SEMI-ANNUAL TANK RELEASE CLOSURE REPORT

for the period

July 1 through December 31, 2011

submitted to the
Environmental Quality Council

by the
Department of Environmental Quality
December 16, 2011

Introduction

Pursuant to House Bill (HB) 613, the Department of Environmental Quality (DEQ) is required to report the status of certain benchmarks associated with the management of the cleanup of certain petroleum releases to the Environmental Quality Council (EQC) (§75-11-521, MCA). This is the first semi-annual report to be submitted. This report is organized to provide background and explain the required benchmark information in the context of the petroleum release cleanup process and site priorities.

Background

The department oversees cleanup of petroleum tank releases to the environment. This work is conducted in accordance with the Petroleum Storage Tank Cleanup Act and the Montana Underground Storage Tank Act.

Montana has had 4,350 releases confirmed since the inception of the program. Since 1988, the department has closed 3,090 releases, leaving 1,450 active releases yet to be cleaned up and closed. Figure 1 shows the number of confirmed and resolved releases that have occurred each year since 1988. Note the significant divergence in the data during 2008 when the number of newly confirmed releases is much lower than the number of resolved releases. Recent department efforts in estimating time to closure suggest this trend could be sustained for 3-4 years, assuming no significant increases occur in the rates of release discovery. Figure 2 shows the cumulative total of confirmed, active, and closed releases through time and Figure 3 illustrates the distribution of active releases across the state.

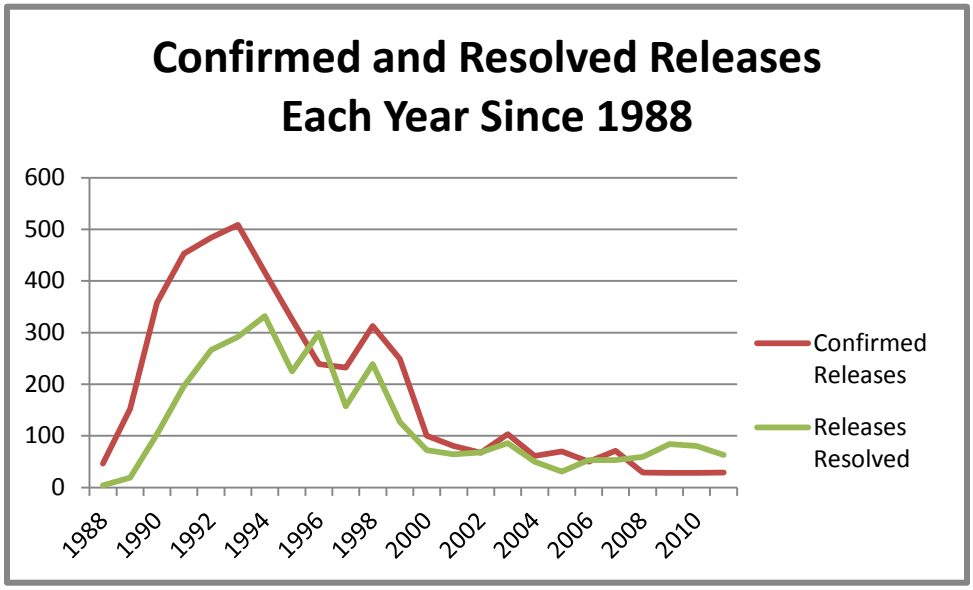

Figure 1: Confirmed and Resolved Releases Each Year since 1988. Montana's discovery and closure of petroleum releases since federal and state storage tank regulations began mirrors the national trend. A large number of releases were identified in the mid 1990's when leak detection requirements were phased in, and another large discovery occurred in 1998-1999 when all tanks needed to be replaced or upgraded. Because many releases only required minor cleanup that could be accomplished quickly, closure trends generally experienced the same trend peaks.

