

**Florida Department of Environmental Protection
DIVISION OF WASTE MANAGEMENT
Bureau of Petroleum Storage Systems**

**PETROLEUM
CONTAMINATION CLEANUP
and
DISCHARGE
PREVENTION PROGRAMS**



- DECEMBER 2009 -

**Florida Department of Environmental Protection
Bureau of Petroleum Storage Systems
December 2009 Program Briefing**

PROGRAM ORIGINS

Regulation of underground petroleum storage tanks began in the early 1980s with the recognition that Florida's groundwater, which provides 90% of the state's drinking water, 70% of the state's industrial water and 50% of its agricultural water needs, was at risk of becoming contaminated. In 1982, petroleum contamination from a leaking underground petroleum storage tank was documented in a well field for the City of Bellevue, in Marion County. The legislative response to the problem was the passage of the Water Quality Assurance Act of 1983. The law provided for:

- Prohibition against petroleum discharges
- Required cleanup of petroleum discharges
- State mandated cleanup if not done expeditiously
- Strict liability for petroleum contamination
- Required tank inspections and monitoring

The provisions of the 1983 Act were implemented by rule under the former Florida Department of Environmental Regulation (FDER), but by 1985, the situation became clear that an incentive program was needed to accelerate the assessment and cleanup process for petroleum contaminated sites. The Legislature considered the alternatives and created the State Underground Petroleum Environmental Response Act of 1986. The fiscal analysis that accompanied the legislation in 1986 predicted as many as 2,000 contaminated sites throughout the State. As of December 2009, the total number of contaminated sites exceeded 24,877 of which 17,487 are eligible for state funding.

The 1986 legislation also created the Inland Protection Trust Fund (ss. 376.3071, Florida Statutes) to pay for the expedited cleanup of petroleum contaminated sites. The Inland Protection Trust Fund (IPTF) is a non-lapsing revolving trust fund with revenues generated from an excise tax per barrel of petroleum products currently produced or imported into the State as defined in ss. 206.9935, Florida Statutes. The amount of the excise tax collected per barrel is dependent upon the unobligated balance of the IPTF according to the formula: thirty cents if the balance is between \$100 and \$150 million; sixty cents if the unobligated balance is between \$50 and \$100 million; and eighty cents if the unobligated balance is less than \$50 million.

BUREAU'S MANAGEMENT APPROACHES TO SITE CLEANUP

1996 To Present

The Bureau has two basic missions. The first is to clean up, in a health threat priority order system, all known petroleum-contaminated sites eligible in one of the five legislative cleanup programs and to ensure that all non-eligible discharges are cleaned up in accordance with Chapter 62-770, FAC. The second mission is to reduce or eliminate future discharges to ensure that the State does not suffer a petroleum contamination relapse of the magnitude that was discovered in the late 1980s and early 1990s.

In 1996, the Bureau redirected activities to:

- Preapprove the scope and costs of cleanup activities for all state-funded eligible sites. (While the Bureau does not micromanage contractors, the Bureau is statutorily required to approve the prepared scope of work and technical approach submitted by the contractor. The Bureau is not obligated to approve any scope of work with which it does not agree).
- Utilize business-based approaches to operations
- Develop a "tool kit" of alternative cleanup strategies to fit various cleanup scenarios
- Provide for on-going program audits and accountability

The successful implementation of the Bureau's two missions has been largely due to the establishment of an innovative baseline program structure and to constant refinements and improvements in the way operations are conducted, outsourcing initiatives are implemented, and training and standardized procedures are developed and instituted.

Risk-Based Corrective Action

Legislation in 1996 required formalization of Risk-Based Corrective Action (RBCA) procedures at petroleum contamination sites. RBCA considers the actual risk to human health, public safety and the environment in determining whether alternative cleanup strategies can be utilized to provide for more cost-effective cleanups. RBCA allows for using alternative cleanup target levels, institutional and engineering controls and remediation by natural attenuation in lieu of using conventional cleanup technologies on a case-by-case basis. These RBCA strategies allow the Bureau to make cleanup decisions that can reduce costs while protecting human health and the environment. RBCA concepts and strategies were folded into the Bureau's petroleum cleanup rule, Chapter 62-770, FAC, in 1997.

