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SRB TECHNOLOGIES (CANADA) INC.

2012

Annual Compliance and Performance Report

Licence Number NSPFOL-13.00/2015

Licence Condition Number 2.4

Submission Date:	March 31, 2013
Submitted to:	Nadia Petseva Project Officer, Canadian Nuclear Safety Commission
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EXECUTIVE SUMMARY

On average, the emissions of "HTO" were maintained at 12.43% of the licence limit and the emissions of "HTO + HT" were maintained at 6.68% of the licence limit. No action levels for air emission were reached in 2012.

Sewer release values based on sampling and analysis indicate that the emissions to sewer in 2012 were 5.99% of the license limit. Maximum concentrations in sewage in 2012 was 32 Bq/L with average concentrations just over 16 Bq/L.

The maximum annual dose received by any person employed by SRB is well within the regulatory limit for a nuclear energy worker of 50.0 mSv per calendar year. The highest annual dose for any staff member for the year was 0.80 mSv, with an average of only 0.11 mSv for all staff and none of the staff members exceeded the action levels for effective dose to worker.

Collective dose was also low at 2.75 mSv. There were no instances at anytime in 2012 whereby a staff member's tritium body burden exceeded the action level of 1,000 Bq/ml.

Tritium contamination control is maintained by assessment of non-fixed tritium contamination levels throughout the facility by means of swipe method and liquid scintillation counting of the swipe material. A total of 7,940 swipes were performed in various work areas in 2012.

Of the 37 monitoring wells, the concentrations of only four wells now exceed the current Ontario Drinking water Guideline. These four wells are located on the SRB site within 50 meters of the stack. The highest tritium concentration in any well, remains in monitoring well MW06-10 which is located in the stack area on the SRB property.

The highest tritium concentration in a well used for drinking water remains in the water supply well which is located closest to SRB and is being used by individuals working for a business for some of their drinking water intake. Tritium concentrations in this well in 2012 averaged 869 Bq/L, which is approximately 12% of the Ontario Drinking Water Standard of 7,000 Bq/L. Average concentrations over 2012 for other wells used for drinking water ranged from 3 Bq/L to 210 Bq/L, depending on their location and distance in relation to the facility.

Passive air samplers, precipitation, runoff, milk, produce and receiving waters were sampled regularly in 2012 and results were slightly lower than those in 2011.

Based on environmental monitoring results the maximum dose to a member of the public as a result of the emissions from SRB in 2012 was 4.346 µSv which is slightly lower than the dose in 2011 of 5.031 µSv.

In 2012 a total of 78 minuted committee meetings have taken place at the company compared to 67 in 2011.

In 2012 our staff increased from 16 to 22. The employees that were employed in 2011 are working in the same positions as when the licence[1] was issued in July 2010. By the end of 2012 our workforce had an average experience of over 11 years with an average age of just over 42 years of age.

EXECUTIVE SUMMARY (Continued)

In total 14 non-conformances and 10 opportunities for improvements were raised in 2012 in several areas of the company operations.

In 2012 CNSC Staff performed three Type II Compliance Inspections[8][9][10] of the facility. All issues identified during the first two inspections have been addressed and those identified in the third inspection will be addressed in 2013.

In 2012 we also had two audits by our ISO 9001: 2008 registrar BSI Management Systems, one inspection by the Pembroke Fire Department, one inspection by a Fire Protection Consultant and an audit by our tritium supplier Ontario Power Generation. Issues that were identified were minor and will be addressed in 2013.

Although no requests for information were made by the public in 2012, various Public Information initiatives were taken including frequent web site update with latest environmental monitoring results, plant tours and direct interaction with the public reporting results of well and produce sampling.

Site specific requirements for payments of cost recovery fee arrears and payments to the decommissioning escrow account have been met.

In 2013, SRB plan on providing CNSC Staff a revised Preliminary Decommissioning Plan, Cost Estimate and Financial Guarantee[57]. The revised PDP will be based on those submitted and approved by CNSC Staff for other licensees with similar facilities.

A number of training initiatives will be undertaken in 2012 to address any weakness in Health Physics training.

We will continue to monitor the existing network of wells to ensure that current concentrations eventually gradually decrease as expected.

In 2013, we expect to submit to CNSC Staff revisions of the Maintenance Program[30], Quality Manual[23], Fire Protection Program[17], Waste Management Program[49], Contractor Management Program[21] and Emergency plan[19].

Despite a predicted minimum increase in production of 100% in 2013 over 2012, Senior Management has committed to an emission target only 90% higher than the 575 GBq released per week in 2012 and to an average occupational dose target only 90% higher than the 0.11 mSv achieved in 2012.

We plan on increasing the number of Committee Meetings in 2013 to further ensure compliance with the NSCA, Regulations and conditions of the Licence[1] and to help identify further provisions to implement for the protection of the environment, the health and safety of persons and the maintenance of national security.

TABLE OF CONTENTS

DESCRIPTION **PAGE**

DESCRIPTION **PAGE**

DESCRIPTION **PAGE**

LIST OF APPENDICES

LIST OF TABLES

LIST OF FIGURES

1.0 INTRODUCTION

1.1 GENERAL INTRODUCTION

For all of 2012, SRB Technologies (Canada) Inc. has been licensed under Canadian Nuclear Safety Commission Nuclear Substance Processing Facility Operating Licence, NSPFOL-13.00/2015[1]. Condition 2.4 of Licence NSPFOL-13.00/2015[1] reads:

The licensee shall prepare an annual compliance and performance report.

Section 3.2 of the Licence Conditions Handbook (LCH) LCH-SRBT-R000[2] for licence NSPFOL-13.00/2015[1] reads:

For licence condition 2.4, that the Annual Compliance Report should be submitted to the CNSC by March 31 of each year, covering the previous calendar year's operation including the following information:

i. ***Operational review including equipment and facility performance and changes, significant events/highlights that occurred during the year.***

ii. ***Information on production including verification that limits specified in the licence was complied with.***

iii. ***Modifications including changes in organization, administration and/or procedures that may affect licensed activities.***

iv. ***Health physics information including operating staff radiation exposures including distributions, maxima and collective doses; review of action level or regulatory exceedence(s), if any, historical trending where appropriate.***

v. ***Environmental and radiological compliance including results from environmental and radiological monitoring, assessment of compliance with licence limits, historical trending where appropriate, and quality assurance/quality control results for the monitoring.***

vi. ***Facility effluents including gaseous and liquid effluent releases of nuclear substances from the facility, including unplanned releases of radioactive materials and any releases of hazardous substances.***

vii. ***Waste management including types, volumes and activities of solid wastes produced, and the handling and storage or disposal of those wastes.***

viii. ***Updates regarding activities pertaining to safety, fire protection, security, quality assurance, emergency preparedness, research and development, waste management, tritium mitigation and training (as applicable).***

ix. ***Compliance with other federal and/or provincial Regulations.***

x. ***A summary of non-radiological health and safety activities, including information on minor incidents and lost time incidents.***

xi. ***Public information initiatives.***

xii. ***Forecast for coming year(s).***

1.1 GENERAL INTRODUCTION (Continued)

A CNSC Staff letter[3] dated March 10, 2011 from B.R. Ravishankar provided a document[4] that outlined the reporting requirements for the 2011 and future Annual Compliance and Performance Reports for Class 1 A & B Nuclear Facilities. SRB produced the 2011 Annual Compliance Report[5] to these new requirements and following review of this report CNSC Staff requested[6] that SRB provide additional information which SRB subsequently provided in an Addendum[7] to the 2011 Annual Compliance Report dated December 17, 2012.

The purpose of this report is therefore to meet the requirements of conditions 2.4 of Licence NSPFOL-13.00/2015[1] providing the information in Section 3.2 of the Licence Condition Handbook LCH-SRBT-R000[2]. The information is reported in the basic format similar to that outlined in CNSC document[4] titled Annual Compliance Monitoring and Operational Performance Reporting Requirements for Class 1 A & B Nuclear Facilities with the exception that some of the Tables and Figures are inserted in the relevant sections of the report rather than at the end of the report for ease of review.

1.2 FACILITY OPERATION

Throughout 2012 the facility was operated and maintained to all requirements of the Nuclear Safety Control Act (NSCA), Regulations, conditions of the Licence[1] and applicable safety programs and procedures. None of the limits or action levels were exceeded and no building modifications were made.

The Quality Manager developed an audit schedule for 2012 which resulted in 15 internal audits which resulted in one non-conformance and six opportunities for improvement. In total 14 non-conformances and 10 opportunities for improvements were raised in 2012 in several areas of the company operations.

In 2012 CNSC Staff performed three Type II Compliance Inspections of the facility. The first inspection[8] was conducted on March 16, 2012, the second inspection[9] was conducted on June 19 and 20, 2012 and the third inspection[10] on October 26, 2012. All issues identified during the first two inspections have been addressed and those identified in the third inspection will be addressed in 2013.

In 2012 we also had audits by our ISO 9001: 2008 registrar BSI Management Systems on February 27, 2012 and November 14, 2012, inspections by the Pembroke Fire Department on April 12, 2012 and by a Fire Protection Consultant Nadine International Inc. on December 10, 2012 and an audit by our tritium supplier Ontario Power Generation on November 8 and 9, 2012. Issues that were identified were minor and will be addressed in 2013.

In 2012 our staff increased from 16 to 22. The employees that were employed in 2011 are working in the same positions as when the licence[1] was issued in July 2010 and after addressing the recommendations of the Organizational Study[11][12]. By the end of 2012 our workforce had an average experience of over 11 years with an average age of just over 42 years of age.

A number of committees meet on a regular basis to discuss various items that ensure compliance with the NSCA, Regulations and conditions of the Licence[1]. The information attained during these committee meetings has been extremely valuable in improving various safety programs and procedures and in ensuring the improvement in the provisions taken for the protection of the environment, the health and safety of persons and the maintenance of national security.

The Health Physics Committee which has formally met 11 times in 2012 is specifically responsible for review of all safety programs and safety related procedures to ensure that requirements of the NSCA, Regulations, conditions of the licence[1] are met. This Committee is comprised of five employees including the President and Vice President.

The President, supported by the Vice President remain personally involved in the development and implementation of Safety Programs demonstrating a visible commitment to all staff. The President and Vice President make nuclear safety the main focus of the operations and communicate to all staff this focus. Employees are encouraged to take a leadership role and to focus on nuclear safety in their day-to-day activities. Such behaviour has improved the safety culture, which should in turn increase the confidence of all its stakeholders and lead to less regulatory oversight.

1.3 PRODUCTION OR UTILIZATION

1.3.1 TRITIUM PROCESSED

In 2012, a total of 10,224,590 GBq's of tritium was processed. For comparison, in 2011, a total of 7,342,449 GBq's of tritium was processed, an increase of just over 39%.

1.3.2 POSSESSION LIMIT

Section IV (c) of Licence NSPFPL-13.00/2015[1] reads:

possess a maximum of 6,000 TBq of tritium in any form.

Throughout 2012 the possession limit was not exceeded. The maximum tritium activity possessed at any time during 2012 was 5,782 TBq in February 2012. Tritium activity on site during 2012 can be found in **Appendix A** of this report.

At all times, unsealed source material was stored on uranium getter beds or in the handling volumes of the gas filling rigs.

1.3.3 RELEASE LIMITS TO ATMOSPHERE

Throughout the year SRB Technologies (Canada) Inc. operated under release limits to atmosphere prescribed under its Nuclear Substance Processing Facility Operating Licence number NSPFOL-13.00/2015[1] and its associated release limits to atmosphere which are outlined in Appendix A of the licence.

Stack release values in 2012 based on weekly sampling and analysis for tritium oxide (HTO) and elemental tritium (HT) were well below the release limits.

On average, the emissions of "HTO" were maintained at 12.43% of the licence limit and the emissions of "HTO + HT" were maintained at 6.68% of the licence limit. See Facility Emissions Data in **Appendix B** of this report:

TABLE 1: 2012 AIR RELEASES AGAINST RELEASE LIMIT

NUCLEAR SUBSTANCE AND FORM	LIMIT (GBq/YEAR)	RELEASED (GBq/YEAR)	RELEASED (GBq/WEEK)	% OF LIMIT
TRITIUM AS TRITIUM OXIDE (HTO)	67,200	8,356	160.69	12.43%
TOTAL TRITIUM AS TRITIUM OXIDE (HTO) AND TRITIUM GAS (HT)	448,000	29,905	575.10	6.68%

Air emissions in 2012 have reduced from what they were in 2011. In 2011, emissions of "HTO" were 18.61% of the licence limit and the emissions of "HTO + HT" were 12.43% of the licence limit.

1.3.4 ACTION LEVELS FOR RELEASES TO ATMOSPHERE

Throughout the year SRB Technologies (Canada) Inc. did not exceed the Action Levels to atmosphere which are outlined section 3.10 of the Licence Conditions Handbook number LCH-SRBT-R000[2]:

TABLE 2: ACTION LEVELS FOR RELEASES TO ATMOSPHERE

NUCLEAR SUBSTANCE AND FORM	WEEKLY ACTION LEVEL (GBq)
TRITIUM AS TRITIUM OXIDE (HTO)	840
TOTAL TRITIUM AS TRITIUM OXIDE (HTO) AND TRITIUM GAS (HT)	7,753

TABLE 3: CHART RECORDER ACTION LEVEL FOR RELEASES TO ATMOSPHERE:

MEASURE ON THE CHART RECORDER
10,000 μCi/m FOR A DURATION OF ONE HOUR

1.3.5 RELEASE LIMIT TO SEWER

Throughout the year SRB Technologies (Canada) Inc. operated well below the release limits to sewer prescribed under its Nuclear Substance Processing Facility Operating Licence number NSPFOL-13.00/2015[1] and its associated release limits to sewer which are outlined in Appendix A of the licence.

Sewer release values based on sampling and analysis indicate that the emissions to sewer in 2012 were 5.99% of the license limit. See Annual Liquid Effluent Data in **Appendix C** of this report:

TABLE 4: SEWER RELEASES AGAINST RELEASE LIMIT:

NUCLEAR SUBSTANCE AND FORM	LIMIT (GBq/YEAR)	RELEASED (GBq/YEAR)	% OF LIMIT
TRITIUM – WATER SOLUBLE	200	12	5.99%

Sewer releases have increased from what they were in 2011, emissions were 3.90% of the licence limit in 2011.

Since October 30, 2008 SRB had been working to a maximum daily release target to the sewer of 0.3 GBq. On March 5, 2012[13] to further reduce the levels to the sewer we have further reduced the daily target by half from 0.3 GBq to 0.15 GBq. As a result a new revision to the EMS Objectives and Targets was completed. Weekly releases were below target for all of 2012.

1.4 FACILITY MODIFICATION

A number of improvements have been made throughout 2012 that contribute to further protecting the environment and the health of the public and staff. These include a number of program and procedure improvements.

1.4.1 BUILDING MODIFICATIONS

No modifications were made to the building during 2012.

1.4.2 DOCUMENT MODIFICATION

1.4.2.1 HEALTH PHYSICS TRAINING

In 2011, it had been decided to institute more cross training amongst the members of the health physics team to ensure more coverage in the event of prolonged absence of an individual and during times of high workload in specific areas of responsibility.

On December 21, 2012 a complete training matrix of specific tasks in Health Physics was reviewed during a Health Physics Meeting[14] and a plan to complete all the necessary training by September 30, 2013 was put in place.

1.4.2.2 RADIATION SAFETY PROGRAM

Improvements were made to the Radiation Safety Program[15] to address the comments[16] from CNSC Staff and to ensure the program clearly reflects current activities and improvements that have been made at the facility.

The Radiation Safety Program[15] was revised to reflect the exact definition of a NEW (Nuclear Energy Worker) from the NSCA.

One of the other changes to the Radiation Safety Program[15] included a complete redesign of the Nuclear Energy Worker (NEW) Declaration to demonstrate that paragraphs 7(l)(b) and 7(3) of the Radiation Protection Regulations are satisfied in addition to other information in the Radiation Protection Regulations in section 11 on Pregnant Nuclear Energy Workers and in section 13 on Effective Dose Limits.

Other changes to the Radiation Safety Program[15] were made to reflect actions to be taken if an employee is absent from the annual training and the actions to be taken if an employee fails to achieve a passing grade of 75% on the test that is provided at the conclusion of the annual training.

1.4.2.3 FIRE PROTECTION PROGRAM AND PROCEDURES

In 2012 we have continued to improve the Fire Protection Program[17] and Fire Protection Procedures. The revised documents will include an updated floor plan and will reflect that a number of Fire Protection System inspections are now being performed by qualified third parties rather than being performed by staff. Drafts of these documents are complete and are expected to be issued in early 2013.

1.4.2.4 EMERGENCY PLAN

As a result of the Request[18] Pursuant to Subsection 12(2) of the General Nuclear Safety and Control Regulations issued by CNSC Staff as a result of the Lessons Learned From the Japanese Earthquake, we have thoroughly reviewed our Emergency Plan[19] and it was found that the document would benefit from the addition of more detailed procedures to address the occurrence of extreme weather events. Changes to document were made and a new revision was issued to CNSC Staff for review on August 27, 2012.

CNSC Staff reviewed the Emergency Plan[19] and requested additional changes to ensure that the Emergency Plan makes reference to Regulatory Document "RD-353: Testing the Implementation of Emergency Measures"[20]. CNSC Staff also requested that the roles and responsibilities during an emergency situation are clearly defined within the Emergency Plan[19] and that there is a more formal link and agreement to ensure that outside assistance from other licensed facilities is available if SRB resources be unavailable during an emergency. The document will be revised to address CNSC Staff comments and will be re-submitted to CNSC Staff in early 2013.

1.4.2.5 CONTRACTOR MANAGEMENT PROGRAM

In 2012 we have continued to improve Contractor Management Program[21] to address the comments[22] from CNSC Staff to provide greater control of contractors and define work to be performed in a more specific manner. The revised program will also include improved Vendor/Contractor appraisal guidelines and increased detail to the ongoing Contractor evaluation process. A draft is complete and expected to be issued in early 2013.

1.4.2.6 QUALITY ASSURANCE DOCUMENTS

An updated revision of the Quality Manual[23] is near completion and is expected to be submitted to the CNSC in early 2013 for approval. Various associated second tier quality procedures are also expected to be updated in 2013 to address the opportunities for improvements and the corrective actions identified through recent audits and inspections.

2.0 SAFETY AND CONTROL AREAS

2.1 MANAGEMENT

2.1.1 MANAGEMENT SYSTEM

The quality management system implemented continues to ensure that results of various assessments are raised in a corrective or preventive action and subjected to a root cause analysis controlled by the Quality Department.

In 2012, a total of 14 non-conformances and 10 opportunities for improvements were raised in different areas of the company operations. By the end of 2012, 11 of these non-conformances had been addressed in full and the other three are expected to be addressed by the end of 2013.

All staff is continuously reminded to maintain a healthy safety culture in identified areas that may need improvement or corrective action for all company safety.

On January 18 and 19 2012, the Organizational Management reviews were conducted with the Quality Manager to review the Benchmarking and Self-assessment activities that were performed by all the Organizational Managers for 2011.

A Senior Management Meeting[24] took place on January 25, 2012 to report and discuss the results of the Benchmarking and Self-assessment activities performed in 2011 and to define areas where improvements can be made in the various company safety programs.

On January 24, 2012 a Management Meeting[25] took place for which all managers and senior management were present. The quality management system was reviewed to ensure it remains suitable and effective at meeting the requirements of the NSCA, Regulations, conditions of the licence[1] and ISO 9001: 2008.

2.1.1.1 CNSC INSPECTIONS

CNSC Staff conducted a Type II Compliance Inspection[8] focusing on Environmental Protection on March 16, 2012. The purpose of the inspection was to verify compliance with the NSCA, CNSC Regulations and the CNSC operating licence NSPFOL-13.00/2015[1] and Licence Conditions Handbook[2].

The inspection resulted in two action notices which have since been addressed. The scope of the inspection and ensuing report[8] included the following elements:

- Gaseous Systems
- Liquid Systems
- Weather Station
- Environmental Monitoring

A Type II Compliance Inspection[9] on SRB's quality management system was conducted by CNSC Staff at the facility on June 19 and 20, 2012. The purpose of the inspection was to verify compliance with the NSCA, CNSC Regulations and the CNSC operating licence NSPFOL-13.00/2015[1].

The inspection resulted in five action notices which have since been addressed. The scope of the inspection and ensuing report[9] included the following elements:

- Management Review
- Management Self-Assessment
- Audits
- Non-conformance and Corrective Action
- Change and Design Control
- Procurement
- Maintenance and Calibration

A Type II Compliance Inspection[10] was conducted by CNSC Staff at the facility on October 26, 2012. The purpose of the inspection was to verify compliance with the NSCA, CNSC Regulations and the CNSC operating licence NSPFOL-13.00/2015[1].

The inspection resulted in two recommendations which will be addressed in 2013. The scope of the inspection and ensuing report[10] included the following elements:

- Transportation and Packaging
- Radiation Protection
- Personnel Qualifications and Training
- Worker Exposure and Dose Control
- Radiation Instrumentation and Detection Equipment
- Personnel Dosimetry
- Contamination Control

2.1.1.2 ISO 9001: 2008 REGISTRAR AUDITS

SRB Technologies (Canada) Inc. continues to maintain a quality management system that is registered to ISO 9001: 2008 by BSI Management Systems.

On February 27, 2012 a yearly surveillance assessment was performed by BSI Management Systems which resulted in one opportunity for improvement.

On November 14, 2012 a re-certification assessment was performed by BSI Management Systems which resulted in two minor non-conformances and three opportunities for improvements that will be addressed in 2013. Following the re-certification assessment BSI Management Systems recommended SRB for continuation of registration to ISO 9001: 2008.

2.1.1.3 INTERNAL AUDITS

The Quality Manager developed an audit schedule for 2012 which resulted in 15 internal audits being conducted. The audits performed focused on all activities associated with developing, managing and implementing all company safety programs.

These audits alone resulted in identifying one non-conformance and six opportunities for improvement.

2.1.1.4 ONTARIO POWER GENERATION AUDIT

Ontario Power Generation who supplies SRB Technologies (Canada) Inc. with tritium gas performed an audit of the facility on November 8 and 9, 2012 which resulted in no findings.

The audit reviewed the following:

- Operating Licence
- Operating procedures involving tritium
- Inventory control process/procedures
- Inventory control records/procedures
- Tritium stack monitoring procedures
- Staff training procedures and records for safe tritium handling
- Physical security measures at the facility
- Instrument calibration procedures/records for tritium

2.1.1.5 PEMBROKE FIRE DEPARTMENT INSPECTION

Pembroke Fire Department conducted a fire inspection on April 12, 2012. No violations of the Ontario Fire Code were identified.

2.1.1.6 FIRE PROTECTION CONSULTANT INSPECTION

As required by licence NSPFOL-13.00/2015[1] and section 3.11 of the Licence Conditions Handbook LCH-SRBT-R000[2], on December 10, 2012 a Fire Protection Consultant, Nadine International Inc. performed an annual third party review of compliance with the requirements of the National Fire Code, 2005, and National Fire Protection Association, NFPA-801, 2008 edition: Standard for Fire Protection for Facilities Handling Radioactive Materials.

The review resulted in two findings which will be addressed in 2013.

2.1.1.7 BENCHMARKING

In 2012 individuals responsible for specific programs and procedures at SRB regularly looked at process problems, corrective actions as well as trending and used this information to benchmark elsewhere in or out of the organization in order to improve the effectiveness of these programs and procedures and to help define where improvements could be made.

Benchmarking against other CNSC Licensees was encouraged. The documents of other CNSC Licensees were continuously reviewed:

- Commission Member Documents
- Proceedings, Including Reasons for Decision
- Documents from other licensees

Meetings with the Quality Manager and Senior Management will take place in 2013 to discuss the results of the 2012 benchmarking activities performed and to define areas of improvement.

2.1.1.8 SELF-ASSESSMENTS

Throughout 2012 routine self-assessments by Organizational Managers were undertaken to identify, correct and prevent problems that hinder the achievement of the company's vision, mission, goals, values and policy and to assess the adequacy and effectiveness of the Quality Management System.

Self-assessments were performed by review of:

- Analysis and trending of performance data against historical data
- Input from stakeholders (public, contractors, regulators, etc.)
- Workspace inspections or observations
- Routine communications with staff to determine whether expectations are understood
- Training and coaching results
- Corrective and preventive actions raised throughout the organization
- Internal audit results

Meetings with the Quality Manager and Senior Management will take place in 2013 to discuss the results of the 2012 self-assessments and to define areas of improvement.

2.1.1.9 CHANGES IN QUALITY ASSURANCE DOCUMENTS

The Quality Manual[23] remained unchanged for 2012, however an updated revision is near completion and is expected to be submitted to the CNSC in early 2013 for approval. Various associated second tier quality procedures are also expected to be updated in 2013 to address the opportunities for improvements and the corrective actions identified through recent audits and inspections.

2.1.1.10 RESULTS OF LSC QA PROGRAM

2.1.1.10.1 ROUTINE PERFORMANCE TESTING

Routine Performance Testing are performed on both Liquid Scintillation Machines (LSC) as required in section 4.2.3 of Regulatory Standard S-106 "Technical and Quality Assurance Requirements for Dosimetry Services" [26], Revision 1.

Routine Performance Testing are performed to specifically demonstrate that the dosimetry service is operated in a predictable and consistent way.

Routine Performance Testing was carried out every 3 months as required throughout 2012 on each of the two LSC machines, for a total of eight Routine Performance Tests without failures. All records are kept on file.

2.1.1.10.2 WEEKLY EFFICIENCY CHECK

The LSC-QA[27] program includes weekly instrument efficiency checks using National Institute of Standards and Technology (NIST) traceable standards of a blank, H-3 and C-14 standards. The absolute activity of the capsules is calibrated by comparison with the reference standards of tritiated toluene supplied by NIST.

All tests have been performed at least on a weekly basis and passed the acceptability criteria. All records are kept on file.

2.1.1.10.3 BATCH VALIDITY TEST

In addition NIST traceable standards, certified to have an estimated accuracy of ± 1.2%, are prepared in-house, analyzed and checked against a 10% acceptability criterion with every batch of samples being analyzed.

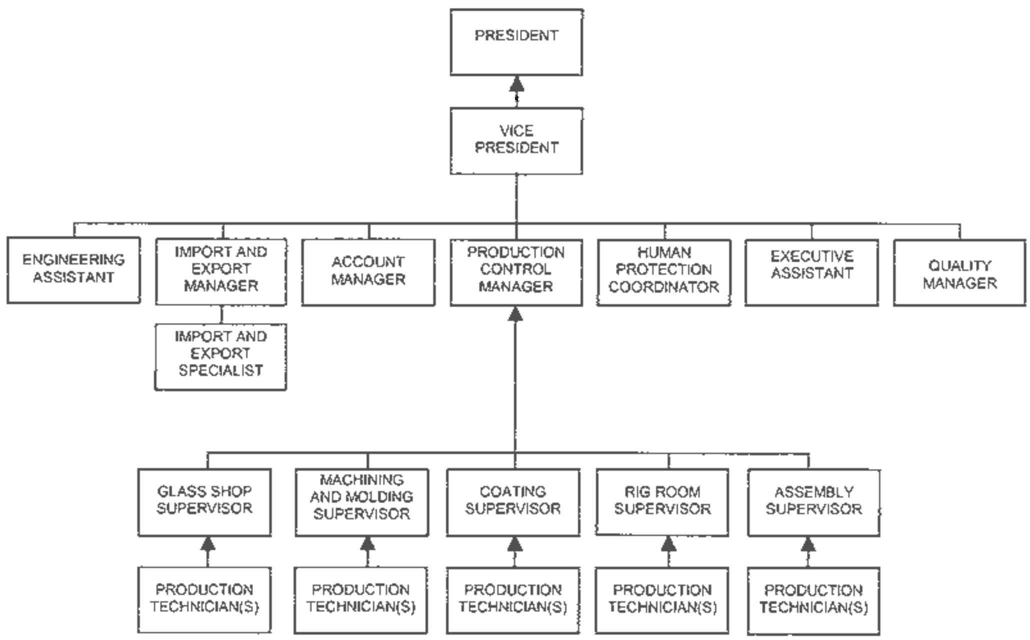
All tests were performed with every batch and had to pass the acceptability criteria to ensure the validity of the results. All records are kept on file.

2.1.2 HUMAN PERFORMANCE MANAGEMENT

2.1.2.1 ORGANIZATIONAL IMPROVEMENTS

The following organizational chart represents the structure at the facility as a result of addressing the recommendations of the Organizational Study[11][12] that was performed in support of maintaining a processing licence. Each position is held by a single individual who possesses the "qualifications" and "experience requirements" of the position:

FIGURE 1: ORGANIZATIONAL CHART



In order to ensure more coverage in the event of prolonged absence of the Import and Export Manager and during times of high workload in 2012 Senior Management decided to add a new position of Import and Export Specialist. On November 19, 2012 an individual was hired to fill this position. The Import and Export Specialist is mainly responsible for assisting the Import and Export Manager:

- With receipt and authorizing receipt of tritium, tritium sources and products containing tritium sources.
- Maintain accurate tritium inventory records.
- Prepare, submit and maintain all import and export permits.
- Transport and documentation of shipments that contain tritium.

In October 2012 the General Manager position was renamed Vice President to clearly demonstrate the authority of this position on other Management and to further reinforce that the individual holding this position will assume full duties of the President in their absence, otherwise assist the President in their duties.

2.1.2.2 STABLE WORKFORCE

In 2012 our staff increased from 16 to 22. The employees that were employed in 2011 are working in the same positions as when the licence[1] was issued in July 2010 and after addressing the recommendations of the Organizational Study[11][12]. By the end of 2012 our workforce had an average experience of over 11 years with an average age of just over 42 years of age.

2.1.2.3 EXPERIENCED WORKFORCE

By the end of 2012 our workforce had an average experience of over 11 years with an average age of just over 42 years of age.

2.1.2.4 COMMITTEES

Again in 2012 committees have been instrumental in the development and refinement of company programs and procedures and at identifying ways to reduce emissions and improve safety at the facility. Committees use meeting results as an opportunity for improvement and make recommendations accordingly. In 2012 a total of 78 minuted meetings have taken place at the company compared to 67 in 2011, a 16% increase. The "Other Staff" meeting minutes being most frequent at 24:

TABLE 5: BREAKDOWN OF MEETINGS HELD

COMMITTEE	NUMBER OF MEETINGS
OTHER STAFF	24
WORKPLACE HEALTH AND SAFETY COMMITTEE	13
HEALTH PHYSICS COMMITTEE	11
MITIGATION COMMITTEE	7
EXECUTIVE COMMITTEE	7
FIRE PROTECTION COMMITTEE	6
PUBLIC INFORMATION COMMITTEE	4
PRODUCTION COMMITTEE	4
WASTE MANAGEMENT COMMITTEE	2
TOTAL	**78**

Notable improvements made by the Committees in 2012 included the introduction of a "Production Committee" dedicated to production related matters, the addition of a new position of Import and Export Specialist in order to ensure more coverage in the event of prolonged absence of the Import and Export Manager and during times of high workload, the reduction of both liquid releases and associated impact on the environment and the implementation of air emission reduction initiatives during the laser cutting process.

2.1.2.5 RADIATION PROTECTION TRAINING

Staff last received Radiation Protection Training as part of the ongoing employee-training program on November 20, 2012. The training included information with respect to natural radiation exposure, anticipated health effects from radiation exposure, tritium, proper handling of tritium throughout the facility, emissions monitoring, environmental monitoring, fire safety, security, the non-conformance process, licensing, overview of other licensees and facilities, public relations, emergency and safety features within the facility and open dialogue with a question and answer session. A written test was provided to all 21 participants. The pass criterion for the test is 75%. Results averaged 93% with no marks below 75%. Any wrong answer on the test was also discussed in detail as a group with all employees and with employees individually. Six new employees were hired and successfully received indoctrination-training complemented by Radiation Protection Training with other staff in November 2012.

2.1.2.6 FIRE EXTINGUISHER TRAINING

Yearly fire extinguisher training was performed for all staff on May 9, 2012 by the Pembroke Fire Department.

2.1.2.7 FIRE RESPONDER TRAINING

There was no training of Fire Responders in 2012. SRB and the Pembroke Fire Chief determine if this training is required if any changes have occurred at SRB's facility, if the training has not been performed for a number of years or if there are a number of new firefighters and/or volunteers that have not yet taken the training. The training of fire responders performed in 2011 included a tour of the facility and information with respect to the hazardous materials found on the site. Responders are also instructed on the various properties and precautions with respect to tritium.

2.1.2.8 HEALTH PHYSICS TRAINING

As briefly discussed in section "1.4.2.1 Health Physics Training" of this report, in 2011, it had been decided to institute more cross training amongst the members of the health physics team to ensure more coverage in the event of prolonged absence of an individual and during times of high workload in specific areas of responsibility. On December 21, 2012 a complete training matrix of specific tasks in Health Physics was reviewed during a Health Physics Meeting[14] and a plan to complete all the necessary training by September 30, 2013 was put in place.

2.1.2.9 TDG TRAINING

The Import and Export Manager received the required Transportation of Dangerous Goods Training (Recurrent) on March 15, 2012.

2.1.3 OPERATING PERFORMANCE

Throughout 2012, SRB Technologies (Canada) Inc. has conducted their operations in accordance with their safety related programs and procedures and no events have resulted in the exceedance of any action levels over 2012.

The Quality Manager performed 15 internal audits in 2012. The audits focused on all activities associated with developing, managing and implementing all company safety programs. These audits alone resulted in identifying one non-conformance and six opportunities for improvement.

In 2012, a total of 14 non-conformances and 10 opportunities for improvements were raised in several areas of the company operations. By the end of 2012, 11 of these non-conformances had been addressed and the other three are expected to be addressed by the end of 2013.

2.2 FACILITY AND EQUIPMENT

2.2.1 SAFETY ANALYSIS

The methods and procedures that are used to carry on the activity licensed are summarized in the SRB Technologies (Canada) Inc. Safety Analysis Report[28] (Revision II), dated July 4, 2006.

The document titled Review of Hypothetical Incident Scenarios[29], dated February 22, 2008 analyzes incident scenarios for the facility and determines if these were applicable considering the improvements made to the safety programs and procedures and the upgrades that have been implemented over the years. The review also ensured that the hypothetical incidents identified were credible and reflected worse case conditions.

The documents are continuously reviewed for accuracy and validity. The overall safety case remained valid and effective throughout 2012. No modification or change performed in 2012 has affected the validity of the safety case.

No new potential hazards associated with any modification or changes has been identified.

As most potential hazards associated with the facility would result from fire, the Safety Analysis[28] for the facility was validated and maintained for any modifications and changes during the review period by submitting any proposed modification for third party review of compliance with the National Building Code, 2005, the National Fire Code, 2005, and National Fire Protection Association, NFPA-801, 2008 edition: Standard for Fire Protection for Facilities Handling Radioactive Materials. Other potential hazards are prevented and mitigated through the adherence to our safety programs and procedures which are constantly assessed through an internal audit process and corrective and preventive action process.

2.2.2 PHYSICAL DESIGN

No change in physical design of the facility occurred over 2012. As most potential hazard associated with the facility would result from fire, the ability of systems, structures and components to meet and maintain their design basis is maintained through the company Maintenance Program[30] which includes periodic inspection for the facility. As required by condition 7.1 and 7.2 of CNSC operating licence NSPFOL-13.00/2015[1] and section 3.7 of the Licence Conditions Handbook LCH-SRBT-R000[2] SRB shall operate, maintain, test, and inspect the facility in accordance with the National Fire Code, 2005, and National Fire Protection Association, NFPA-801, 2008 edition.

2.2.3 FITNESS FOR SERVICE

The Maintenance Program[30] has continued to remain effective in 2012. The facility and equipment associated with the facility were maintained and operated within all manufacturers requirements. A new revision of the maintenance program is due in 2013 which will reflect improvements that have been made.

2.2.3.1 VENTILATION

The ventilation of the facility is such that the air from the facility flows to the area with greatest negative pressure in Zone 3 which has the highest potential for tritium contamination where all tritium processing takes place. This area and part of Zone 2 are kept at high negative pressure with the use of two air handling units which combined provide airflow of approximately 10,000 cubic feet per minute.

The air handling units are connected to a series of galvanized and stainless steel ducts. In addition to providing ventilation for the facility these air handling units also provide local ventilation to a number of fume hoods which are used to perform activities that have a potential for tritium contamination and exposure.

These air handling units are maintained through contract maintenance and service program with local contract providers in conjunction whereby preventive maintenance is performed by qualified staff. All records of the maintenance are kept on file. Ventilation equipment maintained in 2012 can be found in **Appendix D** of this report.

All ventilation systems were maintained in fully operational condition with no major system failures during 2012 to the requirements of our Maintenance Program[30] and operational procedures[31][32]. Equipment is maintained on a quarterly or semi-annually basis, see equipment maintenance information in **Appendix E** of this report. Equipment maintenance was performed under contract with a fully licensed maintenance and TSSA certified local HVAC contract provider. All records of the maintenance are kept on file.

2.2.3.2 STACK FLOW PERFORMANCE

Stack maintenance is performed by a third party, in order to ensure effective performance of the ventilation system and minimize airflow reductions from the beginning to the end of the maintenance cycle to ensure accuracy of results.

Pitot tubes that were installed in the stacks are maintained by a third party to ensure stack airflow are at design requirements. This essentially allows for daily stack flow verification in addition to more detailed annual stack flow verification performed by an independent third party.

Stack Performance Verification was performed on August 31, 2012 by an independent third party. The inspection confirmed that the stacks were performing to design requirements. It should be noted that the airflow on both air handling units have increased in 2012 from what they were in 2011. However the stack height and the airflow in the fume hoods continue to be checked on a regular basis.

We will continue to monitor and trend the results of the yearly Stack Performance Verification, no further action is required at this time other than continuing to perform the daily readings of the stack height and the monthly airflow checks of fume hoods. All records are kept on file.

2.2.3.3 LIQUID SCINTILLATION COUNTERS

Two liquid scintillation counters are maintained and calibrated on a yearly basis to ensure their functionality by a qualified service representative from the manufacturer of the equipment.

Both liquid scintillation counters were serviced as required at least once during 2012. Service on the units was completed March 2012. All records of the maintenance are kept on file.

2.2.3.4 PORTABLE TRITIUM-IN-AIR MONITORS

Portable tritium-in-air monitors are maintained in Zones 2 and 3. The portable units are used to determine the source of tritium that might cause an alarm threshold to be breached.

There are three portable tritium-in-air monitors available for airborne tritium monitoring at the facility. Normally two are located in Zone 3, one in Zone 2.

As required by our Radiation Safety Program[15] all tritium-in-air monitors were calibrated at least once during 2012, all three now in service were last calibrated in July, September and November 2012. All records of the maintenance are kept on file.

2.2.3.5 ROOM TRITIUM-IN-AIR MONITORS

The ambient air in Zones 2 and 3 is continuously monitored using stationary tritium-in-air monitors.

There are four stationary tritium-in-air monitors available for airborne tritium monitoring at the facility. Three monitors are strategically located in Zone 3; one in the Rig Room where gaseous tritium light sources are filled and sealed, one in the Laser Room where a laser is used to cut and seal small gaseous tritium light sources and inspected, and one in the Tritium Laboratory where tritium is transferred from bulk supply containers to filling containers. One stationary tritium-in-air monitor is located in Zone 2 in the Assembly Area, where gaseous tritium light sources are pre-packed in preparation for shipping or installed into device housings.

As required by our Radiation Safety Program[15] all tritium-in-air monitors were calibrated at least once during 2012 in November and December 2012. All records of the maintenance are kept on file.

2.2.3.6 STACK MONITORING EQUIPMENT

Stack monitoring equipment is incorporated for each of two main air-handling units. For each air-handling unit, the monitoring equipment includes:

- A tritium-in-air monitor connected to a real-time recording device.
- A bubbler system for discriminately collecting HTO and HT.
- A flow measurement device with elapsed time, flow rate and volume.

As required by our procedures[33], each tritium-in-air monitor connected to the real-time recording device (chart recorder) was calibrated at least once in 2012. The bulk stack monitor was calibrated in June 2012 and the rig stack monitor was calibrated in December 2012. The chart recorder itself was calibrated at least every three months during 2012 for a total of four times in 2012, in February, May, August and November. All records of the maintenance are kept on file.

Filters for the bubbler system and for both tritium-in-air monitors connected to the chart recorder are changed regularly and records are kept on file.

As the calibration of a flow measurement device is only valid for one year, each device was replaced a year after being in place in March 2012.

Third party validation was not completed in 2012 as one was completed in 2011. Further third party validations are to be performed every two years and will therefore be performed in 2013.

2.2.3.7 WEATHER STATION

Maintenance of the weather station to the specifications of the manufacturer was performed on March 7, 2012. All records of the maintenance are kept on file.

2.3 CORE CONTROL PROCESSES

2.3.1 RADIATION PROTECTION

2.3.1.1 DOSIMETRY SERVICES

During 2012, SRB maintained a Dosimetry Service License[34], 11341-3-10.1, for the purpose of providing in-house dosimetry services for the staff of SRB and contract workers performing services for SRB where there existed potential exposure for uptake of tritium.

Dosimetry results were submitted on a quarterly basis to Health Canada in a timely fashion for input to the National Dose Registry for 24 individual staff members. Two employees were only employed at SRB for a part of the year, one was hired on a temporary basis and the other was a summer student.

SRB participated in the annual Tritium Urinalysis Performance Test sponsored by the National Calibration Reference Centre for Bioassay, Radiation Surveillance and Health Assessment Division, Radiation Protection Bureau of Health Canada. The participation is a regulatory requirement for Dosimetry Service Providers.

SRB received the Certificate of Achievement for successful participation in the Tritium Urinalysis Performance Test from the National Calibration Reference Centre for Bioassay and In Vivo Monitoring for the year 2012.

SRB also submits, to the CNSC, an Annual Compliance Report (ACR)[35] for Dosimetry Service License[34], 11341-3-10.1.

2.3.1.2 STAFF RADIATION EXPOSURE

SRB, through the Dosimetry Service License[34], 11341-3-10.1, assesses the radiation dose to its employees and to contract workers who may have exposure to tritium.

For SRB staff members, all are classified as Nuclear Energy Workers. All staff members participate in the dosimetry program. Persons who work in Zones 1 and 2 provide bioassay samples for tritium concentration assessment on a bi-weekly frequency due to the very low probability of uptake of tritium. Persons assigned to work in Zone 3 provide bioassay samples on a weekly frequency due to the significant probability of uptake of tritium.

The assessment of dose to personnel, due to tritium uptake, is performed in accordance with the Health Canada Guidelines for Tritium Bioassay and CNSC Regulatory Standard S-106[26], revision 1 titled Technical and Quality Assurance Requirements for Dosimetry Services.

The maximum annual dose received by any person employed by SRB is well within the regulatory limit for a nuclear energy worker of 50.0 mSv per calendar year. The maximum annual staff dose was 0.80 mSv with an average for all staff of only 0.11 mSv. Collective dose was also low at 2.75 mSv. The table found in **Appendix F** of this report provides the radiological occupational annual dose data for 2012. The table provides a comparison of dosimetry results for the years 1997 to 2012. Any comparison of the dose in 2007 and 2008 to previous years is not informative or appropriate as the facility only processed tritium until January 31, 2007, and only resumed processing tritium in July of 2008.

2.3.1.3 ACTION LEVELS FOR DOSE AND BIOASSAY LEVEL

Section 3.8 of the Licence Conditions Handbook LCH-SRBT-R000[2] for licence NSPFOL-13.00/2015[1] provides the same information:

TABLE 6: ACTION LEVELS FOR EFFECTIVE DOSE TO WORKER

PERSON	PERIOD	ACTION LEVEL (mSv)
NUCLEAR ENERGY WORKER	QUARTER OF A YEAR	2.6
	1 YEAR	5.0
	5 YEAR	25.0
PREGNANT NUCLEAR ENERGY WORKER	BALANCE OF THE PREGNANCY	3.5

TABLE 7: ACTION LEVELS FOR BIOASSAY RESULT

PARAMETER	ACTION LEVEL
BIOASSAY RESULT	1,000 Bq/ml FOR ANY PERIOD

There were no instances at any time in 2012 whereby a staff member's tritium body burden exceeded the action level of 1,000 Bq/ml.

The highest annual staff dose for the year was 0.80 mSv, therefore none of the staff members exceeded the action levels for effective dose to worker.

It should be noted that in response to CNSC Staff's comments on RPD-SRBT-2011-01-R2 found in Inspection Report No. RPD-SRBT-2011-01[36] that SRB has undertaken a review of complete operating conditions and of the "Licence Limit, Action Levels and Administrative Limit" document[37] to ensure that action levels are adequate to detect the emergence of a potential loss of control of the Radiation Protection Program.

As a result, in early 2013 SRB expects to propose revised Action Levels for dose to CNSC Staff that are lower than those currently observed.

2.3.1.4 ADMINISTRATIVE LIMITS FOR DOSE AND BIOASSAY LEVEL

SRB has in place administrative limits for effective dose to worker and bioassay result:

TABLE 8: ADMINISTRATIVE LIMITS FOR DOSE AND BIOASSAY LEVEL

PARAMETER	ADMINISTRATIVE LEVEL
EFFECTIVE DOSE TO WORKER	4 mSv/YEAR 2.0 mSv/QUARTER
BIOASSAY RESULT	500 Bq/ml FOR ANY PERIOD IN ZONE 3 100 Bq/ml FOR ANY PERIOD IN ZONE 1 OR 2

At no time in 2012 did Zone 3 staff bioassay sample results exceed the administrative limit of 500 Bq/ml.

The administrative limit for Zone 2 or Zone 1 staff bioassay sample results is 100 Bq/ml.

The highest annual staff dose for the year was 0.80 mSv, therefore none of the staff members exceeded any of the administrative levels for effective dose to worker.

It should be noted that in response to CNSC Staff's comments on RPD-SRBT-2011-01-R2 found in Inspection Report No. RPD-SRBT-2011-01[36] that SRB has undertaken a review of complete operating conditions and of the "Licence Limit, Action Levels and Administrative Limit" document[37] to ensure that action levels are adequate to detect the emergence of a potential loss of control of the Radiation Protection Program.

As a result, in early 2013 SRB expects to propose revised Administrative Limits for dose to CNSC Staff that are lower than those currently observed.

2.3.1.5 CONTAMINATION CONTROL

Tritium contamination control is maintained by assessment of non-fixed tritium contamination levels throughout the facility by means of swipe method and liquid scintillation counting of the swipe material. SRB has in place the following administrative surface contamination limits:

TABLE 9: ADMINISTRATIVE SURFACE CONTAMINATION LIMITS

ZONE	SURFACES	ADMINISTRATIVE SURFACE CONTAMINATION LIMITS
1	ALL SURFACES	4.0 Bq/cm^2
2	ALL SURFACES	4.0 Bq/cm^2
3	ALL SURFACES	40.0 Bq/cm^2

An overview of swipe monitoring results for 2012 has been tabulated and is included in **Appendix G** of this report. A total of 7,940 swipes were performed in various work areas in 2012.

The data collected shows that 332 swipes were taken in Zone 1 resulting in a pass rate of 97.29% below the administrative level of 4 Bq/cm^2.

The data collected shows that 1,728 swipes were taken in Zone 2 resulting in a pass rate of 93.63% below the administrative level of 4 Bq/cm^2.

The data collected shows that 5,880 swipes were taken in Zone 3 resulting in a pass rate of 94.44% below the administrative level of 40 Bq/cm^2.

All swipe results are reported to the area supervisors. The area supervisor would review the results to determine where extra cleaning effort is necessary.

A comparison of the data for 2012 and 2011 was made:

TABLE 10: 2012 AND 2011 PASS/FAIL RATIO COMPARISON

ZONE	2012 PASS/FAIL RATIO	2011 PASS/FAIL RATIO
1	97.29%	96.64%
2	93.63%	90.68%
3	94.44%	90.65%

As expected the pass rate is higher in 2012 than it was in 2011. During 2011, Health Physics Staff reviewed historical results and set parameters for altering the frequency of swipes, the locations of the swipes and number of locations to be swiped based on the results analyzed. As part of this exercise Health Physics Staff also set a quarterly frequency for this review to be performed. As a result, many additional areas were initially identified in 2011 as possible areas with contamination.

During 2012, quarterly Health Physics Committee meetings[38][39][40][41] were held to review swipe results. The purpose of the review was to determine if the sampling locations chosen are effective in identifying areas where contamination may be present. The sampling locations were methodically compared against each other and approximately 20% of locations with the highest pass-rate for the quarter, which were the areas least likely to exceed the administrative limits, were replaced by new locations selected at the discretion of the Health Physics Committee.

As a result and as expected the pass rate is slightly higher in 2012 than it was in 2011 as that was the year that the new swipe locations were initially implemented which would result in the Health Physics staff being able to identify more areas with contamination.

2.3.1.6 DISCUSSION OF THE SIGNIFICANCE OF THE RESULTS FOR ALL DOSE CONTROL DATA

Reductions in maximum, average and collective dose in 2012 compared to 2011 are attributable to the ongoing training and awareness of the staff in respect to the effect of their activities on their dose, for example changing gloves and other protective clothing more frequently, diligently working with potentially contaminated items under fume hood, promptly segregating contaminated items from work areas and transferring them to waste, etc.

The higher doses in 2011 were also attributed to a single customer order, which was labour intensive with an increased reject rate and produced over a 14 week period. During this 14 week period approximately 2,300 GBq's were released on average weekly as opposed to 618 GBq's on average during the other weeks of the year in 2011. No such orders were processed in 2012 thereby also contributing to the reduction in maximum, average and collective dose.

2.3.1.6.1 MAXIMUM DOSE

As expected in 2012 and as previous years, the highest dose received by any employee was to an individual working primarily in Zone 3 where tritium is processed.

The maximum dose to an employee in 2012 was 0.80 mSv and is 0.35 mSv lower than the maximum dose to an employee in 2011 and 0.08 mSv lower than the maximum dose to an employee in 2010.

In 2012, the maximum dose to an employee working primarily in Zone 2 was 0.13 mSv and is 0.31 mSv less than the maximum dose to an employee working primarily in Zone 2 in 2011.

In 2012, the maximum dose to an employee working primarily in Zone 1 was 0.04 mSv and is 0.01 mSv less than the maximum dose to an employee working primarily in Zone 1 in 2011.

In 2012, the maximum dose to an employee working primarily in administration was 0.08 mSv and is 0.16 mSv less than the maximum dose to an employee working primarily in administration in 2011. This decrease is not unexpected as there were less repairs and maintenance performed in Zone 3 by individuals primarily working in administration.

2.3.1.6.2 AVERAGE DOSE

The average dose for all staff in 2012 was 0.11 mSv and is 0.14 mSv lower than the average dose to all staff in 2011.

The average dose to employees working primarily in Zone 3 in 2012 was 0.58 mSv and is 0.29 mSv lower than the average dose to employees working primarily in Zone 3 in 2011.

The average dose to employees working primarily in Zone 2 in 2012 was 0.03 mSv and is 0.08 mSv lower than the average dose to employees working primarily in Zone 2 in 2011.

The average dose to employees working primarily in Zone 1 in 2012 was 0.02 mSv and is the same as the average dose to employees working primarily in Zone 1 in 2011.

The average dose to employees working primarily in administration in 2012 was 0.06 mSv and is 0.07 mSv lower than the average dose to employees working primarily in administration in 2011. This decrease is not unexpected as there were less repairs and maintenance performed in Zone 3 by individuals primarily working in administration.

2.3.1.6.3 COLLECTIVE DOSE

The collective dose for the staff in 2012 was 2.75 mSv and is 1.72 mSv lower than the collective dose to staff in 2011 despite an increase in tritium processed of 39% in 2012 compared to 2011.

2.3.1.7 DISCUSSION ON RADIATION PROTECTION PROGRAM EFFECTIVENESS

The Radiation Protection Program has been effective in protecting the prevention of unreasonable risk to the health and safety of persons.

2.3.1.7.1 STAFF DOSE

The Radiation Protection Program prescribed measures to ensure that staff doses are kept to levels as low as reasonably acceptable.

The Radiation Protection Program requires that room Tritium-In-Air monitors are used to assess ambient air in Zones 2 and 3 with alarm threshold that ensure that staff are evacuated from work areas with concentrations above normal in order to reduce staff dose. Action is taken accordingly to reduce or eliminate source of tritium exposure and in ensuring staff dose are kept as low as reasonably achievable.

The Radiation Protection Program requires that Portable Tritium-In-Air monitors are used by staff to identify localized sources of tritium exposure in Zones 2 and 3. Action is taken accordingly to reduce or eliminate localized source of tritium exposure and in ensuring staff dose are kept as low as reasonably achievable.

The Radiation Protection Program requires that surface contamination is assessed by liquid scintillation counters at frequent enough intervals and based on results actions are taken to ensure levels are kept as low as reasonably achievable. The actions include an informal review of work practices by the Human Protection Coordinator and Department Supervisor where adjustments are made as deemed necessary. Actions contribute in ensuring staff dose are kept as low as reasonably achievable.

The Radiation Protection Program requires that staff dose is assessed by bioassay testing of staff urine measured by liquid scintillation counters at frequent enough intervals and based on results actions are taken to ensure levels are kept as low as reasonably achievable. The actions include an informal review of work practices by the Human Protection Coordinator and Department Supervisor where adjustments are made as deemed necessary.

The Radiation Protection Program requires that equipment used is maintained and calibrated regularly to ensure the adequacy of results.

2.3.1.7.2 PUBLIC DOSE

The Radiation Protection Program prescribed measures to ensure that public dose are kept to levels as low as reasonably acceptable.

The Radiation Protection Program requires that an Environmental Monitoring Program is in place to assess the amount of tritium released to the environment and to formally calculate the dose to the public. Results are reviewed on a quarterly basis by three members of the Health Physics Team. The actions from this review may result in changes in work practices as deemed necessary and contribute in ensuring public dose are kept as low as reasonably achievable.

The Radiation Protection Program requires that a bubbler system is in place to formally tabulate emissions from the facility. The results are verified on a weekly basis by six employee members including four members of the health physics team and production supervisors for each Zone 2 and Zone 3 where tritium may be released. The actions from this review may result in changes in work practices as deemed necessary and contribute in ensuring public dose are kept as low as reasonably achievable.

The Radiation Protection Program requires that a real-time recording device (chart recorder) is also in place to monitor emissions from the facility as they take place. The results are verified regularly on a daily basis by the production supervisor for Zone 3 where tritium is processed. The actions from this review may result in changes in work practices as deemed necessary and contribute in ensuring public dose are kept as low as reasonably achievable.

The Radiation Protection Program requires that equipment used is maintained and calibrated regularly to ensure the adequacy of results.

2.3.1.8 SUMMARY OF RADIATION PROTECTION PROGRAM PERFORMANCE

Safety Performance Objectives have been set for the upcoming year based on historical performance in 2012 and previous years.

2.3.1.8.1 AIR EMISSION TARGET

Despite a predicted increase in production of 12% in 2012, Senior Management had committed to observe the same air emission (HTO + HT) target that was set for 2011, 642 GBq's released weekly (HTO + HT).

The increase in production was higher than the anticipated 12% with an increase of just over 39%.

Despite this increase SRB still managed to meet the air emission target of 642 GBq per week (HT + HTO) by releasing an average of 575 GBq per week (HT + HTO), approximately 10% below the target that was set for 2012.

The decrease in emissions was directly attributed to initiatives taken by the mitigation committee and procedure improvements.

Despite a predicted minimum increase in production of 100% in 2013 over 2012, Senior Management has committed to an emission target only 90% higher than the 575 GBq per week (HT + HTO) that was released per week in 2012, for a new target of 1,093 GBq's per week (HT + HTO) in 2013. This only represents 14% of our weekly Action Levels of 7,753 GBq's (HT + HTO).

We expect to achieve this target by ongoing training and continuing to raise awareness of the staff in respect to the effect of their activities on air emissions.

2.3.1.8.2 OCCUPATIONAL DOSE TARGET

Despite a predicted increase in production of 12% in 2012, Senior Management had committed to maintain the average occupational dose to all staff at 0.25 mSv for the year.

The increase in production was higher than the anticipated 12% with an increase of just over 39%.

Despite this increase SRB still managed to meet the average occupational dose to all staff target at 0.25 mSv for the year by achieving an average occupational dose to all staff for the year of 0.11 mSv, approximately 56% below the target that was set for 2012.

As discussed in section "2.3.1.6 Discussion of the significance of the results for all dose control data" of this report the reduction in average dose is attributable the ongoing training and awareness of the staff in respect to the effect of their activities on their dose.

Despite a predicted minimum increase in production of 100% in 2013 over 2012, Senior Management has committed to an average occupational dose target only 90% higher than the 0.11 mSv achieved in 2012, for a new target of 0.21 mSv in 2013. This only represents 4.2% of our yearly Action Level of 5.0 mSv.

We expect to achieve this target by ongoing training and continuing to raise awareness of the staff in respect to the effect of their activities on air emissions.

2.3.1.9 SUMMARY OF CONTINUOUS IMPROVEMENTS UNDER ALARA PERFORMANCE

As prescribed in the Radiation Safety Program[15] ALARA is a concept that is also discussed during staff, committee and management meetings as well as in training sessions.

As discussed in section "2.1.2.4 Committees" of this report in 2012 committees have continued to be instrumental in the development and refinement of company programs and procedures and at identifying ways to reduce emissions and improve safety at the facility.

Committees use meeting results as an opportunity for improvement and make recommendations accordingly.

In 2012 a total of 78 minuted meetings have taken place at the company compared to 67 in 2011, a 16% increase. The "Other Staff" meeting minutes being most frequent at 24:

TABLE 5: BREAKDOWN OF MEETINGS HELD

COMMITTEE	NUMBER OF MEETINGS
OTHER STAFF	24
WORKPLACE HEALTH AND SAFETY COMMITTEE	13
HEALTH PHYSICS COMMITTEE	11
MITIGATION COMMITTEE	7
EXECUTIVE COMMITTEE	7
FIRE PROTECTION COMMITTEE	6
PUBLIC INFORMATION COMMITTEE	4
PRODUCTION COMMITTEE	4
WASTE MANAGEMENT COMMITTEE	2
TOTAL	**78**

Notable improvements made by the Committees in 2012 included the introduction of a "Production Committee" dedicated to production related matters, the addition of a new position of Import and Export Specialist in order to ensure more coverage in the event of prolonged absence of the Import and Export Manager and during times of high workload, the reduction of both liquid releases and associated impact on the environment and the implementation of air emission reduction initiatives during the laser cutting process.

2.3.1.10 SUMMARY OF RADIATION DEVICE AND INSTRUMENTATION PERFORMANCE

All instruments in 2012 continued to be maintained in a state of safe operation.

As discussed in detail in section "2.2.3 Fitness for service" of this report the Maintenance Program[30] has continued to remain effective in 2012. The facility and equipment associated with the facility were maintained and operated within all manufacturers' requirements and as prescribed by the Radiation Safety Program[15] to ensure that all regulatory requirements were met.

2.3.1.11 SUMMARY OF INVENTORY CONTROL MEASURES

A number of Inventory Control Measures are in place to ensure that tritium on site does not exceed the possession limit prescribed by licence NSPFOL-13.00/2015[1].

Procedure RSO-009[42] (Revision H) titled "Tritium Inventory Management" is specifically used to assess tritium inventory on site.

Tritium on site is found in:

- Bulk containers, U-beds and tritium traps
- New light sources
- The exit signs for our facility
- New product that contain light sources
- Work in progress
- Waste
- Expired light sources taken out of product
- Products that contain expired light sources
- Non-conforming product

2.3.2 CONVENTIONAL HEALTH AND SAFETY

2.3.2.1 JURISDICTION

SRB is subject to Federal Jurisdiction thus, Part II of the Canada Labour Code and its Occupational Health and Safety regulations.

2.3.2.2 INDUSTRIAL HEALTH AND SAFETY PROGRAM

Being under federal jurisdiction in 2012, the industrial Health and Safety Program for the SRB facility was compliant with the requirements of the Canada Labour Code Part II and its regulations.

2.3.2.3 WORKPLACE HEALTH AND SAFETY COMMITTEE

In accordance with Section 135(1) of the Canada Labour Code Part II (CLC Part II) SRB Technologies (Canada) Inc. maintains a Workplace Health and Safety Committee.

The committee is comprised of three representatives. The representatives are required to meet no less than 9 times per year as required under section 135(10) of the CLC Part II.

The Workplace Health and Safety Committee has met 13 times in 2012 at a rate of one meeting per month with an additional meeting held in March 2012. All minutes are kept on file.

2.3.2.4 MINOR INCIDENTS AND LOST TIME INCIDENTS

There were no major incidents to report in 2012. There was however one minor incident where an employee needed medical care at the outpatient department at the local hospital as a result of an injury that occurred while using a utility knife during the disassembling of expired signs. All the required documents were sent to Workplace Safety And Insurance Board (WSIB) and an investigation report is kept on file. This incident did not require any lost time.

2.3.2.5 VISITS FROM HUMAN RESOURCES AND SKILLS DEVELOPMENT CANADA (HRSDC)

There has been no facility visits by a Health and Safety Officer from HRSDC in 2012.

2.3.2.6 REPORTING

In accordance with Section 15.10 (1) of Part XV of the Canada Occupational Health and Safety Regulations the Employer's Annual Hazardous Occurrence Report was submitted to HRSDC as required.

In accordance with Section 135.2(1) (g) of Part II of the Canada Labour Code (Occupational Health and Safety) the Work Place Health and Safety Committee Report was submitted to HRSDC as required.

2.3.3 ENVIRONMENTAL PROTECTION

This section of the report will provide environmental and radiological compliance including results from environmental and radiological monitoring, assessment of compliance with licence limits, historical trending where appropriate, and quality assurance/quality control results for the monitoring.

SRB Technologies (Canada) Inc. developed an Environmental Monitoring Program[43] that provides data for site-specific determination of tritium concentrations along the various pathways for exposure probabilities to the public due to the activities of the operations.

Most samples are analyzed and collected by a third party contracted by SRB.

On September 6, 2012 CNSC Staff collected a number of environmental samples with our third party for comparison.

2.3.3.1 PASSIVE AIR SAMPLERS

A total of 40 passive air samplers are located throughout a two kilometer radius from the SRB facility, in eight sectors, ranging in distance at 250, 500, 1,000, and 2,000 meters.

The samples were collected on a monthly basis by SRB and a third party laboratory for tritium concentration assessment by the third party laboratory.

Several duplicate samplers are included for quality assurance purposes. Several samplers are also located specifically to provide data for assessment of the defined critical group members.

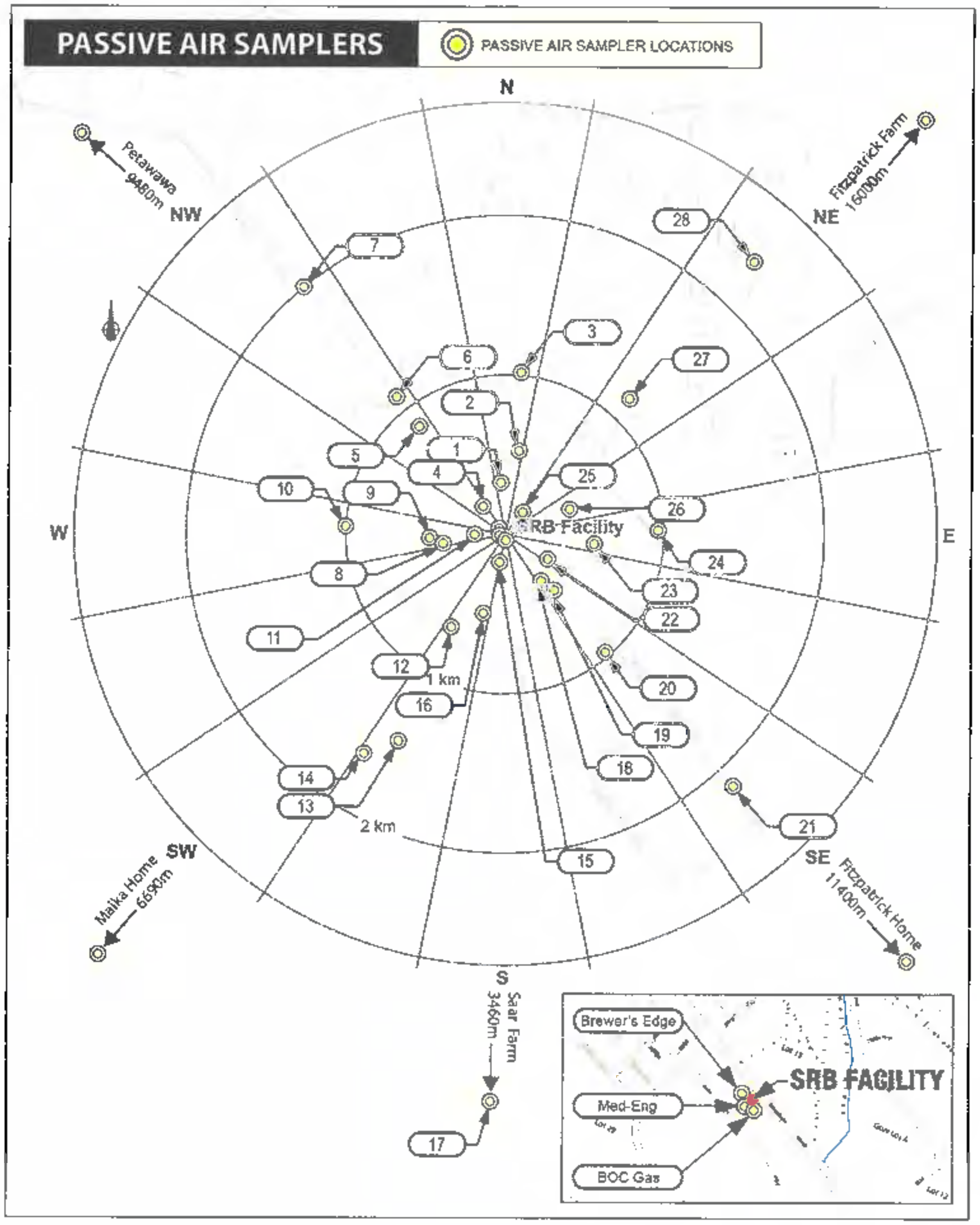
Passive air sampler results for 2012 can be found in the table in **Appendix H** of this report.

The table shows the HTO concentrations for the samplers located in each of the eight compass sectors. The correlation for the results of the samplers as they increase in distance from the facility is quite evident. The patterns of the lines are very similar in most cases.

Tritium oxide in air concentrations for each month of 2012 are graphically represented for each of eight compass sectors and for each of the distances from the facility **Appendix** I of this report.

The Passive Air Samplers represent tritium exposure pathways for inhalation and skin absorption and used in the calculations for critical group annual estimated dose for 2012.

FIGURE 2: PASSIVE AIR SAMPLER LOCATIONS



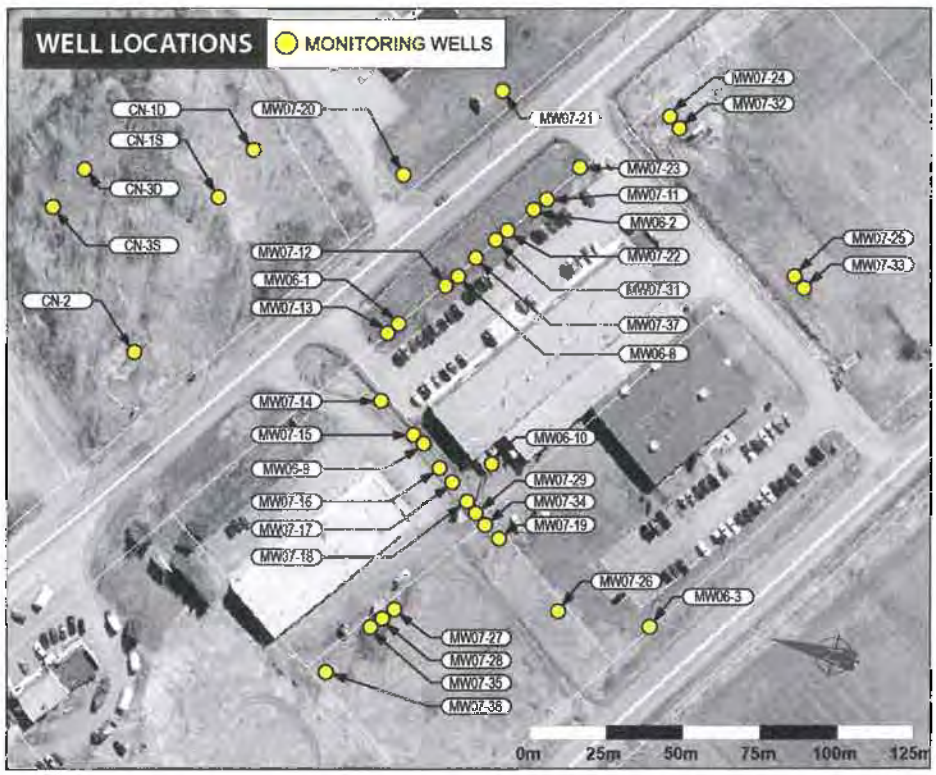
2.3.3.2 WELL MONITORING RESULTS

Our groundwater studies and ensuing reports[44][45][46][47] now includes monitoring data from 57 wells drilled at different depths in the stratigraphy including 37 wells located within approximately 150 meters of our stacks. Well monitoring results can be found in **Appendix J** of this report.

2.3.3.2.1 MONITORING WELLS

32 of these wells are monitored on a monthly basis and another five located further from the facility are monitored every four months.

FIGURE 3: LOCATIONS OF MONITORING WELLS



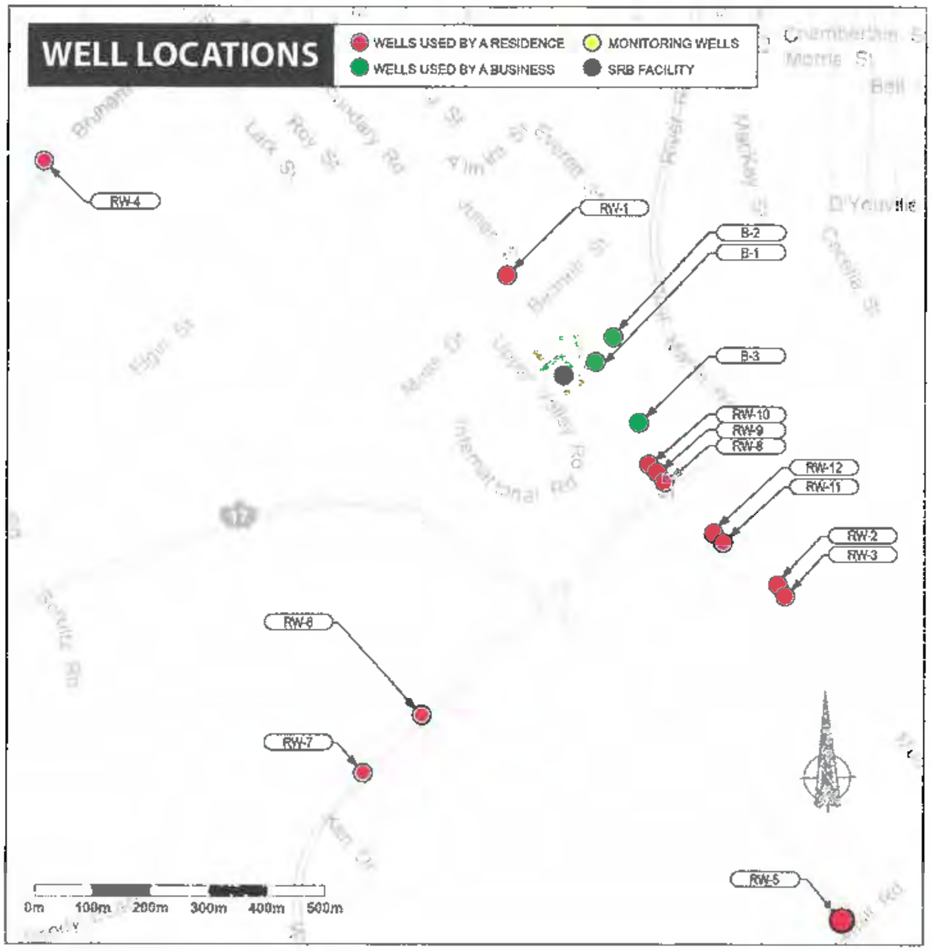
Of the 37 monitoring wells, the concentrations of only four wells now exceed the current Ontario Drinking water Guideline. In 2011 the concentrations of five wells exceeded the current Ontario Drinking water Guideline and six in 2010.

