



**WASTE ELECTRONICS INCENTIVE  
PROGRAM  
SUMMARY OF COMPLIANCE  
ASSURANCE ACTIVITIES  
APRIL 2008 TO MARCH 2009**

Prepared for:

Alberta Recycling Management  
Authority

Prepared by:

Stantec Consulting Ltd.

April 2009  
1102-17989

## **Table of Contents**

TABLE OF CONTENTS

---

<b>1.0 INTRODUCTION .....</b>	<b>1.1</b>
1.1 ALBERTA'S ELECTRONICS RECYCLING COMPLIANCE ASSURANCE MODEL .....	1.1
1.1.1 Applicant Evaluations (and Initial Assessments) .....	1.2
1.1.2 Processor Program Audits .....	1.3
1.1.3 Downstream Processor Reviews .....	1.3
1.1.4 Schedule and Flexibility .....	1.4
1.2 COMPLIANCE ASSURANCE ACTIVITIES – APRIL 2008 TO MARCH 2009.....	1.5
1.2.1 Other Related Activities .....	1.6
1.3 SUMMARY OF FINDINGS .....	1.6
1.3.1 eWaste Activities.....	1.6
1.3.2 Conformance to Program Requirements .....	1.7
1.4 NEXT STEPS.....	1.9
1.5 CLOSING.....	1.10

---

<b>2.0 SCHEDULE .....</b>	<b>2.1</b>
2.1 SUMMARY OF DEFICIENCIES IDENTIFIED DURING PROCESSOR PROGRAM AUDITS.....	2.1

---

<b>3.0 STANTEC QUALITY MANAGEMENT PROGRAM .....</b>	<b>3.1</b>
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## **APPENDICES**

APPENDIX A	COMPLIANCE ASSURANCE ACTIVITIES WITH RESPECT TO REGISTERED PROCESSORS - APRIL 2008 TO MARCH 2009
	COMPLIANCE ASSURANCE ACTIVITIES WITH RESPECT TO DOWNSTREAM PROCESSORS - APRIL 2008 TO MARCH 2009

## **1.0 Introduction**

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The Alberta Recycling Management Authority (Alberta Recycling) has been mandated through regulation to administer electronics recycling programs in Alberta. On September 15, 2004, Alberta Recycling adopted the “Waste Electronics Incentive Program”<sup>1</sup> (the Program). The administration of the Program is carried out by Alberta Recycling.

Municipalities collect waste electronics for recycling at municipal collection sites registered with Alberta Recycling. In addition, Registered Processors collect waste electronics from commercial clients, schools, government clients, etc. Collected materials are then transported to a Registered Processor’s site for processing or recycling. To become a Registered Processor (in order to be eligible for incentives paid under the Program), processors must meet the Processor Qualification Requirements, as well as other terms and conditions specified under the Program, and be registered with Alberta Recycling.

At the time of the implementation of the Program in Alberta, there were three electronics processors who had applied to Alberta Recycling and had become Registered Processors under the Program. Additional processors have become registered since that time while some former Registered Processors have discontinued operations or discontinued their participation under the Program. As of May 2009, there are five Registered Processors under the Program, and one processor who has been granted interim status<sup>2</sup>.

### **1.1 ALBERTA’S ELECTRONICS RECYCLING COMPLIANCE ASSURANCE MODEL**

In order to monitor conformance to Program requirements (which includes compliance with applicable environmental, and occupational health and safety regulations, as well as industry standards related to health and safety), Alberta Recycling has developed “Alberta’s Electronics Recycling Compliance Assurance Model”. This Model framework describes the various audits, reviews and assessment processes that are undertaken to evaluate and help ensure processors’ conformance to Program requirements. Intended to be flexible, compliance assurance activities are assessed and the Model is adjusted as appropriate, based on findings and the evolution of the Program.

As part of the Compliance Assurance process, Alberta Recycling commissions audits of existing Registered Processors, as well as the evaluation of new applicants. Reviews of selected downstream processors to which material is sent under the Program are also part of this process.

Compliance Assurance activities being conducted by Stantec on behalf of Alberta Recycling include the following audits and reviews, which are further described below:

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<sup>1</sup> The Program was originally referred to as the “Waste Electronics Program for Collectors and Processors”.

<sup>2</sup> See section 1.1.1 for an explanation of interim processor status.

**ALBERTA RECYCLING MANAGEMENT AUTHORITY,  
WASTE ELECTRONICS INCENTIVE PROGRAM  
SUMMARY OF COMPLIANCE ASSURANCE ACTIVITIES APRIL 2008 TO MARCH 2009**

Introduction  
April 2009

---

- Applicant Evaluations (and Initial Assessments)
- Processor Program Audits (of Interim or Registered Processors)
- Downstream Processor Reviews (preliminary assessments, desktop studies, site visits and/or on-site audits)

**1.1.1 Applicant Evaluations (and Initial Assessments)**

The processor registration process carried out when new processor applications are submitted to Alberta Recycling includes the evaluation of an application against the Processor Qualification Requirements in order to make recommendations to Alberta Recycling relating to the qualifications and capability of processor applicants, and their suitability for registration under the Program. In order to complete this evaluation, the information contained in the processor application submitted to Alberta Recycling is reviewed. The evaluation involves an assessment of the content and completeness of the required information, including the completed application forms, a company overview, and details regarding environmental management and health and safety systems, insurance, and workers compensation board coverage.

Information (if any) obtained through internet research regarding the applicant company is also considered. As well, an historical environmental enforcement search in respect of the applicant company is conducted through the Environmental Law Centre.

