# Preapproval Program Guidance for Technical and Cost Justification for Contaminated Soil Source Removal

Florida Department of Environmental Protection
Bureau of Petroleum Storage Systems

February 2007

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## Source Removal Guidance

# Contaminated Soil Source Removal Guidelines for Preapproval Program (funded) Cleanup Sites

## I. Introduction, Purpose, Intent, Related Statutes and Rules

This guidance replaces the previous source removal guidance dated September 6, 2001 and applies to eligible discharges that are currently approved for funding from the Inland Protection Trust Fund (IPTF). Separate guidance titled *Procedural and Technical Guidance for the Limited Source Removal Initiative in Conjunction with an early Underground Storage Tank Upgrade,* dated July 1, 2005, has been published which allows limited funding for source removals conducted in conjunction with an early petroleum storage tank system upgrade at facilities with eligible discharges that do not have a priority score which is currently in funding range or otherwise approved for cleanup funding.

These procedures and requirements related to contaminated soil source removals at petroleum cleanup preapproval sites have been updated to reflect the FDEP's experiences with contaminated soil source removals and also because of the dramatically increasing frequency of proposals for conducting soil source removals in conjunction with petroleum storage tank system upgrades (due to the impending December 31, 2009 UST facility secondary containment compliance deadline) in which tank removal/replacement and other facility restoration costs will be borne by the FDEP. This latter consideration warrants more detailed guidance and procedures which identify allowable costs for tank removal and other related facility restoration costs.

Contaminated soil source removal may be performed at a site under procedures of Chapter 62-770, Florida Administrative Code (F.A.C.), either as an Interim Source Removal, in accordance with provisions of Subsection 62-770.300(3), F.A.C., or after the FDEP's approval of a Remedial Action Plan (RAP). Rule 62-770.300, F.A.C., allows Interim Source Removals to be conducted without prior approval by the FDEP. However, for funded discharges, in addition to Chapter 62-770 requirements, the allowable scope of a source removal is limited by program requirements that expenditures by the FDEP be demonstrated to be integral to cost-effective site rehabilitation and be preapproved. Attachment A contains excerpts from statutory requirements associated with allowable uses of the IPTF, which define the requirements for cost-effectiveness and limitations on allowable costs. This guidance is intended to establish boundaries for activities and items that may be allowed as contaminated soil source removal costs, and the technical evaluation procedures that are necessary to justify soil source removal and associated costs in a manner consistent with statutory requirements.

The technical and allowable cost issues associated with funded contaminated soil source removal that follow have an inherent degree of complexity and scope that necessitates a detailed and somewhat lengthy explanation of the procedures, requirements, and funding limitations. However, such detail is not always necessary so an abbreviated quick reference version of these procedures and requirements is provided in Attachment B. If there is any question of interpretation, the more detailed explanation of procedures and requirements takes precedence over the abbreviated quick reference in Attachment B.

## II. Allowable Scope of Source Removal Without a RAP or LS RAP

In the majority of circumstances the site assessment should be completed and a recommendation to conduct a source removal funded by the IPTF should be justified in a RAP. However, the FDEP anticipates the following two circumstances in which a work order for a source removal could be issued without the source removal first being justified in a RAP.

### 1) Emergency Measures due to Imminent Construction Which Will Make Source Area Inaccessible for Future Remediation

If facility improvements which will limit the ability, or significantly increase the cost, to remediate the site are imminent (e.g., a large building construction or road widening will occur over the source area prior to the time a RAP for comprehensive site cleanup can be prepared and implemented, making either source removal or installation of an in-situ system after the construction activity difficult or very costly) the source removal may be justified by submitting an explanation of the proposed facility development activity, the schedule or timeline for implementation, some evidence of the commitment to the project (e.g., copy of building permit) and a depiction of the area and depth of soil to be removed relative to the location of the construction project and the area of delineated soil contamination exceeding the Soil Cleanup Target Levels (SCTLs). Such emergency measures proposals may include excavation of smear zone soil in the saturated zone, which is not subject to meeting SCTLs but may extend the time frame to achieve Groundwater Cleanup Target Levels (GCTLs) if not removed.

### 2) Small Limited-Scope Source Removals Without RAP or LS RAP

In most cases source removals should be conducted after the site assessment is completed and a RAP is prepared to demonstrate that the soil source removal is a cost-effective component of a comprehensive site remediation strategy. The FDEP recognizes, however, that situations may occur in which limited scope source removals may be economically and efficiently conducted in conjunction with a petroleum storage tank system upgrade or some other construction activity before the site assessment is completed. Also there could be circumstances in which a limited amount of soil removal by the FDEP may be deemed to be beneficial, and the limited scope and cost may justify performing the source removal without first incurring the additional expense of an LS RAP. In such case a limited scope of soil removal may be allowed as described below without a RAP being prepared. If a RAP or LS RAP has not been prepared to demonstrate cost-effective cleanup benefits, the allowable source removal costs are limited to:

a) Preapproval contractor mobilization to the facility for source removal oversight;

b) Excavation equipment and subcontractor labor with limitations (see explanation below);

c) Soil screening and collection of representative samples for lab analyses of both soil which is removed (pretreatment) and from the boundaries of the excavation;

d) Stockpiling, transportation, and treatment or disposal of up to 200 cubic yards of contaminated soil;

e) Backfill and compaction equal to the volume of contaminated soil removed;

f) Removal and replacement of affected pavement or concrete if no other construction activity is being performed in conjunction with the source removal; and

g) Preparation of a Source Removal Report.

For item (b) above, if the circumstances are that the responsible party would be performing a petroleum storage tank system upgrade or other facility construction in which contaminated soil will be encountered and in which a source removal of the contaminated soil is proposed to be funded by the FDEP during that construction event without a RAP or LS RAP approval, then the FDEP cost for rental of excavation equipment should be limited to the scope associated with source removal only and not the entire construction project, and in no case should exceed one day (10 hours). If the source removal is a FDEP cleanup initiative and is not associated with any other construction activities, then the FDEP cost may include the entire cost of the excavation subcontractor as well as the cost to remove and replace pavement or concrete integral to the source removal. **Other costs such as tank removal or replacement, dewatering and other facility restoration activities are not allowable costs for FDEP funding without a RAP or LS RAP**. Lastly, at no time shall the FDEP approve costs associated with loss of business to the facility, regardless of whether or not there is an approved RAP.

If a greater scope of funding by the FDEP is desired and the schedule of the facility upgrade or construction event cannot wait for completion of the site assessment and preparation of a RAP, then the FDEP site manager and technical staff will need to decide whether the site assessment information completed to date is sufficient to prepare an LS RAP and justify a greater scope of source removal and/or site restoration as described in sections V through VII below.

