

# **Rhode Island Department of Environmental Management**

## **Auto Salvage Environmental Results Program: Improved Compliance and Performance Through Innovation**

### **Quality Assurance Project Plan**

Rhode Island Department of Environmental Management (DEM)  
Office of Technical and Customer Assistance (OTCA)  
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#### **Project Manager:**

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**A PROJECT MANAGEMENT**

**A1. Approval Sheet**

Thomas E. Armstrong  
RI Department of Environmental Management  
Office of Technical & Customer Assistance  
Principal Environmental Planner  
Project Manager

July 14, 2004  
Date

Ronald Gagnon for Thomas Getz  
RI Department of Environmental Management  
Quality Assurance Manager

July 14, 2004  
Date

Stephen DeMattei  
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Environmental Protection Agency, Region 1  
QA Chemist

July 14, 2004  
Date

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**A3. Distribution List**

Each person listed on the approval sheet and each person listed under Project/Task Organization will receive a copy of this Quality Assurance Project Plan (QAPP). Individuals taking part in the project may request additional copies of the QAPP from personnel listed under Section A4.

This document has been prepared according to the United States Environmental Protection Agency publication *EPA Requirements for Quality Assurance Project Plans* dated March 2001 (QA/R-5).

**A4. Project/Task Organization**

Personnel involved in project implementation are listed in Table 1, and shown as an organization chart in Figure 1.

**Table 1: Auto Salvage ERP Project Implementation Personnel**

<b>Individual</b>	<b>Role in Project</b>	<b>Organizational Affiliation</b>
Thomas E. Armstrong	Project Manager	RIDEM - OTCA
Thomas Getz	QA Manager/Officer	RIDEM - Ombudsman
Ronald Gagnon, PE	Project design & implementation tasks	RIDEM - OTCA Chief
Richard Enander, Ph.D	Research, project design and implementation tasks	RIDEM - OTCA
Eugene Park, Ph.D.	Research, project design and implementation tasks	URI Center for Pollution Prevention & Environmental Health

The Rhode Island Department of Environmental Manager Project Manager will be responsible for the following activities:

- Coordinate and conduct outreach with regulated industry and internal/external stakeholders
- Coordinate major project tasks with other project staff as outlined in the Project Work Plan, including project planning & design, surveys and audits (including baseline and post-certification audits), presenting workshop(s) for facility operators, and preparation and review of documents, project reports
- Carry out duties in areas outlined above as a project staff member
- Maintain official, approved QAPP
- Develop amended QAPP and submit for approval
- Issue quarterly and annual reports to U.S. EPA

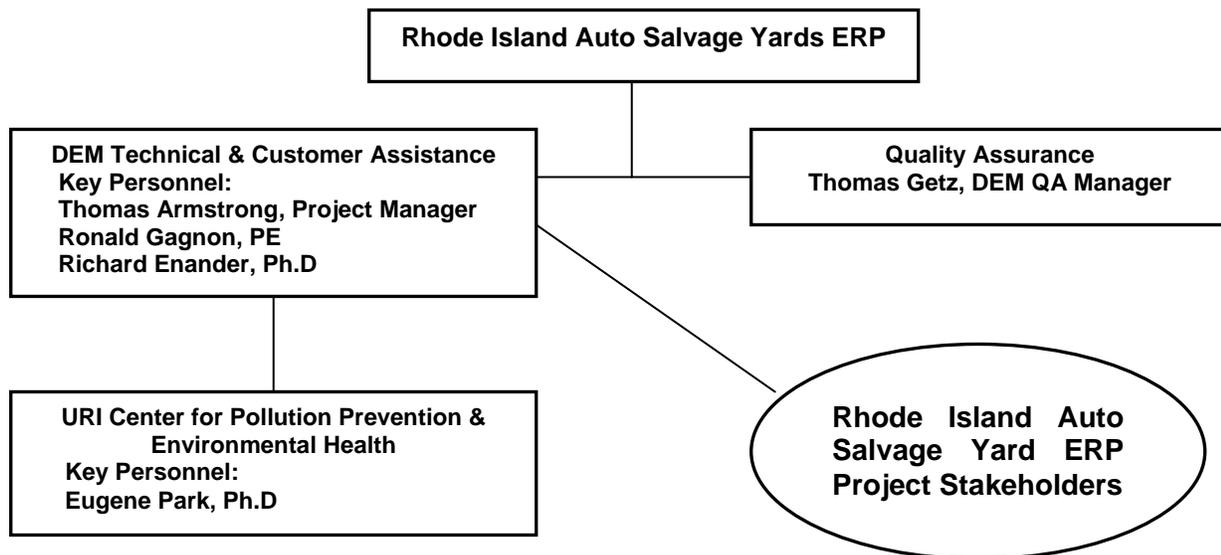
University of Rhode Island's Center for Pollution Prevention and Environmental Health will be a major partner in this project. Eugene Park, Ph.D. will be the key staff member participating.

