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**LIQUID WASTE MANAGEMENT IN WESTERN AUSTRALIA: A CASE STUDY IN ENFORCEMENT AND COMPLIANCE**PARKER, ADAM J.<sup>1</sup>, DAVIES, N.J. AND RYCHNER, H.

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**SUMMARY**

In the early 1990's volumes of liquid wastes presented for disposal in the Perth metropolitan area began to fall. Several prosecutions of liquid waste transporters and contractual problems associated with the viability of the only waste disposal site prompted the development of several new initiatives to police this industry.

The Department of Environmental Protection developed a strategy that included an effective regulatory framework for the liquid waste industry. It was designed to provide equity for waste producers, transporters and disposal site operators. Funding for this project was obtained from forward borrowing's against savings achieved by eliminating a AUS \$800,000 government subsidy for the treatment of liquid wastes.

The liquid waste regulations were updated and transferred to the Environmental Protection Act. The number of inspection staff was increased and new computer based tracking systems were implemented, including the use of Global Position Systems. The program also provided driver training and use of other forms of communication to raise awareness and standards within this industry.

By October 1997 the program had been completed and the volume of waste delivered to the treatment plant had increased, despite the negative impact resulting from the delivery of the Governments infill sewerage program, which effectively removed 10% of the market in 1997 and is estimated to impact by a further 30% in 1998.

This program has seen the removal of the subsidy payments, achieving savings of AUS \$400,000 per annum. The transport industry is now more open and positive. The introduction of Global Position Systems surveillance systems has provided a 'level playing field' for this industry sector and improved the effectiveness and efficiency of inspection services. To date there has been excellent compliance associated with the transport of liquid wastes.

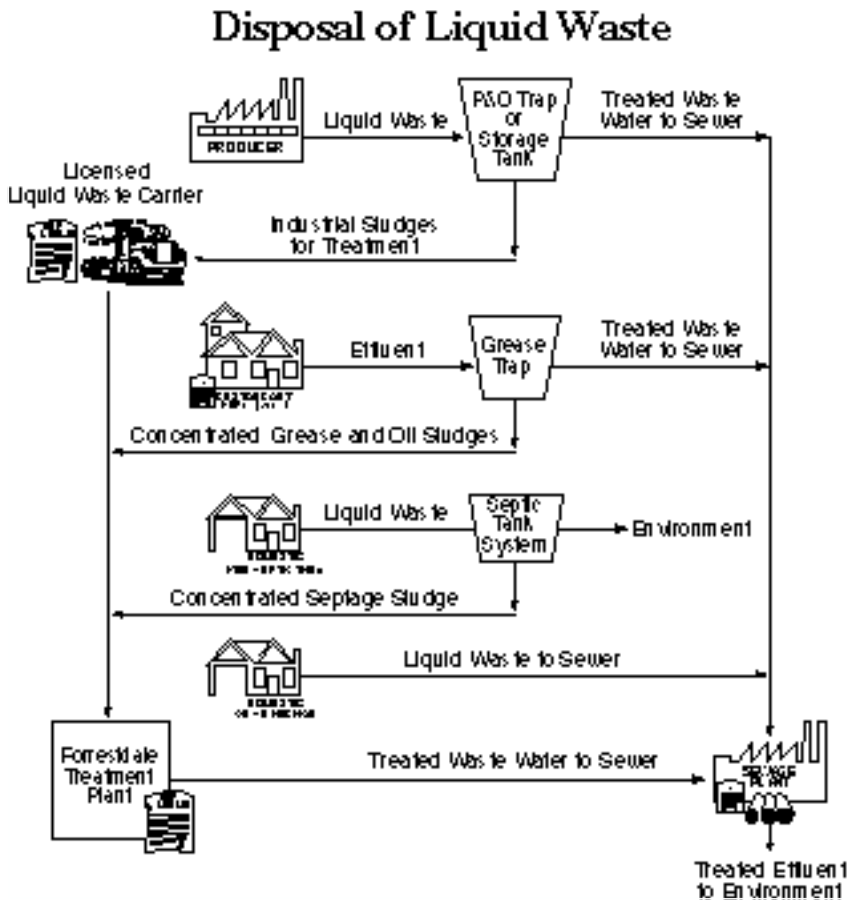
**1 BACKGROUND/INTRODUCTION**

The Department of Environmental Protection is the agency responsible for protection of the environment for both this and future generations. An important area of environmental protection is ensuring that all forms of waste are managed in an effective and responsible manner. The Department is responsible for development and implementation of policy and for regulation of the waste management industry.

Appendix 1 is a copy of the Department of Environmental Protection Waste Management Division's value statement. These values guide the approach taken by divisional staff in all aspects of our business.

This submission describes the approach taken by the Department of Environmental Protection in solving long-standing problems with the management of liquid waste in the Perth metropolitan region and the extension of this solution to other areas of Western Australia.

Figure 1 Liquid Waste Disposal in Western Australia



Prior to 1985, the non-sewer, liquid waste industry in Perth was largely controlled and regulated at local government level under the control of the Health Department. Liquid waste was collected and transported by private contractors who delivered the waste to unlined disposal ponds operated by various local authorities. Disposal costs were low (\$5-10 per kiloliter), because costs to environment (such as odors, off-site water pollution) were not considered at the time.

The liquid waste industry was characterized by improper practices and illegal activity. A major factor contributing to illegal behavior was a system where contractors collected the money to cover the cost of collection and disposal from producers, and then had to transfer it to the disposal site operator. This provides a considerable incentive to dispose of waste illegally and profit by retaining the money earmarked for disposal.

During the late 1980s, all local government operated liquid waste disposal sites closed in the face of serious environmental concerns regarding groundwater and odor pollution. To resolve an impending crisis caused by the lack of liquid waste disposal facilities, the Health Department called tenders to establish a single centralized liquid waste treatment facility at Forrestdale. The successful tenderer, Cleanaway Technical Services, opened its treatment plant in September 1987.

By the early 1990s the volume of liquid waste taken at the Liquid Waste Treatment Plant had fallen from around 130 ML/year in 1987 to less than 50 ML/year in 1993 (See Appendix 2-A). Treatment prices rose from \$5-10/kL to over \$50/kL and a Government subsidy of \$800,000 per year was required to keep prices at this level. The culture of the liquid waste industry by now had deteriorated, illegal behavior was widespread, and there was no trust between any of the parties involved.

The Waste Management Division of the Department of Environmental Protection was created in April 1994 and the staff developed a comprehensive strategic plan for solving the problems of the liquid waste industry. The main elements of the plan were:

- the development of an effective regulatory framework for the liquid waste industry which provided equity for waste producers, transporters and disposal site operators;
- to change the culture of the liquid waste transport industry and encourage open communication, trust and more responsible behavior;
- to eliminate the need for subsidies for liquid waste treatment;
- to ensure that adequate treatment capacity exists for liquid waste; and
- encourage pricing policies which reflected the true cost of environmentally responsible liquid waste disposal.

### 1.1 The Proposed Solution

A comprehensive plan based on the above principles was endorsed by Cabinet on 20 November 1995. In making this decision, Cabinet were aware that the infill sewerage scheme also announced in 1995 would act to further reduce septage waste volumes. The plan was funded by forward borrowing from money allocated to pay part of the liquid waste subsidy, and involved:

- appointment of four permanent inspection/client liaison staff (all redeployees);
- updating the liquid waste regulations and transferring regulations from the Health Act to the Environmental Protection Act;
- elimination of the \$800,000 a year liquid waste treatment subsidy;
- development of improved communication with producers and transporters;
- the introduction of computer based waste tracking systems (WasteTrack) which encouraged the proper servicing of grease, petrol and oil traps while simplifying and improving waste tracking systems; and

- development of electronic vehicle tracking and monitoring systems based on Global Positioning System (GPS) and electronic sensing technology and sophisticated radio communication.