## III. Level of Effort (compensation) for LS RAP

The compensation level for the LS RAP proposing a source removal is based on the scope and nature of the source removal that will be proposed. This is related to both the complexity of the source removal, in consideration of the need for dewatering and measures to ensure structural integrity of the excavation (e.g., professional engineer designing shoring), and also whether or not it will be proposed that the FDEP pay for items such as tank removal, with or without replacement, and other facility demolition and facility restoration expenses in addition to soil excavation and treatment or disposal. Attachment C is a table which indicates the appropriate level of compensation for the LS RAP for several categories of source removals.

It is expected that all LS RAPs that propose source removal greater than 200 cubic yards will provide a demonstration/explanation that the proposed source removal is cost-effective, which is to explain through either narrative form or cost comparison of alternatives why the source removal is a more cost-effective strategy than in-situ

remediation, or that doing the source removal in conjunction with in-situ remediation will result in a more cost-effective cleanup than in-situ remediation alone. In consideration of the requirement for the cost-effective demonstration in all LS RAPs proposing source removal, the minimum level of LS RAP for soil source removals has been established at a Level 2 LS RAP, with level 3 LS RAP if there will be greater technical complexity to the source removal, and finally a Level 4 LS RAP if the cost-effectiveness demonstration is further complicated by the inclusion of tank removal and replacement or other facility restoration activities that have a cost greater than $10,000.

The degree of complexity of the cost-effectiveness demonstration will vary based on site-specific circumstances, but one of the more important variables is cost. The scope of the evaluation should be agreed to between the FDEP and the preapproval contractor prior to issuance of the LS RAP work order, but should generally be based on the following considerations.

For lower cost source removals of $150,000 or less which will not need to also be supplemented by the use of in-situ remediation to qualify for either Natural Attenuation Monitoring (NAM) or No Further Action (NFA), a narrative explanation of the basis of assumption of cost-effectiveness of source removal should generally suffice. If the estimated cost to implement the source removal is greater than $150,000, or the cost is less than $150,000 but it is expected that in-situ remediation will need to be implemented in addition to the source removal to qualify the site for NAM or NFA, there will have to be a cost-effectiveness demonstration based on life cycle comparison of remediation alternatives. The in situ option selected for the cost-effectiveness evaluation will be the most cost-effective in situ alternative that is technologically feasible and reliable and that provides adequate protection of the public health, safety, and welfare and minimizes environmental damage. For the presentation of the in-situ remediation alternative to compare with the source removal alternative, it is not necessary to provide detailed design information of the in-situ remediation alternative; however, the LS RAP must provide sufficient details of a conceptual design to identify the method of the in-situ remediation (e.g., in-situ sparging, multi-phase extraction, bioremediation or chemical oxidation), and general scope of the system to support the cost estimate. In some cases it might be necessary to perform a pilot study of an in-situ remediation technology to better substantiate the assertions that soil excavation is preferable because in-situ remediation would not be feasible or effective, or to establish a basis for the scope of the conceptual design in the cost-effective comparison of alternatives.

## IV. Minimum Site Assessment Data Necessary for LS RAP for Source Removal

The following site assessment requirements and procedures apply to facilities for which source removal of greater than 200 cubic yards is proposed. Commonly the site remediation strategy has not been conceptualized at the conclusion of the site assessment to the point of having made a decision to conduct a source removal. When the assessment information on extent and degree of contaminated soil is sufficient for approval of the site assessment but is not adequate for making proper decisions as to the appropriate scope of a source removal, it is appropriate to conduct supplemental soil assessment during the RAP preparation. Therefore, it is not the intent of this guidance to suggest that the data described below be collected at every facility during

the site assessment preparation in order to evaluate the feasibility of source removal, but once a decision to perform a source removal of greater than 200 cubic yards has been made or is being seriously considered, it is necessary for this information to be available to justify the scope of the soil excavation:

1) The term “excessively contaminated soil” should not be used to describe the extent of soil contamination or to establish boundaries for soil excavation. Instead, the OVA soil screening results should be compared with the laboratory results to delineate the likely extent of soil contamination exceeding the “direct exposure residential” and “leachability based on groundwater criteria” SCTLs. This comparison may involve the selection of an OVA reading level that appears to correspond to exceedences of SCTLs so that the OVA data, for which there are significantly more data points, can be used to make meaningful source removal or remediation decisions. However, OVA data should not be correlated with only a few laboratory results to propose extensive excavation based on an arbitrary OVA threshold. The determination of an appropriate OVA screening level is useful for defining the proposed limits of the excavation prior to the source removal and in making decisions during the source removal as to how far the excavation should extend prior to confirmation sampling. After initial analytical results of samples with ‘high’, ‘medium’, and ‘low’ OVA results are compiled, the range of OVA readings between soil samples that exceed SCTLs and those which do not is typically quite large. Therefore, it is usually beneficial to obtain additional soil analytical samples bracketing and within the range over which SCTLs were initially exceeded and not exceeded to support the appropriate OVA screening value that will be utilized. (See 2 below concerning increased frequency of lab samples for excavations.)

2) Soil assessment data should usually be less than one year old and should include both screening (OVA) data and the results of laboratory analyses of representative soil samples. If existing soil analytical data are greater than one year old, a scope of supplemental soil assessment should be developed to collect representative samples in strategic locations to verify the previous assumptions of the extent and degree of soil contamination by comparing new and previous analytical results, without completely repeating the previous number of soil borings and samples. In order to put the relative benefit of the proposed source removal in perspective, the entire extent and degree of soil contamination should be defined vertically and horizontally, and not just the area proposed to be excavated. The number of soil samples should conform to the Bureau of Petroleum Storage Systems (BPSS) publication titled *Guidelines for Assessment and Source Removal of Petroleum Contaminated Soil* dated May 1998, which specifies the appropriate soil assessment field screening frequency, and that a minimum of three samples for laboratory analysis should be collected for each source area, or 5% of the number of positive field screening samples, whichever is greater. For most soil source removal projects, it is appropriate to obtain enough lab samples to prepare a figure indicating the horizontal and vertical boundary of soil that exceeds soil CTLs and is proposed to be excavated. This will generally consist of at least 4 samples representing 4 sides of the area proposed to be excavated for each 10 feet of vertical depth of the proposed excavation. Once that detail has been described, it may be appropriate to collect additional samples in order to consider applicability of alternative closure options for soil, particularly if only leachability cleanup target levels are exceeded in

part or all of the delineated area with soil concentrations above CTLs (SPLP or calculated alternative CTLs based on soil properties).