URI's Center for Pollution Prevention & Environmental Health will be responsible to assist the project for the following activities:

- Assist in project scoping and design
- Assist in pre-certifications survey design, implementation, tabulating results
- Participate as an active member in the stakeholder process
- Assist in preparation of certification documents and materials
- Assist in presenting workshop(s) for auto salvage yard operators
- Assist with carrying out baseline and post-certification facility audits

The participating facilities will be responsible for submitting self-certification materials and, if applicable, returning to compliance.

**Figure 1: Project Organizational Chart**



**A4a. Quality Management Plan (QMP)**

The Rhode Island Department of Environmental Management has an approved Quality Management Plan (QMP), dated April 17, 2002. This Quality Assurance Project Plan is consistent with that plan.

**A5. Problem Definition/Background**

**Rationale for initiating the project.**

The human health and environmental risks associated with auto salvage operations are diverse and variable - arising from a broad array of physical, chemical, and biological hazards. Such hazards include:

- The potential for fire or explosion at improperly managed sites
- The transmission of West Nile Virus and/or other zoonotic diseases where yard areas serve as vector-breeding habitats
- Soil, surface water, and groundwater contamination resulting from the improper management of solid and hazardous wastes, including mercury switches; and air releases of asbestos fibers, fugitive dust, and/or volatile organic compounds.

The Rhode Island auto salvage yard industry has historically been under regulated, due to agency resource limitations. Site inspections and enforcement activities have been sporadic, and limited to responding to specific complaints about facilities, and audits of major recycling operations where incidents of environmental contamination were found to occur. Response to complaints generally resulted in a single media inspection and enforcement response to the specific problem reported, rather than using a multi-media approach that allow review and response to cross-media impacts.

Many auto salvage yards are in close proximity to residential areas, and in areas that present rather unique land use conflicts. Some are found in communities where residents must rely on private wells due to the lack of public water supplies, and thus presenting critical outcomes from groundwater contamination. The proposed ERP approach to be used is unique, as it will allow DEM, for the first time, to take a comprehensive, multi-media sector-based approach to environmental compliance and pollution prevention in the auto salvage yard industry.

### **Objectives of the project.**

The project will be used to determine if implementation of the ERP, with its certification by auto salvage yard operators, provides better environmental compliance with air, water, and waste regulations than the existing regulatory enforcement framework. Thus, it will produce an environmental improvement by reducing the amount of wastes and pollutants described above being introduced into the environment. Specific performance measures will be developed and adopted through the stakeholder process. A fundamental part of the process will be the compilation of pre-certification data gained through the baseline audits.

Just before this statewide project is formally launched, industry baseline conditions will be assessed using a comprehensive multi-media compliance and pollution prevention certification checklist. Checklist questions will be developed in consultation with regulatory divisions, represented as first phase stakeholders, and will address all relevant air, water, solid and hazardous waste regulatory requirements, as well as assess pollution prevention opportunities. The actual number of facilities to be targeted for baseline audits will be statistically determined and locations randomly selected.