These four wells (MW06-1, MW06-10, MW07-13 and MW07-18) are located on the SRB site within 50 meters of the stack and showed either decreasing or steady concentrations in 2012. The highest tritium concentration in any well, remains in monitoring well MW06-10 which is located in the stack area on the SRB property. The average concentrations in all monitoring wells combined have decreased by 24% since 2009.

2.3.3.2.2 RESIDENTIAL AND BUSINESS WELLS

All water supply wells located in the vicinity of SRB's facility have been identified, we have also assessed the drinking water usage for each of these wells and have been monitoring them at least every four months or at a frequency requested by the owner. The results were promptly reported to the members of the public and posted on the web site.

FIGURE 4: LOCATIONS OF RESIDENTIAL AND BUSINESS WELLS



The highest tritium concentration in a well used for drinking water remains in the water supply well B-1 which is located closest to SRB and is being used by individuals working for a business for some of their drinking water intake.

Tritium concentrations in this well in 2012 averaged 869 Bq/L, which is approximately 12% of the Ontario Drinking Water Standard of 7,000 Bq/L. This concentration is lower than 2011 at 1,063 Bq/L and is significantly lower than what it was in April 2009 at 2,063 Bq/L.

Average concentrations over 2012 for other wells used for drinking water ranged from 3 Bq/L to 210 Bq/L, depending on their location and distance in relation to the stacks.

Generally, tritium concentrations for all residential and business wells have showed either decreasing or steady concentrations in 2012. The average concentrations in all wells used for drinking water combined have decreased by 41% since 2009.

2.3.3.2.3 PREDICTED GROUNDWATER CONDITIONS

While most of the released tritium in the air is dispersed, some of it will reach the soil through dry and wet deposition. Infiltrated precipitation water brings tritium into the groundwater below it. The deposition of tritium on and around the facility from air emissions and resulting soil moisture and standing water are the sole direct contributor to tritium found in groundwater.

Groundwater is affected by the percolation of soil moisture and standing water from the surface.

Current concentrations in the wells are expected to eventually gradually decrease once all historical emissions have flushed through the system and/or decayed with some influence of higher concentrations in nearby wells from lateral underground water flow. This will be confirmed by continuous monitoring of the existing network of wells. The rate at which this decrease will occur is dependent on the level and speed of recharge of the groundwater on and around the SRB facility.

The level and speed of recharge of groundwater differs drastically depending on the geology, surface topography, surface vegetation, soil characteristics, precipitation and climate. In turn the level and speed of recharge can differ from one monitoring well to another.

The tritium concentrations in groundwater are consistent with historical emission levels. Groundwater samples that are greater than those expected from air dispersion were affected by water draining from roof downspouts or from snow storage areas in which water or snow would have historically developed with higher tritium levels in closer proximity to the stacks. The concentrations measured in the well are dependent on the level and speed of recharge for a well and the depth of the well.

Therefore the slower the speed of recharge of a well, the older the emissions the well will be reflecting in its tritium concentration. It will take longer for soil moisture from the surface to reach the sampling depth of a well with a slower speed or recharge.

A deeper well will be reflecting older emissions than would a shallower well. In a deeper well soil moisture from the surface has to travel much longer to reach the sampling depth of the well.

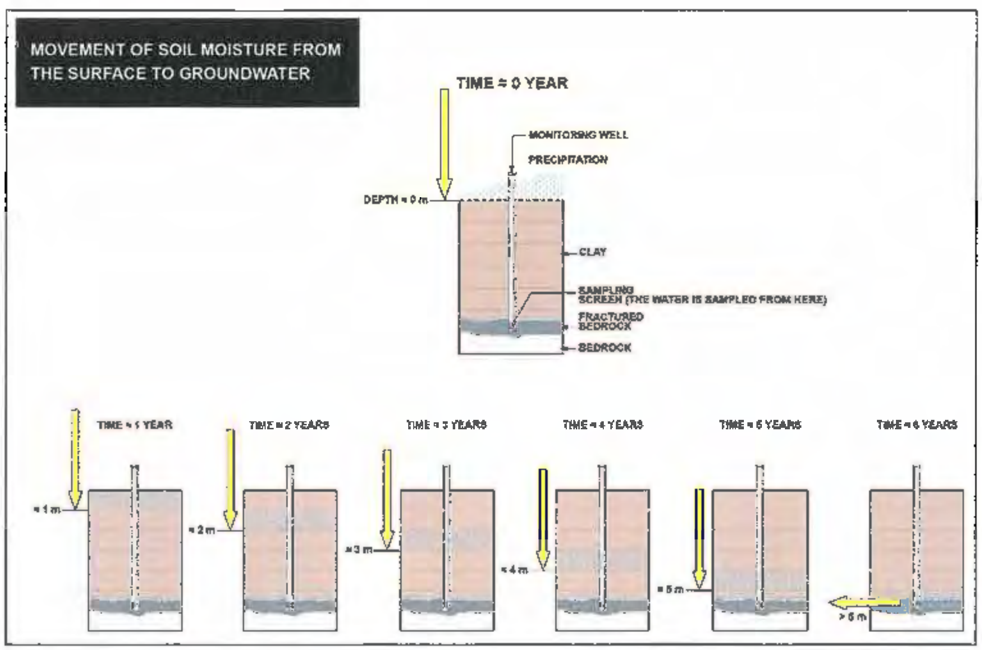
Bedrock was found to range between 5.2 to 7.5 meters below ground in the vicinity of SRB, vertical infiltration rate in clay is approximately 1 meter per year. Therefore it takes at least 5.2 years for tritium concentrations in soil moisture at the surface to be reflected in the wells.

The continued use of the existing release limit continues to ensure the sustainable use of groundwater resources and the protection of the environment and the public. We are confident that the release limit has been developed with sufficient data and conservatism. Furthermore the release limit has been validated by comparing the concentrations in downspouts and precipitation monitors to those estimated by our model.

Concentrations in the future will be within those predicted by the model and concentrations will eventually decrease once all historical emissions have flushed through the system and/or decayed with some influence of higher concentrations in nearby wells from lateral underground water flow. The rate of decrease for individual wells will be dependent on its level and speed of recharge.

The Muskrat River and drinking water supply wells are not at risk of exceeding the Ontario Drinking Water Guideline.

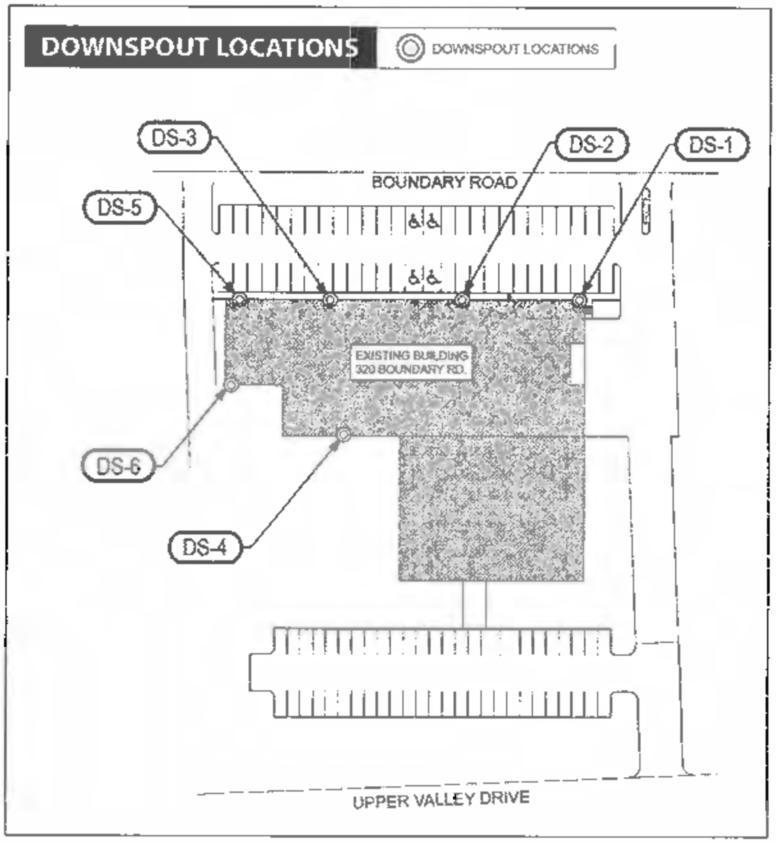
FIGURE 5: MOVEMENT OF SOIL MOISTURE FROM THE SURFACE TO GROUNDWATER



2.3.3.3 RUN OFF FROM DOWNSPOUTS

Tritium concentrations are measured in all facility downspouts. The samples were collected periodically by SRB for tritium concentration assessment.

FIGURE 6: BUILDING DOWNSPOUTS



Runoff from downspouts was collected during seven precipitation events throughout 2012. Average results per downspout in 2012 ranged between 118 Bq/L (DS-1) and 1,000 Bq/L (DS-6).

The average for all six downspouts in 2012 is 385 Bq/L compared to 492 Bq/L in 2011.

Runoff monitoring results can be found in **Appendix K** of this report.

2.3.3.4 PRECIPITATION SAMPLER RESULTS

Eight precipitation monitors are installed near existing air monitoring stations that are located approximately 250 m from the facility.

FIGURE 7: MAP OF AIR AND PRECIPITATION MONITORING STATIONS

The samples were collected on a monthly basis by SRB and a third party laboratory for tritium concentration assessment by the third party laboratory. Average results in 2012 ranged between 29 Bq/L (sampler 25P) and 81 Bq/L (sampler 8P). The average for all eight precipitation monitors in 2012 is 55 Bq/L comparable to 76 Bq/L in 2011. Precipitation monitoring results and comparisons can be found in **Appendix** L of this report.

The tritium concentration in precipitation monitors are generally lower than the concentrations that are expected. This means that the model used to define the estimated values was adequate in overestimating the impact from the emissions on soil moisture and in turn protective of groundwater. The overestimation can also be partly attributed to the fact that SRB does not process tritium during the occurrence of any type of precipitation. Having lower values in the precipitation monitors than the concentrations that were expected by the model can provide further evidence that concentration in soil moisture are lower when no processing takes place during the occurrence of precipitation.

2.3.3.5 WATER LEVEL MEASUREMENTS

The water levels are measured in monitoring wells on a monthly basis prior to purge and sampling. Analysis of this data shows consistent trends from year to year when comparing season to season.

Compilation of water level measurements for 2012 can be found in **Appendix M** of this report.

2.3.3.6 PRODUCE MONITORING RESULTS

Produce from a local market and from local gardens were sampled once in 2012. The samples were collected by a third party laboratory for tritium concentration assessment by the third party laboratory. The results were reported to the members of the public and posted on the web site. This data is also used in the calculations for critical group annual estimated dose for 2012.

Produce monitoring results and locations for 2012 can be found in **Appendix N** of this report with graphs comparing 2012, 2011, 2010, 2009, 2008, 2007 and 2006 results. Tritium concentrations in produce for 2012 on average are lower to those in 2011.

2.3.3.7 MILK MONITORING RESULTS

Milk from a local producer and from a local distributor is sampled every four months. The samples were collected by SRB and a third party laboratory for tritium concentration assessment by the third party laboratory. This data is also used in the calculations for critical group annual estimated dose for 2012.

Milk monitoring results and locations for 2012 can be found in **Appendix O** of this report. Tritium concentrations in milk for 2012 on average are lower to those in 2011.

2.3.3.8 WINE MONITORING RESULTS

Wine from a local producer is sampled once a year. The sample was collected by a third party laboratory for tritium concentration assessment by the third party laboratory. The results were promptly reported to the members of the public.

Wine monitoring results for 2012 can be found in **Appendix P** of this report with a graph comparing results from 2006 to 2012 results. Tritium concentrations in wine in 2012 are lower to those in 2011.

2.3.3.9 RECEIVING WATERS MONITORING RESULTS

Samples of receiving waters downstream from SRB in the Muskrat River were collected regularly. Samples were collected by SRB and a third party laboratory for tritium concentration assessment by the third party laboratory.

Receiving waters monitoring results for can be found in **Appendix Q** of this report. Tritium concentrations in receiving waters in 2012 are near the minimum detection limit and comparable to those in 2011.

2.3.3.10 WEATHER DATA

A weather station near the facility collects data on a continuous basis. See weather data for 2012 in **Appendix R**.

2.3.3.11 OTHER SAMPLING RESULTS

Throughout 2012, SRB Technologies (Canada) Inc. performed additional sampling above those described in our Environment Monitoring Program[43].

2.3.3.11.2 SEWAGE MONITORING RESULTS

Sewage samples were taken by Pollution Control Plant staff on a daily basis and provided to a third party laboratory for tritium concentration assessment to quantify any possible impact on sewage plant workers and the environment.

Maximum concentration in sewage in 2012 was 32 Bq/L, a decrease from the maximum in 2011 of 54 Bq/L, a decrease from the maximum in 2010 of 85 Bq/L and again a decrease from the maximum in 2009 of 138 Bq/L. Average concentration in sewage in 2012 was just over 16 Bq/L, a decrease from the average in 2011 of 25 Bq/L, a decrease from the average in 2010 of 30 Bq/L and again a decrease from the average in 2009 of 63 Bq/L.

Each year the maximum and average concentration have decreased, demonstrating that the measures we have taken when releasing liquid to the sewer system have been successful in reducing concentration in sewage.

Results continue to show that workers are not at risk as a result of the exposure to tritium levels associated with releases to the sewer from SRB. It has therefore been determined in a Health Physics meeting[48] held on July 13, 2012 that there is little value in continuing to contract a third party to continue analyze sewage and it was agreed that the practice should be discontinued.

Sewage monitoring results can be found in **Appendix S** of this report.

2.3.3.12 PUBLIC DOSE FOR 2012

The calculation method used to determine the dose to the 'Critical Group' as defined in the SRB Environment Monitoring Program[32] is described in the EMP document using the effective dose coefficients found in CSA Guideline N288.1-08. The dose assessed for the Critical Group is a summation of:

- Tritium uptake from inhalation and absorption through skin at the place of residence and/or the place of work, ($P_{(i)19}$ and $P_{(e)19}$), and
- Tritium uptake due to consumption of well water (P_{29}), and
- Tritium uptake due to consumption of produce (P_{49}), and
- Tritium uptake due to consumption of dairy products (P_{59}).

Dose due to inhalation

The closest residence to Passive Air Sampler NW250 is located at the intersection of Boundary Road and International Drive at approximately 240 meters from the point of release. The 2012 average concentration of tritium oxide in air at Passive Air Sampler NW250 has been determined to be 2.34 Bq/m^3.

Three passive air samplers are located close to the SRB facility and represent the tritium oxide in air ($P_{(i)19}$ and $P_{(e)19}$) concentrations for the critical group member (adult worker) at samplers 1, 2, and 13. The sampler indicating the highest tritium oxide in air concentration is used to calculate the P19 dose values while at work. The highest average result for 2012 for PAS # 1, PAS # 2, and PAS # 13 is 5.20 Bq/m^3 at PAS # 13.

$P_{(i)19}$: Adult worker dose due to HTO inhaled at residence

The average value for tritium oxide in air for the sampler representing the place of residence for the defined critical group equals 2.34 Bq/m^3.

$P_{(i)19r}$ = [H-3$_{air}$] (Bq/m^3) x Time (h/a) x Breathing Rate (m^3/h) x DCF$_{H3}$ (μSv/Bq)
= 2.34 Bq/m^3 x 6,680 h/a x 1.2 m^3/h x 2.0E-05 μSv/Bq
= 0.375 μSv/a

$P_{(i)19}$: Adult worker dose due to HTO inhaled at work

Taking the highest concentration between Passive Air Samplers #1, #2, and #13 is Passive Air Samplers #13 at 5.20 Bq/m^3.

$P_{(i)19w}$ = [H-3$_{air}$] (Bq/m^3) x Time (h/a) x Breathing Rate (m^3/h) x DCF$_{H3}$ (μSv/Bq)
= 5.20 Bq/m^3 x 2,080 h/a x 1.2 m^3/h x 2.0E-05 μSv/Bq
= 0.260 μSv/a.

$P_{(i)19}$: Adult resident dose due to HTO inhaled at residence

The average value for tritium oxide in air for the sampler representing the place of residence for the defined critical group equals 2.34 Bq/m^3:

$P_{(i)19}$ = [H-3_{air}] (Bq/m^3) x Time (h/a) x Breathing Rate (m^3/h) x DCF_{H3} (μSv/Bq)
= 2.34 Bq/m^3 x 8,760 h/a x 1.2 m^3/h x 2.0E-05 μSv/Bq
= 0.492 μSv/a

$P_{(i)19}$: Infant resident dose due to HTO inhaled at residence

The average value for tritium oxide in air for the sampler representing the place of residence for the defined critical group equals 2.34 Bq/m^3:

$P_{(i)19}$ = [H-3_{air}] (Bq/m^3) Breathing Rate (m^3/a) x DCF_{H3} (μSv/Bq)
= 2.34 Bq/m^3 x 1.4 E+03m^3/a x 5.3E-05 μSv/Bq
= 0.174 μSv/a

Dose due to skin absorption

$P_{(e)19}$: Adult worker dose due to skin absorption of HTO at residence

The dose due to skin absorption is equal to the dose due to inhalation.

$P_{(e)19r}$ = 0.375 μSv/a

$P_{(e)19}$: Adult worker dose due to skin absorption of HTO at work

The dose due to skin absorption is equal to the dose due to inhalation.

$P_{(e)19w}$ = 0.260 μSv/a

$P_{(e)19}$: Adult resident dose due to skin absorption of HTO at residence

The dose due to skin absorption is equal to the dose due to inhalation.

$P_{(e)19}$ = 0.492 μSv/a

$P_{(e)19}$: Infant resident dose due to skin absorption of HTO at residence

The dose due to skin absorption is equal to the dose due to inhalation.

$P_{(e)19}$ = 0.174 μSv/a

Dose due to consumption of well water

The tritium uptake due to consumption of well water is calculated by taking the average tritium concentration of the water sampled.

The annual consumption rate for well water is assumed to be 700 L/a for adults and 300 L/a for infants.

The highest concentration in a residential well used as the sole source of the drinking water is found in RW-9 at 210 Bq/L and will therefore be used in the calculation of the public dose.

P_{29}: Adult dose due to consumption of well water

$$\begin{aligned} P_{29} &= [H\text{-}3]_{well} \times M \times 2.0E\text{-}05\ \mu Sv/Bq; \\ &= [210\ Bq/L] \times 700\ L/a \times 2.0E\text{-}05\ \mu Sv/Bq \\ &= 2.94\ \mu Sv/a \end{aligned}$$

P_{29}: Infant dose due to consumption of well water

$$\begin{aligned} P_{29} &= [H\text{-}3]_{well} \times M \times 5.3E\text{-}05\ \mu Sv/Bq; \\ &= [210\ Bq/L] \times 300\ L/a \times 5.3E\text{-}05\ \mu Sv/Bq \\ &= 3.339\ \mu Sv/a \end{aligned}$$

Dose due to consumption of produce

The tritium uptake due to consumption of produce, both locally purchased and home grown is calculated by taking the average tritium concentration of produce purchased from the local market and consuming 70% of the annual total and by taking the average tritium concentration from local gardens and consuming 30% of the annual total.

The annual consumption rate for produce is assumed to be 200 kg/a for adults and 84 kg/a for infants.

If we assume the average concentration in produce purchased from a market to be 14.5 Bq/L and if we assume the average concentration in produce from the local gardens with the highest average concentration of 58 Bq/L at 416 Boundary Road. Historically the average concentration of all produce in all gardens was used but it was determined that using the garden with the highest average concentrations would be more conservative, i.e. In 2012 using 58 B/L (for 416 Boundary Road only) rather than 48 Bq/L (for all gardens).

P_{49}: Adult dose due to consumption of produce (HTO)

$$\begin{aligned} P_{49HTO} &= [[H_{prod,market}] + [H_{prod,res}]] \times 2.0E\text{-}05\ \mu Sv/Bq \\ &= [[H\text{-}3_{veg}]\ (Bq/kg) \times (kg) \times 0.7] + [H\text{-}3_{veg}]\ (Bq/kg) \times (kg) \times 0.3]] \times 2.0E\text{-}5\ \mu Sv/Bq \\ &= [[14.5\ Bq/kg \times 200\ kg/a \times 0.7] + [58\ Bq/kg \times 200\ kg/a \times 0.3]] \times 2.0E\text{-}05\ \mu Sv/Bq \\ &= [[2{,}030\ Bq/a] + [3{,}480\ Bq/a]] \times 2.0E\text{-}05\ \mu Sv/Bq \\ &= 0.110\ \mu Sv/a \end{aligned}$$

P_{49}: Infant dose due to consumption of produce (HTO)

P_{49HTO} = [[$H_{prod,market}$] + [$H_{prod,res}$]] x 5.3E-05 μSv/Bq
= [[H-3_{veg}] (Bq/kg) x (kg) x 0.7] + [H-3_{veg}] (Bq/kg) x (kg) x 0.3]] x 5.3E-5 μSv/Bq
= [[14.5 Bq/kg x 84 kg/a x 0.7] + [58 Bq/kg x 84 kg/a x 0.3]] x 5.3E-05 μSv/Bq
= [[852.6 Bq/a] + [1,461.6 Bq/a]] x 5.3E-05 μSv/Bq
= 0.123 μSv/a

For OBT, the same equations are applied, using the same ingestion rates and fractions. Since measures of OBT are not available, the measured HTO amount can be used to estimate the OBT. The transfer parameter from HTO in air to HTO in the plant (on a fresh weight basis) is given by:

$$P_{14HTO} = RF_p \cdot [1 - DW_p] / H_a$$

The transfer parameter from HTO in air to OBT in a plant (fresh weight basis) is:

$$P_{14HTO\text{-}OBT} = RF_p \cdot DW_p \cdot ID_p \cdot WE_p / H_a$$

Where: RF_p = Reduction factor – default is 0.68

DW_p = Dry weight of plant – default value of 0.1 for generic fruit and vegetables

ID_p = Isotopic discrimination factor for plant metabolism (unitless) - default is 0.8

WE_p = Water equivalent of the plant dry matter (L water • kg^{-1} dry plant) – default value for all plants is 0.56

H_a = Atmospheric absolute humidity - a generic default value of 0.011 L/m^3 can be used.

In using the default values and combining the equations, the amount of OBT in a plant (fresh weight basis) can be determined by multiplying the HTO measure for plants for the same location by 0.05.

If we assume the average concentration in produce purchased from a market to be 14.5 Bq/L and if we assume the average concentration in produce from the local gardens with the highest average concentration of 58 Bq/L at 416 Boundary Road.

Then the values for OBT will be 0.725 Bq/L produce purchased from a market and 2.9 Bq/L in produce from local gardens:

P_{49}: Adult dose due to consumption of produce (OBT)

P_{49OBT} = [[$H_{prod,market}$] + [$H_{prod,res}$]] x 4.6E-05 μSv/Bq
= [[H-3_{veg}] (Bq/kg) x (kg) x 0.7] + [H-3_{veg}] (Bq/kg) x (kg) x 0.3]] x 4.6E-5 μSv/Bq
= [[0.725 Bq/kg x 200 kg/a x 0.7] + [2.9 Bq/kg x 200 kg/a x 0.3]] x 4.6E-05 μSv/Bq
= [[101.5 Bq/a] + [174 Bq/a]] x 4.6E-05 μSv/Bq
= 0.013 μSv/a

P_{49}: Infant dose due to consumption of produce (OBT)

P_{49OBT} = [[$H_{prod,market}$] + [$H_{prod,res}$]] x 1.3E-4 μSv/Bq
= [[H-3_{veg}] (Bq/kg) x (kg) x 0.7] + [H-3_{veg}] (Bq/kg) x (kg) x 0.3]] x 1.3E-4 μSv/Bq
= [[0.725 Bq/kg x 84 kg/a x 0.7] + [2.9 Bq/kg x 84 kg/a x 0.3]] x 1.3E-4 μSv/Bq
= [[42.63 Bq/a] + [73.08 Bq/a]] x 1.3E-4 μSv/Bq
= 0.015 μSv/a

P_{49}: Adult dose due to consumption of produce (HTO + OBT)

P_{49} = P_{49HTO} + P_{49OBT}
= 0.110 μSv/a + 0.013 μSv/a
= 0.123 μSv/a

P_{49}: Infant dose due to consumption of produce (HTO + OBT)

P_{49} = P_{49HTO} + P_{49OBT}
= 0.123 μSv/a + 0.015 μSv/a
= 0.138 μSv/a

Dose due to consumption of local milk

The tritium uptake due to consumption of milk, from a local producer and distributor is calculated by taking the average tritium concentration of the milk sampled.

The annual consumption rate for milk is assumed to be 120.45 kg/a (0.33 kg/day) for adults and 219 kg/a (0.6 kg/day) for infants.

The average concentration in milk being 5.5 Bq/L but adjusting for the density of milk 5.5 Bq/L x 0.97 L/kg = 5.335 Bq/kg:

P_{59}: Adult dose due to consumption of milk

P_{59} = [H-3]$_{dairy}$ x M x 2.0E-05 μSv/Bq;
= [5.335 Bq/kg] x 120 kg/a x 2.0E-05 μSv/Bq
= 0.013 μSv/a

P_{59}: Infant dose due to consumption of milk

P_{59} = [H-3]$_{dairy}$ x M x 5.3E-05 μSv/Bq;
= [5.335 Bq/kg] x 219 kg/a x 5.3E-05 μSv/Bq
= 0.062 μSv/a

Critical group annual dose due to tritium uptake

Based on the Environmental Monitoring Program[43] results the annual dose (P_{total}) due to tritium uptake from inhalation and skin absorption, consumption of local produce, local milk and well water equates to a maximum of 4.346 μSv/A for an adult worker of the critical group in 2012, this is slightly lower than the dose in 2011 of 5.031 μSv/A.

TABLE 11: 2012 CRITICAL GROUP ANNUAL DOSE DUE TO TRITIUM UPTAKE

DOSE CONTRIBUTOR		ADULT WORKER ANNUAL DOSE (μSv/A)	ADULT RESIDENT ANNUAL DOSE (μSv/A)	INFANT RESIDENT ANNUAL DOSE (μSv/A)
DOSE DUE TO INHALATION AT WORK	$P_{(I)19}$	0.260	N/A	N/A
DOSE DUE TO SKIN ABSORPTION AT WORK	$P_{(E)19}$	0.260	N/A	N/A
DOSE DUE TO INHALATION AT RESIDENCE	$P_{(I)19}$	0.375	0.492	0.174
DOSE DUE TO SKIN ABSORPTION AT RESIDENCE	$P_{(E)19}$	0.375	0.492	0.174
DOSE DUE TO CONSUMPTION OF WELL WATER	P_{29}	2.94	2.94	3.339
DOSE DUE TO CONSUMPTION OF PRODUCE	P_{49}	0.123	0.123	0.138
DOSE DUE TO CONSUMPTION OF MILK	P_{59}	0.013	0.013	0.062
TOTAL DOSE DUE TO TRITIUM UPTAKE	P_{TOTAL}	4.346	4.060	3.887

2.3.4 EMERGENCY MANAGEMENT AND RESPONSE

As most potential hazards associated with the facility would result from fire, Emergency Management and Response for the facility are addressed by an extensive Fire Protection Program[17] supported by an Emergency Plan[19].

2.3.4.1 FIRE PROTECTION

Various measures were taken at the facility in 2012 to improve fire safety.

2.3.4.1.1 FIRE PROTECTION COMMITTEE

SRB Senior Management has formally constituted a Fire Protection Committee in the organizational structure. In 2012, six minuted meetings have been held which have resulted in the implementation of various measures which have improved fire safety at the facility.

2.3.4.1.2 FIRE PROTECTION PROGRAM AND PROCEDURES

In 2012, there were some small improvements made by the Fire Protection Committee to the Fire Protection Program[17] and to the Fire Protection Procedures. In 2012 we have continued to improve the Fire Protection Program[17] and Fire Protection Procedures. The revised documents will include an updated floor plan and will reflect that a number of Fire Protection System inspections are now being performed by qualified third parties rather than being performed by staff. Drafts of these documents are complete and are expected to be issued in early 2013.

2.3.4.1.3 MAINTENANCE OF THE SPRINKLER SYSTEM

Quarterly maintenance was performed on the fire sprinkler system by a third party, also a weekly check of various valves and line pressures were performed by trained SRB staff. All records are kept on file.

2.3.4.1.4 FIRE PROTECTION EQUIPMENT INSPECTIONS

In 2012 inspections of the emergency lighting and fire extinguishers have been performed monthly by in-house trained staff and an inspection of the emergency lighting and fire extinguishers was also performed by a qualified third party on March 27, 2012. All records are kept on file.

2.3.4.1.5 FIRE EXTINGUISHER TRAINING

Yearly fire extinguisher training was performed for all staff on May 9, 2012 by the Pembroke Fire Department. All records are kept on file.

2.3.4.1.6 FIRE RESPONDER TRAINING

There was no training of Fire Responders in 2012. SRB and the Pembroke Fire Chief determine if this training is required if any changes have occurred at SRB's facility, if the training has not been performed for a number of years or if there are a number of new firefighters and/or volunteers that have not yet taken the training.

The training of fire responders performed in 2011 included a tour of the facility and information with respect to the hazardous materials found on the site. Responders are also instructed on the various properties and precautions with respect to tritium.

2.3.4.1.7 FIRE ALARM DRILLS

Six in-house Fire Alarm Drills were performed in 2012. All drills were reviewed by the Fire Protection Committee. All drills were conducted with no major findings to address.

2.3.4.1.8 FIRE PROTECTION CONSULTANT INSPECTION

As required by licence NSPFOL-13.00/2015[1] and section 3.11 of the Licence Conditions Handbook LCH-SRBT-R000[2], on December 10, 2012 a Fire Protection Consultant, Nadine International Inc. performed an annual third party review of compliance with the requirements of the National Fire Code, 2005, and National Fire Protection Association, NFPA-801, 2008 edition: Standard for Fire Protection for Facilities Handling Radioactive Materials.

The review resulted in two findings which will be addressed in 2013.

2.3.4.1.9 PEMBROKE FIRE DEPARTMENT INSPECTION

Pembroke Fire Department conducted a fire inspection on April 12, 2012. No violations of the Ontario Fire Code were identified.

2.3.4.2 EMERGENCY PREPAREDNESS

Various measures were taken at the facility in 2012 to further improve emergency preparedness and emergency response measures.

2.3.4.2.1 EMERGENCY PLAN

As a result of the Request[18] Pursuant to Subsection 12(2) of the General Nuclear Safety and Control Regulations issued by CNSC Staff as a result of the Lessons Learned From the Japanese Earthquake, we have thoroughly reviewed our Emergency Plan[19] and it was found that the document would benefit from the addition of more detailed procedures to address the occurrence of extreme weather events.

Changes to document were made and a new revision was issued to CNSC Staff for review on August 27, 2012.

CNSC Staff reviewed the Emergency Plan[19] and requested additional changes to ensure that the Emergency Plan makes reference to Regulatory Document "RD-353: Testing the Implementation of Emergency Measures"[20]. CNSC Staff also requested that the roles and responsibilities during an emergency situation are clearly defined within the Emergency Plan[19] and that there is a more formal link and agreement to ensure that outside assistance from other licensed facilities is available if SRB resources be unavailable during an emergency.

The document will be revised to address CNSC Staff comments and will be re-submitted to CNSC Staff in early 2013.

2.3.5 WASTE AND BY-PRODUCT MANAGEMENT

2.3.5.1 WASTE MANAGEMENT PROGRAM

The Nuclear Substances and Radiation Devices Regulations (CNSC) were amended April 2008 with one of the significant changes being the introduction of regulatory measures that allow for the removal of nuclear substances from regulatory control by establishing clearance limits below which abandonment or disposal is safe. These threshold limits are based on international standards and practices for bulk quantities of materials, published in the 2004 edition of the International Atomic Energy Agency (IAEA) Safety Standards Series, Safety Guide No. RS-G-1.7 - Application of the Concepts of Exclusion, Exemption and Clearance. The adoption of these new international standards is consistent with the CNSC risk-informed regulatory control and ensures that Canadian regulations are consistent with international practices.

Therefore, as a result of these changes, SRB is able to dispose of some of its waste through conventional methods.

The Waste Management Program[49] is being revised to reflect these changes and will be submitted to CNSC Staff for comment in early 2013.

2.3.5.2 RADIOACTIVE CONSIGNMENTS

Five shipments of "Low Level Waste" (LLW) were made in 2012.

Four shipments solely contained expired gaseous tritium light sources with the other shipment made on October 16, 2012 being comprised predominantly of Zone 3 used protective clothing, used equipment components, crushed glass, filters, broken lights and cleaning material.

TABLE 12: RADIOACTIVE CONSIGNMENTS

DATE	CONSIGNOR	WASTE DESCRIPTION	QTY AND PACKAGE DESCRIPTION	TOTAL WEIGHT (Kg)	TOTAL ACTIVITY (TBq)
April 25, 2012	AECL	LLW	53 x Type A Pkgs	212	1,481.24
May 15, 2012	AECL	LLW	17 x Type A Pkgs	68	662.04
September 25, 2012	AECL	LLW	47 x Type A Pkgs	188	951.21
October 16, 2012	AECL	LLW	2 x 200 L Drums	140	0.14
October 30, 2012	AECL	LLW	22 x Type A Pkgs	88	319.67

2.3.5.3 STORAGE OF RADIOACTIVE WASTE

Radioactive waste was stored on-site and inventory records of the waste were maintained. All packaged wastes were inspected monthly for potential off-gassing and container integrity.

2.3.5.3.1 "VERY LOW-LEVEL WASTE" INTERIM STORAGE

Waste that is only minimally contaminated and meets the clearance limits in accordance with the Nuclear Substances and Radiation Devices Regulations is deemed to be "Very Low-Level Waste" (VLLW). The activity of the VLLW that SRB possesses, falls under Schedule 1 Exemption Quantities and is therefore limited to transferring or disposing of no more than 1 tonne of material per year per pathway or disposal route. Therefore, any additional waste that is produced throughout the year above the 1 tonne limit is stored on-site until it is transferred or disposed.

Examples of such "general waste" are typically paper towel, gloves, disposable lab coats, shoe covers, etc. The VLLW that is stored on-site was collected in various receptacles throughout the facility, assessed, and ultimately placed into storage awaiting transfer or disposal.

TABLE 13: INTERIM STORAGE OF "VERY LOW LEVEL WASTE" (GENERAL WASTE)

AMOUNT IN STORAGE AT YEAR END 2011	AMOUNT GENERATED THROUGHOUT 2012	TRANSFERRED OFF SITE 2012	AMOUNT IN STORAGE AT YEAR END 2012
268.34 Kg	+ 909.80 Kg	- 926.94 Kg	251.20 Kg
32.35 GBq	+ 36.65 GBq	- 61.98 GBq	7.02 GBq

A number of drums are also stored on site that contain excavated soil from the well drilling activities that have taken place between 2006 and 2007:

TABLE 14: INTERIM STORAGE OF "VERY LOW LEVEL WASTE" (EXCAVATED SOIL)

AMOUNT IN STORAGE AT YEAR END 2011	AMOUNT GENERATED THROUGHOUT 2012	TRANSFERRED OFF SITE 2012	AMOUNT IN STORAGE AT YEAR END 2012
*33 x 200 L drums	0	0	29 x 200 L drums
0.09 GBq	0	0	0.09 GBq

* The contents of 33 drums were condensed to 29 drums during 2012.

2.3.5.3.2 "LOW-LEVEL WASTE" INTERIM STORAGE

"Low-level waste" (LLW) is any waste with activity levels that exceed the clearance limits or exemption quantities established in the Nuclear Substances and Radiation Devices Regulations. Typical examples of such wastes are tritium-contaminated equipment or components, crushed glass, filters, broken lights, clean-up material, pumps, pump oil, etc. LLW was collected in various sealed receptacles (cans or re-sealable bags) assessed, and ultimately placed into a steel drum, which is located in the Waste Storage Room within Zone 3. Once a drum was full it was prepared for interim storage and placed in the Waste Storage Room awaiting transfer to a CNSC licensed waste handling facility.

TABLE 15: INTERIM STORAGE OF "LOW LEVEL WASTE"

AMOUNT IN STORAGE AT YEAR END 2011	AMOUNT GENERATED THROUGHOUT 2012	TRANSFERRED OFF SITE 2012	AMOUNT IN STORAGE AT YEAR END 2012
12 x 200 L drums	+ 2 x 200 L drums	- 2 x 200 L drums	12 x 200 L drums
0.85 TBq	+ 0.11 TBq	- 0.14 TBq	0.82 TBq

* Contains Zone 3 used protective clothing, equipment components, crushed glass, filters, broken lights, cleaning material, etc.

2.3.5.4 HAZARDOUS MATERIAL COLLECTION AND STORAGE

In 2012 there were no hazardous waste collected or stored.

Hazardous (non-radioactive) liquid waste material was historically produced as a result of the silk screening process. This waste was stored in 20-liter plastic containers waiting for sufficient quantity for disposal with any storage and disposal of hazardous substances (non-radioactive) reported to the Ontario Ministry of the Environment.

In 2010, 2011 and throughout 2012, the generation of liquid hazardous waste material has been reduced to zero mainly due to the elimination of certain silk screening activities. Historically, the screens were emulsioned on-site which generated the bulk of the hazardous liquid waste.

A third party now performs this process off-site. Also paints and thinners are now more efficiently generated and re-used as part of SRB's waste minimization practices.

2.3.6 NUCLEAR SECURITY

SRB Technologies (Canada) Inc. has a Security Program[50] for the facility in accordance with CNSC regulatory requirements and CNSC Staff expectations. No Physical Security Inspections were conducted in 2012. The last Physical Security Inspection was conducted by CNSC Staff on December 1, 2011. Minor issues identified during the inspection have since been addressed and our Facility Security Program was revised on February 15, 2012 accordingly.

2.3.7 SAFEGUARDS AND NON-PROLIFERATION

SRB takes all the necessary measures to facilitate Canada's compliance with any applicable nuclear safeguards international agreements. This would include providing the IAEA, an IAEA inspector or a person acting on behalf of the IAEA with such reasonable services and assistance as are required to enable the IAEA to carry out its duties and functions pursuant to a safeguards agreement.

Since SRB has a very small amount of depleted uranium on-site, SRB must comply with the nuclear safeguards agreement. During 2012, there were no inspections from the IAEA and the depleted uranium inventory remained at 6.63 Kg, the same as in 2011.

2.3.8 PACKAGING AND TRANSPORT OF NUCLEAR SUBSTANCES

2.3.8.1 IMPORT AND EXPORT ACTIVITIES

As per the requirements of the Nuclear Non-proliferation Import and Export Control Regulations, SRB is required to obtain export and import licences for all international tritium shipments. During 2012 all Import and Export licenses were acquired as necessary and no licence limits were exceeded. Prior and Post Notifications were made to the CNSC for all international shipments.

2.3.8.2 SHIPPING ACTIVITIES

No transport incidents occurred nor were reported during 2012. SRB prepared, packaged and shipped, in accordance with CNSC regulatory document, SOR/2000-208, Packaging and Transport of Nuclear Substances Regulations, 367 consignments to various customers located in 17 countries around the world including Canada. The number of monthly shipments containing radioactive material for 2012 can be found in **Appendix T** of this report.

For the purpose of packaging and offering for transport, shipments of product designated as dangerous goods, SRB must comply with the requirements of:

- CNSC
- IAEA
- International Air Transport Association (IATA)
- Transport Canada

Regulations for the safe transport of radioactive goods are found in guides published by the above groups. The procedures used at SRB are based on regulations and practices found in the following publications;

- Packaging and Transport of Nuclear Substances Regulations
- IAEA Safety Standards Series - No. TS-R-1
- Dangerous Goods Regulations (IATA)
- The TDG Compliance Manual: Clear Language Edition (Carswell)

Staff members involved with the packaging, offering for transport and receipt of dangerous goods are given Transportation of Dangerous Goods (TDG) training in accordance with the applicable regulations and are issued certificates by the employer.

2.3.8.3 TYPE B PACKAGE REGISTRATION

In April 2012, SRB registered with the CNSC as a user of the G.E. Healthcare Type B Package, 3605D Certificate No. CDN/E204/-96 (Rev. 5) which is used to ship tritium from our supplier.

3.0 OTHER MATTERS OF REGULATORY INTEREST

3.1.1 PUBLIC INFORMATION PROGRAM

This section of the report will provide public information initiatives taken in 2012.

3.1.1.1 DIRECT INTERACTION WITH THE PUBLIC

In all of 2012 we received no inquiries from a member of the public. In all of 2011 we had received only one inquiry from a member of the public requesting our 2010 Annual Compliance Report[51] which was provided and also posted on our web site. In 2012 we proactively contacted this individual and provided them a copy of our 2011 Annual Compliance Report[5] on April 3, 2012.

In 2012, as part of the current licence[1] we have sampled water from a number of wells belonging to the public every four months for tritium concentration. On a yearly basis we also sample produce from gardens belonging to members of the public for tritium concentration. We promptly provide each member of the public with a report of the sample results along with the anticipated radioactive exposure due to tritium from consuming either the water or produce. We provide members of the public a comparison of this exposure against the CNSC limit and against radioactive exposure from other known sources, such as cosmic radiation, x-rays, etc.

Plant tours have proven to be a useful tool for SRB to reach the public. In 2012 we have provided plant tours to 9 members of the general public who had expressed interest in our facility. We have also provided plant tours to employees of three local financial institutions.

3.1.1.2 PUBLIC INFORMATION COMMITTEE

The Public Information Committee had four minuted meetings in 2012 consisting of discussing revisions of our groundwater brochure[52], general information brochure[53] and pamphlet[54]. Other discussions centered around future changes to the web site that will now be implemented in 2013. The web site will be revised to include important information on safe handling and return of our products after their useful life.

3.1.1.3 WEBSITE

The website is frequently updated to provide up to date information on the facility including environmental monitoring results from passive air samplers, air emissions, produce and groundwater. The main page provides a number of possible information sources for the public on tritium and radiation exposure. Our revised groundwater brochure[52], general information brochure[53] and pamphlet[54] will be uploaded on the web site in 2013.

3.1.2 SITE SPECIFIC

3.1.2.1 PAYMENT SCHEDULE FOR COST RECOVERY FEE ARREARS

As per condition 16.1 of Licence NSPFOL-13.00/2015[1], in 2012, SRB has made the payments of cost recovery fee arrears or "Annual Fee Adjustment payments" as found in section 3.16 of the Licence Condition Handbook LCH-SRBT-R000[2].

3.1.2.2 DECOMMISSIONING ESCROW ACCOUNT DEPOSITS

As per condition 16.2 of Licence NSPFOL-13.00/2015[1], in 2012, SRB has made the payments to the decommissioning escrow account or "Decommissioning Escrow Account Deposits" as found in section 3.16 of the Licence Condition Handbook LCH-SRBT-R000[2].

3.1.2.3 REVIEW ENGAGEMENT REPORT

As per condition 16.3 of Licence NSPFOL-13.00/2015[1], in 2012, SRB has provided CNSC Staff an annual Review Engagement Report[55] reporting the gross revenue and profits of the company as described in section 3.16 of the Licence Condition Handbook LCH-SRBT-R000[2].

3.1.2.4 ONTARIO MINISTRY OF THE ENVIRONMENT

In 2012 SRB continued to make releases of hazardous substances to the air under a Certificate[56] of Approval (Air), Number 5310-4NJQE2 issued by the Ontario Ministry of the Environment in accordance with Section 9 of the Ontario Environment Protection Act.

3.1.3 IMPROVEMENT PLANS AND FUTURE OUTLOOK

3.1.3.1 PRELIMINARY DECOMMISSIONING PLAN, COST ESTIMATE AND FINANCIAL GUARANTEE

The Financial Guarantee[57] was approved[58] by the Commission in October 2007. In early 2013 we plan on providing CNSC Staff a revised Preliminary Decommissioning Plan, Cost Estimate and Financial Guarantee. These documents will be revised using guidelines found in "G-219 - Decommissioning Planning for Licensed Activities"[59] and "G-206 - Financial Guarantees for the Decommissioning of Licensed Activities"[60] and "CSA N294-09 - Decommissioning of facilities containing nuclear substances"[61].

We intend on providing a revised Cost Estimate that will reflect inflationary increases since the plan was approved by the Commission in 2007. We will reflect reduction of activities as a result of eliminating waste and pieces of equipment that are in the process of being removed from the facility. We will seek estimates from CNSC Staff on future regulatory costs with the assumption that future activities from CNSC Staff will be reduced as a result of the detail provided in SRB documents and SRB's improved compliance performance.

We believe that the review of the revised PDP by CNSC Staff will be facilitated as we have based our revised PDP on those submitted and approved by CNSC Staff for other licensees with similar facilities. Once the documents are satisfactory to CNSC Staff, the Financial Guarantee will have to be reviewed and approved by the Commission.

3.1.3.2 HEALTH PHYSICS TRAINING

As briefly discussed in section "1.4.2.1 Health Physics Training" of this report, in 2011, it had been decided to institute more cross training amongst the members of the health physics team to ensure more coverage in the event of prolonged absence of an individual and during times of high workload in specific areas of responsibility. On December 21, 2012 a complete training matrix of specific tasks in Health Physics was reviewed during a Health Physics Meeting[14] and a plan to complete all the necessary training by September 30, 2013 was put in place.

3.1.3.3 GROUNDWATER

Current concentrations in the wells are expected to eventually gradually decrease once all historical emissions have flushed through the system and/or decayed with some influence of higher concentrations in nearby wells from lateral underground water flow. This will be confirmed by continuing to monitor the existing network of wells.

3.1.3.4 MAINTENANCE PROGRAM

A new revision of the Maintenance Program[30] is due in 2013 which will reflect improvements that have been made.

3.1.3.5 QUALITY MANUAL

A revision of the Quality Manual[23] is near completion. The new revision expected in 2013 reflects minor changes in responsibilities to be in sync with the latest revision of the Radiation Safety Program[15], and the additions of a process chart, a master list for calibrated equipment, staff training on Non-conformance and corrective action process, and minor changes to the document control process.

3.1.3.6 FIRE PROTECTION PROGRAM

In 2012 we have continued to improve the Fire Protection Program[17]. A draft of the Fire Protection Program[17] is complete and is expected to be issued in early 2013.

3.1.3.7 WASTE MANAGEMENT PROGRAM

The Waste Management Program[49] is being revised to reflect changes to the Nuclear Substances and Radiation Devices Regulations and will be submitted to CNSC Staff for comment in early 2013. The Nuclear Substances and Radiation Devices Regulations (CNSC) were amended April 2008 with one of the significant changes being the introduction of regulatory measures that allow for the removal of nuclear substances from regulatory control by establishing clearance limits below which abandonment or disposal is safe

3.1.3.8 CONTRACTOR MANAGEMENT PROGRAM

In 2012 we have continued to improve Contractor Management Program[21] to address the comments[22] from CNSC Staff to provide greater control of contractors and define work to be performed in a more specific manner. A draft is complete and expected to be issued in early 2013.

3.1.3.9 EMERGENCY PLAN

CNSC Staff reviewed the Emergency Plan[19] and requested additional changes to ensure that the Emergency Plan makes reference to Regulatory Document "RD-353: Testing the Implementation of Emergency Measures"[20]. The document will be revised to address CNSC Staff comments and will be re-submitted to CNSC Staff in early 2013.

3.1.3.10 LESSONS LEARNED SHIELD SOURCE INC.

On August 30, 2012 the Health Physics Team held a meeting[62] to discuss operational issues widely reported on Shield Source Inc. (SSI), another processing facility that produces some of the same products as SRB. Members of the Health Physics Team have reviewed the "Root Cause Investigation Report Tritium Stack Emissions Reporting Discrepancies"[63] prepared by a third party for SSI. Although SRB's emissions have been verified by a third party and although the HTO emissions are in agreement with the environmental measurements, in 2013 SRB will continue to review the information available on these operational issues and request to meet SSI staff to discuss the issues they have faced in order to see if any lessons can be learned to help improve the operations of SRB.

3.1.4 SAFETY PERFORMANCE OBJECTIVES

3.1.4.1 TRITIUM PROCESSED

In 2012, a total of 10,224,590 GBq's of tritium was processed, we are expecting a minimum increase of 100% in 2013.

3.1.4.2 AIR EMISSION TARGET

Despite a predicted minimum increase in production of 100% in 2013 over 2012, Senior Management has committed to an emission target only 90% higher than the 575 GBq per week (HT + HTO) that was released per week in 2012, for a new target of 1,093 GBq's per week (HT + HTO) in 2013.

3.1.4.3 OCCUPATIONAL DOSE TARGET

Despite a predicted minimum increase in production of 100% in 2013 over 2012, Senior Management has committed to an average occupational dose target only 90% higher than the 0.11 mSv achieved in 2012, for a new target of 0.21 mSv in 2013.

3.1.4.4 COMMITTEE MEETINGS

We plan on increasing the number of Committee Meetings in 2013 as discussions in these meetings ensure compliance with the NSCA, Regulations and conditions of the Licence[1]. The information attained during these committee meetings has been extremely valuable in improving various safety programs and procedures and in ensuring the improvement in the provisions taken for the protection of the environment, the health and safety of persons and the maintenance of national security.

4.0 CONCLUDING REMARKS

On average, the emissions of "HTO" were maintained at 12.43% of the licence limit and the emissions of "HTO + HT" were maintained at 6.68% of the licence limit. No action levels for air emission were reached in 2012.

Sewer release values based on sampling and analysis indicate that the emissions to sewer in 2012 were 5.99% of the license limit. Maximum concentrations in sewage in 2012 was 32 Bq/L with average concentrations just over 16 Bq/L.

The maximum annual dose received by any person employed by SRB is well within the regulatory limit for a nuclear energy worker of 50.0 mSv per calendar year. The highest annual dose for any staff member for the year was 0.80 mSv, with an average of only 0.11 mSv for all staff and none of the staff members exceeded the action levels for effective dose to worker.

Collective dose was also low at 2.75 mSv. There were no instances at anytime in 2012 whereby a staff member's tritium body burden exceeded the action level of 1,000 Bq/ml.

Tritium contamination control is maintained by assessment of non-fixed tritium contamination levels throughout the facility by means of swipe method and liquid scintillation counting of the swipe material. A total of 7,940 swipes were performed in various work areas in 2012.

Of the 37 monitoring wells, the concentrations of only four wells now exceed the current Ontario Drinking water Guideline. These four wells are located on the SRB site within 50 meters of the stack. The highest tritium concentration in any well, remains in monitoring well MW06-10 which is located in the stack area on the SRB property.

The highest tritium concentration in a well used for drinking water remains in the water supply well which is located closest to SRB and is being used by individuals working for a business for some of their drinking water intake. Tritium concentrations in this well in 2012 averaged 869 Bq/L, which is approximately 12% of the Ontario Drinking Water Standard of 7,000 Bq/L. Average concentrations over 2012 for other wells used for drinking water ranged from 3 Bq/L to 210 Bq/L, depending on their location and distance in relation to the facility.

Passive air samplers, precipitation, runoff, milk, produce and receiving waters were sampled regularly in 2012 and results were slightly lower than those in 2011.

Based on environmental monitoring results the maximum dose to a member of the public as a result of the emissions from SRB in 2012 was 4.346 μSv which is slightly lower than the dose in 2011 of 5.031 μSv.

In 2012 a total of 78 minuted committee meetings have taken place at the company compared to 67 in 2011.

In 2012 our staff increased from 16 to 22. The employees that were employed in 2011 are working in the same positions as when the licence[1] was issued in July 2010. By the end of 2012 our workforce had an average experience of over 11 years with an average age of just over 42 years of age.

The Quality Manager developed an audit schedule for 2012 which resulted in 15 internal audits which resulted in one non-conformance and six opportunities for improvement. In total 14 non-conformances and 10 opportunities for improvements were raised in 2012 in several areas of the company operations.

In 2012 CNSC Staff performed three Type II Compliance Inspections[8][9][10] of the facility. All issues identified during the first two inspections have been addressed and those identified in the third inspection will be addressed in 2013.

In 2012 we also had two audits by our ISO 9001: 2008 registrar BSI Management Systems, one inspection by the Pembroke Fire Department, one inspection by a Fire Protection Consultant and an audit by our tritium supplier Ontario Power Generation. Issues that were identified were minor and will be addressed in 2013.

Although no requests for information were made by the public in 2012, various Public Information initiatives were taken including frequent web site update with latest environmental monitoring results, plant tours and direct interaction with the public reporting results of well and produce sampling.

Site specific requirements for payments of cost recovery fee arrears and payments to the decommissioning escrow account have been met.

In 2013, SRB plan on providing CNSC Staff a revised Preliminary Decommissioning Plan, Cost Estimate and Financial Guarantee[57]. The revised PDP will be based on those submitted and approved by CNSC Staff for other licensees with similar facilities.

A number of training initiatives will be undertaken in 2012 to address any weakness in Health Physics training.

We will continue to monitor the existing network of wells to ensure that current concentrations eventually gradually decrease as expected.

In 2013, we expect to submit to CNSC Staff revisions of the Maintenance Program[30], Quality Manual[23], Fire Protection Program[17], Waste Management Program[49], Contractor Management Program[21] and Emergency plan[19].

Despite a predicted minimum increase in production of 100% in 2013 over 2012, Senior Management has committed to an emission target only 90% higher than the 575 GBq released per week in 2012 and to an average occupational dose target only 90% higher than the 0.11 mSv achieved in 2012.

We plan on increasing the number of Committee Meetings in 2013 to further ensure compliance with the NSCA, Regulations and conditions of the Licence[1] and to help identify further provisions to implement for the protection of the environment, the health and safety of persons and the maintenance of national security.

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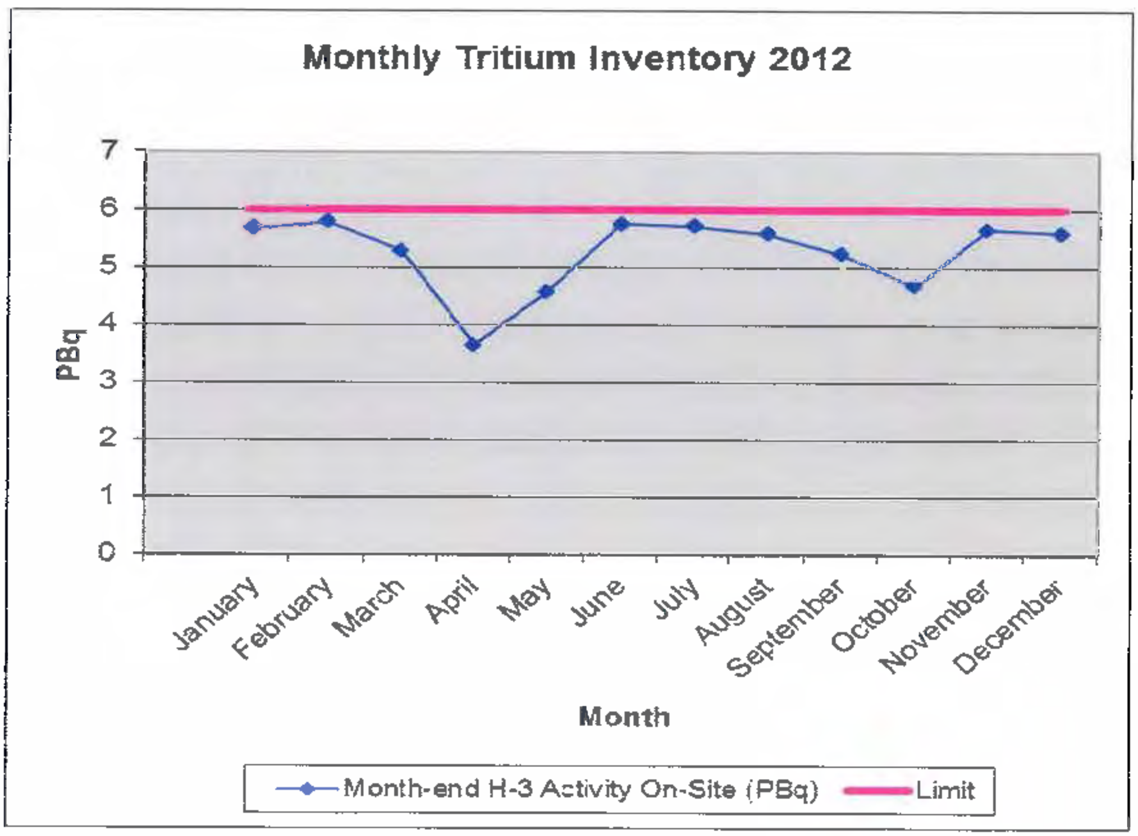
APPENDIX A

Tritium activity on site during 2012

TRITIUM ACTIVITY ON SITE DURING 2012

Month / 2012	Month-end H-3 Activity On-Site (PBq)	Percent of Licence Limit (%)
January	5.67	94
February	5.78	96
March	5.28	88
April	3.64	61
May	4.58	76
June	5.75	96
July	5.72	95
August	5.59	93
September	5.23	87
October	4.67	78
November	5.66	93
December	5.60	93
2012 Monthly Average	***5.26***	***87.5***

Note: Possession limit is 6.00 PBq.

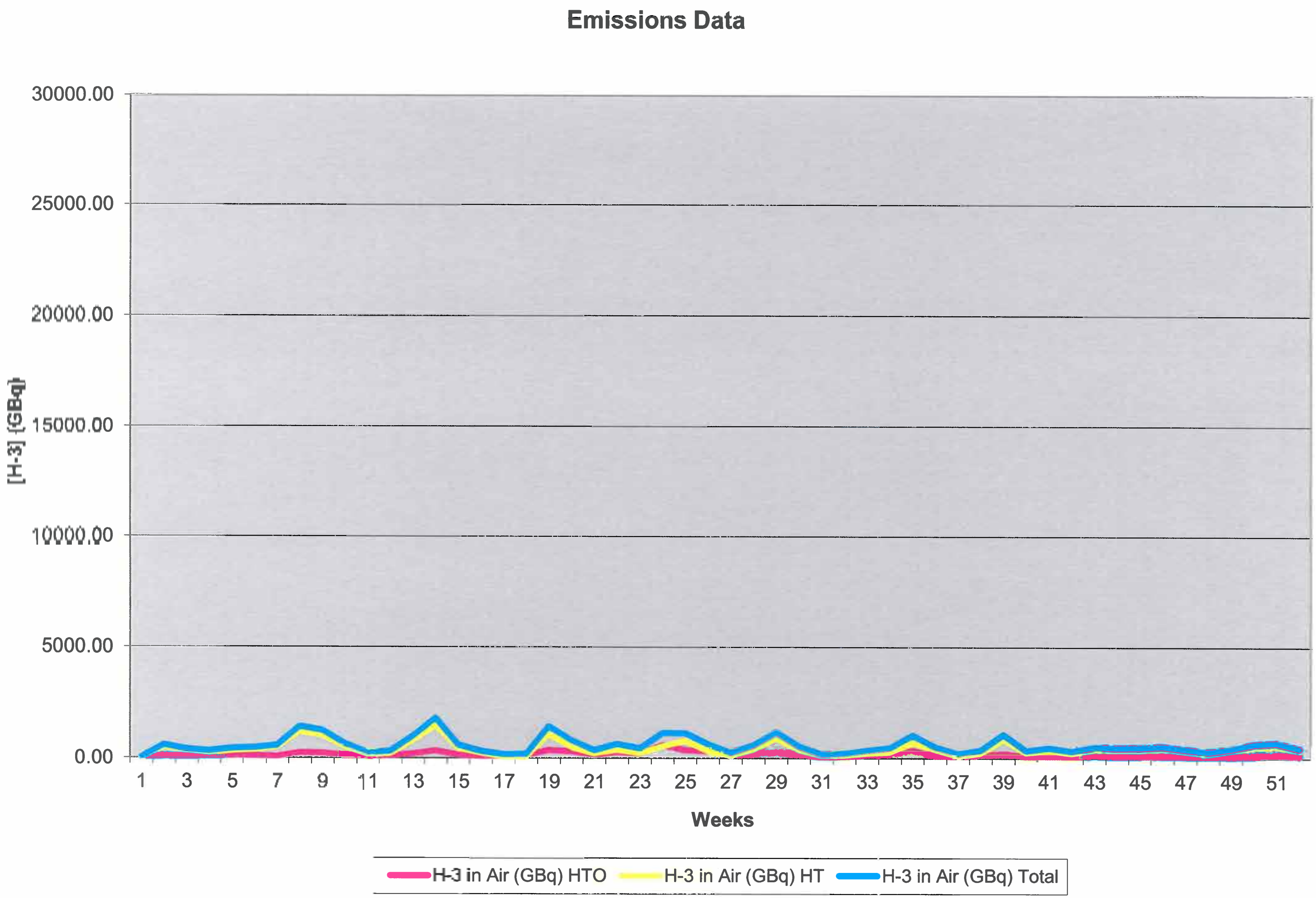


APPENDIX B

Facility Emissions Data for 2012

Facility Emissions Data

Week	Date Initial	Date Final	Stack Release Data: H-3 in Air (GBq) HTO	HT	Total	(GBq) ∑(HTO)	∑(HTO + HT)	1996 SRBT DEL %DEL Adult Resident	Infant Resident	Adult Worker	Weekly Release Limit %WRL HTO	HT	2006 SRBT DRL % DRL Adult Resident	Infant Resident	Nursing Infant	Nursing Mother	Adult Worker
1	27/12/2011	03/01/2012	29.08	2.40	31.48	29.08	31.48	0.01	0.00	0.01	0.02	0.01	0.02	0.01	0.03	0.02	0.02
2	03/01/2012	10/01/2012	82.25	495.06	577.31	111.33	608.79	0.02	0.01	0.02	0.06	0.11	0.06	0.05	0.10	0.06	0.06
3	10/01/2012	17/01/2012	57.20	328.57	385.77	168.53	994.56	0.01	0.01	0.01	0.04	0.07	0.04	0.03	0.07	0.04	0.04
4	17/01/2012	24/01/2012	88.09	220.70	308.79	256.62	1303.35	0.02	0.01	0.02	0.07	0.06	0.06	0.04	0.09	0.06	0.06
5	24/01/2012	31/01/2012	98.46	323.93	422.39	355.08	1725.74	0.02	0.01	0.02	0.07	0.08	0.06	0.05	0.11	0.07	0.06
6	31/01/2012	07/02/2012	87.53	374.43	461.96	442.61	2187.70	0.02	0.01	0.02	0.06	0.09	0.06	0.05	0.10	0.06	0.06
7	07/02/2012	14/02/2012	65.25	489.91	555.16	507.86	2742.86	0.01	0.01	0.02	0.05	0.11	0.05	0.04	0.08	0.05	0.05
8	14/02/2012	21/02/2012	227.71	1181.35	1409.06	735.57	4151.92	0.05	0.03	0.05	0.17	0.27	0.16	0.12	0.26	0.17	0.16
9	21/02/2012	28/02/2012	223.23	1015.49	1238.72	958.80	5390.64	0.05	0.03	0.05	0.17	0.24	0.15	0.12	0.25	0.16	0.15
10	28/02/2012	06/03/2012	117.56	510.02	627.58	1076.36	6018.22	0.02	0.01	0.03	0.09	0.12	0.08	0.06	0.13	0.08	0.08
11	06/03/2012	13/03/2012	86.56	159.06	245.62	1162.92	6263.84	0.02	0.01	0.02	0.06	0.05	0.05	0.04	0.09	0.06	0.05
12	13/03/2012	20/03/2012	115.81	195.22	311.03	1278.73	6574.87	0.02	0.01	0.03	0.09	0.06	0.07	0.05	0.11	0.07	0.07
13	20/03/2012	27/03/2012	183.37	803.03	986.40	1462.10	7561.27	0.04	0.02	0.04	0.14	0.19	0.13	0.10	0.21	0.13	0.12
14	27/03/2012	03/04/2012	328.59	1457.02	1785.61	1790.69	9346.88	0.07	0.04	0.08	0.24	0.34	0.23	0.17	0.37	0.23	0.22
15	03/04/2012	10/04/2012	134.71	452.15	586.86	1925.40	9933.74	0.03	0.02	0.03	0.10	0.11	0.09	0.07	0.14	0.09	0.09
16	10/04/2012	17/04/2012	75.04	235.22	310.26	2000.44	10244.00	0.02	0.01	0.02	0.06	0.06	0.05	0.04	0.08	0.05	0.05
17	17/04/2012	24/04/2012	106.79	59.60	166.39	2107.23	10410.39	0.02	0.01	0.02	0.08	0.03	0.06	0.05	0.10	0.06	0.06
18	24/04/2012	01/05/2012	129.24	46.41	175.65	2236.47	10586.04	0.03	0.01	0.03	0.10	0.03	0.08	0.06	0.12	0.08	0.07
19	01/05/2012	07/05/2012	348.66	1073.97	1422.63	2585.13	12008.67	0.07	0.04	0.08	0.26	0.27	0.23	0.17	0.37	0.23	0.22
20	07/05/2012	15/05/2012	293.10	496.84	789.94	2878.23	12798.61	0.06	0.03	0.07	0.22	0.15	0.18	0.14	0.29	0.19	0.18
21	15/05/2012	22/05/2012	138.08	213.38	351.46	3016.31	13150.07	0.03	0.02	0.03	0.10	0.07	0.09	0.06	0.14	0.09	0.08
22	22/05/2012	29/05/2012	259.40	370.52	629.92	3275.71	13779.99	0.05	0.03	0.06	0.19	0.12	0.16	0.12	0.25	0.16	0.16
23	29/05/2012	05/06/2012	210.56	226.09	436.65	3486.27	14216.64	0.04	0.02	0.05	0.16	0.08	0.13	0.10	0.20	0.13	0.12
24	05/06/2012	12/06/2012	586.42	538.81	1125.23	4072.69	15341.87	0.12	0.06	0.13	0.43	0.22	0.35	0.26	0.56	0.36	0.34
25	12/06/2012	19/06/2012	354.36	768.27	1122.63	4427.05	16464.50	0.07	0.04	0.08	0.26	0.22	0.22	0.17	0.36	0.23	0.22
26	19/06/2012	26/06/2012	302.87	323.41	626.28	4729.92	17090.78	0.06	0.03	0.07	0.22	0.12	0.18	0.14	0.29	0.19	0.18
27	26/06/2012	03/07/2012	134.65	105.19	239.84	4864.57	17330.62	0.03	0.01	0.03	0.10	0.05	0.08	0.06	0.13	0.08	0.08
28	03/07/2012	10/07/2012	204.93	387.58	592.51	5069.50	17923.13	0.04	0.02	0.05	0.15	0.11	0.13	0.10	0.21	0.13	0.13
29	10/07/2012	17/07/2012	270.16	890.01	1160.17	5339.66	19083.30	0.06	0.03	0.06	0.20	0.22	0.18	0.14	0.29	0.18	0.17
30	17/07/2012	24/07/2012	179.73	355.68	535.41	5519.39	19618.71	0.04	0.02	0.04	0.13	0.10	0.11	0.09	0.18	0.12	0.11
31	24/07/2012	31/07/2012	60.21	113.63	173.84	5579.60	19792.55	0.01	0.01	0.01	0.04	0.03	0.04	0.03	0.06	0.04	0.04
32	31/07/2012	07/08/2012	92.79	118.17	210.96	5672.39	20003.51	0.02	0.01	0.02	0.07	0.04	0.06	0.04	0.09	0.06	0.06
33	07/08/2012	14/08/2012	145.26	208.08	353.34	5817.65	20356.85	0.03	0.02	0.03	0.11	0.07	0.09	0.07	0.14	0.09	0.09
34	14/08/2012	21/08/2012	204.90	259.06	463.96	6022.55	20820.81	0.04	0.02	0.05	0.15	0.09	0.12	0.09	0.20	0.13	0.12
35	21/08/2012	28/08/2012	353.59	684.80	1038.39	6376.14	21859.20	0.07	0.04	0.08	0.26	0.20	0.22	0.17	0.35	0.23	0.22
36	28/08/2012	04/09/2012	123.71	383.25	506.96	6499.85	22366.16	0.03	0.01	0.03	0.09	0.10	0.08	0.06	0.13	0.08	0.08
37	04/09/2012	11/09/2012	111.89	88.14	200.03	6611.74	22566.19	0.02	0.01	0.03	0.08	0.04	0.07	0.05	0.11	0.07	0.07
38	11/09/2012	18/09/2012	144.53	222.00	366.53	6756.27	22932.72	0.03	0.02	0.03	0.11	0.07	0.09	0.07	0.14	0.09	0.09
39	18/09/2012	25/09/2012	207.33	859.34	1066.67	6963.60	23999.39	0.04	0.03	0.05	0.15	0.20	0.14	0.11	0.23	0.15	0.14
40	25/09/2012	02/10/2012	101.22	240.47	341.69	7064.82	24341.08	0.02	0.01	0.02	0.07	0.07	0.06	0.05	0.10	0.07	0.06
41	02/10/2012	09/10/2012	114.50	353.44	467.94	7179.32	24809.02	0.02	0.01	0.03	0.08	0.09	0.07	0.06	0.12	0.08	0.07
42	09/10/2012	16/10/2012	100.73	222.10	322.83	7280.05	25131.85	0.02	0.01	0.02	0.07	0.06	0.06	0.05	0.10	0.07	0.06
43	16/10/2012	23/10/2012	137.91	362.07	499.98	7417.96	25631.83	0.03	0.02	0.03	0.10	0.10	0.09	0.07	0.14	0.09	0.09
44	23/10/2012	30/10/2012	104.87	357.90	462.77	7522.83	26094.60	0.02	0.01	0.02	0.08	0.09	0.07	0.05	0.11	0.07	0.07
45	30/10/2012	06/11/2012	115.59	354.65	470.24	7638.42	26564.84	0.02	0.01	0.03	0.09	0.09	0.08	0.06	0.12	0.08	0.07
46	06/11/2012	13/11/2012	96.53	414.53	511.06	7734.95	27075.90	0.02	0.01	0.02	0.07	0.10	0.07	0.05	0.11	0.07	0.06
47	13/11/2012	20/11/2012	99.54	295.55	395.09	7834.49	27470.99	0.02	0.01	0.02	0.07	0.08	0.06	0.05	0.10	0.07	0.06
48	20/11/2012	27/11/2012	99.06	178.20	277.26	7933.55	27748.25	0.02	0.01	0.02	0.07	0.05	0.06	0.05	0.10	0.06	0.06
49	27/11/2012	04/12/2012	76.68	340.88	417.56	8010.23	28165.81	0.02	0.01	0.02	0.06	0.08	0.05	0.04	0.09	0.05	0.05
50	04/12/2012	11/12/2012	106.39	515.11	621.50	8116.62	28787.31	0.02	0.01	0.02	0.08	0.12	0.07	0.06	0.12	0.08	0.07
51	11/12/2012	18/12/2012	143.97	547.48	691.45	8260.59	29478.76	0.03	0.02	0.03	0.11	0.13	0.10	0.07	0.16	0.10	0.09
52	18/12/2012	26/12/2012	95.47	330.40	425.87	8356.06	29904.63	0.02	0.01	0.02	0.07	0.08	0.06	0.05	0.10	0.07	0.06
Annual	Total		8356.06	21548.57	29904.63			Average % DEL			Average % WRL		Average % DRL				
Weekly	Average		160.69	414.40	575.09			0.03	0.02	0.04	0.12	0.11	0.10	0.08	0.17	0.11	0.10
% Annual Release Limit:				(Bq/a)	% Release Limit			Projected Dose (uSv/a)					Projected Dose (uSv/a)				
			HTO	6.72E+13	12.43			0.33	0.19	0.37			1.03	0.78	1.66	1.06	1.01
			HTO + HT	4.48E+14	6.68			Adult Resident	Infant Resident	Adult Worker	HTO	HT	Adult Resident	Infant Resident	Nursing Infant	Nursing Mother	Adult Worker
Derived Weekly HTO Release/Emission Limit (GBq/week)								5.00E+05	9.40E+05	4.40E+05	2.90E+04	NA	1.73E+05	2.33E+05	1.10E+05	1.69E+05	1.77E+05
Derived Weekly HT Release/ Emission Limit (GBq/week)								6.60E+07	2.70E+07	6.40E+07	NA	1.80E+06	4.02E+06	4.52E+06	2.07E+06	3.80E+06	4.07E+06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20000.00
15000.00
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0.00
[H-3] (GBq)
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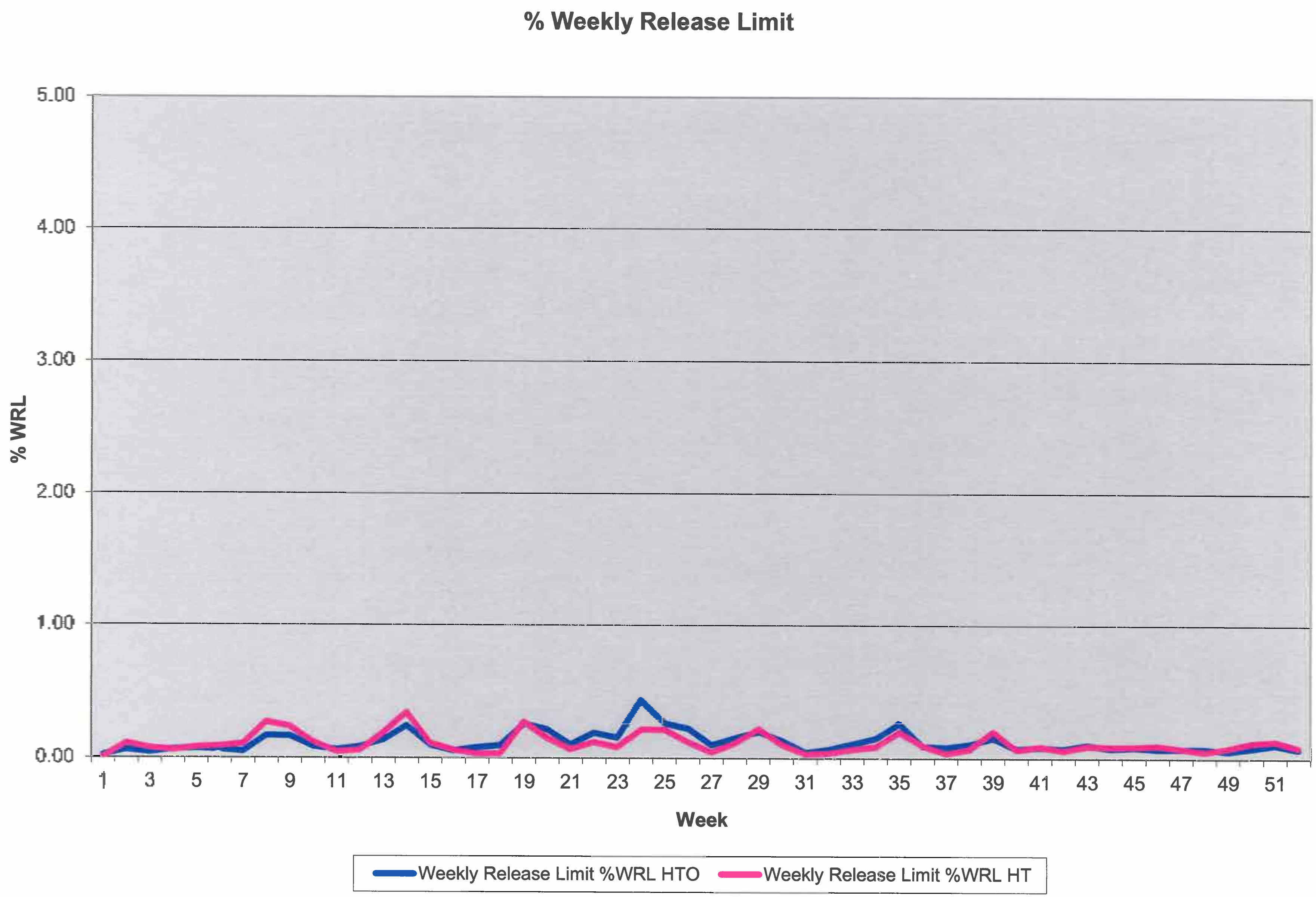
Weeks
H-3 in Air (GBq) HTO
H-3 in Air (GBq) HT
H-3 in Air (GBq) Total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2.00
1.00
0.00
% WRL
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3
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7
9
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17
19
21
23
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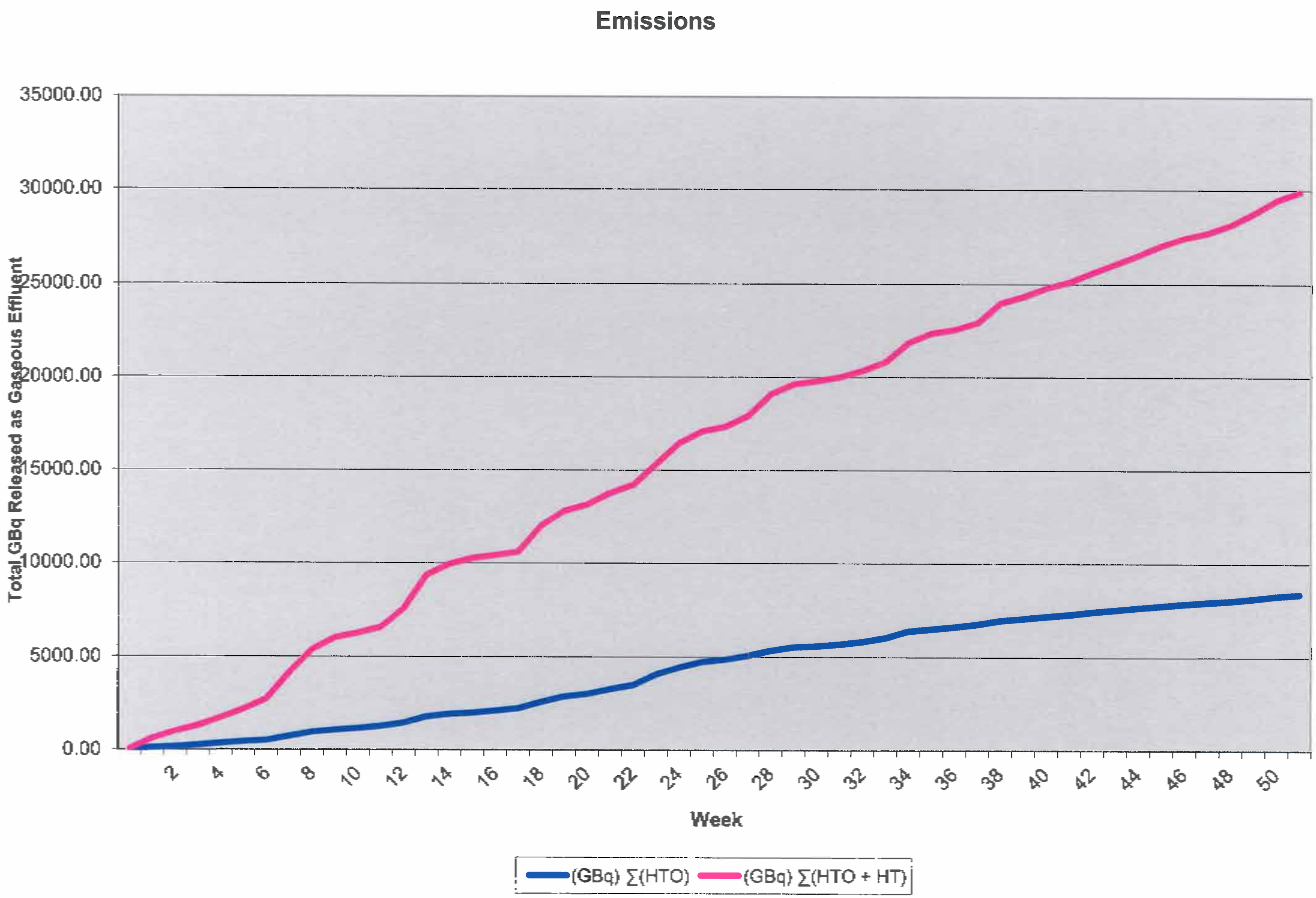
Week
Weekly Release Limit %WRL HTO
Weekly Release Limit %WRL HT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10000.00
5000.00
0.00
Total GBq Released as Gaseous Effluent
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4
6
8
10
12
14
16
18
20
22
24
26
28
30
32
34
36
38
40
42
44
46
48
50
Week
(GBq) ∑(HTO)
(GBq) ∑(HTO + HT)

