TCEQ REGULATORY GUIDANCE
Remediation Division
RG-366/TRRP-34 ● January 2010

Facility Operations Area

Overview of this Document

Objectives: This document provides guidance on the information and procedures necessary to establish a Facility Operations Area (FOA) to address multiple sources of chemicals of concern (COCs) within an operational chemical or petroleum manufacturing plant that is required to perform corrective action under 30 TAC §335 and pursuant to the Texas Risk Reduction Program (TRRP).

Audience: Regulated Community and Environmental Professionals

References: The regulatory citation for the Texas Risk Reduction Program (TRRP) rule is Title 30 Texas Administrative Code (TAC) Chapter 350.

The TRRP rule, together with conforming changes to related rules, is contained in 30 TAC Chapter 350, and was initially published in the September 17, 1999 Texas Register (24 TexReg 7413-7944). The rule was amended in 2007 (effective March 19, 2007; 32 TexReg 1526-1579).

Find links for the TRRP rule and preamble, Tier 1 PCL tables, and other TRRP information at: www.tceq.state.tx.us/remediation/trrp/.

TRRP guidance documents undergo periodic revision and are subject to change. Referenced TRRP guidance documents may be in development. Links to current versions are at: www.tceq.state.tx.us/remediation/trrp/guidance.html.

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1.0 Introduction

This document provides guidance on the information and procedures necessary to establish a Facility Operations Area (FOA) to implement corrective action in the operational area of a petroleum refinery or chemical plant in response to multiple sources of chemicals of concern (COCs). A FOA offers the following benefits:

- addresses all contamination from manufacturing process areas and waste units with a response action;
- manages risk for entire site and not just individual solid waste management units or "SWMUs" (manufacturing areas and waste units);
- manages receptors for entire site;
- may defer TRRP Remedy Standards A or B within the FOA so that final response actions can be performed more efficiently;

- consolidates multiple corrective actions into a single solution;
- may streamline the assessment and remediation process;
- allows deferral of certain requirements in TRRP;
- offers more alternatives than a plume management zone; and
- may encourage productive industrial use of inactive areas of facilities by providing regulatory incentives to redevelop such areas.

This document also discusses the process and information requirements for obtaining a FOA under a compliance plan or corrective action order. Specifically, this document:

- defines a FOA, its applicability and justification, and what it is intended to accomplish;
- discusses the administrative and technical procedures for authorizing a FOA;
- presents the qualifying criteria for being eligible for a FOA;
- identifies the information requirements and submittals for authorizing a FOA;
- discusses how a FOA is integrated into a qualifying facility's overall regulatory framework, including Resource Conservation and Recovery Act (RCRA) and Hazardous and Solid Waste Amendments (HSWA) corrective action; and
- addresses the duration of a FOA authorization and how the FOA is terminated at the end of a facility's operating life.

This guidance helps potential applicants and the TCEQ to streamline efforts by understanding the process and the information requirements. The FOA consolidates the RCRA/HSWA corrective action process and is a cooperative effort between the TCEQ and applicant. The end result of the FOA is a performance-based program with well-defined measurement points. Obtaining a FOA is a five-step process, but applicants should tailor the level of effort and amount of information presented in each step to what is needed to facilitate site-specific decision making only. The types of information and level of detail presented in the remaining sections of this guidance are meant to be examples; however, the TCEQ recognizes that each facility will be different.

1.1 Definition and Purpose

As provided in §350.4(a)(37), a FOA is defined as:

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 Agency 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 FOA 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.

The FOA applies to existing petroleum refineries and chemical manufacturing plants that must conduct corrective action for releases from solid waste management units (SWMUs) and areas of concern (AOCs) pursuant to a hazardous waste permit or corrective action order. Any future reference in this document to the term SWMU is intended to include AOCs. The conventional approach has been to investigate each SWMU to determine if a release has occurred and then to determine the extent of the release. These releases may be commingled with and indistinguishable from other releases from adjacent SWMUs or from historical contamination that has resulted from process areas over time. The FOA is meant to be an option for those facilities for which a consolidated or facility-wide approach is appropriate. For facilities that have substantially completed their corrective action programs, or will be able to effectively complete the corrective action process on a unit-by-unit basis, a FOA may not be advantageous.

The advantage of using a FOA is that all contamination from manufacturing process areas and waste units within those areas will be addressed with a response action. To accomplish this response action, have a detailed understanding of the geology and hydrogeology at the site such that COC migration can be reliably predicted. The facility must apply interim or permanent response actions at and within the FOA boundary using exposure prevention such that workers are sufficiently protected to carry out their normal duties. For ecological receptors, the FOA process is no different than already specified in TRRP and the site is still subject to performing an ecological risk assessment (ERA). Media concentrations must be protective of ecological receptors where complete/significant exposure pathways exist. Use physical controls where necessary to confine COCs within the FOA boundary. Monitoring is required at the boundaries and may be required within the interior of the FOA to determine the potential for COCs to migrate to the FOA boundary. Protect any points of exposure outside of the FOA to levels consistent with TRRP.

Another advantage of using a FOA is that attainment of Remedy Standards A and B under TRRP may be deferred within the FOA to the end of active manufacturing operations so that final response actions can be performed in a more efficient manner. This concept will encourage reuse of inactivated portions of facilities since cleanup is not necessary to enable immediate use of the land.

The stepwise approach provides for expediently determining eligibility and efficiently completing the process. However, the requirements for a FOA and the submittals required for obtaining a FOA are rigorous and require a serious commitment of resources from both the applicant and the TCEQ. Meetings between the TCEQ Project Manager and applicant should occur prior to initiating Steps 1 to 3. Additional meetings may be necessary to monitor the progress of a step and to address potential issues identified as each step progresses. A FOA is not a deferral of responsibility—it serves as the response action for the "operating" land use. If the land use changes, then the response action, including the FOA, needs to be reevaluated based on new exposure scenarios.

1.2 Justification for FOA

Operations at chemical plants and petroleum refineries have often resulted in contamination of the soil and groundwater. In some cases, this contamination may result from multiple sources of COCs. The FOA is meant to be an option for those facilities for which a consolidated or site-wide approach to managing these releases is beneficial and appropriate. The FOA is not intended to address new spills (see Section 4.6.2).

The conventional corrective action process addresses only individual SWMUs and any releases that have been identified within process areas. Under the conventional process, there is the potential for releases not yet identified to migrate undetected from process areas and thus pose a threat to human health and the environment. A FOA is designed to be protective of the releases from more than just SWMUs. A FOA is designed to identify pathways and potential receptors over the entire area (not just for individual units) and to establish monitoring and controls, as appropriate. In short, the FOA serves as a comprehensive site management plan for all environmental contamination within the FOA that allows the standard Remedy Standard A and B performance requirements to be met outside the FOA.

In evaluating the justification for use of a FOA, a facility must determine whether there are multiple sources of contamination, whether some or all of these are commingled, and whether a site-wide approach to corrective action makes sense. If a facility has substantially completed corrective action investigations/remedial solutions, then a FOA may not be an effective approach. Additional matters to consider include:

- the stringent qualifying criteria and application requirements;
- the cost and effort in providing the necessary geology and hydrogeology information for the proposed FOA;
- the lack of deferral of ecological risk requirements;
- the potential that multiple companies located on a site without a uniform health and safety plan may not meet the qualifying criteria;
- the inability to transfer the FOA to another company[1].

Although a facility could defer a final remedy within the FOA for the duration of its active industrial life, the FOA as an interim response action is not necessarily a total deferral of all corrective action within the FOA. For instance, sufficient action would have to be taken within the FOA to identify and abate the primary source of a release that is migrating or is predicted to migrate past the FOA boundary in concentrations exceeding the protective levels under TRRP. Some amount of containment and/or removal remedies may be necessary to prevent the migration of COCs beyond the FOA boundary and to ensure that workers are protected within the FOA boundary. In essence, phased corrective action often will need to be implemented throughout the duration of the FOA designation and may be necessary to prevent the migration of COCs beyond the FOA boundary.

1.3 FOA Application Process

FOA authorization is a five-step process. Each step builds on the information from the previous step, ultimately arriving at a complete FOA application. The TCEQ serves as the gatekeeper at each step—if the TCEQ is satisfied that the facility meets the requirements of that step, the facility may proceed to the next step. If the TCEQ is not satisfied, procession to the next step is declined and the facility either addresses the deficiencies or exits the FOA process.

The purpose of using a stepwise approach is to focus information on discrete elements of the FOA and allow the TCEQ review and dialogue with the applicant throughout the process. Such an approach allows for collaboration and steering during development of the FOA and ultimately is intended to provide a more consolidated and expedited approval.

1 Although a FOA is not directly transferable to a new owner of the facility, the TCEQ expects that the new owner may be able to obtain a FOA through a streamlined application process for cases in which the FOA boundaries and the environmental management of the FOA will continue as specified in the compliance plan governing the previous owner. In that instance, the TCEQ will allow the new owner to cross-reference applicable technical information that was submitted in the FOA application submitted by the prior owner and approved by the TCEQ. The new owner will only need to provide company-specific information (financial assurance, worker health and safety, compliance record, etc). This will be considered a Class 3 modification to the hazardous waste permit.

Figure 1 presents a general flowchart of the FOA application process, including a summary of the information required in each step and the decision points for proceeding to the next step. While data requirements are provided, the submittals and application are intended to address facility-specific conditions.

1.3.1 FOA Qualification Requirements (Step 1)

The first step in the process involves evaluating the overall facility status with respect to several qualification requirements. For this step, the applicant prepares information documenting the facility's performance in relation to 11 qualifying criteria and submits this information to the TCEQ for review and approval (see Appendix A for the *Qualifying Criteria Checklist*). These criteria are designed to assess the facility's performance in the areas of worker health and safety, environmental protection and compliance, and financial viability. A FOA is most appropriate for facilities with demonstrated track records in effective compliance, financial soundness, and diligence towards protection of human health and the environment. A more detailed discussion of the qualification requirements and a qualifying criteria checklist are provided in Section 2.0 and Appendix A, respectively.

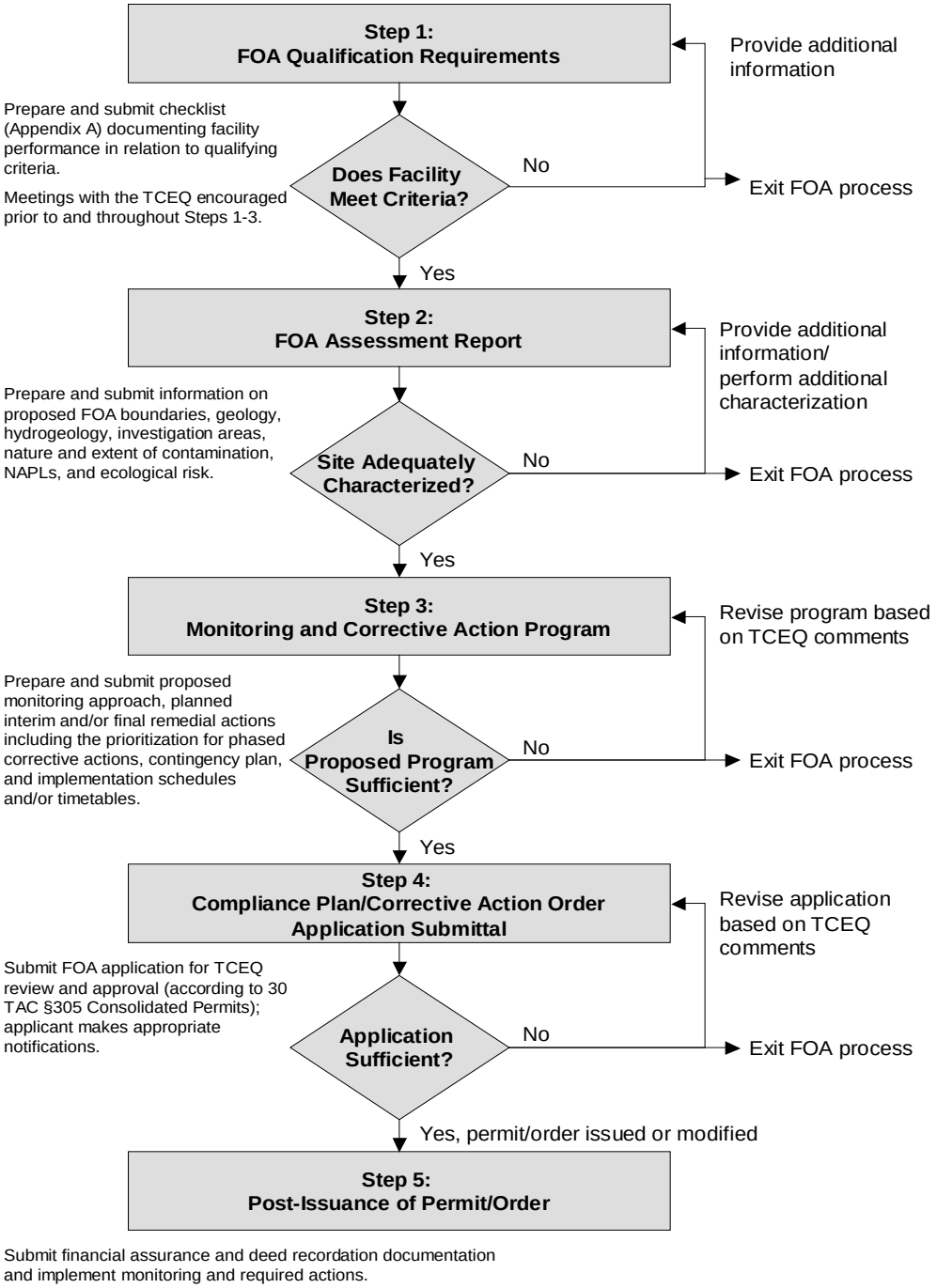

Figure 1. FOA Application Process.

1.3.2 FOA Assessment Report (Step 2)

For Step 2, the facility prepares and submits a FOA Assessment Report. This report:

- identifies the proposed FOA boundaries;

- provides a thorough but concise presentation of the facility's geology and hydrogeology;
- identifies and summarizes the investigation areas (i.e., SWMUs) within the proposed FOA boundaries;
- documents the nature and extent of contamination including the presence and location of non-aqueous phase liquids (NAPLs) within the FOA boundaries;
- assesses contaminant migration pathways; and
- provides an initial evaluation of ecological risk.

Fill data gaps prior to submitting this report. When complete, the FOA Assessment Report is submitted to the TCEQ for review and approval. Section 3.0 of this guidance document identifies the structure and content of the FOA Assessment Report.

1.3.3 Monitoring and Corrective Action Program (Step 3)

Step 3 involves the development of a monitoring and corrective action program for the proposed FOA. This section includes:

- the design of a FOA monitoring approach, selection of action levels developed for the health and safety program (e.g., exceeding pre-determined contaminant levels triggers specific actions to be taken under the worker health and safety program);
- Tier 2/3 ERAs (as appropriate), preparation of a contaminated media response plan;
- procedures for spill response and tracking;
- development of protective concentration levels (PCLs);
- proposed interim and final response actions;
- the prioritization plan for any phased corrective action, preparation of a contingency plan; and
- identification of implementation schedules and/or time lines.

Section 4.0 of this guidance discusses the requirements for the monitoring and corrective action program.

1.3.4 Compliance Plan/Corrective Action Order Application Submittal (Step 4)

Step 4 condenses the information provided in Steps 1-3 into a formal application package submitted to the TCEQ for review and approval. Also included in this step are the notification and financial assurance requirements. An implementation schedule for items not completed at FOA authorization must also be provided. Once submitted, the TCEQ will either approve the application or identify deficiencies. If approved, the FOA will be incorporated into the facility's compliance plan or corrective action order. Details regarding the compliance plan/corrective action order application submittal are provided in Section 5.0 of this guidance document.

