

The Texas Commission on Environmental Quality (agency, commission, or TCEQ) adopts amendments to §§350.2, 350.4, 350.77, 350.91, and 350.92 *without changes* to the proposed text as published in the November 21, 2008, issue of the *Texas Register* (33 TexReg 9439) and will not be republished.

BACKGROUND AND SUMMARY OF THE FACTUAL BASIS FOR THE ADOPTED RULES

In a prior rulemaking proposal published May 2, 2008, and adopted on October 8, 2008, the commission sought input regarding the appropriateness of whether Leaking Petroleum Storage Tank (LPST) sites should be removed from the requirements of Chapter 350 to support statutory changes made to Texas Water Code (TWC), §26.351(a) and (i) by House Bill 3554, 80th Legislature, 2007, authored by Representative Carl Isett. The commission directed staff at the October 8, 2008 Agenda to initiate a rulemaking and address the LPST issue in a comprehensive rulemaking for both 30 TAC Chapter 334, Underground and Aboveground Storage Tanks and Chapter 350.

SECTION BY SECTION DISCUSSION

Subchapter A - General Information

The commission adopts the amendment to §350.2 to eliminate language requiring compliance with Chapter 350 for the assessment, response actions, and post-response action care for releases of regulated substances from underground storage tanks (USTs) and aboveground storage tanks (ASTs). Currently, LPST sites discovered and reported on or after September 1, 2003 are required to follow Chapter 334, with the exception that Chapter 350 be used in lieu of certain parts of Chapter 334. This rulemaking would effectively reinstate the sole use of Chapter 334 for releases from USTs and ASTs.

The commission adopts the amendment to §350.4(a)(11) so that the definition of "chemical of concern" in the Texas Risk Reduction Program (TRRP) does not include reference to the UST provisions of the TWC and Chapter 334.

Subchapter D - Development of Protective Concentration Levels

The commission adopts the amendment to §350.77(b) so that the definition of "chemical of concern" does not include references to the UST provisions of the TWC and Chapter 334.

Subchapter E - Reports

The commission adopts the amendments to §350.91 and §350.92 to remove reference to LPST identification numbers.

FINAL REGULATORY IMPACT ANALYSIS DETERMINATION

The commission reviewed the rulemaking in light of the regulatory impact analysis requirements of Texas Government Code, §2001.0225, and determined the rulemaking is not subject to §2001.0225 because it does not meet the definition of a "major environmental rule" as defined in that statute. A major environmental rule means a rule the specific intent of which is to protect the environment or reduce risks to human health from environmental exposure and that may adversely affect in a material way the economy, a sector of the economy, productivity, competition, jobs, the environment, or the public health and safety of the state or a sector of the state.

Concerning the economy, this rule package represents a return to a more streamlined and flexible process for owners or operators of USTs or ASTs (e.g. retail gasoline stations) to address contamination resulting

from releases from tank systems. Because costs of gasoline and diesel are a major concern for the Texas economy and the general public, it is sufficient to note that a streamlined and flexible process may result in a benefit to the economy. Concerning jobs, competition, and productivity, nothing in this package can be estimated to adversely affect these areas; to the extent that a benefit to the economy previously described could also benefit jobs, competition, and productivity, then we expect to see a benefit in these areas as well.

Concerning "the environment, or the public health and safety of the state," the commission would first point out that the Chapter 334 assessment and corrective action rules and guidance are currently being used at a majority (approximately 63%) of open LPST sites. (These were LPST releases discovered and reported before September 1, 2003.) This rule affects only LPST releases discovered and reported on or after September 1, 2003, including future LPST sites.

Second, the commission notes that the particular Chapter 334 rules and guidance of concern here were originally proposed and adopted in 1995. House Bill 2587, 74th Legislature, 1995, effective September 1, 1995, significantly revised regulatory authority and responsibilities relative to USTs and ASTs. The rules proposed in July 1995 and adopted October 1995, officially incorporated "risk-based corrective action." This is the same risk-based corrective action program which this rule package uses for all current and future LPST sites. As stated in the 1995 rule proposal, the commission recognizes that the level of remediation warranted at a high risk site will not be equivalent to the level necessary at a low risk site and that appropriate target concentrations and target cleanup levels should be used in determining risk actually posed to the environment and health or human safety. When risk pathways are not present or less risk is posed at a site, corrective action may generally be conducted more expeditiously. Thus, "risk" is the

primary consideration in Chapter 334, as required by the TWC. Certain questions are approached using risk analysis, such as how far does a groundwater contamination plume need to be delineated, or for how many years, or to what concentration levels does natural attenuation have to be monitored. Remediation itself may involve a number of different actions, from soil removal to removal of "free product" (also known as non-aqueous phase liquid or NAPL) from wells, to engineered groundwater systems, to monitored natural attenuation (since petroleum products naturally biodegrade to a large degree). In each of these actions, effectiveness and efficiency of removing actual risk pathways to human health and the environment must be considered, as required by the statute, regardless of whether Chapter 334 or Chapter 350 is being applied.

Thus, when actual risk is considered, the Chapter 334 rules, both in 1995 and in the current rulemaking, are adequately protective of the environment. Although there may be discrete scenarios where Chapter 350 and Chapter 334 assessment and remediation require a different process and may have comparative positive or negative effects, taken as a whole this rule does not represent a major environmental rule which adversely affects the environment or the public health and safety.

Lastly, even if this rule were considered a "major environmental rule," it fails the second test under the Texas Government Code. It does not meet any of the four requirements listed in Texas Government Code, §2001.0225(a). That section states: "(a) This section applies only to a major environmental rule adopted by a state agency, the result of which is to: (1) exceed a standard set by federal law, unless the rule is specifically required by state law; (2) exceed an express requirement of state law, unless the rule is specifically required by federal law; (3) exceed a requirement of a delegation agreement or contract between the state and an agency or representative of the federal government to implement a state and

federal program; or (4) adopt a rule solely under the general powers of the agency instead of under a specific state law." None of these four elements is applicable; the rule package does not exceed any federal or state requirements, nor exceed delegation agreements or contracts. The rule package is adopted under a specific state law, TWC, §26.351, and it is not adopted solely under the general powers of the agency.

The commission invited public comment regarding the draft regulatory impact analysis determination during the public comment period. No comments were received on the draft regulatory impact analysis.

TAKINGS IMPACT ASSESSMENT

The commission evaluated this rulemaking action and performed an analysis of whether the rule is subject to Texas Government Code, Chapter 2007. The rulemaking returns LPST assessment and remediation to the same rules that were in effect before September 1, 2003. This may result in lower costs for assessment of releases from tanks, and may result in closure status being granted more quickly.

Promulgation and enforcement of the amendments would constitute neither a statutory nor a constitutional taking of private real property. Specifically, the rulemaking does not affect a landowner's rights in real property because the rulemaking does not burden (constitutionally) nor restrict or limit the owner's right to property and reduce its value by 25% or more beyond that which would exist in the absence of the amendments.

Although a contaminated LPST site or contaminated neighboring property may suffer from market devaluation due to contamination, this devaluation is due to the basic fact of the presence of

contamination; it cannot be concluded that the choice of application of Chapter 334 risk-based corrective action in lieu of TRRP would "cause" the devaluation. As a whole, this rulemaking is not anticipated to be a cause of a reduction in market value of private real property, does not create a burden on private real property, and will not constitute a takings under Texas Government Code, Chapter 2007.

CONSISTENCY WITH THE COASTAL MANAGEMENT PROGRAM

The commission reviewed the rulemaking and found that it is a rulemaking identified in the Coastal Coordination Act Implementation Rules (31 TAC §505.11(b)(2)) subject to the Texas Coastal Management Program (CMP) and will, therefore, require that goals and policies of the CMP be considered during the rulemaking process. The commission reviewed this rulemaking for consistency with the CMP goals and policies in accordance with the regulations of the Coastal Coordination Council and determined the rulemaking protects the environment by ensuring that the CMP goals and policies will not be adversely affected by the rule changes described in this preamble for the reason that although Chapter 334 cleanup requirements will now be used without Chapter 350 cleanup requirements, Chapter 334 risk-based corrective action requirements are adequately protective of human health and the environment.

The commission invited public comment regarding the consistency with the CMP during the public comment period. No comments were received on the CMP.

PUBLIC COMMENT

A public hearing on this rulemaking was held in Austin on December 16, 2008, 10:00 a. m. at the Texas Commission on Environmental Quality complex located at 12100 Park 35 Circle in Building E, Room

201S. The comment period closed on January 5, 2009. The commission received comments from: ATC Associates Inc. (ATC); Brookshire Brothers, Ltd. (Brookshire Brothers); Chambers Pump Service, Inc. (Chambers); Clear Fork Consulting Services (Clear Fork); GSI Environmental (GSI); Lowerre, Frederick, Perales, Allmon and Rockwell, Attorneys at Law on behalf of their own firm and on behalf of Clean Water Action, Texas Center for Policy Studies, Texas Conservation Alliance, Environment Texas, Public Citizen, Sierra Club (Lone Star Chapter), Sustainable Energy and Economic Development Coalition, Texas Campaign for the Environment, Environmental Defense Fund (Lowerre); Texas Oil and Gas Association (TxOGA); Texas Petroleum Marketers and Convenience Store Association (TPCA); Valero Retail Holdings, Inc. (Valero); and an individual.

ATC, Brookshire Brothers, Chambers, Clear Fork, TxOGA, TPCA, and Valero were in favor of the proposed rule changes. Lowerre and one individual objected to any removal of LPST sites from TRRP, without suggesting alternate language. GSI was not clearly in favor or against, but did suggest delaying the effective date of implementation of this rule to ensure consistency with updated guidance documents.

RESPONSE TO COMMENTS

Comments Regarding General Protectiveness of Human Health, Safety, and the Environment

A number of commenters made general points concerning the protectiveness of the Chapter 334 and Chapter 350 rules for human health and the environment. Brookshire Brothers stated its agreement with the idea that Chapter 334 rules and guidance adequately protect the environment while providing appropriate regulatory flexibility. Brookshire Brothers further pointed out Chapter 334 was accepted by the United States Environmental Protection Agency (EPA) as being protective. Chambers commented that the Chapter 334 rules have served Texas very well for cleaning up the environment. TPCA stated

that tens of thousands of LPST sites have been successfully closed under Chapter 334 and that subsequent analysis demonstrated that closure under Chapter 334 was just as protective of the environment as closure under Chapter 350. TPCA further stated that both chapters are structured to provide similar assessment of sites and that they both require: a) survey of ecological receptors; b) delineation of contaminant plume; c) removal of NAPL to the extent practicable; d) achievement of similar human health points of exposure; and e) notification of off-site property owners. TxOGA communicated its view that Chapter 334 standards and procedures are actually more environmentally protective than those in Chapter 350. ATC stated the Chapter 334 rules provided a simple and concise risk-based site assessment program that protected human health and the environment, while it found the TRRP rules and guidance documents cumbersome for handling petroleum storage tank (PST) sites.

Lowerre asserted that the transfer of the LPST program to Chapter 334 would be less protective of public health and the environment and would represent a step backward from protections in TRRP. An individual who described himself as a senior environmental consultant stated that use of Chapter 334 would result in sites that get less cleaned up.

The commission responds that concerning the question of comparative protectiveness of Chapter 334 versus Chapter 350 assessment and remediation requirements, it would first point out that the Chapter 334 assessment and corrective action rules and guidance are currently being used at a majority (approximately 63%) of open LPST sites. These were LPST releases discovered and reported before September 1, 2003. This rulemaking affects only LPST releases discovered and reported on or after September 1, 2003, including future LPST sites.

