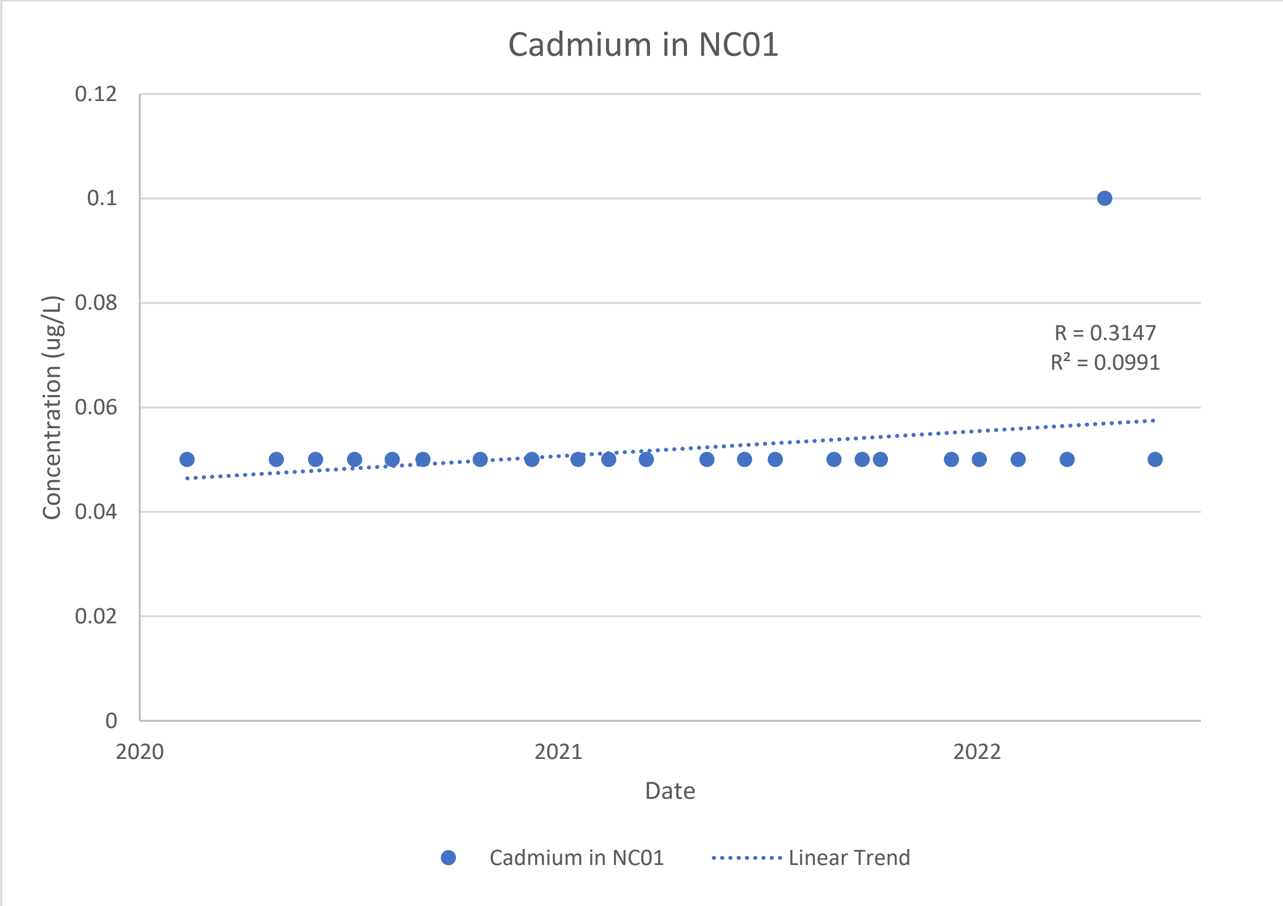

Total Dissolved Solids (TDS) in LMP01
R = 0.0547
R² = 0.003
450
400
350
300
250
200
150
100
50
0
Concenrtation (ug/L)
2020
2021
2022
Date
Total Dissolved Solids (TDS) in LMP01
Linear Trend

Surface Water Linear Trend Graphs

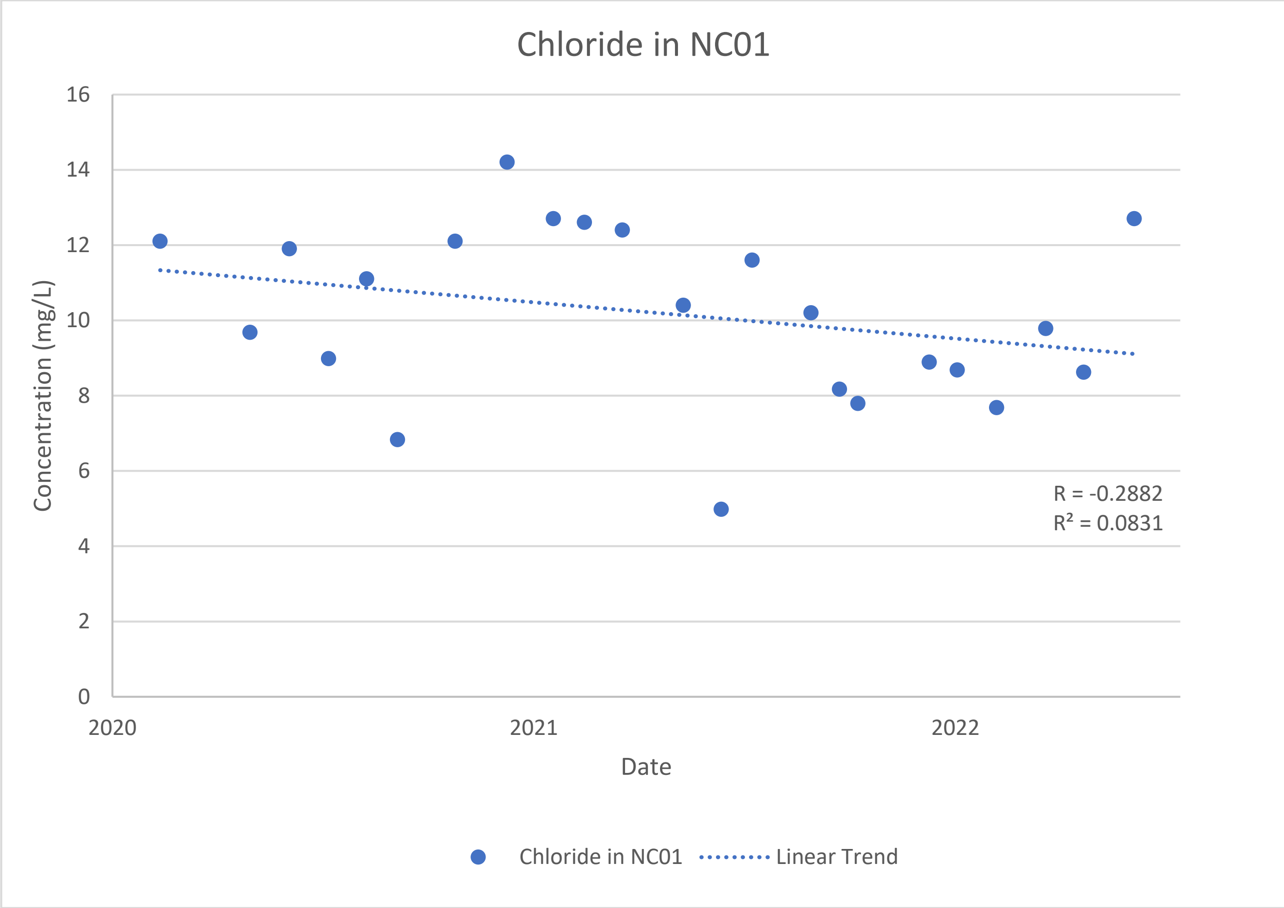



Arsenic in NC01
0.6
0.5
0.4
0.3
0.2
0.1
0
Concentration (ug/L)
R = NA
R^2 = NA
2020
2021
2022
Date
Arsenic in NC01
Linear Trend