In addition to this documentation review and research, an initial assessment is completed in order to determine the scope and magnitude of the applicant's operations, to clarify information provided in the application, and to identify those elements that may require further clarification or investigation. The initial assessment, which may include a site visit, also facilitates the completion of other audit and review activities required by Alberta Recycling with respect to the Program.

At the applicant evaluation stage, information with respect to transportation companies (carriers) that will be retained by the processor, as well as downstream processors to which Program materials will be directed (as indicated on the application form) is also reviewed.

Based on the findings of the applicant evaluation and initial assessment, one of the following recommendations is made to Alberta Recycling in respect of the application:

- to request that the applicant provide additional information and to reassess the documentation once the additional information is received, or
- to grant the applicant interim status as a processor under the Program pending the completion of the initial processor program audit, within three months, to evaluate compliance with Program requirements

**ALBERTA RECYCLING MANAGEMENT AUTHORITY,  
WASTE ELECTRONICS INCENTIVE PROGRAM  
SUMMARY OF COMPLIANCE ASSURANCE ACTIVITIES APRIL 2008 TO MARCH 2009**

Introduction  
April 2009

---

Subsequent to the initial processor program audit, the auditors further recommend to Alberta Recycling one of the following:

- to grant the applicant full status as a Registered Processor under the Program, based on the findings of the initial processor program audit and the corrective actions taken by the processor, within the prescribed timelines, to address any deficiencies identified during the audit, or
- to suspend interim processor status due to the processor's failure to resolve, within the prescribed timelines, the deficiencies identified during the initial processor program audit, or
- to not register the applicant

If warranted, the applicant evaluation and initial assessment process may also involve periodic on-site inspections (monitoring) during commissioning in order to assess site activities and performance, and to assist the interim processor in addressing any issues related to conformance with Program requirements.

### **1.1.2 Processor Program Audits**

On site processor program audits of each Registered Processor are undertaken to evaluate conformance to Program requirements. Facilitated by information obtained through the initial assessments described above, appropriate protocols were developed and are used as a tool to conduct these audits. The initial processor program audits are currently scheduled approximately three months after a processor is granted interim status by Alberta Recycling, and these audits are carried out approximately once per year thereafter.

Depending on the findings of the processor program audit, one or more follow-up visits to the Registered Processor's facility may be conducted to ensure that any deficiencies identified during the audit are properly addressed.

Alberta Recycling has advised Registered Processors that, where the findings of any two consecutive processor program audits in respect of a given Registered Processor's facility showed no significant deficiencies (and if there is timely resolution by the Registered Processor of the deficiencies that were identified), the frequency of processor program audits in respect of that facility may be reduced from annually to biennial (once every two years), subject to information obtained during a site visit that would take place in the intervening year.

### **1.1.3 Downstream Processor Reviews**

Apart from the audit of Program requirements pertaining to sub-contractors and transportation conducted as part of the processor program audits (described above), additional reviews are carried out as required in respect of downstream processors. When a Registered Processor or a new applicant seeks to direct Program material to a new downstream processor, a preliminary

**ALBERTA RECYCLING MANAGEMENT AUTHORITY,  
WASTE ELECTRONICS INCENTIVE PROGRAM  
SUMMARY OF COMPLIANCE ASSURANCE ACTIVITIES APRIL 2008 TO MARCH 2009**

Introduction  
April 2009

---

assessment of the proposed downstream processor is generally conducted. Based only on the information provided by the Registered Processor and any additional information that may be publicly available regarding the downstream processor facility, this preliminary assessment does not specifically draw conclusions regarding conformance to Program requirements pertaining to downstream processors, though Program requirements are considered in the collection and review of the information.

If/once the downstream processor receives electronics materials (eWaste) from the Registered Processor(s) under the Program for further processing/recycling, Alberta Recycling may request further review of the downstream processor facility. Such further reviews would typically include telephone interviews with personnel from the downstream processing facility, and a review of any documentation provided by the Registered Processor and/or the downstream processor pertaining to materials ultimately receiving funding under the Program. Internet research of company websites is conducted, and available environmental regulatory approval and compliance history is also obtained.

The need to conduct a site visit to, and/or an on-site audit of, the downstream processor's facility, based on the findings of the "desktop studies" (i.e. preliminary assessment, telephone interviews, document review and research), is determined on a case-by-case basis, based on an assessment of risk and materiality, in consultation with Alberta Recycling.

In addition to reconciling information obtained from the downstream processor with that provided by the Registered Processor, particularly with respect quantities of eligible material shipped by the Registered Processor and received by the downstream processor, these reviews are aimed at also ensuring that the sub-contractors and other sites conform to Program requirements pertaining to downstream processors, e.g. that they possess all appropriate permits or certifications, that they process materials in an environmentally sound manner, that they safeguard the health and safety of employees, etc.

#### **1.1.4 Schedule and Flexibility**

The schedule and nature of the audits and reviews that are conducted as part of the Compliance Assurance Model are established with a view to ensuring conformance to Program requirements, which continues to be the key objective of the Model. As the Program matures, Compliance Assurance activities are reassessed and the Model is adjusted as appropriate.

Although a generic timeline had originally been established in respect of the activities described above, the Compliance Assurance process is intended to be flexible such that the scope and/or frequency of a given type of audit or review of a Registered Processor or downstream processor may be adjusted, if it is considered necessary to do so, based on findings. For example, the frequency of an audit or review may need to be increased if any issues are observed that require follow-up on a more urgent basis; alternatively, audit findings may indicate that it is appropriate to reduce the audit frequency. (Refer to section 1.1.2, above, regarding a potential change to the frequency of processor program audits in specified circumstances.)