## 1.2 Current Status

These initiatives resulted in an initial increase in the volume of liquid waste treated at the Liquid Waste Treatment Plant. This is despite the impact of the in-fill sewerage program which removed ten per cent of the market in Perth in 1997. The treatment subsidy has been removed and prices have stabilized. The Department of Environmental Protection now deals directly with approximately 4000 clients (producers, transporters and disposal site operators) and has established a positive and open relationship with these clients.

The culture of the transport industry has also changed significantly and transporters now act as the Department's agents for the WasteTrack system and while illegal behavior may not have been eliminated, it has been significantly reduced. The introduction of the GPS tracking system, with its ability to continuously track both the location of each tanker and the amounts of waste being carried, has eliminated illegal activity within the transport industry. It is no longer possible for transporters to dump waste or falsify records without being detected.

Throughout the program, the Department has endeavoured to act in a manner which is consistent with the policy directions set by Government through:

- encouraging open and fair competition in the liquid waste industry;
- achieving open and transparent pricing for services;
- where appropriate, contracting for services in accordance with tendering and contract management guidelines;
- communicating with the industry and the community on an open basis;
- developing and maintaining a customer oriented service delivery;
- aiming for best practice and continuous improvement; and
- developing opportunities for people redeployed from other arms of Government.

This program continues to successfully achieve a regulatory outcome through a range of approaches. It acts to raise environmental and public health standards while ensuring equitable implementation of public policy. Saving money for both the government and the community. In addition, by communicating effectively with the Department's clients, we have changed a very negative industry culture to one which is positive and forward looking.

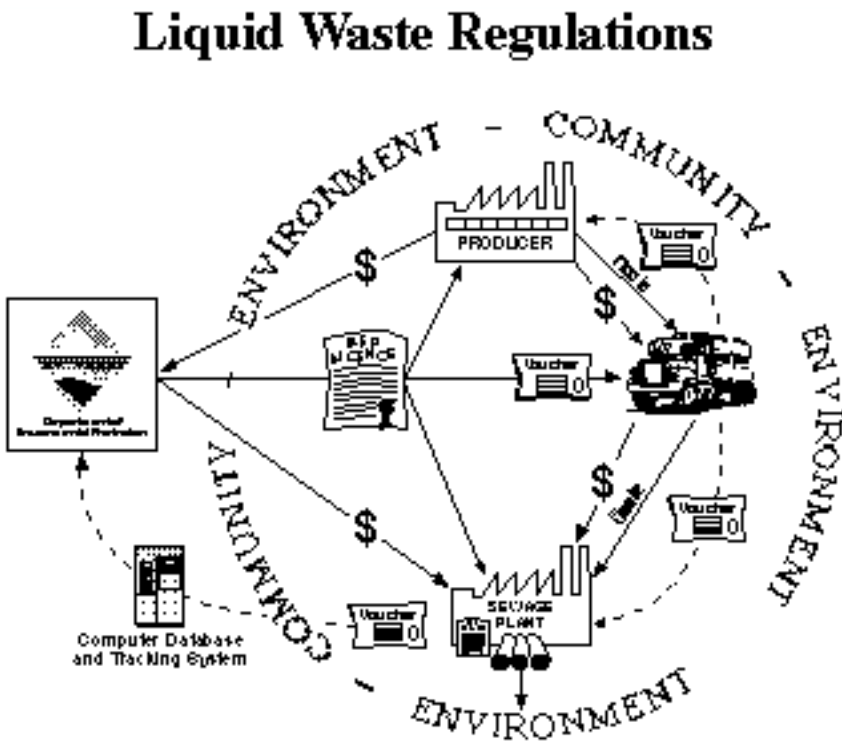
We have now developed a modern customer focused and efficient regulatory system for the liquid waste industry which is continuing to be refined and improved. This has already been recognized by interest shown in the program in other parts of the State and other states of Australia.

## **2 EFFECTIVENESS IN MEETING ORGANIZATIONAL OBJECTIVES & CUSTOMER NEEDS**

The primary aim of the Liquid Waste Regulatory system is to protect the environment and public health from damage due to illegal disposal or improper management of liquid wastes in the Perth metropolitan area.

The liquid waste section of the Department of Environmental Protection is responsible for the effective control and management of liquid wastes within the Perth metropolitan area. This is achieved with the use of the Environmental Protection (Liquid Waste) Regulations 1996 which provides the basis for contact with over 4,000 businesses many of which interact also with each other as well as the department (see figure 2).

Figure 2 Liquid Waste Regulation System



As shown in figure 1, these businesses range from restaurants and cafes which generate grease wastes that are a problem in the sewer system, to industrial producers such as the metal finishing industry that produce acid, chromium and cyanide wastes requiring specialized treatment prior to disposal.

The Liquid Waste Section also licenses the liquid waste transport companies and drivers to ensure proper standards are maintained.

While our involvement with a range of customers is established by regulations, each customer has very different needs and the approach taken to communicating with each group is different.

### 2.1 Grease Traps & Oil Interceptors

Each premise with a registered grease trap or oil interceptor has agreed to a service schedule, and to pay for their disposal charges six months in advance. These businesses want to be sure they meet environmental standards while minimizing costs and that their competitors are being required to operate in a similar manner.

The WasteTrack registration system was designed to meet these environmental needs. It involves the registration of each interceptor with the volume of waste collected and servicing intervals being measured or assessed. Dated vouchers are then issued for each service and monitored when presented at the disposal site to ensure compliance with this standard.

A team of four trained inspectors undertake assessments of new sites and the level of compliance by premises which are already registered. These individual assessments provide the opportunity to achieve a balance between required environmental standards and individual business needs. This personalized contact is also an important part in explaining the benefits of the system to customers who otherwise would have little contact with the Department of Environmental Protection and understanding of their potential impact on the environment.

Ensuring a consistent standard across these industries has the additional effect of stabilizing the volumes of waste presented for treatment. It has encouraged an increase in alternative technologies in the treatment market since the inception of WasteTrack two years ago, which has stabilized previously rising treatment costs.

### 2.2 Licensed Industrial Premises

This client group produce industrial wastes which cannot be disposed of either on-site or to the sewer system. Industrial wastes have the greatest potential for environmental and public health damage, and therefore the collection, treatment and disposal of these wastes needs to be monitored. The industries involved wish to minimize the cost and effort involved in managing their wastes.

Where industrial waste needs to be transported off site for disposal on a regular basis, the site is required to be licensed. Each tank where liquid waste is stored is registered and identified by a tank identification number. These numbers are displayed on placards next to or on each tank and identify this waste to the liquid waste contractor (Carrier) for collection. The tank registration system simplifies the carriers job and provides the basis for tracking the transport and disposal of the wastes.

To support this system, inspectors audit the use of tank ID plates, inspecting premises at least once a year. This provides an opportunity to discuss any customer specific waste management issues and clarify each customer's involvement in the licensing system. At the same time licence conditions are reviewed and revised as necessary. The regular review of licence conditions has assisted in reducing the number of transport incidents in recent times.

Monitoring the volumes and type of wastes generated by particular industry groups also allows opportunities to be identified for minimizing waste production.

### 2.3 Carriers and Drivers

Historically carriers and drivers have posed the most significant risk to the correct disposal of liquid waste. The culture of the group has tended to be resentful and hostile towards government regulation and the objective of protecting the environment.

Since the inception of WasteTrack, staff in the Liquid Waste Section have fostered a closer relationship with the carriers and drivers. New liquid waste regulations introduced in 1996, put greater responsibilities on drivers and to support this shift in emphasis, training seminars were

conducted for this industry. This has since been built on by development of an information package which is distributed to prospective drivers prior to them being licensed as a driver. The department is also working with industry to develop a more formal driver training course.

These initiatives have assisted in changing the culture of this industry and Department of Environmental Protection reinforces this change through the publication of a quarterly newsletter. This newsletter is intended to create a positive, group image for drivers and carriers and also promote the exchange of information to improve standards (see Appendix 4).