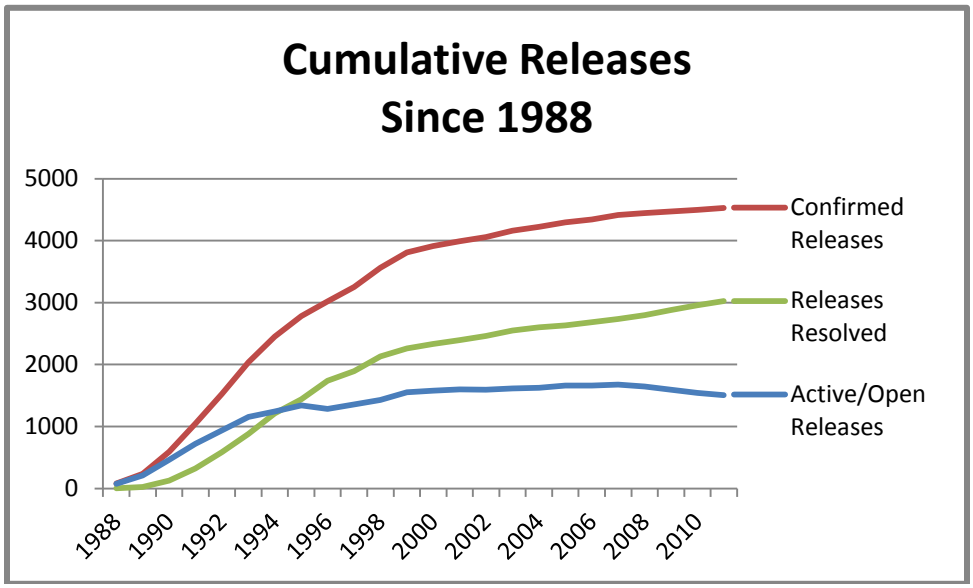

Figure 2: Cumulative Releases since 1988. As newly confirmed releases have leveled off starting around 2008, the DEQ has been able to gain headway against the total "backlog" of active releases and has been steadily resolving more releases than are discovered each year.

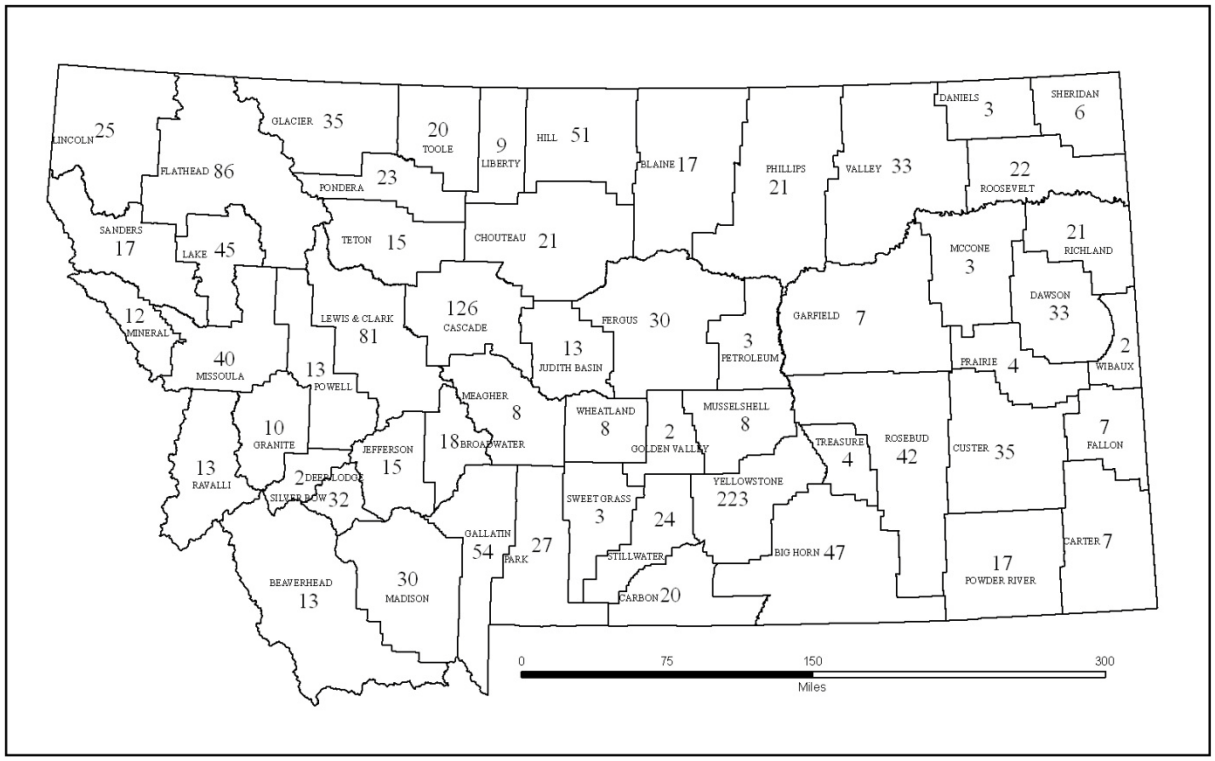

Figure 3: Map of active Releases by County. This map shows the number of active petroleum releases in each county.