Performance measures will be developed as necessary and used through the project period. Any changes will be provided in an amendment to the Project Work Plan. Proposed performance measures for the project at this time include:

- Number of auto salvage yards participating in this voluntary initiative.
- Implementation of an industry-wide survey

- Development of effective EBPI's for the project.
- Development of Workbook, Checklist, fact sheets, brochure
- Results of post certification analysis, especially improvements in comparison of baseline vs. post-certification compliance
- Number of informational requests about the project from auto salvage yard operators, municipal officials or agencies, press contacts, environmental or trade organizations
- Number of requests for compliance assistance from participants
- Compare general amounts of wastes recycled or disposed by major waste type for the sector using Uniform Hazardous Waste Manifest data, by surveying facilities included in the baseline survey, and the facilities included in random follow-up audits.

Among expected intermediate and longer term outcomes of the project include:

- Increased awareness and knowledge by auto salvage yards operators of environmental regulatory requirements and compliance and management issues as a result of project documents that are easy to read and understand, workshops, and compliance assistance provided through the project.
- Improvements in environmental performance as indicated through tracking EBPI's identified for the project.
- Improvements in identifying sources of contamination and working to minimize sources and impacts of it, through an environmental risk assessment component in the project.
  - A key component in this assessment is the identification of auto salvage yards located in areas with the availability of public water and wastewater treatment systems, or using private systems due to a lack of availability of public systems.
- Information and "lessons learned" in the project will be applied to future iterations of the workbook, checklist, and overall program structure.
- Increasing improvements in environmental performance over time as the industry gains experience working with DEM-OTCA, and by using self-educational tools commonly and successfully employed in Environmental Results Programs.
  - It is anticipated that voluntary self-certification will be conducted every two years, and that performance measurement statistics will track all future progress.

The proposed list of performance measures and outcomes is subject to modification, based on discussion, findings, and action in the first phase stakeholder process., and will include development of a logic model. Any changes will be provided in amendments to the Project Work Plan and the Quality Assurance Project Plan (QAPP).

### **Regulatory information, applicable criteria and action limits.**

This project will provide an easier, more cost effective way for government and for auto salvage yard operators to comply with applicable state and federal environmental regulations, which includes RIDEM's Rules & Regulations for Hazardous Waste Management, Regulations for Underground Storage Facilities Used for Petroleum Products and Hazardous Materials, Solid Waste Regulations, and applicable Water and Air Pollution regulations. It is also a piece in a

strategy to combat West Nile Virus, by effectively managing standing water in auto salvage yards.

**A6. Project/Task Description**

**Project overview.**

This project will allow the Rhode Island Department of Environmental Management, hereinafter referred to as RIDEM, to explore whether an approach modeled upon the Environmental Results Program (ERP) can help achieve these goals, while improving regulatory cost-effectiveness. The Environmental Results Program (ERP) is an innovative approach to solving high-priority environmental problems in industry sectors largely comprised of small businesses. The ERP concept combines technical assistance, self-certification, inspections, and statistically based performance measurement in order to reduce environmental impacts of business.

The promise of ERP is that it will cost-effectively reduce environmental impacts of small businesses that may present a substantial cumulative environmental risk. Businesses targeted so far by ERP include gas stations, auto salvage yards, auto body and mechanical repair shops, dry cleaners, and printers. ERP can help environmental agencies identify previously unknown facilities, measure performance, increase regulatory efficiency, and help improve overall environmental performance. ERP is in part designed to help facilities that want to comply but don't understand their requirements, and evidence suggests that ERP can motivate firms to comprehensively review their environmental performance and take needed action to come into compliance and adopt best practices.

**Project summary and work schedule.**

This project's major tasks and timeline are outlined in the table below.