3) Historical data on depth to the groundwater table and free product levels should be considered to determine the leachability potential and excavation boundary limits relative to the groundwater table, and the extent and thickness of the smear zone. The SCTLs only apply to the soil in the unsaturated zone; however, residual source material in the smear zone may often prevent or prolong the achievement of GCTLs. Therefore the smear zone, which may be below the groundwater table at the time of the soil excavation, may need to be considered for removal during the source removal action. For this reason, OVA screening data and soil analytical data from the saturated zone should be considered as well as indications of odors and visual staining in soil boring logs.

4) The cleanup objectives for the site need to be established. Based on the proposed endpoint of the cleanup, and also whether or not a subsequent phase of active remedial action is anticipated to be necessary following the source removal, a determination should be made as to whether the source removal is intended to comprise a complete cleanup of the soil to the applicable SCTLs referenced in Chapter 62-777, F.A.C. If so, it is advisable to collect confirmatory samples from the bottom (if the water table was not reached or dewatering allows for a dry excavation floor) and perimeter of the excavation during the excavation activities to verify that the SCTLs were achieved so that it will not be necessary to perform confirmatory soil borings later. Although SCTLs apply only to the unsaturated zone, if one of the objectives is to remove significant contaminant mass in the smear zone below the water table, confirmatory samples at the boundary of the excavation below the groundwater table should be considered. A minimum of five soil samples from four sides and the bottom of the excavation is usually called for, but for large excavations a greater number of confirmatory soil samples for laboratory analyses may be appropriate. The number of confirmatory soil samples to be collected should be specified in the RAP or LS RAP.

5) Consideration needs to be given to the use of Level I closure options to qualify for No Further Action for soil. The BPSS publication titled *Procedures for Evaluating the Cleanup Strategy on Complex, Difficult, or Costly Petroleum Remediation Sites in the Preapproval Program*, dated May 21, 2003, requires that alternative closure options be evaluated whenever the post-assessment cost of remediation is expected to exceed $500,000. The degree of attention given to Level I closure options if the cleanup cost will be less than $500,000 is related to the scope of the soil excavation and also which SCTLs are exceeded (leachability or direct exposure). It is particularly important to evaluate the alternative closure options if only leachability SCTLs or TRPH SCTLs are exceeded in part or all of the area proposed for excavation. Alternative closure options for soil in such cases may include TRPH fractionation, SPLP leaching test, calculation of site-specific SCTLs based on site-specific soil properties, and a demonstration based on empirical groundwater monitoring data that soil which exceeds leachability SCTLs at a site that is not paved above the contaminated soil will not leach and result in GCTL exceedences.

## V. RAP or LS RAP Technical Justification for Source Removals That Will Include Tank Removal/Replacement & Other Facility Restoration Expenses

If the source removal work order to be funded by the FDEP is anticipated to include any costs other than contaminated soil excavation, backfill and compaction, dewatering of a scope necessary for contaminated soil removal, and treatment or disposal of soil (such as removal of tanks, additional dewatering beyond the scope and duration necessary for soil removal for the purpose of removing existing tanks and reinstalling new tanks, removal and replacement of canopy, and various facility restoration activities) then the RAP or LS RAP must describe the comprehensive cleanup strategy that will ultimately result in the site qualifying for NFA and demonstrate how the FDEP's expenditure on the source removal constitutes a cost-effective component of the comprehensive site rehabilitation strategy. (See the table in Attachment C for the appropriate level of compensation for the LS RAP in this category.) For either an LS RAP to justify an interim source removal before completion of the site assessment, or a phased RAP in which the source removal will be conducted as the initial phase, it is not necessary to provide detailed design information of the subsequent site remediation system. However, the RAP or LS RAP must provide sufficient details of a conceptual design to identify the nature of the subsequent remediation (e.g., NAM, in-situ physical/mechanical system, or chemical/bioremediation), the anticipated method if it is an in-situ physical/mechanical system (e.g., in-situ sparging, multi-phase extraction), and cost estimates for at least the following two alternatives:

1) Comprehensive cost to achieve NFA with the proposed source removal followed by an additional phase of either in-situ remediation or NAM; or

2) Comprehensive cost to achieve NFA without the proposed source removal by the lowest cost in-situ remediation method that is technically feasible for the site and reliable. (If it is considered to be technically infeasible to conduct in-situ remediation or unlikely to reach cleanup objectives using in-situ technologies due to site-specific lithological conditions, the rationale for this conclusion, based on site-specific considerations, must be explained in detail in the RAP.)

The RAP cost-effectiveness evaluation to justify source removal that includes costs such as tank removal and/or replacement, dewatering beyond the scope and duration necessary for contaminated soil removal for the purpose of removing existing tanks and reinstalling tanks, and site restoration costs, must be complete, accurate and reasonable. In particular, the specific items and costs associated with the proposed source removal phase must be complete and accurate. **The FDEP will not include any items in a subsequent work order for source removal that are not clearly identified in the RAP or LS RAP. Additionally, the FDEP will not proceed with a subsequent source removal work order if the costs for the source removal in the work order proposal are significantly different than the costs presented in the RAP**. **For the purpose of this guidance, the costs in the work order proposal must be within 20% of the costs that were presented in the source removal strategy presented in the RAP.** Unless the RAP is revised at no cost to the FDEP to include items that were not disclosed in the previously approved RAP or to correct inaccurate cost estimates and re-verify the cost-effectiveness demonstration of the RAP, the FDEP source removal work order that is issued will be limited to items that

were disclosed in the approved RAP and the amount of the work order will be limited to that amount presented in the approved RAP.

In order for the FDEP to make determinations of the allowable costs associated with tank removal and replacement and site restoration activities, the RAP, as well as subsequent work order proposal for RAP implementation, must provide sufficient cost breakdown to identify the individual cost items for which determinations will be made for those items to be allowable, not allowable, or partially allowable. In conjunction with the publication of these source removal guidelines, the FDEP has also published the Source Removal Quote/Summary Form. This form must be used to identify the individual items to be included in the scope of the source removal and for which determinations may be made by the FDEP as to allowability of costs. The final RAP approved by the Department must include a summary of the estimate of source removal costs for each applicable item on this form. After RAP approval, the bid solicitation must include adequate cost breakdown so that the form may be revised with the same details of individual items based on the low bidders' cost data. The individual items must be broken out in the bids. It is not appropriate for cost items to be lumped together in the bids and then subsequently broken out by the preapproval contractor based on verbal requests of the proposed subcontractor.

Because of the importance of obtaining the proper format for the submittal of the subcontractor bid information, in all cases of funding contaminated soil source removal following the publication of this guidance the FDEP will include compensation for "RAC Bid Package Solicitation/Evaluation". Contaminated soil source removals should be implemented in two work orders following RAP approval. The first work order will include bid package solicitation/evaluation (Template H-14) and proposal prep (Template B-1) as final deliverable; the latter will be a work order proposal to implement the source removal and including the bid data summarized on the Source Removal Quote/Summary Form in accordance with the associated instructions and including any required backup documentation. As indicated previously, if significant items appear on the summary form that were not disclosed when the form was submitted with the final approved RAP, or if the total costs to complete the source removal alternative have increased by 20% or more, the preapproval contractor will be required to revise and resubmit the RAP at no cost to the FDEP to re-verify the allowability of items included and the overall cost-effectiveness of the source removal alternative. The FDEP will attach the Source Removal Quote/Summary Form to the source removal work order when it is issued and this information shall be the basis for any VCOs that may be necessary.