The result of these actions has been increased compliance with the regulations, more accurate tracking of waste and a reduction in improper disposal. The fact that the Department now collects treatment fees for grease trap and oil interceptor wastes has also removed a significant financial burden from carriers, as they no longer have to cover the disposal charges at the treatment plant.

#### 2.4 Liquid Waste Treatment Plants

Currently only one plant operates in the Perth metropolitan area. However, as a direct result of the liquid waste initiatives a competitor will enter the market within the next twelve months.

Treatment plant operators rely on effective compliance with the Regulations to ensure all liquid waste is disposed of appropriately. With the introduction of grease trap and oil interceptor registrations, the Department of Environmental Protection is the largest debtor for the Liquid Waste Treatment Plant, with about AUS \$2 million dollars in waste treatment fees charged annually to the department. The disposal site relies on the timely payment of these invoices.

The new systems in place have encouraged compliance with regulations and environmental standards. The amount of liquid waste being treated has increased despite a diminishing market as a result of the infill sewage program. This has stabilized the liquid waste industry and increased the viability of the treatment plant.

#### 2.5 Effectiveness

Implementation of the liquid waste initiatives have proven effective in meeting the objective of reducing the impact of liquid waste on the environment and public health. The volume of biological liquid waste presented for treatment has increased 50% in the past eighteen months, and the total volume treated has increased marginally, despite the loss of ten per cent of the market each year due to the Government infill sewerage program.

All performance indicators and financial reports used to assess the effectiveness of this program indicate the initiatives have improved compliance with the regulations and minimized negative environmental and public health outcomes. These indicators have resulted in significant changes in administration of this system within the first six months and also the reprioritising of inspection activities.

### 3 IMPLEMENTED IN EFFICIENT AND COST EFFECTIVE MANNER

The liquid waste initiatives were developed and introduced within a six month period and within the budget allocated. This was achieved using project management as a tool to assist in this process.

The department liaised with over 5,000 potential new customers in the design and implementation phase of this project. Most of these customers had not dealt with the Department of Environmental Protection before. It was a particularly difficult time for many customers, the Department dealt with nominated representative bodies and groups to assist in the development of this system.

### 3.1 Information Technology

A significant aspect of our efficiency in administering WasteTrack was brought about by the integration of the computer licensing and tracking system with the accounts management system. This allows invoices to be generated for each customer based on the following key factors:

- a. the volume of waste to be treated;
- b. the service interval and hence the number of services for that period; and
- c. the type of waste, which reflects the treatment costs.

The integrated system also monitors payment of each individual account. On receipt of each payment the details are updated, transferred to the licensing data base and records are automatically amended, avoiding duplication of effort, data errors and allowing effective use of time.

### 3.2 Innovative Administration and Management

At the start of this program many claims were made by customers for refunds of treatment fees for amounts less than AUS \$30 which cost more to process. As a result, we arranged for our financial system to be modified to allow credits to be forwarded to the next invoice period. This has proven to be a major efficiency gain for the Department and also our customers who do not have to process refund checks.

The provision of an individual approach to customer service through the use of inspection services is critical to the effectiveness of the system. These services are provided through our small team of inspectors who are managed through the establishment of a unique mobile work environment.

Each inspector is provided with a car, mobile phone, training, safety equipment, sampling equipment and inspection packs. The provision of these resources is offset by the reduced office space and infrastructure required if the positions were based in the office.

This initiative, and the efficient use of the computer system, has reduced the administrative staff to two full time employees. These administrative staff liaise between the customer base and the inspectors and process the results of completed inspections through the database under the guidance of the Liquid Waste Manager. This approach to service delivery is central to providing a high level of efficiency in communicating with our customers.

Inspection activity is monitored and evaluated against estimates of time and effort. This allows us to monitor the true costs associated with each activity to determine an optimal inspection program to balance our expenditure against customer needs. Data regarding this monitoring program is reviewed by senior management on a monthly basis (see Appendix 3-A). This indicator shows efficiency gains for aspects of our customer service delivery which will be further investigated.

The overall impact of these policy initiatives has allowed the gradual removal of the Government subsidy of AUS \$800,000 a year to support the viability of the Liquid Waste Treatment Plant.

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#### **4 COORDINATION WITH ACTIVITIES OF OTHER AGENCIES AND CONTRIBUTIONS TO THE DESIRED WHOLE OF GOVERNMENT AND COMMUNITY OUTCOMES**

The management of non-sewer liquid waste disposal involves government, local government and industry. The effective development and implementation of policy in this area requires careful consultation and coordination.

While developing the liquid waste regulatory system, the Department of Environmental Protection has consulted closely with a number of government agencies, including the Health Department and Water Corporation of Western Australia to ensure that approaches used complemented activities in these agencies. There has also been close cooperation with several other areas of government including Contract and Management Services over tendering and contractual matters, Office of Mobility over use of redeployed staff as inspectors and Treasury in developing and implementing innovative funding and revenue packages.

Examples of some of these interactions are set out below:

##### **4.1 Water Corporation of Western Australia**

The Water Corporation is the major provider of sewerage services in Western Australia. The majority of the clients registered with the WasteTrack system are also clients of the Water Corporation of Western Australia. The implementation of the WasteTrack system impacts directly on the sewerage operations of the Water Corporation, as incorrectly maintained grease, petrol and oil traps can lead to unacceptable levels of contaminants being discharged to the sewer and increased maintenance and operating costs. There is also a potential to cause environmental damage should a sewerage treatment plant be 'poisoned' by toxic materials discharged illegally to sewer.

The Department of Environmental Protection has consulted closely with the Water Corporation throughout the process of developing the WasteTrack proposal and this interaction continues through information sharing meetings with the Water Corporation.

The infill sewerage program, which is being implemented by the Water Corporation, also requires close interaction with the Department. This sewage program is removing 5000-7000 unsewered premises from service each year over a 10 year period. This will eventually reduce waste volumes substantially and could increase waste treatment prices. In addition, there is a need to ensure that septic tank systems are decommissioned properly so that they do not pose a public health or environmental threat. This has been identified as an issue and policy options for it are currently being developed.

##### **4.2 Office of Mobility**

Having identified the need for additional inspection staff, the Department sought the assistance of the Office of Mobility in obtaining officers with the necessary skills. This has proved extremely successful with a total of six redeployees having been appointed as liquid waste inspectors since the program commenced (although only four remain in this role now, with one having accepted a redundancy and the other occupying another permanent position within the Department of Environmental Protection).

This is consistent with the Government's policy of redeploying redundant personnel to new positions and has simplified the task of appointing staff.

#### 4.3 Contract and Management Services

Whilst some additional staff have been appointed to The Department of Environmental Protection for operating the WasteTrack system, large sections of the work have been contracted to the private sector. This management of the tender processes and contract development has been assisted by Contract and Management Services.

The approach of contracting for services has been adopted to achieve competitive pricing and access the technical expertise and innovation available in the private sector, while maintaining maximum flexibility for the Department in managing its work force.

This approach has proved to be a great advantage to the project as there has been a need to reallocate resources to cope with the administrative work loads associated with managing the WasteTrack system.

#### 4.4 Local Government

Under the Health Act local government is responsible for delivering public health services to the community. This includes ensuring septic tank and grease traps are properly constructed and serviced. In rural areas of the State, local governments also often still operate liquid waste treatment facilities, in addition to regulating the collection and disposal of wastes.

Department of Environmental Protection staff have briefed relevant staff in local government on the WasteTrack program and have enlisted the support of local authority Environmental Health Officers in identifying unregistered and nonconforming grease traps. In a similar manner, Department inspectors provide information to local government Environmental Health Officers where premises are not maintaining equipment correctly or where public health issues arise.