The commission further responds to the general question of protectiveness by emphasizing that both Chapter 334 and Chapter 350 were designed to be protective of human health and the environment, in order to fulfill the agency's mission and in order to comply with both Texas and Federal law. Both chapters were written to be protective within the frame work of risk-based corrective action. According to TWC, §26.342(15), "risk-based corrective action" means site assessment or site remediation, the timing, type, and degree of which is determined according to case-by-case consideration of actual or potential risk to public health from environmental exposure to a regulated substance released from a leaking underground or aboveground storage tank. The commission agrees with commenters who note that both chapters are structured to be protective by providing parallel areas of assessment and action, such as: 1) plumes must be delineated; 2) pathways of risk to receptors must be evaluated; 3) human health-based target concentrations are set using science-based formulas and numbers; 4) member of the public affected by an LPST must be notified; 5) groundwater plumes may be managed, taking into consideration the natural attenuation and biodegradation of petroleum substances. Although there are differences in process, terminology, and in certain numbers and formulae, the fundamental structure and goal of the two chapters are designed to be protective within the framework of "case-by-case" consideration of actual or potential risk to public health. As explained in the March 26, 1999 preamble of a prior rulemaking (see 24 TexReg 2210), the agency shifted from Chapter 334 to Chapter 350 for LPST sites reported after September 1, 2003, not in an effort to change substantive requirements relating to protectiveness, but to consolidate the regulatory strategies and requirements for the benefit of the regulated community and the agency. Since that time, however, response from the regulated community has been that Chapter 350 is ill-suited to LPST sites and that it has created additional burdens and costs which have not achieved a corresponding

environmental benefit in terms of protectiveness. The commission has made no change to the rule in response to the comments received during this rulemaking.

Comments Regarding Off-Site Plume Delineation and Notification to Off-Site Landowners

Several commenters addressed the related issues of off-site plume delineation and notification to off-site landowners. TxOGA, TPCA, and Valero commented that delineation requirements under Chapter 334 are appropriate and effective because they consider actual and potential risk, and that delineation simply for the sake of delineation does not assist in meeting actual cleanup goals. TPCA further commented that under TRRP, a responsible party is still required to install monitoring wells on the property of adjacent landowners when it has already been shown the contamination has not left the LPST site.

Lowerre commented that Chapter 334 no longer requires full delineation of plumes because of a 1997 interoffice memorandum entitled "Guidance for Judging the Adequacy of Contaminant Delineation for Purposes of Determining if Further Corrective Action is Needed." Lowerre concedes that under TRRP, cleanup and closure at smaller sites in close vicinity to other properties may experience difficulties when neighboring property owners do not cooperate. However, Lowerre commented that this issue does not justify a shift back to Chapter 334. Additionally, Lowerre stated that 40 CFR §280.65 "Investigations for soil and ground-water cleanup" requires full characterization of soil and groundwater contamination in a number of instances.

The commission responds that although delineation of a plume is a basic component of assessing and addressing contamination, it is one aspect of an overall approach which must take into account actual and potential risk while taking actions to actually remediate. Delineation refers to

discovering information about the location and nature of groundwater contamination through drilling and sampling of monitoring wells. Under Chapter 334, responsible parties work with TCEQ project managers in determining the most useful locations of monitoring wells.

The commission further responds that Chapter 334 meets the standard set by 40 CFR §280.65 "Investigations for soil and ground-water cleanup" because §334.80 mirrors this section almost verbatim and points out that on the question of notification, Chapter 334 provides for public participation in §334.82: "For each confirmed release that requires corrective action, the owner or operator must provide notice to the public by means designated to reach those members of the public directly affected by the release and the planned corrective action." The commission has made no changes to the proposed rule in response to these comments.

Comment Regarding Analytical Requirements

Lowerre commented that analytical data requirements are less strict under Chapter 334 than under Chapter 350.

The commission agrees that Chapter 334 does not specify in rule the analytical requirements. However, the commission points out that under Chapter 334, the analytical data must be of known and documented quality to meet the program and project objectives just as in Chapter 350, and that the requirements are clearly specified in guidance. No change to the rule was made in response to this comment.

Comments regarding the Length of Time for the Entire LPST Process

A number of commenters stated that TRRP causes each stage of the LPST process (assessment, remediation, and closure) to take a longer amount of time. Valero expressed concerns with post-response action care, which TRRP states has a default period of up to 30 years. TxOGA noted that the industry is seeing a significant decline in TRRP sites closing and that the TCEQ will see an alarming reduction of site closures due to the very nature of TRRP. TPCA stated that its membership's experience with TRRP cleanups is that they require more time to assess, monitor, and eventually close.

TxOGA stated that TRRP is more suited to assessing large plumes due to chemical properties of chlorinated solvents and other chemicals not present in LPST releases. While TRRP is well suited for large tracts sites where cleanup can take decades, PST sites are typically small tracts located adjacent to other PST sites and light commercial businesses. ATC stated that its experience has been that the TRRP is better suited for large scale projects and/or solvent plumes, not retail gasoline station LPST sites. As a result, the commenters point out that the TRRP process is taking longer to achieve the required assessment, and site closure is difficult to achieve even though concentrations do not present a risk to human health or the environment.

The commission responds that time periods associated with the life cycle of an open LPST case are indeed an important concern. The commission determined that Chapter 334 provides flexibility to allow sites to be closed both effectively and expeditiously. The commission has made no change to the rule in response to these comments.

Comments regarding Institutional Controls

Brookshire Brothers stated that institutional controls (ICs) required by TRRP at commercial/industrial sites are particularly restrictive. The Chapter 334 allowance to implement ICs voluntarily as part of the remedial plan when non-standard exposure assumptions are used is more appropriate. Valero commented that Chapter 334 evaluates LPST sites and neighboring properties based upon current and/or future usage as residential or commercial/industrial and allows for ICs on an as-needed basis; however, TRRP requires ICs which unnecessarily burden a site and adjacent properties, when there is no real risk to human health and the environment. TPCA commented that although TRRP does permit responsible parties to select an appropriate cleanup level based upon the property's use, TRRP requires that an LPST site (as well as other properties impacted by the release) be deed recorded if a risk-based closure is selected; this requirement delays remediation, increases costs, and encourages litigation as property owners adjacent to the LPST site object to deed recordation and insist upon remediation to TRRP's residential standards.

The commission responds that it is a legitimate concern that IC rules be appropriately tailored to actual or potential risk. Chapter 334, Subchapter G, contains criteria for when and how ICs may be used. It is important to note that in Chapter 334, ICs are not merely "optional." They are required whenever a tank owner or operator wishes to use non-standard exposure assumptions when calculating risk. No changes were made in response to this comment.

Comments regarding the Cost of LPST Assessment and Remediation

Brookshire Brothers commented that returning LPST sites to Chapter 334 will result in a cost savings of 25% or more over the life of a typical LPST site, and that Chapter 334 is purposely designed for LPST sites which results in its strategies being more efficient than the strategies of Chapter 350. Chambers commented that costs have escalated as a result of Chapter 350 and that has been particularly harsh on

small business owners, especially after the expiration of eligibility for reimbursement from the PST Remediation account. TxOGA, TPCA, and Valero also noted additional costs associated with Chapter 350, which they felt did not result in actual environmental benefit. TPCA, in addition, asserted that costlier cleanups will mean higher insurance premiums for tank owners or operators. ATC stated that it found the TRRP rules and guidance documents cumbersome for handling PST sites and that they required costly unnecessary site assessment.

An individual commented that the rule change is solely being made for the financial benefit of the gas station owners and not to create a cleaner environment, which should be the purpose of all environmental rulemaking.

The commission responds that both Chapter 334 and Chapter 350 are fundamentally protective of the environment. With that in mind, as part of our mission, it is both necessary and prudent to reassess regulatory requirements in terms of cost-benefit analysis. The commission has made no changes to the rule in response to these comments.

Comments Regarding Whether TRRP is Risk-Based

Clear Fork stated that Chapter 334 is a risk-based program and was recognized as such by EPA. Clear Fork also pointed out that TRRP does not utilize a case-by-case consideration of actual or reasonable exposure, and that all sites, including sites with no nearby wells and no beneficial use, are subject to the maximum concentration level requirement and delineation of soils to residential assessment levels.

TxOGA noted that cleanup standards under TRRP are not risk-based in practice because the difficulty of convincing neighboring landowners to sign deed restrictions means that the only option is to clean up to residential standards even if the neighboring property is commercial/industrial. TxOGA further commented that under TRRP, closure is not risk-based. Remedy Standard B is intended to be "risk-based" but in practice is not, for the reason that once a person gets a TRRP site to what would otherwise be a closure under Chapter 334, he is burdened with a requirement to monitor the site under Post Response Action Care.

Valero commented that Chapter 334 uses a risk-based approach and includes an evaluation of receptors, surface cover, groundwater use or likely future use, and geologic conditions. Valero further commented that TRRP requires delineation in all directions to basically non-detectable levels with virtually no regard to risk. TPCA also pointed out that delineation requirements are not risk-based under TRRP in many circumstances.

Lowerre commented that the TRRP rules provide a clearer process for identifying and addressing ecological risks.

The commission responds that risk-based corrective action was originally proposed in July 1995 and adopted into Chapter 334 of TCEQ rules in October 1995. As stated in the 1995 rule proposal, the commission recognizes the level of remediation warranted at a high risk site will not be equivalent to the level necessary at a low risk site and that appropriate target concentrations and target cleanup levels should be used in determining risk actually posed to the environment and health or human safety. When risk pathways are not present or less risk is posed at a site,

corrective action may generally be conducted more expeditiously. Thus, "risk" is the primary consideration in Chapter 334, as required by the TWC. Certain questions are approached using risk analysis, such as how far does a groundwater contamination plume need to be delineated, or for how many years, or to what concentration levels does natural attenuation have to be monitored. Remediation itself may involve a number of different actions, from soil removal to removal of "free product" (also known as non-aqueous phase liquid or NAPL) from wells, to engineered groundwater systems, to monitored natural attenuation (since petroleum products naturally biodegrade to a large degree). In each of these actions, effectiveness and efficiency of removing actual risk pathways to human health and the environment must be considered, as required by the statute, regardless of whether Chapter 334 or Chapter 350 is being applied.

Thus, when actual risk is considered, the Chapter 334 rules, both in 1995 and in the current rule, are adequately protective of the environment. Although there may be discrete scenarios where Chapter 350 and Chapter 334 assessment and remediation require a different process and may have comparative positive or negative effects, taken as a whole this rule does not represent a major environmental rule which adversely affects the environment or the public health and safety.

The commission has made no changes to the rule in response to these comments.

Comments Regarding the Need to Revise Chapter 334 Guidance Documents

GSI commented that transferring LPST sites from Chapter 350, which is supported by up-to-date guidance documents for risk-based corrective action, to Chapter 334, which does not have the support of up-to-date guidance documents for risk-based corrective action, will result in inconsistent assessment and cleanup standards for the PST program. GSI also expressed concern about ease of use of the interoffice

memoranda that were issued since 1994 to add to or modify regulatory guidance documents RG-36 "Risk-Based Corrective Action for Leaking Storage Tank Sites" (January 1994) and RG-411 "Investigating and Reporting Releases from the Petroleum Storage Tanks" (December 1994).

The commission acknowledges the concern for effective guidance documents; however, it also points out that roughly two-thirds of the sites currently in the PST Program were discovered and reported before September 1, 2003 and are therefore still effectively using Chapter 334 and its associated guidance documents and interoffice memoranda. Minor revisions to Chapter 334 guidance and interoffice memoranda are expected in the normal course of updating such types of documentation. Returning all sites to Chapter 334 assessment and cleanup requirements (rather than part in TRRP and part not) will actually achieve more consistency within the PST Program. No changes were made to the rule in response to this comment.

Comments Regarding the Intent of House Bill 3554

Several commenters addressed the legislative amendments to the Texas Water Code contained in House Bill 3554, 80th Legislature, 2007. TPCA stated that the House Bill 3554's requirement that the commission use "risk-based corrective action" was introduced and adopted in response to the TCEQ's rule change a few years prior, requiring that sites discovered and reported after September 1, 2003, must use TRRP instead of the "risk-based corrective action" developed in Chapter 334. TPCA noted both the language of the bill and the statement of intent by the bill's author.

An individual and Lowerre expressed the position that House Bill 3554 did not require the TCEQ to amend its rules to remove LPST sites from the TRRP. Lowerre commented that even if the sponsor of

the bill stated his intent orally in committee or on the floor, the legislative intent is not established unless explicitly stated in the language of the bill.