APPENDIX C

Annual Liquid Effluent Data for 2012

ANNUAL LIQUID EFFLUENT DATA

WEEK ENDING	WEEKLY RELEASE (Bq)	WEEK	LIMIT ALLOWANCE	IF RELEASED IN ONE WORK DAY AT SEWAGE PLANT (Bq/L)	IF RELEASED IN FIVE WORK DAYS AT SEWAGE PLANT (Bq/L)	IF RELEASED IN OVER ENTIRE WEEK AT SEWAGE PLANT (Bq/L)
			200,000,000,000	**4,170,399**	**20,851,995**	**87,578,380**
			200,000,000,000	0	0	0
8-Jan-12	271,256,000	52	199,728,744,000	65	13	3
15-Jan-12	339,070,000	51	199,389,674,000	81	16	4
22-Jan-12	383,700,612	50	199,005,973,388	92	18	4
29-Jan-12	389,901,906	49	198,616,071,482	93	19	4
5-Feb-12	275,114,400	48	198,340,957,082	66	13	3
12-Feb-12	117,249,000	47	198,223,708,082	28	6	1
19-Feb-12	234,498,000	46	197,989,210,082	56	11	3
26-Feb-12	0	45	197,989,210,082	0	0	0
4-Mar-12	0	44	197,989,210,082	0	0	0
11-Mar-12	0	43	197,989,210,082	0	0	0
18-Mar-12	27,351,820	42	197,961,858,262	7	1	0
25-Mar-12	0	41	197,961,858,262	0	0	0
1-Apr-12	0	40	197,961,858,262	0	0	0
8-Apr-12	1,449,600	39	197,960,408,662	0	0	0
15-Apr-12	137,075,136	38	197,823,333,526	33	7	2
22-Apr-12	342,687,840	37	197,480,645,686	82	16	4
29-Apr-12	342,687,840	36	197,137,957,846	82	16	4
6-May-12	411,225,408	35	196,726,732,438	99	20	5
13-May-12	342,687,840	34	196,384,044,598	82	16	4
20-May-12	137,075,136	33	196,246,969,462	33	7	2
27-May-12	0	32	196,246,969,462	0	0	0
3-Jun-12	0	31	196,246,969,462	0	0	0
10-Jun-12	94,401,818	30	196,152,567,644	23	5	1
17-Jun-12	342,250,590	29	195,810,317,054	82	16	4
24-Jun-12	410,700,708	28	195,399,616,346	98	20	5
1-Jul-12	342,250,590	27	195,057,365,756	82	16	4
8-Jul-12	206,638,338	26	194,850,727,418	50	10	2
15-Jul-12	414,564,660	25	194,436,162,758	99	20	5
22-Jul-12	414,564,660	24	194,021,598,098	99	20	5
29-Jul-12	345,470,550	23	193,676,127,548	83	17	4
5-Aug-12	308,319,820	22	193,367,807,728	74	15	4
12-Aug-12	345,470,550	21	193,022,337,178	83	17	4
19-Aug-12	103,381,030	20	192,918,956,148	25	5	1
26-Aug-12	0	19	192,918,956,148	0	0	0
2-Sep-12	0	18	192,918,956,148	0	0	0
9-Sep-12	297,913,106	17	192,621,043,042	71	14	3
16-Sep-12	893,739,318	16	191,727,303,724	214	43	10
23-Sep-12	744,782,765	15	190,982,520,959	179	36	9
30-Sep-12	893,739,318	14	190,088,781,641	214	43	10
7-Oct-12	553,030,358	13	189,535,751,283	133	27	6
14-Oct-12	133,900,546	12	189,401,850,737	32	6	2
21-Oct-12	272,055,960	11	189,129,794,777	65	13	3
28-Oct-12	408,083,940	10	188,721,710,837	98	20	5
4-Nov-12	476,097,930	9	188,245,612,907	114	23	5
11-Nov-12	204,041,970	8	188,041,570,937	49	10	2
18-Nov-12	0	7	188,041,570,937	0	0	0
25-Nov-12	0	6	188,041,570,937	0	0	0
2-Dec-12	20,989,040	5	188,020,581,897	5	1	0
9-Dec-12	0	4	188,020,581,897	0	0	0
16-Dec-12	0	3	188,020,581,897	0	0	0
23-Dec-12	1,116,960	2	188,019,464,937	0	0	0
30-Dec-12	0	1	188,019,464,937	0	0	0

Annual Total (Bq)	11,980,535,063
Annual Total (GBq)	12
Limit (GBq)	200
% of limit	**5.99**

APPENDIX D

Ventilation equipment maintained in 2012

VENTILATION EQUIPMENT MAINTAINED IN 2012

	TYPE	ZONE	LOCATION
1	Heat Recovery unit	1	Mold area/Office
4	Unit heaters	1 & 3	Rig room, Glass shop, Molding area & office
2	A/C wall units	1	Coating room, Glass shop
2	Makeup air units	1 & 2	Coating room, Assembly room
4	Exhaust fans	1 & 2	Coating, Assembly, Glass room, Paint Booth
1	HRV with reheat	2	Assembly room
2	Fan coils	1	Office, Mold area/Office
2	Condenser	1	Mold area/Office
1	Mid efficient gas furnace & central air	1	Stores
1	Mid efficient gas furnace	1	Receiving
1	Bulk stack air handling unit	1	Compound
1	Rig stack air handling unit	1	Compound
2	Rig and Bulk stack air handling units pitot tubes	1	Compound

APPENDIX E

Equipment maintenance information for 2012

2012 Equipment Maintenance Information

Major maintenance carried out in 2012:	None
Semi-Annual Maintenance carried out in 2012: **Contract:** Kool Temp/ Valley Refrigeration Ltd.	May 28,2012 Oct 21,2012
Maintenance Schedule: **Contract:** Valley Compressor	April 11, 2012 Aug 14, 2012 December 3, 2012
Quarterly Maintenance carried out in 2012: **Contract:** Kool Temp/ Valley Refrigeration Ltd.	January 27,2012 February 28,2012 May 28,2012 August 29,2012 December 12,2012
Sprinkler System Maintenance by a Third Party in 2012: Drapeau	March 30,2012 June 29,2012 September 04,2012 December 05,2012
Sprinkler System Check by SRB Technologies in 2012:	Weekly
Report of any weakening or possible major failure of any components:	None

All ventilation systems were maintained in fully operational condition with no major system failures during 2012.

Equipment maintenance was performed under contract with a fully licensed maintenance and TSSA certified local HVAC contract provider.

All process equipment is serviced and maintained by qualified staff and through contract with companies that specialize in process control systems. All process equipment has been maintained in fully operational condition with no major equipment failures during 2012.

APPENDIX F

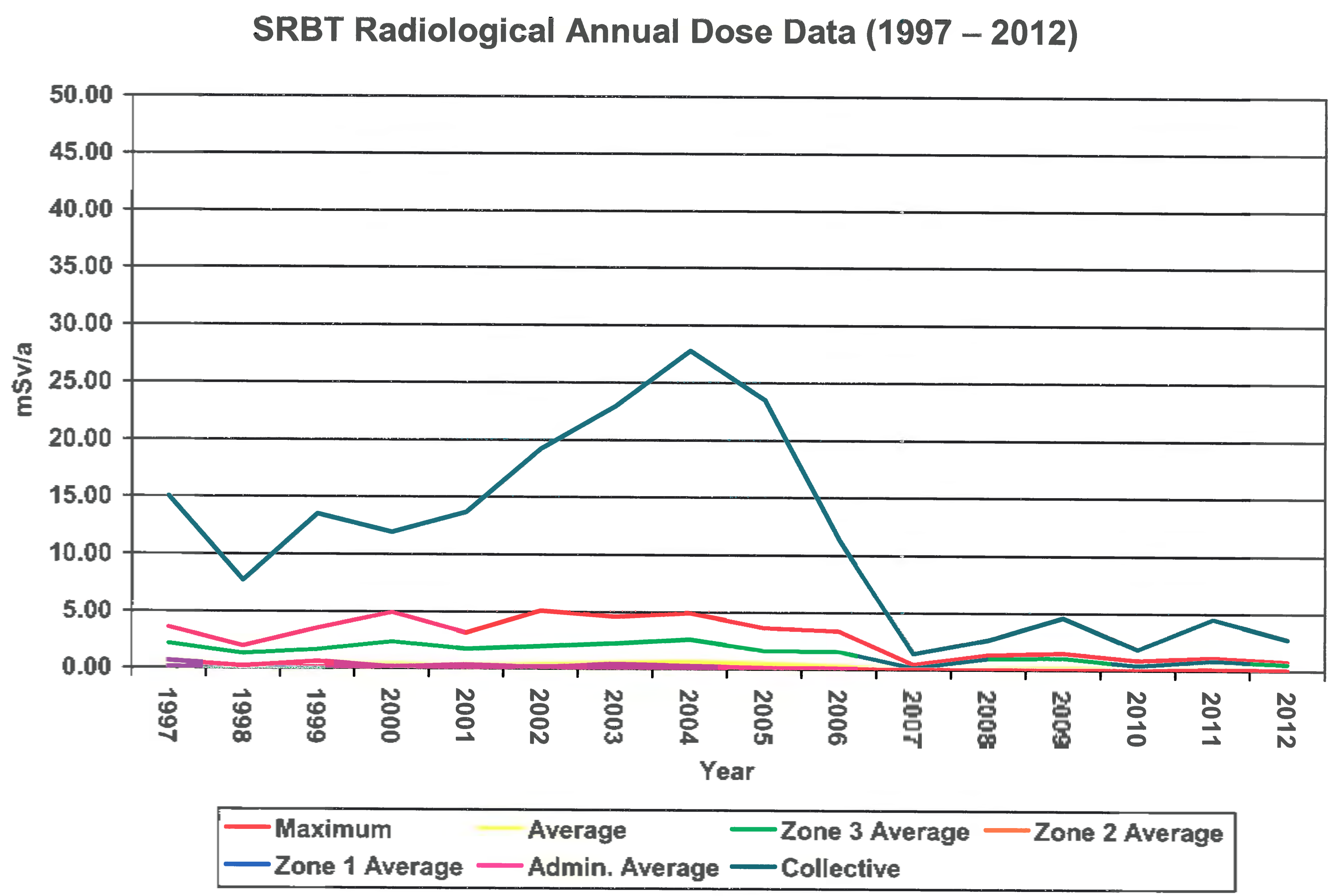
Radiological occupational annual dose data for 2012

SRB RADIOLOGICAL ANNUAL DOSE DATA (1997 – 2012)

ANNUAL DOSE (mSv/year)	1997	1998	1999	2000	2001	2002	2003	2004	2005	*2006	**2007	***2008	2009	2010	2011	2012	AVERAGE
Maximum Dose	3.55	1.91	3.48	4.89	3.11	5.08	4.54	4.90	3.61	3.35	0.48	1.34	1.50	0.88	1.15	0.80	2.79
Average	0.52	0.24	0.46	0.38	0.29	0.40	0.55	0.67	0.50	0.30	0.04	0.16	0.25	0.11	0.25	0.11	0.33
Average Zone 3	2.12	1.26	1.62	2.30	1.70	1.94	2.22	2.58	1.61	1.57	0.17	1.00	1.06	0.42	0.87	0.58	1.44
Average Zone 2	0.07	0.12	0.11	0.15	0.08	0.18	0.16	0.18	0.12	0.07	0.07	0.02	0.01	0.01	0.11	0.03	0.09
Average Zone 1	0.08	<0.01	<0.01	<0.01	0.01	0.01	0.01	0.02	<0.01	<0.01	0.00	0.03	0.03	0.02	0.02	0.02	0.02
Average Administration	0.61	0.17	0.60	0.12	0.31	0.11	0.39	0.24	0.12	0.09	<0.01	0.05	0.05	0.02	0.13	0.06	0.19
Collective Dose	15.01	7.72	13.47	11.91	13.65	19.21	22.91	27.75	23.50	11.34	1.40	2.62	4.57	1.82	4.47	2.75	11.51

DOSIMETRY RANGE (mSv/year)	1997	1998	1999	2000	2001	2002	2003	2004	2005	*2006	**2007	***2008	2009	2010	2011	2012	AVERAGE
0.00 – 0.99	23	29	28	33	43	43	39	30	39	34	32	15	15	17	16	24	28.75
1.00 – 1.99	4	3	4	1	4	2	0	5	3	3	0	1	3	0	2	0	2.19
2.00 – 2.99	1	0	0	1	1	2	3	2	3	0	0	0	0	0	0	0	0.81
3.00 – 3.99	1	0	2	1	1	0	2	2	2	1	0	0	0	0	0	0	0.75
4.00 – 4.99	0	0	0	1	0	0	1	2	0	0	0	0	0	0	0	0	0.25
> 5.00	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0.06
> 50.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
Staff Members	29	32	34	37	49	48	45	41	47	38	32	16	18	17	18	24	32.81

*** Operated 48 weeks**
**** Operated 5 weeks**
***** Operated 26 weeks**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1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
Year
Maximum
Average
Zone 3 Average
Zone 2 Average
Zone 1 Average
Admin. Average
Collective

APPENDIX F

APPENDIX G

Swipe monitoring results for 2012

Zone 3 Swipe Areas	No. of Swipes	Average Value	Amount Pass	Amount Fail	Average Pass
Floor @ Barrier	245	15.21	235	10	95.92%
Rig 7 Floor	245	15.80	234	11	95.51%
Rig 7	245	5.75	243	2	99.18%
Rig 1 Floor	245	20.40	227	18	92.65%
Rig 1	245	14.71	240	5	97.96%
Muffle Fume Hood	245	31.04	229	16	93.47%
Crusher Fume Hood	245	29.14	218	27	88.98%
Wash Fume Hood	62	13.92	58	4	93.55%
Waste Rm Floor	245	9.98	241	4	98.37%
Laser Rm Floor @ F/H	186	14.12	176	10	94.62%
Laser Rm Floor @ EIP	245	18.97	229	16	93.47%
Laser Rm Fume Hood	245	22.25	220	25	89.80%
EIP Housing	62	11.37	59	3	95.16%
EIP Key Pad	62	8.47	61	1	98.39%
Laser Cabinet	186	8.93	178	8	95.70%
Reclaim Floor	62	18.77	59	3	95.16%
Bulk Splitter Floor	245	32.75	203	42	82.86%
Storage Rm Floor	186	19.66	169	17	90.86%
Trit Lab Desk	186	9.24	177	9	95.16%
Disassembly F/H	245	56.72	220	25	89.80%
Bulk Fume Hood	245	102.88	237	8	96.73%
Tool Box (Outer)	62	12.35	61	1	98.39%
Tool Box (Inner)	245	44.13	225	20	91.84%
Sink Area	62	12.67	58	4	93.55%
Shelves @ Barrier	62	5.30	61	1	98.39%
Pre-bake Oven	62	5.24	62	0	100.00%
EIP Area	183	6.97	181	2	98.91%
Laser Counter	124	8.86	120	4	96.77%
Diss. Chair	62	5.25	61	1	98.39%
B/S Chair	62	6.31	61	1	98.39%
RR Monitor Area	62	6.46	62	0	100.00%
Muffle Cabinet	121	11.85	112	9	92.56%
Wash Cabinet	121	10.93	116	5	95.87%
Light Prep Cabinet	121	5.95	118	3	97.52%
RR Desk Area	59	6.95	58	1	98.31%
Counter @ P.Hole	59	2.31	59	0	100.00%
Crusher Cabinet	59	14.04	55	4	93.22%
Laser Floor Random	59	7.22	58	1	98.31%
LMI Laser	59	4.16	59	0	100.00%
Storage Rm Shelves	59	31.28	53	6	89.83%
	5880	17.21	5553	327	95.34%

Total Swipes	5880
Total Fails	327
Pass Rate	94.44

Zone 2 Swipe Areas	No. of Swipes	Average Value	Amount Pass	Amount Fail	Average Pass
Floor at Barrier	144	1.61	133	11	92.36%
Floor at Sign Prep	109	1.49	101	8	92.66%
Floor at Computer	37	2.21	35	2	94.59%
Paint Booth Floor	37	1.71	36	1	97.30%
Floor at Sight Area	73	1.74	69	4	94.52%
Floor at Windows	109	1.51	100	9	91.74%
Floor at Table 1	144	2.32	124	20	86.11%
Floor at Table 2	73	1.96	70	3	95.89%
Work Counters	144	0.55	143	1	99.31%
Insp. Prep Floor	144	2.17	129	15	89.58%
Insp. Prep Counter	144	3.33	135	9	93.75%
Rig Porthole	144	0.60	144	0	100.00%
Screen Printer Area (Man)	36	0.51	36	0	100.00%
Photometer Room	72	0.51	72	0	100.00%
Floor At QA Table	71	1.83	66	5	92.96%
WIP Shelving	71	1.57	66	5	92.96%
Insp. Prep Cabinet	71	1.84	64	7	90.14%
QA Table	35	0.81	33	2	94.29%
QA Shelving	35	1.87	30	5	85.71%
Counter @ Barrier	35	1.39	32	3	91.43%
	1728	1.58	1618	110	93.77%

Total Swipes	1728
Total Fails	110
Pass Rate	93.63

Zone 1 Swipe Areas	No. of Swipes	Average Value	Amount Pass	Amount Fail	Average Pass
Lunch Room	51	0.13	51	0	100.00%
LSC Room	51	0.39	50	1	98.04%
Bathroom (Mens)	39	0.93	37	2	94.87%
Bathrm. (Ladies)	13	0.31	13	0	100.00%
RR Ante Room	51	0.77	50	1	98.04%
Rig Room Barrier	51	1.23	48	3	94.12%
Assembly Entry	51	0.57	49	2	96.08%
Bathrm. (Shipping)	13	0.21	13	0	100.00%
Records Room	12	0.28	12	0	100.00%
	332	0.54	323	9	97.91%

Total Swipes	332
Total Fails	9
Pass Rate	97.29

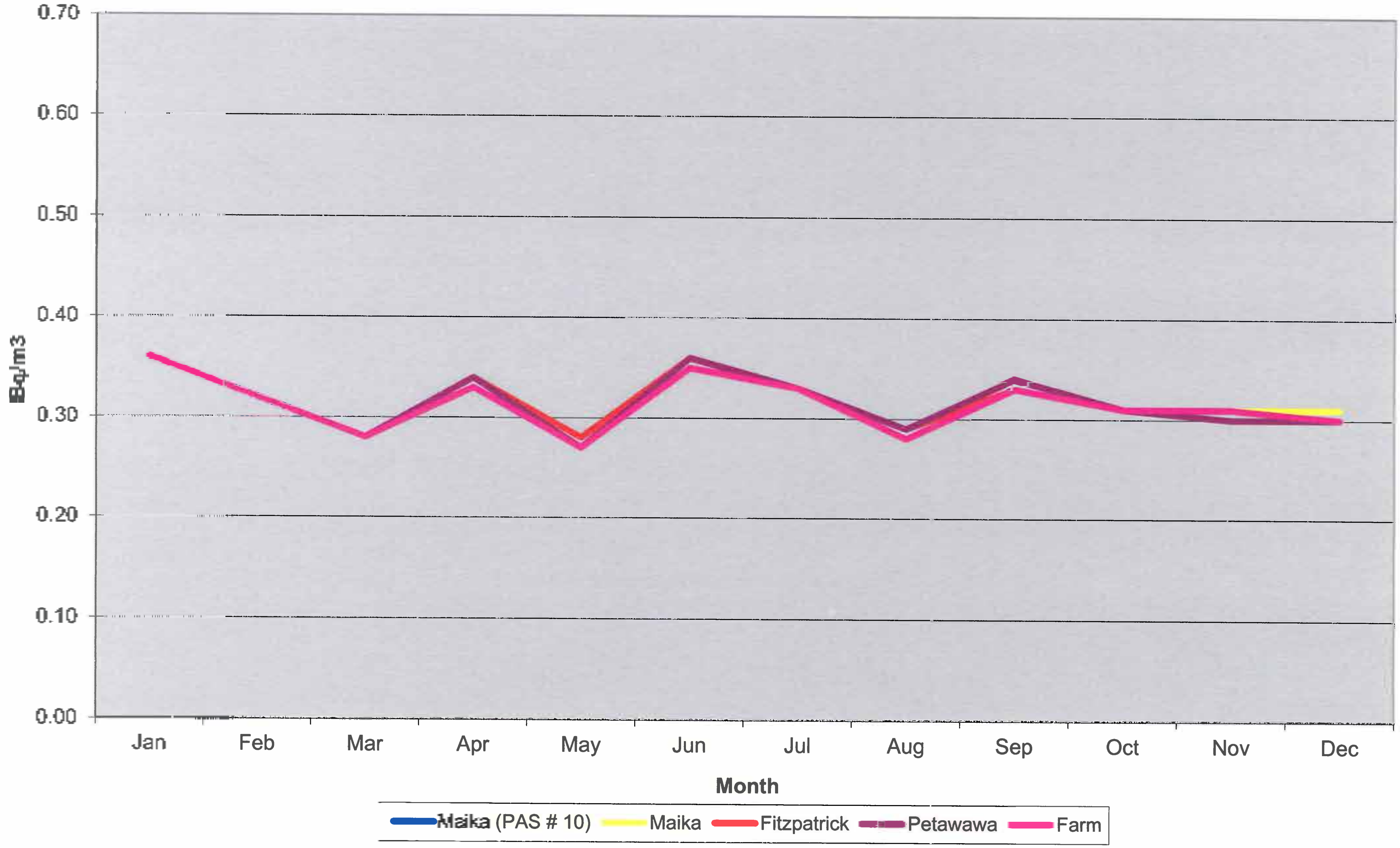
APPENDIX H

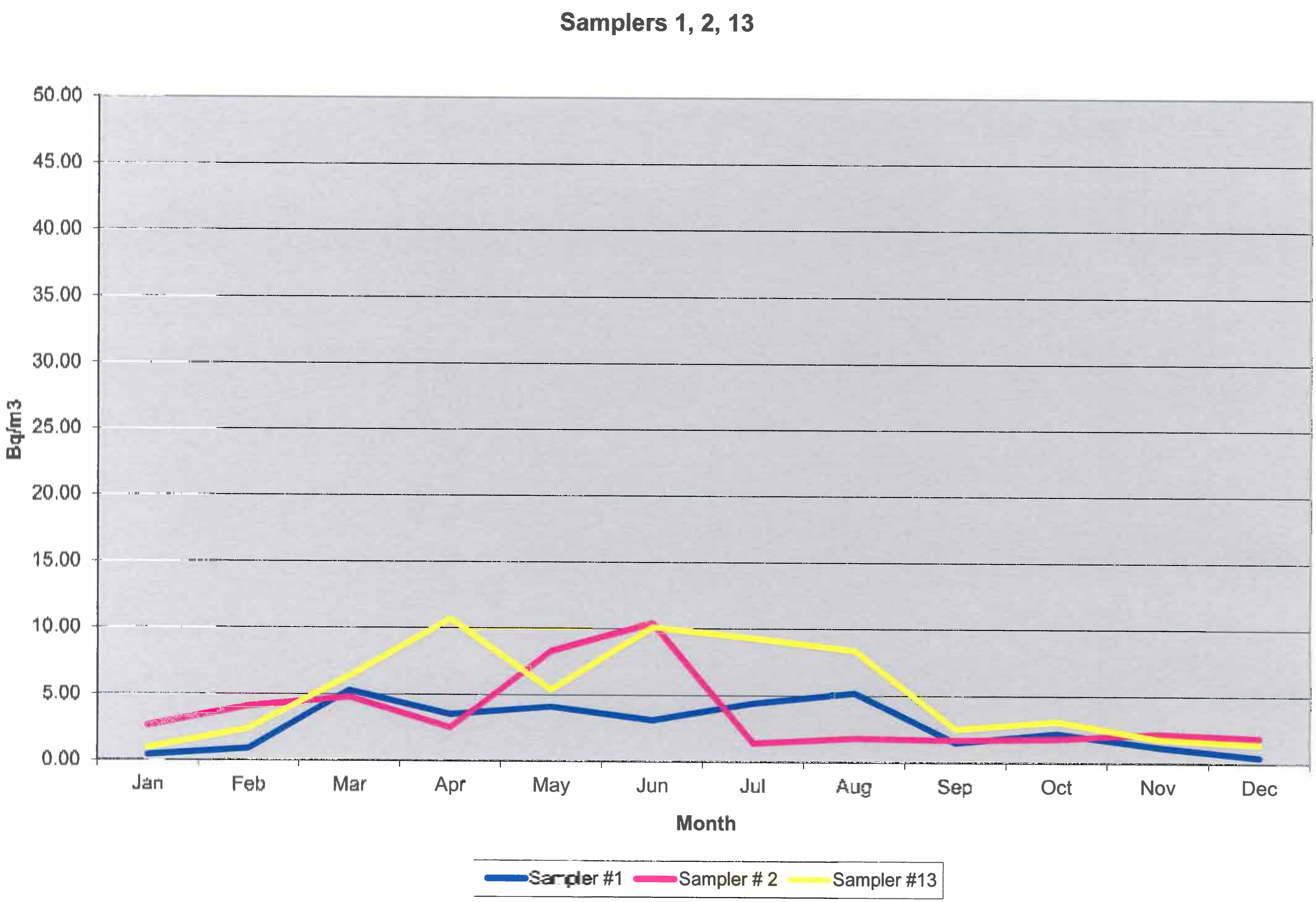
Passive Air Sampler Results 2012

2012 Environment Monitoring Program Passive Air Sampling System																
				(Bq/m3)												Average
Sampler No.	Sampler ID	Location	Dist. to SRBT	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	(Bq/m3)
				(Jan5-Feb1)	(Feb1-Mar1)	(Mar1-Apr4)	(Apr4-May2)	(May2-June5)	(June5-July4)	(July4-Aug2)	(Aug2-Sept5)	(Sept5-Oct 2)	(Oct 2-Nov1)	(Nov1-Dec4)	(Dec4-Jan4)	
1	N250	N 45° 48.486' W 077° 07.092' Elev. 137m	322m	0.36	1.00	0.74	0.51	2.90	2.70	1.20	1.50	3.60	1.10	0.95	0.30	1.41
2	N500	N 45° 48.572' W 077° 07.008' Elev. 134m	493m	0.36	0.70	0.48	0.34	0.70	0.84	0.75	0.74	2.10	0.31	0.55	0.31	0.68
3	N1000	N 45° 48.869' W 077° 06.997' Elev. 135m	1040m	0.36	0.39	0.28	0.33	0.29	0.75	0.41	0.35	0.58	0.39	0.31	0.30	0.40
4 (PAS #4)	NW250	N 45° 48.412' W 077° 07.189' Elev. 137m	222m	1.10	1.70	2.00	2.10	4.50	4.70	0.94	1.60	3.70	2.90	1.30	1.50	2.34
5	NW500	N 45° 48.577' W 077° 07.382' Elev. 134m	615m	0.42	1.00	0.55	0.64	0.75	1.30	0.49	0.69	1.50	1.30	0.49	0.38	0.79
6 (PAS # 8)	NW1000	N 45° 48.754' W 077° 07.599' Elev. 130m	1050m	0.36	0.93	0.33	0.36	0.36	0.57	0.33	0.32	0.93 *		0.45	0.32	0.48
7	NW2000	N 45° 49.141' W 077° 08.090' Elev. 139m	2000m	0.36	0.47	0.28	0.33	0.27	0.44	0.33	0.29	0.52	0.31	0.31	0.30	0.35
8	W250	N 45° 48.300' W 077° 07.323' Elev. 138m	297m	0.36	3.50	2.20	1.70	2.10	0.92	0.57	0.34	0.58	1.00	0.59	0.37	1.19
9	W500	N 45° 48.288' W 077° 07.393' Elev. 137m	389m	0.36	1.10	1.20	0.92	1.50	0.72	0.36	0.32	0.45	0.80	0.36	0.39	0.71
10	W1000	N 45° 48.306' W 077° 07.630' Elev. 134m	691m	0.36	0.79	0.70	0.54	0.40	0.36	0.33	0.29	0.33	0.51	0.33	0.30	0.44
11	SW250	N 45° 48.247' W 077° 07.206' Elev. 140m	183m	0.36	0.43	1.30	0.87	1.70	0.49	1.20	1.20	0.56	0.49	0.48	0.41	0.79
12	SW500	N 45° 47.896' W 077° 07.307' Elev. 148m	839m	0.36	0.32	1.50	0.34	0.28	0.35	0.33	0.28	0.33	0.31	0.31	0.30	0.42
13	SW1000	N 45° 47.599' W 077° 07.543' Elev. 149m	1470m	0.36	0.32	0.28	0.33	0.27	0.36	0.33	0.29	0.33	0.31	0.31	0.30	0.32
14	SW2000	N 45° 47.408' W 077° 07.866' Elev. 155m	2110m	0.36	0.32	0.28	0.34	0.27	0.36	0.33	0.29	0.33	0.32	0.30	0.31	0.32
15	S250	N 45° 48.129' W 077° 07.014' Elev. 131m	356m	0.36	1.30	1.70	1.40	1.50	1.90	2.10	0.89	0.71	1.50	0.33	0.87	1.21
16	S500	N 45° 48.029' W 077° 07.110' Elev. 143m	532m	0.36	0.37	0.35	0.35	0.53	0.36	0.42	0.41	0.33	0.31	0.31	0.30	0.37
17 (PAS # 12)	S1000	N 45° 46.466' W 077° 07.441' Elev. 158m	1450m	0.36	0.32	0.28	0.34	0.28	0.36	0.33	0.29	0.33	0.31	0.30	0.30	0.32
18	SE250	N 45° 48.189' W 077° 06.874' Elev. 132m	365m	2.30	2.40	2.60	1.60	2.60	2.80	1.90	1.50	1.70	0.95	1.30	3.10	2.06
19	SE500	N 45° 48.108' W 077° 06.783' Elev. 123m	554m	0.93	1.20	0.28	0.95	1.20	1.20	1.00	0.70	0.90	0.44	0.75	1.30	0.90
20	SE1000	N 45° 47.894' W 077° 06.501' Elev. 120m	1090m	0.36	0.37	0.70	0.34	0.37	0.36	0.33	0.28	0.33	0.31	0.31	0.30	0.36
21	SE2000	N 45° 47.505' W 077° 05.978' Elev. 137m	2080m	0.36	0.32	0.28	0.34	0.27	0.36	0.33	0.29	0.33	0.30	0.31	0.30	0.32
22	E250	N 45° 48.234' W 077° 06.807' Elev. 131m	401m	1.40	1.10	0.93	1.10	1.30	1.70	1.60	1.50	2.20	1.10	1.30	1.40	1.39
23	E500	N 45° 48.333' W 077° 06.693' Elev. 132m	520m	0.36	0.85	0.39	0.34	0.29	0.82	0.79	1.20	0.92	0.60	0.48	0.51	0.63
24	E1000	N 45° 48.303' W 077° 06.260' Elev. 143m	1080m	0.36	0.45	0.28	0.34	0.28	0.46	0.54	0.55	0.36	0.37	0.31	0.30	0.38
25	NE250	N 45° 48.371' W 077° 06.964' Elev. 124m	198m	1.00	3.20	1.30 *		3.40	4.60	3.40	8.60	3.00	2.10	0.91	0.58	2.92
26	NE500	N 45° 48.421' W 077° 06.732' Elev. 131m	508m	0.36	1.20	0.51	0.34	0.38	1.20	0.80	1.30	1.00	0.69	0.35	0.30	0.70
27	NE1000	N 45° 48.683' W 077° 06.441' Elev. 148m	1100m	0.36	0.32	0.28	0.34	0.27	0.42	0.50	0.48	0.33	0.54	0.31	0.30	0.37
28	NE2000	N 45° 49.116' W 077° 05.843' Elev. 156m	2200m	0.36	0.47	0.45	0.34	0.27	0.36	0.33	0.29	0.33	0.31	0.31	0.30	0.34
Pre-Sample Points																
BOC Gas (PAS #1)		N 45° 48.287' W 077° 07.123' Elev. 129m	94.1m	0.41	0.90	5.30	3.50	4.10	3.10	4.40	5.20	1.50	2.20	1.20	0.45	2.69
Brewer's Edge (PAS #2)		N 45° 48.325' W 077° 07.132' Elev. 132m	52.8m	2.60	4.10	4.80	2.50	8.30	10.40	1.40	1.80	1.70	1.80	2.20	1.90	3.63
Med-Eng (PAS #13)		N 45° 48.262' W 077° 07.093' Elev. 132m	61.5m	0.94	2.40	6.40	10.70	5.40	10.10	9.30	8.40	2.50	3.10	1.80	1.40	5.20
Replicates																
4-2	NW250	N 45° 48.412' W 077° 07.189' Elev. 137m	222m	0.85	1.50	2.00	2.00	4.30	4.40	0.67	1.60	3.50	2.80	1.20	1.20	2.17
11-2	SW250	N 45° 48.247' W 077° 07.206' Elev. 140m	183m	0.36	0.41	1.30	0.77	1.60	0.40	1.10	1.00	0.50	0.48	0.45	0.37	0.73
18-2	SE250	N 45° 48.189' W 077° 06.874' Elev. 132m	365m	2.20	1.90	2.50	1.50	2.30	2.70	1.70	1.50	1.70	0.72	1.30	2.80	1.90
25-2	NE250	N 45° 48.371' W 077° 06.964' Elev. 124m	198m	0.97	2.70	1.20 *		3.10	4.40	3.20	8.00	3.00	0.45	0.76	0.51	2.57
Background Samples																
Maika (PAS # 10)	SW	N 45° 46.367' W 077° 11.447' Elev. 149m	6690m	0.36	0.32	0.28	0.34	0.28	0.36	0.33	0.29	0.33	0.31	0.31	0.30	0.32
Maika	Duplicate	Same as above	6690m	0.36	0.32	0.28	0.34	0.27	0.36	0.33	0.29	0.33	0.31	0.31	0.31	0.32
Fitzpatrick	SE	N 45° 44.818' W 076° 59.822' Elev. 159m	11400m	0.36	0.32	0.28	0.34	0.28	0.36	0.33	0.29	0.33	0.31	0.31	0.30	0.32
Petawawa	NW	N 45° 51.497' W 077° 12.828' Elev. 149m	9480m	0.36	0.32	0.28	0.34	0.27	0.36	0.33	0.29	0.34	0.31	0.30	0.30	0.32
Farm	NE	N 45° 53.071' W 076° 56.768' Elev. 142m	16000m	0.36	0.32	0.28	0.33	0.27	0.35	0.33	0.28	0.33	0.31	0.31	0.30	0.31
			Sum	25.20	42.35	47.35	40.43	59.70	69.05	45.69	55.72	44.67	32.98	25.07	26.09	43.36

*Unable to replace sample

Background Samples

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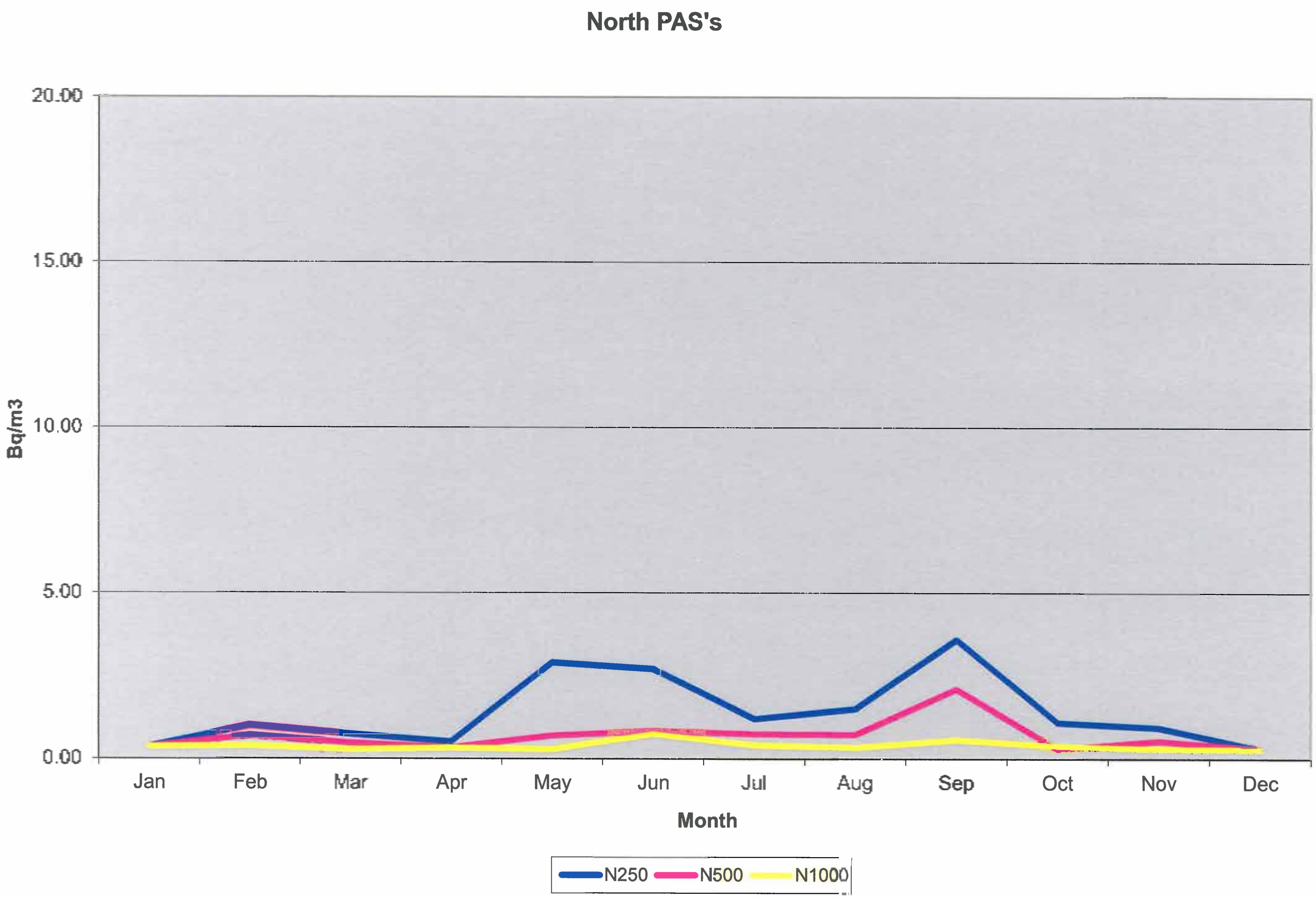
Sampler # 2
Sampler #13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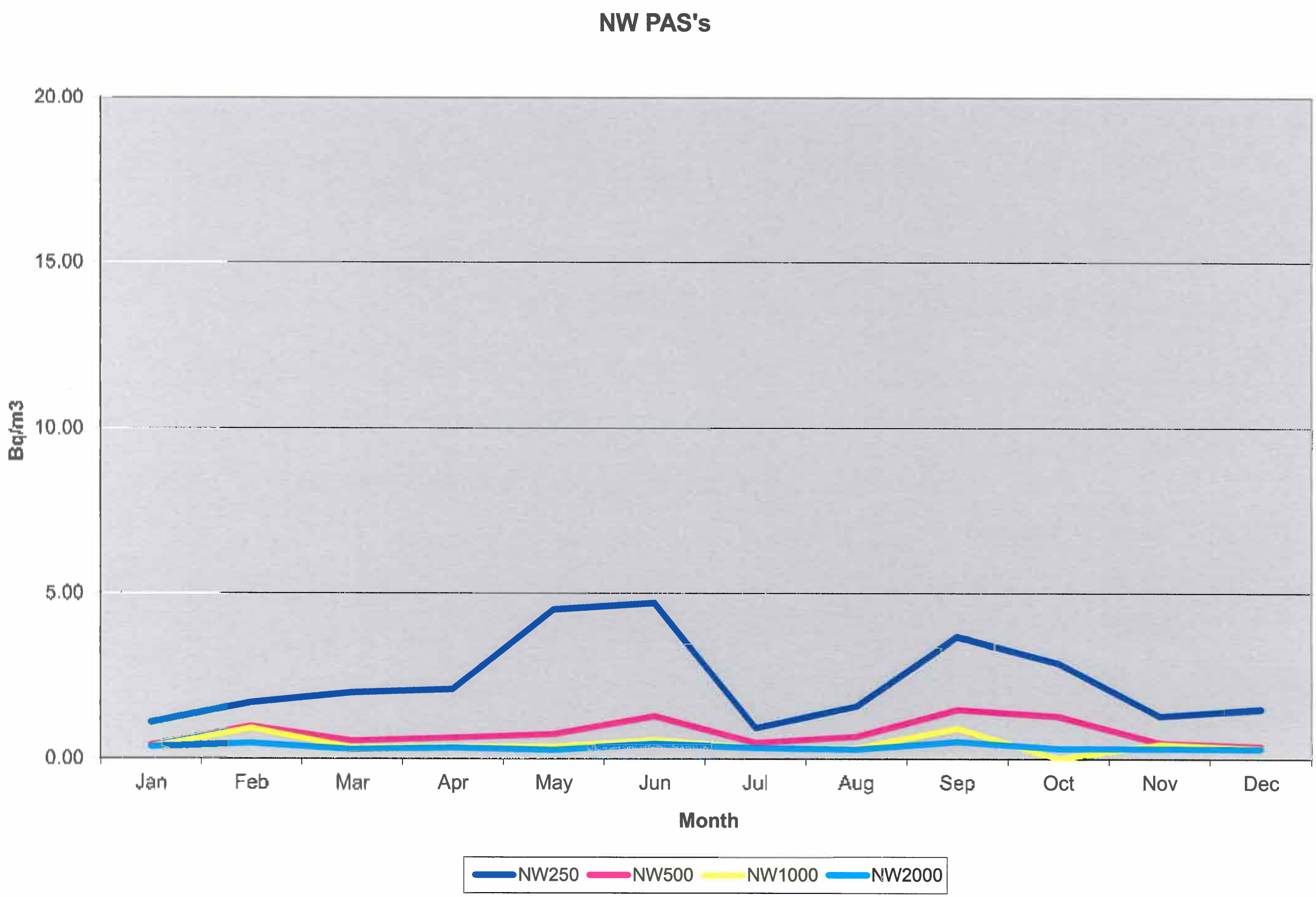
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Jan
Feb
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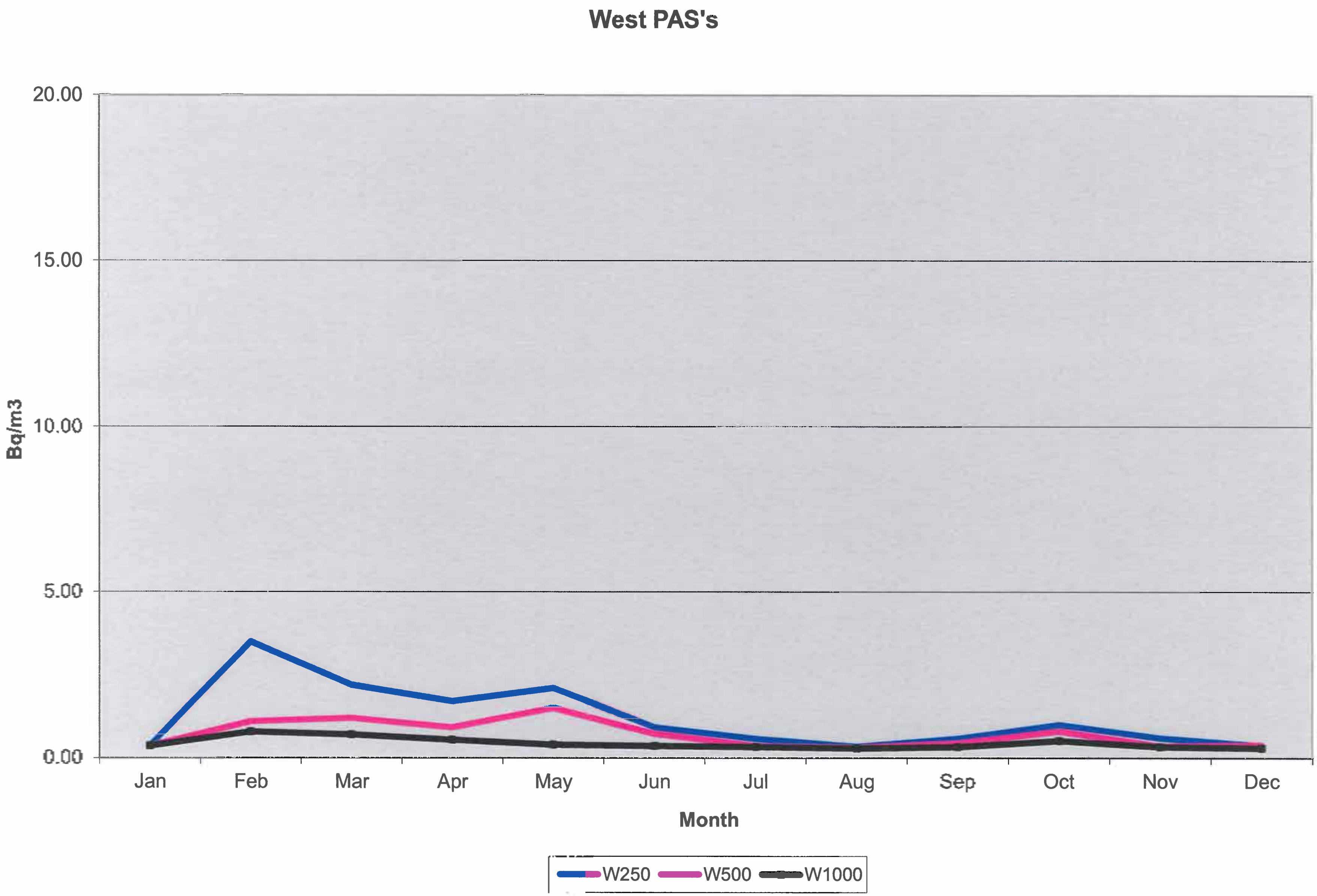
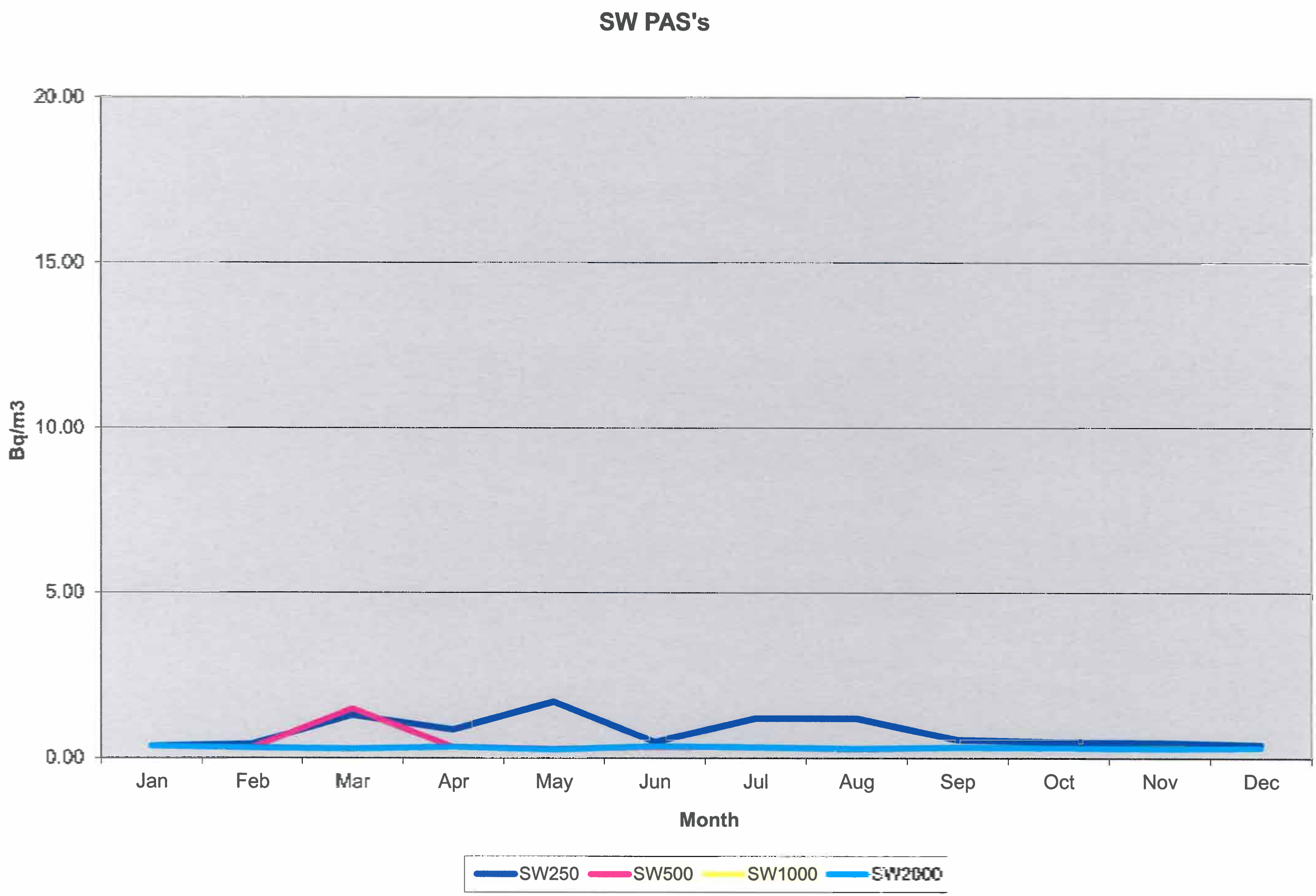
Oct
Nov
Dec
Month
NW250
NW500
NW1000
NW2000


West PAS's
20.00
15.00
10.00
5.00
0.00
Bq/m3
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Month
W250
W500
W1000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15.00
10.00
5.00
0.00
Bq/m3
Jan
Feb
Mar
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May
Jun
Jul
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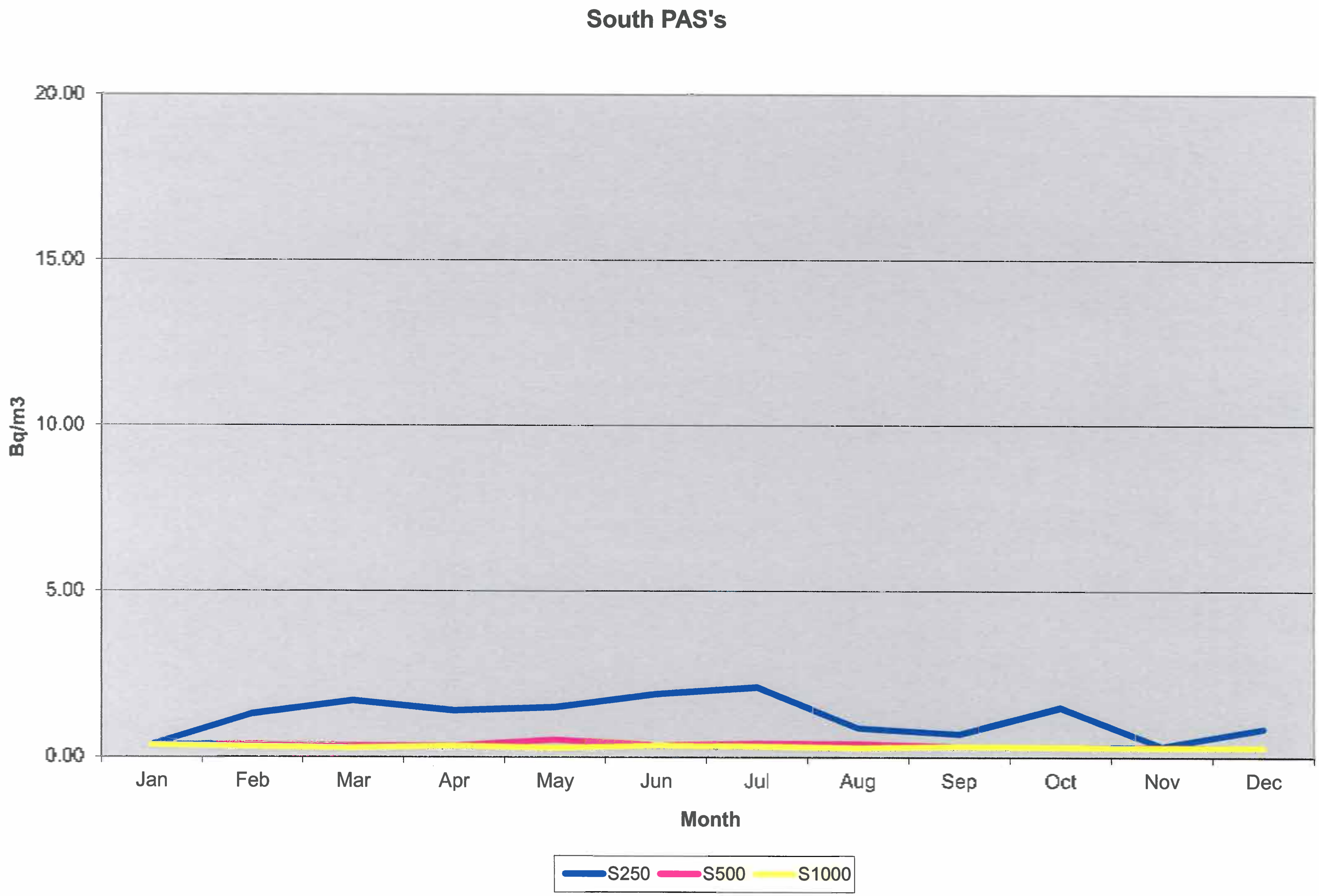
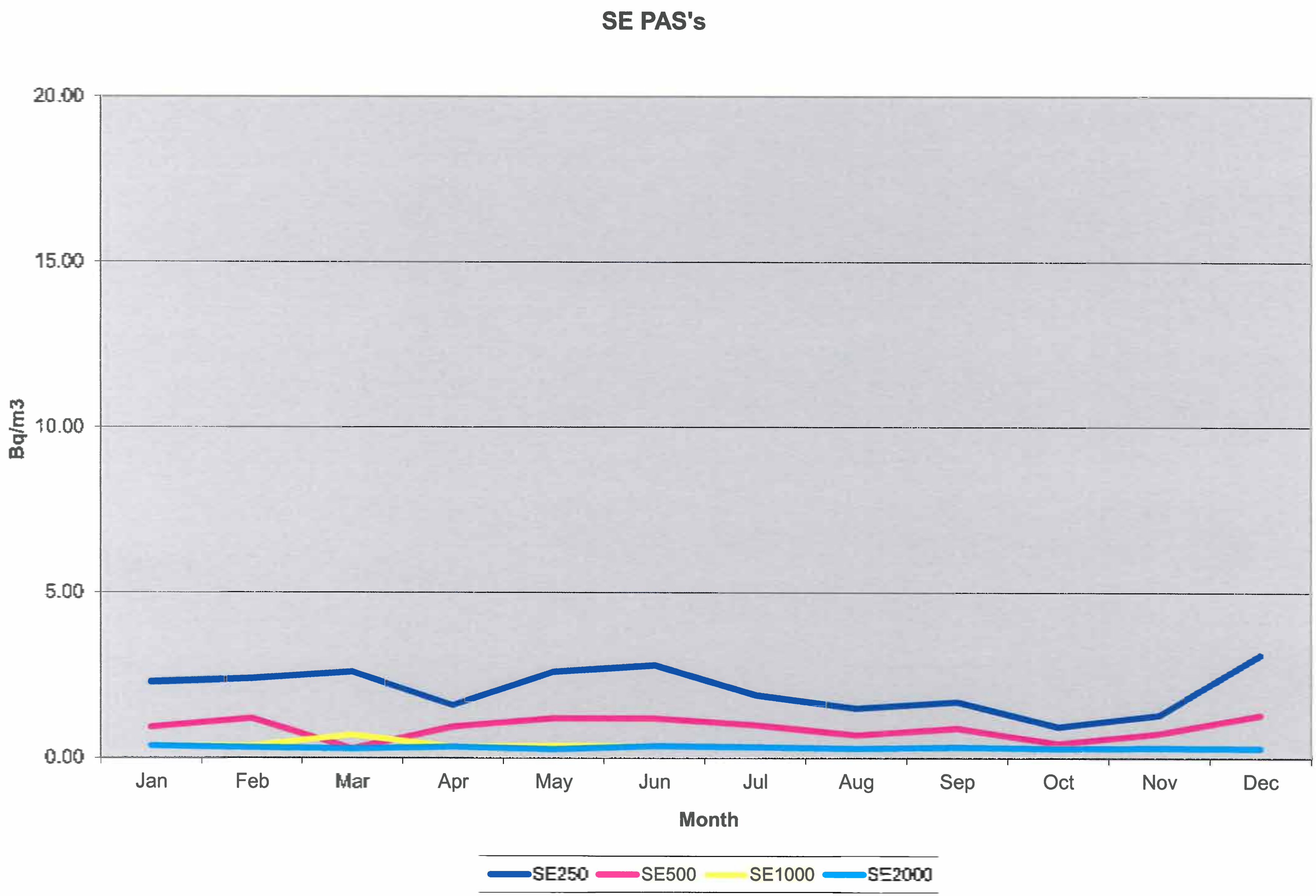
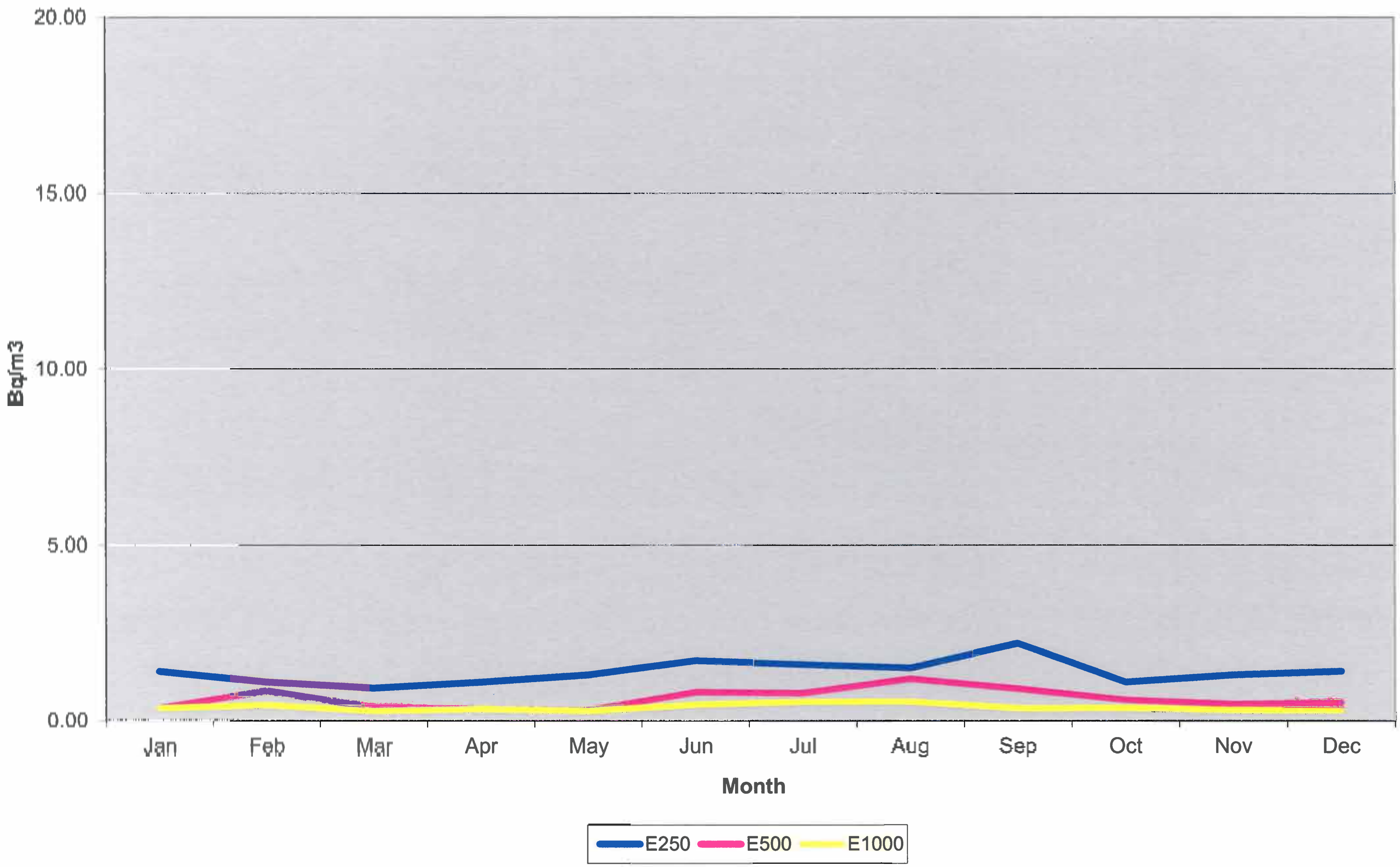
Nov
Dec
Month
SW250
SW500
SW1000
SW2000

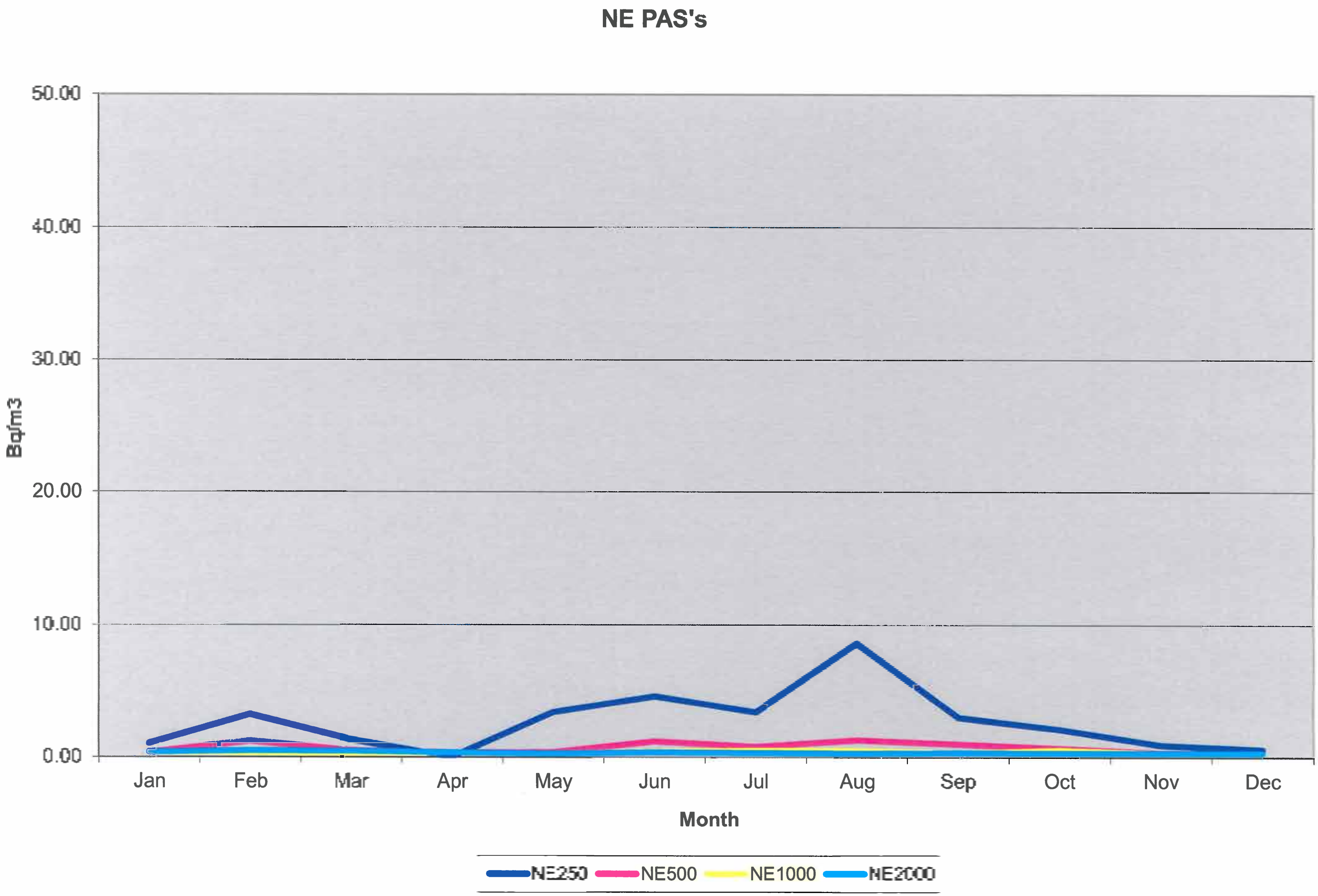

South PAS's
20.00
15.00
10.00
5.00
0.00
Bq/m3
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Month
S250
S500
S1000