Cost Templating/Standardization

The underpinning of the Bureau's innovative baseline program structure is to focus on the scope of work and to standardize the ways in which site rehabilitation work is conducted. The Legislature required the Bureau by statute to develop "templates" which provided for standardized forms and pricing schedules for activities conducted on a job site. This innovative structure and approach has significantly reduced or eliminated negotiation times with cleanup contractors, reduced or eliminated subcontractor bidding requirements, resulting in more sites being assessed, remediated and closed. In addition, the Bureau established a standard operating procedure manual (SOP) and numerous geological and engineering technical guidance documents to ensure consistency throughout the program for both internal operations and the cleanup industry.

Program Audits

The Bureau works closely with the Department's Office of Inspector General (OIG) to establish short, mid and long-term audit schedules for the staff augmentation, administrative, compliance and local program cleanup oversight contracts as well as audits on the cleanup contractors who perform the actual remediation work. Audits are routinely conducted, reports are reviewed and action taken where necessary in order to protect the integrity of the state's petroleum cleanup discharge prevention program.

COMPLIANCE AND ENFORCEMENT

Compliance Inspections

The Bureau's successful wholesale and retail petroleum compliance program for monitoring how well registered sites are complying with the State's storage and distribution engineering requirements as stipulated in Chapters 62-761 and 62-762, FAC, continues to produce outstanding results. Inspectors ensure facilities maintain equipment upgrades; that leak detection systems are functioning; that reconciliation records are up to date and, that new discharges are handled appropriately. Inspectors work closely with owners and operators and provide expertise and advice on their petroleum storage and distribution systems. All inspectors receive initial and continuation training and must pass a test prior to participation in the inspection program.

Active Tank Facility Registrations

During the first half of Fiscal Year 2009/2010, the Bureau maintained site records on more than 48,394 underground and above ground tanks and 21,359 registration placards issued to facilities during the year.

Discharge Reports Filed

The Bureau requires that all new discharges of petroleum products be reported. Since 1993, the numbers of reported discharges has declined dramatically. This decrease can be attributed to engineering improvements such as double walled tanks and piping, secondary containment and leak detection systems as well as diligence on the part of the inspectors, owners and operators. The number of total discharges per year is shown in **Figure 1**.

During the 2006 Legislative session, new statutory language was added to Chapter 376 which directs the program to fold new releases having occurred on or after July 1, 2005 into the existing state funded eligibility if the facility has met specific legislative-required criteria.

Discharges Reported

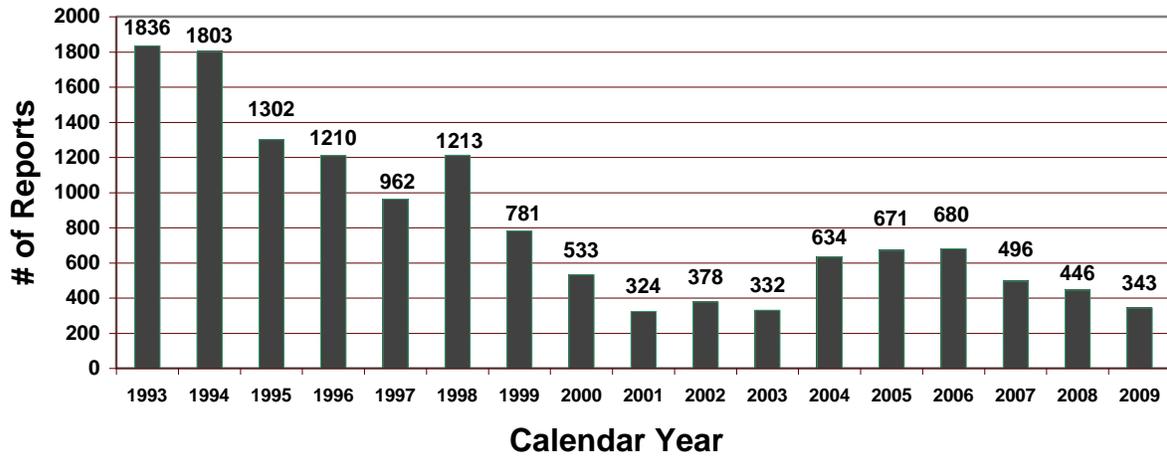


Figure 1

OUTSOURCING/CONTRACTING

Over the past seven years, the Bureau has created an infrastructure consisting of State staff, county contracted staff and private contractors to address the administrative and management issues and complex technical issues associated with petroleum, pollutant and hazardous materials discharge prevention and contamination cleanup.