Department staff are also working cooperatively with local governments in rural areas to extend the use of the WasteTrack system beyond the Perth metropolitan area. The system is already being used in a limited fashion in the South-West and negotiations are well advanced for the adoption of the system by the City of Kalgoorlie-Boulder and the Geraldton-Greenough Regional Council.

#### 4.5 Community Outcomes

The illegal activity which characterized the liquid waste industry in the past has meant that those transporters and producers who operated responsibly and within the law, subsidized those involved in illegal or improper activities. The community as a whole paid a price in terms of the environmental damage caused by illegal dumping of waste and the need for an AUS \$800,000 a year subsidy which was only required because waste was not disposed of appropriately.

The liquid waste regulatory initiative is aimed at returning equity to the liquid waste industry and encouraging fair competition between companies. The WasteTrack voucher system means that all premises using grease, petrol or oil traps are obliged to service their equipment correctly and pay the appropriate treatment costs which means that they compete on even footing in terms of waste management costs. Similarly the Global Position Systems tracking systems and waste volume sensing equipment for liquid waste tankers will make it almost impossible to dump illegally and this will mean that all transporters can compete on equal basis. This serves to encourage competition.

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## **5 CLEAR ACCOUNTABILITY, SYSTEMATIC EVALUATION AND PERFORMANCE REPORTING**

In order to assess the progress towards the central objectives of the program, a structured, quantifiable measurement system has been developed by the Department of Environmental Protection.

Appendices 2 and 3 contain examples of some of the graphical monitoring reports used, generally on a monthly basis within the Department's performance monitoring system, to assess our progress in managing liquid waste. The graphs describe the volumes of various waste types treated at the Liquid Waste Treatment Plant (and comparisons to previous years), the progress of the rigorous inspection program for registered facilities, and an analysis of the WasteTrack system which considers both total volumes, and the efficiency of the WasteTrack system itself.

In addition to the liquid waste treatment monitoring system, there is also a detailed and integrated financial reporting system for WasteTrack. Within that system the Department of Environmental Protection is dealing with over 4,000 client businesses (each invoiced twice per year). This generates in excess of AUS \$2 million per year in revenue and means that the Department is the Liquid Waste Treatment Plant's largest client. In managing these funds, the Department must reconcile volumes received for treatment against produced twice per month.

Clear accountability for finances is provided by an integrated data base that matches client invoices to the volumes treated, and through an electronic link, the amounts receipted from clients. The operation of a trust fund established for these funds under the Financial Administration and Audit Act is reported publicly in the Department of Environmental Protection Annual Report. The system is also used to arrange refunds of pre payments from clients who go out of business, or who have their waste treated appropriately outside WasteTrack.

The trust fund is reconciled monthly to ensure that there are sufficient funds to meet the liabilities created by waste yet to be treated in a six month period that clients have already paid for, which is important given the non profit nature of the trust fund (see example - Appendix 3-A).

Apart from the liquid waste volume, and financial evaluations, the Department of Environmental Protection also monitors the workload and time allocation of inspectorial staff in the liquid waste area. These outcomes are reviewed monthly with the staff involved (see - Appendix 3-B), and used to amend resource allocation to the needs of the immediate future. This approach provides more detailed information than is required by the department's working hours record system.

In summary the liquid waste management area delivers clear, regular evaluations in four key areas:

- waste volumes treated;
- efficiency / success of the WasteTrack systems;
- financial management of the trust fund; and
- allocation of staff time to agreed work outputs.

Each of these systems forms a regular part of management review and reporting.

**6 INNOVATION & LEADERSHIP IN STIMULATING IMPROVEMENT IN OTHER PARTS OF PUBLIC SECTOR**

This program uses many innovations which either are or will contribute to stimulate improvements within and outside public sector management. Some of the areas which may impact outside of the Department of Environmental Protection are:

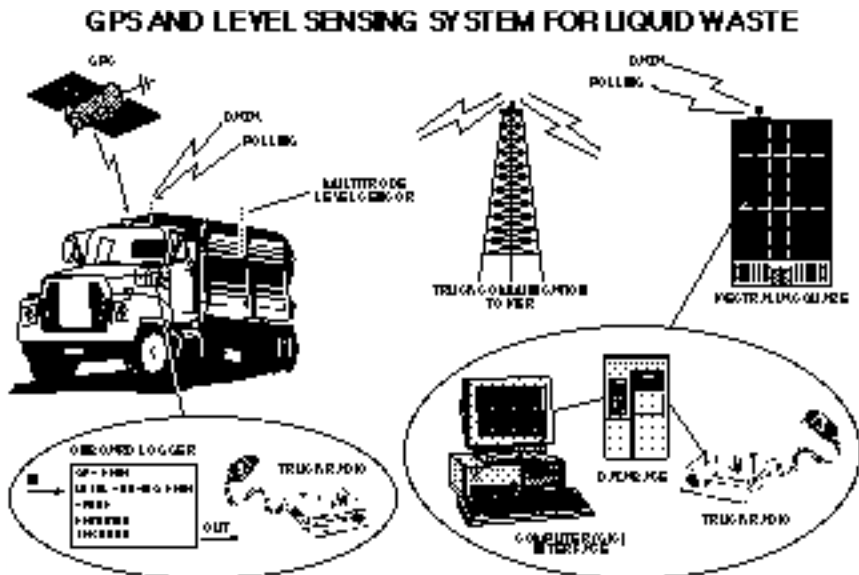
**6.1 Sound Management**

Liquid waste initiatives have been funded by redirecting funds spent on subsidy to fixing a substantial problem. They actually result in a net saving of approximately AUS \$400,000 per year for government. It is unusual for a regulatory agency to provide a positive dividend for the Government while delivering an enhanced regulatory program. The short term success of this system has vindicated this decision. This unique approach to establishing and funding infrastructure has drawn a lot of attention from other public sector agencies.

**6.2 Waste Tracking & Use of Evolving Technology**

Many of the systems implemented for liquid waste management have assisted in the tracking of wastes on a national level. The current WasteTrack system in place in Perth is well advanced compared to those in other States of Australia and will be enhanced further with the introduction of Global Position Systems and remote sensing technologies to monitor the collection and transport of liquid wastes at the point of collection. Figure 3 describes the Global Position Systems tracking system which is currently being installed in all tankers. This is the first time this technology has been used for tracking liquid waste tankers and represents a major opportunity for the company to market the technology interstate and overseas.

**Figure 3 Global Position Systems Tracking**



The introduction of bar-coded vouchers to the liquid waste tracking system in July 1996 saw a dramatic improvement in the processing time for tracking the movement of liquid wastes. This system collected the information on delivery at the treatment plant, which allows the monitoring of information on a daily basis. The implementation of the Global Position Systems will allow the tracking of wastes to occur during collection. This system is designed with automatic monitoring states and is activated during certain alarm states, such as the loss of volume in a place other than an approved site. This system will mark exactly the location of the incident to within five meters.

It is envisaged this will provide the ultimate tracking system to ensure waste is correctly disposed of and make policing of the industry more efficient. The development and implementation of this system has sparked national and international interest and is likely to result in its application on other waste transport.

### 6.3 Delivery of Inspection Services

The delivery of inspection services in the Department of Environmental Protection acts as a different model than is used in other sections of the Department and has placed our inspectors in a lead role with respect to assessment of grease traps and oil interceptors, and delivering a client service.

This regulatory system has also provided the impetus for the Water Corporation to introduce new technologies in the management of grease traps to supplement regular servicing.

### 6.4 Redeployment & Retraining

The establishment of the team of inspectors has been done by training people from redeployment, each from different backgrounds with State Print and Westrail. This approach is directly in line with Government policy and can be used as a model for redeployment in other agencies.

### 6.5 Managing Change

Great progress has been made in protecting the environment, changing industry culture, increasing compliance with regulations and increasing the awareness of environmental issues in liquid waste management. We have achieved this through dramatic changes in this area including the introduction of an efficient, equitable, cost effective system of regulation and a dedication to expanding these innovations in the future through Global Position Systems and maintaining our effort in registration and licensing of liquid waste producers and contractors to regional areas of Western Australia.