The cleanup of a release is the legal responsibility of the owner/operator. Generally the owner and the operator of a site are the same person. However, some operators lease their sites from other property owners. When a release occurs in this situation, both parties are responsible for cleanup.

When a release occurs, cleanup is funded one of two ways, either by the owner/operator, or, if release is eligible for reimbursement under the Petroleum Storage Tank Cleanup Act, by the fees in the Petroleum Tank Release Compensation Fund. Approximately 60 percent of the active releases have been deemed eligible for cleanup funds. However, some cleanup work using these funds has been delayed as a result of limited revenues in the fund over past years. (The fee has remained flat since its inception in 1988. Inflation has significantly affected expenditures through time.)

Anticipated Dates to Closure

HB 613 requires DEQ to develop a list of active releases prioritized by threats to human health and the environment and an anticipated date to closure for all releases. These threats are typically encountered when people, fish, and/or wildlife are exposed to contaminated air, water, or soil. To address the HB 613 requirement, the department applied a three-step process. Step one is to evaluate site priority. The department used its existing priority ranking system, shown in Table 1, to rank all active releases.

Site Priorities

New releases are assigned to staff and prioritized as information regarding the extent and magnitude of contamination and risk of impacts are known. Staff may be un-assigned from a new release if the priority does not warrant use of resources (medium to low priority). High priority releases remain assigned to be investigated, cleaned up, and resolved. Cleanup activities range from simple to complex; some releases only require small, simple excavations, while others require management of groundwater plumes to mitigate migrating contaminants and vapors that pose a threat human health. Monitoring is conducted throughout the process, initially to determine the magnitude and extent of contamination and ultimately to determine whether cleanup actions have effectively limited the threat to human health and the environment.

Table 1: Petroleum Release Priority Ranking Matrix. This matrix helps manage work load by assessing threats to human health and the environment. A new release is typically prioritized as a 1.4 until more details are presented on the extent and magnitude of the contamination and impacts. The database is used to track priority ranking and summarizes the impacts.

High	**1.1**	**High Priority Emergency Response**	Significant and immediate impacts or risks to sensitive receptors (drinking water, vapors in buildings, utilities, surface water body).
	1.2	**High Priority Remediation Free Product**	Known impacts or imminent threats to sensitive receptors. Free product present. Active remediation required.
	1.3	**High Priority Remediation**	Probability of impacts to sensitive receptors. Active remediation required.
	1.4	**High Priority Characterization**	Sensitive receptors nearby; impacts unknown.
Medium	**2**	**Medium Priority Characterization**	No sensitive receptors, some impacts to non-sensitive receptors, some unknowns.
	3	**Medium Priority Remediation**	Some impacts to non-sensitive receptors, or low probability of risks to sensitive receptors. Further remediation needed.
Low	**4**	**Groundwater Management**	No further active cleanup required. Monitored natural attenuation (MNA) only.
	5	**Pending Closure**	Release site cleaned up. Waiting for land-farm cleanup or other verification/documentation.

Figure 4 shows the distribution of active releases as organized by the priority ranking system. As you can see, the largest group of release sites is ranked priority 1.4. This means additional data is needed to fully determine the risk to human health and the environment and to further refine the work needed to resolve or close the release and facilitate future use of the property.