SE PAS's
20.00
15.00
10.00
5.00
0.00
Bq/m3
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Month
SE250
SE500
SE1000
SE2000

East PAS's

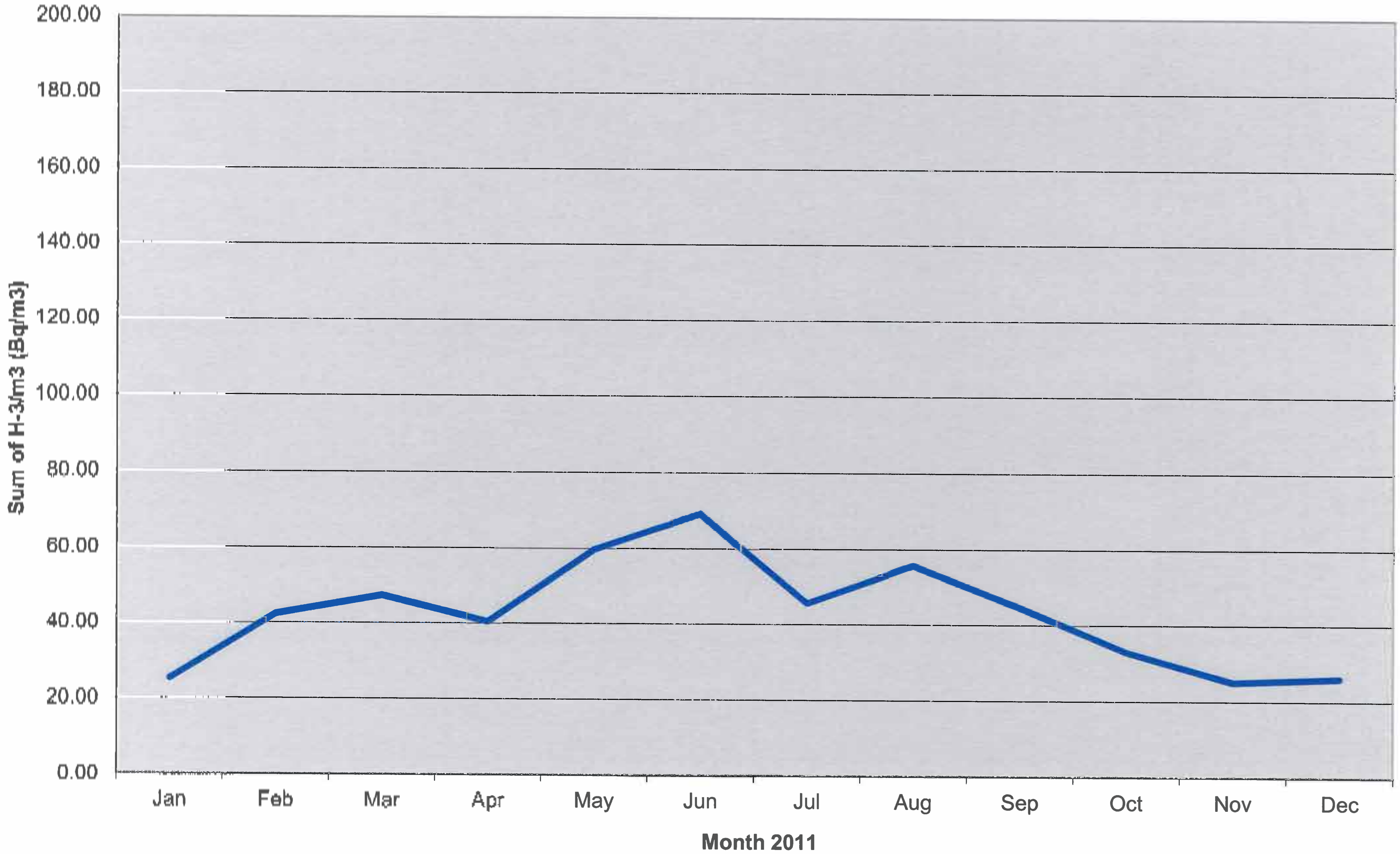


20.00
15.00
10.00
5.00
0.00
Bq/m3
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Month
E250
E500
E1000



NE PAS's
50.00
40.00
30.00
20.00
10.00
0.00
Bq/m3
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Month
NE250
NE500
NE1000
NE2000

Chart of Sum of HTO in Air in PAS



APPENDIX I

Wind Direction Graphs for 2012

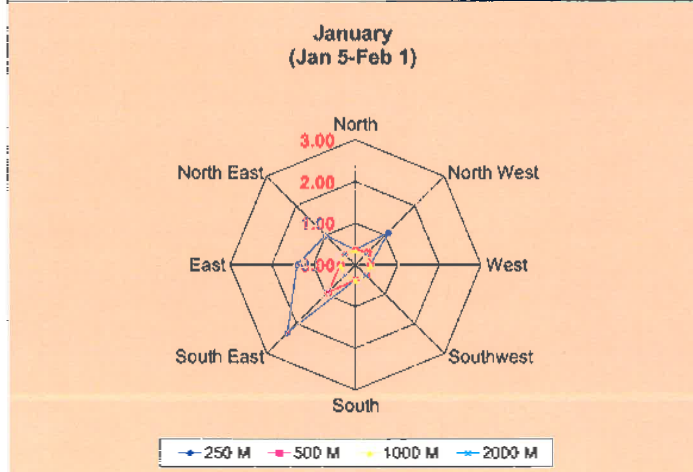
Passive Air Sampling Data (Results in Bq/m3)

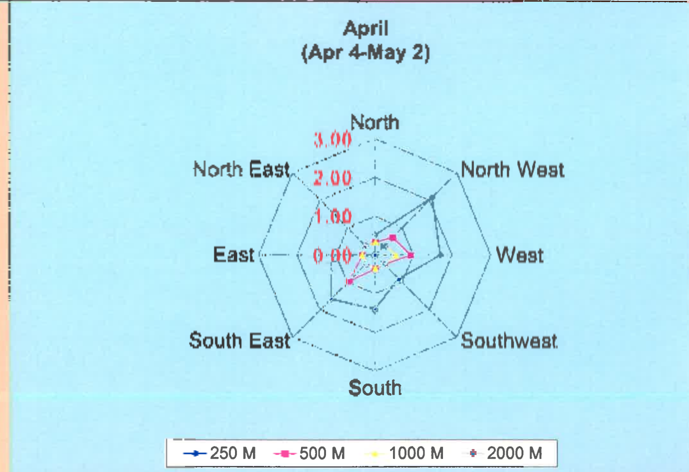
Direction	January 250 M	January 500 M	January 1000 M	January 2000 M	February 250 M	February 500 M	February 1000 M	February 2000 M	March 250 M	March 500 M	March 1000 M	March 2000 M
North	0.36	0.36	0.36		1.00	0.70	0.39		0.74	0.48	0.28	
North West	1.10	0.42	0.36	0.36	1.70	1.00	0.93	0.47	2.00	0.55	0.33	0.28
West	0.36	0.36	0.36		3.50	1.10	0.79		2.20	1.20	0.70	
Southwest	0.36	0.36	0.36	0.36	0.43	0.32	0.32	0.32	1.30	1.50	0.28	0.28
South	0.36	0.36	0.36		1.30	0.37	0.32		1.70	0.35	0.28	
South East	2.30	0.93	0.36	0.36	2.40	1.20	0.37	0.32	2.60	0.28	0.70	0.28
East	1.40	0.36	0.36		1.10	0.85	0.45		0.93	0.39	0.28	
North East	1.00	0.36	0.36	0.36	3.20	1.20	0.32	0.47	1.30	0.51	0.28	0.45
	1st Quarter											

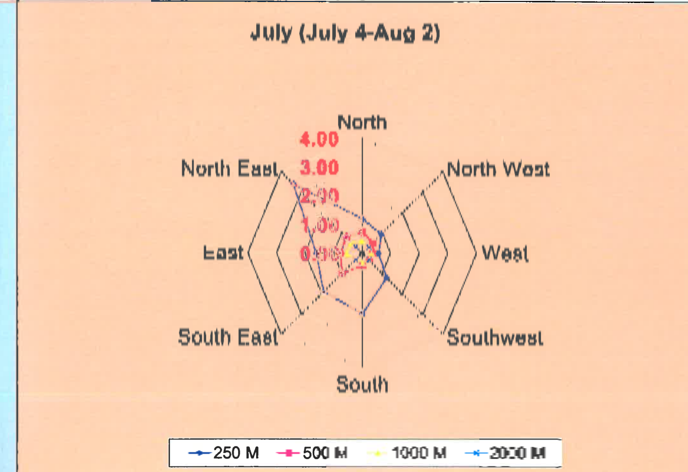
Direction	April 250 M	April 500 M	April 1000 M	April 2000 M	May 250 M	May 500 M	May 1000 M	May 2000 M	June 250 M	June 500 M	June 1000 M	June 2000 M
North	0.51	0.34	0.33		2.90	0.70	0.29		2.70	0.84	0.75	
North West	2.10	0.64	0.36	0.33	4.50	0.75	0.36	0.27	4.70	1.30	0.57	0.44
West	1.70	0.92	0.54		2.10	1.50	0.40		0.92	0.72	0.36	
Southwest	0.87	0.34	0.33	0.34	1.70	0.28	0.27	0.27	0.49	0.35	0.36	0.36
South	1.40	0.35	0.34		1.50	1.50	0.28		1.90	0.36	0.36	
South East	1.60	0.95	0.34	0.34	2.60	1.20	0.37	0.27	2.80	1.20	0.36	0.36
East	1.10	0.34	0.34		1.30	0.29	0.28		1.70	0.82	0.46	
North East	*	0.34	0.34	0.34	3.40	0.38	0.27	0.27	4.60	1.20	0.42	0.36
	2nd Quarter											

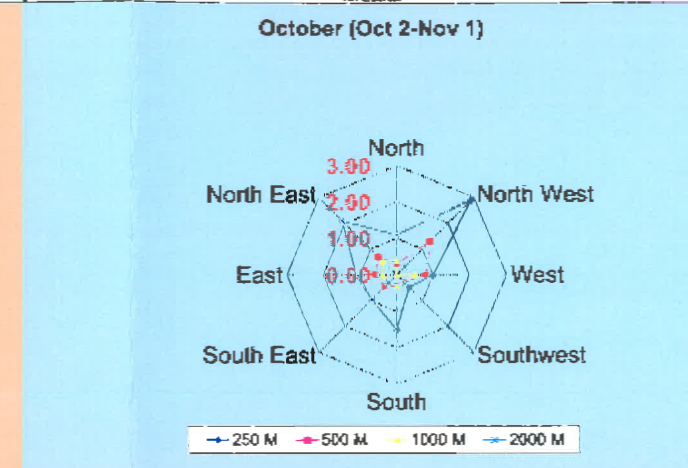
Direction	July 250 M	July 500 M	July 1000 M	July 2000 M	August 250 M	August 500 M	August 1000 M	August 2000 M	September 250 M	September 500 M	September 1000 M	September 2000 M
North	1.20	0.76	0.41		1.00	0.74	0.35		3.60	2.10	0.58	
North West	0.94	0.40	0.34	[illegible]	1.00	0.69	0.32	0.29	3.70	1.50	0.93	0.52
West	0.67	0.30	0.33		0.34	0.32	0.29		0.58	0.45	0.33	
Southwest	1.20	0.33	0.33	[illegible]	1.20	0.28	0.29	0.29	0.56	0.33	0.33	0.33
South	2.10	0.42	0.33		0.80	0.41	0.29		0.71	0.33	0.33	
South East	1.00	1.00	0.33	0.33	1.60	0.70	0.28	0.29	1.70	0.90	0.33	0.33
East	1.00	0.70	0.54		1.00	1.20	0.55		2.20	0.92	0.36	
North East	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1.30	0.48	0.29	3.00	1.00	0.33	0.33
	3rd Quarter											

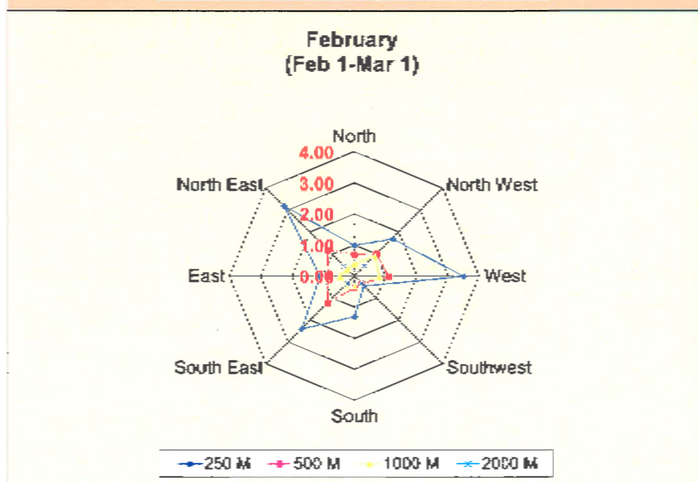
Direction	October 250 M	October 500 M	October 1000 M	October 2000 M	November 250 M	November 500 M	November 1000 M	November 2000 M	December 250 M	December 500 M	December 1000 M	December 2000 M
North	1.10	0.31	0.39		0.95	0.55	0.31		0.30	0.31	[illegible]	
North West	2.90	1.30 *		0.31	1.30	0.49	0.45	0.31	1.50	0.38	0.32	0.30
West	1.00	0.80	0.51		0.59	0.36	0.33		0.37	0.39	0.30	
Southwest	0.49	0.31	0.31	0.32	0.48	0.31	0.31	0.30	0.41	0.30	0.30	0.31
South	1.50	0.31	0.31		0.33	0.31	0.30		0.67	0.30	0.30	
South East	0.95	0.44	0.31	0.30	1.30	0.75	0.31	0.31	3.10	1.30	0.30	0.30
East	1.10	0.60	0.37		1.30	0.48	0.31		1.40	0.51	0.30	
North East	2.10	0.69	0.54	0.31	0.91	0.35	0.31	0.31	0.58	0.30	0.30	0.30
	4th Quarter											

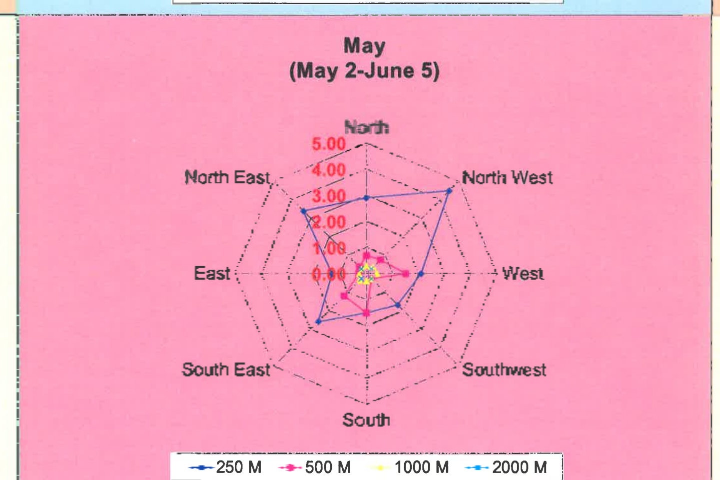


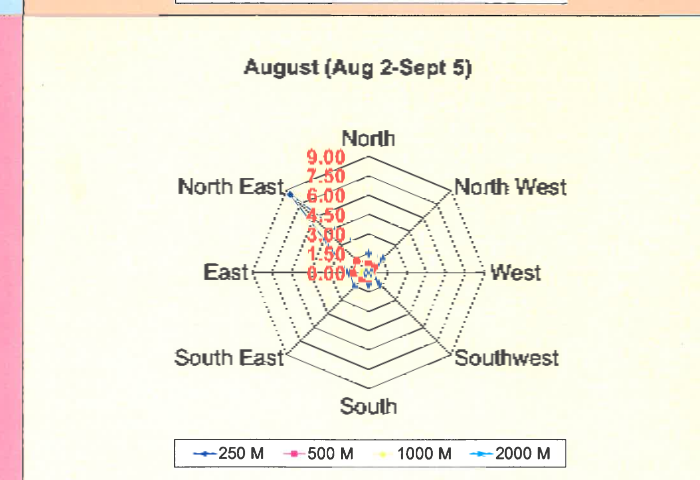


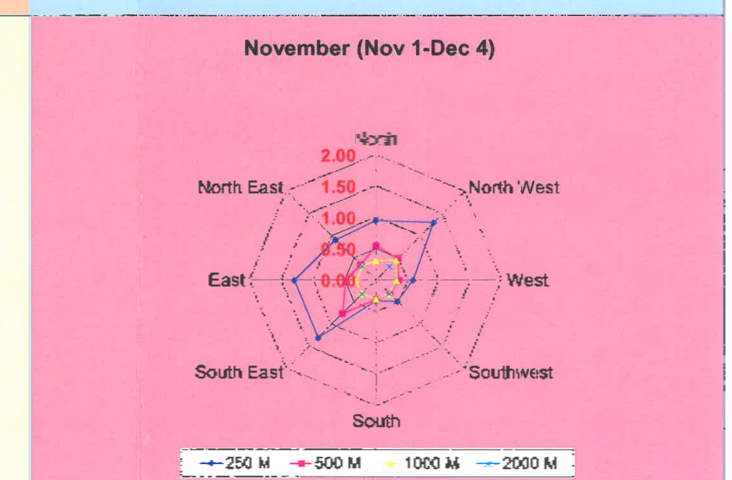


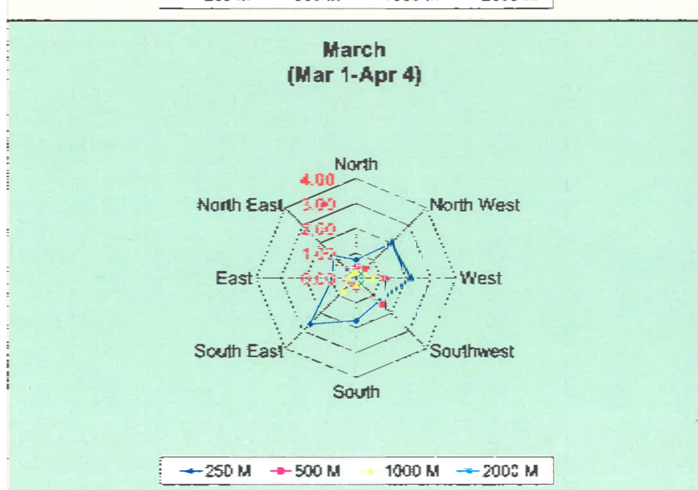


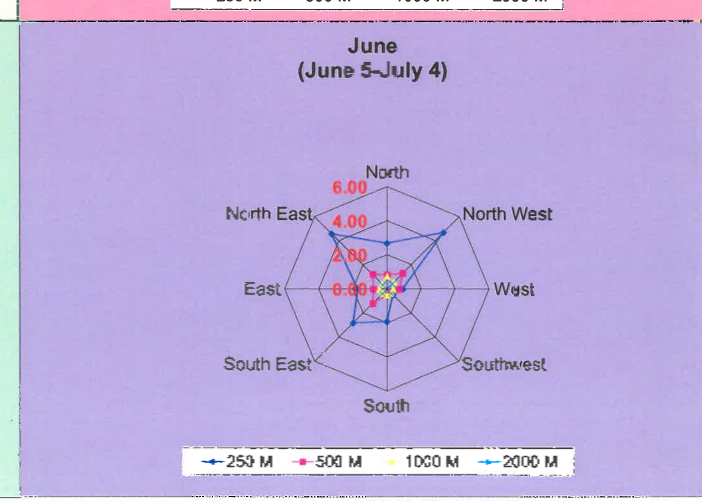


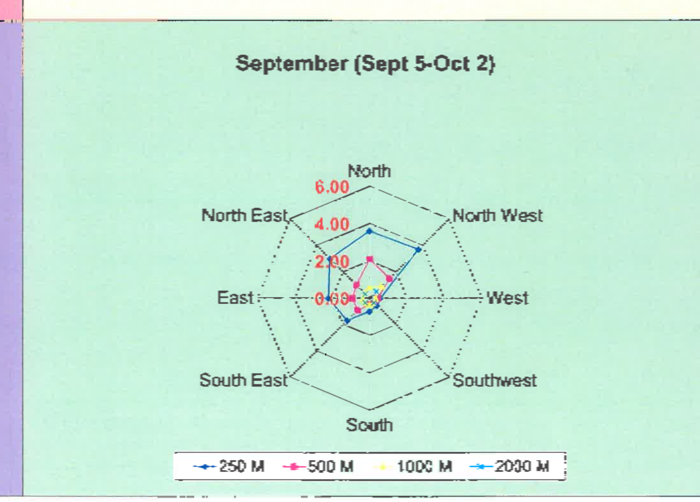


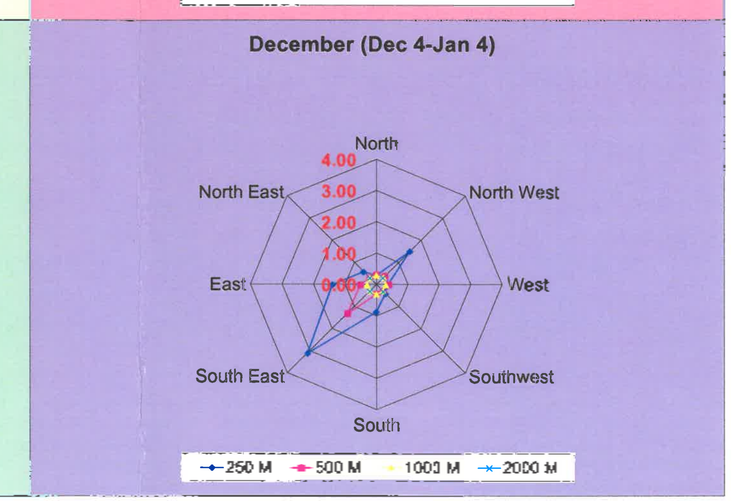












APPENDIX J

Well Monitoring Results for 2012

WELL I.D.	DESCRIPTION	DISTANCE FROM STACKS (m)	5/1/11	2/2/11	3/3/11	5/4/11	5/5/11	2/6/11	6/7/11	3/8/11	1/9/11	5/10/11	3/11/11	1/12/11	AVG
RW-1	413 BOUNDARY ROAD	465			N/A				190				N/A		190
RW-2	185 MUD LAKE ROAD	1,100			118				145				89		117
RW-3	183 MUD LAKE ROAD	1,100			120				128				102		117
RW-5	171 SAWMILL ROAD	2,300			13				13				11		12
RW-6	40987 HWY 41	1,400			27				32				24		28
RW-7	40925 HWY 41	1,600			6				7				4		6
RW-8	204 BOUNDARY ROAD	700			219				208				199		209
RW-9	206 BOUNDARY ROAD	650			239				246				144		210
RW-10	208 BOUNDARY ROAD	625			3.0				3.0				4.0		3
RW-12	202 MUD LAKE ROAD	753			12				21				43		25
B-1	SUPERIOR PROPANE OFFICE	160			735				698				1,174		869
B-3	INTERNATIONAL LUMBER OFFICE	385			3.0				4.0				4.0		4
														AVG	149

WELL I.D.	DESCRIPTION		DISTANCE FROM STACKS (m)	5/1/11	2/2/11	3/3/11	5/4/11	5/5/11	2/6/11	6/7/11	3/8/11	1/9/11	5/10/11	3/11/11	1/12/11	5/1/12	1/2/12	1/3/12	4/4/12	2/5/12	5/6/12	5/7/12	2/8/12	5/9/12	3/10/12	1/11/12	4/12/12	WELL I.D.
MW06-1	SRB SITE	IN SOIL	50	20,899	20,747	18,752	19,295	19,314	16,954	16,645	15,287	18,787	14,156	13,960	15,676	14,744	14,891	16,254	15,378	19,101	13,145	14,837	DRY	13,422	12,137	11,521	11,408	MW06-1
MW06-2	SRB SITE	IN SOIL	75	3,303	3,154	3,056	2,993	3,157	2,918	3,189	3,001	3,226	2,625	2,690	3,308	2,875	2,702	2,818	2,918	2,706	2,994	2,808	2,973	2,879	2,798	2,646	2,625	MW06-2
MW06-3	SRB SITE	IN SOIL	50	2,142	DRY	2,240	1,848	1,916	1,716	1,924	1,889	DRY	DRY	DRY	2,138	DRY	DRY	DRY	1,733	1,718	1,772	1,728	1,843	DRY	DRY	1,785	DRY	MW06-3
MW06-4S	JOHNSTON MEADOWS		300						N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	MW06-4S
MW06-4D	JOHNSTON MEADOWS		300						N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	MW06-4D
MW06-5	RENFREW COUNTY HEALTH UNIT		500						N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	MW06-5
MW06-6	KI, 600 m		600						N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	MW06-6
MW06-8	SRB SITE	IN SOIL	55	1,175	1,136	1,075	1,117	1,327	1,148	1,279	1,148	1,236	1,066	1,052	1,262	1,201	1,023	1,138	1,176	1,060	2,233	1,519	1,753	1,248	1,294	1,122	1,191	MW06-8
MW06-9	SRB SITE	IN SOIL	25	3,904	3,279	2,792	3,239	3,662	3,022	3,409	3,420	3,438	3,060	3,459	4,114	3,677	DRY	2,973	3,564	3,376	3,875	3,515	DRY	3,088	2,972	3,450	3,479	MW06-9
MW06-10	SRB SITE	SURFACE OF BEDROCK	0	18,566	53,965	68,486	16,488	13,417	17,336	21,683	40,538	10,062	54,757	39,142	46,388	65,918	42,582	68,154	14,572	15,462	20,043	18,090	75,825	43,355	32,441	40,501	36,959	MW06-10
MW07-11	SRB SITE	SURFACE OF BEDROCK	75	1,839	1,780	1,892	1,955	1,788	1,434	1,580	1,881	1,952	1,713	1,655	2,288	1,942	1,921	2,005	2,038	1,596	1,896	1,953	2,045	1,944	1,962	1,876	1,841	MW07-11
MW07-12	SRB SITE	SURFACE OF BEDROCK	55	453	355	360	458	468	391	440	414	511	375	426	443	418	381	355	540	455	526	394	320	273	353	425	360	MW07-12
MW07-13	SRB SITE	SURFACE OF BEDROCK	50	21,305	22,537	22,109	19,343	18,582	18,106	22,247	22,133	14,812	17,750	19,233	22,794	23,488	No Sample	19,156	20,218	13,550	22,503	22,358	21,140	21,257	20,743	20,300	20,037	MW07-13
MW07-14	SRB SITE	SURFACE OF BEDROCK	40	2,867	2,826	2,996	2,859	3,018	2,799	2,985	2,780	2,946	2,561	2,684	3,238	2,854	2,897	2,896	3,036	2,831	2,736	2,694	2,745	2,866	2,769	2,700	2,657	MW07-14
MW07-15	SRB SITE	SURFACE OF BEDROCK	25	1,560	1,322	1,102	1,427	2,032	1,749	1,535	1,225	1,442	993	927	1,701	1,058	1,371	1,267	1,818	1,731	1,444	1,221	1,217	1,406	1,574	1,380	1,208	MW07-15
MW07-16	SRB SITE	SURFACE OF BEDROCK	15	3,856	3,451	3,511	3,784	3,992	3,618	3,874	3,482	3,903	2,908	3,296	3,551	3,291	3,132	3,055	3,561	3,290	3,668	2,982	3,014	2,997	2,892	3,253	3,086	MW07-16
MW07-17	SRB SITE	DEEPER BEDROCK	15	1,856	1,670	1,612	1,508	1,250	1,064	964	1,118	1,453	1,339	1,240	1,529	1,510	1,373	1,288	1,295	1,011	1,200	1,148	1,213	1,250	1,266	1,311	1,299	MW07-17
MW07-18	SRB SITE	SURFACE OF BEDROCK	10	13,881	14,246	16,201	12,926	11,444	11,445	13,746	12,266	12,383	12,834	10,574	13,865	13,222	13,974	14,077	11,533	10,936	12,453	14,012	12,565	12,419	11,674	10,941	11,694	MW07-18
MW07-19	SRB SITE	SURFACE OF BEDROCK	20	6,651	7,124	6,613	4,580	4,132	3,788	4,836	5,725	6,782	7,018	5,328	4,378	6,104	5,671	3,172	2,957	4,223	5,737	6,274	5,981	4,704	4,022	2,452	5,731	MW07-19
MW07-20	SUPERIOR PROPANE PROPERTY	SURFACE OF BEDROCK	90	1,323	1,137	1,230	1,192	1,244	1,069	1,194	1,212	1,321	1,126	1,283	1,117	1,267	1,182	1,091	1,188	1,093	2,017	1,436	1,221	1,262	1,196	1,042	1,179	MW07-20
MW07-21	SUPERIOR PROPANE PROPERTY	SURFACE OF BEDROCK	110	697	757	868	835	886	808	1,001	1,030	954	1,096	1,019	1,119	1,239	1,234	1,171	1,384	1,307	2,969	2,434	1,631	1,705	1,749	1,558	1,930	MW07-21
MW07-22	SRB SITE	SURFACE OF BEDROCK	70	840	887	921	886	970	927	947	923	1,039	950	900	1,093	904	1,025	929	1,064	975	1,237	1,172	1,191	1,184	1,116	959	1,109	MW07-22
MW07-23	SRB SITE	SURFACE OF BEDROCK	90	2,642	2,610	2,751	2,751	2,886	2,637	2,744	2,655	2,799	2,507	2,572	2,753	2,754	2,829	2,704	2,830	2,621	2,833	2,729	2,808	2,799	2,679	2,549	2,701	MW07-23
MW07-24	HARRINGTON PROPERTY	SURFACE OF BEDROCK	115	1,925	1,989	1,980	2,035	2,046	1,938	2,305	1,965	2,124	1,937	1,944	2,241	2,116	2,458	2,275	2,388	2,244	2,377	2,352	2,523	2,421	2,380	2,081	1,820	MW07-24
MW07-25	HARRINGTON PROPERTY	SURFACE OF BEDROCK	105	1,524	627	1,244	1,336	959	988	941	1,127	814	656	473	755	985	792	901	800	740	1,229	1,438	864	974	407	402	587	MW07-25
MW07-26	SRB SITE	SURFACE OF BEDROCK	50	3,309	3,346	3,231	3,191	2,777	3,241	3,556	3,349	3,489	2,678	2,766	2,681	2,810	3,004	2,440	3,324	3,268	3,303	3,172	3,225	3,179	DRY	2,379	3,024	MW07-26
MW07-27	CITY PROPERTY	SURFACE OF BEDROCK	55	6,909	6,284	6,478	6,542	6,864	6,472	7,067	6,627	6,710	6,032	5,176	6,666	6,434	5,651	5,922	6,786	6,585	6,555	6,536	6,552	6,734	5,354	5,892	6,094	MW07-27
MW07-28	CITY PROPERTY	DEEPER BEDROCK	55	3,382	2,032	2,399	3,366	2,340	2,286	2,048	3,051	2,495	2,075	1,123	1,862	2,718	2,346	1,557	3,088	2,788	2,441	2,356	2,418	1,820	2,236	2,334	2,132	MW07-28
MW07-29	SRB SITE	DEEPER BEDROCK	10	7,463	6,321	5,930	5,923	6,562	6,279	6,000	6,507	7,883	7,257	7,895	8,264	5,982	5,568	4,929	3,682	4,677	5,054	5,145	4,778	4,961	5,682	6,136	5,372	MW07-29
MW07-30	SRB SITE	DEEPER BEDROCK	50	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	MW07-30
MW07-31	SRB SITE	DEEPER BEDROCK	70	1,535	1,214	1,161	300	382	603	1,361	1,436	1,606	1,491	1,235	893	1,299	1,039	871	299	943	1,262	1,191	1,377	1,385	1,399	1,243	1,397	MW07-31
MW07-32	HARRINGTON PROPERTY	DEEPER BEDROCK	115	342	266	311	272	568	176	203	281	315	289	361	353	346	417	337	413	136	3,092	710	794	465	157	324	405	MW07-32
MW07-33	HARRINGTON PROPERTY	DEEPER BEDROCK	105	581	877	562	1,053	1,010	977	837	764	782	636	621	848	No sample	856	716	915	776	775	697	608	546	468	305	No Sample	MW07-33
MW07-34	SRB SITE	SHALLOW BEDROCK	10	5,762	4,854	4,497	5,807	7,484	5,932	6,229	6,581	5,131	5,010	5,866	4,942	5,105	4,174	4,566	5,476	4,562	5,633	5,173	3,614	4,445	5,086	5,527	5,652	MW07-34
MW07-35	CITY PROPERTY	SHALLOW BEDROCK	55	5,900	5,773	5,562	5,741	6,569	5,535	5,961	5,659	5,775	5,029	5,187	5,622	4,845	4,876	5,083	5,345	5,067	5,564	5,037	5,119	5,568	5,466	4,615	4,546	MW07-35
MW07-36	CITY PROPERTY	SHALLOW BEDROCK	50	6,183	6,234	5,656	4,547	4,206	3,631	5,086	4,528	5,196	4,726	4,925	5,131	4,997	4,619	5,242	3,779	3,595	4,757	4,516	DRY	DRY	4,266	5,234	5,188	MW07-36
MW07-37	SRB SITE	SHALLOW BEDROCK	50	1,263	1,330	1,373	1,125	2,037	1,351	1,197	1,146	1,294	1,393	1,307	1,454	1,291	1,475	1,490	1,322	1,278	1,218	1,327	1,469	1,528	1,539	1,399	1,523	MW07-37
CN-1S	CN PROPERTY		125			1,124				928				DRY	734			857				758				DRY		CN-1S
CN-1D	CN PROPERTY		130			1,446				1,142				912				DRY	768			DRY				505		CN-1D
CN-2	CN PROPERTY		150			895				1,033				1,364				1,265				1,012				611		CN-2
CN-3S	CN PROPERTY		165			565				298				DRY	DRY			DRY	352			351				575		CN-3S
CN-3D	CN PROPERTY		160			931				523				537				725				452				DRY		CN-3D
RW-1	413 BOUNDARY ROAD		465			350				323				242				No Sample				190				No Sample		RW-1
RW-2	185 MUD LAKE ROAD		1,100			176				163				145				118				145				85		RW-2
RW-3	183 MUD LAKE ROAD		1,100			176				150				138				120				128				102		RW-3
RW-4	711 BRUHAM AVENUE		2,200			4.0				3.8				3.5				No Sample				No Sample				No Sample		RW-4
RW-5	171 SAWMILL ROAD		2,300			17				14				14				13				13				11		RW-5
RW-6	40987 HWY 41		1,400			46				42				36				27				32				24		RW-6
RW-7	40925 HWY 41		1,600			10				9				6				6				7				4		RW-7
RW-8	204 BOUNDARY ROAD		700			265				251				230				219				206				199		RW-8
RW-9	206 BOUNDARY ROAD		650			19				128				256				239				245				144		RW-9
RW-10	208 BOUNDARY ROAD		625			4.0				3.6				3.5				3.0				3.3				4.0		RW-10
RW-11	200 MUD LAKE ROAD		794			N/A				N/A				N/A				N/A				N/A				N/A		RW-11
RW-12	202 MUD LAKE ROAD		753			9				6				4				12				21				43		RW-12
B-1	SUPERIOR PROPANE OFFICE		160			634				1,351				1,004				735				692				1,174		B-1
B-2	SUPERIOR PROPANE TRUCK WASH		250			1,969				2,135				1,944				1,897				1,774				1,760		B-2
B-3	INTERNATIONAL LUMBER OFFICE		385			4.0				6.0				3.5				3.0				4.0				4.0		B-3

WELL I.D.	DESCRIPTION		DISTANCE FROM STACK (m)	22/11/07	19/12/07	17/01/08	15/02/08	18/03/08	15/4/08	16/5/08	11/6/08	15/7/08	6/8/08	4/9/08	2/10/08	4/11/08	3/12/08	6/1/09	4/2/09
MW06-1	SRB SITE	IN SOIL	50	42,299	41,947	39,251	41,889	41,623	38,970	35,667	33,864	33,137	32,396	30,416	30,590	29,985	28,526	29,045	31,171
MW06-2	SRB SITE	IN SOIL	75	3,695	3,641	3,748	3,923	3,627	3,953	3,880	4,004	3,869	3,839	3,710	3,579	3,339	3,301	3,668	3,757
MW06-3	SRB SITE	IN SOIL	50	DRY	DRY	3,136	3,342	3,072	3,128	3,010	3,026	3,018	3,079	DRY	DRY	DRY	2,832	2,948	DRY
MW06-4S	JOHNSTON MEADOWS		300																
MW06-4D	JOHNSTON MEADOWS		300																
MW06-5	RENFREW COUNTY HEALTH UNIT		500																
MW06-6	KI, 600 m		600																
MW06-8	SRB SITE	IN SOIL	55	225	DRY	488	641	486	577	760	815	871	1,069	1,094	1,070	998	1,160	1,185	1,035
MW06-9	SRB SITE	IN SOIL	25	1,402	DRY	2,013	3,076	2,000	2,877	2,782	3,039	3,024	3,229	3,294	2,544	2,567	3,078	3,818	3,100
MW06-10	SRB SITE	SURFACE OF BEDROCK	0	30,326	25,712	12,995	12,448	17,064	6,243	24,126	36,040	27,930	54,979	36,311	35,275	42,897	28,330	60,624	41,029
MW07-11	SRB SITE	SURFACE OF BEDROCK	75	485	727	1,248	1,717	1,615	1,759	1,294	1,511	1,224	1,116	1,044	1,152	1,204	1,399	1,151	1,380
MW07-12	SRB SITE	SURFACE OF BEDROCK	55	177	DRY	212	490	252	292	255	283	375	345	341	307	323	352	364	304
MW07-13	SRB SITE	SURFACE OF BEDROCK	50	7,859	9,968	7,344	7,654	11,007	6,092	8,507	11,120	12,382	13,699	14,997	15,718	19,248	15,963	17,504	17,421
MW07-14	SRB SITE	SURFACE OF BEDROCK	40	3,692	2,048	3,063	3,216	2,845	2,878	2,679	2,917	2,503	2,868	2,716	2,887	2,624	2,775	2,774	2,743
MW07-15	SRB SITE	SURFACE OF BEDROCK	25	170	112	598	642	374	769	442	406	442	361	377	436	457	785	580	594
MW07-16	SRB SITE	SURFACE OF BEDROCK	15	6,776	6,358	7,007	6,543	6,545	6,388	5,720	4,785	4,864	4,385	5,520	5,143	5,295	5,859	5,255	4,097
MW07-17	SRB SITE	DEEPER BEDROCK	15	117	663	1,208	1,425	1,265	1,516	1,088	688	828	1,310	1,414	1,604	1,798	1,904	1,863	1,864
MW07-18	SRB SITE	SURFACE OF BEDROCK	10	52,516	52,009	52,690	49,994	46,343	46,735	41,374	39,674	39,345	37,892	33,369	29,530	20,752	28,723	28,066	31,743
MW07-19	SRB SITE	SURFACE OF BEDROCK	20	2,230	DRY	5,153	2,806	2,455	2,708	4,839	4,687	3,730	3,749	3,781	3,503	3,967	4,103	6,874	6,407
MW07-20	SUPERIOR PROPANE PROPERTY	SURFACE OF BEDROCK	90	674	667	570	1,151	762	912	998	1,013	1,108	1,024	1,120	1,098	952	1,182	1,298	1,206
MW07-21	SUPERIOR PROPANE PROPERTY	SURFACE OF BEDROCK	110	116	111	100	359	156	273	245	251	310	280	326	334	341	359	437	442
MW07-22	SRB SITE	SURFACE OF BEDROCK	70	421	184	225	578	493	422	227	187	243	246	298	291	318	807	334	396
MW07-23	SRB SITE	SURFACE OF BEDROCK	90	668	610	992	1,318	1,387	1,632	1,309	1,257	1,315	1,397	1,408	1,479	1,467	1,691	1,741	1,890
MW07-24	HARRINGTON PROPERTY	SURFACE OF BEDROCK	115	118	111	150	374	273	243	476	448	473	454	564	570	717	803	911	952
MW07-25	HARRINGTON PROPERTY	SURFACE OF BEDROCK	105	176	111	376	334	118	111	159	172	178	103	138	93	210	144	100	178
MW07-26	SRB SITE	SURFACE OF BEDROCK	50	2,609	2,533	2,839	3,429	2,917	2,919	3,376	3,624	3,833	3,803	3,800	3,471	3,193	2,947	3,479	3,811
MW07-27	CITY PROPERTY	SURFACE OF BEDROCK	55	6,652	DRY	7,393	7,216	7,366	7,400	6,832	7,002	7,210	6,999	7,001	7,156	7,635	6,965	6,799	7,550
MW07-28	CITY PROPERTY	DEEPER BEDROCK	55	6,569	4,957	3,493	2,102	2,722	1,360	2,244	2,066	2,388	2,401	1,979	1,601	928	1,630	2,340	1,306
MW07-29	SRB SITE	DEEPER BEDROCK	10	35,421	30,468	28,862	19,999	15,779	8,595	10,661	10,827	16,263	14,152	14,098	12,923	12,633	12,305	8,822	6,404
MW07-30	SRB SITE	DEEPER BEDROCK	50	10,457	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
MW07-31	SRB SITE	DEEPER BEDROCK	70	1,394	1,436	929	1,622	940	1,115	653	1,457	2,170	2,199	2,260	1,986	1,233	1,337	1,111	1,113
MW07-32	HARRINGTON PROPERTY	DEEPER BEDROCK	115	117	111	100	264	112	347	367	284	217	149	197	173	251	235	311	293
MW07-33	HARRINGTON PROPERTY	DEEPER BEDROCK	105	[illegible]	[illegible]	563	791	512	532	754	690	586	546	551	466	476	439	524	473
MW07-34	SRB SITE	SHALLOW BEDROCK	10	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
MW07-35	CITY PROPERTY	SHALLOW BEDROCK	55	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
MW07-36	CITY PROPERTY	SHALLOW BEDROCK	30	[illegible]	DRY	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
MW07-37	SRB SITE	SHALLOW BEDROCK	50	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
DW-18	ON PROPERTY		125	2,458				1,380				2,254				2,368	2,298		
DW-10	ON PROPERTY		130	DRY	DRY	1,585		2,675				2,456				DRY	2,398		
DW-2	ON PROPERTY		150	2,154				1,455				1,257				2,368	2,687		
DW-88	ON PROPERTY		165	DRY	DRY	1,407		956				1,149				DRY	1,406		
DW-80	ON PROPERTY		150	1,354				1,454				1,100				1,550	1,451		
RW-1	415 BOUNDARY ROAD		465	1,395				1,236				376				366			
RW-2	185 MUD LAKE ROAD		1100	257				324				259				252			
RW-3	193 MUD LAKE ROAD		1100	323				295				315				250			
RW-4	711 BRUHAM AVENUE		2200	4.2				5.0				3.1				5			
RW-5	171 SAWMILL ROAD		2300	17				21				19				25			
RW-6	40987 HWY 41		1400	32				32				75				63			
RW-7	40925 HWY 41		1500	25				31				23				15			
RW-8	234 BOUNDARY ROAD		700	236				292				307				242			
RW-9	208 BOUNDARY ROAD		550	563	442			454				536				422			
RW-10	208 BOUNDARY ROAD		525	4.3				5.0				2.5				3			
RW-11	200 MUD LAKE ROAD		794																
RW-12	202 MUD LAKE ROAD		753																
S-1	SUPERIOR PROPANE OFFICE		160	1,075	1,006	1,306	920	1,034	1,727	2,001	1,575	1,104	1,309	1,132	1,102	1,237	1,293	1,356	1,211
S-2	SUPERIOR PROPANE TRUCK WASH		250	3,067	4,073			4,435				3,536				3,575			
S-3	INTERNATIONAL LUMBER OFFICE		395	4.4				4.0				5.0				7			

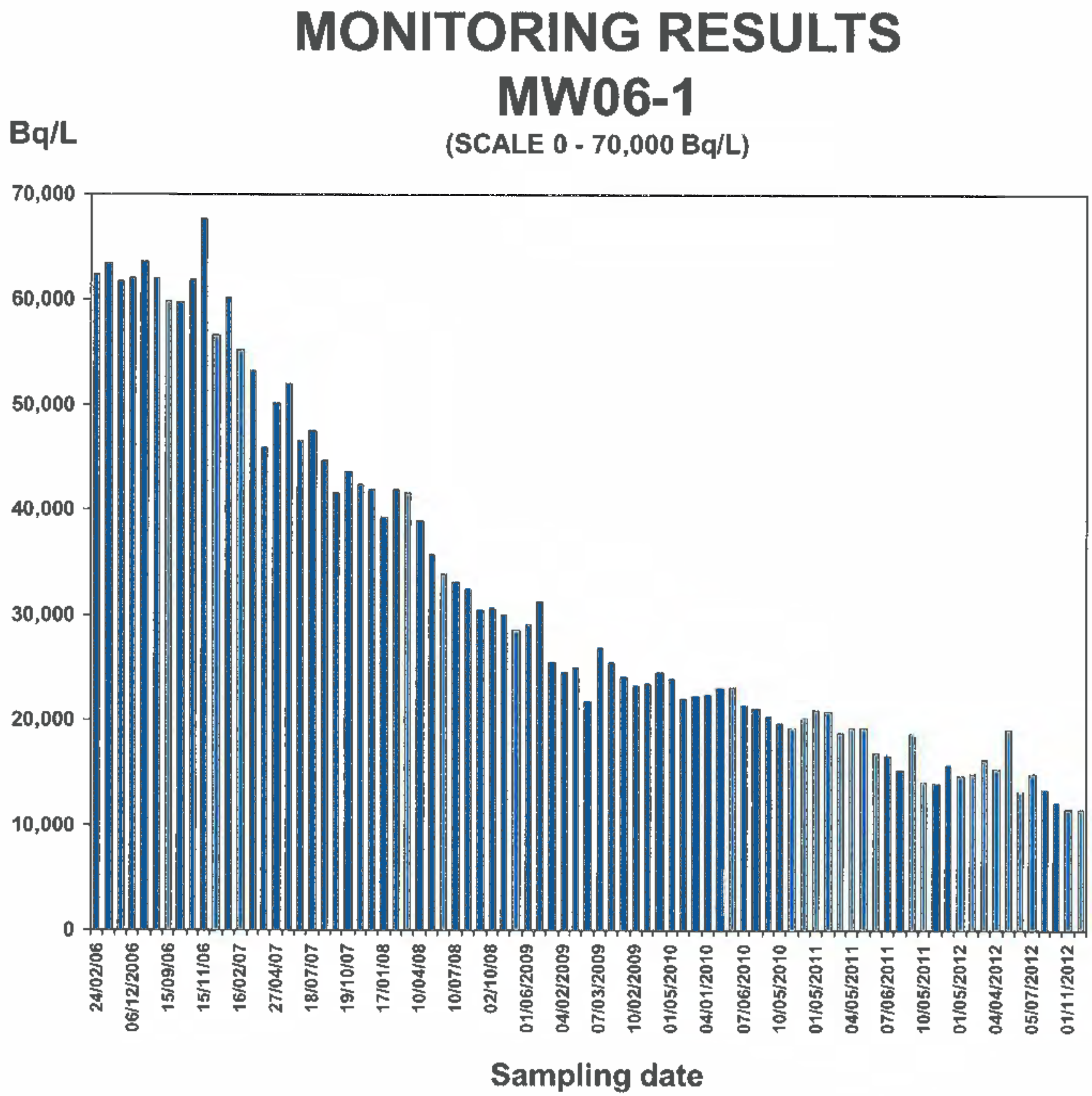
WELL I.D.	3/3/09	2/4/09	5/5/09	4/6/09	3/7/09	6/8/09	4/9/09	5/10/09	4/11/09	2/12/09	5/1/10	3/2/10	4/3/10	1/4/10	4/5/10	2/6/10	6/7/10	5/8/10	1/9/10	5/10/10	2/11/10	1/12/10	WELL I.D.
MW06-1	25,477	24,502	24,969	21,702	26,783	25,452	24,126	23,320	23,481	24,457	23,877	21,987	22,179	22,401	22,895	23,063	21,461	21,118	20,264	19,693	19,169	20,134	MW06-1
MW06-2	3,856	3,860	3,499	3,078	3,623	3,569	3,432	3,303	3,346	3,500	3,527	3,460	3,485	3,377	3,357	3,407	3,316	3,228	3,095	2,992	3,044	3,185	MW06-2
MW06-3	2,960	2,948	2,593	2,199	2,629	2,663	DRY	DRY	2,647	2,575	2,561	2,630	2,582	2,185	2,032	2,246	2,292	DRY	DRY	2,240	2,223	2,377	MW06-3
MW06-4S																							MW06-4S
MW06-4D																							MW06-4D
MW06-5																							MW06-5
MW06-6																							MW06-6
MW06-8	1,009	1,032	1,062	935	1,203	1,157	1,187	1,032	1,193	1,240	1,251	1,096	1,093	1,165	1,284	1,106	1,262	1,183	1,180	1,175	1,124	1,212	MW06-8
MW06-9	3,099	3,728	3,313	2,938	3,071	3,413	3,353	2,599	3,723	3,887	3,791	3,148	2,823	3,558	3,297	3,275	3,171	3,211	2,532	3,305	3,285	3,527	MW06-9
MW06-10	67,282	38,639	32,241	42,319	30,839	61,191	53,990	79,479	75,762	55,334	59,317	74,942	46,473	22,666	30,160	35,986	57,159	23,579	45,181	49,327	48,842	39,501	MW06-10
MW07-11	1,424	1,589	1,513	1,468	1,586	1,681	1,594	1,780	1,749	2,092	1,717	1,661	1,635	1,667	1,673	1,738	1,706	1,666	1,769	1,732	1,708	1,827	MW07-11
MW07-12	345	322	287	239	283	347	337	316	344	363	357	335	338	361	367	365	342	389	389	405	406	430	MW07-12
MW07-13	16,932	16,625	16,312	14,135	17,899	18,615	20,310	19,339	19,321	21,746	19,727	21,655	19,973	19,085	19,135	19,717	18,831	19,823	22,163	19,017	22,403	20,809	MW07-13
MW07-14	2,845	3,370	2,886	2,661	3,136	3,019	2,772	2,852	3,003	3,089	2,968	3,005	3,032	2,967	3,093	2,981	2,858	2,918	2,865	2,828	2,821	2,943	MW07-14
MW07-15	642	783	852	771	687	680	719	759	808	1,001	722	848	967	1,135	1,273	1,121	933	828	1,055	1,197	1,133	1,258	MW07-15
MW07-16	5,083	4,126	4,996	4,271	4,674	4,219	3,642	4,750	4,620	4,293	4,621	4,642	5,539	4,272	4,536	4,445	3,906	3,680	3,651	4,031	3,780	3,757	MW07-16
MW07-17	1,839	1,766	1,425	1,010	1,308	1,866	1,867	2,046	2,063	2,191	2,204	2,056	1,900	1,772	1,524	1,398	1,628	1,727	1,669	1,798	1,722	[illegible]	MW07-17
MW07-18	29,267	28,347	25,318	23,198	26,736	25,664	24,601	23,189	23,184	21,323	20,873	20,855	20,714	17,722	16,383	18,194	17,387	16,078	16,029	15,715	14,658	14,935	MW07-18
MW07-19	6,432	9,723	5,529	3,750	5,824	7,462	7,945	6,101	6,442	7,421	6,885	7,604	7,313	6,042	6,327	6,882	6,101	6,757	6,065	5,343	5,311	6,225	MW07-19
MW07-20	1,332	1,182	1,262	1,089	1,256	1,259	1,351	1,268	1,346	1,738	1,356	1,340	1,396	1,279	1,276	1,217	1,229	1,235	1,237	1,249	1,187	1,233	MW07-20
MW07-21	542	482	445	390	481	495	576	578	591	635	579	604	643	576	642	654	713	788	809	863	716	579	MW07-21
MW07-22	377	440	373	338	454	465	514	644	593	727	619	691	654	640	711	645	731	779	785	757	753	796	MW07-22
MW07-23	1,901	2,135	2,083	2,008	2,230	2,222	2,296	2,339	2,354	2,650	2,448	2,543	2,620	2,528	2,555	2,544	2,524	2,508	2,530	2,390	2,383	2,450	MW07-23
MW07-24	979	1,170	1,154	1,048	1,232	1,229	1,285	1,384	1,504	1,371	1,450	1,582	1,715	1,593	1,696	1,745	1,663	1,744	1,860	1,809	1,754	1,709	MW07-24
MW07-25	249	312	296	371	490	529	428	338	403	436	586	925	794	714	839	673	588	470	652	386	243	1,306	MW07-25
MW07-26	3,835	4,077	3,941	3,481	3,934	3,915	3,763	3,332	3,514	3,600	3,854	3,662	3,123	3,518	3,635	3,605	3,524	3,569	3,113	2,670	2,877	3,255	MW07-26
MW07-27	7,078	7,322	7,229	6,085	6,765	6,729	6,717	7,011	6,662	6,763	6,937	6,723	6,251	6,370	6,931	6,638	6,480	6,531	6,616	6,487	6,409	6,700	MW07-27
MW07-28	1,680	3,216	2,470	2,561	3,644	3,578	3,223	2,297	2,875	4,026	2,358	2,116	2,501	2,440	3,282	2,399	2,908	2,786	2,278	2,599	2,966	3,496	MW07-28
MW07-29	8,500	8,566	9,277	9,808	11,390	11,977	11,888	10,495	10,647	8,685	8,538	7,370	6,366	6,500	8,060	7,758	9,882	8,533	9,313	9,931	6,637	7,979	MW07-29
MW07-30	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	MW07-30
MW07-31	1,069	1,779	531	1,340	1,806	2,005	1,817	1,908	1,720	1,618	1,135	981	903	475	1,107	1,031	1,351	1,521	1,611	1,655	1,824	1,653	MW07-31
MW07-32	254	270	348	221	205	239	285	308	368	540	342	314	344	337	173	175	251	302	267	299	340	385	MW07-32
MW07-33	472	708	732	809	653	585	599	507	631	817	805	859	892	939	579	788	677	691	641	522	574	No Sample	MW07-33
MW07-34	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	MW07-34
MW07-35	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	MW07-35
MW07-36	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	MW07-36
MW07-37	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	MW07-37
DW-18	1,483				1,511				1,513				1,434				1,248				1,157		DW-18
DW-10	2,232				1,764				1,750				1,642				DRY				DRY	1,461	DW-10
DW-2	567				321				1,158				355				1,130				1,022		DW-2
DW-88	636				612				DRY	611			527				DRY				DRY	544	DW-88
DW-80	1,113				356				1,154				1,026				756				1,545		DW-80
RW-1	701				532				507				425				424				366		RW-1
RW-2	266				230				200				135				135				155		RW-2
RW-3	265				225				176				130				136				157		RW-3
RW-4	5				3.4				4.5				5.0				6.2				6.6		RW-4
RW-5	7				17				15				14				12				14		RW-5
RW-6	8				75				74				74				63				46		RW-6
RW-7	13				14				5				10				11				6		RW-7
RW-8	303				285				246				238				261				245		RW-8
RW-9	135				132				27				134				56				52		RW-9
RW-10	7				3.5				4.5				5.0				6.3				6.6		RW-10
RW-11														6.0			6.3				5.4		RW-11
RW-12														30			17				6		RW-12
S-1	1,417	2,065	1,364	1,460	1,542	1,362	1,405	1,156	1,315	1,346	1,138	1,138	380	1,377	1,215	361	573	300			1,046		S-1
S-2	3,370				2,381				2,660				2,303				2,031				2,022		S-2
S-3	2				3.5				4.5				5.0				6.5				6.0		S-3

APPENDIX J

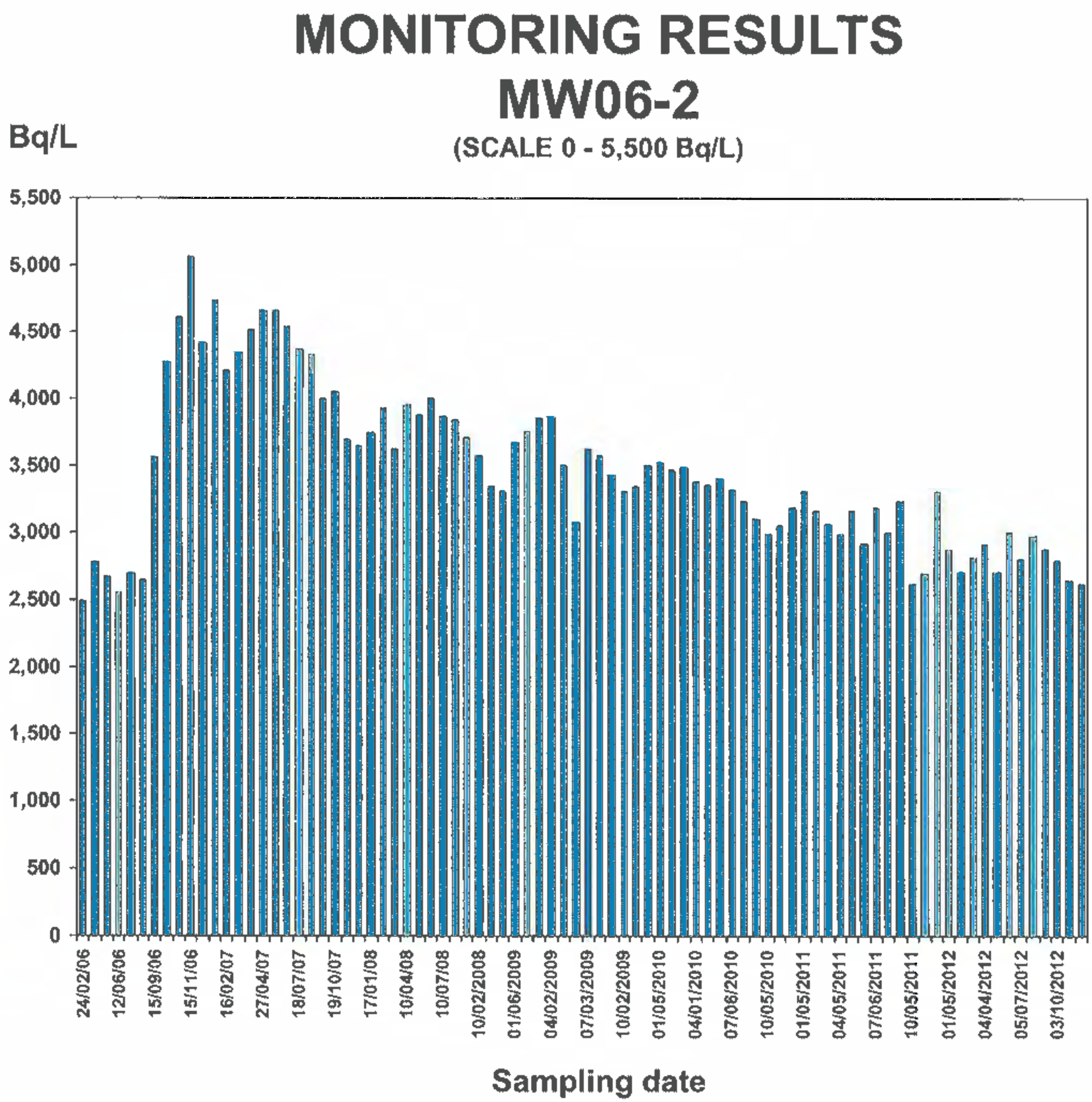
WELL I.D.	DESCRIPTION		Distance (m)	22/11/05	29/12/05	05/01/06	12/01/06	19/01/06	26/01/06	02/02/06	15/02/06
MW06-1	SRB SITE	IN SOIL	50								
MW06-2	SRB SITE	IN SOIL	75								
MW06-3	SRB SITE	IN SOIL	50								
MW06-4S	JOHNSTON MEADOWS		300								
MW06-4D	JOHNSTON MEADOWS		300								
MW06-5	RENFREW COUNTY HEALTH UNIT		500								
MW06-6	KI, 600 m		600								
MW06-8	SRB SITE	IN SOIL	55								
MW06-9	SRB SITE	IN SOIL	25								
MW06-10	SRB SITE	SURFACE OF BEDROCK	0								
MW07-11	SRB SITE	SURFACE OF BEDROCK	75								
MW07-12	SRB SITE	SURFACE OF BEDROCK	55								
MW07-13	SRB SITE	SURFACE OF BEDROCK	50								
MW07-14	SRB SITE	SURFACE OF BEDROCK	40								
MW07-15	SRB SITE	SURFACE OF BEDROCK	25								
MW07-16	SRB SITE	SURFACE OF BEDROCK	15								
MW07-17	SRB SITE	DEEPER BEDROCK	15								
MW07-18	SRB SITE	SURFACE OF BEDROCK	10								
MW07-19	SRB SITE	SURFACE OF BEDROCK	20								
MW07-20	SUPERIOR PROPANE PROPERTY	SURFACE OF BEDROCK	90								
MW07-21	SUPERIOR PROPANE PROPERTY	SURFACE OF BEDROCK	110								
MW07-22	SRB SITE	SURFACE OF BEDROCK	70								
MW07-23	SRB SITE	SURFACE OF BEDROCK	90								
MW07-24	HARRINGTON PROPERTY	SURFACE OF BEDROCK	115								
MW07-25	HARRINGTON PROPERTY	SURFACE OF BEDROCK	105								
MW07-26	SRB SITE	SURFACE OF BEDROCK	50								
MW07-27	CITY PROPERTY	SURFACE OF BEDROCK	55								
MW07-28	CITY PROPERTY	DEEPER BEDROCK	55								
MW07-29	SRB SITE	DEEPER BEDROCK	10								
MW07-30	SRB SITE	DEEPER BEDROCK	50								
MW07-31	SRB SITE	DEEPER BEDROCK	70								
MW07-32	HARRINGTON PROPERTY	DEEPER BEDROCK	115								
MW07-33	HARRINGTON PROPERTY	DEEPER BEDROCK	105								
MW07-34	SRB SITE	SHALLOW BEDROCK	10								
MW07-35	CITY PROPERTY	SHALLOW BEDROCK	55								
MW07-36	CITY PROPERTY	SHALLOW BEDROCK	80								
MW07-37	SRB SITE	SHALLOW BEDROCK	60								
CN-1S	CN PROPERTY		125								
CN-1D	CN PROPERTY		130								
CN-2	CN PROPERTY		150								
CN-3S	CN PROPERTY		165								
CN-3D	CN PROPERTY		160								
RW-1	413 BOUNDARY ROAD		465	1,811	1,884	1,872	1,915	1,895	1,902	1,900	1,826
RW-2	185 MUD LAKE ROAD		1,100		354	388			362		
RW-3	183 MUD LAKE ROAD		1,100	430	395	331	397	411	437	423	
RW-4	711 BRUHAM AVENUE		2,200				3.0	2.0	4.0	2.0	3.0
RW-5	171 SAWMILL ROAD		2,300				13		18		
RW-6	40087 HWY 41		1,400								
RW-7	40075 HWY 41		1,600		123						
RW-8	204 BOUNDARY ROAD		700								
RW-9	206 BOUNDARY ROAD		650								
RW-10	208 BOUNDARY ROAD		625								
S-1	SUPERIOR PROPANE OFFICE		160								
S-2	SUPERIOR PROPANE TRUCK WASH		250								
S-3	INTERNATIONAL LUMBER OFFICE		385								

WELL I.D.	24/02/06	13/04/06	15/5/06	12/06/06	11/7/06	15/08/06	15/09/06	25/09/06	13/10/06	26/10/06
MW06-1	62,434	63,518	61,774	62,025	63,631	62,155	59,902	59,734	61,947	
MW06-2	2,484	2,786	2,665	2,550	2,698	2,652	3,560	4,264	4,612	
MW06-3	2,722	3,068	3,133	3,045	2,982	3,205	2,990	2,999	3,209	
MW06-4S	211									
MW06-4D	3.0									
MW06-5	14									
MW06-6	376									
MW06-8								105	141	
MW06-9								439	1,772	
MW06-10								130,060	141,111	
MW07-11										
MW07-12										
MW07-13										
MW07-14										
MW07-15										
MW07-16										
MW07-17										
MW07-18										
MW07-19										
MW07-20										
MW07-21										
MW07-22										
MW07-23										
MW07-24										
MW07-25										
MW07-26										
MW07-27										
MW07-28										
MW07-29										
MW07-30										
MW07-31										
MW07-32										
MW07-33										
MW07-34										
MW07-35										
MW07-36										
MW07-37										
CN-1S	3,928									
CN-1D	3,838									
CN-2	5,037									
CN-3S	3,581									
CN-3D	3,283									
RW-1	2,061								1,626	
RW-2									313	
RW-3	481								366	
RW-4	2.0								4.0	
RW-5	15								14	
RW-6	77								67	
RW-7									90	
RW-8										260
RW-9										
RW-10										
S-1										1,264
S-2										2,145
S-3										

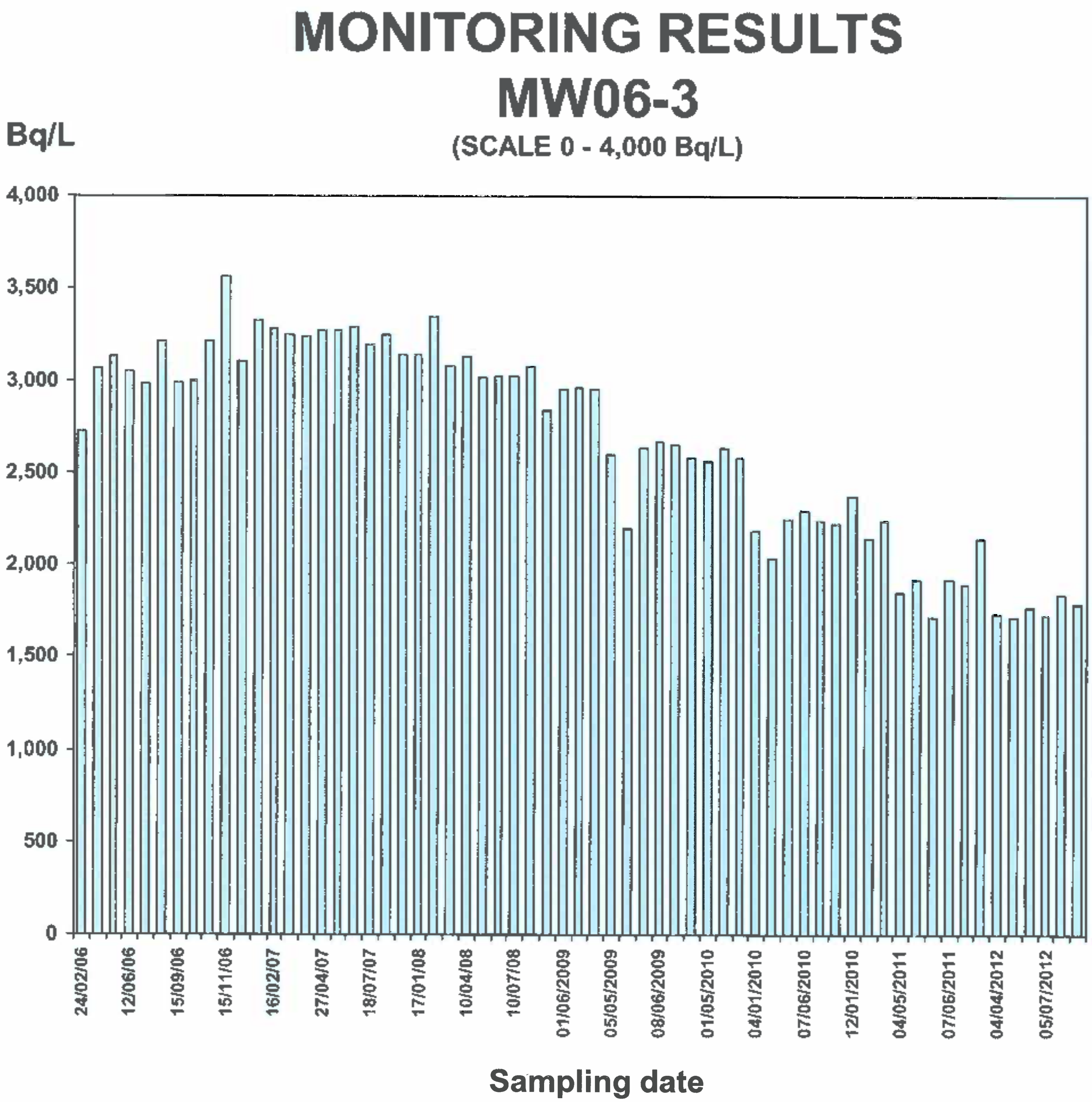
WELL I.D.	15/11/06	13/12/06	13/01/07	15/02/07	15/03/07	16/04/07	27/4/07	17/5/07	14/6/07	16/7/07	13/8/07	11/9/07	18/10/07	WELL I.D.
MW06-1	67,606	56,595	60,166	55,310	53,306	45,932	50,170	51,972	46,565	47,489	44,653	41,651	43,586	MW06-1
MW06-2	5,060	4,414	4,730	4,207	4,347	4,516	4,657	4,646	4,538	4,365	4,329	3,997	4,050	MW06-2
MW06-3	3,564	3,103	3,324	3,282	3,243	3,236	3,273	3,267	3,288	3,187	3,247	3,139	DRY	MW06-3
MW06-4S														MW06-4S
MW06-4D														MW06-4D
MW06-5														MW06-5
MW06-6														MW06-6
MW06-8	120	175	178	270	296	258	209	207	172	202	236	247	311	MW06-8
MW06-9	2,003	1,640	1,611	1,487	1,444	1,642	1,450	1,609	1,526	1,866	1,704	1,723	1,489	MW06-9
MW06-10	156,643	135,612	142,308	149,928	138,509	133,622	104,350	94,956	70,225	46,379	49,347	39,228	29,795	MW06-10
MW07-11							203	638	936	866	898	955	400	MW07-11
MW07-12							152	154	114	106	117	151	194	MW07-12
MW07-13							6,358	7,781	8,070	9,463	9,221	9,287	10,057	MW07-13
MW07-14							1,504	1,662	1,895	2,526	3,494	3,610	2,357	MW07-14
MW07-15							690	675	672	314	376	255	227	MW07-15
MW07-16							6,855	6,845	7,059	4,927	6,381	6,148	6,646	MW07-16
MW07-17							521	519	233	109	107	106	103	MW07-17
MW07-18							110,422	108,879	97,441	100,612	93,704	85,781	58,139	MW07-18
MW07-19							28,788	25,806	20,475	13,852	16,329	18,318	4,229	MW07-19
MW07-20													628	MW07-20
MW07-21													102	MW07-21
MW07-22													557	MW07-22
MW07-23													595	MW07-23
MW07-24													102	MW07-24
MW07-25													1,230	MW07-25
MW07-26													2,731	MW07-26
MW07-27													6,959	MW07-27
MW07-28													8,068	MW07-28
MW07-29													38,797	MW07-29
MW07-30													14,185	MW07-30
MW07-31													801	MW07-31
MW07-32													143	MW07-32
MW07-33													678	MW07-33
MW07-34													45,544	MW07-34
MW07-35													14,824	MW07-35
MW07-36													9,100	MW07-36
MW07-37													3,297	MW07-37
CN-1S	3,511					3,780				2,326				CN-1S
CN-1D	3,279				3,277	1,660				2,806				CN-1D
CN-2	2,123				1,363	523				2,801				CN-2
CN-3S	2,984				1,437	1,783				1,917				CN-3S
CN-3D	1,427				1,890	891				1,239				CN-3D
RW-1					1,506			1,366		1,370				RW-1
RW-2					336					311				RW-2
RW-3					186					358				RW-3
RW-4					3.8					3.0				RW-4
RW-5					14					18				RW-5
RW-6					69					70				RW-6
RW-7					67					38				RW-7
RW-8					254					294				RW-8
RW-9	455				268					269				RW-9
RW-10	7.0				3.9					2.0				RW-10
S-1					979			1,289	1,515	1,022	1,126	848	865	S-1
S-2					1,849					2,222				S-2
S-3	15				6.0					6.0				S-3