Our commitment and success in managing cultural change in the liquid waste transport industry has seen changes which have resulted in improvements in compliance and expansion of services they offer to their customers to include other aspects of waste management, in place of just transportation. This is a direct result of the innovation and leadership we have shown in changing the culture of the industry.

## **7 COMMITMENT TO A BEST PRACTICE MANAGEMENT FRAMEWORK**

Many aspects of best practice management were utilized in the design and implementation of this unique approach to management and delivery of regulatory services. This has included benchmarking, a commitment to continuous improvement through measurement and evaluation, adoption of a quality management approach to administration and not least a clear customer focus.

Commitment to these aspects of best management practice has also allowed the identification of future challenges in delivery of this service.

### **7.1 Benchmarking**

In developing the WasteTrack system for Western Australia, approaches used were other States evaluated in order to set a benchmark for delivery of this service in Western Australia. WasteTrack is based on the best available system operated by Sydney Water to monitor grease trap services. This Sydney Water system was used as the basis for meeting our needs and was enhanced to deliver a state of the art waste tracking system to monitor compliance.

In addition to this benchmarking exercise it was apparent that no regulatory agency in the same field offered solutions to some of the problems associated with the liquid waste transport industry in Western Australia. The development of the Global Position Systems for tracking waste transportation drew from other fields. Fisheries agencies nationwide have made effective use of this technology to monitor catches, enforce quotas and police regulations. This was used as the benchmark in research and development for the application of these technologies to the transport of wastes.

### **7.2 Continuous Improvement**

A commitment to continuous improvement is a standard feature of programs delivered by the Department of Environmental Protection. This commitment is best reflected in a Statement of Values developed by the staff and published shortly after the division's formation as 'the Office of Waste Management' in April 1994 (Appendix 1).

The success of the liquid waste initiatives draws heavily on measurement and identification of specific problems in industry and development of solutions to make positive changes. Without measurement and assessment of the program, the proposed changes could not have been implemented.

An example of this is the establishment of the WasteTrack system for grease trap and oil interceptors. The nature of the system meant that we were able to develop a series of performance indicators which compared the volume of wastes expected to be transported and disposed at the disposal site with actual volumes transported within the system, to total volumes transported (see Appendix 2-C and D) on a monthly basis.

Within three months of commissioning the system, the measurement systems showed that the business objectives were not being achieved. After further investigation of this problem, the administration of the system was redesigned by issuing the vouchers directly to the customer's nominated contractor. This change caused some initial confusion with our new customers but the approach has proven to be successful in meeting our objectives and also ensuring a more effective and efficient system of management (table 1).

Our inspection services have also evolved with the changing work environment. When problems were encountered, the staff were allowed to develop and implement innovative ways to overcome them. This has seen the development of sampling equipment to allow more accurate assessment of grease trap service intervals. These innovations once evaluated and proven were documented and shared with other staff to provide consistency of service.

### 7.3 Quality Management

A quality management approach is essential to offer an effective and equitable service to over 4,000 customers and ensure adequate controls are in place to manage data critical to maintaining and improving the delivery of this service. Commitment to this is achieved through the use of clear and documented procedures.

The design of the procedures manual is quite unique, as it not only shows the life cycle of each discrete job using flow charts but also links these to detailed written procedures and other tasks. In planning the procedures manual much emphasis was placed on its ease of use, which we feel has been achieved.

An integral part of our journey to achieve a quality administrative system is the use of an integrated records management and document control system in this section. A database has been set up to register all incomings and outgoing correspondence, and these are allocated to file prior to action. To achieve this, all registrations are managed within the section.

These tools allow all customer contacts to be traced and accurately recorded which has seen dramatic improvements in the way we do business and relate to our customers. The document control and records management system will play an important step in toward the Quality Accreditation of this area.

### 7.4 Customer Focus

The commitment to this aspect of our system is critical and has been integrated into the systems approach to our service delivery.

Through our experiences over the last ten years, we realized that despite having a state of the art tracking systems and increased regulations, our environmental and public health objectives could not be achieved without the cooperation of our customers, in maintaining contact. The manner in which the inspectors are used provides an individual approach in managing the industry and seeking compliance.

Since November 1996, inspection staff have visited over 3,000 customers each year to provide individual assessments and licence inspections. These inspections result in modifications to registrations or licenses and were recorded on both the WasteTrack database and each customers file.

All of these requirements tie into the highly efficient records management system which tracks business history and ensures equitable treatment of customers. Equity is the backbone of this system and guarantees that the largest and smallest producers comply with the same regulations, procedures and environmental standards.

The level of compliance with service schedules for grease and petrol and oil traps has been monitored and has shown a steady since inception 1 July 1996 as follows:

**Table 1 Regulatory Compliance**

<u>Period</u>	<u>%Compliance</u>
July - December 1996	61.3
January - June 1997	93.5
July - December 1997	91.3
January - June 1998	93.0

This compliance is a direct result of our commitment to customer focus and reflects the success in changing the culture of the liquid waste industry.

## 8 FUTURE CHALLENGES

In line with our the commitment to continual improvement several challenges lay ahead to further improve our service delivery and maximize our environmental protection and public health objectives. These include:

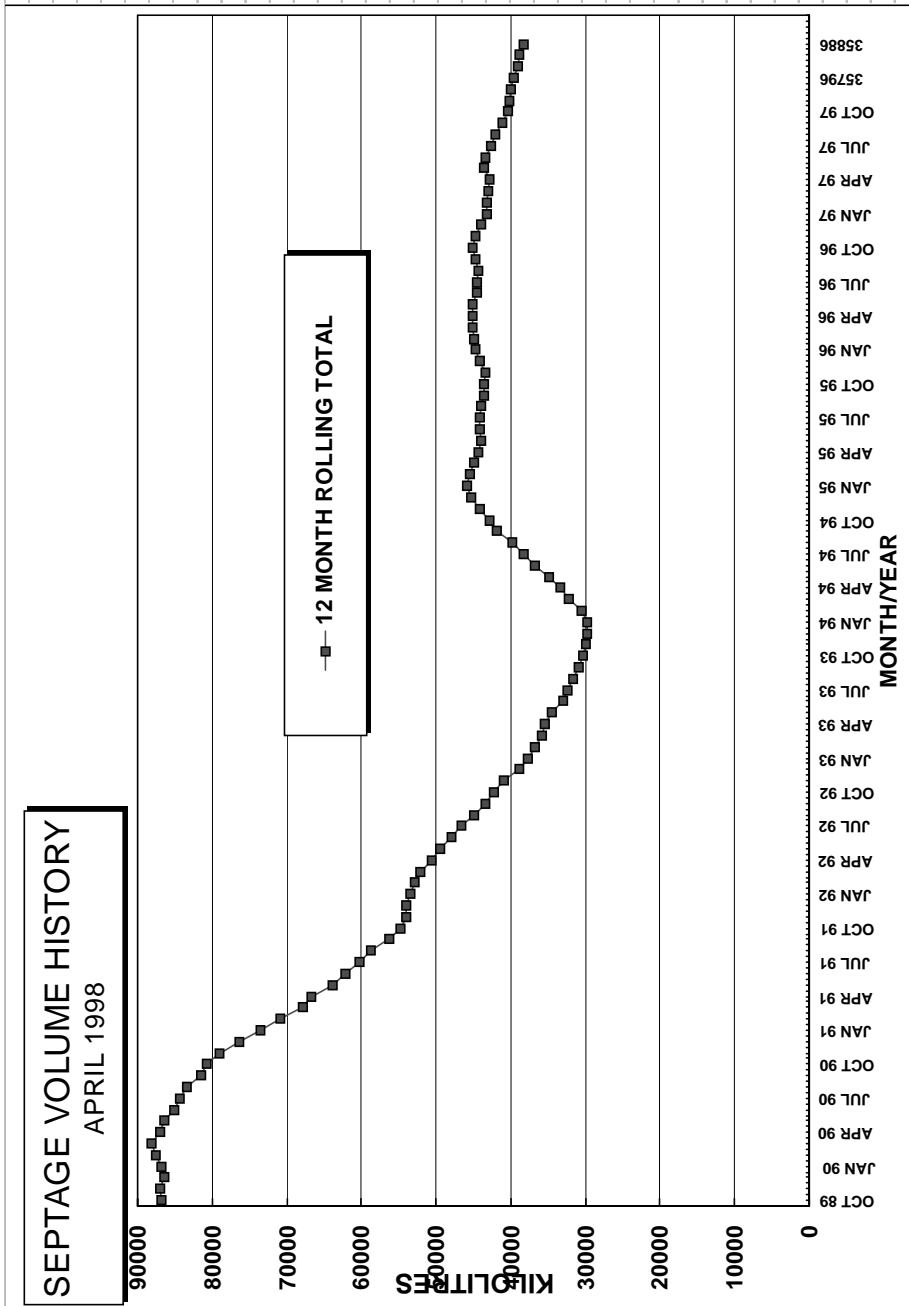
- commissioning of the quality procedures manual and achievement of Quality accreditation of this section to ISO 9002;
- development and refinement of our performance indicators to meet changing industry priorities and reflect environmental inputs;
- management and maintenance of an efficient records management system;
- refinement of delivery of our inspection / customer service to achieve highlighted efficiency gains;
- delivery and commissioning of the GPS tracking system;
- marketing of the GPS tracking system for use in other related applications at State, National and International levels;
- introduction of this system to regional Western Australia; and
- development and implementation of inter agency policies to deal with the decommissioning of septic tanks as a result of infill sewerage.