The commission responds that House Bill 3554 specifically directed the agency to use "risk-based corrective action." That term was defined in TWC, Chapter 26 before the TCEQ adopted the TRRP as a rule. Thus, the plain language of the bill refers to a phrase which has a specific definition in both the TWC and Chapter 334. Both during the legislative session and afterwards, the bill author communicated to members of the legislature and the TCEQ that the intent of the bill was to return the PST Program to the rules that had been used to clean up thousands of LPST sites. The particular Chapter 334 rules and guidance of concern here were originally proposed and adopted in 1995. House Bill 2587, 74th Legislature, 1995, effective September 1, 1995, significantly revised regulatory authority and responsibilities relative to USTs and ASTs. The rules proposed in July 1995 and adopted October 1995, officially incorporated "risk-based corrective action." This is the same risk-based corrective action program which this rule package uses for all current and future LPST sites. The commission has made no change to the rule in response to these comments.

Comments Regarding Regulatory Oversight Concerns

TxOGA stated that TRRP does not provide the TCEQ with timely information key to making risk-based decisions. If a responsible party chooses not to submit an Affected Property Assessment Report right away, TRRP allows him to submit a Self-Implementation Notice giving him no reporting requirements for three years. In contrast, Chapter 334 requires timely assessments and updates as plumes are delineated.

The commission responds that although the agency shares a general concern with ensuring that remediation projects are progressing around the state, the commission also values the private sector's ability to voluntarily comply with regulations. The agency takes note of TxOGA's point, and further notes that the requirements for reporting and oversight are reasonable in both Chapter 334 and Chapter 350. No changes to the rule was made in response to this comment.

SUBCHAPTER A: GENERAL INFORMATION

§350.2 and §350.4

STATUTORY AUTHORITY

The amendments are adopted under Texas Water Code (TWC), §5.012, which provides that the commission is the agency responsible for implementing the constitution and laws of the state relating to the conservation of natural resources and protection of the environment; TWC, §5.103, which authorizes the commission to adopt any rules necessary to carry out its powers and duties under this code and other laws of this state and to adopt rules repealing any statement of general applicability that interprets law or policy; TWC, §5.105, which directs the commission to establish and approve all general policy of the commission by rule; TWC, §26.345, which authorizes the commission to develop a regulatory program and to adopt rules regarding underground storage tanks (USTs); TWC, §26.351, which directs the commission to adopt rules establishing the requirements for taking corrective action in response to a release from a UST or aboveground storage tank (AST) and TWC, §26.011, which requires the commission to control the quality of water by rule.

The adopted amendments implement TWC, §26.351, which directs the commission to adopt rules establishing the requirements for taking corrective action in response to a release from a UST or AST.

§350.2. Applicability.

(a) General applicability. On May 1, 2000, persons shall comply with the requirements of this chapter to the extent not modified by the provisions of this section. Before May 1, 2000, the person may

use this chapter upon the effective date of the chapter. The rules in this chapter specify objectives for response actions for affected properties and further specify the mechanism to evaluate such response actions once an obligation is established to take a response action via other applicable rules, orders, permits or statutes. All actions undertaken and demonstrations required by this chapter must be performed and documented to the reasonable satisfaction of the executive director. Additionally, no person shall submit information to the executive director or to parties who are required to be provided information under this chapter which they know or reasonably should have known to be false or intentionally misleading, or fail to submit available information which is critical to the understanding of the matter at hand or to the basis of critical decisions which reasonably would have been influenced by that information. This chapter does not establish requirements for reporting releases to program areas. The regulations in this chapter address releases of chemicals of concern (COCs) as defined by various programs subject to this chapter as specified in subsections (b) - (m) of this section. However, the regulations in this chapter do not eliminate the need for the person to meet any more stringent or additional requirements found in the particular rules for the covered program areas or applicable federal requirements.

(b) Property where a release of COCs occurs that is regulated under Chapter 327 of this title (relating to Spill Prevention and Control), as amended. The person shall first complete notification for releases under §327.3 of this title (relating to Notification Requirements), as amended, and then conduct response actions under §327.5 of this title (relating to Actions Required), as amended. The person shall utilize this chapter to conduct response actions when either the conditions of paragraphs (1) or (2) of this subsection apply.

(1) The person chooses to respond under this chapter to a release of COCs within the first six months after the release is reported to the executive director.

(2) The person determines that the response action to the release of COCs cannot be completed to the satisfaction of the executive director within the first six months following notification to the executive director.

(c) Property regulated under Chapter 330 of this title (relating to Municipal Solid Waste). Persons shall comply with the requirements of this chapter for those municipal solid waste properties except when subject to the requirements of 40 Code of Federal Regulations Parts 257 and/or 258, as amended. However, for those municipal solid waste properties subject to the requirements of 40 Code of Federal Regulations Parts 257 and/or 258, as amended, the executive director may establish an alternative health-based groundwater protection standard for a COC in accordance with §330.409 of this title (relating to Assessment Monitoring Program), as amended. Determination of such an alternative standard shall be made using the procedures of Subchapter D of this chapter (relating to Development of Protective Concentration Levels).

(d) Property regulated under Chapter 331 of this title (relating to Underground Injection Control). The person shall address unauthorized releases of COCs from associated tankage and equipment utilizing the procedures of this chapter. Excursions of injected mining solutions at in-situ mining properties or injection of waste which is confined below all underground sources of drinking water as defined in §331.2 of this title (relating to Definitions), as amended, are not subject to the requirements of this chapter.

(e) Property regulated under Chapter 332 of this title (relating to Composting). The person shall comply with the requirements of this chapter to conduct assessments, response actions, and post-response action care for releases of COCs in environmental media at a compost facility, mulching facility or land application property authorized under Chapter 332 of this title, as amended.

(f) Property regulated under Chapter 333 of this title (relating to Brownfields Initiatives). The person entering the Voluntary Cleanup Program (VCP) shall comply with all requirements found in the Texas Health and Safety Code, Chapter 361, Subchapter S, as amended, concerning the Voluntary Cleanup Program; Subchapter A of Chapter 333 of this title (relating to Voluntary Cleanup Program Section), as amended; and the requirements of this chapter. Where there is a conflict between the requirements of this chapter and the requirements in the Texas Health and Safety Code, Chapter 361, Subchapter S, as amended, and Chapter 333, Subchapter A of this title, as amended, the requirements of the Texas Health and Safety Code, Chapter 361, Subchapter S, as amended, and Chapter 333, Subchapter A of this title, as amended, shall apply.

(g) Property regulated under Chapter 334 of this title (relating to Underground and Aboveground Storage Tanks). The person shall comply with the requirements of Chapter 334 of this title and not this chapter for the assessment, response actions, and post-response action care for releases of regulated substances from underground storage tanks (USTs) and aboveground storage tanks (ASTs).

(h) Property regulated under Chapter 335 of this title (relating to Industrial Solid Waste and Municipal Hazardous Waste). The person shall comply with the requirements of this chapter when

undertaking the remediation of affected property at facilities used for the storage, processing or disposal of industrial solid waste or municipal hazardous waste, or for the remediation of environmental media containing COCs resulting from releases from waste management facility components (e.g., tank, container storage area, surface impoundment, etc.), either as part of closure or at any time before or after closure. The person shall close a waste management facility component in a manner that minimizes or eliminates the need for further maintenance and controls. The manner of closure shall also minimize or eliminate, to the extent necessary to protect human health and the environment, the post-closure escape of waste, contaminants, leachate, run-off, or decomposition products to the surrounding environmental media. Waste management facility components undergoing closure for which the person can demonstrate that no release of COCs to surrounding environmental media has occurred are subject to this chapter only with regard to this closure performance standard and the removal, decontamination or control requirements for waste as specified in Subchapter B of this chapter (relating to Remedy Standards). In the event a release of COCs to surrounding environmental media has occurred, then the person shall comply with this chapter for response to the release. The person shall comply with §335.118(b) of this title (relating to Closure Plan; Submission and Approval of Plan), as amended, or applicable permit provisions regarding requirements for public participation in the corrective action process for permitted hazardous waste facilities. The person shall also comply with the requirements of paragraphs (1) - (3) of this subsection, as applicable.

(1) Any person who stores, processes, or disposes of industrial solid waste or municipal hazardous waste at a facility permitted under §335.2(a) of this title (relating to Permit Required), as amended, shall, unless specifically modified by other order of the commission, close the facility in accordance with the closing provisions of the permit.

(2) Any person who stores, processes, or disposes of hazardous waste is also subject to the applicable provisions relating to closure and post-closure in Chapter 335, Subchapters E and F of this title (relating to Interim Standards for Owners and Operators of Hazardous Waste Treatment, Storage, or Disposal Facilities; and Permitting Standards for Owners and Operators of Hazardous Waste Treatment, Storage, or Disposal Facilities, respectively), as amended.

(3) The person may utilize this chapter to determine if COCs, specifically listed hazardous waste or hazardous constituents, exceed concentrations protective of human health and the environment when making "contained-in" determinations for environmental media being managed as wastes (e.g., excavated soils, investigation derived wastes such as monitor well purge water, etc.) for purposes of treatment or disposal in a different location. In such cases, the person must still perform a waste classification in response to Chapter 335, Subchapters A and R of this title (relating to Industrial Solid Waste and Municipal Hazardous Waste Management in General; and Waste Classification, respectively), as amended.

(4) The person may propose a facility operations area (FOA) to address multiple sources of COCs within an active facility that is required to perform corrective action for releases pursuant to a permit or commission corrective action order. The requirements for establishing a FOA are specified in Subchapter G of this chapter (relating to Establishing a Facility Operations Area).

(i) Affected property regulated under Chapter 335, Subchapter K of this title (relating to Hazardous Substance Facilities Assessment and Remediation). The person shall comply with all

requirements found in the Texas Health and Safety Code, Chapter 361, Subchapter F, as amended; Chapter 335, Subchapter K of this title, as amended; and the requirements of this chapter for any release or threatened release of hazardous substances into the environment that may constitute an imminent and substantial endangerment to public health and safety or the environment. Where there is a conflict between the requirements in this chapter and the requirements of Texas Health and Safety Code, Chapter 361, Subchapter F, as amended, and Chapter 335, Subchapter K of this title, as amended, the requirements of Texas Health and Safety Code, Chapter 361, Subchapter F and Chapter 335, Subchapter K of this title shall apply.

(j) Property regulated under Chapter 336 of this title (relating to Radioactive Substance Rules).

The person shall comply with the requirements of Chapter 336 of this title, as amended, regarding contamination limits for radioactive material in environmental media. In instances involving remediation of releases in media containing both radioactive material and other COCs, the person shall use the contamination limits determined in accordance with Chapter 336 of this title, as amended, for radioactive material and PCLs determined by the procedures of this chapter for other COCs.

(k) Property regulated under Chapter 312 of this title (relating to Sludge Use, Disposal, and Transportation). The executive director may reference this chapter in permits subject to Chapter 312 of this title, as amended, when specifying closure provisions to address releases of COCs from facility components at municipal wastewater treatment plants.

(l) Other releases. The executive director may require the use of this chapter to address other releases of COCs subject to Texas Water Code, Chapter 26, as amended.

(m) Use of this chapter on or after May 1, 2000. The person who started a response action under Chapter 335, Subchapters A and S of this title (relating to Industrial Solid Waste and Municipal Hazardous Waste in General; Risk Reduction Standards, respectively), as amended, may qualify to continue under those previous commission rules subject to the limitations specified in paragraphs (1) - (4) of this subsection. Any person desiring to remain under Chapter 335 of this title may not use any of the provisions of this chapter. If a person elects to proceed under this chapter, then they shall not be allowed to return to Chapter 335 of this title. Also, the person shall respond as described in §350.35 of this title (relating to Substantial Change in Circumstances) in the event a substantial change in circumstance occurs which results in an unacceptable threat to human health or the environment.

(1) The person who has submitted an initial notification of intent to conduct a Risk Reduction Standard 1 or 2 response action (i.e., §335.8(c)(1) and (2) of this title (relating to Closure and Remediation), as amended) prior to May 1, 2000, and has submitted a final report within five years after that date may request that the response action be reviewed according to the regulations in effect at the time of initial notification. Persons will automatically qualify for this grandfathering provision if they have previously received a letter from the agency acknowledging receipt of the initial notification, or submit other forms of documentation by May 1, 2001, that proper and timely notification had been made.

(2) The person who has submitted a remedial investigation report that fully complies with §335.553(b)(1) of this title (relating to Required Information), as amended, prior to May 1, 2001, may elect to either continue under those rules or to proceed under this chapter.

(3) Any closure plans approved as part of a permit issued prior to May 1, 2000, but not implemented at the time of permit renewal are subject to review for compliance with this chapter as part of the permit renewal process.