**ALBERTA RECYCLING MANAGEMENT AUTHORITY,  
WASTE ELECTRONICS INCENTIVE PROGRAM  
SUMMARY OF COMPLIANCE ASSURANCE ACTIVITIES APRIL 2008 TO MARCH 2009**Introduction  
April 2009

---

Depending on the nature of the activities that take place at the Registered Processor's facility and the findings of compliance assurance activities, it may also (or instead) be appropriate to expand the scope of the audit of a given facility in order to include monitoring (by means of analytical sampling and testing) to ensure compliance with environmental regulatory requirements.

## **1.2 COMPLIANCE ASSURANCE ACTIVITIES – APRIL 2008 TO MARCH 2009**

A number of Compliance Assurance activities have taken place since the last summary report was issued in June 2008. These activities (from April 2008 to March 2009) are shown in the tables in Appendix A and are briefly described below.

Processor program audits were completed in respect of the Registered Processors<sup>3</sup>. Four of the current Registered Processors have been operating under the Program since 2005/2006 and have now undergone a total of four annual processor program audits.

Based on the findings of two consecutive processor program audits and the timely resolution of deficiencies that were identified, the frequency of processor program audits for one Registered Processor was reduced to once every two years, subject to a site visit in the intervening year. Based on the March 2009 interim site visit of the Registered Processor, it was determined that a processor program audit would not be required in 2009. The next processor program audit of that Registered Processor will take place in 2010.

Given that a considerable number of downstream processor reviews were conducted in previous years, compliance assurance activities related to downstream processors in the past year have generally been in the form of preliminary assessments of proposed new downstream processors. Some telephone interviews regarding quantities of eligible materials received from the Registered Processor(s) were also conducted, at the direction of Alberta Recycling. As noted in section 1.2.1, below, a detailed analysis was completed in early 2009 of information previously obtained in relation to downstream processors in order to make recommendations regarding future compliance assurance activities.

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<sup>3</sup> An initial processor program audit of GEEP, at that time an interim processor, was conducted in March 2008; the next processor program audit of GEEP, now a Registered Processor, is scheduled for May 2009.

The last processor program audit (PPA) of Shankled Computer Recycling (SCRI) took place in March 2008. The findings of the 2007 and 2008 PPAs of SCRI showed no significant deficiencies. On this basis, and given SCRI's timely resolution of deficiencies, the frequency of PPAs in respect of SCRI was reduced from annually to biennial (once every two years), subject to information obtained during a site visit that would take place in the intervening year. Based on the findings of the March 2009 site visit, it was determined that a PPA of SCRI would not be required in 2009. The next PPA of SCRI will be conducted in 2010. This is consistent with policy adopted by Alberta Recycling, as described in section 1.1.2 of this report.

### **1.2.1 Other Related Activities**

In addition to these specific audit and review activities, Stantec has undertaken, at the request of Alberta Recycling, the following tasks also related to Compliance Assurance with respect to the Program:

- Report regarding flat panel displays (FPDs)
- Letter regarding possible reduced audit frequency and checklist for interim site-visits
- Preparation of summary reports, as requested
- Completion of “Guide to What Constitutes Processing”
- Research/memos regarding various issues associated with the Program (e.g. building code issue with respect of use of propane-powered forklifts; processing of wood, and toner and ink cartridges, from eWaste; residue to landfill; and recycling of cameras)
- Detailed comparison of H&S protocols with the government standard and protocols published by various certifying partners for the Certificate of Recognition program
- Analysis of information regarding downstream processors and recommendations regarding further compliance assurance activities
- Monitoring of initial operations of interim processor and preparation of related report

## **1.3 SUMMARY OF FINDINGS**

The summaries contained in the sub-sections below are based on the findings of processor program audits conducted between April 2008 and March 2009 of facilities who currently have “Registered Processor” status, as well as the findings of any downstream processor review activities conducted during the same timeframe.

### **1.3.1 eWaste Activities**

Eligible eWaste<sup>4</sup> is sorted from ineligible waste. Eligible eWaste is tracked by the Registered Processor by weight and/or by the number of the various eligible products (i.e. waste counts). Activities at the Registered Processors’ facilities consist of receiving, sorting, processing and packaging electronics waste for shipping to a downstream processor. Processing generally involves the dismantling of the eWaste into its component parts (i.e. circuit boards, metal, plastic, wire and glass). Both automated equipment and manual labour is used to carry out the sorting, dismantling and processing operations. In general, improvements to operations through

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<sup>4</sup> “Eligible eWaste” means waste in respect of which a Registered Processor is eligible for incentive payments under the Program.

**ALBERTA RECYCLING MANAGEMENT AUTHORITY,  
WASTE ELECTRONICS INCENTIVE PROGRAM  
SUMMARY OF COMPLIANCE ASSURANCE ACTIVITIES APRIL 2008 TO MARCH 2009**Introduction  
April 2009

---

the purchase of new equipment and/or changes to procedures are considered/implemented by Registered Processors on an ongoing basis.

Incoming eWaste arrives from various collection sites and other customers. In some cases, Registered Processors pick up electronics waste from customers.