1.3.5 Post Permit or Order Issuance (Step 5)

Once the permit or order has been issued by the TCEQ, submit financial assurance and deed recordation documentation and implement the requirements of the compliance plan or corrective action order. Section 6.0 details the activities to be completed after the compliance plan or corrective action order has been issued or modified.

1.4 Qualifying Criteria and Relation to Purpose

The purpose of the qualifying criteria is to serve as an initial screening tool (*Qualifying Criteria Checklist*, Appendix A). Addressing the qualifying criteria in an initial submittal requires potential applicants to demonstrate their commitment and capabilities early in the process based on past performance and current programs. Therefore, the qualifying criteria represent a quick, efficient way to evaluate a facility's eligibility and "screen out" those that are not eligible before significant efforts are expended to address Steps 2-4.

Minor noncompliances can be found at any complex facility. It is only if a facility has not resolved significant noncompliance issues that the TCEQ will consider it a disqualifying condition.

1.5 Integration into Facility's Overall Regulatory Framework

The FOA and its requirements are incorporated into the compliance plan or corrective action order. While the FOA concept is relatively new, view it as another tool in the TRRP toolbox to provide flexibility at operating facilities where a consolidated or area-wide approach is appropriate. In concept, releases within or from a FOA are treated similarly as with a large SWMU. However, do not confuse a FOA with the definition of a

SWMU or corrective action management unit (CAMU) for purposes of corrective action—authorization of a FOA does not define a contiguous area of contamination or establish a special type of unit for the purpose of complying with land disposal restrictions or minimum technology requirements during corrective action.

The FOA-specific requirements for corrective action only apply inside the FOA boundary, while the traditional corrective action requirements already contained in the existing compliance plan or corrective action order apply outside the FOA boundary. Outside the FOA boundary, all TRRP requirements apply. Note that RCRA regulated units (RUs) within a FOA boundary are still subject to the RCRA corrective action requirements for those units. A FOA designation does not alter the requirements for RUs in any way. However, the location of the RUs inside the FOA may allow flexibility in calculating alternate concentration levels (ACLs) in the event there is a release from the unit. The development of ACLs for the RU may follow the procedure for calculating PCLs for the FOA (see Section 4.1.1 of this guide for more specific information on this subject).

Evaluate a FOA in the context of other federal and state initiatives, such as the Government Performance and Results Act (GPRA) goals for corrective actions at RCRA facilities. The GPRA goals include progress toward achieving the Environmental Indicators (EIs) for corrective action, which are tracked in the RCRA Information System (RCRIS) database. The EIs currently being tracked include Current Human Exposure Under Control (RCRIS Code CA 725) and Migration of Contaminated Groundwater Under Control (RCRIS Code CA 750), as well as the EIs of Remedies Selected (RCRIS Code CA 400) and Remedy Construction Complete (RCRIS Code CA 550). Detailed information about the EIs is provided on the United States Environmental Protection Agency's (USEPA) Web site at www.epa.gov/epawaste/hazard/correctiveaction/eis/.

FOA-based responses should be consistent with the final response action(s) at the facility as much as is practicable. The USEPA has issued guidance on the completion of corrective action activities, which includes "corrective action complete" and "corrective action complete with controls." To review the guidance, see 68 Federal Register 8757, February 25, 2003, or download from the USEPA Web site at www.epa.gov/epawaste/hazard/correctiveaction/resource/.

Similarly, consider the objective of the USEPA's 2020 Challenge in the use of a FOA, which is to implement final remedies at all RCRA facilities by the year 2020. The goals to be achieved in the RCRA program by the year 2020 are discussed on the USEPA's Web site at www.epa.gov/epawaste/hazard/corredctiveaction/programs.htm.

The long-term corrective action encompassed in a FOA is consistent with the USEPA's GPRA Goals and the 2020 Challenge. If a FOA is approved,

the corrective action program implemented for the FOA may serve as the long-term remedy implementation for the area encompassed by the FOA.

1.6 Duration and Termination [§350.133]

An approved FOA remains in effect for the duration of active industrial operations and is subject to compliance plan or corrective action order renewal. When the facility (or operational area within which the FOA is located) ceases industrial operations, implement any additional actions necessary to address TRRP requirements. This typically will include a reevaluation of the facility based on changes in land use and exposure pathways. This reevaluation will include a review of the PCLs used in the monitoring network and, as appropriate, reset of the values to be protective in the changed circumstances.

While the facility is operating, the FOA authorization will be reviewed at time of compliance plan or corrective action order renewal for changed conditions that indicate the FOA response action is no longer protective. The TCEQ can withdraw the FOA authorization at any time that the facility fails to maintain compliance with the qualifying criteria, but will afford the facility an opportunity to re-establish compliance (see Section 6.5).

1.7 Key Acronyms and Abbreviations

ACL = Alternate concentration level

AMP = Attenuation monitoring point

BOC = Boundary of compliance

COC = Chemical of concern

ERA = Ecological risk assessment

GWBU = Groundwater-bearing unit

GWPS = Groundwater protection standard

NAPL = Non-aqueous phase liquid

OSHA = Occupational Safety and Health Administration

PCL = Protective concentration level

POC = Point of compliance

POE = Point of exposure

RU = Regulated unit

SWMU = Solid waste management unit

VPP = Voluntary Protection Program

2.0 FOA Qualification Requirements (Step 1) [§350.134 and §350.135(a)(13)]

The standard for authorization to use the FOA as an alternative approach to corrective action is set at a high level. The qualifying criteria of §350.134(a) and (b), along with the Qualifying Criteria Checklist (see Appendix A), are intended to provide an objective means of evaluating a facility's suitability for FOA authorization. Upon successfully satisfying the qualifying criteria, the applicant will have to include the facility's supporting documentation as part of the FOA application in accordance with §350.135(a)(13).

2.1. Qualifying Criteria

This section describes the 11 qualifying criteria that must be satisfied at Step 1 in order to proceed with the process. The full application, including the qualifying criteria, is subject to formal review during Step 4. The following descriptions of each criterion supplement the text in the rule and provide links to pertinent information sources.

2.1.1 Operational Status [§350.134(a)(1)]

Document that the facility is an operational chemical or petroleum manufacturing plant, classified by North American Industrial Classification System (NAICS) code 325 or 324, respectively, which is actively producing a product stream. Temporary shut-down due to strike, natural disaster, or process changes are not disqualifying conditions so long as the disruption is temporary.

Information Sources: Company annual reports; the hazardous waste permit application (Part A); other active permits (e.g., air, wastewater) issued by state or federal agencies; and waste generation records submitted to the TCEQ. For NAICS code information, refer to http://www.census.gov/eos/www/naics.

2.1.2. Hazardous Waste Permit or Corrective Action Order [§350.134(a)(2)]

Document that the facility was issued a hazardous waste permit prior to September 23, 1999 and that the permit is still in effect. If the facility does not have such a permit but all other qualifying criteria can be met,

request the issuance of a corrective action order as the means to authorize the FOA.

Information Sources: A copy of the cover page of the hazardous waste permit with signature and issuance date; permit status as shown on the TCEQ Central Registry database accessible from www4.tceq.state.tx.us/crpub/ or a copy of the letter of intent to request a corrective action order.

2.1.3 Access Control and Restrictions for Planned FOA [§350.134(a)(3)]

Document that the facility has or will have the means to restrict access to the FOA such that only workers and authorized visitors who have been provided appropriate training or are subject to controls on their activities are permitted to enter the FOA. Typically, facilities seeking FOA authorization will already have means to control access, such as fences, manned gates, security patrols, surveillance systems, visitor sign-in, and escort requirements. Existing controls that include the proposed FOA can be used for this purpose.

Information Sources: Map or diagram of the facility depicting existing control features and proposed FOA; photographs; summaries of existing procedures relevant to access restriction and control.

2.1.4 Worker Health and Safety Program [§350.134(a)(4)]

Document that the facility conducts a worker health and safety program. This criterion is a key measure of the facility's demonstrated performance in the area of human health protection. It is not enough to have a plan on paper; the facility must have a track record showing diligence towards worker health and safety. This can be documented in one of several ways. Acceptance in the Occupational Safety and Health Administration (OSHA) Voluntary Protection Program (VPP) at the Star or Merit level will automatically satisfy and document this criterion. Alternatively, provide any results relating to OSHA compliance history or the results of an evaluation by a third party certified industrial hygienist and safety specialist. Note that many health and safety audits may automatically qualify for a privilege under Texas law that protects the audit reports from discovery requests or subpoenas in legal proceedings. Check the Texas Environmental Health and Safety Audit Privilege Act to make sure you don't accidentally waive a privilege for your health and safety audit when you provide your results to TCEQ.

Information Sources: OSHA regional office files; correspondence and reports from third party evaluators; listing in the OSHA VPP at www.osha.gov/dcsp/vpp/.

2.1.5 Health and Safety Record [§350.134(a)(5)]

Document that the facility's averages for lost workday injury case rates and injury incidence rates for the most recent three-year period are at or below the most recent specific industry national average published by the Bureau of Labor Statistics.

Information Sources: Utilize information developed as part of the facility's health and safety reporting requirements and latest national average data available from the Bureau of Labor Statistics Web site at www.bls.gov/iif/oshsum.htm with links to Table 1 (Summary Tables – Table 1 – Incidence rates – detailed industry level/Incidence rates of nonfatal occupational injuries and illnesses by industry and case types).

2.1.6 Health and Safety Audit Program [§350.134(a)(6)]

Document the results of periodic audits (minimum of once every three years or whenever there is a significant change to the health and safety program). These audits can be performed by OSHA as part of its evaluation for VPP listing or by a third party-certified professional industrial hygienist and safety specialist. Note that OSHA generally does not perform routine audits. If the facility is not listed in the VPP at the start of the FOA process, arrange for an audit. The results of this and any such audit must indicate that the health and safety program is satisfactory. Actual submittal of the audit can be delayed until submittal of the FOA application if information can be provided concerning the health and safety program and the facility's likely success in an audit. While in the process of renewing the FOA authorization, submit the results of periodic or special audits to demonstrate continued compliance with the qualifying criteria [see §350.133(b)].

Information Sources: A copy of the results of the audit.

2.1.7 Worker Protection Program [§350.134(a)(7)]

Document that procedures are in use (or to be used) to protect workers within the proposed FOA from exposure to COCs in contaminated media exceeding PCLs or action levels based on the health and safety program. Note that these procedures will be evaluated for technical acceptance according to §350.135(a)(4) during Step 3 of the process. For purposes of meeting the qualifying criteria, document that such procedures are in use.

Information Sources: Pertinent portions of the facility's worker health and safety plan or other facility policy and procedure documents.

2.1.8 Pollution Prevention Program [§350.134(a)(8)]

Document that the facility has a pollution prevention program that has as a goal to prevent releases of COCs to environmental media within the FOA. The program may consist of one or more options: a) a rigorous inspection and maintenance program to prevent or, if detected, abate releases of COCs from manufacturing, storage, and conveyance infrastructure; b) another approach with equivalent performance; or c) acceptance into a TCEQ-sponsored multimedia voluntary pollution prevention program, such as Clean Texas or equivalent, such as the EPA's National Environmental Performance Track. Any environmental improvement goal of an alternative pollution prevention approach or program must be relevant to the FOA.

Information Sources: Pertinent portions of the facility's pollution prevention program or accepted alternative approach; listing in the TCEQ's Clean Texas program at www.tceq.state.tx.us/assistance/nav/cleantexas.html or the EPA's National Environmental Performance Track at www.epa.gov/performancetrack/.

2.1.9 Compliance with RCRA Permit or Commission Orders [§350.134(a)(9)]

Document that there are no significant outstanding non-compliance issues resulting from inspections for compliance with the hazardous waste permit or any TCEQ order. Non-compliance issues include any alleged deficiency or violation identified during an inspection. Consider only those that are significant (i.e., formal enforcement action has been initiated) and outstanding (i.e., resolution is pending or not resolved within specified time frames) as indicated by issuance of a Notice of Enforcement (NOE) letter. Confer with the TCEQ to verify the current compliance status.

Information Sources: Inspection and correspondence files of the facility, the TCEQ Region Office, and the TCEQ Central Office.

2.1.10 Financial Assurance [§350.134(a)(10)]

Document that the facility can meet the requirements for financial assurance in accordance with Chapter 37 rules on financial assurance, as reflected by the manner in which it meets its current financial assurance obligations. Since a facility likely will not have a final response action plan developed to the point that a detailed cost estimate can be made at the time of completing Step 1 of the process, develop the financial assurance estimate based on the total cost for corrective action at the individual SWMUs as would be the normal requirement without a FOA. Also, document that the facility is not in bankruptcy proceedings.

Information Sources: Facility financial reports and correspondence from the TCEQ regarding acceptability of methods for meeting current financial assurance obligations.

2.1.11 Other Criteria [§350.134(b)]

While this provision is potentially unlimited in its scope of considerations (e.g., the TCEQ may consider such information as the risk to human health and the environment that would be presented by the granting of a FOA), such comprehensive information needed to make this evaluation is not submitted until after the applicant passes the qualifying screen. For purposes of Step 1 of the process, these "other criteria" are limited to items indicative of the facility's overall compliance status, as determined in accordance with 30 TAC Chapter 60 (relating to Compliance History), and commitment to source reduction and waste minimization. The facility submits this information to various parts of the TCEQ in response to requirements other than the TRRP rule. The Remediation Division staff will determine an applicant's standing by reviewing the databases listed in the Qualifying Criteria Checklist (Appendix A); thus, there is no primary documentation to be submitted in support of these criteria unless requested by staff.

2.2 Qualifying Criteria Checklist [§350.134 and §350.135(a)(13)]

The Qualifying Criteria Checklist is provided as Appendix A to this guidance document. This checklist is intended to aid in identifying potential disqualifications or deficiencies prior to preparation of, or in response to a review of, an application for a FOA. The checklist prompts the user to respond with a "yes" or "no" answer whenever possible to result in an objective evaluation. First complete this checklist to the extent possible with available information and reach a conclusion in the Score Box at the end. Review the information with the TCEQ staff as part of Step 1 of the FOA process before developing the rest of the submittals. Note, however, that passing the checklist at this first step is not an assertion by the TCEQ that the facility has met the qualifying criteria. The burden remains with the applicant to prepare a complete application addressing the items specified in §350.135 (Application Requirements) including §350.135(a)(13) "Sufficient evidence to show compliance with the qualifying criteria identified in this subchapter." The TCEQ staff will also use this checklist as part of its official review of the FOA application.

3.0 FOA Assessment Report (Step 2)

Once the TCEQ has approved the information submitted in Step 1, compile and submit the *FOA Assessment Report* elements of Step 2. These

elements include Site Characterization, Hydrogeology, FOA Compliance Boundaries, FOA Characterization, NAPLs, and Areas of Ecological Impact.

3.1 Site Characterization [§350.135(a)(2)]

The governing regulation for Sections 3.1 and 3.2 is from 30 TAC §350.135(a)(2), which states:

The results of an investigation that sufficiently characterizes the proposed FOA with regard to surface and subsurface conditions, groundwater quality and horizontal and vertical flow pathways. Migration of COCs toward and beyond the FOA boundary must be capable of being reliably predicted and controlled. (emphasis added)

The evaluation and presentation of site characterization data are critical in the FOA process. It demonstrates understanding of the environmental conditions that govern the fate and transport of COCs. The facility's characterization is the basis for a conceptual model. A conceptual model describes in text and graphical format the complete and potentially complete exposure pathways for human and ecological receptors.