(4) The person may resubmit plans or reports that the person has revised voluntarily to conform with the requirements of this chapter, unless such resubmittal would result in noncompliance with a previously approved or imposed schedule of compliance.

§350.4. Definitions and Acronyms.

(a) Definitions.

(1) Affected property--The entire area (i.e., on-site and off-site; including all environmental media) which contains releases of chemicals of concern at concentrations equal to or greater than the assessment level applicable for residential land use and groundwater classification.

(2) Alternate point of exposure--A location other than the prescribed point of exposure where an individual human or population will be assumed to have a reasonable potential to come into contact with chemicals of concern based on property-specific considerations.

(3) Assessment level--A critical protective concentration level for a chemical of concern used for affected property assessments where the human health protective concentration level is established under a Tier 1 evaluation as described in §350.75(b) of this title (relating to Tiered Human

Health Protective Concentration Level Evaluation), except for the protective concentration level for the soil-to-groundwater exposure pathway which may be established under Tier 1, 2, or 3 as described in §350.75(i)(7) of this title, and ecological protective concentration levels which are developed, when necessary, under Tier 2 and/or 3 in accordance with §350.77(c) and/or (d), respectively, of this title (relating to Ecological Risk Assessment and Development of Ecological Protective Concentration Levels).

(4) Attenuation action level--The maximum concentration of a chemical of concern which can be present at an attenuation monitoring point and not exceed the applicable critical protective concentration level at the points of exposure over time.

(5) Attenuation monitoring point--A location within the migration pathway of a chemical of concern which is used to verify that the critical PCL will not be exceeded at the points of exposure.

(6) Background--A population of concentrations characterized from samples in an environmental medium containing a chemical of concern that is naturally occurring (i.e., the concentration is not due to a release of chemicals of concern from human activities) or anthropogenic (i.e., the presence of a chemical of concern in the environment which is due to human activities, but is not the result of site-specific use or release of waste or products, or industrial activity). Examples of anthropogenic sources include non-site specific sources such as lead from automobile emissions, arsenic from use of defoliants, and polynuclear aromatic hydrocarbons resulting from combustion of hydrocarbons. There are some commonalities regardless of the activity; specifically, the chemicals of concern have resulted from the use of a product in its intended manner and may be present at generally

low levels over large areas (tens of square miles up to hundreds of square miles). Background is required for use in a statistical model appropriate for testing the hypothesis that the background area characterized by these kinds of models has the same concentrations of the chemical of concern as the affected property. The background area characterized is as "close" as possible to the affected property, in either space or time, as required.

(7) Bedrock--The solid rock (i.e., consolidated, coherent, and relatively hard naturally formed material that cannot normally be excavated by manual methods alone) that underlies gravel, soil or other surficial material.

(8) Bioaccumulative chemical of concern--A chemical of concern which has the tendency to accumulate in the tissues of an organism as a result of food consumption or dietary exposure and/or direct exposure (e.g., gills and epithelial tissue) to an environmental medium.

(9) Carcinogen--A chemical of concern which causes an increased incidence of benign or malignant neoplasms, or substantially decreases the time to develop neoplasms, in animals or humans (a chemical of concern can act as both a carcinogen and a noncarcinogen).

(10) Carcinogenic risk level--The probability of development of a neoplasm due to continuous lifetime exposure to a single carcinogen acting through an individual or combined exposure pathway.

(11) Chemical of concern--Any chemical that has the potential to adversely affect ecological or human receptors due to its concentration, distribution, and mode of toxicity. Depending on the program area, chemicals of concern may include the following: solid waste, industrial solid waste, municipal solid waste, and hazardous waste as defined in the Texas Health and Safety Code, §361.003, as amended; hazardous constituents as listed in 40 Code of Federal Regulations Part 261, Appendix VIII, as amended; constituents on the groundwater monitoring list in 40 Code of Federal Regulations Part 264, Appendix IX, as amended; constituents as listed in 40 Code of Federal Regulations Part 258 Appendices I and II, as amended; pollutant as defined in Texas Water Code, §26.001, as amended; hazardous substance as defined in the Texas Health and Safety Code, §361.003, as amended, and Texas Water Code, §26.263, as amended; other substances as defined in Texas Water Code, §26.039(a), as amended; and daughter products of the aforementioned constituents.

(12) Closure--The act of permanently taking a waste management unit or facility out of service.

(13) Commercial/industrial land use--Any real property or portions of a property not used for human habitation or for other purposes with a similar potential for human exposure as defined for residential land. Examples of commercial/industrial land use include manufacturing; industrial research and development; utilities; commercial warehouse operations; lumber yards; retail gas stations; auto service stations; auto dealerships; equipment repair and service stations; professional offices (lawyers, architects, engineers, real estate, insurance, etc.); medical/dental offices and clinics (not including hospitals); financial institutions; office buildings; any retail business whose principal activity is the sale of food or merchandise; personal service establishments (health clubs, barber/beauty salons, mortuaries,

photographic studios, etc.); churches (not including churches providing day care or school services other than during normal worship services); motels/hotels (not including those which allow residence); agricultural lands; and portions of government-owned land (local, state, or federal) that have commercial/industrial activities occurring. Land use activities consistent with this classification have the North American Industrial Classification System code numbers 11 - 21 inclusive; 22 except 22131; 23 - 56 inclusive; 61 except 61111, 61121, and 61131; 62 except 62211, 62221, 62231, 62311, 62322, 623311, 623312, 62399, and 62441; 71 except 71219; 72 except 721211 and 72131; 81 except 814; and 92 excluding 92214.

(14) Community--An assemblage of plant and animal populations occupying the same habitat in which the various species interact via spatial and trophic relationships (e.g., a desert community or a pond community).

(15) Compensatory ecological restoration--The creation of ecological services by or through restoration or the setting aside of, preferably, a comparable type of habitat as that which is impacted to offset residual ecological risk at an affected property. A net environmental benefits analysis or similar evaluation of ecological services may be used in the determination of the appropriate level of compensation.

(16) Complete exposure pathway--An exposure pathway where a human or ecological receptor is exposed to a chemical of concern via an exposure route (e.g., incidental soil ingestion, inhalation of volatiles and particulates, consumption of prey, etc.).

(17) Construction zone--The typical depth of construction within soil for an affected property considering the planned or historical installation of subsurface utilities, foundations, basements, or other such subsurface structures within the vicinity of the affected property not to extend below the top of bedrock.

(18) Control--To apply physical or institutional controls to prevent exposure to chemicals of concern. Control measures must be combined with appropriate maintenance, monitoring, and any necessary further response action to be protective of human health and the environment.

(19) Critical protective concentration level--The lowest protective concentration level for a chemical of concern within a source medium determined from all of the applicable human health exposure pathways as described in §350.71 of this title (relating to General Requirements), and when necessary, protective concentration levels for applicable ecological exposure pathways as required in §350.77 of this title (relating to Ecological Risk Assessment and Development of Ecological Protective Concentration Levels).

(20) Cumulative carcinogenic risk--The aggregate risk due to exposure of an individual human receptor to multiple carcinogens originating from a single affected property and acting through an individual or combined exposure pathway.

(21) Decontaminate--Application or occurrence of a permanent and irreversible treatment process to a waste or environmental medium so that the threat of release of chemicals of concern at concentrations above the critical protective concentration levels is eliminated.

(22) Deed notice--An instrument filed in the real property records of the county where the affected property is located that is intended to provide to owners, prospective buyers and others notice and information regarding, but which does not, by itself, restrict use of the affected property.

(23) *De minimus* --The description of an area of affected property comprised of one acre or less where the ecological risk is considered to be insignificant because of the small extent of contamination, the absence of protected species, the availability of similar unimpacted habitat nearby, and the lack of adjacent sensitive environmental areas.

(24) Ecological benchmark--A state standard, federal guideline, or other exposure level for a chemical of concern in water, sediment, or soil that represents a protective threshold from adverse ecological effects. An ecological benchmark may also be a toxicity reference value that is established by the person based on scientific studies in the literature.

(25) Ecological hazard index--The sum of individual ecological hazard quotients of COCs within a class of compounds that exert ecological effects which have the same toxicological mechanism or endpoint (e.g., PAHs, PCBs).

(26) Ecological hazard quotient--The ratio of an exposure level to a chemical of concern to a toxicity value selected for the risk assessment for that chemical of concern (e.g., a no observed adverse effects level).

(27) Ecological protective concentration level--The concentration of a chemical of concern at the point of exposure within an exposure medium (e.g., soil, sediment, groundwater, or surface water) which is determined in accordance with §350.77(c) or (d) of this title (relating to Ecological Risk Assessment and Development of Ecological Protective Concentration Levels) to be protective for ecological receptors. These concentration levels are primarily intended to be protective for more mobile or wide-ranging ecological receptors and, where appropriate, benthic invertebrate communities within the waters in the state. These concentration levels are not intended to be directly protective of receptors with limited mobility or range (e.g., plants, soil invertebrates, and small rodents), particularly those residing within active areas of a facility, unless these receptors are threatened/endangered species or unless impacts to these receptors result in disruption of the ecosystem or other unacceptable consequences for the more mobile or wide-ranging receptors (e.g., impacts to an off-site grassland habitat eliminate rodents which causes a desirable owl population to leave the area).

(28) Ecological risk assessment--The process that evaluates the likelihood that adverse ecological effects may occur or are occurring as a result of exposure to one or more stressors; however, as used in this context, only chemical stressors (i.e., COCs) are evaluated.

(29) Ecological services--The physical, chemical, or biological functions of natural resources that one natural resource provides for another or to the public. Examples include provision of food, protection from predation, and nesting habitat, among others.

(30) Ecological services analysis--A measurement of the potential change in ecological services based on considerations which may include, but are not limited to: the percent change in

ecological services at the affected property that are attributable to COCs and/or potential response actions; the spatial extent of the affected property; and the recovery period.

(31) Environmental medium--A material found in the natural environment such as soil (including non-waste fill materials), groundwater, air, surface water, and sediments, or a mixture of such materials with liquids, sludges, gases, or solids, including hazardous waste which is inseparable by simple mechanical removal processes, and is made up primarily of natural environmental material.

(32) Exclusion criteria--Those conditions at an affected property which preclude the need to establish a protective concentration level for an ecological exposure pathway because the exposure pathway between the chemical of concern and the ecological receptors is not complete or is insignificant.

(33) Exposure area--The smallest property surface area within which it is believed that exposure to chemicals of concern in soil or air by a receptor would be limited under reasonably anticipated current or future use scenarios.

(34) Exposure medium--The environmental medium or biologic tissue in which or by which exposure to chemicals of concern by ecological or human receptors occurs.

(35) Exposure pathway--The course that a chemical of concern takes from a source area to ecological or human receptors and includes a source area, a point of exposure, and an exposure route (e.g., ingestion), as well as a transport mechanism if the point of exposure is different from the source area.

(36) Facility--The installation associated with the affected property where the release of chemicals of concern occurred.

(37) Facility Operations Area--One or more areas (lateral and vertical extent) of an operational chemical or petroleum manufacturing plant with North American Industrial Classification System code numbers 325 or 324, respectively, with a hazardous waste permit or commission corrective action order within which response actions to multiple releases of COCs can be consolidated for purposes of compliance with this chapter on an area-wide basis by using interim or permanent response actions. The lateral extent of the facility operations area is limited to the contiguous area actively used for the development, manufacture, process, transfer, storage, and management of chemical or refinery products, hazardous materials, substances and wastes subject to Resource Conservation and Recovery Act regulation, and includes ancillary components such as, but not necessarily limited to, power plants and cooling units.

(38) Feeding guilds--Groups of ecological receptors used to represent the variety of species that may be exposed to chemicals of concern at the affected property. The feeding guilds are generally based on function within an ecosystem, potential for exposure, and physiological and taxonomic similarity. Examples include carnivorous mammals, carnivorous birds, and piscivorous birds.

(39) Functioning cap--A low permeability layer or other approved cover meeting its design specifications to minimize water infiltration and chemical of concern migration, and prevent

ecological or human receptor exposure to chemicals of concern, and whose design requirements are routinely maintained.

(40) Groundwater-bearing unit--A saturated geologic formation, group of formations, or part of a formation which has a hydraulic conductivity equal to or greater than 1×10^{-5} centimeters/second.