MONITORING RESULTS
MW06-1
(SCALE 0 - 70,000 Bq/L)
Bq/L
70,000
60,000
50,000
40,000
30,000
20,000
10,000
0
24/02/06
06/12/2006
15/09/06
15/11/06
16/02/07
27/04/07
18/07/07
19/10/07
17/01/08
10/04/08
10/07/08
02/10/08
01/06/2009
04/02/2009
07/03/2009
10/02/2009
01/05/2010
04/01/2010
07/06/2010
10/05/2010
01/05/2011
04/05/2011
07/06/2011
10/05/2011
01/05/2012
04/04/2012
05/07/2012
01/11/2012
Sampling date

APPENDIX J


MONITORING RESULTS
MW06-2
(SCALE 0 - 5,500 Bq/L)
Bq/L
5,500
5,000
4,500
4,000
3,500
3,000
2,500
2,000
1,500
1,000
500
0
24/02/06
12/06/06
15/09/06
15/11/06
16/02/07
27/04/07
18/07/07
19/10/07
17/01/08
10/04/08
10/07/08
10/02/2008
01/06/2009
04/02/2009
07/03/2009
10/02/2009
01/05/2010
04/01/2010
07/06/2010
10/05/2010
01/05/2011
04/05/2011
07/06/2011
10/05/2011
01/05/2012
04/04/2012
05/07/2012
03/10/2012
Sampling date

APPENDIX J

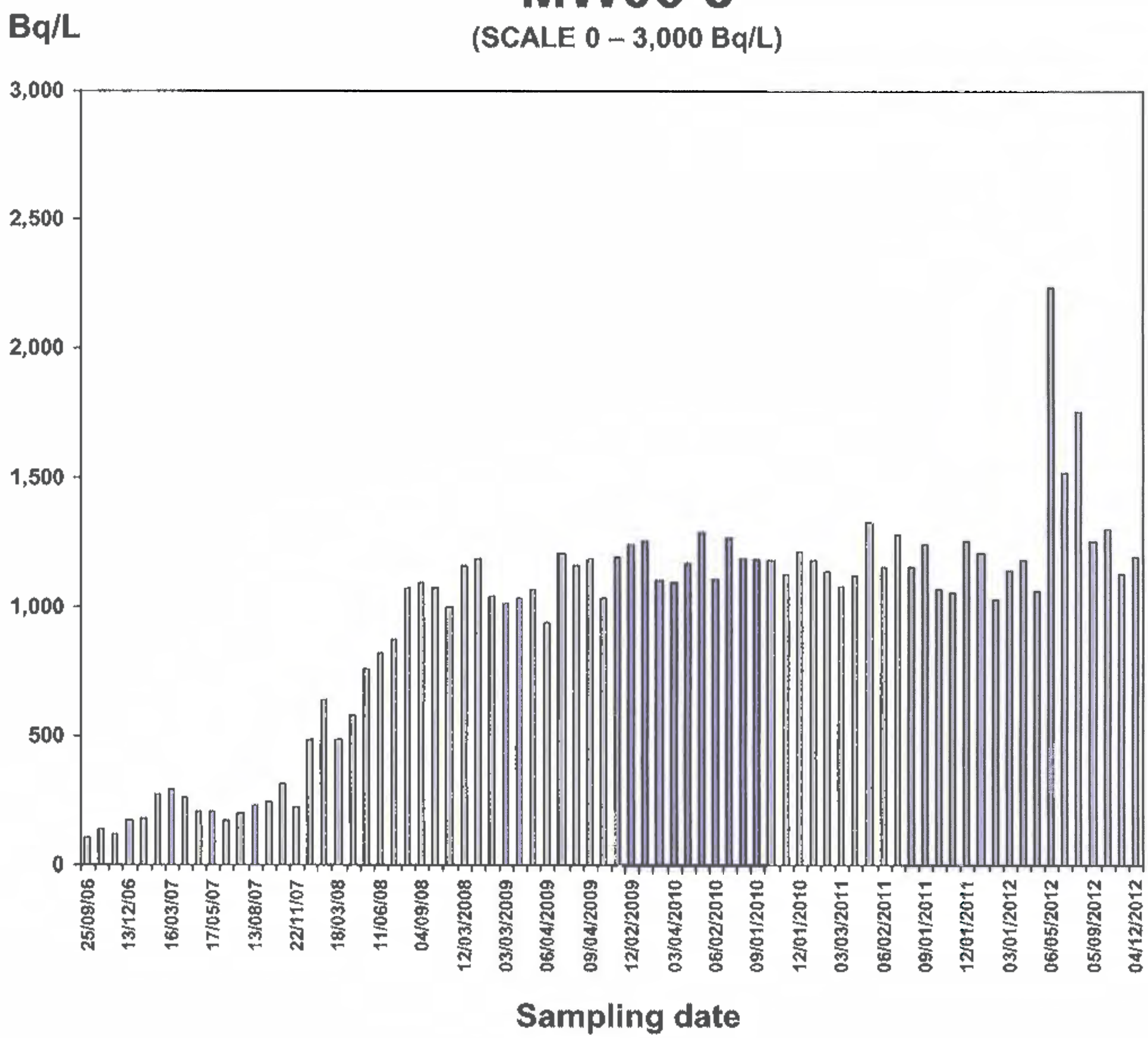


MONITORING RESULTS
MW06-3
(SCALE 0 - 4,000 Bq/L)
Bq/L
4,000
3,500
3,000
2,500
2,000
1,500
1,000
500
0
24/02/06
12/06/06
15/09/06
15/11/06
16/02/07
27/04/07
18/07/07
17/01/08
10/04/08
10/07/08
01/06/2009
05/05/2009
08/06/2009
01/05/2010
04/01/2010
07/06/2010
12/01/2010
04/05/2011
07/06/2011
04/04/2012
05/07/2012
Sampling date

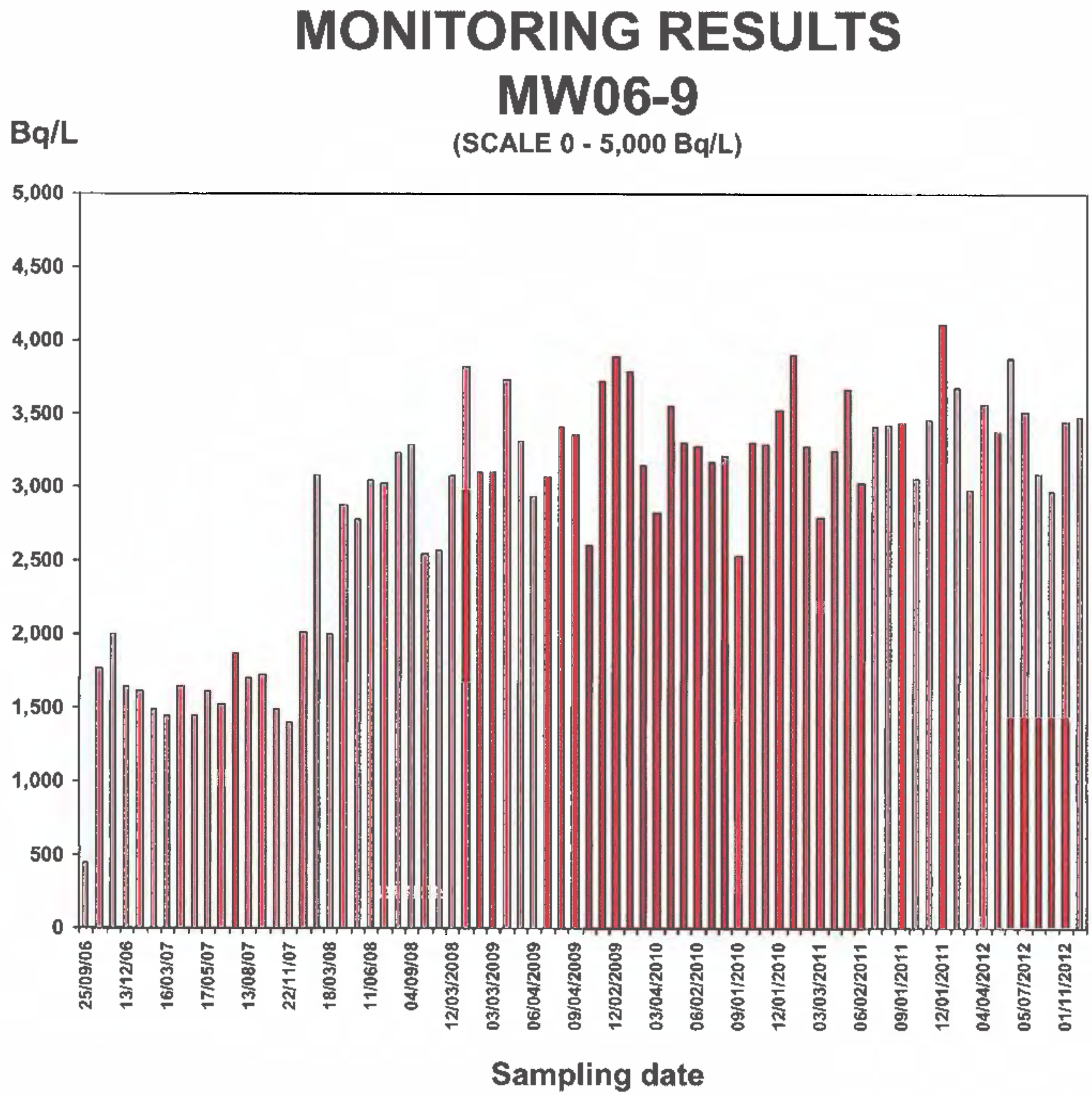
APPENDIX J

MONITORING RESULTS
MW06-8

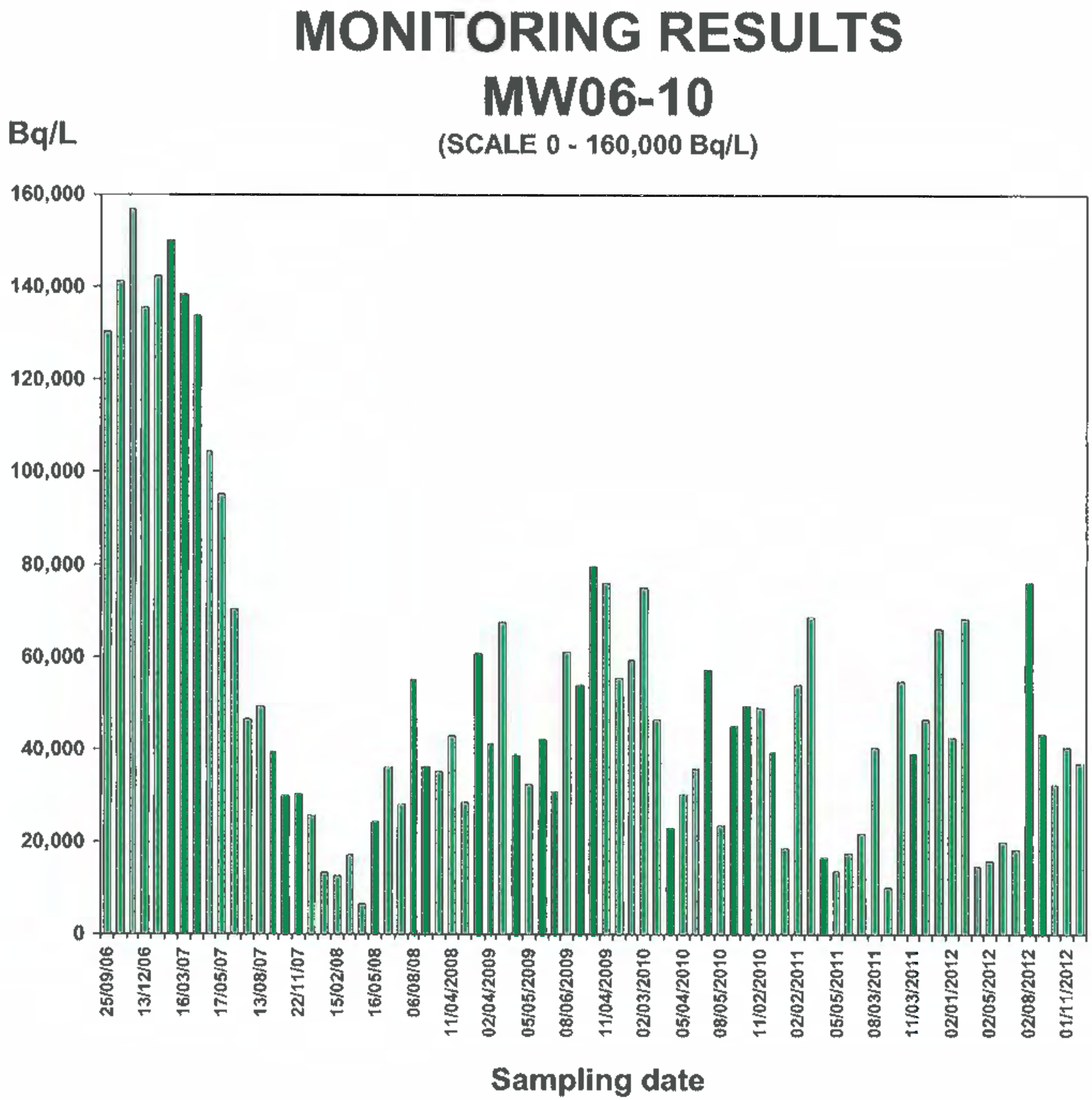
(SCALE 0 – 3,000 Bq/L)



APPENDIX J

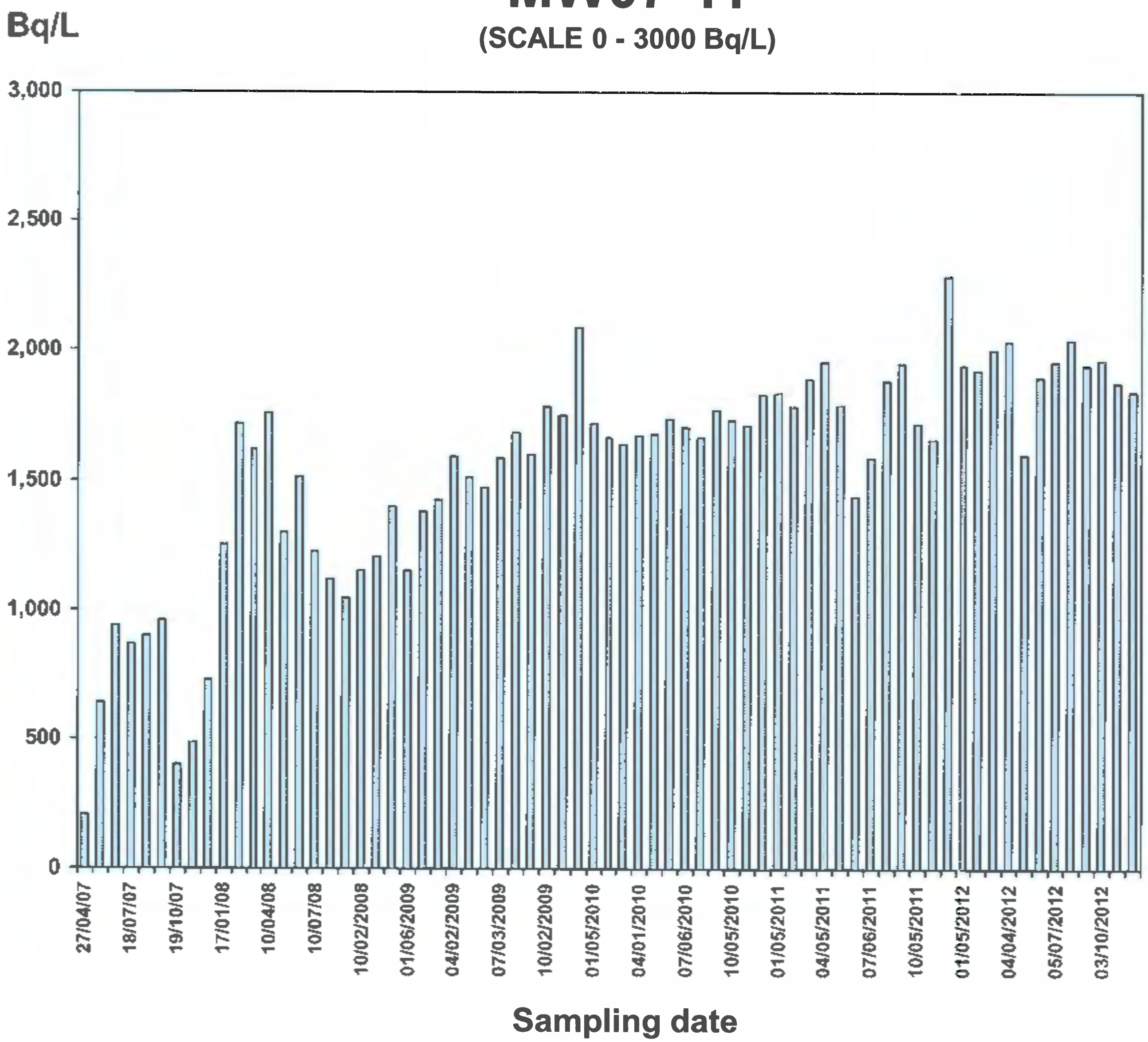

MONITORING RESULTS
MW06-9
(SCALE 0 - 5,000 Bq/L)
Bq/L
5,000
4,500
4,000
3,500
3,000
2,500
2,000
1,500
1,000
500
0
25/09/06
13/12/06
16/03/07
17/05/07
13/08/07
22/11/07
18/03/08
11/06/08
04/09/08
12/03/2008
03/03/2009
06/04/2009
09/04/2009
12/02/2009
03/04/2010
06/02/2010
09/01/2010
12/01/2010
03/03/2011
06/02/2011
09/01/2011
12/01/2011
04/04/2012
05/07/2012
01/11/2012
Sampling date

APPENDIX J

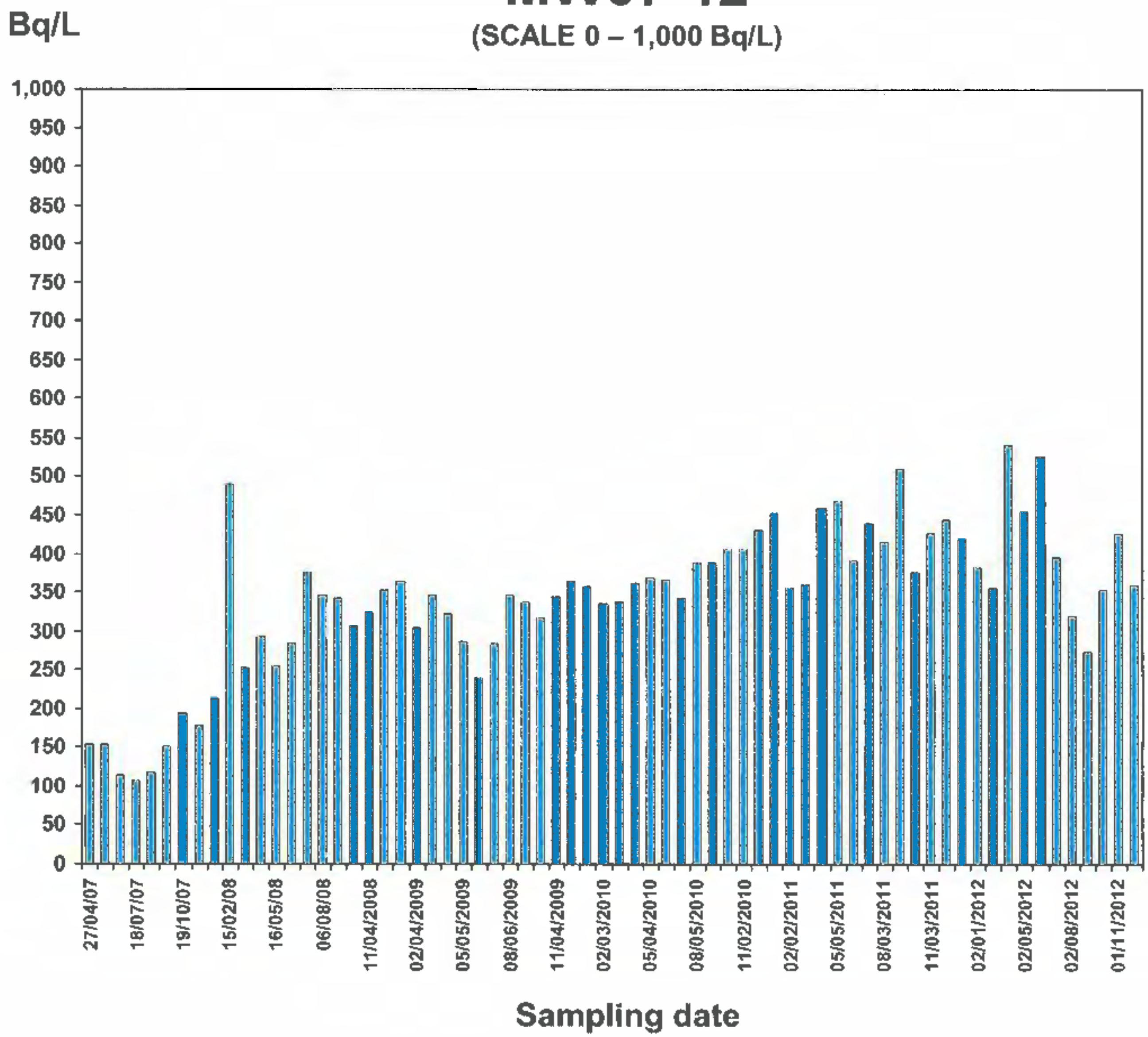

MONITORING RESULTS
MW06-10
(SCALE 0 - 160,000 Bq/L)
Bq/L
160,000
140,000
120,000
100,000
80,000
60,000
40,000
20,000
0
25/09/06
13/12/06
16/03/07
17/05/07
13/08/07
22/11/07
15/02/08
16/05/08
06/08/08
11/04/2008
02/04/2009
05/05/2009
08/06/2009
11/04/2009
02/03/2010
05/04/2010
08/05/2010
11/02/2010
02/02/2011
05/05/2011
08/03/2011
11/03/2011
02/01/2012
02/05/2012
02/08/2012
01/11/2012
Sampling date

APPENDIX J

MONITORING RESULTS
MW07-11
(SCALE 0 - 3000 Bq/L)

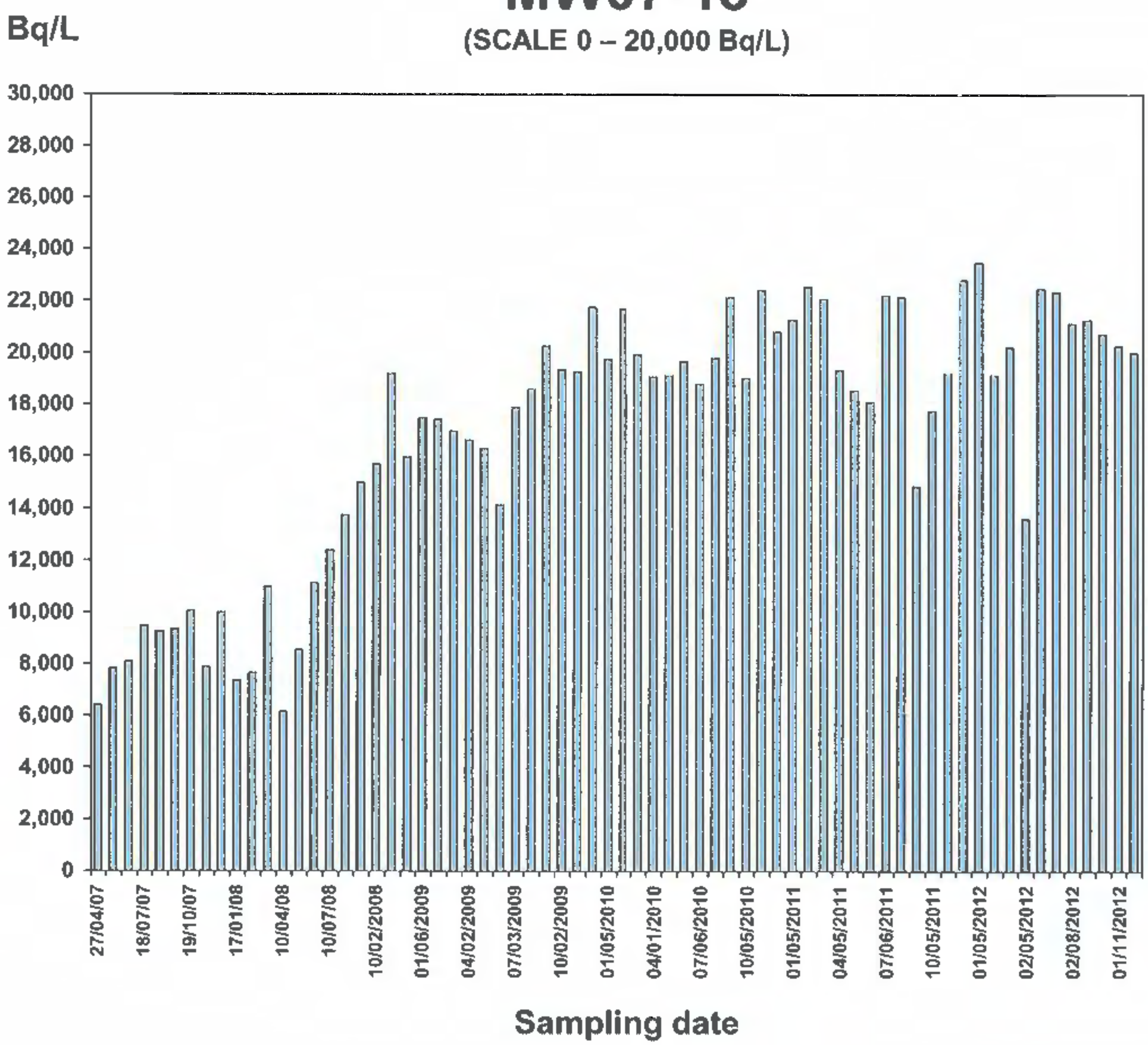


MONITORING RESULTS
MW07-12



APPENDIX J

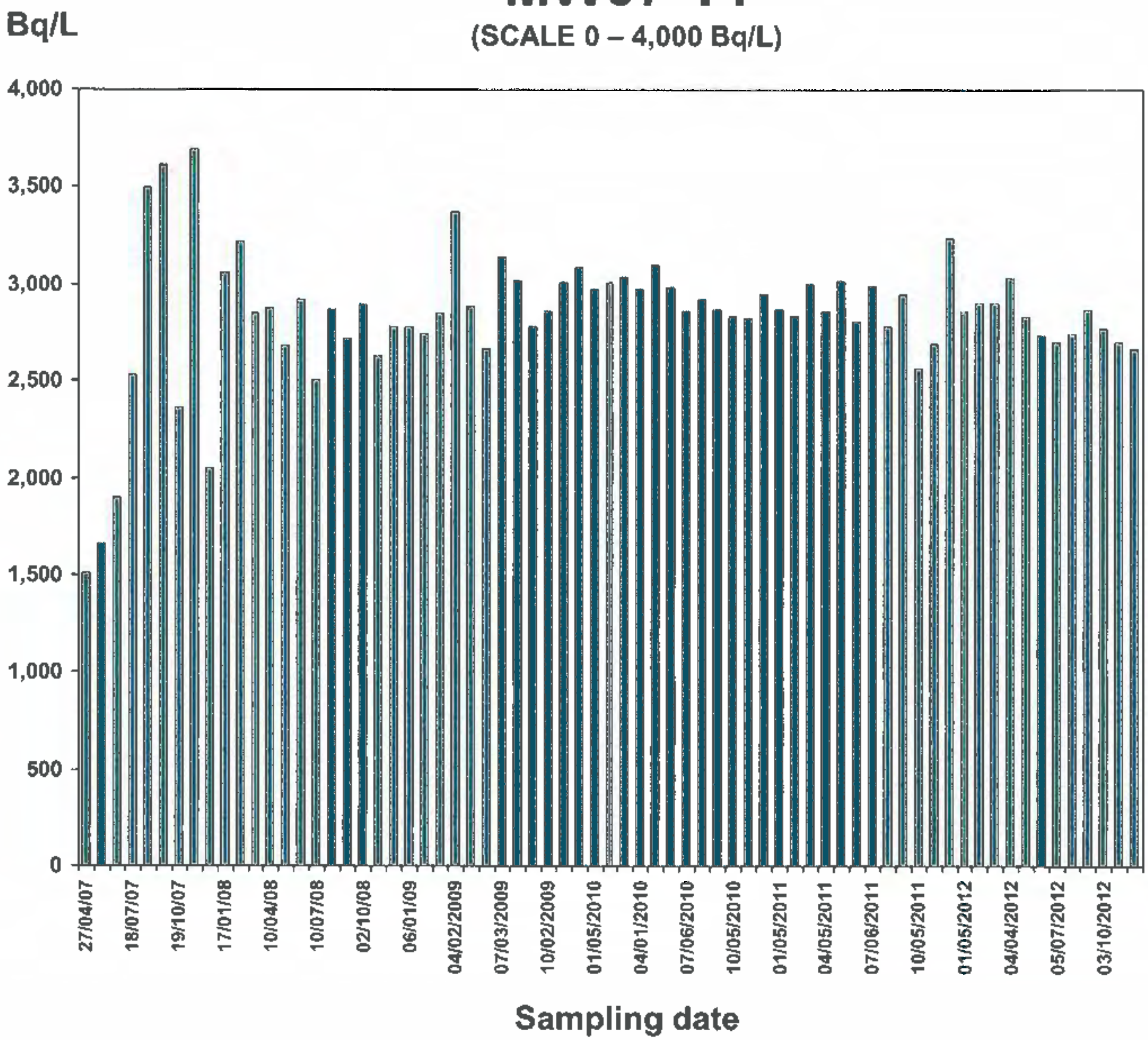
MONITORING RESULTS
MW07-13
(SCALE 0 – 20,000 Bq/L)



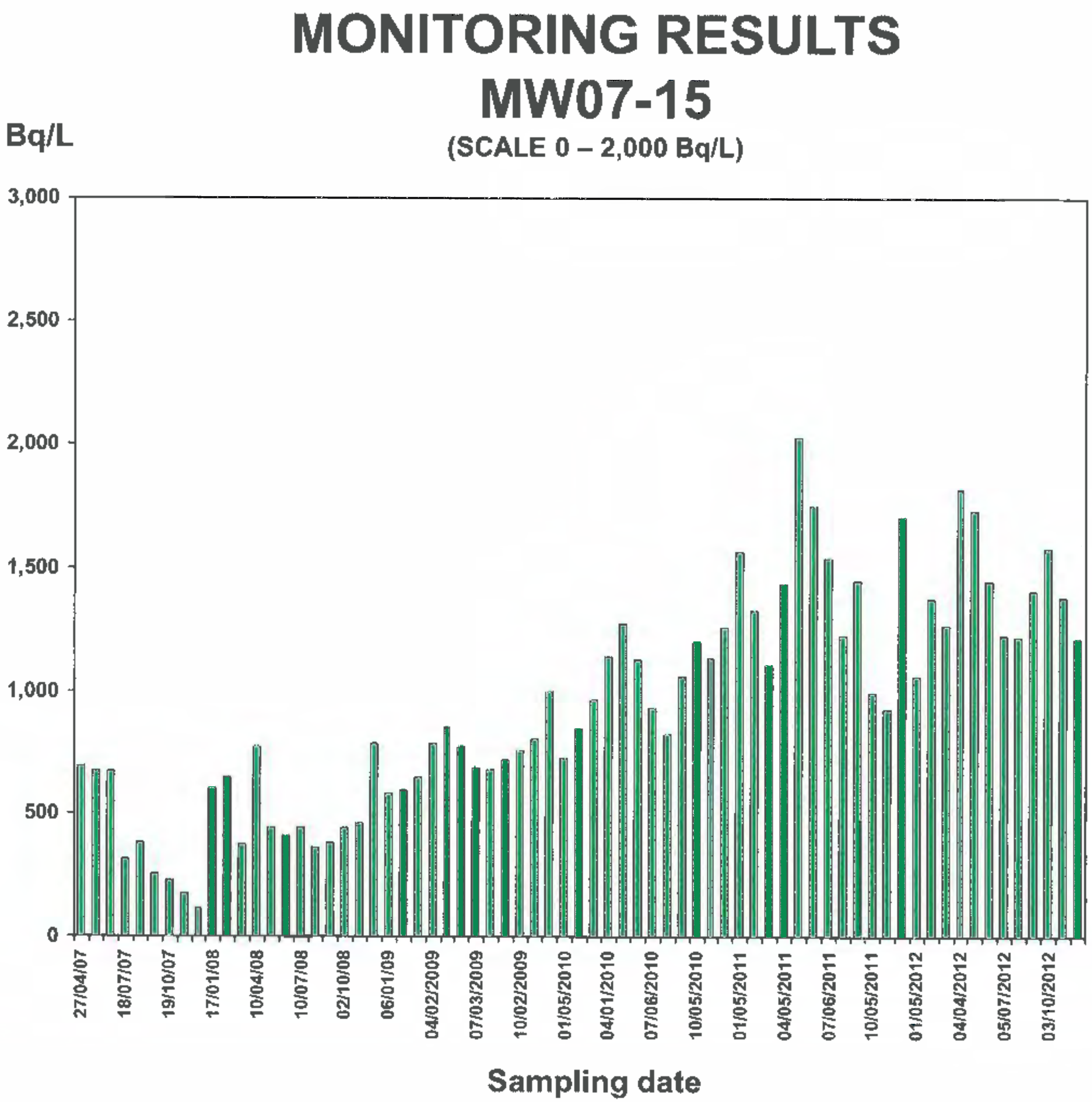
APPENDIX J

MONITORING RESULTS
MW07-14

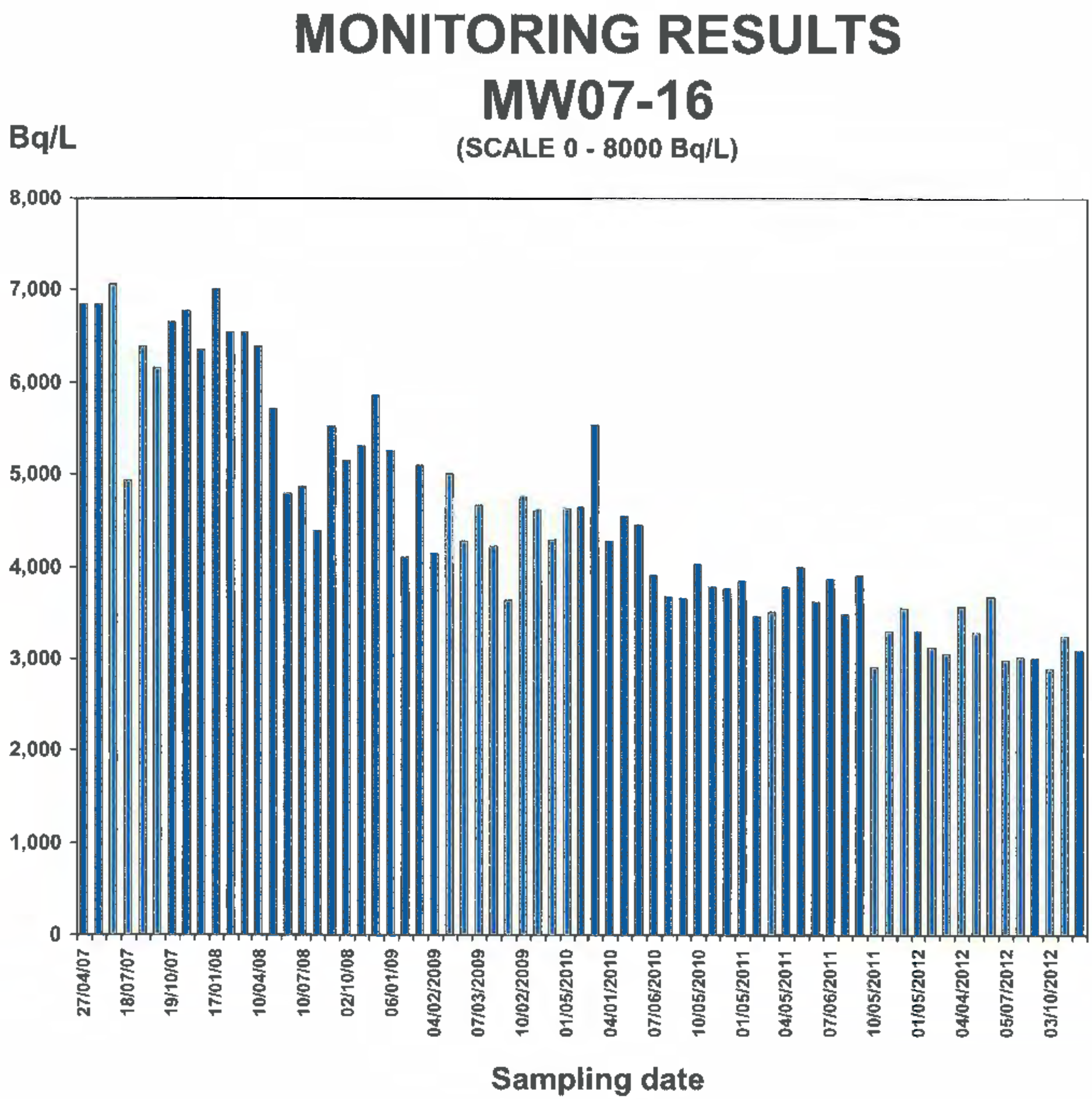
(SCALE 0 – 4,000 Bq/L)



APPENDIX J

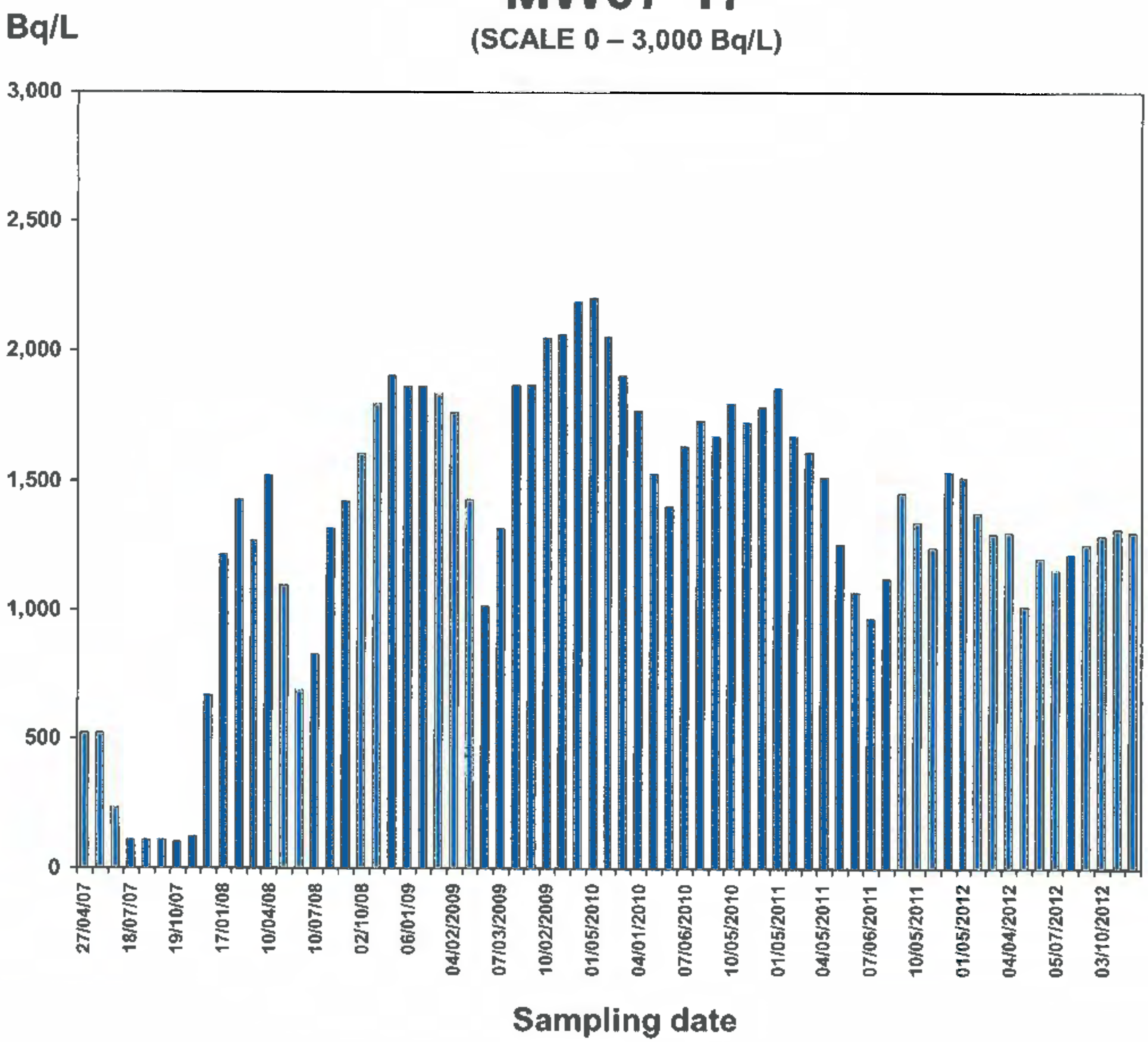

MONITORING RESULTS
MW07-15
(SCALE 0 – 2,000 Bq/L)
Bq/L
3,000
2,500
2,000
1,500
1,000
500
0
27/04/07
18/07/07
19/10/07
17/01/08
10/04/08
10/07/08
02/10/08
06/01/09
04/02/2009
07/03/2009
10/02/2009
01/05/2010
04/01/2010
07/06/2010
10/05/2010
01/05/2011
04/05/2011
07/06/2011
10/05/2011
01/05/2012
04/04/2012
05/07/2012
03/10/2012
Sampling date

APPENDIX J

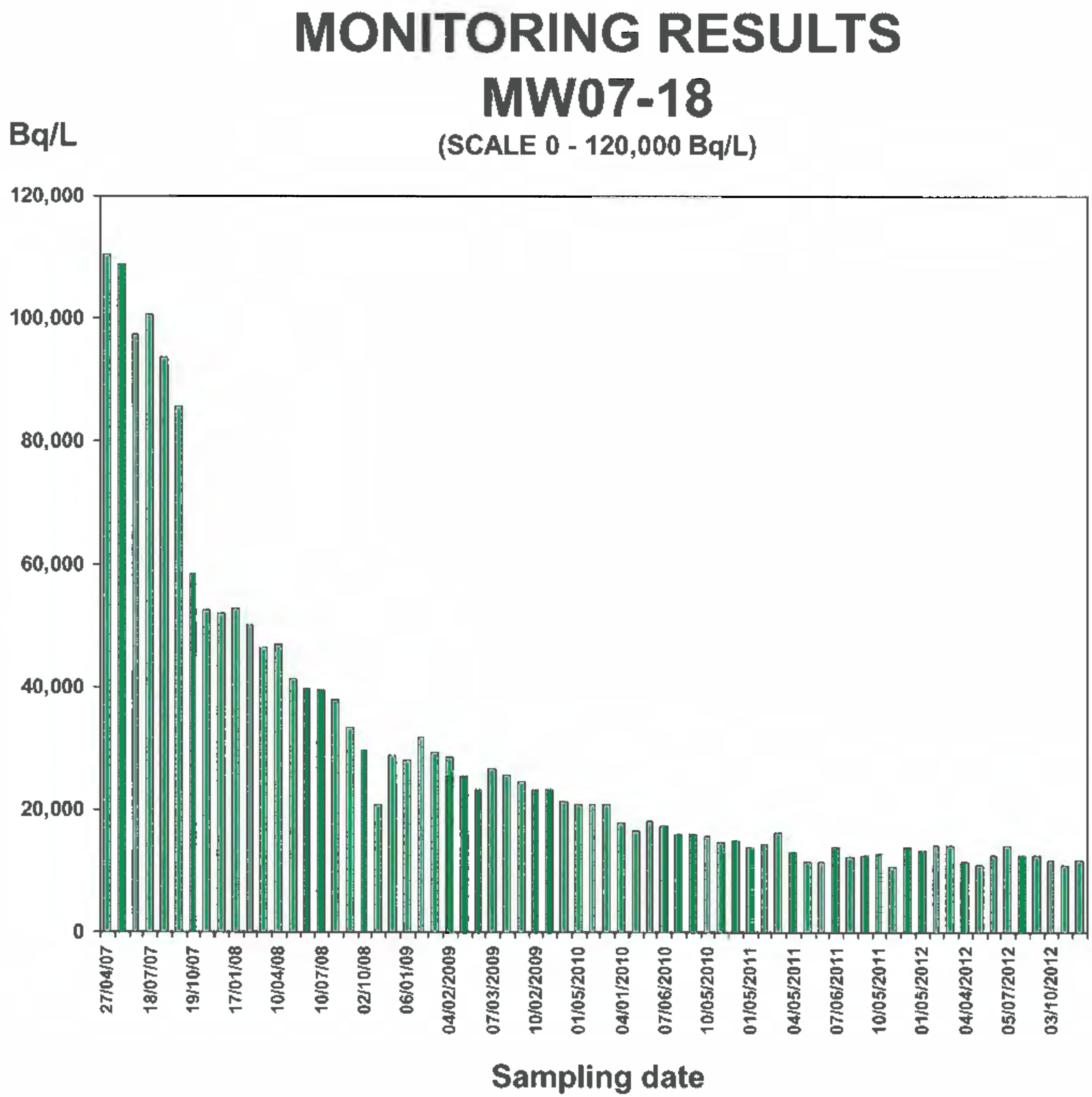

MONITORING RESULTS
MW07-16
(SCALE 0 - 8000 Bq/L)
Bq/L
8,000
7,000
6,000
5,000
4,000
3,000
2,000
1,000
0
27/04/07
18/07/07
19/10/07
17/01/08
10/04/08
10/07/08
02/10/08
06/01/09
04/02/2009
07/03/2009
10/02/2009
01/05/2010
04/01/2010
07/06/2010
10/05/2010
01/05/2011
04/05/2011
07/06/2011
10/05/2011
01/05/2012
04/04/2012
05/07/2012
03/10/2012
Sampling date

APPENDIX J

MONITORING RESULTS
MW07-17
(SCALE 0 – 3,000 Bq/L)

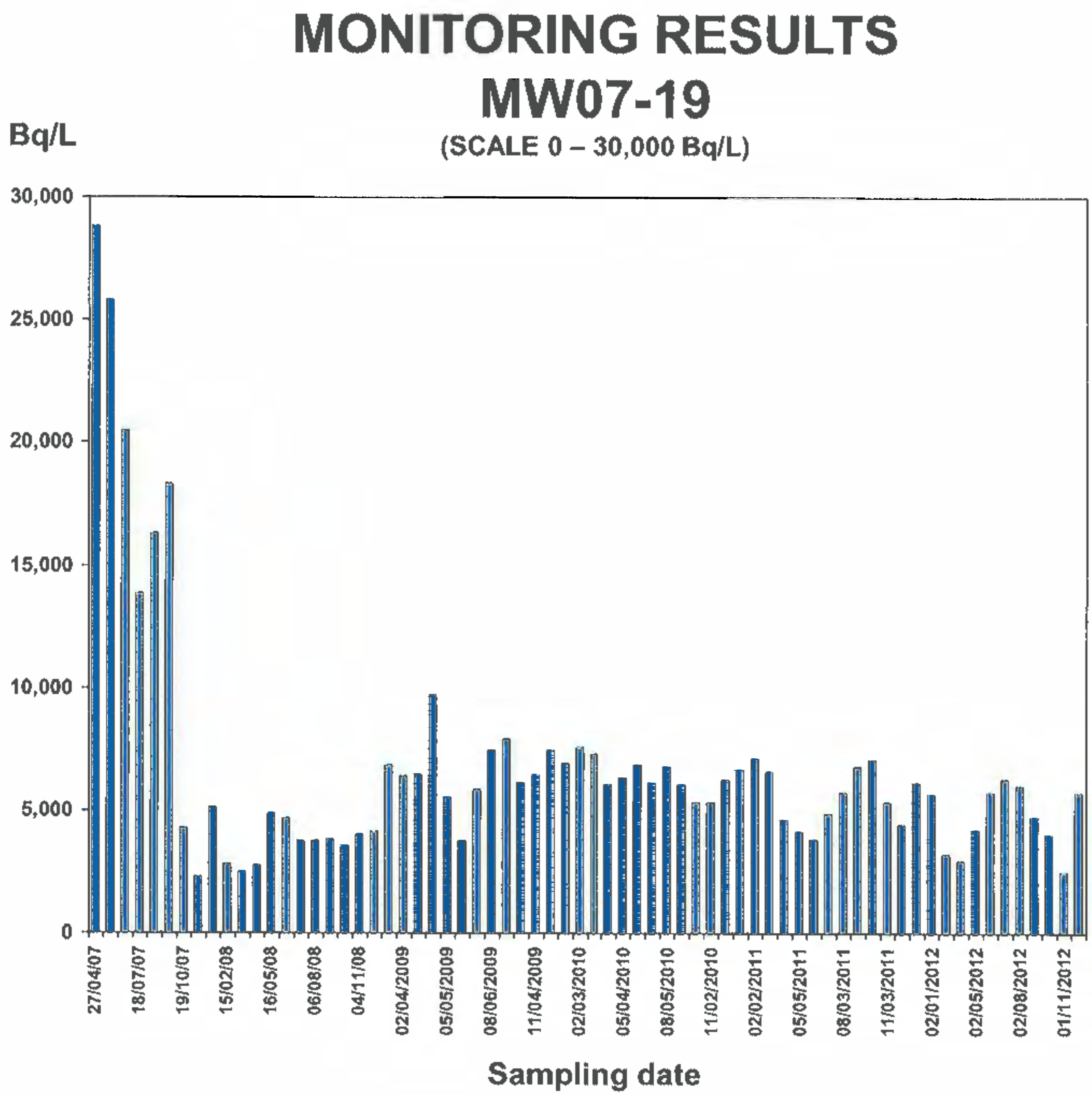


APPENDIX J

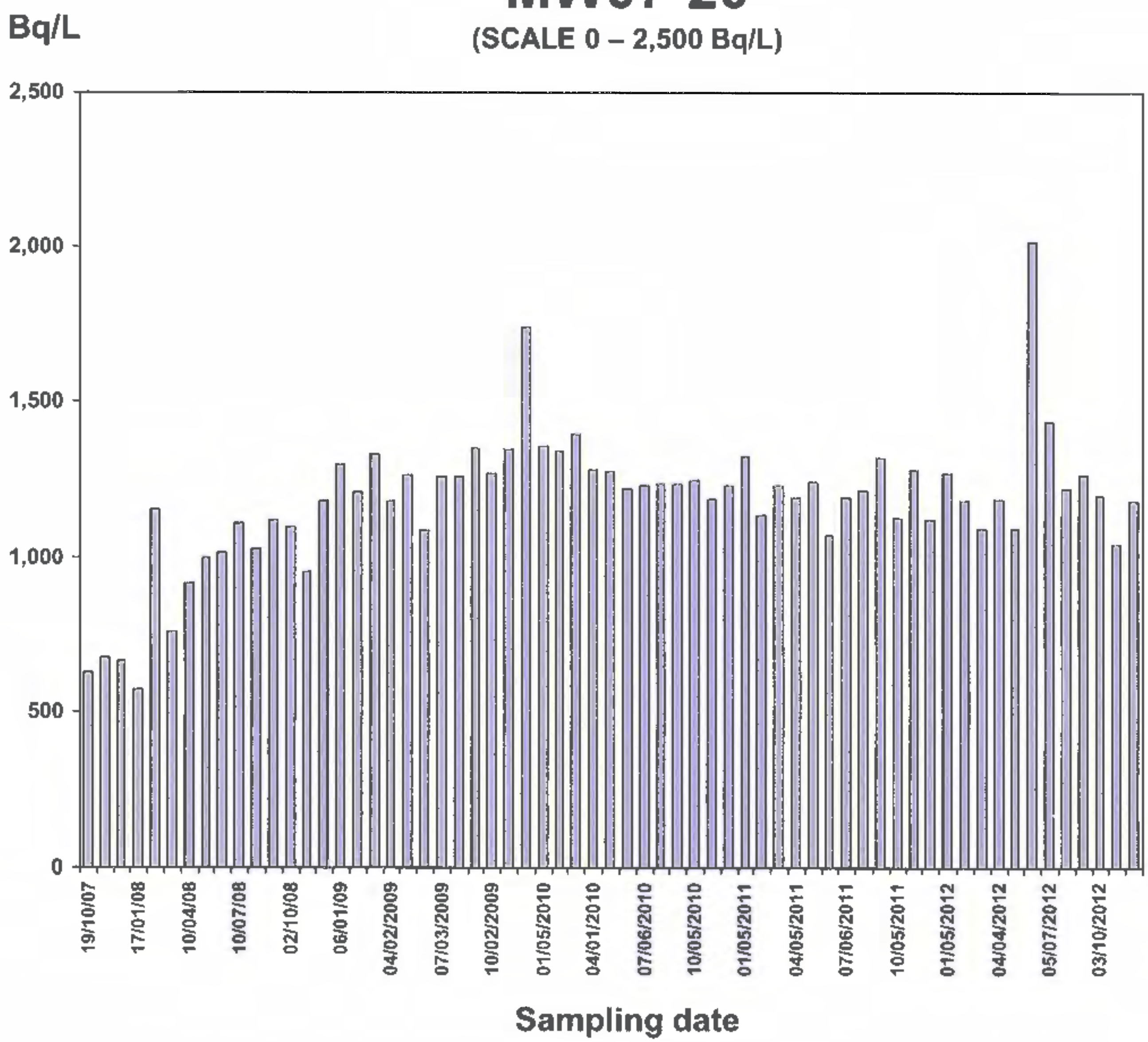


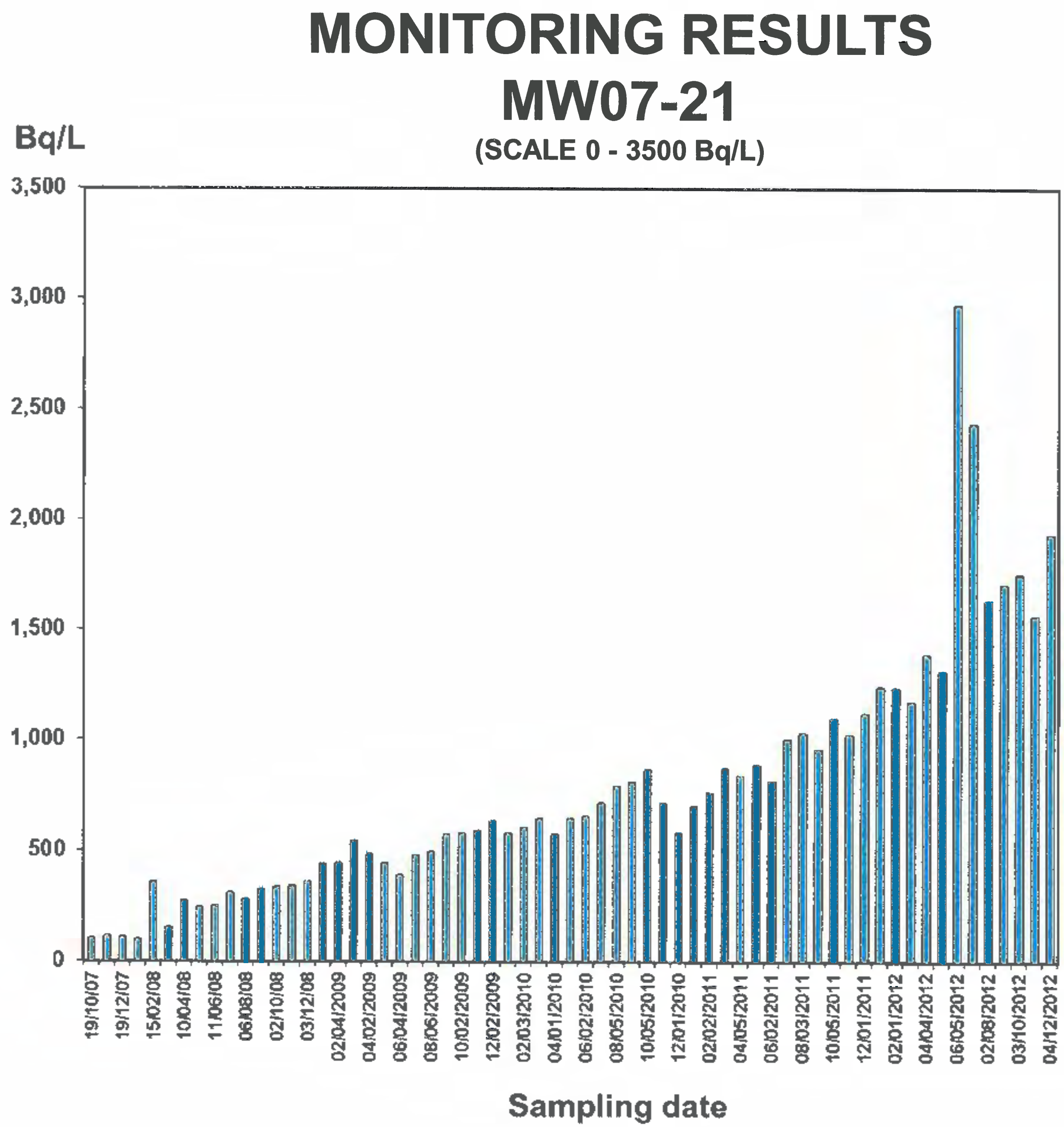
MONITORING RESULTS
MW07-18
(SCALE 0 - 120,000 Bq/L)
Bq/L
120,000
100,000
80,000
60,000
40,000
20,000
0
27/04/07
18/07/07
19/10/07
17/01/08
10/04/08
10/07/08
02/10/08
06/01/09
04/02/2009
07/03/2009
10/02/2009
01/05/2010
04/01/2010
07/06/2010
10/05/2010
01/05/2011
04/05/2011
07/06/2011
10/05/2011
01/05/2012
04/04/2012
05/07/2012
03/10/2012
Sampling date

APPENDIX J

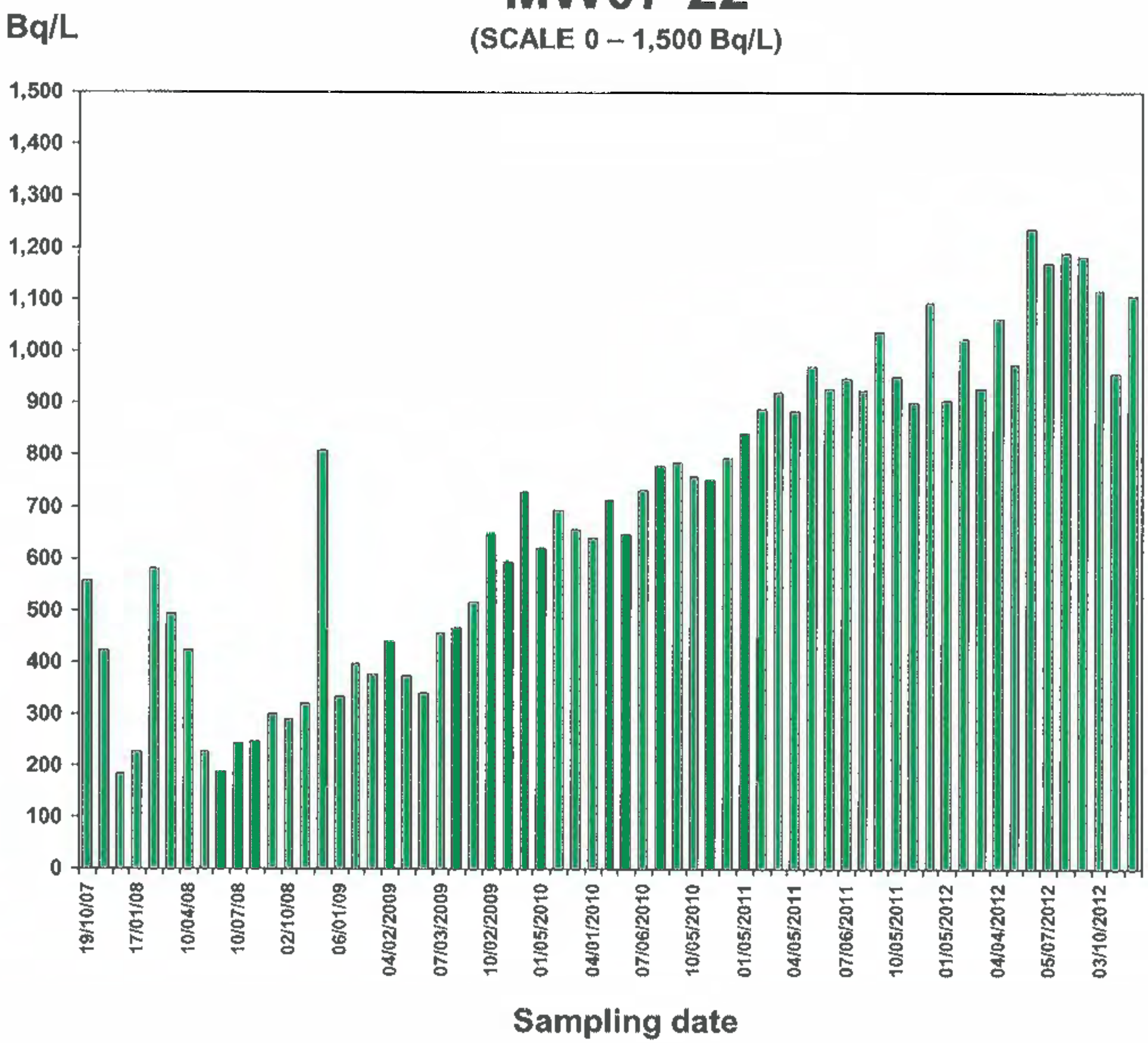

MONITORING RESULTS
MW07-19
(SCALE 0 – 30,000 Bq/L)
Bq/L
30,000
25,000
20,000
15,000
10,000
5,000
0
27/04/07
18/07/07
19/10/07
15/02/08
16/05/08
06/08/08
04/11/08
02/04/2009
05/05/2009
08/06/2009
11/04/2009
02/03/2010
05/04/2010
08/05/2010
11/02/2010
02/02/2011
05/05/2011
08/03/2011
11/03/2011
02/01/2012
02/05/2012
02/08/2012
01/11/2012
Sampling date

MONITORING RESULTS
MW07-20

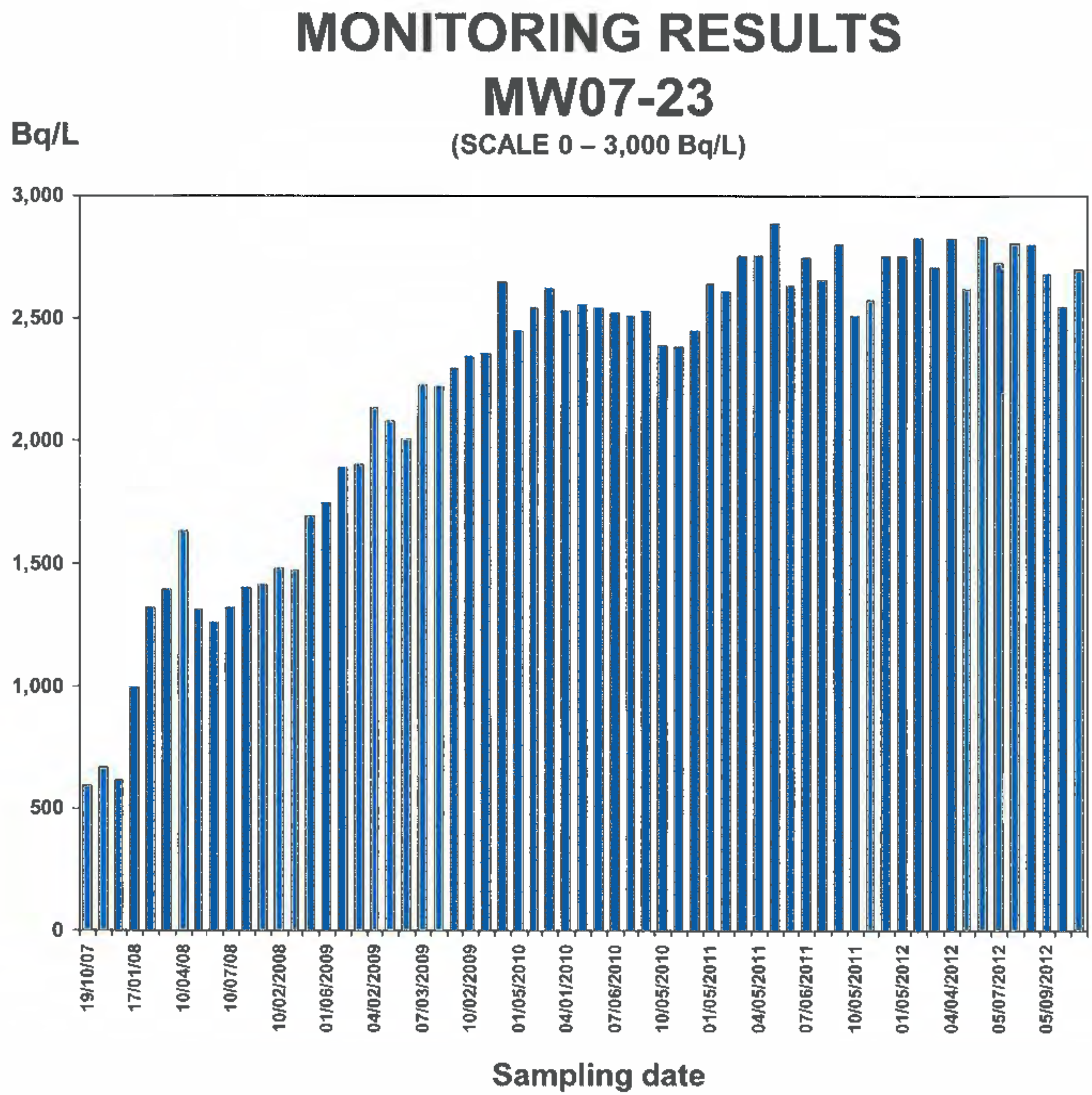



MONITORING RESULTS
MW07-21
(SCALE 0 - 3500 Bq/L)
Bq/L
3,500
3,000
2,500
2,000
1,500
1,000
500
0
19/10/07
19/12/07
15/02/08
10/04/08
11/06/08
06/08/08
02/10/08
03/12/08
02/04/2009
04/02/2009
06/04/2009
08/06/2009
10/02/2009
12/02/2009
02/03/2010
04/01/2010
06/02/2010
08/05/2010
10/05/2010
12/01/2010
02/02/2011
04/05/2011
06/02/2011
08/03/2011
10/05/2011
12/01/2011
02/01/2012
04/04/2012
06/05/2012
02/08/2012
03/10/2012
04/12/2012
Sampling date