## **APPENDIX 1 WASTE MANAGEMENT DIVISION STATEMENT OF VALUES**

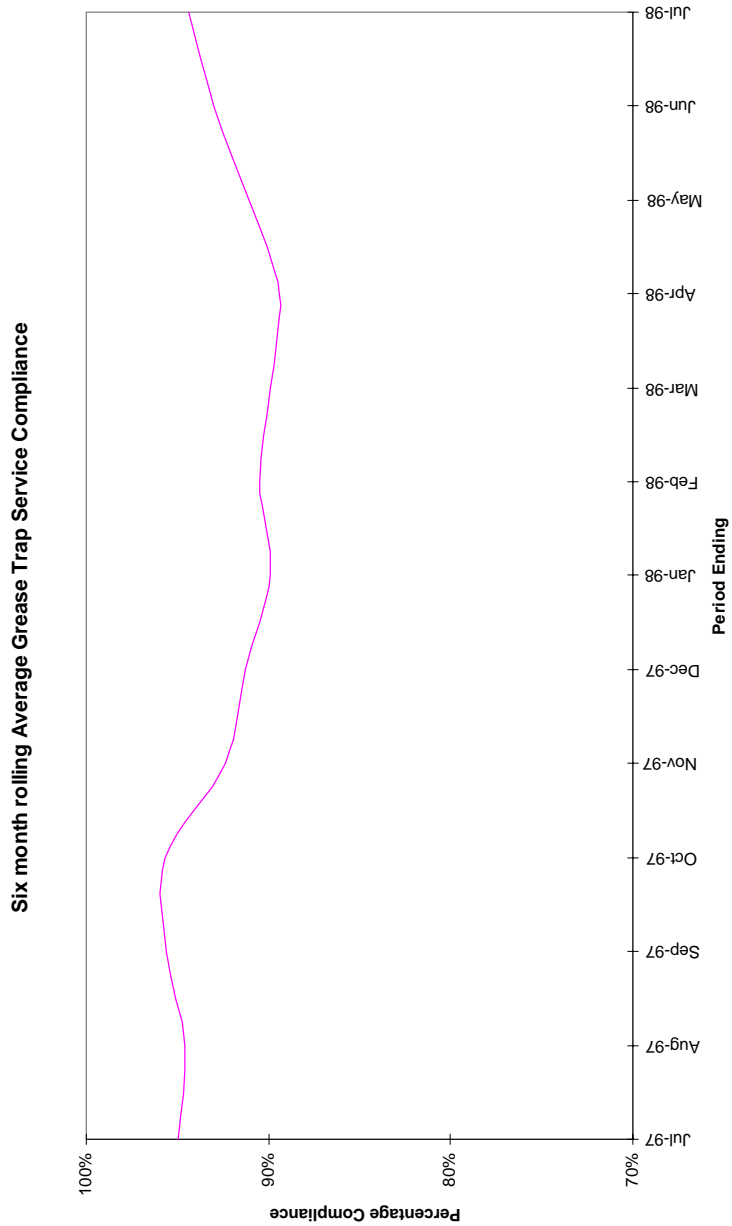
The Waste Management Division, as part of the Department of Environmental Protection, will operate with a sound values structure:

- Our Clients are important and valued people.
- We will operate with integrity and honesty in our dealings with others.
- Our operations will be performed with efficiency and a professional approach.
- We will strive to continuously improve all our products and services.
- Our staff are acknowledged as our most important resource and have a shared responsibility for our success.
- We will be a caring and open employer.
- We will operate to the highest standards of public sector management, and comply with all relevant policies and laws.
- We will offer staff the opportunities to improve their knowledge and skills and access a range of work environments.

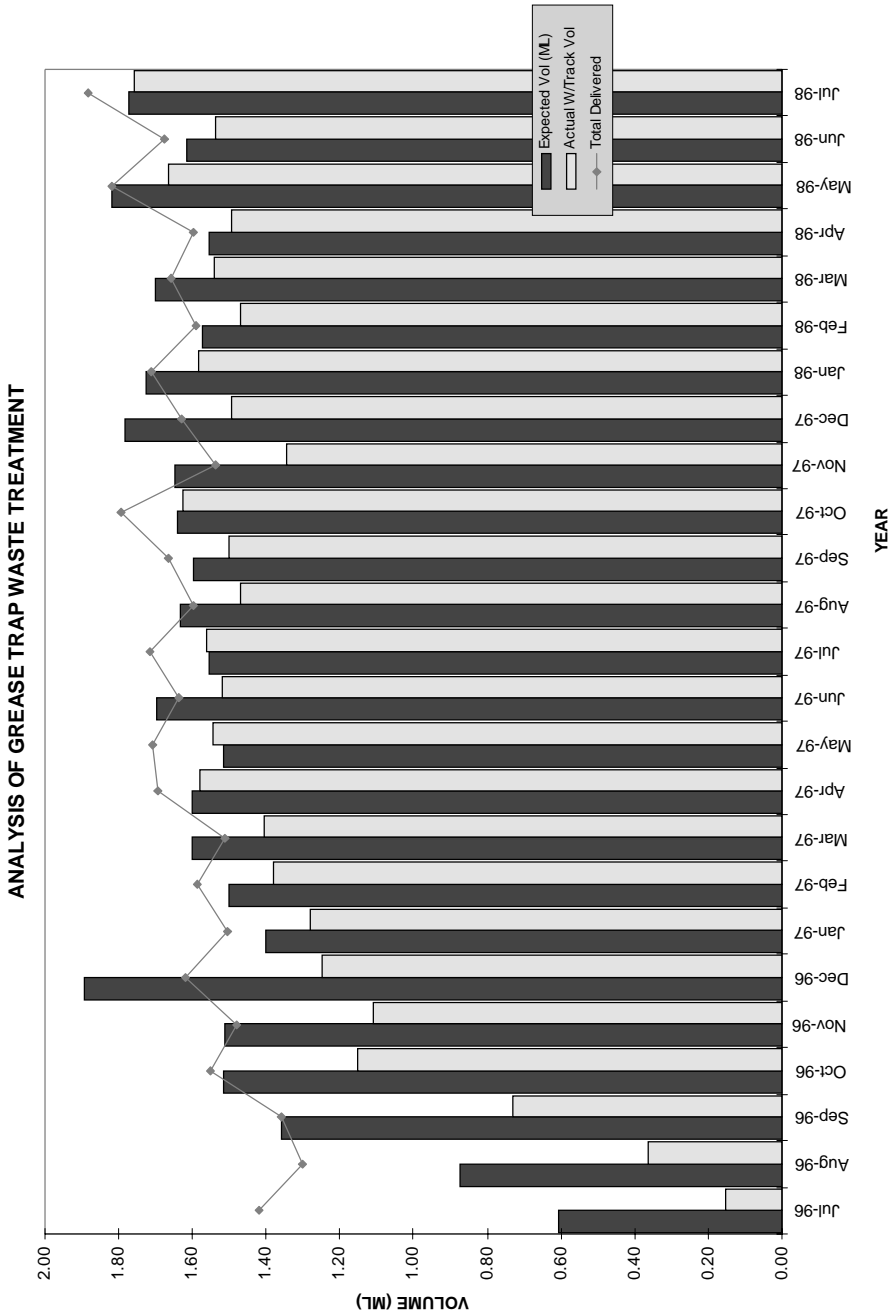
APPENDIX 2-A PERFORMANCE INDICATORS  
TWELVE MONTH ROLLING AVERAGE SEPTAGE VOLUME