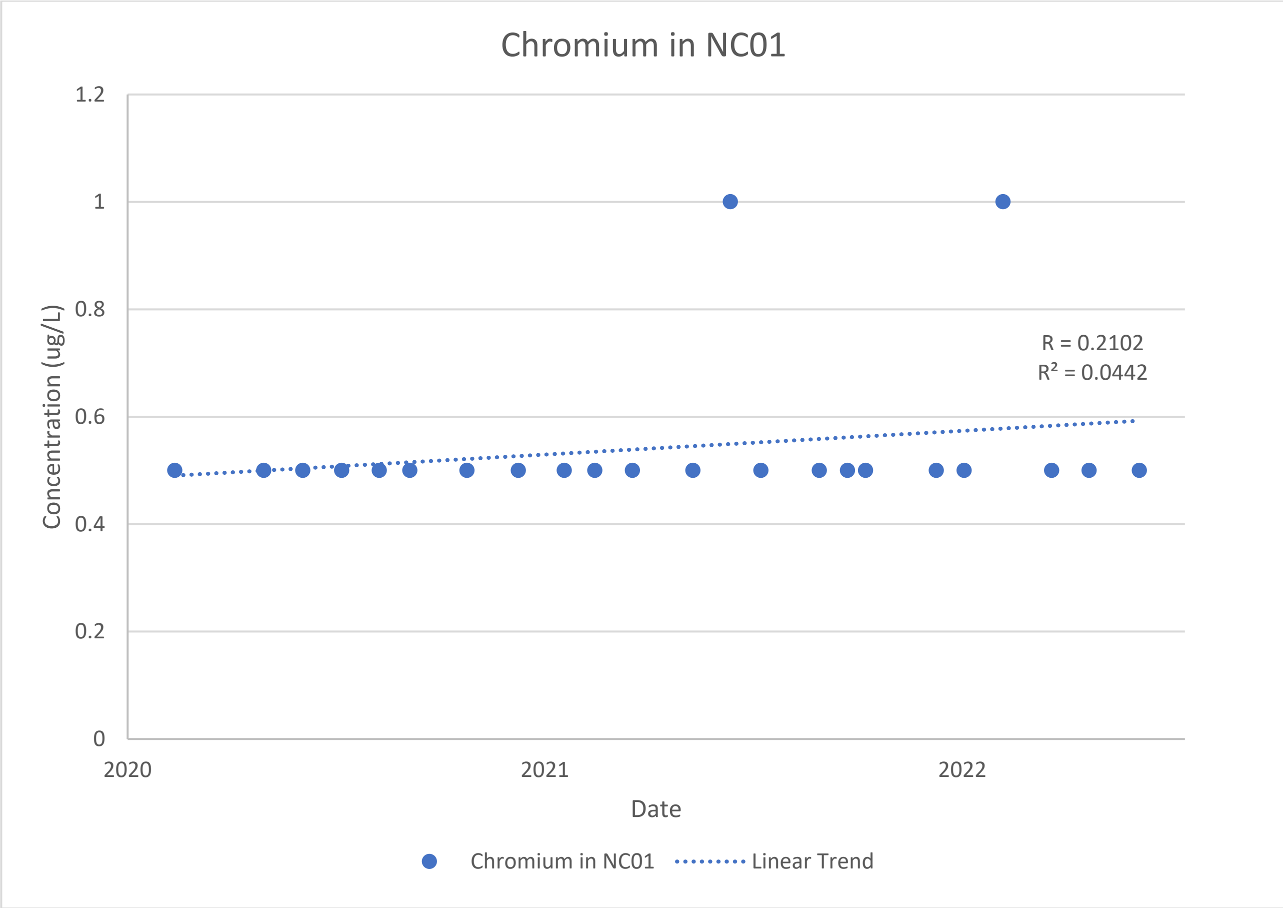

Boron in NC01
90
80
70
60
50
40
30
20
10
0
Concentration (ug/L)
R = -0.0457
R² = 0.0021
2020
2021
2022
Date
Boron in NC01
Linear Trend


Cadmium in NC01
0.12
0.1
0.08
0.06
0.04
0.02
0
Concentration (ug/L)
R = 0.3147
R² = 0.0991
2020
2021
2022
Date
Cadmium in NC01
Linear Trend