(41) Groundwater production zone--The groundwater-bearing unit(s) which contributes water to a well. For example, if a well penetrates four distinct groundwater-bearing units isolated by competent aquitards, but the well is screened in only two of the units and has a competent annular seal to isolate the other two units, then the groundwater production zone consists of only the two units that contribute water to the well.

(42) Groundwater protective concentration level exceedence zone--A protective concentration level exceedence zone within a groundwater-bearing unit.

(43) Hazard index--The sum of two or more hazard quotients for multiple noncarcinogens originating from a single affected property.

(44) Hazard quotient--The ratio of the level of exposure of a noncarcinogen acting through an individual or combined exposure pathway over a specified time period to a reference dose for the noncarcinogen derived for a similar exposure period.

(45) Implementation Procedures--The most current version of *Procedures to Implement the Texas Surface Water Quality Standards*, as amended.

(46) Innocent Owner or Operator--Those persons so designated in accordance with Texas Health and Safety Code, Chapter 361, Subchapter V, Immunity From Liability of Innocent Owner or Operator, as amended.

(47) Institutional control--A legal instrument placed in the property records in the form of a deed notice, Voluntary Cleanup Program Certificate of Completion (VCP Certificate of Completion), or restrictive covenant which indicates the limitations on or the conditions governing use of the property which ensures protection of human health and the environment or equivalent zoning and governmental ordinances.

(48) Judgmental sample--An investigative sample of an environmental medium which is purposefully located based upon property-specific information.

(49) Laboratory Control Sample--A spiked blank sample analyzed by the laboratory to assess laboratory ability to successfully recover chemicals of concern from a control matrix.

(50) Landscaped area--An area of ornamental, introduced, commercially installed, or manicured vegetation which is routinely maintained.

(51) Long-term effectiveness--The ability of a remedy to maintain the required level of protection of human health and the environment over time.

(52) Lower explosive limit--The lowest concentration of a vapor or gas in air that will produce a flash of fire when an ignition source (heat, arc, or flame) is present.

(53) Method detection limit--The minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is greater than zero and is determined for each COC from the analysis of a sample of a given matrix type containing the COC.

(54) Method quantitation limit--The lowest non-zero concentration standard in the laboratory's initial calibration curve and is based on the final volume of extract (or sample) used by the laboratory.

(55) Monitored natural attenuation--The use of natural attenuation within the context of a carefully controlled and monitored response action to achieve protective concentration levels at the point of exposure.

(56) Natural attenuation--The reduction in mass or concentration of a chemical of concern over time or distance from the source of a chemical of concern due to naturally occurring physical, chemical, and biological processes, such as: biodegradation, dispersion, dilution, adsorption, and volatilization.

(57) Natural attenuation factor--The numerical value which represents the natural attenuation (i.e., reduction) in chemical of concern concentrations during transport from the source area to the point of exposure. The natural attenuation factor is the concentration at the source area divided by the concentration at the point of exposure. The natural attenuation factor is always greater than or equal to one for the purposes of this rule.

(58) Natural Resource Trustees--The federal agencies as designated by the President and the state agencies as designated by the Governor pursuant to the National Contingency Plan, Oil Pollution Act, and CERCLA §107(f)(2)(A) and (B) to act on behalf of the public as trustees of natural resources (e.g., water, air, land, wildlife). The Trustees include TCEQ, Texas Parks and Wildlife Department, Texas General Land Office, National Oceanic and Atmospheric Administration, and the Department of the Interior.

(59) Off-site property (off-site)--All environmental media which is outside of the legal boundaries of the on-site property.

(60) On-site property (on-site)--All environmental media within the legal boundaries of a property owned or leased by a person who has filed a self-implementation notice or a response action plan for that property or who has become subject to such action through one of the agency's program areas for that property.

(61) Permanence/permanent/permanently--The property of a response action which is capable of enduring indefinitely without posing the threat of any future release of chemicals of concern above the critical protective concentration levels established for the property.

(62) Person--An individual, corporation, organization, government or governmental subdivision or agency, business trust, partnership, association, or any other legal entity.

(63) Physical barrier--Any structure or system, natural or manmade, that prevents exposure or prevents migration of chemicals of concern to the points of exposure.

(64) Physical control--A structure or hydraulic containment action which prevents exposure to and/or migration of chemicals of concern when combined with appropriate post-response action care to protect human health and the environment. Examples of physical controls are caps, slurry walls, sheet piling, hydraulic containment wells, and interceptor trenches, but typically not fences.

(65) Plume management zone--The area of the groundwater protective concentration level exceedence zone at the time of response action plan submittal, plus any additional area allowed in accordance with §350.33(f)(4) of this title (relating to Remedy Standard B).

(66) Point of exposure--The location within an environmental medium where a receptor will be assumed to have a reasonable potential to come into contact with chemicals of concern. The point of exposure may be a discrete point, plane, or an area within or beyond some location.

(67) Prescribed points of exposure--The prescribed on-site and off-site locations within an environmental medium where an individual human or population will be assumed to come into contact with chemicals of concern from an affected property.

(68) Protective concentration level--The concentration of a chemical of concern which can remain within the source medium and not result in levels which exceed the applicable human health risk-based exposure limit or ecological protective concentration level at the point of exposure for that exposure pathway.

(69) Protective concentration level exceedence zone--The lateral and vertical extent of all wastes and environmental media which contain chemicals of concern at concentrations greater than the critical protective concentration level determined for that medium, as well as, hazardous waste. A protective concentration level exceedence zone can be thought of as the volume of waste and environmental media which must be removed, decontaminated, and/or controlled in some fashion to adequately protect human health and the environment.

(70) Reasonably anticipated to be completed exposure pathway--A situation with a credible chance of occurrence in which an ecological or human receptor may become exposed to a chemical of concern (i.e., complete exposure pathway) without consideration of circumstances which are extreme or improbable based on property characteristics.

(71) Release--Any spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, escaping, leaching, dumping, or disposing into the environment, with the exception of:

(A) A release that results in an exposure to a person solely within a workplace, concerning a claim that the person may assert against the person's employer;

(B) An emission from the engine exhaust of a motor vehicle, rolling stock, aircraft, vessel, or pipeline pumping station engine;

(C) A release of source, by-product, or special nuclear material from a nuclear incident, as those terms are defined by the Atomic Energy Act of 1954, as amended (42 U.S.C. §2011 *et seq.*), if the release is subject to requirements concerning financial protection established by the Nuclear Regulatory Commission under §170 of that Act;

(D) For the purposes of the environmental response law §104, as amended, or other response action, a release of source, by-product, or special nuclear material from a processing site designated under §102(a)(1) or §302(a) of the Uranium Mill Tailings Radiation Control Act of 1978 (42 U.S.C. §7912 and §7942), as amended; and

(E) The normal application of fertilizer.

(72) Remediation--The act of eliminating or reducing the concentration of chemicals of concern in environmental media.

(73) Remove--To take waste or environmental media away from the affected property to another location for storage, processing or disposal in accordance with all applicable requirements.

Removal is an irreversible process that results in permanent risk reduction at an affected property.

(74) Residential land use--Property used for dwellings such as single family houses and multi-family apartments, children's homes, nursing homes, and residential portions of government-owned lands (local, state, or federal). Because of the similarity of exposure potential and the sensitive nature of the potentially exposed population, day care facilities, educational facilities, hospitals, and parks (local, state or federal) shall also be considered residential.

(75) Response action--Any activity taken to comply with these regulations to remove, decontaminate and/or control (i.e., physical controls and institutional controls) chemicals of concern in excess of critical PCLs in environmental media, including actions taken in response to releases to environmental media from a waste management unit before, during, or after closure.

(76) Restrictive covenant--An instrument filed in the real property records of the county where the affected property is located which ensures that the restrictions will be legally enforceable by the executive director when the person owning the property is an innocent landowner.

(77) Risk-based exposure limit--The concentration of a chemical of concern at the point of exposure within an exposure medium (e.g., soil, sediment, vegetables, groundwater, surface water, or air) which is protective for human health. Risk-based exposure limits are the fundamental risk-based values which are initially determined and used in the development of protective concentration levels.

Risk-based exposure limits do not account for cumulative effects from exposure to multiple chemicals of concern, combined exposure pathways, and cross-media or lateral transport of chemicals of concern within environmental media.

(78) Sample detection limit--The method detection limit, as defined in this section, adjusted to reflect sample-specific actions, such as dilution or use of smaller aliquot sizes than prescribed in the analytical method, and to take into account sample characteristics, sample preparation, and analytical adjustments. The term, as used in this rule, is analogous to the sample-specific detection limit.

(79) Sediment--Non-suspended particulate material lying below surface waters such as bays, the ocean, rivers, streams, lakes, ponds, or other similar surface water body (including intermittent streams). Dredged sediments which have been removed from below surface water bodies and placed on land shall be considered soils.

(80) Selected ecological receptors--Species that are to be carried through the ecological risk assessment as representatives of the different feeding guilds and communities that are being evaluated. These species may not actually occur at the affected property, but may be used to represent those within the feeding guild or community that may feed on the affected property.

(81) Sensitive environmental areas--Areas that provide unique and often protected habitat for wildlife species. These areas are typically used during critical life stages such as breeding, hatching, rearing of young, and overwintering. Examples include critical habitat for threatened and endangered species, wilderness areas, parks, and wildlife refuges.

(82) Soil protective concentration level exceedence zone--A protective concentration level exceedence zone within the surface soil or subsurface soil which may extend down to a groundwater-bearing unit(s). These protective concentration level exceedence zones may also be present below or between groundwater-bearing units.

(83) Source area--The volume of a chemical of concern in environmental media (e.g., soil or groundwater) which is leaching, dissolving or emitting chemicals of concern. Of primary regulatory concern are the source areas that are leaching, dissolving or emitting chemicals of concern at unprotective concentrations under natural conditions, and not in consideration of any physical controls (e.g., slurry walls, caps), that will result in protective concentrations being exceeded at the point of exposure. The source area need not be the horizontal and vertical extent of the protective concentration level exceedence zone when cross-media or lateral chemical of concern transport is required for a point of exposure to be reached. Generally, a source area is located in the vicinity of or below primary release sources (e.g., tanks, pipelines, drums, lagoons, landfills, etc.).

(84) Source medium--An environmental medium containing chemicals of concern which must be removed, decontaminated and/or controlled in order to protect human health and the environment. The source medium may be the exposure medium for some exposure pathways.

(85) Stressor--Any physical, chemical, or biological entity that can induce an adverse response; however, as used in this context, only chemical entities apply.

(86) Subsurface soil--For human health exposure pathways, the portion of the soil zone between the base of surface soil and the top of the groundwater-bearing unit(s). For ecological exposure pathways, the portion of the soil zone between 0.5 feet and 5 feet in depth.

(87) Surface cover--A layer of artificially placed utility material (e.g., shell, gravel).

(88) Surface soil--For human health exposure pathways, the soil zone extending from ground surface to 15 feet in depth for residential land use and from ground surface to 5 feet in depth for commercial/industrial land use; or to the top of the uppermost groundwater-bearing unit or bedrock, whichever is less in depth. For ecological exposure pathways, the soil zone extending from ground surface to 0.5 feet in depth.

(89) Surface water--Any water meeting the definition of surface water in the state as defined in §307.3 of this title (relating to Definitions and Abbreviations), as amended.

(90) Toxicity reference value--An exposure level from a valid scientific study that represents a conservative threshold for adverse ecological effects.

(91) Waste control unit--A municipal or industrial solid waste landfill, including those Resource Conservation and Recovery Act regulated units closed as landfills, with a liner system (i.e., synthetic or clay) and an engineered cap, that have been closed pursuant to an approved closure plan, previous regulations, or will be implemented pursuant to an approved response action plan.

(b) Acronyms.