From the Registered Processors in Alberta, eWaste is directed to a number of downstream processors including glass and plastics recyclers, metal recyclers and/or steel processors, scrap and precious metal recovery facilities, toner/ink cartridge recyclers and battery recyclers. Any eWaste components or parts that are resold or reused are not eligible for incentives (i.e. are not funded) under the Program. Most Registered Processors continue to research options for recycling/processing some of the small amount of residual material that has been directed to landfill. Although not eligible for incentive payments under the Program, paper and cardboard is generally sent to downstream recyclers rather than to landfill. In addition, wood from console TVs (eligible material) and wood pallets (ineligible material) is generally sent to downstream recyclers.

### **1.3.2 Conformance to Program Requirements**

Under the Program, Registered Processors must identify and comply with all applicable legislated environmental, and occupational health and safety requirements, as well as industry standards related to H&S<sup>5</sup>. In the course of the Compliance Assurance activities, all Registered Processors were found to have a Health and Safety program in place, and at least some elements of a typical Environmental Management System (EMS). The completeness of those programs, and the extent to which they were implemented, varied among the Registered Processors but most have continued to make improvements. High staff turnover experienced until recently at some facilities presented challenges with respect to H&S and environmental awareness training.

Management support for health and safety was found to be high at most Registered Processors' facilities. Most facilities hold a Certificate of Recognition (COR) in respect of their health and safety program. At least one Registered Processor is registered to ISO 14001 in respect of their EMS; other facilities are taking steps toward ISO 14001 registration.

The findings indicate that there is more emphasis on health and safety programs than EMSs at most of the Registered Processors' facility. This is not unexpected given that the environmental risks associated with their operations are relatively small and that, overall, the facilities have a net positive environmental impact. More indoor storage of eWaste has been provided at the Registered Processor sites, as compared to the findings of earlier audits, which further decreases the potential for impacts to soil and groundwater. The inventory of eWaste stored

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<sup>5</sup> Since the Certificate of Recognition (COR) program is widely accepted as an industry standard, COR requirements have been adopted as the applicable industry standard in this regard.

**ALBERTA RECYCLING MANAGEMENT AUTHORITY,  
WASTE ELECTRONICS INCENTIVE PROGRAM  
SUMMARY OF COMPLIANCE ASSURANCE ACTIVITIES APRIL 2008 TO MARCH 2009**Introduction  
April 2009

---

outdoors at one Registered Processor facility had significantly increased but the outdoor storage area is paved.

Management of hazardous materials is generally good. Plasma, liquid crystal display (LCD) and/or FPD screens were being stored at some facilities pending arrangements for downstream processing. Where LCD screens were being processed by the Registered Processor, procedures had been developed to address possible breakage of mercury-containing bulbs.

Some deficiencies have been noted in respect of compliance with occupational health and safety regulatory requirements and industry standards, and the scope and completeness of the EMS documentation. There were also a small number of deficiencies related to operations, sub-contractors and maintenance. There have been no findings to date of non-compliance with environmental regulatory requirements; Registered Processors do not require an approval under the *Environmental Protection and Enhancement Act* (EPEA).

In general, the number of deficiencies identified at Registered Processors' facilities during processor program audits has decreased since the first processor program audits were conducted. In addition, follow-up activities indicate that Registered Processors have typically been diligent in taking corrective actions to address the deficiencies that are identified. Consistent with its policies and requirements, Alberta Recycling advised a Registered Processor that incentive payments under the Program would be discontinued if outstanding deficiencies were not addressed in a timely manner.

As noted above, the frequency of processor program audits in respect of one Registered Processor has been decreased from annually to once every two years, based on findings of two consecutive processor program audits.

The Registered Processor facilities have a business license or permit issued by the municipality in connection with which periodic inspections are conducted by the local fire departments. All Registered Processors have a WCB account in good standing.

A summary of the deficiencies identified in the most recent processor program audits of facilities that are currently operating with "Registered Processor" status is attached as a Schedule to this report. Deficiencies identified during the processor program audits are brought to the attention of Alberta Recycling and the respective Registered Processors. A deficiency list in respect of an audit of a Registered Processor is provided to the Registered Processor following the processor program audit of their facility. Each Registered Processor is required to respond to the deficiency list with an action plan on an item-by-item basis, typically within 14 days of receipt, and to address the deficiencies in a timely manner. The issues related to the deficiencies are followed up by the auditors, in some cases by means of additional site visits, to ensure that the appropriate corrective actions are implemented.

In some instances, Registered Processors wish to direct eWaste to downstream processors other than those listed in the Registered Processor's initial application package. (Conversely,

**ALBERTA RECYCLING MANAGEMENT AUTHORITY,  
WASTE ELECTRONICS INCENTIVE PROGRAM  
SUMMARY OF COMPLIANCE ASSURANCE ACTIVITIES APRIL 2008 TO MARCH 2009**Introduction  
April 2009

---

materials are not always directed to all of the facilities that were listed in the initial application.) This is seen as positive in that it suggests that Registered Processors continue to seek the best options for downstream processing of eWaste. Registered Processors are required to provide advance notice to Alberta Recycling prior to sending materials to any new downstream processors. A preliminary assessment (described in section 1.1.3, above) is conducted in respect of any new downstream processors and, once eligible shipments of eWaste are made to these downstream processors, their operations may be further evaluated as part of the downstream processor review process.

Apart from identifying the downstream processors, Program requirements also stipulate that the Registered Processor must have a process in place to ensure that the downstream processors meet certain specified criteria. More specifically, all Registered Processors must have a process to ensure that downstream processors: possess all appropriate waste and air emissions, permits or certifications; have liability insurance of no less than \$1 million; process materials in an environmentally sound manner; safeguard the health and safety of employees working at the facility; and do not send electronic materials and/or consumables to landfill or developing and non-OECD countries for disposal.