County Compliance Contracting

In order to prevent or reduce future discharges of petroleum products, the Bureau established an aggressive and comprehensive inspection, compliance and enforcement program. The Bureau has 39 contracts with counties and local Department of Health Districts to establish and maintain inspections, compliance and enforcement covering all 67 counties. The compliance contracts employ approximately 140 field inspectors. Florida's petroleum inspection, compliance and enforcement program is the State's first line of defense for ensuring that petroleum storage and distribution systems are maintained and upgraded as required by law and that all new discharges are reported and cleaned up. All inspectors are required to attend formal training and must pass a test in order to be recognized as a State inspector. Continuous training is also required for all inspectors.

County Cleanup Contracting

Over the past few years, the Bureau has expanded its operations as the number of sites undergoing petroleum contamination cleanup has increased. In order to meet this challenge, the Bureau initiated contracts with counties and local Department of Health entities to establish cleanup programs so that more sites could be managed at the local level. The Bureau has entered into contracts with 14 counties and local Department of Health offices to manage petroleum cleanups covering 20 counties. The contracted cleanup programs employ approximately 80 people, most of whom are geologists, engineers and scientists. To maintain consistency, all staff members associated with the program are required to use the program SOP manual and technical guidance documents. In addition, all staff are required to attend initial and refresher training on all aspects of petroleum assessment, remediation and internal operations.

Private Sector Contracting

Over the past seven years, the Bureau has increased its work output by utilizing private contractors to augment State employees. To supplement the Bureau's four operational cleanup teams that handle the review and oversight of the cleanup of contaminated sites, two additional contractor teams were hired. The contractor teams provide approximately 40 - 50 additional professional staff members, including engineers, geologists, and scientists, to implement the preapproval program and oversee cleanup work. The cost of the two contractor teams is approximately \$5 – 6 million per year for each team. In addition, the Bureau utilizes private contractors at a cost of approximately \$2.07 million per year to provide administrative support and State-

owned equipment management services, including priority scoring; accounting and support staff; contractor qualification; contractor designation form solicitation and processing; deductible and LCAR solicitation and tracking; utility invoice processing; file and database QA, off-site contamination notification; equipment inventory and tracking; evaluation and minor repair of equipment; management of two equipment storage warehouses; and remediation system performance tracking services. The Bureau also uses private contractors as needed to perform ability to pay analyses and legal support services. The use of contract staff has allowed the Bureau to dramatically increase its business volume without incurring long-term staffing obligations.

Department of Health Contracting

All petroleum contaminated sites are scored so that site prioritization based upon health risks and threats to human receptors can be maintained. In addition, representative potable wells in the vicinity of petroleum release sites need to be monitored for petroleum contaminants. Those found contaminated need to be treated or have alternative sources of water provided. The Department of Environmental Protection has a direct legislative appropriation of approximately \$300,000 annually for potable water treatment and replacement which is administered through the Division of Water Resource Management. The Department of Health has a direct appropriation of approximately \$1.3 million for potable water well surveys, and sampling and analyses to ensure water integrity. In addition, the Division of Waste Management has established a contract with the Department of Health to provide additional well surveillance activities on an overflow basis at an annual cost of approximately \$600,000.

LEGISLATIVE FUNDING

Beginning with the restructuring of the petroleum cleanup and discharge prevention program in 1996, the Legislature began funding the preapproval program. The funding history to achieve these improvements is depicted in **Figure 2**.