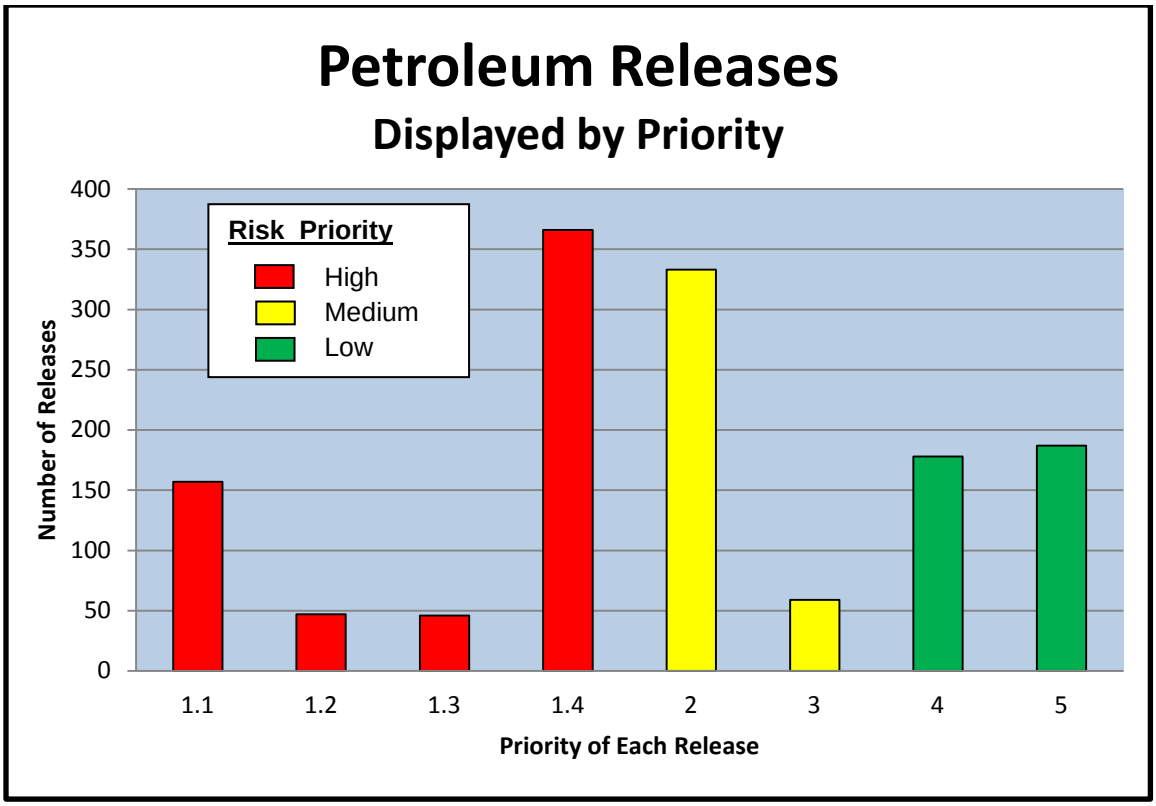

Figure 4: Releases Displayed by Priority. PTS actively works high priority releases, as well as pending closures (Priority 5). Any remaining resources are dedicated to responding to new releases, middle- to low-priority releases, public requests, and special projects.

Assigned Releases

As noted above, there are currently 1,450 releases to be cleaned up. These releases reflect the net effect of site complexity, the number of new releases identified in the intervening years, the 3,090 sites already closed, and the resources available to manage these sites. Active releases are further categorized as "assigned" or "unassigned." Approximately 40% of active releases are assigned to project managers who are working them toward closure. Unassigned releases represent the remaining backlog that was created when new regulatory requirements, such as tank upgrades, triggered the discovery of peak numbers of releases. The last upgrade was in 1998 when 560 releases were identified. In comparison, only 29 releases have occurred in calendar year 2011. All releases are worked on as resources, including staffing levels and revenues from the petroleum tank release cleanup fee (§75.11.313(2)(a), MCA), allow. Once a release is assigned to a project officer, cleanup typically moves forward more rapidly.

Release Closure

Step two of our three-step process to address HB 613 involved estimating the time it may take for a given type of release to reach closure. A site is characterized as "resolved" or "closed"

after cleanup has been completed and standards have been met. To estimate the time to closure, DEQ evaluated specific information at each site including factors such as contaminant type(s), geologic conditions, complexity, and size of the release. These factors resulted in the break-out of eight time-based estimates ("categories" for the purposes of discussion) shown in Figure 5. The department believes that the releases in the near-future timeframes (i.e. within the next two-four years) are likely closure candidates.

In making these time-based estimates, DEQ assumed that:

i. time and money were not considerations;
ii. we had full cooperation of the owner/operator; and
iii. the investigation, cleanup, and monitoring move forward without any delays due to the presence of unanticipated data or new information [Such information can trigger the need for additional investigation, cleanup, and/or monitoring.]

Once resources are focused on a release, the department expects closure to take the amount of time shown in Figure 5. A closure date for a specific release cannot be estimated until resources are available to begin work on that release.