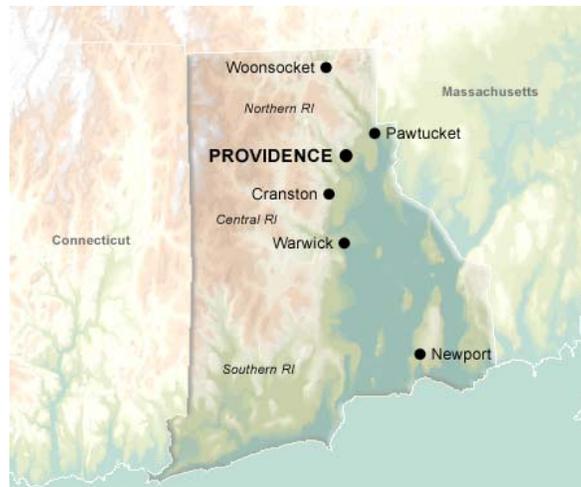
<b>Table 2: Schedule of major project tasks</b>			
<b>Task Name</b>	<b>Task Description</b>	<b>Start Date</b>	<b>End Date</b>
Outreach	Outreach to internal and external stakeholders (including targeted facilities) about the project.	10/04	3/08
Goals identification	Finalize the goals of this project, upon which metrics will be based	10/04	3/05
Measures identification	Finalization of metrics to be tracked by this project.	10/04	3/05
Facility identification	Determine the exact characteristics of facilities to be included in this project, and compile a list of facilities from a reliable source, the RI Department of Business Regulation.	8/04	3/05
Statistical methodology	Development of a statistical methodology to drive performance measurement and analytical tasks.	8/04	3/05
Data input & management	Development and implementation of an approach to cost-effectively inputting and	10/04	7/05

	managing ERP data, including primary and secondary data. Primary data consists of data from inspection reports and facility forms (including self-certification forms). Secondary data sources include lists of facilities from regulatory and private-sector databases.		
QAPP finalization & approval	Finalize QAPP based upon results of the measures identification, statistical methodology, and data management tasks. Primary data collection will not occur before relevant parts of the QAPP are finalized and approved by EPA.	8/04	3/05
Baseline inspections/ audits (establishing a performance measures baseline)	Inspections at facilities to establish a baseline for performance measures. Facilities selected at random from the entire targeted population, based upon sample design from statistical methodology.	8/05	12/05
Baseline analysis	Analysis of inspection data to establish a baseline for the project's performance measures.	12/05	3/06
Facility assistance	Delivery of compliance/technical assistance to facilities, which is expected to take the form of workbooks, fact sheets and/or workshops.	11/06	3/08
Self-certification	Implementation of a voluntary facility self-certification approach. Self-certification refers to the submission of a legally binding record of a facility's compliance practices.	11/06	3/07
Analysis of self-certification results	Analysis of self-certification data, with primary purpose of identifying opportunities for selective follow-up (next step).	4/07	3/08
Selective Follow-up	Selective follow-up with self-certifying facilities, based upon analysis of self-certification data. Selective follow-up may include phone calls, inspections and enforcement. Selective follow-up is not typically based upon a random sample. If resources allow, this project may collect representative samples from sub-populations (e.g., to compare the performance of certifiers to non-certifiers). RIDEM recognizes the analytical challenges presented by such an approach. Such challenges would be addressed in the statistical methodology.	4/07	9/07
Post-certification inspections/	Inspections at facilities to establish whether sector performance measures (and other measures) have changed since the baseline.	4/07	9/07

audits	Inspection data also used to cross-check self-certification data at inspected facilities.		
Data analysis	Analysis of baseline, self-certification, and post-certification data to understand change in facility performance and overall outcomes of interest. Assessment of project efficiency.	9/07	3/08
Reporting to EPA	Reporting shall include quarterly, annual and final reports.	11/04	3/08

**Geographic focus.**

The project will be implemented for the entire State of Rhode Island (Providence, Bristol, Newport, Kent, and Washington counties), in all communities in which auto salvage yards are located.