All Registered Processors were found to have such a process in place in respect of both downstream processors and transporters, though the process was sometimes informal in nature, and supporting documentation was lacking in some cases.

The available information from regulatory authorities or other sources regarding environmental permits/approvals, and enforcement and compliance, in respect of Registered Processors, did not give rise to any concerns regarding regulatory compliance or conformance to Program requirements.

Based on a reconciliation of quantities shipped to and received by downstream processors (done by means of telephone interviews with selected downstream processors), in most instances, the quantities that the downstream processors reported having received from the Registered Processor corresponded fairly closely with the information reported to Alberta Recycling by the Registered Processor. Significant discrepancies (>5%) were noted for some shipments to three downstream processors.

Based on the findings of the processor program audits and downstream processor reviews, and having regard to the deficiencies identified and related corrective actions, all Registered Processors are currently in substantial conformance to the Program requirements. Follow-up activities, including site visits, will continue to be undertaken to address deficiencies, where any were found.

#### **1.4 NEXT STEPS**

Follow-up activities (in some cases including site visits) related to the most recent processor program audits of Registered Processors will be completed in 2009. In addition, an initial

**ALBERTA RECYCLING MANAGEMENT AUTHORITY,  
WASTE ELECTRONICS INCENTIVE PROGRAM  
SUMMARY OF COMPLIANCE ASSURANCE ACTIVITIES APRIL 2008 TO MARCH 2009**

Introduction  
April 2009

---

processor program audit of the interim processor, as well as two other processor program audits of current Registered Processors, are planned in the coming months.

Based on the detailed analysis of information previously obtained in relation to downstream processors and the recommendations that ensued from that analysis, additional downstream processor reviews (desktop studies, site visits and/or on-site audits) are anticipated in respect of certain downstream processors, at the direction of Alberta Recycling. Some of these activities were underway at the time of writing of this report. It is also expected that further preliminary assessments will be conducted of any proposed new downstream processors.

Applicant evaluations and initial assessments will continue to be carried out as required when new processor applications are received by Alberta Recycling.

## **1.5 CLOSING**

Having regard to the purposes of the Program, and the overall Program requirements, all current Registered Processors have been found to be substantially in conformance to the terms and conditions of the Program.

Based on the findings of the Compliance Assurance activities, Alberta Recycling has implemented some changes to the Program in order to enhance its efficiency and effectiveness. Changes to the Compliance Assurance Model are also considered, and implemented as required, in order to better achieve its objectives.

The number of deficiencies identified during processor program audits continues to decrease in respect of most Registered Processors. Alberta Recycling will continue to require that the Registered Processors address any deficiencies identified in order to ensure conformance to Program requirements and to further the overall Program objectives.

**ALBERTA RECYCLING MANAGEMENT AUTHORITY,  
WASTE ELECTRONICS INCENTIVE PROGRAM  
SUMMARY OF COMPLIANCE ASSURANCE ACTIVITIES APRIL 2008 TO MARCH 2009****2.0 Schedule****2.1 SUMMARY OF DEFICIENCIES IDENTIFIED DURING PROCESSOR PROGRAM AUDITS**

The following is a summary of the deficiencies identified at one or more facilities during processor program audits of current Registered Processors that were conducted between April 2008 and March 2009. The deficiencies are categorized under the various areas within the scope of the audits. The relevant legislative or Program reference is also provided.

<b>HEALTH AND SAFETY</b>		
	<b>ITEM</b>	<b>REFERENCE</b>
1	The job task analysis forms did not reflect all of the hazards associated with all jobs/tasks.	<i>Alberta Occupational Health and Safety Code (2006)</i>
2	Hazard assessments have not been updated for almost three years.	<i>Alberta Occupational Health and Safety Code (2006)</i>
3	Workers may be exposed to excess noise in the electronics dismantling area, particularly in proximity to baling operations. The auditor was not provided the opportunity to properly review the objective evidence (i.e. noise assessment reports) in order to effectively evaluate compliance with regulatory requirements pertaining to noise assessments.	<i>Alberta Occupational Health and Safety Code (2006)</i>
4	Completed/relevant documentation was not made available to the auditors in respect of the following:  a) noise assessments, b) audiometric testing, and c) air quality monitoring, including surface testing for lead (and potentially lead blood analyses).  As a result, objective evidence of compliance with applicable H&S regulations and industry standards has not been provided.	<i>Alberta Recycling's Processor Qualification Requirements</i>
5	The level of worker exposure to lead at the worksite has not been assessed.	<i>Alberta Occupational Health and Safety Code (2006)</i>
6	A number of doors at the facility were recorded as having been, or were observed to be, blocked/obstructed.	<i>Alberta Occupational Health and Safety Code (2006)</i>

**ALBERTA RECYCLING MANAGEMENT AUTHORITY,  
WASTE ELECTRONICS INCENTIVE PROGRAM  
SUMMARY OF COMPLIANCE ASSURANCE ACTIVITIES APRIL 2008 TO MARCH 2009**