Preapproval Funding

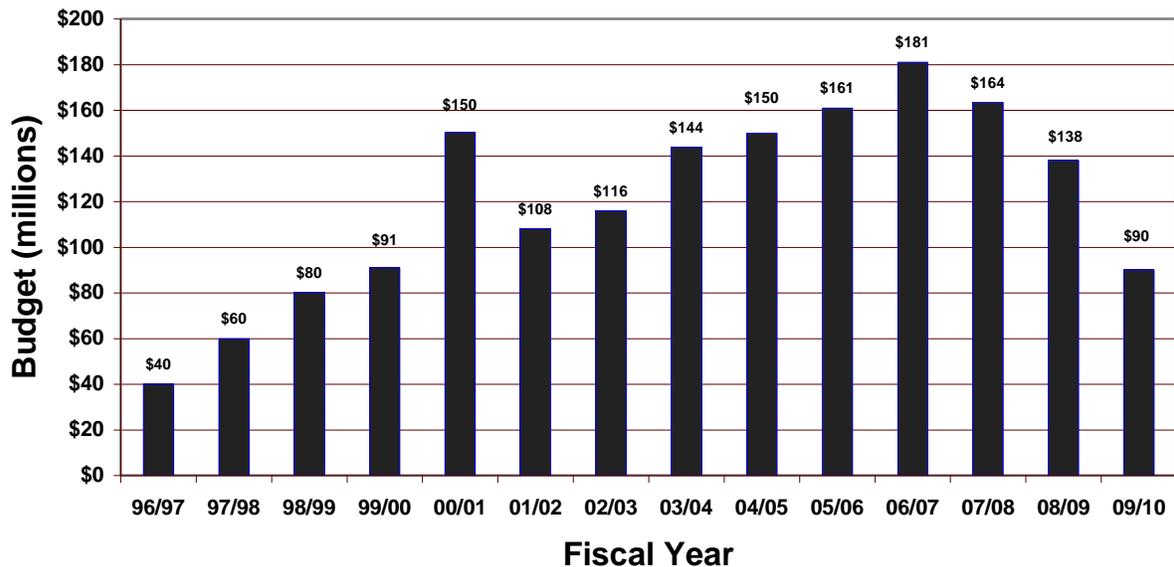


Figure 2

PERFORMANCE MEASURES

Overall Program Performance

There are 17,487 sites that have been identified, ranked and determined eligible for state-funded cleanup under the various programs administered by the Bureau. The program progress is summarized as follows:

- *Total number of contaminated sites registered in a state funded program eligible – 17,487*
- *Eligible sites undergoing cleanup as of December 2009 – 2,570*
- *The score range for funding active sites was raised from 45 to 60 on May 14, 2009, and then adjusted to 56 in September in response to the reduction in the program's funding. Before the score was raised in May, there were about 3,488 sites within the active scoring range.*
- *Eligible sites awaiting cleanup as of December 2009 – 8,871*
- *Total number of eligible site closures as of December 2009 (cleanups completed) – 6,046*
- *Total number of ineligible site closures as of December 2009 (cleanups completed) – 5,521*

Number of Work Orders Issued

Two key indicators of performance within the petroleum cleanup program are the number of work orders issued for cleanup activities and the number of site closures. In other words, the tally of the number of work orders and site closures and the corresponding dollar value is the measure of program activity and intensity. **Figure 3** documents the ramp up of the workload since mid-1996 and **Figure 4** documents the number of eligible and ineligible site closures since 1996.