Please note that in circumstances in which the RAP justified the selection of a soil excavation alternative that was more costly than an in-situ remediation alternative in accordance with the 25% cost preference provisions described in Section VII of this document, an increase in the cost to implement the source removal by up to 20% in the work order as compared to the RAP estimate, shall not be a basis to exceed the cost for the in-situ remediation alternative by greater than 25%.

## VI. Allowable Costs Which May Be Considered in Source Removals with RAP if Determined Cost-Effective and Integral to Site Rehabilitation

As indicated in the statutory citations of Attachment A, costs related to tank removal and replacement or any other site restoration activities can only be funded by the IPTF if demonstrated to be integral to site rehabilitation and that the source removal with tank removal and replacement is demonstrated to be cost-effective in an approved RAP. Also, the FDEP's participation should be limited to restoring the facility to the pre-excavation condition and not result in improvements to the previous condition of the facility. Lastly, at no time shall the Department approve costs associated with loss of business to the facility, regardless of whether or not there is an approved RAP. In the interest of brevity, in the following explanation of required justification and limitations of allowable costs, the requirement that the various items have been demonstrated to be integral to cost-effective site rehabilitation has not been repeated under each category, but it should be assumed to be a requirement for each category of integral costs:

1) General – As indicated in Section V above, all costs related to tank removal and replacement and site restoration must be accurately disclosed in the RAP cost estimate or they cannot be subsequently included in a work order for RAP implementation. If any items are omitted from the RAP, or the costs for items are substantially different in the subsequent work order proposal than indicated in the RAP, those items will not be allowed in the work order unless the RAP is revised and resubmitted with the revised costs, and the revised RAP reconfirms the cost-effectiveness of the proposed site rehabilitation strategy. Any costs for revising the RAP due to such deficiencies will not be borne by the FDEP. Individual items included in the source removal must be broken down in sufficient detail to make determinations of allowable costs and summarized on the Source Removal Quote/Summary Form in Attachment D.

2) Tank, piping, and related hardware – The FDEP cannot pay for any of the new hardware for tanks, dispensers, or integral piping. (See 376.3071(4)(j), F.S.) The only exception is if the piping had already been upgraded to be compliant with the secondary containment standards prior to the source removal and the removed piping cannot be reinstalled without voiding the warranty. In such case consideration may be given to the FDEP paying for the replacement piping hardware on a case-by-case basis if clearly demonstrated that it is necessary to remove the piping hardware to accomplish the contaminated soil removal.

3) Tank installation contractor (a Pollutant Storage System Contractor, as defined in Chapter 489.105, F.S.) – The FDEP may pay for tank system installation if demonstrated to be integral to site rehabilitation and cost-effective in an approved RAP; however, the FDEP will not be responsible for the quality of the tank installation. Therefore, the responsible party for the tank system installation shall select the tank installation contractor of his choice and will be responsible for overseeing the tank installation contractor's work. In order to determine the FDEP participation toward tank installation expenses, the responsible party must solicit bids from three or more tank installation contractors. The FDEP contribution will be based on the amount of the low bid even if the owner chooses a contractor other than the low bid. The compensation for tank system installation expenses will be

included in section D of the applicable work order event. The preapproval contractor will not have responsibility under the FDEP work order for the oversight of the tank installer's work and will not be compensated by the FDEP for having staff on site to oversee the tank system installation. The responsible party may choose to have a separate arrangement with the preapproval contractor to oversee the installation.

On a-case-by case basis, in circumstances in which the responsible party for the petroleum storage system has a corporate contract with a specific PSSC, as an alternative to the three quotes for tank installation; the Department will consider documentation that the solicitation for PSSC contractors that the responsible party for the petroleum storage system conducted before selecting their PSSC contractor was consistent with the Department's requirements for competitive procurement and that the contracted rates for tank installation in the responsible party's contract will be passed on to the Department.

4) Tank installation expenses – The FDEP's expenses are limited to restoring the facility to the conditions that existed prior to the source removal. This means that the FDEP can pay the appropriate cost to install the replacement components of the petroleum storage tank system which were integral to the source removal and that is equivalent to that which was removed. If the number of tanks, or size of the tanks, or location of the new tanks is different the FDEP will only participate in a portion of the reinstallation expense. This will generally be limited based on the comparative total storage tank capacity as well as the new tank orientation on the facility; i.e., a different configuration, number, or location of installed system will result in the following limitations:

   a) If more total tank capacity is installed than that which was removed, the FDEP's share of installation costs will be prorated based on comparative tank volume. EXAMPLE – two existing 4,000 gallon tanks (8,000 gallon total capacity) are replaced with two 5,000 gallon tanks (10,000 gallons total capacity). The FDEP's share of tank installation expense is 80%.

   b) If a different dimension of excavation is necessary in the same location where the old tanks were removed, the FDEP can pay for the additional excavation to the extent that it is adjusted to the comparative tank volume limitation indicated in (a) above, and there are no additional structural or dewatering costs that would not otherwise be necessary. EXAMPLE – three 4,000 gallon tanks are removed and replaced with one 12,000 gallon 3-compartment tank to be installed in the same location. In this case the FDEP can pay for 100% of the cost for extending the excavation longer in dimension to install the longer tank of same total tank volume, and can also pay to make the tank excavation deeper to accommodate the larger diameter tank, so long as there are no other additional expenses that would not otherwise be necessary to reinstall three 4,000 gallon tanks. If dewatering is necessary for the larger diameter tank that would not otherwise be necessary for the smaller diameter tanks, or if additional shoring is necessary because the longer tank butts up against a roadway that would not otherwise be necessary for the three smaller tanks, or if other site infrastructure needs to be destroyed and restored to install the longer tank, the FDEP will not pay for those additional expenses.

c) If the site responsible party chooses to install the new storage tank system in a different location that would not otherwise be excavated for the tank removal or source removal, the FDEP will not pay for excavation, dewatering or other site restoration expenses in the new location; however, the FDEP can pay to install the storage tank system in the new location once the excavation in that location has been conducted, subject to the limitations indicated in (a) and (b) above.