Schedule  
April 2009

<b>HEALTH AND SAFETY</b>		
	<b>ITEM</b>	<b>REFERENCE</b>
7	Poor general housekeeping was noted in H&S committee meeting minutes and was observed during the site tour.	<i>Alberta Occupational Health and Safety Code (2006)</i>
8	Signed orientation sheets related to full orientations conducted in 2008 as well as some conducted very recently could not be located. (Documentation related to orientations (training) was not being maintained/kept current.)	<i>Industry standards (COR requirement)</i>
9	At the time of the site visit, no one at the facility was a qualified and trained emergency first aider.	<i>Alberta Occupational Health and Safety Code (2006)</i>
10	Workers were not familiar with proper procedures to be followed in the event of a medical emergency.	<i>Alberta Occupational Health and Safety Code (2006)</i>
11	No emergency evacuation drills and/or emergency drills were conducted in 2008.	<i>Industry standards (COR requirement)</i>
12	Managers/supervisors are not held accountable for the investigation process.	<i>Industry standards (COR requirement)</i>
13	Many investigation reports were not signed off by management, indicating that management review of investigations is lacking.	<i>Industry standards (COR requirement)</i>
14	There was no evidence of worker involvement (in investigations) extending beyond the parties involved in the incident.	<i>Industry standards (COR requirement)</i>
15	Some MSDSs were outdated i.e. had not been updated for more than three years.	<i>Alberta Occupational Health and Safety Code (2006)</i>
16	An up-to-date copy of the H&S manual, containing current policies, procedures and practices was not available.	<i>Industry standards (COR requirement)</i>
<b>ENVIRONMENTAL MANAGEMENT AND REGULATORY REQUIREMENTS</b>		
1	The EMS had not been reviewed in the last year.	<i>Alberta Recycling's Processor Qualification Requirements</i>
2	Not all documentation relevant to the EMS is compiled, or cross-referenced, in a comprehensive manual, indicating that the EMS is not being properly maintained.	<i>Alberta Recycling's Processor Qualification Requirements</i>

**ALBERTA RECYCLING MANAGEMENT AUTHORITY,  
WASTE ELECTRONICS INCENTIVE PROGRAM  
SUMMARY OF COMPLIANCE ASSURANCE ACTIVITIES APRIL 2008 TO MARCH 2009**Schedule  
April 2009

---

3	There is no documented procedure with respect to reporting of environmental incidents (pollutant spills and emergency situations).	<i>Alberta Recycling's Processor Qualification Requirements</i>
<b>OPERATIONS, SUB-CONTRACTORS AND MAINTENANCE</b>		
1	No records were available with respect to transporters.	<i>Alberta Recycling's Processor Qualification Requirements</i>
2	Documentation (WCB and insurance) with respect to evaluation of downstream processors was missing or expired.	<i>Alberta Recycling's Processor Qualification Requirements</i>

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**ALBERTA RECYCLING MANAGEMENT AUTHORITY,  
WASTE ELECTRONICS INCENTIVE PROGRAM  
SUMMARY OF COMPLIANCE ASSURANCE ACTIVITIES APRIL 2008 TO MARCH 2009**

**3.0 Stantec Quality Management Program**

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This report, entitled "**Alberta Recycling Management Authority, Waste Electronics Incentive Program for Collectors and Processors - Summary of Compliance Assurance Activities; April 2009**" was produced by the following individual(s):



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## **APPENDIX A**

**COMPLIANCE ASSURANCE ACTIVITIES  
WITH RESPECT TO REGISTERED  
PROCESSORS - APRIL 2008 TO MARCH  
2009**

**COMPLIANCE ASSURANCE ACTIVITIES  
WITH RESPECT TO DOWNSTREAM  
PROCESSORS - APRIL 2008 TO MARCH  
2009**

**TABLE 1. SUMMARY OF SUBSTANCES OF CONCERN DIVERTED FROM LANDFILL**

Substance	Source <sup>1</sup>	Regulated Unit <sup>2</sup> (mg/L)	Oct 2004/ Mar 2005 <sup>3</sup> (kg)	Apr 2005/ Mar 2006 <sup>4</sup> (kg)	Apr 2006/ Mar 2007 <sup>4</sup> (kg)	Apr 2007/ Mar 2008 <sup>4</sup> (kg)	Apr 2008/ Mar 2009 <sup>4,5</sup> (kg)	Apr 2009/ Mar 2010 <sup>6</sup> (kg)	Apr 2010/ Mar 2011 <sup>6</sup> (kg)
Mercury	CB/B/LBS	0.20	0.003	0.010	0.014	0.029	0.044	0.067	0.087
Cadmium	CB/B/CRT/IW/P	1	0.45	2.48	3.34	5.07	8.90	13.40	17.40
Lead	CB/CRT	5	26,020	140,255	203,410	310,763	540,910	811,365	1,054,775
Beryllium	CB	5	1.2	6.3	9.2	14.1	24.1	36.1	47.0
Barium	CB	100	51	286	378	576	1,008	1,512	1,965
Antimony	CRT	500	112	592	790	1,260	2,029	3,044	3,957
Lithium	CB/CRB/B	NR	14	77	102	154	273	409	532
Silver		5	6	34	45	68	120	180	235
Arsenic		5	0.01	0.03	0.04	0.08	0.12	0.18	0.24
Chromium		5	21	116	158	241	421	631	821
Nickel		5	170	943	1,246	1,906	3,322	4,984	6,479
Copper		100	4,059	22,392	29,604	45,441	78,903	118,355	153,861
Cobalt		100	1.23	6.91	9.12	13.8	24.4	36.6	47.6
TBBPA*		N/A*	28,648	156,465	222,457	334,884	628,409	942,613	1,225,397

\* TBBPA - Tetrabromobisphenol A - one of the brominated flame retardants; N/A - regulated limit not applicable

<sup>1</sup> Electronics Product Stewardship Canada Guidance Document. March 27, 2006 "Substances of Concern" - Electronics sources where substances of concern may be found: CB = Circuit Boards; B = Batteries; CRT = Cathode Ray Tubes; LBS = Lamps, Bulbs, and Switches; IW = Insulated Wire; P = Plastics