**Resource and time constraints.**

The project schedule was developed such that tasks should be able to be accomplished as outlined in the Work Plan in the timelines stated, given current staffing and budgetary circumstances. Should any changes take place to affect that situation, the Work Plan and QAPP will be amended to reflect those changes.

**A7. Quality Objectives and Criteria**

**Detailed performance measures.**

This project is primarily interested in the following list of likely performance measures. Note that one of the tasks of this project involves revisiting and reaffirming/revising these draft performance measures. The final list will be submitted in a QAPP amendment. Proposed performance measures for the project at this time include:

- Number of auto salvage yards participating in this voluntary initiative.

- Implementation of an industry-wide survey
- Development of effective EBPI's for the project.
- Development of Workbook, Checklist, fact sheets, brochure
- Results of post certification analysis, especially improvements in comparison of baseline vs. post-certification compliance
- Number of informational requests about the project from auto salvage yard operators, municipal officials or agencies, press contacts, environmental or trade organizations
- Number of requests for compliance assistance from participants
- Compare general amounts of wastes recycled or disposed by major waste type for the sector using Uniform Hazardous Waste Manifest data, by surveying facilities included in the baseline survey, and the facilities included in random follow-up audits.

**Quality objectives.**

Quality objectives for these performance measures will be developed as part of the Measures Identification and Statistical Methodology tasks. Specific quality objectives for these measures as a group (and, if necessary, individually) will be provided in the anticipated revision to the QAPP.

The amendment to the QAPP will ensure that the quality objectives for these performance measures are appropriate for the regulatory and non-regulatory decisions to be made based upon those measures. This determination will take into account both the best practices for similar projects and the resources available for this project. In part, the Project Manager will rely upon EPA's *Generic Guide to Statistical Aspects of Developing an Environmental Results Program* (2003) for advice in making decisions related to the optimizing the following aspects of data quality for this project:

- Precision
- Bias
- Representativeness
- Completeness
- Comparability
- Sensitivity (if applicable)

**A8. Special Training/Certification**

The RIDEM and University of Rhode Island Center for Pollution Prevention and Environmental Health will develop and deliver mandatory and voluntary training sessions to key parties to ensure quality data collection, to the extent practicable.

Mandatory intensive in-person training sessions will be delivered to the following individuals to ensure quality data collection:

- inspectors who will be collecting baseline and post-certification data

- data-entry personnel who will be processing data from inspections and self-certification responses
- QA/QC personnel (if any additional training is needed to familiarize them with the project)
- Individuals who will be compiling the database containing the universe of facilities

Each session will cover proper data collection and QA procedures. Training will be augmented by debriefing personnel shortly after their tasks have begun, to correct and clarify appropriate practices.

Voluntary intensive in-person training sessions will be offered to the self-certifying facilities. Facilities will also be provided with clear written instructions on how to prepare and submit data, and they will be able to call a phone number to ask anonymous questions if they wish.

The Project Manager is responsible for ensuring that all personnel involved with data generation (including state personnel, contractors, and partners) have the necessary QA training to successfully complete their tasks and functions. The Project Manager will document attendance at all training sessions. Attendance records for voluntary trainings may not include names, given privacy/confidentiality concerns.

The Project Manager is also responsible for ensuring the self-certification materials sent to facilities clearly document how facilities should properly prepare and submit their data.

## **A9. Documents and Records**

### **Report format/information.**

The format for all data reporting packages will be consistent with the requirements and procedures used for data validation and data assessment described in this QAPP.

### **Document/record control.**

The recording media for the project will be both paper and electronic, with photographs and video also to be used. The project will implement proper document control procedures for both, consistent with RIDEM's Quality Management Plan. . For instance, hand-recorded data records will be taken with indelible ink, and changes to such data records will be made by drawing a single line through the error with an initial by the responsible person. The Project Manager will have ultimate responsibility for any and all changes to records and documents. Similar controls will be put in place for electronic records..