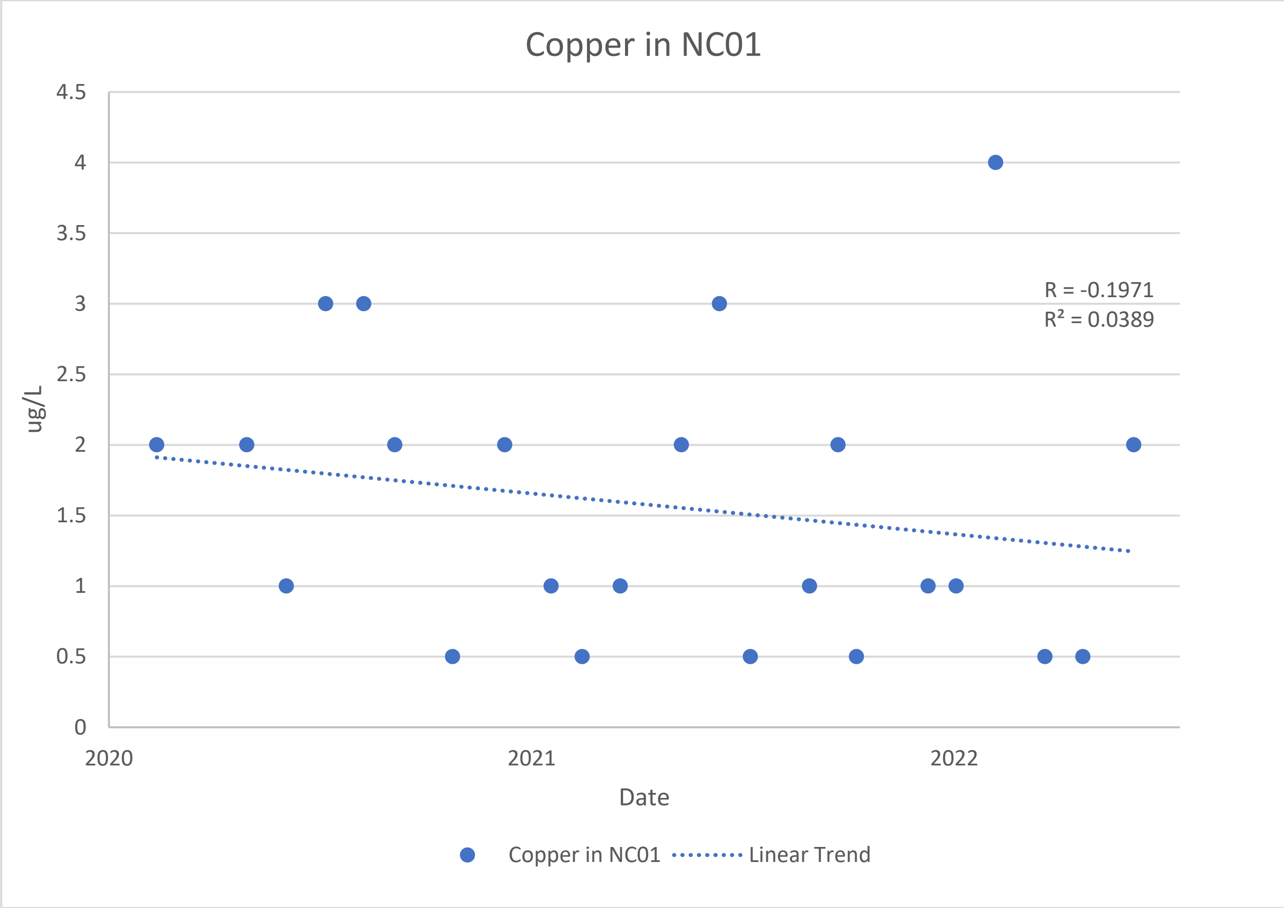
Surface Water Linear Trend Graphs

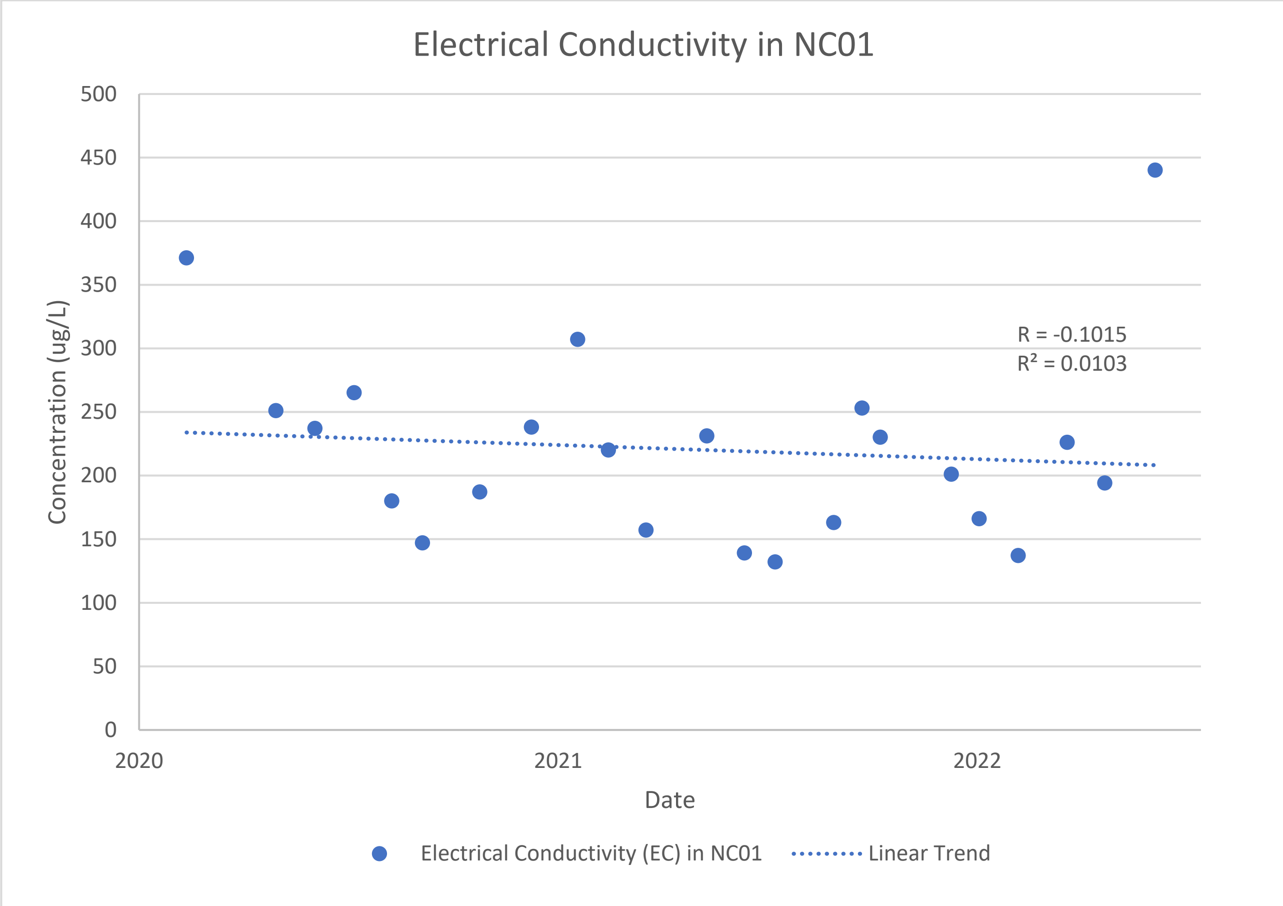


Surface Water Linear Trend Graphs

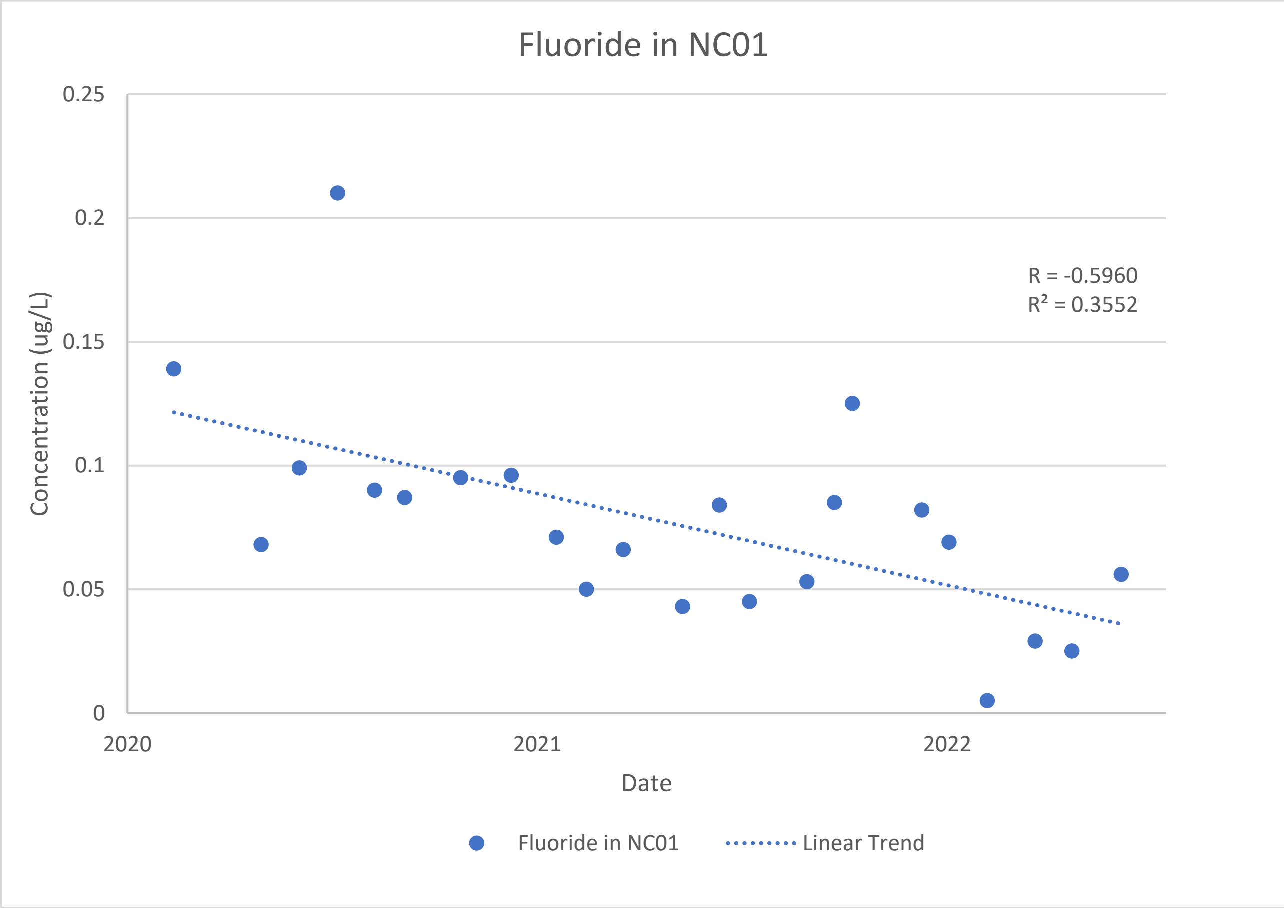


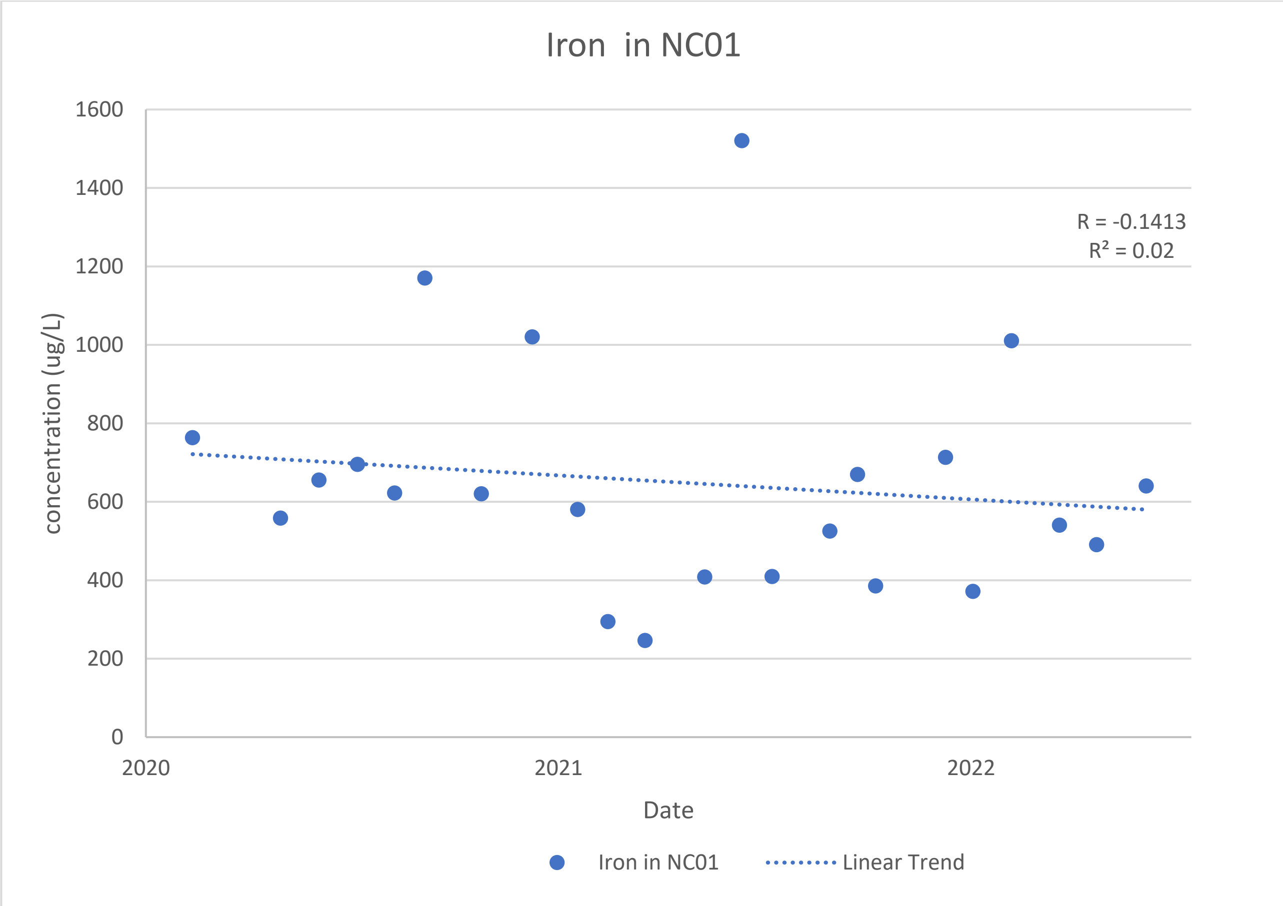