3.1.1 Location, Topography and Climate (Facility Setting/Surrounding Land Use)

Provide sufficient information to describe the location, topography and climate of the facility and surrounding areas. The information should include:

- a specific description of surrounding land use (e.g., commercial, industrial, agricultural, or residential);
- a description of the pertinent site features that may affect COC fate and transport, such as significant changes in slope or elevation and proximity to surface water bodies;
- a 7.5-minute United States Geological Survey (USGS) quadrangle topographic map;
- an overall plan map of the entire facility showing the property boundaries; and
- a map showing adjacent land use.

Include in the description of facility setting the source(s) of drinking water used at the facility and a discussion on climate including precipitation trends and other pertinent information (e.g., evapotranspiration, surface run off, and soil erosion). This information is used to qualitatively determine risks, identify potential exposure

pathways, and potentials and mechanism for COCs to move past the FOA boundaries.

3.1.2 Surface Water Features

Include a facility-specific discussion of surface water features on and adjacent to the facility consistent with *Determining PCLs for Surface Water and Sediment* (RG-366/TRRP-24). Include in the description of surface water features a discussion of facility drainage, receiving waters, and man-made structures such as land-based wastewater treatment systems. Also, include proximity to classified stream segments along with the classification from §307.7 of the Texas Surface Water Quality Standards (TSWQS).

3.1.3 Regional Geology

Describe the regional geologic framework to a reasonable depth that includes the regional groundwater resources. Describe the regional geology in text and with graphics including a regional stratigraphic column, regional geologic map, and at least one regional cross-section. Describe the major stratigraphic sequence identifying formations, sediment/rock types, and depositional environments that may impact groundwater flowpaths. Describe structural characteristics including, faults, folds, and special features (e.g., salt domes).

3.1.4 Facility-Wide Geology

Include a detailed description of the facility-specific geologic framework. This framework will be the basis for the discussion of groundwater-bearing units (GWBUs) in the following section. Include a map showing the location of relevant data points that have geologic data and the orientation of cross-sections. Show in the distribution of data points adequate coverage of the entire FOA, not just the areas around SWMUs. Base the geologic description on characteristic cross-sections extending from the surface down through the base of the FOA vertical boundary (see Section 3.3). The number of cross-sections is a facility-specific decision, but include two orthogonal sections that show the typical subsurface conditions. Additional cross-sections illustrating GWBU characteristics will be presented in the following section. Include in the characteristic geologic cross-sections:

- soil/rock types using the Unified Soil Classification System (USCS);
- boring depth whether from a standard penetration test (SPT) method, cone penetrometer test (CPT), direct push technology (DPT), or other test method;

- downhole geophysical logging, if available;
- water table elevation; and
- an appendix containing all boring logs used in the construction of the cross-sections.
- If the facility is characterized by bedrock within the vertical limits of the FOA, include a structural contour map of the bedrock surface and an isopachous map of the overlying soil thickness.

3.2 Hydrogeology [§350.135(a)(2)]

Consider both the regional and facility-wide hydrogeology.

3.2.1 Regional Hydrogeology

Include a description of the regional hydrogeology that emphasizes the groundwater systems that are used for potable supply. Document the regional hydrogeology and include references to recognized institutions such as the USGS, Texas Water Development Board, and/or Texas Bureau of Economic Geology. Discuss groundwater usage in the region in terms of type of usage (industrial, municipal, agricultural) and amounts, and identify large-scale pumping centers. Discuss regional groundwater flow patterns and the influence of pumping centers with text and maps. Include a regional surface map of the uppermost groundwater resource that identifies the facility location and regional groundwater flow directions.

3.2.2 Facility–Wide Hydrogeology

For the facility-wide hydrogeology, describe the groundwater-bearing units, COC fate and transport properties, and the quality of each groundwater-bearing unit.

3.2.2.1 Description of Groundwater-Bearing Units

Describe the facility-wide hydrogeology in detail, including definition of the GWBUs, hydraulic characteristics of the GWBUs, and the intervening confining beds, and water quality characteristics of the GWBUs. Describe the uppermost GWBU, hydraulically-interconnected GWBUs, and GWBUs affected by COCs.

Make the description of GWBUs consistent with *Groundwater Classification* (RG-366/TRRP-8). The description of GWBUs requires the following information:

- a characterization of facility's stratigraphy and structure over the depth and areal extent of the FOA;
- identification of water-saturated units;
- a description of saturated thickness; and
- a characterization of GWBUs.

Include both text and graphical depiction of the critical features controlling the fate and transport of COCs both in dissolved-phase and non-aqueous phase states. Include map(s) showing the location of relevant monitoring and corrective action wells. Use additional cross-sections to those presented in the description of facility geology to clearly identify the uppermost GWBU, hydraulically-interconnected GWBUs, and GWBUs containing COCs. Consider including the following information on the cross-sections, where this information will aid in the interpretation of the fate and transport of COCs:

- GWBUs and adjacent confining or semi-confining beds;
- boring depth whether from a SPT method, CPT, DPT, or other test method;
- well-screen intervals;
- downhole geophysical logging, if available;
- water table elevation; and
- direction of groundwater flow.

Include cross-sections along the lateral boundaries of the FOA, with all boring logs used in the construction of the cross-sections placed in an Appendix. Include water table and/or groundwater flow maps, as applicable, of the uppermost GWBU, hydraulically-interconnected GWBUs, and GWBUs containing COCs. Use a sufficient number of tables and/or surface maps to illustrate seasonal variation in hydraulic gradient and inferred groundwater flow directions. Discuss the potential effects of heterogeneity and anisotropy on groundwater flowpaths. Evidence of preferred pathways may include COC distribution and plume morphology, depositional environment, distribution of hydraulic characteristics, bedding plane strike/dip and fracture orientation, storm drains, utility lines, and pipelines. Discuss the interaction between groundwater and surface water in the submittal.

Other maps that may be useful in the description of the hydrogeologic units include isopachous maps of saturated thickness and confining-bed thickness, and structural contour maps of the top/bottom of critical units.

3.2.2.2 Fate and Transport Properties

Provide the hydraulic properties of each of the GWBUs described above, including porosity, hydraulic conductivity, storativity/specific yield, hydraulic gradient (horizontal and vertical), well yield, and groundwater velocity. Also, provide vertical hydraulic conductivity and/or leakage factor estimates for each of the confining beds. Discuss the methods used to derive those parameters. A similar discussion may be included that describes the physical and chemical properties that, in addition to the hydraulic properties, affect the fate and transport of COCs. The physical and chemical properties include fraction organic carbon (foc) for the GWBUs, organic carbon-water partitioning coefficient (Koc) for organic COCs and the soil-water partitioning coefficient (Kd) for inorganic COCs, degradation rate constants (if available), lateral/transverse/vertical dispersivity, bulk density of the aquifer matrix, Henry's Law constants for the COCs, and aqueous solubility for the COCs. The chemical-specific fate and transport parameters must be consistent with the most current version of 30 TAC §350.73(e).

3.2.2.3 Groundwater Quality

Discuss the groundwater quality. Describe the concentration of naturally-occurring total dissolved solids (TDS) and COCs, where appropriate, in each pertinent GWBU in both text and graphics. The TDS characterization is necessary for groundwater resource classification and COC distribution for plume characterization. Select COCs consistent with *Selecting Target COCs* (RG-366/TRRP-10).

3.2.3 Groundwater Classification

Present the classification of each GWBU and the supporting data/calculations in the FOA submittal. Follow the seven-step process identified in *Groundwater Classification* (RG-366/TRRP-8):

- describe affected GWBUs;
- determine hydraulic interconnectivity of GWBUs;
- determine current groundwater use;
- evaluate natural groundwater quality;
- evaluate GWBU productivity;
- evaluate GWBU resource sustainability; and
- document results.

3.2.4 Present/Future Groundwater Usage

Include a discussion of the present groundwater usage at and near the facility, including the type of usage (e.g., industrial, municipal, private, or agricultural) and the present pumping amounts, as available (the regional discussion was addressed in Section 3.2.1). Include a review of possible future trends given historical trends in land use and water consumption. Provide a map of well locations within one-half mile of the FOA boundary, including on-site wells. Where possible, identify well owner, owner's address, water use, well depth, well-screen interval, and aquifer.

3.3 FOA Compliance Boundaries

The applicant is responsible for providing a comprehensive demonstration that adequately supports the proposed FOA boundary. A FOA is three-dimensional, having its perimeter defined by lateral boundaries and a bottom or floor defined by a vertical boundary. Include aerial photographs and maps that define process areas and infrastructure that are active parts of the facility's operations. Label cross-sections used to demonstrate the conceptual model with the lateral and vertical boundary labeled. The final FOA boundary is established as part of a negotiated agreement with the TCEQ.

3.3.1 Lateral Boundary Description

The lateral FOA boundary may encompass the active process areas of the facility and associated infrastructure that are used for the development, manufacture, processing, transfer, storage, and management of chemical or refinery products, hazardous materials, substances, and wastes. Infrastructure associated with the active manufacturing processes may include storage areas, roadways, utility corridors, pipeline corridors, waste management areas, and impoundments or conveyances used to hold water for fire protection and managing process water. Exclude undeveloped property, particularly large tracts, if such land is not a part of the manufacturing infrastructure. Units, such as landfills, that are isolated from the active process areas and other infrastructure may be excluded. Relatively small, undeveloped tracts within process areas may be included in the FOA boundary. Roadways and waterways will require a case-by-case evaluation regarding exclusion from the FOA. Areas within the general footprint of the FOA may be excluded from the FOA (an analogy is a donut hole where the hole represents the excluded area and the donut represents the FOA) but may represent internal, lateral FOA boundaries that require monitoring (e.g., property transfer, waterways).

Label the proposed FOA boundary on aerial photographs and facility maps that have process areas and infrastructure identified. The FOA

boundary may follow the property boundary when it coincides with active process areas. Provide a narrative that describes that FOA boundary and the rationale for choosing the boundary, including documentation that access is restricted.

3.3.2 Vertical Boundary Description

Use cross-sections developed for the conceptual model to demonstrate that the proposed vertical FOA boundary is present across the entire facility defined by the proposed lateral FOA boundary. The cross-sections should also adequately demonstrate the nature of the FOA boundary (e.g., undulating, horizontal, dipping).

The vertical FOA boundary defines a point of exposure (POE) for the FOA. The vertical FOA boundary does not need to coincide with a drinking water zone. However, the vertical FOA boundary must be defined in order to be protective of drinking water zones. Typically, the vertical FOA boundary may coincide with the top of the first transmissive zone encountered below the lower-most contaminated zone. However, it is not required that the boundary be set at different transmissive zones based upon whether COCs are present at a particular spot but may be based upon the conditions at the entire facility. The general goal is that unaffected groundwater-bearing units (GWBUs) remain unaffected.

3.4 Investigation Areas [§350.135(a)(1)]

Use information from assessments conducted at the facility during the corrective action program to develop the geologic and hydrogeologic basis (Sections 3.1 and 3.2) for the conceptual model presented in Section 3.5, in the site-wide evaluation of the facility, and in developing the NAPL management program presented in Section 3.6.

Present a summary of assessments conducted during the corrective action program as part of the submittal. This data may include investigations conducted at SWMUs, compliance plan areas, and agreed order/permit-related areas. The relevance of these data is to provide a basis for financial assurance requirements of the FOA; sources of data that will be incorporated into the compliance plan application; and a comprehensive summary of the RCRA HWSA Corrective Action process for future use when the FOA is terminated.

Provide a summary of the facility history for waste management units in a tabular format, including, but not limited to:

- name of unit;
- type of unit;

- Notice Of Registration (NOR) number;
- dates that unit was placed into service and taken out of service;
- type of waste placed into unit;
- phase and status of corrective action;
- type of COCs; and
- date of closure for closed units.

In addition to the summary table, provide a facility map illustrating the locations of SWMUs, RUs, and the FOA boundary.

For those areas that have undergone investigations and/or corrective actions, also include a separate table listing reports submitted to the TCEQ for each unit or area, regulatory status, and status of any corrective actions. Illustrate units or areas that have undergone investigations and/or corrective actions on the map illustrating all of the SWMUs and RUs or on a separate map that identifies the FOA boundary. Identify data points that were used in developing the conceptual model and/or plume maps on this figure and provide the corresponding boring logs with any additional data that were used in developing the site-wide geologic and hydrogeologic evaluation.

3.5 FOA Characterization [§350.135(a)(2)]

This facility-wide characterization of the hydrogeologic regime is one of the most important components of the FOA Assessment Report and submittal, because it forms the basis for monitoring and controlling the migration of COCs within and beyond the facility boundary. Another name for the depiction of this facility-wide characterization is the conceptual model.

3.5.1 Conceptual Model

As its name suggests, a conceptual model is a basic *representation* of how released COCs will likely behave once they are introduced into the environmental media of soil, groundwater, surface water, or sediment. It is not a mathematical forecast tool to predict movement in the sense of a numerical fate and transport model. In order to adequately convey this technical information, a conceptual model will usually include textual, tabular, and graphical components. In formulating a conceptual model, the applicant should take into account the following kinds of information and integrate the pieces into a working understanding and presentation of potential facility impact. Consider the information below in the development of the conceptual model. While all the information may not need to be submitted to the TCEQ, include sufficient detail to demonstrate

that potential contaminant migration is understood and can be predicted such that receptors at the boundary and beyond are protected.

COC Source Information – consider the following:

- the history and extent of manufacturing operations at the facility, as well as significant process changes, or previous industrial uses of the facility;
- the location of pipelines, vessels, storage tanks, and other process equipment;
- known SWMUs, including NAPLs and dissolved plumes;
- previous reports and studies of releases (e.g., RFIs, spills, media investigations);
- COCs found in the wastes, products, intermediates, and raw materials;
- environmentally significant properties (if available, use from TRRP) of those COCs, such as aqueous solubility, volatility, tendency to sorb or change chemical states, bioaccumulation potential, and toxicity; and
- available background concentrations of COCs.

Hydrogeologic and Surface Conditions -– consider the following:

- the surface topography and soil types, including fill;
- the lithological profile of the facility (types of soil at various depth intervals;);
- the degree of heterogeneity of that profile from one location to the next;
- the geologic depositional history of the facility and region;
- the normal and seasonally variant depths to groundwater;
- the utility and natural condition of GWBUs;
- the recharge and discharge features of those GWBUs;
- the potentiometric surface of the uppermost GWBU of significance;
- the direction and rate of groundwater flow;
- the vertical and horizontal gradients of groundwater flow; and
- the degree of hydraulic communication from one GWBU to another.

Receptors and Exposure Pathways -– consider the following:

- surrounding land use and zoning classifications, present and future;
- human population distribution data for the surrounding area;
- nearby rivers, lakes, or other waterways, and their use classifications;

- ecologically significant areas (habitats and biodiversity) within or around the facility;
- access controls to the facility (fencing, security, natural barriers);
- water wells within a half-mile radius of the FOA; and
- present use classifications of the aquifers.

Based on the complexity of the conceptual model, the FOA may be divided into subareas that are dictated by different geologic and/or hydrogeologic conditions. Simplifying the FOA into subareas based on these conditions may be useful for developing the FOA monitoring program and may be necessary to adequately demonstrate migration pathways at the FOA boundary. Discuss the FOA boundary and any proposed internal boundaries with the TCEQ Project Manager.

3.5.2 Nature and Extent of Known COCs

While the reports of previous investigations may be available to detail the extent of known COCs, it is important in the FOA Assessment Report and conceptual model to synthesize these findings into a coherent and comprehensive understanding of facility-wide contamination. Previous studies should be referenced only, including their dates and authorship. This list becomes a marker in time should the facility need to resume a focus on individual areas of concern rather than the facility-wide approach. Figures of individual unit areas and the facility and tabulated summaries of the findings may be useful for describing this information.