Work Orders / Task Assignments / Other Contracts: Preapproval Program

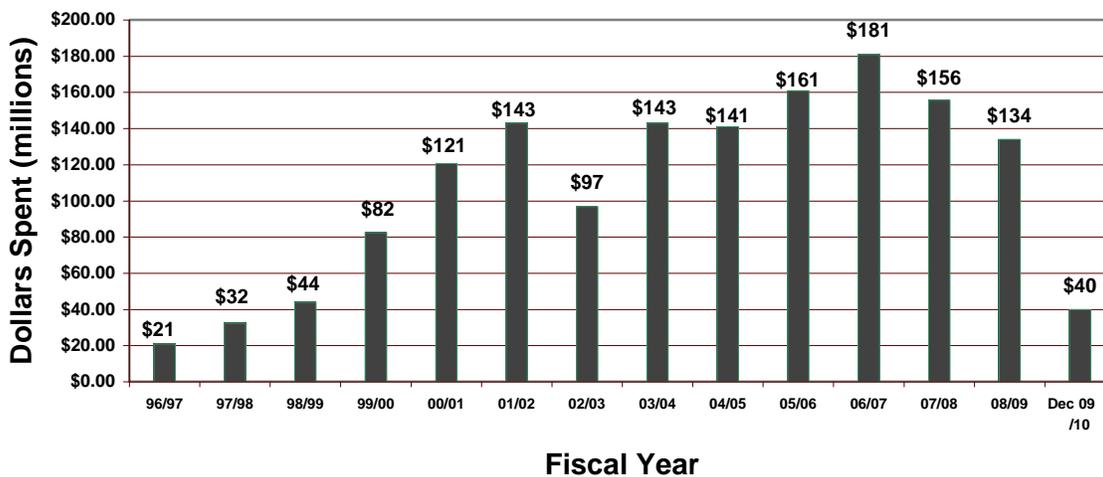


Figure 3

Cleanups Completed

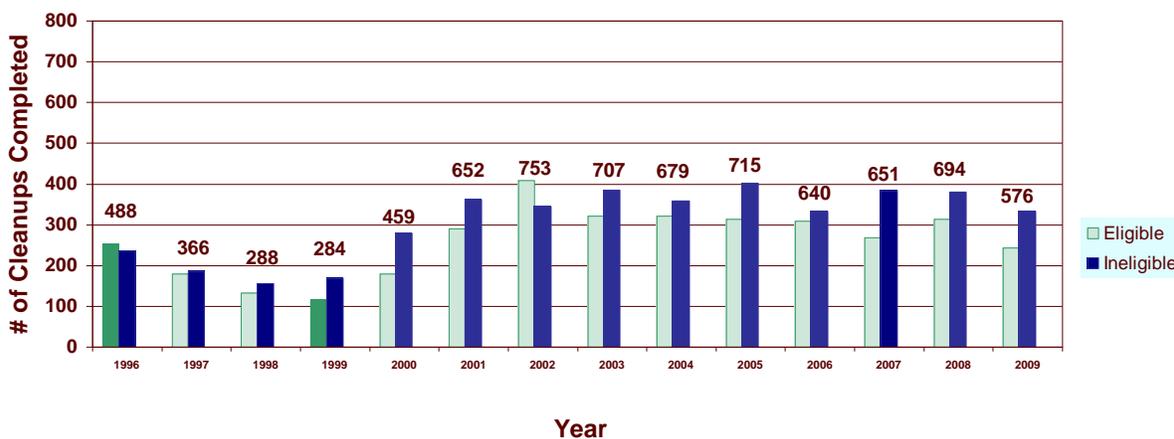


Figure 4

Cleanups Underway

Figure 5 depicts the number of sites where cleanup operations are underway. This graph shows the dramatic acceleration in program activity from 1996 to present.

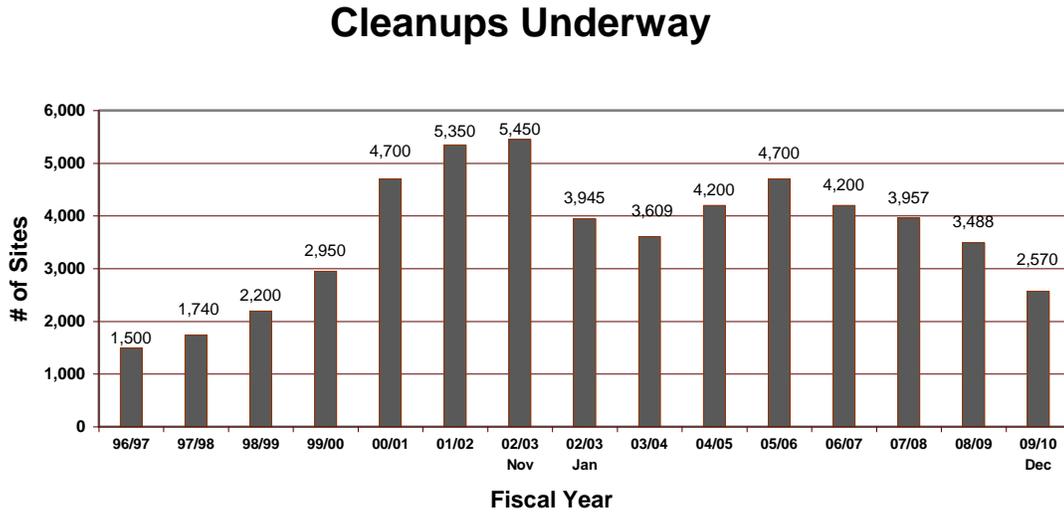


Figure 5

Fiscal Year 2009/2010 Active Cleanups are expected to drop to approximately 1,900 sites due to reductions in funding.