<sup>2</sup> Alberta Environment Regulated Limits expressed in mg/L

<sup>3</sup> Kilograms diverted October 1, 2004 - March 31, 2005

<sup>4</sup> Kilograms diverted from April 1 (year) to March 31 (year)

<sup>5</sup> Data for March 2009 was unavailable; the average from the preceeding 11 months was used as March 2009 data

<sup>6</sup> Kilograms diverted based on assumed 50% program growth (from 2008 quantities) and 30% program growth (from 2009 quantities)

Table 2. SUBSTANCES OF CONCERN - PROGRAM INCEPTION TO MARCH 2009 and PROJECTED VALUES FOR 2009 and 2010

Collection Period	Collected TV Sets (Units)					Collected Monitors (Units)	Collected CPUs (Units)	Collected Laptops (Units)	Collected Printers (Units)	Total Weight of Mercury in Inventory Period (kg)	Total Weight of Cadmium in Inventory Period (kg)	Total Weight of Lead in Inventory Period (kg)	Total Weight of Beryllium in Inventory Period (kg)	Total Weight of Barium in Inventory Period (kg)	Total Weight of Antimony in Inventory Period (kg)	Total Weight of Lithium in Inventory Period (kg)	Total Weight of Silver in Inventory Period (kg)	Total Weight of Arsenic in Inventory Period (kg)	Total Weight of Chromium in Inventory Period (kg)	Total Weight of Nickel in Inventory Period (kg)	Total Weight of Copper in Inventory Period (kg)	Total Weight of Cobalt in Inventory Period (kg)	Total Weight of TBBPA <sup>1</sup> in Inventory Period (kg)	Total Weight of Plastic in Inventory Period (kg)	Total Weight of Wiring and Metal Parts in Inventory Period (kg)
	18"	19-29"	30-45"	46"+	Sum																				
<b>2004 (Oct 2004 - Mar 2005) TOTAL</b>	2,011	4,346	512	132	7,001	16,422	13,774	556	8,926	0.0028	0.45	26,020	1.2	51	112	14	6	0.01	21	170	4,059	1.23	28,648	132,315	131,680
<b>2005 (Apr 2005 - Mar 2006) TOTAL</b>	13,229	21,414	4,486	628	39,757	86,117	77,150	1,993	41,956	0.010	2.48	140,255	6.3	286	592	77	34	0.03	116	943	22,392	6.91	156,465	722,990	730,308
<b>2006 (Apr 2006 - Mar 2007) TOTAL</b>	18,201	31,357	3,730	648	53,936	129,590	101,746	2,735	57,525	0.014	3.34	203,410	9.2	378	790	102	45	0.04	158	1,246	29,604	9.12	222,457	1,026,578	992,374
Apr-07	1,644	3,640	338	75	5,697	13,433	9,865	385	5,938	0.002	0.33	21,178	1	37	78	10	4	0.01	16	121	2,893	0.88	23,114	106,543	99,021
May-07	2,004	4,851	574	52	7,481	16,822	12,439	339	9,494	0.002	0.42	26,941	1	46	107	12	5	0.00	20	155	3,689	1.11	29,565	136,249	125,621
Jun-07	1,857	4,571	471	61	6,960	14,402	10,971	327	7,727	0.002	0.37	23,734	1	41	92	11	5	0.00	18	136	3,238	0.98	26,339	121,364	111,274
Jul-07	1,919	4,559	470	46	6,994	18,009	12,601	269	9,428	0.001	0.42	27,608	1	47	108	13	6	0.00	20	156	3,724	1.13	29,748	137,108	126,891
Aug-07	2,465	4,350	389	76	7,280	16,573	12,788	433	7,292	0.002	0.42	26,454	1	48	100	13	6	0.01	20	157	3,732	1.15	29,072	134,072	126,745
Sep-07	1,738	3,103	323	31	5,195	12,025	8,913	281	6,565	0.001	0.30	19,078	1	33	76	9	4	0.00	14	111	2,641	0.80	20,872	96,212	89,446
Oct-07	2,447	4,097	538	141	7,223	17,401	11,617	445	8,117	0.002	0.40	27,196	1	44	97	12	5	0.01	19	144	3,438	1.04	29,446	135,572	120,650
Nov-07	1,741	3,175	355	114	5,385	13,339	12,160	435	6,845	0.002	0.39	20,824	1	45	94	12	5	0.01	18	149	3,549	1.09	22,930	106,101	111,966
Dec-07	1,767	3,642	671	93	6,173	16,368	11,172	409	7,382	0.002	0.38	24,859	1	42	91	11	5	0.01	18	138	3,292	1.00	26,664	122,874	113,026
Jan-08	1,410	4,610	517	112	6,649	24,876	22,543	1,167	14,452	0.006	0.70	34,831	2	84	183	23	10	0.02	32	279	6,667	2.02	36,833	170,939	197,267
Feb-08	923	2,843	357	31	4,154	19,387	13,836	689	8,677	0.003	0.45	25,747	1	52	111	14	6	0.01	21	171	4,083	1.24	26,203	121,235	127,603
Mar-08	1,997	4,506	553	97	7,153	22,228	15,315	553	9,528	0.003	0.51	32,312	1	57	123	15	7	0.01	24	189	4,495	1.37	34,097	157,302	150,486