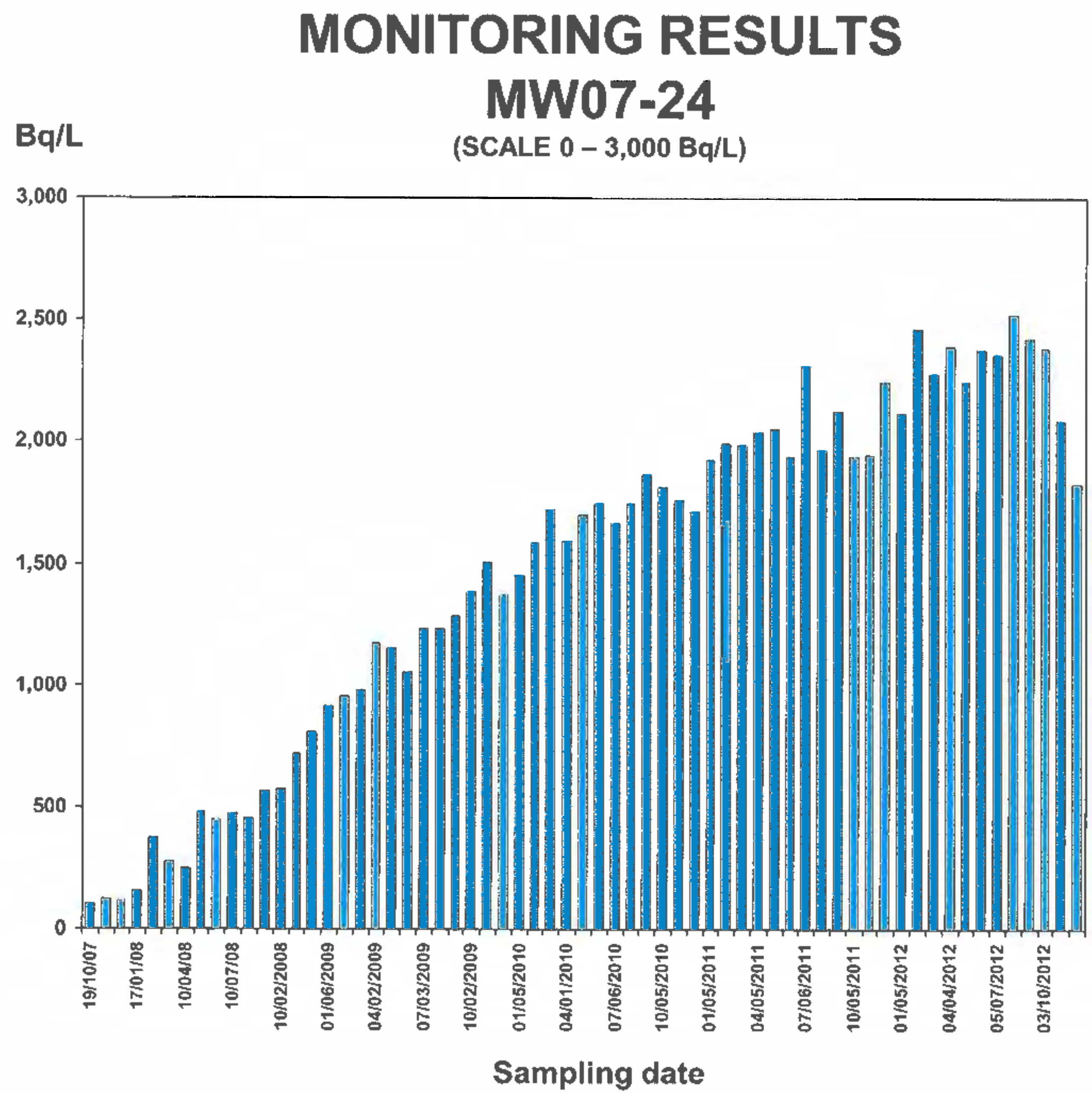
MONITORING RESULTS
MW07-22



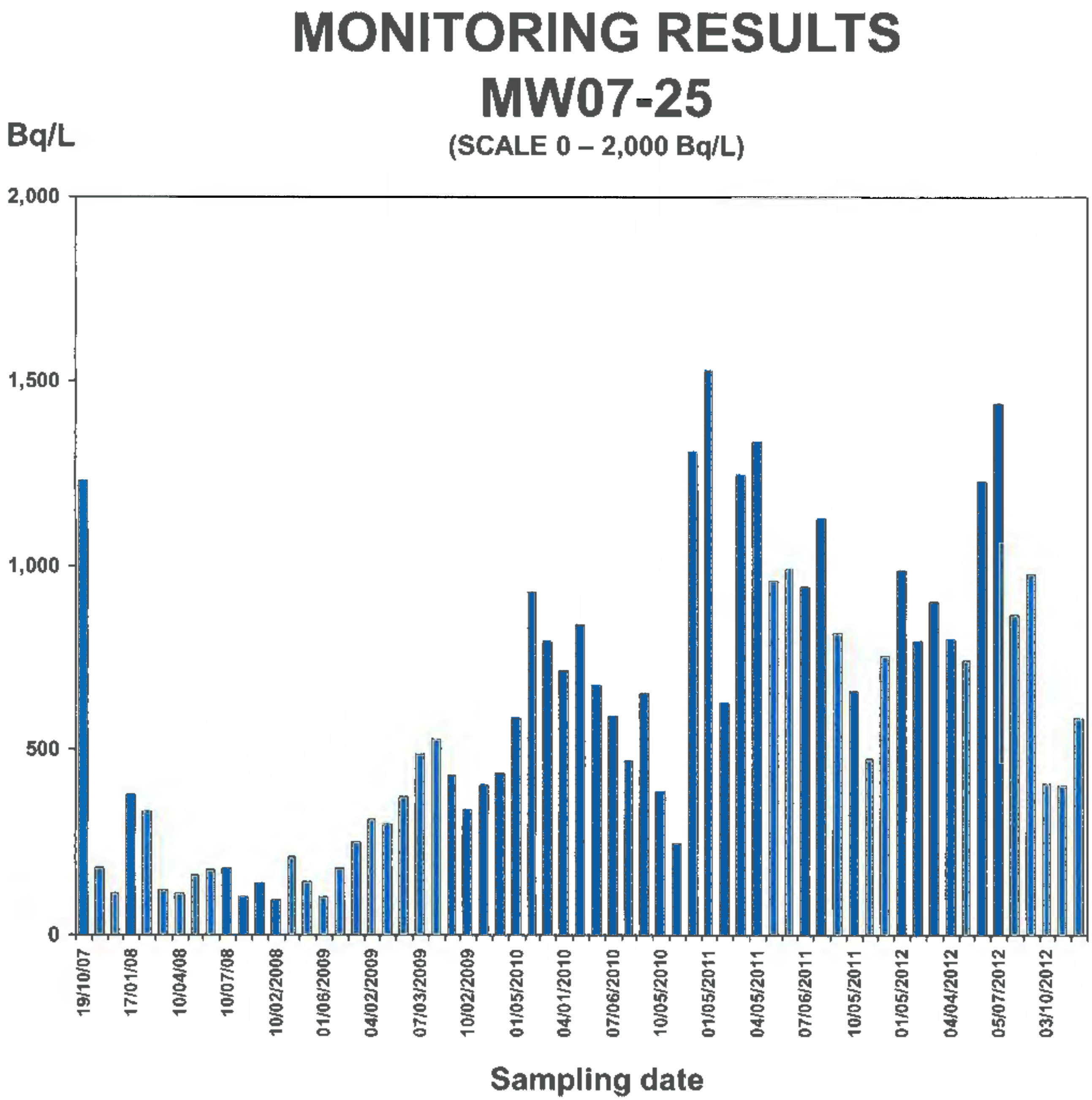
APPENDIX J



MONITORING RESULTS
MW07-23
(SCALE 0 – 3,000 Bq/L)
Bq/L
3,000
2,500
2,000
1,500
1,000
500
0
19/10/07
17/01/08
10/04/08
10/07/08
10/02/2008
01/06/2009
04/02/2009
07/03/2009
10/02/2009
01/05/2010
04/01/2010
07/06/2010
10/05/2010
01/05/2011
04/05/2011
07/06/2011
10/05/2011
01/05/2012
04/04/2012
05/07/2012
05/09/2012
Sampling date

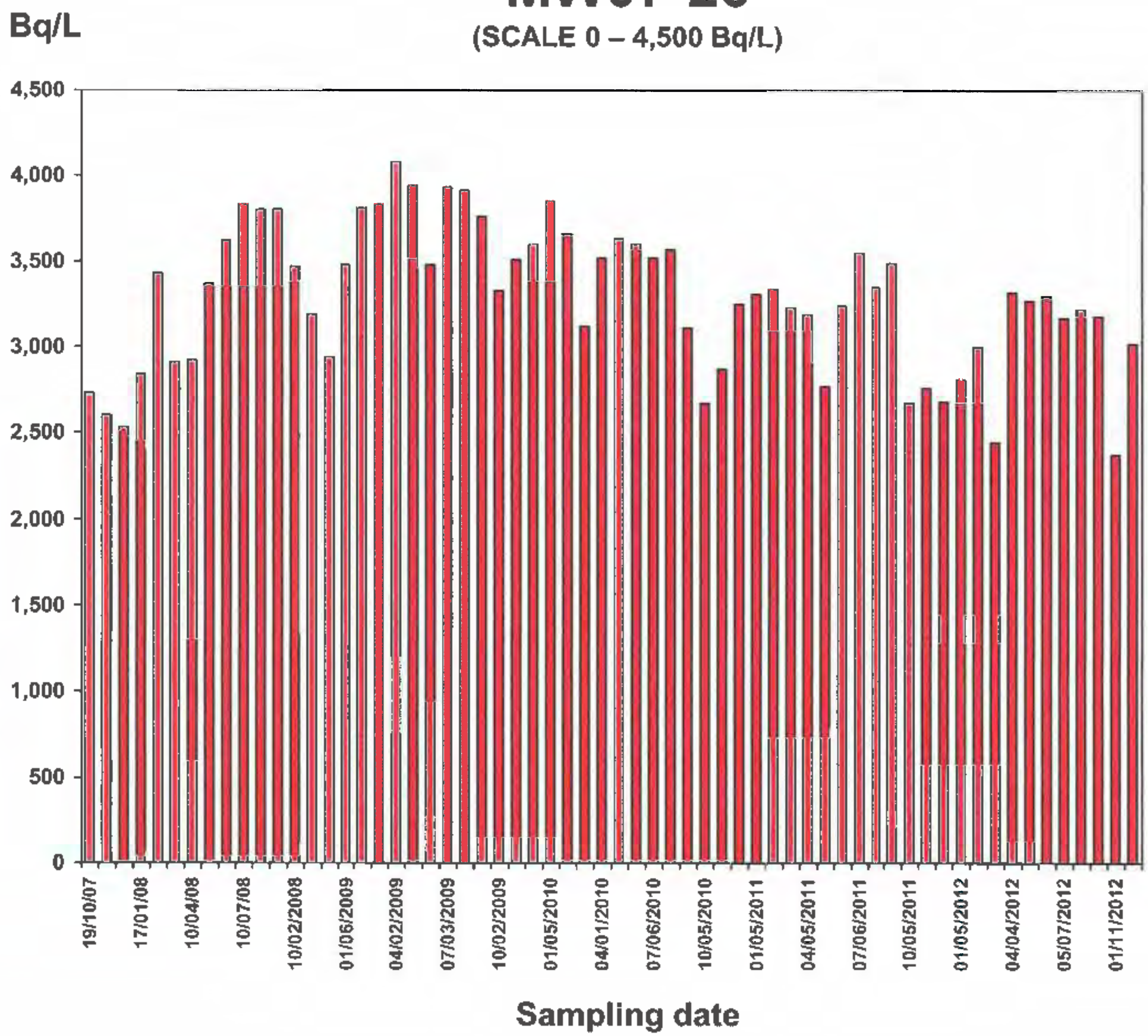

MONITORING RESULTS
MW07-24
(SCALE 0 – 3,000 Bq/L)
Bq/L
3,000
2,500
2,000
1,500
1,000
500
0
19/10/07
17/01/08
10/04/08
10/07/08
10/02/2008
01/06/2009
04/02/2009
07/03/2009
10/02/2009
01/05/2010
04/01/2010
07/06/2010
10/05/2010
01/05/2011
04/05/2011
07/06/2011
10/05/2011
01/05/2012
04/04/2012
05/07/2012
03/10/2012
Sampling date

APPENDIX J


MONITORING RESULTS
MW07-25
(SCALE 0 – 2,000 Bq/L)
Bq/L
2,000
1,500
1,000
500
0
19/10/07
17/01/08
10/04/08
10/07/08
10/02/2008
01/06/2009
04/02/2009
07/03/2009
10/02/2009
01/05/2010
04/01/2010
07/06/2010
10/05/2010
01/05/2011
04/05/2011
07/06/2011
10/05/2011
01/05/2012
04/04/2012
05/07/2012
03/10/2012
Sampling date

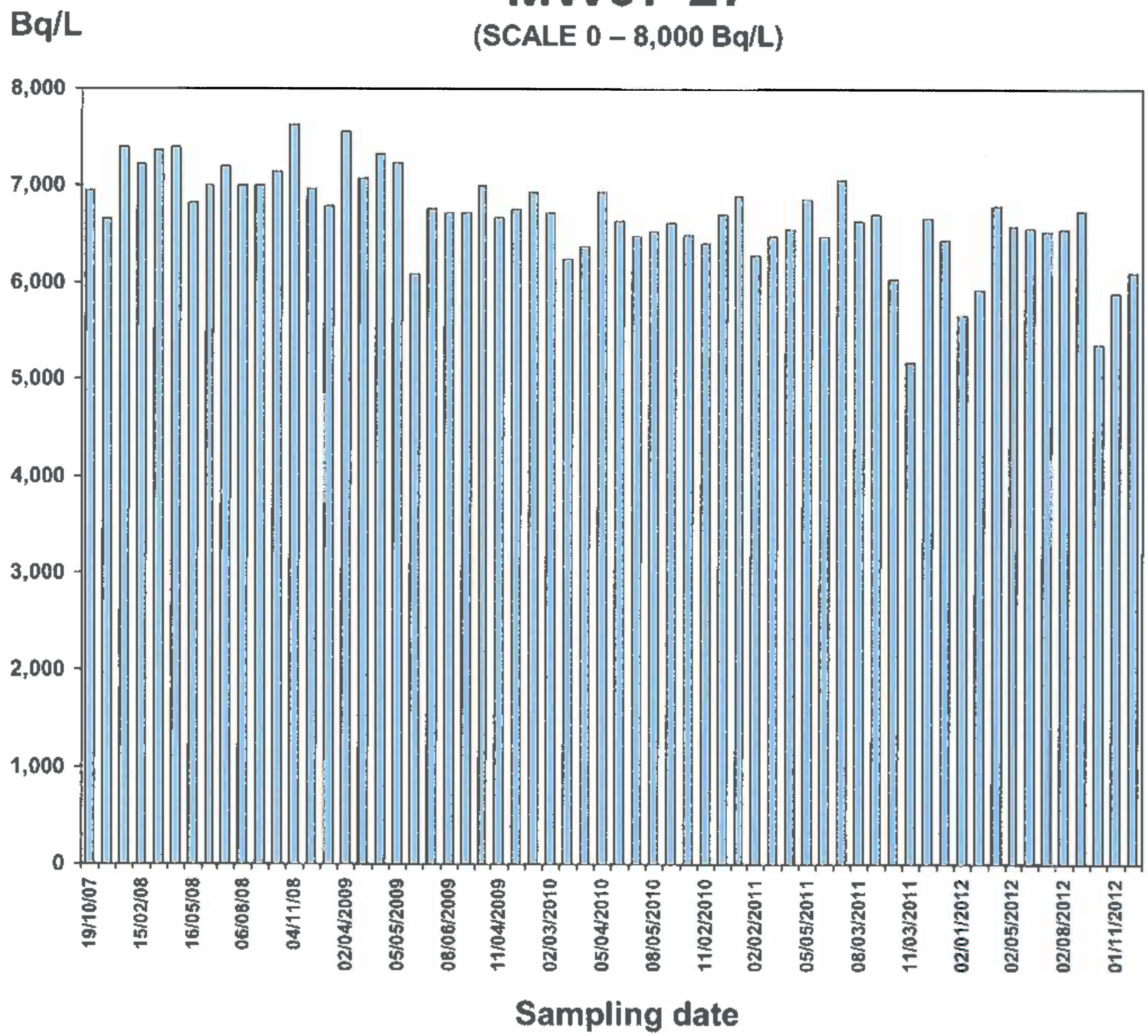
APPENDIX J

MONITORING RESULTS
MW07-26
(SCALE 0 – 4,500 Bq/L)



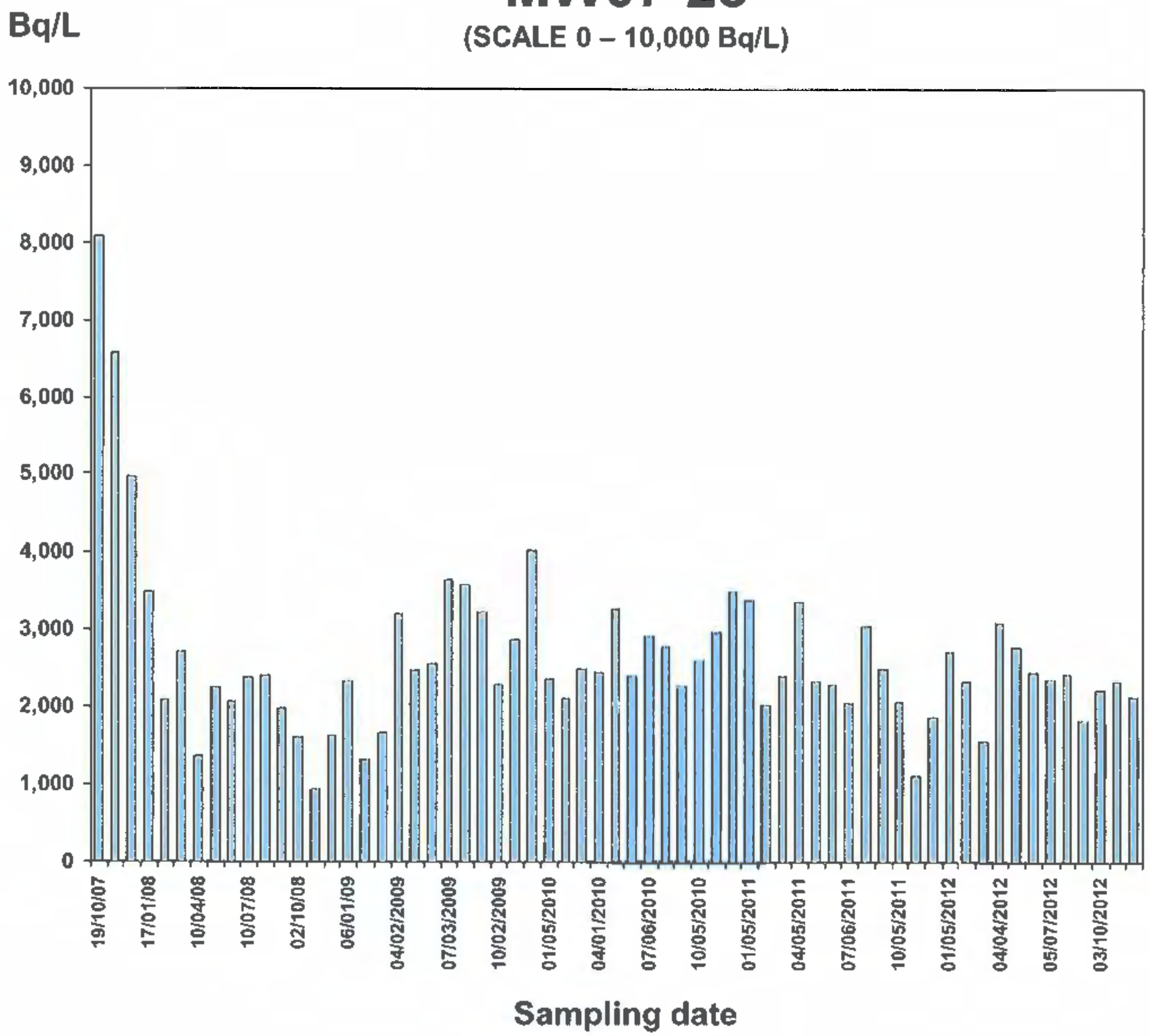
APPENDIX J

MONITORING RESULTS
MW07-27

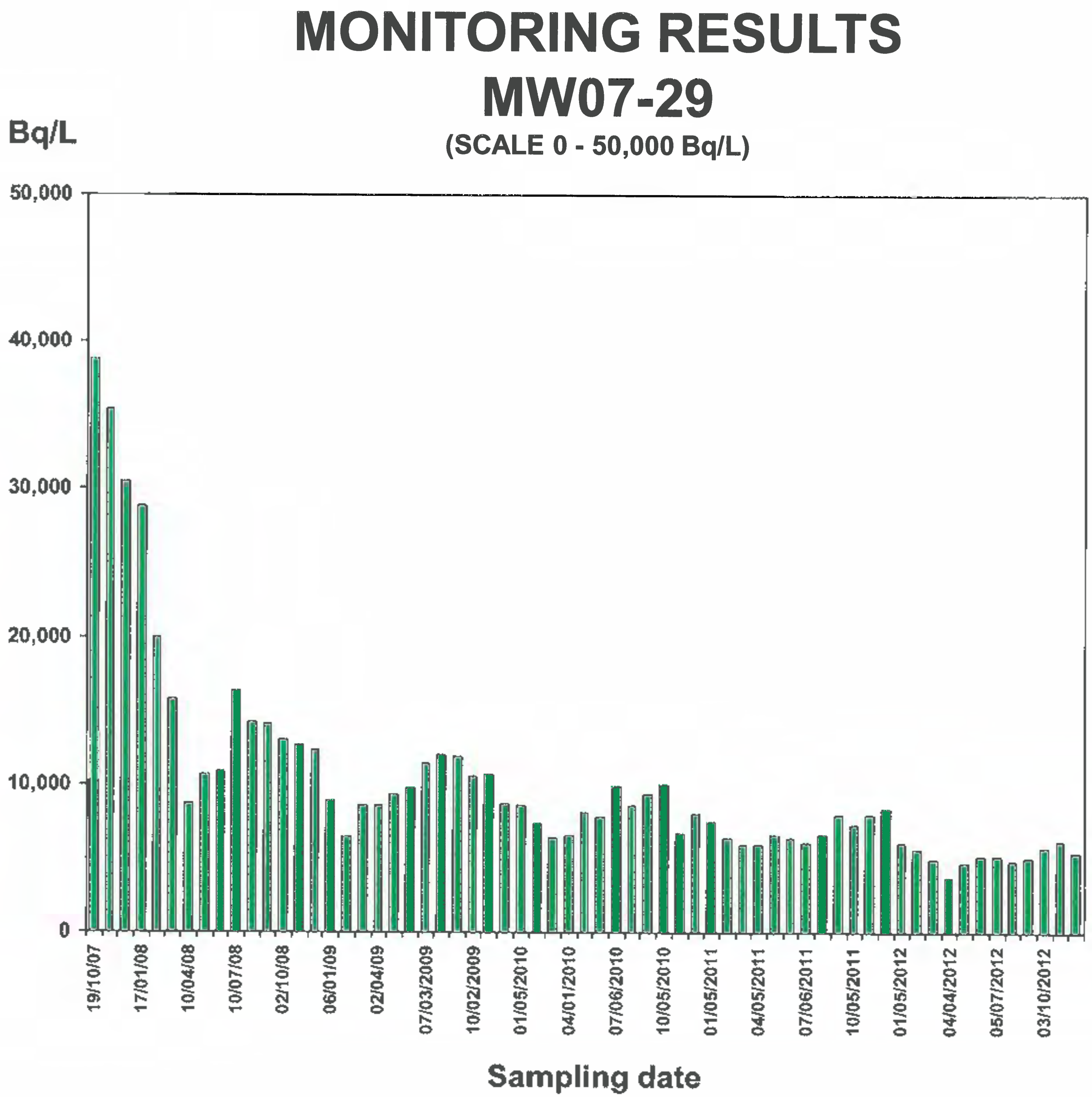


APPENDIX J

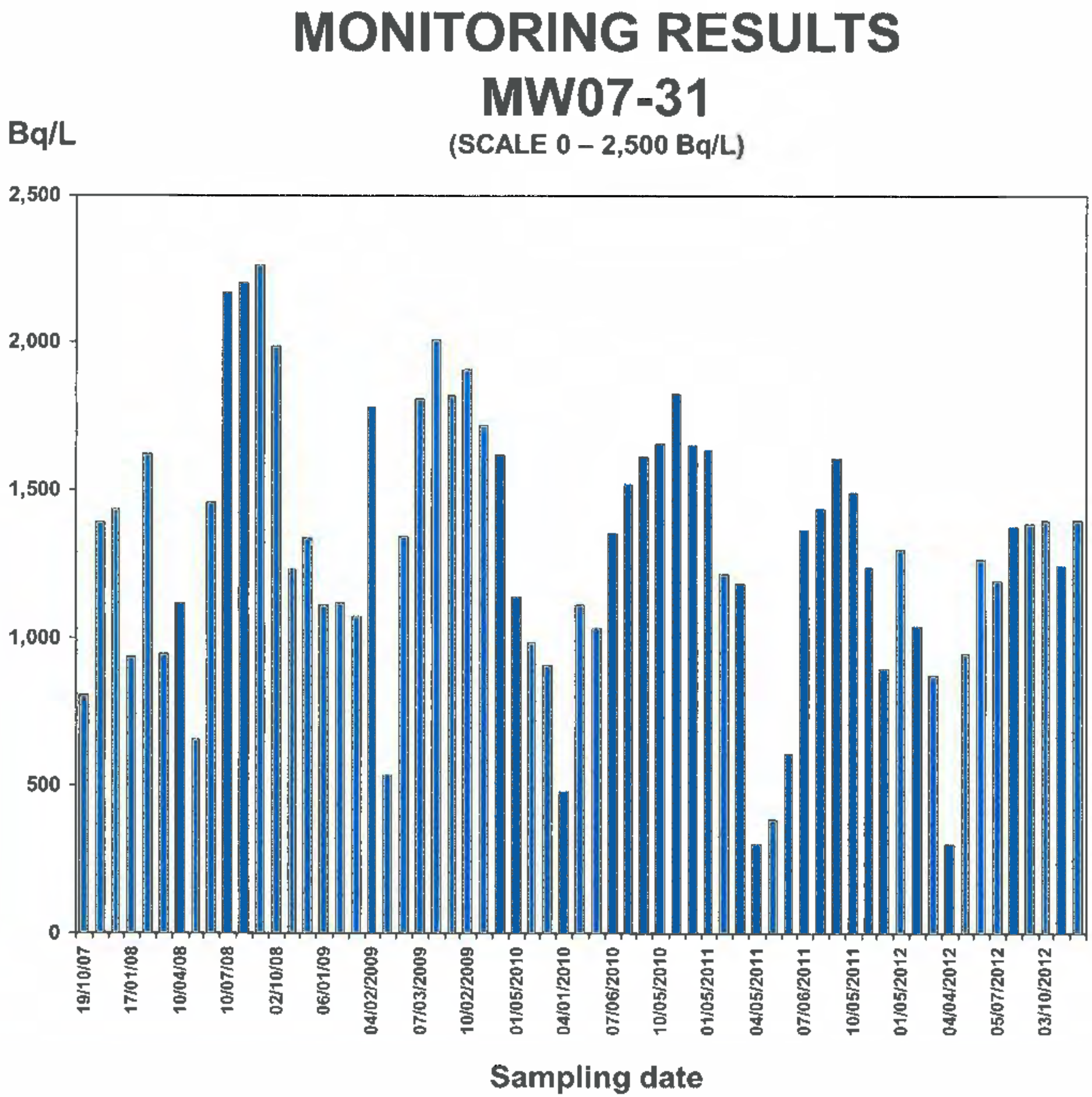
MONITORING RESULTS
MW07-28
(SCALE 0 – 10,000 Bq/L)



APPENDIX J

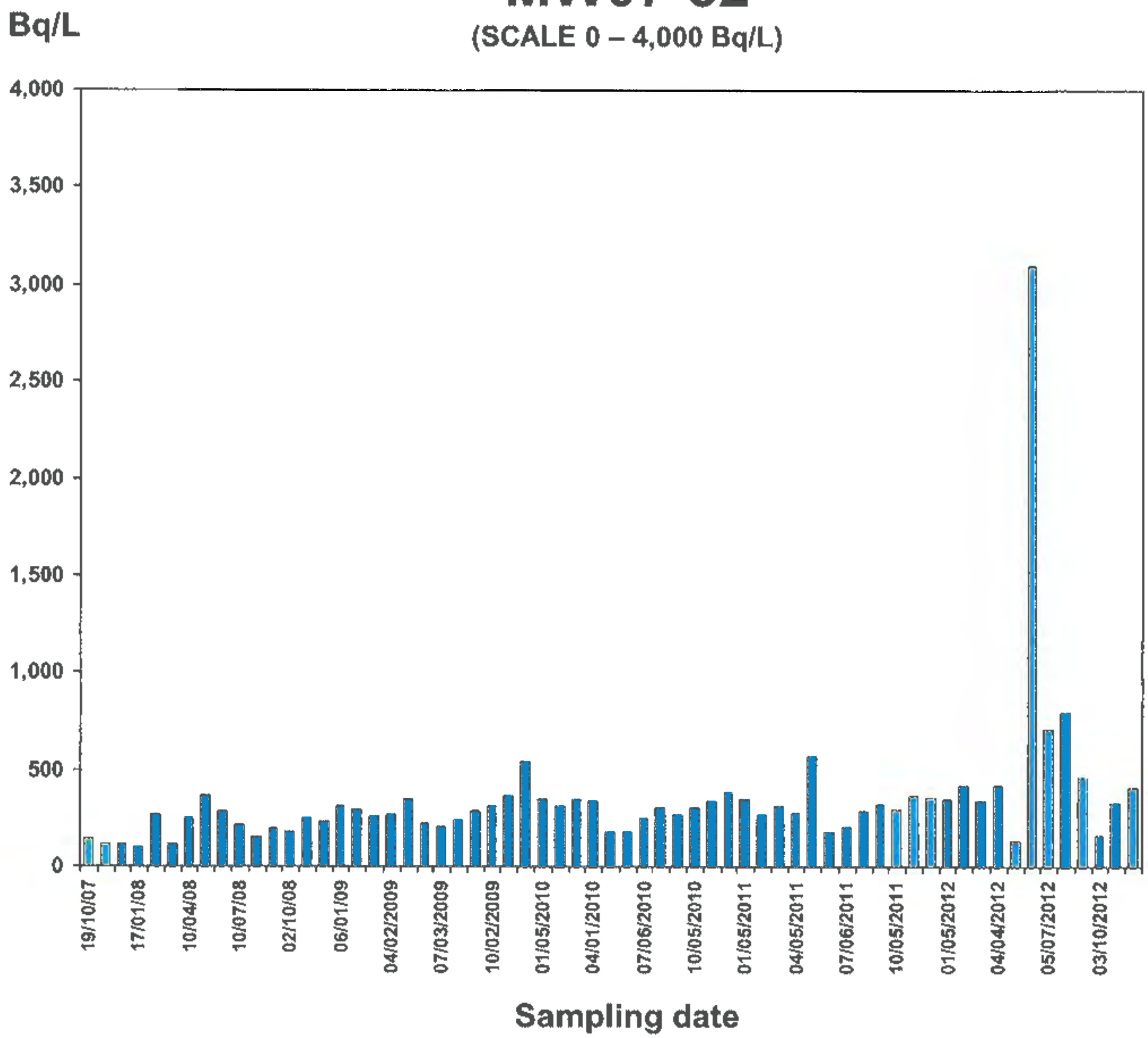


MONITORING RESULTS
MW07-29
(SCALE 0 - 50,000 Bq/L)
Bq/L
50,000
40,000
30,000
20,000
10,000
0
19/10/07
17/01/08
10/04/08
10/07/08
02/10/08
06/01/09
02/04/09
07/03/2009
10/02/2009
01/05/2010
04/01/2010
07/06/2010
10/05/2010
01/05/2011
04/05/2011
07/06/2011
10/05/2011
01/05/2012
04/04/2012
05/07/2012
03/10/2012
Sampling date



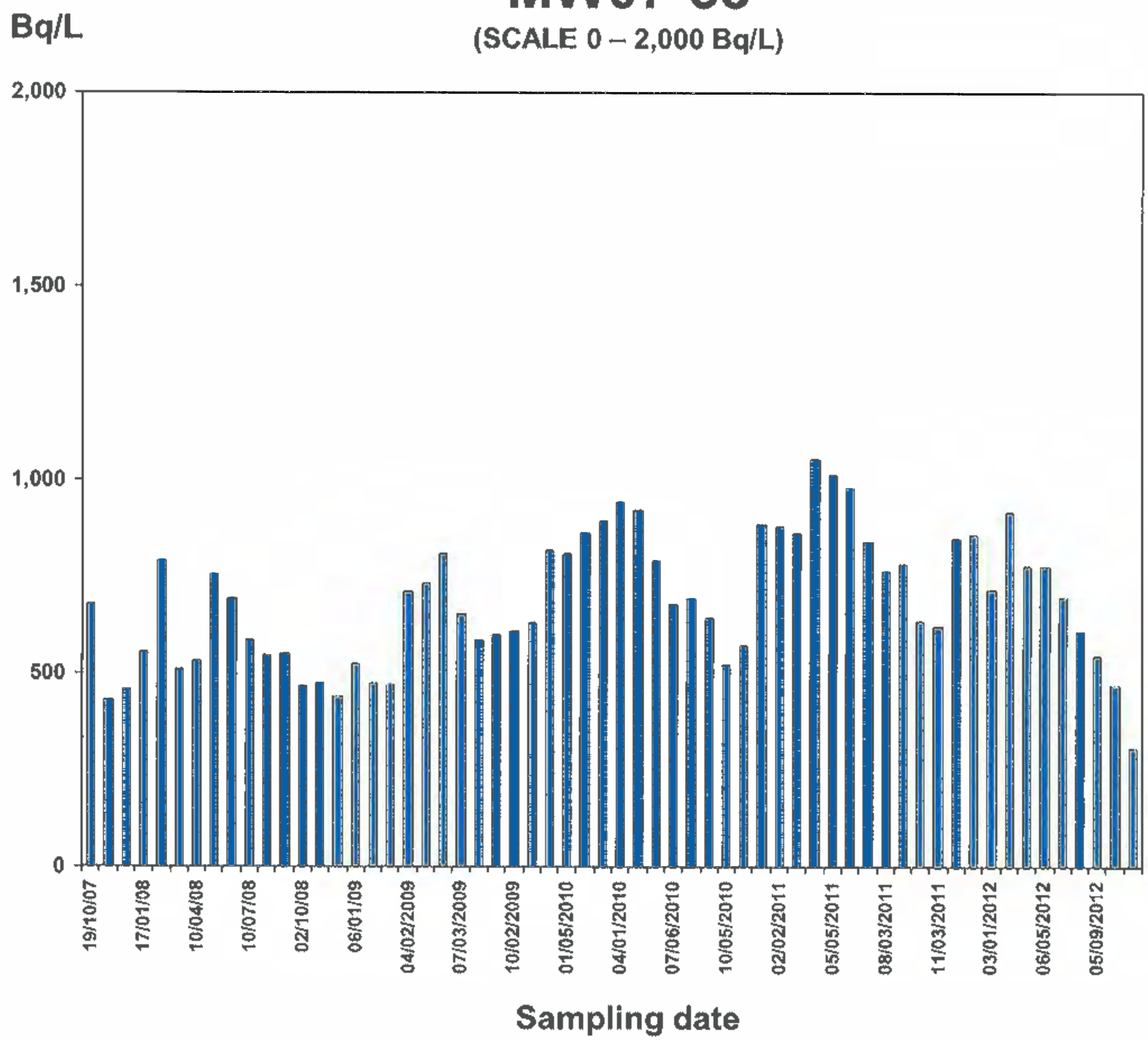
MONITORING RESULTS
MW07-31
(SCALE 0 – 2,500 Bq/L)
Bq/L
2,500
2,000
1,500
1,000
500
0
19/10/07
17/01/08
10/04/08
10/07/08
02/10/08
06/01/09
04/02/2009
07/03/2009
10/02/2009
01/05/2010
04/01/2010
07/06/2010
10/05/2010
01/05/2011
04/05/2011
07/06/2011
10/05/2011
01/05/2012
04/04/2012
05/07/2012
03/10/2012
Sampling date

MONITORING RESULTS
MW07-32



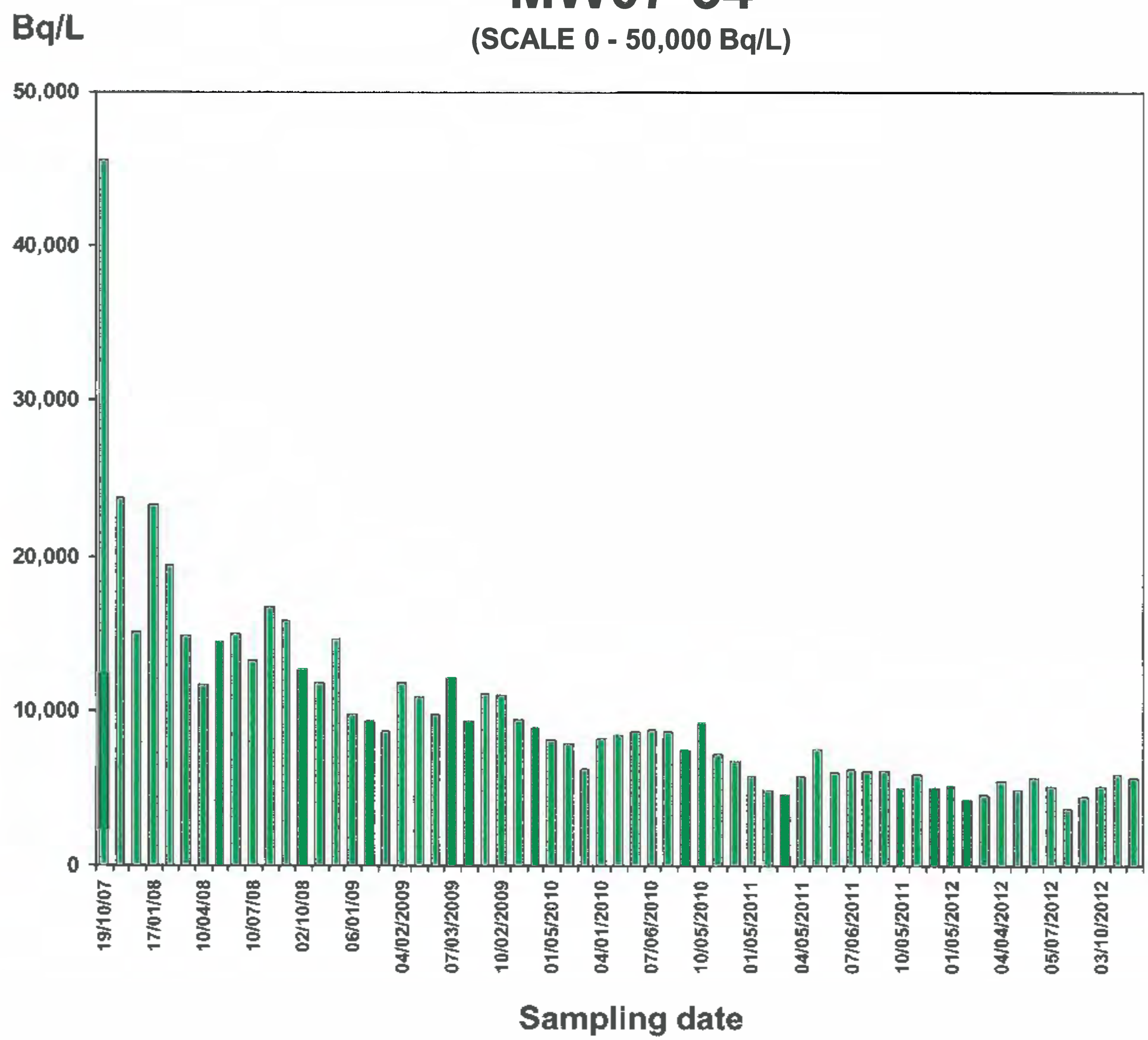
APPENDIX J

MONITORING RESULTS
MW07-33
(SCALE 0 – 2,000 Bq/L)

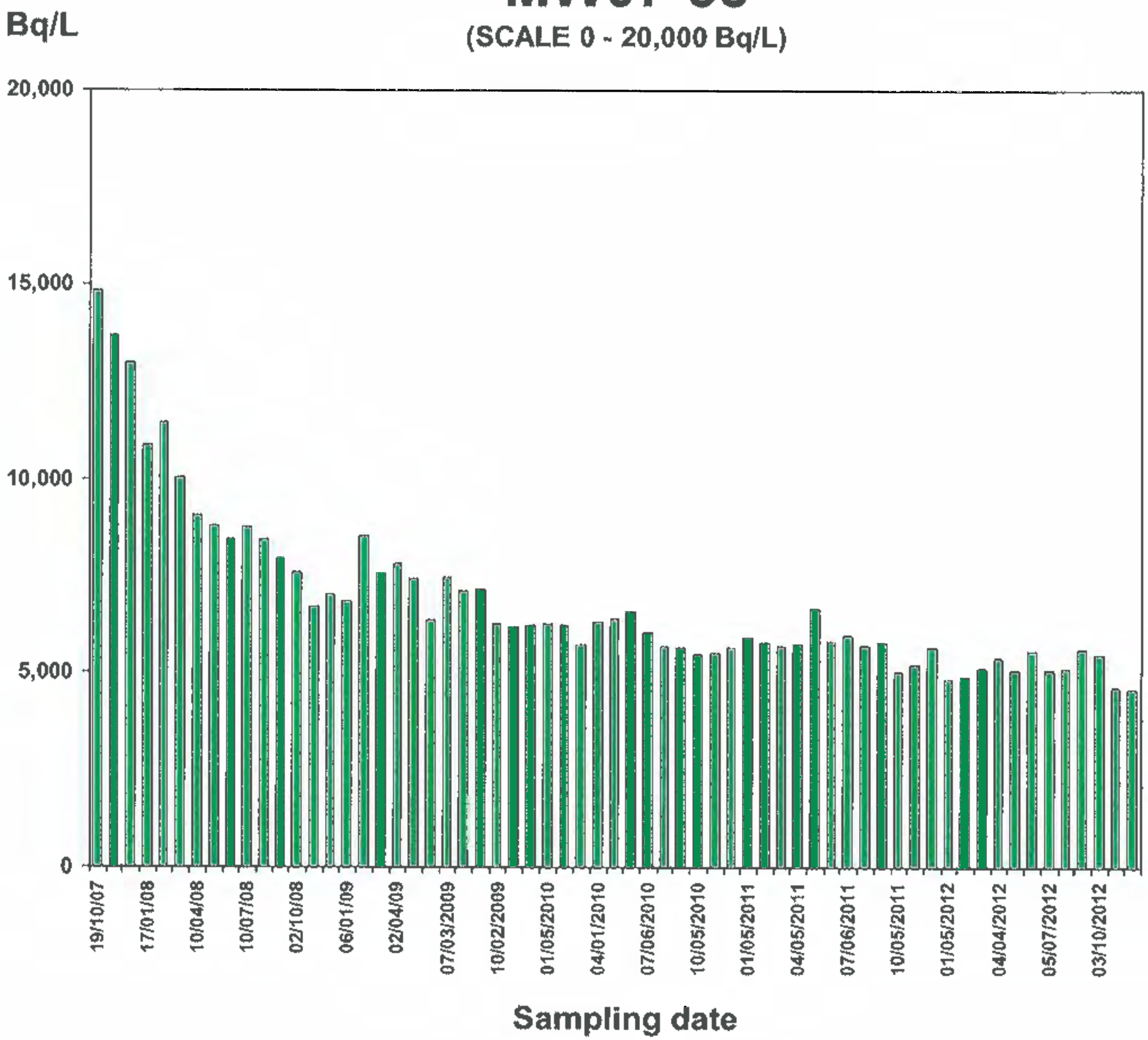


APPENDIX J

MONITORING RESULTS
MW07-34
(SCALE 0 - 50,000 Bq/L)

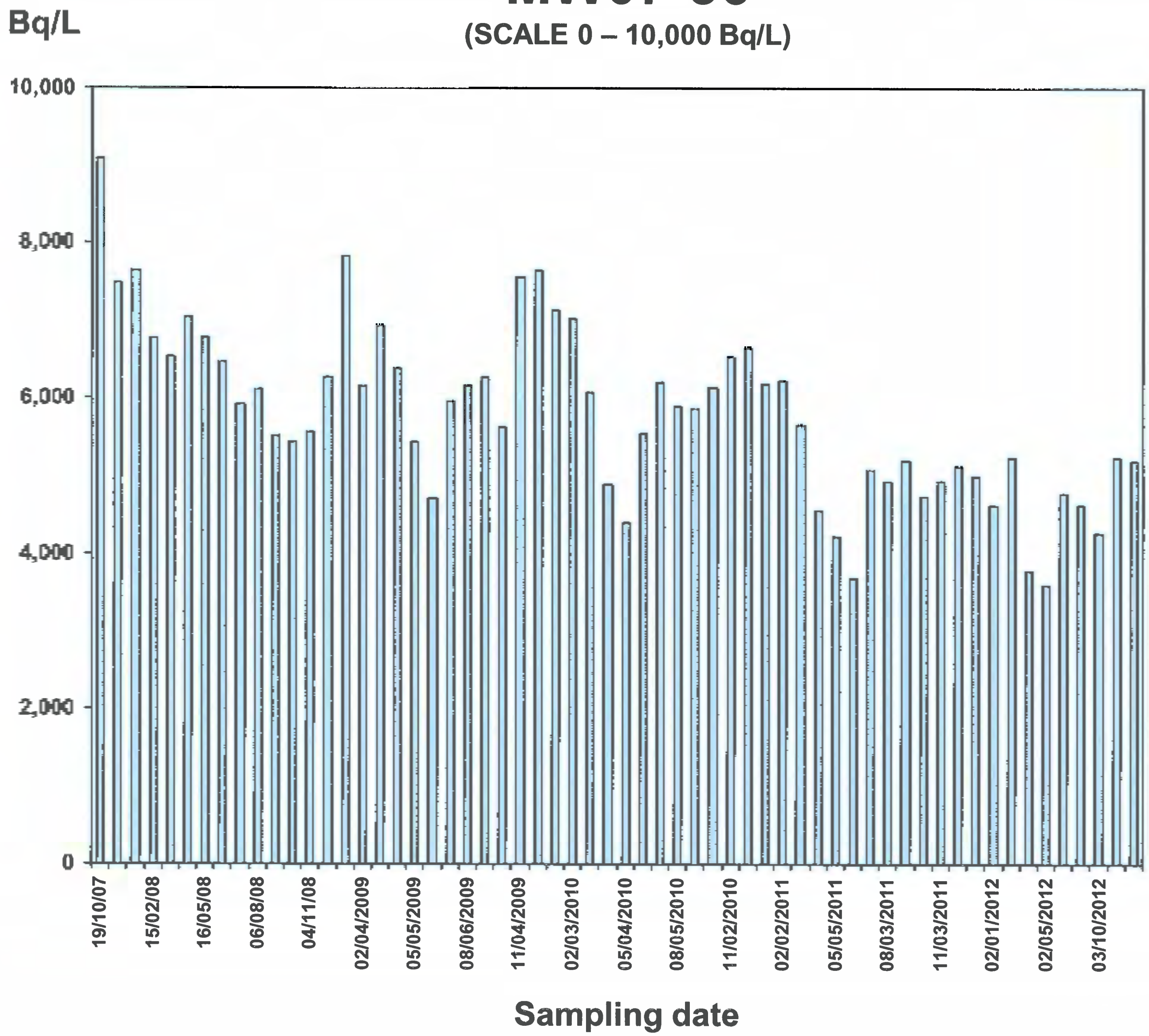


MONITORING RESULTS
MW07-35
(SCALE 0 - 20,000 Bq/L)

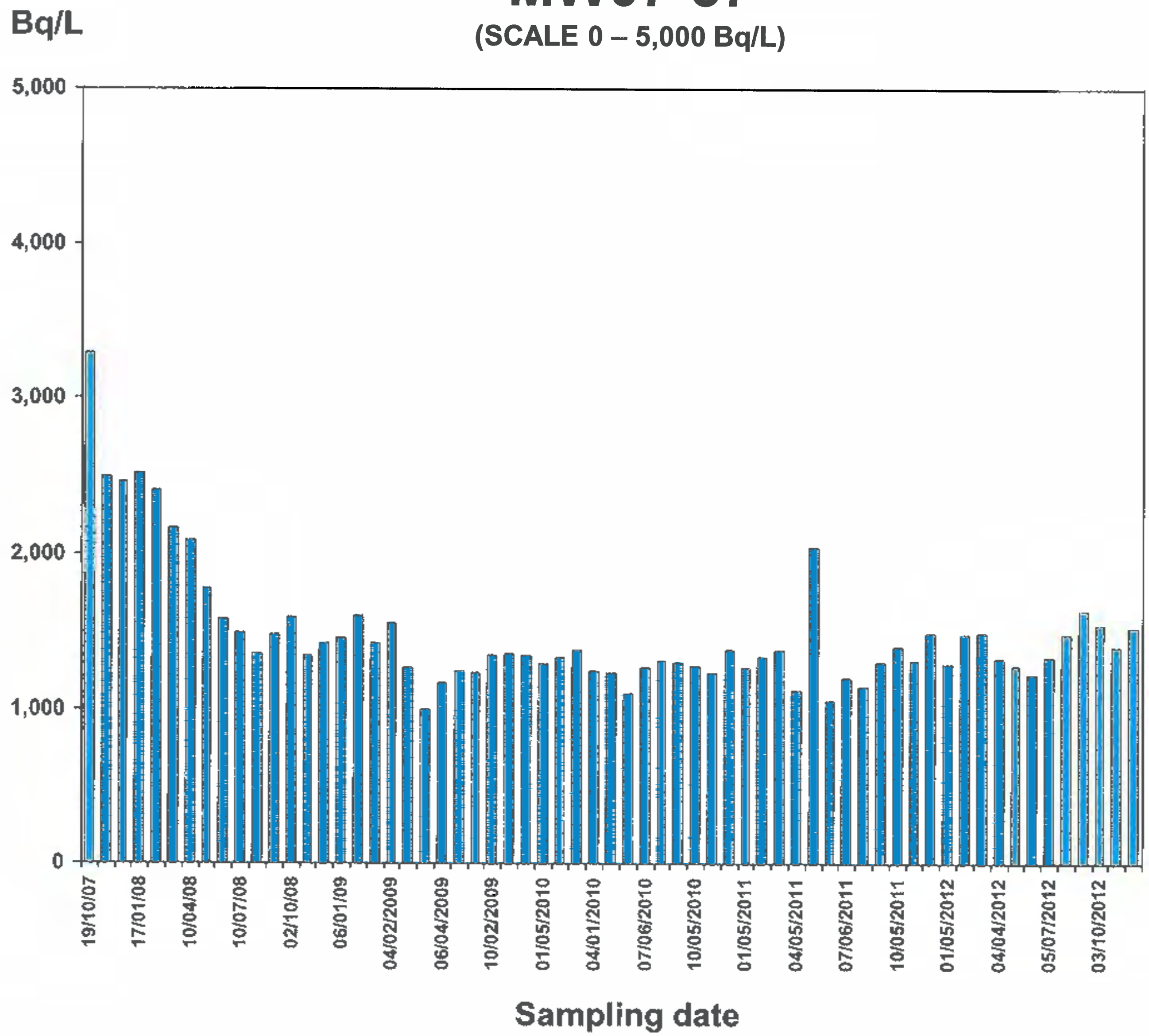


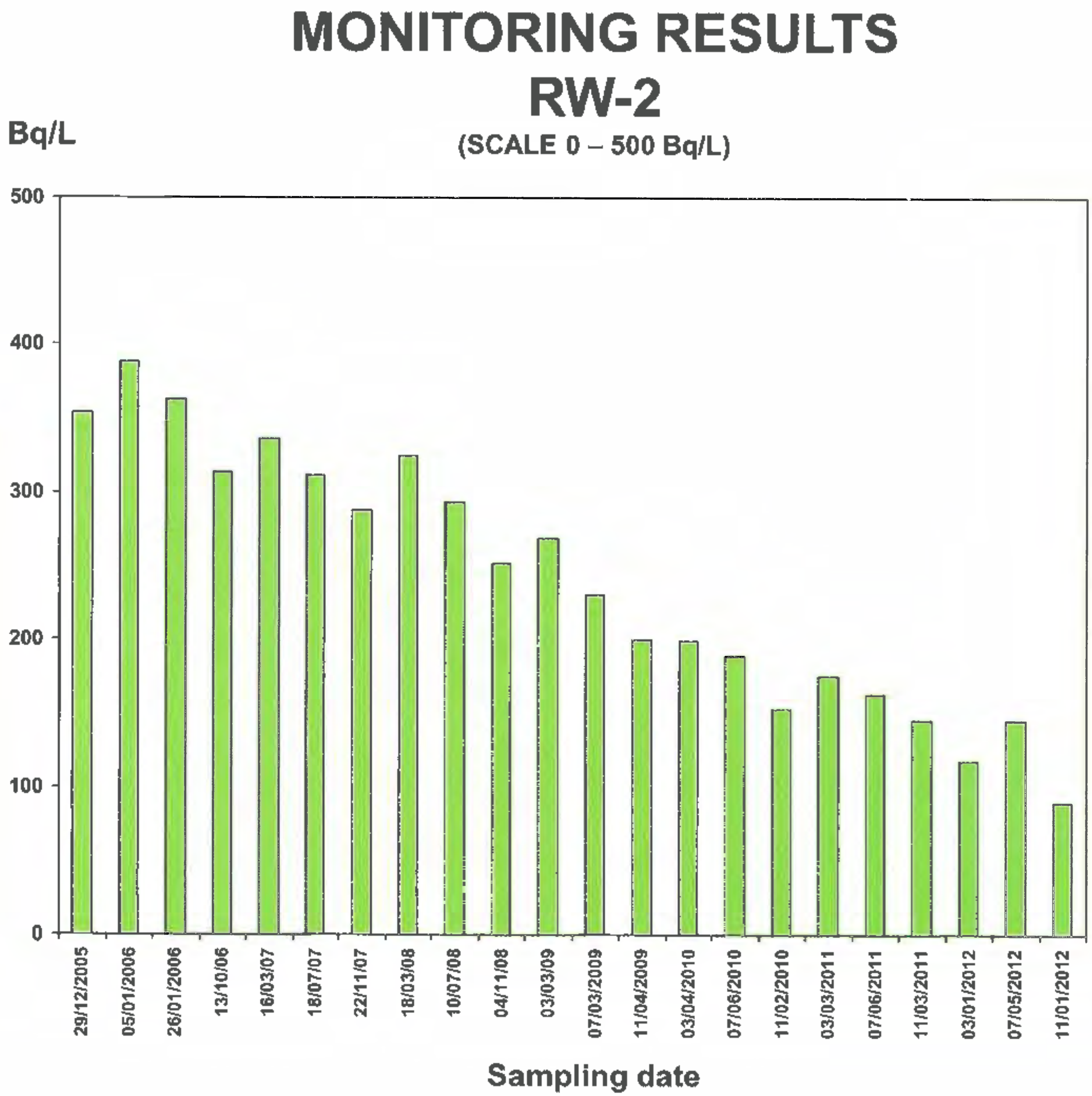
APPENDIX J

MONITORING RESULTS
MW07-36
(SCALE 0 – 10,000 Bq/L)

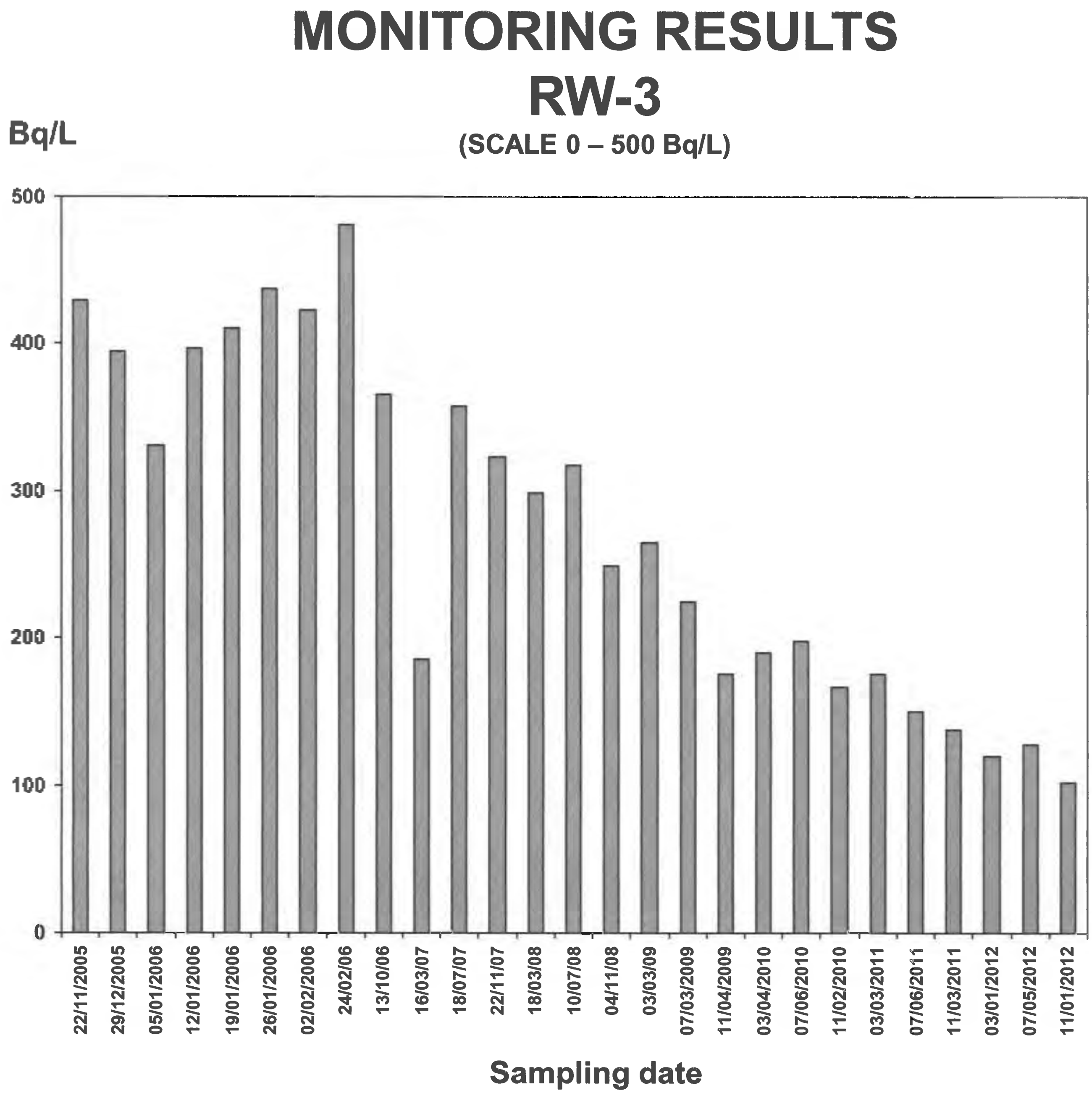


MONITORING RESULTS
MW07-37
(SCALE 0 – 5,000 Bq/L)

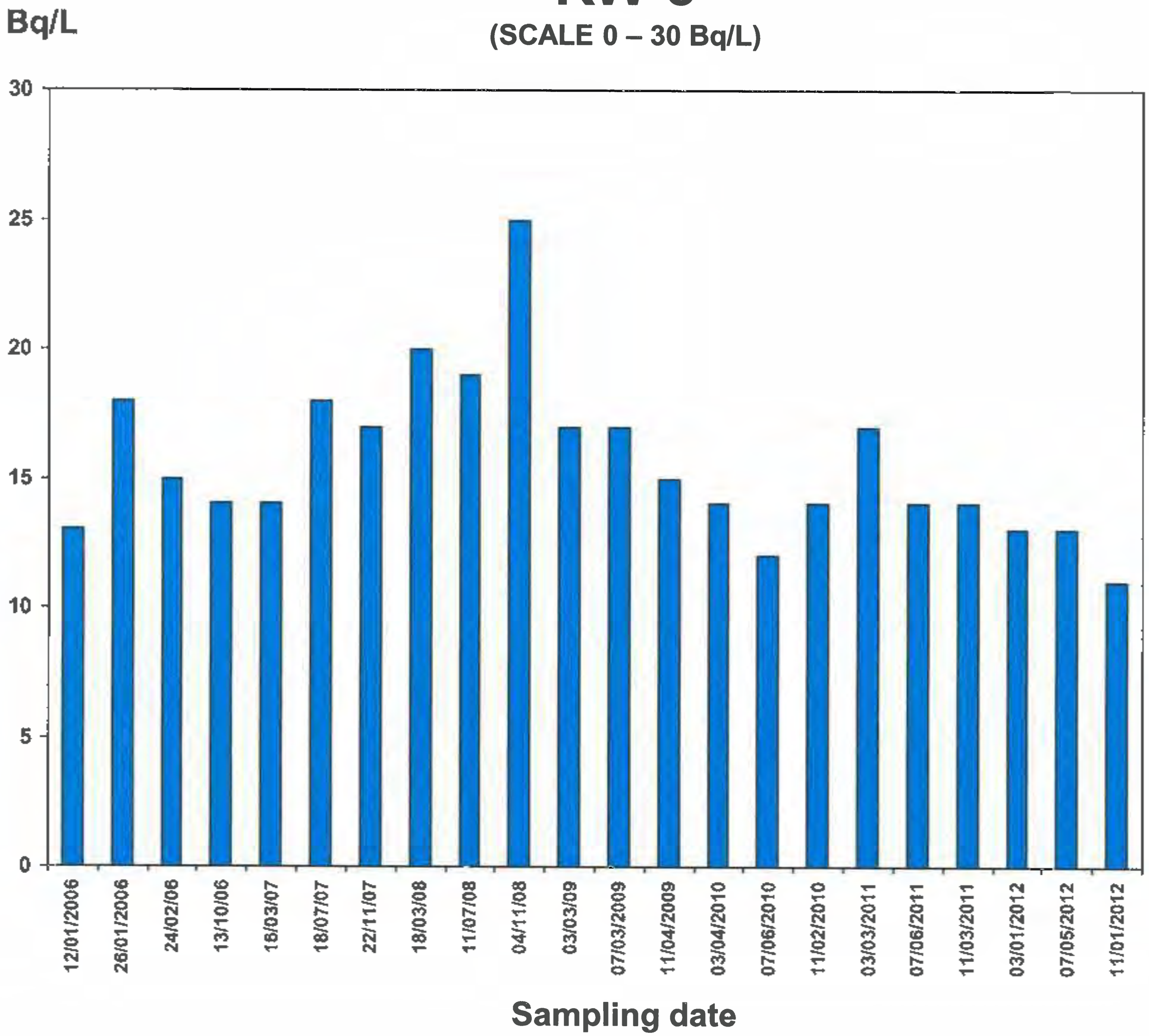




MONITORING RESULTS
RW-2
Bq/L
(SCALE 0 – 500 Bq/L)
500
400
300
200
100
0
29/12/2005
05/01/2006
26/01/2006
13/10/06
16/03/07
18/07/07
22/11/07
18/03/08
10/07/08
04/11/08
03/03/09
07/03/2009
11/04/2009
03/04/2010
07/06/2010
11/02/2010
03/03/2011
07/06/2011
11/03/2011
03/01/2012
07/05/2012
11/01/2012
Sampling date

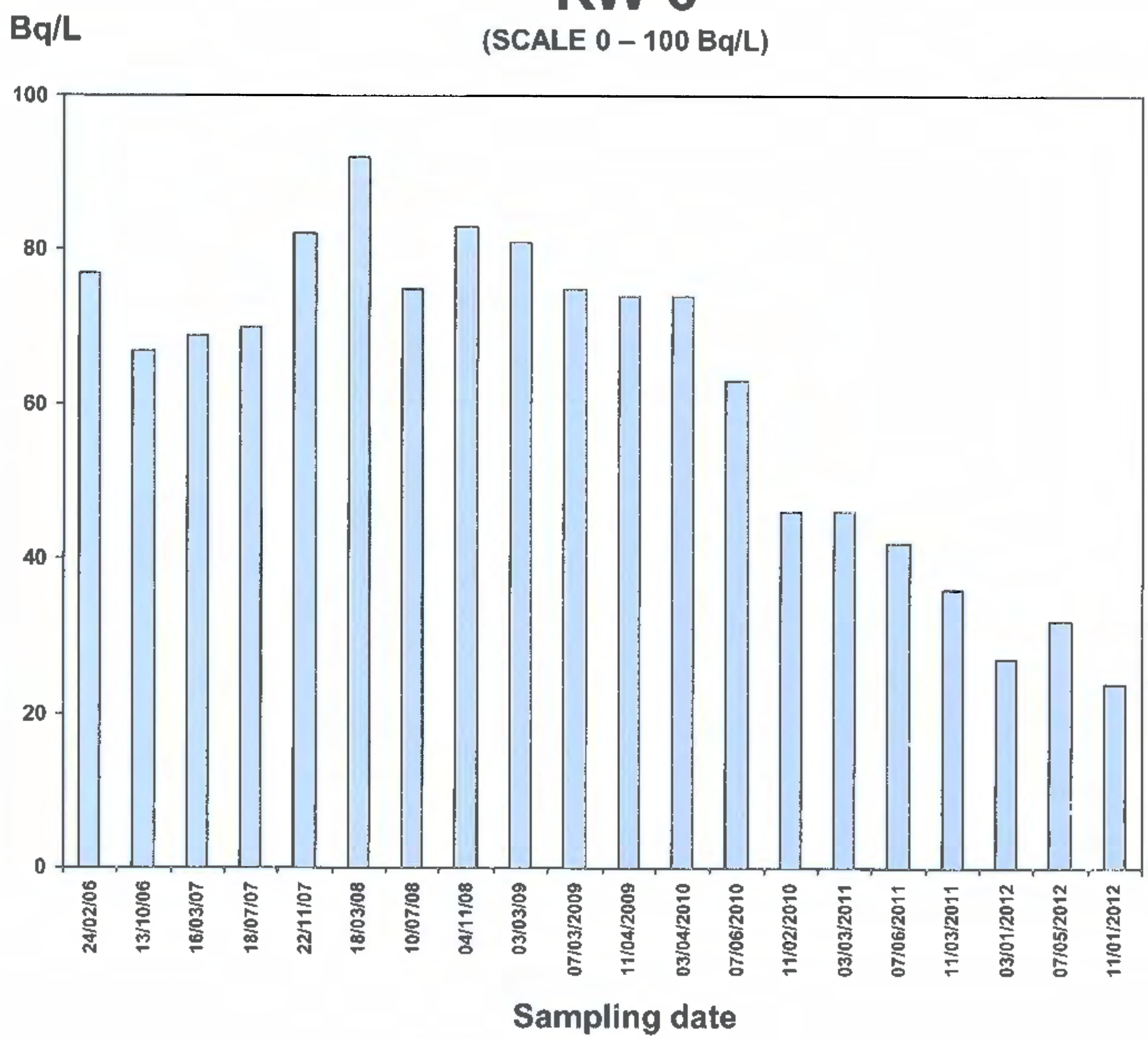

MONITORING RESULTS
RW-3
Bq/L
(SCALE 0 – 500 Bq/L)
500
400
300
200
100
0
22/11/2005
29/12/2005
05/01/2006
12/01/2006
19/01/2006
26/01/2006
02/02/2006
24/02/06
13/10/06
16/03/07
18/07/07
22/11/07
18/03/08
10/07/08
04/11/08
03/03/09
07/03/2009
11/04/2009
03/04/2010
07/06/2010
11/02/2010
03/03/2011
07/06/2011
11/03/2011
03/01/2012
07/05/2012
11/01/2012
Sampling date

MONITORING RESULTS
RW-5
(SCALE 0 – 30 Bq/L)



MONITORING RESULTS
RW-6

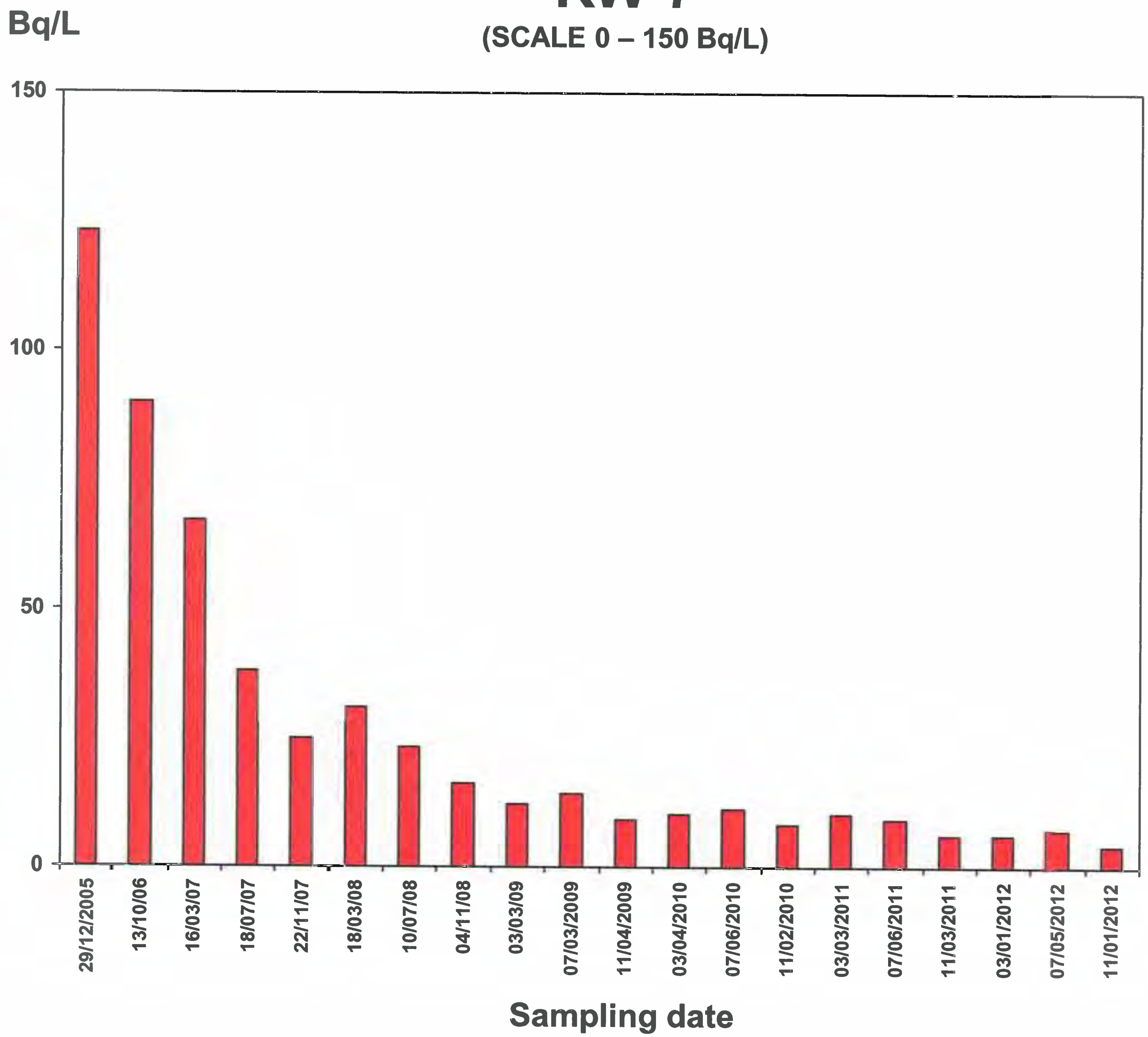
(SCALE 0 – 100 Bq/L)

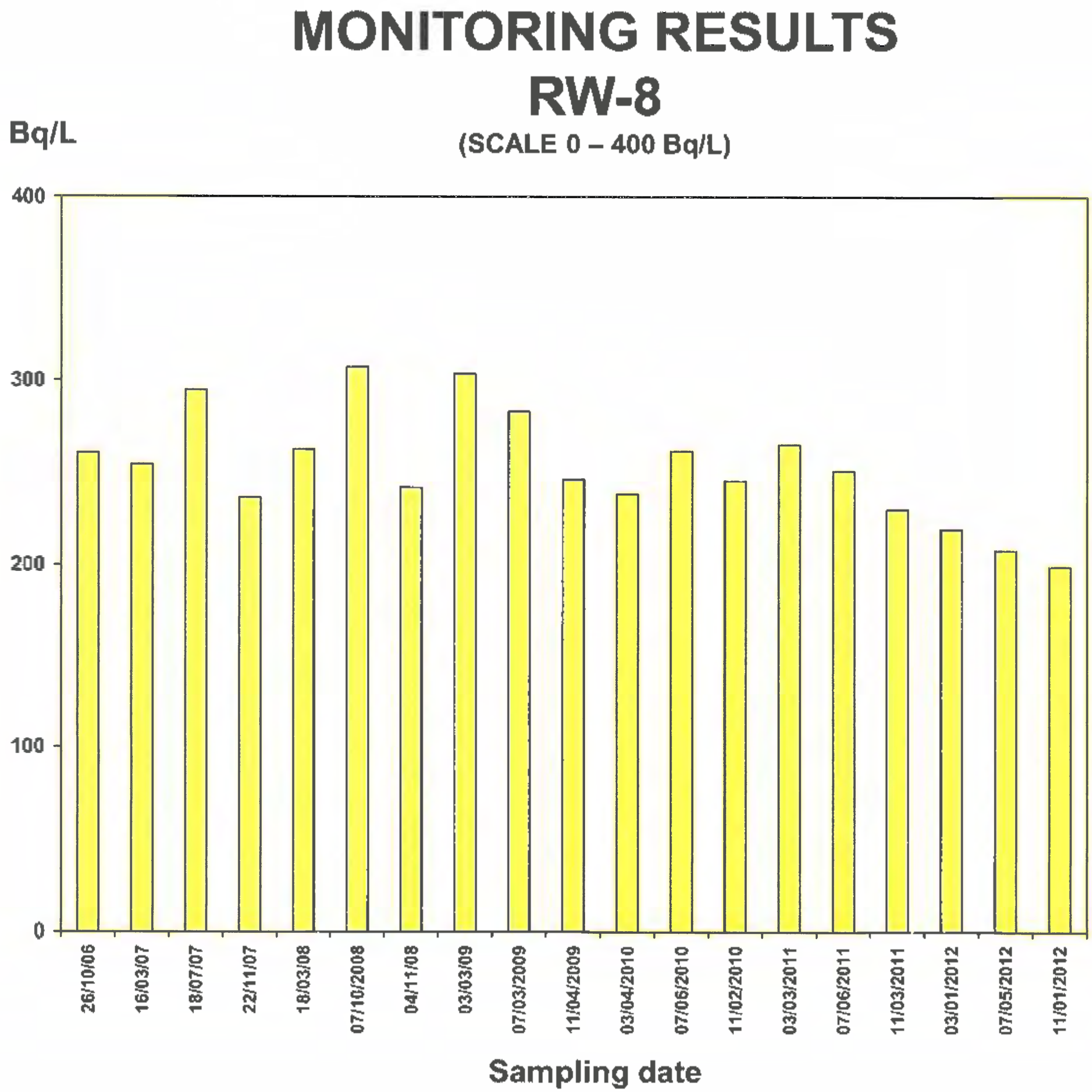


APPENDIX J

MONITORING RESULTS
RW-7

(SCALE 0 – 150 Bq/L)