3.5.3 Vertical and Horizontal Pathways

With respect to the movement of groundwater and the COCs in groundwater, prepare groundwater flow maps at various points in time to illustrate the flow direction, gradients, seasonal variability of the flow gradient, and degree of seasonal variability, and to illustrate the likely horizontal flow directions of dissolved COCs in groundwater. Flow-net diagrams for each GWBU are relatively easy to prepare from groundwater flow maps and serve to illustrate the likely horizontal flow directions of dissolved COCs in groundwater.

Combine in vertical gradient maps the potentiometric surfaces of two water-bearing units to illustrate whether flow is upward or downward in various regions of the facility and the relative degree of hydraulic driving force in that given direction.

3.5.4 Prediction/Control of Contaminant Migration

The migration and potential migration of COCs, especially near the lateral and vertical FOA boundaries, must be well understood. Plume morphology and plume markers can be vital components of verifying the predicted movement of COCs. Provide a discussion of plume morphology in relation to the migration pathways and conceptual model. Identify natural migration controls –which could potentially include aquitards –in this subsection as well as corrective actions undertaken to control the subsurface movement of COCs, such as slurry walls, barriers, recovery trenches, point wells, recovery wells, in-situ methods, and stabilization.

3.6 NAPL – [§350.135(a)(9)]

The following sections discuss NAPL requirements.

3.6.1 NAPL Identification/Location/ Historical Presence

Identify all known NAPL zones and associated dissolved protective concentration level exceedence (PCLE) zones at the time of submitting the facility maps illustrating the FOA boundary and migration pathways. Base data used to develop the NAPL zone maps on a summary of the information presented in Section 3.4. Differentiate light non-aqueous phase liquid and dense non-aqueous phase liquid occurrences. Develop a map(s) illustrating the NAPL distribution for each transmissive zone identified in Section 3.2.2. Additional maps of the NAPL zones may be presented to demonstrate rates of migration (types of COCs), degradation of the NAPL based on daughter products, and NAPL zone stability (historical versus current NAPL zone footprints).

Provide a description for each NAPL zone that includes the age and nature of the release, if known, composition of the NAPL, migration rates of the NAPL, and corrective measures (if any). Use this type of information for future demonstrations of NAPL zone stability, natural attenuation, and no further action determinations.

3.6.2 Actions to Address NAPL

Address NAPLs outside the FOA boundary (including a plume management zone or PMZ) in accordance with the TCEQ guidance document *Risk-Based NAPL Management* (RG-366/TRRP-32). For NAPL occurrences within the FOA boundary, take the appropriate action to prevent NAPL zone expansion to the FOA boundary (e.g., hydraulic control). Evaluate the determination for NAPL migration and the potential recovery efforts for NAPL using the conceptual model and historical data to determine if migration to the FOA boundary is likely and

would present a risk to human health and the environment. In all cases, take action to prevent the active migration of NAPL to outside the FOA boundary.

3.7 Areas of Ecological Impact

The FOA process [§350.135 (a)(6)] requires identification of areas of ecological impact within the proposed FOA and specific procedures for responding to these ecologically-impacted areas in accordance with §350.77. The TCEQ's *Guidance for Conducting Ecological Risk Assessments at Remediation Sites in Texas* (RG-263) and future updates provide detailed information regarding the process for evaluating potential ecological risks in conformance with §350.77. The first step of that process, completion of the Tier 1 Exclusion Criteria Checklist (the "Tier 1 Checklist"), is discussed in Sections 3.7.1 and 3.7.2. For areas within the FOA that do not meet the exclusion criteria, conduct a Tier 2 Screening Level ERA and/or an optional Tier 3 site-specific ERA. The Tier 2/3 ERA process is discussed in Section 4.4.3. To facilitate review of the Tier 1 Checklist (and/or Tier 2/3 ERA), include a figure that clearly depicts the proposed lateral boundary of the FOA, and any areas that are proposed to meet the exclusion criteria in the Tier 1 Checklist.

3.7.1 Ecological Exclusion Criteria and Supporting Information (Tier 1)

Complete the Tier 1 Checklist for all properties subject to TRRP including those being considered for a FOA. The Tier 1 Checklist is actually a figure in the TRRP rule (30 TAC §350.77(b)). The purposes of the Tier 1 Checklist are to characterize the ecological setting of the property and to determine the existence of complete and potentially significant ecological exposure pathways through the use of exclusion criteria. The ERA guidance document provides a detailed discussion of the Tier 1 Checklist. Rather than repeat that information here, consult Section 2.0 of that document for further guidance.

Completion of the Tier 1 Checklist should result in the identification of any significant and complete or reasonably anticipated to be completed ecological exposure pathways within the FOA. If the property within the proposed FOA meets the exclusion criteria, then the applicant has fulfilled the ERA obligation and is not required to conduct a Tier 2 or Tier 3 ERA unless changing circumstances result in the site not meeting the exclusion criteria [see §350.35].

Each Tier 1 Checklist will be evaluated on a case-by-case basis. Regarding potential ecological exposure to impacted soils within the FOA, it is anticipated that most FOAs will meet the exclusion criteria since these locations are ordinarily disturbed ground, and therefore would not be

attractive to wildlife or livestock, including threatened and endangered species. Depending on the specific site information, this may not always be true. For example, areas of buried pipeline and utility corridors that are not mowed or otherwise disturbed may not meet the exclusion criteria. Evidence of routine human activity would be a key aspect of this determination. If the proposed FOA has had a release (or there is an imminent threat of release) to surface water/sediment, it fails the exclusion criteria and will have to undergo additional ecological evaluation for these media (e.g., completion of a Tier 2/3 ERA). Further ecological evaluations need only focus on the soil and/or surface water/sediment exposure pathways that do not meet the exclusion criteria in the Tier 1 Checklist. Complete Tier 2/3 ERAs as part of the FOA application, and/or later as a compliance plan requirement (if approved by the TCEQ). ERAs that evaluate releases to surface water and sediment outside of the FOA boundary will ordinarily be addressed as a part of the normal application process, since the ERA will be used in part to develop action levels/PCLs for groundwater at the FOA release points. The Tier 2/3 ERAs can be used to determine sediment and surface water PCLs based on current media concentrations. The ERAs can also be used to develop sediment, surface water, and groundwater (source media) PCLs for future monitoring efforts (see Section 4.4.4) regardless of current media concentrations. The development of action levels is discussed in Section 4.4.

3.7.2 Qualitative Summary (Tier 1)

At the conclusion of the Tier 1 Checklist, complete the Qualitative Summary and Certification (Part III of the Checklist). This is discussed in more detail in Section 2.3.4 of the ERA guidance document.

4.0 Monitoring and Corrective Action Program (Step 3)

Once the TCEQ has approved the information submitted in Step 2, compile and submit the monitoring and corrective action program elements of Step 3. These elements include a corrective action program overview, a description of the FOA monitoring program, action levels to be used in the monitoring program, a description of the response plan to ensure worker health is protected (e.g., the contaminated media response plan), and a description of the procedures for responding to future spills that may occur within the FOA (e.g., spill response and tracking).

4.1 Corrective Action Program Overview [§350.135(a)(8) and §350.132(a)]

Facilities authorized for a FOA are required to perform interim response actions as necessary to maintain performance objectives at the FOA boundaries and POE throughout the life of the FOA. Submit a prioritized plan for implementation of these interim response actions. Include actions to initiate or complete final response actions that are practicable during the term of the FOA in the prioritization plan to the extent that they are known at the time of the submittal. Develop a contingency plan that anticipates actions that will be taken if the monitoring program indicates that corrective action is not having the desired effect in controlling the contaminant migration and achieving other FOA objectives.

4.1.1 FOA Corrective Action Plan

Briefly describe the existing and planned corrective action program and how implementation of interim and final actions during the period of the FOA will affect the existing CA program. The FOA does not defer corrective action for RCRA regulated units; however, those actions may be integrated into the FOA response actions and can affect ACL development for the unit (see Section 1.5).

See Figure 2 for a depiction of the effect that FOA authorization may have on corrective action monitoring systems at RCRA RUs and SWMUs. RUs (those subject to 40 CFR §264.90-100, as incorporated in TCEQ compliance plan provisions) must retain the point of compliance (POC) wells even with FOA authorization. The concentration limits specified in the groundwater protection standard applicable to the POC wells could be modified to ACLs calculated to be protective of a POE at the FOA boundary. If the ACL is greater than the measured COC concentration, the corrective action program could be reduced or put on stand-by. One or more of the existing corrective action observation wells could be retained as an attenuation monitoring point (AMP) to verify that measured COC concentrations will not exceed PCLs (based on a Tier 2 or 3 lateral transport evaluation) at the FOA boundary. The corrective action program and monitoring systems at a SWMU can be modified in a similar way but without POC wells.

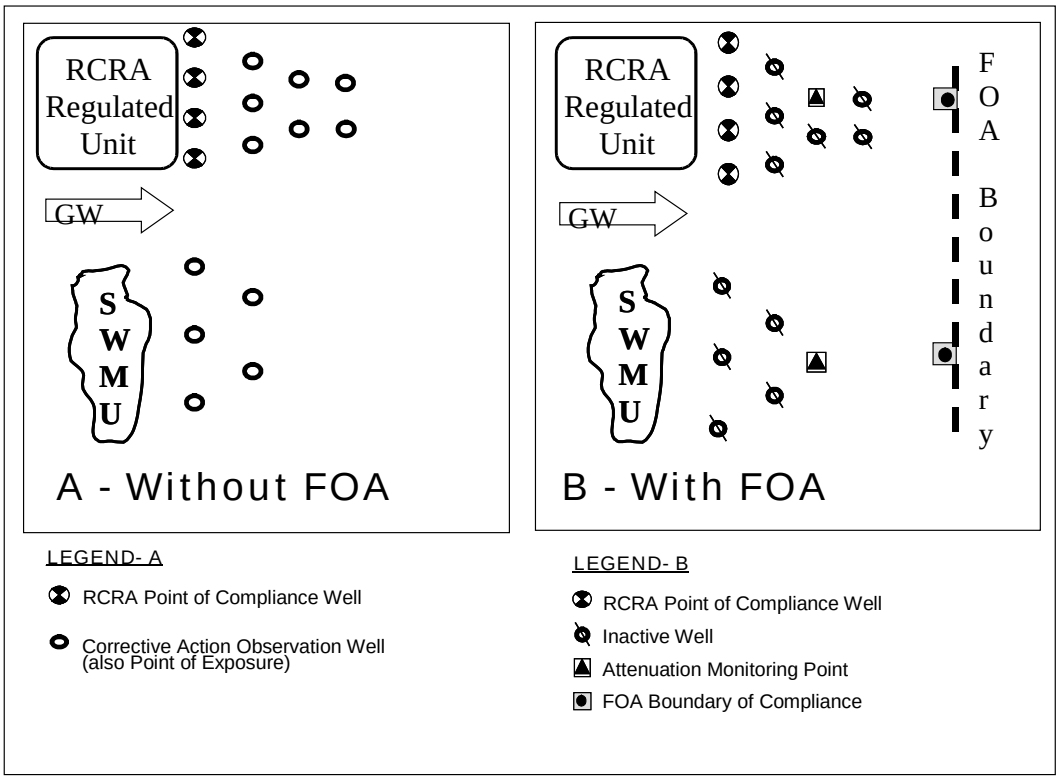

Figure 2. Potential FOA Impact on RCRA Monitoring Systems.

Identify response action objectives and provide details on those procedures for interim corrective action necessary to attain and maintain those objectives (see Section 3.6). In addition to interim actions, specify any final response actions that will be initiated or completed during the FOA in order for the facility to meet its corrective action obligations. Actions to meet these obligations could be paced out over time so that meeting final objectives will not be as burdensome upon termination of the FOA. For example, it may be possible to initiate final response actions in areas of the FOA where production facilities have been deactivated or in other areas where the corrective action would not be hindered by facility infrastructure. In some situations, the action taken to control COCs in the groundwater, so that PCL objectives are met at the FOA boundary, may also be a part of the final remedy. For example, utilizing a process of biologically enhanced natural attenuation to ensure that PCLs are met at the boundary might be the same procedure that would be utilized to meet revised PCLs upon termination of the FOA. See Section 5.4 for a discussion of prioritizing and scheduling corrective actions.

The FOA application (Step 4) requires that costs for identified interim and final corrective actions be developed in sufficient detail to support financial assurance requirements. While it is not necessary to submit these costs with the Step 3 submittal, consider this requirement when developing the Corrective Action Plan. It will be necessary to provide and justify the costs necessary for implementing and monitoring the response action at the FOA for a 30-year period, as well as the cost to carry out the

final response actions required to achieve compliance with TRRP upon termination of the FOA. See Section 5.2 for additional discussion of the costing requirements.

4.1.2 Exceptions to TRRP

An important component of the FOA submittal is the need to specify which portions of the TRRP rule are to be modified within the FOA boundary upon authorization of the FOA. The basis for this listing of exceptions is found at §350.132(a) and (c) which state,

(a) The person can propose to modify the provisions of this chapter to the extent necessary to establish an interim response action that will be protective of human health and the environment within and at the boundary of the FOA, with the exception of releases which occur after the effective date of the FOA…

(c) The person must comply with all other applicable requirements of this chapter unless explicitly exempted from doing so under this subchapter.

The TRRP rule, in Subchapter G, provides an extensive list of qualifying criteria and application requirements, but there is no corollary discussion on what TRRP requirements may change at a facility with approval of the FOA application. The rule further states that the applicant must comply with all other applicable TRRP requirements unless explicitly exempted from doing so under the FOA subchapter. While there is a general understanding that there will be a monitoring system that will sentinel potential exceedences at the boundary and the facility will rely upon its health and safety program to ensure protection of on-site workers, none of this is clearly authorized simply with the approval of a FOA application. Note each exception and corresponding substitution to the normal TRRP rule requirements. This information could be presented in tabular form. For example, if soil action levels will be based on the health and safety program and not the TCEQ's risk-based PCLs, then identify the sections of the TRRP rule that require the establishment of soil PCLs and indicate that these sections are not applicable for the FOA.

4.2 FOA Monitoring Program [§350.135(a)(3)]

Section 350.135(a)(3) requires identification of any AMPs and POEs in relation to the FOA boundary. Design the FOA monitoring program to effectively monitor (i.e., sentinel future exceedences and trigger an evaluation) the migration pathways identified during Step 2 (FOA Characterization) of the FOA process and to evaluate the effectiveness of corrective action.

4.2.1 Design of FOA Groundwater Monitoring Program

The conceptual model for the FOA Monitoring Program is based upon the application of the site-wide findings. Consider the following factors in the selection of FOA monitoring points:

- location and areal extent of transmissive zones;
- presence of multiple transmissive zones;
- groundwater flow direction;
- probable COC transport pathways to the FOA boundary;
- groundwater velocity;
- geologic and sediment structures (e.g., aquicludes and aquitards);
- physical/chemical properties of COCs that may affect migration patterns;
- areas of groundwater/surface water interface;
- groundwater discharge to the surface (seeps); and
- location, morphology, and migration of existing plumes.

Types of monitoring points that may be used within a FOA monitoring program are described below. Some of the types of monitoring points are presented in Figure 3. Figure 3 is a 3-dimensional illustration of a FOA. Both a lateral FOA boundary and the vertical FOA boundary (the bottom of the FOA) are depicted in the figure.