5) Dewatering – Installation of a dewatering system along with equipment for treatment and disposal of the recovered water is allowable for a scope and duration of operation necessary to accomplish the tank removal that is integral to the contaminated soil removal, and reinstallation of equivalent tanks in the same location. If the new tanks will be installed in a different location, the FDEP will not pay for a separate dewatering system to install the new tanks, or to extend the dewatering system to encompass the new UST area. Also, if larger and/or a greater number of tanks will be installed in the same location as the existing tanks that would necessitate a larger scope of dewatering system than would otherwise be necessary to install tanks of equivalent size, the FDEP contribution to the dewatering system installation and operation shall be prorated based on comparative area or comparative tank volume. The FDEP contribution toward dewatering expenses shall be based on accomplishing the tank removal, source removal, and tank replacement in a timely manner. If the responsible party is performing other renovations of the facility which results in a time delay between tank removal and tank reinstallation, the FDEP contribution toward rental of dewatering or other equipment necessary for the tank removal, source removal, and tank reinstallation shall be suspended during the delay period. Preapproval contractor oversight related to the source removal will also be suspended during this period.

6) Pavement restoration – Restoring pavement that is removed or damaged during source removal and storage tank system removal and replacement is an allowable cost. However, the type and quality of pavement should be comparable to what was removed. If the facility owner wishes to pave a larger area than what was affected by the source removal, the FDEP's contribution in the work order should be prorated on a unit area basis. If the owner decides to use a different more expensive material such as concrete when concrete did not exist at the facility then the Department will only pay the cost to restore the facility using the previous material. The owner will have to pay the difference.

7) Canopy – Generally, the FDEP will pay to remove and reinstall the existing canopy if integral to and necessary to accomplish the source removal which was demonstrated to be cost-effective in the approved RAP. If the existing canopy cannot be reinstalled because of building code restrictions, the FDEP will not pay for a new canopy if the storage tank system is being upgraded and the upgrade of the petroleum storage system would have necessitated canopy removal regardless of whether a source removal was also being conducted, because the responsible party would have faced the prospect of buying a new canopy anyway when the petroleum storage system was upgraded by 12/31/09. However, in such circumstance the FDEP will pay to remove and dispose of the old canopy and to reinstall the new canopy which the facility owner pays for. In a circumstance in which the tanks are already compliant with secondary containment standards, or if it is demonstrated to have been feasible to upgrade the petroleum storage system without removing the

canopy; the FDEP may pay for the new canopy in a circumstance in which it is demonstrated the existing canopy must be removed to accomplish the contaminated soil excavation and cannot be reinstalled due to building code restrictions or due to other structural or cost-effectiveness considerations.

## VII. 25% Cost-Effectiveness Preference for Source Removal

It has been the FDEP's general experience that soil source removals as a site remediation strategy have a higher success rate at achieving cleanup target levels in the timeframe and cost anticipated than in-situ remediation methods. This difference is due to a variety of factors that affect in-situ remediation performance for which information is approximated or assumed based on limited assessment information, such as soil characteristics, complexity of lithology, amount and location of source mass, and range of groundwater level fluctuation. These factors often result in in-situ systems not performing up to expectations, as the time and cost of site cleanup for in-situ remediation methods is often greater than anticipated.

It has been a standard procedure of the petroleum cleanup program that when considering individual site remediation proposals the most cost-effective alternative that is technically feasible and reliable should be selected for site cleanups that are funded by the IPTF (376.3071(4)(c), F.S.). However, based on the FDEP's experience with many cleanups as described above, it appears that establishing a mechanism to preferentially select soil source removal in some circumstances when the relative cost of alternatives are close but soil excavation does not appear to be the lowest cost alternative would reduce the overall expenditures from the IPTF for the hundreds of site cleanups for which the preference might be considered and applied.

In consideration of this knowledge gained from experience with many cleanups, the FDEP will allow the following preference for selection of source removal over in-situ remediation methods at preapproval program cleanup sites. ***When comparing soil source removal to other remediation methods in a RAP or LSRAP, the cost of the source removal alternative can be up to 25% greater than the lowest cost and most technically feasible and reliable in-situ method of site remediation and can still be selected for a site cleanup funded under the preapproval program.*** The following considerations should be included in the alternative comparison to use this preference:

1) The source removal and technically feasible and reliable in-situ remediation alternative(s) being compared should include all life cycle costs for a comprehensive cleanup of the site to achieve soil and groundwater cleanup target levels, including post-remediation monitoring.

2) Use of this selection preference is optional. That is, if the life-cycle cost of the source removal alternative is up to 25% greater than the lowest cost in-situ remediation alternative, the source removal alternative does not have to be selected. Use of this option should be based on a consensus decision of the preapproval consultant and the FDEP's site manager and PE. If the total life cycle cost of the source removal alternative is less than the lowest cost in-situ remediation

alternative, then there must be site-specific justification for not selecting the lower cost alternative.

3) When deciding whether to use this option, consideration needs to be given to the relative confidence in anticipating the effects of the factors described in the first paragraph above on the success of in-situ remediation. For example, it would generally be more appropriate to apply this preference to a site for which the lithology was very heterogeneous and complex and/or of low permeability than for a site that had more homogeneous soil and aquifer characteristics and higher permeability, as it would be more difficult to accurately predict the cleanup time and cost for in-situ remediation of the former.

4) It is very important that the scope of the source removal to be conducted be predicted accurately to use this preference. An adequate number of both OVA and laboratory samples should be collected to properly define the boundaries of the excavation such that there will not be a significant change in scope once excavation is initiated. Chapter 62-770, F.A.C., and various FDEP guidance, indicate that at least three samples be collected for laboratory analyses from each source area. This is the minimum for general assessment considerations. Three samples for lab analysis are rarely adequate if soil excavation will be proposed. The increased cost for laboratory analyses of more soil samples will generally be paid for many times over by better defining the boundaries of contamination if soil excavation will be performed.

5) If there are structures on the property that have value and which need to be removed, then the value of these structures shall be included in the overall cost calculation of the source removal project. The value of the structure will be the accepted value to the landowner based upon appraisals and subsequent negotiation with the owner.

6) If the life-cycle cost of the source removal alternative is greater than 125% of that for the in-situ alternative and the owner/responsible party wishes to select the more expensive source removal option, then the total cost approved by the Department would be limited to 125% of the life cycle cost for the in-situ alternative.