- (1) APAR--Affected property assessment report;
- (2) COC--Chemical of concern;
- (3) FOA--Facility Operations Area;
- (4) K_d --Soil-water partition coefficient;
- (5) K_{oc} --Octanol-water partition coefficient;
- (6) LOAEL--Lowest observed adverse effect level;
- (7) MCL--Maximum contaminant level;
- (8) NAPLs--Nonaqueous phase liquids;
- (9) NOAEL--No observed adverse effect level;
- (10) PCL--Protective concentration level;
- (11) PCLE zone--Protective concentration level exceedence zone;

- (12) POE--Point of exposure;
- (13) PRACR--Post-response action care report;
- (14) RACR--Response action completion report;
- (15) RAER--Response action effectiveness report;
- (16) RAP--Response action plan;
- (17) RBEL--Risk-based exposure limit;
- (18) SIN--Self-implementation notice;
- (19) TAC--Texas Administrative Code;
- (20) TCEQ--Texas Commission on Environmental Quality;
- (21) TPDES--Texas Pollutant Discharge Elimination System; and
- (22) U.S. EPA--United States Environmental Protection Agency.

(c) Risk-based exposure limit nomenclature. A nomenclature is used in Subchapter D of this chapter (relating to the Development of Protective Concentration Levels) to refer to specific RBELs. The RBEL nomenclature reflects the exposure medium and the exposure route. The exposure medium appears first in superscript text, followed by RBEL in regular text and lastly the exposure route in subscript text. For example $^{\text{Soil}}\text{RBEL}_{\text{Ing}}$ is a RBEL where soil is the exposure medium and ingestion is the exposure route.

- (1) $^{\text{Air}}\text{RBEL}_{\text{Inh}}$ --air inhalation RBEL;
- (2) $^{\text{Soil}}\text{RBEL}_{\text{Derm}}$ --dermal contact with soil RBEL;
- (3) $^{\text{Soil}}\text{RBEL}_{\text{Ing}}$ --ingestion of soil RBEL;
- (4) $^{\text{GW}}\text{RBEL}_{\text{Ing}}$ --ingestion of groundwater RBEL;
- (5) $^{\text{GW}}\text{RBEL}_{\text{Class 3}}$ --class 3 groundwater RBEL;
- (6) $^{\text{SW}}\text{RBEL}$ --surface water RBEL;
- (7) $^{\text{AbgVeg}}\text{RBEL}_{\text{Ing}}$ --ingestion of aboveground vegetables RBEL; and
- (8) $^{\text{BgVeg}}\text{RBEL}_{\text{Ing}}$ --ingestion of below-ground vegetables RBEL.

(d) Protective concentration level nomenclature. A nomenclature is used in Subchapter D of this chapter (relating to the Development of Protective Concentration Levels) to refer to specific PCLs. The PCL nomenclature reflects the exposure medium, source medium and the exposure route. The exposure medium appears first in superscript text, followed by the source medium in regular text and lastly the exposure route in subscript text. For example, $^{GW}GW_{Ing}$ is a PCL where groundwater is the source medium (GW), groundwater is the exposure medium (GW), and ingestion is the exposure route ($_{Ing}$). Cross-media transfer is indicated when exposure occurs in a different medium than the source medium. For example, $^{Air}Soil_{Inh-v}$ is a PCL where soil is the source medium and air is the exposure medium.

(1) $^{GW}GW_{Ing}$ --PCL for groundwater ingestion;

(2) $^{GW}GW_{Class\ 3}$ --PCL for class 3 groundwater;

(3) $^{Air}GW_{Inh-v}$ --PCL for inhalation of volatiles from groundwater;

(4) ^{SW}GW --PCL for groundwater discharge to surface water;

(5) $^{Tot}Soil_{Comb}$ --surface soil PCL for combined soil ingestion, dermal contact, inhalation of volatiles and particulates, and for residential land use, ingestion of aboveground and below-ground vegetables;

(6) $^{Air}Soil_{Inh-vp}$ --PCL for inhalation of volatiles and particulates from surface soil;

- (7) ^{Soil} Soil_{Derm}--PCL for dermal contact with surface soil;
- (8) ^{Soil} Soil_{Ing}--PCL for ingestion of surface soil;
- (9) ^{Veg} Soil_{Ing-Inorg}--surface soil PCL for ingestion of inorganic COCs in vegetables;
- (10) ^{Veg} Soil_{Ing-Org}--surface soil PCL for ingestion of organic COCs in vegetables;
- (11) ^{GW} Soil--PCL for surface and subsurface soil to protect groundwater;
- (12) ^{Air} Soil_{Inh-V}--PCL for inhalation of volatiles from subsurface soil;
- (13) ^{Air} Air_{Inh}--air PCL for inhalation; and
- (14) ^{SW} SW--surface water PCL.

SUBCHAPTER D: DEVELOPMENT OF PROTECTIVE CONCENTRATION LEVELS

§350.77

STATUTORY AUTHORITY

The amendments are adopted under Texas Water Code (TWC), §5.012, which provides that the commission is the agency responsible for implementing the constitution and laws of the state relating to the conservation of natural resources and protection of the environment; TWC, §5.103, which authorizes the commission to adopt any rules necessary to carry out its powers and duties under this code and other laws of this state and to adopt rules repealing any statement of general applicability that interprets law or policy; TWC, §5.105, which directs the commission to establish and approve all general policy of the commission by rule; TWC, §26.345, which authorizes the commission to develop a regulatory program and to adopt rules regarding underground storage tanks (USTs); TWC, §26.351, which directs the commission to adopt rules establishing the requirements for taking corrective action in response to a release from a UST or aboveground storage tank (AST) and TWC, §26.011, which requires the commission to control the quality of water by rule.

The adopted amendments implement TWC, §26.351, which directs the commission to adopt rules establishing the requirements for taking corrective action in response to a release from a UST or AST.

§350.77. Ecological Risk Assessment and Development of Ecological Protective Concentration Levels.

(a) General. The person shall evaluate the affected property by conducting an ecological risk assessment in a manner appropriate and consistent with subsections (b), (c), or (d) of this section. The process is discussed in the agency's ecological risk assessment guidance. The purpose of the ecological risk assessment will be to characterize the ecological setting of the affected property, identify complete or reasonably anticipated to be completed exposure pathways and representative ecological receptors, scientifically eliminate COCs that pose no unacceptable risk, and develop PCLs for selected ecological receptors where warranted. The POEs for the selected ecological receptors shall be established on a property-specific basis. However, if the person can show that no unacceptable ecological risk exists due to incomplete or insignificant exposure pathways as specified in subsection (b) of this section, or if all COCs can be eliminated as specified in subsection (c)(1), (6), (7), or (8) of this section, or if, after incorporation of site-specific information, it can be shown that there is either no ecological risk or that it is not apparent as specified in subsection (d) of this section, then the ecological risk assessment process will terminate at that point. Also, if after the ecological risk assessment process specified in subsection (b) of this section, or if at anytime during the ecological risk assessment process specified in subsections (c) or (d) of this section, the person can demonstrate to the satisfaction of the executive director that the implementation of a response action will eliminate the ecological exposure pathway or render it insignificant, or that human health PCLs will be protective of ecological receptors, then no further ecological risk assessment evaluation will be required. In addition, if after the ecological risk assessment process specified in subsection (b) of this section, the person can demonstrate to the satisfaction of the executive director that an expedited stream evaluation can determine that the completed surface water and sediment pathways are insignificant, then no further ecological risk assessment evaluation will be required. If no further ecological risk assessment evaluation is required, then the person shall provide, as appropriate, a reasoned justification and/or an expedited stream evaluation for terminating the ecological

risk assessment and place this information in the affected property assessment report as described in §350.91 of this title (relating to Affected Property Assessment Report). Furthermore, after ecological PCLs have been established, the person shall have the option, where determined appropriate, of conducting an ecological services analysis as a means of managing ecological risk at the affected property, in accordance with subsection (f) of this section and §350.33(a)(3)(B) of this title (relating to Remedy Standard B). Subsections (b), (c), and (d) of this section describe a three-tiered approach to conducting an ecological risk assessment, and although there is a logical progression from one tier to the next, the person may begin the ecological evaluation of the affected property at any tier.

(b) Tier 1: exclusion criteria checklist. The person shall conduct a Tier 1 assessment at all affected properties to which this rule is applicable as presented in §350.2 of this title (relating to Applicability), unless the person elects to begin the ecological evaluation at Tier 2 or Tier 3. The person shall use the Tier 1 Exclusion Criteria Checklist provided in the following figure. The person will have fulfilled the ecological risk assessment requirements if the affected property meets the exclusion criteria. However, the person shall re-enter the ecological risk assessment process if changing circumstances result in the affected property not meeting the Tier 1 exclusion criteria. The person is required to continue the ecological risk assessment process as described in subsection (c) or (d) of this section if the affected property fails the exclusion criteria, unless the reasoned justification and/or expedited stream evaluation processes described in subsection (a) of this section are used to demonstrate that no unacceptable ecological risk exists.

Figure: 30 TAC §350.77(b)

TIER 1: EXCLUSION CRITERIA CHECKLIST

This exclusion criteria checklist is intended to aid the person and the TCEQ in determining whether or not further ecological evaluation is necessary at an affected property where a response action is being pursued under the Texas Risk Reduction Program (TRRP). Exclusion criteria refer to those conditions at an affected property which preclude the need for a formal ecological risk assessment (ERA) because there are **incomplete or insignificant ecological exposure pathways** due to the nature of the affected property setting and/or the condition of the affected property media. This checklist (and/or a Tier 2 or 3 ERA or the equivalent) must be completed by the person for all affected property subject to the TRRP. The person should be familiar with the affected property but need not be a professional scientist in order to respond, although some questions will likely require contacting a wildlife management agency (i.e., Texas Parks and Wildlife Department or U.S. Fish and Wildlife Service). The checklist is designed for general applicability to all affected property; however, there may be unusual circumstances which require professional judgement in order to determine the need for further ecological evaluation (e.g., cave-dwelling receptors). In these cases, the person is strongly encouraged to contact TCEQ before proceeding.

Besides some preliminary information, the checklist consists of three major parts, **each of which must be completed unless otherwise instructed**. PART I requests affected property identification and background information. PART II contains the actual exclusion criteria and supportive information. PART III is a qualitative summary statement and a certification of the information provided by the person. **Answers should reflect existing conditions and should not consider future remedial actions at the affected property**. Completion of the checklist should lead to a logical conclusion as to whether further evaluation is warranted. Definitions of terms used in the checklist have been provided and users are strongly encouraged to familiarize themselves with these definitions before beginning the checklist.

Name of Facility:

Affected Property Location:

Mailing Address:

TCEQ Case Tracking #s:

Solid Waste Registration #s:

Voluntary Cleanup Program #:

EPA I.D. #s:

Definitions¹

Affected property - The entire area (i.e., on-site and off-site; including all environmental media) which contains releases of chemicals of concern at concentrations equal to or greater than the assessment level applicable for residential land use and groundwater classification.

Assessment level - A critical protective concentration level for a chemical of concern used for affected property assessments where the human health protective concentration level is established under a Tier 1 evaluation as described in §350.75(b) of this title (relating to Tiered Human Health Protective Concentration Level Evaluation), except for the protective concentration level for the soil-to-groundwater exposure pathway which may be established under Tier 1, 2, or 3 as described in §350.75(i)(7) of this title, and ecological protective concentration levels which are developed, when necessary, under Tier 2 and/or 3 in accordance with §350.77(c) and/or (d), respectively, of this title (relating to Ecological Risk Assessment and Development of Ecological Protective Concentration Levels).

Bedrock - The solid rock (i.e., consolidated, coherent, and relatively hard naturally formed material that cannot normally be excavated by manual methods alone) that underlies gravel, soil or other surficial material.

Chemical of concern - Any chemical that has the potential to adversely affect ecological or human receptors due to its concentration, distribution, and mode of toxicity. Depending on the program area, chemicals of concern may include the following: solid waste, industrial solid waste, municipal solid waste, and hazardous waste as defined in Texas Health and Safety Code, §361.003, as amended; hazardous constituents as listed in 40 Code of Federal Regulations Part 261, Appendix VIII, as amended; constituents on the groundwater monitoring list in 40 Code of Federal Regulations Part 264, Appendix IX, as amended; constituents as listed in 40 CFR Part 258 Appendices I and II, as amended; pollutant as defined in Texas Water Code, §26.001, as amended; hazardous substance as defined in Texas Health and Safety Code, §361.003, as amended, and the Texas Water Code, §26.263, as amended; other substances as defined in Texas Water Code, §26.039(a), as amended; and daughter products of the aforementioned constituents.

Community - An assemblage of plant and animal populations occupying the same habitat in which the various species interact via spatial and trophic relationships (e.g., a desert community or a pond community).