The RIDEM Quality Assurance Officer shall retain all updated versions of the QAPP and be responsible for distribution of the current version of the QAPP. The RIDEM Quality Assurance Officer and the RIDEM Project Manager will approve annual updates. The Project Manager shall retain copies of all management reports, memoranda, and all correspondence between the Rhode Island Department of Environmental Management and all project personnel identified in A4.

### **Other records/documents.**

Other records and documents that will be produced in conjunction with this project include:

- Inspection checklists and reports
- Self-certification forms
- Return-to-compliance forms
- Non-applicability forms
- Enforcement documentation
- Facility outreach materials, including workbook, fact sheets, brochures, etc.
- Amended QAPP
- Readiness reviews (see below)
- Data handling reports
- Quarterly and annual progress reports to EPA
- Project final report (to include discussion of QA issues encountered, and how they were resolved)

### **Storage of project information.**

Files, paper records, and other media such as photographs will be maintained in the DEM Office of Technical & Customer Assistance for a minimum of three (3) years after the completion of the grant on March 31, 2008. After such time, some records may be moved to the DEM Records Archives for storage. Electronic files shall be maintained for a minimum of three (3) years after the completion of the grant on March 31, 2008. As it is anticipated that auto salvage yard certification will continue after the grant is completed, the time frames stated are the minimum and probably will be exceeded as the information will be needed for the ongoing program.

### **Backup of electronic files.**

Electronic files will be maintained on the DEM network server, as well as periodically backed up locally by the project manager on CD's or zip disks. Also, as a normal procedure, files on the network server are backed up by the DEM MIS staff at the server location.

## **B DATA GENERATION AND ACQUISITION**

### **B1. Sampling Process Design (Experimental Design)**

A key task in this project will be to develop a sound statistical methodology for collecting and analyzing facility data, in order to draw inferences related to the selected performance measures. The major quality objective will be to collect representative data that truly reflect the conditions of the universe of facilities that this ERP focuses on. Facility data is of two types: (1) inspection data, which will be collected by trained Rhode Island Department of Environmental Management inspectors from randomly sampled facilities, and (2) self-certification data<sup>1</sup>, which will be collected from facilities through a mail survey process. While the precise methods are not known at this point, they are expected to be built upon the advice given in EPA's *Generic Guide to Statistical Aspects of Developing and Environmental Results Program* (2003).

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<sup>1</sup> Includes data from self-certification forms, return-to-compliance forms, and non-applicability forms.

This section of the QAPP will be amended upon completion of the project-specific statistical methodology.

**B2. Sampling Methods**

As described above, the primary data collected and used by this ERP will come from a survey data collection process. This section of the QAPP will be amended upon completion of the project-specific statistical methodology, which will detail the statistical sampling methods to be used. As mentioned elsewhere, that methodology will be prepared consistent with the principles identified in the EPA's *Generic Guide to Statistical Aspects of Developing an Environmental Results Program* (2003).

**Preparation of data collection instruments.**

All data collection instruments will be subject to multiple rounds of review by relevant internal and external stakeholders to help assure the collection of high-quality and representative data. Data collection instruments will be prepared in accordance with the guidance on data collection instruments provided in EPA's *Generic Guide to Statistical Aspects of Developing an Environmental Results Program* (2003). Specifically, preparation will follow the checklist for data collection instruments provided in an appendix of that guide.

**B3. Sample Handling and Custody**

Upon completion of paper checklists used in baseline audits and post certification audits, inspectors will sign the checklists. Inspectors will enter data from paper checklists into the electronic database, or entered directly into a tablet PC for later download into the electronic database. Facilities will mail signed certification forms into RIDEM, where data-entry staff will input data into the electronic database.

Chain of custody is not relevant to this project.

**Data entry QA procedures.**

Procedures for entering hand-written data into the database will follow standard quality assurance procedures (e.g., 100% verification using independent double key entry), consistent with RIDEM's Quality Management Plan. Detailed quality assurance procedures for data entry and acceptance will be prepared during the development and implementation of a data management strategy. The final QAPP will reflect the strategy.