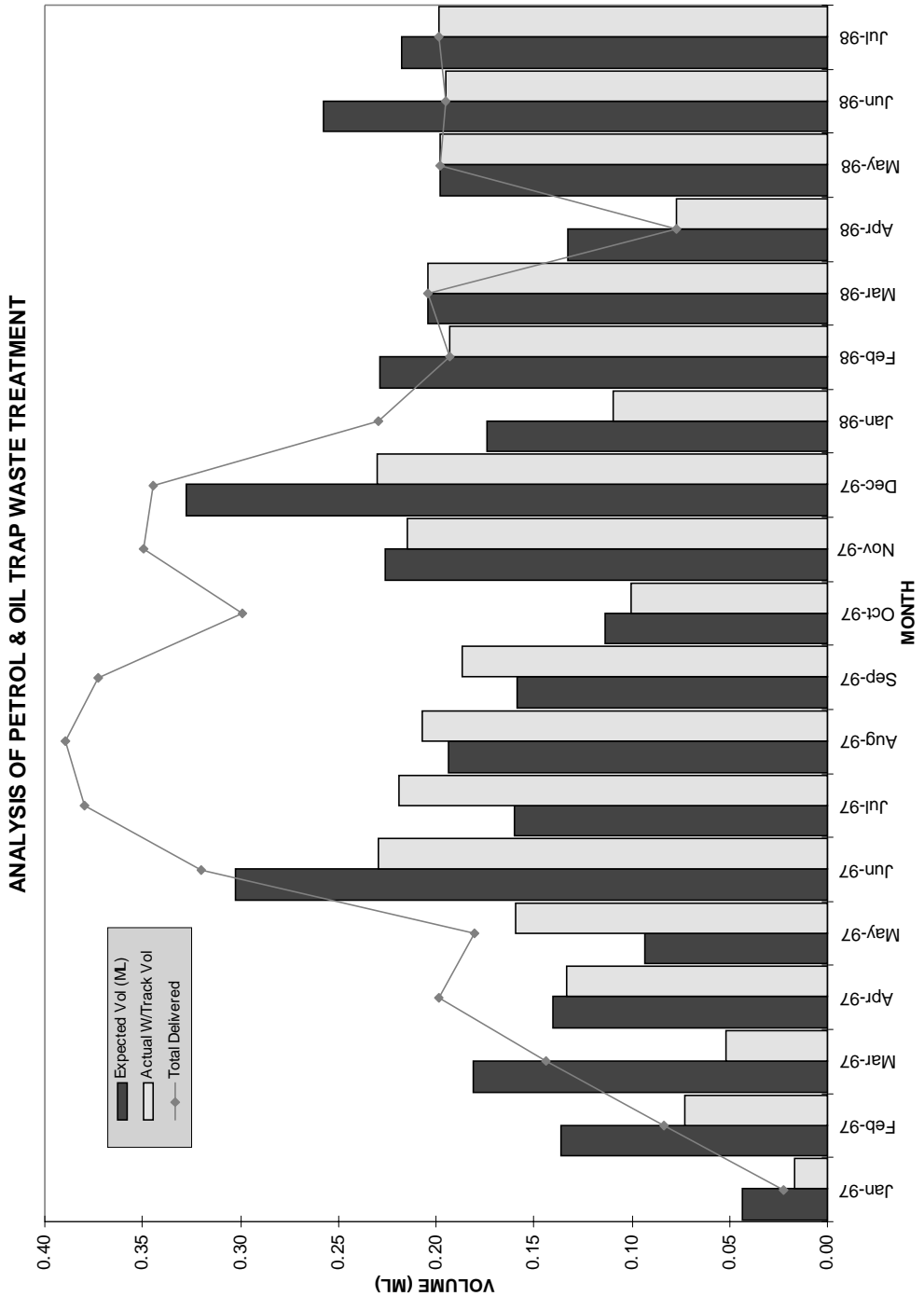
**APPENDIX 2-B                      PERFORMANCE INDICATORS**  
**SIX MONTH ROLLING AVERAGE GREASE TRAP SERVICE COMPLIANCE**