Complete exposure pathway - An exposure pathway where a human or ecological receptor is exposed to a chemical of concern via an exposure route (e.g., incidental soil ingestion, inhalation of volatiles and particulates, consumption of prey, etc).

De minimus - The description of an area of affected property comprised of one acre or less where the ecological risk is considered to be insignificant because of the small extent of contamination, the absence of protected species, the availability of similar unimpacted habitat nearby, and the lack of adjacent sensitive environmental areas.

Ecological protective concentration level - The concentration of a chemical of concern at the point of exposure within an exposure medium (e.g., soil, sediment, groundwater, or surface water) which is determined in accordance with §350.77(c) or (d) of this title (relating to Ecological Risk Assessment and

Development of Ecological Protective Concentration Levels) to be protective for ecological receptors. These concentration levels are primarily intended to be protective for more mobile or wide-ranging ecological receptors and, where appropriate, benthic invertebrate communities within the waters in the state. These concentration levels are not intended to be directly protective of receptors with limited mobility or range (e.g., plants, soil invertebrates, and small rodents), particularly those residing within active areas of a facility, unless these receptors are threatened/endangered species or unless impacts to these receptors result in disruption of the ecosystem or other unacceptable consequences for the more mobile or wide-ranging receptors (e.g., impacts to an off-site grassland habitat eliminate rodents which causes a desirable owl population to leave the area).

Ecological risk assessment - The process that evaluates the likelihood that adverse ecological effects may occur or are occurring as a result of exposure to one or more stressors; however, as used in this context, only chemical stressors (i.e., COCs) are evaluated.

Environmental medium - A material found in the natural environment such as soil (including non-waste fill materials), groundwater, air, surface water, and sediments, or a mixture of such materials with liquids, sludges, gases, or solids, including hazardous waste which is inseparable by simple mechanical removal processes, and is made up primarily of natural environmental material.

Exclusion criteria - Those conditions at an affected property which preclude the need to establish a protective concentration level for an ecological exposure pathway because the exposure pathway between the chemical of concern and the ecological receptors is not complete or is insignificant.

Exposure medium - The environmental medium or biologic tissue in which or by which exposure to chemicals of concern by ecological or human receptors occurs.

Facility - The installation associated with the affected property where the release of chemicals of concern occurred.

Functioning cap - A low permeability layer or other approved cover meeting its design specifications to minimize water infiltration and chemical of concern migration, and prevent ecological or human receptor exposure to chemicals of concern, and whose design requirements are routinely maintained.

Landscaped area - An area of ornamental, or introduced, or commercially installed, or manicured vegetation which is routinely maintained.

Off-site property (off-site) - All environmental media which is outside of the legal boundaries of the on-site property.

On-site property (on-site) - All environmental media within the legal boundaries of a property owned or leased by a person who has filed a self-implementation notice or a response action plan for that property or who has become subject to such action through one of the agency's program areas for that property.

Physical barrier - Any structure or system, natural or manmade, that prevents exposure or prevents migration of chemicals of concern to the points of exposure.

Point of exposure - The location within an environmental medium where a receptor will be assumed to have a reasonable potential to come into contact with chemicals of concern. The point of exposure may be a discrete point, plane, or an area within or beyond some location.

Protective concentration level - The concentration of a chemical of concern which can remain within the source medium and not result in levels which exceed the applicable human health risk-based exposure limit or ecological protective concentration level at the point of exposure for that exposure pathway.

Release - Any spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, escaping, leaching, dumping, or disposing into the environment, with the exception of:

- (A) A release that results in an exposure to a person solely within a workplace, concerning a claim that the person may assert against the person's employer;
- (B) An emission from the engine exhaust of a motor vehicle, rolling stock, aircraft, vessel, or pipeline pumping station engine;
- (C) A release of source, by-product, or special nuclear material from a nuclear incident, as those terms are defined by the Atomic Energy Act of 1954, as amended (42 U.S.C. §2011 *et seq.*), if the release is subject to requirements concerning financial protection established by the Nuclear Regulatory Commission under §170 of that Act;
- (D) For the purposes of the environmental response law §104, as amended, or other response action, a release of source, by-product, or special nuclear material from a processing site designated under §102(a)(1) or §302(a) of the Uranium Mill Tailings Radiation Control Act of 1978 (42 U.S.C. §7912 and §7942), as amended; and
- (E) The normal application of fertilizer.

Sediment - Non-suspended particulate material lying below surface waters such as bays, the ocean, rivers, streams, lakes, ponds, or other similar surface water body (including intermittent streams). Dredged sediments which have been removed from below surface water bodies and placed on land shall be considered soils.

Sensitive environmental areas - Areas that provide unique and often protected habitat for wildlife species. These areas are typically used during critical life stages such as breeding, hatching, rearing of young, and overwintering. Examples include critical habitat for threatened and endangered species, wilderness areas, parks, and wildlife refuges.

Source medium - An environmental medium containing chemicals of concern which must be removed, decontaminated and/or controlled in order to protect human health and the environment. The source medium may be the exposure medium for some exposure pathways.

Stressor - Any physical, chemical, or biological entity that can induce an adverse response; however, as used in this context, only chemical entities apply.

Subsurface soil - For human health exposure pathways, the portion of the soil zone between the base of surface soil and the top of the groundwater-bearing unit(s). For ecological exposure pathways, the portion of the soil zone between 0.5 feet and 5 feet in depth.

Surface cover - A layer of artificially placed utility material (e.g., shell, gravel).

Surface soil - For human health exposure pathways, the soil zone extending from ground surface to 15 feet in depth for residential land use and from ground surface to 5 feet in depth for commercial/industrial land use; or to the top of the uppermost groundwater-bearing unit or bedrock, whichever is less in depth. For ecological exposure pathways, the soil zone extending from ground surface to 0.5 feet in depth.

Surface water - Any water meeting the definition of surface water in the state as defined in §307.3 of this title (relating to Abbreviations and Definitions), as amended.

PART I. Affected Property Identification and Background Information

1) Provide a description of the specific area of the response action and the nature of the release. Include estimated acreage of the affected property and the facility property, and a description of the type of facility and/or operation associated with the affected property. Also describe the location of the affected property with respect to the facility property boundaries and public roadways.

Attach available USGS topographic maps and/or aerial or other affected property photographs to this form to depict the affected property and surrounding area. Indicate attachments:

- Topo map Aerial photo Other

2) Identify environmental media known or suspected to contain chemicals of concern (COCs) at the present time. Check all that apply:

- | Known/Suspected COC Location | Based on sampling data? | |
|--|------------------------------|-----------------------------|
| <input type="checkbox"/> Soil <5 ft below ground surface | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| <input type="checkbox"/> Soil >5 ft below ground surface | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| <input type="checkbox"/> Groundwater | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| <input type="checkbox"/> Surface Water/Sediments | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

Explain (previously submitted information may be referenced):

3) Provide the information below for the nearest surface water body which has become or has the potential to become impacted from migrating COCs via surface water runoff, air deposition, groundwater seepage, etc. Exclude wastewater treatment facilities and storm water conveyances/impoundments authorized by permit. Also exclude conveyances, decorative ponds, and those portions of process facilities which are:

- a. Not in contact with surface waters in the State or other surface waters which are ultimately in contact with surface waters in the State; and

b. Not consistently or routinely utilized as valuable habitat for natural communities including birds, mammals, reptiles, etc.

The nearest surface water body is _____ feet/miles from the affected property and is named _____ . The water body is best described as a:

- freshwater stream: _____ perennial (has water all year)
_____ intermittent (dries up completely for at least 1 week a year)
_____ intermittent with perennial pools
- freshwater swamp/marsh/wetland
- saltwater or brackish marsh/swamp/wetland
- reservoir, lake, or pond; approximate surface acres: _____
- drainage ditch
- tidal stream bay estuary
- other; specify _____

Is the water body listed as a State classified segment in Appendix C of the current Texas Surface Water Quality Standards; §§307.1 - 307.10?

- Yes Segment # _____ Use Classification: _____
- No

If the water body is not a State classified segment, identify the first downstream classified segment.

Name: _____

Segment #: _____

Use Classification: _____

As necessary, provide further description of surface waters in the vicinity of the affected property:

PART II. Exclusion Criteria and Supportive Information
Subpart A. Surface Water/Sediment Exposure

1) Regarding the affected property where a response action is being pursued under the TRRP, have COCs migrated and resulted in a release or imminent threat of release to either surface waters or to their associated sediments via surface water runoff, air deposition, groundwater seepage, etc.? Exclude wastewater treatment facilities and storm water conveyances/impoundments authorized by permit. Also exclude conveyances, decorative ponds, and those portions of process facilities which are:

a. Not in contact with surface waters in the State or other surface waters which are ultimately in contact with surface waters in the State; and

b. Not consistently or routinely utilized as valuable habitat for natural communities including birds, mammals, reptiles, etc.

Yes

No

Explain:

If the answer is Yes to Subpart A above, the affected property does not meet the exclusion criteria. However, complete the remainder of Part II to determine if there is a complete and/or significant soil exposure pathway, then complete PART III - Qualitative Summary and Certification. If the answer is No, go to Subpart B.

Subpart B. Affected Property Setting

In answering "Yes" to the following question, it is understood that the affected property is not attractive to wildlife or livestock, including threatened or endangered species (i.e., the affected property does not serve as valuable habitat, foraging area, or refuge for ecological communities). (May require consultation with wildlife management agencies.)

1) Is the affected property wholly contained within contiguous land characterized by: pavement, buildings, landscaped area, functioning cap, roadways, equipment storage area, manufacturing or process area, other surface cover or structure, or otherwise disturbed ground?

Yes

No

Explain:

If the answer to Subpart B above is Yes, the affected property meets the exclusion criteria, assuming the answer to Subpart A was No. Skip Subparts C and D and complete PART III - Qualitative Summary and Certification. If the answer to Subpart B above is No, go to Subpart C.

Subpart C. Soil Exposure

1) Are COCs which are in the soil of the affected property solely below the first 5 feet beneath ground surface **or** does the affected property have a physical barrier present to prevent exposure of receptors to COCs in surface soil?

Yes

No

Explain:

If the answer to Subpart C above is Yes, the affected property meets the exclusion criteria, assuming the answer to Subpart A was No. Skip Subpart D and complete PART III - Qualitative Summary and Certification. If the answer to Subpart C above is No, proceed to Subpart D.

Subpart D. *De Minimus* Land Area

In answering "Yes" to the question below, it is understood that all of the following conditions apply:

The affected property is not known to serve as habitat, foraging area, or refuge to threatened/endangered or otherwise protected species. (Will likely require consultation with wildlife management agencies.)

Similar but unimpacted habitat exists within a half-mile radius.

The affected property is not known to be located within one-quarter mile of sensitive environmental areas (e.g., rookeries, wildlife management areas, preserves). (Will likely require consultation with wildlife management agencies.)

There is no reason to suspect that the COCs associated with the affected property will migrate such that the affected property will become larger than one acre.

1) Using human health protective concentration levels as a basis to determine the extent of the COCs, does the affected property consist of one acre or less and does it meet all of the conditions above?

Yes No

Explain how conditions are met/not met:

If the answer to Subpart D above is Yes, then no further ecological evaluation is needed at this affected property, assuming the answer to Subpart A was No. Complete PART III - Qualitative Summary and Certification. If the answer to Subpart D above is No, proceed to Tier 2 or 3 or comparable ERA.

PART III. Qualitative Summary and Certification (Complete in all cases.)

Attach a brief statement (not to exceed 1 page) summarizing the information you have provided in this form. This summary should include sufficient information to verify that the affected property meets or does not meet the exclusion criteria. The person should make the initial decision regarding the need for further ecological evaluation (i.e., Tier 2 or 3) based upon the results of this checklist. After review, TCEQ will make a final determination on the need for further assessment. **Note that the person has the continuing obligation to re-enter the ERA process if changing circumstances result in the affected property not meeting the Tier 1 exclusion criteria.**

Completed by:

(Typed/Printed Name)

(Title)

(Date)

I believe that the information submitted is true, accurate, and complete, to the best of my knowledge.

(Typed/Printed Name of Person)

(Title of Person)

(Signature of Person)

(Date Signed)

1 These definitions were taken from 30 TAC §350.4 and may have both ecological and human health applications.

For the purpose of this checklist, it is understood that only the ecological applications are of concern.