Surface Water Linear Trend Graphs



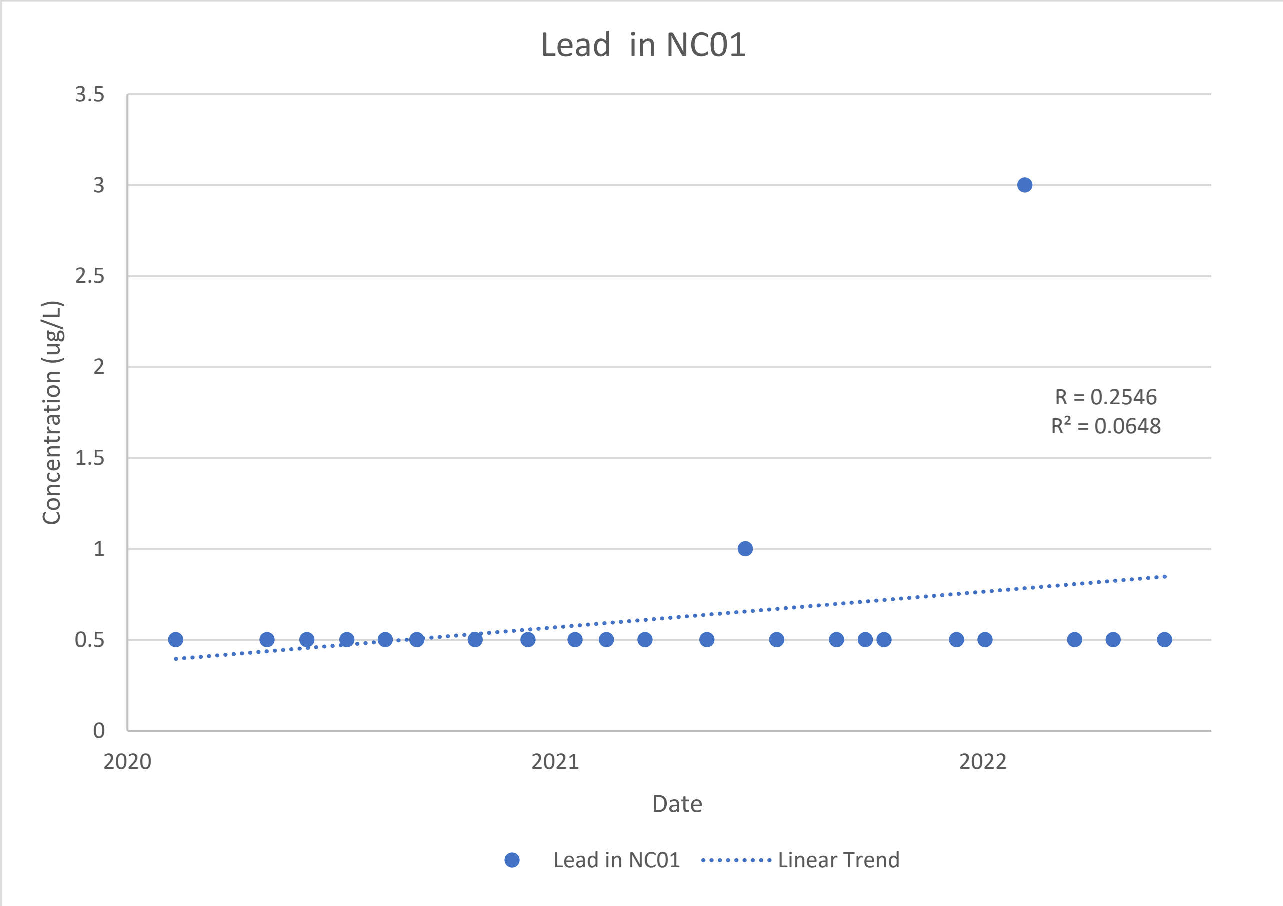

Electrical Conductivity in NC01
500
450
400
350
300
250
200
150
100
50
0
Concentration (ug/L)
2020
2021
2022
Date
R = -0.1015
R² = 0.0103
Electrical Conductivity (EC) in NC01
Linear Trend