**APPENDIX 2-C                      PERFORMANCE INDICATORS  
ANALYSIS OF GREASE TRAP WASTE TREATMENT**

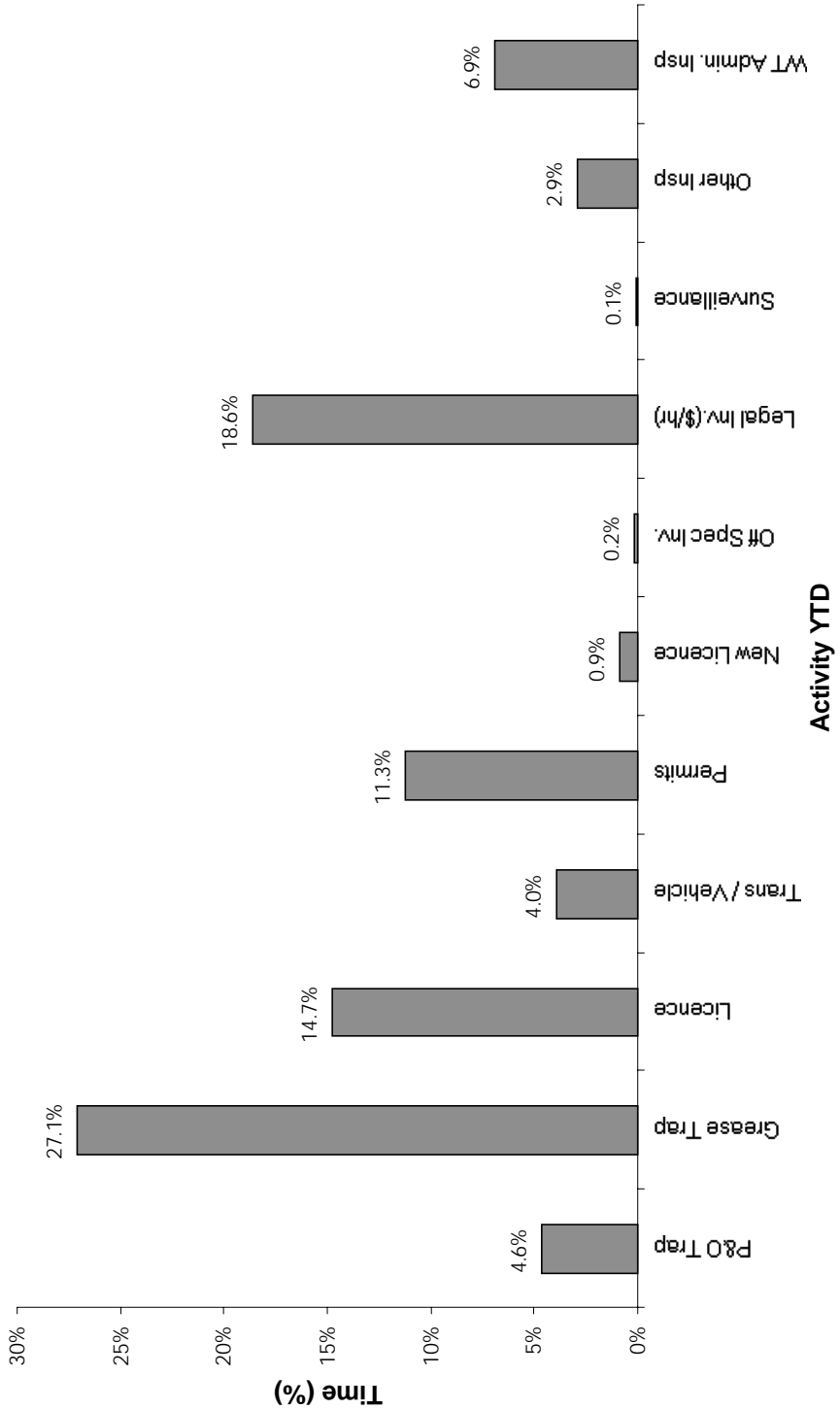


**APPENDIX 2-D PERFORMANCE INDICATORS  
SIX MONTH ROLLING AVERAGE GREASE TRAP SERVICE COMPLIANCE**

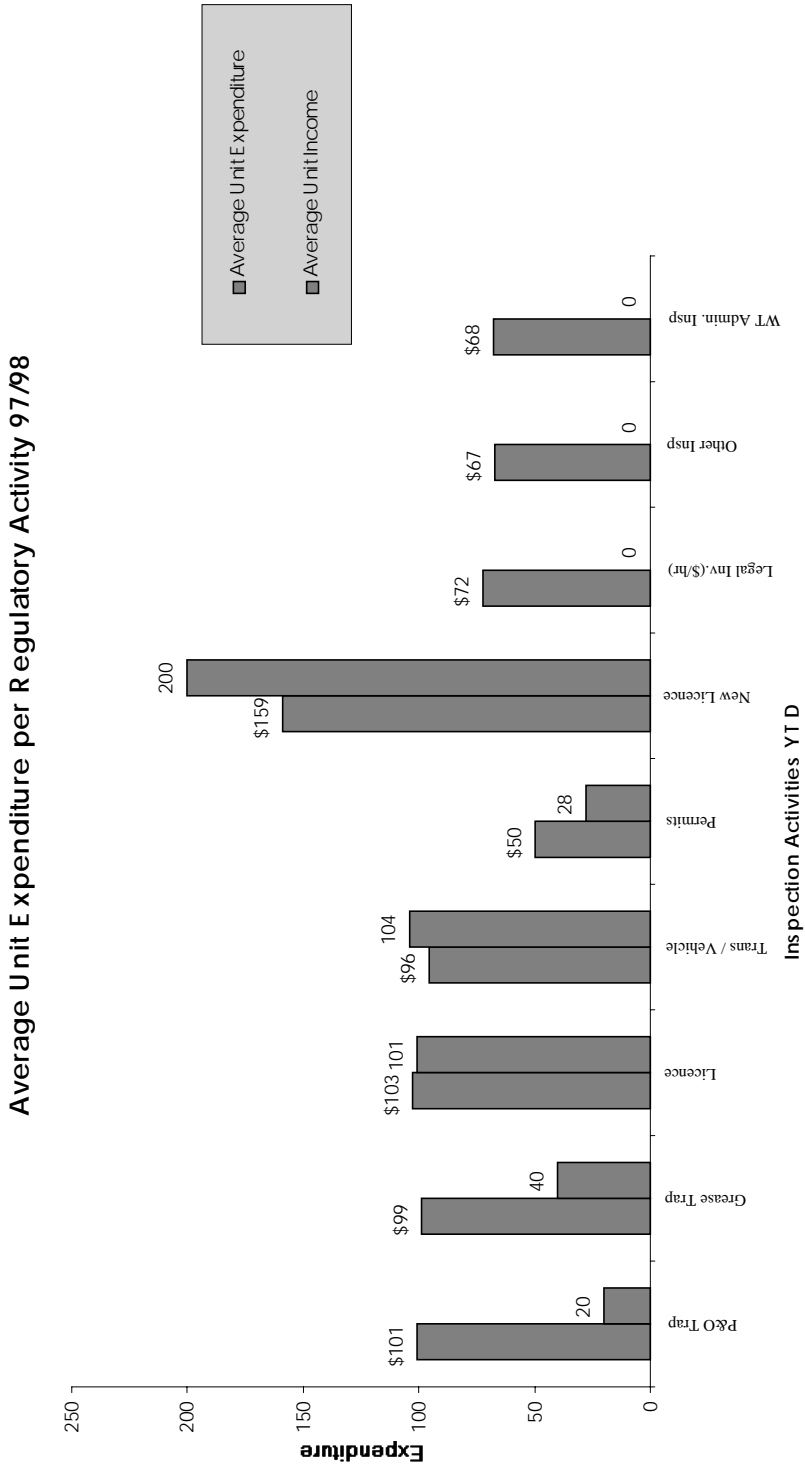


**APPENDIX 3-A EFFICIENCY INDICATORS**  
**PROPORTION OF TIME SPENT ON REGULATORY ACTIVITIES 97/98**

**Proportion of Time Spent on Regulatory Activities 97/98**



**APPENDIX 3-B                      EFFICIENCY INDICATORS**  
**AVERAGE UNIT EXPENDITURE PER REGULATORY ACTIVITY 97/98**



**APPENDIX 3-C                      WASTE TRACK RECONCILIATION  
(AS OF 30 JUNE 1998)**

	Opening Balance (As of 1 January 1998) (includes \$70,000 not paid to CRF in Dec '97)	\$	\$314,322
<u>Plus</u>	Grease Trap Revenue	\$	648,745
	P&O Trap Revenue	\$	<u>130,067</u>
	<b>Total Revenue</b>	<b>\$</b>	<b>1,093,134</b>
<u>Less</u>	Payments to consolidated fund G/T *(includes GT rev Commitment of \$53K) #(includes GPS project funding commitment of \$110K)	\$	256,000
	Payments to consolidated fund P&O *(includes P&O rev commitment of \$6K) #(includes GPS project funding commitment of \$10K)	\$	23,000
	Payments made for treating G/T waste	\$	503,475
	Payments made for trating P&O waste	\$	97,298
	Refund Grease Traps	\$	237
	Refund P&O Traps	\$	<u>844</u>
	<b>Total Cash at Bank</b>	<b>\$</b>	<b>212,280</b>
<u>Less</u>	Liabilities for G/T waste to 30 June 1998 (Invoiced but not yet paid) (expected not yet invoiced)	\$	59,903
		\$	30,000
	Liabilities for P&O waste to 30 June 1998 (Invoiced but not yet paid) (expected not yet invoiced)	\$	14,941
		\$	10,000
	*Grease Trap Revenue Commitment (CRF)	\$	51,659
	(*P&O Trap Revenue commitment (CRF)	\$	6,213
	Credits to clients	\$	6,918
	Liabilities for treatment costs raised but not invoiced	\$	11,496
	<b>Gross Total Non-Committed Funds</b>	<b>\$</b>	<b>79,022</b>
	#GPS Project funding commitment	\$120,000	
	<b>Net Total Non-Committed Funds</b>	<b>\$</b>	<b>79,022</b>