## VIII. Timing of Remediation Relative to Facility Upgrade

The schedule for site rehabilitation for an eligible site in the preapproval program is determined by its priority ranking. The site assessment is initiated once it is determined that the site is in funding range, a remediation strategy is developed in a RAP immediately after the site assessment is complete, and then the remediation activity is immediately implemented following approval of the RAP. This process does not recognize the benefits of conducting a source removal, where warranted, in conjunction with a facility construction or upgrade event or tank facility construction or upgrade event, which generally do not coincide with the remediation initiation. Due to statutory limitations it is not possible for the FDEP to elevate the priority of a site for cost-effectiveness or convenience purposes (with the exception of the Limited Source Removal Initiative – See guidance dated 7/1/2005). There should be consideration given, however, to schedule a source removal event, where warranted, of a site that is

already in funding range to coincide with a station construction or tank upgrade event. Consideration should also be given to encouraging a responsible party for a facility to adjust the schedule for a construction or tank upgrade event to be performed sooner to coincide with the remediation schedule. Coordinating remediation activities with the facility's construction schedule can not only reduce the life-cycle costs of the remediation by the IPTF but may also reduce some of the cost to the facility owner/operator for the tank upgrade or construction activity and may reduce the amount of disruption of business. The following evaluation procedure should be incorporated into RAPs to assure that source removal opportunities are thoroughly considered in determining the remediation strategy.

All RAPs and major RAP Modifications for preapproval program sites at which significant source area soil contamination has been documented during the assessment, must include consideration of future facility upgrade or construction projects that may provide an opportunity to perform source removal as a remediation strategy instead of, or in addition to, other in-situ remediation activities. An evaluation must be included in the RAP that indicates the facility owner or operator has been contacted to discuss future facility construction or storage system upgrades and that the development of the RAP strategy has taken into consideration the potential to either delay remedial action to coincide with facility construction or system upgrade or to encourage the facility owner/operator to do upgrades or other construction activities earlier. In order to assure that this requirement is consistently adhered to, RAPs (and major RAP Modifications) for sites at which significant source area soil contamination has been documented during the assessment should include a brief section of the RAP narrative titled "***Potential to Conduct Source Removal During Facility Construction or Storage System Upgrade***" so that the FDEP's technical reviewer can readily verify that this requirement has been met. The following considerations must be included in the analysis.

1) The purpose of this initiative is to ensure that opportunities to perform effective source removals that make a meaningful and cost-effective contribution to the site cleanup are identified. This policy assumes that the site under consideration is an active facility such that the documented source area coincides with the locations of tanks, dispensers, a building, or other structural impediments to accomplishing an effective source removal. The remediation of the site should not be delayed unless such impediments to conducting a source removal exist and there are cost-effective benefits to the FDEP to conduct a source removal. ***This policy should not be misconstrued as an incentive program to encourage facility owners to upgrade their systems early regardless of whether there is a meaningful and cost-effective cleanup benefit. A cost-effective cleanup benefit must be demonstrated in a RAP or LSRAP as described elsewhere in this memorandum and other FDEP guidance publications.***

2) Implementation of remedial action can be delayed to coincide with a facility construction project or storage system upgrade if cost-effective cleanup benefits for the FDEP would result from a source removal implemented at that time. Delays in conducting the source removal should generally be proportional to the timeframe it would take to complete remediation if an in-situ remediation system were implemented. Longer delays may be appropriate if significant cost savings for the

FDEP would result. In other words, analysis of the in-situ remediation strategy costs and timeframes must be compared with the cost and timeframes associated with delaying until the construction event period and use of excavation. A facility construction project must be justified by submitting an explanation of the proposed development activity, the schedule or timeline for implementation and some evidence of the commitment to the project (e.g., copy of building permit). [This policy shall not be used as justification for a facility to delay compliance with requirements to upgrade petroleum storage tank system equipment to secondary containment standards by 12/31/09.] Facility owners/operators should be advised that agreeing to perform their facility construction or upgrade ahead of schedule (rather than to delay remedial action to coincide with the facility's schedule) will more likely result in a greater number of costs they would otherwise incur which could be determined to be integral to the cleanup and potentially eligible for cleanup funding.

3) This policy on deferring remedial action shall only be used if there are no receptors, such as supply wells or surface water bodies, that are currently or likely to be affected by the site contamination. The site assessment results should indicate that the dissolved plume is stable in size (not expanding). Please see Subsection 62-770.690(1), F.A.C., for guidance.

4) Sites for which remedial action is delayed shall implement an interim program of monitoring of natural attenuation to verify the contamination is not migrating and to document the contribution of natural attenuation to the cleanup during the time that remedial action is being delayed. The BPSS procedures for natural attenuation monitoring call for notification to "off-site" property owners if the dissolved plume extends beneath their property. The cost for interim monitoring needs to be included in the cost-effectiveness analysis which compares in-situ remediation immediately to source removal in the future to determine whether it is appropriate to delay remedial action to do a source removal at a later time.

5) The 25% cost-effectiveness preference described in the previous section of this memorandum can be applied to situations in which remedial action is delayed to coincide with a source removal or in which a facility owner/operator agrees to accelerate his schedule of non-remediation related construction or facility upgrade to coincide with remedial action.

6) If a facility owner/operator agrees to accelerate the facility construction or upgrade schedule from a few years in the future to the current year to coincide with remedial action and accomplish a source removal, the remedial action can still be delayed for several months to accommodate the owner/operator's business considerations.

# Attachment A

## Source Removal Guidance - Statutory Citations

Statutory restrictions and limitations govern the use of the IPTF for all funded site rehabilitation activities, including contaminated soil source removal, and there are specific imitations to the costs that are allowable when storage tank system removal and replacement and various site restoration is combined with site rehabilitation funded by the IPTF. The following provisions of Chapter 376.3071(4), Florida Statutes, which describe allowable "Uses" of the Inland Protection Trust Fund, are applicable to this issue:

> 376.3071(4) (c), F.S. - Rehabilitation of contamination sites, which shall consist of cleanup of affected soil, groundwater, and inland surface waters, **using the most cost-effective alternative** that is technologically feasible and reliable and that provides adequate protection of the public health, safety, and welfare and minimizes environmental damage, in accordance with the site selection and cleanup criteria established by the department under subsection (5), except that **nothing herein shall be construed to authorize the department to obligate funds for payment of costs which may be associated with, but are not integral to, site rehabilitation, such as the cost for retrofitting or replacing petroleum storage systems**.
>
> 376.3071(4) (j), F.S. - Activities related to removal and replacement of petroleum storage systems, **exclusive of costs of any tank, piping, dispensing unit, or related hardware**, if soil removal is preapproved as a component of site rehabilitation and requires removal of the tank where remediation is conducted under s. 376.30711 or if such activities were justified in an approved remedial action plan performed pursuant to subsection (12).
>
> 376.3071(4)(l), F.S. - Reasonable costs of **restoring property as nearly as practicable to the conditions which existed prior to** activities associated with contamination assessment or remedial action taken under s. 376.303(4).

As indicated in these statutory citations, costs related to storage tank system removal and replacement or any other site restoration activities can only be funded by the IPTF if demonstrated to be integral to contaminated soil source removal and that the source removal with tank removal and replacement is demonstrated to be cost-effective in an approved RAP. Also the FDEP's funding participation should be limited to restoring the site to the pre-excavation condition and not result in improvements to the previous condition of the site.