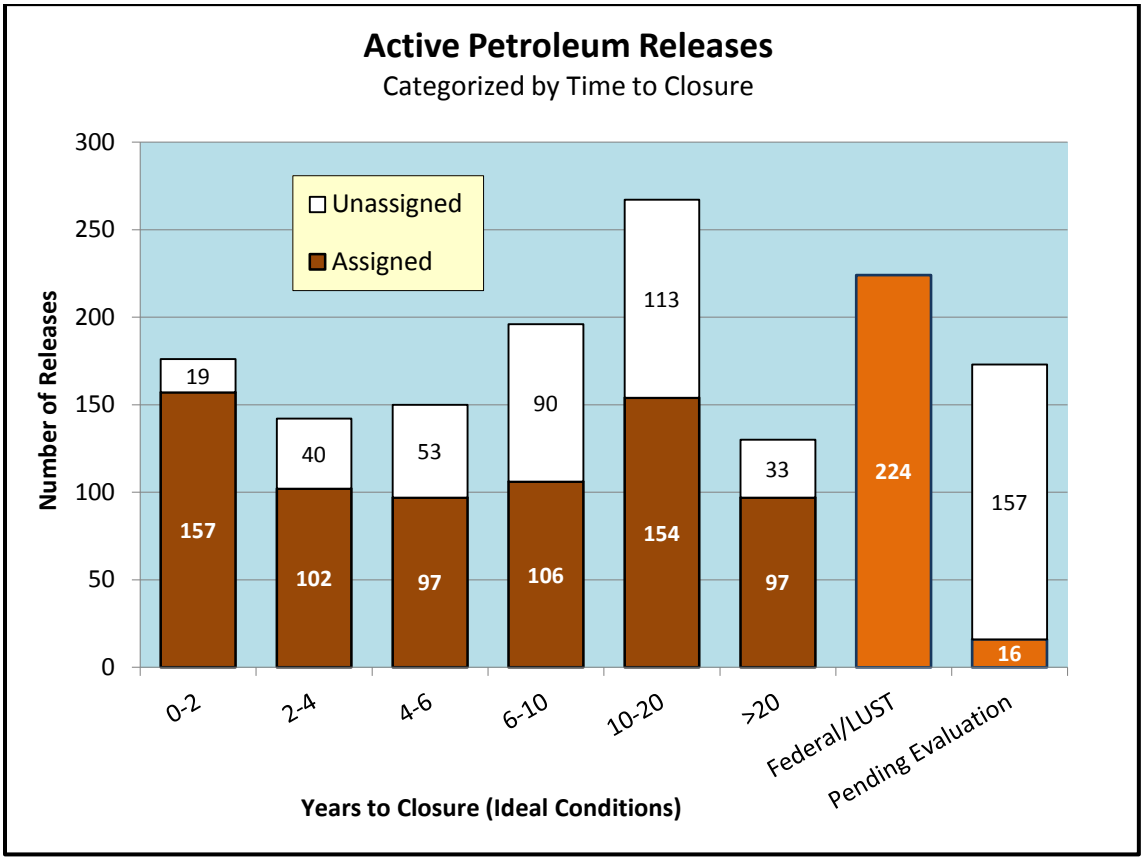

Figure 5: Active Petroleum Releases and Estimated Time to Closure. The unassigned releases are waiting for resources and are not actively worked on. Assigned releases include releases ready to be characterized as "resolved" and the high priority releases. Mid- to low-priority releases receive DEQ attention as resources are available, including owner/operator interest.

Figure 5 shows one category called "Pending Evaluation." Since the passage of HB 613, department staff has reviewed 1,277 site files to generate an estimated time to closure for each site, using the above noted assumptions. The "Pending Evaluation" category was created to account for the remaining 173 site files the department still had under review at the time this report was prepared. An update of Figure 5 will provided at the January EQC meeting.

Time to Closure, by Priority

Since not all sites are assigned and do not have resources allocated to them, the third and final step in meeting the requirements of HB 613 involved overlapping the site-specific data for site priority and the site-specific estimate of time-to-closure with site assignments. Figure 6 shows this overlap, depicting the number of high, medium, and low priority sites within each "years-to-closure" category that was identified in Figure 5. This distribution shows low priority releases closing early and high priority releases requiring more time to progress to a "resolved" status.