FOA Boundary (Lateral and Vertical) of Compliance (BOC) Wells: This well type is placed at the FOA boundary (Figure 3, Wells A and C). The number and spacing of this well type is dependent on the conceptual model and the flow pathways. BOC wells are used to monitor COCs in the groundwater. COCs detected in the groundwater are compared with calculated PCLs to determine response actions, if needed.

Attenuation Monitoring Point Wells: This well type is placed along the identified migration pathway upgradient of a BOC well. AMP wells are used as "early warning" monitoring points to detect the presence and concentrations of COCs in the groundwater.

Point of Exposure Wells: This type of well is not normally set within the proposed FOA boundary as exposure to COCs within the FOA boundary is controlled by health and safety measures and standard operating procedures. POE wells are typically set outside the FOA boundary at the nearest down-gradient location with a potential for exposure to COCs (Figure 3, Well B). An exception is a water well that is screened inside the vertical FOA boundary. If the POEs involve surface water or sediments, then incorporate appropriate sampling points in the

monitoring program. POE wells are established consistent with §350.37 and PCLs for POE wells are developed using §350, Subchapter D.

Piezometers: Piezometers are used to monitor groundwater elevations. Routine gauging of groundwater elevations can be used to prepare groundwater flow maps for the various transmissive zones and to monitor hydraulic containment.

Corrective Action Observation Wells: This well type is placed to monitor the progress of response actions within or outside of the FOA.

4.2.2 Other Monitoring

Monitoring at a FOA may not be limited to groundwater. Depending upon site-specific conditions, the monitoring program may need to take into consideration other media such as air, surface water, and sediments to adequately protect human and/or ecological receptors. As applicable, include:

- the media of concern;
- the type of monitoring/sampling being proposed;
- the frequency for the proposed monitoring; and
- the media-specific PCLs or action levels to be employed.

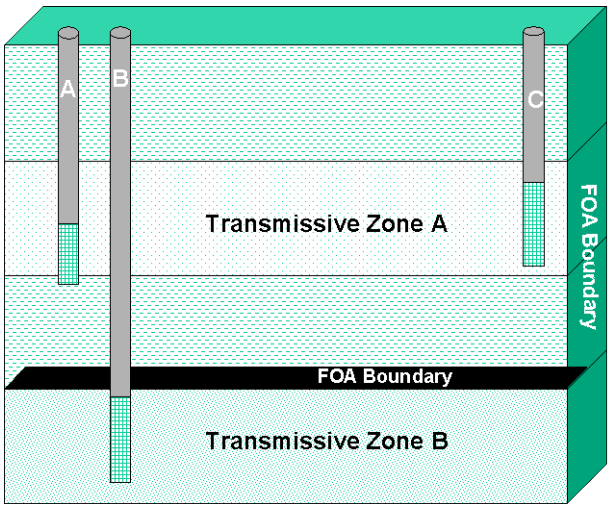

Figure 3. Three-dimensional illustration of a FOA with monitoring points depicted.

As discussed in Section 1.5, RUs within a FOA are subject to the requirements of RCRA including groundwater monitoring. Integrate the requirements of the separate programs, to the extent possible, while clearly stating the regulatory program(s) for which the data are intended.

4.2.3 Sampling Rationale, Frequency, and Analytes

Base selection of COCs for the FOA monitoring program on compliance plan requirements, process knowledge, and other available data, including physical and chemical properties, consistent with *Selecting Target COCs* (RG-366/TRRP-10). The COC list for monitoring can be narrowed to indicator parameters that present the most significant potential for risk and/or migration. Additionally, use other indicator parameters (e.g., total petroleum hydrocarbons) as appropriate. Describe the basis for selection of indicator parameters.

Describe the sampling frequency. Groundwater sampling is commonly conducted on a semi-annual basis, although it may vary depending upon well type, function (e.g., wells proposed to monitor deeper unaffected transmissive zones may be sampled with less frequency or zones with lower transmissivities may not need to be sampled as frequently as zones with higher transmissivities), and location. Explain the proposed frequency of sampling for other media (e.g., surface water).

4.2.4 Sampling and Analysis Plan

The requirements for a Sampling and Analysis Plan (SAP) for groundwater are presented in the TCEQ's compliance plan application template available on the following Web page:

www.tceq.state.tx.us/permitting/waste_permits/ihw_permits/ihw_permit_forms.html.

Part XI, Attachment C, of the application form requires submittal of the current SAP. The instructions for preparing the SAP are as follows:

The Sampling and Analysis Plan must include information required by 30 TAC 335.163(4) and 335.163(5) and 40 CFR Subpart 270.30(j). The plan should include the sample collection procedures, sample preservation and shipment procedures, analytical methods, field parameters to sample, chain of custody procedure and a procedure to inspect the monitoring system at the time of the sampling event. For guidance, please see Attachment C to the application.

Take into consideration applicable media such as air, groundwater, surface water, and sediments.

4.3 FOA Contingency Plan

Include contingency plans in the event monitoring indicates the response actions are not successfully meeting performance objectives for the FOA (see Section 4.2 for a discussion of the FOA monitoring program). Because of the complex and interrelated nature of actions taken and the

length of time the FOA may be in place, it will generally not be possible to provide specific details on the actions to be implemented as part of the contingency plan. Provide information on the process for determining noncompliances with the performance objectives, what would trigger the need for implementing the contingency plan, and how specific actions would be identified and implemented. Focus the contingency plan more on identifying the process that will be used to develop the specific response actions than on the actions themselves.

The Groundwater Protection Standard (GWPS) defines the objective of groundwater restoration with respect to hazardous constituents which is to be achieved at the FOA BOC and the POE, if any. Describe the process the applicant would use if the GWPS or other established values are exceeded in the monitoring programs. The most common monitoring programs are going to be those associated with groundwater monitoring. However, dependant upon conditions at a facility, it may be necessary to establish other types of monitoring programs to demonstrate the FOA is protective of human health and the environment.

Identify monitoring decision points that would trigger changes in the response action or implementation of the contingency plan, including the potential alternatives that might be considered for the contingency plan and where or under what circumstances they would be used. This could be a series of decision points with increasingly aggressive actions. For example, the consequences of detecting a COC in an interior well (AMP well) that is to track potential movement of COCs towards the FOA boundary are much less severe than exceeding the GWPS in a BOC well. Submit a proposal to resample an AMP well within a certain time period to verify that COCs had been detected, if appropriate. If confirmed, propose in the contingency plan to increase the frequency of sampling, to install a new AMP well closer to the boundary, to take a specific corrective action, or to take any other appropriate actions that are specific to that facility's conditions.

One example of a contingency in the plan is as follows. Upon first identifying that COCs at an AMP well or FOA BOC well are continuing to increase and that the increase is not due to an ongoing release, the facility could implement biologically-enhanced natural attenuation. If concentrations continue to increase, the next step might be a pump and treat system and then, finally, a barrier wall to contain the plume.

During this process of implementing the corrective action, communication with the TCEQ will be ongoing and interactive. Describe requirements for notifying the TCEQ that monitoring has identified the need for implementing a contingency plan and define the next steps.

4.4 Action Levels [§350.135(a)(4), (6) and (8)]

4.4.1 PCL Development and Site-Specific Exposure Pathways

In §350.71(c)(1-8) the standard TRRP process requires that the applicant develop PCLs for each of the following human health exposure pathways:

- ingestion of COCs from Class 1 or 2 groundwater or for protection of Class 3 groundwater;
- inhalation of volatile emissions in outdoor air from COCs in groundwater;
- combined exposure to the following from COCs in surface soil:
    - inhalation of volatile emissions and particulates;
    - dermal contact;
    - ingestion;
    - ingestion of vegetables (residential land use only);
- leaching of COCs in soil to groundwater;
- inhalation of volatile emissions in outdoor air from COCs in subsurface soil;
- contact with surface water or sediment containing COCs; and
- other complete or reasonably anticipated to be completed exposure pathways.

In the FOA process, determining the critical PCL is the same as the standard TRRP process but there may be fewer complete exposure pathways in each environmental medium. If a given medium does not have any complete exposure pathways or alternate mechanisms approved in the FOA to address that pathway, then a critical PCL may not need to be calculated for that medium. More detailed information regarding determination of critical PCLs can be found in TCEQ guidance document *Critical PCLs* (RG-366/TRRP-25).

However, §350.71(d) allows any of these pathways (except for the ingestion of COCs from groundwater) to be considered incomplete if a competent physical control is in place that prevents the exposure of receptors to COCs.

In the FOA process, each of these pathways will still be addressed, but rather than developing PCLs, alternate methods of protecting receptors may be proposed. For example, the ingestion of COCs from the groundwater ingestion pathway may be considered to be incomplete (within the FOA boundary) if no usable water wells are located within the FOA [§350.135(a)(3)]. In addition, the FOA application requires a description of action levels developed for the worker health and safety

program, facility access restrictions to control exposure to COCs [§350.135(a)(4)], and the procedures in place for responding to COCs in excavated soil [§350.135(a)(5)]. Each of these may be proposed as alternatives to developing PCLs for the pathways affected. If no alternative is proposed for a particular pathway, then develop a PCL for that pathway in accordance with the standard TRRP process.

4.4.2 Human Exposure Pathway Screening and PCL Development

Document that all of the applicable exposure pathways are addressed when action levels are developed, and provide justification for any excluded exposure pathways (e.g., groundwater ingestion). Also include any excluded pathways in the request for exemptions from specific requirements of TRRP (see Section 4.1.2).

In accordance with §350.135(a)(4), describe the facility's occupational health and safety program to document that action levels are developed to prevent worker exposure to environmental media containing COCs at concentrations in excess of protective levels. In order to protect off-site receptors, action levels for a given medium may also be dependent upon proximity to the FOA boundary. Evaluate action levels for a given medium to demonstrate they are protective of off-site receptors.

Include a description of all of the action levels developed for the health and safety program and the sources used to derive them (e.g., ACGIH Threshold Limit Values, OSHA Permissible Exposure Levels, and PCLs). Describe any applicable facility-specific exposure guidelines. The worker action levels should assure that personal protective equipment beyond facility-specific worker clothing requirements is not needed during performance of normal job duties. Media with COC concentrations exceeding action levels are addressed under the Contaminated Media Response Plan as discussed in Section 4.5.

4.4.3 Tier 2/Tier 3 Ecological Risk Assessment, Ecological PCL Screening and Development, and/or Risk Management Recommendations

Tier 2/3 ERAs and ecological PCLs are relevant to a FOA in two cases: 1) where an ecological pathway is complete inside a FOA (e.g., a habitat that doesn't screen out at Tier 1), and 2) where COCs from the FOA may affect an ecological receptor outside the FOA boundary. Perform a Tier 2 and/or Tier 3 ERA for areas within the FOA or outside the FOA boundary that do not meet the Tier 1 Checklist [§350.77 (b)]. Consult the TCEQ ERA guidance document *Guidance for Conducting Ecological Risk Assessments at Remediation Sites in Texas* (RG-263), and updates, for detailed information regarding Tier 2/3 ERAs.

Regardless of whether the FOA process is used, develop PCLs and/or make risk management recommendations at the conclusion of a Tier 2 or 3 ERA to address unacceptable current or potential ecological risks that are identified in the course of the ERA. The ERA guidance document provides detailed information regarding the calculation of ecological PCLs and the development of risk management recommendations. Rather than repeat that information here, consult Sections 3.13, 3.14, and 4.3 of that document (and updates) for further guidance.

4.4.4 PCL Development for the FOA Monitoring Program (Human Health and Ecological)

The FOA process requires that applicants set up a monitoring program with protective levels to track FOA COCs within and at the FOA boundaries [§350.135(a)(3), (a)(6) and (8)]. Monitor FOA COCs within and at the FOA boundaries (see Section 4.2), as appropriate. Key to any monitoring program is the development of media-specific PCLs that are protective of human health and the environment. Develop human health PCLs for the exposure pathways previously listed in Section 4.4.1. If applicable, develop ecological PCLs for ecological receptors for all complete and potential future ecological exposure pathways.

PCLs (or the process for developing PCLs) for human receptors can be obtained from the TRRP rule and guidance documents, including *Determining PCLs for Surface Water and Sediment* (RG-366/TRRP-24). With regard to ecological receptors, the PCLs may be the same as those developed at the conclusion of the ERA (for impacted media), but it is likely that the number of COC-specific PCLs for monitoring purposes will be greater. For example, consider a site with 20 groundwater COCs where there is a groundwater release to surface water and sediment. The risk assessment may conclude that due to an ongoing and/or historical release of impacted groundwater, only two of these COCs have shown an unacceptable impact to adjacent sediments. Rather than monitor groundwater in the future for those two COCs only, the groundwater may be monitored for all 20 COCs to ensure that groundwater concentrations do not increase above levels protective of surface water and sediment.

For community level ecological receptors (e.g., benthics, aquatic invertebrates, fish), base PCLs for all target COCs on available standards, risk-based exposure levels (e.g., acute and chronic water quality criteria), and/or sediment concentrations protective of benthics, as applicable. This process is fully described in *Determining PCLs for Surface Water and Sediment* (RG-366/TRRP-24) and the ERA guidance document (RG-263), and updates. For higher trophic level (e.g., birds and mammals) ecological receptors, this process is different since the PCL is based on the ERA and is prospective rather than reactive. To develop a prospective ecological PCL for a COC, start with an acceptable risk level, and solve for a media concentration that would satisfy that risk level. PCL

development is necessary for bioaccumulative COCs, as defined in the ERA guidance document, and may be necessary for additional COCs particularly where a COC is determined to be potentially bioaccumulative (see Section 3.4.2 of the ERA guidance document). Repeat this process for a set of measurement receptors that represent the various feeding guilds associated with the likely food webs supported by the habitats at the FOA to arrive at the lowest (critical) ecological PCL for a given COC. Sections 3.6.1, 3.13, and Appendix A of the ERA guidance document (and updates) offer detailed information on the derivation of ecological PCLs. Just as human health PCLs are developed for all relevant human health exposure pathways, develop ecological PCLs for all complete ecological exposure pathways within the FOA and at release points at the FOA boundary.

4.5 Contaminated Media Response Plan [§350.135(a)(4) and (5)]

Section 350.135(a)(5) of the FOA application requirements states that the applicant must provide the following:

Procedures that shall be used for performing response actions for soil that will achieve protection of human health when COCs in excess of levels acceptable under the worker health and safety program are encountered in response to construction activity, excavation, etc.

As discussed in Section 4.1.2, submit a proposal to modify the provisions of the other subchapters of the TRRP "to the extent necessary to establish an interim response action that will be protective of human health and the environment within and at the boundary of the FOA." To assure that this protection is established at a FOA, include action levels required in the health and safety plan [§350.135(a)(4)] and provide written procedures on how personnel at a facility will proceed when contaminated media above these action levels are encountered. The action levels are discussed in Section 4.4. This section covers the elements of a Contaminated Media Response Plan.

4.5.1 Overview of Facility-wide Health and Safety Program

Since the facility's health and safety plan is integral to meeting the requirements for establishing a FOA, provide an overview of the plan. While this should be brief, it also should be in sufficient detail to provide a sense of how the plan elements protect the workers from exposure to environmental media.

Facilities that are applying for the FOA authorization should already have a highly integrated health and safety plan and the challenge may be limiting the amount of information provided. The elements of the overview could include the following:

- an introduction to the health and safety plan that includes a description of the OSHA VPP (or equivalent) or the third-party audit certification;
- roles and responsibilities of management, health and safety personnel, workers (company and contractor);
- the company/facility's safety policy;
- any pertinent corporate safety standards or guidelines;
- any pertinent facility safety rules; and
- action levels used to protect worker health.

Documents that illustrate how the health and safety plan works may be included as attachments. Examples include permits, excavation plans/requirements, and other rules or requirements.