# Attachment B

## Source Removal Guidance – Abbreviated Summary

*This attachment is intended for a quick reference summary of the more extensive explanation of source removal procedures and requirements. If there is an apparent conflict between this summary and the main body of the source removal guidance and procedures, or there is any question of interpretation of the procedures and requirements, the main body of the guidelines takes precedence over this summary.*

### Section I Introduction, Purpose, Intent, Related Statutes and Rules

- Replaces 9/6/01 source removal guidance.
- Applies to soil source removals of eligible contaminated soil at eligible sites in funding range or otherwise approved for funding.
- Includes better clarification of limitations on tank removal/replacement and other site restoration costs based on statutory limitations of use of the IPTF.
- Source removals that include tank removal/replacement and/or other site restoration costs must be demonstrated integral to cost-effective site rehabilitation in an approved RAP (or LS RAP).

### Section II Allowable Scope of Source Removal without a RAP or LS RAP

- Emergencies – documentation of imminent construction event (other than petroleum storage system removal and replacement) can justify source removal work order without a RAP or LS RAP.
- Small source removals – If the FDEP funded source removal will be less than 200 CY of soil, the work order can be issued for contractor mobilization, soil OVA screening, lab samples for disposal and confirmation purposes, transportation, soil treatment or disposal, backfill, and Source Removal Report. Additionally, excavation equipment costs may be included for the incremental time the equipment was used for contaminated soil source removal (up to one day) if the source removal is associated with another construction event at the initiative of the site owner or tank responsible party; or actual time of excavation if conducted for the sole purpose of the source removal and not associated with another construction event at the initiative of the site owner or tank responsible party.
- No tank removal or replacement, dewatering or any other site restoration expenses allowed without prior approval of RAP or LS RAP. Pavement replacement may only be an allowable cost if the source removal is an independent event and not associated with another construction or tank removal/upgrade event.

### Section III Level of Effort (compensation) for LS RAP

- Level of LS RAP is related to technical complexity of source removal and also whether tank removal and/or replacement or any other site restoration activities will be funded by the FDEP.
- Attachment C indicates appropriate level of LS RAP based on site specific circumstances.
- If tank removal and/or replacement, dewatering beyond the scope necessary for the source removal, or other site restoration costs greater than $10,000 will be funded by the FDEP, then the RAP must include a cost-effectiveness demonstration by comparison of alternatives for complete site cleanup to CTLs. Source removals that do not include tank removal and replacement or that include other site restoration costs greater than $10,000, ~~and~~ the total

cost of the source removal will be less than $150,000 and the site will qualify for NAM or PARM after the source removal, must as a minimum include a narrative explanation of the cost-effective benefits of the source removal based on site conditions and alternative remediation strategies that might be considered. If the cost will exceed $150,000, or the cost of the source removal will be less than $150,000 but an additional phase of active remediation will be necessary following the source removal, then a cost-effectiveness comparison of alternatives is required regardless of whether tank removal and replacement or other site restoration greater than $10,000 is included.

## Section IV Minimum Site Assessment Data Necessary for LS RAP for Source Removal

- "Excessively contaminated soil" levels are now considered an obsolete concept in remediation decision-making and should not be used to specify scopes of soil source removals.
- The number of soil samples collected for lab analyses when a soil excavation will be proposed should be greater than the minimum necessary for approval of the site assessment. The minimum for site assessment is three samples per source area or minimum of 5% of the number of positive OVA samples, whichever is greater. A larger number of samples for lab analysis are usually necessary to adequately plan the scope of a source removal.
- History of appearance of free product, groundwater fluctuation range, and soil samples from vicinity of groundwater table should be used to define potential smear zone boundaries.
- OVA results and lab sample results should be compared (not correlated) along with smear zone information, groundwater contamination data, and other lines of evidence to define appropriate excavation boundaries (horizontally and vertically).
- The cleanup objectives of the source removal within the context of the overall comprehensive cleanup should be defined; i.e., will complete cleanup of all soil to CTLs be necessary at this stage, or will a subsequent phase of remedial action be implemented for groundwater remediation which could also accomplish some of the soil remediation. Also, for sites with funding caps, consider how much of the funds available under the cap can be exhausted on soil source removal and how this will affect RP's closure options for both soil and groundwater.
- Level I closure options for soil become increasingly important to consider as the scope of the excavation becomes larger and more costly, especially if only leachability SCTLs or TRPH SCTLs are exceeded in some or all of the area proposed for excavation.

## Section V RAP or LSRAP Technical Justification for Source Removals That Will Include Tank Removal and/or Replacement and Other Site Restoration Expenses

- If the source removal proposal will include incremental costs of greater than $10,000 related to tank removal or replacement, dewatering beyond the scope necessary for the contaminated soil removal and/or other site restoration expenses which will benefit the facility owner or tank responsible party, a Level 4 LS RAP is required that provides cost-effectiveness comparison of alternatives for - 1) cleanup of site with the source removal alternative and 2) complete cleanup of the site with in-situ remediation.
- LS RAP costs for items that will benefit the site owner or tank responsible party must be complete and accurate in scope and cost.

- If the subsequent work order proposal has a cost which is more than 20% greater than the RAP estimate, the work order will be limited to the amount specified in the RAP or, alternately, the RAP must be revised at no cost to the FDEP to reconfirm cost-effectiveness.

## Section VI Allowable Costs Which May Be Considered in Source Removals with RAP if Determined Cost-Effective and Integral to Site Rehabilitation

- The FDEP cannot pay for new hardware for tanks, dispensers or integral piping. The only exception (case-by-case) is if piping is already compliant with 12/31/09 secondary containment standards, must be removed to conduct the source removal, and warranty will be voided if reinstalled.
- For tank installation the FDEP will pay for the amount of the low bid which results from bid solicitation by the tank facility responsible party, regardless of which installation contractor the facility owner selects.
- The FDEP will not be responsible for tank system installation and will not compensate the preapproval contractor for oversight of tank system installation.
- The FDEP will only pay for a portion of the tank installation costs if larger tanks or a greater number of tanks are installed, or the tanks are installed in another location, or if any other costs are incurred as a result of changes to the facility that would not otherwise be necessary if identical capacity tanks were installed in the same location.
- Pavement restoration is limited to the area of pavement that was affected by the source removal, including petroleum storage system removal that was demonstrated to be integral to site rehabilitation.
- The FDEP will pay to remove and reinstall the canopy if integral to the source removal to accomplish the site rehabilitation, but will not pay for a new canopy unless the canopy removal is only necessary for the source removal and would not be necessary to do the petroleum storage system upgrade without the source removal, or if the petroleum storage system was already compliant with 12/31/09 secondary containment standards.