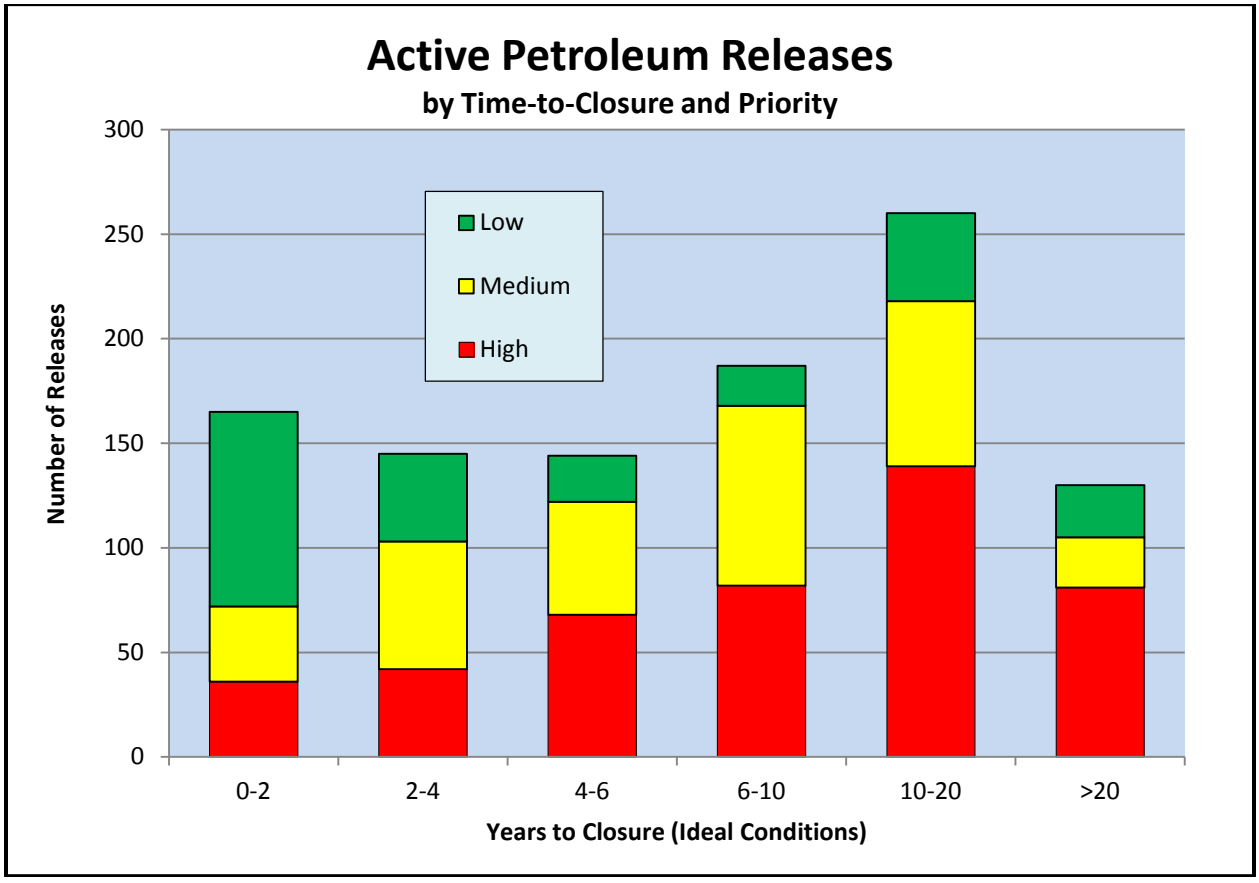

Figure 6: Years to Closure by Priority. Given money, time, and full cooperation of an owner/operator, the majority of the low priority releases could be resolved in 4 years. High priority releases would require time (years) to continue through investigation, clean-up, and monitoring to become the next generation of low priority releases to be resolved.

Release Cleanup Process

The on-the-ground steps to getting a release resolved, or closed, include investigation, cleanup, and monitoring (Figure 7). The "source mass" (the bulk of the contamination that is leading to environmental impacts) is delineated, clean-up alternative(s) are evaluated, and a plan is selected and implemented. Follow-up monitoring shows if, or enables the department to project when, the release would meet standards and is no longer a threat to human health or the environment. Most releases occur in complex soil or geological settings that offer multiple pathways for petroleum to migrate underground. This complicates the investigation, cleanup, and monitoring activities necessary to effectively manage the cleanup of a release.