**B4. Analytical Methods**

This project will follow well-recognized statistical analytical methods for survey samples. This section will be amended upon completion of the detailed statistical methodology. At this time, no physical tests or chemical analyses are anticipated for this project. If such analyses are to take place, this plan will be amended for EPA approval prior to commencement of the analyses.

**B5. Quality Control**

This project will undertake the following specific steps to measure/estimate the effect of data errors, consistent with RIDEM's Quality Management Plan. If environmental samples/lab analyses are undertaken in this project, this plan will be amended and submitted to EPA for approval prior to commencing with this work.

**Crosschecking data.**

Primary data collection forms will be designed in such a way to allow internal crosschecking of data by comparing answers of different questions to each other, and such crosschecking will be automatic for electronically entered data. Further, post-certification inspections will offer the opportunity to compare inspection results with self-certification results, if the facilities sampled have submitted self-certification forms.

**Data anomalies.**

Procedures for handling data anomalies (such as outliers and missing data) will be handled based on guidance prepared in the project-specific statistical methodology.

**Quality control statistics.**

The quality control statistics to be used in this project are described in more detail in section D3.

**B6. Instrument/Equipment Testing, Inspection and Maintenance**

This section is not relevant to this project. The project will not involve such scientific instruments and equipment.

**B7. Instrument/Equipment Calibration and Frequency**

This section is not relevant to this project. The project will not involve such scientific instruments and equipment.

**B8. Inspection/Acceptance for Supplies and Consumables**

A digital camera and occasional use of a video camera will be used as necessary to record conditions found at auto salvage yards. The Project Manager is responsible for inspecting and accepting supplies associated with the digital and video cameras.

**B9. Non-Direct Measurements (I.e., Secondary Data)**

This project will rely upon secondary data to identify the facilities in the target population. Since auto salvage yards are required by Rhode Island law to be licensed by the Rhode Island Department of Business Regulation, that department’s list of licensed auto salvage yards will be used as the primary source to identify the facilities targeted for certification in this project.

**Table 3: Non-Direct Measurements (I.e., Secondary Data)**

<b>Data Sources</b>	<b>Intended Use</b>	<b>Rationale for Use</b>	<b>Acceptance Criteria</b>
RIDEM database of facilities, from RI Department of Business Regulation’s list of licensed auto salvage yards	Identifying the target population, for the sample	Commonly accepted source of facility list	All records will be accepted unless sample response indicates facility should not be part of target population. RIDEM will cross-check any facility that

			self-identifies as non-applicable to this project.
Auto Recyclers of Rhode Island	Identifying the target population, for the sample	Trade Group	Will cross check RI DBR list with Auto Recyclers of RI list to determine if any additional facilities not listed with RI DBR.

**Key resources/support facilities needed.**

RIDEM will require access to the data sources mentioned above, and this information will be managed within the database created/ utilized for the overall project. RIDEM does not anticipate any obstacles to this approach.

**Determining limits to validity and operating conditions.**

Database containing the list of targeted facilities will be designed such that the original source for all facility data is marked, and procedures will be in place such that only the Project Manager can officially remove a facility entry from the target population. In such cases, facility entry will not be deleted from the database but will be marked as non-applicable, and corrective data will be provided in fields parallel to the original data.

**B10. Data Management**

As part of this project, RIDEM, with assistance from URI Center for Pollution Prevention & Environmental Health, will develop a data management strategy, and amend the QAPP based upon the strategy. The Project Manager is responsible for ensuring that that strategy is developed and that the QAPP is amended to reflect that strategy. The strategy will be consistent with the existing RIDEM's Quality Management Plan. Once amended, this QAPP section on data management will provide information on the following issues:

- Data management scheme, from field to final use and storage
- Standard record keeping and tracking practices, and document control system (citing relevant agency documentation)
- Data handling equipment/procedures that will be used to process, compile, analyze, and transmit data reliably and accurately
- Individuals responsible for elements of the data management scheme
- Process for data archival and retrieval

**C ASSESSMENT/OVERSIGHT**

**C1. Assessment and Response Actions**

The Quality Assurance Officer will conduct a Readiness Review immediately prior to the five major data collection tasks: identifying targeted facilities, baseline inspections, self-certification, targeted follow-up, and post-certification inspections. The QA Officer will report findings to the Project Manager, who will take corrective action (if any is necessary) before the data collection

task begins. Further, the Project Manager and QA Officer will thoroughly debrief project implementation staff a short time after beginning their respective implementation tasks, to identify emerging/unanticipated problems and take corrective action, if necessary.