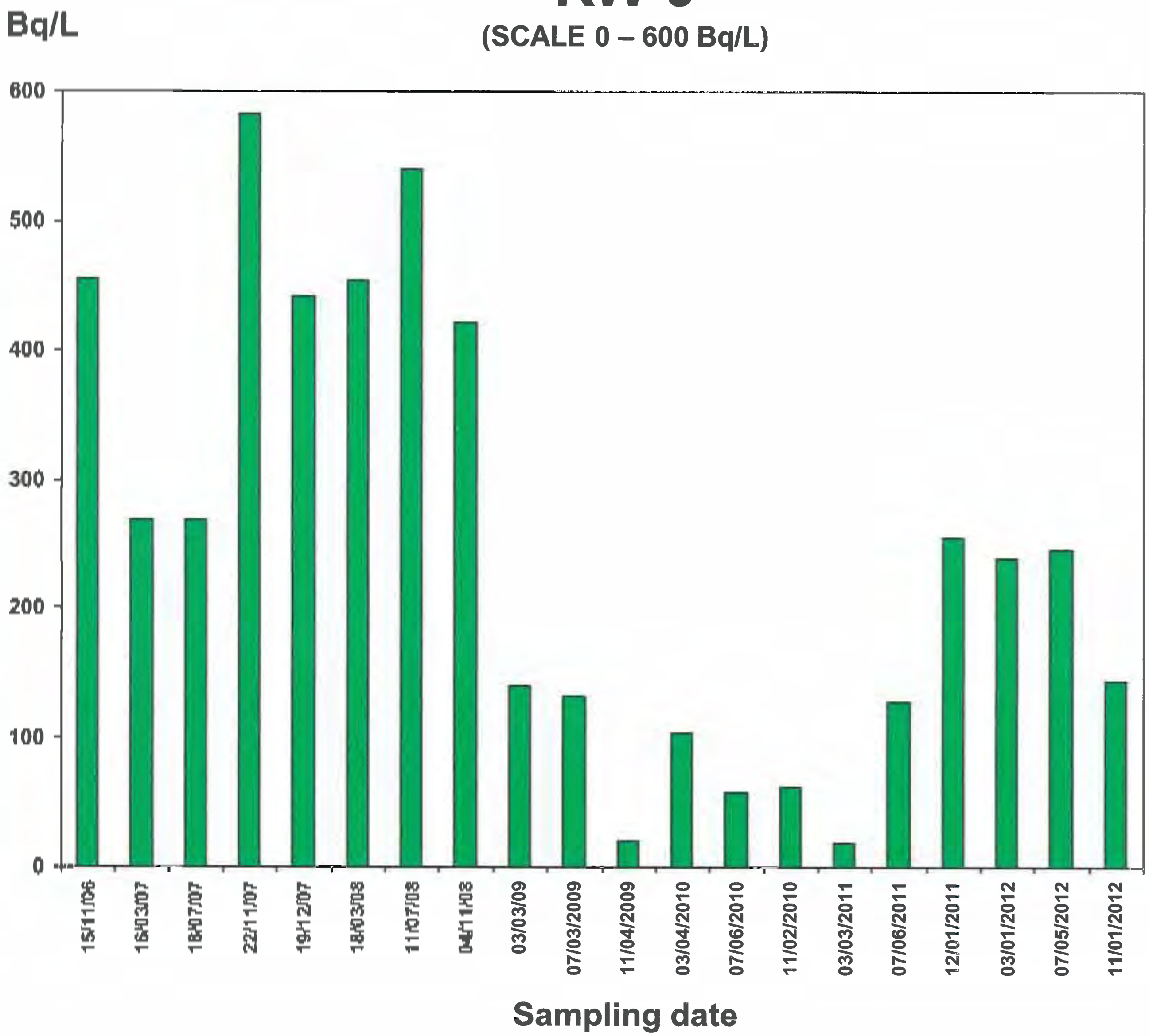


MONITORING RESULTS
RW-8
Bq/L
(SCALE 0 – 400 Bq/L)
400
300
200
100
0
26/10/06
16/03/07
18/07/07
22/11/07
18/03/08
07/10/2008
04/11/08
03/03/09
07/03/2009
11/04/2009
03/04/2010
07/06/2010
11/02/2010
03/03/2011
07/06/2011
11/03/2011
03/01/2012
07/05/2012
11/01/2012
Sampling date

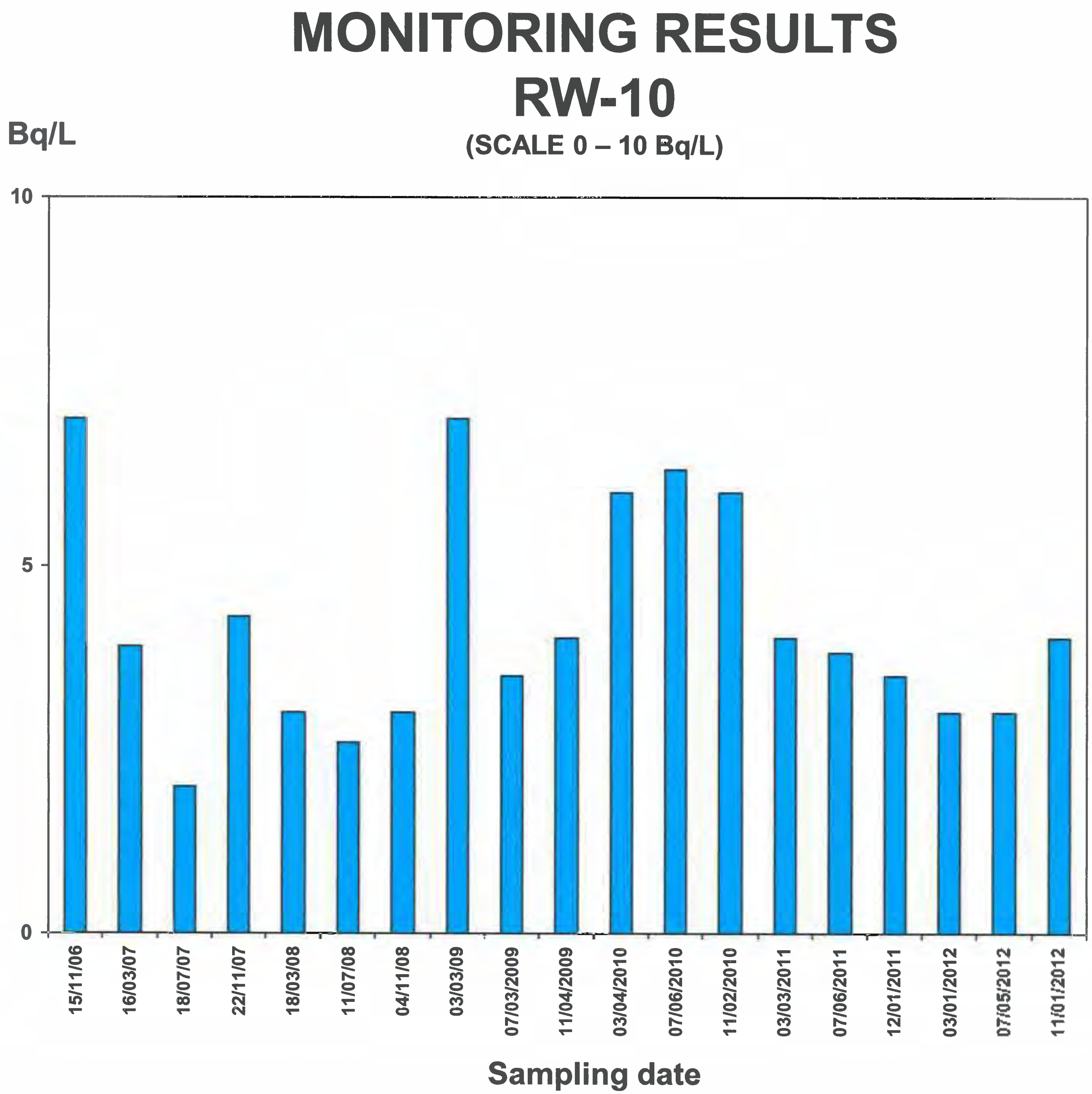
APPENDIX J

MONITORING RESULTS
RW-9

(SCALE 0 – 600 Bq/L)



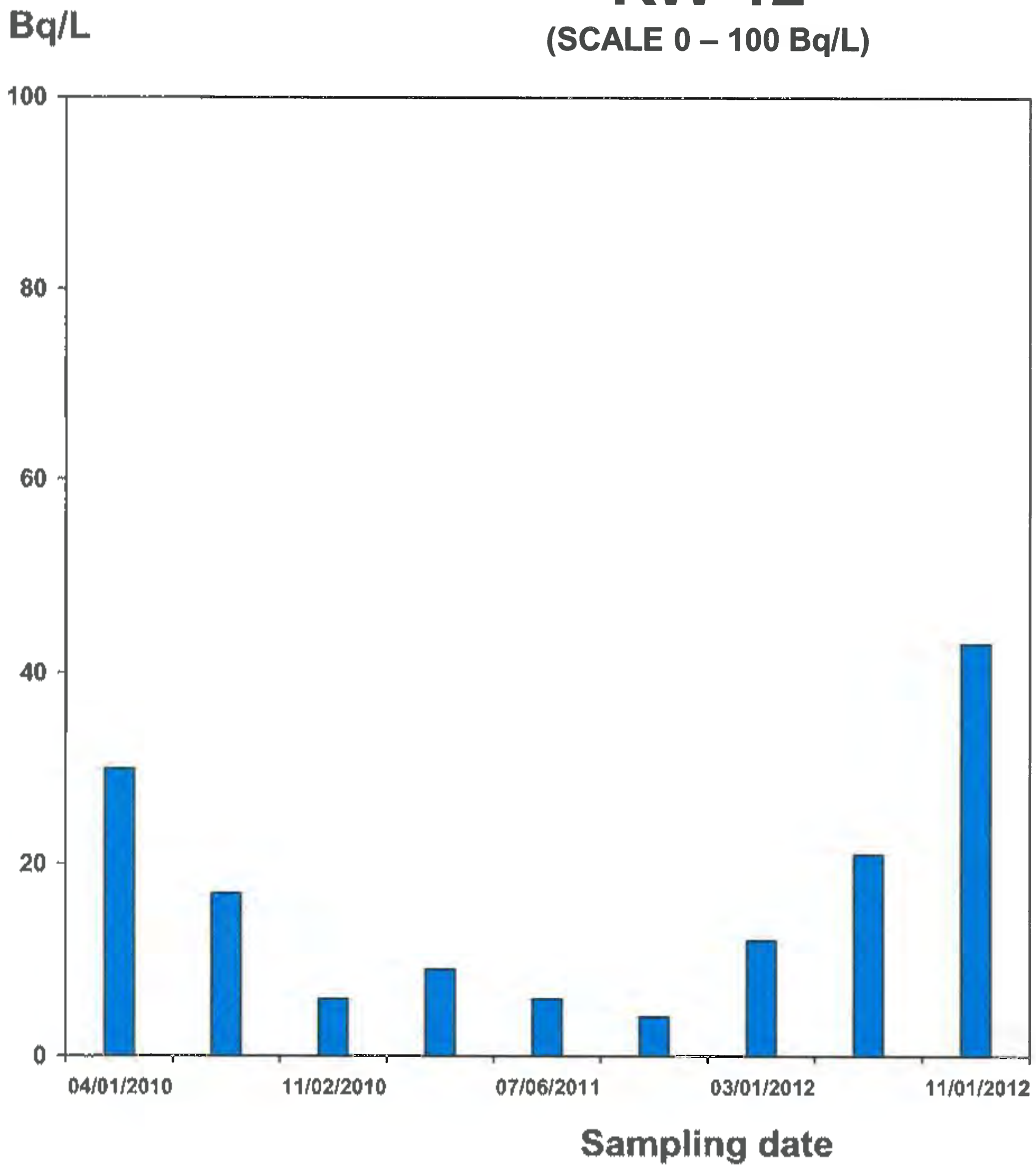
APPENDIX J

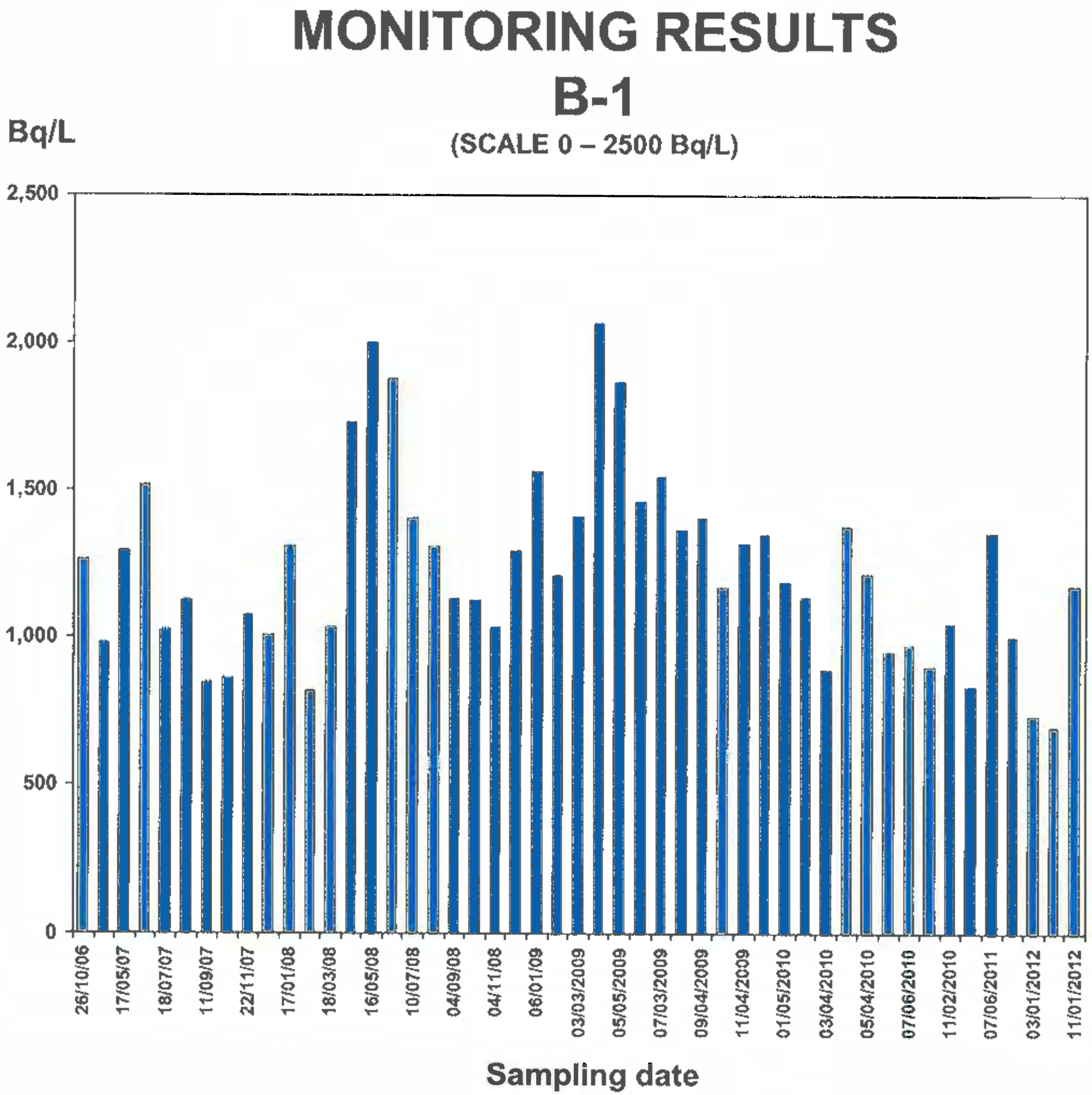

MONITORING RESULTS
RW-10
(SCALE 0 – 10 Bq/L)
Bq/L
10
5
0
15/11/06
16/03/07
18/07/07
22/11/07
18/03/08
11/07/08
04/11/08
03/03/09
07/03/2009
11/04/2009
03/04/2010
07/06/2010
11/02/2010
03/03/2011
07/06/2011
12/01/2011
03/01/2012
07/05/2012
11/01/2012
Sampling date

APPENDIX J

MONITORING RESULTS
RW-12

(SCALE 0 – 100 Bq/L)



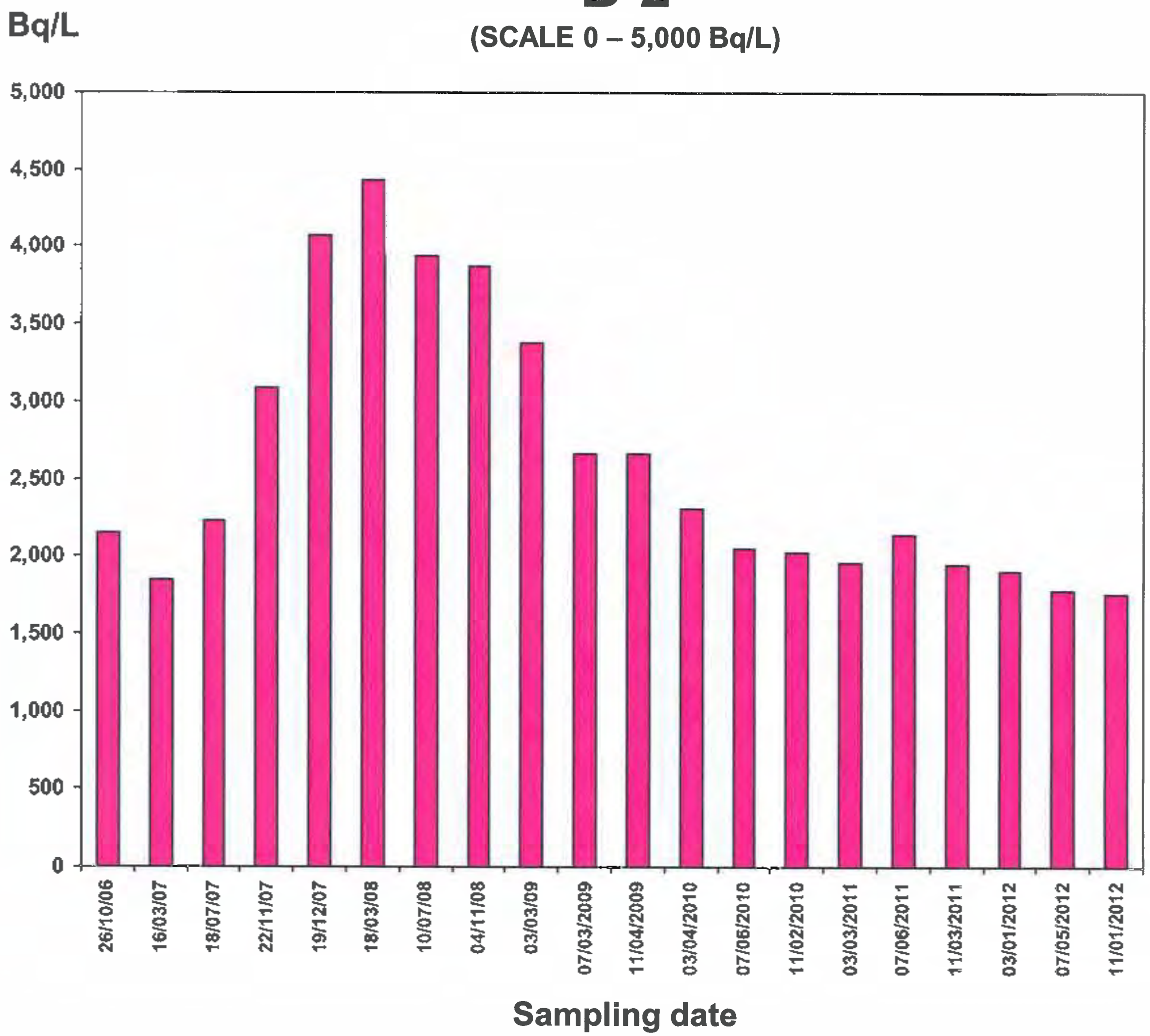


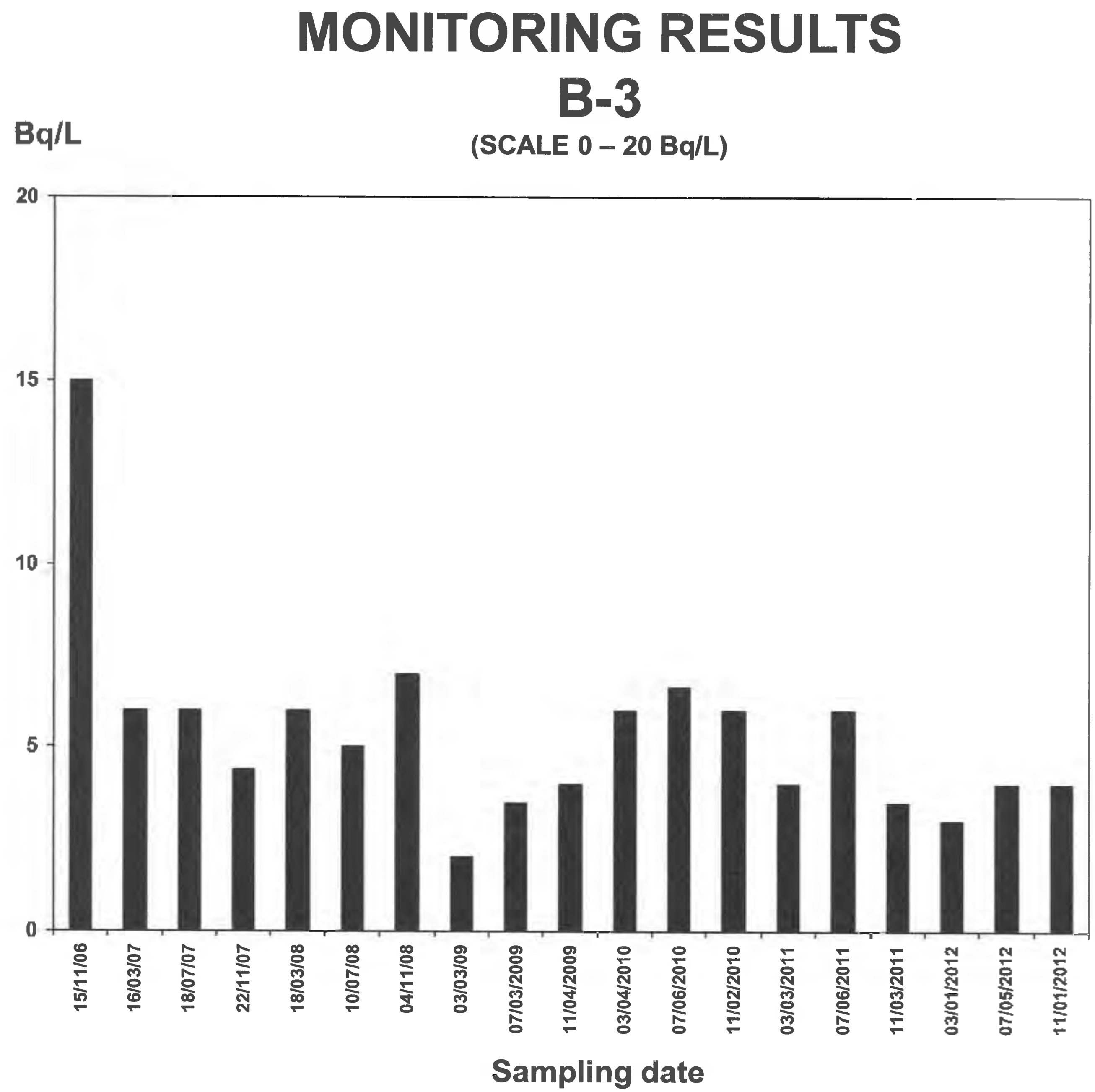
MONITORING RESULTS
B-1
Bq/L
(SCALE 0 – 2500 Bq/L)
2,500
2,000
1,500
1,000
500
0
26/10/06
17/05/07
18/07/07
11/09/07
22/11/07
17/01/08
18/03/08
16/05/08
10/07/08
04/09/08
04/11/08
06/01/09
03/03/2009
05/05/2009
07/03/2009
09/04/2009
11/04/2009
01/05/2010
03/04/2010
05/04/2010
07/06/2010
11/02/2010
07/06/2011
03/01/2012
11/01/2012
Sampling date

APPENDIX J

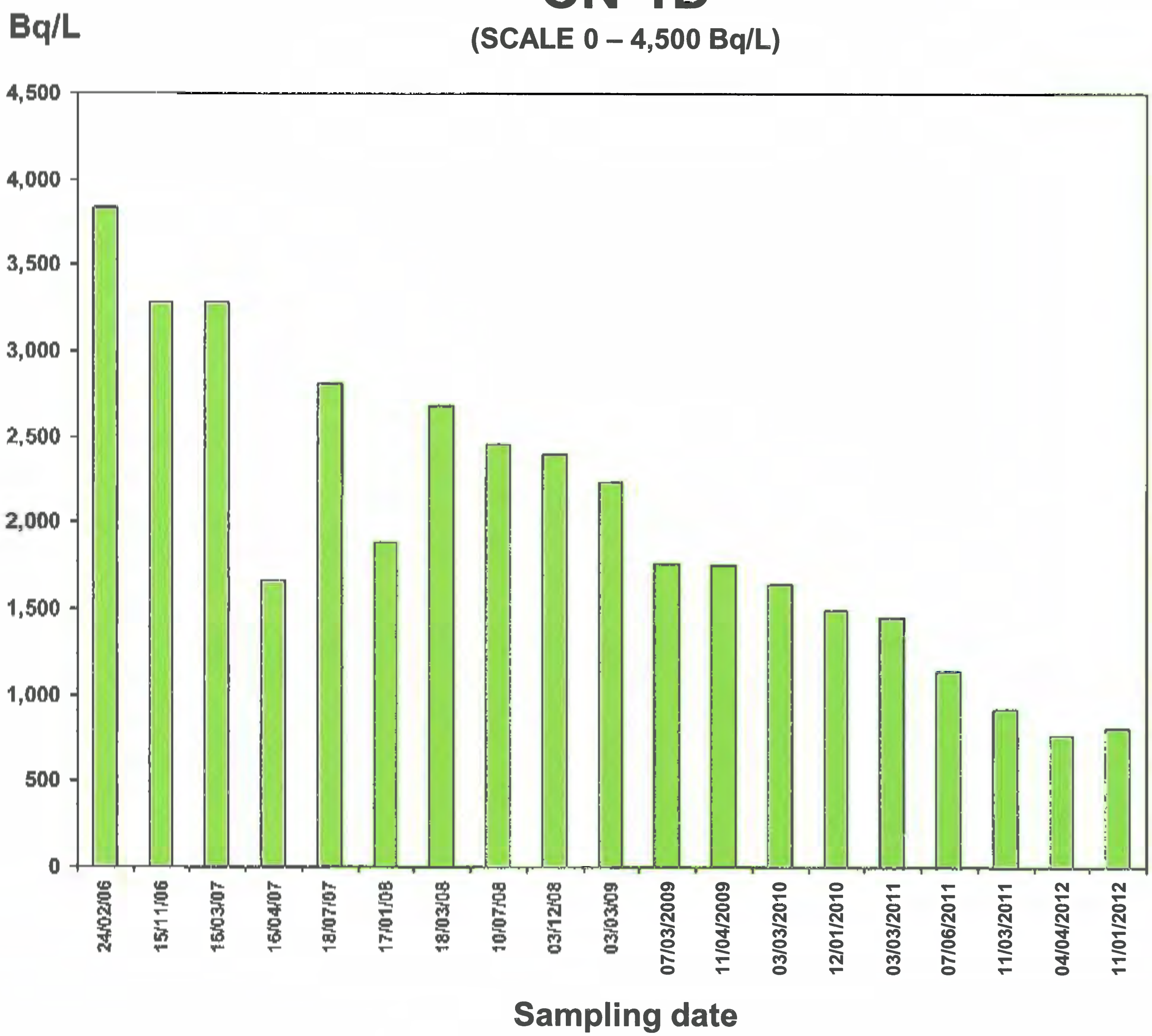
MONITORING RESULTS
B-2

(SCALE 0 – 5,000 Bq/L)




MONITORING RESULTS
B-3
Bq/L
(SCALE 0 – 20 Bq/L)
20
15
10
5
0
15/11/06
16/03/07
18/07/07
22/11/07
18/03/08
10/07/08
04/11/08
03/03/09
07/03/2009
11/04/2009
03/04/2010
07/06/2010
11/02/2010
03/03/2011
07/06/2011
11/03/2011
03/01/2012
07/05/2012
11/01/2012
Sampling date

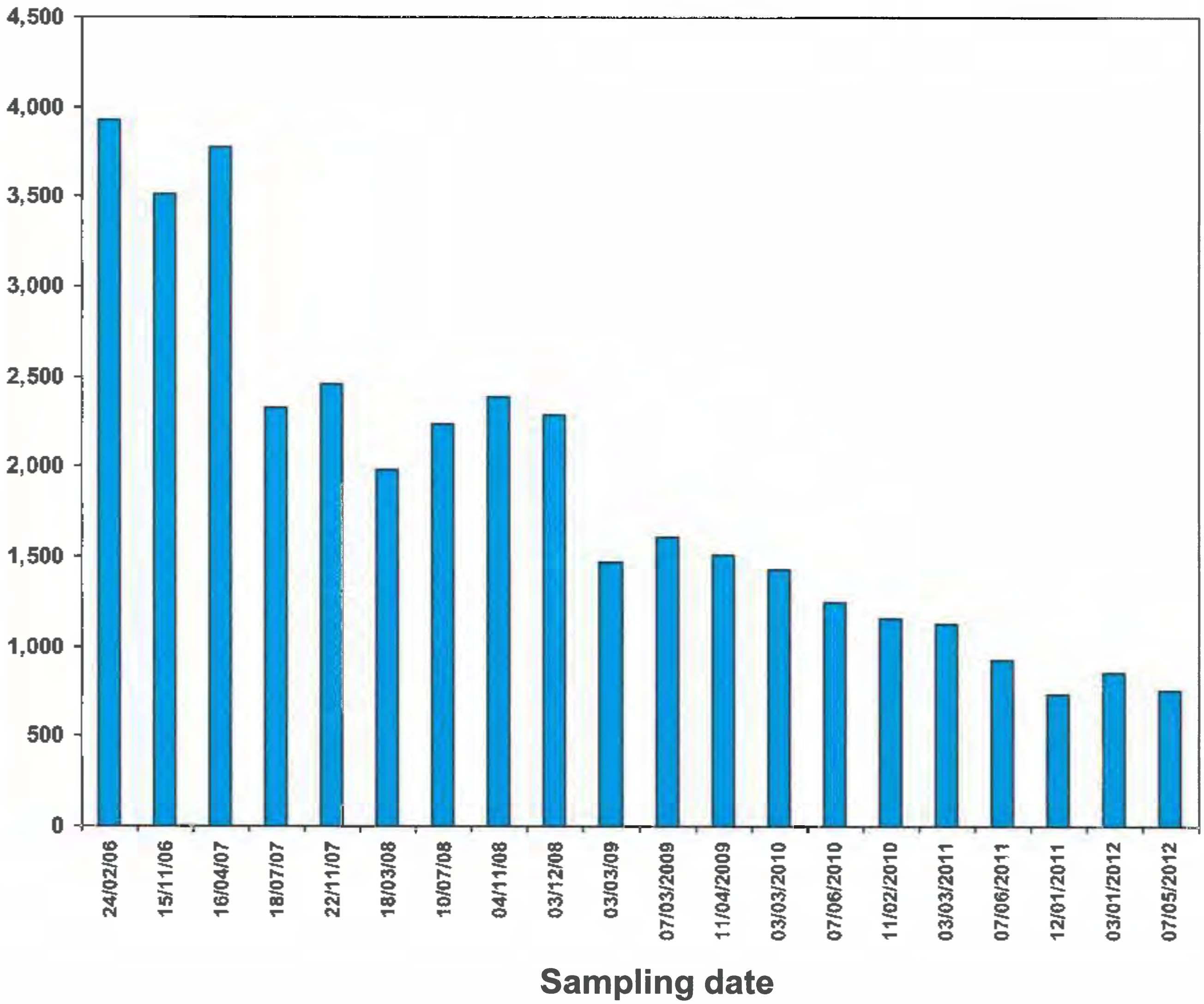
MONITORING RESULTS
CN-1D
(SCALE 0 – 4,500 Bq/L)



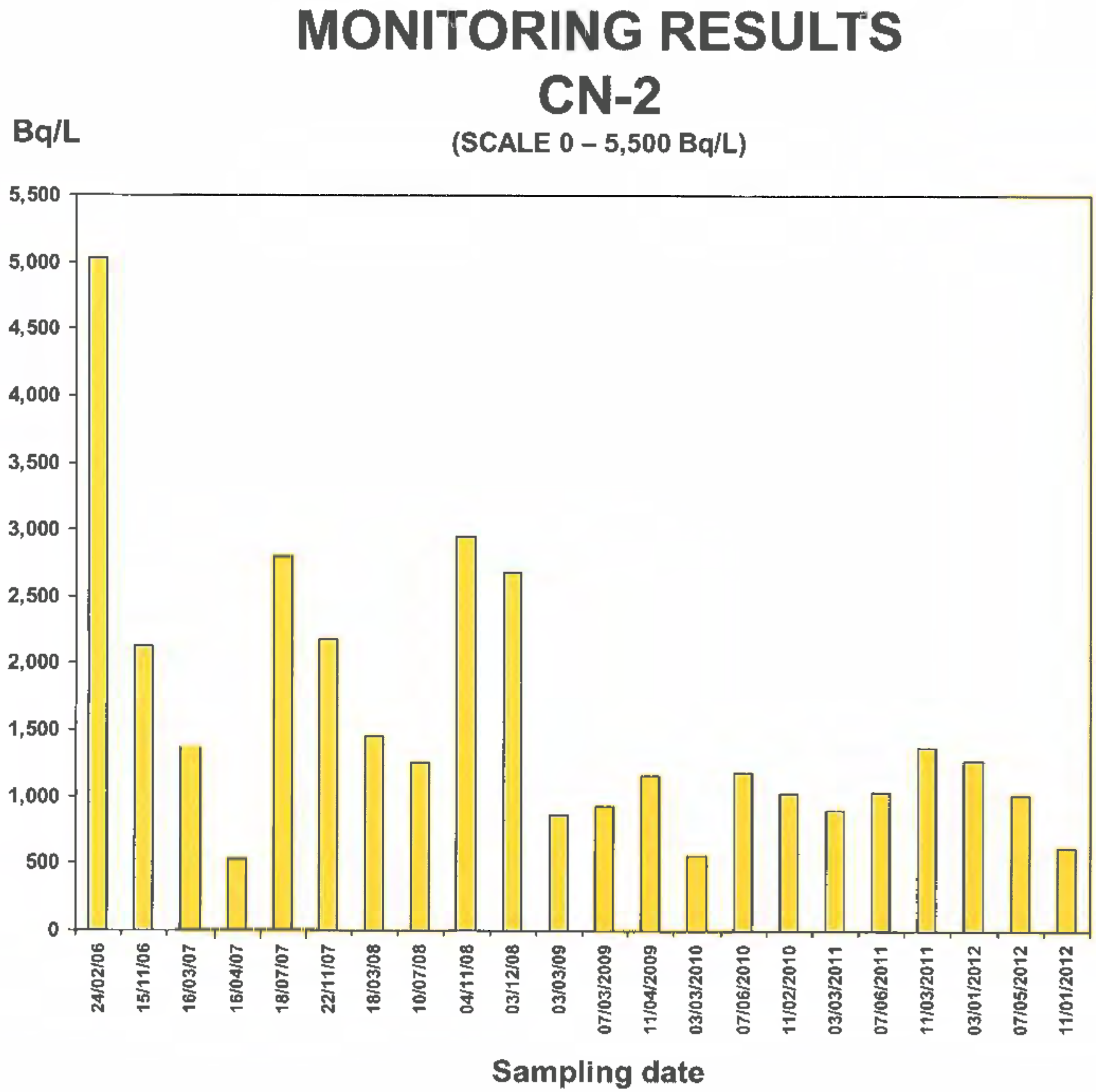
MONITORING RESULTS
CN-1S

Bq/L

(SCALE 0 – 4,500 Bq/L)

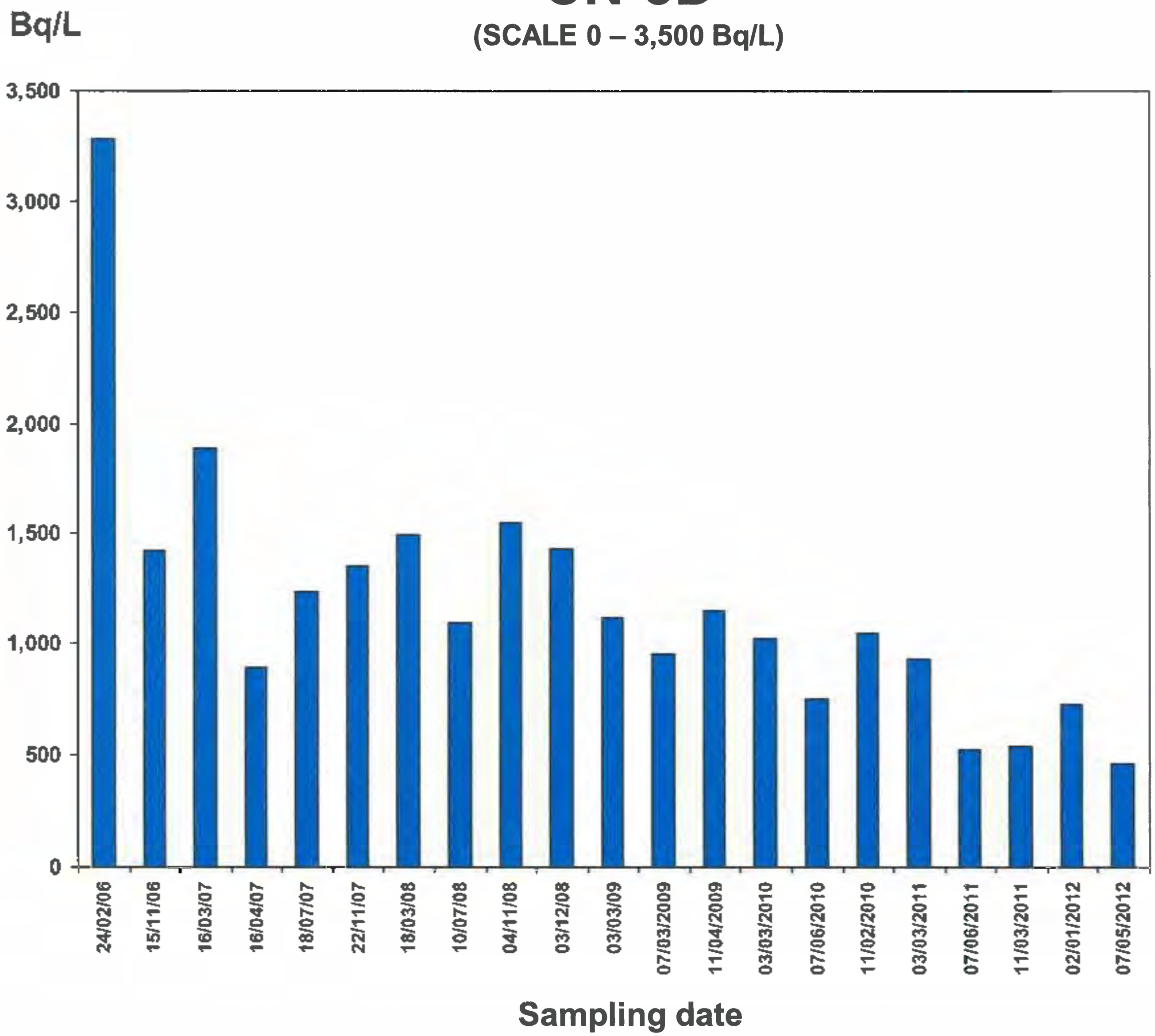


APPENDIX J


MONITORING RESULTS
CN-2
(SCALE 0 – 5,500 Bq/L)
Bq/L
5,500
5,000
4,500
4,000
3,500
3,000
2,500
2,000
1,500
1,000
500
0
24/02/06
15/11/06
16/03/07
16/04/07
18/07/07
22/11/07
18/03/08
10/07/08
04/11/08
03/12/08
03/03/09
07/03/2009
11/04/2009
03/03/2010
07/06/2010
11/02/2010
03/03/2011
07/06/2011
11/03/2011
03/01/2012
07/05/2012
11/01/2012
Sampling date

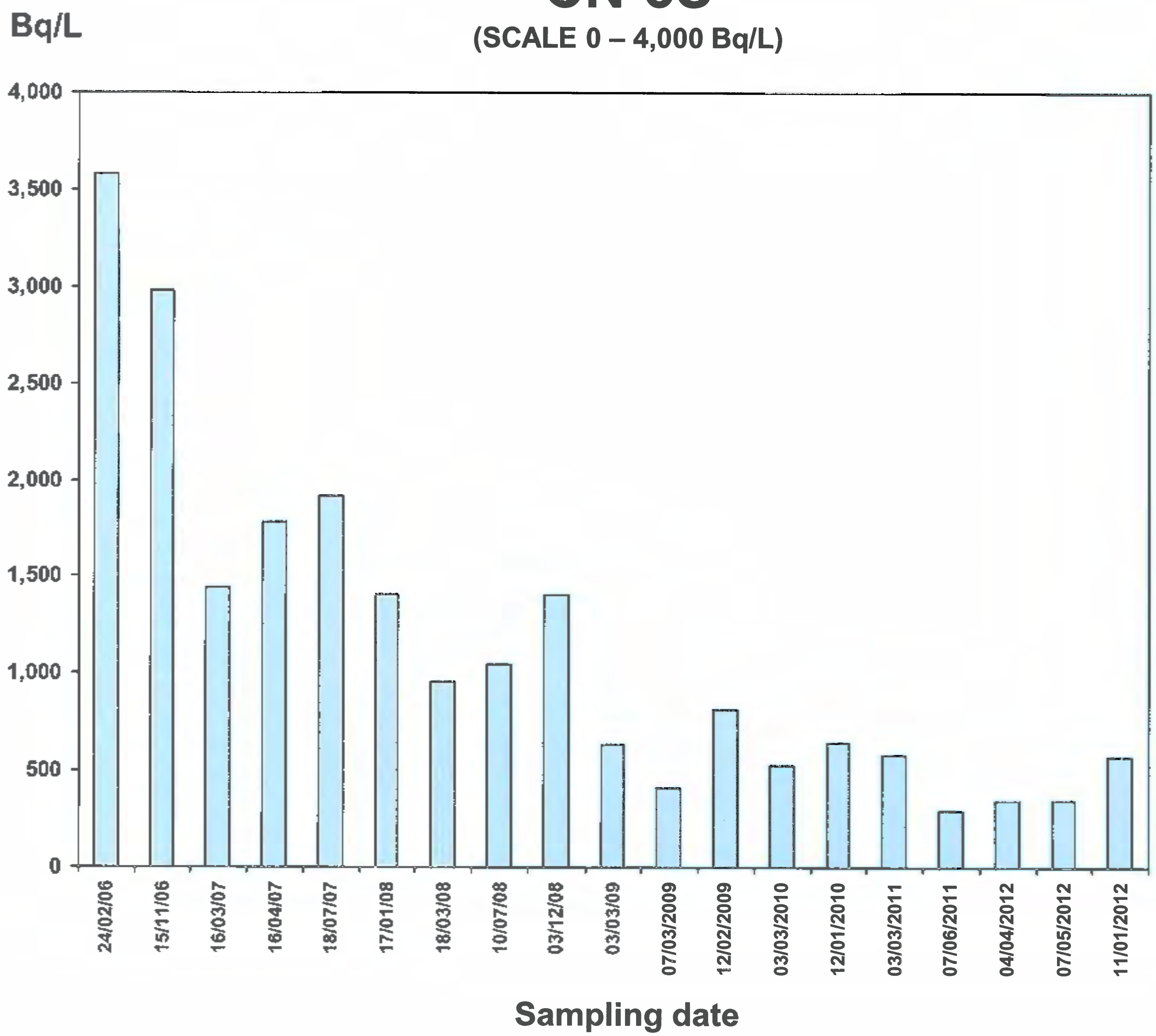
APPENDIX J

MONITORING RESULTS
CN-3D



APPENDIX J

MONITORING RESULTS
CN-3S
(SCALE 0 – 4,000 Bq/L)



APPENDIX K

Runoff Monitoring Results for 2012

DOWNSPOUTS							
DATE	TIME	DS-1	DS-2	DS-3	DS-4	DS-5	DS-6
24-Jan-12	12:54 PM	No sample	No sample	140	180	1,070	770
22-Feb-12	1:45 PM	No sample	210	180	170	390	950
7-Mar-12	12:10 PM	No sample	No sample	310	460	720	3,350
23-Jul-12	2:20 PM	100	100	100	100	100	100
10-Aug-12	2:37 PM	100	100	100	120	220	230
27-Aug-12	3:00 PM	120	100	120	100	230	190
10-Oct-12	1:00 PM	150	530	1,370	600	110	1,410
Average		**118**	**208**	**331**	**247**	**406**	**1000**
Average all results		385					

Values are all in Bq/L
Lower limit of detection = 100 Bq/L

LOCATION OF DOWNSPOUTS

APPENDIX L

Precipitation Monitoring Results for 2012

PRECIPITATION SAMPLERS								
	1P	4P	8P	11P	15P	18P	22P	25P
	Bq/L							
January 5 - February 1, 201	29	82	20	32	16	98	61	53
February 1 - March 1, 2012	70	76	583	40	21	238	134	34
March 1 - April 4, 2012	23	141	48	59	14	26	21	12
April 4 - May 2, 2012	64	111	51	153	75	47	6	36
May 2 - June 5, 2012	18	46	115	12	24	57	15	8
June 5 - July 4, 2012	301	86	14	9	9	13	9	22
July 4 - Aug 2, 2012	50	59	12	23	13	18	15	43
Aug 2 - Sept 5, 2012	22	50	7	108	14	9	8	31
Sept 5 - Oct 2, 2012	35	49	10	11	11	48	41	19
Oct 2 - Nov 1, 2012	49	31	34	45	77	24	27	23
Nov 1 - Dec 4, 2012	18	20	19	20	73	58	73	36
Dec 4, 2012 - Jan 4, 2013	22	28	53	60	140	262	86	34
Average	**58**	**65**	**81**	**48**	**41**	**75**	**41**	**29**
Average all results	**55**							

PASSIVE AIR SAMPLER	JAN (Bq/m3) MEASURED	JAN (Bq/L) ESTIMATED IN RAIN	PRECIPITATION MONITOR	JAN (Bq/L) MEASURED	RATIO ESTIMATED/MEASURED
N250	0.36	68	1P	29	233%
NW250	1.1	206	4P	82	252%
W250	0.36	68	8P	20	338%
SW250	0.36	68	11P	32	211%
S250	0.36	68	15P	16	422%
SE250	2.3	431	18P	98	440%
E250	1.4	263	22P	61	430%
NE250	1	188	25P	53	354%
					335%

PASSIVE AIR SAMPLER	FEB (Bq/m3) MEASURED	FEB (Bq/L) ESTIMATED IN RAIN	PRECIPITATION MONITOR	FEB (Bq/L) MEASURED	RATIO ESTIMATED/MEASURED
N250	1	176	1P	70	252%
NW250	1.7	300	4P	76	395%
W250	3.5	618	8P	583	106%
SW250	0.43	76	11P	40	190%
S250	1.3	229	15P	21	1092%
SE250	2.4	424	18P	238	178%
E250	1.1	194	22P	134	145%
NE250	3.2	565	25P	34	1661%
					502%

PASSIVE AIR SAMPLER	MAR (Bq/m3) MEASURED	MAR (Bq/L) ESTIMATED IN RAIN	PRECIPITATION MONITOR	MAR (Bq/L) MEASURED	RATIO ESTIMATED/MEASURED
N250	0.74	82	1P	23	357%
NW250	2	222	4P	141	158%
W250	2.2	244	8P	48	509%
SW250	1.3	144	11P	59	245%
S250	1.7	189	15P	14	1349%
SE250	2.6	289	18P	26	1111%
E250	0.93	103	22P	21	492%
NE250	1.3	144	25P	12	1204%
					678%

PASSIVE AIR SAMPLER	APR (Bq/m3) MEASURED	APR (Bq/L) ESTIMATED IN RAIN	PRECIPITATION MONITOR	APR (Bq/L) MEASURED	RATIO ESTIMATED/MEASURED
N250	0.51	40	1P	64	63%
NW250	2.1	166	4P	111	149%
W250	1.7	134	8P	51	263%
SW250	0.87	69	11P	153	45%
S250	1.4	111	15P	75	147%
SE250	1.6	126	18P	47	269%
E250	1.1	87	22P	6	1447%
NE250	0	0	25P	36	0%
					298%

PASSIVE AIR SAMPLER	MAY (Bq/m3) MEASURED	MAY (Bq/L) ESTIMATED IN RAIN	PRECIPITATION MONITOR	MAY (Bq/L) MEASURED	RATIO ESTIMATED/MEASURED
N250	2.9	126	1P	18	700%
NW250	4.5	196	4P	46	425%
W250	2.1	91	8P	115	79%
SW250	1.7	74	11P	12	616%
S250	1.5	65	15P	24	272%
SE250	2.6	113	18P	57	198%
E250	1.3	57	22P	15	377%
NE250	3.4	148	25P	8	1848%
					564%

PASSIVE AIR SAMPLER	JUNE (Bq/m3) MEASURED	JUNE (Bq/L) ESTIMATED IN RAIN	PRECIPITATION MONITOR	JUNE (Bq/L) MEASURED	RATIO ESTIMATED/MEASURED
N250	2.7	83	1P	301	27%
NW250	4.7	144	4P	86	167%
W250	0.92	28	8P	14	201%
SW250	0.49	15	11P	9	167%
S250	1.9	58	15P	9	646%
SE250	2.8	86	18P	13	659%
E250	1.7	52	22P	9	578%
NE250	4.6	141	25P	22	640%
					386%

PASSIVE AIR SAMPLER	JULY (Bq/m3) MEASURED	JULY (Bq/L) ESTIMATED IN RAIN	PRECIPITATION MONITOR	JULY (Bq/L) MEASURED	RATIO ESTIMATED/MEASURED
N250	1.2	30	1P	50	60%
NW250	0.94	24	4P	59	40%
W250	0.57	14	8P	12	119%
SW250	1.2	30	11P	23	130%
S250	2.1	53	15P	13	404%
SE250	1.9	48	18P	18	264%
E250	1.6	40	22P	15	267%
NE250	3.4	85	25P	43	198%
					185%

PASSIVE AIR SAMPLER	AUG (Bq/m3) MEASURED	AUG (Bq/L) ESTIMATED IN RAIN	PRECIPITATION MONITOR	AUG (Bq/L) MEASURED	RATIO ESTIMATED/MEASURED
N250	1.5	38	1P	22	173%
NW250	1.6	41	4P	50	81%
W250	0.34	9	8P	7	123%
SW250	1.2	31	11P	108	28%
S250	0.89	23	15P	14	162%
SE250	1.5	38	18P	9	424%
E250	1.5	38	22P	8	477%
NE250	8.6	219	25P	31	705%
					272%

PASSIVE AIR SAMPLER	SEPT (Bq/m3) MEASURED	SEPT (Bq/L) ESTIMATED IN RAIN	PRECIPITATION MONITOR	SEPT (Bq/L) MEASURED	RATIO ESTIMATED/MEASURED
N250	3.6	111	1P	35	318%
NW250	3.7	114	4P	49	234%
W250	0.58	18	8P	10	179%
SW250	0.56	17	11P	11	157%
S250	0.71	22	15P	11	200%
SE250	1.7	53	18P	48	110%
E250	2.2	68	22P	41	166%
NE250	3	93	25P	19	488%
					231%

PASSIVE AIR SAMPLER	OCT (Bq/m3) MEASURED	OCT (Bq/L) ESTIMATED IN RAIN	PRECIPITATION MONITOR	OCT (Bq/L) MEASURED	RATIO ESTIMATED/MEASURED
N250	1.1	56	1P	49	114%
NW250	2.9	147	4P	31	476%
W250	1	51	8P	34	150%
SW250	0.49	25	11P	45	55%
S250	1.5	76	15P	77	99%
SE250	0.95	48	18P	24	201%
E250	1.1	56	22P	27	207%
NE250	2.1	107	25P	23	464%
					221%

PASSIVE AIR SAMPLER	NOV (Bq/m3) MEASURED	NOV (Bq/L) ESTIMATED IN RAIN	PRECIPITATION MONITOR	NOV (Bq/L) MEASURED	RATIO ESTIMATED/MEASURED
N250	0.95	70	1P	18	386%
NW250	1.3	95	4P	20	476%
W250	0.59	43	8P	19	227%
SW250	0.48	35	11P	20	176%
S250	0.33	24	15P	73	33%
SE250	1.3	95	18P	58	164%
E250	1.3	95	22P	73	130%
NE250	0.91	67	25P	36	185%
					222%

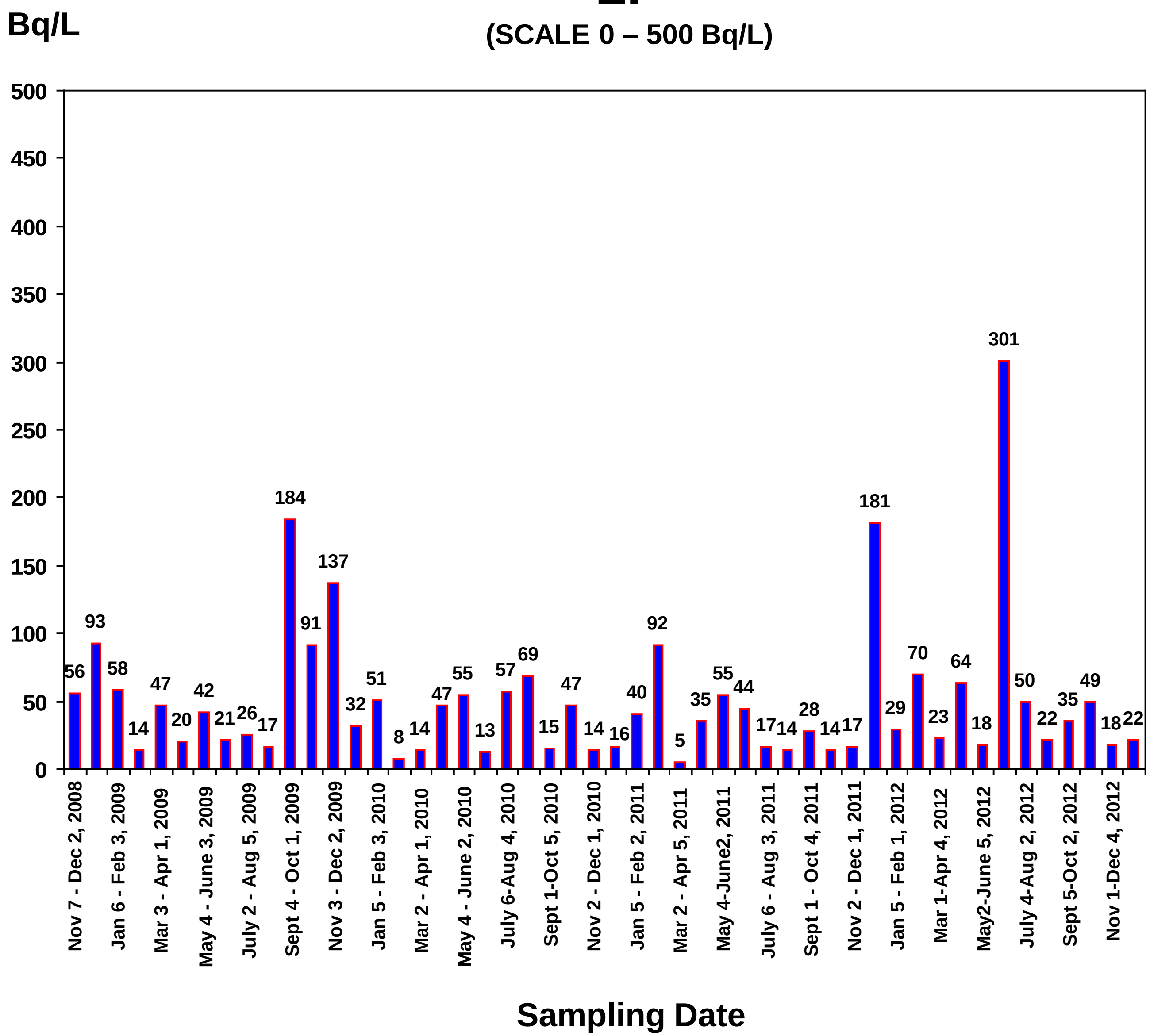
PASSIVE AIR SAMPLER	DEC (Bq/m3) MEASURED	DEC (Bq/L) ESTIMATED IN RAIN	PRECIPITATION MONITOR	DEC (Bq/L) MEASURED	RATIO ESTIMATED/MEASURED
N250	0.3	38	1P	22	170%
NW250	1.5	188	4P	28	670%
W250	0.37	46	8P	53	87%
SW250	0.41	51	11P	60	85%
S250	0.87	109	15P	140	78%
SE250	3.1	388	18P	262	148%
E250	1.4	175	22P	86	203%
NE250	0.58	73	25P	34	213%
					207%

Site-Specific Absolute Humidity Values

year	Endpoint	Monthly Readings												Average		
		J	F	M	A	M	J	J	A	S	O	N	D	Annual	Snow-free Period	Growing Season
2000	Temp (C)	-11.8	-8.2	0.5	4.4	12.4	15.6	18.4	17.7	12.8	7.9	1.0	-11.3	4.9	11.3	16.1
	Dew Point (C)	-16.5	-12.8	-5.7	-3.6	7.0	10.9	13.8	13.8	8.7	2.7	-2.4	-14.8	0.1	6.3	11.8
	RH (%)	68.9	71.7	65.9	61.7	72.7	76.1	77.2	79.9	78.2	72.4	79.4	76.1	73.4	74.7	77.9
	Ha (g/m^3)	1.4	1.9	3.2	3.6	7.6	9.8	11.7	11.7	8.5	5.7	4.0	1.6	5.9	7.8	10.4
2001	Temp (C)	-10.2	-9.9	-3.4	5.8	13.2	18.5	18.9	20.6	14.4	8.3	3.7	-1.2	6.6	12.9	18.1
	Dew Point (C)	-13.4	-14.4	-9.7	-2.8	6.3	12.0	12.4	13.8	10.5	4.6	-0.7	-4.0	1.2	7.0	12.2
	RH (%)	78.0	70.7	63.6	58.5	67.8	68.9	68.8	69.0	79.8	78.6	75.3	82.9	71.8	70.8	71.6
	Ha (g/m^3)	1.8	1.7	2.3	3.9	7.2	10.4	10.7	11.7	9.6	6.5	4.6	3.6	6.2	8.1	10.6
2002	Temp (C)	-5.4	-7.0	-4.0	5.2	9.7	16.5	21.0	19.5	16.6	5.3	-0.7	-6.6	5.8	11.6	18.4
	Dew Point (C)	-8.5	-11.4	-9.2	-1.4	3.2	11.7	15.2	14.3	12.0	1.8	-3.8	-10.0	1.2	6.6	13.3
	RH (%)	80.0	72.0	69.4	65.8	67.2	76.4	72.5	74.9	76.7	79.4	80.7	77.5	74.4	74.2	75.1
	Ha (g/m^3)	2.6	2.1	2.4	4.3	5.9	10.3	12.7	12.0	10.5	5.4	3.7	2.3	6.2	8.1	11.4
2003	Temp (C)	-14.2	-14.0	-4.5	2.8	11.6	17.3	19.3	19.7	15.1	6.4	1.5	-5.7	4.6	11.7	17.9
	Dew Point (C)	-18.8	-19.5	-10.2	-5.5	5.4	10.9	14.4	15.0	11.4	3.2	-1.6	-8.3	-0.3	6.6	12.9
	RH (%)	69.1	64.5	66.4	58.2	70.5	70.3	76.4	76.8	81.1	81.5	81.6	82.4	73.2	74.5	76.2
	Ha (g/m^3)	1.2	1.1	2.3	3.2	6.8	9.7	12.1	12.6	10.2	5.9	4.3	2.6	6.0	8.1	11.1
2004	Temp (C)	-16.6	-8.5	-1.2	4.6	11.3	15.8	19.1	17.3	15.5	8.0	0.8	-9.7	4.7	11.6	16.9
	Dew Point (C)	-21.4	-13.1	-6.1	-2.8	5.2	9.6	15.0	13.0	11.1	3.8	-3.1	-12.9	-0.1	6.5	12.1
	RH (%)	67.4	71.3	71.8	62.6	70.7	70.1	79.0	77.7	76.9	76.6	76.8	78.2	73.2	73.8	75.9
	Ha (g/m^3)	0.9	1.8	3.1	3.9	6.8	9.0	12.6	11.1	9.9	6.2	3.9	1.9	5.9	7.9	10.6
5-yr Avg	*Temp (C)*	*-11.7*	*-9.5*	*-2.5*	*4.6*	*11.6*	*16.8*	*19.3*	*19.0*	*14.9*	*7.2*	*1.2*	*-6.9*	***5.3***	***11.8***	***17.5***
	Dew Point (C)	*-15.7*	*-14.2*	*-8.2*	*-3.2*	*5.4*	*11.0*	*14.2*	*14.0*	*10.7*	*3.2*	*-2.3*	*-10.0*	***0.4***	***6.6***	***12.5***
	RH (%)	*72.7*	*70.0*	*67.4*	*61.4*	*69.8*	*72.4*	*74.8*	*75.7*	*78.6*	*77.7*	*78.8*	*79.4*	***73.2***	***73.6***	***75.3***
	Ha (g/m^3)	*1.6*	*1.7*	*2.7*	*3.8*	*6.9*	*9.8*	*12.0*	*11.8*	*9.7*	*5.9*	*4.1*	*2.4*	***6.0***	***8.0***	***10.8***
Factor to convert		***190***	***176***	***113***	***80***	***44***	***31***	***25***	***25***	***31***	***50***	***73***	***124***	***50***	***37***	***28***

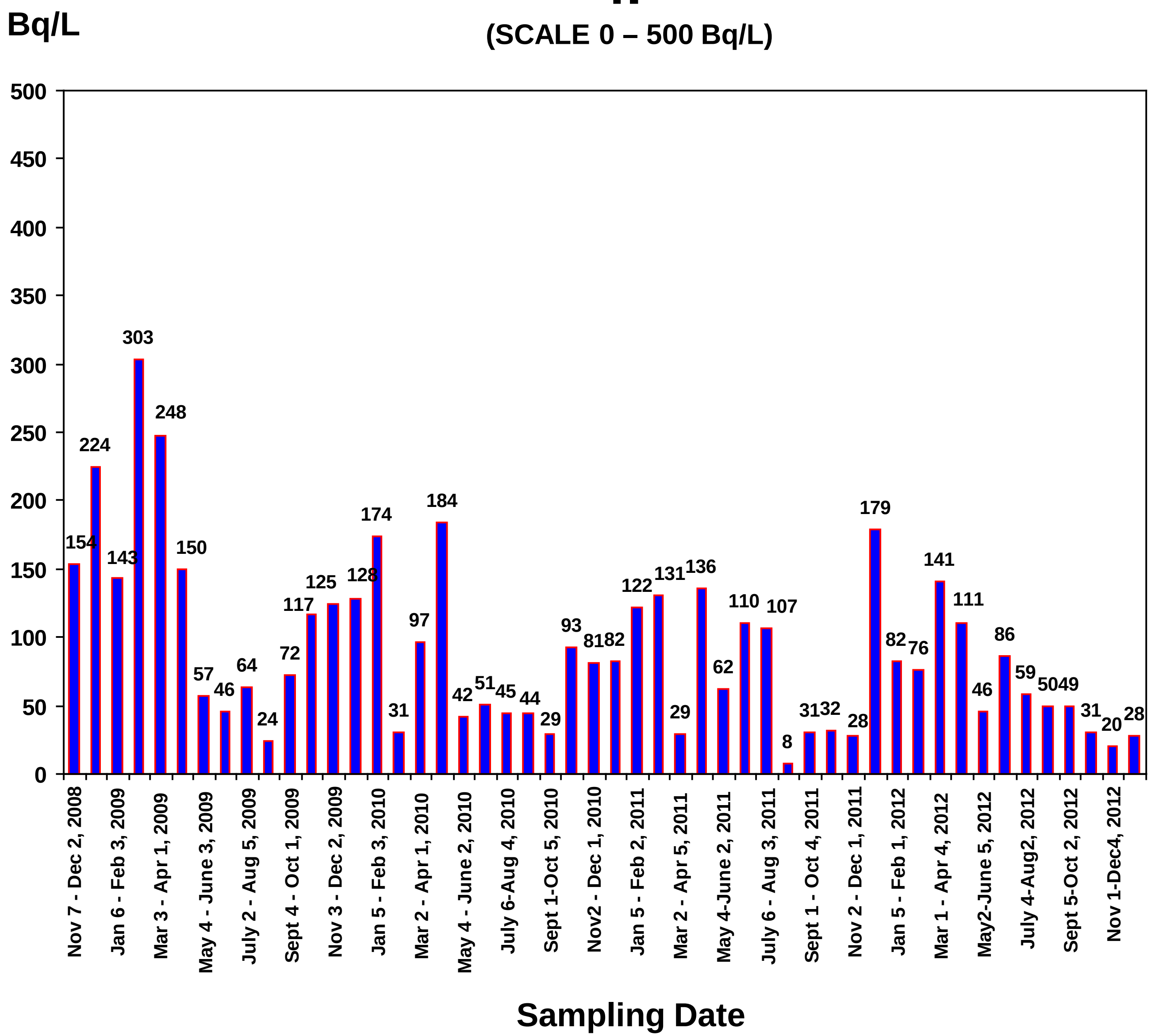
Monthly data derived from hourly readings at Environment Canada's Petawawa A Station
Average Annual values calculated using monthly means
Snow-free period is April to November, inclusive
Growing season is June to September, inclusive

PRECIPITATION RESULTS
1P
(SCALE 0 – 500 Bq/L)



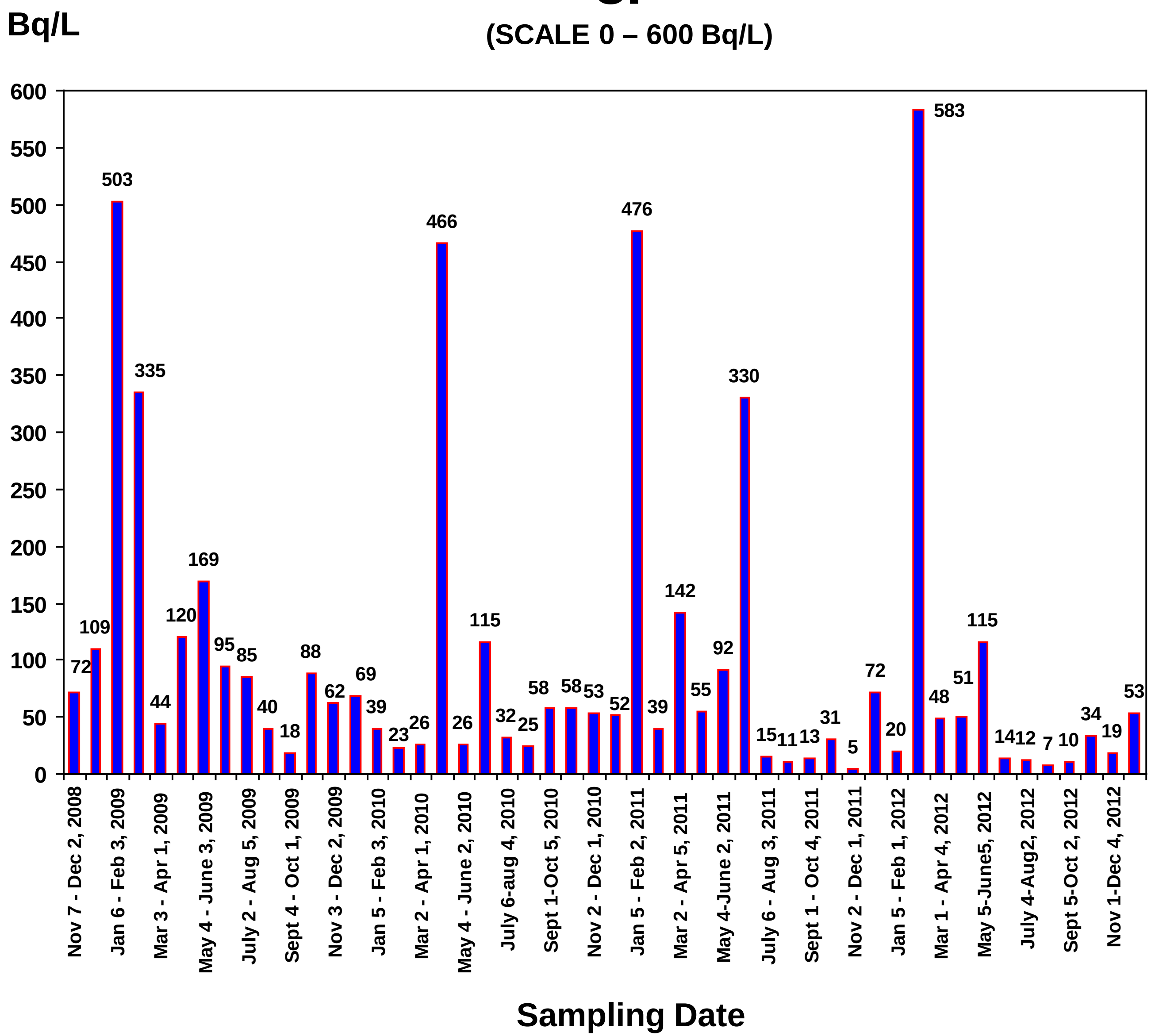
PRECIPITATION RESULTS
4P

(SCALE 0 – 500 Bq/L)