Surface Water Linear Trend Graphs

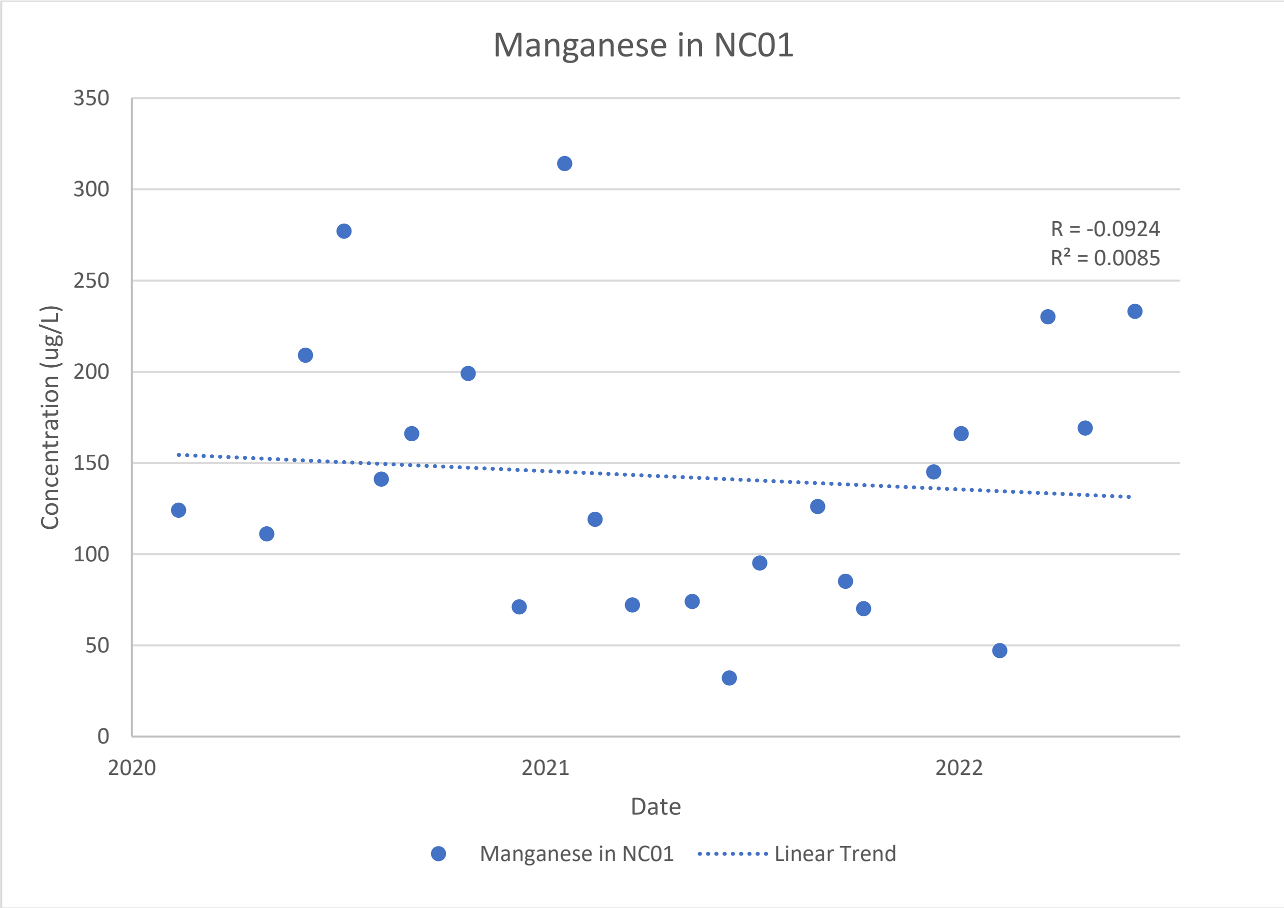



Iron in NC01
1600
1400
1200
1000
800
600
400
200
0
concentration (ug/L)
R = -0.1413
R² = 0.02
2020
2021
2022
Date
Iron in NC01
Linear Trend