<b>2007 (Apr 2007 - Mar 2008) TOTAL</b>	21,912	47,947	5,556	929	76,344	204,863	154,220	5,732	101,445	0.029	5.07	310,763	14.1	576	1,260	154	68	0.08	241	1,906	45,441	13.82	334,884	1,545,573	1,499,997
Apr-08	2,738	5,199	691	189	8,817	23,378	17,449	1,109	11,968	0.006	0.58	35,583	2	66	145	17	8	0.02	27	217	5,204	1.56	38,369	177,047	170,585
May-08	2,603	5,418	1,198	163	9,382	30,562	23,843	792	11,749	0.004	0.77	44,020	2	89	178	24	11	0.01	36	291	6,905	2.14	46,626	215,594	222,562
Jun-08	3,021	5,481	597	129	9,228	30,336	20,232	626	11,056	0.003	0.68	43,430	2	75	155	20	9	0.01	32	248	5,885	1.81	45,478	209,770	199,586
Jul-08	3,313	7,922	2,191	146	13,572	26,821	22,519	746	11,466	0.004	0.74	45,010	2	84	169	23	10	0.01	35	275	6,531	2.02	50,512	233,001	221,955
Aug-08	3,250	8,036	2,292	206	13,784	26,625	22,766	720	11,083	0.004	0.74	45,067	2	84	169	23	10	0.01	35	277	6,585	2.04	50,763	234,182	223,840
Sep-08	5,281	9,789	3,328	205	18,603	19,913	22,479	570	10,467	0.003	0.73	43,757	2	82	165	22	10	0.01	34	273	6,474	2.01	53,440	246,276	227,036
Oct-08	5,813	18,569	2,429	268	27,079	28,890	19,056	797	12,641	0.004	0.71	62,941	3	71	156	19	8	0.01	36	236	5,627	1.71	75,095	343,949	246,534
Nov-08	10,520	13,688	3,081	647	27,936	23,404	17,073	555	12,950	0.003	0.64	58,153	3	63	147	17	8	0.01	33	212	5,071	1.53	71,585	327,691	228,693
Dec-08	8,349	9,280	2,877	185	20,691	16,540	11,833	406	6,940	0.002	0.45	42,199	2	44	93	12	5	0.01	23	145	3,459	1.06	52,196	238,829	163,188
Jan-09	2,353	11,131	2,295	738	16,517	22,831	19,229	1,167	9,633	0.006	0.65	44,177	2	72	144	19	9	0.02	31	236	5,629	1.72	51,647	237,590	204,980
Feb-09	1,520	5,913	820	265	8,518	18,158	53,410	653	12,489	0.003	1.47	31,496	1	193	338	53	23	0.01	62	635	14,958	4.79	40,328	192,028	382,188
Mar-09 <sup>3</sup>	4,433	9,130	1,982	286	15,831	24,314	22,717	740	11,131	0.004	0.74	45,077	2	84	169	23	10	0.01	35	277	6,575	2.04	52,369	241,459	226,470
<b>2008 (Apr 2008 - Mar 2009) TOTAL</b>	53,194	109,556	23,781	3,427	189,958	291,772	272,606	8,881	133,573	0.044	8.9	540,910	24.1	1,008	2,029	273	120	0.12	421	3,322	78,903	24.4	628,409	2,897,415	2,717,617
<b>PROJECTION - 2009<sup>4</sup></b>	79,791	164,334	35,672	5,141	284,937	437,658	408,909	13,322	200,360	0.067	13.4	811,365	36.1	1,512	3,044	409	180	0.18	631	4,984	118,355	36.6	942,613	4,346,123	4,076,426
<b>PROJECTION - 2010<sup>4</sup></b>	103,728	213,634	46,373	6,683	370,418	568,955	531,582	17,318	260,467	0.087	17.4	1,054,775	47.0	1,965	3,957	532	235	0.24	821	6,479	153,861	47.6	1,225,397	5,649,960	5,299,354
<b>Overall Total To Mar 31, 2009 (Oct 2004 - Mar 2009)</b>	108,547	214,620	38,065	5,764	366,996	728,764	619,496	19,897	343,425	0.099	20.2	1,221,358	55	2,299	4,783	619	273	0.27	956	7,588	180,399	56	1,370,863	6,324,870	6,071,976
<b>Projected Total To Mar 31, 2010 (Oct 2004 - Mar 2010)</b>	188,338	378,954	73,737	10,905	651,933	1,166,422	1,028,405	33,219	543,785	0.166	34	2,032,723	91	3,811	7,826	1,028	454	0.46	1,588	12,571	298,754	92	2,313,476	10,670,993	10,148,402
<b>Projected Total To Mar 31, 2011 (Oct 2004 - Mar 2011)</b>	292,066	592,588	120,109	17,587	1,022,351	1,735,377	1,559,987	50,536	804,252	0.253	51	3,087,498	138	5,777	11,783	1,560	688	0.697	2,408	19,050	452,615	140	3,538,873	16,320,953	15,447,756
										253 grams	51 kg	3,087 tonnes	138 kg	5,777 kg	11.78 tonnes	1560 kg	688 kg	697 grams	2,408 kg	19.05 tonnes	453 tonnes	140 kg	3,539 tonnes	16,321 tonnes	15,448 tonnes

\* All unit counts have been provided to Stantec by Alberta Recycling.

<sup>1</sup> TBBPA stands for Tetrabromobisphenol A, a brominated flame retardant

<sup>2</sup> Laptops and printers are not included as there is a lack of information with respect to the percent of plastic (of the total weight) for these items

<sup>3</sup> The data for March 2009 is the average of the monthly values for the preceding 11 months (April 2008 to February 2009)