RECENT DEVELOPMENTS

In 2002 the Bureau instituted a streamlined Petroleum Contamination Assessment process which was designed to speed up the process of determining the vertical and horizontal extent of the contamination plume. This new streamlined assessment process has been very successful and contamination assessments that were previously taking 18 – 24 months are now completed in 9 months or less.

In early 2003 the Bureau began an extensive review of the efficiency and effectiveness of the remediation systems used to remove petroleum contamination from soil and groundwater. The results of this study indicated that a more comprehensive approach to engineering design, component selection, construction, testing, operations and monitoring of remediation systems was essential to increased site closures and increased efficiency and effectiveness. In July of 2003 the Bureau instituted new standards for all phases of remediation operations and in March of 2004 instituted new payment standards. Contractor performance standards were also established linking remediation performance to contractor performance/nonperformance criteria. Additionally, each cleanup team and county cleanup program has a designated engineer who reviews quarterly remediation system performance reports and provides recommendations to the site managers and a systems field inspector who ensures that the system is running and performing to design specifications. The improved standards which integrate design, component selection, construction, testing and operations coupled with human and automation monitoring vastly improved remediation system performance, efficiency and effectiveness resulting in more site closures per year and greatly reduced cleanup timelines. In addition, remediation systems are being refurbished and reused at other sites, reducing the capital investment costs of purchasing new systems.

Over the past few years, the Bureau has made several attempts to project and estimate the costs associated with site cleanups. There are multiple variables associated with each contaminated site and each site is best viewed as a separate project with its own set of circumstances and variables. Each site requires extensive assessment to determine the depth and width of the contamination plume, what geology is present and particulars on groundwater flow. Such assessments are done by physically drilling for soil and groundwater samples as deep as 100 feet or more. The contamination plume is essentially chased across the source property and beyond until the laboratory analyticals indicate where the outer edge of the plume is located.

Once an assessment report is completed based upon the physical investigation at the site, the engineers and geologists decide on the best course of action to cleanup the site. A typical assessment report presents the vertical and horizontal contamination plume on maps, groundwater flow, geology and laboratory analytical tables which show which contaminants are present, where they are and at what levels, and recommendations on how to approach the cleanup. The costs for assessment can run as little as \$20,000 and as high as \$100,000 or more.

Depending on whether a mechanical remediation system is to be installed or the soil will be removed or a combination of approaches, the costs could run \$100,000 to

\$200,000 for system construction and \$60,000 or more per year to operate a remediation system. Systems can run for several years before the site is ready for monitoring and closure. Soil removals can cost up to several million dollars depending on how deep and wide the contamination is and whether roadways, parking lots or structures need to be moved, demolished or relocated.

Geology, vertical and horizontal extent of the plume, levels of contamination, whether petroleum in its liquid state is present and whether there is groundwater contamination are, in many cases, the main variables which determine the cleanup costs at a site. The total cost of a cleanup could be as low as \$20,000 - \$30,000, where no contamination is detected and as high as \$5 million or more where contamination has sunk deep into the ground requiring a massive soil removal and groundwater remediation effort. In 2002 the average cost of a cleanup was approximately \$460,000. In 2004 the average cost of cleanup dropped to \$380,000 per site. Since 2004 the average cost has risen slightly to \$400,000 per site. The Bureau fully expects the average cleanup costs to oscillate over the years. However, as the program begins to address low scored sites in the years to come, larger contamination plumes are expected because these sites have been awaiting cleanup for many years. It is anticipated that the average cost for a site cleanup will rise dramatically.

RECENT PROGRAM DIRECTIONS

Preapproval Advanced Cleanup Program

The Preapproval Advanced Cleanup Program (PAC) was created to provide an opportunity for site rehabilitation to be conducted on a limited basis in advance of the site's priority ranking. Applicants in this program bid a significant cost share for cleanup work and successful projects are allowed to move forward in advance of other priorities. **Table 1** below summarizes the number of participants and the cost sharing since 1996. Eleven of the last twelve cycles of the PAC program were cancelled due to the need to fund priority scored site cleanups.