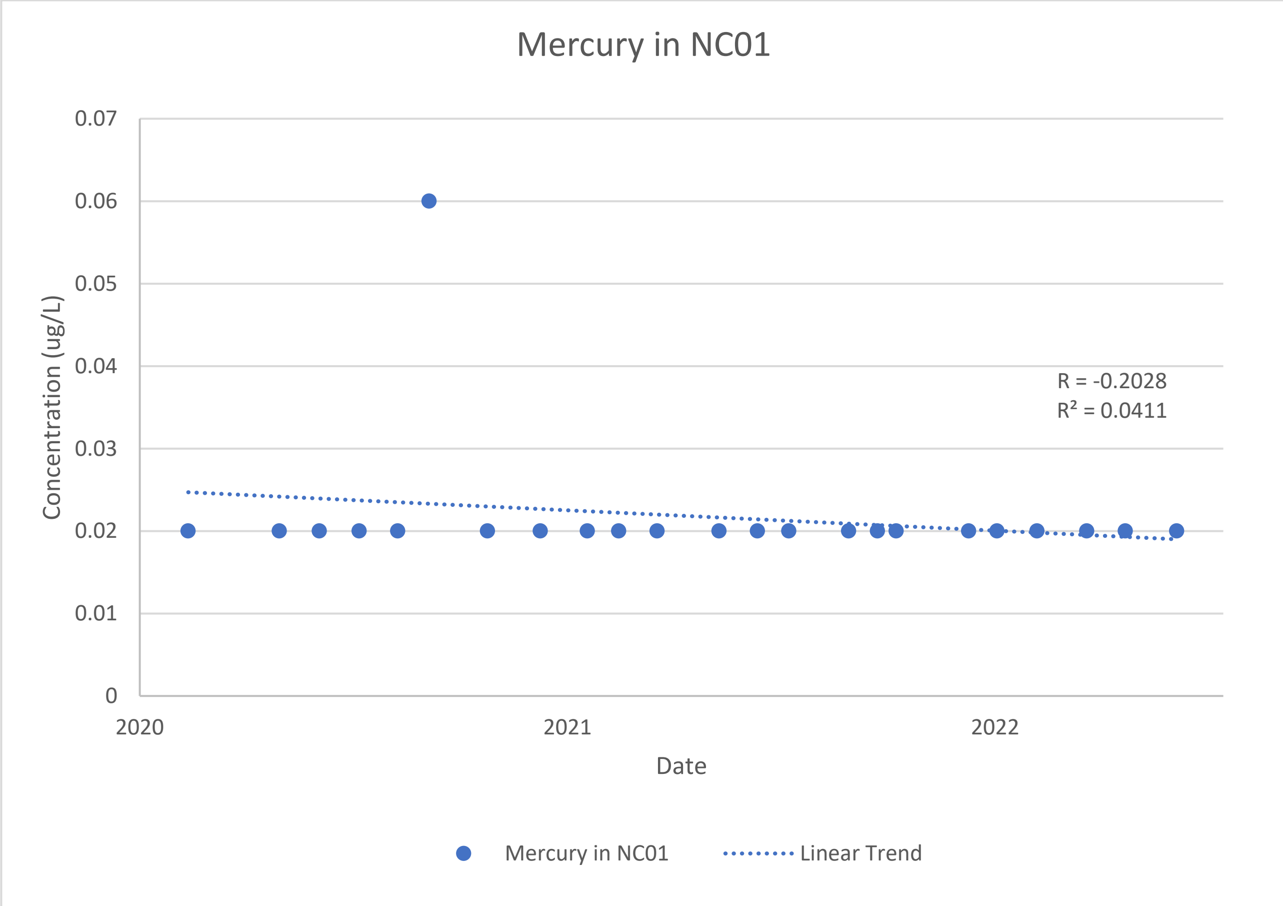
Surface Water Linear Trend Graphs



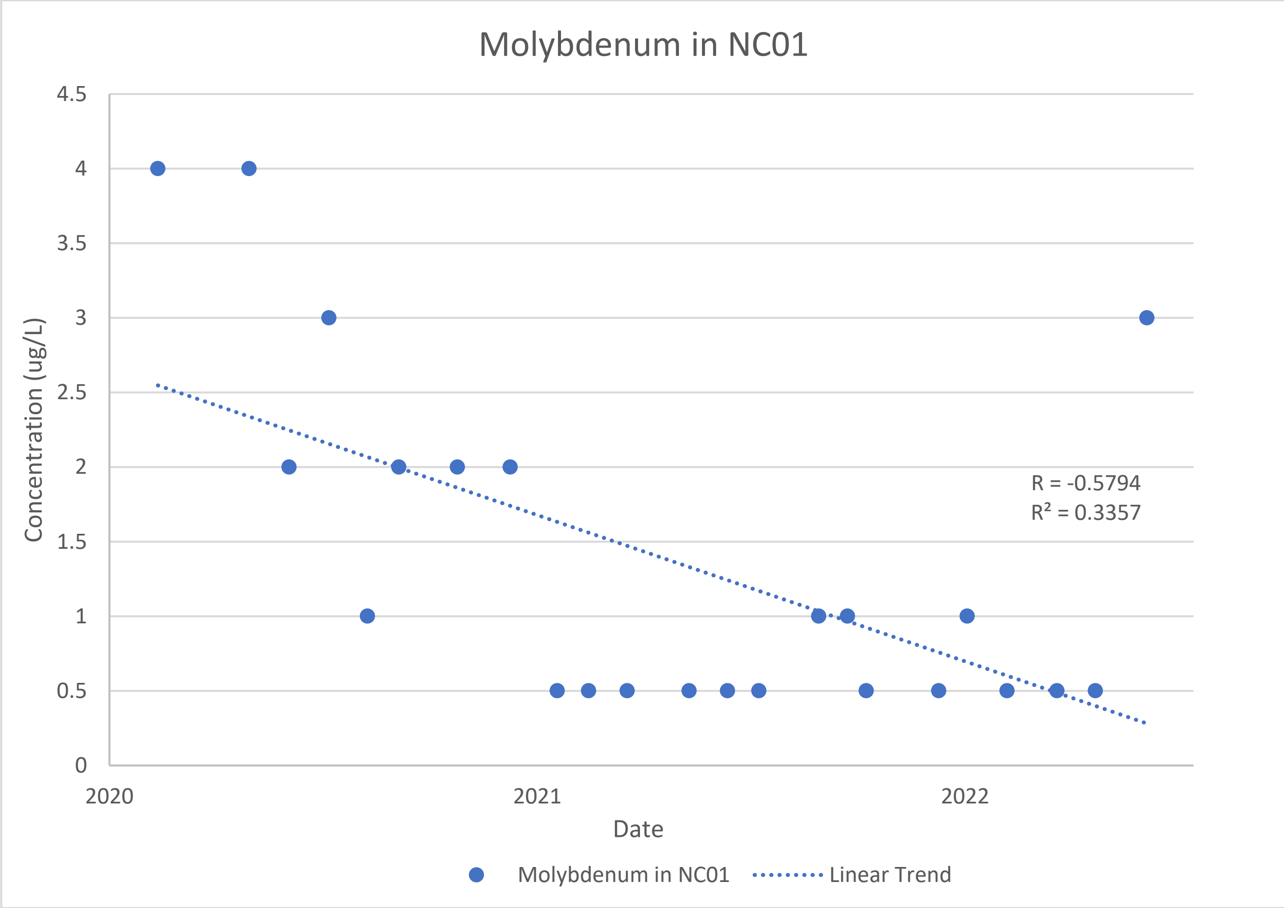
Surface Water Linear Trend Graphs



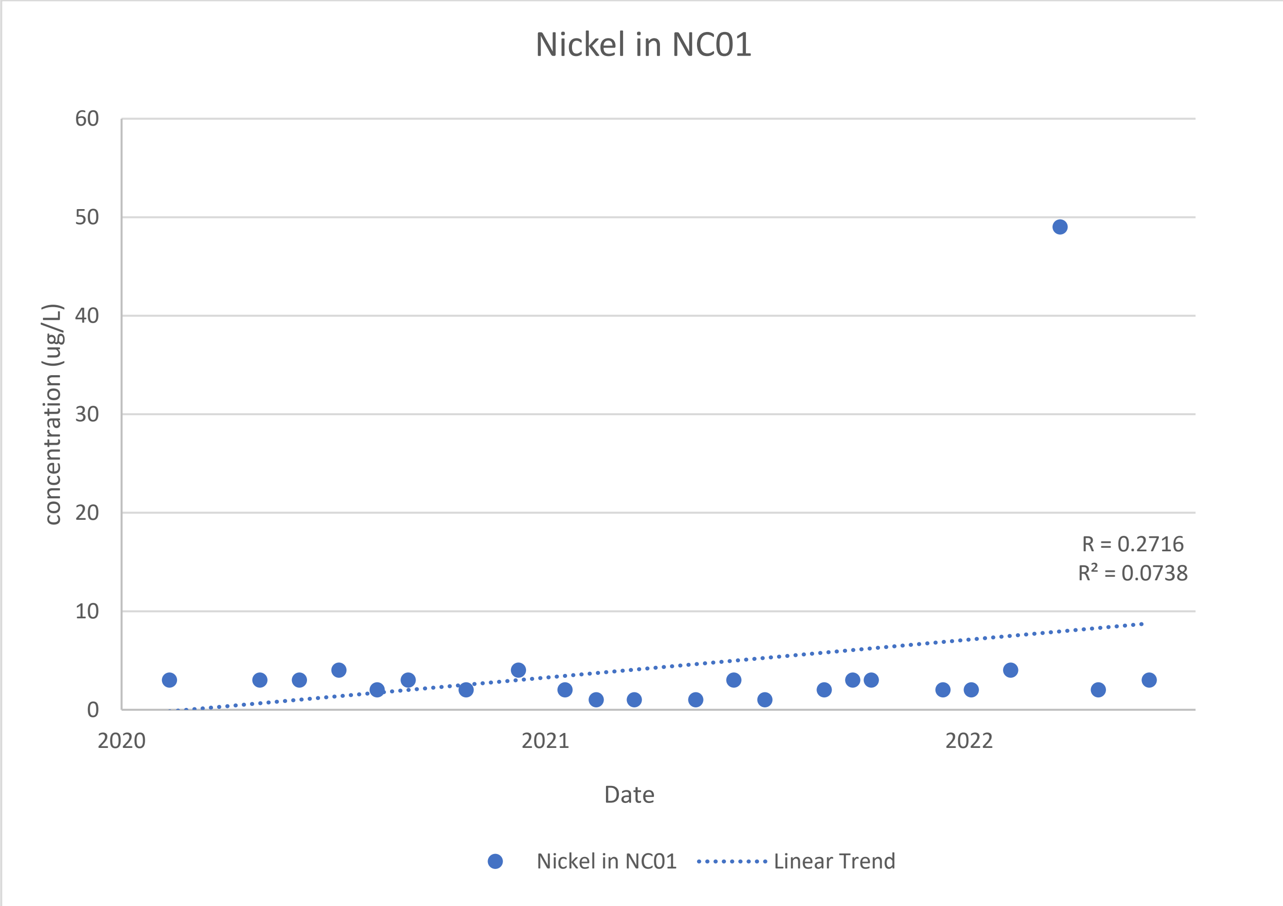
Surface Water Linear Trend Graphs



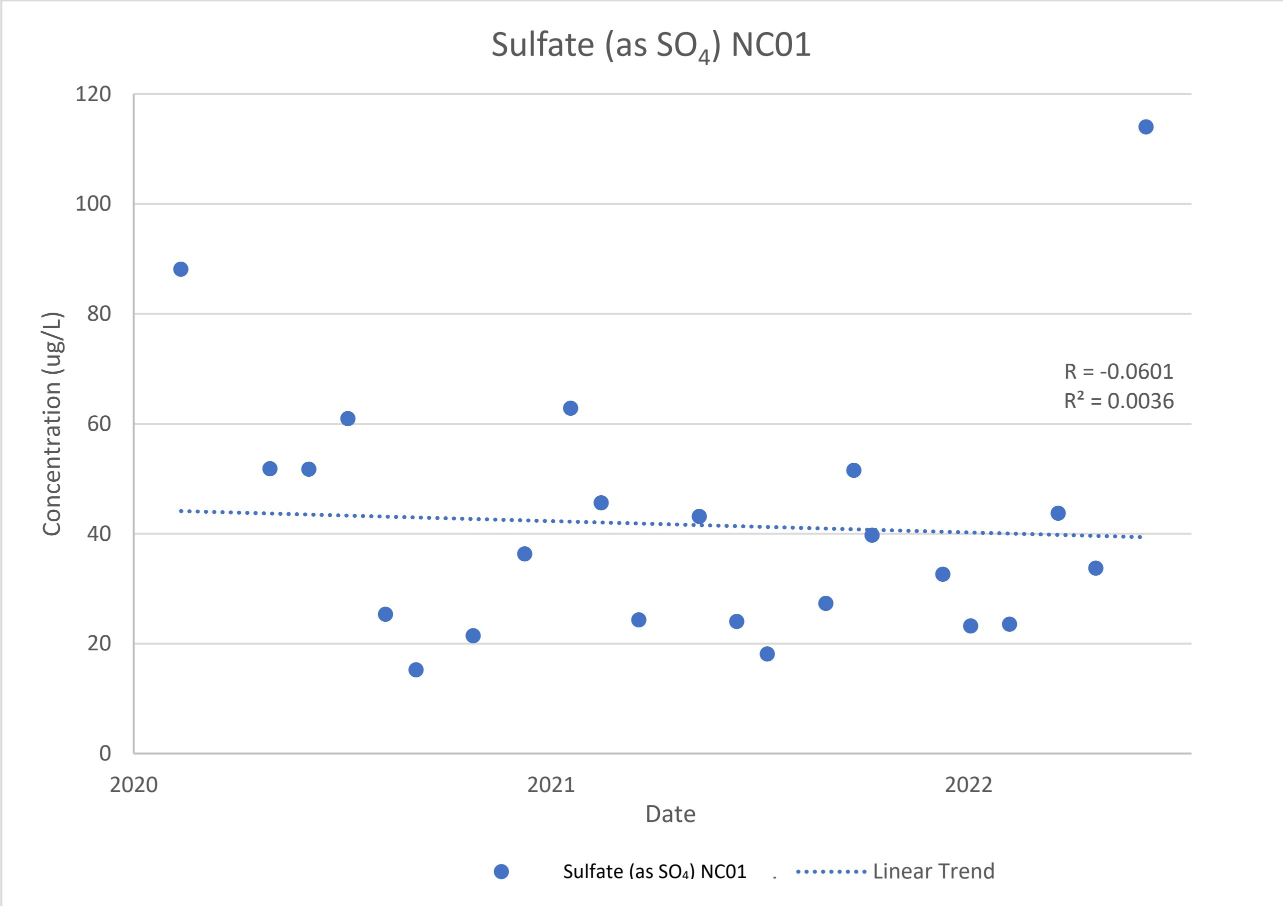
Surface Water Linear Trend Graphs



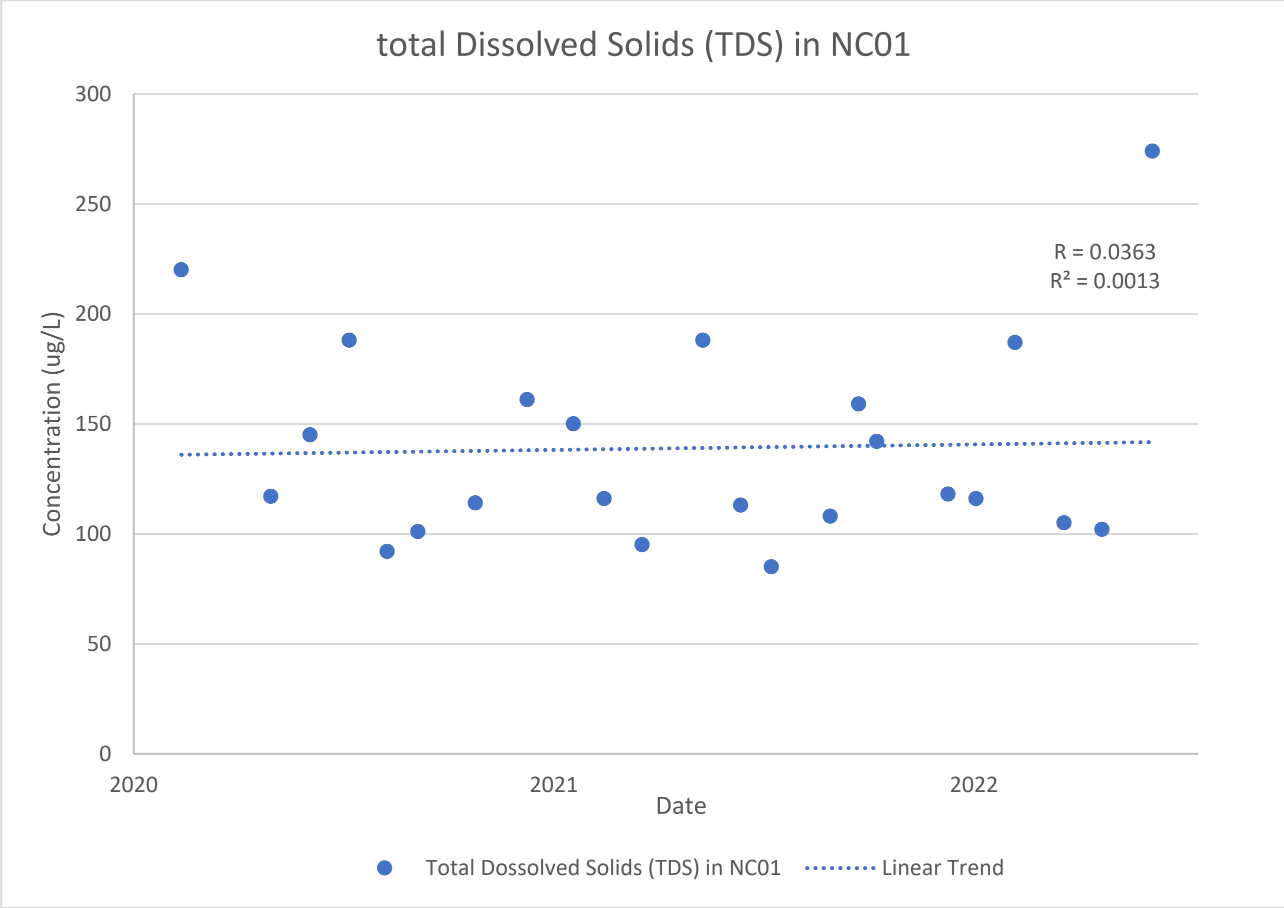
Surface Water Linear Trend Graphs



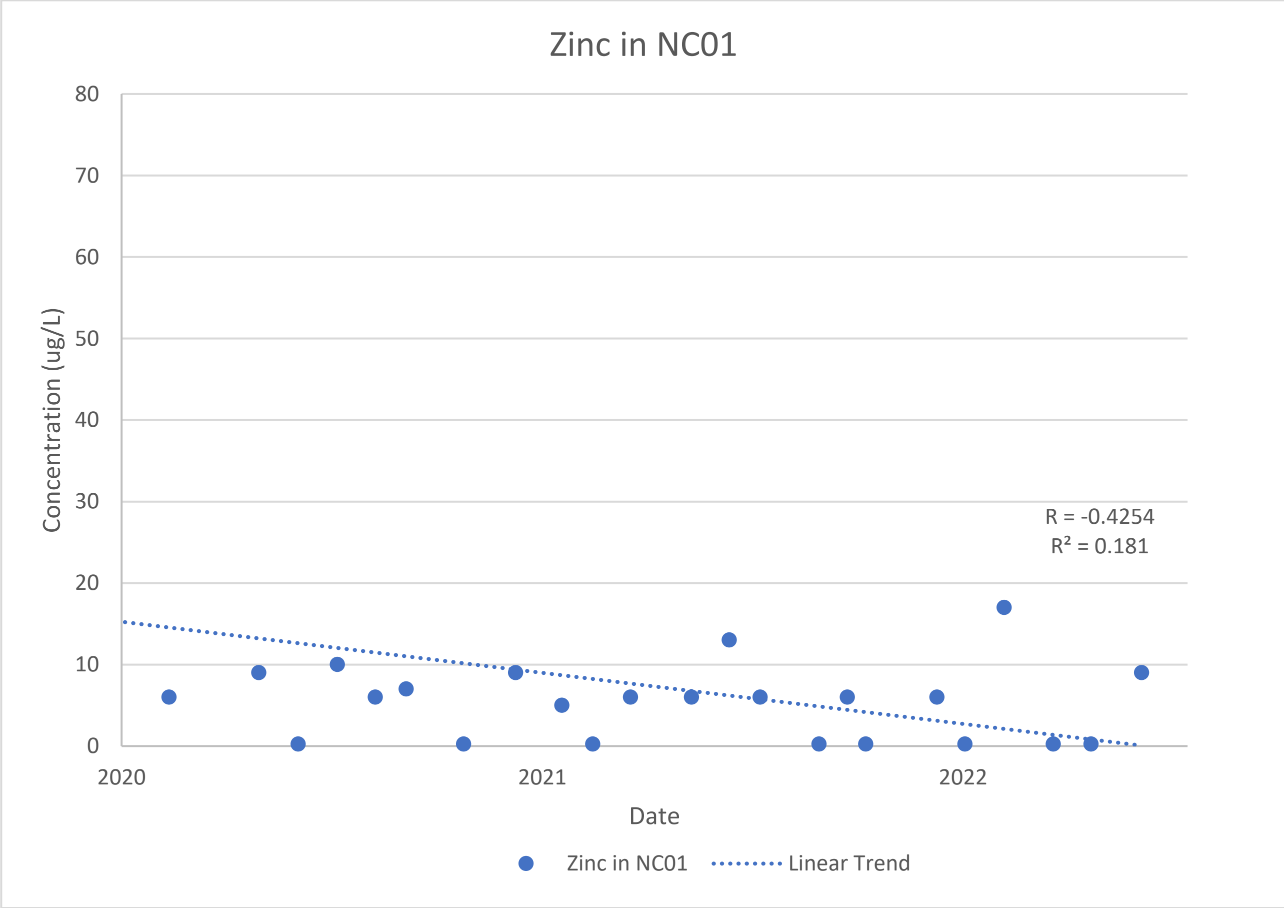
Surface Water Linear Trend Graphs



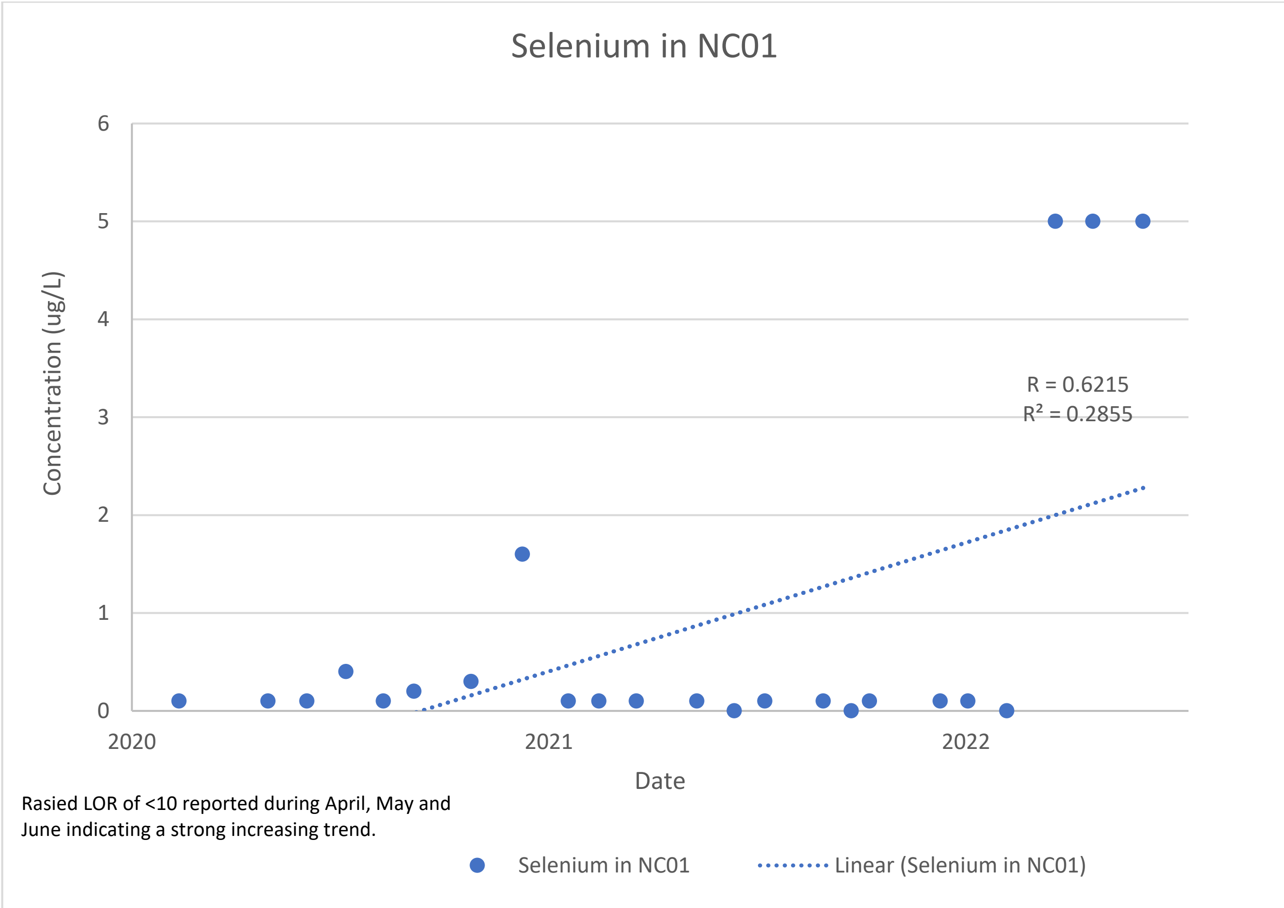
Surface Water Linear Trend Graphs



Surface Water Linear Trend Graphs



Surface Water Linear Trend Graphs



APPENDIX N NALCO SAMPLING METHOD AND QUALITY ASSURANCE AND QUALITY CONTROL (QA/QC) PROGRAM

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Macquarie Park 2113
Phone: +61 (0) 2 8870 8434

ABN: 41 000 424 788

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Quality assurance/quality control program (2022)

The laboratory's Quality assurance/quality control program ensures that sampling activities and analytical data is accurate, reliable and acceptable.