## Section VII 25% Cost-effectiveness Preference for Source Removal

- A source removal alternative can be selected over an in-situ remediation alternative if the alternative that includes the source removal is up to 25% more costly when compared on a life-cycle cost basis (cleanup to CTLs).
- This is optional; it is not required to select the source removal alternative if more costly than in-situ remediation.

## Section VIII Timing of Remediation Relative to Facility Upgrade

- The RAP for a facility with an active petroleum storage system must take into consideration the facility compliance status and future schedule for facility upgrade.
- Consideration of the strategies for encouraging the owner to upgrade ahead of compliance schedule or to delay remedial action are only applicable to situations in which source removal would be a cost-effective alternative.
- The RAP must include a statement to the effect that the facility owner has been contacted regarding his plans for facility upgrade, is aware of the considerations for coordinating site rehabilitation actions with the facility upgrade, is aware of the possible benefits derived from coordinating such activities, and has considered accelerating the schedule for facility upgrade.

- If the facility owner or tank facility responsible party does not wish to accelerate the facility upgrade, consideration should be given to delaying the initiation of site rehabilitation to coincide with the schedule for the upgrade.
- If site rehabilitation is delayed, interim monitoring of the site is necessary.

The two tables below provide a summary of the allowable costs and activities for the two scenarios of 1) a source removal without first preparing a RAP or LS RAP to justify the costs and activities as described in Section II of this document, and 2) when a RAP or LS RAP is prepared which demonstrates various activities are integral to cost-effective site rehabilitation, as described in Section V of this document.

**Source Removals Without Complete Justification in Approved Remedial Action Plan**

| Allowable Costs/Activities | Non-Allowable Costs/Activities |
|---|---|
| Contractor oversight w/mobilization integral to SR only | Mobilization of excavation/loading equipment if used for other construction activities at site |
| Mobilization of excavation/loading equipment only if not used for other construction activities at site | Dewatering/GW treatment |
| Maximum one day excavation/loading equipment & operator for up to 200 yds soil integral to SR only if combined with other construction activity (actual time of equipment and operator allowed if the source removal is not combined with other construction activity) | Removal/replacement of paving/concrete/sod if other construction activities in SR area |
| Contractor sampling/screening/lab analysis of representative source and boundary soil samples | Removal/replacement of paving/concrete/sod in areas not damaged by SR activities or with specs more expensive than original (unless mandated by new building codes) |
| Stockpiling/transportation of soil integral to SR | Storage system removal/disposal/replacement |
| Treatment/disposal of up to 200 yds soil integral to SR | Canopy or other structure removal/disposal/ replacement |
| Removal/replacement of paving/concrete/sod (same area & specs) only if no other construction activities in SR area | Any other cost not directly integral to SR |
| Preparation of SR report | Costs associated with loss of business at facility |

**Source Removals With Complete Justification in Approved Remedial Action Plan**

| Allowable Costs/Activities | Non-Allowable Costs/Activities |
|---|---|
| Contractor oversight w/mobilization integral to all activities approved in RAP | Storage system hardware (tanks, lines, dispensers, valves, meters, gauges, alarms, etc.) |
| Mobilization of excavation/loading equipment integral to all activities approved in RAP | Preapproval contractor oversight of storage system installation by PSSC |

| | |
|---|---|
| Excavation/loading equipment & operators integral to all activities approved in RAP | Excavation, Dewatering, GW treatment, resurfacing or other site restoration in new (different) tank area |
| Contractor sampling/screening/lab analysis of representative source and boundary soil samples | Removal/replacement of paving/concrete/sod in areas not damaged by activities approved in RAP or with specs more expensive than original (unless mandated by new building codes) |
| Treatment/disposal of soil integral to SR and approved in RAP | Purchase of new canopy, unless tanks already upgraded to 09 standards prior to SR, or tanks could have been replaced without removal of canopy if the source removal were not also being conducted, or no tanks are being replaced and old canopy can not be replaced due to new building codes |
| Removal/replacement of paving/concrete/sod (same area & specs) integral to SR and approved in RAP | Any other cost not directly integral to activities approved in RAP |
| Removal/replacement of storage system (less hardware) of equivalent size and in same location and approved in RAP (replacement costs at lowest of three bids & PSSC selected by site owner) | Costs associated with loss of business at facility |
| Dewatering/GW in old tank area approved in RAP | |
| Removal/replacement of existing canopy with new footers | |
| General restoration of site to pre-SR activity | |

# Attachment C

## LS RAP Options for Source Removal

| Soil source removal description | Level of LS RAP | Comments/explanation |
|---|---|---|
| Excavation of less than 200 cubic yards – no site restoration or dewatering (except for pavement replacement when the source removal is not combined with another construction project) | No LS RAP necessary | Assumes there are no dewatering or integral cost issues (tank removal, site restoration, etc.) The work order proposal or other correspondence should explain a meaningful cleanup benefit to be accomplished by the source removal |
| Excavation of greater than 200 cubic yards without dewatering or geotechnical design. A cost effectiveness demonstration is necessary as described in Section III. | Level 2 LS RAP | Geotechnical design is design of a shoring system or slope stability calculations by a geotechnical engineer to protect adjacent structures from sidewall collapse, limit encroachment of slopes to adjacent properties, or reduce unnecessary clean soil excavation for slope areas. |
| Excavation of greater than 200 cubic yards with dewatering design **or** geotechnical design. A cost-effectiveness demonstration is necessary as described in Section III. | Level 3 LS RAP | Geotechnical design is design of shoring system or slope stability calculations by a geotechnical engineer to protect adjacent structures from sidewall collapse, limit encroachment of slopes to adjacent properties, or reduce unnecessary clean soil excavation for slope areas. |
| Excavation of greater than 200 cubic yards with dewatering design **and** geotechnical design. A cost-effectiveness demonstration is necessary as described in Section III. | Level 4 LS RAP | Geotechnical design is design of shoring system or slope stability calculations by a geotechnical engineer to protect adjacent structures from sidewall collapse, limit encroachment of slopes to adjacent properties, or reduce unnecessary clean soil excavation for slope areas. |
| Large diameter auger source removal design. A cost-effectiveness demonstration is necessary as described in Section III. | Level 3 LS RAP | LDA design only, does not include other groundwater or soil remediation design. |
| RAP to justify FDEP funding of tank removal or tank removal with replacement, pavement, or canopy removal or replacement, or any other site restoration expenses in which the total tank removal related and site restoration costs will exceed $10,000 | Level 4 LS RAP | Includes evaluation of alternatives including conceptual design of an in-situ remediation alternative to demonstrate cost-effectiveness of source removal. If tank removal or other site restoration costs will not exceed $10,000, select LS RAP level based on other considerations above. |