4.5.2 Contaminated Media Response Process / Recordkeeping / Reporting

In this section of the submittal, describe the process or methodology used to respond to reports that contaminated media that exceed the action levels described above have been encountered during excavation, construction, or other activities. Elements of the response process could include the following:

- an overview of the process;
- roles and responsibilities of personnel involved in the reporting and executing of the response;
- initial response actions such as immediate actions that may need to be taken, assessment of the hazards, sources, potential exposure pathways, and collection of data (information or samples), and removal of COCs;
- an assessment to determine if further remedial actions are needed; and
- potential general response actions to manage/control the exceedence of action levels.

Since there may be many different potential exceedence/response scenarios that may occur at large facilities, limit the discussion of the elements of the response process to an overview or general description.

Since information concerning any exceedences of the action levels could be beneficial in evaluating future cleanup activities at the termination of a FOA, describe the methods proposed for maintaining records of such exceedences/responses. Maintain these records throughout the duration of a FOA.

Report the implementation of the Contaminated Media Response Plan to the TCEQ on at least an annual basis once a permit or corrective action order is issued. Propose in this step the frequency/time of reporting this information in the required semi-annual reports. For example, propose to report this information every six months in the semi-annual report required by the compliance plan or propose an annual reporting frequency in January or July.

4.6 Spill Response and Tracking [§350.135(a)(7)]

Section 350.135(a)(7) of the FOA application requirements states that the applicant must provide the following:

Procedures for tracking and responding to releases which occur within the FOA after the effective date of the FOA in a manner that will identify and abate the source of the release (e.g., leaking tank or piping), and restore the impacted environmental media to pre-release conditions.

The objective of this provision is to prevent an increase of COC concentrations within the area of the new release above those that already exist and to require facilities to maintain diligence in preventing releases and responding quickly should they occur. In this section, provide the plan for responding to spills within the FOA.

4.6.1 Procedures for Spill Response

There are numerous federal and state statutes/regulations, including 30 TAC Chapter 327, that require response to releases to the environment. Most facilities should already have detailed emergency response/spill response plans and some facilities may be utilizing an Integrated Contingency Plan for this purpose. Provide an overview of the spill response process at the facility and a slightly more detailed view of the response procedures.

Include the facility's spill reporting requirements, general spill reporting procedures, the types of personnel training required for spill reporting, personnel that may be involved in spill response (security, fire, safety, environmental, and transportation emergency specialists), and the types of emergency response equipment available either on or off the facility.

Due to the variability of events that may occur at large facilities, the more detailed view of the response procedures may still be generic in nature. The procedures could provide a step-by-step approach from the initial discovery of the release, notification of security or other appropriate personnel, reporting to the appropriate agencies, dispatch of personnel and/or equipment to the scene, initial steps to assess/abate the release, potential cleanup methods, storage/disposal considerations, sampling to verify clean-up levels have been attained, and any interim or final reports

that may be required. Provide the procedures as an attachment to the submittal.

4.6.1.1 Initial Response and Reporting

Provide a narrative that explains the initial response and the reporting to TCEQ in the step-by-step procedure provided in the above section. This can still be a summary of the detailed procedures that exist at facilities but should illustrate the first steps an applicant takes before abatement of contaminated media occurs. Include steps taken by personnel discovering the release and reporting to the appropriate facility contact point and dispatch of release specialists to:

- assess the release;
- determine type and quantity of material released;
- make appropriate agency notifications;
- make recommendations on containment, diversion, or neutralization of released material; and
- support in coordinating clean-up activities.

4.6.1.2 Abatement Procedures

Provide a narrative that explains the steps to be taken in cleaning up a release to return it to pre-release conditions. Again, due to the many different release scenarios that may occur, a generic description may be used. Abatement procedures could include, but are not limited to, the following:

- establishing cleanup requirements by reviewing action levels for worker protection and regulatory requirements;
- if visible contamination is present, initiating removal operations without sampling or performing sampling to determine the extent of the release;
- if previous contamination is discovered in an area, establishing cleanup requirements to return the area to pre-release conditions that are protective of worker health;
- establishing removal and storage requirements;
- obtaining necessary personnel and equipment to remove, store, and transport the contaminated media;
- removing or treating contaminated media until action levels for worker protection and regulatory requirements can be met;
- performing any verification sampling, as needed, to establish cleanup levels have been met;

- decontaminating or disposing, as necessary, any equipment used in the cleanup effort;
- properly treating or disposing of removed contaminated media; and
- restoring the area, as necessary, to the original elevation by placing clean soil or other appropriate material in any excavated areas.

4.6.2 Spill Cleanup Levels within a FOA

FOAs are intended to deal with historic contamination either known at the time a FOA is designated or discovered later. §350.135(a)(7) states that the applicant must restore the impacted environmental media to pre-release conditions. The TCEQ has indicated in the adoption preamble for the 1999 TRRP rule (Analysis of Comments – 30 TAC §350.132) that the objective of these immediate response actions is a restoration such that COC concentrations within the FOA do not increase over time as a result of additional releases. Respond to new releases consistently with the requirements in Chapter 327.

The cleanup levels for areas where contamination already exists are established as those that existed prior to the new release. This is consistent with the approach in Chapter 327 in which the cleanup requirement is restoration to background or pre-release conditions. In addition, the cleanup levels need to be protective of worker health and safety. If not previously quantified, sampling may be needed to establish the pre-release concentrations. In unimpacted areas where there is no previous release or "historical" concentrations of COCs, remediate the COCs to background, which is the pre-release condition. However, if the release cannot be cleaned up to background, the applicant can still use Remedy Standard A or B in TRRP as the rules in Chapter 327 would normally allow.

4.6.3 Tracking and Reporting Requirements

Describe how records of reportable releases to media will be maintained at the facility and propose the reporting frequency. Any spills not cleaned up to Chapter 327 requirements require referral to the Remediation Division and cleanup to TRRP Remedy Standard A or B. Maintenance of records of any historic releases discovered at the facility as part of a spill response could facilitate any needed future cleanup activities to occur at the termination of the FOA. Propose a means of recording the location of the release so it can be located even if changes have been made to the units at the facility. An example method to record the locations is noting the location using the geographic coordinates obtained using a global positioning system (GPS). Other methods may be proposed.

In this step, the frequency/time of reporting this information can be proposed in the required semi-annual reports. For example, propose to report this information every six months in the semi-annual report required by the compliance plan or propose an annual reporting frequency in January or July.

5.0 Compliance Plan/Corrective Action Order Application Submittal (Step 4) [§350.135(b)]

Section 350.131 specifies that a FOA must be established through either a hazardous waste permit (through a Class 3 Modification or major amendment for a compliance plan) or the TCEQ corrective action order. In Texas, HSWA and RCRA corrective action (including a FOA) is prescribed through the compliance plan portion of the hazardous waste permit. Due to the time constraints for processing permit and compliance plan applications, a stepped FOA pre-approval process was established. This allows review of the technical submittals and substantive approval prior to submittal of the formal compliance plan application.

Steps 1, 2, and 3 of the pre-approval process must be reviewed and approved by the TCEQ prior to initiating Step 4, which is the submittal of the formal compliance plan application (or application for a corrective action order). Although a large volume of technical data and information will have been submitted and approved prior to Step 4, the compliance plan application is a "stand-alone" submittal and must include some of the information previously submitted. Previously submitted information necessary for the application may be in summary, tabular, and graphic format and could also reference the earlier submittal date and section.

5.1 Components of Application or Order

To guide the preparation of the compliance plan application, a short discussion of the components of the current compliance plan application (as of the date of this document) is appropriate. Include relevant and similar kinds of information required for a compliance plan application, not just information concerning the FOA. If a corrective action order is required to establish a FOA, then submit relevant information requested for a compliance plan application. This information will be required in order for the TCEQ to develop a corrective action order.

The compliance plan application is currently divided into seven parts. Future revisions to the compliance plan application may change the numbering and detail of the sections but the overall information requested will likely be similar. Although proposed Part VII of the current application is devoted to FOA-related information, several other parts of the application will be affected by application for a FOA. Contact the

TCEQ Project Manager to obtain the latest application template. The relevant FOA information discussed below for each part of the compliance plan application should be submitted.

Part I - General Information – Among the general facility information requested in Part I, provide a brief written description of the portion of the facility covered by the application. In addition to any RCRA or HSWA corrective action or compliance monitoring being performed at the facility, provide an overview of the FOA, including the multiple sources of COCs addressed by the FOA.

Provide a brief description of the proposed changes to any existing compliance plan, including the establishment of the FOA and how it relates to existing corrective action requirements in the compliance plan, if any.

Part II – Facility Specific Information – This section includes any pertinent facility maps, geologic maps, topographic maps, facility location maps, aerial photographs, surrounding land use maps, FOA boundaries, locations of relevant SWMUs, hazardous waste management units, wastewater treatment facilities, areas of concern, potential source areas, cross-sections, existing corrective action components, groundwater flow maps for relevant transmissive zones, surrounding water wells, and extent of contamination in each affected zone.

In addition, provide a tabulated history of the relevant units, a summation of the hydrogeologic data, and the results of appropriate Appendix IX or other groundwater sampling in order to adequately develop a list of facility-specific hazardous COCs. Identify units located inside and outside the FOA in the table.

Part III – GW Protection Standard – Develop PCLs for each COC for the appropriate wells in the RCRA corrective action, HSWA corrective action, compliance monitoring, and FOA monitoring network. Base these PCLs on the appropriate exposure assumptions for the location of each well in the corrective action/monitoring network, whether inside the FOA or outside the FOA. Present and document these PCLs, which will have been developed and approved in Step 3 of the pre-approval process, in this section of the application.

Part IV – Compliance Monitoring – Because the FOA concept was developed to address multiple sources of COCs requiring corrective action, the compliance monitoring portion of the application may not be relevant for a FOA. It is possible that other units not addressed by the FOA, either within the FOA or outside the FOA, may require compliance monitoring.

Part V – Corrective Action Program – Discuss the types of corrective action that will be employed to address media that exceed critical PCLs, whether inside or outside the FOA. The FOA concept is designed to

address multiple sources requiring corrective action so elaborate on any remedial measures employed to contain or reduce the PCLE zones.

Provide detailed descriptions of groundwater recovery systems, including maps of recovery systems, radius of influence and estimates of optimum pumping rates and locations of collection, storage and disposal facilities, if proposing to implement interim response actions or corrective action during the life of the FOA. Include calculations and engineering specifications, as appropriate.

Provide similar information for other remedial technologies to be employed such as vapor extraction systems, interceptor trenches, in-situ or ex-situ treatments (ex-situ treatment should be evaluated for land disposal restrictions), barrier walls, or other proposed corrective action.

Provide a detailed description of the groundwater monitoring system associated with any corrective actions, including hydrogeological evaluations of the relevant waste management units/FOA, number and location of monitoring wells in each transmissive unit, well construction details, sampling frequency, COCs, sample handling procedures, and statistical procedures for evaluating analytical results.

Propose the methodology for evaluating the effectiveness of the corrective action and potential enhancements to the corrective action system(s) should the TCEQ deem it necessary. Also, propose a reporting schedule to provide updated information including the installation and certification of the recovery systems and monitoring systems, and the operation and effectiveness of the corrective action systems (contaminant plume maps, NAPL distribution maps, groundwater flow maps).

Part VI – Financial Assurance Cost Estimates – Provide a thorough, detailed estimate of costs that will be incurred by implementing interim response actions, corrective action, or monitoring proposed in the compliance plan application, as well as the ongoing operation and maintenance of the corrective action and monitoring systems, sampling and analytical costs, and reporting requirements. Also include an estimate for the final corrective action for each unit/area included in the FOA. See Section 5.2 for a more detailed description of Financial Assurance documentation.

Part VII – FOA – This section of the application specifically concerns the FOA and may require information that is also being submitted in response to Parts I through VI of the application. If submitted elsewhere in the application, the applicant may reproduce the requested information or provide a reference indicating where it can be found elsewhere in the application.

To address the requirements for Part VII, provide the following information:

- an approved version of the FOA Qualifying Criteria Checklist and evidence that Steps 1 through 3 of the FOA pre-approval process have been approved by the TCEQ;
- requested exceptions to the TRRP rule;
- final proposals for lateral and vertical FOA compliance boundaries including figures of appropriate scale depicting these boundaries;
- a summation of the site-wide hydrogeology including cross-sections representative of FOA conditions depicting PCLE zones at FOA boundaries;
- facility maps that include the location of components of the FOA corrective action and monitoring network (including proposed FOA interior monitoring points) that were approved in Step 3 of the pre-approval process;
- figure(s) showing known occurrences of NAPL (see Section 3.6) including occurrences that require immediate corrective action and those that may not;
- figures depicting any areas of ecological impact that require corrective action (see Section 3.7);
- a summary of the Contaminated Media Response Plan (see Section 4.5) that provides for the protection of on-site workers from environmental media exceeding applicable PCLs;
- a summary of the Spill Response and Tracking program (see Section 4.6) designed to address accidental releases inside the FOA after FOA issuance;
- a proposed schedule for sampling and analysis of FOA wells and any other monitoring requirements;
- a schedule for submittal of required annual and semi-annual reports; and
- a proposed schedule for implementation of items that will not have been completed when the FOA is authorized (see Section 5.4).

5.2 Cost Estimates for Financial Assurance [§350.135(a)(10)]

The FOA application requires a cost estimate for implementing response action requirements of the FOA and for carrying out the final response action at the termination of the FOA. The sum of these costs is the basis for the amount of financial assurance required when the FOA is authorized by permit or corrective action order (see Section 6.1). As with other regulatory provisions requiring a cost estimate for financial assurance (e.g., RCRA-permitted units, corrective action), the cost estimate is required to be in current dollars for a third party to perform all necessary actions to fulfill the obligations of the FOA and the final

response action upon termination of the FOA. Do not use net present value and other discounted cash flow techniques to calculate the current cost.

Annual cost estimates for FOA operating costs must continue for a period of 30 years and cannot be reduced each year to reflect a reduction in the 30-year period, except to the extent that response action construction costs have already been incurred. This means financial assurance for the operating and maintenance costs remains available throughout the life of the FOA.

5.2.1 FOA Costs

The ongoing FOA costs to be considered are costs necessary for implementing and monitoring the response action at the FOA for a 30-year period including:

- design, construction, maintenance, and operation of physical controls (e.g., caps, slurry walls, sheet piling, and hydraulic containment) or remediation systems (e.g., groundwater recovery and treatment systems, vapor extraction systems, in-situ biological and chemical remediation systems);
- installation, maintenance, and replacement of groundwater monitoring wells;
- groundwater and other media monitoring;
- laboratory analyses;
- reporting;
- maintenance of access restrictions; and
- project management and other administrative costs.

The purpose of the above list is to provide examples of typical activities that are included in the FOA costs and should not be considered comprehensive for all FOA applications where other facility-specific costs may need to be considered. The compliance plan guidance documents and application contain an example format that may be used as a guide for groundwater-related costs. Technical Guideline 10, *Closure and Post-closure Cost Estimates,* may provide some guidance in preparing the cost estimate. A link to the Industrial and Hazardous Waste Technical Guidance Web page follows:

www.tceq.state.tx.us/permitting/waste_permits/ihw_permits/tech_guidance_index.html

5.2.2 Final Response Action Costs

The second component of the cost estimate is the cost to carry out the final response action that will be required to achieve compliance with TRRP upon termination of the FOA. At that time, updated PCLs revised to reflect normal TRRP POEs for soil and groundwater will have to be met. The final response action cost also includes any costs for post-response action care. Until approval of a final response action (which may not be submitted for many years or until near the end of the FOA period), the sum of costs estimated to achieve Remedy Standard A or B at each individual SWMU within the FOA, as listed in the permit or corrective action order, should be used as the final response action cost.