Table 1: Preapproval Advance Cleanup Program

Application Period	Winning Applicants	DEP Funding	Applicant Funding	Average Applicant Cost Share %
11/01/96 – 12/31/96	63	\$ 4,063,853.54	\$ 7,371,481.47	62.90%
05/01/97 – 06/30/97	69	\$ 4,262,593.40	\$ 6,575,902.70	60.02%
11/01/97 – 12/31/97	20	\$ 1,709,636.58	\$ 2,006,055.30	53.33%
05/01/98 – 06/30/98	38	\$ 5,658,372.35	\$ 7,088,115.90	53.76%
11/01/98 – 12/31/98	30	\$ 1,300,329.57	\$ 1,494,862.04	44.81%
05/01/99 – 06/30/99	8	\$ 2,643,793.14	\$ 1,121,681.06	33.02%
11/01/99 – 12/31/99	14	\$ 1,260,041.80	\$ 583,616.20	37.59%
05/01/00 – 06/30/00	13	\$ 1,561,743.80	\$ 664,581.12	29.54%
11/01/00 – 12/29/00	5	\$ 830,149.67	\$ 325,760.14	27.80%
05/01/01 – 06/30/01	15	\$3,074,144.05	\$1,208,845.09	27.18%
11/01/01 – 12/29/01	25	\$6,775,956.04	\$2,357,243.15	26.53%
05/01/02 – 06/30/02	6	\$1,086,489.77	\$391,786.83	27.50%
11/01/02 – 12/29/02	-----	CANCELLED		-----
05/01/03 – 06/30/03	-----	CANCELLED		-----
11/01/03 – 12/29/03	-----	CANCELLED		-----
05/01/04 – 06/30/04	-----	CANCELLED		-----
11/01/04 – 12/31/04	-----	CANCELLED		-----
05/01/05 – 06/30/05	-----	CANCELLED		-----
11/01/05 – 12/31/05	-----	CANCELLED		-----
05/01/06 – 06/30/06	-----	CANCELLED		-----
11/01/06 – 12/31/06	-----	CANCELLED		-----
05/01/07 – 06/30/07	18	\$4,848,000.35	\$5,449,734.87	51.46%
11/01/07 – 12/31/07	-----	CANCELLED		-----
05/01/08 – 06/30/08	-----	CANCELLED		-----
11/01/08 – 12/31/08	-----	CANCELLED		-----
05/01/09 – 06/30/09	-----	CANCELLED		-----
11/01/09 – 12/31/09	-----	CANCELLED		-----

Note: The PAC program allows for discretionary funding on sites below score range. Since 2002 the program has concentrated funding on sites within score range to help increase site closures on higher scored sites.

Cost Share Agreements

The Bureau developed Cost Share Agreements for handling the problem where new discharges occur at sites where there is an existing discharge, which is eligible in one of the State's four cleanup programs. The mixed plumes of old and new discharges could lead to awkward situations within the existing program areas with respect to the allocation of costs. To remedy this problem, the Legislature authorized the Bureau by statute in 1999 to negotiate cost sharing agreements with the responsible parties for new discharges. The cost sharing allows the Bureau to negotiate issues of prioritization and allocation of cleanup and funding responsibilities with the person accepting responsibility for the new contamination.

College Co-Op Program

The Bureau established a college CO-OP program to attract and train science, geology, and engineering students in petroleum assessment and cleanup. These students are encouraged to move into an environmental science career once they graduate.

HISTORY OF STATE-ASSISTED PETROLEUM CLEANUP PROGRAMS

Early Detection Incentive Program (Section 376.3071(9), F.S.): July 1, 1986 – December 31, 1988

Owners of underground petroleum tanks with suspected contamination that were reported to the Department between June 30, 1986, and December 31, 1988, were eligible for either state-contracted cleanup or reimbursement of costs for a privately managed cleanup. A critical component of the Early Detection Incentive (EDI) program was the creation of a “grace period” or exemption from departmental enforcement actions for sites that were reported. Approximately 10,000 contaminated sites were submitted under the EDI program with approximately 5,000 sites being submitted just prior to the deadline the last two weeks of 1988.