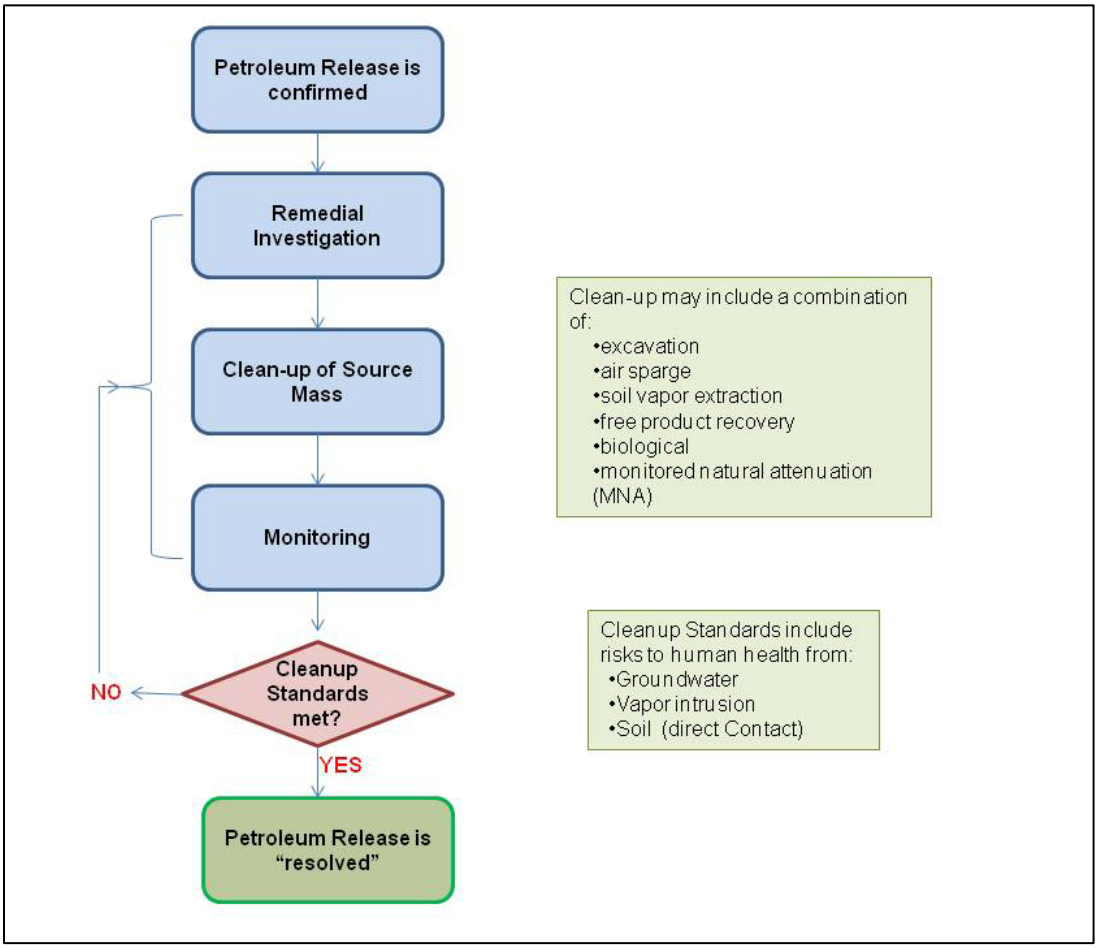

Figure 7: Petroleum Release Cleanup Process. The clean-up phase attempts to significantly reduce the source mass. Monitoring identifies the scope of the problem and demonstrates if the source mass was adequately removed. If not, further investigation and/or clean-up are warranted.

Other Work Load Considerations

Other actions that drive work load priorities and time to closure include requests for work at specific release sites by either the owner/operator or someone involved in a property transaction at the release site, such as a real estate agent or bank representative. When an owner/operator approaches the department to do work, a proactive opportunity is available to complete work with a motivated owner/operator and release closure is expedited.

Most commercial property sales require environmental assessments, which evaluate the existence of on-site contamination from historic uses of the property and may include environmental sampling. Many times these assessments result in the identification of a new release at a time when quick DEQ action is necessary to facilitate property sale or redevelopment. This too expedites cleanup.

In contrast, enforcement actions may delay work at a priority release site. If an owner/operator fails to complete work within an established timeframe, delaying cleanup and thus closure, the department will use "progressive enforcement" to get the required work completed (Figure 7 shows how the enforcement process steps progress). DEQ initiates progressive enforcement with a formal request to the owner/operator for work using a "second request letter" with a specified due date.

If the owner/operator is unresponsive, the process triggers the issuance of a "warning letter," then a "violation letter," each with specified due dates. Each level of correspondence informs the owner operator of the next step in the formal enforcement action. Once the due date set in a violation letter passes without a response from an owner/operator, formal enforcement action is taken by the department's Enforcement Division.

Formal enforcement action involves the issuance of administrative orders, the potential for penalties to be assessed and the potential for court action to be taken. Figure 8 summarizes enforcement actions taken in 2011. After the second request letter (20) there is a significant increase in compliance that occurs. The data shows far fewer warning letters (6) have to be issued. Likewise, increased compliance occurs after a warning letter is issued, thus the number of necessary violation letters decreases, as shown in Figure 8. Compliance with the department's request after any letter (stage) negates the need for continued enforcement.