**C2. Reports to Management**

Three kinds of reports will be prepared: readiness reviews (described above), regular quarterly and annual progress reports, and project final report. Progress reports will note the status of project activities and identify whether any QA problems were encountered (and, if so, how they were handled). Project final report will analyze and interpret data, present observations, draw conclusions, identify data gaps, and describe any limitations in the way the data should be used.

**Project QA Status Reports**

<b>Type of Report</b>	<b>Frequency</b>	<b>Preparer</b>	<b>Recipients</b>
Amended QAPP	Once, before primary data collection begins	RIDEM Project Manager	All recipients of original QAPP
Readiness Review	Before each major data collection task	RIDEM QA Officer	RIDEM Project Manager, Pollution Prevention Program Manager
Progress Report	Quarterly	RIDEM	U.S. EPA Project Officer (Copying US EPA OPEI)
Progress Report	Annually	RIDEM	U.S. EPA Project Officer (Copying US EPA OPEI), stakeholders
Final Project Report	Once	RIDEM	U.S. EPA (Copying US EPA OPEI) stakeholders

**D DATA REVIEW AND EVALUATION**

**D1. Data Review, Verification and Validation**

This QAPP shall govern the operation of the project at all times. Each responsible party listed in Section A4 shall adhere to the procedural requirements of the QAPP and ensure that subordinate personnel do likewise.

This QAPP shall be reviewed at least annually to ensure that the project will achieve all intended purposes. All the responsible persons listed in Section A4 shall participate in the review of the QAPP. The Project Manager and the Quality Assurance Officer are responsible for determining that data are of adequate quality to support this project. The project will be modified as directed by the Project Manager. The Project Manager shall be responsible for the implementation of changes to the project and shall document the effective date of all changes made.

It is expected that from time to time ongoing and perhaps unexpected changes will need to be made to the project. The Project Manager shall authorize all changes or deviations in the operation of the project. Any significant changes will be noted in the next report to EPA, and shall be considered an amendment to the QAPP. All verification and validation methods will be noted in the analysis provided in the final project report.

## **D2. Verification and Validation Methods**

Data Validation will consist of the Project Manager (or their designee) reviewing the self certification forms, baselines inspections, and any selected follow-up to ensure that they have been filled out accurately and completely. The statistical methodology will have its own validation criteria built in.

To confirm that QA/QC steps have been handled in accordance with the QAPP, a readiness review will be conducted before key data collection/analysis steps, and data handling reports will be prepared after each step. These reviews and reports will be consistent with RIDEM's Quality Management Plan. Standard statistical tests (described below in Section D3) will be used to determine the extent to which inferences can be drawn from the sample data.

## **D3. Evaluating Data in Terms of User Needs**

This section will be written and finalized after completion of the project-specific statistical methodology, which will be developed consistent with RIDEM's Quality Management Plan and EPA's *Generic Guide to Statistical Aspects of Developing an Environmental Results Program* (2003).

- **Meeting and reporting needs of your project:** This section shall contain a description of how the results of the study will be analyzed and evaluated to determine whether the needs of the project were met and then reported
- **Mathematical and statistical formulae:** This section shall contain details of formulae that will be used to calculate precision, accuracy/bias, completeness, comparability and sensitivity (if applicable) of the project data.
- **Approach to managing unusable data:** This section shall contain a description of what will happen if data are unusable, with particular emphasis on the impact of such unusability on data representativeness.