Petroleum Liability and Restoration Insurance Program (Section 376.3071(13), F.S.): January 1, 1988 – December 31, 1998

The Petroleum Liability and Restoration Insurance Program (PLRIP) was established on January 1, 1989 in response to anticipated federal financial responsibility requirements. In the late 1980’s there were few, if any, private insurers writing coverage for petroleum-contaminated sites. PLRIP provided petroleum facilities that were in State regulatory compliance eligibility to purchase \$1 million in pollution liability protection from a state-contracted insurer. PLRIP also provided \$1 million worth of state funded site restoration coverage. In the early 1990’s, commercial liability insurance was available in the marketplace at cost effective premiums. Legislation was passed to return the responsibility for site cleanup to the responsible party and to phase out the Department’s participation in the restoration insurance program by the end of 1998. State funded coverage was reduced to \$300,000 from January 1, 1994 to December 31, 1996. A reduction to \$150,000 in state funded coverage started on January 1, 1997 through December 31, 1997 with the Department’s participation in the PLRIP program being phased out by the end of 1998. During the 2008 Legislative session, the state-funded coverage for PLRIP sites was raised effective July 1, 2008. Sites with \$1 million in state coverage were raised to \$1.2 million. Sites with \$300,000 in coverage were raised to \$400,000 and sites with \$150,000 in coverage were raised to \$300,000.

Abandoned Tank Restoration Program (Section 376.305(6), F.S.): June 1, 1990 – June 30, 1996

The Abandoned Tank Restoration Program (ATRP) was established on June 1, 1990 by the Legislature to address the problem of out-of-service or abandoned tanks that have contamination associated with previous operations. The original program created in 1990 had a one-year application period. The application deadline to participate in the program subsequently was extended to 1992, 1994, and finally in 1996 the deadline was waived indefinitely for owners financially unable to comply with tank closure.

Petroleum Cleanup Participation Program (Section 376.3072, F.S.): July 1, 1996 – December 31, 1998

In 1996, the Petroleum Cleanup Participation Program (PCPP) was created to implement a cost-sharing cleanup for properties or sites not otherwise eligible under EDI, ATRP or PLRIP for which contamination occurred prior to January 1, 1995. Sites qualifying for the program are eligible for up to \$300,000 of site rehabilitation funding with a co-payment of 25% of the costs by the owner, operator or person responsible. The co-payment percentage can be reduced if the owner demonstrates an inability to pay. During the 2008 Legislative session, the state-funded site restoration coverage for PCPP sites was increased from \$300,000 to \$400,000 effective July 1, 2008.

Innocent Victim Program (Section 376.30715, F.S.)

A contaminated site acquired prior to July 1, 1990, and which ceased operating as a petroleum storage or retail business prior to January 1, 1985, is eligible for financial assistance under the Abandoned Tank Restoration Program.

The Limited Source Removal Initiative (LSRI) was originally designated to sunset on June 30, 2008. During the 2008 Legislative session, the decision was made to extend the sunset date to June 30, 2010.

Inland Protection Finance Corporation (Section 376.3075, F.S.)

With the conclusion of the Petroleum Contamination Site Cleanup Reimbursement Program on December 31, 1996, the total backlog of unpaid claims for cleanup reimbursements amounted to \$551.5 million. The 1996 Legislature addressed the need to pay off this obligation in an expeditious manner since the collections from the Inland Protection Trust Fund (IPTF) were not enough to cover payback on a timely basis and continue cleanups on high priority sites. The solution was the creation of the Inland Protection Finance Corporation (IPFC) that was authorized to issue bonds to finance repayment of the reimbursement claims. In February 1998, the IPFC obtained \$262 million in bond proceeds and by late 1999, the Reimbursement Program backlog had been paid off using a combination of bond proceeds and IPTF. The bonds issued in 1998, which were being retired at a rate of approximately \$50 million per year, were completely satisfied in July 2005, six months ahead of schedule. The last reimbursement claims were paid out in 2005 and the Reimbursement Claims Program was officially terminated by the end of 2005.