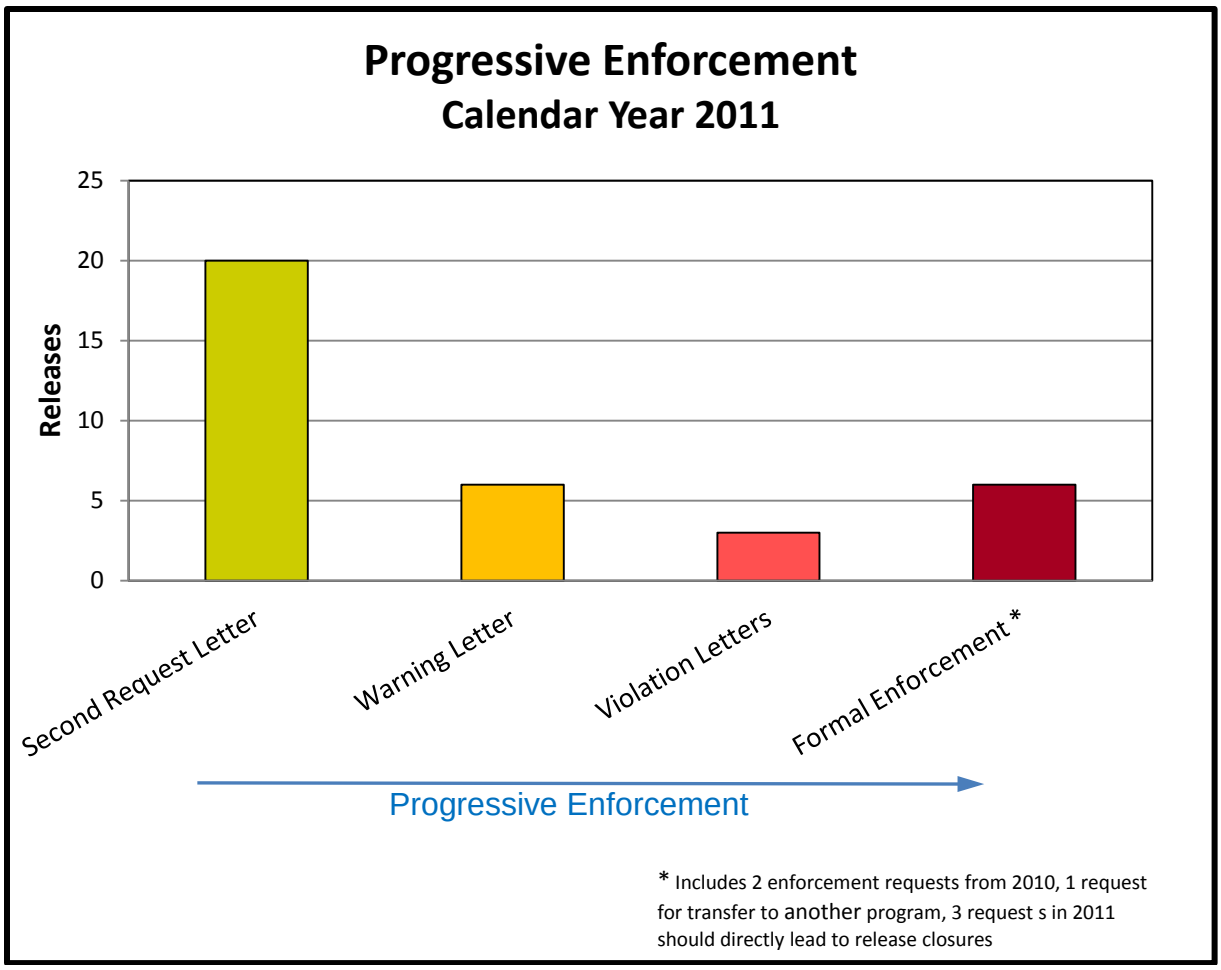

Figure 8: 2011 Calendar Year Progressive Enforcement. This process is taken when an owner/operator fails to meet established timeframes and typically yields positive results (i.e. work completed). This process can take from 3 months to over a year.

Summary

The department, under HB 613, is required to complete 45 closures every 6 months. A total of 48 closures were completed by the department between July 1 and December 31, 2011. The projected time to closure for the remaining release sites will vary with the volume of product released, site-specific conditions such as geology or infrastructure, and available resources. Future closures will occur as priorities, funding, and responses from enforcement actions (if needed) allow. Due to the significant decrease in new releases identified now as opposed to the peak numbers that resulted from the 1998 tank upgrades, the department anticipates it will be able to meet the closure criteria of HB 613 in the next semi-annual reporting period.