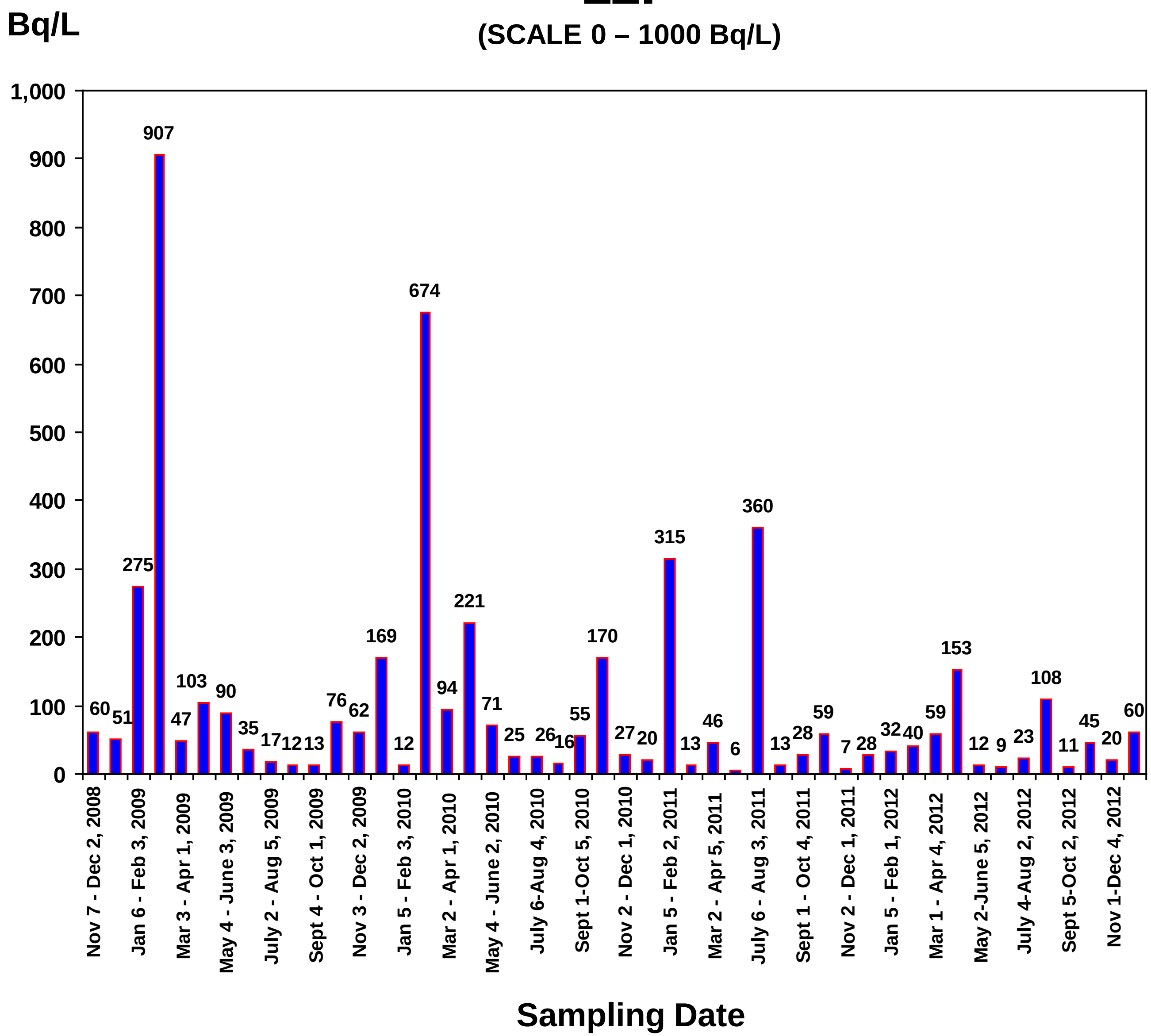
PRECIPITATION RESULTS
8P

(SCALE 0 – 600 Bq/L)



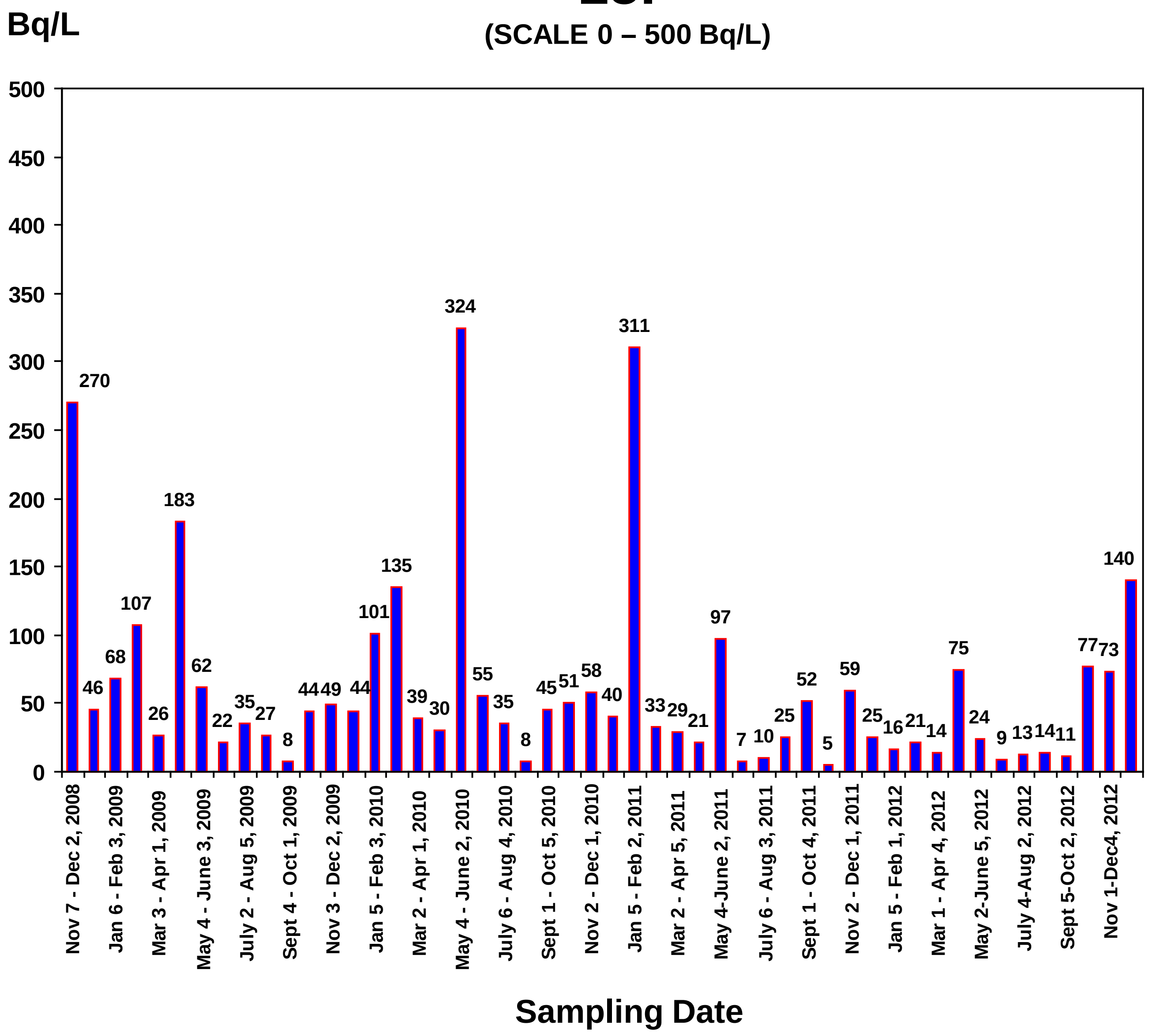
APPENDIX L

PRECIPITATION RESULTS
11P

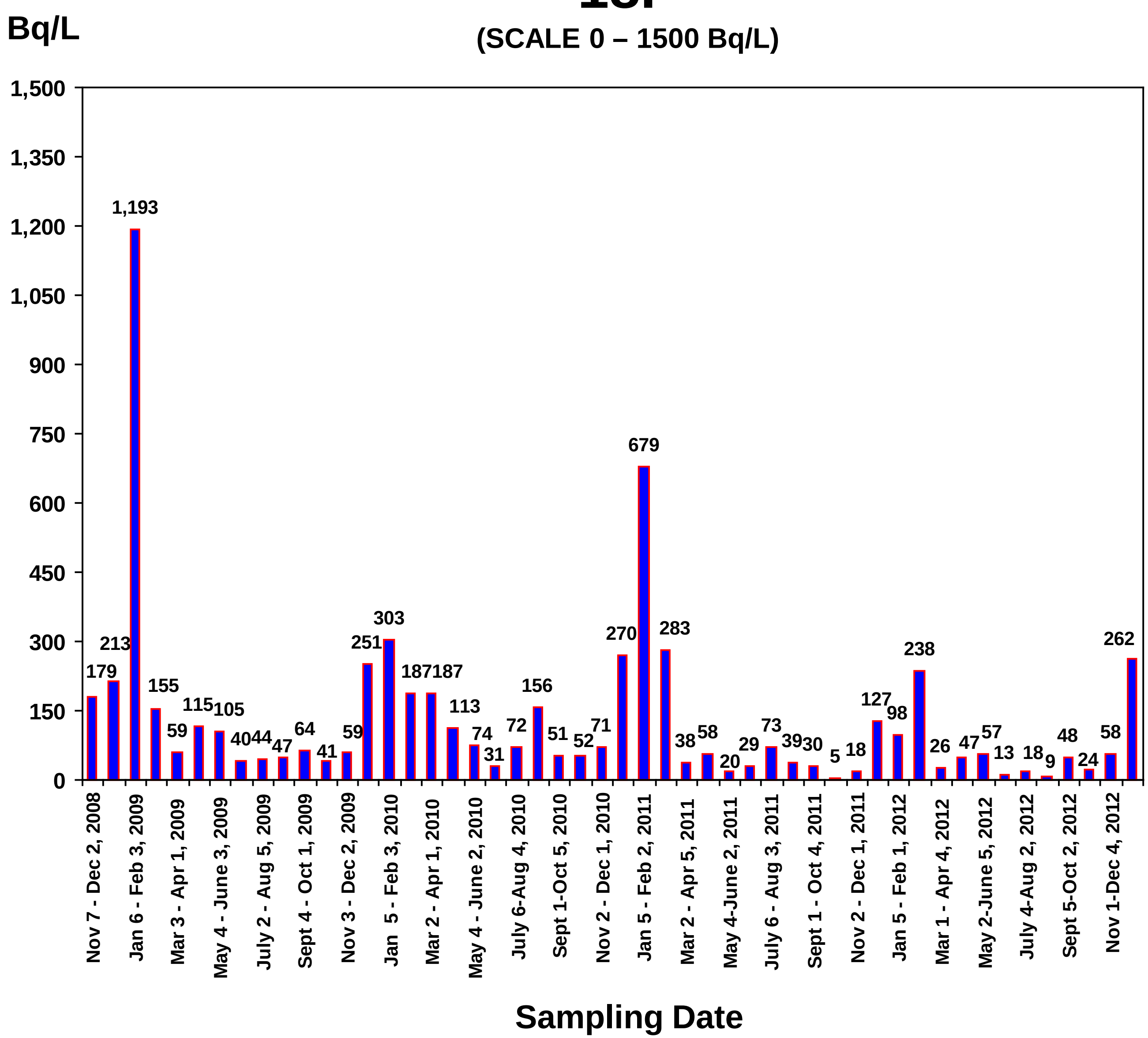


APPENDIX L

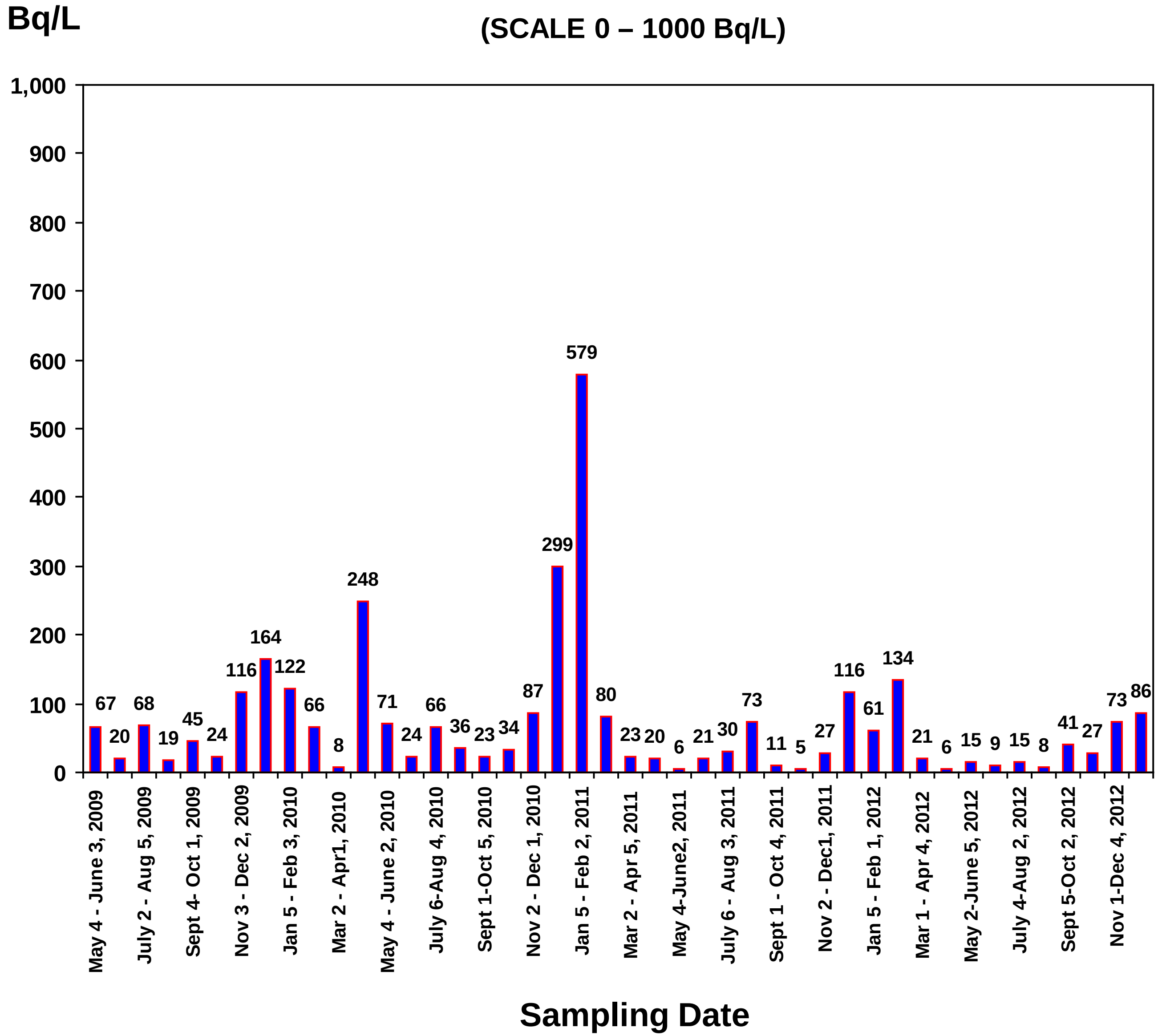
PRECIPITATION RESULTS
15P
(SCALE 0 – 500 Bq/L)



PRECIPITATION RESULTS
18P
(SCALE 0 – 1500 Bq/L)



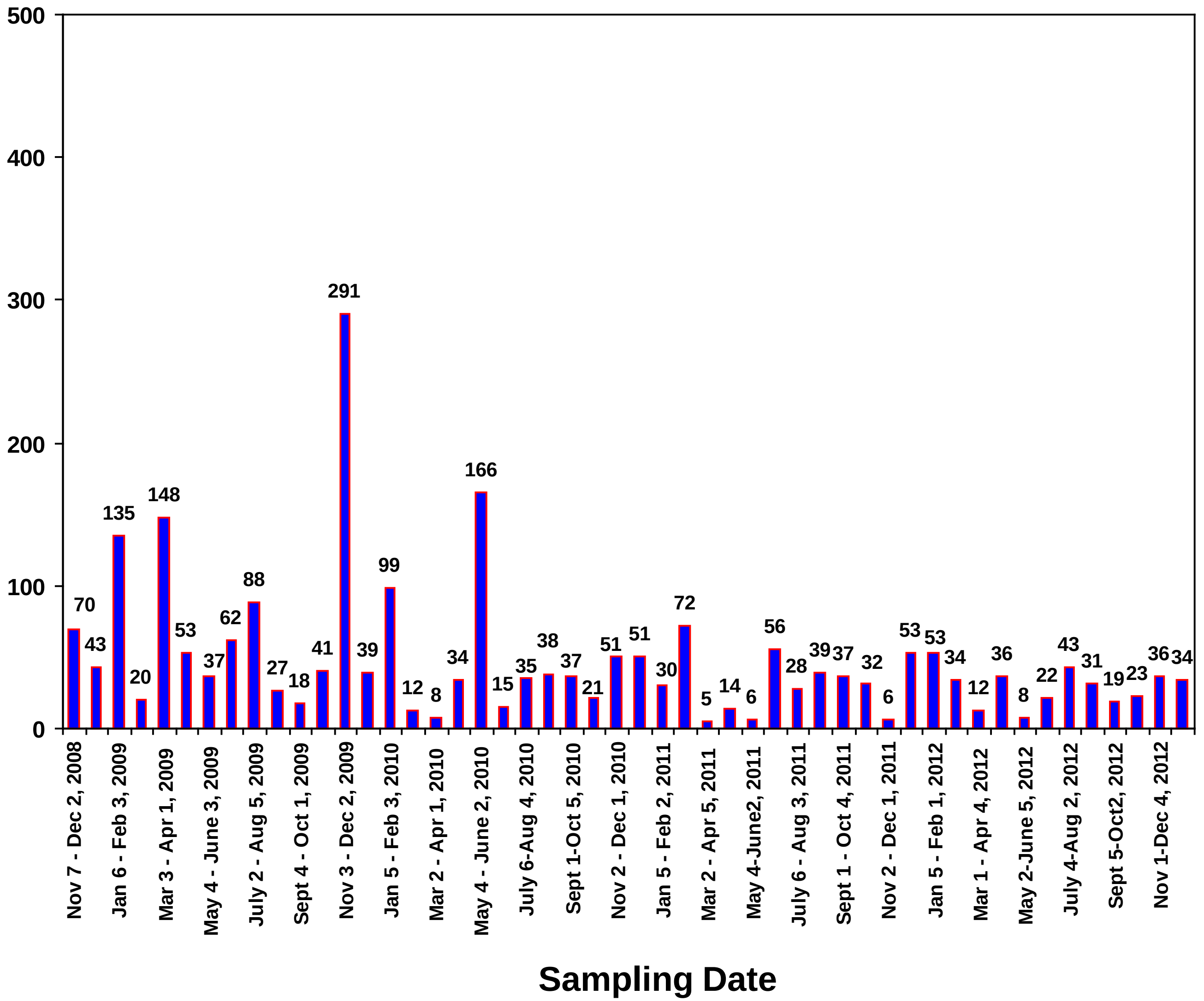
PRECIPITATION RESULTS
22P
(SCALE 0 – 1000 Bq/L)



PRECIPITATION RESULTS
25P

(SCALE 0 – 500 Bq/L)

Bq/L



APPENDIX M

Compilation of Water Level Measurements for 2012

Monitoring Wells (Values in m)

Date	MW06-1	MW06-2	MW06-3	MW06-8	MW06-9	MW06-10	MW07-11	MW07-12	MW07-13	MW07-14	MW07-15	MW07-16
Easting	335449	335478	335363	335464	335401	335408	335478	335465	335448	335415	335403	335393
Northing	5074615	5074578	5074535	5074590	5074605	5074506	5074576	5074588	5074616	5074617	5074605	5074599
TOP Elevation (m)	130.99	130.03	133.09	130.30	131.15	131.32	130.06	130.41	130.92	130.86	130.84	130.98
GS Elevation (m)	130.17	129.24	132.32	129.58	129.86	130.24	129.15	129.58	130.03	129.98	129.93	130.16
Well Diameter (m)	0.051	0.051	0.051	0.032	0.032	0.032	0.032	0.032	0.032	0.032	0.032	0.032
Well Depth (m)	5.165	5.330	6.130	6.700	5.930	7.770	7.215	7.450	6.615	7.280	7.230	7.050
Stick-up (m)	0.820	0.788	0.767	0.720	1.290	1.077	0.905	0.835	0.893	0.880	0.910	0.822
04-Jan-12	127.09	125.56	127.03	125.51	126.65	126.03	125.59	125.43	125.29	125.93	125.86	125.82
31-Jan-12	126.22	126.74	127.03	124.56	125.65	125.24	124.77	124.56	124.50	124.68	124.91	124.91
29-Feb-12	127.78	127.02	127.03	124.88	125.52	125.53	125.13	124.95	124.69	125.29	125.27	125.25
03-Apr-12	128.83	127.93	129.81	127.63	129.31	128.93	127.59	127.57	127.74	128.92	128.89	128.89
01-May-12	128.82	127.87	129.19	127.37	128.92	128.46	127.35	127.29	127.46	128.56	128.46	128.42
04-Jun-12	128.45	127.61	127.57	126.44	127.71	127.13	126.43	126.32	126.50	127.56	127.24	127.15
03-Jul-12	126.64	127.08	127.03	125.36	126.61	125.90	125.42	125.22	124.84	125.65	125.67	125.64
01-Aug-12	125.85	125.87	127.04	124.33	125.39	125.07	124.52	124.33	124.33	124.63	124.74	124.75
04-Sep-12	126.22	125.86	126.99	124.53	125.75	125.15	124.73	124.49	124.38	124.67	124.84	124.84
01-Oct-12	126.96	125.87	127.02	124.93	125.72	125.54	125.12	124.92	124.53	125.35	125.36	125.33
31-Oct-12	128.51	126.91	127.86	126.34	127.68	127.33	126.46	126.28	126.57	127.97	127.49	127.39
03-Dec-12	127.20	127.11	127.03	125.84	126.83	126.30	125.91	125.72	125.73	126.69	126.26	126.19

Date	MW07-17	MW07-18	MW07-19	MW07-20	MW07-21	MW07-22	MW07-23	MW07-24	MW07-25	MW07-26	MW07-27	MW07-28
Easting	335392	335387	335378	335296	335522	335472	335492	335519	335466	335357	335354	335352
Northing	5074599	5074595	5074587	5074616	5074584	5074584	5074560	5074530	5074498	5074567	5074611	5074612
TOP Elevation (m)	131.08	131.23	131.61	130.70	129.51	130.25	130.04	129.03	129.85	132.42	132.89	132.71
GS Elevation (m)	130.16	130.37	130.79	129.85	128.78	129.05	129.29	128.22	129.03	131.85	132.02	132.04
Well Diameter (m)	0.051	0.032	0.032	0.032	0.032	0.032	0.032	0.032	0.032	0.032	0.032	0.032
Well Depth (m)	14.610	7.250	7.400	7.820	7.580	7.465	5.905	6.525	6.750	7.310	8.330	14.400
Stick-up (m)	0.915	0.868	0.815	0.850	0.730	1.200	0.750	0.810	0.820	0.570	0.870	0.670
04-Jan-12	121.24	125.83	125.88	124.58	124.06	125.38	126.68	125.91	126.73	126.12	125.51	121.32
31-Jan-12	120.69	124.98	125.08	123.42	123.32	124.52	125.98	125.37	126.27	125.57	124.75	120.71
29-Feb-12	120.56	125.28	125.37	123.96	123.76	124.89	126.33	125.62	126.38	125.69	124.88	120.58
03-Apr-12	124.15	128.84	129.03	127.09	126.45	127.51	128.07	127.20	128.17	129.80	129.13	124.04
01-May-12	123.53	128.38	128.52	126.71	125.95	127.24	127.95	127.07	128.10	129.21	128.42	123.65
04-Jun-12	122.33	126.97	127.05	125.59	124.64	126.26	127.32	126.33	127.19	127.01	126.55	122.39
03-Jul-12	121.41	125.71	125.78	124.23	123.46	124.30	126.41	125.48	126.44	126.11	125.32	121.50
01-Aug-12	120.54	124.79	124.90	125.03	122.52	124.32	125.49	124.80	125.81	125.44	124.65	120.58
04-Sep-12	120.31	124.87	124.96	123.40	122.87	124.50	125.74	124.84	125.68	125.42	124.64	120.36
01-Oct-12	120.27	125.29	125.35	123.86	123.05	124.89	126.12	125.12	125.77	125.47	124.86	120.30
31-Oct-12	120.82	127.15	127.19	125.49	124.75	126.27	127.37	126.29	126.68	127.28	126.31	120.89
03-Dec-12	121.17	126.12	126.18	124.73	124.21	125.70	126.91	126.02	126.49	126.27	125.59	121.23

Date	MW07-29	MW07-31	MW07-32	MW07-33	MW07-34	MW07-35	MW07-36	MW07-37
Easting	335384	335471	335517	335465				
Northing	5074592	5074583	5074530	5074497				
TOP Elevation (m)	131.09	130.16	128.86	129.88	131.12	132.89	133.10	130.06
GS Elevation (m)	130.57	129.38	128.23	129.26	130.71	132.16	132.31	129.47
Well Diameter (m)	0.032	0.032	0.032	0.032	0.032	0.032	0.032	0.032
Well Depth (m)	13.000	13.240	13.090	14.230	9.110	9.390	9.330	8.590
Stick-up (m)	0.520	0.780	0.630	0.620	0.410	0.730	0.790	0.590
04-Jan-12	121.44	120.41	120.39	120.40	125.45	125.16	124.70	125.50
31-Jan-12	120.77	120.10	119.04	120.09	124.66	124.48	125.26	124.65
29-Feb-12	120.61	120.04	120.38	120.01	124.95	124.63	124.33	125.02
03-Apr-12	124.05	123.99	123.98	123.98	128.43	128.64	127.80	127.64
01-May-12	123.66	122.45	122.44	122.44	127.84	127.92	126.98	127.37
04-Jun-12	122.42	121.18	121.17	122.49	126.41	126.12	125.23	126.39
03-Jul-12	121.49	120.40	120.39	121.66	125.19	125.02	124.56	125.32
01-Aug-12	120.62	119.77	119.77	120.88	124.26	124.27	124.01	124.44
04-Sep-12	120.39	119.37	119.36	119.37	124.45	124.31	124.10	124.53
01-Oct-12	120.62	119.30	119.28	119.30	124.83	124.56	124.32	125.00
31-Oct-12	120.96	120.01	119.98	119.97	126.45	125.89	125.26	126.40
03-Dec-12	121.27	120.04	120.02	120.02	125.55	125.30	124.84	125.82

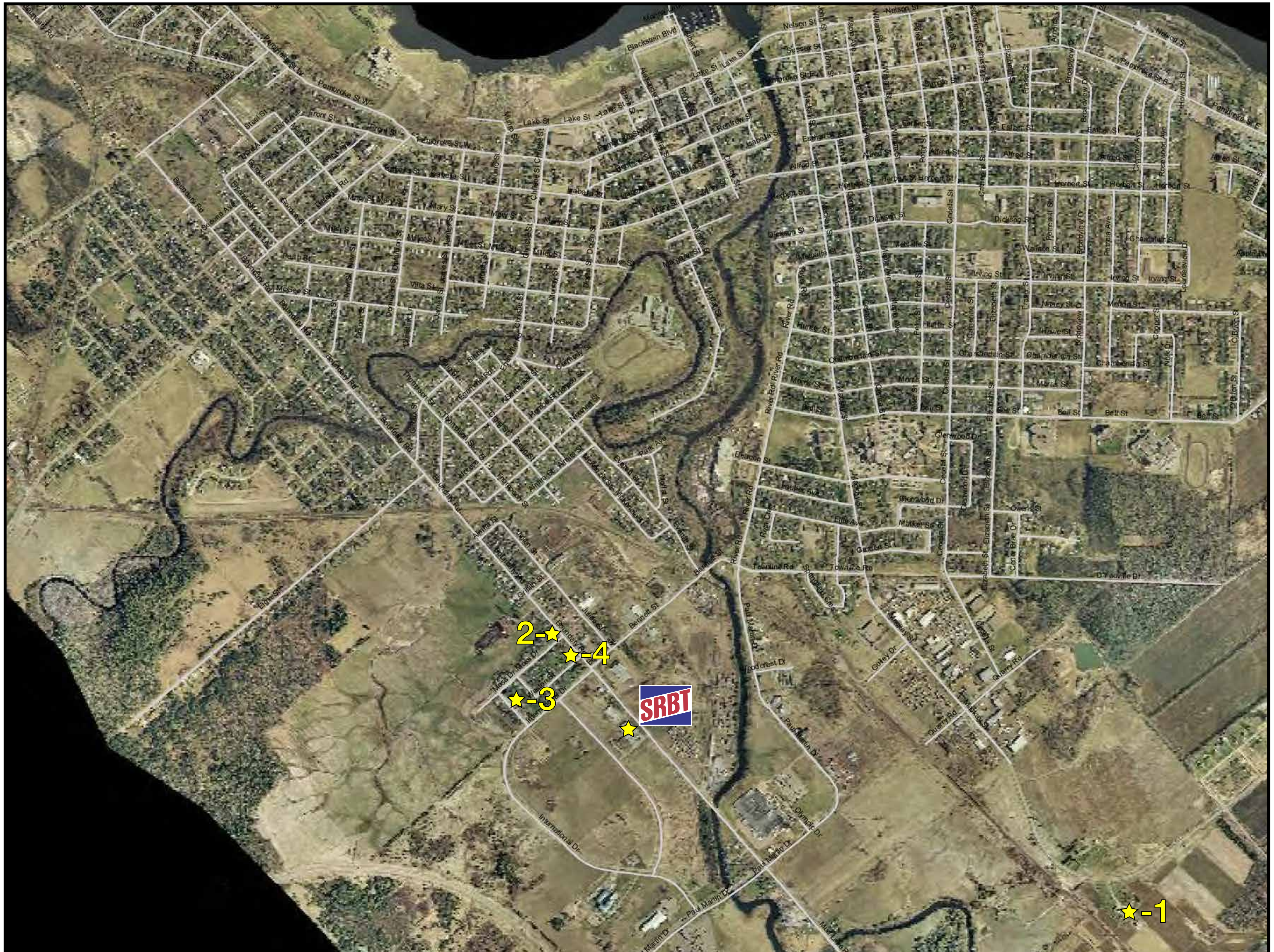
APPENDIX N

Produce Monitoring Results for 2012

DESCRIPTION	DISTANCE FROM STACKS	RHUBBAR	TOMATO	PLUM	BEET	CUCUMBER	POTATO	SPINACH	ZUCCHIN	ONION	CARRO	APPLE	AVG
416 BOUNDARY RD	400	97					36		33		50	74	58
413 SWEEZEY CRT	400		10			38				64		101	53
408 BOUNDARY RD	400		30			45				27			34
												AVG	48

DESCRIPTION	DISTAN FROM STACK	RHUBBARB	TOMAT	BEET	LETTU	CUCUM	POTAT	SPINAC	PLUM	ONION	CARRO	APPLE	AVG
LOCAL MARKET	1,750		21			8							14.5
												AVG	14.5

SRB PRODUCE SAMPLING - 2012

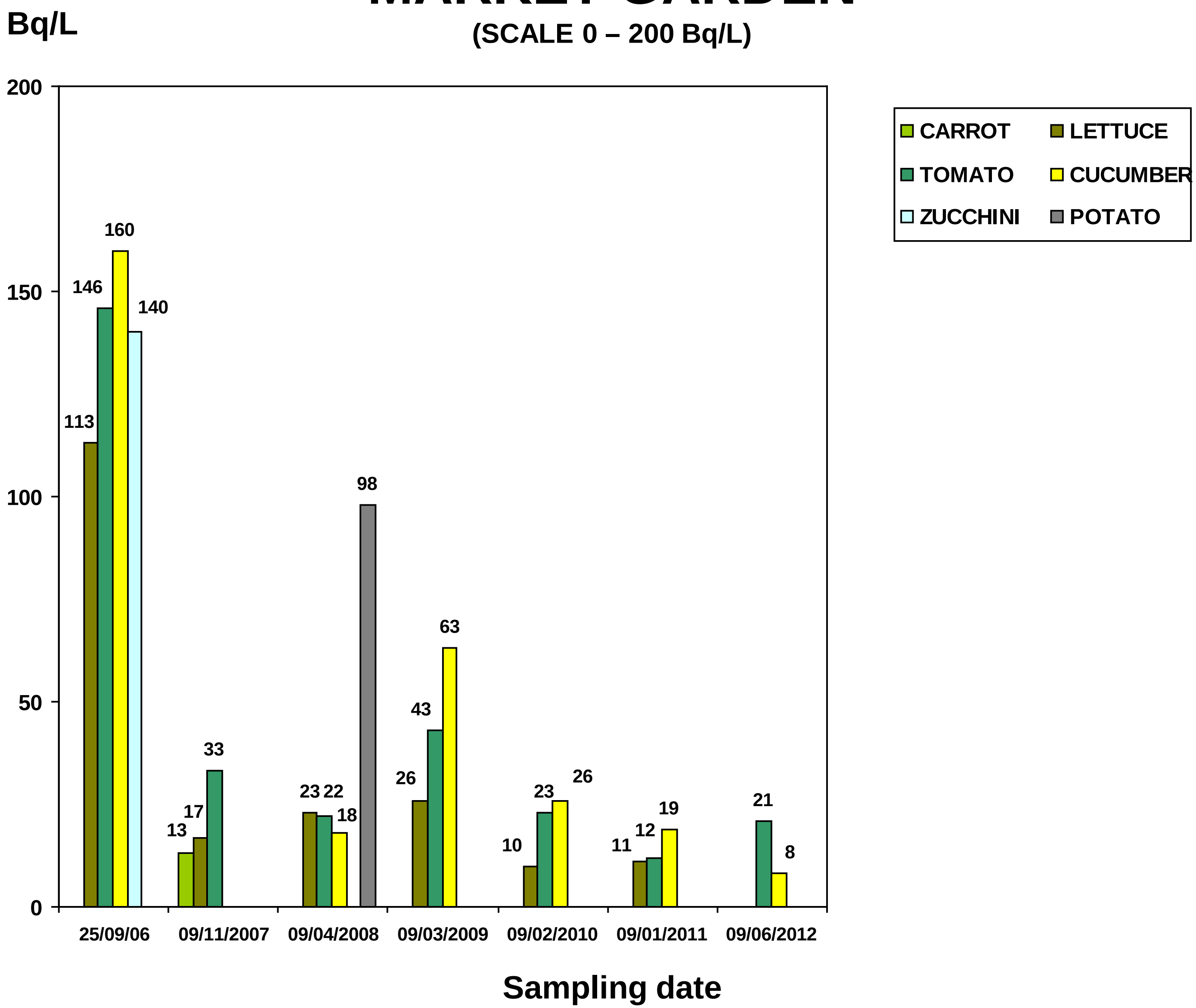


Rev. 10/ 25/2012

Sample Locations

1- Local Market ~ 1.75 KM
2- 416 Boundary Rd. ~ 0.4 KM
3- 413 Sweezey Crt. ~ 0.4 KM
4- 408 Boundary Rd. ~ 0.35 KM

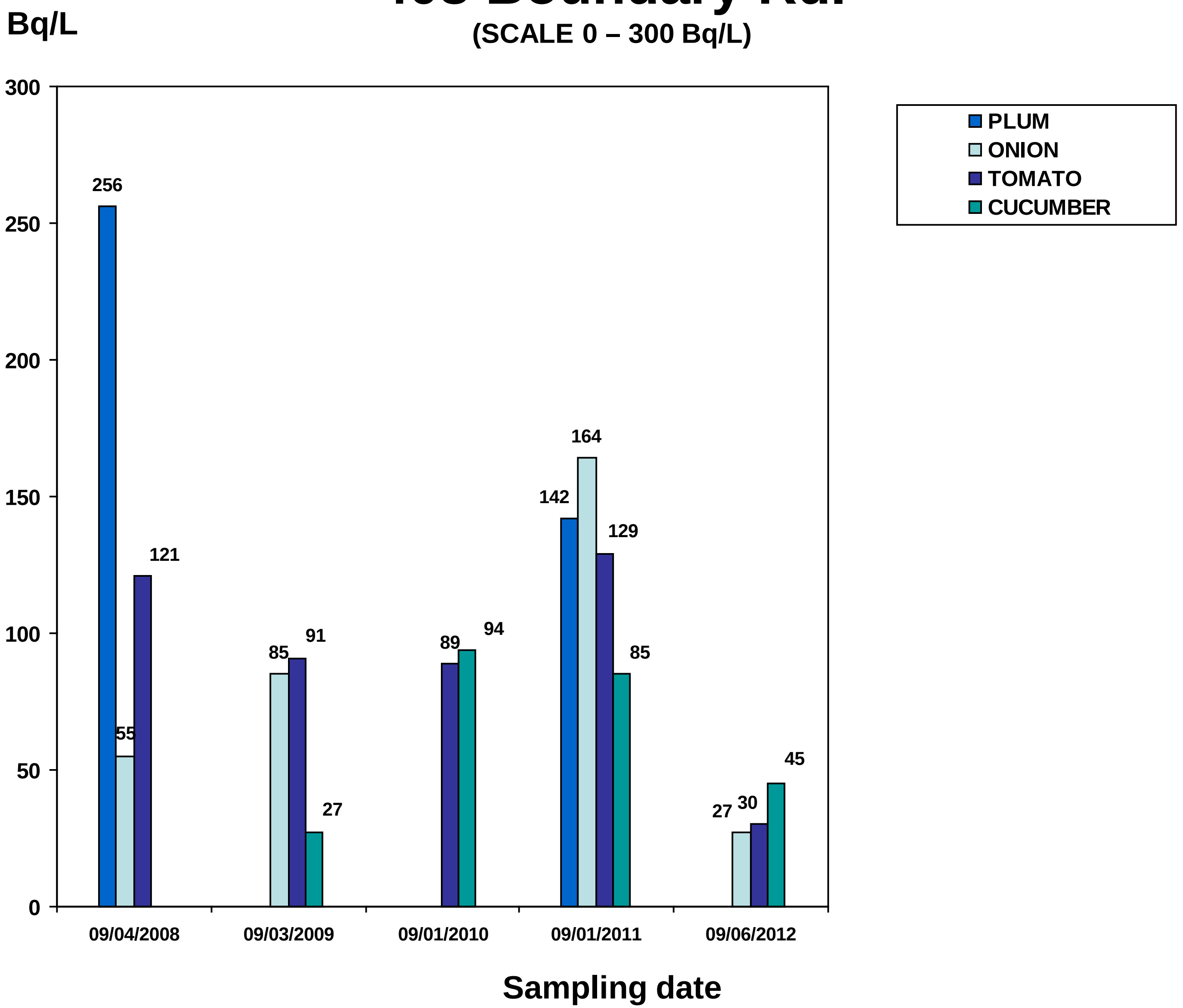
PRODUCE MONITORING RESULTS
MARKET GARDEN
(SCALE 0 – 200 Bq/L)



APPENDIX N

PRODUCE MONITORING RESULTS
408 Boundary Rd.

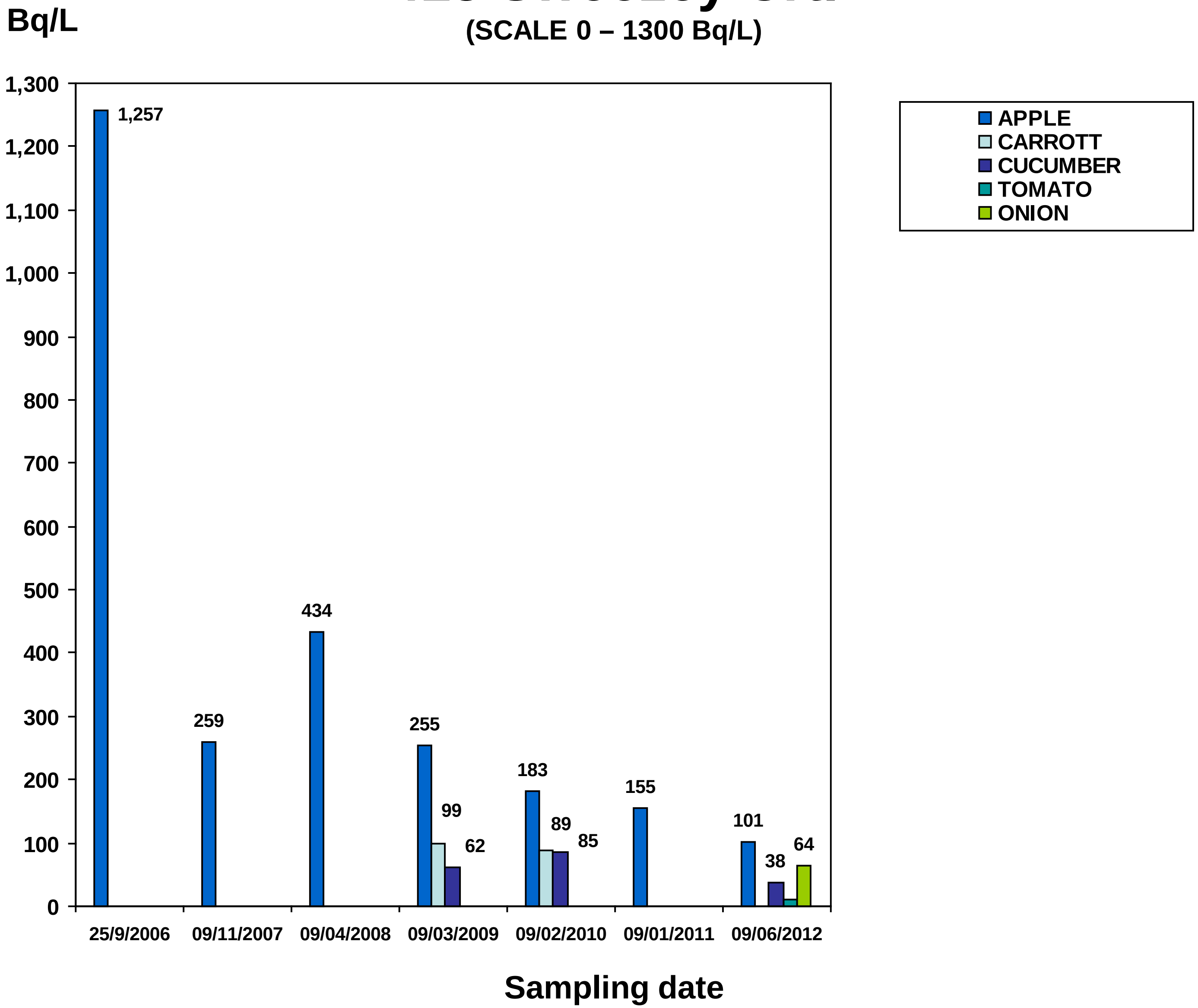
(SCALE 0 – 300 Bq/L)



APPENDIX N

PRODUCE MONITORING RESULTS
413 Sweezey Crt.

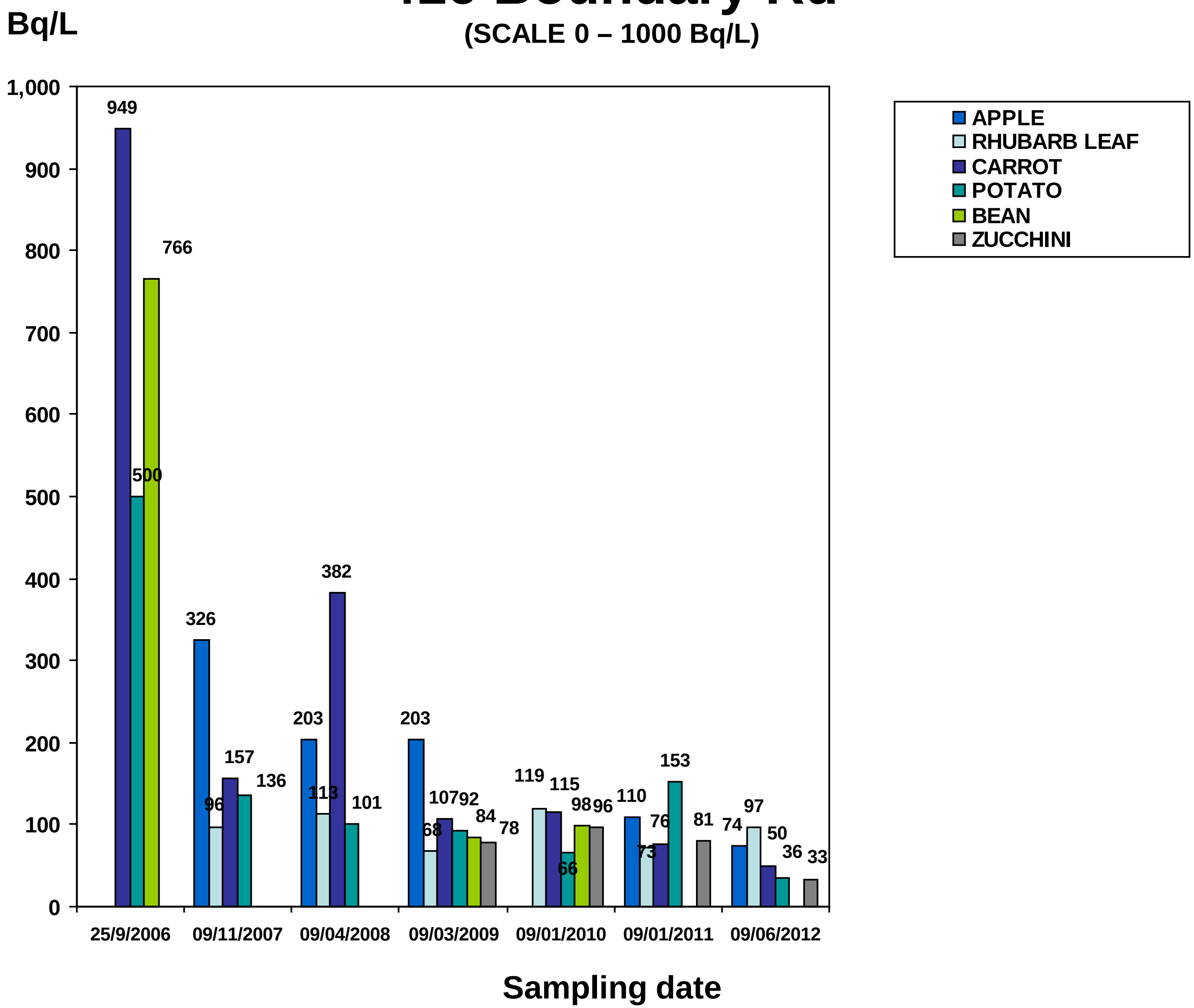
(SCALE 0 – 1300 Bq/L)



APPENDIX N

PRODUCE MONITORING RESULTS
416 Boundary Rd

(SCALE 0 – 1000 Bq/L)



APPENDIX N

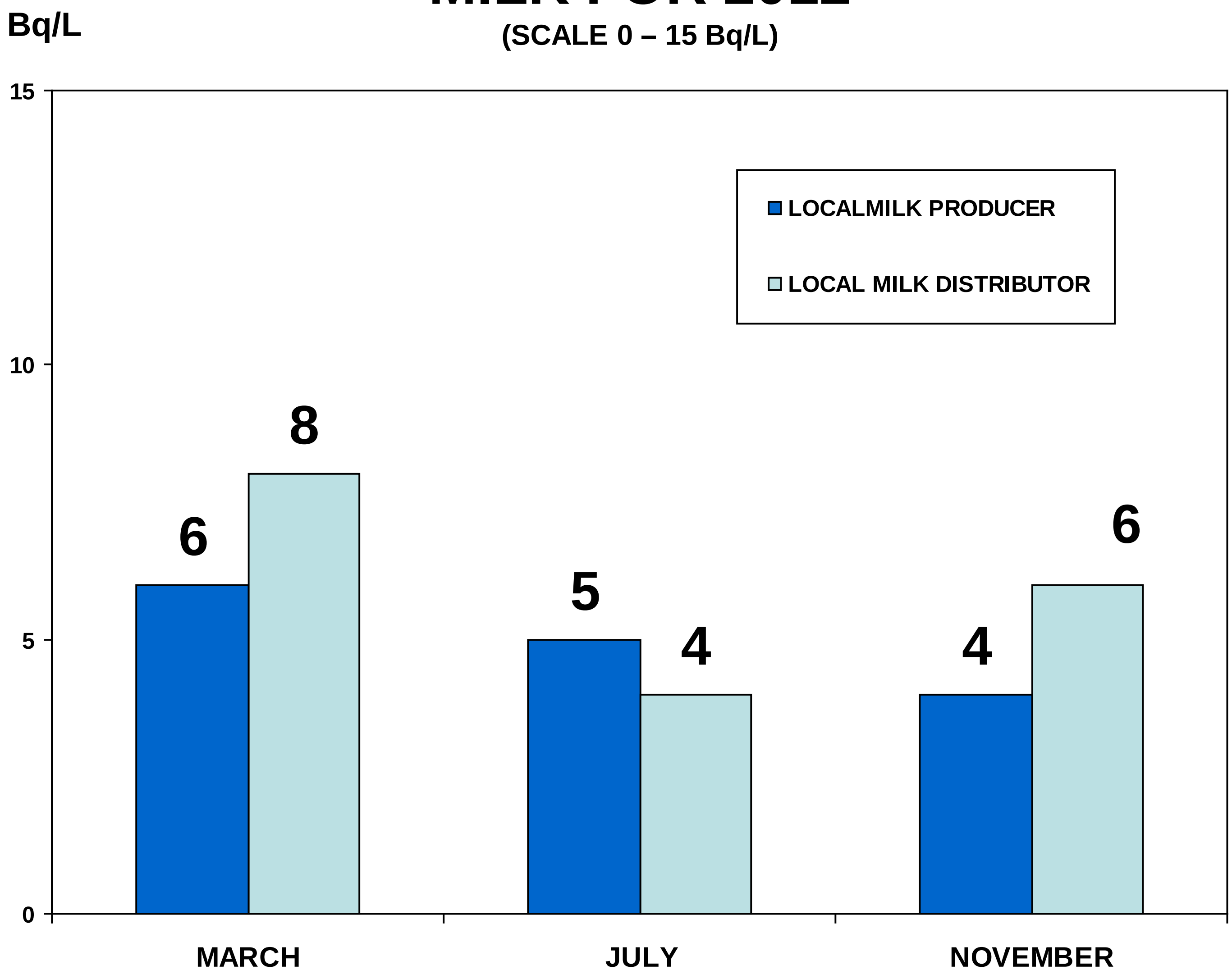
APPENDIX O

Milk Monitoring Results for 2012

DESCRIPTION	March	July	November	AVG
LOCAL PRODUCER	6	5	4	5
LOCAL DISTRIBUTOR	8	4	6	6
			AVG	5.5

MONITORING RESULTS
MILK FOR 2012

(SCALE 0 – 15 Bq/L)

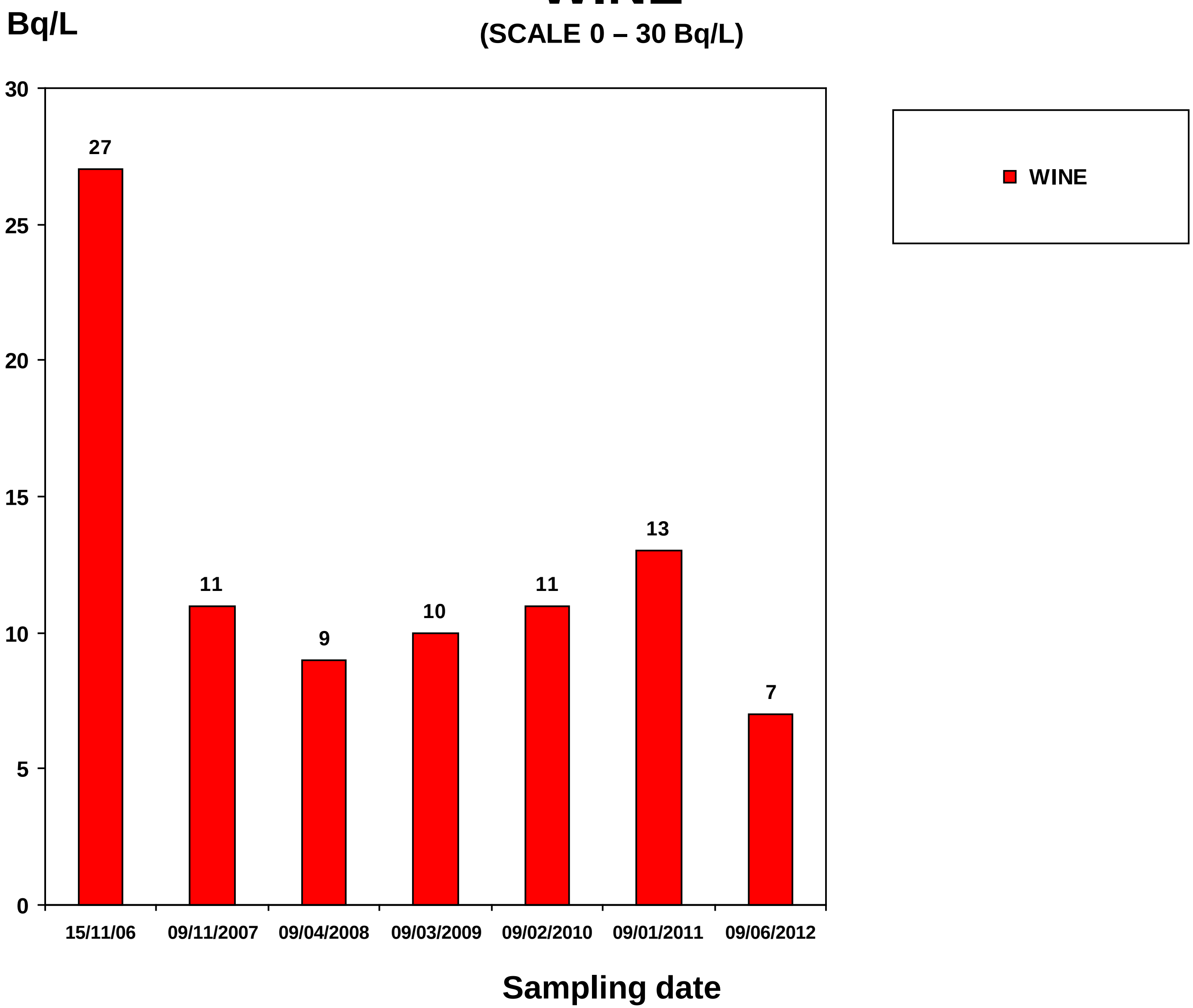


APPENDIX O

APPENDIX P

Wine Monitoring Results for 2012

MONITORING RESULTS
WINE
(SCALE 0 – 30 Bq/L)



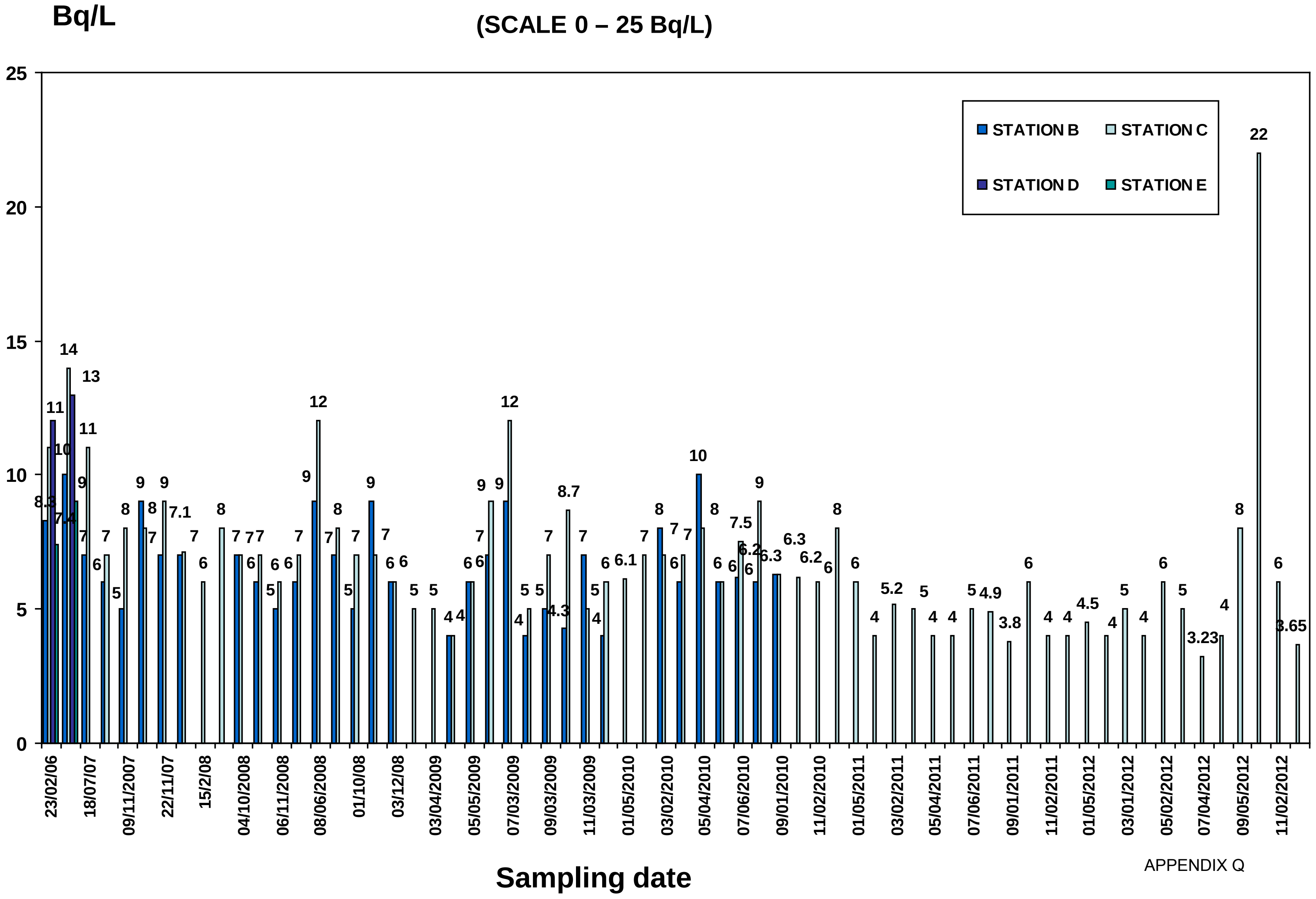
APPENDIX P

APPENDIX Q

Receiving Waters Monitoring Results for 2012

MONITORING RESULTS
RECEIVING WATERS

(SCALE 0 – 25 Bq/L)



APPENDIX Q

APPENDIX R

Weather Data for 2012

	WEATHER MONITORING DATA 2012									
	Pressure, mbar()	Counts, # ()	Wind Speed, m/s()	Gust Speed, m/s()	Wind Direction, ø()	Temp, °C()	RH, %()	DewPt, °C()	Wind sector (nesw)	Total rain (mm)
Jan-12	995.69	79	3.12	4.43	174.91	-8.8	82.65	-11.27	SSE	15.8
Feb-12	997.46	42	2.63	3.78	236.99	-5.22	76.11	-8.93	SW	8.4
Mar-12	999.83	143	2.98	4.47	184.54	2.98	73.12	-1.91	SSW	28.6
Apr-12	996.49	253	3.81	5.69	231.16	6.1	64.08	-1.11	SW	50.6
May-12	996.92	283	2.76	4.13	193.14	15.36	65.55	7.99	SSW	56.6
Jun-12	995.55	151	2.74	4.21	202.49	20.54	67.96	13.74	SSW	30.2
Jul-12	996.63	83	2.15	3.41	203.08	21.97	60.98	13.2	SSW	16.6
Aug-12	996.84	376	2.3	3.56	184.35	19.77	75.06	14.75	SSW	75.2
Sep-12	997.24	288	2.58	3.83	171.98	13.05	77.68	8.85	SSE	57.6
Oct-12	995.32	698	3.01	4.46	154.9	8.17	82.73	5.2	SSE	139.6
Nov-12	1003.94	107	2.62	3.79	149.02	-0.27	79.5	-3.54	SE	21.4
Dec-12	997.63	227	2.64	3.79	175.86	-7.37	86.66	-9.26	SSE	45.4
YEARLY AVERAGE	997.46	227.50	2.78	4.13	188.54	7.19	74.34	2.31	SSW	45.50

APPENDIX S

Sewage Monitoring Results for 2012

2009 SLUDGE WATER FROM POLLUTION CONTROL PLANT	
DATE	**Bq/L**
Jan 7 – 13, 2009	62
Jan 14 – 20, 2009	44
Jan 21 – 27, 2009	50
Jan 28 – Feb 3, 2009	49
Feb 4 – 10, 2009	62
Feb 11 – 17, 2009	78
Feb 18 – 24, 2009	75
Feb 25 – Mar 2, 2009	64
Mar 4 – 10, 2009	56
Mar 11 – 17, 2009	64
Mar 18 – 24, 2009	77
Mar 25 – 31, 2009	91
Apr 1 – 7, 2009	<121
Apr 8 -14, 2009	<103
Apr 15 – 21, 2009	103
Apr 22 – 28, 2009	<103
Apr 29 – May 5, 2009	<103
May 6 – 12, 2009	74
May 13 – 19, 2009	138
May 19 – 26, 2009	90
May 27 – June 2, 2009	70
June 3 – 9, 2009	50
June 10 – 16, 2009	91
June 17 – 23, 2009	52
June 24 – 30, 2009	124
July 1 -7, 2009	50
July 8 – 14, 2009	60
July 15 – 21, 2009	58
July 22 – 28, 2009	54
July 29 – Aug 4, 2009	42
Aug 5 – 11, 2009	57
Aug 12 – 18, 2009	40
Aug 19 – 25, 2009	51
Aug 26 – Sept 1, 2009	67
Sept 2 – 8, 2009	50
Sept 9 – 15, 2009	44
Sept 16 – 22, 2009	49
Sept 23 – 29, 2009	48
Sept 30 – Oct 6, 2009	52
Oct 7 – 13, 2009	62
Oct 13 – 20, 2009	53
Oct 21 – 27, 2009	51
Oct 28 – Nov 3, 2009	55
Nov 4 – 10, 2009	57
Nov 11- 17, 2009	63
Nov 18 – 24, 2009	77
Nov 25 – Dec 1, 2009	36
Dec 2 – 8, 2009	38
Dec 8 – 15, 2009	34
Dec 15 – 22, 2009	26
Dec 22 – 29, 2009	25
Dec 29, 2009 – Jan 5, 2010	25
AVERAGE	**63**

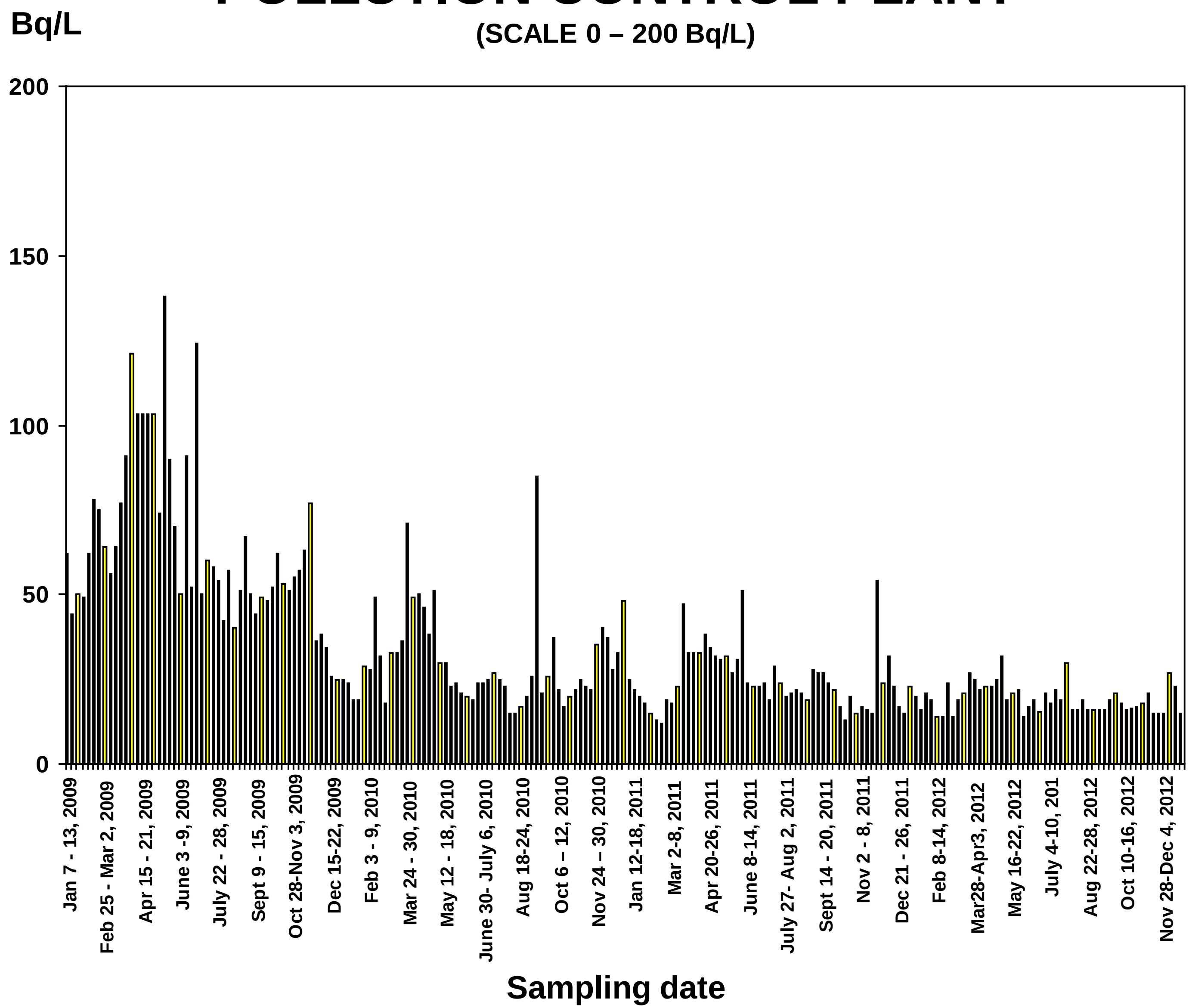
2010 SLUDGE WATER FROM POLLUTION CONTROL PLANT	
DATE	**Bq/L**
Jan 6 – 12, 2010	24
Jan 13 – 19, 2010	19
Jan 20 – 26, 2010	19
Jan 27 – Feb 3, 2010	29
Feb 3 – 9, 2010	28
Feb 10 – 16, 2010	49
Feb 17 – 23, 2010	32
Feb 24 – Mar 2, 2010	18
Mar 3 – 9, 2010	33
Mar 10 – 16, 2010	33
Mar 17 – 23, 2010	36
Mar 24 – 30, 2010	71
Mar 30 – Apr 6, 2010	49
Apr 7 – 13, 2010	50
Apr 14 – 20, 2010	46
Apr 21 – 27, 2010	38
Apr 28 – May 4, 2010	51
May 5 – 11, 2010	30
May 12 – 18, 2010	30
May 19 – 25, 2010	23
May 26 – June 1, 2010	24
June 2 – 8, 2010	21
June 9 – 15, 2010	20
June 16 – 22, 2010	19
June 23 – 29, 2010	24
June 30 – July 6, 2010	24
July 6 – 13, 2010	25
July 14 – 20, 2010	27
July 21 – 27, 2010	25
July 28 – Aug 3, 2010	23
Aug 4 – 10, 2010	15
Aug 11 – 17, 2010	15
Aug 18 – 24, 2010	17
Aug 25 – 30, 2010	20
Aug 31 – Sept 7, 2010	26
Sept 8 – 14, 2010	85
Sept 15 – 21, 2010	21
Sept 22 – 28, 2010	26
Sept 29 – Oct 5, 2010	37
Oct 6 – 12, 2010	22
Oct 13 – 18, 2010	17
Oct 20 – 26, 2010	20
Oct 27 – Nov 2, 2010	22
Nov 3 – 9, 2010	25
Nov 10 – 16, 2010	23
Nov 17 – 23, 2010	22
Nov 24 – 30, 2010	35
Nov 30 – Dec 7, 2010	40
Dec 8 – 14, 2010	37
Dec 15 – 21, 2010	28
Dec 22 – 28, 2010	33
Dec 29 – Jan 4, 2011	48
AVERAGE	**30**

2011 SLUDGE WATER FROM POLLUTION CONTROL PLANT	
DATE	**Bq/L**
Jan 4 – 11, 2011	25
Jan 12 – 18, 2011	22
Jan 19 – 25, 2011	20
Jan 26 – Feb 1, 2011	18
Feb 2 – 8, 2011	15
Feb 9 – 15, 2011	13
Feb 16 – 22, 2011	12
Feb 23 – Mar 1, 2011	19
Mar 2 – 8, 2011	18
Mar 9 – 15, 2011	23
Mar 16 – 22, 2011	47
Mar 23 – 29, 2011	33
Mar 30 – Apr 5, 2011	33
Apr 6 – Apr 12, 2011	33
Apr 13 – 19, 2011	38
Apr 20 – 26, 2011	34
Apr 27 – May 3, 2011	32
May 4 – 10, 2011	31
May 11 – 17, 2011	32
May 18 – 24, 2011	27
May 25 – 31, 2011	31
June 1 – 7, 2011	51
June 8 – 14, 2011	24
June 15 – 21, 2011	23
June 22 – 28, 2011	23
June 29 – July 5, 2011	24
July 6 – 12, 2011	19
July 13 – 19, 2011	29
July 20 – 26, 2011	24
July 27- Aug 2, 2011	20
Aug 3 – 9, 2011	21
Aug 10 – 16, 2011	22
Aug 17 – 23, 2011	21
Aug 24 – 30, 2011	19
Aug 30 – Sept 6, 2011	28
Sept 7 – 13, 2011	27
Sept 14 – 20, 2011	27
Sept 21 – 27, 2011	24
Sept 28 – Oct 4, 2011	22
Oct 5 – 11, 2011	17
Oct 12 – 18, 2011	13
Oct 19 – 25, 2011	20
Oct 26 – Nov 1, 2011	15
Nov 2 – 8, 2011	17
Nov 9 – 15, 2011	16
Nov 16 – 22, 2011	15
Nov 23 – 29, 2011	54
Nov 30 – Dec 6, 2011	24
Dec 7 – 13, 2011	32
Dec 14 – 20, 2011	23
Dec 21 – 26, 2011	17
Dec 27 – Jan 3, 2012	15
AVERAGE	**25**

2012 SLUDGE WATER FROM POLLUTION CONTROL PLANT	
DATE	**Bq/L**
Jan 4 – 10, 2012	23
Jan 11 – 17, 2012	20
Jan 18 – 24, 2012	16
Jan 25 – 31, 2012	21
Feb 1 – 7, 2012	19
Feb 8 – 14, 2012	14
Feb 15 – 21, 2012	14
Feb 22 – 28, 2012	24
Feb 29 – Mar 6, 2012	14
Mar 7 – 13, 2012	19
Mar 14 – 20, 2012	21
Mar 21 – 27, 2012	27
Mar 28 – Apr 3, 2012	25
Apr 4 – 10, 2012	22
Apr 11 – 17, 2012	23
Apr 18 – 24, 2012	23
Apr 25 – May 1, 2012	25
May 2 – 8, 2012	32
May 9 – 15, 2012	19
May 16 – 22, 2012	21
May 23 – 29, 2012	22
May 30 – June 5, 2012	13.9
June 6 – 12, 2012	17
June 13 – 19, 2012	19
June 20 – 26, 2012	15.3
June 27 – July 3, 2012	21
July 4 – 10, 2012	18
July 11 – 17, 2012	22
July 18 – 24, 2012	19
July 25 – 31, 2012	30
Aug 1 – 7, 2012	16
Aug 8 – 14, 2012	16
Aug 15 – 21, 2012	19
Aug 22 – 28, 2012	16
Aug 29 – Sept 4, 2012	16
Sept 5 – 11, 2012	16
Sept 12 – 18, 2012	16
Sept 19 – 25, 2012	19
Sept 26 – Oct 2, 2012	21
Oct 3 – 9, 2012	18
Oct 10 – 16, 2012	<16
Oct 17 – 23, 2012	16.5
Oct 24 – 30, 2012	<17
Oct 31 – Nov 6, 2012	18
Nov 7 – 13, 2012	21
Nov 14 – 20, 2012	<15
Nov 21 – 27, 2012	<15
Nov 28 – Dec 4, 2012	<15
Dec 5 – 11, 2012	27
Dec 12 – 18, 2012	23
Dec 19, 2012 – Jan 2, 2013	<15
AVERAGE	**16.25**

MONITORING RESULTS
POLLUTION CONTROL PLANT

(SCALE 0 – 200 Bq/L)



APPENDIX S

APPENDIX T

Shipments Containing Radioactive Material for 2012

SHIPMENTS CONTAINING RADIOACTIVE MATERIAL FOR 2012

Month / 2012	Number of Shipments
January	19
February	22
March	26
April	20
May	26
June	27
July	14
August	34
September	38
October	41
November	58
December	42
Total Shipments	***367***
2012 Monthly Average:	***31***

DISTRIBUTION OF SHIPMENTS CONTAINING RADIOACTIVE MATERIAL FOR 2012