(c) Tier 2: screening-level ecological risk assessment. The person shall conduct a screening-level ecological risk assessment to scientifically eliminate COCs that do not pose an ecological risk and to develop PCLs for those COCs that do pose an unacceptable risk to selected ecological receptors. Effect levels and exposure factors from the literature are used as early input, but Tier 2 PCLs are not developed without consideration of realistic assumptions and available site-specific information. The screening-level ecological risk assessment should contain the three following widely-acknowledged phases of an ecological risk assessment: problem formulation, which establishes the goals, breadth, and focus of the assessment; analysis, which consists of the technical evaluation of data on both the exposure of the ecological receptor to a chemical stressor and the potential adverse effects; and risk characterization, where the likelihood of adverse effects occurring as a result of exposure to a chemical stressor is

evaluated. In order to develop a screening-level ecological risk assessment which appropriately evaluates ecological risk, the person shall meet the minimum requirements listed in paragraphs (1) - (10) of this subsection. Additional information on these requirements, as well as case examples, are provided in the agency's ecological assessment guidance. The person shall:

(1) use affected property concentrations of non-bioaccumulative COCs to compare to established ecological benchmarks and/or use approved methodologies to develop benchmarks to determine potential effects and to eliminate COCs that do not pose unacceptable ecological risk (if all COCs are eliminated at this point, the ecological risk assessment process ends and the items listed in paragraphs (2) - (9) of this subsection are not required);

(2) identify communities (e.g., soil invertebrates, benthic invertebrates) and major feeding guilds (e.g., omnivorous mammals, piscivorous birds) and their representative species which are supported by habitats on the affected property for each complete or reasonably anticipated to be completed exposure pathway;

(3) develop a conceptual model which graphically depicts the movement of COCs through media to communities and the feeding guilds;

(4) discuss COC fate and transport and toxicological profiles;

(5) prepare a list of input data which includes values from the literature (e.g., exposure factors, intake equations that account for total exposure, no observed adverse effect level (NOAEL) and

lowest observed adverse effect level (LOAEL) values, references), any available site-specific data, and reasonably conservative exposure assumptions, and then calculate the total exposure to selected ecological receptors from each COC not eliminated according to paragraph (1) of this subsection and present these calculations in tables or spreadsheets;

(6) utilize an ecological hazard quotient methodology to compare exposures to the NOAELs in order to eliminate COCs that pose no unacceptable risk (i.e., NOAEL hazard quotient less than or equal to 1); however, when multiple members of a class of COCs are present which exert additive effects, it is also appropriate to utilize an ecological hazard index methodology (if all COCs are eliminated at this point, the ecological risk assessment process ends and the items listed in paragraphs (7) - (9) of this subsection are not required);

(7) justify the use of less conservative assumptions (e.g., a larger home range) to adjust the exposure and repeat the hazard quotient exercise in paragraph (6) of this subsection, once again eliminating COCs that pose no unacceptable risk based on comparisons to the NOAELs and adding another set of comparisons, this time to the LOAELs, for those COCs indicating a potential risk (i.e., NOAEL hazard quotient >1); however, when multiple members of a class of COCs are present which exert additive effects, it is also appropriate to utilize an ecological hazard index methodology (if all COCs are eliminated at this point, the ecological risk assessment process ends and the items listed in paragraphs (8) and (9) of this subsection are not required);

(8) develop an "uncertainty analysis" which discusses the major areas of uncertainty associated with the screening-level ecological risk assessment, including a justification for not developing

PCLs for particular COCs/pathways, if appropriate (e.g., NOAEL hazard quotient $> 1 >$ LOAEL hazard quotient, an evaluation of the likelihood of ecological risk, a discussion of the half-life of the COCs, etc.); however, when multiple members of a class of COCs are present which exert additive effects, it is also appropriate to utilize an ecological hazard index methodology (if all COCs are eliminated at this point, the ecological risk assessment process ends and the item listed in paragraph (9) of this subsection is not required);

(9) calculate medium-specific PCLs bounded by the NOAEL and the LOAEL used in paragraph (7) of this subsection for those COCs that are not eliminated as a result of the hazard quotient exercises or the uncertainty analysis; and

(10) make a recommendation for managing ecological risk at the affected property based on the final ecological PCLs, unless proceeding under Tier 3 (may be included as part of the affected property assessment report, self-implementation notice, or the response action plan).

(d) Tier 3: site-specific ecological risk assessment. When any of the Tier 2 PCLs, as described in subsection (c) of this section, are considered by the person to be inappropriate or not reflective of existing conditions at the affected property, or when otherwise elected, the person may conduct a site-specific ecological risk assessment. If the person elects to begin the ecological evaluation of the affected property by proceeding directly to a site-specific ecological risk assessment, applicable components of a Tier 2 screening-level ecological risk assessment shall be incorporated, including subsections (c)(2) - (4), (8), and (10) of this section and other requirements of subsection (c) of this section as determined appropriate by the executive director. The purpose of the optional site-specific ecological risk assessment shall be to

incorporate additional information obtained through the performance of site-specific studies designed to provide a more empirical evaluation of ecological risk at the affected property. The result of the site-specific ecological risk assessment will be the development of site-specific Tier 3 PCLs, a determination that there is no ecological risk, or a conclusion that ecological risk is not apparent based on site-specific information. Site-specific studies which may be conducted include but are not limited to:

- (1) development of site-specific bioaccumulation factors through the collection and analysis of tissue samples from appropriate ecological receptors.
 - (2) performance of toxicological testing of the impacted media via exposure to an appropriate test species.
 - (3) comparison of site data (e.g., macroinvertebrate diversity surveys) to like data from a reference area.
 - (4) other studies designed to obtain a preponderance or "weight-of-evidence" to draw conclusions about ecological risk.
- (e) Cross-media transfers of COCs. In situations where cross-media transfer of a COC from a source medium to a POE within an exposure medium must occur for the receptor to be exposed, then the person shall use the cross-media natural attenuation factor equations as shown in the figure in §350.75(b)(1) of this title (relating to Tiered Human Health Protective Concentration Level Evaluation) to

calculate the PCL. In lieu of using the human health RBEL referenced in the figures, the person shall use the ecological PCL established under subsections (c) or (d) of this section.

(f) Ecological risk management options. After the ecological risk has been quantified and PCLs have been established as specified in subsections (c) or (d) of this section and it has been determined that the ecological PCL is the critical PCL, or is the only PCL, the person may either:

(1) take action to remove and/or decontaminate the impacted media and COCs as described in §350.32 of this title (relating to Remedy Standard A); or

(2) remove, decontaminate, and/or control the impacted media and COCs or, when after consultation with the Natural Resource Trustees, it is determined appropriate by the executive director, conduct an ecological services analysis in accordance with §350.33 of this title (relating to Remedy Standard B). The ecological services analysis considers the ecological risks and benefits of the potential response actions available under Remedy Standard B at the affected property and, as appropriate, factors in compensatory ecological restoration in lieu of or in addition to remediation as a means of managing residual ecological risk.

SUBCHAPTER E: REPORTS

§350.91 and §350.92

STATUTORY AUTHORITY

The amendments are adopted under Texas Water Code (TWC), §5.012, which provides that the commission is the agency responsible for implementing the constitution and laws of the state relating to the conservation of natural resources and protection of the environment; TWC, §5.103, which authorizes the commission to adopt any rules necessary to carry out its powers and duties under this code and other laws of this state and to adopt rules repealing any statement of general applicability that interprets law or policy; TWC, §5.105, which directs the commission to establish and approve all general policy of the commission by rule; TWC, §26.345, which authorizes the commission to develop a regulatory program and to adopt rules regarding underground storage tanks (USTs); TWC, §26.351, which directs the commission to adopt rules establishing the requirements for taking corrective action in response to a release from a UST or aboveground storage tank (AST) and TWC, §26.011, which requires the commission to control the quality of water by rule.

The adopted amendments implement TWC, §26.351, which directs the commission to adopt rules establishing the requirements for taking corrective action in response to a release from a UST or AST.

§350.91. Affected Property Assessment Report.

(a) The person shall include the contact and identifications as described in paragraphs (1) - (3) of this subsection in an affected property assessment report (APAR):

(1) the name, mailing address, and telephone number of the contact person or office for the on-site affected property;

(2) the program and identification numbers for the project, if any (e.g., Solid Waste Registration number, Voluntary Cleanup Program number, etc.); and

(3) the physical address or location of the affected property, including accurate latitude and longitude and associated spatial data attributes in a format approved or required by the executive director.

(b) An APAR shall document descriptions of procedures and conclusions of the assessment and shall include all information required to meet the requirements of §350.51 of this title (relating to Affected Property Assessment), §350.52 of this title (relating to Groundwater Resource Classification) and §350.53 of this title (relating to Land Use Classification). This includes, but is not limited to:

(1) the classification of the groundwater(s) at an affected property including all supporting data and results;

(2) the classification of the land use(s) of the affected property;

(3) the identification and characterization of all source areas (e.g., NAPLs);

(4) a characterization of the local geology and hydrogeology;

(5) the direction and rate of movement, composition, and representative concentrations of COCs in environmental media (including the potential for migration to other media);

(6) an identification of all complete or reasonably anticipated to be completed exposure pathways, and an identification of other exposure pathways evaluated in accordance with §350.71(c)(8) of this title (relating to General Requirements) and an explanation of why those pathways were not considered to be complete or reasonably anticipated to be completed;

(7) as required, a completed Tier 1 Exclusion Criteria Checklist and, if appropriate, a reasoned justification and/or an expedited stream evaluation for terminating the ecological risk assessment, or as required a Tier 2 screening-level ecological risk assessment, and/or a Tier 3 site-specific ecological risk assessment as specified in §350.77 of this title (relating to Ecological Risk Assessment and Development of Ecological Protective Concentration Levels);

(8) summaries of sampling methodology;

(9) all analytical data in accordance with §350.54 of this title (relating to Data Acquisition and Reporting Requirements);

(10) documentation that the data necessary to support the development of PCLs and remedy selection have been adequately and appropriately collected;

(11) documentation of the derivation of all RBELs and PCLs and the determination of the critical PCLs for environmental media including all associated assumptions and calculations;

(12) a tabular comparison between concentrations of COCs and the critical PCLs. If statistical or geostatistical methods are used to develop representative concentrations of COCs, then the person shall include the following:

(A) a discussion of the data collection effort from an environmental medium to support this determination (e.g., judgmental samples, random sampling design, etc.);

(B) the statistical or geostatistical methodology applied; and

(C) the assumptions of the statistical or geostatistical method and how those assumptions are met.

(13) graphical representations (e.g., maps and cross-sections) of the soil and/or groundwater PCLE zone(s), location of other environmental media which exceeds the respective critical PCLs, and the plume management zone if applicable;

(14) a description of any exposure conditions which require notice under §350.55(e) of this title (relating to Notification Requirements) and any certification required under §350.55(d) and (e) of this title;

(15) accurate spatial coordinates and associated data attributes, in a format approved or required by the executive director, for all locations where samples of environmental media were collected or where other testing was conducted (e.g., water wells and monitor wells which were sampled or which were used for aquifer testing, soil sampling locations, surface water and sediment sampling locations, and air sampling locations); and

(16) any other reasonable information required by the executive director.

§350.92. Self-Implementation Notice.

The person shall include the following information in a self-implementation notice (SIN):

(1) the person shall include the following contact and identifications:

(A) the name, mailing address, and telephone number of the contact person or office for the on-site affected property;

(B) the program and identification numbers for the project, if any (e.g., Solid Waste Registration number, Voluntary Cleanup Program number, etc.); and

(C) the physical address or location of the affected property;

(2) a list of the COCs which require a response action;

(3) a description of the qualitative and quantitative response action objectives to be achieved by the response action;

(4) a description of any exposure conditions which require notice under §350.55(e) of this title (relating to Notification Requirements) and any certification required under §350.55(d) and (e) of this title;

(5) a description of the response action chosen to achieve Remedy Standard A;

(6) acknowledgment that any permits needed to implement the remedy will be obtained prior to implementation;

(7) a schedule for implementation and completion of the response action;

(8) if applicable, a copy of the proposed institutional control for §350.31(h)(1) of this title (relating to General Requirements for Remedy Standards); and

(9) any other reasonable information required by the executive director.