The Quality assurance/quality control program consists of both internal and external measures.

Internal

- Laboratory instrumentation and field equipment are calibrated at the correct intervals, as prescribed in the relevant NATA 'General equipment table'.
- Regular preventative maintenance is carried out on all key laboratory instrumentation and field equipment.
- Trip blanks (where appropriate) are supplied to monitor contamination.
- Certified reference materials are analysed routinely.
- Duplicate analysis is conducted to check precision.
- Laboratory blanks are analysed to monitor contamination.
- Quality control checks on media are performed.
- All records and subsequent reports are systematically checked.
- Quality control charts are used to statistically monitor trends in data.
- The laboratory is regularly internally audited.

External

- Ecolab Global Analytical & Microbiological Services participates in regular chemical and microbiological external proficiency testing programs as well as NATA audits as per their surveillance program.

Sampling and Data Collection

- All sampling is performed by trained personnel in accordance with procedure A-2.18 and relevant parts of Australian Standard 5667, for which NATA accreditation is held.
- Site measurements (Dissolved Oxygen, pH, Turbidity, Temperature and Conductivity) and sampling observations (water depth) are recorded and reported in accordance with procedure CA12125.

Sample Bottles

- Pre-labeled sample containers are used for routine sampling and testing.
- The sample bottles are prepared so that samples are preserved in accordance with Australian Standard 5667.1:1998 and Standard Methods for the Examination of Water and Wastewater, 22nd Edition (APHA).

Delivery of Samples

- Eskies and freezer packs are used to maintain the integrity of the samples during transport from the sampling sites to our Global Analytical & Microbiology Laboratory (Sydney).

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