Although a facility may have already prepared cost estimates for addressing corrective action at some SWMUs, it may be necessary to collect additional information during the FOA investigation to be able to reasonably identify, estimate, and justify response action costs. In many cases, the final response action for groundwater may be the same as, or a continuation of, actions taken for implementing the FOA. In this case, do not count those costs again. For example, post-closure requirements following final closure of a SWMU might include groundwater monitoring, groundwater/NAPL recovery and maintenance of facility security – the same actions likely necessary during the life of the FOA. In this case, these costs need not be counted twice. Final response action costs will need to address remediation or removal and disposal of soil, sediment, and contaminated media in addition to groundwater.

Present final response action costs for each SWMU in sufficient detail to identify and justify how the cost was obtained and include the following items, as applicable:

- investigation and remediation studies;
- analytical and drilling costs;
- development of workplans;
- remedial design;
- remediation system installation, operation, maintenance, and removal;
- removal/treatment/disposal of:
    - liquids,
    - waste material,
    - contaminated soil and sediment, and
    - contaminated debris and other materials (e.g., concrete and/or piping);
- construction of CAMUs, Treatment Units, or other disposal areas;
- removal of dikes, placement of fill material and final grading;
- placement and maintenance of liners, caps, or other cover;

- stormwater management during construction;
- health and safety monitoring;
- monitoring of affected media including groundwater and possibly surface water;
- collection, analysis, and reporting of affected media samples to demonstrate that PCLs have been achieved and final closure can be approved by the TCEQ; and,
- reporting, project management, and other administrative costs.

Also, consider and include other post-response action costs not included as part of the 30-year FOA cost in the final response action costs. Examples of such costs are maintenance of caps, institutional controls, and other cover or long term monitoring.

5.3 Notification Requirements

The FOA permitting process requires a deed notice and various public notices.

5.3.1 Deed Notice [§350.135(a)(11)]

A deed notice is an instrument filed in the real property records of the county where the affected property is located and is intended to provide owners, operators, prospective buyers, and others notice and information regarding property conditions and limitations on property use. The FOA application must include draft language for a notice to be placed in the property deed within 90 days following issuance of the FOA (see Section 6.2) in compliance with §350.111 relating to the Use of Institutional Controls. A deed notice is the only applicable form for an institutional control for a FOA.

Requirements for institutional controls are explained in the TCEQ guidance document *Institutional Controls* (RG-366/TRRP-16). This guidance document also includes model deed notice language appropriate for a FOA as well as other situations (see Model Institutional Controls and Appendix A).

There are several specific situations in addition to a FOA that may require an institutional control. These "triggers" include, but are not limited to:

- use of Remedy Standard B;
- use of facility-specific exposure assumptions (including use of occupational inhalation criteria for establishing PCLs);
- use of long-term (>15 years) response actions; and

- use of a PMZ.

Address each applicable situation; however, they may be combined into a single institutional control if each is addressed with the appropriate degree of specificity.

Include in the deed notice language standard information required as part of every deed notice and additional information that is specific to a FOA. A metes and bounds description is required for portion(s) of the affected property to which the IC applies. The boundary of the FOA is considered the affected property. Other standard information includes:

- a plat map showing the affected property;
- a certification by a registered professional land surveyor;
- a statement discussing the appropriate land use;
- an explanation of the environmental media that contain COCs above PCLs;
- a statement documenting any property use limitations or any requirements for maintenance of physical controls and/or ICs, or compliance with health and safety plans;
- the TCEQ program and identifier number; and
- the physical address and mailing address for the TCEQ Records Services Office.

Other information required specifically for a FOA includes:

- an explanation of what a FOA is and its purpose;
- delineation of the horizontal and vertical boundaries of the FOA;
- acknowledgement that TRRP PCLs are exceeded within the FOA;
- a description of the deferred or ongoing response actions within the FOA; and
- FOA access restrictions.

5.3.2 Public Notice and Meeting [§350.135(b)]

As a Class 3 permit modification or major amendment, a compliance plan application for a FOA and the resulting TCEQ authorization are subject to the public notice requirements of 30 TAC Chapter 39, Subparts H and I, and 30 TAC Chapter 305, Subchapter D.

With Part II of the application (Site-Specific Information), submit a map showing boundaries of adjacent properties and contact information for

adjacent landowners. The TCEQ will mail applicable notices regarding the application and subsequent intent to issue a permit modification or amendment to individuals on the mailing list. The mailing list will include the adjacent landowners as well as local government officials, Texas Department of State Health Services, Texas Parks and Wildlife Department, the Railroad Commission of Texas, Coastal Coordination Council, persons who have requested to be on a mailing list for information pertaining to the facility, and interested persons who have filed public comments. If not previously submitted, the facility may need to provide information for the mailing list (§39.413 and §39.418).

Within 30 days of receiving notice from the TCEQ that the application is administratively complete, publish a notice (Notice of Receipt of Application and Intent to Obtain Permit) in the largest newspaper in the county where the facility is located. The TCEQ will provide specific information regarding the wording, size, and placement of the notice. Place a copy of the permit modification or amendment (FOA) application in a location accessible to the public by the date the newspaper notice is published. Publication of the notice initiates a 60-day public comment period. File a copy of the published notice with the TCEQ within 10 days after the last publication date and file a copy of the publisher's affidavit with the TCEQ within 30 days after the last publication date [§39.418 and §305.69(d)(3)].

The notice must provide the date, time, and location for a public meeting to be held by the permittee in the vicinity of the facility no earlier than 15 days after the publication date and no later than 15 days prior to 60 days after the last publication date of the notice [§305.69(d)(4)].

Following the TCEQ notice that the Technical Review is complete, publish a Notice of Application and Preliminary Decision using the wording and following the directions provided by the TCEQ. Publish this notice in the same newspaper as the previous notice. The TCEQ will mail a notice regarding the preliminary decision to appropriate individuals on the TCEQ mailing list for the facility.

5.4 Proposed Implementation Schedule for Items Not Completed at FOA Authorization [§350.135(a)(12)]

If all required items for the FOA have not been implemented at the time that the FOA application is submitted, submit a proposed schedule for these items with Part VII of the application. Base the proposed schedule on elapsed time after authorization of the FOA.

List items associated with the implementation of the FOA in the proposed schedule. While all other items that are required for FOA authorization should be submitted with the application for a FOA, approval by the TCEQ is required for delay of items to the Implementation Schedule.

Items required for FOA authorization are listed in §350.134 and §350.135 and in Sections 2, 3, and 4 of this document. Examples of items that may be listed on the Implementation Schedule include the following:

- installation of monitoring wells at monitoring points, at the FOA boundaries, or beyond the FOA boundaries;
- installation of recovery wells or equipment that will be used to control or reduce NAPL within the FOA;
- a prioritization list of ongoing or final response actions and institutional controls that the facility plans to initiate or complete during the period of FOA authorization;
- installation of physical structures and/or implementation of administrative procedures that will be used to control access to the FOA;
- implementation of the Worker Protection Program that protects workers within the FOA from environmental media that contain COCs in excess of PCLs or action levels;
- implementation of the Pollution Prevention Program that was developed for the FOA;
- implementation of spill response procedures for releases within the FOA; and
- implementation of media monitoring program(s) and reporting.

These items may be implemented prior to FOA approval; however, the facility may be required to modify procedures to implement these items before the FOA is authorized. Include other items that will be implemented after the FOA authorization and that are not included in the above list in the proposed implementation schedule. The facility must submit an updated, revised schedule within 60 days after the FOA is authorized (see Section 6.3).

6.0 After Issuance of Permit or Corrective Action Order (Step 5)

After the final authorization for the FOA has been issued by the TCEQ in the form of a permit modification/amendment or corrective action order, submit financial assurance documentation and complete the deed notice process. Initiate actions to complete any items not completed at the time of the FOA application (Section 5.4) and implement other FOA requirements of the compliance plan or corrective action order. Annually, update the cost estimate and financial assurance documentation.

Throughout the life of the FOA, notify the TCEQ of any substantial changes in circumstances that could result in the FOA being no longer

protective of human health and the environment and to make necessary changes. Also maintain compliance with all FOA qualifying criteria. If a substantial change in circumstances occurs, re-establish compliance with the compliance plan and associated application.

6.1 Submit Financial Assurance Documentation [§350.135(c)]

These sections discuss the financial assurance documentation.

6.1.1 Initial Financial Assurance Documentation

Submit proof of financial assurance within 60 days after the effective date of the permit modification/amendment (compliance plan) or corrective action order authorizing the FOA. Financial assurance requirements for a FOA are specified in Chapter 37, Subchapter N (Financial Assurance Requirements for the TRRP Program Rules; §37.4001, §37.4031). Requirements for financial assurance in the following subchapters of Chapter 37 also apply:

- Subchapter A (General Requirements)
- Subchapter B (Financial Assurance Requirements for Closure, Post-closure and Corrective Action)
- Subchapter C (Financial Assurance Mechanisms for Closure, Post-closure and Corrective Action)
- Subchapter D (Wording for Financial Assurance Mechanisms)

Utilize any of the financial assurance mechanisms specified in Subchapter C to meet the financial assurance requirements except a Pay-in Trust which is specifically excluded in §350.135(c).

The amount of financial assurance required for the FOA will be specified in the permit or corrective action order and will be based on costs submitted with the FOA application for 30 years of FOA implementation and final response action costs (see Section 5.2). Financial assurance for the FOA is in addition to other financial assurance obligations the facility may have. The total amount of financial assurance required by a facility may include closure and post-closure care for RCRA-regulated units as well as corrective action or other future response action costs not in the FOA.

6.1.2 Adjustments to Cost Estimate

Update the current cost estimate for the FOA and final response action annually based on inflation using the procedures outlined in §37.131 or whenever there is a change that would cause the current cost estimate to exceed the amount of financial assurance. Annual inflation adjustments are required within 60 days prior to the anniversary date the financial mechanism was first established or within 30 days of the close of the firm's fiscal year if using the Financial Test or Corporate Guarantee method.

Annual cost estimates must continue to project FOA operating costs for a period of 30 years and cannot be reduced each year to reflect a reduction in the 30-year period. This means financial assurance for the operating and maintenance costs remains available throughout the life of the FOA. Request a reduction in the current cost estimate as appropriate to reflect implementation of remedies or other changes that have taken place at the facility. A request for a reduction in the cost estimate must be approved by the TCEQ before reducing the amount of financial assurance [§37.151].

6.1.3 Adjustments to Financial Assurance

Annual adjustments to financial assurance, reflecting inflation or other changes, are required by the anniversary date the financial assurance mechanism was first established. If using the Financial Test or Corporate Guarantee, submit updated information within 90 days of the close of the firm's fiscal year (§37.251 and §37.261).

Adjustments are also required within 60 days of becoming aware of any changes that cause the current cost estimate to exceed the financial assurance amount or as required in Chapter 37 Subchapter C for the specific financial assurance mechanism utilized.

Requests for a decrease in the financial assurance amount must be made in writing to the TCEQ following approval of a decrease in the current cost estimate to the extent that the amount of financial assurance exceeds the cost estimate. A request for a reduction in the current cost estimate and the financial assurance amount may be made simultaneously. Following written approval by the TCEQ, the amount of financial assurance may be reduced to the amount of the revised cost estimate (§37.151).

6.2 Submit Deed Recordation Documentation within 90 Days [§350.135(a)(11) and §350.111]

After issuance of the permit or corrective action order authorizing the implementation of the FOA, file the deed notice language submitted with the application in the real property records of the county in which the facility is located. Proof that the deed notice has been filed must be provided to the TCEQ within 90 days of authorization of the FOA.

6.3 Implementation Pursuant to Compliance Plan or Corrective Action Order

Within 60 days of issuance of the compliance plan or corrective action order, the facility must submit to the TCEQ a schedule summarizing activities required by the compliance plan or order. List the starting dates of routine activities and include an updated schedule in each semi-annual report required by the compliance plan until required activities are completed. List the activity or report, the compliance plan section that requires the activity or report, and the calendar date the activity or report is to be completed or submitted. These activities may include, but are not limited to, installation and operation of the groundwater recovery/monitoring system, submission of required reports, additional extent delineation if requested by the TCEQ, notification requirements, deed recordation, and providing evidence of financial assurance.

Changes may occur while implementing the FOA that may result in a need to modify the compliance plan or order. If any POE well or AMP exceeds its respective PCL or attenuation action level, enhance the corrective action system and/or reevaluate the groundwater protection standards, either of which may result in a modification to the compliance plan or order. The compliance plan or order may also require a periodic reevaluation of the COCs and the indicator parameters. Changes to these COCs will require a modification to the compliance plan or order. If previously unidentified SWMUs are identified within the FOA, provide an assessment to determine if a release from the SWMU may require changes to the FOA corrective action program, and add the SWMU to the HSWA Corrective Action program through a modification or major

amendment to the compliance plan or order. Any changes to the FOA boundary will require a modification or major amendment to the compliance plan or order.

6.4 Substantial Change in Circumstances [§350.133(b) and §350.35]

The authorization of a FOA is subject to re-evaluation at the time of renewal of the hazardous waste permit or the corrective action order. At the time of renewal, the facility's renewal application will be evaluated for substantial changes in circumstances. Types of substantial changes in circumstances are listed in §350.35 and §350.133(b) and include the following:

- institutional (deed notice) or physical control (fence for access restrictions, pavement above affected soils) that fails to prevent exposure to human and ecological receptors at concentrations above PCLs;
- an actual exposure condition is determined to occur at levels that are not protective of human health and the environment;
- new information indicates that the presence of COCs was not sufficiently characterized such that an unacceptable threat to human health and the environment exists;
- an exposure area upon which PCLs are based changes, which results in an unacceptable threat to human health and the environment; and
- a health and safety plan to ensure compliance with the occupational inhalation criteria as RBELs [§350.74(b)(1)] will no longer be maintained.

If these changes or other substantial changes which result in the FOA no longer being protective of human health and the environment occur during the term of the FOA, report these changes to the TCEQ at the time that the changes are identified. Include the nature and extent of the substantial change in circumstances and the proposed method for modifying the FOA to ensure that it is protective of human health and the environment.

Following the TCEQ review of the permit renewal application or notification of changes, the facility may be requested to take certain actions within an established time frame to address substantial changes in circumstances of the FOA. Completion of these actions will be required to retain the TCEQ approval of the FOA.

If the requested actions are not implemented, the TCEQ can take actions to revoke or suspend the approval of the FOA and require compliance with the TRRP rules in Chapter 350, Subchapters A – F. The procedures

in Chapter 305, Subchapter D: Amendments, Renewals, Transfers, Corrections, Revocation, and Suspension of Permits will be followed for revocation or suspension of a FOA. Once a FOA has been revoked or suspended, prepare and submit an application for a major amendment to the hazardous waste permit to remove the FOA language and to add the now required non-FOA compliance provisions.

Regardless of whether the FOA is renewed, revoked, or suspended, address any circumstances where it is determined that an exposure condition exists that is not protective of human health and the environment. It is the TCEQ's intention to approve the renewal of a FOA provided that the facility can demonstrate that the FOA and any proposed actions to address substantial changes are protective of human health and the environment.

6.5 Noncompliance with Qualifying Criteria [§350.133(b) and §350.35]

Approval of the FOA is also subject to re-evaluation by the TCEQ at any time to determine compliance with the qualifying criteria listed in Section 2. The FOA may be re-evaluated following a facility inspection by the TCEQ, during a review of permit-required submittals from the facility, or at any other time that the TCEQ deems appropriate. Actions that may result in noncompliance with the qualifying criteria include the following:

- change in operational status of a facility;
- voluntary non-renewal or discontinuance of a hazardous waste permit or corrective action order;
- changes in access restrictions for a FOA that do not meet the FOA requirements; and
- OSHA compliance history or third party evaluation that documents that the facility does not meet or exceed OSHA requirements;
- average of either lost workday injury case rates or injury incidence rates for the most recent three-year period that is above the specific industry national average;
- a pollution prevention program that is determined to be insufficient to meet the qualifying criteria goal of prevention of releases of COCs to environmental media within the FOA;
- significant and outstanding compliance issues resulting from the TCEQ inspections of the facility; and
- non-compliance with the financial assurance requirements of §350.134(a)(10).

If the qualifying criteria are no longer being met, report these changes to the TCEQ at the time that the noncompliance is identified. As with a substantial change in circumstances, there are several options to address a noncompliance with the qualifying criteria. If the facility does not regain compliance with the qualifying criteria, the facility may request to revoke the FOA or the TCEQ may revoke the authorization of the FOA.

As noted in the preamble for the 1999 TRRP rule, the TCEQ recognizes that minor infractions to the qualifying criteria may occur at a complex facility. It is only if a facility has not resolved significant infractions that the TCEQ will consider it as a condition that disqualifies the authorization of a FOA. In these instances, the significant infractions may be addressed through the TCEQ's enforcement process. The TCEQ's expected results from the enforcement process are to regain compliance with the qualifying criteria. If the TCEQ proposes to revoke the FOA, the TCEQ will follow the procedures outlined in Section 6.4. Once a FOA has been revoked or suspended, the facility may be required to prepare and submit an application for a major amendment to the hazardous waste permit.

Once a determination is made that the qualifying criteria are not being met for a facility or that there has been a substantial change in circumstances, the noncompliance violation or deficiency will be evaluated by the TCEQ. If a deficiency is noted, the TCEQ will request corrective actions by the facility to regain compliance with the applicable qualifying criteria.

Appendix A

Qualifying Criteria Checklist

Facility Operations Area

Objective: This checklist is intended to aid applicants and TCEQ staff in identifying potential disqualifications or deficiencies prior to preparation of, or in response to a review of, an application for a hazardous waste permit/compliance plan modification or corrective action order for authorization of a Facility Operations Area (FOA).

Instructions: A person who meets the qualifying criteria of the Texas Risk Reduction Program (TRRP) rule, Title 30 Texas Administrative Code Chapter 350, Subchapter G (Establishing a Facilities Operations Area) can apply for a hazardous waste permit/compliance plan modification or a corrective action order to authorize a FOA. Qualifying criteria are specified in §350.134(a) and (b).

This checklist can be used in two main ways:

First, complete this checklist to the extent possible with available information and reach a conclusion in the Score Box at the end of this checklist. The facility can review its information with staff of the Remediation Division prior to submittal of the checklist. The results of this screening can help determine whether or not the facility should proceed with application development or provide an opportunity for development of additional information. Note, however, that passing this screen in Step 1 is not an assertion by the TCEQ that the facility has met the qualifying criteria. The burden remains with the person to prepare a complete compliance plan or corrective action order application (Step 4) addressing all the qualifying criteria of §350.134.

Second, the TCEQ staff will use this checklist as part of its official review of the permit/compliance plan modification request. Note that the facility must prepare a complete application addressing all the items specified in §350.135 (Application requirements) including §350.135(a)(13) – "Sufficient evidence to show compliance with the qualifying criteria identified in this subchapter." The supporting documentation for the qualifying criteria will be checked first for administrative completeness (items are present or absent) and then technical adequacy. The applicant will be given opportunities to respond to notices of deficiency at the end of these two review steps. However, if one or more of the qualifying criteria results in a disqualification, the application will be returned.

To use this checklist, review the information offered in support of each criterion and answer each item or question with a Yes or No by checking the appropriate response in the Results box. Additional instructions to the TCEQ staff for verifying information are provided in the box at the base of each criterion table. Use the Evaluation Table to determine if a Yes or No response results in a disqualification or deficiency. Sum up the number of criteria, if any, rated as either disqualified or deficient and enter the results in the Score Box. Draw the appropriate Conclusion based on the Sum and Results boxes. For the record, indicate the names and organizations of the members of the TCEQ review team, if utilized.

Qualifying Criteria Checklist

Facility Operations Area

Table 1. - Criterion A-1 - Operational Status - Citation §350.134(a)(1).

Qualifying Criteria	Results
The facility must meet all of the following:	
1. Operational chemical or petroleum manufacturing plant	Yes or No
2. NAICS Codes 325 or 324	Yes or No
3. Actively producing a product stream	Yes or No
Refer to the hazardous waste permit/compliance plan and application (Part A), the solid waste notice of registration, or the TCEQ central records files to verify the facility's status.	

Table 2. Criterion A-2 - Permit Status - Citation §350.134(a)(2)

Qualifying Criteria	Results
Was the facility issued a hazardous waste permit prior to September 23, 1999 and is it still in effect?	Yes or No
Verify that the date of issuance of the permit is prior to 9/23/99 (effective date of TRRP rule). Check in the TCEQ central records files or the Hazardous Waste Permits Section database. If the result is No, the facility must seek FOA authorization by means of a corrective action order.	

Table 3. Criterion A-3 - Access Restrictions - Citation §350.134(a)(3)

Qualifying Criteria	Results
Does the facility have the means to restrict access to the planned FOA? If Yes, explain:	Yes or No
Evaluate the facility's proposal. Suitable techniques include perimeter fencing, controlled access at gates, security guards, identification badges, etc. Warning signs alone are not sufficient.	

Table 4. Criterion A-4: Worker Health and Safety Program - Citation §350.134(a)(4)

Qualifying Criteria	Results
1. Does the facility conduct a worker health and safety program?	Yes or No
2. If yes, can the facility document that the worker health and safety program meets or exceeds OSHA requirements by means of one or more of the following methods:	
a. OSHA compliance history, or	Yes or No
b. Evaluation by a third party certified industrial hygienist and safety expert, or	Yes or No
c. Acceptance into an OSHA Voluntary Protection Program at the Star or Merit levels.	Yes or No

Qualifying Criteria	Results
For Question 1, the facility must provide documentation showing that it is conducting a worker health and safety program in the planned FOA. Merely having a health and safety plan is not sufficient. For Question 2, verify the facility's status by checking with the following sources: a. contact the OSHA regional office in Dallas at (972) 850-4145, or area offices. Contact information for area offices is provided at OSHA Regional & Area Offices: http://www.osha.gov/html/RAmap.html. b. contact the third party expert, or c. determine if the facility is listed in the OSHA Voluntary Protection Program register at www.osha.gov/dcsp/vpp/sitebystate.html. The information is organized by states with facilities listed alphabetically followed by SIC and NAICS codes.	

Table 5. Criterion A-5: Safety Record - Citation §350.134(a)(5)

Qualifying Criteria		Results
Does the facility documentation show that the following rates for the most recent 3-year period are at or below the most recent specific industry national average?		
1. cases with days away from work, job transfer, or restriction		Yes or No
2. total recordable cases		Yes or No
The following benchmark rates are based on Bureau of Labor Statistics (BLS) data for 2007, the most current data available as of the revision date of this checklist (11/2008):		
Benchmark Rate (per 200K manhours)	**NAICS Code 324**	**NAICS Code 325**
1. cases with days away from work, job transfer, or restriction	1.7	1.7
2. total recordable cases	2.8	3.1
The facility should present its performance for each rate for the most recent 3-year period expressed as annual values. Compare the rates for each of the 3 years to the appropriate industry benchmark rate. Check the BLS website at http://www.bls.gov/iif/oshsum.htm to determine if more current rates are available. The information is grouped by NAICS code; look for major groups 324 and 325. Use the entry in the Total sub-column under "Cases with days away from work, job transfer, or restriction" as the Lost workday injury case rate, and the "Total recordable cases" column as the Injury incidence rate.		

Table 6. Criterion A-6: Audit Results - Citation §350.134(a)(6)

Qualifying Criteria	Results
1. Has the facility had an audit of its worker health and safety program within three years or anytime there has been a significant change to the program within the past three years (can include audit for OSHA VPP)?	Yes or No
2. Do the results of the audit indicate that the facility's worker health and safety program is satisfactory, as performed by either OSHA or a third-party certified industrial hygienist and safety expert?	Yes or No
The facility should submit documentation that an audit has been performed within three years, or sooner if the facility determined that a change in its health and safety program warranted an audit. Examine the documentation for indications that the results were satisfactory.	

Table 7. Criterion A-7: Worker Protection Program -Citation §350.134(a)(7)

Qualifying Criteria	Results
Does the facility have a program to protect workers within the planned FOA from environmental media containing COCs at unprotective levels?	Yes or No
The facility must provide documentation that it has a program to protect workers within the planned FOA from exposure to media containing COCs in excess of protective levels. The facility may utilize its existing worker health and safety program that is the subject of Criteria A-4 and A-6 of this checklist, or the facility can develop a specific program as part of its FOA application.	

Table 8. Criterion A-8: Pollution Prevention Program - Citation §350.134(a)(8)(A) - (C)

Qualifying Criteria	Results
Does the facility have a pollution prevention program that has as a goal the prevention of releases of COCs to environmental media in the FOA, by meeting one or more of the three options:	
1. a program as specified by §350.134(a)(8)(A), or	Yes or No
2. an equivalent program as allowed by §350.134(a)(8)(B), or	Yes or No
3. a program that is a TCEQ-sponsored multi-media voluntary pollution prevention program, including any of the following:	
a. Clean Texas at Silver, Gold or Platinum Level,	Yes or No
b. Clean Texas at any level with an environmental improvement goal relevant to the FOA, or	Yes or No
c. Member in good standing in other voluntary pollution prevention program? (name the program _____)	Yes or No
For options under Item 3, determine if the facility is currently listed as a Clean Texas member by checking the lists at Clean Texas at www.tceq.state.tx.us/assistance/nav/cleantexas.html or contacting Small Business and Environmental Assistance at (512) 239-3100. An environmental improvement goal must be relevant to the activities taking place in the planned FOA. For example, reduction of air emissions from storage tanks is relevant whereas providing assistance to improve a city park is not relevant. Regarding Item 3.c, the Clean Industries 2000 program concluded and has been replaced by the Clean Texas program.	

Table 9. Criterion A-9: Compliance Status - Citation §350.134(a)(9)

Qualifying Criteria	Results
1. Does the facility have any significant outstanding non-compliance issues resulting from inspections for compliance with its RCRA permit or any TCEQ order?	Yes or No
2. If a TCEQ order (or agreed judgment, etc. resulting from TCEQ enforcement) has been issued to the facility within three years, is it still in effect?	Yes or No
3. Is the facility compliant with the terms of the order?	Yes or No
4. Would FOA authorization resolve any remaining non-compliance issues?	Yes or No

Qualifying Criteria	Results
Non-compliance issues include any alleged deficiency or violation identified during an inspection. Consider only those that are significant (i.e., formal enforcement action has been initiated) and outstanding (i.e., resolution is pending or not resolved within specified time frames) as indicated by issuance of Notice of Enforcement (NOE) letter. Determine this status by checking the enforcement case log maintained by the Office of Compliance and Enforcement. In all situations, consult the Region office for any pending enforcement actions not yet reflected in the database.	

Table 10. Criterion A-10: Financial Status - Citation §350.134(a)(10)

Qualifying Criteria	Results
1. Is the facility able to meet requirements for financial assurance in accordance with 30 TAC Chapter 37, as reflected by how it meets its current financial assurance obligations?	Yes or No
2. Is the facility in bankruptcy proceedings?	Yes or No
Determine the facility's status for current financial assurance obligations by checking with the Financial Administration Division, Revenue Section at 512/239-6260. Regarding bankruptcy status, check with the Bankruptcy Program at (512) 239-6812 to see if the facility is listed.	

Table 11. Criterion B-1: Source Reduction/Waste Minimization Status - Citation §350.134(b) Other Criteria

Qualifying Criteria	Results
1. Is the facility compliant with its Pollution Prevention Plan required by 30 TAC Chapter 335 Subchapter Q §§335.471- 480?	Yes or No
2. Are the facility's source reduction/waste minimization goals relevant to the FOA?	Yes or No
For Items 1 and 2, check with the Small Business and Environmental Assistance Division, Waste Reduction Planning program, at (512) 239-3100 to obtain the facility's status and description of its source reduction/waste minimization goals. Determine if the goals are relevant to the planned FOA. For example, reducing the amount of hazardous waste generated from manufacturing processes is relevant whereas increasing recycling of paper in offices is not relevant.	

Table 12. Criterion B-2: Compliance History Classification - Citation §350.134(b)

Qualifying Criteria	Results
3. Is the facility rated Average or High Performer on the TCEQ Compliance History database?	Yes or No
Check the Compliance History Database at www.tceq.state.tx.us/compliance/enforcement/history/. If the rating is listed as "average by default," check Yes and proceed on to Criterion B-3. If the rating is between 0 to 45, except for the default rating of 3.01, check Yes and stop here. If the rating is greater than 45, check No.	

Table 13. Criterion B-3: Compliance Summary Status - Citation §350.134(b)

Qualifying Criteria	Results
4. Is there any other pertinent information that would be included in the Compliance Summary required by §281.21(d) that could have a bearing on this facility's ability to meet the qualifying criteria?	Yes or No
A. Reporting record for spill response B. Compliance with other TCEQ permits (TPDES, UIC, Air, etc.) C. Are fee payments current? D. Any citizen complaints? E. Pending enforcement actions F. Prior enforcement actions not covered by Criterion A-9 G. Prior enforcement actions at associated facilities H. Manager's conviction of a criminal violation of environmental laws	
Review the most current compliance summary prepared as part of the permitting process and check for any changes in items A. - H. For a pre-application screen, utilize available information to identify issues of concern and probe further if necessary. For example, focus on Item A since this ties in directly to Criterion A-8 regarding pollution prevention. Check Yes if one or more items show a detrimental change or continued compliance problems.	

Table 14. Evaluation Table.

Compare the answers in the preceding criterion tables to the conditions stated in the Disqualified or Deficiency columns of this table. Check the box [☐] if the specified condition applies. N/A = non-applicable.

Criterion	Disqualified if answer is ...		Deficiency if answer is ...	
A-1	1, 2, or 3 is No	☐	N/A	
A-2	N/A		No	☐
A-3	N/A		No	☐
A-4	1 is No	☐	2.a, b, and c are No	☐
A-5	1 and 2 are No	☐	1 or 2 is No	☐
A-6	N/A		1 or 2 is No	☐
A-7	N/A		No	☐
A-8	all are No	☐	3.b, if environmental improvement goal is not relevant to FOA	☐
A-9	1 is Yes, or3 and 4 are No	☐	2 is Yes	☐
A-10	1 is No or 2 is Yes ☐	☐	N/A	
B-1	1 is No and 2 is Yes	☐	1 and 2 are No	☐
B-2	No	☐	N/A	
B-3	N/A		Yes	☐

Table 15. Score Box.

Determine the number of criteria checked in the Evaluation Table as either disqualified or deficient and enter the amounts, if any, in the respective Sum column of this table. Draw the appropriate Conclusion based on the Sum and Results columns.		
Sum	**Results**	**Conclusion**
___	Number of criteria rated as Disqualified (One or more --facility does not qualify)	Stop
___	Number of criteria rated as Deficiency (One or more --facility must satisfactorily explain or rectify before Step 4 of FOA application process)	Revise, Try Again
0	Facility meets all criteria or has rectified deficiencies	Proceed

Table 16. Review Team.

Indicate staff names and organizations participating in this evaluation	
Name	**Organization**